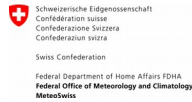




ETH zürich



C2SM seeks a new Executive Director

After 7 years at C2SM, the C2SM Executive Director Isabelle Bey will be leaving C2SM at the end of February to take a position at MeteoSwiss as head of the Regional Center West in Geneva. The search for a new executive director is on-going, see [here](#) for details.

Reflecting on her time at C2SM, Isabelle Bey said: "This was a great opportunity to contribute to the establishment of the center back in 2009. The center is now a mature "system" active in several areas. C2SM is and should remain a bottom-up initiative, and its developments should be driven by the needs of its Community. Working with and for the C2SM Community was a great privilege on both a professional and personal basis. I'd like to thank very sincerely the [C2SM Executive Office](#) for the enjoyable collaboration over the years and I wish C2SM all the best luck for its further development!"

C2SM Members listed as Highly Cited Researchers 2015

[Ulrike Lohmann](#) (ETH), [Sonia Seneviratne](#) (ETH) and [Niklaus Zimmermann](#) (WSL) were listed as "Highly Cited Researchers 2015" by Thomson Reuters, which qualifies them as "some of world's most influential scientific minds".

Towards C2SM Phase III

C2SM is nearing the end of its 2nd phase (2013-2016), requiring us to develop the plans for its third phase (2017-2020). Planning is well underway and a workshop with the members of C2SM will take place at the end of March to define the objectives and strategy for the next phase. The proposals will be submitted to our respective institutions this summer so that we will be ready to start the new phase in January of next year. If you have questions and/or want to provide input to the process, please get in touch with the chair [Nicolas Gruber](#).

New activities in scientific visualization at C2SM

Scientific visualizations provide a glance at the details and complexities of the climate and weather phenomena simulated by climate and weather models. As of April 2016, C2SM will offer support in the areas of scientific visualization in collaboration with the ETH [Scientific IT Services \(SIS\)](#) unit. The Community is now invited to think about its needs in terms of scientific visualization and to submit proposals for the development of these products. Through the collaboration with SIS, small support could also be provided for web programming. Details about these activities (responsible person, workflow towards the development of a scientific visualization, etc.) is available on the following web page: <http://www.c2sm.ethz.ch/services/visualization.html>. Contact person is [Tracy Ewen](#).

Report on the Carbocount CH project

The [SNF Sinergia project CarboCount CH](#) ended on 31 December 2015. The project was an excellent demonstration of the value of integrating observations and atmospheric modeling to study biospheric and anthropogenic greenhouse gas fluxes, an approach also followed by the European Research Infrastructure ICOS (Integrated Carbon Observation System). The first two PhD students of the project, Brian Oney (group of [D. Brunner](#), Empa) and Stefanos Mystakidis (group of [S. Seneviratne](#), ETH) defended their theses at the end of 2015. Three of the four observation sites set up by CarboCount CH are continuing to produce invaluable measurements of carbon dioxide and methane to study their biospheric fluxes and anthropogenic emissions over Switzerland. Long-term funding is currently being secured for the core site of the network, the 212 m tall tower at Beromünster. The project has successfully developed several extensions to the COSMO model allowing the simulation of atmospheric transport of CO₂ and CH₄, to describe the exchange of CO₂ between the atmosphere and the biosphere, and to quantify the fluxes of CO₂ and CH₄ from measurements at the CarboCount CH sites by inverse methods.

