

Deliverable 7.3: DESTRESS Newsletter 2 published

WP7: Dissemination, communication and outreach

Lead Beneficiary	
Type	<input checked="" type="checkbox"/> R - report, document etc. <input type="checkbox"/> OTHER - software, technical diagram etc. <input type="checkbox"/> DEM - demonstrator, pilot etc. <input type="checkbox"/> E - ethics <input type="checkbox"/> DEC - website, patent filing etc.
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Contributors	<input checked="" type="checkbox"/> 1-GFZ <input checked="" type="checkbox"/> 5-GES <input checked="" type="checkbox"/> 9-GTL <input checked="" type="checkbox"/> 13-SNU <input checked="" type="checkbox"/> 2-ENB <input checked="" type="checkbox"/> 6-TNO <input checked="" type="checkbox"/> 10-UoS <input checked="" type="checkbox"/> 14-KIC <input checked="" type="checkbox"/> 3-ESG <input checked="" type="checkbox"/> 7-ETH <input checked="" type="checkbox"/> 11-TUD <input checked="" type="checkbox"/> 15-ECW <input checked="" type="checkbox"/> 4-UoG <input checked="" type="checkbox"/> 8-GTN <input checked="" type="checkbox"/> 12-NEX <input checked="" type="checkbox"/> 16-WES
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Introduction

DESTRESS mails alternating approximately four times a year an internal and an external newsletter via the email marketing service MailChimp to its members, respectively to an interested public. Available feedbacks and experiences proof the effectiveness and relevance of this communications means and will therefore be continued. The next series were published successfully as you see below and received a very good reception and new subscribers.

Coverage / Reach of mailing list

The email marketing service MailChimp allows tracking the mailing lists changes. As the following table shows, both newsletters gain continuously subscribers.

	Internal Newsletter	External Newsletter
No. of subscribers Oct 2016	91	115
No. of subscribers Dec 2016	100	130
No. of subscribers March 2017	118	176
No. of subscribers Oct 2017	133	205
No. of subscribers Feb 2018	133	210

Appendix: published newsletters between March 2017 and February 2018

	Internal Newsletter	External Newsletter
Newsletter #3	<i>January 2017 (see Deliverable 7.2)</i>	March 2017
Special Edition Klaipeda II	18 March 2017	-
Newsletter #4	2 May 2017	25 October 2017
Newsletter #5	21 August 2017	-
Special Edition: Reporting	31 August 2017	-
Newsletter #6	19 December 2017	-
External Special Edition I	-	19 January 2018
Special Edition Glasgow	2 February 2018	13 February 2018

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2nd General Assembly 2017 in Klaipeda

Two weeks to go! In this second Special Edition Newsletter we give you some more details for a smooth orientation on-site. Please read it carefully as this newsletter will be the only information channel for the meeting.

We are looking forward to meeting you soon!



Programme

Updated Agenda and Venues

Monday, 3rd April

Aula Magna, Small Hall, 1st floor

08.45-09.00 Welcome and introduction to the meeting aims

09.00-10.00 Project management issues

10.00-11.00 Status quo of the sites

11.15-18.30 Progress and status quo of WP2-WP6

Hotel Amberton, Restaurant Viva la Vita

19.00-22.00 Opening dinner

Tuesday, 4th April

Aula Magna, Big Amphitheatre, Hall, 2nd floor

09.00-09.45 Progress and status quo of WP7

09.45-11.00 Workshop on communicating DESTRESS

11.00-12.00 Executive Board Meeting (members only)

13.00-14.00 Advisory Board/Executive Board Meeting (members only)

14.00-15.00 General Assembly

15.15-19.00 Klaipeda Site Access Programme / Joint Project Workshop of DESTRESS and SURE

Wednesday, 5th April

Pick-up and drop-off see below

09.00-10.30 First DESTRESS site tour (WP3, WP4, WP7)

10.30-12.00 Second DESTRESS site tour (WP5)

12.30-14.00 Third DESTRESS site tour (WP2, WP6)

parallel:

Old Architecture Building

08.30-10.30 Technical meeting for WP6, *Auditorium 212*

08.30-10.30 Technical meeting for WP2, *Auditorium 216*

10.30-12.30 Workshop on economics within DESTRESS, *Auditorium 216*

10.30-12.30 and 14.30-18.30 Technical meeting for WP4, *Auditorium 212*

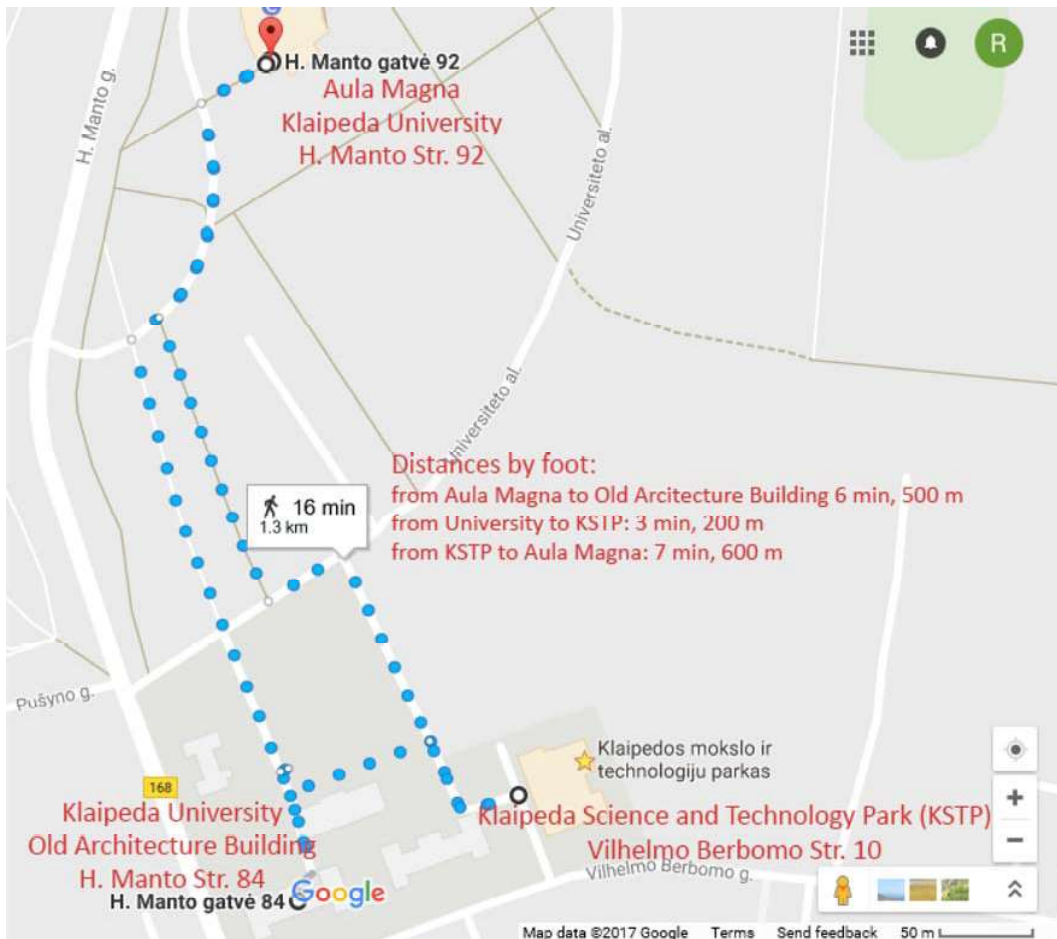
14.30-18.30 Technical meeting for WP5, *Auditorium 216*

Thursday, 6th April

Old Architecture Building

09.00-14.00 Technical meeting for WP5, *Auditorium 117*

For details see the [programme](#).



Presentations

Presentation templates for the status quo of work package, task and site are saved on [EMDESK](#) (Document Manager > 4 Meetings > General Assembly > Presentations).



Travelling and Lodging

Please note that the booking of flights and hotel rooms lies in your own responsibility and, if not already done, should be taken care of as soon as possible! We received notice that not everyone booked a room yet. Below you'll find again the information for the hotel.

Hotel

We received a special group offer for 50€/night for a single room with breakfast at the

Amberton Hotel
Naujojo Sodo 1
92118 Klaipėda
Tel. +370 46 404 372

The hotel is located in the city center near the old town. The university can be reached by car or bus within 6 minutes or a walk of about 25 to 30 minutes.

Late check-in is possible.

To book a room with a special rate, please use this link for booking (Promo code "@GEOTERMA").

