2026 Workshop: Python for Space Science

Long title
Snakes on a Spaceship: Heroes and Pythons
Conveners
Angeline Burrell
Leslie Lamarche
Jessica Norrell
angeline.g.burrell.civ@us.navy.mil
Description

The pursuit of system science requires integrating measurements from multiple platforms into a coherent system for analysis. The variety of instrument types and data formats makes this challenging. Typically these challenges are solved separately by different research teams, leading to duplicated efforts. The reproducibility of scientific results are also affected, since most journal articles do not include complete analysis descriptions. The study of the magnetosphere and the ionosphere as a system would be enhanced if solutions to these problems were made broadly available to the community. This year, 'Snakes on a Spaceship' will focus on Python packages developed by and for the CEDAR community and a tutorial on developing or transitioning science code into tools suitable for operations.

Agenda

1. Tutorial: Coding for Operations - Emily Morgan (presented by Leslie Lamarche)
2. pyIntensityFeatures - Angeline Burrell (presented by Alanah Cardenas-O'Toole)
3. PyRayHF - Henry Valentine
4. asispectralinversion - Alex Mule
5. pyValEIA - Alanah Cardenas-O'Toole
6. PlasmaCalcs - Save Koontaweepunya
7. Discussion

Zoom link:
https://asu.zoom.us/j/89240082845?pwd=AneocOE0RKrB2N9aBE9Jk3w4N3XqUu.1 If you can't attend in person, please consider attending virtually.

File upload
pyValEIA presentation by Alanah Cardenas-O'Toole (1.58 MB)

pynasonde overview by Chakraborty et al. (486.05 KB)
PlasmaCalcs presented by Save Koontaweepunya (3.36 MB)
Nightglow Conversion overview by Zishun Qiao (1.08 MB)
pyIntensityFeatures presented by Alanah Cardenas-O'Toole (7.6 MB)
PyRayHF presented by Henry Valentime (6.32 MB)
Transcript of presentations and summary of discussion (410.91 KB)
Justification

This workshop addresses the CEDAR strategic thrust #6: manage, mine, and manipulate geoscience data and models. This 12th annual CEDAR workshop provides a meeting place for researchers of different career levels and programming experience to meet, learn from each other, and build collaborations around the data methods and analysis tools they develop to tackle scientific problems. The tutorial addresses the recent pivot in NASA funding, which focuses on transitioning science results into operational assets.

The challenge of performing system science is addressed by teaching the community about the existence and use of open source science software that enables system science. Our workshop will connect scientists with a particular problem to others working to solve this problem or offering solutions. Because scientific Python software is a rapidly growing field, it is important to showcase new tools to the community. It is also important to teach new scientists and older scientists less involved with the software sharing community how they can become involved and the positive impacts this can have on their research projects.

Related to CEDAR Science Thrusts:
Manage, mine, and manipulate geoscience/geospace data and models
Workshop format
Short Presentations
Round Table Discussion
Other
Keywords
Reproducibility, data access, data analysis, software
View PDF