

NW-AIRQUEST Annual Meeting, June 12-14, 2018

Puget Sound Clean Air Agency, Seattle, WA



NW-AIRQUEST Annual State of the Model Report

Topics

- Contract review, status and budget balance
- Ongoing Tasks
- SFY2018 Tasks
- Deliverables
- Aeolus Cluster Evolution and Status
- AIRPACT-5 Configuration (promised)

Contract review, status and balance

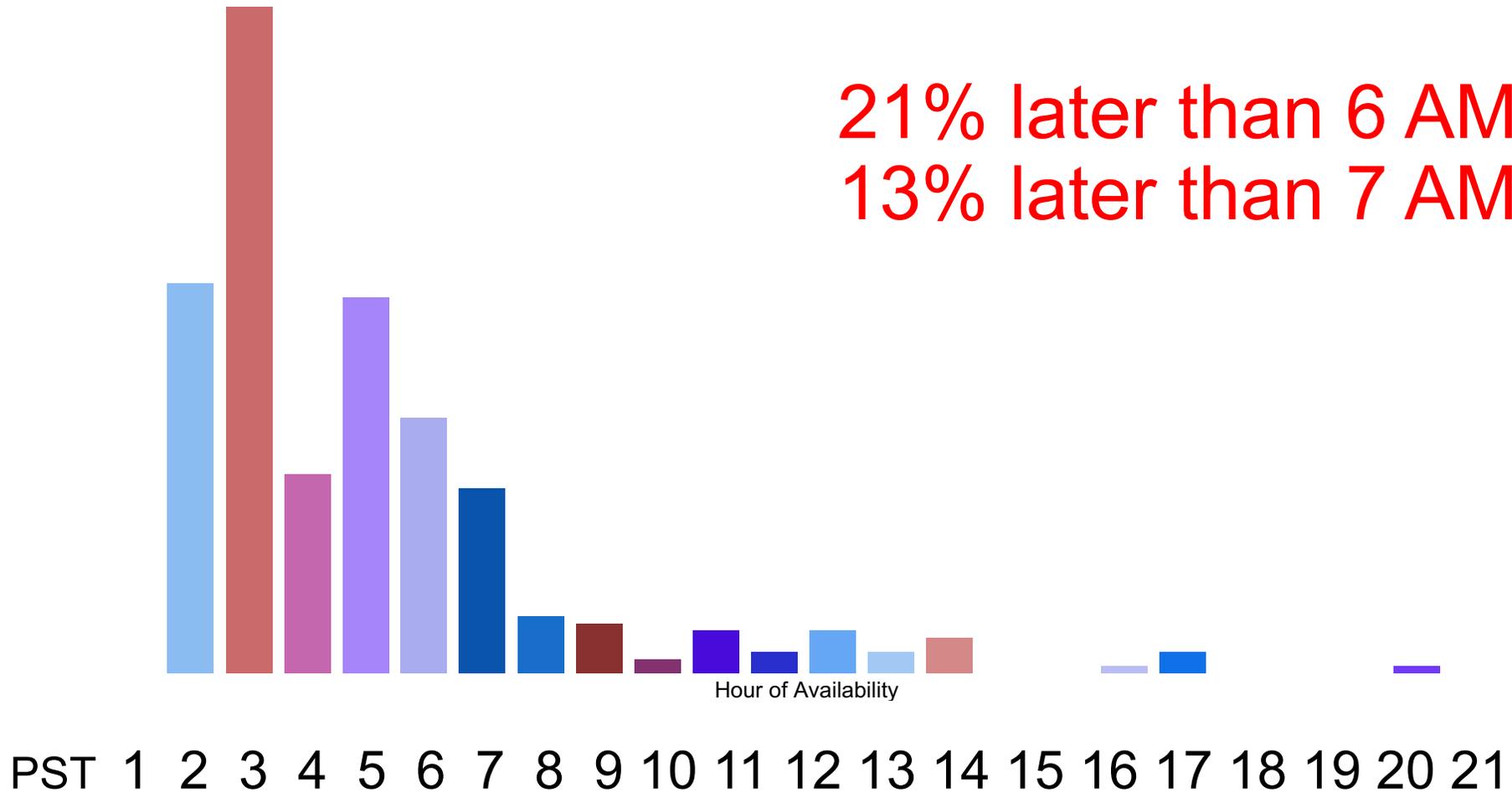
- State of the Model Report ~ Due June 30, 2018 (~ this report)
- Project Duration: July 1, 2017 – June 30, 2018
- Budget Total: \$100K
- Balance as of 6/10/2018:
 - Reflects accounting up through 5/31/2018
 - \$2,399.96

