Document details

Proceedings of the 2018 7th International Conference on Computer and Communication Engineering, ICCCE 2018
16 November 2018, Article number 8539311, Pages 412-415
7th International Conference on Computer and Communication Engineering, ICCCE 2018; Kuala Lumpur; Malaysia; 19 September 2018 through 20 September 2018; Category numberCFP1839D-USB; Code 142740

Air Born Dust Particles Effects on Microwave Propagation in Arid-Area (Conference Paper)

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Abstract

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Dust storms can degrade visibility and increase atmospheric attenuation. Therefore, microwave (MW) propagation is severely affected by dust storms in many parts of the world. Air - born dust particles may affect electromagnetic waves during a dust storm. In this paper airborn dust particles effects are studied based on measured visibility. Recent analytical and numerical models results are compared to the measured at 14 GHz. Consequently, measured attenuation is significantly greater than the predicted using recent analytical and numerical models. © 2018 IEEE.

SciVal Topic Prominence

Topic: Dust | Storms | dust storms

Prominence percentile: 58.698

Author keywords

Attenuation | Dust storms | Microwave

Indexed keywords

Engineering controlled terms: Dust | Electromagnetic waves | Microwaves | Numerical models | Visibility

Engineering uncontrolled terms: Analytical and numerical models | Arid area | Atmospheric attenuation | Attenuation | Dust particle | Dust storm | Microwave propagation

Engineering main heading: Storms

ISBN: 978-153866991-4
Source Type: Conference Proceeding
Original language: English
DOI: 10.1109/ICCCE.2018.8539311
Document Type: Conference Paper
Publisher: Institute of Electrical and Electronics Engineers Inc.

Elsheikh, E.A.A. , Md Rafiqul, I. , Chebil, J.
(2013) IOP Conference Series: Materials Science and Engineering

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References (20)

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1 Islam, M.R., Elsheikh, E.A.A., Alam, A.Z., Khalifa, O.O.
Proposing a horizontal path adjustment factor for microwave link's attenuation prediction based on the analysis of dust storm behavior

(2011) 2011 IEEE 10th Malaysia International Conference on Communications, MICC 2011, art. no. 6150297, pp. 44-48. Cited 6 times.
ISBN: 978-145770976-0
doi: 10.1109/MICC.2011.6150297

View at Publisher

2 Elsheikh, E.A.A., Islam, M.R., Al-Khateeb, K., Alam, A.Z., Elshaikh, Z.O.
A proposed vertical path adjustment factor for dust storm attenuation prediction

(2011) 2011 4th International Conference on Mechatronics: Integrated Engineering for Industrial and Societal Development, ICOM'11 - Conference Proceedings, art. no. 5937141. Cited 9 times.
doi: 10.1109/ICOM.2011.5937141

View at Publisher

3 Chiou, M.-M., Kiang, J.-F.
Attenuation of Millimeter-Wave in a Sand and Dust Storm

(2016) IEEE Geoscience and Remote Sensing Letters, 13 (8), art. no. 7480958, pp. 1094-1098. Cited 7 times.
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=8859
doi: 10.1109/LGRS.2016.2566799

View at Publisher

4 Sharif, S.M.
Attenuation properties of dusty media using mie scattering solution (Open Access)

(2015) Progress In Electromagnetics Research M, 43, pp. 9-18. Cited 3 times.
http://www.jpier.org/PIERM/pierm43/02.15022403.pdf
doi: 10.2528/PIERM15022403

View at Publisher

5 Elsheikh, E.A.A., Rafiqul, I.M., Habaebi, M.H., Ismail, A.F., Chebil, J.
Preliminary analysis of dust storm effects on microwave links measured in Khartoum

(2015) 2015 IEEE 12th Malaysia International Conference on Communications, MICC 2015, art. no. 7725430, pp. 181-185.
ISBN: 978-150900019-7
doi: 10.1109/MICC.2015.7725430

View at Publisher

6 Islam, M.R., Elsheikh, E.A.A., Ismail, A.F., Bashir, S.O., Chebil, J.
Development of an empirical dust storm attenuation prediction model for microwave links in arid area - A proposed framework

(2015) Proceedings - 5th International Conference on Computer and Communication Engineering: Emerging Technologies via Comp-Unication Convergence, ICCCE 2014, art. no. 7031642, pp. 224-227. Cited 6 times.
ISBN: 978-147997635-5
doi: 10.1109/ICCCE.2014.71

View at Publisher

7 Elsheikh, E.A.A., Rafiqul, I.M., Ismail, A.F., Habaebi, M.H., Chebil, J.
Dust storms attenuation measurements at 14GHz and 21 GHz in Sudan

