README.9N_lowT_longterm_files.txt

Dan Scheirer, 2007 Jan 10, dscheirer@usgs.gov
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1) I have bundled-together a number of data files that I used for the time-series
   study of 9N EPR vent sites that was published in:
       Scheirer, D.S., Shank, T.M., and Fornari, D.J., 2006, Temperature variations
          at diffuse and focused flow hydrothermal vent sites along the northern
          East Pacific Rise, Geochem. Geophys. Geosyst., DOI:10.1028/2005GC001094.

   The data span from December 1993 through January 2002. From December 1993
   until October 1995, temperatures were recorded with HOBO probes at low sample
   rates (>2 hours) mainly in the Bio141 vent area. Starting in November 1995,
   temperatures were recorded using Vemco probes at 15 minute and 10 minute sample
   rates in all of the low-temperature vent sites of the 9N EPR Biotransect.

   The data are distributed in a directory/folder structure. The data require
   about 270 Mb of disk usage. The top level of the directory structure
   contains this README* file and a spreadsheet file in Excel format:
   9N_lowT_longterm_temperature.1993-2002.xls. The spreadsheet file
   lists the probes that were collected during each deployment at each
   vent site, along with listing the cruises that serviced the probes.
   NOTE: All of the files in this directory structure are in text/ASCII
   NOTE: format, except for the *.xls and *.pdf files. These text files
   NOTE: have Unix-type end-of-line characters. Simple text editors
   NOTE: on non-Unix/non-Linux platforms, such as Windows or Mac, may
   NOTE: encounter funny characters between text lines; fancier editors
   NOTE: on these platforms should allow opening of these text files
   NOTE: without funny end-of-line behavior.

   A number of subdirectories/subfolders actually contain the data files;
   these subdirectories are named as:
       <YEAR_START>_<YEAR_END>.<SITE_ID>
   The SITE_ID often refers to a particular vent or a marker within a
   vent field.

   The data files in this directory structure derived from ASCII dumps of
   the binary data from the probes' memories. These ASCII files were created
   mostly (exclusively?) by Tim Shank and Dan Fornari at-sea during cruises
   from 1993 to 2002. Because of different download software versions, download
   settings, and downloading people, these ASCII files have data that are
   formatted slightly differently among the cruises (especially the formats
   containing the dates and times and header fields). I spent a fair amount
   of initial effort reformatting these files to a common format (see below)
   with standardized filenames, and these standardized files are contained
   in this directory structure.

   This directory structure does *not* contain some of the data that we used
   in the G-cubed publication: high-temperature records, short-term and
   calibration records, current-meter records, averaged/min/max temperature
   summary files, spectral estimates, etc.

2) Each subfolder, named <YEAR_START>_<YEAR_END>.<SITE_ID>, contains three
   types of files:

   (a) <PROBE_ID>.<SITE_ID>: These files are have a simple format of one
       headerline, and they use a YYYY/MM/DD HH:MM:SS format for the date
       and time. These files are the least-changed from the ASCII data
       dump files.

       For example, the top lines of file: 99_00.119/ASC2897.119
       (one of three probes collected at Bio119 vent field, deployed
       in 1999 and recovered in 2000) are:

> Date Time Temp(degC) : (1999/05/16 to 2000/04/16) (from file ASC2897.txt)
1999/05/16 12:00:00 12.50
1999/05/16 12:10:00 13.08
1999/05/16 12:20:00 13.46

    (b) <SITE_ID>.<YEAR_START>_<YEAR_END>.#min.merge: These files merge
       together the temperature records from all probes at a particular
       site for a particular time interval. These records also omit down-
       and up-transits through the water column, if they are present in
       the logged data. The files also include a column of "elapsed time"
       from the beginning of the record. The files also include columns
       listing the predicted tidal height and the tidal height rate-of-change,
       based on a satellite altimetric model of tidal variations (see Scheirer
       et al., 2006, for more on this). The #min value in the filename is the
       time-spacing between temperature records, often 10min or 15min.

       For example, top lines of file: 99_00.119/119.99_00.10min.merge
> date time elapsed_time(day) tide(tpxo2, meters) tide_change(meters/hr) ASC2888 ASC2889 ASC
2897 stack2888_2897 (1999/05/16_12/00/00--2000/03/23_23/50/00)
1999/05/16 12:00:00 0.0000000 -0.29909 -0.0111 12.240000 12.590000 12.500000 12.443333
1999/05/16 12:10:00 0.0069444 -0.29965 -0.0034 12.630000 13.170000 13.080000 12.960000
1999/05/16 12:20:00 0.0138889 -0.29890 0.0045 13.400000 13.740000 13.460000 13.533333

    (c) <PROBE_ID>.<SITE_ID>.<YEAR_START>_<YEAR_END>.#min.merge.spectra.pdf:
       Quick and dirty time-series plot and spectral plot of each of the
       probe's temperature records. The file containing plots of the data
       example in (a) is: ASC2897.119.99_00.10min.merge.spectra.pdf

   If others wish to analyze these data, I would recommend them to start
   with the (b) files, above. I provide the (a) files, in part, to demonstrate
   how I got from the ASCII dumps to the (b) files. The PDF plots (c)
   serve as quick views of the nature of each record.

3) Notes about nomenclature.

   <PROBE_ID> values will be "probe###" for HOBO probe deployments (low-T),
   which include data from 1993-1995. <PROBE_ID> values will be "vemco####"
   or "ASC####" for Vemco probe deployments, which include data from 1995-2002.
   The ### and #### values are serial or other ID numbers.

   <SITE_ID> values can be low-T vent sites (e.g. Bio9, 82, 119) or they
   can be particular locations/markers within vent sites (e.g. 119C, 82A,
   141Stick1). The maps and photos in Scheirer et al., 2006, and those
   in publications by Tim Shank et al., can serve to locate these sites.
   RR=Rusty Riftia; Bio9R=Bio9 Riftia.