C2SM Newsletter February 2015 **Vol. 17**

Changes in the Steering Committee of C2SM

At the end of 2014, Christoph Schär and Konrad Steffen stepped down from the C2SM Steering Committee (SC). Christoph Schär was a driving force for the establishment and development of C2SM and served as its inaugural chair until 2012. Konrad Steffen joined the SC in 2013 and brought new impetus and ideas into the C2SM network. We sincerely thank both Christoph and Konrad for their extremely valuable contributions and their leadership during all those years.

We warmly welcome Reto Knutti from ETH and Niklaus Zimmermann from WSL as new SC members and are looking forward to working with them. Both were elected by the Plenary on Nov 24th – Read more about the people at C2SM

New C2SM Members

C2SM has broadened its membership to better reflect the inter-disciplinary and diversity of the research dealing with the climate system and climate change. Six new members were elected during the last Plenary meeting on Nov. 24, including

- Dr. Marco Arpagaus (Head of the "Applications and Operations Team", Numerical Prediction Division, MeteoSwiss)
- Prof. Jan Carmeleit (Building Physics, D-ARCH, ETH & Laboratory of Building Science and Technology, Empa)
- Dr. Lukas Emmenegger, (Head of the Laboratory for Air Pollution and Environmental Technology, Empa)
- Dr. Oliver Fuhrer (Head of the Model Development Group, Numerical Prediction Division, MeteoSwiss)
- Prof. Torsten Hoefler (Scalable Parallel Computing Laboratory, Institute of Computer Systems, D-INFK, ETH)
- Prof. Nicolai Meinshausen (Seminar for Statistics, D-MATH, ETH)
- Prof. Thomas Schulthess (CSCS Director & Institute for Theoretical Physics, D-PHYS, ETH).

Changes in the governance at MeteoSwiss

Christof Appenzeller (C2SM vice-chairman) was appointed as the new head of the division "Analysis and Forecasting" and Mischa Croci-Maspoli has taken over the lead of the Climate Division at MeteoSwiss. The Numerical Prediction Division at MeteoSwiss (led by Philippe Steiner) established two new teams, including "Applications and Operations" and "Model Development" under the lead of Marco Arpagaus and Oliver Fuhrer, respectively. The National Center for Climate Services (NCCS), which is currently under development at MeteoSwiss and has close connections with C2SM, appointed a.i. Jacqueline Flückiger-Knutti as head of the Coordination Office.

New staff at C2SM for the regional climate modeling activities

Katherine Osterried has joined C2SM this February to lead the activities related to Regional Climate Modeling (RCM). Katherine received a Ph.D. in Geophysical Fluid Dynamics from MIT in 2010. Katherine then joined the Queen's University in Belfast, Ireland, where she further developed and provided support for a well-established model of free-surface flow. We give Katherine a warm welcome!

Read more about the people at C2SM

Open position at C2SM: Outreach and Communication Officer

C2SM is seeking to appoint a C2SM is currently seeking to appoint an Outreach and Communication Officer (60%) to develop a portfolio of outreach activities and ensure the internal and external communication of the Center. She/he will in particular organize activities targeting the general public to increase their awareness, understanding, and involvement in climate-related issues (e.g., public events, science fairs) and further develop and implement communication instruments (newsletter, website, etc.)

Additional information about the position and the application procedure

Open position at C2SM: Scientifc software developer in regional weather modeling

C2SM is seeking to appoint a scientific software developer to work in close collaboration with MeteoSwiss. The successful candidate will join a goal-oriented team of active developers who are further developing and maintaining a new version of the regional numerical weather and climate model COSMO recently adapted for hybrid HPC architectures.

Additional information about the position and the application procedure

Meeting announcement: Climate data management and handling - a technical exchange within the C2SM community

C2SM invites interested members of its community to participate in an informal meeting that will serve to exchange practical approaches to the problems posed by accessing, storing and processing large volumes of gridded data, such as climate simulation output.

March 2, 2015, 13:00-17:00, ETH Zürich, Building CHN, Room P 12 – Goal and tentative program of the meeting

Worskshop announcement: 14th Young Researchers Meeting on "Soft skills for hard-working researchers"

The workshop aims to better equip the young researchers with soft skills. Opportunity will be provided to enhance academic writing proficiency, present effectively results to a scientific community, or to learn how to successfully manage research projects. The meeting is open to PhD and postdocs from the Oeschger Centre, C2SM, and other related institutions. The Oeschger Centre and Graduate School of Climate Sciences will cover registrations fees and accommodation. Participation is limited, first come first served!

