

## Seasonal variation of export ratio in the Arabian Sea predicted by an ecosystem-circulation model with particle aggregation

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Seasonal variation of export ratio (e-ratio) in the Arabian Sea is investigated using a three-dimensional, ecosystem-circulation coupled model with an eddy-permitting resolution, in which particle sinking velocity is computed as a dependent variable by a particle aggregation sub-model. The model shows the sudden increase of e-ratio in late southwestern monsoon season that has been indicated in the <sup>234</sup>Th data compiled by Buesseler (1998).

The cause of the time lag in the model between the onsets of monsoon and the e-ratio increase is that a certain time is required before the nitracline is lifted up to supply enough nitrate to the surface.

The pattern of e-ratio is totally changed in an experiment with a constant sinking velocity. An unrealistic process turns out to be critical for e-ratio in this experiment, illustrating advantage of a model with aggregation process over those with the traditional prescription of particle sinking.