

EGU21-42

<https://doi.org/10.5194/egusphere-egu21-42>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Modifying emissions data and projections to incorporate the effects of lockdown in climate modelling

**Robin Lamboll**<sup>1</sup>, Piers Forster<sup>2</sup>, Chris Jones<sup>3</sup>, Ragnhild Skeie<sup>4</sup>, Stephanie Fiedler<sup>5,6</sup>, Bjørn Samset<sup>4</sup>, and Joeri Rogelj<sup>1,7</sup>

<sup>1</sup>Imperial College, Grantham Institute, London, United Kingdom of Great Britain and Northern Ireland (rlamboll@imperial.ac.uk)

<sup>2</sup>Priestley International Centre for Climate, University of Leeds, Leeds, UK

<sup>3</sup>Met Office Hadley Centre, Exeter, UK

<sup>4</sup>CICERO Center for International Climate Research, Oslo, Norway

<sup>5</sup>Institute of Geophysics and Meteorology, University of Cologne, Köln, Germany

<sup>6</sup>Hans-Ertel-Centre for Weather Research, Climate Monitoring and Diagnostics, Bonn/Cologne, Germany

<sup>7</sup>International Institute for Applied Systems Analysis, Laxenburg, Austria

Lockdowns to avoid the spread of COVID-19 have created an unprecedented reduction in human emissions, however emissions estimates are typically only available after one or more years, making it hard to incorporate these reductions into emissions projections. In this talk we will outline how mobility data and power usage can nowcast country-and-sector emissions of various gases. In this way we show that the short-term impact of lockdown on emissions data is not expected to be significant for long-term temperature trends.

We will also outline how different recovery pathways can be made using basic longer-term emissions projections and how to construct detailed scenarios for non-CO<sub>2</sub> emissions, using assumptions about the effects of lockdown on nationally determined contributions and a new software package called Silicone that can infill missing greenhouse gas emissions. Silicone allows the consistent incorporation of tradeoffs between emission species as modelled by IAMs, and as expressed in available greenhouse gas emission scenarios, to be applied to the proposed pathways. We will then show how to make these projections into the more detailed, gridded, CMIP-6 compatible emissions estimates that are required to run General Circulation Models (GCM).