T-jet resources to produce an HWRF ensemble for 2011 Demonstration

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Goals

1. Run HWRF with 3 nests (27:9:3 km) as demonstration for potential operational implementation in FY12 (proposed Stream 1.5)

2. Run HEDAS with Doppler and other aircraft data to increase number of cases for evaluation (Stream 2)

3. Produce ≥10-member HWRF ensemble – emphasis on <u>diversity</u> in IC (GSI/HEDAS/Hybrid), Physics (EMC/3-km/coupled/uncoupled), & horizontal resolution (27/9/3 km)

4. Test Basin-scale HWRF (27:9) with multiple nests following multiple storms

Proposed HWRF Ensemble

- Combine HWRF (27:9:3) with HWRFx, HEDAS, and Basin-scale HWRF to generate ensemble (at least 10 members)

| 2011 demo HWRF ensemble	Organization	ICs	Physics	CPU requirement
Operational HWRF (27:9)	NCEP/EMC	New HWRF IC	NCEP HWRF physics **coupled** to ocean	operational computer
HWRF (27:9) parallel	NCEP/EMC	Hybrid GSI DA + cycling	NCEP HWRF physics **coupled** to ocean	operational computer
HWRF parallel (27:9:3)	NCEP/EMC	new HWRF IC	NCEP HWRF physics **coupled** to ocean	tjet - 168 per run
HWRF parallel (27:9:3)	HRD(tjet)	new HWRF IC	3-km HWRF physics **uncoupled**	tjet - 168 per run
HWRF (9:3) baseline	HRD(tjet)	new HWRF IC	3-km HWRF physics **uncoupled**	tjet - 256 per run
HWRF (9:3) (≤30 members + **control**)	HRD(tjet)	HEDAS IC	3-km HWRF physics **uncoupled**	tjet - 256(/128)*(ensemble members) per run
Basin-scale HWRF with multiple nests following multiple storms (27:9)	HRD(tjet)	GSI DA + cycling	NCEP HWRF physics **uncoupled**	tjet - 168 per run
up to 36 members				request ~3200 tjet CPUs

Storage Requirements

Experiment	Storage Needs
HWRF (9:3) ensemble + control	Members: 35-40 GB/member Ens. Mean (control): 5-7 GB
HWRF (9:3) baseline* / run	42 GB
HWRF parallel (27:9:3) / run	40 GB
Basin-scale HWRF (27:9) / run	60 GB

