題名 ISWI Newsletter - Vol. 4 No. 108
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Attachment(s):
(1) "Callisto status_37_20121014_V0", 723 KB pdf, 5 pages.
(2) "Report IAU ISWC WG Meeting",   600 KB pdf, 2 pages.
(3) "Nile Rainfall Project proposal", 700 KB pdf, 3 pages.

:   Re:
:   (1) Callisto Status Report #37
:   (2) Report by IAU Working Group,
:   related to space weather.
:   (3) Nile Rainfall Project, proposal

Dear ISWI Participant:

There are three news items today as well:

----------(1)
Attached is another outstanding CALLISTO status report by Christian Monstein in Switzerland. One photo in it was taken by me during the recent "2012 ISWI and MAGDAS School" in Indonesia; Christian sells a Callisto spectrometer unit on the spot to LAPAN (the national space agency of Indonesia). His pace of instrument deployment is truly fantastic. My hat is off to Christian for his energy and passion.

----------(2)
During the recent IAU General Assembly in Beijing, China, the Working Group on International Collaboration in Space Weather held a half-day meeting. Attached is the report. Many thanks to Dr David Webber for sending it in to this office.

----------(3)
Finally, Dr Mahrous of Helwan University, Egypt, is seeking to measure some of the rainfall in the Nile River region in his country. He plans to use a GPS-based technique. Attached as the third pdf today is his plan for this extensive measurement effort. It stands a good chance of being approved by the Egyptian government, as the data is crucial for future regional planning and policy-making. Dr Mahrous: Please keep us posted on further developments. We know that this system can be used for more than just measuring rainfall.

So, ladies and gents of the ISWI community, please keep the news coming in to this office.

Cordially yours forever,
:   George Maeda
:   The Editor
:   ISWI Newsletter

n|w University of Applied Sciences and Arts Northwestern Switzerland

ETH 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.

