

Improving the Navy's Sea Ice Forecasting System – PIPS 2.0 to PIPS 3.0

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The Polar Ice Prediction System (PIPS 2.0) is the operational model used by the Fleet Numerical Meteorology and Oceanography Center (FNMOC) for sea ice forecasting. The PIPS 2.0 coupled ice-ocean model forecasts ice conditions for most of the ice-covered areas in the northern hemisphere. The horizontal grid resolution of the model varies from 15-27 km and uses 15 vertical levels. PIPS 2.0 is driven by atmospheric forcing from the Navy Operational Global Atmospheric System (NOGAPS). A 120-hour forecast each day of ice drift, ice thickness and ice concentration is produced each day.

The Naval Research Laboratory is presently validating an improved coupled ice-ocean model (PIPS 3.0) to replace the current PIPS 2.0 system. The PIPS 3.0 system, grid resolution of ~ 10 km, will include improved arctic physics and will assimilate real-time ice concentration and ice drift data. PIPS 3.0 will also incorporate improved ocean and atmospheric forcing.

Specific examples of PIPS 2.0 and PIPS 3.0 forecasts will be presented.