Forecasting Carbon Sequestration in Salt Marshes with the Marsh Equilibrium Model (MEM)

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Combine Tide Data (shown here) with Shuttle Radar Topography Mission (SRTM) topography data (not shown) to compute potential intertidal area.

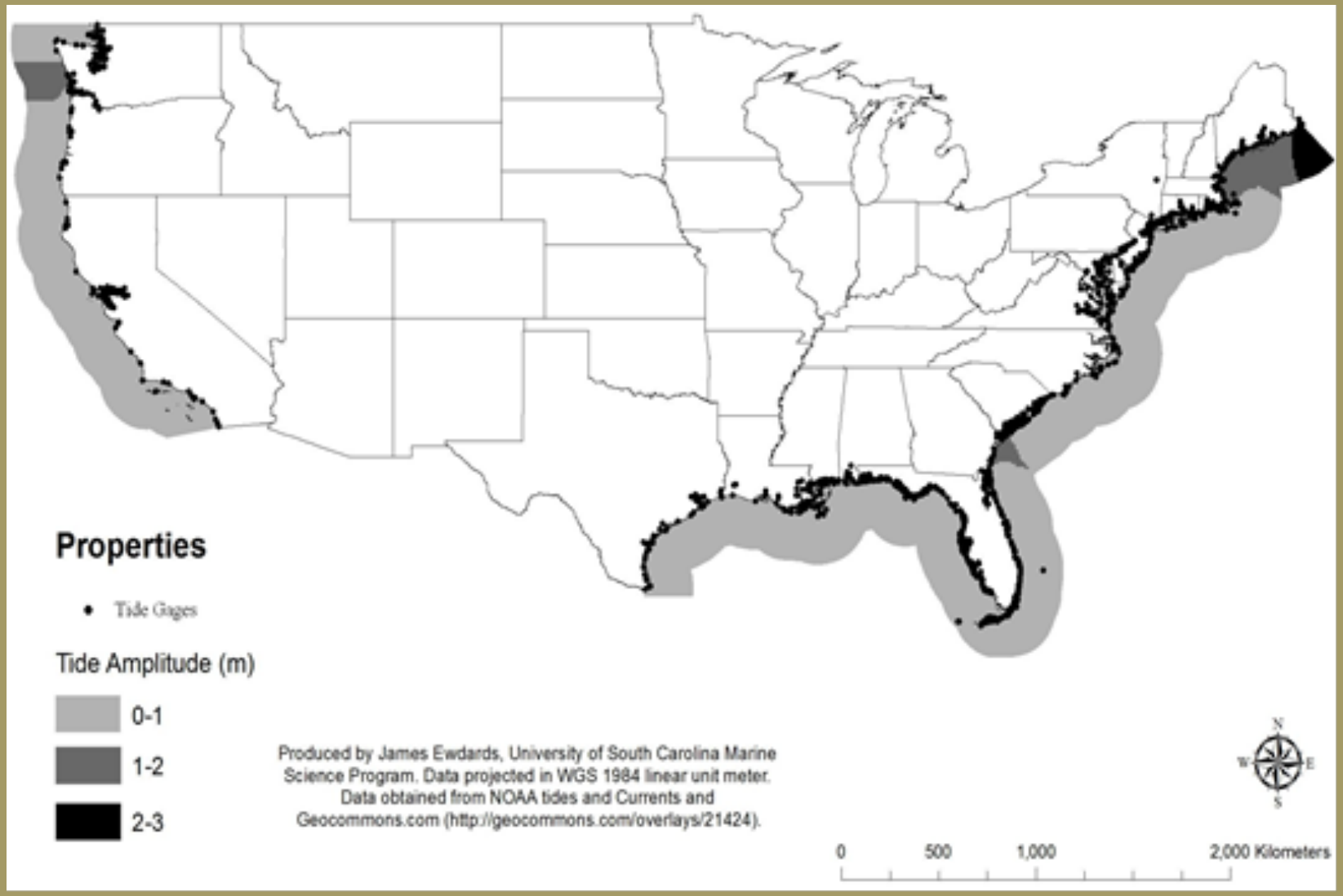
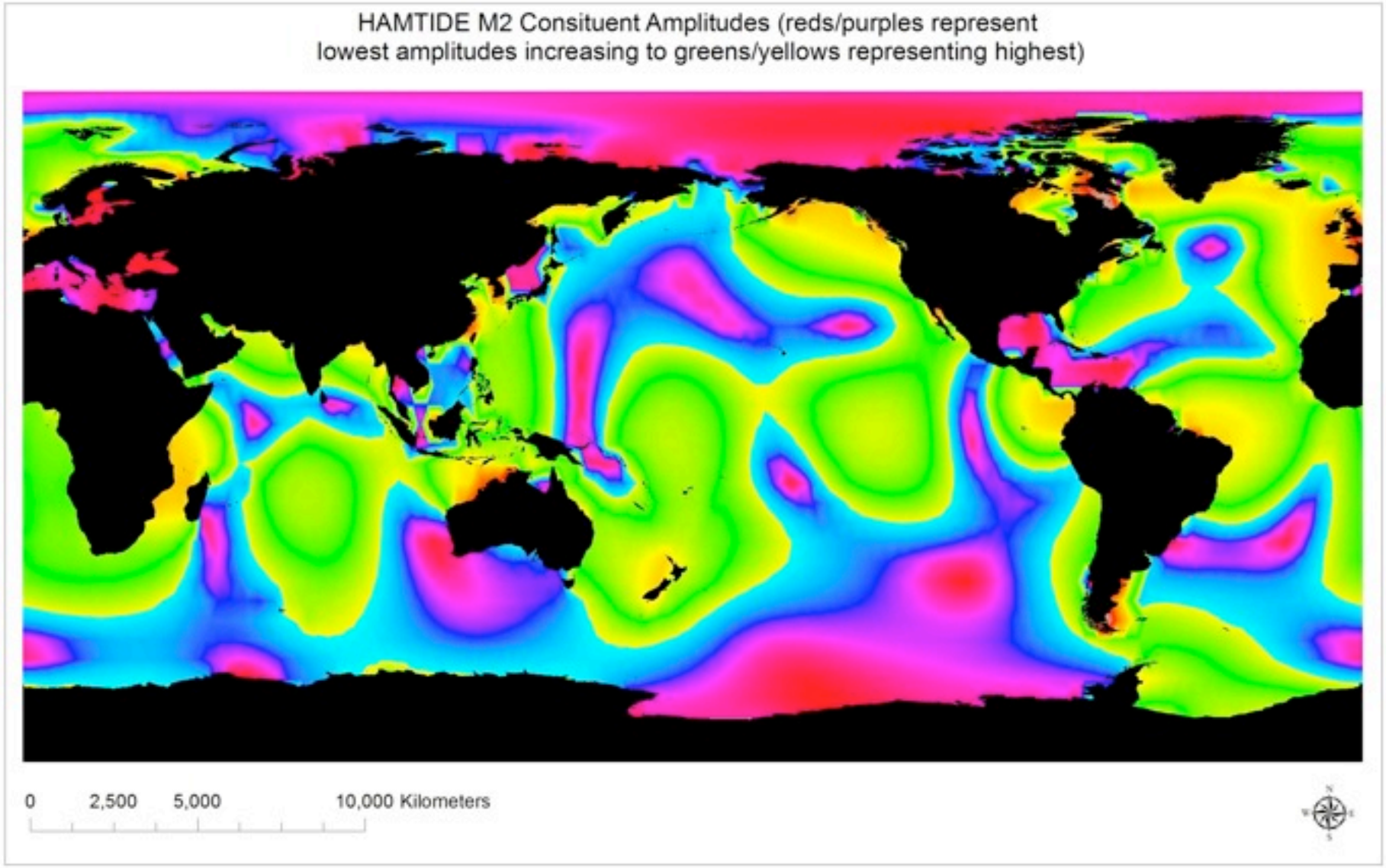


