

Breakout Group Discussions on Hurricane Research and Prediction

Key Areas for WRF-model Improvement/Development:

- Improving model numerics and physical parameterizations for high-resolution modeling
- Developing a fully coupled atmosphere-wave-ocean modeling system
- Initialization and data assimilation for hurricane research and forecasting

Hurricane Research and Prediction (Continue)

- Physical parameterizations
 - Microphysics* (very little supercooled water and issues related graupel and hail in hurricanes)
 - PBL and Surface Fluxes* (sloping boundary layer and sfc fluxes affected by ocean sfc waves, etc.)
 - TKE* (dissipation heating)
- Atmosphere-wave-ocean coupling (under development)
 - Ocean models*: HYCOM & simple upper ocean model
 - Air-sea interface* (wind-wave coupling, sea spray, etc.)
- Initialization and data assimilation
 - Vortex relocation using WRF forecasts*
 - 3DVar*
 - 4DVar*
 - EnKF*

Proposed Action Items:

- ***Short-term and high priority:*** Establishing a working group representing each modeling component listed above.
- ***Short-term and high priority:*** Selecting storms from the 2004 and 2005 Hurricane Seasons as testbeds for improving model physical parameterizations as well as data assimilation (working closely with other working groups such as physics and data assimilation).
- ***Mid-term and high priority:*** Developing model evaluation and verification tools and using the recent field program data from CBALST, RAINEX, and satellite data. Need to evaluate model simulation/forecast of storm structure (not just the track and intensity index).
- ***Long-term and high priority:*** Developing coupled atmosphere-wave-ocean model for hurricane research and forecasting.
- ***Long-term:*** Working with DTC on research to operation issues in the future.