

# Pre-Processing

Description of SFIT Processing Environment: [sfit4-procEnv\\_Ortega\\_v2.pdf](#)

## Pre-Processing Flow

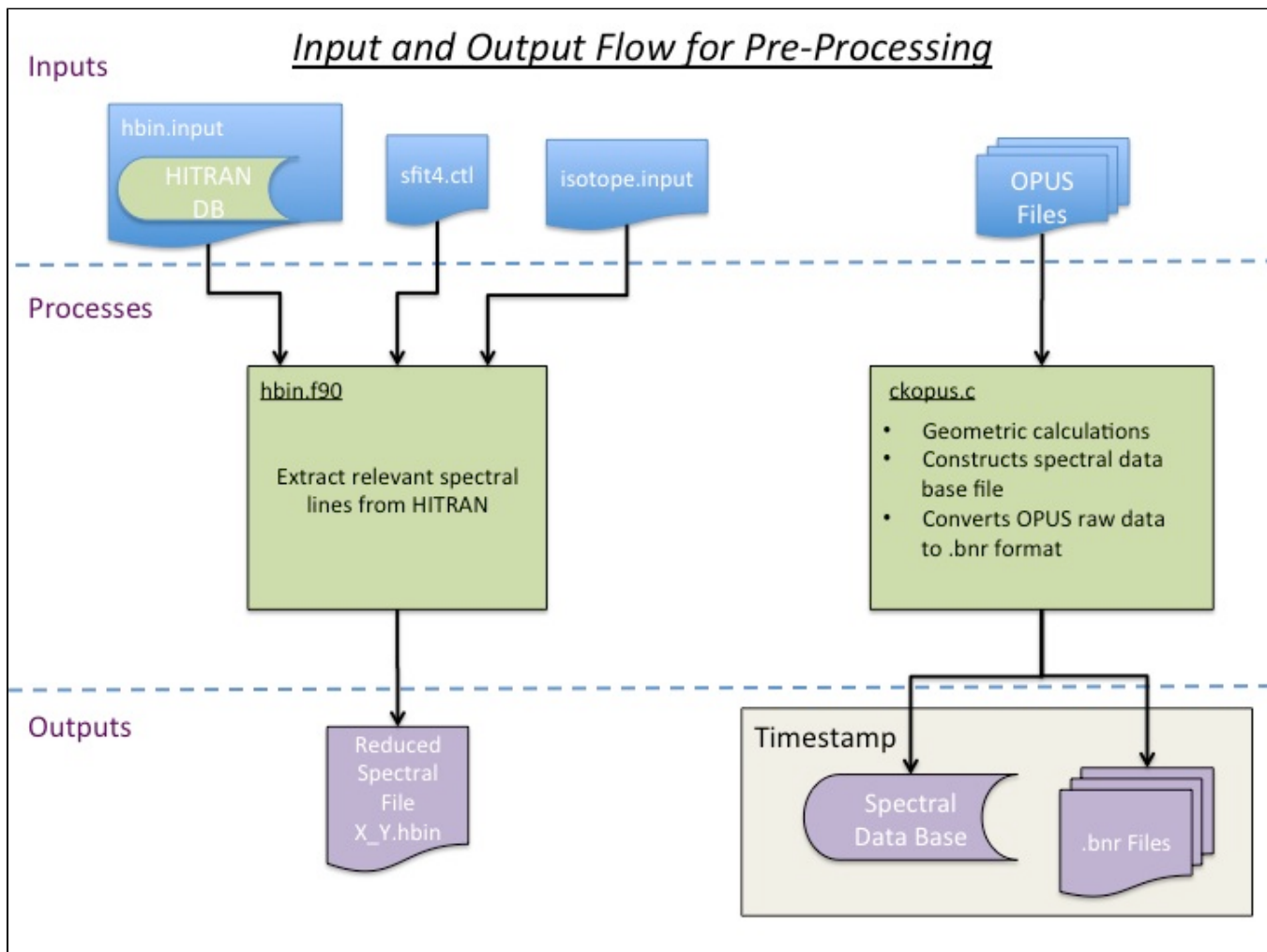
Layer 1 is based on a spectral database file which is a space delimited file that contains information related to each observation. The spectral database file is essential for the operation of Layer 1. Creating the spectral database is part of pre-processing.

The ultimate goal of pre-processing is to:

- Extract relevant spectral lines from the HITRAN database
- Create a spectral database file
- Convert OPUS raw data to bnr type

The hbin.f90 program which is provided as part of the SFIT core code extracts the relevant HITRAN spectral information and creates a reduced spectral file. The reduced spectral file allows for faster read and access time of the HITRAN spectral information. The hbin.f90 program requires an input file called hbin.input.

The following diagram is a visual representation of pre-processing flow



## Code Description and Download

### Spectral Database and Conversion to bnr

The python program mkSpecDB.py and the C program ckopus.c are used to create the spectral database (see [Layer 1 documentation](#)). The ckopus.c program also the ability to convert OPUS files to regular binary files. The spectral database file catalogs the measurements and associates important meta-data with each. Meta-data includes: time-stamp, solar zenith angle, etc.

The following contains some information required in the pre-processing. Note: documentation for mkSpecDB.py is found in the Layer 1 documentation.

Link	Version	Release Date	Description
<a href="#">sfit4-procEnv_Ortega_v2.pdf</a>	3.0	May 12th, 2020	Description of SFIT Processing Environment
<a href="#">ckopus</a>	1.1	May 5th, 2020	ckopus program
<a href="#">EW_Tsukuba-Helpers.pdf</a>	1.0	June 25th, 2013	An overview of the auxiliary codes to support the SFIT core code including ckopus.c
<a href="#">SpectralDB</a>	1.0	May 5th, 2020	mkSpecDB.py file and associated input file
<a href="#">HRspDB_tab_1999.dat</a>	1.0	January 13th, 2014	An example of a spectral database file