# Python in Heliophysics Community Spring 2021 Meeting

May 10th, 2021 - May 13th, 2021

*Meeting materials are located at* [*http://heliopython.org/meetings/*](http://heliopython.org/meetings/)

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# Participants

61 people registered to participate in the virtual spring 2021 meeting via the meeting’s Google sign up form. Of those 61 people, participation on each session’s Zoom was anywhere from 15ish people to larger groups of 30ish people. In general, the core project updates (Day 1) were best attended, while hackathons (Day 3) were least attended (at least, from a Zoom participant list standpoint; one hackathon was held outside of Zoom on MS Teams). Meeting participants’ home institutions (as indicated by responses to the Google sign up form) included the following:

* National Aeronautics and Space Administration (NASA) Goddard Space Flight Center (GSFC) and/or Community Coordinated Modeling Center (CCMC)
* University of Edinburgh
* Laboratory for Atmospheric and Space Physics/University of Colorado-Boulder
* SRI International
* GATS, Inc.
* Institut de Recherche en Astrophysique et Planétologie (IRAP)
* University of California - Los Angeles
* National Center for Atmospheric Research (NCAR)
* George Mason University
* University of New Hampshire
* Mullard Space Science Laboratory (MSSL)/University College London (UCL), UK
* Johns Hopkins University (JPU) Applied Physics Lab (APL)
* Boston University
* Observatoire de Paris
* University of Texas at Arlington
* Center for Astrophysics (Cfa) | Harvard & Smithsonian
* Aperio Software
* Dublin Institute for Advanced Studies (DIAS)
* Computational Physics, Inc.
* University of Turku, Finland
* Dublin Institute of Advanced Studies
* Institut für Weltraumforschung
* Stanford University
* University of Southampton, UK
* Katholieke Universiteit (KU) Leuven, Belgium
* National Solar Observatory
* UC Berkeley Space Sciences Lab
* Southwest Research Institute
* Columbia University
* European Space Agency (ESA)/European Space Research and Technology Centre (ESTEC)
* Predictive Science Inc

Meeting Overview

The spring 2021 meeting was spread over a four-day period, with each daily session running a two-hour period (from 9 AM - 11 AM MT). This format was decided based on feedback from the fall 2020 meeting (which spanned a four-week period; this was deemed too long/spread out, according to participants), as well as seeing how well the annual International Heliophysics Data Environment Alliance (IHDEA) meeting went with a similar format. As with prior virtual meetings, the meeting organizing committee chose to use the Zoom platform as Zoom is familiar to PyHC members (it is already in use for the bi-weekly PyHC telecons), it consistently provides good quality video and sound, and lends itself nicely to large group video calls and breakout rooms. Days 1, 2, and 4 were recorded, with links uploaded to [the meeting web page](https://heliopython.org/meetings/spring2021/) after each day. Eventually, in place of links to Zoom recordings the Zoom recording itself will be saved on the meeting Google Drive (the link will eventually expire).

The meeting began Monday, May 10th, and ran through Thursday, May 13th. Content of each day was as follows:

* Day 1: Updates from the PyHC core projects (as well as a couple others deemed equally important)
* Day 2: Tutorials on topics relevant to PyHC
* Day 3: Hackathons to add more examples on the PyHC website for core projects, as well as some project self evaluation work and a taxonomy rethink
* Day 4: Overall PyHC direction discussion and meeting wrap up (an hour-long outside speaker had been planned, but had to be cancelled due to personal reasons)

See [the hackathon spreadsheet](https://docs.google.com/spreadsheets/d/1EUqKfj6iAEPj2AQsyeNyo03qlbCFL0jNoygja4N6KtQ/edit?usp=sharing) for topics workshopped and the [Hackathon Notes folder](https://drive.google.com/drive/folders/1WQg_c7emmFHBvXmCTSo1ArnGHA_NWWJG?usp=sharing) for notes on what was accomplished for each project. [General conference notes](https://docs.google.com/document/d/1bjTiWUmnXHzQafquY1XFk14-ewvsg3-JOIjsndAHocQ/edit?usp=sharing) were taken by the PyHC group as a whole. All presentation slides (core project updates, tutorials, etc.) were collected and put into the [Presentations folder](https://drive.google.com/drive/folders/10XeipjZGBAy5C9YHP49CXFcuOs4ZbR7q?usp=sharing) on the meeting’s Google Drive.

# Conclusions and Future Work

In general, this meeting format was the most well-received of all the virtual meeting formats employed thus far. Participants felt that having the meeting confined to a single week, as opposed to the fall 2020 meeting format, which spanned four weeks, was ideal. The two-hour time frame for each session was generally well-liked; participants felt that a two-hour long Zoom session was enough to pique interest/drive meaningful discussions, while not running too long and leaving one feeling burnt out. The only session which would have benefited from *more* time was the hackathon session. A couple comments were made that two hours was just long enough to start to pick up steam on a hackathon session, but not enough time to really dig in and get a full topic addressed. Perhaps the next meeting could dedicate a four-hour period (or multiple days) for hackathons. Finally, meeting participants appreciated that the days (save for hackathons) were recorded. Many have already gone back to refresh their memory of discussions that took place.

