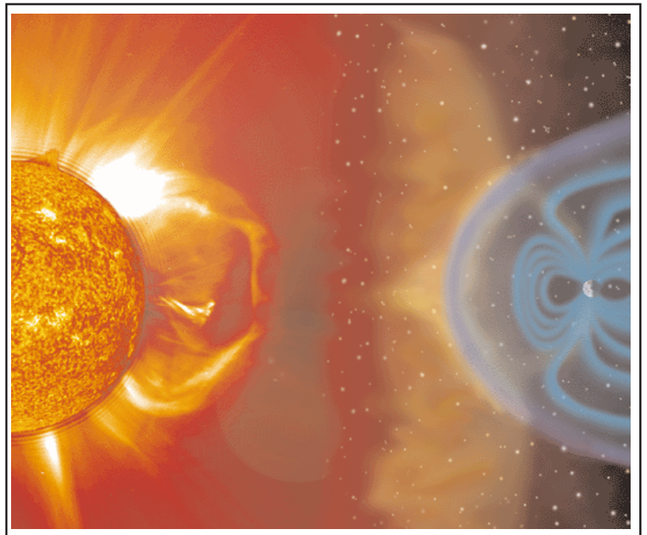
APPENDIX C

National Space Weather Program

The National Space Weather Program (NSWP) was initiated in 1994, and the goals of the program were articulated in the NSWP Strategic Plan, published in 1995. The overarching goal of the program is to achieve, within the next ten years, an interagency system to provide timely, accurate, and reliable space environment observations, specifications, and forecasts. A detailed Implementation Plan was published in 1997 and updated in 2000. The NSWP focuses on four elements-research, observations, models, and education-which, taken together, support improvement in the ability to specify and forecast space weather in support of a variety of customers. This customer base includes operators and/or users of communications systems, satellites, power grids, navigation systems, and manned spaceflight systems.

The NSWP is led through the Federal coordinating infrastructure of the Office of the Federal Coordinator for Meteorology (OFCM). OFCM's multi-agency National Space Weather Program Council (NWSPC) sets policy and provides oversight and direction to the program. The Committee for Space Weather (CSW) is aligned under the Program Council and implements policy and provides management of the NSWP.

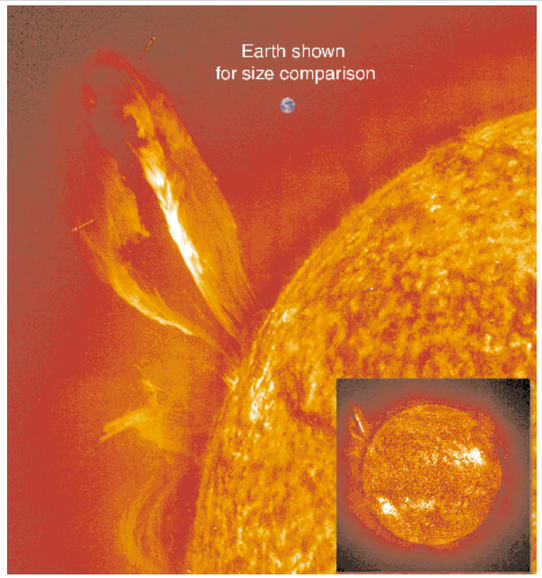
Detailed information on OFCM and agency NSWP involvement appears in various sections of this plan. The reader is invited to review the following sections to learn more about current activities related to the program:



Coronal Mass Ejection (CME) blast and subsequent impact at Earth

This illustration shows a CME blasting off the Sun's surface. The left portion is composed of an extreme ultra-violet (EUV) image superimposed on SOHO's coronagraph. Two to four days later, the CME cloud is shown striking and beginning to be mostly deflected around the Earth's magnetosphere. The blue paths emanating from the Earth's poles represent some of its magnetic field lines. The magnetic cloud of plasma can extend to 30 million miles wide by the time it reaches earth. These storms, which occur frequently, can disrupt communications and navigational equipment, damage satellites, and even cause blackouts. (Objects in the illustration are not drawn to scale.)

All solar images from Solar Heliospheric Observatory (SOHO)



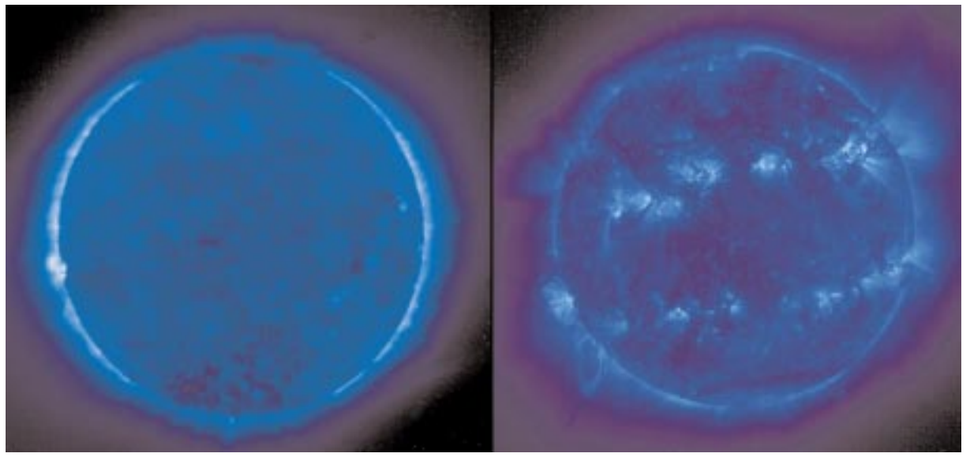
Solar Prominence on Sun's Limb

Large, eruptive prominence in He II at 304Å, with an image of the Earth added for size comparison. This prominence from 24 July 1999 is particularly large and looping, extending over 35 Earths out from the Sun. Erupting prominences (when Earthward directed) can affect communications, navigation systems, even power grids, while also producing auroras visible in the night skies.

