French International LOFAR Station at Nançay – FR606

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Site choice (1/2)

LOFAR

- Geographical criterion
  - Soil humidity
  - Flatness
  - Tree planting
- Networks access
  - Power
  - optical fiber
- And Some other instruments in the site !

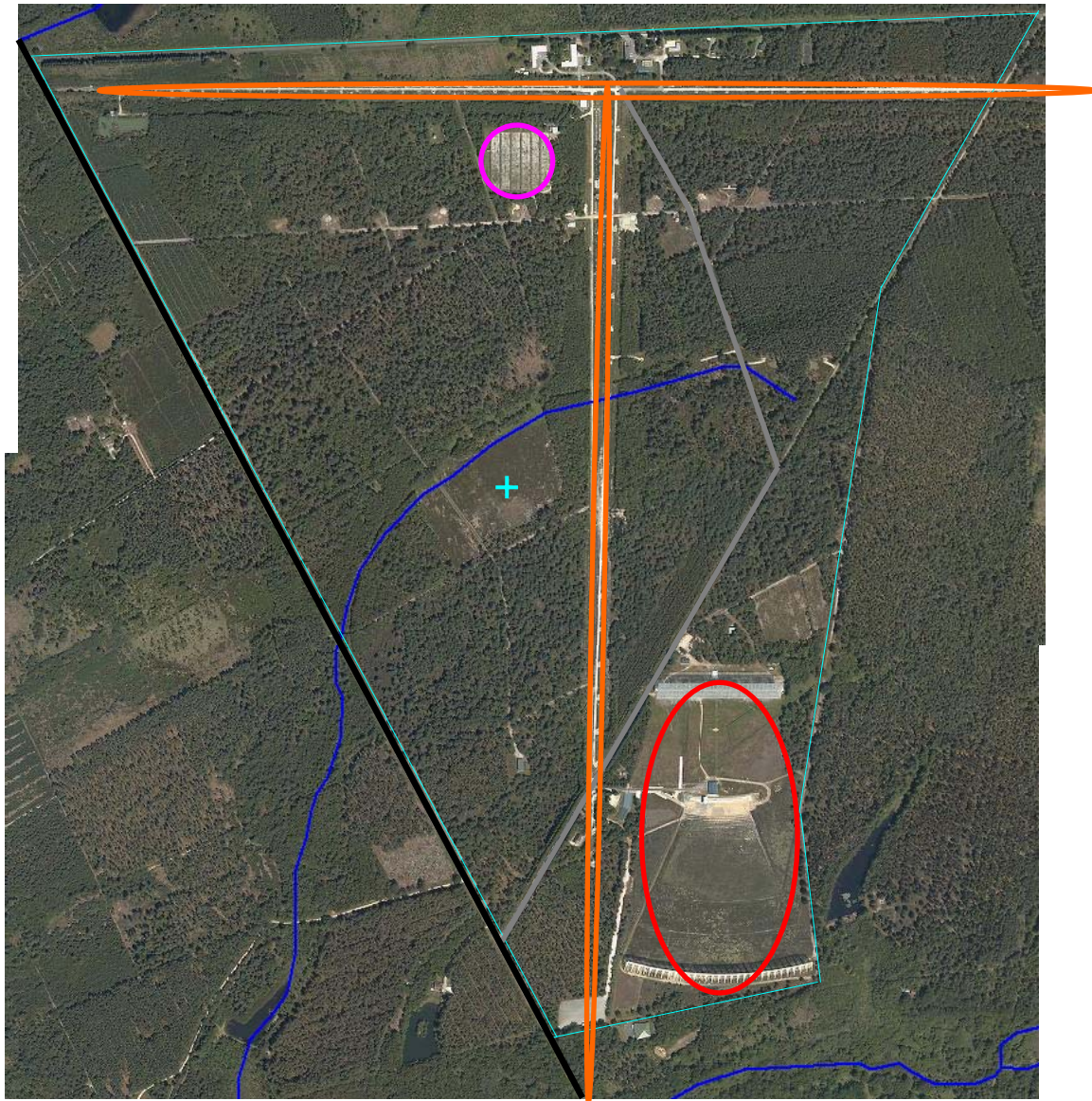
Décameter Array (10 - 100 MHz)

