

Chemical Engineering Seminars - HT 2011

*Week 10, Tuesday March 22nd 2011, 4:00PM-5:00PM
Lecture Room 3, Thom Building, Engineering Science*

Comparing iron and nitrogen fertilisation of the Ocean

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Abstract

There have been suggestions that an increase in the productivity of the ocean would store more carbon in the ocean organic carbon cycle, as well as enhancing the higher trophic levels of the marine food web. Proposals have included fertilisation of regions low in one or more of nitrogen, phosphorous or iron, the later being termed a micronutrient. Iron is available by mining, phosphorus from mining or artificially induced upwelling while the provision of nitrogen involves using either cyanobacteria, the Haber-Bosch process or artificially induced upwelling. All these fertilization methods can be effective in locally increasing new primary production, but the global impact varies because of iron scavenging, nutrient stealing or the role of regenerative primary production. An examination of these concepts leads to the conclusion that macronutrient nourishment supplied by the Haber-Bosch process is an attractive approach to slow climate change and increase marine productivity. The carbon storage capacity of nitrogen fertilisation appears to be limited by the supply of phosphorus available to support additional new primary production.

Biography

Professor Jones is Director of the Ocean Technology Group at the University of Sydney. An engineering graduate of UNSW he took a PhD degree from the University of Waterloo, Canada. Dr Jones is a director of Earth Ocean & Space, a Sydney based environmental consultancy and has been a visiting professor at Sun Yat Sen, Tokyo, Copenhagen, Conception and Columbia Universities, NY. He is the co author of three books and a recent monograph published by Cambridge University Press entitled "Engineering Strategies for Greenhouse Gas Mitigation".