



Exploring the Swarm-Echo/e-POP Dataset Tools for Accessing, Visualization, and Analysis

Andrew White, Andrew W. Yau, Andrew D. Howarth, Warren Holley, Troy Kachor, Paige Rutledge



Available Data Products

Below is a list of the available published data products for the e-POP data set.

CASSIOPE Spacecraft Products

- Ephemeris Data
- Orbit Data
- Quaternion Data
- Housekeeping Telemetry Data

e-POP Payload Products

- Data Availability
- Payload Quicklook

Fast Auroral Imager (FAI)

- Summary Plot
- Quicklook Movie
- HDF5 Files of Images
- PNG Files of Images

Magnetic Field Instrument (MGF)

- Summary Plot
- Quicklook Plot
- CHAOS Residuals Plot
- CDF File – Magnetic Data @ 1Hz
- CDF File – Magnetic Data @ 160Hz

GPS Attitude, Position, and Profiling Instrument (GAP)

- Quicklook Plot
- Raw GPS Messages
- Observation RINEX
- Navigation RINEX
- Line of Sight Total Electron Content
- Topside Vertical Total Electron Content

Imaging Rapid-Scanning Mass Spectrometer (IRM)

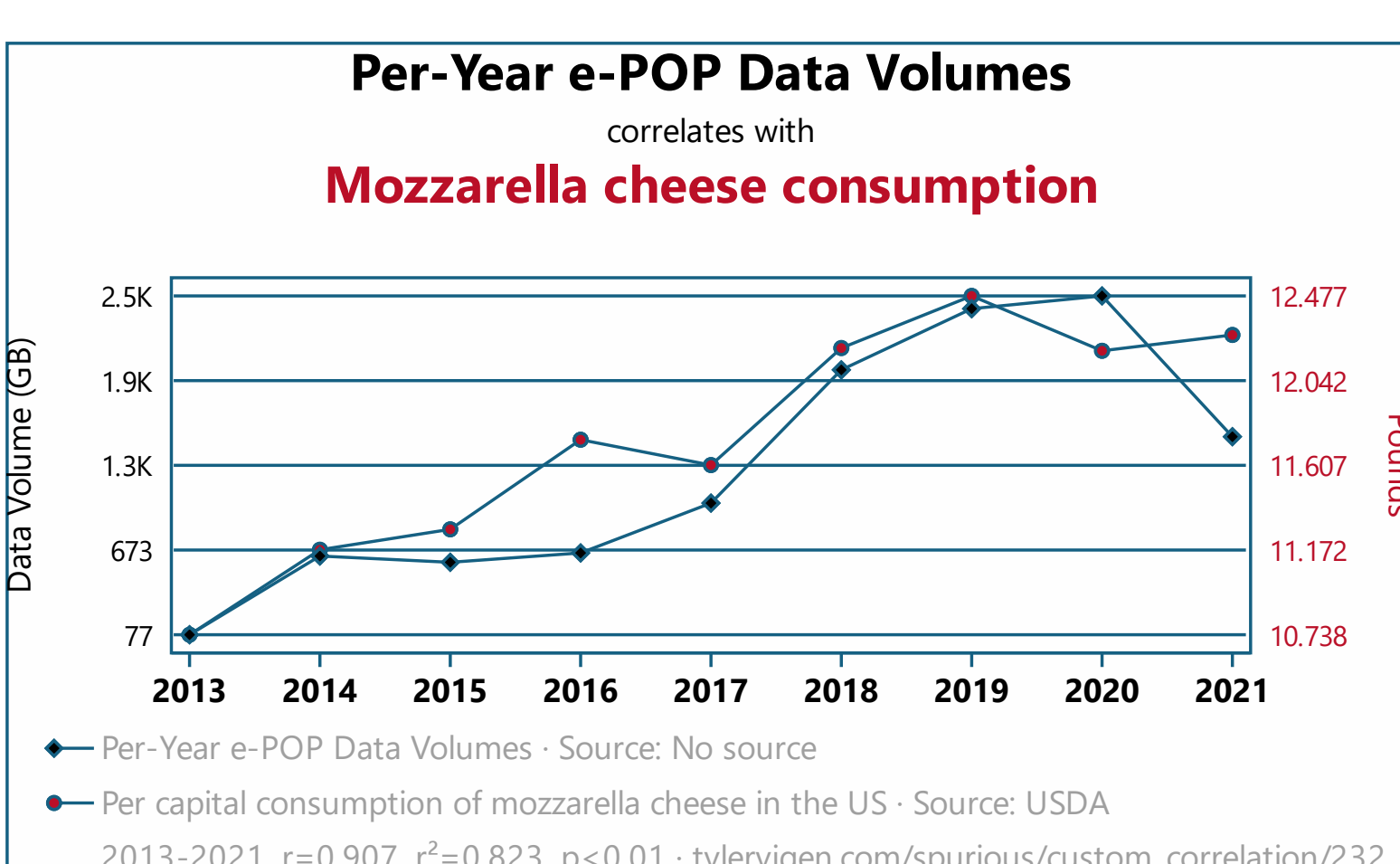
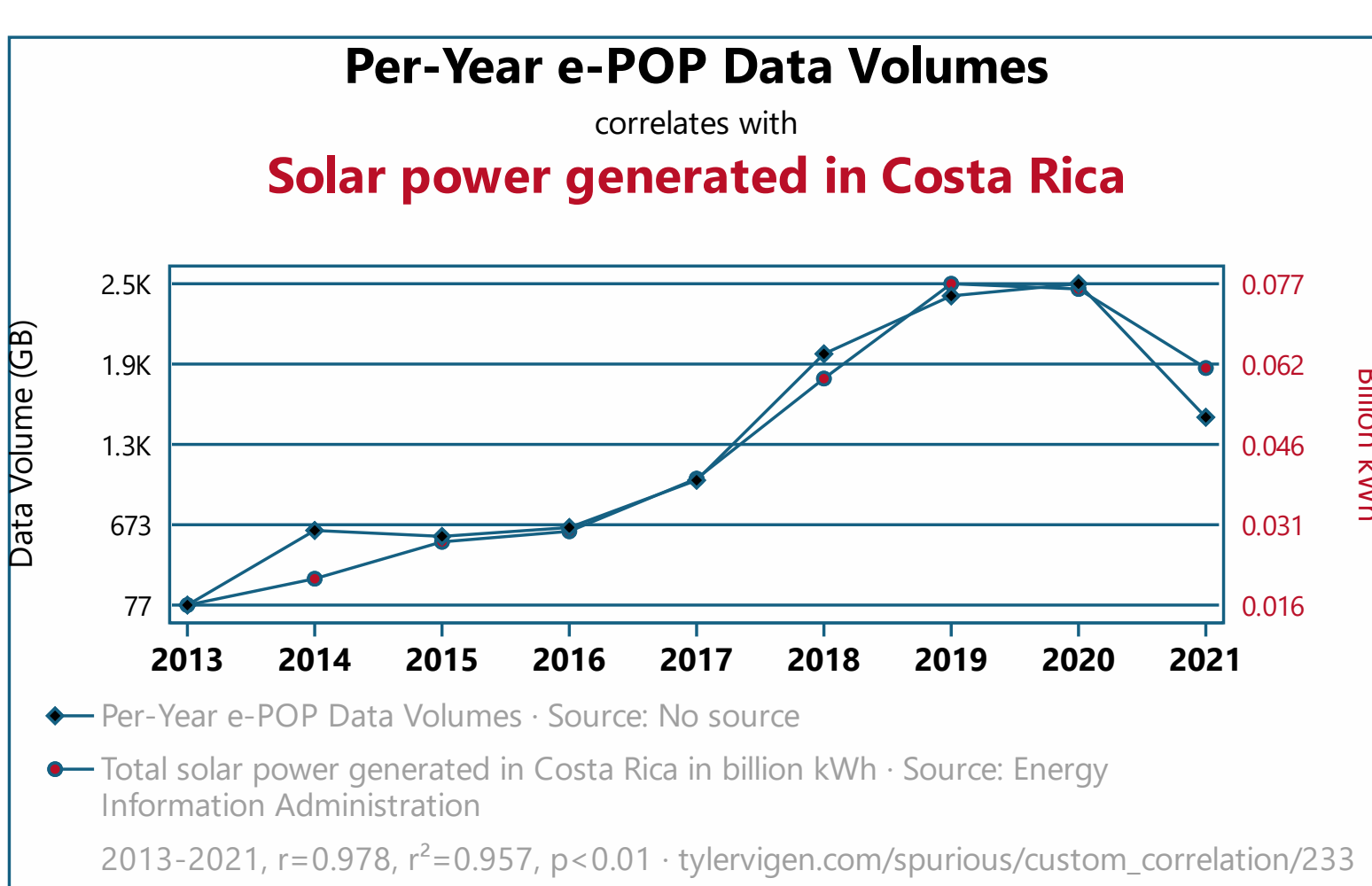
- Summary Plot
- Quicklook Plot
- Surface Sensor Current