How to get from the airport Palanga to the hotel

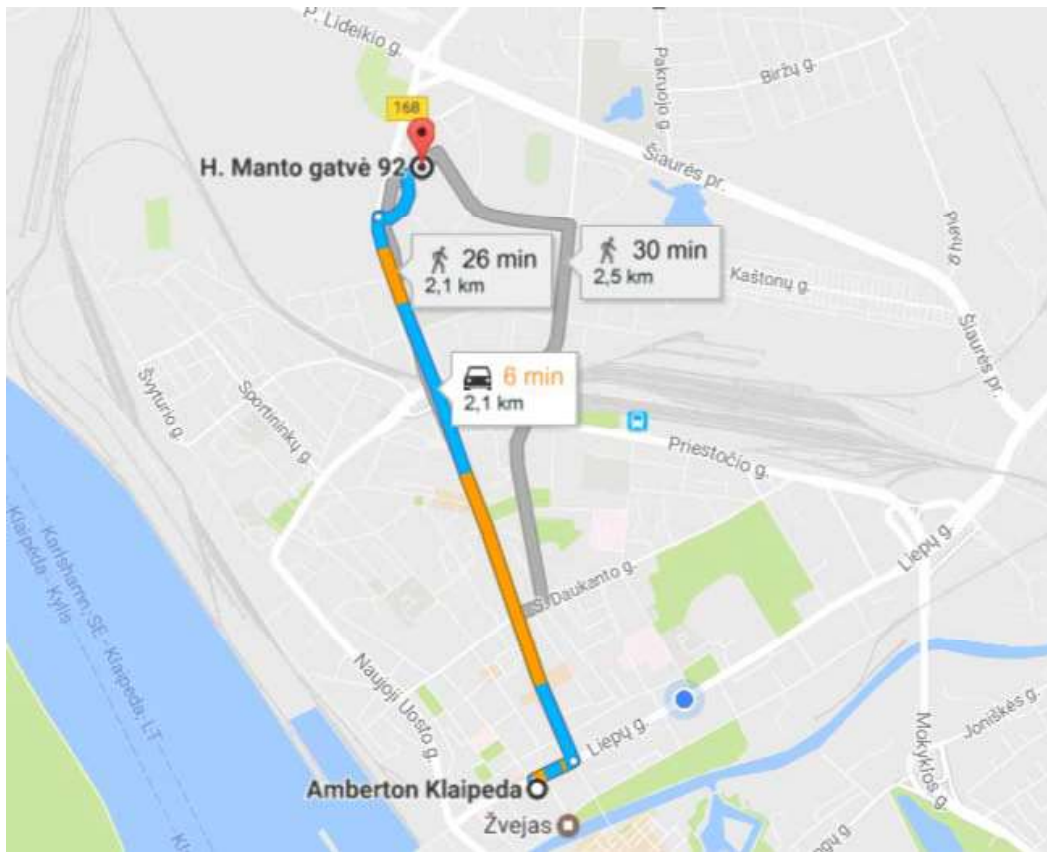
As there are not many flights a day, we assume that you will meet other participants to share a taxi, which costs about 40 Euros. Taxis are usually on the spot. You can also use the app eTAKSI or book a airport pick up when you book your hotel room (30 Euros).

How to get from the hotel to the venue

The meetings on Monday and Tuesday will take place in the Aula Magna at the University. On Wednesday we will be in the Old Architecture Building. Please check the map below.

You can reach the Aula Magna from the hotel by foot (25 minutes' walk), bus or taxi. The bus station close to the hotel is called "Atgimimo st". A one way ticket costs 0,80 €. Details about the bus trip from the hotel to the university are available here.

The closest bus station to the Aula Magna is "Universiteto st."



Site Visit

There will be a pick-up and drop-off service for the site visits. Please check the [participant list](#) to find out which tour you have been assigned to. Due to limited space at the venue, the tours are limited to 15 people. Unfortunately, we could not satisfy all preferences and changes are not possible. The first group will be picked up at 09:00 a.m. from the hotel and dropped off afterwards at the university. The next tours scheduled for 10:30 a.m. and 12:30 a.m. will start and end at the university.

Restaurants and Sightseeing

Lunch and coffee breaks are provided from Monday to Wednesday at the university (check the [agenda](#) for details). On Monday night we are looking forward to dining together at the [Viva la Vita restaurant](#) in the Amberton Hotel for the opening dinner. As for the other nights you are free to explore the (old) city center of Klaipeda. Here are some recommendations:

1. [Stora Antis](#), Tiltu str. 6
2. [Momo Grill](#), Liepu g. 20
3. [Friedrich Passage](#), Tiltu G. 26 A
4. [Meridianas](#), Kurpiu g.
5. [Skandalas](#), I. Kanto g. 44

If you have some spare time for sightseeing, our locals propose to see:

1. [Klaipeda Old City](#): a picturesque and romantic setting with interesting history and unique architecture - full of cosy restaurants and cafes along the narrow, lovely streets.
2. [The History Museum of Lithuania Minor](#): Get an overview of Lithuania's eventful history - starting with the prehistory, learning about the conquest of the German order and finishing with an insight in the traditional culture.
3. **Sculptures**: Look out for all the small and big sculptures, that are scattered all over the town! For example the [Magical Mouse](#), the [Mermaid](#) or the [Basket with Coins](#)!
4. [Curonian Spit / Kursiu Nerija National Park](#): The Curonian Spit is part of UNESCO heritage, and offers amazing and breathtaking views: dunes, forest and the village of Nida. A perfect place to switch off, enjoy the nature, escape the meetings or reflect on them.
5. [Meridianas](#): This pearl is a symbol of the city of Klaipeda. A restaurant inside the sailing ship: nice experience and great food!





DESTRESS is a Horizon 2020 supported programme aiming to demonstrate methods of EGS (enhanced geothermal systems) and thereby expanding knowledge and providing solutions for a more economical, sustainable and environmentally responsible exploitation of underground heat.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 691728



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Back with Enthusiasm!

Travelling to Klaipeda was quite a challenge for many participants of the Second General Assembly. But it was definitely worth the effort! Productive sessions and face-to-face encounters on the "working side" as well as good food and even sunshine on the "leisure side" made the days fly by fast. We hope that you all returned from Lithuania with renewed enthusiasm and hopefully had some free (Easter) Days to recharge your batteries.

In this newsletter we are looking back on the General Assembly with a report on the outcomes of the communication workshop. Furthermore, ÉSG reports on an interesting encounter with their Swiss neighbors. At the same time, we are sad to say goodbye to two important and very engaged people leaving DESTRESS and happy to welcome two successors. And - as always in our internal newsletters - we received intriguing answers to 4 questions and are welcoming "New Faces".

Organizational Matters

Important: Mandatory Sign up for Good Practice Reports

As presented at the GA in Klaipeda, the WP7-team developed a concept for task 7.5 "Report Series on Good Practices". To proceed, we compiled a document with all relevant information (objectives, target audience, structure and content etc.).

Each institution has to sign up for at least one topic and is asked to review one or more contributions from others. We are now calling for **your binding commitment** as each organisation has a budget allocated to WP7. When signing up for the leadership of a task, you are responsible for the content, but of course should rely on the expertise of your team or other DESTRESS members! Please fill in the topics, responsibilities and assign for the review process by **10th May** in this google doc:

[Report Series on Good Practices](#)

If there are any questions, please don't hesitate to contact [Michèle](#)!

Personnel Changes within DESTRESS

Unfortunately, Professor Paul Younger will take an early retirement due to his illness. We wish him all the best and are very thankful for his initiative and engagement, which laid the foundation for DESTRESS in many ways!

In the light of this situation, it was necessary to rearrange the leadership and management of DESTRESS at the University of Glasgow. Dr. Neil Burnside, a key researcher in Paul's team, was recently appointed to a prestigious Lord Kelvin Adam Smith Fellowship (a research focused academic staff post) by the University of Glasgow. Neil, as an experienced researcher in the area of geothermics, will now substantially take over the leadership of Paul's research team as Principal Investigator at Glasgow. He will also join the Executive Board of DESTRESS and lead Glasgow's overall contribution. Welcome on board, Neil!

At TNO, unfortunately, Hans Velkamp has resigned from his role as leader for WP6 for personal reasons. We thank him for his involvement in DESTRESS and wish him all the best for his personal and professional future! From now on, Brecht Wassing will fill in this position and take over the coordinating, monitoring and scientific responsibility for activities in WP6.



Neil Burnside and Brecht Wassing

And last but not least, the lead of task 4.2 will be taken over from Axel Sandén.

As there were many personnel changes within DESTRESS, we updated the list with all persons involved in individual work packages and tasks, go [here](#) or on [EMDESK](#) to see the latest update (Documents Manager > Work Packages > WP1 Project Management). Please consider the mailing lists while contacting people from certain tasks to avoid excluding any contributors!

Save the Date! Joint Horizon 2020 event of DEEPEGS & DESTRESS

Our 3rd Site Access Programme will take place together with DEEPEGS between 11-14 October 2017 within EGW 2017:

- Field trip to Soultz and Rittershoffen sites and presentations on 11 October
- Geothermal Workshop Karlsruhe "Characterization of Deep Geothermal Systems" (EGW 2017), KIT Karlsruhe, on 12-13 October
- 1/2 day of geothermal site visit (optional), on 14 October

A detailed programme and the application requirements will be published in spring 2017 on our [website](#).

Insights



Progress Reports at the 2nd General Assembly

The first day of the General Assembly was dedicated to the progress and status quo of all work packages. The aim was to identify and address challenging issues and risks as well as to prepare for the official reporting to the European Commission due in September 2017. Furthermore, the cross-cutting exchange between the themes was important. The second day started with the report of WP7 dealing with communication and dissemination of DESTRESS and was followed by an interactive workshop on communication. Afterwards, the members of the Executive Board came together and discussed crucial issues such as publication of deliverables, amendment to the grant agreement or stimulation treatment in Klaipeda. They also prepared for the following open discussion and voting at the General Assembly. Afterwards, the 2nd Site Access Programme started with a joint project workshop on the demonstration site in Klaipeda together with the SURE-project. This was completed with the possibility to visit the site on the next morning. Besides, some work packages took the opportunity to get together in smaller groups and to deepen the discussions on specific topics.

