

Ventilation Workgroup

Robert Elleman
EPA Region 10

NW-AIRQUEST
June 12, 2018

Members

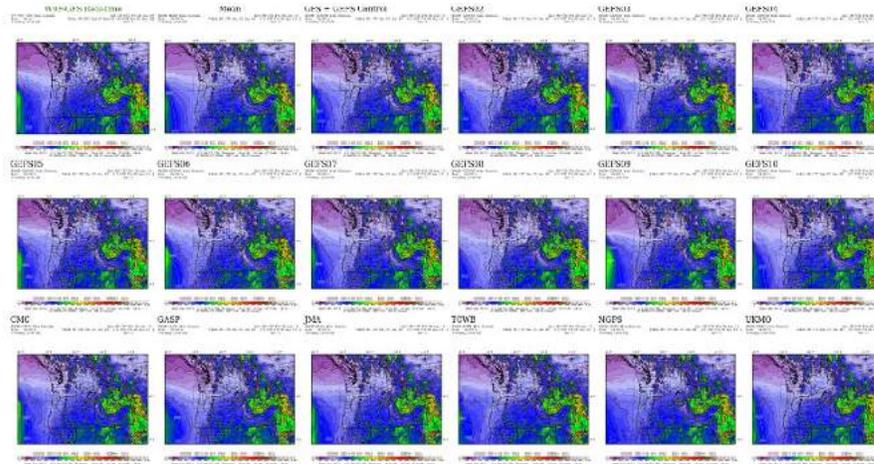
- **Most active**
 - **Rob Elleman**
 - **Jacob Wolf**
- **Less active**
 - **Mary Fauci**
 - **Paul Rossow**
 - **Phil Swartzendruber, Erik Saganic**
 - **Ranil Dhammapala**

Focus on New Ensemble Graphics

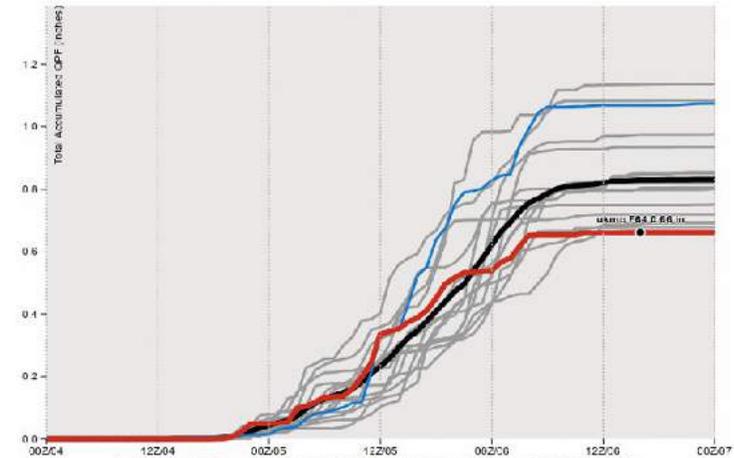
Secure | <https://atmos.washington.edu/mm5rt/ensembles/>

UW High-Resolution Ensemble Forecasts

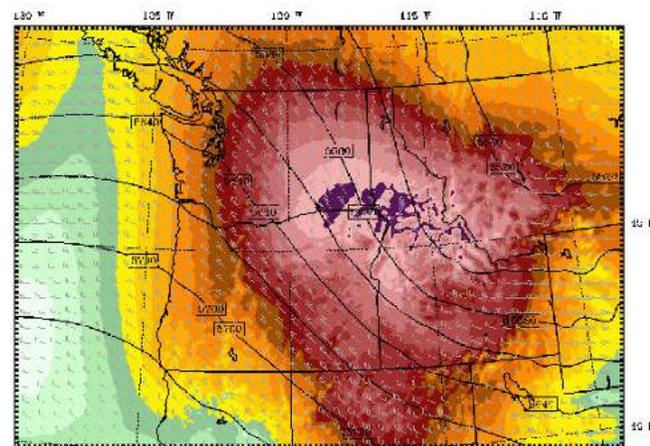
Supported by the [Northwest Modeling Consortium](#). Return to [Main NW Forecast Page](#).



