

Solar, Heliospheric and Ionospheric SWG Summary

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What did we do?

- Embedded ourselves in discussions of various other SWGs
 - Cradle of life
 - EoR
 - Our Galaxy
 - Pulsars
 - Transients
- Met as a group at the end of each day
- Had a telecon with the larger group yesterday

Bands of interest

	Solar	Heliospheric	Ionospheric
SKA1-Low	■	■	■
SKA1-Mid Band 1	■	■	■
SKA1-Mid Band 2	■	■	
SKA1-Mid Band 3	■	■	
SKA1-Mid Band 4	■	■	
SKA1-Mid Band 5	■	■	

Explore possibilities of using

- 20-50 MHz
- Band 5+

Establishing Feasibility

	Solar	Heliospheric	Ionospheric
SKA1-Low	Green	Green	Green
SKA1-Mid Band 1	Orange	Green	Green
SKA1-Mid Band 2	Orange	Orange	
SKA1-Mid Band 3	Orange	Orange	
SKA1-Mid Band 4	Orange	Orange	
SKA1-Mid Band 5	Orange	Orange	

- **Uncertainty**

- Ability to handle thermal load
 - J-VLA can do it
- Ability to handle high flux levels
 - RF attenuators + ‘extra-high’ noise cal

Plan to work with the SKA Project office to clarify the situation

Desired data products from the Observatory

- Solar
 - Image cubes with high time resolution
- Heliospheric
 - IPS – dynamic spectra with 10ms, few MHz resolution
 - Subset of pulsar analysis pipeline (P??)
 - FR – RM synthesis image cubes with time resolution of ~minute
- Ionospheric
 - dynamic spectra with 10ms, few MHz resolution
 - Subset of pulsar analysis pipeline (P??)
 - Image cubes with time resolution of a few s
- Capture these in use cases
 - Expect to need a greater level of engagement with the SKA Project Office

Desirable survey products

- IPS
 - Catalog of sources with compact emission (mas scale)
 - Work with the appropriate survey team to identify scintillating sources
- Heliospheric and Ionospheric Faraday rotation
 - All sky IQUV atlas with pa of linearly polarized component of emission

Commensality

- Solar
 - 0%
- Heliospheric
 - 100% with all observations
 - Require a small number of tied array beams (No. of IPS sources in the FoV)
- Ionospheric
 - 100% with all observations

KSP Planning

- Commensal observations
- Targeted observations
 - Sit and stare/Monitoring
 - TOO/Triggered observations
 - Pre-defined observation sequence – track the CME from the Sun to the terrestrial neighborhood and ionospheric impact.

To Do

- Use cases to be filled in and submitted
 - Level 1 system requirements
 - SDP data products
 - Explore some perhaps unusual system configuration options
- Planning for the KSPs
- Maintain/increase engagement with the SKA project office and SWGs
- Engaging the community to enable multi-wavelength solar observing

Conclusion

- Thank the other SWGs for the opportunity to join in their discussions, look forward to continue to work with them
- Identified a few key people from different SWGs who are deeply embedded in the SKA project to work with
- Well defined To Do list
- First formal contact of the SHI SWG with the larger SKA community - very useful
- Very useful for early science and commissioning