eReefs Hydrodynamic model

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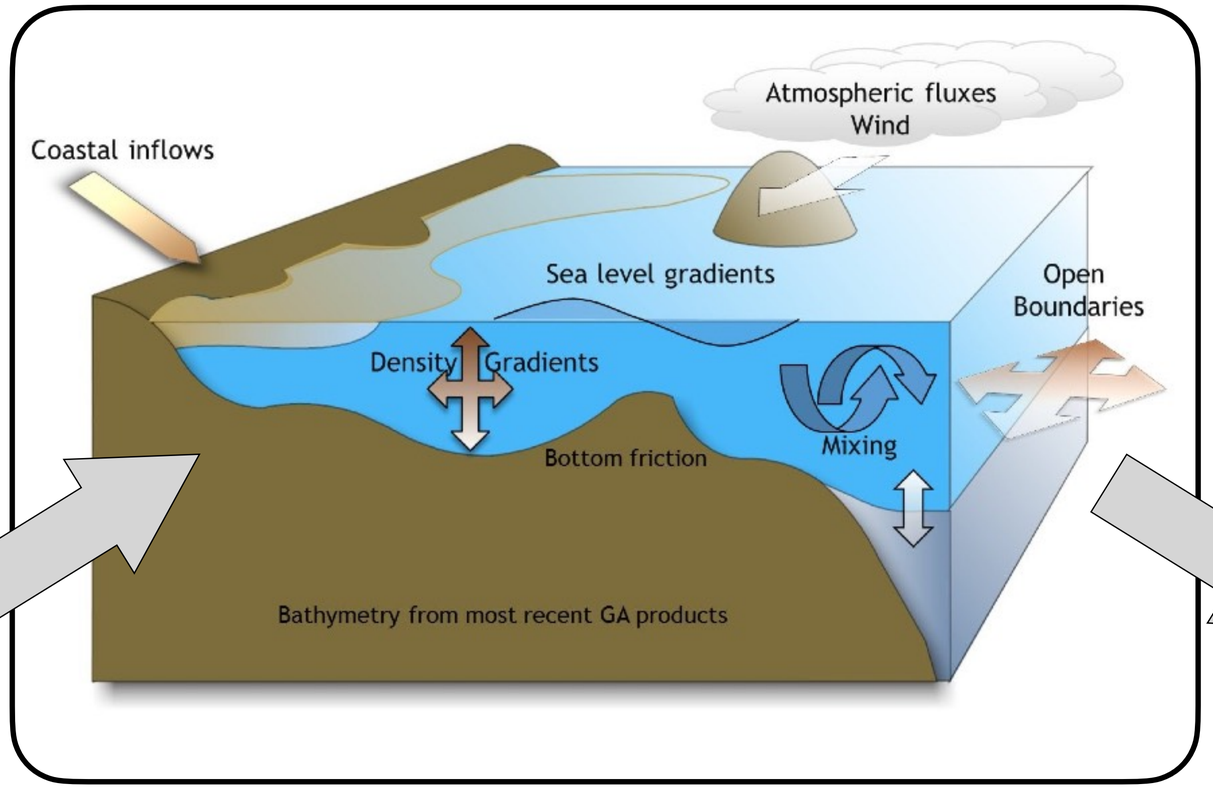
SHOC — Sparse Hydrodynamic Ocean Code

Forcing (*inputs*)

- wind,
- atmospheric pressure gradients,
- surface heat and water fluxes and
- open-boundary conditions such as tides and low frequency ocean currents.



Schematic representation of major forcing inputs for the SHOC hydrodynamic model

4D *Outputs*

- velocity,
- temperature,
- salinity,
- density,
- passive tracers,
- mixing coefficients &
- sea-level.

