

Space Weather As a Framework for International Cooperation in the Peaceful Uses of Outer Space



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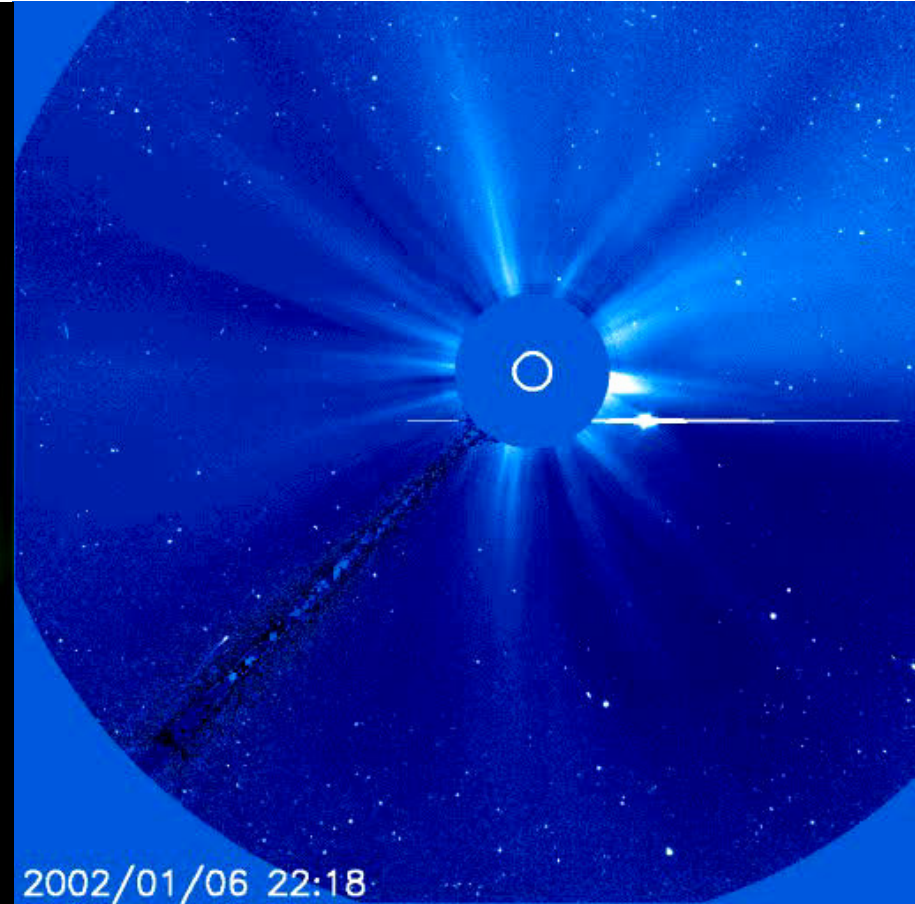
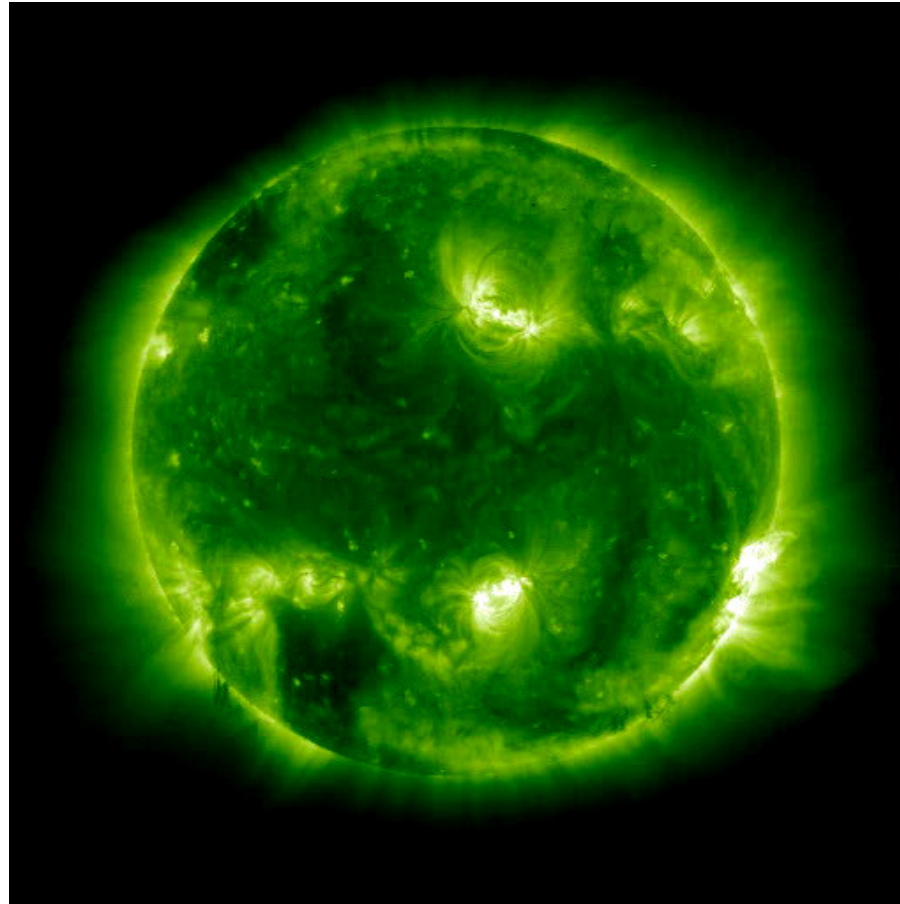
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<http://www.spaceweather.gov>



