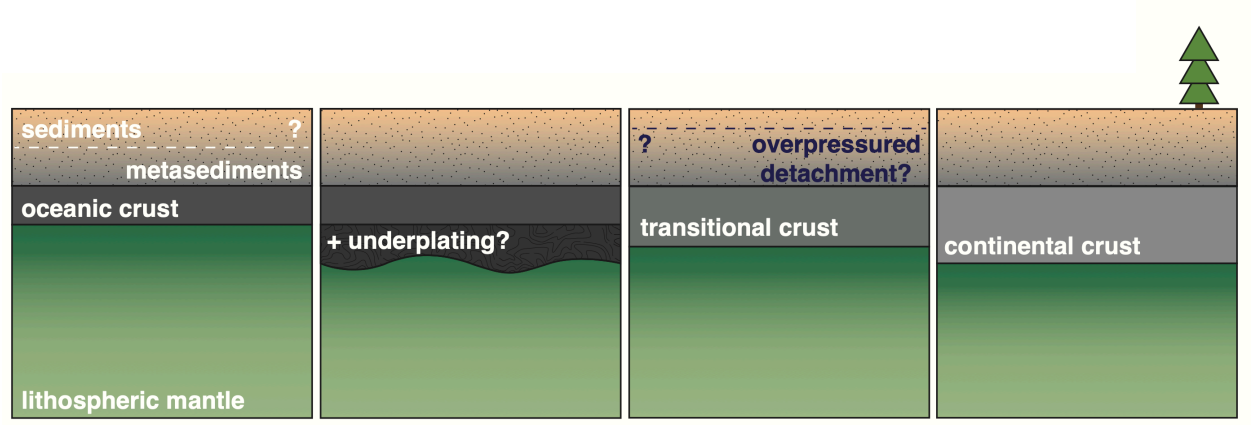
SAGE/GAGE 2022 Community Science Workshop – Pittsburg, PA – June 14 to 16
Abstract Submission for Christopher Carchedi

The Bangladesh-India-Myanmar Array (BIMA) broadband seismic experiment across the Indo-Burman Subduction Zone (IBSZ) provides an opportunity to investigate subsurface velocity structure across an endmember system for sedimentary accretion. The IBSZ is an active subaerial accretionary system overriding the subducting Bengal Basin, which extends from the Indian Craton and reaches a maximum sedimentary thickness of ~20 km. Deformation of these sediments forms the IB accretionary prism, with an active fold-thrust belt over 250 km wide. Sediments of the Ganges-Brahmaputra Delta cover the blind deformation front of this prism. Recent GPS results indicate that this highly oblique boundary is locked, but the geometry, lithology, and fluid content across and within the subduction interface are poorly understood.

We aim to provide a 3-D survey of seismic shear velocity within the IB accretionary margin using a joint inversion of surface-wave and scattered-wave measurements. Initial receiver functions across the array reveal a complex interlayering of deep basin and crustal structure atop a dipping slab. We employ a high-resolution array-based imaging technique, the 2-D generalized radon transform (GRT) inversion to provide additional constraints on the subsurface architecture underlying the IB accretionary margin. Initial composite images constructed from the scattered modes of 78 high-quality events contain up to three coherent scattering surfaces beneath the array, which may represent the sediment-basement contact, Mohos for the overriding and downgoing plates, and/or reverberations from overlying scattering surfaces. This work continues a systematic exploration of velocity-model dependence and image uncertainty for the GRT imaging method in order to better assess the robustness of these features and aid in their interpretation.



Conceptual cartoon displaying possible basement conditions underlying the Bengal Basin and Indo-Burman accretionary system.