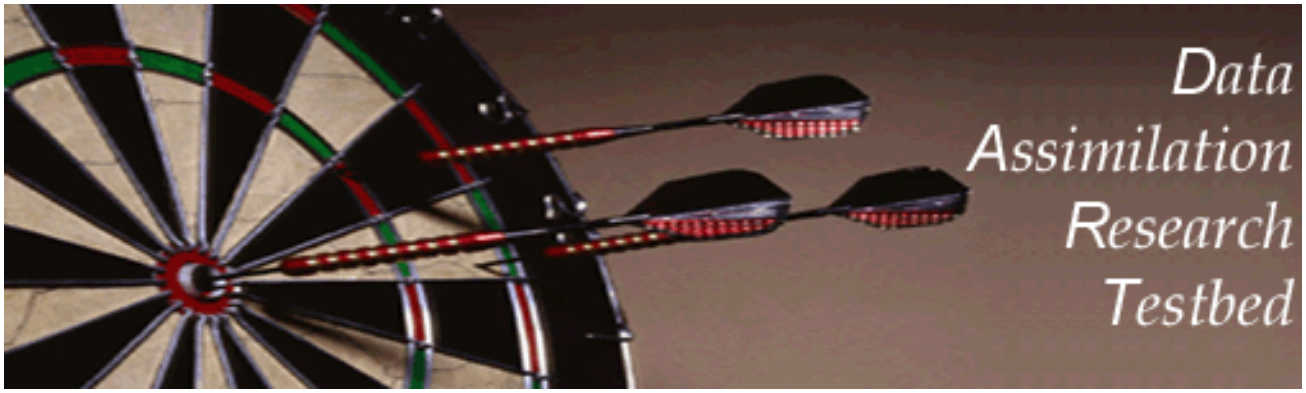
Data Assimilation Research Testbed Tutorial



Section 3: DART Runtime Control and Documentation

Version 2.0: September, 2006

Philosophy: Make many things configurable at run-time.

Use F90 namelist facility to do this.
(In retrospect, this may have been a poor choice, but now standard).

Each F90 module can have its own associated namelist file.

All namelists combined in a single file, input.nml, in work directory.

Documentation of modules including namelists in html files.

Example: Changing to a multivariate filter.

Section 1 Lorenz_63 example:

- Observed x, y, z components.
- Observation of x only impacted ensemble for x, etc.

Let's convert to a multivariate filter:

- Observations of x will impact ensembles for x, y and z.

To do this, will modify a namelist setting:

- Change will be made in file models/lorenz_63/work/input.nml.
- Modification to assim_tools_nml.
- Namelist parameter of interest is *cutoff*.

Example: Changing to a multivariate filter.

Open a browser and look at file *assim_tools/assim_tools_mod.html*.

Has a variety of sections:

- Overview;
- List of other modules used;
- Public interface (how to use this in another module);
- Details of public interfaces and variables;
- Namelist (what we're interested in for now).

The namelist section lists all runtime control variables for assim_tools.

- Gives description of each;
- *cutoff* controls distance to which observation has impact;

Originally very small: obsevation of x only impacts x.
Make it very big: all observations impact all state variables.

Example: Changing to a multivariate filter.

Edit file *models/lorenz_63/work/input.nml*.

Contains namelists for all modules used with Lorenz_63.

Namelist name preceded by ampersand indicates start:

For instance, *&filter_nml* or *&assim_tools_nml*.

Modification to assim_tools_nml.

Namelist parameter of interest is *cutoff.*

Change cutoff from small value to 1000000.0

When program filter is run again, it will incorporate this modification.

input.nml automatically constructed by compilation tool (Section 11).