



ETH zürich



EMPA  
Materials Science & Technology



## C2SM Newsletter February 2014

Vol. 14

### Conference on Climate dynamics across all spatial scales

The “Latsis Symposium on Atmosphere and Climate Dynamics: From Clouds to Global Circulations” will be held on June 18-21 in Zurich. C2SM member Tapio Schneider is co-organizing the conference, which addresses dynamical processes that shape climate and their interactions across an enormous range of scales: from the micrometer scale of cloud droplet formation to the global scale of atmospheric circulations.

Deadline for submission of abstracts for talks and posters: March 21, 2014.

<http://www.latsis2014.org>

### Conference on High Performance Computing

On June 2-3, PASC is hosting the PASC14 conference. The conference aims at bringing together scientists from diverse scientific domains to foster interdisciplinary collaborations and to strengthen high-performance computing knowledge exchange. As part of this conference, Christoph Schär and Isabelle Bey organize a session on climate and atmospheric modeling.

Deadline for submission of abstracts for talks and posters: March 31, 2014.

<http://www.pasc14.org>

### Final Public Event of the CH2014-Impacts Initiative

C2SM co-publishes the report “CH2014-Impacts: Toward Quantitative Scenarios of Climate Change Impacts in Switzerland”. Led by the Oeschger Center, the CH2014-Impacts Initiative links the Swiss Climate Change Scenarios CH2011 with quantitative impact models. C2SM provided support regarding the utilisation of climate data, and many members substantially contributed their expertise to chapters addressing climate scenarios, climate indices, cryospheric aspects, biodiversity, forest properties and ecosystem services, and agricultural production.

Registration for the presentation (March 14, afternoon):

<http://www.oeschger.unibe.ch/events/conferences/ch2014> (registration)

<http://www.ch2014-impacts.ch> (final report)

[http://www.climate.unibe.ch/~kuno/ch2014/ch2014\\_entwurf\\_08.pdf](http://www.climate.unibe.ch/~kuno/ch2014/ch2014_entwurf_08.pdf) (last version)

### Workshop: “Regional climate model data for Alpine impact research”

C2SM and the SNF Sinergia project TEMPS are organizing a 3-day workshop on the theoretical and practical aspects of utilising the output of regional climate models for Alpine climate impact research. It will be held at ETH Zurich from June 4–6 2014. The workshop is primarily targeted at climate impact researchers at the PhD or PostDoc level. The scientific part of the workshop will consist of focus lectures, hands-on sessions, and round-table discussions.

Deadline for application: March 31, 2014.

<http://www.c2sm.ethz.ch/Regional-climate-model-data-for-Alpine-impact-research/>

### **“Klimarunde 2014”: “Innovative outreach project” will be repeated**

Corporate communications of ETH recognized ETH-Klimarunde 2013 as one of the two most innovative outreach events in 2013. Special attention raised the fact that a large number of climate researchers – from group leaders to voluntaries – participated in the same event with huge enthusiasm. The concept of “Klimarunde” will be presented at the Lunchboxmeeting of HK “Neue Formate in der Wissenschaftskommunikation”. “Klimarunde 2014” is on the way and will take place on November 5 2014 following the release of the IPCC Synthesis report and will tackle the topic of “Innovationen fürs Klima”. The event is jointly organized by C2SM and the Energy Science center (ESC) of ETH.

### **Event: Workshop on Hail science**

The 1st European Hail Workshop will take place from June 25–27 at the University of Bern. Luca Nisi and Alessandro Hering from MeteoSwiss are in the organizing board. In several regions of Europe, including Switzerland, south-west Germany and Austria, hail damage has increased substantially in recent years with the consequence that hail is now one of the major atmospheric risks. Despite the large damage potential, there is a substantial lack of knowledge about hail climatology and risk, hail forecasting, cloud microphysics, and the relationship between hail probability and climate change.

Deadline for abstract submission: March 1.