Radioheliograph (150 - 450 MHz)

Décimeter radiotelescope (1 - 3,5 GHz)

CODALEMA (decameter waves)

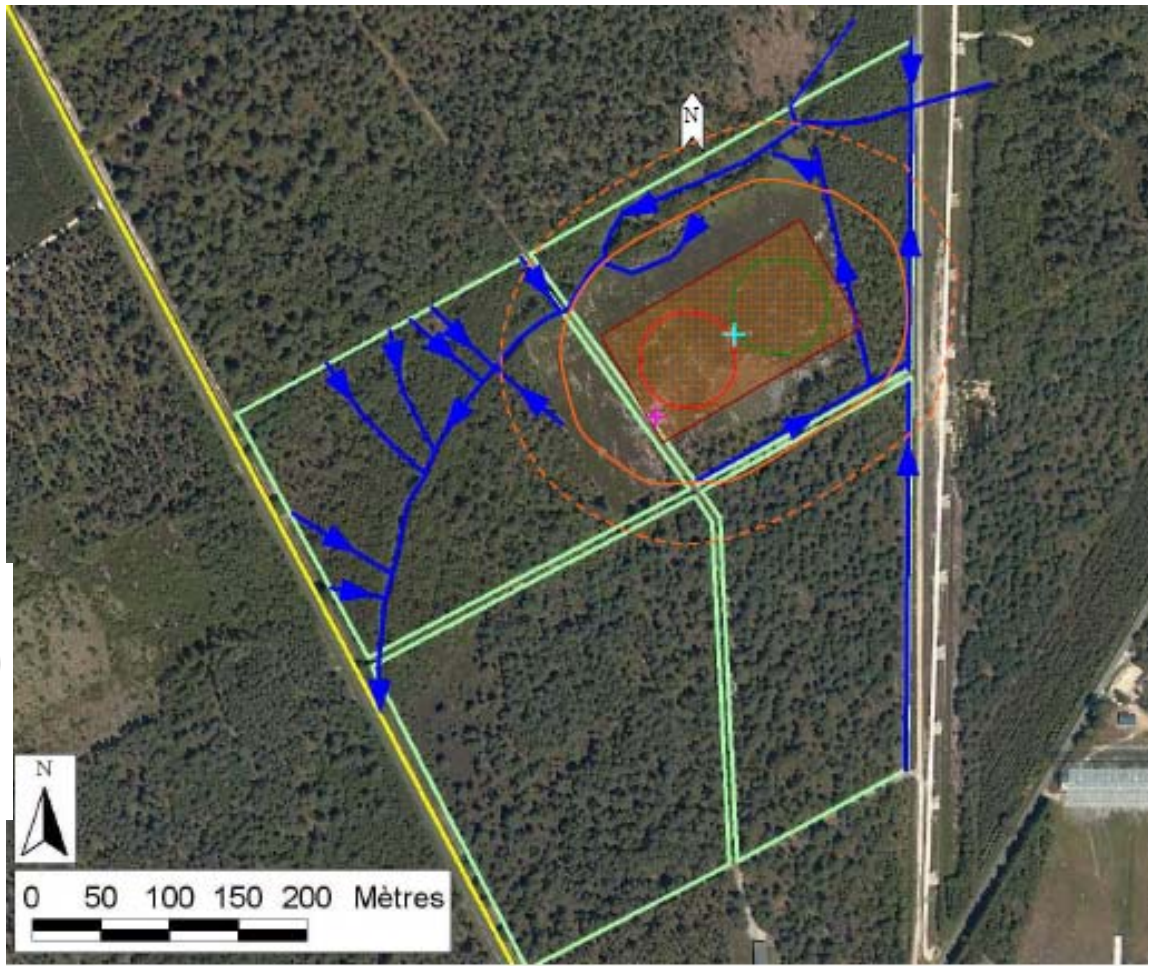
Survey antennas



Site Choice (2/2)