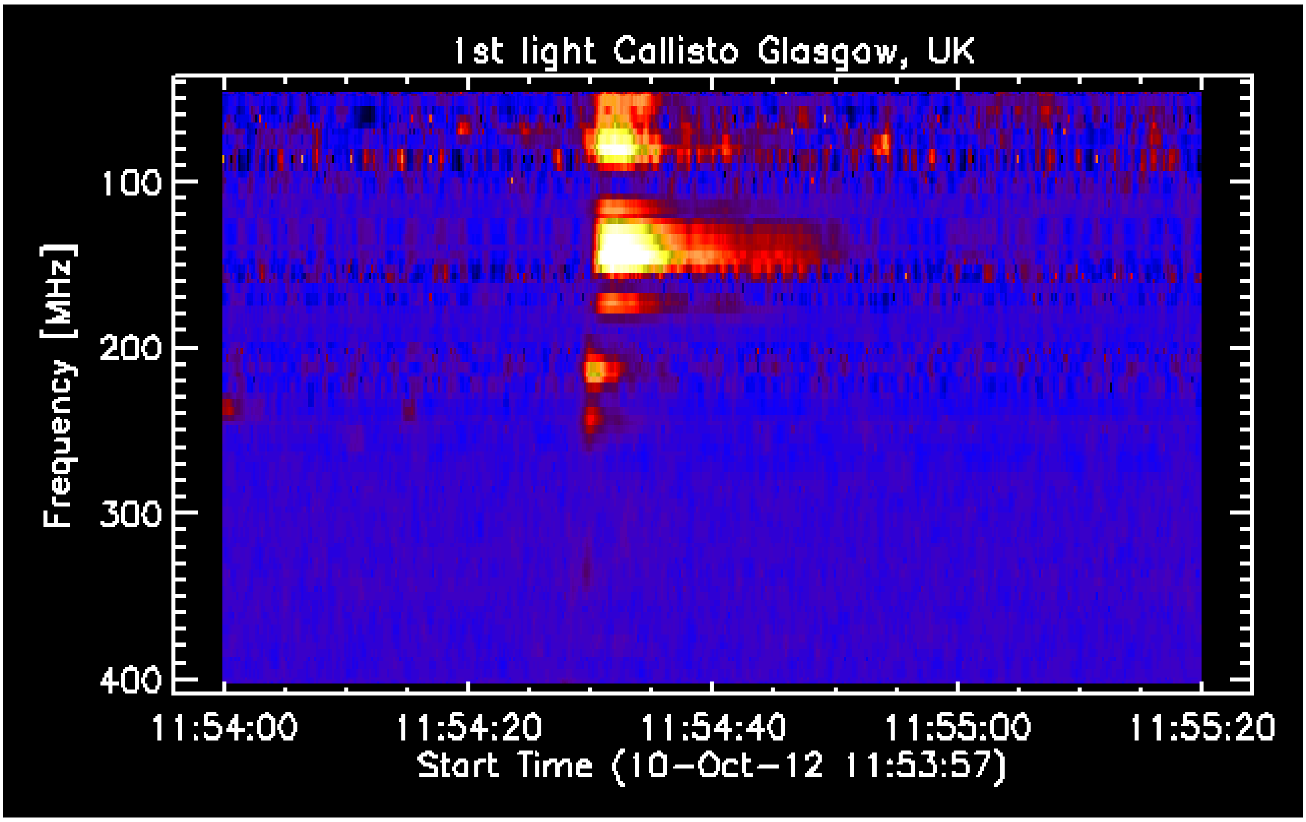


Fig. 2: 1st light, a type III solar burst recorded in Glasgow. The same burst was also observed at 11 other stations of the e-Callisto network at similar longitudes (BIR/Ireland, BLEIEN/Switzerland, DARO/Germany, HUMAIN/Belgium, HURBANOVO/Slovakia, Nairobi/KENYA, KRIM/Ukraine, MRO/Finland, MRT/Mauritius,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

NOAA event-list:

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

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.

