ADAS403: Merge iso-electronic master files

The code is a general utility for mapping the primary generalised collisional-radiative (GCR) output from ADAS208 correctly into position in an existing iso-electronic ADF10 files.

Background theory:

There is no general background theory. It is a policy of ADAS to accumulate GCR data in iso-electronic sequence collections over common ranges of scaled electron temperature and density in the first instance. This gives opportunities for interpolation in ion charge. Subsequently a translation to iso-nuclear collections of format ADF11 takes place. Note that it is intended to do further work on this code to allow merging of two ADF10 file sets.
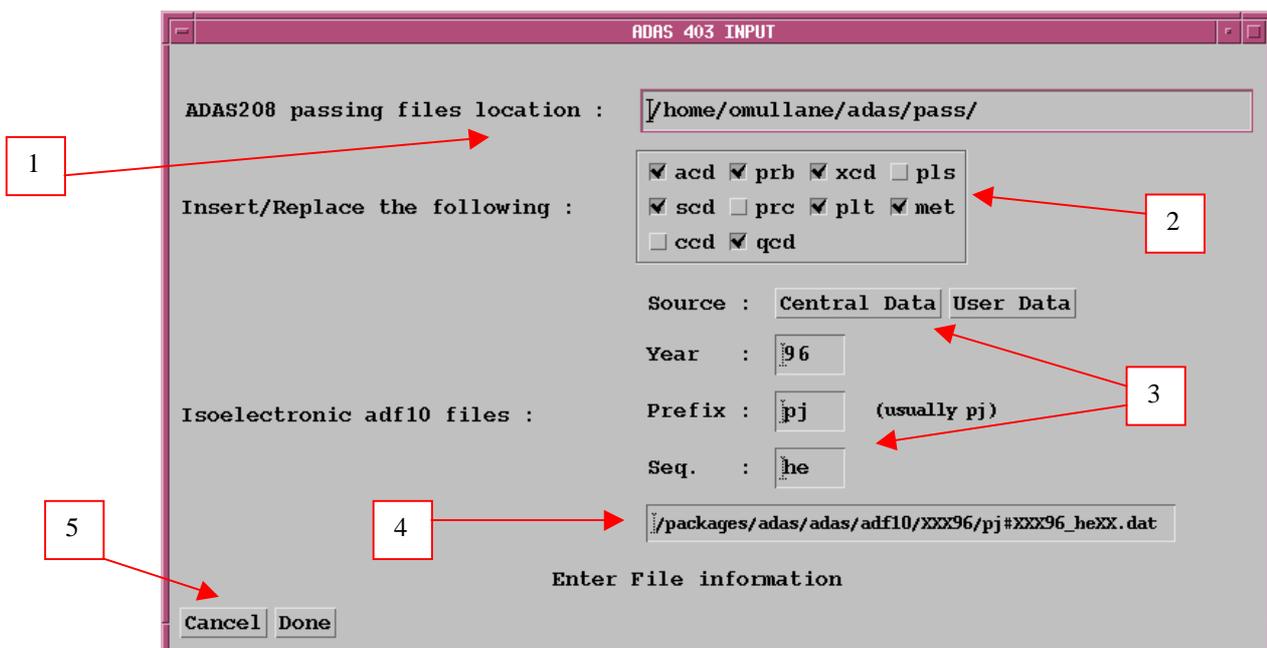
## Program steps:

These are summarised in figure 5.3.

Figure 5.3
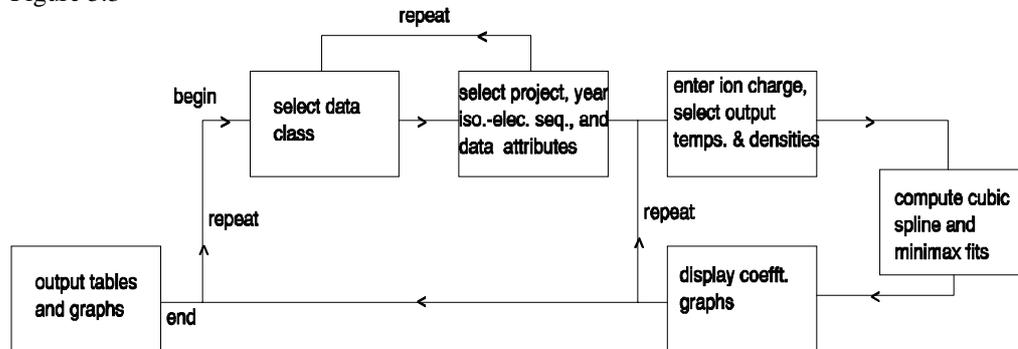
Interactive parameter comments:

The **input options window** has the appearance shown below

1. At identify the directory of the passing files from the ADAS208 run. Note that ADAS208 provides the actual file names within the output directory.
2. Click to select the particular GCR classes of data which you wish to be inserted/replaced into ADF10 archives.
3. Specify the location of the ADF10 archives by year, prefix and iso-electronic sequence and whether they are to be sought in your user space or in central ADAS.
4. The template file name appears in the text widget which is not editable. It is for information only.
5. Clicking the *Done* button moves you forward to the information window. Clicking the *Cancel* button takes you back to the series 4 menu.

