

Decadal to bidecadal rainfall variation in the western Pacific: A footprint of South Pacific decadal variability?Huang-Hsiung Hsu[†]; Yun-Lan Chen[†] National Taiwan University, TaiwanLeading author: hsu@webmail2.as.ntu.edu.tw

Decadal to bi-decadal rainfall variation in the Western Pacific, e.g., Eastern Australia, the Maritime Continent, the Philippines, Taiwan, and Korea, during July-October in the second half of the 20th century was identified in this study. It is suggested that the fluctuation of the 10-20-year South Pacific Decadal Oscillation, the leading SST pattern in the South Pacific, in the second half of the 20th century resulted in the significant 10-20-year rainfall variation along the Western Pacific coast. The associated divergent flow was characterized by an anomalous zonal circulation between the Eastern and Western South Pacific, and an anomalous Hadley-like circulation between the Western South Pacific and the Philippine Sea. The close temporal and spatial relationship between the divergent circulation and the SSTA suggests that the anomalous divergent circulations were likely driven by the SSTA and resulted in the anomalous rainfall in Eastern Australia and the Maritime Continent. It is conjectured here that the SSTA in the Western South Pacific led to an anomalous Hadley circulation in the Western Pacific and indirectly affected the convection activity and monsoon trough in the Philippine Sea, which in turn had an impact on the rainfall in the Philippines, Taiwan and Korea through an east-west vertically overturning circulation between the Western North Pacific coast and the Philippine Sea.