



U.S. ARMY
RDECOM

Meteorological Sensor Array



S&T Campaign: Information Sciences *Sensing and Effecting*

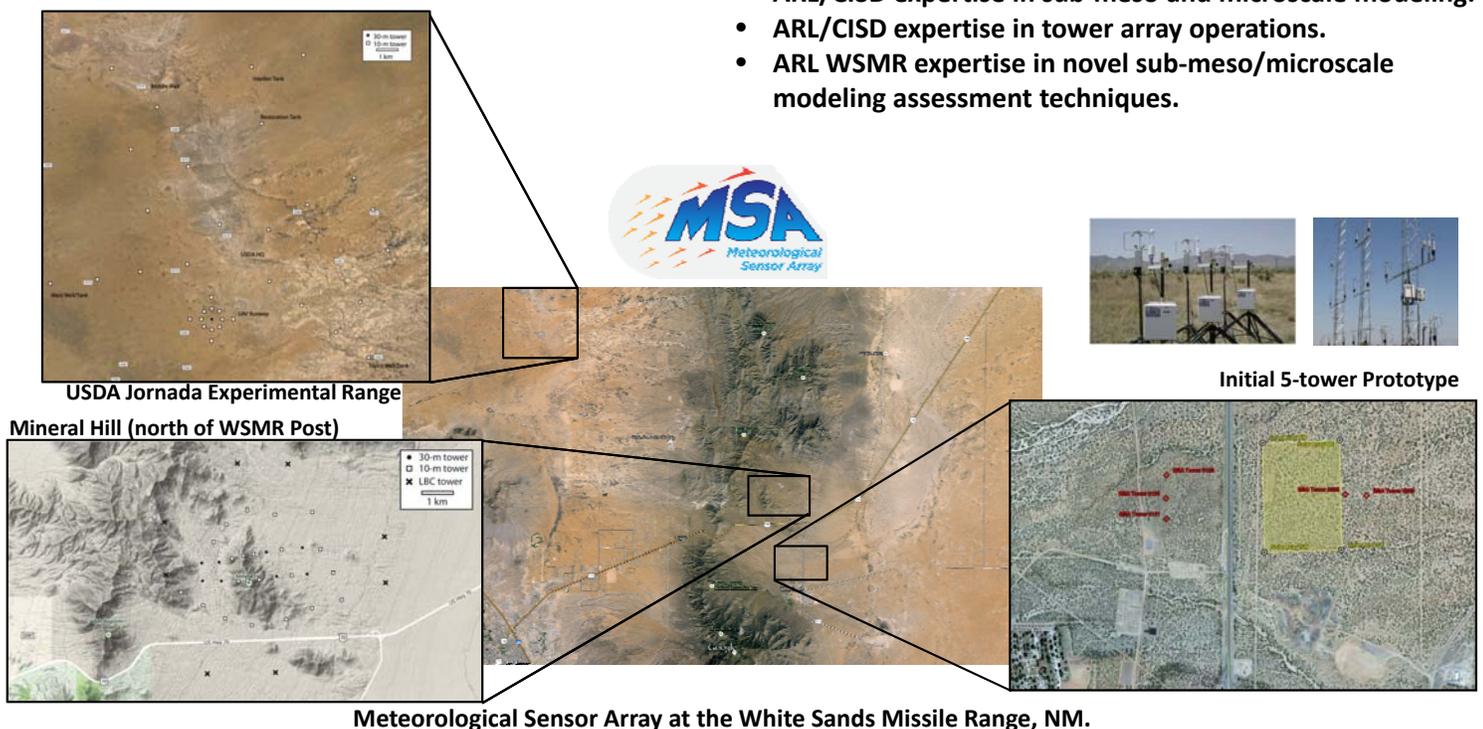
Benjamin MacCall, (301) 394-1463
benjamin.t.maccall.civ@mail.mil

Research Objective

- Develop an agile, innovative, reliable, sustained, and world-class finely-spaced grid of near-surface met sensors that will be used to probe atmospheric boundary layer (ABL) behavior and to assess ABL models and novel sensing methods.
- The MSA will be a persistent, customizable meso/microscale community wide data source.

ARL Facilities and Capabilities Available to Support Collaborative Research

- ARL will provide an asset that will directly support researchers at microscale and meso-gamma resolutions.
- ARL and the WSMR community will provide a long-term resource for the modeling community.
- ARL high-performance computing resources in support of modeling and data analysis.
- ARL/CISD expertise in sub-meso and microscale modeling.
- ARL/CISD expertise in tower array operations.
- ARL WSMR expertise in novel sub-meso/microscale modeling assessment techniques.



Challenges

- Need high resolution (≤ 1 km) observations in complex terrain to probe highly dynamic atmospheric behavior.
- High resolution modeling assessment requires traditional and non-traditional methods.
- Infrastructure and maintenance costs have limited previous dense array measurement projects to short duration, limited span, lower density, or in simpler terrain.

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Expertise in ABL, aerosol, or land-surface processes in both flat and complex terrain.
- Expertise in ABL modeling.
- Additional instrumentation to increase the level of measurement detail or capture related processes.
- New observational techniques and instrumentation of atmospheric quantities to be verified at the MSA.

Organized under the US Army Research Laboratory Atmospheric Sciences Center

References:

- Vaucher et al., "Meteorological Sensor Array (MSA), Volume1: Phase I ("Proof of Concept") ARL-TR-7058, Sep 2014
- Harrison, S and Vaucher GT Meteorological Sensor Array (MSA)-Phase I, Volume 2 (Data Management Tool: "Proof of Concept"); ARL-TR-7133, Oct 2014.

