

CALLISTO status report #22**To:**

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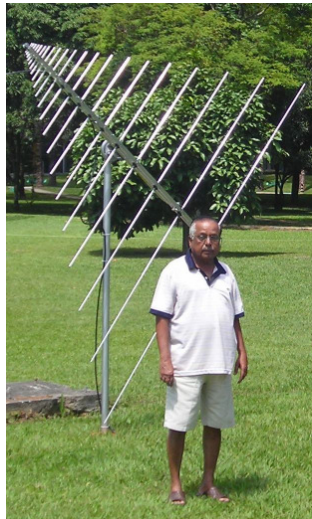
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Remark: replace @ with Ω in the email addresses above.

Actual status

The sun is getting more and more active at radio wavelength. The Callisto network detected already several nice flares in December 2009, see below. Two new Callisto spectrometers were recently handed over and set into operation at INPE in San José dos Campos, Brazil. Welcome Brasil to our Callisto network!



Sawant in front of a log-per.



Observatory with 2 Callisto to cover 2 linear polarizations.

And two kits were sent to Australia and another one to Hawaii, welcome Pacific region.

Ecuador, Morocco, Canada, Turkey, Egypt, Cuba, Malaysia, Nigeria, Italy, Czech Republic and others are still in planning phase. We hope that one or the other of these locations can be set into operation until autumn 2010.

New features have been included in the Callisto application.

1. All plots (yt, xy, xyt) show now a title
2. Up to 3 real-time light curves can be stored as ASCII files to produce on-line plots
3. Printed circuit board layouts available (on our website) for the 'self-edger's'

New applications and documents:

4. A plot utility to visualize real-time light-curves here:
http://www.astro.phys.ethz.ch/instrument/callisto/ecallisto/Lightcurve_Plotter.zip
5. Updated documents: MAIT.doc, CheckList.doc, Operating Manual

Planned upgrades in view of Space Weather and Flux Monitoring:

1. Scheduler shall allow to change frequency program during observation
2. More than 3 real-time light curves shall be possible
3. Engineering change request: take out tantalum capacitor C1 and replace it with a simple wire to allow dc-measurement of internal detector voltage.

If you have any engineering change requests of general interest, please let us know.

General information about Callisto here:

http://www.astro.phys.ethz.ch/instrument/callisto/callisto_nf.html

Software and related products about Callisto here:

<http://www.astro.phys.ethz.ch/instrument/callisto/ecallisto/applidocs.htm>

Direct access to the data archive here:

http://www.astro.phys.ethz.ch/cgi-bin/showdir?dir=Observation_callisto&file=dir.html

Direct access to the Callisto flare list here:

<http://www.astro.phys.ethz.ch/instrument/callisto/Appdocs/FlaresCallistoNetwork.htm>

The advantage of the CALLISTO network.

On December 22th 2009 between 04:51 UT and 05:06 UT there was a rather complex flare composed of several type III and a type II flare with herringbone structure and harmonics. We got data from Gauribidanur/India, Ootacamund/India, Daejeon/South Korea and Poste de Flacq/Mauritius. All of them are quite different regarding signal level and interference level. All other locations could not 'see' it or, their equipment was not operational. I integrated all five (two linear polarizations from Ooty) spectra together to one single spectrum using SSWIDL. The result looks not bad because the signal improves by a factor of 5 while the noise reduces by a factor of $\sqrt{5}$. Due to the fact that the SNR (signal to noise) increases by a total factor of 11.1 a new type II flare appeared at 04:51 and 04:53 below 100 MHz.

