



Effects of spatial and temporal variation in sediment flux on the Aleutian subduction zone

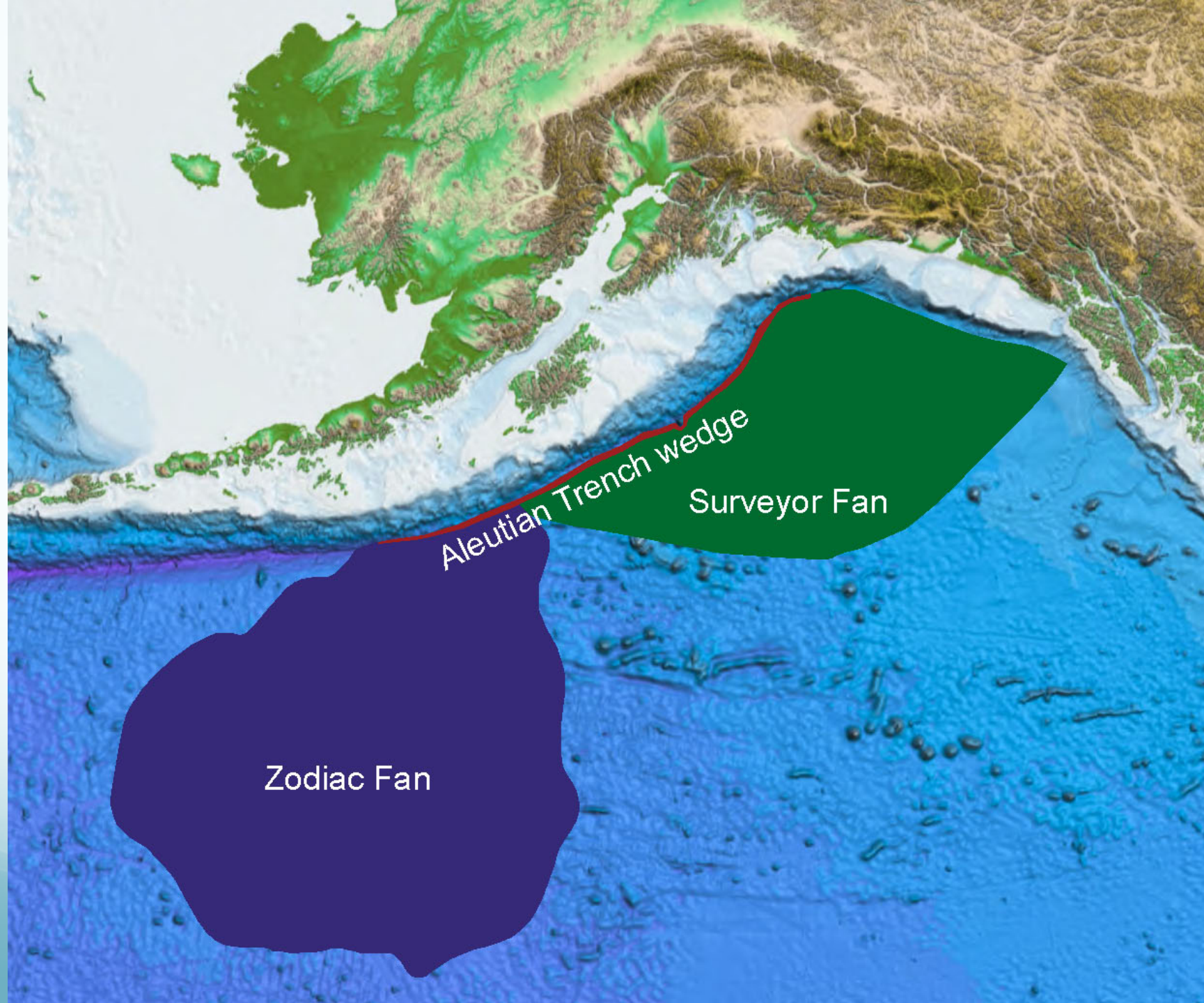
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The University of Texas at El Paso



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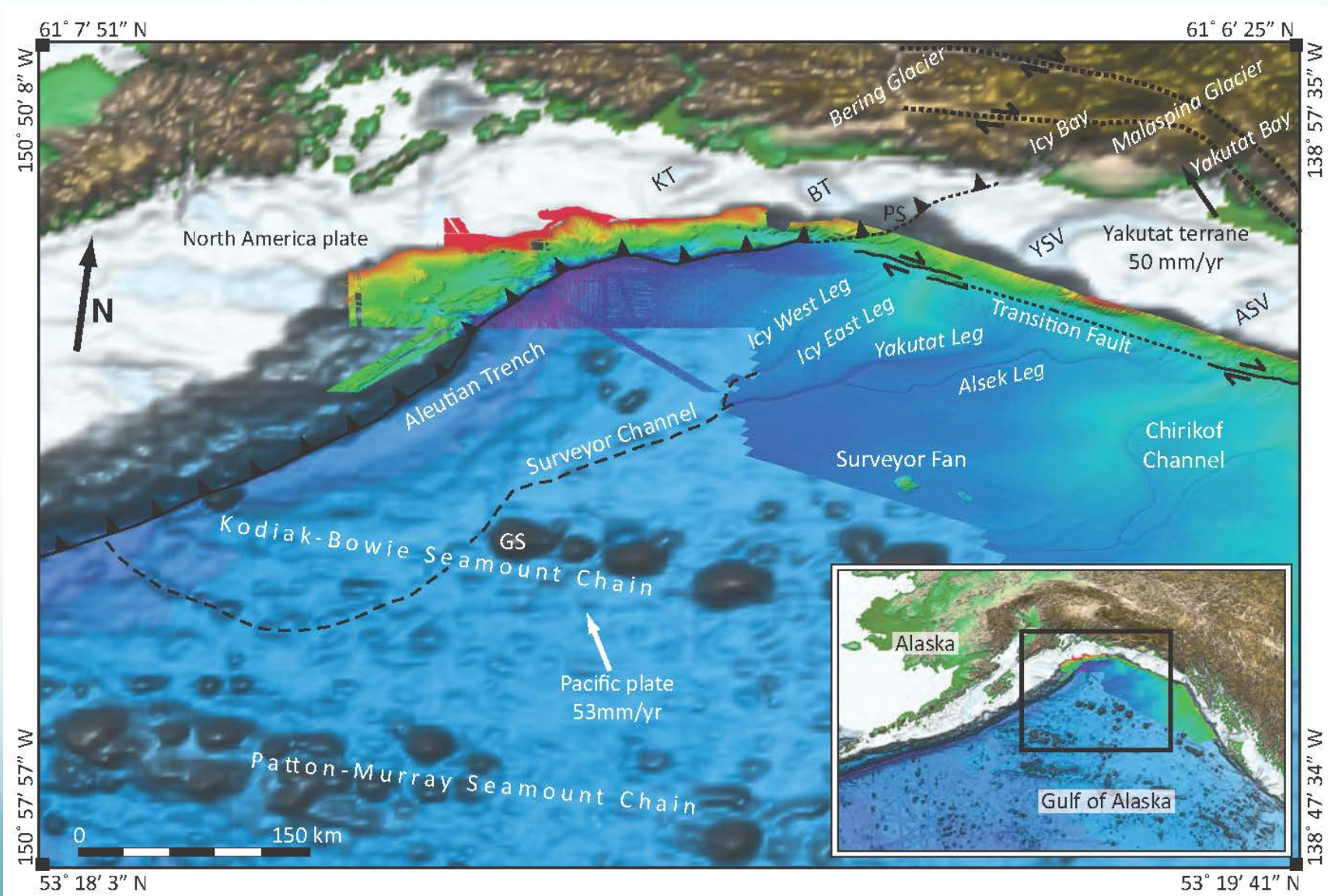


