# MODIS Atmosphere Group Summary

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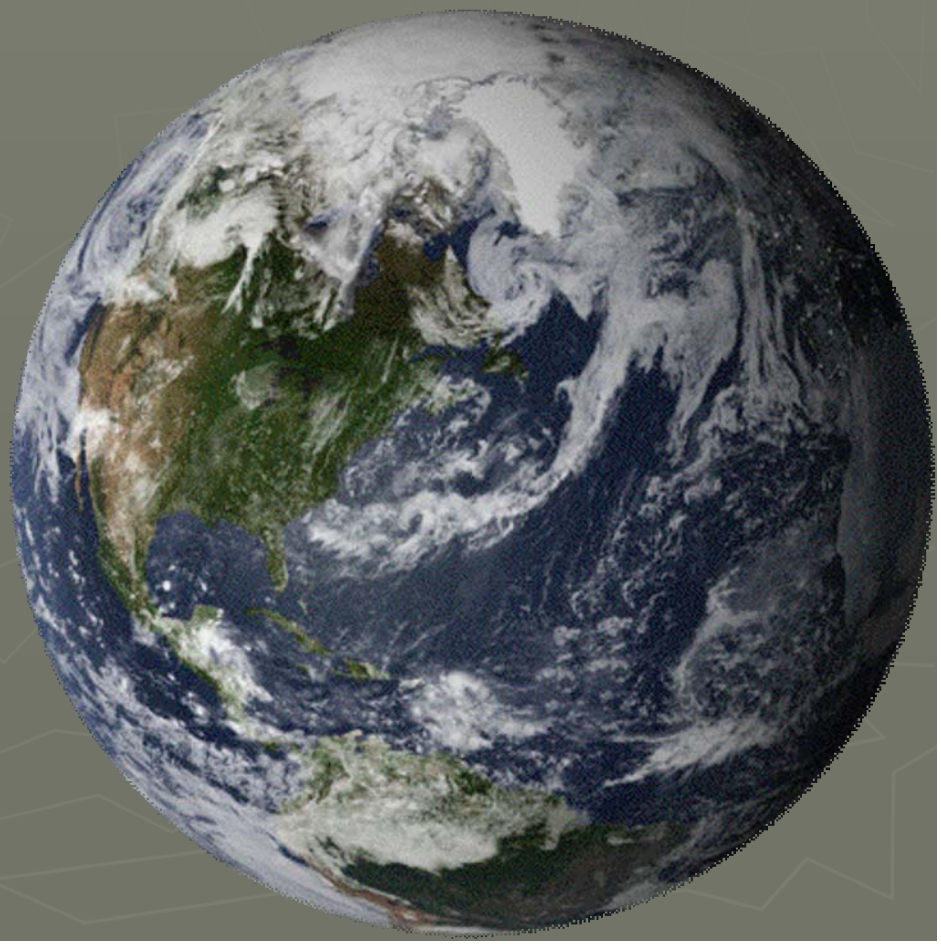
- Collection 5 Production
  - Summary presented on day 1
  - Aqua production complete
    - ✓ Reprocessing of aerosol (with deep blue) to commence in January
  - Terra production ongoing
    - ✓ Reprocessing to complete in January
- Data use/validation investigations
  - 23 presentations
  - New uses of MODIS data
- Need and plans for Collection 6
- Science justification for mission extension



# Data Product Documentation

- New Algorithm Theoretical Basis Documents (ATBD) describing collection 5 algorithms and characterization
  - Aerosol properties
    - ✓ Remer et al. 'operational' algorithm description
    - ✓ Does not include deep blue algorithm or bright deserts
  - Cloud mask
  - Cloud top properties
  - Atmospheric profiles
- New Quality Assurance (QA) Plan
  - New version posted that contains QA flags (collection 5 updates)
  - QA flags for deep blue incorporated
    - modis-atmos.gsfc.nasa.gov

# NASA HQ Senior Review Questions regarding Terra and Aqua for MODIS

- What new science (processes, trends, etc.) has been discovered so far due to the unique capabilities of MODIS and accompanying data products?
  - Global mapping of fine vs coarse aerosol
  - Fine scale variations in water vapor (1 km)
  - Revealing 3D structure and microphysics of clouds
  - IWP (from IR) complementing LWP (from MW)
  - Reconciling cloud trends from AVHRR, HIRS, & ISCCP
  - more low clouds than we thought (especially in tropics)

- What new applications have been developed due to the provision of MODIS instrument capabilities and accompanying data products?
  - Derivation of polar winds from water vapor image MODIS loops
  - Forecasts of air quality for EPA (with IDEA)
  - Strategic maps of aerosol, fires, clouds for military operations
  - MODIS is used extensively for nowcasting by the international direct

# NASA HQ Senior Review Questions regarding Terra and Aqua for MODIS

Do any MODIS results say models are wrong or need to be improved to reflect "truth" indicated in MODIS products? Do any MODIS results offer ways to improve models?

- Cloud horizontal structure improved stochastic models
- Aerosol data constraining chemistry models
- Polar winds influencing 3-5 day mid-latitude forecasts

Why are two MODIS instruments (one on Terra and the other on Aqua) necessary or important?

- for science?
  - ✓ Terra AM is more important for one day nowcasting
  - ✓ Aqua PM is part of A-train
  - ✓ Regional AM to PM change studies (e.g., clouds)
- for applications?
  - ✓ More chances for clear field of view
  - ✓ 1.6 μm on Terra is better than 2.1 μm on Aqua for snow/ice

# NASA HQ Senior Review Questions regarding Terra and Aqua for MODIS

What new science needs to be or could be done that requires 3 or more years of Aqua and MODIS operations beyond the design life of 5-6 years (i.e. beyond 2008)?

- Possible volcanic eruption (none so far in MODIS data gathering)
- Same for strong El Niño / Southern Oscillation
- More complete A-train cloud and aerosol studies

What new science needs to be or could be done that requires 3 or more years of Terra and MODIS operations beyond the design life of 5-6 years (i.e. beyond 2006)?

- IASI/MODIS synergy for improved atmospheric retrievals

What new scientific objectives can be pursued if the Aqua and Terra missions (including MODIS) are extended 3 years or more (e.g., involving data fusion, data assimilation, etc.)

- CloudSat, CALIPSO, Glory don't make any sense without MODIS

# NASA HQ Senior Review Questions regarding Terra and Aqua for MODIS

How important is it to extend the Aqua and Terra (including MODIS operations) to sustain climate trend studies?

- Without extension of EOS Terra and Aqua there will be no multi-spectral observations
- Gap while waiting for NPP / NPOESS