

DATA HANDLING EXPERIENCE FROM THE GLOBAL SURFACE ALBEDO (GSA) PROJECT

The paper reports on the experience with the handling of archived satellite data used for the generation of a consistent broadband surface albedo product from five geostationary satellites (Meteosat-5, Meteosat-7, GMS-5, GOES-8, GOES-10). The 10-day surface albedo product is described in a separate paper (EUM-WP-22) (reference: Actions 31.27 and 31.28).

Working Group II at CGMS 33 is invited to discuss the experience presented in this paper with a view to requirements for the reprocessing of archived satellite data sets for climate analysis and applications.

EUM-WP-23 Data Handling Experience from the Global Surface Albedo (GSA) Project

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The GSA (Global Surface Albedo) scientific data processing problems are not reported here (see EUM-WP-23). The following observations rather refer to the input data themselves and to their usage. Pertinent experience are listed separately for each satellite:

Meteosat-7

Archived data from Meteosat-7 provided all the information needed for an adequate reprocessing of VIS channel data in order to produce the surface albedo product.

Meteosat-5

Ancillary information

- Due to the very high orbit inclination, it was necessary to know the actual acquisition time of each pixel. This information has been made available in the image header following a specific request.
- The need to use the Meteosat-7 VIS band response for Meteosat-5 is evident and should be recognised in the future.
- The actual sub-satellite point can be calculated from orbital information available in the file header (at least in the internal RECT2LP format).
- Some information is still missing in the image header (such as the gain setting and calibration) and is only available from additional files or in more recent images.

GMS-5

- i) Data reading: GMS data are delivered in a raw format. JMA distributes a C library to read and navigate these data. This library is easy to use.
- ii) Ancillary information: The actual sub-satellite point and acquisition time are available from the file header. Information concerning the actual rectification accuracy would also be useful.
- iii) Visible Channel Calibration: The calibration method proposed by JMA appeared to be incorrect as it would give negative radiances. It is also noted that the calibration was not provided in physical units but just accounted for the non-linearity of the radiometer response. Interactions with JMA helped to recognise the problem. The proposed solution did not provide a way to convert the count into physical units, therefore, results from a calibration method found in the literature (P. Minnis) were used.

GOES-8 and GOES-10

- i) Data reading: GOES data are distributed in AREA format which is not truly navigated. However information on the geolocation of a pixel is available. This necessitated the use of an external code (McIDAS) to process data into a reference grid. This is additional processing step on the user side.
- ii) Ancillary information: No information is available concerning the actual geolocation accuracy. Radiometric noise information would also be helpful for quantitative analysis. We assume such information would be available upon request.
- iii) Visible Channel Calibration: Image header does not contain calibration information but the pre-launch one. In the end, results from a calibration method found in the literature (P. Minnis) were used.
- iv) Remark: GOES data are spatially acquired according to configurable schedule. A specific space/time analysis for data availability has been necessary. A product like the GSA would benefit from a more regular scanning schedule over South America.