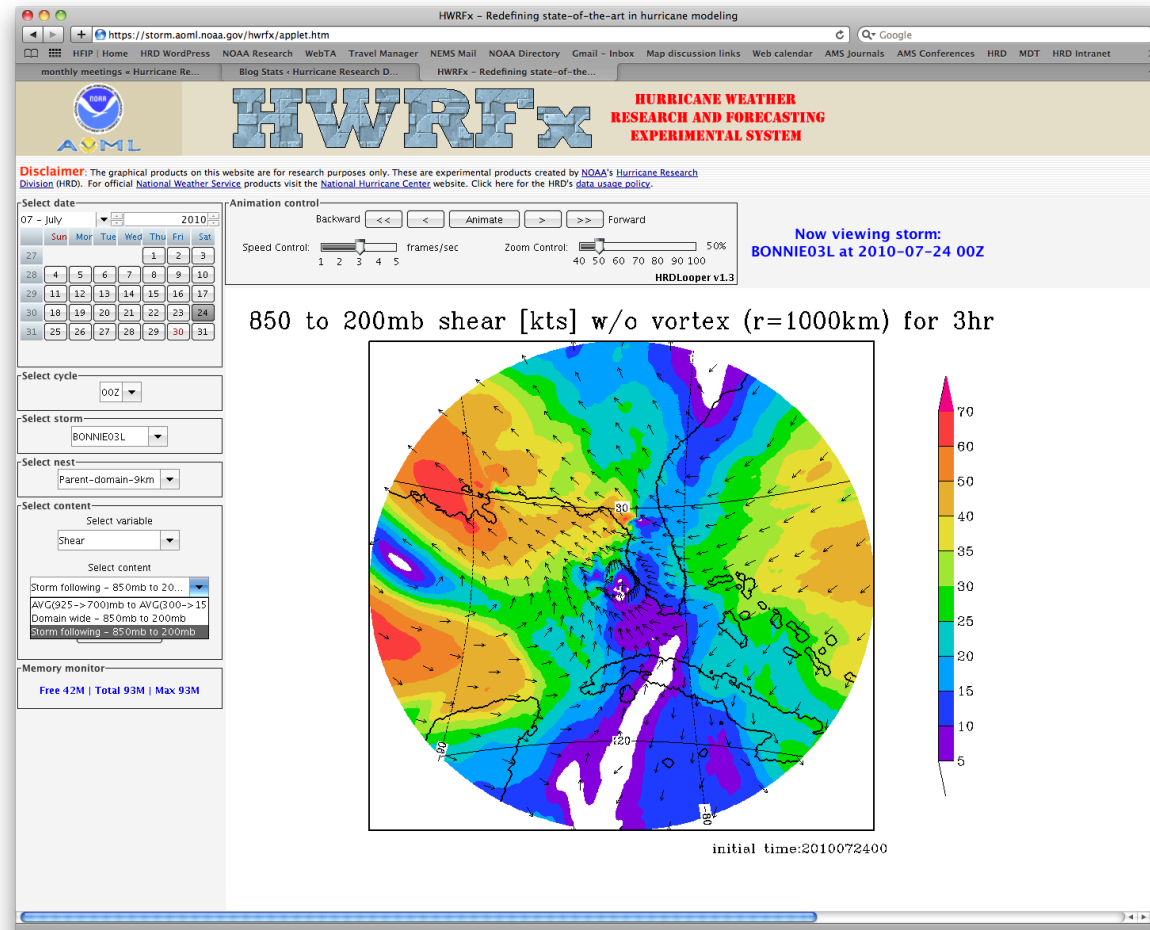*Example: 2010 season for baseline 9:3
consumed 25 TB for 600 runs

