

Collaboration Panel

Comments by A. Eldering

My perspective

- Started as a research scientist at NASA on science discovery – primarily atmospheric composition and atmospheric aerosols
- Moved to project science and science leadership roles with a focus on greenhouse gases. An important part of this effort was work with the Japanese GOSAT data as we developed and prepared OCO-2 and OCO-3.
- The work in CO₂ gave me more interest in how we connect our data with internationally recognized standards
- My work at NIST has/had been building on that theme – best practices and documentary standards, including through international collaboration

NASA activities changing over time



All these are happening, but the relative role is shifting over time.

Data record maturity different in different disciplines

Radiation
budget

- Have linked the records of a long series of measurements

Atmospheric
temperature

- Tackled by the met community for a long time, internationally

ozone

- Still dominated by ground based measurement records

Carbon
dioxide

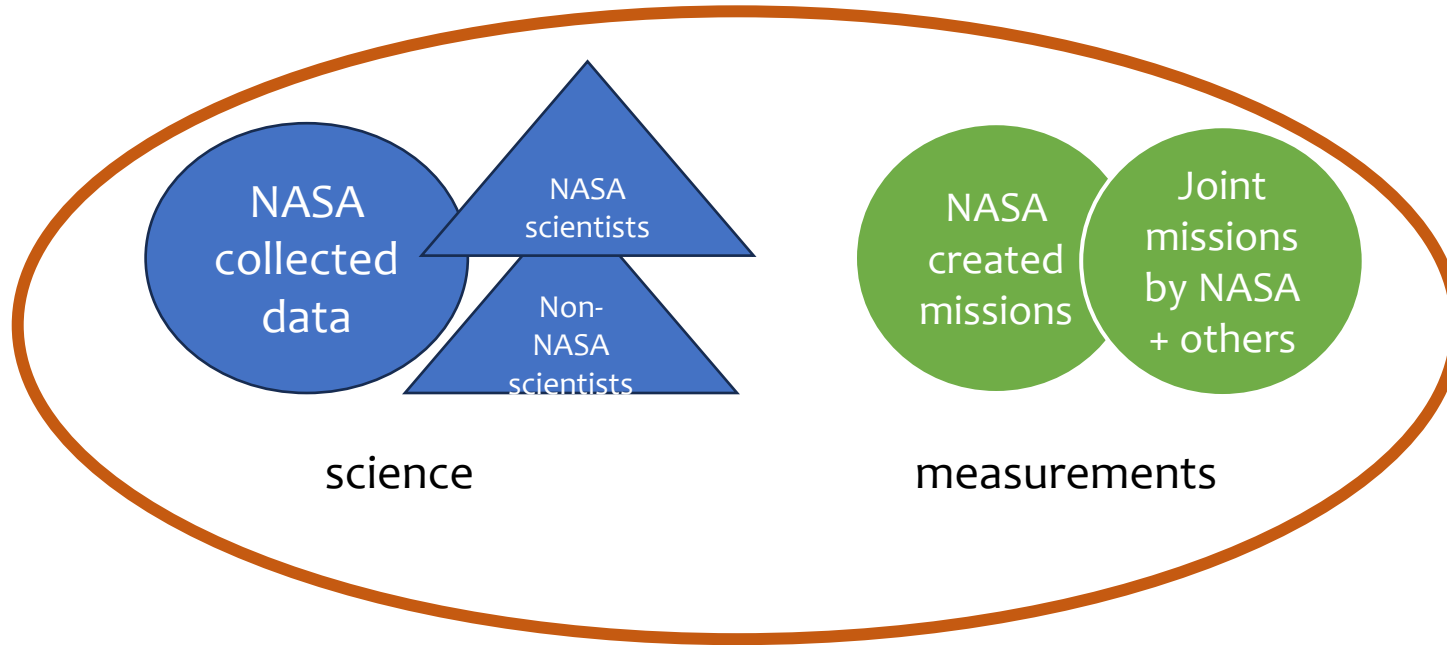
- Have a sparse ground-based record, satellite effort in early days

How can NASA (and DS) better support this range of goals?



