



An Overview of TROPRESS Data Products and Services at the NASA GES DISC

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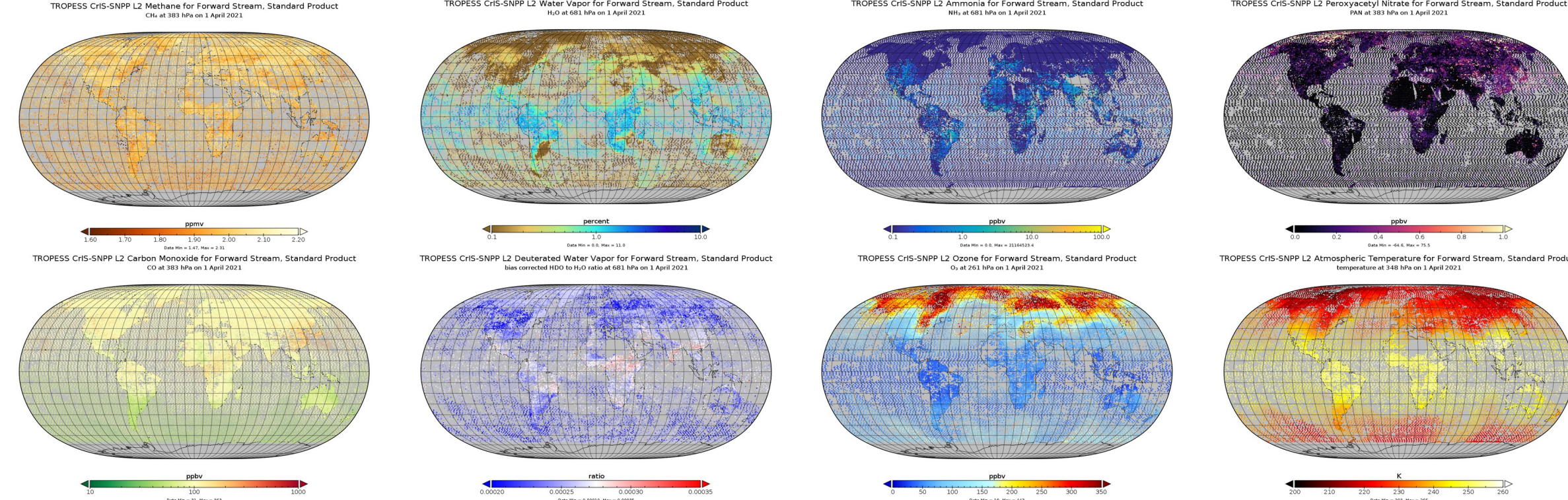
TROPRESS Data Products

The Tropospheric Ozone and Precursors from Earth System Sounding (TROPRESS) project currently generates Earth System Data Records (ESDRs) of ozone, and other atmospheric constituents (CH₄, CO, H₂O, HDO, NH₃, PAN and temperature) by processing data from multiple satellites through a common retrieval algorithm and ground data system. Satellite Level-1B input data used in generating the TROPRESS L2 data products include AIRS Aqua, CrIS JPSS-1 (NOAA-20), CrIS Suomi-NPP, OMI Aura, and TROPOMI S5P. The common retrieval framework is known as the Multi-SpEctra, MUlti-SpEcies, MUlti-SEnsors (MUSES) science data processing system (MUSES-SDPS). TROPRESS data are now available from the NASA Goddard Earth Sciences Data and Information Service Center (GES DISC) for users to download (see table and figures at right).

