MSG cloud mask initialisation in hydrostatic and non-hydrostatic NWP models

S. H. van der Veen

KNMI, Weather Service / Research and Development, De Bilt, Netherlands (veenvds@knmi.nl)

The cloud mask of the Eumetsat nowcasting SAF (Satellite
Application Facility) is introduced in the hydrostatic NWP
model Hirlam. This cloud mask is based on imagery from
the Meteosat Second Generation (MSG) satellite. Also MSG
cloud top temperatures and synoptic cloud base heights
are used in order to construct a 3-D field of cloud cover.
This 3-D field is then applied to change and improve initial cloudiness
in Hirlam.
Model runs are performed with and without this cloud mask initialisation,
for one week in each of the four different seasons.
It is shown that predictions of cloud cover by Hirlam are clearly
improved when MSG clouds had been inserted. The improvements often last
for 24 hours.

In addition to these experiments, cloud initialisation is
applied in an Hourly Update Cycle of Hirlam, in the period
May-December 2011. The lead time of the forecasts is 6 hours.
Verification results show considerable improvement of forecasts of cloud
cover, precipitation, upper air temperatures and surface pressure.

Furthermore, we will show a few case studies of cloud initialisation
in the non-hydrostatic Harmonie model. Results are verified and
compared to those of Hirlam.