



2nd SFB1502 DETECT Newsletter

DETECT has kicked off

With the election of the Speaker team and board and the implementation of the bylaws during the first general assembly on May 2nd, DETECT accomplished full administrative functionality. Almost all of the positions in the scientific and central service projects are either already filled or will be filled very soon. The work on the scientific challenges has started. Please check the kickoff dates of the four scientific clusters provided in the 'Announcement' section of this newsletter. Everyone of the DETECT team is welcome to participate.

This newsletter features reports about ESA's Living Planet Symposium, the Bonn Science Night and an interview with Kristine Larson, one of our Mercator Fellows.

The Bonn Science Night, May 16th-17th, has opened the first opportunity for DETECT to

present baseline and challenges to the public. Charlotte Hacker, PhD student in project C03, reports about her impressions in this newsletter. Kristine Larson has been appointed by the University of Bonn as a "Distinguished Professor Emerita", funded from the University of Excellence strategy. With her internationally recognized expertise in geoscientific applications of GNSS, we are happy for her support in our CRC.

Enjoy reading!

Sincerely,

[Jürgen Kusche](#)
DETECT Speaker

[Silke Hüttel](#)
Co-Speaker

[Harry Vereecken](#)
Co-Speaker

[Frank Siegismund](#)
scientific coordinator



Notes from the DETECT coordination office

The mailing lists

Uni Bonn provides a service to create [mailing lists](#) owned and administrated by the creator of the list. In DETECT a number of lists are available to simplify communication within or announcements to the different groups of our CRC. Most of the lists are internal in the sense that only subscribers can address other subscribers of the list, while mails from others using the list are silently ignored. All lists are currently administrated by the coordinator Frank Siegismund, but for some lists second owners might be registered so that the groups addressed in these lists can organize themselves.

It is important to understand that subscribers of a mailing list are identified by exactly the e-mail-address they are registered with. Aliases will not work and e-mails from non-subscribed senders will silently ignored. All senders to DETECT mailing lists should, however, always receive their own e-mails. If that isn't the case please check your e-mail and, if in doubt, get in contact with an owner of the list.

detect-team

Everyone working for our CRC should be subscribed in detect-team@listen.uni-bonn.de. This mailing list is set-up as an internal list for communication within DETECT to spread information important to all of us or organize activities or administrative matters. People from outside who want to inform the CRC about activities or news they suppose interesting for us have therefore to contact a DETECT team member first who then decides whether the

information is interesting for DETECT and then eventually forward it to the team.

detect-cluster-{a,b,c,d,z}

Each cluster has its own mailing list named detect-cluster-X@listen.uni-bonn.de with X the name of the cluster. The lists are established as internal communication lists within the clusters. However, due to strong linkages of High Performance Computing (HPC) to all clusters the Z04 project team is subscribed to each cluster mailing list.

detect-earlycareer

PhDs and PostDocs of DETECT are subscribed to detect-earlycareer@listen.uni-bonn.de. Unlike all other mailing lists it is applicable as announcement platform for senders outside the platform. It is meant specifically to announce activities for the DETECT Integrated Research Training Group (IRTG), for example the communication between lecturers and students. It is, however, also meant as private communication platform for the early-career scientists in DETECT. The list is currently administrated by the scientific coordinator, but we would suggest that the subscribers of the list should appoint someone among them as a second owner to manage the list themselves.



Sciebo project box for DETECT

To provide information we need for our daily work in DETECT, a sciebo project box has been established. The chain of directories *CRC1502 Board > CRC1502 Project Leaders > CRC1502 Community* forms the backbone of the box with additional folders branching off at different levels. Depending on your role in DETECT you should find one of the backbone directories under your sciebo home directory and have access to all subdirectories. Please surf around and check what is interesting for you. If you don't find the mentioned folders or have suggestions for improvements please get in contact with the scientific coordinator.

e-mail-adresses of new DETECT colleagues

To keep the whole DETECT team informed please provide the e-mail-address(es) of your

new colleague to the scientific coordinator. One address is needed for subscription to the mailing lists and should be the address usually used by the subscriber. The second one, which might be different from the first, is needed to share information in the sciebo project box and it has to be the user name of the sciebo account (uni-ID@uni-bonn.de in case of employees of Uni Bonn, Uni Cologne and FZ Jülich). Employees at non-NRW institutions can obtain a guest account for sciebo, and they should also get in contact with the coordinator.

