

HFIP-PSU Regional EnKF Real-time runs in 2011 on T-jet

Fuqing Zhang, Yonghui Weng, and Xuyang Ge
The Pennsylvania State University

Project Overview

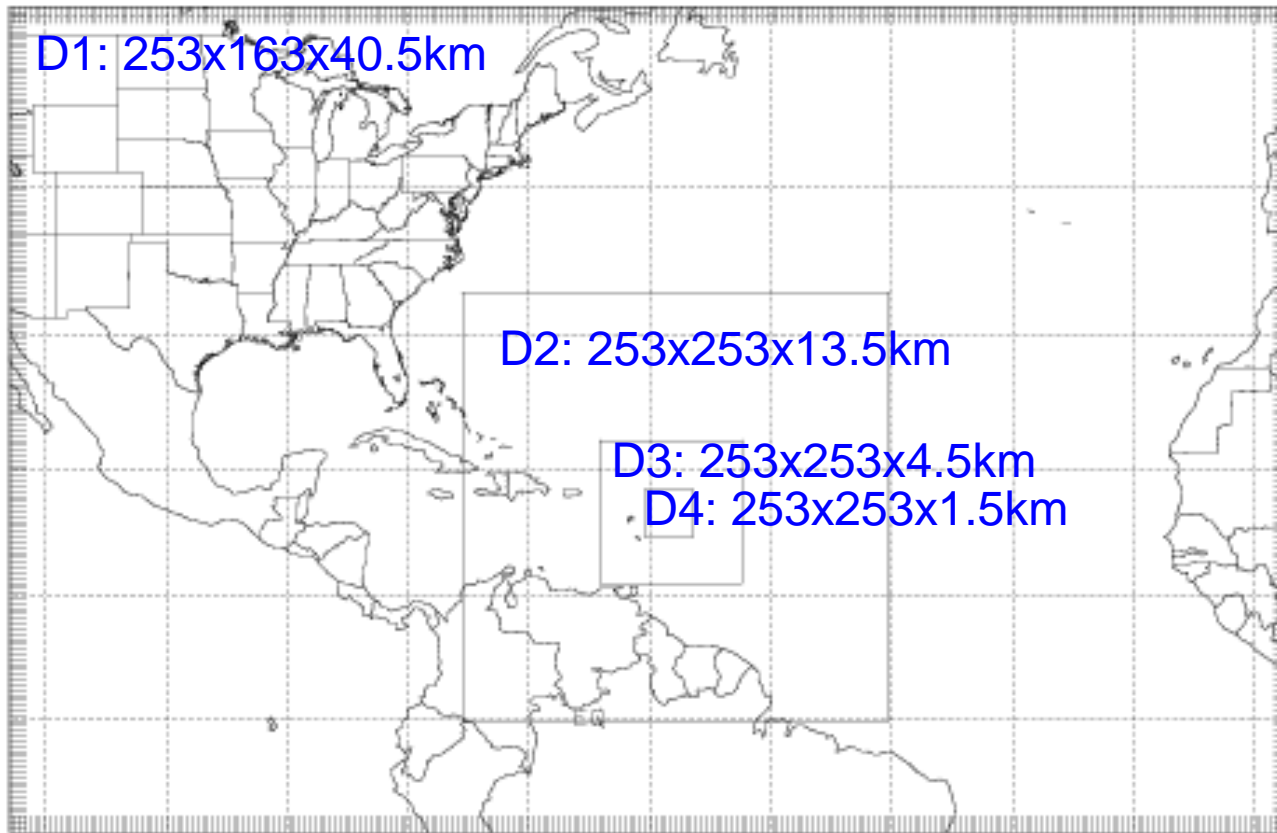
- Name of Project: **HFIP-PSU**
- Management Point of Contact: **Fuqing Zhang**, fzhang@psu.edu
- Technical Point of Contact: **Yonghui Weng**, yhweng@psu.edu
- Date code will be ready for system integration: **June 1, 2011**
- Date production runs are scheduled to start: **July 1, 2011**
- Date production runs are scheduled to end: **October 31, 2011**
- Number of independent work streams in project: 3
 1. PSU WRF-EnKF airborne Doppler radar data assimilation system
 2. PSU WRF-based EnKF-3DVar hybrid system
 3. WRF Forecast with GFS for multi-storms (>1)

