Wirewalker Signature 1000 data is arranged in a structure called “ADCP”. This is a final, gridded product. Data is sorted into profiles and depth binned. Depths of individual ADCP measurements are corrected for the orientation of the ADCP; velocity measurements are motion corrected and rotated into an east-north-up frame before depth binning. The Signature 1000 ADCP has a ~20m range in good conditions, and the Wirewalker profiles at ~0.5m/s. This means that each depth bin is in view for ~40 seconds per profile. Most deployments use an upward looking ADCP, and only data from upcasts are saved.

Variables:

time: time in matlab date-time. Time is averaged over the full period during which the ADCP is retrning good velocity data for a given depth bin, generally ~40 seconds per profile. Units: days, Dimensions: depth-bins x profiles

depth: depth in meters. Units: meters, Dimensions: depth-bins x profiles

velE: East-West velocity. Not corrected for magnetic declination or buoy motion. Units: m/s, Dimensions: depth-bins x profiles.

velN: North-South velocity. Not corrected for magnetic declination or buoy motion. Units: m/s, Dimensions: depth-bins x profiles

velU: Up-Down velocity. Units: m/s, Dimensions: depth-bins x profiles

shearE: east-west shear calculated from raw signature 1000 profiles and then binned. Units: s^-1, Dimensions: depth-bins x profiles

shearN: north-south shear calculated from raw signature 1000 profiles and then binned. Units: s^-1, Dimensions: depth-bins x profiles

surf\_vel: surface velocity calculated from ADCP main lobe surface echo. Not well tested. It is likely that this data includes stokes drift. Units: m/s, Dimensions: direction x profiles

Nav.Burst\_WaterTemperature or Nav.Burst\_Temperature: One of these fields will be populated, depending on the name of the variable in the Nortek structure. Measure of water temperature averaged while the sensor itself is in a given depth range. Units: degrees C, Dimensions: 1 x profiles

Nav.Burst\_Heading: Nortek rotation about its z-axis. Averaged while the sensor itself is in a given depth range. Units: degrees, Dimensions: 1 x profiles

Nav.Burst\_Pitch: Nortek rotation about its y-axis. Averaged while the sensor itself is in a given depth range. Units: degrees, Dimensions: 1 x profiles

Nav.Burst\_Roll: Nortek rotation about its x-axis. Averaged while the sensor itself is in a given depth range. Units: degrees, Dimensions: 1 x profiles

amp: amplitude is corrected for transmission loss (TR = 10\*log10((2\*(r+dr/2)).^2)+2\*0.37\*(r+dr/2)) where r is the range from the sonar and dr is the cell size in the range dimension. Corrected amplitudes are binned. Units are dB corrected to 0 range. Units: dB, Dimensions: depth-bins x profiles x beam number.

amp\_var: standard deviation of corrected amplitude values within a depth bin. Units: dB, Dimensions: depth-bins x profiles x beam number.

velE\_var: standard deviation of east-west velocity within a depth bin. Units: m/s, Dimensions: depth-bins x profiles.

velN\_var: standard deviation of north-south velocity within a depth bin. Units: m/s, Dimensions: depth-bins x profiles.

velU\_var: standard deviation of up-down velocity within a depth bin. Units: m/s, Dimensions: depth-bins x profiles.

velE\_corr: East-west velocity corrected for the horizontal motion of the Wirewalker along a tilted profiling wire (“sail” correction). Not corrected for magnetic declination or buoy motion. Units: m/s, Dimensions: depth-bins x profiles.

velN\_corr: North-south velocity corrected for the horizontal motion of the Wirewalker along a tilted profiling wire (“sail” correction). Not corrected for magnetic declination or buoy motion. Units: m/s, Dimensions: depth-bins x profiles.