en614 flatfile notes

Date	Version	Notes	Who
6/11/2018	v1	Assembled bottle file workbook from *.btl files.	jpm
6/11/2018	v1	Added Cruise, Station, Event, Filename, BottleID columns at left.	jpm
6/11/2018	v1	Rearranged sheets to put DepSM next to bottle number	jpm
6/11/2018	v1	Standarized column formatting across all casts	jpm
6/11/2018	v1a	set calculated fields to values for export to flat file	jpm
6/12/2018	v1	Created and cleaned up flat file	jpm
1/31/2020	v2	Copy nutrient data from NutsCrxnSheet-v10. Add N2(-2), MLD, ChlMD, SST, SSS. Calculate NAI	hap
5/6/2020	v3	Fix habitat defining variables from en614-profiles-v3, update NAI calculation	hap
3/12/2021	v1	Created "en614-Flatfile-N-v1" to reflect that the bottfile data is now merged with N, or nutrient data	EKS
3/12/2021		Created "DATASET-EN614-Nutrients" to prepare data for BCO-DMO submission	EKS
3/15/2021		input 'nd' to designate no data for these parameters	EKS

en614 representative header file

* Sea-Bird SBE 9 Data File:
* FileName = D:\ctd\raw\614_003_03.hdr
* Software Version Seasave V 7.26.7.107
* Temperature SN = 2902
* Conductivity SN = 2469
* Number of Bytes Per Scan = 40
* Number of Voltage Words = 5
* Number of Scans Averaged by the Deck Unit = 1
* System UpLoad Time = May 08 2018 23:45:21

* NMEA Latitude = 08 20.87 N
* NMEA Longitude = 054 24.69 W
* NMEA UTC (Time) = May 08 2018 23:45:20
* Store Lat/Lon Data = Append to Every Scan
* SBE 11plus V 5.2
* number of scans to average = 1
* pressure baud rate = 9600
* NMEA baud rate = 4800
* surface PAR voltage added to scan
* A/D offset = 2
* Latitude/Longitude added to scan
* GPIB address = 1
* advance primary conductivity 0.073 seconds
* autorun on power up is disabled
* S>
** Ship: R/V Endeavor
** Cruise: EN614
** Chief Scientist: Joseph Montoya
** Organization: Georgia Tech
** Area of Operation: Amazon Plume
** Dates: 06 May - 01 June 2018
** Bridgetown, Barbados to San Juan, Puerto Rico
** Bottom Depth: 1229
** Operator: jpm
** 003.03: After sed trap and BONO deployments
* System UTC = May 08 2018 23:45:21
# nquan = 45
# nvalues = 253
# units = specified
# name 0 = scan: Scan Count

name 1 = timeJ: Julian Days
name 2 = timeS: Time, Elapsed [seconds]
name 3 = prDM: Pressure, Digiquartz [db]
name 4 = depSM: Depth [salt water, m]
name 5 = t090C: Temperature [ITS-90, deg C]
name 6 = t190C: Temperature, 2 [ITS-90, deg C]
name 7 = T2-T190C: Temperature Difference, 2 - 1 [ITS-90, deg C]
name 8 = c0S/m: Conductivity [S/m]
name 9 = c1S/m: Conductivity, 2 [S/m]
name 10 = C2-C1S/m: Conductivity Difference, 2 - 1 [S/m]
name 11 = v0: Voltage 0
name 12 = CStarAt0: Beam Attenuation, WET Labs C-Star [1/m]
name 13 = CStarTr0: Beam Transmission, WET Labs C-Star [%]
name 14 = v1: Voltage 1
name 15 = flECO-AFL: Fluorescence, WET Labs ECO-AFL/FL [mg/m^3]
name 16 = v2: Voltage 2
name 17 = altM: Altimeter [m]
name 18 = v3: Voltage 3
name 19 = par: PAR/Irradiance, Biospherical/Licor [umol photons/m^2/sec]
name 20 = v4: Voltage 4
name 21 = sbeox0V: Oxygen raw, SBE 43 [V]
name 22 = v5: Voltage 5
name 23 = sbeox1V: Oxygen raw, SBE 43, 2 [V]
name 24 = v6: Voltage 6
name 25 = v7: Voltage 7
name 26 = spar: SPAR, Biospherical/Licor [umol photons/m^2/sec]
name 27 = pumps: Pump Status
name 28 = latitude: Latitude [deg]
name 29 = longitude: Longitude [deg]
name 30 = depSM: Depth [salt water, m], lat = 8.34783

