1-W.Tibet.jpg. Tibetan plateau bounded by Altyn Tagh fault on N and Karakoram fault on S. In S. Tibet, note N-S normal faults. Karakoram fault either continues across the Nepal Himalaya or changes to the discontinuous, left-stepping Jiali fault system.

2-Tibet.topo.jpeg. High Tibetan plateau (white) gives way NE to Qaidam Basin and Qilian Shan (red). Sichuan basin is dark green, reflecting its low altitude relative to adjacent mountains, especially to NW, where topo gradient was site of 2008 Wenchuan earthquake. Topo gradient is much lower to NE. Xianshuihe left-lateral and Red River right-lateral faults are SW of Sichuan basin. To S, note Myanmar Central Basin with Sagaing fault and Arakan Yoma, mts. to W. Still farther W, pale green area marks Shillong Plateau. Kunlun fault is N of Xianshuihe fault.

3-gps\_flow.jpg. Blue arrows are vectors relative to Eurasia. Vectors are N across Himalaya, but strongly curved in E Tibet: NE in Qaidam basin to Helanshan in SW Ordos, E in Sichuan basin, SE in Yunnan. Curvature seems to rotate about the Assam syntaxis of Himalaya.

4-sichuan.jpg. Topographic setting of 2008 Wenchuan earthquake. Sichuan basin is low relative to mts. on all sides. Wenchuan eq faults on NW side (marked by seismicity). Ordos Plateau in NE corner, bounded by Helanshan and Liupan Shan on W and and Qingling Shan on S. Wei River is site of ancient Middle Kingdom and city of Chang’an.

5-Tibet.topo.xsec.png.This shows topography between Himalayan front and Qilian Shan on far right. Himalaya shows only as a narrow peak above plateau. Lower area between Tibet and Qilian Shan is Qaidam Basin.

6-Tian Shan active folds.jpg. Folds on SE side of Tian Shan in Xinjiang extend into alluvium in three rows.

7-Xianshuihe.Fig.1. Left-lateral offset shutter ridge along the Xianshuihe fault at Yousi Village, Luhuo County, view north. Photo by Junjie Ren, Institute of Crustal Dynamics, China Earthquake Administration.

8-Xianshuihe.Fig.2. Surface rupture (disturbed ground) associated with the 1973 Luhuo earthquake (Ms 7.6) south of Yousi Village on the Xianshuihe fault. Photo by Yanfen An, Institute of Geology, China Earthquake Administration.

9-Wenchuan-Yingxiu 1. Offset river terrace sequence of Mingjiang River on the Yingxiu-Beichuan fault at Yingxiu Town, epicenter of the 2008 earthquake (Mw 7.9), view SW. Increasing offset with terrace age indicates multi-events since T4. Photo by Junjie Ren, Institute of Crustal Dynamics, China Earthquake Administration.

10-Wenchuan-Yingxiu 2. Dislocated road at Yingxiu Town in the 2008 Wenchuan earthquake, view NW, indicating that the Yingxiu-Beichuan fault is dominated by reverse thrusting with a component of dextral slip. Photo by Qinjiang Tian, reference: Institute of Crustal Dynamics, China Earthquake Administration, 2009. Scientific Investigation Album of the 2008 Wenchuan Ms 8.0 Earthquake. Beijing, *Seismological Press*.165 pages.

11-Wenchuan-Nanyue 3. Dislocated cement road in the 2008 Wenchuan earthquake at Nanyue Village, Longchi Town, Dujiangyan City. Photo by Shimin Zhang. Reference: Institute of Crustal Dynamics, China Earthquake Administration, 2009. *Scientific Investigation Album of the 2008 Wenchuan Ms 8.0 Earthquake*. Beijing, *Seismological Press.*165 pages.

12-Longriba flt. Dislocated terraces along the Maoergai fault, eastern branch of the Longriba fault, eastern Tibet, view north. T5/t2’ and t2/t1 riser are offset dextrally. Photo by Junjie Ren, Institute of Crustal Dynamics, China Earthquake Administration.

13-00190045.jpg. Hongyazi town wall was offset by reverse fault during earthquake of 1509 of M 7.2. Fault dips 65°, left (south) side up. Photo by Robert Yeats. Reference: Xu et al., 2010, *SSA Bull. 100*:541-561.

14-00190059.jpg. Shuxiakou trench site at the reverse-fault scarp that rose during the 34 May 1927 Gulang, Gansu Province, earthquake. Although there is a Gulang strike-slip fault, the earthquake struck this reverse fault. An observer confirmed that this reverse-fault scarp was formed in the 1927 earthquake. Photo by Robert Yeats. Reference: Xu et al., 2010, *SSA Bull. 100*:541-561.

15-00190037.jpg. Right-offset shutter ridge accompanying 1954 Shandan, Gansu Province, earthquake. Presence of a scarp is because of juxtaposition of ridge and gully topography. Photo by Robert Yeats. View south. Reference: Xu et al., 2010, *SSA Bull. 100*:541-561.

16-20430025.jpg. View E along Shandan rupture, showing S. dip based on V’s across gully. S. side up. Photo by Robert Yeats. Reference: Xu et al., 2010, *SSA Bull. 100*:541-561.

