



Supplement of

Natural marine bromoform emissions in the fully coupled ocean–atmosphere model NorESM2

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9 Equations for MLR calculations were as follows with coefficients *a*, *b*, *c*, *d*, *e*, *f*, CHBr₃ production (*Bromo_{prod}*),
10 *Bromo_{oce}*, *Bromo_{air}* and *Bromo_{flux}*, as well as the 10 m surface wind speed (*wind*) and sea surface temperature (*SST*):

$$Bromo_{oce} = a * SST + b * wind + c * Bromo_{prod} + d * Bromo_{flux} + e * Bromo_{air} + f \quad (S1)$$

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$$Bromo_{flux} = a * SST + b * wind + c * Bromo_{prod} + d * Bromo_{oce} + e * Bromo_{air} + f \quad (S2)$$

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$$Bromo_{air} = a * SST + b * wind + c * Bromo_{prod} + d * Bromo_{flux} + e * Bromo_{oce} + f \quad (S3)$$

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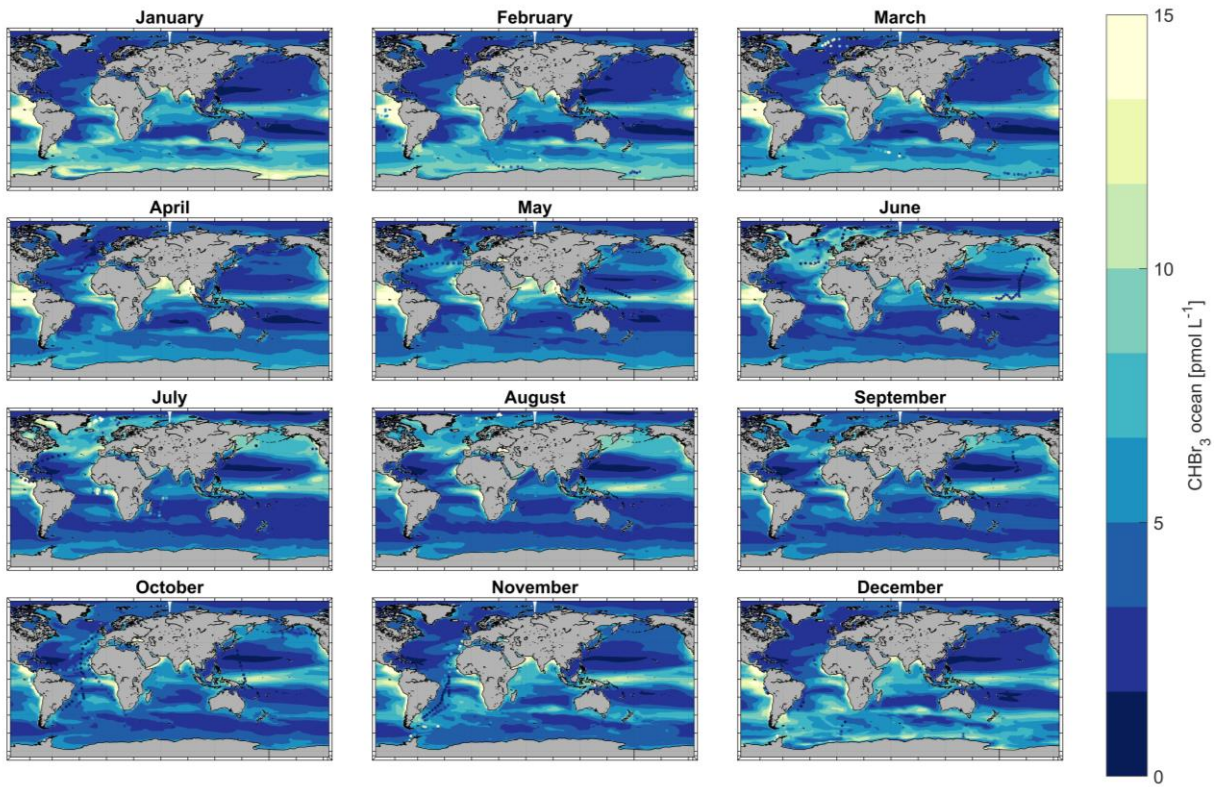
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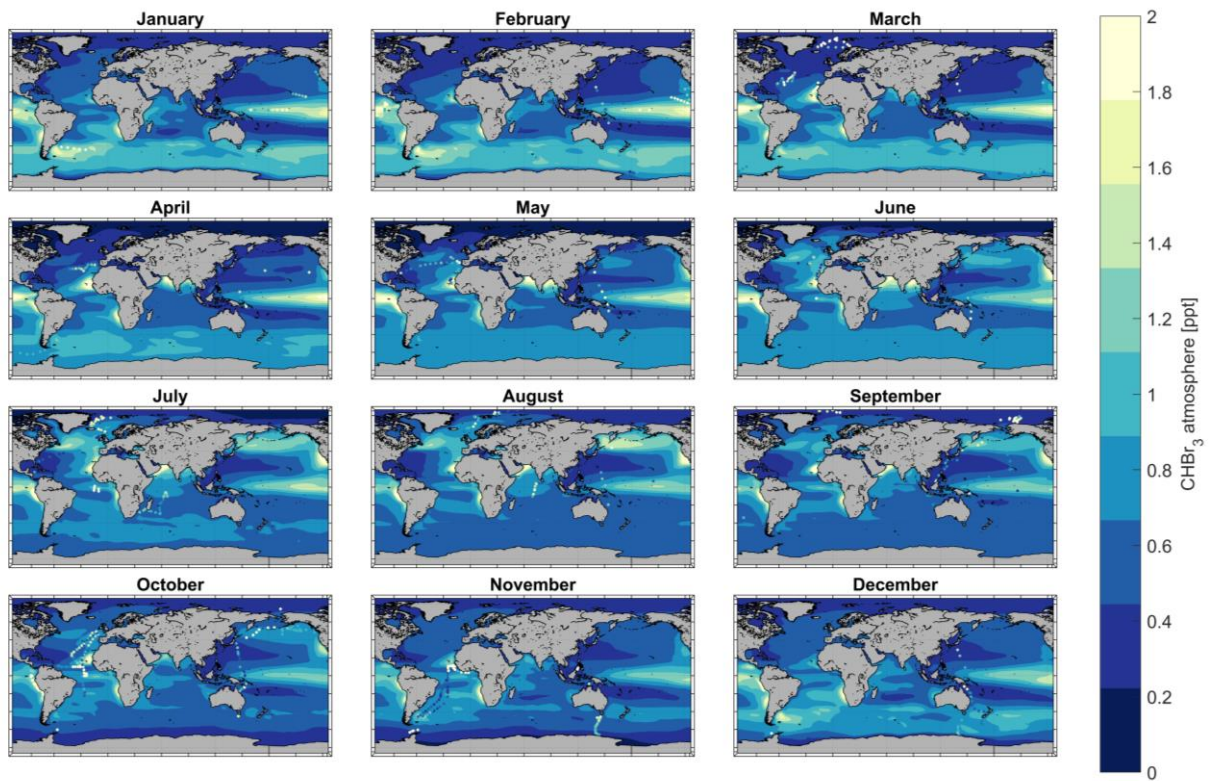
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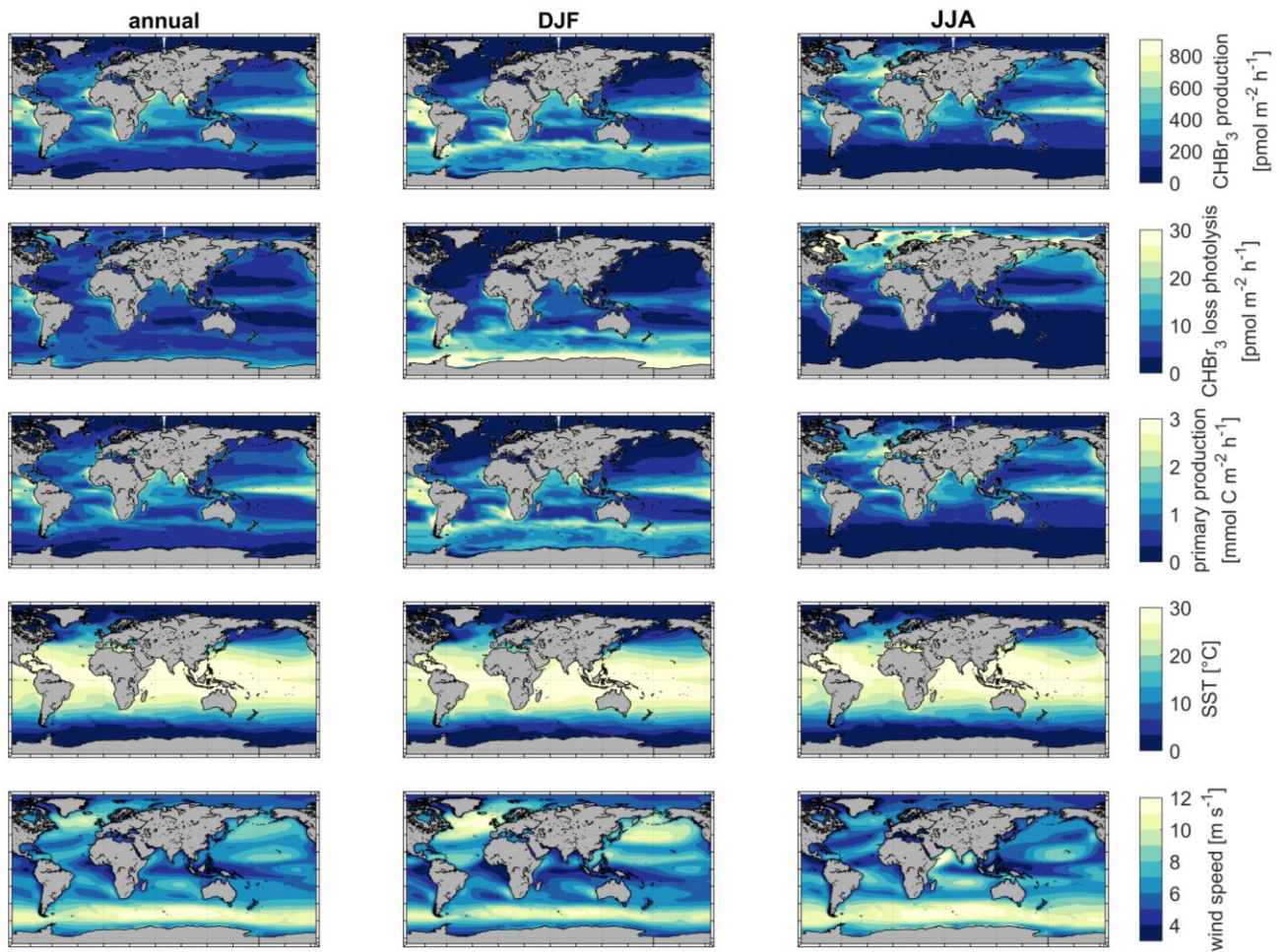
21 **Figure S1: Monthly resolved daily mean oceanic bromoform concentrations from HalOcat on top of**
 22 **monthly mean oceanic bromoform data (1990-2014) from NorESM2.**

