

CRC 1502  
DETECT

# Newsletter

EGU 2023 in Vienna

Report on the EGU 2023  
assembly and poster session

CRC 1502 Retreat

First in-person-meeting of the  
entire DETECT community





## It's time for the first CRC-DETECT Retreat!

Collaborative project work more and more becomes a key imperative of our CRC. First and foremost, the modelling projects, for example, are either on their way or have already started their first integrations. Since both a comparison of model runs between projects as well as to upcoming, more advanced integrations is planned, a consistent definition of model versions, setups and used input data sets is needed. Cross-cluster meetings have thus been held and commitments on these issues have been decided among the involved projects.

Second: In the meantime the so far open positions for the much needed IT specialist for Z01 and the scientist for HPC in project Z04, respectively, have been filled. For the IT administration, it is Sascha Wüst who has started on May 1 working part time for the Agricultural Faculty of University of Bonn and for the DETECT coordination office, while Marco van Hulst will start his work on June 1 in Z04. A warm welcome to you both! Sascha Wüst will introduce himself in the interview of this issue.

CRC DETECT's first retreat will be held in Eitorf, Hotel Schützenhof from May 30 to June 1. The focus will be on burning scientific questions across all disciplines and projects and on teambuilding. This will be the first in-person meeting of the entire DETECT Team which consists of about 100 members from all over the world. You will find more information in this issue.

Furthermore, many DETECT Team members have performed presentations during this year's European Geophysical General Assembly (EGU), held in Vienna on April 24-29. Charlotte Hacker and Wanxue Zhu will share their impressions of this event in this issue.

In May, Director of the Center for Space Research (CSR) and a leading figure in the space gravimetry community, Srinivas Bettadpur, has visited Bonn. Jürgen Kusche will report about his visit in this issue.

Using massive cpu time and space on the JSC is essential for a part of the project work in DETECT. We advertise to apply for CPU hours by submitting compute time proposals...

**Enjoy reading!**

**Sincerely,**

**Jürgen Kusche**

**DETECT'S Speaker**

**Silke Hüttel**

**DETECT'S Co-Speaker**

**Harry Vereecken**

**DETECT'S Co-Speaker**

**Frank Siegismund**

**DETECT'S Scientific Coordinator**

## EGU general assembly 2023

by Charlotte Hacker and Wanxue Zhu

Every year, the European Geoscience Union (EGU) General Assembly takes place in Vienna to share, learn and discuss about the latest geoscience research results. From April 24-29, more than 19000 scientists from 121 countries participated both on site and online.

The sessions of the week covered a wide range of topics, related to Earth planetary and space science. The topics included volcanology, seismology, planetary exploration, the Earth's internal structure and atmosphere, hydrology, ocean science, soil system science, geodesy, climate, as well as energy and resources.

Especially the latter are represented in DETECT. This EGU conference is the first one, where DETECT members contributed and shared their research status and results.

The CRC DETECT project B05 performed a poster presentation titled "Towards a dynamic representation of irrigation in land surface models" (presented by: Wanxue Zhu, supervised by Prof. Stefan Siebert, Division Agronomy, Uni-Göttingen) of the SSS9.10 session - the irrigation challenges to cover social issues in the XXI century.

This poster presentation introduced the research regarding irrigation mapping of the Euro-



Wanxue Zhu at the entrance of the EGU2023  
*source: Wanxue Zhu*

pean from 1990 to 2020 time period, including research objectives, methods, primary results, and current challenges.

During the conference, Wanxue engaged in in-depth academic exchanges with scholars worldwide, and the resulting discussions were fruitful and illuminating. This is a good opportunity for young scholars to deepen their understanding of the latest research in their field, forge new connections with scholars worldwide, and gain inspiration for their own future research.

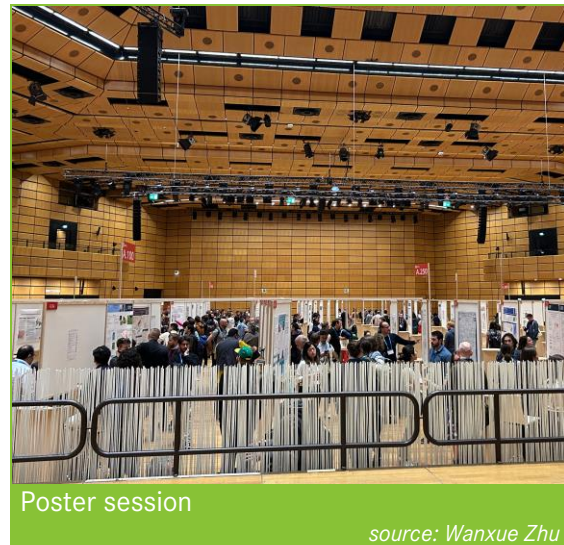


Impressions outside the venue

*source: Charlotte Hacker*

Thursday, May 27, 4-6 pm: The poster session “Geodesy for climate research” takes place. On board X2.55 project C03 presents the topic “How realistic are multi decadal reconstructions of GRACE-like total water storage?”.

