Prototype 449 MHz Modular Wind Profiler: Progress and Future Plans

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Technology and Goals
* Modularity and scalability
* Ease of deployment – setup, remote system monitor, etc.
* Advanced hardware – digital, FPGA, distributed Tx and Rx, etc.
* Innovative signal processing – SA winds, RIM
* Expandability, Instrument host

Current Status
• Tested a 3-panel boundary-layer prototype
• Good performance compared with traditional 915 MHz wind profiler

Salt Lake Valley, Jan 2011

449 MHz Wind Profiler: Basic Building Block

One antenna panel
• Hexagonal symmetry
• 449 MHz
• 18 patches

With 18 panels we create

Or with 19 panels we create

Or with 14 panels we create

A distributed network of six 3-panel profilers
• up to 4 km
• 30-m altitude resolution
• 1-minute time resolution

6 BOUNDARY LAYER wind profilers

A network of two 7-panel profilers
• up to 7 km
• 30-m to 200-m altitude resolution
• 1-minute time resolution

2 MID-TROPOSPHERIC wind profilers

An ST radar (19-panel)
• up to 15 km
• 100-m to 200-m altitude resolution
• 5-minute time res.

1 FULL-TROPOSPHERIC wind profiler

• Building a 7-panel mid-tropospheric prototype
• Designing a Mobile 3-panel 449-MHz version
• Evaluating complimentary instruments (lidars, surface energy balance)
• Looking for potential partners and users