The COSPAR ISWAT Cluster: Ambient Solar Magnetic Field, Heating and Spectral Irradiance

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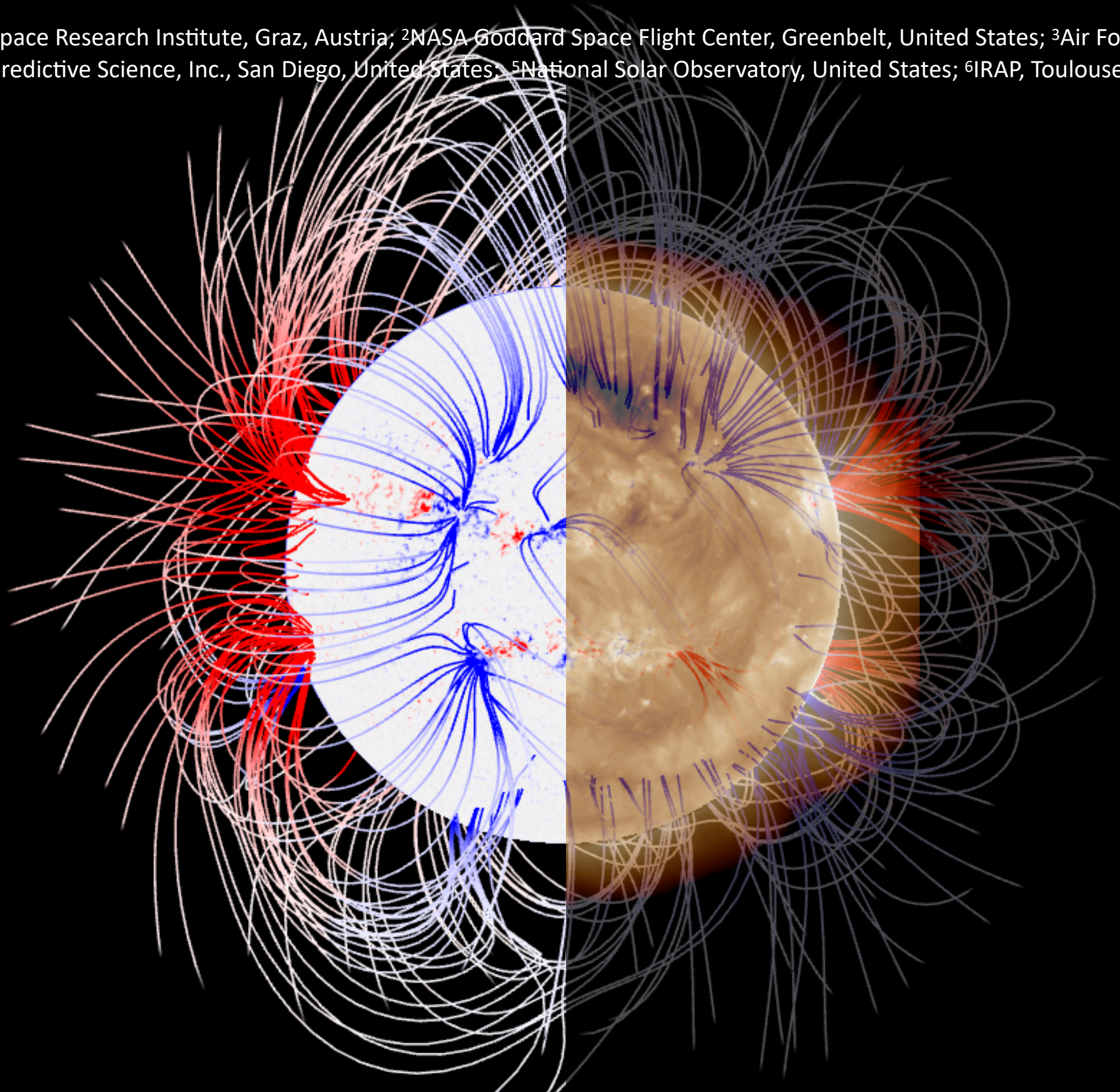
Content

Overview of Cluster S2

What did we discuss during the working meeting?