Ongoing Tasks (1 of 3)

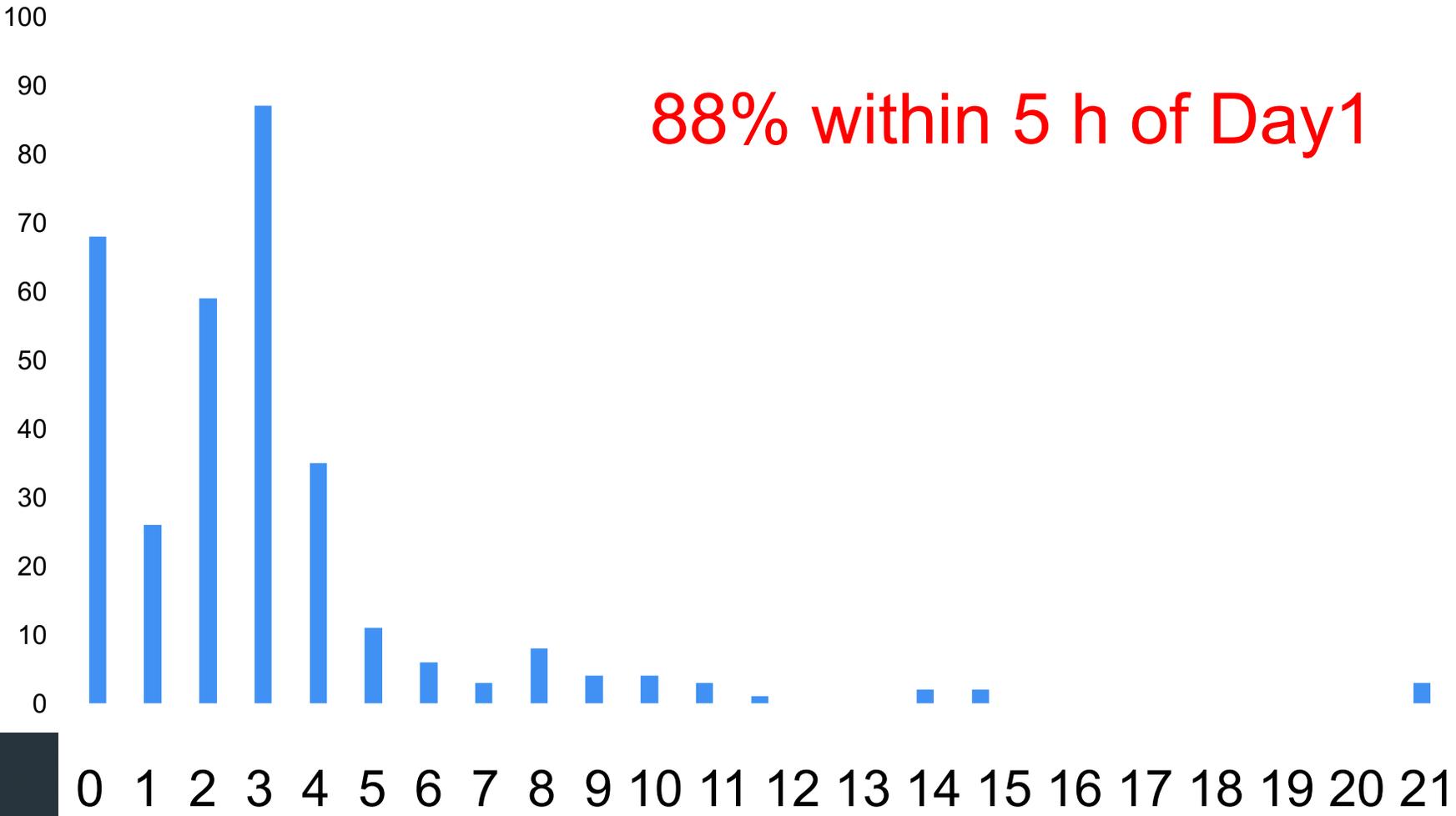
Provide daily forecasts ... By 6 AM for Day1, 95% target. By +5 h for Day2.	(two runs missing) Timing Stats Slide # 6 & # 7
Provide near real-time verification statistics ...	Ongoing
Track and continue to improve model performance ...	Changes for fire pending, subject to testing.
Maintain ambient air monitoring data streams from AIRNow as well as images of satellite retrieval.	Ongoing
Continue improvements and requested additions to web graphical display.	Ongoing effort. BCON plotting for PM2.5 needs fixed as do Curtain plots. Profiles?

