Short-course

The significance of soft-sediment deformation structures

The soft-sediment deformation structures are the unique record of sedimentary and tectonic processes occurring in the little-known time interval between the latest sedimentation phases and the diagenesis.

Soft-sediment deformation structures are widespread in sedimentary successions of all ages and most depositional settings. They develop at or close to the sediment surface, during or shortly after sediment accumulation and before significant burial has taken place. As such, they have the potential to contribute to the understanding of depositional palaeoenvironments. Progress has been made recently in developing methodologies to understand the processes that trigger the instabilities leading to soft-sediment deformation. In particular, it is possible in many cases to distinguish structures that have been generated by triggers of external origin (exogenic triggers such as earthquakes) from those of "internal" origin (endogenic triggers such as rapid sedimentation or flood-related turbulence). The focus of this course will be to develop understanding of the palaeoenvironmental significance of soft-sediment deformation structures. All aspects of the palaeoenvironment will be considered, including the physical environment, tectonic setting, palaeoclimate and depositional processes. The aim is to further develop the understanding of soft-sediment deformation structures beyond their description and classification, with an emphasis on their context and significance.

We will treat all aspects of soft-sediment deformation that contribute to understanding the environmental context and significance, including theoretical approaches, experimental investigations, methodologies for analysing soft-sediment deformation, process studies and field-based case studies from bed to basin scale.

Main topics

- Deformation mechanisms in soft-sediments. Liquefaction and fluidization.
- Classifications of soft-sediment deformation structures.
- Trigger mechanisms with field examples:
  1) overloading;
  2) storm wave-induced deformation;
  3) seismically-induced soft-sediment deformation;
  4) tectonic deformation of soft-sediments;
  5) karstic deformation of soft-sediments;
  6) other trigger mechanisms.
- Procedures to establish the trigger mechanism for soft-sediment deformation.

Location

Dipartimento di Scienze della Terra e Geoambientali – Università degli Studi di Bari “Aldo Moro”, BARI.

Duration (2 days - 2 CFU)

One day of lessons (about 8 hours) followed by one day in the field visiting well-exposed examples of soft-sediment deformation structures.

Date

June 5 and 6, 2015.

Costs

The individual cost is 70 € (Geosed/SGI member) – 90 € (Geosed/SGI non-member) and includes the field trip and the tutorial material. A minimum of 10 participants is foreseen. Deadline for registration is May 15. Payment by credit card or bank transfer at:

http://www.socgeol.it/876/short_course_the_significance_of_soft_sediment_deformation_structures.html

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