

Supplementary Material: Mesoscale eddies structure mesopelagic communities

1 TABLES

Cruise-Station	Dates	Eddy properties	Sampling hours (Night)	Sampling hours (Day)
N1-S2	13/11/15	Out-of-eddy	26.7	15.7
N1-S3	16/11/15	Cyclone	2.9	5.9
N1-S4	18/11/15	Anticyclones	19.0	12.5
N1-S5	20/11/15	Out-of-eddy	7.3	5.6
N1-S6	21/11/15	Anticyclone	25.9	31.0
N1-S7	24/11/15	Cyclone (core)	12.8	17.6
N2-S1	18/5/16	Cyclone (core)	4.8	17.9
N2-S2	19/5/16	Anticyclone	6.7	18.3
N2-S3	21/5/16	Anticyclone	4.8	11.74
N2-S4	23/5/16	Anticyclone (core)	22.5	73.9
N2-S5	28/5/16	Cyclone	7.4	17.2
N3-S1	4/9/17	Cyclone (core)	7.1	9.3
N3-S2	5/9/17	Anticyclone (core)	14.0	15.7
N3-S3	8/9/17	Mode-water eddy (core)	10.0	15.0
N3-S4	9/9/17	Cyclone	13.9	19.6
N3-S5	12/9/17	Out-of-eddy	8.8	14.86
N3-S6	13/9/17	Out-of-eddy	22.4	61.1
N4-S1	26/3/18	Out-of-eddy	7.4	9.6
N4-S2	28/3/18	Out-of-eddy	4.2	10.7
N4-S3	30/3/18	Out-of-eddy	4.7	2.8
N4-S4	31/3/18	Out-of-eddy	4.9	3.1
N4-SE4	2/4/18	Cyclone	0	3.0
N4-S2RD	3/4/18	Out-of-eddy	0.8	5.7
N4-S2RF	4/4/18	Out-of-eddy	1.8	14.2

Table S1. Eddies and sampling properties of the NAAMES stations analyzed. Dates refer to the arrival on station and are in the format 'dd-mm-yy'.

