

**SSEC/CIMSS
Seminar**

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**The Hydrological SAF Visiting Scientist program:
merging of AMSU and SEVIRI data to improve
precipitation estimates for convective systems**

The Precipitation Classes (PC) algorithm developed within NWC-SAF (Bennartz et al., 2002) was selected as the most suitable AMSU-based precipitation retrieval algorithm for H-saf Precipitation Cluster Visiting Scientist (VS) project. The selection was based on operational software availability, knowledge of performance characteristics over a large part of H-saf area (North Europe) and the use of AMSU channels more sensitive to heavy rainfall. The PC product, in its current implementation, generates likelihoods for four different classes of precipitation intensities and it is calibrated on Northern Europe regions. Within the VS activities the PC coverage was extended to the whole H-saf area making its validation and testing possible also in the Mediterranean (Southern Europe) climate regimes. Ground-based observations from radar and rain gauges were collected for selected Italian convective cases. The validation, on more than 43000 observations taken on different days by , was performed using Italian RADAR data convolved on the AMSU grid. The results obtained for the convective events studied appeared to be different from those over North Europe. Initial comparison results indicate that the background brightness temperature tuning that was originally developed for northern Europe frequently produces spurious rainfall signatures, especially in arid regions during daytime. To improve the performances of the algorithm a different scheme to evaluate the background temperature was introduced, and the ground work for the introduction of Bayesian retrieval for Rain Rate estimation was laid down. In addition exploiting the potential of geostationary IR observations, a high correlation between the intensive precipitation estimated by the PC algorithm and the convective objects detected from SEVIRI was observed. The specific product used for this study was NEFODINA, an automated scheme designed to detect convective systems and to follow their development. Merging NEFODINA and the PC output improves the resolution of AMSU estimates by re-distributing the derived intensive precipitation over the SEVIRI fields of view classified as convective. Following this approach it is possible to associate an estimated lower bound RR with the associated uncertainty to each convective object and therefore it is possible to provide an answer to the H-saf hydrologist need of a product for the intensive precipitation detection and estimation with improved resolution.

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9:00 a.m.

Room AOSS 351