VirES: a platform for accessing and analysing geomagnetic (and other) data from Swarm (and beyond!)

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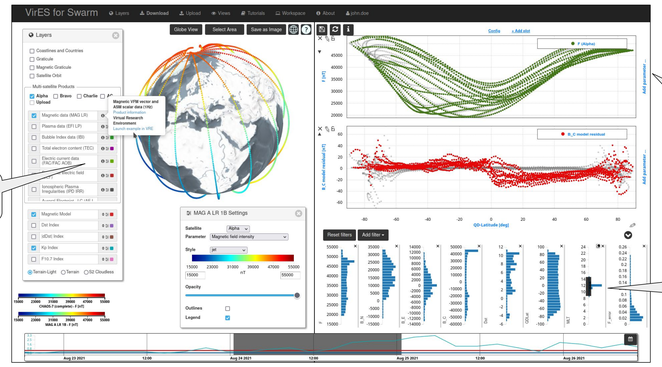
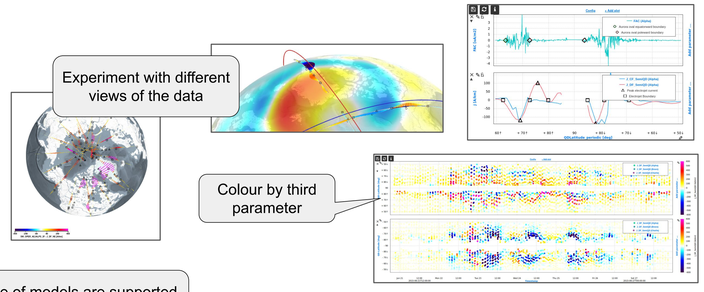
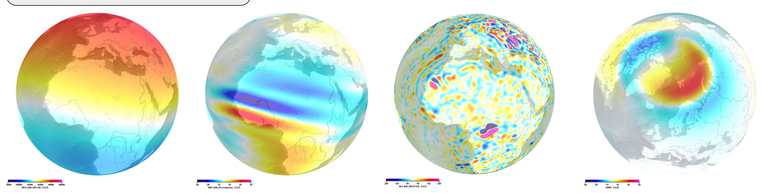
Interactive data discovery with VirES

