

Planetary Boundary Initiative Newsletter

FIRST EDITION · Q3+Q4 2024



Planetary Boundaries
Science



POTSDAM INSTITUTE FOR
CLIMATE IMPACT RESEARCH

While Planetary Boundary science has advanced tremendously over the past decades, we still lack a deep understanding of the intricate, yet pivotal connections between many biological and physical functions of the Earth system.

In late 2023, the Potsdam Institute for Climate Impact Research and its partners launched a major scientific effort to improve both our ability to model how the Earth system evolves under the pressure of human activity, as well as our ability to measure the state of the Earth system at a high temporal resolution: **Planetary Boundaries Science (PBScience)**.



GLOBRIA



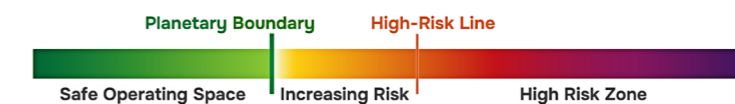
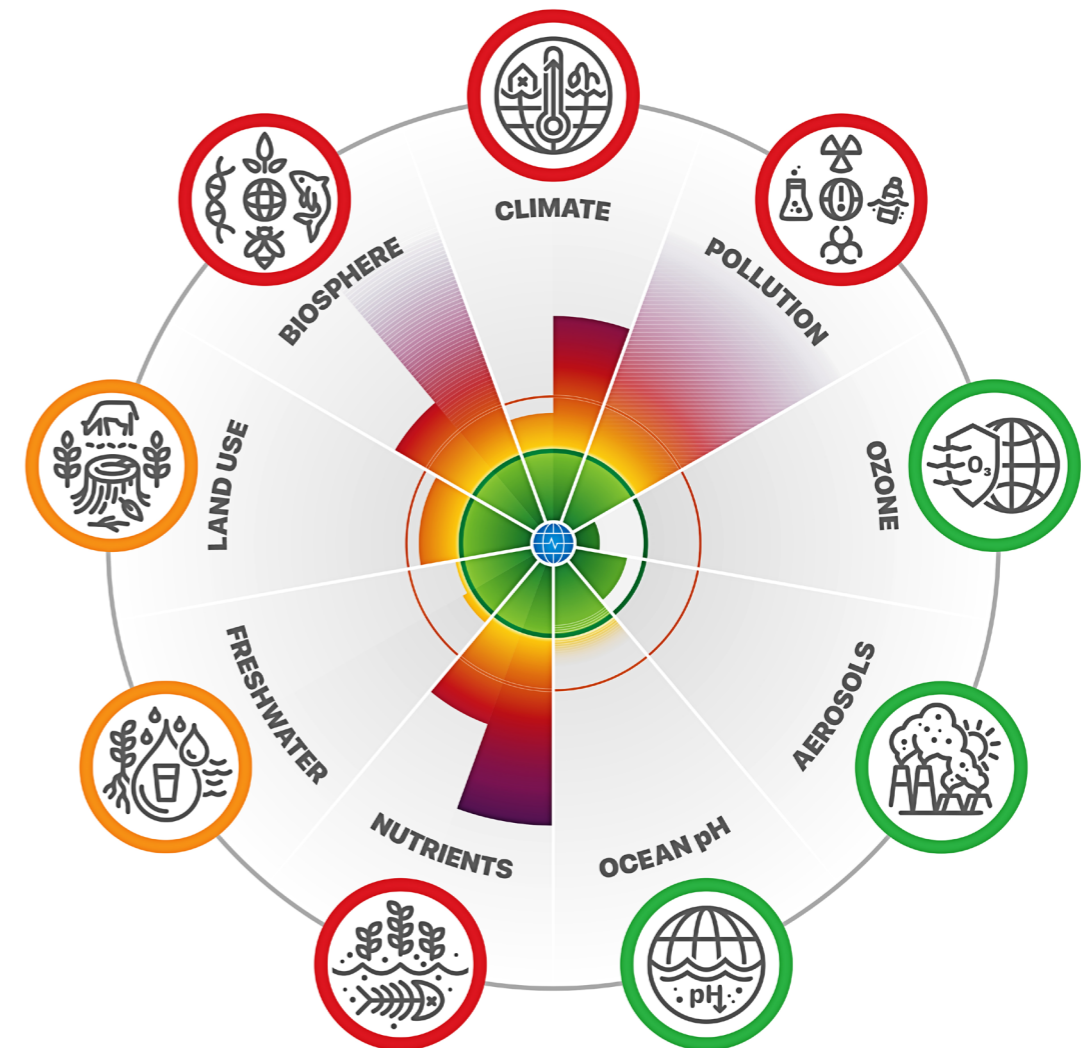
WELCOME TO THIS FIRST NEWSLETTER OF THE PLANETARY BOUNDARY INITIATIVE (PBI).