Radio Receiver Instrument (RRI)

- Quicklook Plot
- HDF File – Antenna Voltage Data

Suprathermal Electron Imager (SEI)

- Summary Plot
- Quicklook Movie

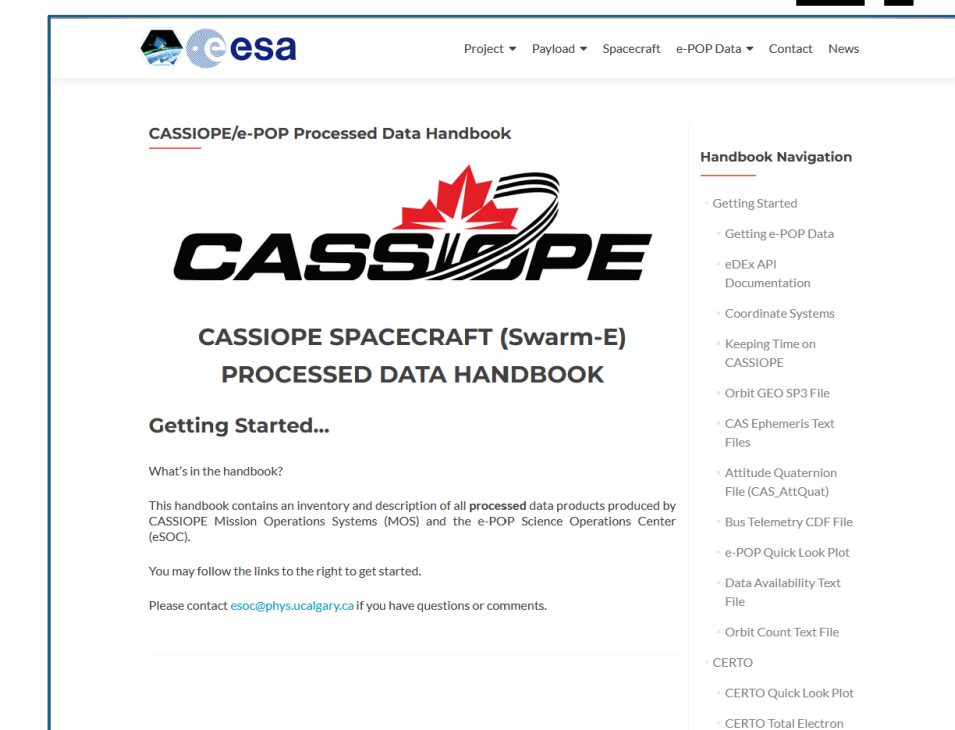


e-POP Data Handbook & Data Tutorials

A document describing the available processed e-POP data products. Each processed data product has a high-level description of the file, and the detailed information required when working with the data.

Python Jupyter notebook tutorials have been created to provide examples of how to start working with each of the data products.