HWRF (27:9:3) – Stream 1.5 & 2

- Stream 1.5 - NCEP physics with ocean coupling
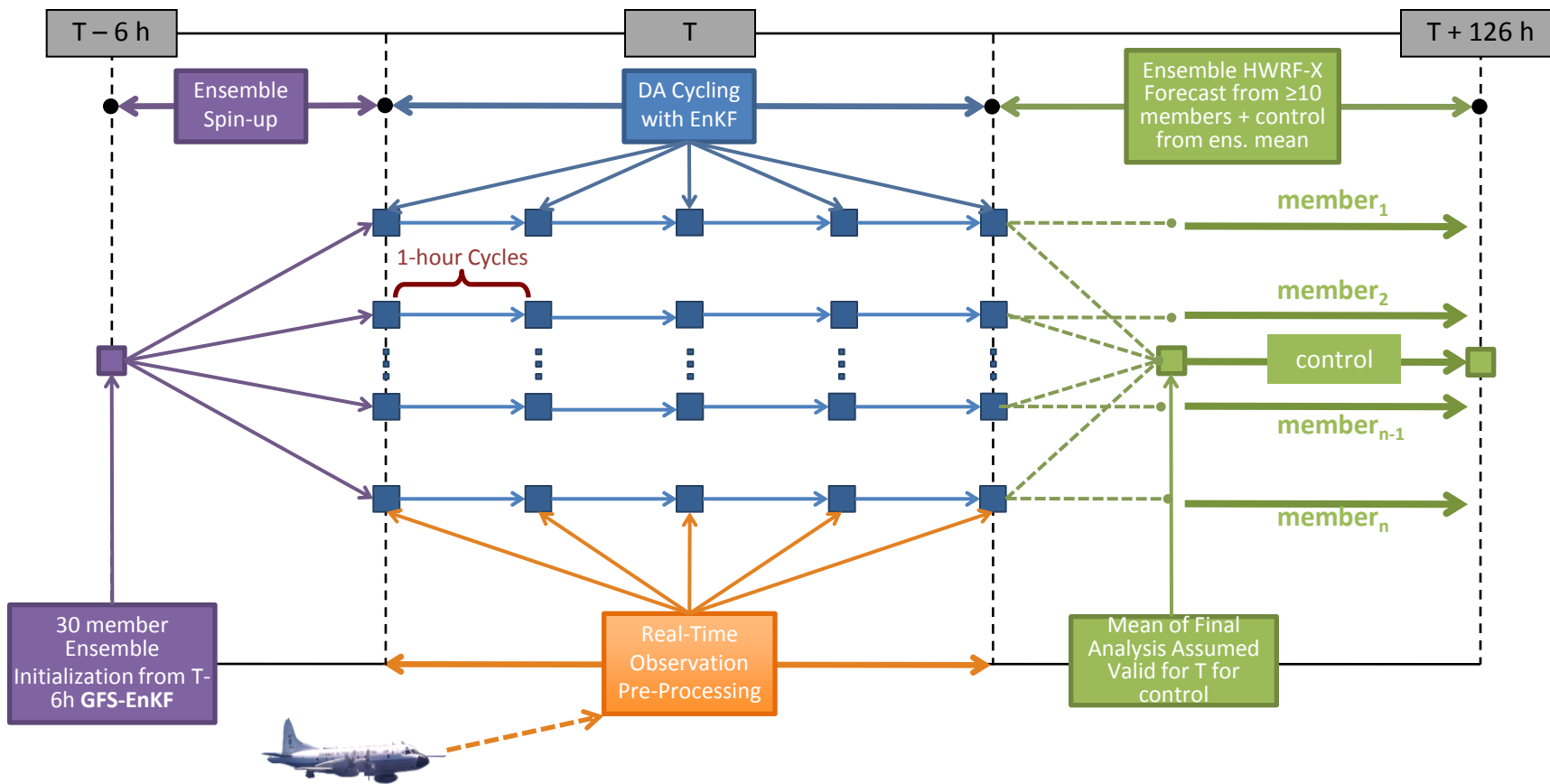- Stream 2 – 3-km physics & NO ocean coupling