June 11-12, 2015 at Hotel Aeschi Park in Aeschi bei Spiez, Switzerland – Program

Conference announcement: PASC2015

C2SM Members Christoph Schär, Thomas Schulthess, and Torsten Höfler are part of the Scientific Committee that is organizing the Platform for Advanced Scientific Computing (PASC) 2015 conference. The objectives of PASC2015 are to bring together researchers from diverse scientific backgrounds and to promote interdisciplinary collaboration and exchange of expertise in HPC and computational science. PASC2015 is currently inviting researchers from the academic and corporate world to present their research area in the form of mini symposia, talks and/or poster presentations. "Climate and Weather" is one of the key scientific domains featured in the conference. Bjorn Stevens (Director of the Max-Planck-Institute for Meteorology in Hamburg and Chair of the C2SM Scientific Advisory Board) will give the keynote talk in this area and discuss recent advancements in climate science that have been made possible by increasing computational power and advances in algorithms.

PASC2015 Conference – June 1-3, 2015, ETH Zurich, Switzerland

Conference announcement: 10th International Carbon Dioxide Conference (ICDC10)

The Swiss science community and the Oeschger Centre for Climate Change Research are proud to organize the 10th anniversary International Carbon Dioxide Conference (ICDC). The first conference of this series took place in Bern, Switzerland, and is now being brought back to the Bern area.

The focus of ICDC10 is on changes in carbon dioxide and the carbon cycle, and their interactions and links to climate and human activities from the regional to the global scale, and from the past into the future.

ICDC10 Conference – 20-25 August 2017, Interlaken, Switzerland

Call for an intercomparison exercise of climate downscaling methods

The EU-funded COST Action VALUE (Validating and Integrating Downscaling Methods for Climate Change Research) is entering its final year. The Action, which involves C2SM members from MeteoSwiss and ETH Zurich, is launching a coordinated validation exercise to intercompare downscaling methods targeting the site scale. Climate "downscalers" within and outside VALUE are invited to contribute until 17 April 2015. The results will be made publicly available. Learn more about VALUE's experimental framework in:

Maraun, D., M. Widmann, J.M. Gutiérrez, S. Kotlarski, R.E. Chandler, E. Hertig, J. Wibig, R. Huth, R.A.I. Wilcke (2015): VALUE: A framework to validate downscaling approaches for climate change studies. Earth's Future, doi:10.1002/2014EF000259

and about the intercomparison exercise

Workshop report: Climate Change Scenarios workshop

MeteoSwiss, the Federal Office for the Environment (FOEN) and ProClim organized a workshop on "Climate Change Scenarios" in September for those involved in projects of the "Pilot Program Adaptation to Climate Change". The workshop offered the opportunity to learn more about CH2011 and CH2011+ and to discuss specific questions with experts. Among the experts were C2SM members Christoph Schär and Mark Liniger and other scientists from IAC, MeteoSwiss and the University of Bern. The workshop highlighted the diversity of user needs in terms of climate data but also the need for similar dataset such as specific climate

indicators or information on the expected changes in extreme precipitation. The discussions also revealed the need for enhanced information on today's climate. End-user tailored climate information - so called climate services - will be developed further over the next years in the framework of the National Center for Climate Services. In this context it is important to strengthen the dialogue between providers and users of climate data and climate information. The workshop "Climate Change Scenario" proved to be a useful step in this direction.

"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 – Enjoy here

Simulating and visualizing an extreme weather event in Switzerland

MeteoSwiss has simulated the passage of a cyclone moving through Switzerland from August 11 to 13, 2014 that has caused unusually high precipitations in Southern Switzerland and resulted in dramatic landslides. They used the regional weather model COSMO at the high resolution of 1km x 1km and qualitatively compared the simulation with satellite/radar observations. The comparison is shown in a movie produced by Climate Science Visuals at ETH – Enjoy here

Award: EGU Outstanding Student Poster (OSP) award

Peter Greve, PhD student in the C2SM-hosted CHIRP2 project addressing the water cycle in a changing climate, has received an Outstanding Student Poster (OSP) award from the European Geoscience Union (EGU) for his poster: "The Budyko framework beyond stationarity" presented at the 2014 EGU General Assembly – Read more

Paper: Revisiting the "Dry gets drier, wet get wetter" paradigm

A recent study led by Peter Greve and Sonia Seneviratne challenges the often stated principle that dry regions are getting drier and wet regions are getting wetter. A comprehensive analysis based on a range of observational datasets for the time period 1948-2004 reveals divergent trends in many regions, including several humid regions getting drier, and a large fraction of the land area without significant trends. The results emphasize that we should not overly rely on simplifying principles to assess past developments in dryness and humidity. Peter Greve is a PhD student within the C2SM-hosted CHIRP2 project "Modelling the water cycle in a changing climate".

