1-20430061. DEM of New Zealand microcontinent extending north to Kermadec, Tonga, and New Hebrides trenches and south to MacQuarrie Ridge. Earthquakes in red. Note that although New Zealand is seismically active, the Tonga-Kermadec and New Hebrides subduction zones are much more active. Fig. 10.14.

2-00190036.jpg. Waiohine stream terraces offset along Wairarapa fault (right center to lower left center), North Island, NZ. Terraces along Waiohine River uplifted and displaced with motion on Wairarapa fault, with latest motion in 1855. The slip rate on the Wairarapa fault is determined by comparing offset on stream terraces with their ages; one of the first places worldwide this was done. Based on work by Harold Wellman, Victoria University, and Gerald Lensen, NZ Geological Survey. Photo by Lloyd Homer, NZ Geol. Survey.

3-204430062.jpg. View SW along Wairarapa fault from near the Waiohine River to “The Hernia”. Note increase in scarp height with increasing distance from camera. Photo by Robert Yeats.

4-00190033.jpg. Gemini spacecraft oblique image of South Island, NZ, showing straight trace of Alpine fault uplifted on SE side (marked by snow) because deformation is transpressive. Straight trace of fault indicates it is strike slip; vertical component due to contractional component of recent deformation, which uplifts the Southern Alps. Rounded feature near top of image is Banks Peninsula near Christchurch.

5-20430063.jpg. View E to exposure of Alpine fault in Westland, South Island, at Gaunt Creek. Although fault is mainly strike slip, the exposure here has reverse separation, reflecting the strong component of dip-separation leading to uplift of the Southern Alps. From bottom to top: Quaternary gravel, fault gouge, and Alpine Schist. Photo by Robert Yeats; note people for scale. Reference: Berryman, K.R., et al., *Annales Tectonicae supp. v. VI*:12-163.

6-20430053.jpg. Wairau fault, Marlborough, view N. People show offset of a terrace riser across fault, which extends across image, up on left. The Wairau fault carries most of the total slip on the Alpine fault system, but it carries less slip than the Hope fault to the south. Photo by Robert Yeats.

7-00190032.jpg. Wellington fault, NZ, over Hutt Valley, view south to Wellington. Lambton Harbour on left. In distance, fault is in central Wellington, close to government buildings. Fig. 10.16. Reference Berryman, K.R., 1990, *N.Z Jour. Geology and Geophysics 33*:257-270. Photo by Lloyd Homer, NZ Geol. Survey.

8-20430057.jpg. Wellington fault as viewed from Puffer Track on way to Dobson’s Hut, Tararua Range. Kaitoke Basin is a pull-apart. The Kaukau surface locally has late Cenozoic gravel similar to Maori Bottom Fm. Fig. 10.16. Photo by Robert Yeats.

9-20430052.jpg. Mohaka (Wellington) fault at Waipawa River, Hawkes Bay. View NNE. Latest movement up on right, although long-term movement up on left. Thesis research by Mike Raub, Auckland University. Photo by Robert Yeats.

10-20430054.jpg. Aerial view of Cape Kidnappers, North Island. Beach cliffs expose volcaniclastic strata in a broad anticline cut by normal faults, which follow drainages at right angles to coastline. Normal faults interpreted as related to bending moment accompanying anticlinal folding. At least two normal faults visible in this photo. Photo by Lloyd Homer, NZ Geological Survey.

11-20430055.jpg. Aerial view of Cape Kidnappers looking toward coast. Normal faults cut an interglacial surface; east (left) side up. Photo by Lloyd Homer, NZ Geological Survey.

12-00190055.jpg. Normal faults at Cape Kidnappers, E. coast of North Island, produced by bending moment related to broad fold. Photo by Alan Hull, NZ Geological Survey. These faults can be seen on the tourist trip to the gannet colony at Cape Kidnappers.

13-20430050.jpg. Trench across normal fault scarp near Mt. Ruapehu, North Island. Fig. 10.15. Photo by Robert Yeats.

14-20430056.jpg. Trench across normal fault scarp near Mt. Ruapehu. One meter grid. Photo by Robert Yeats.

15-00190058.jpg. Fault scarp accompanying 23 May 1968 Inangahua earthquake in NW Nelson. Very likely a secondary rupture. References: Anderson et al. 1994, *NZ Jour. Geology and Geophysics 37*:57-86, Yeats 2000, *NZ Jour. Geology and Geophysics 43*:587-599. Photo by Robert Yeats.

16-20430064.jpg. Surface deformation accompanying 23 May 1968 Inangahua earthquake. This may be a secondary rupture involving mainly the soil zone, or it could be related to strong ground motion. Reference: Anderson et al. 1994, *NZ Jour. Geology and Geophysics 37*:57-86.

17-20430048.jpg. Air photo of Blackball flexural-slip faults in Moonlight area, ssouthern end of the Grey-Inangahua basin, South Island

18-00190056.jpg. Flexural-slip fault scarp, Moonlight area, Blackball, South Island, NZ. Fault is parallel to bedding in subsurface. Photo by Robert Yeats, standing on crest of Fault A, looking toward scarp of Fault B.

19-20430049.jpg. Air photo of Giles Creek flexural-slip fault scarps (upper right to lower left) in Grey-Inangahua Basin, South Island. Terrace riser trends nearly at right angles; alluvial-fan drainage features trend across the fault scarps. Reference, Suggate, R.P., 1957, Geology of Reefton Subdivision: *NZ Geol. Survey Bull. n.s.56*, 146 p. Suggate was the first to describe features that are now known as flexural-slip scarps.

20-20430051.jpg. Landsat image of range and basin topography in Central Otago, South Island. Clutha River flows across lower left part of image. Reverse faults bound the SE range front of Dunstan and Pisa ranges. These range-front faults are transected at upper right by the Hawkdun fault, nearly at right angles to the Dunstan and Pisa faults. The bedrock schist is locally beveled by an erosion surface described by C.A. Cotton. Reference Yeats, 1987, *NZ Jour. Geology and Geophysics 30*:61-71.

21-20430060.jpg. Aerial view of Upper Nevis basin, showing folding into an anticline within the basin, producing a horst. Drainage across the basin is entrenched, accompanying uplift. Photo by Lloyd Homer, NZ Geological Survey. Reference: Beanland, S., and Barrow-Hurlbert, S.A., 1986, The Nevis-Cardrona fault system, central Otago, New Zealand: *N.Z. Jour. Geology and Geophysics 31*:337-352..S.A. Barrow-Hurlbert, OSU MS thesis.

22-00190023.jpg. Ostler fault, South Island, NZ. Shows combination of reverse faulting and folding of hanging wall (left side). Electric pylons near top of image show that these are very large structures. Photo by Lloyd Homer, NZ Geol. Survey. Research by Stuart Read, GNS.

23-00190050.jpg. Branch River trench on Cardrona fault, central Otago, showing reverse separation. Fault has demonstrated Holocene offset. Photo by Robert Yeats. Reference Beanland and Barrow-Hurlbert, 1986, *NZ Journal Geology and Geophysics 31*:337=352.

24-00190041.jpg. Trench across reverse fault in Kawarau Gorge east of Queenstown, New Zealand. Dark layers in footwall are peat deposits formed when Cardrona fault cut off a stream; most recent movement was Holocene. Reference Beanland, S., and Barrow-Hurlbert, S.A., 1986, *NZ Journal Geology and Geophysics 31*:337=352.

25-20430058.jpg. Branch Creek trench on N wall of Cardrona fault. Note in lower left corner, footwall makes a recumbent fold; a caterpillar tread in a rollover. Photo by Robert Yeats.