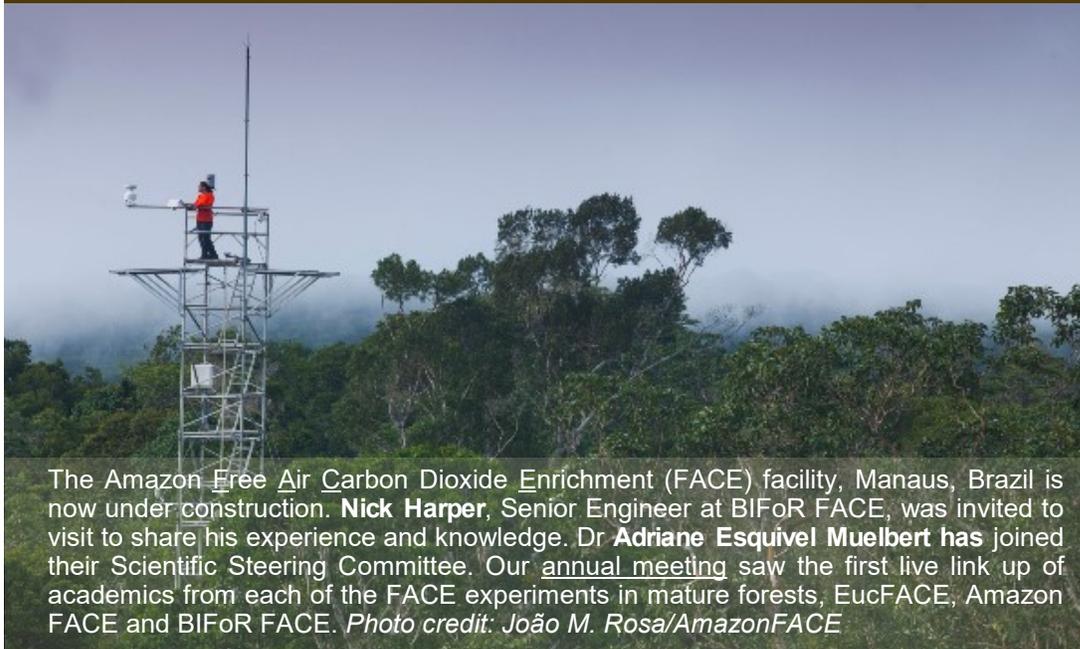


# Last leaf fall

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NEWSLETTER OF THE BIRMINGHAM INSTITUTE OF FOREST RESEARCH



The Amazon Free Air Carbon Dioxide Enrichment (FACE) facility, Manaus, Brazil is now under construction. **Nick Harper**, Senior Engineer at BIFoR FACE, was invited to visit to share his experience and knowledge. Dr **Adriane Esquivel Muelbert** has joined their Scientific Steering Committee. Our [annual meeting](#) saw the first live link up of academics from each of the FACE experiments in mature forests, EucFACE, Amazon FACE and BIFoR FACE. *Photo credit: João M. Rosa/AmazonFACE*

## All's Well, that Ends Well

At BIFoR FACE in Staffordshire, we are very fortunate to have an experimental infrastructure that takes our forest of today into the future. Fumigation of the forest patches with elevated carbon dioxide (CO<sub>2</sub>) mimics the atmospheric concentration of CO<sub>2</sub> of the year 2050 and beyond. BIFoR Fumigation is a decade long (2017-27). As with any experiment, there are always risks and challenges to tackle; and a proactive and agile approach is central to troubleshooting! Sourcing CO<sub>2</sub> under a highly volatile and uncertain market required nous and strong nerves which brings to mind the Shakespearean quotation that "All's Well, that Ends Well."

There was a very steep increase in the cost of CO<sub>2</sub> in September 2021 (year 5) and again in September 2022 (year 6). On both occasions the University stepped in to ensure the continuity of the experiment.

Moving forward, the BIFoR FACE operation team led by Dr **Kris Hart** responded with tremendous agility scanning the CO<sub>2</sub> market in the UK for a competitive supplier. Initial discussions with Wykes Engineering Ltd for supplying CO<sub>2</sub> were consolidated through a formal partnership. Wykes, which is the largest Anaerobic Digestion facility for food wastes in England will now supply CO<sub>2</sub> to BIFoR FACE from 2023 onwards. This new partnership serves the dual purpose of capturing CO<sub>2</sub> from food wastes to put into use at an important climate change research facility and enabling Wykes Engineering to fulfil their sustainability goals through a circular economy. The partnership of BIFoR and Wykes was awarded the **National Sustainability Award 2022** under the category of 'Partnership of the Year.' We look forward to the continued fumigation of the FACE facility to continue addressing the key research questions of global significance.

## Future research

DiversiTree is a UKRI Treescapes project aiming to increase woodland resilience and enhance understanding of the impacts of diversifying tree species composition. Dr **Ruth Mitchell** (James Hutton Institute) leads, with collaboration from BIFoR's Prof. **Robert Jackson**.

The **Ecological Continuity Trust** (ECT) continues its generous support to BIFoR with new grants given this year to researchers **Andrea Rabbai** and **William Hagan Brown**.

## Thank You

Alumni **John** and **Lorna Powell** have very generously donated a second gift. We are extremely grateful for their support, which has been used to refurbish space on campus and employ a BIFoR Education and Outreach Officer.

## Welcome

Prof **James McDonald** (Microbial Ecology); Prof **Richard Norby** (Honorary Prof); Dr **Juliano Sarmiento Cabral** (Associate Prof for Biodiversity Modelling & Env. Change); **Kapil Subramanian & Justine Phillips** (research fellows in the [MaMoGH](#) project); Dr **Humberto Marotta** (Visiting lecturer from Fluminense Federal University, Brazil); **Samantha Dobbie** (BIFoR Education Officer); **Rachel Mailes** (MEMBRA); **Robert Grzesik** (promoted to Senior Engineer, QUINTUS); **George Fereday** (FACE Underground).

New video available online "Ruskin Land: Literature in Forests." Arts & humanities are crucial in addressing our perilous position in relation to climate change & ecosystem dysfunction. Image below of workshop at the Wyre Forest - listening to a reading from an **Ursula K. Le Guin** novel. Learn more in **Dion Dobrzynski's** [new article](#).



**Global, global conference** The 2022 BIFoR annual meeting had a global theme this year and, thanks to its hybrid format, a global audience. Keynote speaker, Prof. Jérôme Chave said the conference was “packed with jaw-dropping talks, from physiology, ecology, social sciences, forestry, remote sensing and modelling.” Posters and recordings of many of the talks are still available on our [website](#).

## MEMBRA Update

The investigators and research team have been very busy this year kicking off the [project](#) and carrying out fieldwork. They have surveyed more than 7,000 trees across the UK and have sampled about 70% of the material for DNA methylation. An increased incidence of ash dieback disease has been observed. The team has taken samples to assess memory of the disease in different age trees as well as in their progenies this last summer and have prioritised this work in case the trees do not make it through to next summer.

## Tree mapping

Dr **Emma Ferranti** continues exchanging essential knowledge with practitioners, through; a fantastic “[Tree Mapping webinar](#)” which had 500 registrations; a briefing report ‘[Impacts & benefits of trees on urban air quality](#)’; a new podcast, filmed at BIFoR FACE with ‘People Place and Nature’ ... [listen now](#).

## FACE Catch Ups

Congratulations to **Nine Douwes Dekker** for winning the ‘Three-minute thesis challenge’ focussing on her research at FACE. Catch up [online](#).

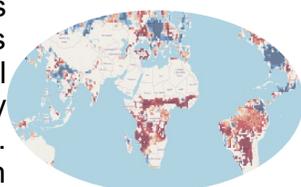
Missed the opportunity to see the BIFoR FACE Exhibition at the Exchange? Now you can take a [virtual tour online!](#)

## Research highlight

A climate risk analysis of Earth’s forests in the 21st century, by **Nezha Acil** From new paper in *Science*: Anderegg, W., Wu, C., **Acil, N.** et al (2022) <https://doi.org/10.1126/science.abp9723>

To tackle the climate crisis, we need to understand where forests are the most at risk from the different impacts of climate change. BIFoR researchers contributed to a study, led by **William Anderegg**, University of Utah, to identify those forests most threatened by combined changes in carbon stocks, biodiversity and disturbance regimes, as projected in the future by modelling. Results consistently highlighted the vulnerability of transitional boreal forests in Central Canada and Russia and dry tropical forests throughout the Amazon and Africa. These results will help design better targeted adaptation and mitigation strategies.

Image right: In blue, lowest climate risk and red, highest climate risk. [wilkescenter.utah.edu/tools/globalforestclimaterisk/](http://wilkescenter.utah.edu/tools/globalforestclimaterisk/)



## Doctoral research

The BIFoR talent pipeline in the forestry / forest sciences is gathering pace; we congratulate Drs **Liam Crowley**, **Angeliki Kourmouli** & **Clare Ziegler!**

Joining this year are; **Rehab Almutaira** (oak seedlings in extreme climates); **Octavia Brayley** (invasive insect species); **Xinshi Cheng** (prehistoric seeds); **Nick Corker** (linear forests along train lines); **Estelle Darko** (global forest diversity, dynamics and resilience); **Xianbang Feng** (mycorrhizal biomass, Uni of Exeter); **Grace Handy** (future of tree carbon allocation in the future); **Novalia Kusumarini** (root exudates); **Nick Lugg** (wood in streams); **Dee Phillips** (GHGs & woody constructed wetlands).

## Creative BIFoR

Artist **Clare Hewitt** exhibited her work at the [Landskrona Foto Festival](#), Sweden. Clare has made art in the BIFoR research woodland for many years. A short video — ‘Everything in the forest is the Forest’ is available [online](#).

Students have created artwork in response to their visit to the Wyre Forest as part of PhD student **Dion Dobrzynski's** research into ‘Forests and Fantasy Fiction’. During October, the art was on display in Winterbourne House. Images of the exhibition can be found [online](#).

The BIFoR annual report is now available.

Stay in touch

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