

Irregular motions of a typhoon near steep mountainous lands

SAEKI, Takuro^{1*}, YAMANAKA, Manabu D.²

¹Graduate School of Science, Kobe University, ²RIGC, JAMSTEC; BPPT, Indonesia; Graduate School of Science, Kobe University

It has been known that typhoons move irregularly on around steep mountainous islands such as Luzon, Taiwan, Kyushu, Shikoku and Honshu, in particular inside Pacific subtropical high where background flows are weak. Even over oceans, when two typhoons exist, they may move cyclonically and often irregularly by Fujiwara effect (Fujiwara, 1921). An isolated typhoon may take trochoidal (cycloidal) motions as a secondary effect of vortex motions (e.g. Syono, 1955; Muramatsu, 1986), and they are related to their losing axi-symmetric structures (e.g. Abe, 1987; Itano and Ishikawa, 2010).

Typhoon Ma-on (T2011) took an irregular motion near the southern coast of Shikoku and Honshu. It changed suddenly from northward to southward at the southeast edge of Shikoku on July 19, 2011. We analyzed a local trough on Shikoku, which seems similar to a local orographic low found by Higashi et al. (2010) near the Baiu-frontal medium-scale cyclone. We examined meandering typhoon motion, background wind change, and typhoon transformation. The last one includes Fujiwara effect between the typhoon and a local low.

Keywords: typhoon, irregular motion, orographic low