UNIVERSITÀ DEGLI STUDI DELL'AQUILA

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ETEMPS
Telesensing of Environment and Model Prediction of Severe events

I SEMINARI DEL GIOVEDÌ

Satellite-based precipitation estimates: role of the GPM mission and analysis of extreme events in the Mediterranean area

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ABSTRACT

Meteorological satellites provide a unique opportunity for global precipitation monitoring, and recent advances in Earth Observation technology allow achieving accurate precipitation estimates at spatial and temporal scales useful for several applications. With the recent advent of the NASA/JAXA Global Precipitation Measurement (GPM) mission the exploitation of the constellation of satellites carrying passive microwave (PMW) radiometers allows 3-hourly global coverage (1.5 h on average over the Mediterranean) of precipitation. The first spaceborne dual-frequency precipitation radar (DPR), along with the advanced GPM Microwave Imager (GMI), onboard the GPM core satellite, are the reference instruments for precipitation retrieval providing consistency around the globe. In this work we illustrate the potential of using the constellation of PMW radiometers in the GPM era for precipitation monitoring and estimation over the Mediterranean area. Microwave measurements evidence their unique ability to depict the precipitation structure of typical heavy precipitation systems in this region (e.g., medicanes, self-regenerating thunderstorms, MCS, etc.) as they develop and evolve, also during their transition over the sea where ground-based measurements are not available.

BIOGRAFIA

Dr. Giulia Panegrossi is Research Scientist at the Institute of Atmospheric Sciences and Climate of the National Research Council of Italy (ISAC-CNR, Rome branch) since December 2011, and Co-coordinator of the ISAC-CNR Macro-Area Observations and Models for Meteorology and Climate (CAMEO) since November 2018. She earned a Laurea degree (MS level) in Physics (with honor) at Sapienza University of Rome in 1993, and a Ph.D. degree at the University of Wisconsin-Madison, Dept. of Atmospheric and Oceanic Sciences, in 2004, supported by the NASA Earth System Science Fellowship Program. For nearly 25 years she has been involved in research activities focused on remote sensing of clouds and precipitation, development of passive microwave precipitation retrieval algorithms, microwave radiative transfer through precipitating clouds. Other research activities include: passive microwave remote sensing of surface properties (snow cover, sea ice), cloud and precipitation microphysics (modeling and retrieval from ground-based and satellite observations), use of Numerical Weather Prediction models (UW-NMS, WRF, MM5) for the analysis of heavy precipitation systems, cloud electrification (modeling and observations), quality assessment of satellite precipitation products. She is currently actively involved in different research projects and activities related to global precipitation monitoring and estimation, snowfall, Earth Observation (EO) systems, use of EO data for characterization and monitoring of extreme events, water cycle assessment in a changing dimate, and hydrological applications. During her career she has always promoted active collaborations with scientists from national and international institutions and organizations. She is a member of the NASA Precipitation Measurement Mission Science Team since 2013 in which she plays a key role as PI of the scientific collaboration proposal between the EUMETSAT Hydrology SAF and the NASA/JAXA Global Precipitation Measurement (GPM) mission, approved by the NASA Research Program and endorsed by EUMETSAT.

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