The **information window** appearance is shown below
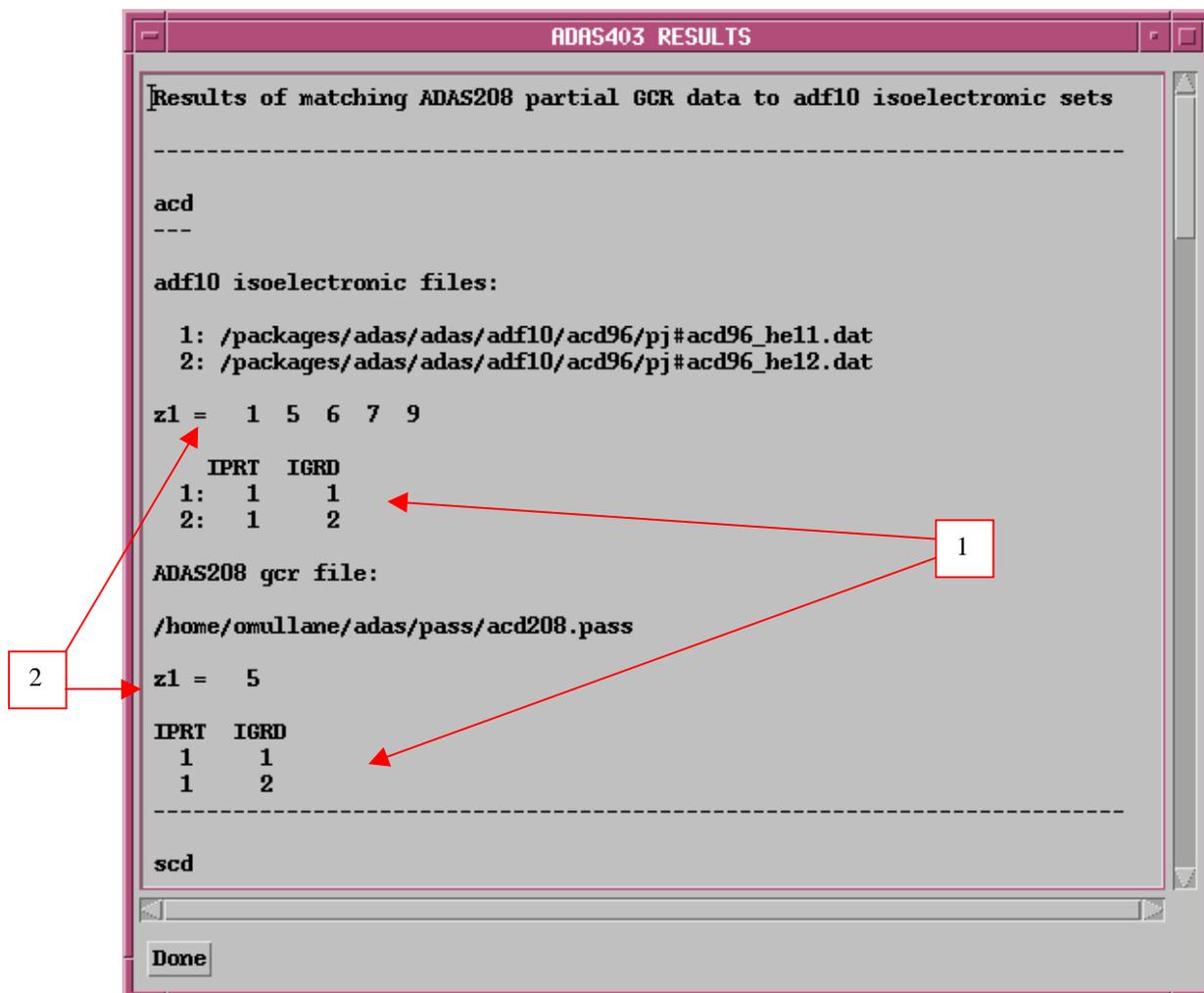
1. This is a pre-analysis to show if the expected files are present and to allow a check of their content. It checks also if parents and metastables align correctly. It is important that the results window be checked to see that operations will proceed according to plan. There is a separate block for each ADF10 data class.

