Mo isotope variability records climate-driven water column redox changes in ferruginous Lake Towuti, Indonesia over the past ~30 kyrs

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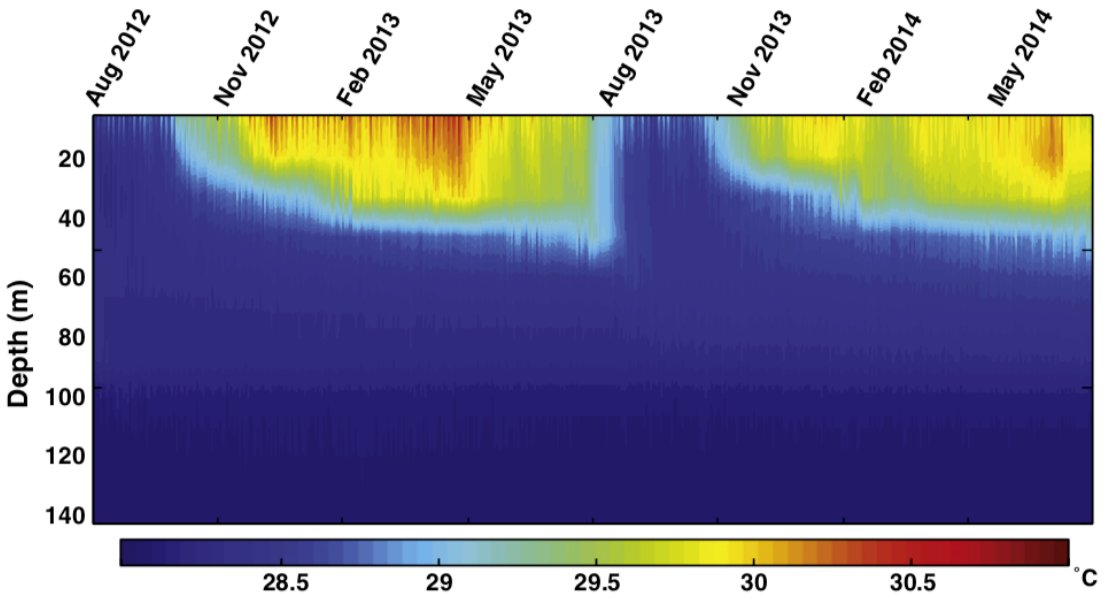
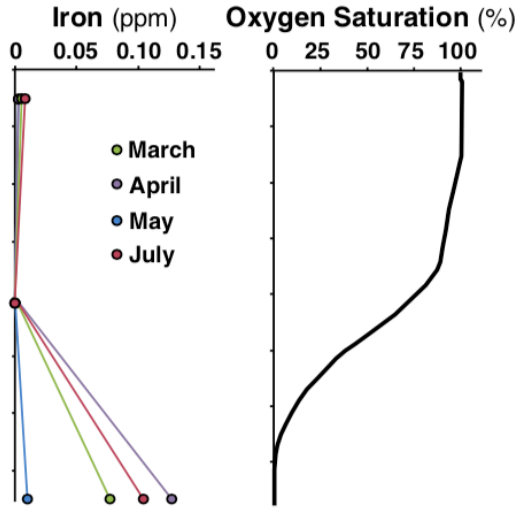
Why Mo?

