

# Cylinder Radio Telescope

- Site testing

- Social Impact

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# Site Testing

Atlas Mountains offer a natural shield, isolating the interior desert areas from the radio noise of the cities.  
Morocco is centrally located and is easily reached by astronomers from Europe and North America.



# Site Tesing - Iriki lake

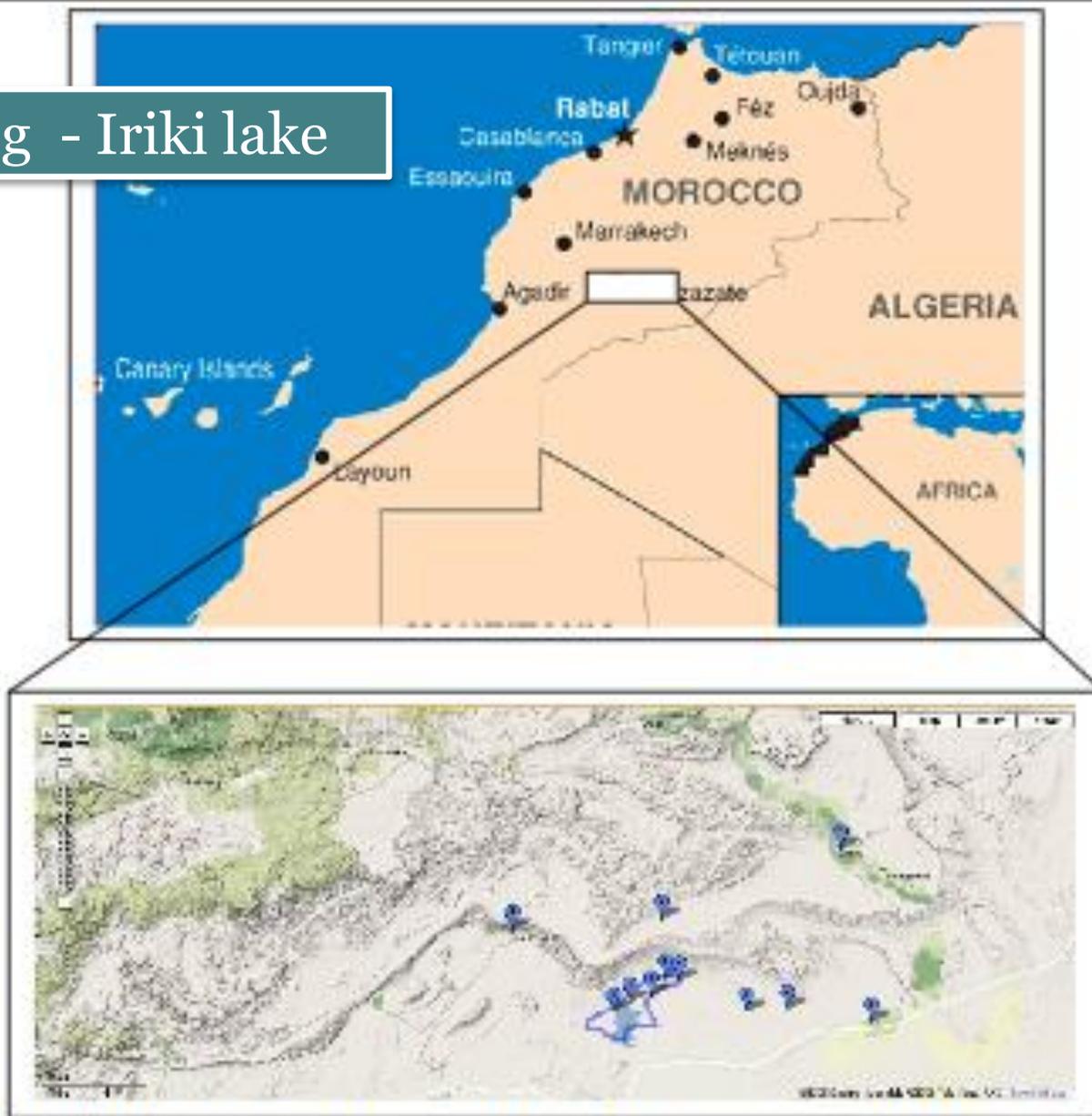


Figure A-0. Iriki Dry Lake is outlined with the blue line. In google maps this is incorrectly called Tata Lake. The outer three markers show the three nearest GSM towers in Zagora, M'Hamid and Fom-Zguid. The other makers show test sites 2-8.

