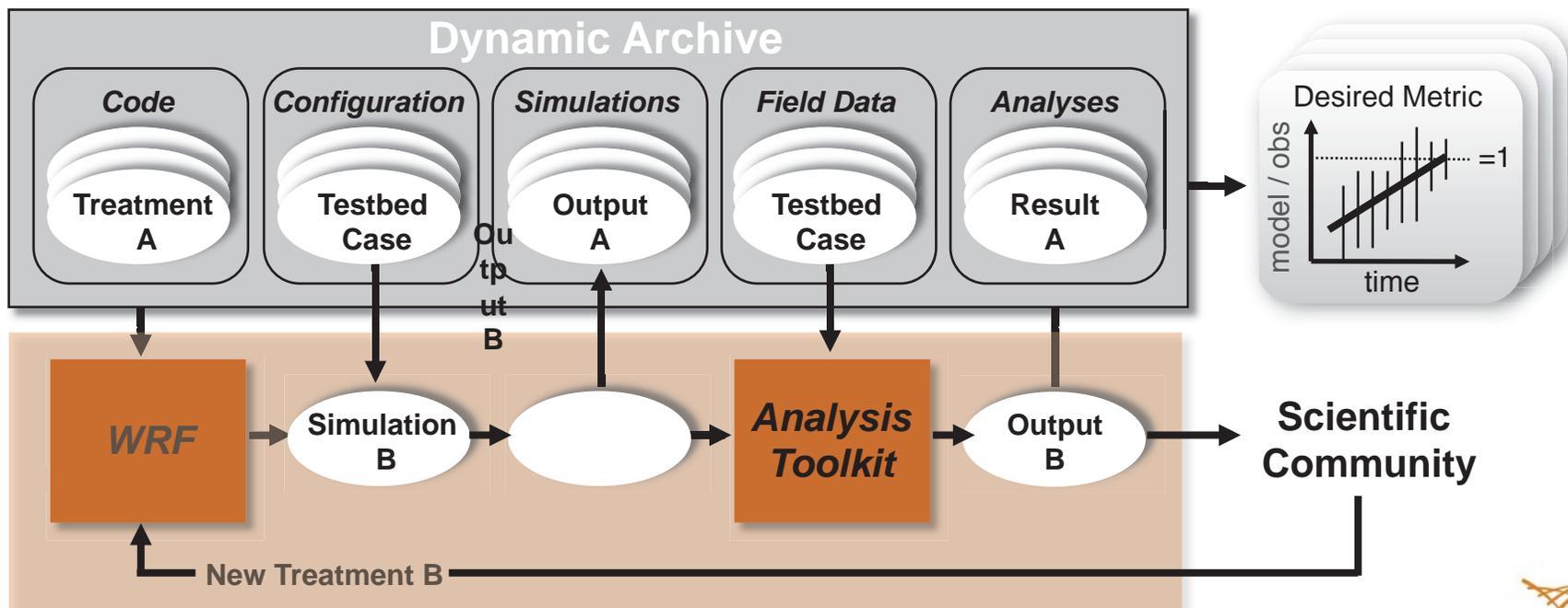


Status of the CARES Testbed Evaluation Product

Jerome Fast
VAP Breakout Session

What is the Aerosol Modeling Testbed?

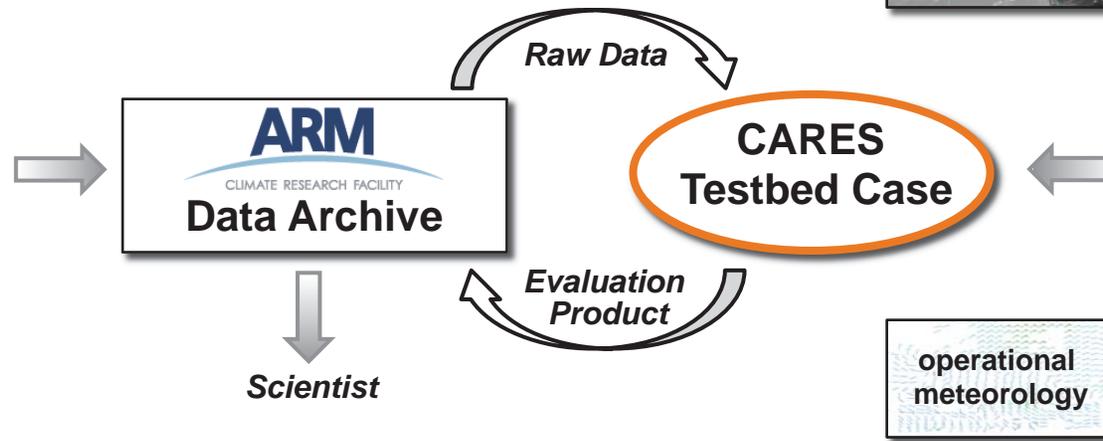
A computational framework that systematically and objectively evaluates aerosol and clouds process modules over a range of spatial scales



