

# Validation of NASA's GPM satellite precipitation estimates over Spain. Solid Phase

## Objetivo del proyecto

1. (O1) help calibrating and validating the new GPM CO satellite estimates with measurements from our previous campaigns.
2. (O2) validating the precipitation estimates from a numerical prediction model for Spain with data from the GPM constellation.
3. (O3) improving the precipitation estimates from the GPM constellation over Spain, with an emphasis in the mountains.
4. (O4) comparing the improved global estimates of GPM with the outputs from the reanalyses.

## Periodo de ejecución

Desde el 2020 al 2023.

## Financiación del proyecto

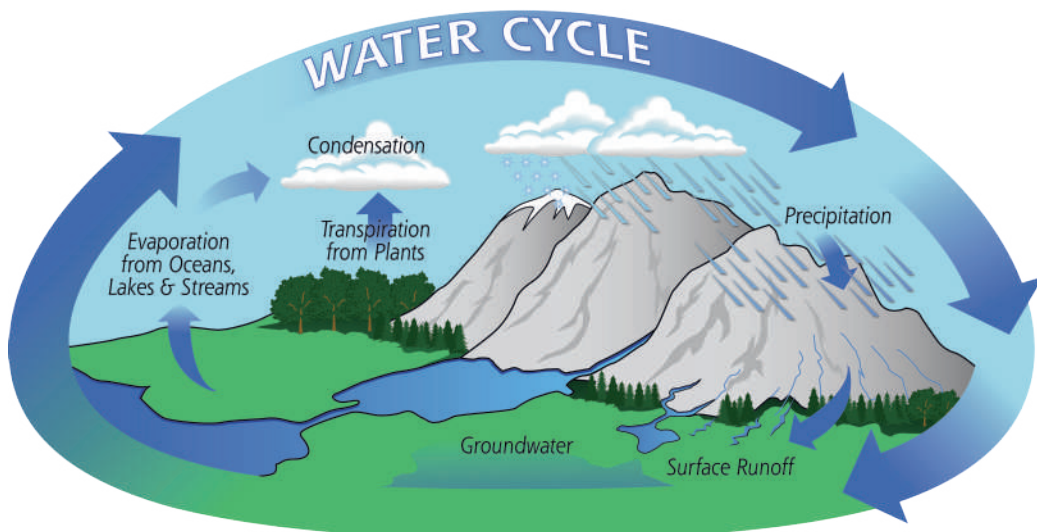
Ministerio de Ciencia e Innovación.

## Participantes del proyecto

Universidad de León, [www.unileon.es](http://www.unileon.es)

Universidad de Castilla-La Mancha, [www.uclm.es](http://www.uclm.es)

SCAYLE, Supercomputación Castilla y León,  
[www.scayle.es](http://www.scayle.es)



Credit: NASA GSFC

## Justificación del proyecto

The challenges addressed by this project are two within the fifth axis: action on climate change and efficiency in the use of natural resources and raw materials, in this case a primary natural resource such as fresh water. The results of the project will be used to manage water resources in a sustainable manner, also contributing to the forecast of hydrometeorological extremes at different scales.

In relation to the Spanish Strategy for Science and Technology and Innovation (EECTI) the GPM Core satellite is clearly a disruptive technology. It is the only satellite for direct global measurement of precipitation (radar) in orbit (CloudSAT is limited to clouds). Space technology is naturally situated within the concept of emerging and cutting-edge technologies that operate in highly competitive environments -space technology- and in which diffusion and adoption by potential users represent a critical factor. The project would contribute to the fifth priority axis of the strategy, that of internationalization, specifically Objectives II-4 and IV-15. Spain's participation in the development and subsequent exploitation of the satellite has the potential to offer a comparative advantage both to Spanish science and to those within the agroindustry sector who wish to exploit the products of the GPM mission.

The project is also related to the lines of work of Horizon Europe. As far as EO 3-2015 is concerned, TRMM, as part of PMM, and GPM will provide the precipitation data necessary to establish homogeneous, systematic and accessible series of observations that serve for the creation of continuous climate data records over decades. On the other hand, there is potential and sufficient critical mass for the elaboration of a research project with the European groups that also participate in GPM, which would contribute to improve the EECTI indicators, and to facilitate the capture of resources in the new ERDF operational program.

The project is also adapted to the Strategy for its component of applying the results to the first link in the integral management of water, precipitation. Specifically, the action on climate change and efficiency in the use of resources and raw materials states that "special attention should be paid to aspects related to water resources, in particular integrated water management systems, and technologies aimed at the efficiency of their use in irrigation, rural, urban and industrial environments and all activities that make it possible to advance in the protection of aquatic ecosystems, seas and oceans".

## Funciones de SCAYLE

La aportación de Caléndula a los proyectos es la disponibilidad de un sistema HPC para la realización de predicciones numéricas meteorológicas de alta resolución espacial y temporal, mediante un modelo atmosférico no hidrostático a mesoescala.

### Líder del proyecto

**EARTH AND SPACE SCIENCES RESEARCH GROUP (Universidad de Castilla - La Mancha) y GRUPO DE FÍSICA DE LA ATMÓSFERA (Universidad de León).**

Como líneas esenciales de investigación son:

- Geology.
- Energy.
- Plant biology.
- Remote sensing.
- Climatology.
- Integrated flood risk management.
- Meteorology.
- Precipitation.



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