# Measured Sites in the Iriki lake region



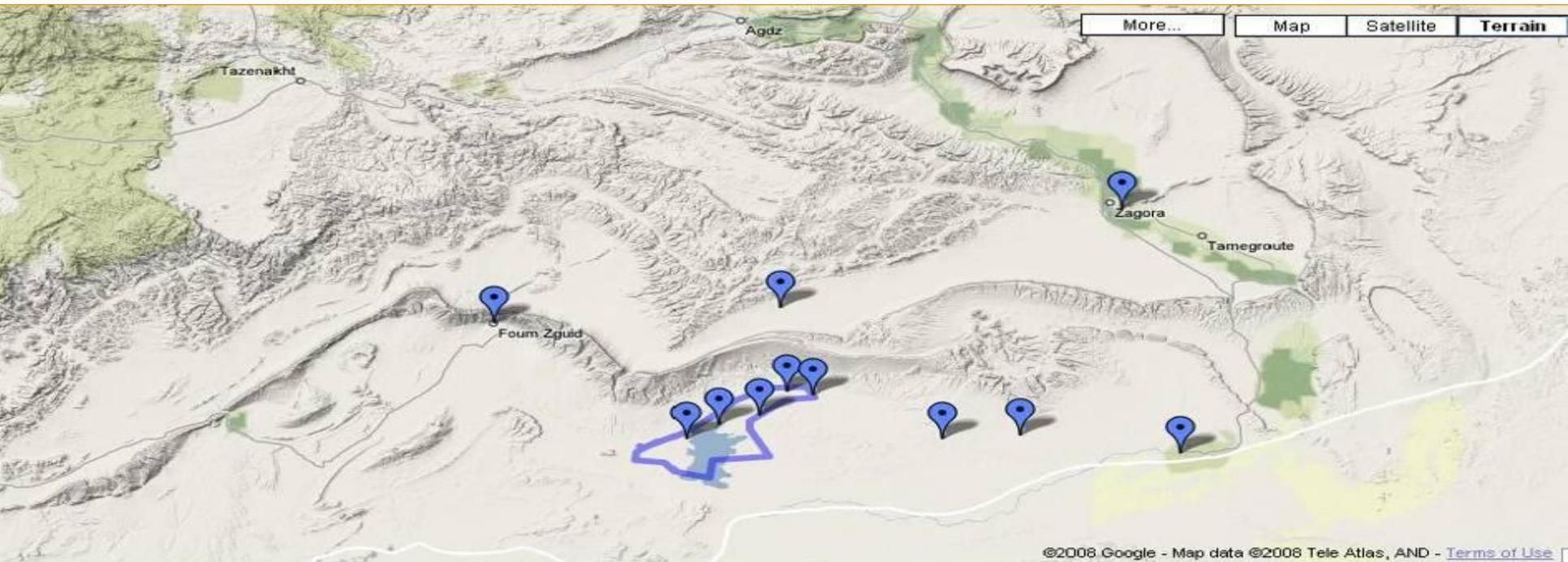
