

Wright State University

Physics Department Seminar – Faculty Candidate

Monday, March 27, 2017

3:25 pm, Medical Sciences Building 145

"Developing a Land Surface Temperature Product for NASA"

Dr. Nabin Malakar

Jet Propulsion Laboratory, California Institute of Technology

The satellite remote sensing of earth is important to study climate variability, land cover and land use change, and the energy balance between the land and atmosphere. The remote sensing measurements of thermal infrared radiance includes the atmospheric contributions in the signal. Atmospheric effects require removal from the observation in order to isolate the emitted radiance, which is then separated into its temperature and emissivity components. Atmospheric correction is highly dependent on an accurate radiative transfer model, and accurate atmospheric profiles like temperature, water vapor, etc. I will discuss the lessons learned during implementation of atmospheric correction using a water vapor scaling method, and improvements to a new MODIS Land Surface Temperature (LST) and Emissivity product (MOD21) currently being developed at NASA's Jet Propulsion Laboratory. A case study of LST observations in the greater Los Angeles area using MODIS Aqua data for 2003-2015, and examples of relevant projects involving students will be presented.

Nabin K. Malakar received his Ph.D. in physics from the University at Albany (SUNY), Albany NY USA, in 2011. He is currently a postdoctoral research scientist at the NASA's Jet Propulsion Laboratory, California Institute of Technology, in Pasadena, CA. He is working on the development, evaluation, and validation of new NASA land surface temperature and emissivity products for the thermal infrared sensors onboard Terra, Aqua, Landsat and VIIRS satellites. His research interests include identification of relevant variables in physical phenomena to improve our understanding of atmospheric processes, and algorithm development for societal applications of remote sensing data.