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## Development of channel model to predict rain attenuation time series useful for satellite communication link over the world

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Due to the congestion at the lower frequency bands, the satellite communication systems are now operating at the higher frequency Ku or Ka bands (Ku or Ka). However in these bands, mainly above 10 GHz, rain events cause severe attenuation to the propagating signal along earth space communication link. If time series prediction of rain attenuation during rain events is possible, fade countermeasure techniques such as adaptive control of signal power, coding and data rate can be effectively implemented to mitigate this attenuation effect. In the present study, a channel model has been developed to predict time series of rain attenuation during rain event. This model is not only tested on long term basis but also event wise. The effectiveness of the methodology is tested for different locations in the globe. The yearly cumulative distributions of measured rain rate and attenuation data for tropical and temperate locations are compared. Separate model parameters are developed for tropical and temperate regions for better prediction of rain attenuation. Temperate model parameters obtained from a temperate location are successfully used for other temperate locations. Similarly tropical model parameters obtained from a tropical location are successfully used for other tropical locations. We are now trying to develop a global model which will be applicable to all over the world for time series prediction of rain attenuation during rain events.

### Biography

Dalia Nandi (Das) has completed her PhD from Calcutta University, West Bengal, India. She is working as Assistant Professor (Senior Grade) in Electronics and Communication Engineering Department of Meghnad Saha Institute of Technology. She has 13 years teaching experience and 10 years research experience. She has published 5 SCI journals and 12 proceedings to her credit. She is associated with different projects funded by Indian Space Research Organization (ISRO). Her present areas of interests are satellite communications, atmospheric remote sensing and wave propagation.

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