Meeting Minutes:

[Executive Board and General Assembly](#)
[Project Meeting and 2nd General Assembly](#)

For all minutes and presentations go to [EMDESK](#): Documents/4 Meetings/201704 General Assembly.

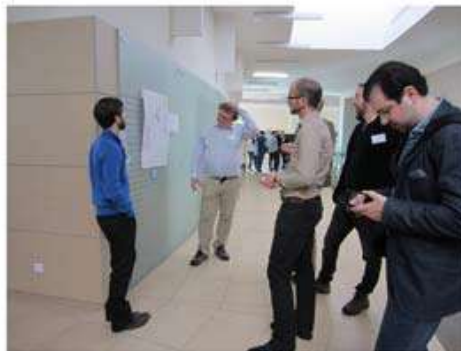


A big thank you to the hosting partner GEOTERMA and the project management team for the smooth running of the event! And of course thank you to all participants for their contributions and engagement!



Results of the Communication Workshop in Klaipeda

First of all: Thank you very much for your active involvement and very helpful feedback! It was great to see you discussing in front of the posters and we hope that there was some fun about it as well :).



As promised, we would like to highlight a few outcomes:

1) Your ideas - that we will try to fulfill!

- "Visualisation" is a key term in your feedback: infographics, cartoons, illustrations, movies etc. - all this would be much appreciated by the DESTRESS members. Already in the planning phase are ideas to illustrate the upcoming section on "Good Practices". We hope to hit a nerve with this undertaking. Unfortunately, we do not have the resources to realize videos or to produce materials for a bigger campaign. In case, you have

such materials at hand, we are happy to share them!

- A bigger engagement in "public relations" is mentioned more than once. There are two challenges related to a comprehensive media communication strategy for DESTRESS: 1. We are an international project. We speak different languages, have a diverse media environment and country-specific needs towards communication about geothermal energy. Finding common topics and a presentation style addressing different national interests is almost impossible. 2. Most of the involved industry partners have their own communication / media department and are bound to their communication strategy. Nevertheless, we are constantly thinking about how to make DESTRESS more visible and well known. One step in this direction is our active contribution for a press release with other geothermal projects funded by the European Commission.
- An "Information platform" or a FAQ-section is prominent on your wish list. And yes: we are working on it!

2) Your offers - that we would love to accept!

Thanks for your proposals on your offers which can be divided in:

- Events and activities, e.g. participation at conferences
- Publications, e.g. papers and scientific journal articles
- Material, e.g. videos, photos
- Information, e.g. data, tests, updates

As most proposals are written down without an affiliation - please contact us with your ideas!

3) Your feedback - that was more than helpful!

What you liked the most

1. the DESTRESS website
2. the internal newsletter
3. the power point presentation

You never heard of

1. the postcard
2. the brochure
3. the poster

Please have a look on our website (stay informed > information materials) and check out all materials. We are happy to provide you with our printed products for conferences, workshops etc. Just drop a line 2 to 3 weeks ahead and we will send the materials to you.

Read here the wole Evaluation of Communication Workshop



Site Visit in Alsatian Geothermal plants for Citizens of the Canton Jura

On March 11th, a visit of the geothermal power plants of Soultz-sous-Forêts and Rittershoffen was organised by Geo-Energie Suisse SA (GES) and Électricité de Strasbourg Géothermie (ÉSG) for citizens of the Canton Jura, Switzerland, where GES is planning its Haute-Sorne project. About 40 people, members of the parliament, neighbours of the future project, interested citizens and scientists (ETHZ) have been welcomed by the mayor of Rittershoffen and guided through the plants by the team of ÉSG. The visits offered them an opportunity to discover this promising technology that may soon deliver renewable energy in their home region as well.

ÉSG



4 Answers from...



Rob Westaway, University of Glasgow

ONE sentence to describe your role/function in DESTRESS:

My main role in DESTRESS is currently as leader of Work Package 4; I am also involved in other activities, including leading the University of Glasgow's inputs to task 3.3 on risk governance and task 6.1 on predicting the performance of acid stimulation.

TWO linking points between DESTRESS and your current duties:

My current duties include supervising a PhD student, Sean Watson, who is assessing the feasibility of future geothermal projects in the Glasgow region of Scotland. Second, I have recently developed and published a conceptual model for the Preese Hall project in 2011 in NW England, which might help with the development of conceptual models for DESTRESS project sites.

THREE aspects of DESTRESS you are interested most in:

First, I am particularly interested in the Klaipeda project as it exploits a geothermal reservoir in Devonian sandstone, a rock type that might serve as a geothermal reservoir for future projects in a number of British cities, including Glasgow. Second, I am most interested in the results Sean will obtain from his work comparing the properties of these rocks in Scotland and Lithuania. Third, I am interested in the outcome of the investigations that are taking place for task 3.3 in relation to public acceptability of the nuisance arising from hydraulic fracturing and the associated induced seismicity.

The concept of EGS is focused on improving the extraction of hot fluids from and injection of cold fluids into a reservoir. What do you like best hot and cold?

Hot: Thai food; my favourite Thai restaurant is in the centre of the historic city of Durham in northeast England, overlooking its thousand-year-old cathedral.

Cold: Beer, naturally! I have worked extensively in the past in Syria, with long dusty days in the field followed by refreshing evenings debating the relative merits of Barada, the principal beer brewed in Damascus, and Al-Chark, its competitor from Aleppo - of course, sampling both as much as possible to ensure one's opinions are correct. Sadly, the people of Syria nowadays have to face more serious issues than choices of beer; it is hoped that they can achieve peace and good government in the future.

Behind the Scenes

New Faces

A warm welcome to the newest DESTRESS project members:

Christian Bos, TNO

Christian has a background in reservoir engineering, production forecast uncertainty quantification and investment decision analysis. His main interest lies in integrating technical and business aspects in decision support tools. His contribution to the DESTRESS project consists of developing practical methodologies, workflows and tools for WP2 (business modelling), WP3 (risk assessment and management), and WP6 (workflows and analytical tools to assess and reduce the uncertainty in energy production forecasts).

Jamie Farquharson, University of Strabsourg

Jamie is a post-doc at the Université de Strabsourg and tasked with performing sample characterization and reactive flow-through experiments of granite at the laboratory-scale. The aim is to investigate the potential strength and permeability evolution of the granite reservoir at Soultz during chemical stimulation (WP 4.3).

Yeny Serrano, University of Strabsourg

As a mass media analyst, Yeny analyses how media (news television programmes, national and local newspapers, citizens' blogs, etc.) depict geothermal energy in France, especially in Alsace (WP 3.3). Does the media influence citizens' perception and understanding of geothermal energy and of the projects being conducted in Alsace? If so, how?



Goodbye!

From this month on, Isabel is on maternity leave, getting ready to welcome her baby! As announced at the General Assembly, Isabel is up to new challenges afterwards and won't be part of the project anymore. We would like to thank her for her enthusiasm and commitment in communicating DESTRESS and wish her all the best for the future! Please refer from now on directly to Michèle for communicational matters.

Services

Education

Gestion de projets en géothermie.
Diplôme porté par l'université de Strasbourg, dans le cadre d'un partenariat entre l'engées, es Géothermie et L'EOST.
Prochaine rentrée: 2.5.2017

Conferences

3.5.2017 in Hannover, Germany
Norddeutsche Geothermietagung

18.-19.5.2017 in Fira/Santorini, Greece
1 st EFG EuroWorkshop: Geothermal - the Energy of the Future

23.-24.5.2017 in Izmir, Turkey
IGC Turkiye 2017



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Icy, spicy and soft: welcome to Pohang!

Do you know the culinary speciality from Pohang? It is a soup which is so spicy that you must neutralize it with crushed ice. This dish is highly recommended by our Korean partner Ki-Bok Min combining hot and cold, like the first successful soft stimulation in Pohang from last week. Congratulations!

And there are more good news: in the Netherlands, our Dutch partners from Trias Westland are moving forward with their project in such a pace that we can hope to spot big steam-clouds above the Westland area at Christmas!

Learn more about this and other burning DESTRESS news in the newsletter.

Enjoy reading!

Important information

First periodical reporting in September 2017

We are facing our first periodical reporting for the European Commission. We will send you an email with all important information concerning the procedure at the end of this week!

Remember, that there are new deadlines: the deadline for contributions to the technical part is **14 September**, and the deadline for completing financial statements is **21 September**.

Organizational Matters

Soon welcoming a new partner: KIGAM

The Korea Institute of Geoscience and Mineral Resources (KIGAM) expressed its interest in joining DESTRESS and contributing to the seismic monitoring during stimulation treatments in Pohang. Even though, KIGAM is warmly welcome, their accession is only possible within an amendment, which can be done after submitting the periodical report. Therefore, we expect to welcome KIGAM on board from October 2017 on.

KIGAM will mainly be involved in work packages 5, 6 and 7. In WP 5 they contribute to task 4, supporting ETH in designing a site-specific monitoring system for Pohang, installing it and taking responsibility for maintenance and operation of the data center. This involves permanent monitoring of the micro-seismicity at the site, and the processing and interpretation of the data together with DESTRESS partners. In WP 6 they are engaged in task 4, monitoring the environmental performance for validation and control, with focus on the relevant parameters (e.g., noise, ground deformation, ground shaking, radiation, ground water contamination). These is a key requirement for obtaining a license to operate, a insurance coverage, and for gaining public acceptance. In WP 7 they support all dissemination and communication activities of DESTRESS.