Project Overview

- Data source:
 - GFS: <ftp://ftp.prdd.ncep.noaa.gov/pub/data/nccf/com/gfs/>
 - Madis: <ftp://66.45.28.37/public/archive>
 - TDR: <ftp://ftp.aoml.noaa.gov/pub/hrd/gamache/FuqingSO>
- Workflow manager:
 - Workstream 1: NO. manually with Bash.
 - Workstream 2: YES.
- Workflow Time Requirements:
 - Workstream 1: Depended on TDR Obs
 - Workstream 2: 0435, 1035, 1635, 2235 UTC daily
- Output:
 - Workstream 1: 450GB/case after archived
 - Workstream 2: 1.1TB/day after archived

Model Configurations

WRF V3.1.1 + PSU EnKF



➤ The inner domains are centered with the storm's center

- 35 vertical levels;
- WSM 6-class microphysics;
- YSU PBL;
- Grell-Devenyi CPS

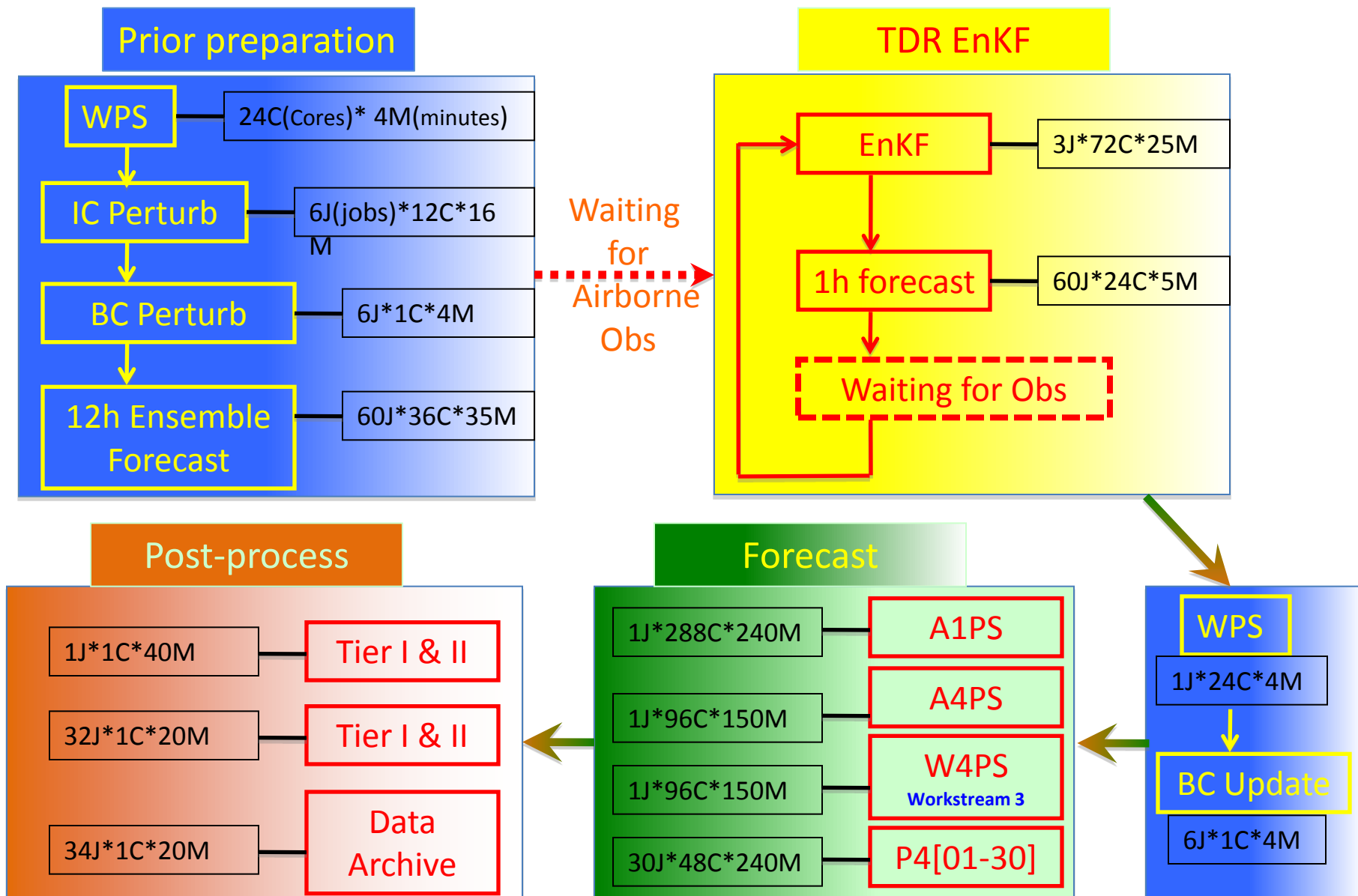
- 60-member ensemble;
- Gaspairi&Cohn 99' covariance localization with varying RoI

