Initiatives neuroscientists can take to tackle the climate crisis

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Overview

At the 2021 United Nations Climate Change Conference (COP26), delegates agreed that we need to take drastic actions to achieve net-zero carbon emissions and limit atmospheric temperature growth to less than 2 degrees Celsius. Many people, including many of our OHBM members, recognize that neuroimaging research activities play a part in the climate crises, from liquid helium extracted through fossil fuel production to cool the MRI magnets, to the energy usage of big data analysis and meeting-related travel. OHBM members also are motivated to tackle the climate crisis individually and together. Hence, we need resources and guidelines from experts in this area to steer us in that direction.

The symposium is an important platform to highlight concerns, propose strategies, and affirm the confidence in our members to mitigate the climate crisis as a community. One of the primary objective of the SEA-SIG is to educate the OBHM community on the environmental impacts of neuroimaging research activities. Hence, the symposium opens doors to educate, discuss and recommend more sustainable and environmentally-friendly research activities, including the annual meeting. As the second year of the SIG, we would like to update the extended OHBM community on our works in the past year on sustainable neuroscience and extend the conversation towards future projects and plans. We also aim for attendees to understand how they can continue to adapt their research activities to make them more sustainable to address the climate crisis as individuals, members of the OHBM community, and professional scientists and educators.

Lecture 1: *Tackling the carbon footprint of the OHBM annual meeting: Past & future*
Samira Epp Presenter

In the midst of a climate crisis, we have the responsibility to reduce our carbon footprint whenever possible. That is why we will have a look at the carbon emissions (CO2e) of previous OHBM meetings, which largely come from air travel to the host city, and discuss possibilities to reduce our future footprints, such as hybrid and hub meetings, and the importance of location.

Lecture 2: *Opportunities for Academic Communities to Reduce Flying While Maintaining Effectiveness*
Parke Wilde Presenter

1. The international #flyingless initiative supports universities and research institutions in setting goals and measuring progress for flying reductions, while preserving the good they do through their work.

2. Many conferences suddenly moved online during the COVID pandemic, generating new evidence about resulting tradeoffs between climate costs and objectives for professional networking, communication, fairness, and inclusion. We will present results from a forthcoming journal article based on experience with a global conference series that previously had been held each year in a different low-income country.
3. Progress on climate-friendly transformation of academic conferencing requires recognizing the views and career objectives of key stakeholders, including both faculty and institutional leaders.

Lecture 3: *Does the way to a sustainable mind go through the gut to the brain?*
Evelyn Medawar Presenter

1. Sustainable diets can help to counter the two-fold problem of the climate crisis and malnutrition.
2. Sustainable diets might be able to alter how we make food decisions.
3. Open Science helps to do Sustainable Science.

Lecture 4: *Sustainable deep learning models for neuroimaging*
Simon Hofmann Presenter

Deep learning models have become an invaluable computational asset in many research fields including neuroimaging. Despite optimisations of hardware and software in recent years, training this model class and its huge parameter space is computationally very expensive. In the presentation I will talk about how to make deep learning for neuroimaging more sustainable. To this end, I will introduce the concept of transfer learning, and go into the nuts and bolts of how to minimise training time, making a pre-trained model useful for various MRI datasets.