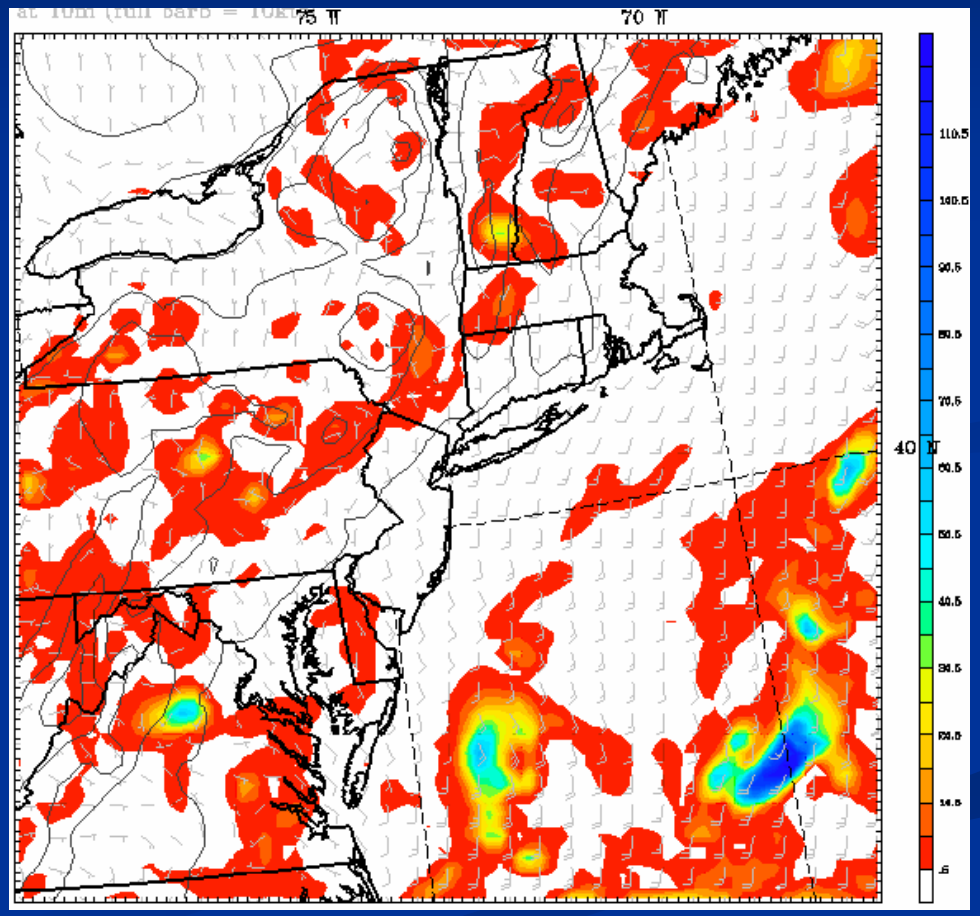
Use of MM5 Ensembles at NERFC

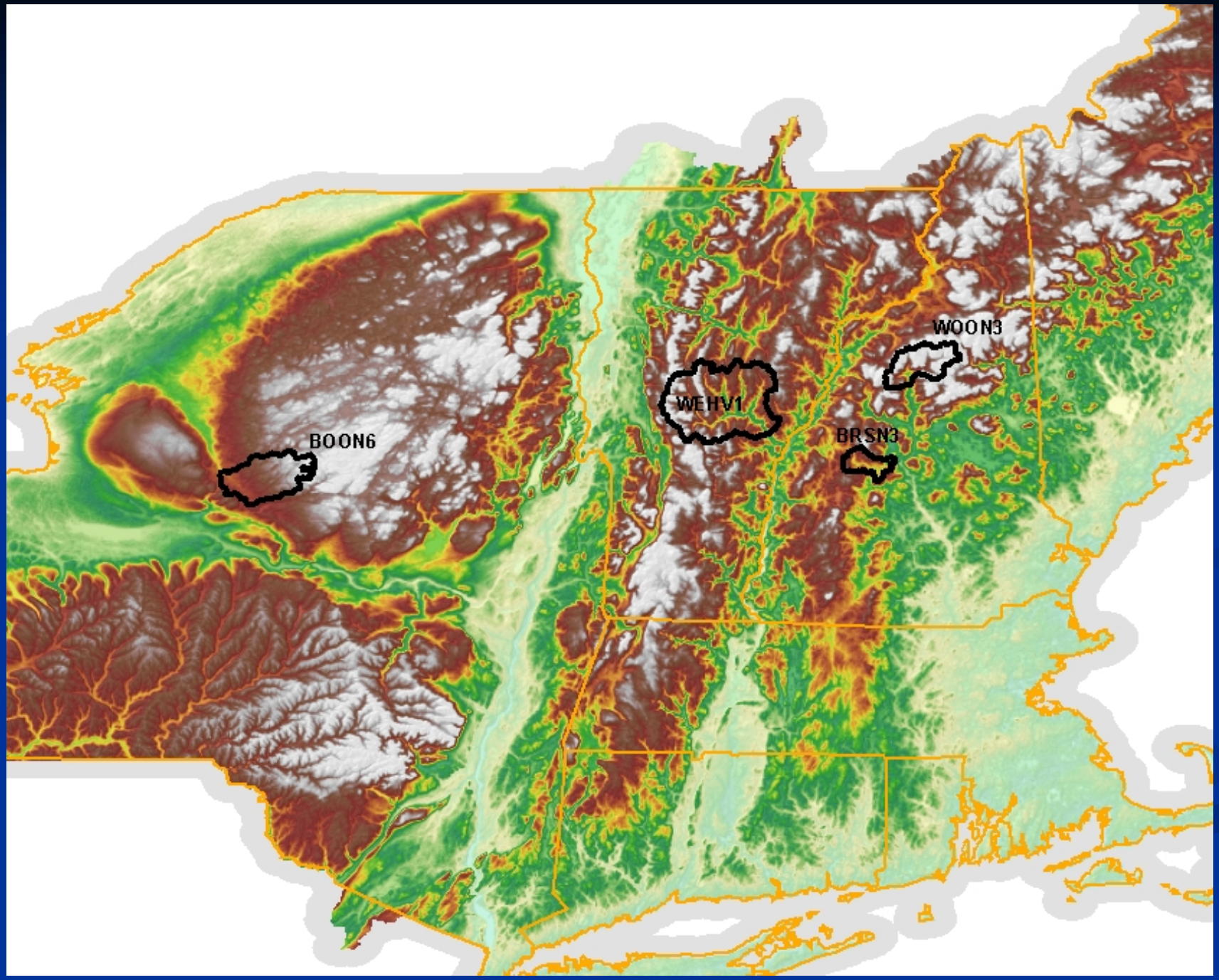
12-km MM5 Information

- 18 ensemble members
  - 1 control run
  - 11 members with varying physics
  - 6 members with varying initial conditions
- Run once per day to 48 hrs
- 00z ensemble runs available 10-12z



