

*[Global Biogeochemical Cycles]*

Supporting Information for

**[Nitrogen fixation changes regulated by upper-water structure in the South China Sea during the last two glacial cycles]**

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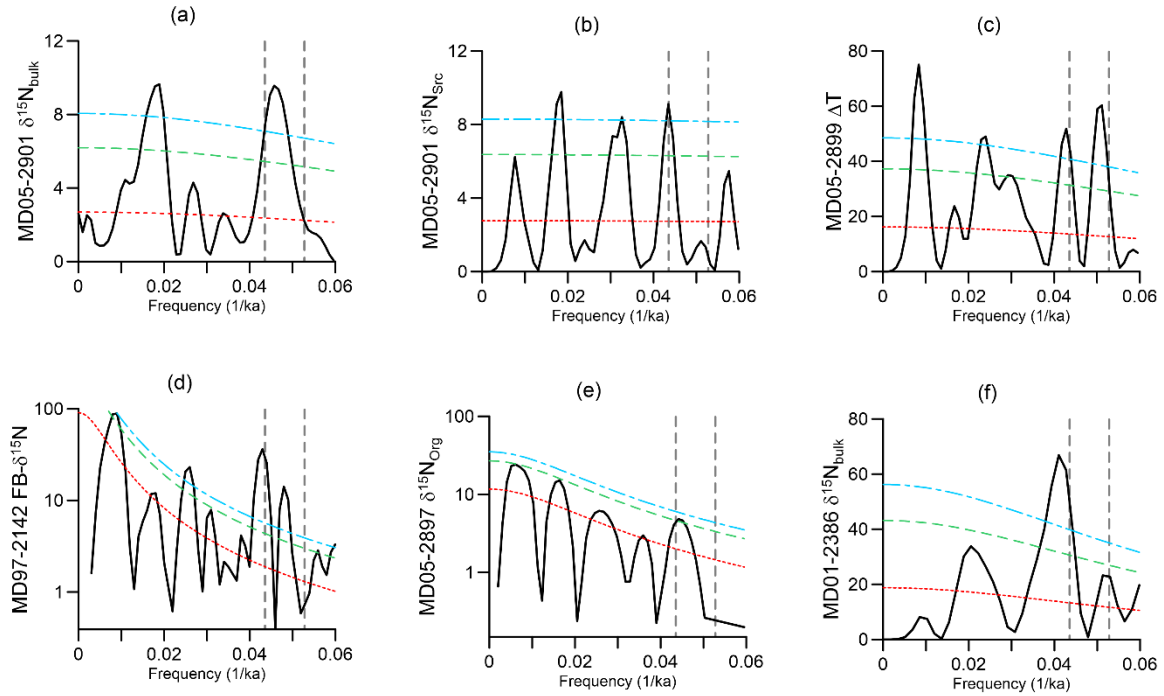
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**Introduction**

The supporting information includes one figure with caption and four tables in separate EXCEL file. The figure shows the results of spectral analysis using software Redfit38. Tables include nitrogen isotope data and upper water temperature data used in this study.



**Figure S1.** Spectral analyses of SCS  $\delta^{15}\text{N}$  records by software Redfit38 (rectangle window, oversample = 4, segment = 1, [Schulz & Mudelsee, 2002]). **a.** MD05-2901  $\delta^{15}\text{N}_{\text{bulk}}$ . **b.** MD05-2901  $\delta^{15}\text{N}_{\text{src}}$ . **c.** MD05-2899  $\Delta T$ . **d.** MD97-2142 FB- $\delta^{15}\text{N}$  [Ren et al., 2017]. **e.** MD05-2397  $\delta^{15}\text{N}_{\text{org}}$  [Dong et al., 2019]. **f.** MD01-2386  $\delta^{15}\text{N}_{\text{bulk}}$  [Jia et al., 2011]. Vertical dashed lines denote the frequencies of 23 and 19 kyr. The 95% (blue dot-dashed lines) and 90% (green dashed lines) confidence level and the red-noise (red dotted lines) are presented.

**Table S1.** MD05-2901 bulk sedimentary nitrogen isotope ( $\delta^{15}\text{N}_{\text{bulk}}$ )

**Table S2.** MD05-2901 compound-specific amino acid nitrogen isotope ( $\delta^{15}\text{N}_{\text{AA}}$ )

**Table S3.** MD05-2901 amino acid mole percentage (mol%)

**Table S4.** MD05-2899 temperature differences between surface and subsurface waters ( $\Delta T$ )