# Newsletter S2S-Future

February 2021

Marie Skłodowska-Curie Actions

The Innovative Training Networks

S2S Future

SIGNAL PROPAGATION IN SOURCE-TO-SINK

MARIE CURIE ACTIONS

## *Editorial*

*Welcome to the first issue of S2S-Future Newsletter. The project started in April 2020 and we have dedicated the first nine months of the project to the establishment of legal, financial, and managing structure of the project. Moreover, the website as the basis for internal and external communication is in the final phase of creation. The social media accounts (Twitter, LinkedIn and ResearchGate) have been launched and they will be fed by the latest scientific updates which involve S2S-Future network of senior and early-stage researchers.*

*One of the major accomplishments of the project is the recruitment of 13 early-stage researchers out of 15 in total. We have received numerous high-quality applications from all over the globe and selected the best candidates according to their education and research experience and affinity to the subject. Now they have taken seats in their host institutions and soon they will be producing research results. Two more ESRs will be soon recruited at the Imperial College London and will join the "crew" as soon as possible.*

*Unfortunately, the global pandemic has had an impact on the original planning of the project and caused the delays in recruitment and training activities. However, the first part of the training programme "Dragonstone" was organised in mid-January online, while the second part will take place in Spain at the end of May.*

*The aim of this newsletter is to summarise the main project activities and keep the consortium, ESRs and other interested readers informed about key project-related issues. We hope you will enjoy reading this issue and we promise to provide you updates through website and social media channels.*

*Milica Pejovic- Project Manager*

## Summary of the Issue

## Kick-off Meeting

Online, April 2020

The Kick-off meeting of the S2S-Future Consortium was held remotely on the 7th of April 2020. Although the sanitary situation precluded an onsite meeting of the members of the network, the whole-day day online meeting bred a fruitful discussion on different aspects of the project, gathering all key participants of the project, notably the coordinators, beneficiaries and partner organisations. The management structure consisting of several governing bodies such as the Coordination team, the Supervisory board, the Steering committee, the External advisory board and the ESR board was created.

## First Supervisory Board Meeting

Online, October 2020

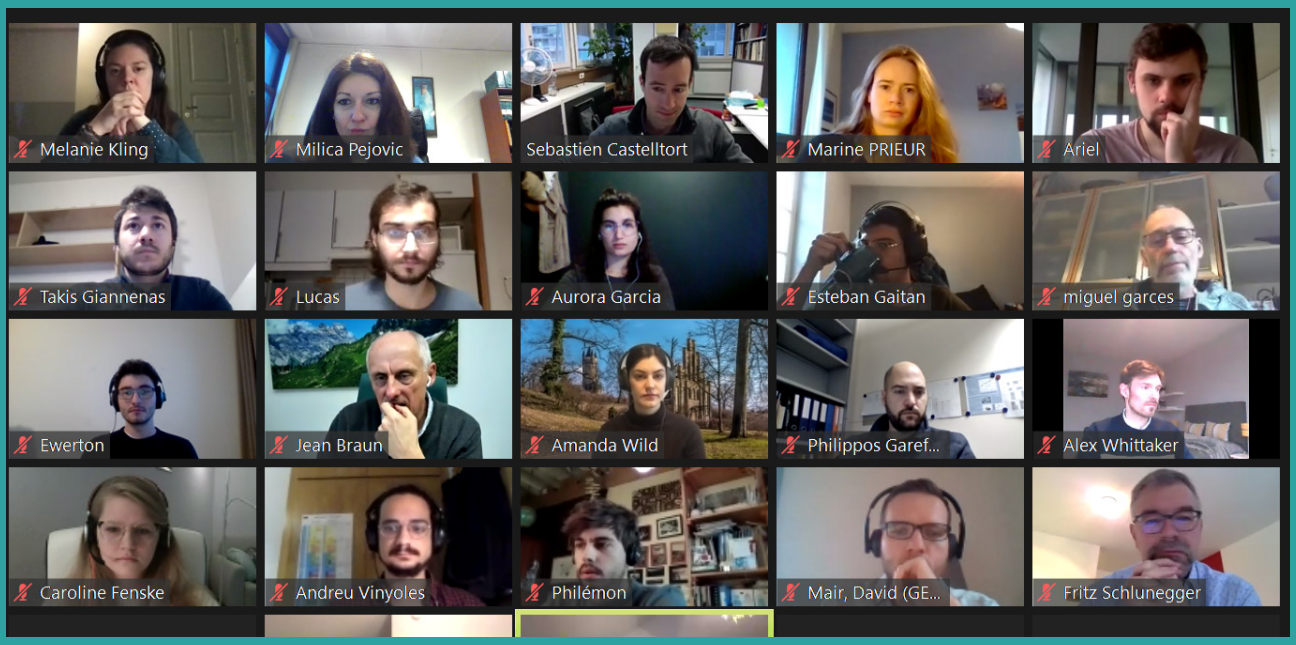
The second meeting of the S2S-Future network took place on the 8th of October 2020. Due to the Covid-19 pandemic that has severely affected all events worldwide, the meeting took place via online platform. The meeting was mostly dedicated to the first progress check and to the planning of the next activities. The main topics discussed during the meeting were: the résumé of the first 6 months of the project, the organization of training events, the revisions of the original planning, the development of work packages, personal training and career development plan, open access, and data management plan. The next meeting is planned for 24 March 2021.

