September 16, 2016
Edition 1

ENERGY INFLOW

www.trr-energytransfer.de

Our first Newsletter

By Meike Ruhnau

Dear project participants,

This is the first internal project newsletter of the TRR 181. Our project is now two months “old” and we are looking forward to the next four years working together with all of you.

Positions are getting filled and hopefully we will be fully employed by the beginning of next year. However, there are already some new colleagues who present themselves and their work in this newsletter. ☺

What else can you find in here?
You'll find information on the internal web area, how to apply for publication or guest funding or how to get reimbursed for your travel costs.

We explain how you should acknowledge the TRR 181 in your publication and what we plan to do for outreach.

Content

What can be found in the future?
This newsletter will contain recent publications and important dates or information for our project.

Additionally, each edition will include texts by project members presenting their work to keep you updated on the progress.

We like to thank everyone who already contributed to this newsletter and hope you enjoy reading it!

Web page up and running

I am sure every one of you already visited our web page. If not, now is your chance. ☺

We implemented a news tool on the main page, where we add exciting information of work done in the TRR 181. If you have something you think is worthy to present to the whole world, get in touch with me and I will add it to our webpage, e.g. new publications, invited talks or received prizes.

Additionally, you can find an event tool that will show you interesting happenings for our community. If you plan a workshop or find a conference that is valuable for everyone: Let me know!

What else is new on the web?
You now find an internal area only for TRR 181 members. There, you have access to all kind of information on the administrative processes of the project and (soon) templates for presentations or poster as well as the official logo.

Login information is as following:

Username: TRREnergy
Password: temp4TRR!

These pages are only for TRR 181 members. Therefore, please don´t give away the login information.

Publications and acknowledgements

Publications are the main indicator for the success of a project. Hence, we need to keep track of all the publications that are created in the TRR 181 and present them on our website. Please send **all publications as a pdf to me**. I will create a publication list on the web page and archive the pdfs for future usage.

Can I get funding for my publication?
Yes, there are funds for the support of publications. Each sub project has 2000 € for publications per year (half in 2016 and 2020). TRR 181 project participants need to write a short proposal to apply for publication funding, including the relation to the TRR 181 project, the manuscript of the paper and an estimate of the costs. Please make sure to contact your supervisor before asking for funding.

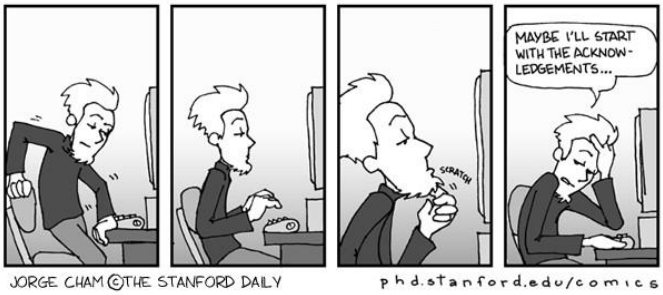
Important: Only papers that acknowledge the TRR 181 can be supported.

Have you already published and acknowledged the TRR 181? Let me know!

How do I acknowledge the TRR 181 in my publication?

It is actually quite easy and maybe, as the comic suggests, you should always start with the acknowledgements. ☺
Please follow this form for all TRR 181 publications:
"This paper is a contribution to the project XX (title of project) of the Collaborative Research Centre TRR 181 "Energy Transfer in Atmosphere and Ocean" funded by the German Research Foundation."

Important: If the TRR 181 is not acknowledged in your publication, we cannot use it for the second proposal regarding the continuation of the project.



The ultimate guide to travel reimbursement (in the TRR)

Travelling is very important for scientists. Going to an international conference or visiting partners at other TRR locations can contribute to your work or broaden the horizon. Each TRR 181 sub project has 2.500 € for covering travel costs per year (half in 2016 and 2020).

TRR 181 scientists have to apply for a business trip at their institutions (Universität Hamburg, Jacobs University etc.). **Important:** You have to mention the funding by the TRR 181 through the Universität Hamburg in your form, so that your administration knows how to proceed. Please make sure to contact your supervisor before taking a business trip.

Long trips or trips with large costs have to be announced beforehand to me. Smaller trips between the TRR 181 locations can be done without an announcement.

Now an example:

1. TRR PhD John Smith likes to go to the AGU conference in San Francisco. John contacts his supervisor. The supervisor agrees.

2. John writes an email to Meike Ruhnau about his planned trip with an estimate of the costs. Ms. Ruhnau checks the finances.

3. After the approval of Ms. Ruhnau, John can fill in the “Dienstreiseantrag” at his institution.

4. After his trip John files a travel expense report at his institution and gets reimbursed.

Be our guest!

Inviting international renowned guests is as equally important for science as trips to conferences or partner institutions. The TRR 181 does provide funding each year, if you like to invite a colleague.

If you plan to invite a guest, you have to write a short proposal that needs to be sent to me. This has to include a description on how the guest visit will benefit the project as well as the intended time frame and costs of the stay. Your proposal is assessed by the speaker and the project coordinator.

