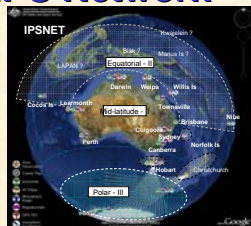


The IPS Network and the Australian Space Forecast Centre Services

IPS Network



IPS operates an extensive network of monitoring stations and observatories within the Australasian region and in Antarctica. Information related to the space environment is gathered in support of our customer's operations. IPS also exchanges this information with similar organisations world-wide.

IPS Products and Services

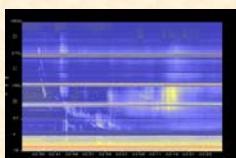


IPS products and services include:

- Radio propagation predictions for HF and satellite communications, based on real-time and statistical data.
- Space environment activity forecasts.
- Space environment data.
- Consultancy services and technical support for those affected by the space environment.
- Training in radio propagation and the use of IPS services.

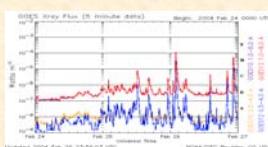
Many of our products and services are available at our web site, www.ips.gov.au. Subscription to the alerts and warnings displayed in this poster is free via the internet and distributed by email (some alerts are also available through SMS for a fee).

Solar



PLAIN PRESTO CULGOORA 17/024UT MAY 2005
 SOLAR RADIO EVENT 1:
 DRIFTING: 750 - 35 MHz
 START TIME: 0236 UT END TIME: 0259
 SPECTRAL TYPE: TYPE B BURST
 IMPORTANCE: MODERATE
 FUNDAMENTAL AND HARMONIC VISIBLE

RADIO EVENT OPTICALLY CORRELATED WITH FLARING REGION 540
 MODERATE SHORT WAVE FADEOUT OBSERVED
 ESTIMATED SHOCKSPEED 850 KMS



• Displayed to the left is data from the solar radio spectrograph at the IPS Culgoora Solar Observatory. This instrument sweeps through a frequency range of 18 - 1800 MHz every three seconds and is used to monitor solar events such as this Type II/IV radio burst (inferred CME). Shown to the right of the spectrograph plot is a corresponding PRESTO solar radio event message generated by the IPS duty forecaster or the Culgoora Solar Observatory analyst.

• The message below is part D of a four part auto alert service initiated when there is an x-ray flare greater than C8. The message is based on solar x-ray flux values from the GOES 11 and GOES 12 satellites and is correlated with flare activity observed through the 25 cm H-Alpha solar telescope at Culgoora Solar Observatory.

• Below right is an IPS auto alert following a shock in the solar wind detected from ACE satellite data. Solar wind data (velocity, density, temperature, and magnetic field) are correlated with a step function to determine a shock.

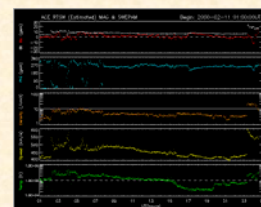
IPS XRAY AND OPTICAL FLARE CORRELATION - PART D
 ISSUED AT 0245 UT on 26 Feb 2004 BY IPS RADIO AND SPACE SERVICES
 FROM THE AUSTRALIAN SPACE FORECAST CENTRE

Optical flares with maximum within 10 minutes of X-ray maximum are correlated.

Approximate xray flare maximum 26 2 2004 0204 UT at Flux X1.1

Xray flare possibly optically correlated with the following H-alpha flare auto-detected at IPS Culgoora Solar Observatory:

Any large positive polarity concentrations with the following magnetic flux auto-detected at IPS Culgoora Solar Observatory:					
Start date/time		Max date/time		End date/time	
26 02 2004 01:55UT		26 02 2004 01:59UT		26 02 2004 02:41UT	
Lat	Long	Imp.	Bright.	Area	SEC Region Num
14	014	2	Bright	00485	564

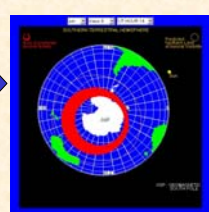
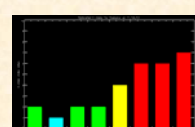
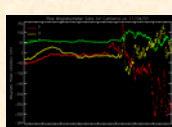
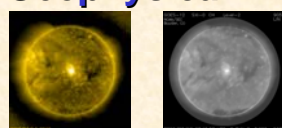


STRONG SHOCK DETECTED IN SOLAR WIND AT 11 02 2000 2315UT

Mean Solar Wind Parameters Pre/Post Shock:

Param.	Unit	Pre Shock	Post Shock	Pre/Post Change
Density	particle/cm³	4.1	21.2	17.1
Velocity	km/sec	442.3	592.4	151.1
Temp	Degree K	73921.0	251733.3	177812.7
Bz	nT	7.2	23.4	16.2
Bt	nT	0.2	6.3	6.1

Geophysical

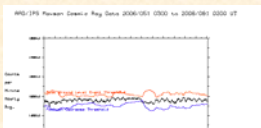
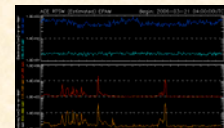
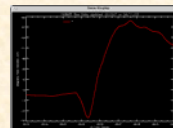


SUBJ: IPS GEOMAGNETIC DISTURBANCE ALERT
 ISSUED AT 1716 UT on 11 Apr 2001 BY IPS RADIO AND SPACE SERVICES
 FROM THE AUSTRALIAN SPACE FORECAST CENTRE

SEVERE GEOMAGNETIC DISTURBANCE IN PROGRESS (K OF 7 REACHED)
 PRELIMINARY AUSTRALIAN REGION K INDICES FOR 11 04 01: 2122 47-

SUBJ: IPS AURORA ALERT
 ISSUED AT 1818 UT on 11 Apr 2001 BY IPS RADIO AND SPACE SERVICES
 FROM THE AUSTRALIAN SPACE FORECAST CENTRE

SEVERE GEOMAGNETIC STORM IN PROGRESS. AURORA MAY BE OBSERVED DURING LOCAL NIGHT TIME HOURS IN GOOD OBSERVING CONDITIONS AT REGIONS AS FAR EQUATORWARD AS MIDDLE LATITUDES.



