

'The BIG Questions' Lecture Series



Ocean Mesoscale Eddy - Atmosphere Interaction

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“Like storms and weather in the atmosphere, mesoscale eddies are ubiquitous features in the world oceans, and carry more than half of the kinetic energy of the global ocean circulation. It has been widely recognized that mesoscale ocean eddies play a major role in the mixing and transport of water properties, affecting the generation and maintenance of strong ocean currents and fronts, as well as the physical and biogeochemical properties of water mass. However, the extent to which ocean mesoscale eddies can directly influence the atmosphere, and thereby impact weather and climate, is far from being fully understood. The central theme of this talk is to demonstrate that the ocean and atmosphere interact strongly at frontal- and meso-scales, and this interaction can be critically important for understanding, simulating and predicting weather and climate extremes, such as tropical cyclones and extratropical winter storms. High-resolution modeling and observational evidence will be presented to showcase how ocean mesoscale eddies can exert both local and remote influences on near-surface wind and rainfall patterns and how ocean mesoscale eddy-atmosphere (OMEA) feedback can potentially affect energetics and structures of strong ocean currents and fronts. Current generation global climate models and observing systems are inadequate in fully resolving the complex nature of OMEA interaction. Improving our capability to better observe and model OMEA interaction remains one of the grand challenges for oceanographers and climate scientists.”

Venue: GEOMAR westshore building, large conference room (großer Konferenzraum)

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