[http://www.oeschger.unibe.ch/events/conferences/hail/index\\_en.html](http://www.oeschger.unibe.ch/events/conferences/hail/index_en.html)

### **New core staff member at C2SM**

C2SM is pleased to welcome Colombe Siegenthaler-Le Drian as a new core staff. As of March 1, Colombe will be working as a scientific programmer in the field of global climate modeling. Colombe received a PhD from ETH Zurich and has a large experience in developing and applying the ECHAM-HAMMOZ global coupled model. Welcome on board!

### **New C2SM and Steering Committee members**

C2SM welcomed three new members. Paolo Burlando (ETH D-BAUG) is professor of Hydrology and Water Resources Management. Pierre Mérel (ETH D-USYS) holds the chair of Agricultural Economics. Anthony Patt (ETH D-USYS) is leading the Human-Environment Systems Group. The new members strengthen the C2SM network towards a more comprehensive understanding of climate change impacts. At the same occasion, Tapio Schneider (ETH D-ERDW) was elected as a new member of the C2SM Steering Committee. He replaces Gerald Haug who stepped down from this position.

<http://www.c2sm.ethz.ch/people/members>

### **Local contact person at C2SM for CESM Earth System Model**

Since January 2014, C2SM provides a local contact person for the Community Earth System Model (CESM) model, a fully-coupled, community, global climate model that provides state-of-the-art computer simulations of the Earth's past, present, and future climate states. Interested users are invited to contact Urs Beyerle ([urs.beyerle@env.ethz.ch](mailto:urs.beyerle@env.ethz.ch)) for specific information.

<http://www2.cesm.ucar.edu/>

### **C2SM mailing-list about climate data**

The mailing list [c2sm.data@sympa.ethz.ch](mailto:c2sm.data@sympa.ethz.ch) is being used to communicate all news regarding C2SM data services, including updates on the availability of CORDEX output for the C2SM community. From now on, subscribers to the mailing-list can also post questions and comments regarding climate data. Everybody interested in C2SM data services is encouraged to subscribe and participate actively.

<https://sympa.ethz.ch/sympa/subscribe/c2sm.data>

### **Meeting on “Science and Communication” for Young Researchers in the C2SM network**

The 2014 edition of the Young Researchers Meeting will take place June 19–20 2014 in Aeschi bei Spiez. The meeting will give you the opportunity to understand how the media work, do a hands-on media training, learn how the IPCC handled communication while compiling AR5, analyze the arguments of climate skeptics and learn about additional means of outreach. The meeting is open to PhD and postdocs from C2SM, the Oeschger Centre, and other related institutions. The Oeschger Centre and the Graduate School of Climate Sciences will cover registrations fees and accommodation. More details and the registration form can be found at

[http://www.oeschger.unibe.ch/education/YRM/2014/index\\_en.html](http://www.oeschger.unibe.ch/education/YRM/2014/index_en.html)

Deadline for registration: April 18 2014

### **First EURO-CORDEX data available**



EURO-CORDEX is an international climate downscaling initiative that aims to provide high-resolution climate scenarios for Europe. The recent publication by Kotlarski et al. (2014) provides a standard evaluation of the

reanalysis-driven EURO-CORDEX ensemble. First results of climate change scenarios are presented by Jacob et al. (2014). Subscribe to the C2SM data mailinglist to receive updated information

(<https://sympa.ethz.ch/sympa/subscribe/c2sm.data>).

Kotlarski S., et al. (2014): *A joint standard evaluation of the EURO-CORDEX RCM ensemble*. *Geoscientific Model Development Discussion*, 7, 217-293.

<http://www.geosci-model-dev-discuss.net/7/217/2014/gmdd-7-217-2014.html>.

Jacob D. et al. (2014): *EURO-CORDEX: New high-resolution climate change projections for European impact research*. *Regional Environmental Change*, in press.

<http://link.springer.com/article/10.1007%2Fs10113-013-0499-2>.