Building Kekuléstr. 39a

It is currently projected that the DETECT office and several PhD students and postdocs will move to the new premises in Poppelsdorf in the first half of August.



The central service projects

In addition to the well-known central project Z01, which is responsible for all administrative, coordination, communication, monitoring and control matters in the CRC, also the projects Z02-Z04 provide central services to our CRC we want to introduce here.

Z02 – The Integrated Research Training Group (IRTG)

The IRTG guides the qualification of the CRC PhD students and young PostDocs in the interdisciplinary approach of the CRC. The IRTG is integrated into the Bonn International Graduate School “Land and Food” (BIGS-LF) as a separate track specifically designed for the needs within the interdisciplinary and transdisciplinary research approach of the CRC.

The IRTG is thus a joint effort of (1) the DETECT PIs and invited speakers for subject specific knowledge transfer for the transdisciplinary scientific work in DETECT, (2) the BIGS-LF for additional, non-specific qualification, as soft skills and science communication and, (3) the proactive contributions of the PhD students and young PostDocs involved.

For general questions on DETECT-specific courses please contact the scientific coordinator [Frank Siegismund](#), while for more general qualification courses check the [BIGS-LF homepage](#) and get in touch with the coordinator [Philipp Gutbrod](#) for further questions.

On July 13th , 10:15 - 12:00, an informative zoom-meeting is scheduled to provide more insight into activities of the IRTG, and the roles of the players in DETECT and BIGS-LF, and the early-career researchers. All DETECT PhDs and PostDocs are invited to participate ([link](#)).

Z03 – Data infrastructure and services

Project Z03 is responsible for maintaining a central research data infrastructure, which is hosted at the Jülich Supercomputing Centre (JSC). Thereby, it will ensure safe storage, efficient use, and fully documented publication of observation and model data from all DETECT partners. Responsible PIs are Dr. Olaf Stein and Prof. Dr.-Ing. Jan-Henrik Haurert.

Two PostDocs will work on the challenges of project Z03. On Aug., 15th Dr. Farzane Mohseni will start working on data management issues requiring expertise in geoinformation, including data stewardship tasks. Dr. Amir Hossein Nikfal will work on general High Performance Scientific Computing (HPSC) support tasks. The start date of his contract is, however, not fixed yet.

Z04 – Central supercomputing support

Z04 supports the CRC to efficiently conduct its demanding numerical model integrations, but also to process and analyze large data sets. As one example, Z04 provides basic support for HPC-related issues, specifically porting and tuning of scientific software applications on the latest supercomputers at Jülich Supercomputing Centre (JSC) and University of Bonn HPC/A-Lab. Responsible PIs are Dr. Klaus Görden and Prof. Dr. Petra Mutzel.

On July, 1st, Dr. Moritz Hartig (HPC/A) and Dr. Stefan Poll (JSC) will start as PostDocs and will work on general HPC support tasks.



Report from the Living Planet Symposium 2022, Bonn

by Jürgen Kusche

Every three years, the European Space Agency (ESA) organizes a massive conference, where topics ranging from European space policy and Earth observation programmes to the newest scientific advances in the mapping and analysis of the Earth system are presented. This year, the Living Planet Symposium (LPS22) took place on May 23-27 in Bonn, for the first time in Germany. It took place on historic ground, with many sessions organized in the plenary building of the former Deutscher Bundestag, today part of the World Conference Center WCC Bonn.

