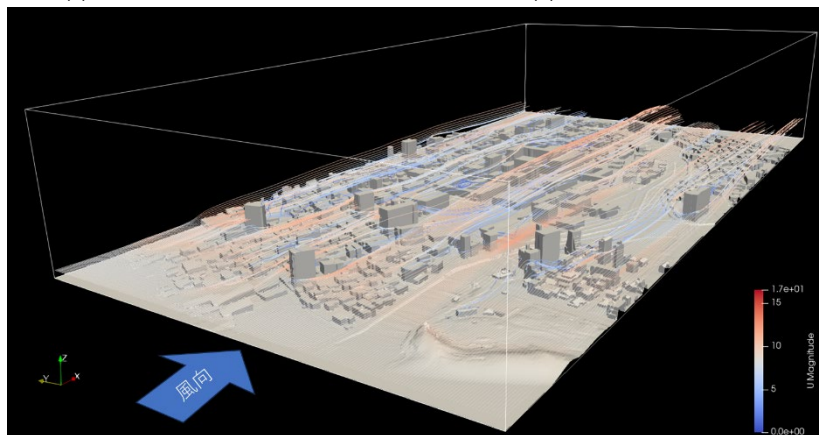
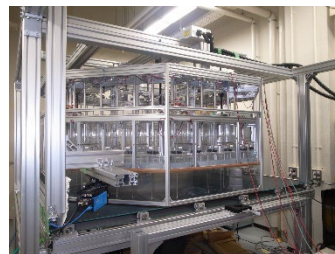
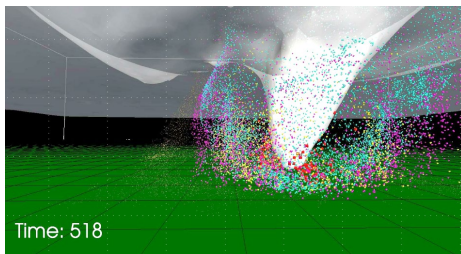
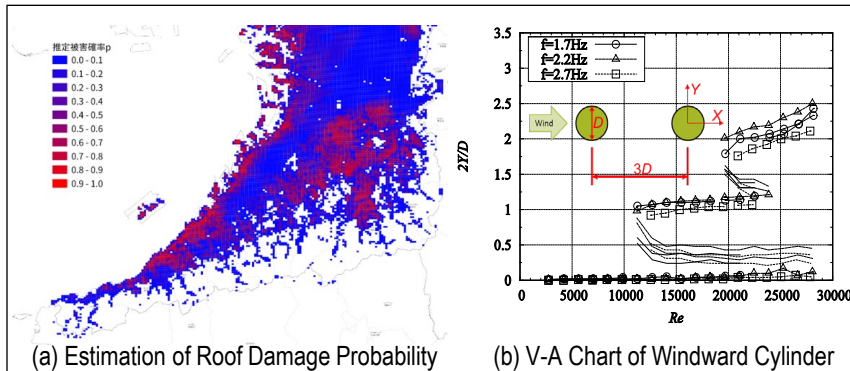




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Research on reducing disasters caused by strong winds

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Strong wind disasters are mainly caused by excessive wind pressure due to strong winds, destruction of structures due to collision of flying debris carried by strong winds, and aerodynamic vibration due to lack of wind stability determined by the shape of structures and airflow characteristics. Therefore, in order to reduce disasters caused by strong winds, it is necessary to clarify the mechanism of occurrence of strong winds, wind pressure characteristics of structures under strong winds, flight characteristics of flying debris, aerodynamic stability of structures, and the effect of flow fields on these characteristics.

The factors that cause high wind disasters include natural phenomena such as typhoons, tornadoes, and downbursts, as well as increases and decreases in wind speed and airflow turbulence due to topography and the vicinity of buildings.

Wind pressure characteristics of structures are strongly affected by the flow field, so wind tunnel experiments and numerical fluid analysis are being conducted. The flight characteristics of flying debris are also studied by combining the results of 6-DOF flight analysis and numerical fluid dynamics analysis of tornadoes, and the motion characteristics and collision risk of flying debris in tornadoes are also investigated.

For the aerodynamic stability of structures, wind tunnel tests using an aeroelastic model are conducted to investigate airflow characteristics and the effects of neighboring objects on the aerodynamic vibration of structures, with the aim of improving wind-resistant design.

Keywords : Wind disaster, Aerodynamic stability

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