Supplemental Materials for

Mapping the Present-day 2-D Crustal Stress Field and Seismic Moment Release for the Greater Permian Basin of Texas as Constrained by Earthquake Source Mechanisms

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This supplement contains auxiliary materials, including:

1. Table S1: Results of stress inversion, where:

Column 1: Coordinate of the grid-point (lat, lon)
Column 2: Azimuth and uncertainty of *S1* (the maximum compress axis)
Column 3: Plunge and uncertainty of *S1* (the maximum compress axis)
Column 4: Azimuth and uncertainty of *S2* (the median compress axis)
Column 5: Plunge and uncertainty of *S2* (the median compress axis)
Column 6: Azimuth and uncertainty of *S3* (the least compress axis)
Column 7: Plunge and uncertainty of *S3* (the least compress axis)

Mapping the Present-day 2-D Crustal Stress Field and Seismic Moment Release for the Greater Permian Basin of Texas as Constrained by Earthquake Source Mechanisms

Table S1: Azimuth and Plungs of Principal Stress Axes of the Inverted Stress Tensors

Grid_Location Lat & Lon	*S1* azi.&uncert.	*S1* plg.&uncert.	*S2* azi.&uncert.	*S2* plg&uncert.	*S3* azi.&uncert.	*S3* plg.&uncert.
31.61° -104.7°	326.4°±7.9°	74.1°±0.0°	104.1°±5.8°	11.9°±0.0°	196.3°±4.9°	10.4°±1.3°
31.71° -104.7°	338.5°±8.4°	75.9°±1.7°	105.7°±9.0°	8.6°±2.0°	197.4°±8.3°	11.0°±3.2°
31.81° -104.7°	345.5°±11.5°	76.6°±1.9°	107.3°±8.0°	7.2°±0.9°	198.8°±7.3°	11.3°±3.2°
31.51° -104.55°	319.7°±4.5°	73.5°±0.0°	104.6°±6.1°	13.6°±0.0°	196.8°±4.4°	9.1°±3.6°
31.61° -104.55°	328.0°±6.2°	76.2°±0.0°	103.5°±6.5°	9.9°±0.4°	195.1°±5.0°	9.5°±2.0°
31.71° -104.55°	345.1°±7.5°	77.7°±0.0°	104.9°±3.8°	6.2°±1.6°	196.1°±2.9°	10.6°±1.5°
31.81° -104.55°	342.3°±3.1°	77.8°±0.3°	108.2°±3.5°	7.3°±3.9°	199.5°±2.7°	9.8°±2.6°
