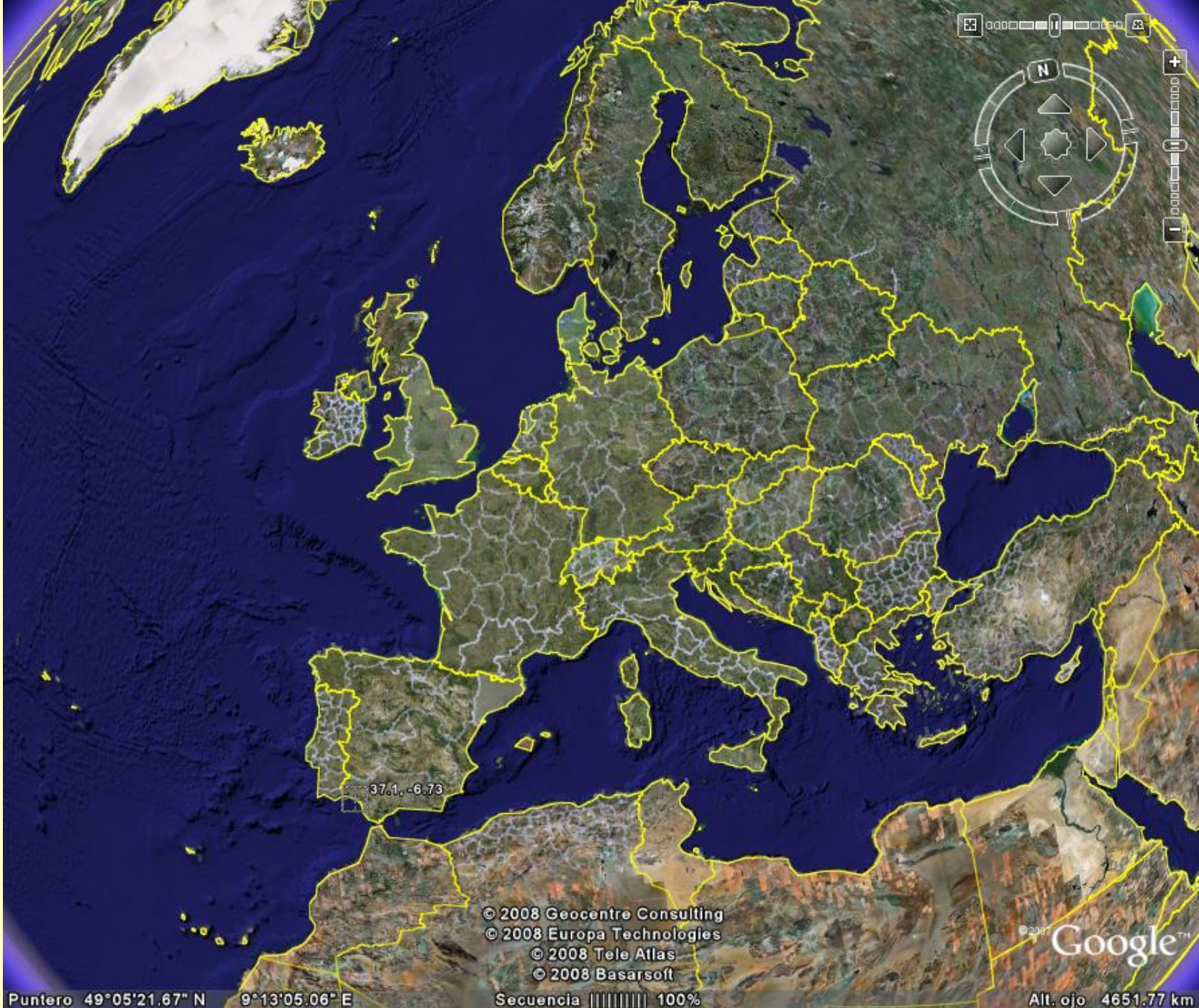




Atmospheric Sounding Station  
"El Arenosillo"



