

Aviation, Range, and Aerospace Meteorology Committee

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

This is ARAM!



ARAM Scope



iation, Range, and Aerospace Meteorology Committee

- ARAM focuses on three areas within the science:
 - Aviation,
 - o Range, and
 - Aerospace Meteorology
- Examples of ongoing research:
 - Detection of turbulence, lightning, icing, and convection
 - Mitigation of significant weather impacts on airport operations, missile testing, and space vehicle launches
 - Development and implementation of forecasting methods
- Combined information from several areas of Meteorology, including:
 - Forecasting and nowcasting
 - Data assimilation
 - Numerical modeling and artificial intelligence/machine learning
- o Remote sensing
- Research-to-operations/operations-to-research
- Processes within physical, dynamic, and synoptic meteorology



ARAM Committee



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- Connects advances in Meteorology and related technologies to aviation, range, and aerospace operations and meteorological research:
 - General, business, commercial and military aviation
 - Missile testing
 - \circ $\:$ Launch and recovery of space vehicles

• Goals:

- Specialty conference(s)
- Outreach and education
- Professional networking

- Unmanned aeronautical systems and urban air mobility
- Balloon operations
- o Experimental aircraft
- 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*



Aviation, Range, and Aerospace Meteorology Committee





Aviation Meteorology



- Focused on weather impacts to aviation from the surface through ~50,000' AGL.
 - Examples include: thunderstorms, icing, 0 turbulence, winds, cloud ceiling and visibility
- Operations of interest include:
 - Unmanned Aeronautical Systems (UAS), Urban Ο Air Mobility (UAM), General Aviation (GA), Business Aviation, Commercial Aviation and **Military Aviation**
- Membership from:
 - Academia, Defense (e.g., USAF), Operations Ο (e.g., FAA, Airports, NASA), Producer (e.g., NOAA NWS), Authority/Regulator (e.g, FAA), Research (Commercial and Not-for-profit organizations)



Photo Credit: https://www.aopa.org/-/media/Images/AOPA-Main/Training-and-Safety/ASI/safetyspotlights/ThunderstormAvoidance/Thuderstorm-Airplane.jpg



Range Meteorology



- Focused on weather-related impacts to range operations from the surface through the stratosphere.
 - Examples include: thunderstorms, clouds, wind influences on trajectories, atmospheric effects on sound and laser propagation.
- Locations of interest comprise:
 - 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/white-sands-missile-range/_img_url1_jssqlc7wti.jpeg



Aerospace Meteorology



- Aviation, Range, and Aerospace Meteorology Committee
- 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.



https://www.bjerknes.uib.no/sites/default/files/styles/crop_i mage_main_large/public/img/2020-06/Stratosphere_top.jpg?itok=-sl5gA5u

• Membership typically from Government or Private Companies.







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• For more information:

- ARAM Website: <u>https://www.ametsoc.org/stac/index.cfm/committees/committee-on-aviation-range-and-aerospace-meteorology/</u>
- Twitter: https://twitter.com/ams_aram
- Contact ARAM: aram.stac.ams@gmail.com