PRELIMINARY STRUCTURE MAP OF THE GORDA "PLATE" FROM MULTIBEAM BATHYMETRY, SIDESCAN SONAR, AND SEISMIC REFLECTION DATA

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Preliminary structural mapping of the Gorda plate offshore southern Oregon and northern California using multibeam bathymetry, sidescan sonar and seismic reflection data reveals the presence of a substantial number of strike-slip and reactivated spreading-center normal faults. The northern part of the plate is dominated by long, NNE-trending reactivated spreading fabric normal faults that offset Gorda basin sediments. A number of these basement fabric faults also appear to be drag folded adjacent to "pseudofaults" which may also be active as tectonic structures. In addition, numerous small sinistral strike-slip faults are present in the northern part of the plate that offset the NNE-trending spreading fabric faults. In the central and southern part of the plate, NE to NNE-trending spreading fabric and strike-slip faults are the dominant structural features present. A number of these strike-slip faults show apparent sinistral horizontal offsets, with a major strike-slip fault in the center of the plate displaying up to an estimated 10 km of displacement. Fault types and orientations within the plate correlate well with the NE-trending nodal plane of moment-tensor solutions from reasonably well located earthquakes in the region (after removal of a systematic 15-20^{o} clockwise rotation error from the solutions). Preliminary estimates of slip-rate on a major sinistral strike-slip fault, calculated from approximate offsets observed on the multibeam data and using basement as the maximum age of fault movement, suggests that between 0.5-2 mm/yr of slip may be occurring on structures in the center of the plate. This estimate represents a first-order determination and may or may not represent either the historical or current slip rate. Analysis of the multibeam data also indicate the presence of two NW-trending linear basins in the central part of the plate, which may represent large wavelength folds that cut across basement fabric.

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