

Microwave Imager Pre-Processor (MWIPP)

Version 1.3 Release Notes

06 August 2026

1. Introduction

MWIPP is a software package designed to perform pre-processing on microwave imager data. For general information, see the MWIPP web page on the NWP SAF web site: <https://nwp-saf.eumetsat.int/site/software/mwipp>

MWIPP version 1.3 is an updated release with the following main changes:

- Support for AMSR-3 BUFR encode
- Updates to MWI/ICI processing including netCDF format updates and level 1B BUFR support
- Update the installation method akin to AAPP-SG

Details of changes:

AMSR-3, on the GOSAT-GW satellite, is the successor to AMSR-2 on GCOM-W. MWIPP supports the two main level 1 formats that JAXA distribute: level 1B (each feedhorn at its own resolution and sampling) and level 1R (re-sampled with feedhorns mapped to a reference geolocation). MWIPP converts to BUFR output, with a range of options that can be specified by the user:

- L1B, all channels including full-resolution 89 GHz (new AMSR-3 BUFR sequence 3-10-107)
- L1R, all channels at the resolution of 23 GHz (3-10-107)
- Merged L1R and L1B: all channels at 23 GHz resolution plus full-resolution 89 GHz (3-10-107)
- L1B, heritage channels only (AMSR-2 BUFR sequence, 3-50-254)
- L1R, heritage channels only (3-50-254)
- Merged L1R and L1B, heritage channels only (3-50-254)

The new main routine is `amsr3_netcdf2bufr.exe`. Because the L1R product is expected to satisfy most of the needs of NWP, we have only created the BUFR tool. We have not provided any additional re-mapping or averaging functionality for this instrument.

For MWI and ICI (to be launched on Metop-SG-B1 in late 2026), there have been some evolutions to the netCDF formats, and these are reflected in the new MWIPP release. We have also added support for EUMETSAT's level 1B BUFR sequences for MWI and ICI (3-10-081 and 3-10-080 respectively). MWIPP can convert from netCDF into the level 1B BUFR format and can also ingest the level 1B BUFR files as an alternative to ingesting netCDF. There is no change to the averaging and re-mapping functions provided in MWIPP for MWI and ICI.

2. Reference Documents

For details on the software capabilities and how to install and run the package, please see the MWIPP User Manual, which is linked from the MWIPP web page.

The following reference documents are also available via the web page and are unchanged:

- MWIPP version 1 Product Specification
- MWIPP version 1 Top Level Design
- MWIPP version 1 Test Plan

The documents can be accessed from the [NWP SAF web site](#).

3. Distribution mechanism and package Files

The software is distributed via the NWP SAF web site. A login is required to access the software, see <https://www.nwpsaf.eu/site/login/>. Click on the "software downloads" link at the top of the page, then select "Change Software Preferences", tick the MWIPP box and "Update Software Preferences". You will then be given access to a zipped tar file containing the latest release, as follows:

Changes in MWIPP source code files

File name	Purpose
MWIPP_v1.3.tar.gz	Source code

You may also wish to download some of the test cases (at https://nwpsaf.eumetsat.int/downloads/mwipp_testcases/), which are linked from the MWIPP web page and listed in the table below. Also available is a tar file containing a selection of Reduced Gaussian grids in GRIB format, which have been made available by ECMWF and can be useful for re-mapping the microwave imager data.

MWIPP test cases

Test case file	Size	Purpose
SSMIS.tgz	40 MB	SSMIS test case
AMSR2.tgz	105 MB	AMSR-2 test case
GMI.tgz	5.3 MB	GMI test case
MWRI.tgz	48 MB	MWRI test case
ECMWF_grids.tgz	0.84 MB	Reduced Gaussian grids from ECMWF
MWI_ICI.tgz	1.9 GB	MWI and ICI test case. Supersedes previously released test cases.
AMSR3.tgz	79 MB	AMSR-3 test case

4. License

To use this software, users need to have agreed to the terms of the NWP SAF License Agreement. The License Agreement is displayed when a user is logged into the NWP SAF web site and chooses to change software preferences. It can also be viewed here: <https://nwpsaf.eumetsat.int/site/software/licence-agreement/>

5. System Requirements

A linux operating system is required. MWIPP has been tested on RedHat Enterprise Linux 9, 64-bit. A Fortran90 compiler that supports Fortran2003. The recommended compilers are gfortran or ifort. The MWIPP software does not occupy significant disk space (~10MB when built). You will need space for your own data. We recommend that the system has at least 6GB of memory. You will need the following libraries to be installed on your system:

- ecCodes, distributed by ECMWF
- hdf5 with Fortran90 and Fortran2003 interfaces enabled
- netCDF (Fortran and C interfaces) (only required for MWI, ICI, AMSR3, otherwise it is optional)

If they are not already installed, the MWIPP User Manual contains instructions on how to download and build these packages. Please note that ecCodes installation requires "cmake". In general, Administrator privilege is not necessary to build MWIPP. MWIPP output products are generally in hdf5 or BUFR. For viewing hdf5 outputs a Python utility (requiring python2.7 or later) is provided as part of MWIPP. This makes use of *Cartopy* [1], *numpy*, *h5py* and *matplotlib*. If these packages are not available on your system, you can still run the core programs of MWIPP, but will not be able to generate the quick-look maps.