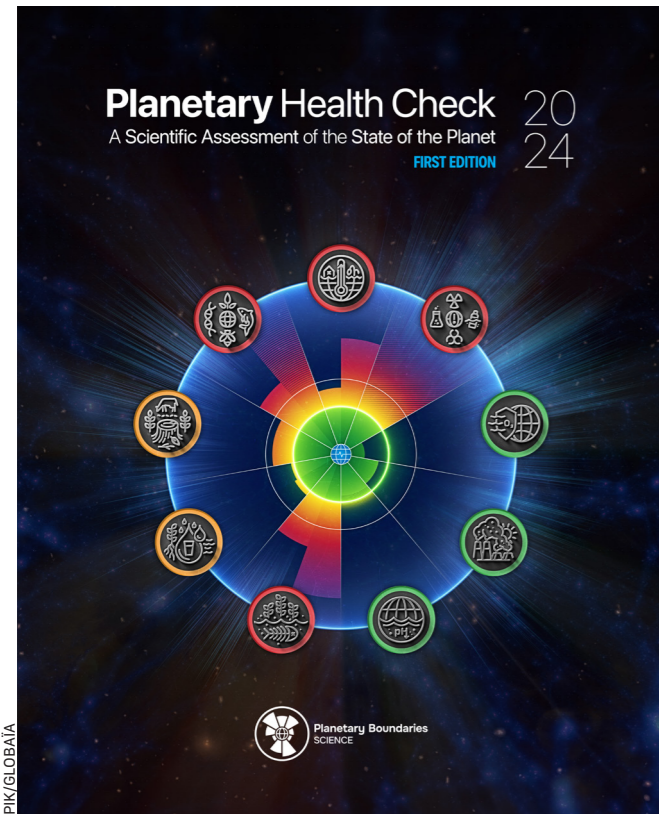
Here, you find updates on **Planetary Boundaries Science** and related research efforts conducted at the **Potsdam Institute for Climate Impact Research (PIK)** and beyond. Read on for news on our steadily growing science initiative, cutting-edge Planetary Boundaries (PB) research results, and exclusive insights into the PBScience effort.



RECENT PBSCIENCE HIGHLIGHTS

In this segment, we share new exciting developments pushed forward by the PBScience Lab and its collaborators, including their research and advocacy.





