

# The ESA Heliophysics Working Group

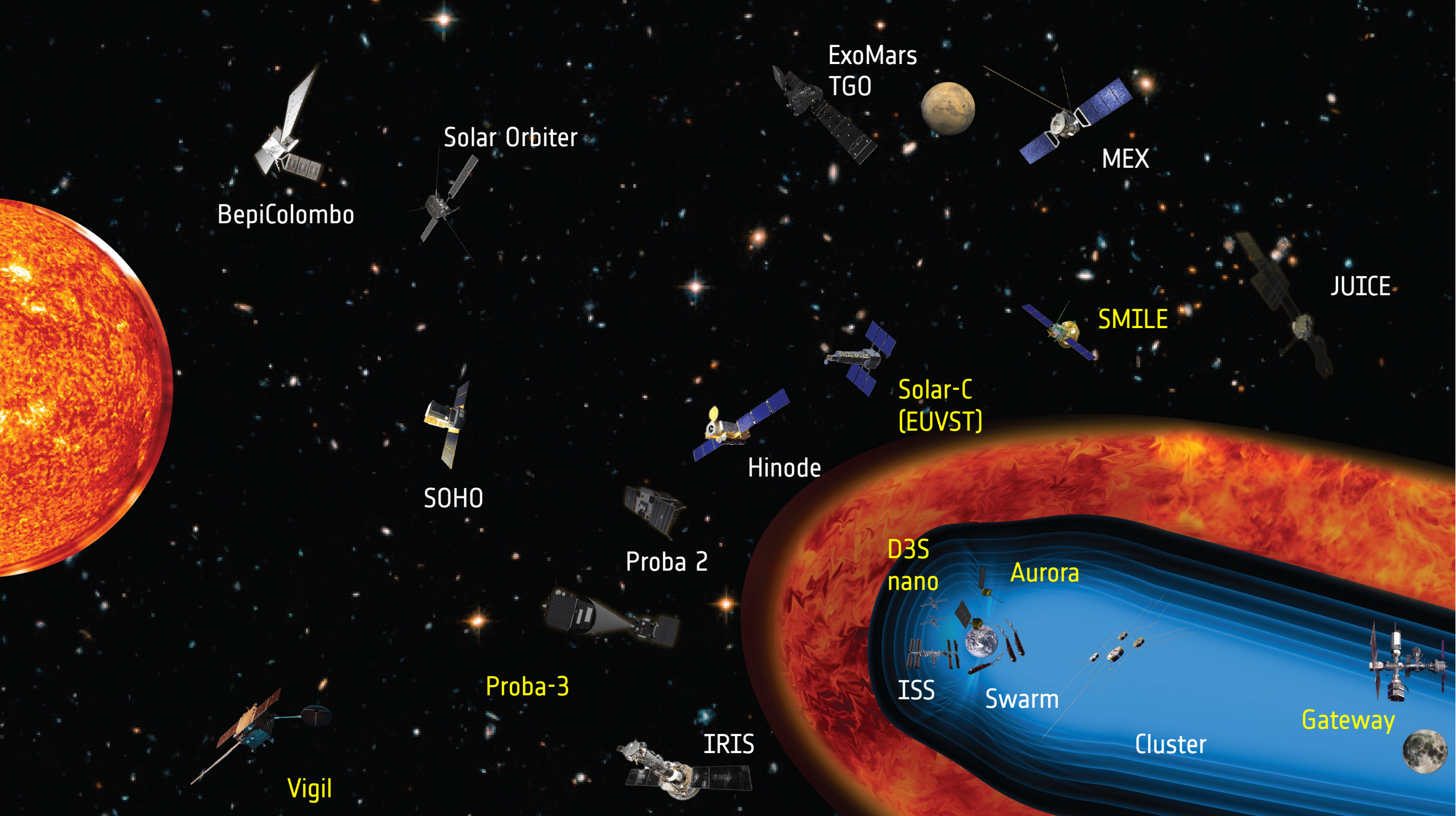
30/10/2023

Matt Taylor, Piers Jiggins, Juha-Pekka Luntama, Sebastien Vincent-Bonneau, A. Strømme

# What is Heliophysics?

- Covers the science of understanding the Sun and its interaction with the Earth and the solar system including planets and small bodies.
- Encompasses Solar System plasma physics and space weather.
- Has a large and active international community, with significant expertise and heritage in Europe

