



## **Rupture process of the September 25, 2003 Tokachi-Oki (Hokkaido, Japan) Mw 8.3 earthquake from joint inversion of tsunami waveform and GPS data**

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The aim of this work is to infer the slip distribution along the rupture zone of the 25 September 2003 Hokkaido Region (Japan) from tide-gauge records of the tsunami and GPS measured static coseismic displacements. This has been the largest earthquake in 2003, according to USGS. We select waveforms from 16 stations, distributed along the east coast of the Hokkaido Region and the north-east coast of the Tohoku Region. Furthermore we select more than 100 GPS stations positioned on these regions. We assume the fault plane to be consistent with the geometry of the subducting plate and the slip direction with the focal mechanism solutions and previous inversions of teleseismic body waves. We subdivide the fault plane into several subfaults (both along strike and down dip) and compute the corresponding Green's functions both for the tsunami and coseismic displacement. The slip distribution is determined by means of a simulated annealing technique. Preliminary synthetic checkerboard tests, using the station coverage of the available data, indicate that the main features of the rupture process may be robustly inverted with a minimum subfault area of 30-40 km. We compare our results with those obtained by previous inversions of teleseismic, GPS

and tsunami data.