2 FIGURES

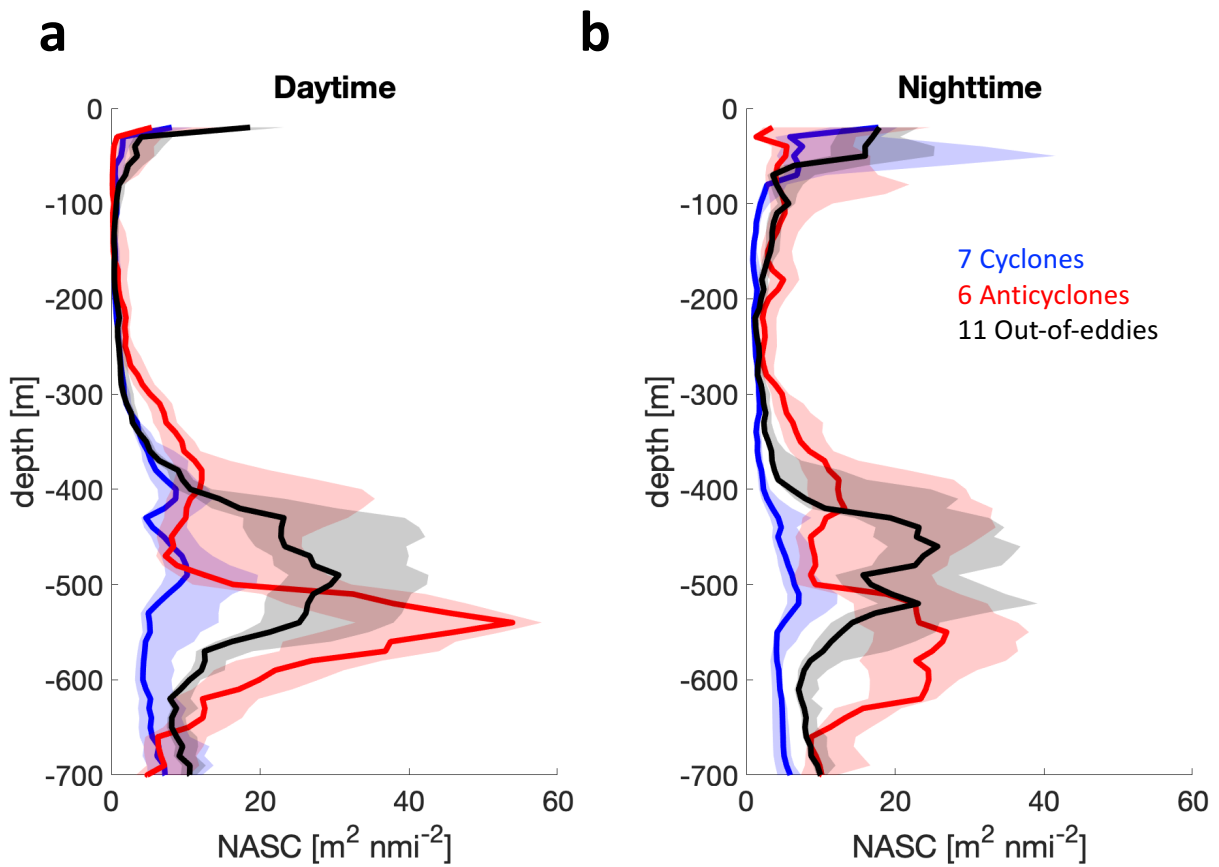


Figure S1. (a) Daytime and (b) night-time NASC median (lines) for the sampled cyclones (blue), anticyclones (red) and out-of-eddy (black) stations. Colored bands indicate the respective 15th and 85th percentiles divided by the square root of the number of observations.

REFERENCES

- Locarnini, R. A., Mishonov, A. V., Antonov, J. I., Boyer, T. P., Garcia, H. E., Baranova, O. K., et al. (2013). World ocean atlas 2013. volume 1, temperature

