

OCCI-funded researcher awarded Alexander von Humboldt Fellowship for Indian Ocean research

Caroline Ummenhofer, Assistant Scientist in the Physical Oceanography Department at WHOI, used OCCI seed funding for novel Indian Ocean research to secure a prestigious fellowship in Germany. The German [Alexander von Humboldt Foundation](#) sponsors foreign scientists for extended visits to collaborate with research groups in Germany. Ummenhofer was the sole recipient in the field of oceanography amongst the 612 Humboldt Fellowship awardees in 2014. The awardees were invited to Berlin for the [Annual Meeting of the Alexander von Humboldt Foundation](#), which included receptions at Schloss Bellevue in Berlin by the German Federal President and at the Freie University Berlin in honor of the new awardees.

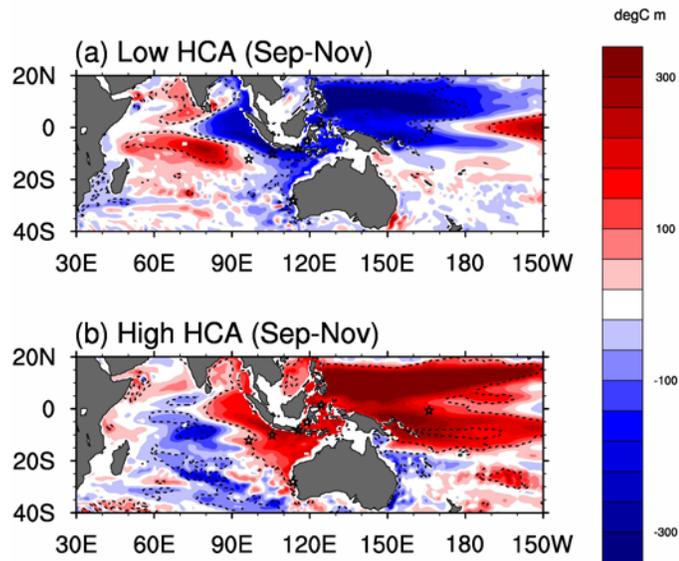


(left) Caroline Ummenhofer at the reception in Schloss Bellevue, the seat of the German Federal President, Joachim Gauck (right, courtesy of Humboldt-Foundation/David Ausserhofer).

Now, Ummenhofer is preparing for her initial 3-month research visit to the GEOMAR Helmholtz Centre for Ocean Research in Kiel, Germany. With her German collaborators, she will investigate long-term changes in the Indian Ocean using state-of-the-art numerical ocean models on increasingly finer grids. Despite its importance for regional climate, the Indian Ocean is the least observed of the tropical ocean basins. It

is also particularly vulnerable to climate change. Assessing changes in Indian Ocean upper-ocean properties, such as distinguishing between natural low-frequency variability and long-term trends driven by human-induced warming, is hampered by sparse observational records.

State-of-the-art ocean model simulations provide a dynamically-based tool to evaluate how upper-ocean conditions evolve and covary across different timescales. This information will be combined with coral records and other paleo proxy reconstructions to address past, present, and future changes in Indian Ocean variability. This has important implications for societies particularly vulnerable to climate change in Indian Ocean rim countries.



Ocean model composite anomalies of subsurface heat content ($^{\circ}\text{C m}$) for the period 1970-2004 for anomalous (a) low and (b) high heat content events in the eastern Indian Ocean. Stars indicate locations of selected paleo proxy records to be used in the proposed study.

This important research evolved from her project on “Indo-Pacific Connectivity on Decadal Timescales: Remote Pacific Impacts on Eastern Indian Ocean Variability” funded by OCCl.