University of Applied Sciences and Arts Northwestern Switzerland

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

e-Callisto status report #37

1st instrument in UK deployed:

A new Callisto system eC61 has recently be installed and set into operation at Acre Road Observatory, a facility of University of Glasgow, Scotland UK, see also here: http://www.astro.gla.ac.uk/observatory/srt

The antenna is a commercial LPDA (Logarithmic Periodic Dipole Array) from CREATE CLP5130-1N connected to a low noise preamplifier Mini-Circuits ZX60-33LN with 20 dB of gain and 1.1 dB of noise figure. Data (GLASGOW*.fit) are already transferred in real time to the archive at FHNW in Switzerland.

Fig. 1: Alex M. and two students beside the antenna discussing potential projects based on Callisto data. The instrument is foreseen for scientific solar observations as well as for students projects and 'bad-weather'-outreach activities.

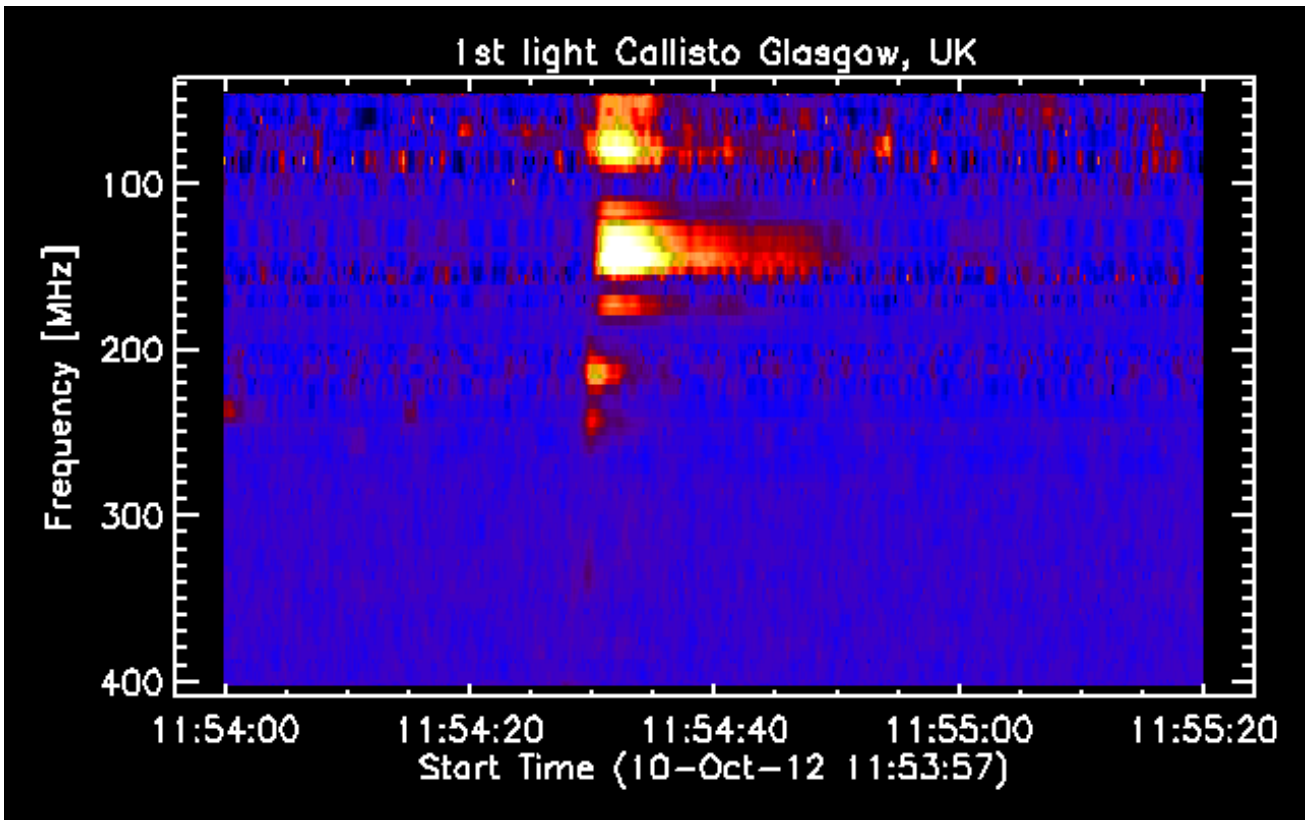

Fig. 2: 1st light, a type III solar burst recorded in Glasgow. The same burst was also observed at 11 other stations of the e-Callisto network at similar longitudes (BIR/Ireland, BLEIEN/Switzerland, DARO/Germany, HUMAIN/Belgium, HURBANOVO/Slovakia, Nairobi/KENYA, KRIM/Ukraine, MRO/Finland, MRT/Mauritius, OSRA/Czech Republic, SWMC/Egypt.

NOAA event-list:

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7640 +      1154    ////      1155  SVI  C   RSP  025-180   III/2
7640        1154    1154      1154  SAG  G   RBR  410       160
7640 +      1154    1154      1154  SAG  G   RBR  245       260
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Redundancy in frequency and longitude allows to do intensity cross-correlation to improve SNR of burst plots significantly, in this particular case up to 12/sqrt(12) = 5.4 dB. Local interference (not correlated) contributes only with -10.8 dB.

