



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study : Ph.D.

Thesis Title:

FUZZY CLUSTERING OF HYDROCLIMATIC REGIONS OF NORTHEAST INDIA AND CLIMATE CHANGE ANALYSIS

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SHORT ABSTRACT

This research is mainly focused on climate change impacted fuzzy clustering to identify homogeneous hydroclimatic regions and subsequent assessment of climate change impacts in the region. The research work was carried out with prime emphasis on the northeastern region (NE) of India, which is still considered as an experimentally unexploited land with vast natural resources. We found that the large-scale Global Climate Models have unavoidable limitations when applied to a regional-scale study, especially in regions with high topographic and orographic variations. Hence, the orographic variation of the NE region is included in downscaling model development in an attempt to improve the application of coarse-grid General Circulation Models (GCM) for regional scale climate study. We developed a new factor that can incorporate these local orographic variations and act as an influencing factor while developing a model. We found that this orographic factor has a huge capability of improving downscaling model efficiency. However, there are still a lot of scopes to work in this area and we are very optimistic about the future possibilities that it may uncover.