### **New project on high-performance computing**

A new project called “Grid Tools: Towards a library for hardware oblivious implementation of stencil based codes” was recently awarded to C2SM within the PASC (Platform for Advanced Scientific Computing) initiative. The focus of the project, led by Oliver Fuhrer from MeteoSwiss, is to develop C++ libraries and tools for developing portable and efficient weather and climate applications that perform well on modern heterogeneous computing systems. A research assistant/ post-doctoral fellow position is open in this framework:

<https://pub.refline.ch/845721/2942/++publications++/1/index.html>

<http://www.pasc.ch.org/projects/projects/grid-tools/>

### **New project: Aerosol-cloud interactions in the spotlight**

On December 1 2013 the EU project "Impact of Biogenic versus Anthropogenic emissions on Clouds and Climate: towards a Holistic UnderStanding" (BACCHUS) was launched. C2SM member Ulrike Lohmann coordinates the FP-7 project with the aim to better understand key processes and feedbacks controlling aerosol-cloud interactions. 20 partner institutions collaborate during four years with a budget of 11.7 million euros. Miriam Kübbeler (BACCHUS project administrator) blogged about the project in the ETH Zukunftsblog: <https://www.ethz.ch/en/news-and-events/zukunftsblog/archiv/2014/02/dem-einfluss-von-feinstaub-und-wolken-auf-der-spur.html>  
[www.bacchus-env.eu](http://www.bacchus-env.eu)

### **New project: SCCER-Supply of Electricity**

C2SM is contributing to "Supply of Electricity", which is one of Swiss Competence Centres for Energy Research (SCCER) recently established within the ETH domain. Sven Kotlarski, Christoph Schär and Paolo Burlando will collaborate to develop new climate scenarios to ultimately provide reliable quantitative assessment of future hydropower production. A post-doctoral fellow position in "Climate Scenarios Downscaling and Uncertainty Assessment" is open in this framework:  
<https://pub.refline.ch/845721/2932/++publications++/1/index.html>  
<https://www.ethz.ch/en/news-and-events/eth-news/news/2013/12/energy-competence-centres.html>

### **New project: "Extreme Precipitation" at MeteoSwiss**

The statistics of extremes yields invaluable information for protection and mitigation. In response to a growing need for easily accessible extreme value analyses of high quality, the Federal Office of Meteorology and Climatology MeteoSwiss and the Federal Office of the Environment (BAFU) have initiated a 2-year joint project that started in summer 2013. The goal of this project, hosted at MeteoSwiss is to create a user-adapted web platform presenting statistical analyses of extreme precipitation based on state-of-the-art statistical methods, and updated climatological data. The platform development is a long-term undertaking. In a first release, it will provide punctual analyses at stations of the MeteoSwiss observation network.

[http://www.meteoschweiz.admin.ch/web/en/research/current\\_projects/climate/extrem\\_niederschlaege.html](http://www.meteoschweiz.admin.ch/web/en/research/current_projects/climate/extrem_niederschlaege.html)

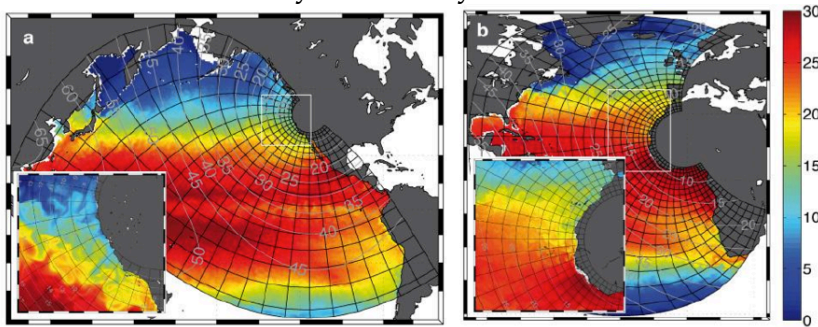
Statistical analyses of 27 selected stations are already available in a simple format on the MeteoSwiss webpage:

