

The Characteristics of Disaster by Track of Typhoon Affecting the Korean Peninsula

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I. Introduction

- Recently, meteorological disasters occur frequently in Korea. Those are mainly driven by the meteorological phenomena such as heavy rain and typhoon in summer and heavy snow in winter.
- According to the recent statistics, meteorological disasters occurred by heavy rain (37%), heavy rain accompanied with the typhoon (22%), and the typhoon (15%) (*Ministry of Public Administration and Security, 2003).
- The frequency of typhoons affecting the Korean Peninsula (KP) shows an increasing trend and its intensity is getting stronger (**Park et al., 2006).
- There are a lot of studies on the typhoons landing on the KP, However, study on the typhoons passing through the Sea Area around the KP is few.
- The purpose of this study is to find out the characteristics of disasters caused by typhoons passing through the sea area around the KP.

II. Data and Methodology

DATA	Typhoon Information	<ul style="list-style-type: none"> Resources : TC(Tropical Cyclone) best-track data of the Regional Specialized Meteorological Centers (RSMC)-Tokyo Typhoon Center Elements : Latitude, Longitude, and central pressure Period : From 1951 to 2007
	Typhoon Disaster	<ul style="list-style-type: none"> Resources : Disaster annual report of National Emergency Management Agency Elements : Total damage, Casualty, Sufferers, Flooding area, House, Farmland, Road and bridge Period : From 1973 to 2006
	Meteorological Analysis	<ul style="list-style-type: none"> Resources : 60 Korean weather stations of Korea Meteorological Administration (KMA) Elements : Daily Precipitation and Maximum wind speed Period : From 1973 to 2006

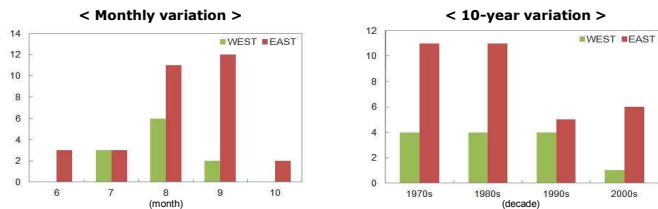
Methodology

- Definition of "Typhoons affecting the KP"**
 - Typhoon affecting the KP : The typhoons through the region in 32-40°N, 120-135°E(Typhoon White Book, 1996)
 - WEST case : The typhoon passing through the Yellow Sea, west of the Peninsula without landing on the Peninsula
 - EAST case : The typhoon passing through the East Sea, east of the Peninsula without landing on the Peninsula
 - Frequency and intensity analysis**
 - Frequency and intensity changes of the typhoons affecting the KP by using RSMC Best Track data from 1973 to 2006
 - Damage analysis**
 - Damage type of typhoons passing through the area of West and East case from 1973 to 2006
 - Cause Analysis of typhoon disasters**
 - Precipitation and Maximum wind speed data analysis for 60 Korean weather stations with KMA data
 - Precipitation : above 80 mm/day, Maximum wind speed : above 7 m/s
- The number of stations to satisfy the conditions
60 stations × Affecting period (day) × The number of typhoons

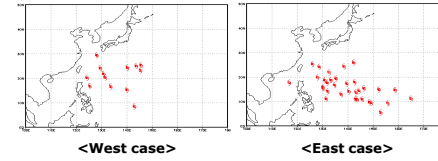
III. Result

Frequency and Intensity of typhoons

Frequency changes of the Typhoons

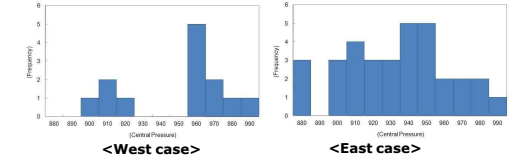


Genesis : Location(Latitude, Longitude)



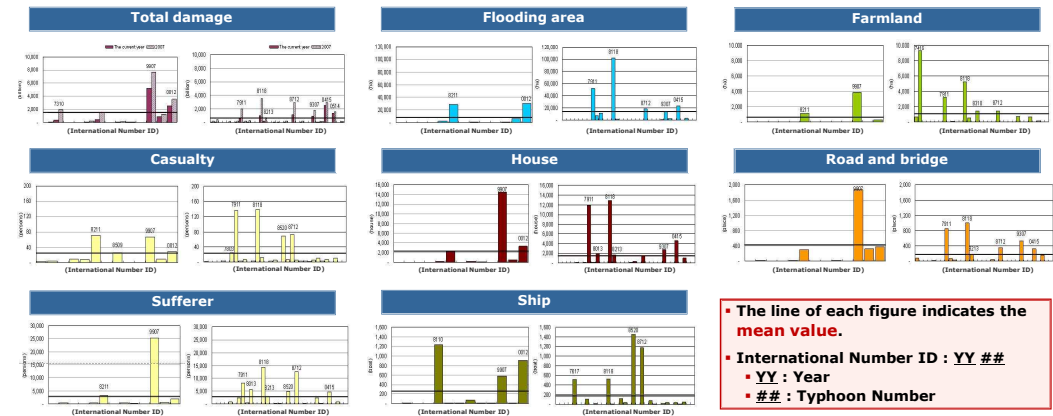
The number of Typhoons is more in East case.

Intensity : Central pressure distribution of Typhoons



The intensity of Typhoons is stronger in East case.

Damage type in each case : West cases(left) & East cases(right)



	Damage Type								
	Total damage (billion)	Casualty (person)	Sufferer (person)	Flooding area (ha)	House (house)	Ship (boat)	Farmland (ha)	Road and bridge (place)	
West case	867	25	2,976	8,744	2,313	261	676	420	
East case	280	23	2,924	13,866	1,574	183	1,027	169	

- West and East case are similar for Casualty and Sufferer. But, Total damage of West case is bigger than east case.
- Flooding area and Farmland : West case < East case
- House, Ship, Road and bridge loss : West case > East case

Cause Analysis of typhoon damage

	West case	East case
Precipitation(%)	77.8	73.7
Wind(%)	88.9	42.1

• West case : Precipitation effect < Wind effect
 • East case : Precipitation effect > Wind effect

IV. Summary

The result of this study indicates that the characteristic of disasters is distinctive according to the Typhoon track. If applied to establish the disaster prevention plan, this result could make a contribution to the damage reduction.

	Frequency	Intensity	Total Damage	Cause	Typhoon Type
WEST case	Few	Weak	Large	Wind	Wind Typhoon
EAST case	Many	Strong	Small	Precipitation	Rain Typhoon

V. Acknowledgement

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