

# KAIRA

Kilpisjärvi Atmospheric Imaging Receiver Array

## Project Status Report

LOFAR ILTO Meeting

Onsala, April 2012

Derek McKay-Bukowski  
derek@sgo.fi



Leverage from  
the EU  
2007-2013



LOFAR

RAL Space

European Union  
European Regional Development Fund  
European Social Fund

UNIVERSITY  
of  
O U L U

# KAIRA

Kilpisjärvi Atmospheric Imaging Receiver Array

Sodankylä Geophysical Observatory, Univ. Oulu, Finland

## Project

- Bi-static radar receiver for existing EISCAT system
- EISCAT\_3D prototype
- Imaging Riometer
- Radiotelescope

## Schedule

- Funded in 2010
- Testing in 2010/11
- HBA construction 2011
- Commissioning and LBA 2012/13







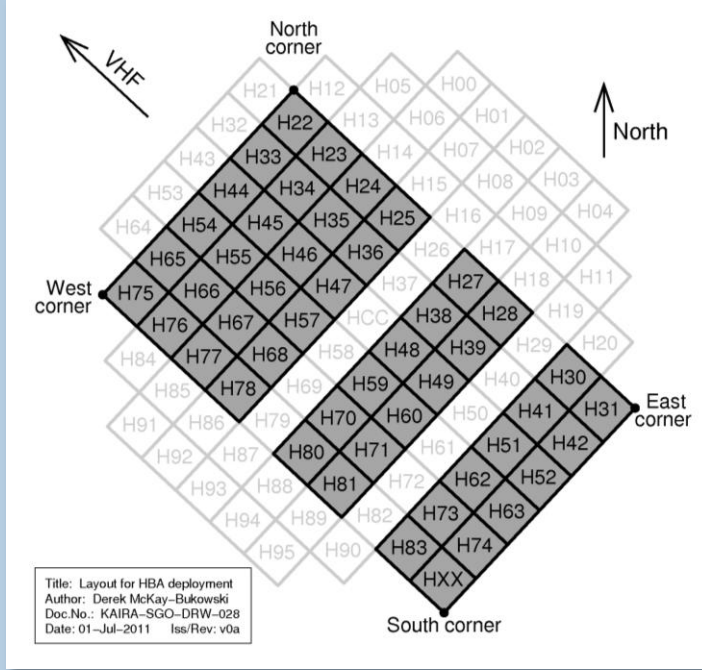
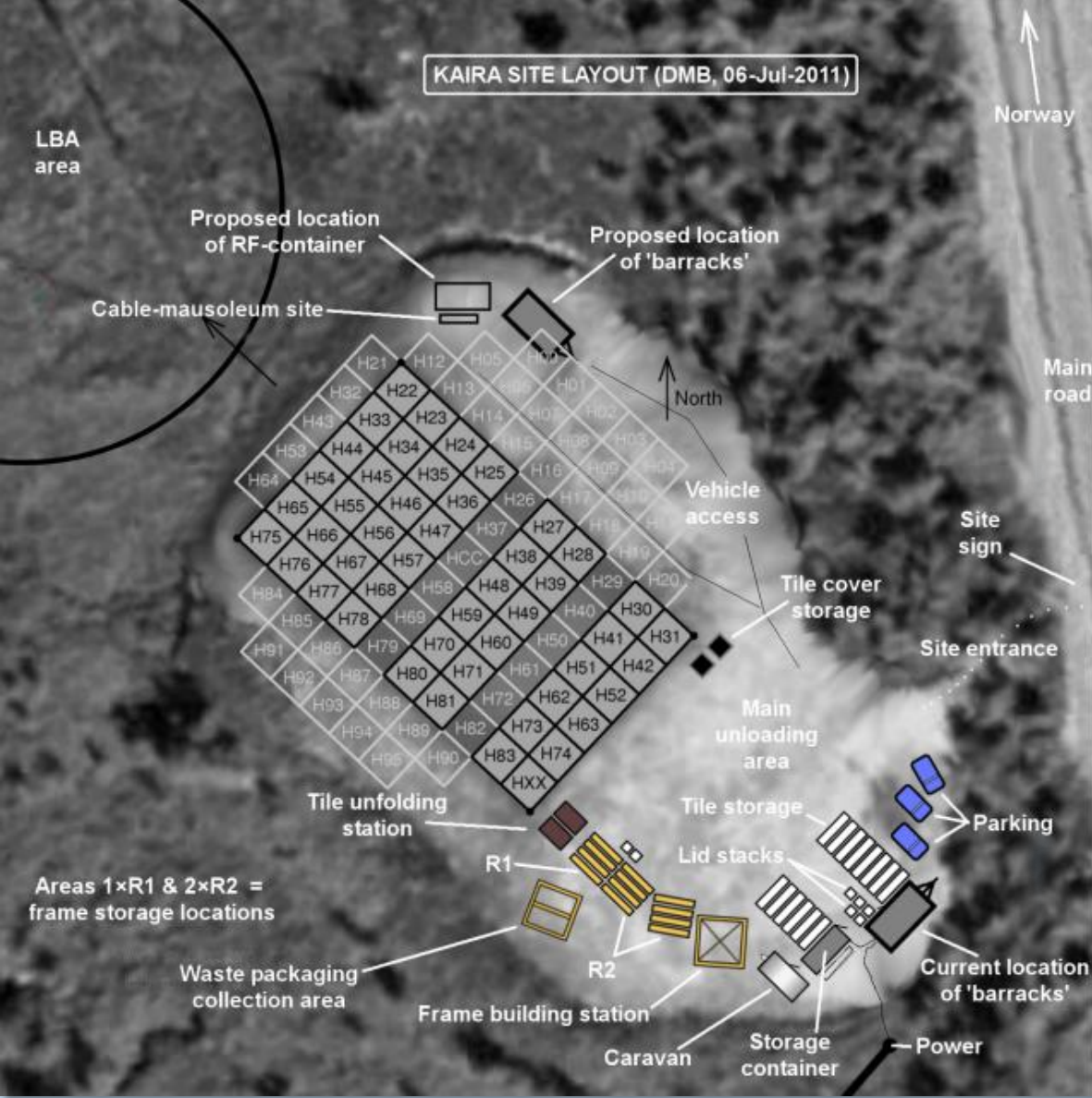