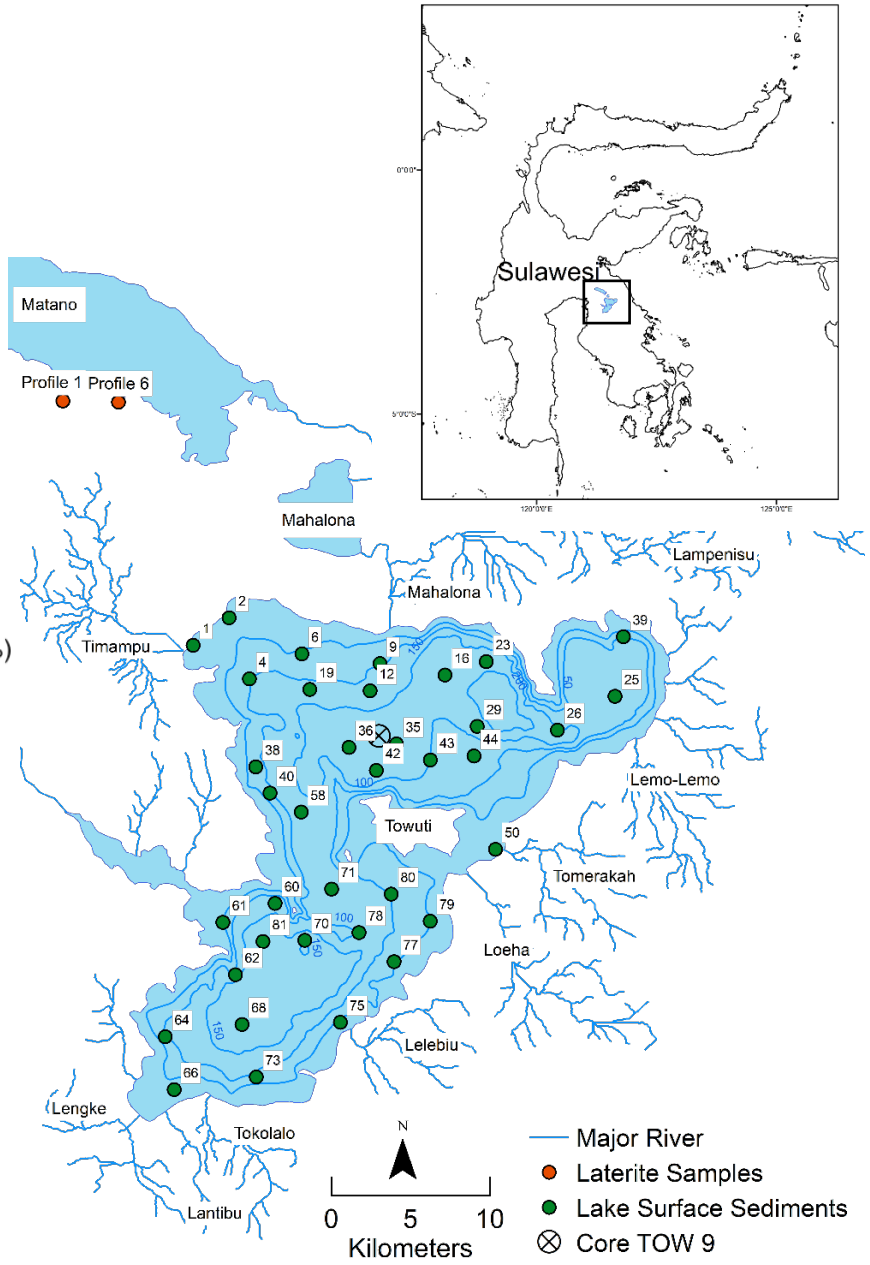
- Mo is a well-known versatile recorder for redox changes
- But so far few studies in lacustrine settings

Lake Towuti

- Seasonally stratified at ~60 m depth
- Permanently stratified below ~110 m depth

