Federal Aviation Administration

Weather Observation Research Program

Briefing to FPAW

by

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Opportunities:

- **Time Division Multiplexing to Internet Protocol (TDM/IP)**

https://www.faa.gov/about/office_org/headquarters_offices/ang/offices/tc/library/storyboard/detailedwebpages/tdm-to-ip.html

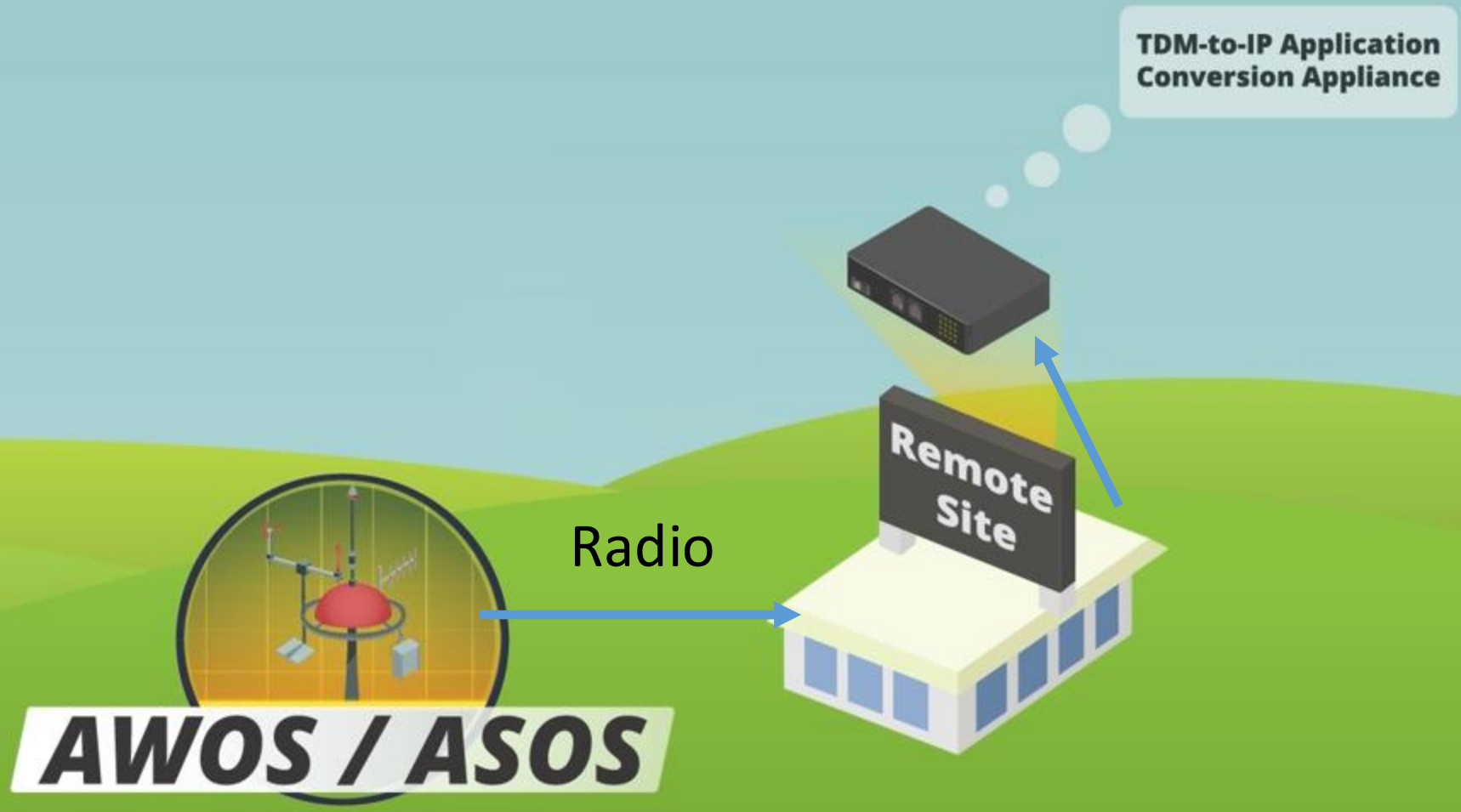
- TDM/IP for ASOS and AWOS.
  - A CASS (Conversion Appliance System) device communicates locally to the AWOS-C and ASOS through the AWOS CDP (Central Data Platform) and ASOS ACU (Acquisition Control Unit) via the High-Level Data Link Control (HDLC) communications port.
  - The HDLC interface is terminated locally and provides a bridge to the ADAS via the IP interface over LTE.
  - The functionality of the CASS device/IP interface over LTE provides a Research and Development opportunity to explore alternative approaches for both acquiring existing sensor data and deployment of specialized weather sensors.

