Dropsonde Training Instructions (7-14-2020)

Download Aspen

1) Download and install the latest version of ASPEN from
   https://www.eol.ucar.edu/software/aspen
   As of May 2020, the correct version number is V3.4.4

   Download the following software for your OS from the website
   Mac: AspenV3.4.4-osx-mojave-installer
   Windows: AspenV3.4.4-Installer
   Linux: AspenV3.4.4_CentOS7.7.1908_x86_64.tar

   Install the software by double clicking on the application and following the prompts.
   If ASPEN requests a geographic data base use the pop-up window to browse to
   ASPENV3.4.4/Geodata/ne1to50msqlite

Set Up Aspen

1) Create a local folder where you will download Global Hawk GPS dropsonde D-Files for the current mission (e.g. YYYYMMDDgh)
   a) Create a sub directory called *dfiles* >> raw D-Files from the GH are downloaded here
   b) Create a 2nd sub directory called "*output*" >> Aspen output can be put here

2) Select the Configuration Set for Processing
   a) Aspen >> File >> Select Active Configuration Set 1 >> *Editsonde*

3) Under *Editsonde* >> select *Edit* >> Advanced Configuration Management window (these edits will only have to be made the 1st time Aspen is opened)
   a) QC Parameters
      - no changes needed
   b) Processing
      - fixed Data Source and Destination Directory >> select *Enabled*
      - Fixed Data Source and Destination Directory >> select *Change* >> select local directory for *dfiles* set up in step #1a
   c) WMO
      - Message Type >> *TEMP*
   d) Auto Save
      - Select >> *Auto Save Enable*
      - Change Auto Save Directory to desired directory to save Aspen's output data set up in step #1b
      - QC Output Formats >> Select >> *NOAA FRD (.frd), WMO BUFR (.bfr)*
      - Skewt Output Formats >> Select >> *PNG (.png)*
      - WMO Formats >> Select >> *Text (.txt)*
      - Summary Formats >> Select >> *Summary text (.txt)*

e) Synoptic Map
   - Geographical Database >> should default to the local directory where Aspen resides...e.g. Users/Jason/AspenV3.4.4/Geodata/ne1to50m.sqlite
   - Synoptic Map title >> enter the desire name of the map (e.g., Dorian YYYYMMDD)
   - Note: if this is the beginning of the flight >> before the 1st dropsonde is processed >> click the Earth icon in the main Aspen window >> if any old D-files appear on the right side of the panel >> select (check box) any old D-files in the listing on the right side of the panel and select >> Delete. This will remove any old drops in the listing.

f) Visual
   - XY Graph Scale Limits >> no changes needed (use the default *AutoScale* values)
   - Skew-T Graph Settings >> Temperature (degC) >> min=-80; max=40
     - For G-IV sondes: >> min=-70; max=1050
   - Skew-T Graph Settings >> Pressure (mb) >> min=50; max=1050
     - For G-IV sondes: >> min=150; max=1050
   - Keep all other Skew-T values set to their default values

Practice Dropsondes

1) 20140912 092710z
   - good drop
   - note typical fall rates of 10-12 m s^{-1} near surface

2) 20140912 095339z
   - good drop
   - note typical fall rates of 10-12 m s^{-1} near surface

3) 20130824 221217z
   - impressive Saharan Air Layer (SAL) sounding (~500-850 mb)
   - note the strong low level temperature inversion
   - note the low- to mid-level easterly jet in the SAL layer

4) 20130824 200857z: fastfall
   - here the parachute did not deploy correctly
   - note the very fast fall rates (dz/dt) at the top of the sounding
   - note the pendulum swing of the fall rate in the mid-level (parachute issue)
   - note the very fast fall rate at the surface (~20 m s^{-1})
   - for fastfalls, always flag speed and direction
   - for fastfalls, pressure, T, RH are usually ok, but double check that they look

5) 20140912 101754z: near surface speed ramp up anomaly
   - note the ramp up of several m/s at the near surface (GPS signal issue)
   - flag these winds from the inflection point to the surface (i.e. below 1006.6 mb)
   - this flagging needs to be done be done from the raw tab

6) 20140912 143108z: did not hit surface

- uncheck <hit surface> and select <Set Heights Missing> in the main tab and recompute sounding
- all other parameters look ok

7) 20140912 150818z: Not processed/corrupt D file
   - this dropsonde is corrupt and contains no data
   - do not send this ob to the NOAA NWS Gateway (i.e. do not email this ob)

8) 20110309 235444z (WISPAR): good drop (missed atmospheric river; near NW Pacific low)
   - strong surface winds: 41 kt
   - strong jet 250-525 mb: 135 kt at ~300 mb
   - as expected, the tropopause is lower than typical tropical soundings (~270 mb)

9) 20110309 234559z (WISPAR): good drop (nicked atmospheric river)
   - low level dry air/dry adiabatic lapse rate below 900 mb
   - possible atmospheric river: 80-90% RH 600-700 mb
   - surface temperature: 12.3 (54F); reasonable off the north CA coast (confirmed with SST analysis)

10) 20191027 130854z: G-IV Hurricane Lorenzo (Morgan's 1st dropsonde)
    - SAL drop (~620-860 mb)
      - as dry as 25-40% RH from 750-850 mb
      - ~DALR from 660-800 mb)
      - classic T inversion at SAL base (~860 mb) and top (~650 mb)
      - 21 kt ENE jet
    - Raw tab >> flagged last point (t=924.25s) >> 0 satellites, bad winds