A young pine plantation was in place at the site chosen

Trees are crushed for reach a field of view down to 30° elevation



Ditches for water

Site area divided in plot of land (ONF division)

"Nançay-Souesmes" road

Field of view down to 30° elevation

Field of view down to 20° elevation

Preparation of the site (1/3)

Site before pine crushing

After pine crushing, the topsoil is removed

- Stumps, trees remains, vegetation

Preparation of the site (2/3)

- Leveling of the platform using heavy machineries

- realisation of a concrete platform for container

Preparation of the site (3/3)

Networks connecting

- Power supply cable : 5 x 70mm² sq. copper wires

3P + N + Ground

- Data link cable : 12 optical fiber (6 couples Rx/Tx)

2 couples for LOFAR and others for spares/other applications

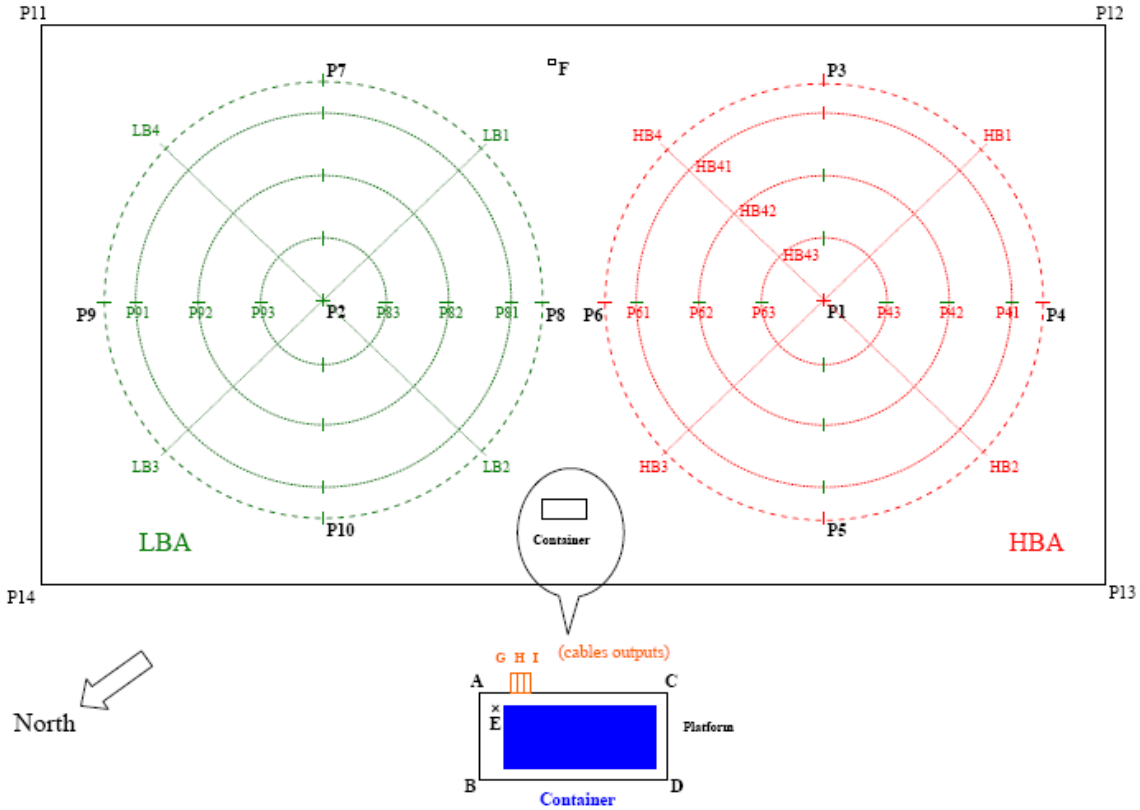
Power transformer and Gbits WAN connection are 1 KM away from LOFAR site

