

Seismic triggering of submarine landslides

Dr. Giovanna Biscontin (University of Cambridge)

Seminar overview:

In recent years, increasing attention has been focused on the problem of submarine slope stability. The global economy requires a better, wider reaching infrastructure, able to quickly distribute resources, such as oil and gas, from the point of production to the points of use. An expanding network of telecommunication cables is also crossing the ocean floors and breakages caused by slope failures would interrupt or delay the flow of information around the world. In addition, large submarine slides can cause tsunamis, which can be devastating for the coastal communities on the wave's path.

A number of the failures takes place on slopes inclined 5° or less and typical soil profiles consist of almost parallel layers of normally consolidated clay. The submerged slope under earthquake loading can be modeled using simple shear conditions and a compatible set of constitutive laws to describe the response of the soil. A multi-directional simple shear device allows loading along three independent axes, two perpendicular horizontal directions to allow any stress or strain paths in the horizontal plane, and a third in the vertical direction. This prototype provides the ability to apply shear stresses and complex loading paths to soil samples. The experimental program focused on investigating the effects of anisotropy of Gulf of Mexico clay subjected to cyclic loading.

Biography:

Giovanna Biscontin earned her bachelor's degree in geotechnical engineering from the University of Padova (Italy) in 1997 and both her MS (1998) and PhD (2002) in geotechnical engineering from the University of California, Berkeley (USA). She was an academic at Texas A&M University from 2002 until joining the Department of Engineering at the University of Cambridge in September 2013. Dr Biscontin's work focuses on characterizing and modeling the response of soils, especially when subjected to cyclic loading, such as earthquakes. Her interests are also related to offshore deposits, and soft marine clays in particular. Her experimental research has been related primarily to simple shear testing and especially the effects of anisotropy and multi-directional loading.

When and where:

Wednesday, 13 June, 19:00

The Gordon Cameron Lecture Theatre, Fitzwilliam College

Queries:

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