

Through the Lens of the Past into Future Climate Conditions



Anthony J. Broccoli
Professor, Environmental Sciences

CURRENT RESEARCH

Understanding climate systems by examining extreme weather events and climate changes in the past

Climate is changing, primarily as a result of human activities. Because these changes are already underway and are expected to amplify in the decades to come, society must prepare for the impacts of climate change as well as work to limit its magnitude. Dr. Anthony Broccoli, Professor of Atmospheric Science at Rutgers University, studies the physical mechanisms responsible for changes in climate, including the processes that can lead to changes in heat waves, extreme rainfall, and storm tracks. Dr. Broccoli's efforts to understand the climate system is thus twofold: modeling the distant past, during which climate changes were large but only indirect information is available, and modeling the more recent era, in which climate changes are more moderate but more precise data from modern observing systems like weather stations and satellites are abundant. By exploring and comparing the two models, Dr. Broccoli hopes to shed light on how climate systems changed in the past, and better predict changes that are happening now and in the future.

In order to simulate, understand, and predict changes in the climate system, Dr. Broccoli uses mathematical climate models that are designed to express the laws of physics in a computer program. These models can be used to perform "What If" experiments, which he and his team use to identify the most important causes of past and future changes in climate. Using this approach, Dr. Broccoli has studied a broad range of topics including the climate of the last ice age, the effects of mountains on regional aridity, the response of climate to very slow changes in Earth's orbit, influences of high-latitude climate change on tropical rainfall, changes in intense precipitation...

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AFFILIATION



Rutgers University

EDUCATION

- Ph.D. in Environmental Sciences 1998, Rutgers University

AWARDS

- Fellow, American Association for the Advancement of Science, 2012
- Fellow, American Meteorological Society, 2012

RESEARCH AREAS

Environment, Atmospheric / Space, Clean Energy

FUNDING REQUEST

Your contributions will help support the continued research of Dr. Anthony Broccoli of Rutgers University as he examines climate systems in the distant past and in the present to predict changes in the future. Donations will help fund the \$100K/year required per focused project to support personnel, computer resources, travel and opportunities for testing new ideas in developmental stages. Help develop new ways of understanding the past and future climate; fund Dr. Broccoli.

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