

DAISY Data Information

Data Files

Data File	Configuration	Flow Shield?	Tether Length	Tether Type	Hydrophone
MCRL_DAISS_66.mat	1	Yes	5 m	Rubber	HTI 99-UHF
MCRL_DAISS_67.mat	1	Yes	5 m	Rubber	HTI 99-UHF
MCRL_DAISS_68.mat	1	Yes	5 m	Rubber	HTI 99-UHF
MCRL_DAISS_69.mat	4	No	5 m	Rubber	icListen HF Reson
Admiralty_DAISS_1.mat	1	Yes	5 m	Rubber	HTI 99-UHF
Admiralty_DAISS_2.mat	2	No	5 m	Rubber	HTI 99-UHF
Admiralty_DAISS_3.mat ¹ Admiralty_DAISS_3_ADV.mat	3	No	5 m	Rubber	N/A - ADV
Admiralty_DAISS_4.mat	4	No	5 m	Rubber	icListen HF Reson
Admiralty_DAISS_5.mat	1	Yes	10 m	Rubber	HTI 99-UHF
Admiralty_DAISS_6.mat	2	No	10 m	Rubber	HTI 99-UHF
Admiralty_DAISS_7.mat ¹ Admiralty_DAISS_7_ADV.mat	3	No	10 m	Rubber	N/A - ADV
Admiralty_DAISS_8.mat	4	No	10 m	Rubber	icListen HF Reson
Admiralty_DAISS_9.mat	1	Yes	15 m	Rubber	HTI 99-UHF
Admiralty_DAISS_10.mat	2	No	15 m	Rubber	HTI 99-UHF
Admiralty_DAISS_11.mat ¹ Admiralty_DAISS_11_ADV.mat	3	No	15 m	Rubber	N/A - ADV
Admiralty_DAISS_12.mat	4	No	15 m	Rubber	icListen HF Reson
Admiralty_DAISS_13.mat	1	Yes	5 m	Rubber	HTI 99-UHF
Admiralty_DAISS_14.mat	1	Yes	5 m	Bare line	HTI 99-UHF
Admiralty_DAISS_15.mat	1	Yes	5 m	Faired line	HTI 99-UHF
Admiralty_DAISS_16.mat	1	Yes	10 m	Rubber	HTI 99-UHF
Admiralty_DAISS_17.mat	1	Yes	10 m	Bare line	HTI 99-UHF
Admiralty_DAISS_18.mat	1	Yes	10 m	Faired line	HTI 99-UHF
Admiralty_DAISS_19.mat	1	Yes	15 m	Rubber	HTI 99-UHF
Admiralty_DAISS_20.mat	1	Yes	15 m	Bare line	HTI 99-UHF
Admiralty_DAISS_21.mat	1	Yes	15 m	Faired line	HTI 99-UHF

¹Data file contains *pressure* and *lower_imu* data structures, but integrated from instrument housings on deck, not in the water. These values are meaningless and should be ignored.

- MCRL: quiescent comparisons performed in Sequim Bay adjacent to PNNL Marine and Coastal Research Laboratory
- Admiralty: energetic tests performed in Admiralty Inlet

Acoustic Data Files

All [site]_DAISY_[Drift #].mat files follow the same data conventions. Variables are summarized here.

acoustic_proc: acoustic processing parameters

- *V_range*: Voltage range (+/- VDC) for the DAISY hydrophone
- *f_range*: Minimum and maximum frequencies reported
- *cal_path*: Path for sensitivity data [*will be deprecated*]
- *settings*: acoustic processing settings (2)
 - *dt*: duration of each window for frequency-domain processing
 - *win_overlap*: fractional overlap of adjacent windows
 - *taper*: taper applied to each window
 - *settings(1)* contains processing for time-resolved spectrogram plots
 - *settings(2)* contains processing for frequency-resolved periodogram plots
- *f_trunc*: Maximum frequency to store during processing (blank indicates no limit)
- *Pref*: acoustic reference pressure squared ($1e-12 \text{ uPa}^2$)
- *resample_rate*: sample rate for embedded audio for playback

audio: resampled audio for playback purposes

- *time*: datetime (Nx1)
- *v*: voltage (Nx1)
- *fs*: sample rate (equal to *resample_rate*)

boat: position of survey vessel recorded by handheld GPS (if available)

