Large-Eddy Simulation for the Masses: LASSO’s Going into Production

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What is LASSO?
The Large-Eddy Simulation (LES) ARM Symbiotic Simulation and Observation (LASSO) Pilot Project develops the capability to generate routine LES simulations of shallow convection over the SGP region. Ongoing LES simulations will be coupled with ARM observations to form a library of data bundles to quicken scientific discovery.

LASSO Benefits Many Research Areas

As an observationalist
- Inform instrument remote sensing retrievals
- Conduct Observation System Simulation Experiments (OSSEs)
- Test implications of scan strategies or flight paths

As a theoretician
- Get estimates of fluxes & co-variability of values
- Test relationships without having to run the model yourself

As a modeler
- Know ahead of time which days have good forcing
- Have co-registered observations at high-resolution scales
- Have inputs and corresponding outputs to test parameterizations

Data Bundles Provide Easy Useability

A “data bundle” is constructed for each case date and is discoverable with the Bundle Browser. The bundles contain

- Diagnostics and metrics for model evaluation
- ARM observations in a form directly comparable to the LES output
- Domain-wide and time averaged profiles for LES statistics, e.g., meteorological state, cloud fraction, variances
- Instantaneous LES output fields at regular intervals
- LES initialization and forcing data based on an ensemble of forcing sources

Timeline

April 2015 Started LASSO pilot project
March 2016 Formed Atmospheric Modeling Advisory Group
May 2016 Began collecting data from new boundary facility instruments
July 2016 Released Alpha 1 data bundles
May 2017 Planned release of Alpha 2 data bundles
May 2017 Make recommendations to ARM and transition from pilot phase to routine operations

To be included in LASSO project e-mail updates, sign up for the LASSO Information e-mail list at http://eepurl.com/bCS8s5

The LASSO website: https://www.arm.gov/capabilities/modeling/lasso/
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