

## Sour and anoxic Sea of Japan in the near future

\*Chen-Tung Arthur Chen<sup>1</sup>, Hon-Kit Lui<sup>1</sup>, Masao Ishii<sup>2</sup>

1. National Sun Yat Sen University, 2. Japan Meteorological Agency

The ocean acidification is frequently related to hypoxia. In the paper "An anoxic Sea of Japan in 2200?" (Chen, Marine Chemistry, 1999) it was suggested that the sea is undergoing rapid de-oxygenation, and that the sea may become anoxic by the year 2200. But, a question mark was used in the title because of large uncertainties. In a recent Nature Climate Change paper (Chen et al., 2017), however, it was further concluded that the deep Sea of Japan has acidified at a faster rate than anywhere else in the world oceans. The conclusion of rapid acidification is in line with the conclusion of de-oxygenation. In addition, adding 20 years of new data confirms that the assessment of 1999 was correct. Likely the Sea of Japan would become sour and anoxic within the next two hundred years, if not sooner, based on nutrients, oxygen and pH data.

Keywords: Sea of Japan, acidification, hypoxia