

= 2003 Sri Lanka cyclone =

In May 2003 , a tropical cyclone officially called Very Severe Cyclonic Storm BOB 01 produced the worst flooding in Sri Lanka in 56 years . The first storm of the 2003 North Indian Ocean cyclone season , it developed over the Bay of Bengal on May 10 . Favorable environmental conditions allowed the system to intensify steadily while moving northwestward . The storm reached peak maximum sustained winds of 140 km / h (85 mph) on May 13 , making it a very severe cyclonic storm according to the India Meteorological Department (IMD) , which is the official Regional Specialized Meteorological Center for the basin . The cyclone drifted north over the central Bay of Bengal , gradually weakening due to heightened wind shear . Turning eastward , the storm deteriorated to a deep depression on May 16 before it curved northeastward and re-intensified into a cyclonic storm . It came ashore in western Myanmar and dissipated over land the following day .

In the wake of prolonged precipitation during the first half of May , the cyclone produced torrential rains across southwest Sri Lanka while stationary in the central Bay of Bengal . The storm drew extensive moisture that coalesced in the mountainous portion of the island . A station at Ratnapura recorded 366 mm (14.4 in) of rainfall in 18 hours on May 17 , including 99 mm (3.9 in) in one hour . In southwestern Sri Lanka , the rainfall caused flooding and landslides that destroyed 24 , 750 homes and damaged 32 , 426 others , displacing about 800 , 000 people . Overall damage totaled about \$ 135 million (2003 USD) , and there were 260 deaths . The cyclone also produced some rainfall in the Andaman and Nicobar Islands of India and along the country 's eastern coast . The storm funneled moisture away from the mainland , which possibly contributed to a heat wave that killed 1 , 900 people , and dropped heavy rainfall in Myanmar .

= = Meteorological history = =

Around May 6 , the monsoon trough extended across the southern Bay of Bengal , producing a vast field of thunderstorm activity . A broad low pressure area formed by the next day and remained nearly stationary . Over the next few days , the convection varied in intensity until becoming more organized around the nascent surface low on May 10 . At 03 : 00 UTC on May 10 , the India Meteorological Department (IMD) reported the formation of a depression about 535 km (330 mi) west of Banda Aceh , Indonesia . Within nine hours , the depression further intensified into a deep depression . Around the same time , the system was classified as Tropical Cyclone 01B by the Joint Typhoon Warning Center .

With warm sea surface temperatures , a formidable anticyclone aloft , and low wind shear , the system continued to mature as it tracked northwestward . Early on May 11 , the deep depression strengthened into a cyclonic storm , marked by maximum sustained winds of at least 65 km / h (40 mph) , and later in the day into a severe cyclonic storm . Simultaneously , the system was driven toward the north by a ridge of high pressure to the northeast . At the time , the cyclone was located about 700 km (430 mi) east of Sri Lanka . The storm continued to intensify , becoming a very severe cyclonic storm on May 12 . That day , the JTWC upgraded Tropical Cyclone 01B to the equivalence of a minimal hurricane with winds of 120 km / h (75 mph) . In post-season analysis , however , the agency revised the storm 's maximum winds to 110 km / h (70 mph) . At 06 : 00 UTC on May 13 , the IMD estimated that the storm attained peak winds of 140 km / h (85 mph) . The intensity estimate was based on a satellite-derived Dvorak number of 4.5 , limited chiefly by the lack of an eye feature .

After peaking in intensity , the storm began weakening due to increasing easterly wind shear from the ridge to the north , displacing the center of circulation from the deepest convection . Early on May 14 , the IMD downgraded the storm to a severe cyclonic storm . Around this time , steering currents slackened , and the cyclone meandered northward over the central Bay of Bengal . By late on May 14 , convection had largely dissipated , with the exception of a small area near the center , and the system weakened to minimal cyclonic storm status . Thunderstorm activity continued to wax

and wane as the storm turned to the southeastward , though persistent hostile conditions caused the storm to weaken further to a deep depression on May 16 . As the nearby ridge translated eastward , the depression was able to move more steadily to the east and later to the northeast , passing northwest of the Andaman Islands on May 18 . On the next day , the deep depression re-intensified into a cyclonic storm , reaching a secondary peak with winds of 85 km / h (50 mph) . At about 10 : 00 UTC on May 19 , the storm made landfall close to Kyaukpyu , Ramree Island , in western Myanmar . The storm rapidly weakened into a depression and later degenerated into a low pressure area on May 20 , and was no longer discernible on satellite imagery by the next day .