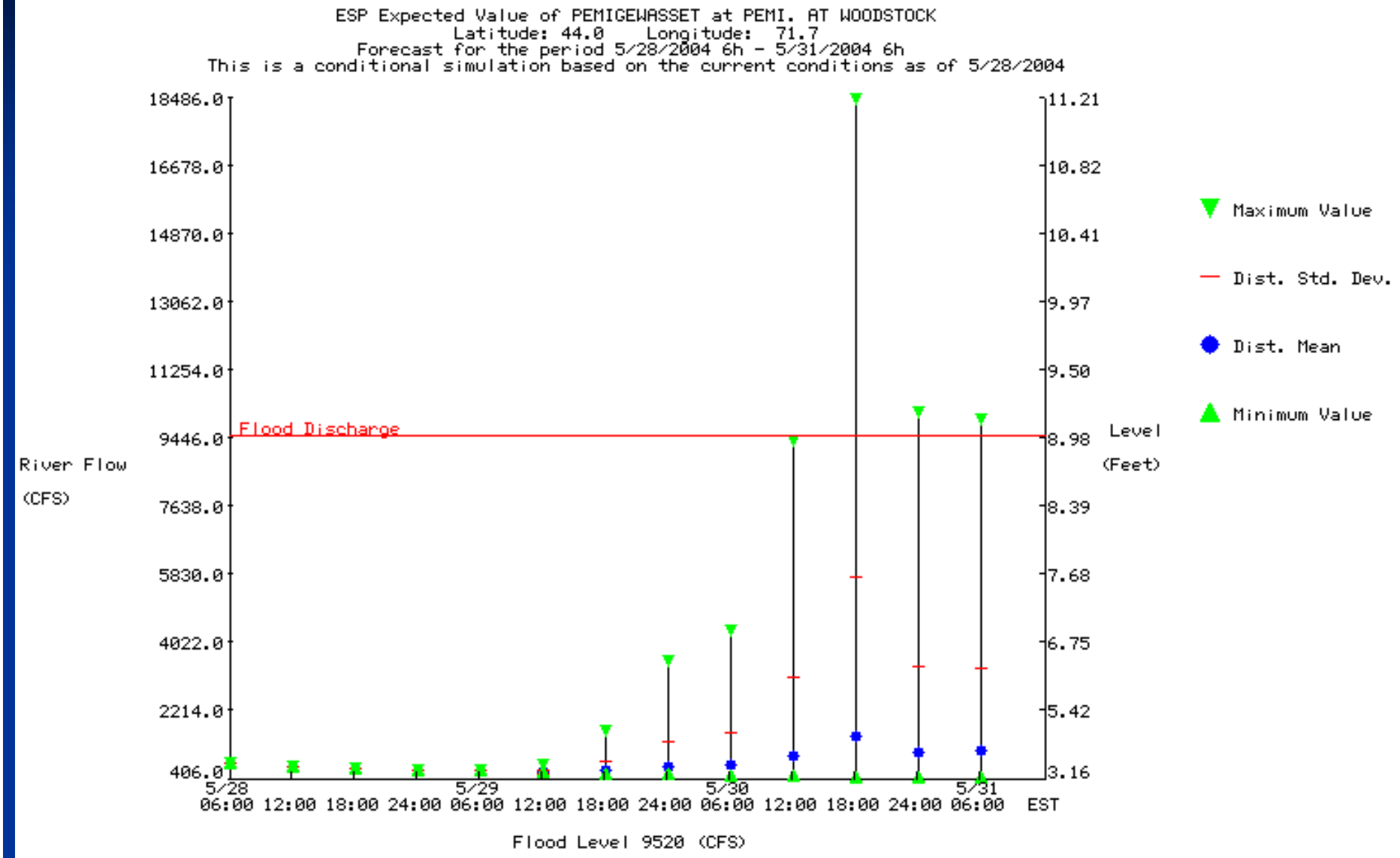
Test Basins

- Criteria
  - SAC-SMA basins that are running ESP
  - Variety of basin sizes
  - Headwaters
  - Limited or no regulation
  - Multiple River Basins
- Selected Basins
  - Smith River at Bristol, NH (86 mi^2)
  - Pemigewasset River at Woodstock, NH (193 mi^2)
  - Black River at Boonville, NY (295 mi^2)
  - White River at West Hartford, VT (690 mi^2)


WOON3
WEHV1
BRSN3
BOON6

Current Status

- NERFC has developed script to convert SUNY file format into OH Datacard format for ESP
- Routine conversion of MM5 fields to ESP input and ESP run beginning Feb 2004
- Internal web site created to post output
- Web Sites:
  - SUNY: http://fractus.msrc.sunysb.edu/mm5rte/
  - NERFC: http://www.erh.noaa.gov/nerfc/mm5_test.shtml


ESP Expected Value of PEMIGEWASSET at PEMI. AT WOODSTOCK
Latitude: 44.0 Longitude: 71.7
Forecast for the period 5/28/2004 6h - 5/31/2004 6h
This is a conditional simulation based on the current conditions as of 5/28/2004
18486.0
16678.0
14870.0
13062.0
11254.0
9446.0
7638.0
5830.0
4022.0
2214.0
406.0
River Flow
(CFS)
Flood Discharge
11.21
10.82
10.41
9.97
9.50
8.98
8.39
7.68
6.75
5.42
3.16
Level
(Feet)
Maximum Value
Dist. Std. Dev.
Dist. Mean
Minimum Value
5/28
06:00 12:00 18:00 24:00
5/29
06:00 12:00 18:00 24:00
5/30
06:00 12:00 18:00 24:00
5/31
06:00
EST
Flood Level 9520 (CFS)

Problems Encountered

- Bias in air temperatures over snow cover (~ 5-10 ºF)
  - Stony Brook is working on post-processor to address this issue
- Transmission of Ensemble fields
- Errors in file formats
- Labeling of time axis in ensemble plots did not include the hour – addressed in R25

Issues

- How do you transition with proper statistics from one basis of ensembles (e.g. MM5) to another (e.g. medium-range)
- Ability to adjust ensembles based on real-time conditions

Verification

- Originally set up as proof-of-concept, no verification data archived
- ESP time series files began to be archived in May 2004
- Stony Brook has MS student working on MM5 verification project