Hindcasting Storm Surges in Tokyo Bay induced by an intense yet notably compact typhoon Faxai in 2019

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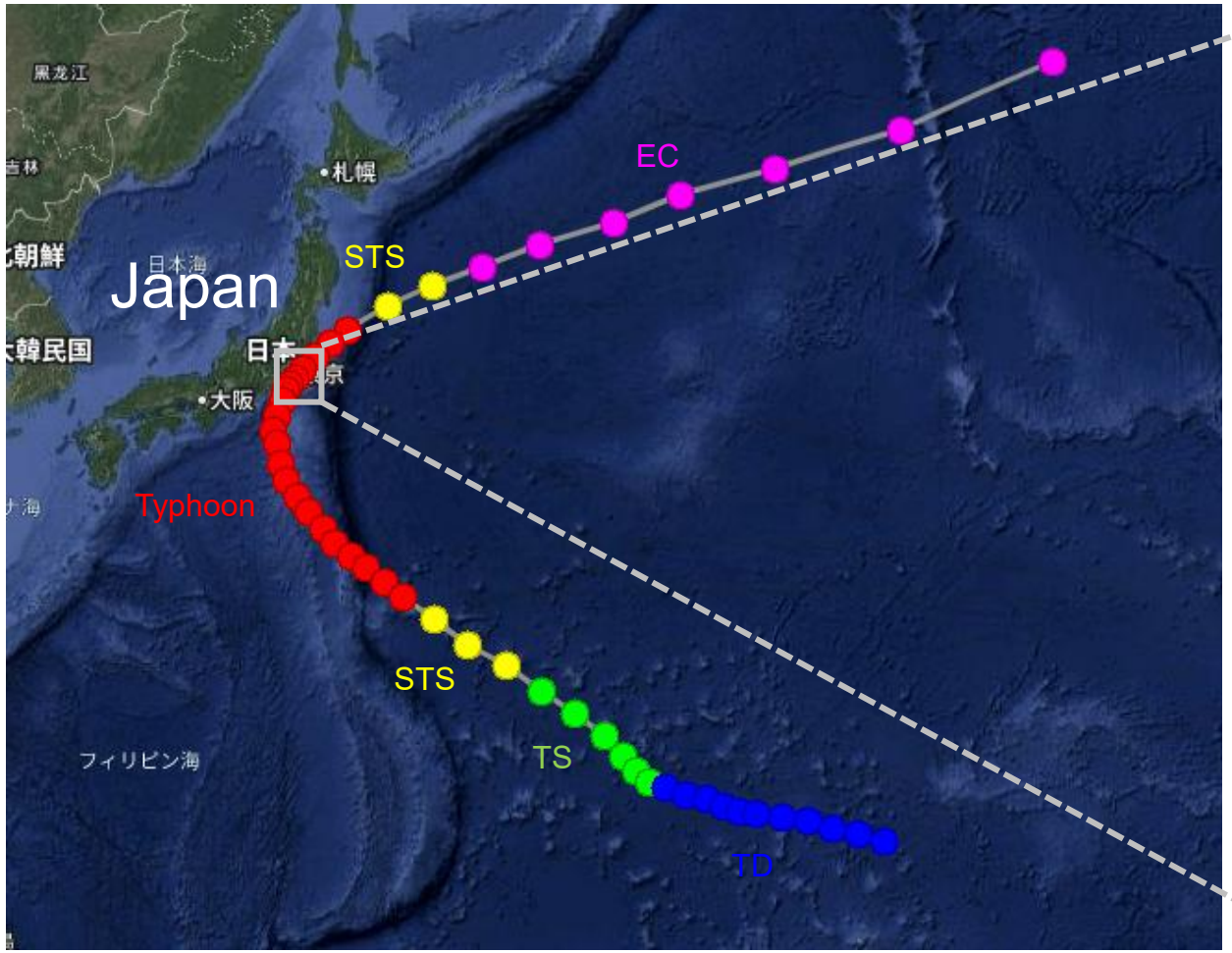