Table 24.2. Contemporary and projected, cumulative intertidal areas by topographic zone (intertidal elevation) along the coastline of the conterminous United States.

Current intertidal elevation (m)	Current area (km^2) within each zone	Area (km^2) following a 1 m rise, no survival	Area (km^2) following a 1 m rise, 100% survival†
0-1 m SRTM contour	14722 (93%)	0	0
1-2	1057 (7%)	11224 (92%)	25946 (96%)
2-3	4 (<0.5%)	1035 (8%)	1035 (4%)
3-4	0	5 (<0.5%)	5 (<0.5%)
Totals	15783 (100%)	12264 (100%)	26986 (100%)

† Assumes all contemporary marshes survive and gain 1 m in elevation.

Or… use TOPEX data for tides



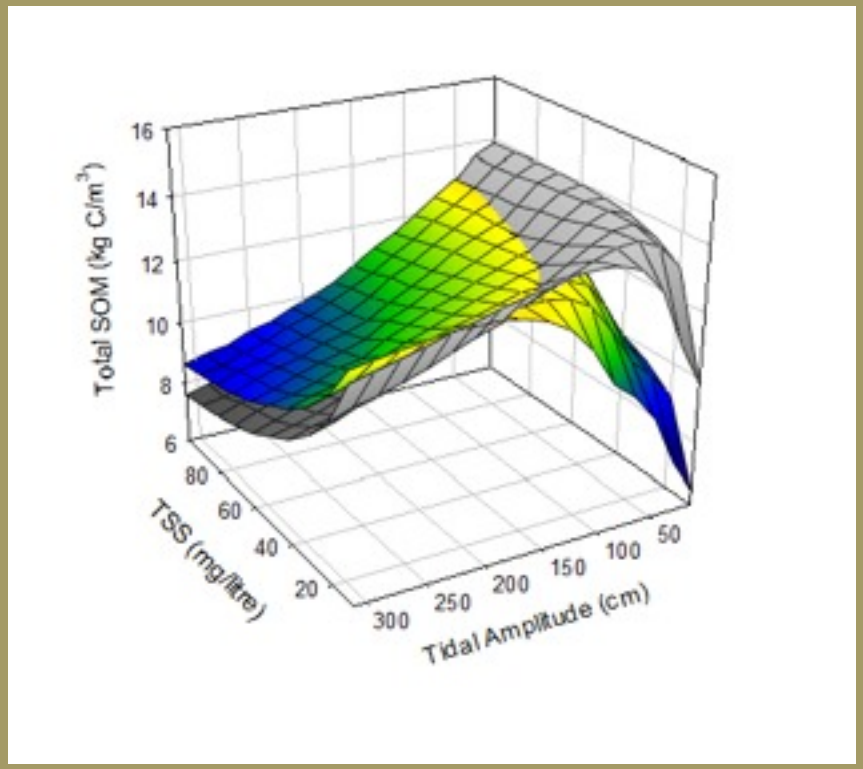


Fig. 24.3. Computed inventory of sediment organic matter (SOM) in coastal wetlands that are equilibrated to a contemporary rate of sea-level rise of 0.24 cm/yr (grey surface), and following an accelerating rate of sea-level rise that rises to 1 m elevation in a century (color surface).

