

MEEP Report

Project: 1431

Project title: Mapping effects of environmental policies (MEEP)

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Report period: 2024-05-01 to 2025-04-30

New thermal inversions dataset (2008-2020)

We have assembled a dataset on temperature inversions that covers all of Europe for the time period 2008-2020. We plan to publish this data as a data publication. Compared to the very preliminary state of the dataset at the time of the MEEP proposal, several things have been improved:

- consistent coverage from 2008 to 2020
- more realistic inversions calculation with the use of surface pressure values from a different reanalysis dataset rather than from the lowest pressure level
- calculation of mean monthly inversions episode strength
- six different upper pressure levels for robustness checks
- five different definitions of inversion episodes for robustness checks:
 - inversions lasting for 3 hours
 - inversions lasting for 12 hours
 - inversions lasting for 24 hours
 - inversions occurring during daytime
 - inversions occurring during nighttime
- complete accompanying datasets of weather control variables and PM2.5 pollution data on the same grid

The data is formatted in an accessible way, such that every month can be calculated for every country separately. All data is given on the 1 km by 1 km grid used by Eurostat, such that they can readily be combined with socioeconomic data for further analysis.