



## **Comparative analysis of ERA-Interim, NCEP/NCAR and JMA reanalysis data with observation on Zhejiang Islands**

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The reliability of surface air temperature (SAT) from ERA-Interim, NCEP/NCAR and JMA reanalysis data sets are analyzed by comparing with high frequency observed data from 26 stations near Zhejiang area, including meteorological station on land and buoys from ocean. Summary statistics show that the ERA-Interim reanalysis data has a better performance than NCEP/NCAR and JMA in representing SAT variations, which has higher correlation coefficient with the observation. The annual cycle in four datasets is well described by four different data over the 1996–2014 periods, but the differences between three reanalysis data and observation have large disparities in winter than in summer. The data at 00UTC and 12UTC also shows slightly difference between the three reanalysis, . The SAT from NCEP/NCAR at 00UTC is lower than observed temperature in summer (April-October). The climatological mean SAT with ranging from 15.6 to 21.2 [U+2103] is spatially inhomogeneous. The minimum temperature is negative at most location except for the Nanlu, Shipeng and Zhoushan buoy station. Extreme temperature observed by some station cannot well represent by reanalysis datasets. Comparing the spatial pattern of air temperatures between ERA-Interim and station observation after interpolation all data into same grid by linear method, it shows that the ERA-interim reanalysis data underestimates SAT in the coast area of Zhejiang and overestimates air temperature in offshore area with maximum difference large than 1 [U+2103].