



## **Recent Improvements in the U.S. Navy's Ice Modeling Using Merged CryoSat-2/SMOS Ice Thickness**

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The U.S. Navy's Arctic Cap Nowcast/Forecast System (ACNFS) is composed of the Community Ice Code (CICE) coupled to the HYbrid Community Ocean Model (HYCOM). The system assimilates ocean and ice observations including ice concentration from the Advanced Microwave Scanning Radiometer 2 (AMSR2), Special Sensor Microwave Imager Sounder (SSMIS) and ice edge data from the National Ice Center's Interactive Multisensor Snow and Ice Mapping System (IMS). In this study, we perform a series of experiments in which the ACNFS is initialized with a blended ice thickness field from CryoSat-2 and the Soil Moisture and Ocean Salinity (SMOS) Missions. CryoSat-2 produces a sea ice thickness product which is more accurate for thicknesses greater than 0.46 m while SMOS ice thickness is best for thicknesses less than 0.46 m. The experiments begin in March 2012 and continue through April 2015. ACNFS ice thickness is compared against NASA IceBridge, WHOI Upward Looking Sonar, and Cold Regions Research and Engineering Laboratory (CRREL) ice mass balance buoy data. Preliminary results show reduced ice thickness errors using this blended technique.