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Salinity control on Na incorporation into calcite tests of the planktonic foraminifer *Trilobatus sacculifer* – evidence from culture experiments and surface sediments

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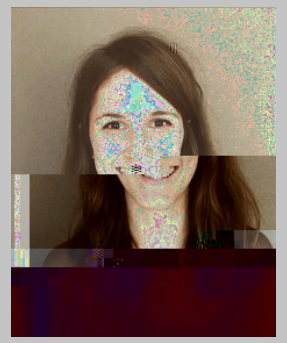

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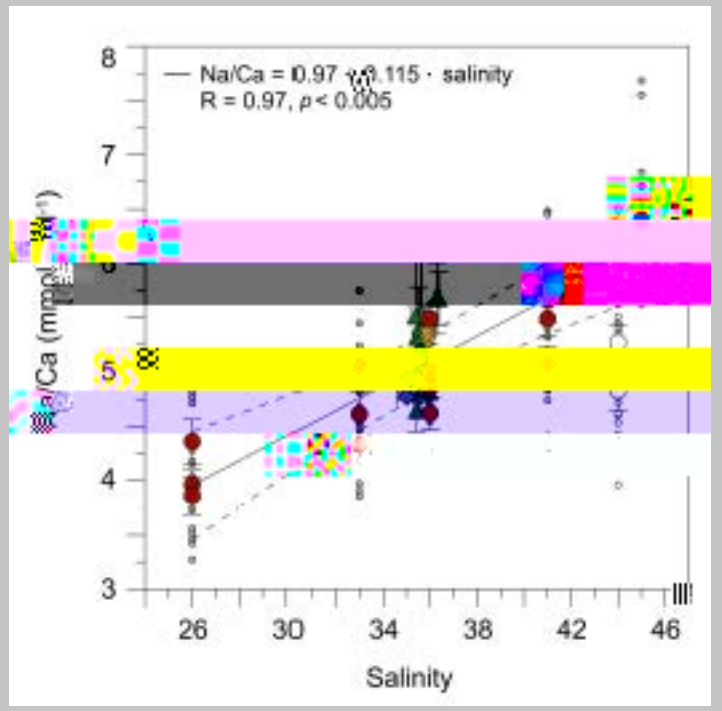

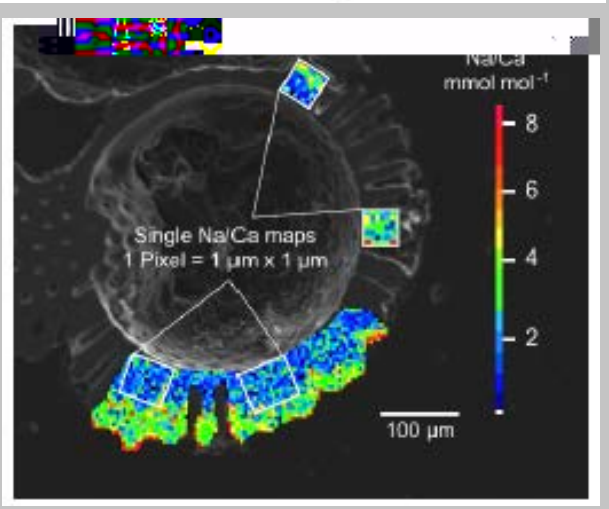

…act. The… salinity has yet to be achieved, and the search for a direct and independent salinity proxy is ongoing. Recent culture and field studies show a significant positive correlation of Na/Ca with salinity in benthic and planktonic foraminiferal calcite. For accurate paleoceanographic reconstructions, consistent and reliable calibrations are necessary. However, such are still missing. In order to assess the reliability of foraminiferal Na/Ca as a direct proxy for seawater salinity, this study presents electron microprobe Na/Ca data measured on cultured specimens of *Trilobatus sacculifer*. The culture experiments were conducted over a wide salinity range, while temperature was kept constant. To further understand potential controlling factors of Na incorporation, experiments were also performed on foraminifera cultured at various temperatures within the range of 19.5 to 29.5 °C under constant salinity conditions. Foraminiferal Na/Ca values positively correlate with seawater salinity ($Na/Ca_{T.\ sacculifer} = 0.97 + 0.115 \cdot salinity$, $R = 0.97$, $p < 0.005$). Temperature, on the other hand, exhibits no statistically significant relationship with Na/Ca values, indicating salinity to be one of the dominant factors controlling Na incorporation. The culturing results are [illegible] by measurements on *T. sacculifer* from Caribbean and Gulf of Guinea surface sediments, indi…