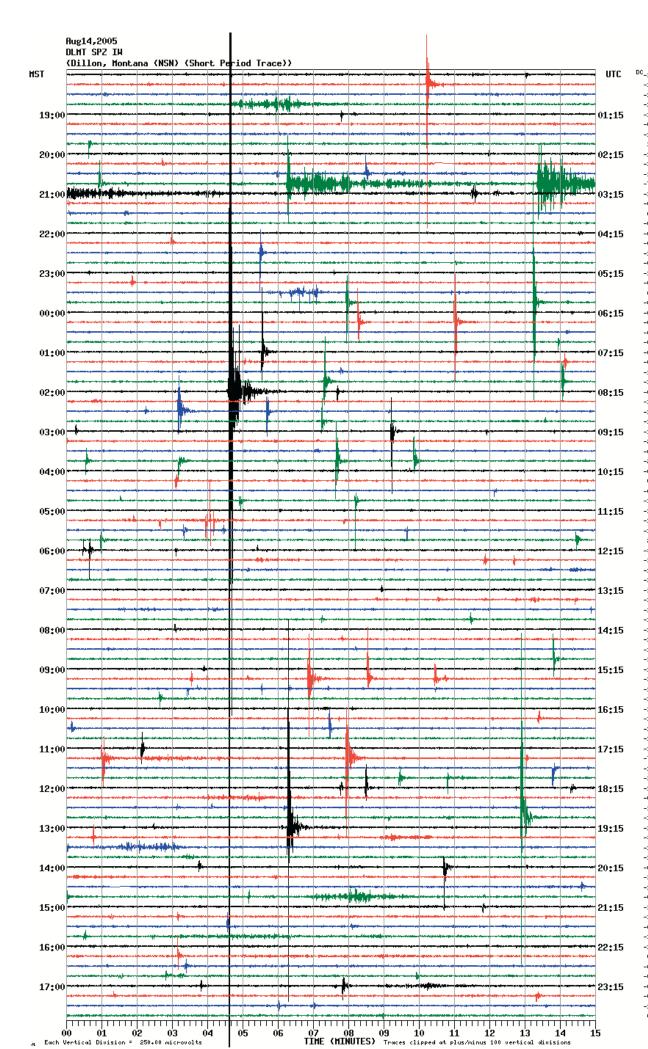
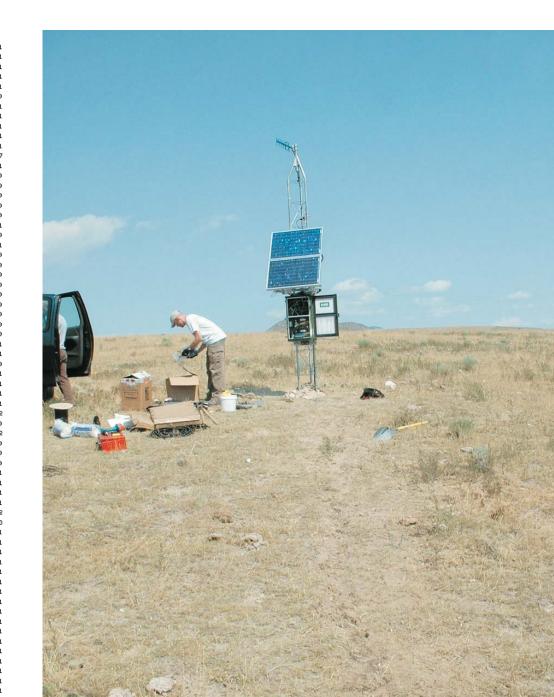
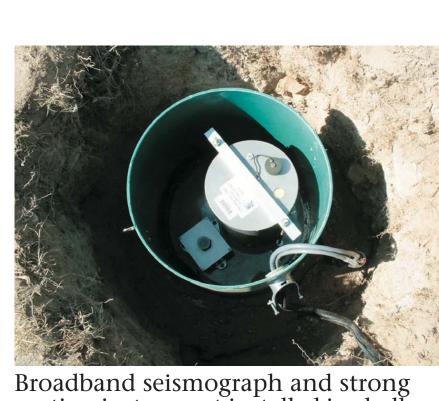
The 26 July 2005 Dillon, Montana Earthquake







surface vault for the new DLMT station.

