AQAST Investigator Project, 2013-2014

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Project duration: June 1, 2013 – May 31, 2014

Title: Addressing Western U.S. AQ Issues through Modeling, Satellites and Field Experiments

Problem to be solved: Understanding Front Range Summertime Ozone, Long-Range Pollution Transport, Stratospheric Intrusion Events

Project description:
We are providing and evaluating spatially and temporally varying chemical boundary conditions from the NCAR global models for the Denver SIP modeling. The models are evaluated by comparison to satellite products (MOPITT CO, IASI CO and O₃, OMI NO₂) as well as available in-situ data from ground and aircraft. The global chemical boundary conditions from MOZART-4 simulation are made available on our website for past years and in forecast mode and have been widely used by the community. We will continue providing these and work with users on special requests. We also work on improvements by assimilating the latest MOPITT V6 retrievals and IASI CO retrievals, which are being processed in-house. A website is under development which will display past and near-real time MOPITT and IASI quick-look images to be used in assessing long-range pollution events, fire plume transport etc. Plans are underway to also start processing of IASI O₃ in-house and this will be added once available. IASI CO and O₃ provided by C. Clerbaux (CNRS) are also being used for supporting tasks of the Stratospheric Ozone Working Group (lead by Gail Tonnesen, EPA Region 8). We are also contributing to this group by analyzing MOZART-4 forecasts for possible STE events.

We currently are in the proposal stage of a large Colorado Front Range Campaign – FRAPPÉ – to address the issue of high summertime ozone. The campaign will involve a series of coordinated NSF/NCAR C-130 flights and ground-based measurements, and if funded, will also bring the NASA DISCOVER-AQ 4th deployment to the Front Range.

Deliverables:
- Deliverable 1: IASI and MOPITT CO Website and Assimilation into MOZART-4 web products
- Delivery date: May 2014
- Deliverable 2: FRAPPÉ Field Experiment
- Delivery date: August 2014

Expected AQ management outcomes:
- Improved understanding and characterization of Front Range Summertime Ozone
- Collaboration and exchange of tools and information with local and regional AQ managers