LTE Infrastructure Overview

Explore TDM/IP Model for "Breaking the Stovepipe"

Remote FAA site with Surface Weather Observation Stations, such as AWOS and ASOS.

LTE Infrastructure Overview



Application Layer TDM Conversion Appliances

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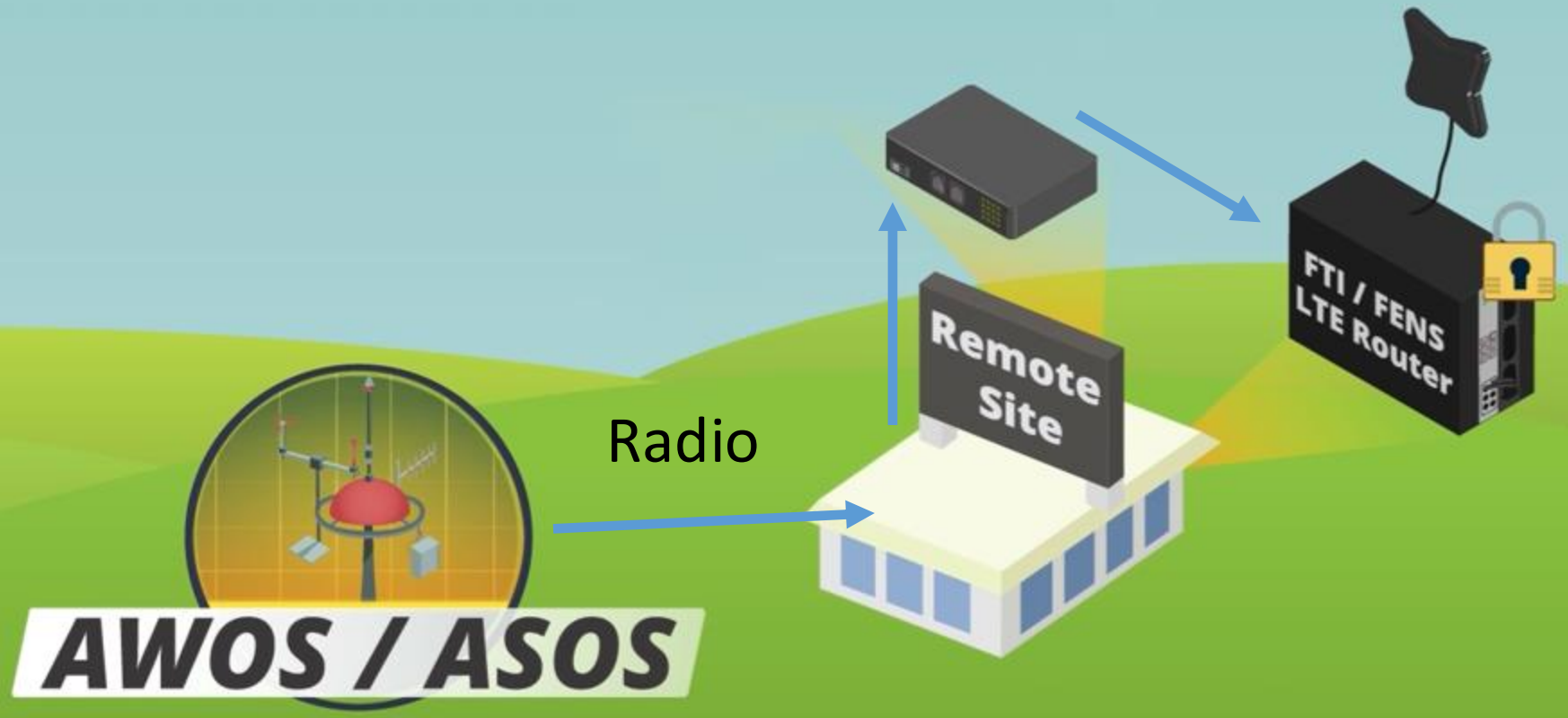
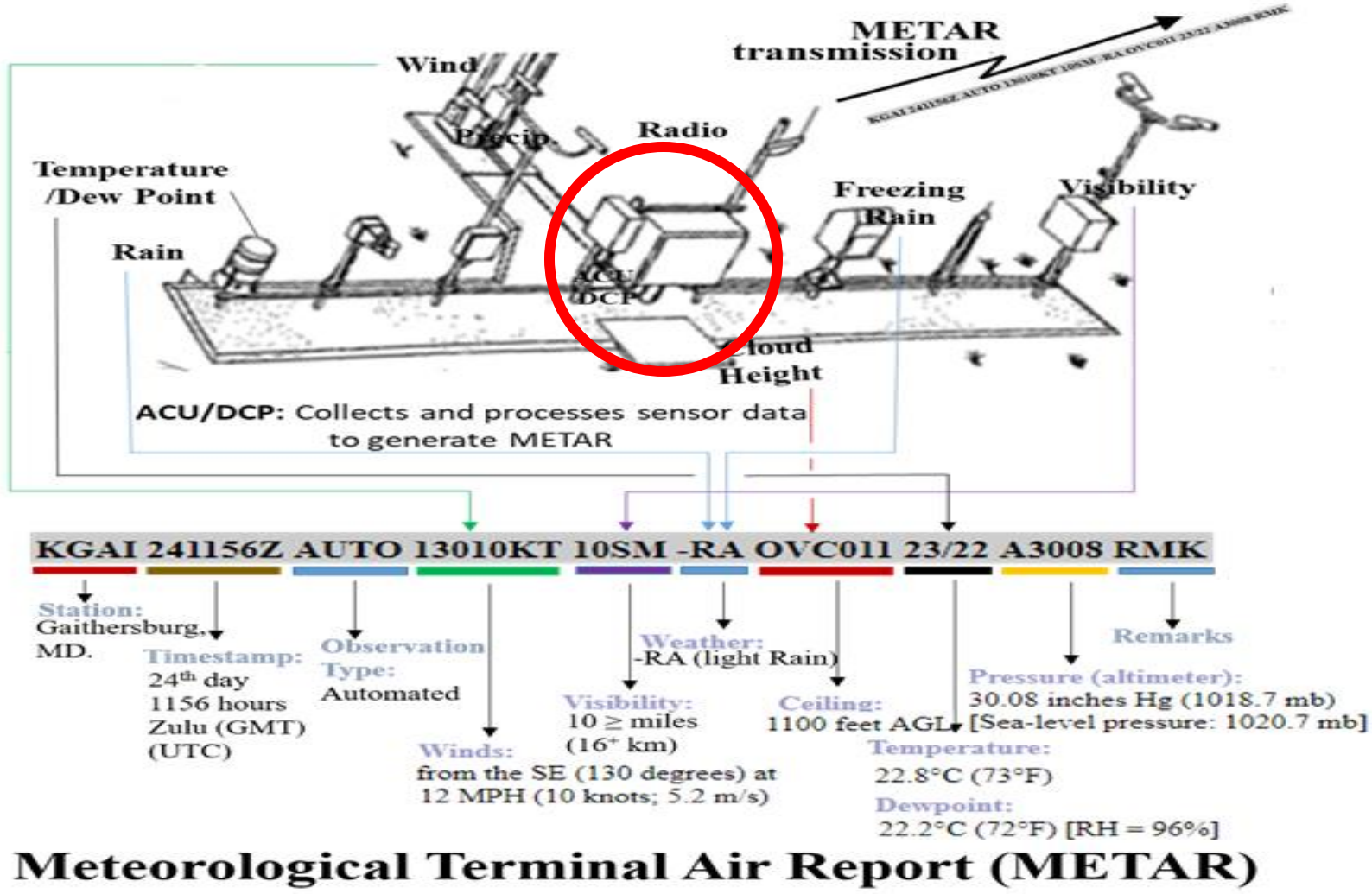
LTE Infrastructure Overview