LBA Field : coordinates 1/2

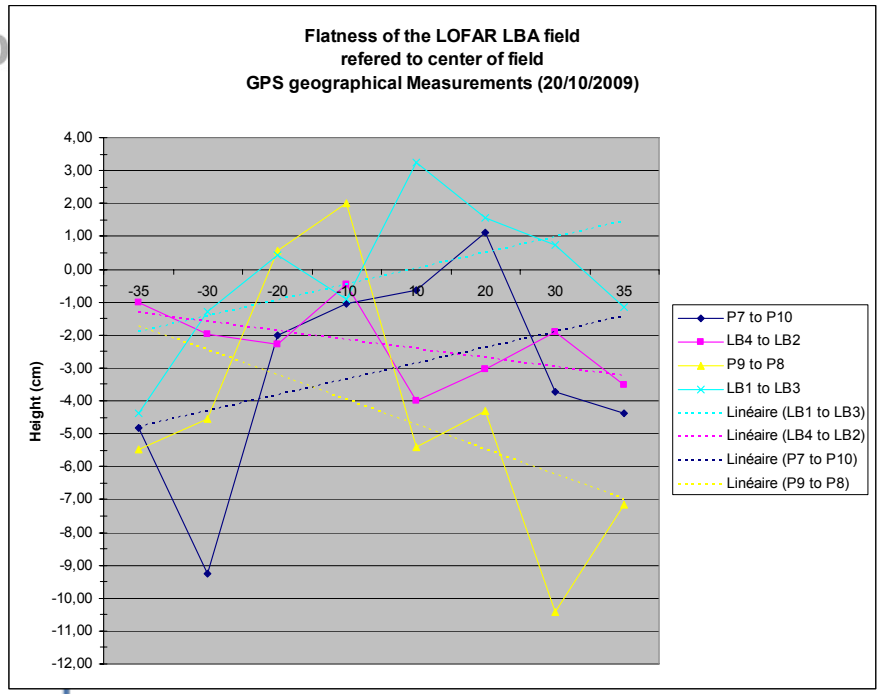
1) Flatness mesureament in ETRS89 coordinates using GPS system

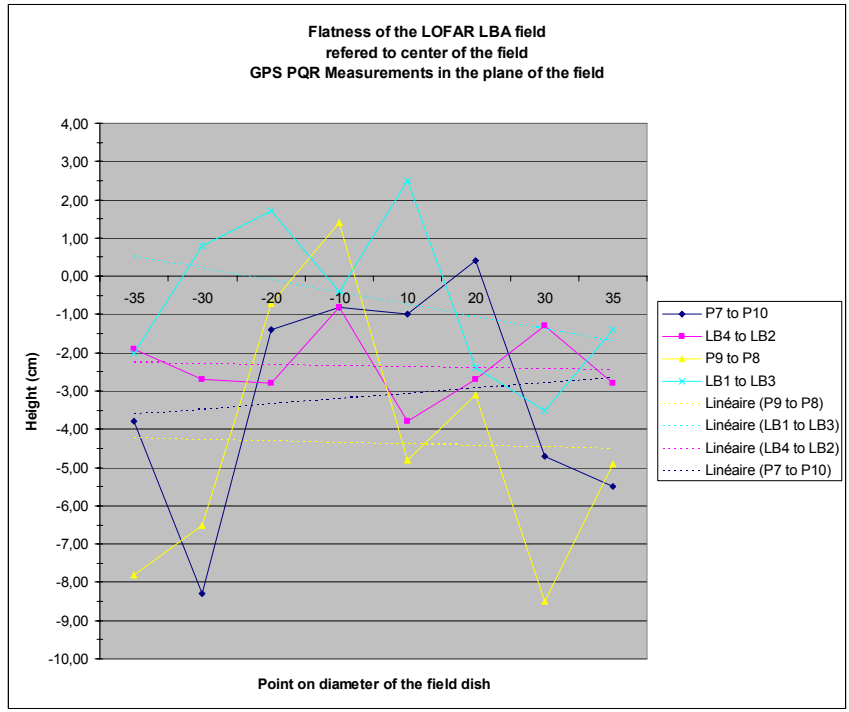
Precision : 0.8 to 1cm in planimetry and 1.2 to 3.5cm in altimetry

