

Customized Delivery of Sub-Orbital Data Products

- Access to terabytes of data for field campaigns across ESDIS
- Subset data temporally, spatially, and by variable
- Discover new and related datasets
- Compare data from different campaigns



Learn more about SOOT Project here:

Why SOOT?

Sub-orbital studies are typically intended to address **what, how, and why** questions related to Earth system phenomena and/or processes, e.g.:

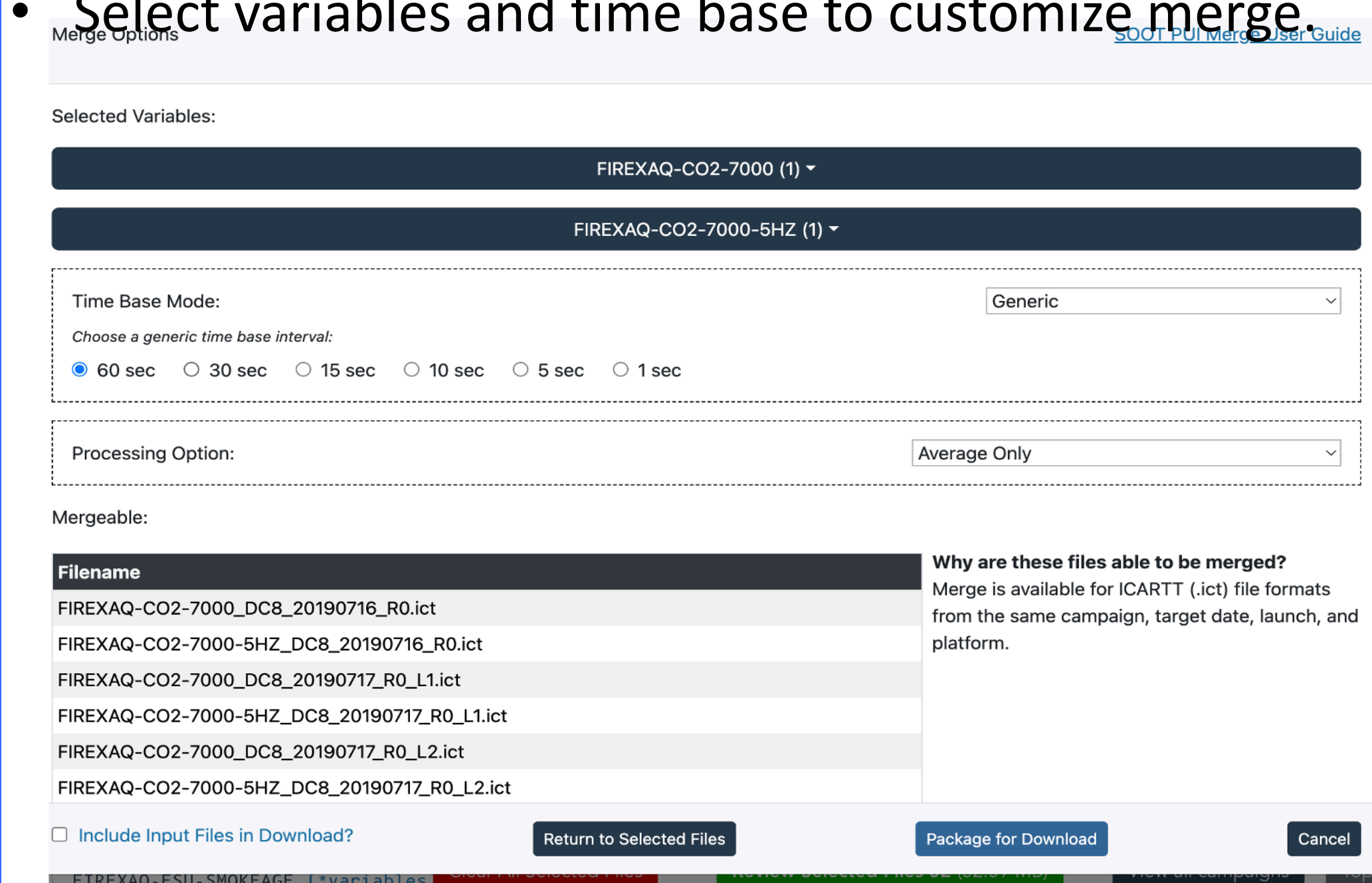
- **What** are the physical, chemical, and meteorological characteristics of the phenomena and/or processes being studied?
- **How** do the phenomena and/or processes interact with the environment?
- **Why** are the phenomena and/or processes occurring? (What are the controlling factors?)

The Sub-Orbital Order Tool (SOOT) is designed as a **variable-centric tool to help Earth scientists find and access the specific data they need** to answer these types of questions.

- SOOT is being designed and implemented in response to real research use cases
- SOOT is being designed and implemented to take advantage of existing CMR metadata schemas and to improve the variable metadata for broader application

Merge Service

- Align data to a common time base, output in a single International Consortium for Atmospheric Research on Transport and Transformation (ICARTT; .ict) file for each campaign, platform, flights and/or date.
- Select variables and time base to customize merge.



How do users search for and use sub-orbital data?

- Researchers working with field campaign data were asked to **describe the data needs for their research projects**
- LaRC scientists and ASDC staff worked with the ESDSWG Variables First WG to develop use cases with inputs from participants across ESDIS
- The inputs were used to create a summary of **variable-centric capabilities that should be supported by the UMM-Var**
- Use cases fell into several **distinct capabilities: Data Discovery, Subsetting, Visualization, Spatial Averaging and Regridding, Temporal Averaging and Resampling, Variable Aggregation, and Reformatting**

The ESDSWG Working Group, and the SOOT use case developers identified **4 variable-centric discovery scenarios**:

- searching by measurement type (e.g., Black Carbon Mass Concentration)
- browsing the variables in a specific collection (for satellite data)
- browsing the variables in a specific mission or campaign
- browsing for variables produced by specific instruments or types of instruments

Use Case Scenario

1. The user searches "black carbon" using keyword search or selects "black carbon" via faceted search under "Aerosol" category
2. The UI displays a list of black carbon measurements from all campaigns with PIs and instruments
3. The user selects the variables associated with the "SP2 (Single Particle Soot Photometer)" instrument for each mission
4. The user selects merge feature
5. The UI prompts her to specify the merge choices (e.g., time basis)
6. The user chooses her merge options and submits the merge request
7. The merge module processes the request and prepares the merge files
8. The user downloads the merged files
9. The user repeats step 5 to 7 for each mission selected

Or

Search by campaign or by data variable

► Campaign

▼ Variables

▼ Aerosols

▼ Measurement Object

☐ Aerosol Particle Phase

☒ Black Carbon

☐ Cloud Condensation Nuclei

☐ Sulfate

☐ Nitrate

☐ Ammonium

► Property

☐ Light Absorption Coefficient

☒ Mass Concentration

☐ Number Concentration



Draw a bounding box to search by geographic region

PI Var Name	PI Var Description	PI	Instrument	Campaign	Object	Property	Constraints
BC_Mss	Black carbon mass concentration reported at STP	John Doe	SP2 (NOAA)	KORUS-AQ	Black carbon	Mass Concentration	STP
BCMss	BC mass conc reported at STP	Jim Doe	SP2 (NASA)	Firex-AQ	Black carbon	Mass Concentration	STP
BC	BC mass	Jane Doe	SP (NIER)	KORUS-AQ	Black carbon	Mass Concentration	Ambient Temp and press

Displaying 1-10 of 1000