The idea of reconstructions is to extend a data record, i.e time series, into the past to allow further (and deeper) analyses. For the GRACE satellite mission, that allows to track the global water cycle, the past is everything before the mission was launched in 2002.



“So, how realistic are they?” a lot of scientists ask. “Well it depends”, is most of time the start for an interesting exchange of knowledge and views.

The two hours poster session passed rather quick, while discussing the results of the poster with different scientists. It is a great experience, which not only provided input, but also motivation and joy.

## 4 and 5 May 2023: Visit by Prof. Srinivas Bettadpur

by Jürgen Kusche

We were pleased to host Prof. Srinivas Bettadpur from the University of Texas at Austin, TX, during these two days. Srinivas is the current director of the Center for Space Research (CSR) and a professor with the Department of Aerospace Engineering and Engineering Mechanics at UT.

With CSR being part of the official Science Data System for the GRACE and GRACE-FO missions, he is a leading figure in the space gravimetry community. Srinivas Bettadpur has received many fellowships and awards for his research.

In his presentation „Yet one more viewpoint on pathways for future space borne mass-change measurements“ on May 5, Srinivas provided his view on how quantum technology in space will help in the future to measure hydrological and ocean mass change at higher spatial and temporal resolution, a topic with strategic relevance for DETECT. Likewise, the CSR team has experience in assimilating short-time GRACE solutions into the CLM model and this will be a topic for further collaboration with DETECT in the near future.

## Notes from the DETECT coordination office

### Please apply for CPU hours at Jülich Super-computing Centre (JSC)!

The computing resources available locally at your home institution will sometimes not suffice to perform the necessary computations for your scientific project work or are too time consuming. For these cases the computing clusters at the JSC are available to us.

Computation time at these clusters have to be applied for in a competitive approach.

A number of applications from the CRC have been approved already. Project Z04 has been of help in the application process. Deadlines for the applications are provided here:

<https://www.fz-juelich.de/en/ias/jsc/systems/supercomputers/apply-for-computing-time>

### Retreat 2023: First in-person meeting of the entire DETECT Community from 30 May to 1 June

On May 30, the entire DETECT Community will meet for the first time for an in-person Retreat in Eitorf.

The overall goal of the event, due to this first joint in-person meeting since the CRC1502 project has started, will be focused on team building.

To achieve this goal, a programme has been elaborated by the Coordination Team and the DETECT Board, which combines both team-building methods with scientific and technical content that are relevant for the entire community.



## DETECT administrative staff

### Interview with Sascha Wüst, responsible for the IT administration in DETECT

I'm an experienced IT administrator and somewhat nerdy computer enthusiast with a lifelong passion for all tech-related things.

Coming from the beautiful rural region of West-erwald, I can be best described as grounded and balanced.

Born in the '70s, I've been captivated by the ever-evolving world of computer technology since a young age.

As a dedicated FOSS (Free and Open Source Software) and Linux advocate, I have a deep appreciation for the power of open-source technology. My curiosity and enthusiasm drive me to continuously explore new advancements and to find innovative solutions.

With over 30 years of experience in the IT industry, I've gained a wealth of knowledge and have worked in various roles, ranging from data center operations to customer support.

Whether it's tackling complex challenges in IT-project management or ensuring customer support, I strive to realise effective solutions that meet user needs.

In the upcoming months, I will be taking on the responsibility of administering the various IT systems within CRC 1502 DETECT and provide end-user support. I kindly ask for your understanding and patience as this task is extensive and complex.