= = Preparations and impact = =

= = = Sri Lanka = = =

Due to the significant distance between Sri Lanka and the Bay of Bengal storm , no cyclone warnings were posted . The India -based National Centre for Medium Range Weather Forecasting anticipated the flood event three days in advance . However , the Sri Lankan government did not issue the first flood warnings until May 17 , the same day that the flooding began . Many residents learned about the impending floods through loudspeakers and word of mouth , although some were alerted by television or radio . About 8 000 people evacuated on May 18 , utilizing schools and public buildings as emergency shelters . The precipitation occurred in the wake of an already rainy period ; a station near the Kalu River reported over 600 mm (24 in) of rainfall in the first 15 days of May .

While the storm was nearly stationary in the central Bay of Bengal , the southwesterly flow drew abundant moisture over Sri Lanka to produce severe flooding . In the island 's mountainous southwestern portion , the winds across the island produced heavy rainfall rates through a process known as orographic lift , mostly occurring on May 17 ? 18 . Throughout May 2003 , the highest rainfall in the country was 899 mm (35 @. 4 in) at Gonapenigala Iranganie Estate . A station at Ratnapura recorded 718 mm (28 @. 3 in) of precipitation in the month , of which 366 @. 1 mm (14 @. 41 in) fell over an 18 ? hour period on May 17 ; at the same station , there was a peak hourly rainfall total of 99 @. 8 mm (3 @. 93 in) . These were the heaviest rains on the island since 1947 . Rainfall was primarily concentrated in southwestern Sri Lanka , with a rain shadow farther inland that resulted in minimal precipitation in and Matale . After the Kalu River overflowed , floodwaters reached 3 m (9 @. 8 ft) deep in Ratnapura City , submerging the first floors of most homes and persisting for about three days . Landslides created a temporary natural dam on the river that washed away a bridge when it broke . Along the Gin River , flood waters inundated the surrounding terrain up to 2 m (6 @. 6 ft) deep , covered roadways , and complicated evacuations . In Hambantota District , the inundation occurred after an ongoing drought , which amplified flood-related damage . Although the flooding was severe in the southwestern portion of Sri Lanka , effects were minimal in the central and north-central regions , and there was no severe flooding in the capital city of Colombo .

Since the previously wet conditions had saturated soils , the rains related to the cyclone caused severe flooding and landslides , mostly in Ratnapura and Nuwara Eliya districts . A landslide in Batugoda killed 81 people , and at least 125 people died in Ratnapura . The floods increased river levels in Hambantota , Matara , Galle , and Kalutara districts , persisting until May 30 in Matara . Many roads were damaged , including the one that links Ratnapura to Colombo . About 100 schools were destroyed and another 200 were damaged , and some health facilities lost their equipment . Flooding from the cyclone destroyed 53 @, 300 hectares (132 @, 000 acres) of tea crops , representing an estimated 20 ? 30 % loss for the year in the low country . Farmers in the affected areas also lost some of their rice paddies to the high waters , although only about 3 % of the rice crop in the region was damaged , so no impact on the rice harvest was expected . Many areas lost electricity and telephone service , and there were disruptions to food and water supplies .

Throughout Sri Lanka , the floods destroyed at least 24 @, 750 homes and damaged 32 @, @

426 others , displacing about 800 @, @ 000 people , many of whom lost everything they owned . Total damage was estimated at \$ 135 million (2003 USD) , primarily to homes and roads . Across the island , floods related to the cyclone killed 260 people . Most of the deaths were along the nation 's southern coast where the floods occurred , primarily along the Kalu River , and were mainly farmers . Levees helped drain floodwaters where systems were already in place .

= = = Elsewhere = = =

In its formative stages , the storm produced moderate rainfall in the Andaman and Nicobar Islands , totaling 70 mm (2 @. @ 8 in) at Mayabunder . Later , as the storm was approaching Myanmar , it dropped 89 mm (3 @. @ 5 in) of rainfall on Hut Bay . Several stations in Tamil Nadu reported light precipitation , including a total of 98 mm (3 @. @ 9 in) at Adirampattinam . Along the coast of Odisha , the fringes of the cyclonic storm dropped light rainfall , reaching 53 mm (2 @. @ 1 in) at Swampatna . As the storm made landfall in Myanmar , it produced heavy rainfall in Rakhine State , signalling an early start to the monsoon season .

