

Supplementary material for:

Evaluation of factors affecting TOC and its trend at three Antarctic stations in the years 2007–2023

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Table S1: Daily TOC characteristics expressed by the medians, 25th (Q1) and 75th (Q3) percentiles and standard deviations (sd) in individual months for stations Marambio, Troll and Concordia.

Marambio				
Month	median	Q25	Q75	sd
SEP	207.52	183.03	248.82	49.95
OCT	223.37	178.78	292.46	69.42
NOV	284.30	215.83	331.26	65.82
DEC	308.31	288.20	323.38	31.05
JAN	290.14	279.31	301.77	16.43
FEB	282.18	267.75	294.15	20.07
MAR	277.15	263.60	294.04	23.16
APR	281.55	263.31	297.73	25.67
Troll				
Month	median	Q25	Q75	sd
SEP	173.20	155.43	191.78	27.47
OCT	156.23	138.65	175.35	27.12
NOV	208.80	180.21	294	67.60
DEC	292.40	246.45	312.5	47.04
JAN	286.90	274.79	298.91	17.85
FEB	277.30	262.41	288.95	18.92
MAR	265.10	251.85	278.29	20.17
APR	268.65	254.24	281.21	20.97
Concordia				
Month	median	Q25	Q75	sd
SEP	198.2	172.74	229.28	51.18
OCT	192.93	169.88	250.41	64.08
NOV	242.55	193.58	329.34	73.79
DEC	296.42	273.51	317.86	37.12
JAN	295.81	282.57	305.39	17.64
FEB	290.55	280.79	301.38	14.88
MAR	291.03	278.61	301.29	18.45
APR	290.60	278.55	304.45	19.74

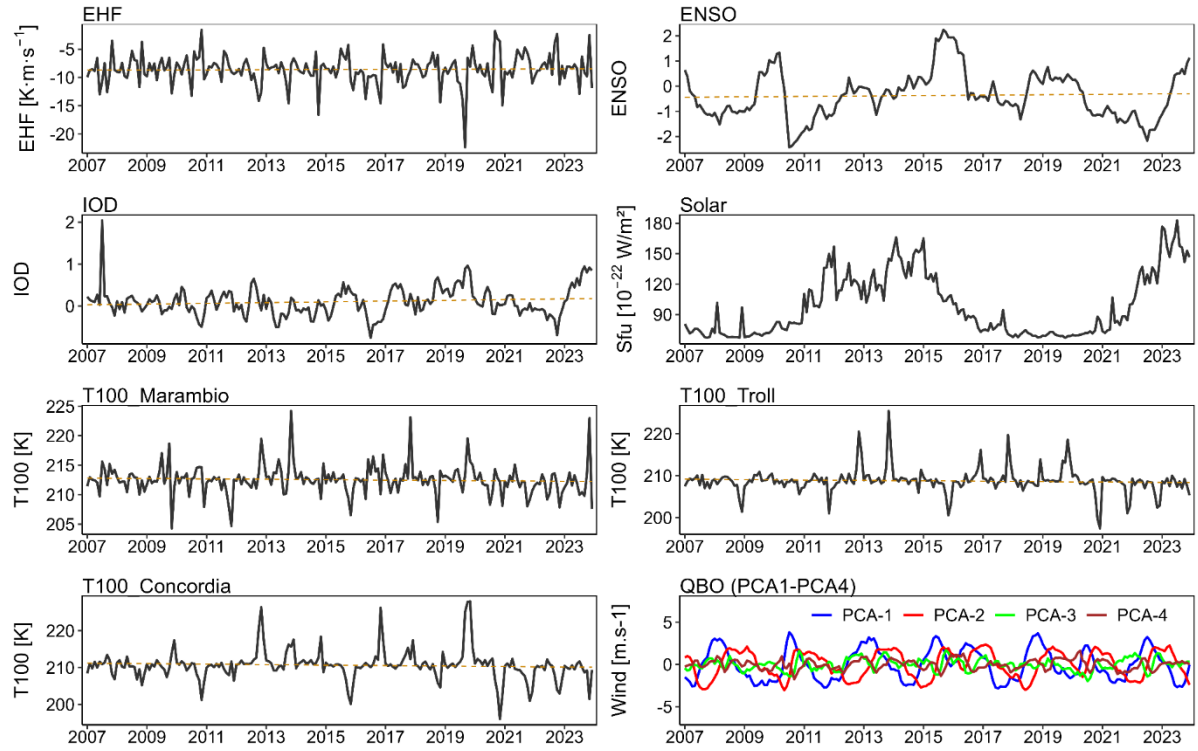


Figure S1: Time series of predictors supplemented with a linear trend (red; except for the solar and QBO predictors), which was statistically insignificant at the significance level of $p = 0.05$.