New broadband station DLMT was installed 2 km northeast of the main shock epicenter on August 12 in cooperation with the US Geological

A 24-hour digital seismogram (webicorder) recorded on August 14, 2004 by the new station DLMT showing numerous aftershocks. The largest occurred at 08:04 UTC with a magnitude of 2.4. Some of the smallest aftershocks are not recorded by the next closest Montana Regional Seismograph Network stations at epicentral distances of 42-60 km. DLMT webicorder records are accessible on the Montana Bureau of Mines and Geology website





En echelon fractures along south edge of section 7, T. 6 N. R. 8 W. This group of fractures extends for about 200 meters east-west with the south side displaced downward. The soils are derived from Tertiary valley fill deposits consisting of gravelly silts.





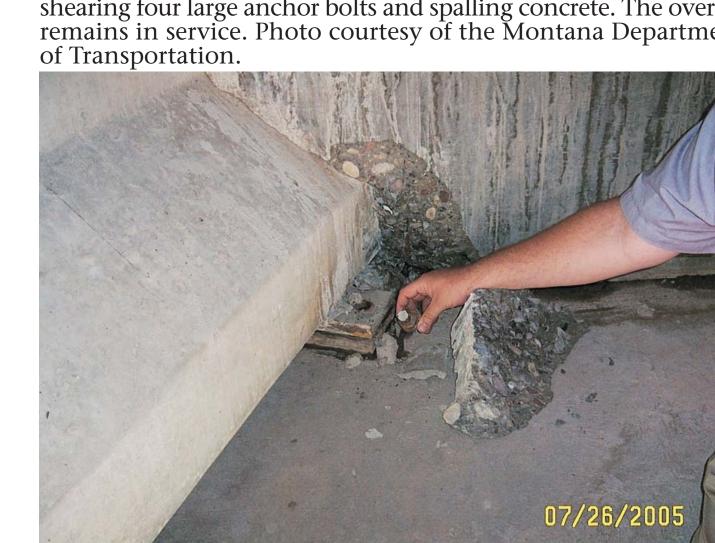
North-south-trending fractures up to 2 cm wide crossing gravel road along the common border of sections 7 and 18, T. 6 N., R. 8 W. No vertical or horizontal displacement was observed at this location. Pencil is 11 cm

