

# Last Leaf Fall

ISSUE 6, AUTUMN 2016

NEWSLETTER OF THE BIRMINGHAM INSTITUTE OF FOREST RESEARCH



Photo credit: John James, University of Birmingham

## Team Spirit

As of March 2017, **Professor Michael Tausz** will be joining the School of Biosciences as Chair in Forest Ecosystem Sciences, academic lead for BIFoR FACE, and a BIFoR Director. Michael is currently academic lead for the Australian AGFACE crop FACE facility at the University of Melbourne, where he has also served as Head of the School of Forest and Ecosystem Science. Previously Michael studied at the University of Graz and was a Senior Fulbright Scholar at the USDA.

Along with Michael, some of the rest of the BIFoR FACE team includes **Professor Rob MacKenzie**, Chair in Atmospheric Science and a Director of BIFoR, **Professor Stefan Krause**, Chair in Ecohydrology and Biogeochemistry and expert in intelligent measurement systems; **Professor Jon Sadler**, Chair in Biogeography and expert in the ecology of bugs, bats and birds; **Dr Tom Pugh**, Lecturer in Environmental Science and expert in the computer modelling of vegetated land surfaces; **Dr Sabine Tausz-Posch**, Lecturer in Plant Sciences and expert in the nutritional quality of seeds; **Dr Scott Hayward**, Lecturer in Molecular Ecophysiology, is an expert in plant-insect relations; Birmingham Fellow **Dr Iain Johnston**, expert in mitochondria and mathematical biology; Birmingham Fellow **Dr Francis Pope**, expert in atmospheric particles including spores and pollen; and Birmingham Fellow **Dr Zongbo Shi**, expert in nutrient deposition and air pollution. Helping these and other academics is a team of 4 PhD students, 3 technicians, 2 postdoctoral researchers, and a fieldwork assistant.

## Funding successes

University of Birmingham staff in the School of Geography Earth and Environmental Sciences have been awarded NERC grants for two BIFoR-related projects worth a total of £300,000:

1. Measuring total ozone reactivity due to volatile organic compounds emitted from trees—principal investigator, Prof Bill Bloss.
2. Novel fibre-optic measurements of soil temperature and moisture—principal investigator, Prof Stefan Krause.

## Welcome

This is the sixth BIFoR newsletter. We know that many of our readers are familiar with BIFoR but, if you find yourself wondering what is this FACE they keep mentioning you can find out more about the BIFoR Free-Air Carbon Dioxide Enrichment (FACE) facility by viewing two short videos available online on our website [www.birmingham.ac.uk/bifor](http://www.birmingham.ac.uk/bifor). In our last issue we announced a generous gift from the John Horseman Trust. This has helped us purchase a system of 18 mini-robots. We are pleased to say that these are now installed and a PhD student is working with these already to take these vital soil respiration measurements!

## Seeing is believing

The last 6 months have seen many visitors to BIFoR FACE including local residents, A-level students, parish councillors, MPs, senior government officials, the **National Farmers' Union**, the **Royal Forestry Society**, and our Vice Chancellor, **Sir David Eastwood**, Provost **Tim Jones** and Pro-Vice-Chancellor **Tim Soffley**.

In September, BIFoR FACE hosted the field trip of the **Arboricultural Association Conference 2016**. We've also been delighted to show around more than 50 research academics interested in collaboration.

Feedback has been universally positive, almost always including something to the effect that ... "it's not until you get here that you sense the scale and scope of the facility". To visit, please contact **Deanne Brettle** ([d.brettle@bham.ac.uk](mailto:d.brettle@bham.ac.uk))

**Prof Michael Tausz, Prof Arthur Gessler, Prof Thorsten Grams, and Dr Gabriele Guidolotti** were

distinguished guests at a workshop to introduce BIFoR FACE to the UK researcher community. Made possible by the Institute of Advanced Studies, 25 colleagues from outside BIFoR joined 17 BIFoRists to plan grant applications and discuss early science results, ranging from hysteresis in nutrient inputs to Mill Haft stream to early model results from the Joint UK Land Environment Simulator (JULES) model applied to Mill Haft. Attendees debated the mechanism for applying to carry out research at BIFoR FACE, and agreed a common process and cost structure. The first step in any application to is to contact the team via the email address below. We will host a European workshop early in 2017. To be added to our mailing list please get in touch.



## How does CO<sub>2</sub> enrichment influence within-season tree growth?

Summer 2016: **Earthwatch** staff and undergraduate student volunteers installed 198 dendrometer bands on trees within the 9 FACE experimental arrays. Initial diameter measurements of each tree were recorded. Regular measurements over at least the next 3 years will be taken using carefully trained citizen scientists. The data collected will be used alongside weather, CO<sub>2</sub> and soil data to create a coherent analysis of the response levels of the trees in relation to elevated CO<sub>2</sub>. Please get in touch if you are interested in volunteering opportunities with BIFoR.



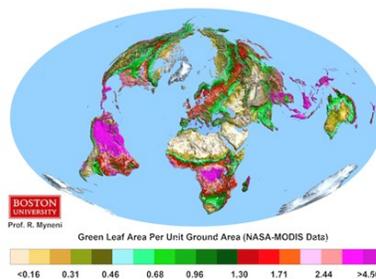
## Life of an intern

**Alice Oliver** (3rd year Biological Sciences MSci)

“Over summer, I was awarded the **Aerosol Society Undergraduate Bursary** to undertake a 6 week internship collecting data on Biological Aerosols. Going to BIFoR FACE every week gave me chance to do my own field work; I set up a weather station and installed aerosol detectors in the forest. The rest of my time was spent learning new skills in data analysis and learning about aerosols under non-CO<sub>2</sub> enriched environments.”

## Research highlight: Crop browning, forests greening

**Tom Pugh** contributed to four studies published recently in **Nature Journals**. Using state-of-the-art vegetation modelling that Tom brings with him from Karlsruhe Institute of Technology, three of the papers investigate how global agriculture will be affected by climate change. Negative effects of climate on yield were widespread, however, crop growth potential may increase in regions which currently contribute little to global production, and elevated atmospheric CO<sub>2</sub> concentration could lead to large water savings in arid regions. The final paper describes observations indicating that leaf area has been increasing globally over the last three decades, amounting to a "greening of the planet". This effect was overwhelmingly attributed to the effects of elevated CO<sub>2</sub> concentration by an ensemble of state-of-the-art models. Whether such a "greening" effect translates into increased carbon storage in the biosphere remains an open question.



DOI: 10.1038/NCLIMATE3115    DOI: 10.1038/NCLIMATE2995  
DOI: 10.1038/NCLIMATE3004    DOI: 10.1038/ncomms1260810.1038/ncomms12608

## Leadership Fellows

### History

The days after the Brexit vote were eventful in many ways. On 28 June **Dr Frank Uekotter** had his own experience in Whitehall when he spoke on "the legacy of sustainable forestry" to a forestry Think Tank chaired by Rory Stewart MP.

**Dr Tait Keller**, of Rhodes College in Memphis, USA, will visit BIFoR in November. Tait is working on an environmental history of World War I, which changed, among many things, Britain's relationship to its woodlands (the Forestry Commission was founded immediately after the Great War).

### Ecocriticism

**Dr Louise Hardwick** has been awarded funding through **EU Climate-KIC**, to develop her research in Ecocriticism and Ecoliteracy. This strengthens Louise's cross-college activities as a **BIFoR** Interdisciplinary Leadership Fellow. As part of the programme Louise is undertaking a placement at **The Small Woods Association**, where she is scoping potential future projects between **Small Woods** and BIFoR.

## School visit

A-Level students from **King Edward's Five Ways** School in Birmingham visited BIFoR FACE and Norbury Estate in June 2016. Highlights included a demonstration of a saw mill and stopping to take a tree core from a larch tree. Discussions followed regarding tree resilience, pests and diseases. Their teacher said, "The students really benefited from **Dr Jerry Pritchard's** expertise on the complexities of the effects climate change may have on the natural environment." Interested in a schools visit? Please do get in touch.

## Coming soon

**22 November 2016 at 4pm Open Day at BIFoR FACE; booking essential; please see contact details below.**

## Stay in touch

Email: [bifor@contacts.bham.ac.uk](mailto:bifor@contacts.bham.ac.uk)  
Phone: 0121 414 6146  
Twitter: @BIFoRUoB  
Website: [www.birmingham.ac.uk/bifor](http://www.birmingham.ac.uk/bifor)