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Researches of Offshore Sea Surface Height in Probability

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Sea surface height was the height of interface between sea and atmosphere, generally, which meant mean sea level added to tidal level, storm surge level, surface wave height and other dynamic mechanisms that led to the change of sea surface height, such as tsunami, seiche, abnormal temperature rise of the sea and so on.
Its return level was one of the most important indicators in coastal and marine facilities that prevented flood. Unfortunately, there was no accumulation of sea surface height information in the past, let alone the corresponding extreme value theory and application.
In this study, we analyzed that it played a significant role in ocean science and coastal engineers. At the same time, it exposed shortage of ocean observations and researches in the past. In northern ocean station of china, annual maximum water level and maximum wave height series were chose to form the most likely optimized sea height series. Further, with mature methods in probability theory, we calculated the sea surface height in different return period and compared them with the results of combined probability.