ENAbling Green E-science for SKA

Sustainability of Portuguese participation in the SKA

ENGAGE SKA PORTUGAL

Radioastronomy as an Open Innovation Living Lab

5 Academic Partners

7 Industry partners

1 Competitivity Cluster

universidade de aveiro

UNIVERSIDADE DE ÉVORA

U.PORTO FACULDADE DE CIÊNCIAS UNIVERSIDADE DO PORTO

IPBeja INSTITUTO POLITÉCNICO DE BEJA

instituto de telecomunicações

activespace technologies making space a global endeavour

Critical software

MARTIFER SOLAR

tice.pt

LC Technologies

Coriant

visabeira global

PT

Consortium Structure

ENGAGE SKA PORTUGAL

- Board Committee (with Exec BC)
- External Science Advisory Committee
- Industry Advisory Committee

instituto de telecomunicações

U.PORTO FACULDADE DE CIÊNCIAS UNIVERSIDADE DO PORTO

universidade de aveiro

UNIVERSIDADE DE ÉVORA

IPBeja INSTITUTO POLITÉCNICO DE BEJA

EXEC

Richard Schilizzi (UMAN, ex-dir SKA)
Arnold van Ardenne (ASTRON)
Paulo Freire (Max Planck)
Oleg Smirnov (SKA, Cape Town)

CRITICAL SOFTWARE

PT

tice.pt PÓLO DE COMPETITIVIDADE DAS TECNOLOGIAS DE INFORMAÇÃO, COMUNICAÇÃO E ELECTRÓNICA

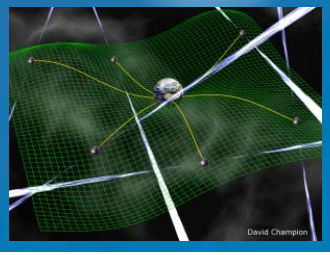
MARTIFER SOLAR

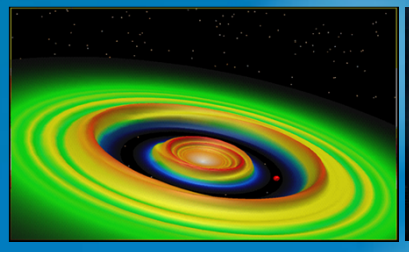
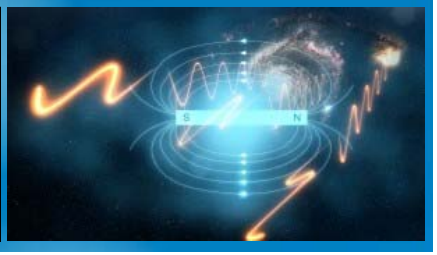
visabeira global

activespace technologies

Coriant

LC Technologies

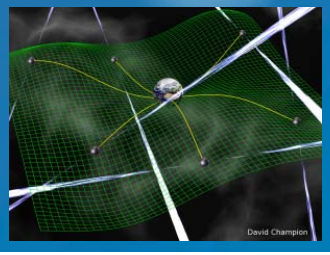




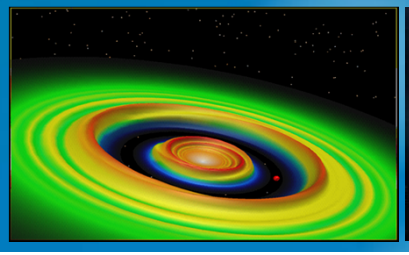
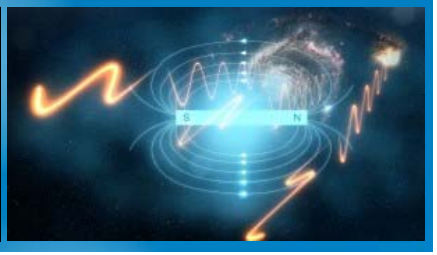
Global Science: Paving the way

ENGAGE SKA PORTUGAL

- Key Science Cases presence (New SKA Science Book))
-
- Membership of Scientific WGs (Craddle of life, Heliophysics, Continuum, Cosmology)

- Cooperation EU-AFR, Australia

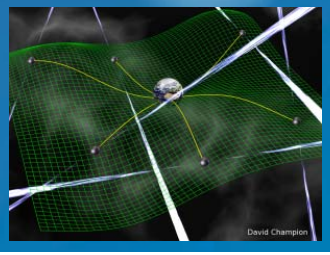



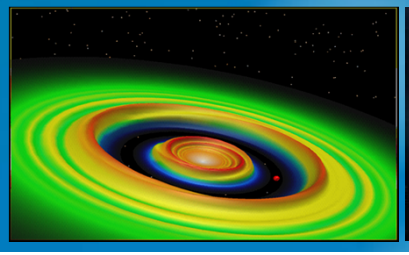
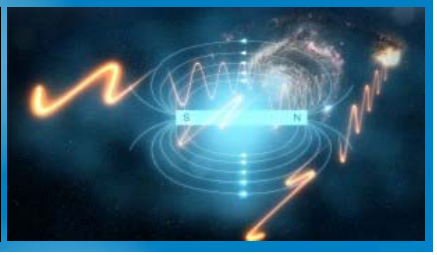




Global Science
Human Resources

ENGAGE SKA PORTUGAL

- PhDs grants for experimental radioastronomers / e-scientists
  - –High Performance Computing / Big Data Capacitation
- Strengthen existing teams by recruiting Senior scientists
  - ➢TARGET: 2015-16 Lead team ; 2020 Core Team

SKA : Industry

- 2014-16 - Pre-Construction Consortia Membership with CA and MoUs
  - TELESCOPE MANAGER – Critical Software, (WP Lead)
  - INFRA SOUTH AFRICA (POWER) – MARTIFER SOLAR (Lead), Critical Software
  - SIGNAL AND DIGITAL TRANSPORT – VISABEIRA GLOBAL (NDA)
  - SOFTWARE DATA PROCESSOR – P TELECOM (NDA)
  - APERTURE ARRAY MID FREQUENCY – Active Space, Critical
  - DISH – LC Tech, Active Space, Critical ,(WP Lead)
- Clustering Agreed Investment : 6FTEs, 2M€.