The TRR 181 provides funding for travel and hotel costs.

Responsibilities during the stay
We want to benefit as much as possible from our guests, so a few responsibilities have to be kept in mind.

1. The guest has to give a talk in our TRR 181 seminar series. Please contact me for a list of possible dates.

2. You and your guest need to provide a short summary of the visit, if your guest stays longer than 1 or 2 days.

Balancing family and cutting-edge research

The TRR 181 helps you to combine cutting-edge research and family life. Measures addressing the compatibility work and family have to encompass both, childcare as well as taking care of dependant relatives.

Student assistant hours for scientists with family commitments (child- and eldercare)
To support their scientific work, academics with family commitments will be given student assistant hours for up to three months. The aim is to give the applicant more flexibility for research despite family commitments. The TRR Vorstand will assess the applications.

Applications
All academics of the TRR 181 who have family commitments are eligible to apply. Applications should be submitted to me by **September 19, 2016** and should include the following documents:

- Letter of application, information about your requirements and the type of help needed.

- For childcare: Number and age of children, details of childcare, details of legal custody and/or joint households.

- For care of relatives: Details of the care situation and/or the joint household.

More information on family support can be found on the internal web page.

Cloudy applications

We are still receiving applications although not as many as before. The applications on the OwnCloud are updated regularly. To give you a better overview we sorted the older applications into a special folder in each area.

Since we also need to send out rejections, we would like you to have a look at the old applications again. Maybe there was someone you are interested in? If so, please let me know.

Important: We will start sending out rejections in about two weeks to all applicants in the "Old" folders.

Upcoming events

September 20-21, 2016: Mini-Course pdepath-auto-days

At University of Bremen. Please register free of charge by email to Ebba Feldmann <ebba@math.uni-bremen.de>.

September 22, 2016: TRR 18 seminar series

At Jacobs University starting at 09:45 am. Presentations by **David Dritschel (University of St. Andrews)** and **Georg Gottwald (University of Sydney).** You can follow online over the **DFN network**. The link will be sent through the mailing list. A manual for the DFN network can be found on the internal web area.

October 19, 2016: Kick off meeting

In the Yu Garden Hamburg starting at 10:00 am. First member meeting of the project. Including presentations on preliminary work for the project and a reception in the evening. Furthermore, the members of the task groups will be elected.

December 12-16, 2016: AGU general assembly

In San Francisco, USA. Largest Earth and space science meeting in the world. Are you planning on attending the AGU? Please get in touch!

TRR 181 Winter school

Most of the staff will have started their work at the beginning of next year. But how do you know, who is working where and what they do?

For this purpose we are organizing a winter school for all PhDs and Postdocs in the project. The winter school will be held from **February 6-10, 2017** at the Alfred-Wegener-Institute in List, Sylt.

We will spend five days getting to know each other and learning about the other disciplines in the project. Everyone is staying at the AWI guest house "Möbius" in List.

The winter school is mandatory for all PhDs and Postdocs in the project. Please contact me if you cannot attend for some reason.

Reaching out to the public

With great power comes great responsibility. This is not only true in movies but also in science.

The awarding of funding means that science receives tax money. Hence, all tax payers have the right to know, what their money is used for. This is the reason why outreach programs of large projects are also scaled equally big.

The TRR 181 outreach is done by me in cooperation with the outreach departments of the different institutions. However, I am dependent on the help of you to present the project with all its glory to the public.

Exclusive sneak peak

Short “Legefilm Technik” **movies** on processes investigated in the project. Have a look at the Youtube channel of Explainity GmbH. They are doing our movies as well!

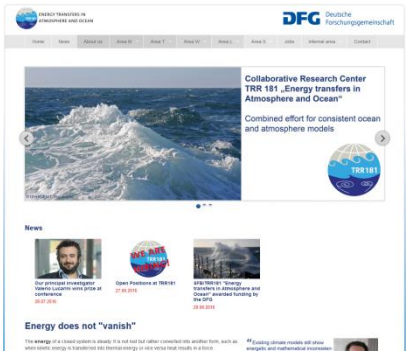
Having a movie idea already? Get in touch with me!

Info charts for an online exhibition also on the processes. We can kill two birds with one stone: if you have an idea for a movie, we may be able to use it for these charts as well. They are created by a graphic designer and will help the public to understand what we are working on.

