SIGMA-T SURFACES IN THE ATLANTIC OCEAN

BY

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Wüst (1936) shows the distribution of σ_t on a number of surfaces of constant depth in the Atlantic Ocean, based on about seventy expeditions over a period of sixty years. For most purposes there is more significance in the configuration of σ_t-surfaces, since these are approximately the surfaces of isentropic flow in the absence of vertical mixing. Such preliminary charts have been obtained directly from those of Wüst without recourse to the original data. Wüst's charts give the lines of intersection of σ_t-surfaces with surfaces of constant depth, arranged according to depth; the charts presented in Figures 12–17 are tracings of the same lines, but arranged according to σ_t.

In the construction of surfaces $\sigma_t = 26.5$ g l^{-1} and $\sigma_t = 27.0$ g l^{-1} Montgomery's (1938) σ_t-charts of the southern North Atlantic also were utilized. The contours in all the charts were simplified to some extent. A number of inconsistencies in the original lines giving instability have been eliminated. Due to the greater spacing of the deeper surfaces of constant depth a contour interval of 500 meters was used on the surfaces $\sigma_t = 27.6$ g l^{-1} and $\sigma_t = 27.8$ g l^{-1} instead of the 200-meter interval used on the surfaces of lower σ_t-values.

The boundaries of σ_t-surfaces are their intersections with the continental slopes, indicated by broken lines, and with the sea surface. The mean positions of the 0-contour were taken from Böhnecke's (1936, Beilage L) chart of the mean density of the sea surface. The polar and equatorial extremes of the intersections with the sea surface, indicated by dotted lines, have been estimated from Böhnecke's monthly and quarterly charts.

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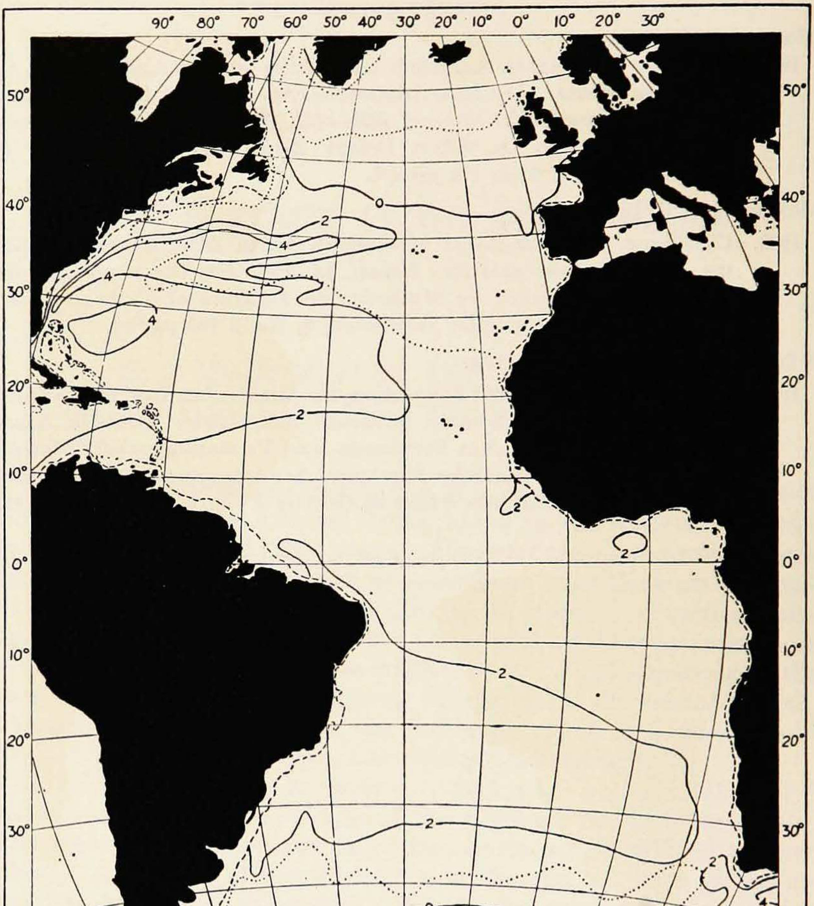

Figure 12. Depth in hektometers of $\sigma_t = 26.5$ g l^{-1}. Azimuthal equal-area projection.