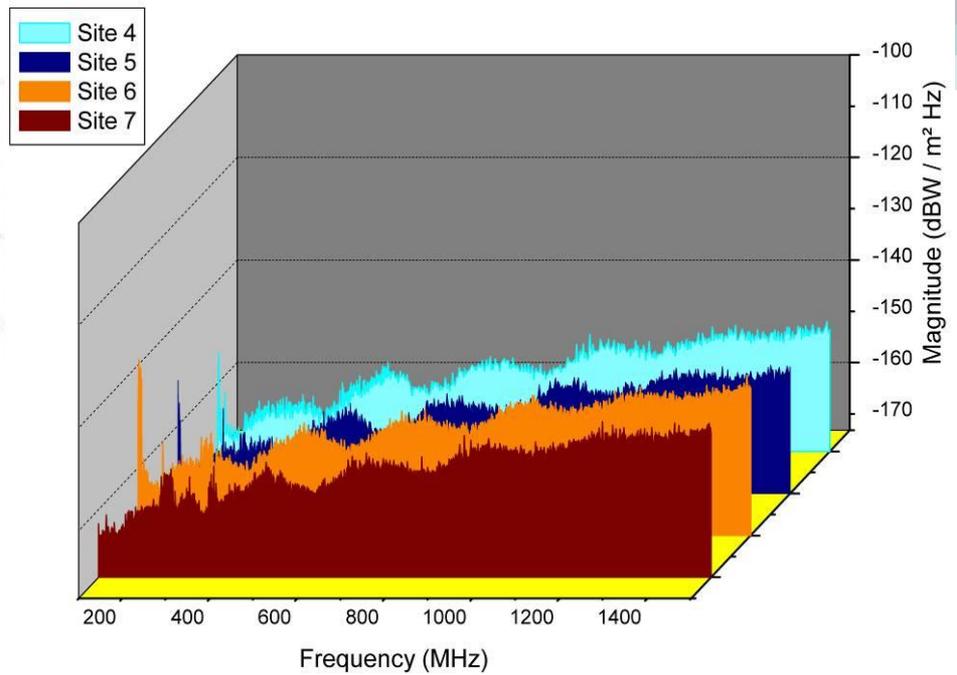
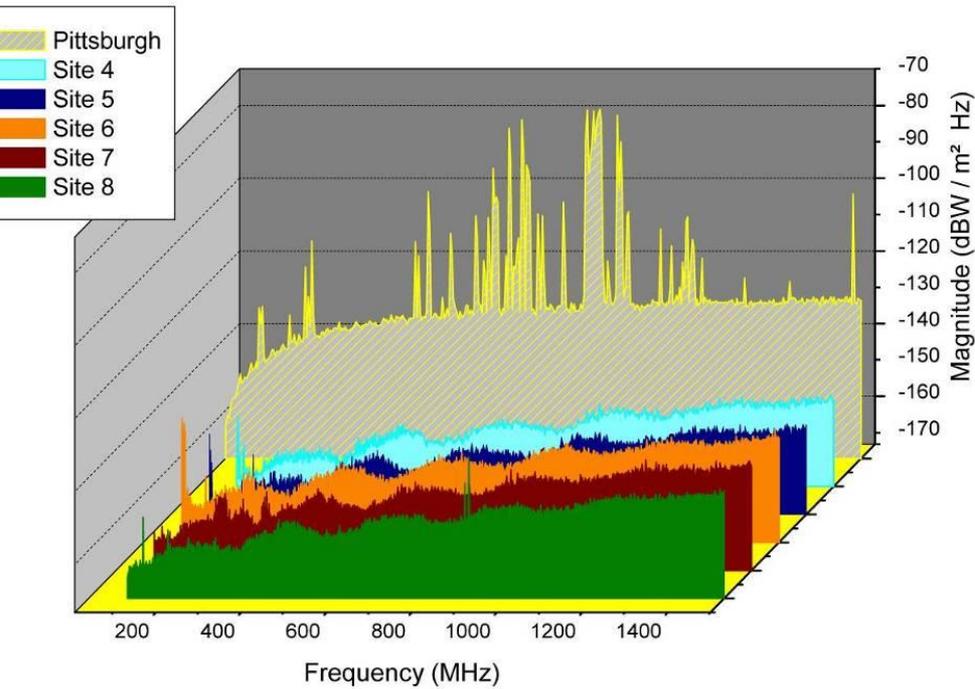