Aleutian Trench wedge

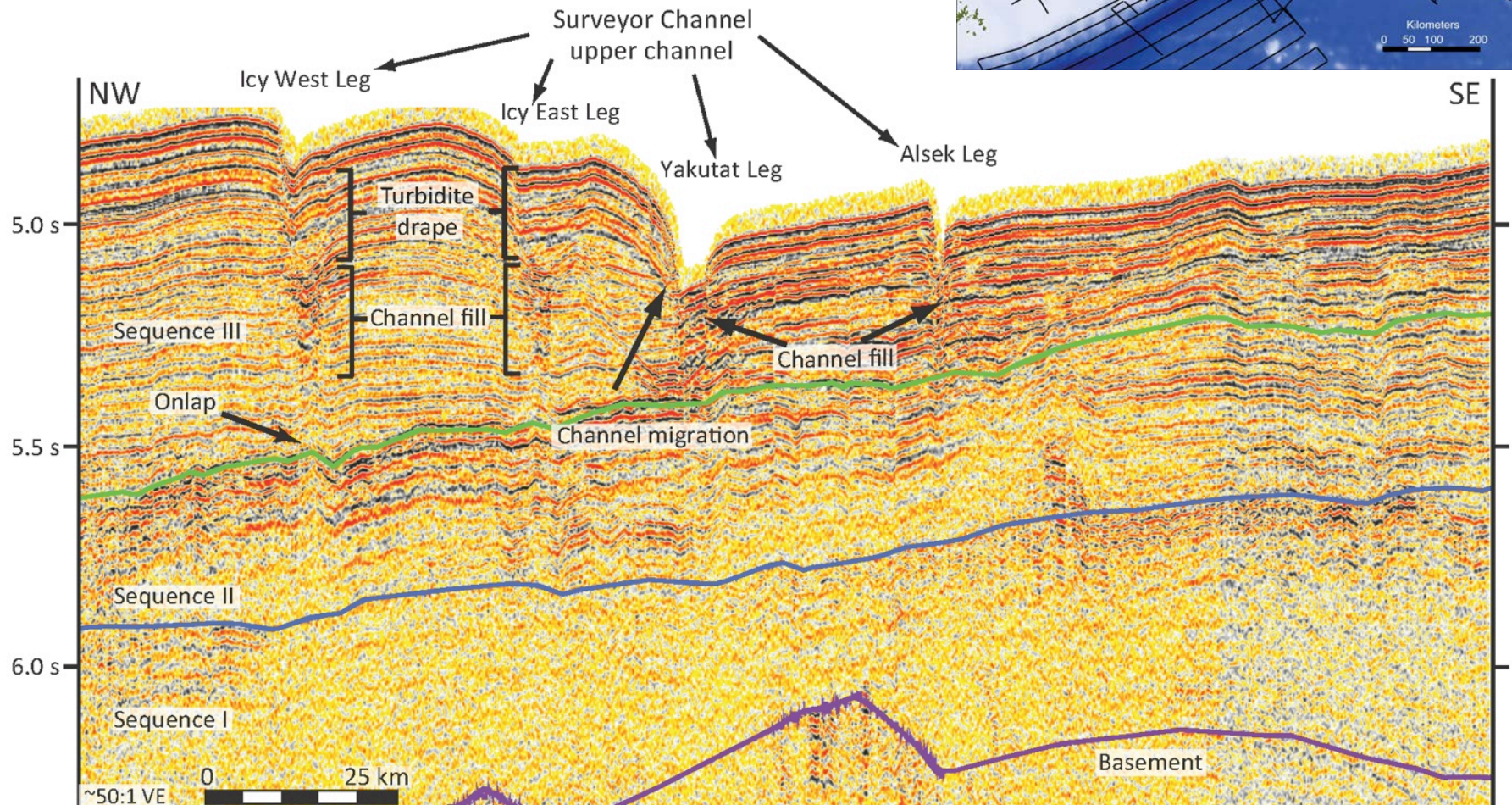
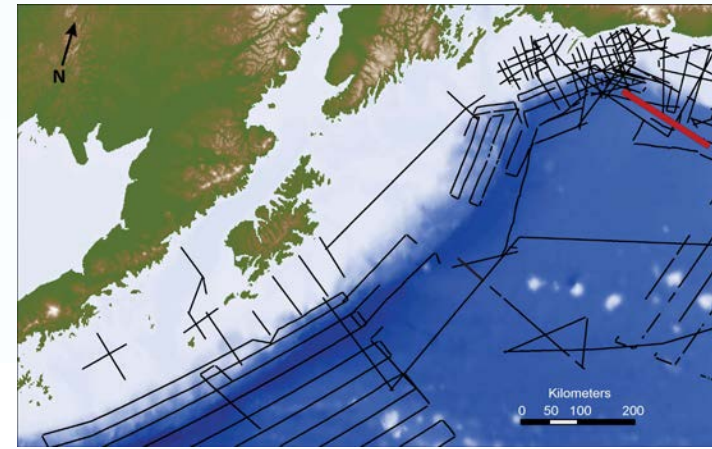
Surveyor Fan

