

# Exercise: Creating CDMS variables

**AIM:** To explain how to create a CDMS variable object from scratch, attaching attributes and axes.

## Issues covered:

- Creating a new variable
- Assigning attributes
- Linking to axis objects
- Writing to NetCDF

## Instructions

1. Generate a Masked Array of shape (1, 2, 5) as follows [[[12, 15, -999, -999, 14], [24, 26, 17, 18, 29]]], it should have a missing value of -999 and be of type 'integer'.
2. The variable is surface temperature recorded at 5 longitudes (0.0E, 0.25E, 0.5E, 0.75E, 1.0E) and latitudes (55.0N, 60.0N), at the time step "2004-12-16 00:00". Create CDMS axes for each of these.
3. Add units and CF-compliant standard names to each of the axes.



**CF standard\_names are 'latitude', 'longitude' and 'time'; units are 'degrees\_[east|north]' and UDUNITS time description.**

4. Create an attribute dictionary and ID (used as the short name in a NetCDF file) for the variable.
5. Create the variable, incorporating the axes (least changing first), id, missing value and attribute dictionary).
6. Write the data to a new file called '~ /my\_cdat\_files/output/stemp.nc'.
7. Optionally, you can add file level metadata such as:  
title: "Surface temperature from MADEUP model-0.2.3b."  
institution: "Created at the University of South Orglanshire."