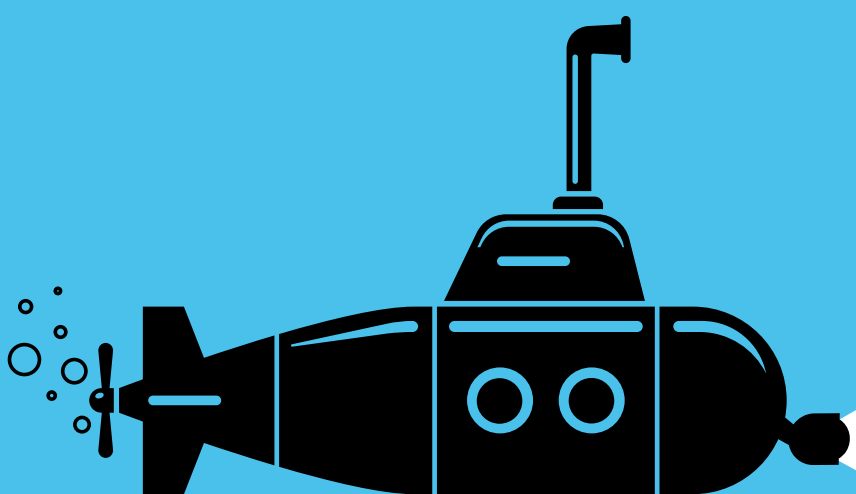
ETH zürich

Departement Bau, Umwelt und Geomatik
Dept. of Civil, Environmental and Geomatic Engineering

Jahresbericht 2021

Departement Bau, Umwelt und Geomatik

Annual Report 2021
Dept. of Civil, Environmental and Geomatic Engineering



ENLIGHTENING

D BAUG

D-BAUG JAHRESBERICHT 2021 / ANNUAL REPORT 2021

PUBLISHED BY
Department of Civil, Environmental and Geomatic Engineering

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LAYOUT
qgraphics GmbH
Grafik + Design
Wädenswilerstrasse 11
CH-8712 Stäfa

PHOTOS AND ILLUSTRATIONS
ETH Zurich / D-BAUG, Shutterstock, qgraphics GmbH

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777 copies

1st edition: May 2022

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Liebe Leserinnen und Leser

Es ist mir eine Freude und Ehre, Ihnen bereits zum zweiten Mal in meiner Funktion als Vorsteher des Departements Bau, Umwelt und Geomatik der ETH Zürich unseren Jahresbericht vorzustellen.

2021 war ein weiteres anspruchsvolles Jahr mit Blick auf die anhaltenden pandemischen Einschränkungen. Doch trotz dieser schwierigen Rahmenbedingungen hat das D-BAUG den strategischen Wandlungsprozess, den es in den letzten Jahren angestossen hat, unvermindert dynamisch vorangetrieben. So konnten wir die kollektiven Bemühungen um eine präzisere Fokussierung der Mission des Departements durch vielfältige Massnahmen sowie die Schaffung von Entwicklungsmöglichkeiten weiter konsolidieren. Damit ist es gelungen, den Schwerpunkt in der Forschung und Lehre verstärkt auf das Potenzial einer nachhaltig gebauten Umwelt auszurichten – mit der Perspektive, die natürliche Umwelt durch Instandsetzungsmassnahmen und eine nachhaltige Ressourcenbewirtschaftung zu erhalten.

Das D-BAUG kann stolz darauf sein, in seinem Kompetenzbereich zu den weltweit führenden Lehr- und Forschungsinstitutionen zu gehören. Dies hat auch die periodisch vorgenommene wissenschaftliche Evaluation bestätigt, die im März 2021 erfolgreich abgeschlossen werden konnte. Das internationale Expertengremium, welches den gesamten Kompetenzbereich des D-BAUG begutachtete, zeigte sich sowohl von den Leistungen der einzelnen Forschenden und Forschungsgruppen wie auch von den Erfolgen des Departements insgesamt begeistert. Die Bewertung lieferte einen klaren Beweis dafür, dass der Erneuerungs- und Dynamisierungsprozess des Departements zunehmend an Fahrt gewonnen hat. Die Schulleitung der ETH Zürich hat das positive Ergebnis mit Anerkennung und Wertschätzung aufgenommen. Dies ermutigt das Departement, die in den letzten Jahren entwickelte Strategie zur Stärkung seiner wissenschaftlichen Führungsrolle auf internationaler Ebene weiter fortzusetzen.

Aufgrund der pandemischen Situation musste die Evaluation komplett virtuell durchgeführt werden. Somit gab es gewisse Einschränkungen in der persönlichen Interaktion, doch Dank der Kreativität und Pro-

fessionalität der Forschenden und Mitarbeitenden am D-BAUG konnte das Expertenkomitee den virtuellen Besuch in allen Forschungseinheiten fast so erleben, als ob es vor Ort gewesen wäre. In diesem Zusammenhang möchte ich dem wissenschaftlichen, administrativen und technischen Personal meine aufrichtige Wertschätzung und Dankbarkeit für den enormen Einsatz während des gesamten Evaluierungsprozesses aussprechen.

Die pandemiebedingten Einschränkungen wirkten sich auch 2021 weiter auf den Forschungs- und Lehrbetrieb aus, jedoch in geringerem Masse als noch im Jahr 2020. Mittels der im Vorjahr gesammelten Erfahrungen konnte der Lehrkörper des D-BAUG den Unterricht auf höchstem Niveau fortführen und auf diese Weise die Erwartungen der Studierenden erfüllen. Dabei ermöglichte das Modell des hybriden Unterrichts das notwendige Mass an Flexibilität, um den Vorlesungsbetrieb vor Ort weitestgehend aufrechtzuerhalten und zugleich allen Studierenden und Dozierenden gerecht zu werden, die nicht vor Ort sein konnten. Auch dies war nur durch den grossen Einsatz aller Departementsangehörigen möglich, denen ich an dieser Stelle herzlichen danken möchte.

Die Forschungsaktivität des D-BAUG war weiterhin produktiv und fand national und international Anerkennung, wie die zahlreichen Publikationen in renommierten Fachzeitschriften, Ehrungen und Preise sowie die erfolgreichen Anträge im Bereich von hochkompetitiven Förderprogrammen belegen. Überdies hat das D-BAUG eine grosszügige Spende von der Albert-Lück-Stiftung erhalten, die der Forschung im Bereich zukunftsfähige Infrastrukturen dienen soll. Weiterhin lancierte das D-BAUG im Rahmen der Departementsstrategie einen internen Aufruf zur Entwicklung und Eingabe von Leuchtturmprojekten. Diese sollen die interdisziplinäre Zusammenarbeit am Departement fördern und zudem als Wahrzeichen für den gesellschaftlichen Wandel und die neuen Ansätze im Zuge der drei «Grand Challenges» stehen, die die Mission des D-BAUG prägen: zunehmende Urbanisierung, zukunftsfähige Infrastrukturen und veränderliche Umwelt.

«Das D-BAUG kann stolz darauf sein, in seinem Kompetenzbereich zu den weltweit führenden Lehr- und Forschungsinstitutionen zu gehören. Dies hat auch die periodisch vorgenommene wissenschaftliche Evaluation bestätigt, die im März 2021 erfolgreich abgeschlossen werden konnte.»

– Paolo Burlando

Schliesslich war 2021 auch das Jahr, in dem die herausragende Kollegin und Wissenschaftlerin Prof. Sarah M. Springman nach langjähriger erfolgreicher Tätigkeit an der ETH Zürich in den Ruhestand ging. Sie diente zunächst als D-BAUG Professorin für Geotechnik und in den letzten sieben Jahren als Rektorin. Ihr Einfluss auf die Lehre war nicht nur innerhalb der ETH Zürich, sondern auch weit darüber hinaus anerkannt. Im Namen des D-BAUG möchte ich Prof. Springman meinen Dank für ihren grosszügigen Einsatz, zunächst für unser Departement und später für die ETH Zürich, aussprechen.

Und zum Schluss dieses Vorworts noch eine persönliche Anmerkung: Als ich das Vorwort zum Jahresbericht 2020 verfasste, machte ich mich auf eine anspruchsvolle Zeit in der Leitung des Departements gefasst. Ein Jahr später kann ich sagen, dass sich diese Erwartung in vielerlei Hinsicht bewahrheitet hat. Doch der Einsatz von Zeit und Mühen haben sich sehr gelohnt und ich fühle mich geehrt, zur Weiterentwicklung eines solch produktiven, intellektuell hochkarätigen Departements beitragen zu dürfen, dem bei der Entwicklung von technischen Lösungen für eine nachhaltigere Welt eine Schlüsselrolle zukommt.

Paolo Burlando
Departementsvorsteher

Dear Readers

It is my pleasure and honour to introduce to you, for the second time in my role as head of department, the annual report of the Department of Civil, Environmental and Geomatic Engineering of ETH Zurich.

2021 has been another intense year, characterised by the persistence of some operational limitations due to the pandemic, which, however, did not slow down the dynamics that marked the strategic changes that D-BAUG undertook in the recent years. These further consolidated the collective effort to sharpen the department's mission through actions on multiple fronts and the creation of development opportunities. This allowed strengthening the main focus of the departmental teaching and research activities around harnessing the potential of sustainable design of the built environment, while preserving the natural environment through its restoration and the sustainable management of resources.

D-BAUG can be proud of being one of the world's leading teaching and research institutions in its domain of competence. This was confirmed by the periodic academic evaluation, which was successfully completed in March 2021. The panel of international experts across the domain of expertise of D-BAUG enthusiastically commented the achievements of individual researchers and research groups, as well as those of the department as a whole. Their assessment provided clear evidence that the department increasingly gained momentum in its renovation and dynamization process, despite the difficult boundary conditions that in the past two years slowed down the change. The positive evaluation outcome was recognised and appreciated by the ETH Zurich Executive Board, thus encouraging the department to continue pursuing the strategy that was devised in the recent years to strengthen D-BAUG's leading role in the international academic scene.

Due to the restrictions imposed by the pandemic, the evaluation was entirely carried out on a remote format. While this inherently limited the possibility of personal interaction with the evaluation panel, the creativity and professionalisms of D-BAUG's scientists, supported by a strongly committed departmental

staff, allowed the panel to experience the virtual visit to the research units almost as if they had been present onsite. In this respect, I would like to convey here my sincere appreciation and gratitude to the entire academic, administrative and technical staff for the outstanding engagement throughout the entire evaluation process.

The restrictions due to the persisting pandemic still conditioned the operativity of teaching and research, though on smaller scale than in 2020. The experience matured in the previous year allowed D-BAUG's faculty to keep the teaching standard at the highest level, thus meeting the students' expectations. The hybrid lecturing format allowed the necessary level of flexibility to maintain the largest possible number of lectures onsite, while remaining fair to all students and faculty, who could not be present on campus. This was possible only through the considerable effort of all members of the department, whom I want here sincerely thank.

D-BAUG's research continued to be productive and appreciated in the national and international scene, as witnessed by the great number of publications in prestigious journals, by the several awards received by our faculty and by the numerous successful applications to competitive research funding schemes. D-BAUG also received a generous donation from the Albert Lück Foundation, which will support research in the domain of future-oriented infrastructures. Moreover, as part of the departmental strategy, D-BAUG launched an internal call for the formulation of "Lighthouse Projects". These are expected to increase the interdisciplinary collaboration among D-BAUG's research groups and aim to develop as beacons for societal transformation and development associated with all three grand challenges leading D-BAUG's mission: urbanisation, future oriented infrastructure, and changing environment.

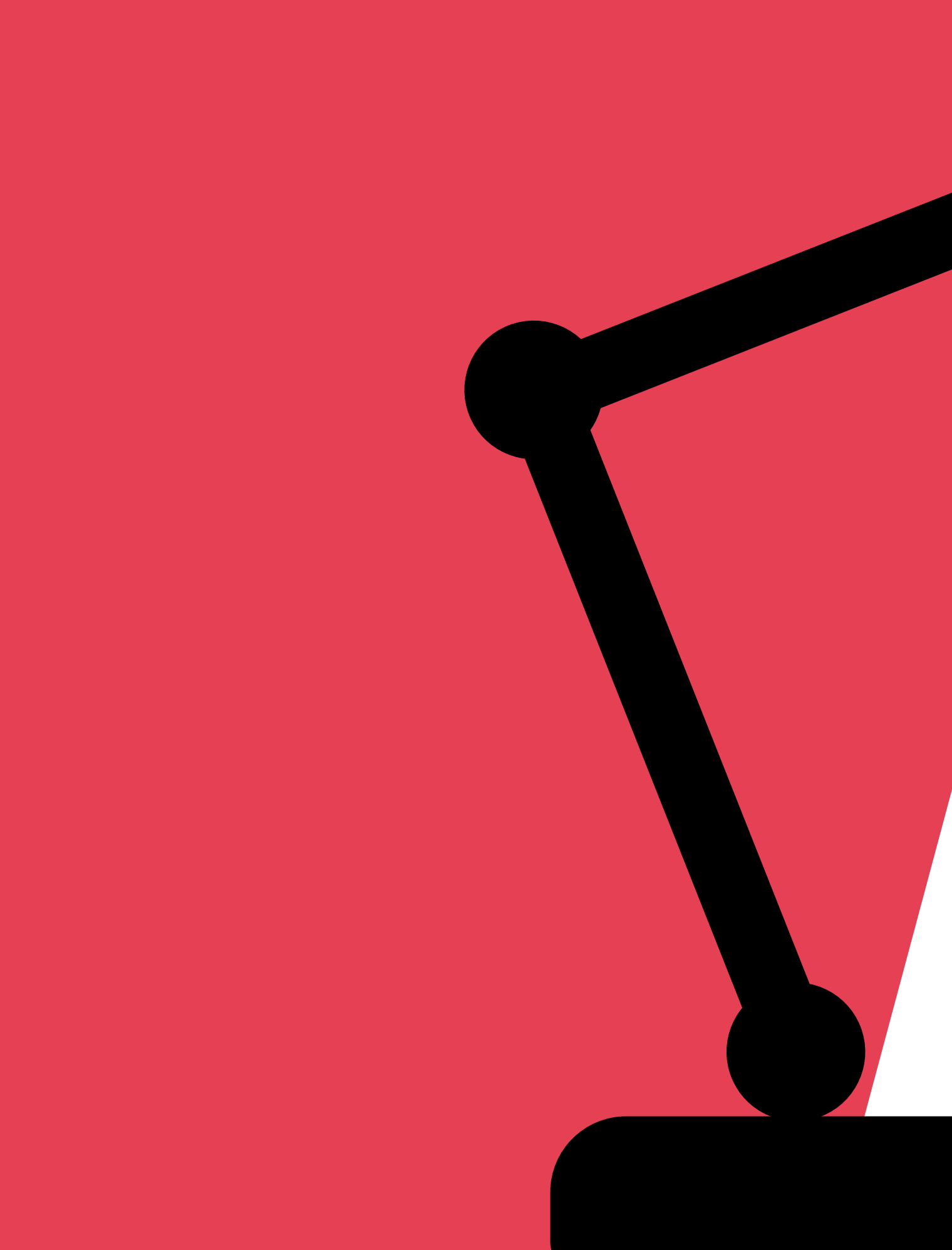
"D-BAUG can be proud of being one of the world's leading teaching and research institutions in its domain of competence. This was confirmed by the periodic academic evaluation, which was successfully completed in March 2021."

– Paolo Burlando

Finally, 2021 was also the year of retirement of a distinguished colleague and scientist, Prof. Sarah M. Springman, who retired after having successfully served ETH Zurich, first as professor of Geotechnics at D-BAUG and in the past seven years as Rector. Her imprint on education at ETH Zurich was widely recognised within the institution and well beyond. On behalf of D-BAUG I would like to thank Prof. Springman for her generous dedication to our department first and to ETH Zurich later.

I want to conclude this foreword on a personal note. When writing the foreword to the 2020 report, I was expecting a demanding time in leading the department. One year later, I can say that the expectation was correct and the past year was quite intense in many different respects. But I must say that the reward was worth the investment of time and energy and I feel privileged having the opportunity to contribute to the further development of such an intellectually rich and productive department, the role of which is key for engineering a sustainable world.

Paolo Burlando
Head of Department



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CAMPUS & FACULTY

“Build your own stuff, with your own hands”

INTERVIEW Iris Mickein

Prof. Catherine De Wolf
ist seit September 2021 als Tenure-Track-Assistenzprofessorin für «Circular Engineering for Architecture» am Departement für Bau, Umwelt und Geomatik der ETH Zürich tätig. In diesem kurzen Interview spricht sie über ihre Forschung und Lehre und erklärt, warum das Bauen auch in ihrem Privatleben eine wichtige Rolle spielt.

Catherine De Wolf has been Tenure Track Assistant Professor of Circular Engineering for Architecture at the Department of Civil, Environmental and Geomatic Engineering at ETH Zurich since September 2021. In this short interview, she talks about her research and teaching and explains why building projects also play an important role in her private life.

Professor De Wolf, welcome to ETH! The furniture at your office looks unique. How come?
Thank you! When I arrived at ETH, I had the chance to order new furniture for my empty office. As I encounter a lot of perfectly good furniture and materials that would have been thrown away otherwise in my daily work, I decided to reuse furniture or to make my own furniture with reused materials instead. For many meetings in my office, it has become a conversation starter about the circular economy.

"I believe that digitalization will be a major agent in the transition from a linear take-make-waste model to a circular economy through the longer use, reuse, regeneration, repair, refurbishment, and recycling of construction resources."

– Catherine De Wolf

What are your current research interests?
I have always been interested in making construction more environmentally friendly. Currently, I look at digital innovations that are being used in other sectors, exploring how these innovations could be translated to the built environment. I believe that digitalization will be a major agent in the transition from a linear take-make-waste model to a circular economy through the longer use, reuse, regeneration, repair, refurbishment, and recycling of construction resources. Digitalization can help overcome technical, but also legal, economic, political, logistical, or sociological barriers. Digitalization for circularity is also the focus of my new lab, the Circular Engineering for Architecture (CEA) lab here at D-BAUG. We use machine learning, laser scanning, augmented reality, blockchain technology, etc. to facilitate the reuse of building materials.

What is the impact of your research on society?
Circular construction has tremendous benefits for society, most obviously for the environment, but also in other ways, for example, for the job market. The building sector is responsible for about 40% of our greenhouse gas emissions. Not to mention that construction and demolition waste accounts for more than a third of all our generated waste. As the global population rises, there will be more and more construction in the decades to come – estimates say that the world will add the equivalent of another New York City every month. So, as engineers, contractors, and architects, we play a huge role in the climate crisis!

Instead of extracting raw materials for construction while throwing away other materials due to renovation or demolishment, it just makes so much sense to do reuse. The circular economy also creates a series of new purposeful, local jobs. With my lab, I want to contribute knowledge on how to upscale reuse, so that it is not just for niche projects but for the entire sector. Digitalization can help make those new material usages and construction jobs competitive.

Which courses will you be teaching at ETH?
I will be teaching new courses on digitalization for circular construction. I'm really excited, as I love the discussions with students. My teaching is very hands-on, so I will go to demolition sites and reclaim ele-

Deconstruction
The CEA lab disassembles a building set for demolition in collaboration with reuse actors in order to reuse its materials.

ments with the students. I will make them interact with pioneering industry practitioners. They will also design their own circular construction for the ETH campus. I like to work in an interactive and interdisciplinary way, showing students from different disciplines how much they can learn from each other. This kind of teaching also gives me a lot of energy and insights for my own research.

After six months, what are your impressions of Switzerland and ETH Zurich?
Switzerland has awe-inspiring nature, which reminds me why I do what I do. I think, Switzerland is also a country that really enables entrepreneurship. Especially at ETH Zurich I feel this "everything is possible"-vibe strongly. Everyone has been very welcoming to me, and I meet brilliant researchers and students every day, who want to change the world for the better. The more I get to know my colleagues and the students, the more honored I am to be part of this institution.

What do you do if you have a few minutes to spare?
I spend time with my partner and take a walk with our dog in the mountains! I also love taking the train or my bike to discover new places and to visit my friends and family. Together, we then do things such as rock-climbing, yoga, and playing the piano. As I am very passionate about my research topic, I also apply circular, low-carbon construction in my daily life, by making furniture and interior design with waste materials or disassembling abandoned buildings and making greenhouses, cabins, or nomadic architecture out of the reclaimed materials.

What advice would you give to students who are just starting out in construction?
To do exactly that: build your own stuff, with your own hands, with materials you reclaim from your own neighborhood. We acquire so many useful skills at school and in our daily lives, especially digital skills (which you should absolutely learn!), but you must construct something yourself to realize what kind of 'real-world' problems need solutions and to realize what questions need to be asked. Yes, certain classes do offer construction experience, but don't wait for those: go and build something that your community needs, preferably with reused materials. Don't miss opportunities to apply your (digital) skills in a way that could be impactful for the construction sector, and for society as a whole!

More about the ➡Circular Engineering for Architecture research group led by Professor Catherine De Wolf

Ein Ausblick und ein emotionales «Goodbye»

FOTOS ETH Zürich **TEXT** Aus der ETH-Medienmitteilung vom 20.11.2021

An Sarah Springmans letztem ETH-Tag würdigte ETH-Präsident Joël Mesot die Rektorin, in der er auch eine Mentorin sieht. Beide reflektierten am Jahrestag bewältigte wie kommende Herausforderungen.

Dass die Stimmung am 166. Jahrestag der ETH besonders emotional war, lag nicht nur daran, dass er im Gegensatz zum letzten Jahr physisch stattfinden konnte: Es war auch der letzte ETH-Tag, zu dem Sarah Springman als Gastgeberin lud. Sie tritt nach 25 Jahren als ETH-Professorin und sieben Jahren als Rektorin zurück. Noch hat sie die Lehre an der ETH fest im Blick: «Wir sind zwar noch nicht zurück im «Courant normal», doch die Studierenden sind wieder auf dem Campus», sagte sie. Das sei nur durch die Covid-Zertifikatspflicht möglich. Die Rektorin betonte, dass wir bei globalen Herausforderungen wie der Pandemie alle eine Verantwortung tragen: «Der Homo sapiens scheint der grösste Troublemaker auf diesem Planeten zu sein. Er ist aber auch der einzige Problem solver».

«Der Homo sapiens scheint der grösste Troublemaker auf diesem Planeten zu sein. Er ist aber auch der einzige Problem solver.»

– Sarah M. Springman

Die Curriculumsentwicklung der ETH sieht sie dabei auf Kurs: So wurde etwa ein Grossprojekt lanciert, das die Computational Competencies in allen Studiengängen integriert. Eine grosse Chance sieht die Rektorin im neu eröffneten Student Project House auf dem Campus Zentrum – gerade mit Blick auf überfachliche Kompetenzen: «Die Studierenden können hier ihre Ideen umsetzen und erhalten auch die Gelegenheit, dabei zu scheitern. Scheitern lernen und aus dem Scheitern lernen, gehört zu einer der wichtigsten Erfahrungen aufstrebender junger Menschen».

Auf Wiedersehen Rektorin Sarah M. Springman

Ein wichtiges Anliegen war der Rektorin auch die neue Doktoratsverordnung, die 2022 in Kraft tritt und dabei helfen wird, die Betreuung der Doktorierenden zu regeln. «Die ETH Zürich ist in den Jahren, die ich überblicke, enorm gewachsen – auch an Komplexität», sagt Springman. «Die neue Doktoratsverordnung ist beispielhaft, wie sich die ETH Zürich selbst erneuert».

Gerade weil sich die Welt so rasant verändere, so die Rektorin, veralte auch das beste Fachwissen. Für «Life Long Learning» wurde das Weiterbildungsangebot stets ausgebaut und 2018 die School for Continuing Education gegründet, die heute über 60 Diplomstudiengänge anbietet.

Ihr Amtsnachfolger Günther Dissertori wird dieses Erbe antreten, das auch weiterhin bestehende Herausforderungen umfasst – etwa ein kontrolliertes Wachstum der ETH oder die Förderung der mentalen Gesundheit der Studierenden und der Diversität an der ETH Zürich.

ETH-Präsident Joël Mesot ehrte die scheidende Rektorin in seiner Rede. Springman habe keine Mühen gescheut, die Studierenden beim Lernen, aber auch in Persönlichkeitsentwicklung bestmöglich zu fördern. Nicht zuletzt rühmte er sie als Mentorin in Sachen Diversität: «Der 45%-Frauenanteil bei den Neuberufungen 2021 ist Ausdruck unserer Fortschritte – aber wir wissen, dass noch ein grosses Wegstück vor uns liegt», so der ETH-Präsident. Bei der Entwicklung der Hochschule sei es ähnlich wie bei gotischen Kathedralen: «Wenn ein Teil renoviert ist, beginnen die Arbeiten an einem anderen Ort».

Auch der Präsident des Studierendenverbandes der ETH, Nils Jensen, dankte Sarah Springman. Beim Thema der psychischen Gesundheit von Studierenden habe sie sich besonders eingesetzt. Er mahnte jedoch auch vor dem Leistungsdruck im Studium und dem schnellen Wachstum der ETH.

Der ETH-Ratspräsident Michael Hengartner hob zum Schluss sowohl die wissenschaftlichen wie auch die sportlichen Spitzenleistungen von Sarah Springman hervor. Vor allem aber dankte er der Rektorin für ihren unermüdlichen Einsatz für die ETH und ihre Studierenden, besonders auch für die Frauenförderung. «Sarah Springman war in all ihren Funktionen immer ein hervorragendes Rollenmodel für junge Studentinnen und Forscherinnen», so der ETH-Ratspräsident.

Liebe Sarah! Das Departement Bau, Umwelt und Geomatik dankt Dir ebenfalls für Dein immenses und unermüdliches Engagement in Lehre und Forschung während all den Jahren im D-BAUG und als Rektorin der ETH Zürich. Alle Angehörigen des D-BAUG wünschen Dir viel Erfolg und Freude bei Deinen neuen Aktivitäten.

Prof. Sarah M. Springman

Sarah M. Springman had been a full professor at the Institute for Geotechnical Engineering (IGT) at the Department of Civil, Environmental and Geomatic Engineering (D-BAUG), ETH Zurich since 1997, and was Deputy Head of D-BAUG from 2013 to 2014.

She has broad experience in national and international research, innovation, teaching and governance, ranging from the Swiss Science and Technology Council to the Board of the largest Swiss construction company. She became Rector of ETH Zurich in 2015, with responsibility for overseeing the curriculum and guiding the academic mission, as only the second woman in this role since the founding of ETH in 1855.

She was elected a Fellow of The Royal Academy of Engineering in 2009 and of The Swiss Academy for Technological Sciences in 2015.

Professor Springman is an alumna of the University of Cambridge, graduating with a Bachelor of Arts (Engineering Sciences) from Girton College in 1978; a Master of Philosophy (Soil Mechanics) from St Catharine's College in 1984; and a Doctor of Philosophy (Soil Mechanics) from Magdalene College in 1989. She holds honorary doctorates from the Universities of Bath, Berne, Sheffield, and Wollongong, Australia, and is an Honorary Fellow of all three of her Cambridge Colleges.

In addition to her distinguished career as an academic and a civil engineer, Professor Springman has been an elite-level sports-woman. She represented Great Britain in triathlon between 1984 and 1993, competing in the demonstration triathlon in the 1990 Commonwealth Games in Auckland. She was European Triathlon champion in 1985, 1986 and 1988. She is a former President of the British Triathlon Federation and has served as Vice President of both European and World Triathlon. She is credited with a pivotal role in campaigning for the inclusion of triathlon in the Olympic, Commonwealth and Paralympic programmes and was awarded the CBE for services to sport in 2012.

«Typisch Frau!»

FOTOS Jessica Keller **INTERVIEW** Adrian Meyer
Erstmalig publiziert im EqualVoice Magazin, September 2021, Ringier Verlag

«Wenn sich talentierte Frauen aufgrund ihres Umfelds oder wegen Vorurteilen nicht für MINT-Fächer einschreiben, verliert man viele gute Fachkräfte und Talente. Das können wir uns einfach nicht mehr leisten.»

– Sarah M. Springman

Sarah M. Springman ist Professorin für Geotechnik und seit 2015 Rektorin der ETH Zürich - als zweite Frau überhaupt. Die britische Ingenieurin war in den 80er-Jahren als Spitzensportlerin aktiv, dreimal wurde sie Europameisterin im Triathlon. Im Interview spricht sie über häufige Selbstzweifel bei Frauen, die Notwendigkeit der weiblichen Sicht auf die Wissenschaft und die unbändige Kraft eines starken Willens.

Frau Springman, Sie bezeichneten Ihren Weg zur Rektorin der ETH Zürich einmal als Zehnkampf. Wie haben Sie gesiegt?
Der Bewerbungsprozess dauerte rund zehn Monate. Das brauchte viel Ausdauer. Geholfen hat mir, dass ich keine typische Akademikerin bin. Wegen meiner Erfahrungen als Sportfunktionärin im Triathlon brachte ich ein politisches Verständnis mit. Das braucht es für die Rolle als Rektorin.

Sie sind die zweite Rektorin der ETH und dreifache Europameisterin im Triathlon. Was treibt Sie an?
Als Kind wollte ich immer die Beste sein. Ich hatte drei jüngere Brüder, sie bekamen einen Grossteil der Aufmerksamkeit meiner Eltern. Ich musste mich durchsetzen, um klarzumachen, dass ich auch noch hier bin. Dass ich im Sport viel Ausdauer habe, entdeckte ich relativ spät. Mein erstes Rennen am ersten Triathlon in Grossbritannien vom 5. Juni 1983 hat mein Leben verändert. Ich wurde Vierte und merkte, dass ich in dieser seltsamen Sportart sehr gute Chancen haben könnte.

Wollten Sie als Studentin auch die Beste sein?
Nein. Mein Ingenieursstudium an der Universität Cambridge habe ich zwar mit einer sehr guten Note abgeschlossen. Trotzdem dachte ich, ich sei nicht gut genug für die Forschung. Anstatt von mir selbst überzeugt zu sein, hatte ich Zweifel. Typisch Frau! Dass ich das Zeug habe zur erstklassigen Wissenschaftlerin, merkte ich erst mit Mitte 3o.

Was braucht es, um als Frau in der Wissenschaft erfolgreich zu sein?
Man sollte flexibel sein, viele Kompetenzen haben und sehr gute Leistungen zeigen. Ich war immer fähig, Menschen zum Mitwirken zu begeistern. Ich wollte eine Partnerin sein und keine Feindin, die Kämpfe führt. Denn gemeinsam erreichen wir viel mehr. Nur im Sport ging es um mich.

Warum wurden Sie Bauingenieurin?
Um mit einer besseren Infrastruktur die Lebensqualität der Menschen zu steigern. Eine sehr weibliche Vorstellung.

Hat Sie die Männerdomäne nicht abgeschreckt?
Nein. Ich hatte auch nie schlimme Erfahrungen gemacht. Klar gab es manchmal Sprüche auf den Baustellen. Aber nichts, womit ich nicht selber fertig wurde. Sachlich argumentieren, die Fakten kennen, damit überzeugt man am Ende.

Warum schrecken die Naturwissenschaften so viele Frauen ab?
Das ist ein gesellschaftliches Problem und hat mit klassischen Rollenbildern zu tun. Den Mädchen wird in der Schule durch Bemerkungen der Lehrkräfte oder der Eltern von Naturwissenschaften abgeraten. Hinzu kommt, dass sich Frauen viele Gedanken über alle möglichen Probleme und Schwierigkeiten machen, anstatt von sich selbst überzeugt zu sein und es einfach zu versuchen.

Wie lässt sich der Frauenanteil steigern?
Wir müssen früh ansetzen, um Mädchen für Naturwissenschaften zu begeistern. Mit Begeisterung ist man gegen abfällige Bemerkungen eher immun, das weiss ich aus eigener Erfahrung. Ausserdem müssen wir die Frauen sichtbar machen. Daher habe ich viel Zeit investiert für «ETH unterwegs», um in den Mittelschulen bei jungen Frauen das Interesse an MINT-Fächern zu wecken.

«Ich habe versucht, vorzuleben, dass man als Frau alles schafft, wenn man es nur will. Wer ein Ziel vor Augen hat und daran arbeitet, wird irgendwann eine Meisterin. Manchmal sagen die Menschen, ich sei eine Superfrau. Dabei bin ich eine normale Frau, die sich mit viel Engagement für ihre Ziele einsetzt.»

– Sarah M. Springman

An der ETH stagniert der Frauenanteil bei den Studierenden trotz Förderprogrammen bei einem Drittel. Bei den ordentlichen Professuren machen Frauen nur 15 Prozent aus.

