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The Relationship between Climate and Influenza at Monthly Timescale

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Predictions of trends in the distribution of known diseases can be used to inform and drive public health action. Given the strong linkage between climate and influenza, we propose an in-depth study of the relationship between humdidty and other climate variables and influenza morbidity and mortality at various temporal and spatial scales. Although several studies indicate that relative humidity affects both influenza virus transmission and influenza virus survival, a new lab-based study suggests that it is absolute humidity that constrains both transmission efficiency of the influenza virus survival and its transmission. We test this assumption using a 20-year disease and humidity data for seven US cities. The ultimate goal of the study is to make it possible to use weather and climate predictions at or before the start of the influenza season to provide valuable prediction of the characteristics of the season. We further suggest that using the NASA Terrestrial Observation and Prediction System offers a unique and promising opportunity to apply data from NASA satellites and modeling frameworks to enable prediction of the severity and peak time of influenza based on climate indicators. Improving the predictability of influenza can result in the development of more cost effective and successful disease control strategies and enhance our understanding of how the disease might respond to potential climate changes.