

Model component	Improvements or relevant properties	Time step
Circulation (OPA)	prescribed forcing (off-line physics) (e.g. used by Arsouze et al., 2009)	6.0h
Biogenic particles	prognostically integrated by PISCES (Aumont et al., 2015)	1.5h
- POC	two size classes settling with $w_s = 2 \text{ md}^{-1}$ and $w_b = 50 \text{ md}^{-1}$; variable reactivity (Aumont et al., 2017)	
- CaCO ₃	one size class settling with $w_b = 50 \text{ md}^{-1}$; higher-order dissolution (e.g. Subhas et al., 2015)	
- bSiO ₂	one size class settling with $w_b = 50 \text{ md}^{-1}$; no changes	
Lithogenic particles	based on forcing of dust deposition; two size classes settling with $w_s = 2 \text{ md}^{-1}$ and $w_b = 50 \text{ md}^{-1}$	1.5h
Radionuclide model	six prognostic tracers (dissolved, small and big adsorbed; ²³¹ Pa and ²³⁰ Th)	6.0h