Dank der Massnahmen steigt der Frauenanteil langsam. Aber nicht so schnell, wie wir das gerne hätten. 2019 ging immerhin die Hälfte aller Neuberufungen bei den Assistenzprofessuren an Frauen, bei den ordentlichen Professuren waren es seit 2020 über 40 Prozent. Vom Bund haben wir die Aufgabe, einen Frauenanteil von 35 Prozent zu erreichen. Wir haben unseren Job also gemacht.

Warum braucht es in den MINT-Fächern mehr Frauen?

Wenn sich talentierte Frauen aufgrund ihres Umfelds oder wegen Vorurteilen nicht für diese Fächer einschreiben, verliert man viele gute Fachkräfte und Talente. Das können wir uns einfach nicht mehr leisten. Wir haben monumentale Herausforderungen auf der Welt, vor allem der Klimawandel. Dafür braucht es einen bunten Strauss an Lösungen. Und die bekommen wir nicht, wenn die weibliche Perspektive fehlt.

Machen Frauen anders Wissenschaft?

Sie machen ein Team diverser. Das ergibt mehr Offenheit, freiere Gedanken und bessere Lösungen.

Sind Sie eine Feministin?

Natürlich bin ich das. Aber ich bin nicht so radikal wie andere. Ich habe von den Feministinnen profitiert, die vor mir kämpften. Daher konnte ich als kollaborative, inklusive Frau wirken.

Als Sie 1997 an die ETH kamen, waren Sie erst die neunte ordentliche Professorin.

Ich war damals sogar die erste Professorin für Bauingenieurwissenschaft in der Schweiz. Ich wusste, dass die Schweiz etwas rückständig ist hinsichtlich Frauen im MINT-Bereich. Aber in kurzer Zeit hat sich hier viel verändert. Das passiert nicht zuletzt wegen mehr weiblichen Vorbildern.

Was wollen Sie für ein Vorbild sein?

Ich habe versucht, vorzuleben, dass man als Frau alles schafft, wenn man es nur will. Wer ein Ziel vor Augen hat und daran arbeitet, wird irgendwann eine Meisterin. Manchmal sagen die Menschen, ich sei eine Superfrau. Dabei bin ich eine normale Frau, die sich mit viel Engagement für ihre Ziele einsetzt.

Prof. Sarah M. Springman

Sarah M. Springman (64), born in London, studied engineering at Cambridge University. After graduating, she worked in England, Australia and Fiji, where she supervised dam constructions for a hydroelectric power station. In the 1980s, she was a top athlete in triathlon, becoming European champion three times. As vice president of the international triathlon federation, Springman actively supported the sport in becoming an Olympic discipline. For her achievements in sports, she received a medal from the Queen. Her scientific career began in 1990, and since 1997 she has been a professor of geotechnical engineering at ETH Zurich, and a rector since 2015. Springman stepped down at the end of 2021. She will then become principal of St Hilda's College at Oxford University.

“I'm not yet ready for zero percent.”

FOTOS ETH Zürich **TEXT** Nils Pfändler, NZZ, 7-Dec-2021 (translated, shortened version)

A drumbeat breaks the silence. Slowly, almost reverently, Sarah Springman strides out of the darkness towards the stage. Around her neck hangs a large golden medal, the rector's chain. It sparkles in the spotlight. The conductor of the Academic Orchestra gives a signal. The trumpets start up, followed by the strings. Soon the sounds of the overture from Monteverdi's “L'Orfeo” fill the university portico.

Under the gaze of the audience, Springman takes her seat, where she has belonged for so many years: in the front row. On ETH Day at the end of November 2021, the most important festive event in the university calendar, Sarah Springman was in the spotlight for the last time. After seven years on the Executive Board, she is handing over to particle physicist Günther Dissertori.

Springman's shoes will not be easy to fill. A quarter of a century ago, the geotechnical engineer came to Zurich as a pioneer in a male-dominated environment. She leaves the city as a formative personality of the Swiss research establishment, a universally popular rector, a role model for many up-and-coming female academics and a mentor to seasoned scientists. This is a loss – not only for the university.

When Springman came to Zurich, she was only the ninth female full professor in the history of ETH. She was the only female professor in her department. She was the first female civil engineering professor ever in Switzerland, and she was the first geotechnical engineer to hold such a post in the whole of Western Europe.

When Sarah Springman sets herself a goal, she achieves it. Most of the time, certainly. President of the ETH Board Michael Hengartner who, as former Rector of the University of Zurich, worked with Springman for many years, emphasised her drive, charm and British humour in his laudation. But she could also bang on the table when she had to. “With you, we know what's going on, where we stand and where the journey is going. But we still have fun working together”.

Many companions attest to these qualities in the soon-to-be 65-year-old. As a speaker, she has no trouble making the whole room laugh. In conversation, she is always attentive and responsive to the other person, no matter who it is that stands in front of her. She is on first-name terms with the student representatives, and she also knows the first names of the housemaster and the chef. ETH President Joël Mesot, in turn, calls Springman his mentor. Her energy seems boundless, even after working an 80-hour week. Her exuberant enthusiasm might explain this.

Springman has high expectations of herself, and of others. Shortly after taking office as Rector, she said that there was probably no university in the world where students would learn more than at ETH Zurich. A bold statement that she still stands by today. The sentence not only reflects the proud sense of university identity that Springman helped to shape at ETH Zurich, but also expectations with regard to the students.

Even Springman has not been immune to setbacks over the course of her career, however. The advancement of women, for example, always very close to Springman's heart, has not been as successful as she would have liked – at least in terms of numbers. The quota of women among ETH students has stagnated at just over 30 per cent since she took office. The university has so far failed to come close to its declared aim of raising the quota to at least 35 percent. When Springman is asked about this, her disappointment

Michael Hengartner awarding Sarah Springman with two new medals: One for her services as a professor. The other for her work as Rector.

is obvious. “The problem is deep in people's minds. Young women have told me that their teacher told them that science is for men. I mean: oh, bloody hell!” If she had her way, women at ETH Zurich would be promoted much more extensively in the future - and not only the female students. The compatibility of family and research would also be improved, and academic success measured not merely by the number of publications. What counts is quality. “If you publish a few articles less but have had two children, then that should be included in the calculation,” she says.

Her successor Günther Dissertori will soon have to deal with these problems. ETH President Joël Mesot did offer Springman the opportunity to stay on for another year. She declined. Seven years was enough, she realised. But she is not thinking of retiring for a long time yet. In February 2022, she will become Principal of St Hilda's College at Oxford University. “I'm not ready for zero percent”.

“I will never forget ETH,” she said, with tears in her eyes. Tackling a job has never been a problem for Springman. Her biggest challenge is quitting.

The departure from Zurich is not easy for her, as various people who know her can confirm. This was also evident on ETH Day. After his laudatory speech, Michael Hengartner awarded her two new medals: One for her services as professor, the other for her work as rector. As he placed the symbolic awards around her neck, the audience began to clap, and one after the other stood up. The applause which spread throughout the hall lasted a whole minute, to be hushed only by Springman herself. Now with three gold medals around her neck, she stood on stage, visibly moved, and turned to the audience: “I will never forget ETH,” she said, with tears in her eyes. Tackling a job has never been a problem for Springman. Her biggest challenge is quitting.

Assist. Prof. Fabian Walter
Fabian Walter studied physics at the Brigham Young University and at the University of Colorado in the USA from 1999 to 2004. Subsequently he completed his PhD at ETH Zurich in 2009. From 2009 to 2014, Fabian Walter was a Post-Doctoral Fellow at the Scripps Institution of Oceanography (San Diego, USA), at the Swiss Seismological Service of ETH Zurich (SED) and at the Institut des Sciences de la Terre (Grenoble, France). In 2015, he joined VAW (D-BAUG) as an SNF assistant professor of glacier seismology. In 2021, he moved to WSL (Swiss Federal Institute for Forest, Snow and Landscape Research) as Senior Scientist.

Glaziologie / Naturgefahren

Assist. Prof. Fabian Walter

Was ist Ihre Geschichte?
Nach dem Abitur und Zivildienst in Deutschland ging ich für das Physikstudium für den Bachelor (Brigham Young University in Provo, Utah) und Master (University of Colorado in Boulder, Colorado) in die USA. Anschliessend kam ich an die ETH, um bei Prof. Martin Funk und Dr. Nicolas Deichmann meine Diss auf dem Gebiet Gletscherseismologie zu machen. Das Thema liess mich bei meinen folgenden Postdocs an der ETH, der University of California, USA, und der Université Joseph Fourier in Grenoble, Frankreich, nicht los. Im April 2015 erhielt ich eine SNF Assistenzprofessur am D-BAUG und erlebte 6 spannende Jahre mit interessanter Forschung zum Thema Gletscherdynamik in den Alpen und in Grönland. Mit dem Ende der non-tenure-track Assistenzprofessur wechselte ich letzten Frühling an die Eidgenössische Forschungsanstalt für Wald, Schnee und Landschaft WSL und arbeite nun an Themen rund um Alpine Massenbewegungen und baue dabei auf meine Erfahrungen im Thema Umweltseismologie und Gletscherdynamik.

Wechsel an die WSL **Dr. Fabian Walter**

US Marine Sgt. Nicole Gee
hält auf dem Kabuler Flughafen ein Baby auf dem Arm. Kurz darauf kam sie bei den ISIS-K-Bombenanschlägen ums Leben.

Foto: U.S. Department of Defense via AP

«Sehr berührt hat mich das Bild von Nicole Gee, einer amerikanischen Marineinfanteristin, die ein afghanisches Baby bei der Evakuierung Kabuls in den Armen hält. Es scheint so, als ob das hilflose Baby die Macht hat, Streit, Krieg, Hass und Leid für einen Moment zu beenden.»

– Fabian Walter

Was wollten Sie als Kind werden?
Cowboy oder Polizist.

Warum haben Sie Ihr Fachgebiet gewählt?
Ich war auf der Suche nach einem Thema, bei dem ich meine Ausbildung als Physiker einsetzen konnte und gleichzeitig etwas frische Luft bekomme.

Was ist das Highlight Ihrer bisherigen Laufbahn?
Bisher ging es trotz Frustrationsmomenten immer weiter und damit immer bergauf. Daher sind die Highlights in den zuletzt abgeschlossenen PhD Projekten zu finden. Dabei geht es um Überwachung von Alpinen Massenbewegungen mit Seismologie und künstlicher Intelligenz sowie Gleitprozesse am Bett von Alpinen Gletschern.

Welche Erfahrung hat Ihr Leben am stärksten geprägt?
Das Vater sein/werden. Kinder zeigen einem wo die kleinen und grossen Wunder im Leben zu finden sind.

Wie sieht ein perfekter Tag für Sie aus?
Mit der Familie einen Ausflug machen, viel frische Luft und Bewegung, und am Abend ein feines Essen und ein guter Film.

Wenn Sie eine Sache auf der Welt verändern könnten, was wäre das?
Weniger gegeneinander und mehr miteinander.

Welches Buch hat Sie am meisten beeindruckt und warum?
Kite Runner. Es geht um Menschen, die anders sind als der Rest, um Schmerzen, um Gewalt, um Verbitterung und trotz all dem um Hoffnung.

Wenn Sie die absolute Wahrheit über eine Sache erfahren könnten, welche Frage würden Sie stellen?
Sind wir allein?

Was würden Sie gern an sich ändern?
5 kg weniger wären schön.

Wenn Sie einen Wunsch frei hätten, was würden Sie sich wünschen?
Tenure.

Was hat Sie zuletzt emotional sehr berührt?
Das Bild von Nicole Gee, einer amerikanischen Marineinfanteristin, die ein afghanisches Baby bei der Evakuierung Kabuls in den Armen hält. Es scheint so als ob das hilflose Baby die Macht hat, Streit, Krieg, Hass und Leid für einen Moment zu beenden. Etwas, das 20 Jahre mit Unmengen von Geld und Waffen nicht möglich gewesen ist. Zum Zeitpunkt als ich das Foto zu ersten Mal sah, war Frau Gee bereits durch einen Selbstmordanschlag ums Leben gekommen.

Was treibt Sie auf die Palme?
Wenn sich Wissenschaftler gegenseitig in ihrer Forschung behindern.

Wenn Sie eine berühmte Persönlichkeit zum Essen einladen könnten, welche wäre das und warum?
Max Planck. Wie kann man sich für einen Durchbruch in der Forschung motivieren, der die komplette wissenschaftliche Weltanschauung auf den Kopf stellt?

Wenn Sie in der Zeit zurückreisen könnten, was würden Sie Ihrem 20-jährigen Ich raten?
Glaub an das was Du weisst und vertraue Dir selbst mehr als anderen.

Von was träumen Sie schon lange und haben es nie getan?
Rucksack packen und einfach loslaufen.

Vor was haben Sie Angst und warum?
Vor Hass und Zorn. Dagegen kommt man mit Argumenten nicht an.

Was war der bester Rat, den Sie je erhalten haben?
Keep your eyes above the crowd!

Für was geben Sie gern Geld aus?
Für Abenteuer mit der Familie.

Was würden Sie tun, wenn Sie nicht mehr arbeiten müssten?
Ich glaube auf diese Frage gibt es keine Antwort, weil es immer etwas zu tun gibt. Die Prioritäten ändern sich einfach.

Foto: Dominik Gräff

Fabian Walter (l.) bei einer Seismometerinstallation auf dem Glacier d'Argentière (Frankreich).

Senior Scientist at the Institute for Geotechnical Engineering (IGT)

Dr. Alexandru Marin

“Early in my undergrad years, I had the opportunity to work in the US alongside people with strong personal and professional ethics who showed me hands-on how to value honesty and hard work.”

– Alexandru Marin

What is your story?

I graduated from the Technical University of Constructions in Bucharest, where I specialized in structural earthquake engineering for my diploma thesis. In 2009, shortly after graduation, I successfully applied for a doctoral position at the Institute for Geotechnical Engineering of D-BAUG. During my doctoral studies, my field of interest shifted towards geotechnical earthquake engineering, focusing on non-linear soil

response in alpine areas subjected to seismic hazard. The excellent research and teaching facilities, and the opportunities of involvement in projects with direct application in society motivated me to stay at ETH even after obtaining the doctoral degree. During my postdoctoral studies, the chair of Geotechnical Engineering transitioned from Prof. Springman to Prof. Anastasopoulos and this was for me a unique opportunity to bring together the knowledge from my undergraduate and graduate studies, by shifting once more my field of research, this time towards soil-structure interaction and retrofit of bridge foundations. At the same time, the close relation to my doctoral co-supervisor, Prof. Jan Laue, currently at Luleå Technical University in Swedish Lapland, created the perfect circumstances for a very interesting and fruitful ongoing collaboration. Thanks to the key persons that kindly guided me through my career path, I am able now to contribute with my expertise to the excellent research and teaching facilities of ETH that once motivated me to relocate to Switzerland.

What did you want to become as a child?
Carpentry and traditional masonry were on my mind for many years in my early teens.

“A dinner with one of America’s founding fathers, such as Benjamin Franklin or James Madison, would be extremely interesting! I’d really like to learn more about their views on freedom, government, and individual responsibility.”

– Alexandru Marin

Why did you choose your field of expertise?
Most probably, it was the field of expertise, which eventually chose me. Aside from my father who is specialized in solid mechanics and vibrations, most key persons that guided me in my career decisions have a vast experience in earthquake engineering.

What is the highlight of your career so far?
I like fieldwork a lot, so the highlight of my career so far was to be part of all deployment stages of a seismic station in Visp (VS), from the first soil investigations on an empty plot of land, to the deep drilling campaign and final instruments installation.

What experience has influenced your life the most?
Early in my undergrad years, I had the opportunity to work in the US alongside people with strong personal and professional ethics who showed me hands-on how to value honesty and hard work.

What does a perfect day look like?
On a perfect day, you will find me outdoors with family and friends, most probably working on a personal project, discovering a new place, or just enjoying old familiar hangouts.

If you could change one thing in the world, what would that be?
I wish division and polarization with their root causes could be eradicated from society.

Which book impressed you the most and why?
The most impressive book for me is the Bible, with its transcendent inspiration, inerrancy, authority, and wisdom for all aspects of life.

What would you like to change about yourself?
I'd like to be more open to change.

If you were granted one wish, what would you wish for?
I wish I could organize a retreat with all my ancestors from back in the Middle Ages all the way up to the last decades and get to know them personally.

What has recently touched you emotionally?
The birth of our baby daughter, one year ago, was definitely one of the most touching moments of my life.

What drives you crazy?
Lack of punctuality, both of my own and of others.

If you could invite a famous personality (live or deceased) to dinner, who would it be and why?
A dinner with one of America's founding fathers, such as Benjamin Franklin or James Madison, would be extremely interesting! I'd really like to learn more about their views on freedom, government, and individual responsibility.

If you could travel back in time, what advice would you give to your 20 year old self?
Always look for the big picture and try to understand the things you study in relation to each other.

What have you been dreaming of for a long time but never did it?
Moving somewhere remote, maybe high up in the Carpathian mountains or in the far North for a few years.

What are you afraid of and why?
Snakes freak me out since I was just a kid!

What was the best advice you have ever received?
Don't waste your life!

What do you like to spend money on?
Travelling has one of the top positions in the list of spending priorities.

What would you do if you didn't have to work anymore?
I'd open up a bakery or a carpentry shop, and keep working.

Two relevant publications of Dr. Alexandru Marin

Existing bridges on pile groups: In-situ measurement of stiffness

Retrofit of existing bridges founded on pile groups can be a challenging, costly, and time-consuming operation, especially when foundation interventions are required. The optimization of retrofit design, and hence of such complicated interventions, may be done by allowing con-trolled strongly nonlinear response of pile groups and associated energy dissipation mecha-nisms to develop during seismic loading. Taking advantage of such response may also offer improved seismic performance. Nevertheless, a prerequisite for the application of such rational design concepts is the realistic evaluation of actual stiffness and capacity of pile groups. The latter can be estimated based on in-situ soil testing (e.g. CPT) according to the current state of practice, while the former has been approached until now solely analytically and numerically. This paper proposes a first approach to a simplified stiffness estimation method based on in-situ measurements of lateral vibration response of existing bridges. Estimates of stiffness parame-ters are obtained with simplified equations of motion, using measurements of the lateral vibra-tion response of a bridge pier and its foundation system to a controlled low-amplitude non-destructive dynamic loading. A numerical study is conducted to evaluate the efficiency of the proposed simplified method and to explore its applicability in real-scale projects.
Link: ➡https://doi.org/10.1016/j.soildyn.2021.106797

Displacement-Based Seismic Analysis of Slopes, Dams and Embankments

The seismic design of slopes, dams, or embankments is usually based on limit-equilibrium calcu-lations, which include the seismic action by means of an equivalent static force acting on the failure mechanism. This approach is limited, especially in situations in which existing over-inclined structures or steep natural slopes have to be analyzed. An alternative approach, which overcomes the limitations of the classical limit-equilibrium calculations, is available with dis-placement-based methods. The displacement-based analysis offers the possibility of evaluating the seismic behavior in terms of displacements, in contrast to the limit-equilibrium calculations, which only provide information about the ratio between the stabilizing and destabilizing forces acting on the structure. The displacement-based approach allows the analysis of the seismic behavior and, based on the resulting deformations, the corresponding risk evaluation. In addi-tion to that, the optimized seismic design of new geotechnical structures is possible by ensuring the compliance of the seismic behavior with given requirements. This paper presents a dis-placement-based procedure to be incorporated in the Swiss design codes for the seismic anal-ysis of slopes, dams, and embankments.
Link: ➡https://doi.org/10.1142/S1793431116500056

Senior Scientist at the Institute for Structural Engineering (IBK)

Dr. Vasileios Ntertimánis

What is your story?
I was born and raised up in Athens. I received my Diploma in Mechanical Engineering from the University of Patras and my PhD from the National Technical University of Athens (NTUA), in modelling and identification of faults in dynamical systems. After my PhD, I served as a senior researcher in the NTUA Vehicles Laboratory, the Machine Design Laboratory and the Laboratory for Earthquake Engineering. In parallel to my academic career and for more than a decade, I have been self-employed as a freelancer measurement engineer and vibration analyst. I also worked in the international carriage of dangerous goods by road/rail, where I served as vehicle and tank designer, inspector, and instructor in training seminars. In 2013 I was appointed for one year as an experienced researcher by the Cyprus University of Technology, within the framework of the Marie Curie ITN "SmartEN" project. A one-month secondment at EMPA during this time brought me in Zurich, where I met Eleni Chatzi and was offered a position. Since 2014 I am a member of the Chair of Structural Mechanics & Monitoring, serving as a PostDoc, Senior Assistant and Executive Scientific Collaborator, as from January 2022. My research interests are in the areas of structural identification and health monitoring, lineal and nonlinear state estimation, active/passive structural control, and hybrid testing.

What did you want to become as a child?
Work for Playmobil.

Why did you choose your field of expertise?
I was told I won't have to wear a tie. Seriously, during my Bachelor, I attended some courses on Automatic Control and Stochastic Signals and Systems. There, I was introduced into the fascinating area of inverse engineering, i.e., decision making based on structural response data.

New at D-BAUG Dr. Vasileios Ntertimánis

Vasileios Ntertimánis (center)
on a measurement campaign in Iceland, during a bridge demolition project, in collaboration with OSMOS Group and the Icelandic Road and Coastal Administration.

What is the highlight of your career so far?
My promotion to a permanent position in one of the most influential academic Institutes worldwide is undoubtfully a significant milestone in my career.

What experience has influenced your life the most?
My personal and social affairs with charismatic individuals. Athens 90's underground scene.

What does a perfect day look like?
A perfect day is the one you do not want to end.

If you could change one thing in the world, what would that be?
Poverty.

Which book impressed you the most and why?
That's a hard one. My library is full of such books. If I have to point one, I would choose the book I have never stopped reading, Adorno's "Minima Moralia". I am quite attracted to the way he develops his aphorisms about life in the modern capitalist society and promotes affirmation through denial.

If you could get to know the absolute truth to any single question, what would you ask?
On the existence of God.

What would you like to change about yourself?
Be more empathetic.

If you were granted one wish, what would you wish for?
To establish a society where wishes would not be necessary.

What has recently touched you emotionally?
The picture by the Turkish photographer Mehmet Aslan, where a father who lost his leg during the Syrian conflict holds his limbless-born son. Their paired smile is a punch to our eyes.

What drives you crazy?
Bureaucracy and traffic jams.

If you could invite a famous personality (live or deceased) to dinner, who would it be and why?
There are too many, I cannot pick one.

If you could travel back in time, what advice would you give to your 20 year old self?
Learn playing the flute.

What have you been dreaming of for a long time but never did it?
Becoming a musician.

What are you afraid of and why?
All forms of fascism.

What was the best advice you have ever received?
Einstein did not advise me in person, but I always have in mind his quote: "Try not to become a man of success, but rather try to become a man of value".

What do you like to spend money on?
Growing my vinyl collection and my library, culture, trips, spoiling my daughters, hanging around with friends

What would you do if you didn't have to work anymore?
Sailing.

Two relevant publications of Dr. Vasileios Ntertimánis

Feasibility analysis on the attenuation of strong ground motions using finite periodic lattices of mass-in-mass barriers

This study assesses the implementation of locally resonant metamaterials in seismic isolation applications by investigating their potential feasibility in the [0.5, 5.0] Hz frequency band. To this end, via adoption of both Bloch's theory and classical vibration analysis, the one-dimensional mass-in-mass lattice is analyzed in three overlapping subbands and corresponding relations for the structural parameters are derived. Accordingly, a basic unit cell is proposed that incorporates a core of dense material that is suspended in a thin shell composed of a light-weight material using distributed elastomeric tendons. Initial numerical simulations on finite-dimensional lattices reveal significant potential in the proposed solution and encourage further investigation, particularly to the two-dimensional case.
Link: ➡https://doi.org/10.1061/(ASCE)EM.1943-7889.0001120

Input-state-parameter estimation of structural systems from limited output information

A successive Bayesian filtering framework for addressing the joint input-state-parameter estima-tion problem is proposed in this study. Following the notion of analytical, rather than hardware redundancy, the envisaged scheme, (i) adopts realistic assumptions on the sensor network capacity; and (ii) allows for a certain degree of uncertainty in the structural information available throughout the life-cycle of the monitored structure. This uncertainty is quantitatively expressed via a parameter vector of known functional relationship to the structural matrices. An observer is accordingly established, which recombines the dual and unscented Kalman filters. The former aims at tackling the unknown structural excitations, while the latter solves the state and parame-ter estimation problem via an augmented state-space. An extensive parametric study on simu-lated structural systems under different measurement setups, excitation types and structural properties demonstrates the method's effectiveness.
Link: ➡https://doi.org/10.1016/j.ymssp.2019.02.040

Computergestützte Wissenschaften – Data Science for Sciences

Ein Erfolg für D-BAUG, die ETH Zürich und die UZH

Prof. Jan Dirk Wegner
hält als ausserordentlicher Professor den Lehrstuhl "Data Science for Sciences" am Institut für Computational Science an der Universität Zürich und ist Leiter des EcoVision Labs an der ETH Zürich.

Jan Dirk Wegner wurde auf den 1. Januar 2021 an der Universität Zürich (UZH) zum ausserordentlichen Professor für Computergestützte Wissenschaften ernannt und gehört zum ➡Institut für Computational Science. Zudem ist er Leiter des ➡EcoVision Labs an der ETH Zürich.

Jan Dirk Wegner studierte Geodäsie und Geoinformatik an der Leibniz Universität Hannover; 2011 erlangte er dort die Promotion. Anschliessend wechselte er an die ETH Zürich, wo er zunächst als Postdoctoral Researcher im D BAUG bei Prof. Dr. Konrad Schindler (IGP; Photogrammetry and Remote Sensing [PRS]) und später als Senior Research Assistant und Lecturer tätig war. 2015/2016 war Dr. Wegner Visiting Scientist am California Institute of Technology sowie am Institut Geographique National (F). Seit 2016 war er an der ETH Zürich stellvertretender Leiter der PRS Gruppe.

Seine Forschungsschwerpunkte liegen im Grenzbereich von maschinellem Lernen, Computer Vision und Fernerkundung zur Lösung ökologischer Fragestellungen. Jan wurde mehrfach ausgezeichnet, unter anderem mit einem ETH-Postdoc-Stipendium und dem Wissenschaftspreis der Deutschen Geodätischen Kommission. Er wurde für die ➡WEF Young Scientist Class 2020 als einer der 25 weltweit besten For-

EcoVision Lab
unter der Leitung von Prof. Dr. Jan Dirk Wegner, mit Teammitgliedern.

scher unter 40 Jahren ausgewählt, die sich für die Integration wissenschaftlicher Erkenntnisse in die Gesellschaft zum Wohle der Allgemeinheit einsetzen.

Das D-BAUG gratuliert Jan Dirk Wegner für seine Berufung an die Universität Zürich und wünscht ihm viel Erfolg.

EcoVision Lab – Machine learning for environmental sciences and geosciences

The EcoVision Lab does research at the frontier of machine learning, computer vision, and remote sensing to solve scientific questions in the environmental sciences and geosciences. Its objective is to invent original, data-driven methods that analyze environmental data at very large scale automatically. We innovate on a very technical level and closely collaborate with our colleagues from, for example, ecology to jointly find new ways to protect our environment at global scale. Scientific projects include global mapping of vegetation parameters like canopy top height and carbon stocks at very high spatial and temporal resolution, monitoring of agricultural land, water-level prediction under flooding scenarios, or establishing a rapid-alert system that detects deforestation. On the technical side, we investigate exciting topics like uncertainty quantification in deep learning, explainable AI, graph neural networks, or time-series analysis with neural ordinary differential equations. We believe that interdisciplinary research is key to scientific breakthroughs and always aim at putting our research into practice by collaborating with NGOs, company's or public administration.

EcoVision

Daniel Hall receives Golden Owl
Every year, the student association of ETH Zurich recognises particularly dedicated and inspiring lecturers with a "Golden Owl". At D-BAUG, the teaching award 2021 goes to Daniel Hall, Professor of Innovative and Industrial Construction. Congratulations!

Goldene Eule für Daniel Hall

Jedes Jahr vergibt der Verband der Studierenden an der ETH Zürich die «Goldene Eule» an besonders engagierte und inspirierende Lehrpersonen. Am D-BAUG haben sich die Studierenden 2021 für Daniel Hall entschieden, Professor für innovatives und industrielles Bauen. Herzlichen Glückwünsch!

Verleihung der
Goldenen Eule 2021

Ueli Angst von Studierenden und jungen Forschenden ausgezeichnet

TEXT Iris Mickein

Ueli Angst honoured by students

The ETH Entrepreneur Club and the ETH AI Center recently launched the "Dandelion Entrepreneurship Award". The new award recognises ETH professors who promote talented people and encourage them to take the leap into entrepreneurship. Nominations were made in the departments by students, doctoral candidates and postdoc researchers. D-BAUG Professor Ueli Angst is among the first winners. Congratulations!

ETH AI CENTER

ETH ENTREPRENEUR CLUB

Der ETH Entrepreneur Club und das ETH AI Center haben erstmalig den «Dandelion Entrepreneurship Award» verliehen. Der neue Preis würdigt ETH-Professorinnen und -Professoren, die Talente fördern und sie ermutigen, den Schritt ins Unternehmertum zu wagen. Die Nominierung erfolgte in den Departementen durch Studierende, Doktorierende und Postdoktorierende. D-BAUG-Professor Ueli Angst ist unter den ersten Gewinnern. Herzlichen Glückwunsch!

Ueli Angst ist Spezialist für die Korrosion und Dauerhaftigkeit von Stahlbetonbauwerken. Er wurde 2011 an der Technisch-Naturwissenschaftlichen Universität Norwegen (NTNU) in Trondheim promoviert und war danach Postdoktorand und Lehrbeauftragter an der ETH Zürich sowie beratend in der Privatwirtschaft tätig. Seit 2017 hat Angst am Departement für Bau, Umwelt und Geomatik (D-BAUG) eine SNF-Förderprofessur inne. 2019 wurde er mit einem ERC Starting Grant ausgezeichnet. Er ist Mitbegründer des ETH-Spin-Off DuraMon, das spezielle Sensoren für die Überwachung von Korrosionsprozessen in Betonbauwerken entwickelt. Weiterhin arbeitet seine Forschungsgruppe aktuell an einem SNF/Innosuisse-Projekt zur Entwicklung einer neuen Technologie für die Inspektion von Winkelstützmauern im erdvergrabenen Bereich.

Ehrendoktorwürde für Kay W. Axhausen

TEXT Iris Mickein

Honorary doctorate for Kay W. Axhausen
Kay W. Axhausen, Professor of Transport Planning at the Department of Civil, Environmental and Geomatic Engineering, received an honorary doctorate from the Technical University of Denmark (DTU). He was honoured during the university's annual Commemoration Day.

DTU Technical University of Denmark

Kay W. Axhausen, Professor für Verkehrsplanung am Departement Bau, Umwelt und Geomatik, erhält die Ehrendoktorwürde der Technical University of Denmark (DTU). Er wurde im Zuge der diesjährigen Gedenkfeier der Hochschule ausgezeichnet.

Kay W. Axhausen ist seit 1999 Professor für Verkehrsplanung und Transportsysteme an der ETH Zürich. Seine Forschungsschwerpunkte sind die Messung und Modellierung des Verkehrsverhaltens, Verkehrstagebücher, Stated-Response-Ansätze, Entscheidungsmodelle und Mikrosimulation. Aktuell widmet er sich u.a. dem Forschungsprojekt MOBIS-COVID-19, das zeigt, wie sich die Krise auf die Mobilität und das Alltagsleben in der Schweiz auswirkt, und auch zur Erforschung der Übertragungswege des Virus beiträgt. Weiterhin ist Axhausen Mitherausgeber der Zeitschrift «Transportation». Von der DTU in Lyngby bei Kopenhagen wurde ihm beim diesjährigen «Commemoration Day» am 26. April 2021 die Ehrendoktorwürde der Hochschule verliehen.

Eleni Chatzi gewähltes Mitglied im Nationalen Forschungsrat

TEXT Iris Mickein

Der Stiftungsrat des Schweizerischen Nationalfonds (SNF) hat Eleni Chatzi, Ausserordentliche Professorin für Strukturmechanik und Monitoring am Institut für Baustatik und Konstruktion am D-BAUG, in den Nationalen Forschungsrat berufen. Sie hat ihr Amt am 1. Oktober 2021 angetreten.

Eleni Chatzi wird der Abteilung «Programme» angehören und als Expertin für den Bereich Ingenieurwissenschaften zuständig sein. Als Forschungsrätin besteht ihre Aufgabe primär in der wissenschaftlichen Beurteilung von Projektgesuchen in spezifischen Fachgebieten.