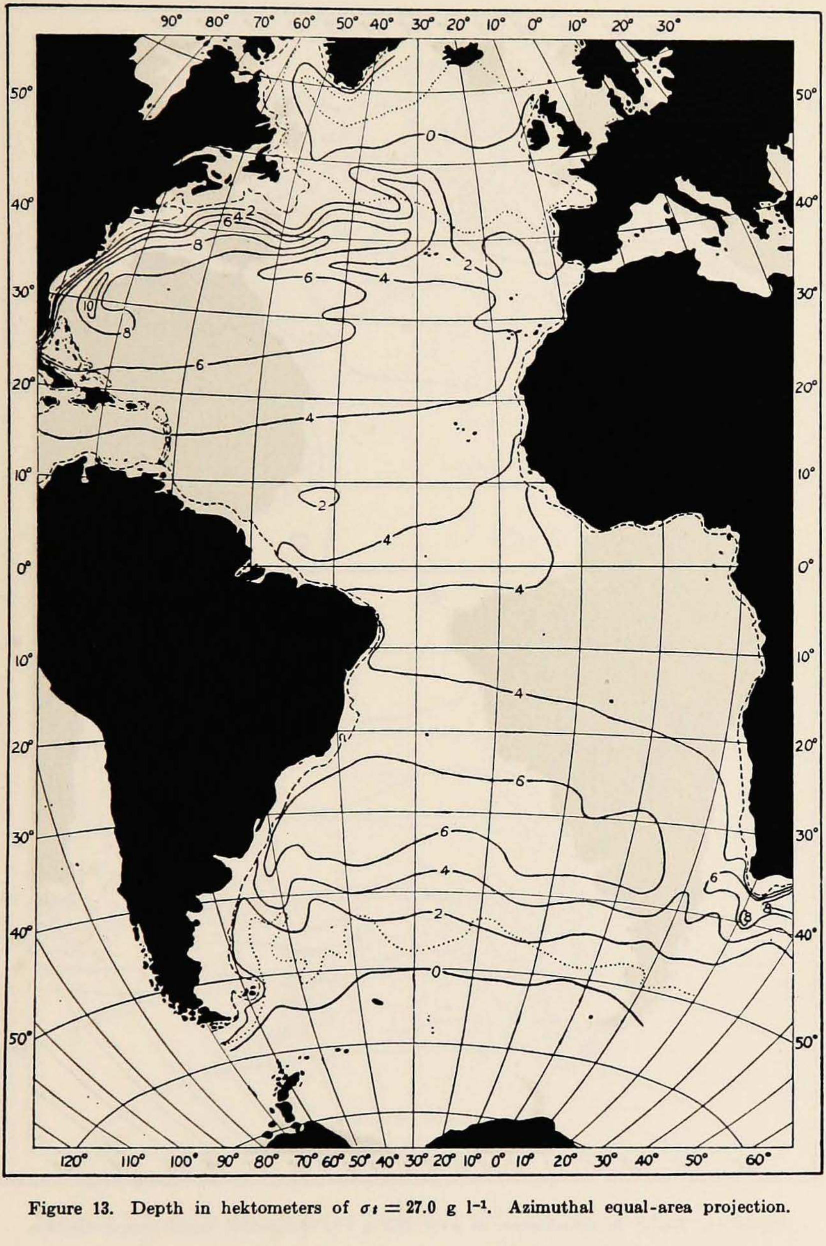

Figure 13. Depth in hektometers of $\sigma_t = 27.0$ g l^{-1}. Azimuthal equal-area projection.

