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Supplement of

Historical Nansen cast temperature profiles and the ocean heat content changes since 19th century

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Supporting Information

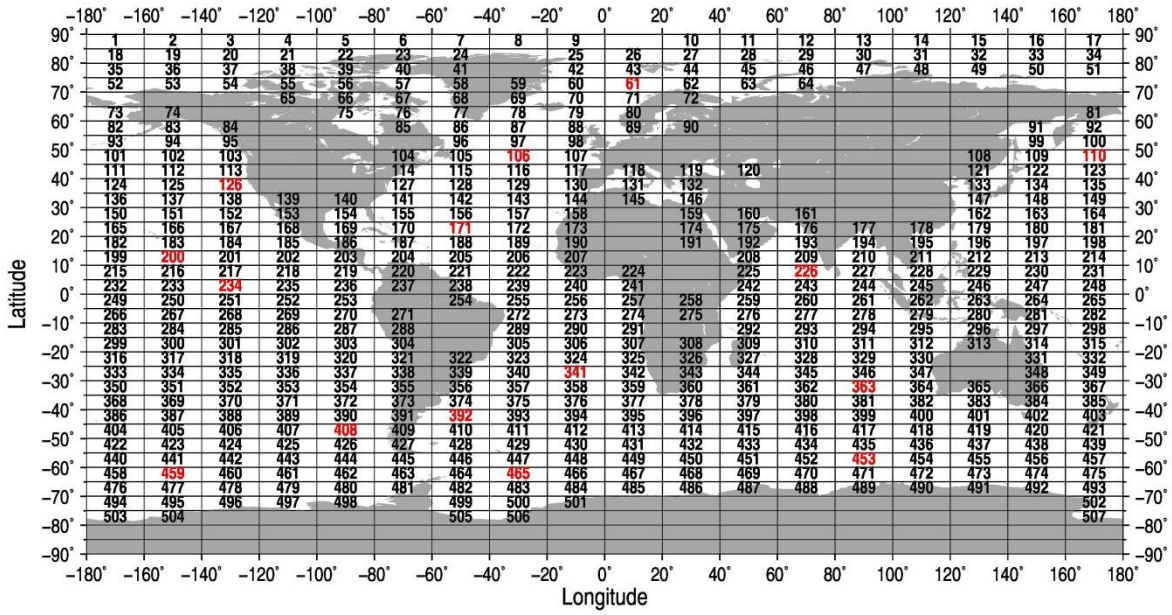


Figure S1. 5x20-degree Latitude/Longitude boxes used for the manual quality control. Profiles in the boxes marked in red are shown in Fig. S2.

