Modeling of Transient Winds and their Load Effects on Structures

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ABSTRACT

Notwithstanding the developments made in recent decades in wind effects on structures, there is a need to revisit the current paradigms and to look for improved understanding concerning the nature of wind field, associated aerodynamics and the resulting load effects in light of the emerging themes: non-stationarity/non-homogeneity/transient wind events; mechanical/convective turbulence; unsteady/transient aerodynamics. Also, one needs to take note of recent advances in analysis and identification tools, modeling frameworks and model to full-scale monitoring of wind effects that promise to offer better understanding of the underlying complexities associated with the preceding theme. This paper discusses these issues and illustrates their significance as the next frontiers in wind engineering, current progress and activities at the NatHaz Modelling Laboratory to address this challenge.