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ICAO WRC-27 Preparatory Workshop
Agenda item 1.17: Space weather sensors

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Presentation Overview

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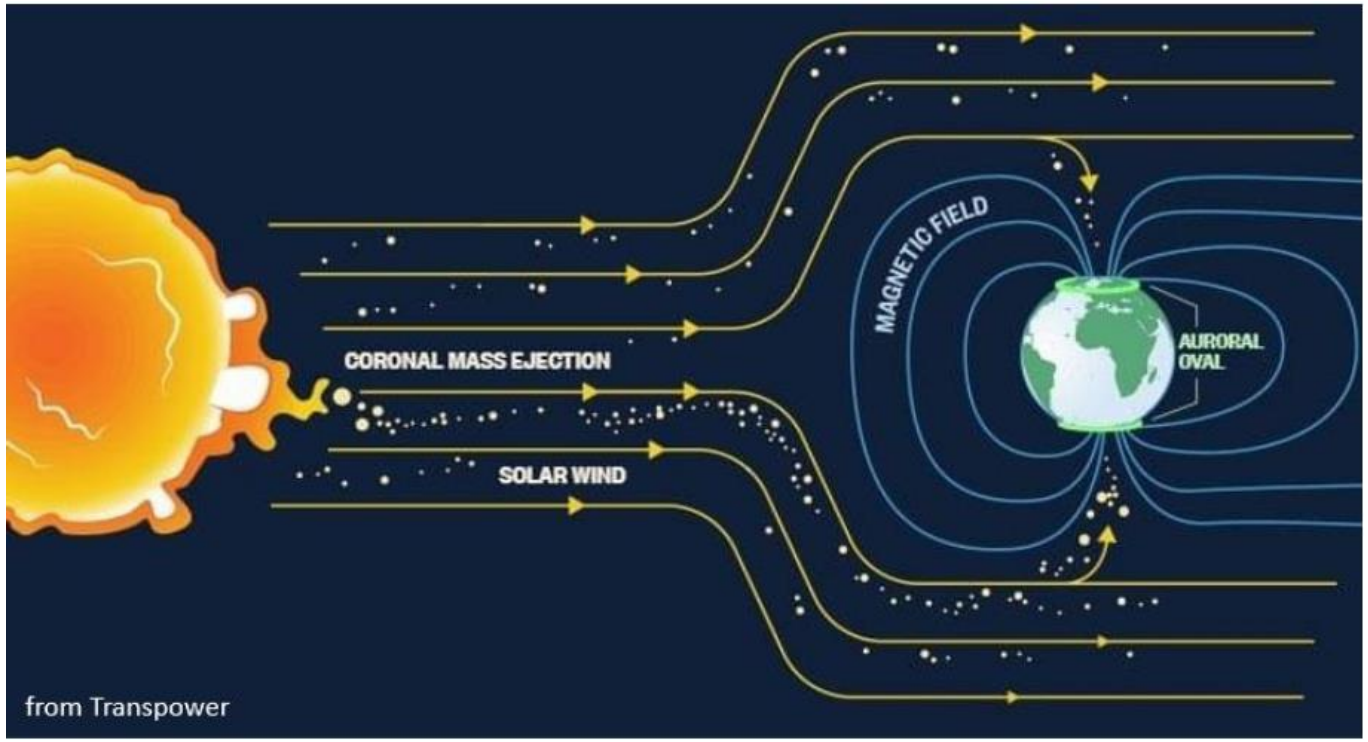
ICAO

Background

WMO definition of space weather: "*The physical and phenomenological state of the natural space environment, including the Sun and the interplanetary and planetary environments*."

Space weather phenomena include:

- Geomagnetic storm
- Solar radiation storms
- Solar flare radio blackouts
- Solar radio bursts
- Cosmic radiation



Background

Space weather sensor frequency needs:

- Relative Ionospheric Opacity: observe ionospheric absorption events that can degrade or obscure HF communications lasting minutes to several days, potentially disrupting aeronautical communications on polar and high-latitude flights

- Solar radio flux monitor / solar spectrograph: Monitor short term solar radio burst.

