

IRSPP version 1.0 – Release Note

8 March 2022

1. Introduction

IRSPP v1.0 is the first release of the Infrared Sounder Pre-processor (IRSPP), a software package designed to process hyperspectral sounder data from the IRS instrument on the MTG-S1 and MTG-S2 satellites. The package is designed primarily for applications in numerical weather prediction (NWP).

This release is compatible with the IRS pre-launch test data released by EUMETSAT in December 2019. A future software release, after MTG-S1 launch, will support in-orbit data.

2. Reference documents

The IRSPP documents are listed in Table 1.

Table 1: IRSPP documentation

Doc reference	Title	Version / year	Status
NWPSAF-MO-UD-053	IRSPP User Manual	1.0 / 2022	New
NWPSAF-MO-DS-037	IRSPP Product Specification	1.0 / 2018	Published
NWPSAF-MO-DS-037	IRSPP Top Level Design	1.4 / 2022	Published

Note that the User Manual is the main document that users should refer to as it includes details of how to install the software, how to run the software and the scientific principles.

The documents can be accessed from the NWP SAF web site at

<https://nwp-saf.eumetsat.int/site/software/irspp/>

3. Package files

The IRSPP package files are listed in Table 2.

Table 2: IRSPP v1.0 package files

File name	Size (bytes)	Purpose
Release_note_IRSPPv1.0.pdf		This document
IRSPP_v1.0.tgz	30846	Source code
IRSPP_exec.tgz	24206354	Executables and dynamic libraries (built on Red Hat 7.9) - OPTIONAL
IRSPPv1_test_cases.tgz	181216107	Test cases

Access to the IRSPP v1.0 code and executables is via the “software downloads” tab on the NWP SAF web site. User registration is required.

Users have the choice of building the package from source or using the supplied Red Hat 7.9 executables, if their system is compatible. See the User Manual for further information about compatibility.

The test cases are accessible from https://nwp-saf.eumetsat.int/downloads/irspp_testcases/

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://nwp-saf.eumetsat.int/site/software/licence-agreement/>.

5. System requirements

IRSPPP has been tested on systems compatible with 64-bit CentOS7 and CentOS8. It would be expected to work on other Linux distributions, provided support for the dependency libraries exists. The dependency libraries include:

- ecCodes, distributed by ECMWF
- netCDF (Fortran and C interfaces)
- hdf5 (with Fortran enabled)
- LAPACK

For building IRSPPP from source, a Fortran90 compiler is required. The recommended F90 compilers are gfortran and ifort.

The supplied test case scripts are based on Bash shell.

Standard Unix utilities (including gmake, ar, tar) are used.

There are no particular requirements on disk space (IRSPPP takes up only about 300MB when built). But you will need space for the input and output IRS data files. The PC product occupies approximately 33MB per 10 second dwell. The instrument records 280 dwells per hour (see <https://www.eumetsat.int/mtg-infrared-sounder>), so throughput would be expected to be 220GB per day.

The test cases include a README file that gives typical run times on a system with 8 GB of memory and 4 processor cores. This could be considered a minimum configuration. IRSPPP v1.0 does not include parallelisation within the Fortran code, but it is possible to improve throughput by processing several dwells simultaneously, provided the system has sufficient memory and cores.

6. Installing IRSPPP

For instructions on installing IRSPPP, please see sections 2 and 3 of the IRSPPP User Manual. If you are building IRSPPP from source, two scripts are supplied to assist the process:

- *install_dependencies.sh* – downloads the necessary dependency libraries and builds them

- *configure_irspp.sh* – prepares the necessary makefiles, ready for the user to run “make”

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

7. Running the test cases

The test cases are documented in section 9 of the User Manual and are distributed as a single gzipped tar file.

They are based largely on a granule of simulated IRS data that was released by EUMETSAT in December 2019: see <https://www.eumetsat.int/mtg-test-data>.

It is expected that new IRSPP test cases will be added when EUMETSAT supply more simulated data. The availability of new test cases will be communicated to users via the IRSPP web page and NWP SAF news announcements.

8. Version control

Contents of the IRSPP_version.txt file released as part of IRSPP v1.0:

Last Changed Rev: 1994

Last Changed Date: 2021-12-15 15:18:54 +0000 (Wed, 15 Dec 2021)

This refers to the Subversion repository held at the Met Office.

9. User feedback

If you encounter a problem, or have suggestions for improvements, please use the NWP SAF Helpdesk, at <https://nwp-saf.eumetsat.int/site/help-desk/>.