AIRPACT5 DAY1 Image Acquisition to Web Times

21% later than 6 AM
13% later than 7 AM



Job Count for Day2 by Delay in Hours



Why the failures?

- Excluding failures of hardware, power and networking, the major cause of failures has been inconsistency in how AIRPACT component processes run, resulting in timing errors where files are not available when required, terminating jobs.
- But why? Processor timings were studied and recorded, and the sequence planned out with reasonable padding.
- And, the AP5 scripting runs OK, sometimes, or mostly!

Heraclitus (b. 544 b.c.)

“No man ever steps in the same river twice, for it’s not the same river and he’s not the same man.”

So, maybe...

“No job ever runs in the same system twice, for it’s not the same system, and they are not the same jobs?”

The state of the system varies significantly, because it is shared, and the nightly jobs differ also, in meteorological complexity and thus computational load.

So, job timing is tricky.

Ongoing Tasks (2 of 3)

Maintain the “Change Log”, posted on the AIRPACT website	Up to date.
Archive daily model output of the first 24 hours of forecast for each day and provide access to same upon requests from users.	Archive is missing two days output for current contract period (not counting the recent UW outage period). Provided upon request!
Web-based graphical displays for each day’s first 24 hours of forecast should be available for the most recent 5 years ...	AIRPACT-4: imagery on-line from Jan 1, 2014 through March 31, 2016. 27 Mo. AIRPACT-5: imagery online from April 16, 2016 through to June, 2018. 26. mo.
Gridded model output files should remain accessible for at least one month.	Initial results are available in CMAQ output format for ~ 1 week, then only archive formatted files are saved.

Ongoing Tasks (3 of 3)

Modify AIRPACT as needed to respond to changes in fire emissions produced by other organizations.	Monitoring status of replacements for BlueSky and SMARTFIRE .
Ensure R web server hosting background concentrations lookup tool (http://bglookup.cee.wsu.edu) remains functional.	OK, so far!

SFY 2018 Tasks (1 of 4)

Incorporate dust-suppression module for rain days (AFDUST)	Pushed back to October 2018
Add the north, south, and east boundary conditions for CO and O3 to the “vertical curtain plots” page.	Completed (once); however, a recent effort to improve scaling of PM2.5 images degraded PM2,5 output. So, code needs to be fixed for PM2.5.
Apply Direct Decoupled Method for source attribution for T-COPS case studies	Mahshid Etesamifard reporting on DDM for T-COPS this meeting, June 13, 2018.
Hosting wood smoke PM forecast models from formulas shared by the state and local agencies.	Available to collaborate/cooperate with agencies...
Perform an evaluation of ozone and PM2.5 (including speciation) simulations on at least one year of Airpact5 data, in consultation with consortium members .	Evaluation underway by Jordan Munson, for AIRPACT-5 and Urbanova.

SFY 2018 Tasks (2 of 4)

Convert to obtaining BCON from NCAR CAM-Chem export by Louisa Emmons.	WACCM model output is available. Redevelopment of BCON extraction pushed to summer 2018.
Develop PM10 & SO2 performance charts	PM10 and SO2 are extracted/exported from CMAQ results and are captured from AIRNow feed. Addition of graphics to performance charts page is pending renewal of Univ. Idaho contract.
Begin incorporating new SMOKE-MOVES (2014a) emission rates and supporting information.	Deferred to SFY2019
Begin incorporating 2014 NEI v.2	Deferred to SFY2019

SFY 2018 Tasks (3 of 3)

Explore bidirectional Ammonia CMAQ processing	Waiting on EPA results... So, deferred to SFY2019
Begin incorporating new Canadian Inventory	Deferred to SFY2019
Develop 1.3 km simulations using Spokane as a demonstration case	Urbanova being reported on by Jordan Munson, this meeting, June 13, 2018.
Begin incorporating 2014 NEI v.2	Deferred to SFY2019
Develop PM2.5 bias correction products	Focus of REU project June-July, 2018.

