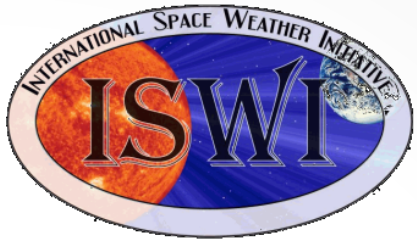


Space Weather Monitoring; Benefits and Needs of the e-Callisto Network.

Pietro Zucca[1],
Christian Monstein[2], Peter Gallagher[1],
Christophe Marqué[3], Eoin Carley[1],
Diana Morosan[1], Joe McCauley[1]

[1]School of Physics, Trinity College Dublin, Ireland
[2]Institute for Astronomy, ETH-Zentrum, Zurich, Switzerland
[3]Royal Observatory of Belgium, Brussels, Belgium

Overview

- General information about the e-Callisto network
- Presentation of the observing site in Ireland
- Science with e-Callisto
- Education and outreach

The Receiver

Compound
Astronomical
Low cost
Low frequency
Instrument for
Spectroscopy and
Transportable
Observatory

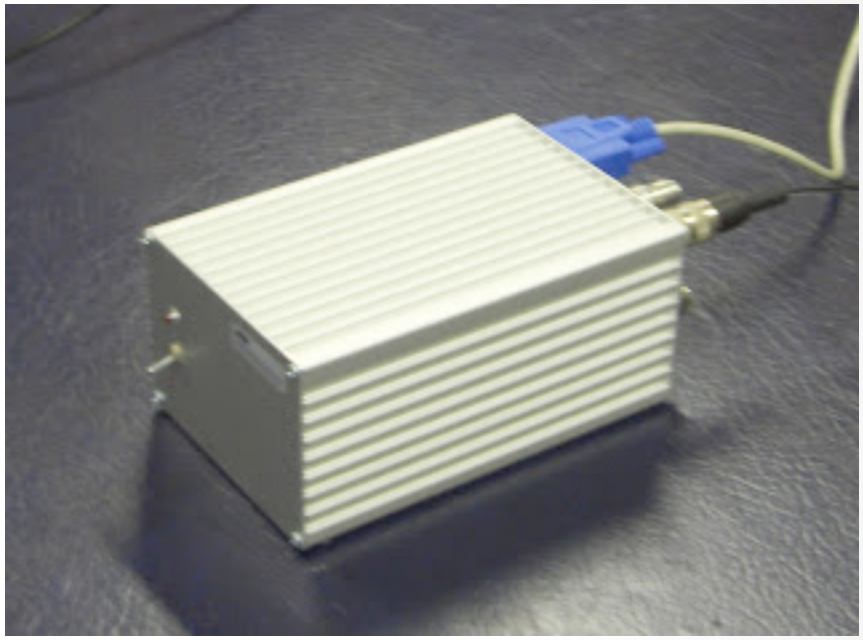
First CALLISTO prototype receiver in 2002

Benz et al. 2005

11th anniversary of Callisto since 1st light of the prototype receiver in 2002

The Receiver

- Frequency Range 45-870 MHz
- 200 frequency channels
- Temporal resolution of 0.25 s
- Cost ~€350



New CALLISTO unit, 110x80x205 mm

11th anniversary of Callisto since 1st light of the prototype receiver in 2002

Antennas

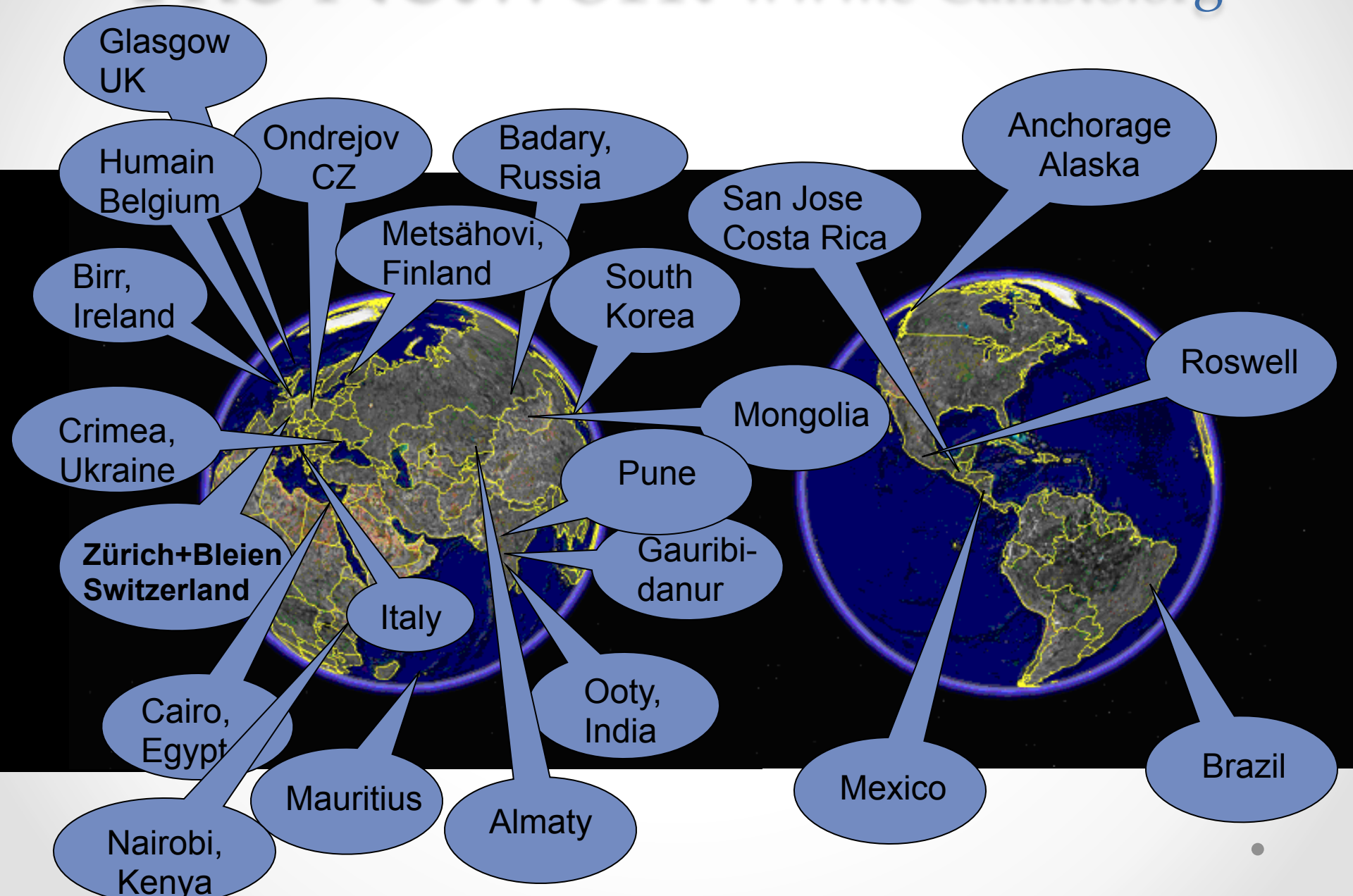
Bicone mounted on trees (Germany)