31.51° -104.4°	318.6°±7.6°	75.5°±0.5°	107.8°±4.5°	12.5°±0.0°	199.4°±3.4°	7.2°±4.8°
31.61° -104.4°	317.8°±4.0°	77.7°±0.0°	112.9°±3.1°	11.2°±7.3°	203.9°±2.2°	5.0°±2.9°
31.71° -104.4°	323.6°±0.0°	77.7°±0.0°	113.5°±1.1°	10.7°±6.1°	204.6°±0.0°	6.0°±2.8°
31.81° -104.4°	331.2°±0.0°	77.4°±0.0°	111.6°±0.7°	9.8°±1.5°	203.0°±0.0°	7.9°±2.7°
31.51° -104.25°	311.7°±3.0°	78.0°±0.0°	111.0°±0.9°	11.2°±0.0°	201.8°±0.4°	4.1°±2.3°
31.61° -104.25°	313.1°±12.4°	77.6°±0.0°	117.8°±1.7°	12.0°±9.7°	208.5°±1.3°	3.2°±2.6°
31.71° -104.25°	319.3°±3.9°	75.7°±0.0°	119.9°±3.0°	13.5°±0.0°	211.0°±2.2°	4.6°±3.5°
31.81° -104.25°	324.8°±0.0°	74.3°±0.0°	117.2°±7.0°	13.9°±0.0°	209.0°±8.1°	7.0°±2.2°
31.51° -104.1°	306.5°±12.6°	77.4°±0.0°	114.1°±3.0°	12.4°±0.0°	204.7°±2.6°	2.6°±2.6°
31.61° -104.1°	308.3°±4.1°	70.6°±0.0°	115.1°±0.9°	18.9°±0.0°	206.5°±0.4°	4.1°±1.3°
31.71° -104.1°	315.1°±0.0°	70.0°±0.0°	115.5°±3.4°	18.9°±0.0°	207.6°±2.3°	6.2°±1.8°
31.81° -104.1°	320.7°±3.2°	74.6°±0.0°	116.0°±7.9°	14.1°±0.0°	207.5°±7.3°	6.2°±2.2°
31.51° -103.95°	304.7°±15.6°	80.6°±1.0°	116.9°±2.5°	9.3°±1.0°	207.1°±2.5°	1.3°±0.6°
31.61° -103.95°	306.4°±0.0°	69.9°±0.0°	113.7°±1.0°	19.7°±0.0°	205.1°±0.9°	4.1°±0.5°
31.71° -103.95°	309.8°±0.0°	70.2°±0.0°	108.6°±3.2°	18.6°±0.0°	200.9°±2.5°	6.7°±0.3°
31.81° -103.95°	308.6°±1.0°	78.4°±1.9°	98.9°±2.8°	10.1°±0.3°	189.9°±2.5°	5.6°±0.6°
31.91° -103.95°	306.6°±24.7°	81.3°±2.0°	75.1°±1.4°	5.4°±3.1°	165.8°±1.5°	6.8°±2.8°
32.01° -103.95°	346.6°±72.6°	84.3°±3.4°	253.4°±2.8°	0.3°±9.7°	163.3°±2.3°	5.7°±4.3°
31.41° -103.8°	187.8°±105.1°	88.1°±1.8°	299.9°±4.9°	0.7°±3.4°	29.9°±4.4°	1.7°±3.2°
31.51° -103.8°	272.4°±11.5°	87.2°±2.6°	118.5°±3.4°	2.5°±0.5°	28.4°±3.3°	1.2°±2.3°
31.61° -103.8°	305.0°±2.8°	78.0°±1.0°	113.1°±1.7°	11.7°±0.6°	203.6°±1.9°	2.4°±0.5°