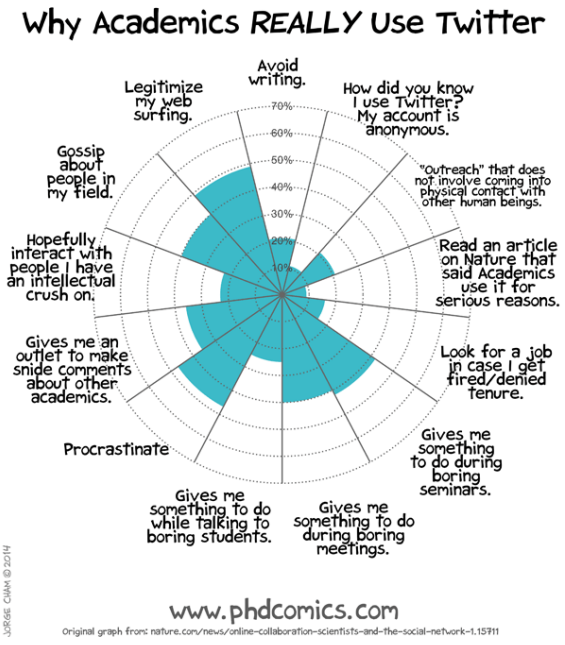
Movies from **TRR 181 expeditions** shot during cruises or experiments.

What else do we do?

- Having an up to date **website** with news, events and current scientific results.



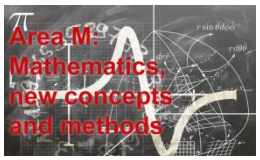
- Using social media channels like **Twitter and Youtube** to distribute our results. We just got online on Twitter this week! Have a look at our tweets so far **@TRREnergy**. Please get in touch if you are on Twitter (for any of the given reasons below)! ☺



- Participate at **open university days/nights** and **conferences**

Reports from the scientific front

Each newsletter will contain short reports from the projects scientists on their work and the progress they made. So everyone can keep up on the new findings in the project. Enjoy!



Lyapunov vectors and the geophysical flow

By Florian Noethen

Since August 2016 I am a Ph.D. student at Universität Hamburg. Specifically, I am a member of the research group differential equations and dynamical systems at the department of mathematics. Under supervision of Professor Reiner Lauterbach, Professor Ingenuin Gasser and Professor Valerio Lucarini, together with Dr. Sebastian Schubert, I work on the subproject ***M1: Instabilities across scales and statistical mechanics of multi-scale GFD systems.***

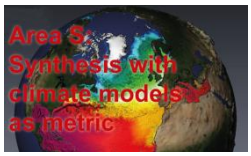
In particular, my forthcoming research is based on the numerics of covariant Lyapunov vectors. These vectors identify directions of asymptotic growth rates to small linear perturbations of orbits in a dynamical system. The theory of covariant Lyapunov vectors provides an extension to the stability analysis of equilibria and to Floquet theory. Hence, they can be used to investigate the stability of more complex objects in, for example, geophysical flows.

"We hope to better understand the effects of melting of glaciers related to global warming on the Gulf Stream within the scope of a small model."

Furthermore, I am to investigate the dynamics of a low-dimensional model of the Gulf Stream in the context of bifurcation analysis. With the use of local and global properties such as temperature, specific weight and ocean salinity, we hope to better understand the effects of melting of glaciers related to global warming on the Gulf Stream within the scope of a small model.

Before the project, I studied mathematics at Universität Hamburg and wrote my master's thesis on the dynamics of coupled cell systems this year.

I am happy for the opportunity to gain new experience through this project and to contribute to this research.



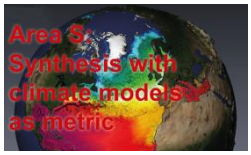
Working with IDEMIX

By Hannah Kleppin

I'm Hannah Kleppin, I recently finished my PhD at the University of Copenhagen under the supervision of Markus Jochum. Until the end of this year I work in the TRR 181 in subproject *S2: "Improved parameterizations and numerics in climate models"*, together with Johann Jungclaus and Carsten Eden. The main goal of subproject S – Synthesis with climate models as metric – is to test parameterizations that are developed in the other subprojects. I will work on implementing IDEMIX –

"We will develop a library that simulates the vertical part of IDEMIX independently from the calling GCM (in this case ICON or FESOM)."

a closure for internal gravity wave mixing in the ocean - into ICON (MPI) and FESOM (AWI). We will develop a library that simulates the vertical part of IDEMIX independently from the calling GCM (in this case ICON or FESOM). In the long run other vertical mixing parameterizations will be implemented in this library, so that the effects of the different parameterizations on e.g. biases in the different GCMs can be readily tested and compared.



Implementing new parameterizations and algorithms

By Patrick Scholz

I'm Patrick Scholz, Post Doc at Alfred Wegener Institute and working together with Sergey Danilov at Research area *S2: "Improved parameterizations and numerics in climate models"*. Aim of this project part is to implement new parameterizations and algorithms to improve the energetic consistency in the ocean component of climate models. In particular I will work with the new Finite Volume Sea Ice Ocean Model (FESOM2.0) and start there to implement a new vertical coordinate frame (Arbitrary Lagrangian Eulerian, ALE), based on vertical mesh motion, that has the potential to reduce unwanted spurious mixing effects in the ocean. ALE also allows to combine different versions of vertical coordinates in a single ocean setup, which will also help to broaden the functionality of the model. Further, we will implement new parameterizations of overflows, improved numerical transport algorithms and an energetically consistent parameterization of vertical mixing.

"ALE has the potential to reduce unwanted spurious mixing effects in the ocean."

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Something funny for the end …