

Abstract

Oberwolfach Workshop:

Model Hierarchies in Atmosphere, Ocean, and Climate Sciences

Dates:

30 June - 5 July 2024 (Code: 2427)

Organizers:

Paola Cessi, San Diego
Rupert Klein, Berlin
Samuel N. Stechmann, Madison
Bjorn Stevens, Hamburg

This Oberwolfach workshop continues the sequence on "Atmosphere-Ocean Science" from (2002, 2006, 2010). The spirit of the event is that of an open invitation to engage in an eye-level exchange on recent developments and pressing challenges in each of the participating disciplines, and to explore possible new routes of interdisciplinary cooperation. This workshop will emphasize "model hierarchies" and their importance for the systematic development of both theoretical understanding and methods of scientific investigation. To limit its scope, the workshop will focus on (i) complex scale interactions in the ocean, (ii) complex thermodynamics and multiphase processes, and (iii) tropical-extratropical interactions from the applied perspective. From a mathematics perspective, challenging aspects of the derivation, justification, and numerical integration of hierarchical reduced models will be addressed. Moreover, the workshop will explore the potential applicability in atmosphere-ocean science of exciting recent results of mathematical fluid dynamics on "rough path" stochastic modelling and "wild" weak solutions of the Euler and Navier-Stokes equations.

Mathematics subject classification (MSC): 76, 76U60, 86A05, 86A08, 86A10