Mapping the Present-day 2-D Crustal Stress Field and Seismic Moment Release for the Greater Permian Basin of Texas as Constrained by Earthquake Source Mechanisms

Table S1: Azimuth and Plungs of Principal Stress Axes of the Inverted Stress Tensors (continued)

Grid_Location Lat & Lon	*S1* azi.&uncert.	*S1* plg.&uncert.	*S2* azi.&uncert.	*S2* plg&uncert.	*S3* azi.&uncert.	*S3* plg.&uncert.
31.71° -103.8°	306.5°±0.0°	74.8°±0.0°	101.5°±1.4°	13.8°±0.0°	193.0°±1.0°	6.2°±1.0°
31.81° -103.8°	304.8°±4.3°	76.7°±2.0°	88.6°±2.2°	10.8°±1.8°	180.1°±1.7°	7.7°±1.7°
31.91° -103.8°	304.6°±19.1°	81.0°±2.7°	76.1°±2.4°	6.0°±3.8°	166.8°±2.5°	6.7°±2.1°
32.01° -103.8°	340.2°±58.8°	84.2°±3.0°	72.7°±1.6°	0.3°±11.3°	162.7°±1.4°	5.8°±2.4°
31.11° -103.65°	223.2°±33.5°	82.9°±2.8°	315.8°±13.8°	0.3°±3.6°	45.9°±10.5°	7.1°±3.2°
31.21° -103.65°	229.9°±62.1°	85.0°±4.4°	130.6°±29.6°	0.8°±2.0°	40.5°±25.4°	4.9°±4.6°
31.31° -103.65°	250.0°±45.0°	84.1°±3.6°	123.2°±10.9°	3.6°±2.7°	32.9°±10.8°	4.7°±4.1°
31.41° -103.65°	248.4°±30.7°	82.7°±2.9°	121.2°±5.8°	4.4°±3.8°	30.7°±6.0°	5.8°±3.2°
30.91° -103.5°	167.2°±18.7°	82.2°±3.2°	316.8°±15.5°	6.7°±3.2°	47.2°±9.7°	3.9°±3.1°
31.01° -103.5°	176.0°±15.8°	83.2°±3.1°	317.5°±12.5°	5.3°±1.8°	47.9°±9.4°	4.2°±2.4°
31.11° -103.5°	202.0°±51.9°	82.8°±3.3°	318.5°±23.7°	3.2°±3.9°	48.8°±14.6°	6.4°±3.6°
31.21° -103.5°	211.4°±50.4°	82.9°±3.2°	316.1°±24.8°	1.8°±2.6°	46.3°±22.3°	6.8°±3.3°
31.31° -103.5°	239.2°±28.5°	81.9°±3.0°	129.7°±9.2°	2.7°±2.0°	39.3°±9.7°	7.7°±2.8°
31.41° -103.5°	247.4°±19.6°	79.4°±2.8°	126.0°±7.2°	5.6°±3.8°	35.2°±7.2°	9.0°±2.6°
30.91° -103.35°	228.6°±74.8°	87.2°±2.3°	133.7°±11.6°	0.2°±6.2°	43.7°±4.9°	2.8°±2.4°
31.01° -103.35°	181.0°±95.1°	87.2°±2.3°	317.7°±13.5°	2.0°±6.7°	47.8°±4.4°	1.9°±4.9°
31.11° -103.35°	183.1°±72.7°	85.8°±2.3°	319.9°±3.4°	3.1°±2.7°	50.1°±3.3°	2.9°±2.3°
31.21° -103.35°	183.5°±45.6°	83.0°±2.2°	319.6°±8.0°	5.1°±2.2°	50.1°±7.8°	4.8°±3.7°
31.31° -103.35°	227.2°±12.5°	82.6°±3.3°	135.9°±31.7°	0.2°±1.3°	45.9°±10.1°	7.4°±3.3°
31.41° -103.35°	232.8°±12.1°	80.2°±2.5°	130.0°±7.5°	2.2°±2.0°	39.6°±7.7°	9.6°±2.6°
31.91° -103.35°	90.2°±2.6°	3.4°±1.0°	343.3°±32.3°	78.6°±3.7°	180.8°±3.0°	10.9°±4.2°
32.01° -103.35°	88.9°±2.4°	4.1°±3.2°	339.4°±27.2°	77.8°±4.0°	179.8°±3.0°	11.5°±3.7°
31.01° -103.2°	188.1°±18.7°	88.0°±1.4°	317.5°±6.2°	1.3°±7.2°	47.5°±4.5°	1.5°±0.4°
31.11° -103.2°	179.9°±45.9°	86.2°±2.0°	321.2°±8.1°	3.0°±3.0°	51.3°±8.0°	2.4°±2.2°
31.21° -103.2°	161.2°±35.5°	84.4°±2.3°	322.2°±13.0°	5.3°±2.6°	52.4°±12.9°	1.8°±0.2°
31.31° -103.2°	213.2°±0.1°	89.6°±0.4°	319.4°±8.0°	0.1°±2.4°	49.4°±8.5°	0.4°±2.9°
31.41° -103.2°	341.8°±10.2°	89.0°±0.9°	131.6°±6.3°	0.9°±0.2°	221.6°±6.3°	0.5°±2.3°
31.31° -103.05°	46.5°±0.5°	88.3°±1.6°	138.2°±6.7°	0.0°±3.1°	228.2°±6.7°	1.7°±1.0°

Mapping the Present-day 2-D Crustal Stress Field and Seismic Moment Release for the Greater Permian Basin of Texas as Constrained by Earthquake Source Mechanisms

Table S1: Azimuth and Plungs of Principal Stress Axes of the Inverted Stress Tensors (continued)

