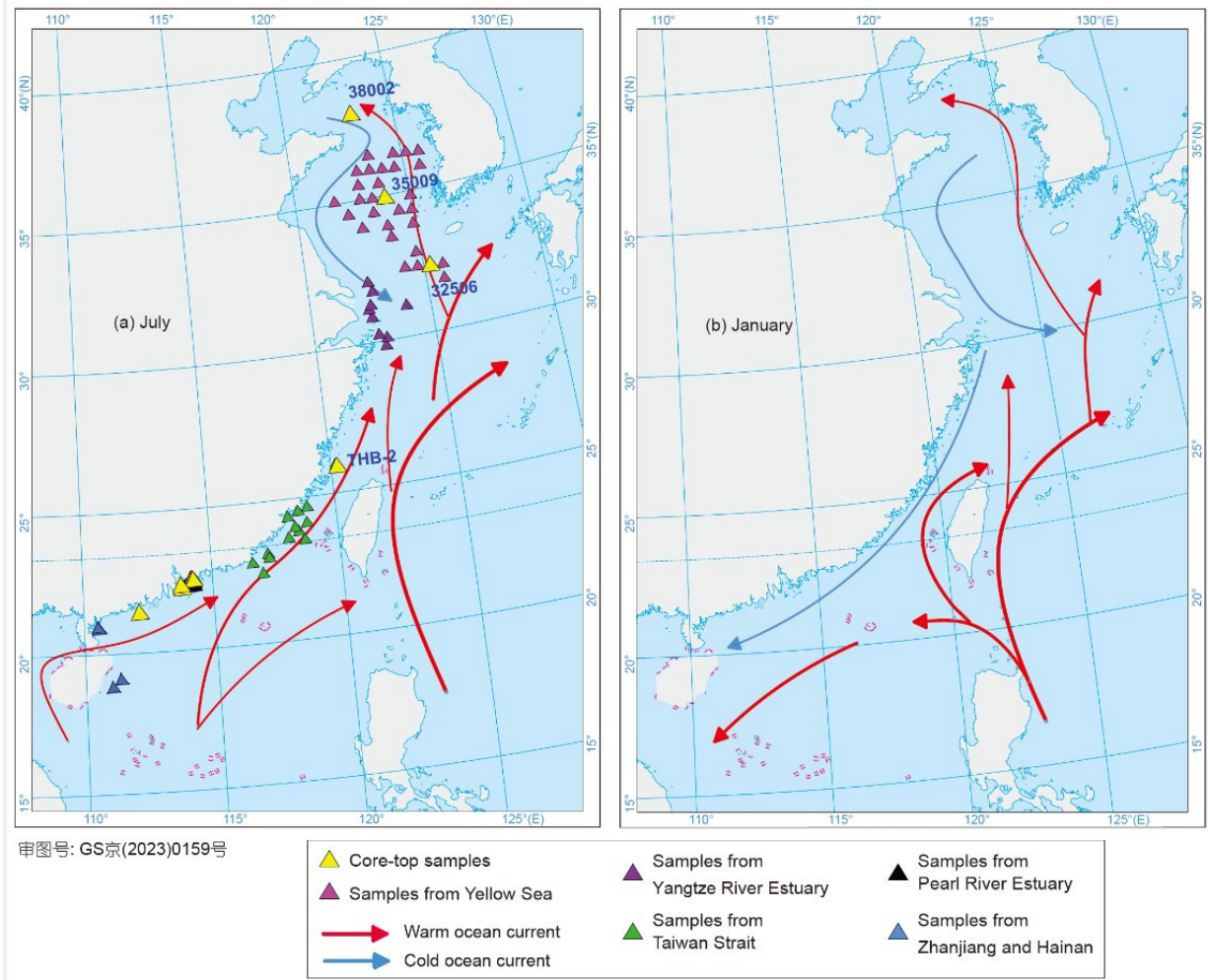


Assessing the sea surface temperature relationship in shallow marine waters

March 27 2023



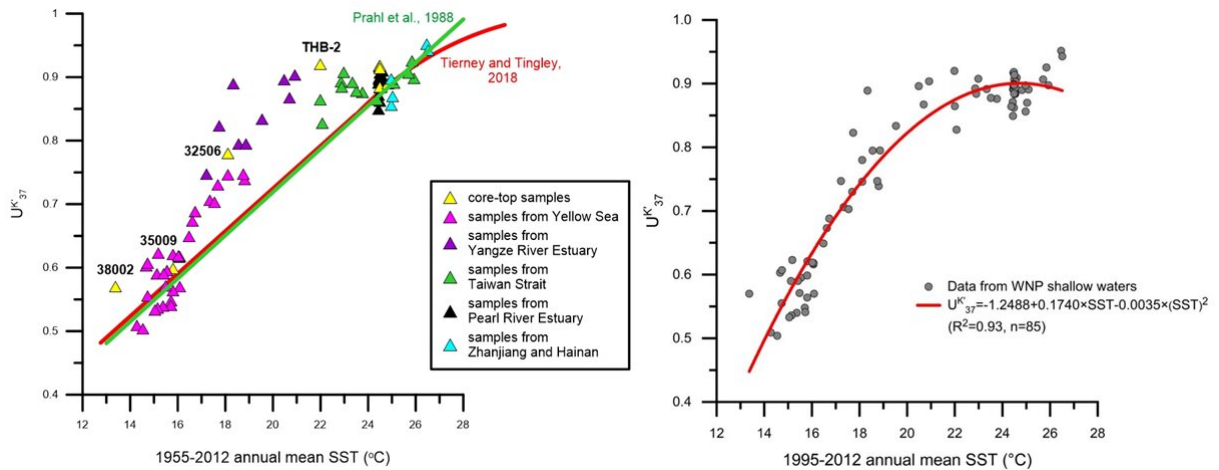
Warm and cold ocean currents of Chinese marginal seas. Credit: Science China Press

In a study published in the journal *Science China Earth Sciences*, researchers led by Dr. Mengyuan Wang (School of Marine Sciences, Sun Yat-sen University) proposed a non-linear regression of $U_{37}^{K'}$ -SST for samples collected from the specific environment of Chinese marginal sea shallow waters.

The coastal-continental shelf environment is more complex than the open ocean. The relationship between $U_{37}^{K'}$ and SST has not been fully explored in this environment, which limits the accuracy of the reconstruction results of this indicator in marginal seas.

To investigate the relationship between the alkenone unsaturation index ($U_{37}^{K'}$) and [sea surface temperature](#) (SST) in coastal and continental shelf waters, 58 surface sediment samples were collected from the South China Sea (SCS), Taiwan Strait, and East China Sea (ECS).

Researchers combined the new results with the previously published 71 [data points](#) from the SCS, the shallow water areas of the Yellow Sea (YS) and northern ECS, to form a dataset with sample sites spanning across 6 °N and 37 °N (including annual SST calibration between 14.3 °C and 28.6°C). With this dataset, they examined the $U_{37}^{K'}$ -SST relationship based on 129 samples from the Western North Pacific (WNP) margin as well as using 85 samples from specific WNP shallow water.



(left) differences between UK'37 and observed SST of samples, and their offset to global open sea linear regression; (right) non-linear regression of UK'37-SST from shallow waters of Chinese marginal seas. Credit: Science China Press

Based on this dataset, the team proposed a non-linear regression of $U_{37}^{K'}-SST: U_{37}^{K'} = -1.2488 + 0.1740 \times SST - 0.0035 \times (SST)^2, R^2 = 0.93, n = 85$, specifically for the environments with SST below 24 °C.

More information: Mengyuan Wang et al, Assessing the $U_{37}^{K'}$ -sea surface temperature relationship in shallow marine waters, *Science China Earth Sciences* (2023). [DOI: 10.1007/s11430-021-1041-6](https://doi.org/10.1007/s11430-021-1041-6)

Provided by Science China Press

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