Preface

The 2013 Geophysical Fluid Dynamics Summer Study Program theme was *Buoyancy-Driven Flows*. Professor Paul Linden of the University of Cambridge was the principal lecturer. He ably introduced the topic from simple beginnings to sophisticated models and observations, guiding the audience in the cottage and on the porch through fundamental theory and applications. A number of topics from the lectures resurfaced in the fellows' projects. The first ten chapters of this volume document these lectures, each prepared by pairs of the summer's GFD fellows. Following the principal lecture notes are the written reports of the fellows' own research projects. This summer's fellows were:

- Tobias Bishoff, California Institute of Technology
- Catherine Jones, Scripps Institution of Oceanography
- Daniel Lecoanet, University of California, Berkeley
- Kate Snow, Australian National University
- Ton van den Bremer, Oxford University
- Karin Van Der Wiel, University of East Anglia
- Gregory Wagner, University of California, San Diego
- Yuki Yasuda, University of Tokyo
- Varvara Zemskova, University of North Carolina

In 2013, the Sears Public Lecture was delivered by Professor Susan Lozier, of Duke University on the topic of "Overturning in the North Atlantic: new observations, new views, lingering questions". Susan showed how modern observational techniques now allow the time-variability of the Gulf Stream and the North Atlantic circulation to be monitored, revealing trends and changes hitherto undetected. Redfield was crowded, and the audience enjoyed refreshments together after the lecture.

Claudia Cenedese, Eric Chassignet and Stefan Llewellyn Smith were co-directors for the summer. The summer was marked by a large number of long-term staff members, as well as many visitors who gave talks on a large variety of topics. The large number of long-term staff members ensured that the fellows never lacked for guidance, and the seminar series was filled by a steady stream of visitors, talking about topics as diverse as how to model hagfish slime and the science and art of sculpturing fluids.

As usual, laboratory experiments were facilitated by able support from Anders Jensen, who had to worry about long tanks, small slopes and smaller particles. Janet Fields and Jeanne Fleming made sure that the administrative side of the program ran with admirable efficiency. We continue to be indebted to W.H.O.I. Education, who once more provided a perfect atmosphere.