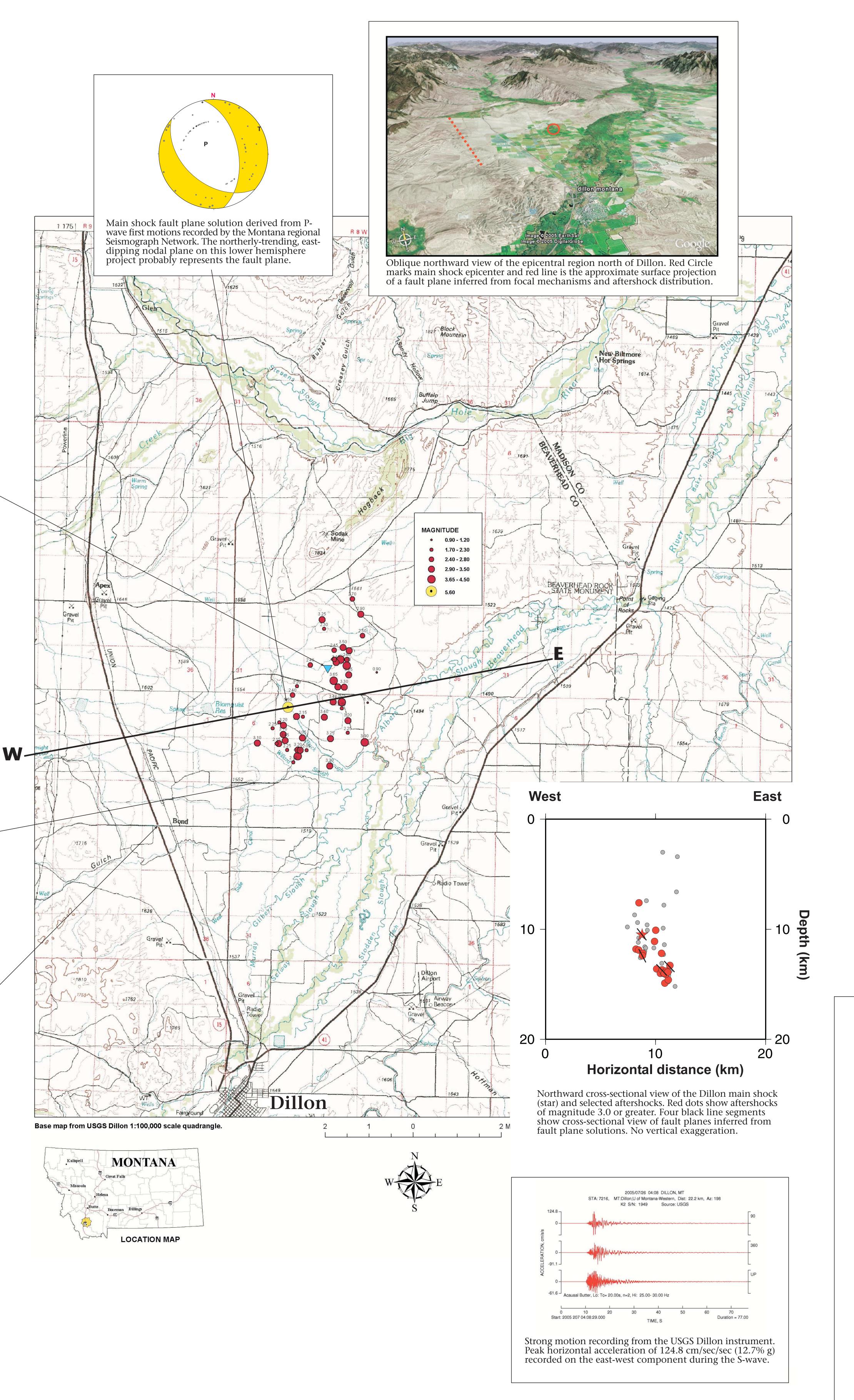
East-west-trending fracture near the south edge of section 7, T. 6 N., R. 8 W. Up to 20 km of down-to-the-south displacement was observed along this 200-m-long group of fractures. An irrigation canal traverses the hillside near the trees at upper right of photo.



Ground cracks in approach to an Interstate 15 overpass 6.5 km southwest of main shock epicenter. View is to the north. Photo courtesy of the Montana Department of Transportation.

Damage to an overpass on Interstate 15, 6.5 km southwest of the main shock epicenter. Structural beams shifted on foundation, shearing four large anchor bolts and spalling concrete. The overpass remains in service. Photo courtesy of the Montana Department