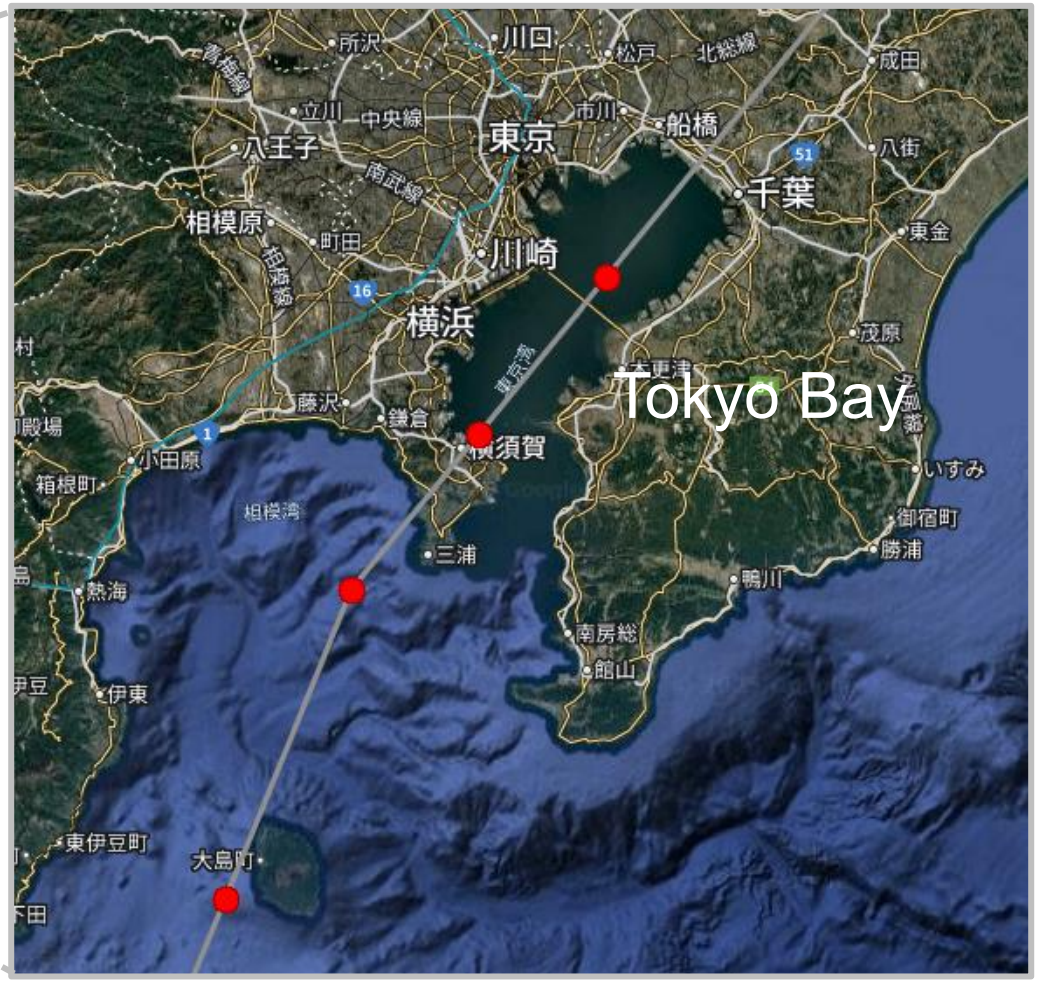
The satellite image was obtained from the MODIS website (https://modis.gsfc.nasa.gov/gallery/individual.php?db_date=2019-09-11)

