2025 Northeast U.S. Field Observations Workshop

September 3-4, 2024, University of Maryland College Park

Goals for this workshop

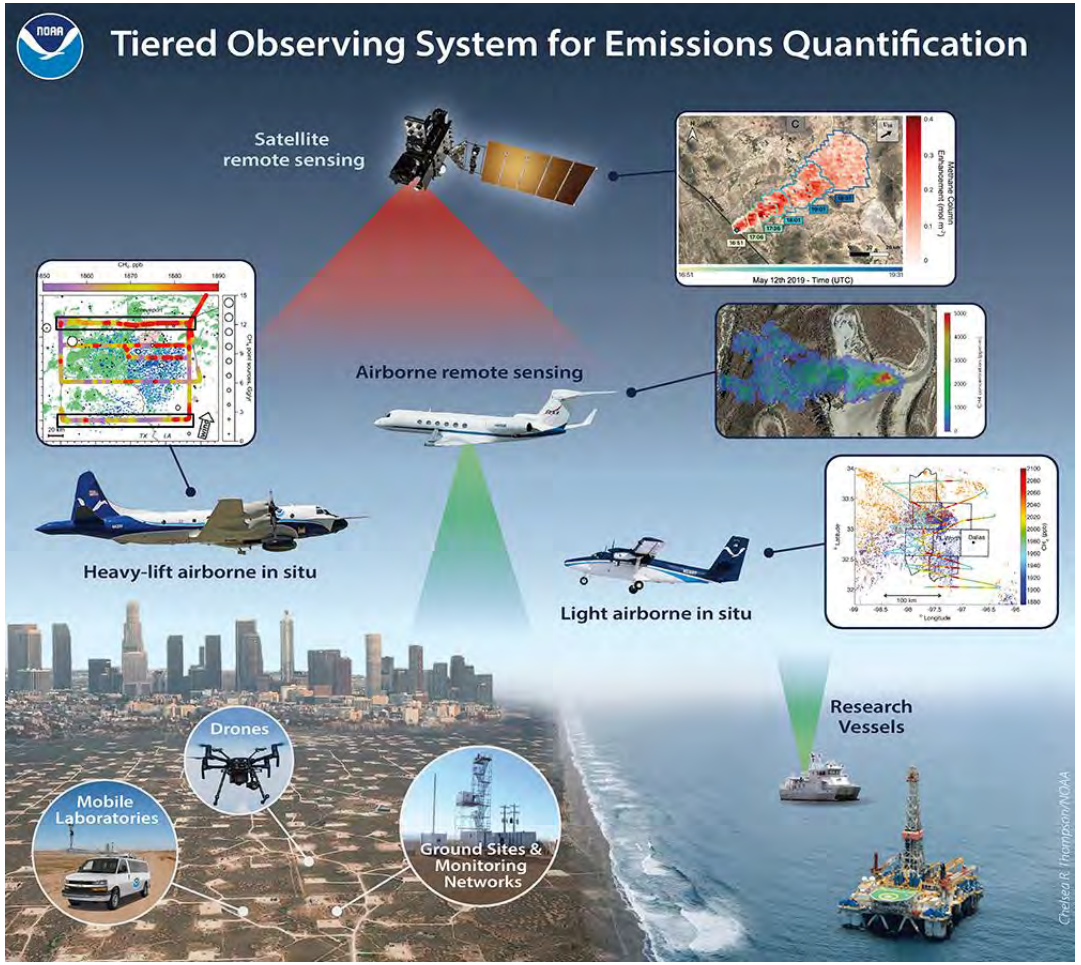
- Discuss field activities in the broad areas of air quality and climate, planned (or desired) in the Northeast U.S. in summer 2025, to facilitate coordinated science and analysis
  - Air quality and climate are closely related issues - discussion between these communities benefits both
- Make best use of the combined satellite remote sensing, airborne and ground based observational assets
- Leverage the organizational structure of the new U.S. Greenhouse Gas Center for campaign coordination, communication, etc.
- Identify the needs of local stakeholders to best address them as part of planned observations

Workshop Structure

- Short talks plus time for open discussion – please make use of discussion time !
- Compressed schedule for a 1.5 day workshop. Anticipate need for follow on discussions.
- Modeling coordination to take place at a later time.

