



Validation of MSG-SEVIRI liquid water path retrievals with ground-based observations in West Africa



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1. Introduction

In the framework of the Satellite Application Facility on Climate Monitoring (CM-SAF), KNMI has developed a Cloud Physical Properties (CPP) retrieval algorithm¹. The algorithm uses 0.6- and 1.6- μm narrow-band reflectance measurements from both geostationary (SEVIRI) and polar-orbiting (AVHRR, MODIS) imagers to derive cloud optical thickness (COT), particle effective radius (r_e), liquid water path (LWP) and thermodynamic phase. Retrieval products are provided via <http://www.cmsaf.eu>.

2. This poster

Validation of the retrieved SEVIRI-CPP products has so far been limited to comparisons with a number of European ground-based microwave radiometer (MWR) observations. As part of the AMMA project, MWR measurements have been performed in Niamey (Niger) in 2006 with the ARM Mobile Facility (AMF)². These measurements offer the possibility to validate SEVIRI observations in a different viewing geometry and for different cloud types.

3. First results

Fig. 1 shows the very first comparison between SEVIRI and MWR observations of LWP at Niamey on 8 June 2006. Clouds were observed during most of the day, with a promising agreement between spaceborne and ground-based LWP retrievals. Fig. 2 illustrates that thicker (probably precipitating) clouds passed just south of Niamey.

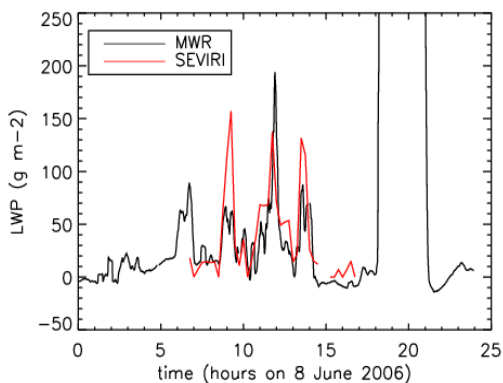


Figure 1: SEVIRI and MWR observations of LWP at Niamey (Niger, 13°28' N; 2°10' E) on 8 June 2006. For the MWR observations a running 15-minute average is shown, corresponding to the temporal resolution of SEVIRI.

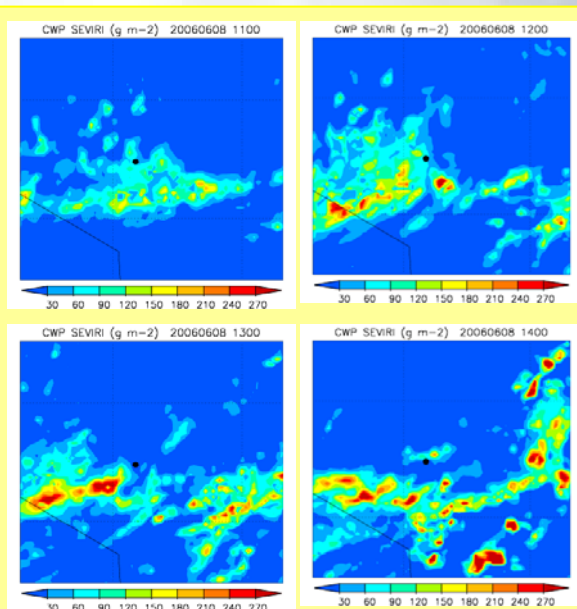


Figure 2: Maps of SEVIRI-derived cloud water path (liquid plus ice) over a 2°x2°-area around Niamey station (black dot) on 8 June 2006 at 11:00, 12:00, 13:00 and 14:00 UTC.

4. Outlook

The comparisons will be extended to the full year of deployment of the AMF and to LWP measurements made at another West-African station (Nangatchori in Benin). The validation procedure will be further optimised in line with a recent study³. Furthermore, we intend to compare the observations with a regional climate model (RACMO) simulation, with the specific aim to evaluate the modelled diurnal cycle. Finally, plans exist to study couplings between clouds and the land surface, using satellite retrievals of soil moisture and vegetation.

Acknowledgements

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References

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