



## **Analyses of extreme winds on the Croatian Adriatic coast**

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The wind regime in Croatia is influenced by many factors such as the nearness of the Alps to the north-west, the Dinaric Alps along the Adriatic coast and flatland in the north-east part of the state. The whole region is under rather frequent influences of cyclonic disturbances coming predominantly from the west and south-west and the front passages from the north and north-west. The eastern part of the Adriatic coast has developed system of sea and land breezes and the well-known *bura* (bora) and *jugo* (scirocco) winds. *Bura* is the NE, dry, cold and gusty wind. Contrary of that *jugo* is the SE, wet, warm and uniformly wind. Both these winds are frequently quite strong and may last for several days. Calms and weak winds prevail in the continental part of Croatia. An exception to this is the mountain peaks and chains where weak and moderate winds predominate. Severe winds, especially *bura*, along the Adriatic coast cause the great damages in the road and sea traffic, in agriculture and tourism. Detailed knowledge of the characteristics of the extreme wind is also necessary to predict wind load for the design, planning and operational aspect of roads, bridges, marines, ports, airports, wind turbines, and other open-air structure. Thus, in this study the maximum wind speed and the frequency of the strong wind for the available anemographic stations on the Croatian Adriatic coast and islands have been analyzed. The highest maximum gusts have been measured on the bridges: Krk, Pag and Maslenica (58.9 m/s, 65.2 m/s and 69.0 m/s, respectively) during the *bura* wind. The strong *bura* is most frequent on the northern Adriatic and strong *jugo* on the middle and southern Adriatic. The predicted maximum wind speeds related to wind directions for the different return periods, using the generalize distributions of the extreme events by Jenkinson, have been also presented. Results obtained indicate specific location (mountain

passes) along the Adriatic coast where the predicted maximum gust wind greater than 50 m/s for the 50-year return period.