Geboren 1981, studierte Chatzi Bauingenieurwissenschaften in Athen und New York. 2010 wurde sie an der Columbia University in New York promoviert. Noch im selben Jahr wechselte sie an die ETH Zürich, um als Assistenzprofessorin den Lehrstuhl für Strukturmechanik anzunehmen. 2017 folgte ihre Beförderung zur Ausserordentlichen Professorin für Strukturmechanik und Monitoring. In ihrer Forschung befasst sich Chatzi hauptsächlich mit dem «Structural Health Monitoring». Sie diagnostiziert den Zustand von Infrastrukturen, Maschinen und technischen Systemen, indem sie Informationen von Sensoren mit Algorithmen kombiniert, die physikalisches, probabilistisches und maschinelles Lernen nutzen.

Swiss National Science Foundation

Eleni Chatzi elected member of the National Research Council

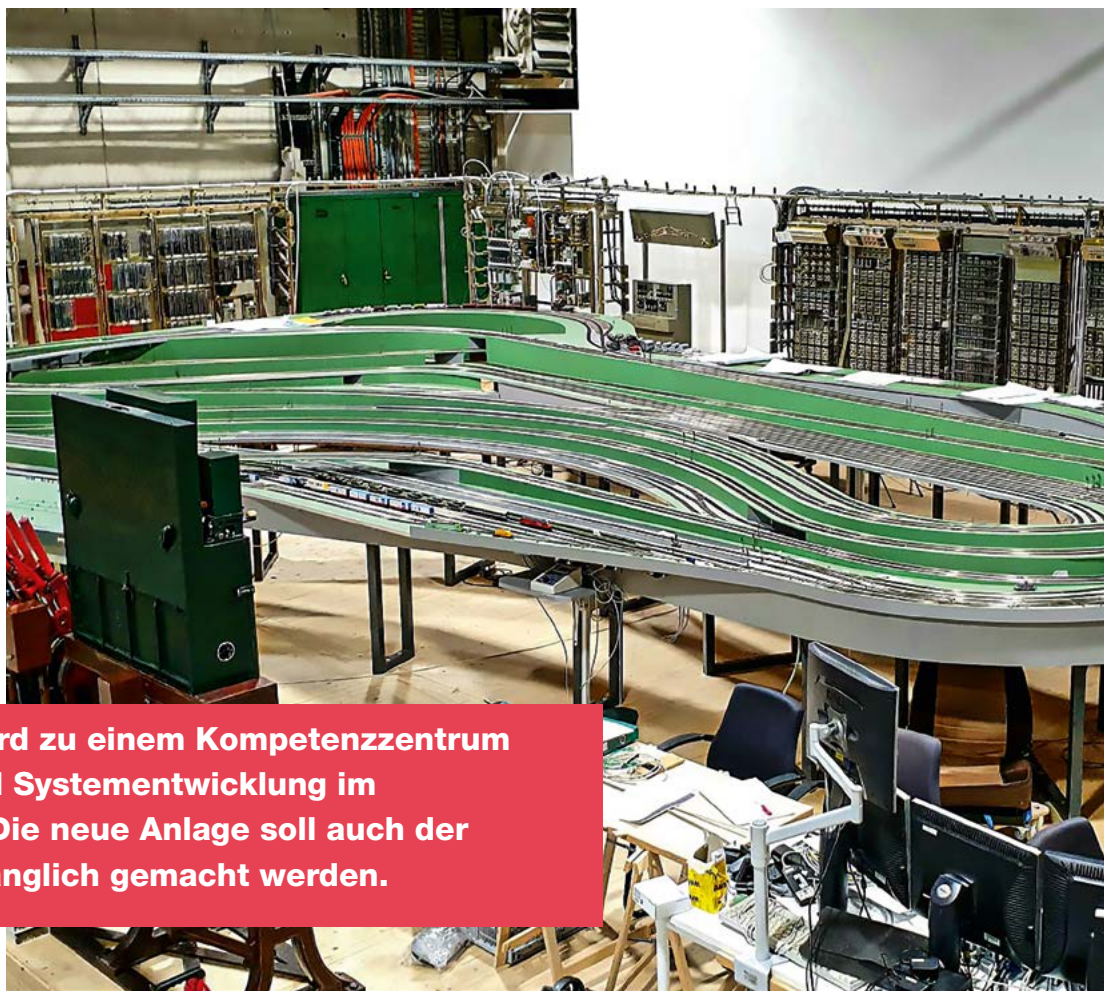
The Foundation Council of the Swiss National Science Foundation (SNSF) has appointed Eleni Chatzi, Associate Professor of Structural Mechanics and Monitoring at the Institute of Structural Engineering at D-BAUG, to the National Research Council. She took office on October 1, 2021.

Railroad laboratory new at Air Force Center Dübendorf

The 40-year-old railway operations laboratory (EBL) of D-BAUG was taken over by the newly founded association EBL Schweiz in 2021 and transferred from the Hönggerberg campus to the Air Force Center in Dübendorf. For decades, the EBL was an integral part of railway operations training and introduced thousands of trainees, students and visitors to Swiss railway operations and the associated safety technology.

➔Verein EBL Schweiz

Eisenbahnlabor neu im Air Force Center Dübendorf



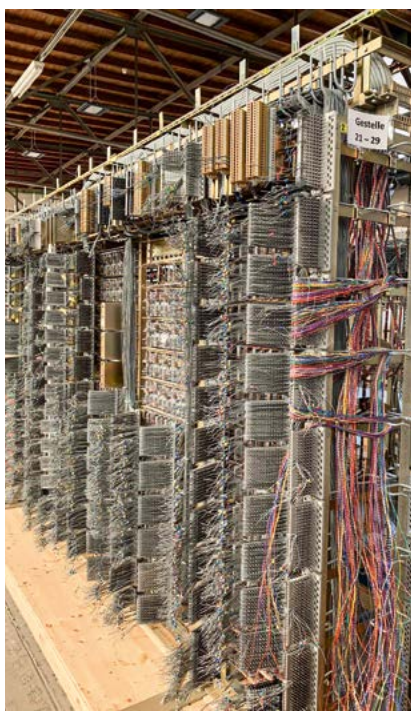
Das neue Labor wird zu einem Kompetenzzentrum für Ausbildung und Systementwicklung im Schienenverkehr. Die neue Anlage soll auch der Öffentlichkeit zugänglich gemacht werden.

Das 40-jährige Eisenbahnbetriebslabor des D-BAUG wurde 2021 vom Campus Hönggerberg ins Air Force Center in Dübendorf überführt. Der neu gegründete Verein Eisenbahnbetriebslabor Schweiz übernimmt die Anlage und investiert mit ihrem Betrieb in die Ausbildung von Technikerinnen und Technikern für das Eisenbahnsystem und von Betriebseisenbahnerinnen und -bahnern.

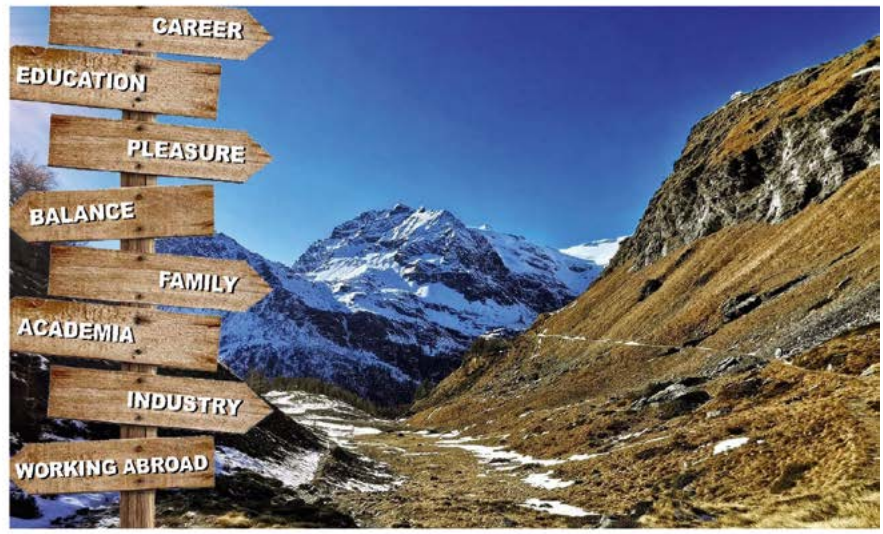
Eisenbahnlabor Air Force Center Dübendorf

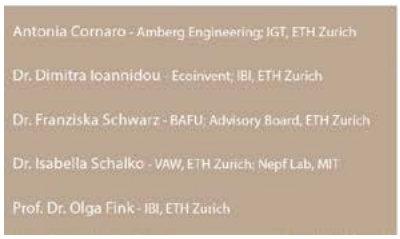
Das Institut für Verkehrsplanung und Transportsysteme (IVT) suchte 2019 nach vierzig Jahren eine Nachfolge für ihr Eisenbahnbetriebslabor (EBL). Die räumlichen und organisatorischen Voraussetzungen für dessen Weiterführung im bisherigen Rahmen waren nicht mehr gegeben. Das EBL war während Jahrzehnten fester Bestandteil der Bahnbetriebsausbildung und führte tausende von Lernenden, Studierenden sowie Besucherinnen und Besucher in den Schweizer Eisenbahnbetrieb sowie die zugehörige Sicherungstechnik ein.

Nach einer öffentlichen Ausschreibung ging der Zuschlag an den eigens dafür gegründeten Verein Eisenbahnbetriebslabor Schweiz. Dieser übernahm den Betrieb per Ende Januar 2021 und konnte die Anlage noch am Standort ETH Hönggerberg modernisieren, bevor sie im Sommer 2021 nach Dübendorf überführt wurde. Dem neuen Verein gelang es, im Air Force Center in Dübendorf einen Hangar mietweise zu übernehmen. Das neue Labor erhält damit direkten Zugang zu den weiteren Infrastrukturen vor Ort (Restaurants, Event- und Sitzungsräume, Büroräume).



Im neuen Eisenbahnbetriebslabor wird auch die sogenannte Löwenberganlage (Modellbahnanlage des ehemaligen SBB-Weiterbildungszentrums Löwenberg in Murten) integriert werden. Auch werden Lok-Simulatoren eingebaut. Damit wird das neue Labor zu einem Kompetenzzentrum für Ausbildung und Systementwicklung im Schienenverkehr. Die neue Anlage soll auch der Öffentlichkeit zugänglich gemacht werden.





Women in focus – Online event "I do it my way"
The first online event of the Gender and Diversity Commission at D-BAUG was a great success! Under the title "I do it my way", five female engineers discussed current topics related to gender equality on 4 March, 2021. Around 200 young women and men attended, many of whom took up the offer to submit topic-related questions in advance. The event was moderated by Professor Eleni Chatzi, PhD candidate Firehiwot Kedir, and Professor Andreas Wieser.

Frauen im Fokus – Online-Event «I do it my way»

Der erste Online-Event der Gender and Diversity Kommission des D-BAUG war ein voller Erfolg!

Unter dem Titel «I do it my way» diskutierten am 4. März 2021 fünf Ingenieurinnen zu aktuellen Themen rund um die Gleichstellung von Mann und Frau. Rund 200 junge Frauen und Männer waren dabei, und viele von ihnen hatten das Angebot wahrgenommen, bereits im Vorfeld themenbezogene Fragen einzureichen. Moderiert wurde das Event von Prof. Eleni Chatzi, der Doktorandin Firehiwot Kedir sowie von Prof. Andreas Wieser.

Spitzenstellung im Shanghai-Ranking

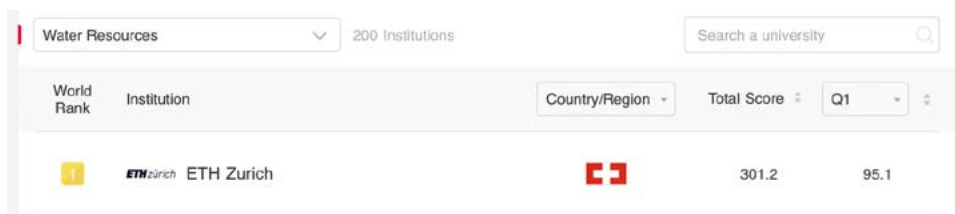
Leading position in Shanghai Ranking

D-BAUG is top-ranked in three disciplines in the Global Ranking of Academic Subjects 2021 (Shanghai Ranking): It is ranked world leader in the field of "Water Resources Engineering"; in the fields of "Civil Engineering" and "Environmental Science & Engineering", the department achieves a 2nd and a 3rd place.

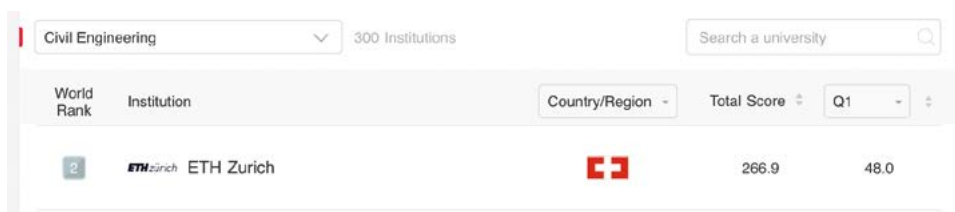
Im Global Ranking of Academic Subjects 2021 (Shanghai-Ranking) erreicht das D-BAUG Bestnoten in drei Fachgebieten: Im Bereich «Water Resources» erzielt das Departement den 1. Platz; in den Bereichen «Civil Engineering» und «Environmental Science & Engineering» folgt es auf den Plätzen 2 und 3.

Das Shanghai-Ranking nach Disziplinen erfasst 54 Fächer aus den Bereichen Naturwissenschaften, Ingenieurwissenschaften, Biowissenschaften, Medizin und Sozialwissenschaften. Insgesamt werden weltweit mehr als 4000 Universitäten gerankt. Die ETH Zürich belegt in der aktuellen Gesamtbewertung den 20. Platz, wie auch bereits im vergangenen Jahr.

Das Shanghai-Fächer-Ranking ist ein Sub-Ranking des «Academic Ranking of World Universities», das jährlich den wissenschaftlichen Einfluss von Hochschulen bewertet. Dieser wird anhand von sechs Indikatoren in den Kategorien «Qualität der Ausbildung», «Qualität des wissenschaftlichen Personals» und «Output in der Forschung» bemessen. Weiterhin wird auch die Grösse der jeweiligen Institution als Indikator der Leistungsfähigkeit ganz allgemein bewertet.



Shanghai Ranking 2021 Water Resources



Shanghai Ranking 2021 Civil Engineering

Shanghai Ranking 2021 Environmental Science & Engineering

TAP-Vollversammlung: Julia Dannath zu Gast

TEXT TAP (Ruth Kläy, Dominik Werne, Martin Huber)

TAP general assembly: Julia Dannath as guest

Every two years, the administrative and technical staff at D-BAUG gather for their general assembly, after all the Covid-related restrictions, this year's assembly felt all the more special as it could take place as a physical meeting in the Bauhalle! Another highlight was the visit of guest speaker Julia Dannath, the new Vice President for Personnel Development and Leadership at ETH Zurich.

Alle zwei Jahre treffen sich die Mitarbeitenden aus Administration und Technik am D-BAUG zu ihrer Vollversammlung – dieses Jahr ein besonderer Anlass, da er nach der langen Zeit ohne physische Treffen in der Bauhalle stattfinden konnte! Als Gastrednerin konnte die neue Vizepräsidentin für Personalentwicklung und Leadership (VPPL) Dr. Julia Dannath gewonnen werden.

Die Vollversammlung TAP (Technisch-Administratives Personal) am D-BAUG konnte am 4. November 2021 vor Ort stattfinden, und rund 60 Personen fanden den Weg in die Bauhalle. Die Freude, sich wieder persönlich treffen zu können, war bei allen spürbar und das Zeigen des Zertifikates für die meisten Routine.

Die drei aktuellen Personalvertretenden Ruth Kläy, Martin Huber und Dominik Werne gaben einen kurzen Überblick über ihre Aufgaben im TAP. Dazu gehören u.a. die halbjährlichen Treffen mit der Departementsleitung, die Teilnahme an den jährlich vier Departementskonferen-

Julia Dannath, Vizepräsidentin für Personalentwicklung und Leadership (VPPL), im Gespräch.

zen und die Organisation von Anlässen für die TAP-Mitarbeitenden. Der Rückblick zeigte allerdings, dass gerade Anlässe – und damit Möglichkeiten, sich untereinander besser kennenzulernen und zu vernetzen – in der ablaufenden Amtsperiode (11/2019–11/2021) der Pandemie zum Opfer gefallen waren.

Ein für das ganze Departement grosses Ereignis war die Evaluation im März 2021, innerhalb deren eine auf sechs Personen vergrösserte TAP-Gruppe ein eigenes Gespräch mit den Evaluierenden führen konnte. Aktuell gibt es rund 117 TAP-Mitarbeitende am D-BAUG, was die Bedeutung dieser Gruppe zeigt.

Als Gastrednerin konnte die neue Vizepräsidentin für Personalentwicklung und Leadership Dr. Julia Dannath gewonnen werden, die uns in ihrem Referat die «Arbeitswelt der Zukunft» vorstellte. Die anschliessenden Fragen und die engagierte Diskussion sind Zeichen des Interesses aller Beteiligten an ihrem Arbeitsplatz D-BAUG.

Statutengemäss sind die drei Personalvertretenden jeweils für zwei Jahre gewählt, und zwei davon – die beiden Techniker Dominik Werne und Martin Huber – stellten sich der Wiederwahl. Damit gab es eine Vakanz, die wieder durch eine in der Administration tätige Person ausgefüllt werden sollte, doch konnte im Vorfeld dieser Vollversammlung keine Person für dieses spannende Amt gefunden werden. Ruth Kläy stellte sich deshalb als Übergangslösung bis höchstens zum Start des Herbstsemesters 2022 ad interim zur Verfügung.

Als Gastrednerin konnte die neue Vizepräsidentin für Personalentwicklung und Leadership Dr. Julia Dannath gewonnen werden, die uns in ihrem Referat die «Arbeitswelt der Zukunft» vorstellte. Die anschliessenden Fragen und die engagierte Diskussion sind Zeichen des Interesses aller Beteiligten an ihrem Arbeitsplatz D-BAUG.

Beim vom Departement ausgerichteten – und von vielen Teilnehmenden gerühmten – Stehlunch blieb danach genügend Zeit für Gespräche.

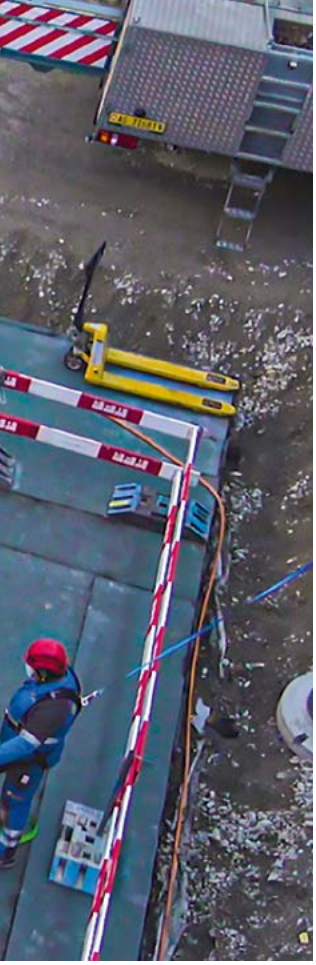
Europas leistungsstärkste Forschungszentrifuge
Auf dem Campus Hönggerberg entsteht die leistungsstärkste geotechnische Forschungszentrifuge Europas. Sie ermöglicht es, geotechnische Bauwerke wie Fundamente, Dämme und Tunnel sowie die Auswirkungen von Naturgefahren wie Erdbeben, Erdrutschen, Überschwemmungen und Tsunamis zu simulieren. Die Zentrifuge wurde am 14. April 2021 millimetergenau eingesetzt. Sie wird Teil eines neuen Forschungszentrums für Zentrifugenmodellierung am D-BAUG.

Europe's largest capacity research centrifuge

TEXT Florian Meyer, HK

The most capable geotechnical research centrifuge in Europe is currently being built on the Hönggerberg campus. It will enable researchers to simulate geotechnical structures, such as foundations, dams and tunnels, and the effects of natural hazards, such as earthquakes, landslides, flooding and tsunamis. The centrifuge itself was installed on 14. April 2021 with meticulous precision.

The start of the installation process back in August 2020 was a spectacle in itself, with workers taking just under an hour to lift a 245 tonne circular concrete chamber by crane and place



Europe's largest geotechnical research centrifuge
It was installed on the Hönggerberg campus on 14 April 2021. It will enable researchers to simulate geotechnical structures, such as foundations, dams and tunnels, and the effects of natural hazards, such as earthquakes, landslides, flooding and tsunamis.

Campus Hönggerberg Europe's largest capacity research centrifuge

it in the ground of the inner courtyard of the HIF building from a height of 25 metres.

On 14 April 2021, the key element of the new research facility at the ETH Institute for Geotechnical Engineering was put in place: the centrifuge, weighing about 20 tonnes, was lowered into the concrete chamber using a mobile crane. The challenge was to place the centrifuge precisely in the centre of the concrete chamber, ensure verticality of its axis. And this position had to be accurate to the millimetre.

The chamber is supported by special steel springs that will absorb vibrations from the centrifuge and prevent them from spreading underground through the campus. This facility will not only be the largest capacity geotechnical centrifuge in Europe, but also the first one worldwide to be vibration-isolated.

Modelling to enhance sustainability and resilience to natural hazards

The new centrifuge will be part of a research centre for centrifuge modelling at the ETH Department of Civil, Environmental and Geomatic Engineering, and will enable researchers to simulate earthquakes, ground movements (e.g., landslides), and water-related hazards (e.g., flooding, tsunamis) to geotechnical structures. These simulations will be used to optimise the design of new and the retrofit of existing structures (such as bridges, buildings and dams), reducing the potential risks posed by natural hazards to structures and infrastructure, while minimising the use of natural resources and the associated carbon footprint.

The centrifuge itself has a simple structure, consisting essentially of a 9-metre-long rotating arm with two swings attached, on which the soil-structure models are installed. By spinning, the centrifuge can develop a centrifugal acceleration of 250 times the gravitational acceleration (g), technically referred to as "250 g". The centrifuge has a capacity of 500 gtonnes, which means that it can carry up to 2 tonnes of specimen in an increased gravitational field of 250 g (2 tonnes multiplied by 250 g gives 500 gtonnes). The next step will be to equip the facility with an earthquake simulator, capable of simulating real earthquake motions.

The enhanced gravity field is indispensable in order to achieve realistic modelling of soil in the reduced scale laboratory environment. The behaviour of soil largely depends on stress level. Models that merely reduce the geometric scale of the real (prototype) problem (soil layer depth, dimensions of structure) cannot provide realistic results. By increasing the gravitational field, the centrifuge achieves correct stress scaling.

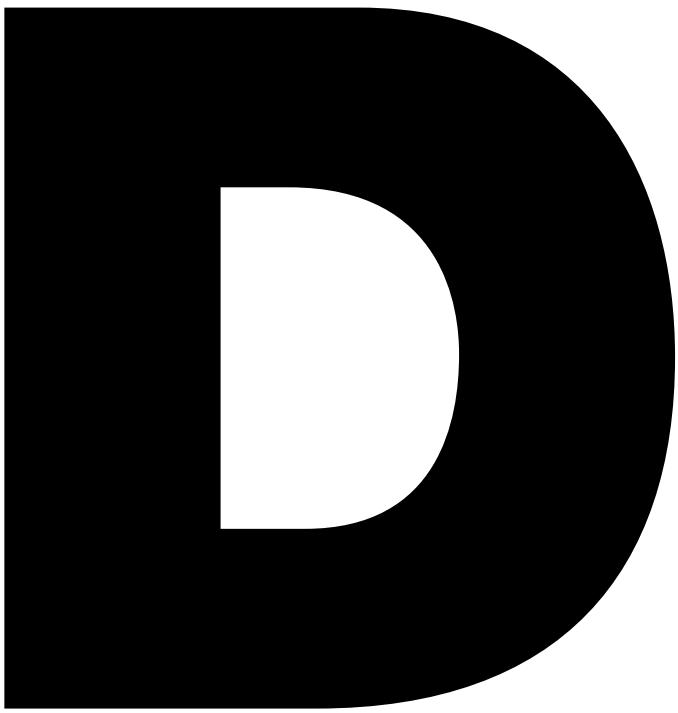
Thus, researchers will be able to use the centrifuge to realistically simulate the performance of large-scale structures and ground movements. To do this, they will place the models of the ground, including soil layers and the structure, on the swings and accelerate them to the desired centrifugal acceleration. For example, 30 centimetres of soil in the centrifuge accelerated at 100 g corresponds to a depth of 30 metres in reality. The earthquake simulator has a load capacity of up to 700 kilogrammes.

From Bochum to Zurich

The centrifuge itself is not completely new, but comes from Bochum, where it was no longer used. Bearings, motors, hydraulics, and electronics were all renewed and modernised. The work involved in fully setting up the centrifuge and connecting it to the necessary media was finished by the end of 2021: it is ready for use – albeit initially at reduced power only. It is expected to be fully functional from late summer 2022, once the electricity supply is fully installed and the second phase of the current construction work on the HIF teaching and research building is complete.

The centrifuge is being installed as part of the renovation and extension of the HIF building, which was built in 1976 and houses the Department of Civil, Environmental and Geomatic Engineering (D-BAUG). The first stage, which involves the new extension wing with additional laboratories, was ready by the end of June 2021. This part of the building brings together all nine professorships of environmental engineering for the first time. In addition, new meeting areas will also be set up to promote scientific exchange. The overall HIF renovation and extension process will run until the completion of the third stage in 2023.

➡Video ➡Learn more about the research group led by Prof. Anastasopoulos.



DONATOREN & TALENTE

DONATOREN D-BAUG 2021

Thank You

Donators D-BAUG 2021

The D-BAUG would like to thank all institutions, companies and private individuals who sponsored it and provided financial or material support during the year for their generous contributions. The list does not claim to be complete. Numerous benefactors wish to remain unnamed.

Many graduates stay in touch with the ETH Zurich and our department by giving donations. We'd like to thank all of them for their loyal support!

Link to the list of donators:
➡ www.ethz-foundation.ch/en/thank-you/

Das D-BAUG dankt allen Institutionen, Firmen und Privatpersonen, von denen es im Berichtsjahr gefördert und finanziell oder materiell unterstützt worden ist, für ihren grosszügigen Beitrag. Die Liste erhebt keinen Anspruch auf Vollständigkeit. Zahlreiche Gönnerinnen und Gönner möchten ungenannt bleiben.

Partner, Unternehmen und Stiftungen

- Albert Lück-Stiftung
- Dr. Alfred und Flora Spälti-Fonds
- Basler & Hofmann
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- Geberit
- Hexagon
- Hilti
- Holcim Schweiz
- Implenia
- La Prairie

Viele Absolventinnen und Absolventen bleiben mit der ETH Zürich und unserem Departement über eine Schenkung verbunden. Wir danken Ihnen allen für die treue Unterstützung!

Link zur Donatorenliste: ➡ www.ethz-foundation.ch/danke/

Albert Lück-Stiftung unterstützt Projekte im Bereich zukunftsfähiger Infrastrukturen

Mit einer grosszügigen Donation fördert die Albert Lück-Stiftung über vier Jahre Leuchtturmprojekte im Bereich zukunftsfähiger Infrastrukturen am Departement Bau, Umwelt und Geomatik (D-BAUG) der ETH Zürich.

Das D-BAUG fokussiert seine Forschung und Lehre in den kommenden Jahren auf drei grosse Herausforderungen, zu denen es neue Ansätze für eine nachhaltige Entwicklung beisteuern will: «Zunehmende Urbanisierung», «Veränderliche Umwelt» und «Zukunftsfähige Infrastrukturen». In letzterem Bereich ist das Ziel, die Funktionsfähigkeit der baulichen Infrastruktur durch die Entwicklung innovativer Ansätze zu

gewährleisten und die Infrastruktur mit digitalen Innovationen und Künstlicher Intelligenz smart zu gestalten.

Willen des Stifters umsetzen

Stiftungszweck der Albert Lück-Stiftung ist gemäss dem Willen ihres Stifters, des 1974 verstorbenen Bauingenieurs Albert Lück, die Förderung von Lehre und Forschung sowie des Studiums auf dem Gebiet des Bauwesens an der ETH Zürich. «Nachdem wir uns in den letzten Jahren auf die Förderung von Professuren und Projekten von Professorinnen und Professoren konzentriert haben, freuen wir uns, mit dem neuen ‹Albert Lück Grant› interdisziplinäre Projekte von Doktorierenden am D-BAUG zu unterstützen. Damit schaffen wir ein neues Förderinstrument, um den Willen unseres Stifters umzusetzen», so Stiftungsratspräsident Raymond Cron zum jüngsten Engagement.

«Diese Spende der Albert Lück-Stiftung steht in einer grosszügigen Tradition gegenüber unserem Departement und unterstützt uns dabei, unsere Vision einer nachhaltigen Welt zu verwirklichen.»

– Paolo Burlando

«Diese Spende der Albert Lück-Stiftung steht in einer grosszügigen Tradition gegenüber unserem Departement und unterstützt uns dabei, unsere Vision einer nachhaltigen Welt zu verwirklichen», betont der Vorsteher des Departements Bau, Umwelt und Geomatik Paolo Burlando. «Ziel ist es, interdisziplinäre Leuchtturmprojekte zu fördern, die zur Bewältigung der grossen gesellschaftlichen Herausforderungen im neuen Jahrtausend beitragen können. Die Förderung durch die Albert Lück-Stiftung wird massgeblich dazu beitragen.»

Der Geschäftsführer der Albert Lück-Stiftung Adrian Berger sieht hier grosses Potenzial: «Unsere moderne und komplexe Gesellschaft ist auf leistungsfähige Infrastrukturen angewiesen. Mit dem ‹Albert Lück Grant› leisten wir einen Beitrag zur Zukunftsfähigkeit dieser Infrastrukturen.»

Langjährige Förderung

Das neuerliche Engagement am D-BAUG über die ETH Foundation ist bereits die siebte Förderung seit 2007: So unterstützte die Stiftung bereits herausragende Master-Studierende der Bauingenieurwissenschaften, die Professur Strukturmechanik und Monitoring (Prof. Eleni Chatzi), die Professur Urbane Wassersysteme (Prof. Max Maurer), das Forschungsprojekt «Holztragewerke» (Prof. Andrea Frangi) sowie das Projekt «Stocks & Flows» am Institut für Denkmalpflege und Bauforschung des Departements Architektur.

Albert Lück-Stiftung funds projects on future-oriented infrastructures

The Albert Lück-Stiftung has pledged a generous donation to flagship research projects in the field of future-oriented infrastructure at the Department of Civil, Environmental and Geomatic Engineering (D-BAUG) of ETH Zurich. The funding will be provided over a period of four years.

Talentförderung an der ETH Zürich und im D-BAUG

Für sehr begabte Studierende vergibt die ETH Zürich für die Dauer des Master-Studiums Exzellenz-Stipendien. Diese umfassen Studien- und Lebenshaltungskosten sowie den Erlass der Studiengebühren und erlauben es den Studierenden, sich voll und ganz auf ihr Master-Studium zu konzentrieren.

Die Förderung ist aber nicht nur eine Investition in die einzelnen Talente: Die geförderten jungen Leute haben beste Chancen, in der Wirtschaft, in der Wissenschaft oder in der Politik wichtige Positionen zu bekleiden oder selbst Unternehmen zu gründen und so ihr Wissen und Können in die Gesellschaft zurückfliessen zu lassen.

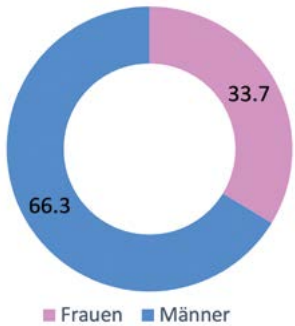
➡ www.ethz-foundation.ch/exzellenz-stipendien

Talent promotion at ETH Zurich and D-BAUG

For very talented students, ETH Zurich awards Excellence Scholarships for the duration of the Master's program. These cover tuition and living expenses as well as the waiver of tuition fees and allow students to concentrate fully on their Master's studies.

