Geophysical Research Abstracts, Vol. 8, 09020, 2006
SRef-ID: 1607-7962/gra/EGU06-A-09020

Persian Gulf seismicity

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Persian Gulf is a marginal sea located next to the southern flanks of the Zagros Mountains between Persian Plateau and Arabian Plate. Tectonically there is a basin of the late Pliocene-Pleistocene subdued by Pleistocene lime-stones that was locally rejuvenated by tectonic activity during Quaternary. The region is known for its oil-gas fields and most seismic investigations are concentrated on active source projects to study rich oil fields. Natural seismic activity around northern parts of the Persian Gulf, which is sometimes associated with great and devastating earthquakes, seem to be mainly under control of the convergent movement between Arabia-Eurasia while the southern parts and the Persian Gulf itself are considered to be seismically quiet. The recent Qeshm island earthquake has shown that northern Persian quakes can shake southern Arabian parts also. So to study natural seismic activity we have considered a rectangle between 22-31N and 48-57E which is also divided to the southern and the northern parts. The division line trends NW-SE and SW-NE around 53E point about the middle of the offshore. Then historical and relocated instrumental earthquakes plus some existing focal solutions are presented and shortly discussed. Later we have obtained different statistical relations including a-value, b-value etcĚ for each zone. Based on the results it seems that natural activity is mostly concentrated next to the northern parts and there is a little activity within the Persian Gulf. So we propose to install a digital seismic network including a set of sea bottom seismographic stations and complementary coastal stations to monitor sea bed seismic/microseismic activity. Such a network is not only useful to study natural events but also may be applied to find out about reservoir induced earthquakes if there is any.