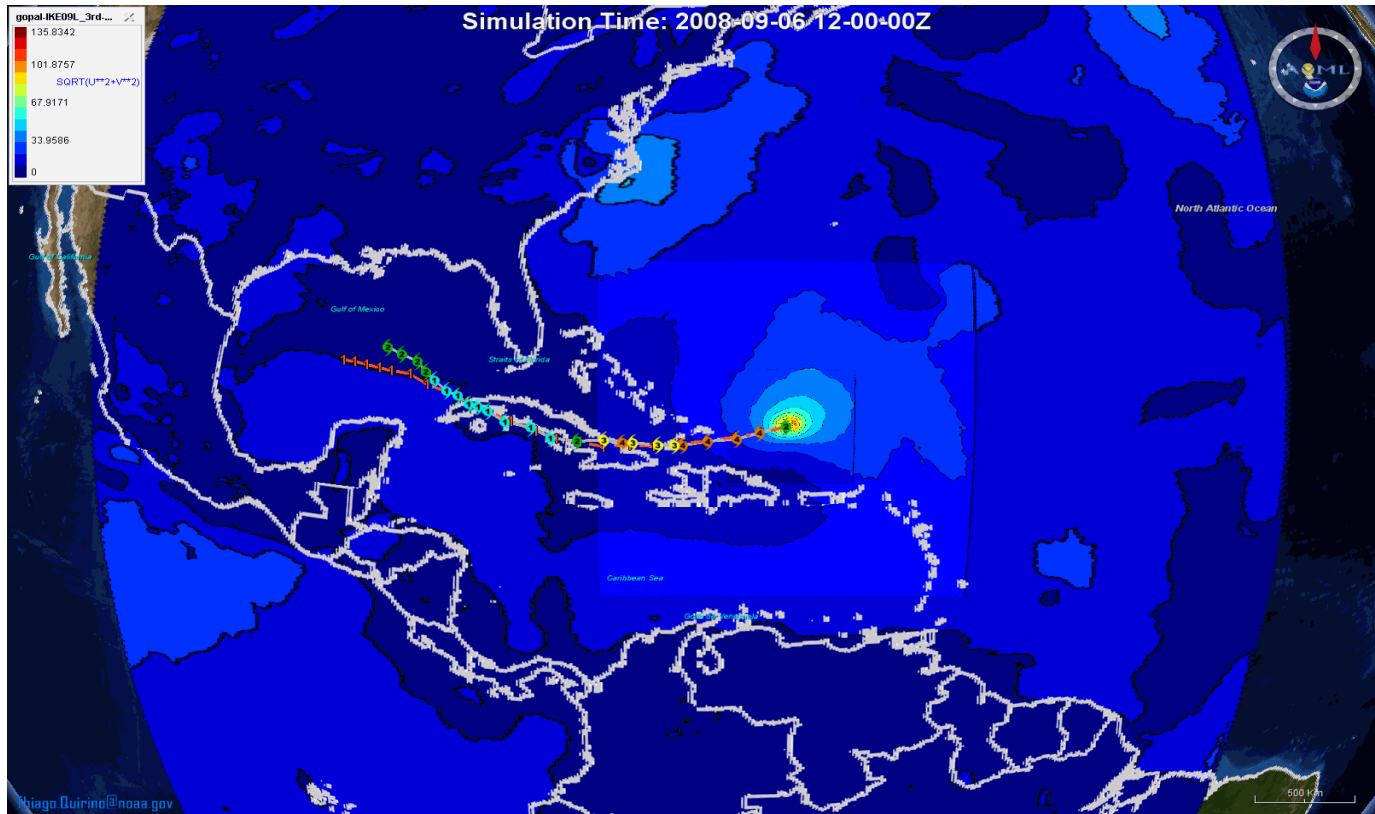
HWRF (9:3) Baseline
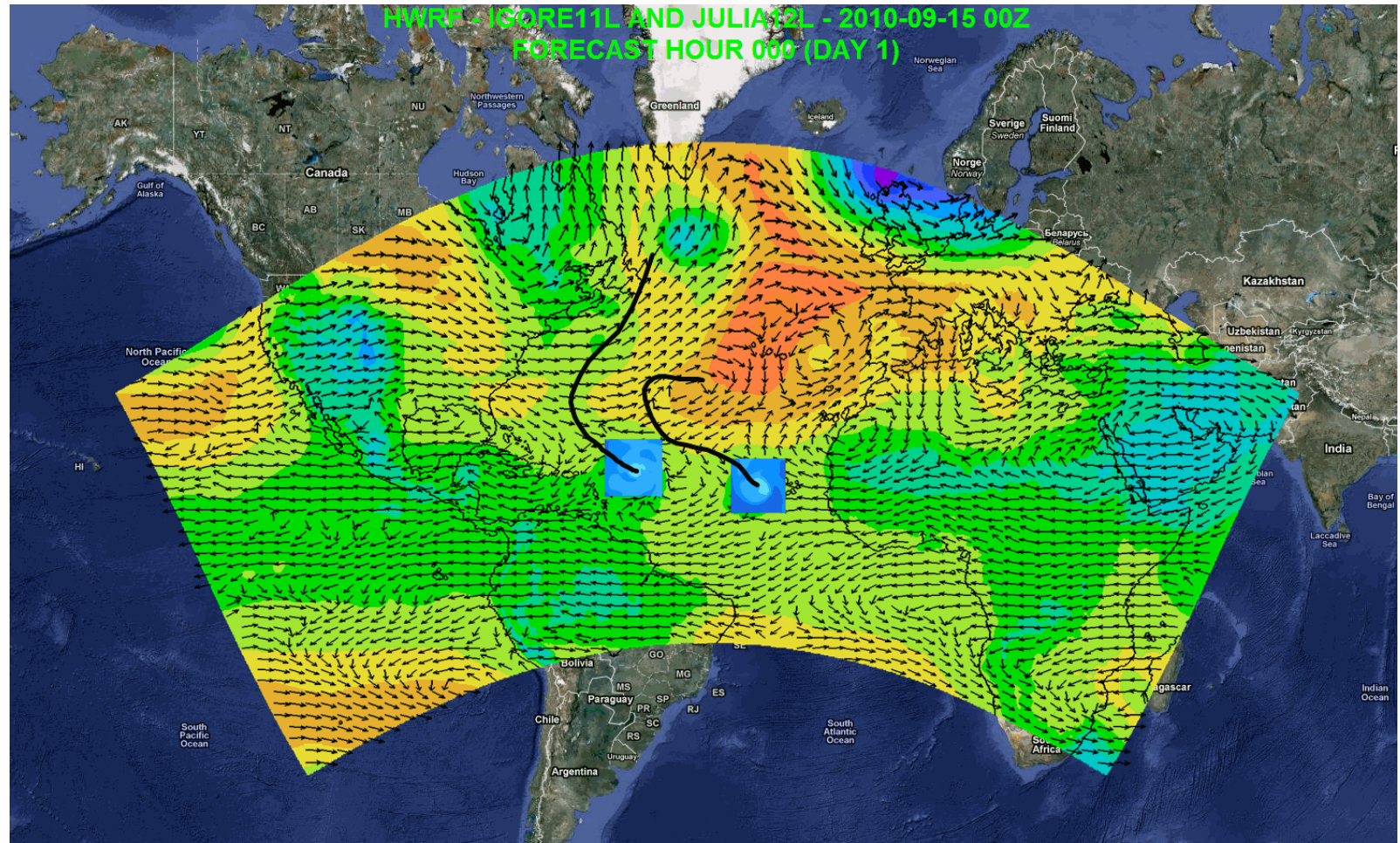
- Stream 2 – 3-km physics & NO ocean coupling