Zodiac Fan

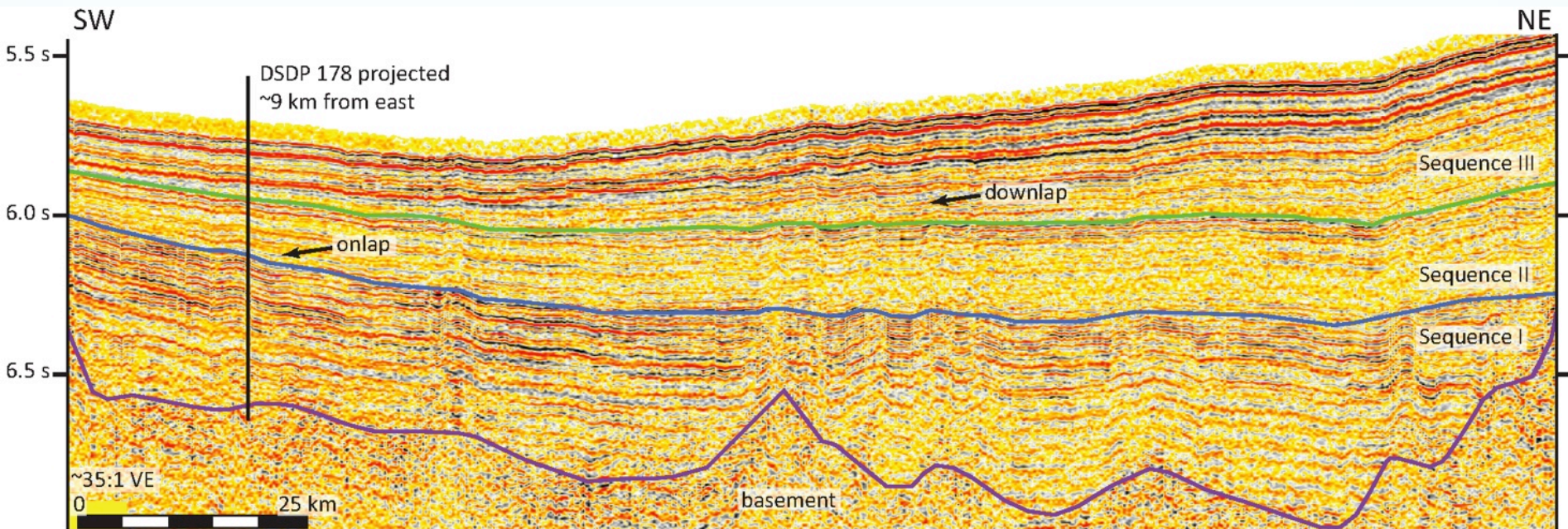
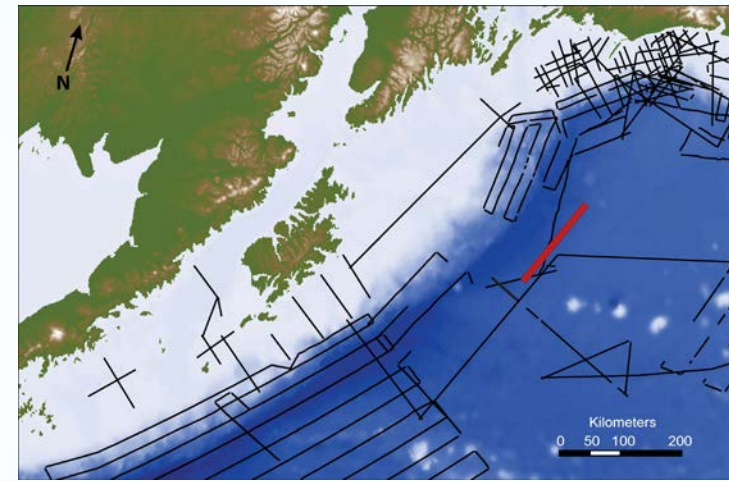
Climate-driven fan growth