What to keep in mind when publishing DESTRESS results

According to the consortium agreement, the partners are obliged to inform the consortium 30 days before a publication and 14 days before a poster or project presentation. We will remain more flexible since the projects are often funded by several sources and DESTRESS is just one part of the publications or conference contribution. However, the consortium shall be informed about any publication accurately timed beforehand to be updated on implemented dissemination and communication activities. In this case, an email addressed to the general assembly (destress_generalassembly@list.emdesk.eu) will be enough.

Furthermore, save all publications on EMDESK: Documents Manager>Publications including information about them added to the publication list in the reporting section: <https://emdesk.eu/cms/?p=350&>.

Please keep in mind to publish your work results OpenSource. For details read the letters from the EC [here](#) and [here](#), and our [guidelines](#).

Important! In case of including sensitive or confidential data in the publication or presentation, the consortium must agree before this happens.

When presenting or publishing DESTRESS results, we have to acknowledge DESTRESS as a H2020 funded project by adding: "This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No.691728" and by including the disclaimer: "The content of this publication/presentation does not reflect the official opinion of the European Union and its Innovation and Networks Executive Agency (INEA).

Good practice report series on track

The DESTRESS good practice series is established: Linking DESTRESS research results to investment decision-analysis is the topic of the first report, which was written by Christian Bos from TNO. Further contributions are already in the pipeline.

For quality reasons, every reports needs to be internally reviewed by a DESTRESS member not working in your team before the report is published online. We still need persons who will review other's work. General guidelines, topics and assignments are accessible in [this Google sheet](#).

[Click here to read the first good practice report online.](#)

Insights

Trias Westland picks up speed



Both conductors in Westland have been drilled and the drill-site and test-basins are being built as you read this newsletter.

Trias Westland (WES) is adding the finishing touches on the drilling-and-testing

programme. The testing with 140°C degrees warm water is an interesting challenge as Dutch geothermal service providers are not used to water temperatures above 100°C. Luckily, WES received advice from DESTRESS partners in France, who already tested high-temperature wells. Thank you!

And there is even more positive news: thanks to DESTRESS, WES has managed to get a budget to log the reservoir and pull a barrel of cores. The obtained data will help to make well-founded decisions concerning stimulation, and the data will also flow in the structural model which two Bsc. students from the TU Delft implemented.

Successful stimulation treatment in Pohang

The first DESTRESS hydraulic soft stimulation treatment in Pohang (South Korea) took place from 07.08.2017 to 16.08.2017 in well PX-1. The goals of the treatment were to limit the induced seismicity to magnitudes below 2, to map the reservoir using the induced seismic events, to increase the hydraulic performance, and to test different injection schemes.

The demonstration experiment was a joint effort of WP5 experts from GFZ, GES, KICT, KIGAM, NexGEO, SNU, TNO, and UoG. During the ten days of field work about 1700 m³ of water was injected cyclically with maximum flow rates of 10 l/s and maximum wellhead pressures below 23 MPa. The KIGAM surface network, a downhole sensor from ETHZ, and a GFZ geophone chain monitored the seismicity. The GFZ geophone chain was installed prior to the treatment in the neighboring well PX-2 in 1350 to 1520 m depth and will be removed on 24 August.

The combination of the cyclic injection scheme with an advanced traffic light system, and knowledge from previous stimulations allowed to limit the seismicity to magnitudes below 2. GFZ seismologists will now jointly analyze the seismic data recorded during the soft stimulation treatment as well as during the previous treatments in order to refine the locations of the seismic events. These locations will serve as an approximation of the stimulated reservoir geometry. Also, the effect of the soft stimulation on the hydraulics is currently evaluated using conventional and advanced methods including harmonic pulse testing analysis.

These results and the subsequent reservoir simulations will soon allow to give recommendations for future development options at the EGS site in Pohang. Overall this soft stimulation treatment can be considered as a great success!



Installation of the geophone chain into the well PX-2 (view from the rig floor).



Testing of the geophone chain at the surface.



Installation of the geophone chain (view from the well head).

Delays in implementation of stimulation treatment in Klaipeda

Since we currently can't stimulate the well in Klaipeda, the planned treatment must be postponed. We keep you updated!

4 Answers from...



Ki-Bok Min

ONE sentence to describe your role/function in DESTRESS:

I am a designated broker working between EU and Korea for effective intercontinental collaboration.

TWO linking points between DESTRESS and your current duties:

1) My students who are dedicated and enjoying working on real EGS issues, and 2) Pohang EGS site that provides unique data in crystalline rock formation.

THREE aspects of DESTRESS you are most interested in:

There are three REAL things that are the essence of DESTRESS: 1) REAL data we can obtain from demonstrations, 2) REAL people who have been leading the EGS research and industry for decades, and 3) REAL fun from meetings and travels with my students and colleagues.

The concept of EGS is focused on improving the extraction of hot fluids from injection of cold fluids into a reservoir. What do you like best hot and cold?

Actually, I like "cold hot raw fish soup" that is famous in Pohang. It is a mixture of raw fish slices and cold water or ice and red pepper paste, so it is both hot and cold.



Welcome to Pohang! Ki-Bok's favourite dish: Hot cold raw fish soup.

Behind the Scenes

New Faces

Susanna Galloni is our new project officer from the European Commission. She took over the management of DESTRESS from Adas Pangonis in August and will be present at the review meeting in Rotterdam.

Justine Mouchot is a geochemical engineer engaged within ESG. She is involved in task 4.3 and contributes to the studies about the soft stimulation planned to be undertaken at Soultz.

Stephanie Schnydrig took over the tasks in the DESTRESS communication of Isabel after she left because of maternity. Stephanie works together with Michèle at the SED in Zurich and is looking forward to hearing from you when you have burning DESTRESS news, interesting facts, or funny stories.



Joint press release: Bundling forces to boost geothermal energy

Clean, sustainable, and available almost everywhere: geothermal energy has a great potential to become an important part in the global energy supply. To bring forward geothermal technologies, the European Commission funds thirteen projects with the common goals to develop, improve and demonstrate new technologies in geothermal heat extraction.

In order to recap these projects, we published a joint press release. Therein, we point out a few facts about geothermal energy and describe in more detail the aim of each EC-funded project. Read the whole [joint press release online](#).

Services

DESTRESS Activities

11.10. & 14.10.2017
Rittershoffen/Soultz, France

3rd Access Programme: Joint Horizon
2020 Event of DESTRESS and
DEEPEGS [Flyer](#)

30.11.2017 Rotterdam,
Netherlands

First Review Meeting with the
European Commission

Conferences

12.-14.09.2017 in München,
Germany

[Geothermiekongress DGK 2017](#)

14.-15.09.2017 Birmensdorf,
Zürich

[SCCER-SoE Annual Conference 2017](#)

Hydropower and Geo-Energy in
Switzerland – Challenges and
Perspectives

03.-06.4.2018 Glasgow, Scotland

DESTRESS Midterm Conference.
Details will follow on our website.

04.-06.10.2017 Akureyri, Iceland

IMAGE - Novel Approaches for
Geothermal Exploration. Final
Confernece.

26.-27.10.2017 Miskolc, Hungary

Geochemistry of Geothermal Fluids
Workshop

Deadline for registration: 21 August
2017.

**10.-11.01.2018 SMU Campus in
Dallas, USA**

Power Plays: Drilling into Geothermal
Energy Applications



DESTRESS is a Horizon 2020 supported programme aiming to demonstrate methods of EGS (enhanced geothermal systems) and thereby expanding knowledge and providing solutions for a more economical, sustainable and environmentally responsible exploitation of underground heat.

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First Periodical Reporting in September 2017

The countdown for submitting the periodical reporting to the European Commission has started. We significantly eased the internal procedure for you and hope to receive better results and understanding. Details and deadlines are described below.

What work package and task leaders should do:

Deadline: 14 September

Via Google sheets

- describe objectives and submit updates on all activities/works carried out and the results achieved in your work package in the last 18 months [here](#). Use your contributions from the last Interim Report saved on EMDESK and add the results from the last six months. Please include each partner involvement in your descriptions.
- update the critical risks in your WP/ task (foreseen and new unforeseen risks) [here](#).

What partners should do:

Deadline: 14 September

Via Google sheets

- give a summary of deviations regarding the tasks and the used personal resources in each WP [here](#)

When explaining activities happened in any WP, we always need to indicate if there have been any deviations from the description of action in the amendment ([new grant agreement](#)). If this was the case, then explain the reasons for these differences from the DoA, the consequences and the proposed corrective actions regarding the tasks (e.g., not fully implemented, not on schedule) and the personal resources.

- add details to dissemination activities and publications [here](#).

Attention: it is your choice whether you work in these documents online (changes will be saved automatically) or send them filled out to Justyna via email.

- inform Justyna about a number of female and male participants in your institution (ellis@gfz-potsdam.de).

What partners receiving EU-funding should do:

Deadline: 21 September

- complete financial statements individually on the Participants Portal, electronically sign it and submit to the coordinator (GFZ); each institution will receive a notification from the EC to fill in the statement.

