

README – nfTides V2.1.1

Legal Matters

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Files in distribution file nfTides-V211-f90-dist.zip

README.pdf	This document
nfTides.f90	Stand-alone Fortran90 source code requiring no additional external libraries to compile and execute.
admiralty.in	File containing Admiralty Basis Functions for each day. <<nfTides>> reads in the daily values for the Admiralty basis functions from a file "admiralty.in" which must be present in the installation directory. The default version of this file, as distributed with the source code, has basis functions defined for each day in 1988 through the beginning of January 2000. The extent of the valid time window for the basis functions is easily extended by referring to the latest Admiralty Tide Tables publication, as referenced above. The format of "admiralty.in" is as follows: YYYY MM DD then four pairs of integer angles and tidal factors where YYYY is the year, MM is the month, DD is the day of month, a factor of 1.12 would be written as 112, and angles are in integer degrees. IT IS ESSENTIAL TO NOTE THAT ALL DATES/TIMES ARE IN

UNIVERSAL TIME (GMT). If time series time stamps are not in UT, the analysis will be invalid.

Quick-guide-gplv3.pdf Gnu General Public License guide

Supplemental file nfTides-examples.zip

94GMT_TAG_t2.txt Time series file containing data from the TAG hydrothermal field at the Mid-Atlantic Ridge by Dr. Adam Schultz, collected from one of the temperature sensors on a MEDUSA hydrothermal instrument. <<nfTides>> requires only one input file - containing the time series to be analyzed, and this file is an example of that. A simple text (ASCII) file format is used. The input file must have no header, and 7 columns separated by white spaces in the following format:

column 1	column 2	column 3	column 4	column 5	column 6	column 7
YYYY	MM	DD	HH	MM	SS	time series

where YYYY is the year, MM is the months, DD is the day, HH is the hour, MM is the minute, SS is the seconds, and "time series" is the value of the time series at that time. TO REPEAT - IT IS ESSENTIAL THAT ALL DATES/TIMES IN THE INPUT FILES BE PROVIDED IN UNIVERSITY TIME (UT/GMT), OTHERWISE THE ANALYSIS WILL BE INVALID! All phase delays reported by <<nfTides>> are relative to UT, i.e. hours from the prime meridian at Greenwich, UK. Understanding this is critically important to interpreting the results of <<nfTides>>, since the phase delay from 0 degrees longitude is the way in which one can distinguish between ocean and earth tidal modulation.

94GMT_TAG_t2.txt.huber *.magnitude-phase *.real-imag *.time-series are automatically generated output files or hopefully self-explanatory format. In event of any questions that can't be answered by a quick look at the source code (search for "write(" statements, please email questions to NGF@coas.oregonstate.edu

Building your nfTides executable file

You must have a Fortran90 compiler available on your machine. nfTides has been compiled on Linux (CENTOS/RedHat) and Mac OS X (Lion, Mountain Lion) operating systems with no difficulties using both Gnu gfortran and Portland Group pgfortran. Typical command line compilations are:

```
pgfortran nfTides.f90 -o nfTides
Gfortran nfTides.f90 -o nfTides
```

Under Linux/Unix, executing the program requires the simple command line entry:
./nfTides

The program will then query you for the name of the input (time series) file, which must be in the format specified above.

nfTides also requires the file “admiralty.in” to be present in the same directory. When it executes, nfTides will generate a series of files with the same name as the input time series file, but with the extensions .huber .magnitude-phase .real-imag and .time-series appended. If any of these files already exist, nfTides will overwrite them – so be aware of that.