## Dragonstone: First Part

Online, January 2021

The first training event of the S2S-Future project is « Dragonstone » which started by a week of online training from the 11th to 15th of January. The main objective of this training week was to provide the participants with the basic notions of Source to sink (geological arguments, physical principles and modeling). The instructors were Sébastien Castelltort, Jean Braun, François Guillocheau et Cécile Robin. Moreover, this first training week was the first occasion for ESRs to meet each other and the members of the network. During the training, the ESRs got an opportunity to briefly present their past academic and professional experiences as well as their current research.

If the sanitary conditions allow, this training will be continued by the fieldwork in the south of Pyrenees in May 2021.




## Dragonstone: First Week Programme

**MONDAY**

9h00 – 9h30 Personal presentations

9h30– 12h30 INTRODUCTION to the S2S system by presenting (1) concept of erosional, by-passing (transfer) and depositional landscapes, (2) geomorphological and sedimentological characteristics, (3) some modern examples of S2S systems and (4) economic and societal implications of S2S approaches (F. Guillocheau)

14h00 - 16h00 HISTORICAL PERSPECTIVES (S. Castelltort)

16h00 - 18h00 SOURCE / GEOLOGICAL DATA Characteristics of erosional landforms in orogenic and anorogenic settings, process of physical and chemical (weathering) erosion and sediment production (F. Guillocheau)

**TUESDAY**

9h00 – 9h30 Personal presentations

9h30 – 12h30 and 14h00 – 15h00 SOURCE / PHYSICAL PROCESS Terminology and key numbers : geomorphologic physics (S. Castelltort)

15h00 - 17h00 SOURCE / MODELS Introduction to the notion of Stream Power Law (J. Braun)

**WEDNESDAY**

9h00 – 9h30 Personal presentations

9h30 – 11h30 SINK / GEOLOGICAL DATA Characteristics and variability of depositional profiles in different basin settings, concept of accommodation, impact of the A/S balance on the sedimentary record, prediction in terms of sediments preservation (C. Robin)

11h30 – 12h30 and 14h00 – 15h00 SINK / PHYSICAL PROCESS Terminology et key numbers: major reports of the world's rivers (S. Castelltort)

15h00 - 17h00 SINK / MODELS Fastcape modeling sediment transport module and marine sedimentation module (J. Braun)

**THURSDAY**

9h00 – 9h30 Personal presentations

9h30 – 12h30 SOURCE TO SINK / FACTORS OF CONTROL Control parameters of the S2S system (S. Castelltort)

14H00 – 15h00 SOURCE TO SINK / SIGNAL PROPAGATION Theory and examples (S. Castelltort)