This was the first in-person conference since the begin of the pandemic for many of us, so obviously there was a mood of great excitement.

LPS symposia cover all topics of Earth observation where ESA is operating (or contributing to) space missions, or plans to engage in them in the future. Sessions cover topics ranging from EO applications (from earth's core to the land surface, cryosphere changes, ocean warming and sea level, climate, atmosphere, land use and agriculture, air pollution, marine litter, ...) over specific space instruments performance, new analysis techniques and data products, machine learning and data assimilation techniques, digital twin earths and oceans, to sustainable management options.

I was invited by ESA to talk about scientific requirements for future satellite gravity missions enabled by quantum technology sensors, from a user perspective.

The GRACE and GRACE-FO satellites provide, since 2003, maps of monthly land water storage that relate not only to soil moisture but to root-zone water, groundwater, snow storage and water stored in lakes and reservoirs. ESA hadn't directly contributed to these missions but it had operated a technologically advanced gravity mission in the past (the GOCE satellite) and it supported GRACE operations. ESA is currently investigating a European Next Generation Gravity Mission (for the time after GRACE-FO) and it is exploring options jointly with NASA's Mass Change Designated Observable (MCDO) team for an inter-agency collaboration with the acronym MAGIC (Mass change and Geo-science International Constellation). As part of its Space for a Green Future (S4GF) Accelerator, ESA also pursues the concept of a quantum satellite mission (QSG), piloted by a pathfinder experiment, that would target at drastically improving the spatial and temporal resolution of water storage maps compared to today or to NGGM/MCDO/MAGIC. ESA will fund a study on the potential science return of QSG in applications such as climate research and hydrology that are relevant for DETECT.



Plenary lecture hall at LPS22, Bonn



13th “Bonner Wissenschaftsnacht” Two days dedicated to sustainable research.

by Charlotte Hacker



© Stadt Bonn

© Stadt Bonn



© Barbara Frommann /Uni Bonn

© Barbara Frommann /Uni Bonn

After long weeks of preparation, it was finally time. On May, 12 and 13 the “Bonner Wissenschaftsnacht” took place. For DETECT the first opportunity to present itself to the public. The topic of our tent, that we shared with the geodesy and geoinformation study program and with the transdisciplinary CRC “Sustainable future” (TRA6), was “climate change”. A well know topic, you might say. Surprisingly we had a lot of discussions about the reasons of global warming and its influence on the climate. Beside these discussions, we also had a lot of pupils visiting us. To attract their attention, we replicate the impact the melting ice has on the sea level, using an ice bloc (representing the ice-sheets) and a box (representing the ocean). The ice melted over the day, causing the sea level to rise (or the box to be filled with water). An altimeter measured the “sea level” showing a constant rise of the water content. Altimeter observations also play a key role in the projects B01, B03 and C01 (please excuse me, if I miss someone). Of course, the aim of our presence was not to explain climate modelling, but to show, what we do/ will do, why and how and I think we did a pretty good job.

Over all it had been two very interesting days and I want to use the opportunity to thank everyone for their help and time, as for our CRC, such an event is a co-production.

If you are interested in more information and impression (unfortunately only in German), please visit:

<https://www.uni-bonn.de/de/neues/096-2022>

<https://www.uni-bonn.de/de/neues/schuhe-aus-ananas-und-drohnen-fuer-den-acker-1>

Hello everyone, my name is Charlotte Hacker (I am the girl with the green scarf in the pictures). Some of you already know me from the “Wissenschaftsnacht”. For those, who does not: Hello, nice to meet you. I work in the project C03. In this project we will reanalyze the coupling between the water and carbon cycle. I am dealing with the reconstruction of total water storage from GRACE (a satellite mission to measure changes in the Earth gravity field). I studied “Geodäsie und Geoinformation” at the university of Bonn. I finished my master degree in 2021 and I am really happy to be part of such a huge project and family. I am looking forward to meet and work with you all.



