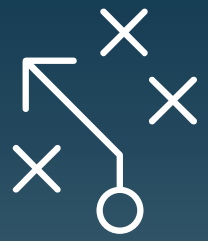


Friends and Partners of Aviation Weather

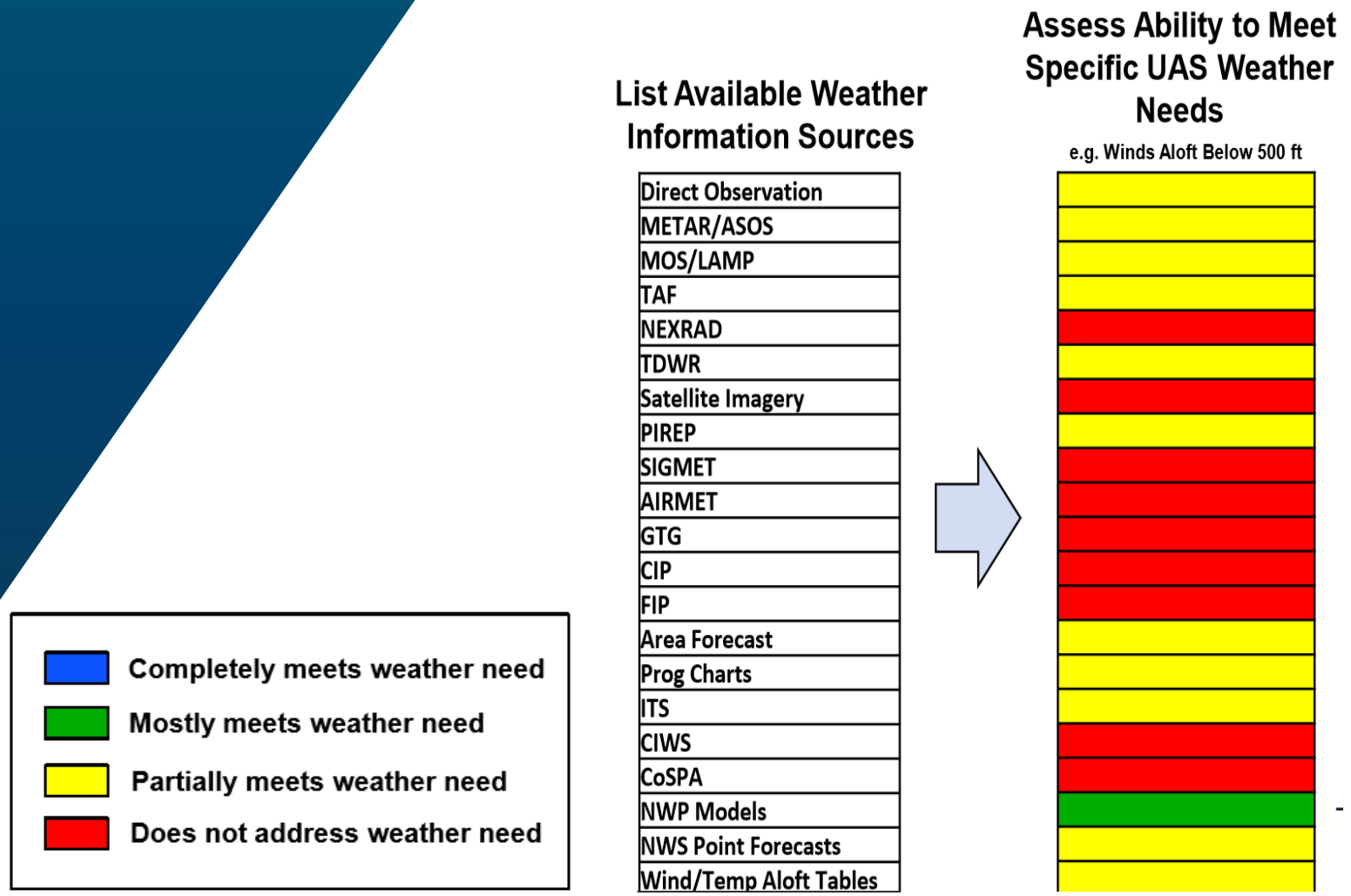
Don Berchoff
28 Apr 2021

Panel: Technology for Remote Observations

TRUWEATHER SOLUTIONS

MIT LL Study says current government weather products are not good enough for UAS/UAM Industry.

