

Introduction of Geophysical Observations during the 2016 Amundsen Sea Cruise

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During the 2016 Amundsen Sea cruise, we carried out geophysical surveys on the Getz Ice Shelf (GIS) in order to investigate the response of ice-shelf basal melt rates to changes in the underlying ocean. There were three activities performed during the cruise: autonomous phase-sensitive radio echo sounder (ApRES) deployments to measure ice-shelf basal melt rates, seismic surveys with geopebbles to determine the ice base and seabed depths for supporting the gravity survey, and helicopter gravity field observations to provide wide area estimates of water depth below ice shelves. The ApRES deployments and seismic experiments were performed at four sites on the western GIS and three two-hour helicopter gravimetry survey flights were flown over the GIS. These observation data will be used to analyze ice-shelf basal melt rates and insight into geological boundaries and structures in the Getz Ice Shelf region. Additionally, some methods of ice mass balance estimation using ApRES and satellite data will be introduced for the future research.