SedNet

Sediment continuum: applying an integrated management approach

First Announcement and Call for Abstracts

13th International SedNet Conference
Faculty of Sciences of the University of Lisbon, Lisbon, Portugal

6 - 8 September 2023

Co-organised by Faculty of Sciences of the University of Lisbon and Instituto Dom Luiz

Ciências ULisboa

INSTITUTO DOM LUIZ

Background

Sediments are ubiquitously found in different settings, from upland streams, industrialised waterways, floodplains, estuaries, coastal zones to offshore waters. Sediments present different characteristics, some inherited from their origin and other acquired along the transport and deposition. These characteristics are naturally interlinked as sediment travels from the catchment to the open sea. The natural flow of sediments from mountainous regions to the ocean is strongly impacted by anthropogenic activities along its journey, both in terms of the quantity that is transported and the quality of transporting waters. Sediment distribution and quality is not only impacted by direct human influence but also indirectly by changes in weather features and climate patterns. Changes in the natural sediment dynamics can lead to issues, such as sediment starvation or excessive accumulation, and is often the concern of river basin and coastal managers. Historical or emerging contaminants may also hinder management of these areas, and there's a growing need for integrated approaches and tailored solutions.

At the 2023 SedNet conference "Sediment continuum: applying an integrated management approach", we invite abstracts for a series of sessions aiming to explore different challenges and proposed solutions related to this theme. Among other topics, we explicitly welcome case studies from practice that preferably engaged stakeholders and that included how policies and plans were developed for the range of interlinked issues experienced along the continuous journey of sediment from upland to the depositions sites. This includes how to quantify and manage sediment movement, how to assess sediment quality, sediment health and ecosystem service provision, how excess sediment can be re-used, etc. Special attention will also be given to challenges posed by anthropogenic influences, resource exploitation and climate change, and how we can truly apply an integrated management approach that enables the sediment continuum.

The proposed thematic sessions are:

1. **Sediment quality guidance and sediment quality assessment**
2. **Circular economy - sediment as a resource**
3. **Sediment in coastal and marine management**
4. **Climate change and sediment pledge** (joint session with PIANC navigating a changing climate)
5. **Sediment management concepts and sediment policy**
6. **Climate change and sediments: direct and indirect consequences and opportunities**
7. **Sediments health: what is it and how to achieve it?**
8. **Zero pollution in the soil-sediment-water nexus**
9. **Sediment literacy**

Deadline for submission of abstracts: **the 15th of January 2023.**

Abstracts will be selected by the SedNet Steering Group for either a platform presentation or a poster presentation. Please visit the SedNet website for the template for submission of abstracts. The abstracts should be sent to the SedNet Secretariat: secretariat@sednet.org.

Conference Program

THEME 1

Sediment Quality Guidance and Sediment Quality Assessment

Sediment quality assessment is performed in different contexts including dredged material characterisation and environmental monitoring. Sediment quality assessment helps to answer questions for informing sediment management, such as: Is the sediment contaminated and how to deal with that? Can contaminated sediment compromise environmental and human health and at which temporal and/or spatial scales? Are remediation or other risk reduction measures necessary and, if so, which remediation option is preferred? Many methods and tools have been developed and implemented in a scientific context. Although a certain level of flexibility is necessary to accommodate to different priorities among stakeholders and limited resources, it results in diverse assessment frameworks due to the lack of common objectives, assessment tools, data interpretation methods and communication strategies. It may also result in different answers to key questions of decision makers and ultimately different management strategies.

With the overarching conference theme of "Sediment continuum: applying an integrated management approach" in mind, this session welcomes presentations that highlight:

- the latest developments in environmental chemistry, eco-/toxicology, ecology, modelling and practical methods and tools for contaminated sediment assessment at large
- the behaviour of sediment associated contaminants along the sediment continuum and its consequences
- case studies and examples showing good practices in contaminated sediment assessment within the application of an integrated sediment management concept
- critical discussions and (comparative) evaluations of sediment quality assessment frameworks

THEME 2

Circular Economy – Sediment as a resource

Sediments must be managed for the needs of sustainable water transport and infrastructures, of flood protection, of coastline protection or for the improvement of living environment. Thus, they can either become a massive waste stream or a valuable mineral resource. Circular economy thinking is needed to improve the footprint of these activities.

