Issue #8 - 2024/1

CRC 1502 DETECT Newsletter

Constitutional Meeting

Presenting the CRC1502 Scientific Advisory Board

Now online

Introducing the CRC1502 internal web area

Quo vadis, DETECT?

You probably know that feeling: It's only just been Christmas and now summer is around the corner... With the start of spring, we are now rapidly moving towards the second meeting of the entire community. This year's DETECT Retreat will take place in Bad Breisig from 15-16 May. The countdown has begun and preparations are running.

The focus is clearly on Roadmap and Strategy for the second phase application: Where is DETECT heading? The agenda includes an intensive programme of state-of-the art and introductory presentations, new proposals, consultations, discussions and decisions.

It is our great pleasure that the Scientific Advisory Board will be available to advise us during the retreat. Its official constitutional meeting will also take place in Bad Breisig on 16 May.

Read more about the members of the CRC SAB in this newsletter and on DETECT's website.

Furthermore, all participants can look forward to a new poster event format and an intercultural evening programme.

And while we are getting prepared for the Retreat in May and the roadmap for DETECT's 2nd phase, we are also working on expanding existing structures and processes of the administrative and scientific coordination of DETECT.

Since the beginning of this week, the CRC1502 internal Web pages are available to the DETECT Community providing centralised information about the Coordination Office, procedural regulations, on how to apply for the different types of funds, possibilities for career promotion, Wikis, the DE-I-TECT programme, CRC publications and further formal and logistics information. This is a milestone, as this information was previously only available on Sciebo and is now available in one place on the Web, exclusively for all DETECT members.

Your feedback to Dorothee and Frank is most welcome!

Furthermore, DETECT's Diversity path has been strengthened as well. The first DE-I-TECT Lecture held in January by Prof. Marieke van den Brink has been attended by around 80 participants and was gratefully received. Silke (Hüttel) and Dorothee (Berkle-Müller) report on the event in this Newsletter edition.

Your ideas and suggestions for further DE-I-TECT events are much appreciated.

Last but not least, DETECT is essentially about research and publishing scientific findings. We will therefore read news from Yikui Zhang from sub-project D02 on his impressions of the AGU. Thanks also to all our colleagues who travelled to this year's EGU in Vienna and shared their impressions and lessons learnt from the event.

To sum up, the Editorial Team wishes you a joyful spring time, exciting project progress and looks forward to meeting you all very soon in Bad Breisig.

Enjoy reading!

Sincerely,

Jürgen Kusche
Speaker

Silke Hüttel
Co-Speaker

Harry Vereecken
Co-Speaker

Frank Siegismund
Scientific Coordinator

Dorothee Berkle-Müller
Administrative Coordinator

CRC1502 Scientific Advisory Board

by Frank Siegismund and Dorothee Berkle-Müller

It is our great pleasure to present DETECT's Scientific Advisory Board, in short SAB:

Dr. Rosie Fisher, senior researcher at CICERO, Oslo, Norway.

Scientific focus: Land surface modeling, ecophysiology, climate science, ecology and biogeochemistry.

Dr. Rosie Fisher

Prof. Daniela Jacob, director of GERICS, Hamburg, Germany.

Research interests: regional climate modeling, the hydrologic cycle, climate service, and adaptation to climate change impacts.

Prof. Daniela Jacob

Prof. Adrian Jäggi, director of the Astronomical Institute, University of Bern, Switzerland.

Research interests: Global Gravity Field Recovery Using Orbit Positions of Low Earth Satellites established by the Global Positioning System and GRACE/GRACE-FO inter-satellite ranging, Orbit Determination of Low Earth Satellites, determination of geodetic parameters.

Prof. Adrian Jäggi

Prof. Pavlos Kollias, Division of Atmospheric Science, Stony Brook University, NY, USA.

Research interests: Cloud Microphysics and Dynamics, Atmospheric Experimentation, Radar Science and Technology.

Prof. Pavlos Kollias

Prof. Patrick Meyfroidt, FRS-FNRS & Earth and Life Institute, Université catholique de Louvain (UCLouvain), Louvain-la-Neuve, Belgium.

Research interests: land use transitions, i.e. non-linear land use dynamics at broad scale such as forest transitions and emergence of land use frontiers; linkages between globalization and land use including supply chain interventions to halt deforestation; theories of land system change; and social-ecological feedbacks.