(2015) Proceedings - 2015 International Conference on Computing, Control, Networking, Electronics and Embedded Systems Engineering, ICCNEEE 2015, art. no. 7381366, pp. 11-16. Cited 3 times.
ISBN: 978-146737869-7
doi: 10.1109/ICCNEEE.2015.7381366

View at Publisher

8 Elsheikh, E.A.A., Islam, M.R., Habaebi, M.H., Ismail, A.F., Zyoud, A.
Dust Storm Attenuation Modeling Based on Measurements in Sudan

(2017) IEEE Transactions on Antennas and Propagation, 65 (8), art. no. 7948717, pp. 4200-4208. Cited 2 times.
doi: 10.1109/TAP.2017.2715369

View at Publisher

9 Musa, A., Bashir, S.O., Abdalla, A.H.
Review and assessment of electromagnetic wave propagation in sand and dust storms at microwave and millimeter wave bands - part ii (Open Access)

(2014) Progress In Electromagnetics Research M, 40, pp. 101-110. Cited 6 times.
http://www.jpier.org/PIERM/pierm40/11.14102903.pdf
doi: 10.2528/PIERM14102903

View at Publisher

10 Chen, H.-Y., Ku, C.-C.
Calculation of Wave attenuation in sand and dust storms by the FDTD and turning bands methods at 10-100 GHz

(2012) IEEE Transactions on Antennas and Propagation, 60 (6), art. no. 6183464, pp. 2951-2960. Cited 16 times.
doi: 10.1109/TAP.2012.2194657

View at Publisher

11 Xiao-Ying, D., Chen, H.-Y., Guo, D.-H.
Microwave and millimeter-wave attenuation in sand and dust storms
(2011) IEEE Antennas and Wireless Propagation Letters, 10, pp. 469-471. Cited 27 times.

12 Ghobrial, S.I., Sharief, S.M.
Microwave Attenuation and Cross Polarization in Dust Storms

(1987) IEEE Transactions on Antennas and Propagation, 35 (4), pp. 418-425. Cited 61 times.
doi: 10.1109/TAP.1987.1144120

View at Publisher

13 Elsheikh, E.A.A., Islam, M.R., Zahirul Alam, A.H.M., Ismail, A.F., Khalid, A.-K., Elabdin, Z.
The effect of particle size distributions on dust storm attenuation prediction for microwave propagation

(2010) International Conference on Computer and Communication Engineering, ICCCE'10, art. no. 5556831. Cited 15 times.
ISBN: 978-142446234-6
doi: 10.1109/ICCCE.2010.5556831

View at Publisher

14 Ansari, A.J., Evans, B.G.
Microwave propagation in sand and dust storms

(1982) IEE Proceedings F: Communications Radar and Signal Processing, 129 (5), pp. 315-322. Cited 57 times.
doi: 10.1049/ip-f-1.1982.0047

View at Publisher

15 Vishvakarma, B.R., Rai, C.S.
Limitations of Rayleigh scattering in the prediction of millimeter wave attenuation in sand and dust storms

(1993) International Geoscience and Remote Sensing Symposium (IGARSS), 1, pp. 267-269. Cited 14 times.
ISBN: 0780312406

View at Publisher

16 Ahmed, A.S., Ali, A.A., Alhaider, M.A.
Airborne Dust Size Analysis for Tropospheric Propagation of Millimetric Waves into Dust Storms

(1987) IEEE Transactions on Geoscience and Remote Sensing, GE-25 (5), pp. 593-599. Cited 30 times.
doi: 10.1109/TGRS.1987.289838

View at Publisher

17 Goldhirsh, J.
Attenuation and backscatter from a derived two-dimensional duststorm model

(2001) IEEE Transactions on Antennas and Propagation, 49 (12), pp. 1703-1711. Cited 55 times.
doi: 10.1109/8.982449

View at Publisher

18 Elabdin, Z., Islam, M.R., Khalifa, O.O., Raouf, H.E.A.
Mathematical model for the prediction of microwave signal attenuation due to duststorm (Open Access)

(2009) Progress In Electromagnetics Research M, 6, pp. 139-153. Cited 34 times.
http://ceta.mit.edu/PIERM/pierm06/11.09021906.pdf
doi: 10.2528/PIERM09021906

View at Publisher

19 Vaisala Transmissometer LT31 RVR with New Eyes
Vaisala Vaisala., Helsinki, FINLAND, Tech. Rep. Ref. B210416en-C

20 Islam, M.R., Elshaikh, Z.E.O., Khalifa, O.O., Alam, A.H.M.Z., Khan, S., Naji, A.W.
Prediction of signal attenuation due to duststorms using mie scattering
(2010) IIUM Engineering Journal (ISSN: 1511-788X), 11 (1), pp. 71-87. Cited 14 times.