

= 1990 ? 91 South Pacific cyclone season =

The 1990 ? 91 South Pacific cyclone season was one of the least active cyclone seasons , with only three tropical cyclones occurring within the South Pacific basin which is to the east of 160 ° E. The season officially ran from November 1 , 1990 , to April 30 , 1991 with the first disturbance of the season forming on November 23 and the last disturbance dissipating on May 19 . This is the period of the year when most tropical cyclones form within the South Pacific Ocean . During the season there was no deaths recorded from any of the tropical cyclones while they were within the basin . However six people were killed by Cyclone Joy , when it made landfall on Australia . As a result of the impacts caused by Joy and Sina , the names were retired from the tropical cyclone naming lists .

During the season , tropical cyclones were monitored by the Tropical Cyclone Warning Centers (TCWC) in Nadi , Fiji , and in Wellington , New Zealand . Whilst tropical cyclones that moved to the west of 160 ° E were monitored as a part of the Australian region . Both the United States Joint Typhoon Warning Center (JTWC) and the Naval Western Oceanography Center (NWOC) issued unofficial warnings within the southern Pacific . The JTWC issued warnings between 160 ° E and the International Date Line whilst the NWOC issued warnings for tropical cyclones forming between the International Date Line and the coasts of the Americas . Both the JTWC and the NWOC designated tropical cyclones with a number and a P suffix with numbers assigned in order to tropical cyclones developing within the whole of the Southern Hemisphere . TCWC Nadi , TCWC Wellington and TCWC Brisbane all use the Australian Tropical Cyclone Intensity Scale and estimate wind speeds over a ten @-@ minute period , while the JTWC estimates sustained winds over a one @-@ minute period , which are subsequently compared to the Saffir ? Simpson hurricane wind scale (SSHWS) .

= = Seasonal summary = =

As a result of the South Pacific Convergence Zone being both weaker and located further to the north than in previous seasons and the Madden ? Julian oscillations being weaker and less regular defined than in previous tropical cyclone seasons . As a result , only three tropical cyclones occurred within the South Pacific basin between 160 ° E and 120 ° W , which made the season one of the least active on record . The first tropical cyclone was first noted as a shallow depression on November 20 before it was named Sina on November 24 after it had intensified into a tropical cyclone . After peaking as a category three severe tropical cyclone on the Australian tropical cyclone intensity scale , Sina affected Fiji , Tonga , Niue and the Southern Cook Islands with total damage estimated at over 18 @.@ 5 million before it was last noted on December 4 , as it was absorbed by an advancing trough of low pressure near 50 ° S. During December 15 , the precursor tropical low to Cyclone Joy developed near the Solomon Islands . Over the next two days the system moved westwards , before it moved into the Australian region during December 17 . The system was subsequently named Joy on December 19 , before it made landfall on Queensland during December 26 .

The basin then remained quiet until March when three significant tropical depressions including 15 and 16P were observed within the Coral Sea / Australian region , which did not develop into tropical cyclones but were subject to gale warnings . 15P was first noted on March 3 , while it was located about 900 km (560 mi) to the east of the Solomon Islands and over the next couple of days subsequently moved south @-@ westwards and out of the South Pacific basin during the next day . 16P was first noted on March 14 , while located about 300 km (185 mi) to the southeast of Honiara in the Solomon Islands . Over the next couple of days the system moved towards the south @-@ east before the JTWC designated the system 16P and initiated advisories on it during March 18 after it had moved into the South Pacific basin . Over the next couple of days the system , moved towards the south @-@ southeast before it turned towards the southwest and passed over New Caledonia on March 20 , before it was last noted during the next day moving out of the basin . The final tropical cyclone of the season , Lisa , moved into the Southern Pacific on May 11 at its peak

intensity of 110 km / h (75 mph) . During the next day as the storm moved towards the subtropical jet , Lisa rapidly weakened into a tropical depression before passing over Anatom Island without causing any significant damage . After the season both the names Sina and Joy were retired from the naming lists for the region , while it was determined that a weak gale force tropical cyclone had affected Tonga between December 14 ? 17 .

= = Storms = =

= = = Severe Tropical Cyclone Sina = = =

On November 20 , the FMS started to monitor a shallow tropical depression that had developed within the South Pacific Convergence Zone to the west of Wallis Island . Over the next three days the system moved towards the west @-@ northwest and the Fijian dependency of Rotuma , before the JTWC initiated advisories and classified the depression as Tropical Cyclone 03P during November 24 . TCWC Nadi subsequently named the system Sina after the depression had developed into a category 1 tropical cyclone on the Australian scale , while it was located about 425 km (265 mi) to the northwest of Rotuma . During the next day the cyclone continued to intensify and developed an eye as it moved erratically towards the west @-@ southwest and performed a small clockwise loop . During that day Sina 's eye became very distinct on satellite imagery , as it intensified and the upper level steering flow which resulted in Sina moving erratically towards the southeast and Fiji . Later that day TCWC Nadi reported that the system had peaked as a category 3 severe tropical cyclone , with 10 @-@ minute sustained wind speeds of 140 km / h (85 mph) .

