MQNC (short for 'MQuest NetCdf') netcdf is based on the MEDS-ascii format. MQNC databases consist of a folder (and subfolders) containing the netcdf files and a master 'keys' netcdf file. The 'keys' file contains metadata about each profile in the database. Below is an example of a keys file header:

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netcdf IQUODtestdataNOQC\_keys {

dimensions:

N\_Casts = UNLIMITED ; // (114665 currently)

String\_1 = 1 ;

String\_2 = 2 ;

String\_4 = 4 ;

String\_10 = 10 ;

variables:

float obslat(N\_Casts) ; %latitude

float obslng(N\_Casts) ; %longitude

float c360long(N\_Casts) ; %longitude in 360degrees

int autoqc(N\_Casts) ; %QC information for CSIRO automated tests

autoqc:conventions = "0=OK,1=fail aut1, 2=fail aut2, 3=fail aut1&2" ;

autoqc:\_FillValue = 9 ;

char stn\_num(N\_Casts, String\_10) ; %profile unique ID number

char callsign(N\_Casts, String\_10) ; %ship or platform callsign

char obs\_y(N\_Casts, String\_4) ; % year

char obs\_t(N\_Casts, String\_4) ; % time

char obs\_m(N\_Casts, String\_2) ; % month

char obs\_d(N\_Casts, String\_2) ; % day

char data\_t(N\_Casts, String\_2) ; % data type (e.g., XB, BO, CT) for a full list, see below

char d\_flag(N\_Casts, String\_1) ; % duplicate flag

d\_flag:conventions = "D=yes, N=no" ;

d\_flag:\_FillValue = "N" ;

char data\_source(N\_Casts, String\_10) ; % Original Data source

int priority(N\_Casts) ; %CSIRO priority code. The lower the number, the more trustworthy the data/metadata

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Data\_type codes ('data\_t' field in keys file) > BA - bathy> BO - bottle> BT - micro or digital bathythermograph (early xbt)?> CT - CTD> CU ‚Äì CTD upcast> DB - drifting buoy> DT ‚Äì digital thermograph> MB ‚Äì MBT (mechanical bathythermograph)> MR - moored buoy (moorings)> ST ‚Äì surface temperature > TE - tesac> UN - Unknown> UO - Undulating oceanic recorder> XB - XBT> XC ‚Äì XCTDTHE DATABASE:

Every profile is listed in the keys file and the 'stn\_num' variable give information on the location of the profile netcdf file in the database.

For example, in the database 'fr02', stn\_num (station or profile number) 88938009 is located at fr02/88/93/80/09ed.nc. There is also a fr02/88/93/80/09raw.nc file. 'ed' means edited (includes automatic and manual QC flags added by CSIRO) and 'raw' contains the originator's version of the data (including the originator's flags if present). For the best copy of the dataset, the 'ed' version should be used.

Each profile's netcdf file is structured as given below.

Comments on the right give information for the most relevant fields. If more information on the fields is required, refer to the table at: http://www.nodc.noaa.gov/GTSPP/document/datafmt/medsfmt.html

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netcdf 3ed {

dimensions:

N\_Prof = UNLIMITED ; // (1 currently)

Nparms = 30 ;

Nsurfc = 30 ;

Num\_Hists = 100 ;

time = 1 ;

latitude = 1 ;

longitude = 1 ;

depth = 900 ;

String\_1 = 1 ;

Single = 1 ;

String\_2 = 2 ;

String\_4 = 4 ;

String\_5 = 5 ;

String\_8 = 8 ;

String\_10 = 10 ;

String\_12 = 12 ;

String\_6 = 6 ;

String\_16 = 16 ;

variables:

int woce\_date(Single) ; %Date in the format yyyymmdd UTC

woce\_date:long\_name = "date" ;

woce\_date:units = "yyyymmdd UTC" ;

woce\_date:data\_min = 19990307 ;

woce\_date:data\_max = 19990307 ;

int woce\_time(time) ; %Time in hhmmss

woce\_time:long\_name = "time of day" ;

woce\_time:units = "hhmmss" ;

woce\_time:data\_min = 115600 ;

woce\_time:data\_max = 115600 ;

double time(time) ; %date since ‚Ä¶‚Ä¶

time:long\_name = "time" ;

time:units = "days since 1900-01-01 00:00:00" ;

time:data\_min = 36224.4972222224 ;

time:data\_max = 36224.4972222224 ;

float latitude(latitude) ; % latitude

latitude:long\_name = "latitude" ;

latitude:units = "degrees\_N" ;

latitude:valid\_min = -90.f ;

latitude:valid\_max = 90.f ;

latitude:C\_format = "%8.4f" ;

latitude:FORTRAN\_format = "F8.4" ;

latitude:data\_min = -17.7667f ;

latitude:data\_max = -17.7667f ;

float longitude(longitude) ; %longitude

longitude:long\_name = "longitude" ;

longitude:units = "360degrees\_E" ;

longitude:valid\_min = 0.f ;

longitude:valid\_max = 360.f ;

longitude:C\_format = "%9.4f" ;

longitude:FORTRAN\_format = "F9.4" ;

longitude:data\_min = 108.7667f ;

longitude:data\_max = 108.7667f ;

int Num\_Hists(Single) ; % number of history codes in the Act\_Code, Act\_Parm, Aux\_ID etc fields.

