

# EXPLORE EARTH

## **NASA Air Quality Research**

Jack A. Kaye\* and Barry Lefer^

\*Associate Director for Research

^ Manager, Tropospheric Composition Program

NASA Earth Science Division

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*\* Prepared with inputs from numerous colleagues from NASA HQ*

# Overview

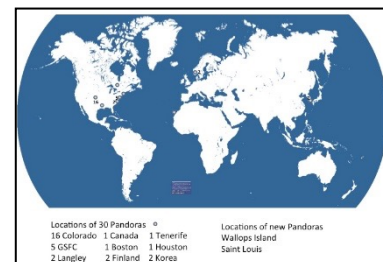
- NASA and Air Quality Science
- NASA Satellites and Air Quality Measurements
- NASA Participation in Air Quality Related Campaigns

# NASA and Air Quality Science

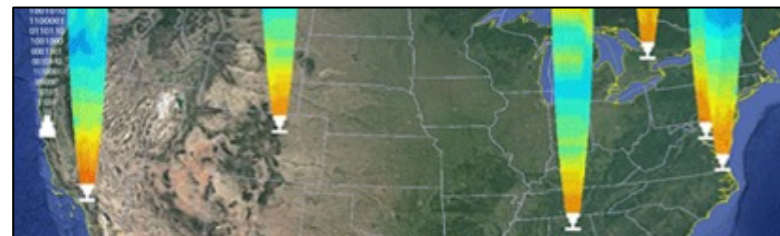
- NASA contributes to air quality related research in a variety of ways
  - Satellite observations (see next chart)
  - Surface-based measurement networks
  - Airborne field campaigns
  - Modeling/data assimilation/reanalysis
  - Provision of data to research and applications communities
  - Connection to users, incl. Health and Air Quality Applied Sciences Team
  - Technology Development
  - Interagency and international partnership in all of the above



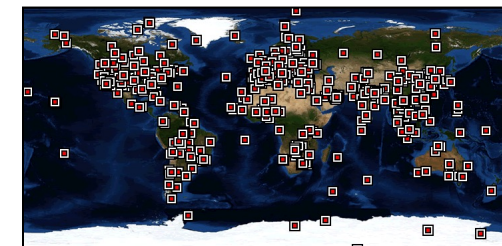
PANDORA Network



TOLNet

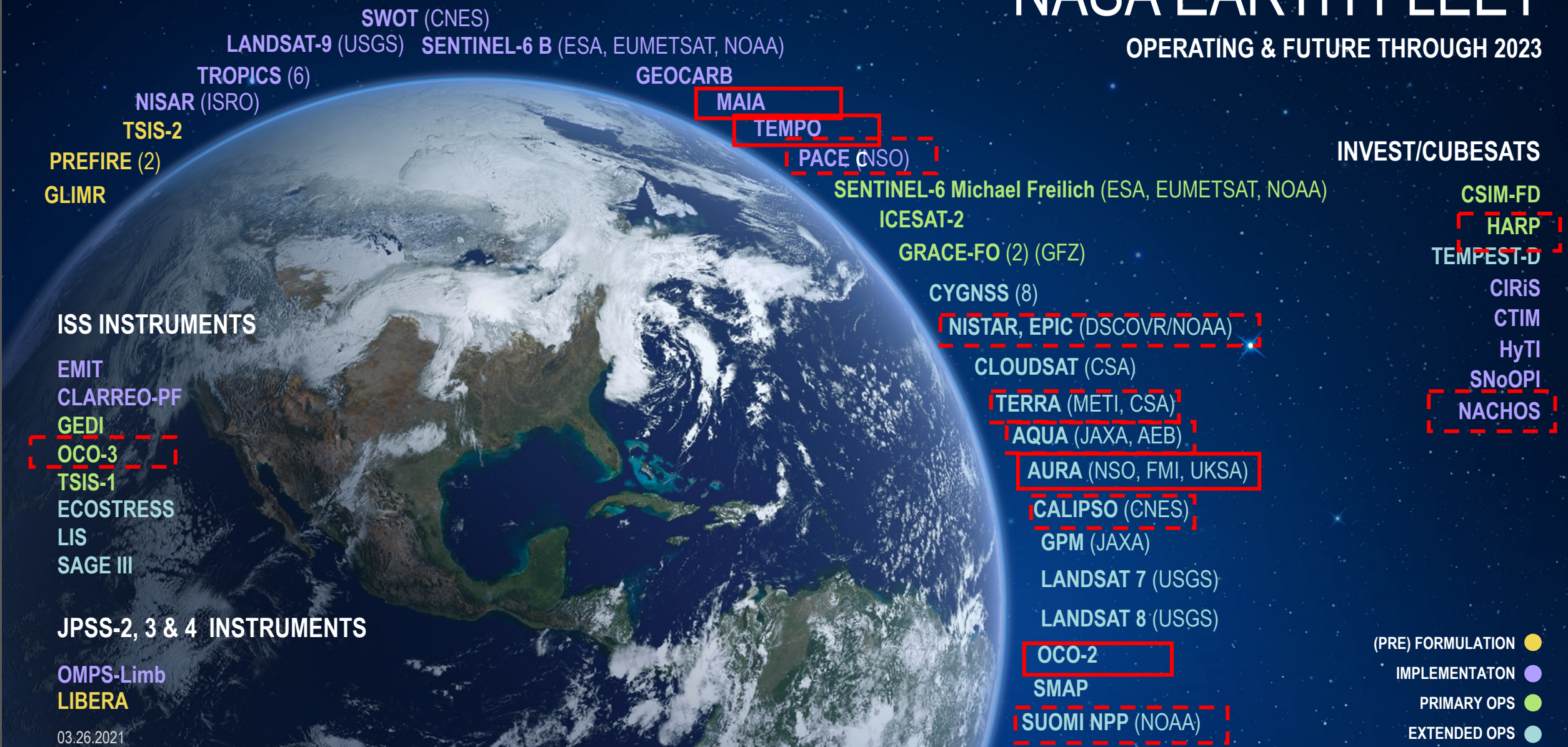


AERONET



# NASA EARTH FLEET

OPERATING & FUTURE THROUGH 2023



# NASA Participation in Air Quality Related Campaigns

- NASA has a long history of participation in airborne field campaigns associated with global and regional air quality
  - Early on (1980s-2000s) much of effort focused on global air quality in relatively unpolluted areas or those that were affected by long range transport
  - More recently, large campaigns using one or more large platforms have emphasized polluted areas, including
    - DISCOVER-AQ (2011-2014) – Baltimore/Washington, California Central Valley, Houston, Denver Area
    - KORUS-AQ (2016) – Seoul, Korea and surrounding areas (with Korea Institute for Environmental Research)
    - FIREX-AQ (2019) – Boise, ID and Salina, KS (with NOAA) – to study atmospheric aspects of wildfires and agricultural burning
  - “Smaller” campaigns have used smaller platforms and surface-based measurements (Chesapeake Bay, Lake Michigan, Long Island Sound); forthcoming ones include Houston, TX (with Department of Energy), Detroit area, NY Metropolitan Area
  - Deployment of surface-based measurement network instruments (esp. PANDORA/PANDONIA and Tropospheric Ozone Lidar Network (TOLNet) enhance campaigns
  - Modeling participation supports mission planning and incorporation of satellite data
- Next major air quality airborne campaign is planned for ~2024-2025 in Asia

# Long Island Sound Tropospheric Ozone Study (LISTOS) - 2018

