2016 NOAA EPP FORUM

**Frontier of Cloud-Climate Feedback Prob**lem

William B. Rossow, Distinguished Professor

CREST at City College of New York

Steinman Hall (T-107)

140th Street and Convent Avenue

New York, NY 10031

wbrossow@ccny.cuny.edu

In 1974 an international conference of leading Earth scientists assessed what was known about climate variations, especially how sensitive the climate might be to changes made by humans, and what the major uncertainties in that knowledge were. One identified major uncertainty was the nature and magnitude of cloud-radiative feedback. The strategy outlined at that conference for reducing this uncertainty was to gather better and more complete global observations of cloud properties to determine how they affect the current-day radiation budget, to investigate how clouds behave and what processes control their properties and variations, and to improve climate model representations of clouds to estimate possible cloud-climate feedbacks. Major national and international efforts were launched in the early 1980s to collect and analyze new observations of clouds, particularly from satellites, and to develop better models of cloud processes. This presentation will describe the progress that has been made on the cloud-radiative feedback problem, discuss the relation of this problem to cloud-precipitation feedback, and outline what remains to be done to understand and quantify the cloud feedbacks on the coming climate changes produced by increasing carbon dioxide in the atmosphere.