

HFIP Milestones/Deliverables

Note: “Better Understanding of”, “Begin to..”,
“Improve ..”, not good choices for wording

HFIP Workshop

November 9-10, 2009

Stream-1 Topics/Issues

- Over intensification esp. sheared systems
- Minimum resolution to resolve convection
 - Increase resolution or fix parameterization?
 - Oper. Goal for 3 to 4 km real time run by 2012
 - <1 km by 201x
- Development of advanced physics for high resolution
 - Microphysics, surface fluxes, PBL, wave/ocean, radiation, convective parameterization, gravity wave drag

Stream -1 Topics/Issues

- Data assimilation, especially for regional models
 - Comparison of techniques
 - EnKF, 4Dvar, hybrid, digital filtering, nudging
 - When will inner core assim. be available in real time?
 - More emphasis on satellite data
 - What data is needed for very high resolution model?
 - Special challenges for coupled systems
- Vortex initialization
- Role for OSSEs?
 - Optimal mix, targeting strategies

Stream 1 Topics/Issues

- Detailed analysis/diagnostics of model runs
 - Kinematics and thermodynamics
 - Vortex 3-D structure
 - Large scale
 - Systematic biases
 - Circulation features; sub-tropical high, TUTT, trades, etc
 - Evaluation against observations
 - In situ and remote sensing
- Ensemble forecasts
 - Methods for generating perturbations
 - Initial condition, physics
 - Global versus regional
 - Configuration
 - Resolution versus ensemble size, ocean coupling
 - Information content and NHC forecast applications

Stream 1 Topics/Issues

- Ocean model
 - What complexity is needed?
 - Resolution, assimilation, physics
 - Trade-offs with atmospheric component
- Land surface model
- Ocean, wave, storm surge
- Coordination of HWRF and CoAMPS efforts

Stream 1 Topics/Issues

- NCEP EMC and NCO constraints
 - Current computing at NCO through FY13
 - Competition for resources
 - Space Wx, Nexgen, tsunami, etc
 - GFS changes have downstream influences
 - ~1.5 year cycle for implementations
 - Increase bandwidth through HFIP interaction
 - How can stream 2 influence stream 1?
- What observations are needed?

Stream-2 Topics/Issues

- Data assimilation, Initialization
 - Global and regional
 - Inner core issues
 - Nonlinear/non-Gaussian errors
 - Representativeness
 - Inclusion of model uncertainty
 - Assimilation resolution versus model resolution
 - Full utilization of satellite data
- Physics
 - Advanced parameterizations, better diagnostics
- Ensembles
 - Design including initial condition and model errors
 - products, downscaling, decision support
 - Verification
 - Bias corrections
 - Inter-model comparisons
 - Regional models running off different global models
- Special challenges for coupled systems

Stream-2 Topics/Issues

- Resolution requirements, trade-offs
- Predictability limits for track, intensity, structure
- Ocean model complexity
- Genesis issues
- What observations are needed?
 - Use of special field programs (GRIP, PREDICT, etc) for validation, diagnostics
- FY10 demo configuration
 - Database including ensembles