GRANULAR WEATHER IS KEY TO UAS/UAM INDUSTRY VITALITY



ANSI Gap O5: “do not have sufficient resolution”

Gap O5: UAS Operations and Weather.
No published or in-development standards have been identified that adequately fill the need for flight planning, forecasting, and operating UAS (including data link and cockpit/flight deck displays), particularly in low altitude and/or boundary layer airspace.

> **Weather data standards themselves.** Currently, published weather data standards by National Oceanic and Atmospheric Administration (NOAA), World Meteorological Organization (WMO), ICAO, and others **do not have sufficient resolution** (spatial and/or temporal) for certain types of UAS operations and have gaps in low altitude and boundary layer airspaces.
>
> *ANSI Unmanned Aircraft Systems Standardization Collaborative (UASSC), December 2018*

All Weather is Local

GEOGRAPHICAL INFLUENCES

- **Latitude**

(solar radiation, temperature, etc.)

- **Major Water Bodies**

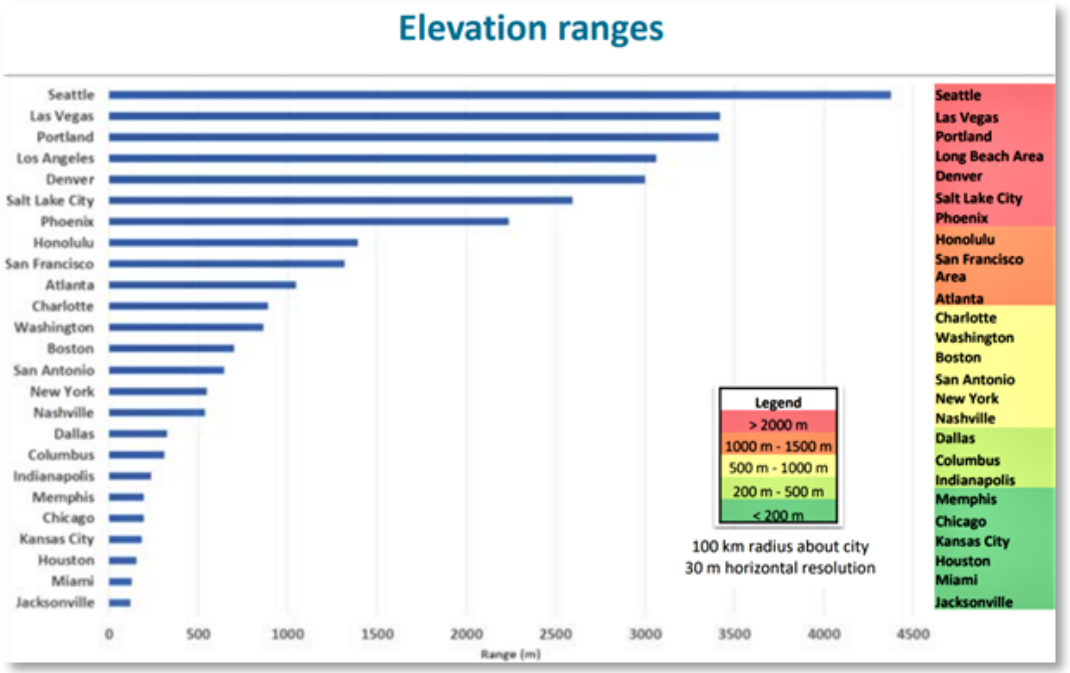
(sources of moisture)

