

## GuMNet Project:

### What is it?

GuMNet is a network of atmosphere and subsurface monitoring stations located in the Sierra de Guadarrama.

### Which are the goals?

The vision of GuMNet is to contribute to the research, education and management of the environment.



GuMNet Station EG007-Dos Hermanas (2.225 m. a. s. l.) located very close to Peñalara peak.

[www.ucm.es/gumnet/](http://www.ucm.es/gumnet/)

## Participating Institutions



Complutense  
University of  
Madrid



MONCLOA  
campus of  
International  
Excellence



POLITÉCNICA

Universidad  
Politécnica de  
Madrid



Research Centre for Energy,  
Environment and  
Technology



State  
Meteorological  
Agency



IGEO



CSIC

Institut of Geosciences, IGEO  
(Spanish National Research Council – Complutense  
University of Madrid)



Sierra de Guadarrama  
National Park



GuMNet Station EG002-Cabeza Mediana (1.682 m. a. s. l.) on a top in the Rascafría Valley.



If you do not want to keep this brochure, do not throw it away.  
Please, give it back to the organization.

Atmospheric and  
subsurface  
observational network

**GuMNet:**

**Guadarrama**

**Monitoring Network**



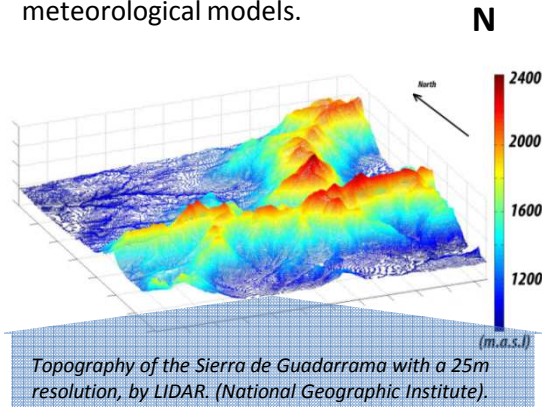
GuMNet Station EG006-Las Hoyas (2.019 m. a. s. l.)  
designed to offer minimal impact on sensitive  
ecosystems.

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## The Science GuMNet promotes

### • *Meteorology at high mountain elevations:*

The high density of stations installed in a complex orography environment allows to validate and improve high resolution meteorological models.



### • *Soil studies:*

The subsurface sensors installed at each site provide data on the role of soil and bedrock as a reservoir of moisture and energy, respectively, for a variety of ecosystems and their relation with atmospheric conditions.

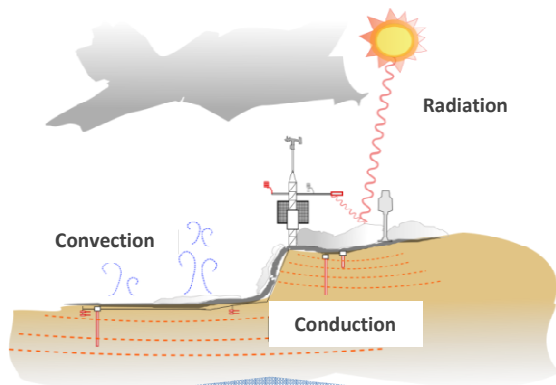


Diagram of the earth-atmosphere energy exchange processes monitored by a GuMNet station.

### • *Ecology:*

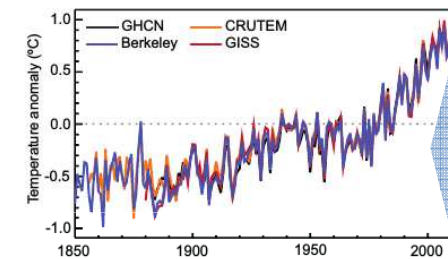
The existence of a hydrometeorological database in a natural heritage environment as valuable as the Sierra de Guadarrama National Park can be a very useful tool for researchers and visitors to the Park. Evaluating present environmental conditions and forecasting future ones will allow for a better management of the resources in the Sierra de Guadarrama.



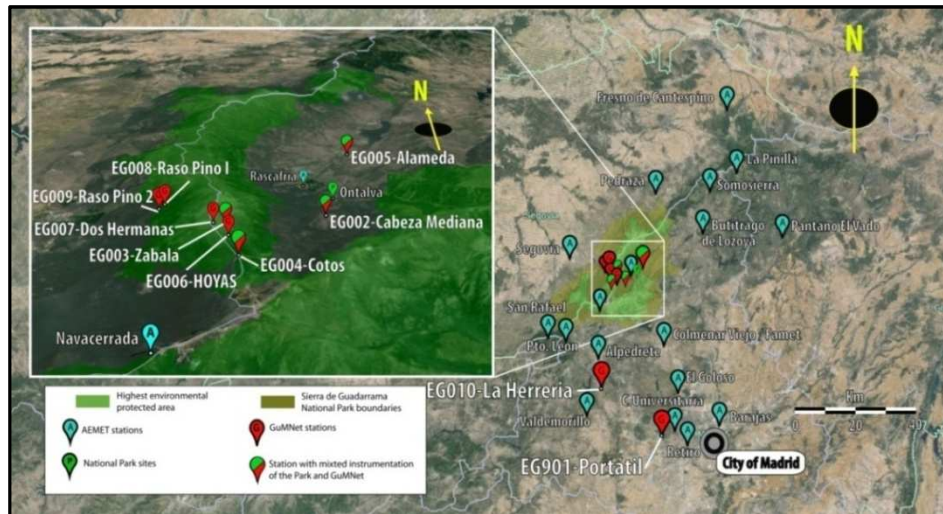
Wildlife of small vertebrates in the Peñalara peaks.

### • *Climatology:*

Climate regulates many biological and physical processes. The study of atmospheric conditions over long periods of time (about 30 years) allows defining the climate of an area. The data collected by the GuMNet network will permit to evaluate the speed and magnitude of climate change in the future in such sensitive environments as the high mountain ecosystems of the Sierra de Guadarrama National Park.



Anomalies of the annual averages of air temperature at 2 m on continental surface, relative to the climatology 1961-1990 for different observational data bases (IPCC, 2013).



Distribution of hydrometeorological stations of the GuMNet network (red icons). AEMET (State Meteorological Agency), stations (blue icons), which may be incorporated into the database in the future. The shaded green areas represent the boundaries of the Sierra de Guadarrama National Park.