

CALLISTO status report/newsletter #60

Solar storm knocks out flight control systems in Sweden, grounds air traffic across country

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STOCKHOLM – Swedish aviation officials say a solar storm has knocked out their air traffic control systems, prompting them to shut down the country's airspace for more than an hour.

The civil aviation authority said the solar storm Wednesday created disturbances in the Earth's magnetic field, which affected radar installations in southern Sweden. It wasn't immediately clear whether other countries also were affected.

Agency spokesman Per Froberg said flights disappeared from radar screens in Swedish air traffic control towers during the blackout, which lasted about an hour until 5:30 p.m. (1630 GMT). Froberg said it was unclear why the impact was so severe, adding the last time something similar happened in Sweden was in 1999.

He couldn't say how many flights were affected, but the country's main airports listed dozens of delays.

The e-Callisto observed several radio bursts during that time, see e-Callisto archive here:

<http://soleil.i4ds.ch/solarradio/callistoQuicklooks/?date=20151104>

Data are very clear in L-band, best visible from stations BLEN5M*, ZSTS* between 13:40 UT and 15:10UT. A study is planned within several hosts the e-Callisto network. Currently, there is a cross-calibration planned, led by Royal Observatory of Belgium (ROB).

New Callisto station operational at observatory "Scherrer" in Heiterswil, Switzerland

Recently, a new station in Switzerland has been set into operation, composed of a long wavelength antenna (LWA) and a Callisto spectrometer as a backend. The observatory is located in Heiterswil, see here: <http://www.sternwarte-toggenburg.ch/>

The solar radio experiment is operated by the local college in Wattwil <http://www.kantiwattwil.ch/> and it will be used for students projects.



Fig. 1: LWA installed at observatory "Scherrer" in Heiterswil, Switzerland.