Implementation :

Research Infrastructure exists

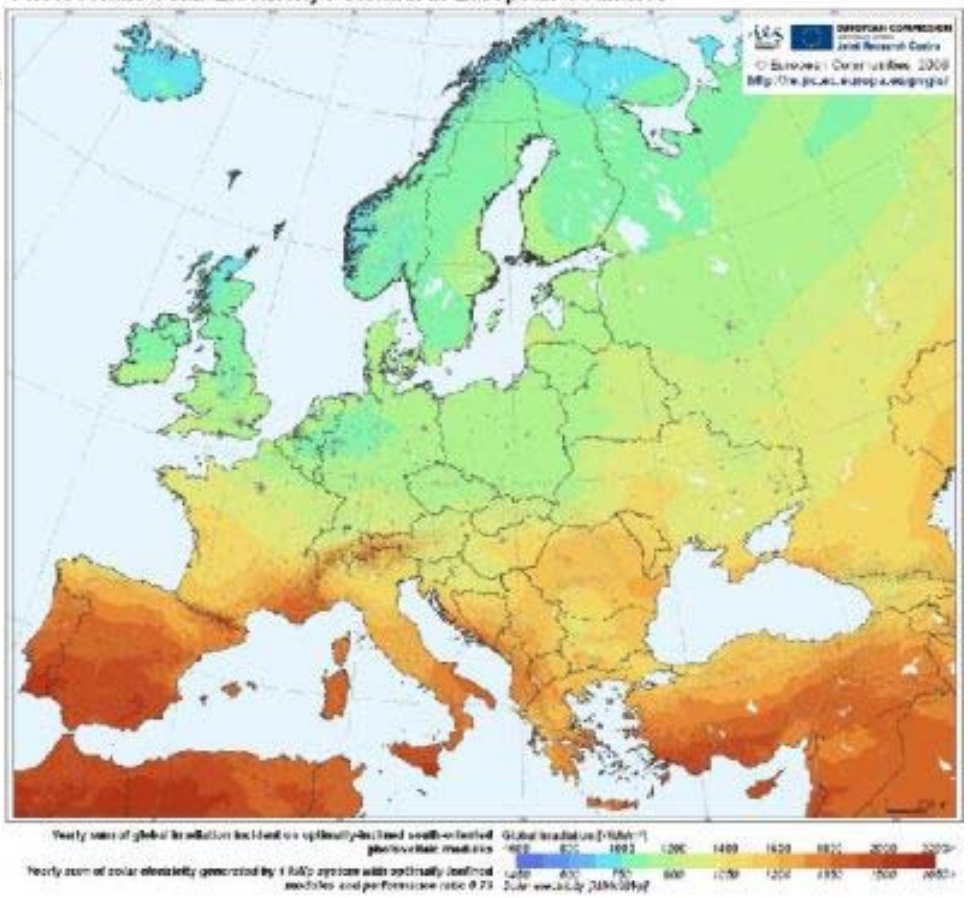
- Science and Industry Internationally positioned
- Innovation and Industry Participation
- Science reference demonstrator being developed on Portugal

Consortia in Final Implementation Phase 2015

- Expected deliverables 2015-2017
- Consortia in Final Implementation Phase mid-2015

Herdade da Contenda (no people living within 54km^2)

Photovoltaic Solar Electricity Potential in European Countries



Source: European Comittee, IES– Institute for Environment and Sustainability Joint Research Centre

The region has the highest levels of solar radiation in Europe

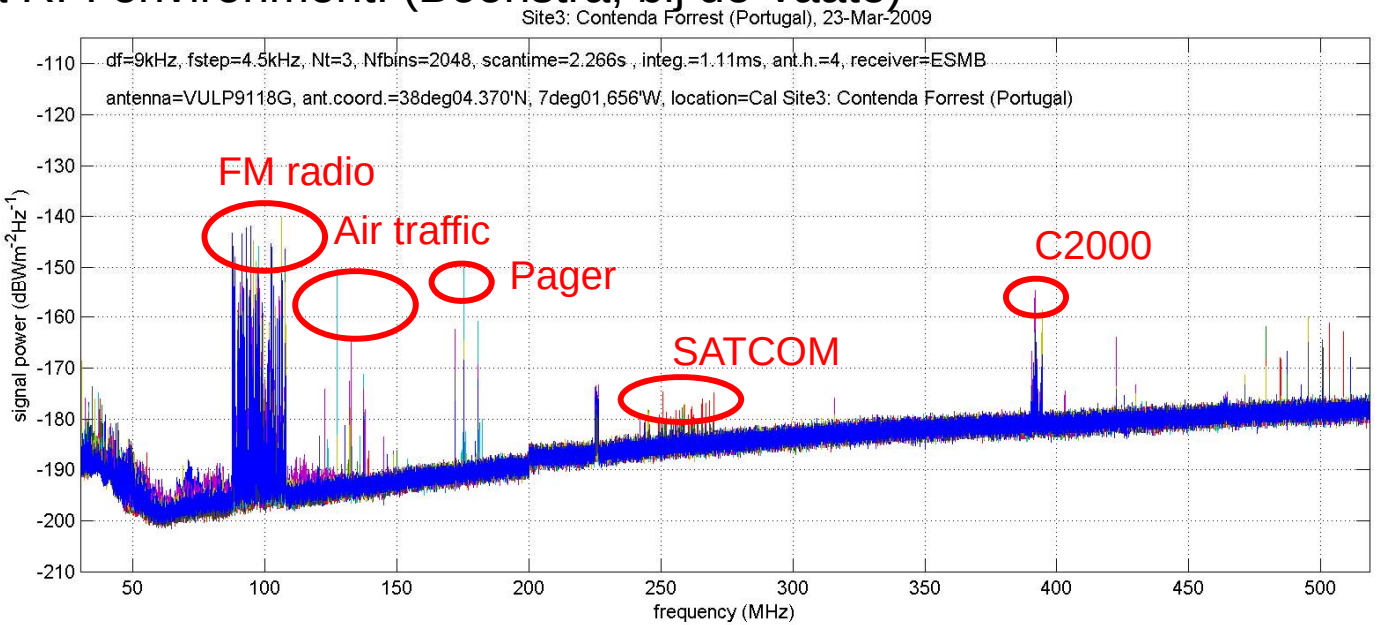
2.200 KWh/m2
Sum of the annual incident irradiation on photovoltaic modules oriented to the south.