The Value of Coordinated Research

- AGES+ (AEROMMA, GOTHAAM, EPCAPE, STAQS, + several others): multi agency study in 2023
- Motivated in part by 2023 launch of TEMPO geostationary air quality satellite (first light, Aug 2)



- NOAA AiRMAPS: 3-4 year initiative from OAR & NESDIS for greenhouse gases
- Multi-agency coordination needed !

2025 Field Campaigns and Observations

Airborne & Ground Based

- NOAA AiRMAPS 2025: Baltimore Air Quality and Marcellus Methane Survey
- DOE Urban IFL: Baltimore Social-Environmental Collaborative
- DOE COURAGE: Coast-Urban-Rural Atmospheric Gradient Experiment
- NASA SARP & ALEGROS
- NASA G-III / B-200 Airborne Remote Sensing Flights (acronym ?)
- NSF GOTHAAM: Greater New York Oxidant Trace gas Halogen and Aerosol Airborne Mission
- NIST Baltimore/DC Urban Testbed Program & DC-Flux Experiment

Let's remember models, emissions inventory development (NOAA GRAAPES, EPA NEI, etc.) !

Satellite Remote Sensing

- NASA TEMPO mission entering 2nd full year of observations (Green Paper ?)
- TROPOMI – Air Quality + Methane
- MethaneSAT & MethaneAIR
- NASA EMIT & AVIRIS instruments
- Carbon Mapper
- GHGSat
- NOAA GOES ABI methane capability
- Others ? See for e.g. Jacob et al., ACP 2022

Other Programs

- DOE Methane Emissions Reduction Program
- RFPs from NOAA AC4, EPA
- Regional GHG networks, observations and modeling
- State interests from MD, PA, NY, etc.
- Academic partners

The U.S. GHG Center: Airborne Measurement Coordination

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On behalf of the large (and growing!) Interagency GHG Center team

September 3, 2024

What is the U.S. Greenhouse Gas Center?

From the National Strategy to Advance an Integrated U.S. Greenhouse Gas Measurement, Monitoring, and Information System:

The U.S. GHG Center, initially led by NASA, EPA, NIST, and NOAA, will **facilitate coordination** across federal and non-federal, domestic, and international entities to **integrate and enhance GHG data and modeling capabilities** from the USG and non-USG sources for **scalable impact**.

Earth Action Strategy

Virtuous Cycle
- User needs inform next iteration of programs, missions and initiatives

