Creating OPeNDAP DAS files

In order for the ASCII data files to be displayed in OPeNDAP, there are additional files that are needed. These additional files need to reside in the same directory as the data files. The first file is a .fmt file, which describes the format of the data file and is only needed once for each dataset (since each data file in a dataset has the same format). There are .fmt files for each type of QCF or PQCF data file as follows:

a) qcf.fmt - For all of the standard QCF data files (1 minute, 5 minute, hourly).
b) qcf-short-stn.fmt - For QCF data files with a 10 character station ID (6th variable in data file) instead of 15 characters. (Ex: 1.65)
c) qcf-short-stn-no-nominal.fmt - For QCF data files with a 10 character station ID (4th variable in data file) instead of 15 characters and no nominal date or nominal time. (Ex: 1.31)
d) qcf-no-seconds.fmt - For QCF data files with HH:MM format for time instead of HH:MM:SS and a 2 digit year. (Ex: 45.102)
e) qcf-no-seconds-4-digit-year.fmt - For QCF data files with HH:MM format for time instead of HH:MM:SS and a 4 digit year. (Ex: 38.018)
f) qcf-wind.fmt - For QCF data files with u/v wind and specific humidity at the end of each data line. (Ex: 19.014)
g) qcf-snow.fmt - For QCF data files with snow variables, such as min/max temperatures, snow depth, snow fall, and total precipitation. (Ex: 85.0991)
h) qcf-clouds.fmt - For QCF data files with only cloud variables after the first 8 variables. (Ex: 40.039)
i) qcf-soil-temp-6-depths.fmt - For QCF data files with soil temperature variables, such as soil temperature and soil depth with 6 different soil depths. (Ex: 19.008)
j) qcf-soil-temp-9-depths.fmt - For QCF data files with soil temperature variables, such as soil temperature and soil depth with 9 different soil depths. (Ex: 19.009)
k) qcf-soil-moisture.fmt - For QCF data files with soil moisture variables, such as soil volumetric water content and soil matric potential. (Ex: 19.037)
l) hrly-pqcf.fmt - For the hourly PQCF data files (Ex: 77.114).
m) hrly-pqcf-short-stn.fmt - For hourly PQCF data files with a 10 character station ID (4th variable in data file) instead of 15 characters. (Ex: 1.58)
n) dly-pqcf.fmt - For the daily PQCF data files (Ex: 55.023).
o) 15min-pqcf.fmt - For the 15 minute PQCF data files (Ex: 85.117).
p) 15min-pqcf-short-stn.fmt - For the 15 minute PQCF data files with a 10 character station ID (4th variable in data file) instead of 15 characters. (Ex: 1.59).
q) monthly-pqcf.fmt - For the monthly PQCF data files (Ex: 15.111).

All of the QCF .fmt files need to be renamed to *file-extension*.fmt, where *file-extension* is qcf, dqc, 0qc (depending on the file extensions on the data files) and all of the PQCF .fmt files need to be renamed to *file-extension*.fmt, where *file-extension* is pqcf, dqc, pqc (depending on the file extensions on the data files) for OPeNDAP to work correctly. The

format files are named differently in svn to distinguish between the different QCF and PQCF data formats.

Possible QCF data file extensions are qcf, 0qc, pqc, and dqc. Possible PQCF data file extensions are pqcf, pqc, dqcf, dqc, and 0mqc.

The other file that is needed is the .das file. There is one .das file needed for each data file. There are sample .das files available for each different format of QCF or PQCF data files as follows:

