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Note of the Tropical Cyclone Activities in Taiwan Area during 2004 and the Forecasts

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Taiwan is among the areas that frequently affected by the tropical cyclones. On average, there were 6.3 tropical cyclones that threatened to the area. Among them, there were 3.1 storms that the center either made landfall on Taiwan or that the center passed the island from the nearby ocean and had caused significant damages on the island. During 2004, nine of the 29 named tropical cyclones in the west Northern Pacific had threatened to Taiwan and the CWB had issued warnings. Typhoons Conson, Rananim, Meari, Nock-ten and tropical storm Kompasu induced relatively smaller amount of rainfall in Taiwan. Typhoon Area produced very heavy rainfall in northwestern Taiwan. The maximum accumulation rainfall reached 1546 mm in a haracteristics of the very heavy rainfall are similar to that of the type of 'Northwestward-Typhoon' known by the local forecasters. The slow moving speed of Area enhanced the rainfall amount.

Typhoon Mindulle made a 90-degree turn by 06 UTC 30th June. Most of the model forecasts and the official forecasts did not predict the unusual turn correctly. After the change of the moving direction, the center then moved northward and made landfall on the central eastern Taiwan. Our analysis shows that the accumulated rainfall reached 600 mm over eastern Taiwan in a 48-hour period before the center moved further inland. The heavy rainfall area then shifted to the southwestern Taiwan when the system moved northward and induced strong southwesterly flow. The daily rainfall reached about 800 mm in southwestern Taiwan on 2nd July. Heavy rainfall continued till 5th July. We also found that the numerical models can show the heavy rainfall qualitatively, but the magnitude of the rains is much underestimated.

Interesting rainfall events also occurred in Taiwan prior to the formation of tropical storm Haima and during the approaching of typhoon Nanmadol. We found that under the influence of two tropical disturbances, 799 mm of rains occurred in Taipei within 24-hour before the formation of Haima. Interaction of the topography, the northeasterly monsoon and the outer circulation of Nanmadol produced 1057 mm of rains in central eastern Taiwan. We will show more details of the rainfall events in the Conference. Model forecasts of the tracks, the rainfall distribution, and examines of different initialization processes including tests of the impacts of dropsonde observations will also be addressed.