LAUNCHING THE FIRST-EVER PLANETARY HEALTH CHECK REPORT

NEW YORK CLIMATE WEEK

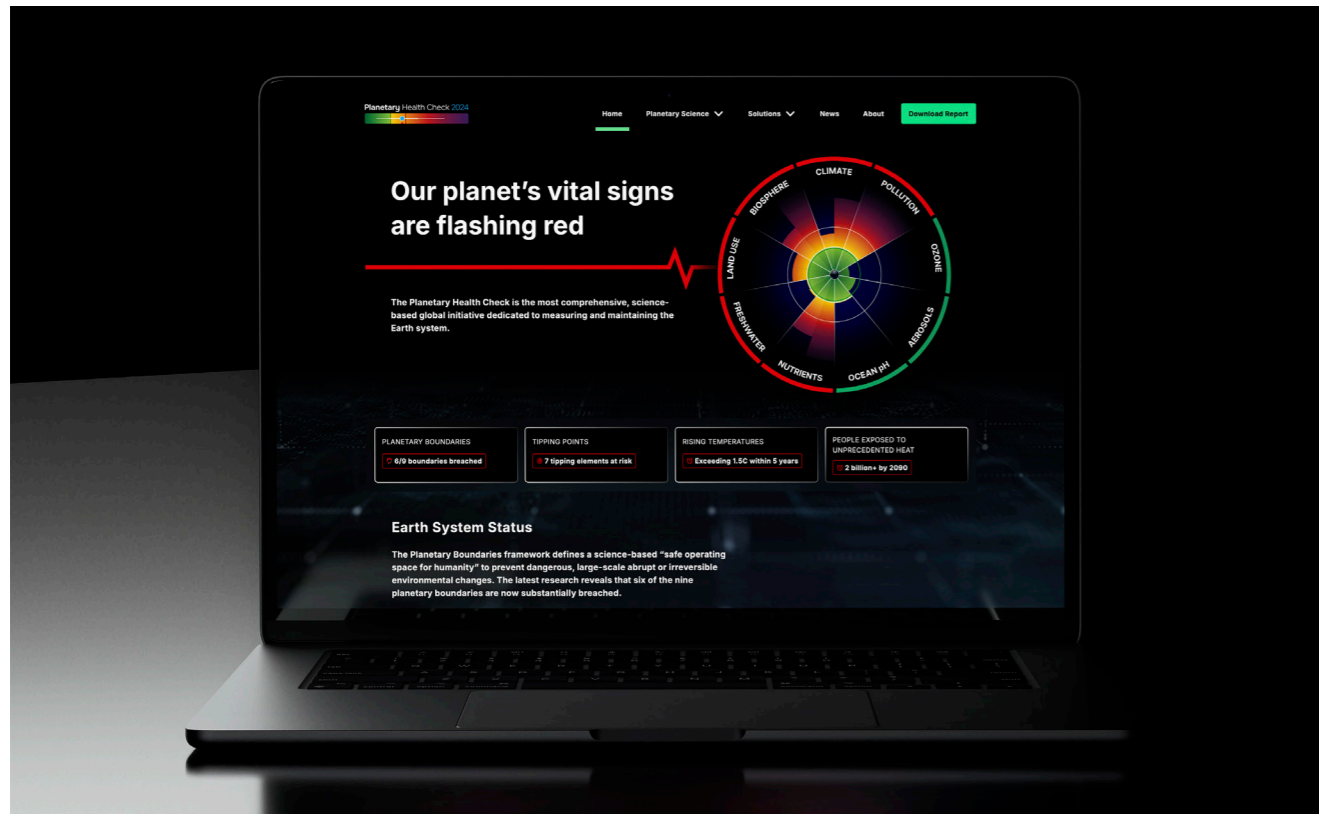
Text: Clara Nicolai | Photos: Planetary Guardians

The growing PBSscience Lab and several collaborators from PIK and beyond put in a tremendous amount of time and effort to work on the first-ever annual **Planetary Health Check report**. The main purpose of this collective effort is to provide a comprehensive, up-to-date overview of the state of all nine Planetary Boundaries, in a language accessible to experts and non-experts alike.

On 23rd September, the report was officially launched at the **New York Climate Week**. For the launch event, the PBSscience Lab's co-lead Dr. Levke Caesar as well as PIK director Prof. Dr. Johan Rockström were present in New York to answer questions and connect with activists, supporters, and fellow researchers.

The launch of the report was followed by an impressive media echo. Our team assistant Reinhold collected the immediate press reactions in a table containing links to various articles and videos. You can download the zipped press collection [here](#) (password "PHC2024_press").