Dish + log-periodic (Trieste)

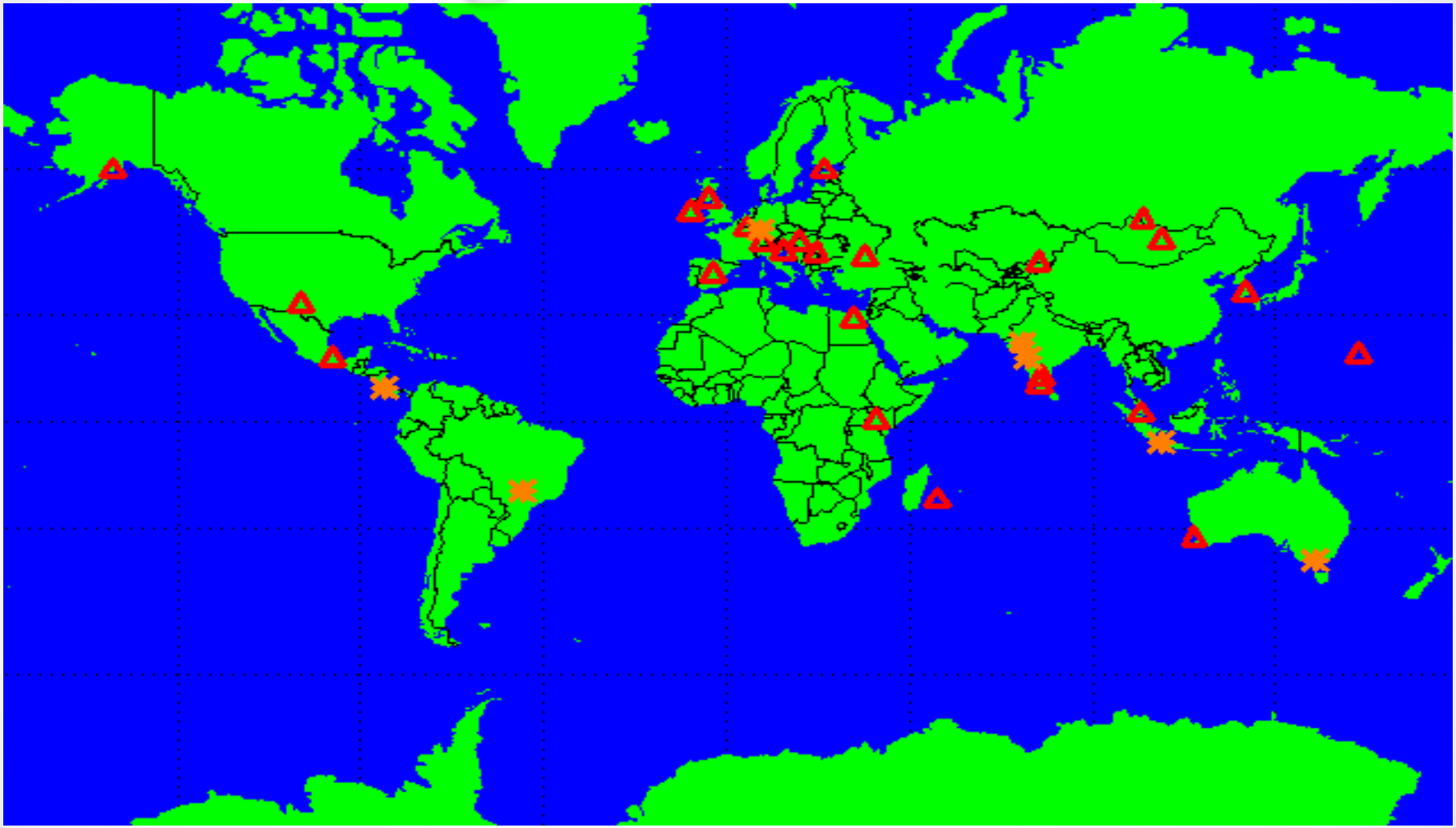
Array of small log-periodic (Ukraine)

Log-periodic (South Korea)

