



## **Reconstruction of the intensity and track of the historic typhoon of 17 September 1828 based on meteorological observations from Nagasaki, Japan**

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According to various historical documents in Japan during the 19th century, an extremely strong typhoon made landfall in southwestern Japan on 17 September 1828. Nearly 20,000 people were estimated to have been killed by the flood and storm surge. During the typhoon's passage, detailed meteorological observations were made by a German physician, Philipp Franz von Siebold and his colleagues at the small artificial island "Dejima" in Nagasaki. Ironically, a Dutch ship was wrecked by the strong winds of this typhoon and many valuable (but illegal to export) documents and maps of Japan collected by von Siebold were discovered. As a result, he was arrested and expelled from Japan in 1829 ("The Siebold Incident").

Actually, detailed meteorological observations by the Dutch medical doctors were carried out continuously from the 1820s to the 1860s with several interruptions. We have collected and digitized these meteorological data for the purpose of climate change studies. The data were used to reconstruct the intensity and track of the typhoon, which was named "Typhoon Siebold" after the "Siebold Incident". Our results indicate that the lowest pressure at the time of landfall was about 930-940 hPa and that the track of this typhoon could be reconstructed from weather conditions and wind directions described in local diaries and documents from the 19th century.