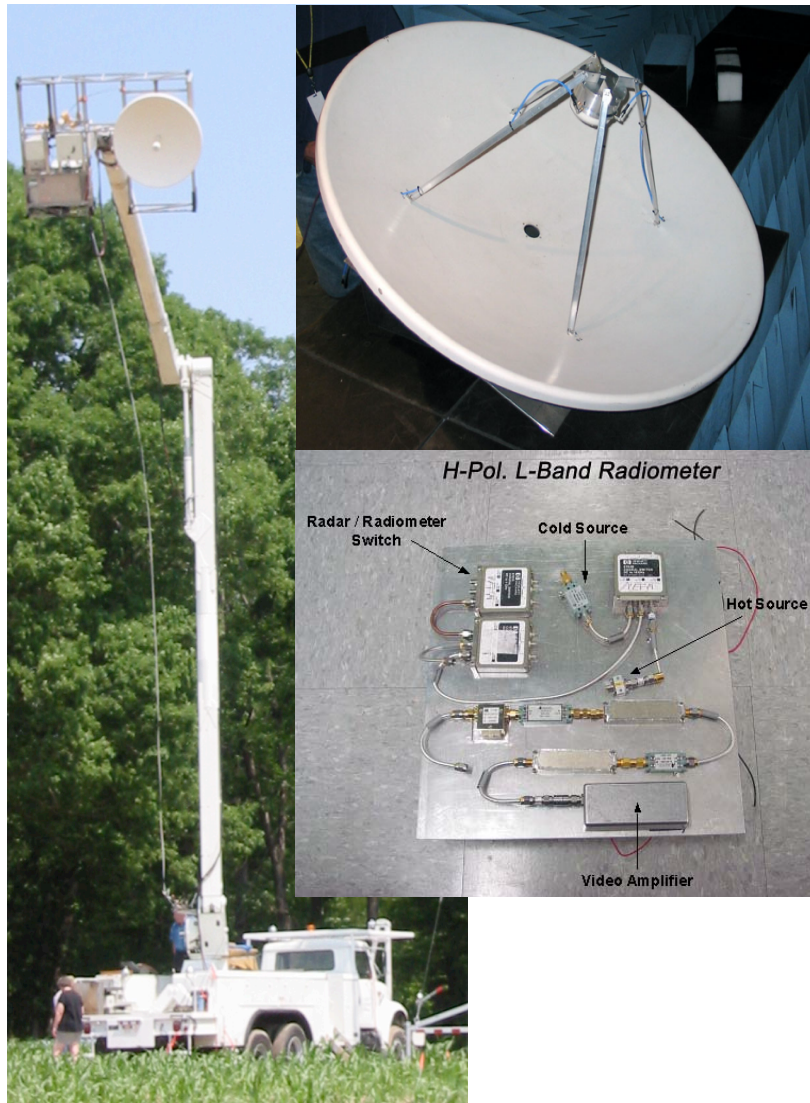


ComRAD – Combined Radar / Radiometer



(Peggy O'Neill, NASA / GSFC Code 614.3; Peggy.E.ONeill@nasa.gov)



Freq: 1.403-1.424 GHz L radiometer;
1.25, 4.75, and 10 GHz radars

Pol: dual pol radiometer (LH and LV)
quad pol L, C, and X band radars

Antenna: 1.22 m parabolic dish w/broadband feed

Incidence Angle Range: 0° - 175°

Azimuth Angle Range: 0° - 120° autonomous
0° - 360° manual

Platform: 20-m hydraulic boom truck

Developed by: Roger Lang, George Washington U.
Keith Carver, U. of Massachusetts

Planned use: can serve as SMAP and Aquarius
(active/passive) and SMOS (multi-angle)
simulators; primarily used in development of
microwave soil moisture retrieval algorithms

Current Research: will deploy to BARC for SMAP
growing series time series experiment in 2012



ComRAD Microwave Truck Update



Parts Replacements:

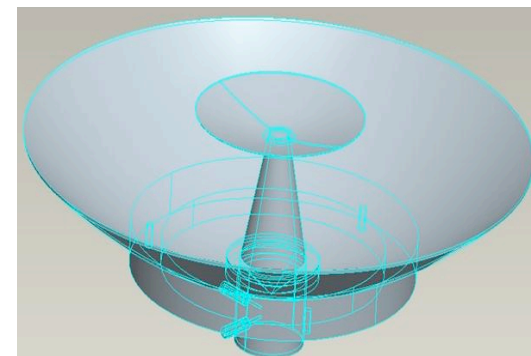
- new hydraulic valves installed
- new fuel tanks/fuel filters installed
- work completed January 2011

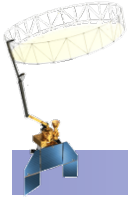
Autonomous Control System:

- new control system installed
- partial demonstration at vendor in December 2010
- final fine tuning of control system coefficients awaits installation of all equipment and new antenna
- new control software completed & demonstrated

New Low-Loss Antenna / Feed System:

- new antenna designed through numerical simulation model and confirmed through 2nd simulation model (HFSS & FEKO)
- dielectric tests of antenna material underway
- fabrication & delivery of antenna expected this summer

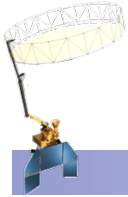




ComRAD 2011-2012



- **A deployment is critical to assess the performance of the new system components and autonomous operating modes**
- **Two-week continuous operation test over corn field at USDA BARC summer/fall 2011**
- **2012 – growing season time series experiment over corn & soybeans at USDA BARC**
- **Future deployments not currently funded**



SMAP Field Campaign Plans



- **FY11**
 - **ComRAD: Tests at BARC**
 - **CARVE**
 - **Transits: Reynolds Creek on return flight**
 - **Alaska: Potential use**
 - **Oklahoma: ISST and LW (only if scan mode is operational)**
- **FY12**
 - **ComRAD: Crop growing season at BARC**
 - **SMAPVEX12**
 - **Impacts of CARVE and alternatives**
- **FY13**
 - **CanEx-FT**
 - **ComRAD: Available if supported**
 - **CARVE related campaign**
- **FY14**
 - **ComRAD: Available if supported**
 - **CARVE related campaign**
- **FY15**
 - **SMAPVEX15**
 - **Impacts of CARVE and alternatives**