Report on the CHIRP-2 project “Modeling the water cycle in a changing climate”

The [CHIRP2 project](#) (which ended in July 2015) combined the expertise and interests of 18 co-applicants from ETH Zurich, MeteoSwiss, and Agroscope. The project aimed to improve our quantitative understanding and our ability to quantitatively model a number of key processes and interactions within the Earth’s water cycle. Seven PhD theses were awarded in the framework of the CHIRP2 project and the project has resulted in over 30 publications. The project has allowed major advances with respect to processes involved in the water cycle over a wide range of scales and climate system components. These include (among others) the representation of moist convection (thunderstorms and rain showers) in high-resolution climate simulations, the role of small eddies for the exchange of energy between atmosphere and ocean, the impacts of anthropogenic aerosol on the sea surface temperature, and the behavior of evapotranspiration from land in relation to precipitation using long-term in-situ measurements. In addition, a collaboration with the ETH Competence Center for Learning and Instruction ([EducETH](#)) and in particular the “[Mathematics, Informatics, Natural sciences, and Technics](#)” (MINT)-learning Center has been initiated. The main objective of this collaboration is to contribute to, and financially support, the development of teaching units in mathematics, physics and chemistry for the “Gymnasialunterricht” within the core curricula, taking examples from the climate and atmospheric sciences.

Report on the COSMO user workshop 2016

Approximately 40 people attended the COSMO User Workshop co-organized by C2SM and held at MeteoSwiss on January 18. New users of the COSMO model were briefly introduced, and 14 presentations were given highlighting the varied uses of COSMO within the Swiss user community. The presentations and program can be found at: <https://wiki.c2sm.ethz.ch/COSMO/EventsCUW2016>.

C2SM @ Schools

In the framework of the [CHIRP2](#) project, C2SM has engaged in a collaboration with the [ETH Competence Center for Learning and Instruction \(EducETH\)](#) and in particular the ["Mathematics, Informatics, Natural sciences, and Technics" \(MINT\)-learning Center](#). The main objectives of this collaboration is to contribute to, and financially support, the development of teaching units in mathematics, physics and chemistry for the "Gymnasialunterricht" within the core curricula, taking examples from the climate and atmospheric sciences. Ultimately, the main goal is to improve science education at the high school level in the MINT areas to ensure that students gain a better general education and are better qualified for studies and professions in the natural sciences and technology.

Outreach: "Werkstattgespräche" and "Workshop Discussions"

The new episode of the "Werkstattgespräche" series (produced by C2SM-community member [Oliver Stebler](#)) features [Heini Wernli](#) (ETH), Bernhard Leuppi (a pilot from Edelweiss Air), and Bruno Kunz (an aeronautical meteorological forecaster at MeteoSchweiz). Entitled "Über den Wolken", it addresses the links between aviation and weather. This workshop discussion contains two COSMO animations specific for the days where the movie was produced.

[Über den Wolken on vimeo.](#)

Animation of the COSMO-2 regional weather model for August 2015 ([on vimeo](#)) and November 2015 ([on vimeo](#)).

Upcoming events of potential interest for the C2SM Community

- Special Seminar Series "Greenhouse Gas Fluxes and Sinks" jointly organised by the CCES MAIOLICA-II project and C2SM: [2016 program](#)
- International Summer School on Atmospheric and Oceanic Sciences 2016: [Advanced Programming Techniques for the Earth System Science](#) – August 28 - September 2, 2016, L'Aquila, Italy.
- International colloquium in honour of Prof. Johannes Staehelin: "[Ozone Research - Quo Vadis](#)" – May 4, 2016, ETH Zurich

Paper: Dynamical processes in cold air outbreaks in the Southern Ocean

A recent study led by [Lukas Papritz](#) and [Stephan Pfahl](#) investigates the dynamical mechanisms governing the evolution and decay of a cold air outbreak from Antarctica using the numerical weather prediction model COSMO. The study shows for the first time that latent heat release associated with mesocyclones strongly accelerates the decay of cold air outbreaks. This finding has important implications for the representation of cold air outbreaks in climate models, where mesocyclones are poorly resolved. [Lukas Papritz](#) was a PhD student within the C2SM-hosted CHIRP2 project "[Modelling the water cycle in a changing climate](#)".