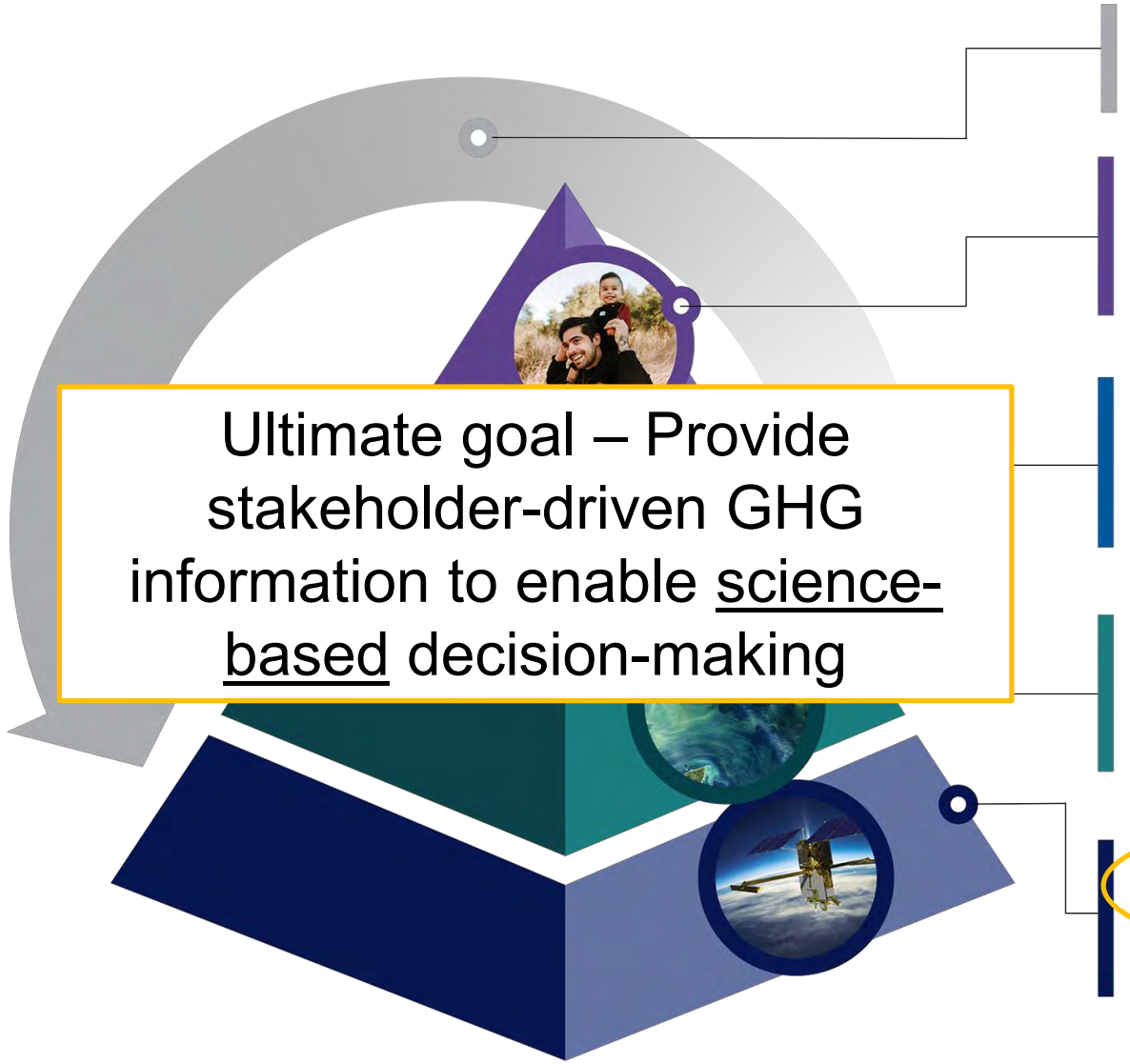
Public Understanding & Exchange
- Put more scientific understanding into public sphere
- Deliver applied science to users
- Participate in multi-way info exchange
- Use input to inform subsequent work

Solutions & Societal Value
- Offer models, scientific findings and info through Open-Source Science principles
- Support climate services
- Provide science applications and tools to inform decisions

Earth System Science & Applied Research
- Grow scientific understanding of Earth's systems
- Develop predictive modeling for science applications and tools to mitigate, adapt and respond to climate change

Foundational Knowledge, Technology, Missions & Data
- Technology innovation
- Earth observations missions
- Data collected from space, air and ground

The U.S. Greenhouse Gas Center



Ultimate goal – Provide stakeholder-driven GHG information to enable science-based decision-making

Outreach Edu	Outreach	Outreach	Outreach
Tools OCO portal EMIT portal GM Worl new DAACs ...	**Tools** GHGRP (facility scale) reports ...	**Tools** GHG website Urban testbed ...	**Tools** OCOMIP site CarbonTracker GGGRN s e Data centers ...
Models GMAO CMS-Flux GIS Land, ocean ...	**Models** CMAQ Anthropogenic models ...	**Models** WRF-STILT Hestia* (NAU) ...	**Models** CarbonTracker CT-Lagrange Land, ocean ...
Observations OCO-2, 3 EMIT ... Ground-based remote sensing Airborne	**Observations** Stack monitoring stations (AQ) Research measurements	**Observations** Urban Testbeds sensors Airborne campaigns	**Observations** CGGRN Airborne monitoring, CrIS ...