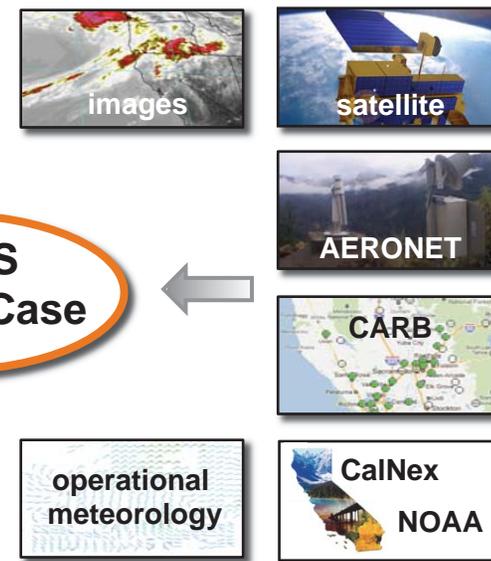
CARES Dataset

Development of an Evaluation Produce for the ARM Archive: *CARES Dataset for the AMT*

ARM IOP



Other Sources



- Not just for WRF-Chem modeling and Aerosol Modeling Testbed, can be used and analyzed by anyone
- “One-stop shopping” for CARES data
 - More consistent formats
 - Derived products, e.g. merged data, averages

Status

ARM IOP

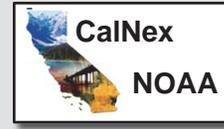
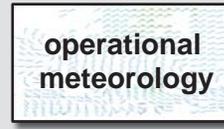


All Processed Except:

- SPLAT*
- PILS
- CCN
- GC
- PALMS*
- PILS
- ATOFMS*
- PILS
- RSP – secondary products available in October

*single particle data not directly comparable to model output – and needs to be processed differently

Other



Processed:

- MODIS
- Others?
- CA station AOD
- all AQ data
- radiosondes
- radar wind profilers
- not started

still need to check filenames for consistency and write up documentation

Example WRF-Chem Simulation

Extraction Programs – “Simulators”



Analysis Programs - Graphics and Statistics



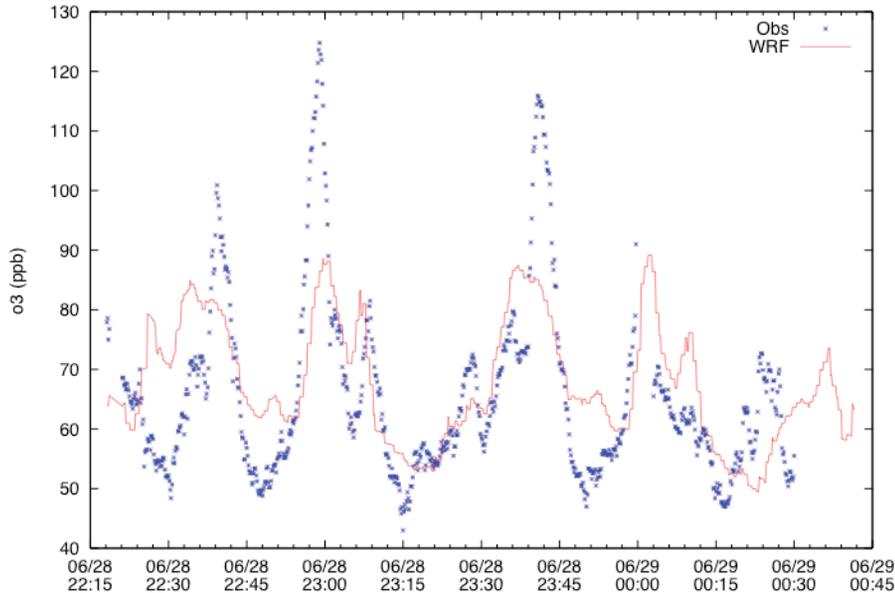
“good”