Prof. Patrick Meyfroidt

Prof. Remko Uijlenhoet, Faculty of Civil Engineering and Geosciences, Delft University of Technology, Netherlands.

Research interests: hydrological science, specifically (1) the measurement and parameterization of the space-time variability of rainfall using ground-based remote sensing techniques and (2) the development of opportunistic sensing techniques.

Prof. Remko Uijlenhoet

The SAB will support CRC1502 by providing recommendations and comments on the scientific and structural development of the collaborative research centre, participate in internal evaluations and provide advice for the second funding phase proposal.

The Constitutional Meeting of the SAB will take place on 16 May 2024 in Bad Breisig after this year's Retreat.

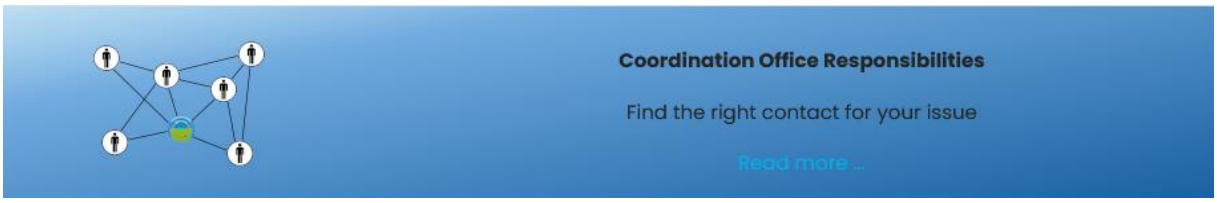
The CRC1502 Management Team and Executive Board look forward to a fruitful collaboration.

Our CRC1502 Internal Web Area goes online

by Dorothee Berkle-Müller

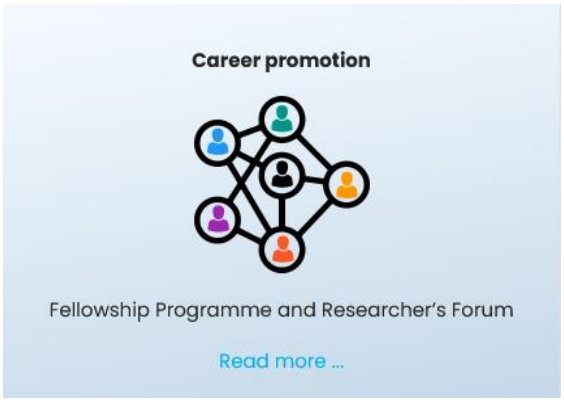
After months of preliminary considerations in coordination, writing, compiling information, intensive dialogue with Polywebster, our web experts, and with Sascha from IT about the technical implementation possibilities, we are very excited to finally be able to provide the DETECT community with a central internal area online.

Here are a few impressions of what to expect on our internal web sites:



Read all about the responsibilities of the **CRC1502 Coordination Team**:
Who we are, what we do and how to contact us!

Find here all **CRC1502 Wiki's** at a glance



Infomation about **IRTG's Career Promotion Programmes** are available here.

DE-I-TECT

What is behind **Diversity, Equity and Inclusion in DETECT**?

DE-I-TECT: Read more about funded measures, objectives, gender-sensitive language, funding guidelines of our funding organisation DFG and also find an emergency contact list...

In the **intranet CRC calendar** you will find all dates and events relevant to the DETECT community. All DETECT community members are allowed to subscribe to the calendar. Is any event missing? Please submit details, such as the title, date, time and location/format to Dorothee Berkle-Müller.

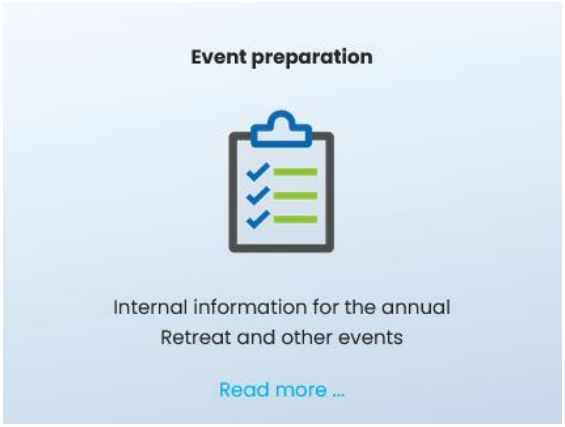
You are welcome to use the **meeting room calendar** to see whether the room is available for your desired time slot and make the binding reservation with Sandra Juraga.