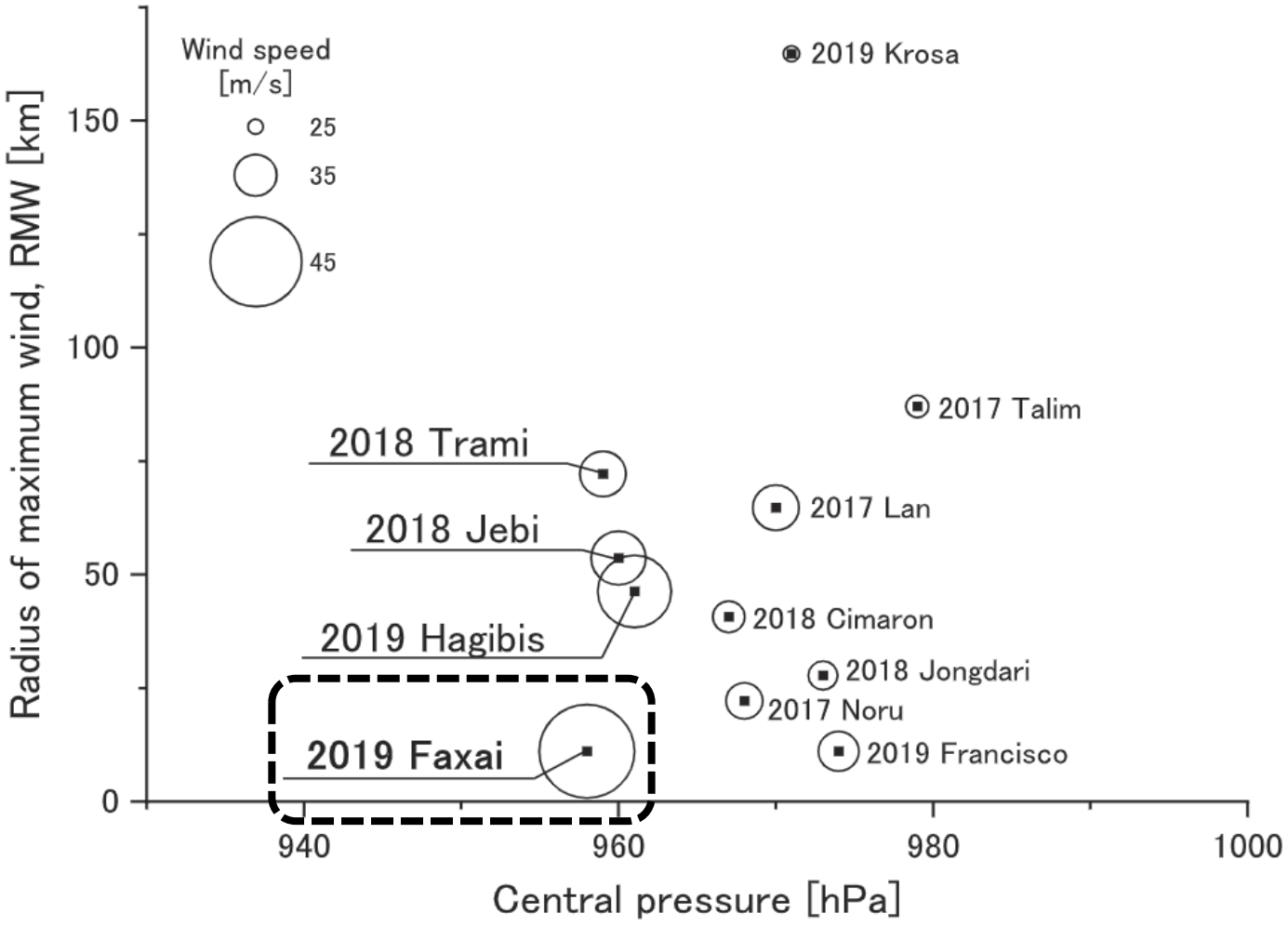
Location of Tokyo Bay and the Faxai's track



