



## **Improving sea ice edge forecasts by assimilating high resolution VIIRS sea ice concentration data into the U.S. Navy's ice forecast system**

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This study presents the improvement in ice edge error within the U.S. Navy's operational sea ice forecast system gained by assimilating the high horizontal resolution Visible Infrared Imaging Radiometer Suite (VIIRS) ice concentration products. A series of hindcast studies are performed for the period of 1 January – 31 December 2016 using the Global Ocean Forecast System (GOFS 3.1), a  $1/12^\circ$  HYbrid Coordinate Ocean Model (HYCOM) that is two-way coupled to the Community Ice Code (CICE) in a daily update cycle with the Navy Coupled Ocean Data Assimilation (NCODA) system. Comparisons using the VIIRS ice concentration products ( $< 1\text{km}$  resolution) show a 15-19% reduction ice edge location errors (for both the Arctic and Antarctic) than the current system, which assimilates near real-time passive microwave data from the Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave/Imager (SSMIS) and the Advanced Microwave Scanning Radiometer (AMSR2) ice concentration products (25 and 12.5km resolution, respectively). The daily ice edge locations from the model simulations are compared against independent observed ice edge locations. Results from the Pan-Arctic and regional areas along with seasonal time scales will be presented.