Kyucho in Wakasa Bay induced by Yura river flushing

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In Wakasa Bay, a stormy current, Kyucho, caused by a meteorological disturbance or Tsushima Warm Current often damages the set-nets. Although the set-net damages caused by Kyucho events frequently occur in the bay mouth, the damage caused by the passage of Typhoon 1102 was concentrated in the bay head. To clarify the generation mechanism of this Kyucho event, a high-resolution numerical model for Wakasa Bay was developed with a horizontal grid interval of 500 m （called DR_W model）. Numerical experiments using DR_W model reproduced the Kyucho event well, with input data of the strong northerly wind and Yura River flushing caused by the typhoon. The modeled Kyucho had a maximum speed of approximately 1 m·s^{-1}, a width of less than 10 km, a depth of less than 10 m, and moved from the western to eastern part of the bay head about 12 to 36 hours after the passage of the typhoon. The sea level rise also occurred in the western part of the bay head during typhoon-induced northeasterly winds and moved from the western to eastern part of the bay head after the passage of the typhoon. However, the phenomenon could not be reproduced by numerical experiments using DR_W either with the strong northerly wind or the Yura River flushing （each calculated current speed of less than 0.5 m·s^{-1} in the bay head）. Thus, in the simulation, a large amount of freshwater from Yura River was piled up by the strong northeasterly wind on the western part of the bay head, and the horizontal pressure gradient was generated during the typhoon's approach to Wakasa Bay. When the typhoon passed, the wind direction changed, the pressure gradient was released, and then gave rise to Kyucho in the bay head.