SICHUAN EARTHQUAKE May 12, 2008

Two of the 48 pandas that live at China's Chengdu Research Base of Giant Panda Breeding frolic on an outdoor climbing structure.

On the fault. A massive landslide crushed some buildings in Beichuan.

Science
1. Find the seismic moment

SEISMIC MOMENT $M_0 = \text{fault area} \times \text{slip} \times \text{rigidity}$

MOMENT MAGNITUDE $M_w = \frac{2}{3} \times (\log M_0 - 9.1)$
2. Predict the rupture length (km) and average displacement (m)

3. Use these and the moment to predict the downdip dimension (fault width). Use rigidity $= 3 \times 10^{10}$ Pa ($1 \text{ Pascal} = \text{N/m}^2$)
4. How do the intensity & aftershock distributions compare to the fault parameters you estimated?
5. How does the slip distribution from body wave modeling compare to the fault parameters you estimated?
6. What type of faulting did it involve?

7. Which plane did it occur on?

8. What's the tectonic cause?

GPS site velocities wrt Eurasia

Zhang et al., 2004