Introduction

Western Guangdong waters (WGWs) are located in the northern South China Sea (SCS). This is an important place for fish spawning, feeding, breeding, and migration. Satellite remote-sensing technology provides all-weather, large-scale, and high-resolution marine-surface information, and it was successfully applied to marine-fishery research. In this study, satellite remote-sensing data were applied in the analysis of the environmental effects of the spatiotemporal distribution of spawning grounds in WGWs. The early supplementary mechanism of fishery resources in WGWs was explored, providing a reference for the protection of fish habitats in the SCS.

Conclusion

This study analyzed for the first time the environmental effects of the spatiotemporal distribution of the spawning grounds in WGWs on the basis of satellite remote-sensing and survey data. The most important environmental factor affecting the fish egg density was the SSS, followed by the SST, depth, month, Chl-a, and distance. The spawning grounds in WGWs were mainly distributed in waters with an SSS of 33.0–34.5 PSU, SST of 24–29 °C, and depth of 5–25 m. The complex seabed terrain was conducive to the accumulation of fish eggs. The results of this study were helpful in understanding the spatiotemporal distribution of early supplementary populations of fishery populations and their response mechanisms to environmental changes in WGWs.

Funding: (1) National Key R&D Program of China (2018YFD0900901), (2) Natural Science Foundation of Guangdong Province, China (2018A030313120), (3) Central Public-interest Scientific Institution Basal Research Fund, CAFS, China (2018HY-ZD0104).