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Contribution of phosphorus transported by atmosphere to the East China Sea in summer

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Phosphorus is an important nutrient for the growth of marine life in the East China Sea(ECS), where phosphorus is restricted. The external input of phosphorus may cause changes in primary productivity and result in harmful algal blooms. Previous studies emphasized the important contribution of diluted water from the Yangtze River and Kuroshio current. Few researches focus on the sudden and large atmospheric input. Supported by the National Natural Science Foundation of China Open Research Cruise, we collected seawater samples, measured the oxygen isotopes of phosphate and then quantitatively analyze the contribution rate of phosphate from different sources. The results are found that atmospheric input is the main source of phosphorus in the northeast of the East China Sea and the main source of phosphate is from Taiwan Warm Current in the southwest part of the ECS. This finding is helpful for exploring the influencing factors of harmful algal blooms in the ECS and providing some ideas of solution.