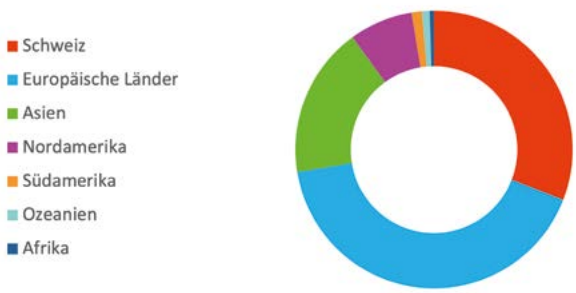
Frauen und Männer

Rund ein Drittel der Exzellenz-Studierenden sind Frauen. Über die letzten zehn Jahre hat sich der Frauenanteil bei etwa 34 % eingependelt. Im Vergleich: Der Frauenanteil bei allen Master-Studierenden an der ETH Zürich beträgt 31.6 %.



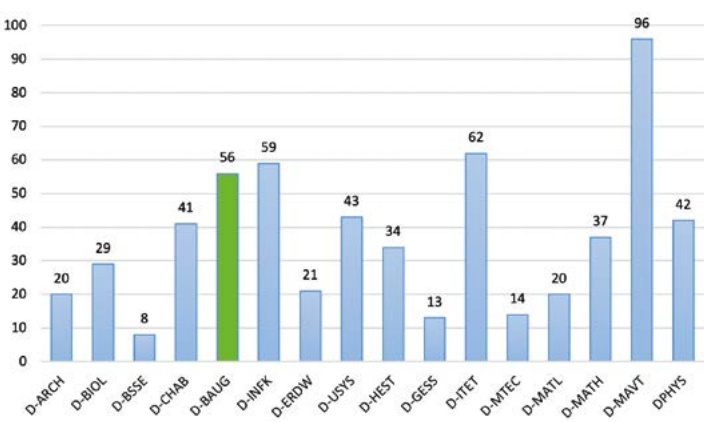
Nationalität der Stipendiatinnen und Stipendiaten

Von allen Exzellenz-Stipendiatinnen und -Stipendiaten stammen rund 31 % aus der Schweiz, 42 % beträgt der Anteil aus anderen europäischen Ländern, und rund 18 % der Studierenden kommen aus Asien.



Exzellenz-Studierende nach Departementen

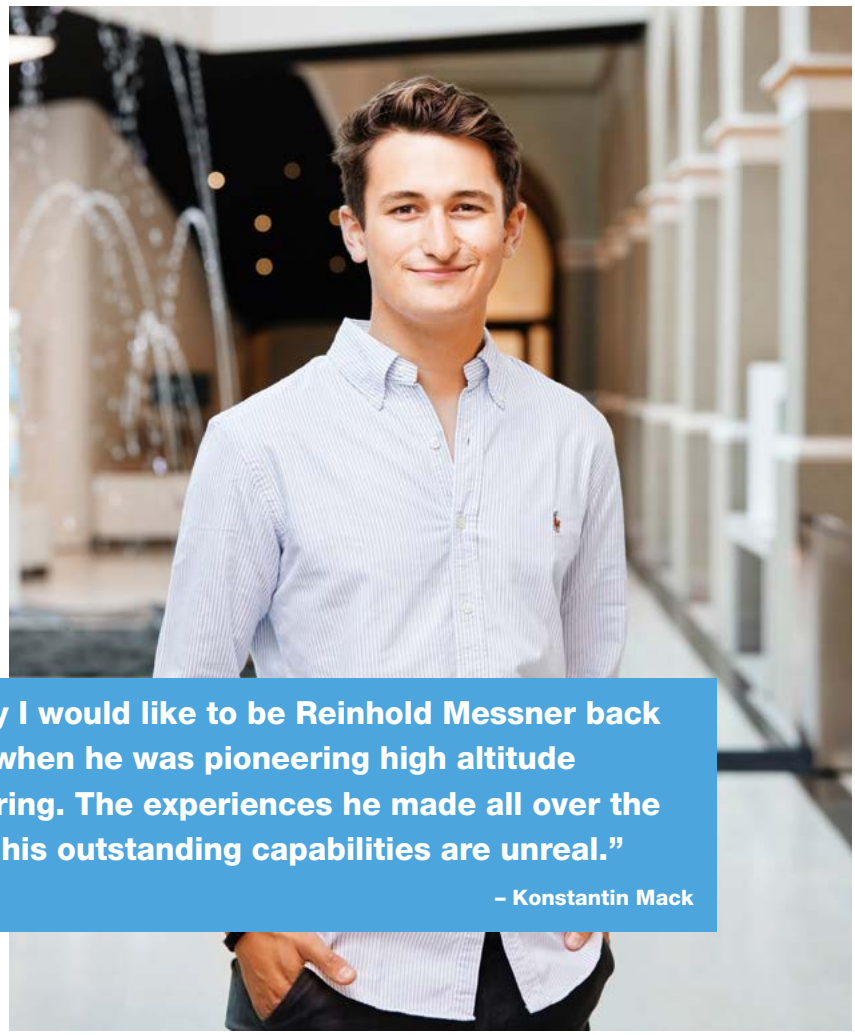
Gefördert werden jährlich jene Talente, die zu den besten 2 bis 3 Prozent ihres Jahrgangs gehören. Die meisten Stipendiatinnen und Stipendiaten, nämlich 96 (16 %), studierten am Departement für Maschinenbau und Verfahrenstechnik. Danach folgen die Departemente Informationstechnologie und Elektrotechnik, Informatik sowie Bau, Umwelt und Geomatik mit insgesamt 62, 59 und 56 Exzellenz-Studierenden.



D-ARCH: Departement Architektur
D-BIOL: Departement Biologie
D-BSSE: Departement Biosysteme
D-CHAB: Departement Chemie und Angewandte Biowissenschaften
D-BAUG: Departement Bau, Umwelt und Geomatik
D-INFK: Departement Informatik
D-ERDW: Departement Erdwissenschaften
D-USYS: Departement Umweltsystemwissenschaften
D-HEST: Departement Gesundheitswissenschaften und Technologie
D-GESS: Departement Geistes-, Sozial- und Staatswissenschaften
D-ITET: Departement Informationstechnologie und Elektrotechnik
D-MTEC: Departement Management, Technologie und Ökonomie
D-MATL: Departement Materialwissenschaft
D-MATH: Departement Mathematik
D-MAVT: Departement Maschinenbau und Verfahrenstechnik
D-PHYS: Departement Physik

ESOP Civil Engineering

Konstantin Mack



“For one day I would like to be Reinhold Messner back in the days when he was pioneering high altitude mountaineering. The experiences he made all over the world using his outstanding capabilities are unreal.”

– Konstantin Mack

Why did you choose the D-BAUG for your Master's degree programme?
I was looking for a new challenging university located in an interesting city after finishing my Bachelor’s degree at KIT (Karlsruhe Institute of Technology). The combination of studying at ETH and living in Zürich convinced me.

How would your best friend describe you in five words?
Energetic, open minded, talkative, structured, dedicated - directly from my friend.

What’s your favorite way to spend your weekend?
Having good food and a little party with my friends. Then head into the mountains for hiking, skiing or biking!

Reinhold Messner (left) climbed all 14 eight-thousanders from 1970 to 1986, without bottled oxygen. In 1978, he became the first climber to reach the summit of an eight-thousander alone, that of Nanga Parbat. Years earlier, this mountain was the site of a tragedy: In 1970, Reinhold Messner climbed Nanga Prabat together with his brother Günther Messner (right). On the descent, the brother got killed, buried by an ice avalanche. Reinhold Messner searched for the brother in vain, descended alone into the valley, hallucinating, and was found by locals more dead than alive. Later at the hospital, he had to have seven frostbitten toes removed.

Foto: Archiv Messner

If you could be a famous person for one day, who would that be and why?
Reinhold Messner back in the days when he was pioneering high altitude mountaineering. The experiences he made all over the world using his outstanding capabilities are unreal.

What's one of your favorite memories?
My “Work & Travel” adventure in Canada, just after finishing high school.

Who was your best teacher and why?
Mr. Forster, my math and physics teacher in high school – I think he is one of the reasons why I got interested in engineering.

If you didn't have to sleep anymore what would you do with the extra time?
Spend more time exploring nature, meet my friends more often or study computer science.

What is the craziest thing you’ve ever done and would you do it again?
Travelling all of Sweden on my own by bike and sleeping in a tent for three months straight - I would definitely repeat it, but preferably in a new country.

What bothers you the most about the world and why?
Powerful people not taking the chance to make important changes or even working against progress – concerning climate and nature protection especially.

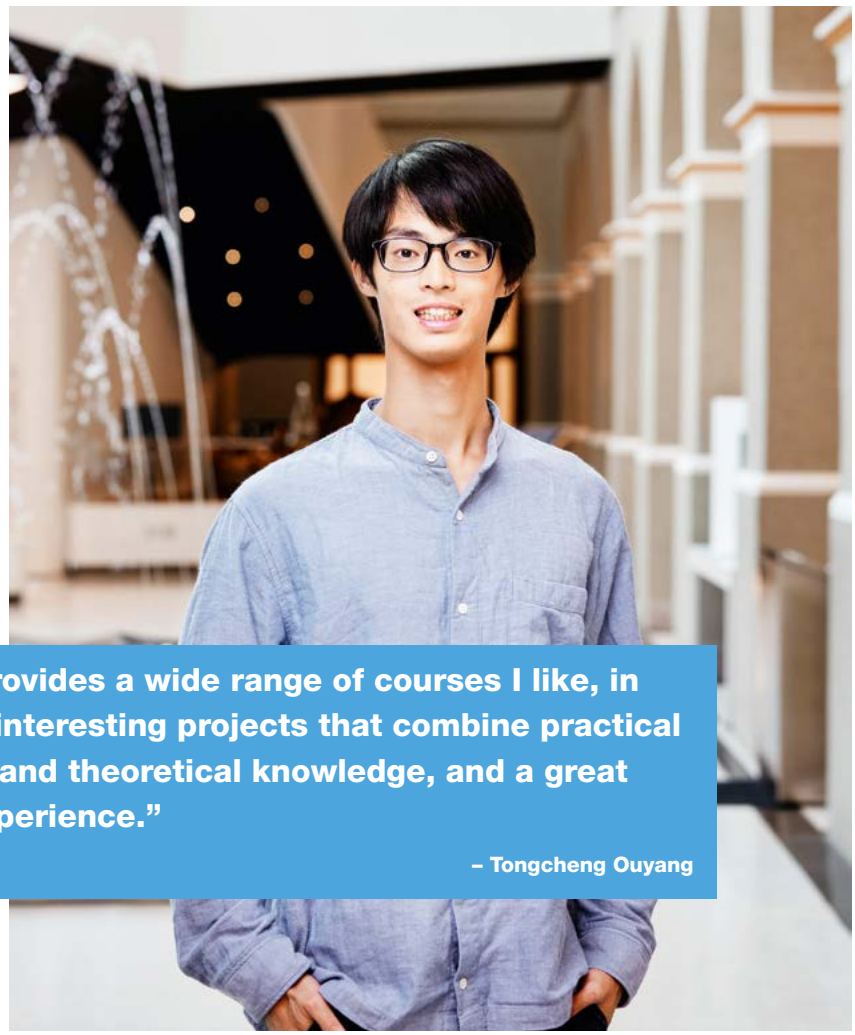
What’s the one thing you wish you knew how to do?
Programming for all kinds of applications.

Which song makes you happy?
“Return to Oz” by Monolink and ARTBAT.

What are your future plans after having finished your Master’s programme?
Working all over the world on tunneling projects that are key to important infrastructure projects.

ESOP Civil Engineering

Tongcheng Ouyang



“D-BAUG provides a wide range of courses I like, in addition to interesting projects that combine practical experience and theoretical knowledge, and a great studying experience.”

– Tongcheng Ouyang

Why did you choose the D-BAUG for your Master's degree programme?
Because D-BAUG provides a wide range of courses I like, in addition to interesting projects that combine practical experience and theoretical knowledge, and a great studying experience.

How would your best friend describe you in five words?
Considerate, sincere, reliable, fastidious, inventive – directly from my friend.

What’s your favorite way to spend your weekend?
Half a day studying and reading, half a day playing the piano, one day doing sports like climbing and hiking.

The baton of God
Herbert von Karajan is one of the most famous and important conductors of the 20th century. His enormous ambition and unconditional demand for quality got him almost killed at the beginning of his career: the 21-year-old had barely begun his first engagement at the Theater Ulm when he demoted the orchestra's concertmaster to a mere violinist. Whereupon the humiliated man decided to shoot the young conductor - which could be prevented at the very last second.

Foto: Siegfried Lauterwasser

If you could be a famous person for one day, who would that be and why?
I would be one of the greatest conductors, like Herbert von Karajan. It was my dream profession though I’m now far away from it. It would be a unique experience to stand on a stage and make all instruments play in harmony.

What's one of your favorite memories?
Spending a whole day in the mountains, rock climbing and having a picnic with friends. Simple but fun.

Who was your best teacher and why?
My first math teacher in primary school, Mrs. Ruan. She was always patient and made my school life fun from the beginning.

If you didn't have to sleep anymore what would you do with the extra time?
Basically the same things I do and enjoy during the day: studying, doing sports, reading.

What is the craziest thing you’ve ever done and would you do it again?
Winter swimming when I was in primary school. I would do it again because it’s so refreshing.

What bothers you the most about the world and why?
Climate change, because I’ve learned a lot about this problem during the semesters and realized that it is really serious and we all need to take action immediately.

What’s the one thing you wish you knew how to do?
Handstand walking. It looks so cool and I’m still practicing it.

Which song makes you happy?
“Autumn Leaves“ by Tony O'Malley.

What are your future plans after having finished your Master’s programme?
To become an all-round structural engineer, design and maintain various structures and solve challenging engineering problems.

ESOP Environmental Engineering

Matteo Bonatesta

"I would like to be Neil Armstrong on July 21st , 1969. I would live the indescribable experience of having left my planet to walk on another celestial body. It is beyond words, if I think about it."

– Matteo Bonatesta

Why did you choose the D-BAUG for your Master's degree programme?
I chose to pursue my Master's at D-BAUG because it has a confident look at the future. We know that our world is reaching its limits, and we have to deal with limited resources that must be managed in the best possible way. I feel that here at D-BAUG, one can find the right place to become a global thinker.

How would your best friend describe you in five words?
If I asked him, he would probably argue that I am responsible and respectful, very curious. He would also say that I find too many things "very interesting", that I am quite ironic and also a bit of a latecomer, but only a bit. And then he would probably start laughing and teasing me as he always does.

What's your favorite way to spend your weekend?
A perfect weekend for me is a couple of days in which I can relax and take care of myself. I like to take a walk or to dedicate myself to my hobbies. It helps me to release stress. I like to spend time with my fam-

Neil Armstrong
In the early morning of July 21, 1969, Neil Armstrong made history by becoming the first man to walk on the moon. An estimated 600 million people watched the moon landing on television, a fifth of the world's population. On July 24, 1969, Neil Armstrong and the crew members of the Apollo 11 mission landed in the Pacific Ocean. But they weren't quickly integrated into society as NASA subjected the crew to a three-week quarantine, a precaution against space viruses that they might've picked up.

ily, also on the phone, if I'm not home; and in the evening I would meet with my friends, not to go to loud places such as clubs, but to chill and have fun playing some games together.

If you could be a famous person for one day, who would that be and why?
Not an easy question. Many extraordinary women and men have lived incredible lives, but if I can also choose which day to live then I would like to be Neil Armstrong on July 21st , 1969. I would live the indescribable experience of having left my planet to walk on another celestial body. It is beyond words, if I think about it.

What's one of your favorite memories?
One of my favorite memories goes back to when I was an exchange student in the USA in 2016. I was in San Francisco with other exchange students from all over the world and with Italian friends I made over there. I remember the city was beautiful and cold, and we were always laughing, seeing wonderful places, sharing meaningful moments. I really have a great memory of those days.

Who was your best teacher and why?
I have had several great teachers throughout my school years and to whom I owe a lot. In particular, I can't help thinking about Maestra Enza, who used to be my teacher during primary school. She knew how to be tough, because she wanted us to study, learn, and grow as young respectful boys and girls. But she loved us and cared so much for us; she was so sweet and kind with everyone, she was like a mother to us.

If you didn't have to sleep anymore what would you do with the extra time?
That would be literally living the dream! I would dedicate a lot of time to my hobbies – not only the ones I already have, like playing musical instruments, reading, or doing puzzles, but also to many new ones. I would use that time also to educate myself, and maybe study a new language, to watch documentaries and, of course, play videogames!

What is the craziest thing you've ever done and would you do it again?
In 2018, I decided that I wanted to go to see a Paul McCartney in concert in London: I quickly organized the trip with a friend of mine, we left Milan and we ended up in London with no clue on where to go. We had booked a very cheap room in a remote suburb of the city. But we made it: we went to the concert, and we had an incredible night. It was also my birthday! No doubt I would do it again.

What bothers you the most about the world and why?
If there is one thing I can hardly stand, it is how people are able to turn their head and live in a world of false hopes and truths, knowing it and pretending they don't see it. We have given up so much of our real connection to people around us and to the world: it makes it easier to detach, to keep living in our own little world, paying little attention for a short while and then going back to our "truly" big, delicate problems.

What's the one thing you wish you knew how to do?
There are so many things I wish I knew how to do: for instance, I would like to be able to cook – being Italian is not a guarantee for culinary skills – or to sing – some days I would like to be a street artist – or to draw something that goes beyond a flower or a tree. But I know I will try hard and do my best to learn!

Which song makes you happy?
A song that makes me deeply happy is "Abbracciala, abbracciali, abbracciati" by the legendary Italian musician Lucio Battisti. Not a very known song, it is a hymn to love and its profound meaning, suspended between its illusions and its most unconscious manifestation, expressed in a soliloquy of the artist. I suggest it to everyone.

What are your future plans after having finished your Master's programme?
I am not sure about my plans after finishing my Master's. I certainly would like to start working, but I also deeply love what I study and the idea of pursuing a PhD is appealing. And though I really enjoy living in Switzerland, in my dreams I don't see myself living in a fixed place, anywhere. I would like to move, see different countries and live in different cultures for as long as I can.

ESOP Geomatics

Andreas Brown

“I chose D-BAUG because of its strong reputation, high-quality education, innovative research, state of the art facilities, and international environment. Furthermore, it’s one of few departments around the world that offers a geomatics programme.”

– Andreas Brown

Why did you choose the D-BAUG for your Master's degree programme?
I chose D-BAUG because of its strong reputation, high-quality education, innovative research, state of the art facilities, and international environment. Furthermore, it’s one of few departments around the world that offers a geomatics programme.

How would your best friend describe you in five words?
Friendly, patient, pedantic, quiet, hard-working.

What’s your favorite way to spend your weekend?
Sleep in, get outside, spend time with friends and family.

Bradford W. Parkinson is an American engineer and inventor, retired United States Air Force Colonel and recalled emeritus Professor at Stanford University. He is best known as the lead architect, advocate and developer of the Air Force NAVSTAR programme, better known as Global Positioning System (GPS). He was also the principal investigator and programme manager on Gravity Probe B, which tested gravitomagnetism and was the first ever direct mechanical test of Einstein's General Relativity. He has received numerous awards and honors for GPS and contributions to engineering and invention. In 2019, Bradford Parkinson received the Queen Elizabeth Prize for Engineering.

Foto: Gregg Segal

If you could be a famous person for one day, who would that be and why?
I would be Bradford W. Parkinson, one of the fathers of GPS, since he helped develop a very important technology that we use every day, and because I feel like he has lived through some interesting experiences.

What's one of your favorite memories?
Partaking in the geomatics engineering survey camp at the University of Calgary, which is a two-week long field course outdoors where students collect and process data.

Who was your best teacher and why?
It would be unfair to name just one. I am fortunate to have been taught by many caring teachers and knowledgeable professors over the years.

If you didn't have to sleep anymore what would you do with the extra time?
I would invest the time in reading more, learning a musical instrument or a new language, maybe also improving my coding skills.

What is the craziest thing you’ve ever done and would you do it again?
Move across an ocean to a new continent to pursue graduate studies. I would totally do it again, but maybe not right away.

What bothers you the most about the world and why?
Poverty, hunger, disease, war, conflict, pollution, and misinformation because they are persistent problems that have been around for a long time and have not yet been solved.

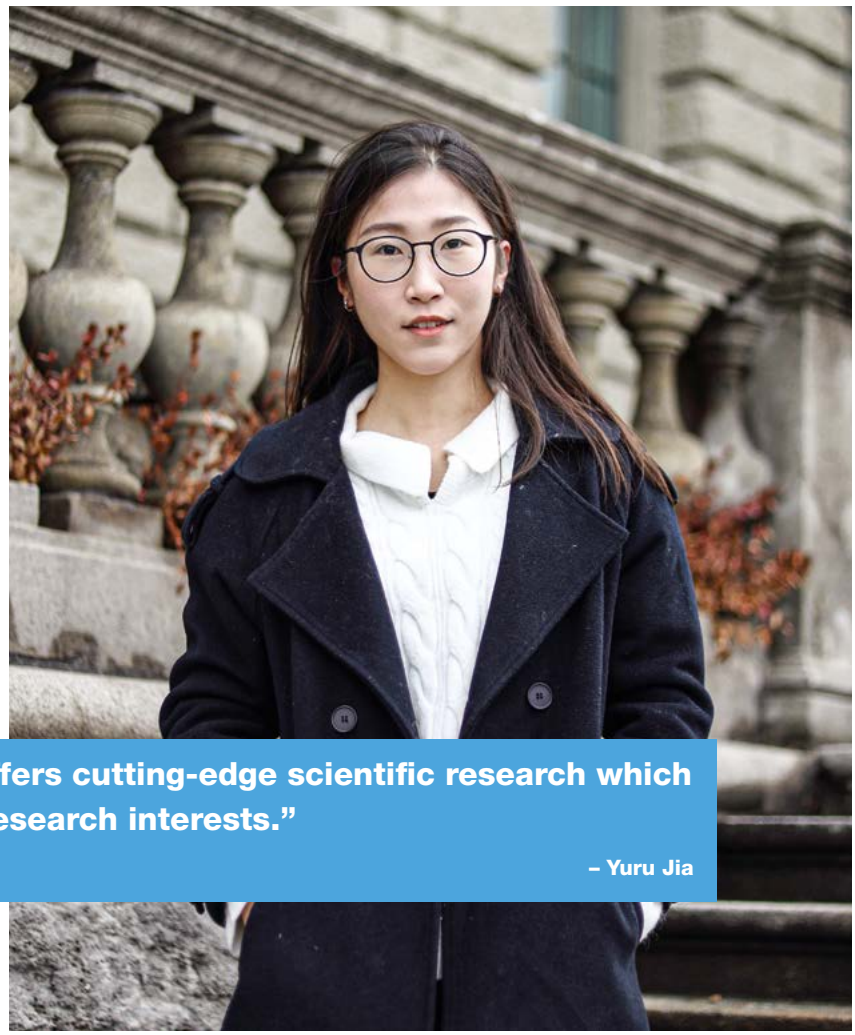
What’s the one thing you wish you knew how to do?
How to efficiently manage my time and multitask.

Which song makes you happy?
“Pictured Within” by Jon Lord.

What are your future plans after having finished your Master’s programme?
Further education is a possibility, but it would be nice to first gain some practical industry experience and solve real-world problems.

ETH D-BAUG Scholarship Geomatics

Yuru Jia



“D-BAUG offers cutting-edge scientific research which meets my research interests.”

– Yuru Jia

Why did you choose the D-BAUG for your Master's degree programme?
D-BAUG offers cutting-edge scientific research which meets my research interests.

How would your best friend describe you in five words?
Diligent, easy-going, rational, helpful, considerate.

What’s your favorite way to spend your weekend?
Enjoying a live concert.

If you could be a famous person for one day, who would that be and why?
Jane Goodall, I’d like to experience how she develops a close bond with the chimpanzees.

Jane Goodall is the world's foremost expert in chimpanzees. She spent 45 years studying wild chimpanzees in Gombe Stream National Park, Tanzania. Shortly after working in Tanzania, Goodall made two revolutionary observations about chimpanzees: 1) that they used tools, a behavior previously attributed only to humans; 2) chimpanzees were not vegetarian. For the last three decades, she's been on the road more than 300 days a year, giving talks and leading initiatives to improve the lives of chimpanzees, apes, and all animals in captivity and in the wild.

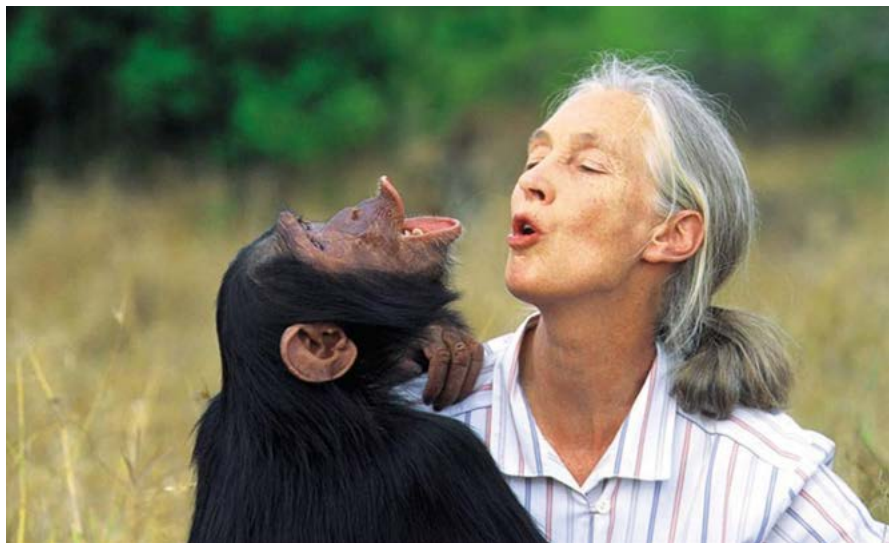


Foto: Jane Goodall Institut/Michael Neugebauer

What's one of your favorite memories?
My trip to Taiwan in 2019.

Who was your best teacher and why?
Dingrui Wen, my math teacher in primary school, was my best teacher. She inspired me a lot with her passion when I was a kid.

If you didn't have to sleep anymore what would you do with the extra time?
I would learn an instrument and form a band.

What is the craziest thing you've ever done and would you do it again?
I made the decision to move to another city and finished packing and getting on the train in only one night. Maybe I'll do it again one day.

What bothers you the most about the world and why?
Environmental degradation caused by human bothers me the most since the environment is the foundation of all civilization.

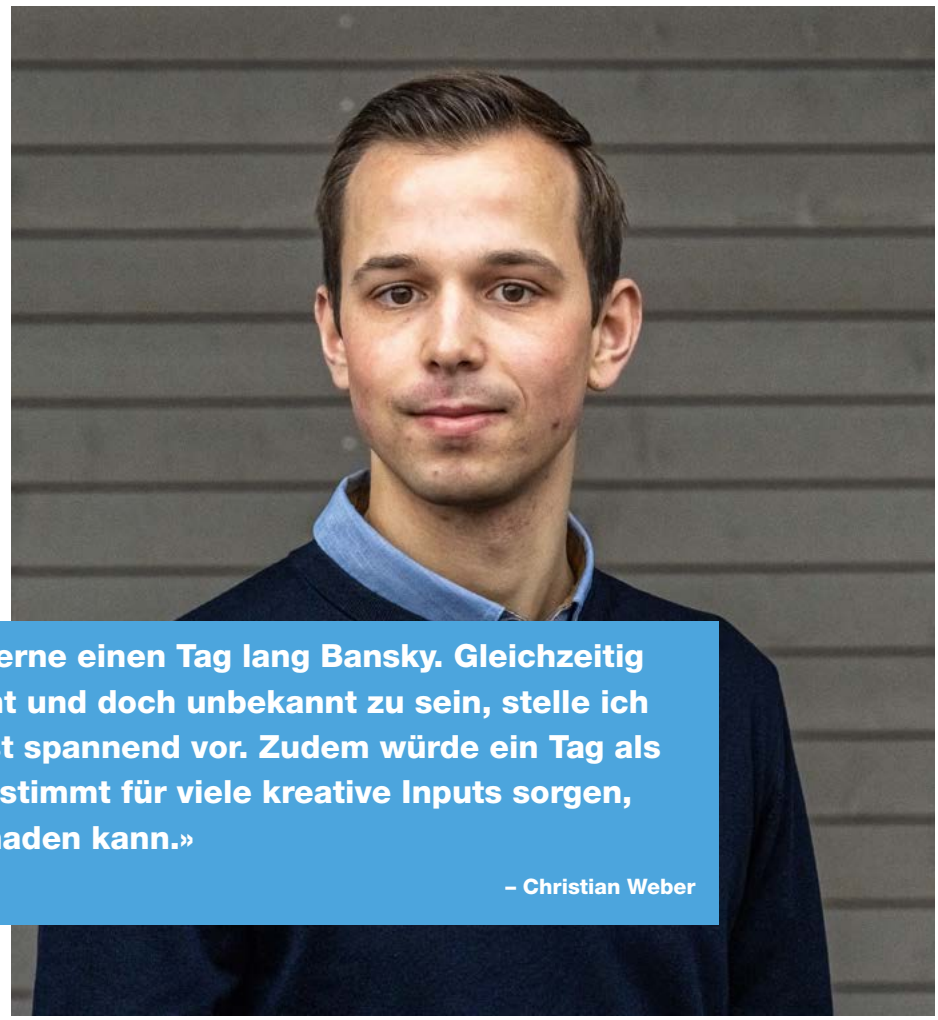
What's the one thing you wish you knew how to do?
I wish I knew how to time travel.

Which song makes you happy?
"L'Internationale".

What are your future plans after having finished your Master's programme?
I will continue my studies for a Ph.D.

ETH D-BAUG Scholarship Civil Engineering

Christian Weber



«Ich wäre gerne einen Tag lang Bansky. Gleichzeitig weltberühmt und doch unbekannt zu sein, stelle ich mir äusserst spannend vor. Zudem würde ein Tag als Künstler bestimmt für viele kreative Inputs sorgen, was nie schaden kann.»

– Christian Weber

Warum haben Sie sich für ein Master-Studium am D-BAUG entschieden?
Weil ich überzeugt bin, mir hier die bestmögliche Ausgangslage erarbeiten zu können, um anschliessend gemeinsam mit künftigen Fortschritten wachsen zu können.

Wie würde Sie Ihre beste Freundin/Ihr bester Freund in fünf Worten beschreiben?
Optimistisch, ehrgeizig, zuverlässig, wissbegierig, hilfsbereit.

Wie verbringen Sie am liebsten Ihr Wochenende?
Ein Tag sportlich aktiv, gerne auch in den Bergen. Der andere Tag darf dann etwas gemütlicher sein und mit feinem Essen und einem angeregten Gespräch enden.

Banksy Originale für 60 Dollar ist der erfolgreichste Streetart-Künstler der Welt. Doch er hat kein Urheberrecht an seinen Bildern. Niemand weiss, wer sich hinter dem Namen verbirgt. Ist er eine Einzelperson, ein Mann, eine Frau oder verbirgt sich hinter dem Namen gar ein Kollektiv? 2013 liess Banksy am Strasenrand in der Nähe des Central Park in New York handsignierte Orginale seiner Arbeiten verkaufen, für 60 Dollar pro Bild (Foto). Doch die Werke fanden nur gerade acht Käufer. Heute ist ein einzelnes dieser Werke $200,000-$300,000 wert.
➡Video der Aktion

Wenn Sie einen Tag lang mit einer berühmten Persönlichkeit tauschen könnten, wer wäre das und warum?
Bansky – sofern das eine einzelne Person ist. Gleichzeitig weltberühmt und doch unbekannt zu sein, stelle ich mir äusserst spannend vor. Zudem würde ein Tag als Künstler bestimmt für viele kreative Inputs sorgen, was nie schaden kann.

An welches Erlebnis erinnern Sie sich besonders gern zurück?
Aus meiner Studienzeit in Strasbourg durfte ich viele schöne Erinnerungen mitnehmen, weshalb ich immer mit grosser Freude daran zurückdenke.

Wer war Ihre beste Lehrerin/Ihr bester Lehrer und warum?
Mein Klassenlehrer in der Primarschule, weil er auch nach Erreichen des Pensionsalters noch gemeinsam mit uns jeweils nach der letzten Schulstunde Fussball gespielt hat.

Wenn Sie nicht mehr schlafen müssten, was würden Sie mit der zusätzlichen Zeit anfangen?
Mehr Ausflüge unternehmen und mehr lesen.

Was ist das Verrückteste, das Sie je gemacht haben, und würden Sie es wieder tun?
Da fällt mir ein Tandem-Gleitschirmflug ein, welcher vor dem Start schon etwas Überwindung gekostet hatte. Für das Gefühl in der Luft lohnt es sich aber definitiv, weshalb ich das auch bereits wiederholt habe.