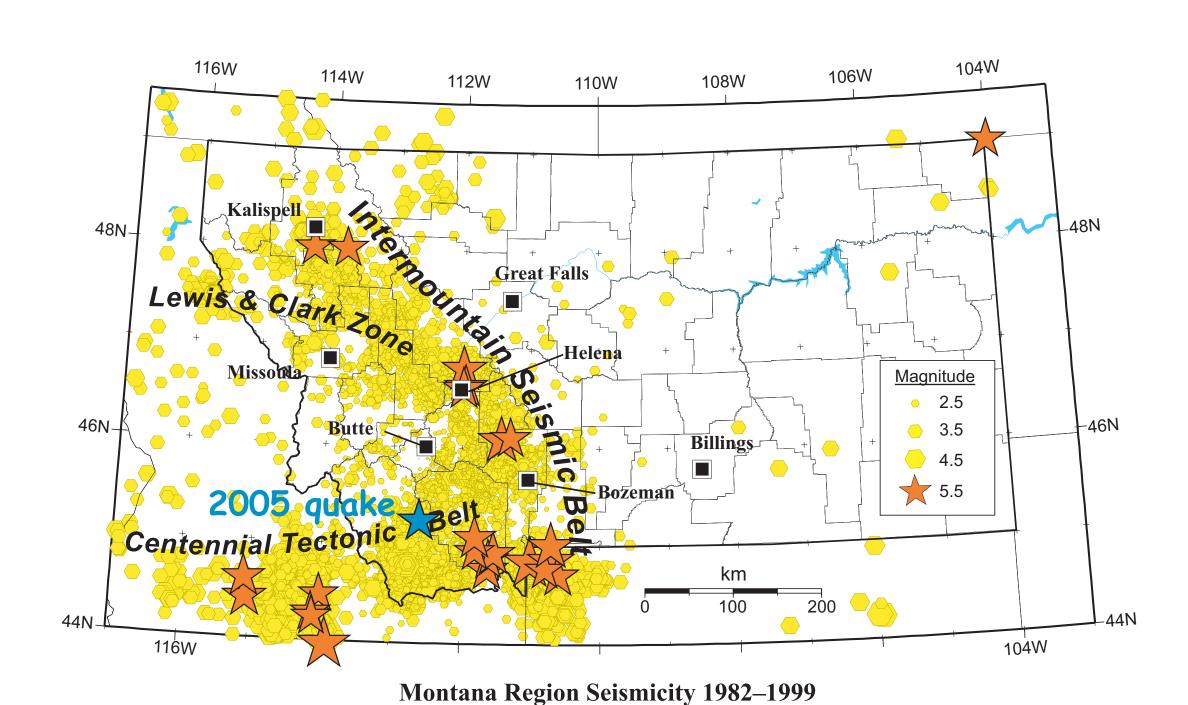


On the evening of July 25, 2005 at 10:08 p.m. (26 July 2005 at 04:08 UTC) a magnitude 5.6 earthquake occurred in southwestern Montana 16 km north of Dillon. Intensity VI shaking at Dillon caused damage to some masonry structures, particularly older chimneys. A large chimney on Old Main Hall on the University of Montana Western campus in Dillon sustained severe damage and was subsequently removed to prevent total collapse. Beaverhead County DES personnel estimated that up to 60% of older masonry chimneys in Dillon were damaged. The US Geological Survey Strong Motion Program installed a new strong motion instrument on the UM Western campus in 2004, which recorded a peak horizontal acceleration of 12.7% g. An overpass above Interstate 15 located 6.5 km southwest of the epicenter experienced sheared anchor bolts and spalled concrete but remained in service. Ground cracks formed in weakly consolidated deposits approximately 3 km southwest of the epicenter, apparently a result of strong ground shaking in weak soils but were unrelated to primary faulting. The Community Internet Intensity Map (URL:

http://pasadena.wr.usgs.gov/shake/imw/STORE/Xazad_05/ciim_display.html) received over 3800 reports from throughout western Montana and surrounding states, over 60% of which came within two hours of the main shock.

The main shock and hundreds of aftershocks were well recorded by the Montana Regional Seismograph Network. A P-wave first motion fault plane solution and moment tensor solutions by the USGS, Harvard, and St. Louis University for the main shock are all very similar and indicate oblique normal faulting with ENE-WSW-directed extension, consistent with the previously identified regional stress field. The distribution of aftershock hypocenters suggest that the north-trending, east-dipping nodal plane represents the fault plane. A new broadband seismograph station installed in cooperation with the USGS on top of the aftershock zone on August 12 has significantly improved hypocenter locations for the ongoing aftershock

The Dillon earthquake occurred on a previously unknown fault that apparently lacks surface expression. No late Quaternary faults are recognized in this region of the Beaverhead Valley. The 26 July 2005 event provides a well-documented example of a damaging, background earthquake on a blind structure in the Intermountain Seismic Belt.

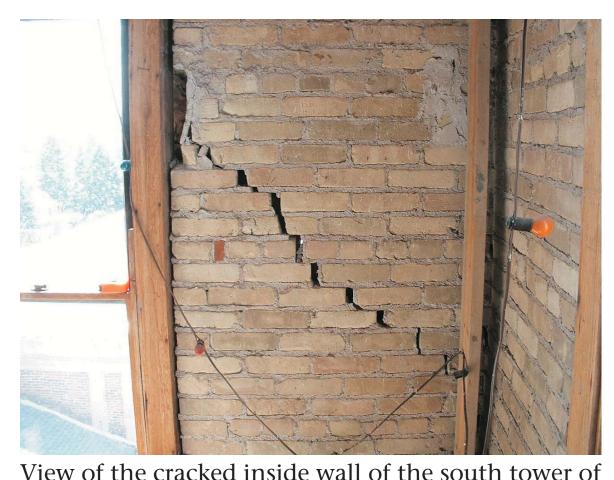


Recent seismicity located with the Montana Regional Seismograph Network (yellow hexagons) and historic earthquakes with magnitudes greater than or equal to 5.5 (orange stars). The 26 June 2005 Dillon earthquake is shown by the blue star.