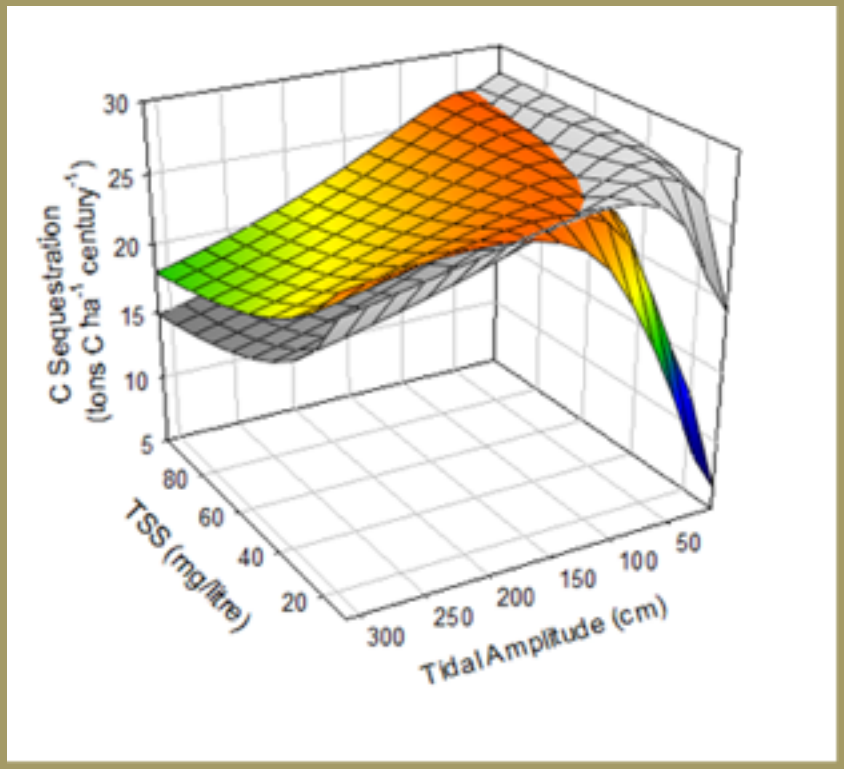
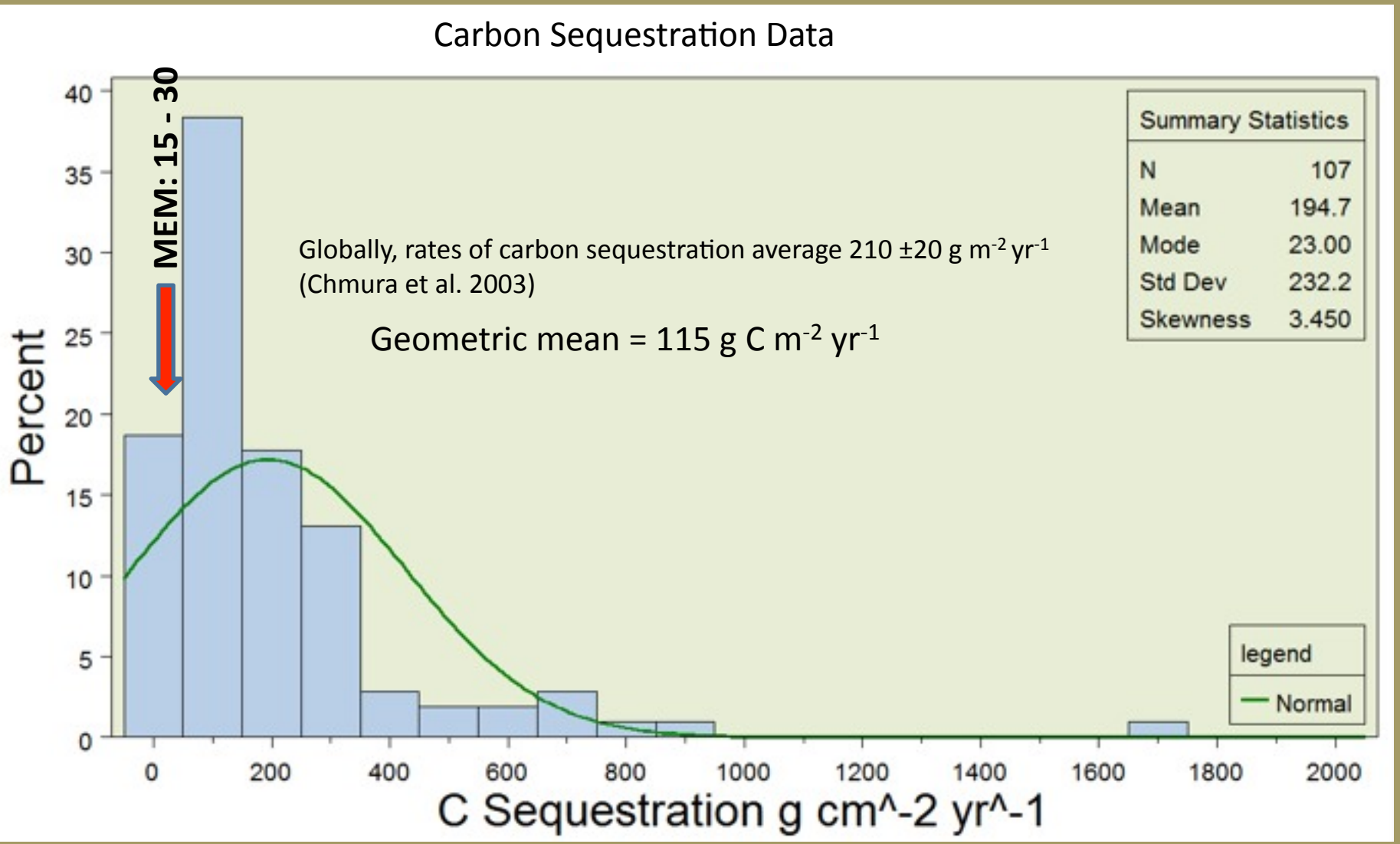
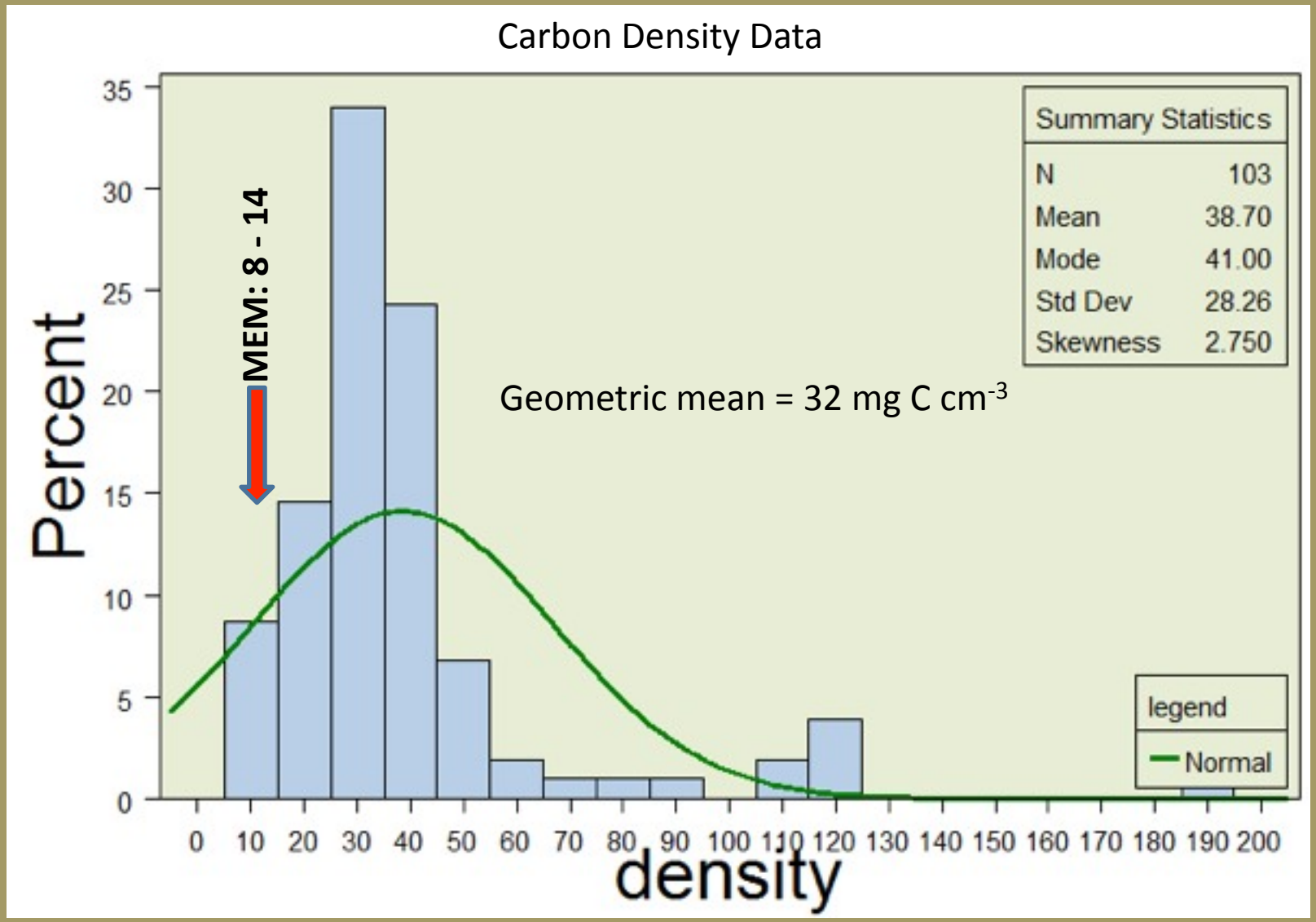


Fig. 24.2. Computed rate of carbon sequestration for coastal wetlands that are equilibrated to a contemporary rate of sea-level rise of 0.24 cm/yr (the grey-scale surface), and following an accelerating rate of sea-level rise that reaches the 1 m elevation in a century (the colorized surface).

Carbon Sequestration Data



Carbon Density Data



mg C/cm^3

Accretion or Elevation Change Data