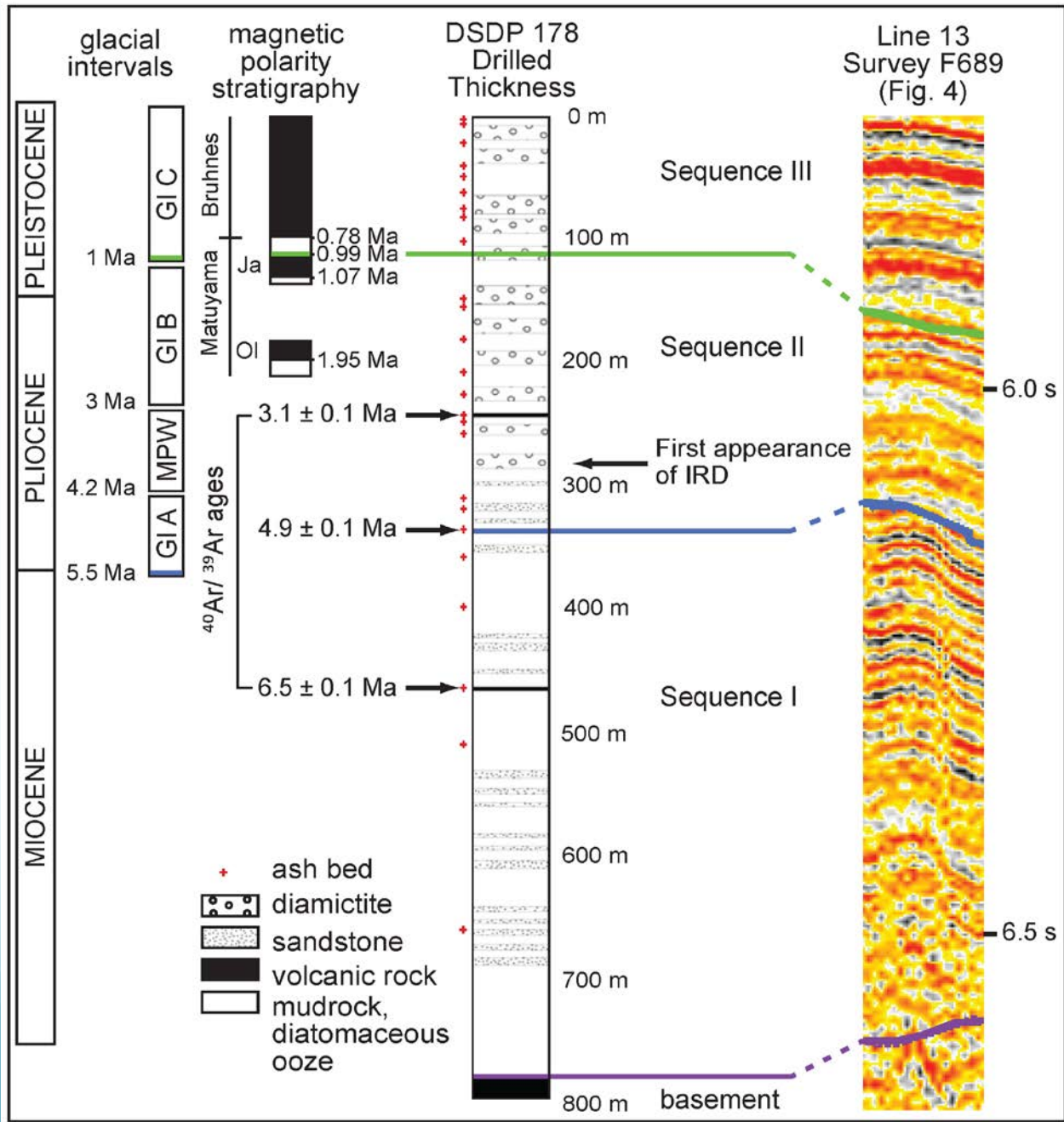


Proximal Surveyor: dominated by aggradational channel system



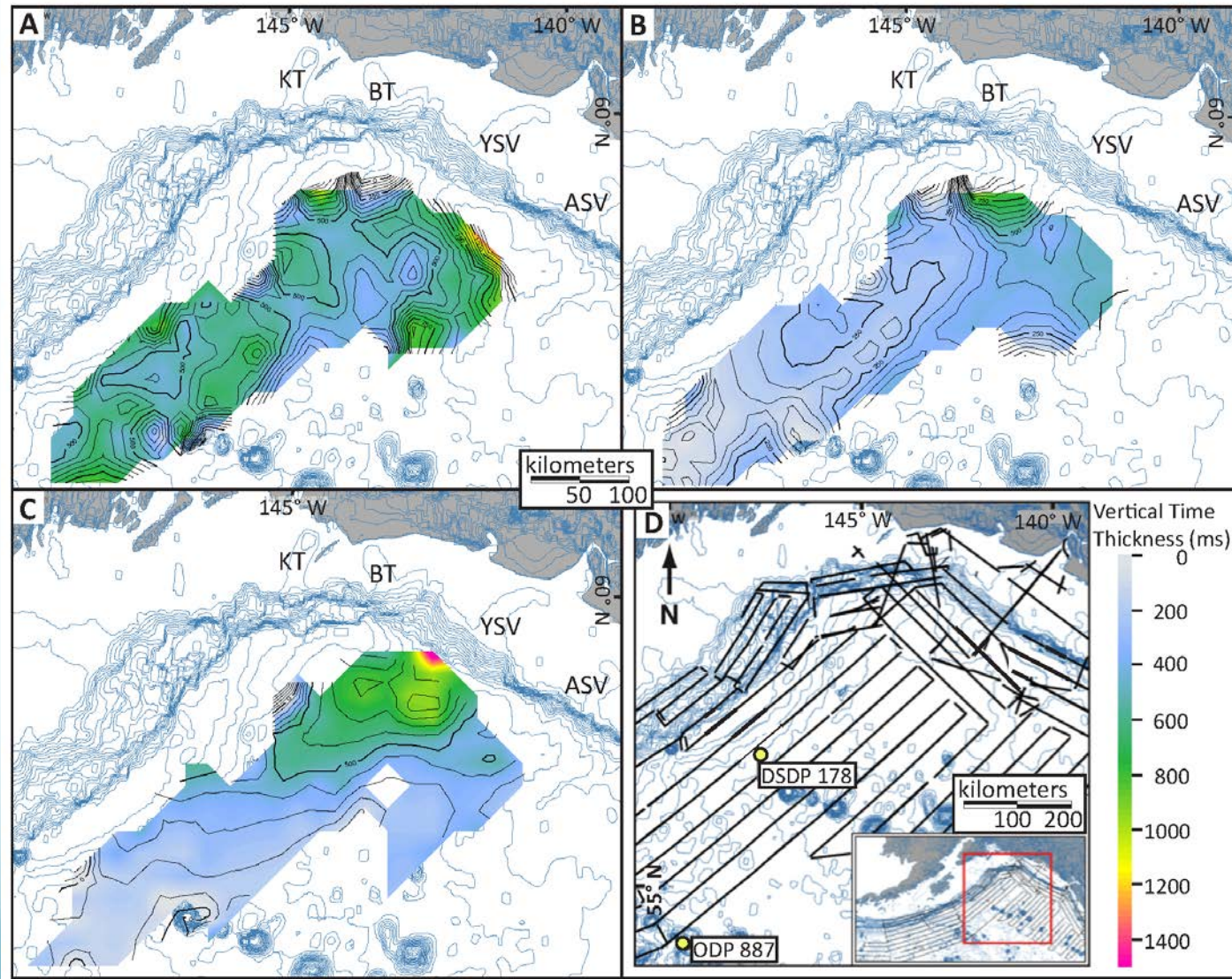
Distal Surveyor: thinning away from Yakutat margin, parallel to trench



