ANNOUNCEMENT OF SEMINARS

Analysis of characteristics, weather scenario, and statistics of thunderstorm outflows based on measured data

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The Seminar will be held at the

Department of Civil, Chemical and Environmental Engineering (DICCA)

Polytechnic School, University of Genoa (UNIGE)

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Classroom A11, at 14:30

Analysis of characteristics, weather scenario, and statistics of thunderstorm outflows based on measured data:

Thunderstorm outflows are common occurrences around the world and the number of which in progress at any time over the Earth's surface is nearly 2000. Design wind velocities with return periods greater than 10-20 years are often associated with thunderstorms. The study of thunderstorm outflows and their actions on structures is a dominant topic of recent research in wind engineering. Despite this awareness and the research in the last thirty years there is no model of the thunderstorm winds and their actions similar to that established over half a century ago for cyclones. Likewise, there is no unified framework for cyclone and thunderstorm wind actions. This occurs because the complexity of thunderstorms makes it difficult to establish realistic and simple models; their short duration and small extension limits the available measures; there is a clear gap between research in atmospheric sciences and wind engineering. Luckily, two European Projects generated a wind monitoring network in the High Tyrrhenian area from which many records of thunderstorm outflows were extracted, which provides a unique opportunity to 1) reconstruct the weather scenario, classify this event as a thunderstorm and determine its space-time evolution; 2) embed in this framework signal analyses aiming to extract the key parameters for determining the wind loading of structures; 3) do the preliminary statistical analysis of extreme wind speed in the mixed climate of the considered area.

BIOGRAPHY: Dr. Shi Zhang is a co-turoring Ph.D. candidate from Beijing Jiaotong University, China and University of Genoa, Italy. She has authored 4 articles published in highly respected journals of structural/wind engineering fields, and presented 3 conference papers under the guidance of her supervisots Prof. Qingshan Yang and Prof. Giovanni Solari.