

SIO 268. Marine Chemistry and Geochemistry Seminar. Th 9-10:20 Vaughan 300.

This seminar will introduce you to some of the classic papers in Chemical Oceanography. Many of these papers have laid the foundation for the field as we know it today. Where possible, I have chosen papers by SIO professors to provide some personal context for the work. Each of you have been assigned some papers (I have tried to pick papers that may be of interest to you) but in most cases you are also expected to include a new paper in the literature that broadly deals with this topic or related topic/method. I have provided some paper pairs for reference. Everyone has to read and summarize the classic papers. I expect a written 1-page summary for each week (single spaced, no references). If two individuals are presenting you are allowed to choose one paper to summarize. The week's presenter does not need to provide a written document (even if two are presenting). However, they have to present the classic paper(s) (primarily) and the more recent paper of "their choice" (highlighting new applications, differences, improvements, new discoveries etc.) in a power point format.

Syllabus

January 9th 2020: **Introduction/Expectations**

January 16th 2020: Margot White

January 23rd 2020: Sydney Plummer, May-Linn Paulsen

January 30th 2020: Irina Koester

February 6th 2020: Sara Rivera

February 13th 2020: Ralph Torres and Bo Peng

February 20th 2020: **OCEAN SCIENCES, no class.**

February 27th 2020: Jamee Adams and Noreen Garcia

March 5th 2020: Daniela Nestory, Tricia Light

March 12th 2020: Lauren Manck

Jamee Adams

Minster & Boulahdid. (1987). Redfield ratios along isopycnal surfaces—a complementary study. *Deep Sea Research Part A. Oceanographic Research Papers* **34**: 1981. (Summarize)

Noreen Garcia

Stuiver, Quay and Ostlund (1983). Abyssal water carbon-14 distribution and the age of the world oceans. *Science* **219**:849. (Summarize)

DeVries&Holzer (2019). Radiocarbon and helium isotope constraints on Deep Ocean Ventilation and Mantle 3He sources. *JGR Oceans* **124**:3036

Irina Koester

Brandhorst (1958). Nitrite accumulation in the Northeast Tropical Pacific. *Nature* p. 679. (Summarize)

Goering & Cline (1970). A note on denitrification in seawater. *Limnology and Oceanography*. **15**:306. (Summarize)

Cline & Kaplan (1975). Isotopic fractionation of dissolved nitrate during denitrification in the eastern tropical North Pacific Ocean. *Marine Chemistry* **3**: 271.

Tricia Light.

Goldberg and Arrhenius (1958). Chemistry of Pacific pelagic sediments. *Geochimica et Cosmochimica Acta*. **13**:153. **Read pages 180 (section 5.4) to page 188.** (Summarize)

Chow and Goldberg (1960). On the marine geochemistry of barium. *Geochimica et Cosmochimica Acta*. **20**:192.

[Paytan, Kastner, Chavez. 1993. Glacial to interglacial fluctuations in productivity in the equatorial Pacific as indicated by marine barite. *Science*.]

Lauren Manck

Lupton et al. (1980). Helium-3 and Manganese at 21N East Pacific Rise hydrothermal site. *Earth and Planetary Science Letters* **50**:115.

Landing & Bruland (1980) Manganese in the North Pacific. *Earth and Planetary Science Letters* **49**:45. (Summarize)

Oldham et al. (2017). Soluble Mn (III)–L complexes are abundant in oxygenated waters and stabilized by humic ligands. *Geochimica et Cosmochimica Acta* **199**: 238-246.

Daniela Nestory

Koide, Soutar, Goldberg (1972). Marine geochronology with 210Pb. *Earth and Planetary Science Letters* **14**:442. (Summarize)

Rigaud et al. (2015). ^{210}Po and ^{210}Pb distribution, dissolved particulate exchange rates and particulate export along the North Atlantic GEOTRACES GA03 section. *Deep sea research II* **116**:60 (Focus on ^{210}Pb results).

May-Linn Paulsen.

Edmond (1974). On the dissolution of carbonate and silicate in the deep ocean. *Deep Sea Research* **21**:455. (*Summarize*)

Cites Peterson, MNA (1966). Calcite dissolution: rates of dissolution in a vertical profile in the Central Pacific.

Bo Peng

Craig and Gordon (1965). Deuterium and oxygen 18 variations in the ocean and the marine atmosphere. (*Summarize*)

Ward et al., (2019) Oxygen isotopes ($\delta^{18}\text{O}$) trace photochemical hydrocarbon oxidation at the sea surface. *Geophysical Research Letters*.

Sydney Plummer.

Dugdale and Goering (1967). Uptake of new and regenerated forms of nitrogen in primary productivity. *Limnology and Oceanography* **12**:196. (*Summarize*)

Eppley and Peterson (1979). Particulate organic matter flux and planktonic new production in the deep ocean. *Nature* **282**:677 (*Summarize*)

Sara Rivera

Barber (1968) Dissolved organic carbon from deep waters resists microbial oxidation. *Nature*, **220**:274 (*Summarize*)

Williams et al. (1969). Natural radiocarbon activity of the dissolved organic carbon in the Northeast Pacific Ocean. *Nature* **224**:256 (*Summarize*)

Mahmoudi et al. (2019) Illuminating microbial species effects on organic matter remineralization in marine sediments. *Environmental Microbiology*. **In press**.

Ralph Torres

Kim and Craig (1993). Nitrogen-15 and oxygen-18 characteristics of nitrous oxide: A global perspective. *Science*. **262**:1855. (*Summarize*)

Santoro et al. Isotopic signature of N_2O produced by marine ammonia-oxidizing archaea. *Science* 2011

Margot White

Revelle, R & Suess H (1957). Carbon dioxide exchange between atmosphere and ocean and the question of an increase of atmospheric CO₂ during the past decades. *Tellus*, **9**:18 (*Summarize*)

Keeling (1958). The concentration and isotopic abundances of atmospheric carbon dioxide in rural areas. *Geochimica et Cosmochimica Acta*. **13**:322.

Keeling (1960). The concentration and isotopic abundances of carbon dioxide in the atmosphere. *Tellus* **12**:2