Ensemble-based genesis guidance

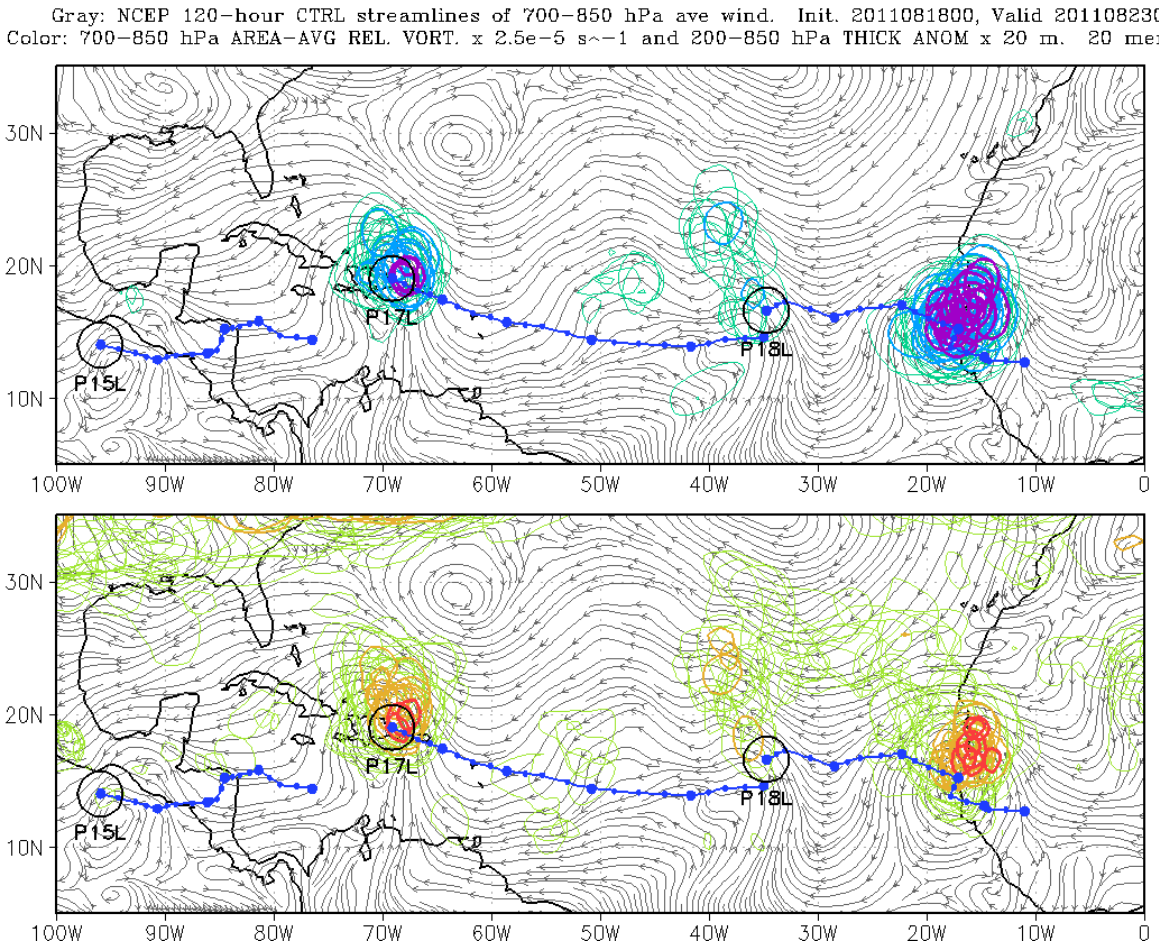
Tim Marchok

HFIP Ensemble Subgroup

10/31/11 Telecon

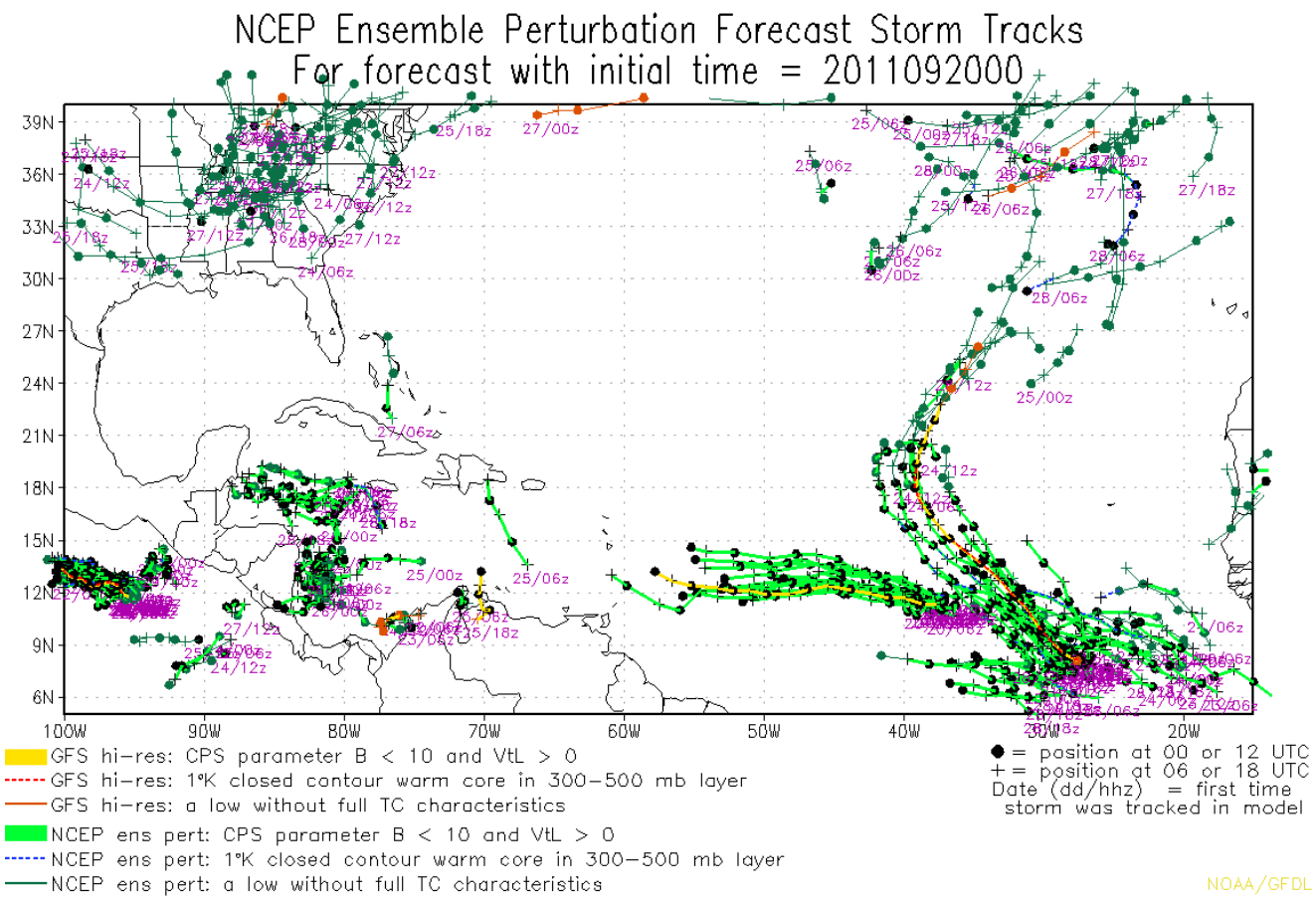
Two related pathways….

1. Ensemble-based diagnostics (e.g., Majumdar)



Synoptic & statistical analysis of various diagnostics (e.g., relative vorticity, convergence & divergence, thickness anomalies, RH, etc)