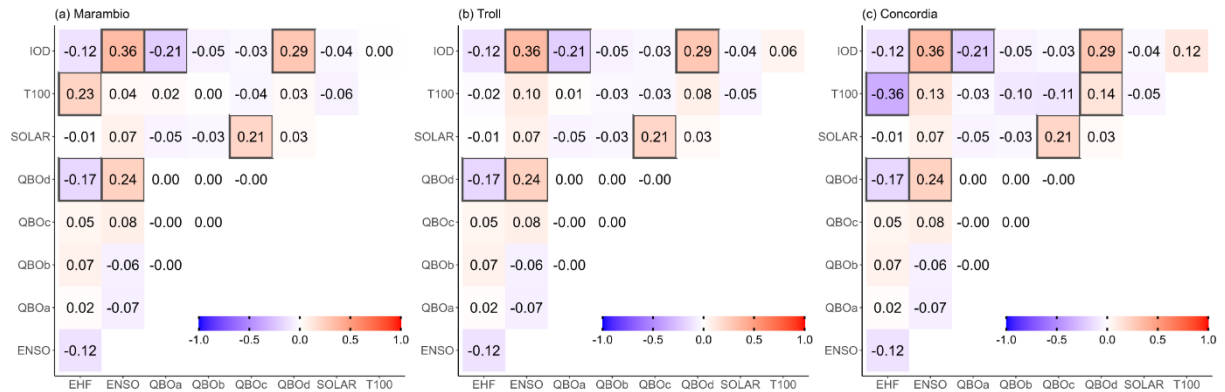


Figure S2: Pearson correlation coefficients of the used predictors for Marambio (a), Troll (b) and Concordia (c). Statistically significant correlations ($p < 0.05$) are marked with a grey border.

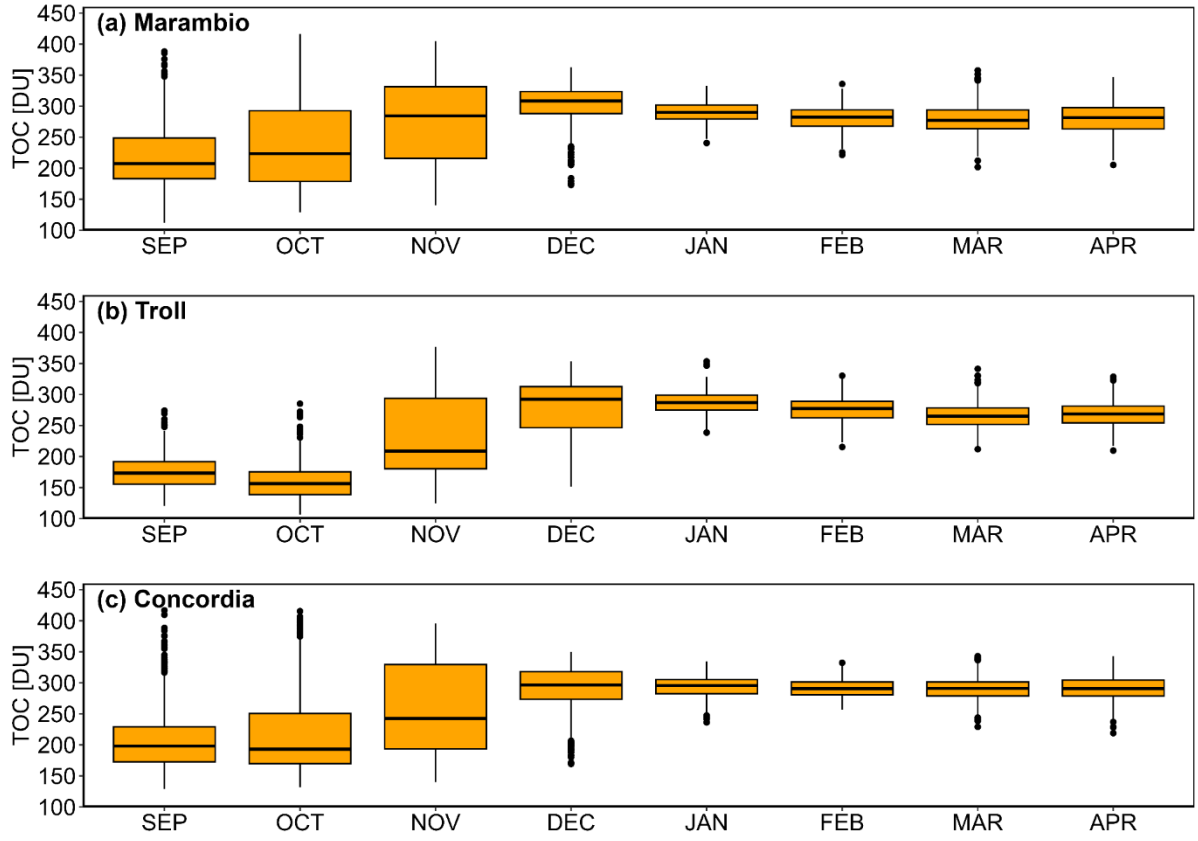


Figure S3: Annual run of available daily TOC at stations Marambio (a), Troll (b) and Concordia (c) in the period 2007–2023. The black line shows the median, the boxes the 25th ($Q1$) and 75th ($Q3$) percentiles, the whiskers $Q1(3) - 1.5 \times IQR$ (interquartile range) and the black dots the outliers.