WRF(co) and Obs(co_obs) for flight g1_100628b

WRF(no) and Obs(no_obs) for flight g1_100628b

WRF(no2) and Obs(no2_obs) for flight g1_100628b

WRF(o3) and Obs(o3_obs) for flight g1_100628b

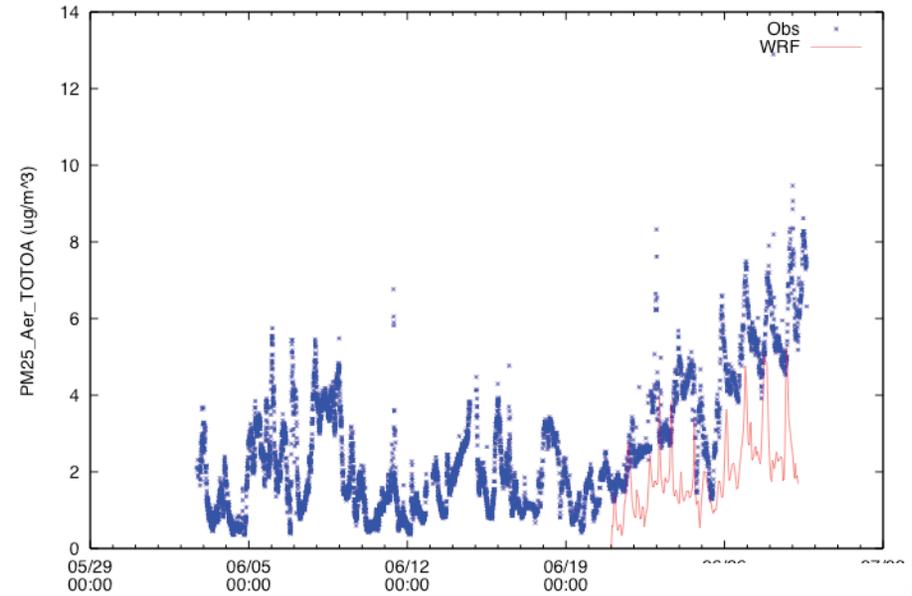


“needs improvement”