- As we have seen, there are several ESA directorates connected with this topic.
- There have been several examples over the years of scientific collaborations across the directorates, but mostly ad-hoc.
- To improve this and with the 'one ESA' ethos– the ESA Heliophysics working group was formed
- Talk of an ESA Heliophysics Orchestra began to resonate



BepiColombo

Solar Orbiter

ExoMars  
TGO

MEX

JUICE

SMILE

Solar-C  
(EUVST)

SOHO

Hinode

Proba 2

D3S  
nano

Aurora

Vigil

Proba-3

IRIS

ISS

Swarm

Cluster

Gateway

The Heliophysics Working Group (HWG) is appointed by the Directors of SCI, EOP, HRE, OPS and TEC to provide internal guidance on all scientific aspects in the area of Heliophysics, under the Chairship of the D/SCI representative of the WG.

D/EOP	Anja Strømme
D/HRE	Astrid Orr -> Sebastien Vincent-Bonnieu
D/OPS	Juha-Pekka Luntama
D/SCI (chair)	Matt Taylor
D/TEC	Piers Jiggins

- Provide a scientifically unified view in the area of Heliophysics, in light of the plans of the involved Directorates;
- Act as focus for discussion inside ESA of the scientific interests of the Heliophysics community, including the European ground-based community and data archiving activities;
- Assess potential synergies and provide inputs and recommendations as relevant to the involved Directorates.
- Set up dedicated internal workshops to build on existing synergies + dedicated community workshops to build on these internal synergies and receive inputs from the scientific community that cuts across ESA programmes.
- The HWG will identify any potential science synergies and where relevant, specific information will be consolidated into recommendations to be issued to the ESA Directors and relevant coordination entities. The relevant science advisory groups will be kept informed regularly of the HWG activities.

# ESA Science Advisory Committees and Working Groups

D/NAV

D/SCI

D/HRE

D/EOP

D/OPS

D/TEC



Global Navigation Satellite System Science Advisory Committee (GSAC)

Space Science Advisory Committee (SSAC)

Ex officio membership and observers across some advisory committees

Human Spaceflight and Exploration Science Advisory Committee (HESAC)

Advisory Committee on Earth Observation (ACEO)

Space Situational Awareness Advisory Group (SSA-AG)

Driven by programmatic needs of other directorates and ad-hoc activities

Report\* mainly to SSAC, but also HESAC and ACEO.

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\* Any Directorate can request appropriate advice from any of the Working Groups.

Astronomy Working Group (SSEWG)

Solar System and Exploration Working Group (SSEWG)

Physical Sciences Working Group (PSWG)

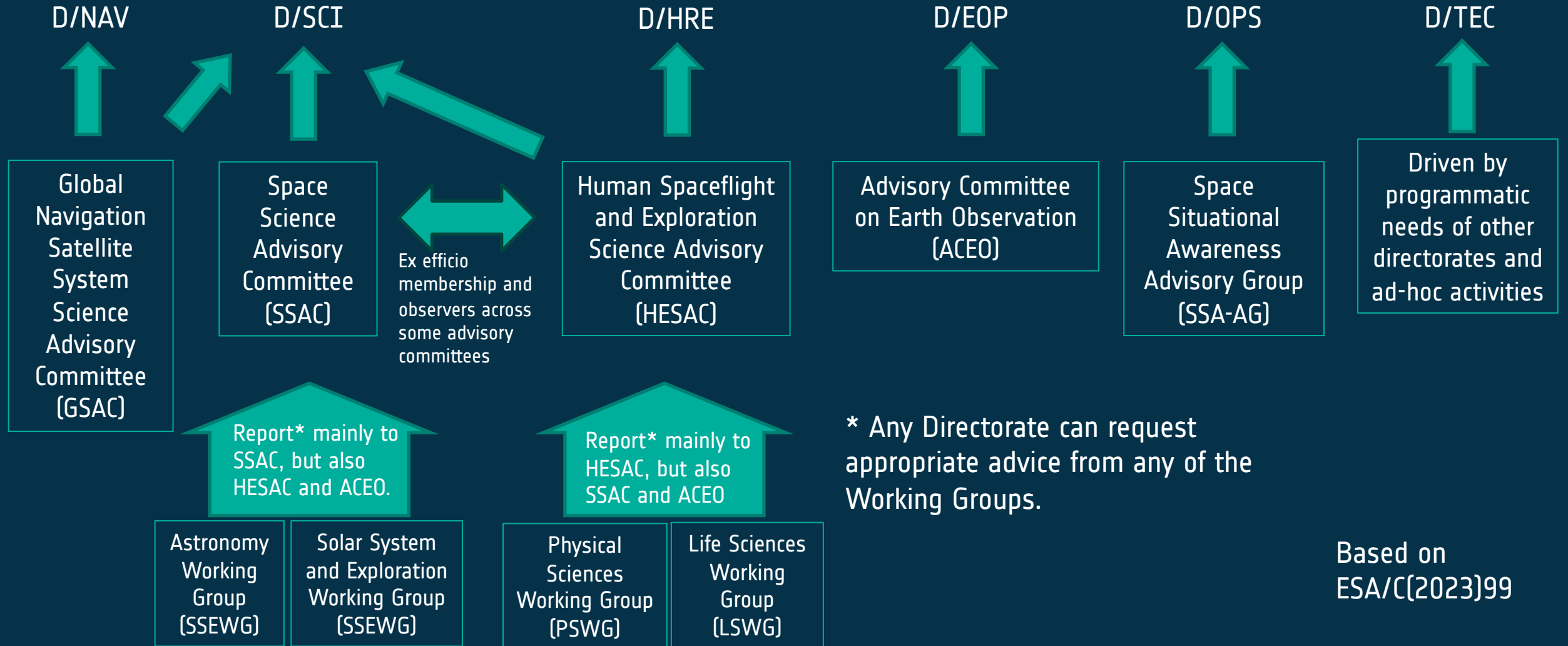
Life Sciences Working Group (LSWG)