This session welcomes presentations that highlight:

- Contributions describing sediment management realisations or projects in line with the beneficial use of sediments, especially in applications for climate change mitigation, for soil revitalisation and improved agriculture, for river and coastline improvement in line with natural processes (Building or Engineering with Nature)
- Technologies aimed at facilitating the beneficial use of sediments (treatment, characterisation, monitoring, implementation) or at making profit of available sediments for sustainable applications
- Case studies on the social and economic aspects of sediments beneficial use, acceptability and long-term impacts.

Projects and technologies based on the deliberate extraction of sediments otherwise than for the abovementioned objectives are out of scope.

THEME 3

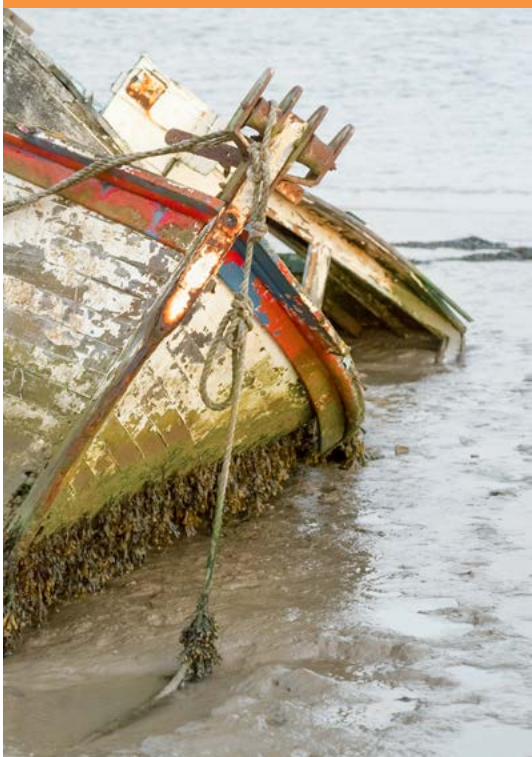
Sediment in Coastal and Marine management

Coastal and marine areas are characterised by being extremely dynamic, posing specific challenges in terms of sediment management. Sediments play an intricate and important role in achieving a sustainable use, development and protection of coastal/marine environments and associated resources. Changes in sediment supply can influence water quality, navigation and the stability of adjacent coastlines and the seafloor. Activities related to coastal industries, maritime transport, and infrastructures (harbours, barriers, etc.) can influence the distribution of sediments, leading to erosion and flooding of the coastline; or excess accumulation which poses water quality issues. Also, most harbours demand dredged operations for maintenance and increased volumes of dredged sediments may cause management issues. Coastal-marine managers also deal with beach nourishments (emerged and/or submerged) and morphological restoration of inter-tidal areas, reopening of river mouths and other issues where sediment management is of key importance.
In addition, driven by the increasing demand for new sources of raw materials, new challenges arise about seabed mining and the development of technologies for research in these areas.

Sediment as a resource is therefore of critical importance in coastal and marine management and new opportunities have been identified by the European Union as one of the potential new blue-growth sectors.

Thus, we invite scientists and regulators to share their insights, new findings and developments related, but not limited, to the following topics:

- Equilibrium between land and sea activities such as erosion risk management
- Strategies for coastal-marine zone protection, sediment use and re-use, including EU policies
- Case studies about innovative approaches to coastal-marine zone management
- Development of new methods and technologies for seabed research and exploration
- Sustainable sediment dredging



THEME 4

Climate Change and Sediment Pledge (joint session with PIANC Navigating a Changing Climate)

Climate change is an existential threat. In the lead up to COP26, commitment to tackling the climate and ecological emergencies has never been greater. There is a need for urgent action, across all sectors, to decarbonise – while at the same time strengthening resilience and adapting to the changing climate. Sediment managers – scientists and researchers, water managers, port and waterway operators, flood protection managers and similar, as well as those in the dredging and construction sector – all have an important role to play. Sediments are an

integral part of aquatic systems, the building block for natural habitats and an inherent component of many ecosystem services. Sediments and their associated aquatic habitats – blue carbon stocks – also play a vital role in sequestering and storing carbon.

