Coulomb 3.2 Short Course

given on 5 June 2011 at Peking University

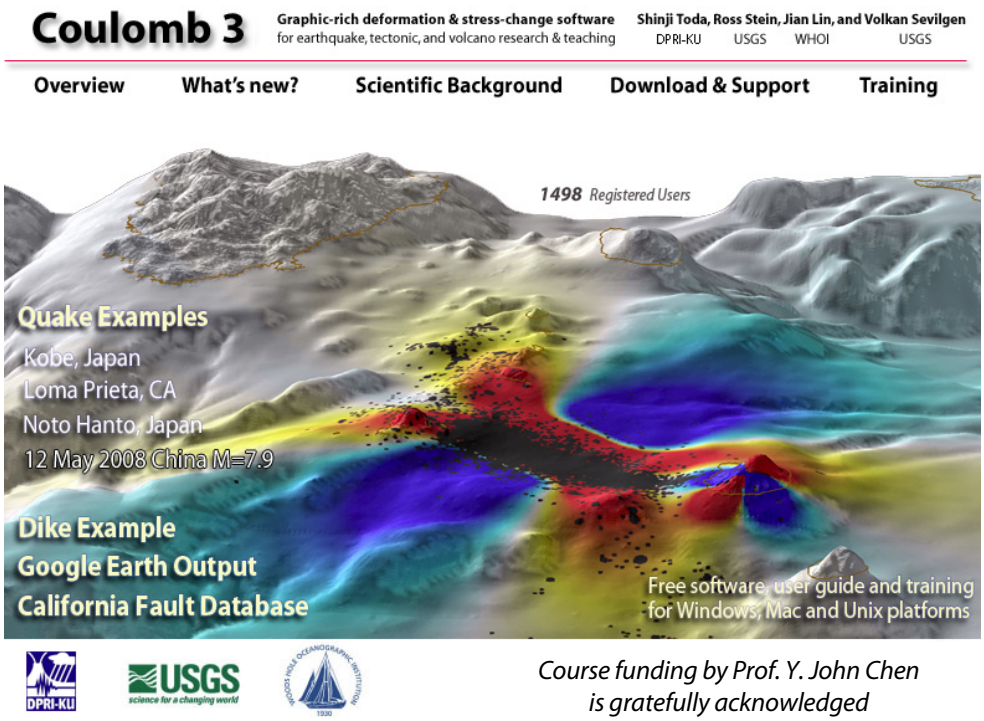
Thanks to Prof. Y. John Chen, Institute of Theoretical & Applied Geophysics of Peking University, the program Coulomb will be taught in English by Ross Stein (USGS), Shinji Toda (Kyoto Univ.) and Jian Lin (WHOI); Dr. Lin will also tutor in Chinese. This free, full-day course guaranteed to turn novices into experts. You don't have to take the class to use Coulomb, but you will learn faster with us.

You will receive a bound User Guide, you can download Coulomb onto your own laptop and bring it with you if you have MATLAB. Please register for the course here:

http://www.whoi.edu/page.do?pid=65956

The course is open to students, researchers and professors, but we can only accommodate about 75 people.

The program, user guide, and tutorial files are freely available from http://www.coulombstress.org. You will be asked to register when you first launch; there are 1600 registered Coulomb users worldwide. Coulomb runs on Macx;s, PC's and Linux boxes. It is a MATLAB application, so you'll need to install MATLAB 7.4 or later.



Why Coulomb?

We believe that one learns best when one can see the most and can explore alternatives quickly. So the principal feature of Coulomb is ease of input, rapid interactive modification, and intuitive visualization of the results. Coulomb calculates displacements, strains, and stresses caused by fault slip, magmatic intrusion or dike expansion. Typical uses are how an earthquake promotes or inhibits failure on nearby faults, or how fault slip or dike expansion will compress a nearby magma chamber. Geologic deformation associated with strike-slip faults, normal faults, or fault-bend folds is also a useful application. Calculations are made in an elastic halfspace with uniform isotropic elastic properties following Okada (1992). The internal graphics are intended for publication, and can be imported into illustration or animation programs for enhancements.

Class Plan

In the first half-day, we'll introduce you to Coulomb analysis and explain our approach to modeling. Then you learn how to build and use input files, add active faults, earthquakes, and coastlines, calculate displacements and strains, and create publication-quality PDF and numerical output files. We'll also show you how to taper or tile the fault slip, and how to import variable-slip source models. In the second part, we'll focus on Coulomb stress analysis for seismic and volcanic investigations, and show you how to display your results in Google Earth. We'll let you resolve stress changes on faults in their rake directions, on specified rakes, or on optimal planes. You'll learn how to view all these results graphically in 3D or to output numerical tables.

Course funding by Prof. Y. John Chen is gratefully acknowledged

PROGRAM

Sunday, June 5

8:00	Software downloads
9:00	Participant registration
9:30	Coulomb concepts
11:00	Coffee/tea break
11:30	Stress change calculations
1:00	Lunch
2:00	Overlays and input files
3:30	Coffee/tea break
4:00	Advanced features
5:30	Course close

Questions? Contact Jian Lin <jlin@whoi.edu>