Model	Requirement	Usage scope	Applied area
C-GEM 1D, daily - seasonal	Simplified hydro-geometrical characteristics, tidal period; biogeochemical reactions	Biogeochemical dynamics in estuaries. Reduces data requirements by using an idealized representation of the estuarine geometry.	Scheldt estuary (Volta et al., 2014, 2016)
CONTRASTE 1D, daily - seasonal	Bathymetrical maps, Hydrodynamic description in detail in upstream, tidal forcings. Biogeochemical reactions	The time series of nutrient transformations and fluxes along the estuary–coastal zone	Scheldt estuary (Regnier et al., 1997, 1999)
MOSES 1D, yearly	Biogeochemical, pelagic, reactive- transport model	Fate and turnover of nutrients entering the estuary; and fluxes in the estuary	Scheldt estuary (Hofmann et al., 2008)
HEM-3D daily - seasonal	Detail bathymetry. Hourly tide, daily discharge. Meteorological data. Water quality	Nutrient dynamics (21 state variables), algal groups, fecal coliform bacteria	Kwang-Yang Bay (Park et al., 1995, 2005)
ELCOM-CAEDYM 3D, daily - seasonal	Detail bathymetry, meteorological data, tidal elevation, Water quality	Nutrient dynamics, phytoplankton bloom, phytoplankton species	Mozambique coast (Miguel et al., 2018)
MOHID 3D, daily - yearly	Detail bathymetry, Hourly tide, daily discharge upstream, Atmosphere, Water quality, Algal species	Mainly Phytoplankton and macroalgae, zooplankton dynamics	Vouga Estuary (Trancoso et al., 2005)
MIKE 1-3D + water quality module	Detail bathymetry, hourly tide, daily discharge upstream and tributaries. Water quality	Depend on water quality module, for instance, nutrients dynamics and diatom development.	Scheldt estuary (Arndt et al., 2009, 2011)
Delft3D + GEM/water quality module	Detail bathymetry, hourly tide, daily discharge upstream and tributaries. Water quality	Describes the behavior of nutrients, organic matter, and primary producers in estuaries	Dutch coastal waters Blauw et al., 2008