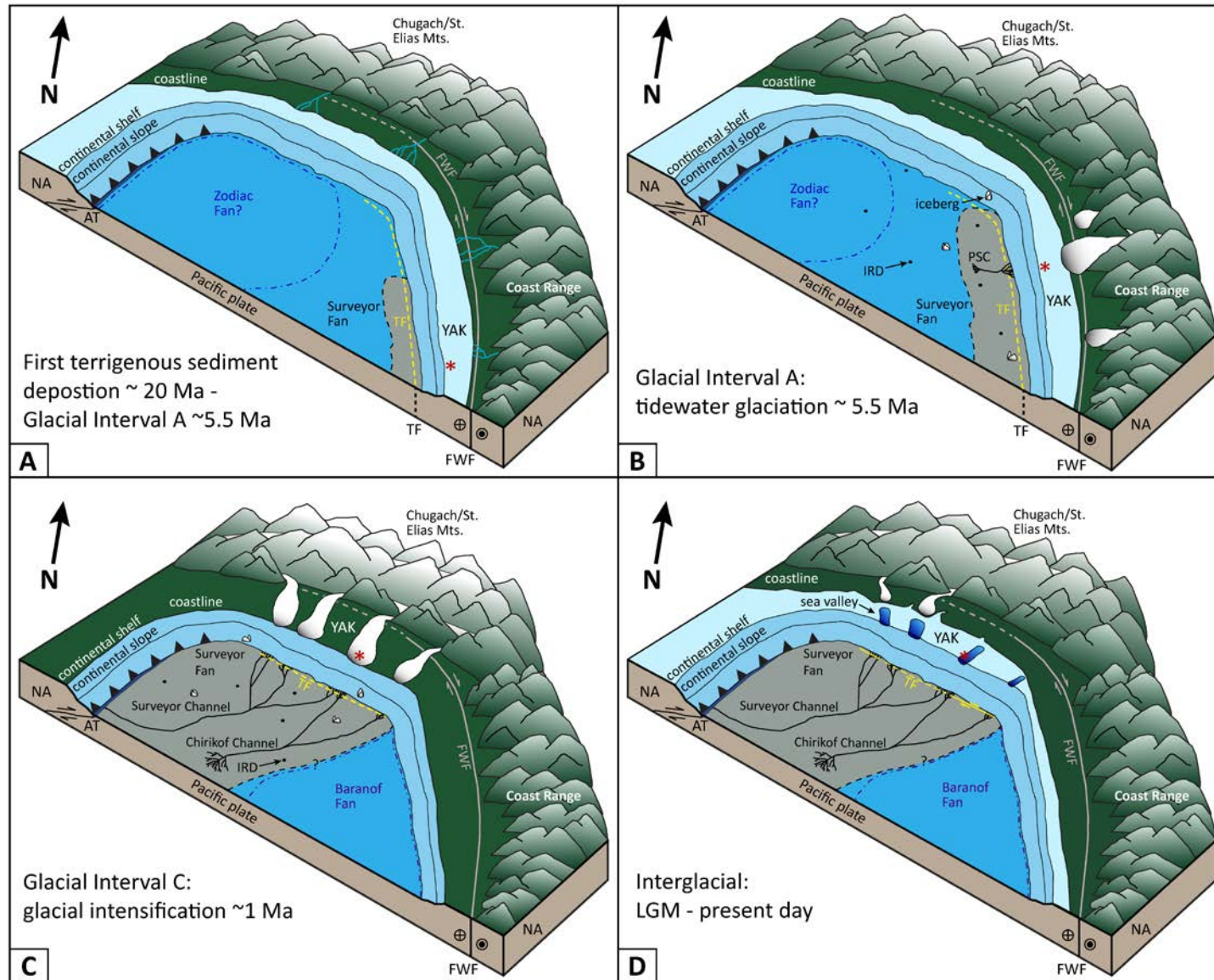


Glacial intervals = increased accumulation rates

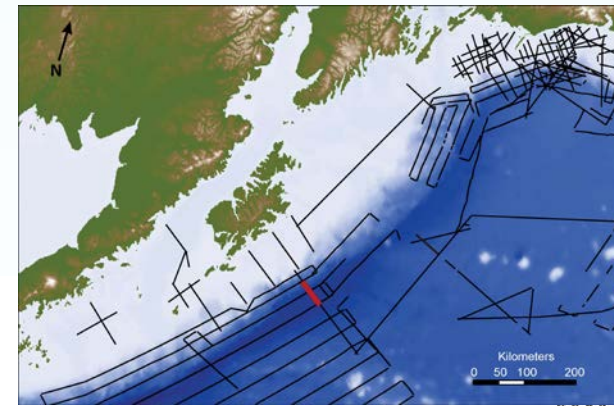
Transition to climate-driven Surveyor Fan