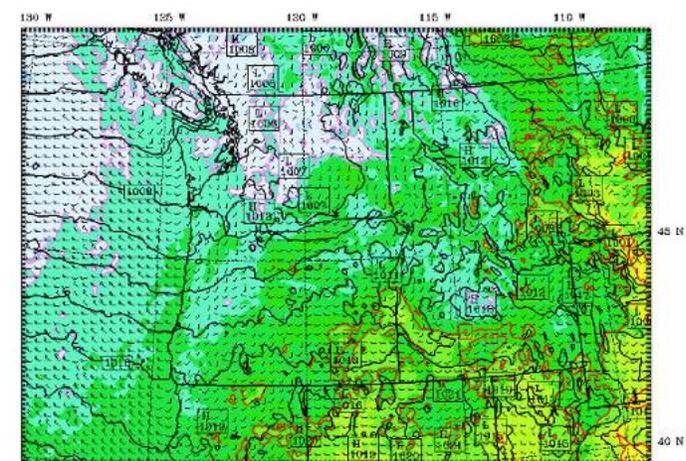
[Show All Plots](#)



[Plumes](#)



[Mean and Spread](#)



[Loop Individual Members](#)

As always, thanks for compiling.

Hi Rob, I know we're late on this, but I did have a number of thoughtful

1) I'd like to see more parameters for the spreadal (light as in only 925 temps and 500mb heights): <https://atmos.washington.edu/mm5rt/ensembles/spread.cgi?2018020500-PB-1500Hr-24>

Exceedance plots for mountain precipitation sites. Threshold values of .5", 1.5". We'd be interested in the seat, particularly interested in looping through time. For sure, I'd like thresholds evaluated over 6, 12, and 24 hour intervals as far out as the (10) days.

- Surface temperatures (10) days.
- Surface winds (2) Ensemble mean QPF and 2 sigma confidence intervals.
 - o Direction (3) 2 meter ensemble mean temperature and 2 sigma confidence intervals for those same precipitation stations and probability of exceedance of 32F and 34F during any given 6-hour period at those locations.
 - o speed

1) For probability of exceedance of 12% low and 12% high probability (2nd lowest and 2nd highest model member result) for each of the 16 mountain precipitation stations (Bainbridge, Crystal Summit, Timberline Falls, Hood Meadows, Mission Summit, Alpentop, Brooks, Tumwater Mtn, Dirtyface Mtn, and Washington Pass, Camp Muir, and 2nd pass winds at Schmidt Haus and Snoqualmie Pass)

- o a map showing DOT of each grid cell
- o a map that probability of exceedance of mean windchill values in a 6-hour period: 10 mph, 20 mph, 30 mph, 40 mph, 50 mph, and 60 mph
- o a map that would have the 2nd highest model member result for each of the 16 sites

5) Probability of Exceedance for wind gusts >= 58 mph. 6) Snow plumes for the sites we forecast heavy snow for in the highest mountains - Mount Baker, Stevens Pass, Snoqualmie Pass, Paradise, White Pass, Hurricane Ridge.

7) One hour Probability of Exceedances of 0.5 and 1.0 inch would be possible for tracking intense rainfall events.

8) 12 and 24 hour snowfall >= 1", 3", 4", 6", 12", 18"

9) 12 and 24 hour QPF 1", 2", 3", 6", 10"

10) Addition of different sites for plume and PDE plots

1) I support the assumption: https://weather.gc.ca/ensemble/naefs/EP5grams_e.html with surface winds and surface temps, but I would put it at the lowest priority since the plumes essentially do this already.

Logan

That's my thoughts for now, thanks Rob, Erik

OK – I really did look hard at these, so here's my input on what is presented from the 4 links:

1. Show all plots – I'm not interested in looping through the models, more interested in looping through time. Like the big plots

2. Yes - I liked the plumes page. I also like the "hourly weather" on NWS – example:

<https://forecast.weather.gov/MapClick.php?lat=46.3978&lon=-116.8025&unit=0&lg=english&FcstType=graphical>) I think these are

meteograms, so yes meteograms – can be like the plumes page with variability of all the models shown, and then stack parameters like hourly weather on NEWS pages.

3. I don't understand the mean spread page – I'm not that interested in the 500mb. For the temperature at 925mb I don't get what the colors are, if the contours are temperature timeseries of PBLs or Vis in any of the products currently available already. I do like that you can scroll over the forecast hours.