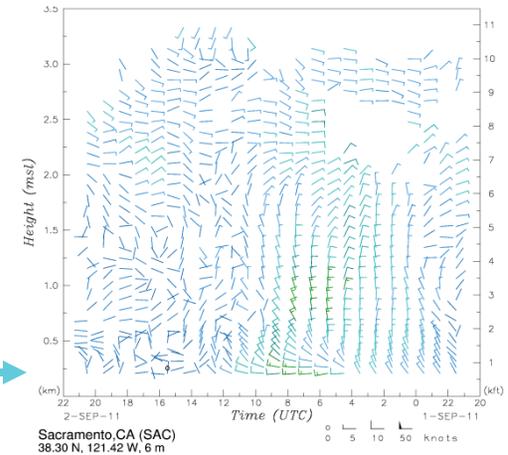
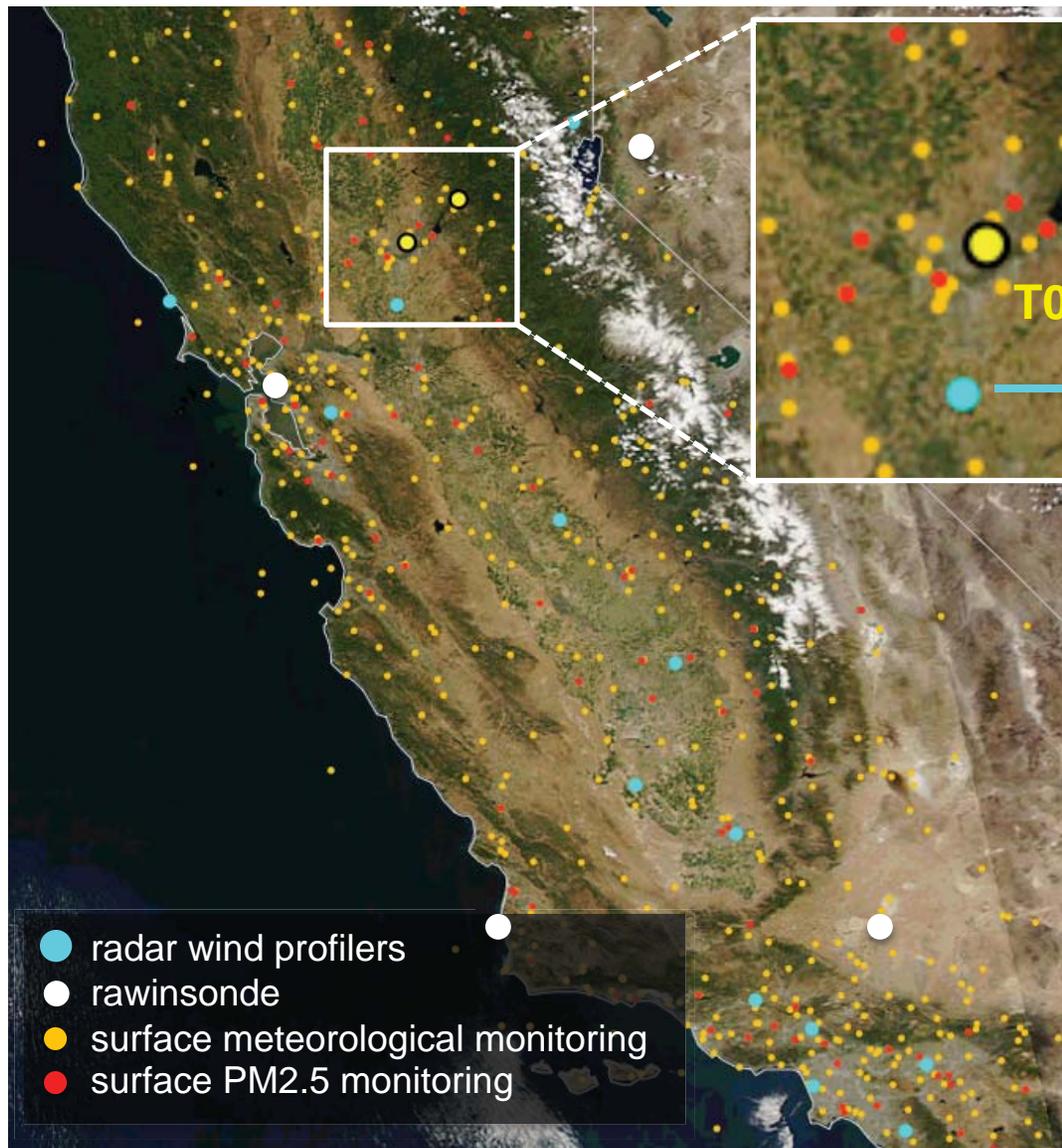
WRF(so2) and Obs(so2_obs) for flight g1_100628b