SPACE WEATHER

Illustrating Solar Variability

A comparison of two images almost two years apart illustrates how the level of solar activity has increased significantly. The Sun attained its expected sunspot maximum in the year 2000. These images are captured using Fe IX-X 171 Å emission showing the solar corona at a temperature of about 1.3 million K. Many more sunspots, solar flares, and coronal mass ejections occur during the solar maximum. The numerous active regions and the number/size of magnetic loops in the recent image shows the increase.

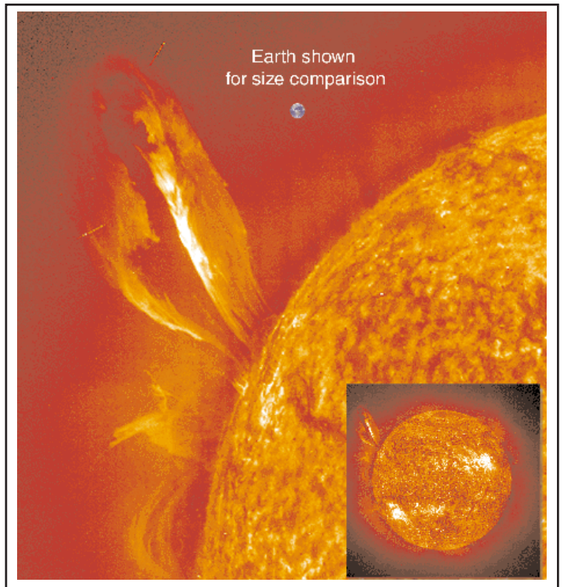


National Space Weather Program

The National Space Weather Program (NSWP) was initiated in 1994, and the goals of the program were articulated in the NSWP Strategic Plan, published in 1995. The overarching goal of the program is to achieve, within the next ten years, an interagency system to provide timely, accurate, and reliable space environment observations, specifications, and forecasts. A detailed Implementation Plan was published in 1997 and updated in 2000. The NSWP focuses on four elements-research, observations, models, and education-which, taken together, support improvement in the ability to specify and forecast space weather in support of a variety of customers. This customer base includes operators and/or users of communications systems, satellites, power grids, navigation systems, and manned spaceflight systems.

The NSWP is led through the Federal coordinating infrastructure of the Office of the Federal Coordinator for Meteorology (OFCM). OFCM's multi-agency National Space Weather Program Council (NWSPC) sets policy and provides oversight and direction to the program. The Committee for Space Weather (CSW) is aligned under the Program Council and implements policy and provides management of the NSWP.

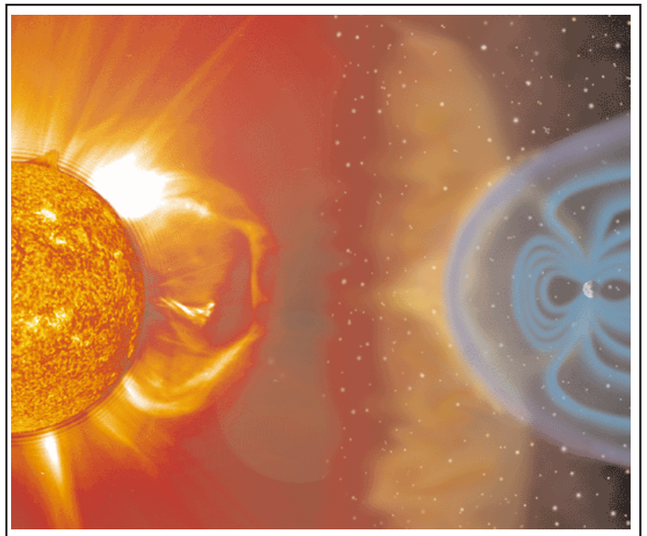
Detailed information on OFCM and agency NSWP involvement appears in various sections of this plan. The reader is invited to review the following sections to learn more about current activities related to the program:



Solar Prominence on Sun's Limb

Large, eruptive prominence in He II at 304Å, with an image of the Earth added for size comparison. This prominence from 24 July 1999 is particularly large and looping, extending over 35 Earths out from the Sun. Erupting prominences (when Earthward directed) can affect communications, navigation systems, even power grids, while also producing auroras visible in the night skies.

SPACE WEATHER



Coronal Mass Ejection (CME) blast and subsequent impact at Earth

This illustration shows a CME blasting off the Sun's surface. The left portion is composed of an extreme ultra-violet (EUV) image superimposed on SOHO's coronagraph. Two to four days later, the CME cloud is shown striking and beginning to be mostly deflected around the Earth's magnetosphere. The blue paths emanating from the Earth's poles represent some of its magnetic field lines. The magnetic cloud of plasma can extend to 30 million miles wide by the time it reaches earth. These storms, which occur frequently, can disrupt communications and navigational equipment, damage satellites, and even cause blackouts. (Objects in the illustration are not drawn to scale.)

All solar images from Solar Heliospheric Observatory (SOHO)

Illustrating Solar Variability

A comparison of two images almost two years apart illustrates how the level of solar activity has increased significantly. The Sun attained its expected sunspot maximum in the year 2000. These images are captured using Fe IX-X 171 Å emission showing the solar corona at a temperature of about 1.3 million K. Many more sunspots, solar flares, and coronal mass ejections occur during the solar maximum. The numerous active regions and the number/size of magnetic loops in the recent image shows the increase.