Aiming at developing a more effective method of controlling the train speed under snowfall in the Tokaido Shinkansen line, experiments on the snow-flying phenomena using car model and new snow made wet by watering were carried out. As a result, clear relationships among occurrence of snow-flying phenomena, physical properties of snow and the running speed were found. In addition, we were able to show the method of presuming change in the density and water content of the snow under water sprinkling based on the air temperature, the snowfall, and the amount of water sprinkling.