

Distribution and Potential factors influencing the occurrence of Fe(II) in the Tropical Eastern Pacific

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One of the most interesting geochemical features of oxygen minimum zones (OMZs) is the persistent maxima in Fe²⁺ that coincides with a secondary nitrite maximum (SCM) at the top of the OMZ, just below the anoxic/oxic interface, which is a surprising feature. We suppose that Fe³⁺ is used by a process, possibly involving anammox, as a terminal electron acceptor. The SCM also coincides with a zone of high microbial density. Elucidation of the processes involved in Fe²⁺ accumulation will require a combination of mechanistic studies, and high resolution depth profiles over different types of OMZs, to see what the variables are. Differences are particularly acute in OMZs, where the oxycline is shallow enough to observe a deep chlorophyll maximum (DCM). In this presentation, we have the opportunity to compare data from the Mexican OMZ sampled in 2012, and the US GEOTRACES EPZT cruise of 2013. Both cruises included stations which exhibit a DCM. The observed differences could result from the preferential drawdown of nitrite relative to Fe²⁺ by species like *Prochlorococcus*, which must use nitrite. Each cruise also included stations within the coastal shelf and had extremely high Fe concentrations. It appears under these conditions, that Fe²⁺ is decoupled from nitrite and more strongly associated with benthic sources of Fe.