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**Characteristics of Convectively Induced Turbulence and Near-Cloud
Turbulence in East Asia Using the Geostationary Korea Multi-Purpose
Satellite-2A (GK-2A) and In-Situ Aircraft Data**

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Deep convection and vicinity are important for possible areas of turbulence encounters in cruising aircraft, which is called the convectively induced turbulence (CIT) and near-cloud turbulence (NCT). In this study, deep convection area (DCA) in East Asia was retrieved using the infrared channel of the Geostationary Komsat-2A (GK-2A), and CIT was determined by using in situ aircraft data adjacent to the DCA. Of the total turbulent cases, 15.68% were classified as CIT in East Asia. CIT ratio is the highest in summer due to the East Asian summer monsoon, and surprisingly the second highest in winter. With the increase of horizontal distance between the boundary of DCA and turbulence, CIT intensity decreases rapidly due to the decrease of direct influence from deep convection. However, as the distance becomes even higher than 40-km from the DCA boundary, the intensity of turbulence increases gradually, which trend is most significant in winter. Two case studies confirmed that stronger intensity of this type of NCT in winter is mainly due to the interaction between winter storms and strong East Asian jet stream. Eventually, the CIT detection algorithm in combination with the model-based turbulence diagnostics will provide a better situational awareness of CIT and NCT, which will be useful for safe and efficient aviation operations in the world.