

Headquarters U.S. Air Force

Integrity - Service - Excellence

Department of Defense Space Weather



U.S. AIR FORCE

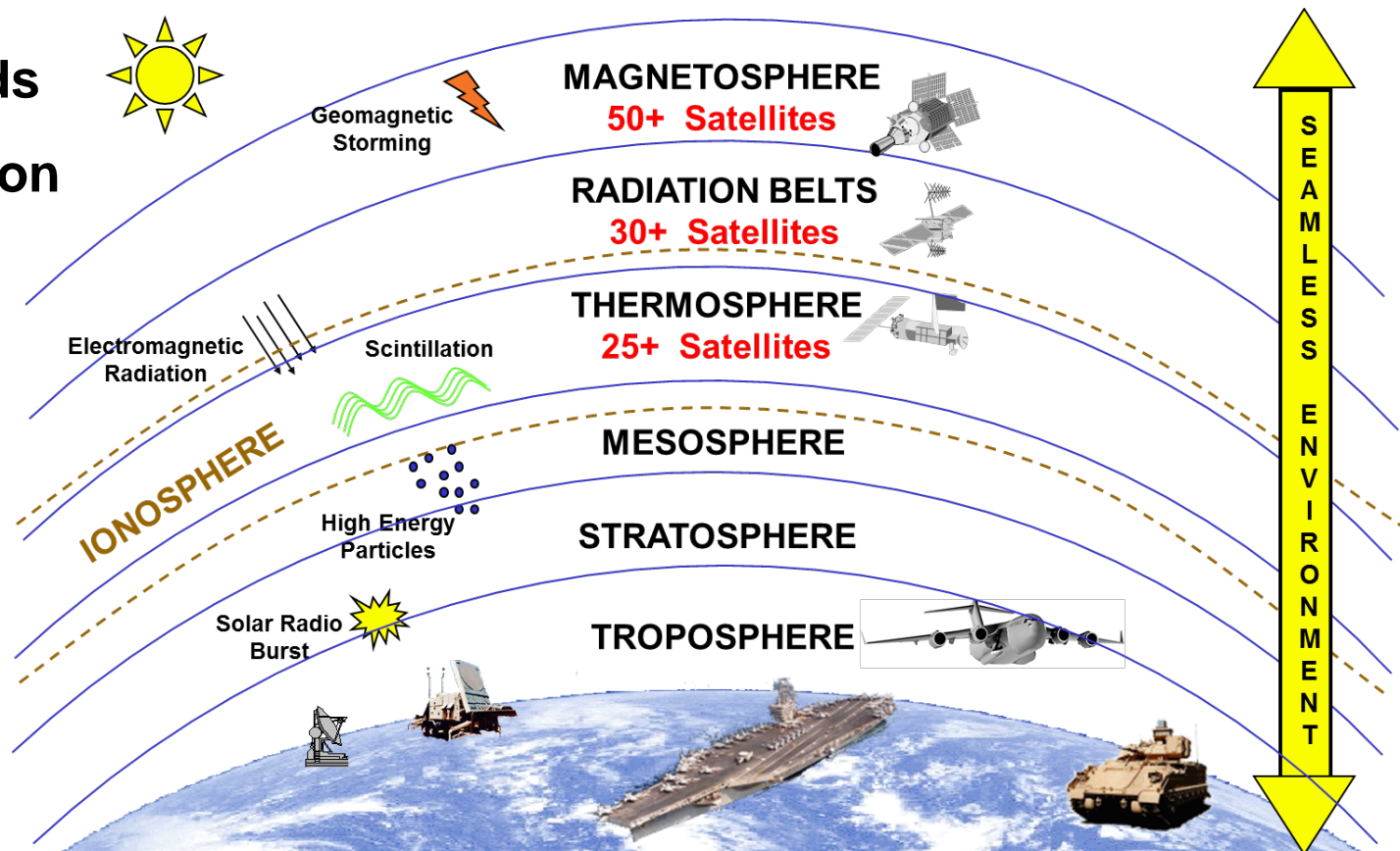
**Mr. Ralph O. Stoffler
United States Air Force
Directorate of Weather
15 April 2015**