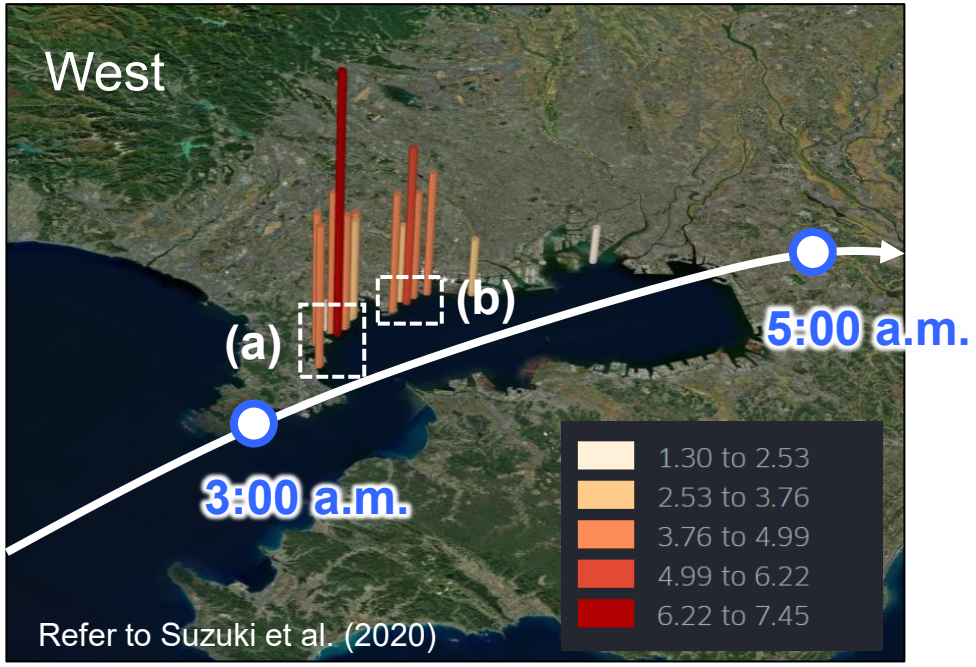


https://agora.ex.nii.ac.jp/digital-typhoon/summary/wnp/g/201915.html.ja

Faxai was small and intense typhoon

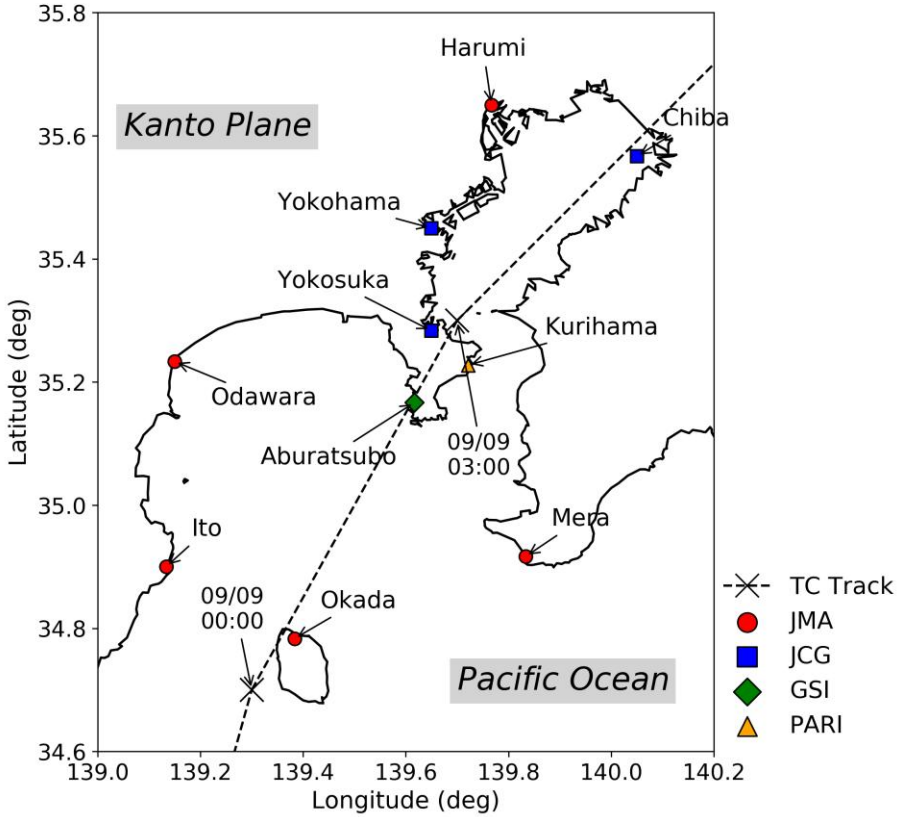


Recent typhoons landed in Japan (Suzuki et al. 2020)