Greve, P., B. Orlowsky , B. Mueller, J. Sheffield, M. Reichstein, S.I. Seneviratne, (2014): Global assessment of trends in wetting and drying over land, Nature Geosci. 7, 716–721, doi:10.1038/ngeo2247

News and Views comment in Nature Geoscience

ETH media release

Paper: Air-sea interaction in the Southern Pacific Ocean

A new paper led by Lukas Papritz and colleagues reveals the relevance of cold air outbreaks from Antarctica for air-sea interaction in parts of the Southern Ocean. In particular, the study shows that the frequency of cold air outbreaks in the Ross Sea and the Amundsen and Bellingshausen Seas strongly determines the interannual variation of air-sea heat fluxes. Lukas Papritz is a PhD student within the C2SM-hosted CHIRP2 project "Modelling the water cycle in a changing climate".

Papritz, L., S. Pfahl, H. Sodemann, and H. Wernli (2015): A climatology of cold air outbreaks and their impact on air-sea heat fluxes in the high-latitude South Pacific. J. Climate, 28, 342-364, doi:10.1175/JCLI-D-14-00482.1

Paper: Changes in heavy summertime precipitation in a changing climate

Using the COSMO model in a convection-resolving configuration (horizontal grid spacing of 2.2 km), Nikolina Ban and colleagues have found that projected increases in both extreme daily and hourly summer precipitation in summertime over continental Europe follow theoretical expectations from the Clausius-Clapeyron relation. These results are in contrast to previous studies that predicted an increase of extreme hourly precipitation faster than expected from the Clausius-Clapeyron relation.

Ban, N., J. Schmidli, and C. Schär (2015): Heavy precipitation in a changing climate: Does short-term summer precipitation increase faster? Geophysical Research Letters, in press. doi: 10.1002/2014GL062588

Swiss National Supercomputing Centre (CSCS) highlight

Paper: Revisiting the energy balance over land and oceans

In a recent study, Martin Wild and colleagues have assessed the energy budgets over land and oceans in the state-of-the-art climate models considered in the latest IPCC report using, to the extent possible, direct observations from both surface and space. They show that significant biases still remain, particularly in the simulated surface budgets. They also infer best reference estimates for the energy balance components, which are presented in global land and ocean energy balance diagrams.

Wild, M., D. Folini, M. Hakuba, C. Schär, S.I. Seneviratne, S. Kato, D. Rutan, C. Ammann, E.F. Wood, and G. König-Langlo (2015): The energy balance over land and oceans: An assessment based on direct observations and CMIP5 climate models. Climate Dynamics, doi:10.1007/s00382-014-2430-z

Paper: New insights into precipitation changes over Switzerland in a changing climate

Projected changes in seasonal mean precipitation are often insufficient to address the multifaceted challenges of climate adaptation. A new study provides more details for Switzerland by considering changes in precipitation frequency and intensity, precipitation type and the temporal structure. The study reveals that the expected future summer drying is caused by a reduction in the number of wet days thereby increasing the likelihood of multi-day wet spells.

Fischer, A.M., D.E. Keller, M.A. Liniger, J. Rajczak, C. Schär, and C. Appenzeller (2014): Projected changes in precipitation intensity and frequency in Switzerland: a multi-model perspective. Int. J. Climatology, doi: 10.1002/joc.4162

Paper: Impact of atmospheric nitrogen deposition on the North Pacific

Nitrogen concentrations have increased markedly in surface waters across the North Pacific Ocean for the past decades. C2SM member Nicolas Gruber was part of a team of researcher that reconstructed these changes based on in situ measurements of nutrient concentrations. The trend could enhance microbial growth in the ocean and eventually increase production of the greenhouse gas nitrous oxide (N2O)

Kim, I.-N., K. Lee, N. Gruber, D. M. Karl, J. L. Bullister, S. Yang, and T. Kim (2014): Increasing Anthropogenic Nitrogen in the North Pacific Ocean. Science 1102: 1102–1106, doi:10.1126/science.1258396

Paper: Atmospheric circulation drives increases of Antarctic ice in a warming world

Antarctic sea-ice cover has increased over the past few decades. C2SM community member Alexander Haumann led a team of scientists that explained the underlying cause and analyzed why climate models fail to reproduce it. The authors found that winds blowing more strongly away from the Antarctic continent were the driver of increasing ice cover. Consequently the ice is further blown to the north and the ocean refreezes in the south. However climate models do not fully reproduce this effect.

Haumann, F. A., D. Notz, and H. Schmidt, (2014). Anthropogenic Influence on Recent Circulation-Driven Antarctic Sea Ice Changes. Geophysical Research Letters, doi:10.1002/2014GL061659

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