LTE cell tower.

LTE Infrastructure Overview

Radio Throughput Obstacle



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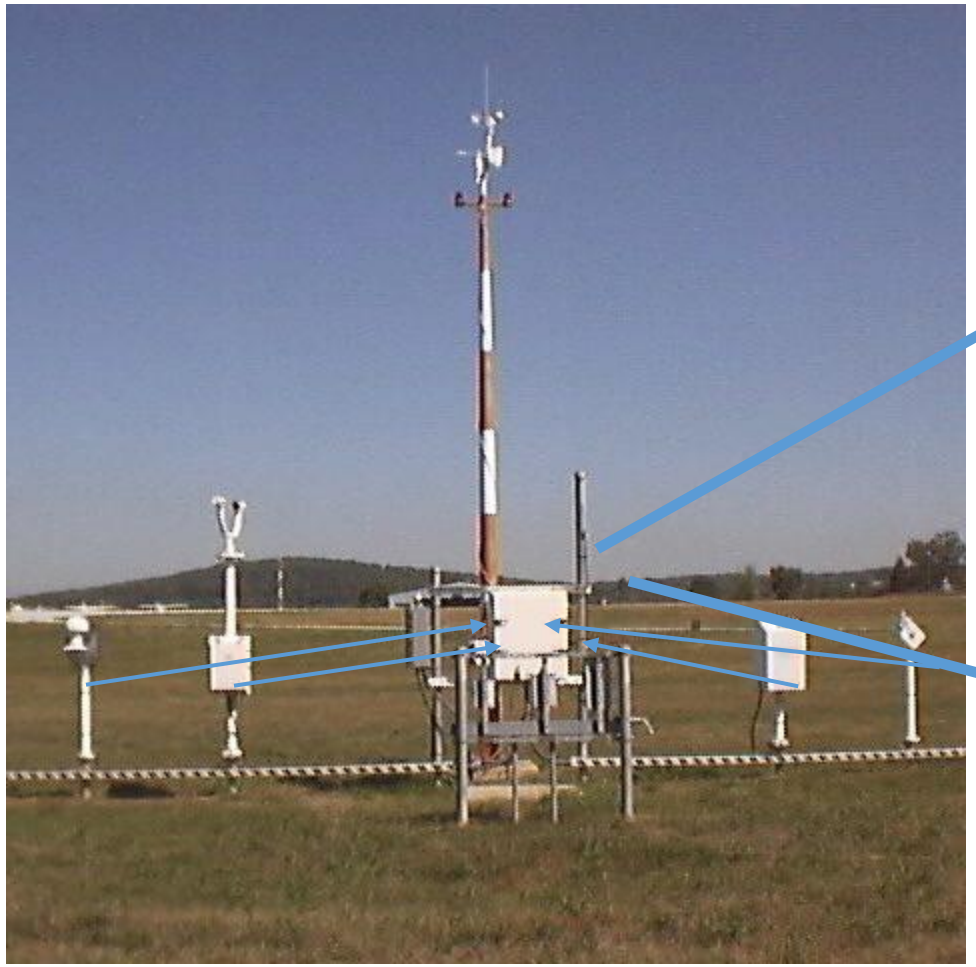
Investigate CASS/LTE Paradigms at Sensor Level



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Present Research

Conversion Appliance System (CASS)

- Demonstrate how CASS “Listens” for data being transmitted by individual sensor and directs data to destination.
- For existing ASOS/AWOS sensors, CASS/LTE may allow for mitigation of RF restrictions that throttle data (ceilometer).
- Potential for the collection of “official” sensor data for dissemination and alternative processing techniques; (e.g. other-than-METARs)

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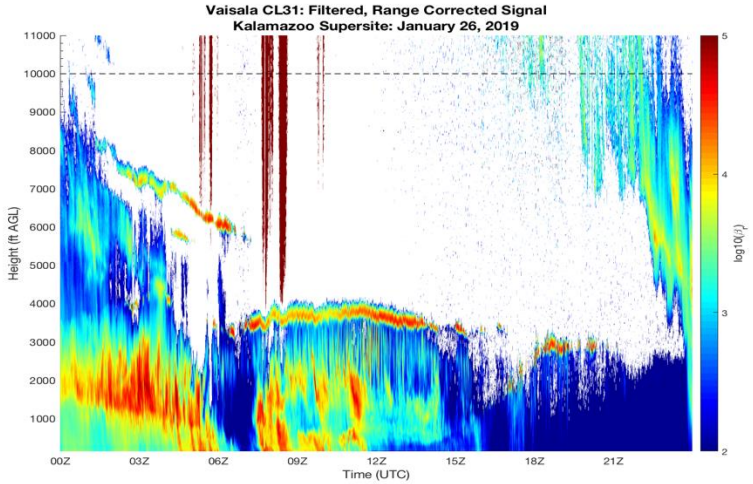
Examples - Weighing Precipitation Guage & Ceilometer



We will be investigating both stand-alone sensors and ASOS/AWOS sensors

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Tailored Rain Intensity Product

One-minute rain gauge information could become available to a “listener” for configuration into tailored products.

Very light, light, moderate, heavy, very heavy

- Heavy + boundaries are .5” to .9” per hour
- Heavy ++ boundaries are .9” to 1.3” per hour
- Heavy +++ boundaries are above 1.3” per hour

Emerging Research

Explore Research Opportunities: ASOS 2.0

Campbell Scientific under contract by National Weather Service to develop next generation of ASOS

- Exploring collaboration on improvements to ASOS
- Open the door to native IP applications and alternative data distribution paradigms