The Network www.e-Callisto.org



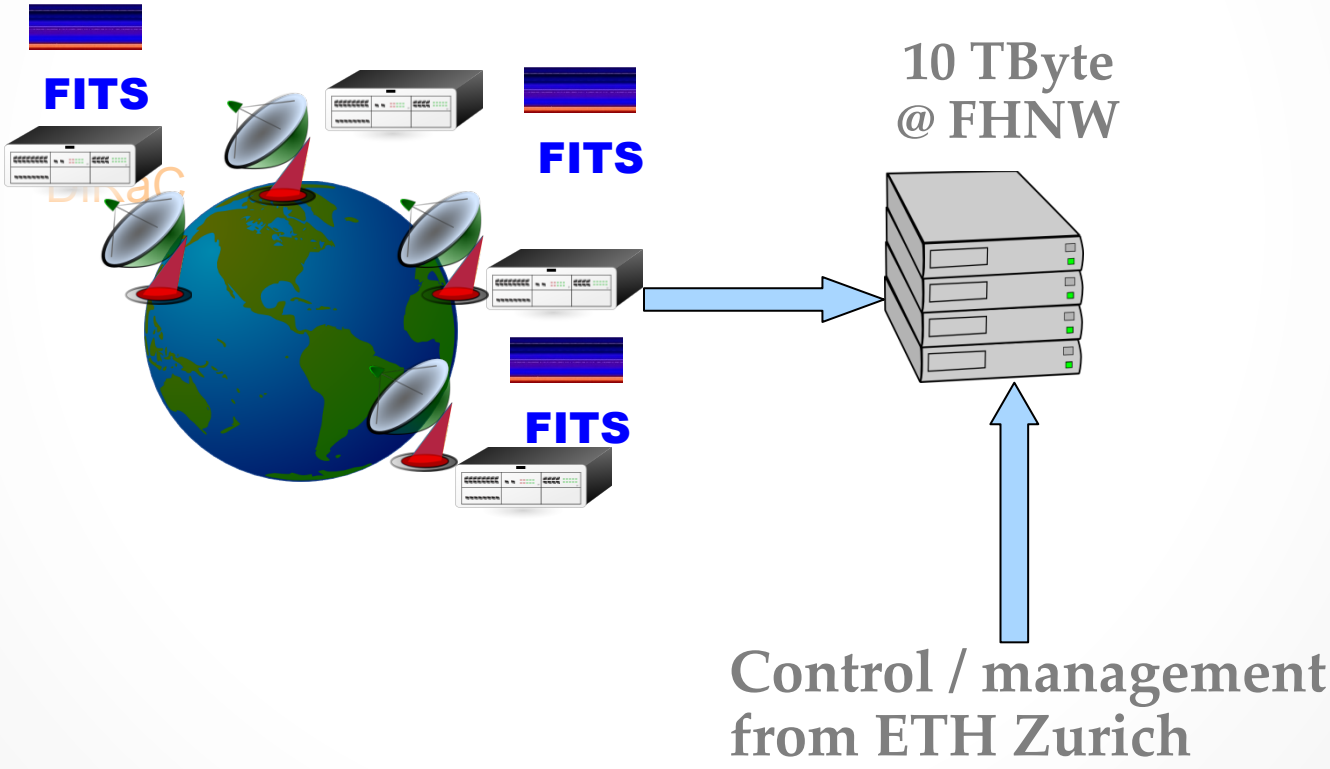
Coverage



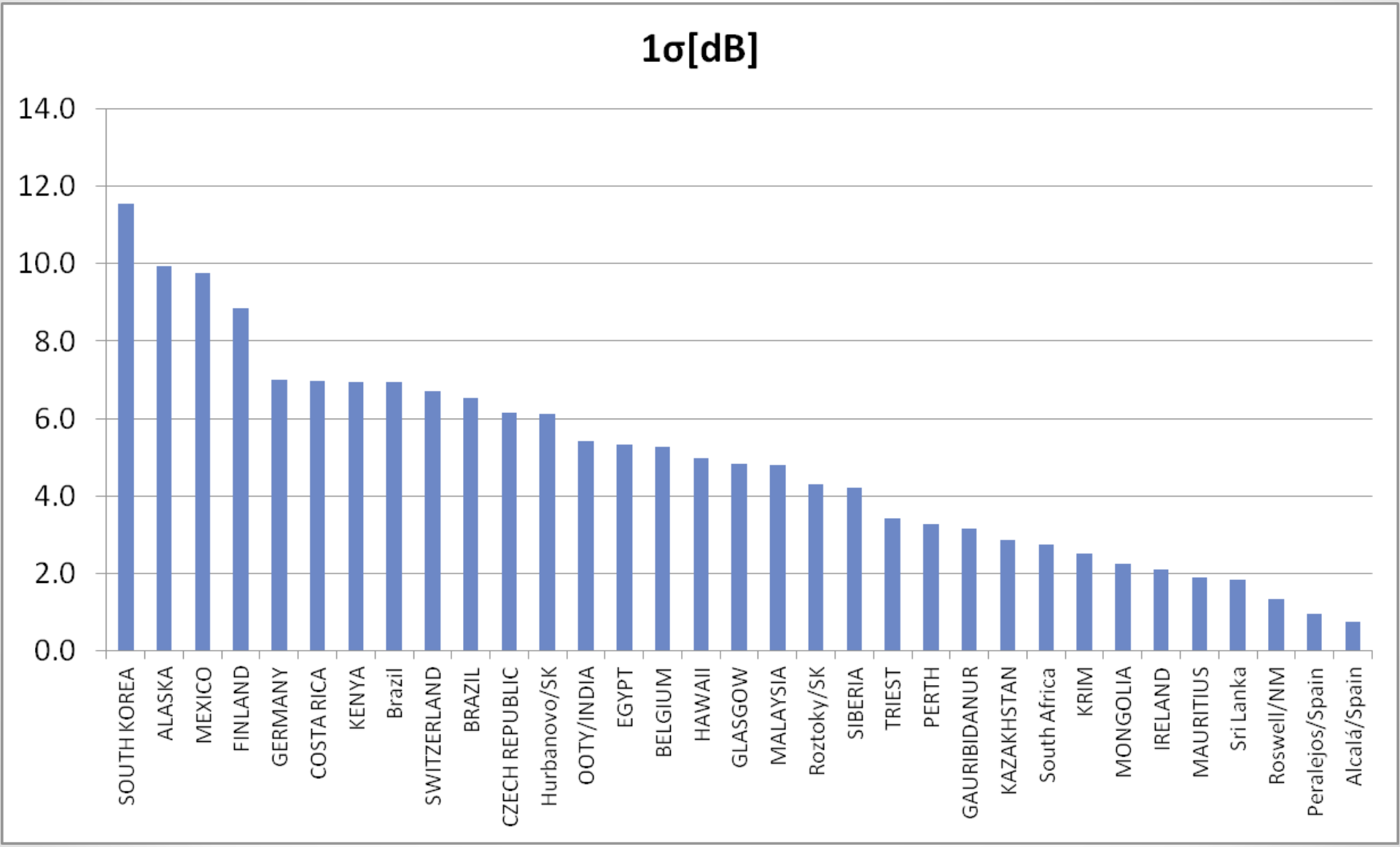
56 instruments at 35 different locations worldwide
100 % coverage in March 2013