What is Space Weather?



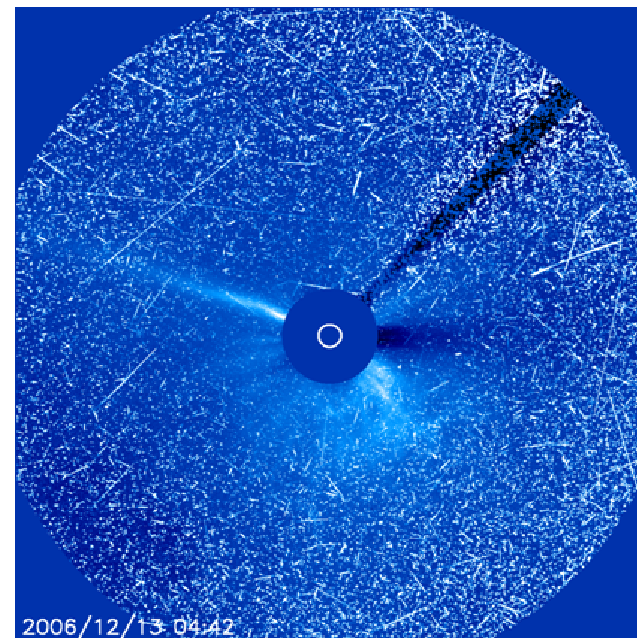
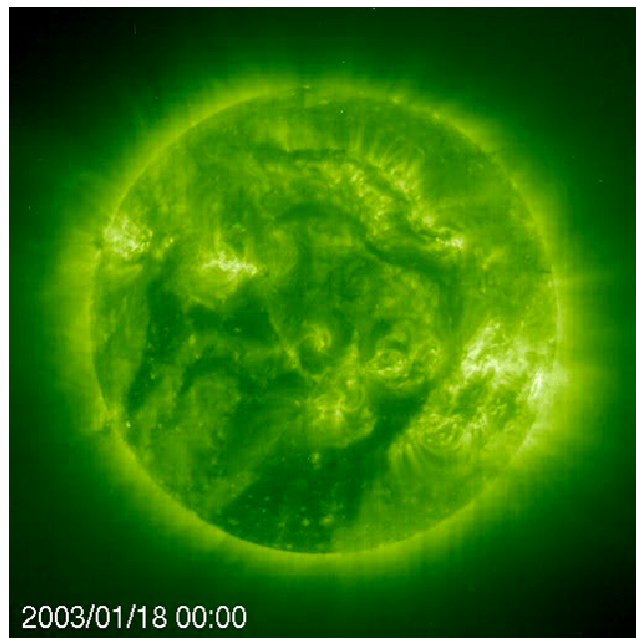
- Solar X-Ray Flares
- Ionize Earth's Atmosphere
- Coronal Mass Ejections
- Radiation and Geomagnetic Storms ²



Who/What is at Risk?