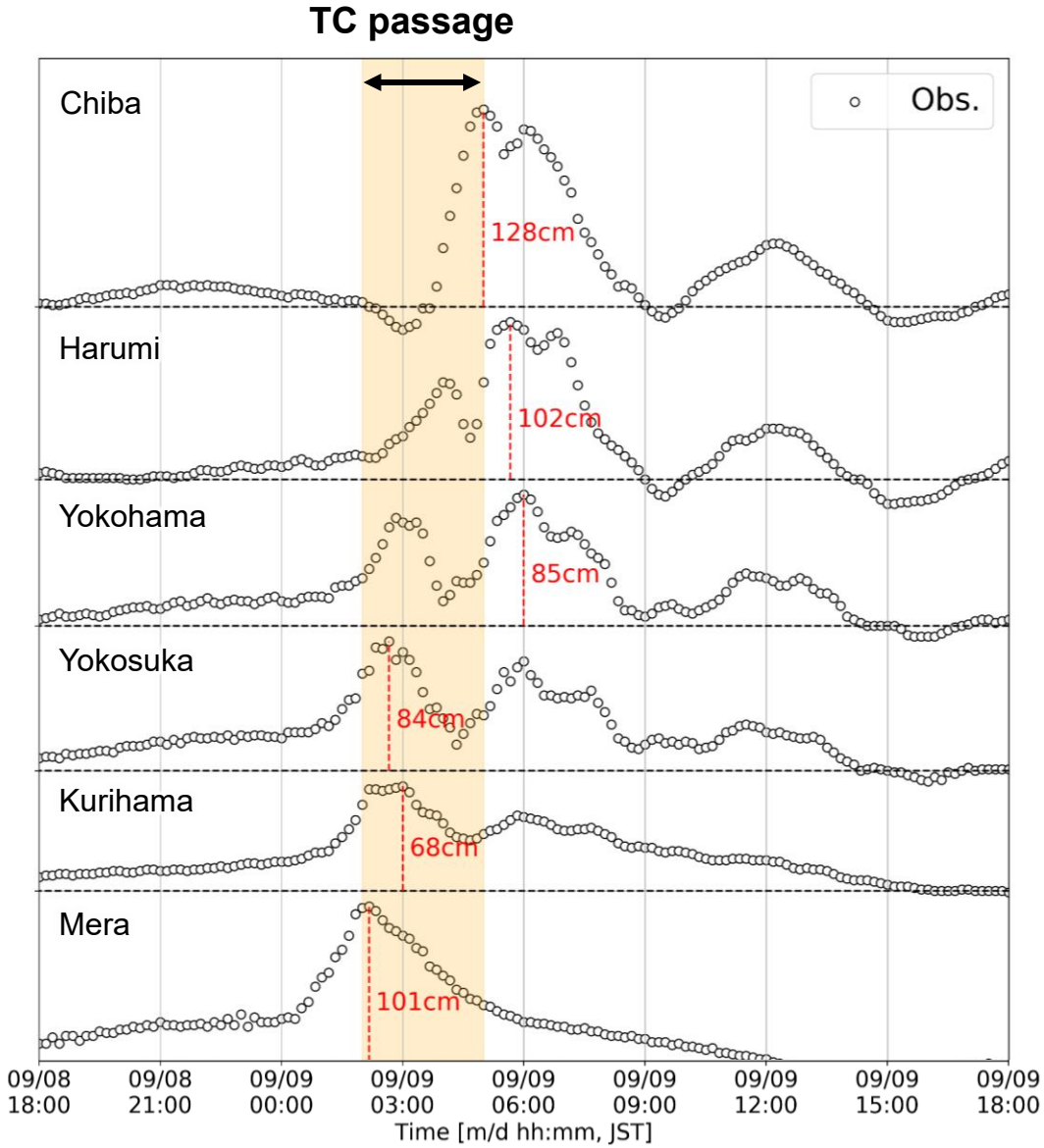


Measured watermark heights by waves

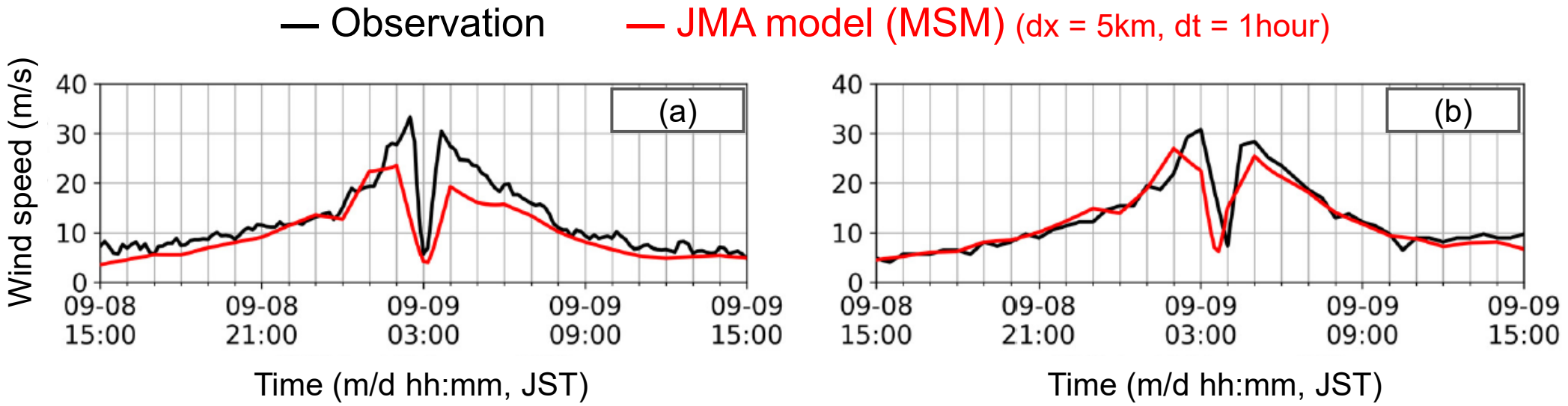