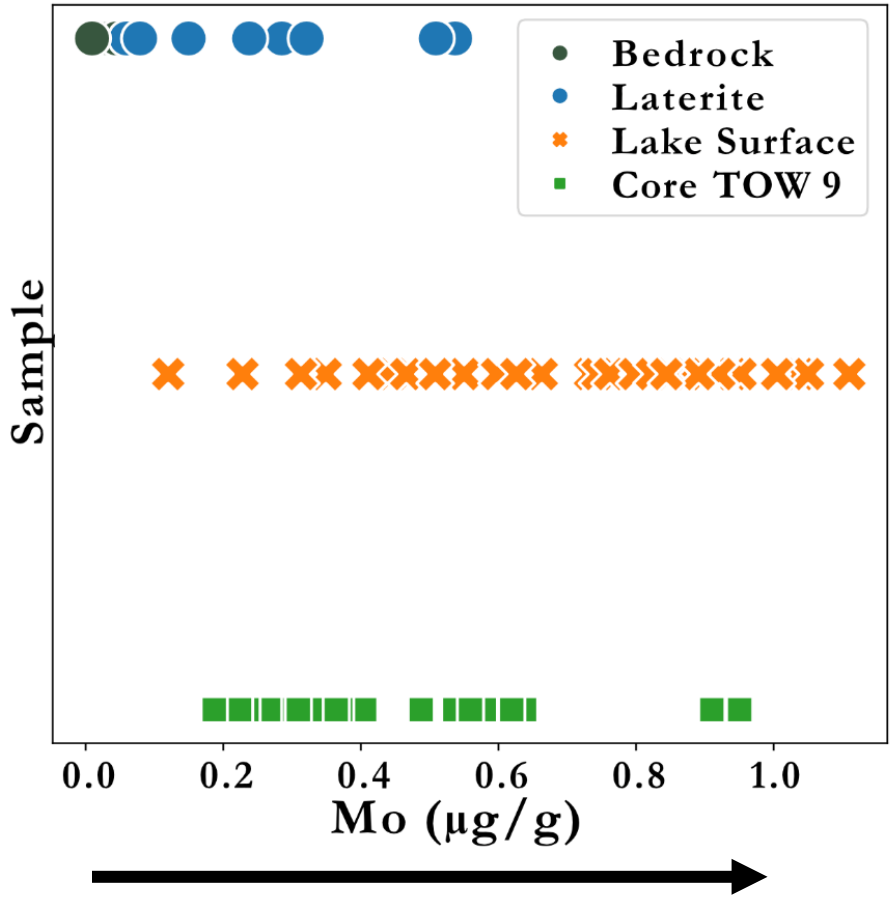




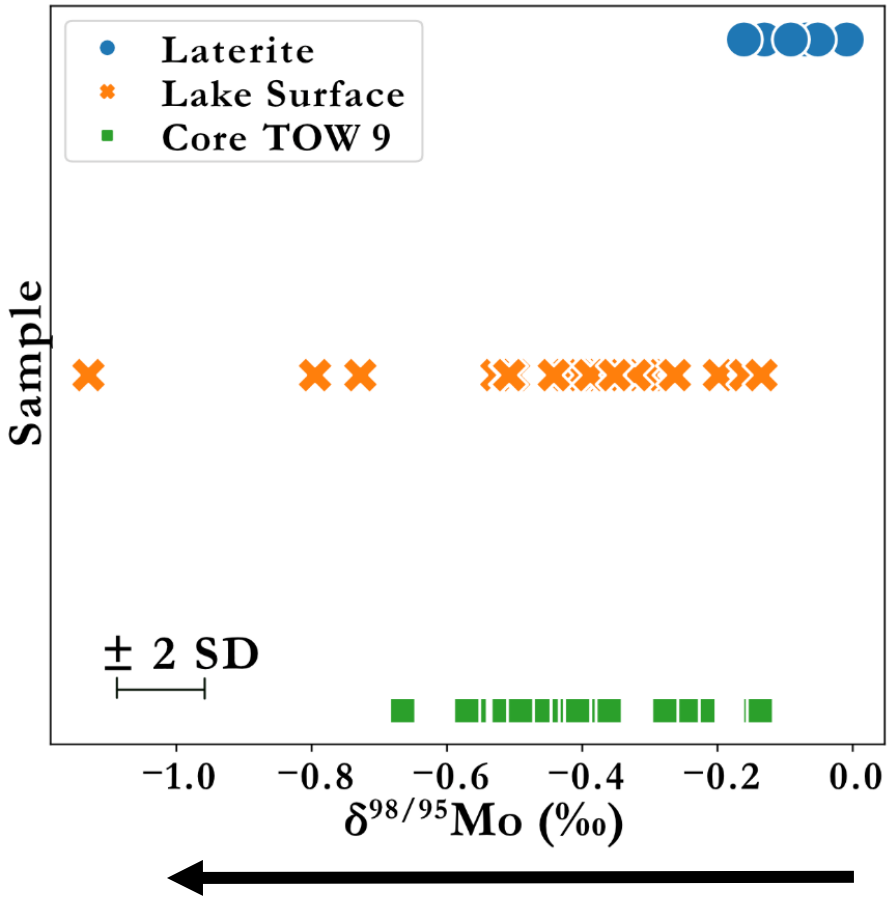


Costa et al. 2015

