RESPONSE OF THE MARINE UNICELLULAR DIAZOTROPHIC CYANOBACTERIUM C.WATSONII TO INPUT OF ATMOSPHERIC IRON FROM SAHARAN DUST

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Marine diazotrophic cyanobacteria are able to use dissolved dinitrogen (N_2) as nitrogen source for primary production. These cyanobacteria play a key role in the global carbon and nitrogen cycles as they contribute to significantly increase the oceanic N pool and thus primary production and carbon export. Fe bioavailability controls the growth and N_2 fixing activity of the open ocean unicellular diazotrophic cyanobacteria *Crocosphaera watsonii*. As the main source of Fe to ocean surface waters is represented by aeolian dust deposition, we are wondering if Fe released by Saharan dust is bioavailable for *C. watsonii*. To address this issue, batch cultures of *C. watsonii* WH8501 acclimated to low Fe concentration were amended with simulated Saharan rain. Cellular abundance increased quickly after rain addition leading to a significant increase in the growth rate (0.43 d^{-1}) relative the unamended cultures (0.30 d^{-1}). Cellular N_2- and CO_2-fixing activities were also rapidly increased (+ 78% and +31% respectively), probably due to an up-regulation of nitrogenase and photosynthetic Fe-containing enzymes. Saharan dust deposition is a source of bioavailable iron and so may induce significant stimulation of the metabolic processes of unicellular diazotrophic cyanobacteria in Fe-depleted oceanic regions.