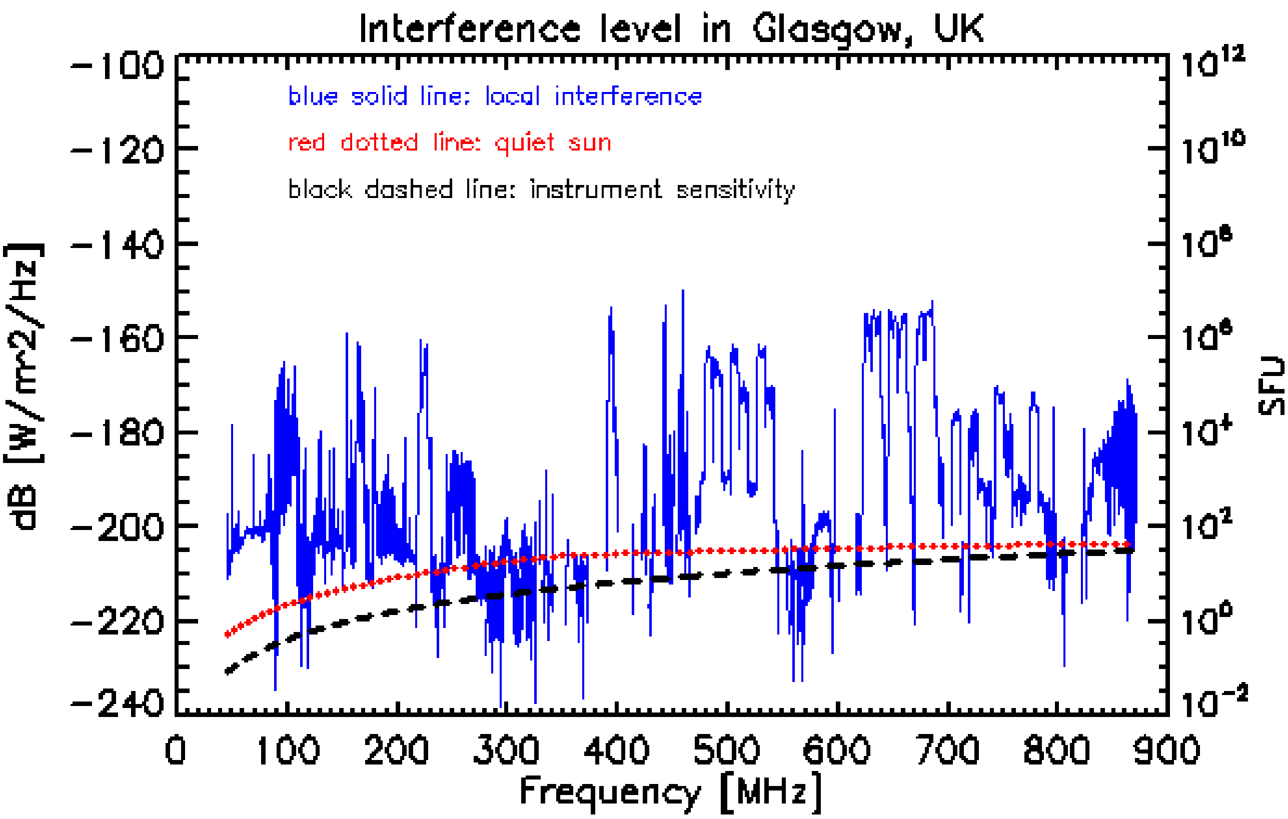


Fig. 3: Interference level at Acre Road Observatory in Glasgow. This location is suffering from a lot of interference caused by commercial radio- and TV transmitters, air traffic communication and Schengen police information system called TETRA. Between 240 MHz and 280 MHz we can identify US military 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.

This pdf circulated in Volume 4, Number 108, on 25 October 2012.

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

The following was received by George Maeda (ISWI Newsletter Editor) from David Webb on 24 October 2012.

Report of the Meeting of the International Astronomical Union (IAU) Division II Working Group on International Collaboration in Space Weather at the IAU General Assembly

An informal half-day meeting was held at the IAU General Assembly in Beijing, China on 23 August 2012. The main goal of this Working Group is to provide a clearinghouse of and general information on space weather organizations and activities in countries around the world.

The main attendees at the meeting were Nat Gopalswamy of NASA GSFC, USA, Luc Dame of IPSL/CNRS/UVSQ/LATMOS, France, Junga Hwang of KASI, Korea, Vladimir Papitashvili of NSF, USA, and David Webb of Boston College, USA. These scientists are shown in the photo in this order from left to right.

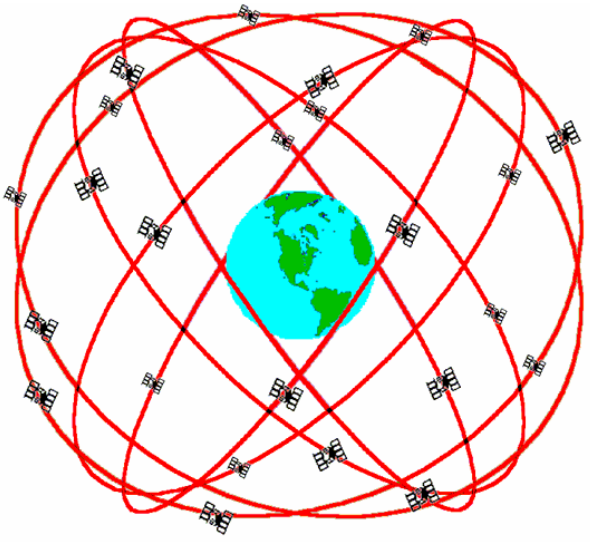
Presentations were either provided before and summarized at the meeting or were given by the attendee as follows:

Dave Webb introduced the WG and summarized its goals, which had been in an article in the IAU GA Newspaper the previous day. Junga Hwang then reviewed the Korean space weather program. Webb showed these presentations provided in advance: George Maeda on ISWI & MAGDAS, Christian Monstein on e-Callisto, Volker Bothmer on the European AFFECTS project, Nat Gopalswamy on SCOSTEP and the CAWSES-II programs, Luc Dame on ESA's space weather missions, and Vladimir Papitashvili on the NSF Antarctic programs and new instruments pertinent to space weather.

