

The data set for Engelstad et al., "Sand suspension and transport during barrier island inundation" is organised as follows:

General:

All data is available both as .txt and .mat files.

The data for each flooding encompasses 5 hours starting 2.5 hours before high tide and ending 2.5 hours after high tide. However, some floodings were substantially shorter. When data is unavailable, NaN is used.

Files contain time-stamps and headers (or variable names in case of .mat files) as described below:

u - fitted, depth-averaged cross-shore velocity [m/s]
v - fitted, depth-averaged alongshore velocity [m/s]
u_mean - time averaged u [m/s]
v_mean - time averaged v [m/s]
c - fitted, depth-integrated sand concentration [kg/m²]
C - time averaged c [kg/m²]
h - water depth [m]
zPT - height of pressure transducer above the bottom [m]
Hs_HF - short wave heights [m]
Hs_LF - long wave heights [m]
AsymLF - infragravity-wave asymmetry
Tm10 - mean wave period [s]
shields - instantaneous Shields number
sh_c - Shields number related to the magnitude of the flow
sh_short - Shields number related to the infragravity waves
sh_ig - Shields number related to the short waves.
Qu - cross-shore component of time-averaged, depth integrated sand transport rate [kg/m²*m/s]
Qv - alongshore component of time-averaged, depth integrated sand transport rate [kg/m²*m/s]
Qc/Qall, Qig/Qall, Qshort/Qall - the relative contributions of the mean flow transport(Qc), the infragravity-wave transport (Qig) and the short wave transport (Qshort) to the sum of all (absolute) contributions (Qall).
northing - profile coordinate [m]
z - profile height [m]

times of floodings:

Flooding 1 - 12/26/16 18:00 - 12/27/16 23:00
Flooding 2 - 12/27/16 05:30 - 12/27/16 10:30
Flooding 3 - 01/03/17 23:15 - 01/04/17 04:15
Flooding 4 - 01/04/17 10:45 - 01/04/17 15:45
Flooding 5 - 01/13/17 20:00 - 01/14/17 01:00

Instrument names and locations can be found in "InstrumentLocations". The initial and final profiles of the instrument transect at the beginning and end of the field campaign are located in "ProfileInitial" and "ProfileFinal".

Time-series:

- u, v, and c are available for 5 floodings, where each flooding is located in a separate file. Filenames are "vel_timeseries_Flood#",

or "c_timeseries_Flood#", for velocities and sand concentrations, respectively.

- instantaneous Shields numbers for all floodings can be found in a single file: "ShieldsNumber_timeseries".
- The sampling frequency was 4 Hz.

15-minute block averages:

- h, zPT, Hs_HF, Hs_LF and Tm10 from pressure sensors P2 are available in "Variables_P2"
- h, u_mean, v_mean, C, AsymLF at the frame are in file "Variables_Frame "

The normalised cumulative transport can be found in "CumulativeTransp" where each row contains 15 minutes of the cumulative transport at the start of each flooding (F*_st), at high tide (F*_HT) and at the end (F*_end) where the * is the number for the floodings. In the .mat files, this is saved as a structure F(*). Here no time-stamp is used.