- IC & BC: GFS using 3DVAR background uncertainty

- Assimilation is performed over D1-3. D4 is used only for high-res forecast.

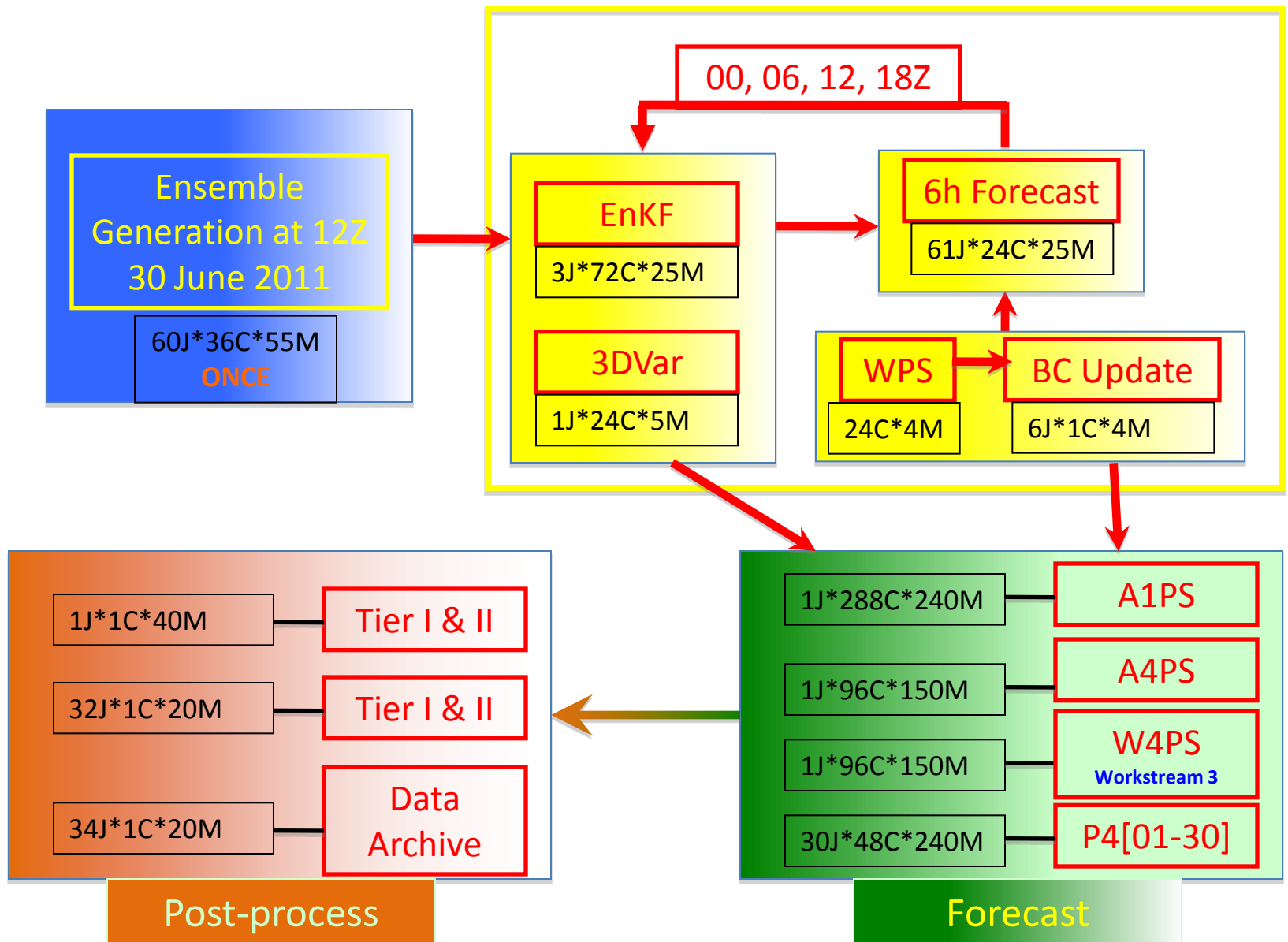
Workstream 1: workflow

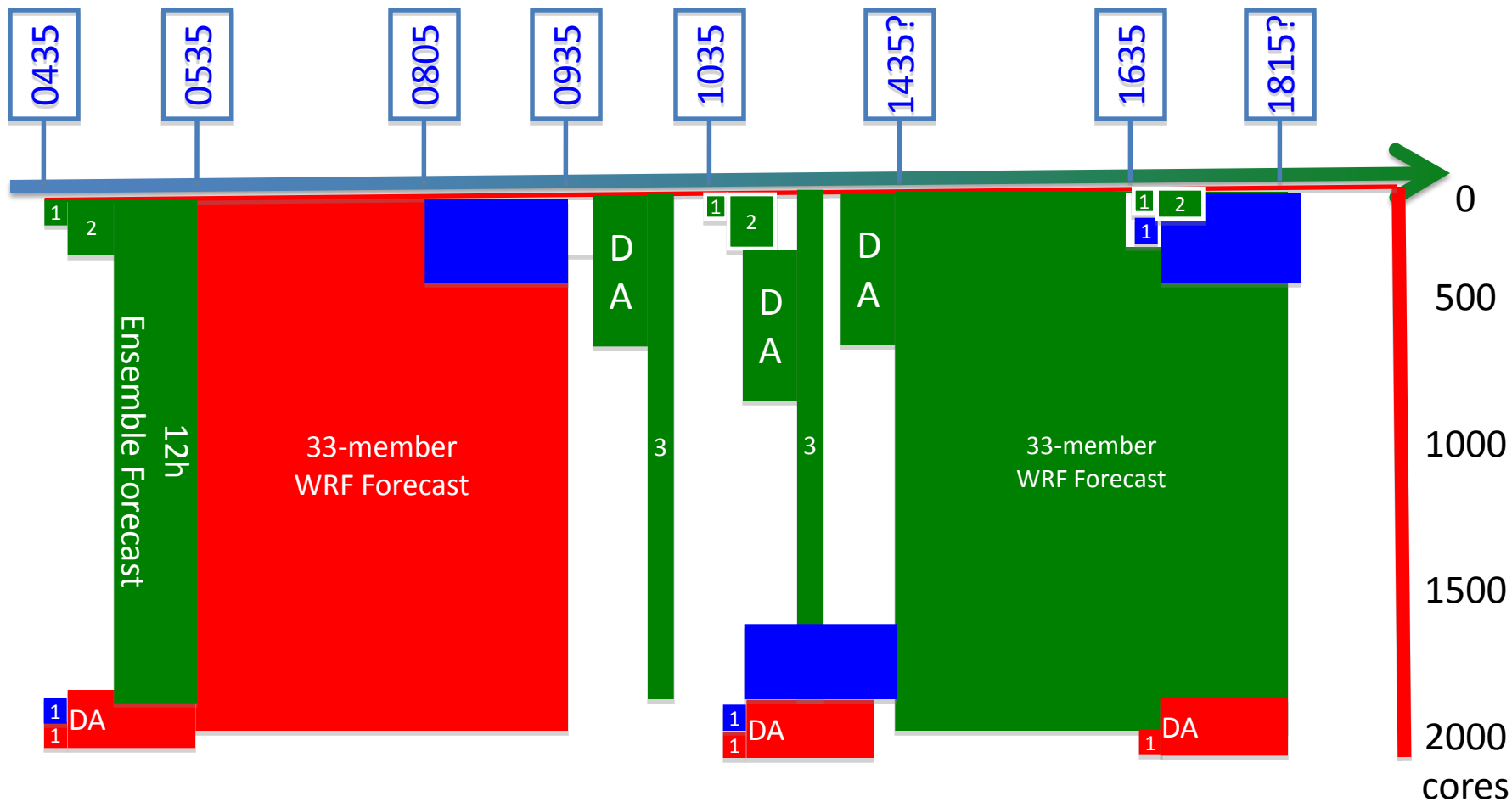
PSU WRF-EnKF airborne Doppler radar data assimilation system



