

Headquarters U.S. Air Force

Integrity – Service – Excellence

Air Force Space Weather Briefing



**Col Robert T. Swanson
Air Force Weather
20 November 2014**

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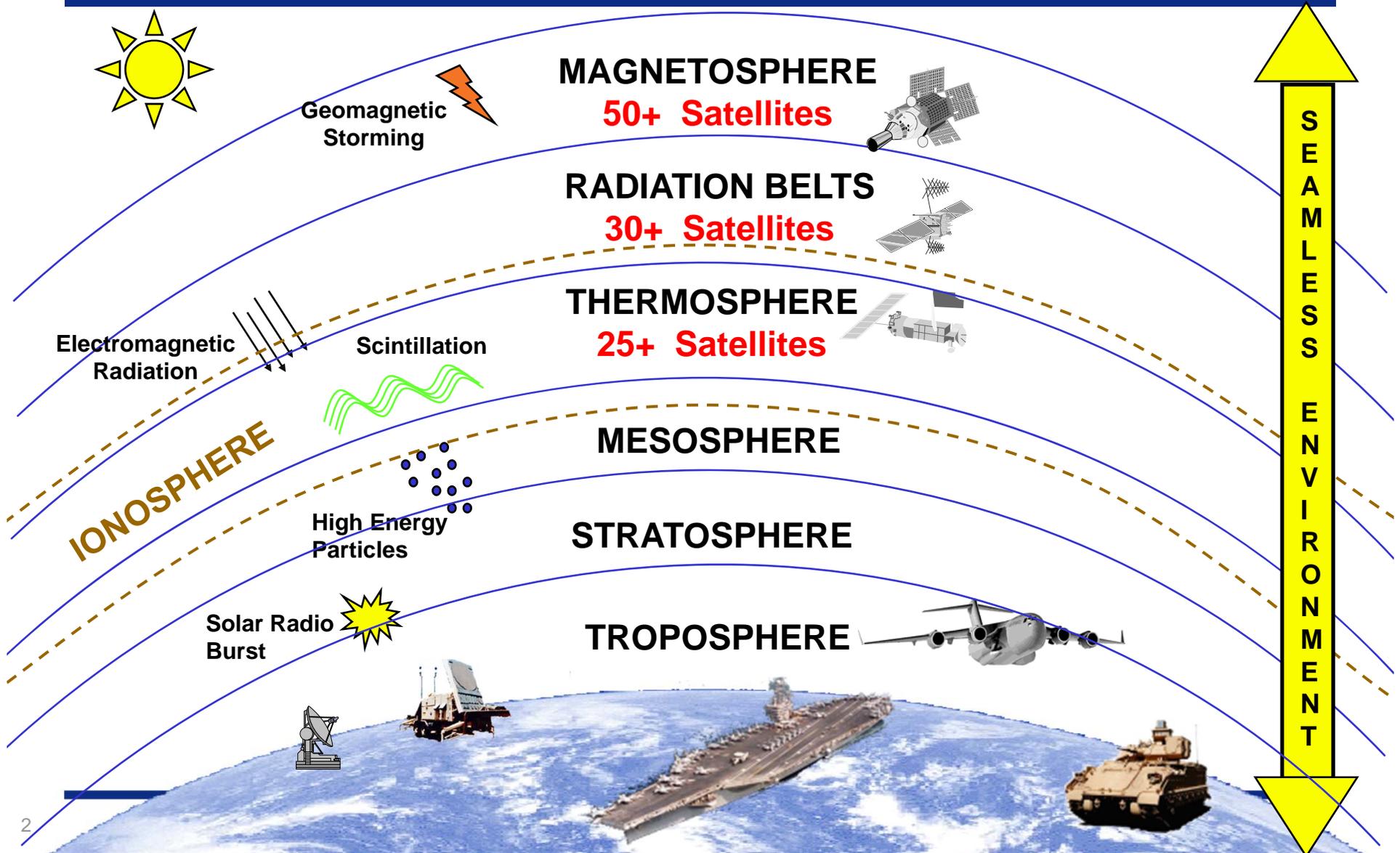
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UNCLASSIFIED

