

Radio meteor news

Jean-L. RAULT

f6agr@orange.fr



Société Astronomique de France
Commission Radioastronomie



International Meteor Organization
Radio Commission



Radio forward scatter detection of meteors

Some news about transmitters

Analog Band I TV transmitters are disappearing one after each other

Several Eastern Europe transmitters are still usable for meteor forward scattering (how long ?)

Dedicated transmitters in the 50 MHz band such as the VVS Yper and the BRAMS Dourbes beacons are commonly used

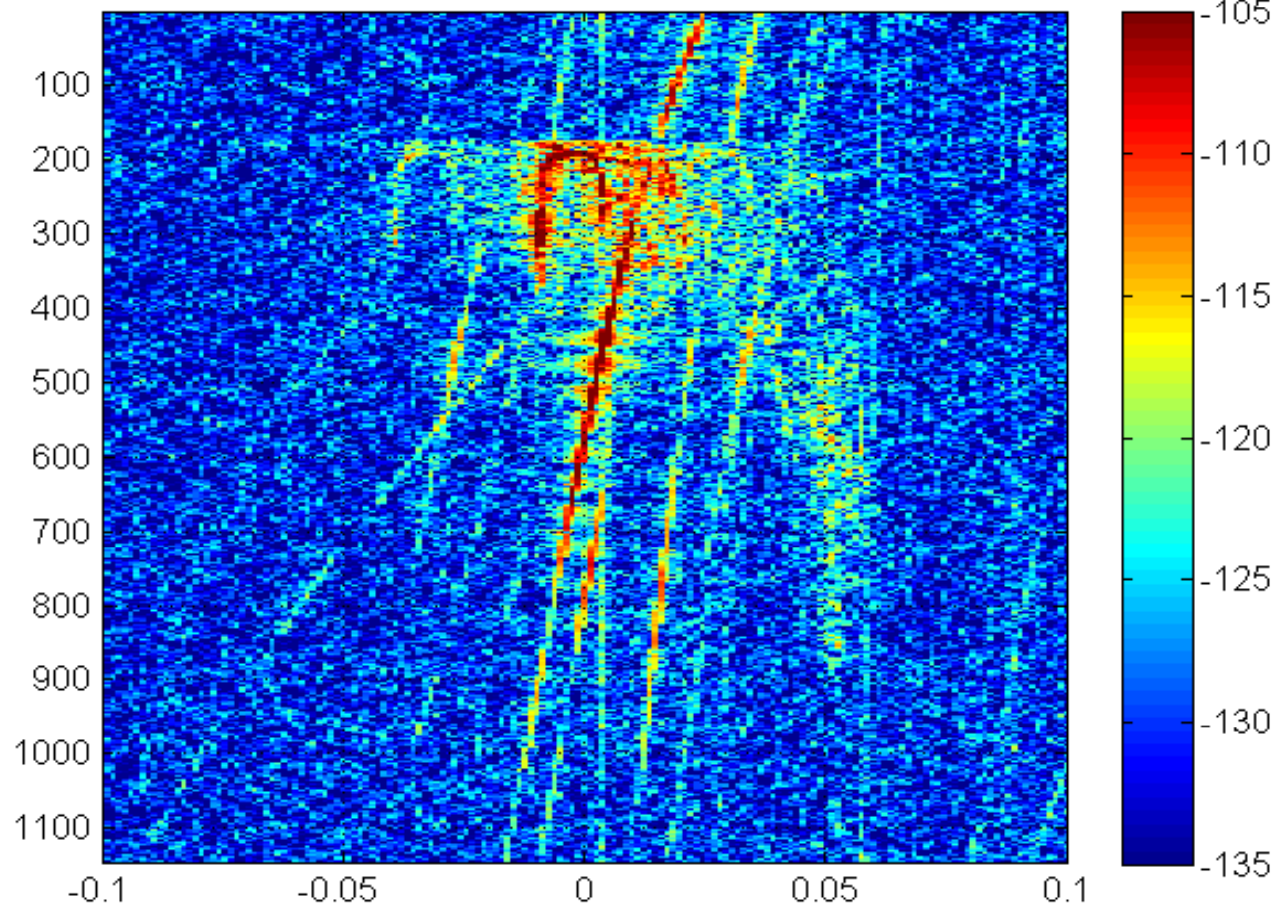
The french military GRAVES radar is also frequently used by meteor observers, and is giving good echoes as far as Cyprus