Attention: please note that you need to report on all activities and costs for the first periodical period between 1 March 2016 to 31 August 2017, assign carefully used personal resources to work packages as stated in the amendment (new grant agreement).

For more guidelines see:

- minutes and Justyna's presentation from the general assembly in Klaipeda and other supporting documents can be found on EMDESK in the Documents Manager > Reporting - Periodical Report. (<https://emdesk.eu/cms/?p=334>)
- annotated model grant agreement [here](#).
- And if you still feel lost, please contact Justyna (ellis@gfz-potsdam.de) any time.

Good luck!



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Demonstration of soft stimulation treatments
of geothermal reservoirs

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Merry Christmas and a happy New Year!

Christmas season is often a good time to reflect on the past year. In terms of DESTRESS, the periodical reporting as well as the review meeting in Rotterdam requested to reminisce the numerous achievements of the project. Find a selection of those achievements in this newsletter. In addition, learn more about the progresses in the drilling campaign in Westland and the site visits in Soutz and Rittershoffen.

Last but not least, we would like to thank all of you for your engagement and fruitful collaboration within DESTRESS this year. We are looking forward to next year full of more exiting highlights!

Important information

Midterm conference in Glasgow

From 3 - 6 April 2018, we will meet in Glasgow for the DESTRESS midterm conference. Besides an internal progress meeting, we will also organize an external event open to an interested audience. For the latter one, we strongly depend on your input. Therefore, if you want to share results or discuss concrete topics with our public audience, contact [Justyna](#). We very much appreciate your support.

Organizational Matters

To all task leaders

Our EC-project officer, Susanna Galloni, would like to have a time table of every task. Therefore, we ask all task leaders to send a detailed time table to Justyna by the end of this year. It should list the task number, the associated work package and the starting and the end month of the task.

Example: WP7, Task 7.1: Internal Dissemination, Start: Month 1, End: Month 48.

New amendment December 2017 - your approval required

All changes regarding the description of action and budget have been processed. Justyna prepared two annexes (A and B) in the "track changes mode" allowing you to follow the amendments taken. The annexes are saved on EMDESK for your information and approval ([EMDESK - Documents Manager - 7 EC - Amendment - December 2017](#)). Each partner is asked to pay attention to those documents, as they describe your (new) responsibilities within DESTRESS and will serve as the new grant agreement. In case of corrections or improvements, please contact Justyna by Monday, 18 of December at the latest. Please note that comments coming after this due date, cannot be considered any more. Thank you for your understanding!

Insights



Update on Trias Westland drilling project

On Monday, November 6, drilling in Trias Westland started. Since the kick-off, the operator Trias Westland and the drill crew of KCA Deutag work 24 hours, seven days a week. Axel Sandén, involved in WP4, production engineer and responsible for the research program, gives us an update on Westland.

The plan is, to reach the 4500 metres deep Buntsandstein reservoir around Christmas, are you on track?

We had a small delay of two weeks. Because we had chert in the chalk, and in consequence the rate of penetration decreased drastically. The first section took therefore longer than expected. We plan to reach the targeted depth at

the beginning of January.

What are the tasks of WP4 during drilling?

During drilling WP4 doesn't do a lot. The first task will be when the cores will come up. Based on this we will need to decide if, and when we want to stimulate the reservoir.

What are the next steps after drilling is completed?

We will hang in a pump (ESP) and test the reservoir. If the reservoir produces at sufficient flow rate, we plan to drill a second well to the deeper water-bearing layer (Triassic). If not, we will try to stimulate the reservoir. However, if we find absolutely no water during the production test, we will directly abandon the well and no stimulation at all will take place.

[Click for further information and more pictures](#)



Site visit in Soultz and Rittershoffen

In the framework of the third DESTRESS access program, ES-Géothermie organized two geothermal site visits on 11 and 14 October 2017. These events, framing the European Geothermal Workshop 2016 in Karlsruhe, were a great opportunity for participants to discover two enhanced geothermal system plants in operation located in the French part of the Upper Rhine Graben.



Access group in Rittershoffen.



Access group in Soultz.

[Read more](#)



Recording ambient noise in French households

Work package 3.4, entitled "Non-standard risk monitoring", organized in collaboration with GFZ and ES-Géothermie a three days acquisition campaign from 16 to 18 October 2017. The main objective was to install four sets of sensors in private houses located in villages near the Soultz and the Rittershoffen sites: one sensor outside, and one each at the basement, the ground floor and the first floor in a total of eleven houses. Those have been previously selected in order to have a representative sample of different types of masonries (timber frame, concrete frame, etc). Whereas ES-Géothermie was in charge to find participants, GFZ installed the instruments. The measurements to record ambient noise lasted for half an hour. The records are

used to draw a vulnerability mode allowing to adopt damage forecasts.

In return for their support, the owners were invited to visit the different installations at the Rittershoffen geothermal plant and obtain a detailed insight into the project. The goal was, that the visitors learned about the advantages and challenges of deep geothermal project.

Albert Genter, és Géothermie



Installation of sensors.



Site visit in Rittershoffen.



Review meeting in Rotterdam

The first review meeting with our EC-officer Susanna Galloni took place at the end of November in Rotterdam. Besides a site visit to Trias Westland, the work package leaders presented the main achievements of their tasks. A selection of highlights is listed below:

- Implementing models for cyclic hydraulic stimulation and induced seismicity
- Overview on main problems in monitoring and managing induced seismicity
- Implementing a geomechanical model for the Trias Westland site
- Building a thermo-hydro-mechanical model with fracture implementation
- Conducting fracture initiation tests
- Soft stimulation at Pohang geothermal site
- Detailed physical and hydrochemical investigations of the Klaipeda site
- Publishing a guideline for "Implementation of communication plans for soft stimulation"
- Establishing methodological improvements in the techno-economic evaluation of geothermal power
- Identification and prioritization of risk factors in geothermal projects
- Addressing public acceptance issues e.g. through mitigation options
- Initialization of site access programme including three site visits
- Launch of best practice report series with five reports already published

This list is anything but complete. Therefore, you can have a look at the presentations held at the meeting on [EMDESK](#).



4 Answers from...



Jin Ma

One sentence to describe your role/function in DESTRESS

I am involved in WP4 (Task 4.4) and WP6 (Task 6.1). My main task is to verify the effectiveness of chemical stimulation under certain conditions.

Two linking points between DESTRESS and your current duties

During my PhD, my research includes rock characterization and reactive flow – through experiments on samples from DESTRESS geothermal reservoirs.

Three aspects of DESTRESS you are interested most in

- 1) Effect of reservoir stimulation in practice.**
- 2) Samples from various geothermal reservoirs.**
- 3) Cooperative research results from different experimental and numerical approaches.**

The Concept of EGS is focused on improving the extraction of hot fluids from and injection of cold fluids into a reservoir. What do you like best hot and cold?

Hot: hotpot

Cold: ice cream

Behind the Scenes

News faces

A warm welcome to our newest DESTRESS project member:



"I'm Maria Leonhardt and 27 years old. I started my PhD at GFZ in September 2017. A main part of the PhD is the analysis of induced seismicity recorded during the DESTRESS soft stimulation treatment at Pohang. Detecting and locating the induced events are first steps of the data processing, followed by further processes such as the estimation of source parameters and moment tensors. The investigation of source and statistical earthquake properties in relation to the hydraulic parameters of the soft stimulation will also be part of the analysis."

News article on Magnitude 5.4 earthquake in Pohang

On 15 November 2017 at 05.29 UTC (14.29 local time) an earthquake with a magnitude of 5.4 occurred near Pohang in South Korea. There may be concerns regarding a connection between the recent earthquake and the nearby Pohang geothermal project due to the close proximity and shallow depth of the earthquake.

[Read more](#)

Services

DESTRESS Activities

3.-6.4.2018 in Glasgow, Scotland

In spring 2018 DESTRESS will meet in Glasgow for its midterm conference. Further information will follow on the website.

Conferences

21.2.-24.2.2018 in Afyonkarahisar, Turkey

V. Geothermal and Natural Mineral Waters Symposium and Exhibition

28.2.2018 in Offenburg, Germany

Southeast-Asia Symposium
Geothermal Energy

1.-2.3.2018 in Offenburg, Germany

Geotherm - expo & congress

The world's largest congress on geothermal energy.

DESTRESS will have a booth and offer a workshop at the congress.

19.4.-21.4. 2018 in Izmir, Turkey

5. Expo Geothermal

24.4.-26.4.2018 in Reykjavik, Iceland

Iceland Geothermal Conference 2018 (IGC 2018)



Demonstration of soft stimulation treatments
of geothermal reservoirs

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DESTRESS Progress Meeting & Mid-Term Conference

Our midterm conference (3 to 6 April 2018) in Glasgow is coming closer. Find in this special edition newsletter practical and organizational information to help you planning your trip. Please read it carefully as this newsletter will be the only information channel for the meeting.

We are looking forward to seeing you in April!

Programme

Registration

By now, 51 people registered for our internal and external conference. Please check [here](#) whether your name is on the participants' list (DESTRESS people only). If that is not the case, please add your details by **Friday, 9 February** at the latest, thank you!

Venue

The conference will take place at the [campus of the University of Glasgow](#), which is located around 2 km WNW of the city centre.