15h00 - 17h00 SIGNAL PROPAGATION MODELS: numerical applications (J. Braun)

**FRIDAY**

9h00 – 9h30 Personal presentations

9h30 – 12h30 GAINS and LIMITATIONS of the S2S approach (S. Castelltort)

14H00 – 17h00 GAINS and LIMITATIONS of the S2S / MODELISATION (J. Braun

# EGU General Assembly 2021

## 19–30 April 2021, Online

The EGU General Assembly 2021 will bring together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary, and space sciences. We suggest you to attend the source-to-sink-related presentations of our ESRs and the members of the network that have submitted the following abstracts to the respective sessions:

**Authors:** Philémon Juvany and Miguel Garcés
**Title:** "Sediment flux across the south-Pyreneean foreland basin. A contribution to the S2S-Future network"
**Session**: GM3.17 – Processes and timescales of sediment production, transport, and deposition from source to sink)

**Authors:** Ewerton da Silva Guimarães, Ronald T. van Balen, Cornelis Kasse, Freek S. Busschers, Renaud Bouroullec
**Title:** "Impacts of climatic changes on fluvial sediment fluxes in north western Europe: The Middle and Late Pleistocene Meuse river system"
**Session:** GM3.17 – Processes and timescales of sediment production, transport, and deposition from source to sink

**Authors:** Marine Prieur, Alex Whittaker, Fritz Schlunegger, Tor Sømme, Jean Braun, Sebastien Castelltort
**Title**: "Impact of extreme hydrological perturbation on sediment distribution from source to sink, PETM, Spain. "
**Session:** GM1.4 – Quantifying geomorphic and sedimentary processes

**Authors:** Rocio Jaimes-Gutierrez, Thierry Adatte, Emmanuelle Puceat, Jean Braun, Sébastien Castelltort
**Title**: "Chemical weathering response to extreme global warming during Paleocene-Eocene Hyperthermals, Southern Pyrenees, Spain"
**Session:** GM1.4 – Quantifying geomorphic and sedimentary processes

**Authors**: Maxime Tremblin, Hassan Khozyem, Jorge E. Spangenberg, Charlotte Fillon, Sylvain Calassou, Arnaud Grauls, Eric Lasseur, Jean-Yves Roig, Olivier Serrano, François Guillocheau, Thierry Adatte, Sébastien Castelltort
**Title**: "Enhanced volcanism associated to the emplacement of the North Atlantic Igneous Province during the PETM evidenced by mercury anomalies in Pyrenean foreland sections"
**Session:** SSP1.3 – Mass Extinctions, Volcanism, Impacts and Extreme Environmental Changes

# WRITE DOWN IN YOUR AGENDA!

**24 March 2021**
S2S-Future **Supervisory Board and Steering Committee Meeting** with gather the benerficiaries, partner organisations and ESR representatives who will discuss main scientific, administrative and financial questions related to the project.

**26 May- 10 June 2021**
**"Dragonstone 2" Training**

Beginning of training: the 26th of May, early morning meeting at Barcelona airport (depending on arrival times of all airlines)

26-28 May: fieldwork activities and training with S. Castelltort, J. Braun, F. Guillocheau, C. Robin, A. Whittaker and ESRs (open to broad community)

29 May-4 June: a unique source-to-sink field course involving all ESRs, Principal Investigators and Partners (open to broad community); meeting is foreseen for the 28th of May in the evening in Tremp

5-6 June: ESR retreat in Zumaia

7-10 June: 4 full days of training in Total premises in Pau (Tech-Lab "Subsurf 1" and Soft-Lab)

End of training: the 10th of June at 6 PM

**June 2021**
**Mid-term project check meeting** will be held in June (date to be defined). Ms Stanka Miteva, the Project Officer at the Research Executive Agency of the European Commission, will virtually meet all ESRs involved in your project and the representatives from all Beneficiaries (Supervisors); welcomed are also the representatives of Partner Organisations hosting secondments for the ESRs. The aim of the meeting is to assess the fulfilment of all aspects (scientific, research training, management, etc.) described in Annex 1 of the Grant Agreement.

