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Determining The Zinc Effects on phytoplankton communities' growth in the Open Oceans FWZIAH MOHAMED, MICHAEL WIESER, University of Calgary — Researchers have intensively studied the Iron hypothesis, which illustrated the influences of the iron cycle on phytoplankton communities growth, and thus in the global carbon cycle. Attention has now turned to confirming a possible Zinc hypothesis. Zn is a toxic heavy metal which can cause considerable health problems to humans and phytoplankton. The interactions between phytoplankton and Zn are often discussed in terms of the limitation or co-limitation concept. The questions are: Is Zn limiting or co-limiting the phytoplankton growth and diversity as well as the abundance of different phytoplankton communities? Is phytoplankton regulating the distributions, chemical speciation, and cycling of Zn through cellular uptake and recycling processes, which, as a negative feedback, can influence the biogeochemistry of the ocean and the whole earth system? To investigate Zn effects in the open oceans, it is necessary to identify Zn emissions from biogenic and anthropogenic sources. Stable Zn isotopic compositions can help to identify and quantify sources of Zn. This presentation will explore our current knowledge of Zn isotopic compositions from industrial and biological sources and explain how this knowledge may be used to understand the biogeochemical processing of Zn.

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