The Journal of Open Source Software

rtimicropem: an R package supporting the analysis of RTI MicroPEM output files

Maëlle Salmon[1], **Sreekanth Vakacherla**[2], **Carles Milà**[1], **Julian D. Marshall**[2], **and Cathryn Tonne**[1]

1 ISGlobal, Centre for Research in Environmental Epidemiology (CREAL), Universitat Pompeu Fabra, CIBER Epidemiología y Salud Pública, Barcelona, Spain. **2** Department of Civil and Environmental Engineering, University of Washington, Seattle, WA, USA

DOI: 10.21105/joss.00333

Software

- Review
- Repository
- Archive

Summary

rtmicropem (Salmon and Zhou 2017) is an R package (R Core Team 2017) that aims at supporting the analysis of PM2.5 measures made with RTI MicroPEM. RTI MicroPEM are personal monitoring devices (PM2.5 and PM10) developped by RTI international. They output csv files containing both settings and measurements corresponding to measurement sessions. These files are not tabular data, that the package transforms into tabular data.

The goal of the package functions is to help in two main tasks:

- Checking individual MicroPEM output files after, say, one day of data collection. For this the package includes an R6 class representing one file/session of measurements with a plot method and a summary method, and a Shiny app for uploading and exploring single files.
- Building a data base based on output files, and clean and transform the data for further analysis. For this the package offers a function for saving all RTI MicroPEM output files of a folder into two csv containing, respectively, the settings and measurements of all files.

The documentation includes a transparent report of the data cleaning process used in the CHAI project ("Cathryn Tonne and Maëlle Salmon and Margaux Sanchez and V. Sreekanth and Santhi Bhogadi and Sankar Sambandam and Kalpana Balakrishnan and Sanjay Kinra and Julian D. Marshall" 2017).

References

"Cathryn Tonne and Maëlle Salmon and Margaux Sanchez and V. Sreekanth and Santhi Bhogadi and Sankar Sambandam and Kalpana Balakrishnan and Sanjay Kinra and Julian D. Marshall". 2017. "Integrated Assessment of Exposure to Pm2.5 in South India and Its Relation with Cardiovascular Risk: Design of the Chai Observational Cohort Study." *International Journal of Hygiene and Environmental Health* 220 (6): 1081–8. doi:http://dx.doi.org/10.1016/j.ijheh.2017.05.005.

R Core Team. 2017. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Salmon, Maëlle, and Zheng Zhou. 2017. "Rtimicropem: Supports the Analysis of Rti Micropem Output Files." doi:10.5281/zenodo.831438.