The Doty Fault Network: 3D regional deformation applied to seismic hazard characterization in the forearc of Washington State

Megan Anderson, Michael Polenzi, Rebecca Becerra, Conner Toth, Alex Steely, Tim Walsh, Dave Norman, Brian Sherrod


Tectonic Setting

The Doty fault is a set of several north-east trending normal faults that have been active since the Pleistocene. The fault system is characterized by a combination of normal and strike-slip motion. Some of the faults have been reactivated in the recent geologic past, while others are still active. The fault system is associated with a series of younger and older fault segments, which extend from the north-western to the south-eastern part of the region. The faults are characterized by a range of dip directions, which vary from north-east to south-west. The age of the youngest fault activity is estimated to be about 500,000 years.

Previously Mapped Fault Network

The upper part of the fault system includes the youngest faults in the region, which are characterized by a low dip angle. The fault system is associated with a series of younger and older fault segments, which extend from the north-western to the south-eastern part of the region. The faults are characterized by a range of dip directions, which vary from north-east to south-west. The age of the youngest fault activity is estimated to be about 500,000 years.

New Observations from Potential Field Mapping

We use potential field anomaly and geomagnetic dipole data to identify the geometry of the fault system. The data show that the fault system is characterized by a series of younger and older fault segments, which extend from the north-western to the south-eastern part of the region. The faults are characterized by a range of dip directions, which vary from north-east to south-west. The age of the youngest fault activity is estimated to be about 500,000 years.

Geology

The upper crust in the forearc of the Juan de Fuca subduction zone is characterized by a series of younger and older fault segments, which extend from the north-western to the south-eastern part of the region. The faults are characterized by a range of dip directions, which vary from north-east to south-west. The age of the youngest fault activity is estimated to be about 500,000 years.

Fault Structure

An excavation of the WSRD is used to understand the structural control of faults in the Juan de Fuca subduction zone. The faults are characterized by a series of younger and older fault segments, which extend from the north-western to the south-eastern part of the region. The faults are characterized by a range of dip directions, which vary from north-east to south-west. The age of the youngest fault activity is estimated to be about 500,000 years.

Is the Doty fault Active?

We propose new active seismic data across Chehalis River syncline to assess the activity of the Doty fault. Additional gravity data collected and used to refine our models.

Continuing Work

We provide new active seismic data across Chehalis River syncline to assess the activity of the Doty fault. Additional gravity data collected and used to refine our models.

Conclusions

We have found no clear evidence that the Doty fault is currently active. The fault system is characterized by a series of younger and older fault segments, which extend from the north-western to the south-eastern part of the region. The faults are characterized by a range of dip directions, which vary from north-east to south-west. The age of the youngest fault activity is estimated to be about 500,000 years.

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References