METEOROLOGY PANEL

METP SWX User Workshop, 20 October 2025, Rome, Italy

Space Weather Forecast Information

User Feedback

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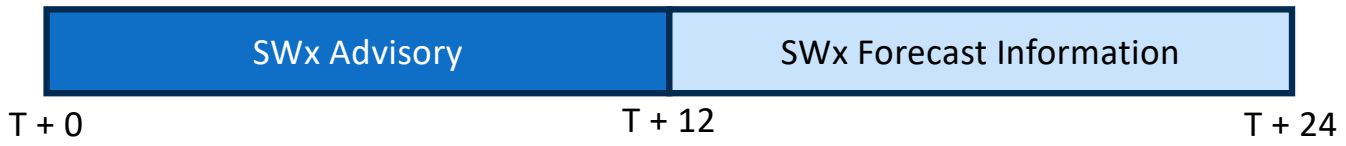
Objective and Scope

- Objective
  - To summarize space weather events with the possibility of impacts resulting in future HF COM, GNSS, or RAD advisories in the T+12 to T+24 hour period.
  - Used by operators to risk assess SWx impacts.
- Scope
  - Daily product
  - Updated when required
  - Description of activity over the T+12 to T+24 hour period in general terms, with improved temporal definitions where possible. [Note that hours T+0 to T+12 will be addressed in the advisory.]
  - Simple terminology with simple definitions.



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Terminology Examples

Phenomenon	Possible Entries (Phenomenon Specific)	Possible Entries
HF COM	• SWx impacting HF COM frequency band expected. • Intermittent loss of HF COM likely over the next 24 hours. • Chance of isolated areas of MOD HF COM degradation. • Intermittent loss of HF COM expected during the 3-hour interval following onset.	• Impacts not expected. • Effects expected to rotate with the Earth. • Effects strongest at mid-latitudes. • Effects may extend into the equatorial region. • Effects strongest on the nightside. • Expected duration of XX hours after impact.
GNSS	• Chance of SWx impacting GNSS performance. • Intermittent loss of GNSS signals and / or degradation of timing and positioning performance over the next 18 hours. • Isolated areas of SEV loss of GNSS signals and / or degradation of timing and positioning performance expected. • Due to seasonal effects not associated with solar eruptions.	
Radiation	• Space weather event causing increased radiation above FLXXX in progress. • Radiation above flight level FLXXX is expected to return to normal values within the next 24 hours. • Small radiation enhancement expected to be of short duration.	

Terminology Examples

Phenomenon	Possible Entries (Phenomenon Specific)
Background	• Nothing significant to report. • Solar activity is high. • Chance of solar eruptions over the next 24 hours. • High speed streams of charged particles expected to affect the Earth over the next 24 hours. • Chance of X-class flares over the next 24 hours. • CME arrival in progress. • Solar energetic particle event expected in the next 24 hours.

Probability Language

- Percent probability of MOD (or greater) activity being observed.

Percent Probability	Expression of Uncertainty		Comment
prob ≤ 30%	Not expected	Low	Do not report
30% < prob ≤ 50%	Chance	Medium	Report
50% < prob ≤ 80%	Likely	High	
prob > 80 %	Expected	Very High	

Template

SWx Forecast Information

STATUS:	TEST
DTG:	20251129/1200Z
SWXC:	ACFJ
OUTLOOK NR:	2025/3
REMARKS:	TEXT, formatted with subsections on HF COM, GNSS, RAD, and Background

Example 1

Quiet Conditions

Variation 1		Variation 2	
HF COM:	Impacts not expected.	HF COM:	IMPACTS NOT EXP
GNSS:	Impacts not expected.	GNSS:	IMPACTS NOT EXP
RAD:	Impacts not expected.	RAD:	IMPACTS NOT EXP
Background:	Nothing significant to report.	Background:	None

Example 2

High Probability of solar flares

Variation 1

HF COM:	Space weather event impacting lower HF COM frequency band expected. Temporary loss of HF COM possible over the 1-hour interval following onset. Effects strongest at equatorial latitudes. Effects strongest on the dayside.
GNSS:	Impacts not expected.
RAD:	Impacts not expected.
Background:	Solar activity is very high. X-class flares expected over the next 24 hours.

Variation 2

HF COM:	HF COM MOD EXP. Intermittent HF SEV likely. Strongest dayside. Strongest equatorial.
GNSS:	IMPACTS NOT EXP
RAD:	IMPACTS NOT EXP
Background:	Solar activity is very high.

Example 3

No solar disturbances, GNSS scintillation due to seasonal effects

Variation 1

HF COM:	Impacts not expected.
GNSS:	Isolated areas of MOD loss of GNSS signals and / or degradation of timing and positioning performance possible. Effects strongest in the high-latitude region. Effects strongest on the dawnside. Instances may vary across regions and with time. Due to seasonal effects not associated with solar eruptions.
RAD:	Impacts not expected.
Background:	Nothing significant to report.

Variation 2

HF COM:	IMPACTS NOT EXP
GNSS:	Chance GNSS MOD
RAD:	IMPACTS NOT EXP
Background:	None

Example 4

Event expected: 10 May 2024 07:00 UTC

Variation 1

HF COM:	Space weather event impacting HF COM frequency band expected. Intermittent loss of HF COM expected during the 12-hour interval following onset. Effects strongest in the HNH and HSH regions. HF COM may be degraded or temporarily unavailable. Higher frequencies may be less impacted.
GNSS:	Space weather event impacting GNSS performance expected. Isolated areas of MOD to SEV loss of GNSS signals and / or degradation of timing and positioning performance likely. Effects strongest in the HNH and HSH regions. Instances may vary across the region and with time.
RAD:	Impacts not expected.
Background:	Solar activity is very high. Solar eruptions very likely over the next 24 hours. X-class flares expected over the next 24 hours. CME arrival expected in the next 24 hours. Solar energetic particle event in progress.

