Atmosphere Observing System Applications

AOS Applications Lead: Emily Berndt (MSFC)

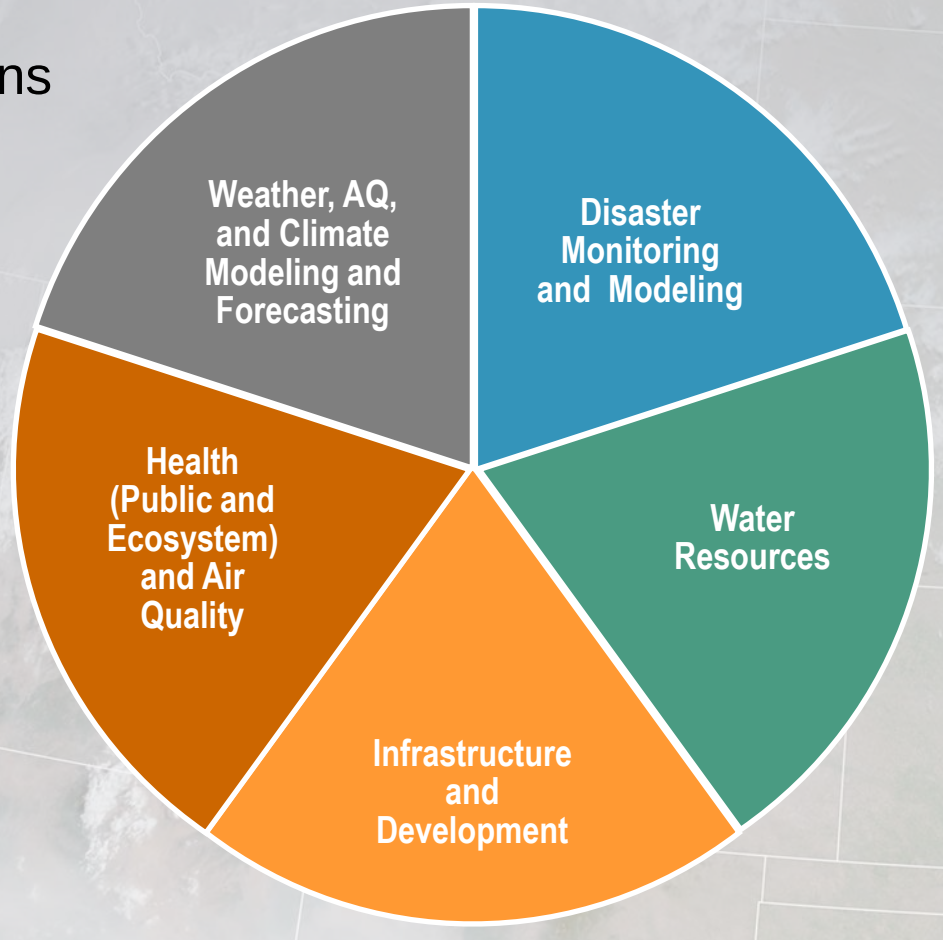
AOS Applications Coordinator: Andrea Portier (SSAI/GSFC)

Pre-Decisional

AOS Applications

- **The overarching goal of the AOS Applications Impact Team**
  - Identify future AOS applications and stakeholders
  - Develop Novel-AOS products that will support applications
  - Help improve the capacity for transitioning science to applications to make it possible to more quickly and effectively use NASA data to directly benefit society

- **AOS will provide key information to support decision making at timescales from hours to decades enabling**
  - Improved weather and air quality forecasting today
  - Monitoring sub-seasonal to seasonal changes in the near future
  - Anticipating societal challenges resulting from climate change in the decades to come



AOS Applications Seminar Series

- Opportunities to leverage AOS data products in stakeholder applications and research
- Existing gaps in data needs that may present future opportunities for ESO and AOS
- Engagement of communities to increase awareness of and participation in AOS
- Expand breadth of thematic areas covered in preparation for future activities, including Early Adopter Program

- High seminar attendance (~>70 participants)
- 10 seminars covering a wide range of topics

Applications Seminars:
https://aos.gsfc.nasa.gov/meetings.htm?id=sem

Seminars – What we've learned

Aviation Community

Organizations Represented

FAA Advanced Weather Research Program
United Airlines
NOAA NWS Aviation Weather Center
NOAA NESDIS/STAR
NRL

Applications

- Icing
- Turbulence
- Convective Weather
- Volcanic Plumes
- Wildfire smoke/pyroCBs