Sascha Wüst

*source: Sascha Wüst*



## 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.

13. Jun.	8:00-11:00	Bibi Sarvat Naz: 'Hydrological modeling'
13. Jun.	13:00-16:00	Thomas Gaiser: 'Interactions between crops, soil, and the atmosphere'
11. Jul.	08:00-11:00	Marcus Lindner: 'Forests, forest management and climate change'

#### DETECT Land & Climate Seminar

Mondays at 10:15 ([zoom-link](#))

05. Jun.	Visakh Sivaprasad, Carsten Montzka: 'LST, SSM observation, data assimilation'
12. Jun.	Prof. Marieke van den Brink: 'Sponsorship in higher education: gendered effects and possibilities for Early Career Researchers'
19. Jun.	Fernand Eloundou, Harrie-Jan Hendricks-Franssen: 'Inverse modelling and data assimilation'
26. Jun.	Dymphie Burger, Sara Bauke, Wulf Amelung: 'Patterns and processes of soil organic carbon (SOC) cycling; soil aggregate dynamics'
03. Jul.	Hakan Uyanik, Luciana Fenoglio-Marc: 'Observing river discharge and water storage from space'
10. Jul.	Bernd Schalge, Jan Keller: 'Development, generation, and evaluation of regional re-analyses'

**30 May – 01 Jun.**  
**DETECT Retreat**

The DETECT plenary retreat is planned as a two-day event (half day/full day/half day) and will take place at the [Hotel Schützenhof](#) in Eitorf.

The agenda is scheduled to be composed of scientific exchange (project developments, networking, synergies, general science topics etc.) and team building measures.

**21 Jun., 9:00**  
**General Assembly 2023**

The agenda will follow in due time.

**30 Nov.**  
**Status-Meeting 2023**

The agenda will follow in due time.

**Dates already earmarked for 2024:**

Please enter in your calendar!

**21-23 May 2024**  
**Retreat including General Assembly****28 Nov 2024**  
**Status meeting 2024**

## Other announcements

**CESOC Seminar Series****“My research”**

CESOC continues the seminar series “My Research” this summer term 2023. The talk lasts about 30 minutes with the possibility to ask questions afterwards.

It will be held via Zoom and is open to any interested person within the CESOC research disciplines (any Earth system sciences, mathematics or computer science).

Please contact [info@cesoc.net](mailto:info@cesoc.net), if you would like to participate.

**30 June, 15:30-16:30**

Prof. Dr. Harrie-Jan Hendricks-Franssen from the Institute for Bio- and Geosciences (IBG), Research Centre Jülich

**14 July, 15:30-16:30**

Prof. Dr. Petra Friederichs from the Institute of Geosciences – Meteorology Section, University of Bonn, talking on her work on ‘Extreme Weather and Climate Events: Statistical Modelling and Prediction’



## Recent and Upcoming Events

11-20 July 2023

### IUGG 28th General Assembly of IUGG

**Deadline of Abstract Submission:  
14th of February 2023**



The 28th IUGG General Assembly will be held 11-20 July 2023 at the Messe Berlin – City Cube, Berlin, Germany. This is a special opportunity for participants from around the world to come together and share their science and culture. Join us for a host of scientific activities, including special public lectures, keynote Union lectures and a wide variety of themed sessions.

More info [here](#).

23-27 October 2023

### WCRP Open Science Conference 2023

**Deadline of Abstract Submission:  
28th of February 2023**



Every decade the World Climate Research Programme (WCRP) brings together communities from around the world to showcase recent and significant advances in climate science, identify gaps and opportunities, and jointly develop future plans.

The next WCRP Open Science Conference, focusing on “Advancing climate science for a sustainable future”, will be held in Kigali (Rwanda) and online on 23-27 October 2023, with the major goal of bridging science and society.

More info [here](#).

## Publications

...are published on our website

<https://www.sfb1502.de>

The last five years in Germany were characterized by exceptional summer droughts. But the exact extent of the loss of water, and whether a trend for the future can be robustly derived, are still unanswered questions.

A team including DETECT researchers Stefan Kollet and Jürgen Kusche has closely examined the years from 2002 to 2022, using satellite data and model simulations. Their conclusion is that on average, Germany lost 760 million tonnes (0.76 km<sup>3</sup>) of water every year – whether through decreasing soil moisture, dwindling groundwater, or lowered surface water levels.

The study compared four different evaluation methods and arrived at significantly lower water loss rates than other evaluations

(e.g. publicized in ARD Tagesschau 15.03.2022). The amount of water storage in Germany has thus decreased by a total of 15.2 km<sup>3</sup> over two decades. By comparison, the annual water consumption across all sectors – industry, agriculture, households – in Germany is around 20 km<sup>3</sup>. However, the time period is still too short to reliably estimate a trend.

Güntner, A., Gerdener, H., Boergens, E., Kusche, J., Kollet, S., Doblsw, H., Hartick, C., Sharifi, E., Flechtner, F. (2023): Changes in water storage in Germany since 2002 from satellite gravimetry observations. *Hydrology & Water Management*, 67, (2), 74-89.

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