Grid_Location Lat & Lon	*S1* azi.&uncert.	*S1* plg.&uncert.	*S2* azi.&uncert.	*S2* plg&uncert.	*S3* azi.&uncert.	*S3* plg.&uncert.
31.41° -103.05°	32.4°±62.8°	87.6°±2.3°	135.4°±11.4°	0.6°±1.7°	225.5°±7.4°	2.4°±1.2°
31.91° -102.45°	246.5°±1.9°	1.3°±5.0°	127.5°±30.2°	87.4°±1.3°	336.5°±1.8°	2.3°±1.4°
32.01° -102.45°	246.6°±1.6°	1.5°±2.9°	129.8°±51.0°	86.8°±2.0°	336.7°±1.7°	2.9°±2.0°
31.91° -102.3°	245.7°±1.9°	2.0°±2.0°	114.0°±27.2°	87.0°±1.1°	335.8°±1.8°	2.2°±0.4°
32.01° -102.3°	246.0°±1.8°	2.6°±1.4°	110.5°±32.1°	86.3°±1.3°	336.1°±1.9°	2.6°±1.2°
32.11° -102.3°	247.0°±0.8°	8.8°±6.3°	83.1°±11.8°	80.8°±4.4°	337.4°±1.2°	2.5°±0.9°
32.01° -102.15°	246.5°±1.7°	6.2°±3.9°	68.5°±0.2°	83.8°±3.9°	336.5°±1.6°	0.2°±4.5°
32.11° -102.15°	247.5°±1.5°	10.3°±3.9°	77.7°±10.1°	79.6°±8.9°	337.8°±1.6°	1.8°±1.7°
32.21° -102.15°	241.6°±3.1°	65.2°±2.9°	72.9°±1.1°	24.4°±2.7°	340.9°±2.1°	4.3°±3.4°
32.31° -102.15°	229.8°±3.9°	83.1°±4.1°	71.6°±2.3°	6.4°±3.0°	341.4°±2.5°	2.6°±1.9°
32.41° -102.15°	84.8°±14.8°	78.9°±9.1°	250.8°±4.4°	10.8°±6.7°	341.3°±4.1°	2.6°±2.4°
32.51° -102.15°	76.7°±7.5°	66.3°±3.3°	248.6°±5.9°	23.5°±2.6°	339.9°±5.2°	3.0°±2.9°
32.01° -102°	246.0°±1.8°	6.5°±6.2°	54.1°±0.1°	83.3°±6.0°	155.9°±2.0°	1.4°±2.1°
32.11° -102°	247.2°±2.5°	11.9°±38.2°	66.7°±0.0°	78.1°±11.7°	157.2°±2.7°	0.1°±4.8°
32.21° -102°	247.9°±6.6°	56.7°±0.0°	69.2°±2.0°	33.3°±0.0°	338.8°±2.3°	0.6°±3.2°
32.31° -102°	247.5°±1.4°	73.7°±0.0°	69.5°±2.2°	16.3°±0.0°	339.4°±2.3°	0.6°±3.7°
32.41° -102°	87.2°±18.8°	82.1°±6.6°	249.0°±3.4°	7.6°±4.5°	339.3°±3.4°	2.5°±2.3°
32.51° -102°	83.2°±10.7°	75.8°±5.5°	248.0°±4.5°	13.8°±5.6°	338.9°±4.1°	3.6°±3.2°
32.21° -101.85°	245.6°±0.1°	64.2°±0.0°	65.6°±2.2°	25.8°±0.0°	335.6°±0.4°	0.0°±0.9°
32.31° -101.85°	242.9°±0.1°	77.8°±0.0°	65.3°±2.0°	12.2°±0.0°	335.2°±1.8°	0.5°±1.9°
32.21° -101.7°	240.5°±0.0°	78.6°±0.0°	63.7°±1.2°	11.3°±0.0°	333.6°±1.9°	0.6°±1.5°
32.31° -101.7°	230.9°±0.5°	82.2°±0.0°	63.8°±2.5°	7.6°±0.0°	333.5°±1.8°	1.7°±2.0°
32.41° -101.7°	190.4°±48.9°	86.8°±2.7°	64.4°±3.5°	1.9°±3.4°	334.3°±3.6°	2.6°±2.1°
32.31° -101.55°	213.7°±19.7°	84.4°±0.4°	64.2°±3.3°	4.8°±1.1°	334.0°±3.4°	2.8°±1.4°
32.41° -101.55°	198.7°±20.5°	85.7°±1.9°	64.1°±3.6°	3.0°±2.3°	333.9°±2.9°	3.0°±1.9°
32.11° -101.1°	235.6°±6.4°	75.8°±3.1°	52.5°±6.8°	14.2°±3.1°	142.7°±9.1°	0.7°±1.8°
32.21° -101.1°	232.9°±9.2°	77.2°±2.6°	52.8°±5.8°	12.8°±2.6°	142.8°±7.2°	0.0°±2.5°
32.81° -101.1°	90.8°±23.6°	85.4°±1.7°	230.7°±1.8°	3.5°±1.8°	320.9°±1.7°	3.0°±1.4°