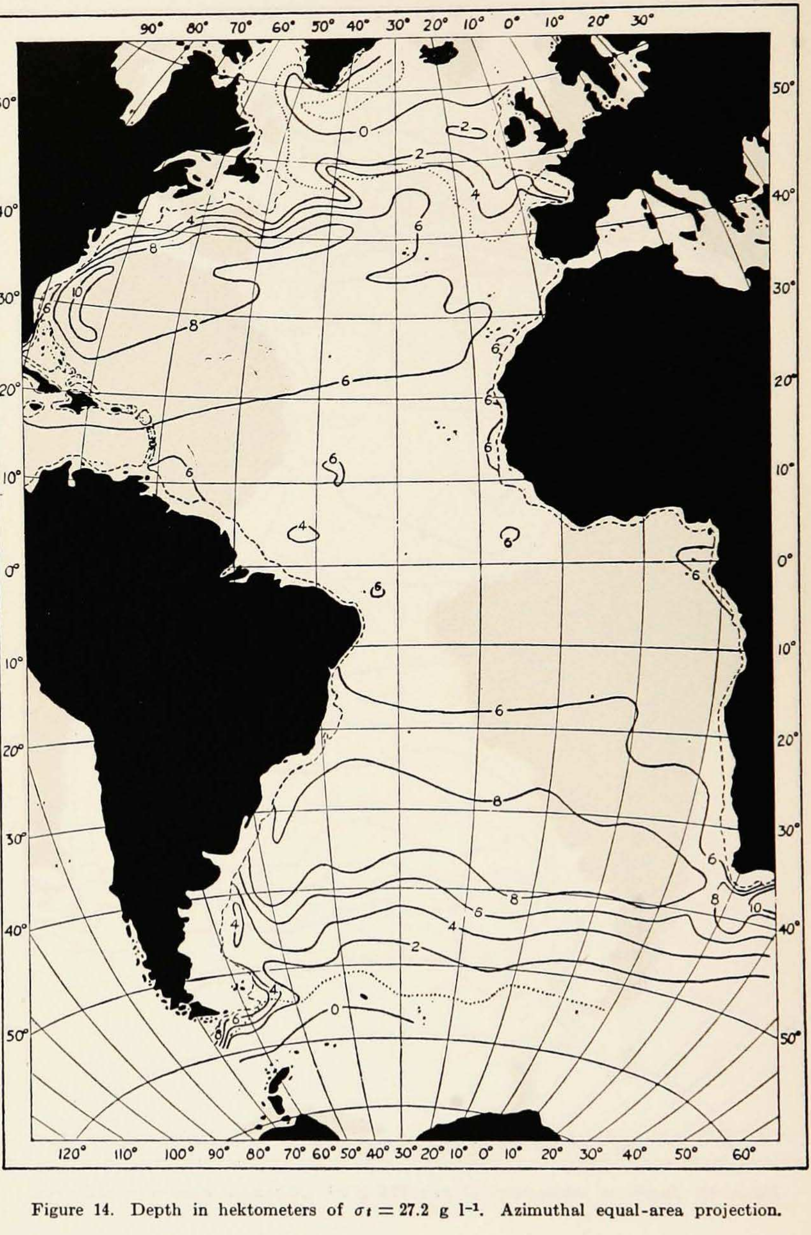

Figure 14. Depth in hektometers of $\sigma_t = 27.2$ g l^{-1}. Azimuthal equal-area projection.