name 31 = sal00: Salinity, Practical [PSU]
name 32 = sal11: Salinity, Practical, 2 [PSU]
name 33 = sigma-È00: Density [sigma-theta, kg/m^3]
name 34 = sigma-È11: Density, 2 [sigma-theta, kg/m^3]
name 35 = sbeox0Mm/L: Oxygen, SBE 43 [umol/l], WS = 2
name 36 = sbeox1Mm/L: Oxygen, SBE 43, 2 [umol/l], WS = 2
name 37 = potemp090C: Potential Temperature [ITS-90, deg C]
name 38 = potemp190C: Potential Temperature, 2 [ITS-90, deg C]
name 39 = svCM: Sound Velocity [Chen-Millero, m/s]
name 40 = svCM1: Sound Velocity, 2 [Chen-Millero, m/s]
name 41 = dz/dtM: Descent Rate [m/s], WS = 2
name 42 = gpa: Geopotential Anomaly [J/kg]
name 43 = nbin: number of scans per bin
name 44 = flag: flag
span 0 =   -303,   19188
span 1 = 128.989678, 128.999080
span 2 =   -12.674,   799.460
span 3 =   2.011,   255.590
span 4 =   2.000,   254.000
span 5 =   11.1833,   27.6961
span 6 =   11.1870,   27.6981
span 7 =   -0.0645,   0.0154
span 8 =   3.948804,   5.636752
span 9 =   3.948507,   5.636360
span 10 = -0.007239,   0.009839
span 11 =   4.5648,   4.6887
span 12 =   0.4669,   0.5753
span 13 =   86.6036,   88.9839
span 14 =   0.0186,   0.0340
span 15 =   -0.0366,   0.3644

