Interactive comment on "50 years return period wet-snow load estimation based on weather station data for overhead line design purpose" *by* H. Ducloux and B. E. Nygaard

Anonymous Referee #2

Received and published: 18 September 2014

Paper by Ducloux and Nygaard Comments: The topic of the paper is very important as ice accretion can have huge effects on populations as well as economically. My recommendation is that the paper be rejected but the authors be given a chance to re-submit. General comments: 1. The paper is loaded with unjustified assumptions and these affect the outcome of the results. 2. The analysis is not clearly outlined and therefore the paper is not possible to understand in its present form. See comments below. 3. Physically, such a problem will involve extreme values since extreme loads are estimated. There is no justification for assuming a Generalized Pareto Distribution (GPD) based on data. The Icelandic data appear to be the only data set available and

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

they do not follow a GPD. I fit the Icelandic data (2013 paper) to 60 distributions using 5 goodness-of-fit tests and found best fit is a Gumbel distribution with GPD among the worst, it failed the Kolmogorov Smirnov, Anderson Darling and Chi-squared tests. Next best to Gumbel was Gen. Extreme Value but it and the GPD have the disadvantage of 3 parameters for such a small data set. This is only one of many ad-hoc assumptions in the paper. The authors say that their simulations follow a normal distribution but that is not believable and it follows from the Central Limit Theorem on basis of their simulation assumptions. For example a gamma distribution applied many times will converge to a normal distribution. 4. The authors need to explain how time enters into their model. The only real analysis results in the paper seem to be in Table 2 based on Figure 3. For Table 2, the scale and location parameters need to be listed for each case. For the GPD, it is possible to get the same return period values by varying the scale or location parameters or both or the shape parameter. Why should the shape parameter be different at the same location?? How does time enter? Are the values just exceedance probability 0.02 for the GPD?? If that was the case then for the 241 simulated events in Fig 3., results in Table 2 would represent return periods of about 5 years not 50. Until all 3 parameters are stated, it is not possible for a reader to figure out what the calculations mean. 5. The results should be stated in diameter to compare with the Icelandic data. Calculation with the Icelandic data assuming random Poisson arrivals with random Gumbel loads gives a 50 year diameter of about 13 cm which suggests that the Icelandic data (50 year values) are more than a factor of 10 higher than given in this paper. ??? The fact that some of the lines in France are designed for 5 – 10 kg/m ..2-4 times the values here could be of some importance. 6. There are no data on ice accretions in this paper and the results and assumptions appear not to agree with the only data set available. That is of concern.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 5139, 2014.