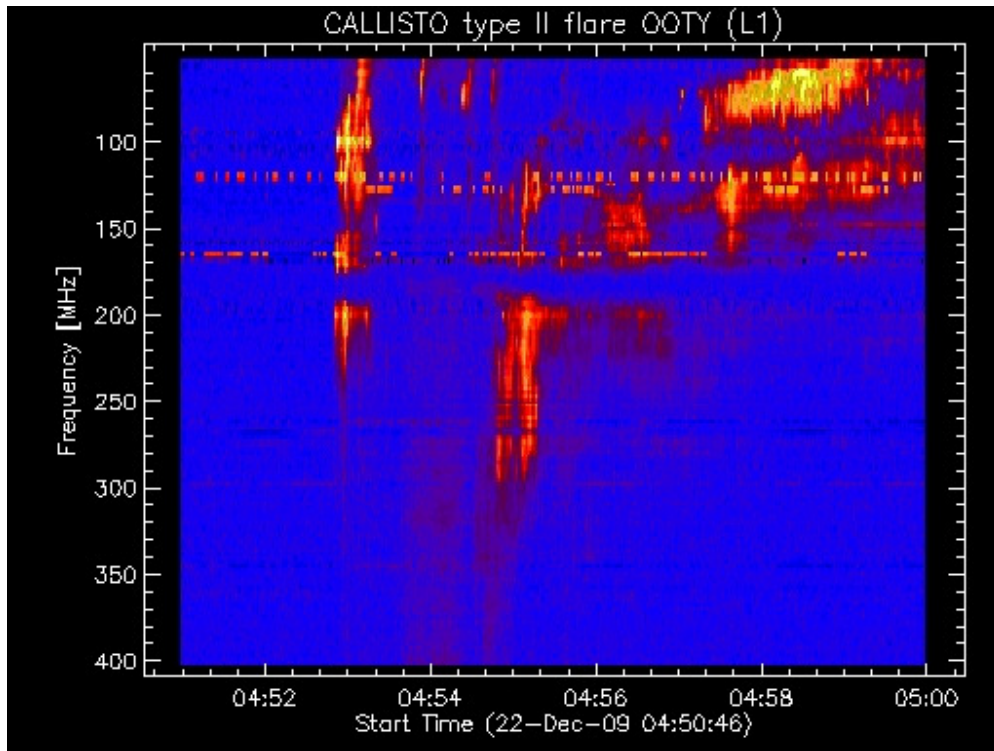


Fig. 1: Group of type III flares and a type II herringbone-flare with harmonic. Location = Ootacamund India linear polarization #1.

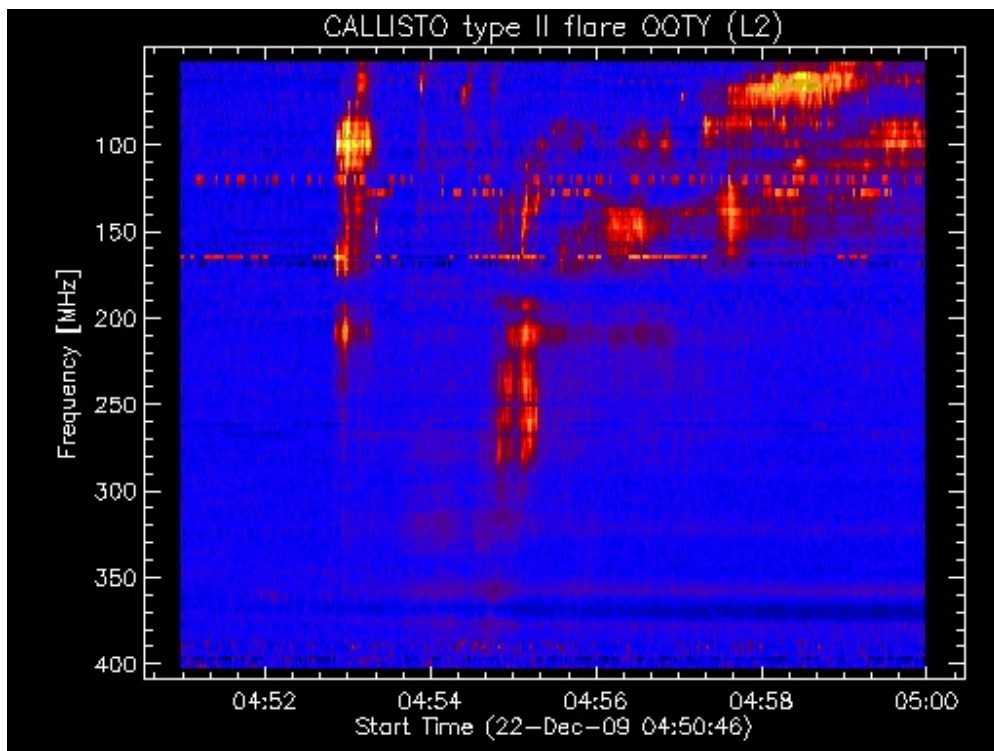


Fig. 2: Group of type III flares and a type II herringbone-flare with harmonic. Location = Ootacamund India linear polarization #2.

