



## **A practical indicator of the importance of heat and freshwater flux on the surface buoyancy flux**

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The heat and freshwater exchange at the ocean surface can either drive convection or stratify the water. Depending on the local atmospheric and oceanic state the individual contribution of the two components enhance or compensate for each other. Here a quantitative measure of the relative contributions of heat and freshwater buoyancy fluxes is proposed. The formulation leads to an angular measure that has the advantage over a simple flux ratio as the sign of the individual components is preserved making it non-ambiguous. The global distribution of the angle is discussed and regions are identified where variability of the ocean/atmosphere exchange in heat versus freshwater are most critical. As an example, the transformation of surface water in the South Pacific between 1951 to 2001 is examined using the proposed angle.