Topex Microwave Radiometer Replacement Product
Version 1.0
December 13, 2006

The Topex Microwave Radiometer (TMR) replacement product, version 1.0, is intended as an interim product for use with the version B Topex MGDRs while a new Topex/Poseidon GDR is being generated. The new GDR will contain the TMR data provided in this replacement product. The TMR replacement product was generated after a recalibration of the TMR for the entire Topex/Poseidon mission by Shannon Brown at JPL.

Users are advised that there is a scale difference between the TMR path delays on this TMR replacement product and the JMR path delays on the Jason-1 Version B I/GDRs. Cross-mission consistency can be approximated by dividing the JMR path delays on the Jason-1 version B GDRs by 1.023. This scale difference causes the mean JMR path delay to be wetter by 4-6 mm than the mean TMR path delay on the TMR replacement product. Recalibration of the JMR is ongoing to ensure that the TMR and JMR are consistently calibrated.

The TMR replacement product is provided as binary pass files labeled TMR_Cccc_Pppp, where ccc is the cycle number and ppp is the pass number, e.g. TMR_C033_P002 for cycle 33, pass 2. Each record in a pass file has a one to one correspondence with each record on the Topex/Poseidon Version B MGDR pass files, as they were available at the PODAAC ftp site as of November 30, 2006.

All pass files have big-endian byte ordering (e.g. HP, Sun), and require byte swapping on a Linux machine to convert to little-ending byte ordering. The provided read software should do this automatically.

This TMR replacement product is available by anonymous ftp to:
ftp://poseidon.jpl.nasa.gov/pub/sandbox/products/topex_tmr/
There are three subdirectories:

1) doc – Contains documentation, including ASCII and PDF versions of this README file.
2) software – Contains read software for the data files (see below).
3) data – Contains the pass files separated by cycle in subdirectories labeled TMR_ccc (ccc = Cycle number).

Pass files can be downloaded individually, or they can be downloaded by cycle. For example to download all of cycle 479 pass files use the following ftp command when in the pub/sandbow/products/topex_tmr/data subdirectory:
get TMR_479.tar
In this example, the entire cycle 479 directory will be downloaded as a tar file.

Each record in the pass file provides the time tag, latitude, longitude, altimeter surface type, radiometer surface type, TMR_Bad quality flag, TMR instrument state flag, and all available geophysical measurements from the TMR. Provided geophysical measurements

include the 3 brightness temperatures, wet path delay, 2-way sigma0 atmospheric attenuation, wind speed, water vapor and liquid water content. The time tag, latitude, longitude, altimeter surface type, and radiometer instrument state flag have been copied from the Version B MGDRs. The radiometer surface type has been computed from the same land/sea mask that is currently used for the Jason-1 data products, and may differ from the value provided on the Topex/Poseidon MGDRs. The value of the flag TMR_Bad has been recomputed based on the reprocessed data, and can differ from that provided on the MGDRs. However, the parameter TMR_Bad is defined in the same way as is documented in the handbook for the Topex/Poseidon MGDRs (namely, 0 = Good, 1 = Fair, 2 = Poor and 3 = Bad).

Default values for all parameters are the maximum available value of the integer type. For example, short integers have a default value of 32767. Default values are set when the parameter cannot be computed (e.g. path delay is set to default over land).

Read software is provided and has been tested on the following platforms:
Linux
SunOS

The primary C function and header file needed to read the replacement product are:
r1cor.c
r1cor.h

Sample C software to read the pass files from the TMR replacement product is provided as:
readtmrrp.c
This program utilizes the functions in r1cor.c and the header file r1cor.h.

This header file indicates the units of each parameter. A sample Makefile to compile these C functions is also provided, and creates the executable readtmrrp.

Sample output from this program is provided for cycle 126, pass 1, and provided in tmr_c126_p001.dump when executing the program as follows:
readtmrrp TMR_C126_P001

Questions should be referred to Shailen Desai.
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