1. Context

We are announcing a new monitoring network in the Guadarrama Mountains north of Madrid, which is planned to be operational during 2015. GuMNet (Guadarrama Monitoring Network) integrates atmospheric measurements as well as subsurface observations. It aims at improving the characterization of atmosphere-ground interactions in mountainous terrain, the hydrogeology of the region, climate change regional/local impacts, and related research lines. It will also provide the meteorological and climate data that constitute the necessary background information for biological, agricultural and hydrological investigations in this area. Currently, the initiative is supported by research groups from the Complutense University of Madrid (UCM and UPM), the Polytechnical Universities of Madrid (UCM and UPM), the Agency (AEMET), and finally the Parque Nacional de la Sierra de Guadarrama (PNG). This network will increase the coverage of high-altitude observatories and it will provide the meteorological and climate data that are necessary for the characterization of regional meteorology and climate of the area.

2. Location of Hydro-meteorological sites

New instrumentation will be installed at 8 new high altitude locations that belong to high protected National Park area (see light green area in Fig. 2). At 3 of these sites the new instrumentation will replace and/or expand already existing sensors operated by PNG. Additional instrumentation will be placed at two lower altitude sites (<1500 m.a.s.l.) and complemented by locations endorsed by AEMET, thus providing information about the meteorological and subsurface state in the boundaries of the Guadarrama massif. This heterogeneous distribution of measuring sites will allow for monitoring of physical phenomena of various spatial and temporal scales, this will make this network a multidisciplinary meeting point to develop synergies between diverse research groups of a wide range of disciplines.

3. Site Equipment

The starting setup is as follows: A group of WMO-compatible meteorological stations in the central area of the massif will be installed, which include also a subsurface component of boreholes (≈20 m depth), where temperature and moisture will be measured. This core group is complemented by other sites in the surrounding as La Herrera (including a fixed and a mobile tower for micrometeorological investigations, CO2 and water vapor fluxes). This setup is embedded in an network of meteorological stations run partly by AEMET and partly by the PNG, which will provide the information necessary for the characterization of regional meteorology and climate of the area.

4. GuMNet Team

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