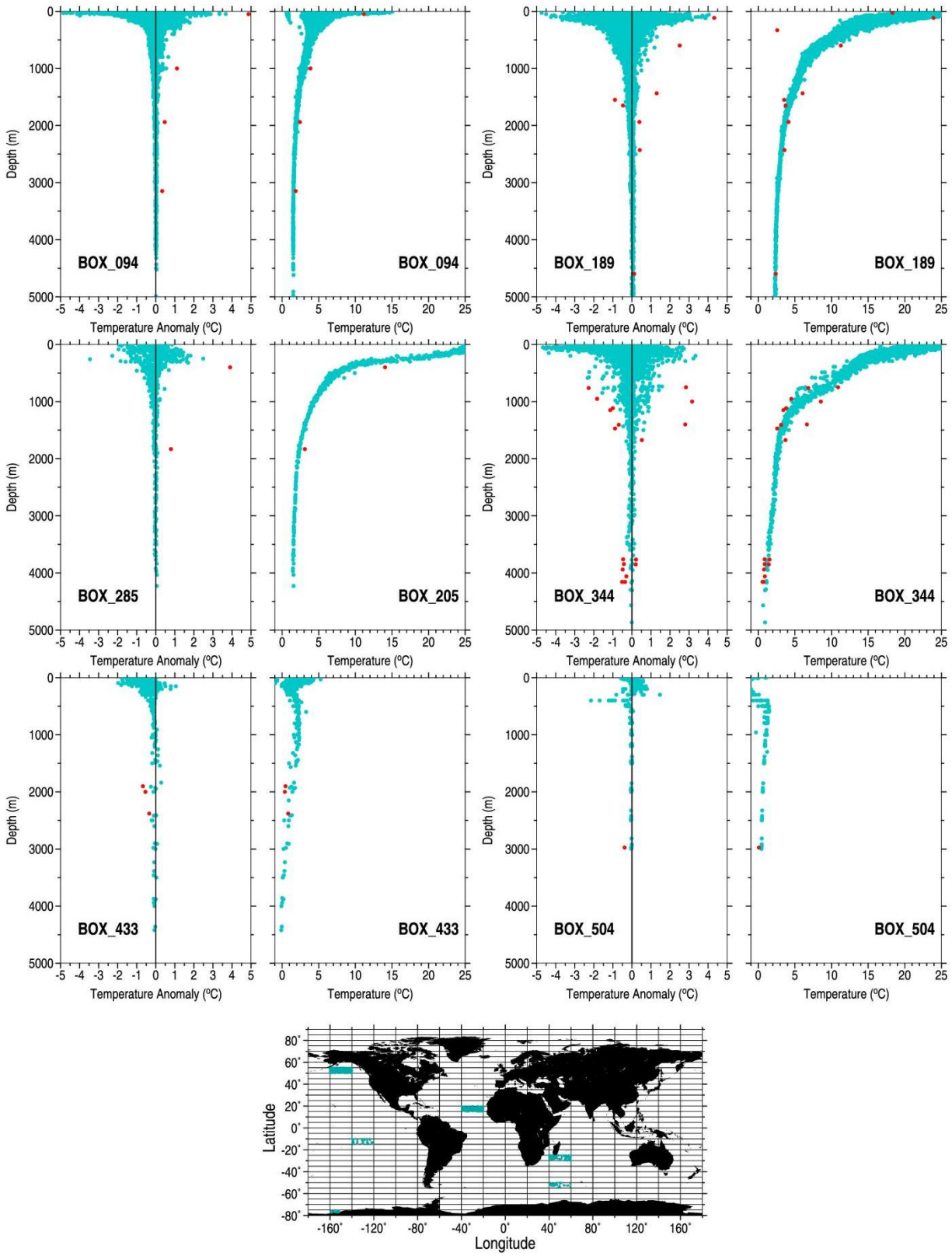


Figure S2. Manually rejected temperature observations (red points) and observations which passed automated quality control (cyan points) in six randomly selected 5x20-degree latitude/longitude geographical boxes (12 upper panels). For each box temperature observations and temperature anomalies relative to the climatology are shown. Map shows locations of temperature profiles (cyan points) in selected boxes.