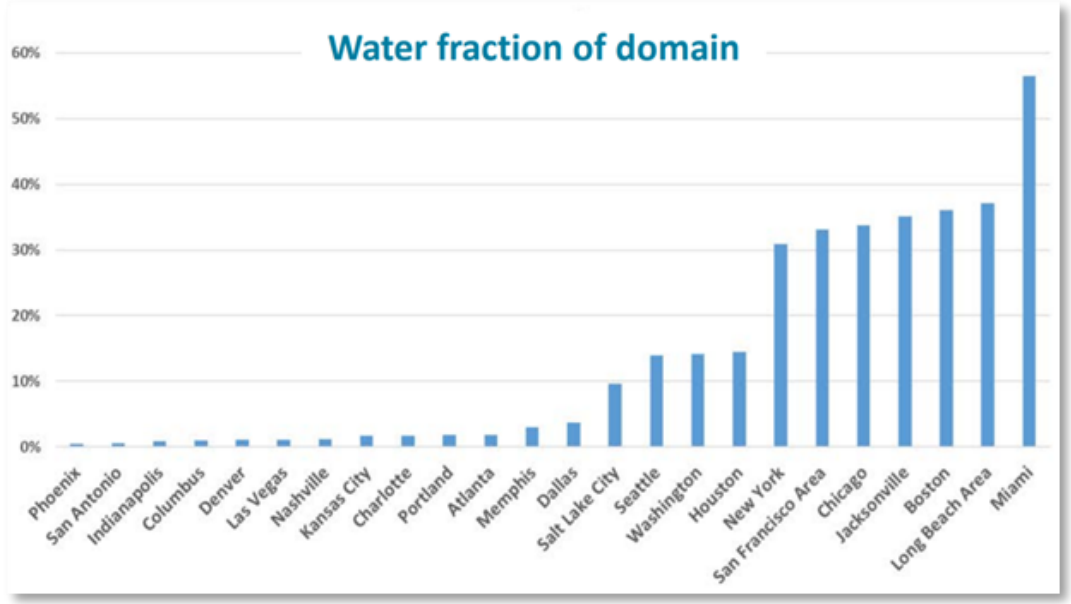
- **Mountains**

(range of altitude, air density, etc.)

