

## New hydrothermal field in the Okinawa Trough

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Two cruises (HOBAB2 & HOBAB3) were undertaken to investigate hydrothermal activities in the Okinawa Trough aboard the R/V *KEXUE* from April to May in 2014. During the cruise HOBAB3, the new *Tang Yin* hydrothermal field (122°34'E, 25°4'N, 1206m) was discovered in the southern Okinawa Trough and first described in the last year's cruise report. We have sampled altered pumices, hydrothermal sediments and related biology dominated by *Bathymodiolus platifrons*, *Shinkaia crosnieri*, etc. Sulfide mineral particles such as pyrite, chalcopyrite, galena and sphalerite have been observed in these altered rocks and sediments. During the cruise HOBAB2, we used ROV *FAXIAN* to observe two high-temperature vents and four low-temperature diffuse vents with different faunas surrounding them. In the Iheya North hydrothermal field which biological communities mainly consist of mussels and galatheoidea, there exist a huge ore deposit with an estimated amount of 5 million tons. Also the methane concentration of seawater was up to 4.1 $\mu$ mol/L at a depth of 967m. Tube worms and shrimps were retrieved from the Iheya Ridge hydrothermal field, which had a CH<sub>4</sub> concentration of 0.83 $\mu$ mol/L at 1385m depth. All these surveys provide support for us to better understand mechanisms of hydrothermal activity in back-arc basins.

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