



**DIVECHA CENTRE
FOR CLIMATE CHANGE**

Divecha Center for Climate Change
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SEMINAR NOTICE

Title: “Short-lived Radionuclides (^7Be , ^{210}Po and ^{210}Pb -210) as Tracer and Chronometer in the study of Ice/Snow Dynamics in the Western Arctic”

Speaker: Mark Baskaran, Department of Geology, Wayne State University, Detroit, USA

Date: 29th May 2019, 3.30 pm

Venue: Divecha Centre Auditorium

Tea at 3.15 pm

Abstract: Long-lived progeny of radon-222 have been widely utilized as environmental tracer and chronometer covering time scales of 1 to 150 years. A fraction of ^{222}Rn produced in the upper 1-2 m of earth's surface escapes to the atmosphere and during its journey, it undergoes radioactive decay to ^{210}Pb . This atmospheric ^{210}Pb is subsequently removed from the atmosphere by precipitation in a time scale of around 10-15 d. The atmospherically-delivered ^{210}Pb on surface water is removed by suspended particulate matter and eventually becomes part of the sedimentary record. Lead-210 is the most-widely used chronometer after ^{14}C . In this study, we present newly-developed application to date snow, melt-ponds, and ice-rafted sediments in samples collected during Western Arctic GEOTRACES cruise in 2015. From the measured concentrations of ^{210}Pb and ^{210}Po in a suite of aerosol samples collected from the Arctic region, we assessed the residence time of ^{210}Po - ^{210}Pb -laden aerosols. The ‘ages’ of snow and melt ponds were determined to be 2-34 and 47-61 days, respectively. The ‘age’ of IRS ranged between 56 and 136 days, corresponding to Transpolar Drift Stream velocity of $0.08 - 0.17 \text{ m s}^{-1}$. This range of values is comparable to the satellite-based data of 0.05 to 0.10 m s^{-1} . From the measured disequilibrium between ^{210}Po and ^{210}Pb in a suite of ice cores, the model-derived accumulation and ablation rates of ice cores were obtained..

ALL ARE WELCOME