SUBJ: IPS GEOMAGNETIC DISTURBANCE WARNING 0246
 ISSUED AT 230107Z DECEMBER 2002
 BY THE AUSTRALIAN SPACE FORECAST CENTRE.

INCREASED GEOMAGNETIC ACTIVITY EXPECTED DUE TO CORONAL MASS EJECTION FOR 23-24 DECEMBER 2002

GEOMAGNETIC ACTIVITY FORECAST
 23 Dec: Active to minor storm periods.
 24 Dec: Active

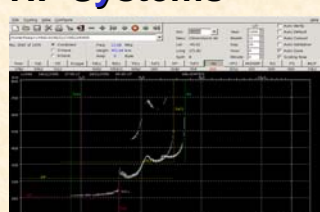
MODERATE SUDDEN IMPULSE DETECTED (87nT) IN IPS MAG DATA 04 11 03 0626UT

Mean Mag Parameters Pre/Post Impulse:

Stn	Unit	Pre Impulse	Post Impulse	Pre/Post
Hbt	nT	15.0	116.9	103.9
cbr	nT	29.1	131.7	102.5
nl	nT	17.0	69.6	52.6
lcr	nT	43.2	130.4	87.2
clg	nT	-34.4	54.7	89.1

• Three other IPS alert messages not displayed include the Solar Wind Geomagnetic Precursor Alert (based on ACE EPAM 65-112keV proton data flux shown above), IPS Forbush Decrease Alert (based on ANARE Mawson Antarctic base cosmic ray data, displayed above) and the IPS GEOSTAT Alert (a six stage alert initiated by a halo CME and ending with a sudden impulse event).

HF Systems

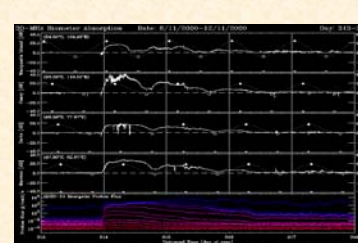


• IPS ionosondes record the time delay between transmission and reception of vertical radio pulses. A sweep is performed over a range of frequencies (typically 1 - 22 MHz) every 5 minutes to produce an ionogram, as shown to the left. The highest frequency which the ionosphere will reflect vertically is called foF2.

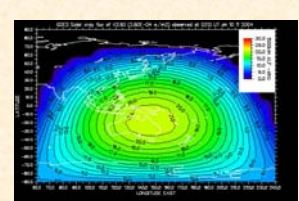
• foF2 measurements from the IPS Network are used to create real-time foF2 maps of the Australasian region. Through data exchange with similar agencies world-wide IPS also generates European and Global foF2 maps.

• In conjunction with the IPS propagation models a range of HF frequency predictions are produced. Shown below is an Hourly Area Prediction (HAP) chart showing recommended HF sky-wave frequencies for communication from a base at Sydney.

• Displayed to the right is riometer data from Antarctica showing absorption by the ionosphere of 30 MHz cosmic radio waves. The riometer data is used to give an indication of the severity of a Polar Cap Absorption (PCA) event.



10MeV Proton/PCA Event Began 8 11 2000 2345UT and is in progress

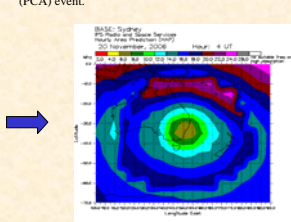
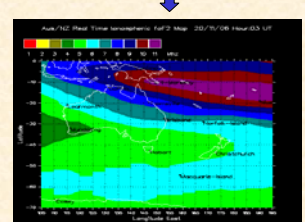


IPS FADEOUT ALERT - PART B
 FOR HF FADEOUTS AFFECTING THE AUSTRALIAN REGION
 ISSUE TIME: Wed Nov 10 14:08:18EST 2004

 HF FADEOUTS TAKE PLACE AT THE SAME TIME AS MAJOR SOLAR FLARES
 THE START, MAXIMUM, AND END TIMES OF THE FLARE FADEOUT ARE GIVEN
 BELOW. MAJOR FLARES ARE WEAKER AND CAUSE A FADEOUT OVER A
 SMALLER AREA AND AFFECT A LESSER RANGE OF THE HF SPECTRUM THAN DO
 X-CLASSE FLARES.

Approximate Flare Start : 10-11-2004 0204 UT
 Approximate Flare Maximum: 10-11-2004 0214 UT at Flux X 2.5
 Approximate Flare End : 10-11-2004 0309 UT

 Follow the progress of this flare on the IPS Web site
<http://www.ips.gov.au> Click "Space Weather" Click "X-Ray Flare"



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email: asfc@ips.gov.au
 WWW: <http://www.ips.gov.au>
 FTP: <ftp://ips.gov.au>

• Displayed above is a map of the Absorption Limiting Frequency (ALF) contours for a circuit length of 1500 km. ALF event contouring is triggered when the x-ray flux is greater than C8 and is centred on the longitude where the sun is overhead.