Mashiko, W., 2019: A statistical study of wind gusts in Japan using surface observations. *J. Meteor. Soc. Japan*, **97**, https://doi.org/10.2151/jmsj.2019-001.

**Plain Language Summary:** There is still a lot of uncertainty regarding the statistical characteristics of wind gusts. This study clarified the frequency and spatiotemporal distribution of wind gusts throughout Japan by statistically analyzing the surface observational data of the last 16 years. The frequency of wind gusts with more than 25 m $s^{-1}$ averaged across all observatories is 0.97 per year, which is four or five orders of magnitude higher than the tornado encounter probability in Japan.

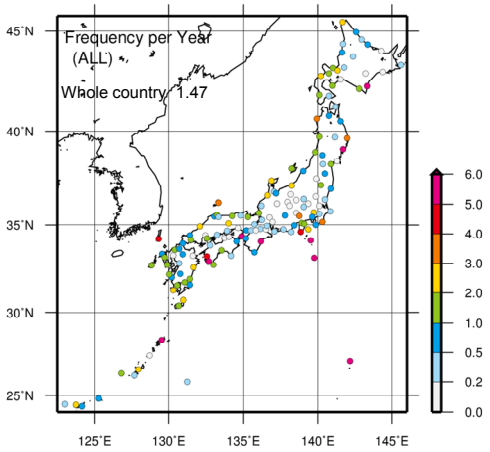


Figure 1. Annual frequency of wind gusts averaged from 2002 to 2017 at the weather observatories.

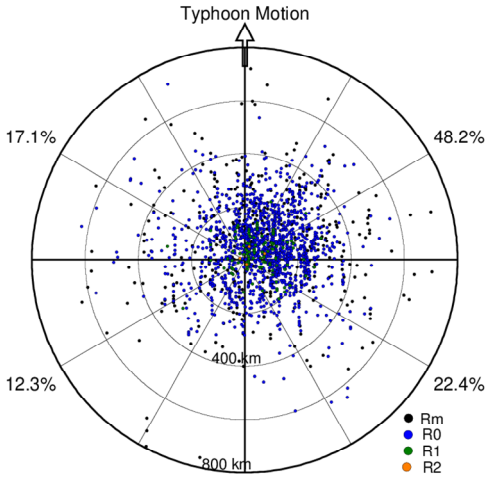


Figure 2. Spatial distribution of the typhoon-associated wind gusts relative to the typhoon center. The colors indicate the intensity of wind gusts categorized by the Japanese Enhanced Fujita (JEF) scale. The ratio of the number of the wind gusts in each quadrant is also shown.

- This study is the first to statistically analyze wind gusts using surface meteorological observations throughout Japan.
- The frequency of wind gusts averaged over all observatories is 1.47 per year (0.97 for wind gusts with more than 25 m $s^{-1}$). The coastal regions experience an approximately threefold higher frequency of wind gusts than the inland areas (Fig. 1).
- The wind gusts have high activities during daytime, especially between 13:00 and 17:00 JST.
- Approximately half of the typhoon-associated wind gusts occur in the right-front quadrant of a typhoon with respect to the typhoon motion (Fig. 2).