

Model component	Improvements or relevant properties	Time step
Circulation (OPA)	prescribed forcing (off-line physics) (e.g. used by Arsouze et al., 2009)	6.0 h
Biogenic particles	prognostically integrated by PISCES (Aumont et al., 2015)	1.5 h
– POC	two size classes settling with $w_s = 2 \text{ m d}^{-1}$ and $w_b = 50 \text{ m d}^{-1}$; variable reactivity (Aumont et al., 2017)	
– CaCO_3	one size class settling with $w_b = 50 \text{ m d}^{-1}$; higher-order dissolution (e.g. Subhas et al., 2015)	
– bSiO_2	one size class settling with $w_b = 50 \text{ m d}^{-1}$; no changes	
Lithogenic particles	based on forcing of dust deposition; two size classes settling with $w_s = 2 \text{ m d}^{-1}$ and $w_b = 50 \text{ m d}^{-1}$	1.5 h
Radionuclide model	six prognostic tracers (dissolved, small and big adsorbed; ^{231}Pa and ^{230}Th)	6.0 h