# MEET OUR ESRS!

I hold a master's degree in petroleum geology from the University of Perugia, Italy (2019) and a bachelor's degree in geology from Bandung Institute of Technology, Indonesia (2015). My master's thesis with the title of "Seismic Characterization of a Late Miocene Calciclastic Deep-Water Fan in the Phu Khanh Basin, Offshore Vietnam" was about unravelling the characteristics of a calciclastic submarine fan from seismo-sedimentological and stratigraphic point of view as well as assessing its reservoir properties from the outcrop and core analogues. I have been working in the oil and gas industry from exploration to development stages. Hence, I am highly skilled in hydrocarbon exploration & production especially in seismic stratigraphy, well log analysis, sedimentological analysis, structural geology, regional geology, and static reservoir modeling.

Iwan Setiawan (ESR 1)

*University of Rennes 1*

Thesis: Mantle dynamics, very long wavelength deformations and large rivers source to sink systems: the case example of Africa (Congo, Nile)

Supervisor: F. Guillocheau

My name is Melanie Kling and I I studied earth sciences for my bachelor's and master's degrees in 2013–2020 at Heidelberg University in Germany. During my master's thesis, I investigated the depositional environment of an Ordovician, shallow marine, deltaic succession in Newfoundland, Canada. I also investigated diagenetic processes, such as cementation and in-situ sulphur isotopic composition of sedimentary pyrite, within this deltaic succession. From 2015–2020, I worked for the Junior Research Group 'Cambrian of Avalonia' at Heidelberg University. Therefore, I spent quite some months doing fieldwork in in Newfoundland, Canada! After that, my work focused on mineral identification in marine and fluviatile sediments using X-ray diffraction to find variations within the mineral composition, which is a key method for interpreting environmental and climatic changes.

Melanie Kling (ESR 2)

*University of Bergen*

Thesis: Response of source-to-sink systems to major step-changes in environmental factors: the case study of the Barents Sea during the Permian-Triassic transition

Supervisor: C. Eide

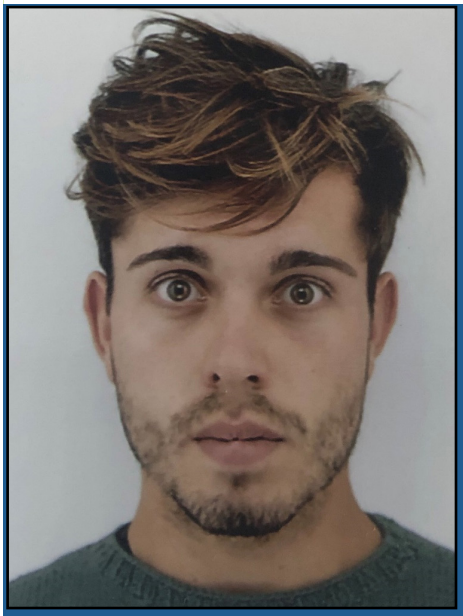
Hello! My name is Lucas Valore. Prior to moving to Bergen, I was doing my master's degree in Exploratory Geology in my hometown of Curitiba, Brazil, where I also had my bachelor's degree in Geology. My master's research was focused on intracontinental volcanic environments and associated sedimentary and volcaniclastic deposits. Back then, I was trying to investigate the influence of magmatism on specific sedimentary systems such as those associated with monogenetic basaltic volcanoes at the Cretaceous Paraná Magmatic Province. Now, however, I will be looking at the impacts of magmatic systems from a rather different perspective.