Mo variability and lake input

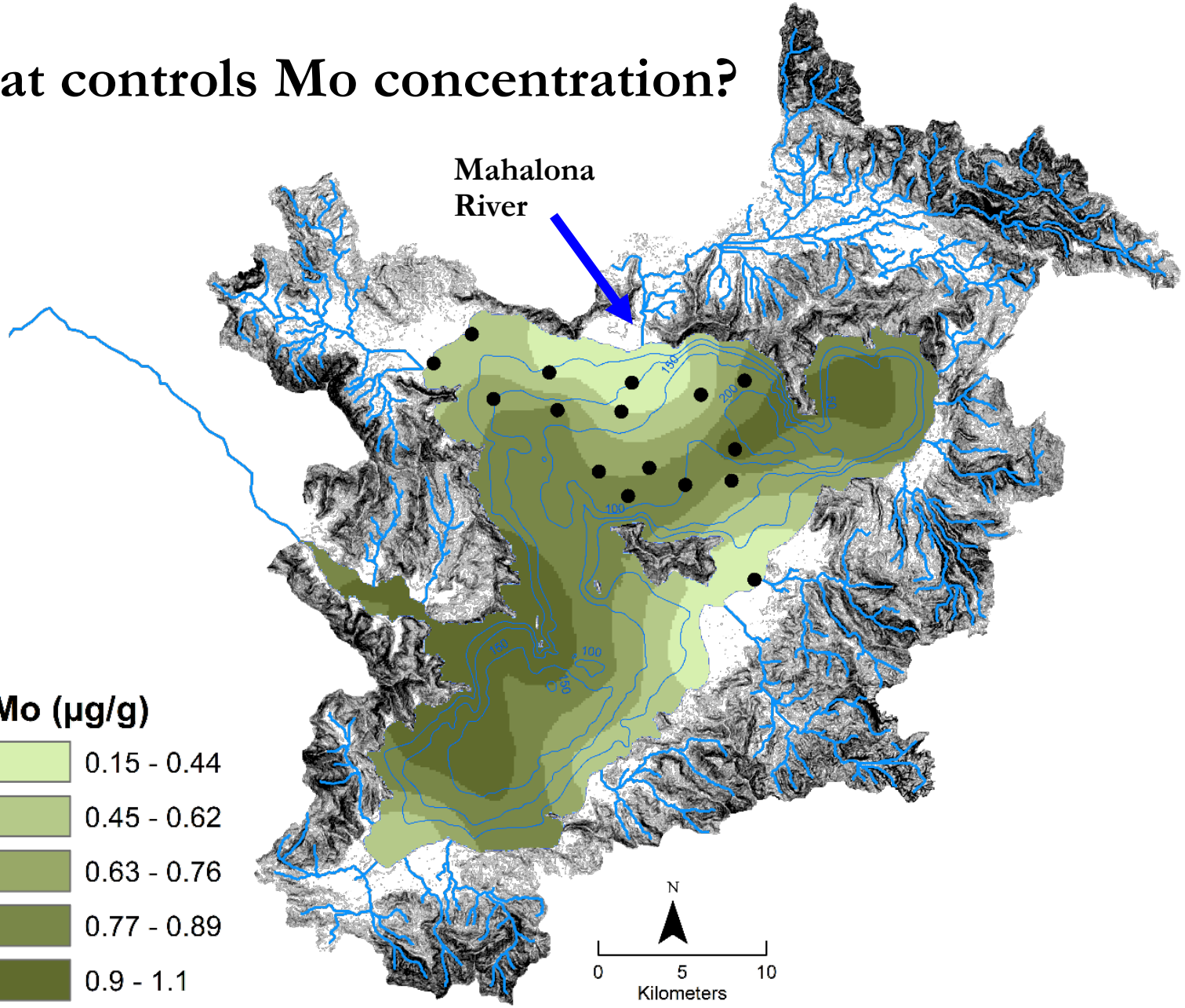


enrichment

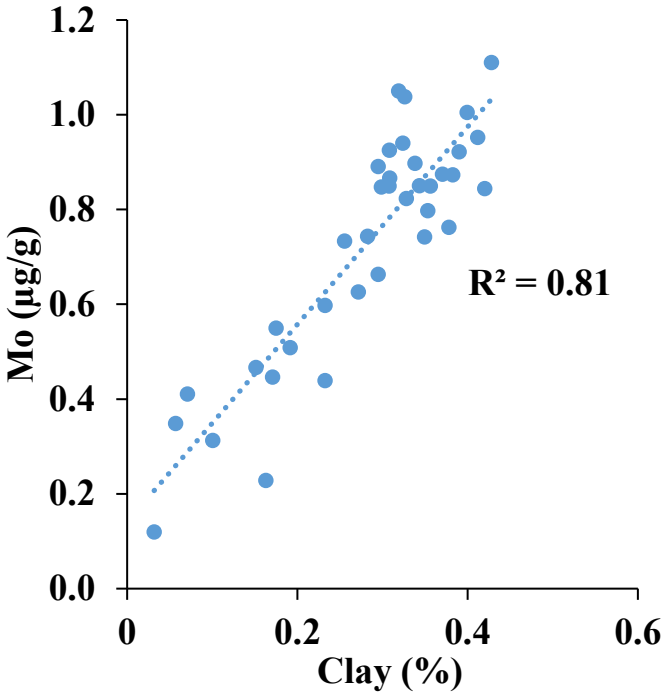


