

Summary of EOL REFRACTT Team Meeting
16 December 2005

Attendees: Rita Roberts, Tammy Weckwerth, Jim Wilson, Roger Wakimoto, Karyn Sawyer, Shelley Zucker, Jon Lutz, Bob Rilling, Al Phinney, Jim Moore, Nancy Rehak, Kathy Sharpe, Jack Fox

Project Overview

Meeting started with a review of REFRACTT science objectives by Rita. The main objectives are i) to obtain refractivity measurements from the NWS WSR-88D radars, starting with Denver during REFRACTT. This field will be combined with S-Pol, CHILL and Pawnee refractivity fields in real-time to better understand the role of water vapor in the development of convection. A product will be provided to the Denver NWS as a test for using the information in their short term forecasting activities. ii) John Braun (COSMIC) will deploy GPS receivers on the front range. He will combine GPS and radar refractivity to create 3-D maps of water vapor. iii) Juanzhen (Jenny) Sun (RAL) will utilize 2-D radar derived refractivity fields and project sondes in post analysis to assimilate into the VDRAS model. iv) Scott Ellis (RAL) will use the differential attenuation between S-band and Ka-band to obtain path-integrated water vapor and water vapor profiles. This will include providing real-time retrievals, as well as improving the technique in post analysis mode.

Project field season is now scheduled from 5 June through 28 July, 2006.

Piggyback Experiments and Interest

There are a number of collaborators that would like to piggyback experiments, equipment testing and technique developments onto the REFRACTT Project deployment. The participants and interests in other studies include:

Al Fried, Shane Mayor, Volker Wulfmeyer, Jack Fox, Tammy Weckwerth—
Development, implementation and testing of water vapor DIAL system in collaboration with U. of Hohenheim. This includes building a custom seacontainer for the device, integration of EOL receiver, beam steering unit and German laser transmitter components and deployment and operations during the REFRACTT field season.

David Gochis, David Yates, Ed Brandes and Mike Dixon (RAL) – 1) Precipitation estimation studies using a combination of REFRACTT radar fields with Denver Urban Drainage District Alert surface sensors and video disdrometer measurements. 2) Analysis and application of precipitation estimation and QPF fields in hydrological models.

Hatim Sharif, Texas University—Use of REFRACTT radar fields for hydrometeorological studies.

Witold Krajewski, Univ of Iowa— 1) Development of ground-based water vapor sensors for hydrometeorological purposes. 2) To deploy ground based water vapor sensors for comparison with REFRACTT water vapor fields.

Steve Reising, CSU — Less expensive water vapor profiler development. Proposes to deploy 2 prototype systems in refractivity coverage for data intercomparison

Erik Rasmussen, OU-- Deployment of a flock of small UAVs to test/demonstrate their capabilities for autonomous observations.

Josh Wurman—Possible deployment of DOWS for providing additional context to UAV observations and for testing realtime integration of mobile data.

Al Pietrycha, SOO, NWS Goodland, KS—Interested in exploring the temporal evolution of the DCVZ and embedded instabilities within the convergence zone through to CI. May work with Erik Rasmussen to bring mobile mesonet platform(s). May bring NWS forecasters from GLD office to help in the field

Chandra, CSU-- Bistatic radar studies using Pawnee and CHILL during field project.

Dave McLaughlin (U Mass), Interested in collaborating with NCAR on CASA (Collaborative Adaptive Sensing of the Atmosphere) activities, and particularly, refractivity and clear air applications.

John Hubbard EOL—Development of refractivity technique for RVP8

Other Items of Interest

It was clarified that the OFAP recommendation for support of REFRACTT included deployment and operation of the CHILL and S-POL radar systems and the provision of 80 upsondes, not including the mobile sounding data collection system (MGAUS).

EOL through TDL has committed resources for the development of the water vapor DIAL system as part of an ongoing cooperative agreement with the U. of Hohenheim. Each group needs to complete components of the system that will be brought to EOL this spring for integration, testing and deployment in the summer field season. Latest word is that there is a request from Wulfmeyer to delay DIAL deployment until August 2006. RSF has accepted this extension to S-Pol REFRACTT operations and S-Pol will be available to collect data during that time. One added resource requirement for the DIAL system is a spotter to alert the operator to turn off the laser should an aircraft approach the area being scanned. This will be required during all DIAL operations here in Colorado.

The TAOS tethered system was requested for REFRACTT but it will not be possible to deploy this system due to conflicts with another supported project. REFRACTT data or other soundings will be required for validation of the water vapor DIAL.

S-Pol would like to have a dedicated weather station that can be deployed with the radar, regardless of location. We will explore options with the ISF group. It may be possible to use the WISP weather station now located at Marshall but that is not the preferred solution.

Action Items (and results, as available)

1. There is a requirement for a high speed data communications link between Marshall and FL for S-Pol radar operations. We have confirmed that there is 10 Mbps wireless link from the radar to FL already in existence. There is also a T-1 link unused at this time. We believe the wireless link will handle all possible S-Pol data and/or products being relayed to/from FL. In addition, it will support all chat communications needs. There is an internal and 'guest' NCAR network access via this link. We may want to check to make sure all wireless components are on a UPS in case of power outages.
2. The project needs cell phones. There are cell phones available for field deployments. Availability and number required during the project period need to be checked.
3. Rita is checking on the availability of a mobile sounding receiving station from NSSL. Assuming the station is used, there needs to be a clarification on the availability of EOL personnel to process and quality control the 80 special REFRACTT sondes. FPS and CDS will discuss this item and a resolution will be forthcoming.
4. Jim Moore will be the EOL REFRACTT Team Leader.
5. Jim will develop a calendar of milestones and deadlines for all project participants to use.
6. The lead scientists need to prepare a comprehensive REFRACTT Science Plan that describes the science priorities and related science objectives of all participants.
7. Preparations are underway to have a REFRACTT Science and Project Planning Meeting. It is scheduled for all day on 10 February 2006. It will give an opportunity for all participants to explain their objectives in the project and discuss ways to better coordinate activities. An agenda will be forthcoming once the date and participant list is finalized.
8. EOL REFRACTT Team meetings will be scheduled about once a month until spring when a bi-weekly schedule may be needed. We will expand the invitation list to include CSU and other Front Range colleagues as necessary to help with deployment preparations.