- **Landcover Gradients**

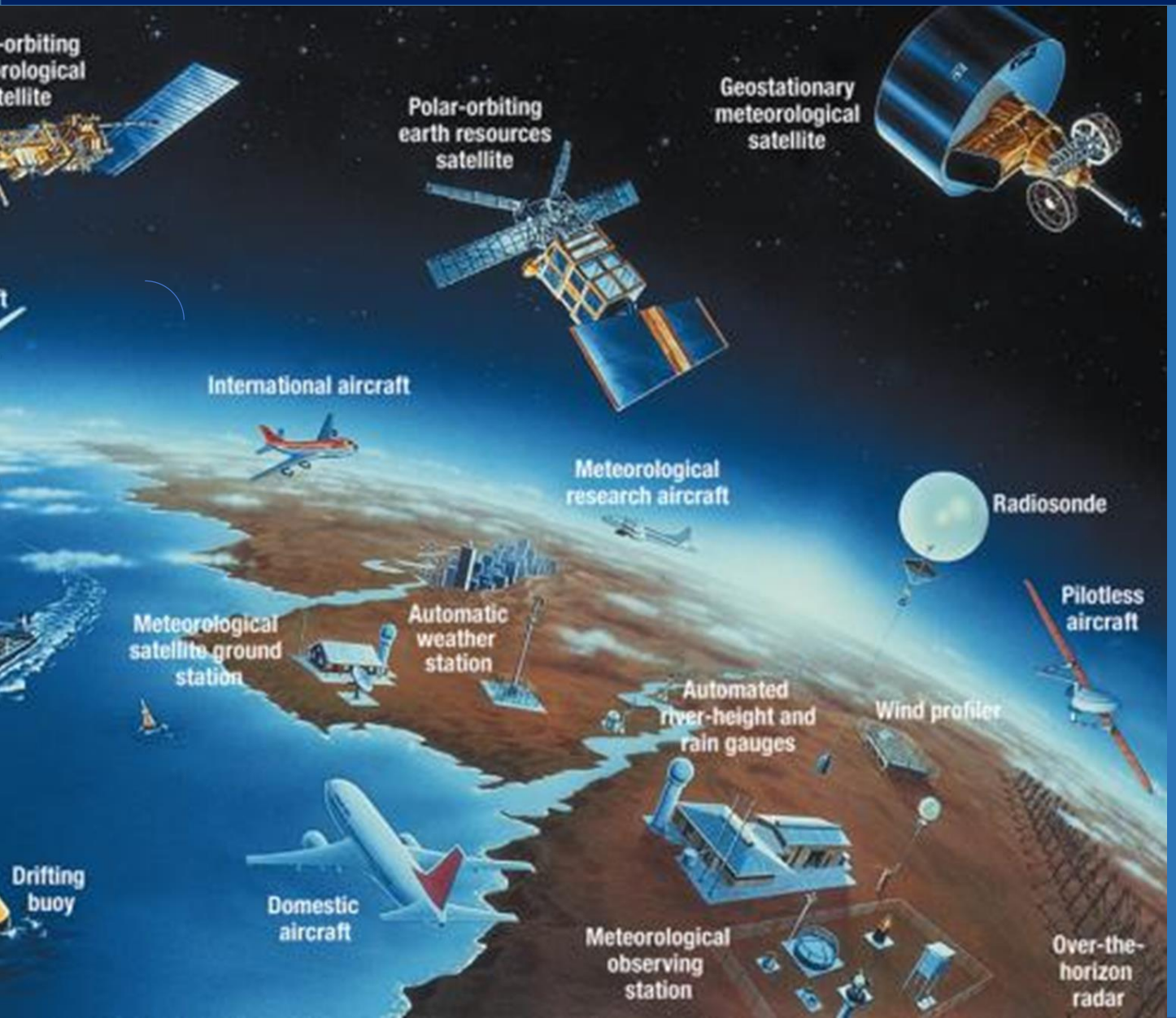
(differential heating)





Credit: Mattias Steiner, NCAR

Close Weather Data Gaps



Our Weather Infrastructure has a “Weather Data Desert” in the lowest 5,000 Feet of the Atmosphere

Why Addressing Weather Gaps Is Important?

