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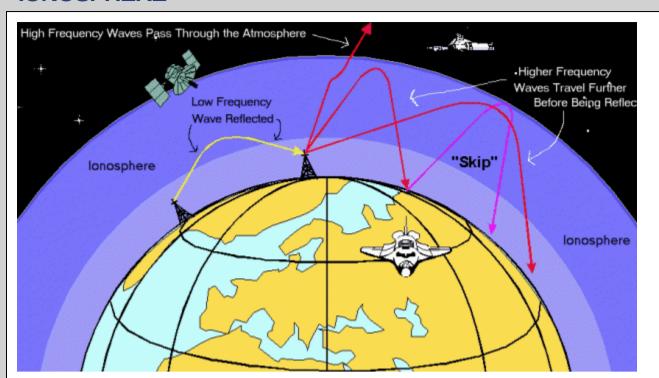
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CURRENT SPACE WEATHER CONDITIONS on NOAA Scales

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IONOSPHERE



IONOSPHERE

The Ionosphere is part of Earth's upper atmosphere, between 80 and about 600 km where Extreme UltraViolet (EUV) and x-ray solar radiation ionizes the atoms and molecules thus creating a layer of electrons. the ionosphere is important because it reflects and modifies radio waves used for communication and navigation. Other phenomena such as energetic charged particles and cosmic rays also have an ionizing effect and can contribute to the ionosphere.

The atmospheric atoms and molecules are impacted by the high energy the EUV and X-ray photons from the sun. The amount of energy (photon flux) at EUV and x-ray wavelengths varies by nearly a factor of ten over the 11 year solar cycle. The density of the ionosphere changes accordingly. Due to spectral variability of the solar radiation and the density of various constituents in the atmosphere, there are layers are created within the ionosphere, called the D, E, and F-layers. Other solar phenomena, such as flares, and changes in the solar wind and geomagnetic storms also effect the charging of the ionosphere. Since the largest amount of ionization is caused by solar irradiance, the night-side of the earth, and the pole pointed away from the sun (depending on the season) have much less ionization than the day-side of the earth, and the pole pointing towards the sun.

Impacts

Radio Communication Radio Navigation (GPS) Satellite Communication

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F10.7 cm Radio Emissions



National Oceanic and Atmospheric Administration

National Weather Service

National Centers for Environmental Prediction

Space Weather Prediction Center 325 Broadway, Boulder CO 80305

PRODUCTS AND DATA

Forecasts

27-Day Outlook of 10.7 cm Radio Flux and Geomagnetic Indices

3-Day Forecast 3-Day Geomagnetic Forecast

Forecast Discussion Predicted Sunspot Numbers and Radio Flux

Report and Forecast of Solar and Geophysical Activity Solar Cycle Progression

Space Weather Advisory Outlook

USAF 45-Day Ap and F10.7cm Flux Forecast

Weekly Highlights and 27-Day Forecast

Reports

Forecast Verification Geoalert - Alerts, Analysis and Forecast Codes

Geophysical Alert Solar and Geophysical Event Reports

USAF Magnetometer Analysis Report Models

Aurora - 30 Minute Forecast

CTIPe Total Electron Content Forecast D Region Absorption Predictions (D-RAP)

Geoelectric Field Models (US Canada 1D & 3D EMTF CONUS) Geospace Geomagnetic Activity Plot

Geospace Ground Magnetic Perturbation Maps Geospace Magnetosphere Movies

North American (US Region) Total Electron Content

North American Total Electron Content Relativistic Electron Forecast Model

SEAESRT

STORM Time Empirical Ionospheric Correction

WSA-Enlil Solar Wind Prediction

WAM-IPE Observations

Boulder Magnetometer GOES Electron Flux

GOES Magnetometer

GOES Proton Flux GOES Solar Ultraviolet Imager (SUVI)

GOES X-ray Flux LASCO Coronagraph

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Alerts, Watches and Warnings

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ACE Real-Time Solar Wind Aurora Viewline for Tonight and Tomorrow Night

GloTEC International Civil Aviation Organization (ICAO) Space Weather

Advisory

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