

CALLISTO status report #19**To:**

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

Actual status of present host sites:

A 2nd Callisto spectrometer was recently handed over and set into operation at Humain station, the remote observatory of the ROB (Royal Observatory of Belgium). This, to study decimetric radio events of the active sun. After several month of complete silence of solar activity we finally got a weak deka-metric radio flare captured by the Callisto network. On December 11th the system observed its 'first light' as a type II burst associated with a class c1.3 x-ray flare. Beside Humain (Belgium) also Ooty (India) and Bleien (Switzerland) observed the flare at the same time (09:26:35 UT) and at exactly the same frequency of about 70MHz.



Figure 1: Remaining interferometer antenna at Humain station of ROB with broad band antenna attached to the rim of the dish. The dish with its mount and drives is only used as a positioning tool for the broad band antenna. In the background one can recognize an old "Würzburg Riese" from World War II. The logarithmic periodic antenna CLP-5130-1N covers the frequency range of 50MHz up to 1300MHz. While Callisto in most cases only makes use of a part of the spectrum, in this case. 45 MHz - 90 MHz as presented in figure 3.

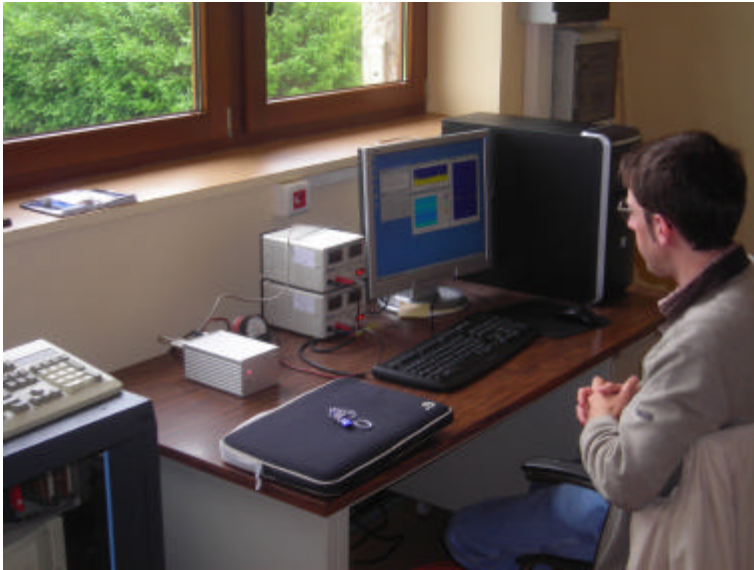


Figure 2: Christophe Marqué of ROB sitting in front of the running Callisto spectrometer in Humain. Callisto is on the left side of the table, power supplies in the center and monitor with keyboard and PC on the right.

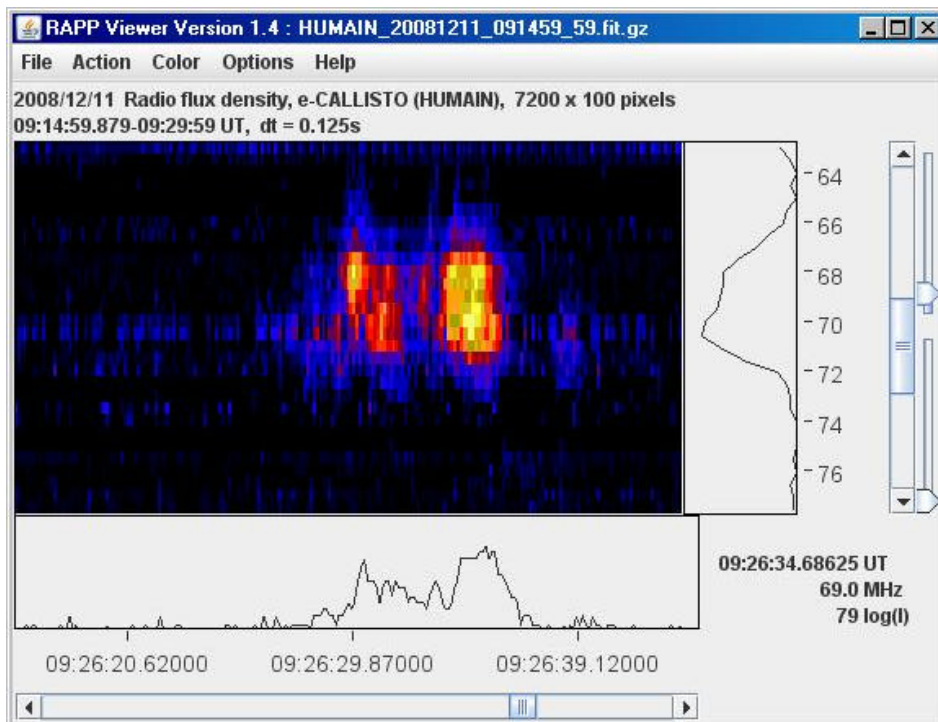


Figure 3: ‘First light’ radio burst observed at Humain station of ROB (Royal Observatory of Belgium). An average background spectrum has been subtracted. X-axis shows time expressed in UT, y-axis shows frequency in MHz and z-axis denotes to the stored digital value of the ADC (without any calibration). The frequency resolution is 450 KHz (100 channels) and time resolution is 125 msec (8 sweeps per second).

