

Open positions at C2SM

In collaboration with C2SM, the [ETH Scientific IT Services \(SIS\)](#) unit is currently seeking to appoint a **programmer in scientific visualization** to support the C2SM community. The successful candidate will work closely with the research groups to develop and implement advanced visualization techniques to convey scientific results in ways that are innovative and appealing for scientific and lay audiences. Further details can be found [here](#).

In the framework of the [PASC GridTool](#) project, C2SM is seeking to appoint a **C++ scientific software developer**. The successful candidate's main tasks will be to contribute to the design and implementation of a DSEL library allowing implementation of portable stencil codes applicable to the large class of stencil-based weather, climate and geoscience models. Further details can be found [here](#).

Announcement: 15th International Swiss Climate Summer School “Climate Risks – Coping with Uncertainty”, 28 August – 2 September 2016, Grindelwald, Switzerland

The 15th International Swiss Climate Summer School is focusing on the theme “Climate Risks – Coping with Uncertainty”. This theme has been chosen due to its paramount importance in terms of both scientific challenges and pressing societal concerns. Always with a focus on uncertainty, the specific topics include:

- What is “dangerous climate change”?
- Emergent climate risks and vulnerability
- From global climate change to regional impacts
- Economics of climate change and adaptation, geo-engineering
- Ethical aspects, policy choices and policy making

The Summer School invites young researchers from all fields of climate research. The courses cover a broad spectrum of climate and climate impact research issues and foster cross-disciplinary links. Each topic includes keynote plenary lectures and workshops with in-depth discussion in smaller groups. All Summer School participants are expected to present a poster of their research and there will be ample opportunity for discussion.

Deadline for applications is 20 January 2016. Further information and the application form is available [here](#).

Upcoming event: Swiss COSMO User Workshop

The Swiss COSMO User Workshop is an informal one-day event, whose goal is to bring together COSMO users and developers from Switzerland, share experience and knowledge about the COSMO model, and to get insights into some projects involving this model. Presentations could provide an overview of activities revolving around the COSMO model, the description of a technical problem, the presentation of results from a specific project, or the demonstration of a tool that can be useful for other COSMO users.

This workshop is a great opportunity to get to know people working on COSMO. New users are warmly encouraged to introduce themselves and their work. An apero will close the workshop. For registration and further questions, please contact [Andreas Pauling](#) at MeteoSwiss.

C2SM Member Andreas Fischlin elected as a new IPCC Vice-Chair

IPCC held its 42nd session in Dubrovnik from October 5 to 9, 2015. At this session, C2SM member Andreas, professor emeritus of Terrestrial Systems Ecology at ETH Zurich, was elected as a Vice-Chair of the Intergovernmental Panel on Climate Change, Working Group II. The new Bureau of 34 members, will lead the IPCC as it works towards the forthcoming Sixth Assessment Report.

Article in the Tages Anzeiger: [ETH-Professor wird in die Leitung des Weltklimarates gewählt](#) (in German).

Latsis Prize awarded to C2SM member Torsten Hoefler

C2SM member [Torsten Hoefler](#) is the winner of this year's Latsis Prize awarded by ETH Zurich. As head of the [Scalable Parallel Computing Laboratory](#), his group focuses on combining theory and application in the field of high-performance computing. Within C2SM, he works on the optimization of climate and weather codes for large-scale machines like [Piz Daint at the Swiss National Supercomputing Centre \(CSCS\)](#), through parallelizing current climate and weather models. Established by the Fondation Latsis Internationale, this prize is awarded annually by ETH Zurich to honour outstanding work by its younger researchers across all research disciplines.

ETH News: [Turning Life into a Profession](#)

ETH Zukunftsblog: [Computing for Climate \(part 1\): Evolution of Models](#)

ETH Zukunftsblog: [Computing for Climate \(part 2\): How Modern Climate Models Work](#)

MeteoSwiss is the first weather service using a GPU based computer for weather forecasts.

