Comment on ‘Evaluating the statistical validity beyond chance of ‘VAN’ earthquake precursors’ by Francesco Mulargia and Paolo Gasperini

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The paper by Mulargia & Gasperini (1992) concluded that ‘the apparent success of VAN predictions can be confidently ascribed to chance’. This conclusion contradicts our earlier publication and hence a simultaneous publication of our reply was absolutely necessary in order to give the reader the opportunity to judge the correctness of the arguments of both sides. However, the Editor ‘did not see the paper by Mulargia & Gasperini as a comment to our earlier published papers and hence did not accelerate the process of ‘Comment and Reply’ pairs by sending to our group their paper before publication’. In view of this decision of the Editor we cannot proceed here to a simultaneous reply. However, we would like to emphasize the following.

By means of a detailed statistical treatment, Hamada (1992) has recently analysed exactly the same VAN data as Mulargia & Gasperini and has concluded that:

‘When the predictions were limited to expected $M_S \geq 5.3$, 10 were successful and 2 failed predictions were obtained. With a confidence level of 99.8% it is rejected that this success rate (cf. VAN) can be explained by a random model of earthquake occurrence taking into account a regional factor which includes a high density of earthquakes in the prediction area. For earthquakes with $M_B$ (USGS) $<4.5$ statistical significance could not be obtained because of the large number of small earthquakes.

‘Consequently, statistical examination of the SES predictions proved high rates of successful prediction and predicted events with high probability gain. This suggests a physical connection between SES and subsequent earthquakes with $M_B$ at least 5.0’.

It is therefore obvious that the detailed analysis of Hamada invalidates the conclusions of Mulargia & Gasperini.

REFERENCES