Lucas Valore (ESR 3)

*University of Bergen*

Thesis: Influence of emplacement of large igneous provinces on source-to-sink systems: the case study of Shetland during the Palaeocene

Supervisor: C. Eide



Hello, my name is Philémon Jean Juvany, I am a French Pyrenean currently working as a PhD student at the University of Barcelona. I have interests on Sedimentology, Stratigraphy and Geochemistry. I studied geology and more especially Basin analysis at the Ecole Normale Supérieure de Lyon (2019) and at the University of Paris Saclay (2020). The title of my Master thesis was: «Geothermics in clastic reservoirs: from the field to the models» it consisted in modelling a cretaceous reservoir on Petrel® using drone photogrammetry and field expertise. My research focus on reconstructing the evolving paleogeography and the sediment transfer system during Paleocene to Middle Eocene times in the Central and Eastern south-Pyrenean foreland basins in response to the tectonic advance of the South-Pyrenean Central units.

Philémon Jean Juvany (ESR 4)

*University of Barcelona*

Thesis: Sediment flux across the south-Pyrenean foreland Basin

Supervisor: M. Garces

Hello! My name is Esteban Gaitan Valencia and I am Colombian geoscientist. I obtained my bachelor degree in Geosciences at the University of los Andes in Bogota, Colombia. In my bachelor thesis, I carried out a paleomagnetic survey in the Azuero Peninsula in Panama. This work was published in my thesis and part of a posterior publication. Later on, I obtained my master degree in Bedrock Geology at the Lund University in Lund, Sweden. My master thesis project consisted in applying geochronological and geochemical analyses to a set of mafic dikes in SouthAfrica to determine their spatial and temporal distribution along the Kaapvaal Craton. The last year, I have been involved in projects applying drones and GIS to environmental studies and civil constructions in Colombia.

Esteban Gaitan Valencia (ESR 5)

*University of Burgundy*

Thesis: Response of weathering and erosion to intense tectonic uplift of South Africa during the Late Cretaceous

Supervisor: E. Pucéat

I obtained a bachelors degree in Geology from the State University of Campinas, Brazil and a masters degree in Earth Sciences from the Universities of Bern and Fribourg, Switzerland. In my masters studies I investigated the role of lithological, glacio-conditioning and tectonic controls on modulating a possible erosion-uplift positive feedback system in the Plessur catchment basin, a sub-tributary of the Upper Rhine river, SE Switzerland. I have experience in assisting lecturers in courses and tutoring as well as preparing rock samples for cosmogenic nuclide extraction.

Ewerton Da Silva Guimaraes (ESR 6)

*Vrije Universiteit Amsterdam*

Thesis: Impacts of climatic changes on fluvial sediment fluxes in north western Europe: the Middle and Late Pleistocene Meuse riversystem

Supervisor: R.Van Balen

Geology is the history of Earth. Everything that happened since our planet was born can be found written within its rocks. And I'm one of those who has decided to decipher it. I took both my Geology undergrad and master in the Universidade Federal do Paraná (Brazil), where my interests have shifted from petrology of Proterozoic metamorphic rocks to sedimentology of Paleozoic glacial deposits. During the two years of my masters I have focused on the micromorphological aspects of the glacially influenced and glacial deposits of the Itararé Group - Paraná Basin, applying concepts and theories that were previously applied mainly in recent Quaternary deposits.

Aurora Machado Garcia (ESR 7)

*University of Oslo*

Thesis: Impact of Pleistocene glaciations on the production, transfer and deposition of sediments along the Atlantic margins

Supervisor: I. Midtkandal

I have an engineer diploma in sedimentology and environmental sciences from the ENSEGID (Bordeaux, France). I handled two concrete research projects. The first one was applied on continental deposits through the study of Distributive Fluvial Systems (University of Glasgow, UK). The second one took place at the French geological survey (BRGM) and was about the analysis of tectono-sedimentary features of a continental molasse in a foreland basin. I am interested in better understanding the impacts of external forcings on sedimentary systems.

