Australian Government

Department of Industry, Tourism and Resources

MEDIA RELEASE

Thursday 14 December 2006

Major Solar Flare Disrupts GPS

The sun's relatively quiet decline towards solar minimum, the low point of the 11 year solar activity cycle, has been interrupted recently by a burst of major solar activity.

A massive explosion on the surface of the sun, called a *solar flare*, occurred around 1:30 pm (AESST) on 13 December. This is the latest in a series of large solar flares observed in the last week from a very large and magnetically unstable region on the surface of the sun. This latest flare and a previous flare observed on 5 December released unusually high levels of radiation in the 1.4 GHz band. The radio noise burst on 5 December may have been the largest ever recorded from the sun. X-ray radiation released by the 13 December flare caused major disruption to shortwave (HF) radio communications. Long range HF radio communications such as those used by Defence Forces, emergency services and airlines were completely blacked out for two hours following the flare.

The Australian Government's Space Weather Agency, IPS Radio and Space Services, has also received reports of failures with Global Positioning (GPS) Systems due to the intense radio noise bursts.

In addition, a cloud of solar matter called a Coronal Mass Ejection was ejected from the sun during the most recent explosion and has been hurtling towards the earth at around 1600 km/sec. The cloud of debris is due to impact the earth in the early hours of Friday morning (AESST) and is expected to cause severe magnetic storms in the earth's upper atmosphere (ionosphere). This is likely to lead to further degradations in shortwave (HF) communications. It could also cause spectacular Auroral displays as far north as Sydney.

The region responsible for this solar activity is still visible on the sun's disk and there is the strong possibility of further activity and GPS failures before the rotation of the sun takes the active region out of view.

Visit the IPS Australia website www.ips.gov.au to learn more about space weather monitoring and see images of the latest activity.

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Update to Media Release regarding recent Solar and Geophysical behaviour

Monday 18 December, 8 am

Active region 930 :

Solar activity has been Low since the most recent X1.6 flare of 14 December, 2215 UT (9:15 pm AESST, Thursday 14 December).

There is a Moderate to High chance of further flares until Region 930 rotates to the far-side of the sun by the end of the UT day, 18 December (Monday 18/Tuesday 19 December AESST).

CMEs and Geomagnetic Storms:

Severe Geomagnetic storms occurred for 24 hours from 14 UT, 14 December to 14 UT, 15 December (early Friday morning to early Saturday morning AESST) due to the impact with the earth of the **Full Halo CME** associated with the big X3.4 flare of 13 December. It caused major disruptions to HF communications throughout Australasia as seen by IPS ionosondes.

The lesser **Assymetric frontside CME** associated with the X1.6 flare of 14 December impacted the earth with a glancing blow at around 17 UT, 16 December (4am AESST, Sunday 17 December) detected in IPS ground based magnetometers and ACE data. Active geomagnetic conditions lasted for about 12 hours (until early Monday morning AESST).

There are no reports as yet of Aurora in Australia but reports have arrived from the US as far south as Connecticut (41 degrees latitude).

Conditions are expected to return to normal over the next few days.

Duty Forecaster
IPS Radio and Space Services
Monday 18 Dec, 8am.