An outcome of the virtual workshop 'Sediment management opportunities to address the climate change challenge' hosted by Navigating a Changing Climate and SedNet was an ambitious but realistic – and very necessary – COP26 Sediment Management and Climate Change Pledge. SedNet and the NavClimate partners asked organisations that recognise the importance of these issues and the need to work with these critical, inter-related natural processes, to endorse the pledge, and to work with us to identify and deliver solutions that benefit not only climate and nature, but also society and economy. As of October 2022, 35 organisations from around the world have become signatories to the COP26 sediment management pledge.

The session will exchange experiences and discuss activities related to the topics covered in the sediment pledge:

- Blue carbon
- Net zero emissions from sediment management activities
- Reconciling sustainability and adaptation needs with ongoing human activities
- Dealing with climate change uncertainties
- Nature-based solutions for societal/infrastructure resilience
- Closing technical and scientific knowledge gaps
- Green recovery initiatives
- Relevant policy instruments
- UN Sustainable Development Goals

Speakers are encouraged to put forward examples of good practice, including both strategic and site-specific initiatives and other experiences on how to reach the goals formulated in the pledge.

THEME 5

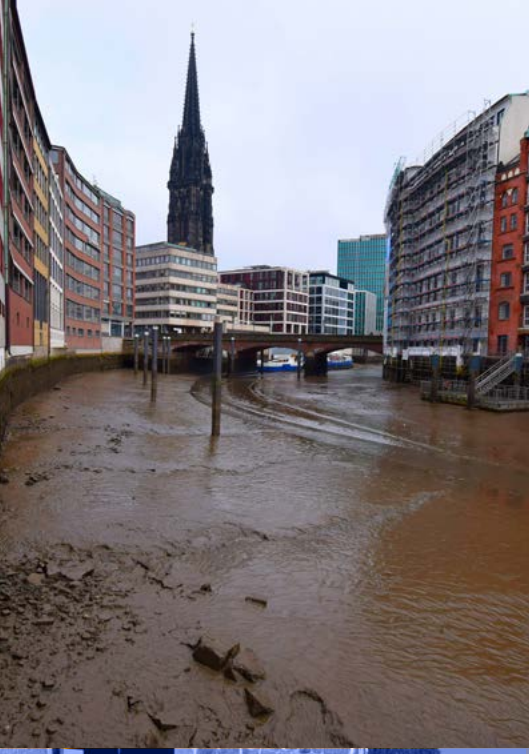
Sediment Management Concepts and Sediment Policy

After two cycles of implementation, the importance of properly managing sediment to reach the environmental objectives of the WFD, but also of many other EU policies, has been now well recognised. Several European Member States and several river basin commissions have made already a sediment management concept (SMC) or are in the process of making one. These SMC's provide recommendations on which sediment measures should best be taken in each part of the catchment. The content of the SMC's is used as input for sediment and water related plans like the WFD River Basin Management Plans and the Flood Risk Management Plans.

The European Commission has also recently published a CIS document to share a common understanding and good practices on the management of sediment in the context of the WFD.

In this session, experiences and lessons learned while making sediment management concepts and experience implementing them will be shared. Presentations about sediment policy evolutions in general in different member states are also welcome. In doing so, we hope to learn from each other, so that sediment policies all over Europe and the rest of the world can be improved.

The aim of this session is also to explore how far the management of sediment quality and quantity has been (or will be) incorporated in the current and future RBMPs in various countries and what challenges arise in the process.



THEME 6

Climate Change and Sediments: Direct and Indirect Consequences and Opportunities

Looking into the extreme weather events of the past years – the extreme rainfall and floods during summer 2021 and the long drought and heatwaves of summer 2022 – makes clear that climate change has already a strong impact on waterways in Europe and all over the world. The need arises to integrate climate change scenarios in sediment management. However, the impact on sediment quality and quantity is site specific and complex.