1.650 KWh/KWp
Annual sum of the electricty generated by 1kWp for a system with the optimal inclination.

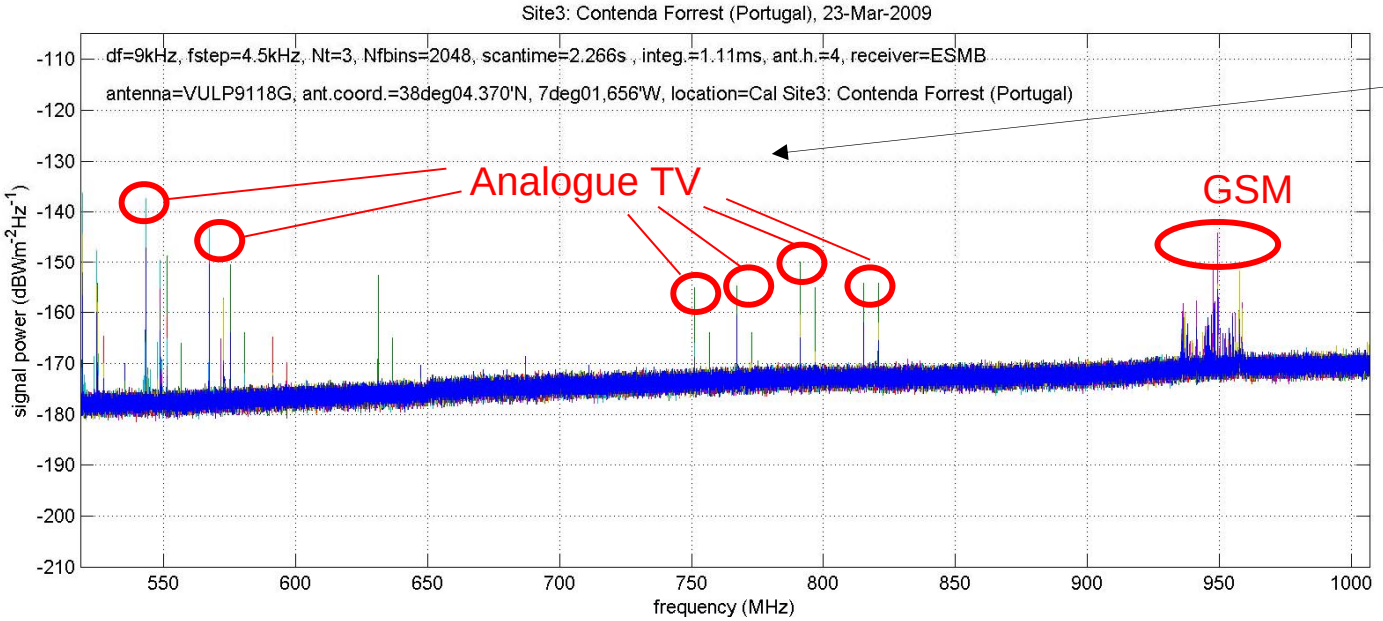
Suitable Orography

Optimal Sun Exposure

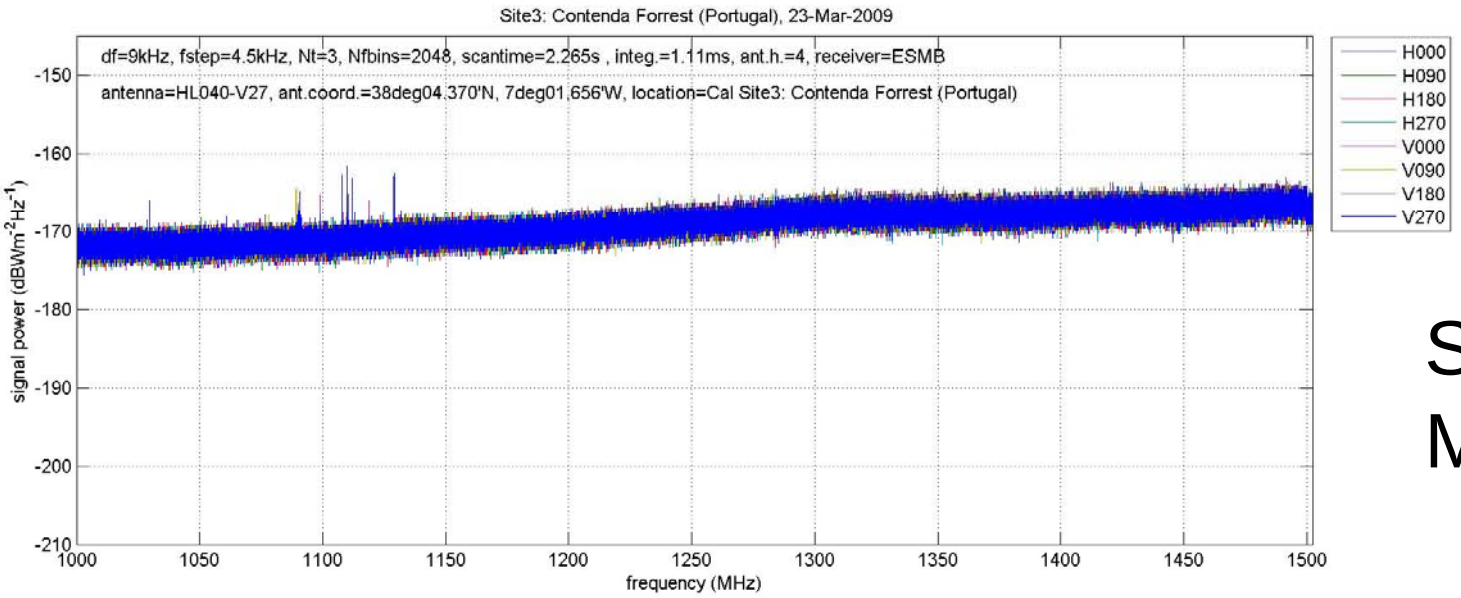
Moura RFI environment: (Boonstra, bij de Vaate)