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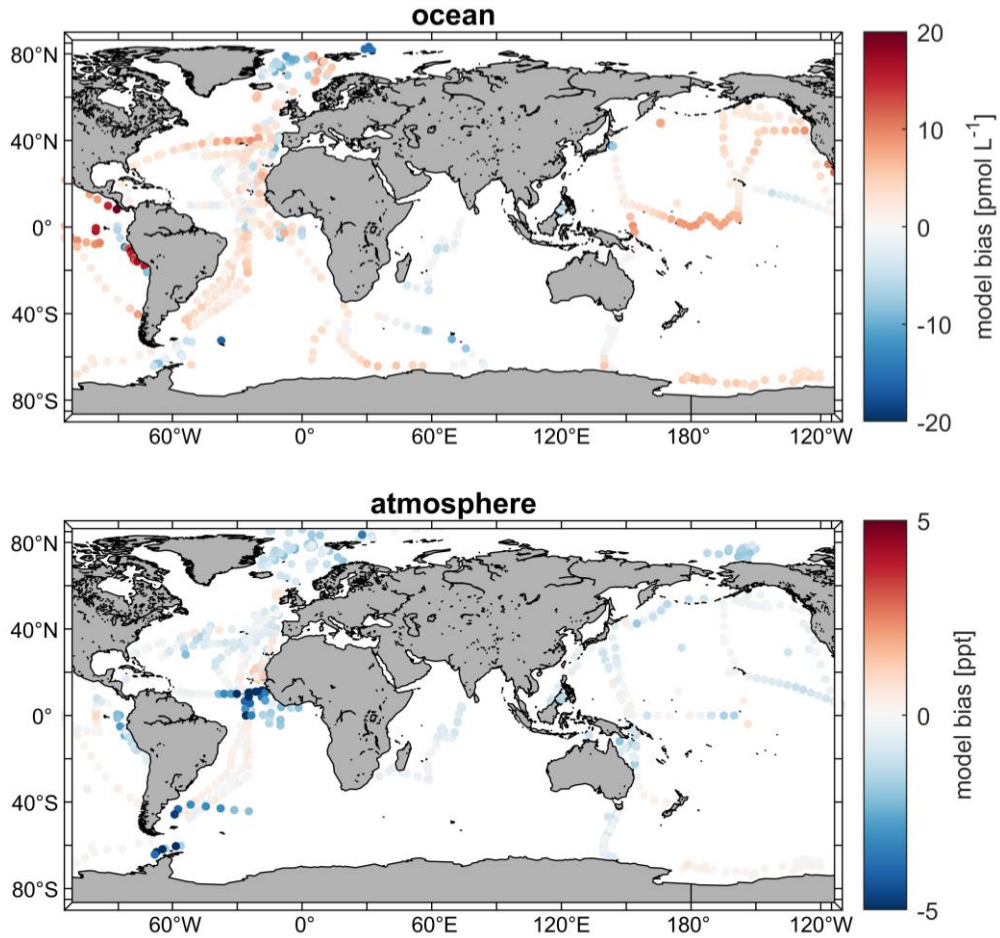
26 **Figure S2: Monthly resolved daily mean atmospheric bromoform mixing ratios from HalOcat on top of**
 27 **monthly mean atmospheric bromoform data (1990-2014) from NorESM2.**