TROPRESS products are divided into the following product types:

- **Standard:** for those doing full analysis with averaging kernel and covariance corresponding to retrieved vertical profiles
- **Summary:** smaller file size and are more convenient for first-look and rapid analysis, include total and partial columns, as well as column averaging kernels
- **Full/Archival:** contain all information used in creating the data

Examples of TROPRESS measured variables for 1 April 2021

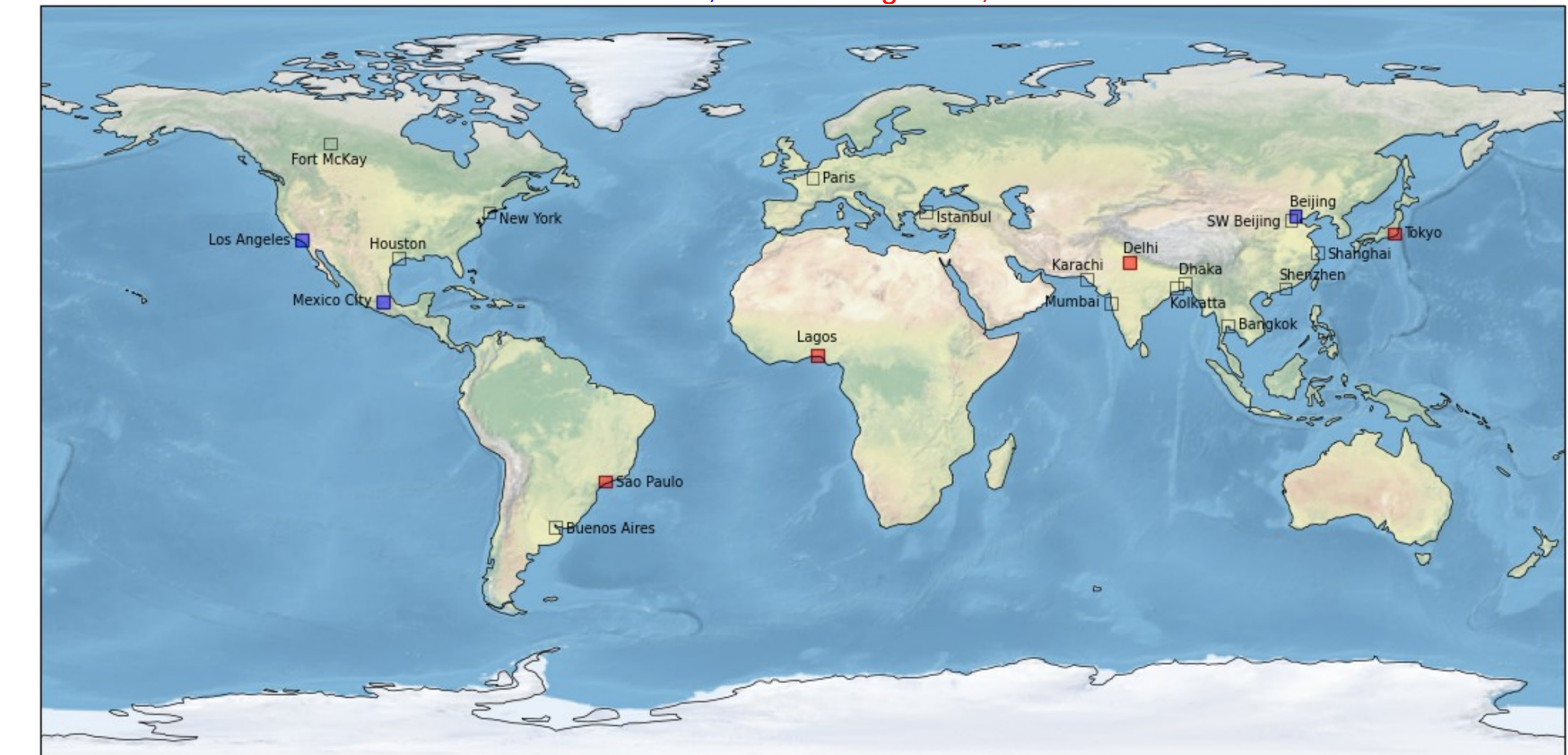


	Forward Stream Products						
	Available at GES DISC				Not Yet Delivered		
	AIRS	CrIS S-NPP	CrIS JPSS-1	OMI	AIRS+OMI	TROPOMI	CrIS+TROPOMI
CH3OH Methanol		Standard Summary Full/Archival	Standard Summary Full/Archival				
CH4 Methane	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival			Standard Summary Full/Archival	Standard Summary Full/Archival
CO Carbon Monoxide	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival			Standard Summary Full/Archival	Standard Summary Full/Archival
H2O Water Vapor	Standard Full/Archival	Standard Full/Archival	Standard Full/Archival				
HDO Deuterated Water	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival			Standard Summary Full/Archival	Standard Summary Full/Archival
ISO Isoprene		Standard Summary Full/Archival	Standard Summary Full/Archival				
NH3 Ammonia	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival				
O3 Ozone	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival
O3IRK Ozone Instantaneous Radiative Kernel	Standard Summary Full/Archival	Standard Summary Full/Archival	Standard Summary Full/Archival				
PAN Peroxyacetyl Nitrate		Standard Summary Full/Archival	Standard Summary Full/Archival				
TATM Atmospheric Temperature	Standard Full/Archival	Standard Full/Archival	Standard Full/Archival				

These data are global and are generated from Feb. 1, 2021 (except for CrIS JPSS-1, which begins April 1, 2021). On May 21, 2021, the CrIS S-NPP instrument suffered a problem resulting in no more CH₄ and HDO (other variables resumed May 1, 2022).

Megacity Products are being produced and delivered to the GES DISC with data from 2016. The Megacity data are localized 3°x3° subsets generated from the CrIS S-NPP instrument and include measurements of O₃, CH₄, CO, H₂O, HDO, NH₃, PAN and temperature. Below are the locations of the 21 proposed Megacity Products:

■ = Available Now, ■ = Coming Soon, □ = Future

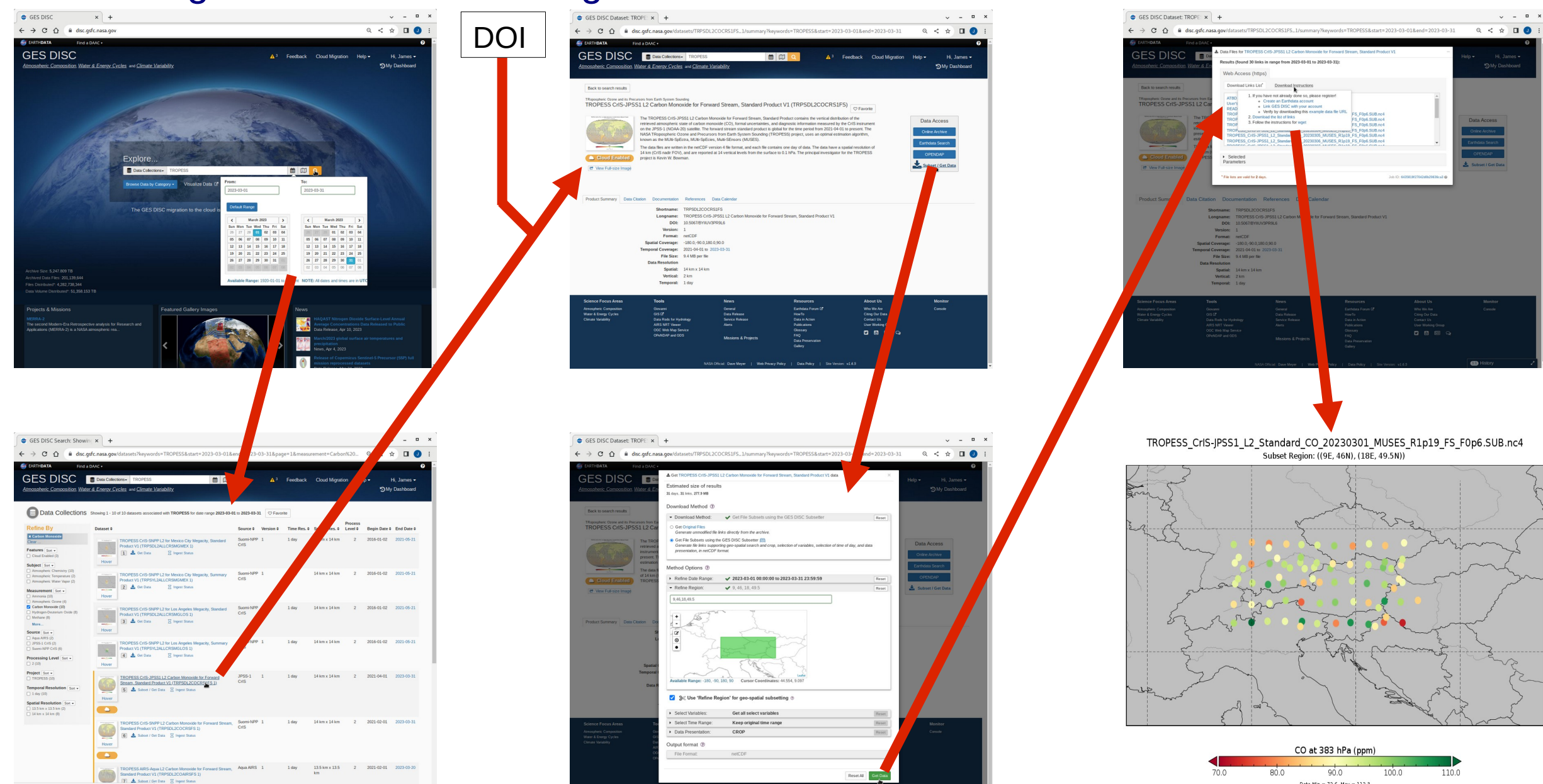


Special Products, provided on an as-needed and as-available basis to support NASA field missions and individual-investigator requests over specific regions. Special Products exist for West Coast Fires (2020 subset over North America of CO, NH₃, O₃, PAN), Australian Fires (2019/20 subset over Australia of CH₄, CO, H₂O, HDO, NH₃, O₃, PAN, TATM) and IPCC Buchholz (2015-2019 global CO).

The **Tropospheric Chemical Reanalysis (TCR2)** products will be delivered as part of TROPRESS soon. A **Reanalysis Stream** will also be produced in the future with Standard, Summary and Full/Archival data products.

