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About some stereotypes in Local Earthquake Tomography (LET)

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Local earthquake tomography (LET) scheme, when both stations and events are located inside the study area, aims at simultaneous determination of P and S velocity structure and source parameters. This is one of the most complicated situations among most of other tomographic schemes as it presumes solution of coupled non-linear problem for velocity structure and source locations. There are several LET codes which are used in practice, and some of them are considered today as well established tools. However, in the up-to-day papers such codes are often presented without prompt description and testing, with only referring to previous "classical" works. Here we consider several stereotypes and myths which pass from one LET study to another, such as: (1) GAP criterion for data selection; (2) using coarse parameterization grids; (3) using the trade-off curves to evaluate the damping parameters; (4) some typical errors in synthetic modeling; (5) preferential using Vp and Vp/Vs inversion scheme; (6) resolution estimates based on some formal parameters; (7) ways for estimating noise effect. We suppose that some of these issues are critical and may appear injurious for the results of tomographic inversion. The purpose of this overview is to attract attention of developers and users of the LET codes to these problems, to discuss them and to take them into account in the new LET studies.