

Review on Demuynck et al.: Spatial Variations in Silicate-to-Nitrate Ratios in the Southern Ocean Surface Waters are Controlled in the Short Term by Physics Rather Than Biology (version 11/2019)

Demuynck et al. simulate the nutrient concentrations (nitrate and silicic acid, or N and Si for short) in the mixed layer (ML) with a box model that allows for spatial resolution in the meridional direction. They responded to my criticisms by detailed comments and various changes in the text. The authors mention various limitations of their model (especially the restriction to short time scales and the unresolved processes responsible for the lower boundary conditions) allowing the reader to interpret model results appropriately ('Essentially, all models are wrong, some are useful', George Box).

Detailed comments:

p.3 '... for the species *Actinocyclus* and 3:1 for the species *Thalassiosira* ...' *Actinocyclus* is a genus (same for *Thalassiosira*); if only the genus name is known you may use '*Actinocyclus* sp.' for an unknown species of genus *Actinocyclus*

Figure 3 may give the false impression that all boxes have the same size

p.7 '... because our starting base for advection is flow and not velocity of the water ...' -> '... because our starting base for advection is volume transport and not velocity ...'

p.18 '...8 $\mu\text{mol m}^{-3}$, which is within the range of measured values (12-27 $\mu\text{mol m}^{-3}$...' 8 is outside the range 12-27

p.22 Negative advection???

p.22 'Fig. (b)' add number

p.23 drop '(?)'