Marine Prieur (ESR 9)

*University of Geneva*

Thesis: Impact of extreme hydrological perturbation on sediment distribution from source to sink, PETM, Spain

Supervisor: S. Castelltort

I am a Colombian geoscientist and journalist, currently based at the University of Geneva. I graduated with a B.Sc. from Universidad de los Andes, Colombia in 2017. Following my studies, I worked as a junior geoscientist at Gmas Lab, Bogota, doing seismic acquisition and processing. I completed my M.Sc. in geology in 2020 at the University of Munich, Germany. During my master's program, I worked for more than a year at a 3D printing magazine in the editorial team. In my master thesis, I studied the sulphidic phases and their trace element concentration in the ceramic clays of the Westerwald, Germany. My thesis was financed by the Stephan Schmidt Group, where I did a 6-month internship.

Rocío Jaimes-Gutiérrez (ESR 10)

*University of Geneva*

Thesis: Chemical weathering response to extreme global warming during Paleocene Eocene Hyperthermals, Southern Pyrenees, Spain

Supervisor: S. Castelltort

Before coming to Rennes, I completed a postgraduate programme: MSc in Petroleum Geology and Petroleum Geophysics at the University of Oslo (2018), Norway. My Master's thesis explores the structural development of the Vestbakken Volcanic Province in the Western Barents Sea, and focuses on the analysis of various structural styles, the relation between faults and folds and their relation to the regional tectonic setting. Prior to my postgraduate studies I received a BSc in Geology (2014) from the University of Patras, Greece.

Panagiotis Athanasios Giannenas (ESR 11)

*University of Rennes 1*

Thesis: Short term climatic events in icehouse periods and their effects on source to sink systems: the case examples of the Aptian events (OAE 1a and 1b) along the Tethyan Margin of Tunisia

Supervisor: C. Robin

My name is Ariel Henrique do Prado and I have a degree in Geophysics and an Earth Sciences MSc title by the University of São Paulo. I ended up developing great interest in the study of fluviology during my undergraduate studies. Later, in early 2018, I started to develop a master's project aiming at studying landscape evolution processes in Central Amazon during the Quaternary through numerical models. During the master's period, I developed a numerical model in Python that, through the construction and testing of different scenarios, allowed a quantitative evaluation of Earth surface processes such as incision events, widening of alluvial valleys and sedimentary deposition.

Ariel Henrique do Prado (ESR 12)

*University of Bern*

Thesis: Human short term S2S forcing

Supervisor: F. Schlunegger

I have been primarily trained as a physical geographer with an emphasis on Geomorphology, Geographic Information Systems, and Remote Sensing. I conducted my master's research at the University of Victoria, Canada, where I assessed the impact of bedrock islands and bedrock confinement on estuarine morphodynamics and stratification. Outside of the master's program, I spent time as a research assistant at the Pacific Geoscience Center, Natural Resources Canada Meanwhile, in a summer contract funded by the BC Ministry of Forests, Lands, and Natural Resource Operations, I have also analysed fluvial plume propagation downstream of an active landslide using remote sensing techniques. Additionally, I have also spent time as a specialist instructor and field ADCP deployment assistant employed by the University of Victoria.

Amanda Wild (ESR 14)

*GFZ – Helmholtz Centre Potsdam*

Thesis: Tracking grain-size in a sediment transport model and application to natural system

Supervisor: J. Braun

I am an early stage researcher working on the geomorphological modelling of the weathering front in the Earth's regolith. I did my Bachelor studies in Toulouse at the University Paul Sabatier Toulouse III. I got my diploma in Geo- and Environmental Sciences from Toulouse in 2018. I also did my Geosciences Master studies in Toulouse, which I successfully ended in June 2020. During my master studies I did 2 internships of 3 and 6 months which provided me professional experience working with other scientists in different environments. In 2019 I was part of an international team working for Total on mud volcanoes, during which we went on a fieldtrip to Azerbaijan for 3 weeks. Then, in 2020 during the pandemic I was able to work in Toulouse with the magnetism section at the Geosciences Environnement Toulouse (GET). I analysed dikes dated from the Neoproterozoic from Oman and Jordan.

Caroline Fenske (ESR 15)

*GFZ – Helmholtz Centre Potsdam*

Thesis: Developing a 3D model of regolith formation and use it to interpret weathering intensity data

Supervisor: J. Braun

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