

## ITINERARY

**8:00-9:45** Departure by bus from the Rectorado de la Universidad Politécnica de Madrid.

**9:45-10:30:** Visit to the Visitors Information Site of the Parque Nacional Sierra de Guadarrama at Cotos (1.873 m.a.s.l.) and the station of the GuMNet network, EG004-Cotos (two groups).

**10:30-12:00:** Hiking route from Cotos to Refugio Zabala (2.057 m.a.s.l.; two groups separated by 15 min).

**11:45-12:30:** Visit to the station of the GuMNet network, EG003-Zabala (two groups separated by 15 min). Snack.

**12:15-13:45:** Return from Refugio Zabala to Cotos (two groups separated by 15 min).

**13:30-14:45:** Meeting for lunch time near the Cotos coffe shop.

**14:45-15:45:** Return to Madrid by bus.

## SPEAKERS

### Thomas Fritz Schmid Sutter

Senior Researcher Departamento de Medio Ambiente.  
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas.

### Juan Gallardo Díaz

Agricultural Technical Engineer.  
PhD in Geography and History.  
Emeritus Professor Escuela Técnico Superior de Ingenieros Agrónomos – Universidad Politécnica de Madrid.

### Íñigo Gómara

“Juan de la Cierva” Postdoctoral.  
Centro de Estudios e Investigación para la Gestión de Riesgos Agrarios y Medioambientales – Universidad Politécnica de Madrid.

### J. Fidel González Rouco

Associate Professor Faculty of Physics.  
Coordinator of the GuMNet Initiative.  
Universidad Complutense de Madrid.

### Rodolfo Pozuelo Díaz

Graduate in Biology.  
Technician Instituto de Geociencias

### Aurora de la Rosa López

Graduate in Forestry Engineering.  
Centro de Investigación, Seguimiento y Evaluación, Parque Nacional Sierra de Guadarrama.

### José Úbeda Palenque

Assistant Professor Faculty of Geography.  
Grupo de Investigación en Geografía Física de Alta Montaña.  
Universidad Complutense de Madrid.

### Cristina Vegas Cañas

Graduate in Physics with a Master's degree in Meteorology and Geophysics.  
Technician on the GuMNet Initiative.



**Walkshop GuMNet Project (Sierra de Guadarrama)  
+ A high mountain observatory as a sentinel of climate change**

**Walking route from Cotos area to Refugio Zabala.**

**July 3, 2018**

**From 8:00 to 15:45 h**

**Organizer:**



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Ivanka Puigdueta, [ivanka.puigdueta@upm.es](mailto:ivanka.puigdueta@upm.es)

**Collaborators:**



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## VISIT TO SOME STATIONS OF THE GUMNET NETWORK IN THE AREA OF COTOS

The GuMNet network has been established as an environmental monitoring laboratory in Sierra de Guadarrama. During the visit, two meteorological stations, EG004-Cotos and EG003-Zabala, will be visited. The instrumentation used, processes of deglaciation of the Central System, increasing temperature of the last glaciation deduced from permafrost features and importance of the study of the climate in mountain ecosystems, will be commented.



*GuMNet Station  
EG004-Cotos  
(1.873 m. a. s. l.)*



*GuMNet Station  
EG006-Las  
Hoyas (2.019  
m. a. s. l.)*



*GuMNet Station  
EG003-Zabala  
(2.057 m. a. s. l.)*

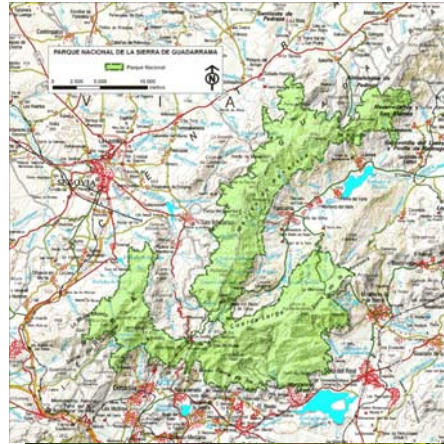


*GuMNet Station EG007-Dos  
Hermanas (2.225 m. a. s. l.)*

## THE SIERRA DE GUADARRAMA NATIONAL PARK AND ITS ENVIRONMENT

The Sierra de Guadarrama National Park was declared in 2013, but the Peñalara area has been a protected space since the 1930s, one of the pioneering environmental protected areas in Spain. In fact, Peñalara has been de focus of attention of mountaineers, naturalists and scientists since long before, at the end of the 19<sup>th</sup> century.

During the excursion to Refugio Zabala, we will have the opportunity to comment on some of the most outstanding ecological values of the Park, the main management challenges and the research lines developed.



## THE ROLE OF SOIL IN MOUNTAIN ECOSYSTEMS

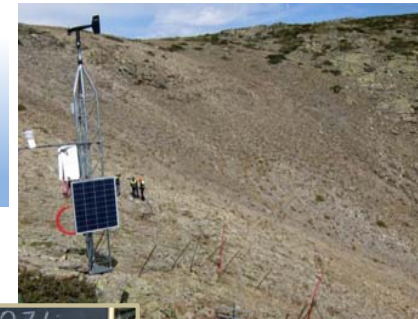
Mediterranean mountain ecosystems are often complex and are seen as important sources of biological diversity. However, these ecosystems are vulnerable to changes due to their particular and extreme climatic and biogeographic conditions.

Some of the main pressures on mountain biodiversity are caused by changes in land use practices, infrastructure and urban development, unsustainable tourism, overexploitation of natural resources, fragmentation of habitats, air pollution, particularly when located close to large population centers, and climate change.

During the excursion, the importance of soil as a key factor in the functioning of complex mountain ecosystems and the consequences of their degradation will be discussed.

By the end of the excursion, we should be able to compile a list of the most important ecosystem services that soils provide for mountain ecosystems.

*Test site Dos  
Hermanas,  
Sierra de  
Guadarrama,  
Madrid.*



*Soil profile excavated  
at the test site Dos  
Hermanas, Sierra de  
Guadarrama, Madrid.*



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