fractionation

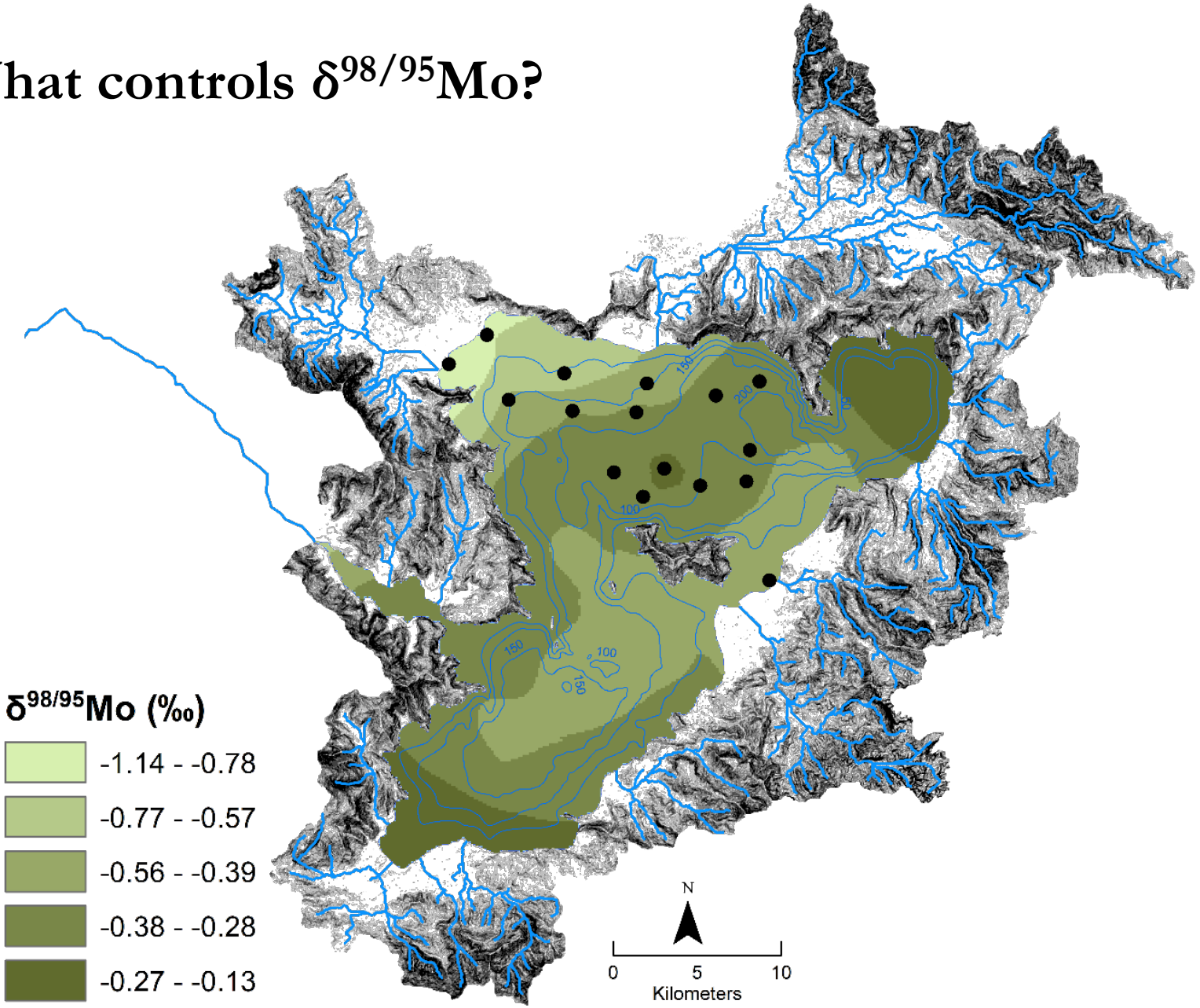
What controls Mo concentration?