a) sample-qcf.das - For all of the standard QCF data files (1 minute, 5 minute, hourly). This file can also be used for files that have a 10 character station ID. (b in 1st section).
b) sample-qcf-short-stn-no-nominal.das - For QCF data files with a 10 character station ID and no nominal date or nominal time.
c) sample-qcf-no-seconds.das - For QCF data files with HH:MM format for time instead of HH:MM:SS and a 2 digit year.
d) sample-qcf-no-seconds-4-digit-year.das - For QCF data files with HH:MM format for time instead of HH:MM:SS and a 4 digit year.
e) sample-qcf-wind.das - For QCF data files with u/v wind and specific humidity at the end of each data line.
f) sample-qcf-snow.das - For QCF data files with snow variables, such as min/max temperatures, snow depth, snow fall, and total precipitation.
g) sample-qcf-clouds.das - For QCF data files with only cloud variables after the first 8 variables.
h) sample-qcf-soil-temp-6-depths.das - For QCF data files with soil temperature variables, such as soil temperature and soil depth with 6 different soil depths.
i) sample-qcf-soil-temp-9-depths.das - For QCF data files with soil temperature variables, such as soil temperature and soil depth with 9 different soil depths.
j) sample-qcf-soil-moisture.das - For QCF data files with soil moisture variables, such as soil volumetric water content and soil matric potential.
k) sample-pqcf-hrly.das - For the hourly PQCF data files. This file can also be used for files that have a 10 character station ID (m in 1st section).
l) sample-pqcf-dly.das - For the daily PQCF data files.
m) sample-pqcf-15min.das - For the 15 minute PQCF data files. This file can also be used for files that have a 10 character station ID (p in 1st section).
n) sample-pqcf-monthly.das - For the monthly PQCF data files.

The .das files are named the same as the QCF or PQCF data file with the .das extension. For example, the .das file for the 20020521.qcf data file is named 20020521.das. **For QCF or PQCF files that are gzipped (.gz extension), the .das file must have the QCF or PQCF extension included in the .das file name. For example, if the data file is named NMSU60_20040601.0qc.gz, the .das file must be named NMSU60_20040601.0qc.das.**

For the Detailed Description, include the information in the documentation file that describes the format of the data. For an example, see the documentation file for dataset 77.109. Include the first paragraph under *Detailed Format Description* except for the last sentence (refers to the section of the document where the QC codes are defined).

If there are multiple projects for a dataset, include all the projects in the sample das file separated by commas.

If the dataset has no DOI or other information in the global section, leave the entry blank, but the double quotes and semicolon need to be included in the sample das file. (Ex: String References “”;).

The program, create_das.pl, will create the .das files for an entire dataset at once. The process for creating the .das files is as follows:

1) Determine which format the dataset is in (QCF or one of the PQCF formats).
2) Copy the appropriate .fmt file to the same directory as the data files.
3) Determine which sample .das file is appropriate for the dataset and note the directory and name of the .das file. The sample .das file should not be in the directory with the data files. The directory and name of the sample .das file is provided as input when running the software.
4) Edit the .das file and make appropriate changes to the Global section of the .das file. The Global section can be found at the end of the .das file. Title, Project, Description, Documentation, Detailed_Description, and References are the parts of the Global section that need to be edited. Processing_Version, Release_Date, and Author may need to be changed. The Processing_Version and Release_Date are shown in Versions on the dataset page, where Release_Date is the date in parentheses (When the create_das.pl program is run, it will change the Start_Date_Time and End_Date_Time so it will be correct for the particular data file).
5) cd to the directory where the data files are located (the program looks in the current directory for the data files).
6) Run the software. Usage: create-das.pl file-type sample-das-file where file-type is the file extension of the data file (qcf, 0qc, dqc, dqcf, pqc, pqcf, or 0qc.gz), and sample-das-file is the file that was created in step 4. Sample-das-file specifies the directory and file name.
   a) The software will ask which format the data file names are in. This is important for creating the correct start and end dates in the file. The different formats for the file names are as follows:
      1 - YYYYMMDD.*
      2 - YYMMDD.*
      3 - *_YYMMDD.*
      4 - *_YYYYMMDD.*
      5 - *_MDD.*
      6 - *_YYMMDD_*.*

7 - YYYYMM.*
8 - YYMM.*
9 - *_YYMM.*
10 - *_YYYYMM.*
11 - *_YYYYMM_*.*
12 - *_YYMM_*.*
13 - *_YYYY.*

If you specify option #5, the software will ask what year is associated with the data files. This is because the year is not specified in the file name.

7) Check a few of the .das files that were created and verify that the Start_Date_Time and End_Date_Time global variables are correct.
8) Mark the dataset in the database as Dodsable.
9) Verify the OPeNDAP links are working properly. From the dataset page, click on OPeNDAP access, and click on Webform for a few of the data files. If the OPeNDAP web page displays and there are no errors, then the .das files have been created successfully.

The directory where this document is located in Google Drive is EOL-DMS/OPeNDAP/das_files:
Creating_OPeNDAP_DAS_files
https://docs.google.com/document/d/1cTqKWnDkuKXF1cmJrbv0Zp530M64oqwBolgWLmwAIcU/edit?usp=sharing