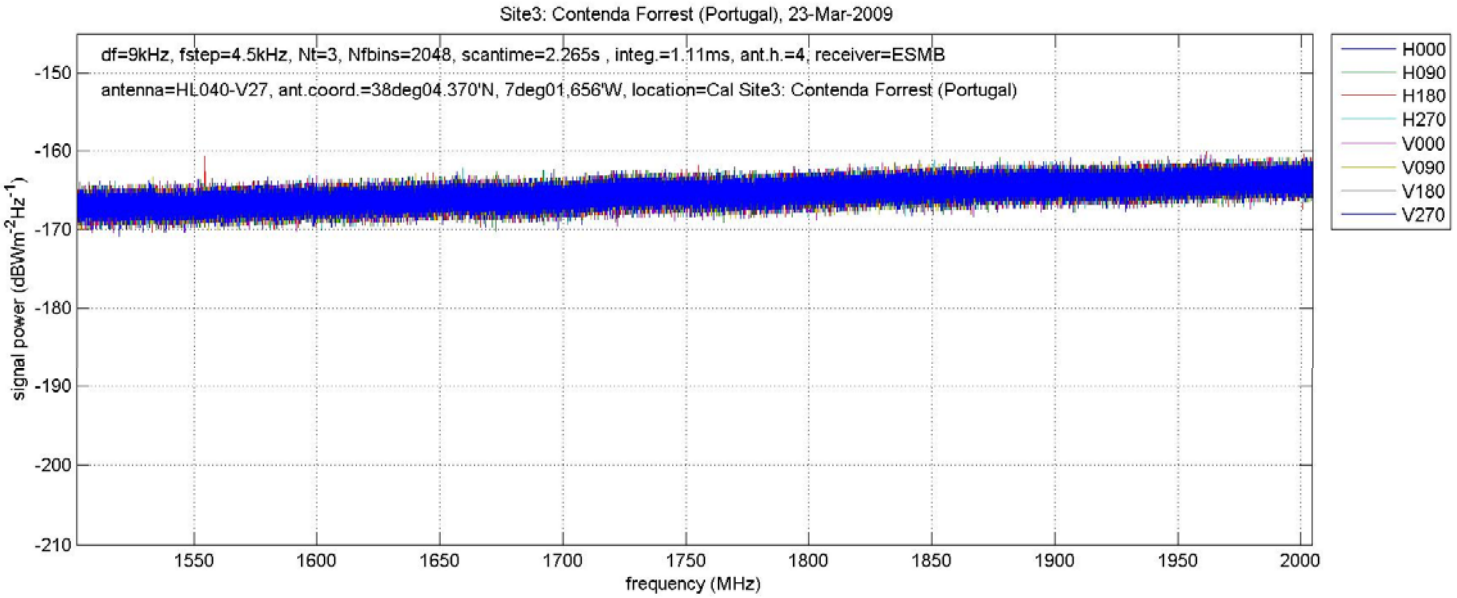
Site 3, Moura



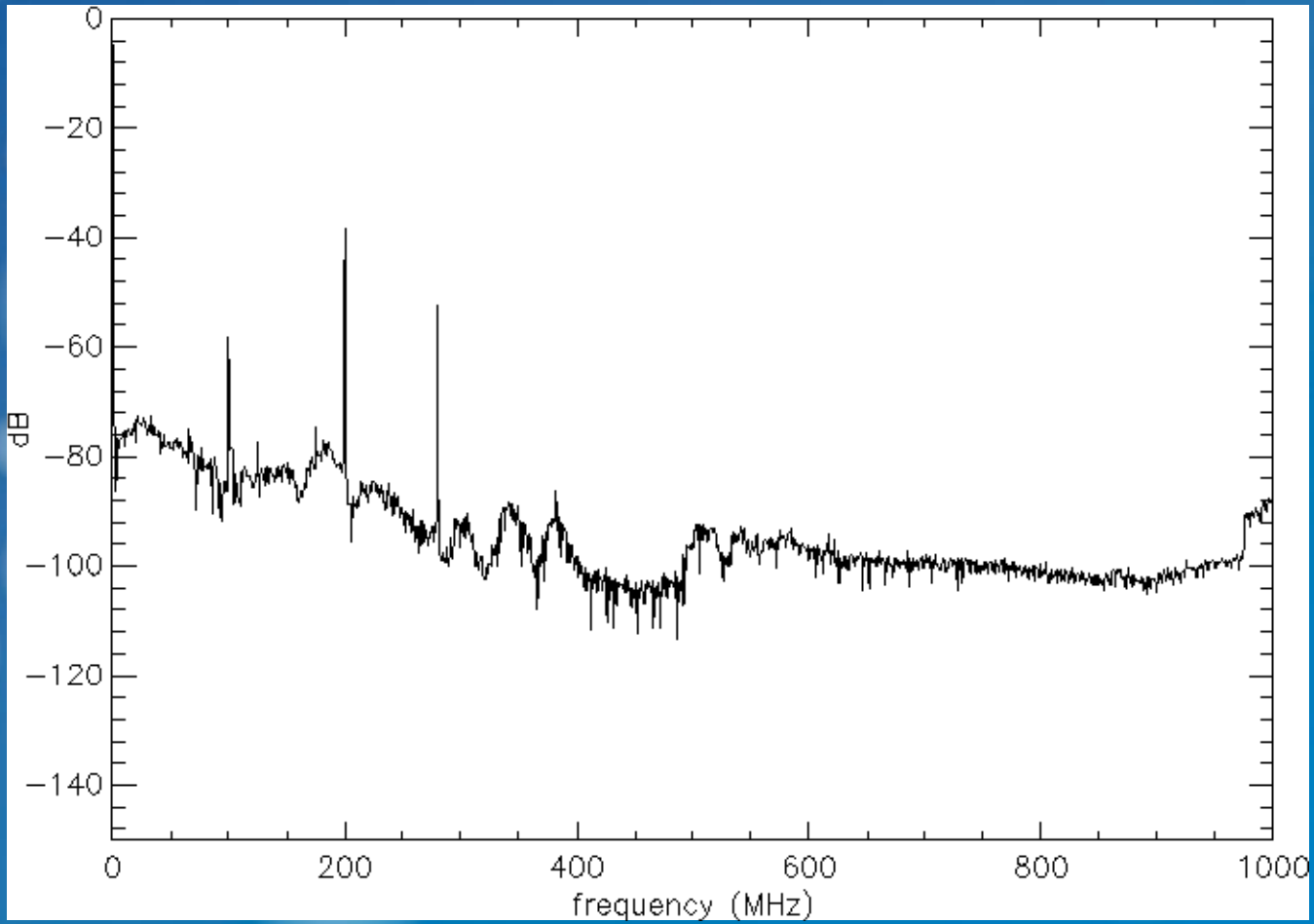
Killed


Site3: Contenda Forrest (Portugal), 23-Mar-2009
df=9kHz, fstep=4.5kHz, Nt=3, Nfbins=2048, scantime=2.265s , integ.=1.11ms, ant.h.=4, receiver=ESMB
antenna=HL040-V27, ant.coord.=38deg04.370'N, 7deg01.656'W, location=Cal Site3: Contenda Forrest (Portugal)
signal power (dBWm-2Hz-1)
frequency (MHz)
H000
H090
H180
H270
V000
V090
V180
V270