The existence of IAU working groups must be justified every 3 years at the time of each General Assembly. Thus the future and possible new goals of the ISWC WG were discussed and, specifically, whether it should continue it or not. We decided that it should continue, but in a new form emphasizing the solar variability aspects of space weather and, more specifically, the Sun and its influence on space weather. No decisions were made on how to reorganize the WG, although Luc Dame agreed to be a new co-Chair with Dave Webb. It is likely that an official organizing committee for the WG will be established in the near future, and the current ICSW WG Website at
http://www.iac.es/proyecto/iau_divii/IAU-DivII/main/spaceweather.php
will be reorganized.

This pdf circulated in Volume 4, Number 108, on 25 Oct. 2012.

GPS SURVEY OF THE EARTH'S ENVIRONMENT



PRINCIPLE

The GPS system is composed by a constellation of 24 satellites orbiting around the Earth (figure on the left side).

The signal emitted by each satellite is recorded by GPS receivers at the ground level. During the crossing of the layers surrounding the earth (figure below) the satellite signal is modified (fluctuations of the power, lengthening path, etc..). The 2 layers which strongly influence the signal are ionosphere and troposphere. The received signal processed gives access to parameters of these layers as :

- **the total electron content (ionosphere)**
- **scintillation index (ionosphere)**
- **the water vapour (troposphere)**

LAYERS

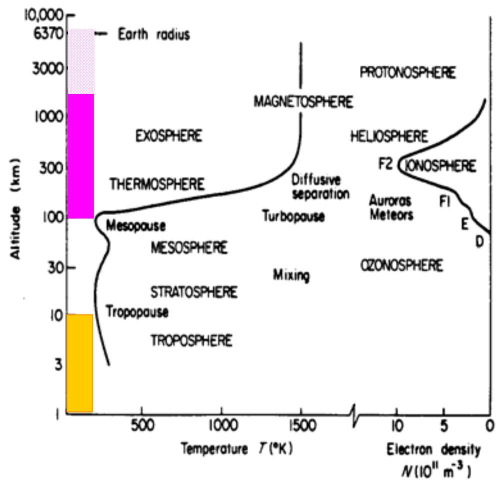
> 600 km EXOSPHERE
few collisions, Particles follow balistic orbit

80-600 km THERMOSPHERE -> Ionization by the solar X-EUV radiation **IONOSPHERE**

30-80 km MESOSPHERE
Absorption of the radiation UV by the ozone layer

11-30 km STRATOSPHERE Turbulence

0-11 km TROPOSPHERE
Meteorological phenomena



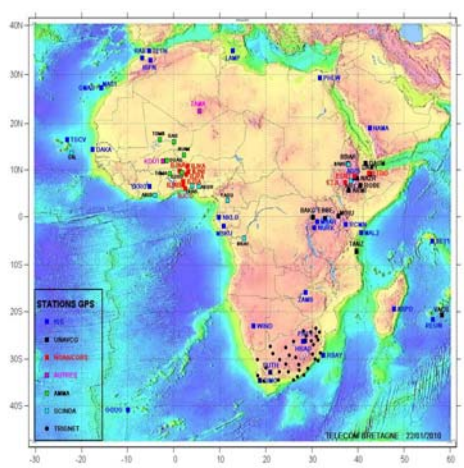
PROJECT

MONITORING OF THE WATER VAPOUR IN THE TROPOSPHERE ALONG THE NIL

By using GPS and meteorological stations located in the different countries along the Nil, we can survey the water vapour and develop climatic studies of this area.

