The Yakutat Block Moves at Neither Pacific nor North American Plate Motion Rate

Fairweather Fault
Slips at 46 mm/yr

Active Collision and Accretion of the Yakutat Block

Characteristics of Velocity Field
– Inland velocities are small
– Coastal velocities parallel to Fairweather fault; strain is Fairweather-parallel
– Limited to no resolvable contraction across Fairweather Range
– Extension across Glacier Bay, related to ice unloading (see Motyka poster)

Inversion for Fault Slip Rate
– 2D dislocation model
– Use GPS data plus USGS EDM network close to fault
– Estimate slip rate on Fairweather and Denali faults, plus locking depths
– 46 ± 2 mm/yr, locking depth 9±1 km

Rapid Collision/Accretion in St. Elias
– ~40 mm/yr of shortening across 100-150 km distance
– Shortening in Fairweather-parallel direction, NOT Pacific
– Not clear how many structures take up contraction, or distribution of slip