

Newsletter

S2S-Future

July 2022

Marie Skłodowska-Curie Actions
The Innovative Training Networks



Editorial

Welcome to the third issue of the S2S-Future Newsletter. The network has achieved several important milestones over the last six months. The Supervisory Board was held on 24 May in Vienna, where the ESRs presented their progress and received feedback. In the same period, the ESRs organised a dedicated EGU session, which attracted significant interest. Moreover, the network submitted the periodic report to the European Commission and is now waiting for the assessment. Furthermore, the project has been extended for six more months due to Covid and will finish on 30 September 2024. Finally, the Second Summer Institute “The Factory” has been successfully held from 30 May till 16 June in Norway and Switzerland.

We are now looking forward to the next important event: the Third Summer Institute “Inside Africa” in Namibia. The organisation of the event has started and will be discussed with the network during the next Supervisory Board in November. The precise dates of the event have not been defined yet but currently the tentative period, when the event will take place, is the first half of May 2023.

In this issue, you will read about the past network meetings, EGU session organised by the ESRs, “The Factory”, ESRs’ secondments, and recently hired ESR 8 Nahin Rezwan at Imperial College London. You will be also reminded about the upcoming events.

We hope you will enjoy the reading and don’t miss our regular updates through website and social media channels.

Milica Pejovic- Project Manager

Summary of the Issue

- **Past network meetings**
- **EGU session**
- **The Factory**
- **Secondments testimonials**
- **Meet ESR 8**
- **Write down in your agenda!**

Supervisory Board meeting

Vienna, May 2022

The first onspot Supervisory Board meeting of the S2S-Future project was held on 24 May 2022 in Vienna. The ESRs have presented their research and training progress in front of the members of the Supervisory Board and the members of the External Advisory Group. All ESRs were complimented for their remarkable progress and allowed to proceed with completion of their theses. Moreover, the external experts provided them with the personalised feedback which will help the ESRs to further improve their work.

The next meeting of the Supervisory Board is planned for November 2022.



S2S-Future EGU session

27 May 2022, Vienna

S2S-Future ESRs have organised an S2S session during EGU 2022 titled “Responding to Change: Climatic, Tectonic, Autogenic, and Anthropogenic Signal Propagation from Source to Sink.” The conveners of the session were Amanda Wild (ESR14), Aurora Machado Garcia (ESR7), Caroline Fenske (ESR15), Melanie Kling (ESR2), Lucas Valore (ESR3), Stefanie Tofelde, and Laure Guerit. The session attracted 30 researchers to submit their abstracts. All ESRs presented their research during this dedicated session that spurred interest of the academic audience.



ESR presentations

Setiawan, I., Guillocheau, F., Robin, C., and Braun, J.: Evolution of the Nile River since 70 Ma: insights from surface processes and anorogenic reliefs controlled by mantle dynamics, <https://doi.org/10.5194/egusphere-egu22-2680>,

Kling, M., Sirevaag, H., and Eide, H.C. 2022. Evolution of a clastic source-to-sink system through the Permian-Triassic transition: Provenance and petrography of the Havert Formation on Finnmark Platform, Barents Sea, Norway. DOI: 10.5194/egusphere-egu22-5009.

Valore, L., Eide, C., and Sømme, T.: Stratigraphic framework and sedimentary environments of the East Shetland Platform in the Paleocene – Preliminary Results, <https://doi.org/10.5194/egusphere-egu22-4577>

Juvany, P., Garcés, M., Lopez Blanco, M., Martín Closas, C., Beamud Amorós, E., and Bekkevold, S. E.: A revised chronology of the Ripoll Basin (NE Spain). Towards an integrated chronostratigraphy of the south-Pyrenean Foreland., <https://doi.org/10.5194/egusphere-egu22-2630>

Gaitan Valencia, C. E., Pucéat, E., Pellenard, P., Blondet, J., Guillocheau, F., Robin, C., Bayon, G., and Adatte, T.: Deep basin record evolution of chemical weathering and physical erosion as response to the tectonic uplift of the South African Plateau during the upper Cretaceous, <https://doi.org/10.5194/egusphere-egu22-6086>

da Silva Guimarães, E., Kasse, C., Busschers, F., Bouroullec, R., and van Balen, R.: Impact of the Mid-Pleistocene Transition on Meuse River Terraces in the Southern Netherlands, <https://doi.org/10.5194/egusphere-egu22-6270>

Garcia, A., Bellwald, B., Midtkandal, I., Planke, S., Anell, I., Sternai, P., and Myklebust, R.: Mixed sedimentation of the North Sea Fan – insights on volumes of contourites, plumites and downslope deposits during a full glacial-interglacial cycle, <https://doi.org/10.5194/egusphere-egu22-10658>

Prieur, M., Whittaker, A.C., Schlunegger, F., Sømme, T.O., Braun, J., Fillon, C. and Castelltort, S.: Impact of an abrupt climate change on sediment distribution from source to sink, PETM, Southern Pyrenees (Spain), <https://doi.org/10.5194/egusphere-egu22-1816>

