

100-member ensemble forecast by NICAM to examine forecast bust case Typhoon Krosa (2019)

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Typhoon Krosa formed near the Mariana Islands at 0600 UTC on 6 August 2019 then translated northwest-north northwestward and made landfall western part of Mainland of Japan on 15 August. At the early stage of Krosa's lifetime, multicenter operational models predicted huge diversity of track: JMA (ECMWF) model predicted Krosa would translate north-northeastward (northwest-north northwestward), thus it would not (would) hit Japan.

To examine why such diversity in predicted tracks occurred, 100-member ensemble forecast experiments were performed using 28-km mesh nonhydrostatic icosahedral atmospheric model (NICAM). The model was initialized with NICAM-LETKF JAXA Research Analysis (NEXRA).

In the experiments initialized at 1200 UTC on 6 August showed large uncertainty of Krosa's track as predicted in multicenter operational models and the west most simulated tracks captured Krosa's analyzed track by RSMC Tokyo. An ensemble-based sensitivity analysis revealed that westward extension of subtropical Pacific high led to northwest/north-northwest trajectory. Dependency of initial data and mechanism which caused westward extension of the subtropical high will be discussed at the presentation.

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