Study of Global Seawater Corrosivity Classification Based on Marine Environmental Factors Data

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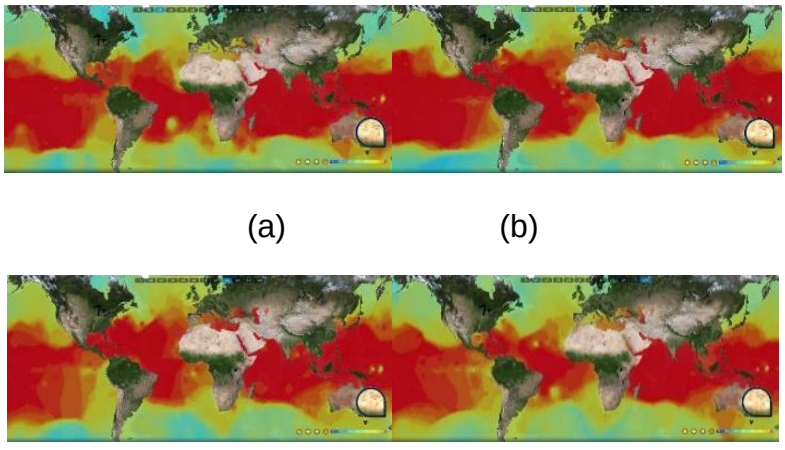
Abstract In order to evaluate the global seawater corrosivity, and ensure the service safety of vessels, the existing methods of seawater corrosivity classification, namely the standard metal corrosion rates method and the environmental factors evaluation method were briefly introduced, and then applied to the seawater corrosivity classification in typical China seas. By comparing the results from both methods, the feasibility of the environmental factors evaluation method, based on the grey relational model was proven. Further, with the collection and processing of typical seawater factors data all over the oceans and seas, the corrosivity of global seawater was classified into six grades with the corrosion test data of carbon steel as baseline, and its distribution in different months was visualized by means of ArcGIS technology. The results showed that the sea areas with high corrosivity are mainly located at equatorial and tropical sea areas, and seawater temperature was the main influence on seawater corrosivity.



(a) (b)

(c) (d)

Distribution of Seawater Corrosivity Classification: (a) March, (b) June, (c) September, (d) December