How does this feed into the Cluster S2 review?

Find out more at
www.iswat-cospar.org/s2

What did we discuss during the working meeting?

S2-03: Global Solar Magnetic Field Team (Carl Henney, Nick Arge)
- discussed the question of how best to create a global magnetic map?
- outlined that ensemble map solutions are useful to capture the uncertainties
- discussed that uncertainties in ensemble map solutions are high but a comparison to coronal models and coronal hole observations can help
- highlighted the need to compare different global magnetic maps in the community
- agreed that it's important to highlight in the review that there are problems with magnetic maps.

S2-04: Use of Vector Field Synoptic Maps (Alexei Pevtsov)
- discussed the role of synoptic magnetic maps as a workhorse in space weather modeling and forecasting.
- mentioned that our models are not yet designed to use full vector field maps.
- outlined that vector fields should be better for modeling, but there are issues that we need to understand and resolve.
- discussed these issues including problems when different instruments are used.

What did we discuss during the working meeting?

S2-05: Sun-Spacecraft and Sun-Earth Magnetic Connectivity (Rui Pinto, Jon Linker)
- highlighted that understanding the magnetic connectivity from spacecraft back to the Sun is essential, and that a critical issue is the input that we use to drive our models.
- discussed different ways to evaluate how well a mapping works.
- discussed an overview of events that the action teams wants to study
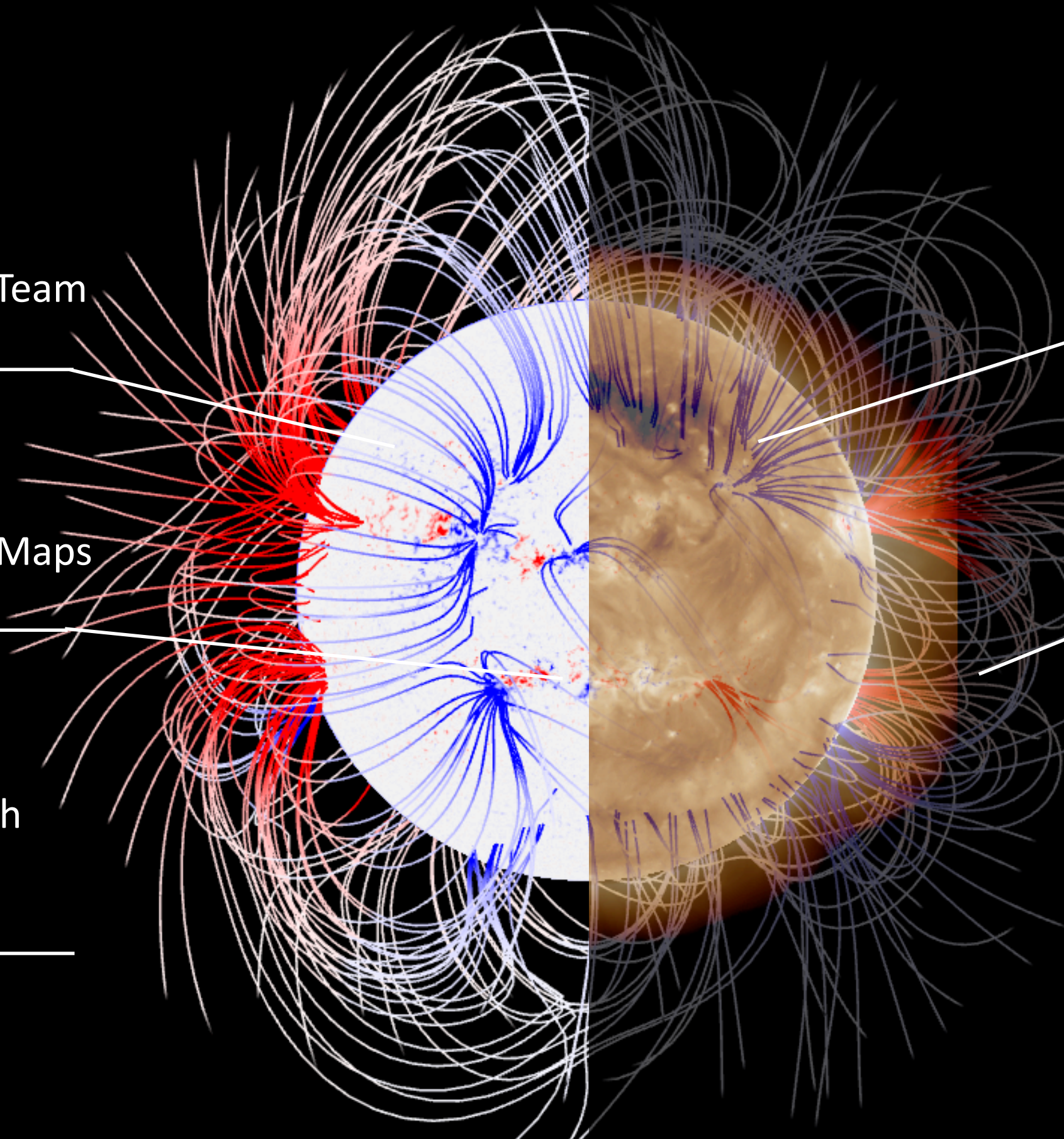
S2-01: Coronal Hole Boundary Working Team (Martin Reiss, Karin Muglach)
- discussed the importance of coronal holes as a diagnostic for space weather models.
- explained our effort to compare different automated schemes with each other.
- mentioned the implementation of a Community Coronal Hole Scoreboard led by S2-01.