The JTWC subsequently reported early the next day that Sina had peaked with 1 @-@ minute sustained wind speeds of 140 km / h (85 mph) , which made it equivalent to a category 4 hurricane on the SSHWS . Sina remained at its peak intensity for most of that day , before it started to gradually weaken as it passed about 40 km (25 mi) to the south of Viti Levu before it passed over the island groups of Vatulele and Moala and the Southern Lau Islands during November 28 . Early on November 29 , Sina weakened into a category two tropical cyclone on the Australian scale just before it passed to the north of Tongatapu in Tonga . During that day the system moved eastwards towards the Southern Cook Islands and gradually weakened further . Early the next day , the system passed about 160 km (100 mi) to the south of Niue , before it recurved sharply towards the south @-@ southeast later that day as it approached the Southern Cook Islands . The system subsequently rapidly weakened and transitioned into an extratropical cyclone under the influence of strong vertical wind shear and cooler sea surface temperatures . Over the next couple of days Sina 's extratropical remnants maintained a southeastward track , before it was absorbed by an advancing trough of low pressure near 50 ° S on December 4 .

The cyclone caused no deaths and over US \$ 18 @.@ 5 million in damages , as it affected Fiji , Tonga , Niue and the Southern Cook Islands . Ahead of the system affecting Fiji , hundreds of holiday makers were evacuated from Fiji 's outer island resorts to hotels on the mainland . High winds and heavy rain forced the closure of several local airports and the main Nadi International Airport . As Sina moved through the archipelago , the system destroyed or damaged houses and other building structures , while bringing down electric and telephone lines and uprooting trees . The system also washed away a railway bridge on Vanua Levu that was used to take sugar cane to Labasa 's mills , growers had no choice but to go through the village of Korowiri . However , the workers refused to go into their fields unless they had police protection to go through the village , after Methodists from the local church attacked a group of growers for working on Sundays in defiance of Fiji 's Sunday Observance Decree . Within Tonga only minor damage to weak structures , trees , banana plantations , electric and telephone lines was recorded . Within both Niue and the Southern Cook Islands only minor damage to crops and structures was reported .

= = = Tropical Cyclone Lisa = = =

Tropical Cyclone Lisa moved into the South Pacific from the Australian region during May 11 , while it was a Category 2 tropical cyclone with sustained wind speeds of 110 km / h (75 mph) . Over the next couple of days , Lisa moved south @-@ eastwards and passed in between the Vanuatuan islands of Tanna and Anatom as it gradually weakened and lost its tropical cyclone characteristics . Lisa 's remnants subsequently started to deepen during May 14 , under the influence of an upper level mid latitude trough and reached a secondary peak intensity of 100 km / h (65 mph) . Over the next few days the system continued to move towards the southeast while slowly weakening until it was last noted dissipating about 2 @,@ 600 km (1 @,@ 615 mi) to the east of Wellington , New Zealand . There were no reports of any significant damage associated with Lisa in Papua New Guinea , Vanuatu or the Solomon Islands .

= = = Other systems = = =

On December 15 , in response to the formation of Typhoon Russ , in the North @-@ Western Pacific Ocean , a tropical low developed about 500 km (310 mi) to the south @-@ east of Honiara in the Solomon Islands . Over the next two days the moved westwards before it moved into the Australian basin during December 17 , where it was later named Joy . A weak gale force tropical cyclone affected Tonga between December 14 ? 17 .

During March , three significant tropical depressions including 15 and 16P were observed within the Coral Sea / Australian region , which did not become tropical cyclones on the Australian scale but were subject to gale warnings . 15P was first noted on March 3 , while it was located about 900 km (560 mi) to the east of the Solomon Islands and over the next couple of days subsequently moved south @-@ westwards and out of the South Pacific basin during the next day . 16P was first noted on March 14 , while located about 300 km (185 mi) to the southeast of Honiara in the Solomon Islands . Over the next couple of days the system moved towards the south @-@ east before the JTWC designated the system 16P and initiated advisories on it during March 18 after it had moved into the South Pacific basin . Over the next couple of days the system moved towards the south @-@ southeast before it turned towards the southwest and passed over New Caledonia on March 20 , before it was last noted during the next day as it moved back into the Australian region .

= = Season effects = =

This table lists all the storms that developed in the South Pacific to the east of longitude 160 ° E during the 1990 ? 91 season . It includes their intensity on the Australian tropical cyclone intensity scale , duration , name , landfalls , deaths , and damages . All data is taken from the warning centers from the region unless otherwise noted .