II / February 2023

ATTO Newsletter

ATTO
AMAZON TALL TOWER OBSERVATORY

In this issue


1

Visit of Germany's President

and the Federal Minisiter of Environment to ATTO

The President of Germany, Frank-Walter Steinmeier, and the Federal Minister for the Environment, Steffi Lemke, visited the ATTO site on January 2nd.
"The rainforest is our basis for life and this basis is in danger. At least 19 to 20 percent of the rainforest's pristine area has already been lost to deforestation," Steinmeier said. For this reason, Frank-Walter Steinmeier and Steffi Lemke visited the German-Brazilian research station ATTO in the central Amazon rainforest during their trip to attend the inauguration of Brazil's new President Luiz Inácio Lula da Silva.
Susan Trumbore and other ATTO members including Bruno Takeshi and Christopher Pöhlker gave the delegation a tour of the research station. Steinmeier and Lemke explored the research towers, including the namesake 325-meter tower, which they climbed to the first intermediate platform at a height of 54 meters accompanied by Stefan Wolff.
Both were impressed by the high-tech site that has been created in the middle of the Brazilian rainforest to conduct multidisciplinary research. "The pulse of the world's climate is being taken here, so to speak", Steinmeier concluded.
The visit was a big success, bringing further awareness to the project, both in the political arena and in the public, as the visit was reported on across many news outlets, including the evening news in Germany.


2


3

New Publications

Papers published between August 2022 and December 2022

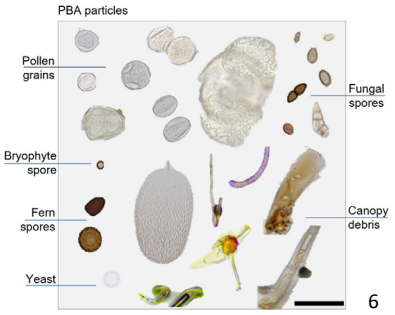
Moraes et al.
Simulation of an orographic gravity wave above the Amazon rainforest and its influence on gases transport near the surface↗,
Atmospheric Research
Eiky Moraes, Cléo Dias-Júnior and their colleagues wanted to find out if the local topography at the ATTO influenced the atmospheric movements and the effect that topography has on the formation of gravity waves. Comparing two simulations, one with and one without topography, revealed some important differences in the dynamics and chemistry of the atmosphere.


4

Mota de Oliveira et al.
Life is in the air: An expedition into the Amazonian atmosphere↗,
Frontiers in Ecology and Evolution
Sylvia Mota de Oliveira and her team used the ATTO site to collect air samples at 300 m above the forest. Then, they used DNA sequencing to analyze the biological components that were present and figure out what species of plant or fungi they belong to. One of the most striking new insights is the stark contrast between the species composition in the near-pristine Amazonian atmosphere compared to urban areas.


5

Barbosa et al.
Identification and quantification of giant bioaerosol particles over the Amazon rainforest↗
npj Climate and Atmospheric Science
Cybelli Barbosa and her team analyzed and studied the distribution patterns of giant bioaerosol particles in the Amazon. For this, they analyzed over 500,000 individual particles from five years. They found that the amounts of coarse and 'giant' bioaerosols decreased substantially with height, suggesting that many of these particles stay close to where they are created and dispersed.



6

Further Papers

Dias-Júnior et al.
Intercomparison of planetary boundary layer heights using remote sensing retrievals and ERA5 reanalysis over Central Amazonia↗
Remote Sensing

Marra et al.
Radiocarbon estimates of age and growth for a dominant Amazon palm species↗
Biotropica

Morais et al.
Relationship between land use and spatial variability of atmospheric brown carbon and black carbon aerosols in Amazonia↗,
Atmosphere

Viljur et al.
The effect of natural disturbances on forest biodiversity: an ecological synthesis↗
Biotropica


7

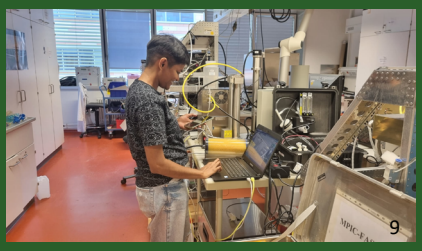
Meet the Team

Introducing new and „old" ATTO members

Tarek El-Madany at MPI-BGC↗
Tarek is the new head of the Central Service Group "Field Experiments and Instrumentation" at MPI-BGC in Jena. He is taking over from Olaf Kolle, who will retire this year. Tarek is a landscape ecologist and specialized in micro-meteorology. Before starting this job, he led a research group at MPI-BGC and was responsible for a big experimental site in Spain. Now he's looking forward to getting to know the science and technical installations developed at ATTO.


8

Subha Raj at MPI-C↗
Subha is a PostDoc at the Max Planck Institute for Chemistry in Mainz in the team led by Christopher Pöhlker. She likes to call herself an interdisciplinary researcher. She did civil engineering for her bachelor's degree, and for her master's degree, she worked on the applications of remote sensing and GIS. Now, she is studying the formation of tiny aerosol particles in the Amazonian atmosphere and how the grow in short periods of time.