Références points : A,B,C,D,E, F



LBA Field : coordinates 1/2





2) LBA & HBA coordinates received from ASTRON

In ETRS-GPS system and in PQR system (refered to the plane of the field)

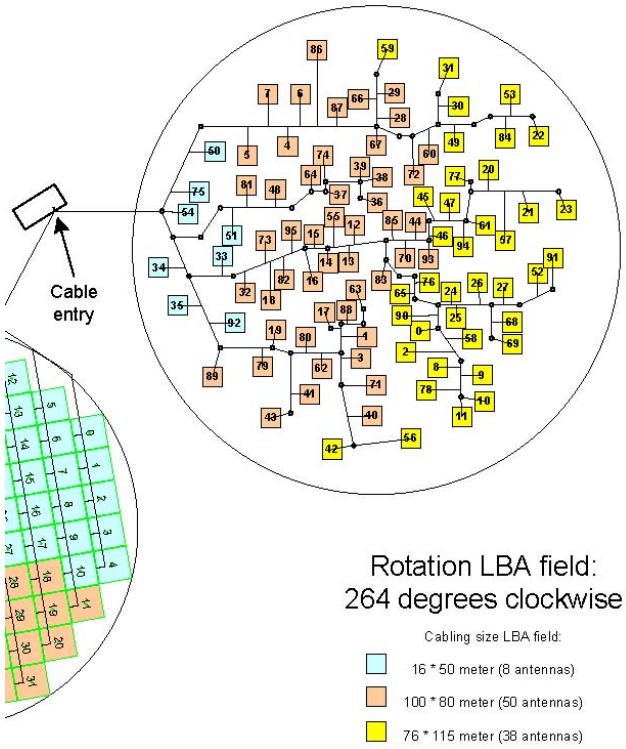
2) Transformation of the PQR coordinates

for the location of antenna with a 3D optical system (theodolite) using reference points (E,F)

- More accurate than GPS system
- Theodolite available at Nancay (GPS system need to be rented)

