

Record Breaking Typhoon Touchdowns on Korean Peninsula during July to September 2012: Climatological Features and Hydrometeorological Perspective

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Abstract. Typhoon is one of the major hydrologic inputs in South Korea, as it supplies large quantities of precipitation in a short period of time on its pathway. This provides ample water supply but also severe flooding and loss of life and property. Typhoons typically occur during Jul-Sep, and the average number of occurrences in North Pacific is ~25 and over S. Korea ~3. In 2012, however, S. Korea experienced 5 typhoons including 3 of them consecutively during August to September. This is unprecedented since modern observation history. We analyze the sea surface temperature and circulation patterns to understand the tracks of the individual typhoons and also the extreme nature of last season. We find that one of the main reasons for the unusually high number of typhoons was the westward-shift of the Northern Pacific Sub-Tropical High Pressure System relative to normal years during Jul-Sep. This enabled an efficient steering of the typhoons towards the Korean peninsula. We also found the intensity of the typhoons to be consistent with the SST in its path. We also analyzed the precipitation amounts and wind speeds at land fall in relation to the large scale SST and circulation features to understand their variability. Better water resources management and infrastructure helped to mitigate the flooding damage - but it remains intriguing in that if such elevated levels of typhoon activity will be the new norm in a warmer future.