4D Outputs: x-y-z-t

eReefs BioGeoChemical model

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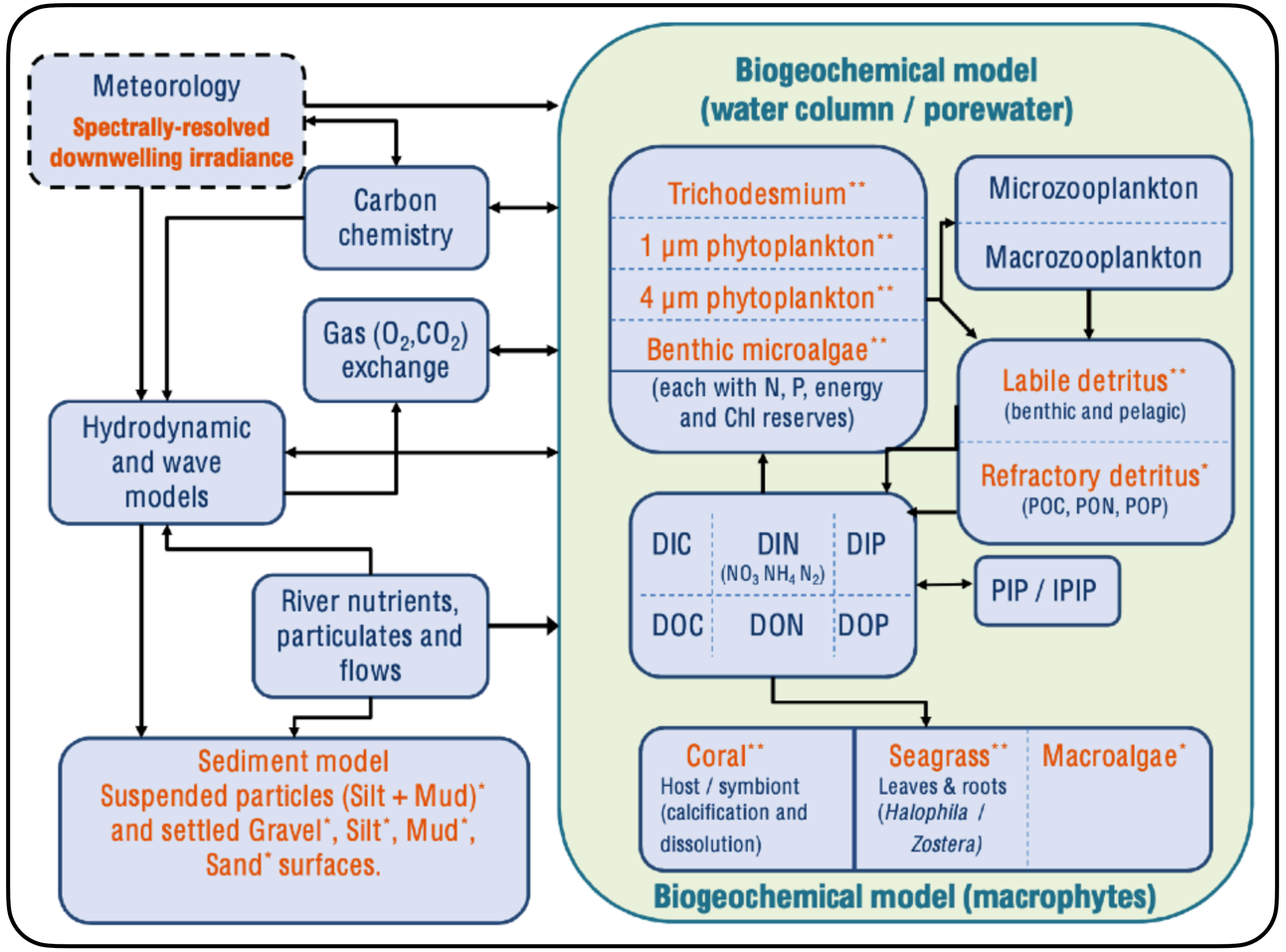
The GBR4 BioGeoChemical (GBR) model builds on the GBR4 hydrodynamic model by modelling the water quality (nutrients and suspended sediment) and key ecological processes (coral, seagrass, plankton) that drive the water chemistry.

We will be using the **version 3.1** of the BioGeoChemical (BGC) model.

Version 3.1 of the BGC was developed to compare the effects of land practice improvements on water quality changes in the Great Barrier Reef. It was run with three scenarios of river sediment and nutrient loads to simulate the differences between:

- **baseline** conditions (based on current land use practices in 2019),
- **pre-industrial catchment** conditions, and
- **target catchment** conditions (anthropogenic loads reduced according to the percentage reductions of DIN, PN, PP and TSS specified in the Reef 2050 Water Quality Improvement Plan 2017-2022).



Schematic diagram of the ecological model compartments, links and vertical layers