

Research Findings

Title of PhD thesis: **Modelling of Solar Radiation using Remote Sensing Data for Assessment of Energy Potential**

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This study undertakes an assessment and simulations of solar radiation time series at New Delhi and adjoining areas in India; while utilizing Remote Sensing data and GIS tools. Forecasting of solar radiation was estimated by implementing ARIMA models and rational method was used to assess the solar energy in the study area. The study deals with stochastic modelling of solar radiation in all sky conditions and presents an effort to predict and analyse the future trends of monthly insolation based on time series analysis. Seasonal ARIMA model, using Box–Jenkins approach, has been utilized for simulating monthly average insolation data retrieved from *NASA POWER* data archive over the study area. It has been implemented with the development of stochastic seasonal ARIMA models for forecasting solar radiation using remote sensing data and comparison with the GIS based estimation of solar radiation in the study area along with validating the models with actual ground measured data. The outcome of this study is a robust methodology for tapping solar energy in an effective manner. This methodology can be used in locations where actual ground measurement data of solar radiation is not available. The research results can provide renewable energy project investors and planners with scientific information regarding solar energy potential and suggestions for solar energy development in the near future.