WRF(relative_humidity) and Obs(relative_humidity_obs) for flight g1_100628b

WRF(PM25_Aer_TOTOA) and Obs(ams_org_obs) for station supersites_t1



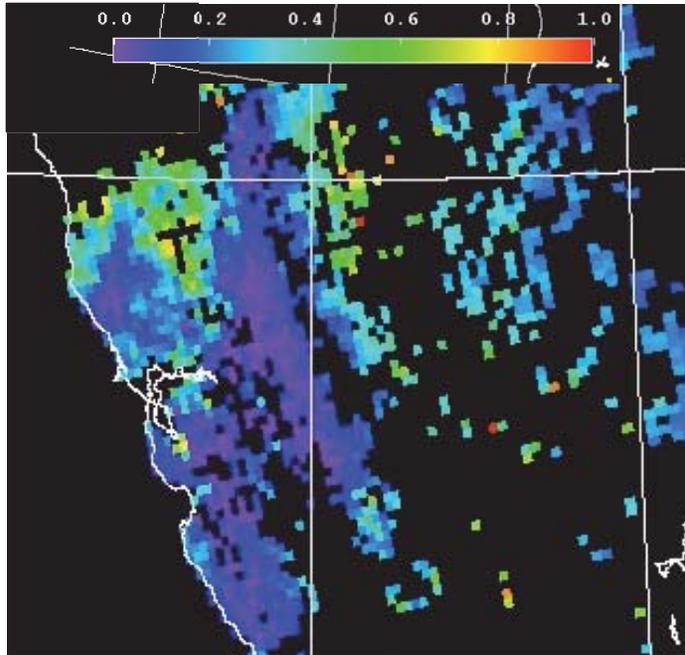
Operational Meteorology and Chemistry



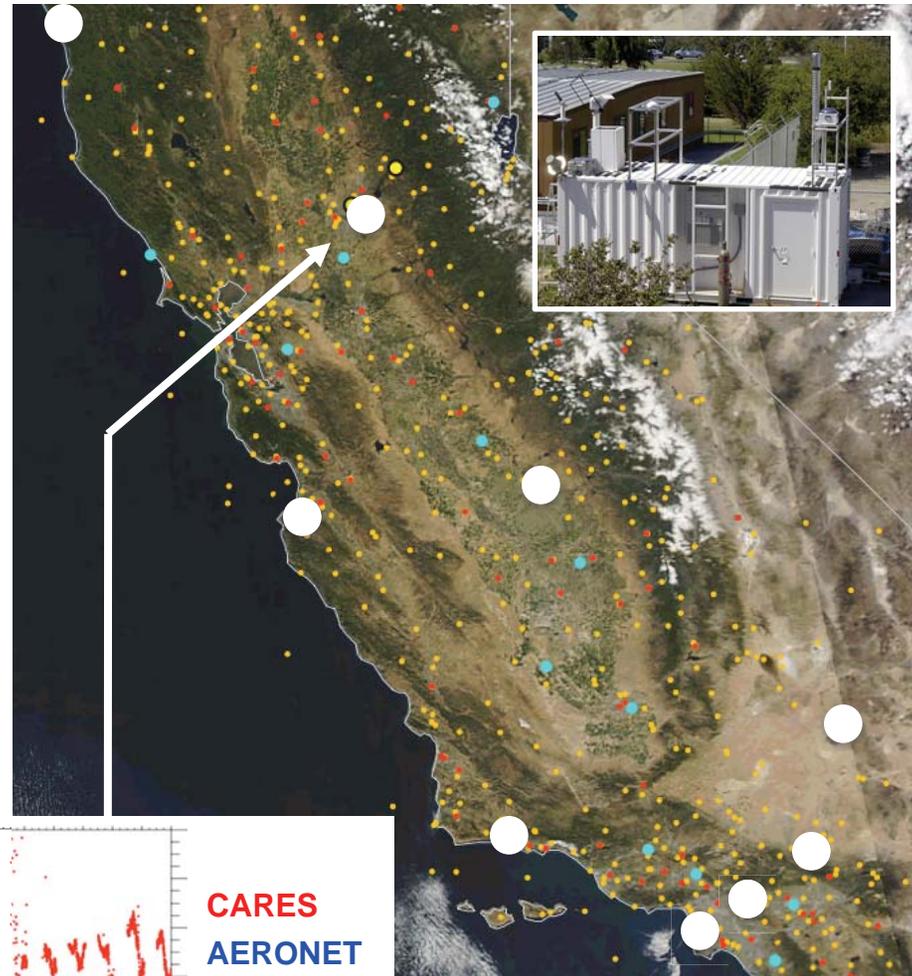
- Chemistry data needed to evaluate regional PM2.5 distributions
- Operational meteorological data needed to evaluate predicted aerosol transport and mixing