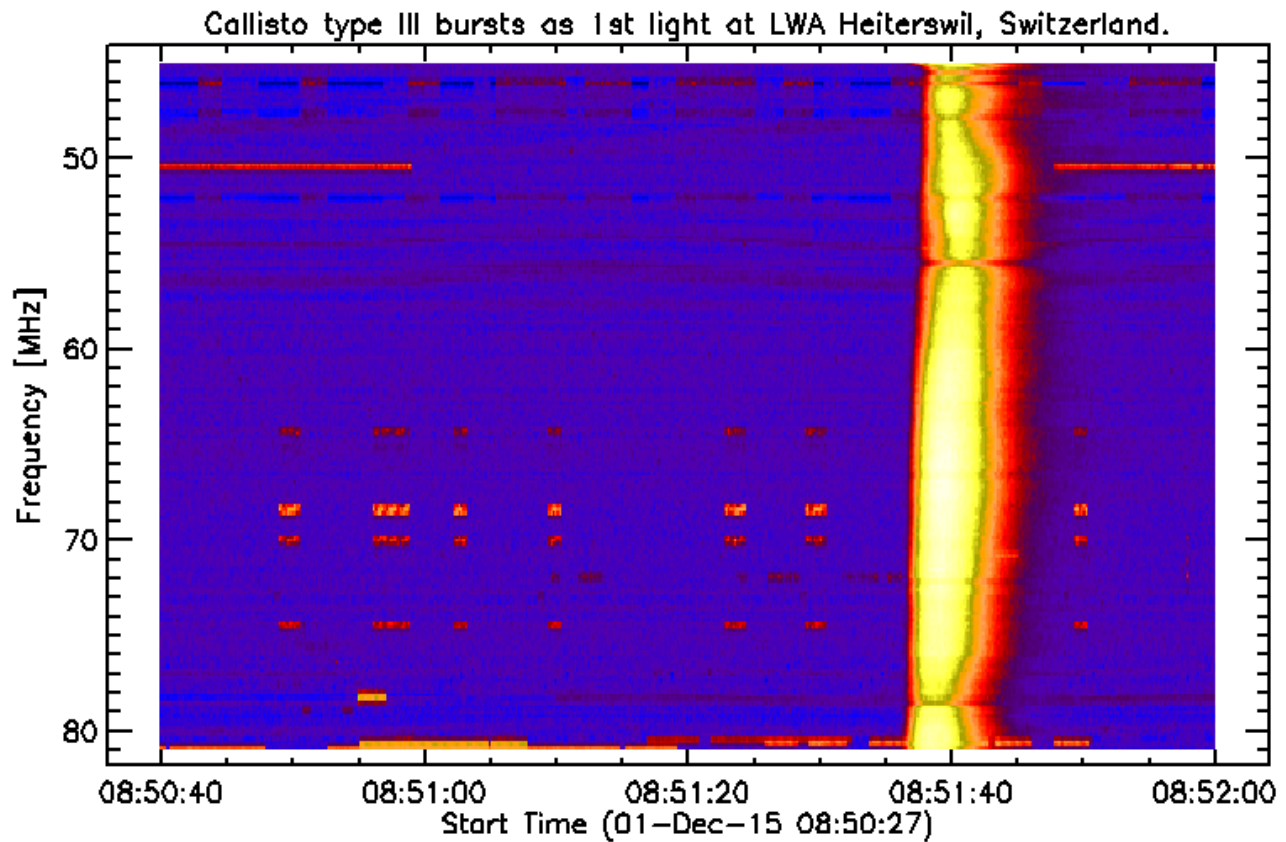


Fig. 2: First light, a bright type III solar radio burst. Generally, the level of rfi is quite low. FM has been suppressed by a low pass filter SLP-90 from Mini Circuits.

2nd Callisto in Ooty operational again

After quite some time of hardware problems in Ooty, the 2nd polarization has been repaired and is now operational again with a new LPDA antenna. Cables have been brought underground. The system is operated by:

Radio Astronomy Centre
Post Bag No.8 , TIFR
OOTY - 643 001
Tamil Nadu, India
Off:-(0423)-2244880/88
FAX : (0423) - 2244900
DID: 2244966

Data available in our e-Callisto archive with the filenames OOTY*



Fig. 3: New LPDA in Ooty. From left to right: P.V.Magesh, M.Alagupandiyaraja, K.Kalyanasundaram and R.Ganesh. Info and image by K. Kalyana Sundaram

