CALLISTO status report/newsletter #95

New instrument at Siuntio, Finland

A new Callisto system has been installed in Siuntio, Finland by Juha Kallunki. Even with a small antenna he already got several solar radio bursts.

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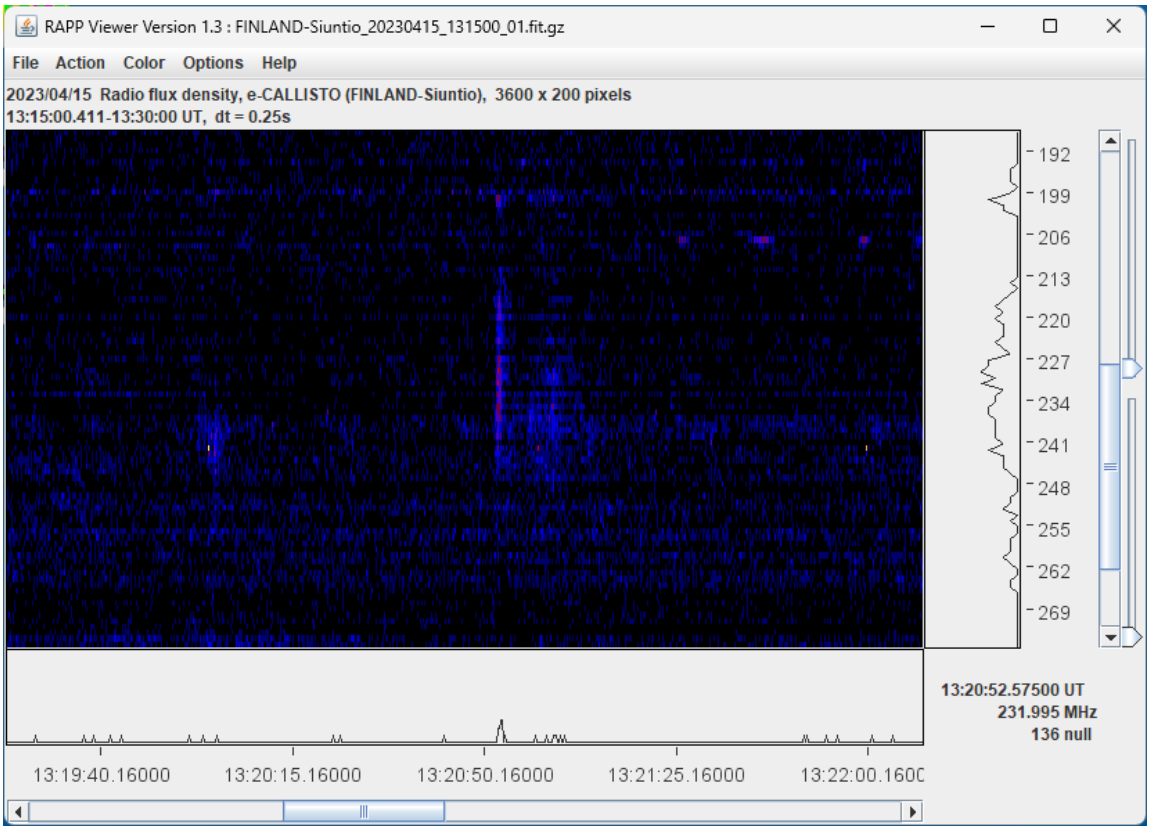

Fig. 1: 1st light from Siuntio. Weak type III burst.

Welcome Juha on board of the e-Callisto international instrument network!