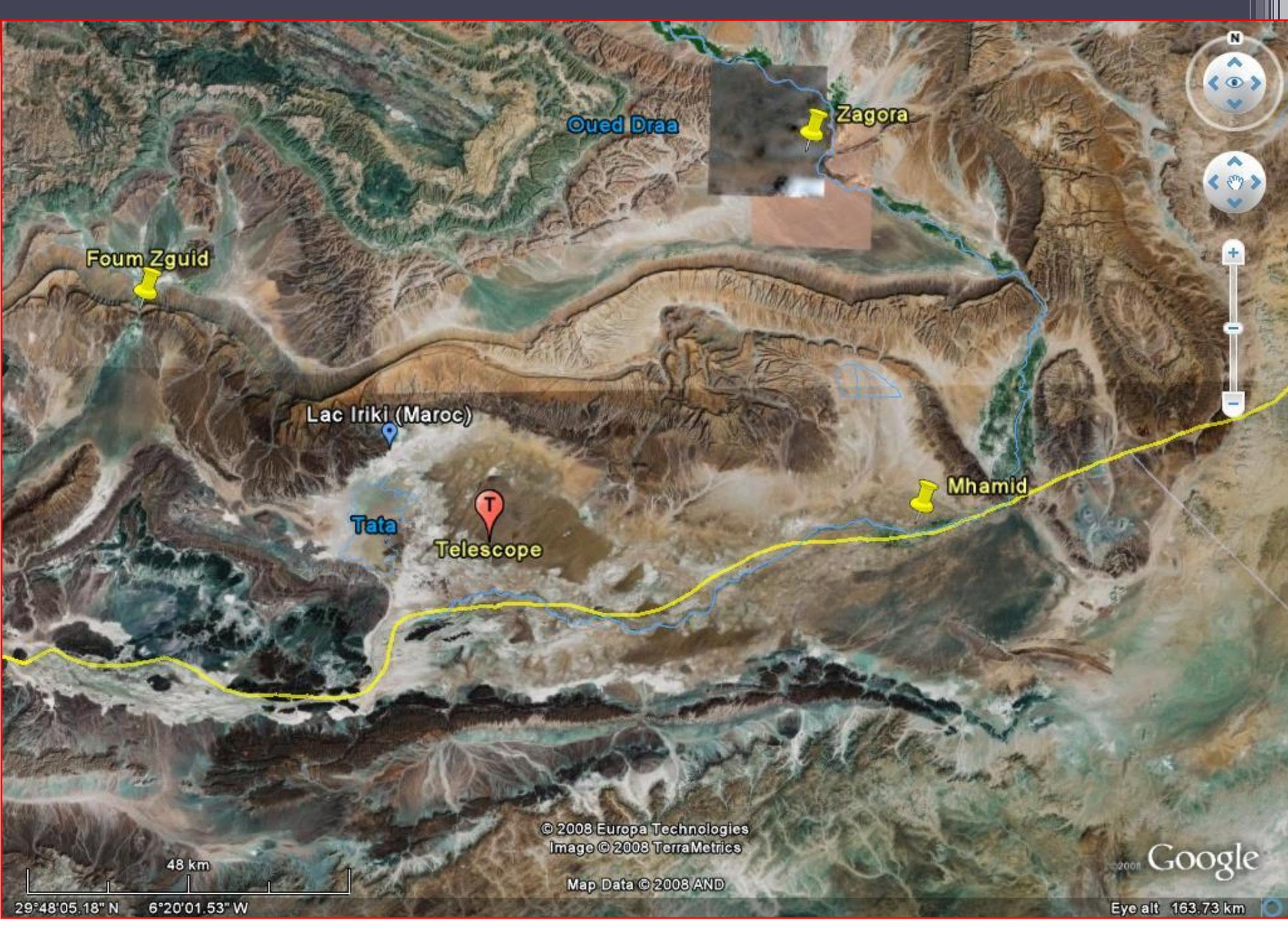
H. Darhmaoui, J. Peterson and H. Bourhrous

