

DISTRIBUTIONS OF DISSOLVED IRON AND ALUMINUM
IN THE EASTERN EQUATORIAL PACIFIC:
RESULTS FROM THE 2004 BIOCOMPLEXITY CRUISE

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ABSTRACT

The aim of this thesis was to assess the relative roles of atmospheric deposition and upwelling in supplying iron (Fe) to surface waters in the eastern equatorial Pacific (EEP) and the resulting potential Fe-limitation of phytoplankton. It was found that the atmospheric contribution is ~0.2% of the upwelling contribution of dissolved Fe. Based upon potential new production supported by upwelled Fe in comparison to that of upwelled N, and also N:Fe ratios in the surface waters of the EEP, it is likely that the persistence of the HNLC state in this region is due to Fe-limitation of phytoplankton growth. Additionally, the sources of Fe to the upwelled water in the EEP and the possible variability of these sources was assessed.