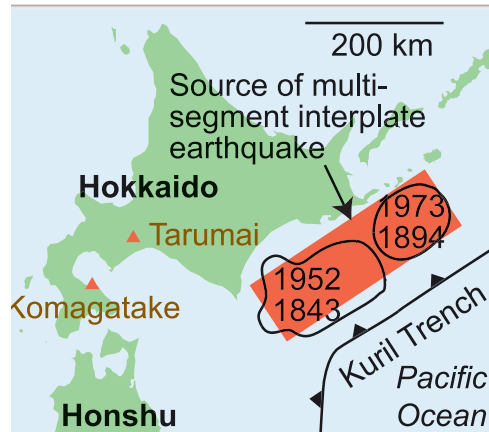


Outsize Tsunamis Caused by Multi-Segment Inter-Plate Earthquakes along the Kuril Trench

Paleoseismological surveys combined with computer simulation of tsunamis disclosed for the first time that multi-segment inter-plate earthquakes along the Kuril trench off Hokkaido had generated greater tsunami than previously reported. Great earthquakes with magnitudes ~8 ruptured single segments (on rupture segments 100-200 km long) over the past two centuries. We use deposits of pre-historic tsunamis, extending kilometers inland, and dated volcanic ash to show that unusually large tsunamis occurred about every 500 years on average over the past 2,000-7,000 years, most recently ~350 years ago. Numerical simulations of these tsunamis are best explained by earthquakes that rupture multiple segments (~300 km) along the southern Kuril trench.



Sources of single-segment earthquakes with years of occurrence and newly-inferred multi-segment earthquakes about 350 years ago

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