C2SM NEWS

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PHOTO: NASA, FLICKR

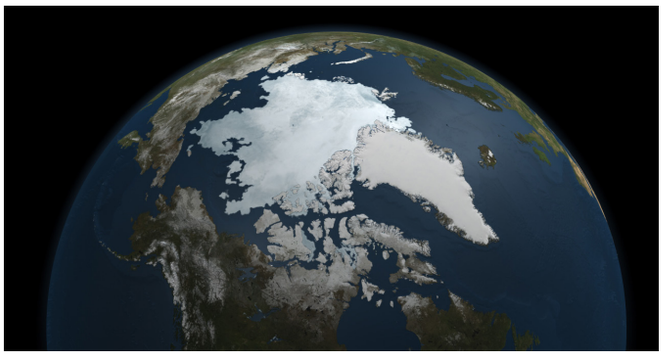
The National Centre for Climate Services NCCS and ETH-Klimarunde present the new climate change scenarios for Switzerland – save the date.

The Swiss Climate Change Scenarios project CH2018 is nearing its completion. We are pleased to announce the publication of the new climate change scenarios: the official launch event will take place on 13 November 2018 at ETH Zurich and will be jointly organized by the National Centre for Climate Services NCCS and ETH-Klimarunde (for more details see article by NCCS). The CH2018 project is a priority theme of NCCS. ■

MORE INFORMATION
www.climate-scenarios.ch/

SCIENCE HIGHLIGHTS

PAPER: ROLE OF POLAR ANTICYCLONES AND MID-LATITUDE CYCLONES FOR ARCTIC SUMMERTIME SEA-ICE MELTING



Annual minima in Arctic sea-ice extent and volume have been decreasing rapidly since the late 1970s, with substantial interannual variability. Summers with a particularly strong reduction of Arctic sea ice extent are characterized by anticyclonic circulation anomalies from the surface to the upper troposphere. This study shows that these seasonal circulation anomalies are the result of individual Arctic anticyclones. Sea-ice reduction is systematically enhanced during episodes with Arctic anticyclones, and the summertime reduction of sea-ice volume correlates with the frequency of Arctic anticyclones poleward of 70°N. The results emphasize the fundamental role of extratropical dynamics in establishing Arctic anticyclones and in turn seasonal circulation anomalies, which are of key importance for understanding the variability of summertime Arctic sea ice melting. ■

REFERENCES
Wernli H and Papritz L (2018) Role of polar anticyclones and mid-latitude cyclones for Arctic summertime sea-ice melting. Nature Geosci., 11: 108–113.

PAPER: STRENGTHENING SEASONAL MARINE CO_2 VARIATIONS DUE TO INCREASING ATMOSPHERIC CO_2

While models have predicted that the amplitude of the seasonal cycle of CO_2 in the world's oceans should be increasing in response to the oceanic uptake of CO_2 from the atmosphere, this has not been observed so far. Using the to-date largest collection of surface ocean CO_2 measurements, this study demonstrates for the first time that the added CO_2 indeed causes a measurable increase in the seasonal amplitude of CO_2 and that the magnitude of this trend is in rather good agreement with the expected change based on basic thermodynamic considerations. This increase will cause a more rapid transition of the surface ocean toward ocean acidification conditions that might be harmful for organisms sensitive to low pH and/or low saturation conditions with respect to mineral carbonates. The study also emphasizes the detectable imprint that human emissions have already left on the global oceans. ■

REFERENCES
Landschützer P, Gruber N, Bakker D C E, Stemmler I, and Six K D (2018) Strengthening seasonal marine CO_2 variations due to increasing atmospheric CO_2. Nature Climate Change, doi:10.1038/s41558-017-0057-x.

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