

## Article Abstract

Title:	Wind climate modeling using Weibull and extreme value distribution
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Abstract:	It is very much important to fit wind speed data into some suitable statistical model for two aspects. One is fatigue failure due to periodic vortex shedding and the other is to estimate the wind energy potential of a particular location. For the fatigue failure due to periodic vortex shedding, it is important to analyse the load cycle. The expected number of stress cycles in the projected working life of a structure is related to the expected number of hours in the critical wind speed range and wind climate modelling is required to know this. The most popular model for this purpose is Weibull distribution. Again, wind energy is proportional to the cube of the wind speed and the same Weibull model is appropriate for cubic wind speed with different parameters. But the problem with Weibull distribution is that it fails to describe the upper tail. The aim of this paper is to determine the technique for finding the wind speed range till which Weibull model is appropriate and also to fit upper wind speed data in a suitable statistical distribution like extreme value distribution of type I (Gumbel). The hourly mean wind speed data of Ahmadabad has been used to validate the procedure.
Keywords:	Wind;energy;vibration;Weibull distribution;Gumbel distribution