

A simple note for HDF5 to CF Mapping

1 Name conventions

In general, for any character not allowed by the CF name conventions, change that character to underscore ('_'). The original HDF5 dataset path and names are preserved by using DAP2 attributes.

1.1 HDF-EOS5

In general, variable names of an HDF-EOS5 multi-grid/multi-swath/multi-zonal-average file should have the corresponding grid/swath/zonal-average names prefixed before the field names. Variable names of an HDF-EOS5 single grid/swath/zonal-average should just use the corresponding field names.

1.2 HDF5

In general, variable names for any non-HDF-EOS5 files should have their group path prefixed before the corresponding HDF5 dataset names. For the supported NASA HDF5 products, if an HDF5 dataset is under the HDF5 root group, the HDF5 dataset name should be used as the variable name. The root group path should not be prefixed.

2 Dimensions

Dimensions in HDF-EOS5 will map to CF dimensions. For netCDF-4 compliant HDF5 files, the dimensions will be retrieved by following the netCDF-4 data model. For other cases, fake dimensions may be added.

3 Coordinate Variables

Latitude and longitude are properly retrieved from either HDF-EOS5 or netCDF-4 or other supported HDF5 files. CF units "degrees_east" and "degrees_north" are added to latitude or longitude. CF requires that each dimension not associated with latitude or longitude has a corresponding coordinate variable. If the handler cannot find such a variable, it will generate a proxy coordinate variable for that dimension. The value of this coordinate variable is index number 0,1,2,3..... Attribute units=level is added to this coordinate variable.

If latitude and longitude can be described as 1-D arrays, COARDS are followed.

If the file is an HDF-EOS5 swath or a curvilinear grid, we add a CF "coordinates" attribute to a variable to describe the coordinates of that variable.

4. CF attributes

CF attribute such as `_FillValue`, `valid_range`, `scale_factor`, `add_offset` are mapped to follow CF conventions.

5. Further reading

For more information, check the section 4 of the HDF5 to DAP2 mapping document (<https://earthdata.nasa.gov/sites/default/files/field/document/ESDS-RFC-017v1.pdf>) and the technical note (http://hdfeos.org/software/hdf5_handler/doc/Reengineering-HDF5-OPeNDAP-handler.pdf)