Overview

U.S. AIR FORCE

- DoD space weather mission
- Operations
- Priority needs
- On the horizon



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DoD Space Weather Mission

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Space Weather Analysis and Forecast System (SWAFS)

- Modeling (GAIM, MSFM, et al.)
- Automated analysis and production
- Verified and adjusted by forecasters

Analyses, forecasts, and warnings

- Tailored products
- Space weather events
- Space weather impacts

- Systems
- People
- Anomaly assessments
- Satellites
- Communications

Joint Space Operations Center

- Tailors SpaceWOC products
- Data driven effects models

AXXX51 KGWC 311215
MAGNETOMETER ANALYSIS FOR 31/1200
HOURLY MAX GAMMA DEFLECTIONS/K INDICES

	03-06	04-07	05-08	06-09	07-10	08-11	09-12
MEANOOK	9/0	16/0	25/0	39/1	43/1	28/0	35/1
SITKA	10/0	12/0	24/1	24/1	34/1	25/1	42/1
OTTAWA	8/0	12/1	17/1	18/1	32/2	32/2	31/2
SAINT JOHNS	9/0	12/1	13/1	18/1	26/2	27/2	22/2
NEWPORT	5/0	10/0	12/0	24/1	26/2	23/1	26/2
FREDERICKSBURG	7/0	11/1	12/1	16/1	20/2	20/2	23/2
BOULDER	5/0	10/0	11/0	19/1	19/1	19/1	26/2
HARTLAND	13/1	15/1	13/1	17/2	24/2	40/4	41/4
FRESNO	5/0	8/0	9/0	19/2	19/2	19/2	20/2

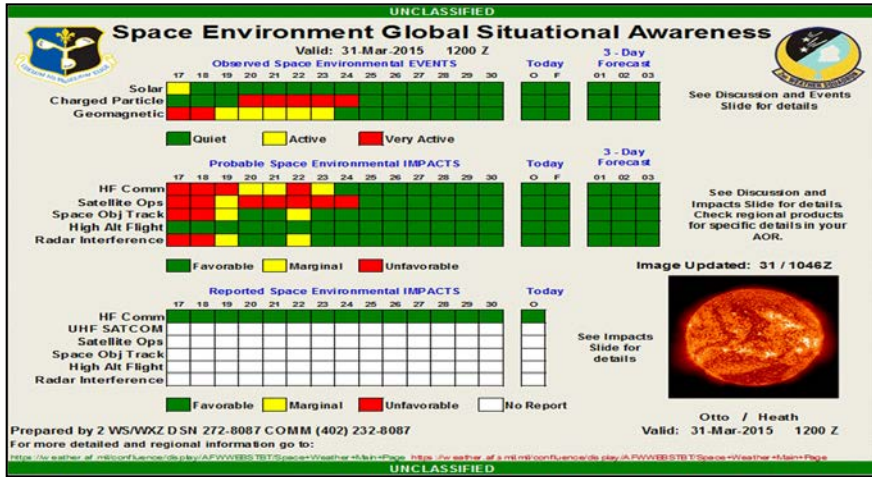
	03-06	04-07	05-08	06-09	07-10	08-11	09-12
3-HOUR AP	2	3	5	7	9	9	9
3-HOUR KP	0P	1M	1P	2Z	2P	2P	2P
12-HOUR AP	**	**	**	**	**	**	**
24-HOUR AP	8	6	6	9	7	7	9