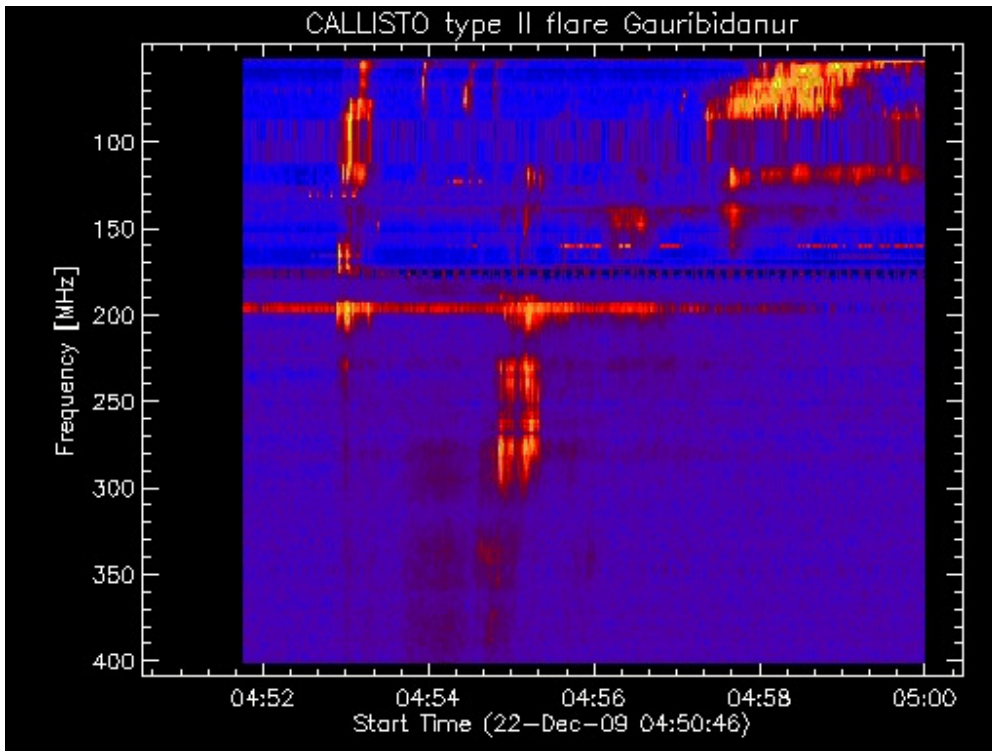


Fig. 3: Group of type III flares and a type II herringbone-flare with harmonic.
Location = Gauribidanur/India.

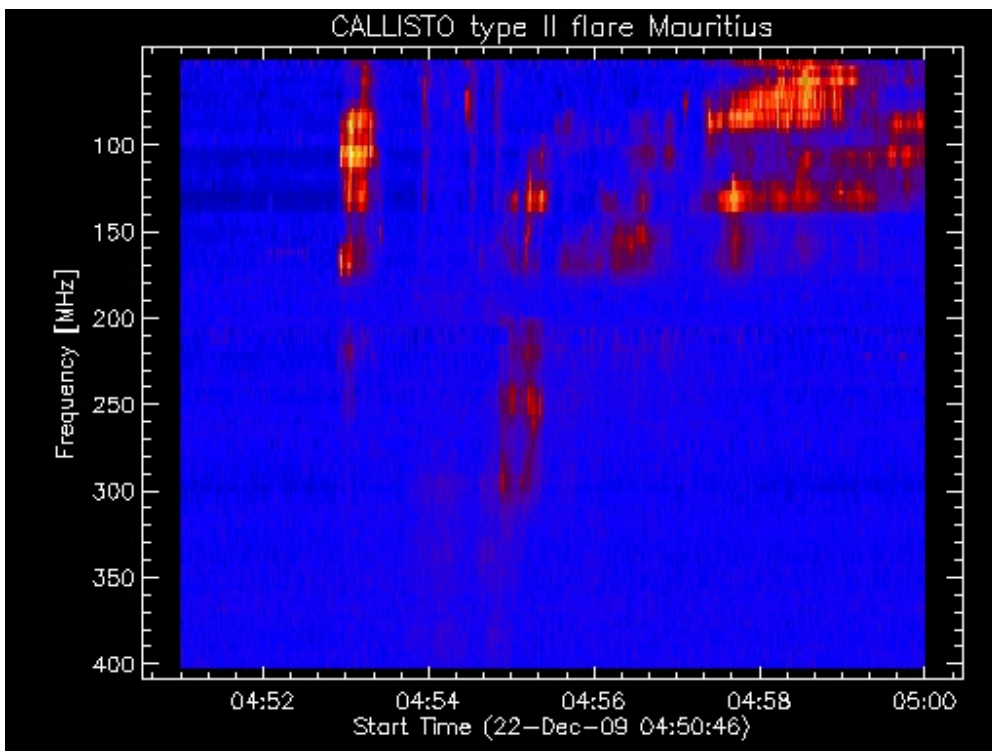


Fig. 4: Group of type III flares and a type II herringbone-flare with harmonic.
Location = Poste de Flacq/Mauritius,