LBA Field : layout

- Location of antennas (3 pikets by antenna)
- Marking of layout using plaster



LBA Field : trenches

- Using of a machinery generally used for garden workground

This is possible because of sandy soil without lot of stones

Trenches : 10cm wide, 60 cm deep

LBA Field : cables

Cables attached to a wooden piket

Cables unlooped in the trenches

Cables stocked by tens near the container

A « swiming pool » is digged for cables extra-lenght

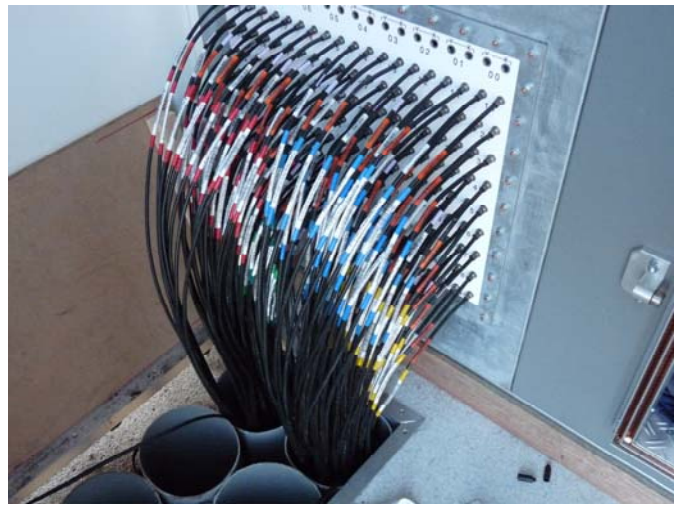
LBA Field : connections

Sheath are used to protect cables before entrance in the PVC tubes

Each PVC tube has his sheath