# Discone Antenna









Oued Draa

Zagora

Foug Zguid

Lac Iriki (Maroc)

Tata

Telescope

Mhamid

48 km

29°48'05.18" N 6°20'01.53" W

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Image © 2008 TerraMetrics

Map Data © 2008 AND

Google

Eye alt 163.73 km

100 km

## Site Tesing - Talsint

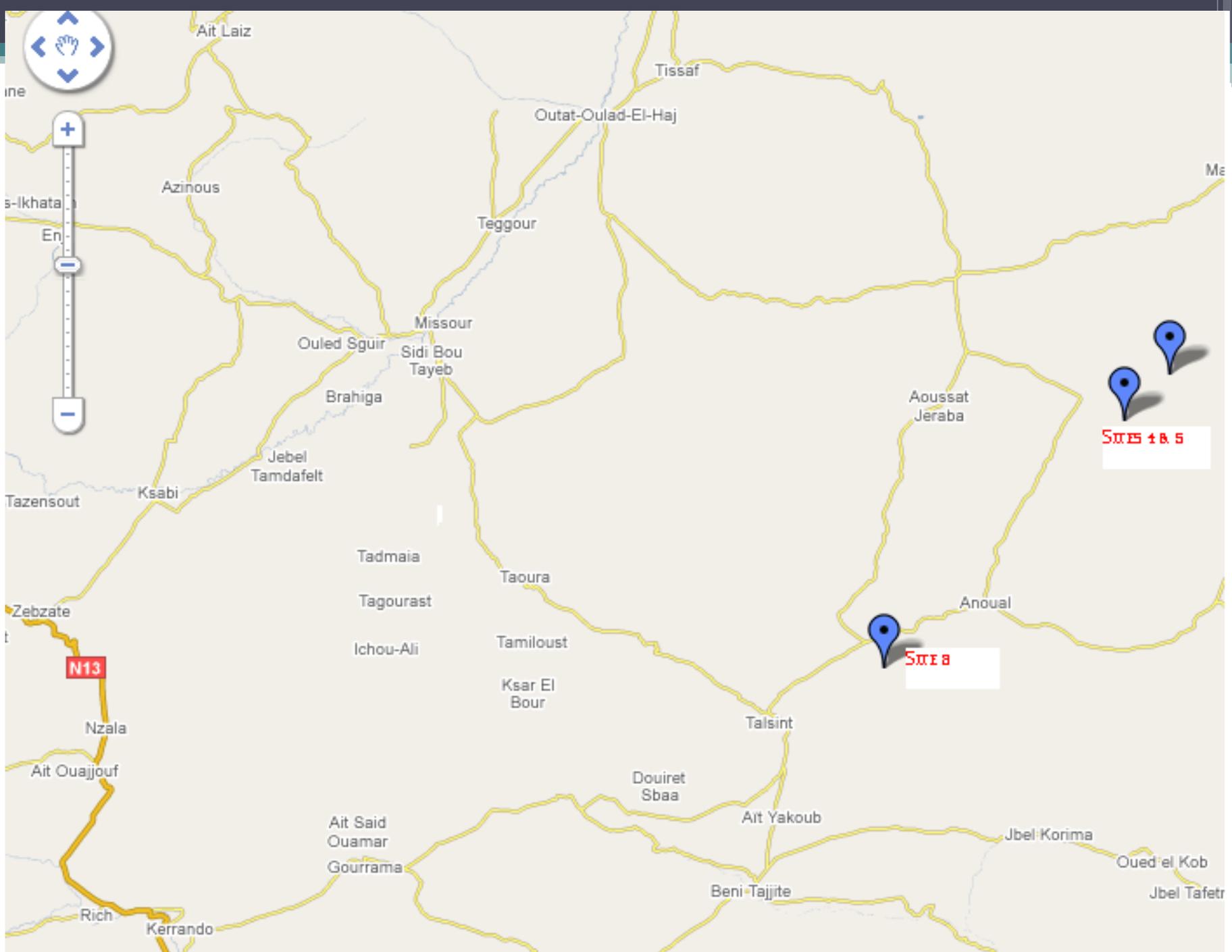
Talsint

Participants: Philippe Abbon, Réza Ansari, Eric Delagne, Christophe Magneville, Christophe Yèche, David McGinnis, Ralph Pasquinelli, Kevin Bandura, K. Loudiyi and H. Darhmaoui

Lat: 32.517 - Long: -3.467 - Alt: 700 km  
TALCEN.com - NASA Goddard Space Flight Center

