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Revised geometry of nodal-plane uncertainty volume used in the seismo-lineament analysis method

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At the core of the seismo-lineament analysis method (SLAM; Cronin *et al.*, 2008, *Env & Eng Geol* 14(3), 199-219) is a procedure for defining the intersection between the ground surface and the uncertainty volume associated with each nodal plane derived from an earthquake focal mechanism solution. This intersection is called a *seismo-lineament*. Given a sufficiently accurate focal mechanism for a well-located earthquake on a fault that is emergent and approximately planar, the trace of the fault that generated the earthquake is likely to be located within the seismo-lineament swath. We have developed the solution for the quantitative description of the nodal-plane uncertainty volume given the uncertainty in nodal plane orientation and the triaxial uncertainty ellipsoid around the hypocenter.

In an emergency response context after a major earthquake, the revised SLAM procedure can help identify where ground-surface rupture might have occurred. This procedure is also useful for spatially correlating historic earthquakes with the faults that produced them, and as a reconnaissance tool in the search for seismogenic faults that might not have been recognized in areas where fieldwork is difficult because of logistics, vegetation, water/snow/ice cover, high relief, or access restrictions. The shape of the seismo-lineaments defined by the revised SLAM procedure resembles a bow tie, with a relatively narrow area near the epicenter broadening along nodal-plane strike away from the epicenter. The procedure has been implemented in code written in *Mathematica* that defines the boundaries of a seismo-lineament on a DEM-based hillshade basemap. A manual method is under development that uses a spreadsheet or calculator and a topographic map of the epicentral area.