GLImER: a MATLAB-based tool to image global lithospheric structure

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Project GLImER (Global Lithospheric Imagining using Earthquake Recordings) aims to conduct a global survey of lithospheric interfaces using converted teleseismic body waves. Data from permanent and temporary seismic networks worldwide are processed automatically to produce global maps of key interfaces (crust-mantle boundary, intra-lithospheric interfaces, lithosphere-asthenosphere boundary). In this presentation, we reflect on the challenges associated with automating the analysis of converted waves and the potential of the resulting data products to be used in novel imaging approaches. A large part of the analysis and the visualization are carried out via MATLAB-based applications. The main steps of the workflow include signal processing for quality control of the input data and earthquake source normalization, mapping of the data to depth for image generation, and interactive 2-D/3-D plotting for visualization. We discuss how these various tools, especially the visualization ones, can be used for both research and education purposes.