Aeolus

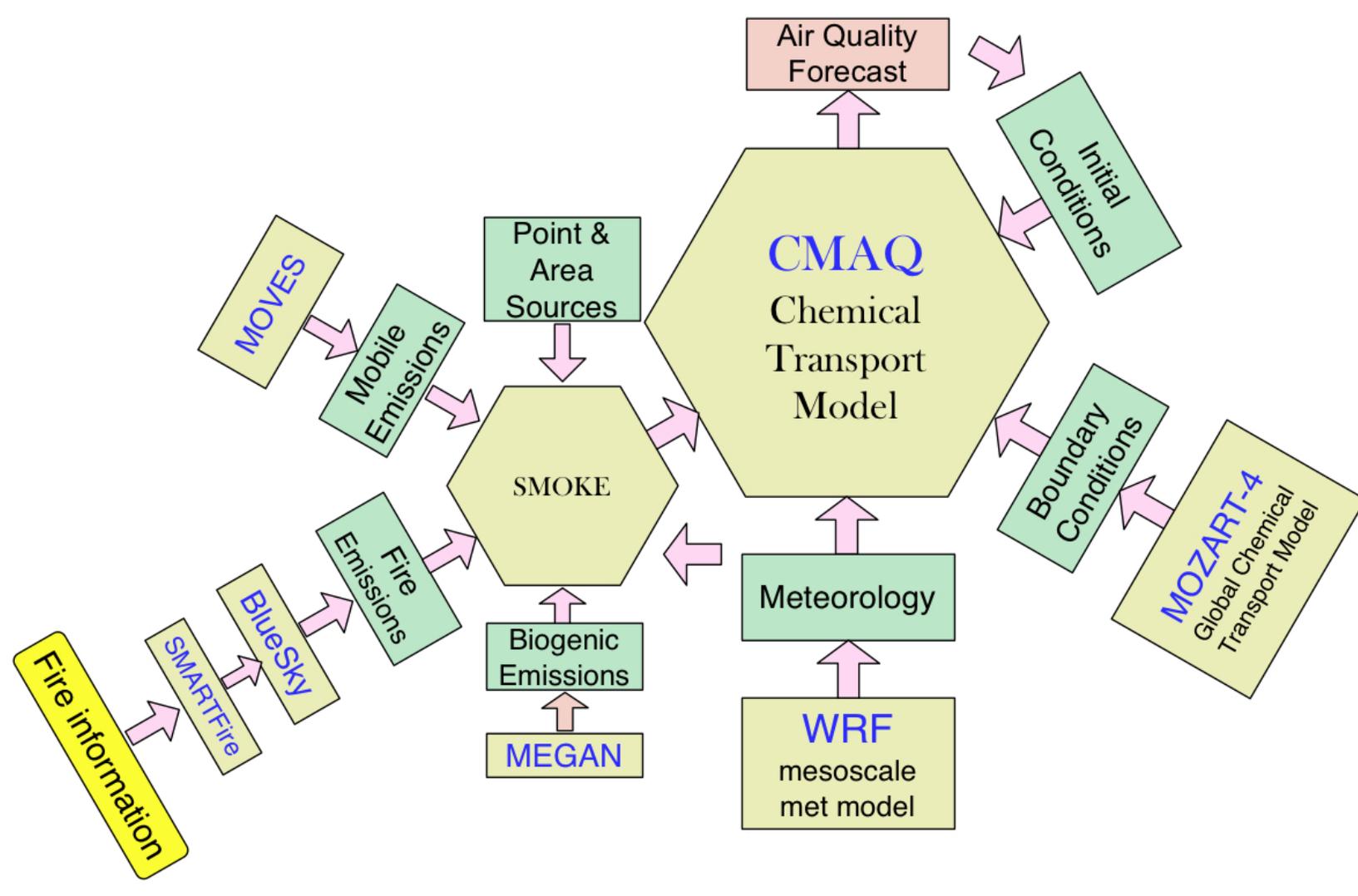
Exploration of proposition that Aeolus should be managed by WSU's Center for Institutional Research Computing	No longer optimistic about CIRC.
Alternative is a Cost Recovery Center (CRC)	VCEA might set one up.
Will VCEA support Aeolus by funding Sys. Admin.?	Uncommitted...
Annual Maintenance Cost ~\$50K	No identified funding, so CRC?



Updated / Restated System Configuration
(to be added before being posted)



AIRPACT5 Configuration



- WRF version 3.7.1
- SMOKE v3.5.1
- MEGAN v2.10
- SMARTFIRE2
- BLUESKY v 3.5.1
- CMAQ version 5.0.2
- Since MOZART4 operations ceased ~ Jan. 2018, Boundary Conditions have come from Monthly Average MOZART4 results from 2015.



- Discussion