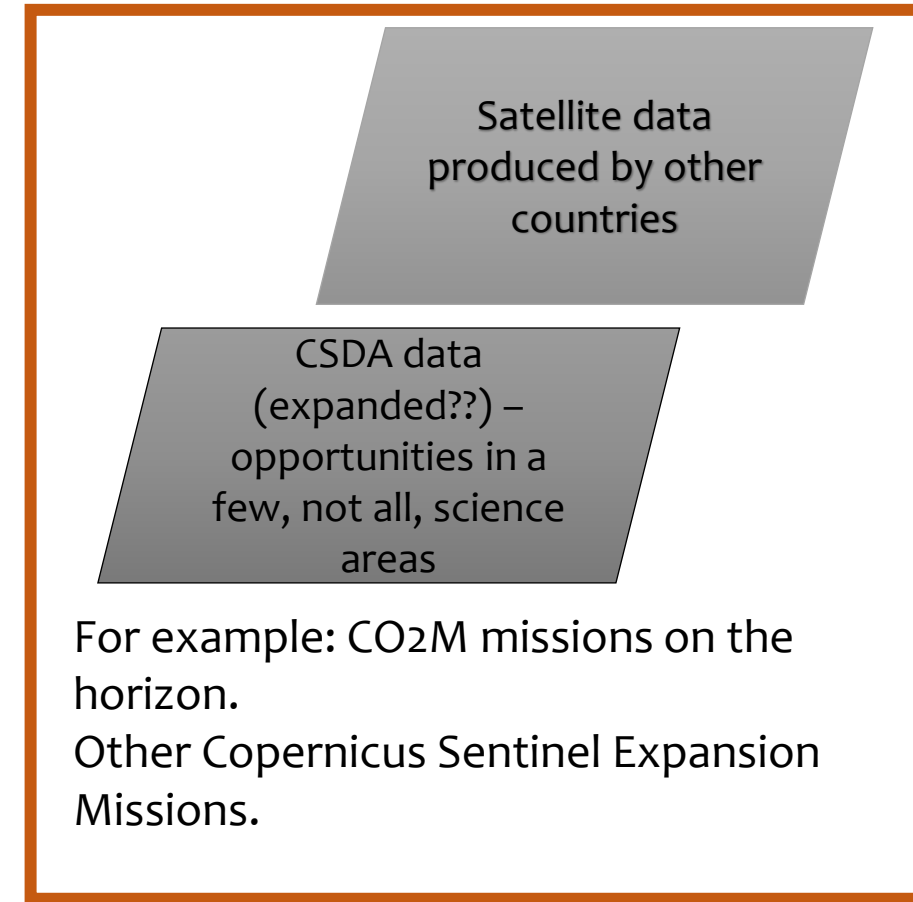
- NASA already develops missions collaboratively with international partners
- Very limited in support for science and data record development with dataset from non-US sources
- Challenged in data record development by the structure of US agencies (esp NASA, NOAA, USGS, and NIST missions)

Opportunity to reframe ideas of international collaboration



The majority of R&A funds are focused on analysis of NASA produced data.

The NASA sea level change team is a new approach??



This becomes even more critical when NASA has a gap between missions for a particular science focus – how to keep experts engaged and productive??

How can NASA capitalize on international datasets?

- Invest more in research and analysis using non-NASA datasets, including algorithm development, validation, dataset harmonization along with science
- Identify topic areas where loss of expertise is a high risk, focus on these first (like CO₂)
- Expand the sea level change team concept to other disciplines

Data Record example: ESA Climate Change Initiative ECVs

- This research programme develops pre-operational satellite climate data records to address a suite of GCOS-defined ECVs (see list below). CCI R&D activities cover: products specification, algorithm development and improvement, uncertainty characterisation, product generation, pre-operational system definition, sizing and demonstration.
- Once sufficiently mature, it is an explicit aim of the CCI to transfer these prototype data products and processing systems to entities that provide operational climate services such as the Copernicus Climate Change Service (C3S) and EUMETSAT.

Back to the interagency question

- US system works poorly for harmonizing data/ creating data records
 - Connecting satellite data to standards (NIST primarily participates on pre-launch calibration)
 - Many fragmented activities related to met community: CGMS (coordination group for meteorological satellites, GSICS (Global Space-based Inter-Calibration System in WMO with involvement of NOAA/NESDIS/ STAR)
 - A lot of the work in atmospheric composition historically grown from ground-based measurements (WMO stratospheric ozone, NOAA ESRL Global monitoring records)
- Were many IWGs through USGCRP, but stay at high level
- Lessons or opportunities with ESA Climate Office and GCOS?? No need for a parallel activity, would be more efficient to collaborate.



Thoughts on role of international organizations

- Varies a lot across disciplines
- Existing organizations reflect how we have done business – CEOS is focused on civil space agencies, and can be quite slow to make decisions and take actions
- Other relevant groups that host collaborative science include
 - G3W through WMO
 - GEWEX
- Developing priorities – can NASA & NOAA & USGS better connect to GCOS (global climate observing system – supported by EU, co-sponsored by UN, WMO, unesco IOC) and their ECV efforts
- How tied to ECVs should DS priorities be?

In conclusion

- Could NASA funding expand opportunities for using international data and non civil space agency data?
- More activities like Sea Level Change team? Especially where there will be mission gaps?
- And expand CDSA? (opportunities primarily in hyperspectral and SAR, radio occultation)
- How to participate in development of ECVs in the US more collaboratively across agencies, including NASA, NOAA, USGS, and NIST.
- Can we better collaborate with GCOS and ESA CCO ECV effort?