The slow movement of the storm altered the atmospheric flow over southeastern India . According to the IMD , the cyclone " might have caused the severe heat wave conditions prevailing over the coastal Andhra Pradesh " from May into early June , killing up to 1 @, @ 400 people , and increasing air temperatures to 50 ° C (122 ° F) .

= = Aftermath = =

In the immediate aftermath of the flooding in Sri Lanka , the country 's air force , army , and navy , as well as police forces , operated search and rescue missions . The navy and air force collected residents stranded in trees and on roofs , and were later assisted by the Indian military . However , the lack of electricity and the damaged infrastructure hampered relief work . In the hardest hit area of Ratnapura , there was a shortage of doctors , prompting officials to request help from adjacent towns . There were increased reports of diarrhea , viral flu , and typhoid in the aftermath of the floods . Mobile health crews treated over 44 @, @ 000 residents , which helped reduce the spread of disease . Residents in one village went without food for three days , and in the storm 's aftermath , many were also without access to clean water . By May 19 , flooding had begun to recede in the worst affected areas , allowing workers to repair roads . The government released RS6 million (LKR , \$ 62 @, @ 500 USD) for immediate relief , and also provided RS15,000 (LKR , \$ 156 USD) toward funeral expenses for each death . From May 22 ? 25 , the country 's legislature had reduced sessions so members could return to their districts . By the end of May 2003 , the government had allocated RS17.29 million (LKR , \$ 180 @, @ 000 USD) for relief measures , including RS27,000 (LKR \$ 280 USD) for each family to rebuild houses . The Sri Lankan government also set up a four @- @ person task force to manage flood relief . The local Red Cross chapter utilized emergency supplies to distribute 10 @, @ 000 food packages while also deploying trained volunteers to assist in the disaster areas . The Red Cross ultimately distributed about 26 @, @ 000 loaves of bread , 862 kg (1 @, @ 900 lb) of sugar , and 1 @, @ 775 kg (3 @, @ 913 lb) of rice , among other supplies . By May 20 , the Sri Lankan air force had distributed 35 tons of food , using eight helicopters to airdrop parcels . Red Cross workers cleaned hundreds of contaminated wells in the region , thereby restoring clean water access ; this task was finished by August . By May 16 , or nine days after the floods began , power was restored to about 95 % of areas , and roads were gradually rebuilt . Road access to most villages was restored by May 26 , with the exception of Matara . There , the ongoing floods prompted officials to close schools to reduce the spread of disease . After the floods largely subsided , the World Socialist Web Site criticized the Sri Lankan government for not having better disaster management in place , as well as noting that deforestation and gem mining contributed to the landslides . A Red Cross report in August 2003 noted the swift work to bring relief to the affected citizens , while also commenting that the floods displayed the country 's problems with disaster mitigation .

On May 19 , the Red Cross launched an appeal to the international community for assistance . A

day prior , the Red Cross allocated CHF50,000 to buy relief supplies , while the United Nations Office for the Coordination of Humanitarian Affairs provided a \$ 50 @, @ 000 grant . In the days after the floods , the government of India sent a ship with inflatable dinghies and medical supplies . A total of 18 countries or local Red Crosses sent Fr.2.3 million CHF worth of cash to Sri Lanka . Sweden sent kr800,000 (2003 SEK) toward relief transport and distribution . The government of Japan sent ¥ 19 @. @ 8 million yen worth of tents , sheets , and other supplies to the country , The Iranian Red Cross sent \$ 65 @, @ 625 (USD) worth of blankets and tents to Sri Lanka , which helped about 240 families . Australia 's government sent about \$ 400 @, @ 000 (AUD) to UNICEF to help rebuild the damaged schools and other social services . The European Community Humanitarian Aid Office donated about ? 800 @, @ 000 (\$ 944 @, @ 000 USD) to the country . The World Food Programme distributed meals to about 10 @, @ 000 families , while the World Health Organization provided water purification tablets , typhoid vaccines , and health kits to about 100 @, @ 000 people . During a peace agreement amid the ongoing civil war , the Tamil Tigers in Sri Lanka sent trucks with clothing and food to the affected areas . In July 2004 , the Asian Development Bank provided \$ 12 @. @ 5 million of the \$ 17 @. @ 5 million needed to repair the damaged infrastructure , while the Sri Lankan government provided the remaining \$ 5 million .