In the “application for funds” area an overview of the framework conditions for the use of our DFG-approved funds is provided, such as the **internal funding application processes and application forms for download**.

As you know, we have to publish our project status information. So please make sure to keep your **project description** updated. **Template and more information** can be found here.

And what is the status of CRC1502 publications? The **Publication Monitoring** provides an overview.

Here we have compiled central CRC documents such as the first phase Full Proposal, Bylaws, Member lists, Principles of Collaboration, Media Guidelines, etc., but also CRC-approved templates such as **Logos, Posters and .ppt-Templates** and a summary of the current usage guidelines for Collaborative Research Centres from the DFG.



In addition, all upcoming events for the CRC are also entered within the internal Web area and all important information such as for our upcoming retreat, will be made available as an overview.

In the future, we will make **recordings of the Land and Climate Seminars and Lecture Series** available here...

Now, we very much hope that this Web page will help to simplify to search and find central information and that it will speed up the implementation of various work steps.

A big thank you at this point to the Polywebster Team Stefan Keidel and Rolf Kaßner and to Sascha Wüst, responsible for DETECT's IT Administration.

Enjoy surfing DETECT's internal Web!

1st DE-I-TECT Lecture

with Prof. Marieke van den Brink: Jan 18 2024

Authors: Silke Hüttel, Dorothee Berkle-Müller

In our first DE-I-TECT Lecture, Professor Marieke van den Brink, Professor of Gender and Diversity at the Faculty of Social Sciences, Scientific Director of Radboud Gender & Diversity Studies, Radboud University, NL (please see here for further information) gave a talk about "Sponsorship in higher education: gendered effects and possibilities for Early Career Researchers".

We learnt from Marieke about the difference between mentoring and sponsorship. In a nutshell: mentors advise, sponsors act and use their power to influence. An upward and downward spiral was used to illustrate the different directions in which career opportunities can develop with the same qualifications, but depending on the form in which the protegees are supported and integrated into networks.

In her lecture, Marieke showed various ways to counteract the imbalance. One central aspect throughout was awareness raising, among all those involved, but also encouraging and creating opportunities. Examples – for both sides – include asking for promotion, encourage for applying for the next position, additional funding or invitations to grant writing, shared keynotes or memberships in organising committees...

> Women are over-mentored and under-sponsored (Ibarra et al 2010)
>
> Ibarra, H., Carter, N., Silva, C. (2010). Why men still get more promotions than women, Harvard Business Review, (sept) 81-85

The discussion following the lecture clearly showed need for opportunities and networking events. Organising, facilitating access and inclusion to "the network" and related events forms another important pillar to counteract imbalances.

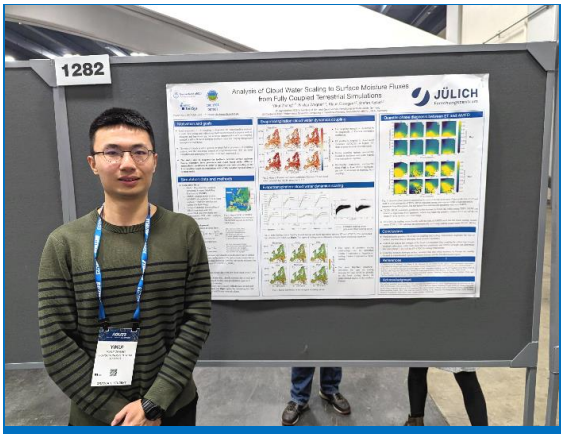
In the zoom event approx. 80 participants attended. The positive feedback encourages us to continue. Suggestions for lecture topics are welcome; please see also our website.

AGU Fall Meeting 2023

From 11 December to 15 December 2023, the American Geophysics Union held the 2023 annual fall meeting in San Francisco, USA.

Every year, AGU Fall Meeting convenes >25,000 attendees from 100+ countries to share research and network. Researchers, scientists, educators, students, policymakers, exhibitors, journalists and communicators attend AGU Fall Meeting to better understand our planet and environment, and our role in preserving its future. It is a results-oriented gathering rooted in celebrating and advancing positive individual and collective outcomes.