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30 **Figure S3: Annual (left), DJF (middle) and JJA (right) mean oceanic surface integrated bromoform**
 31 **production rates (upper panel), bromoform loss rates due to photolysis (second upper panel), integrated**
 32 **primary production (middle panel), SST (second lower panel) and wind speed (lower panel) from NorESM2.**

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50 **Figure S4: Bromoform model bias of oceanic (upper panel) and atmospheric (lower panel) data used during**
 51 **this study. Red colours show a bias towards positive values (overestimation of modelled results compared**
 52 **to observations). Blue colours show a bias towards negative values (underestimation of modelled results**
 53 **compared to observations).**

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69 **Table S1: Annual and seasonal coefficients of the main predictors (driving factor) for each MLR in the**
70 **different case studies. If the highest coefficient was not significantly different to the second or third highest**
71 **coefficient, more than one coefficient including the respective parameters are listed. Atm: atmospheric**
72 **mixing ratio, Prod: bromoform production, Ocean: ocean concentration, SST: sea surface temperature,**
73 **WS: wind speed.**

	Season	North Atlantic		Tropical West Pacific		Southern Ocean	
		Parameter	Coefficient	Parameter	Coefficient	Parameter	Coefficient
CHBr ₃ ocean concentration	Annual	Atm	0.68	WS	-0.96	Atm	0.60
	DJF	Atm	0.98	WS	-0.95	Atm	0.80
	MAM	Prod Atm	0.64 0.41	WS	-0.92	Prod	0.82
	JJA	Atm Prod	1.15 0.86	Atm Prod	-0.58 0.49	Atm	1.26
	SON	Prod	0.72	Prod	0.85	SST	-0.75
CHBr ₃ atmospheric mixing ratio	Annual	Ocean	0.93	WS	0.94	Ocean	1.07
	DJF	SST	1.01	WS	0.93	Ocean	1.00
	MAM	Ocean	1.33	WS	0.92	SST	0.92
	JJA	SST Ocean	0.59 0.53	WS Ocean	0.51 0.42	SST	0.67
	SON	Ocean	0.79	WS	0.77	Ocean	1.62
CHBr ₃ fluxes	Annual	Ocean	0.83	WS	1.27	Atm	-1.22
	DJF	SST Atm	2.05 -1.26	WS	1.55	SST	1.16
	MAM	Prod SST WS	0.79 0.67 0.63	WS	1.31	Ocean	0.59
	JJA	WS Ocean	0.60 0.60	WS SST	0.68 0.52	Atm	-0.88
	SON	SST	0.81	WS	1.11	Atm	-1.00

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