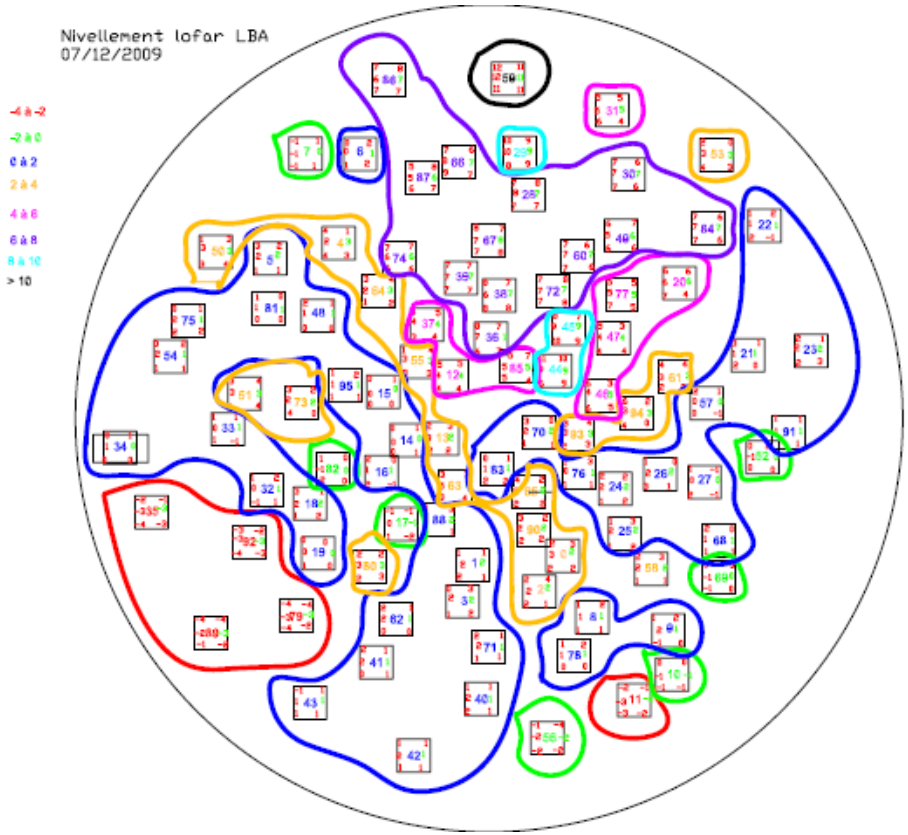
First row connected

All cables connected



LBA Field : final leveling

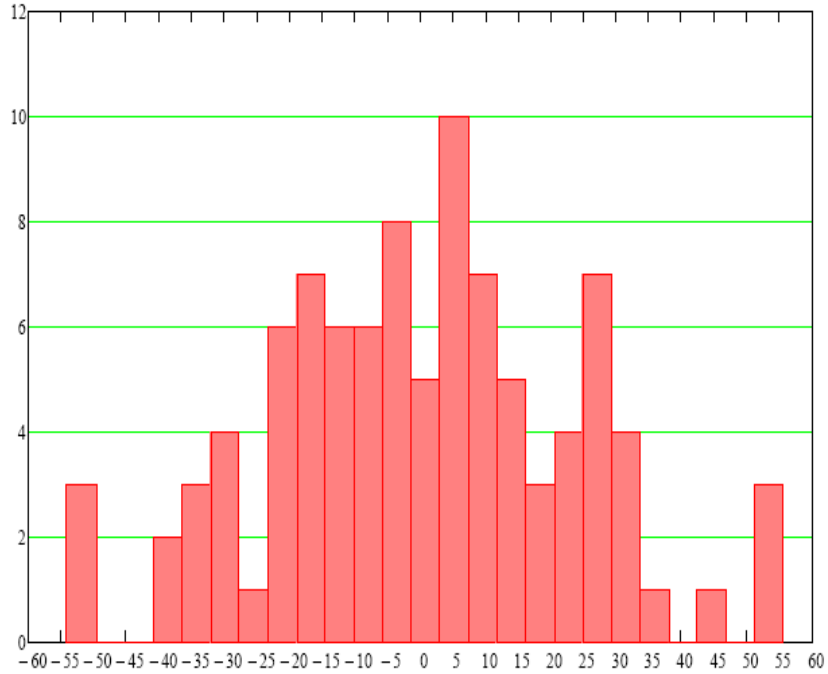
Leveling with a compactor

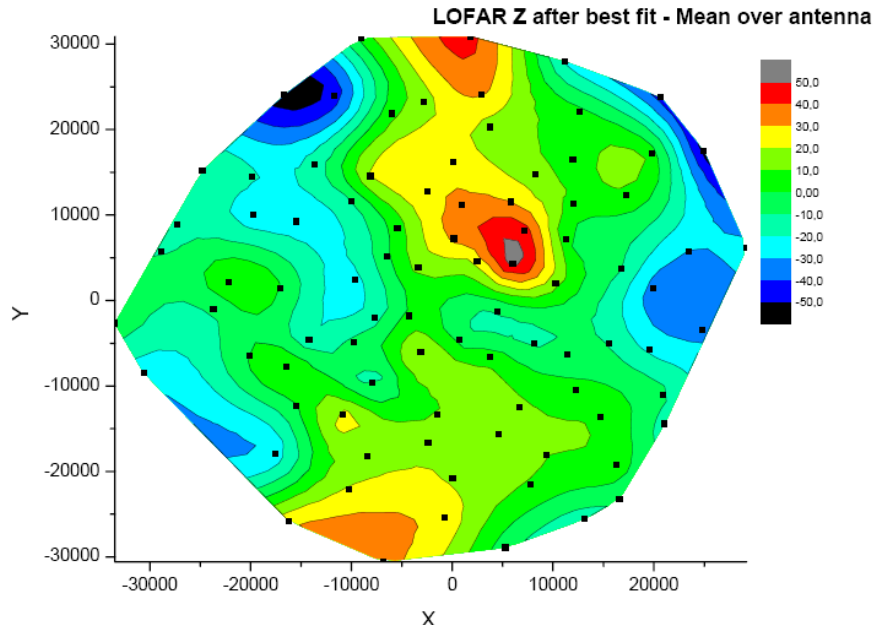


Measurement of the flatness after workgrounds

LBA Field : flatness

Calculation of the best fit for a plane

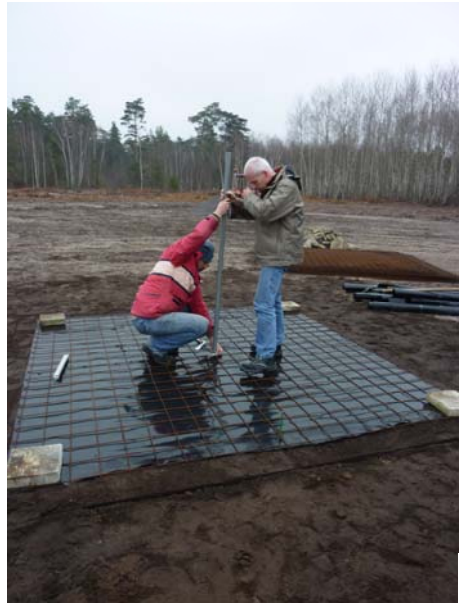




Altitude error of antenna location point refered to the calculated plane

LBA Field : installation

Layer of gravel for:
-Atitude tuning (refered to calculated plane)
-Impovement of interface with soil



Final leveling is better than +/- 1 cm

LBA Field at Nançay