Publication: [Papritz, L., and S. Pfahl, 2016. Importance of latent heating in mesocyclones for the decay of cold air outbreaks: A numerical process study from the Pacific sector of the Southern Ocean. Mon. Wea. Rev., 144, 315-336.](#)

Paper: Translating global mean temperature changes into regional changes

The urgency of reducing carbon dioxide (CO₂) emissions is difficult to communicate to the general public and policy makers when only global temperature targets, such as the widely discussed increase in two degrees celsius above the pre-industrial level, are considered. However translating changes in global temperature (and the associated CO₂ emissions) into regional- and impact-related climate changes may be more powerful because such targets are more directly aligned with individual national interests. Such an approach is presented in a new study published by C2SM-members [Sonia Seneviratne](#) and [Reto Knutti](#) (among others) in *Nature*. Using the wealth of data made available by the climate model inter comparison initiative (so-called [CMIP5](#)) in the framework of the [5th IPCC Assessment Report](#), the authors showed that regional indices such as regional changes in extreme temperatures and precipitation scale robustly with global temperature across scenarios, and thus with cumulative CO₂ emissions. Providing climate and climate impact information at a regional scale could help in the development of solutions - in particular when political decision are needed in the context of climate negotiations and adaptation - and when communicating with the public.

Publication: [Seneviratne, S.L., M.G. Donat, A.J. Pitman, R. Knutti, R.L. Wilby, 2016: Allowable CO₂ emissions based on regional and impact-related climate targets, Nature, doi:10.1038/nature16542](#)

In the media:

ETH News article: [How two degrees may turn into four](#)

NZZ: [Warum das Zwei-Grad-Ziel nicht überall gilt](#)

Tagesanzeiger: [Zwei-Grad-Ziel heisst plus sechs Grad in der Arktis](#)

Paper: The two-degree climate change target under scrutiny

In a perspective article in *Nature Geoscience*, C2SM member [Reto Knutti](#) and co-authors addressed whether the two-degree climate target can be considered safe. Their paper coincided with the international climate talks that took place in Paris in December 2015. In this paper, they argued that global surface temperature is indeed the best measure for a climate target, since temperature increases and total CO₂ emissions show a linear relationship. Each temperature target is therefore associated with a certain emissions budget. A safe target value is however almost impossible to identify, and the two-degree target was a political decision made by the United Nations Framework Convention on Climate Change (UNFCCC) in 2012, albeit, informed by science. As CO₂ emissions are currently nudging the upper margin of scenarios, without climate protection the reductions proposed for Paris are nevertheless not enough to meet the two-degree target. The authors stated that the discussion of whether the two degree target is the right one, and whether it is still feasible, should not distract attention from the real problem: the world must act.

Publication: [Knutti, R., J. Rogelj, J. Sedlacek and E. Fischer, 2015, A scientific critique of the two-degree climate change target, Nature Geoscience, doi:10.1038/ngeo2595](#)

In the media:

ETH Zukunftsblog (English): [Unclear climate targets](#)

ETH Zukunftsblog (German): [Unklare Klimaziele](#)

NZZ am Sonntag, Autorenbeitrag: [Und jetzt alle](#)

Sonntagsblick: [Auf dünnem Eis](#)

Tagblatt: ["Ausreichen wird das nicht"](#):

Paper: The CarboCount CH greenhouse gas observation network

As the [CarboCount CH project](#) has just ended, the CarboCount CH network was presented in a recent publication in Atmospheric Chemistry and Physics. The network is composed of four new sites setup in Switzerland to continuously measure the atmospheric concentrations of carbon dioxide and methane. The paper provides relevant characteristics of the individual sites in terms of their local environment and meteorological conditions and in terms of their areas of influence and ultimately demonstrates that the network nicely covers the area of the Swiss Plateau. It is anticipated that the observations provided by the network, used in conjunction with other tools such as trace gas transport and inverse modeling studies, will allow reliable regional-scale carbon flux estimates to be derived for Switzerland.

Publication: [Oney, B., Henne, S., Gruber, N., Leuenberger, M., Bamberger, I., Eugster, W., and Brunner, D.: The CarboCount CH sites: characterization of a dense greenhouse gas observation network, Atmos. Chem. Phys., 15, 11147-11164, doi:10.5194/acp-15-11147-2015, 2015.](#)

Contact: info.c2sm@env.ethz.ch