March 11, 2011 Earthquake and Tsunami

Sanriku Tsunami
Earth’s Energy Unleashed As Tectonic Plates Shift

• Fifth largest recorded since 1900 and the biggest to hit Japan in 3 centuries
• Pacific plate moving at a speed of about 3 inches a year, slides under the Eurasian plate
• Motion of Pacific plate moving under the Eurasian plate caused massive uplift of the seafloor displacing water and causing 40-foot-tall tsunami.
On March 11 tsunami spilled over some sea walls and embankments washing cars, houses, farm, factories before reversing directions and carrying them out to sea.
Impacts of the Quake and Tsunami

• Quake and tsunami claimed some 20,000 lives, destroyed more than 200,000 homes
• Damaged nuclear reactors, factories, disrupted supply chains, caused crippling power shortage.
• Nearly 23,000 hectares of farmland were flooded with salt water; more than 21,000 fishing boats lost.
• Caused about $210 billion in economic damage; world’s costliest disaster.
80-kilometer evacuation zone recommended by U.S. Embassy
2 million residents

20-30 kilometer evacuation zone mandated by Japanese government
62,000 residents

20-kilometer evacuation zone mandated by Japanese government
77,000 residents

Possible effects:
- Death within weeks
- Possible death in 2 months
- Bleeding from mouth, throat
- Hair loss, nausea and vomiting
- Blood chemistry changes
Radiation and Japan’s Food Chain

• Radioactive cesium from damaged nuclear power plants contaminated beef, kicking off food scare.
• Some contaminated food including milk and spinach from Fukushima prefecture was caught before they reached store shelves
• Radioactive contamination in rice was found in Ibaraki prefecture, 90 miles south of Fukushima
• Tokyo’s water supply contaminated with radiation
Rice Contamination

- Fukushima prefecture, showered with radiation in March, 4\textsuperscript{th} largest rice-producing region in Japan
- Contamination has triggered sales ban of harvested rice (above 500 bequerels per kilogram)
- Cultivation banned in fields with soils above 5,000 bequerels of cesium per kilogram of soil.