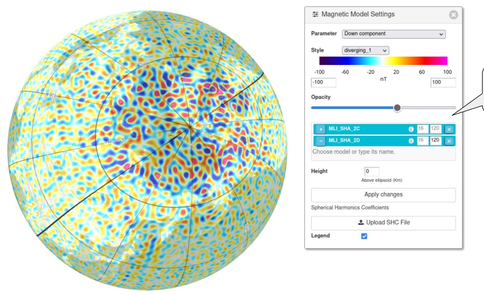
https://vires.services

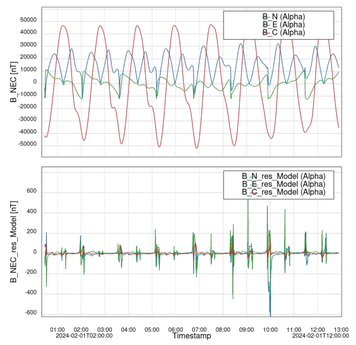




A range of models are supported and are evaluated on demand

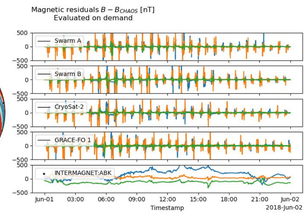


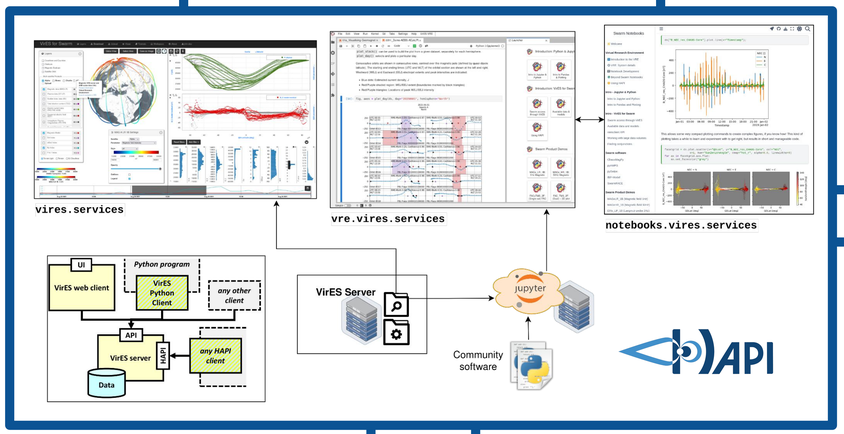




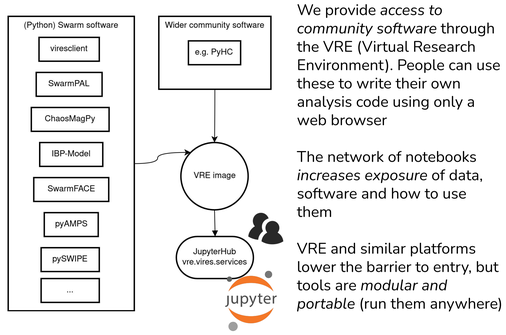
The Swarm *mission* is broader than the Swarm *spacecraft*
Swarm software & services improve utility of other datasets

VirES is a platform for using LEO & ground magnetometry (and more)





Python & Jupyter tooling

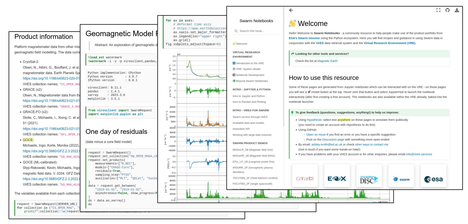


We provide *access to community software* through the VRE (Virtual Research Environment). People can use these to write their own analysis code using only a web browser

The network of notebooks *increases exposure* of data, software and how to use them

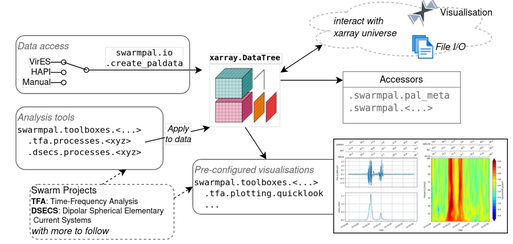
VRE and similar platforms lower the barrier to entry, but tools are *modular and portable* (run them anywhere)

Swarm Notebooks
Cookbook for Swarm products and tools
https://notebooks.vires.services



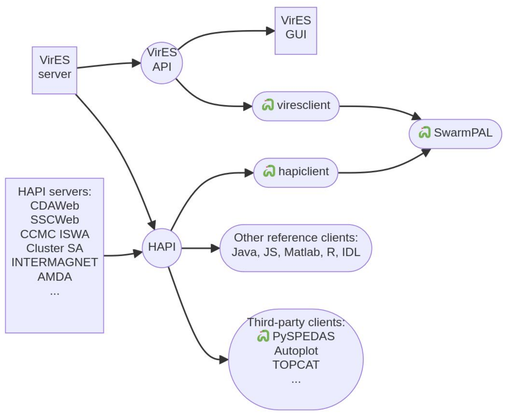
viresclient provides access to data
viresclient.readthedocs.io

SwarmPAL adds tools for processing and visualising the data
swarmpal.readthedocs.io



Interoperability with other services

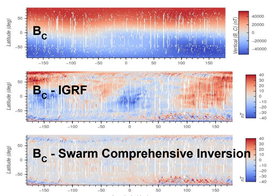
VirES also adopts the Heliophysics API (HAPI)
hapi-server.org



Python workflows can use either/both viresclient & hapiclient


```
from viresclient import SwarmRequest
ds = (
  SwarmRequest()
  .set_collection("SW_OPER_MAGA_LR_1B")
  .set_products(
    measurements=["B_NEC"],
    sampling_step="PT10S",
    models=["IGRF", "SwarmCI"],
    residuals=True,
    auxiliaries=["MLT", "QDLat"]
  )
  .set_range_filter("Kp", 0, 2)
  .get_between("2018-01-01", "2018-02-01")
  .as_xarray()
)
ds.hvplot.scatter(...)
```

viresclient
Provides data/model access
https://viresclient.readthedocs.io



- Main service: https://vires.services
- VRE Guide / Swarm Notebooks: https://notebooks.vires.services
- viresclient: https://viresclient.readthedocs.io
- Blog posts: https://eox.at/tag/swarm
- Swarm mission: https://earth.esa.int/eogateway/missions/swarm

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