



***BRACE CENTRE FOR WATER RESOURCES MANAGEMENT
GLOBAL ENVIRONMENTAL & CLIMATE CHANGE CENTRE
CIVIL ENGINEERING & APPLIED MECHANICS***

SEMINAR

COSMIC RAYS AND GLOBAL CHANGE

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Galactic cosmic rays impact the Earth's atmosphere and create radioactive species from the nitrogen, oxygen and argon composing the atmosphere. The production of short-lived ^7Be (54 days) and ^{35}S (87 days) provides tracers for the tracking of SO_2 in the atmosphere as it is oxidized and forms aerosols affecting climate. The long-lived isotopes ^{10}Be (1.5 my) and ^{14}C (5730 y) are modulated in their production in the atmosphere by changes in the magnetic field of the Earth over long periods of time. This variation in the Earth's magnetic shield has a strong component due to solar coupled outputs of protons and photons. This modulation links the production rate of these nuclides to the intensity of solar photons. The solar modulation effect on climate variation can then be assessed from measurements of these long-lived radionuclides in suitable records. This has been successfully done for the past 10,000 years using climate records in tree-rings and deep-sea deposits and by inference extension to the history of mountain glaciation.

Karl Turekian (M.S. & Ph.D. Columbia University) is the Sterling Professor of Geology and Geophysics at Yale University. He started his academic career as Assistant Professor at Yale in 1956 where he is now Professor. During his career, he has done research in which he uses radioactive and radiogenic nuclides in deciphering the environmental history of the Earth. He has received many honors over his career the most recent of which is the Wollaston Medal of the Geological Society of London. He has been editor or associate editor of many geochemical journals and served on a number of advisory boards for the US government and international committees on the subjects relating to environmental contamination and climate change.

Friday, November 4, 2005
Trottier Building, Room 1090
3:30 - 4:30

EVERYONE WELCOME