During heavy rains, floods can lead to soil contamination through deposition of contaminated sediment inland. In dry summers, a larger surface of the bed of watercourses will dry out, which can lead to chemical oxidation of sediments, influencing the behaviour and mobility of possibly present pollutants. Temperature increase and enhanced UV exposure can facilitate degradation of contaminants, with positive effects, unless degradation products turn out to be more toxic. Sea level rise and the acidification of the ocean will influence the behaviour of the tidal regime and the location of intertidal zones.

On the other hand, in the urge to tackle climate change, it is clear we cannot leave out sediment, as being an important and dynamic component in the entire hydrological and environmental cycle. Achieving 'healthy' sediment positively influences a wide range of ecosystem services. These services have all their direct or indirect effects on climate change. For example, sediments and their associated aquatic habitats play a vital role in sequestering and storing carbon, nutrient cycling, water regulation and purification. Therefore, sediments can play a crucial role in nature-based measures to counteract climate change.

This session welcomes presentations on:

- Understanding the impact and consequences of climatic changes for sediment quality, quantity and sediment use by looking into chemical or toxicological processes, but also those that look at impacts on river basin scale.
- Conceptual approaches or case studies that link sediment management to climate change adaptation are appreciated.

THEME 7
Sediments Health: what is it and how to achieve it?

Sediments are fundamentally important for aquatic ecosystems as well as humans and wildlife. Being sinks and sources for environmental contaminants, they might negatively affect the water quality and aquatic organisms for in situ and on sites downstream by remobilisation and transportation. In line with the objectives of the European WFD and the Green Deal, particularly its Zero Pollution ambition, fresh water and marine sediments have to be healthy in order to help regenerate biodiversity, to provide good conditions for habitats and ecosystem services provision as well as to contribute to a good chemical and ecological status of the waterbodies. Protecting this vital resource which sediment is, thus became a priority in European environmental policy achievement (WFD, MSFD, Nature directives, etc.).

For this session we welcome abstracts that address and provide insight in:

- How sediment health can be defined
- How sediment health can be assessed and which indicators to be used
- The causes of sediment health degradation
- How sediment health can be achieved, what measures/approaches are effective