Evolution of the deep water system



Aleutian Trench fill



WNW

Accretionary prism

Aleutian Trench wedge

Surveyor Fan

Pacific Plate

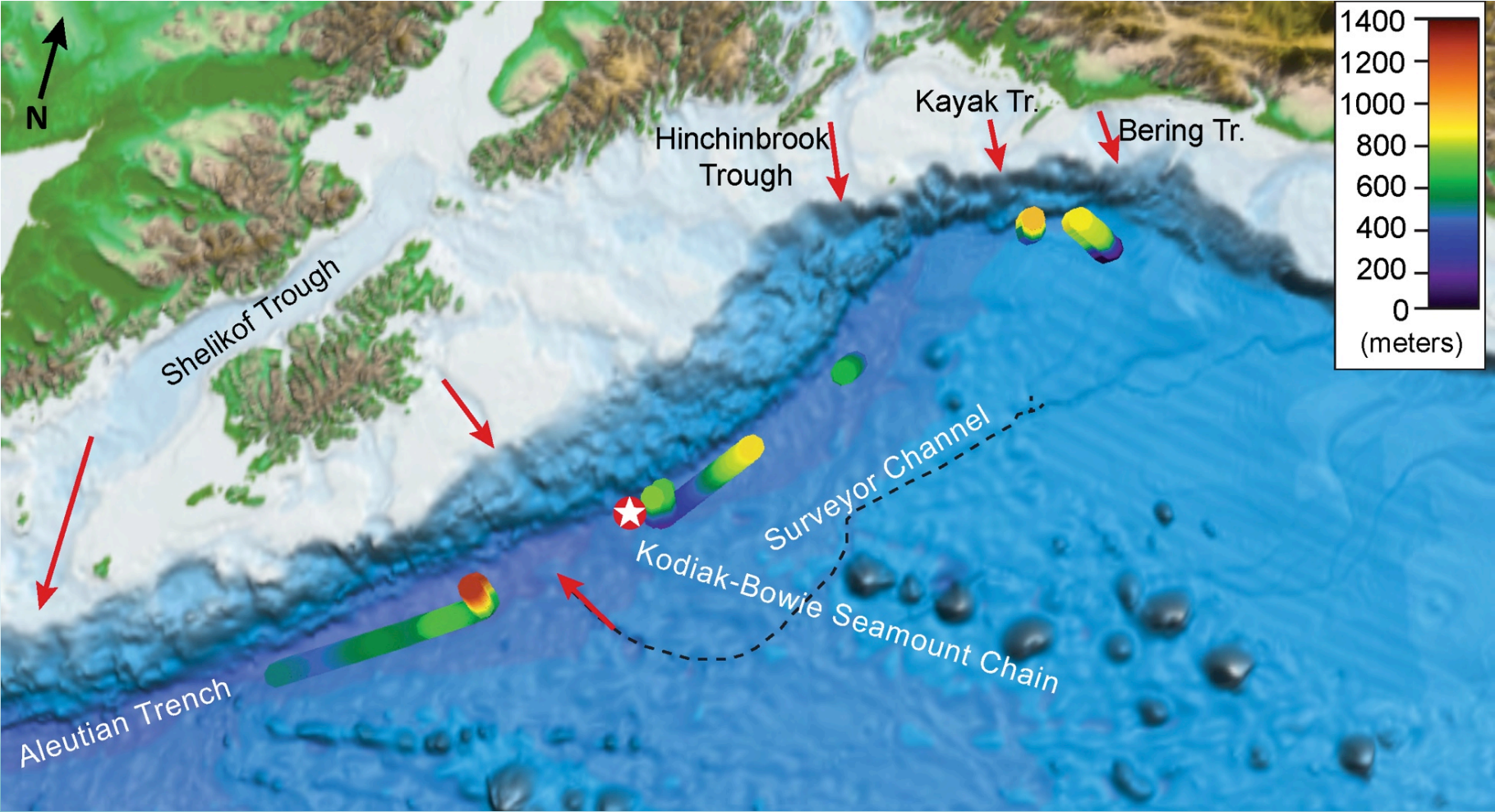
~19:1 VE

0 25 km

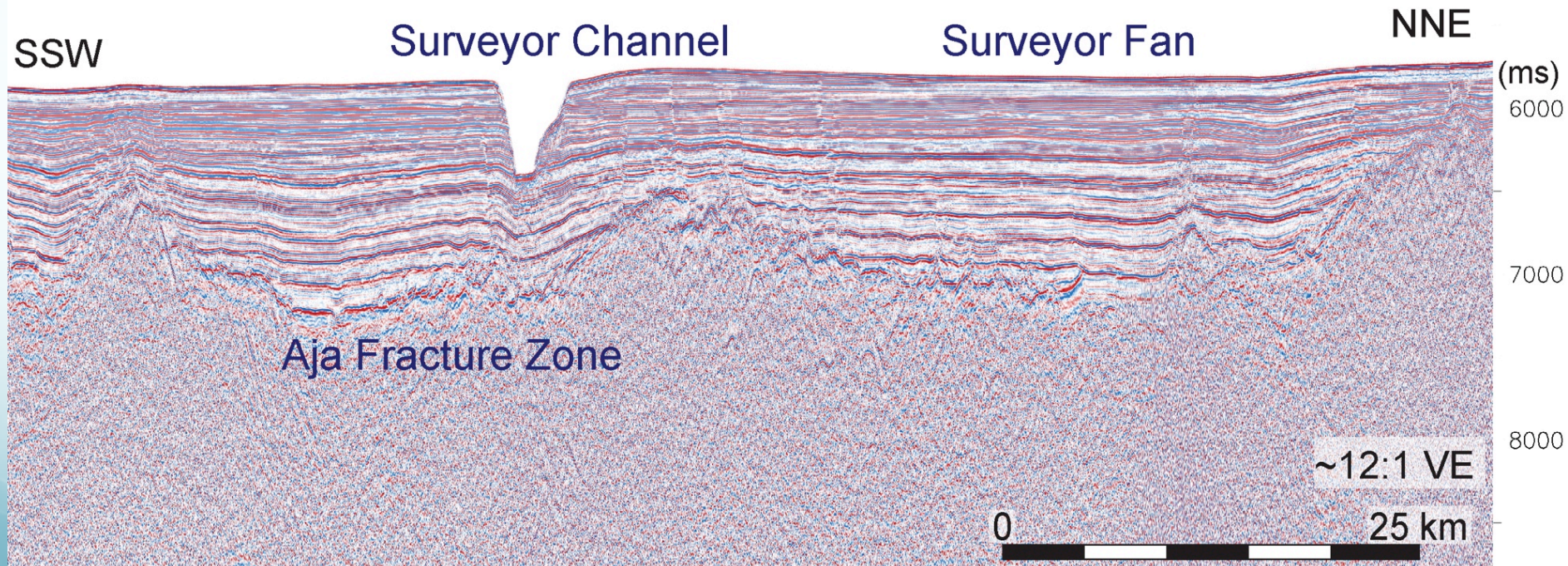
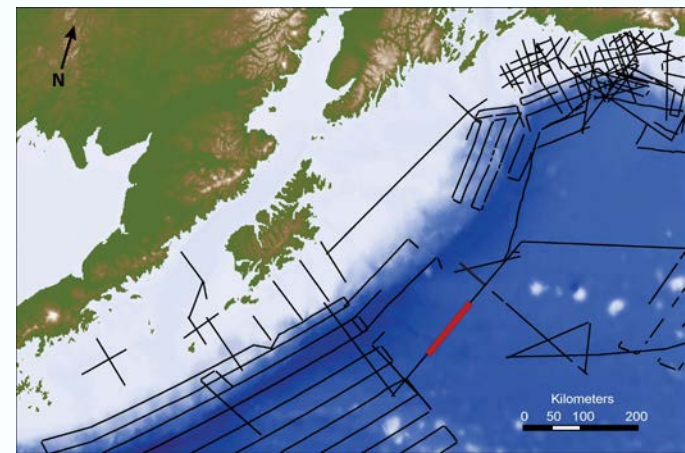
6000
7000
8000
9000
10000



