Machine Learning in Earth System Science: An overview of meteorological normalisation

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Introduction

- Meteorological normalisation is a framework which enables a data user to control for changes in meteorology/weather over time in an air quality time series.
- The technique uses the random forest ensemble machine learning algorithm \[1\].
- An R package, `rmweather` has been accepted by CRAN which contains the tool set required for others to conduct this analysis \[2\].
- The random forest models for Swiss PM\(_{10}\) suggested interesting atmospheric processes \[3\].
- The technique is useful for intervention exploration \[4\].
Figure 1. Conceptual diagram of the meteorological normalisation procedure.
Figure 2. Meteorologically normalised trends for Swiss PM$_{10}$.
Figure 3. Meteorologically normalised trends of NO$_2$ and NO$_x$ at London Marylebone Road between 1997 and 2016.
Final notes

- For examples and full discussion of this work, see references [3, 4]

- A poster is available for viewing at this conference

- A workshop is being held at this conference so the application of the technique and code development can occur with support
References


https://github.com/skgrange/rmweather

https://doi.org/10.5194/acp-18-6223-2018

https://doi.org/10.1016/j.scitotenv.2018.10.344
The online location of this presentation