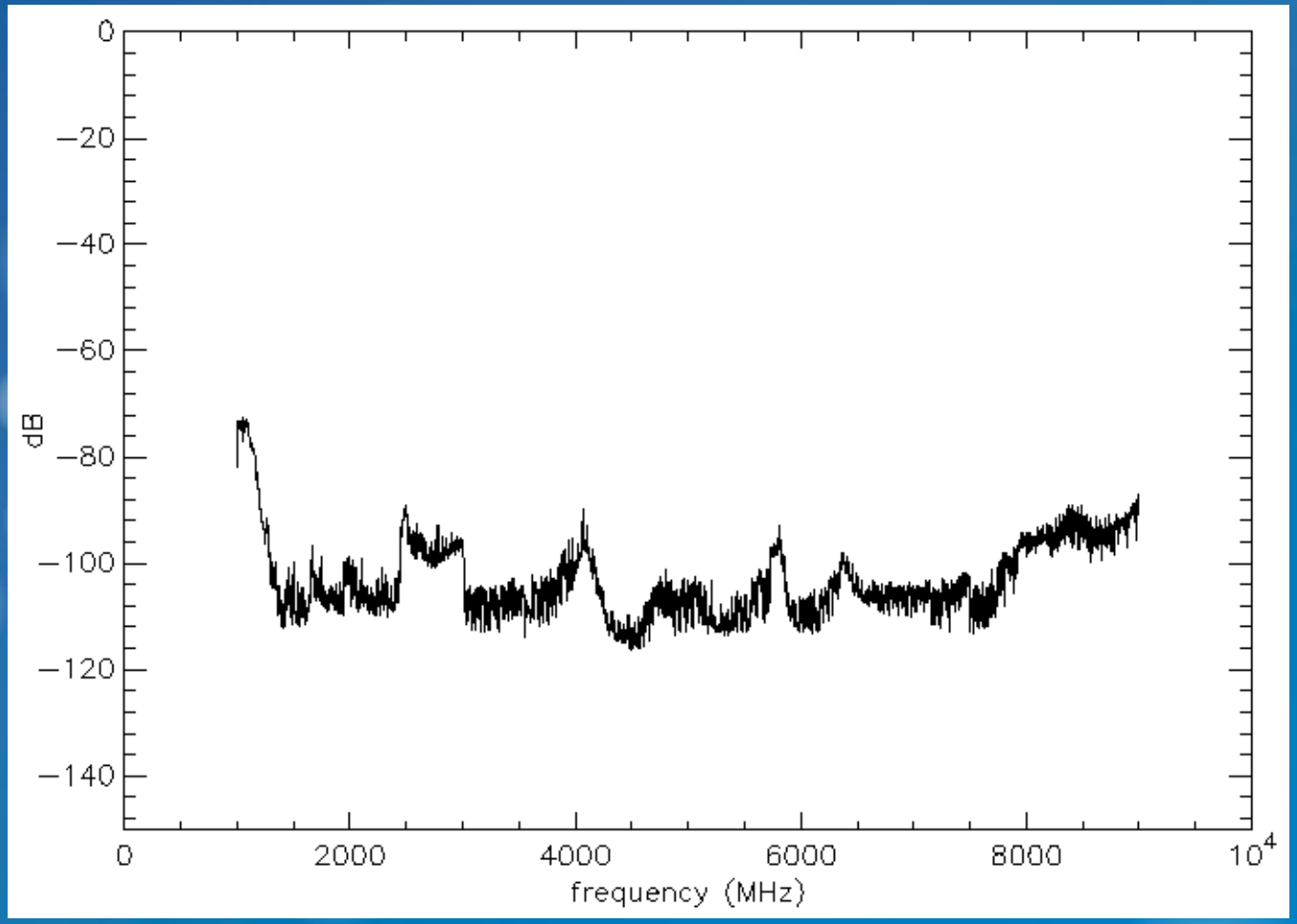
Site 3, Moura


Site3: Contenda Forrest (Portugal), 23-Mar-2009
df=9kHz, fstep=4.5kHz, Nt=3, Nfbins=2048, scantime=2.265s , integ.=1.11ms, ant.h.=4, receiver=ESMB
antenna=HL040-V27, ant.coord.=38deg04.370'N, 7deg01.656'W, location=Cal Site3: Contenda Forrest (Portugal)
signal power (dBWm-2Hz-1)
frequency (MHz)
H000
H090
H180
H270
V000
V090
V180
V270

