Is there any causality between the 2002-2005 volcanic activity of Baitoushan volcano and the 2011 Tohoku M9 earthquake?

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From 2002 to 2005, the Baitoushan volcano on the border between China and North Korea showed an abnormality on the seismicity, temperature of hot spring, and on the summit elevation. The analysis using the ENVISAT SAR interferometry indicated the accumulation of magmatic fluid at about 5km under the summit of Baitoushan volcano. After the activity of Baitoushan volcano, in 2011, megathrust earthquake of M9 occurred in Japan. Many peoples feared the eruption of Japanese volcanoes including Fuji volcano under the influence of the megaquake.
The same kind of questions was born even for Baitoushan volcano, which is away 1300km from the epicenter. Is there any causality between the 2002-2005 volcanic activity of Baitoushan volcano and the 2011 megaquake?
To answer this problem, we need the knowledge of historical relationship between the Baitoushan eruption and the megaquake in Japan. For this we are required the knowledge of correct eruption age based on the ancient documents, and the analysis of relationship between the ages of eruption and megaquake in the past. After the analysis of old documents, we got four data sets of age differences; the average age difference is 1.3 year with a standard deviation of 7.2 year. Using these, we are able to estimate the corresponding age of eruption from the megaquake age. If we assume the eruption in relation to 2011 megaquake, the corresponding age of eruption with 3σ accuracy will be from 1991 to 2034. This time interval covers the present activity interval of 2002 to 2005. Thus the Baitoushan activity from 2002 must be related to 2011 megaquake in Japan.

Keywords: Baitoushan volcano, 2011 Tohoku earthquake, Time correlation

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