Workstream 2: workflow

PSU WRF-based EnKF-3DVar hybrid system





1=WPS; 2=IC perturb;
3=1h ensemble forecast

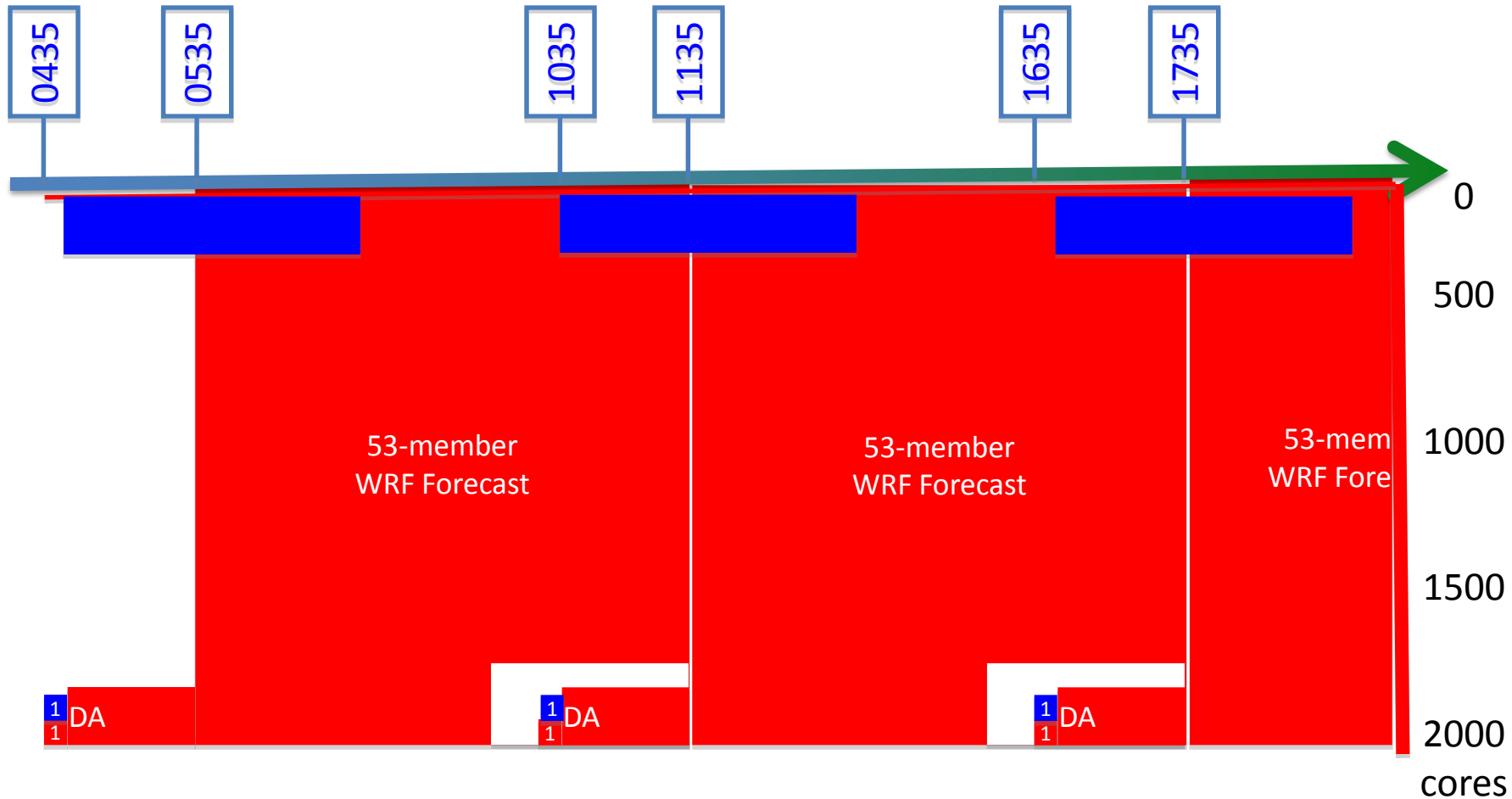
Stream 1

Stream 2

Stream 3

PSU Real-time System Computing Timeline without TDR

-- Example for 0000 UTC run



1=WPS; 2=IC perturb;
3=1h ensemble forecast

Stream 1

Stream 2

Stream 3