

= October 1996 India cyclone =

The October 1996 India cyclone (also known as Cyclone 05A) had an unusual and protracted path that spanned much of the northern Indian Ocean . It originated in a weather disturbance that formed on October 14 in the southern Bay of Bengal , off India 's east coast . Moving westward , it struck Andhra Pradesh on October 17 as a well @-@ defined low pressure area . It crossed southern India and reorganized in the Arabian Sea off the western coast of India . The system developed into a depression on October 22 and quickly intensified while moving northward . By October 24 , the cyclone approached hurricane intensity as it developed an eye , reaching peak winds of at least 110 km / h (70 mph) . On October 25 , the storm abruptly stalled and weakened off Gujarat , and progressed southwestward as a minimal storm . It was no longer classifiable as a tropical cyclone by October 28 , although its remnants persisted until November 2 when they dissipated east of Somalia .

In southern India , the storm dropped heavy rainfall that caused severe flooding in Andhra Pradesh . At least 112 reservoirs and dams were breached , killing 200 people in Prakasam district . The floodwaters ruined about 1 @, @ 600 @, @ 000 ha (4 @, @ 000 @, @ 000 acres) of crops and damaged around 53 @, @ 000 houses , leaving thousands homeless . The floods killed 388 people in southern India and caused US \$ 388 million in damage . The storm later brushed the west coast of India , stranding 50 boats . The Indian military helped with relief and rescue efforts . Another cyclone struck Andhra Pradesh in November , causing additional damage and deaths .

= = Meteorological history = =

The long @-@ tracked storm originated from the monsoon trough , which spawned an area of convection , or thunderstorms , in the southern Bay of Bengal on October 14 . It moved to the west @-@ northwest and later to the west without much development . The India Meteorological Department (IMD) classified the system as a well @-@ marked low pressure area before the system moved over the southern Indian state of Andhra Pradesh on October 17 . The system slowly crossed southern India , emerging into the Arabian Sea on October 21 . That day , the convection organized into a circular cluster as the circulation became more defined . The system slowed and turned to the north around the periphery of a ridge to the east . The system organized into a depression on October 22 , the same day that the Joint Typhoon Warning Center (JTWC) classified it as Tropical Cyclone 05A .

As the storm moved slowly northward , it quickly intensified , and the IMD upgraded the system 's status from a depression on October 22 to severe cyclonic storm status late on October 23 . Around that time , the storm developed an eye , and the JTWC estimated 1 minute peak winds of 120 km / h (75 mph) at 18 : 00 UTC that day , equivalent to a minimal hurricane . On October 24 , the IMD estimated peak 3 minute winds of 110 km / h (70 mph) , although estimates derived from the Dvorak technique suggested winds of 120 km / h (75 mph) .

On October 25 , the storm stalled about 95 km (60 mi) south of the Gujarat coast , as steering currents from the retreating ridge of high pressure diminished . Strengthening wind shear , cooler waters , and dry air rapidly weakened the storm . By late on October 25 , the JTWC had discontinued warnings , and the IMD downgraded the storm to depression status . The system began moving to the southwest away from the wind shear . The IMD downgraded the system further to a remnant low on October 28 , although the JTWC began issuing advisories again after a nearby ship reported winds of 65 km / h (40 mph) . Accelerating to the west , the storm again weakened on October 31 , prompting the JTWC to discontinue advisories while the system was about 110 km (70 mi) northeast of Socotra . The remnants turned to the southwest , dissipating near the east coast of Somalia on November 2 .

The JTWC remarked that the storm " had one of the most unusual tracks in North Indian Ocean cyclone history " and was also one of the longest tracked cyclones in the basin . According to the IMD , most storms approaching Gujarat strike the coast or weaken and move westward . The agency stated that " there is no parallel of this system in [tropical cyclone history] . "

= = Impact and aftermath = =

The precursor to the storm brought heavy rainfall to southern India , mainly in Andhra Pradesh , as well as in Tamil Nadu to the south , Karnataka to the west , and Kerala to the southwest . Daily totals reached 230 mm (9 @. @ 1 in) in portions of Andhra Pradesh , where damage was heaviest . The rains flooded rivers and cities , with thousands of residents in Hyderabad stranded in their houses . About 40 villages were isolated in Kadapa district . Throughout the region , the storm damaged 53 @, @ 000 houses . About 86 @, @ 000 people sought shelter after the storm , and thousands were left homeless . Highways and railroads were inundated , with many bridges washed away . At least 112 reservoirs and dams were breached . The floods also damaged about 1 @, @ 600 @, @ 000 ha (3 @, @ 953 @, @ 000 acre) of crop fields ? 450 @, @ 000 ha (1 @, @ 111 @, @ 000 acre) of rice and 1 @, @ 150 @, @ 000 ha (2 @, @ 842 @, @ 000 acre) of ground nuts ? and killed about 45 @, @ 000 head of cattle . At least 200 people were killed in the Prakasam district after reservoirs were damaged . In Tamil Nadu , south of Andhra Pradesh , at least 10 people were killed , all in Chennai . Overall , 388 people died in southern India due to the floods , including at least 326 in Andhra Pradesh . Damage was estimated at US \$ 128 @. @ 5 million , of which US \$ 120 million was in Andhra Pradesh .

After the floods , helicopters airlifted relief supplies like food and water to isolated villages , and to residents riding out the floods on their roofs . However , relief coordination was disrupted by damaged communication lines and ongoing rainfall . Rescue boats were used to rescue stranded residents . India 's Prime Minister H. D. Deve Gowda provided 500 million rupees (US \$ 15 million) to help Andhra Pradesh with flood recovery . Conditions returned to normal within 12 days of the onslaught of the rains , with the exception of minor delays to trains . However , another cyclone struck Andhra Pradesh about three weeks after the flood event , killing over 1 @, @ 000 people .

Upon forming and moving parallel to India 's west coastline , the storm dropped rainfall in the Konkan region of Maharashtra and neighboring Goa . The threat of the storm prompted schools to be closed around Mumbai . Later , it brushed Gujarat with heavy rainfall and gusty winds . About 50 boats were stranded amid high seas , and 11 other boats were left missing from the Veraval port . During the height of the storm , 320 fishermen were unaccounted for , spurring the Indian navy to launch search and rescue missions .