Was stört Sie am meisten an der Welt und warum?
Prinzipielle Verschlossenheit gegenüber Veränderungen.

Was würden Sie gerne können?
Weitere Sprachen beherrschen.

Welcher Song macht Sie glücklich?
Da habe ich kein spezifisches Lied, aktuell mag ich aber z. B. Musik von Stromae.

Wie sehen Ihre Zukunftspläne aus nach dem Abschluss des Masters?
Das lasse ich mir bewusst offen. Wichtig ist mir auf jeden Fall, die Theorie mit der Praxis zu verbinden.

ETH D-BAUG Scholarship Environmental Engineering

Konstantina Papadopoulou

"The professor that stands out for me is my history teacher in high school, as he trained me to criticise everything and to always keep in mind that history is different depending on who is writing it. This understanding of perspective follows me in every decision."

– Konstantina Papadopoulou

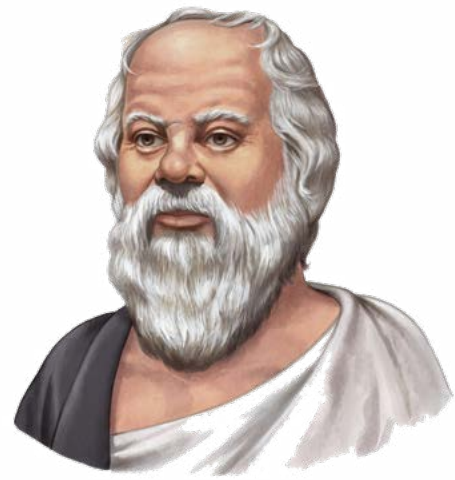
Why did you choose the D-BAUG for your Master's degree programme?
I chose D-BAUG for my Master's degree because of the excellent academic level of ETH but also because of the wide variety and state of the art research options.

How would your best friend describe you in five words?
Clever, independent, responsible, generous, extrovert.

What's your favorite way to spend your weekend?
Good combination of personal relaxation time and activities with friends.

«If you don't get what you want, you suffer; if you get what you don't want, you suffer; even when you get exactly what you want, you still suffer because you can't hold on to it forever. Your mind is your predicament. It wants to be free of change. Free of pain, free of the obligations of life and death. But change is law and no amount of pretending will alter that reality.»

– Socrates



If you could be a famous person for one day, who would that be and why?
I wish I had the chance to be Socrates for one day, in order to gain access to the brilliant brain of this philosopher but also be able to observe in person the Golden Age of ancient Athens and the foundation of science and western civilisation.

What's one of your favorite memories?
Long days in Greek islands by the sea. The beauty and calmness of nature makes me every time appreciate every minute of life.

Who was your best teacher and why?
The professor that stands out for me is my history teacher in high school, as he trained me to criticise everything and to always keep in mind that history is different depending on who is writing it. This understanding of perspective follows me in every decision.

If you didn't have to sleep anymore what would you do with the extra time?
I would do more voluntary work in animal shelters.

What is the craziest thing you’ve ever done and would you do it again?
Moving to another country and changing my life completely. I will never regret it. It is a dream come true for me.

What bothers you the most about the world and why?
I really can’t accept that profit drives the world, instead of ethics and human rights. Also, the lack of common sense as regards climate and planet destruction scares me.

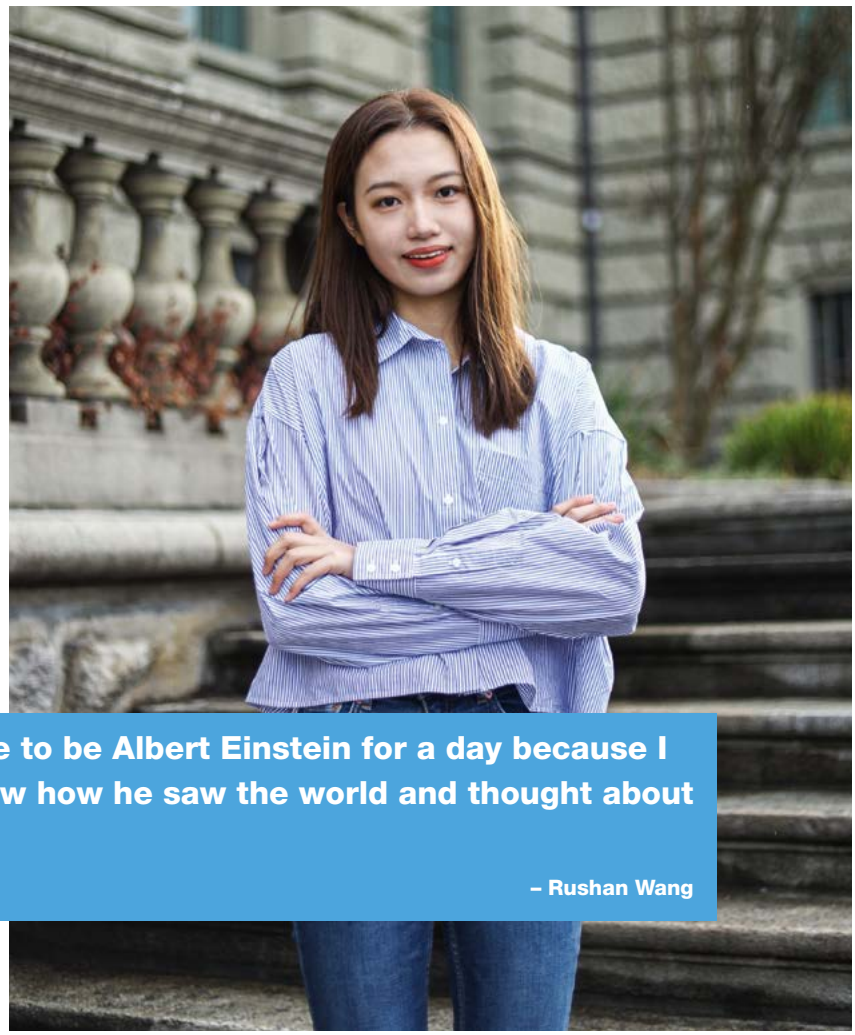
What’s the one thing you wish you knew how to do?
I wish it was easier to have a fully sustainable way of living and minimum environmental footprint. I really consider it a big problem in today’s economy that this change in living is difficult and even discouraging.

Which song makes you happy?
"Dancing Queen" by ABBA, as it brings back moments of pure happiness with my sister.

What are your future plans after having finished your Master’s programme?
I would like to devote my professional career in the protection of environment and life on our planet.

ETH D-BAUG Scholarship Geomatics

Rushan Wang



“I would like to be Albert Einstein for a day because I want to know how he saw the world and thought about things.”

– Rushan Wang

Why did you choose the D-BAUG for your Master's degree programme?
Because the programme in D-BAUG contains a wide range of study areas in geomatics. I’m excited to find my research interests here.

How would your best friend describe you in five words?
Zealous, reliable, considerate, intelligent, persevering.

What’s your favorite way to spend your weekend?
Cooking, watching movies, and getting in touch with nature.

«A human being is a part of the whole called by us universe, a part limited in time and space. He experiences himself, his thoughts and feeling as something separated from the rest, a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty.»

– Albert Einstein

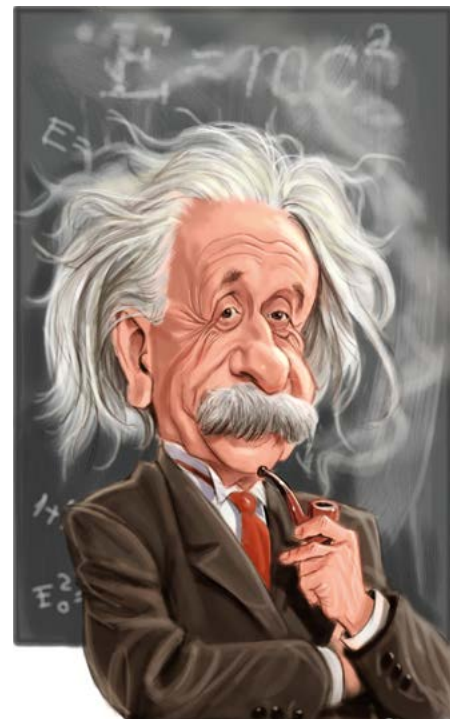


Bild: B. Petry

If you could be a famous person for one day, who would that be and why?
I want to be Albert Einstein because I want to know how he saw the world and thought about things.

What's one of your favorite memories?
Seeing rocks and learning geology in Scotland in the summer of 2019.

Who was your best teacher and why?
Prof. Tinghua Ai, one of my teachers during undergraduate study. He is very knowledgeable and gave me a lot of advice.

If you didn't have to sleep anymore what would you do with the extra time?
I would read more books and spend more time with my families.

What is the craziest thing you've ever done and would you do it again?
Took 50 credits of classes in the first semester, I won't do that again.

What bothers you the most about the world and why?
The divisions and conflicts of the world, especially with the covid situation. We should be supportive to each other.

What's the one thing you wish you knew how to do?
I wish I knew how to snowboarding.

Which song makes you happy?
"Comethru" by Jeremy Zucker.

What are your future plans after having finished your Master's programme?
I would like to pursue a PhD in the field of geomatics.

ETH D-BAUG Scholarship Environmental Engineering

Zixin Hu

“D-BAUG offers comprehensive and flexible curriculum with various modules and opportunities to overcome practical engineering challenges in the future.”

– Zixin Hu

Why did you choose the D-BAUG for your Master's degree programme?
Comprehensive and flexible curriculum with various modules. Opportunities to overcome practical engineering challenges in the future.

How would your best friend describe you in five words?
Friendly, upright, reliable, curious, laughing.

What’s your favorite way to spend your weekend?
Enjoying the fresh air and sunshine with friends.

Hector and Archilles
In Greek mythology, Hector was the son of King Priam of Troy and his wife, Hecuba. A Trojan hero and warrior, he fought bravely against the Greeks in the Trojan War. In the Iliad, Homer's epic about the war, Hector is portrayed as a noble and honorable leader. He was a good son, a loving husband to Andromache and father to Astyanax, and a trusted friend. Honest and forthright, he greatly disapproved of the conduct of his brother Paris, who carried off Helen, the wife of the Greek ruler Menelaus. These actions set the stage for the Trojan War. Hector was later killed in the Trojan War in the duel with Achilles. In revenge for the death of his friend Patroclus, Achilles dragged Hector's corpse 12 days around the tomb of Patroclus. The original painting (picture) is a fresco on the upper level of the main hall of the Achilleion at Corfu, Greece.

If you could be a famous person for one day, who would that be and why?
Hector from Troy. He was brave, thoughtful, and kindhearted, full of heroic spirit.

What's one of your favorite memories?
I have countless precious memories. I always enjoy seeing the smiles and hearing laughter of friends or strangers in daily life.

Who was your best teacher and why?
Ms. Ni. She not only taught me a musical instrument, but also more traditional culture and the self-cultivation.

If you didn't have to sleep anymore what would you do with the extra time?
I would read books. Maybe I could also figure out why I don’t have to sleep.

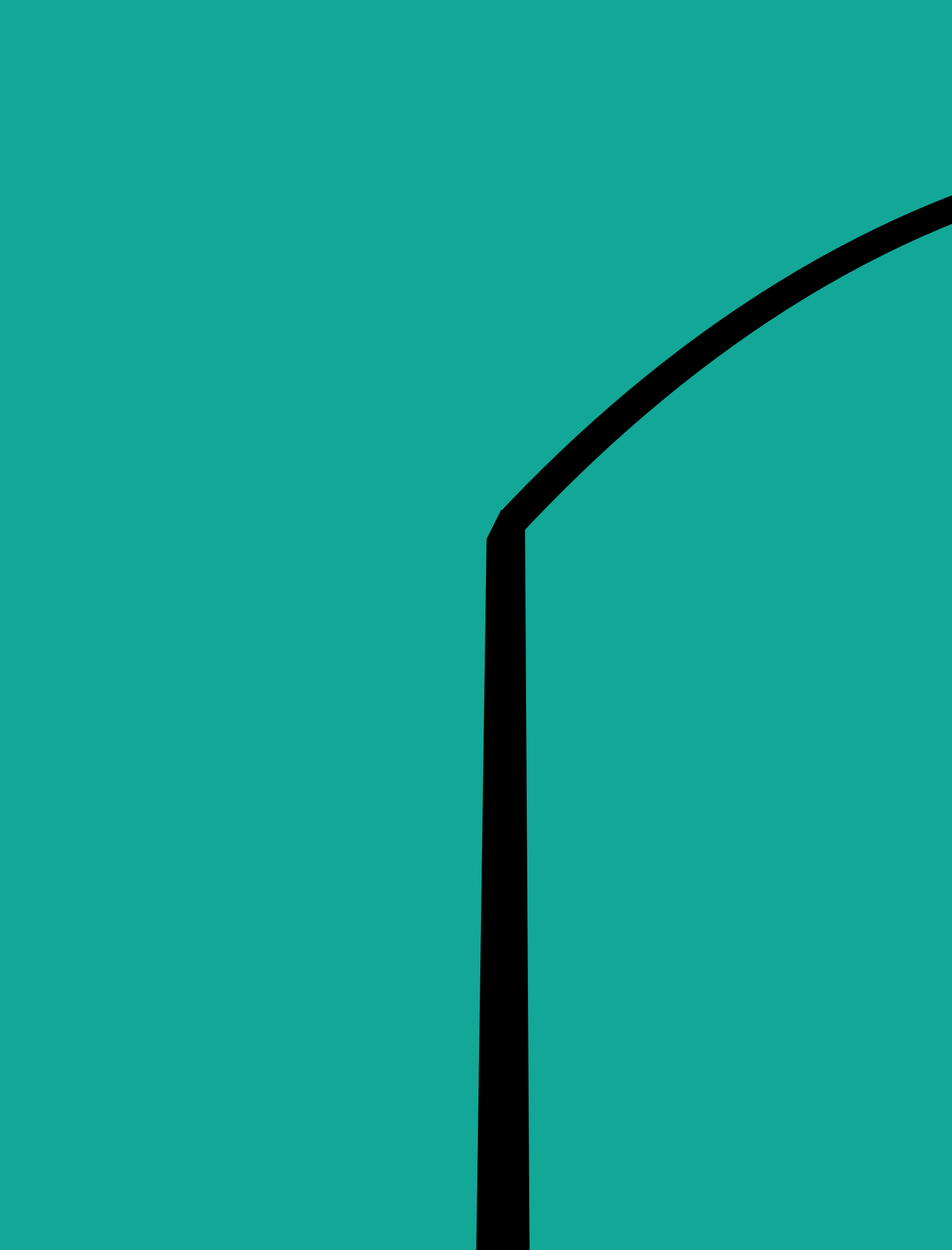
What is the craziest thing you’ve ever done and would you do it again?
Riding a roller coaster. Yes.

What bothers you the most about the world and why?
Parting from old friends and family members. It’s a sad time.

What’s the one thing you wish you knew how to do?
How to communicate better in foreign languages.

Which song makes you happy?
"Summer Vibe" by Walk Off the Earth.

What are your future plans after having finished your Master’s programme?
Find the area that interests me. Try to make some innovations or changes to help overcome one or more practical challenges.




S
STUDENTS & ALUMNI

Lukas Ambühl who has a doctorate in civil engineering from ETH Zurich and is a recent Pioneer Fellow, is convinced that artificial intelligence opens up huge opportunities. With his Transcality project, he is developing a tool that not only digitally maps traffic movements in a town or city in real time, but also allows possible scenarios to be simulated and thus supports long-term traffic planning.

Full of drive for transport

PHOTOS Alessandro Della Bella, ETH Zürich Foundation

TEXT Uplift, ETH Zürich Foundation

Pioneer Fellow Lukas Ambühl is developing a tool that he can use to simulate the transport system of any town or city. Artificial intelligence allows for a planning approach that keeps everyone rolling.

More than half of the world's population already lives in towns and cities, and the trend is rising. One of the biggest challenges posed by increasing urbanisation is the efficient organisation of transport. How can we make sure that the huge numbers of cars, bicycles, trams and buses keep moving? How can traffic jams be avoided? What is the impact of roadworks – and what about when self-driving cars are added to the equation in the future? Good transport planning helps to protect the environment and avoid stress, as well as saving time and money. And last but not least, it makes it safer to be on the road.

Lukas Ambühl, who has a doctorate in civil engineering from ETH Zurich and is a recent Pioneer Fellow, is convinced: artificial intelligence opens up huge opportunities here. With his Transcality project, he is developing a tool that not only digitally maps traffic movements in a town or city in real time, but also allows possible scenarios to be simulated and thus supports long-term traffic planning. "Mobility is extremely complex, as it is influenced by many different interactions and dependencies. Static models are not really up to the task," says the budding entrepreneur. By systematically and automatically processing data, the "digital city twin" can instantly simulate the way in which interventions in the transport system, such as building a tunnel or creating a car-free zone, will affect the rest of the city.

One step ahead with the digital twin

In developing his algorithms, Ambühl makes use of two key aspects: first, that many cities already record data on a regular basis, e.g. measuring how many vehicles pass a certain intersection within a certain period of time; and second, that there are patterns in traffic behaviour that always take the same form, e.g. traffic jams always emerge in a comparable manner – whether in Zurich, Berlin or Tokyo. What makes Transcality unique is that it is a modular tool that collates data from different sources and can thus be applied to cities of any size.

"Mobility is extremely complex, as it is influenced by many different interactions and dependencies. Static models are not really up to the task."

– Lukas Ambühl

The demand for such a tool is demonstrated by the fact that Lukas Ambühl is already running two pilot projects: in a large Swiss city, he is investigating the traffic-related impact of the reconstruction of a long section of motorway. And in London he is helping the city authorities to analyse why congestion has increased compared to the time before Covid, despite there being fewer cars on the roads. With the aid of Transcality simulations, hypotheses can be tested and conclusions drawn for future transport planning.

Pioneer Fellowship as confirmation

It means a lot to Ambühl that he can already use and test his tool in practice during development. After all, it is precisely this practical relevance that motivates him in his work: "I want to actively shape the environment and solve problems." Not only does he benefit from the extensive theoretical knowledge he built up during his dissertation at the Institute for Transport Planning and Systems, but also from the large international network of partners from industry and administration. The fact that Ambühl succeeded in the tough selection process for the Pioneer Fellowship, and in convincing the jury of the potential of Transcality, has provided him with confirmation that he is on the right track. "The funding is one aspect, and the individual coaching is also extremely valuable – but what means the most to me is the trust placed in me and my project."

Voller Drive für den Verkehr

Pioneer Fellow Lukas Ambühl entwickelt ein Tool, mit dem er das Verkehrssystem beliebiger Städte simulieren kann. Künstliche Intelligenz ermöglicht eine Planung, bei der nichts ins Stocken gerät. Mit seinem Projekt Transcality entwickelt er ein Tool, das die Verkehrsbewegungen einer Stadt nicht nur in Echtzeit digital abbildet, sondern auch erlaubt, mögliche Szenarien zu simulieren und damit die langfristige Verkehrsplanung zu unterstützen.

Landwirtschaft heute und morgen

FOTOS GIUZ Blog **TEXT** Nicole Helbing, Enviroswiss

Der studentische Verein Enviroswiss organisiert jedes Jahr ein Wochenende rund um ein aktuelles Umweltthema. Ziel ist es, Studierende aus der ganzen Schweiz zusammenzubringen, um sich über wichtige Themen auszutauschen und die Diskussion untereinander anzuregen. Diesmal ging es um nachhaltige Lösungen in der Landwirtschaft.

Welche langfristigen Auswirkungen hat die konventionelle Landwirtschaft? Welche Alternativen gibt es? Wie können wir selbst dazu beitragen, den Weg hin zu einer nachhaltigeren Lebensmittelproduktion zu ebnen? Mit diesen Fragen setzten sich rund 30 Studierende von Hochschulen aus der ganzen Schweiz und mehrere Referierende an einem Wochenende im Spätherbst auseinander.

Wir danken dem D-BAUG herzlich für die finanzielle Unterstützung, ohne die dieses Wochenende nicht hätte stattfinden können.

Kern des Wochenendes waren die Konferenzen. Diese waren teilweise auf Französisch, teilweise auf Deutsch, um möglichst viele Studierende miteinzubeziehen. Am Morgen lernten wir die Berner Bio-Offensive kennen, erfuhren mehr über die Rolle von Pflanzenschutzmitteln in der heutigen Landwirtschaft und über die Wichtigkeit von Wildbienen. Am Nachmittag ging es dann um Permakultur, wo wir auch einen Einblick in verschiedene Projekte und Höfe in der Schweiz erhielten. Es war sehr spannend, verschiedene Meinungen und Sichtpunkte kennenzulernen und sich miteinander auszutauschen. Auch wenn einige unserer Fragen beantwortet werden konnten, sind viele weitere Fragen aufgetaucht – denn wie so oft hat sich gezeigt, dass es es nicht nur eine gute Lösung gibt. Ein Filmabend, Workshops und ein Orientierungslauf, wo die Teilnehmenden das erlernte Wissen gleich anwenden konnten, rundeten das Wochenende ab. Nun freuen wir uns auf die Edition im nächsten Jahr – dafür sind wir noch auf der Suche nach neuen Vorstandsmitgliedern. Mehr Informationen dazu finden Sie auf ➡ https://enviroswiss.ch/.

Wir danken dem D-BAUG herzlich für die finanzielle Unterstützung, ohne die dieses Wochenende nicht hätte stattfinden können.

Tag der Geomatik 2021

FOTOS Leica Geosystems, ETH Zürich **TEXT** Linda Benz

Jedes Jahr im November lädt die Kommunikationsarbeitsgruppe der Raumbezogenen Ingenieurwissenschaften am D-BAUG in Zusammenarbeit mit der Fachhochschule Nordwestschweiz (FHNW) und anderen Partnern zum Tag der Geomatik ein. Dieser Tag wurde, nach einer Corona-bedingten Pause 2020, im November 2021 bereits zum sechsten Mal durchgeführt.

Der Tag der Geomatik findet jeweils auf dem Campus Hönggerberg, an der FHNW oder an einem anderen themenbezogenen Standort statt und dient primär dazu, die Geomatik und Raumplanung bei Schülerinnen und Schülern bekannter zu machen. Wie in der Vergangenheit, wurden auch im Herbst 2021 Deutschschweizer Lehrpersonen mit ihren Kantons-, Sekundar- und Berufsschulklassen eingeladen, die Interesse an den Fachgebieten Geomatik und Raumplanung haben und im Unterricht daran anknüpfen möchten.

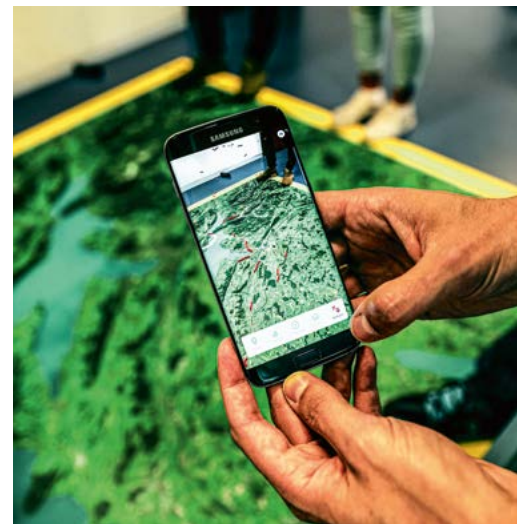
Die teilnehmenden Schulklassen konnten interaktive Lernmodule zu Themen wie Räumliche Orientierung, Satelliten im Weltall, Augmented Reality, 3D-Raumvermessung oder Erfassen der Welt aus der Vogelperspektive besuchen.

Die teilnehmenden Schulklassen konnten interaktive Lernmodule zu Themen wie Räumliche Orientierung, Satelliten im Weltall, Augmented Reality, 3D-Raumvermessung oder Erfassen der Welt aus der Vogelperspektive besuchen. In einem Ausstellungsbereich, der unter Corona-Schutzmassnahmen auch diesmal angeboten werden konnte, durften die Schülerinnen und Schüler darüber hinaus Messtechniken ausprobieren, mit Augmented Reality experimentieren und sich mit jungen Forscherinnen und Forschern unterhalten. Für Klassen, die den Weg nach Heerbrugg nicht auf sich nehmen konnten oder wollten, haben wir erstmals einige Module auch rein online angeboten.

Die Veranstaltung war mit rund 300 Teilnehmenden wiederum ein Erfolg. Der nächste Tag der Geomatik wird voraussichtlich im November 2023 stattfinden.

➡ www.tagdergeomatik.ch

Tag der Geomatik 2021



Kontakttreffen Hönggerberg im Coronajahr 2021

FOTOS KTH **TEXT** Luisa Albertini, Christina Lott, Studentinnen am D-BAUG

Das Kontakttreffen Hönggerberg, kurz KTH, ist eine jährlich im Frühling stattfindende Firmenmesse für Studierende der Fachrichtungen Bauingenieurwissenschaften, Umweltingenieurwissenschaften, Raumbezogene Ingenieurwissenschaften, Geomatik, Raumentwicklung und Infrastruktursysteme, Architektur, Integrated Building Systems und Landschaftsarchitektur. Im Jahr 2021 wurde das KTH erstmals online durchgeführt.

Planung

In den letzten Jahren ist das KTH zu einem festen Termin im akademischen Kalender geworden. Nicht nur Studierende, sondern auch die Departemente D-BAUG und D-ARCH schätzen das KTH sehr. Nachdem es 2020 aufgrund der Coronapandemie leider abgesagt werden musste, war daher klar, dass das KTH im Jahr 2021 unabhängig von den äusseren Umständen stattfinden musste. Somit wurde von Anfang an parallel für eine Durchführung vor Ort sowie für eine Online-Messe geplant. Dies erforderte zwar mehr Flexibilität seitens Organisationskomitee (OK) ermöglichte jedoch, dass die Messe auf jeden Fall stattfinden konnte.

So präsentierten sich trotz der Umstellung über 80 Firmen aus der Bau- und Planungsbranche den interessierten Studierenden und baldigen Absolvierenden auf der Online-Messe Hopin.

Durchführung

Lange blieb das OK zuversichtlich, das KTH vor Ort durchführen zu können. Anfang Frühlingssemester 2021 wurde jedoch bekannt, dass es definitiv virtuell stattfinden würde. Die Absage war für das OK enttäuschend, denn die Neuerungen, die bereits für 2020 geplant worden waren, konnten wiederum nicht umgesetzt werden. Das KTH hätte zum Beispiel erstmals an zwei Tagen stattfinden und insbesondere am zweiten Tag auch für Studierende des interdisziplinären Bauwesens und der Architektur geöffnet werden sollen. Dank der vorausblickenden Planung konnte aber rasch auf die Alternative der Online-Messe ausgewichen werden. So fand das KTH am 14. April 2021 über die Plattform Hopin virtuell statt. Die Plattform ermöglichte es den Firmen, digitale Stände zu haben, welche die Studierenden mittels Videoge-

sprächen besuchen konnten. Nach fast einem Jahr Online-Studium für die Studierenden und Homeoffice für die Firmen waren die meisten Teilnehmenden auch gewappnet für eine virtuelle Durchführung. So präsentierten sich trotz der Umstellung über 80 Firmen aus der Bau- und Planungsbranche den interessierten Studierenden und baldigen Absolvierenden auf Hopin. Dies waren zwar etwas weniger Firmen als üblich, diejenigen, die seit vielen Jahren regelmässig dabei sind, liessen jedoch auch dieses KTH nicht ausfallen, was davon zeugt, dass sich das Konzept des KTH bewährt und erfolgreich ist. Seitens der Besuchenden wurden um die 750 Besucherinnen und Besucher registriert. Unter die zahlreichen Studierenden der ETH Zürich mischten sich auch dieses Jahr Besuchende verschiedener Fachhochschulen sowie Studierende der EPF Lausanne.

Fazit

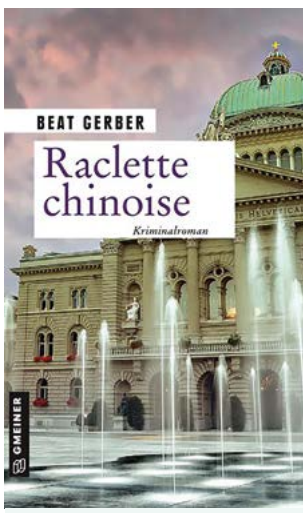
Die Rückmeldungen seitens der Studierenden, OK und Firmen waren durchwegs positiv. Die Präsidentin des KTH 2021, Christina Lott, meint, dass zwar weniger Besucherinnen und Besucher als in anderen Jahren registriert wurden, diese dafür aber sehr interessiert und gut vorbereitet waren. So sei es einerseits für die Firmen einfacher gewesen, Projekte und Referenzen zu präsentieren, andererseits sei es dank der Möglichkeit, ein persönliches Meeting zu erstellen, für Studierenden einfacher gewesen, ein Eins-zu-eins-Gespräch mit einer Firma zu führen. Obwohl der Kern des KTH, also das persönliche Gespräch, auch im virtuellen Rahmen gewährleistet werden konnte, haben sich doch die meisten gefreut, dass die Messe 2022 am 12. und am 13. April wieder vor Ort auf dem Hönggerberg stattfinden konnte.

➡www.kth.ethz.ch

kontakt treffen
Hönggerberg

Alumni Porträt: Beat Gerber

FOTO Jeroen Seyffer **INTERVIEW** Sibylle Schuppli



Buchtipp
Raclette chinoise, Beat Gerber
China ist mächtig und willkommen im globalen Business, daher halten sich Länder wie die Schweiz, Deutschland und Österreich mit Kritik an der Volksrepublik zurück. Kommissarin Nuspliger und Inspektor Schnyder stechen bei ihrem ersten Fall in ein doppelmoralisches Wespennest von Intrigen, Bestechung und Mord.
ISBN 978-3-8392-2748-0

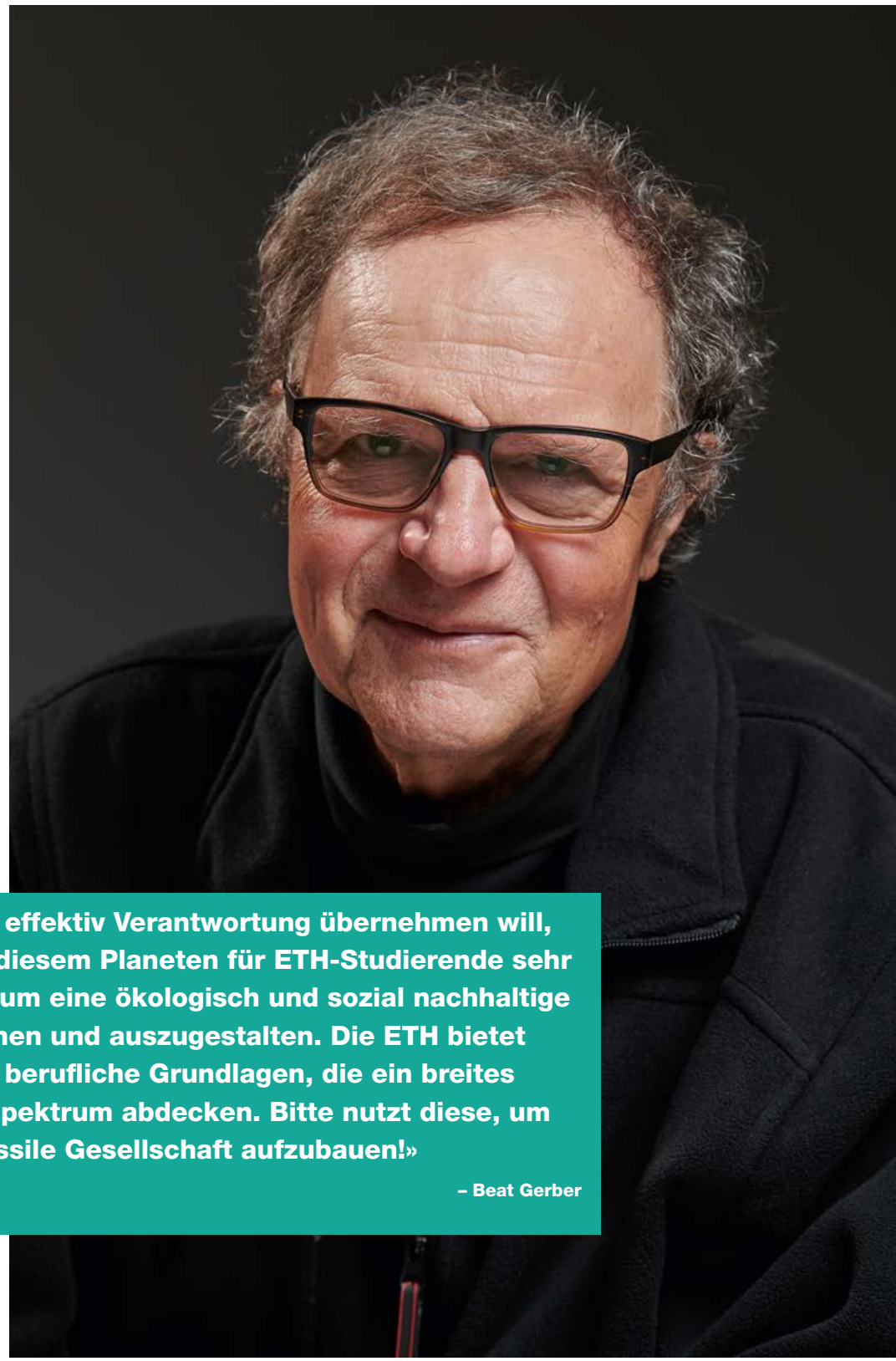
ETH Alumnus Beat Gerber absolvierte sein Studium als Bauingenieur. Im Interview spricht er über seine Interessen, und warum er die Studierenden von heute beneidet.

