

# Metadata for *Wave-driven mean flow dynamics in submerged canopies*

van Rooijen et al., submitted to JGR-Oceans

**Table 1.** General information.

<b>Title of dataset</b>	Wave-driven mean flow dynamics in submerged canopies
<b>URL of dataset</b>	<a href="https://cloudstor.aarnet.edu.au/plus/s/mnEaUvrhwhJn3RW">https://cloudstor.aarnet.edu.au/plus/s/mnEaUvrhwhJn3RW</a>
<b>Abstract</b>	This study uses a combination of physical experiments and numerical modeling to study mean flows generated by waves propagating over submerged vegetation canopies. The dataset includes both the experimental data and the model input files.
<b>Keywords</b>	Aquatic vegetation, waves, wave-vegetation interaction, drag force
<b>Lead author for the dataset</b>	Arnold van Rooijen
<b>Title and position of lead author</b>	PhD Candidate
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<b>Additional authors or contributors to the dataset</b>	Ryan Lowe, Dirk Rijnsdorp, Marco Ghisalberti, Niels Jacobsen, Robert McCall
<b>Organization associated with the data</b>	University of Western Australia
<b>License</b>	This data will become publicly available and free to use. It will be placed on the publicly available University of Western Australia research repository ( <a href="https://research-repository.uwa.edu.au/">https://research-repository.uwa.edu.au/</a> ) after acceptance of the manuscript.
<b>Geographic location – verbal description</b>	The data was collected in a wave tank located in the Hydraulics Laboratory of the University of Western Australia (Crawley campus)
<b>General study design</b>	A laboratory and numerical study to investigate mean flows generated by wave propagating over submerged vegetation canopies.
<b>Methods description</b>	Please refer to the methods description in the manuscript.

**Table 2.** Experimental data

<b>Dataset filename</b>	<b>Dataset description</b>
ProcessedVelocityData.csv	Csv-file with processed mean and root-mean-square velocity data (as presented in Figure 4 in the manuscript).
r01-075-2-020_dq.nc	Netcdf-file with raw experimental data for case R1. See overview of parameters in next table.
r02-075-3-010_dq.nc	Netcdf-file with raw experimental data for case R2. See overview of parameters in next table.
r03-075-3-020_dq.nc	Netcdf-file with raw experimental data for case R3. See overview of parameters in next table.

r04-075-4-020_dq.nc	Netcdf-file with raw experimental data for case R4. See overview of parameters in next table.
r05-075-5-010_dq.nc	Netcdf-file with raw experimental data for case R5. See overview of parameters in next table.
r06-075-5-020_dq.nc	Netcdf-file with raw experimental data for case R6. See overview of parameters in next table.

Column name	Description	Units	Instrument used	Missing data
time	time	s	-	NaN
x	horizontal position of WG along wave tank	m	WG	NaN
z	vertical position of ADV at mid-canopy	m	ADV	NaN
velcom	velocity component	m/s	ADV	NaN
timep	time axis for pressure gauge	s	PG	NaN
xpres	horizontal distance along wave tank for pressure gauge	m	PG	NaN
et0_x	initial water level along wave tank	m	WG	NaN
eta_x	instantaneous water level along wave tank	m	WG	NaN
u_x	u-velocity at mid-depth along wave tank	m/s	ADV	NaN
v_x	v-velocity at mid-depth along wave tank	m/s	ADV	NaN
w_x	w-velocity at mid-depth along wave tank	m/s	ADV	NaN
w2_x	w-velocity (alternative) at mid-depth along wave tank	m/s	ADV	NaN
snr_x	Signal-to-noise-ratio for measurements along tank	-	ADV	NaN
ss_x	Signal strength for measurements along tank	-	ADV	NaN
cor_x	Correlation for measurements along tank	-	ADV	NaN
u_z	u-velocity over depth at mid-canopy	m/s	ADV	NaN
v_z	v-velocity over depth at mid-canopy	m/s	ADV	NaN
w_z	w-velocity over depth at mid-canopy	m/s	ADV	NaN
w2_z	w-velocity (alternative) over depth at mid-canopy	m/s	ADV	NaN
snr_z	Signal-to-noise-ratio for profile measurements	-	ADV	NaN
ss_z	Signal strength for profile measurements	-	ADV	NaN
cor_z	Correlation for profile measurements	-	ADV	NaN
u_z_sync	u-velocity over depth at mid-canopy (synchronized)	m/s	ADV	NaN
v_z_sync	v-velocity over depth at mid-canopy (synchronized)	m/s	ADV	NaN
w_z_sync	w-velocity over depth at mid-canopy (synchronized)	m/s	ADV	NaN
w2_z_sync	w-velocity (alt.) over depth at mid-canopy (sync.)	m/s	ADV	NaN
eta_z_sync	water level at mid-canopy (synchronized)	m	WG	NaN
pres	water pressure along wave tank		PG	NaN
pres0	initial water pressure along wave tank		PG	NaN

**Table 3.** Numerical model data

The numerical simulations in this study were performed with the open-source SWASH model (version 5.01), which is publicly available via <http://swash.sourceforge.net/>. Please refer to Table 1 in the manuscript for an overview of the different simulation cases.

<b>Dataset filename</b>	<b>Dataset description</b>
MainSimulations.zip	This zip-file contains all model input files for the main simulations with SWASH as described in the manuscript.
SupportingSimulations.zip	This zip-file contains all model input files for the simulations with SWASH as described in the supporting information.