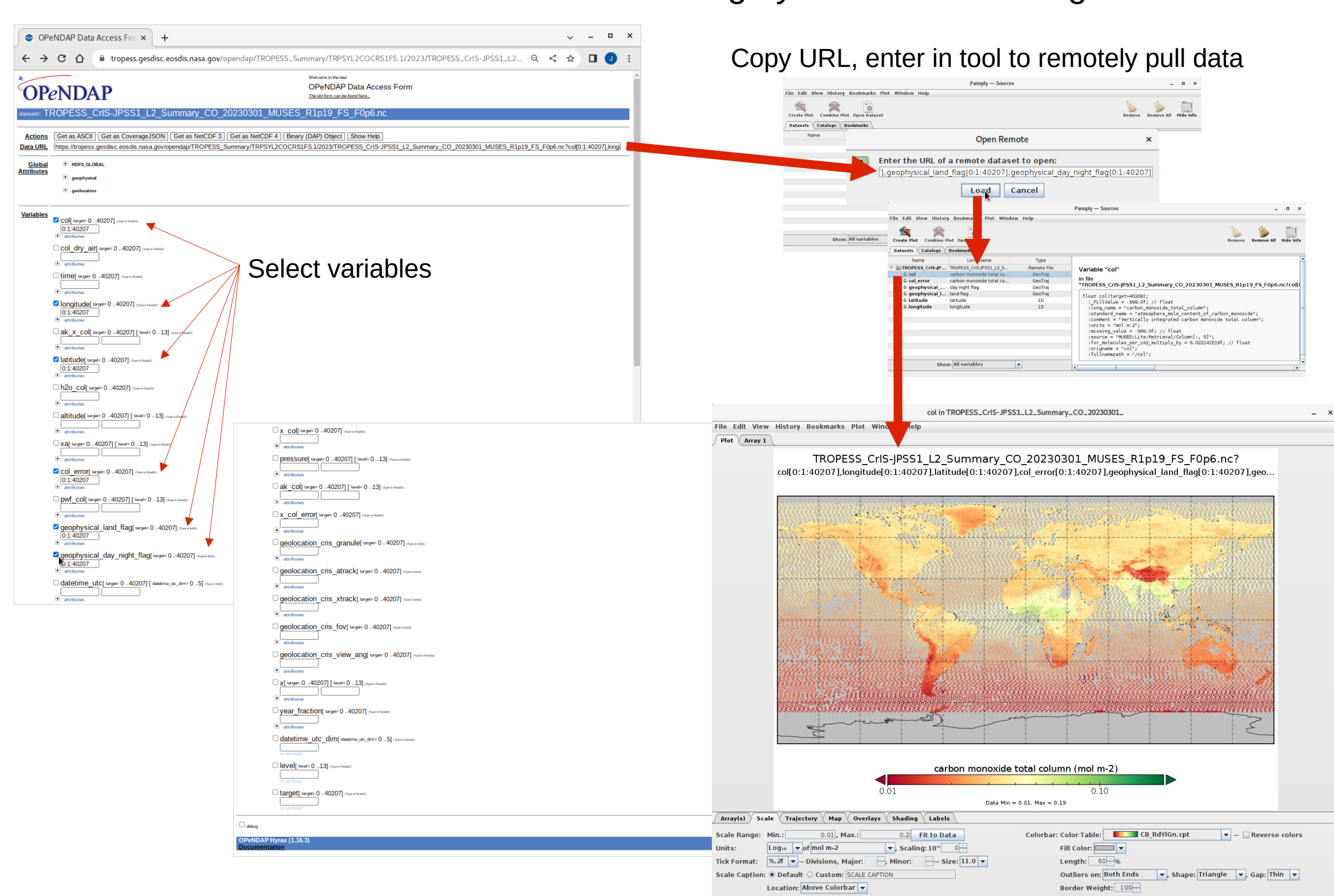
GES DISC Services for TROPRESS

Search and Download/Subset: TROPRESS data products are discoverable via the GES DISC home page's search interface at <https://disc.gsfc.nasa.gov>. Users can browse, search, access and learn about the data holdings at the GES DISC. The interface lets users specify a search keyword, spatial region and time period. One can search for data products as well as documentation. A data product search will return a list of data products satisfying the search criteria. Clicking on a product will take the user to the dataset landing page with information and links to subset/download the data, as well as documentation describing the data. Note, subsetting can also be run using an API.



Alternatively, one can also use the NASA ESDIS DAAC-wide Earthdata Search interface at <https://search.earthdata.nasa.gov>, the US government-wide interface at <https://www.data.gov>, a web search engine, or the data product DOI.