S2-02: Solar Indices and Irradiance Team (Carl Henney, Karin Muglach)
- discussed how best to model and predict the observed variability in solar irradiance
- highlighted that knowing how well Ionosphere-Thermosphere models perform using EUV observations (or EUV proxies) will allow us to better understand current forecast uncertainties and future instrumentation requirements.
- mentioned the usage of an estimate of the Earth-side coronal hole areas based on the WSA model could improve UV predictions.

How does this feed into the Cluster S2 review?

What do we want?

A focused review that addresses key science questions in the cluster, and gives
- an overview of the state-of-the-art,
- an update on the last roadmap,
- an outline of gaps and opportunities for moving things forward within the next 5 years, and
- an outlook beyond 5 years with recommendations.

Science Topics

- Global Solar Magnetic Field (S2-03)
- Vector Field Magnetic Maps (S2-04)
- Sun-Spacecraft and Sun Earth Magnetic Connectivity (S2-05)
- Coronal Hole Boundary Locations (S2-01)
- Solar Indices and Irradiance (S2-02)

Overarching Questions

- What are the key science questions that we need to answer?
- What is our current understanding of the research field?
- What are the science gaps? What are opportunities for closing these gaps?
- Where can we be in 5 years, and beyond 5 years?

What's the progress?

- Greatly helped us to understand possible collaborations between the teams in the cluster.

S2-03 — S2-01
S2-04   S2-02
S2-05   ?S2-06?
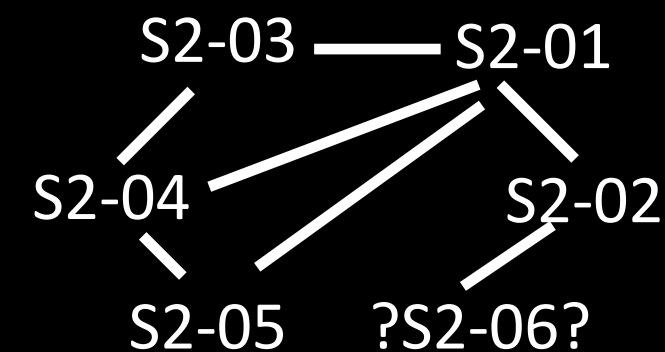
- Helped us to put the review into a bigger picture.
- Feedback from community was valuable to identify points that we need to emphasize in the review.