During the conference, PhD student Yikui Zhang from the CRC project D02, had the opportunity to present his research through a poster titled "Analysis of Cloud Water Scaling to Surface Moisture Fluxes from Fully Coupled Terrestrial Simulations". The presentation included statistical and machine learning methods to diagnose the strength and impact factors of the feedbacks between evapotranspiration and cloud. The conference provided a dynamic platform for scientists and researchers to share their progress and engage in insightful discussions. "It was very nice to hear feedback from colleagues during the poster presentation, especially suggestions on how to continue exploring our dataset with more robust and rigorous data-driven methods. The poster session was also a very nice opportunity to network for future collaboration as a PhD student", Yikui says. People interested can find the poster here.



Yikui Zhang at the AGU poster session

source: CRC 1502

EGU general assembly 2024

by Luciana Fenoglio, Juan Baca Cabrera, Fernand Eloundou, Jane Roque Mamani

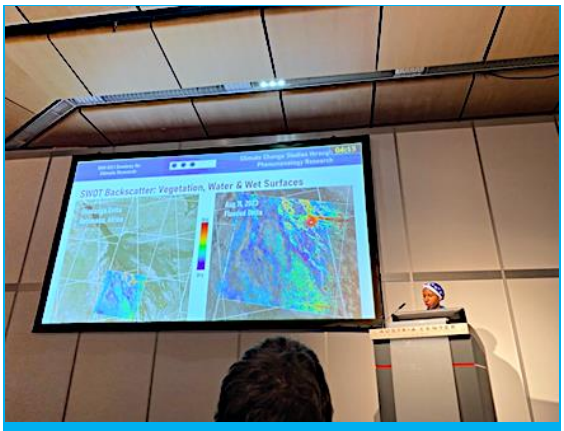
Every year, the European Geoscience Union (EGU) general assembly takes place in Vienna in April. From 15th April 2024 to 20th April 2024 scientists from more than 100 countries visited the EGU.

B01 PI Luciana Fenoglio presented her work in Session OS4.5 of the Ocean Science Programme (OS) "A new view of 2D observations for ocean and coastal dynamics", dedicated to early results of the SWOT swath-altimetry on the sea region. Her presentation **"Monitoring the Elbe Estuary and coastal zone with SWOT and nadir altimeters"** shows that the accuracy of SWOT water level data is superior to the accuracy of standard nadir-altimetry products. The accuracy of SWOT is 10 cm for high resolution (HR) data and 10-20 cm for low resolution (LR) data compared to gauge data in the Science Phase. These values are comparable to the 10-15 cm accuracy found from two regional models.

In poster **"Monitoring water level and lake extent change with nadir-altimeters and SWOT"**, of "Water Level, Extent, Storage and Discharge from Remote Sensing and Assimilation in Hydrodynamic Models" (session HS6.5), Luciana shows that the accuracy of SWOT HR data of the Science Phase is better than 15 cm in Mannheim, the accuracy from FF-SAR altimetry is only 21 cm. This improvement in accuracy comes from differences in both the number of data and the mission coverage. An accuracy of 10 cm in Mannheim is achieved with an advanced FF-SAR processing that estimates the water height along the river at non-nadir locations. However, this processing "a' la SWOT" is feasible for nadir-altimeters only for tracks parallel to the river located within less than 10 km from the river, while SWOT data are usable everywhere.

At EGU, Luciana chaired together with Jessica Fayne (see separate report of her visit on page 13) the Splinter Meeting SPM118 of the Inter-Commission Committee on Geodesy for Climate Research (ICCC) C9 Working Group on "Climate Change Signals in High Resolution Surface Water Observations". Participation to the group is open by filling in the form.

Jessica Fayne was invited speaker at session at the EGU session "Geodesy for climate research" with the talk: **"Climate change studies through Phenomenologie Research"**.



Jessica Fayne talk on results from SWOT using the backscatter coefficient measured in inundation areas

source: SFB 1502

Fernand Eloundou:

Attending the European Geoscience Union (EGU) General Assembly for the first time was a whirlwind of excitement and discovery. Amidst the bustling crowds, I had the opportunity to showcase my ongoing research on disentangling uncertainty sources and model structural errors in the Community Land Model version 5 (CLM5) through a poster presentation.

