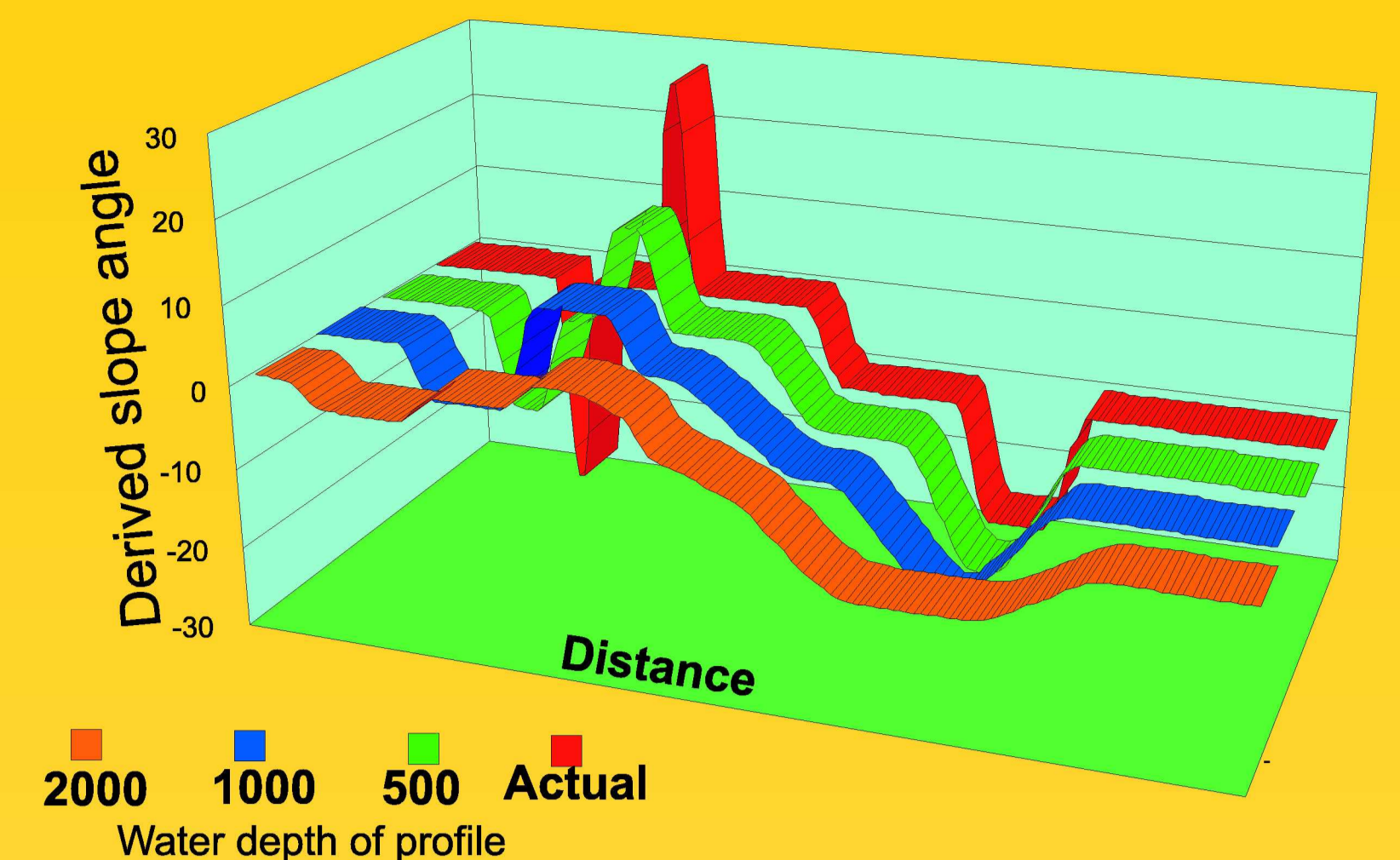
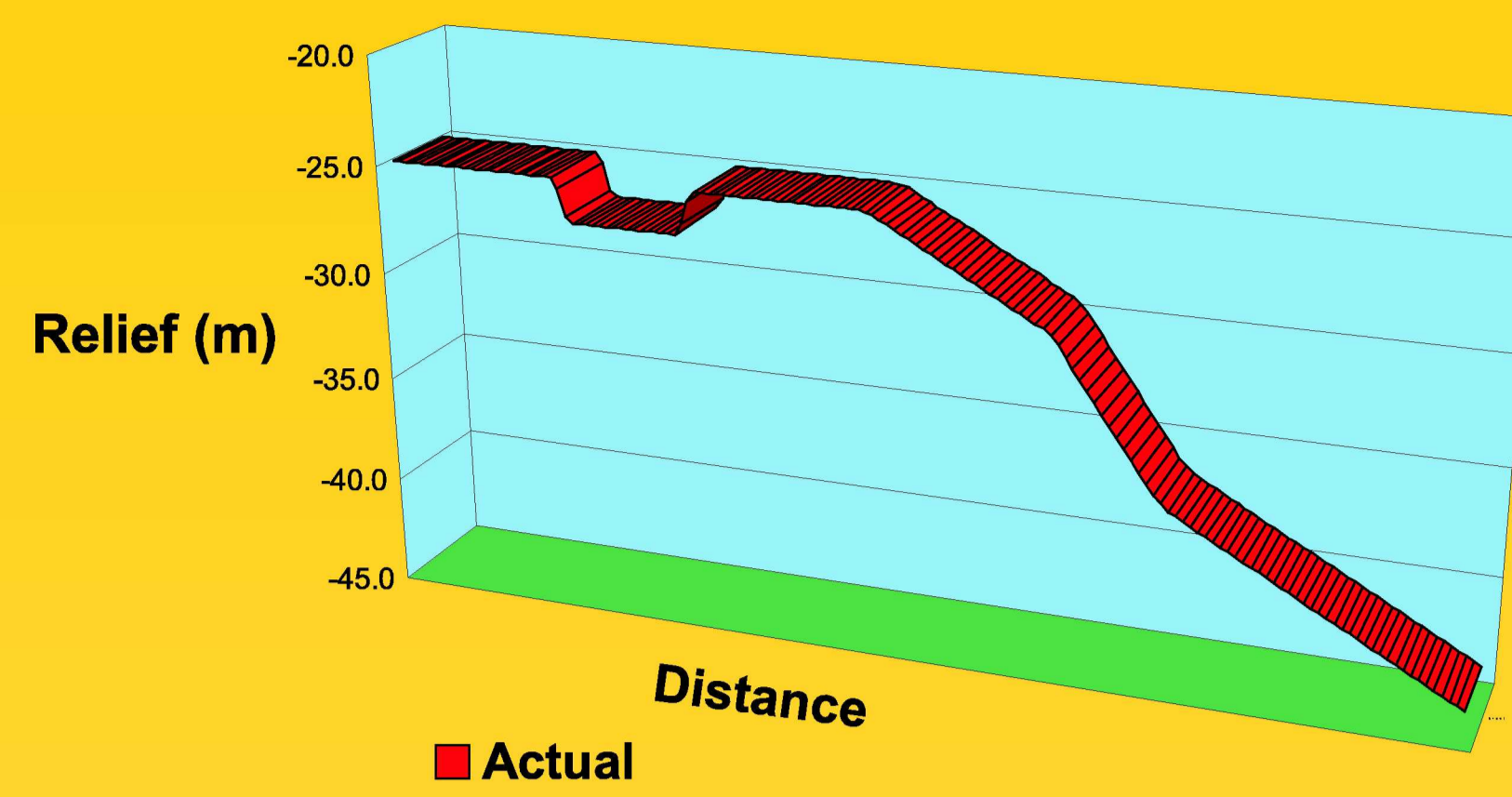
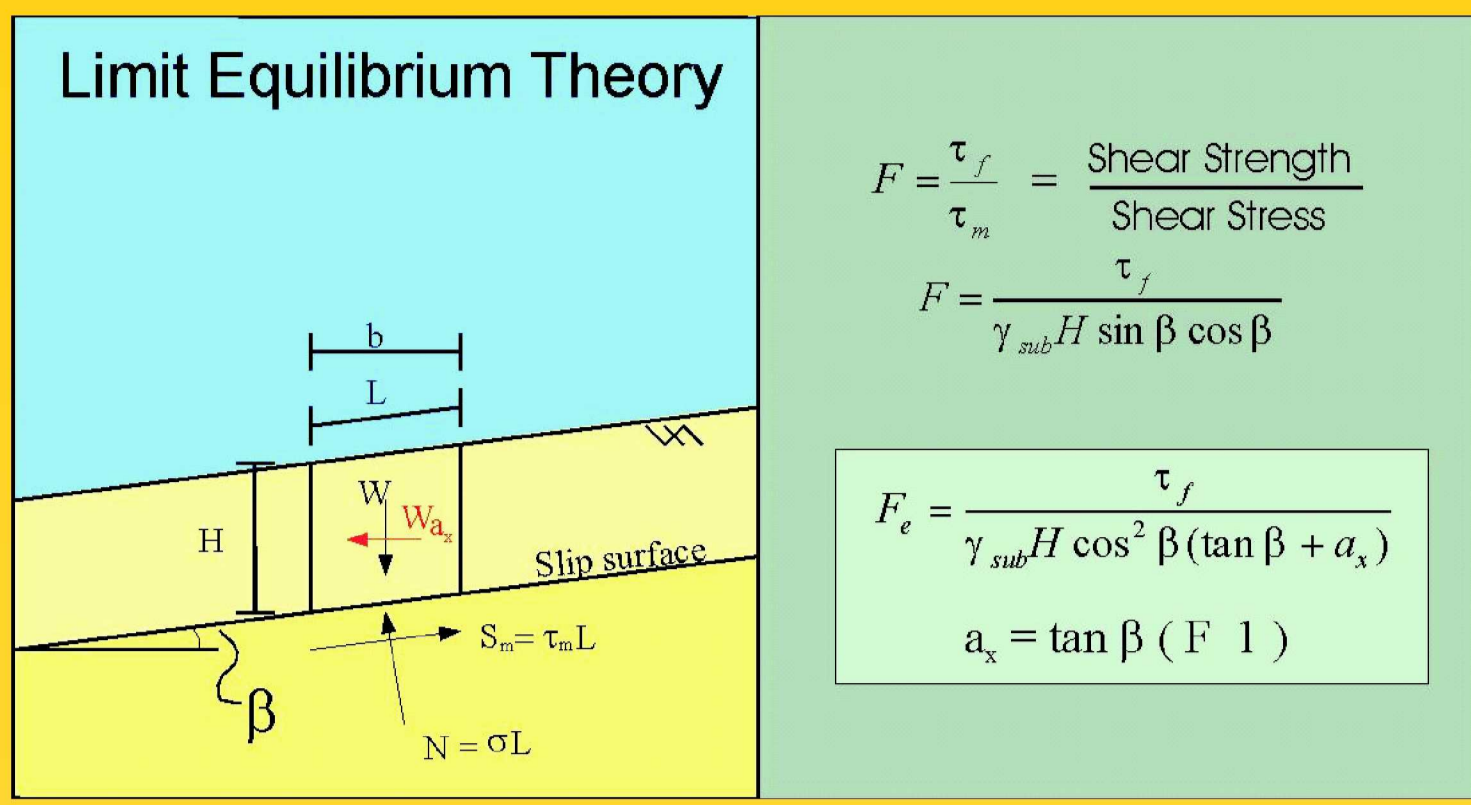
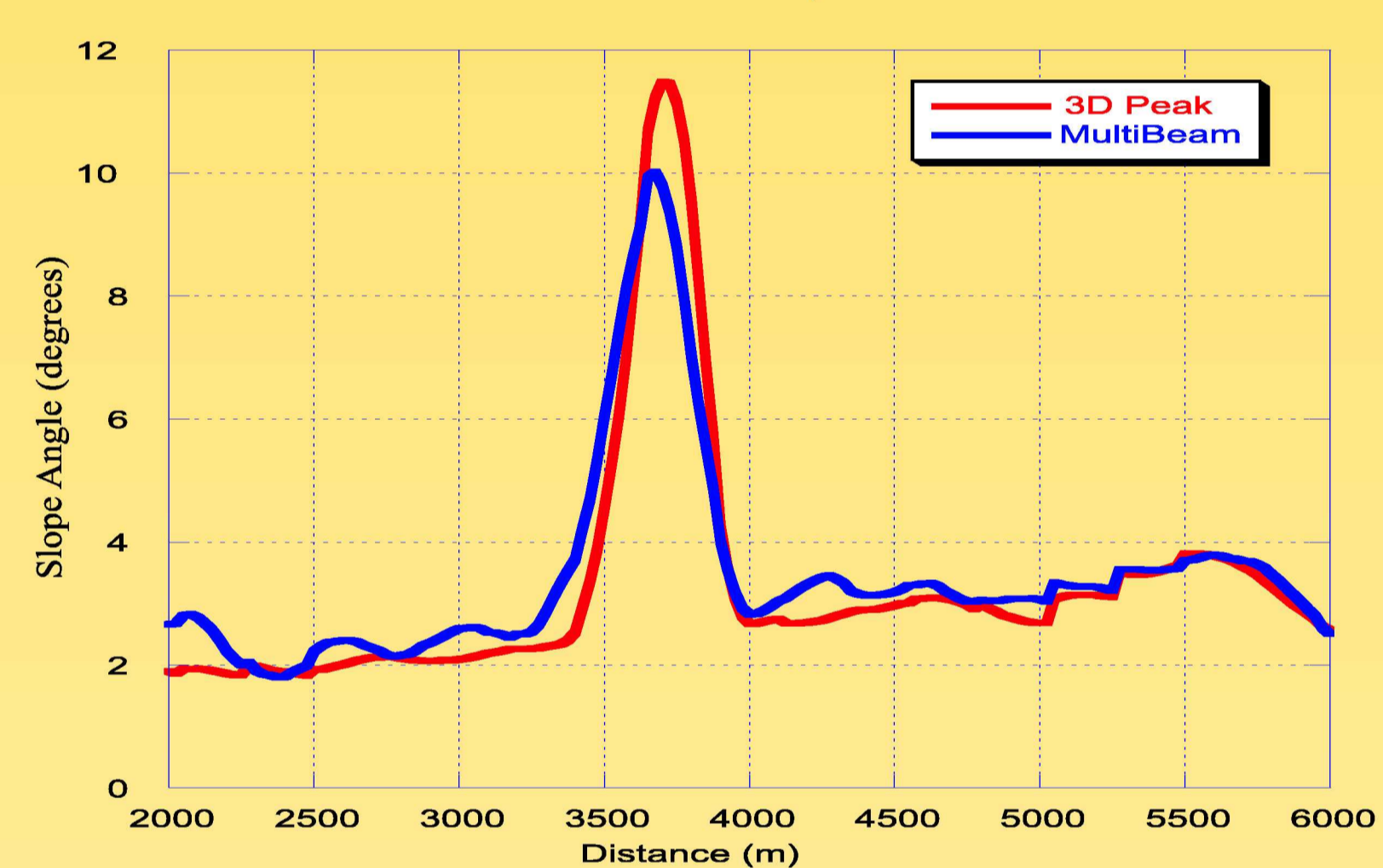
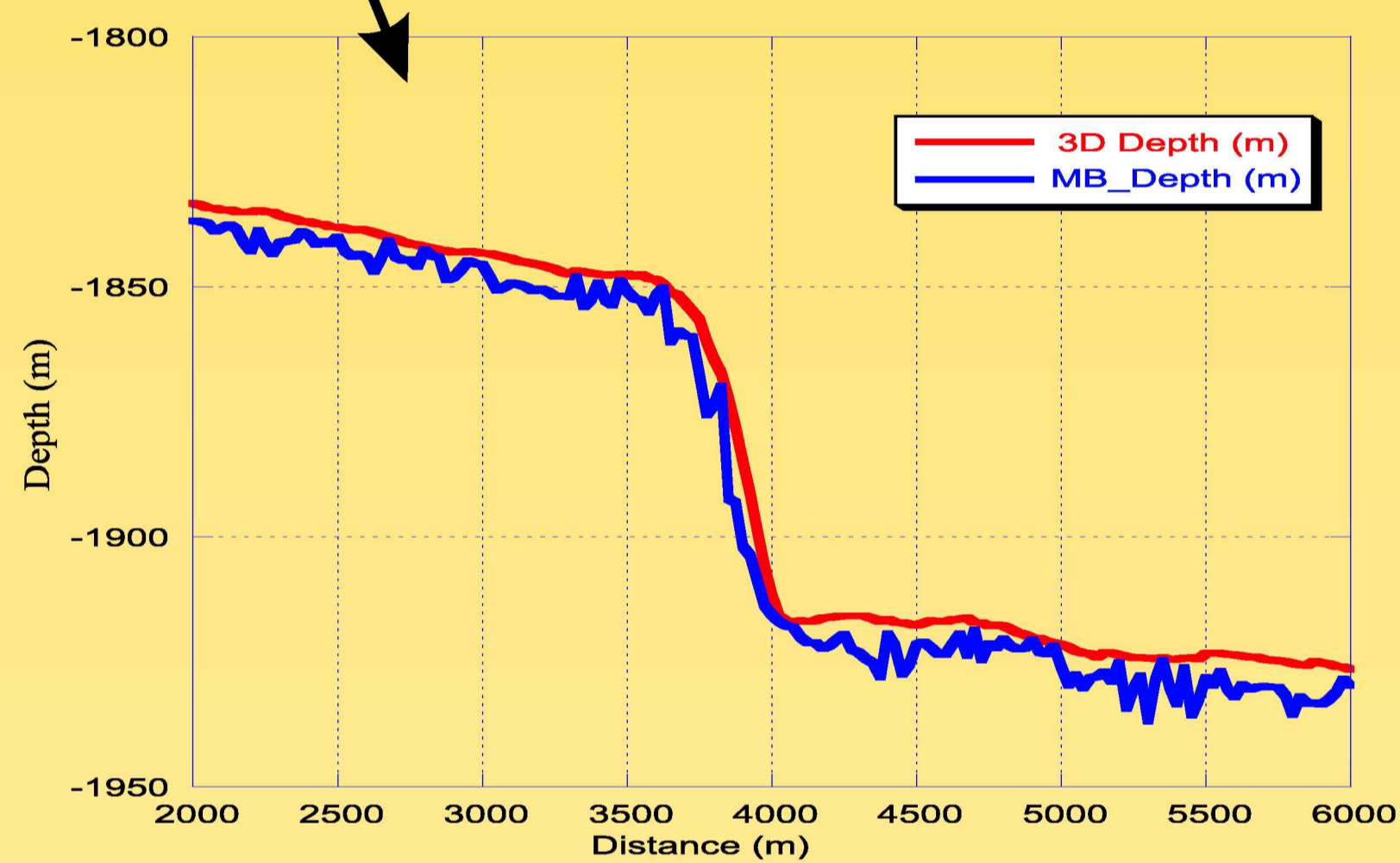
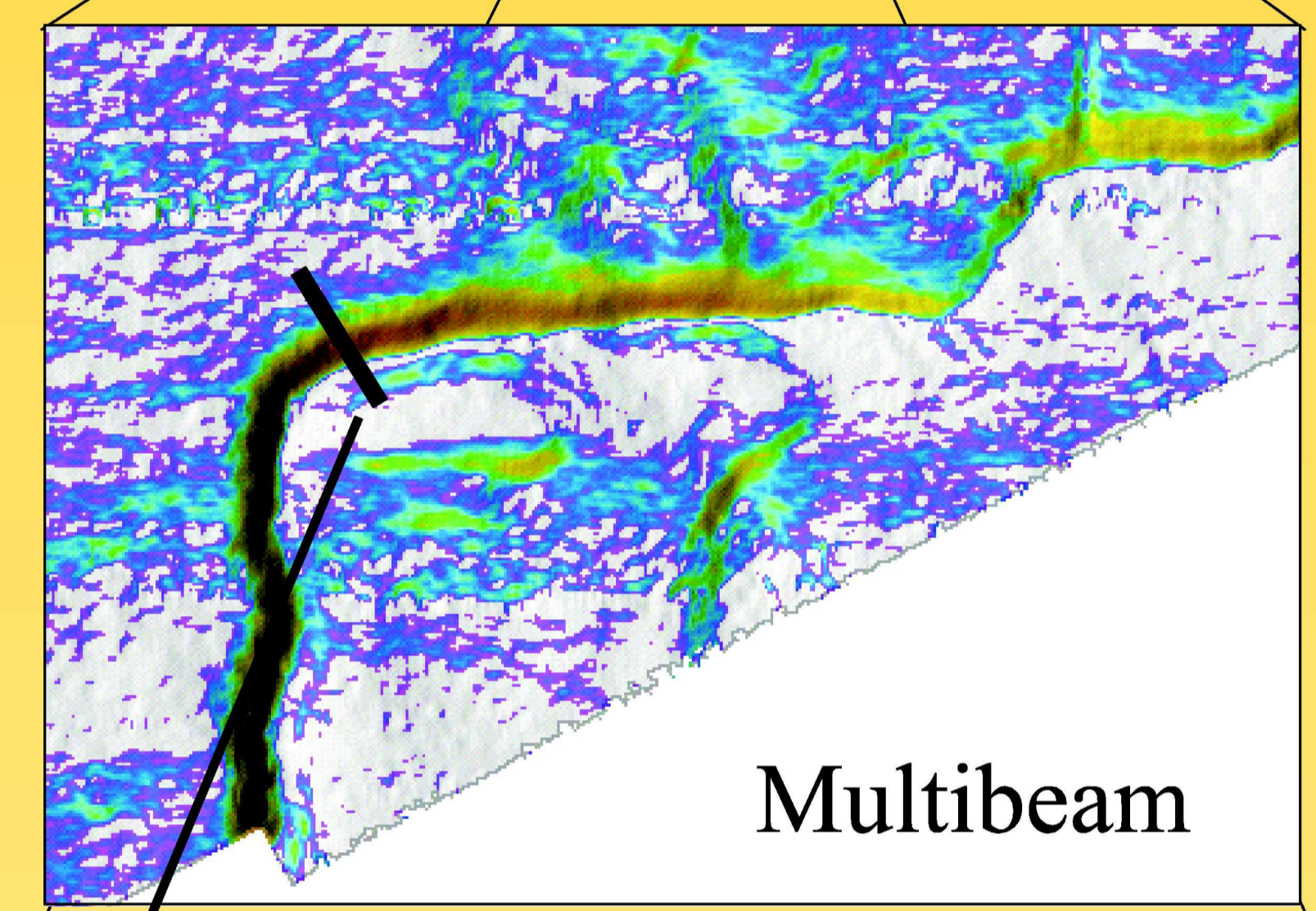
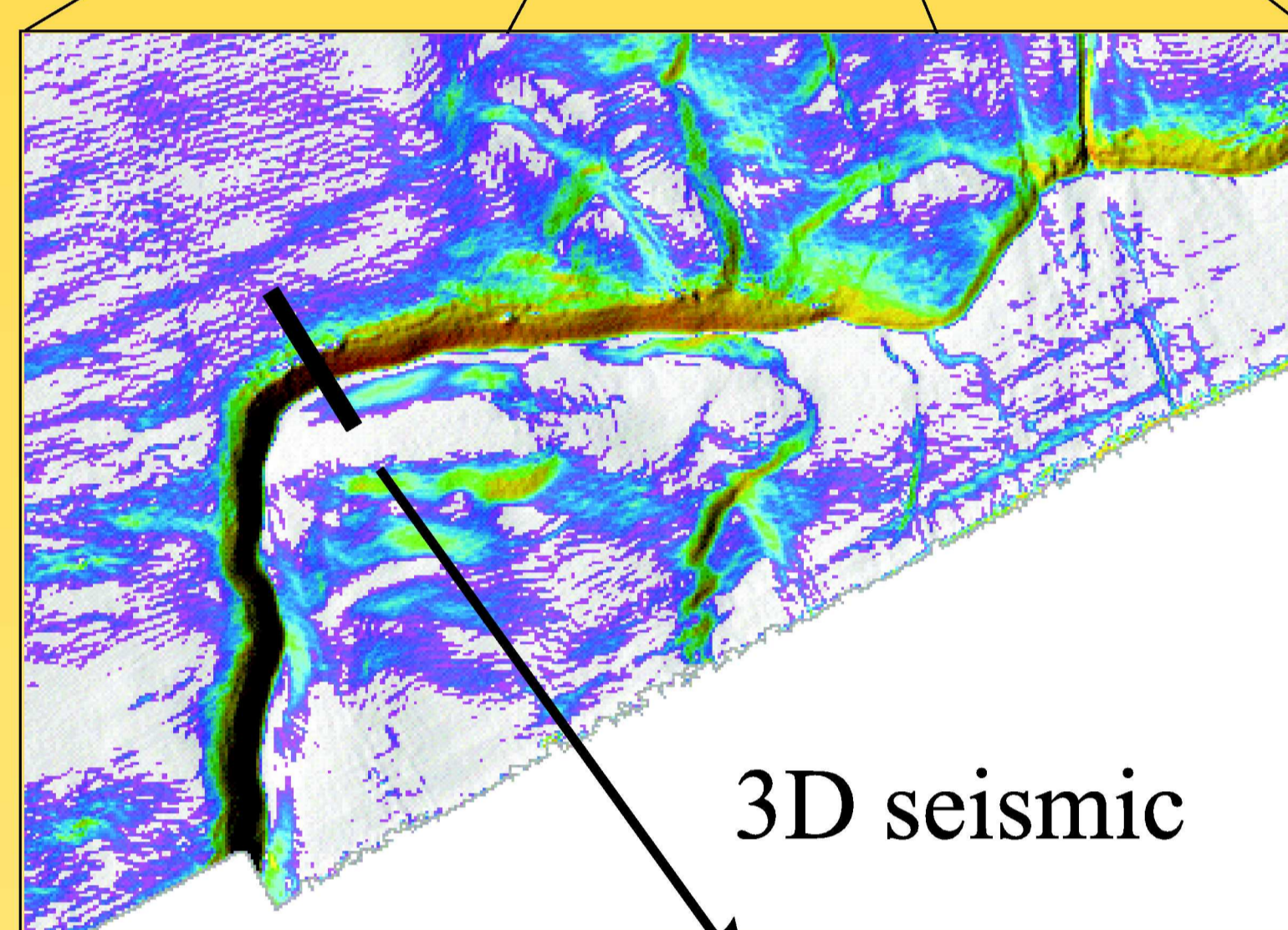
