

Abstract

The most of shallow earthquakes are followed, just after the main shock, by increased residual seismicity known as "aftershocks" or "aftershock sequences". Because of their disparity in time and space, aftershock sequences are more or less obvious and their productivity is spread out in time. Several studies have been regularly proposed to explain or to understand the mechanisms of the occurrence and the behaviour of these small earthquakes. In a theoretical context, many factors can induce the aftershock triggering: residual friction, subcritical crack growth, pore fluid flow etc. Just after the occurrence of the most destructive main shock of the 21 May 2003 Boumerdes (Algeria) earthquake, a wide sequence of aftershocks was recorded at different geographical locations and with various magnitudes. Based on the fact that the region of Boumerdes (40 km east of the capital Algiers) did not develop major earthquakes in the past, a geostatistical investigation of the data for this aftershock sequence is a valuable input for better seismogeological identification of this area. In the present analysis, after an overview of the geological factors in the likely occurrence of the earthquake, fundamental statistical parameters were chosen: the b value from the Gutenberg-Richter law, the p factor of the extracted respectively from the b value and the fractal variogram defined as a graphic tool to describe the continuity or the roughness of data. Jointly to the geostatistical parameters provided by the variogram like the fractal dimension. The main objective of the calculation and interpretation of these parameters is oriented towards a better understanding of the seismicity of the region of Boumerdes (Algeria) now classified as seismogenic zone