Puntero 49°05'21.67" N 9°13'05.06" E

© 2008 Geocentre Consulting  
© 2008 Europa Technologies  
© 2008 Tele Atlas  
© 2008 Basarsoft

Secuencia ||| ||| ||| 100%

© 2008 Google™  
Alt. ojo 4651.77 km

37.1, -6.73



MINISTERIO  
DE DEFENSA



Instituto Nacional de  
Técnica Aeroespacial

SECRETARIA DE ESTADO DE DEFENSA

Atmospheric Sounding Station "El Arenosillo".  
Atmospheric Research and Instrumentation Area -  
Earth Observation, Remote Sensing and Atmosphere  
Department.



## ESAt RESEARCH LINES

Atmospheric Sounding Station "El Arenosillo".  
Atmospheric Research and Instrumentation Area -  
Earth Observation, Remote Sensing and Atmosphere  
Department.

- Continuous monitoring of: total ozone, surface ozone, aerosols, ultraviolet spectral irradiance, global solar irradiance, irradiance integrated over the UVA, UVB and PAR range, all sky camera.
- Continuous monitoring of ionospheric parameters: foF2, h'F2, foF1, h'F1, foE, h'E, TEC, MUF, ... and electronic density profiles to study the upper ionosphere, specially E and F layers.
- Data - base quality control. Distribution to international data centres and research groups (WOUDC, GO3OS, UV - Index Data Base, Meteorological Institutes and Universities, ...).
- Calibration, characterization and development of measurement instrumentation.
- Development of radiative transfer models and prediction of UV index and ozone content.
- Study of the UV radiation effects on human health, local agriculture and environment in general.

# STRATOSPHERIC OZONE AND SOLAR RADIATION GROUP

Atmospheric Sounding Station "El Arenosillo".  
Atmospheric Research and Instrumentation Area -  
Earth Observation, Remote Sensing and Atmosphere  
Department.

## **The main activities in Solar Radiation and Stratospheric Ozone field are:**

- Long term monitoring of O<sub>3</sub> and UV.
- Adoption of the QA/QC recommendations of the WMO
- Data distribution to data centres, universities and Andalusia Environment Agency.
- Scientific research.
- Solar radiation instruments indoor calibrations and characterization.
- Information to the public of the UVI levels over Andalusia and sun protection recommendations.
- Applications: characterization of plastic films for agricultural use, effects on human health .
- Outdoors intercomparison centre for the national network and European regional Brewer RBCC-E and European regional Dobson RDCC RA-VI.
- Outdoors intercomparison centre for broadband instruments.

# RADIOMETRIC CALIBRATION LABORATORY (LCR)

Atmospheric Sounding Station "El Arenosillo".  
Atmospheric Research and Instrumentation Area -  
Earth Observation, Remote Sensing and Atmosphere  
Department.

The main object of the radiometric calibration laboratory (LCR) is the knowledge of the individual characteristics of the instruments before the outdoors intercomparison/calibration versus the standard reference instruments.



Control and acquisition instrumentation.



Automatic system to measure broadband angular response.



Relative spectral response system to radiometers and plastics film.



# ESAt INTERCOMPARISON CENTRE

Atmospheric Sounding Station "El Arenosillo".  
Atmospheric Research and Instrumentation Area -  
Earth Observation, Remote Sensing and Atmosphere  
Department.

- Brewer Intercomparison: 1999 - 2001 –2003 – 2005 – 2007
- Dobson Intercomparison: 2007
- Broadband Intercomparison: 2007

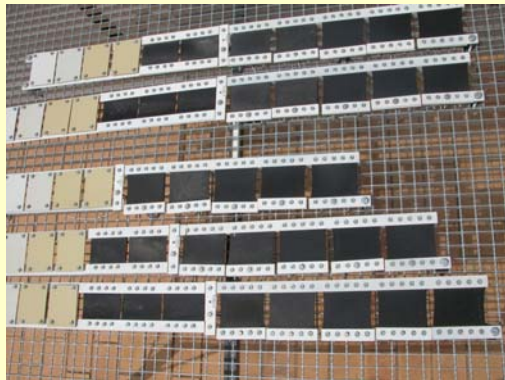
1st Dobson-Brewer Combined International Calibration Campaign.  
1st Broadband National Calibration Campaign.



