



Typhoon-induced coastal sound field change

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Two field experiments were conducted just before and after the passage of typhoon Damrey in the Yellow sea in 2012. After Damrey's passage, the water temperature increases dramatically except the sea surface layer. The thermocline deepens and weakens, which leads to a change of internal wave activity. The transmission losses (TL) of the two experiments show that the environment change induced by typhoon can increase the TL as large as 8 dB at a distance of 9.2 km and depth of 15 m. Due to the thermocline changes, the normal mode structures of the two experiments are significantly different. The scintillation index (SI) of the sound intensity is simulated to estimate the change of the effect of internal wave activity on acoustic field showing that the SI decreases to a half after the typhoon's passage. In addition, the signal arrives earlier after the typhoon's passage due to the water temperature increase. Sediment warming due to bottom-water temperature increase is calculated and the change in sediment sound speed is estimated. TL is simulated both with and without consideration of the change in sediment sound speed induced by temperature variation and results show TL change could be >10 dB within a distance of 16 km.