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AVHRR re-processing over Europe and North Africa

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ABSTRACT:
TIMELINE is a project of the German Remote Sensing Data Center (DFD) of the German Aerospace Center (DLR) and aims in a full re-processing of all available 1km AVHRR data over Europe and North Africa since the 80ies to offer homogeneous time series of land and atmosphere parameters. Due to imprecise geolocation and missing (shortwave) or problematic (longwave) calibration facilities on-board NOAA-satellites a complex pre-processing scheme is being developed. This includes the filtering of data errors (pixel and line based), precise navigation using a two-step chip matching algorithm, orthorectification of the data accounting for surface height, and a harmonizing calibration effort using the spectral information from pseudo-invariant sites. Resulting harmonized L1b dataset will be used for further higher level processing. Basis for the derivation of many land products is a solid atmospheric correction. An atmospheric correction tool TAC using look-up tables is being developed for this task. While the physics behind atmospheric correction is well-known, appropriate input data is a real challenge, especially concerning aerosol types and aerosol optical depth. The lack of such information especially in the early years, and the difficulty in retrieving the information from AVHRR data itself, results in unavoidable uncertainties for the whole time series. Cloud clearing is done using an updated version of the DLR tool Apollo including additional cloud tests. Further products which are under development are Albedo, LST, Snow cover, Vegetation indices, Hot spots, Water masks, and Cloud physical properties. The TIMELINE data policy is free and open, time series download will be available through DLR servers upon completion of the operations. This presentation will inform about the current state of the pre-processing and give insight into current development activities and first results concerning the higher level products.

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