A pick will associate with an event as a given phase if its residual is less than the residual taper value (restpr) which incorporates distance and origin-quality terms (see discussion for details). In this case, a total of four phases from two hypocenters were evaluated (P,S for #40105956 and P,S for #40105957). Both P and S phases for event #40105957 qualified, but the S-phase had the lowest residual and won. The pick set was then evaluated by pick-group-assessment (the event has 10 phases, we’re assessing pick-groups with between 8 and 12 picks here), all the picks were accepted, and the event was relocated. On the first iteration, the step-vector was smaller than the MinXYStep (set to 0.1 km here), so no more iterations were performed.

Association parameters for event #40105956.

Association parameters for event #40105957.

Association parameters for event #51090926.

Event location:

Sample of a pick that attempted to associate with an event, but failed because none of the phases considered had a residual smaller than the residual taper value. Since the association failed, a stack was attempted. But the stack failed to generate a new event (event threshold = 18). The pick remains unassociated and may be used in future stacks.

Samples from Binder's logfile: failed association & failed stack

Association parameters for event #51090926.