ESA is developing a new radar as part of the Agency's Space Situational Awareness programme. First studies are assessing several frequencies such as 435, 1200 and 3200 MHz

NORAD is planning to develop a new space radar system. The frequency presently in use should shift from 216 MHz to S band

VOR/DME aviation beacons are presently under evaluation by a french amateur team (Jean-Jacques Maintoux + Sylvain Azarian + Bernard Kieffer)

Fichiers 1105 à 1140- FFT 4096 overlap par 8 voie 2 canal 2



Example of a VOR meteor forward scatter ping received with a vertical 3 el Yagi beam

Meteors and VLF/ELF events correlation

Meteors and VLF/ELF at Armagh Observatory



An observation programme about meteors and ELF/VLF has been initiated last year by Apostolos Christou thanks to Europlanet funds.

The programme is based on correlation analysis between meteor video and ELF/VLF events

The Armagh set-up consists in :

- video cameras already in use at Armagh observatory for meteor observation
- two ELF/VLF receivers and antennas designed according to Jean-L. Rault design

The ELF/VLF sensors were built and tested by James Finnegan. The first observational results should be published soon by Jonathan Quinn

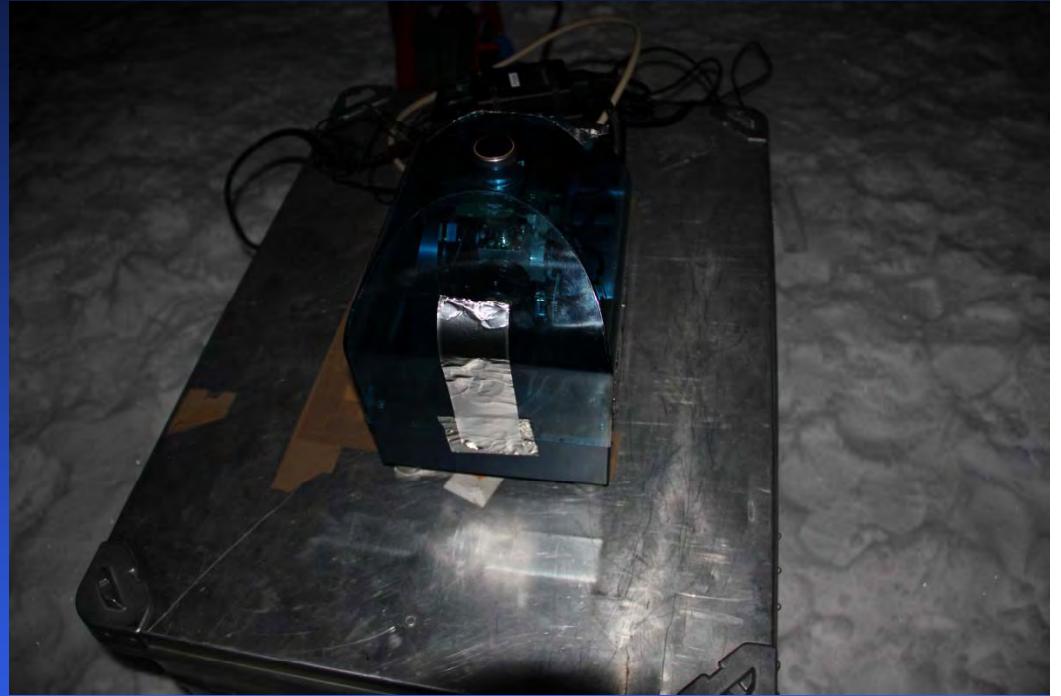


Meteors and VLF at Pic du Midi observatory



A combined radio/video observation campaign was performed during Geminids 2011, using:

- 3 and 11 microns infrared ONERA cameras
- WATEC and Lheritier IMCCE cameras
- VHF and VLF radio equipment



