Processing for Sea Breeze CTD Data

On-board Atlantis, AT11-14, June 14 – July 13, 2004 - Using Brody in main lab.

Note: the data files have been copied & moved so you cannot accidentally change the originals.

1) Start->Programs->SeaBird->SBE Data Processing-Win32
2) Run "Data Conversion" (left pull down tab)
   a) It first forces you to "Create a Default Program Setup File" named DatCnv.psu. Do this into the directory it defaults to, NOT into the directory called "good psu files". It will ask about overwriting the file, say yes. (I can't figure out how to get rid of this useless step).
   b) It then opens to "File Setup" page/tab. Click "Open" and select "good psu files" folder, and the file "DatCnv.psu" in that folder. This has most parameters pre-selected and selects the files paths to be used: J:\ proc-ctd \
   c) In the "Instrument configuration file" box, check that
      √ Match instrument configuration to input file.
      Open the .con file in "J: \ proc-ctd" that goes with the first data you want to process.
   d) In the "Input directory" section, "Select" all the files you want to process (you can do as many as you like at once).
   e) Click on the "Data Setup" tab and check that it has:
      √ Process scans to end of file
      Scans to skip over – *0*
      Output format – *ASCII output*
      Convert data from – *Upcast and downcast*
      Create file types – *Create converted data (.CNV) file only*
      ☐ Merge separate header file *(unchecked)*

      Click to open "Select Ouput Variable" and check:

      1 – Scan Count
      2 – Time [sec]
      3 – Latitude [deg]
      4 – Longitude [deg]
      5 – Pressure [db]
      6 – Temperature [ITS-90, deg C]
      7 – Temperature, 2 [ITS-90, deg C]
      8 – Conductivity [S/m]
      9 – Conductivity, 2 [S/m]
      10- Altimeter [m]
      11 – Beam Transmission [%]
      12 – OBS, Seapoint Turbidity [FTU]
      13 – Voltage 0
      14 – Voltage 1
      15 – Voltage 2
      16 – Voltage 3
      17 – Voltage 4
      18 – Voltage 5
      19 – Voltage 6
      20 – Voltage 7
      21 – Upoly 0, Eh
      22 – Methane Conc. CAPSUM [umol/l]
      23 – Methane Gas Temp., CAPSUM [degC]

      Click OK to close
   f) Click "Start Process". Depending on how many files you chose and how big they are, this may take a while.
   g) Click "Exit ". If it asks if you want to save/overwrite a Setup File, say "yes"

3) Run "Cell Thermal Mass"
   a) Again, it will ask you to "Create a Default Setup File", and again, direct it to do so anywhere BUT in the "good psu files" directory…overwrite the previous file.
   b) From "File", open CellTM.psu in 'good psu files'. This will put in the correct path names.
   c) In the "Input directory" section, "Select" all the files you want to process. These will now be named "at1114xxxx.cnv" If it asks about changing the output file directory, say "yes". And when it asks if you want to overwrite the "at1114xxxx.cnv" file, say "yes".

d) Click on the "Data Setup" tab and check that both primary and secondary conductivity cells are being corrected. The values are:
   Thermal anomaly amplitude [alpha]: 0.03
   Thermal anomaly time constant [1/beta]: 7
e) Click "Start Process". It will ask you about overwriting the at1114xxx.cnv file – say "yes"…this is the file name that we'll use over and over with this program.
f) Click "Exit"

4) Run "Wild Edit
   a) Use SBWildEdit.psa for the .psa file
   b) Select files to process from available .cnv files
   c) Check "Data setup" tab to be sure
      i) Standard deviations for pass one: 2
      ii) Standard deviations for pass two: 16
      iii) Scans per block: 100
      iv) Keep data within this distance of the mean: 0
      v) Check "exclude scans marked bad"
      vi) Run "Wild Edit" on all variables
   d) Click "Start Process" – again overwrite "at1114xxx.cnv"
   e) Click "Exit"

5) Run "Filter"
   a) Again, it forces you to create a new default file…just keep it out of "good psu files".
   b) Open the Filter.psu file from \good psu files.
   c) "Select" files to process (again these are .cnv files).
   d) Check "Data setup" page/tab to be sure:
      Low pass filter A, time constant [s] 0.03
      Low pass filter B, time constant [s] 0.15
      Click "Specify Filters" to check
      Pressure, Digiquartz [db] – Low pass filter B
      Conductivity [S/m] – Low pass filter A
      Conductivity, 2 [S/m] – Low pass filter A
      (all others None)
      Click OK to close
   e) Click "Start Process" – again, overwrite "at1114xxx.cnv".
   f) Click "Exit"

