Supporting Information for

Mixed layer depth variability in the Red Sea

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Introduction

The figures and tables which support the results discussed in the manuscript "**Mixed layer depth variability in the Red Sea**" are given below. Detailed description on the attached figures and tables is given in the manuscript. A brief summary is given in the following lines.

Figure S1 shows the monthly spread of the temperature profiles along the main-axis of Red Sea. The number of profiles are marked at the top right corner in each sub-figure. This document also includes tables of number of profiles removed at different steps of quality checking procedure and the number of selected profiles along the main-axis of Red Sea based on the month and year of measurement. Similarly, a table is included to show the number of profiles with salinity values in the study area.
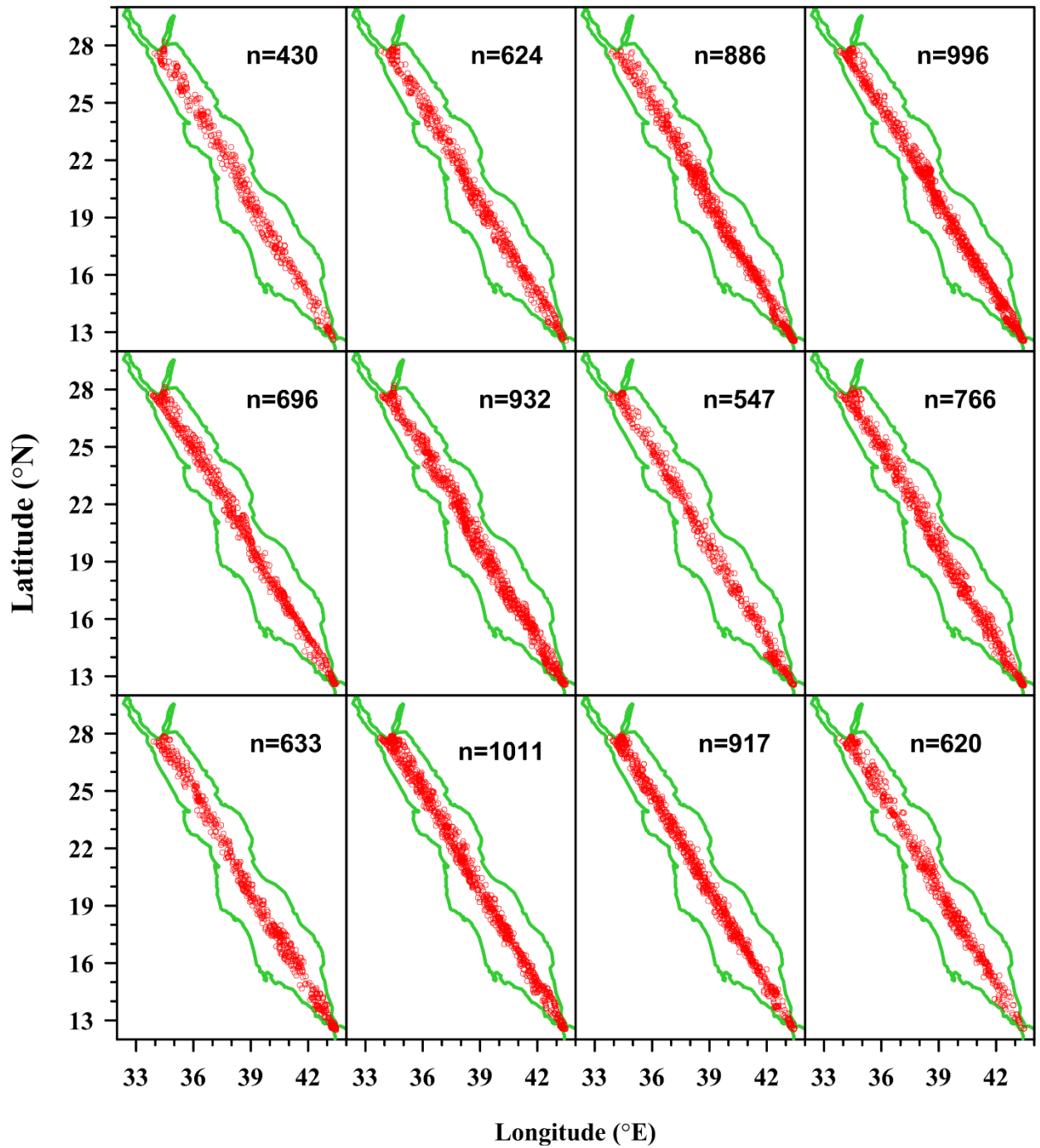
Figure S1. Monthly spread of the temperature profiles along the main-axis of Red Sea. The number of profiles are marker at the top right corner. The different steps of quality control are discussed in the main manuscript.

Table S1. Number of temperature profiles removed at different steps of quality check.

Quality Check	Type				Total
	CTD	PFL	XBT	MBT	
Before the quality check	936	2216	6793	3946	13891
Bad positioned profiles	2	35	20	33	90
Duplicate profiles	213	781	342	90	1426
Removed during depth duplication and depth inversion check*	0	0	3	4	7
Removed during large range check*	0	1	5	4	10
Removed during large temperature inversion/gradient check*	31	14	63	26	134
Low resolution profiles (res >25m)	0	0	853	159	1012
Profiles accepted after quality check	690	1385	5507	3630	11212

*Instead of rejecting the entire profile, the particular level/s with "out of range value/s" or "inversion/gradient in temperature" is/are removed from the profile. If multiple inversions are present in a single profile (3 or more), then the complete profile is rejected.

Table S2. Number of temperature profiles along the main-axis of Red Sea based on the year of measurement.

Years	Type				Total
	CTD	PFL	XBT	MBT	
<1970	0	0	107	2735	2842
1971-1980	11	0	938	56	1005
1981-1990	172	0	1396	171	1739
1990-2000	128	24	1640	0	1792
>2000	161	692	827	0	1680

Table S3. Number of temperature profiles along the main-axis of Red Sea in different months.

Months	Type				Total
	CTD	PFL	XBT	MBT	
Jan	1	57	293	79	430
Feb	85	40	312	187	624
Mar	70	25	603	188	886
Apr	23	46	406	521	996
May	37	48	221	390	696
Jun	40	43	442	407	932
Jul	43	49	295	160	547
Aug	62	59	488	157	766
Sep	20	63	462	88	633
Oct	62	96	586	267	1011
Nov	19	94	451	353	917
Dec	10	96	349	165	620
Total	472	716	4908	2962	9058

Table S4. Number of total salinity profiles available in the entire Red Sea based on the year of measurement.

Years	Type				Total
	CTD	PFL	XBT	MBT	
<1970	0	0	0	0	0
1971-1980	12	0	0	0	12
1981-1990	202	0	0	0	202
1990-2000	134	37	0	0	171
>2000	341	1337	0	0	1678
Total	689	1374	0	0	2063

* Some of the CTD and PFL profiles does not recorded the salinity.