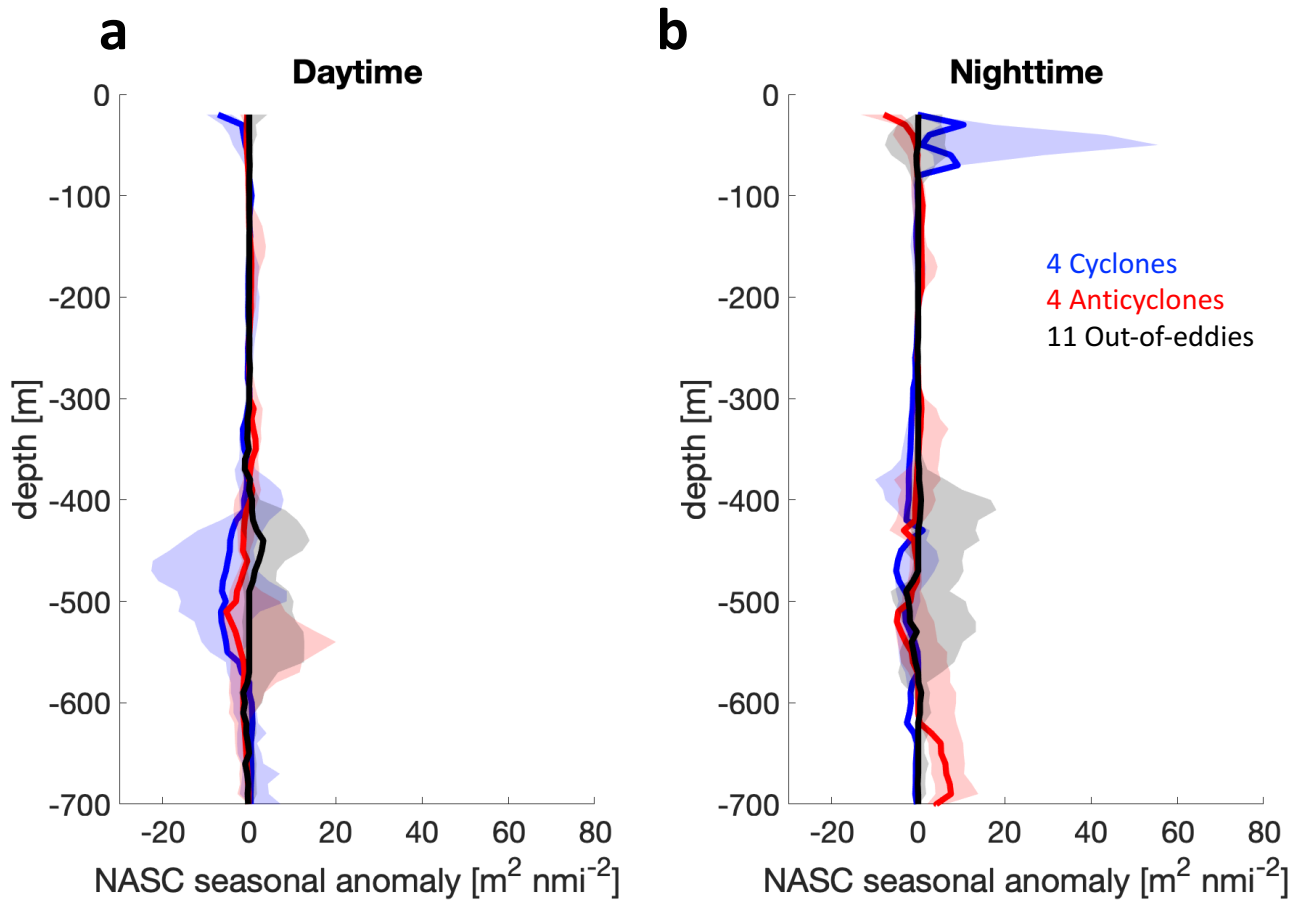


Figure S2. (a) Daytime and (b) night-time NASC median (lines) for the peripheries of the sampled cyclones (blue), anticyclones (red) and out-of-eddy (black) stations. Colored bands indicate the respective 15th and 85th percentiles divided by the square root of the number of observations.

