SEMINAR SERIES

北京大学力学与工程科学学院
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Diagnosing scale-dependent dynamics from limited observations in the atmosphere and ocean

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地 点：新奥工学大楼 2F - 2047 会议室

主持人：谢金翰

内容简介：

Measurements of velocities and buoyancy/temperature by ship/aircraft along tracks, or by drifters along Lagrangian trajectories, are often obtained in the ocean and atmosphere. These measurements span across different spatial scales and can provide valuable scale-dependent insights into the dynamics. In 2014, a method was proposed by Bühler, Callies and Ferrari to decompose ship/aircraft track measurements into linear waves and geostrophic flows. The first step of the method is a Helmhotlz decomposition of horizontal velocities into rotational and divergent parts. Exploiting the different fingerprints from waves and balanced flows on the rotational and divergent motions, the method then achieves a dynamical decomposition if metrics of potential energy are also observed. Since 2014, the method has been repeatedly applied to in-situ data and became a popular approach to disentangle waves and balanced flows. Some theoretical developments have been made to relax some assumptions in the 2014 version and to make it applicable for a wider range of observations. In this talk, I will give an idiosyncratic overview of theoretical developments up to now, introduce a recent work applying a variation of the approach, and discuss some possible new ways to apply the approach to oceanic data

报告人简介：

Han Wang （王含）- currently a research assistant at University of Hamburg, and a Young Project Leader (-- meaning a principal investigator) at the Collaborative Research Center TRR181 "Energy Transfers in Atmosphere and Ocean"
- PhD: Courant Institute of Mathmematical Sciences, New York University, adviser: Oliver Bühler
- Postdocs at University of Toronto (2020 - 2022) and University of Edinburgh (2022 - 2024).
- Research interest: interactions and disentanglement between waves and balanced flows in geophysical fluids, with applications to observational data.

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