Jaimes-Gutierrez, R., Adatte, T., Puceat, E., Tremblin, M., Pellenard, P., Braun, J., and Castelltort, S.: Chemical weathering linked to global warming during the PETM: Insights from the Spanish Pyrenees, <https://doi.org/10.5194/egusphere-egu22-5824>

Giannenas, P. A., Robin, C., Guillocheau, F., Vennin, E., and Gréselle, B.: The role and contribution of eustasy as a triggering force of the onset of Oceanic Anoxic Events: A case study of the early Aptian OAE1a in the Tethyan margin of Tunisia, <https://doi.org/10.5194/egusphere-egu22-6309>

do Prado, A., Mair, D., Garefalakis, P., Whittaker, A., Castelltort, S., and Schlunegger, Impact of river management on grain size patterns: example of the Sense and Gürbe Rivers in the Swiss Alps, <https://doi.org/10.5194/egusphere-egu22-1374>

Aggarwal, E., Gupta, S., and Whittaker, A. C.: How do Source to Sink Systems influence patterns of human settlement in the Indo-Gangetic Basin?, <https://doi.org/10.5194/egusphere-egu22-8230>

Wild, A., Braun, J., Whittaker, A., Fillon, C., and Castelltort, S.: The Importance of Autogenic Dynamics in Multidimensional Models of Grain Size Fining, <https://doi.org/10.5194/egusphere-egu22-5582>.

Fenske, C., Braun, J., Guillocheau, F. & Robin, C. Models of Duricrust Formation in Tropical and Subtropical Areas. <https://doi.org/10.5194/egusphere-egu22-4412>



The Factory

Norway and Switzerland, 30 May-16 June

The ESRs completed their second summer institute “The Factory” from 30 May to 17 June 2022 in Norway and Switzerland. It covered the glacial landscapes, hazards, energy transition, and general factory of sediment production within the mountain source.

The main philosophy of this second Summer Institute was to immerse ESRs within a wide international and intersectorial panel of industrial partners and professionals, who provided them with a course-intensive program of technical and soft skills to accelerate their research, write and present their results, consolidate their profiles and develop concrete plans for their future. In addition, the ESRs visited modern, active, smaller-scale S2S systems in Norway and Switzerland.

The Factory gathered 42 participants, including 15 ESRs, instructors, representatives of beneficiaries and partner organisations. The training leaders were Christian H. Eide (University of Bergen), Tor Sømme (Equinor), Benjamin Bellwald (VBPR), Fritz Schlunegger (University of Bern), Sébastien Castelltort (University of Geneva), Alex Whittaker (Imperial College London), Jean Braun (GFZ), and Benjamin Gréselle (Halliburton).



ESRs' secondment testimonials

Melanie Kling (ESR 2)

«In November 2021 I spent one week for my secondment in Oslo. At VBPR, I interpreted seismic lines which now have been used to calculate sediment volumes for the upper Permian Tempelfjorden Group and the Lower Triassic H1 Interval on Finnmark Platform in Northern Norway. I investigated the environmental transition from the Permian carbonate platform to the Triassic clastic delta. I also spend two days at the University of Oslo to describe and sample a core from Svalbard, which contains Permian and Triassic sand- and mudstones.»



Iwan Setiawan (ESR 1)

«I had my first secondment in GFZ Potsdam for one month at the end of 2021 under the supervision of Prof. Jean Braun. The goal was to initiate my current results into numerical model especially within FastScape framework. I tried to model the landscape evolution of the areas surrounding the Nile River from the uppermost Cretaceous time using the data from DEM, landform map, and sediment volume calculations. Neighbourhood Algorithm (Sambridge, 1999) is used to guide the sampling of the large parameter space. For each model, a misfit that measures how well the predicted values match the observed values is calculated.»



Lucas Valore (ESR 3)

«During my stay in Equinor, I had the opportunity to have an insight into their workflow for research on subsurface geology, hydrocarbon exploration, green energies and other areas. Under Tor Sømme's supervision, I worked with a large database of subsurface data that includes dozens of seismic surveys, hundreds of well logs and reports and also multiple finished structure maps for the Cenozoic in the North Sea. With this, I was able to highly improve my own seismic interpretation and advance my research on the stratigraphic framework of East Shetland, in particular when it comes to tying my interpretations to a better documented biostratigraphic framework. These results will be key for my papers on the stratigraphy of the East Shetland Platform and on the sediment volumes deposited there during the Paleogene. I also had the opportunity to discuss seismic stratigraphy, tectonics and source-to-sink sedimentology with some experts inside the company, highlighting the great value and aid provided by industry secondments in a PhD project such as this one.»



