



# The Institution of Engineers (India)

## Kerala State Centre

cordially invites you attend the Wednesday Webinar

on

"Frozen Coconut Oil, Roar of the Lion and the Rumble of the Arabian Sea  
A Tale of Urban Growth"

by

**Dr. Udaysankar S Nair PhD**  
Associate Professor  
Atmospheric & Earth Science  
University of Alabama in Huntsville



on

**Wednesday 12<sup>th</sup> January 2022 at 6.00 – 7.30 pm**

Click on the below link to register:

[rebrand.ly/IWWS\\_92](https://rebrand.ly/IWWS_92)

**Please register on or before 9.00 pm on Tuesday 11<sup>th</sup> January 2022**

### Jointly organised by

The Institution of Engineers (India) Kerala State Centre  
IEEE Kerala Section

Computer Society of India Trivandrum Chapter

Aeronautical Society of India Trivandrum Branch

Systems Society of India Thiruvananthapuram Chapter

Project Management Institute Trivandrum Kerala Chapter

Indian National Society for Aerospace and Related Mechanism Thiruvananthapuram Chapter

Society of Aerospace Manufacturing Engineers Thiruvananthapuram

Indian Society for Training and Development Thiruvananthapuram Chapter

The Institution of Electronics and Telecommunication Engineers Trivandrum Centre

Indian Institution of Technical Arbitrators Kerala State Centre

## **Abstract:**

This talk will present multi-decadal, spatial and temporal change analysis of urban growth of the Thiruvananthapuram Municipal Corporation (TMC) conducted using NASA satellite observations. This analysis shows that the area of urban and built-up regions within TMC increased by 61% from 46 to 73.88 km<sup>2</sup> during the last two decades. Majority of this urban growth occurred during the last decade and was accompanied by reduction in vegetation cover and increase in land surface temperature. Both day and nighttime land surface temperature show an average increase of 1°C over the TMC during the last two decades. Statistical modeling, controlling for long-term climate trends, shows that urbanization accounts for 0.6°C increase in maximum temperature over the last two decades. Comparison between coastal and inland weather observations suggest that urban growth affects sea breeze circulation. Since coastal urbanization affects air that ultimately interacts with complex terrain upwind, it has the potential to affect local formation of clouds and rain. Urban growth of TMC has implications to ecology and human health and may also play a role in explaining subtle environmental changes experienced by long term residents of Thiruvananthapuram.

## **Profile:**

**Prof Udaysankar S Nair**

### **Education**

- Ph. D. in Atmospheric Science, 2002: Colorado State University
- M. S. in Meteorology, 1991, South Dakota School of Mines and Technology.
- B. Tech in Mechanical Engineering, 1988, University of Kerala, Trivandrum, India

### **Honors & Awards**

- Article based on Ph. D. dissertation work, published in the October 2001 issue of Science, was selected as one of the ten most important science papers of year 2001 in the areas of Earth Science, Environment and Ecology by Science News.
- NASA New Investigator Award, 2006.
- Google Earth Engine Faculty Research Award, 2013
- NSF CAREER Award, 2014

His primary research interest is in studying land-atmosphere interaction processes using numerical modeling, satellite remote sensing and field experimentation. He has led multiple, international field experiments investigating the impact of land cover change (e. g. deforestation) on weather and climate. His other research interests include fate and transport of air pollutants, boundary layer phenomenon, mountain weather, machine learning and development of low-cost sensor systems.