

MEETING

Improving Understanding of the Agulhas Current and Its Global Climate Impacts

Working Group on the Climatic Importance of the Greater Agulhas System; Portland, Oregon, 20–21 February 2010

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The first meeting of the new Scientific Committee on Oceanic Research (SCOR) Working Group 136 was held to discuss recent developments in understanding the greater Agulhas Current system and future research directions. The overarching goal of the working group is to improve understanding and awareness of the regional and global climate impacts of the Agulhas Current, a major western boundary current that flows along the east coast of Africa, and its interocean leakage.

In addition to studying modern circulation, the working group is motivated by recent paleodata that suggest that through the currents' southern influence on the Atlantic meridional overturning circulation (AMOC), changes in the leakage of warm and salty Agulhas waters into the Atlantic may have triggered the end of ice ages. In terms of global climate, this arguably puts the importance of the greater Agulhas system on a par with Heinrich (land-ice release) events and high-latitude deepwater formation.

Recent studies discussed at the meeting suggest that Agulhas leakage is increasing

as a result of global warming, with the potential to strengthen the AMOC. This is a profound finding because it could represent a positive feedback on Northern Hemisphere climate change, in contrast to Greenland ice sheet melting, which represents a negative feedback (through weakening of the AMOC). Working group members noted that although the relative strengths of these feedbacks are unknown, these findings suggest that the Agulhas deserves much greater attention from the scientific community.

During the meeting, the working group began fulfilling its first three terms of reference. The first term of reference is to facilitate collaborations between existing and planned studies of the region. Several current observational programs in particular were identified that would benefit from improved coordination across individual disciplines. The second term is to write a review paper that discusses current levels of both understanding and uncertainty as to how changes in the Agulhas system come about, how they affect regional and global climate, and vice versa. The main foci of the planned review paper that shall be

communicated to a wider community were discussed at the meeting. The third term is to identify key components of the circulation that deserve further study and/or sustained monitoring; this was also discussed at the meeting.

Over the next 3 years, the working group will meet twice more, next year in East Africa. With help from SCOR's Committee on Capacity Building, the group will look for ways to help build scientific capacity in East African nations, such as Mozambique, Tanzania, and Kenya. More resources in these nations will greatly increase the feasibility of sustained observations over the region in the future. The working group's final term of reference is to plan to hold in 2012 an AGU Chapman Conference, with full participation of the African science community, on the climatic importance of the greater Agulhas Current system.

Anyone interested in the greater Agulhas Current system, or in the goals of the working group, is encouraged to contact the authors of this report. Working Group 136 is cosponsored by SCOR, World Climate Research Programme (WCRP), International Association for the Physical Sciences of the Ocean (IAPSO), and International Marine Global Change Studies (IMAGES). For information about Working Group 136, its full terms of reference, and a list of members, see http://www.scor-int.org/Working_Groups/wg136.htm.

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