ONERA IR sensors



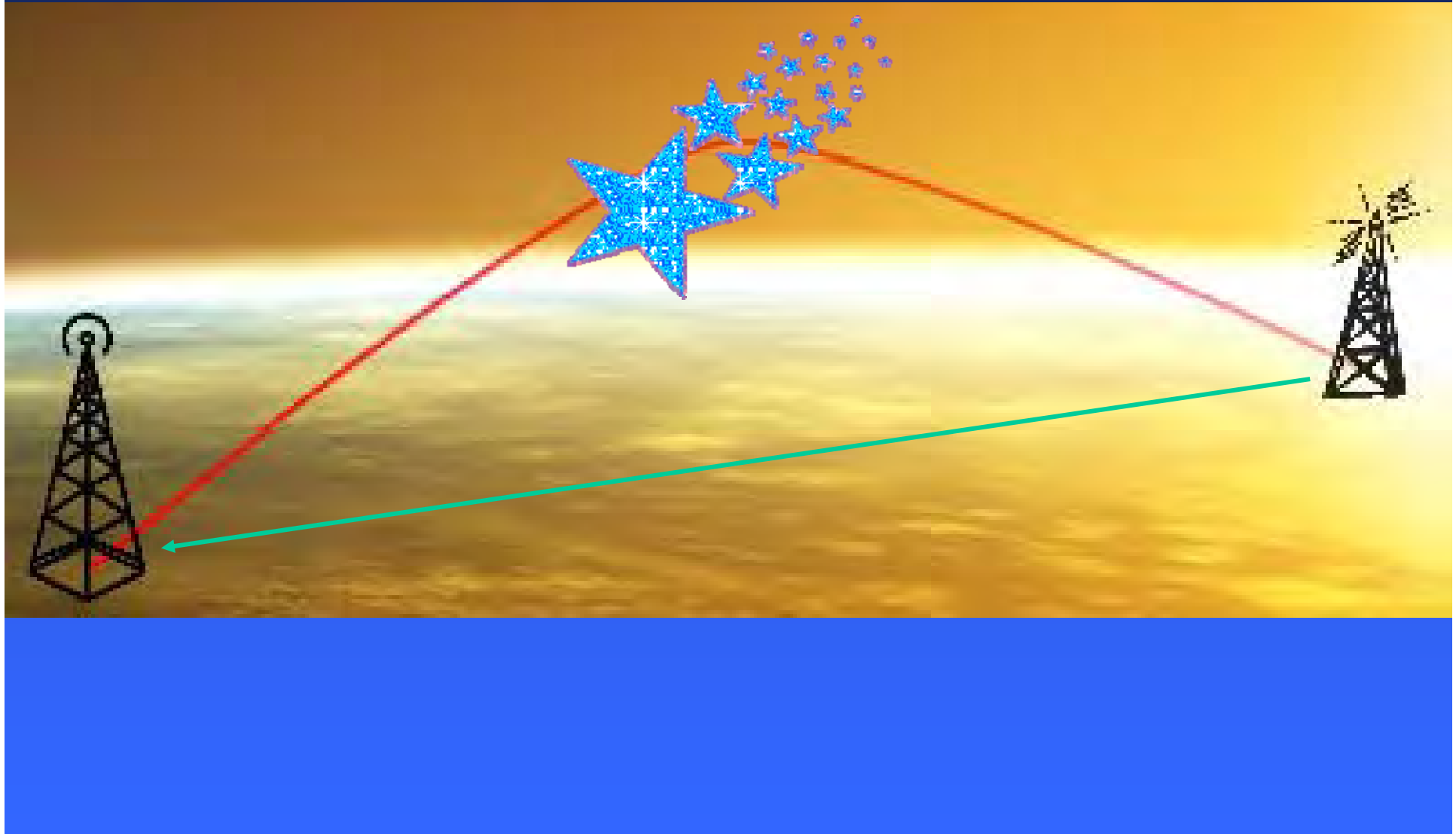
VLF magnetic loop and VHF sensors

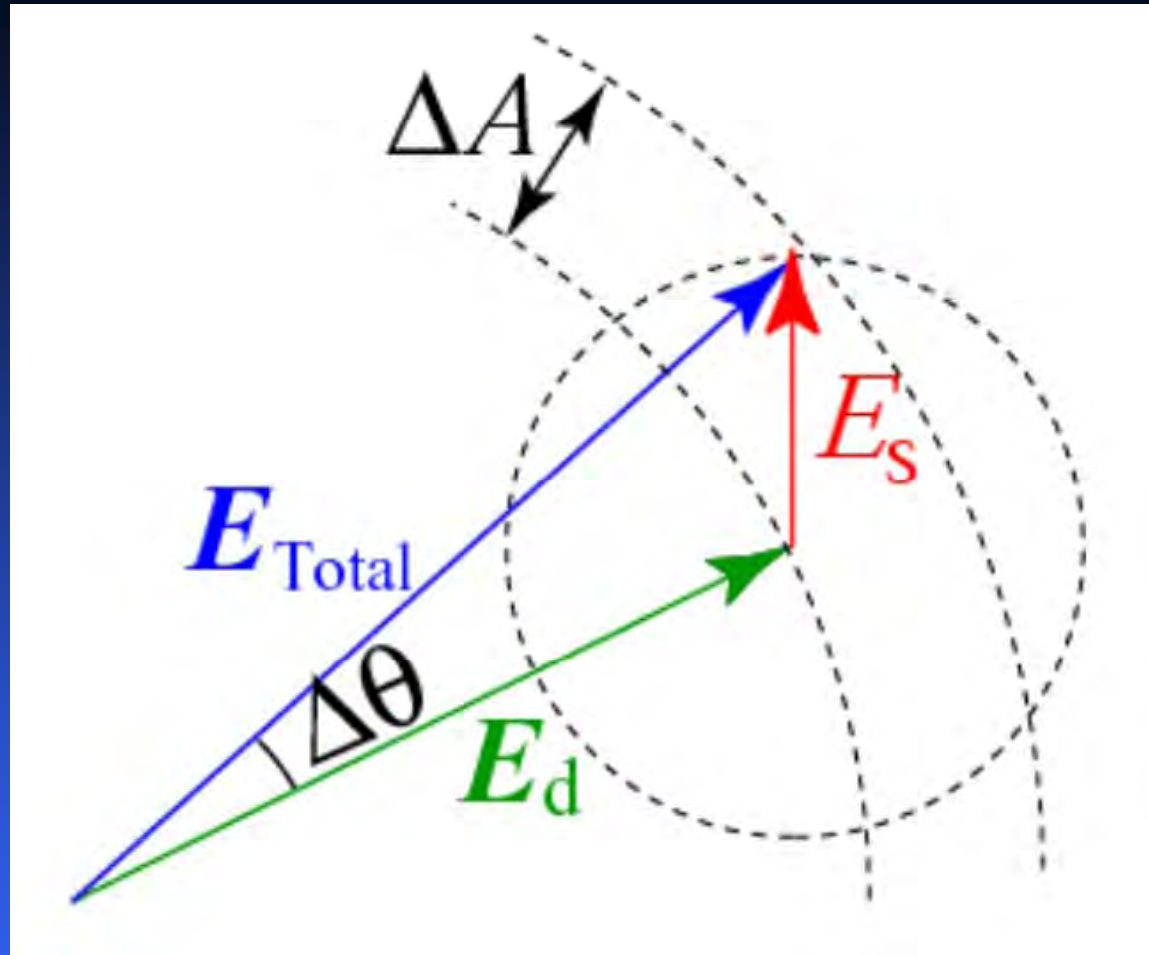
Preliminary results of Geminids 2010 and 2011 VLF/video correlations campaigns give similar results to the first Geminids 2009 campaign, i.e. 30 to 40% of meteor & ELF/VLF events positive correlations.

VLF propagation
disturbances induced
by meteors ?

