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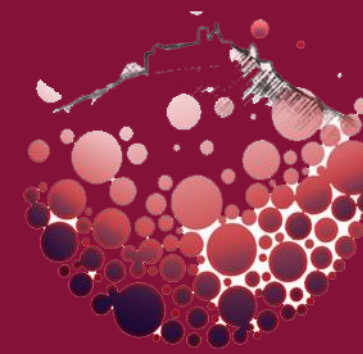
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Determinants of particulate pollution within the Lille subway trains

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MOTIVATION

To reduce road traffic and the associated emissions of pollutants, local authorities worldwide promote the use of public transportation instead of individual motor vehicles. However, these environments can also present elevated levels of pollutants. This has for instance been observed in subway systems, both in the stations and in the trains [1].

This study presents preliminary results on the particulate pollution levels and determinants in the subway system of the Lille area (Northern France).

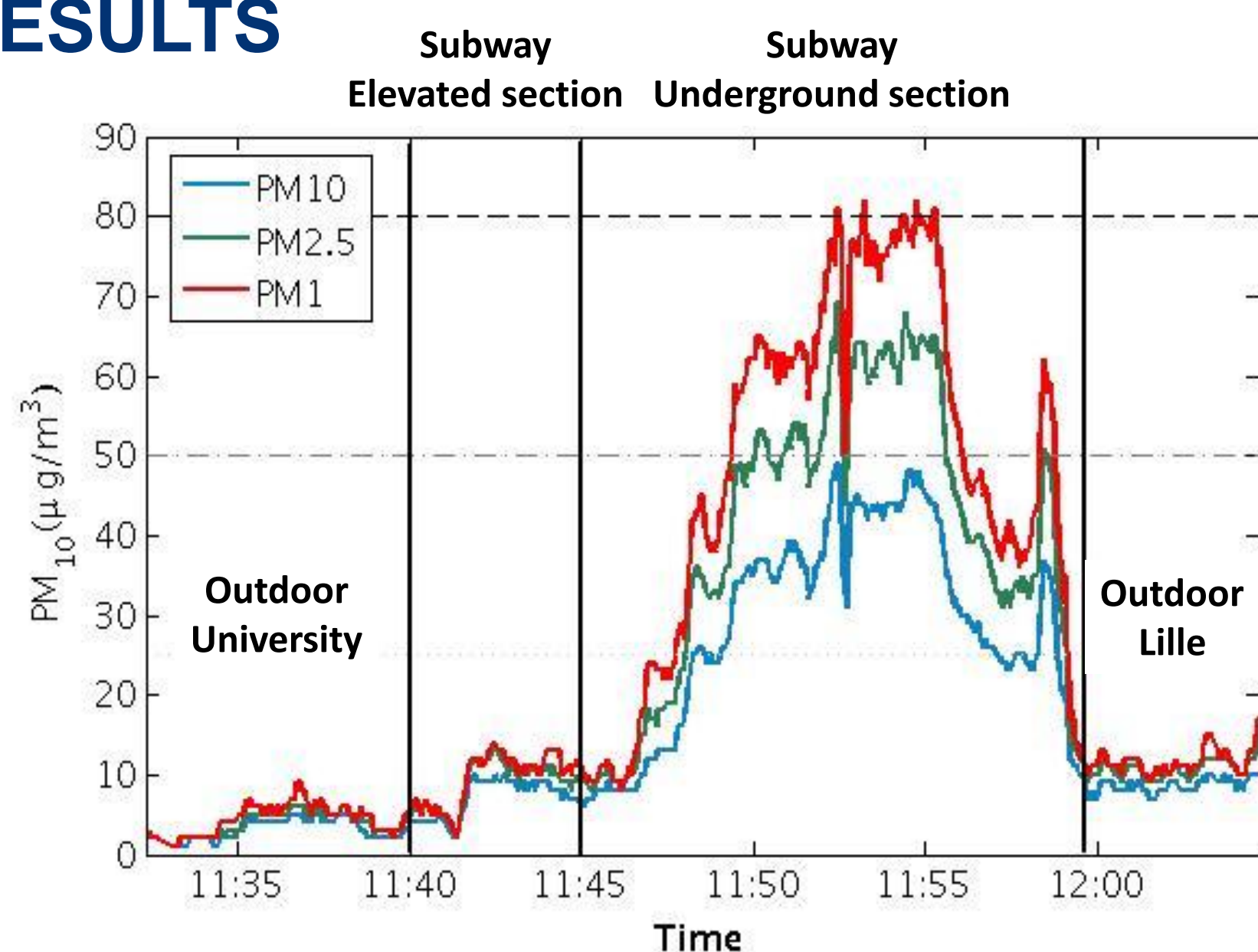
MATERIALS AND METHODS



Mobile unit developed in U Lille, based on commercial HK-A5 laser PM2.5/PM10 sensor.