[http://www.meteoschweiz.admin.ch/web/en/climate/swiss\\_climate/return\\_values.html](http://www.meteoschweiz.admin.ch/web/en/climate/swiss_climate/return_values.html)

### **New project: Quantifying the exchange of carbon and nutrients between the coastal and open seas**

Coastal oceans, especially those associated with Eastern Boundary Upwelling Systems, represent global hotspots of biogeochemical transformations and influence open oceans by lateral exchange processes. CALNEX (Quantifying the exchange of carbon and nutrients between the coastal and open seas: A comparative modeling study of the California and Canary Current Systems), a new SNSF funded project with 2 PhD students (Elisa Lovecchio and Martin Frischknecht) affiliated with Nicolas Gruber's research group at ETH aims at

better understanding these exchange processes and quantifying their contribution to the global oceanic carbon cycle through a comparison of the California and Canary Current Systems.



*Configuration of the two telescopic model grids (Regional Ocean Modeling System ROMS) for (a) the California and (b) the Canary Current Systems permitting very high resolution in the coastal upwelling regions of interest (see insets), while extending the domain to the entire basin with a lower, but still eddy-permitting resolution. Modeled sea surface temperatures are shown in the background.*

### **Completed project: Water demand in Swiss agriculture:**

The Climate/ Air Pollution Group at Agroscope has recently completed a joint study with ETHZ researchers in the framework of the NRP 61 – Sustainable Water Use. Three PhD dissertations by Tommy Klein, Niklaus Lehmann and Danielle Tendall were completed in this project entitled ‘Water demand in Swiss agriculture, and sustainable adaptive options of land and water management to mitigate impacts of climate change –AGWAM’. The study provides evidence that increasing water use for irrigation to boost production under growing water limitation in specific vulnerable regions would lead to increasing environmental impacts and pressure on natural reservoirs such as rivers and lakes. The results from both farm-scale and spatial optimization of land use, in combination with Life Cycle Analysis, offer options for planning adaptation measures that would be more sustainable and robust alternatives to purely technological solutions such as building reservoirs and pipelines to access additional water under climate change. The results received broad media attention (radio, TV and newspapers).

A report is downloadable from

<http://www.agroscope.admin.ch>

### **C2SM member in the GEWEX steering committee**

Since January 2014, Sonia Seneviratne is newly co-chair of the Scientific Steering Group of the Global Energy and Water Exchanges Project (GEWEX). GEWEX is the core project of the World Climate Research Programme (WCRP) concerned with studying the dynamics and thermodynamics of the atmosphere, its interactions with the Earth's surface, and the resulting modifications of the global energy and water cycle.

<http://www.iac.ethz.ch/people/sonia>

<http://www.gewex.org/gewexssg.htm>

<http://www.wcrp-climate.org>

### **Award: ERC grant for innovative ideas**

Sonia Seneviratne of C2SM was awarded an ERC Consolidator Grant for the investigation of drought and heatwave dynamics. These highly competitive grants allow mid-career scientists to develop their most innovative ideas across the European Research Area.

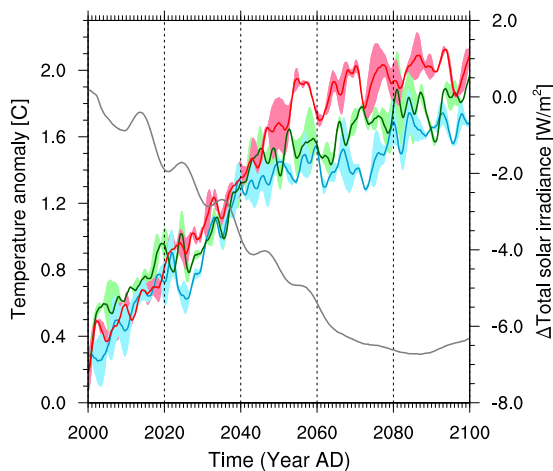
<http://www.iac.ethz.ch/people/sonia>

<https://www.ethz.ch/en/news-and-events/media-information/media-releases/2014/01/vier-eth-forschende-ausgezeichnet.html>

