



Validation of the Blended MW-IR Satellite-derived instantaneous rain rate and accumulated rainfall products in the Western Black Sea Basin of Turkey

I Sonmez (1), AU Komuscu (1), A Oztopal (2), Z Sen (3), and E Erdi (1)

(1) Turkish State Meteorological Service, Ankara, Turkey (aukomuscu@dmi.gov.tr), (2) Istanbul Technical University, Department of Meteorology, Istanbul, Turkey (oztopal@itu.edu.tr), (3) Istanbul Technical University, Department of Civil Engineering, Istanbul, Turkey (zsen@itu.edu.tr)

This study is carried out as part of EUMETSAT H-SAF initiative which is dedicated to the generation of satellite-derived products specifically designed as to comply with requirements for operational hydrology and water management. Turkey takes part in this initiative product development in snow and validation of both rainfall and snow parameters. For the rainfall parameters, more specifically Turkey is responsible for the validation of the instant rain-rate and accumulated rainfall amounts as well as the experimentation of advanced product generation methods in mountainous regions.

Different rainfall products are generated by using various satellite sensors such as, NOAA/AMSU and MSG/SEVIRI as part of H-SAF precipitation cluster led by Italy. In this study, validation of instantaneous precipitation rate and accumulated precipitation products was introduced for one-year period covering December 2007 and December 2008. Instantaneous precipitation maps generated by IR images from operational geostationary satellites “calibrated” by precipitation measurements from MW images in sun-synchronous orbits, processed soon after each acquisition of a new image from GEO. The cumulative precipitation product is based on frequent precipitation measurements as retrieved by blending LEO MW-derived precipitation rate measurements and GEO IR imagery. The error statistics for the study period are analyzed in monthly basis respect to sub-groups of the predefined rainfall classes. Rainfall data recorded at automated weather observation sites (AWOS) in the Western Black Sea basin are used for the validation. The areal representation of products varies depending on the footprint of the corresponding satellite data. In this study spatial dependent functions of the precipitation data obtained by point cumulative semivariogram (PCSV) is introduced rather than using geometric spatial weighting functions, such as Cressman and Barnes.