

PREFACE

The launch of the Tropical Rainfall Measuring Mission (TRMM) satellite in November of 1997 made it possible for quantitative measurements of tropical rainfall to be obtained on a continuing basis over the entire global Tropics. This achievement represents one of the highest points in Dr. Joanne Simpson's 50 years in meteorology. Beginning work on tropical clouds and tropical weather systems under Herbert Riehl at Chicago, Joanne did pioneering work at the Woods Hole Oceanographic Institution in the 1950s and 1960s in the Caribbean. With Woodcock, Bunker, and later Charnock, Joanne helped establish the foundation for the first cumulus cloud models. These field measurements included the earliest successful airborne flux measurements of heat, moisture, and momentum and established the essential features of the structure of the surface, mixed, and cloud layers over the tropical oceans. With Herbert Riehl, she saw deep convection in the equatorial trough as a source of diabatic heating in the tropical atmosphere. She applied the concepts of moist convective fueling to the understanding of hurricanes and ultimately to the driving of the global atmosphere. Her insistence on maintaining a firm grip on the reality of weather while simultaneously developing quantitative models of the complex processes she was attempting to understand uniquely prepared her to take up the reins of the satellite-based TRMM. Submitted by John Theon in 1984 as a proposal to the National Aeronautics and Space Administration Headquarters, from a team of Goddard investigators consisting of Gerry North, Tom Wilheit, and Otto Thiele, the proposal was embraced by Japan's Communications Laboratory under the direction of Dr. Fugono. The joint U.S.–Japan effort came to fruition with the successful launch of the TRMM satellite in the early morning of 28 November from Tanega-shima Island, Japan. Joanne served as the TRMM project scientist from August 1986 until the launch of the satellite. Her tremendous effort during this period was crucial for ensuring that the mission stayed on track and that science, data, and engineering components worked harmoniously. Much work remains to be done to realize the full potential of the TRMM data. This special issue of the *Journal of Climate* documents the beginning of this process and is dedicated to Dr. Joanne Simpson in recognition of her profound contributions to TRMM and the field of tropical meteorology, and of her wholehearted commitment to science and all those who make such efforts possible.

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