QXF2MAT

The QXF2MAT function allows users who have requested data in BODC's QXF format to import those data into the MATLAB technical computing environment.

Running the function

Once QXF2MAT has been downloaded, it should be placed in a directory accessible to your installation of MATLAB (i.e. on the MATLAB 'path'). To run the function, start MATLAB and run the command in the following manner:

```
>> myDataVariable = qxf2mat('/full/path/and/filename/of/a/QXF/file')
```

Accessing the data

The variable which is returned from QXF2MAT is a MATLAB structure array with the following fields:

qxfName	The data originator's identifier for the data file
numberOfChannels	The number of data channels in the data file - excluding date/time and cycle channels
numberOfCycles	The number of data cycles in the data file
parameterCodes	A cell array of BODC parameter usage codes
parameterShortTitle	A cell array of full titles corresponding to the BODC parameter usage codes
parameterDefinition	Where available, a cell array of definitions corresponding to the BODC parameter usage codes
minimumObservedValue	A vector of the minimum value in each data channel
maximumObservedValue	A vector of the maximum value in each data channel
absentValue	A vector of the numbers used to mark absent data in each data channel
binChannel	A string indicating, where appropriate, which data channel describes the second dimension co-ordinate.
cycleFlags	Where available, a cell array of strings of BODC flags corresponding to the data cycle number, for instance 'B' and 'E' to identify the start and end of a CTD cast.
datetime	Where available, a string array of dates and times corresponding to the observations in each data cycle
datetime_flags	Where available, a cell array of strings of BODC flags corresponding to the datetime field.
PCODEXX01	Dynamically named fields containing vectors or matrices of the data for the corresponding BODC parameter usage code
PCODEXX01_flags	Dynamically named fields containing a cell array of strings of BODC flags for the data for the corresponding BODC parameter usage code

The following MATLAB syntax would allow a user, for example, to extract the absent data values from the structure array:

```
>> myDataVariableAbsentValues  =  myDataVariable.absentValues
```

Other options available in QXF2MAT

When running QXF2MAT, adding a flag with value '-S' to the command forces the function to save the contents each QXF file to a Matlab .MAT with a name corresponding to that of the QXF file.

```
myDataVariable  =  qxf2mat('/full/path/and/filename/of/a/QXF/file','-S')
```

QXF2MAT may also be run against a batch of QXF files, specified either as a MATLAB cell array of strings of QXF files to be or the full path and file name of a driver file, listing (one per line) the QXF files to be loaded.

Requirements

An internet connection is required as the function makes calls to the NERC Vocabulary Server to identify parameter titles and definitions. For MATLAB Release 2008a and earlier, the NETCDF toolbox must be installed.