



FACT SHEET

U.S. Air Force Fact Sheet

2ND WEATHER SQUADRON, SOLAR OBSERVING OPTICAL NETWORK

Mission

The Air Force has employed a global network of ground-based solar observatories known as SOON (the Solar Observing Optical Network) to monitor the Sun for flare activity that may affect Department of Defense systems.

Deployed Locations

SOON telescopes are deployed and operated by 2nd Weather Squadron personnel at Holloman Air Force Base, N.M. and Learmonth, Australia. Air Force contractors operate a third SOON telescope at San Vito, Italy.



2nd Weather Squadron, Solar Observing Optical Network

Technical Specifications

SOON images the Sun in the light of Hydrogen-alpha ($H\alpha$, 6563 Å). This wavelength reveals the complex solar activity in the lower atmosphere or chromospheres. It also images in the Sun in the continuum (pseudo-white-light), which shows sunspots on the Sun's surface or photosphere. SOON also creates magnetograms by analyzing right-hand and left-hand circularly polarized light to image the line-of-sight component (Doppler shifting) of the magnetic field in the photosphere.

Solar Impacts

Solar flares can trigger Coronal Mass Ejections (CMEs) that propagate through interplanetary space. CMEs can interact with the Earth's magnetosphere to create geomagnetic storms. Major storms can result in the following impacts:

- Satellite charging and solar cell damage
- Increased satellite drag
- Communications fadeouts and blackouts
- Navigation systems anomalies
- Targeting systems errors
- Damaging high altitude radiation
- Power grid failures
- Pipeline current surges

Summary

For decades, SOON has provided the only dedicated, reliable and operational source of solar imagery to the Air Force and its customers through the Air Force Weather Agency at Offutt Air Force Base, Neb. SOON imagery is also used by the NOAA Space Weather Prediction Center (SWPC) in Boulder, Colorado as an input to real-time space weather watches, warnings, and alerts.

55th Wing Public Affairs
109 Washington Square, Suite 221
Offutt Air Force Base, NE
68113

Com'l: (402) 294-3663
DSN: 272-3663
E-mail: afwapa@offutt.af.mil