Geophysical Research Abstracts
Vol. 18, EGU2016-2930, 2016
EGU General Assembly 2016

FiSH: put fault data in a seismic hazard basket

Bruno Pace (1), Francesco Visini (2), and Laura Peruzza (3)

(1) Università "G. d'Annunzio" Chieti-Pescara, DiSPUTer, Chieti, Italy, (2) INGV (Istituto Nazionale di Geofisica e Vulcanologia), L'Aquila, Italy, (3) OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Trieste, Italy

The practice of using fault sources in seismic hazard studies is growing in popularity, including in regions with moderate seismic activity, such as the European countries. In these areas, fault identification may be affected by similarly large uncertainties in the historical and instrumental seismic histories of more active areas that have not been inhabited for long periods of time. Certain studies have effectively applied a time-dependent perspective to combine historical and instrumental seismic data with geological and paleoseismological information, partially compensating for a lack of information.

We present a package of Matlab® tools (called FiSH), in publication on Seismological Research Letters, designed to help seismic hazard modellers analyse fault data. These tools enable the derivation of expected earthquake rates given common fault data, and allow you to test the consistency between the magnitude frequency distributions assigned to a fault and some available observations. The basic assumption of FiSH is that the geometric and kinematic features of a fault are the expression of its seismogenic potential.

Three tools have been designed to integrate the variable levels of information available: (a) the first tool allows users to convert fault geometry and slip rates into a global budget of the seismic moment released in a given time frame, taking uncertainties into account; (b) the second tool computes the recurrence parameters and associated uncertainties from historical and/or paleoseismological data;

(c) the third tool outputs time-independent or time-dependent earthquake rates for different magnitude frequency distribution models.

We present moreover a test case to illustrate the capabilities of FiSH, on the Paganica normal fault in Central Italy that ruptured during the L'Aquila 2009 earthquake sequence (mainshock Mw 6.3).

FiSH is available at http://fish-code.com, and the source codes are open. We encourage users to handle the scripts, communicate with us regarding bugs, and/or suggest further improvements. Our intent is to distribute these tools in order to help researchers to pinpoint potential inconsistencies and obtain reliable fault-based seismic hazard evaluations.