e-Callisto burst statistics May 2023

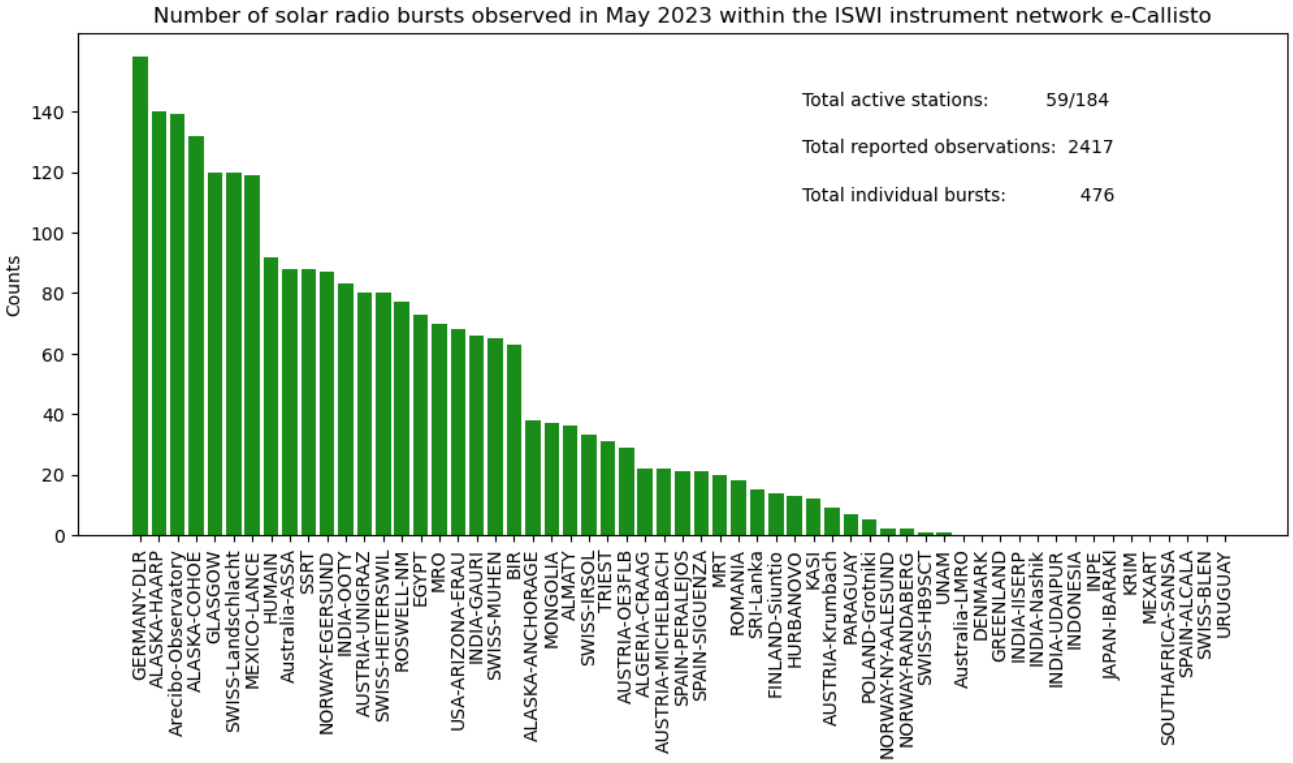

Fig. 7: Compilation of all visually detected bursts from all Callisto-stations which provide data to the e-Callisto network. There is a clear winner of the 'competition', DLR in Neustrelitz, Germany; congratulations!

Too bad: Most of the 218 stations do not provide data to the central archive and there are many reasons such as: Broken instrument (LNA, cables, connectors, antenna tec.), no electrical power and/or no internet access and even loss of motivation …
I want to encourage hosts to put a student or a technician as responsible person for an instrument to keep it operational and to upload data to the central server. Only 70 stations out of more than 200 instruments which provide data on a regular basis is not super successful, we could do it better.

Very active colleagues Manuel Prieto and Alejandro Martin from University of Alcalá created a set of scripts to convert spectra from Learmonth into the dedicated data format from CALLISTO, FIT-files.
A zipped copy is available here: https://e-callisto.org/Software/LEAR_SRS2FIT.zip

The main goal of the network e-Callisto has been changed from Understanding Coronal Heating to now: **Understanding Transient Phenomenon in the Solar Corona.**

On February 20th 2023 we got 1st light from CALLISTO in Bangkok, Thailand.
Congratulations Peter Wright for this achievement.
Unfortunately, the instrument is silent since then without any data upload. We hope Peter can bring the system back into operation soon.

The current, as well as all previous ISWI webinar sessions can be accessed through the website of the Office at: https://www.unoosa.org/oosa/en/ourwork/psa/bssi/iswi_webinars.html

Siberian Solar Radio Telescope SSRT is back online after a couple of years of silence. Congrats and thanks to the team in Badary. I hope that also KRIM (Crimea island) will be back soon despite the war between Russia and Ukraine.

Also, Kigali in Rwanda is back in operation since a few weeks. Congrats to this achievement. Instrument sensitivity is not yet there, possibly an issue with antenna or cables or LNA.

Boumerdes, Algeria was suffering from tremendous local interference. After time consuming investigation they found out the source of rfi. It was a switched power adapter which has now been moved further away from the antenna.

On June 15th we had our first video-conference, organized by colleagues from university of Alcalá. Thanks Javier and Manuel for taking this action to go forward with the network. There were many projects presented and discussed such as:

- Calibration by Pietro Zucca
- Automatic solar radio burst detection by Manuela Temmer Graz and Spanish colleagues
- Products and services by Vincenzo Timmel FHNW
- Receiver and antenna design by Manuel Prieto
- Several other actions were addressed, especially CALLISTO2.0, based on HackRF One and RaspBerry PI.

There were more than 30 attendees on this conference which we see as a great success. If you are interested in one or the other aspect, please get into contact with: Bussons Gordo Javier javier.bussons(at)uah.es

Our friends from Australia (ASSA) are studying a cheaper, better version of the frontend-electronics FEE which is used in connection with LWA and similar low frequency antennas. I know that several people out of the Callisto community are dreaming from a cheap FEE but not everyone is able to design

and built an FEE himself. In addition Peter Wright Bangkok has done some design of a FEE like printed circuits board.
People interested in FEE like PCB shall get into contact with either ERAC Peter Wright in Thailand erachq@aol.com and/or Peter Gray in Australia weaksignals@iinet.net.au
Assuming one can produce more than just one or two FEE, the prize should go down for such a low noise and high gain frontend electronics.

