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Long-term change of atmospheric stagnant condition over northeast Asia

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Recently, it has been noticed that weather and climate conditions could be an important factor in affecting air quality over East Asia. Among such conditions, stagnant condition in the lower troposphere because of weak wind speed is highlighted as a player that could worsen air quality. In this study, long-term change of lower tropospheric stability and wind speed were examined using modern reanalysis dataset. Interestingly, a steady increase trend is found in the static stability as well as a decreasing trend in near-surface wind speed over northeast Asia, implying more stagnant condition over time. Importantly, rate of increasing more stagnant condition in the recent decades has become faster than in earlier periods. Finally, the long-term change of stagnant condition is likely caused by global warming.