# Site Candidates







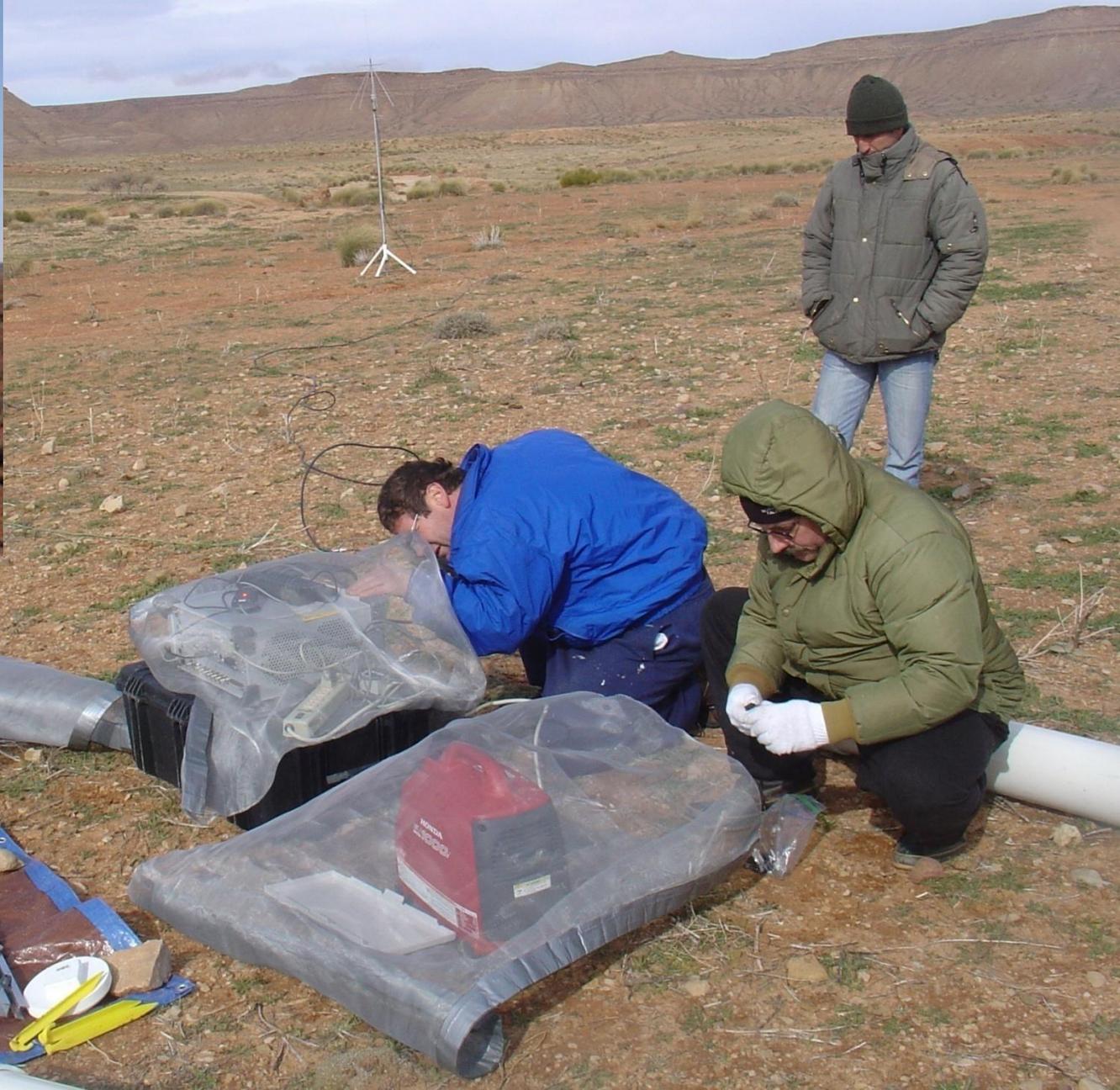
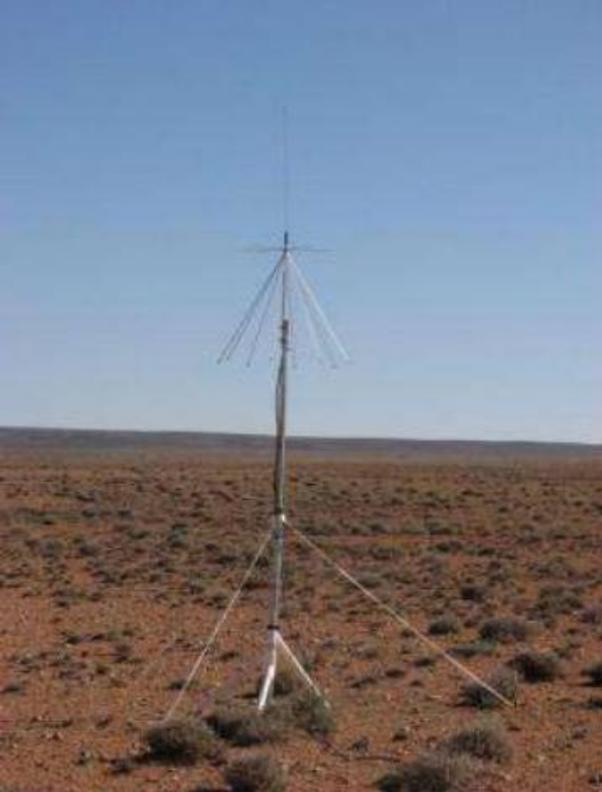






