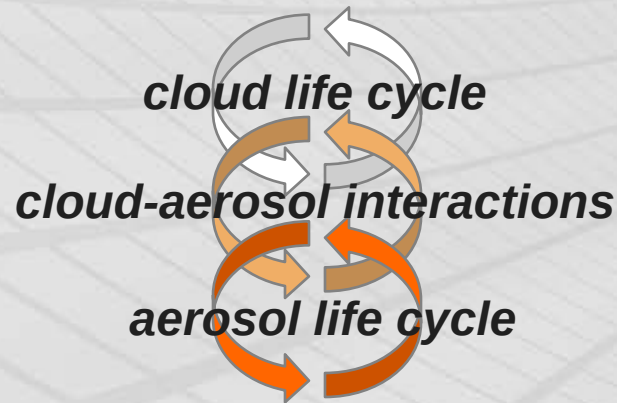




Role of the Aerosol Modeling Translator

Jerome Fast

ASR Science Team Meeting, March 15 – 18, 2010



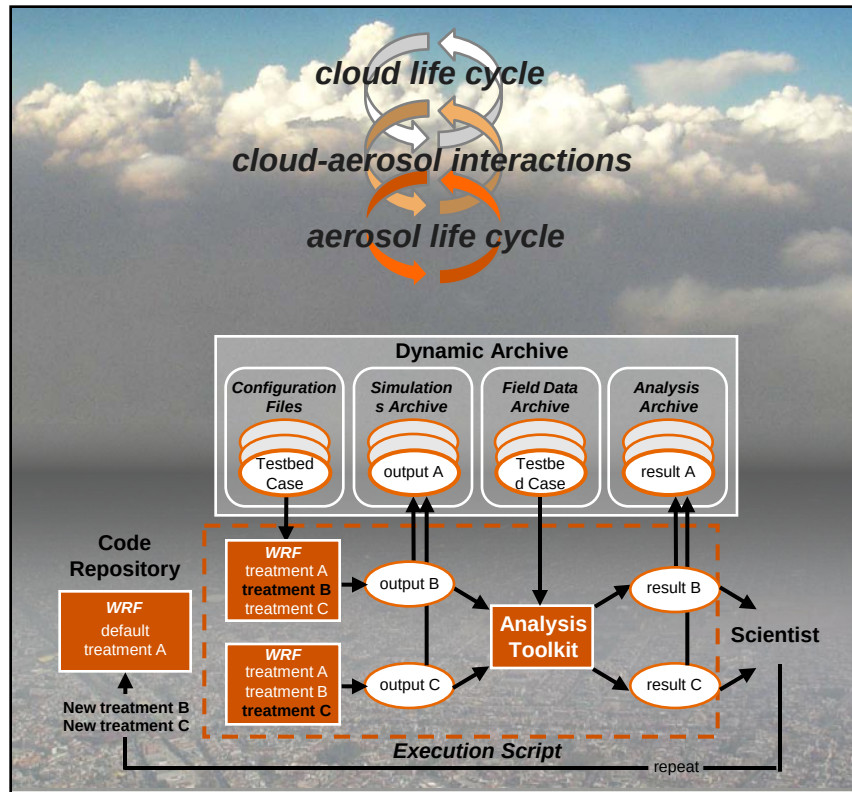
Possible Activities

- Compare measurements of the same aerosol property
 - *Multiple instrumentation deployed at surface sites*
 - *Inter-comparison of aircraft sampling*
- Support field studies by providing modeling analysis framework for others to use:
 - *Emissions estimates*
 - *Boundary conditions for limited area models*
 - *Processed data to evaluate aerosol models*
 - *Acquire relevant non-ARM data*
 - *“Control” simulations*
- Develop “value-added” products
- Testing aerosol process modules developed by others
- Recommend desired measurements for modelers
- Assemble simulated aerosol properties at select measurement sites

borrow
concepts
from the
**Aerosol
Modeling
Testbed**

What is the Aerosol Modeling Testbed ?

A computational framework that streamlines the process of testing and evaluating aerosol and clouds process modules over a range of spatial / temporal scales