DETECT scientists

Interview with Kristine M. Larson, visiting scientist of DETECT

Kristine, what attracts you to work in DETECT?

I was an engineering professor at the University of Colorado for nearly thirty years. I worked on a lot of interdisciplinary science and engineering problems as we learned more and more about the potential of first GPS, and now GNSS. I hope that I can contribute to DETECT both with my technical expertise in GNSS but also from my experience in interdisciplinary research. It is a big challenge to combine geodesy and hydrology – the fields are quite different and have not always collaborated. I think the DETECT project has assembled an outstanding team, and I am very happy to be a member of this team.

What do you see as the big challenge of the CRC?

The normal path is for scientists and engineers to become experts in their specialties. It is a big challenge to bring together all these different specialists to solve the kind of interdisciplinary problems outlined in the DETECT project. It requires both open minds and management support.

And what do you see as your personal challenge in your role in DETECT?

For many years I led interdisciplinary research teams at the University of Colorado which did not always leave me much time for using my technical skills. With my emerita position, I am really looking forward to doing technical work again and being one of the team members rather than the team leader. I have enjoyed improving my IT skills in these last few years and hope to help other team members learn how to use GNSS signals in innovative ways.

About Kristine M. Larson

Kristine M. Larson is a geodesist with a specialization in GNSS applications for earth sciences. She was educated at Harvard University and the Scripps Institution of Oceanography. She was a professor of aerospace engineering sciences from 1990-2018 at the University of Colorado. She is a fellow of the American Geophysical Union and a member of the U.S. National Academy of Sciences. She is currently a distinguished professor emerita at the University of Bonn.





Recent and Upcoming Events

17 - 22 July, 2022: IGARSS 2022

The International Geoscience and Remote Sensing Symposium (IGARSS) is the flagship conference of the IEEE Geoscience and Remote Sensing Society (GRSS). It is aimed at providing a platform for sharing knowledge and experience on recent developments and advancements in geoscience and remote sensing technologies, particularly in the context of earth observation, disaster monitoring and risk assessment. More info [here](#).

25-29 July: International Symposium on Managing Land and Water for Climate-Smart Agriculture 2022

The 'International Symposium on Managing Land and Water for Climate-Smart Agriculture' aims to facilitate the exchange of information and knowledge among soil, water and environment professionals from developed and developing countries to advance the understanding, collaboration and capabilities to respond to the impact of climate change in a rapidly changing global environment. More info [here](#).

21 August: Pattern Recognition in Remote Sensing Workshop (in conjunction with ICPR)

As one of the flagship events of the International Association for Pattern Recognition, Pattern Recognition in Remote Sensing Workshop serves as an event bringing together researchers from both pattern recognition and remote sensing, with emphasis on the application of pattern recognition methods to remotely sensed data. More info [here](#).

21-25 August: ICPR 2022

ICPR 2022 is the flagship conference of IAPR, the International Association of Pattern Recognition. Professionals working in computer vision, image, sound, speech, pattern recognition, and machine intelligence can update their knowledge and sharpen their skills in all sub-specialties of pattern recognition. More info [here](#).

5-8 September: DBG Annual meeting 2022

Annual Meeting of the German Soil Science Society (DBG) at the university campus in Trier. More info [here](#).

4-9 September: EMS Annual Meeting 2022

The Annual Meeting of the European Meteorological Society (EMS) is planned to be held as an in-person meeting at the Poppelsdorf Campus of the University of Bonn. The conference will have an online component. More info [here](#).

7-9 September: viCPCMW

The series of workshops 'Convection-Permitting Climate Modeling' is devoted to all climate modeling activities at the convection-permitting resolution. This is the resolution where there is no need to parametrize convection and it is solved directly by the dynamics of the atmosphere (namely below 5 km). Workshop covers global and regional climate modeling from model development to state-of-the-art climatological studies performed at this resolution. More info [here](#).