Agenda

Tuesday, 3th April

12:30 - 17:00: Get together and technical workshops per work packages
16:00 - 18:00: Executive and Advisory Board meeting
19:30 - 22:00: Opening dinner

Wednesday, 4th April

08:30 - 17:00: Internal progress meetings
17:00 - 21:00: Social dinner and whisky tour (see below)

Thursday, 5th April

09:00 - 18:00: DESTRESS midterm conference (public, open to everyone)

Friday, 6th April

09:00 - 12:00: Wrap-up, General Assembly and outlook
12:00 - 13:00: Lunch

Download [here](#) the detailed programme. Changes are still possible and the final programme will be published soon. If you have questions or comments, please contact Justyna (ellis@gfz-potsdam.de) by **Friday, 9 February 2018**.

Please feel free to invite people to our midterm conference on Thursday. We are currently designing an official flyer with registration details and programme. We will send it around once it is ready to be disseminated.

Visit to Auchentoshan Whisky Distillery



Take the chance and visit with us the [Auchtenthoshan distillery](#) situated in Glasgow. It is a nice distillery that produces lowland whisky with clean and smooth flavour without peat or smokiness. On a guided tour, you will learn about the making of a triple distilled Single Malt Whisky from start to finish.

Please indicate [here](#) whether you wish to join the whisky adventure with us on Wednesday evening. The tour would start with an inofficial dinner at a place close to the distillery. Depending on how many of you will take part in the visit, we will join an existing tour group or might split into two groups. The tour would cost you about £6 per person plus train fare (around £4), assuming that 30 people will come along.

Further information on how to travel to the distillery and where to dine before the tour will follow.

Travelling

How to get to Glasgow

- Direct flights to [Glasgow Airport](#).
- Edinburgh airport offers more flights than Glasgow. There is a [bus service](#) between Edinburgh airport and Glasgow. This travel takes around 1 hour.
- Flights to Manchester airport. Every two hours (07:00, 09:00, etc) there is a direct train from Manchester Airport station to Glasgow central station, taking around three and a half hours and travelling through some spectacular scenery.

How to get from Glasgow Airport to the university

- [Here](#) is a brochure for the express bus service between the airport and the city centre. The bus does not serve the university directly: you must get out at **George Square at Queen Street Station**, where you can get the subway to **Hillhead**.
- A taxi from the airport to the University costs around £20.

How to get from Glasgow city centre to the university

- By bus: routes 4, 4A and 15 run through the university campus from the city centre. Find [here](#) the bus timetables.
- By subway: **Hillhead** is the main station for the University. Find more information [here](#).

Hotels

We recommend the following hotels for staying over, which are located close to the university and are in about 10 to 15 minutes walking distance from the venue.

[Argyll Hotel, about £80](#)

[Heritage Hote, about £70](#)

[Ambassador Hotel, about £70](#)

The rates per night include breakfast. Please check www.booking.com for special offers for these places, it might be worth booking there.

Restaurant and Bars

Neil Burnside, our true DESTRESS Scotsman, highly recommends the following

two bars:

- [Islay Inn](#), with its massive selection of whiskies
- [Brewdog bar](#), Scottish beer from the Grampian region

Other nice restaurants and bars are anywhere in the west end or in the city centre. Have a look at [Trip Advisor](#) for good recommendations.

Any questions?

If you have questions regarding traveling to or staying in Glasgow, please contact Rob (Robert.Westaway@glasgow.ac.uk) or Neil (Neil.Burnside@glasgow.ac.uk).

If you have questions regarding planning and organisation of the internal and external conference, please contact Justyna (ellis@gfz-potsdam.de).



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One Year of DESTRESS

In March, not only spring weather has started, but also the second year of DESTRESS! The work package-leaders took the opportunity to review the achievements of the first twelve months when submitting their contributions to the internal interim report. The last year was shaped by several kick-off meetings and workshops. They helped to strengthen the research ties, but as well getting to know each other on a personal level - an important prerequisite for good collaboration.

In this upcoming year, DESTRESS offers two Site Access Programmes, one in Klaipeda, Lithuania, in April, and another one in Strasbourg, France, during September. We are looking forward to meeting new and known faces there.

In this newsletter, you will read about the demonstration site in Pohang that has again reached a milestone on the way to a successful geothermal reservoir. Furthermore, you have the chance to learn more about the social science research activities. The topics explored, are certainly of interest for everyone building up a promising geothermal site. Another interesting aspect is elaborated by WP2 that submitted the risk and time/readiness maps of all

relevant key factors - a milestone within risk assessment.

Thanks for continuing to follow us, and hope to see you soon!

News and Progress

3rd Access Programme in Soultz-sous-Forêts and Rittershoffen, France

Benefit from an in-depth training and knowledge exchange in geothermal reservoir stimulation from 18 to 20 September 2017!

Within three days, international experts from various disciplines engaged in DESTRESS will provide insights about stimulations in deep-seated fractured rock. Furthermore, geothermal site visits of Soultz-sous-Forêts and Rittershoffen plants will be offered. Academic lab visits at Strasbourg University can be organised upon request.

A detailed programme and the application requirements will be published by the end of March 2017 on the [DESTRESS website](#).



Successful Hydraulic Stimulation in Pohang

Currently there are two deep boreholes in Pohang: PX-1 at 4.2 km and PX-2 at 4.3 km. The first and second hydraulic stimulations have been carried out in January and February 2016 in PX-2 and in December 2016 in PX-1. The flowrate-pressure response in PX-1 is promising and shows that the fractured reservoir may be stimulated with a reasonable wellhead pressure. At the moment, the operators are challenged with the cleaning of PX-2 and the control of induced microseismicity. The next step in Pohang will be the first DESTRESS-led hydraulic stimulation campaign to demonstrate the soft stimulation technique.

Ki-Bok Min, Seoul National University



Acceptance of Geothermal Energy in the Spotlight of Social Science Studies

The social context of geothermal energy projects matters, as participants of the first DESTRESS Workshop on Social Sciences highlighted at the end of January in Strasbourg. A good example is the acceptability of geothermal energy production in the Alsace (France), which is rather high due to positive experiences with extensive oil drilling in the last decades. To promote local support and acceptance in an area without such a history, a DESTRESS affiliated project in the Netherlands counts on "collaborative learning". Therefore, nearly 50 greenhouse farmers and entrepreneurs for heat supply are involved as contractors in the project development. In Switzerland, participatory processes on two sites are studied to gain a better understanding of the views and opinions of different stakeholders towards geothermal energy. Another part of the research activities presented at the workshop focuses on mass media. In the UK, geothermal energy was hardly mentioned so far in the newspapers, and is almost none existent when renewable energy opportunities are discussed. A further expansion of the cross-national cooperation and exchange on social science research within DESTRESS is planned for the future.

On our website you will find the summaries of all talks.



Qualitative Analysis Shows Media Frames of Deep Geothermal Energy

Olivier Ejderyan (ETH Zurich) conducted a qualitative media analysis of 115 articles about deep geothermal energy (DGE) in three French-speaking Swiss newspapers within task 3.3 "Risk Governance". The results are part of a comparative media analysis that also includes French and British media, conducted with teams of the University of Strasbourg and the University of Glasgow. The goal was to provide an overview of media frames, that means, the ways in which media present specific topics or stories. Media frames do not necessarily reflect stakeholders' preferences, but they are good indicators of public perception and highlight issues that will most likely be debated and contested in public.

Results indicate that DGE is framed as a technical matter that requires public risk governance. The main risks which DGE is associated with, are induced earthquakes. Seismic risk is predominantly framed as a phenomenon whose

negative consequences are not dramatic and can be managed. A closer look at the governance frame indicates disagreements between experts, politicians and the population on who should have a voice in decisions about DGE. It also reveals that these groups have different understandings of what constitutes timely and sufficient information. These results highlight the importance of addressing the governance of DGE not only on a technical level but also on a procedural level.

These analyses will be completed with further case studies and the results will form to recommendations for the governance of DGE at an European level.

Olivier Ejderyan, ETH Zurich



Systematic Approach for Techno-Economic Evaluation Developed by WP2

Is soft stimulation worth its effort? Is it wise to use soft stimulation in geothermal exploration from an economical point of view? Which risk factors and uncertainties do we face while performing soft stimulation and how do they affect our project?

These and more questions will a company address before performing soft stimulation at a specific geothermal site. The use of a certain approach must be based on technological and economical evaluations, which form a "business case". A business case combines different scenarios for a possible investment and provides fundamentals to base on decisions. A "decision analysis" is a structured approach of comparing different business cases and enables the integration of risks into the evaluation process. It allows the selection of the best possible alternative.

Within DESTRESS, decision analysis shall therefore provide the methodological framework to investigate soft stimulation and to answer the questions asked above. The techno-economic evaluation of soft stimulation shall give operators of geothermal sites the possibility to evaluate the pros and cons of this technological approach. To accomplish these goals first steps are published in Deliverable 2.1. The deliverable presents two applied methods: One descends from strategic corporate planning and is a combination of mind mapping and cross impact analysis ("dependency structure analysis") while the other is derived from risk management ("risk analysis").

The report submitted by WP2 will be a basis for further techno-economic investigations within DESTRESS.

Did You Know...