### **Paper: Impacts of a weakening sun during the 21<sup>st</sup> century**

How much cooler will surface temperatures in the 21<sup>st</sup> century become if the solar activity declines during the 21<sup>st</sup> century as recently proposed by several studies? With climate model experiments, Julien Anet, Thomas Peter and colleagues found that the projected surface temperature warming of 2° C will be reduced by 0.2 or 0.3° C, depending on the magnitude of the solar weakening. The study also states that the recovery of stratospheric ozone will be delayed by ten years or more as a result of reduced solar activity.

Anet et al. (2013), *Geophysical Research Letters*, DOI: 10.1002/grl.50806



*Globally averaged surface air temperature evolution relative to the averaged 1986–2005 temperatures for constant solar activity (red), and a strong (blue), and weak decrease (green) in solar irradiance. Grey curve: total solar irradiance anomaly of the strong decrease scenario, relative to the average TSI of the 1995–2005 period.*

### **Paper: Climate keeps warming even after complete stoppage of CO2 emissions**

New Earth system model simulations by Thomas Frölicher and colleagues show that global warming may continue after a stoppage of CO<sub>2</sub> emissions. The authors found that the cooling effect of decreasing atmospheric CO<sub>2</sub> on multi-century timescales is not big enough because some parts of the oceans do not take up as much energy as previously thought and the atmosphere keeps warming.

Frölicher et al. (2013), *Nature Climate Change*, DOI: 10.1038/nclimate2060

<https://www.ethz.ch/en/news-and-events/eth-news/news/2013/11/underestimated-future-climate-change.html>

### **Paper: Projections of future climate extremes**

Climate extremes leave very strong impacts on ecosystems, infrastructure and society. In two subsequent studies, Erich Fischer, Urs Beyerle and Reto Knutti show that observed trends in the intensity of hot and cold extremes as well as in dry spell length and heavy precipitation intensity are often not significant

at local scales. However, using a spatially aggregated perspective, the global probability distribution of observed local trends is clearly different to what would be expected from internal variability in the absence of any external factors. The distinct intensification of heavy precipitation events and hot extremes at a global scale cannot be explained by internal variability. The authors further presented robust spatially aggregated projections about the future distribution of heat and precipitation extremes. They found that natural variability is the dominant contribution to uncertainty in near- to mid-term projections of extremes at the local scale. This uncertainty is quasi-irreducible even if models further improve or if more precise greenhouse gas emission scenarios become available.

More about this topic: <https://www.ethz.ch/en/news-and-events/eth-news/news/2013/11/paths-out-of-uncertainty.html>

*E. M. Fischer, R. Knutti, 2014, Detection of spatially aggregated changes in temperature and precipitation extremes, <http://dx.doi.org/10.1002/2013GL058499>*

*Fischer, E.M., U. Beyerle and R. Knutti, 2013: Robust spatially aggregated projections of climate extremes, Nature Climate Change, doi:10.1038/nclimate2051*

### **Paper: Climate model code for heterogeneous computing environments**

With the stagnating performance of storage subsystems it may soon become impractical to store all data produced by a climate simulation. Bit-reproducibility is the ability of obtaining the same results from a numerical simulation on several consecutive runs, on different architectures, with different number of processors or with different software environments. Andrea Arteaga, Oliver Fuhrer and Torsten Hoefler recently published a paper where they present an approach of designing bit-reproducible portable high-performance applications. The main advantages of bit-reproducibility, in particular for climate model codes, are the ability of using heterogeneous hardware, porting code among different architectures and testing code modifications. The complete study can be found here:

<http://spcl.inf.ethz.ch/Publications/.pdf/arteaqa-fuhrer-hoefler-reproducible-apps-ipdps14.pdf>