2. Track-based guidance

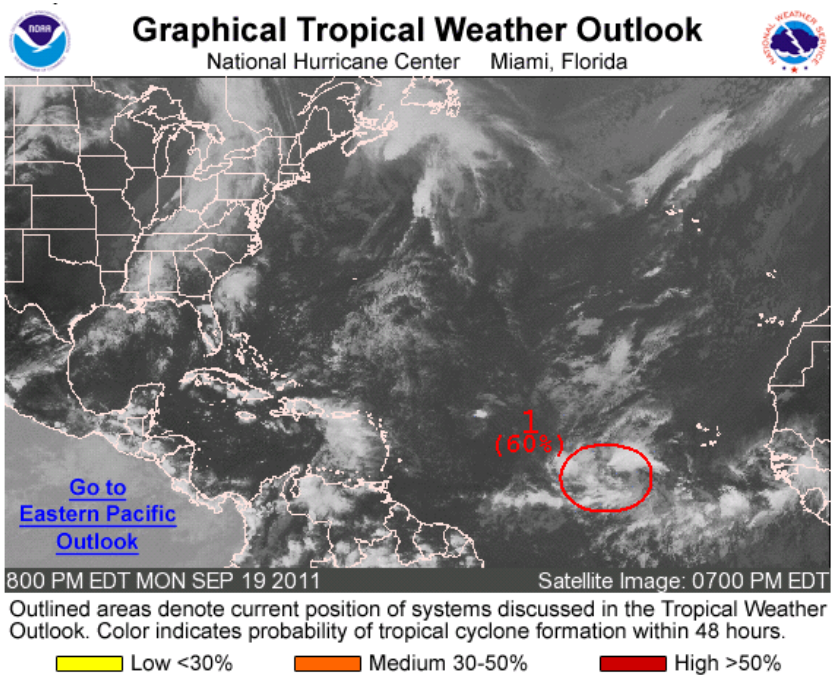


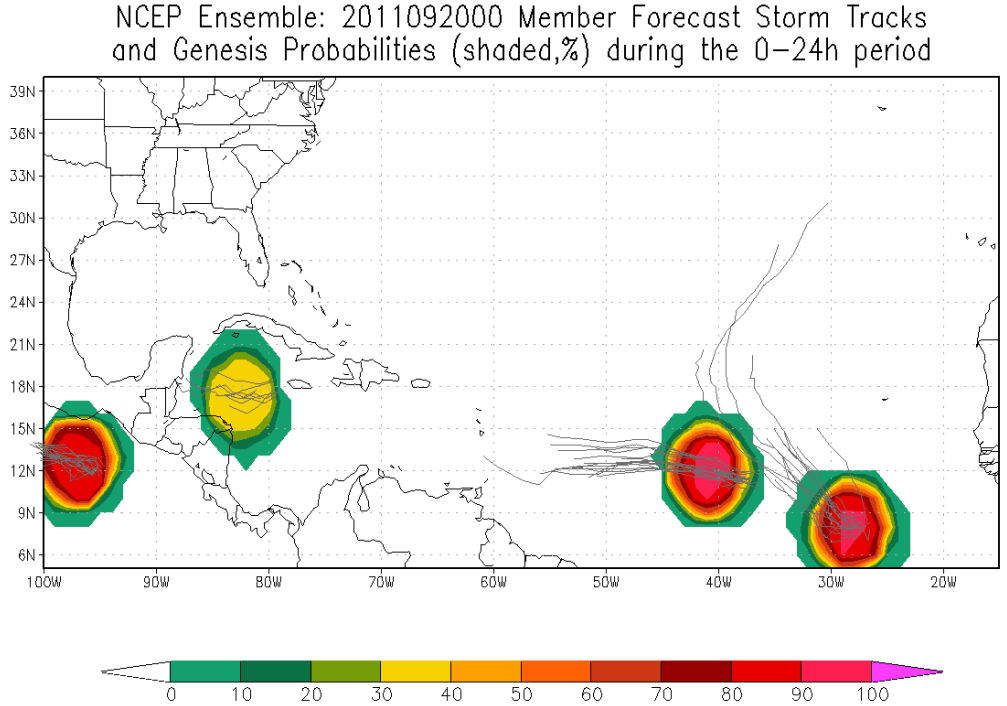
http://www.emc.ncep.noaa.gov/gmb/tpm/emchurr/tcgen

A few critical criteria for tracking and TC / non-TC determination

- At least one closed mslp contour
- Azimuthally averaged 850 mb V_T must exceed threshold
- Cyclone phase space & simple warm core checks used for TC / non-TC determination
- Forecast storm must last at least 24h