Free access data

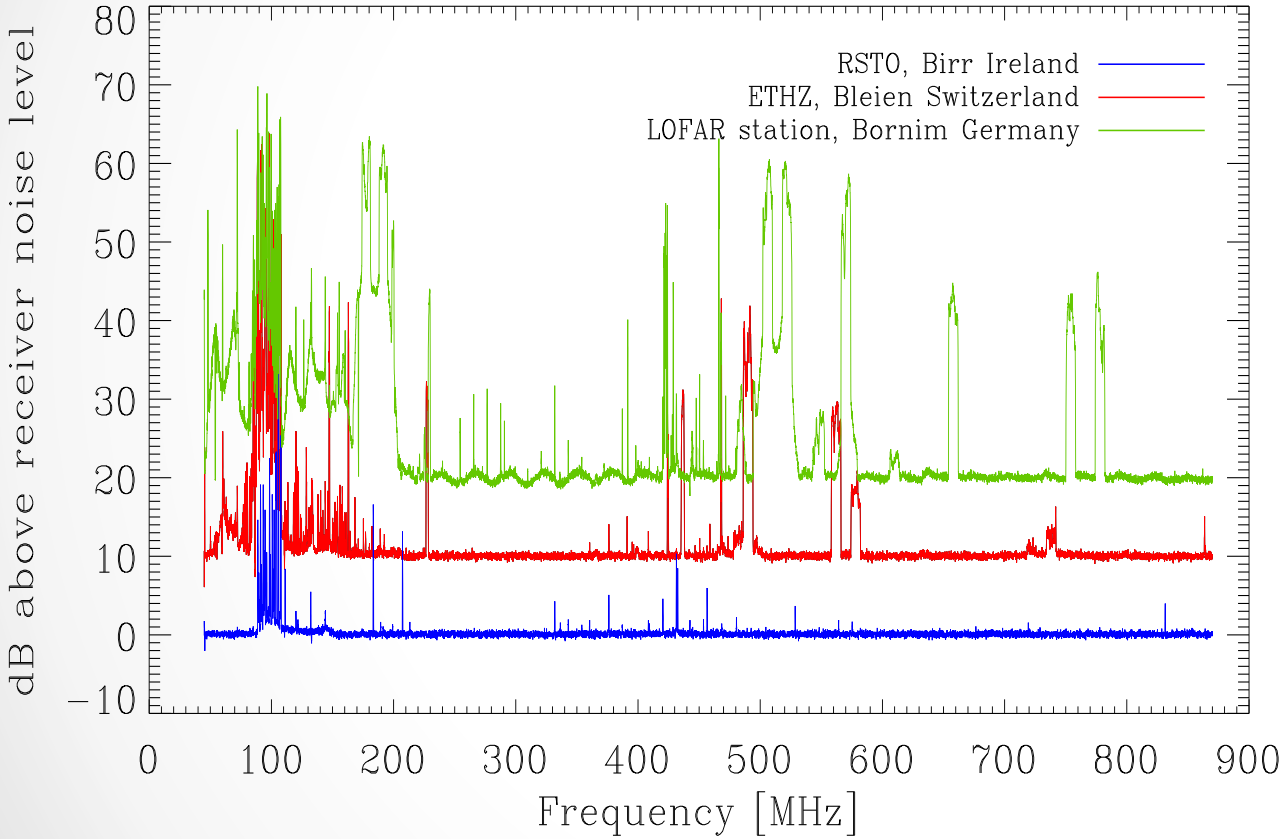
http://soleil.i4ds.ch/solarradio/



Network sites RFI

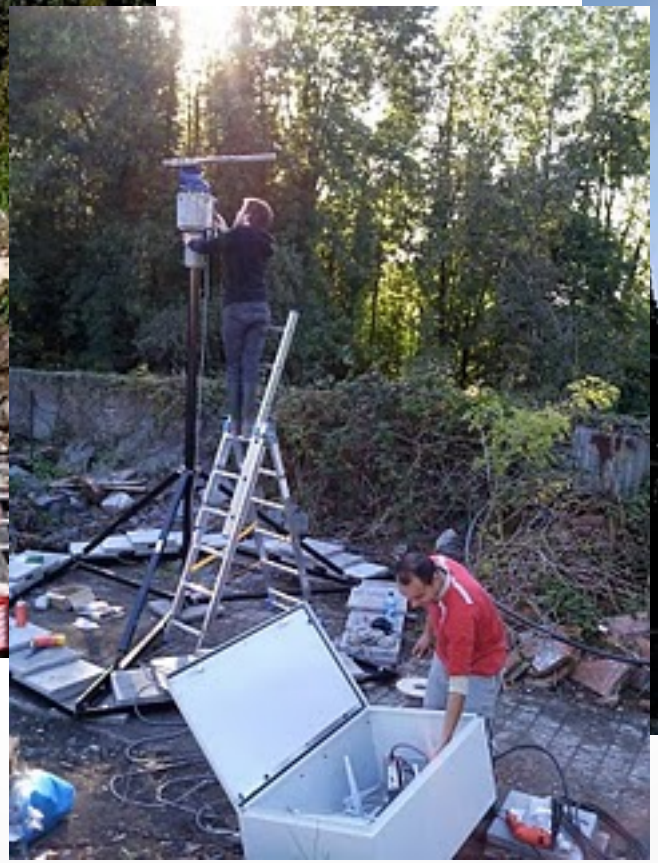


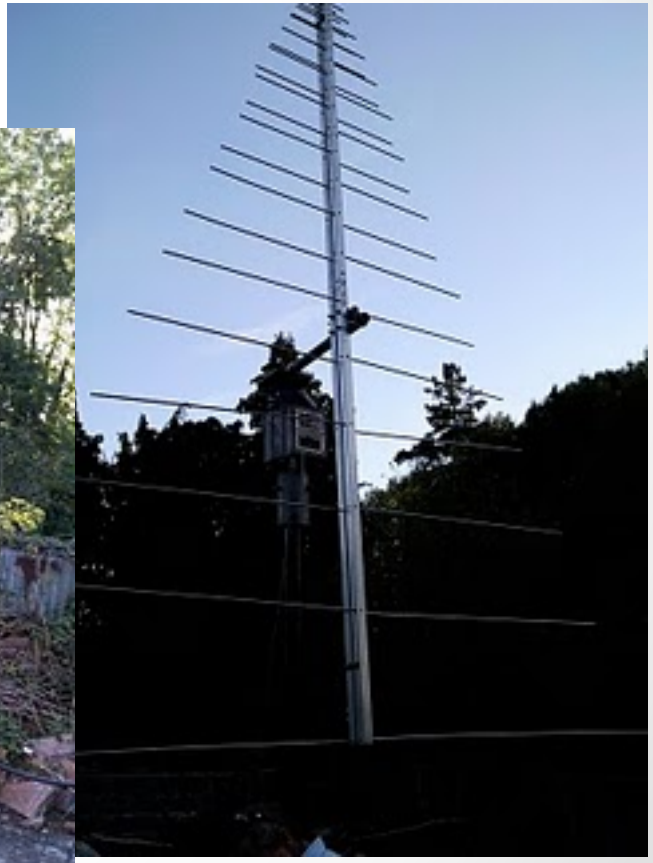
The Rosse Solar Terrestrial Observatory RSTO