6) Run "Align CTD"
   a) Get through the default file creation issue.
   b) Open ~\ good psu file \ AlignCTD.psu
   c) "Select" data files to process (again these are .cnv files).
   d) Go to "Data Setup" tab and click "Enter Advance Values..." to check
      Conductivity [S/m] -0.02
      Conductivity, 2 [S/m] -0.02
      (*all others 0*)
      Click OK to close
   e) Click "Start Process" – again, overwrite "at1114xxx.cnv".
   f) Click "Exit"

7) Run "Derive"
   a) Get through the default file creation issue.

b) Open ~\ good psu files \ Derive.psu
c) Check in the "Instrument configuration file" section see that the "Match instrument configuration to input file" is checked on.
d) "Select" files to process and note that the proper .CON file is showing in the Instrument configuration file section.
e) In the "Data Setup" tab/page, click on "Select Derived Variables" to check that:
   1) Salinity [PSU]
   2) Salinity, 2 [PSU]
   2) Potential Temperature [ITS-90, deg C]
   3) Potential Temperature, 2 [ITS-90, C]
   4) Density [sigma-theta, Kg/m^3]
   5) Density, 2 [sigma-theta, Kg/m^3]
   6) Density Difference, 2-1 [sigma-theta]
   7) Depth [salt water, m] (Lat = 48)
   8) Descent Rate [m/s] (Window = 2 sec)
   9) Pot. Temp. Anomaly (A0 = 218.59 A1 = -6.2667 Multiplier = Salinity)

   Click OK to close
f) "Start process" and overwrite the file "at1114xxx.cnv".
g) When it's done, click "Exit"

8) Run "Bin Average"
   a) Get through the default file creation issue.
   b) Open ~\ good psu files \ BinAvg.psu
   c) Select data files to process (again these are .cnv files).
   d) In Output directory section, check that "**Name append"** is **.bin**
   e) In the "Data Setup" tab/page, and check that
      Bin type: Time, seconds
      Bin size: 0.5
      √ Include number of scans per bin
      √ Exclude scans marked bad
      Scans to skip over: 0
   f) "Start process". This time it will create a new file named "at1114xxxx.bin.cnv"
   g) "Exit".

9) Run "Sea Plot"
   a) Get through the default file creation issue.
   b) "Open" ~\ good psu files \ SeaPlot.psu
   c) "Select" data files to process.
   d) Check *Output to* "Jpeg"
   e) In "Plot Setup" page/tab, check
      Plot type – Single Y – Multiple X
      Title – Sea Breeze
      Font type – Arial
      Font size – Small
      Grid lines – Horizontal and Vertical
      Grid style – Dotted Line
      Auto range padding% - 5
   f) In "Y Axis" page/tab check that
      Variable is *Depth [saltwater, m]*
      √ Label axis with variable name
      Line type – Thin Solid
      Line Color *(green)*
      Scale type: Linear
      √ Auto range

√ Reverse scale direction

g) In "X Axis" 1 page/tab check that
   Variable is *Time, Elapsed [seconds]*
   √ Label axis with variable name
   Line type – Thin Solid
   Line Color *(green)*
   Scale type: Linear
   √ Auto range
   ☐ Reverse scale direction
h) Click "Start Process"
i) From "Output" select "Print" or "Print all" (for multiple casts/stations)
j) "Exit" Sea Plot & SBE Data Processing – Win32
k) Put all the prints in the data notebook after the Cast data sheets.

10) Run "ASCII out"
   a) Get through the default file creation issue.
   b) "Open" ~\good psu files \ ASCII_Out.psu
   c) "Select" data files to process. Use the .bin files.
   d) Click on "Data Setup" tab.
   e) Double check that output head file and output data file are checked.
   f) Change Column Seperator to Tab.
   g) Click "Select Output Variables" and scroll down to the Flag option. Uncheck this.
   h) "Start process". This will create two files "at1114xxxx.asc" and "at1114xxxx.hdr".
   i) "Exit".