INTRODUCING THE PLANETARY HEALTH CHECK WEBSITE

IN PARTNERSHIP WITH THE GLOBAL COMMONS ALLIANCE / EARTH HQ

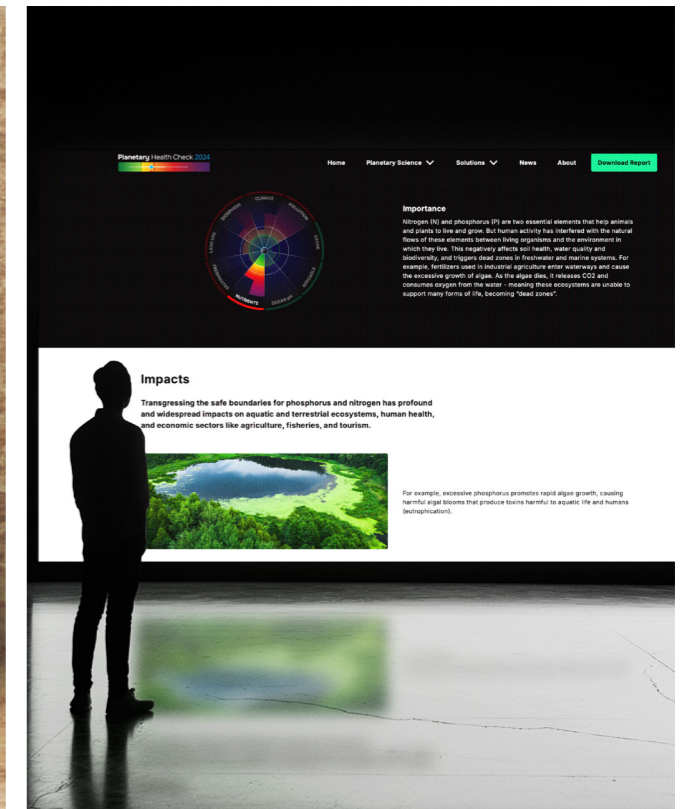
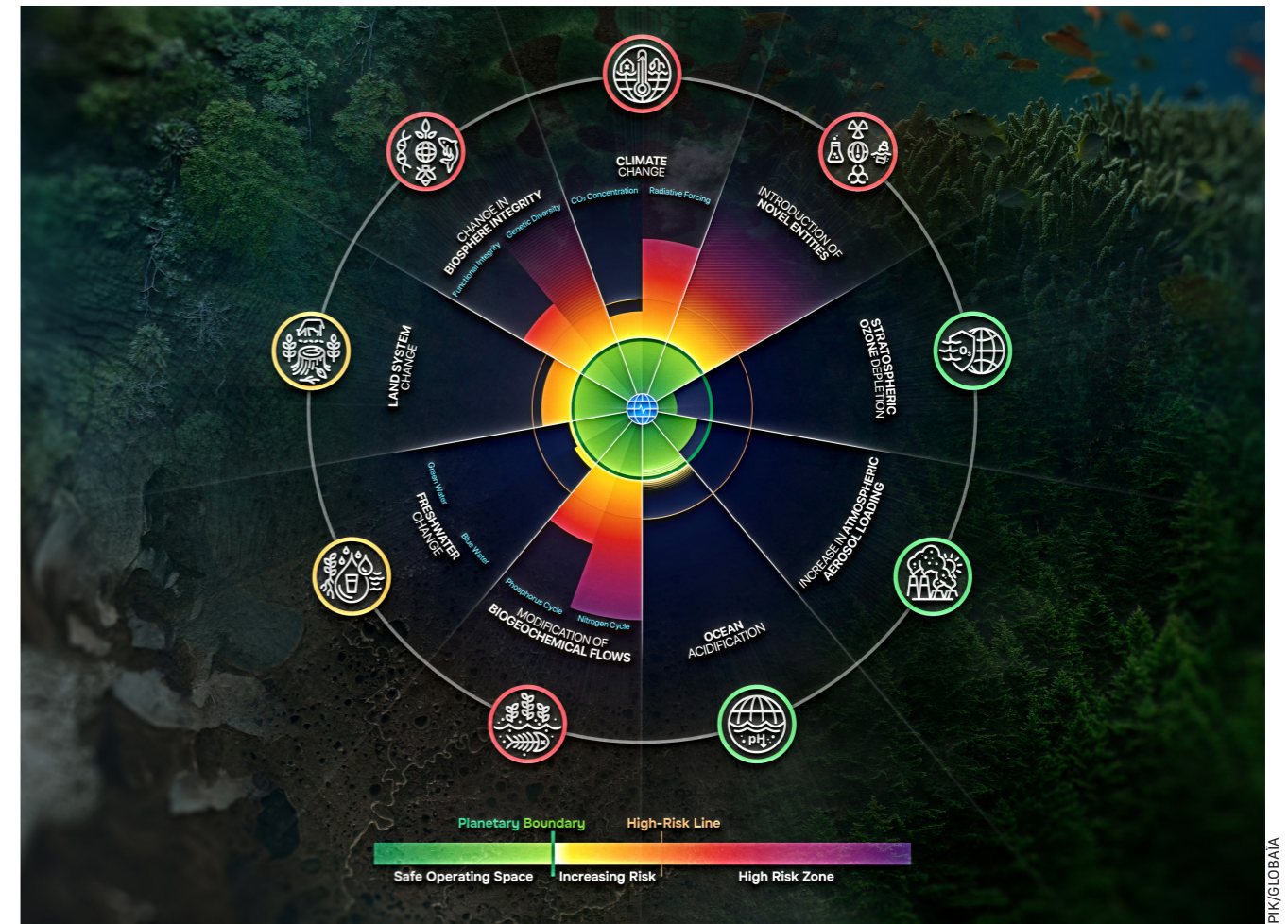
Text: Clara Nicolai | Photos: Globaia

With the launch of the **Planetary Health Check** report, the new website www.planetaryhealthcheck.org was made available online as well.

