Short Course (November 2023) **+ Applied Case Studies**

Virtual and on-site at Univ. Gothenburg, Sweden
First announcement

"Environmental Sedimentology"

As part of the UKE PLATFORM project and in connection with the Marine Environmental Geology course at the University Gothenburg, this web-based, this short course introduces selected concepts and methods that are useful for interpreting sediment sources, transport pathways and environmental risks associated with contaminated sediments (see figure below). Although these methods use the mineralogy, grain size and geochemistry of sedimentary deposits, the course does not assume specialized knowledge in these topics.

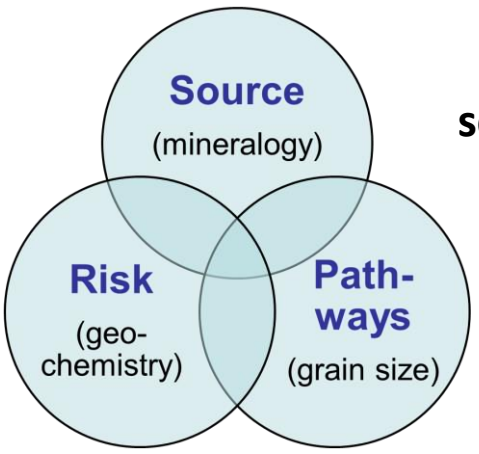
The course will be based on about 15 hours of lectures (theory and examples) and short, hands-on exercises (see tentative schedule below). Following the short course, participants can choose to take up a case study from the literature or connected to their own work. The short course and case-study work are each expected to require approximately one week's work. The course itself will, however, be divided between three weeks in the beginning of November. The case studies can be done by individuals or in small groups, this part is more flexible. After agreement, a final presentation seminar will, probably, be held in early December. The principle lecturer will be Prof. emeritus Rodney Stevens, Dept. Earth Sciences, Univ. Gothenburg, Sweden. A schedule will be included in the second announcement.

Certificates of participation and completion will be given, but credits should be coordinated by the individual home institutes. Following the webinars and exercises is considered equivalent to 1.5 ECTS credits, as is the case-study work (i.e. 3 ECTS totally).

For more information contact Rodney Stevens, stevens@gvc.gu.se, tel: 46-709892750.

Project and course website: https://kermitcooperation.wixsite.com/platform

Webinar site: https://gu-se.zoom.us/my/rodneystevens



main sedimentology topics

November lectures in Environmental Sedimentology (tentative schedule)

- ***Rodney Stevens*** *(extra information in references indicated)*

2 Nov – Thursday (all times are CET – Sweden)

10.15 Introduction(s)
Structure and objectives. Small-scale and large-scale geosystems. (Stevens 2008)

11.15 San Luis Obispo Bay (California) example (Stevens 2012b)
Illustration of the applied importance of sediment parameters and environmental analysis.

13.15 Grain-size parameters, trends and interpretations
Sedimentological processes reflected by grain-size distributions. Spatial variability related to transport directions, erosional and depositional conditions. (Stevens 1979; Kairyte & Stevens 2014)

14.15 Grain size (continued) and exercise example
Grain-size interpretations regarding environmental transport directions, erosion and deposition. The exercise aims to apply these interpretative possibilities.

3 Nov - Friday

10.15 Fine-sediment aggregation, deposition and consolidation
Flocculation, coagulation and other aggregation processes are essential for sedimentation from suspension. They also give very special physical and geochemical properties to these sediments. The transition from sedimentation to preserved bottom sediment involved physical, biological and geochemical processes. (Stevens 1991, 2001)

11.15 The role of sediments relative to pollution problems
Examples illustrating the parameter relationships in sediments. (Stevens 2015)

13.15 Quantitative provenance (sediment supply budgeting)
Mineralogy in size-specific fractions can be used to calculate the contributions from sediment sources. (Kaiyte & Stevens 2009; Stevens 2012a, 2012b)

14.15 Exercise example dealing with sediment budgeting
Hands-on application of provenance interpretations. (Johannesson et al. 2000; Brack et al. 2001; Stevens & Ekermo 2002)

10 Nov – Friday

10.15-12-15 Environmental Sequence Stratigraphy
– Guest lecturer Paul Natanail (Land Quality Management Ltd. & Univ. Nottingham)

13 Nov - Monday

10.15 Introduction to geochemistry, sediment mineralogy and color interpretations
Sediment mineralogy is related to sources, weathering and size sorting effects, as well as the bottom geochemistry, which is often reflected in the sediment color. (Stevens 1987)

11.15 Environmental geochemistry – "My sediments, exactly"
Specifying the sediment geochemistry and the background variability requires consideration of all sediment parameters (size, mineralogy and geochemistry) together. (Johansson et al. 2003)

13.15 Environmental geochemistry (continued) and example from the Portuguese shelf
See above. (Mil-Homens et al. 2006, 2007, 2014; Stevens & Johannesson 2006)

14.15 Skagerrak and Archipelago settings and exercise example
A hands-on exercise dealing with normalization of geochemical data.

15 Nov - Wednesday

10.15 Priority parameters for sediment documentation and interpretations
Practical use of sediment relationships and interpretation possibilities. (Stevens 2003)

11.15 Risk modeling
Ranking and prioritizing sediment pollution risks relative to supply and impact of stressors. (Lavers & Stevens 2014; Stevens et al. 2013, 2017)

13.15 Baltic Sea and Black Sea anoxic environments.
Current eutrophication is often attributed to anthropogenic causes, but it is not a new phenomenon and natural factors are very important. (Lepland & Stevens 1998)

14.15 Kakhovka dam destruction and risks along Dnipro River and Black Sea coast.
Possible case-studies regarding sediment pollution.

15.15 Summary and case-study planning (especially for Ukrainian participants)