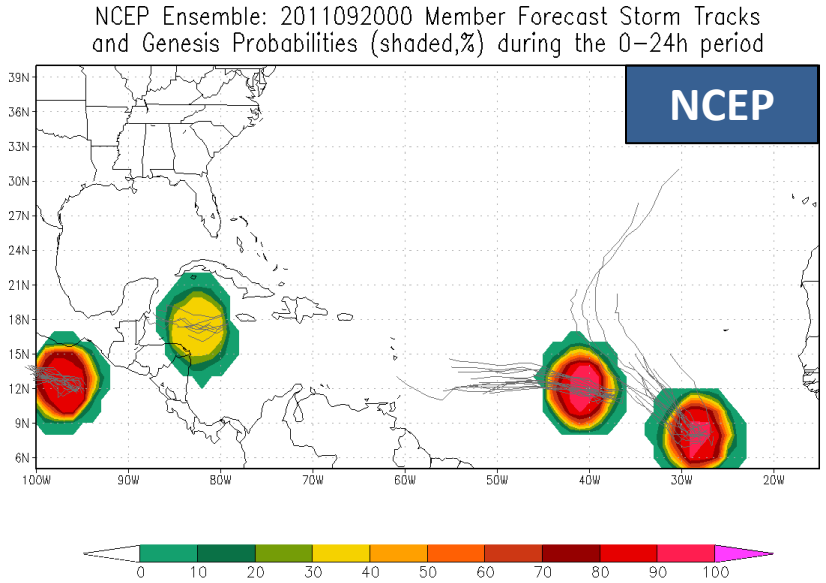
Ensemble track-based probabilistic genesis guidance