The website features dedicated sections on Planetary Science and Solutions, includes a News site dedicated to news pieces related to the Planetary Boundaries, and provides prominently placed download links to both the full Planetary Health Check report as well as to the executive summary.

What is more, together with our creative partner **Globaia** and a number of multilingual volunteers, we are currently working on additional content that will be provided via this website as well. This includes:

- A Glossary containing the key terminology surrounding the Planetary Boundaries in a variety of languages;
- Translations of the executive summary into various languages;
- A section to download all report images and figures at a high resolution to facilitate their re-use.



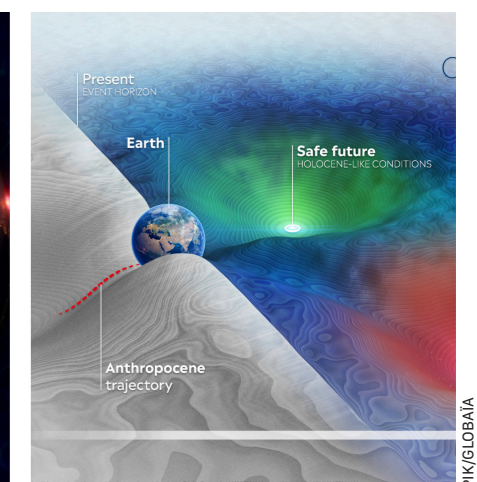
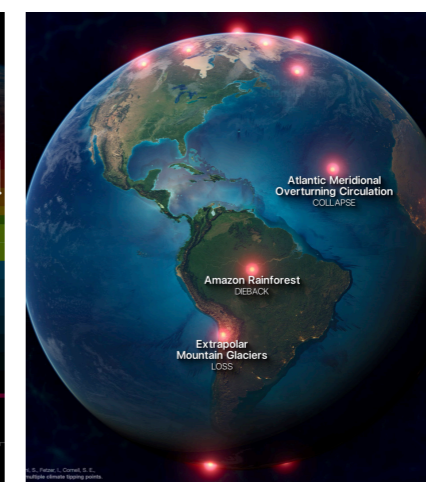
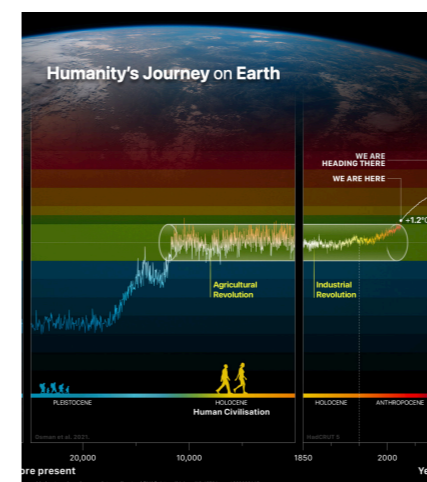
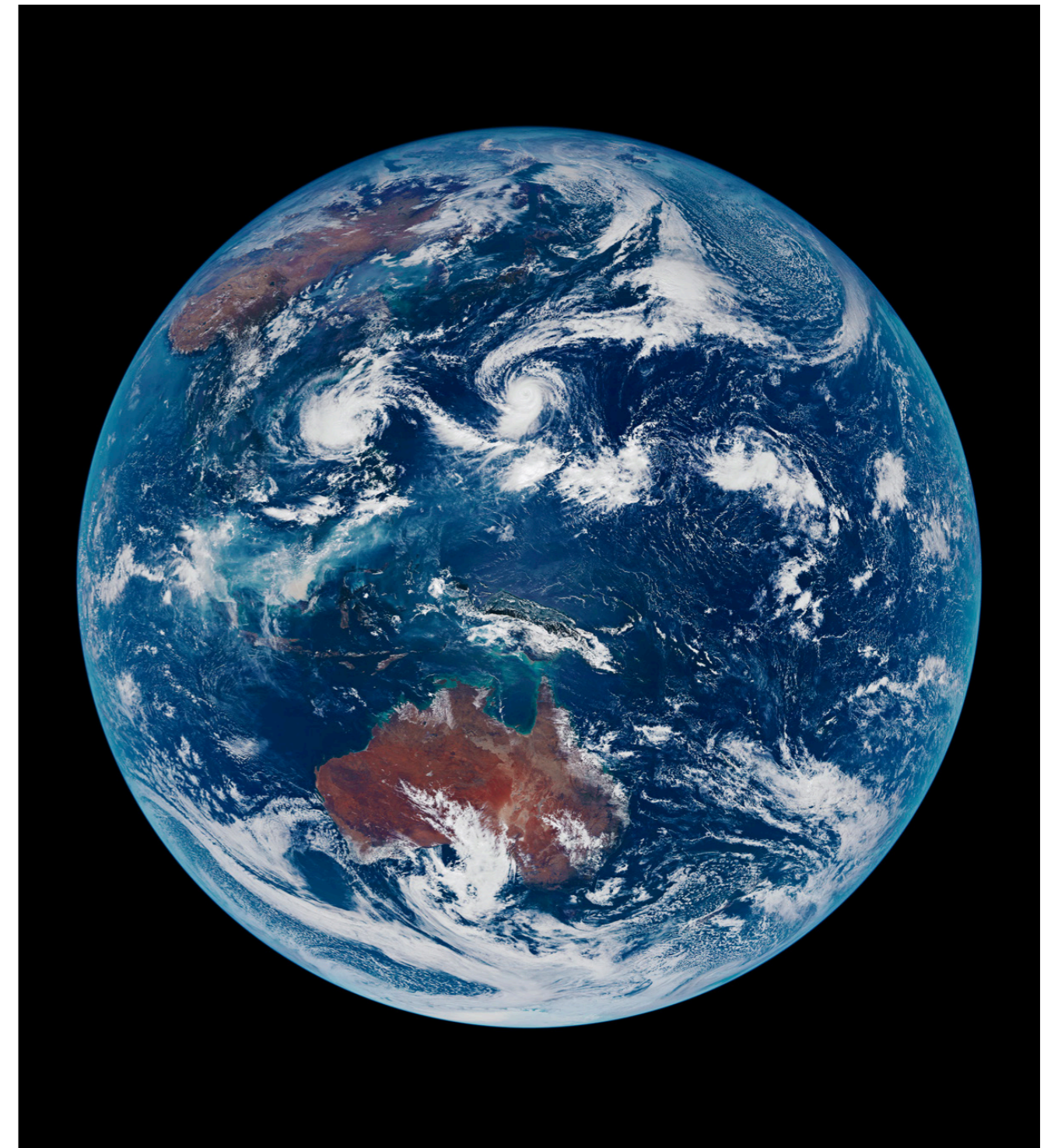