... 7 Reasons for Geothermal Energy*

1. Geothermal power is the cleanest source of electricity & heat, using **less land and producing fewer emissions** than any other energy source.
2. Geothermal power is **price competitive**, and often lower, than other renewables and even fossil fuel alternatives.
3. Geothermal power projects create significantly **more jobs** than comparable large hydro and natural gas fired power plants.
4. Geothermal power is **the only renewable base-load option**; it also has even higher capacity factors than coal, natural gas, nuclear, and large hydro.
5. Geothermal power facilities produce **useful by-product heat** that can be integrated with greenhouses, fish farms, and food processing; you can also directly drill for heat.
6. Geothermal power plants provide **long term cost certainty** which helps stabilize electricity rates, providing an important protection for consumers.
7. With proper heat reservoir management, geothermal resources will never run out; geothermal power plants **can run indefinitely**.

*compiled by the [Canadian Geothermal Energy Association](#)

Services

DESTRESS Events

**14.-17.3.2017 in Davos,
Switzerland**

[Schatzalp - 2nd induced
seismicity workshop](#)

**4.-5.4.2017 in Klaipeda,
Lithuania**

[2nd Site Access Programme](#)

**18.-20.9.2017 in Sultz-
sous-Forêts and**

Rittershoffen, France
[3rd Site Access Programme](#)

Conferences

**3.5.2017 in Hanover,
Germany**

[9. Norddeutsche
Geothermietagung](#)

**23.-24.5.2017 in Izmir,
Turkey**

[IGC Turkiye 2017](#)

**11.-12.9.2017 in Munich,
Germany**

Call for Papers

**11.-12.9.2017 in Celle,
Germany**

Celle Drilling 2017. The Way
Ahead - Gearing Up for
Recovery. International
Conferece and Exhibition for
Advanced Drilling Technology
Call for Papers: 31.3.2017

Praxisforum Geothermie.Bayern

**12.-14.9.2017 in Munich,
Germany**

Bundesverband Geothermie:
Geothermiekongress 2017

Education

**Gestion de projets en
géothermie.**

Diplôme porté par l'université
de Strasbourg, dans le cadre
d'un partenariat entre l'engees,
es Géothermie et L'EOST.
Prochaine rentrée: 2.5.2017



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Demonstration of soft stimulation treatments
of geothermal reservoirs

DESTRESS demonstrates methods of enhanced geothermal systems (EGS). The aim is to expand knowledge and to provide solutions for a more economical, sustainable and environmentally responsible exploitation of underground heat.

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DESTRESS is progressing – more highlights to be expected

The successful soft stimulation in [Pohang](#), a joint effort of eight institutions engaged in work package 5, is definitely a DESTRESS highlight in 2017. So are the first [best practice reports](#), which make DESTRESS results available to an interested public and accomplish one of the main objectives in our project.

As DESTRESS will reach half-time next April, more success stories have to be expected. While you read this newsletter, the operator, [Trias Westland](#), is drilling a well into a 4'000 meters deep reservoir. The aim is to explore whether the reservoir is suited for geothermal heat extraction. Further achievements in terms of an increase in energy output are expected in [Soultz-sous-Forêts](#) after conducting a chemical treatment at one well planned for 2018.

First results and more DESTRESS insights will be presented at our [midterm](#)

[conference](#) in Glasgow from 3 to 6 April 2018. Therefore, save the date and join us in Scotland!

News and Progress



Pohang: first successful soft stimulation

The first hydraulic soft stimulation treatment within DESTRESS took place this August in Pohang (South Korea). There, an “enhanced geothermal system” (EGS) project has started in 2010 with the aim to produce 1 MW of electricity.

The soft stimulation succeeded thanks to a combination of a cyclic injection scheme, an advanced traffic light system, and the knowledge gained during previous stimulations. The aspired threshold of a magnitude 2 was, in contrast to previous treatments at the site, not exceeded.

Currently, several DESTRESS members analyse the hydraulic data to gain a profound knowledge of the effects the treatment had in terms of hydraulic performance. First results are planned to be presented at the 12th Euro conference on Rock Physics and Geo-Mechanics, “Bridging between Rock Physics and Structural Geology”, which will be held in Ma’ale HaHamisha (Israel) from 5 to 10 November 2017.

In parallel, seismologists are locating the seismic events recorded in the course of the soft stimulation treatment to map the reservoir geometry. In combination with relocated events from previous stimulations, an activated zone can be defined, which might be drilled in next.

The soft stimulation treatment experiment was a joint effort of experts from GFZ, GES, KICT, KIGAM, NexGEO, SNU, TNO, and UoG, who are involved in work package 5 “Demonstration of cyclic hydraulic and multi-stage treatments in granites and tight sandstones”.



Soultz-sous-Forêts: feasibility study for chemical stimulation

For 2018, a chemical stimulation treatment is foreseen to be executed in Soultz-sous-Forêts (France). In preparation for it, the working group Hydrogéochimie of the Laboratory of Excellence G-EAU-THERMIE-Profonde (University of Strasbourg UoS/ESG) conducted a feasibility analysis. The subcontractor of this task was the GEIE Heat mining of Soultz-sous-Forêts.

The study focused on the choice of chemicals (between acids, chelating agents and mixtures), the operation design (wellhead or downhole injection), as well as on picking the most suitable well (between the different geothermal wells of Soultz-sous-Forêts: GPK2, GPK3 and GPK4).

Given that GPK2 is not accessible for chemical stimulation due to a casing restriction, and given that GPK3 is already a relatively productive injection well, a chemical stimulation would have the highest economic value in well GPK4. Therefore, a call for tender was launched in July 2017 for a preliminary logging phase of GPK4. The objectives of these logs are:

- quantify the casing condition of well GPK4 in order to decide if it is possible to inject acids in the well without risking to damage the casing, and if it would be possible to set downhole packers in the well.
 - identify flow zones and damaged zones in the open-hole section of GPK4 before stimulation, in order to be able to quantify the effect of a potential chemical stimulation in GPK4.
-



Trias Westland: drilling into 200-million-year-old rocks

Drilling 4'000 meters into the earth, encountering water at temperatures of 130 degrees, and exploiting the feasibility of the reservoir for geothermal heat extraction. This briefly describes the plan of actions of Trias Westland for its geothermal power plant located in the south-western part of the Netherlands.

Only a few weeks ago, the rig arrived after its journey from Turkey. These days, the drilling, the deepest ever performed in the Netherlands, is being geared up. Based on a daily drilling advance of 50 meters per day, the Buntsandstein reservoir should be reached around Christmas. In the following, the well has to be tested, proofing to meet the requirements regarding flow rate ($\sim >150\text{m}^3/\text{h}$) and temperature ($\sim 120^\circ\text{C}$), enabling an efficient and sustainable exploitation of the geothermal energy. In case of success, the Trias Westland geothermal doublet will be completed with a second well, which will make heat extraction possible.



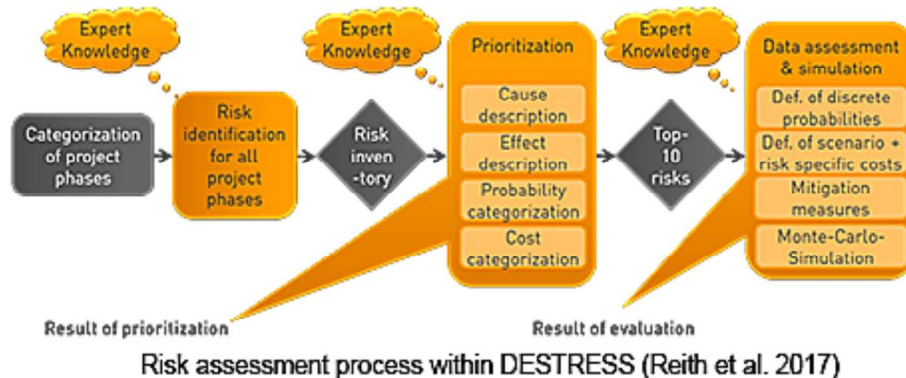
Identifying the risks of soft stimulation

Often, soft stimulation treatments are the only means to meet economical and sustainability requirements for a geothermal plant. Nevertheless, their application is expensive and due to varying natural conditions not always successful. "Therefore, an operator developing a geothermal field using soft stimulation must evaluate the pros and cons of this technology", says Sören Reith, the first author of a recently published study elaborating techno-economic evaluations in geothermal energy.

The authors present an approach to assess the key factors for a techno-economic evaluation of soft stimulation. As a first step of the risk assessment, methodologies from strategic corporate planning are used to identify risk factors. Based on the so-called dependency-structure-analysis, the authors conclude that pumps, water volume or well design have minor effects on the techno-economic evaluation. However, geological and physical parameters, chemical or biological effects are very influential. As the only parameter out of the public affairs, public acceptance may significantly shape the evaluation.

To prioritize the risk factors, the authors interviewed both industrial and scientific experts. They identified the following risk factors of most relevance: public acceptance, lack of information and induced seismicity. "Yet, the experts concluded that soft stimulation is already today a controllable measure for enhancing geothermal energy provision", says Reith.

Original report: Sören Reith (EnBW), Régis Hehn (ésg), Hanna Mergner (EnBW), Dr. Thomas Kölbel (EnBW). "[Systematic preparation of the techno-economic evaluation of soft stimulation](#)", 2017.



