

ESA – University of Bern – AVHRR curation project (01/2017 – 06/2018)

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The main objective of the ESA's proposed Long Term Data Preservation (LTDP) initiative is to guarantee the preservation of the data from all EO ESA and Third Parties ESA managed missions on the long term, also ensuring their accessibility and usability, as part of a joint and cooperative approach in Europe aimed at preserving the EO European data from member states' missions. The need to ensure the preservation of the Earth Observation data has been expressed by practically all environmental monitoring programmes and recently again through the Climate Change Initiative.

There is a strong need for a homogenous data set covering at least Europe of the last 30 years as it was pointed out by different user groups. The AVHRR sensor on-board of NOAA- and EUMETSAT MetOp-satellites is the only system providing global data with a daily and medium spatial resolution over the last three decades. University of Bern (Switzerland) is receiving the AVHRR data stream since many years and has archived data covering whole Europe from 1989 until 2016 with a few data gaps caused by problems with the receiving antenna (Fig.1). But additional data exist at ESA facilities and other centers to fill the temporal and spatial gaps. Of particular interest are data from 1981 until 1989 to expand the time series to the past. Independently of these gaps, a unique data record could be compiled due to the almost unchanged configuration of the AVHRR sensor. Hence, the final aim of the RFP is to provide a public accessible AVHRR data set covering Europe for a time span of more than 30 years. Due to the fact that the available AVHRR data sets archived at UniBern, ESA and other external sources cover different regions and times a consolidation is needed. Furthermore, the format of the different archived data differs, which require a homogenization. Therefore, to reach the final aim of the project the following steps are needed (table 1):

- Consolidate the UniBern data set, which is defined as the AVHRR core data set;
- Develop a procedure for the decisions which data should be kept in the archive (handling of overlapping passes, quality assessment, etc.);
- Identify data gaps to be filled using other archives (ESA, Dundee);
- Fill the gaps and check redundancy (overlapping) and quality;
- Define the final data format (LO/L1A) for the European master data set;
- Define the needed information for EO-SIP format in close cooperation with ESA; start re-processing of archive and generate meta-data for EO-SIP;
- In the near future, the data set should be extended for global applications, hence an assessment is needed to extract the benefit from a global data set available from Apr 1992 – Sep 1996. Also re-processing in the future of the global data set should be analysed related to software and hardware requirements;
- An AVHRR expert group has to be invited to give feedback for final data format, quality flags and data selection;
- Extended documentation is needed to describe in detail the processing steps, data format and data availability as part of mission handbook and further advertisements.

Schedule and work packages:

Table 1: work packages and schedule of ESA – UniBern AVHRR curation project.

AVHRR curation project	2017												2018					
	01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06
WP_1: Inventory and gaps identification of AVHRR UniBe data	■	■	■															
WP_2: Consolidation procedure and reprocessing definition			■	■	■	■												
WP_3: AVHRR Master data set consolidation and reprocessing			■	■	■	■	■	■	■	■	■							
WP_4: Assessment of 1km global AVHRR data set									■	■	■							
WP_5: AVHRR European Master data set validation										■	■	■						
WP_6: Consolidation of AVHRR preserved data set composition										■	■	■	■	■	■	■	■	■
WP_7: AVHRR master data set handbook and future scenario																	■	■
Meetings							PDR / CDR						QR/AR					FR

The following figure shows the amount of the AVHRR core data set archived at University of Bern. Our own HRPT-receiving station is in 24/7 operation since August 2000. Due to a cooperation with FU Berlin the gaps before the year 2000 could be filled resulting in a useable archive covering a time span from 1989 – 2016. Amount of data before 1989 are not sufficient for time series studies.

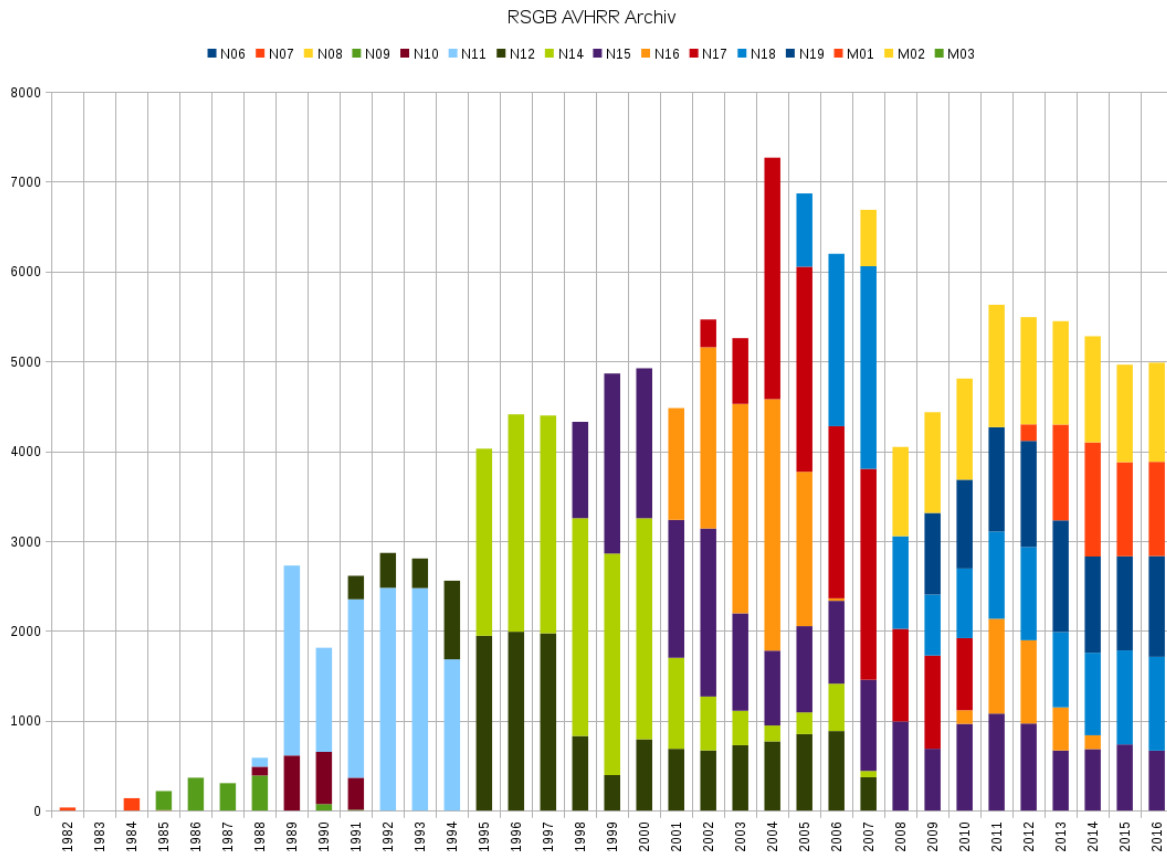


Figure 1: FCDR AVHRR HRPT / level 1b data archive at University of Bern is the basis for thematic CDRs.