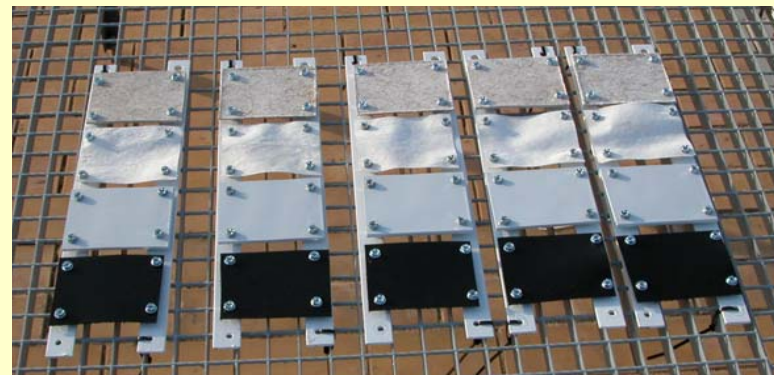
300 clear sky days, uniform albedo, good atmospheric conditions,  
high solar elevation available

# APPLICATIONS

Atmospheric Sounding Station "El Arenosillo".  
Atmospheric Research and Instrumentation Area -  
Earth Observation, Remote Sensing and Atmosphere  
Department.



UVEMA (1st samples) details of exposure effects



UVEMA-2 (2nd samples)



1. Biomass production for food, animal feed and fertilizers.
2. Biotechnological production of compounds that have a cancer preventive activity (carotene).





Atmospheric Sounding Station "El Arenosillo".  
Atmospheric Research and Instrumentation Area -  
Earth Observation, Remote Sensing and Atmosphere  
Department.

## ➤ Study of the UV radiation effects over strawberry crops:

- Production of the crop.
- Physical and chemical properties of the plant and fruit.
- Quality of the fruit.



Atmospheric Sounding Station "El Arenosillo".  
Atmospheric Research and Instrumentation Area -  
Earth Observation, Remote Sensing and Atmosphere  
Department.

➤ Study of the change in the optical properties of plastics for agriculture use by exposure to solar radiation:

- Characterization of plastics for agriculture use at the LCR:
  - Without exposure to solar radiation.
  - After exposure to solar radiation: 1, 3, 5... months of exposure.
  - Characterization of UV radiation sensors for direct measures.



Atmospheric Sounding Station "El Arenosillo".  
Atmospheric Research and Instrumentation Area -  
Earth Observation, Remote Sensing and Atmosphere  
Department.

- Research work:

- “Characterization of Broadband instruments for measuring ultraviolet radiation”

- PhD Thesis:

- Cloudiness effects on solar radiation and solar radiation distribution.

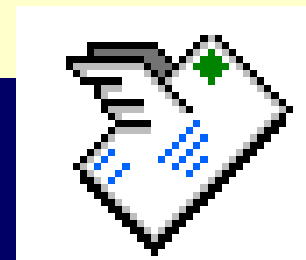
- Application over calibration function.

# ATMOSPHERIC SOUNDING STATION

“EL ARENOSILLO”(37.1°N, 6.7W)

Ctra. San Juan del Puerto- Matalascañas Km.33

21130 Mazagón- Moguer-Huelva-España



Tf: +34 959 20 88 55

Fax: +34 959 20 88 59



e-mail: [morenacb@inta.es](mailto:morenacb@inta.es)

Thank you very much



**Atmospheric Sounding Station  
"El Arenosillo"**

[pariasam@inta.es](mailto:pariasam@inta.es)