4. The order of looping – I'd rather loop through 3 days with one product and then loop to next- example do wind at 925 for a few days, then wind at 850 for a few days, then pbl for a few days or something like that rather than looping through all the parameters at one time and then switching to next time.

Sorry for the delay, Rob.

Interested in the seat, particularly interested in looping through time.

We care most about probability of exceedance of 32 values, again, would like the "hourly weather" on NWS –

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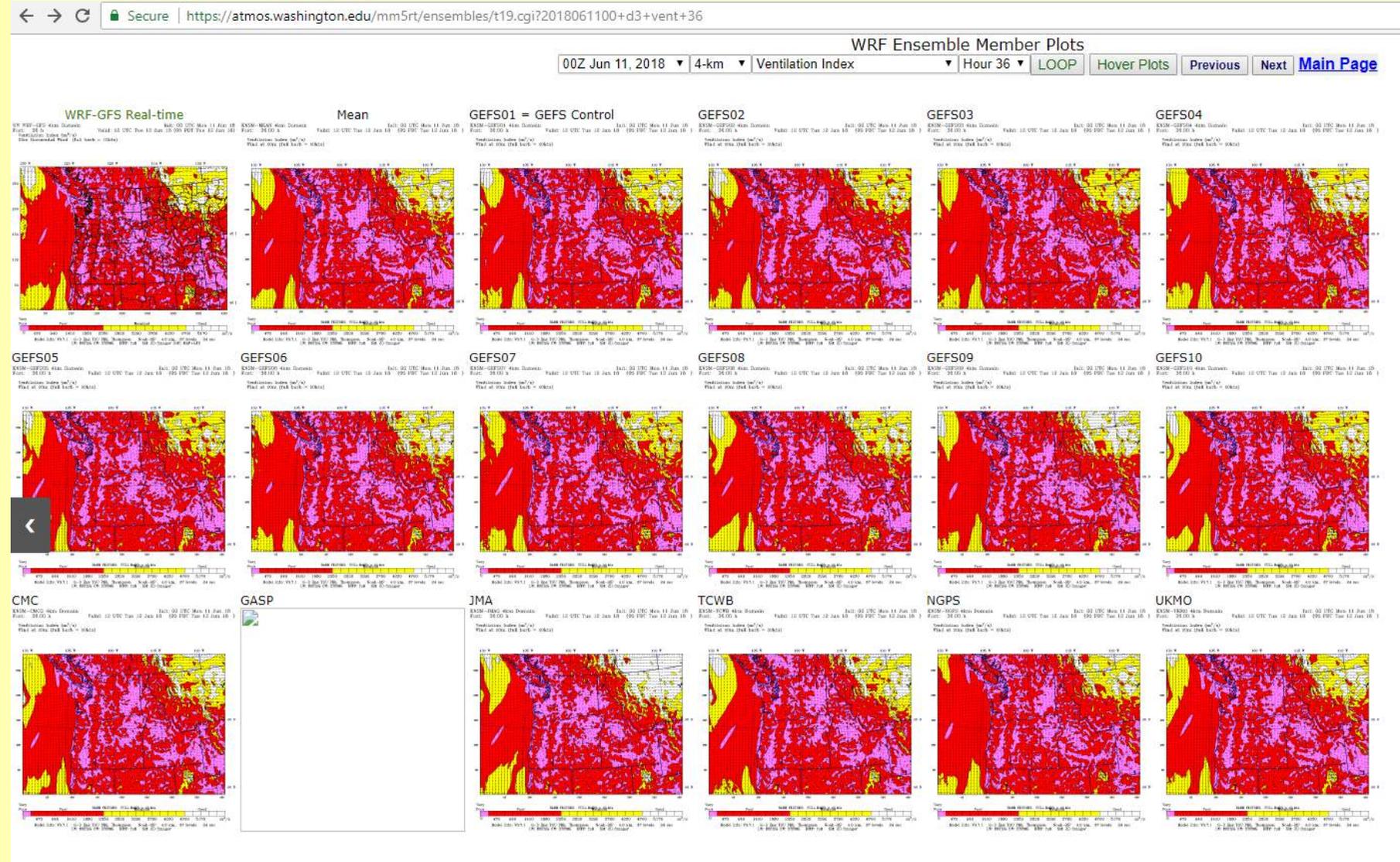
As for getting aerosols into WRF runs, we're not sure if its that beneficial to have the Airpact aerosol grids returned to UW in time for the next WRF run. Even if the 0Z-WRF-based CMAQ is done with day 2 in time for the 12Z WRF run, it will only stretch out a further ~ 38 hrs from the time of completion. Whats the plan for the remaining 48+ hours of the 4km WRF run?

