

Publication

A cross-sectional analysis of meteorological factors and SARS-CoV-2 transmission in 409 cities across 26 countries

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 4646115**Author(s)** Sera, F.; Armstrong, B.; Abbott, S.; Meakin, S.; O'Reilly, K.; von Borries, R.; Schneider, R.; Royé, D.; Hashizume, M.; Pascal, M.; Tobias, A.; Vicedo-Cabrera, A. M.; Gasparrini, A.; Lowe, R.**Author(s) at UniBasel** [Ragetti, Martina](#) ;**Year** 2021**Title** A cross-sectional analysis of meteorological factors and SARS-CoV-2 transmission in 409 cities across 26 countries**Journal** Nat Commun**Volume** 12**Number** 1**Pages / Article-Number** 5968**Keywords** Basic Reproduction Number; COVID-19/epidemiology/*transmission; Cities; Cross-Sectional Studies; Humans; Meta-Analysis as Topic; *Meteorological Concepts; Pandemics; Regression Analysis; SARS-CoV-2/*pathogenicity; Seasons; Temperature; Weather**Mesh terms** Basic Reproduction Number; COVID-19, transmission; Cities; Cross-Sectional Studies; Humans; Meta-Analysis as Topic; Meteorological Concepts; Pandemics; Regression Analysis; SARS-CoV-2, pathogenicity; Seasons; Temperature; Weather

There is conflicting evidence on the influence of weather on COVID-19 transmission. Our aim is to estimate weather-dependent signatures in the early phase of the pandemic, while controlling for socio-economic factors and non-pharmaceutical interventions. We identify a modest non-linear association between mean temperature and the effective reproduction number (R_e) in 409 cities in 26 countries, with a decrease of 0.087 (95% CI: 0.025; 0.148) for a 10 degrees C increase. Early interventions have a greater effect on R_e with a decrease of 0.285 (95% CI 0.223; 0.347) for a 5th - 95th percentile increase in the government response index. The variation in the effective reproduction number explained by government interventions is 6 times greater than for mean temperature. We find little evidence of meteorological conditions having influenced the early stages of local epidemics and conclude that population behaviour and government interventions are more important drivers of transmission.

ISSN/ISBN 2041-1723 (Electronic)2041-1723 (Linking)**URL** <https://doi.org/10.1038/s41467-021-25914-8>**edoc-URL** <https://edoc.unibas.ch/89405/>**Full Text on edoc** Available;**Digital Object Identifier DOI** 10.1038/s41467-021-25914-8**PubMed ID** <http://www.ncbi.nlm.nih.gov/pubmed/34645794>**ISI-Number** WOS:000707028100026**Document type (ISI)** Journal Article