6. Building MWIPP

MWIPP is supplied in source code form. Unpack the gzipped tar file as follows: `tar -xzf MWIPP_v1.3.tar.gz`

For instructions on installing MWIPP, please see section 2 of the MWIPP User Manual. Two scripts are now supplied to assist the process:

- `install_dependencies.sh` - downloads the necessary dependency libraries and builds them
- `configure_mwipp.sh` - prepares the necessary makefiles, ready for the user to run `make` and `make install`

For details on using these scripts, see the User Manual.

7. Running the Test Cases

Each of the MWIPP test cases (see section 3, MWIPP test cases table) comes with a `00README.txt` file that describes how to run the test case and the outputs that should be generated. In most cases only minimal set-up is needed before running the supplied scripts, typically to set environment variables such as `MWIPP_INSTALL`.

8. Changes in MWIPP v1.3

A detailed list of changes:

```
A  setup/configure_mwipp.sh
A  setup/_functions/_common_functions.sh
A  setup/_functions/_dependency_functions.sh
A  setup/install_dependencies.sh
A  setup/requirements.txt
A  setup/run_dependency_checks.sh
A  src/bin/ici_netcdf2bufr.f90
A  src/bin/ici_test_bufrrreadwrite.f90
```

```
A  src/bin/mwi_netcdf2bufr.f90
A  src/bin/mwi_test_bufrreadwrite.f90
A  src/libcommon/bitswap.f90
A  src/libici/ici_read_bufr.f90
A  src/libici/ici_write_bufr.f90
A  src/libmwi/mwi_read_bufr.f90
A  src/libmwi/mwi_write_bufr.f90
A  version.yaml
M  src/bin/amsr2_hdf2bufr.f90
M  src/bin/amsr2_main.f90
A  src/bin/amsr3_netcdf2bufr.f90
M  src/bin/gmi_hdf2bufr.f90
M  src/bin/gmi_main.f90
M  src/bin/ici_main.f90
M  src/bin/Makefile
M  src/bin/mwi_main.f90
M  src/bin/mwipp_quicklook.py
M  src/bin/mwri_hdf2bufr.f90
M  src/bin/mwri_main.f90
M  src/bin/ssmis_main.f90
M  src/libamsr2/amsr2_read_bufr.f90
M  src/libamsr2/amsr2_read_hdf.f90
A  src/libamsr3/amsr3_data_mod.f90
A  src/libamsr3/amsr3_read_bufr.f90
A  src/libamsr3/amsr3_read_l1b_netcdf.f90
A  src/libamsr3/amsr3_read_l1r_netcdf.f90
A  src/libamsr3/amsr3_write_bufr.f90
M  src/libcommon/Makefile
M  src/libcommon/mwipp_write_hdf.f90
M  src/libcommon/mwipp_write_hdf_usergrid_mod.f90
M  src/libgmi/gmi_read_bufr.f90
M  src/libgmi/gmi_read_hdf.f90
M  src/libici/ici_data_mod.f90
M  src/libici/ici_read_hdf5.f90
M  src/libici/ici_read_netcdf.f90
M  src/libici/Makefile
M  src/libmwi/Makefile
M  src/libmwi/mwi_data_mod.f90
M  src/libmwi/mwi_read_hdf5.f90
M  src/libmwi/mwi_read_netcdf.f90
M  src/libmwri/mwri_read_hdf.f90
M  src/Makefile
M  src/Makefile.ARCH.in
```

9. Version Control

MWIPP is maintained under Git at the Met Office. The version is as follows:

```
Name: MWIPP
Version: 1.3
```

Release date: 2026-08-06 03:28:07 +0000 (Thu, 06 Aug 2026)

10. User Feedback

If you encounter a problem, or have suggestions for improvements, please log on to the NWP SAF web site and use the [NWP SAF Helpdesk](#). Open a ticket giving the "department" as MWIPP.

11. References

[1] <https://scitools.org.uk/cartopy/docs/latest/>