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Table S1: Azimuth and Plungs of Principal Stress Axes of the Inverted Stress Tensors

Grid_Location Lat & Lon	*S1* azi.&uncert.	*S1* plg.&uncert.	*S2* azi.&uncert.	*S2* plg&uncert.	*S3* azi.&uncert.	*S3* plg.&uncert.
32.91° -101.1°	91.1°±14.9°	85.1°±1.0°	230.2°±2.1°	3.7°±0.6°	320.4°±1.8°	3.2°±1.1°
32.81° -100.95°	62.3°±4.7°	77.2°±2.7°	223.1°±1.1°	12.1°±2.4°	314.0°±1.2°	4.1°±2.2°
32.91° -100.95°	55.8°±1.3°	71.0°±0.0°	220.5°±1.0°	18.3°±0.0°	312.1°±1.5°	4.7°±2.3°
33.01° -100.95°	42.6°±0.0°	29.9°±0.0°	211.0°±0.0°	59.6°±0.0°	309.7°±3.8°	5.1°±3.8°
32.61° -100.8°	102.2°±4.2°	88.3°±1.6°	225.2°±3.4°	0.9°±2.8°	315.3°±3.2°	1.4°±1.6°
32.71° -100.8°	86.5°±3.5°	87.3°±2.1°	222.7°±4.3°	1.9°±0.1°	312.8°±2.6°	1.9°±1.5°
32.81° -100.8°	59.8°±7.5°	78.0°±1.8°	220.8°±0.7°	11.4°±1.2°	311.5°±0.9°	3.8°±2.1°
32.91° -100.8°	52.3°±0.3°	67.8°±0.0°	218.7°±0.1°	21.7°±0.0°	310.6°±1.0°	4.7°±1.8°
33.01° -100.8°	42.1°±0.0°	28.1°±0.0°	210.1°±0.0°	61.4°±0.0°	309.4°±2.6°	5.0°±3.8°
32.61° -100.65°	140.9°±0.3°	89.1°±0.9°	44.0°±2.8°	0.1°±4.9°	314.0°±2.8°	0.9°±2.1°
32.71° -100.65°	202.6°±0.1°	87.3°±2.0°	41.3°±3.4°	2.6°±2.1°	311.3°±3.4°	0.9°±1.8°
32.81° -100.65°	183.7°±2.3°	87.9°±2.1°	39.9°±3.7°	1.7°±3.6°	309.9°±3.0°	1.3°±3.2°
32.71° -100.5°	212.4°±0.4°	84.8°±2.1°	42.6°±0.7°	5.1°±2.0°	312.5°±0.9°	0.9°±2.4°
32.81° -100.5°	210.7°±27.1°	84.9°±4.0°	42.1°±4.9°	5.0°±4.0°	312.0°±4.9°	1.0°±4.4°