Du hast an der ETH Zürich ein Bauingenieurstudium absolviert. Was hat Dich zu einem Studium an der ETH inspiriert?
Die grosse Themenvielfalt der Studienrichtung, die vom Brücken- und Kläranlagenbau bis hin zur Städte- und Landesplanung reicht, das hat mich angesprochen. Meine Vertiefungsrichtung war Wasserwirtschaft. Der Bau von Staumauern und Wasserkraftwerken war herausfordernd, und ich wollte solche Projekte in Brasilien verwirklichen. Das ergab sich dann leider nicht. Ich habe daher in der dynamischen Strukturanalyse komplexe Bauten wie Atomkraftwerke auf Erdbeben und Flugzeugabsturz dimensioniert. Mit der Zeit wurde mir das jedoch zu eintönig und zu spezialisiert, ich wollte kein Fachidiot werden. Mir fehlte auch die gesellschaftliche Komponente bei der Arbeit.

Wie hat Dir der ETH-Abschluss geholfen?
Ich hege eine Art Hassliebe zum Poly: Zu meiner Studienzeit war die ETH als «Militäranstalt» verrufen und sehr formalistisch geprägt. Doch die streng geregelte Ausbildung war sehr konkret, man jagte nicht Hirngespinsten hinterher. Es war eine sehr gute Grundlage, man lernte logisch denken und analysieren. Auch heute noch. An den Universitäten gibt es zwar mehr «Freidenker» und mehr studentische Freiheiten. Das breite Studium des Bauingenieurs entsprach mir aber besser, und ich habe vom Abschluss immer profitiert.

Du hast nach der ETH noch etliche Semester in Soziologie und Publizistik absolviert, Dich auch laufend weitergebildet, vor allem in den Bereichen Journalismus, Kommunikation und Projektmanagement. Was ist Dein roter Faden?
Soziologie und Publizistik waren eine Art Schnupperlehre an der Uni. Ich war immer sehr neugierig und ich habe vielerlei Interessen. Manchmal sind es fast zu viele! 1980 hatte ich für das damalige Schweizer Katastrophenhilfskorps mitgeholfen, auf den Philippinen ein Flüchtlingslager aufzubauen. Als ich zurückkam, hängte ich ein Nachdiplom im Bereich Energie an. Danach arbeitete ich zehn Jahre als Energieberater und -planer in der Privatwirtschaft. Ich habe schon immer gern geschrieben, daher wechselte ich später in den Wissenschaftsjournalismus. Als Journalist muss man neugierig sein. Motiviert hat mich die kritische Auseinandersetzung mit wichtigen Themen aus Wissenschaft und Technik. Die Recherchen führten mich an spannende Orte, beispielsweise zu den Nuklearkomplexen Tschernobyl und Sellafield, in Indiens IT-Metropole Bangalore und zur Agrarforschung in Brasiliens Nordosten. 2002 wech-

Beat Gerber ist studierter Ingenieur und Wissenschaftsjournalist im Unruhestand, mit langjähriger Berufserfahrung in Industrie, Umweltberatung, Medien und Hochschulkommunikation. Heute schreibt und zeichnet er allerlei Groteskes über unsere globalisierte Welt, meist mit satirischem Unterton. Auch Gastrokritiken sind sein Steckenpferd. Ansonsten streunt er durch die multikulturellen Städte dieses Planeten, besonders Buenos Aires hat es ihm angetan. Geboren und aufgewachsen in Bern, lebt er in seiner Heimatstadt und in Südfrankreich.



«Wenn man effektiv Verantwortung übernehmen will, gibt es auf diesem Planeten für ETH-Studierende sehr viel zu tun, um eine ökologisch und sozial nachhaltige Welt zu planen und auszugestalten. Die ETH bietet dazu solide berufliche Grundlagen, die ein breites Interessenspektrum abdecken. Bitte nutzt diese, um eine postfossile Gesellschaft aufzubauen!»

– Beat Gerber

selte ich als Kommunikationsverantwortlicher ans Paul-Scherrer-Institut. Fünf Jahre später wurde der damalige PSI-Direktor Ralph Eichler zum ETH-Präsidenten gewählt und nahm mich mit an die Rämistrasse als sein persönlicher Kommunikationsberater, wo ich bis zu meiner Pensionierung im März 2014 blieb.

Du bist Ingenieur der ETH und Wissenschaftsjournalist im Unruhestand. Wie zeigt sich das?
Neugierig geblieben, habe ich weiterhin Beiträge als Wissenschafts- und auch als Weinjournalist geschrieben. Vor viereinhalb Jahren erschien zudem mein Pamphlet «An den Tisch der Mächtigen!», das die ETH auffordert, mutiger zu werden und bei wichtigen Fragen wie dem Klimawandel öffentlich Position zu beziehen. Für die Online-Zeitung «Infosperber» verfasse ich noch heute Kolumnen über Wissenschaftsthemen.

Und 2020 hast Du mit «Raclette chinoise» einen Wissenschaftspolitkrimi veröffentlicht.
Die Geschichte trug ich lange herum. Der Krimi spielt in Bern, auf der politischen Bühne der Bundesstadt. Die Story dreht sich um eine höchst umstrittene, künstlich intelligente Überwachungstechnologie, die am Zürcher Polytechnikum (sprich: ETH) erforscht und von China bezahlt wird. Das Projekt wirbelt viel politischen Staub auf, vermischt mit Intrigen und Korruptionsvorwürfen. Eine ranghohe Staatsbeamtin wird tot aus der Aare gezogen. War es ein politischer Mord, verknüpft mit der brisanten Kontrolltechnologie? Mehr dazu will ich nicht verraten, empfehle aber die Lektüre.

«Der Krimi spielt in Bern, auf der politischen Bühne der Bundesstadt. Die Story dreht sich um eine höchst umstrittene, künstlich intelligente Überwachungstechnologie, die am Zürcher Polytechnikum (sprich: ETH) erforscht und von China bezahlt wird. Das Projekt wirbelt viel politischen Staub auf, vermischt mit Intrigen und Korruptionsvorwürfen.»

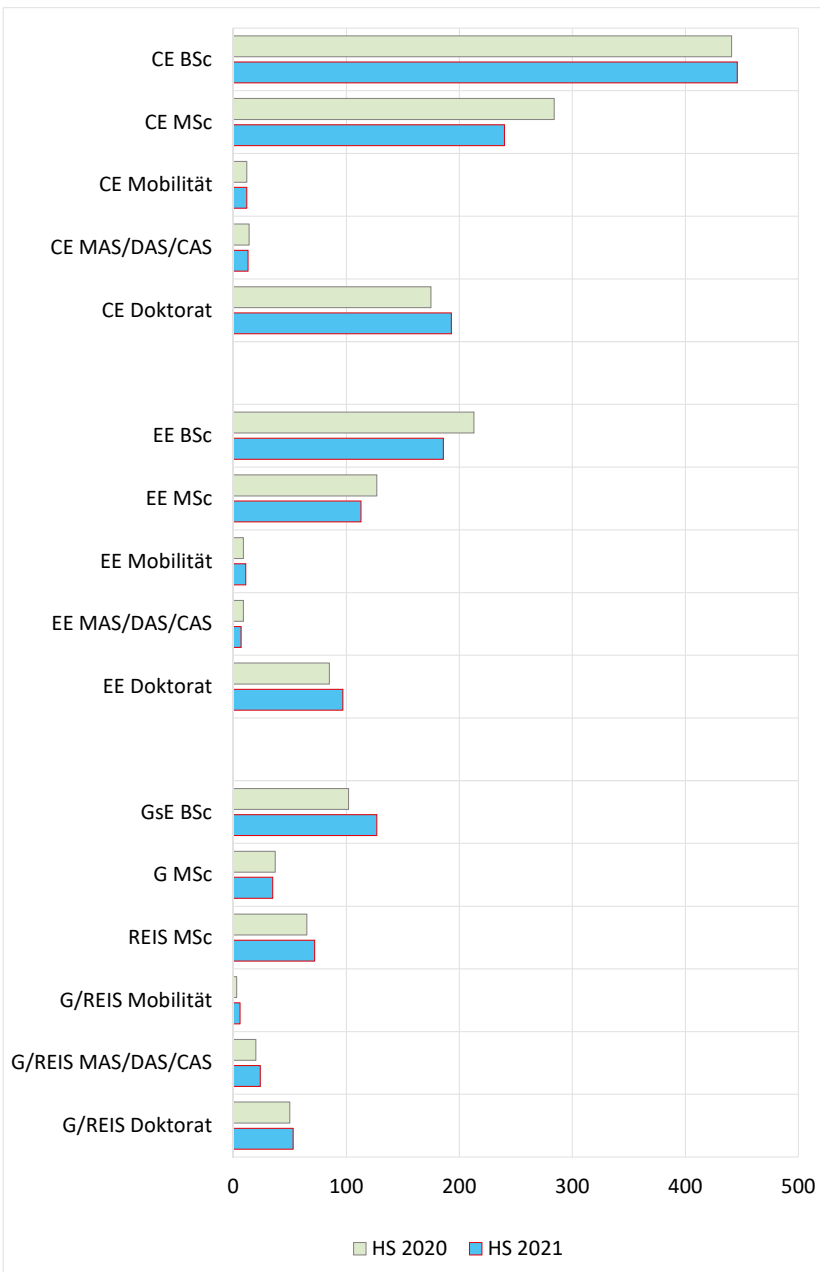
– Beat Gerber

Hast Du einen Tipp für die heutigen Studierenden?
Zurzeit haben es die Studierenden nicht leicht, die Hochschulen sind geschlossen. Es gibt keinen direkten Austausch im Hörsaal, auch Cafeteria und Mensa sind zu. Das Coronavirus hat das Studentenleben hart getroffen. Die jungen Menschen tun mir leid, aber nichtsdestotrotz: Die Pandemie wird einmal enden. Ich beneide die Studierenden um das vielfältige Studium, das die ETH heute bietet. Wenn man effektiv Verantwortung übernehmen will, gibt es auf diesem Planeten für ETH-Studierende sehr viel zu tun, um eine ökologisch und sozial nachhaltige Welt zu planen und auszugestalten. Die ETH bietet dazu solide berufliche Grundlagen, die ein breites Interessenspektrum abdecken. Bitte nutzt diese, um eine postfossile Gesellschaft aufzubauen!

ETH alumnus Beat Gerber
graduated in civil engineering with a specialisation in Water Resources Management. Being interviewed, he talks about his high diverse interests, how he switched to science journalism after many years as an engineer, how he ended up publishing a book in 2020, and that he envies students for the diverse studies that ETH Zurich offers today. "If you want to take on responsibility effectively, there is a lot to do on this planet to design and develop an ecologically and socially sustainable world. ETH Zurich offers solid professional foundations, covering a wide range of interests. Please use them to build a post-fossil society!"

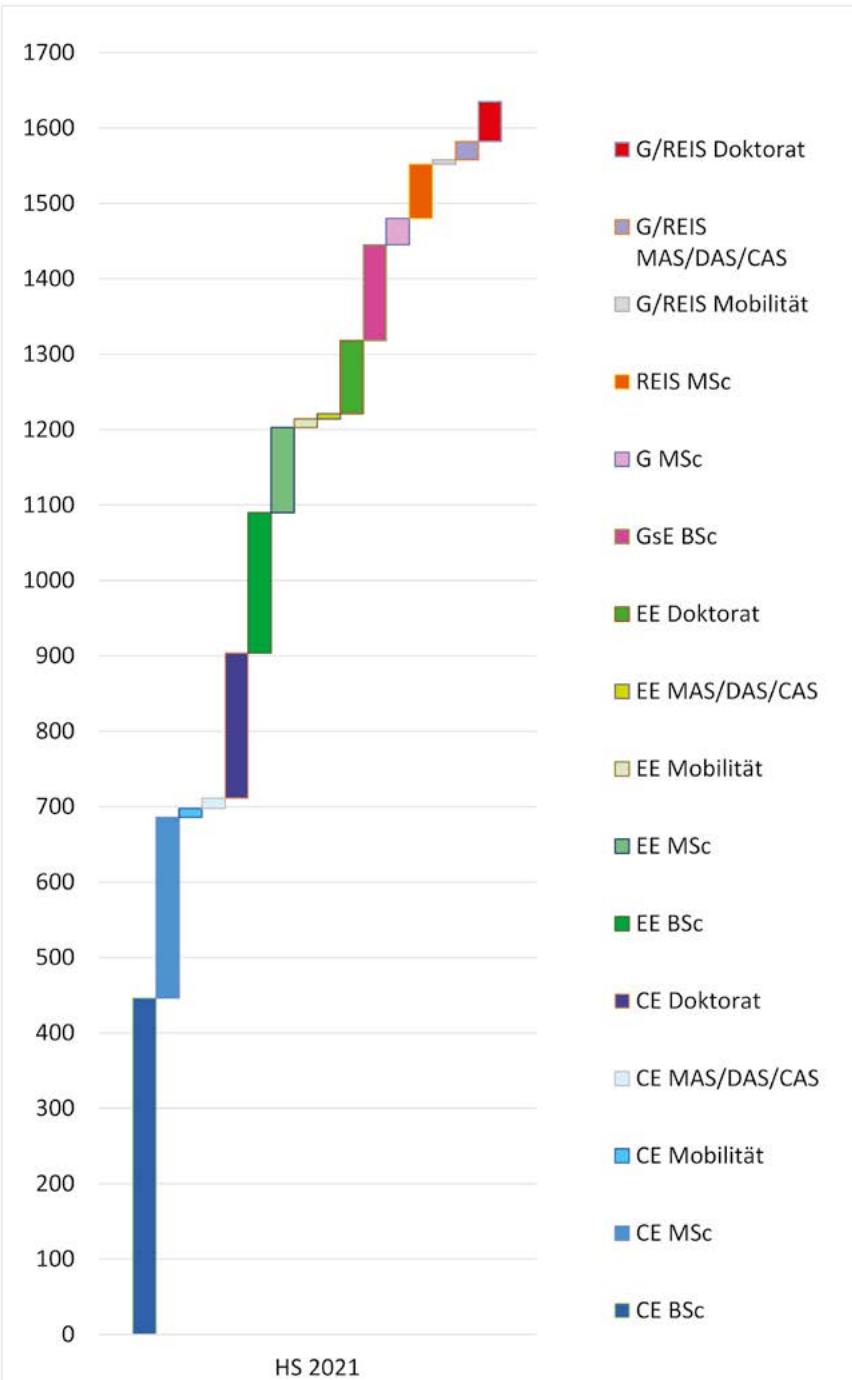
Studierendenzahlen 2021

Studienkategorie und Studienrichtung HS 2020/HS 2021



CE	Bauingenieurwissenschaften (Civil Engineering)
EE	Umweltingenieurwissenschaften (Environmental Engineering)
GsE	Raumbezogene Ingenieurwissenschaften BSc (Geospatial Engineering)
G	Geomatik MSc (Geomatics)
RE&IS	Raumentwicklung und Infrastruktursysteme MSc (Spatial Development & Infrastructure Systems)

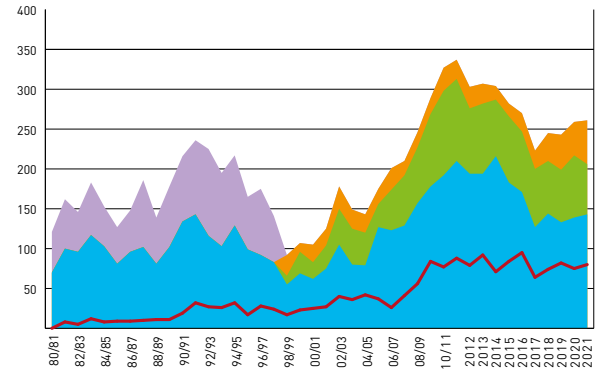
Studienkategorie und Studienrichtung HS 2021



CE	Bauingenieurwissenschaften (Civil Engineering)
EE	Umweltingenieurwissenschaften (Environmental Engineering)
GsE	Raumbezogene Ingenieurwissenschaften BSc (Geospatial Engineering)
G	Geomatik MSc (Geomatics)
RE&IS	Raumentwicklung und Infrastruktursysteme MSc (Spatial Development & Infrastructure Systems)

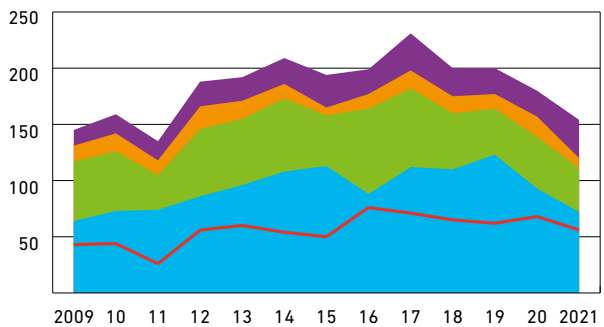
Studierendenzahlen 2021

Neu eintretende Studierende Bachelor



- Kulturtechnik und Vermessung
- GsE
- EE
- CE
- BSc neu eintretende weibliche Studierende

Neu eintretende Studierende Master



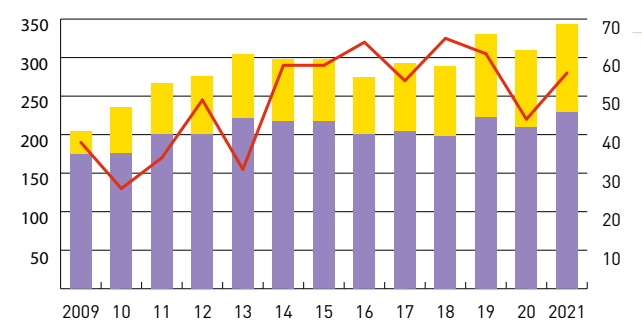
- MSc RE&IS
- MSc G
- MSc EE
- MSc CE
- MSc neu eintretende weibliche Studierende

Studierendenzahlen BSc und Msc Stufe*

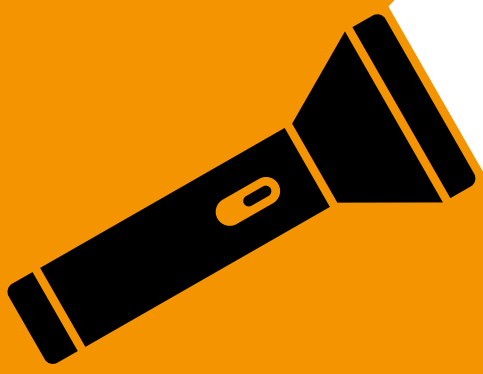
- Masterstudierende
- Bachelorstudierende

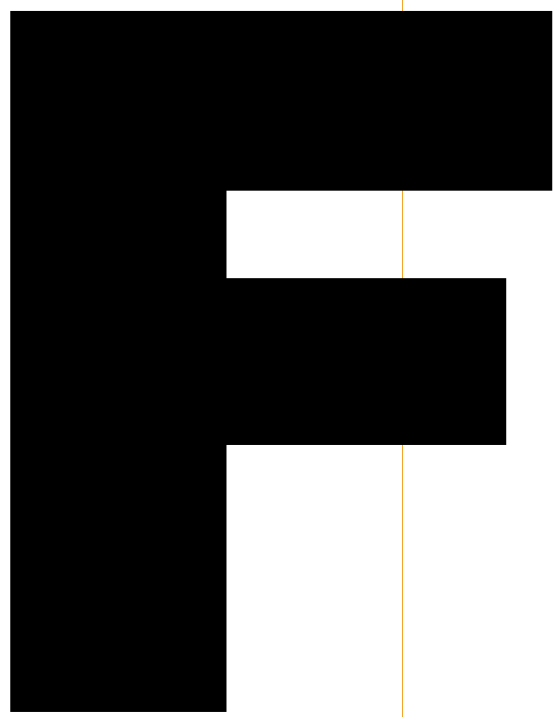
* Zahlen ohne: Gast-/Mobilitätsstudierende, CAS/DAS/MAS Studierende

Doktorierende und Doktorate



- Doktorate
- Doktorierende Frauen
- Doktorierende Männer





FLASHLIGHTS

Flashlights 2021 in research, knowledge and technology transfer

Society is facing major challenges. We want to contribute to their solutions. By training engineers for the sustainable world of tomorrow. And with research results on key issues relating to space, mobility, infrastructure, construction and natural resources.

Our teaching and research focus on opportunities and potential for the sustainable design of living spaces. With our innovative methodical approaches achieving results that have been widely acclaimed, we are among the world's leading teaching and research institutions in the field of structural systems and natural resources.

On the following pages, dear readers, you will find an interesting cross-section of our diverse research activities. The examples are intended to show the very broad range and diversity found in our department. Interdisciplinary, innovative collaborations with other research groups within ETH Zurich and the entire ETH Domain are the great strengths of D-BAUG.

All Flashlights presented on the following pages can also be found on our D-BAUG website under "News".
Responsible for the D-BAUG News section: Iris Mickein, Communication Officer.

Countries benefit when they learn from each other

Roman Stocker, member of the Swiss National Covid-19 Science Task Force, explains why it is so important in this pandemic that experts exchange information across national borders. SARS-CoV-2 has spread around the world. However, the course of the pandemic and how individual countries deal with it differ. In a sense, the pandemic could thus be seen as a huge (and unfortunate) scientific experiment repeated dozens of times, with variations. A wealth of information is inherent in this repetition. Individual countries should take advantage from this by sharing information and learning from each other.

➡Link to the article

Image: Adobe Stock

Masks were used in the early days of the Corona pandemic in many Asian countries, while Western countries only gradually introduced mandatory masks.

Global warming is creating more and more glacial lakes

If these grow uncontrollably and leak, they can quickly become a hazard. Protective projects costing millions are the consequences. But glacier lakes could also have a benefit: as reservoirs for the production of electricity. A TV documentary in German language.

➡Link to the documentary

Images: 3SAT

A new take on an old mystery

Researchers from EPFL and ETH Zürich have conducted an original scientific study that puts forth a plausible explanation for the mysterious 1959 death of nine hikers in the Ural Mountains in the former Soviet Union. In early October 2019, when an unknown caller rang EPFL Professor Johan Gaume's cell phone, he could hardly have imagined that he was about to confront one of the greatest mysteries in Soviet history. At the other end of the line, a journalist from *The New York Times* asked for his expert insight into a tragedy that had occurred 60 years earlier in Russia's northern Ural Mountains – one that has since come to be known as the Dyatlov Pass Incident. On 27 January 1959, a ten-member group consisting mostly of students from the Ural Polytechnic Institute, led by 23-year-old Igor Dyatlov – all seasoned cross-country and downhill skiers – set off on a 14-day expedition to the Gora Otorten mountain, in the northern part of the Soviet Sverdlovsk Oblast. At that time of the year, a route of this kind was classified Category III – the riskiest category – with temperatures falling as low as –30°C. On January 28, one member of the expedition, Yuri Yudin, decided to turn back. He never saw his classmates again. ➡Avalanche research generates wide media coverage.

Image: Dyatlov Memorial Foundation

Dyatlov group preparing the tent for their last night alive

➡Link to the article

Towards more fish-friendly hydropower plants

Illustration: VAW / ETH Zurich

A safe guidance system for fish: a specially designed bar rack effectively guides downward migrating fish past the turbine, only slightly limiting the power plant's operations.

Hydropower plants can have a major environmental impact. They dam up rivers, change aquatic habitats and hinder migrating fish, which can be injured or killed by the turbines, trash racks and flood relief systems. The Swiss Waters Protection Act and the EU Water Framework Directive aim to mitigate these negative effects. However, many older hydropower plants in particular do not meet the new requirements – and have to be retrofitted. For each power plant, cost-effective measures must be individually determined considering its specific case. VAW was involved in the four-year Horizon 2020 "FIThydro" project funded by the European Research Council and contributed several laboratory and field studies, some in collaboration with regional partners.

Over the course of the EU project "FIThydro", research and industry partners studied the ecological impact of hydropower plants. ETH Zurich's Laboratory of Hydraulics, Hydrology and Glaciology (VAW) has developed a protection and guidance system that can help migratory fish to safely bypass hydropower turbines.

➡Link to the article

Building a geospatial legacy at the Swiss Federal Institute of Technology

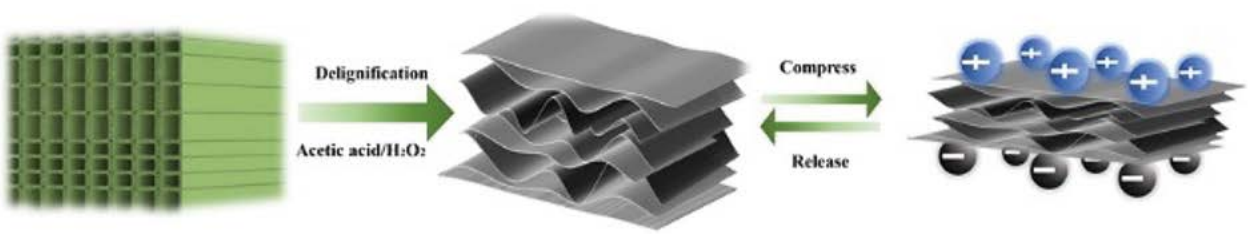
GIS software has been vital for students studying in any of the university's geoinformation-related programmes including geomatic engineering and planning, geospatial engineering, geomatics, and earth or environmental sciences.

Turbulence ahead: A result of a master thesis at ETH Zurich that visualises aviation weather in 3D with the ArcGIS API for JavaScript 4.x for interactive exploration during pre-flight preparations by pilots

Faculty and students at the German-speaking Swiss Federal Institute of Technology – better known as ETH Zurich and a longtime leader in geotechnology education and research – have used Esri technology for more than 20 years. In its work to lead the future of geospatial research, the Institute of Cartography and Geoinformation applies Esri technology for various research projects. Topics include cognitive engineering, mobile GIS, renewable energy, and mobility and sustainability. Among students from ETH are notable winners of Esri's EDC Best Student of the Year prizes; some have gone on to pursue their passion and continue their research as Esri employees.

Link to the article

Voltage from wood



Visualisation: ACS Nano / Empa

When the stabilising lignin is removed from the balsa wood, flexible cellulose layers remain (centre). Compression then creates an electrical voltage.

Researchers around D-BAUG Professor Ingo Burgert have chemically modified wood and made it more compressible, turning it into a mini-generator. When compressed, it generates an electrical voltage. Such wood could serve as a biosensor or as a building material that harvests energy. As Ingo Burgert and his research team "Wood Materials Science" have proven time and again: wood is so much more than just a building material. Now, together with the Empa research group led by Francis Schwarze, the team has used one chemical and one biological process to generate electrical voltage from a type of wood sponge. In doing so, they amplify what is known as the "piezoelectric effect" of wood.

Link to the article

VAW: 90 years of pioneering research

The Laboratory of Hydraulics, Hydrology and Glaciology at D-BAUG houses one of the largest research labs at ETH Zurich. Within an area of 1,500 square metres, experiments and teaching activities have been conducted for over 90 years. By closely linking basic and applied research, the laboratory is at the international forefront in the fields of hydraulic structures, eco-hydraulics, fluvial systems and glaciology. And just very recently, a patent was registered via ETH Transfer. In April 1930, the Laboratory of Hydraulics, Hydrology and Glaciology (VAW) was officially inaugurated in the presence of two federal councillors and other political celebrities. Originally planned as a hydraulic engineering laboratory for demonstration purposes, the VAW has steadily developed its research and teaching activities over time.

90 years of research and teaching at VAW – a brief ➡video portrait

➡Link to the article

AI provides debris flow warnings

Together with his team, D-BAUG Professor Fabian Walter has developed an innovative alarm system that can provide early warning of debris flows at Illgraben in Valais. For this, the scientists used seismic sensors and machine learning. The new AI detector increases the warning time by at least 20 minutes compared with existing systems. The study is the first milestone in a research collaboration conducted by WSL and Swisscom Broadcast in the early detection of natural hazards in Alpine regions.

Workshop discussion with Fabian Walter, Professor of Glacier Seismology at ETH Zurich, and Klaus Pilz, Business Development Manager Swisscom Broadcast AG, about a new IT solution for faster warning of natural hazards

➡Link to the article

D-BAUG experts featured in *Globe* magazine

The new issue of ETH *Globe* magazine focuses on the topic of "disruptions", including those affecting infrastructure systems. In this context, the research contributions of D-BAUG professors Božidar Stojadinović and Olga Fink are highlighted.

Image: Colourbox

Planning decisions have a long-term impact on the resilience of urban systems – and not just in Singapore.

Professor Božidar Stojadinović specialises in urban systems and how to make them more resilient. To this end, he is developing a comprehensive computer model of the city of Singapore that can be used to simulate urban systems as well as any challenges and their effects. Professor Olga Fink conducts research on faults in complex systems – from aircraft and gas turbines to infrastructure systems such as railroads. She focuses on the development of learning algorithms, for example, to predict the remaining life of aircraft engines.

Keeping an eye on systems

Even minor disruptions in infrastructure systems can have fatal consequences. Researchers and practitioners counter that risk by taking action on multiple levels. Four examples.

➡Link to the article

In the workshop of the giants

In D-BAUG's laboratory for experimental research, large-scale tests are carried out – usually until something is destroyed. These tests help scientists to analyse and design materials that may be subject to extreme conditions such as an earthquake. For the large-scale structural tests, special facilities such as LUSET and MAST have been designed at D-BAUG. The tests and experiments are frequently carried out on behalf of federal authorities and companies. Among the pioneering projects is also an 80-metre-tall timber high-rise that soon will be build in Zug.

Image: Daniel Winkler

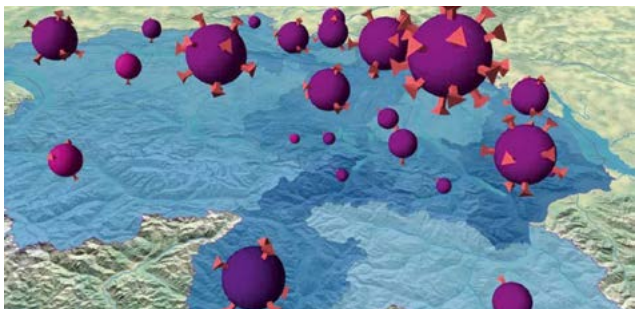
A view of the laboratory reveals the impressive scale of the research facilities.

Image: Daniel Winkler

Andrea Frangi, Professor of Timber Structures, is a scientific adviser on the timber high-rise project.

➡Link to the article

Atlas offers new perspective on Covid-19



How did the coronavirus spread in Switzerland? How did it spread worldwide? And how does that relate to the number of hospitals and inhabitants? The *Atlas of Switzerland –x online* has published two new 3D maps that offer readers a spatial view on the spread of the Covid-19 pandemic and also allow for comparisons with other maps. Since the *Atlas of Switzerland* went online in 2016, the multi-award-winning collection has grown steadily. Around 300 map topics have been added in the past five years. Among the most recent examples are also two visualisations related to the Covid-19 pandemic. For this purpose, the atlas research team used data on the epidemiological situation in Switzerland and worldwide. The developed 3D maps use an abstracted model of the virus, offering an entirely new perspective on the spatial distribution of the pandemic since its beginnings. The ➡*Atlas of Switzerland – online* is available in four languages and can be used free of charge. The comprehensive collection currently offers more than 350 specialised maps in categories such as "nature","society", "economy" or "energy" and is constantly being expanded. Besides the Covid-19 visualisations, there are also easy-to-access topics among the most recent additions, such as maps on the "number of registered dogs" or the "infrastructure of campsites". The online atlas ➡can be downloaded free of charge.