span 16 =   -0.2321,   2.8814
span 17 =   -4.64,   57.63
span 18 =   0.0049,   1.6682
span 19 = 3.0321e-08, 4.0356e+00
span 20 =   1.2649,   2.4150
span 21 =   1.2645,   2.4150
span 22 =   1.4541,   2.7955
span 23 =   1.4537,   2.7955
span 24 =   0.0972,   0.8148
span 25 =   0.0000,   0.0000
span 26 = 2.3889e+01, 2.6475e+01
span 27 =   1,   1
span 28 =   8.34767,   8.35227
span 29 = -54.41292, -54.41136
span 30 =   2.000,   254.000
span 31 =   32.7547,   36.4617
span 32 =   32.7540,   36.4536
span 33 =   20.8167,   26.8715
span 34 =   20.8158,   26.8677
span 35 =   116.629,   208.270
span 36 =   118.866,   211.070
span 37 =   11.1513,   27.6903
span 38 =   11.1550,   27.6923
span 39 =   1498.42,   1540.26
span 40 =   1498.42,   1540.26
span 41 =   -0.091,   1.567
span 42 =   -0.150,   8.945
span 43 =   14,   922
span 44 = 0.0000e+00, 0.0000e+00
interval = meters: 1

```
# start_time = May 08 2018 23:45:21 [System UTC, header]
# bad_flag = -9.990e-29
# <Sensors count="15" >
#   <sensor Channel="1" >
#     <!-- Frequency 0, Temperature -->
#     <TemperatureSensor SensorID="55" >
#       <SerialNumber>2902</SerialNumber>
#       <CalibrationDate>11-Jan-18</CalibrationDate>
#       <UseG_J>1</UseG_J>
#       <A>0.00000000e+000</A>
#       <B>0.00000000e+000</B>
#       <C>0.00000000e+000</C>
#       <D>0.00000000e+000</D>
#       <F0_Old>0.000</F0_Old>
#       <G>4.34453264e-003</G>
#       <H>6.44771066e-004</H>
#       <I>2.29206220e-005</I>
#       <J>2.13330570e-006</J>
#       <F0>1000.000</F0>
#       <Slope>1.00000000</Slope>
#       <Offset>0.0000</Offset>
#     </TemperatureSensor>
#   </sensor>
#   <sensor Channel="2" >
#     <!-- Frequency 1, Conductivity -->
#     <ConductivitySensor SensorID="3" >
#       <SerialNumber>2469</SerialNumber>
#       <CalibrationDate>12-Jan-18</CalibrationDate>
#       <UseG_J>1</UseG_J>
#       <!-- Cell const and series R are applicable only for wide range sensors. -->
```

```
#      <SeriesR>0.0000</SeriesR>
#      <CellConst>2000.0000</CellConst>
#      <ConductivityType>0</ConductivityType>
#      <Coefficients equation="0" >
#        <A>0.00000000e+000</A>
#        <B>0.00000000e+000</B>
#        <C>0.00000000e+000</C>
#        <D>0.00000000e+000</D>
#        <M>0.0</M>
#        <CPcor>-9.57000000e-008</CPcor>
#      </Coefficients>
#      <Coefficients equation="1" >
#        <G>-9.83496168e+000</G>
#        <H>1.37102844e+000</H>
#        <I>-2.42649815e-003</I>
#        <J>2.40267625e-004</J>
#        <CPcor>-9.57000000e-008</CPcor>
#        <CTcor>3.2500e-006</CTcor>
#        <!-- WBOTC not applicable unless ConductivityType = 1. -->
#        <WBOTC>0.00000000e+000</WBOTC>
#      </Coefficients>
#      <Slope>1.00000000</Slope>
#      <Offset>0.00000</Offset>
#    </ConductivitySensor>
#  </sensor>
#  <sensor Channel="3" >
#    <!-- Frequency 2, Pressure, Digiquartz with TC -->
#    <PressureSensor SensorID="45" >
#      <SerialNumber>0444</SerialNumber>
#      <CalibrationDate>20-Dec-16</CalibrationDate>
```

```
#     <C1>-5.378517e+004</C1>
#     <C2>-3.498580e-001</C2>
#     <C3>1.648580e-002</C3>
#     <D1>4.036100e-002</D1>
#     <D2>0.000000e+000</D2>
#     <T1>2.984744e+001</T1>
#     <T2>-3.538190e-004</T2>
#     <T3>3.972770e-006</T3>
#     <T4>2.922330e-009</T4>
#     <Slope>0.99989692</Slope>
#     <Offset>-0.45761</Offset>
#     <T5>0.000000e+000</T5>
#     <AD590M>1.125800e-002</AD590M>
#     <AD590B>-8.763490e+000</AD590B>
#    </PressureSensor>
#   </sensor>
#   <sensor Channel="4" >
#    <!-- Frequency 3, Temperature, 2 -->
#    <TemperatureSensor SensorID="55" >
#     <SerialNumber>2034</SerialNumber>
#     <CalibrationDate>11-Jan-18</CalibrationDate>
#     <UseG_J>1</UseG_J>
#     <A>0.00000000e+000</A>
#     <B>0.00000000e+000</B>
#     <C>0.00000000e+000</C>
#     <D>0.00000000e+000</D>
#     <F0_Old>0.000</F0_Old>
#     <G>4.41224800e-003</G>
#     <H>6.40810109e-004</H>
#     <I>2.34620587e-005</I>
```

```
#      <J>2.22067977e-006</J>
#      <F0>1000.000</F0>
#      <Slope>1.00000000</Slope>
#      <Offset>0.0000</Offset>
#    </TemperatureSensor>
#  </sensor>
#  <sensor Channel="5" >
#    <!-- Frequency 4, Conductivity, 2 -->
#    <ConductivitySensor SensorID="3" >
#      <SerialNumber>2459</SerialNumber>
#      <CalibrationDate>12-Jan-18</CalibrationDate>
#      <UseG_J>1</UseG_J>
#      <!-- Cell const and series R are applicable only for wide range sensors. -->
#      <SeriesR>0.0000</SeriesR>
#      <CellConst>2000.0000</CellConst>
#      <ConductivityType>0</ConductivityType>
#      <Coefficients equation="0" >
#        <A>0.00000000e+000</A>
#        <B>0.00000000e+000</B>
#        <C>0.00000000e+000</C>
#        <D>0.00000000e+000</D>
#        <M>0.0</M>
#        <CPcor>-9.57000000e-008</CPcor>
#      </Coefficients>
#      <Coefficients equation="1" >
#        <G>-1.02361744e+001</G>
#        <H>1.50895334e+000</H>
#        <I>-1.82498446e-004</I>
#        <J>9.47468425e-005</J>
#        <CPcor>-9.57000000e-008</CPcor>
```

```