Engaging with fellow PhDs and scientists sparked insightful discussions, particularly delving into the nuances of my methodology. It was invigorating to exchange perspectives and

ideas, contributing to the collective advancement of our field.

Expectations met reality as I soaked in the vibrant atmosphere of the assembly, yet the sheer number of participants surpassed my initial expectation. Despite the crowds, the sessions remained engaging and surprisingly stress-free, thanks to the option of seamless online connectivity.

Venturing into Vienna for the first time, I was struck by the city's old buildings and impeccable punctuality, particularly evident in its efficient train system.

Juan Baca Cabrera:

I presented my work (talk) entitled **"Evolution of root hydraulic properties of wheat with breeding and its influence on root water uptake"** in the "Soil-Plant Interactions" session (HS8.3.3). I have the impression that the reception was positive, as I had fruitful discussions after the presentation on how this work could be extended to wheat varieties from other regions (e.g. USA) in collaboration with research groups outside the DETECT project. I also used the time at the EGU for fruitful discussions with colleagues from subproject C02 about the next steps in our project. And of course, I was able to gain a good insight into current research that is directly or indirectly related to our project (especially in terms of new modelling approaches and available data sets).

Jane Roque Mamani:

This was my first participation in the European Geosciences Union (EGU) and definitely marked a significant milestone in my career journey. As a first-time attendee, I was prepared for a significant audience, however, the 2024 event reached an unprecedented attendance of over 18 thousand participants, setting a new benchmark in comparison to previous years. Probably this was the reason behind the enthusiasm from many participants in poster and oral sessions. My experience from the whole event can be summed up in three aspects:

Personal career promotion: My participation in the Atmospheric Sciences session, focusing on Numerical Weather Prediction, Data Assimilation, and Ensemble Forecasting, allowed me to show the developmental stage of the Irrigation Parameterization within the ICON-nwp model. Additionally, I identified the session "The Atmospheric Water Cycle under Change" as a promising one for future participation. Here I could network with researchers that are interested in the impact from human interventions in the atmosphere, including the feedback between the atmosphere and the land surface. Even though we use different atmospheric and land surface models, I observed the expectations from fellow scientists regarding irrigation parameterization as a whole and its potential applications in Earth modeling.

Moreover, in the poster session, I was pleased to notice that people from various scientific fields share an interest in the release of the Reanalysis dataset that the D03 cluster is developing. Many of them acknowledged the importance of the human impact in the water cycle within a reanalysis dataset, particularly with irrigation. Of course, I know that we are currently in the developing phase. However, noticing the expectations from the scientific community regarding this reanalysis dataset has increased my enthusiasm in our ongoing efforts.

Lessons learned: Participating in both, an oral presentation and a poster session provided me with different insights into the advantages of each format. While presenting a poster fosters extensive feedback and interactive discussions, oral presentations have the advantage to reach a bigger audience.

I encourage engaging with scientists from different fields, as they helped me to choose sessions beyond my field of expertise. This provided me valuable insights into alternative perspectives within the field of Earth science.

Interesting findings: Some highlights of my experience were the PICO (Presenting Interactive Content) sessions, as they combine a short pitch of 2 minutes with an interactive poster. It could be challenging to have such a short presentation, but I noticed that it is worth it. Also, as a coincidence, these sessions were key to finding potential collaborations and ideas in my field. I am keen to participate in similar sessions in the future.

Visit of Jessica Fayne to APMG / University Bonn 22-24 April 2024

by Luciana Fenoglio

Jessica is Assistant Professor at the University of Michigan in the Department of Earth and Environmental Sciences. She is a hydrologist and remote sensing scientist. She studies water availability dynamics as a result of local scale natural and anthropogenic land cover/land use change and global-scale climate change.

After EGU, Jessica visited B01 PI Luciana Fenoglio for three days in Bonn to discuss a possible cooperation. She gave the lecture **"Satellite Retrievals for Improved Hydroclimate Study using SAR and GNSS-R"** on the **23 May** as DETECT Lecture online. Jessica's talk examined he novel SWOT backscatter data to assess the feasibility of using SWOT phenomenology for estimating characteristics that could contribute to novel datasets, such as wind speed, wind direction (for long wave formations), vegetation moisture, vegetation structure, and land surface moisture fraction. Supported by long running CYGNSS and Sentinel-1 GNSS and SAR satellite systems, this work provides the foundation for a multi-year study to further develop models to improve the retrievals of vegetation water, surface water fraction, and wind speed, which will then be translated to improved evaporation and water storage estimates.