TED

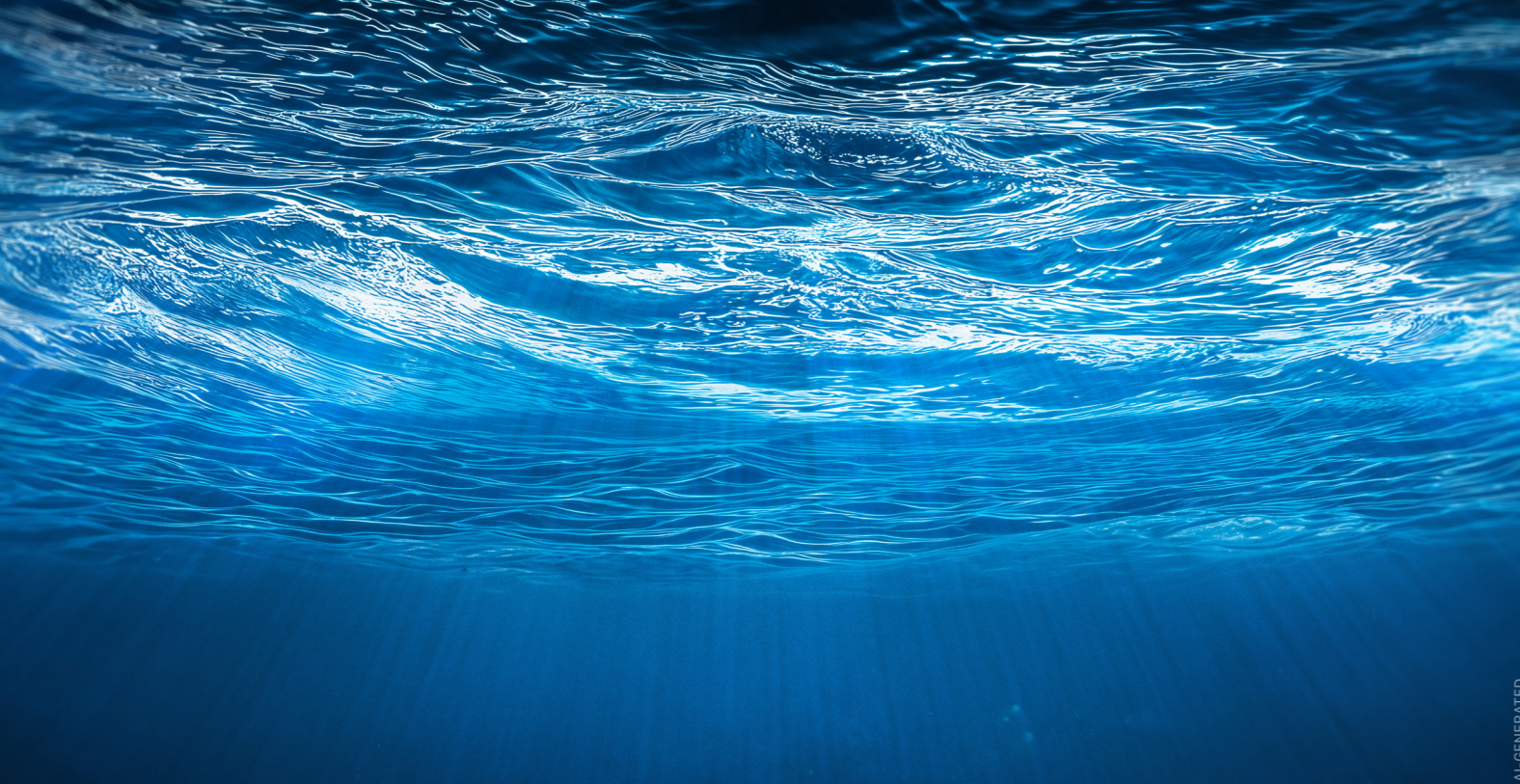
PROF. JOHAN ROCKSTRÖM'S TED TALK AT THE BLOOMBERG GREEN FESTIVAL IN SEATTLE

In July, PIK director Prof. **Johan Rockström**, who co-developed the Planetary Boundaries concept, gave a TED talk at the Bloomberg Green Festival in Seattle, Washington, entitled "**The tipping points of climate change — and where we stand**".

In the talk, which can be accessed on the [TED website](#), Johan spoke about the global action currently (not) taken on the issue of climate change, and presented the latest scientific findings in the field. The talk highlighted the topic of tipping points, a topic related to but distinct from the Planetary Boundaries, which we will shed more light on in the second edition of this newsletter.



PIK/GLOBATA



Dr. Caesar's Live Interview with ARTE

PBScience Lab co-lead Dr. **Levke Caesar** was invited to join the live stream "Behind the Scenes" Watchparty on the French-German public TV channel **ARTE**. As an expert for the **Atlantic Meridional Overturning Circulation** (AMOC for short), Levke explained how the AMOC works, why it is such a vital part of our planet's climate system, and how climate change is threatening the circulation's regular functioning.

The occasion for the livestream was to discuss the [ARTE documentary "Stehen bald die Meere still?"](#), roughly translating to, "**Will the seas soon stand still?**", an episode of the recurring format "42 – Die Antwort auf fast alles" ("42 – the answer to almost everything"). This documentary explains what ocean currents are, how they work, and why they are important for us all, whether we live near the beach or not. The video is available on the official ARTE website, and can be streamed in both German and French. Additional subtitles are available in English, Spanish, Polish, and Italian.



OUTLOOK

Upcoming events, activities and publications related to the Planetary Boundary Initiative

• 4-7 December 2024

TIPMIP General Assembly, Baltimore, ML

The **Tipping Points Model Intercomparison Project (TIPMIP)** is currently hosting its General Assembly in Baltimore, Maryland (USA) with the support of the **Earth Commission/Future Earth**. The program consists of the scientific meeting (Wednesday to Friday afternoon), a public TED-style public evening lecture event on tipping points (Friday), and an abbreviated meeting bringing together scientific experts, policymakers, media, and funding agencies (Saturday).

