# An IR-PMW Blended PDF-matching Technique over the Asia-Pacific and its improvement by incorporating with surface data

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**Abstract.** An IR-PMW blended technique is developed to derive precipitation estimates over the Asia-Pacific domain through calibrating the TBB from the Japanese Himawari-8 satellite to precipitation derived from the combined PMW retrievals (currently MWCOMB2) based on the PDF-matching concept of Turk et al. (2003). Called IRQPE, the technique is modified and fine-tuned to better represent the spatially rapidly changing cloud – precipitation relationship over the target region with PDF matching tables established over a refined spatial resolution of 0.5° lat/lon grid. The evaluation of IRQPE shows broadly comparable performance to that of CMORPH2 in detecting rainfall systems of large and medium-scales. Spatial correlation between IRQPE and the CMORPH2 for daily precipitation at a resolution of 0.25° on average reaches to near 0.9, and the fluctuation of precipitation indices derived from the two datasets over key areas such as the active centers of BSISO/MJO convections show well consistency of each other, all suggesting usefulness of the IRQPE in climate applications over Asian-Australian Monsoon region. We are continuing our work to improve the IRQPE in its capacity to resolve precipitation of finer spatial and temporal scales especially those associated with the orographic effects. Two approaches are explored for improving the precipitation estimates over Taiwan area. The first is to establish the PDF tables for a further refined spatial resolution, while the other is to replace the PMW-based precipitation 'truth' fields with the surface gauge data to overcome the shortcoming of PMW-based retrievals in capturing orographic rainfall. Preliminary experiments showed promising results. Further results will be reported at the workshop.