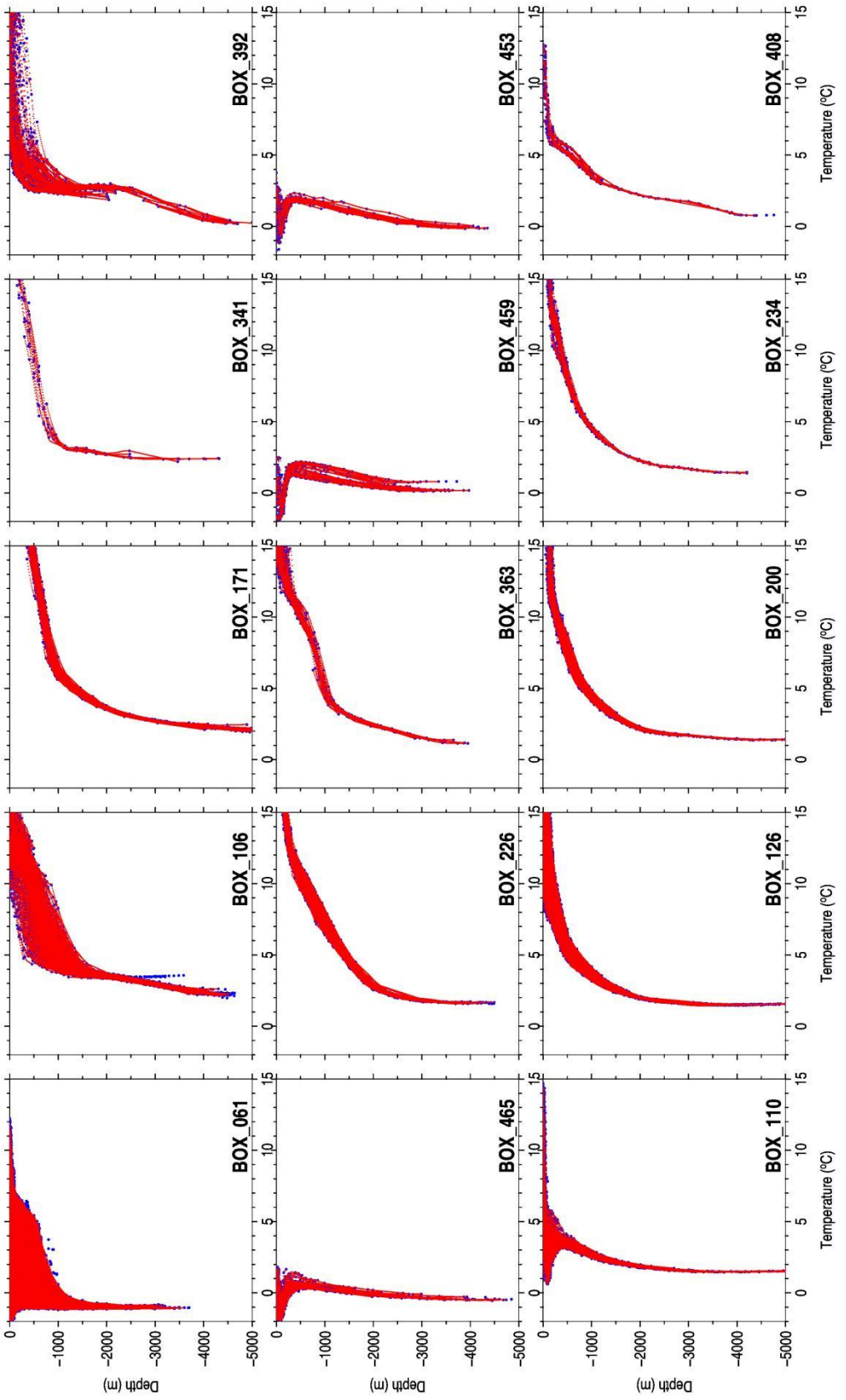


Fig. S3. Quality-controlled temperature profiles for observed profiles (blue) and for the vertically interpolated profiles (red). The sequential numbers of the selected boxes are marked in red in Fig. S1.

