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Sea Ice Topography Monitoring Across Scales and Domains

Sea ice topography is at the interface of ocean and atmosphere interactions in ice covered waters. It is therefore a key component of the Arctic's coupled energy budget, which is currently heavily imbalanced leading to the fastest warming observed anywhere on the planet. To observe it, we rely on expeditions and satellite missions. These are brought together in an ongoing collaboration between AWI and DLR. In this talk, we will outline the existing collaboration and novel remote sensing techniques for topography retrieval. This encompasses the ongoing operational support of navigation during research campaigns by near real-time delivery of satellite data to Polarstern (Project APEXES), and the scientific collaboration in the form of joint analysis of the connections of sea ice topography and high resolution spaceborne synthetic aperture radar measurements (Project MOSAICMicrowaveRS). Currently we are developing new retrieval methods for sea ice topography at previously inaccessible scales. The impact of these observations is not limited to science but will also affect the budding marine traffic sector in Arctic waters.

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