Operational AOD

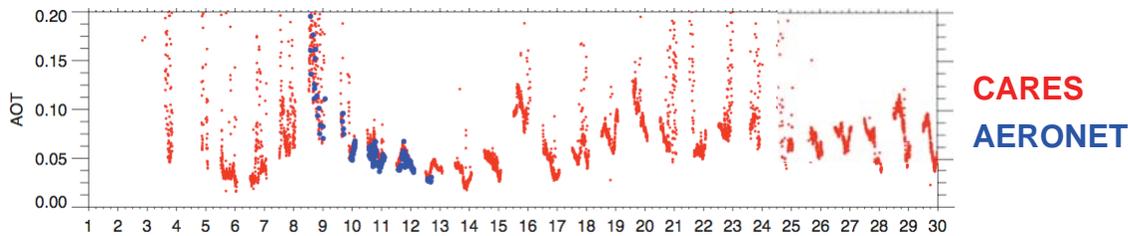
MODIS Aqua, June 22, 2010



AERONET



- Data needed to evaluate regional AOD distributions



CalNex: May – mid June 2010



- **Pasadena:** meteorology, chemistry, aerosols, optical properties, CCN

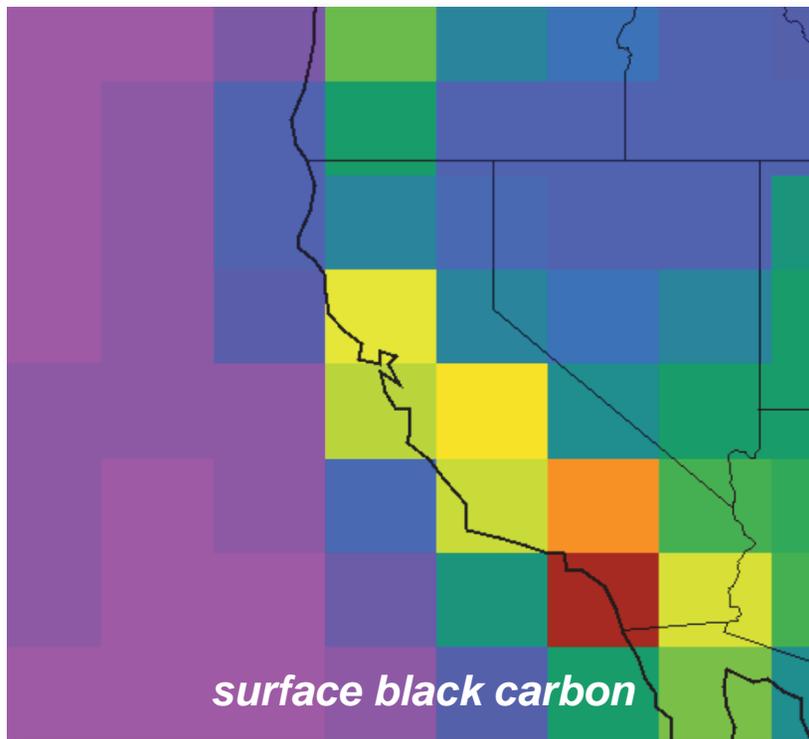
- **WP-3D:** meteorology, chemistry aerosols, 18 flights
- **Twin Otter:** ozone lidar, Doppler wind lidar, DOAS 52 flights
- **B-200:** HSRL, RSP 8 flights
- **Atlantis:** May 14 – June 8

Will be able to compare and contrast aerosol evolution across California by combining CARES and CalNex

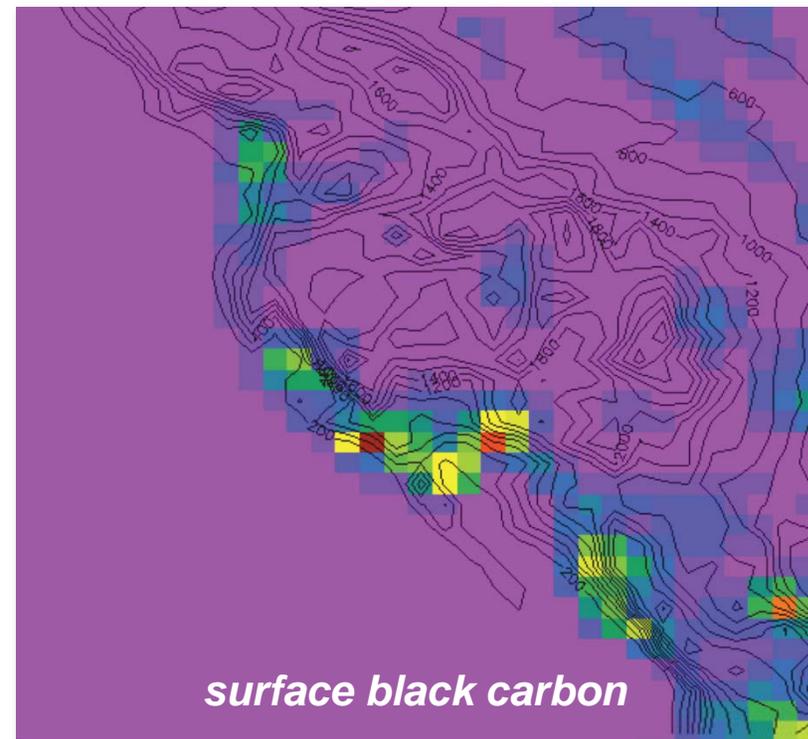
Model Output

- Large-scale global model output could be added to provide initial and boundary conditions for WRF and other analyses
- Help determine periods of trans-Pacific transport that may contribute to CARES measurements

MOZART



RAQMS



Summary

- Phase 1: CARES tested case finished this fall, without CalNex data, and make available via ARM archive
- Phase 2: Inclusion of CalNex data during the winter
 - *Combined CARES / CalNex data will likely increase the number of modelers using CARES data, increasing the scientific impact of ARM data*

Questions / Comments?