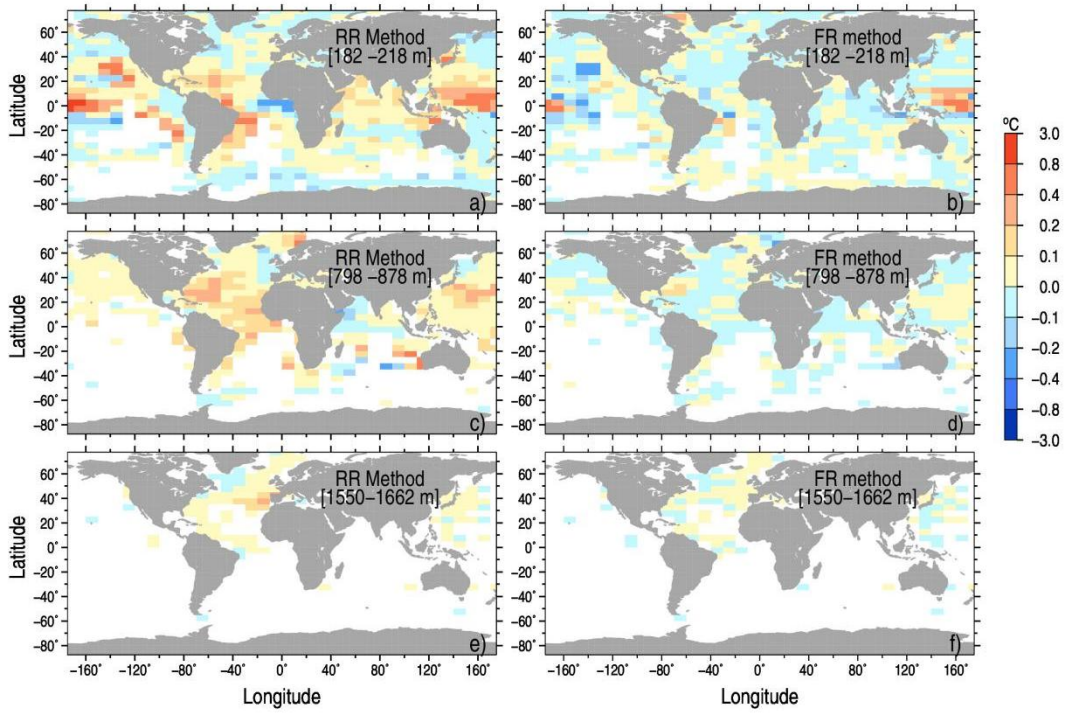


Fig. S4. Mean vertical interpolation error in 5x10-degree latitude/longitude geographical squares and within the three selected depth layers for the Reiniger and Ross (1968) (RR) interpolation method (a,c,e) and for the Frankignoul (1981) method (b,d,f).

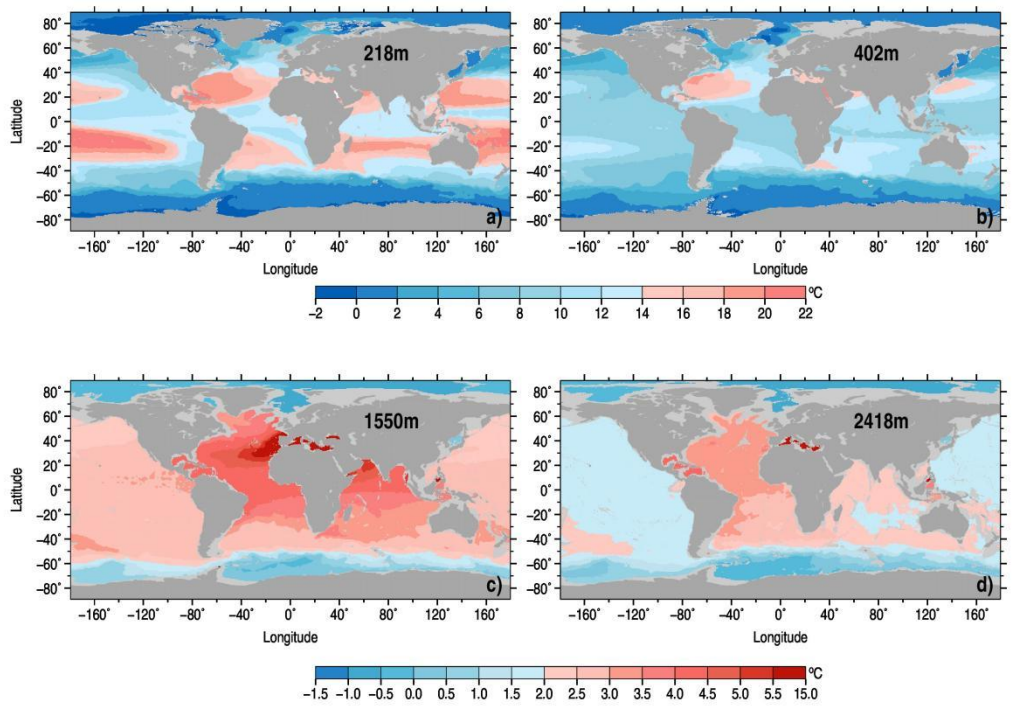


Fig. S5. Annual reference climate temperature fields for selected depth levels.

