

EGU22-10588

<https://doi.org/10.5194/egusphere-egu22-10588>

EGU General Assembly 2022

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## Automatic Picking of Teleseismic P- and S-Phases using an Autoregressive Prediction Approach

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In the recent decade, the amount of available seismological broadband data has increased steeply. Picking later arriving phases such as S-phases is difficult, and there are few manual picks available for these phases. Data sets of manual picks can also be problematic, since phase arrival picks are sensitive to the parameters of the filtering, which are often unknown, and the individual picking behavior of the analysts. However, accurate arrival times, especially for these phases, could be used to improve the accuracy of velocity models obtained from seismic tomography. This necessitates the adoption of automatic techniques for determining teleseismic phase arrival times consistently over a large data set.

In this work, a robust automatic picking algorithm based on autoregressive, multi-component, multiple-sample forward prediction is examined with regards to its accuracy. The phase is identified using the Akaike criterion and the onset time is found by evaluating discontinuities in the instantaneous period of the signal. This signal analytic approach is tested using synthetic waveforms as well as real data in conjunction with manual picks obtained from the reviewed ISC-catalog.

Picking errors are estimated by comparing the automatic picks with manual picks, automatic picks at the neighboring stations as well as statistical methods. The quality evaluations suggest potential of using these automatically determined phase arrival times for a travel time tomography.