• January 2025

Representing the Planetary Boundary Initiative at the **World Economic Forum**

The Planetary Boundary Initiative will be represented at the **World Economic Forum (WEF) 2025** in several sessions by Professor Johan Rockström and his team. This will include the introduction of a first prototype for a Planetary Boundaries Dashboard. The dashboard is meant to give anyone quick, up-to-date insights into the current state of the Planetary Boundaries, and to ultimately make the PB Framework more accessible to non-scientists, especially for policy and decision makers.

• Early 2025

Science communicator joins the PBScience team

In early 2025, a science communicator will join the PBScience Lab. In order for the PBScience Initiative to reach a larger, international audience, and to communicate the science behind the Initiative in a way that is understandable and relatable to a variety of people, this new hire will be essential. They will lead a dedicated effort to spread awareness of the PB Framework through new formats, such as online courses and other digital learning content.

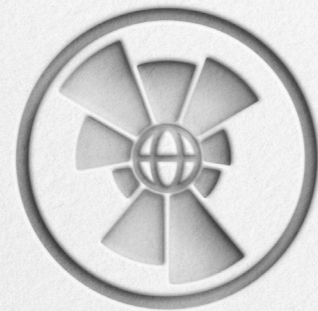
• April 2025

Newsletter second edition – focus on tipping points and Earth resilience research

Look out for the second edition of our newsletter, which we plan to release in April 2025. In it, we will introduce you to our scientific teams focusing on (a) tipping point risks and (b) integrated human-Earth system and resilience analysis.

Meet the PIK PBScience Team

In this segment, we introduce you to people working to advance the Planetary Boundary Initiative. In this first edition of our newsletter, get to know the two scientific leads of PIK's PBScience Lab, Dr. **Levke Caesar** and Dr. **Boris Sakschewski**.

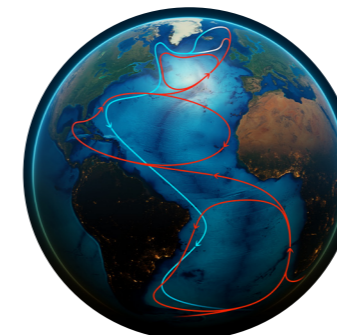


Planetary Boundaries
SCIENCE



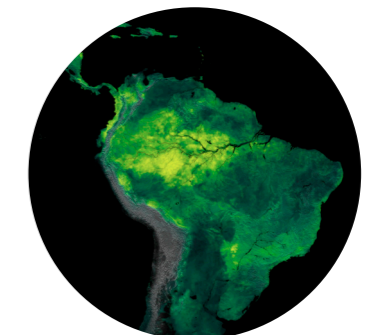
Dr. Levke Caesar

Dr. Levke Caesar is a climate physicist specializing in the role of oceans within the climate system, with a particular focus on the **Atlantic Meridional Overturning Circulation (AMOC)**. She earned her Ph.D. from the **Potsdam Institute for Climate Impact Research (PIK)**, where her research demonstrated a significant slowdown of the AMOC by approximately 15% since the mid-20th century. This pivotal work was published in **Nature** in 2018. Following her doctoral studies, Dr. Caesar joined **Maynooth University** in Ireland as a postdoctoral researcher. In October 2023, she returned to PIK to co-lead the **Planetary Boundaries Science (PBScience) Lab**, focusing on the interactions between oceanic processes and the broader Earth system.



Dr. Boris Sakschewski

Boris Sakschewski is a researcher in Research Department 1 on **Earth System Analysis** at the **Potsdam Institute for Climate Impact Research**. He is a member of the **Future Lab Earth Resilience in the Anthropocene (ERA)** and the **Working Group on Ecosystems in Transition**. His research focus is on vegetation and Earth System modelling. He is specifically interested in feedbacks within and between Earth system elements, Earth system resilience against global change, and the role of biodiversity to mitigate and adapt to global change. Boris is a member of the **Earth Commission** and an author of the chapter on *'The resilience of the Amazon forest to global changes: assessing the risk of tipping points'* in the forthcoming report of the **Science Panel for the Amazon**. In July 2024, Boris joined **Planetary Boundaries Science (PBScience) Lab** as its second scientific co-lead.



An aerial photograph of a river delta, likely the Amazon, with a prominent blue overlay tracing the main river channel and its tributaries. The surrounding land is shown in shades of green and brown, indicating vegetation and terrain. The blue overlay highlights the complex network of waterways.

THANK YOU...

for your interest in Planetary Boundaries science. By providing us with feedback on our activities, you can help us to continuously improve our outreach efforts:

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