➡Link to the article

Global glacier retreat accelerated

Image: P. Rüegg / ETH Zurich

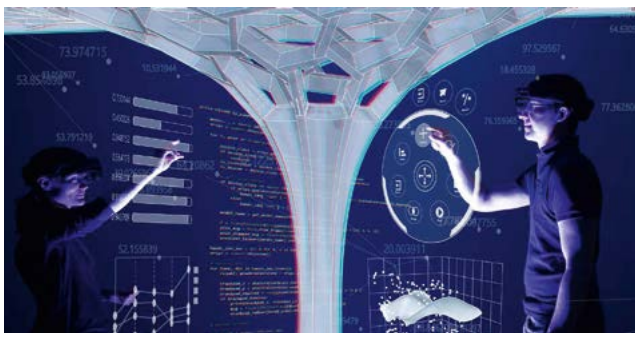
Rapid glacier melt: A roaring meltwater stream connects the Morteratsch and Pers Glaciers (r.), Engadine, Switzerland. A few years ago, the glaciers were connected by ice.

An international research team including D-BAUG scientists Professor Daniel Farinotti and Romain Hugonnet has shown that almost all of the world's glaciers are becoming thinner and are losing mass at an accelerated pace. Glaciers are a sensitive indicator of climate change – and one that can be easily observed. Regardless of altitude or latitude, glaciers have been melting at a high rate since the mid-20th century. Until now, however, the full extent of ice loss has only been partially measured and understood. Now an international research team led by ETH Zurich and the University of Toulouse has authored a comprehensive study on global glacier retreat, which was published online in *Nature* on 28 April 2021. This is the first study to include all the world's glaciers – around 220,000 in total – excluding the Greenland and Antarctic ice sheets. The study's spatial and temporal resolution is unprecedented – and shows how rapidly glaciers have lost thickness and mass over the past two decades.

➡Link to the article

Design++: New Center for Augmented Computational Design

Image: ETH Zurich



A great deal more information is available that can be visualised in real time during the design process.

On 27 May 2021, the new Center for Augmented Computational Design in Architecture, Engineering and Construction opened on Hönggerberg campus. Commonly referred to as Design++, the centre aims to make construction more sustainable and efficient using digital design tools and processes. Scientists from D-BAUG played a leading role in the co-development of Design++.The centre leverages the expertise of 22 professorships from the Departments of Architecture, Civil, Environmental and Geomatic Engineering, Computer Science, Materials, and Mechanical and Process Engineering and from the National Centre of Competence in Research Digital Fabrication (NCCR DFAB).

Center for
Augmented Computational
Design in Architecture,
Engineering and Construction

➡ Link to the article

Bright prospects for wind energy

The WINDMIL team: Charilaos Mylonas, Konstantinos Tatsis and Eleni Chatzi. Not in the picture: Imad Abdallah.

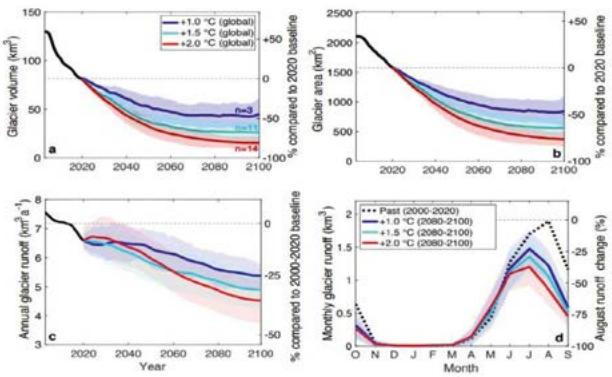
Wind turbines provide more than one third of renewable energy throughout Europe. However, so far, their maintenance has been expensive and their lifespan rather short. Eleni Chatzi, Professor of Structural Mechanics and Monitoring at ETH Zurich, developed a series of methodologies in a research project funded by the ERC, allowing for intelligent,

low-priced wind turbine monitoring during operation. The project is located at the interface of various disciplines: the structural analysis requires the knowledge of constructional engineering; motion recording demands mechanical engineering expertise and electrical engineering is needed for signal processing.

➡ Link to the article

0.5 degrees Celsius: Small difference, large effect

Figure: Glaciology, D-BAUG/ETH Zurich



Modelled evolution of (a) total glacier volume, (b) total glacier area, (c) annual glacier runoff, and (d) monthly glacier runoff of the European Alps, assuming 1.0, 1.5 or 2.0°C global warming by 2100.

For glaciers in the European Alps, it makes a large difference whether the earth's atmosphere will warm by one, one and a half or two degrees Celsius by the end of the century. This is the finding of a new study from the Professorship of Glaciology at D-BAUG, which simulated the effects of the three climate scenarios on the nearly 4,000 glaciers in the European Alps. Half a degree may not sound like much. But as glaciologists from D-BAUG demonstrate, every half-degree counts when it comes to global climate. For their study, the scientists combined different simulation models to calculate how the mass of Alpine glaciers would change over time – assuming one, one and a half, and two degrees global warming. According to their projections, today's ice volume would decrease by 44% (+1.0°C), 68% (+1.5°C) and 81% (+ 2.0°C) until the year 2100. Furthermore, the study shows that these developments would also have a strong impact on the hydrological conditions in the Alps. In summer, glacier runoff could even decrease by up to 55% – with important implications for downstream water resources.

➡Link to the article

Worrying insights into the chemicals in plastics

Image: shaunl/iStock

More potentially hazardous chemicals are lurking in plastics than has been assumed. This also affects recycling processes and materials.

A team of researchers led by Stefanie Hellweg, Professor of Ecological Systems Design, has for a first time compiled a comprehensive database of plastic monomers, additives and processing aids for use in the production of plastics on the world market, and systematically categorised them on the basis of usage patterns and hazard potential. The researchers found an unexpectedly high number of substances of potential concern, as they now report in the journal *Environmental Science & Technology*. Until now, research, industry and regulators have mainly concentrated on a limited number of dangerous chemicals known to be present in plastics. Today, plastic packaging is seen as a main source of organic contamination in food, while phthalate plasticisers and brominated flame retardants are detectable in house dust and indoor air. Earlier studies have already indicated that significantly more plastic chemicals used worldwide are potentially hazardous. The researchers are pursuing the goal of a sustainable circular plastic economy. They see an acute need for effective global chemicals management; such a system would have to be transparent and independent, and oversee all hazardous substances in full. The researchers say that open and easy access to reliable information is crucial.

➡Link to the article

Cultural site from a 3D printer

ETH engineers and architects are planning a 23-metre-high tower made of 3D-printed columns for the village of Mulegns on the Julier Pass. Construction is scheduled to begin in spring 2022. Three professors from D-BAUG are involved: Robert Flatt is working on the concrete mix, the "ink" for the 3D printer, so to speak, Walter Kaufmann on the supporting structure and the connections of the printed concrete elements, and Andreas Wieser on the measurement and shape control.

Image: Hansmeyer/Dillenburger

Exterior view of the White Tower Mulegns

The White Tower, 23 metres in height, will consist mainly of organically shaped, 3D-printed white concrete columns. They support four floors that are each between four and eight metres high. Right at the top, they form a dome and surround a stage. The project is a fascinating blend of culture and science. ETH Zurich aims to use this collaboration to strengthen the association between culture, research and technology development.

Image: Hansmeyer/Dillenburger

Interior view: foyer of the White Tower Mulegns

Watching the robot at work

A public construction site will be set up in April 2022, and everyone will be able to watch as a robot applies the white concrete layer by layer. This robot will need just two hours for a three-metre-high column. And the process of dismantling has also already been planned: the concrete elements can all be taken apart, and the tower can theoretically be rebuilt at another location. The 3D printing approach to construction allows complex geometries to be produced, and for the concrete to be used exactly where it is needed for the load-bearing structure. The structure will also need less raw materials overall, as no formwork is needed.

➡ Clip *Concrete Choreography*

➡ Link to the article

Fostering place-making through emotions

Image: Ralph Sonderegger, PLUS, ETH Zurich, 2018

Virtual reality is used to study how people perceive changes in the landscape.

An issue of ETH's *Globe* magazine discusses two research projects of Adrienne Grêt-Regamey, Chair of Planning Landscape and Urban Systems. She aims at advancing knowledge on how the interactions of humans with their environments shape landscapes and vice versa. Commercial interests often dictate landscape development. This often results in uniform, international landscapes. The research of Professor Grêt-Regamey shows how people perceive changes in the landscape and react emotionally to them. She uses these insights to develop new instruments for sustainable landscape development. The goal is to promote resilient landscapes under growing globalisation – these are landscapes that also appeal to the senses, not just the mind.

➡ Link to the article

Big data improves transport systems

Kay W. Axhausen, Professor of Transport Planning, is featured in an interview series on "Big Data" produced by the Swiss National Science Foundation. His research project "Using data traces to improve transport systems" examined the impact of the coronavirus pandemic on mobility behaviour. For this, the research team collected GPS data from 1,600 smartphones and evaluated more than one million person-trips. In the video, Axhausen talks about the results of the study and new methods for traffic planning.

➡ Video about NFP 75 (Big Data – National Research Programme) with Kay W. Axhausen

➡ Link to the article

➡ Link to NFP 75

Bridge design: Then and now

For more than 150 years, ETH engineers have been shaping modern bridge design in Switzerland as well as abroad. Explora spoke with D-BAUG experts Walter Kaufmann and Eleni Chatzi about the development of the discipline. Learn more about the history of bridge design and how it has been shaped by technology, engineering, innovation and aesthetics. Professor Kaufmann and Professor Chazi also address the question of bridge maintenance and monitoring, for which they use modern methods.

Image: ETH Library Zurich

Part of the Simplon motorway, the Ganter Bridge in the canton of Valais, which opened in 1980, was designed by multiple award-winning ETH Professor Christian Menn (1927–2018). The roadway is held by cable stays, which are not visible because they are encased in concrete.

Image: ETH Library Zurich

The Verrazzano-Narrows Bridge during construction in 1964: more than 12,000 workers used a total of 200,000 kilometres of steel wire to make the bearing cables.

Image: ETH Library Zurich

Filigree shape made of reinforced concrete: the Salginatobel Bridge is the most well-known work of Robert Maillart (1872–1940). The roadway bridge near Schiers in the canton of Graubünden was built in 1930 in line with the static principle of the three-hinged hollow box arch, which Maillart had developed.

Image: ETH Library Zurich

Lucerne's landmark Chapel Bridge is Europe's oldest covered wooden bridge. It was built in the early 14th century.

➡ Read the full story on Explora

The highest timber building in Switzerland

The TV science show Nano visited the construction hall and interviewed Professor Andrea Frangi about "Project Pi" – one of the world's higest timber buildings whose construction is due to start in Zug in 2022. A fascinating report about sustainable and climate-friendly building and much more!

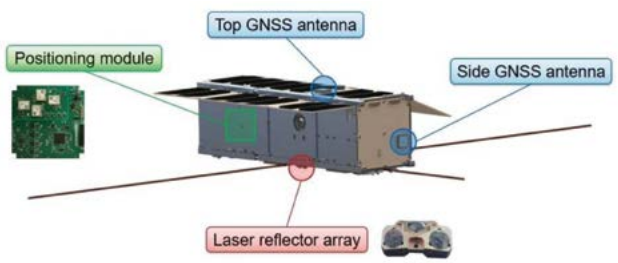
Watch the TV report on ➡3SAT, Nano from June 30, 2021 (in German).

➡Learn more about the Chair of Structural Engineering – Timber Structures led by Andrea Frangi.

High-precision measurements from space

At the end of June, another fleet of miniature satellites traveled into space with a positioning module developed by Professor Markus Rothacher. The speciality of the technology is that it weighs only 100 grams and consumes one-twentieth of the power of a conventional positioning module. The ultimate aim is to enable a more precise monitoring of the Earth system – from a distance of around 500 to 600 kilometres. In an interview, Professor Rothacher offers insights into his team's latest space mission.

On June 30, a SpaceX rocket travelled to space carrying five more nanosatellites with the new technology. Over the next 3 years, a constellation of approx. 80 satellites will be set up in space.



Navigation system with positioning module and antennas

➡Read the interview by ETH Industry Relations.

Gas-liquid flows faster than expected

Previous measurements have systematically underestimated the velocity of turbulent gas-liquid flows. The observed deviations may have far-reaching implications for engineering applications as well as for the understanding of coastal and riverine environments. This reports a recent D-BAUG study in the journal *Nature Communications*. In collaboration with international partners researchers have now developed a correction scheme for such measurements.

Image: VAW, D-BAUG / ETH Zurich

Side view (flow from right to left) of an intrusive probe inside the high-velocity air-water flow tunnel

Image: VAW, D-BAUG / ETH Zurich

Top view of the same probe (flow from bottom to top) at the Laboratory of Hydraulics, Hydrology and Glaciology

➡Link to the article

Water resources: defusing conflict, promoting cooperation

Led by Professor Paolo Burlando, the EU-funded project DAFNE has developed a methodology for avoiding conflicts of use in transboundary rivers. The model-based procedure allows for participatory planning and cooperative management of water resources. The aim is now for the DAFNE methodology to be implemented in other regions of the world.

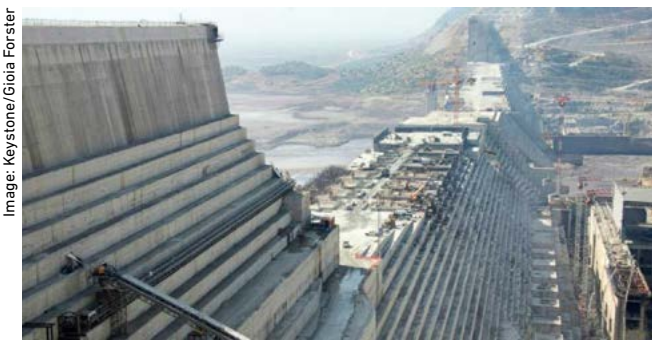


Image: Keystone/Gioia Forster

The construction of the Grand Ethiopian Renaissance Dam on the Blue Nile River at the end of 2017. The dam provoked tensions between Ethiopia and its neighbours – echoing the situation following construction of Gibe III mega-dam on the Omo River.

Video: DAFNE project consortium

Project partners and stakeholders report on their experiences with the DAFNE methodology from two case studies conducted on the Omo and Zambezi rivers under real-life conditions (➡Video).

➡Link to the article

Partnership for the preservation of Swiss glaciers

On his recent excursion to the Jungfraujoch, Professor Daniel Farinotti conducted an interview with La Prairie. The Swiss skincare brand has been supporting the D-BAUG Professor of Glaciology since 2019. "For glaciologists, it is a unique time to create more awareness, and to inform the public about both the effects of climate change and the actions that can be taken against it", states Farinotti in the interview. A conversation about research, innovation, and a special partnership.

Image: Courtesy of La Prairie

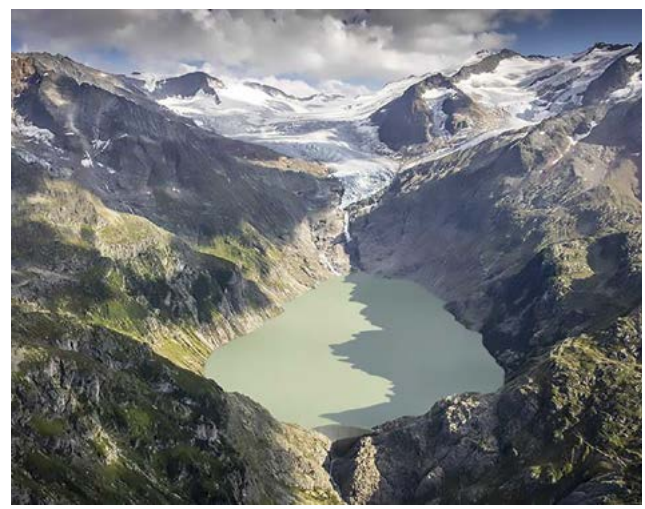
Film still from the video interview with Daniel Farinotti

➡ Read the interview and watch the video.

➡ Learn more about the Glaciology group led by Professor Daniel Farinotti.

Hydropower plays major role in Swiss energy supply 2050

No energy transition without hydropower: This is demonstrated by the recently published final report of the Swiss Competence Center for Energy Research – Supply of Electricity. D-BAUG Professor Robert Boes led the research group on the hydropower sector. The *Hydropower Synthesis Report* aims at taking a holistic look at the future and models a range of scenarios and assumptions. Hydropower is currently the most important domestic energy source in Switzerland and accounts for almost 60 percent of its electricity generation. In addition, hydropower plays a key role as an energy storage system. The following D-BAUG experts contributed to the report: Professor Robert Boes (lead), Professor Paolo Burlando, Dr Frederic Evers, Dr David Felix and Dr Benjamin Hohermuth. Since 2021, research and innovations that contribute significantly to the successful implementation of the Energy Strategy 2050 and the achievement of the Swiss climate goals are funded by ➡ SWEET – Swiss Energy research for the Energy Transition, a programme of the Swiss Federal Office of Energy.



➡ Link to the article

➡ SWEET – Swiss Energy research for the Energy Transition

Fibres make chaotic turbulence more predictable

The chaotic behaviour of vortices is one of the things that makes weather forecasting so difficult. Researchers at ETH Zurich have now developed a novel experimental method that enables more accurate analyses of the movement of turbulence in fluids. Markus Holzner and Stefano Brizzolara of the Environmental Fluid Mechanics group – a joint interdisciplinary research unit of WSL, Eawag and D-BAUG – have tackled the problem of turbulence measurement with a completely new approach. A major advantage of the fibre measurement method is its extraordinary transferability to all size ratios relevant to vortex phenomena, from a few millimetres to several hundred metres.

➡Link to the article

Image: Adobe Stock

Turbulence on the open sea: A new method developed by ETH researchers makes it easier to predict and analyse eddies in the ocean.

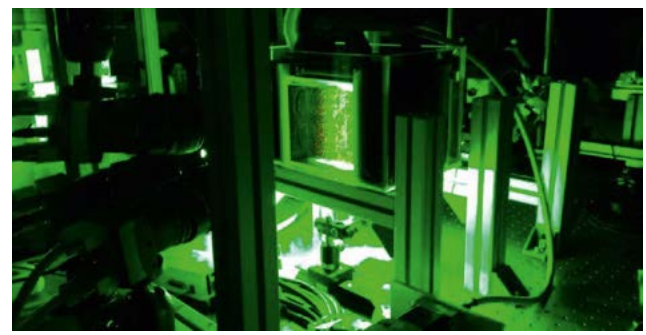


Image: Holzner Lab / Environmental Fluid Mechanics (EFM)

With the new method, tracking the movements of a few rigid fibres is enough to capture the dynamics of vortices in full.

A glimpse into the ocean's biological carbon pump

Oceans absorb carbon dioxide from the atmosphere through microscopic algae that carry out photosynthesis and then sink to the deep sea when they die. This sinking enhances the degradation processes, as ETH researchers have now discovered.

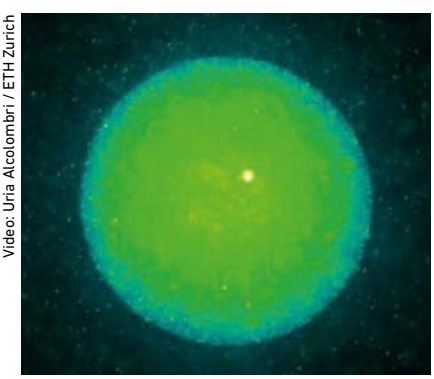
Oceans play a key role in the global carbon dioxide balance. This is because billions of tiny algae live there, absorbing carbon dioxide through photosynthesis and incorporating it into their biomass. When these algae die, they trickle down as "marine snow" into deeper zones. It turned out that the degradation rate of marine snow – and indirectly, the global carbon dioxide content in the atmosphere – is determined by microscopic transport dynamics.

➡Link to the article

Image: NOAA Office of Ocean Exploration and Research

Marine snow is a shower of organic material that sinks into the deep sea from the upper layers of water. Seabed in the Gulf of Mexico, 2017.

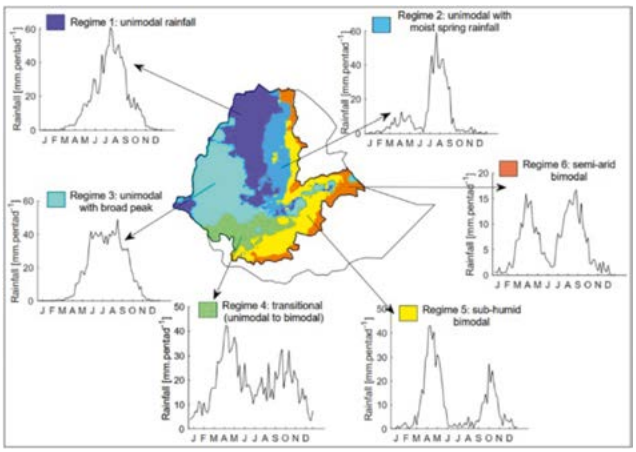
Video: Uria Alcolombri / ETH Zurich



➡Video microscopy of an alginate particle (large light green circle) in a flow of artificial seawater. The water carries marine bacteria (tiny dark green dots), which occasionally land and colonise the particle.

Rainy season shifts affect crop yields

Illustration: IfU, ETH Zurich



Rainfall patterns in the rainfed farming areas of Ethiopia.

As part of the Engineering for Development (E4D) programme, researchers led by Professor Peter Molnar investigate how climate change affects rainfed farming and food security in Ethiopia. In an initial study, first author Mosisa Wakjira correlated rainfall properties derived from global rainfall data and cereal yield data over the period from 1995 to 2010, demonstrating that there were losses in grain production of up to half a million tons due to a 5-day delay in rainfall possible.

➡Link to the article

➡Learn more about the E4D Research project "The Future of Rainfed Agriculture and Sustainable Food Production in Ethiopia".

Transport pricing in practice

Image: Keystone / Gaetan Bally

Traffic jam in front of the motorway exit in Bern. Transport pricing can reduce the external costs of traffic on health, climate and congestion.

In the largest worldwide pricing experiment to date, researchers have demonstrated that road users change their behaviour when they must pay for the social and environmental effects of their transportation. The study was led by researchers from the University of Basel, ETH Zurich and ZHAW. For the study authors, these results show that transport pricing is technologically feasible and has the desired effect, namely to reduce the external costs of transport in respect to health, climate and congestion. "There are also a number of arguments suggesting that effects would be greater in the long term than in this eight-week experiment," says Beat Hintermann, an economist at the University of Basel, who co-led the study with Kay W. Axhausen, a transport scientist at D-BAUG. "These results also open up new avenues for transport policy in Switzerland," adds Kay W. Axhausen. Fairly implemented, price incentives in transport could be an effective instrument in reducing traffic at peak hours and an important pillar of a sustainable transport policy.

➡Link to the article

Algorithms as decision support in tunnelling

Image: Herrenknecht AG

Two men operating a tunnel boring machine

Operators of tunnel boring machines (TBMs) must continuously make complex decisions under great uncertainty. AI algorithms can help with decision making and also guide novice operators. This shows a recent study from the D-BAUG Chair of Intelligent Maintenance Systems led by Olga Fink. For efficient and safe control under constantly changing conditions, operators of TBMs require extensive operating experience that is difficult to formalise and consequently to transfer to novices. However, AI algorithms can support this experience transfer, as Professor Fink's research group demonstrated in a recently published paper. Her team has developed an intelligent decision support system that can assist less experienced operators. The proposed framework for such a human-algorithm collaboration was developed using a real microtunnel project. Herrenknecht AG provided the data for the project. Furthermore, the D-BAUG team collaborated with the ➡Herbert Einstein Research Group at the Massachusetts Institute of Technology.

➡Link to the article

A small house raises big questions

Researchers at D-BAUG have created the world's first self-owned house managed by blockchain. The result is a meditation cabin that shakes up the usual economic and social expectations. The project was developed in the research group of Daniel Hall, Chair of Innovative and Industrial Construction, with the support of project partners Digitec, Dezentrum and Ernst & Young. The prototype with the name no1s1 can now be tested at ETH Student Project House. The authors of the research paper openly question whether self-governing houses would actually lead to lower rental costs, and whether smart contracts and artificial intelligence would act in the long-term interests of society. As the project continues, Wang and Hall are now focusing on the use of the property and the rules of a decentralised organisation of this kind. For that reason, it is ideal that the hut is in the new Student Project House and is widely accessible.

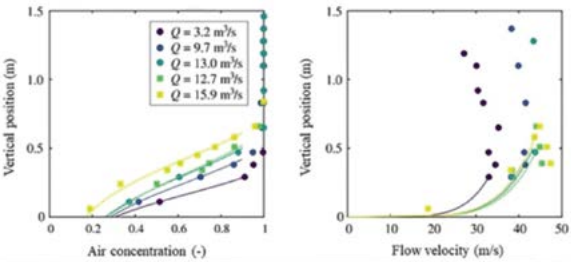
Image: ETH Zurich

PhD candidate Hongyang Wang with the prototype no1s1 in the Student Project House on the ETH Zentrum campus.

➡Link to the article

Speed record for measurements of water-air flows

For the first time, researchers at D-BAUG have measured air-water flows with velocities exceeding 40 m/s. To this end, two challenging measurement campaigns were carried out in the tunnel spillway of a 225-metre-high dam, for which special probes first had to be developed. With the new data, existing design guidelines can be validated, and so-called scale effects can be assessed more accurately. This is relevant for the safe operation of hydraulic structures. The study is an important step toward a better understanding of scale effects for air-water flows. It confirms a good agreement with existing empirical design equations for some bulk air-water flow properties such as mean air concentration, while more detailed properties such as droplet size are significantly influenced by scale effects. Thereby, the study helps to improve design recommendations of safety-relevant hydraulic structures such as spillways and low-level outlets at dams.



Results published in: Hohermuth B., Boes R.M., Felder S., (2021). High-Velocity Air-Water Flow Measurements in a Prototype Tunnel Chute: Scaling of Void Fraction and Interfacial Velocity, *Journal of Hydraulic Engineering* 147(11): 04021044

Image: VAW, D-BAUG / ETH Zurich

For the measurement campaigns, the research team first installed 16 custom-made probes in the tunnel spillway of the 225-metre-high Luzzone Dam.

➡ Link to the article

Swiss glaciers continue to retreat

Despite comparatively favourable weather conditions in 2021, Swiss glaciers have lost about 400 million tons of ice during the past 12 months – almost 1% of the remaining glacier volume. This was recently reported by the Swiss Glacier Monitoring network GLAMOS. "There was considerable precipitation in summer, but hardly any fresh snow in the Alps. All this shows the impact of climate change," states D-BAUG glaciologist Matthias Huss, who heads GLAMOS.

➡ Link to the article

Image: M. Huss

Konkordiaplatz on the Great Aletsch Glacier (VS) is impressive. An ice layer of 2-3 metres melted here in the summer of 2021.

Image: M. Huss

In September 2021, the Glacier de la Plaine Morte (BE) was again completely free of snow, thus its chances of survival are bleak.

Flood protection for aquatic organisms: Bedload plays an important role

A flood causes stress for organisms living in a watercourse. Their survival depends on factors such as whether there are refuge habitats to which they can retreat. Researchers from the Laboratory of Hydraulics, Hydrology and Glaciology (VAW) and Eawag studied how river widening as part of restoration measures improves potential refugia availability. They showed that refugia provision and thereby the protection of biodiversity depends crucially on the supply of bedload. The results show that in case of bedload equilibrium, the main channel widens, partially separates into multiple channels, and increases floodplain connectivity by elevating the riverbed. Erosion and deposition create a mosaic of diverse habitats and thereby also many areas where aquatic organisms can seek refuge during floods. Furthermore, the floodplain is inundated and thus accessible to aquatic organisms at relatively low discharges, such as those with an average return period of 1 to 2 years.

Image: VAW, D-BAUG / ETH Zurich

Dynamic river widenings, which provide more refugia for aquatic organisms during floods, strongly depend on the so-called bedload balance.

➡ Link to the article

Growing carbon footprint of plastics

Plastic not only causes problems in form of waste – greenhouse gases and air pollutants also occur during production.

After analysing the global plastics value chain, an interdisciplinary research team including scientists from the Institute of Environmental Engineering (IfU) have revealed that the impact of plastics on climate and health is bigger than originally thought due to the increased use of coal for process heat, electricity and as a raw material in production.

For their study, the team determined the greenhouse gas emissions generated across the life cycle of plastics – from fossil resource extraction, to processing into product classes and use, through to end of life, including recycling, incineration and landfill. The ETH researchers could proof that twice as much fossil energy is burned for plastics production as is contained as a raw material in plastics. Even in a worst-case scenario in which all plastics are incinerated, their production accounts for the lion's share of total greenhouse gas and particulate matter emissions. The overall production phase of plastics is responsible for the vast majority (96 percent) of the carbon footprint of plastics. The new method used for the study involves a multi-regional, input-output analysis that accurately maps global value chains from production to consumption across industries, countries and regions.

