

## Climate *Charche*

### Series 1: Decoding urban climate with geospatial techniques

*Jointly Organised by the Bengaluru Sustainability Forum (BSF) and Center for Study of Science, Technology and Policy (CSTEP)*

Indian cities are inadequately prepared for climate risks, even though the Intergovernmental Panel on Climate Change (IPCC) assessment reports have indicated increasing urban risk due to climate change. Lack of data and limited technical and institutional capacities at the city scale are some of the reasons for this inadequacy.

To understand Earth's climate, both observational data and model simulations are required. Geospatial technology is advantageous for climate-change-related studies as many of the essential climate variables can be derived from remote sensing data. Therefore, it has become an important and integral part of climate-change-related studies, including climate monitoring and impact assessments. Moreover, geospatial technology provides scientific data for analysing, mapping, and monitoring various aspects of complex systems, such as urban systems. The Google Earth Engine (GEE) is one such tool that provides access to a comprehensive public data catalogue, including a vast database of satellite imagery and geospatial data sets. This platform allows users to visualise and analyse spatial data effectively, thereby emerging as one of the widely used platforms for climate-related studies, such as those on urban heat islands, diurnal temperature ranges, and urban green spaces.

Thus, GEE data sets can be used to combat several of Bengaluru's climate change challenges, such as green space depletion, air pollution, and urban flooding, which have been exacerbated by rapid urbanisation and population growth over the past few decades. Addressing these issues requires coordinated efforts from government authorities, urban planners, policymakers, researchers, and the local community. In line with this, CSTEP and BSF are hosting a workshop under the **Climate Charche** series to enhance users' knowledge of geospatial technology.

**This workshop seeks to demonstrate open-source geospatial technology and its use in enhanced mapping for observing and assessing urban characteristics and climate influence in the Bengaluru urban area.** It also aims to equip attendees with an understanding on climate change implications, the complexities of urban systems, the intricacies of remote sensing, geoinformatics, and the functionalities of GEE. By offering a hands-on training session, the workshop would impart valuable insights into the practical application of climate-tagged data sets within the GEE interface. Participants will be guided on how to navigate and utilise remote sensing data sets that are pertinent to urban climate studies. Moreover, the workshop will cover the execution of Python commands for retrieving and processing data for analytical purposes. This structured approach will ensure that by the conclusion of the workshop, attendees will possess the practical skills needed to analyse and address climate change issues and urban challenges by using advanced geospatial technology.

### **Skills from the workshop**

- Knowledge of urban systems and their challenges through a climate lens
- Navigate the GEE interface to explore remote sensing data sets relevant to urban climate studies, and
- Execute Python commands to retrieve and process data for analysis