



Details of storm top evolution in experimental 2.5-minute MSG rapid scan data

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In spring and summer 2013, EUMETSAT has conducted several experimental 2.5-minute rapid scan series with its older Meteosat-8 (MSG-1) satellite. This experiment was carried out upon a request of the Convection Working Group (CWG, joint initiative of EUMETSAT and ESSL), being motivated by a need of more frequent observations of convective storms. This demand emerged from certain ambiguities and open questions, related to evolution of certain features and processes present at or above storm tops.

In this study we focus at details of evolution of selected storm top features, as documented in the MSG 2.5-minute data. Specifically we address evolution of overshooting tops, aiming at various forms or types of these. We also show fine temporal evolution of some of the features initiated by overshooting tops, such as “pancake cloud”, jumping cirrus and plumes, and also the process of cold ring formation. Any longer interval scanning (5 minutes and more) would either completely miss some of the important details of formation and evolution of these features, or would provide incomplete information about these. Thus, such fine temporal sampling is essential for full understanding of the observed features, and also for their comparison with cloud model studies.

The study documents the crucial role of frequent temporal sampling by geostationary satellites, not only for research purposes, but also for operational and nowcasting applications.