Overview

- AF space weather observing systems – Current & Future
- Space weather application
- Space weather community
- DoD perspective
- Sensor-to-Operator chain
- Summary
AF Space Weather Observing

Current

I n t e g r i t y - S e r v i c e - E x c e l l e n c e
Space Weather Application

- 557th Weather Wing Space Weather Operations Center (SpaceWOC)
  - Mission-tailored unclassified and classified analysis, forecasts, warnings
  - Disseminate system-impacting space weather
    - DoD operators and decision makers
    - National agencies
  - Anomaly assessment support
- Joint Space Operations Center (JSpOC)
  - C2 system executing USSTRATCOM space control mission
  - Focal point for space force integration & employment in military ops
  - Detect, track, and identify all artificial objects in Earth orbit
Space Weather Community

- Space weather is a team sport!
- Actively engaged in global community
- Training
  - Space weather course (2 weeks) at 557 Weather Wing
  - Students from France, Italy, Netherlands, Germany – working to bring in Japan and South Korea
- Engaging with UK, South Korea on Ops Centers stand-up
- Data sharing via web services – national & international partners
- Cooperative efforts
  - NOAA SWPC – analysis and forecasting
  - AFRL, NRL, JHU/APL – modeling and data
  - Academic community
What is the DoD perspective on space weather observing?

- Operational requirement vs Research need
  - Sensor design, sustainability, lifespan
- Assured availability
  - Sustained operational data sources
  - Dedicated communications
  - Access across all phases of military operations
- Accredited systems
  - Usable on DoD/AF IT networks
  - Releasable to partners
Sensor-to-Operator Examples

**SOON** – $H_\alpha$

- Forecaster analysis & sunspot classification
- SpaceWOC forecast space wx & impacts
- 20th Space Control Sq alerted to space object tracking impacts

**ISTO** – Radio Frequency Beacon over flight signals

- UHF SATCOM Scintillation Map
- Combined Air Operations Center Theater ISR collection
- Uninterrupted RQ-1 SATCOM data link to CAOC

**NEXION** – derived profiles

- Models – GAIM assimilates obs
- Impact products – HF illumination
- Naval Special Warfare RHIB C2 via HF Comm
Summary

- Air Force committed to space weather observing...now & future
- Team with national & international community for DoD Support
- Sensor-to-Operator – accurate, timely, relevant impacts delivered

“Air Force weather enables Joint Warfighters to anticipate and exploit the weather...for air, ground, space, cyberspace and intel operations.”

– AFW Mission