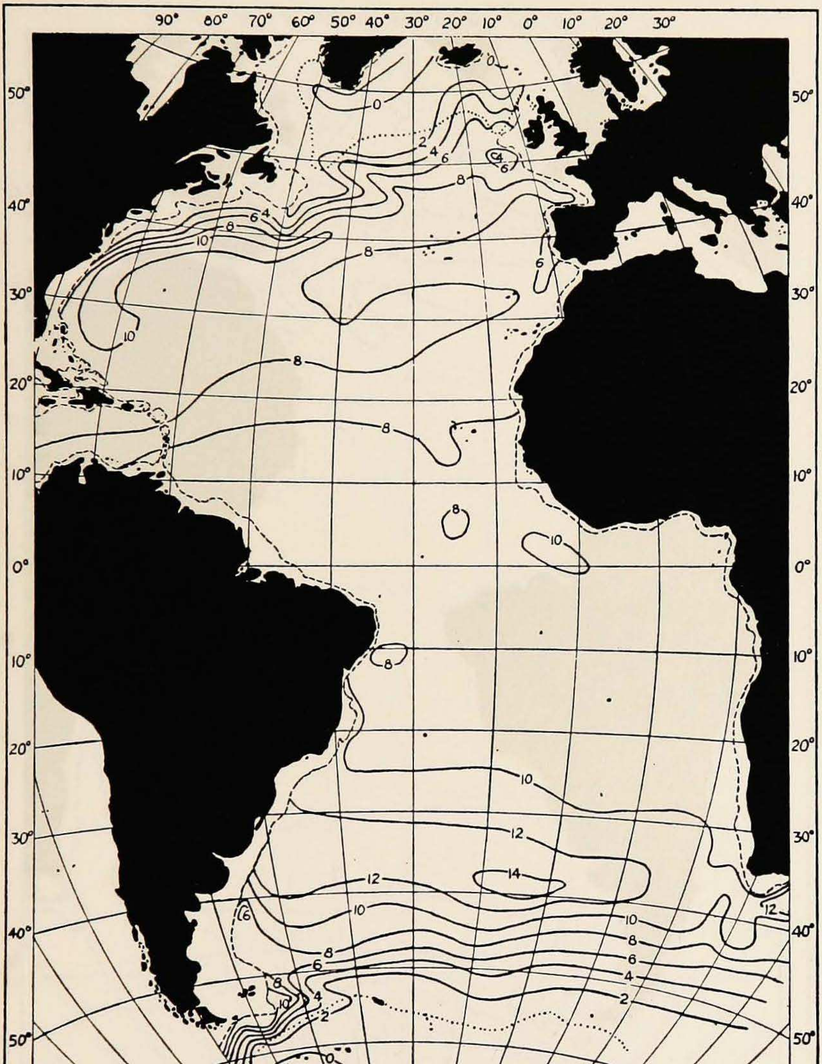

Figure 15. Depth in hektometers of $\sigma_t = 27.4$ g l^{-1}. Azimuthal equal-area projection.

Figure 16. Depth in hektometers of $\sigma_t = 27.6$ g l^{-1}. Azimuthal equal-area projection.

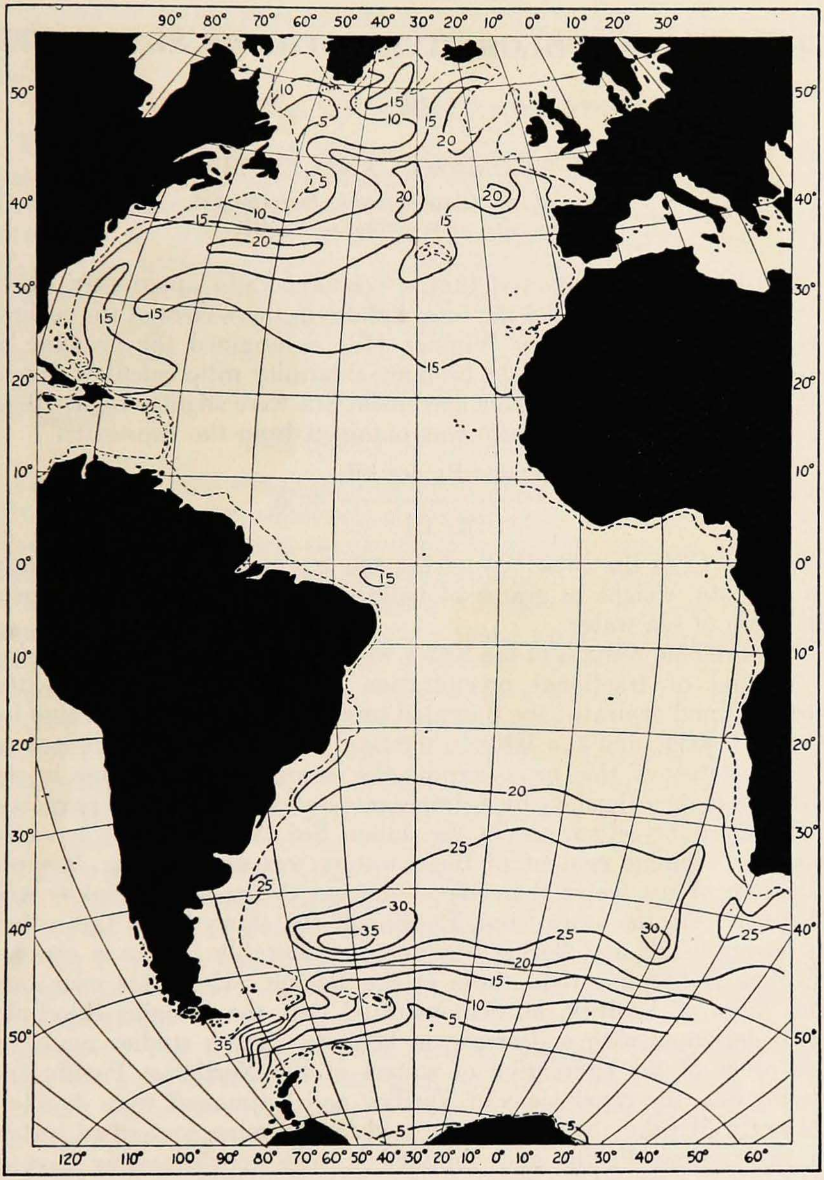

Figure 17. Depth in hektometers of $\sigma_t = 27.8$ g l^{-1}. Azimuthal equal-area projection.