A cooperation with Jessica is planned to contribute to novel datasets for rivers and coastal zone derived from SWOT, data-driver models for wave and winds should also be investigated. Jessica took also part in the internal discussion on the status of DETECT's subproject B01 on 23 April and will participate online in the next monthly meetings.

Recent and Upcoming Events

09–13 December 2024

American Geophysical Union (AGU) Fall Meeting

AGU ADVANCING EARTH AND SPACE SCIENCES

Each year, AGU's annual meeting, the largest gathering of Earth and space scientists, convenes 25,000+ attendees from 100+ countries to share research and connect with friends and colleagues. Scientists, educators, policymakers, journalists and communicators attend AGU24 to better understand our planet and environment, opening pathways to discovery, opening greater awareness to address climate change, opening greater collaborations to lead to solutions and opening the fields and professions of science to a whole new age of justice equity, diversity, inclusion and belonging.

More info here.

Announcements – save the date!

Activities within DETECT

IRTG Lecture Series

To introduce the PhD students to interdisciplinary science conducted in the CRC, a lecture series is held twice a year. The series addresses the different disciplines in an introductory fashion, including concepts and techniques relevant for research in modelling and observation of the water cycle, as well as of the land surface and its use, also beyond what is applied in current CRC projects.

The number of participants for specific courses might be limited. Anyone interested to participate in a specific course has to check admission with the responsible lecturer listed in the table of lectures below.

30. Apr	13:00-16:00	Thomas Heckelei: **'Bayesian model specification and estimation with Probabilistic Programming'**
07. May	14:00–16:00	Georg Winkel: **'Forests, forest management and forest policy'**
14. May	08:00–11:00	Hugo Storm: **'Machine learning in agricultural economics'**
11. Jun	08:00–11:00	Frank Ewert: **'Crop modelling (2)'**
11. Jun	12:00–15:00	Anne Springer: **'Satellite observation of water storage'**

DETECT Land & Climate Seminar

Mondays at 10:15 (zoom-link)

29. Apr	Francis Lopes, Michael Schindelegger: **'Modeling oceanic effects in the hydrological cycle'**
06. May	Haojin Zhao, Harrie-Jan Hendricks-Franssen: **'Weakly coupled reanalysis'**
13. May	Till Fohrmann, Petra Friederichs: **'Detection and attribution of anthropogenic drivers in extreme events'**
27. May	Yorck Ewerdwalbesloh, Anne Springer: **'Assimilation of GRACE-derived TWSA into CLM-ParFlow'**
03 Jun	Jane Roque Mamani, Arianna Valmassoi: **'Implementing and evaluating explicit irrigation in the IMS'**
10 Jun	Sonia Akter, Sander Huisman: **'Root zone soil moisture'**
17 Jun	Julian Alberto Giles, Silke Trömel: **'Radar polarimetry and atmospheric modelling'**
24 Jun	Elif Dönmez, Thomas Heckelei: **'Remote sensing-based crop classification and mapping'**
01. Jul	Buliao Guan, Bibi Sarwat Naz: **'Cryosphere modeling and data assimilation'**

All-cluster meetings scheduled for 2024:

Please enter in your calendar!

15–16 May 2024
Retreat at Hotel Vier-Jahreszeiten in Bad Breisig

26 June 2024
General Assembly

28 November 2024
Status meeting

Other announcements

Dr. Yap Loudi from the National Institute of Cartography of Cameroon has received a Doctoral Fellowship in Sustainable Development Goals to visit the University of Bonn from January 2024, for 11 months. Yap has a background both in aquifer mapping with hydrogeophysical methods and in satellite geodesy, and his research topic in Bonn will be “monitoring of groundwater recharge in the transboundary aquifers over Tropical West Africa based on joint analysis of remote sensing, in situ and assimilation data”. He will engage with DETECT colleagues and provide a seminar.

Publications

...are published on our website

https://www.sfb1502.de

GEOMAR

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JÜLICH Forschungszentrum

Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DWD

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