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Huge Quake and Tsunami Hit Japan

By **MARTIN FACKLER** and **KEVIN DREW**

TOKYO — An 8.9-magnitude earthquake struck off the coast of [Japan](#) on Friday, the strongest ever recorded in the country and one of the largest anywhere in the last century. The quake churned up a devastating tsunami that swept over cities and farmland in the northern part of the country and set off warnings as far away as the West Coast of the United States and South America.

Japanese police officials said that more than 200 bodies were found in Sendai, a port city in the northeastern part of the country and the closest major city to the epicenter, and the government put the official death toll at more than 300. But with many people still missing there and elsewhere, the death toll is expected to rise.

Walls of water whisked away houses and cars in northern Japan, where terrified residents fled the coast. Train service was shut down across central and northern Japan, including Tokyo, and air travel was severely disrupted. A ship carrying more than 100 people was swept away by the tsunami, Kyodo News reported.

The government evacuated thousands of residents in a two-mile radius around a nuclear plant about 170 miles northeast of Tokyo and declared a state of emergency after a backup generator failed, compromising the cooling system. So far, the chief government spokesman, Yukio Edano, said no radiation leaks had been detected.

Prime Minister [Naoto Kan](#) said the quake and tsunami caused major damage across wide areas.

The United States Geological Survey said the quake was the most severe worldwide since an 8.8 quake off the coast of Chile a little more than a year ago. It was less powerful than the 9.1-magnitude quake that struck off Northern Sumatra in late 2004. That quake spawned a tsunami that killed more than 200,000 people around the Indian Ocean.

The survey said that Friday's quake was centered off the coast of Honshu, the most populous of the Japanese islands, at a point about 230 miles northeast of Tokyo and a depth of about 17 miles below the earth's surface.

The quake occurred at 2:46 p.m. Tokyo time, and was so powerful that buildings in central Tokyo, designed to withstand major earthquakes, swayed.

“This tremor was unlike any I’ve experienced previously, and I’ve lived here for eight years,” said Matt Alt, an American writer and translator living in Tokyo. “It was a sustained rolling that made it impossible to stand, almost like vertigo.” Japanese media reported that there had been more than 70 aftershocks were in the hours after the quake. Some of them were of magnitude 6.0 or greater, strong enough to do significant damage on their own.

President Obama said the United States “stands ready to help” Japan deal with the aftermath. “Michelle and I send our deepest condolences to the people of Japan,” he said in a statement.

American military airfields in Japan began accepting civilian flights diverted from airports that suffered damage, American officials said early Friday.

A spokesman for the American 7th Fleet in Japan said that Naval Air Field Atsugi had received several commercial passenger planes that could not land at Narita. Officials said that Yokota Air Base also received civilian flights. In addition, three American warships in southeast Asia will be ordered out to sea to reposition themselves in case they are directed to provide assistance, according to a 7th Fleet spokesman.

Officials around the Pacific warned residents of coastal areas to prepare for a possible tsunami, but the initial reports were of minimal to no damage in the first places that the wave reached. Relatively small tsunami waves were reported in Halmahera, Indonesia, but did little harm. Russia, China and Indonesia canceled their warnings after a few hours.

Gauges at Midway Island in the Pacific registered a wave amplitude of about five feet, according to Gerard Fryer, a geophysicist with the Pacific Tsunami Warning Center.

On Hawaii, where the tsunami hit at midmorning East Coast time on Friday, initial wave heights were about four feet above normal sea level, said Paul Huang, a seismologist with the West Coast and Alaska Tsunami Warning Center in Palmer, Alaska. Often, though, wave heights increase over time, with the second or third being the highest, he said. The center had predicted wave heights of six feet.

Mr. Huang said that tsunami waves of about two to three feet had reached coastal areas in the western Aleutian Islands of Alaska, causing little impact. In Russia and other parts of the Pacific warnings were lifted after waves proved to be insignificant.

Mr. Huang said that the center was predicting significant wave heights for certain parts of the West Coast, particularly in Oregon and Northern California. At Siletz Bay, about 50 miles west of Corvallis, Ore., waves about eight and a half feet above normal sea level were forecast, with the first wave expected to arrive shortly after 7 a.m. local time (10 a.m. Eastern). At the mouth of the Klamath River, near the Oregon-California border, waves were expected to be nearly that high.

“We haven’t seen anything of this amplitude on our coast,” he said, other than tsunamis caused by the 1964 Alaskan earthquake.

Coastal evacuations were issued along the West Coast, from central California to Alaska, which directs residents of low-lying regions to move inland and to higher ground.

Television images showed waves of more than 12 feet roaring inland in Japan. The tsunami drew a line of white fury across the ocean, heading toward the shoreline. Cars and trucks were still moving on highways as the water rushed toward them.

The floodwaters, thick with floating debris shoved inland, pushed aside heavy trucks as if they were toys, in some places carrying blazing buildings toward factories, fields, highways, bridges and homes. The spectacle was all the more remarkable for being carried live on television, even as the waves engulfed flat farmland that offered no resistance.

The force of the waves washed away cars on coastal roads and crashed into buildings along the shore. Television footage showed a tsunami wave bearing down on the Japanese coastline near the community of Sendai.

NHK television transmitted aerial images of columns of flame rising from an oil refinery and flood waters engulfing Sendai airport, where survivors clustered on the roof of the airport building. The runway was partially submerged. The refinery fire sent a plume of thick black smoke from blazing spherical storage tanks. A television commentator called the blaze an “inferno.”