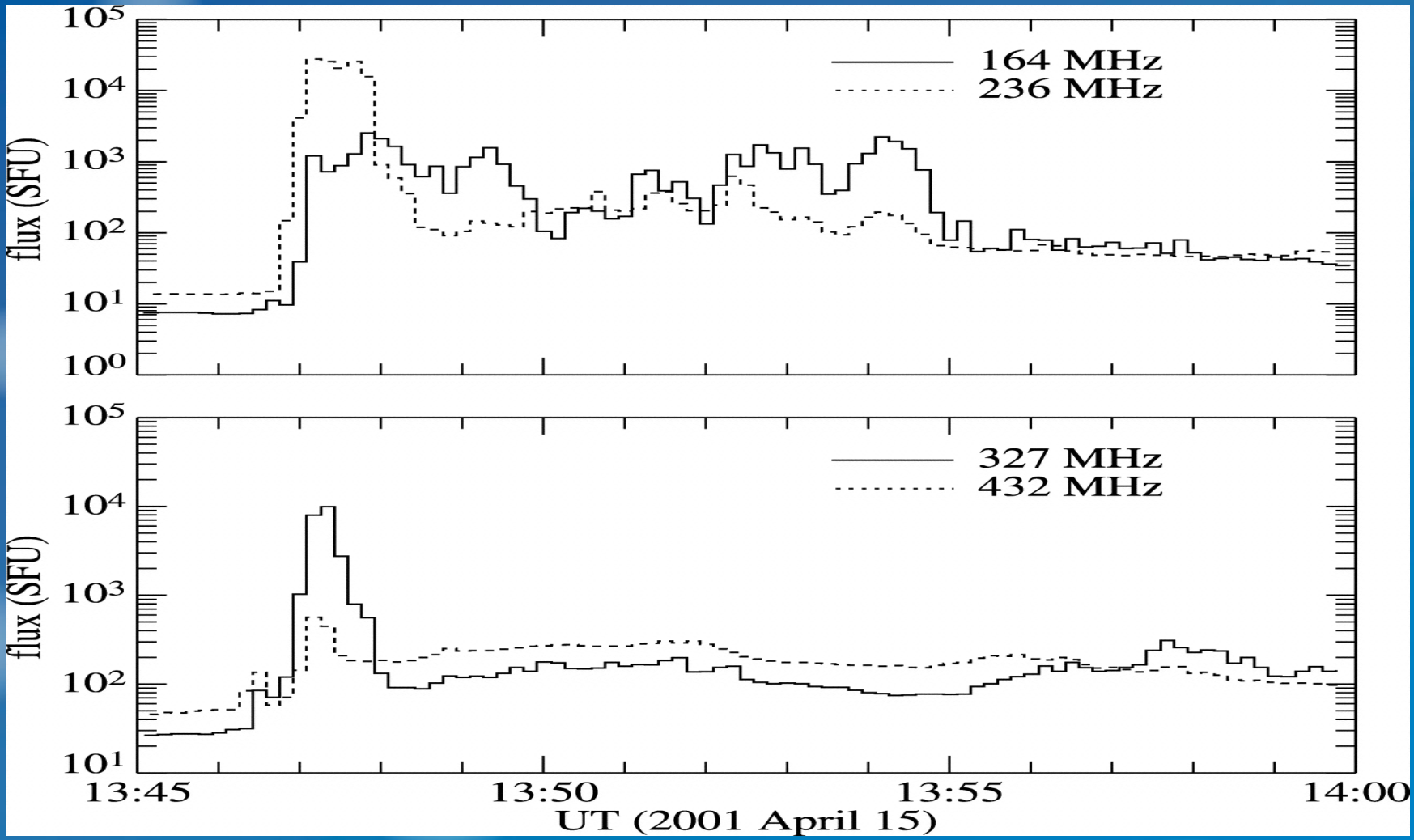
2015 March 25, Contenda site



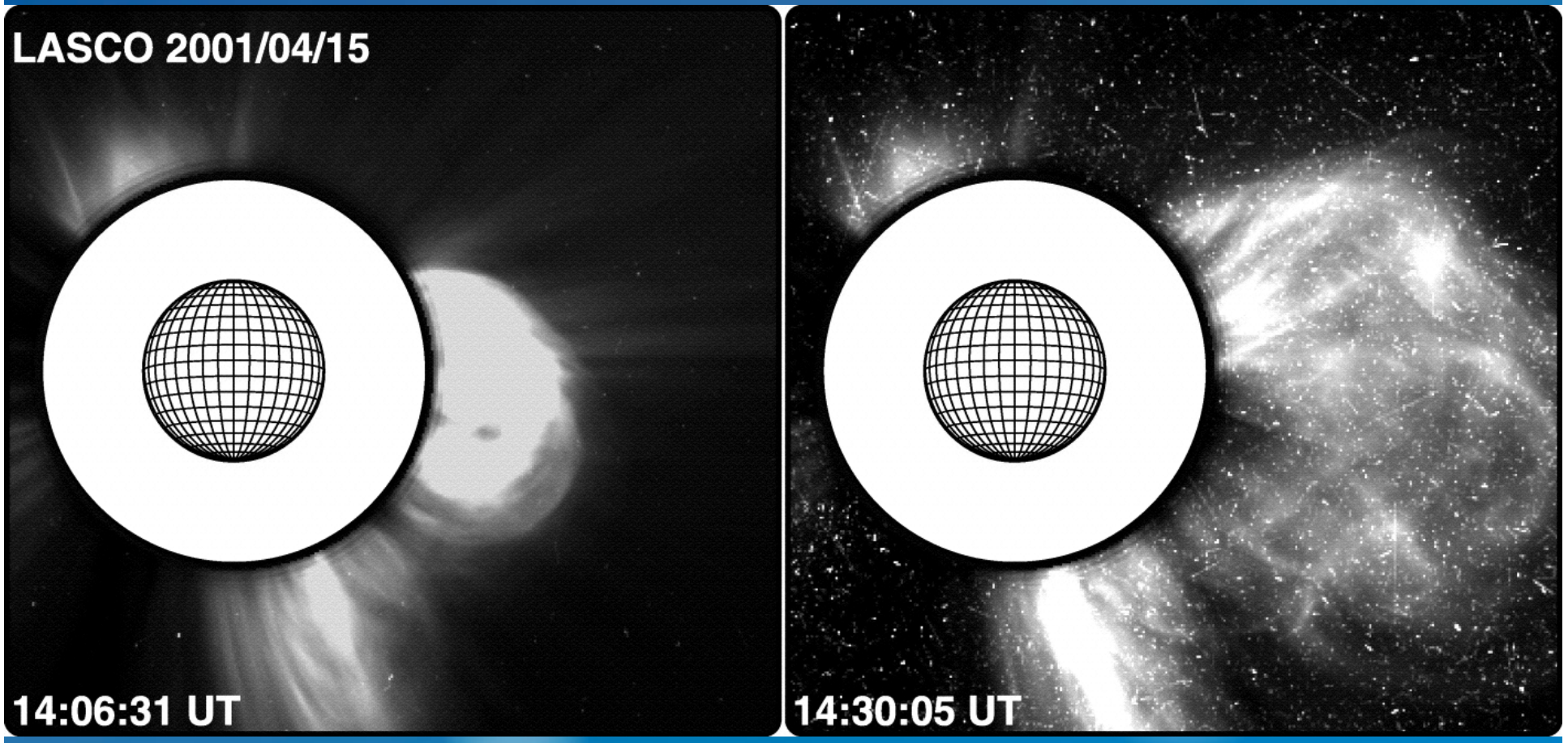
2015 March 25, Contenda site



