Algorithm for estimating the location and tangential plane of a reflector

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Last two decade magmatic reflectors have been detected beneath some volcanic regions by analysing some reflection phases of the seismograms. In this paper we consider a problem to determine the location and tangential plane (facet) of the reflector from the apparent velocity, back-azimuth and travel time of a reflection phase. We formulate this problem as a one-dimensional algebraic problem, and show a simple algorithm to solve it. In the conventional analyses homogeneous velocity structure models have been used, but the present algorithm employs vertically heterogeneous one and can also easily treat reflection converted phases.