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On the analysis of an extreme Bora wind event over the northern Adriatic Sea

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On 10th March 2010 a severe Bora wind event affected the Friuli Venezia Giulia region, northeastern Italy, in particular the gulf of Trieste area (northern Adriatic Sea). Such event has been driven by a widespread westward moving cold pool aloft, coming from the Western Asia, that brought an intense potential vorticity anomaly over the western Mediterranean Sea. It determined a deep cyclogenesis involving all the troposphere. The pressure gradient force in the lowest layers forced a northeastern wind to blow with noticeable strength over the gulf of Trieste area and the Karstic region. The mean ground wind velocity has reached values above 27 m/s (about 100 km/h) for several hours, and maximum gusts exceeded 42 m/s (about 150 km/h) over Trieste town.

The northeastern sector of the Adriatic Sea is frequently affected by strong Bora events in particular during the winter semester. This is a characteristic local wind mostly influenced by the orography of the Karstic relieves to the east of Trieste town.

The target of this work is to assess the climatological relevance of such an event by comparing it with the most representative events of the past. It has been possible thanks to the long term archive of meteorological observations in Trieste site (I.R. Accademia di Commercio e Nautica, Regio Comitato Talassografico Italiano, Ministero dell'Agricoltura e Foreste, Consiglio Nazionale delle Ricerche): we have found out that this is one of the ten strongest Bora event along the 1871-2010 period. Considerations about the trend and frequency of severe Bora events have been proposed.