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Long-term Heat Flux Variability in the Caspian Sea

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Abstract

To study the air-sea heat flux climatology over the Caspian Sea, the net heat flux and its components including solar radiation, long wave radiation, latent heat and sensible heat fluxes were calculated for the period of 1985 to 2009. The bulk formulas were applied to re-analysis data set to calculate the heat fluxes. The annual net heat flux for this period was estimated as -0.69 Wm^{-2}. The magnitude of this value regardless of its sign showed that the basin is in the equilibrium state. The variation trend for the 25 years revealed that from 2002 onward, the basin loses more energy. In the seasonal scale, the basin gain energy in spring-summer and loses energy in fall-winter. The 25 years average evaporation of the basin was estimated as 1128 mm yr^{-1} with increasing trend after 2003.

Keywords: *Air-Sea Heat flux, Evaporation, Heat budget, Bulk formulation, Caspian Sea.*