Many trips (May '17 – march '18) between station Cité Scientifique (U Lille, elevated section) and station Gare Lille-Flandres (center city, underground section). Sensor position within the train depending on seat/space availability.

RESULTS

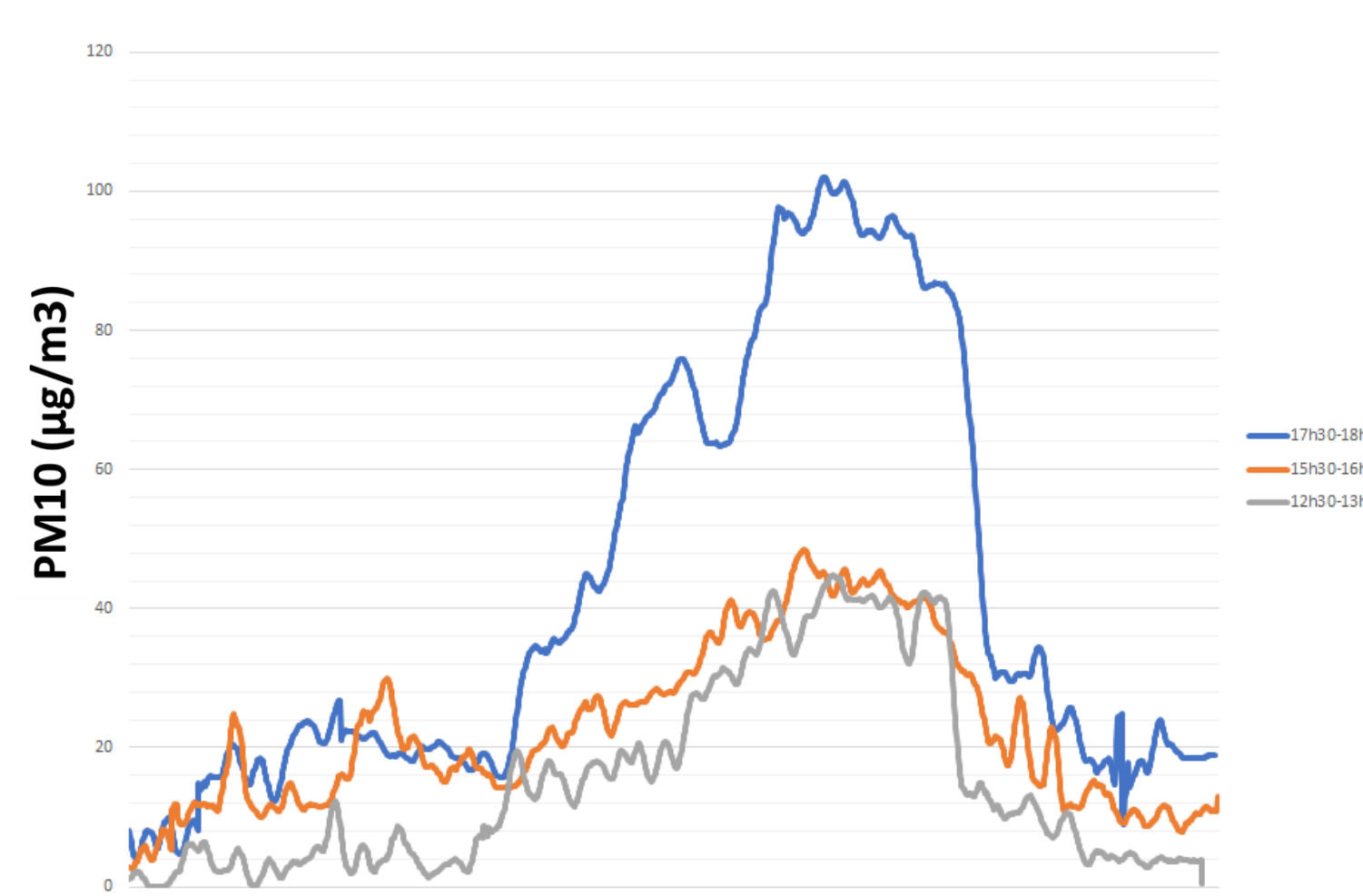


Typical PM profiles during a subway ride (May 22, 2017)