➡ Link to the article

F

FACTS & FIGURES

31 December 2021

Institutes and professors

IBI	Institute of Construction and Infrastructure Management	➔ibi.ethz.ch
Prof. Bryan T. Adey	Infrastructure Management	
Prof. Guillaume Habert	Sustainable Construction	
Prof. Catherine De Wolf (AP TT)	Circular Engineering for Architecture	
Prof. Olga Fink (SNSF AP)	Intelligent Maintenance Systems (until 28-Feb-2022)	
Prof. Daniel M. Hall (AP)	Innovative and Industrial Construction	

IBK	Institute of Structural Engineering	➔ibk.ethz.ch
Prof. Eleni Chatzi	Structural Mechanics and Monitoring	
Prof. Walter Kaufmann	Concrete Structures and Bridge Design	
Prof. Bozidar Stojadinovic	Structural Dynamics and Earthquake Engineering	
Prof. Bruno Sudret	Risk, Safety and Uncertainty Quantification	
Prof. Andreas Taras	Steel and Composite Structures	
Prof. Michalis Vassiliou (ERC AP)	Seismic Design and Analysis	
Prof. Andrea Frangi (TP)	Timber Structures	

IfB	Institute for Building Materials	➔ifb.ethz.ch
Prof. Ingo Burgert (with Empa)	Wood Materials Science	
Prof. Robert J. Flatt	Physical Chemistry of Building Materials	
Prof. Ueli Angst (SNSF AP)	Durability of Engineering Materials	
Prof. David Kammer (AP TT)	Computational Mechanics of Building Materials	
Prof. Pietro Lura (TP; only Empa)	Concrete Technology	

IfU	Institute of Environmental Engineering	➔ifu.ethz.ch
Prof. Paolo Burlando	Hydrology and Water Resources Management	
Prof. Irena Hajnsek	Earth Observation and Remote Sensing	
Prof. Stefanie Hellweg	Ecological Systems Design	
Prof. Max Maurer (with Eawag)	Urban Water Systems	
Prof. Eberhard Morgenroth (with Eawag)	Process Engineering in Urban Water Management	
Prof. Roman Stocker	Groundwater and Hydromechanics	
Prof. Jing Wang (with Empa)	Air Quality and Particle Technology	
Prof. Peter Molnar (TP)	Hydrology and Fluvial Systems	
Prof. Kai Udert (TP; only Eawag)	Resource Recovery from Wastewater	

IGP	Institute of Geodesy and Photogrammetry	➔igp.ethz.ch
Prof. Markus Rothacher	Mathematical and Physical Geodesy	
Prof. Konrad Schindler	Photogrammetry and Remote Sensing	
Prof. Andreas Wieser	Geosensors and Engineering Geodesy	
Prof. Benedikt Soja (AP TT)	Space Geodesy	

IGT	Institute for Geotechnical Engineering	➔igt.ethz.ch
Prof. Georgios Anagnostou	Underground Construction	
Prof. Ioannis Anastasopoulos	Geotechnical Engineering	
Prof. Alexander Puzrin	Geotechnical Engineering	
Prof. Sarah M. Springman	Geotechnical Engineering (ETH rector, until 31-Jan-2022)	

IKG	Institute of Cartography and Geoinformation	➔ikg.ethz.ch
Prof. Lorenz Hurni	Cartography	
Prof. Martin Raubal	Geoinformation-Engineering	

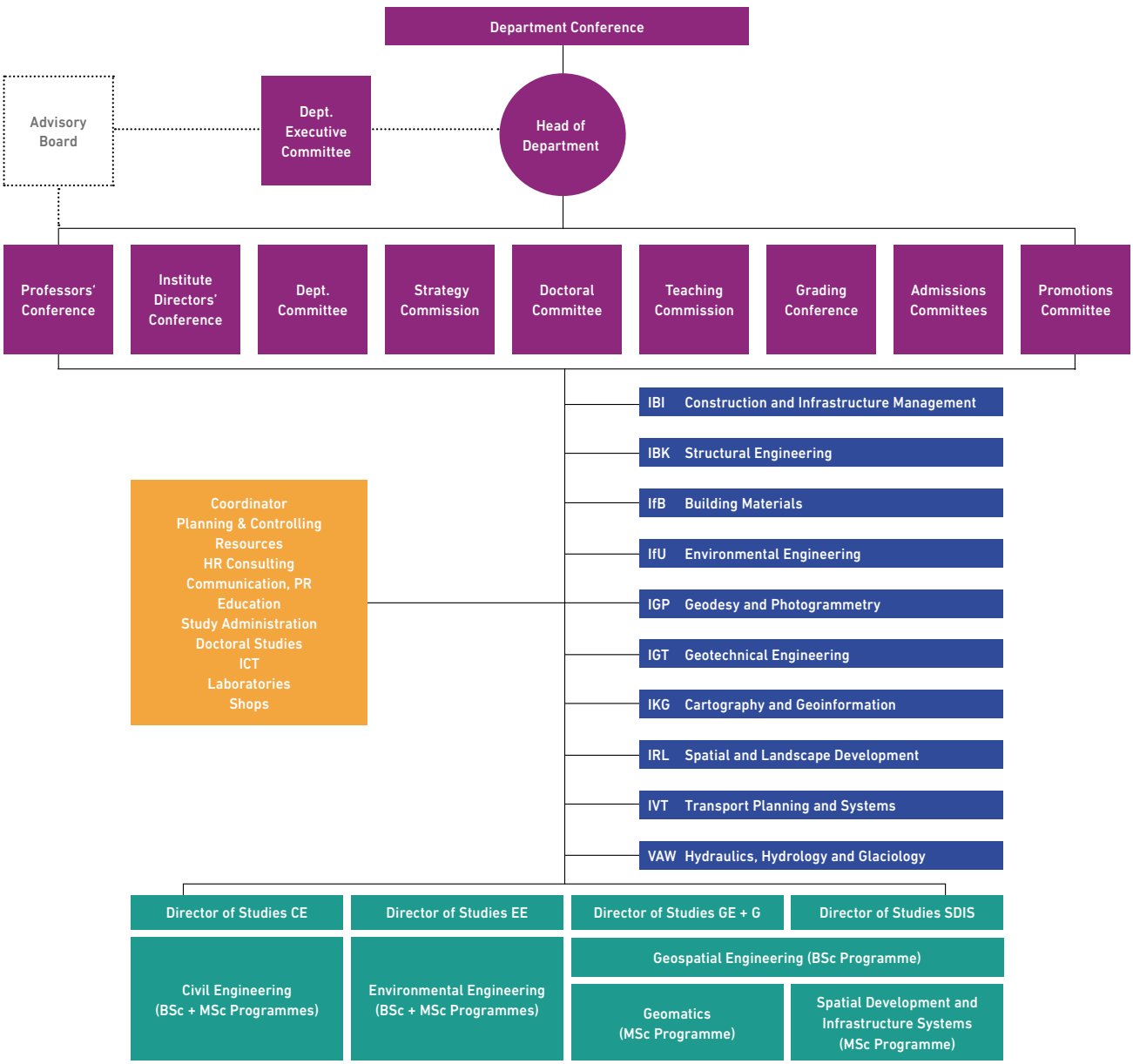
IRL	Institute for Spatial and Landscape Development	➔irl.ethz.ch
Prof. Adrienne Grêt-Regamey	Planning of Landscape and Urban Systems	
Prof. David Kaufmann (AP TT)	Spatial Development and Urban Policy	

IVT	Institute of Transport Planning and Systems	➔ivt.ethz.ch
Prof. Kay W. Axhausen	Transport Planning	
Prof. Francesco Corman (AP TT)	Transport Systems	
Prof. Ulrich Weidmann	Transport Systems – Public Transport (member of ETH board (VPIN) since Jan 2016)	

VAW	Laboratory of Hydraulics, Hydrology and Glaciology	➔vaw.ethz.ch
Prof. Robert M. Boes	Hydraulic Structures	
Prof. Daniel Farinotti (AP TT; with WSL)	Glaciology	
Prof. Jürg Schweizer (TP; only WSL SLF Davos)	Snow Avalanches and Prevention	

D-BAUG

Organisation chart



Established in 2013

Advisory Board D-BAUG

Members as per 31 December 2021

- Hans-Georg Bächtold (Former Managing Director, Swiss Society of Engineers and Architects, SIA)
- Dominik Courtin (CEO Basler & Hofmann AG)
- Dr. Jürgen Dold (President Hexagon GSI)
- Hans-Peter Domanig (Chairman of the Board of Directors Priora Holding AG)
- Dr. Hans Rudolf Ganz (President, owner of Ganz Consulting / VSL)
- Anna Barbara Remund (Vice Director, Board FOT [Federal Office of Transport])
- Dr. Franziska Schwarz (Vice Director, Board FOEN [Federal Office for the Environment])
- Prof. Dr. Henri van Damme (MIT Cambridge, MA / ESPCI-Paris Tech)

➡ www.baug.ethz.ch/departement/advisory-board.html

Remark
The composition of the Advisory Board will be redefined in 2022. The following members have declared their resignation from the committee: Hans-Georg Bächtold, Dr. Jürgen Dold, Hans-Peter Domanig, Dr. Hans Rudolf Ganz. The Department would like to thank these outstanding individuals for their immense commitment and great support over the years!

Faculty

Professorial appointments, emeriti, and retirements

Appointments 2021

Prof. Dr. Catherine De Wolf (see p. 3-5)	Circular Engineering for Architecture	1 September 2021

Emeriti and Retirements 2021(2022)

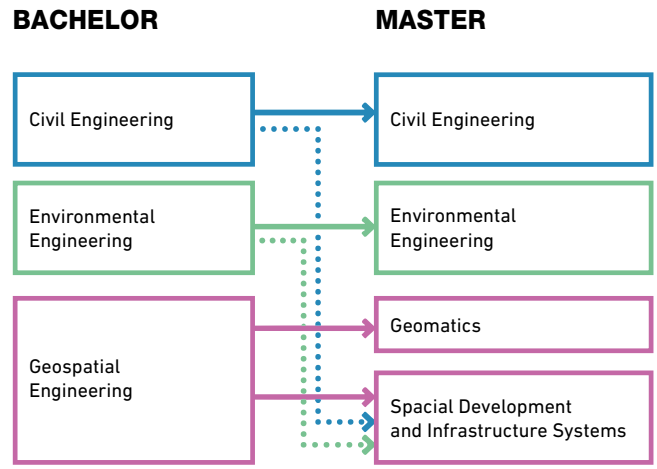
Prof. Thomas Vogel (see Annual Report 2020)	Structural Design and Existing Structures	31 January 2021
Prof. Dr. Fabian T. Walter (SNSF AP) (see p. 17-19)	Glacier Seismology	31 March 2021
Prof. Dr. Sarah M. Springman (see p. 6-16)	Geotechnical Engineering, ETH Rector	31 January 2022

Fall semester 2021

Students at D-BAUG

Discipline	Total of students*) Fall semester 2021
Civil Engineering (CE)	**891**
Civil Engineering BSc	446
Civil Engineering MSc	240
Civil Engineering (Guest/Mobility)	12
Doctoral Students CE	193
Environmental Engineering (EE)	**403**
Environmental Engineering BSc	186
Environmental Engineering MSc	113
Environmental Engineering (Guest/Mobility)	7
Doctoral Students EE	97
Geospatial Engineering (GE)	**293**
Geospatial Engineering BSc	127
Geomatics MSc	35
Geomatics (Guest/Mobility)	6
Spatial Development and Infrastructure Systems MSc	72
Doctoral Students G + SDIS	53

More student figures and charts: see pages 80-82; *) without MAS/DAS/CAS students.



➡www.baug.ethz.ch/en/studies.html

Expenditures, in millions of CHF

Financial means

Year	ETH Basic Funding	ETH Additional Funding	Third Party Funding[1]	Total
2016	46.9	7.1	19.6	73.6
2017	47.8	6.6	19.7	74.1
2018	49.9	3.5	21.0	74.3
2019	47.7	4.7	22.3	74.8
2020	47.7	3.9	24.2	75.1
2021	**47.1**	**5.5**	**25.5**	**78.1**

[1] SNSF, Innosuisse (KTI), ERC, Industry, Federal Agencies, etc.

Total ETH- and third party funding; in FTE

Employees D-BAUG

Year (average FTE)	FP	AP	TP, Senior Scientists (permanent)	Senior Research Fellows (OA)	Post-docs	Doctoral Students, Assistants	Technical & ICT Staff	Admini-strative Staff	Appren-tices	D-BAUG Total (FTE)
2019	27.3	8.5	18.5	63.8	63.8	265.9	55.7	37.2	0.7	590.6
2020	27.4	9.7	19.8	61.7	68.7	283.4	54.8	37.6	0.0	603.0
2021	**26.4**	**9.6**	**20.2**	**58.7**	**80.1**	**293.7**	**55.6**	**40.4**	**0.0**	**619.4**

FP = Full Professor, AP = Assistant Professor, TP = Titular Professor, OA = Senior Research Fellow [DE: Oberassistent/in]
Figures without Student Assistants, Hourly Wage Employees, Trainees, „occupied Workplaces"
FTE = Full Time Equivalent

Master of Advanced Studies (MAS), Diplomas of Advanced Studies (DAS), Certificates of Advanced Studies (CAS)

Continuing education

	Responsible Institute	Title
MAS ETH	IBK	Fire Safety Engineering
MAS ETH	IfU	Sustainable Water Resources (SWR)
MAS ETH	IRL / IVT / NSL	Spatial Planning
DAS ETH	IRL / NSL	Spatial Planning
CAS ETH	IBI	Regenerative Materials
CAS ETH	IBK	Natural Hazards - Risk Management
CAS ETH	IBK	Seismic Evaluation and Retrofitting
CAS ETH	IGP / IKG	Spatial Information Systems
CAS ETH	IRL / NSL	Spatial Planning
CAS ETH	IVT	Transport Engineering

For all ETH BSc and MSc courses (incl. D-GESS), see ➡ vvz.ethz.ch
For short Courses, E-learning andn MOOCs, see ➡ https://sce.ethz.ch/en/programmes-and-courses.html
ETH Centre for Continuing Education, ➡ ethz.ch/weiterbildung

In alphabetical order

Honours 2021

Last Name	First Name	Title	Institute	Award / Prize (invited lectures and the like are not mentioned)
Agalianos	Athanasios		IGT	ETH Silver Medal for outstanding doctoral thesis
Anastasopoulos	Ioannis	Prof. Dr.	IGT	Tso Kung Hsieh Award (ICE) for the paper "Soil, basin and soil–building–soil interaction effects on motions of Mexico City during seven earthquakes"
Anastasopoulos	Ioannis	Prof. Dr.	IGT	Elected Director of the International Association of Earthquake Engineering (IAEE)
Arnold	Raphael		IBK	Culman Prize for excellent Master's thesis
Bührer	Tobias		IFU	Culman Prize for excellent Master's thesis
Byers	Brandon	PhD Student	IBI	Digital Construction Hackathon «Team Achievement - Accelerating the transition towards carbon neutral built environment – Opportunities in the circular economy of buildings"
Charlton	Sam	Dr.	IFU	Marie Skłodowska-Curie Fellowship on untangling the biophysical interactions governing biofilm hydraulic resistance using cyrogel membrane microfluidics — MicroBioMem
Chatzi	Eleni	Prof. Dr.	IBK	Elected Member of the National Research Council of the SNSF
Cracknell	Nevin Michael		IFU	Willi-Studer-Prize for excellent Master's thesis
Crocetti	Laura	MSc	IGP	Best Presentation Award at Meet & Share Your Research Day at D-BAUG 2021
Figueiredo Nunes	Miguel		IBK	Culman Prize for excellent Master's thesis
Fink	Olga	Prof. Dr.	IBI	Young Scientist of the World Laureates Forum 2021 for "Early Career Achievements"
Gao	Minxiang		D-ARCH	Culman Prize for excellent Master's thesis
Graser	Konrad		IBI	Architekturpreis Beton 21, awarded for DFAB HOUSE
Gregorio	Diego		IFU	Culman Prize for excellent Master's thesis
Hall	Daniel	Prof. Dr.	IBI	Golden Owl by VSETH for excellent teaching
Hammett	Alexander		IBK	Culman Prize for excellent Master's thesis
Han	Sun		IKG	Esri Young Scholar Award 2021
Hariharan Sudha	Srividya		IFU	Willi-Studer-Prize for excellent Master's thesis ETH Medal for excellent Master's thesis
Hellweg	Stefanie	Prof. Dr.	IFU	Admission to the Swiss Academy of Engineering Sciences SATW
Hess	Jonas		IVT	ETH Medal for excellent Master's thesis
Hodel	David		IGT	SGEB-Prize for excellent Master's thesis
Höfkes	Gereon		IFU	Culman Prize for excellent Master's thesis
Jiang	Yuchang		IGP	Willi-Studer-Prize for excellent Master's thesis
Kalberer	Eliane Flavia		IBK	VSV award 2021 for excellent Master's thesis
Kasipillai	Abinayan		IBK	Culman Prize for excellent Master's thesis

Last Name	First Name	Title	Institute	Award / Prize (invited lectures and the like are not mentioned)
Kaufmann Mata Falcón	Walter Jaime	Prof. Dr. Dr.	IBK	For their participation in the DFAB HOUSE project: Special mention in the BetonSuisse 21 award for the innovative and collaborative work by architects, civil engineers and industry in the DFAB HOUSE project
Lauber	Nathalie Tanja		IBK	ETH Medal for excellent Master's thesis
Laumer	Daniel		IKG	Geosuisse Award for excellent Master's thesis
Lordieck	Jan		IVT	Willi-Studer-Prize for excellent Master's thesis Culman Prize for excellent Master's thesis
Lüthy	Elian		IFU	Culman Prize for excellent Master's thesis
Mata Falcón	Jaime	Dr.	IBK	Norman Blank Prize for Digital Fabrication for project "Eggshell", and its applications in the Future Tree
Michel	Luca Stefano		IFB	SIKA-Award for excellent Master's thesis
Molnar	Darcy	Dr.	IfU	AVETH Diversity Award, 3rd place
Morf	Urias Dominique		IBK	ETH Medal for excellent Master's thesis
Mylonas	Charilaos	Dr.	IBK	Best Paper Award IMAC XXXIX Conference 2021, awarded by the Society of Experimental Mechanics (SEM)
Reck	Daniel		IVT	ETH Silver Medal for outstanding doctoral thesis
Schär	Styfen Nicola		IBK	Culman Prize for excellent Master's thesis
Schartner	Matthias	Dr.	IGP	Prize of the City of Vienna for outstanding dissertations at the Vienna University of Technology
Secchi	Eleonora	Dr.	IFU	Invitation to the 4th World Laureates Forum (Shanghai, China) as a Young Scientist
Sigurbjörnsdóttir	Thorbjörg Anna		IFU	ETH Medal for excellent Master's thesis
Silva	Luiz	Dr.	IFU	Nominated by the Swiss Federal Office of Energy (SFOE) as a national expert to participate in the Annex XIII – Hydropower and Fish, an initiative of the International Energy Agency – Hydropower – Technology Collaboration Program
Silva	Luiz	Dr.	IFU	Appointed member of the International Program Committee of the World Fisheries Congress 2021, organized by the World Council of Fisheries Societies and held in Adelaide, Australia
Slomka	Jonasz	Dr.	IFU	SNF Ambizione on BioEncounters - where physics encounters microbial ecology
Stauber	Tobias Oskar		IGT	Maggia-Prize for excellent Master's thesis
Stritih	Ana		IRL	ETH Silver Medal for outstanding doctoral thesis
Stutzmann	Nicole		IBI	Culman Prize for excellent Master's thesis
Tepper	Viktoria		IFU	Grant in EUROCHAMP 2021 for Trans-National-Access (Experiments at University of Genoa)
Torelli	David		IGT	Culman Prize for excellent Master's thesis
Vogel	Michael		IFU	Culman Prize for excellent Master's thesis
Wagner	Paul Remo		IBK	ETH Silver Medal for outstanding doctoral thesis
Weiss	Evelyn		IGP	Culman Prize for excellent Master's thesis
Wiedemann	Nina		IKG	3rd price in Traffic4cast competition
Ziegler	Katharina Brigitt		IBK	Willi-Studer-Prize for excellent Master's thesis ETH Medal for excellent Master's thesis

In alphabetical Order

Doctoral theses 2021

NAME, First Name	Supervisor	Thesis
AGALIANOS, Athanasios	Prof. Dr. Ioannis ANASTASOPOULOS	Strike-slip faulting and interaction with structures: A combined numerical and experimental study
ARIAS CHAO, Manuel	Prof. Dr. Olga FINK	Combining Deep Learning and Physics-based Performance Models for Diagnostics and Prognostics
BATTISTA, Giulia	Prof. Dr. Paolo BURLANDO	Numerical Modelling of Suspended Sediment Transport in Pre-Alpine River Basins
BECK, Alexander	Prof. Dr. Walter KAUFMANN	Paradigms of Shear in Structural Concrete: Theoretical and Experimental Investigation
BÜCHEL, Beda	Prof. Dr. Francesco CORMAN	Quantification and Prediction of Variability in Public Transport Operations
BURG, Vanessa	Prof. Dr. Stefanie HELLWEG	Sustainable Bio-Resources for an Energetic Use in Switzerland: Assessment, Projections and Mobilization Strategies with a Special Focus on Manure
BURKHALTER, Marcel	Prof. Dr. Bryan T. ADEY	A Novel Methodology to Optimise Intervention Programs for Railway Infrastructure Networks in a Digital Environment
CABERNARD, Livia	Prof. Dr. Stefanie HELLWEG	Creating transparency in global value chains and their environmental impacts to support sustainability policies
CELENTANO, Giulia	Prof. Dr. Guillaume HABERT	The Regenerative Development Potential of the Construction Sector in the Informal City: the Cases of Bangkok, Nairobi and Cape Town
CHAUDHRY, Sukant	Prof. Dr. Andreas WIESER	Surface Related Uncertainties of Laser Scanning: A Simulation-Based and Experimental Study
CHURCH, Gregory James	Dr. Fabian Thomas WALTER, D-ERDW	Using Active Geophysical Methods to Characterise a Temperate Glacier's Hydrological System
COSCIONE, Roberto	Prof. Dr. Irena HAJNSEK	A Car-Borne SAR System for Deformation Monitoring: Positioning and Interferometric Performance Analysis
DAKIC, Igor	Prof. Dr. Kay W. AXHAUSEN	Macroscopic Tools for Monitoring, Modeling, Design, and Optimization of Multi-Modal Urban Transportation Systems
DEMIRAL YÜZÜGÜLLÜ, Dila	Prof. Dr. Robert BOES	Hydro-Abrasion Processes and Modelling at Hydraulic Structures and Steep Bedrock Rivers
DESING, Harald	Prof. Dr. Gonzalo GUILLÉN GOSÁLBEZ, D-CHAB	Product and Service Design for a Sustainable Circular Economy
FAHRNI, Reto	Prof. Dr. Andrea FRANGI	Reliability-based code calibration for timber in fire
GÖBEL, Fabian	Prof. Dr. Martin RAUBAL	Visual Attentive User Interfaces for Feature-Rich Environments
GOJCIC, Zan	Prof. Dr. Andreas WIESER	Benefiting from Local Rigidity in 3D Point Cloud Processing
GRÄFF, Dominik	Dr. Fabian Thomas WALTER, D-ERDW	Small-Scale Processes at the Glacier Bed: Stick-Slip, Crack Waves and Sliding from Surface and Borehole Observations
GRUBER, Wenzel	Prof. Dr. Eberhard MORGENROTH	Long-term N2O emission monitoring in biological wastewater treatment: methods, applications and relevance

NAME, First Name	Supervisor	Thesis
HADENGUE, Bruno	Prof. Dr. Eberhard MORGENROTH	Urban Water Management Meets Building Engineering: Multi-Scale Optimization of the Water-Energy Nexus
HAMMER, Tobias	Prof. Dr. Jing WANG	Experimental release and exposure studies for quantitative and qualitative risk assessment of nanoforms
HESS, Angelika	Prof. Dr. Eberhard MORGENROTH	Biological Activated Carbon Filter for Greywater Post-Treatment
HIRSCHBERG, Jacob	Prof. Dr. Peter MOLNAR	Climate change impacts on alpine sediment cascades
ILAHI, Anugrah	Prof. Dr. Kay W. AXHAUSEN	Activity Based Model (ABM) Approaches for Sustainable Cities
IMHOF, Michael	Dr. Fabian Thomas WALTER, D-ERDW	Combined Climate-Ice Flow Modelling of the Alpine Ice Field During the Last Glacial Maximum
JAKOB, Manuel	Prof. Dr. Kay W. AXHAUSEN	Parking Policies and their Impacts on Urban Networks
KARAGIANNIS, Demis	Prof. Dr. Walter KAUFMANN	Effect of transverse bending on the shear capacity of concrete bridges
KASSAS, Konstantinos	Prof. Dr. Ioannis ANASTASOPOULOS	Structure-Soil-Structure Interaction (SSSI) of Adjacent Buildings Founded on Liquefiable Soil
KREIS, Benjamin	Prof. Dr. Andrea FRANGI	Two-Way Spanning Timber-Concrete Composite Slabs Made of Beech Laminated Veneer Lumber with Steel Tube Connection
LAYER, Manuel	Prof. Dr. Eberhard MORGENROTH	The Effect of Particulate Organic Substrate on the Formation, Composition and Performance of Aerobic Granular Sludge
LI, Aoyong	Prof. Dr. Kay W. AXHAUSEN	Empirical Analyses of Dockless Bike-Sharing Utilization and its Benefits
MARRA, Alessio Daniele	Prof. Dr. Francesco CORMAN	Tracking Passengers to Analyse Travel Behaviour During Public Transport Disturbances
MEILI, Naika	Prof. Dr. Paolo BURLANDO	Urban Ecohydrological Modelling to Quantify Vegetation Effects on Urban Climate and Hydrology
MOLLOY, Joseph	Prof. Dr. Kay W. AXHAUSEN	Undertaking Mobility Field Experiments Using GPS Tracking
MOZAFFARI, Salma	Prof. em. Thomas VOGEL	Computational Strut-and-Tie Modeling, Explorations of Algebraic Graphic Statics and Layout Optimization
MYLONAS, Charilaos	Prof. Dr. Eleni CHATZI	Machine Learning for Structural Health Monitoring under Uncertainty with Applications in Wind Energy
NETKUEAKUL, Woranan	Prof. Dr. Jing WANG	Epoxy Composites Enabled by Graphene-Related Materials: Properties and Hazard Assessment of the Aerosols Released by Abrasion and Combustion
OBERSCHELP, Christopher	Prof. Dr. Stefanie HELLWEG	Environmental Assessment of Global Site-Specific Industrial Air Pollution
RACHELLY, Cristina	Prof. Dr. Robert BOES	Sediment Supply Control on River Widening Morphodynamics and Refugia Availability
RECK, Daniel Jan	Prof. Dr. Kay W. AXHAUSEN	Modelling Travel Behaviour with Shared Micro-Mobility Services and Exploring their Environmental Implications
RICHARD, Audrey	Prof. Dr. Konrad SCHINDLER	From point clouds to high-fidelity models - Advanced methods for image-based 3D reconstruction
SAIKIA, Eashan	Prof. Dr. Ingo BURGERT	Mechanotransduction in the sensory hairs of the Venus flytrap
SAKELLARIADIS, Lampros	Prof. Dr. Ioannis ANASTASOPOULOS	Physical and Numerical Modelling of Pile Foundations under Combined Loading
SCHRANZ, Bernhard	Prof. em. Thomas VOGEL	Iron-Based Shape Memory Alloy Reinforcement for Prestressed Strengthening of Concrete Structures

NAME, First Name	Supervisor	Thesis
SHAKOORIOSKOOIE, Mahdieh	Prof. Dr. Pietro LURA	The Alkali-Silica Reaction Damage in Concrete at the Mesoscale: Characterization by X-Ray Tomography
SPIELHOFER, Reto	Prof. Dr. Adrienne GRÊT-REGAMEY	Optimal Swiss Renewable Energy Landscapes
STRITIH, Ana	Prof. Dr. Adrienne GRÊT-REGAMEY	Risk-Based Assessments of Ecosystem Services: Addressing Uncertainty in Mountain Forest Management
SUN, Jianguo	Prof. Dr. Ingo BURGERT	Wood-Based Mechanical Energy Converter
TATSIS, Konstantinos	Prof. Dr. Eleni CHATZI	On the fusion of physics-based and data-driven models for dynamic systems virtualization
TOM, Manu	Prof. Dr. Konrad SCHINDLER	Lake Ice Monitoring from Space and Earth with Machine Learning
TSOKANAS, Nikolaos	Prof. Dr. Bozidar STOJADINOVIC	Real-Time and Stochastic Hybrid Simulation
TU, Kunkun	Prof. Dr. Ingo BURGERT	Functionalization of wood materials by metal-organic frameworks
VAN DONGEN, Eef	Dr. Fabian Thomas WALTER, D-ERDW	Monitoring and Modelling the Calving Behaviour of Bowdoin Glacier, Northwest Greenland
VLACHAKIS, Vasileios	Prof. Dr. Markus ROTHACHER	Automated micro-triangulation for high-precision fiducialization and alignment of particle accelerator components
VOULPIOTIS, Konstantinos	Prof. Dr. Andrea FRANGI	Robustness of Tall Timber Buildings
WAGNER, Paul-Remo	Prof. Dr. Bruno SUDRET	Stochastic Spectral Embedding in Forward and Inverse Uncertainty Quantification
WANG, Qin	Prof. Dr. Olga FINK	Towards Real-World Domain Adaptation with Deep Learning
WECKWERTH, Stefanie Anne	Prof. Dr. Robert J. FLATT	Synthesis, Characterization and Competitive Adsorption of Comb Copolymer Dispersants
WENNER, Michaela	Dr. Fabian Thomas WALTER, D-ERDW	Seismic Monitoring and Machine Learning for Gravitational Hazards in Alpine Terrain
ZACCHERINI, Rachele	Prof. Dr. Eleni CHATZI	Granular Metasurfaces and Inertial Amplified Metastructures for Vibration Attenuation

Doctoral thesis titles 2021

Word cloud generated out of all 2021 doctoral thesis titles

Good luck to our young talents and graduates

Our doctoral students are contributing to the enormous challenges that our society faces. Our young talents provide research outputs on key societal issues, such as the use and conservation of space and natural resources, mobility, and the construction of sustainable and resilient infrastructure. D-BAUG addresses the societal "Grand Challenges" of increasing urbanisation, future-oriented infrastructure and changing environment. D-BAUG wishes the young talents good luck and success in their future careers.

May 2022

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May 2022

Department staff

in alphabetical order

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Faculty Affairs

Dr. Darcy Molnar
Gender & Diversity D-BAUG
Programme Coordinator (IfU)

Luzia Von Känel
Student Laboratory for
Environmental Engineering

Staff Retirements and Leavings in 2021:
Harald Bollinger, Dr. Oliver Stebler.

Stopping plastic waste from entering the oceans

Plastic Bank
is a for-profit social enterprise that builds recycling ecosystems in under-developed communities in an effort to fight both plastic pollution in oceans, as well as high poverty levels in developing countries. The company allows people living in poverty to collect plastic and trade it in for material goods such as school tuition, medical insurance, pharmaceutical access, internet access, and cooking fuel.

Over 8 million tons of plastic waste end up in the sea every year. Especially developing countries often lack infrastructure for proper waste disposal.

Clean oceans, Plastic Bank, worldwide

Stopping ocean plastic while improving the lives of those who are most affected – this is the approach taken by the Plastic Bank. In Haiti, Indonesia, Brazil and the Philippines, people collect plastic waste. At local collection points, they can exchange it for money, food, drinking water or even school fees. The project makes sure that less plastic ends up in the sea. Instead, it is recycled and turned into so-called Social Plastic, which serves as raw material for new products such as packaging.

How do clean oceans contribute to climate protection?

The ocean stores a quarter of the CO_2 from the atmosphere and even 93 percent of the heat caused by the greenhouse effect – making it a major brake on climate change. Warming, overfishing, pollutants and waste endanger this balancing function. Several initiatives prevent plastic waste from entering the sea and thus indirectly protect the climate. Because these activities do not generate verified emission reductions, Climatepartner supports ocean protection initiatives in combination with internationally recognised carbon offset projects. This allows for climate neutrality and ocean protection at the same time.

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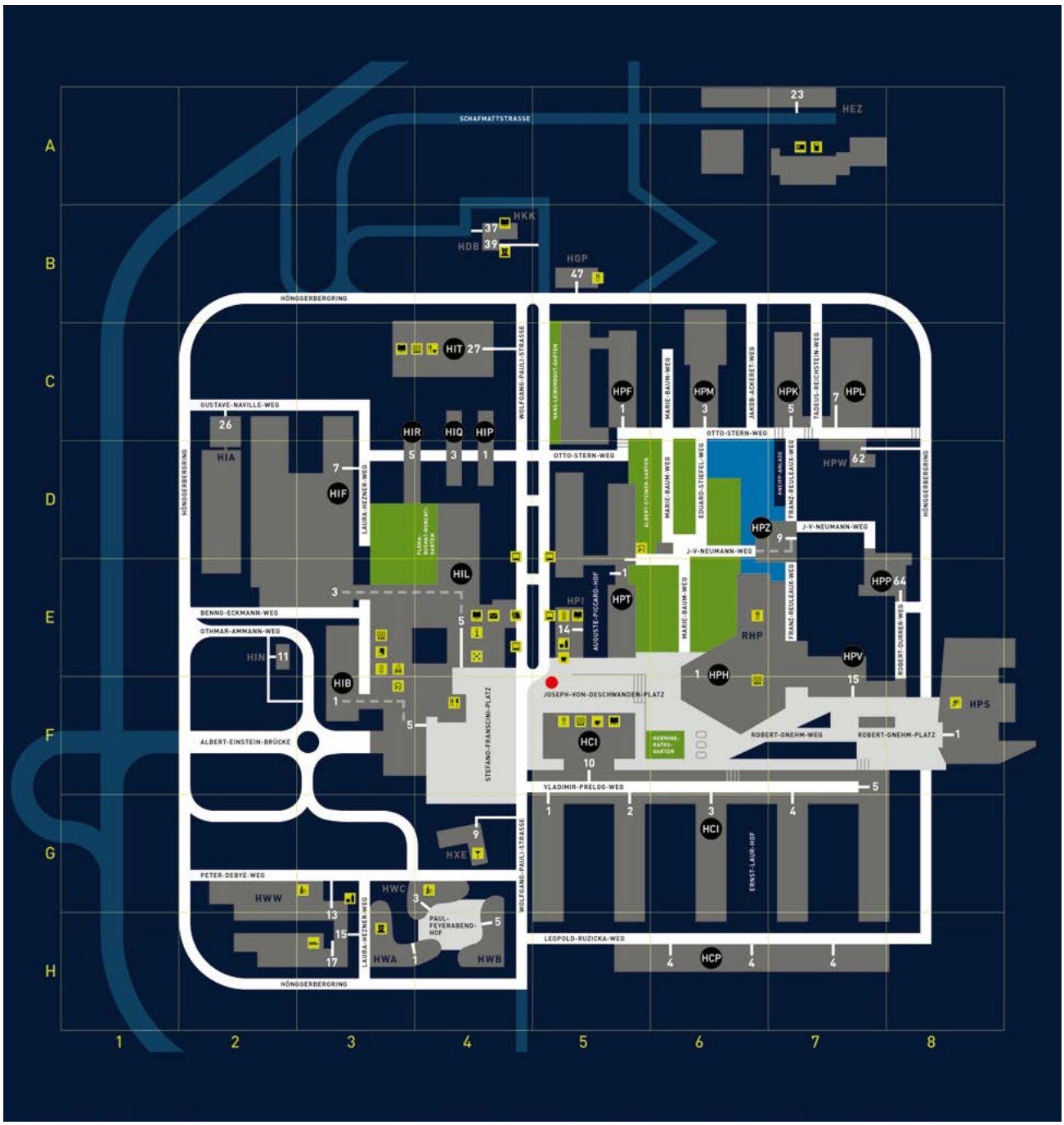
Campus Hönggerberg



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