2. Note the charge states present in the orginal ADF10 files and the charge state of the new or replacement sub-set.

3. If there are any valid selections, then the code will proceed. You can cancel at the output options stage.

The **output options window** has the appearance shown below.

1. If desired select a standard output text file for the summary description of the details of the insertion/replacement at a).

2. Specify where the new ADF10 files are to placed. The information required and/or given immediately below depends on the choice of location. If 'passing files' are to be created activate the first button and then give a name for the passing directory in the text widget below. There is a *Default* button, which causes the default directory name to inserted in the text widget.

3. If *Replace Originals* is selected an extra warning is provided in a pop-up window for safety.

4. Finally by activating *New adf10 set* then specification of the file names in the standard manner by year and prefix is offered in a pop-up window and the template file name is created in the text widget. This is for information only and not editable. An extra button is provided to warn if the files you have chosen already exist.

5. Click *Done* to run the code, *Cancel* to return to the previous window or else click the *Escape to Menu* button to terminate the program. On clicking Done, an information window summarising the results is presented.
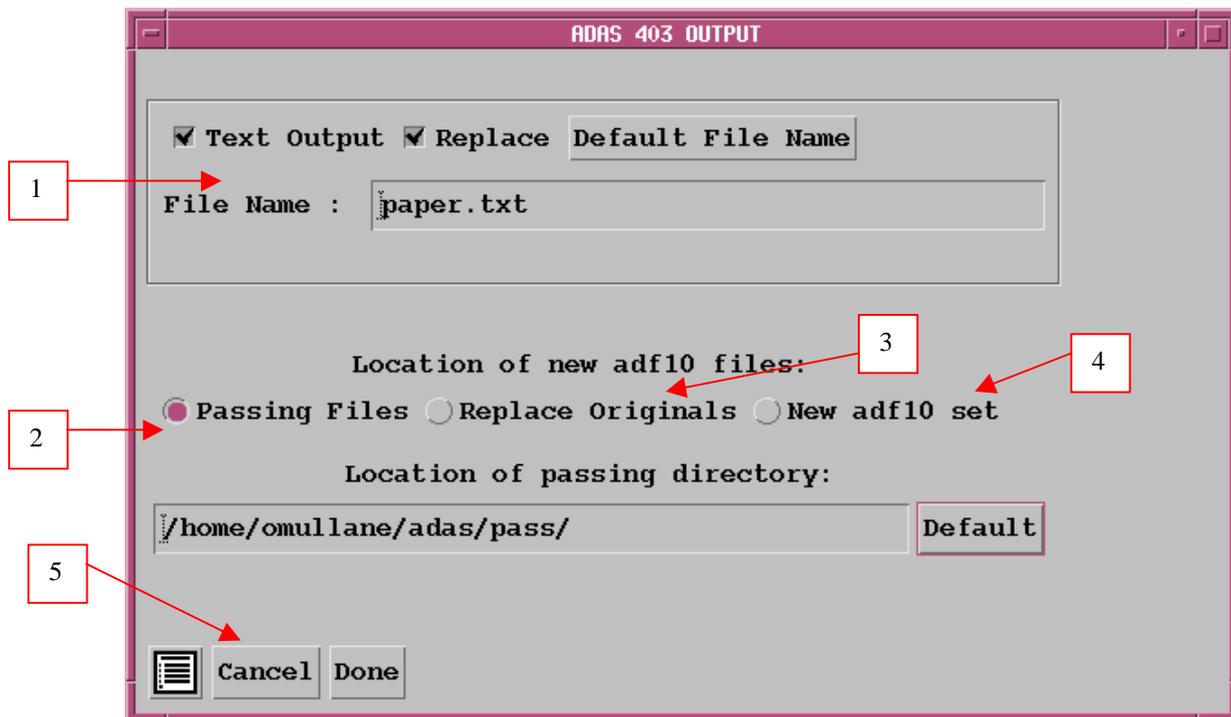

Illustration:

There are is no graphical output from this program. The tabular output information is given in table 5.3a. Some summary information is given on each of the data classes processed. In particular it is noted whether energy level information is stored in the standard master files. This is normally available for the SCD ionisation rate coefficients but may be advisable also for the PLT total line power and PLS specific line power, which have exponential behaviour with temperature. These energy data allow improvement of subsequent interpolations of the standard master data.

Notes: