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## FELIZ NATAL

Sharing Christmas joy with our neighbors in the forest



'Tis the season! Taking the holiday spirit to heart, some of our team members from Mainz initiated a fundraiser a few weeks ago. At MPI-C, they organized BarATTO, serving food and drinks in a cozy jungle atmosphere. With the proceeds and donations from INPA, MPI-C and MPI-BGC, we put together Christmas baskets for our neighbors in the river community of Bela Vista. These families have no regular income and we wanted to make a small contribution to help making their Christmas festive. We packed 28 baskets with food, but also added toys, magazines, books and school supplies for the children. Santa and a large group of helpers delivered the baskets to the families in time for Christmas.



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Many thanks to everyone who contributed: the organizers, donors and of course Santa and his helpers! The remaining money will be used for future common projects with our neighbors.



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## RETROSPECT: ATTO MEETING 2019

Exchange and synthesis



In September 2019, the scientists of the ATTO project met at the National Institute for Amazon Research (INPA) in Manaus for their annual workshop. Unlike in the past, the focus of this meeting was not so much on technical or administrative issues, but rather on scientific exchange; many of the over 100 participants were MSc and PhD students and most of the time was dedicated to poster sessions in a relaxed atmosphere. In this way, many participants had the opportunity to present their work and had time for

a personal exchange with the project partners. In addition, we have focused on interdisciplinary breakout sessions on topics where the research questions of different research groups overlap. The aim was to create synergies to fully exploit the potential of our unique project and infrastructure. This meeting strategy was very well received and many lively discussions took place throughout the workshop.

And to our delight, representatives of the German Aerospace Center (DLR) project management agency, and the

Brazilian Ministry for Science could be with us the whole week.

Highlight for many participants was the following trip to ATTO. Despite the early morning departure at 4:30 in the morning, about 30 meeting participants set off to explore ATTO and catch a glimpse of the tall tower.

Most presentations from the meeting are now available in the ATTO Data portal for registered project members ([attodata.org](http://attodata.org); under Information/General Information/Science).



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## AMAZON SESSION AT EGU 2020

„Amazon forest - a natural laboratory of global significance“



**Call for Abstracts**

submission deadline: January 15, 2020



Vienna | Austria | 3-8 May 2020



We are once again inviting you to bring the Amazon rainforest, or rather your Amazon research to the EGU General Assembly 2020! We are convening the session “Amazon forest – a natural laboratory of global significance” – a place for a vivid and scientifically fruitful exchange between many researchers from many groups and projects on the Amazon forests – including ATTO.

The session will be along the lines of this year’s, with two major differences:

- 1) We are explicitly opening the session to those who study not only intact/pristine rainforest but also degraded areas (and of their interface).
- 2) It will be a PICO session.

Submit your abstract now! <sup>7</sup> The deadline is January 15.

And by the way: For this meeting, the EGU will offset ALL travel-related CO<sub>2</sub> emissions from participants.



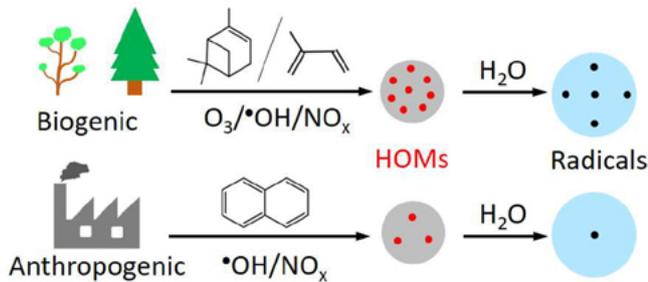
## NEW PUBLICATIONS

Articles published in peer-reviewed journals between August and December 2019

Gonçalves et al.

**Both near-surface and satellite remote sensing confirm drought legacy effect on tropical forest leaf phenology after 2015/2016 ENSO drought<sup>7</sup>**, Remote Sensing of Environment, 237

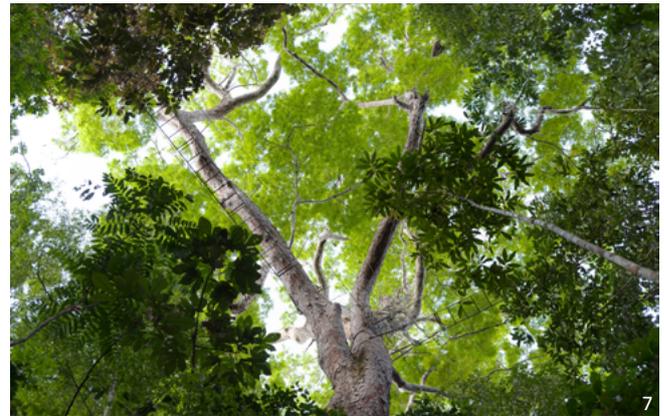
Following the 2015/2016 drought, associated with a strong El Niño, many trees flushed new leaves right after the drought ended, some four months prior to other years. This resulted in more mature leaves much earlier than usual. This shift in leaf age ended up having an impact on the photosynthetic capacity of the canopy for about 1.5 years after the drought. This could be detected with both photo cams installed at ATTO, as well as with satellite data, verifying that the new correction method MODIS-MAIAC is able to detect both seasonal and smaller, anomalous shifts.



Tong et al.

**Radical formation by fine particulate matter associated with highly oxygenated molecules<sup>7</sup>**, Environmental Science & Technology

The potential that free radicals are formed is closely associated with the relative abundance of HOMs, radical yield of particulate matter, and the concentration of PM2.5. At forest sites, including at ATTO, the overall concentration of PM2.5 is low. But the relative abundance of HOMs within the PM2.5 is fairly high. Therefore, the radical yield of PM2.5 at ATTO is high, but the total radical abundance per volume of air is still pretty low.



## MEDIA DIGEST

Highlights from the reporting about our research in the media

Vox.com (online feature)

**These 3 supertrees can protect us from climate collapse.**

VOX visited rainforests around the world, focusing on one tree species in each. On these examples they illustrate how important forests are not only for the region but indeed the whole world. To tell their story about the Amazon, they visited ATTO and spoke with Stefan Wolff, Cybelli Barbosa and Campos Delano. Here, they focused on the capacity of the forest to recycle large amounts of water and create its own rain. It is very fitting that they climbed ATTO on a very foggy morning. Read here<sup>8</sup>



AJ+ (video)

**Climbing South America's Tallest Tower For Climate Science.**

AJ+ created a YouTube series called „Goodbye Earth“ about the threats the Amazon rainforest is facing. For their last episode they visited ATTO and AmazonFACE, by coincidence just when the Amazon fires got huge media attention this summer. They wanted to learn more about the research that is being done to better understand the importance of the forest for global climate. They interviewed Laynara Lugly, Beto Quesada, Michelle Robin, Bruno Takeshi, and Stefan Wolff. Watch here<sup>9</sup>

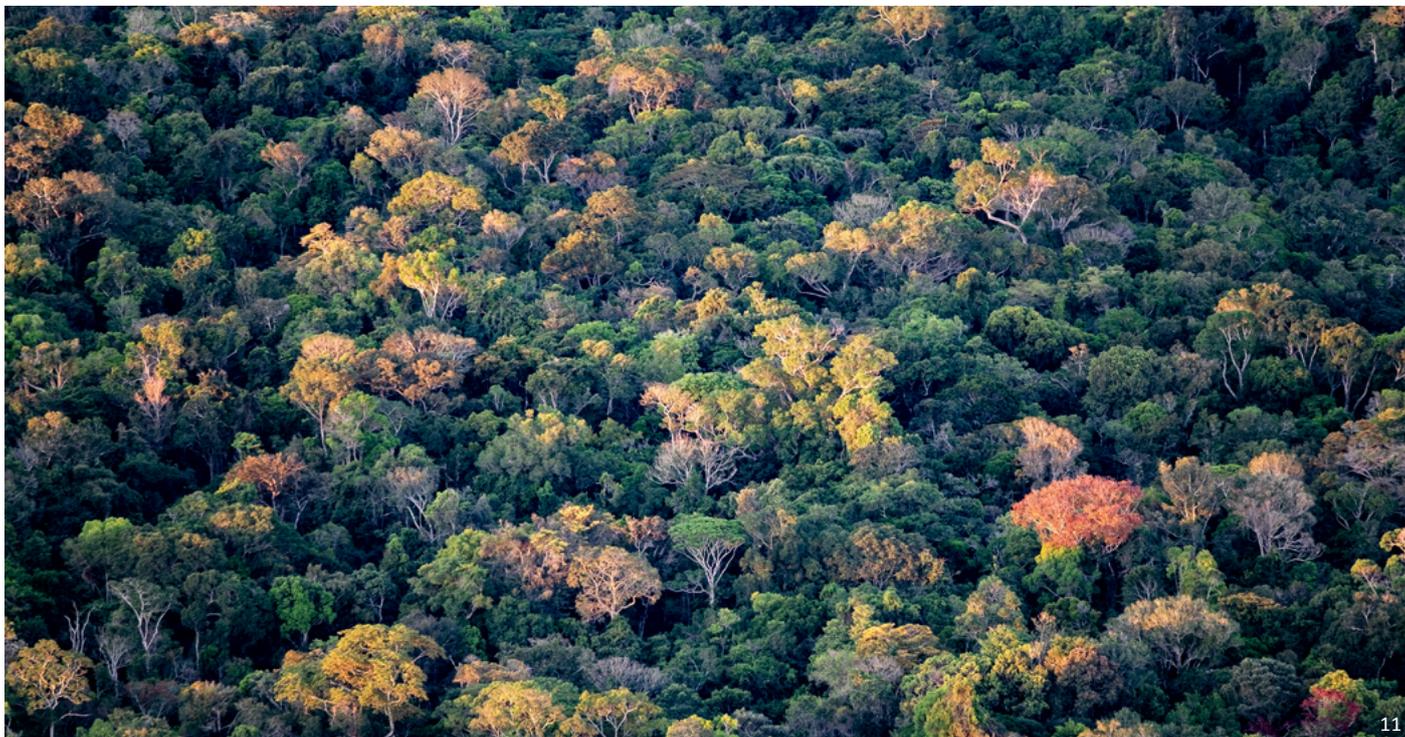


NPR's Here & Now (radio)

**At The Top Of The Amazon Jungle, Scientists Have Their Heads In The Clouds.**

Journalist Dan Grosman climbed ATTO earlier this year and described his experience in an engaging radio piece for NPR and the Pulitzer Center. It breaks down the ATTO project and its goals, different research questions and the challenges of working in such an environment very nicely. Interviews with Andrew Crozier and Beto Quesada add to the very immersive 5-minute piece. Listen here<sup>7</sup>





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## MEET THE TEAM

Introducing members of the ATTO consortium



### Sam Jones, PostDoc at INPA

Sam started working in the ATTO project earlier this year when he moved to Manaus. Originally from Wales, he received his PhD in Geosciences at the University of Edinburgh. Already then he studied tropical ecosystems, a theme throughout his career so far, and always in connection to the carbon cycle. Now at INPA, he focuses on the carbonyl sulfide (COS) cycle of the ecosystems found at ATTO. COS, is a CO<sub>2</sub> molecule where a sulfur atom replaces on oxygen atom. In the atmosphere it is present as a trace gas. Their aim is to improve our ability to use atmospheric measurements of COS to track variations in the regional carbon cycle, as it can provide constraints on canopy net photosynthesis.



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### Ana Caroline Costa, Scientific Assistant at INPA

Ana is a scientific assistant at INPA, working with Gerd Gleixner's group from MPI-BGC. She has been at INPA for quite some time, first obtaining a Bachelor degree in Environmental Management and then successfully pursuing a Masters degree in Climate and Environment. Now she is collecting soil water samples at ATTO in different ecosystems and at different soil depths. The samples are then analysed for various chemical parameters such as pH, electrical conductivity and Dissolved Organic Carbon (DOC). Because of her work she gets to be at ATTO a lot. Although challenging at times, but it is always a rewarding experience for her to be in contact with the forest.



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### Sebastian Donner, PhD at MPI-C

Sebastian is a PhD student in the Satellite Remote Sensing group at MPI-C. Having a background in Meteorology, he has always been interested in the composition of the atmosphere and in air pollution. He spent his Bachelor's and Master's thesis on the development of the MAX-DOAS method, which he now uses to measure atmospheric trace gases together with his colleagues in many locations worldwide. They operate one of them at ATTO since 2017. With the help of the MAX-DOAS, Sebastian wants to learn more about the geographic and seasonal variation of tropospheric formaldehyde, which is heavily involved in tropospheric chemistry and can be used to trace VOC oxidation pathways.



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## SHORT NOTICES

News from the community

### PhD Defence

Eva Pfannerstill, member of Jonathan Williams' group at the MPI-C, recently defended her PhD thesis. Congratulations! Eva studied „Total OH reactivity in pristine and polluted environments - Investigating atmospheric chemistry in the Anthropocene“. One of those „pristine environments“ she looked into was ATTO. For her defence, her colleagues built her this stunning doctoral hat, complete with the ATTO tower, camp and a couple of parrots!



### AGU participation

Several ATTO members presented ATTO data at this year's AGU Fall Meeting.

- » Paulo Artaxo (USP): Comparison of atmospheric composition and properties over boreal and tropical forests ecosystems
- » Marco Aurélio Franco (USP): Vertical Variability of Aerosol Physical Properties at the Central Amazonia ATTO Tower in the Wet Season
- » Fernando Morais (USP): Long Term Characterization of Brown Carbon in Amazonia using AERONET and in situ Measurements
- » Nora Zannoni (MPI-C): Surprising Chiral Composition Changes Over The Amazon Rainforest With Height, Time and Season
- » Carsten Simon (MPI-BGC): Identification of ecosystem-specific markers in dissolved organic matter by ultrahigh resolution tandem mass spectrometry

## UPCOMING EVENTS



### American Meteorological Society Annual Meeting (AMS)<sup>?</sup>

Boston, USA on 12 - 16 January 2020. Registration now open.

### International Conference on Forests for Biodiversity and Climate<sup>?</sup>

Brussels, Belgium on 4 - 5 February 2020. Registration now open.

### European Conference of Tropical Ecology<sup>?</sup>

Leipzig, Germany on 24 - 27 March 2020. Abstract submission deadline: 16 January 2020.

### EGU Annual Meeting<sup>?</sup>

Vienna, Austria on 3 - 8 May 2020. Abstract submission deadline: 15 January 2020.

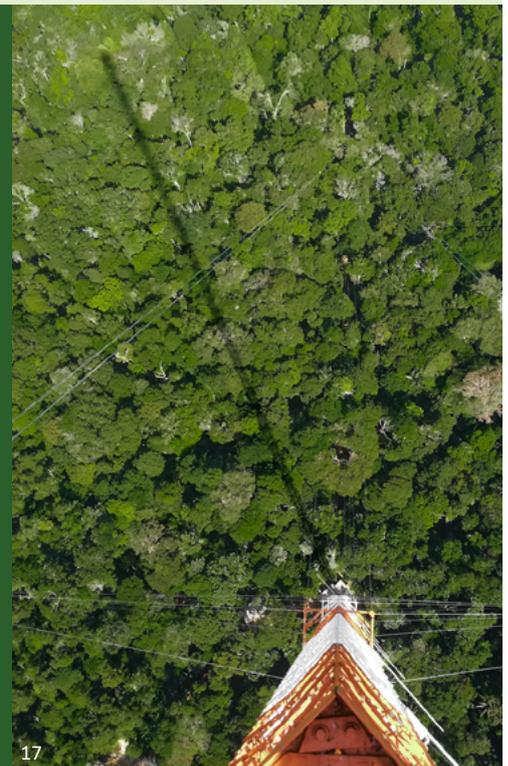
Consider submitting to the session „Amazon forest - natural laboratory of global importance“<sup>?</sup>.

### Goldschmidt 2020<sup>?</sup>

Honolulu, USA on 21 - 26 June 2020. Abstract submission deadline: 14 February 2020.

### Annual Meeting of the Association of Tropical Biology and Conservation<sup>?</sup>

Cartagena, Colombia on 12 - 16 July 2020. Abstract submission deadline: 15 March 2020.



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