- Precision GPS Users
- HF Communications
- Orbital Debris
- Climate Change
- Satellites
- Power Grids
- Trans-Polar Aviation
- International Space Station



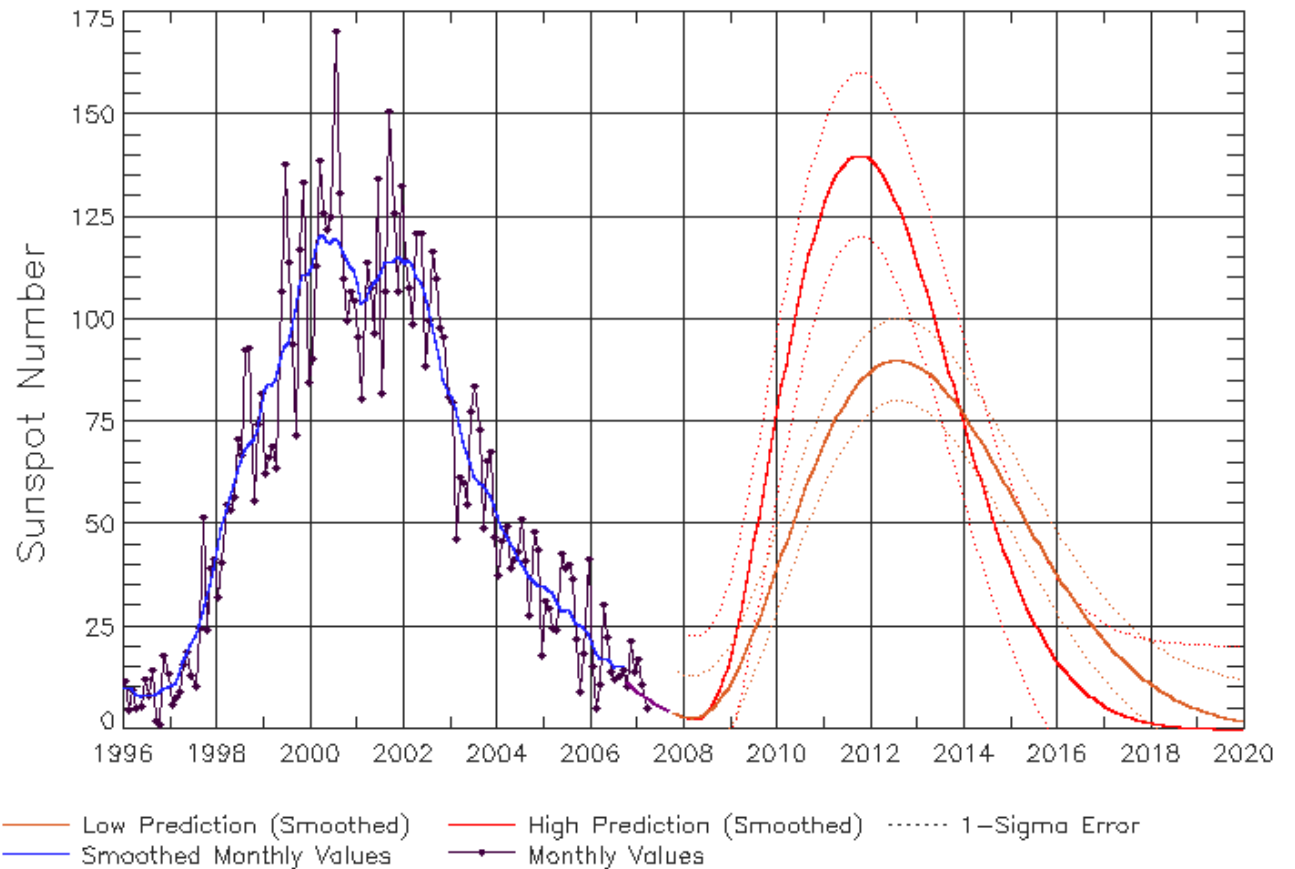


Our Growing Vulnerability



The new advanced technologies that underlie our global economy and contribute to the security of our lives and livelihood put us at increasing risk from the impacts of severe space weather.

Solar Cycle 24 Sunspot Number Prediction
Data Through 31 Mar 07



NOAA/SEC Boulder, CO USA





International Cooperation



- IPS Radio and Space Services **AU**
- Royal Observatory of Belgium **BE**
- Natural Resources Canada **CA**
- Beijing Astronomical Observatory **CN**
- Institute of Atmospheric Physics **CZ**
- National Physical Laboratory **IN**
- National Institute of Information and Communications Technology **JP**
- Space Research Centre **PL**
- Hydrometeorological Service **RU**
- Space Weather Prediction Center **US**
- Lund Space Weather Center **SE**