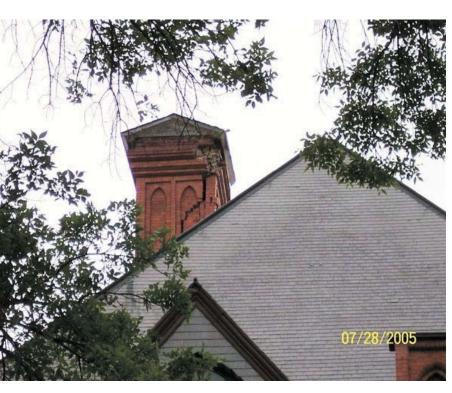
Damage in Dillon, MT



Crack in the south tower of Old Main Hall on the University of Montana Western campus in Dillon, approximately 16 km south of main shock epicenter.



Old Main Hall. The fracture opened a few additional mm following a magnitude 3.9 aftershock on August 7. Note how bricks have separated from window frame

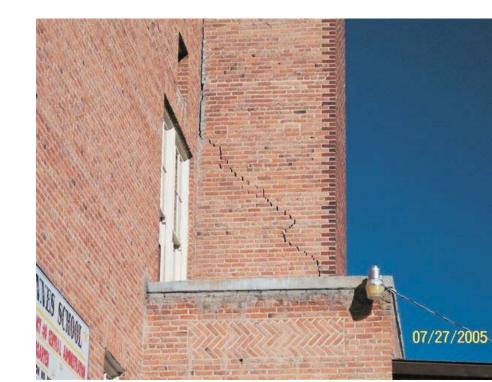


University of Montana Western campus. The chimney was removed several days after main shock to prevent total collapse.

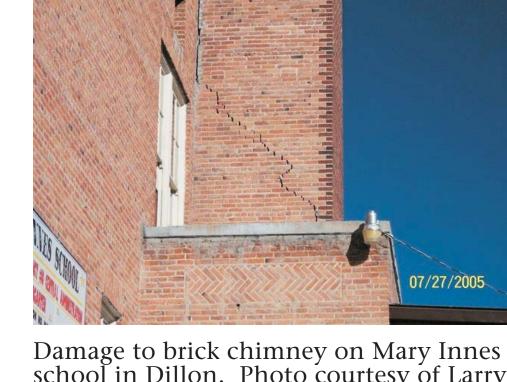


to the right of tree). Photo courtesy of Larry Laknar, Beaverhead County Disaster and Emergency Services.

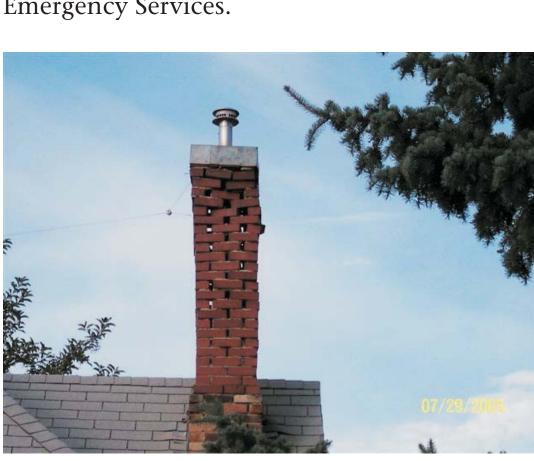
Plaster damage inside of Old Main Hall.



school in Dillon. Photo courtesy of Larry Emergency Services.