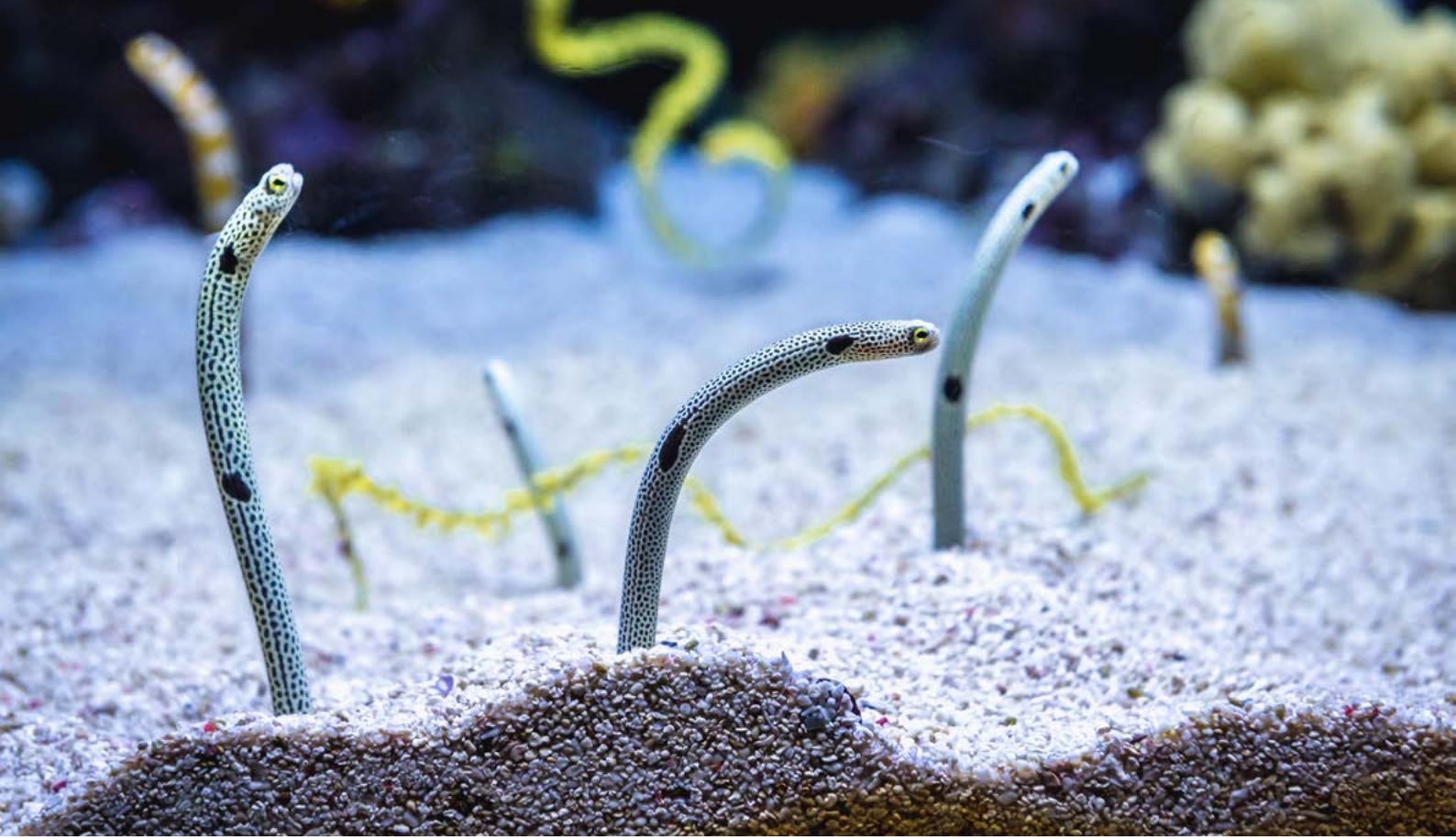
We especially welcome case studies from practice that address these sediment health related topics, and which preferably also engaged stakeholders. Case studies for large streams as well as for tributaries and smaller rivers are appreciated.

THEME 8
Zero Pollution in the Soil-Sediment-Water Nexus

Protecting and where feasible restoring of ecosystem health has become the key European environmental policy objective. A nexus and entire system approach is needed to achieve this objective. 'Nexus' means that soil, sediment and water are regarded as closely interlinked environmental matrices. 'Entire' means that soil-sediment-water is managed by taking a 'river to sea' perspective, crossing spatial, discipline, political and cultural boundaries.

Pollution degrades ecosystem health. Thus, the European Zero Pollution Action Plan sets 2050 is the year where we have reduced pollution to levels no longer considered harmful to health and natural ecosystems. Zero Pollution is the ambition to be achieved by 2050. In the nexus approach it is crucial to note that pollution behaves different in water, in soil and in sediment. Several pollutants – especially the very persistent ones – prefer to stick to and mix in sediment. Thus, sediments all over Europe, and globally, contain a lot of legacy (of the past) pollution. The prevention of further pollution of sediment as well as the prevention of the remobilisation of pollutants from sediment to the water phase and of the transport – e.g. after flooding – of contaminated sediment from up- to downstream locations, should be key elements in a Zero Pollution ambition. Without such dedicated attention it will be hard to achieve that ambition.

In this session we welcome examples on best management practices, that preferably also engaged stakeholders on prevention and control of remobilisation and downstream transport of soil (river banks, flood plains) and/or sediment associated legacy pollution due to e.g. flooding and de-damming and on remediation also eliciting nature-based solutions such as natural attenuation (e.g. natural capping and natural attenuation). This would then also include attention for how to attain net zero emissions from sediment management activities (i.e. de-damming, river restoration, dredging, remediation etc.).



