Basin-scale and Beyond

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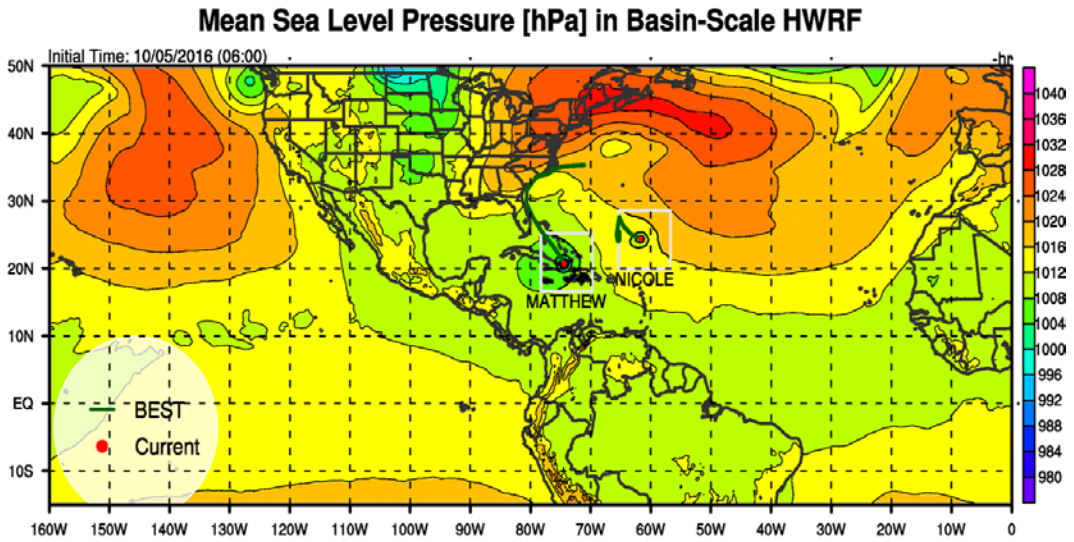
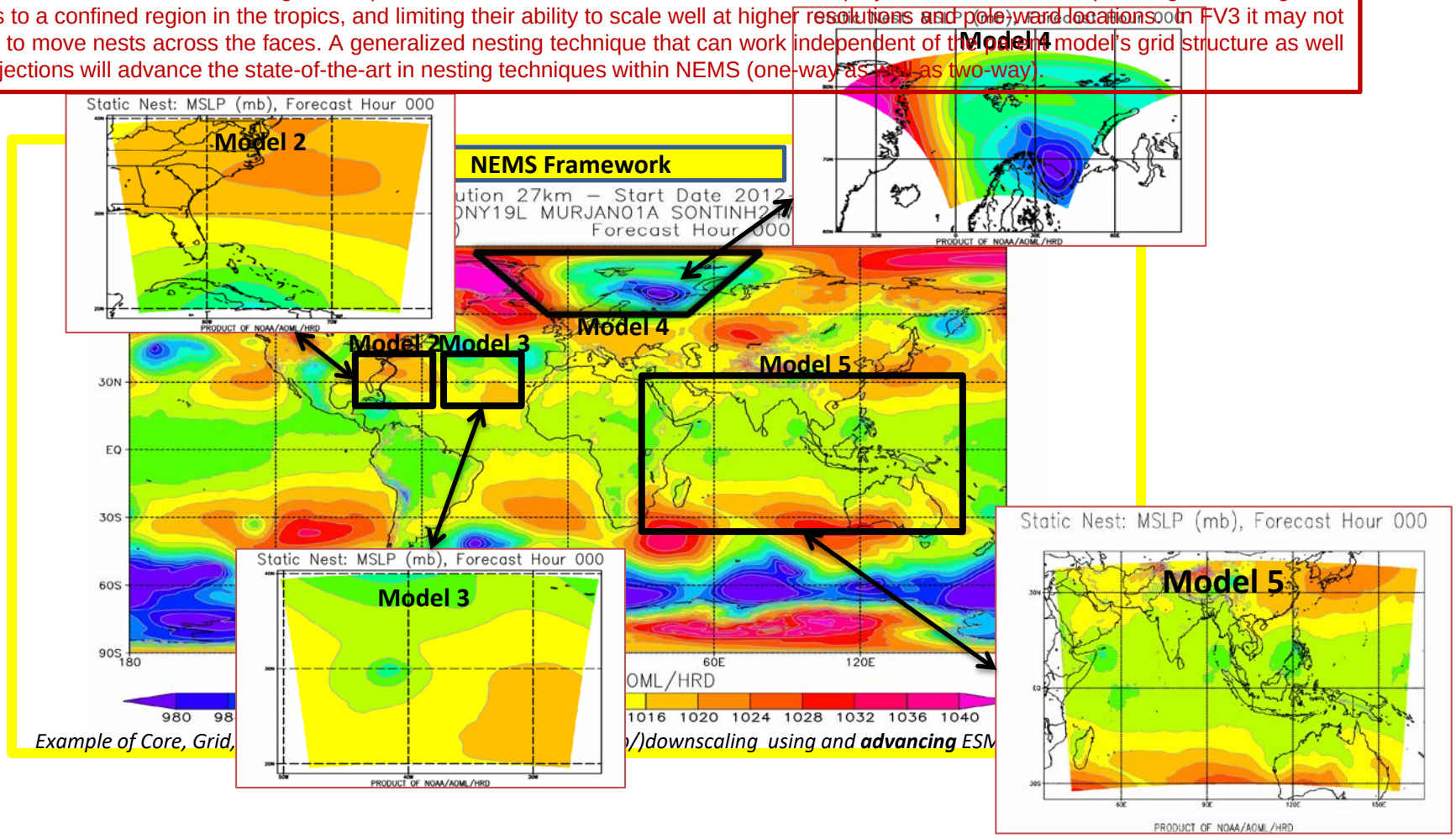


