This readme document gives a description of the L1 and L2 test data for EPS-SG MWS instrument.

Level 1B test data: EPS-SG_MWS-1B-RAD.nc.gz

The Level 1B test data contains the most important variables related to geolocation and calibration processing. These are listed according to the specifications given in MWS L1 Product Format Specification (PFS) document, released along with this package. The MWS L1B product is generated using the MWS L1B In-house Prototype Processor (IPP) developed at EUMETSAT.

MWS L1B TDP V1 is based on the Metop-A orbit number 4655, dated 12/09/2007 with an orbit start time of 08:43:23 UTC, and end time of 10:21:59 UTC.

Epoch time, orbit state vector and satellite velocity at start time are used as input to MWS L1B IPP to perform the orbit propagation and to compute the satellite attitude. Values (Earth-Centered / Earth-Fixed coordinate system) are the following:

- *Epoch: 12/09/07 08:43:23.000*
- *X=4077.321 km*
- *Y=1748.745 km*
- *Z=5661.626 km*
- *$\dot{X}$=6.072 km/s*
- *$\dot{Y}$=0.266 km/s*
- *$\dot{Z}$=-4.445 km/s*

This version (V1) of Test Data Package encompasses a nominal scenario only and consists of a full orbit of data corresponding to Metop-A orbit number 4655, as mentioned earlier. A full data orbit covers all typical observing conditions, therefore spanning the expected range of MWS radiances:

1.) Regions with expected maximum radiance values for surface-sensitive channels, i.e. illuminated (descending orbit) African desert;
2.) Regions with expected minimum surface radiance values for surface-sensitive channels, i.e. cold water surfaces around Antarctica;
3.) Regions with expected maximum radiance values for atmospheric channels, i.e. Tropical areas;

4.) Regions with expected minimum atmospheric radiance values for atmospheric channels, i.e. Southern Hemispheric winter over Antarctica.

Level 2 test data: EPS-SG_MWS-02-TPW.nc.gz

The L2 test data set is generated with the MWS L2 In-house Prototype Processor (IPP) using L1B data and auxiliary data as input. The L2 data contains in netcdf format, the geolocated total precipitable water (TPW) over water-surfaces, and limb-corrected brightness temperatures for all 24 MWS channels. The L2 product also contains quality information for the processed orbit. The format and further contents are described in the MWS L2 Product Format Specifications (PFS), released along with this package.

The test scenario here is an example for nominal global processing. It consists of a full orbit, based on Metop-A orbit number 4655, 08:43:29 12/09/2007 - 10:21:54 12/09/2007. A full orbit covering typical conditions and it is considered representative for the MWS dynamic range (high/ low radiances for atmospheric and for surface sensitive channels). For the L2 product, total precipitable water (TPW), which is computed over water surfaces, this full orbit provides a suitable data base, because

1. regions with high total precipitable water content (in particular over water) are covered (i.e. tropical oceans).
2. regions between -50°S and 50°N are fully covered (note that the L2 product TPW is only computed for this geographical latitude belt to ensure ice-free conditions).