

## MIRS Process Control and Production Rules

[Sid.Boukabara@noaa.gov](mailto:Sid.Boukabara@noaa.gov)

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The Process control files and production rules are described in detail in the User's manual, the System Description Document, the Interface Control Document, as well as the Metadata Document, the System Maintenance Manual and the Operations Manual.

The MIRS is controlled through different levels depending on the level of expertise of the user. This is explained in detail in the User's Manual and reproduced here for convenience.

The following figure presents a diagram that shows the top-to-bottom interactions that the user could have with MIRS with increasing level of expertise.

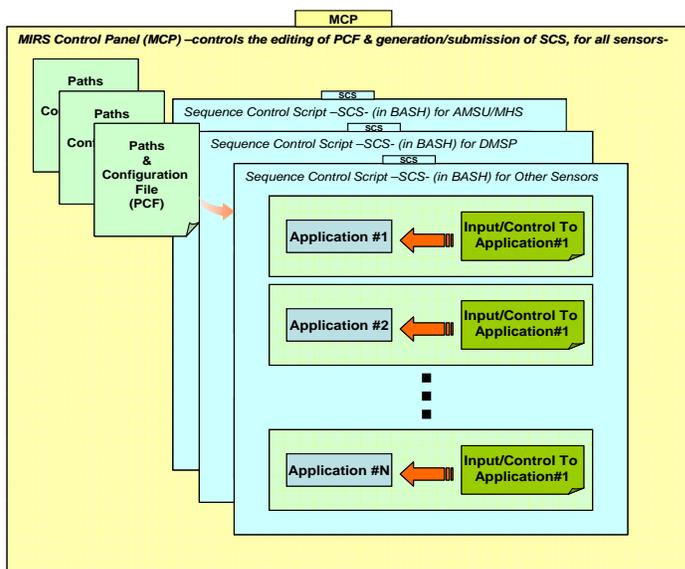


Figure 1. Description of the different levels of user interaction that MIRS offers, from the direct control of every application through namelists to the Graphical User Interface (GUI)-based MIRS Control Panel (MCP). See text for details.

The highest level would only require working with a GUI-based tool called the MIRS Control Panel (MCP), found under /gui. At the mid-level interaction, the user could go directly to the Sequence Control Scripts (SCS) for an individual sensor (generated automatically by the MCP), and the associated Paths & Configuration File (PCF) to control which process to run, what options to turn ON/OFF, etc. At the lowest level of interaction, the user could go directly to the individual application (i.e. 1dvar, footprint matching, etc) and the associated control/input file (a namelist file for F95 applications and a similar controlling-parameters list file for IDL applications). Further details are given below

## High-Level Interaction

At the highest level, the user could make use of the MIRS Control Panel (MCP) to perform any task with MIRS. Here, MIRS is referred to as an ensemble of tasks related logically together. It is not limited to the 1DVAR component. The MCP is a Graphical User Interface (GUI) Java- based tool aimed at making the use of MIRS, as user-friendly as possible. It also makes the maintenance of the MIRS system as seamless as possible, as all changes are centralized in one place, for all tasks, for all sensors. Some of the functions of the MCP is to allow the user to (1) Interactively adapt the data directory structure to the user's particular needs, (2) Interactively update/modify compilation, running and scientific options before running MIRS, (3) Run interactively the MIRS retrieval system, (4) Generate dynamically BASH scripts in order to later submit them through cronjobs and/or other schedulers and (5) Switch between the daily mode and the orbital mode processing, (6) Select/deselect and control how which parameters are retrieved in the 1DVAR.