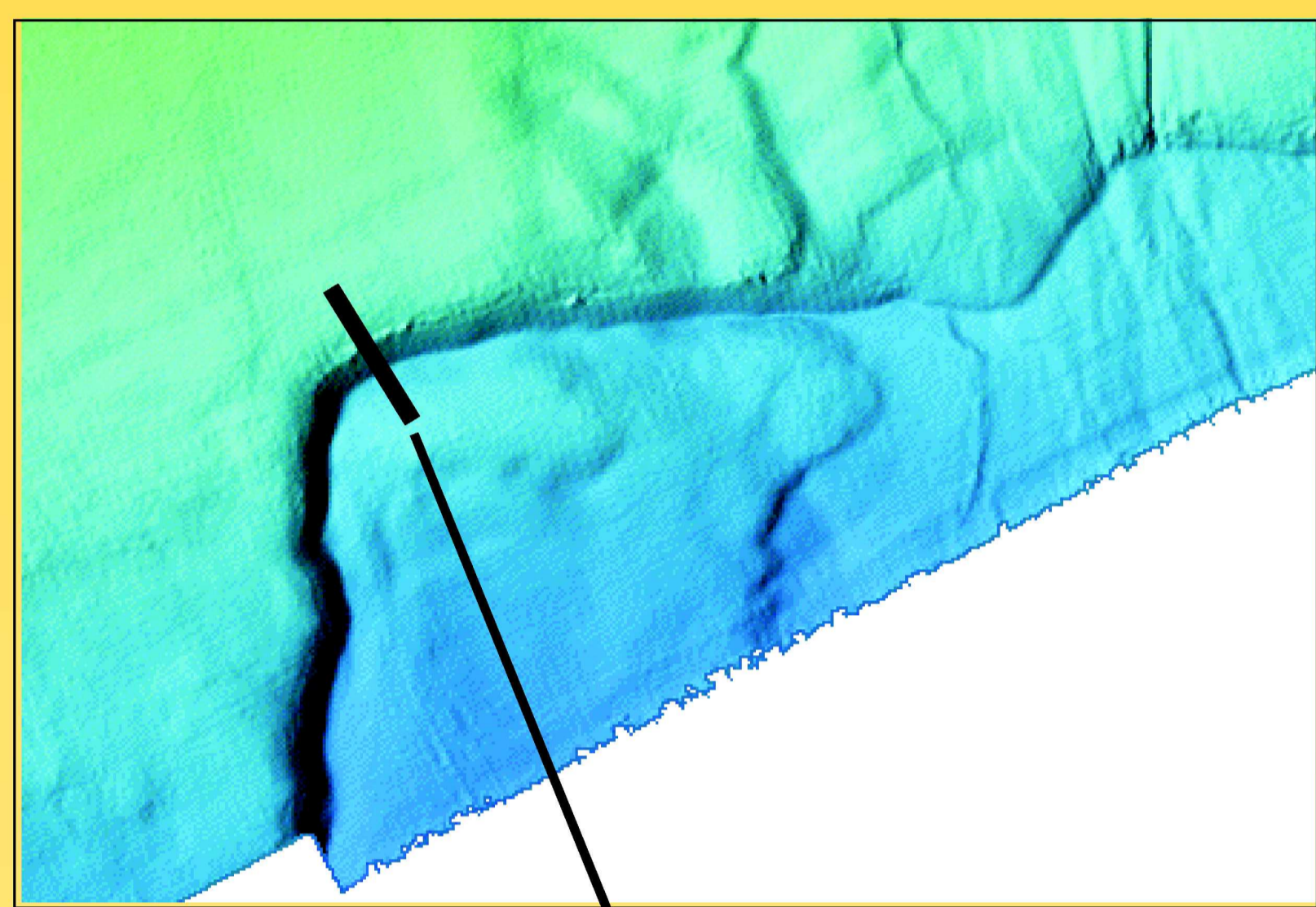
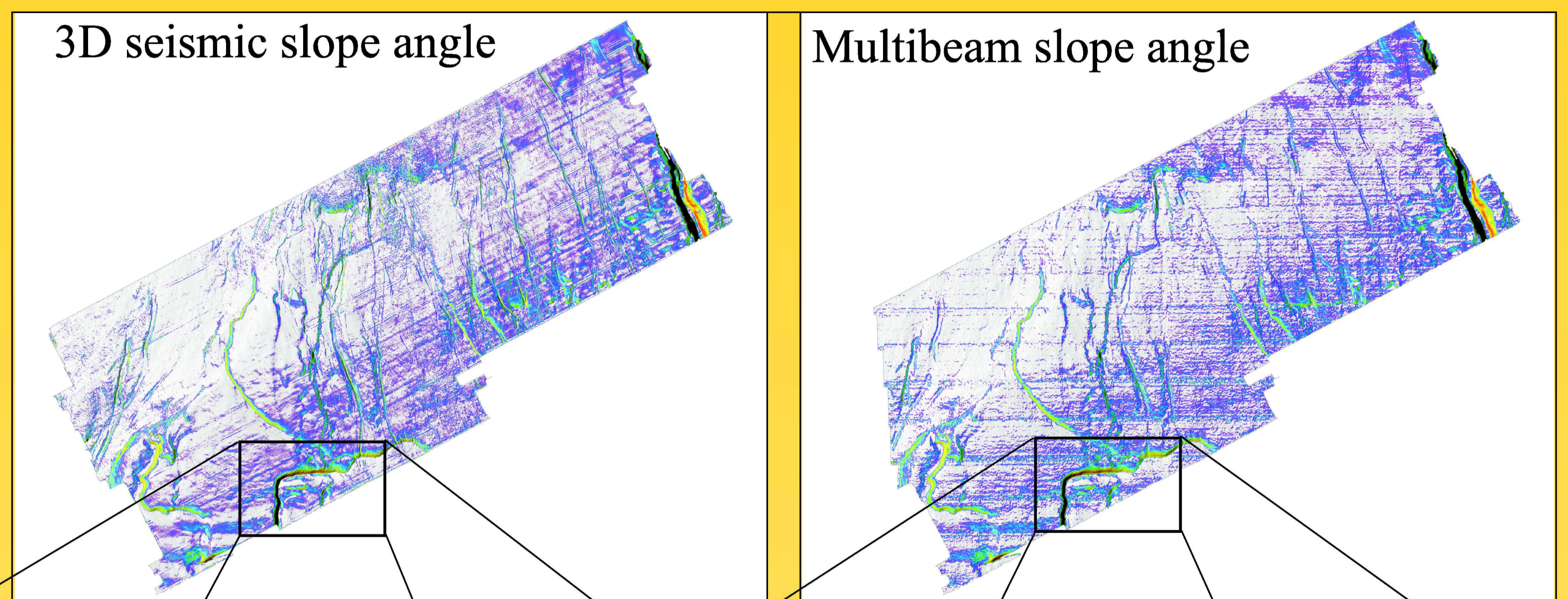


Slope Angle



Accurate slope angle determinations are critical for factor of safety calculations in slope stability analyses. In ever greater water depth, the ensonified area is larger and sample density is