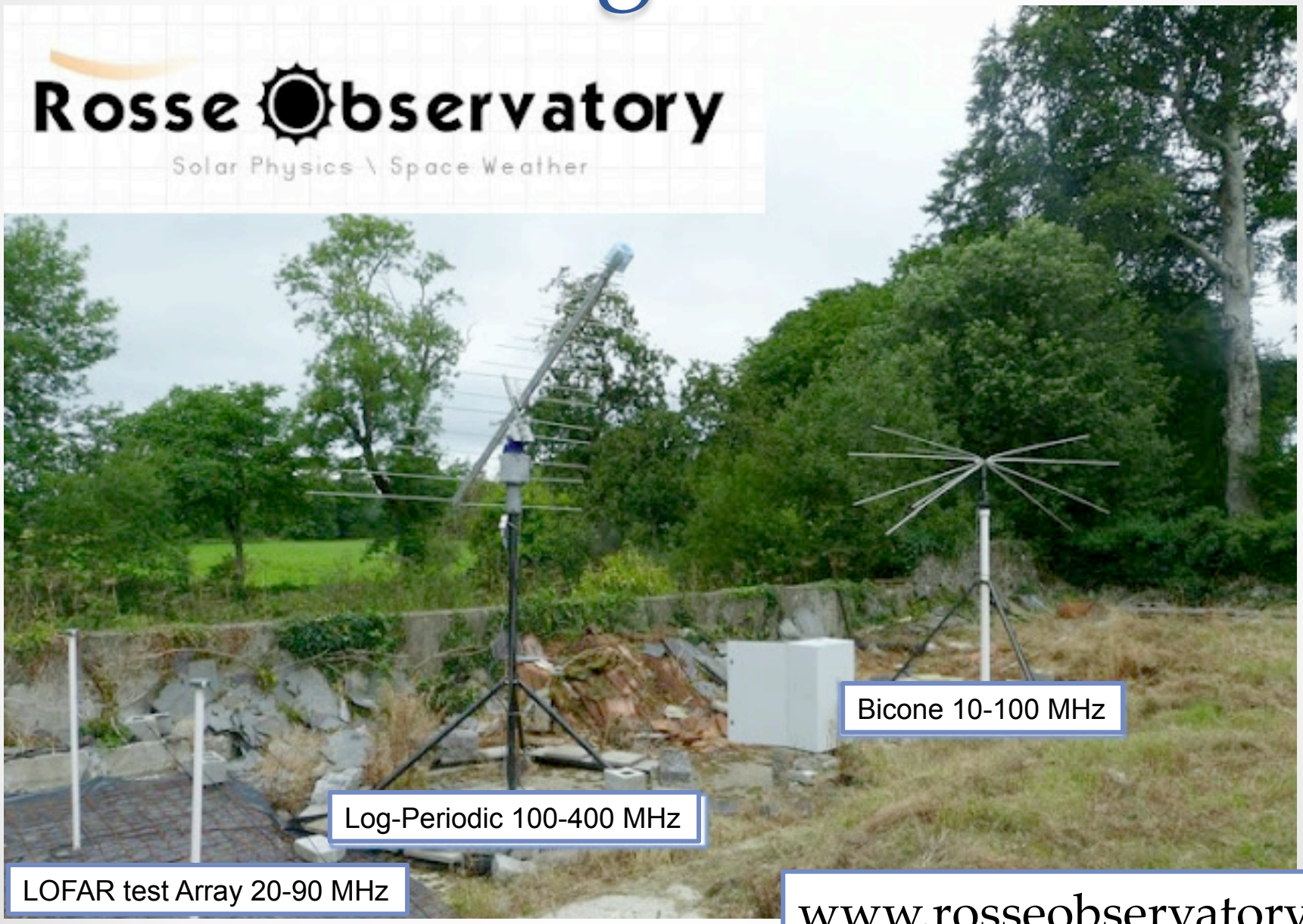
www.rosseobservatory.ie

Setting up the log-periodic antenna (Sep 2010)



