Further Development of the European ATOVS and AVHRR Processing Package

Keith Whyte (Met Office, Bracknell, UK)
K Dieter Klaes and Rainer Schraidt (EUMETSAT, Darmstadt, Germany)

1. Introduction

The ATOVS and AVHRR Processing Package has been well described at previous TOVS conferences (eg Klaes and Schraidt, 1999). AAPP has always been a co-operative venture, with contributions from developers from a number of European institutions. In this paper we review recent developments, and look ahead to how AAPP is expected to be further developed in the future.

2. Past development

As Klaes and Schraidt (1999) described, AAPP was developed co-operatively within Europe, with co-ordination and distribution by EUMETSAT. It is a modular software package for the ingestion and preprocessing of AVHRR and TOVS or ATOVS data in standard formats, and includes modules for decommutation, navigation, calibration and mapping of information from the various sensors to a common instrument grid at the 1d level. The package is written in standard Fortran 77 with a few well-defined extensions, and is designed to run in a Unix environment. It can be used in both research and operational real-time applications, to process either locally-received data or NESDIS level 1b files. AAPP currently has over 140 users worldwide.

From the start effort was put into ensuring that the package could be implemented on as many platforms as possible. Version 1.0 was released in November 1998, with subsequent updates 1.1 to 1.3 being made available during 1999. In February 2000 version 2.0 was released, incorporating the previous updates and including additional bug fixes and improved portability. Since then, further updates have provided revised calibration data as required.

3. Present situation

From the summer of 2000 the maintenance and support of AAPP has been located within the context of one of EUMETSAT's Satellite Application Facilities, namely the Numerical Weather Prediction SAF, which is hosted by the Met Office and includes the Met Office, Météo-France and ECMWF. These SAFs enable the processing and generation of various products and deliverables to take place in the context of a distributed and decentralised way of working which utilises the expertise of the institutions involved. Consequently in the NWP SAF, the continued support for AAPP by EUMETSAT, the Met Office, Météo-France and ECMWF is ensured.

The scope of AAPP has recently been clarified as extending to level 1 products only (ie just the preprocessing), with the MAIA cloud-masking code fully included (albeit not fully integrated), and ICI as a separate level 2 retrieval package.

AAPP is supported by its own internal documentation, together with information available from the EUMETSAT and NWP SAF web pages. In addition there is a list server for the exchange of information between users, and a helpdesk.

4. Future evolution

Support for processing of data from NOAA-16, including the necessary code modifications and also new calibration files for the HIRS, AMSU-A and AMSU-B instruments, will be given in an update to version 2. A visualisation tool such as that illustrated in figure 1 could also be provided.

For AAPP V3.0, which it is hoped will be distributed early in 2001, there will be

- a forecast-independent version (2.1) of the MAIA cloud-mask code
- the option of choosing Backus-Gilbert convolutiom for AMSU-B to AMSU-A (Bennartz, 2001), and
- a cleaner interface to level 2 retrieval packages such as ICI version 3 (Lavanant et al, 2001)

Beyond version 3 of AAPP, it will be necessary to ensure that the code compiles under F90, and consideration will need to be given to support of a PC version, although a Linux implementation has already been tested. It is intended that improved land/sea information be included to support the processing of data from the various sounders.

Beyond AAPP specifically, an AAPP-type package for IASI+AMSU+AVHRR will be an NWP SAF deliverable, and this type of package will continue to be developed to support the processing of data from advanced sounders.

Support for AAPP will continue via the list server (l-aapp) and the helpdesk (keith.whyte@metoffice.com), and also through the EUMETSAT (www.eumetsat.de/en/area4/aapp/index.html) and the NWP SAF (www.metoffice.com/sec5/NWP/NWPSAF/activities.html) web pages.

Feedback on AAPP is always welcome.
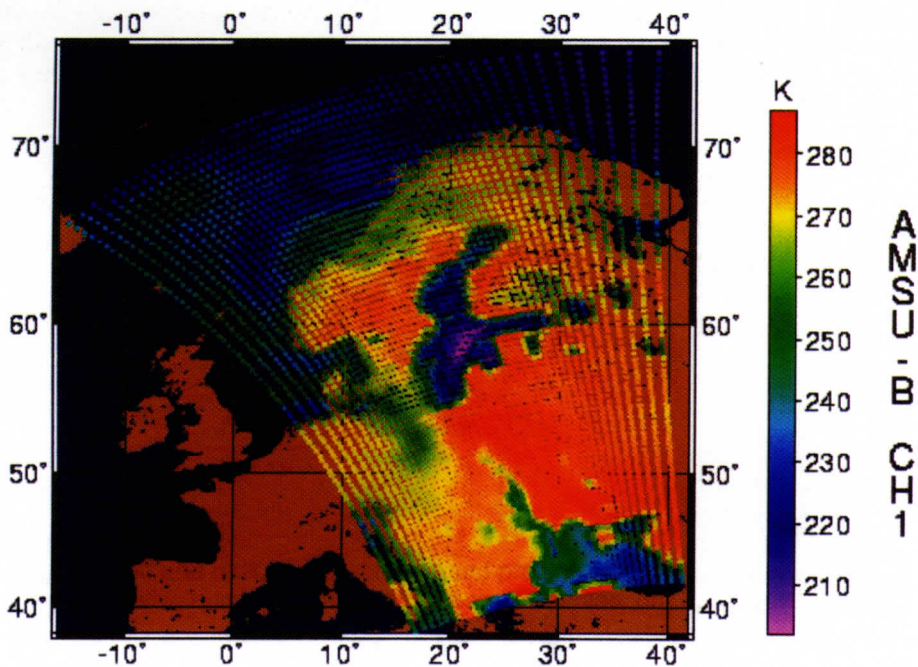
Figure 1. An example of visualisation of AAPP output.

5. Conclusion

In summary, the AAPP has continued to be updated and maintained, and a clear path and framework has been mapped out for its future development, both for the present generation of sounders, and for the advanced sounding instruments that are planned for operational use in the next few years. AAPP remains a good example of international co-operation at its best, both in its initial development, and in the continued support and commitment shown by the co-operating institutions who are actively involved in its further evolution.

6. References

Bennartz, R, 2001: Optimal Convolution of AMSU-B to AMSU-A. Proceedings of the Eleventh International TOVS Study Conference, Budapest, Hungary, 20-26 September 2000.
Klaes, K.D. and R. Schraidt, 1999: The European ATOVS and AVHRR Processing Package (AAPP) Development. Proceedings of the Tenth International TOVS Study Conference, Boulder, Colorado, 27 January – 2 February 1999, 288 – 294.
Lavanant, L, P. Brunel, Gendrier and G. Rochard, 2001: ICI retrieval package: towards version 3. Proceedings of the Eleventh International TOVS Study Conference, Budapest, Hungary, 20-26 September 2000.

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J.F. Le Marshall and J.D. Jasper

Bureau of Meteorology Research Centre, Melbourne, Australia