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Supporting Information (Tables) for

Seasonal Evolution of Oceanic Upper Layer Processes in the Northern Bay of Bengal following a Single Argo Float

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Table S1 to S5

Table S1: Correlation coefficients between individual parameters: mixed layer temperature (MLT), mixed layer depth (MLD), isothermal layer depth (ILD), barrier layer thickness (BLT), 23°C isotherm (D23), sea surface height anomaly (SSHA), net heat flux (NHF), penetrative shortwave radiation, (Q_{pen}), wind stress (WS), and sea surface salinity (SSS) during winter months along the Argo float (WMO ID: 5904302). Values between -0.3 to 0.3 are not considered.

Winter (No. of days: 69)										
	MLT	MLD	ILD	BLT	D23	SSHA	NHF	Q_{pen}	WS	SSS
MLT	1	-	-0.36	-0.35	-	-0.38	-	-	-	-
MLD		1	-	-0.48	-	-	-	-0.89	-	0.65
ILD			1	0.73	0.74	0.64	-	-0.45	-	-
BLT				1	0.47	0.46	-	-	-	-
D23					1	0.63	-	-0.42	-	-
SSHA						1	-	-	-	-
NHF							1	-	-0.69	-
Q_{pen}								1	-	-
WS									1	-
SSS										1

Table S2: Same as table S1 but for spring months only.

Spring (No. of days: 73)										
	MLT	MLD	ILD	BLT	D23	SSHA	NHF	Q_{pen}	WS	SSS
MLT	1	-	-0.41	-0.37	-	-	0.30	0.32	0.39	0.46
MLD		1	-	-	0.34	0.31	-	-0.91	-	-
ILD			1	0.95	0.48	0.40	-	-	-	-
BLT				1	0.38	0.31	-	-	-	-
D23					1	0.90	-	-0.33	-	-0.40
SSHA						1	-	-0.30	-	-
NHF							1	0.46	-0.50	-
Q_{pen}								1	-	-
WS									1	0.36
SSS										1

Table S3: Same as table S1 but for summer months only.

Summer (No. of days: 82)										
	MLT	MLD	ILD	BLT	D23	SSHA	NHF	Q _{pen}	WS	SSS
MLT	1	-0.44	-0.33	-	-	-	-	-	-	-
MLD		1	0.45	-0.47	0.30	-	-	-0.78	-	0.70
ILD			1	0.58	0.49	-	-	-	-	-
BLT				1	-	0.36	-	0.43	-	-0.57
D23					1	0.43	-	-0.34	-	-
SSHA						1	-	-	-	-0.38
NHF							1	0.52	-0.69	-
Q _{pen}								1	-0.40	-0.69
WS									1	-
SSS										1

Table S4: Same as table S1 but for fall months only.

Fall (No. of days: 35)										
	MLT	MLD	ILD	BLT	D23	SSHA	NHF	Q _{pen}	WS	SSS
MLT	1	-	-0.47	-	0.52	-	0.40	0.40	-	-
MLD		1	0.43	-0.69	0.42	-	-	-0.76	-	0.68
ILD			1	0.36	0.44	-	-0.37	-0.46	-	0.33
BLT				1	-	-	-	0.41	-	-0.45
D23					1	-	-	--	-	0.44
SSHA						1	0.35	0.38	-	-0.38
NHF							1	0.54	-0.66	-
Q _{pen}								1	-0.40	-0.59
WS									1	-
SSS										1

Table S5: Seasonal evolution of oceanic upper layer processes

Parameter	Winter (DJF)	Spring (MAM)	Summer (JJAS)	Fall (ON)
MLD (h)	30 – 50 m (Deep)	30 – 40 m (Deep)	~25 m (Moderate)	5 – 20 m (Shallow)
ILD	90 – 100 m (Deep)	0 – 20 m (Moderate)	40 – 50 m (Moderate)	35 – 50 m (Moderate)
BLT	> 50 m (Large)	0 – 20 m (relatively less)	10 – 20 m (relatively less)	15 – 40 m (Moderate)
Temperature inversions	Strong (maximum 2.5°C)	Not Observed (thermally stratified ML)	Weak (in August)	Not Observed (haline stratified ML)
D23	100 – 120 m (Deep)	120 – 150 m (maximally deep)	90 – 100 m (Deep)	60 – 85 m (Moderate)
Net surface heat flux (NSHF)	Cooling tendency	Warming tendency (highly)	Warming tendency (relatively less than spring due to clouds)	Warming tendency (less clouds)
Vertical Process	Warming tendency	Cooling tendency	Cooling tendency but with decreasing trend	Negligible
MLT	26°C – 27°C (Minimum)	31°C (Maximally high)	28°C – 29°C (High)	29.5°C – 30.5°C (Relatively High)
Net surface buoyancy flux	0 – 2 × 10 ⁻⁶ m ² s ⁻³ (Moderate)	≥ 10 ⁻⁶ m ² s ⁻³ (Less)	1 × 10 ⁻⁶ m ² s ⁻³ – 4 × 10 ⁻⁶ m ² s ⁻³ (Maximally high)	~ 10 ⁻⁶ m ² s ⁻³ (Less)
M-O length (L)	< 5 m (Shallow except in December)	≤ 5 m (Shallow)	> 50 m (Deep)	≤ 5 m (Shallow)
 L/h 	0.5 – 1 (> 1 in December)	< 0.5 (Small)	> 1 (Very large)	< 0.5 (Small)
Dominant Mechanism	Moderate wind and negative thermal buoyancy	High thermal stratification, low haline stratification	Wind driven Mixing. Horizontal Advection	High haline stratification, low thermal stratification