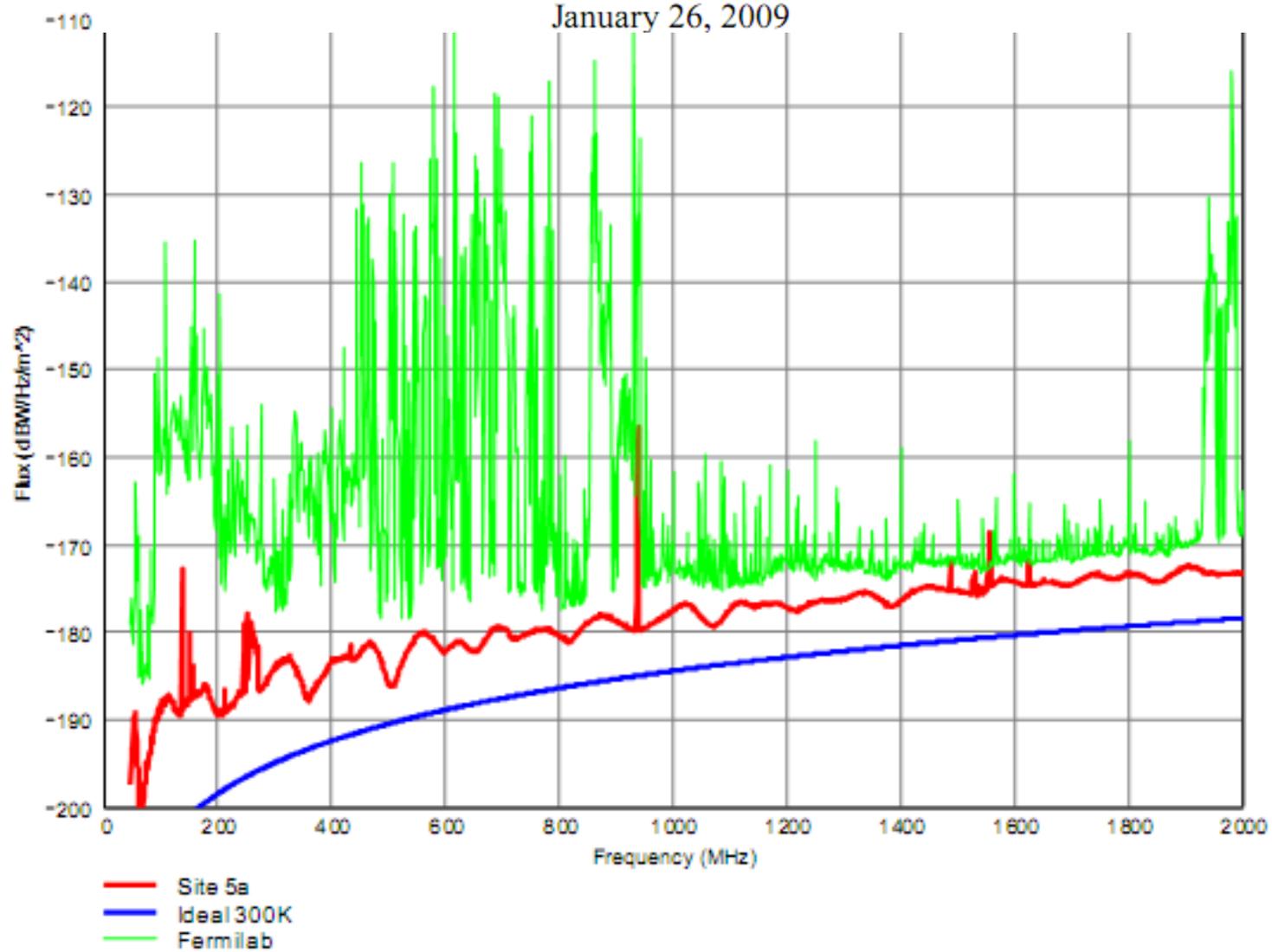
Figure 13. Travel route to Sites 5a and 5b





