

Boundary	Condition		
$z = 0$	Known concentration	(1)	$\text{DIC}(0) = \text{DIC}_0$
$z = z_{\text{bio}}$	Continuity	(2)	$\text{DIC}(z_{\text{bio}}^-) = \text{DIC}(z_{\text{bio}}^+)$
	Flux	(3)	$-(D_{\text{DIC},0} + D_{\text{bio}}) \cdot \frac{\partial \text{DIC}}{\partial z} \Big _{z_{\text{bio}}^-} = -D_{\text{DIC},0} \cdot \frac{\partial \text{DIC}}{\partial z} \Big _{z_{\text{bio}}^+}$
$z = z_{\text{SO}_4}$	Continuity	(4)	$\text{DIC}(z_{\text{SO}_4}^-) = \text{DIC}(z_{\text{SO}_4}^+)$
	Flux (with AOM)	(5)	$-D_{\text{DIC}} \cdot \frac{\partial \text{DIC}}{\partial z} \Big _{z_{\text{SO}_4}^-} + \gamma_{\text{CH}_4} \cdot F_{\text{CH}_4}(z_{\text{SO}_4}) = -D_{\text{DIC}} \cdot \frac{\partial \text{DIC}}{\partial z} \Big _{z_{\text{SO}_4}^+}$
	where		$F_{\text{CH}_4}(z_{\text{SO}_4}) = \frac{1-\phi}{\phi} \cdot \int_{z_{\text{SO}_4}}^{z_{\text{max}}} \sum_i \text{MC} \cdot k_i \cdot \text{POC}_i \, dz$
$z = z_{\text{max}}$	Zero DIC flux	(6)	$\frac{\partial \text{DIC}}{\partial z} \Big _{z_{\text{max}}} = 0$