Metadata Type	**Details**
Dataset name	Replication Data for: Ecological consequences of invasion across the freshwater-marine transition in a warming world
Basic description of dataset	This data set contains incubations with sediment cores to assess the sediment reworking and nutrient release from sediment to the water column, mediated by different sizes of the invasive species Corbicula fluminea, along the freshwater-marine transition
Staff responsible	Daniel Crespo; Martin Solan; Sara Leston; Miguel Pardal; Marina Dolbeth
Locations of collection of sediment and individuals	Mondego Estuary, Portugal (40° 9'47.91"N, 8°40'12.42"W)
Location descriptions	Sediment and individuals of *Corbicula fluminea* were collected in the oligohaline upper reaches of the Mondego Estuary, Portugal from a tidally influenced location. Sediment was characterized by 38.7% gravel, 58.9% sand and 2.5% mud, 0.4 ± 0.2 % organic matter content, loss on ignition at 400ºC, 8h. The experimental proceedings took place in the Department of Life Sciences of the University of Coimbra, Portugal.
Monitoring / sampling rate of observations	The observations were made in the sixth day of the experimental procedures.
Names of the variables or parameters observed or simulated	FIXED FACTORS temp: temperature level (ºC); 24, 30 salinity: salinity level (PSU); 0, 5 bodysize: size class of *C. fluminea* (nominal); control =0, small=1, medium=2 , large=3 ENVIRONMENTAL VARIABLES *Particle reworking* Surface boundary roughness (cm) Mean mixed depth of particle redistribution (cm) Median mixed depth of particle redistribution (cm) Maximum mixed depth of particle redistribution (cm) *Nutrients concentration* NH_3-N concentration (mg L^{-1}) NO_2-N concentration (mg L^{-1}) NO_2-N concentration (mg L^{-1}) PO_4-P concentration (mg L^{-1})
All procedures used to make	A laboratorial experiment included all possible permutations

observations or simulations (field/lab where applicable)	of three different size classes of *Corbicula fluminea*, with fixed biomass achieved through density adjustment (18.79 ± 0.94 g aquaria^{-1} wet biomass: small, measuring <1cm, ~1 year old, 13 ind. aquaria-1 (= 902 ind m^{-2}); medium 2-2.5 cm, ~ 2 years old, 2 ind. aquaria-1 (= 138 ind. m^{-2}); large > 3 cm, > 3 years old, 1 ind. aquaria-1 (= 69 ind m^{-2}) at levels representative of the population at study site. These size classes were crossed with two levels of salinity (freshwater, 0, and oligohaline, 5) and two levels of temperature (24ºC and 30ºC) in glass aquaria (12 x 12 x 35 cm, internal dimensions). Each aquaria contained sediment ~10 cm depth overlain with water to 30 cm depth. All aquaria were continually aerated and maintained under natural daylight conditions. The extent of particle reworking by the activity of macrofaunal organisms was measured non-invasively using fluorescent sediment profile imaging (^{f}SPI) Water column nutrient concentrations (NH_3-N, NO_2-N, NO_3-N, PO_4-P) as well information on particle reworking (mean (Lummean), median (Lummedian) and maximum (Lummax) mixed depth of particle redistribution, and surface boundary roughness (SBR)) were assessed.
Calibration procedures, where applicable	NA
Statistical treatment of the observations or simulations	NA
Data checking procedures (quality control)	NA
File formats used	.csv
Other information	NA

Dataset Field descriptions		
Header	**Description**	**Cell Format**
mesocosm	Nominal number, mesocosm unique identifier.	Number
temp	Temperature level 24^{o}C (24)	Number
	Temperature level 30^{o}C (30)	Number
salinity	Salinity level 0 (0)	Number
	Salinity level 5 (5)	Number
bodysize	Control (no fauna) (0)	Number

	Corbicula fluminea bodysize small (1)	Number
	Corbicula fluminea bodysize medium (2)	Number
	Corbicula fluminea bodysize large (3)	Number
replicate	Replicate number (1-3)	Number
SBR	surface boundary roughness (cm)	Number
Lummean	Mean mixed depth of particle redistribution (cm)	Number
Lummedian	Median mixed depth of particle redistribution (cm)	Number
Lummax	Maximum mixed depth of particle redistribution (cm)	Number
NH3	NH_3-N concentration (mg L^{-1})	Number
NO2	NO_2-N concentration (mg L^{-1})	Number
NO3	NO_3-N concentration (mg L^{-1})	Number
PO4	PO_4-P concentration (mg L^{-1})	Number