

AMPS Update -- June 2008

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This talk discusses changes to the AMPS system in the past year. The status of some current testing and development for AMPS is discussed, as well as some ideas for future directions in the longer term. MM5 and WRF real-time forecasts continue to run in parallel for AMPS, as they have since 2005. With recent development and improved polar modifications for WRF, it is time to discontinue the MM5 forecasts in AMPS. This will free up computer time and developer time for faster development and enhancement of AMPS. No major configuration changes have been made to AMPS recently. The 6-domain model configuration and as-needed one-way nests have been stable for recent years. Products available on the AMPS web pages have been fairly stable as well. A few suggested experimental products (RH wrt water, height-change tables) may not be continued. The addition of pressure gradient force terms in WRF output is ready to be implemented, but requires an upgrade of the compiler on the AMPS machine. Tuning of the GRIB products, as pushed into the Antarctic-IDD LDM stream and archived at NCAR, continues. Development and testing of WRF in AMPS continues. Polar modifications from the Byrd Polar Research Center include adjustments to the Noah Land Surface Model, and a fractional treatment of sea ice. Early versions of these have been implemented in the real-time WRF forecasts. Additional adaptations for the Antarctic environment being tested at NCAR include data preprocessing adjustments to improve initial conditions, and (from NCEP) a stability-dependent calculation for mixing length. Tests have been performed with WRFV2.2. Polar modifications will be tested in WRFV3 (pending a necessary compiler upgrade on the AMPS machine). No major difficulties are expected, and WRFV3+polar should be implemented in the real-time AMPS forecasts by the beginning of the field season (August/September time frame). Beyond the short term, some new capabilities in WRF (and the WRF data assimilation package) might be interesting to test. Assimilation of radiance data into the AMPS initial conditions is currently in testing, and may be implemented in the future. Assimilation of this data will require a configuration change to the model, raising the model top from 50 hPa to ~10 hPa. The latest WRF release includes the capability to run as a global model (with higher resolution nests), which could be interesting to test in AMPS, as it would remove the dependence on GFS forecasts for AMPS boundary conditions. Also, the option of "Digital filter initialization" can potentially reduce the noise generated at model initialization.