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Pournari Dam (W. Greece) Impoundment and Triggered Seismicity

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The Pournari dam is located in the seismically active area of W. Greece, close to Arta. The height of the dam is 87m, with maximum water level height at 126m and maximum volume 865X106m3. The first impoundment commenced in January 1981, and was accompanied by a considerable number of low magnitude seismic events, as well as two major ones on March 10 and April 10, 1981, with magnitudes ML=5.6 and ML=4.7 and focal depths 13km and 10km, respectively, all located in the broader area of the dam. Potential triggering of the second event was studied through the calculation of Coulomb stress changes distribution, due to the occurrence of the first ML=5.6 event.

Additionally, the detailed study of temporal correlation between water level increase and seismicity showed triggering seismicity due to both the initial filling and the disordered structure, controlled by the presence of evaporites, south and west of Pournari dam area.

Further processing of the recorded seismicity for the period 1982-2010, in comparison with the variations of Pournari dam water level, presented an increase of shallow seismicity in the vicinity of the reservoir up to a 10 km distance -in contrast to the initial period, characterized by a number of deeper events- which was due to the background response change from undrained to drained status.