Australia (ASSA) is also experimenting with MWA

The MWA operates at low radio frequencies, **(70) 80–300 MHz.**
Curious to see first results, observed with CALLISTO from Sunnydale. A feature of this antenna design is signal suppression below 30 degrees from the horizon, chosen to reduce man-made interference around the Murchison site in Western Australia

Papers:

"Regular Solar Radio Imaging at Arecibo: Space Weather Perspective of Evolution of Active Regions" - A White Paper Submitted to the “Decadal Survey for Solar and Space Physics (Heliophysics) 2024-2033”. https://arxiv.org/pdf/2211.04472.pdf

Battaglia, Andrea Francesco; Wang, Wen; Saqri, Jonas; Podladchikova, Tatiana; Veronig, Astrid M.; Collier, Hannah; Dickson, Ewan C. M.; Podladchikova, Olena; Monstein, Christian; Warmuth, Alexander; Schuller, Frédéric; Harra, Louise; Krucker, Säm
Identifying the energy release site in a solar microflare with a jet Journal Article
In: Astronomy and Astrophysics, vol. 670, pp. A56, 2023.

Ndacyayisenga, T.; Uwamahoro, J.; Uwamahoro, J. C.; Babatunde, R.; Okoh, D.; Raja, K. Sasikumar; Kwisanga, C.; Monstein, C.
An Overview of Solar Radio Type II Bursts through analysis of associated solar and near Earth space weather features during Ascending phase of SC 25 Journal Article
In: EGUsphere, vol. 2023, pp. 1–22, 2023.

McKee, Sarah Ruth; Cilliers, Pierre Johannes; Lotz, Stefan; Monstein, Christian
The effects of solar radio bursts on frequency bands utilised by the aviation industry in Sub-Saharan Africa Journal Article
In: J. Space Weather Space Clim., vol. 13, pp. 4, 2023.

Mario, Fernández Ruiz; Javier, Bussons Gordo; Manuel, Prieto Mateo; Christian, Monstein
Automatic detection of e-Callisto solar radio bursts by Deep Neural Networks Inproceedings
In: 3rd URSI AT-AP-RASC, Gran Canaria, 29 May – 3 June 2022, 2022

CESRA NEWS

Characteristics of stripes-pattern radio-emission sources
by Khaled Alielden
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3386

Third and fourth harmonics of electromagnetic emissions by a weak beam
in a solar wind plasma with random density fluctuations
by C. Krafft and P. Savoini
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3403

Flares detected in ALMA single-dish images
by I. Skokic et al
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3417

Zebra Stripes with High Gyro-Harmonic Numbers
by Jan Benacek and Marian Karlicky
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3425

Microwave imaging of quasi-periodic pulsations at flare current sheet
by Yuankun Kou et al.
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3435

Radio Scintillation Observations of the Plasma Tail of Interstellar Comet 2I/Borisov,
by P K Manoharan et al.*

https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3452

The First Flare Observation with a New Solar Microwave Spectrometer Working in 35–40 GHz,
by Yan et al.
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3468

Please see the recent nugget describing this special issue:
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3484

The Radial Variation of the Solar Wind Turbulence Spectra near the Kinetic Break Scale from Parker Solar Probe Measurements,
by Lotz et al
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3476

The frequency ratio and time delay of fundamental and harmonic components in solar radio bursts
by X. Chen et al
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3493

Solar coronal density turbulence and magnetic field strength at the source regions of two successive metric type II radio bursts
by Ramesh et. al.
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3501

Temporal and Spatial Association Between Microwaves and Type III Bursts in the Upper Corona
by Altyntsev et al.
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3509

Solar Radio Spikes and Type IIIb Striae Manifestations Triggered by a Coronal Mass Ejection
by Clarkson et al
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3521

Automated Detection and Statistical Study of Solar Radio Spikes
by P.R. Lv et al
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3531

Radio measurements of coronal magnetic fields in fan-spine configurations on the Sun
by B. Ryabov and A. Vrublevskis
https://www.astro.gla.ac.uk/users/eduard/cesra/?p=3554

AOB

- If have some stuff to present to the Callisto community, please let me know

- IRSOL is meant as the new core-station of the e-Callisto network
- To avoid strange issues with Windows computers, disable disc caching. Otherwise configurations files might not be updated in Callisto with the latest information
- Another access to Callisto data here: https://vwo.nasa.gov/
- 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/
- e-Callisto data are hosted at University of Applied Sciences, Institute for Data Science FHNW in Brugg/Windisch, Switzerland. Additionally, data are available at ESA site here: SSA Space Weather Portal (http://swe.ssa.esa.int/).
- Don't forget United Nations Workshop on International Space Weather Initiative: The Way Forward 26-30 June 2023 in Vienna
- In case you (as the responsible person for operating and maintenance of Callisto) are leaving the institute or, if you are retiring, please send me name and email address of the successor.

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