Fertilization of the coastal waters of the Canary Islands by the diazotrophic cyanobacterium *Trichodesmium.*

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Trichodesmium is a filamentous diazotrophic cyanobacterium commonly found in tropical and subtropical oceans. During the last decade, the unabated increase in water temperature, together with periods of intense dust events and decrease in wind intensity, have resulted into recurrent *Trichodesmium* blooms around the Canary Islands. Soon after the colonies of *Trichodesmium* aggregate at convergence surface fronts, cells collapse and die liberating high concentrations of inorganic and organic nutrients to the water column. This could favor the growth of other planktonic organisms, thus acting as a fertilizer in the marine food web. In order to test this hypothesis, we carried out a monitoring program in coastal waters south of Gran Canaria with a biweekly to monthly sampling to track *Trichodesmium* blooms and their impact on the planktonic food web. We observed that patches of *Trichodesmium* were more frequent during summer in the lee of the island, coinciding with higher temperatures and stratified conditions. Waters below the patches showed increases in inorganic nutrient concentrations up to 10 fold for NO_x, 4 fold for NH_4 and 40 fold for PO_4, with respect to ambient concentrations. Likewise, dissolved organic carbon and nitrogen increased up to 45 and 60 fold, respectively, over average concentrations. We also found that chlorophyll *a* increased several fold, as result of enhancements in the abundances of small and large eukaryotes. Moreover, it was observed higher abundances of dinoflagellates (some potentially toxic), probably benefiting from high dissolved organic matter available. Our results suggest that under a future warmer and more stratified subtropical ocean that would reduce water mixing and hence nutrient inputs, *Trichodesmium* may thrive and alleviate the reduction in productivity by fertilizing the surface waters after dying, through nutrients' leaching. But also, our results point out to a future potential enhancement of toxic dinoflagellate blooms associated with these patches.

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