less, so the ability to accurately determine slope angle is reduced, as demonstrated in the model above and to the right. The case study to the immediate right and below shows that the slope angle on the escarpment from both multibeam and 3D seismic techniques is in reasonable agreement. Slight offset, and a slightly lower slope angle derived from the multibeam data is a result of near-neighbour smoothing.



Seafloor Reflectivity

Seafloor reflectivity refers to the strength of the acoustic return signal reflected off the seafloor. In multibeam data, it is generally referred to as backscatter intensity and in 3D seismic it is the peak amplitude of the first return. In the images below, acoustic signal strength is draped over the seafloor topography. To the left is the peak amplitude extraction from 3D seismic, and to the right is the backscatter intensity from the multibeam echo return. The two representations of the seafloor appear distinctly different. From sediment sampling, we know that most of the seafloor on the Scotian Slope is draped in a 1-2 m thick layer of fine silty-clay (mud), therefore, it is thought that multibeam data actually better represent the seafloor than seismic data. The high frequencies and low grazing angles of multibeam, in general, represent the thin layer of mud on the seafloor. In seismic data, the first return is representative of the top several metres below the seafloor, because of the near vertical incidence and low frequency sound. The image below and to the left, therefore, displays significant "brightening" in the canyon floors, likely representative of sand that is present below the mud drape. This sand is not apparent on the multibeam render, shown below and to the right.