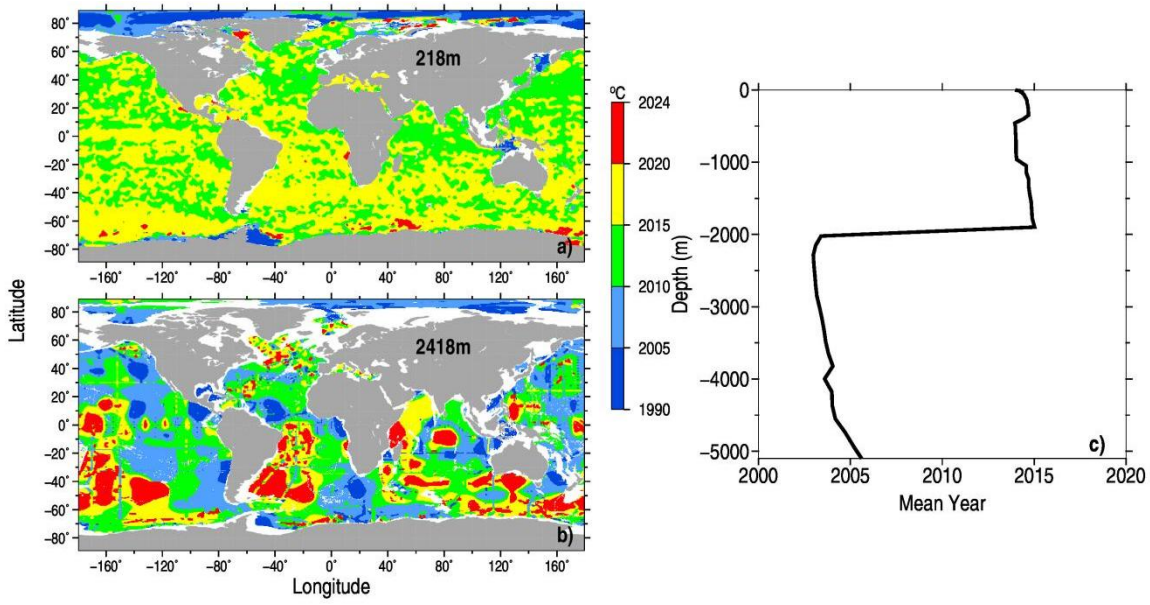


Fig. S6. Climatology median year for the depth level 218 m (a), 2418 m (b), and vertical profile of the area-averaged median year (c).

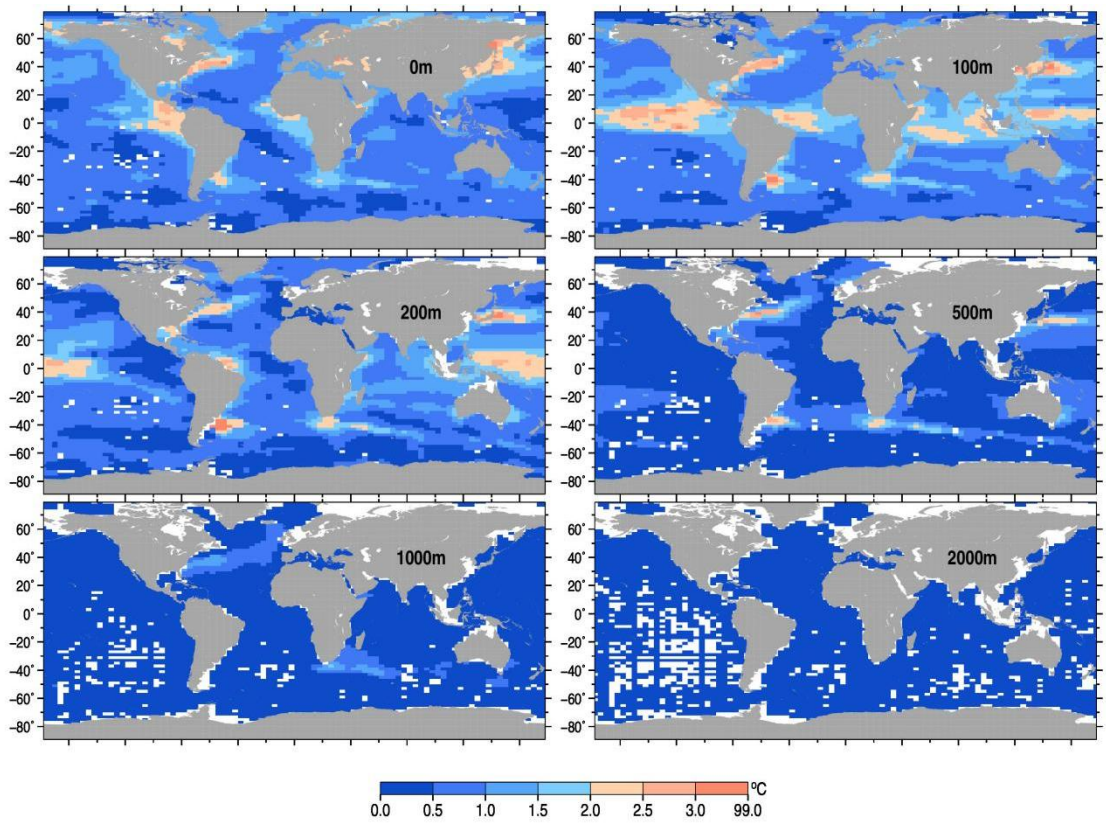


Fig. S7. The standard deviation of temperature anomalies within 2x4-degree latitude/longitude boxes.

