

Preface

The 2014 Geophysical Fluid Dynamics Summer Study Program started on June 16th, with the topic of *Climate Physics and Dynamics*. The topic proved very timely and attracted an unprecedented number of applications from brilliant students. Professors Kerry Emanuel (MIT) and Geoff Vallis (Exeter) gave the principal lectures. They began with the simplest energy balance models and then included adjustment of the vertical profiles by convection (dry and moist). Kerry delved more deeply into convection and the processes found in "cloud-permitting" models, including island effects and the spontaneous formation of clusters surrounded by dry regions. Geoff discussed the larger-scale dynamics of the atmosphere and oceans, including the transports by eddies and the thermohaline circulation. This year, we webcast the principal lectures, with order 50 connections per day from viewers at many universities worldwide.

Antonello Provenzale, Raffaele Ferrari, and Glenn Flierl co-directed the summer and invited a large number of top researchers in the dynamics of climate, so that we had a broad critical view on the status of modelling and theory. As usual, the visitors presented new ideas and approaches to geophysical dynamics, and the visitors, staff, and fellows engaged in intense discussions on the porch and in the lecture room. The long-term staff members ensured that the fellows never lacked for guidance; many of them explored unfamiliar topics but were still able to develop new insights.

This summer's fellows were

- Jörn Callies, MIT/WHOI Joint Program in Oceanography
- Joseph Fitzgerald, Harvard University
- Shineng Hu, Yale University
- Alexis Kaminski, University of Cambridge
- Paige Martin, University of Michigan
- Daniel Mukiibi, University of Hamburg
- Ashley Payne, University of California, Irvine
- Erica Rosenblum, University of California, San Diego
- Geoff Stanley, University of Oxford
- Jim Thomas, New York University

In 2014, the Sears Public Lecture was delivered by Professor Cecilia Bitz, University of Washington, who discussed "The Future of Arctic and Antarctic Sea Ice." She noted that both the Arctic and Antarctic have experienced record sea ice coverage in the last decade. The Arctic has experienced record losses, especially in summer, while the Antarctic has had expanding sea ice. She considers how this is possible in an era of global climate change, and what we can expect in the future. Cecilia overcame problems with the microphone and engaged the audience both in answering question and in discussions at the reception and refreshments following the talk.

Anne Doucette, Julie Hildebrandt, and Janet Fields made sure that the administrative side of the program ran with admirable efficiency. Matt Barton ensured the webcast was high quality. We continue to be indebted to WHOI for their support and to the Academic Programs Office, who once more (with the cooperation of the weather!) provided a perfect atmosphere.