Storm surges in Tokyo Bay

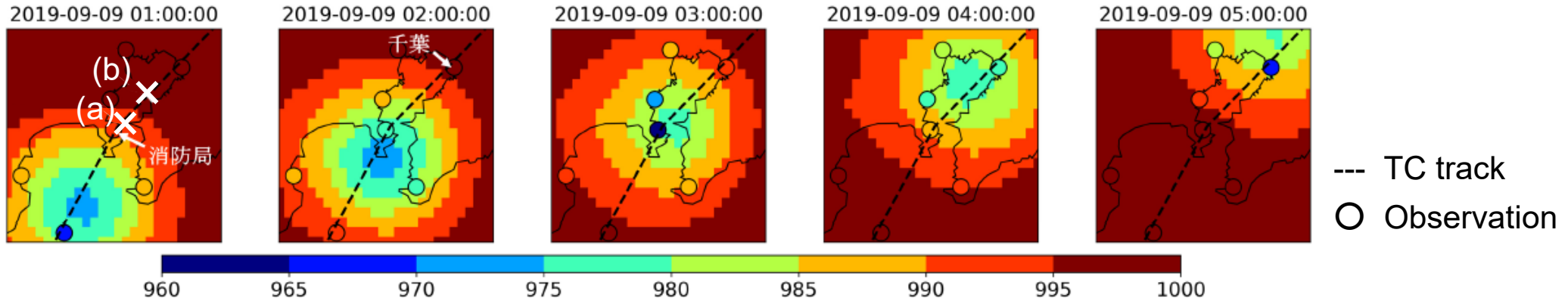


Tide stations around Tokyo Bay



Difficulty in simulating the Faxai's met. fields