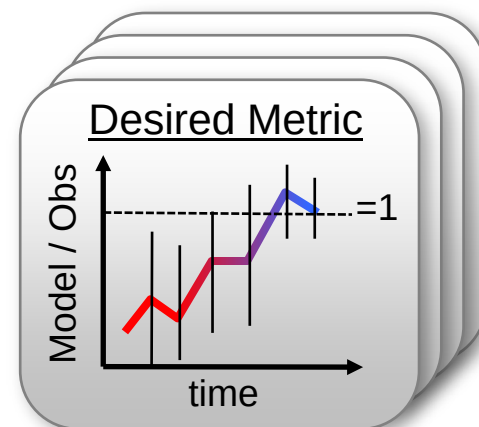


Providing new modules with documented performance

Testing modules at scales compatible with data

Global Climate Modeling Community

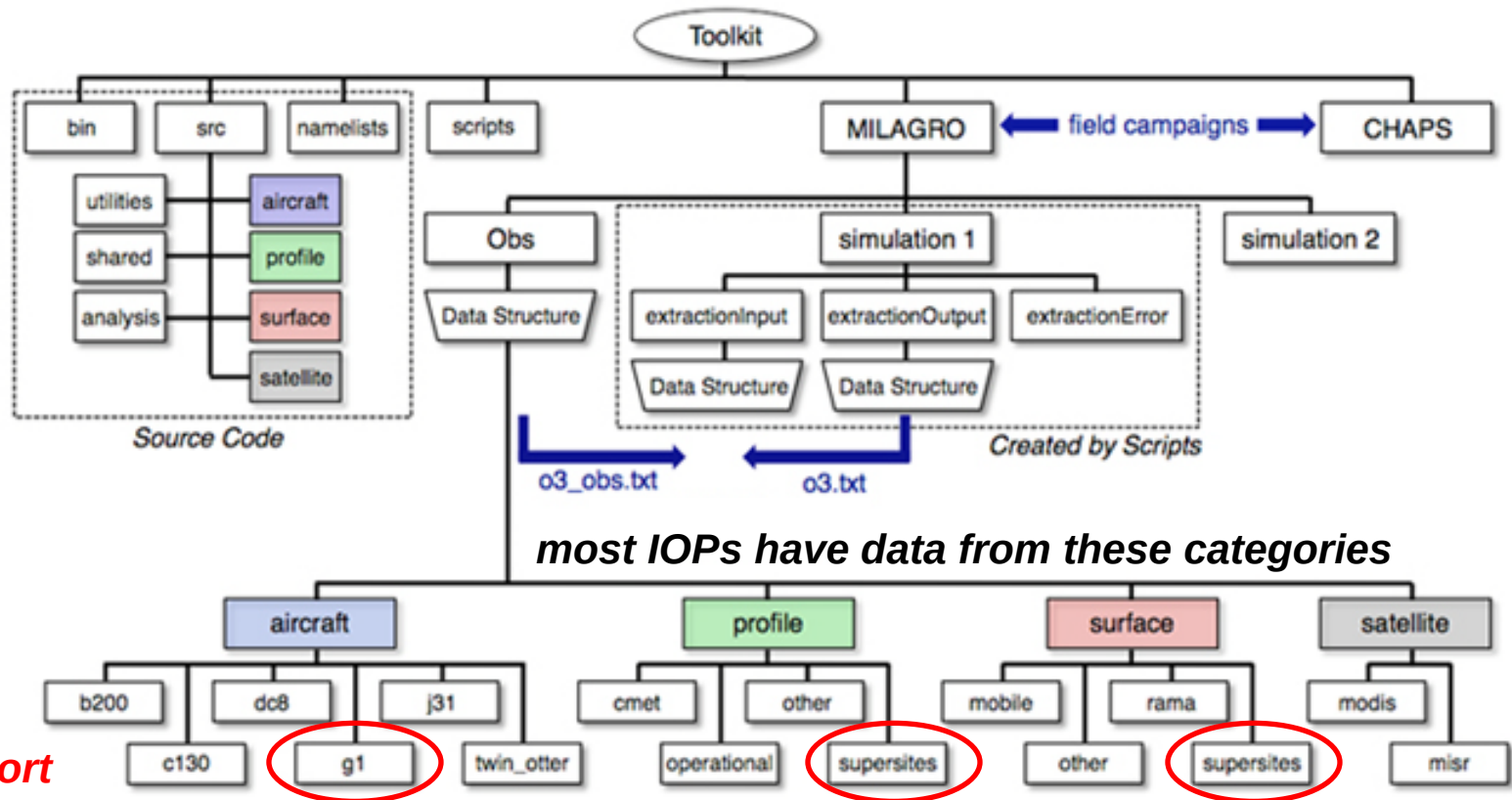
- **Systematically and objectively** evaluate aerosol process modules
- Better **quantify uncertainties** by targeting specific processes
- Provide **tools** that facilitate science by minimizing redundant tasks
- **Document** performance and computational expense



- Foster **international** collaboration

Producing 'Model Friendly' Observations

Parallel Organization of Data and Model Output



DOE support

- Common data format, facilitates model evaluation
- Time averaging of data if necessary, binning aerosol size distribution to anticipated modal or sectional size bins used by models

Testbed Cases Under Development

Multiple Cases Needed for Wide Range of Conditions



- **MILAGRO:** aerosol aging, secondary organic aerosols, and their optical properties

*Mexico
2006*



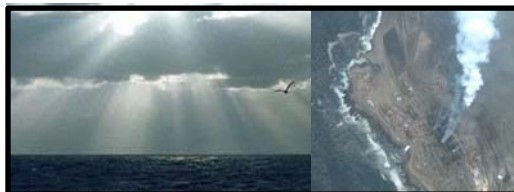
- **CHAPS / CLASIC:** processing of anthropogenic aerosols in shallow cumulus clouds

*Oklahoma
2007*



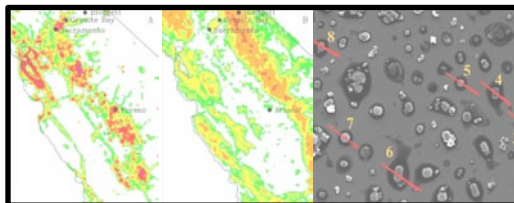
- **ISDAC:** processing of aged aerosols in Arctic mixed-phase clouds