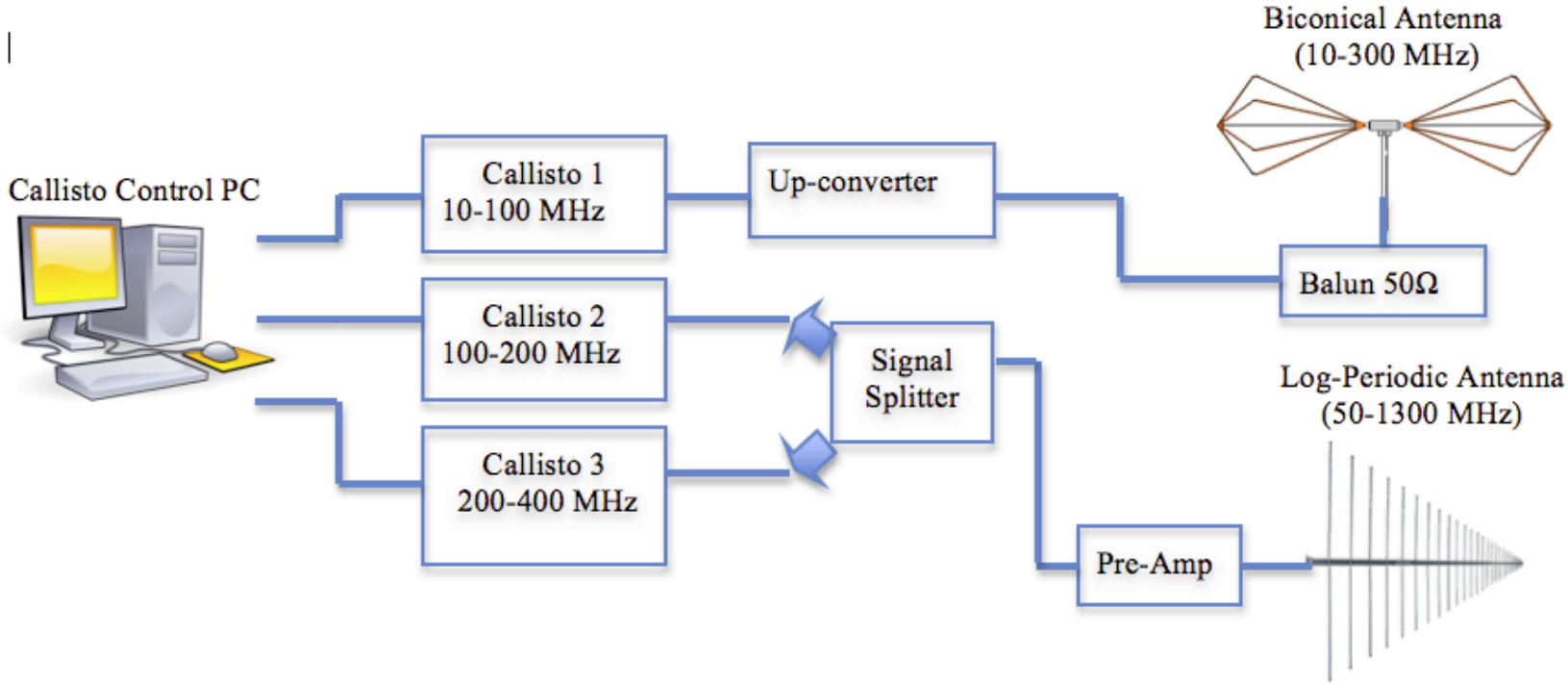


The observing site in Ireland



www.rosseobservatory.ie

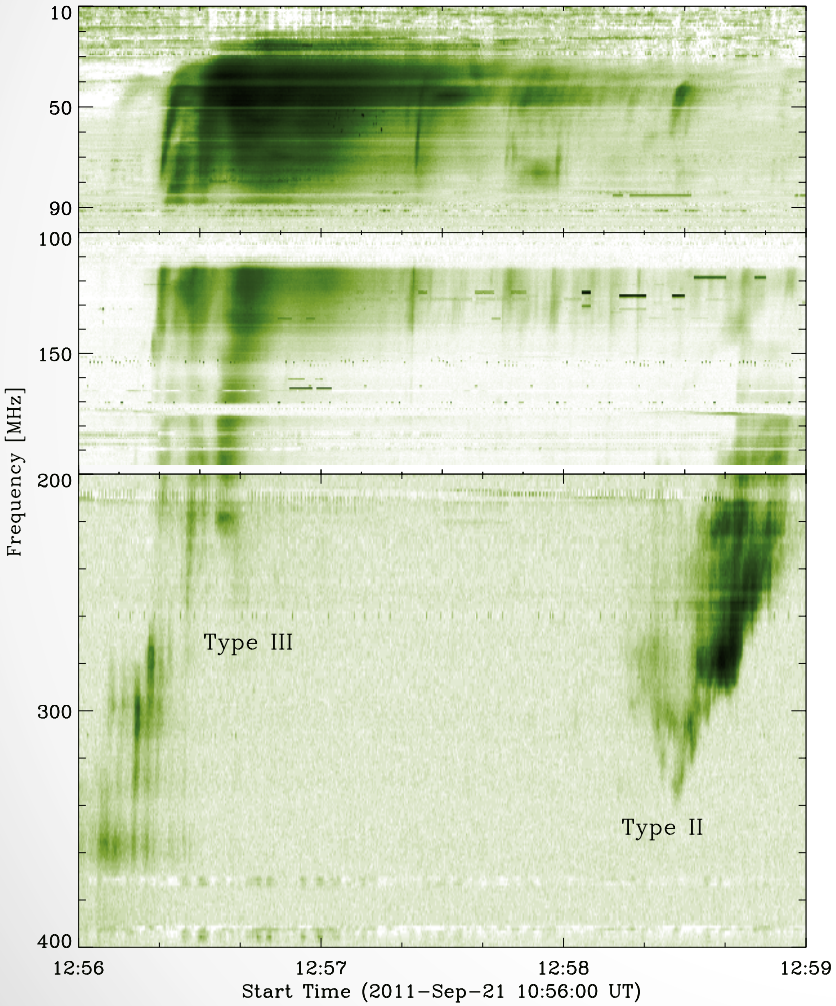
The observing site in Ireland



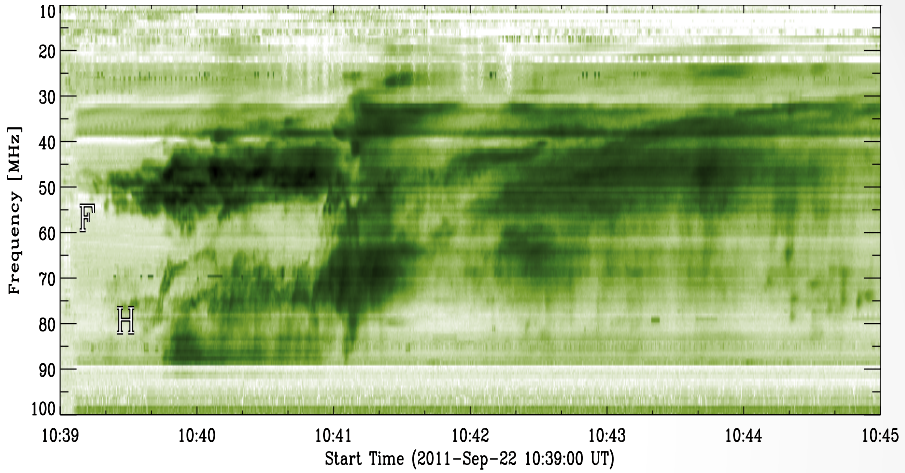
Zucca et al. 2012

Some radio burst examples

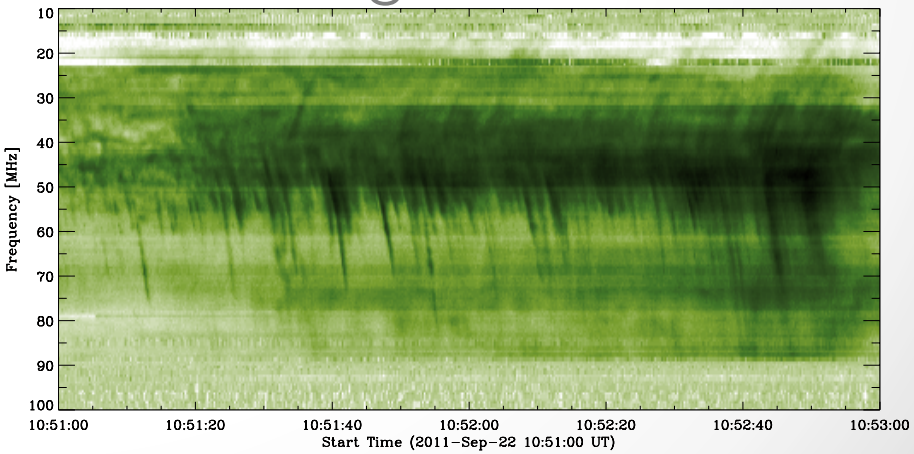
Type III radio burst



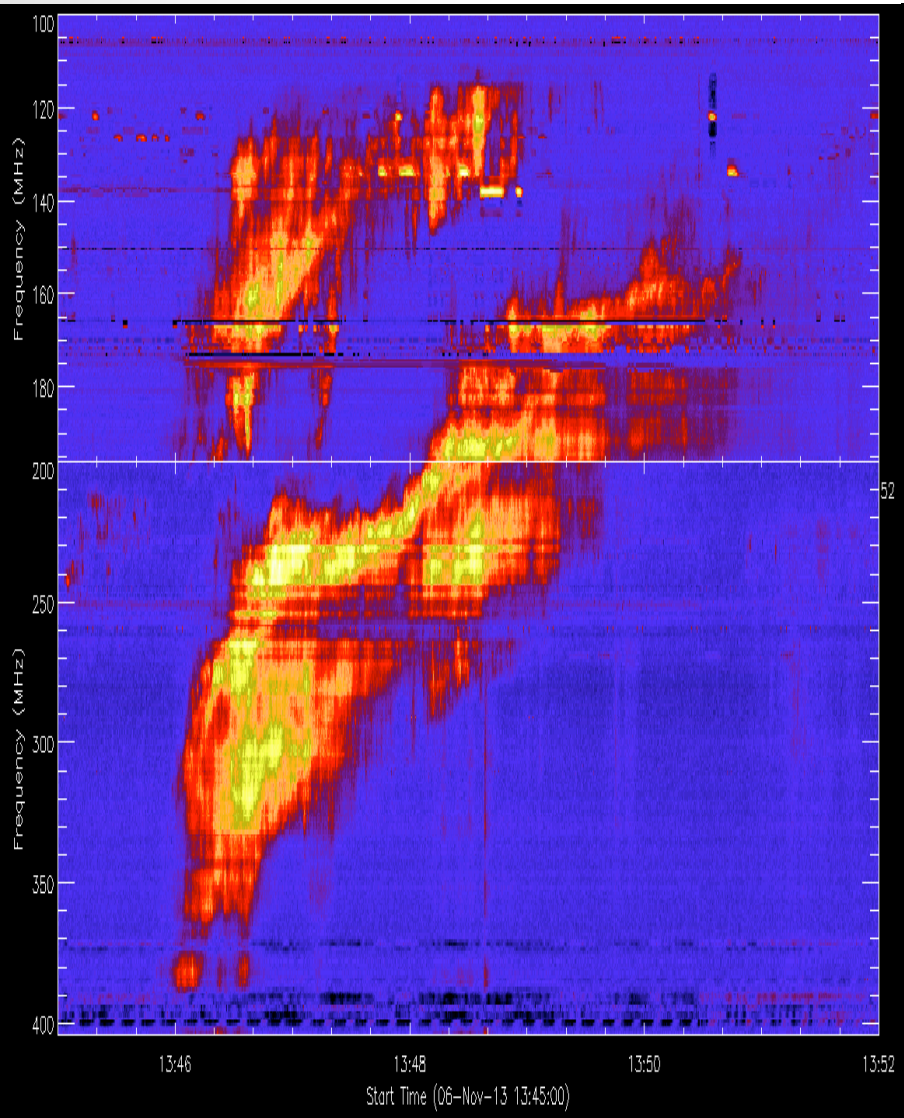
Type II radio burst

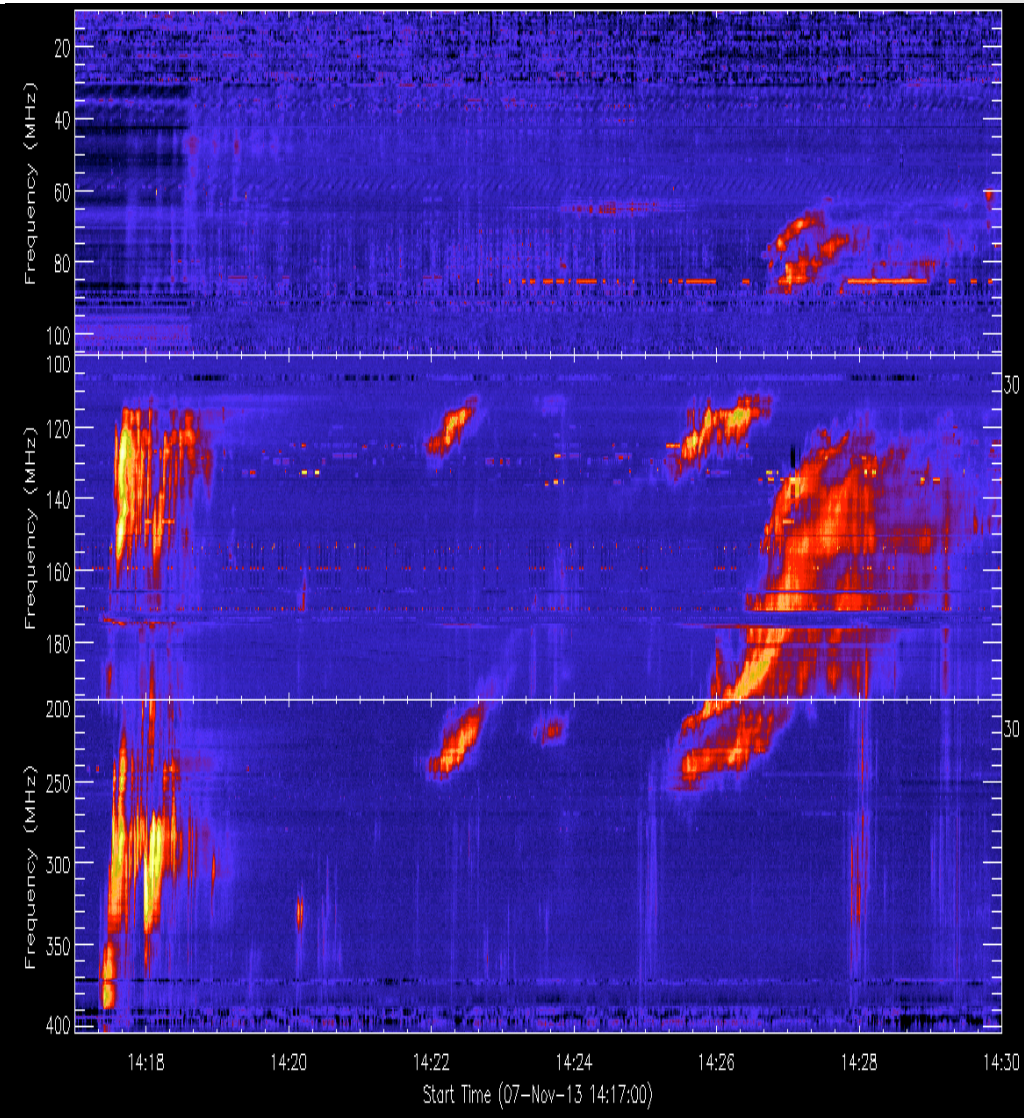


Herringbone burst



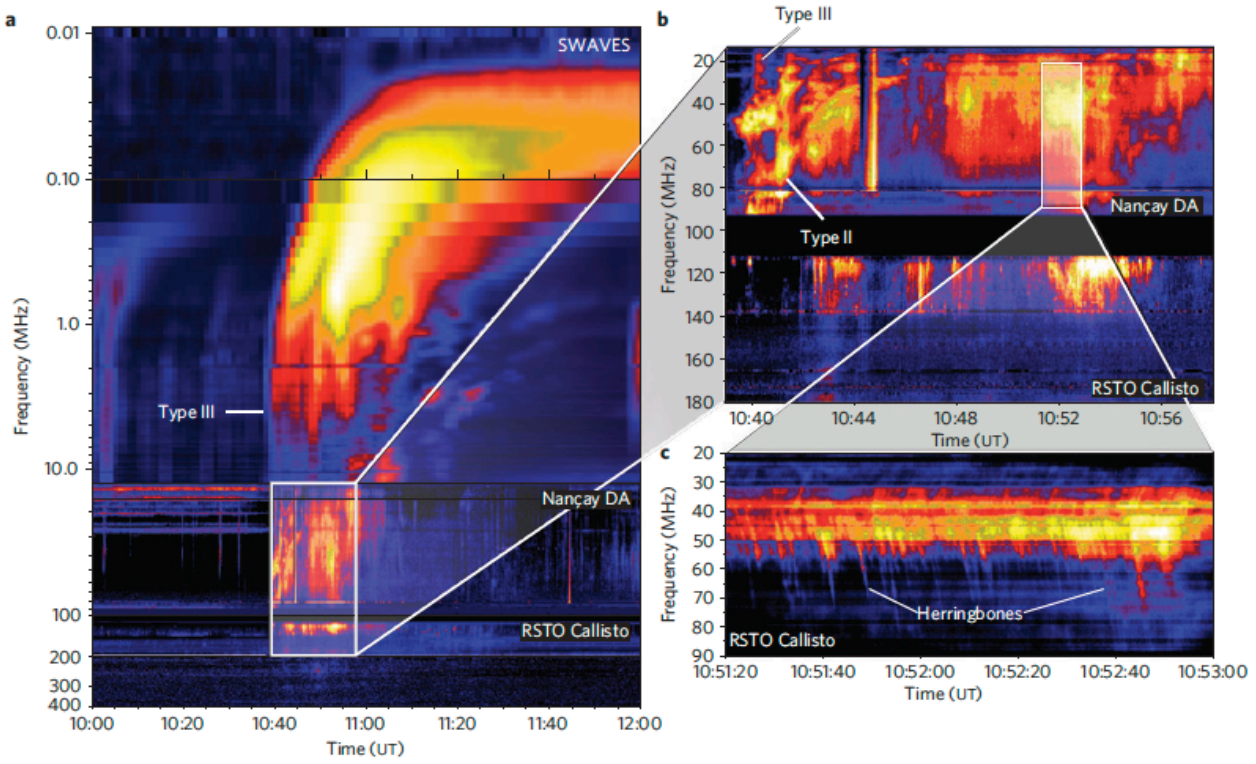
Some recent bursts





Scientific Publications

ARTICLES NATURE PHYSICS DOI: 10.1038/NPHYS2767



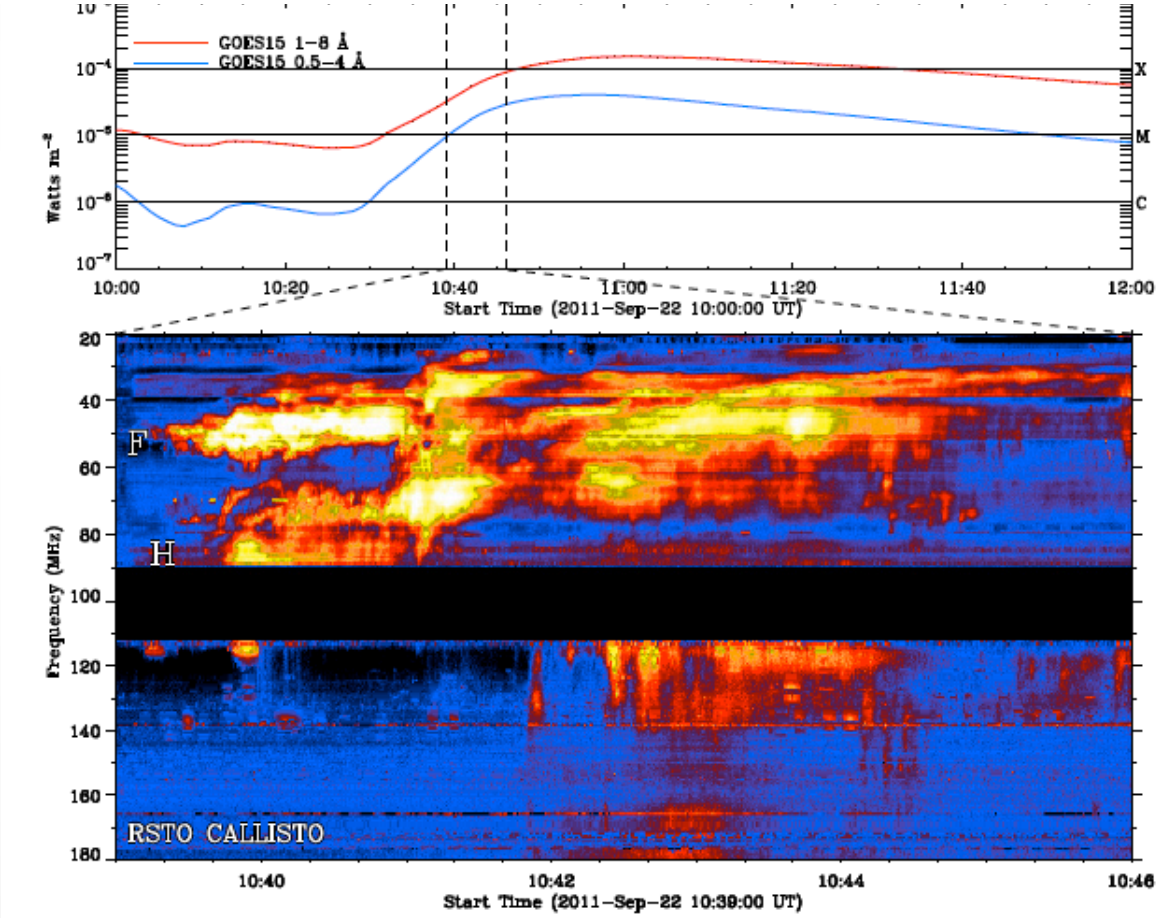