Near-Earth Space Environment

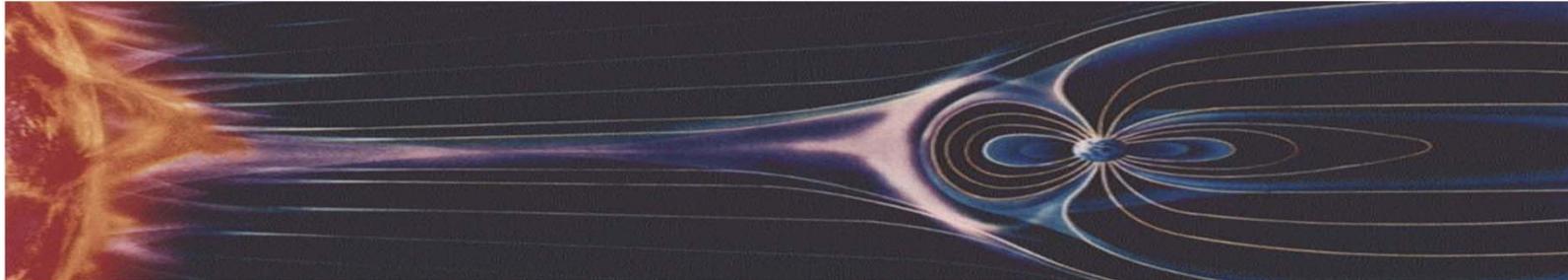
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Space Weather Effects



Electromagnetic Radiation

Arrival: 8 mins

Duration: 1-2 hours

- HF RADIO BLACKOUT
- SATCOM INTERFERENCE
- RADAR INTERFERENCE
- SATELLITE ORBIT DECAY
- GEOLOCATION ERRORS

High Energy Charged Particles

Arrival: 15 mins to few hours

Duration: Days

- SATELLITE DISORIENTATION
- SPACECRAFT DAMAGE
- FALSE SENSOR READINGS
- LAUNCH PAYLOAD FAILURE
- "HI FLIER" RADIATION HAZARD