#       <CTcor>3.2500e-006</CTcor>
#       <!-- WBOTC not applicable unless ConductivityType = 1. -->
#       <WBOTC>0.00000000e+000</WBOTC>
#     </Coefficients>
#     <Slope>1.00000000</Slope>
#     <Offset>0.00000</Offset>
#   </ConductivitySensor>
# </sensor>
# <sensor Channel="6" >
#   <!-- A/D voltage 0, Transmissometer, WET Labs C-Star -->
#   <WET_LabsCStar SensorID="71" >
#     <SerialNumber>593DR</SerialNumber>
#     <CalibrationDate>07-Mar-18/#-Mar-18field</CalibrationDate>
#     <M>19.2160</M>
#     <B>-1.1145</B>
#     <PathLength>0.250</PathLength>
#   </WET_LabsCStar>
# </sensor>
# <sensor Channel="7" >
#   <!-- A/D voltage 1, Fluorometer, WET Labs ECO-AFL/FL -->
#   <FluoroWetlabECO_AFL_FL_Sensor SensorID="20" >
#     <SerialNumber>478</SerialNumber>
#     <CalibrationDate>02-Mar-18</CalibrationDate>
#     <ScaleFactor>2.60000000e+001</ScaleFactor>
#     <!-- Dark output -->
#     <Vblank>0.0200</Vblank>
#   </FluoroWetlabECO_AFL_FL_Sensor>
# </sensor>
# <sensor Channel="8" >
#   <!-- A/D voltage 2, Altimeter -->
```

```
#    <AltimeterSensor SensorID="0" >
#      <SerialNumber>49899</SerialNumber>
#      <CalibrationDate>30-Mar-15</CalibrationDate>
#      <ScaleFactor>15.000</ScaleFactor>
#      <Offset>0.000</Offset>
#    </AltimeterSensor>
#  </sensor>
#  <sensor Channel="9" >
#    <!-- A/D voltage 3, PAR/Irradiance, Biospherical/Licor -->
#    <PAR_BiosphericalLicorChelseaSensor SensorID="42" >
#      <SerialNumber>70513</SerialNumber>
#      <CalibrationDate>07-Feb-2018</CalibrationDate>
#      <M>1.00000000</M>
#      <B>0.00000000</B>
#      <CalibrationConstant>11037527594.00000000</CalibrationConstant>
#      <ConversionUnits>1</ConversionUnits>
#      <Multiplier>1.00000000</Multiplier>
#      <Offset>-0.09188153</Offset>
#    </PAR_BiosphericalLicorChelseaSensor>
#  </sensor>
#  <sensor Channel="10" >
#    <!-- A/D voltage 4, Oxygen, SBE 43 -->
#    <OxygenSensor SensorID="38" >
#      <SerialNumber>1339</SerialNumber>
#      <CalibrationDate>29-Mar-18</CalibrationDate>
#      <Use2007Equation>1</Use2007Equation>
#      <CalibrationCoefficients equation="0" >
#        <!-- Coefficients for Owens-Millard equation. -->
#        <Boc>0.0000</Boc>
#        <Soc>0.0000e+000</Soc>
```

```
#       <offset>0.0000</offset>
#       <Pcor>0.00e+000</Pcor>
#       <Tcor>0.0000</Tcor>
#       <Tau>0.0</Tau>
#     </CalibrationCoefficients>
#     <CalibrationCoefficients equation="1" >
#       <!-- Coefficients for Sea-Bird equation - SBE calibration in 2007 and later. --
>
#       <Soc>5.5279e-001</Soc>
#       <offset>-0.4878</offset>
#       <A>-4.7632e-003</A>
#       <B> 1.8416e-004</B>
#       <C>-2.8285e-006</C>
#       <D0> 2.5826e+000</D0>
#       <D1> 1.92634e-004</D1>
#       <D2>-4.64803e-002</D2>
#       <E> 3.6000e-002</E>
#       <Tau20> 1.3800</Tau20>
#       <H1>-3.3000e-002</H1>
#       <H2> 5.0000e+003</H2>
#       <H3> 1.4500e+003</H3>
#     </CalibrationCoefficients>
#   </OxygenSensor>
# </sensor>
# <sensor Channel="11" >
#   <!-- A/D voltage 5, Oxygen, SBE 43, 2 -->
#   <OxygenSensor SensorID="38" >
#     <SerialNumber>0348</SerialNumber>
#     <CalibrationDate>29-Mar-18</CalibrationDate>
#     <Use2007Equation>1</Use2007Equation>
```

```
#      <CalibrationCoefficients equation="0" >
#        <!-- Coefficients for Owens-Millard equation. -->
#        <Boc>0.0000</Boc>
#        <Soc>0.0000e+000</Soc>
#        <offset>0.0000</offset>
#        <Pcor>0.00e+000</Pcor>
#        <Tcor>0.0000</Tcor>
#        <Tau>0.0</Tau>
#      </CalibrationCoefficients>
#      <CalibrationCoefficients equation="1" >
#        <!-- Coefficients for Sea-Bird equation - SBE calibration in 2007 and later. --
>
#        <Soc>4.4348e-001</Soc>
#        <offset>-0.4795</offset>
#        <A>-4.0215e-003</A>
#        <B> 2.3984e-004</B>
#        <C>-3.4036e-006</C>
#        <D0> 2.5826e+000</D0>
#        <D1> 1.92634e-004</D1>
#        <D2>-4.64803e-002</D2>
#        <E> 3.6000e-002</E>
#        <Tau20> 1.2000</Tau20>
#        <H1>-3.3000e-002</H1>
#        <H2> 5.0000e+003</H2>
#        <H3> 1.4500e+003</H3>
#      </CalibrationCoefficients>
#    </OxygenSensor>
#  </sensor>
#  <sensor Channel="12" >
#    <!-- A/D voltage 6, User Polynomial -->
```

```
#    <UserPolynomialSensor SensorID="61" >
#      <SerialNumber>783</SerialNumber>
#      <CalibrationDate>28-Jul-2016</CalibrationDate>
#      <SensorName>SUNA</SensorName>
#      <A0>-6.80600000</A0>
#      <A1>24.79800000</A1>
#      <A2>0.00000000</A2>
#      <A3>0.00000000</A3>
#    </UserPolynomialSensor>
#  </sensor>
#  <sensor Channel="13" >
#    <!-- A/D voltage 7, Free -->
#  </sensor>
#  <sensor Channel="14" >
#    <!-- SPAR voltage, Unavailable -->
#  </sensor>
#  <sensor Channel="15" >
#    <!-- SPAR voltage, SPAR, Biospherical/Licor -->
#    <SPAR_Sensor SensorID="51" >
#      <SerialNumber>20190</SerialNumber>
#      <CalibrationDate>07-Feb-2018</CalibrationDate>
#      <ConversionUnits>1</ConversionUnits>
#      <ConversionFactor>1.5487e+003</ConversionFactor>
#      <RatioMultiplier>1.00000000</RatioMultiplier>
#    </SPAR_Sensor>
#  </sensor>
# </Sensors>
# datcnv_date = May 27 2018 21:10:02, 7.26.7.114 [datcnv_vars = 30]
# datcnv_in = D:\CTD\raw\614_003_03.hex D:\CTD\raw\614_003_03.XMLCON
# datcnv_skipover = 0
```