- Brazil (INPE) to join
- South Africa (IMT) now a member



ISES REGIONAL WARNING CENTRES

International Space Environment Service



Trans-Polar Commercial Aviation



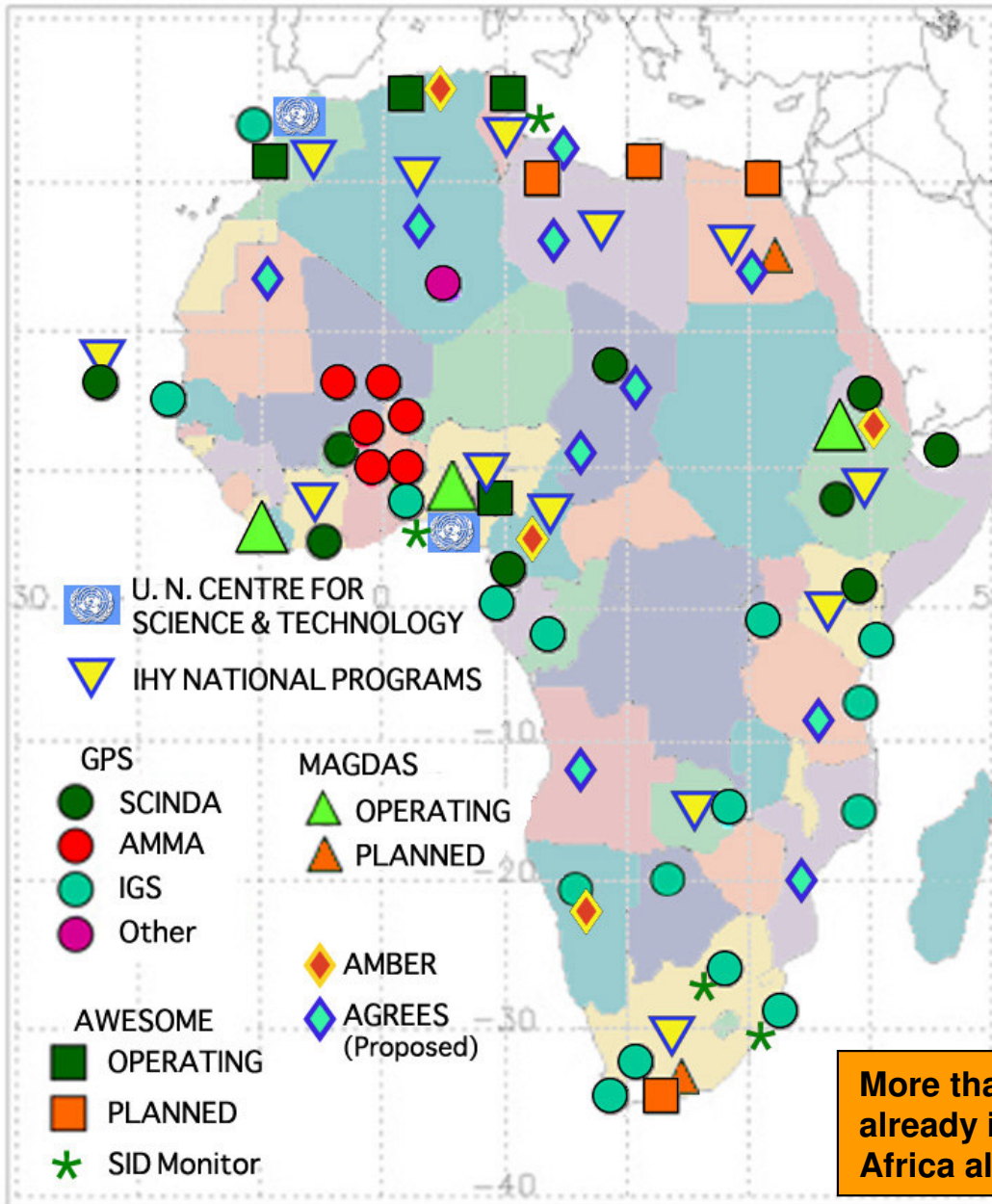


International Cooperation

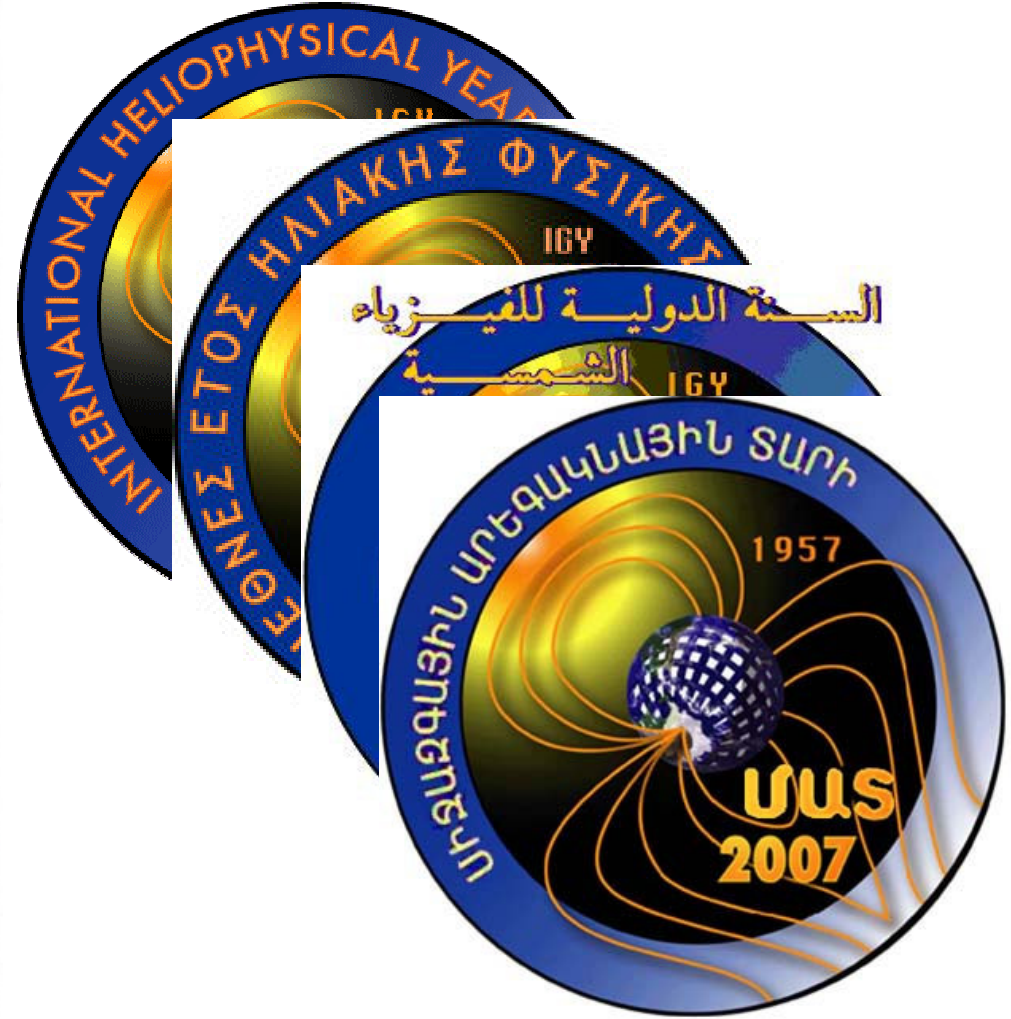




International Heliophysical Year



More than 50 new instruments already installed or planned for Africa alone.