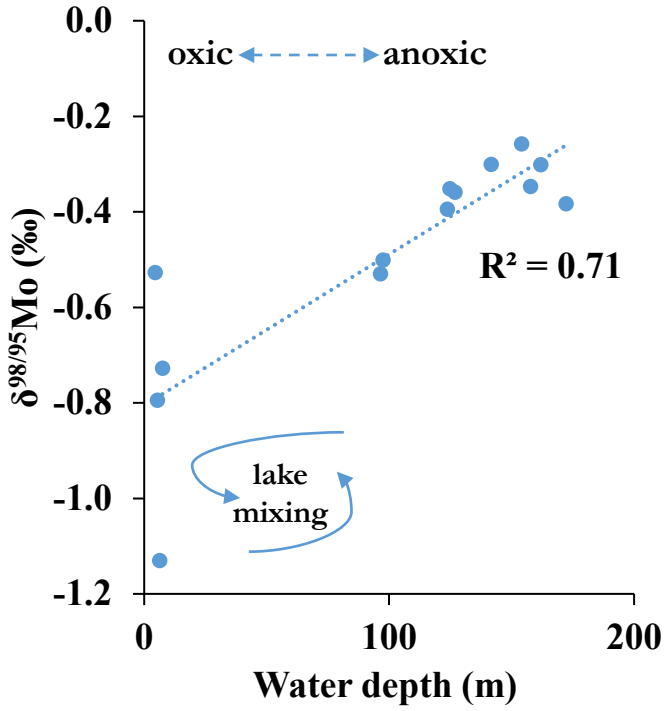
Hydrodynamic sorting

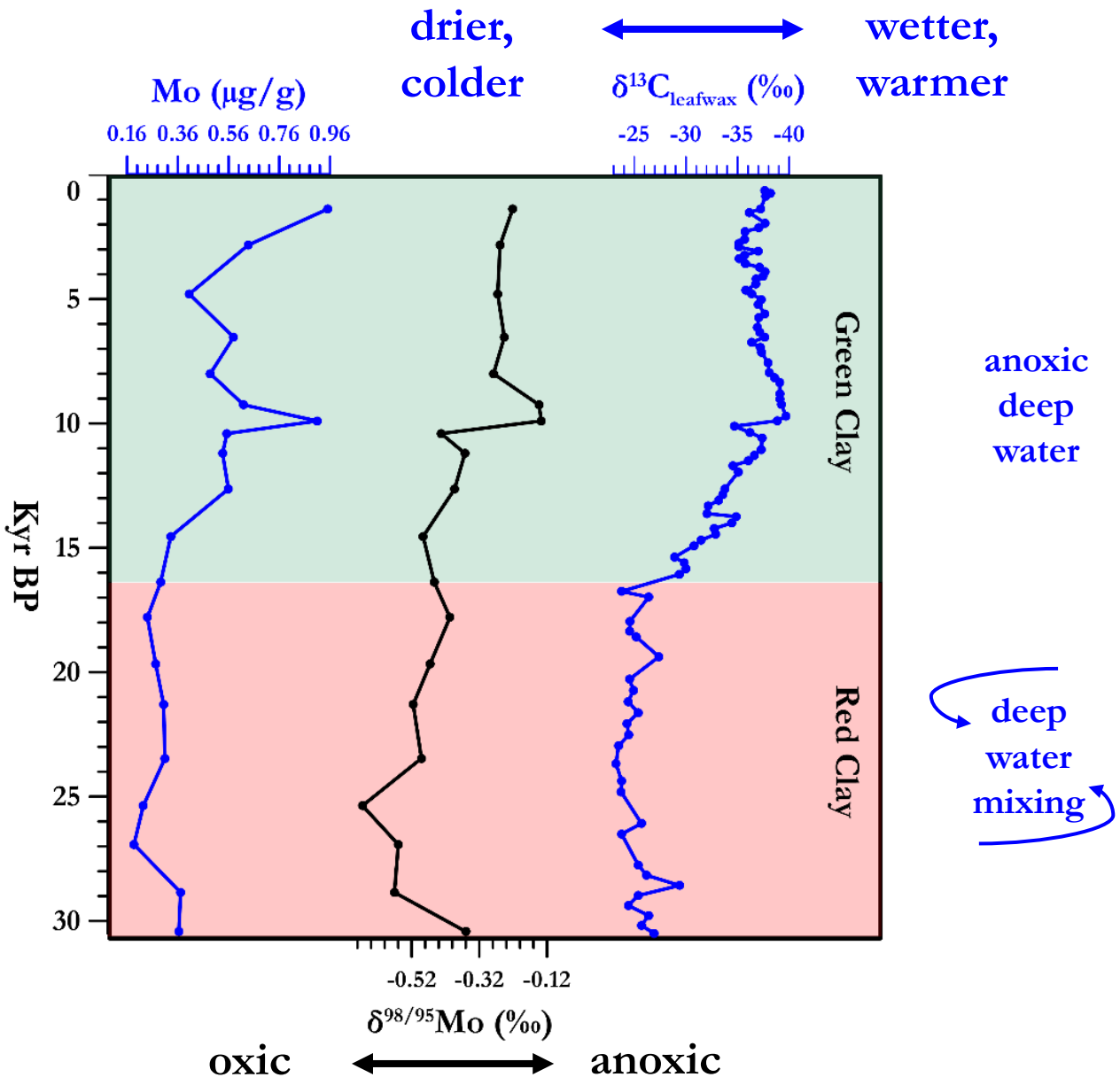


What controls $\delta^{98/95}$Mo?



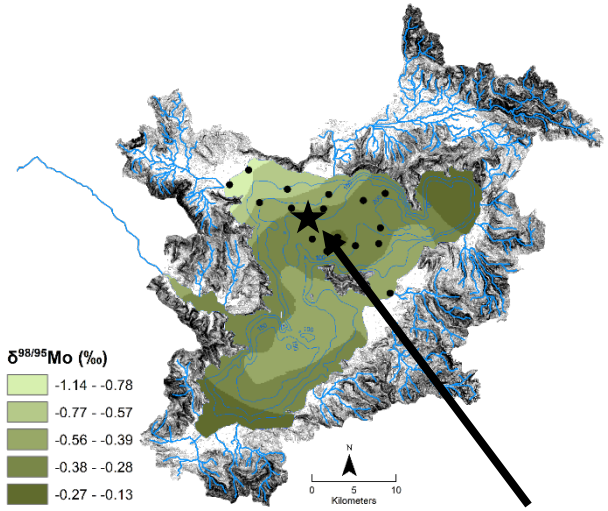
Water column oxygenation





anoxic deep water

deep water mixing



Core TOW 9
(154 m depth)

$\delta^{98/95}$Mo is a sensitive recorder of current and past water column oxygenation