Quasiperiodic acceleration of electrons by a plasmoid-driven shock in the solar atmosphere

Eoin P. Carley[1], David M. Long[2], Jason P. Byrne[3], Pietro Zucca[1], D. Shaun Bloomfield[1], Joseph McCauley[1] and Peter T. Gallagher[1]*

Scientific Publications

The formation heights of coronal shocks from 2D density and Alfvén speed maps

P. Zucca, E. P. Carley, D. S. Bloomfield and P. T. Gallagher



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- Nicola Nosengo, Nature News, 17 February 2011 | Nature | doi:10.1038/news.2011.97
- P. Zucca, E. Carley, J. McCauley, P. Gallagher, C. Monstein, Solar Physics (2012)
- H. M. Bain, Säm Krucker, L. Glesener, and R. P. Lin, The Astrophysical Journal, Volume 750, Number 1, 2012
- R. Ramesh, M. Anna Lakshmi, C. Kathiravan, et. Al., The Astrophysical Journal, 752:107 (6pp), 2012 June 20
- Eoin P. Carley, David M. Long, Jason P. Byrne, Pietro Zucca, D. Shaun Bloomfield, Joseph McCauley & Peter T. Gallagher, Nature Physics 2013

Conclusions

- Still growing network
- 24h coverage of radio monitoring
- Radio burst and event catalog
- Data quality improving
- Scientific Publications in leading Journals
- Outreach (Citizen Science, burst detection and classification ?)

Additional Information

www.e-callisto.org

Thank you