

**(a)**

Year	Time period (June to June)	h (m)	Annual oxygen mass balance (mol O <sub>2</sub> m <sup>-2</sup> yr <sup>-1</sup> )							ANCP = $J_{\text{NCP}}/1.45$ (mol C m <sup>-2</sup> yr <sup>-1</sup> )	ANCP <sub>mixed layer</sub> (mol C m <sup>-2</sup> yr <sup>-1</sup> )
			$dh[\text{O}_2]/dt = F_{\text{A-W}} + F_{\text{E}} + F_{\text{Kz}} + F_{\text{V}} + J_{\text{NCP}}$								
			$dh[\text{O}_2]/dt$	$F_{\text{A-W}} = F_{\text{s}} + F_{\text{b}}$	$F_{\text{E}}$	$F_{\text{Kz}}$	$F_{\text{V}}$	$J_{\text{NCP}}$			
1	2012–2013	91	-0.7	-2.9	0	-0.6	-0.6	3.5	$2.4 \pm 0.6$	3.4	
2	2013–2014	111	-1.3	-1.5	0	-0.8	-0.2	1.2	$0.8 \pm 0.4$	1.3	
3	2014–2015	95	-0.6	-1.7	0	-0.9	-1.0	3.0	$2.1 \pm 0.4$	2.3	
4	2015–2016	103	0.8	-0.1	0	-0.7	-0.3	2.3	$1.6 \pm 0.4$	2.3	

**(b)**

Year	Time period (June to June)	h (m)	Annual DIC mass balance (mol C m <sup>-2</sup> yr <sup>-1</sup> )							ANCP = $-J_{\text{NCP}}$ (mol C m <sup>-2</sup> yr <sup>-1</sup> )
			$dh[\text{DIC}]/dt = F_{\text{A-W}} + F_{\text{E}} + F_{\text{Kz}} + F_{\text{V}} + J_{\text{NCP}}$							
			$dh[\text{DIC}]/dt$	$F_{\text{A-W}}$	$F_{\text{E}}$	$F_{\text{Kz}}$	$F_{\text{V}}$	$J_{\text{NCP}}$		
1	2012–2013	91	-0.2	1.0	0	0.7	0.1	-2.0	2.0	
2	2013–2014	111	-0.1	1.5	0	0.4	0.1	-2.1	2.1	
3	2014–2015	95	0.05	2.0	0	0.5	0.1	-2.6	2.6	
4	2015–2016	103	-0.04	2.0	0	0.9	0.1	-3.0	3.0	