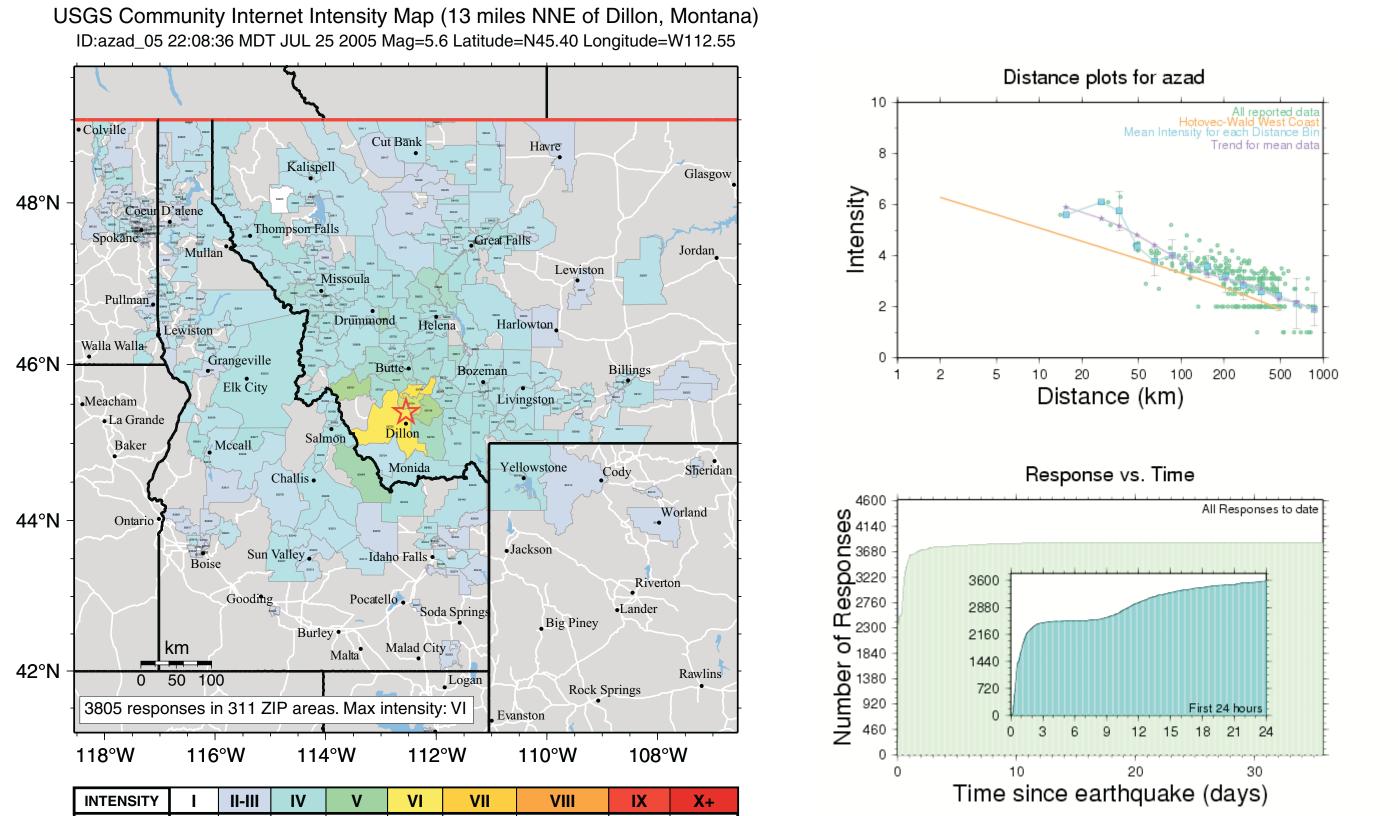
Laknar, Beaverhead County Disaster and



Up to 60% of the old masonry chimneys in Dillon were damaged by the earthquake. Fearing house fires and carbon monoxide poisoning after the heating season begins, county officials are requiring professional inspections of all masonry chimneys. Photo courtesy of Larry Laknar, Beaverhead County Disaster and Emergency Services.



County planner's office in Dillon the morning after the earthquake. Photo courtesy of Larry Laknar, Beaverhead County Disaster and Emergency



Community Internet Intensity Map (CIIM) showing shaking intensity reports for the 26 July 2005 Dillon earthquake (URL: http://pasadena.wr.usgs.gov/shake/imw/STORE/Xazad_05/ciim_display.html). The west coast intensity attenuation model (graph at upper right) appears to slightly under-predict shaking intensity for this earthquake. The earthquake occurred at 10:08 p.m. and over 60% of the CIIM reports were received within two hours (graph at lower right). Few reports were received between midnight and 8:00 a.m. with 95% of the 3805 reports received within 24 hours.

SHAKING Not felt Weak Light Moderate Strong Very strong Severe Violent Extreme

DAMAGE none none very light Light Moderate Moderate/Heavy Heavy Very Heavy

Map last updated on Tue Aug 30 15:37:47 2005

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