

Carbon footprint and reduction initiatives in a French geosciences laboratory

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The impact of our productivist societies on our environment is now clearly demonstrated. It is illustrated in particular by the alteration of biogeochemical flows, the erosion of biodiversity, the chemical pollution of environments, the anthropisation of soils, the alteration of the water cycle, the acidification of the oceans and climate change.

As higher education and research staff working at the interface between science and society, we are aware of the need for an environmental transition that can only be achieved by reducing our greenhouse gas emissions and our environmental impact. We do not believe that the content of our research justifies any form of exemption and are aware of the benefits of being exemplary. As a research lab, we are committed to participating in limiting the increase in the Earth's average temperature, ideally targeted at less than 1.5°C compared to the pre-industrial period. This objective requires achieving carbon neutrality by 2050.

From 2021 the Sustainable Development & Social Responsibility working group of the research laboratory “Géosciences Rennes” has been created (i) to determine the C footprint by using GES1.5 (Research Consortium labo1.5), (ii) to communicate and raising staff awareness of the climate emergency, (iii) to propose indicators for reducing the carbon footprint, (iv) to convey a message to the supervisory authorities to work on the various reduction items.

The calculated C footprint includes heating of buildings, electricity, purchase of goods and services, scientific missions and commutes. Between 2019 and 2021, the C footprint was 879, 520 and 708 T CO₂eq, which corresponds to 5.8, 3.6 and 5.1 T CO₂eq/person. The purchase of goods and services was the main item, representing 48 ± 8 % (mean \pm SD) of the C footprint. Scientific missions represented 14 ± 9 % of the C footprint. Sanitary restrictions due to the covid pandemy induced a drastic decrease of the C footprint of scientific missions from 220 T CO₂eq in 2019 to 43 T CO₂eq in 2020.

Thanks to the GES1.5 toolkit, it is possible to identify the main emission items for a given laboratory and to design and quantify specific actions to collectively reduce the C footprint. These data were the corner stone of collaborative workshops to invent our low-carbon laboratory. This presentation will feature the data and the process of collective decision in “Géosciences Rennes” laboratory. These results highlight that achieving the European Union targets will require a rethinking of the way we do science.