#SYNOPTIC VALUE ESTIMATED FROM AVAILABLE DATA

	05-06	06-07	07-08	08-09	09-10	10-11	11-12
1-HOUR KP	**	**	**	**	**	**	**

	03-06	04-07	05-08	06-09	07-10	08-11	09-12
RUN 3-HOUR AP	2	3	5	7	9	9	9
RUN 3-HOUR KP	0P	1M	1P	2Z	2P	2P	2P

99999

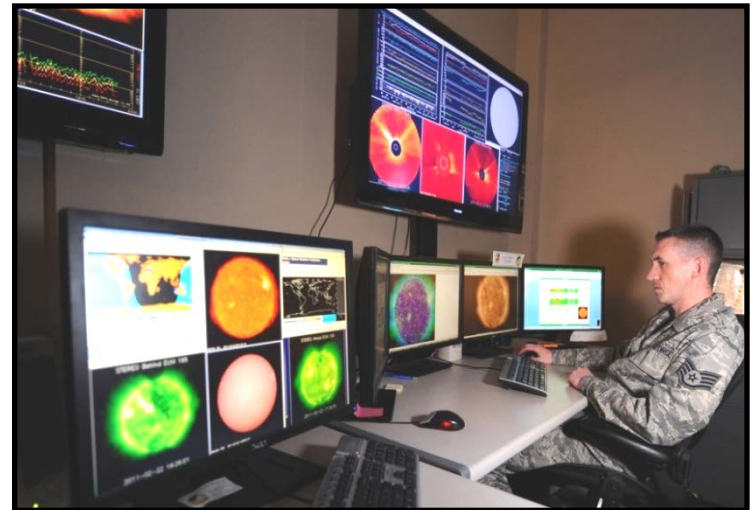
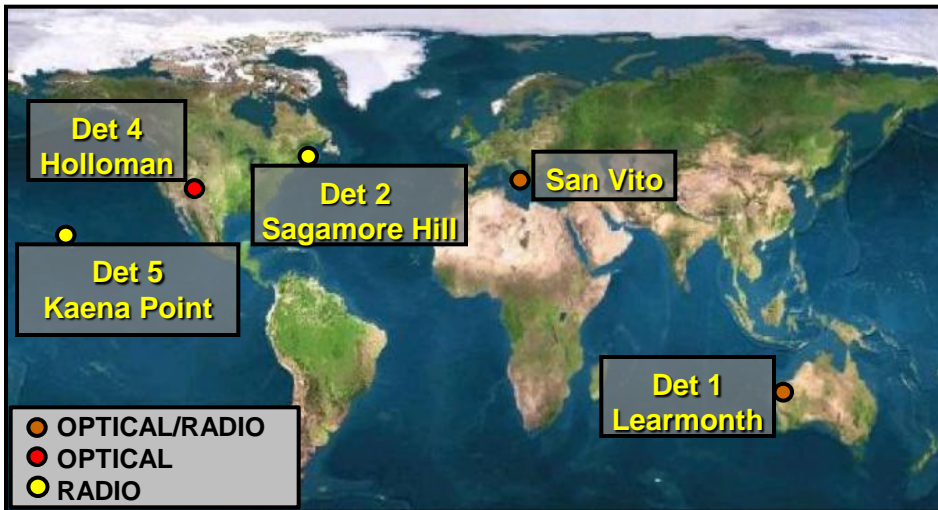




DoD Space Weather Operations

U.S. AIR FORCE

- **557th Weather Wing (formerly known as AFWA)**
 - Unclassified and classified support
 - Next Generation Ionosonde (NEXION)
 - Ionospheric Scintillation and TEC Observatory (ISTO)
- **2nd Weather Squadron detachments provide observations 24/7**
 - Solar radio sweeps and bursts
 - Solar optical phenomena and magnetic features
- **Space Weather Operations Center (SpaceWOC)**



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Near Term Priorities

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- **Next Generation Ionosonde**
 - 10 sites fielded
 - 26 total sites planned
- **ISTO - 10 sites fielded**
- **2nd Weather Squadron network modification**
 - **RSTN service life extension program**
 - Ensure reliability
 - Examining documented requirements
 - More discrete frequencies
 - Changeable frequencies
 - **SOON magnetic characterization capability**
 - Evaluating approaches
 - Solar wind model initialization
 - Flare forecasting
- **Space-based sensors**





Longer Term Priorities

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- Scintillation effects
 - UHF SATCOM
 - Radar
 - GPS
- Solar RFI effects
 - SATCOM
 - Radar
- EDP
- TEC
- Spacecraft charging
- Radar auroral clutter
- Magnetosphere models

