Case Study 1: 2002 Dust Storms in Australia

Figure 19.X: A fierce dust storm pushed by 90 km/h winds approached Griffith, Australia in late 2002. The Sydney Morning Herald reported that the storm rolled in from the southwest after a scorching day of 36°C (97°F). The sky turned pitch black when the dust could engulfed the homes, spreading gritty dust for an hour. The photo was taken 5 min before the dust storm engulfed the homes. (source: snopes.com; hoax-slayer.com; Sydney Morning Herald; Photo by Denis Couch)
Figure 19.Xb: 23 October 2002 NASA satellite image of the Australia dust storm (diagonal streak across the photo). Smoke plumes from a number of wildfires are visible. As small V-shaped features opening toward the east (pushed by northwesterly winds) (source: NASA Earth Observatory)

In October 2002, eastern Australia experienced a massive dust storm that was reported as the worst in 30 years (Figs. 19.Xa and 19.Xb). The dust cloud that was 1500 km long, 400 km wide and 2.5 km high, was whipped up by winds blowing across drought-ravaged farms, after the last rain brought less than an inch nearly two months earlier. Tens of millions of tons of valuable topsoil were stripped from bone-dry farmland while the storm moved slowly, at a speed of about 50 km/h (31 mph), across Victoria and New South Whales. The significance of the storm becomes apparent when considering that the cloud had to cross 1-km-high mountain ranges before reaching Newcastle on the Pacific coast. Dust particle were measured in Sydney at a level of 150 µg/m³ of air. According to the U.S. air quality index (AQI) for polluting particulate matter PM10 (diameter < 10µm for a 24 h average) a concentration of 150 µg/m³ has an air quality index of 100 (moderate). People with respiratory illnesses are at risk. An AQI of 101 fall into the category “unhealthy for sensitive groups”. Wildfires in San Diego county may cause similar numbers.

The photo in Figure 19.Xa circulates on the internet as showing the 2004 Sumatra tsunami approaching the coast which is, of course, a hoax.
**Figure 19.Xa:** Disappearance of the Aral Sea, Kazakhstan and Uzbekistan, between 1989 and 2003. (source: NASA Earth Observatory)

**Figure 19.Xb:** Disappearance of the Aral Sea by 5 Oct 2008. (source: NASA Earth Observatory)
Figure 19.Xc: Disappearance of the Aral Sea by summer 2009. (source: NASA Earth Observatory)

Figure 19.Xd: Two abandoned ships near the former Aral Sea, near Aral, Kazakhstan. (source: Wikipedia)
Case Study 2: Aral Sea, Kazakhstan and Uzbekistan:

Located in Uzbekistan; River water from Amu Darya diverted for farming since 1950s; river now runs low for more than 30 years; between 1960 and 1993 Aral Sea lost > 40% of its area, 75% by 2004; now too salty to support fish; main fishing port Muynak is now stranded 20mi from water; salty dry soil carried by winds as far as Arctic ocean; fouls water supplies, clogs carburetors, induces throat cancer, highest infant mortality rate in FSU.