Islam, M. R., M. Satoh, and H. Takagi 2022: Tropical cyclones affecting Japan central coast and changing storm surge hazard since 1980. *J. Meteor. Soc. Japan*, **100**, 493-507. https://doi.org/10.2151/jmsj.2022-024.

Plain Language Summary: This study investigated tidal records and landfall tropical cyclone (TC) best tracks from 1980 to 2019 to determine changes in storm surge heights in coastal regions of Central Japan, including Tokyo. The results indicate that annual mean storm surge heights have increased in the last 20 years (2000–2019) compared to those in 1980–1999, and that these changes are noteworthy, particularly in Tokyo Bay. TC wind intensity and size during landfall time frame have become stronger and larger, respectively, corresponding to increasing storm surge magnitudes.

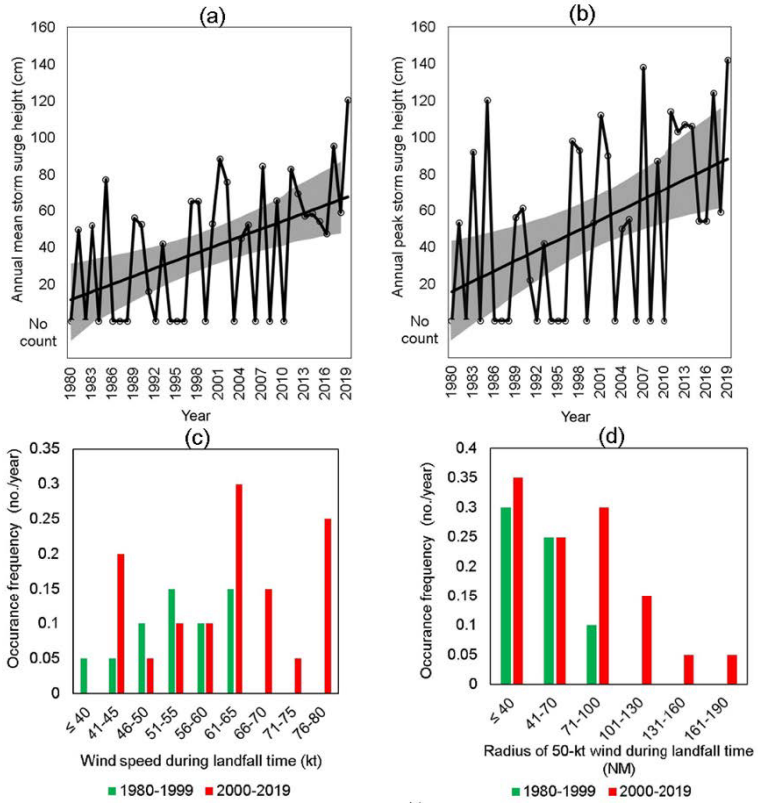

Figure 1. Time series of (a) annual mean storm surge height; (b) annual peak storm surge height along the Japan central coast over 40 years from 1980-2019; Average annual number of landfalling TCs as a function of the (c) maximum sustained wind speed; (d) radius of 50-kt wind.

- A highly significant increase in storm surge height of +41% occurred per decade from 1980 to 2019.
- A positive correlation between surge heights and storm surge hazard potential index (SSHPI) suggests that the changes in TC intensity during landfall time frame have played the most significant role in the increase of surge magnitudes, followed by changes in TC size.
- Also, the increased occurrence frequency of TCs with more northeastward tracks is another factor that may have contributed to the increased surge hazards around Tokyo.