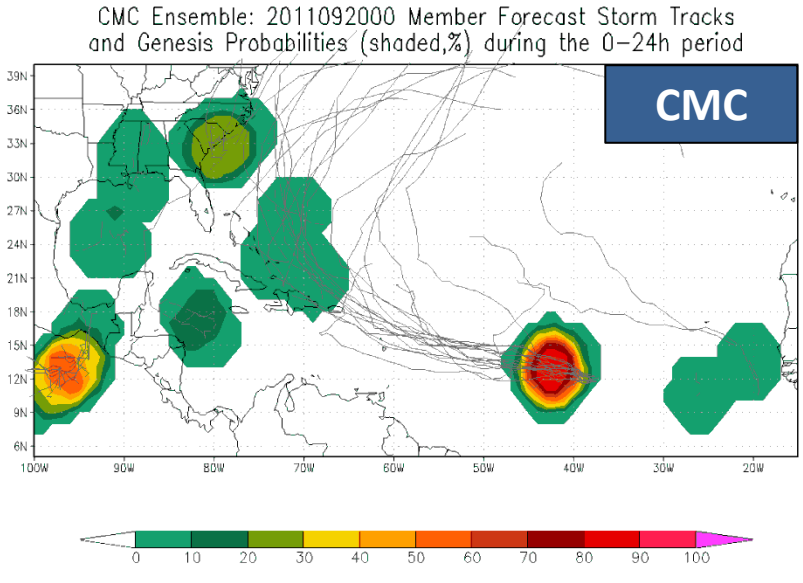


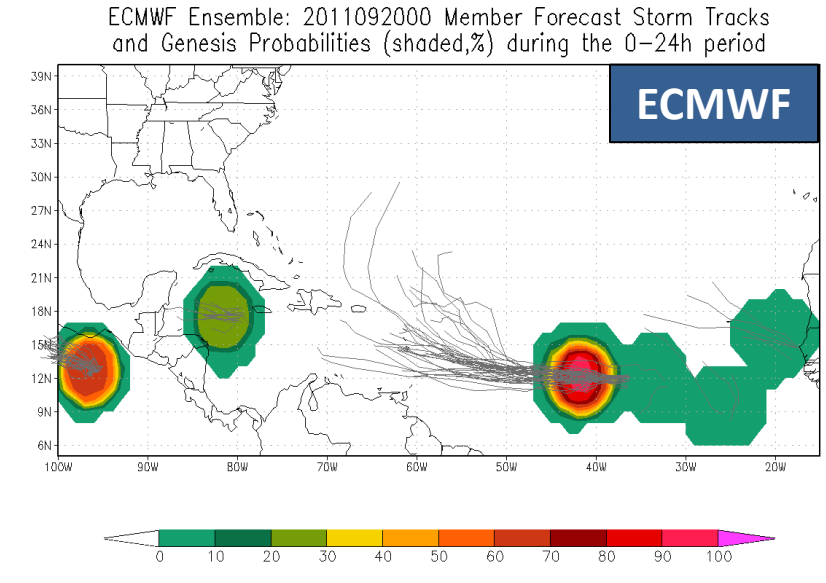


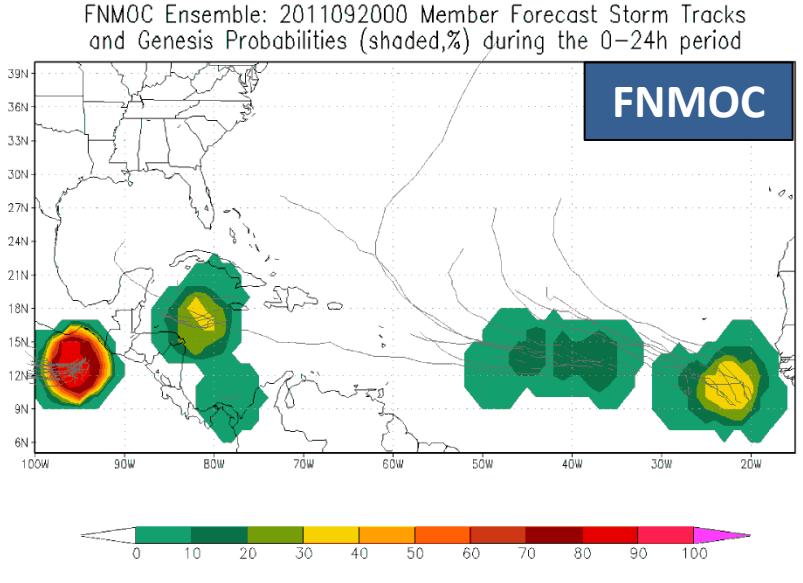
Probability is simply the percentage of members indicating genesis in a given lead time window (here, 0-24h).

4 global ensembles for 2011092000: Pre-Ophelia (0-24h)

