Title : “Effect of rainpower on hurricane intensity”

Dr. Pinaki Chakraborty, Associate Professor of fluid mechanics,
Okinawa Institute of Science and Technology Graduate
University, Japan

Date & Time: 2 February 2018, Friday at 4:00 PM Venue: Varahamihira Hall

Abstract:

Rain pours in a hurricane at a rate of some 2 km3/day, the equivalent of river Ganges cascading from the sky. The “rainpower,” or energy per unit time that is lost to friction as rain falls through a hurricane, has not been quantified, and its effect on hurricane intensity remains unknown. We use the Tropical Rainfall Measuring Mission (TRMM) satellite data to show that the rainpower is on the same order of magnitude as the ocean-derived power that fuels the hurricane. By coupling the satellite data to a suitably modified version of the Carnot-heat-engine model of hurricanes, we estimate that rainpower lessens hurricane intensity by 20% on average, bringing the predicted intensities of North Atlantic hurricanes into a much improved accord with a 30 year record of observations. Our findings have implications for weather and climate change forecasting.