Imaging lithospheric structure beneath the oceans and continents - Surface wave studies of Africa and the Atlantic Margin

Due to the sensitivity to upper mantle structure surface wave tomography is the ideal tool to investigate the regional-to-global variations in wavespeed, and make inferences on lithospheric structure and evolution. Recently there has been increased focus on trying to go from tomographic models of velocity directly to estimates of physical properties (e.g., temperature, lithospheric thickness). This is, however, fraught with uncertainties. Results will be shown from a study of the African region. Initially, the strong correlation between velocity variations and known geological structures is highlighted. Secondly, the difficulties in going from velocity to temperature are discussed. Comparisons between estimates from mineral physics (e.g. Goes et al., 2000) and an empirical parameterisation (Priestley and McKenzie, 2006) are shown - illustrating that even beneath 'simple' oceans the link between velocity structure and thermal structure is not as clear as might be thought.