"Data latency and operational availability is key"

"Safety drives the need for high quality products with long development times"

Societal Impacts

- Safety
- Avoiding Injuries
- Airport operations
- Flight Re-routing/Planning
- Avoiding rapidly developing hazards

Important AOS Measurements

- Cloud top phase, temperature, and particle size are important for identifying supercooled water droplets for icing
- Cloud top height and upward motion for convective awareness

Potential Benefits of AOS

- High-resolution, nadir observations are valuable for detail of phenomena
- Some value in a snapshot of a 'signal' especially for slow changing processes
- Rely on research community to understand the value, blend it with other sources

Seminars – What we've learned

Health & Air Quality Community

Organizations Represented

UNICEF
WESTAR
Texas Commission on Environmental Quality

Applications

- Climate and disaster risk policies, mitigation, adaptation
- Health vulnerability mapping
- Air quality modeling, monitoring, and forecasting
- Tracking wildfire smoke and dust
- Exceptional events and non-attainment

"Data access and training on use is important"

"having data where surface monitors are lacking is informative"

Societal Impacts

- Exposure to climate and environmental hazards – cyclones, flooding, air pollution
- Increasing access to water
- Decreasing vector-borne disease
- Public air quality and smoke alerts
- Air quality episodes, regulatory significance

Important AOS Measurements

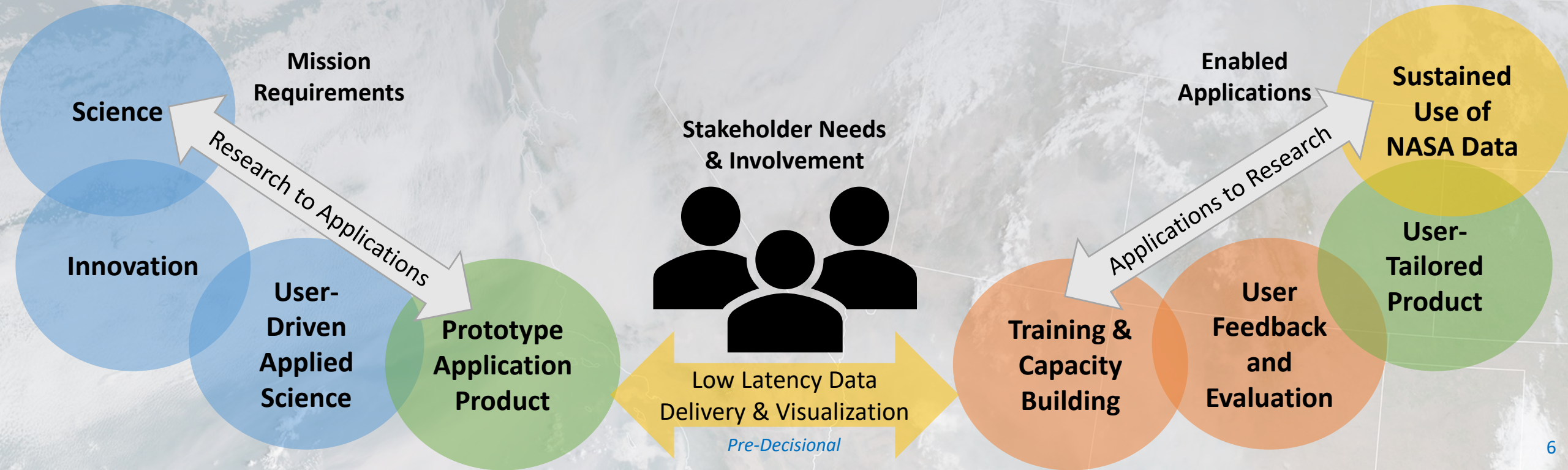
- Precipitation to assess trends in environmental health hazards
- Aerosol optical depth to track wildfire smoke or dust
- PM2.5 to assess pollution and air quality standard attainment (non-attainment)

Potential Benefits of AOS

- Informing climate and disaster vulnerability assessments and indices
- Assessing vertical gradients in pollution to link events to the 'human level' (surface)
- Analyzing air pollution events and non-attainment to inform health standards

Phase-A Activities

- **Phase-A activities focus on**
  - Updating the Applications Traceability Matrix
  - Development of a Project Applications Plan
  - Recruitment of the earliest Early Adopters
  - Identifying Application products for prototyping with proxy data in Phase B/C



Pre-Decisional