



## **Potential of AMSU for detection of intense rainfall and associated upper level conditions in the Mediterranean region**

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The potential of the Advanced Microwave Sounding Unit (AMSU) observations to identify and characterize precipitating systems in the Mediterranean region is explored. This study is part of the framework of the french project CYPRIM (Cyclogenesis and Intense Precipitation in the Mediterranean region), and the motivation for the work presented here is the direct use of satellite data (as an alternative for re-analysis datasets) without relying on retrievals algorithms, to form a climatology of moderate to strongly precipitating systems in the Mediterranean area.

Single channels or combination channels from AMSU module A are used to detect and locate southward stratospheric intrusions that are often associated with intensification of surface lows and occurrence of severe weather, while AMSU module B data are used to detect precipitating areas.

We found that AMSU-A channel 8 is suitable to identify high upper tropospheric potential vorticity associated with intrusions of stratospheric air. The difference between AMSU-B channels 3 and 5, in turn, is able to discriminate moderate to heavily precipitating areas in good agreement with TRMM rainfall product and independent ground-based precipitation data. For specific detection of heavy rainfall areas we examined the applicability of a more stringent criterion based on a tropical deep convection threshold for the Mediterranean region. We found that this criterion performs fairly well also in the Mediterranean basin. Results are shown for selected cases studies of intense precipitation that led to hazardous floods and socio-economical disruption in the Mediterranean.

We will proceed with the investigation of the relationship between such systems and upper level features that may be precursors of extreme events, establishing therefore a typology of precipitating systems based on their frequency, size and position relative to the upper level feature, for the Mediterranean region.