Community Acceptance
Unnecessary Mishaps Bad for Business Case

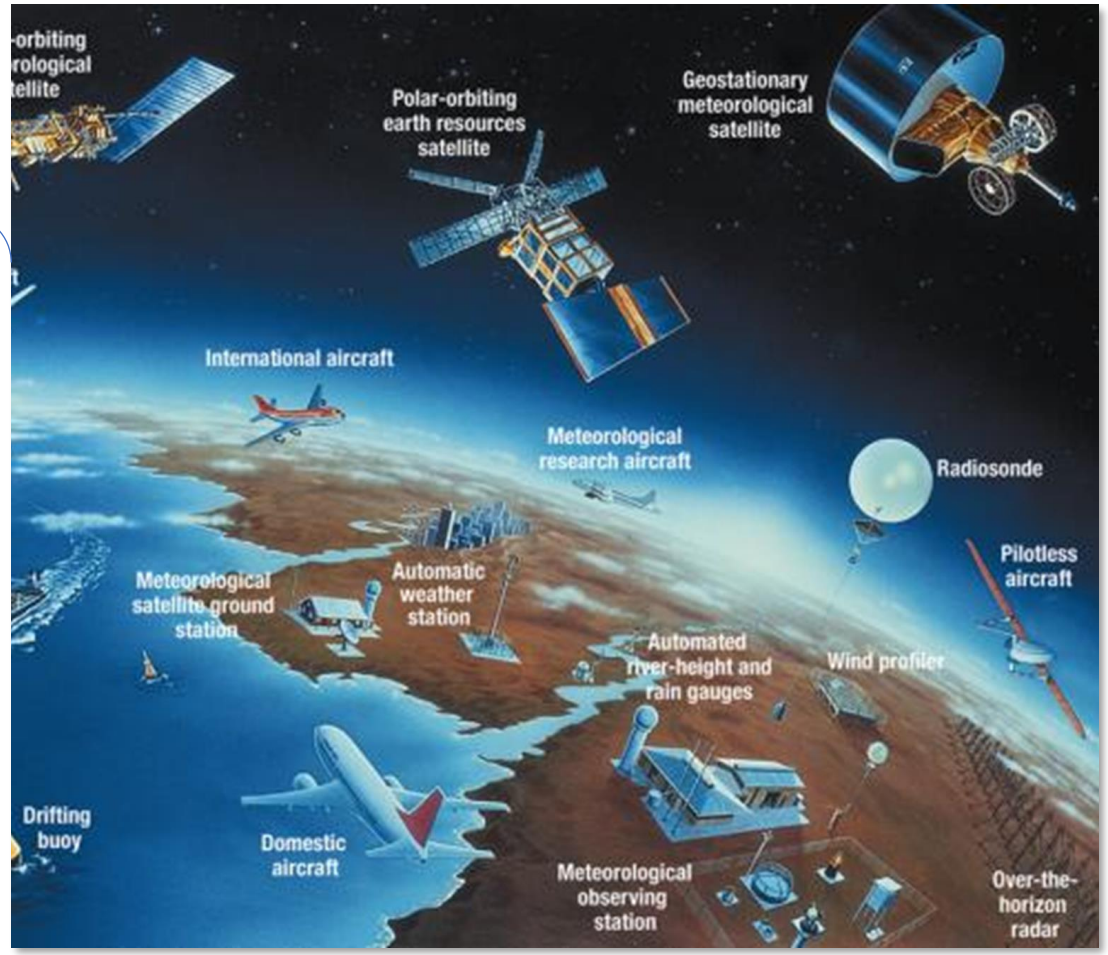
Weather Uncertainty Causes Conservative Flight Decisions
Prediction: Airframes Grounded 40% of time unnecessarily

Will impact revenue and client package delivery or ride predictability and reliability

"It is recognised that the weather information for UAS operations may be different from the one provided by today's meteorological service providers" **–** EU Aviation Space Agency

https://www.easa.europa.eu/sites/default/files/dfu/Draft%20AMC%20%26%20GM%20to%20the%20U-space%20Regulation%20%E2%80%94%20for%20info%20only.pdf

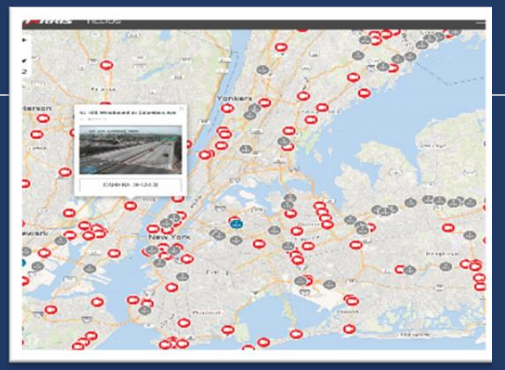
Model Data Versus Real Weather Data Intelligence



Weather Infrastructure “Weather Data Desert” below 5,000 Feet AGL

Models have deficiencies due to a lack of real observations

We need real measurements, and it will require innovation in leveraging IoT data



Requires risk-based performance-based standards to leverage sensors (including UAS themselves) based on mission risk profiles and ground risk.

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Thank You

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