Point sources/dams = Local variations in trench fill thickness



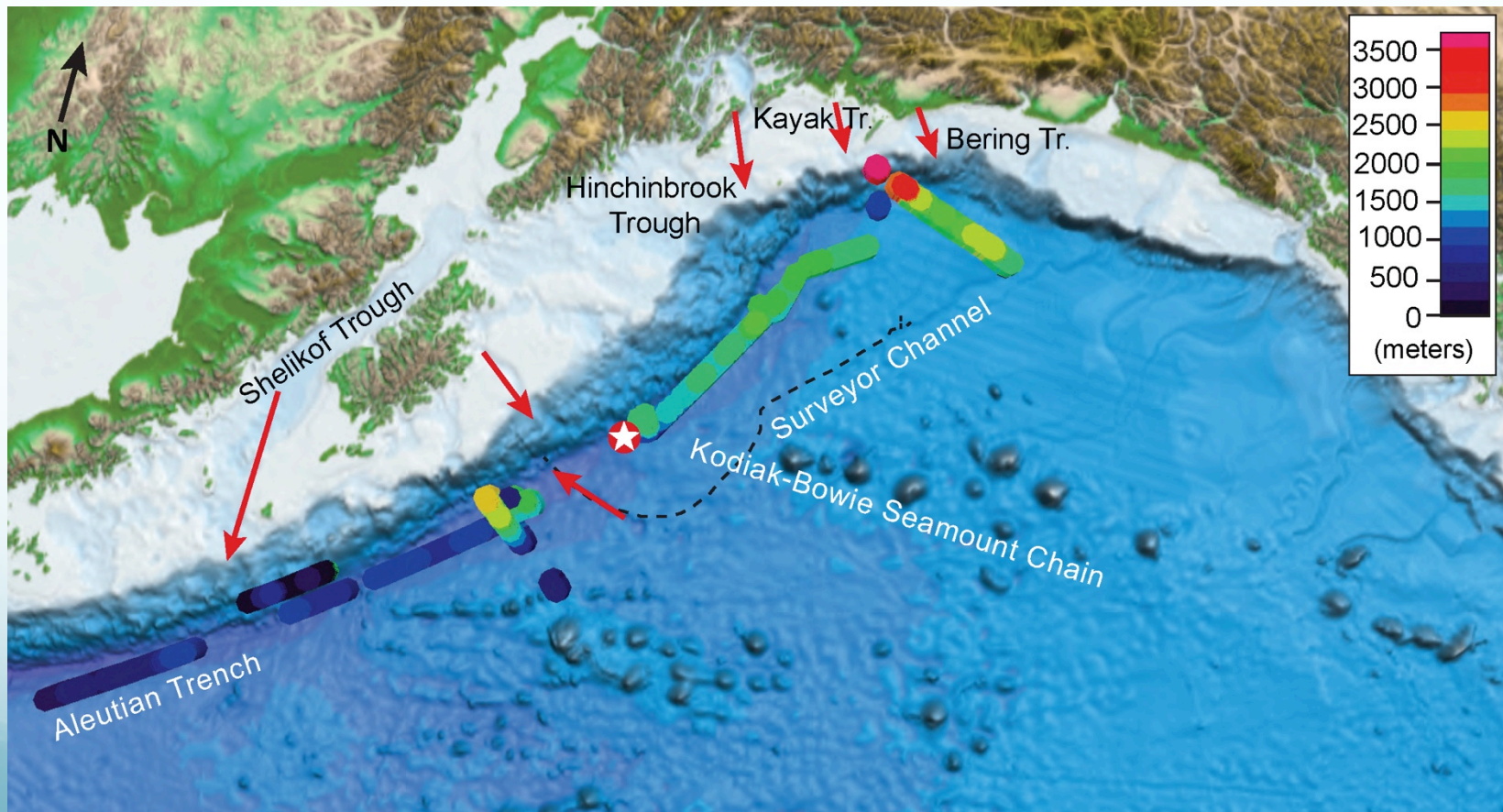
Distal Surveyor Channel =
sediment bypass and erosion of
fan at glacial maxima