datcnv_ox_hysteresis_correction = yes
filter_date = May 27 2018 21:10:14, 7.26.7.114
filter_in = D:\CTD\proc\614_003_03.cnv
filter_low_pass_tc_A = 0.030
filter_low_pass_tc_B = 0.150
filter_low_pass_A_vars =
filter_low_pass_B_vars = prDM depSM
alignctd_date = May 27 2018 21:10:16, 7.26.7.114
alignctd_in = D:\CTD\proc\614_003_03.cnv
alignctd_adv = c1S/m 0.073, v4 4.000, sbeox0V 4.000, v5 4.000, sbeox1V 4.000
celltm_date = May 27 2018 21:10:18, 7.26.7.114
celltm_in = D:\CTD\proc\614_003_03.cnv
celltm_alpha = 0.0300, 0.0300
celltm_tau = 7.0000, 7.0000
celltm_temp_sensor_use_for_cond = primary, secondary
Derive_date = May 27 2018 21:10:19, 7.26.7.114 [derive_vars = 13]
Derive_in = D:\CTD\proc\614_003_03.cnv D:\CTD\proc\614_003_03.XMLCON
derive_time_window_docdt = seconds: 2
derive_ox_tau_correction = yes
derive_time_window_dzdt = seconds: 2
binavg_date = May 27 2018 21:10:23, 7.26.7.114
binavg_in = D:\CTD\proc\614_003_03.cnv
binavg_bintype = meters
binavg_binsize = 1
binavg_excl_bad_scans = yes
binavg_skipover = 0
binavg_omit = 0
binavg_min_scans_bin = 1
binavg_max_scans_bin = 2147483647
binavg_surface_bin = yes, min = 0.000, max = 0.000, value = 0.000

file_type = binary
END