The American Meteorological Society Committee on Aviation, Range, and Aerospace Meteorology (ARAM)

This is ARAM!
ARAM Scope

• ARAM focuses on three areas within the science:
  o Aviation,
  o Range, and
  o Aerospace Meteorology

• Examples of ongoing research:
  o Detection of turbulence, lightning, icing, and convection
  o Mitigation of significant weather impacts on airport operations, missile testing, and space vehicle launches
  o Development and implementation of forecasting methods

• Combined information from several areas of Meteorology, including:
  o Forecasting and nowcasting
  o Data assimilation
  o Numerical modeling and artificial intelligence/machine learning
  o Remote sensing
  o Research-to-operations/operations-to-research
  o Processes within physical, dynamic, and synoptic meteorology
ARAM Committee

• Connects advances in Meteorology and related technologies to aviation, range, and aerospace operations and meteorological research:
  - General, business, commercial and military aviation
  - Missile testing
  - Launch and recovery of space vehicles
  - Unmanned aeronautical systems and urban air mobility
  - Balloon operations
  - Experimental aircraft

• Goals:
  - Specialty conference(s)
  - Outreach and education
  - Professional networking

• Comprised of career members and student members:
  - Senior representation from each discipline:
    Past breakdown examples: 15 aviation, two range, two aerospace, three student members
This is (some of) ARAM*

* Representative of membership as of January 2022

Everyone else →
Aviation Meteorology

- Focused on weather impacts to aviation from the surface through ~50,000’ AGL.
  - Examples include: thunderstorms, icing, turbulence, winds, cloud ceiling and visibility
- Operations of interest include:
  - Unmanned Aeronautical Systems (UAS), Urban Air Mobility (UAM), General Aviation (GA), Business Aviation, Commercial Aviation and Military Aviation
- Membership from:
  - Academia, Defense (e.g., USAF), Operations (e.g., FAA, Airports, NASA), Producer (e.g., NOAA NWS), Authority/Regulator (e.g, FAA), Research (Commercial and Not-for-profit organizations)

Range Meteorology

• Focused on weather-related impacts to range operations from the surface through the stratosphere.
  o Examples include: thunderstorms, clouds, wind influences on trajectories, atmospheric effects on sound and laser propagation.

• Locations of interest comprise:
  o test, training, and operational ranges and facilities including military reservation areas, shared airspace corridors (e.g., Eastern and Western Range), and space launch complexes (e.g., Pacific Spaceport Complex - Alaska).

• Features of interest range from the microscale to the synoptic scale and from seconds to years.

• Membership typically from Defense.

Photo credit: https://s3.us-east-2.amazonaws.com/images.milbases.com/whitesands-missile-range/_img_url1_jssqle7wti.jpeg
Aerospace Meteorology

- Focused on weather impacts to the design, development, and operations of aerospace vehicle throughout the atmosphere.
  - Examples include: tropospheric winds, solar radiation, lightning, surface ambient temperature, sea state conditions
- Defines the atmospheric phenomena engineers must account for in design.
- Develops and quantifies variability of atmospheric parameters to mitigate effects on vehicle.
- Coordinates with launch facilities (Ranges) on operational weather limits and instrumentation systems to monitor weather conditions during vehicle operations.
- Membership typically from Government or Private Companies.

Photo credit: https://www.bjerknes.uib.no/sites/default/files/styles/crop_image_main_large/public/image/2020-06/Stratosphere_top.jpg?itok=-sl5gA5u
ARAM

• For more information:
  o ARAM Website: https://www.ametsoc.org/stac/index.cfm/committees/committee-on-aviation-range-and-aerospace-meteorology/
  o Twitter: https://twitter.com/ams_aram
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