9

Retrospect ATTO Workshop 2022

Project Meeting 2022 in manaus and online

From October 3 to 7, 2022, scientists from the ATTO project met in Manaus, Brazil for our project workshop. It was the first in-person workshop since the start of the pandemic, and the spirits were high.
More than 70 participants were on site at the INPA campus in Manaus. Others followed the workshop from Germany via live stream.
We devoted much time to the presentation of results in poster sessions, mostly from student, and to intensive discussions, where we explored new interactions across disciplines.
Another highlight was a visit from the group of teachers from the local communities near the ATTO site, with whom we work together on our community project.
Finally, Beto Quesada announced the excellent news of new FINEP-MCTI funding to hire eight scientists for the next three years. This is in addition to six other projects funded by CNPq that have already started their research.


10


11


12


13

Community Information Project

Collaboration with near-by river-community schools

We finalized the school project activities for the year 2022 with a positive score. There were many difficulties, but thanks to Cybelli's tireless efforts and everyone who contributed, the initiative was a success.
We had several lectures and interactions at each school, the participation of local teachers in the ATTO workshop, competitions and other recreational activities focused on the environment perception.

After a presentation on the risks of incorrectly disposing of hazardous waste, a total of 4210 used batteries were collected in two months and sent for recycling.
With a water analysis it was possible to establish, together with the community, simple and practical procedures for safer use of river water.

At the end of the year, we asked the students to fill out a questionnaire to evaluate the activities. The average score was 9.7, and the students were overall very happy.

In 2023, new teachers will begin working in the communities. Therefore, new connections will have to be established in the coming weeks and months.
Yet, we are optimistic that our good collaboration with the community schools will continue.
For this we continue to look for volunteers to contribute to this effort. Please get in touch with Cybelli Barbosa and Bruno Takeshi if you would like to participate in any way.

Media digest

Highlights from the reporting about our research in the media

Fantástico: Quem vive ali?↗
Episode of Globo's Fantástico featuring ATTO.
Guardians of Science look after the world's largest climate research tower. And for everything to work, someone has to live there. Fantástico visits ATTO staff Antonio Huxley, Amaury Rodrigues, Adi Vasconcelos, and scientists Sabrina Garcia & Yago Rodrigues.

Die fliegenden Flüsse des Amazonas↗/ Rios Voadores
Arte documentary about the „flying rivers" of the Amazon.
For more than 20 years, Antonio D. Nobre has been researching the mystery of these water currents in the atmosphere, but research is also being conducted at ATTO. With Stefan Wolff and Alessandro Araújo.

Let's save the Amazon - Why we must protect our planet
Richly illustrated British picture book bringing to life the Amazon for young children. It showcases the diverse communities and life-saving medicines that can all be found there and why it is so important that we act to protect this special part of the planet from the impact of climate change.

Graduations

Congratulation to all Master's and PhD students on finishing their thesis

Maria Prass (MPI-C)
PhD thesis: „Bioaerosols in the Amazon characterized by molecular-genetic staining techniques."
Supervisor: Christopher Pöhlker


17

Layon Oreste Demarchi (INPA)
PhD thesis: „Padrões fenológicos e de endemismo da flora das Campinaranas da Reserva de Desenvolvimento Sustentável do Uatumã, Amazônia Central." Supervisors: Maria Piedade & Florian Wittmann


18

Santiago Botía (MPI-BGC)
PhD thesis: „Greenhouse gas exchange in the Amazon region Carbon dioxide and methane insights from the Amazon Tall Tower Observatory." Supervisor: Christoph Gerbig

19

Upcoming Events

April 23-28, 2023, Vienna, Austria and online
European Geosciences Union General Assembly↗
featuring ATTO & AmazonFACE convened session „Amazon forest – a natural laboratory of global significance"

Juni 19-23, České Budějovice, Czech Republic
European Conference of Tropical Ecology↗
Abstract submission deadline: April 4

July 2-6, Coimbatore, India
Annual Meeting of the ATBC↗
Abstract submission deadline: March 15

September 2-8, Madrid, Spain
European Aerosol Science Conference 2023↗
Abstract submission deadline: March 10


20

Imprint

Publisher
Max Planck Institute for Biogeochemistry,
Hans-Knöll-Str. 10
07745 Jena, Germany

Editor
Iris Moebius,
iris.moebius@bgc-jena.mpg.de

Image Credits
(1) Sebastian Brill / MPI-C
(2) Bundesregierung/Guido Bergmann
(3) Bundesumweltministerium
(4) Sebastian Brill / MPI-C,
(5) Hans ter Steege/ naturalis
(6) Cybelli Barbora / INPA (Barbosa et al. 2022)
(7) Sebastian Brill / MPI-C,
(8) Nadine Hempel / MPI-BGC,
(9) Subha Raj / MPI-C
(10) - (13) Yago Santos / INPA,
(14) - (16) ATTO team,
(17) Maria Prass / MPI-BGC,
(18) Layon Demarchi / INPA,
(19) Santiago Botía / MPI-BGC,
(20) CloudRoots Team

All icons by Freepik from www.flaticon.com.

ATTOproject.org

Social Media

@ATTOproject
@ATTOresearch
@ATTOresearch