# Morocco Site Evaluation for 21cm Cylindrical Radio Telescope

Dave McGinnis  
Ralph Pasquinelli  
January 26, 2009



Comparison of RFI at Fermilab and Morocco Site 5a.



# Social Impact

## Region of the oriental



- 1) Nador
- 2) Berkane
- 3) Prefecture of Oujda-Angad
- 4) Taourirt
- 5) Jerada
- 6) Figuig

**Area:**  
**82820 km<sup>2</sup>**



Province of Figuig

**Area:**  
**55950 km<sup>2</sup>**

## PROVINCE OF FIGUIG

**Capital of the province:** BOUAARFA

**Area:** 55950 m<sup>2</sup>

**Population:** 129 430 (data of 2004)

**Main Cities:** Beni Tadjit, Bouanane, Bouarfa, Figuig, **Talsint (15000)**, Tendra

**Geography:** Atlas Mountains, semiarid

**Local Industry:** Industrial activity in the region offers low added value; as a result, the economic fall back is very poor.

Main occupations: fashioning of pottery, tanning of goatskins, manufacturing of leather goods, and weaving of fabrics









## SI: The region of Talsint:

- ❖ The region will benefit economically from the investment of the CRT buildings, health care, roads to the site, power lines, telecommunication infrastructure etc.
- ❖ The region will be known internationally: this will promote its tourism, new projects and opportunities.
- ❖ CRT will develop programs that will help the poor communities in the region especially in the basic education of the kids and health needs

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## SI: The region of Talsint - population near the site

- ❖ Job creation: construction, maintenance and security of the CRT buildings
- ❖ Roads and power lines to the CRT site will be used by the local population
- ❖ Suitable telecommunication infrastructure (phone booths not using GSM)
- ❖ Touristic activity that is always triggered by telescopes (guest houses, small touristic businesses such as Arts and Crafts etc.)
- ❖ Outreach and social programs of the CRT

# Impacts for Morocco and MENA Region

- ❖ Development of Science and Technology
- ❖ Capacity building
- ❖ Networking amongst scientists at national and regional levels
- ❖ Collaboration with renown institutions at the international level
- ❖ Stimulate the technical and research programs in universities
- ❖ Technology spin-offs: Adaptive cell phone networks. Data-Intensive computing.
- ❖ New academic programs in astrophysics with partner institutions linked to the CRT.

# Impacts for Morocco and MENA Region

- ❖ Pride: First Major Cosmology Facility in the Arab World
- ❖ Morocco, as an international center for astronomy
- ❖ CRT presence in Morocco will motivate/inspire many youngsters towards science and technology majors.
- ❖ Science and technology outreach programs
- ❖ Development of innovative educational resources in astronomy for primary and secondary schools to support the science curricula (in Arabic)



# Al Akhawayn University Mission

- Offer quality higher education in different fields of knowledge;
- Diversify branches of knowledge & adapt them to emerging needs;
- Participate in the mastery and application of new and advanced technologies;
- Carry out scientific and technological research in national and international fields related to the socio-economic development;
- Foster continuing education and knowledge development;
- Encourage human progress, and serve as an arena for cooperation and mutual understanding between peoples and civilizations.



# Conclusions

- Morocco has an outstanding radio-telescope site.
- The Cylinder Radio Telescope in Morocco can greatly expand Mankind's knowledge of the Universe (Dark Energy ).
- The Telescope will be source of pride throughout the Arab World, and can be used to boost science and technology in the MENA region
- It'll encourage young people to study science and engineering.
- The SI program of the CRT will help in the development of the Talsint Region