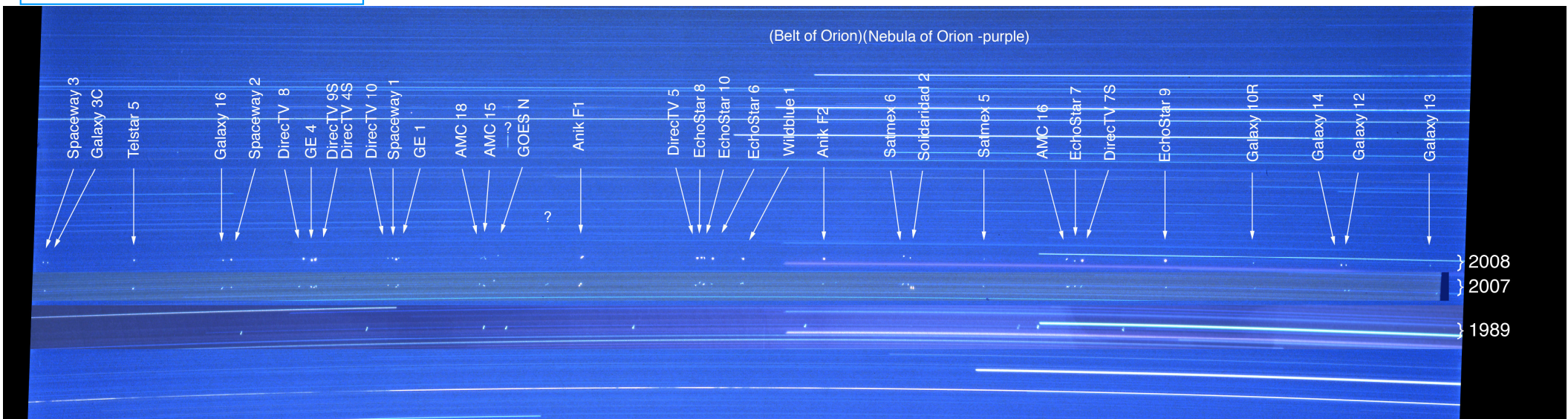
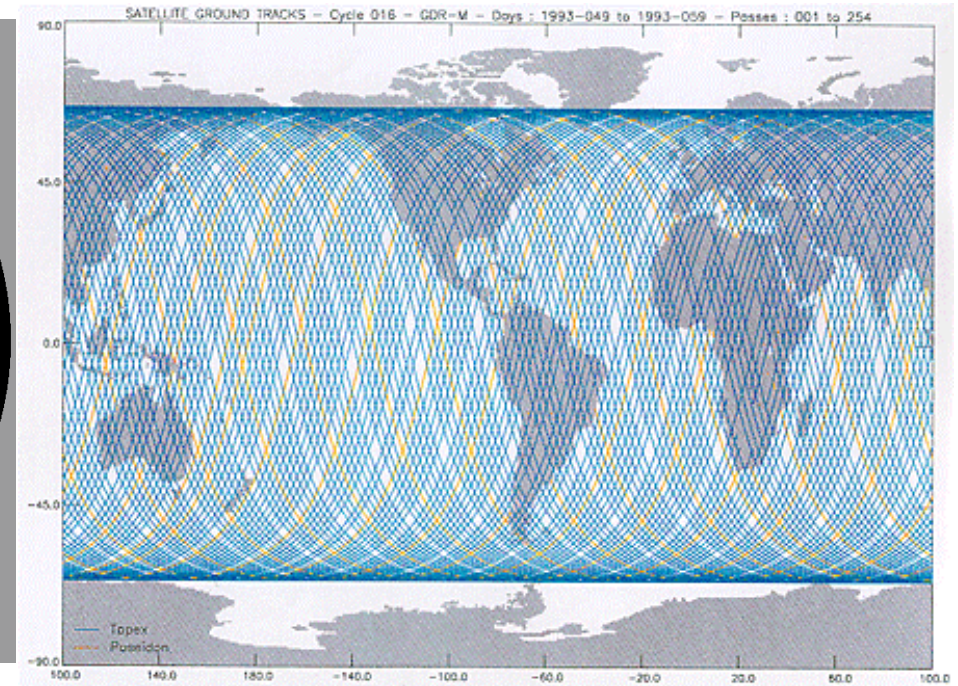
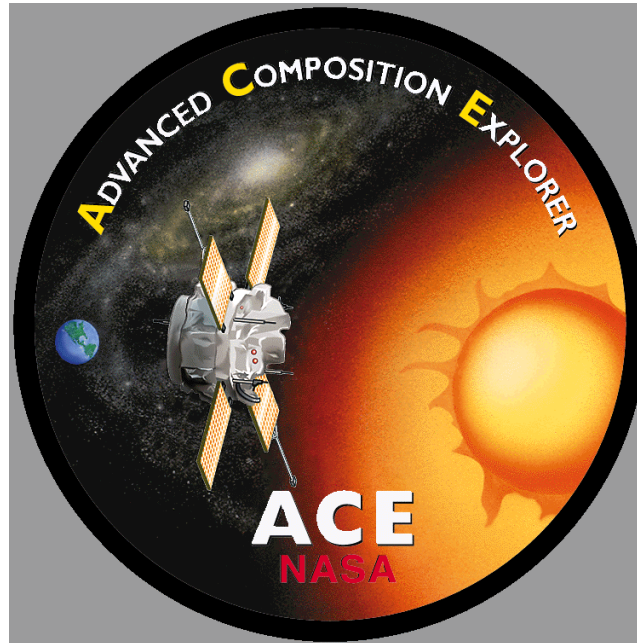




Global Satellite Tracking



International cooperation in securing real-time space weather data from NASA, RKA, ESA, JAXA, CNSA, and ISRO space research missions.





Space Situational Awareness



SES GLOBAL

SINOSAT

HELLAS SAT

Star One
uma Empresa Embratel



KT

ORBCOMM

SIRIUS
SATELLITE RADIO

inmarsat

MSV
Mobile Satellite Ventures

スカパーJSAT

telenor



عرب سات
ARABSAT
Our world. Your world.

WORLDSPACE™
SATELLITE RADIO
TURN ON YOUR WORLD

TURKSAT

DIRECTV®

eutelsat
COMMUNICATIONS

MABUHAY
Satellite Corporation

XM

SATMEX

Telesat

Globalstar

dish
NETWORK

hispasat

IRIDIUM

INTELSAT.
Closer, by far



Космическая связь
Федеральное государственное унитарное предприятие

JSAT



Where Can We Work Together?



- International Committee on GNSS
- World Meteorological Organization
- Committee on Peaceful Uses of Outer Space



How Can We Work Together?



- Cooperative Satellite Data Down-linking
- Exchange of Ground-based Space Weather Data
- Sharing Space Weather Products and Services