### **Paper: Volcanic influence on European summer precipitation**

Strong tropical volcanic eruptions have significant effects on global and regional temperatures. The effects of Strong tropical volcanic eruptions on precipitation are not very well understood. C2SM community members Doris Folini and Martin Wild were part of a research team lead by Martin Wegmann and Stefan Brönnimann that analyzed hydroclimatic anomalies after fourteen strong eruptions during the last 400 years in climate reconstructions and model simulations. The team found a reduction of the Asian and African summer monsoons and an increase of south-central European summer precipitation in the year following the eruption. The simulations provide evidence for a dynamical link between these phenomena: Weaker monsoon circulations weaken the northern branch of the Hadley circulation, alter the atmospheric circulation over the Atlantic-European sector and increase precipitation over Europe. This mechanism is able to explain, for instance, the wet summer in parts of Europe during the “Year Without a Summer” of 1816.

*Wegmann, M., et al, 2014: Volcanic influence on European summer precipitation through monsoons: Possible cause for “Years Without a Summer”. J. Climate. doi:10.1175/JCLI-D-13-00524.1*

### **Event: "Auswirkungen des Klimawandels und Klimapolitik"**

In concert with the release of the IPCC reports from WG2 (impacts) and WG3 (adaptation and mitigation), the "Netzwerk Interdisziplinäre Klimaforschung" of University of Zurich and ETH Zurich and ProClim organize a public event. Researchers discuss the expected outcome and implications of the reports with stakeholders, politicians and an interested audience. The event takes place on Wednesday, April 16 2014, from 17:00-22:00 at the Aula of Zurich University.

Full programme: <http://proclimweb.scnat.ch/portal/ressources/3154.pdf>

Registration (until April 10): <http://proclimweb.scnat.ch/webforms/ipcc.php>

### **IPCC AR5 reports of WG1 are ready for download**

The complete, edited report of IPCC's WG1 including Annexes and the "Atlas of Global and Regional Climate Projections" is now available for download.

<http://www.ipcc.ch/report/ar5/wg1/#.Uv4g6v1DBux>

### **A pause for global change?**

C2SM chair Nicolas Gruber recently blogged on the pause of the temperature warming for the ETH-Zukunftsblog. Global temperature records did not continue upwards despite a continued increase of CO<sub>2</sub> in the atmosphere. Why? In the blog contribution, Nicolas Gruber points to the role of El Niño and La Niña that play a decisive role.

<https://www.ethz.ch/content/main/en/news-and-events/zukunftsblog/archiv/2014/01/el-nino-la-nina-und-das-globale-klima.html> (in German)

### **New webcasts present climate sciences to lay people**

Reto Knutti and Oliver Stebler produced the first two editions of "ETH-Werkstattgespräch" on climate models and IPCC AR5 WG1 report. The pilot-webcast aimed at explaining a climate model to a kid. The second edition focused on the realization of the IPCC WG1 report. Both webcasts were published on the vimeo channel "ETH Climate Science Visuals".

<http://vimeo.com/84229524>

<http://vimeo.com/86999995>

### **"Family-friendly leaders" are part of the C2SM network**

C2SM member Ulrike Lohmann won the "The Golden Tricycle" award 2013 for a family-friendly leader. The Golden Tricycle is an accolade awarded to team leaders who enable their members to reconcile work and family life. The award was launched by the Academic Association of Scientific Staff at ETH Zurich, AVETH, and the Office of Equal Opportunities. The first winner also was a C2SM-member: Nina Buchmann received the award in 2007.

[http://www.family.ethz.ch/ethfamilie/dreirad/index\\_EN](http://www.family.ethz.ch/ethfamilie/dreirad/index_EN)

---

### **Contact**

This Rutishauser, C2SM Communications, [this.rutishauser@env.ethz.ch](mailto:this.rutishauser@env.ethz.ch)

Change your subscription here: <http://www.c2sm.ethz.ch/news/letter/>