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Satellite-based Precipitation Monitoring over Europe using AMSU-A and AMSU-B Sounding Channels

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AMSU-A, AMSU-B and MHS, i.e., instruments operating in a cross-track scanning mode, are primarily designed for temperature (AMSU-A) and humidity (AMSU-B, very similar to MHS) profiles. Nevertheless they are also usefully exploited for precipitation retrieval, mainly because sounding channels measurements filter out spurious signals related to surface emissivities variability. But, AMSU and MHS instruments, as cross-track scanners, provide images with variable zenith angle, that implies different optical path in the atmosphere, variable resolution across the image and generally problems in applying complex physically-based profile retrieval strategies. Moreover the large IFOV of low frequency AMSU-A channels recommends the use of resolution enhancement techniques. However, encouraging results have been obtained over Europe applying two different algorithms developed at Massachusetts Institute of Technology. The topic will be discussed analyzing some recent case studies.