A simple method of combining MSG data for low cloud retrieval

A. Wirth, A. Kann

Zentralanstalt für Meteorologie und Geodynamik, Austria (andreas.wirth@zamg.ac.at)

Recently implemented algorithms make use of MSG data for the retrieval of low cloudiness from satellite data alone. The software consists of two separate modules, one for the night-time and the other for daylight hours. The night-time algorithm applies the widely used MSG channel difference (IR10.8 – IR3.9). Since this channel combination does not work during daylight hours due to the "contamination" of channel 3.9 μm by short-wave solar radiation, another way to retrieve low clouds from satellite images had to be found. The day-time module makes use of the MSG IR10.8 channel for a temperature estimation of cloud tops and uses the short-wave reflectivity from channel IR3.9 and from channel NIR1.6. Both channels are sensitive to small water droplets and hence are able to discriminate low cloud fields from snow patches or bare ground. Since MSG IR3.9 is a mixed channel, containing short-wave reflected radiation as well as long wave radiation from the earth, an algorithm has been implemented for the discrimination.

Satellite data alone are not able to make a differentiation between low clouds and fog (i.e. low clouds reaching the ground). Such a differentiation can be accomplished through a post-processing with a small-scale numerical model (e.g. ALADIN). This post-processing compares cloud top temperature in regions with low clouds with the 2 meter temperature.