Low-Medium Energy Charged Particles

Arrival: 1-4 days

Duration: Days

- GEOLOCATION ERRORS
- SATCOM DISRUPTIONS
- SPACECRAFT ANOMALIES
- SATELLITE ORBIT DECAY
- RADAR FALSE TARGETS

DoD Missions/Systems Affected

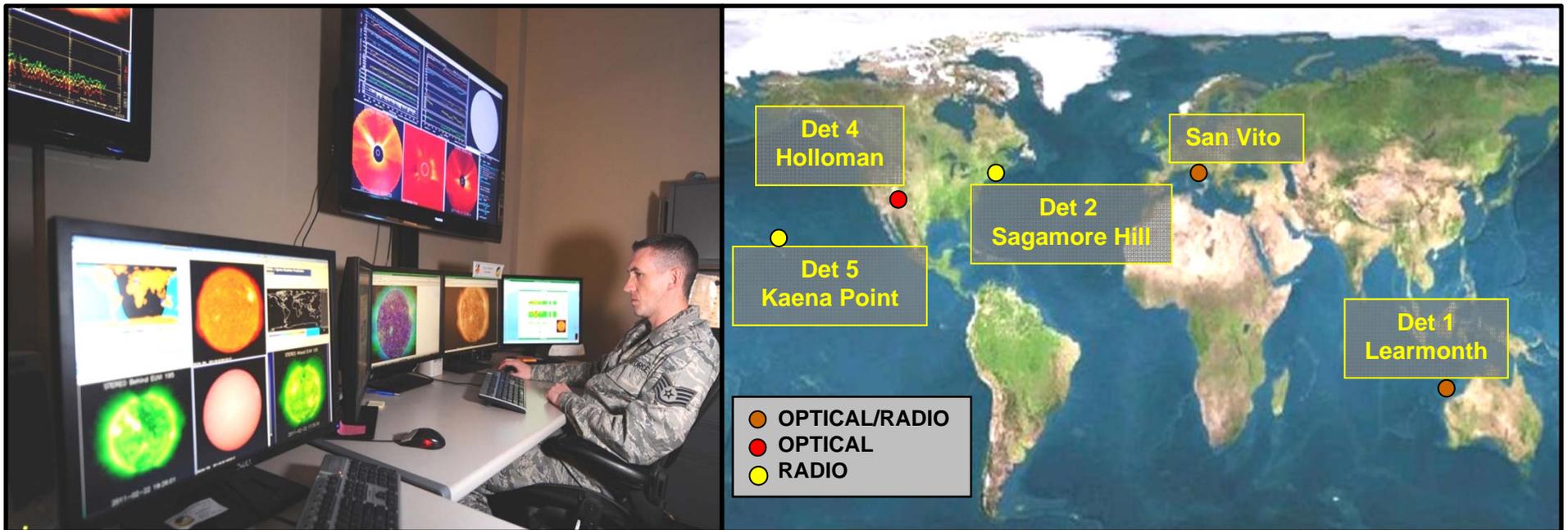
- Space Situational Awareness (SSA)
 - Space object tracking
 - Satellite anomaly attribution
- Tactical Comm. (HF – air, land & sea)
- Space-Based Comm. (UHF SATCOM)
- U-2 Operations
- Missile Defense Radars
- GPS aided systems (munitions, navigation)
- Space Surveillance (intel, targeting)
- Space launch & satellite operations



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Air Force Space Weather Mission/Units

- Space Weather Operations Center (SpaceWOC) located at Air Force Weather Agency HQ, Offutt AFB, Nebraska provides mission-tailored analyses, forecasts and warnings of system-impacting space weather to national agencies, DoD operators, warfighters and decision makers



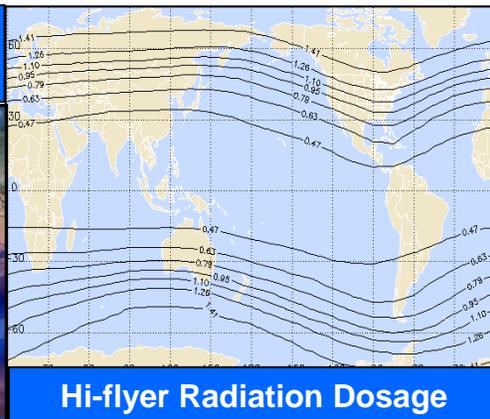
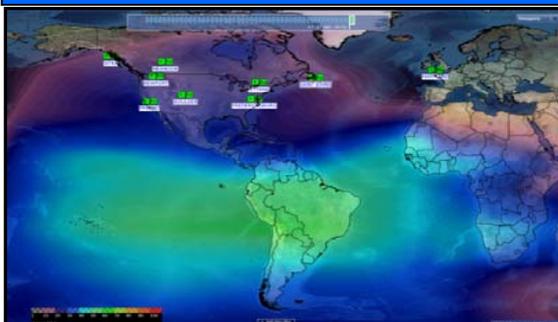
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Air Force Space Weather Products & Services

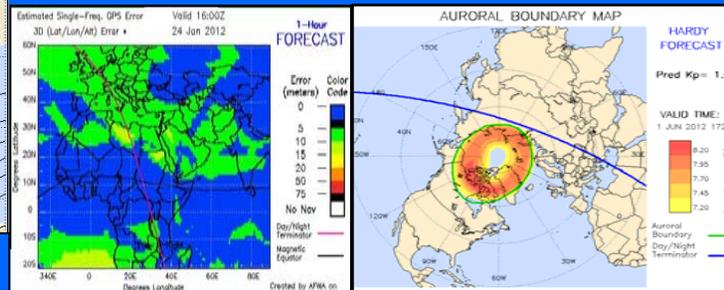
Web Mapping Services for GIS/Google Earth formats