THEME 9

Sediment Literacy

SedNet was established in 2002 to raise proper attention for sediment and its management and especially for the integration of sediment in WFD River Basin Management Plans (RBMPs). For SedNet, it was clear from the beginning that the WFD objectives can be achieved only if sediment management is duly included in these plans.

Then it took nearly two decades for the window-of-opportunity to be opened for proper WFD attention for sediment management. In November 2019 the WFD Common Implementation Strategy (CIS) Strategic Coordination Group (SCG) authorized the drafting of guidance on how both sediment quantity and quality should be managed to support the achievement of the WFD objectives. The document is completed and was published in September 2022. The document is not intended as a cook book but raises awareness about why and how to manage sediment from a WFD perspective. It draws attention to key-messages related to that management. Hopefully it inspires for better inclusion of sediment measures in WFD RBMPs.

Awareness raising on sediment and its management – including promotion of the WFD sediment document – remains an ongoing key objective for SedNet. SedNet wants to improve sediment literacy. Sediment literacy can be defined as "The state of knowing about or being familiar with sediment. It concerns both a popular awareness about the importance of sediment, and specialised and practice-oriented knowledge related to achieving sediment health".

In this session we would welcome inspiring examples from practice – from local to regional to full river basin scale – that were targeted to improve sediment literacy, such as: training courses, master classes, serious games, media campaigns, press releases, advocacy, citizen science, young ambassadors, ontologies, movies, animations etc. What worked, what not? And why?

SedNet would also be glad to promote such inspiring examples via the SedNet website.

Submission of abstracts

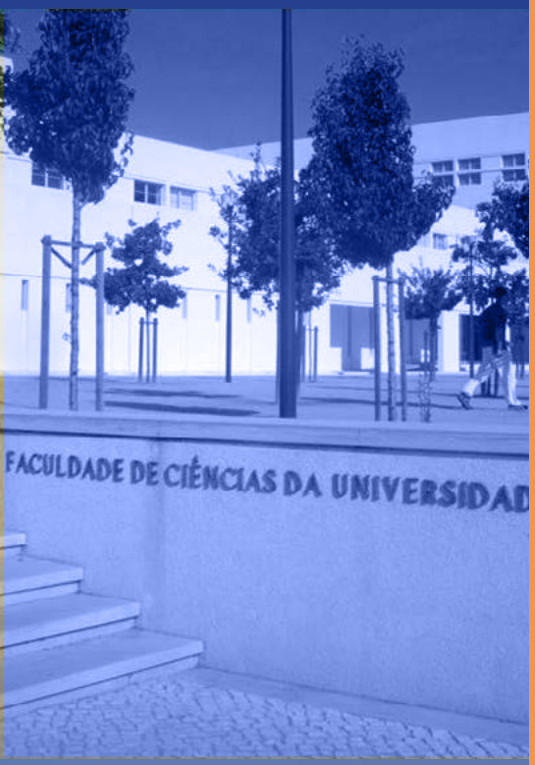
Please visit the SedNet website for the template for submission of abstracts. The abstracts should be sent to the SedNet Secretariat: secretariat@sednet.org.

Deadline for submission of abstracts: **15 January 2023**
Preliminary Conference Program: April 2023

Conference Organisation

The conference is organised by SedNet, the Instituto Dom Luiz and the Faculty of Sciences of the University of Lisbon.