Variation 2

HF COM:	HF SEV HNH HSH EXP
GNSS:	GNSS SEV HNH HSH EXP
RAD:	IMPACTS NOT EXP
Background:	Solar activity is very high. Geomagnetic storm expected.

Example 5

Event ongoing: 11 May 2024 07:00 UTC

Variation 1

HF COM:	Space weather event impacting HF COM frequency band in progress. Effects strongest in the HNH and HSH regions. HF COM may be degraded or temporarily unavailable. Higher frequencies may be less impacted. Expected duration of 24 hours.
GNSS:	Space weather event impacting GNSS performance in progress. Isolated areas of MOD to SEV loss of GNSS signals and / or degradation of timing and positioning performance likely. Effects strongest in the HNH and HSH regions. Instances may vary across the region and with time.
RAD:	Chance of space weather event causing increased radiation above FL460.
Background:	Solar activity is very high. Solar eruptions very likely over the next 24 hours. X-class flares expected over the next 24 hours. CME arrival in progress. Solar energetic particle event in progress.

Variation 2

HF COM:	HF SEV HNH HSH in progress
GNSS:	GNSS MOD, likely GNSS SEV HNH HSH in progress
RAD:	Chance RAD MOD above FL460
Background:	Solar activity is very high. Geomagnetic storm in progress.

Discussion points

- Is the SWx Forecast Information product informative?
- Does the SWx Forecast Information product provide actionable information?
- Is the language understandable?
- What level of detail is needed?
- Variation 1 or Variation 2?
- Is a daily product suitable? What time (e.g. 00:00 UT)?
- Are the duration estimates useful?

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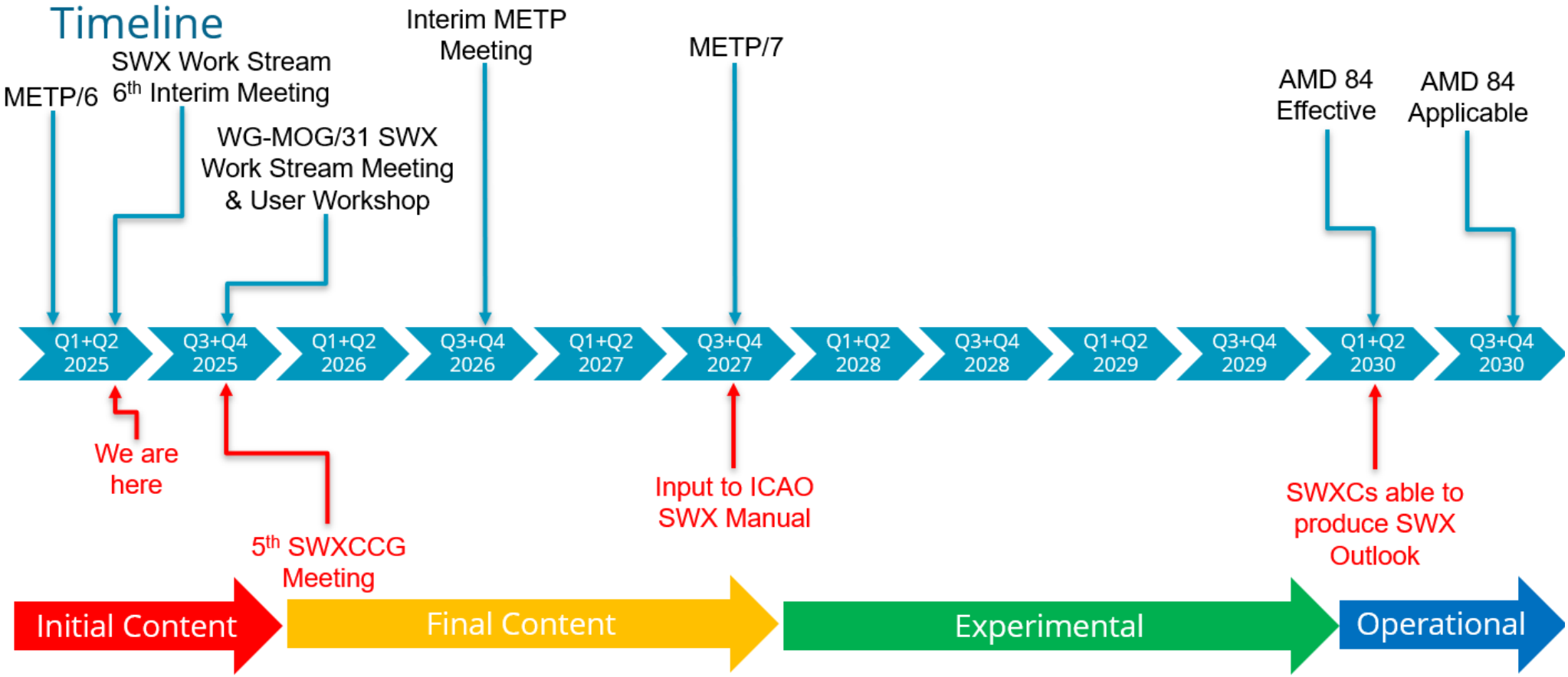
Timeline (2025 – 2030)



Thank you