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The role of biomineral in the transport of POC from the surface ocean

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The efficiency and time scales for oceanic CO_2 sequestration through the marine biota (biological carbon pump) depends critically on how much particulate organic carbon (POC) is exported below the winter mixed layer. The aggregation of biominerals (calcite and opal) with POC might play a key role in ballasting POC that may promote efficient particle export to the ocean interior. Indeed, recent studies have shown that relationships exist between the fluxes of POC with biominerals to the deep sea. However, the paucity of data from the upper ocean means that the potential ballasting mechanisms that may promote particle export from the upper ocean are poorly understood. This therefore prevents the determination of a potential relationship between POC and biominerals fluxes in an analogous manner. Here we present positives correlations of biomineral and POC ^{234}Th derived export numbers and multiple linear regression analyses from 60 Atlantic and Southern Ocean stations.