Frequency band under consideration in Res 682 (passive sensors):

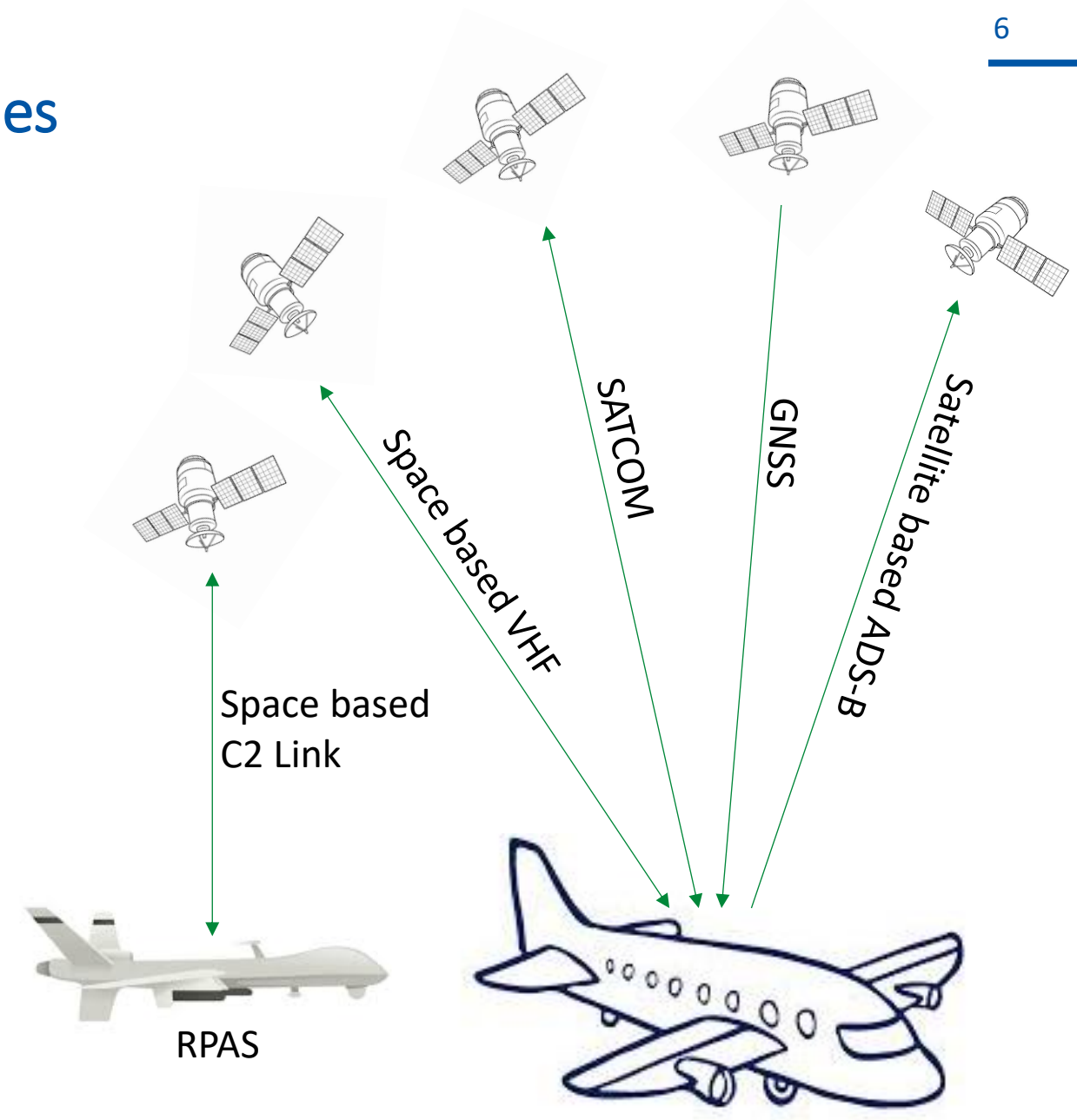
- 27.5 – 28 MHz
- 29.7 – 30.2 MHz
- 32.2 – 32.6 Mhz
- 37.5 – 38.325 MHz
- 73 – 74.6 MHz
- 608 – 614 MHz

Potential issues… or opportunities

Impact of space weather on civil aviation:

- Degradation of satellite communications
- On-board system failure due to radiation
- Higher ionizing radiation dose
- Degradation of magnetic equipment (e.g, compass)
- Degradation of electrical systems

Civil aviation benefits from space weather forecast
➔ ICAO Doc 10100: *Manual on Space Weather Information in Support of International Air Navigation*



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ICAO position

To support the appropriate radio regulatory changes for receive-only space weather sensors (excluding active sensors) while ensuring, based on the ITU-R studies as called for by Resolution 682 (WRC-23), any changes would not impose any technical or regulatory constraints on aviation safety systems.

Conclusion

This agenda item explores regulatory provisions and potential primary allocations to the meteorological aids service (space weather) to accommodate receive-only space weather sensor applications in the Radio Regulations

Civil aviation would benefit from space weather monitoring and forecast

As a consequence, ICAO supports this agenda item,), provided that any changes would not impose any technical or regulatory constraints on aviation safety systems.

Thank You

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