Strategies of adaptation to iron limitation in different phytoplankton

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Iron is a limiting nutrient for phytoplankton growth in vast regions of the ocean. In our ongoing projects, we study the physiological adaptations to iron limitation that have evolved in different phytoplankton groups. Part of the talk will focus on the N_2-fixing cyanobacterium *Trichodesmium*, which has unique adaptations to access mineral iron from dust: It can trap dust particles in colonies, actively move them to the colony centre and dissolve iron from the minerals by a yet unknown mechanism. Using microsensors, we have investigated whether O_2, pH and H_2 conditions in the colony microenvironment favour this dissolution of dust. In a second part of the talk, I will outline plans and preliminary results from our more recently started project, which involves a comparison of adaptation strategies to iron limitation between a broad range of species, including diatoms, dinoflagellates, coccolithophores, flagellates and green algae, focusing mainly on the utilization and intracellular allocation of iron.