A snapshot of the MCP display is presented in the following figure

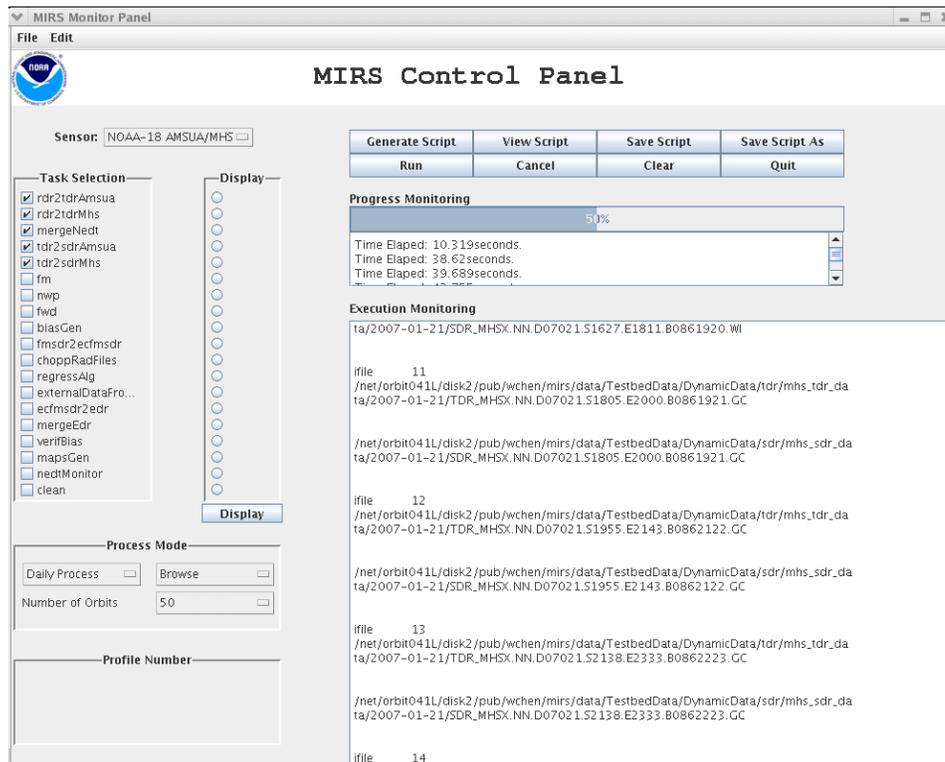


Figure 2. Snapshot of the MIRS Control Panel (MCP) that shows some of the options available in the main window.

Further development is envisioned on the MCP to (1) allow the automatic directory buildup, (2) direct batch scheduling of scripts, etc.

## Mid-Level Interaction

As part of the MIRS package, a number of Sequence Control Scripts (SCS) written in BASH, will be distributed as benchmark files. Corresponding to these scripts are Paths and Configuration Files (PCFs) from which the script extracts the needed information and options to run. It is worth noting that both the PCFs and the SCSs are automatically generated by the MCP. The user can either generate his own SCSs and PCFs with the MCP (by interactively modifying the inputs, paths, options, etc) or manually change the content of the SCSs or more likely the PCFs as they contain what most users would want to change/modify. An example of the PCF content is presented in Figure 3.

```
#-----  
#  
# SECTION OF DATA AND PATHS  
#  
#      NOAA - 18  
#-----  
# Major root paths  
#-----  
rootPath='/net/orbit006l/home/sidb/mirs'  
dataPath=${rootPath}/data'  
bindir=${rootPath}/bin'  
.....  
#-----  
# Research data & Paths  
#-----  
researchDataPath='/net/orbit006l/home/sidb/ResearchData'  
auxPath=${researchDataPath}/FwdSimulAuxData'  
fwdPath=${researchDataPath}/FwdSimulOutputs'  
OutPath1dvar=${researchDataPath}/1dvarOutputs'  
.....  
#-----  
# External data & Paths  
#-----  
externalDataPath=${dataPath}/ExternalData'  
rdrPath=${externalDataPath}/rdr/noaa-18'  
nwpPath_GridForcst='/disk2/pub/mspps/avn'  
nwpPath_GridAnalys=${externalDataPath}/gridNWP_analys'  
#-----  
# Static data & Paths  
#-----  
staticDataPath=${dataPath}/StaticData'  
instrPath=${staticDataPath}/InstrConfigInfo'  
#---Names of the instrumental configuration files  
Topogr=${staticDataPath}/Topography/topography.bin_linux'  
AntennaPath=${staticDataPath}/AntennaPatterns'  
.....  
#---Merged cov matrix (different classes contained in one file)  
CovBkgFileAtm=${staticDataPath}/CovBkgStats/amsu_a_mhs/CovBkgMatrxTotAtm_all_amsu_a_mhs  
.....
```

Figure 3. Sample of the Paths & Configuration File (PCF) generated automatically by the MIRS Control Panel (MCP). A benchmark file is also stored as part of the MIRS package for mid-level-interaction users to modify manually.

## Low-Level Interaction

Low-level interaction requires the user to control the individual application (i.e. 1dvar, forward operator, footprint matching, etc) by editing manually the input file (namelist) and modifying the inputs required for the particular application and run. These values could be numbers, filenames of lists, paths, etc. The input control files are all located under data/ControlData with the distinction between the sensors made by the prefix used for these names. The executables for all applications are all consolidated under the bin/directory.

An example of running manually a particular application through this low-level interaction is the following command line that executes the footprint matching procedure:

```
~user/mirs/bin/fm < ~user/mirs/data/ControlData/n18_fm.in
```

## Important Notes:

All scripts, control files, files lists, etc. could be generated automatically from the MIRS Control Panel (MCP). The user is encouraged to use the MCP at least to generate templates of the SCS and PCF and then work from those templates.

Also, the Namelists *–or process control files–* (for low-level interaction) are generated automatically by the scripts (SCS). The user is therefore encouraged to use the SCS (or by directly by running MIRS through the MCP) to generate these low-level namelists and use them as templates for the particular application needed.