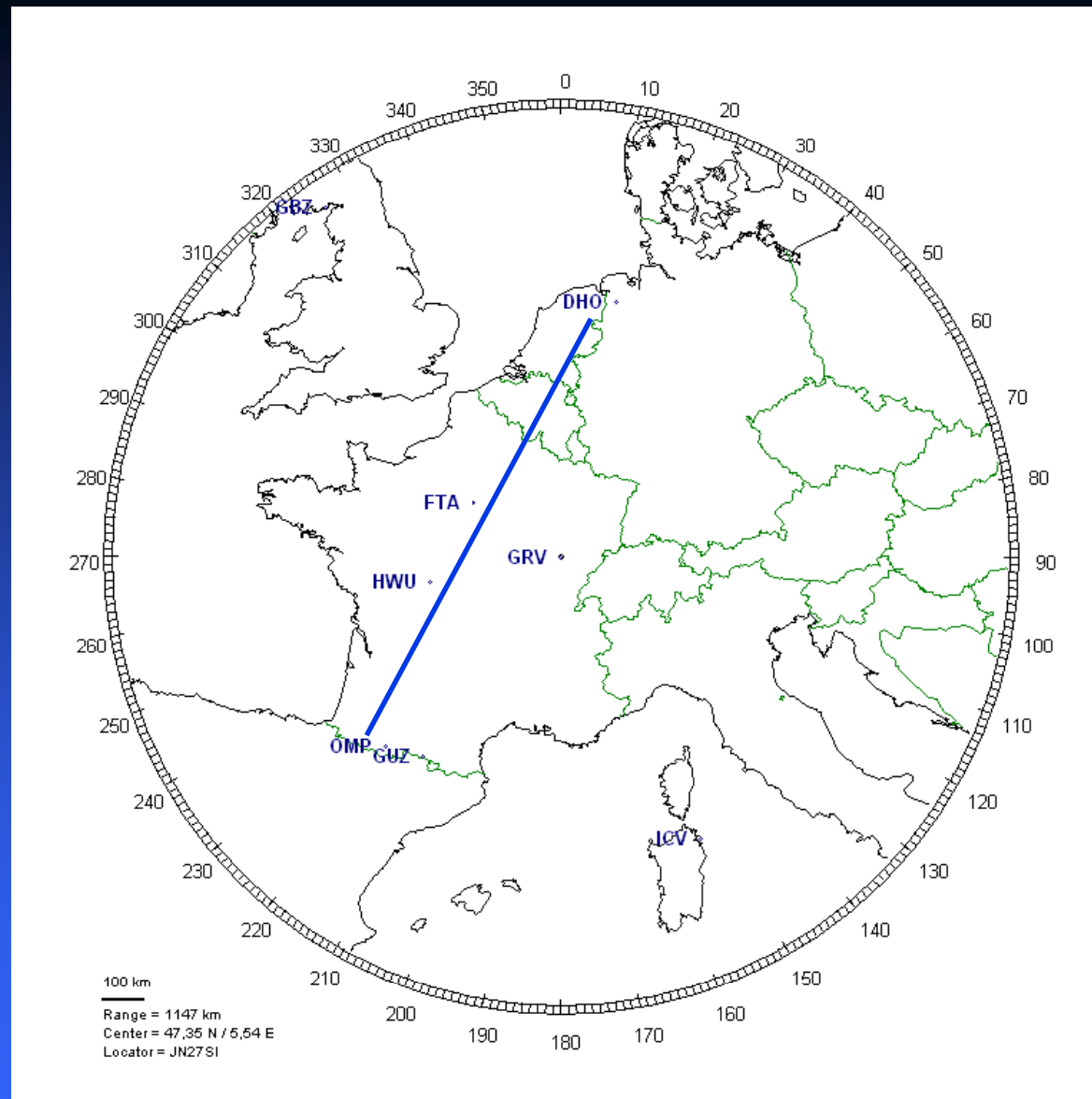


Meteor VLF scattering ???





Destructive or constructive VLF interference at the receiver location



1D VLF circuit geometry

M-SID ?



A french amateur VLF/VHF network was specially mobilized during Lyrids 2012 for searching for more M-SIDs



Some examples of H-field VLF sensors designed and deployed by the french VLF/VHF network ...