Hi-flyer Radiation Dosage

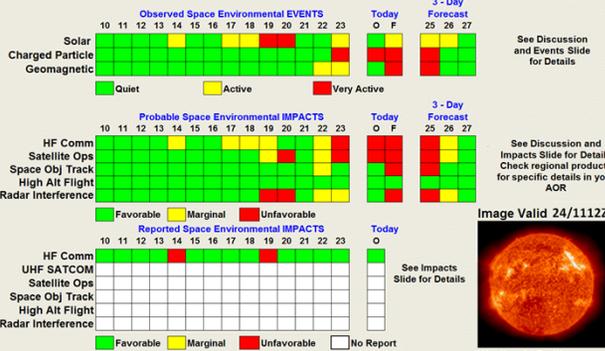
Space Weather Analysis and Forecast System (SWAFS)

- Models & derived products

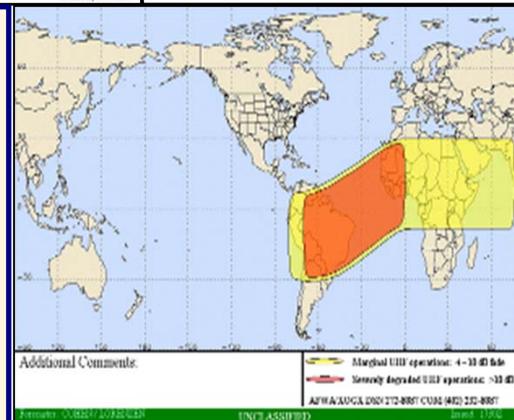


Space Environment Global Situational Awareness

Valid: 24/1200Z Jan 12



WOXX56 KGWC 200802
 SUBJECT: AFWA EVENT WARNING REPORT ISSUED AT 0802Z 20 JAN 2013
 PART A. SOLAR RADIATION DOSAGE EVENT (UPDATE):
 A SOLAR PROTON EVENT IS IN PROGRESS. BELOW IS AN ESTIMATE OF THE MAXIMUM RADIATION IN MILLIREMS BASED ON THE GOES SPACECRAFT PROTON MONITORS. YOU WILL RECEIVE AN UPDATE EVERY HOUR OR WHENEVER ONE OF THE CATEGORIES BELOW IS CROSSED. THE CURRENT RADIATION DOSE CALCULATION AS OF 0701Z IS 212 MREMS.
 CATEGORIES ARE:
 GREEN = LESS THAN 10 MREMS
 YELLOW = 10 - 99 MREMS
 RED = 100 OR GREATER MREMS
 PART B. N/A
 PART C. REMARKS:
 ISSUED BY THE AIR FORCE WEATHER AGENCY, OFFUTT AFB, NE. IF YOU HAVE QUESTIONS OR REQUIRE FURTHER INFORMATION, CALL THE DUTY FORECASTER AT DSN 272-8087, COMMERCIAL 402-232-8087. INFORMATION CAN ALSO BE OBTAINED AT <https://weather.afwa.af.mil> UNDER THE SPACE WEATHER LINK.
 FORECASTERS: Bauman/ Otero



Global SA

Forecaster-In-The-Loop Products (UHF SATCOM Forecast)

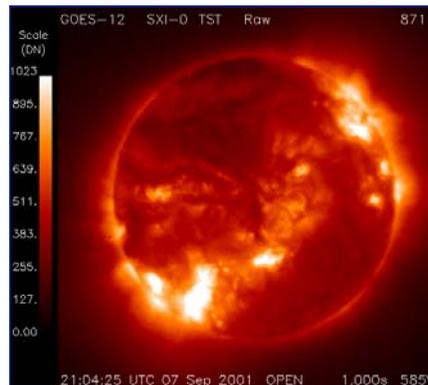
Observed & Forecast Warnings to DoD Forces, Intelligence Community, and Other National Users

40K+ products daily

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Questions



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