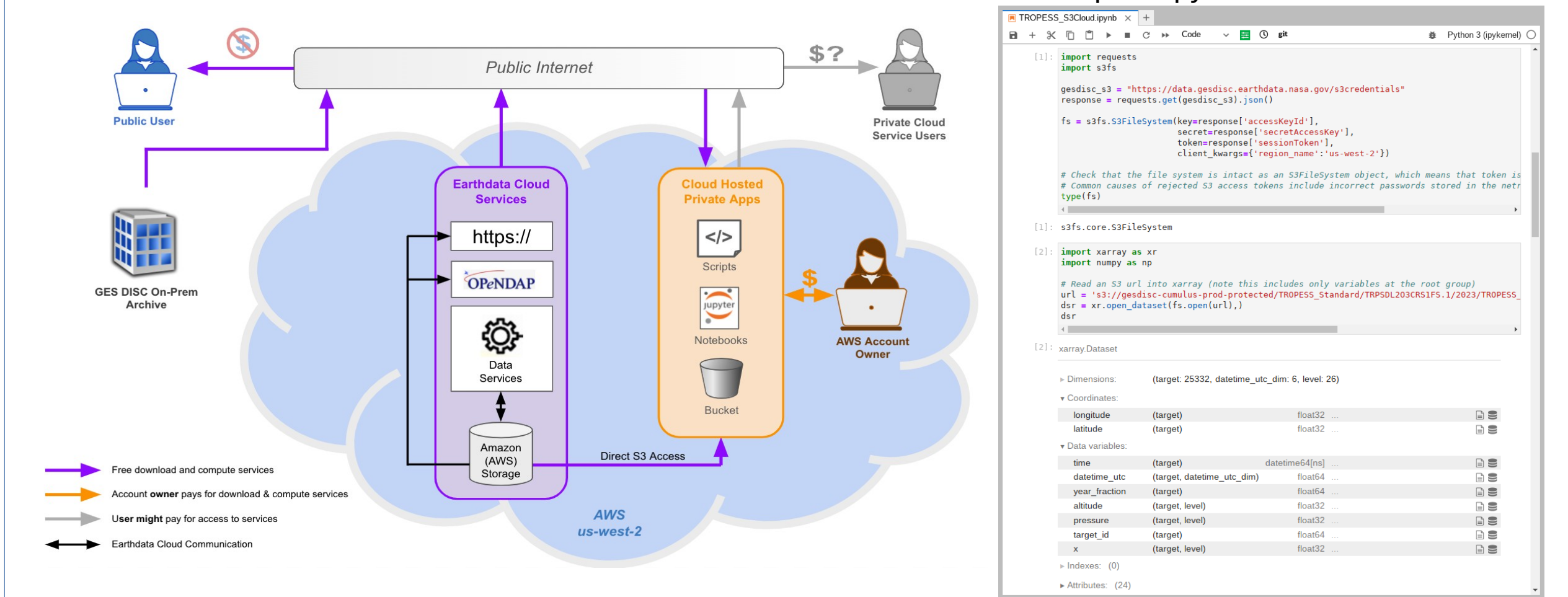
OPeNDAP (Open-source Project for a Network Data Access Protocol) is a client/server framework which enables scientists to share data more easily over the internet. All TROPRESS products at the GES DISC are OPeNDAP enabled, and are accessed using an OPeNDAP URL either via the command-line, an Internet browser, or a custom UI. NetCDF compliant tools, such as Matlab, R, IDL, IDV, and Panoply can access OPeNDAP data remotely without the user downloading to their local machine. OPeNDAP allows for subsetting by variable and along a dimension.



Cloud Services: the GES DISC is moving its data archive to the cloud! In compliance with NASA's open science policy, all GES DISC data and services continue to be free to all users. Benefits include:

- Quick access and subsetting of large volumes of data, compared to data and services in current on-premises archive.
- A new way to access data is S3 (Simple Storage Service) access, which is available to users in the AWS (Amazon Web Service) us-west-2 region.
- Find multidisciplinary NASA data in one place, the Earthdata Cloud.
- Bring algorithms and processing software to work directly with data in the cloud

Note, users can still download the data from the cloud to their local machine for free. Example Jupyter Notebook S3 access



For more information about TROPRESS and its data products please see:

- NASA GES DISC home page at <https://disc.gsfc.nasa.gov>
- TROPRESS Project home page at <https://tes.jpl.nasa.gov/tropress/>