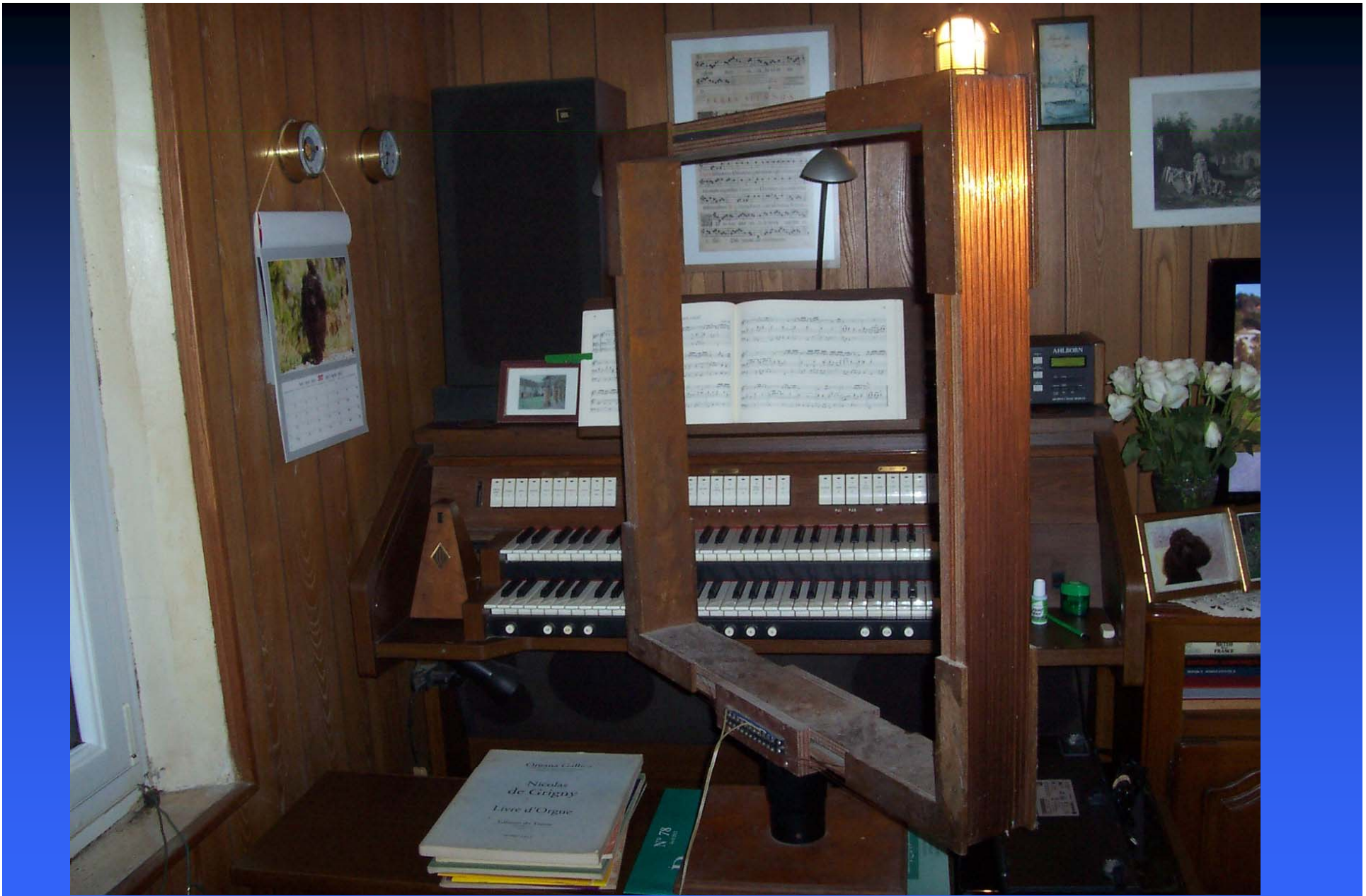
Bernard Kieffer F1EHX



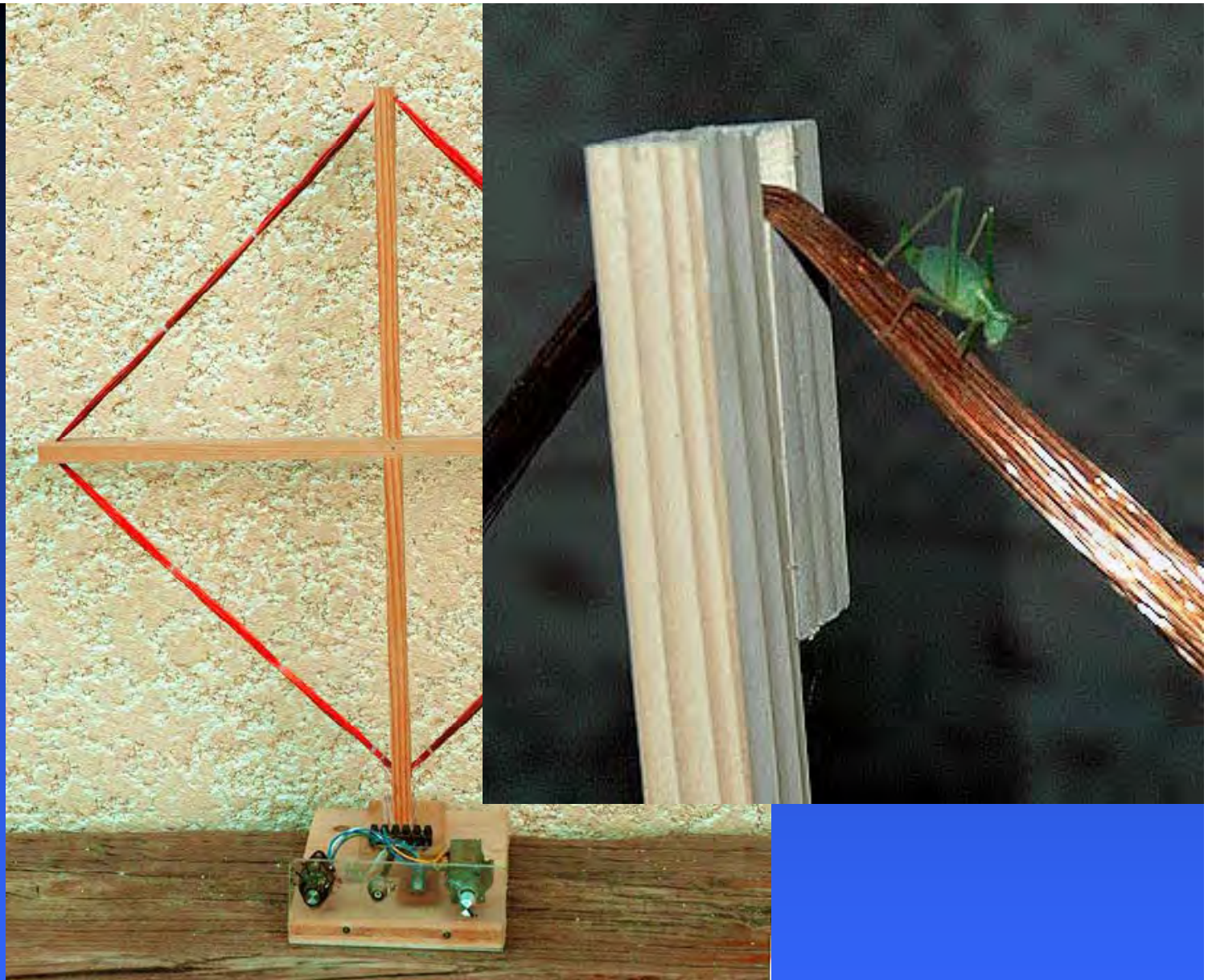
André Gastaud F1GAW



Jean-L. Rault F6AGR



Jean-Pierre Godet F5YG



Hubert Dautremay the cricket hunter



Lionel Loudet



Pierre Meurisse (inspired par Gandhi ?)

Tons of data are presently being
reduced manually ...



Thank you for your attention

Any questions ?

Und jetzt schalten wir um nach ...

