

6B.1 Status of Polar WRF

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The polar-optimized code for WRF, known as “Polar WRF”, is currently updated for WRF version 3.5.1, and will soon be updated for V.3.6. Polar WRF is distributed by The Ohio State University's Byrd Polar Research Center (BPRC) as a code supplement to the WRF-ARW available from NCAR. There are over 100 registered users of Polar WRF, and it is being applied to a variety of Arctic and Antarctic applications. These include coupled atmosphere/ocean/sea ice studies, synoptic studies, climate studies, and real-time numerical weather prediction. Within the past year, the options for user-specified, time and space dependent sea ice thickness and snow depth over sea ice have been tested for Arctic winter conditions during 1998 and 2012. These options are now available through the standard release of WRF, beginning with V.3.5. A poster presentation provides more details on the sea ice thickness and snow depth over sea ice simulations. A sample of recent Polar WRF projects in which the BPRC is a partner include (i) the Antarctic Mesoscale Prediction System (AMPS) for real-time Antarctic forecasting, (ii) the Arctic System Reanalysis (ASR), a regional, high-resolution reanalysis for 2000-2012, and (iii) the Atmosphere-Ocean Coupling Causing Ice Shelf Melt in Antarctica (ACCIMA) project for coupled atmosphere-ocean-ice studies of Antarctica and the Southern Ocean.

Needs for advancing Polar WRF include better representations of Arctic and Antarctic clouds through use of recent and planned field programs. The new Xu-Randall cloud fraction in V.3.6 is being tested to see if it better represents polar low-level clouds. Low-aerosol microphysics need to be identified, parameterized, and tested. The correspondence between cloud-scale cloud statistics and moderate mesoscale resolutions needs to be better understood.