

School of Physical Sciences

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Athlone Institute of Technology

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Physics Building, N115, 13:00

Title: Noctilucent Clouds: Ice in the upper atmosphere.

Abstract

Noctilucent clouds are silvery-blue clouds which form at an altitude of about 80km, in the mesosphere, where the atmospheric temperature is a minimum (about 120K). They are composed of ice crystals, either formed directly from water vapour, or by vapour deposited on dust ablated from micrometeors as they enter the Earth's atmosphere. A project to simulate the atmosphere at this altitude and to observe the formation and growth of ice crystals under laboratory conditions of temperature and pressure similar to those obtaining at the mesopause will be described. The ice particles were grown on various solid substrates, including dust from substances found in meteorites, in a specially-designed low-temperature, low-pressure thermal diffusion chamber. Results from these experiments will be presented and the issue of the rate of formation of ice on solid substrates under these conditions will be discussed from a theoretical point of view.

Biography:

Dr. Brendan Kelly holds a B.Sc. in Mathematics and a Ph.D. in Physics from NUI Galway. His research work has been concerned with the microphysics and chemistry of the atmosphere, particularly in the contexts of air pollution and climate change. In 1994, after post-graduate work at Harvard University, he was appointed Lecturer in Physics and Computing at Athlone Institute of Technology. In 2002, he was seconded to the Irish Environmental Protection Agency (EPA), where he was responsible for establishing an information management system for the newly-founded Environmental Research Centre, focussing initially on data relating to climate change. During Ireland's Presidency of the European Union (EU) in 2003, he joined the Irish government team that led the EU negotiations for the United Nations Framework Convention on Climate Change (UNFCCC). He subsequently was part of Ireland's delegation to the Intergovernmental Group on Earth Observations (GEO) and a member of the Irish National Global Monitoring for Environment and Security (GMES) Forum. These groups are involved in using both satellite and ground-based measurements to address global societal problems. In 2006, he was seconded to the Secretariat of GEO at the World Meteorological Organisation in Geneva. He has also served as a member of the EU Commission's Research Framework Programme Committee on Space and has been a member of several advisory boards of EU projects, including the two GMES Atmosphere projects MACC and PASODOUBLE.