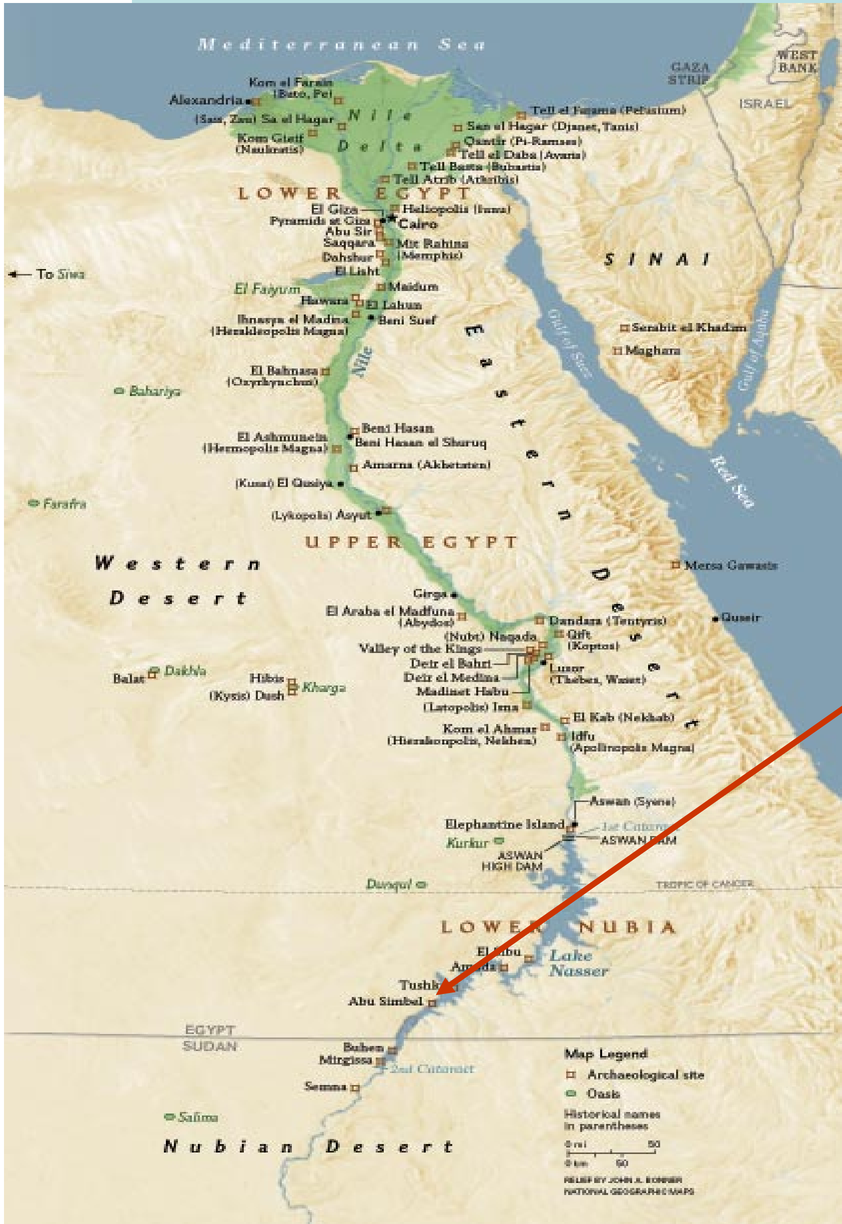
In the international programme ISWI (International Space Weather Initiative), the deployment of GPS receivers over Africa is planned.

Therefore it is a necessity to organize training school for the use of GPS data.



GPS Network over AFRICA

Location



TGCV

VACS
REUN

Abu Simbel

AIM OF THE PROPOSAL

The dramatic change from the abundant rainfall in the 1950s and 60s to much drier conditions from the 70s to the 90s over most of the African countries was the strongest trend in rainfall on the planet of the 20th century. Marked inter-annual variations in recent decades have resulted in extremely dry years with devastating environmental and socio-economic impacts. With a large rural population depending on rain fed agriculture, the abrupt decrease of water resources has been devastating to both populations and economies.

The aim of our proposal is to provide the decision makers with improved assessments of similar rainfall changes which are likely to occur during the 21st century due to natural fluctuations and as a result of anticipated global climate change. An essential step in that direction is to improve our ability to forecast the weather and climate in the east Mediterranean region specially Egypt.

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