



Ground Validation Activities for the INCUS Satellite Mission

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Validation: Forward models used by INCUS to retrieve vertical motion, W , depict the range of microphysical properties observed within deep convection.

Verification: INCUS retrievals of *Convective Mass Flux* and *Ice Water Path* are consistent with observations.

What does this require?

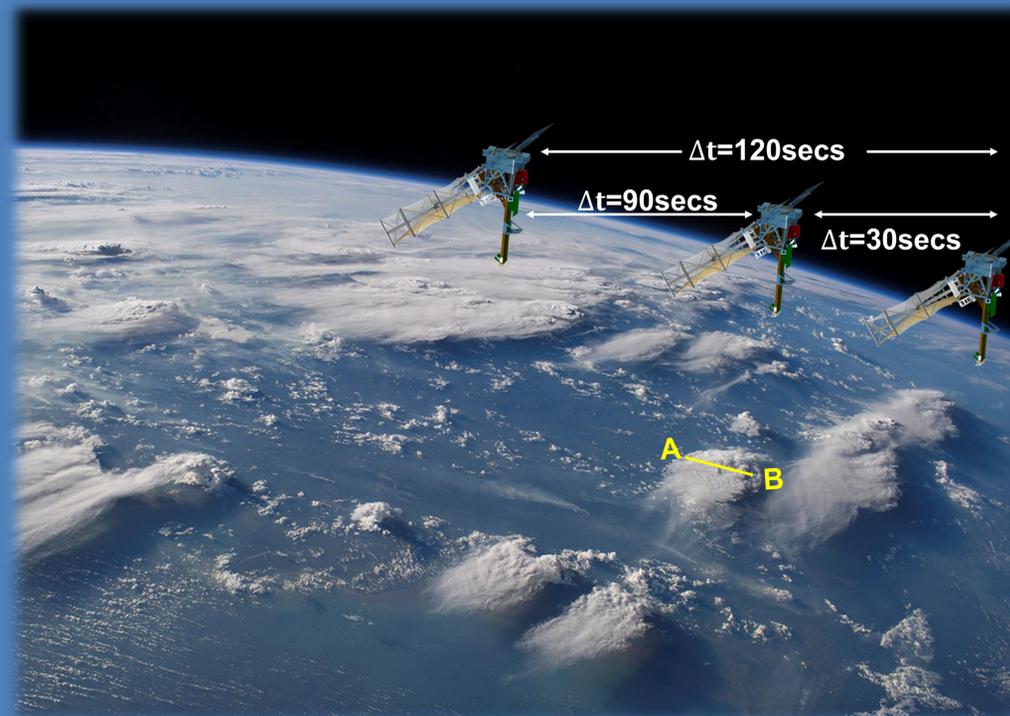
- Suborbital measurements of W , radar reflectivity factor, Z_e , and hydrometeor characteristics on a timescale $< 30-120$ sec

Challenges:

- Airborne simulator not feasible
- Radar “volumes” < 120 sec

Approach:

- Revisit program-of-record
- Utilize innovative technologies for radar sampling to collect new observations of convection



Ground-based tactics to validate satellite estimates of vertical air motion



Photo Credit: K. Nowacki (CC BY-SA 4.0)

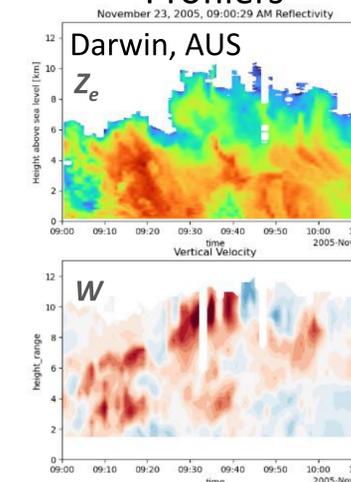
Pre-Launch Activities

Convective Mode Scorecard

Type	Lifecycle	Intensity	Diurnal	Geography
Isolated	Growth	Weak	Morning	Land
Organized	Mature	Moderate	Afternoon	Ocean
Trop Cycl.	Decay	Strong	Night	Orographic

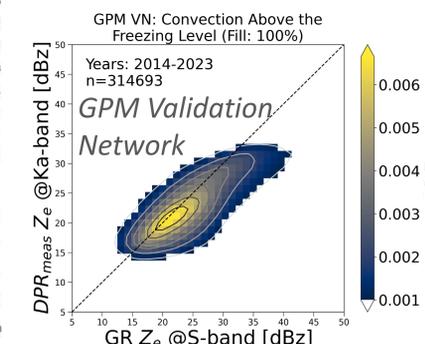
Program of Record

Profilers



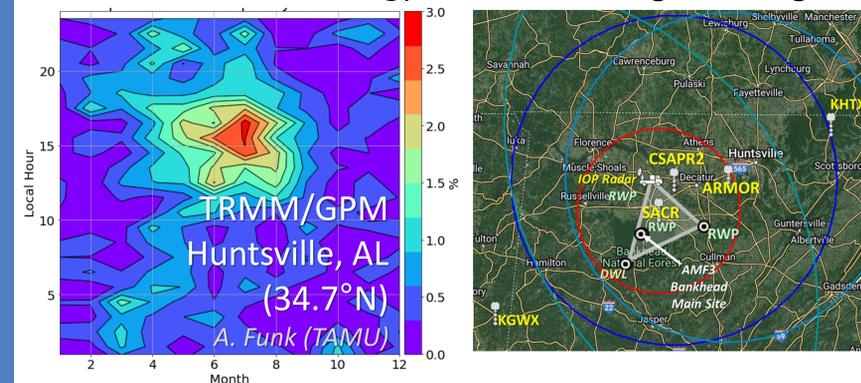
Suborbital-Orbital

Translators

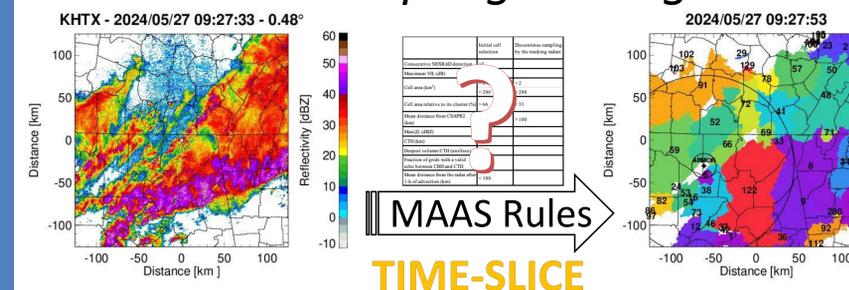


GV Site Selection

Focused IOPs at 2 sites, including maritime, and Convective Climatology Leverage existing



Radar Sampling Strategies



- Optimize MAAS for updraft region
- Minimize W retrieval uncertainties
- Assemble GV product workflow

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