

Special Issue on Characteristics of Downslope Windstorms for Engineering Applications

Preface

Activities in the field of wind engineering include social and economic impacts of wind effects, wind characteristics, local wind environments, wind loads and structural response, diffusion, pollutant dispersion and matter transport, wind effects on building heat loss and ventilation, wind effects on transport systems, wind power generation, and codification of wind effects.

In order to address those topics accurately, it is of a great interest to learn more about the exact characteristics of some local and unique winds. While the basic characteristics of the atmospheric boundary layer are rather well known and provided in international standards and textbooks, further work is still required to entirely elucidate characteristics of downslope windstorms and make them available in a form suitable for engineering applications.

While downslope windstorms have been successfully addressed in the meteorology and geophysics communities, the focus of those research groups is quite different than in wind engineering, and the existing data on characteristics of downslope windstorms are of rather marginal relevance for engineering applications.

It is therefore the scope of this special issue to address some major downslope winds around the globe in a form suitable for engineering applications:

- Santa Ana, the West Coast of the North America,
- Mountain winds, the European Alps,
- Bora, the Adriatic Region in Europe,
- Downslope winds of Liguria, Europe,
- Downslope winds of Japan, Asia,
- Zonda, Andes in the South America.

It is expected that the findings reported in this special issue will result in substantial improvements and validation of future experimental and computational studies on downslope windstorms and their effects on structures, as well as encourage more detailed codification of those winds.

Another important goal is to further enhance an interdisciplinary collaboration among the meteorology, geophysics and engineering communities that will enable this type of work to continue and grow in the future.

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