*North Slope
of Alaska
2008*



- **VOCALS:** processing of natural and anthropogenic aerosols in marine stratocumulus clouds

*southeastern
Pacific Ocean
2008*



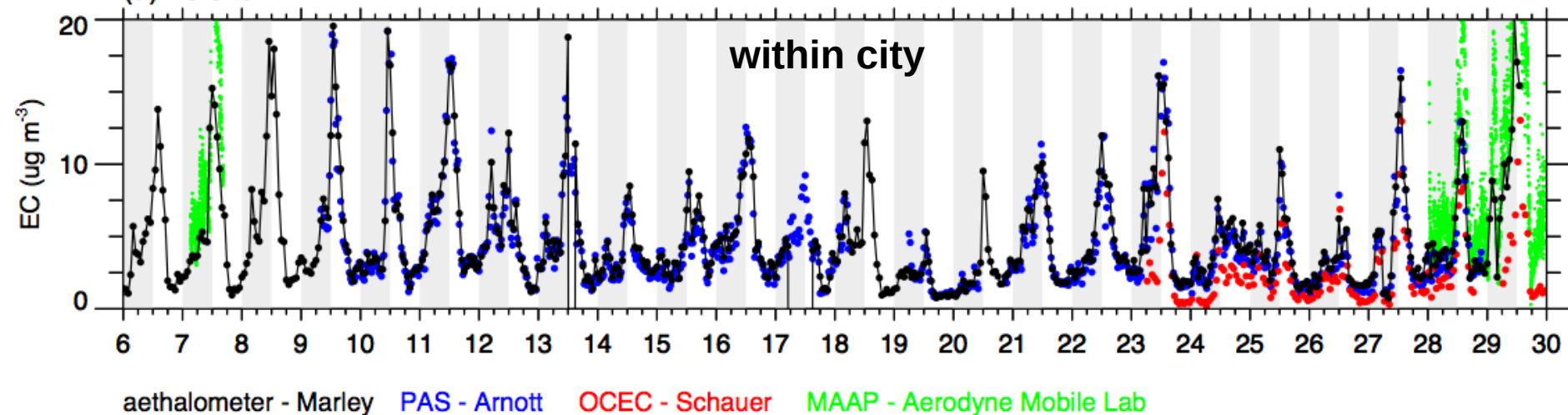
- **CARES / CalNex:** carbonaceous mixing state, secondary organic aerosols, and their optical properties

*California
2010*

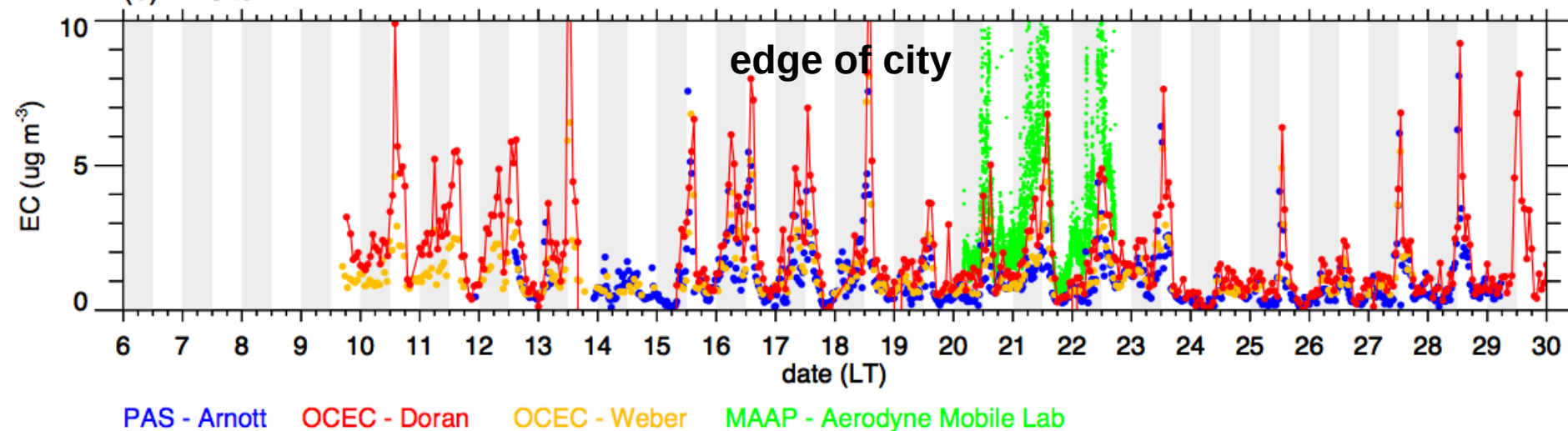
Example Data Comparison: “Black Carbon”

Instrumentation Deployed during MILAGRO during March 2006

(a) T0 site



(b) T1 site



Questions and Comments ?

**What are the priorities of the
Aerosol Working Group ?**