

Science Atlantic/Atlantic Geoscience Society

2017-18 Geology Speaker Tour

Dr. Todd Ventura, Saint Mary's University

Saint Francis Xavier University: November 23rd, time TBA

Dalhousie University: November 30th, 11:30 Milligan Room (8007), Biology/Earth Wing, Life Science Centre.

Does Buried Sedimentary Organic Matter Contain a Deep Biosphere Fingerprint?

Abstract:

Extending deep below Earth's surface lives a microbial ecosystem referred to as the deep biosphere. When these microbes die their remains are recycled, or added to an existing pool of buried sedimentary organic matter. It is hypothesised here that over geologic time even minor additions of this cellular biomass will impact the composition of buried sedimentary organic matter. This secondary input, however, goes mostly undetected because traditional techniques cannot differentiate ancient molecular components of buried organisms from those supplied by microbiota once living deep within the subsurface. Hydrothermal vent systems have been called "windows to the deep biosphere" because their shallow sediments are host to similar microorganisms with the same metabolic strategies for survival as what exists much deeper in the Earth. This talk will show the strategies we are perusing to quantitatively define how cellular organic matter is transformed into highly resistant hydrocarbons and if it is possible to identify the molecular constituents added by its subsurface microbiota at the Cathedral Hill vent site in Guaymas Basin, Gulf of California.

Short Bio:



Dr. Ventura received his PhD from the University of Illinois at Chicago in 2006. This was followed with two postdoctoral positions at Woods Hole Oceanographic Institution and the University of Oxford, England. He then worked at GNS Science, the New Zealand crown research institute for geological sciences before joining the geology department at Saint Mary's University in 2016. Dr. Ventura research interests include organic geochemistry, isotope biogeochemistry, and petroleum geochemistry. His research has focused on the topics of lipid biomarker identification, the characterization of unresolved complex mixtures in ancient (Archean) bitumens and modern hydrothermal systems that

produce petroleum, paleoenvironmental reconstruction using lipid biomarkers, oil fingerprinting techniques, and analytical techniques for assessing oil similarity.