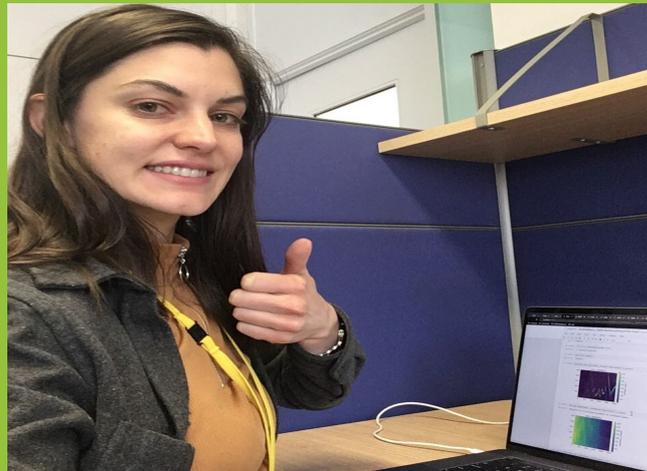
Caroline Fenske (ESR 15)

«For my stay in Rennes, I work with François Guillocheau and Cécile Robin to determine a case study to calibrate my numerical models. The duricrust formation models derived from Braun et al.'s (2016) regolith formation model are now ready to be given real-life inputs. Through this, it will be possible to determine how duricrusts formed in specific areas. The chosen case studies are the Quadrilatero Ferrifero in the Minas Gerais Region in Brazil, and if we have time, the Tambao Region in the Sahel Region in Burkina Faso. The datasets observed are mainly geolocalized geochronological datasets from weathering profiles from laterites to iron duricrusts – or cangas – from Minas Gerais and weathering profiles and drill core data from the Tambao drilling operation. By reading literature and analyzing datasets, my goal is to determine a duricrust formation scenario for these cases by the end of the secondment, and implement the datasets into the models while also implementing the Brazilian data sites in a map with the help of GIS. »



Amanda Wild (ESR 14)

«I am two weeks in to my secondment at Imperial College in London. I am working with Alex Whittaker to better constrain the impact of autogenic dynamics on downstream grain size fining with the Grapvevine Mountain Fans of Death Valley. In the past two weeks I have defined model inputs primarily from D'arcy et al (2017) or derived them using approaches outlined in Braun (2022). To model the fans, I am using a depositional grain size module, from work during the first year of her PhD, that is based on the Fedele and Paola (2007) self-similar model incorporated within the model Fastscape. After a few reasonable simulations are generated, I will begin to assess the variance in grain size at steady-state across the fan and with differing avulsion frequencies. I then will add precipitation oscillations and compare the downstream effects on the fan stratigraphic record. The work is still ongoing, but initial model set-ups are looking promising in terms of the fining and topography observed in the model compared to that measured in the field.»



Panagiotis Athanasios Giannenas (ESR 11)

«During my secondment under the supervision of Benjamin Gréselle at Landmark/Halliburton, the goal is to use published data and synthesis produced by Neflex to better characterize the facies distribution and characteristics of the major paleo flooding event that is associated with the Oceanic Anoxic Event (OAE) 1a, about 120 million years ago in the Cretaceous. Focus is given in determining sedimentological and stratigraphic signatures of this event on both margins of the Neotethys Ocean, in Tunisia for the south, in the Boreal basin for the north. This will contribute to determining a field area for new data acquisition to better characterize the response of drainage and river systems in response to both the OAE1a and the sea level changes. Building on published data and Halliburton/Neflex synthesis and models, I am in the process of better characterizing the precise timing and sequence of events at stake, to refine existing or possibly suggest a novel scenario for the evolution of continental and coastal clastic systems during this period of the Cretaceous.»



MEET OUR ESRS!



«I was born and grew up in the southern part of Bangladesh, which is known as the largest delta in the world (Ganges-Brahmaputra Delta). As this low-lying area is highly exposed to natural hazards, I have experienced many mega cyclones, floods, and riverbank erosion since my childhood, which motivated me to study Earth Science and learn about the Earth's surface processes. I obtained my Bachelor degree in Geology from the University of Barisal, Bangladesh. In the last year of my undergraduate degree, I worked as a research assistant and carried out a high-resolution GPS survey campaign over the Ganges-Brahmaputra delta to study sedimentary basin dynamics and subsidence. I pursued a Master's degree in Environmental Geoscience and Coastal Geophysics from La Rochelle University, France. I worked in the delta research team during my internship at CNRS, LIENSs, where my research focused on the assessment of the interactions between river discharge and sea-level variation in the Bay of Bengal. I have also assessed the relative sea-level variation and the average rate of subsidence using the Glacial Isostatic Adjustment (GIA) model. My postgraduate degree allowed me to conduct exploratory data analysis and numerical modelling through different projects. I would like to explore the signals recorded in the sediments using my prior experience in multi-dataset handling and numerical modelling.»

Nahin Rezwan (ESR 8)

Imperial College London

Thesis: Releasing the sediment cascade: understanding grain size as a record of mass transfer in source to sink systems

Supervisor: A. Whittaker



WRITE DOWN IN YOUR AGENDA!

-Supervisory Board Meeting: November 2022, On-line

-Course by Luca Malatesta (GFZ) “Effective visual communication in the sciences”: 17 November 2022, Online

-EGU: 23-28 April 2023 in Vienna, Austria

-Third S2S-Future Summer Institute “Inside Africa”: May 2023, Namibia



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