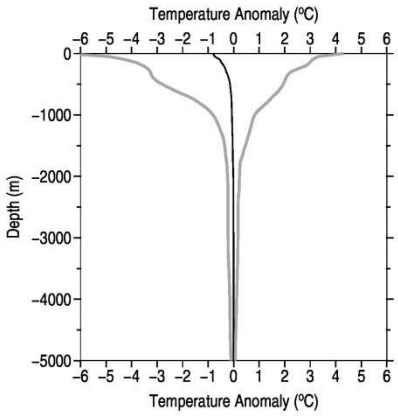


Fig. S8. The minimum/maximum temperature anomaly limits (gray) as the 1st and 99th quantiles respectively. Overall median anomaly profile is shown in black.

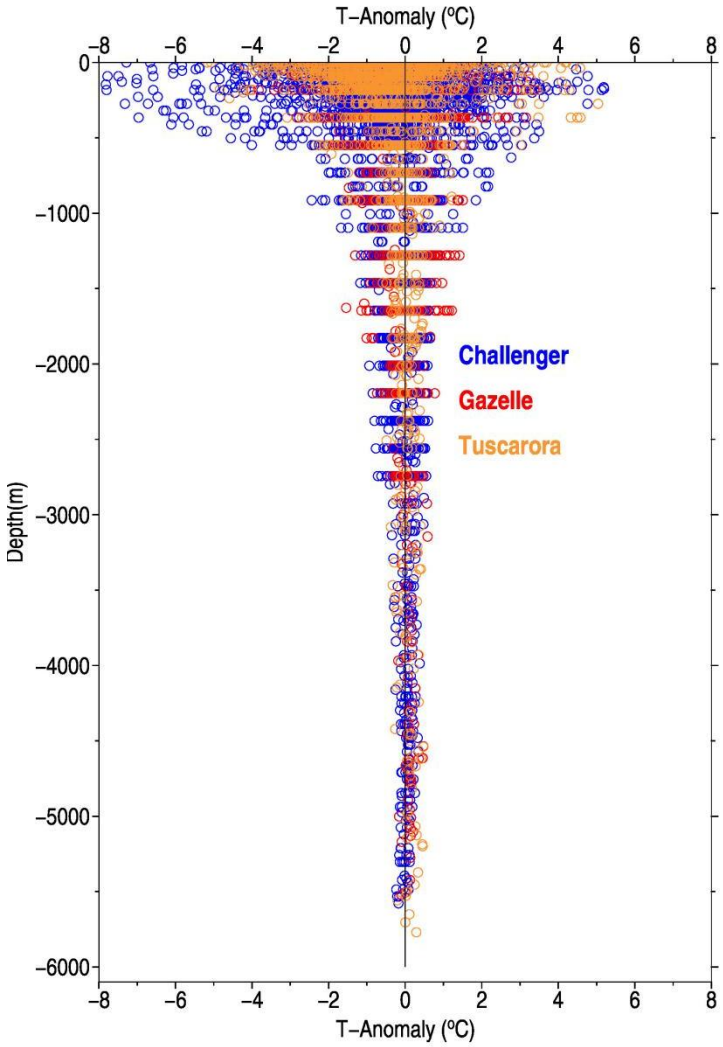


Fig. S9. Distribution of temperature anomalies versus depth for quality-controlled and adjusted "Challenger", "Gazelle", and "Tuscarora" temperature profiles.

Table S1. Round number and “standard level” depths for which depth bias corrections are applied.

Level Number	Level depth (m)
1	5
2	10
3	15
4	20
5	25
6	30
7	35
8	40
9	45
10	50
11	60
12	70
13	75
14	80
15	90
16	100
17	125
18	150
19	175
20	200
21	250
22	300
23	350
24	400
25	450
26	500
27	600
28	700
29	750
30	800
31	900
32	1000
33	1100
34	1200
35	1250
36	1300
37	1400
38	1500

39	1600
40	1750
41	1800
42	1900
43	2000
44	2100
45	2200
46	2300
47	2400
48	2500
49	2600
50	2700
51	2800
52	2900
53	3000
54	3100
55	3200
56	3300
57	3400
58	3500
59	3600
60	3750
61	3800
62	3900
63	4000
64	4500
65	5000
66	5500