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Research Highlight

'Atmospheric new particle formation from the CERN CLOUD experiment'

Summary

Aerosol particles in the atmosphere profoundly influence public health and climate. Ultrafine particles enter the body through the lungs and can translocate to essentially all organs, and they represent a major yet poorly understood health risk.

Human activities have considerably increased aerosols and cloudiness since pre-industrial times, but they remain persistently uncertain and underrepresented in global climate models. We present a synthesis of the current understanding of atmospheric new particle formation derived from laboratory measurements at the CERN CLOUD chamber.

Impact

Experiments at CLOUD have measured new particle formation at the molecular level and helped to interpret observations in the ambient atmosphere. These advances are needed to reduce the sources of urban smog, to sharpen estimates of Earth's climate sensitivity, and to anticipate how global and regional radiative forcings may change later this century as anthropogenic aerosols fall due to air quality policies. .

Authors' bios

Dr Theodoros Christoudias is an Associate Professor at the Climate and Atmosphere Research Center (CARE-C) of the Cyprus Institute, where he leads the Earth System Modelling Group.

Reference

Atmospheric new particle formation from the CERN CLOUD experiment. Kirkby, J., Amorim, A., Baltensperger, U., Carslaw, K. S., Christoudias, T., Curtius, J., Donahue, N. M., Haddad, I. E., Flagan, R. C., Gordon, H., Hansel, A., Harder, H., Junninen, H., Kulmala, M., Kürten, A., Laaksonen, A., Lehtipalo, K., Lelieveld, J., Möhler, O., Riipinen, I., Stratmann F., Tome A., Virtanen, A., Volkamer R., Winkler, P.M & Worsnop, D. R.
Nat. Geosci. **16**, 948–957 (2023).
https://doi.org/10.1038/s41561-023-01305-0

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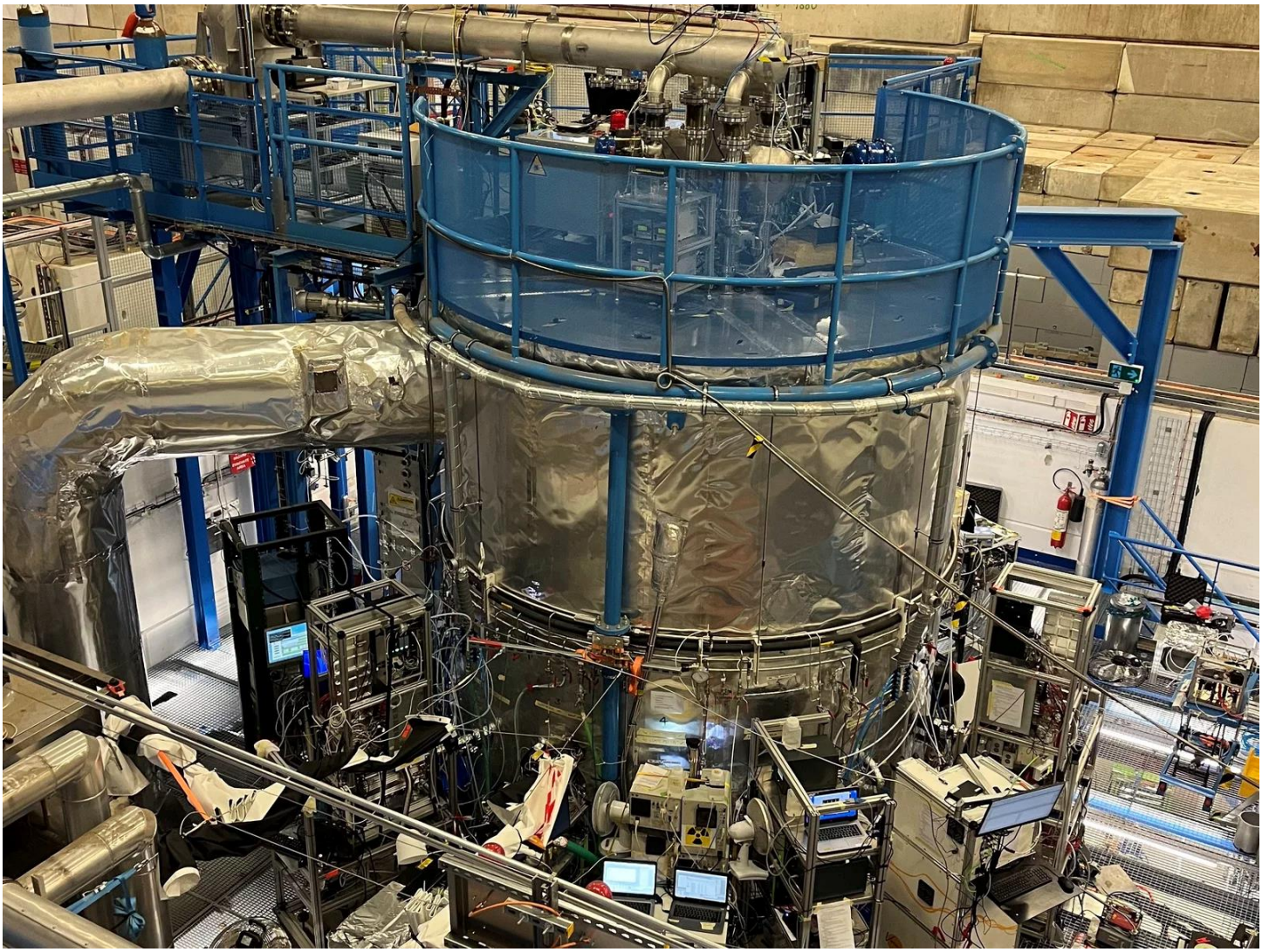

Figure 1 The CLOUD Experiment at CERN