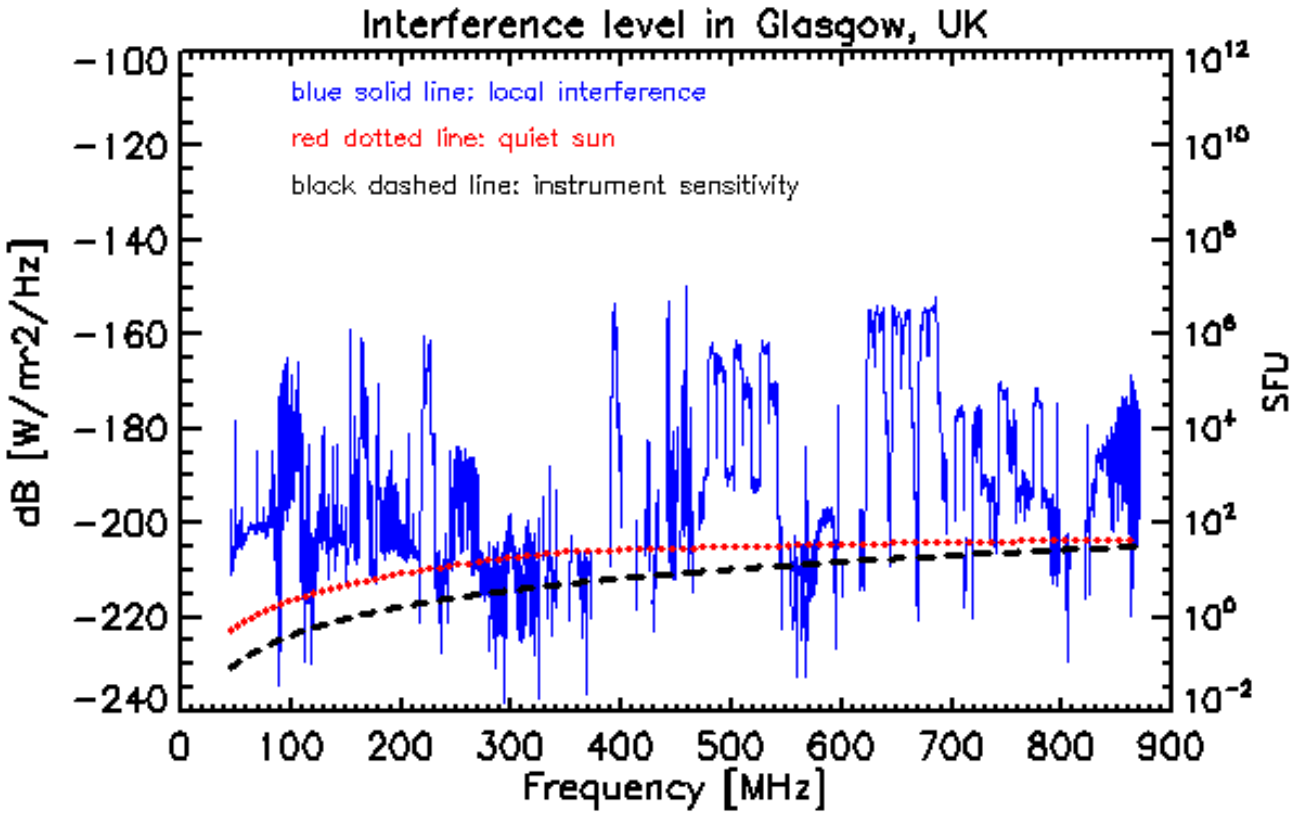

Fig. 3: Interference level at Acre Road Observatory in Glasgow. This location is suffering from a lot of interference caused by commercial radio- and TV transmitters, air traffic communication and Schengen police information system called TETRA. Between 240 MHz and 280 MHz we can identify US military satellite downlink channels. This 'comb' of signals tells us something about the sensitivity of the receiving system. An amplitude above background of more than 10 dB is fine. 'Good' ranges with low interference are below 80 MHz, between 240 MHz and 400 MHz as well as around 600 MHz and 800 MHz. Under perfect conditions it might even be possible to observe quiet sun radio radiation. Perfect means: antenna beam pointing to the sun AND no local interference.

1st instrument delivered to Indonesia:

Fig. 4: Handing over of a CALLISTO swept frequency radio spectrometer eC59 to Timbul Manik of LOC during 2012 ISWI & MAGDAS School on Space Science LAPAN in Bandung, West Java - Indonesia. We hope that LAPAN will setup an antenna, PC and related hardware as soon as possible to get a full member of the e-Callisto network. Photo: Georg Maeda, ICSWSE, Kyushu University, Fukuoka, Japan

Recent papers/articles found on ADS, based on e-Callisto data:

Krucker, Säm Glesener, L. Lin, R. P.	**Radio Imaging of Shock-accelerated Electrons Associated with an Erupting Plasmoid on 2010 November 3** The Astrophysical Journal, Volume 750, Issue 1, article id. 44 (2012). Radio data based on e-Callisto were used from Humain/Belgium and Bleien/Switzerland. A free document for download is also available here: http://sprg.ssl.berkeley.edu/adminstuff/webpubs/2012_aj_44.pdf

To remember:

CALLISTO or Callisto denotes to the spectrometer itself while
e-Callisto denotes to the worldwide network.

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Christian Monstein, Institute for Astronomy, ETH Zurich, Switzerland. email: monstein(at)astro.phys.ethz.ch