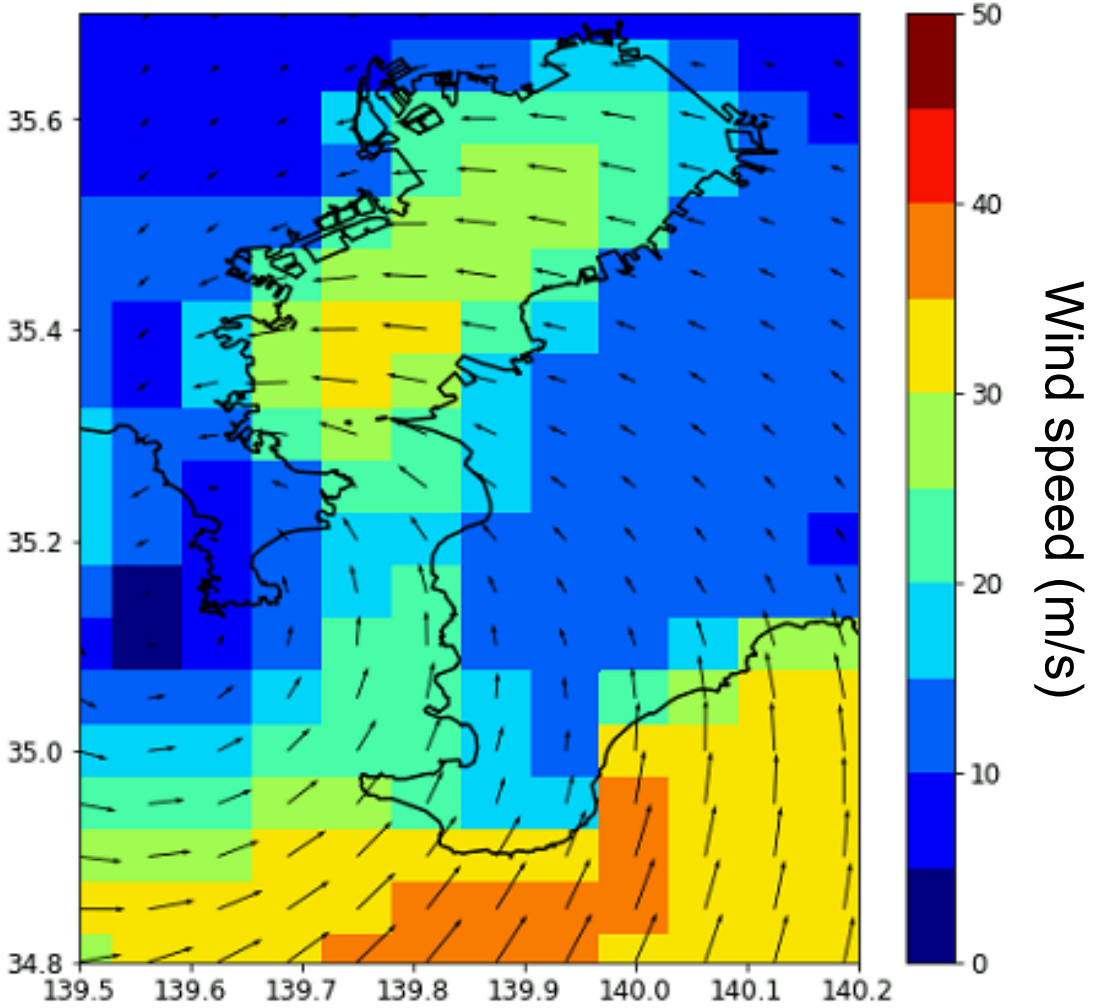




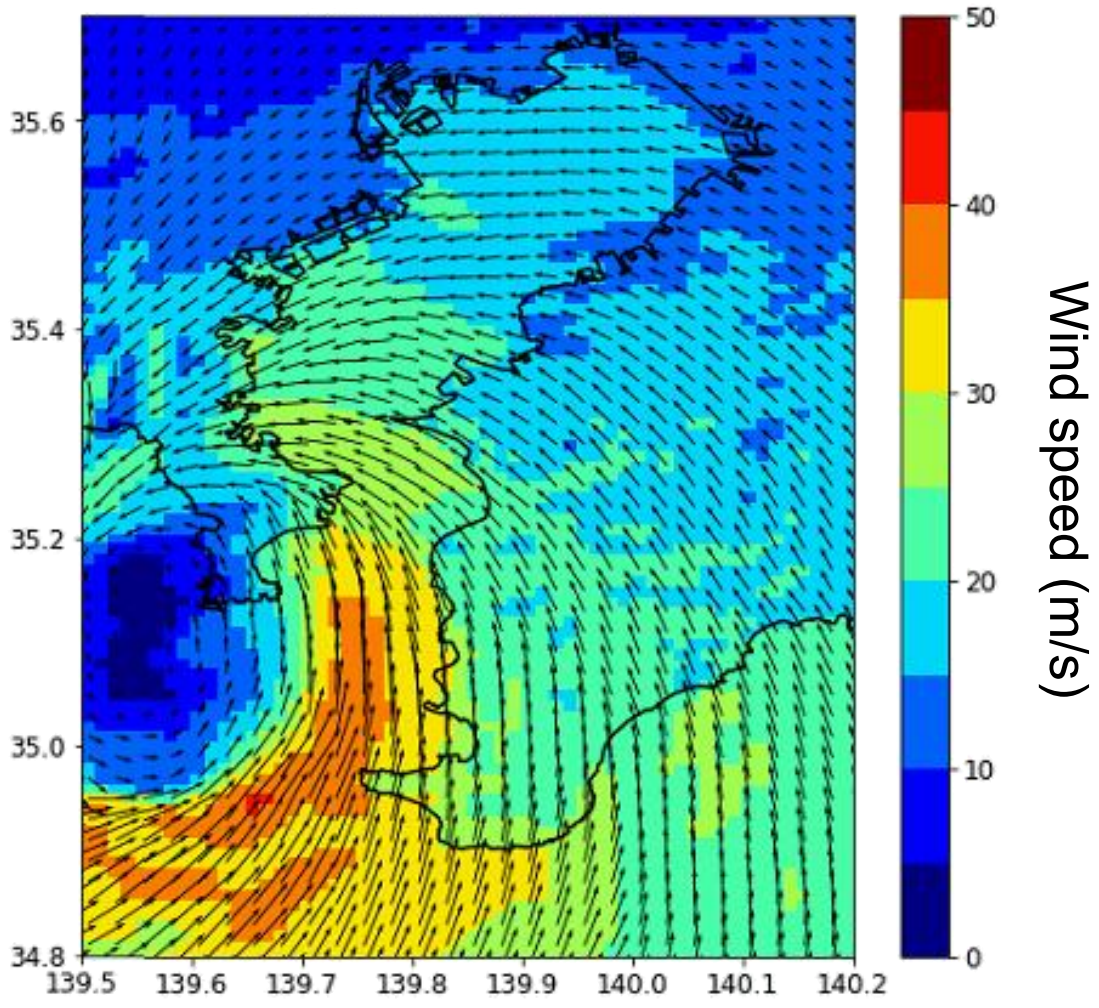
Iwamoto and Kawai (2020)

