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Prediction of rain rate distribution with time delay based on measured 1-min rain intensity data to mitigate fades on satellite link (Conference Paper)

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Abstract

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Earth to satellite communications are moving towards higher frequency bands in future which are more sensitive to environment. Rain causes severe degradation in performances at higher frequency bands specially in tropical regions. Several mitigation techniques are proposed by researcher to design reliable system. Time diversity is one of the potential candidate for it. However, time diversity analysis requires measured rain attenuation data. For future high frequency link design those data are not available at most of the places. This paper proposes a method to utilize 1-min rain rate to analyse time diversity technique at any desired frequency. In proposed method, it is assumed that rain rate with delay can represent rain attenuation with delay for same period of time at same location. This assumption is valid as long as the attenuation causes due to rain. A model is developed to predict rain rate distribution with delay from annual measured statistics. © 2018 Institution of Engineering and Technology. All rights reserved.

SciVal Topic Prominence

Topic: Rain | Electromagnetic wave attenuation | ITU-R model

Prominence percentile: 89.600

Author keywords

Rain fade mitigation Rain rate Time diversity technique

Indexed keywords

Engineering controlled terms: Electromagnetic wave attenuation Satellite communication systems Satellite links Time delay Timing circuits

Engineering uncontrolled terms: High frequency link Higher frequencies Mitigation techniques Rain fades Rain rates Reliable systems Satellite communications Time diversity

Engineering main heading: Rain

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Rafiquel, I.Md. , Lwas, A.K. , Habaebi, M.H. (2018) International Journal of Electrical and Computer Engineering

Probability distributions of rain attenuation obtainable with linear combining techniques in space-to-Earth links using time diversity

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<http://www.journals.elsevier.com/journal-of-atmospheric-and-solar-terrestrial-physics/>
doi: 10.1016/j.jastp.2017.10.004

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- 2 Fukuchi, H., Chodkaveekityada, P.
Propagation impairments along satellite-to-earth path and their mitigation technologies

(2015) *Proceedings of the 2015 IEEE 4th Asia-Pacific Conference on Antennas and Propagation, APCAP 2015*, art. no. 7374437, pp. 433-434. Cited 2 times.
ISBN: 978-147998896-9
doi: 10.1109/APCAP.2015.7374437

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- 3 Chodkaveekityada, P., Fukuchi, H.
Prediction model of time diversity using Japan rain radar data

(2017) *International Journal of Satellite Communications and Networking*, 35 (4), pp. 281-293. Cited 4 times.
[http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1542-0981](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1542-0981)
doi: 10.1002/sat.1182

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- 4 Ng, Y.-Y., Singh, M.S.J., Thiruchelvam, V.
Performance analysis of 60-min to 1-min integration time rain rate conversion models in Malaysia

(2018) *Journal of Atmospheric and Solar-Terrestrial Physics*, 167, pp. 13-22. Cited 2 times.
<http://www.journals.elsevier.com/journal-of-atmospheric-and-solar-terrestrial-physics/>
doi: 10.1016/j.jastp.2017.10.004

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- 5 Fabbro, V., Castanet, L., Croce, S., Riva, C.
Characterization and modelling of time diversity statistics for satellite communications from 12 to 50GHz

(2009) *International Journal of Satellite Communications and Networking*, 27 (2), pp. 87-101. Cited 20 times.
<http://www3.interscience.wiley.com/cgi-bin/fulltext/121659001/PDFSTART>
doi: 10.1002/sat.927

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