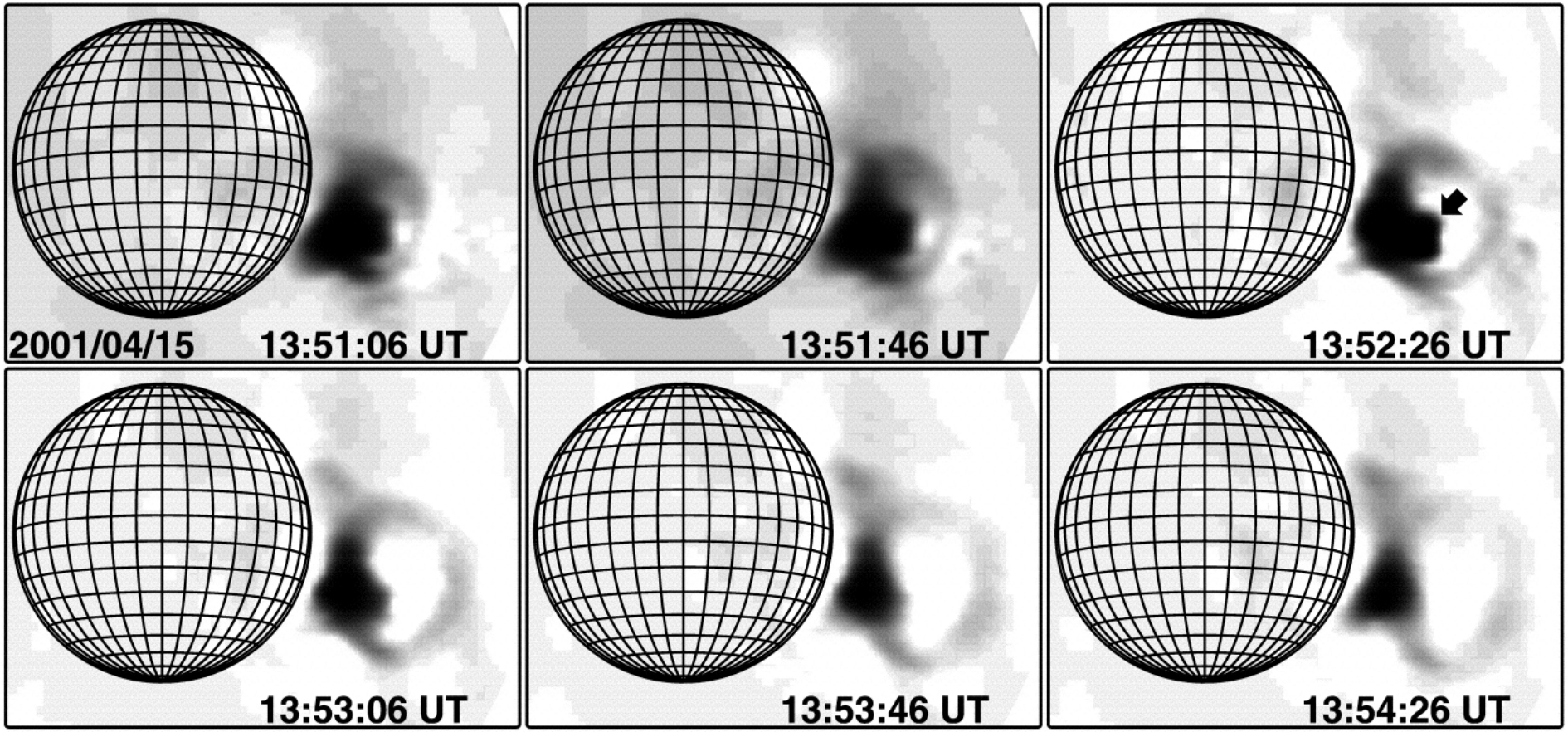
Solar Imaging



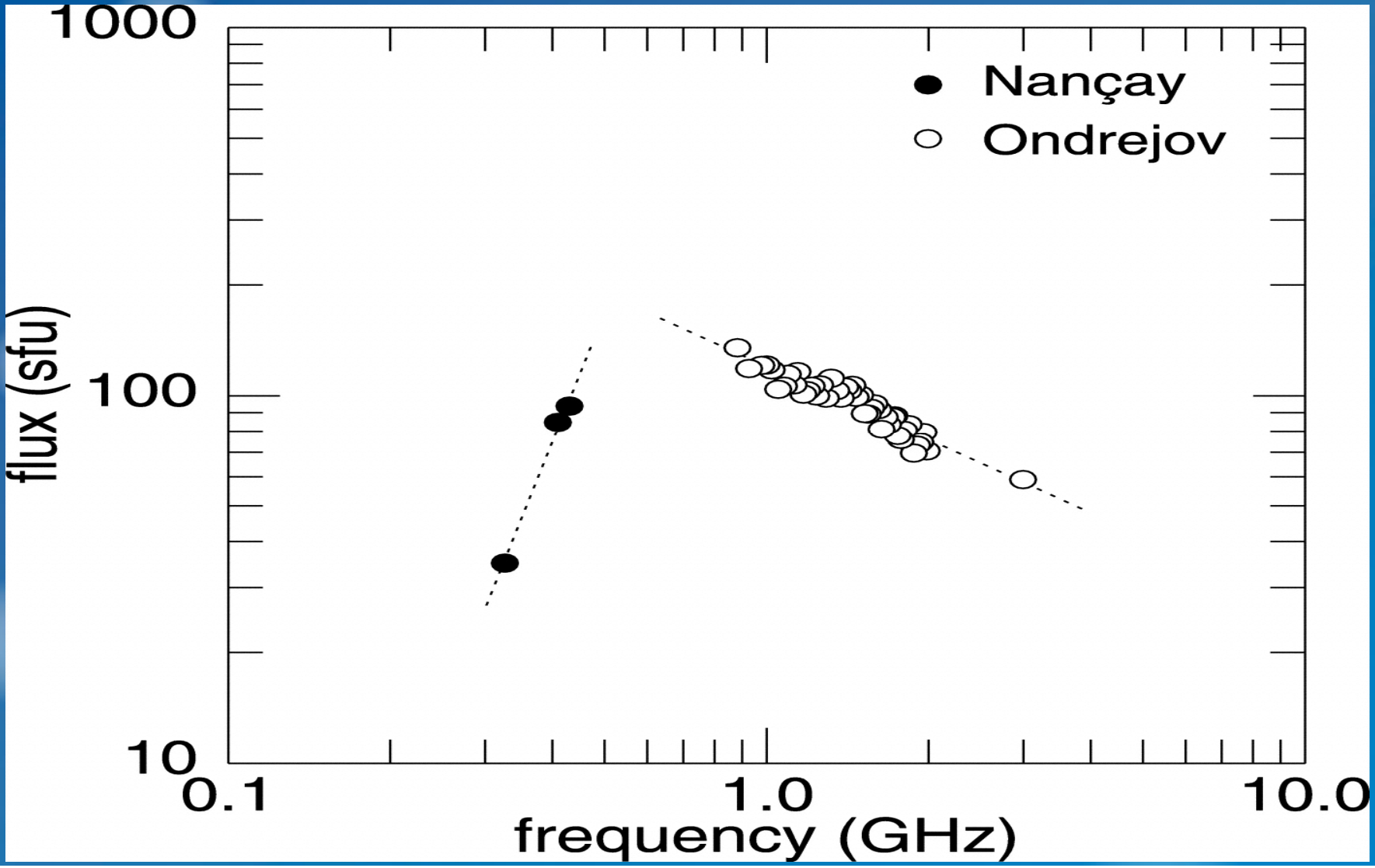
Solar Imaging



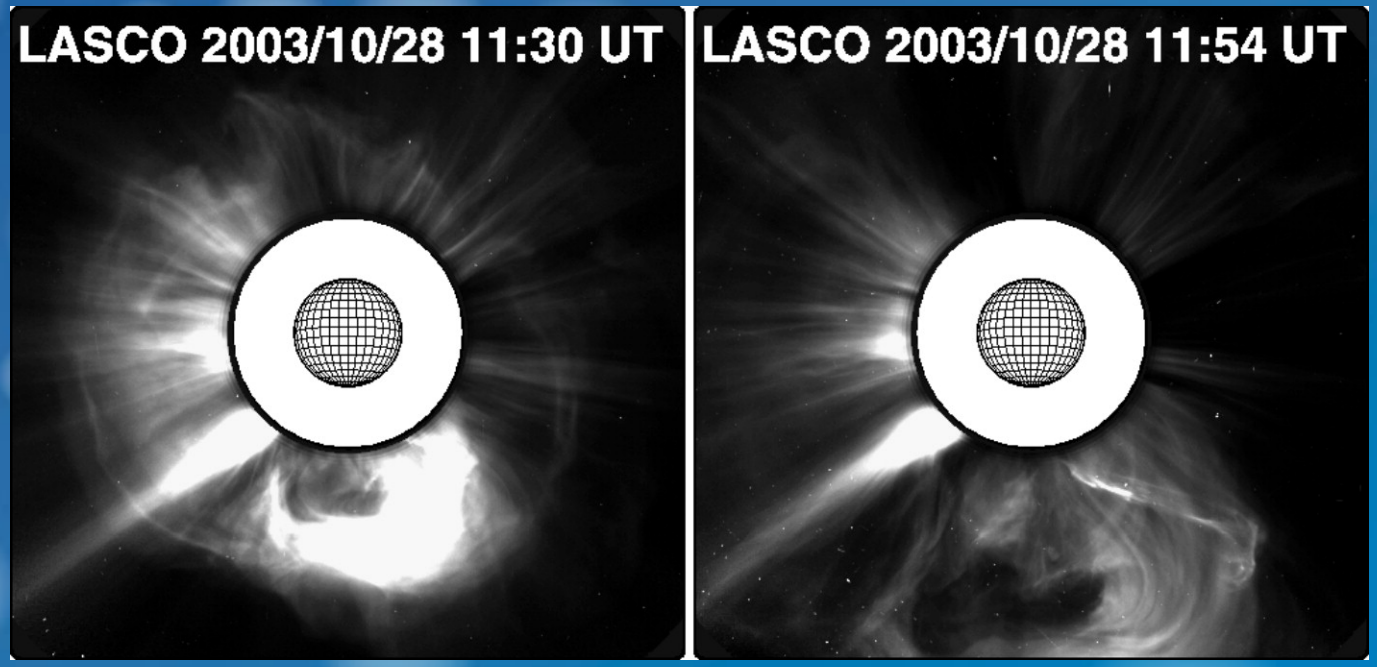
Solar Imaging