MeteoSwiss and the Swiss National Supercomputing Centre (CSCS) in Lugano have announced that the new "super weather computer" of MeteoSwiss has started its operation. Using a new GPU based computer architecture, MeteoSwiss will now run the regional weather forecast COSMO model with a higher grid resolution (1.1x1.1km), yet in a more energy-efficient way and more quickly than before. Using this new computer architecture required a completely new version of the COSMO model to be developed, a major endeavour in which C2SM was strongly involved (read more about our high performance computing activities [here](#)). Peter Binder, Director General of MeteoSwiss, explained that "This grid spacing makes it possible to predict with more detail the

precipitation distribution, the risk of storms or valley wind systems in the Swiss mountains. It is an additional step to increase the utility of the weather forecasts”.

MeteoSwiss / CSCS press release in [English](#) and [German](#).

Visualization of preliminary simulations performed with the COSMO-1 model, including a [3-day episode in June 2013](#) and [a comparison between the COSMO-1 model with satellite and weather radar measurements during a 3-day episode in August 2014](#).

A new National Centre for Climate Services in Switzerland

Climate services comprise scientific information and data on the climate of the past, present and future, as well as its consequences. They serve as the basis for decision-making that needs to account for climate and climate change issues. Launched on November 16, 2015, the [National Centre for Climate Services \(NCCS\)](#) for Switzerland will coordinate the development and dissemination of these climate services. Acting as an interface between producers of climate services and end users, the NCCS will encourage the dialogue and fosters collaborative development. Its main focus sectors are water resources, agricultural, forestry, health, energy and natural hazards. Three C2SM partner institutions, ETH Zurich, MeteoSwiss and WSL are members of the NCCS, together with the Federal Office for the Environment (FOEN), the Swiss Federal Office for Civil Protection (FOCP), and the Federal Office for Agriculture (FOAG).

Article in the Tages Anzeiger: [Massgeschneiderter Klimaservice](#).

MeteoSwiss press release: [Federal government establishes network for climate services](#).

Blog MeteoSwiss: [Wir müssen das Klima vermehrt in unsere Entscheidungen einbeziehen](#).

The CH2018 Climate Change Scenarios

The recently initiated project “CH2018” aims to release new climate change scenarios for Switzerland by 2018. It builds upon the excellent scientific network established in the predecessor project [CH2011](#), which involved the C2SM partners MeteoSwiss and ETH among other institutions. The CH2018 initiative is one of the focus areas of the National Center for Climate Services (NCCS), which was launched on November 16, 2018. The new CH2018 scenarios will be based on the latest set of climate model simulations over Europe. A market evaluation is being performed among stakeholders in Switzerland to ensure that the provided scenario data and information optimally meets the variety of end-user needs. The CH2018 initiative involves MeteoSwiss, ETH Zurich, C2SM, and the University of Bern. [Elias Zubler](#) joined C2SM in August 2015 to lead the CH2018 initiative at ETH. Further details can be found on the [CH2018 web page at MeteoSwiss](#).

The CH2011 Extension Series

The CH2011 Extension Series aims at improving the existing CH2011 climate change scenario products in order to better match end-user needs. This work will be addressed in a series of upcoming articles and is coordinated by members of the CH2011-community. Both, the extension articles and the corresponding new scenario data, will be put on [www.ch2011.ch](#) and is updated as soon as new articles are released. The first such extension article (by [Thomas Bosshard](#), [Sven Kotlarski](#), [Christoph Schär](#)) has recently been published. It extends the existing local scenario data at the A1B emission scenario to the two emission scenarios RCP3PD and A2 based on a pattern-scaling approach. End-users

now have the possibility to explore temperature and precipitation changes at individual stations for these additional emission scenarios. Further details can be found on the [CH2011 web page](#) and in the related article: [Bosshard, T., S. Kotlarski, and C. Schär, 2015: Local scenarios at daily resolution for emission scenarios A2 and RCP3PD, CH2011 Extension Series No. 1, Zurich, 12 pp.](#)

Success for the third edition of Klimarunde

More than 500 people came to ETH Zurich for the Klimarunde 2015 and discussed the “Vision Null: Wege zur einer CO₂-neutralen Gesellschaft”. In light of the upcoming COP21, the question of how to transition towards a low-carbon world was addressed. The event (in German) was jointly organized by C2SM and the Energy Science Center at ETH. A record of the whole event and some pictures can be found on the [Klimarunde 2015 web page](#).

"Werkstattgespräche" and "Workshop Discussions"

[C2SM-community member Oliver Stebler](#) has produced a series of short documentaries to explain the importance and relevance of the research activities of a number of C2SM Members. Some of the interviews are now available in both German and English. The most recent interview features Martin Funk: [Der Berg ruft](#) (in German).