- *time*: datetime (Nx1)
- *lat*: latitude (Nx1)
- *lon*: longitude (Nx1)
- *U*: vessel speed over ground (Nx1) [m/s]
- *cog*: vessel course over ground (Nx1) [degrees true]
- *PDOP*: GPS dilution of precision (Nx1) [not accurate]
- *HDOP*: GPS horizontal dilution of precision (Nx1) [not accurate]
- *x*: UTM easting (Nx1) [m]
- *y*: UTM northing (Nx1) [m]

GPS: DAISY position during drift – this is interpolated to acoustic time stamps

- *time*: datetime (Nx1)
- *lat*: latitude (Nx1)
- *lon*: longitude (Nx1)
- *U*: DAISY speed over ground (Nx1) [m/s]
- *cog*: vessel course over ground (Nx1) [degrees true]
- *U_uncertain*: uncertainty in DAISY speed over ground (Nx1) [not accurate]
- *HDOP*: GPS horizontal dilution of precision (Nx1) [not accurate]
- *x*: UTM easting (Nx1) [m]
- *y*: UTM northing (Nx1) [m]

lower_imu: inertial measurement unit co-located with hydrophone

- *time*: datetime (Nx1)
- *roll*: roll angle (Nx1) [degrees]

- *pitch*: pitch angle (Nx1) [degrees]
- *heading*: yaw angle (Nx1) [degrees]
- *acceleration* (Nx3) [m/s²]
- *magnetometer* (Nx3) [radians?]
- *gyroscope* (Nx3) [radians?]

upper_imu: inertial measurement unit on surface expression

met: Airmar meteorological station on surface expression (if available)

- *time*: datetime (Nx1)
- *lat*: latitude (Nx1)
- *lon*: longitude (Nx1)
- *x*: UTM easting (Nx1) [m]
- *y*: UTM northing (Nx1) [m]
- *airpres*: air pressure (Nx1) [kPa]
- *airtemp*: air temperature (Nx1) [°C]
- *winddir*: wind direction (Nx1) [degrees true]
- *windspd*: wind speed (Nx1) [m/s]
- *roll*: roll angle (Nx1) [degrees]
- *pitch*: pitch angle (Nx1) [degrees]
- *sog*: speed over ground (Nx1) [m/s]
- *cog*: course over ground (Nx1) [m/s]

pressure: pressure logger co-located with hydrophone

- *time*: datetime (Nx1)
- *p*: pressure (Nx1) [kPa]
- *T*: temperature (Nx1) [°C]
- *z*: depth corrected for pressure sensor drift (Nx1) [m]
- *z_rough*: uncorrected depth (Nx1) [m]

spectra: processed acoustic data – each element corresponds to the settings in *acoustic_proc.settings*

- *time*: datetime (Nx1)
- *f*: frequency (Mx1) [Hz]
- *Ppp*: mean-square sound pressure spectral density (MxN) [μPa²/Hz]
 - Pressure spectral density: $10\log_{10}(Ppp/Pref)$ [dB re 1 μPa²/Hz]
- *x*: georeferenced UTM easting (Nx1) [m]
- *y*: georeferenced UTM northing (Nx1) [m]
- *t_end*: end of drift [datetime]

t_end: end of drift [datetime]

t_start: start of drift [datetime]

Velocity Data Files

All [site]_DAISY_[Drift #]_ADV.mat files follow the same data conventions. All variables are packaged in the *ADV* structure.

- *time*: datetime (Nx1)
- *rvel*: relative velocity in ADV instrument coordinates (x,y,z) (Nx3) [m/s]

- *amp*: beam amplitude (Nx3) [counts]
- *snr*: beam signal-to-noise ratio (Nx3) [~]
- *corr*: beam correlation (Nx3) [counts]
- *p*: pressure (Nx1) [dBar]
- *accel*: acceleration (Nx3) [m/s²]
- *ang*: angular velocity (Nx3) [deg/s]
- *mag*: magnetometer (Nx3) [deg?]
- *orient_XX*: orientation vector (Nx3) [quaternions?]
- *fs*: sample rate
- *magvel*: velocity magnitude (vector sum) (Nx1) [m/s]
- *spectra*: horizontal and vertical velocity spectra
- *mean*: mean relative velocity in ADV instrument coordinates (u,v,w) (1x3) [m/s]