

Abstract Submitted
for the 4CF10 Meeting of
The American Physical Society

Tomographic Imaging of Noctilucent Clouds¹ VERN HART, TIMOTHY DOYLE, BRENT CARRUTH, YUCHENG ZHAO, MICHAEL TAYLOR, Utah State University — Ever since their relatively recent discovery and classification, the occurrence of noctilucent clouds has been increasing in frequency and extent. For this reason the clouds themselves have been identified by atmospheric scientists as a possible gauge for measuring the effects of global climate change. The field of atmospheric tomography provides for interesting new ways to measure and explore these clouds and other mesospheric phenomena. The Aeronomy of Ice in the Mesosphere (AIM) is a recent satellite mission launched by NASA for the very purpose of studying noctilucent clouds. We present the tomographic methods and algorithms used to effectively create image reconstructions of data taken by cameras onboard the AIM satellite. The unique imaging geometry belonging to satellite measurements of this type will be discussed along with its tomographic properties. Synthetically created data will also be presented for the purpose of validating reconstruction methods. Actual reconstructions of the AIM satellite data will be presented and compared to aerial images of the clouds taken by onboard cameras. We will analyze the images and discuss their importance to the study of noctilucent clouds as well as the need for future data collection and interpretation of this type.

¹Supported through a grant from the National Science Foundation.

Vern Hart
Utah State University

Date submitted: 08 Sep 2010

Electronic form version 1.4