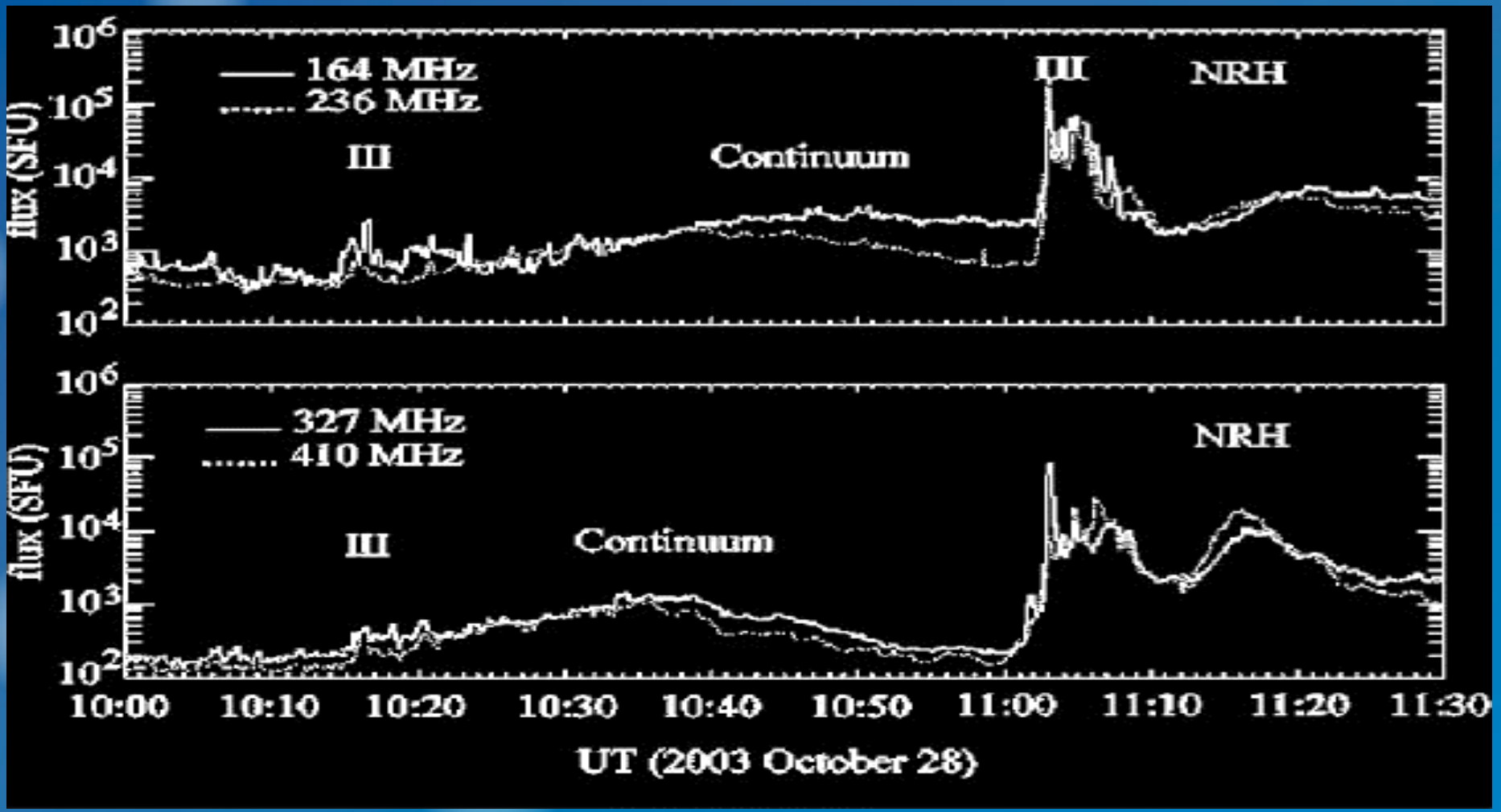
Solar Imaging



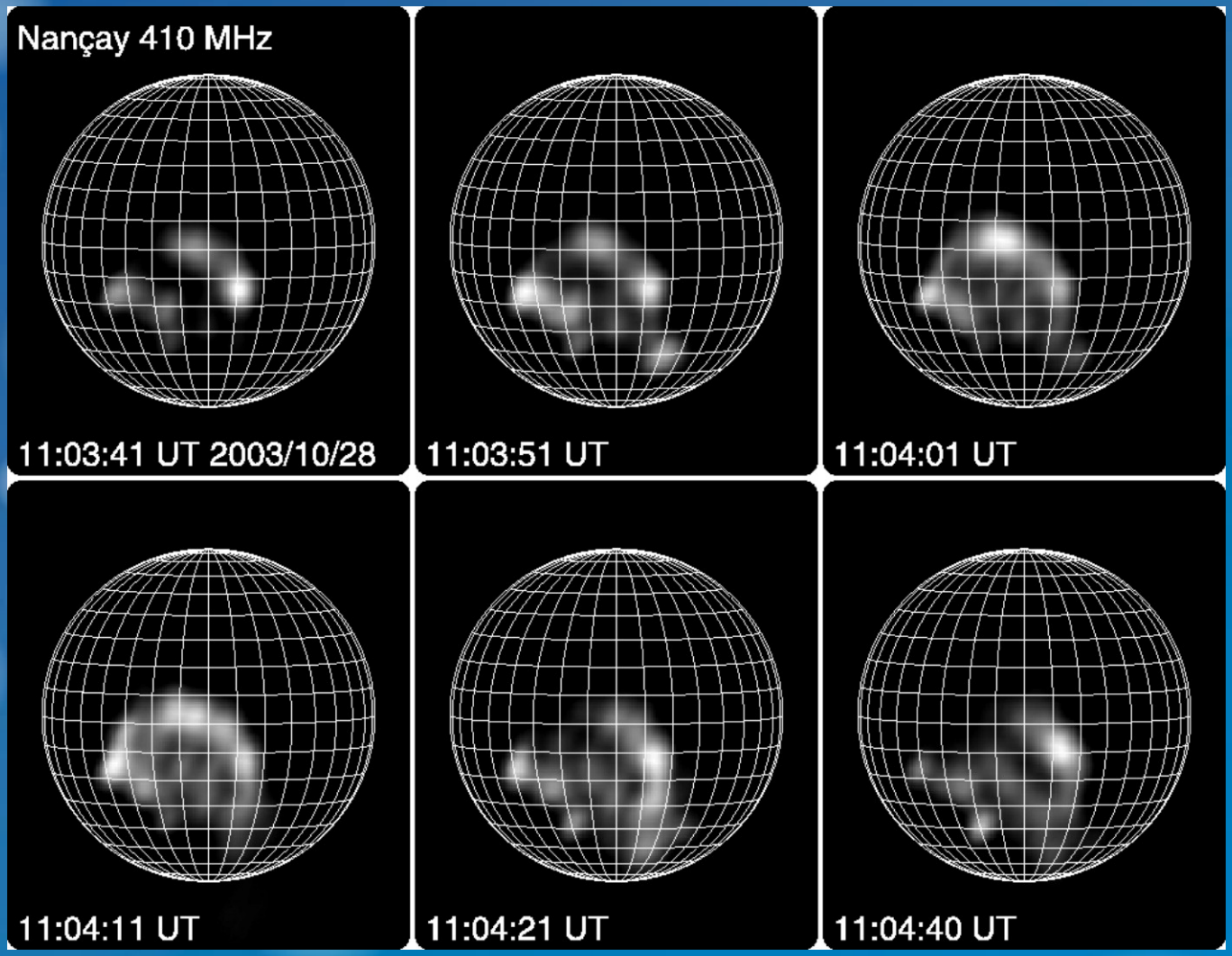
Solar Imaging



Solar Imaging



Solar Imaging



Solar Imaging