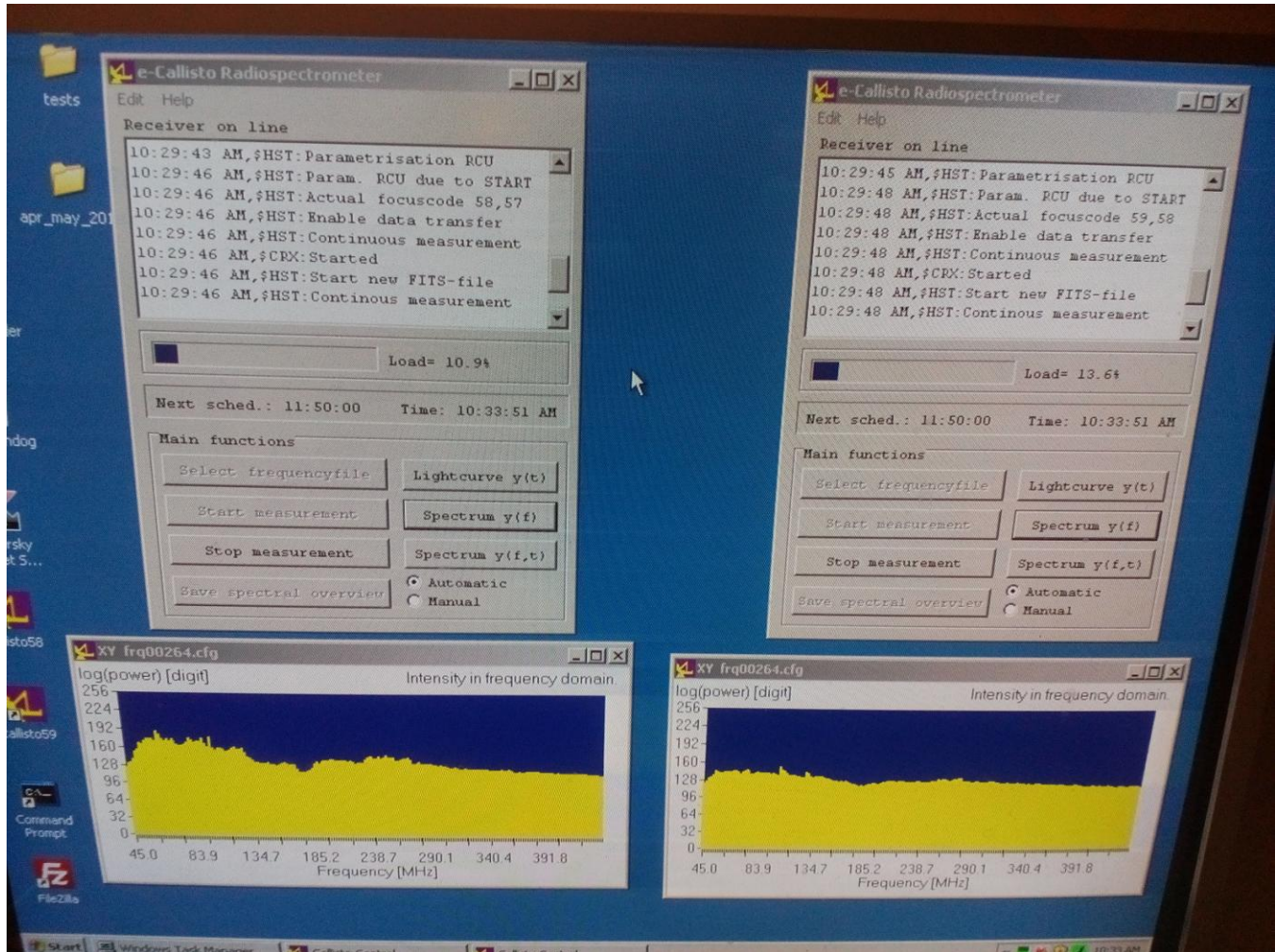


Fig. 4: Both Callisto applications running on the same Windows PC. The rfi-level is quite low and signal to noise of solar radio bursts is usually very good due to high gain antennas and low noise amplifiers.

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- Two Callisto and low noise amplifiers have been delivered to Malaysia. Let's hope that they will also provide data to the e-Callisto archive.
- Another Callisto together with a heterodyne up-converter and combined power supply/quadrature hybrid have been delivered to Technical University of Denmark in Copenhagen. It is planned to set up a new instrument together with an LWA in Greenland spring next year.
- A new article "Analysis of radio astronomy bands using CALLISTO spectrometer at Malaysia-UKM station" has just been published and is available on SpringerLink:



<http://link.springer.com/article/10.1007/s10686-015-9480-z>

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- In case you plan to publish a paper based on e-Callisto data, please invite the observer and me as the PI of the network for co-authorship. This, according to the UN/ISWI resolution addressed during the last UN/Japan workshop at Fukuoka university. We are working on a document regarding data policy which will be published soon (Fung Shing NASA).
- CALLISTO or Callisto denotes to the spectrometer itself while e-Callisto denotes to the worldwide network.
- General information and data access here: <http://e-callisto.org/>
- Callisto software does operate also under Win 8.1 and Win 10
- e-Callisto data are hosted at Fachhochschule Nordwestschweiz (University of applied sciences FHNW) in Brugg/Windisch, Switzerland. Process control, user communication and scripts are conducted at institute for Astronomy, ETH Zurich.

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email-address to be added to the data base.

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