

## Course Description

The Monterey Formation of California has long been recognized as a significant hydrocarbon source rock and reservoir. During this one-day field course, we will visit several exposures of Tertiary siliceous shale, mud rock and sandstone of the Monterey and equivalent formations between the towns of Santa Cruz and Half Moon Bay along the Pacific coast of northern California. The focus of the course shall be observing a broad variety of structural heterogeneities and their impact on the paleo fluid flow including hydrocarbons. The structure types include multiple sets of joints, veins, sand dikes interlaced by deformation bands and faults. Although, it is not the main objective of this course, we shall cross the famous San Andreas Fault both at the beginning and near the end of the trip, which may be of interest for visitors from out of California and the USA.

The field course will use materials from the previous Rock Fracture Project field guides and the case studies from a recent digital publication, the Rock Fracture Knowledgebase (<http://rockfracture.com/>). Students and postdocs will receive a free one-year subscription to the Knowledgebase. Other professional participants will receive 40% discount of the regular one year individual subscription rate. Please email Dr. Jian Zhong <[zhongj@stanfordalumni.org](mailto:zhongj@stanfordalumni.org)> to receive your free or discounted Rock Fracture Knowledgebase subscription after registering for the Field Course and certainly before the field trip date.

## Topics

Mode of fracturing in siliceous shale, mudstone, and sandstone  
Architecture of fracture zones  
Fluid-fracture interaction

## Level

Intermediate (professionals)  
Beginning (students in petroleum engineering, petroleum geology, structural geology, hydrogeology, and environmental geology)

## Why you should take it?

Fractures are conduits or baffles of extreme permeability in reservoir rocks. It is important to know what they are like in the real world. If nothing else, a nice walk in the beach along the beautiful coast of the Pacific Ocean on a spring day in California is worth the price of admission!

## Instructor

Atila Aydin is an Emeritus Professor of Structural Geology and Geomechanics at Stanford University. He served as the Co-Director of the Stanford Rock Fracture Project and Director of the Stanford Shale Smear Project. He has four decades of experience in rock fracture studies and fracture flow. He was responsible for writing a chapter of a book, *Rock Fractures and Fluid Flow* (1996). His most recent on line publication includes *Rock Fracture Knowledgebase* (Aydin and Zhong, 2017), a repository of information about rock fracturing and the properties of resulting structures.