Python email list

A group of PhD students from IAC has initiated a Python email list to facilitate the communication among Python users, share pieces of code and expertise, ask for help when users are stuck during programming or for already existing tools. Further information about the goals of the email list and how to subscribe is provided on the wiki page can be found [here](#).

Paper: Would global warming stop after carbon emissions end?

A new study published in Environmental Research Letters suggests that simple models overestimate how much carbon we can emit if we want to stay below 2°C in the next centuries. [C2SM-community member Thomas Frölicher](#) and [David Paynter](#) from the Geophysical Fluid Dynamics Laboratory use comprehensive Earth System Model simulations to show that global mean temperature will increase by a further 0.5°C for nine hundred years after CO₂ emissions cease when 2°C global warming is reached. Other complex climate models qualitatively agree on this result, whereas Earth System Models of Intermediate Complexity predict on average a cooling of -0.6°C. Because IPCC's carbon budget estimates were based on these simpler models, this implies a stricter budget than previously thought.

Environmental Research Letters publication: [Frölicher, T. L., and D. J. Paynter, 2015: Extending the relationship between global warming and cumulative carbon emissions to multi-millennial timescales, Environmental Research Letters, DOI:10.1088/1748-9326/10/7/075002.](#)

Lay summary from Ars Technica: [Would warming stop after greenhouse gas emissions end? Not quite.](#)

Paper: A revived Southern Ocean carbon sink

The carbon sink in the Southern Ocean was thought to have weakened in recent decades. But a new study shows that the carbon sink has regained its strength to take up anthropogenic CO₂. [Peter Landschützer](#) and [Nicolas Gruber](#) from C2SM and colleagues analyzed surface ocean CO₂ observations and showed that the weakening of the carbon sink in the Southern Ocean reversed around 2002, regaining its expected strength by 2012. The analysis was carried out using a neural network method to interpolate the CO₂ observations, thus deriving a better spatial coverage of the sparse CO₂ observations. All sub-basins of the Southern Ocean were found to contribute to the reinvigoration of the carbon sink and large decadal variability in the Southern Ocean carbon sink was found, suggesting a much more dynamic ocean carbon sink than previously thought. The authors note that continuing to measure surface ocean CO₂ concentrations in the Southern Ocean will be an important step towards determining future changes in this important carbon sink.

Science publication: [Landschützer, P., N. Gruber, F.A. Haumann, C. Rödenbeck, D.C.E. Bakker, S. van Heuven, M. Hoppema, N. Metzl, C. Sweeney, T. Takahasi, B. Tilbrook, and R. Wankinkhof, 2015: The Reinvigoration of the Southern Ocean Carbon Sink, Science, DOI: 10.1126/science.aab2620.](#)

ETH News article: [Revived oceanic CO₂ uptake.](#)

Paper: The worst heat waves to come for the Persian Gulf

The Persian Gulf region may experience heat waves that are dangerous for human health within this century. [C2SM member Christoph Schär](#) writes about a new study in Nature Climate Change by [Pal and Eltahir \(2015\)](#) that shows the Persian Gulf region may experience heat waves that are dangerous for human health within this century. An analysis of regional climate model scenarios for 2071–2100, forced with two emission scenarios (RCP8.5 and RCP4.5), demonstrates that the wet-bulb temperature (TW), the coldest temperature to which an object can be cooled by ventilation and evaporation under outdoor conditions, is expected to exceed 35°C in several places. Above this wet-bulb temperature, the body can no longer dissipate heat and hyperthermia and ultimately death may result, unless some other cooling occurs. Several cities in the Persian Gulf are expected to experience heat and humidity extremes that exceed TW = 35°C within this century, indicating that strong adaptation measures will be critical for people living in this region.

Nature Publication: [Schär, C. 2015: Climate Extremes: The worst heat waves to come, Nature Climate Change, doi:10.1038/nclimate2864.](#)

Article in the Guardian: [Extreme heatwaves could push Gulf climate beyond human endurance.](#)

Article in the New York Times: [Deadly heat is forecast in Persian Gulf by 2100.](#)

Article in Tages Anzeiger: [Brutale Hitze im persischen Golf.](#)