An illustration of NOAA's current capacity for tracking hurricanes developed by HFIP

NOAA HURRICANE FORECAST IMPROVEMENT PROJECT

Next Generation Generalized Nesting Framework

Project Statement: "The current nesting techniques in HWRF and NMMB are based on the projection center of the parent grid, limiting their applications to a confined region in the tropics, and limiting their ability to scale well at higher resolutions and pole-ward locations. In FV3 it may not be possible to move nests across the faces. A generalized nesting technique that can work independent of the parent model's grid structure as well as map projections will advance the state-of-the-art in nesting techniques within NEMS (one-way as well as two-way).

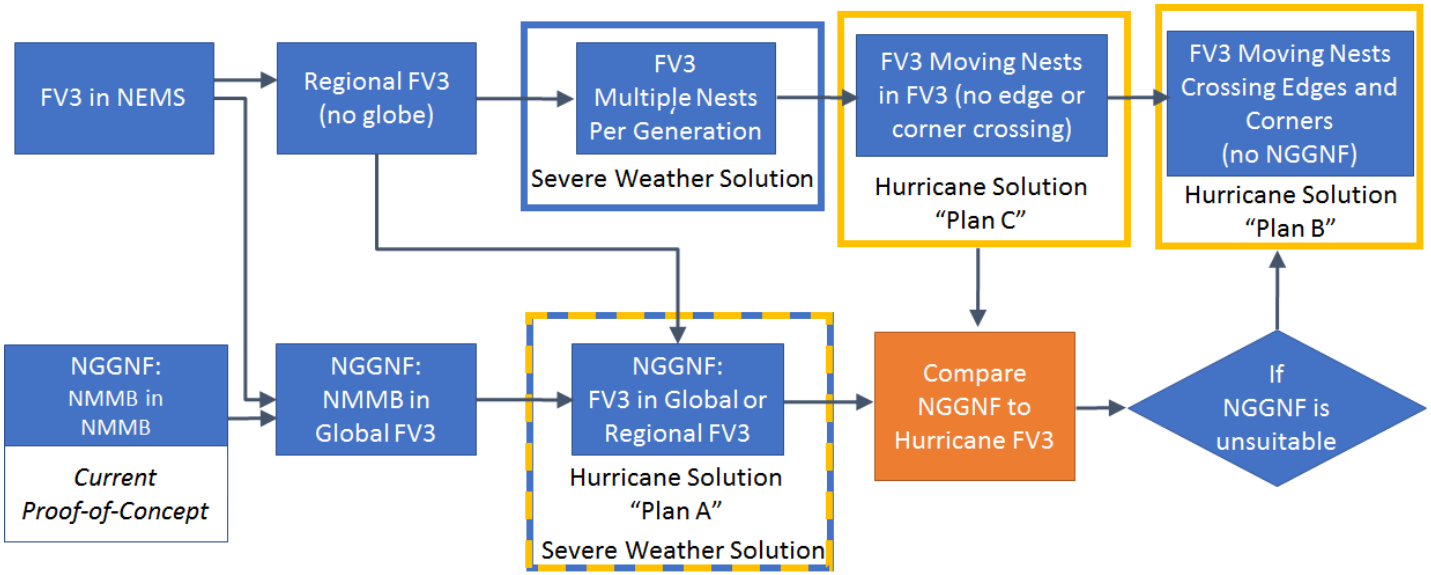


*Example of Core, Grid,)downscaling using and **advancing** ESM*

SVN Repository path: https://svnemc.ncep.noaa.gov/projects/hnmmb/branches/AOML-HRD/NGGNF

Addressing Our Next-Generation TC Prediction Needs

Nesting Workshop participants: Lucas Harris, Shian-Jiann Lin, Tom Black, Timothy Marchok, Morris Bender, Xuejin Zhang, Samuel Trahan, Steven Diaz, Avichal Mehra and Sundararaman Gopalakrishnan



Plan A: *NGGNF: FV3 in Global or Regional FV3* - leverages NGGNF to provide a generalized nesting capability with complete flexibility. High risk and high effort, but with tremendous potential gains in forecast improvement.

Plan B*: FV3 Moving Nests Crossing Edges and Corners* - sufficient for hurricane modeling, but constrains nest placement and shape. Acceptable alternate solution, given the risks in Plan A.

Plan C*: FV3 Moving Nests in FV3 (no edge or corner crossing)* - A WRF-like solution that limits storm forecasts to a particular region. Allows a transition to FV3, but not a global hurricane model.