The images showed survivors in a home surrounded by water, waving white sheets from the upper floors of buildings. News reports said the earthquake had forced the Tokyo subways to empty while airports were closed and many residents took to the streets, desperately trying to leave the city.

Initial television coverage from coastal areas showed very few people actually in the water. The initial impact of the wave seemed to have been enormous, tipping two huge cargo vessels on their sides at one port and tearing others from their moorings.

Smaller vessels, including what looked like commercial fishing trawlers, were carried inland, smashing into the superstructure of bridges as the waters surged. A senior Japanese official said foreign countries had offered to help and Japan was prepared to seek overseas assistance.

Japanese television showed major tsunami damage in northern Japan. Public broadcaster NHK reported that a large ship swept away by the tsunami rammed directly into a breakwater in Kesenuma city in Miyagi prefecture. Video footage also showed buildings on fire in the Odaiba district of Tokyo, The Associated Press reported.

"It just seemed to go on and on," Katherine Wallace, who was in an office building in Tokyo when the quake struck, told the [BBC](#).

A second major earthquake of 7.4 magnitude was reported as aftershocks shook the region. Japanese media reported mobile phone networks were not working.

Power blackouts were affecting about 2 million residents around Tokyo alone, the government said. Cell phone service was severely affected across central and northern Japan as residents rushed to call friends and relatives as aftershocks struck.

The Pacific Tsunami Warning Center extended a [tsunami warning across most of the Pacific Ocean](#), and said the tsunami would threaten coastal areas of Russia, Taiwan, Hawaii, Indonesia, the Marshall Islands, Papua New Guinea and Australia later in the day. The agency, based in Hawaii, added the west coasts of the United States, Mexico, Central America and South America to the list of regions that were given tsunami alerts.

The tsunami warning was later expanded to include much of Alaska, all of the California coast north from Santa Barbara, and Oregon. The rest of Southern California, Washington and British Columbia were under an advisory, the [West Coast and Alaska Tsunami Warning Centers](#) said.

A warning means that people in low-lying areas should evacuate due to the threat of flooding; an advisory cautions that the tsunami could cause dangerous currents and waves but that major flooding is not expected. The center said that initial tsunami waves could hit Homer, Alaska, about 100 miles southwest of Anchorage, shortly after 4 a.m. local time, and that waves could hit California and Oregon about an hour later, or about 7 a.m. their time.

In Honolulu, a tsunami watch was upgraded to a tsunami warning at about 9:30 p.m. local time, with the wave, if it materialized, forecast to arrive in the Hawaiian islands at 2:59 a.m.

The tsunami warning sirens were briefly sounded. In the Waikiki district, lines formed at gas stations.

Russia's Emergency Situations Ministry said that the tsunami had reached the Russian-controlled Kurile Islands north of Hokkaido, Japan at about 6 p.m. local time. "The tsunami has reached three population centers in the Kurile Island chain. The average height of the wave has been recorded at less than one meter. There have been no casualties or damage," the ministry said in a statement. In response to the tsunami threat, about 11,000 people have been evacuated from four population centers in the Kuriles, the ministry said.

The quake occurred in what is called a subduction zone, where one of the Earth's tectonic plates is sliding beneath another. In this case, the Pacific plate is sliding beneath the North American plate at a rate of about 3 inches a year. The earthquake occurred at a depth of about 15 miles, which while relatively shallow by global standards is about normal for quakes in this zone, said Emily So, an engineer with the [United States Geological Survey](#) in Golden, Colo.

Ms. So said that according to her agency's calculations, the quake was of magnitude 8.9. It had been preceded by what seismologists call foreshocks — smaller quakes in the same area. The largest of these was a magnitude 7.2 quake two days before, centered about 25 miles south of the spot where the earthquake struck Friday.

In a subduction quake that occurs underwater, as this one did, the sudden movement of a portion of one of the plates can displace enormous amounts of water, triggering a tsunami. As the tsunami waves approach shallow coastal areas, they tend to increase in height.

The devastation often comes from a succession of waves, with the first few being relatively small. The waves can propagate across oceans at speeds of 500 miles an hour or greater. With Friday's quake occurring only about 80 miles offshore, people in the closest coastal areas would not have had much time to evacuate.

Defense Secretary [Robert M. Gates](#) was briefed on the disaster during a trip to Brussels. Geoffrey Morrell, the Pentagon press secretary, said there were no reports of damage to American military facilities or naval vessels.

At the headquarters of the Navy's Seventh Fleet in Yokosuka, Japan, sailors were preparing for a potential tsunami. "We've issued instructions to our pierside ships in Yokosuka to stand by their lines to be prepared to quickly adjust them as necessary to prevent damage during any resulting tsunami," said Cmdr. Jeff Davis, the Seventh Fleet spokesman.

The Hang Seng index in Hong Kong and the Straits Times in Singapore slumped after news of the quake, ending about 1.6 percent and 1 percent down, respectively.

Martin Fackler reported from Tokyo, and Kevin Drew from Hong Kong. Daniel Krieger contributed from Osaka, Japan, Bettina Wassener from Hong Kong, Alan Cowell and Richard Berry from Paris, Michael Schwirtz from Moscow, Henry Fountain and Maria Newman from New York, Thom Shanker from Washington, Mike Hale from Honolulu, and Elisabeth Bumiller from Brussels.