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Understanding and PreDiction of Rainfall Associated with landFalling Tropical cyclones (UPDRAFT)

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The western North Pacific and East Asian regions are affected the most by tropical cyclones (TCs) in the world. In particular, landfalling TCs can bring heavy precipitation to coastal areas, which is of limited predictability. Inorder to improve the forecast of rainfall associated with landfalling TCs, we propose to establish a WMO/WWRP Research and Development Project (RDP) to advance the understanding and prediction of rainfall associated with landfalling TCs. This RDP will promote research on multi-scale dynamical and physical processes that govern rainfall intensity and distribution in landfalling TCs. The ability of both state-of-the art research and operational NWP models in forecasting rainfall associated with landfalling TCs will be systematically evaluated first. A prototype of optimized configuration of research and operational NWP models for the forecast of landfalling TCs will be established. New forecast techniques based on ensemble of multiple NWP model outputs will be exploited. The proposed RDP will be coordinated and collaborated with the on-going WMO Typhoon Landfall Forecast Demonstration Project (TLFDP) and the Forecast Demonstration Project in Southeast Asia (SWFDP). The establishment of this RDP is expected to help significantly reduce the risk of landfalling TCs to the affected coastal regions by achieving improved rainfall forecast, and also contribute to improved understanding of the fine-scale structure and processes in landfalling TCs.