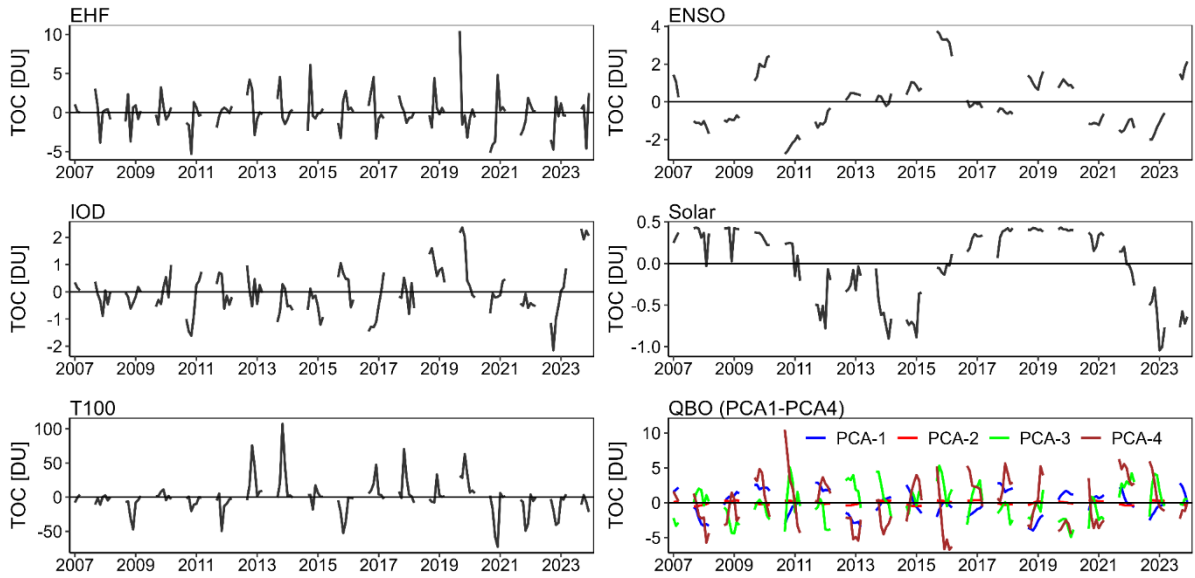


Figure S4: Predictor contribution ($\beta_n \cdot X_n$ with coefficient β_n and predictor X_n) at Troll.

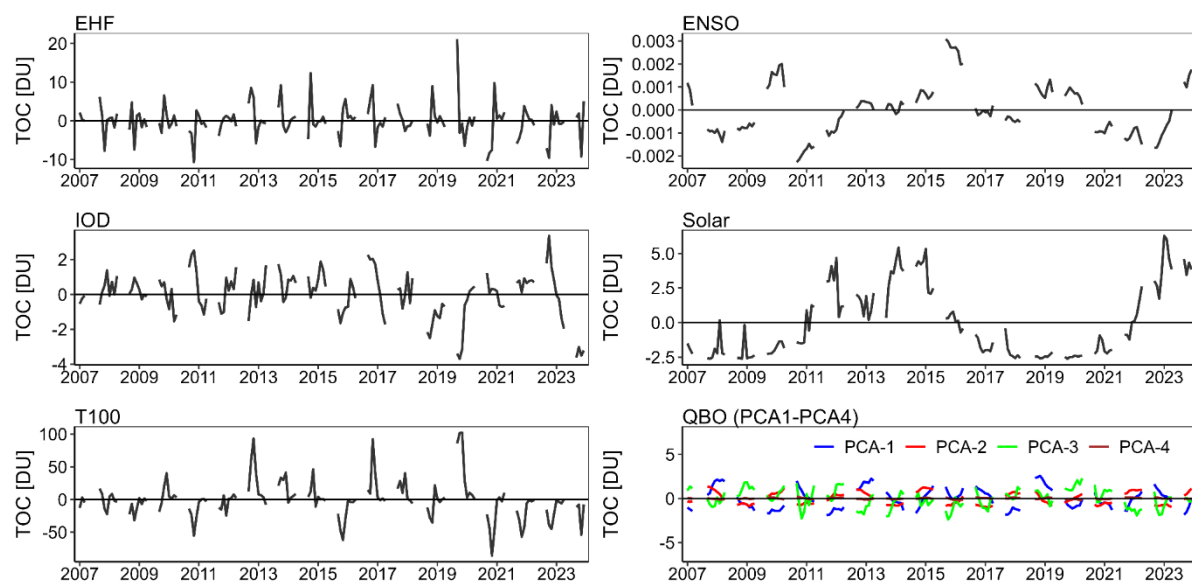


Figure S5: Predictor contribution ($\beta_n \cdot X_n$, with coefficient β_n and predictor X_n) at Concordia.