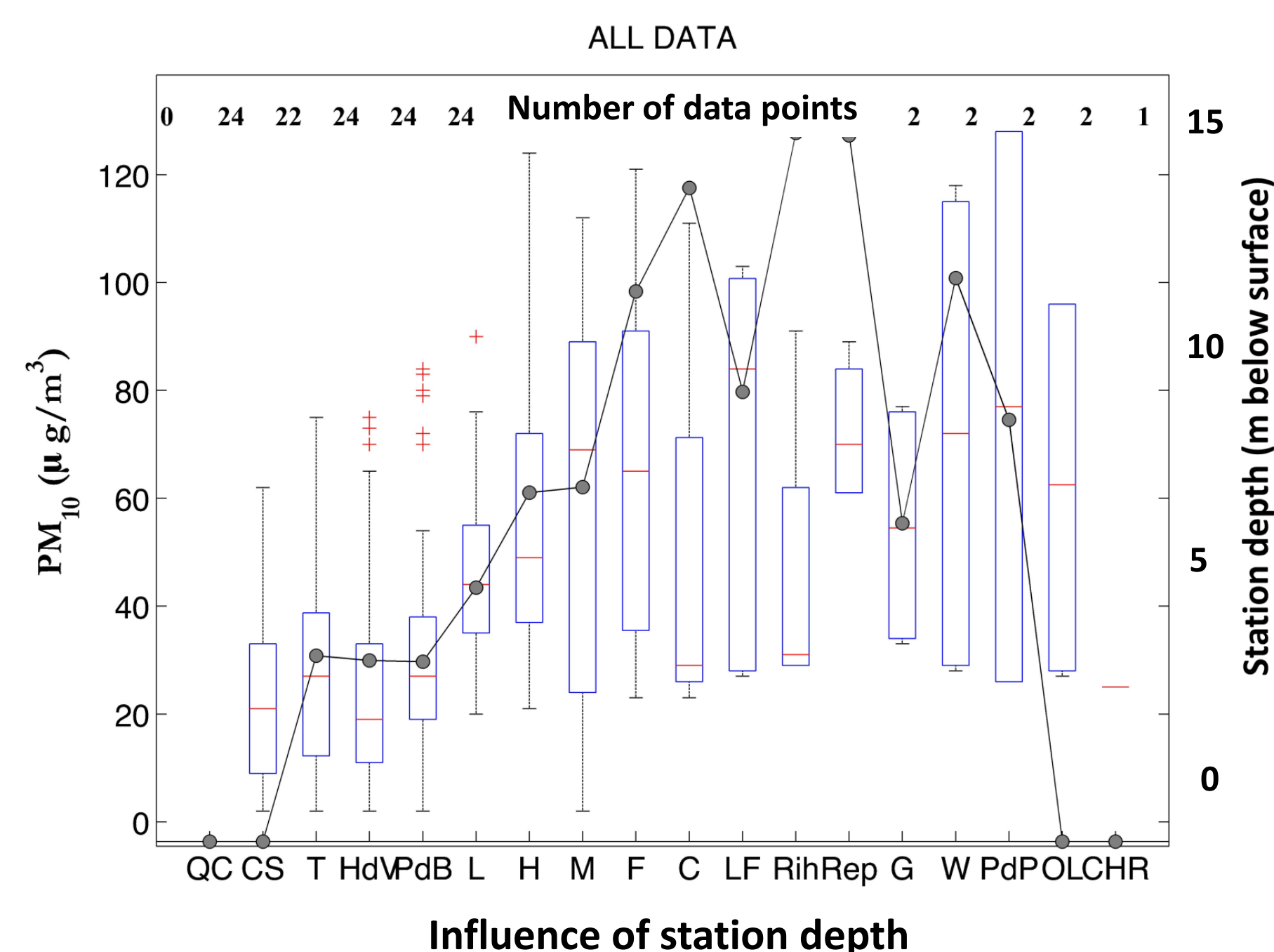
REFERENCES

[1] B. Xu and J. Hao, "Air quality inside subway metro indoor environment worldwide: a review", *Environment International*, vol. 17, pp. 33-46, 2017.

RESULTS



Influence of passenger number



Influence of station depth

CONCLUSIONS

High concentrations of particles (all sizes) are measured inside the subway trains, specially in underground sections. PM concentration is influenced also by number of passengers.

Close collaboration is needed with the local authorities to help in the interpretation of the data, and reduce the exposure of commuters.

ACKNOWLEDGMENTS

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