17-Fuyun Fig. 1. Fault scarp on fluvial terrace associated with the 10 August 1931 earthquake (M ~8) along the Fuyun fault, Xinjiang Province, view SE. Photo by Xinzhe Sun, Institute of Geology, China Earthquake Administration.

18-Fuyun Fig. 2 Fault trough on the hillside due to strike-slip faulting along the Fuyun fault, Xinjiang Province, view east. Photo by Xinzhe Sun, Institute of Geology, China Earthquake Administration.

19-Kunlun Fig.1. Fault plane on eastern Kunlun fault. Slickenlines on the fault plane occurred during the 14 November 2001 Kunlun Shan earthquake (Mw 7.9), showing dominantly left-lateral motion of the eastern Kunlun fault in the northeastern margin of the Tibetan Plateau. Photo by Bihong Fu, Institute of Geology and Geophysics, China Academy of Sciences.

20-Kunlun Fig.2. Left-lateral offset (~4 m) of a river channel at Kunlun Shan Pass, Qinghai Province, during the 14 November 2001 Kunlun Shan earthquake (Mw 7.9), view north. Photo by Bihong Fu, Institute of Geology and Geophysics, China Academy of Sciences.

21-Kunlun Fig. 3. Left-stepping surface rupture due to left-lateral shear associated with the 2001 Kunlun Shan earthquake (Mw 7.9), view north. Photo by Xiwei Xu, Institute of Geology, China Earthquake Administration.

22-Daqingshan Fig. 1. Range-front fault of the Daqingshan Range, Inner Mongolia, view north. Fault scarp marks dislocated fluvial terrace by the Daqingshan fault at north Natai Village. Photo by Baoqi Ma, Institute of Crustal Dynamics, China Earthquake Administration.

23-Daqingshan Fig. 2 View west of surface rupture at north Asan Village, Inner Mongolia, on Daqingshan fault accompanying AD 849 Baotou earthquake (Ms 7.5?). Photo by Baoqi Ma, Institute of Crustal Dynamics, China Earthquake Administration.

24-Yutian Fig. 1.ai Offset fluvial fans characterized by fault scarp at the mountain front in the 2008 Yutian earthquake (Ms 7.3), Xinjiang, view south. Photo by Xibin Tan, Institute of Geology, China Earthquake Administration.

25-Yutian Fig. 2.jpg. Surface scarp with a vertical displacement of ~1 m at the foot of a hill in the 2008 Yutian earthquake (Ms 7.3), Xinjiang, view SE. Photo by Xibin Tan, Institute of Geology, China Earthquake Administration.

26-Wutaishan Fig. 1.jpg.. Offset fluvial terrace along the Wutai Shan fault at Gangli Village, Fansi County, view NE. Fault plane is covered by overlying young loess. Photo by Junjie Ren, Institute of Crustal Dynamics, China Earthquake Administration.

27-20430026.jpg. Sand dike formed by liquefaction along Tan-Lu fault, Shandong Province. Trench was hand-excavated by local villagers. Photo by Robert Yeats.

28-20430023.jpg. Scarp formed in 17 September 1303 Hongdong earthquake of M 8 on Huoshan fault (lower left to upper right). Surface rupture occurred on two parallel faults with a fault length of 45 km. Displacement on this fault is oblique normal and right-lateral. More than 200,000 people lost their lives in this earthquake. Photo by Robert Yeats. Reference: Xu X. et al., 1992, *Annales Tectonicae suppl. to V. VI*:40-53.

29-H4-1.jpg. Deformation from 1556 Shaanxi-Shanxi earthquake that killed >830,000 people, the greatest loss of life of any earthquake in history.

30-Helanshan flt. (offset of Great Wall). Dislocated Great wall built in Ming Dynasty at Honguozi Village, Shizhuishan City, during the 3 January 1739 Yinchuan-Pingluo earthquake (Ms 8) on Helanshan fault, view north. Photo by Wei Min, Institute of Geology, China Earthquake Administration. <Http://www.cea.gov.cn/manage/html/8a8587881632fa5c0116674a018300cf/_content/10_09/28/1285661690698.html>.

31-Haiyuan.paleoearthquake.jpg. The Haiyuan strike-slip fault was the source of an earthquake of M 8.5 in 16 December 1920 that killed > 200,000 people. Zhang et al. (2005, *Science in China Series D: Earth Sciences 48*(3):364-375) divided the 1920 rupture into three segments (map) and excavated 19 trenches, identifying earthquakes in each segment. The earthquake history is shown on the upper diagram. Most earthquakes ruptured only one or two segments, but, aside from the 1920 earthquake, only one at 6600 yBP may have ruptured all three. This earthquake had the largest slip of any except for the 1920 earthquake, which was still larger. We therefore regard the 1920 and possibly the 6600 yBP earthquake as *superquakes*, and their recurrence interval is in contrast to the earthquakes rupturing one or two segments. The Haiyuan fault may be the most extensively trenched strike-slip fault on earth.

32-China Google images: Aerial views of active faults; separate figure captions.