SATREP ONLINE – TRAINING SATELLITE METEOROLOGY IN COMBINATION WITH NWP

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Abstract

In SatRep, Meteorologists try to recognise cloud patterns in satellite images by using the technique of conceptual models. Cloud tops and cloud patterns seen by satellites, are the fingerprints of physical processes in the troposphere. Conceptual models describe the physical processes through cloud phenomena, physical parameters, life cycles and weather events. Analysing a satellite image in terms of conceptual models is the initial step to retrieve a 3D- or even 4D-mental weather picture. Discrepancies between NWP model output and the Satellite image can also act as a trigger that the model is in error and so model modification will be required.

The analysis of a satellite image by these conceptual models has proven not only to be useful to weather forecasts but it also serves as a great training tool. In SatRep Online this training aspect is addressed.

Figure 1. The SatRep Online webpage at http://www.satreponline.org
SatRep online is a product of the international training project EUMeTrain. It consists of a web-based platform (http://www.satreponline.org) in which operationally four times day the 00, 06, 12 and 18UTC Meteosat satellite images are presented in combination with a corresponding set of ECMWF model parameters and derived products such as GII and products from NWC SAF. SatRep Online offers a student the challenge to operationally analyse a satellite image using the SatRep method. This concept is also the basis for a monthly weather briefing. Coordinated by either ZAMG or FMI a discussion is lead once a month in which the actual SatRep is discussed and more in depth training can be done to the interpretation of the different satellite images MSG offers.

This form of training, which is done online, uses software called VisitView whereas the audio connection is being handled by SKYPE. Both of these software packages are freeware and therefore no costs are connected to the participation of a weather briefing. Depending on the time of the year more insight is given to the satellite imagery and derived products. The use of NWCSAF and related cloudfree products such as the Global Instability Index (GII) have shown much benefit to the forecaster when it was trained during the weather briefings over the past summer. During the winter season the weight will shift from convection to fog and snow. Also more relation is now being thought with the warnings that are being issued by METEOALARM and how these can be related to conceptual models.

In Figure 2 the operational part of the website is shown. A direct comparison of the satellite image (Airmass RGB) with the ECMWF field (in this case the temperature advection at 700 hPa.) allows a subjective analysis in how correct the forecast model for that timestep is.

Figure 2. Overlay of Temperature Advection 700 hPa. on Meteosat 9 Airmass RGB satellite image
Over the past two years the Satrep Online has trained dozens of forecasters from all over Europe. The website itself gets on average 400 visitors per day and is used by several NMSs in their operational scheme. The whole product chain of images is changing to present new products which are fitted depending on the season of the year. Future developments including the monthly training sessions are already planned and are found under “schedule” at the SatRep Online website.