What, why, how? – Four best practice reports online

An important achievement of DESTRESS is the compilation of best

practice reports. New techniques, innovations or crucial experiences are made available to an interested audience. Until today, there are four reports online, which are shortly introduced below.

Decision analysis

Decision making in fields where experience is rare and technologies are new is challenging - as it is for geothermal energy production. In the investment world, decision analysts compare systematically various alternatives, and recommend whether to invest or not invest. Advances in research can support specific alternatives, such as a certain stimulation technique, by improving its expected utility and by reducing the possible range of bad outcomes. Linking DESTRESS research results to investment decision-analysis is the topic of [this report](#), which was written by Christian Bos from TNO.

Geochemistry and hydrochemistry

To successfully run a geothermal plant, it is crucial to know how fluids, rock minerals and gases interact in the underground. A poor understanding of those processes can result in corrosion of plant, clogging of wells and reservoirs and may even cause environmental problems. [This best practice report](#), written by David Banks from the University of Glasgow, deals with the question how to design a geo- and hydrochemical sampling campaign for a geothermal programme.

Risk assessment

The long timeline of a geothermal project with the drilling, construction and operation phase poses numerous risks such as legislation, accidents and public acceptance. Therefore, risks should already be assessed in the beginning of a project. Key to a reliable risk assessment are expert interviews or, wherever available, historical data. [This best practice report](#), written by Sören Reith from EnBW, addresses in more detail the topic of risk assessment.

Well construction

Drilling a well is more than just digging a hole into the ground. A well designer must know before drilling what is expected from the wellbore in order to determine for example its hole size diameter or possible stabilization measures. Therefore, [this best practice report](#), written by Frédéric Guinot from Geo-Energie Suisse AG, presents a guideline to successfully drilling and operating wells.

Did You Know...

...that the world's most productive geothermal installation provides enough energy for a city as large as San Francisco?

This geothermal field called "The Geysers" lies in California (USA) and produces currently 900 MW of energy. Heat for the steam reservoir comes

from a large molten rock chamber, spanning over seven kilometres beneath the ground.

However, this is only a small beer compared to the largest power plant in the world: the “Three Gorges Dam”, a barrage in the south-eastern part of China, produces around 22’5000 MW of energy – or as much as 15 modern nuclear power plants together.



The Sonoma Calpine 3 geothermal power plant at The Geysers field in the Mayacamas Mountains of Sonoma County, Northern California. (Licence: CC0 1.0)

Save the date

Midterm Conference in Glasgow

The midterm conference will take place between 3 and 6 April 2018 in Scotland. It will be hosted by our partner, the University of Glasgow. The main objectives of the conference are to present important project results of the first two DESTRESS years and enable public discussion. The conference will consist of various workshops open to internal and external public. The participation at the conference will be free of fees. The external conference attendees will need to register online in advance and cover their travelling expenses. Programme details will be published in the next newsletter and on our website.

Services

Talking about DESTRESS

Conferences

**3 . - 6.4.2018 in Glasgow,
Midterm Conference**
Details will follow.

**29.11. - 30.11.2017 in
Amsterdam, Netherlands**
Global Geothermal Energy Summit

10.1. - 11.1. 2018 Dallas, USA
Power Plays: Drilling into Geothermal
Energy Applications

**1.3. - 2.3.2018 Offenburg,
Germany**
GeoTHERM - expo & congress

Education

10.09.2018 - 15.03. 2019
Neuchâtel, Switzerland
CAS Deep Geothermal Systems
Deadline applications: 15 June 2018



DESTRESS demonstrates methods of enhanced geothermal systems (EGS). The aim is to expand knowledge and to provide solutions for a more economical, sustainable and environmentally responsible exploitation of underground heat.

This project has received funding from the European Union's
Horizon 2020 research and innovation programme
under grant agreement No. 691728



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JOIN THE GEOTHERMAL VOICES with DESTRESS

Dear all,

We would like to draw your attention to two geothermal events, which DESTRESS is hosting this year. It would be a pleasure to welcome you there. Therefore, please save the dates for the following events:

March

2

2018

Stakeholder Event in Offenburg, Germany

The next DESTRESS Stakeholder event at GeoTHERM expo & congress covers the topic: "Soft stimulation: what decides over success or fail?". International experts will provide an overview of good practices for successful geothermal projects focusing on procedural aspects, public involvement and case studies. Click [here](#) for the event flyer with programme and registration details. *There is no participation fee.*

April

5

2018

DESTRESS Midterm Conference in Glasgow, Scotland

The DESTRESS midterm conference is taking place at the University of Glasgow and is open to all people interested in deep geothermal technology development. The DESTRESS community will present relevant insights into the project and discuss preliminary research results. The programme and registration details will follow soon on our website: www.destress-h2020.eu. *There is no participation fee, however, the participants must pay for their traveling and accommodation themselves.*

We are looking forward to sharing the spirit of geothermal energy development with you.

Your DESTRESS' Community



Website



Mail us



Demonstration of soft stimulation treatments
of geothermal reservoirs

DESTRESS demonstrates methods of enhanced geothermal systems (EGS). The aim is to expand knowledge and to provide solutions for a more economical, sustainable and environmentally responsible exploitation of underground heat.

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DESTRESS Mid-Term Conference

Our midterm conference on **5 April 2018** in Glasgow is coming closer. This conference is open to everyone interested in soft treatments in boreholes. We will present relevant insights into the project and discuss preliminary research results. Find in this newsletter the programme, registration details and other practical information.

We are looking forward to welcoming you in Glasgow!

Programme

Registration (only for external participants)

Please register yourself [here](#) until **21 March 2018**. There is no participation fee, however, participants must pay for their travel and accommodation expenses themselves.

Venue

The conference will take place at the **University of Glasgow**, specifically in the James Watt South building, **room 375**. The campus is located around 2 km WNW of the city centre.

Agenda

- 09:00 - 09:30: Registration and welcoming
09:30 - 11:00: Soft-stimulation treatments at demonstration sites I
11:00 - 11:30: **Coffee break**
11:30 - 12:30: Soft-stimulation treatments at demonstration sites II
12:30 - 14:00: **Lunch**
14:00 - 14:45: Risk assessment and business case
14:45 - 15:30: Soft-stimulation social study and public acceptance
15:30 - 16:00: **Coffee break**
16:00 - 17:50: Innovative technologies
17:50 - 19:00: Closing, reception and networking

Download here the [event flyer](#). Do not hesitate to forward this invitation.

For travelling and accommodation information, please visit [our website](#).

Visit to Auchentoshan Whisky Distillery



People who arrive already on Wednesday evening in Glasgow have the chance to visit with us the [Auchtenthoshan distillery](#). On a guided tour, you will learn about the making of a triple distilled Single Malt Whisky from start to finish.

Please indicate [here](#) (only external participants) in the comments section whether you wish to join the whisky adventure. The tour would **start around 7 p.m.** and cost you about £10 per person plus train fare (around £4), assuming that 30 people will come along.

Further information will follow for those who registered for the tour.

Any questions?

If you have questions, do not hesitate to contact our project manager Justyna Ellis (ellis@gfz-potsdam.de).

REMINDER: event in Offenburg



Visit our event during the GeoTHERM expo&conference. The event will take place on 2 March 2018 from 10:00 - 13:15 in the Oberrheinhalle, **Konferenzraum 3**.

Programme

- | | |
|---------------|---|
| 10:00 – 10:05 | Welcome and introduction Michèle Marti, Swiss Seismological Service (SED) |
| 10:05 - 10:15 | Brief overview of DESTRESS and introduction of speakers Dr. Justyna Ellis, Helmholtz Zentrum Potsdam (GFZ) |
| 10:15 – 10:35 | Soft stimulation: how it works Dr. Hannes Hoffmann, Helmholtz Zentrum Potsdam (GFZ) |
| 10:35 – 10:55 | Seismic monitoring: why and how Prof. Stefan Wiemer, Swiss Seismological Service (SED) |
| 10:55 – 11:15 | Public acceptance: no success without public engagement Dr. Olivier Ejderyan, ETH Zurich (ETHZ) |
| 11:15 – 11:45 | Sandwiches, coffee and questions |
| 11:45 – 12:05 | Potential risks: introducing risk assessment Sören Reith, Energie Baden-Württemberg (EnBW) |
| 12:05 – 12:25 | Case study Westland, Netherlands: insights, lessons learned Dr. Floris Veeger, Trias Westland |
| 12:25 – 12:45 | Case study Geneva, Switzerland: insights, lessons learned Michel Meyer, Services industriels de Genève (SIG) |
| 12:45 – 13:15 | Synopsis and discussion Prof. Stefan Wiemer, Swiss Seismological Service (SED) and Sören Reith, Energie Baden-Württemberg (EnBW) |

Register for the event by sending an email to ellis@gfz-potsdam.de until 19 February 2018.

Hint: there is no participation fee.

See our [event flyer](#) for detailed information. Do not hesitate to forward this invitation.



Demonstration of soft stimulation treatments
of geothermal reservoirs

DESTRESS is a Horizon 2020 supported programme aiming to demonstrate methods of EGS (enhanced geothermal systems) and thereby expanding knowledge and providing solutions for a more economical, sustainable and environmentally responsible exploitation of underground heat.

This project has received funding from the European Union's
Horizon 2020 research and innovation programme
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