

Climate Change: Latest on the Wind Speed at the Coastal Regions of India

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Abstract

Indian sub-continent is subjected to many severe windstorms and the Indian coastal belt, especially the east coast is threatened by cyclones that have been known to cause damage to structures. However, the root cause of the damage cannot often be equated to high wind speeds exceeding the standard prescribed design wind speeds; but rather linked to lack of maintenance, poor workmanship, improper standard provision application, and poor standard enforcement.

Note that the frequency of occurrence and associated intensity of storms are the key data required to determine the design speed at a specified risk level with confidence. The lack of cyclone data measurements at landfall is a serious anomaly worldwide including in India, which hinders the development of design speed with confidence. Advanced tropical cyclone wind simulation models have been successfully developed for some tropical cyclone-prone regions.

In our recent studies, the design wind speeds corresponding to various risk levels were determined based on (i) the number of years of full-scale measurements from airports, (ii) numerically simulated data, as well as (iii) the fast-predictive cyclone wind hazard model. Based on all these studies, it is proven that the current recommended cyclonic factor (k_4) in IS 875 (Part 3) will make the wind speed overly conservative. In summary, though the number of storms is on the rise in India, climate change is not warranted to increase the wind speed; at least in the coastal zones yet.

Keywords: climate change; cyclone; India; wind-induced damages; wind speed.

1 Introduction

Climate change is a reality, and how it impacts negatively various aspects of life on our planet is mounting much faster than what researchers and scientists predicted earlier. According to the latest climate change report from Inter-governmental Panel on Climate Change, IPCC [1], most of the

impacts are unavoidable and will hit the world's most vulnerable populations in a drastic way. The report also says that more than 40% of the world's population live in places and situation that are highly vulnerable to climate change. Moreover, the assessment report also states that Earth is warmer than it's been in the last 125,000 years. The impact of climate change is affecting us in various ways like an increase in atmospheric temperature,