Dynamical downscaling by WRF

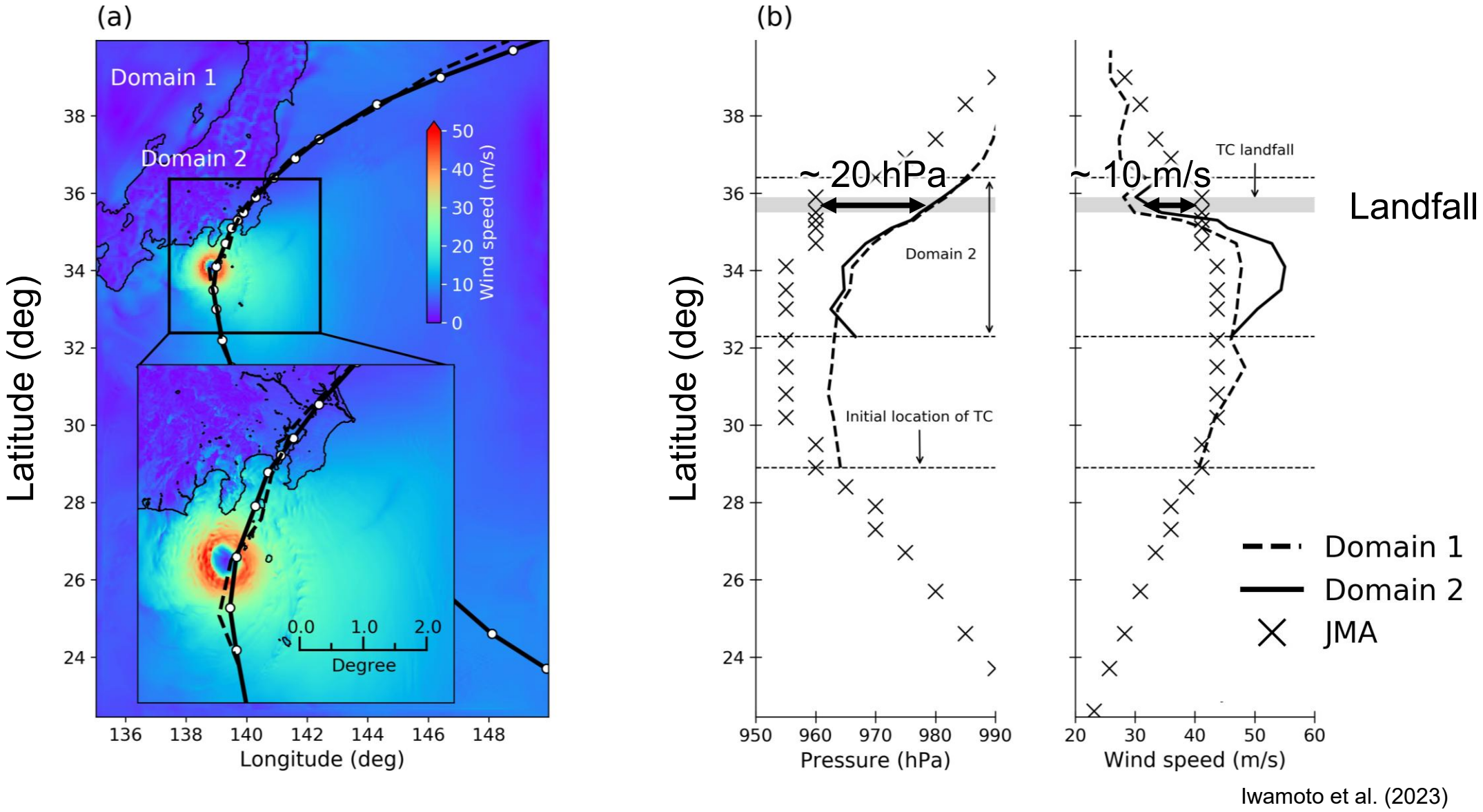
MSM (5km)



WRF (1km)



But still underestimated…



Iwamoto et al. (2023)

The research targets

- Capturing the spatiotemporal changes in Faxai by meteorological models

  → Dynamical downscaling + developing a new modification method

- Hindcasting the storm surges by hydrodynamic models with high accuracy

  → Applying the regional ocean model ROMS

The details are shown in my poster. Thank you for listening!

Iwamoto et al., (2023). A proposal of a semi-empirical method for modifying the atmospheric pressure and wind fields of tropical cyclones. *Coastal Engineering Journal*, *65*(3), 418-432. https://doi.org/10.1080/21664250.2023.2228005.