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Use of NWP in ESA EO Data Quality Monitoring

CGMS is informed about the use of NWP systems for the monitoring of the Earth Observation data produced by ESA satellites.

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This is the activity done at ECMWF in the context of the use of NWP in ESA EO data quality monitoring

The ERS and Envisat data products are validated by comparison with the corresponding ECMWF atmospheric and ocean-wave model data at the same location and at the same time. By studying the differences between satellite and model data one can infer conclusions about the quality of the satellite data, and by studying time series of the differences one can draw conclusions on the stability of the performance of the ERS and Envisat instruments. Based on more than a decade of collaboration between ESA and ECMWF, it is now known that this comparison method is sound, because of the high quality of the ECMWF model products (which incorporate observational data from many other sources) and because the comparison is done on a global scale. As an extra check, ECMWF compares also satellite products against in-situ observations whenever and wherever possible.

ECMWF compares MERIS cloud products with similar products available at ECMWF for one or two periods of several weeks duration.

ECMWF carries out the scientific research required to formulate recommendations for algorithm development as required. This may entail research activities in the field of ocean wave modelling, air-sea interaction, atmospheric composition, radiative transfer, atmospheric dynamics, radar backscattering modelling, SAR ocean wave imaging modelling and data assimilation methodology. In particular, ECMWF examines the relevance of liquid water path to data to the RA2 and MWR products. Furthermore, ECMWF studies the extent to which Altimeter and ASAR data may contribute to a better understanding of freak waves. In addition, ECMWF maintains and optimises the assimilation methodology for processing of ERS and Envisat data products and perform observation system experiments to demonstrate the impact of this data on analyses and forecasts. A comparison of the assimilation of MIPAS products with a novel approach comprising direct assimilation of the raw limb radiances in a four-dimensional variational data assimilation system will be performed in the future.

The above mentioned cooperation between ECMWF and ESA ensures continuous monitoring of ESA Earth Observation missions' performance and confirms the high quality of the related users products.

Similar activities are carried out in various other meteorological centres (Uk.Met.O., MétéoFrance, KNMI, DNMI for example).