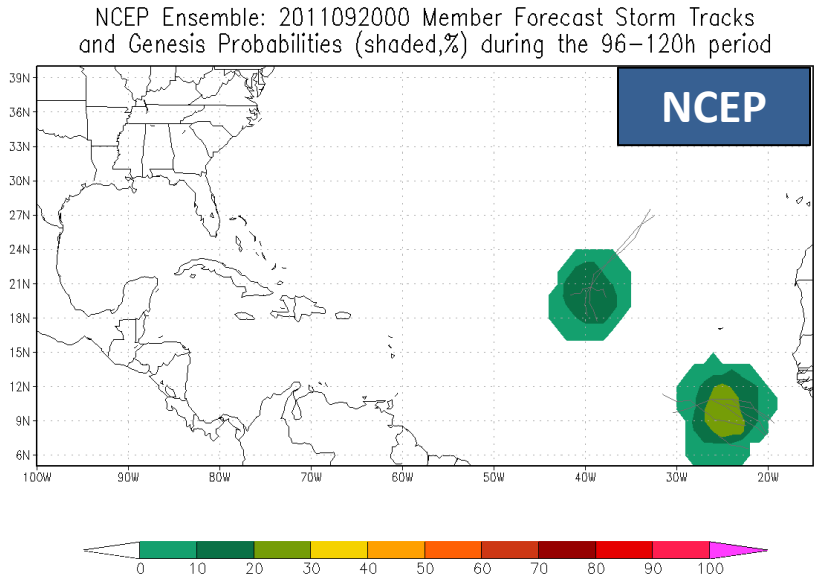


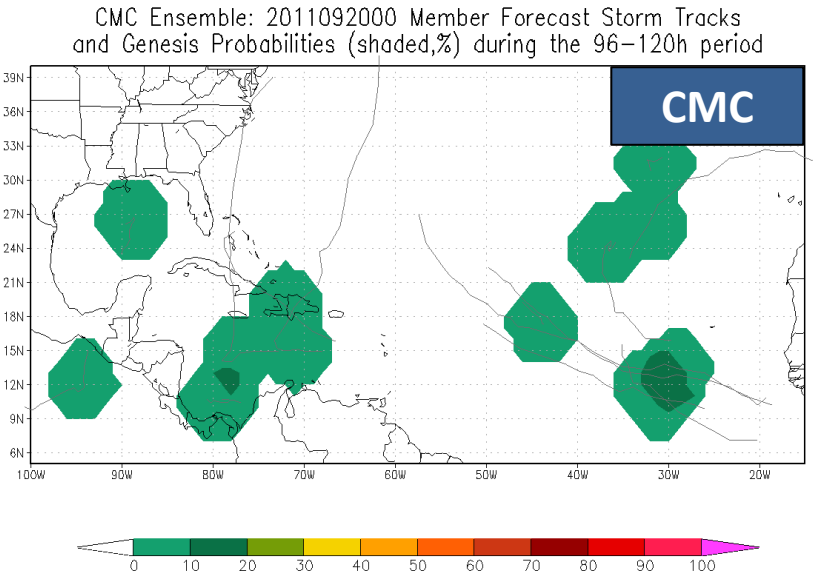


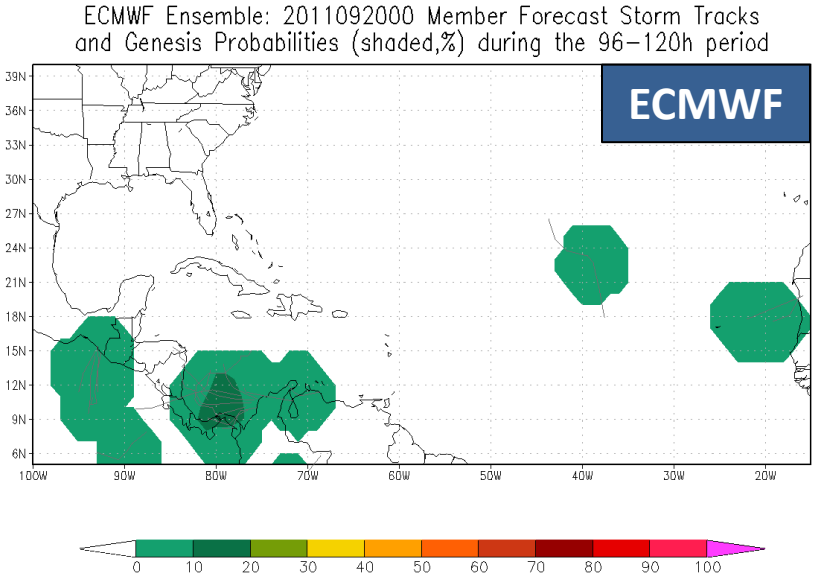


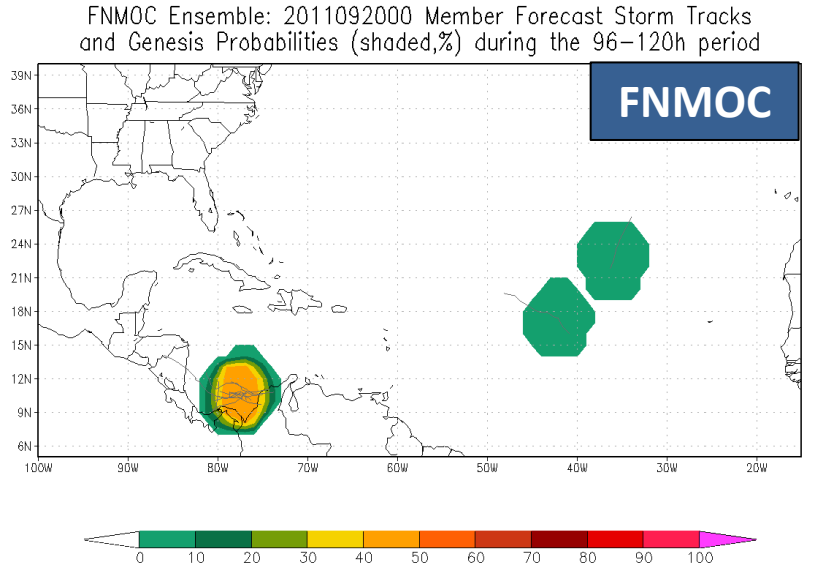


4 global ensembles for 2011092000: Pre-Philippe (96-120h)