<https://epop.phys.ucalgary.ca/data-handbook/>



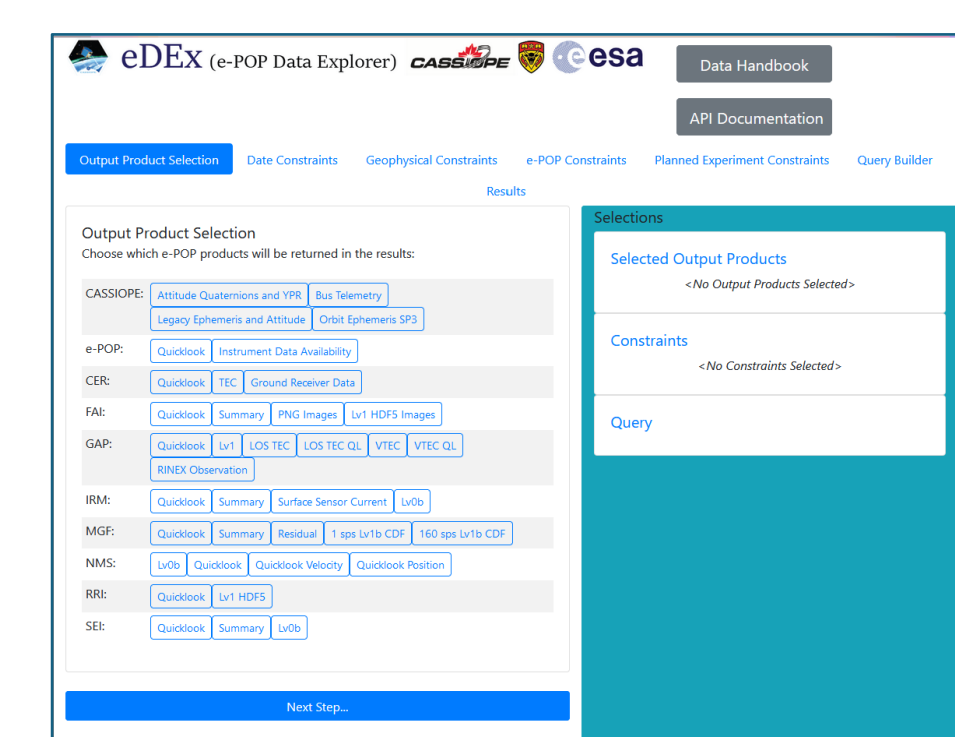
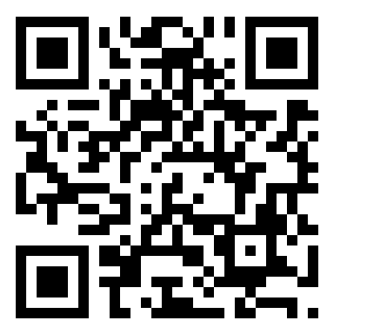
e-POP Data Explorer: eDEX

A complex comprehensive constraint-based filtering tool for e-POP data.

Filtering on geophysical, spacecraft, and payload constraints is available.

This tool is available as a webapp. An API is also available for automated requests.