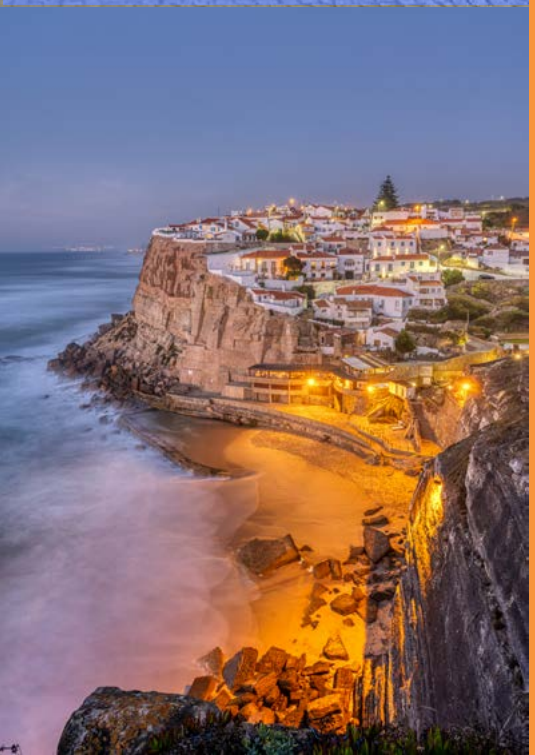
Instituto Dom Luiz (IDL) is an Associated Laboratory that focuses on the use of quantitative science to unravel Earth dynamics and to respond to major societal challenges posed by Climate Change, sustainable use of Earth and Energy Resources, and exposure to Natural Hazards. As a fully-integrated Earth System Science Institute – with over 100 integrated members – IDL produces internationally-relevant science that directly contributes to a vast range of public policies and initiatives, or that is upstream to numerous applications at national and European level. IDL manages state-of-the-art laboratories and research in Geophysics, Geochemistry, Geology, Renewable Energy, High Performance Computing facilities and hosts doctoral programs in Earth System Science and Sustainable Energy. IDL research lines combines analytical studies, data analysis, observational activities, and modelling.



Faculty of Sciences of the University of Lisbon (FCUL) was created in 1911, rooted in the Polytechnic School (1837-1911), and is an integral unit of the University of Lisbon, the largest and most prestigious university in Portugal. As an institution of creation, transmission, and diffusion of scientific and technological knowledge, FCUL promotes a culture of permanent learning, valuing critical thinking and intellectual autonomy. Its mission is research and teaching, and the transfer of knowledge and innovation in the areas of exact-, natural sciences and techno-sciences, as well as the dissemination and sharing of cultures, stimulating a permanent opening to the civil society.

Conference Venue

This conference will only be a physical event. The conference is organised at the campus of the Faculty of Sciences of the University of Lisbon, located in Campo Grande, Lisbon. Lisbon is the capital and the largest city of Portugal, and the second-oldest European capital city. Lisbon has a rich historic past, from Roman occupation, to Moors and the city was established as Portuguese in 1147. Bathed by the river Tagus and very close to the Atlantic Ocean, Lisbon has a long history with the sea. The Mediterranean climate makes it an ideal place to visit all year round, allowing to fully enjoy the contrasting history, culture, and food.



Language

The conference language will be English. No translation facilities will be provided.

Excursion

On the day after the conference (Saturday the 9th of September) an excursion will be organised. Details will be announced in the preliminary conference program.

Conference fee

Regular fee: 500 euro, excl. VAT
Students: 200 euro, excl. VAT

If a student has submitted an abstract that has been selected for oral presentation, then his/her fee is waived.

The fee includes admission to the 3-day conference program, social events, conference dinner on the 7th of September and an excursion on the 9th of September.

Details about the social events and excursion will be provided in the Preliminary Conference Program.

Registration, Travel and Accommodation

Information about registration, travel and accommodation will be provided in detail in the Preliminary Conference Program.

Further Information

SedNet Secretariat, Chayenne van Dijk

E-mail: secretariat@sednet.org
Website: www.sednet.org

SedNet

SedNet is the European network which aims to incorporate sediment issues and knowledge into European strategies to support the achievement of good environmental status or potential and to develop new tools for sediment management. Its focus is on all sediment quality and quantity issues at the river-sea system scale, ranging from freshwater to estuarine and marine sediments. SedNet brings together sediment professionals from science, administration, industry and consultancy. It interacts with the various networks in Europe that operate at national or international level or that focus on specific fields (such as science, policy making, sediment management, industry, education). Special attention was devoted in recent years to the integration of sediment management in the Water Framework Directive implementation process, and particularly in the River Basin Management Plans.

For more information about SedNet visit the website: **www.sednet.org**