HEDAS Ensemble ≥10 members

- HEDAS (9:3) with ≥10 members + control

Basin-scale HWRF (27:9)

- Stream 2 – NCEP HWRF physics & NO ocean coupling

HWRF - IGORE11L AND JULIA12L - 2010-09-15 00Z
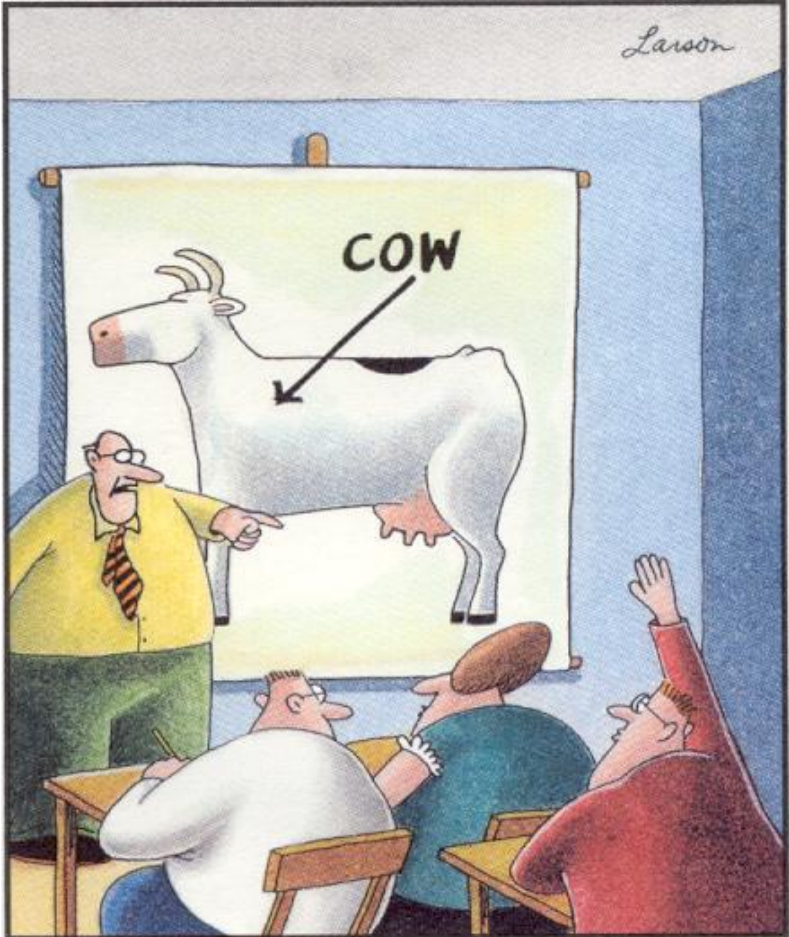FORECAST HOUR 000 (DAY 1)

Products

- 1st order: extended ATCF A-Deck (1 h interval automatically for all members) – Lat, Lon, MSLP, V10, Storm Radii, etc.

- Methodology
  - generate them at least twice per day

- Scientific Value
  - inform HWRF model and DA development, investigate new ensemble products, inform field program decision making

Questions

"Yes ... I believe there's a question in the back."