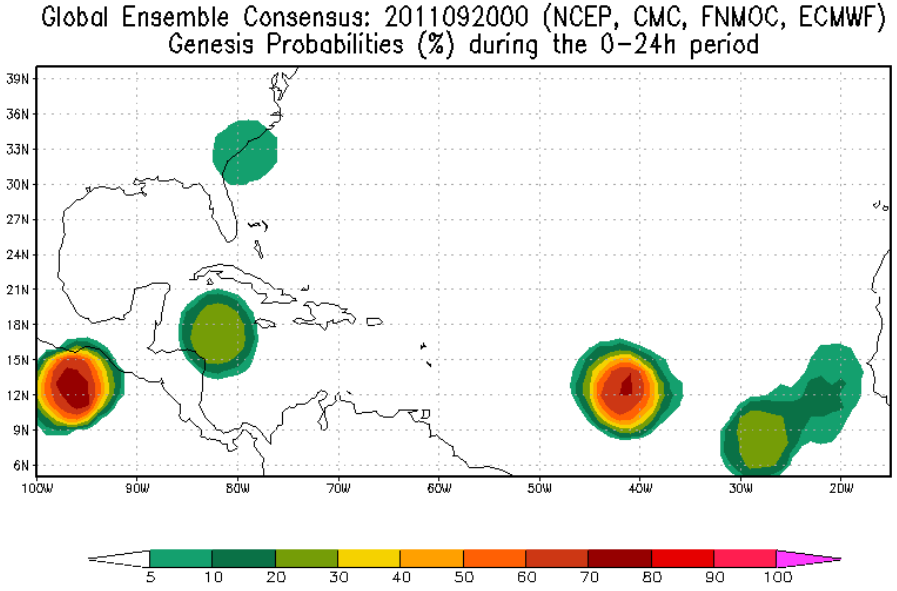




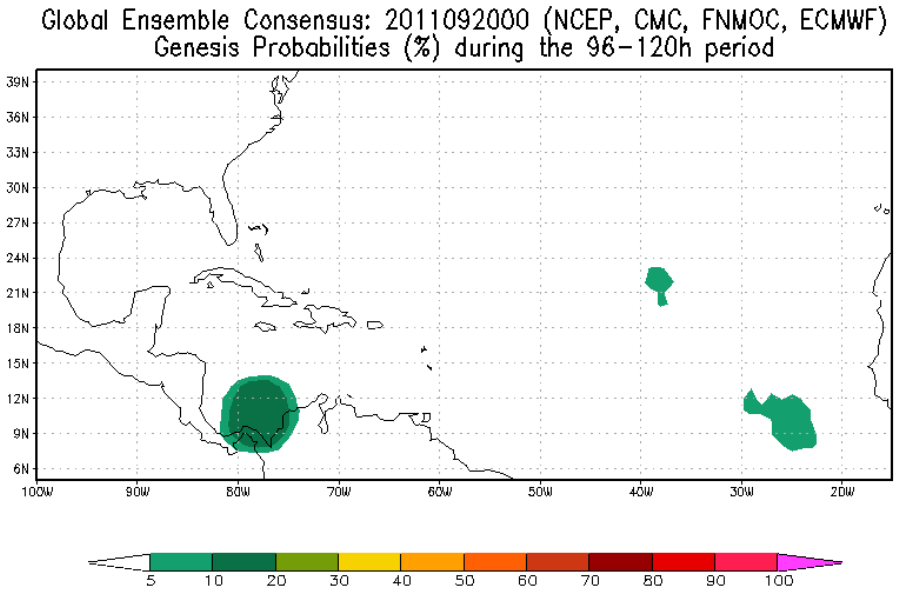


Multi-model consensus probabilities

0-24h



96-120h



Probabilities could also be computed from a consensus of the deterministic counterparts of the above ensembles.

Discussion

- Develop in conjunction with Majumdar ensemble-based diagnostics methods
- What other models should be included, including HFIP deterministic models and the FIM ensemble.
- What can be changed / added to improve this method?
- Verification: Similar to NHC genesis verification, using reliability diagrams, brier skill score. Also, Probability of Detection, False Alarm Rate. Collaboration with TCMT on this would be beneficial.