We're making inquiries about some viable alternative sources of 3-D gridded wildfire smoke aerosol fields.

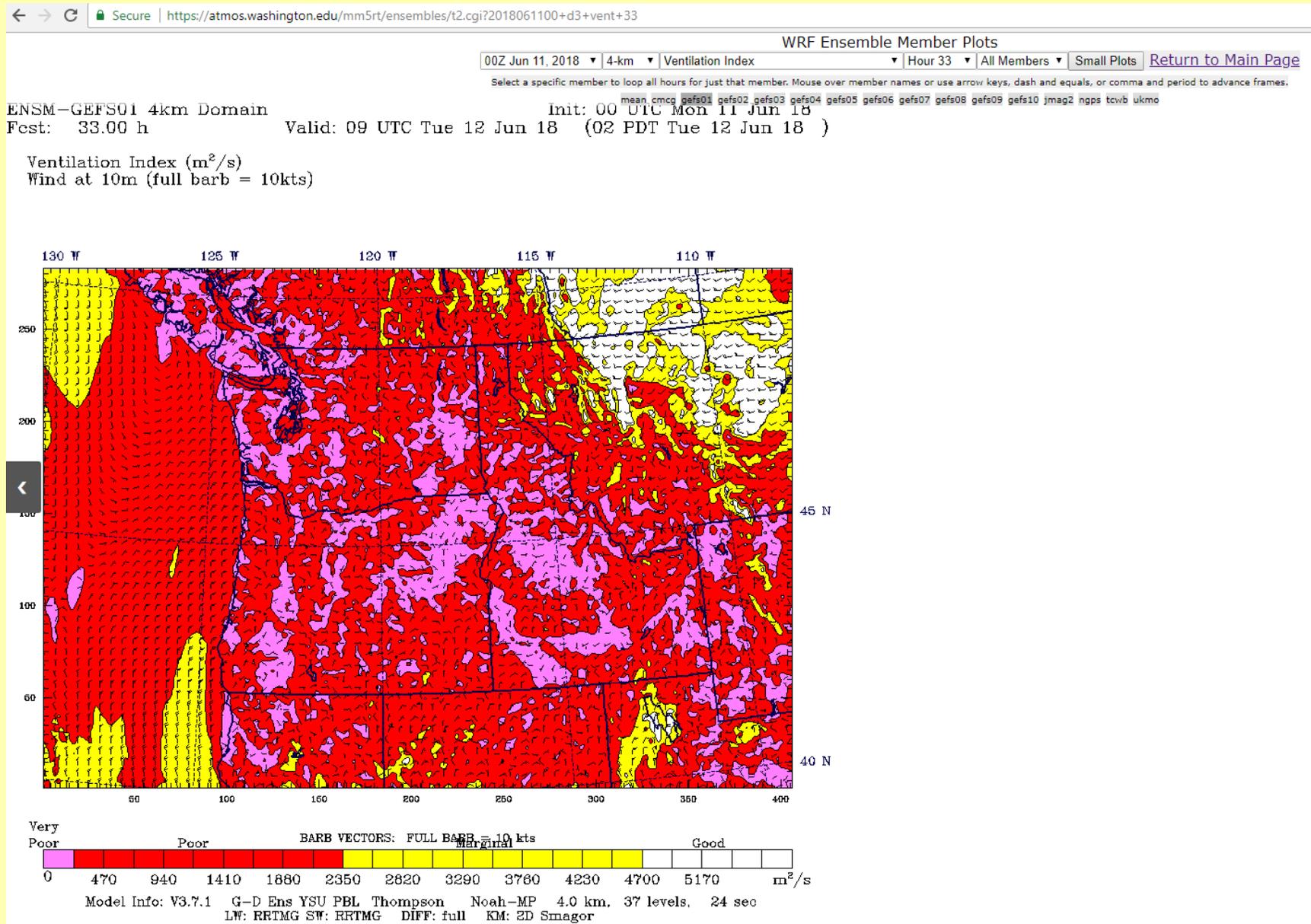
Mary

Show All Plots

- Ventilation Index
- PBL height

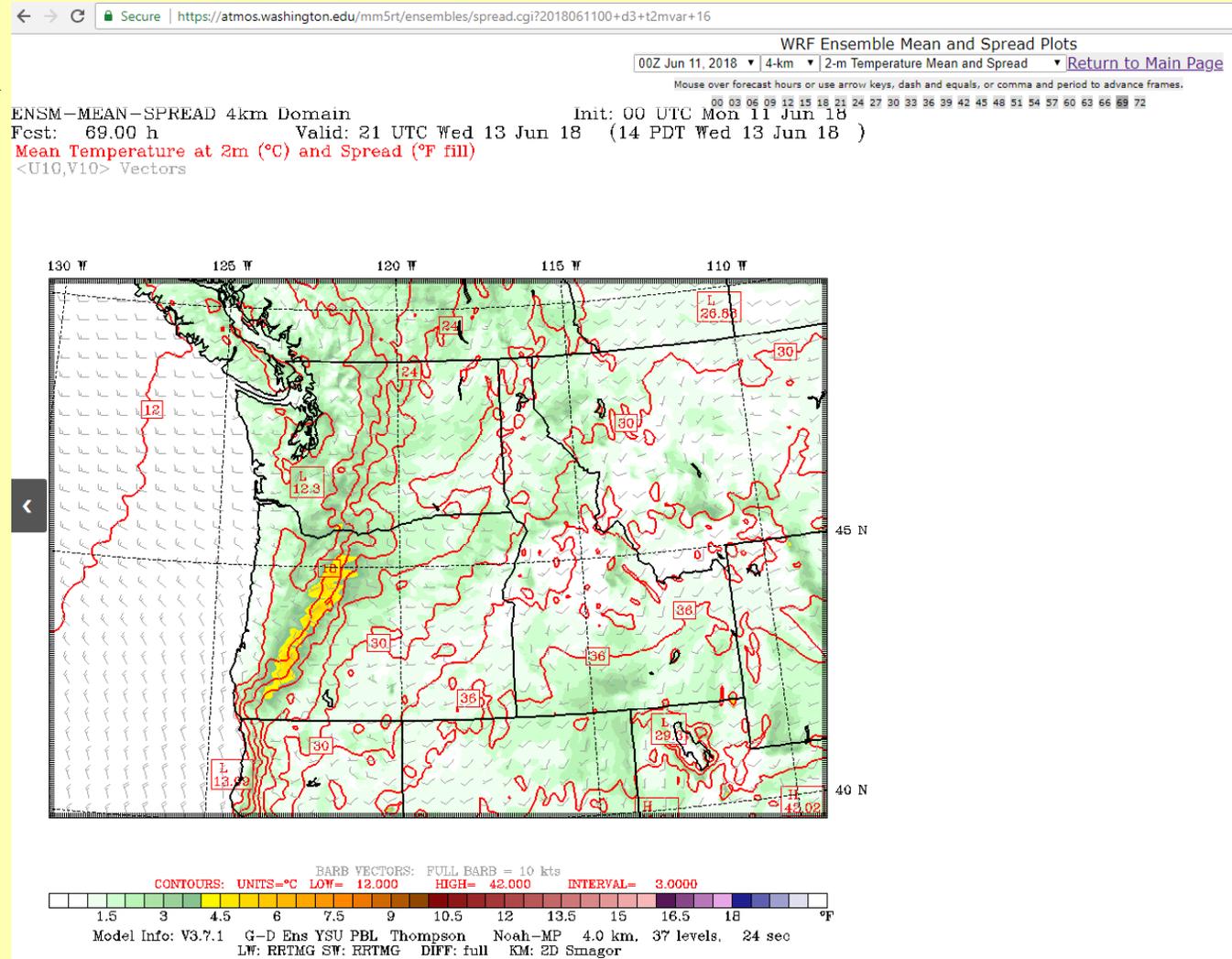


Show All Plots: Hover



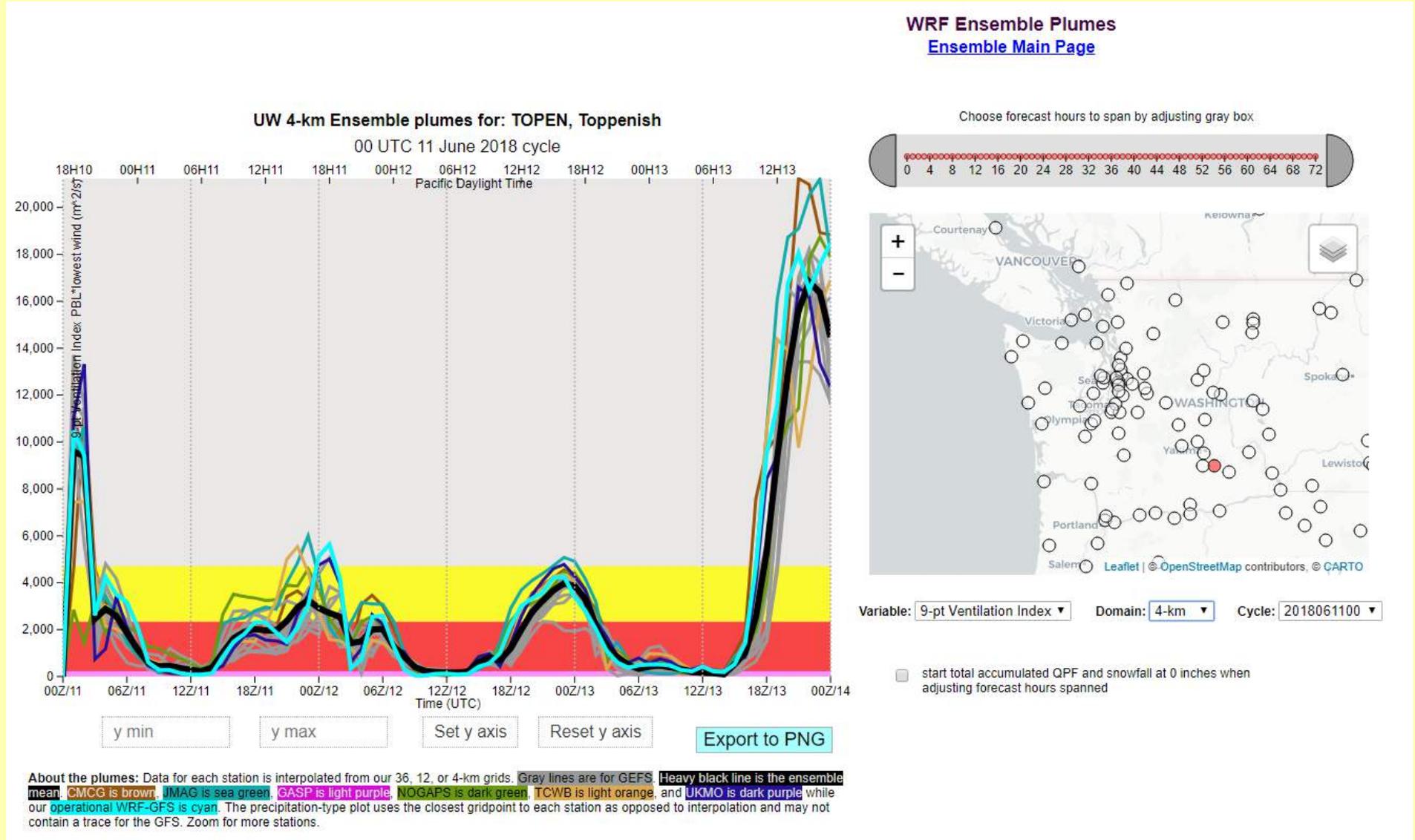
Mean and Spread

- 500 mb Height Mean and Spread
- 925 mb Mean Temperature and Spread
- 2-m Mean Temperature and Spread
- 10-m Mean Wind Speed and Spread



Plumes

- 9-pt Ventilation Index
- PBL Height



A Plan for Ensemble Graphics for Next Year

- **Meteograms**
- **VI, new color scheme**
 - **Plume (like current VI plume, different color background)**
 - **Mean and Spread**
 - **Show All Plots (including hover)**
- **VI, simple color scheme**
 - **Show All Plots (including hover)**
- **Soundings**

Farther Into The Future for Ensemble Graphics

- **Trajectories**
 - Cone of uncertainty
 - 2D versus 3D
- **Actual probabilistic metrics**
 - **Need to wait for:**
 - when we have 30+ members
 - when we have a calibrated system