int No\_Prof(Single) ; % number of profiles in this file (e.g. for CTD you might have TEMP and PSAL, so No\_Prof = 2)

int Nparms(Single) ; % number in Pcode, Parm, Q\_Parm fields

int Nsurfc(Single) ; % number of surface codes (in SRFC\_Code, SRFC\_Parm, SRFC\_Q\_Parm variables)

char Mky(String\_8) ;

char One\_Deg\_Sq(String\_8) ;

char Cruise\_ID(String\_10) ; % cruise identifier if available

char Data\_Type(String\_2) ; % data type (see list above)

char Iumsgno(String\_12) ;

char Stream\_Source(String\_1) ;

char Uflag(String\_1) ;

char MEDS\_Sta(String\_8) ;

char Q\_Pos(String\_1) ;

char Q\_Date\_Time(String\_1) ;

char Q\_Record(String\_1) ;

char Up\_date(String\_8) ; % date the file was last updated

char Bul\_Time(String\_12) ;

char Bul\_Header(String\_6) ;

char Source\_ID(String\_4) ;

char Stream\_Ident(String\_4) ;

char QC\_Version(String\_4) ;

char Data\_Avail(String\_1) ;

char Prof\_Type(N\_Prof, String\_16) ; % type of data in each profile (No\_Prof). Eg, 'TEMP', 'PSAL', 'COND'

char Dup\_Flag(N\_Prof, String\_1) ; % Duplicate flag ('D' = duplicate, 'N' = not duplicate)

char Digit\_Code(N\_Prof, String\_1) ;

char Standard(N\_Prof, String\_1) ;

float Deep\_Depth(N\_Prof) ; % deepest depth for each profile (No\_Prof)

char Pcode(Nparms, String\_4) ;

char Parm(Nparms, String\_10) ;

char Q\_Parm(Nparms, String\_1) ;

char SRFC\_Code(Nsurfc, String\_4) ; % Surface code (see http://www.nodc.noaa.gov/GTSPP/document/codetbls/gtsppcode.html for full listing)

char SRFC\_Parm(Nsurfc, String\_10) ; % Surface parameter data for each SRFC\_Code

char SRFC\_Q\_Parm(Nsurfc, String\_1) ; % Surface quality flag

char Ident\_Code(Num\_Hists, String\_2) ; % Organisation that created the record

char PRC\_Code(Num\_Hists, String\_4) ; % Software that altered the record

char Version(Num\_Hists, String\_4) ; % Software version number

char PRC\_Date(Num\_Hists, String\_8) ; % Date of alteration

char Act\_Code(Num\_Hists, String\_2) ; % Action performed on parameter

char Act\_Parm(Num\_Hists, String\_4) ; % Parameter that action was performed on

float Aux\_ID(Num\_Hists) ; % Depth of changed parameter

int Flag\_severity(Num\_Hists) ; % Severity of the flag (see http://www.nodc.noaa.gov/GTSPP/document/codetbls/gtsppcode.html#QUAL)

char Previous\_Val(Num\_Hists, String\_10) ; % Value of the parameter before the change

char D\_P\_Code(N\_Prof, String\_1) ; % D = Depth, P = pressure

int No\_Depths(N\_Prof) ; % number of depths/pressures in each profile

float Depthpress(N\_Prof, depth) ; % Depth/pressure values

Depthpress:\_FillValue = -99.99f ;

float Profparm(N\_Prof, time, depth, latitude, longitude) ; % Parameter values (TEMP, PSAL, COND found here)

Profparm:\_FillValue = -99.99f ;

char DepresQ(N\_Prof, depth, String\_1) ; % Individual quality flags for each depth/pressure point (see http://www.nodc.noaa.gov/GTSPP/document/codetbls/gtsppcode.html#QUAL)

char ProfQP(N\_Prof, time, depth, latitude, longitude, String\_1) ; % Individual quality flags for each TEMP(/PSAL/COND) point (see http://www.nodc.noaa.gov/GTSPP/document/codetbls/gtsppcode.html#QUAL)

// global attributes:

:title = "Meds-ASCII UOT data" ;

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