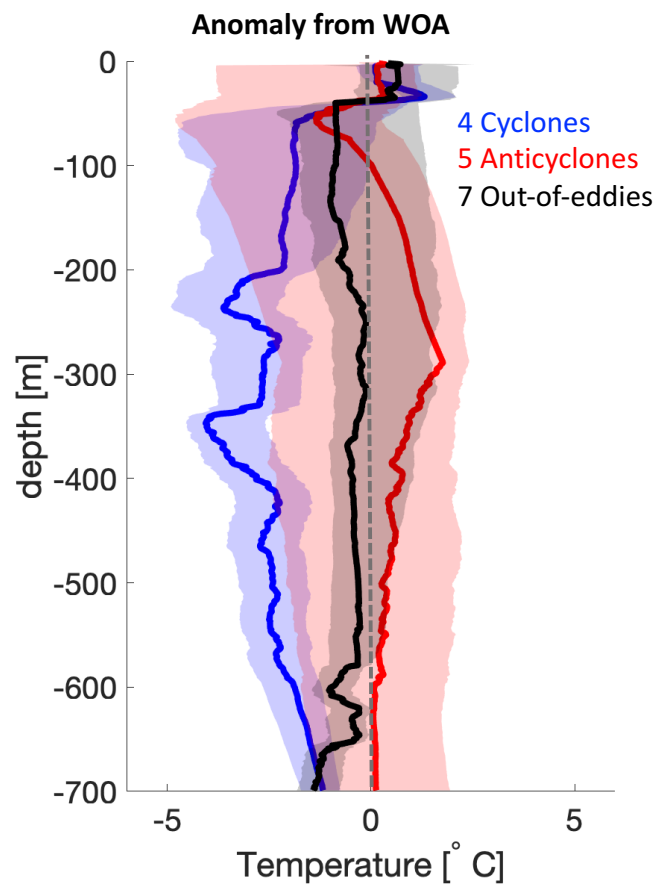


Figure S3. Comparisons between temperature profiles for cyclones (blue lines), anticyclones (red) and out-of-eddy (black) stations. Anomalies are expressed as differences between the median temperature profiles at each station and the one with closest location in the World Ocean Atlas monthly climatology (Locarnini et al., 2013). Shadings represent the 15th-85th percentiles divided by the square root of the number of observations.

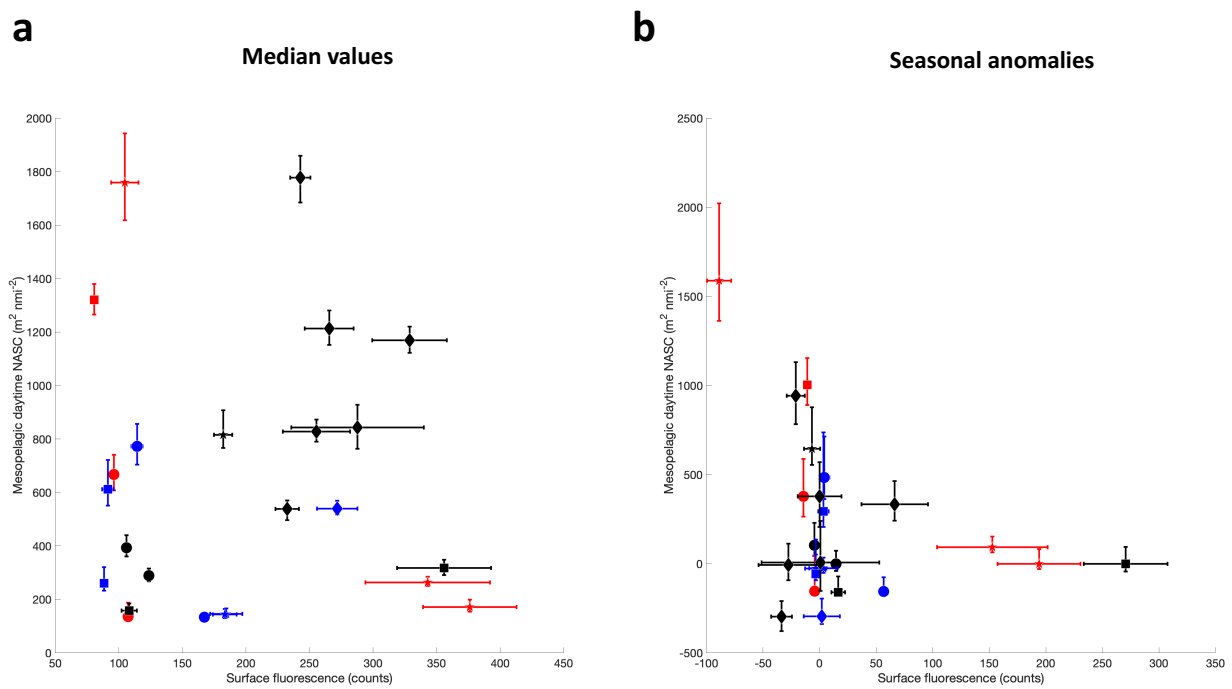


Figure S4. The relationship between surface fluorescence and mesopelagic acoustic backscattering is not simple both in terms of average values (a) or seasonal anomaly (b). Black dots refer to the out-of-eddies station, red to the ones in anticyclones and blue to the ones in cyclones. Bars indicate the 15th-85th percentiles for mesopelagic backscattering and standard deviation for surface fluorescence. Different symbols refer to different surveys: circles refer to November 2015, stars to May 2016, squares to September 2017, and diamonds to March 2018.