7-9 September: GEWISOLA

The 62nd Annual Conference of the German Society of Economics and Social Sciences in Agriculture (GEWISOLA) will be held at the University of Hohenheim, Stuttgart. More info [here](#).

19-23 September: CLM-Community Assembly 2022

The CLM-Community Assembly is the annual meeting of the CLM-Community. It includes plenary sessions, poster sessions and working and project group meetings. The Assembly 2022 will be organized as virtual conference. More info [here](#).

05-07 October: AgEconMeeting

In 2020, the AgEconMeet network was created that aims at facilitating networking among early-career researchers who work on agrifood topics (agricultural economics and related fields such as environmental, development, and food economics or sciences) and who are based in Europe. You can find more information about AgEconMeet [here](#).

The first in person event AgEconMeeting will take place in Göttingen (Germany). The seminar is organized by AgEconMeet, under the auspice of the European Association of Agricultural Economists as the 185th EAAE Seminar.



Announcements – save the date!

Activities within DETECT

13 July, 10:15-12:00 Informative IRTG meeting via zoom ([link](#)).

The management of both DETECT and the Bonn International Graduate School Land and Food at the Agricultural Faculty of the University of Bonn (BIGS-LF) want to inform the PhDs and PostDocs in DETECT about the Integrated Research Training Group (IRTG) of our CRC DETECT.

13 July, 15:00-16:00 Brownbag to call for applications on joint TRA Modelling-DETECT Collaborative Research Award ([link](#))

TRA1 and DETECT have opened a joint call for application to the Collaborative Research Award "[Mathematics, Modelling, and Simulation for the Investigation of Climate Change](#)". The jointly organized TRA Modelling/DETECT Brownbag Meeting intends to bring together potential applicants with actors in DETECT and TRA Modeling to talk about the challenges and provide an opportunity for an exchange of thoughts/ideas.

Cluster-Kickoff-Meetings

The first DETECT cluster meetings are scheduled as follows:

Cluster A: 11 Aug., 09:00 – 11:00, [link](#)

Cluster B: 12 Sept., 10:00- 12:00, [link](#)

Cluster C: 19 July, 09:00 – 13:00

Cluster D: 4 July 13:30-15:30, [link](#)

26-30 Sep. HPSC TerrSys Fall School 2022

The Centre for High-Performance Scientific Computing in Terrestrial Systems (HPSC TerrSys) offers a fall school in Terrestrial Modelling and High-Performance Scientific

Computing from 26 - 30 September 2022 in Bonn, Germany. The course is aimed at Master and PhD students as well as PostDocs. All DETECT PhD students are expected to participate. Please register [here!](#)

Other announcements

CESOC Seminar Series "My research" summer term 2022:

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),

see <https://cesoc.net/my-research-summer-term-2022/>

Congratulations

Hugo Storm and Ribana Roscher were successful in applying for DFG Research Grants for their project 'Tracking the use and adoption of agricultural technologies through satellite remote sensing and self-supervised deep learning (TrAgS)'. The grants include the funding of two PhD positions for three years. The project starts 01/2023. More information [here](#).

Congrats, Hugo and Ribana !

The DFG is funding the Research Unit in the Field of Artificial Intelligence "Algorithmische Datenanalyse für die Geodäsie" (AlgForGe). Petra Mutzel is speaker of the Research Unit. Jan Haurert and Jürgen Kusche are contributing.

Congrats, Petra !

Wulf Amelung, Professor of Soil Science and PI in DETECT projects A01 and C03, has been admitted to the Leopoldina National Academy of Sciences, the oldest continuously existing scientific academy in the world. More information [here](#). Congratulations.



SFB1502 – DETECT - is a Collaborative Research Center run by the University of Bonn and participating institutions FZ Jülich, the Universities of Cologne and Göttingen, and the DWD, and funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – SFB 1502/1-2022 - 450058266.