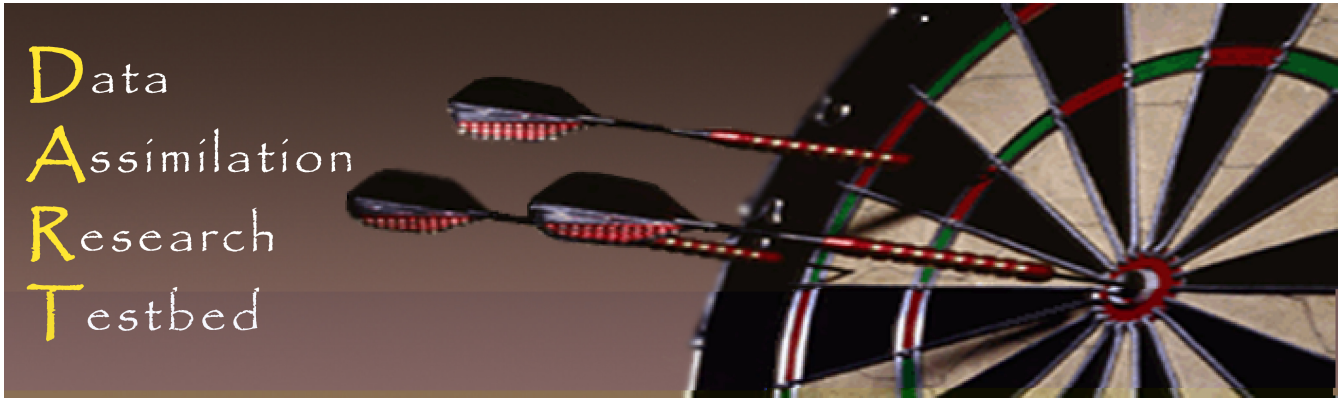
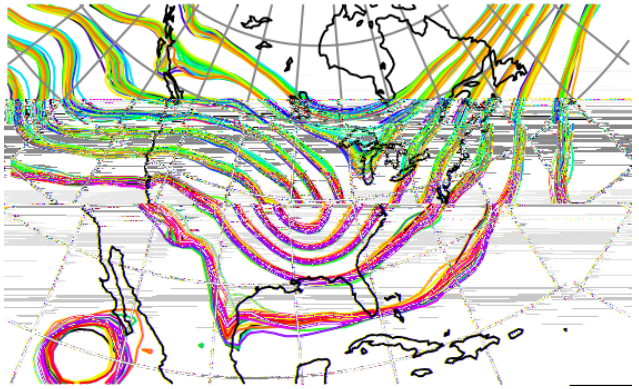


DART Tutorial Section 23: Location Module Design



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DART Location Modules

Location type of Model State and Observations are specified by selecting one of the available location modules.

Module Name	**Location Specification**
threed_sphere (*)	lat, lon, vertical (vert: surface, height, pressure, scale height, level, none)
oned (*)	x (periodic)
annulus	azimuth, radius, vertical (vert: surface, level, height)
channel	x (periodic), y (limited domain), z (infinite)
column	vertical (none, surface, level, pressure, height)
twod	x, y (both periodic)
twod_annulus	azimuth, radius (azimuth boundary options available)
twod_sphere	lat, lon
threed	x,y,z (all periodic)
threed_cartesian	x,y,z

* most commonly used

Location Module Design

Location Derived Type hides differences between different modules for code that passes locations through but doesn't manipulate the internal values.

All Location Modules have a standard set of routine interfaces, so they can be compiled interchangeably with main DART routines.

Location Module Required Interfaces

```
public :: location_type, get_location, set_location,     &
      set_location_missing, is_location_in_region,       &
      query_location, write_location, read_location,     &
      interactive_location, operator(==), operator(/=),  &
      LocationDims, LocationName, LocationLName,         &
      LocationStorageOrder, LocationUnits,               &
      get_close_type, get_close_init, get_close_obs,     &
      get_close_state, get_close_destroy, get_dist,      &
      has_vertical_choice, vertical_localization_on,     &
      set_vertical, is_vertical, convert_vertical_obs,   &
      convert_vertical_state,                            &
      get_vertical_localization_coord,                   &
      set_vertical_localization_coord
```

Some of these may be dummy routines.
Obviously, the low-order models do not have vertical coordinates, yet even the *oned/location_mod.f90* must have these entry points.

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