July 2011



September 2011



# Site issues

- Erosion H75
- plus...



# Status

- HBA
  - Testing
  - Deployment
  - Cabling
  - Summators
  - 5-ns problem
  - Commissioning
- RF-container
- Infrastructure
  - Fence
  - Electricity
  - Low-B/W network
- LBA





## Weather conditions

- Currently still 0,5m snow
- Drifts up to 2,0m
- Wind-breaks still holding up
- Snow-breaks still holding up
- Staff still holding up
- 😊



## Low-Band Array

- Frame construction
  - Three prototype designs, plus ground antenna
  - Non-regular frame
  - Labour-intensive
  - Cost-effectiveness
- Ground plane
  - Beam-patterns
- Ground preparation



## LBA ground preparation

- Permafrost
- Silt/water catchment
- Snow gradient loading
- Access
- Cost (time, money)

**= NOT POSSIBLE**

# KAIRA SCHEDULE

## Kilpisjärvi-HBA

- Summator installation 2012Q2
- HBA commissioning 2012Q3
- EISCAT VHF experiments 2012Q3

## Kilpisjärvi-LBA

- Ground prep. on Sth-East of mound
- Install 48 LBAs 2012Q3
- LBA commissioning 2012Q3?

## Sodankylä-LBA

- Install 4-5 reconstituted LBAs 2012Q2
- Develop E3D-specific DSP backend 2012Q4
- Install remainder LBAs (48 total) 2013





# End

With thanks to the entire KAIRA team at the Sodankylä Geophysical Observatory (University of Oulu), as well as countless others from the Rutherford Appleton Laboratory, FMI, ASTRON/LOFAR, LOFAR-UK, SEPnet, EISCAT\_3D, EISCAT-UK and SKA /AAVP communities. Particular thanks to Th.Ulich, M.Postila, J.Vierinen, A.Juttila, T.Grydeland, K.Bejuk, T. Raita, T.van Eyken, L-G.Vanhainen, I. van Bommel, I. McCrea and S. Keenan. And finally, special thanks to Izabela for her encouragement, patience and support.

**@KairaProject**

**<http://kaira.sgo.fi/>**