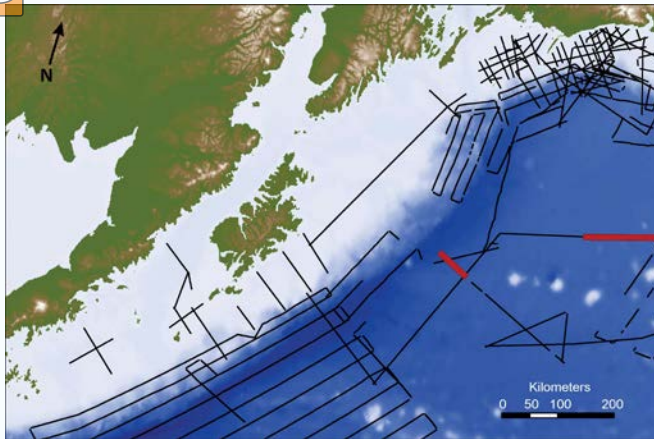
Overall subducting sediment thickness

1st order control:
St. Elias sediment, thins
away from Yakutat

2nd order control:
Point source addition,
damming

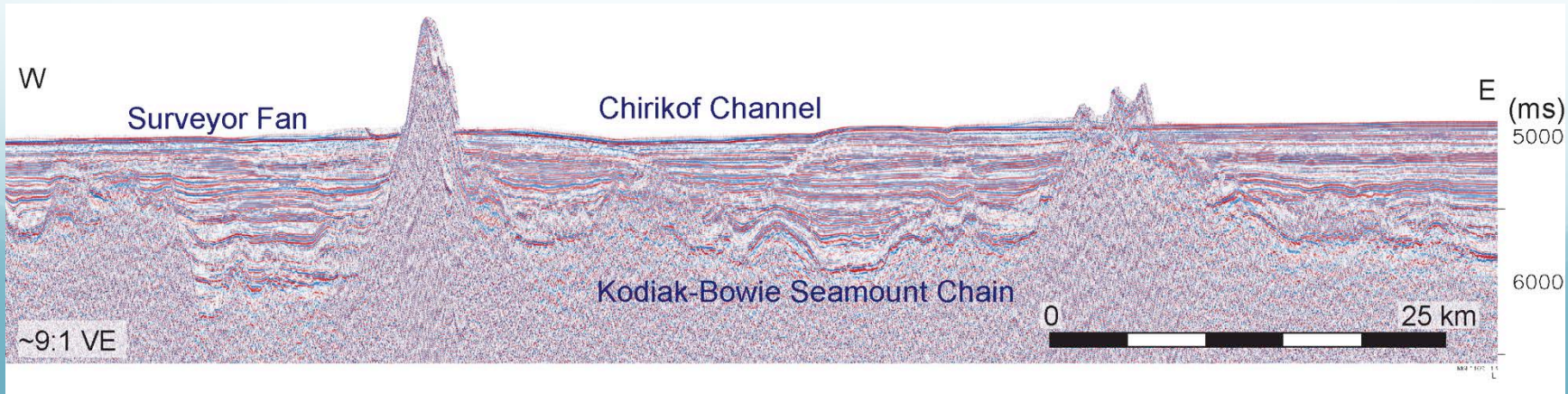
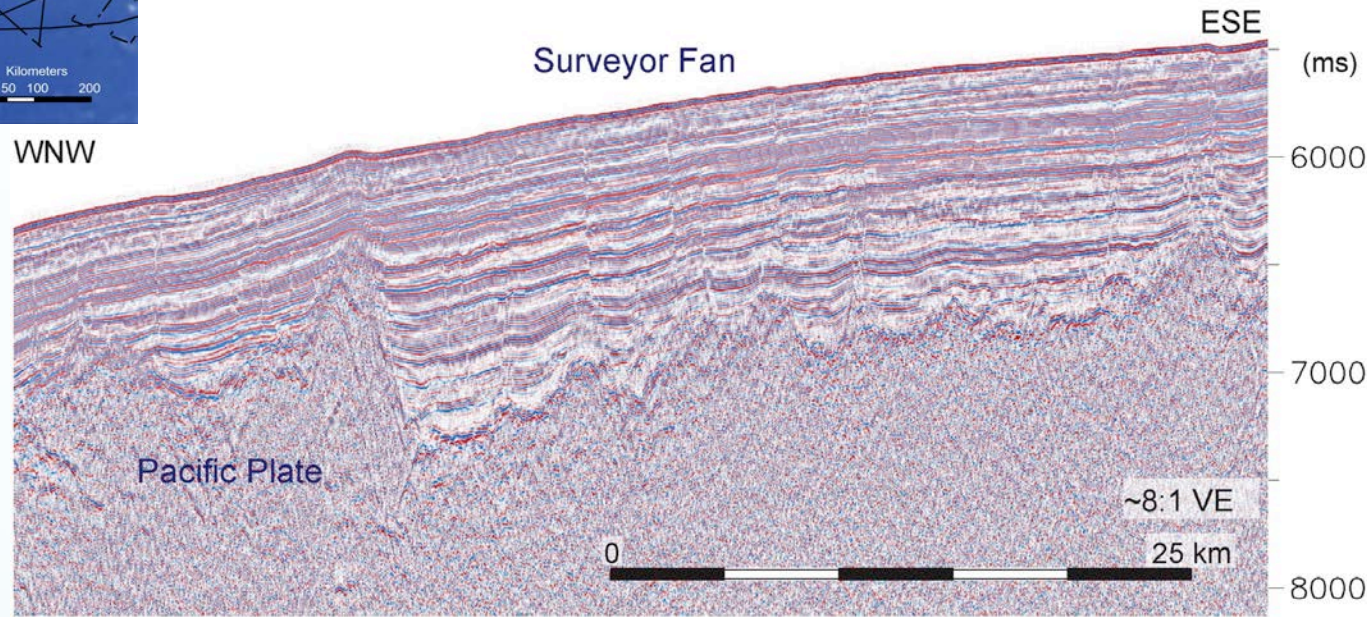


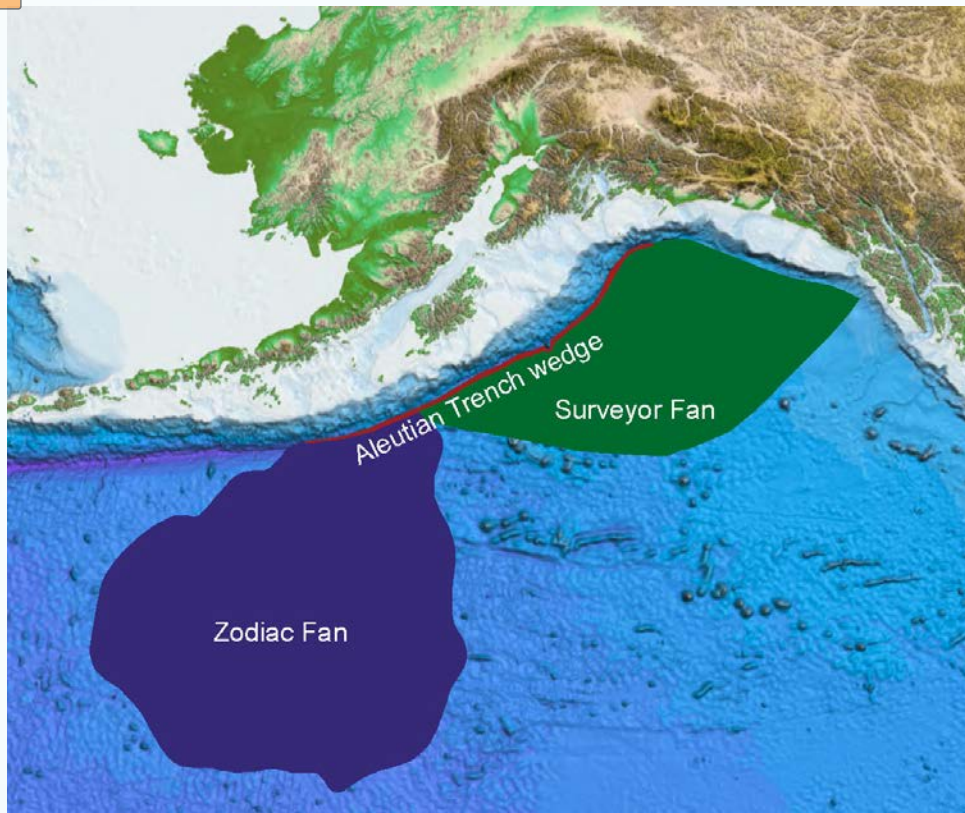
Sediment buffering of basement topography



WNW

Basement control on sediment routing





-Extent of trench fill and influence on subduction?

-Sed. bodies west of Zodiac, location of fundamental change in sed. influence?

-Changes in decollement with variations in sed thickness?

-Correlation between locked and creeping zones and sed variation?

-Sed control on prism fault vergence, OOS/splay faults?

-Interaction between plate topography and sediment- combined effect on seismogenic zone?