# Application of glacial geology in the assessment of neotectonics in coastal environments

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Postglacial deformation of bedrock or sediment is often interpreted as evidence of recent earthquake activity and used to extrapolate beyond the historical record of local seismicity. Such deformation is demonstrated by horizontal or vertical offset of striated or polished bedrock surfaces and/or soft-sediment deformation, including: deformed or convoluted laminae, diapirs, clastic dykes, liquefaction or fluidized water-escape structures, rheoplastic structures, large-scale slumping and sediment gravity flows.

However, along coastal regions such deformation may have resulted from previous glacial activity either directly, as dynamic glacitectonic deformation, or indirectly, as sediment loading, permafrost, postglacial isostasy, glacitectonic stress release, or slope instability. Rock masses generally have greater compressional strength than tensile strength and resultant glacitectonic displacements can occur long after initial glacitectonic stress. Saturated sediments, proximal to a grounded glacier, can experience glacigenic expulsions, while slope instability and resultant sediment gravity flow deposits are natural consequences of rising or falling water levels, which in a glacier-ponded environment may be associated with either glacier advance or retreat.

In glaciated areas, initial stresses may be attributed to glacitectonics if deformation structures demonstrate a combination of structural orientation perpendicular to direction of ice advance or retreat, infillings of till and/or glacier-abraded edges on related displacements. Neotectonic deformation is best demonstrated as a major surficial lineament, or as a spatially controlled kineto-stratigraphic unit indicative of a temporal catastrophic event.