Based on ESA/C(2023)99



# ESA Science Advisory Committees and Working Groups

ESA Heliophysics Working Group is NOT part of this structure!





- The WG has held 6 meetings since it's kick off in late 2021
- Any colleague interested in Heliophysics within ESA is invited to observe the meetings (via an internal Heliophysics email list).
- Up to date information from each directorate is reported by WG members and then other items can be placed on agenda by WG member or ESA observer.
- Summaries of the meetings are provided to the Directors.
  
- Targeted "Low Hanging Fruit", activities common to each directorate which could be enhanced by better coordination and communication
- Identified several topics – Archiving, Rocket programmes, Ground based observations and also modelling activities (predominantly ionospheric).

# ESA Heliophysics Working Group:



Two specific focus groups formed :

Archiving – how to improve inter-directorate data access

- Improving discovery ( for both data and knowledge)
- Ensuring communication and alignment of data formats and versioning

Ground based observations – how to better connect to our missions

- Discovery and information access
- Interaction with g/based community to improve communication.
- Better prepare future missions, learn from other fields

Both forums note need for community connected workshops.

We have also discussed a modelling activities, and how this can be better integrated or communicated with our activities - To be kicked off



- In parallel have worked with ESA Heliophysics community, specifically Sophie Musset, Laura Hayes, Nils Janitzek, Marco Pinto, Helen Middleton and Arnaud Masson to:
  - Start building up more of a central web page area (discoverability)
  - Regular hybrid science seminars - looking to open to the community also.

- Provide a scientifically unified view in the area of Heliophysics, in light of the plans of the involved Directorates;
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One example of communication to the Directors was the request for this workshop:

*The ESA Heliophysics Working group proposes a dedicated workshop on Heliophysics in Europe be held in late 2023/early 2024 at an ESA site. The aim would be to present a 'one-ESA' face to ESA Heliophysics and engage with the European community on this science that cuts across ESA programmes.*

and here we all are.

Has set up formal and regular interaction across directorates

- BETTER COMMUNICATION
- DISCOVERABILITY

and build from there.

Looking at “low hanging fruit”

- Archiving and ground-based community interactions + modeling
- Common themes for further discussion:
  - Data levels, calibrations, meta data formatting
  - Interoperability (and ease of access)
  - Improving coordination between Space and ground-based assets.
- More interaction about modeling.

Communication and interactions overall – seminars etc

The focus is on improving communication and discoverability.

1) ESA HelioWG will look at (in 2024) organizing workshops with the community on (working titles)

“Heliophysics archiving from a cross-disciplinary perspective”

“Improving space and ground-based coordination”

Stay tuned!

2) Some further internal discussions on modeling to then eventually involve community?

3) Which email lists to use to communicate?

4) Can a database of “European Heliophysics Scientist” be collected/curated?

5) ORCID (Open Researcher and Contributor ID) entry – can we agree on adding specific term in the “keywords”

We hope for a fruitful week!