

RESERVOIR INDUCED SEISMICITY IN BRAZIL

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Since the mid-1970s, reservoir induced seismicity (RIS) has been of concern in Brazil, especially in Minas Gerais state, site of the first reported case of RIS in Brazil. In over 20 years of monitoring only 15 of more than 800 reservoir in Brazil were associated with RIS. Low level seismicity has been observed at these reservoirs with the largest a M 4.2 event on February 24, 1974 near Volta Grande and Porto Colombia reservoirs. Except for the Cajuru and Jaguari all other cases show close temporal and spatial association with reservoir impoundment. Seismic networks were deployed at five locations before impoundment and noticeable epicentral growth was observed at Nova Ponte. The magnitude of the largest induced event at any location does not appear to be related to the reservoir volume or the maximum height of the water column. Local geology and stress conditions appear to control the size of the largest earthquake at any reservoir. The temporal and spatial pattern of seismicity suggest that most of the observed RIS occurred by diffusion of pore pressures following filling or lake level changes. The hydraulic diffusivity estimated for three cases, where adequate data are available, range between 0.3 and 8m²/s.