Brazil, Ecuador, Mauritius and Ulaanbaator/Mongolia are still in planning phase. We expect that these locations can be set into operation in early summer of 2009. The main problem is always the lack budget to cover traveling cost of an engineer.

We have set into operation a low frequency antenna connected to a converter at Bleien observatory covering a frequency range from 20MHz - 90MHz. During the active phase of December 11th we already got some small radio bursts.

We have some problems with our web-interface 'DiRaC' due to lack of man power at our institute. But we are optimistic to get a work around until summer 2009. In parallel, Belgium is interested to take over the visualization software 'DiRaC' in the near future.

During a recent ESO-meeting in Aussois France a new radio quiet area was found. Due to low infrastructure there are only a few transmitters within the national park of Val Vanoise, see figure 4.

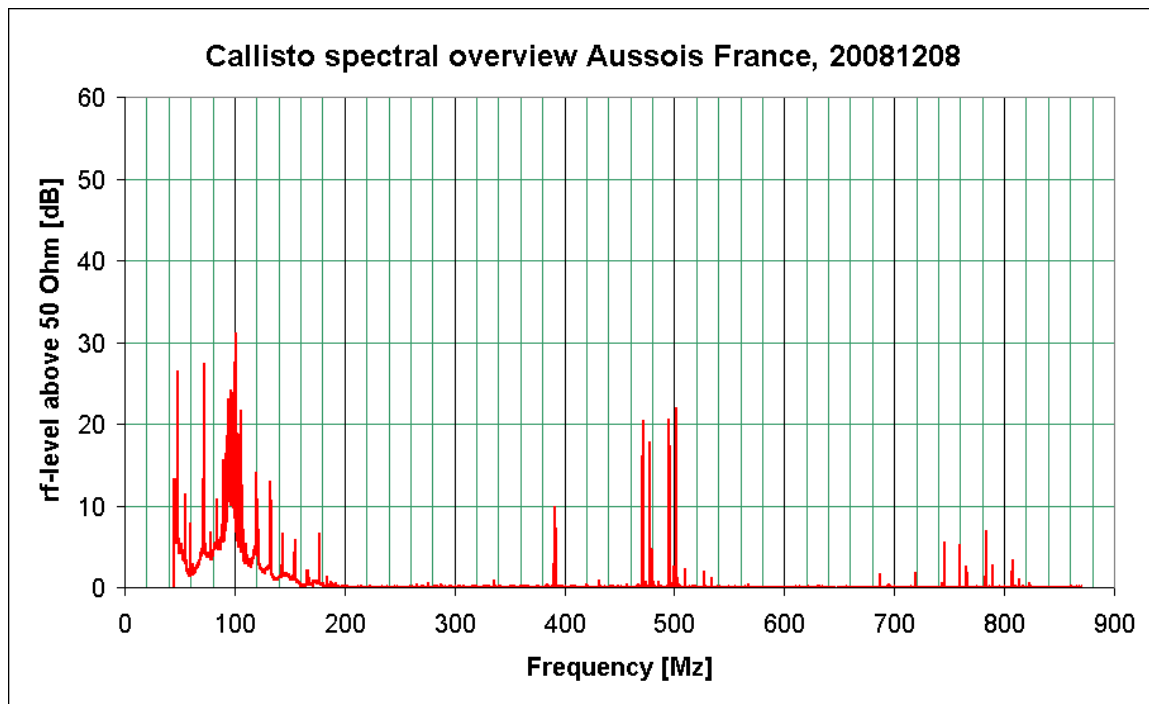


Figure 4: Spectral overview in the French Alps, National Park of Val Vanoise in Aussois taken with a broad-band omni-directional antenna. Plot shows 13'120 channels between 45MHz and 870 MHz with a separation of 62.5 KHz. Integration time is roughly 1 msec in full sensitivity of Callisto. This location would be perfect for meter wave observation.

A new heterodyne up-converter to cover 20 MHz - 90 MHz has been designed and is now in MAIT phase. It is planned to manufacture up to 4 devices for the observation of low frequency spectrum at remote areas. All components were purchased through eBay using private means.

4 additional Callisto spectrometers have just been built by our apprentice Antonin Vyrzel. They are now in an intensive testing phase where the system is carefully checked with regard to the specification

A new software tool is available to create a new frequency program out of an existing spectral overview. Only channels with low rfi are automatically selected. The program can already be downloaded from our website freely as a beta-version. It will be improved until February 2009.

Another software tool has recently been created to automatically produce and update a scheduler file for Callisto. It writes 3 entries composed of keyword and parameter into the file. First a starting sequence for sun rise, a so-called restart sequence (for safety reasons) at transit time of the sun and finally a stop sequence at sun set. The program and its configuration file can be downloaded freely from our website as a beta-version.

If you have ideas for improvement of the control software, please let us know. Within CRAF (Committee for Radio Astronomy Frequencies) the idea came up to use Callisto also for radio monitoring. This is already possible by using the function 'Spectral overview' for example during the night when no observations are taking place.

General information about Callisto:

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

Software and related products about Callisto:

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

Access to data archive and DiRaC:

http://www.astro.phys.ethz.ch/rapp/rapp_home_nf.html