海面熱フラックスによる海面水温勾配の強化・緩和：メトリックの提案と太平洋冷舌に伴う水温前線への応用
A metric for surface heat flux effect on horizontal SST gradients: Application to the SST front associated with the Pacific cold tongue

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Understanding what controls horizontal variations in sea surface temperature (SST) is crucial for tropical air-sea interactions including those associated with the Walker Circulation. Although various oceanic effects contribute to reinforcement/relaxation of horizontal variations in SSTs, the role of surface heat fluxes is very complex and as important as the oceanic effects. In particular, the contribution of surface heat fluxes to surface frontogenesis/frontolysis depends not just on their gradients, but also on the distribution of mixed layer depth (MLD) that controls the effective heat capacity of the upper ocean. In this study, a new metric quantifying the relative importance of horizontal variations in surface heat fluxes and MLD are proposed. Global maps of this metric reveal that the role of surface heat fluxes in determining the horizontal SST gradient is highly variable geographically and by season. Application of this metric to the eastern equatorial Pacific reveals that the horizontal gradient of both surface heat fluxes and MLD contributes to the frontolysis of the SST front associated with the cold tongue by the surface heat flux effect, but the latter contribution is greater in both March-May and September-November.

キーワード：海面水温、混合層、東太平洋赤道域
Keywords: Sea surface temperature, Mixed layer, Eastern equatorial Pacific