Several telecon ideas came to fruition as the meeting progressed, especially with respect to discussions that occurred on Day 4 of the meeting. These ideas will be taken into consideration in putting together a telecon schedule in the near future.

* Helio 2050 debrief
* Tutorial on Docker
* See if Wendy can come and give her presentation she was meant to give at our meeting
* More detailed SPRINTS demo
* Follow up to the overall PyHC direction discussion
  + What kinds of money do we want to shoot for (e.g., CSSI, a larger HDEE grant spanning multiple years?)
  + Brainstorm names for people to put on a panel - where they give feedback on how to consolidate/recommendations forms what goes into next year’s AO
    - Especially take into account getting early career scientists
* Dependency conflicts - good convo in chat today, would be good to continue in near future
  + Potentially have packages dockerize? Use virtualenv and wheels? Get everyone on a consistent release schedule?
  + How best to navigate this, make things more interoperable
    - Perhaps start with targeting making core packages more interoperable first
* PyHC Gallery
  + Brainstorm examples we’d like added

The situation with COVID-19 is fluid and likely to evolve significantly by the PyHC fall 2021 meeting. As such, a decision on all virtual vs. hybrid was not made at the end of this meeting. Sometime towards the end of summer 2021 a decision regarding that will be made, based on the most up-to-date information at that time. Regardless of the format, the meeting will occur sometime in early-to-mid November. We still plan to record non-hackathon days. Finally, we also plan to continue to hold telecons on an approximately bi-weekly cadence, as schedules and holidays allow.

# Final agenda

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Start Time (MDT)** | **Type** | **Title** | **Presenter/Lead** |
| Mon, May 10, 2021 | 9:00 | Presentation | Welcome, Introduction, etc. | Alex Ware/Julie Barnum |
| Mon, May 10, 2021 | 9:08 | Presentation | HelioPy | David Stansby |
| Mon, May 10, 2021 | 9:22 | Presentation | PlasmaPy | Nick Murphy |
| Mon, May 10, 2021 | 9:36 | Presentation | SpacePy | Dan Welling |
| Mon, May 10, 2021 | 9:50 | Presentation | SunPy | Stuart Mumford |
| Mon, May 10, 2021 | 10:04 | Presentation | pysat | Russell Stoneback |
| Mon, May 10, 2021 | 10:18 | Presentation | Pyspedas | Eric Grimes |
| Mon, May 10, 2021 | 10:32 | Presentation | PyTplot | Bryan Harter |
| Mon, May 10, 2021 | 10:46 | Presentation | cdflib | Bryan Harter |
| Tues, May 11, 2021 | 9:00 | Presentation | Quick intro to the day's tutorials | Julie Barnum |
| Tues, May 11, 2021 | 9:05 | Tutorial/Presentation | Python for IDL developers (i.e., a presentation directed towards people new to Python but are experienced in IDL) | Eric Grimes |
| Tues, May 11, 2021 | 9:24 | Tutorial/Presentation | Setting up Github actions (for testing, and automating deployment to PyPI and Anaconda) | Bryan Harter |
| Tues, May 11, 2021 | 9:43 | Tutorial/Presentation | Using Git | Shawn Polson |
| Tues, May 11, 2021 | 10:02 | Tutorial/Presentation | Calling Python code from C++, C, and Fortran | Rebecca Ringuette and Lutz Rastaetter |
| Tues, May 11, 2021 | 10:21 | Tutorial/Presentation | Kamodofying (functionalizing) datasets | Asher Pembroke (and others?) |
| Wed, May 12, 2021 | 9:00 | Discussion | Hackathon Organization | Julie Barnum |
| Wed, May 12, 2021 | 9:10 | Hackathon |  |  |
|  |  |  | PlasmaPy Tutorial/Jupyter notebook | Nick Murphy |
|  |  |  | pysat Tutorial/Jupyter notebook | Russell Stoneback |
|  |  |  | SpacePy Tutorial/Jupyter notebook (focusing on pybats/SWMF support in SpacePy) | Dan Welling |
|  |  |  | pySPEDAS Tutorial/Jupyter notebook | Eric Grimes |
|  |  |  | Project updates: keywords and self-evaluations | Shawn Polson |
|  |  |  | Taxonomy rethink | Shawn Polson |
| Thurs, May 13, 2021 | 10:00 | Presentation | Quick intro to final day's agenda | Julie Barnum |
| Thurs, May 13, 2021 | 10:05 | Discussion | Overall PyHC direction/HDEE discussion | Aaron Roberts |
| Thurs, May 13, 2021 | 10:45 | Discussion | Meeting wrap up/Feedback/Deciding fall 2021 meeting logistics | Julie Barnum |