<https://edex.phys.ucalgary.ca/>



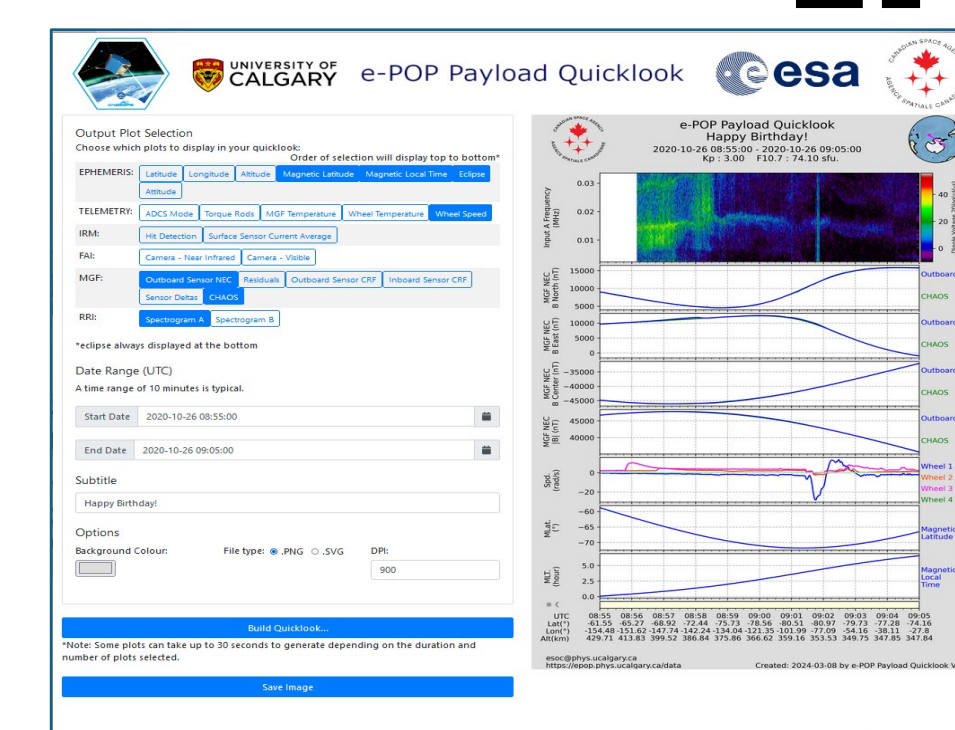
e-POP Payload Quicklook

A tool to generate custom e-POP quicklook stackplot products.

Provides a custom output product based on requested quicklook plots and time range.

Useful for comparing plots from different instruments on the same timescale.

<https://payloadquicklook.phys.ucalgary.ca/>



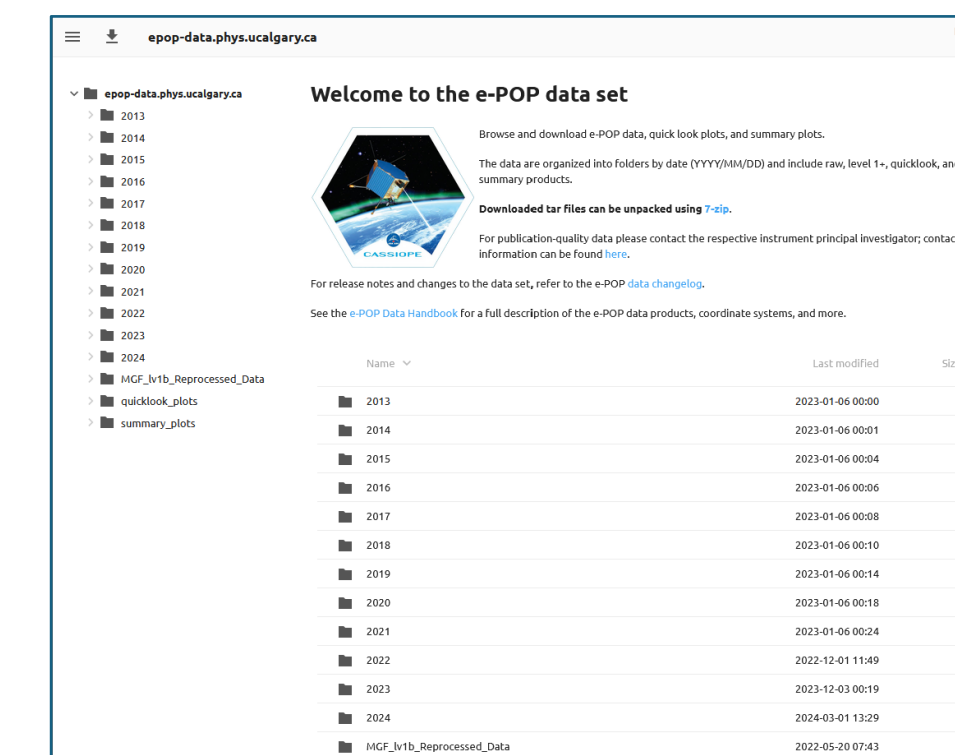
e-POP Data Web Directory

Web-based access via a date-driven folder tree.

An easy way to grab files from a specific day and review generated quicklook and summary products.

No login required.

<https://epop-data.phys.ucalgary.ca/>



e-POP Ephemeris Library

Python package to fetch ephemeris data for the Swarm-E spacecraft.

Includes routines for accessing attitude, position, velocity, altitude, attitude quaternions, and eclipse information. Also includes routines for performing frame rotations and coordinate transformations.

This package is used in the creation of all higher-level e-POP products.

https://epop.phys.ucalgary.ca/epop_ephemeris_library_1.2.zip



SWARM 10 YEAR ANNIVERSARY SCIENCE CONFERENCE
08-12 April 2024 | Copenhagen, Denmark

Andrew White: white@phys.ucalgary.ca

CASSIOPE Fold-Up



Contact Card