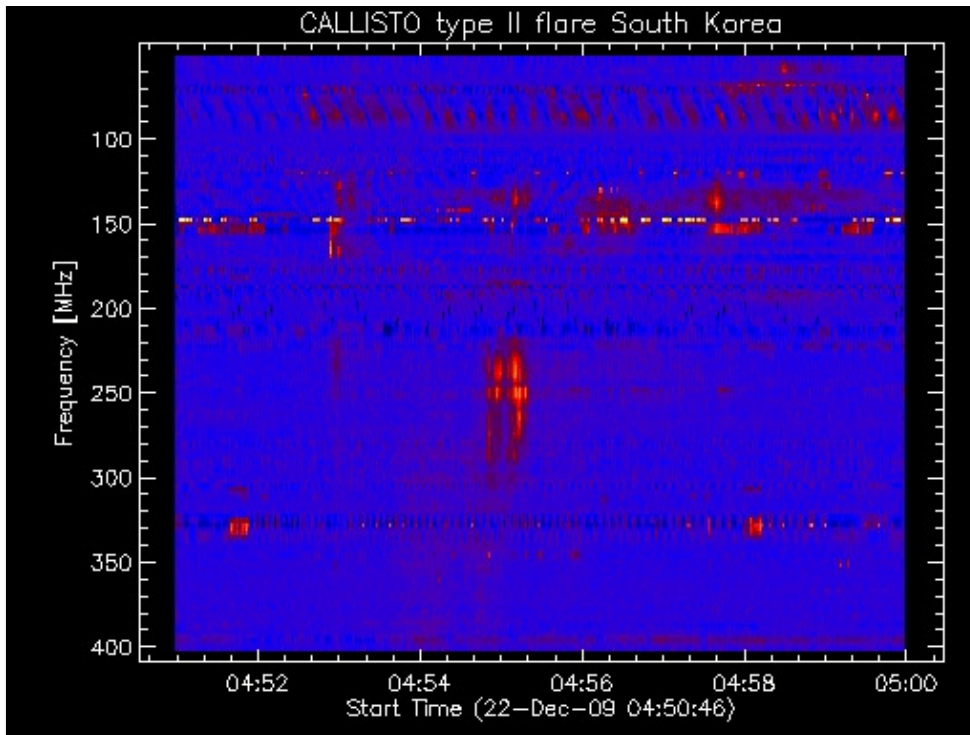


Fig. 5: Group of type III flares and a type II herringbone-flare with harmonic. Location = Dajeon/South Korea.

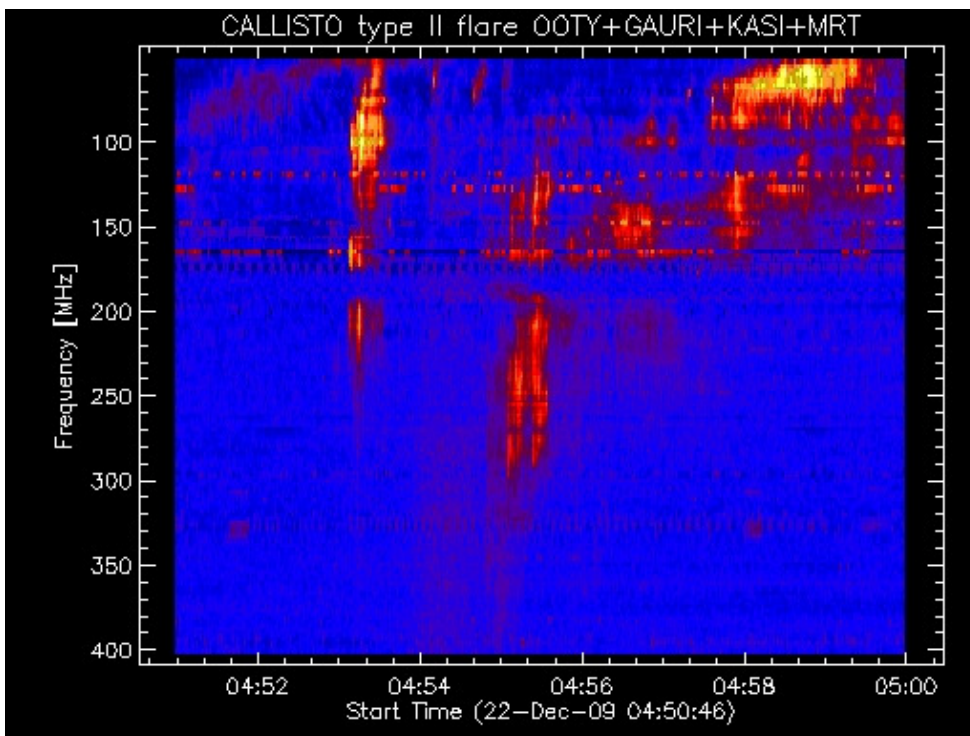


Fig. 6: Group of type III flares and a type II herringbone-flare with harmonic. Location = 2 x Ootacamund + Gauribidanur + South Korea + Mauritius. Among others details, a new type II appears on top left in the spectrum between 04.51 and 04.53 below 100 MHz.