= Tropical Storm Doria (1971) =

Tropical Storm Doria was the costliest tropical cyclone in the 1971 Atlantic hurricane season . The fifth tropical storm of the season , Doria developed from a tropical wave on August 20 to the east of the Lesser Antilles , and after five days without development it attained tropical storm status to the east of Florida . Doria turned to the north , and reached peak winds of 65 mph (105 km / h) as it was making landfall near Morehead City , North Carolina . It turned to the northeast , and moved through the Mid @-@ Atlantic and New England as a tropical storm before becoming an extratropical storm over Maine on August 29 .

In North Carolina , Doria produced moderate rainfall , resulting in localized flooding and damage . The storm spawned a tornado near Norfolk , Virginia , damaging twelve houses and downing hundreds of trees . Tropical Storm Doria dropped heavy precipitation in New Jersey , peaking at 10 @.@ 29 inches (261 mm) in Little Falls . The rainfall led to record @-@ breaking river levels and flooding in several houses , resulting in damage to dozens of houses across the state . Moderate damage and rainfall continued along its path into New England and southeastern Canada . In all , Tropical Storm Doria caused seven deaths and $ 147 @.@ 6 million (1971 USD , $ 862 million 2016 USD) .

= = Meteorological history = =

On August 15 , a tropical wave moved off the coast of Africa , and tracked westward while slowly organizing . On August 20 , subsequent to the development of a low @-@ level circulation , an area of convection along the wave developed into a tropical depression while located about 1 @,@ 000 miles (1 @,@ 600 km) east @-@ northeast of Grenada . Initially failing to organize further , the depression moved to the west @-@ northwest , and on August 23 , it passed through the northern Lesser Antilles . The depression moved to the north of Puerto Rico , Hispaniola , and the Bahamas , and began to show further signs of organization on August 25 . After briefly weakening on August 26 , the depression re @-@ strengthened while turning to the north , and attained tropical storm status on August 27 while located 230 miles (370 km) east of Daytona Beach , Florida .

After reaching tropical storm status , Doria quickly intensified as its wind field expanded while moving northward . The minimum central pressure quickly dropped , as well , and late on August 27 , Doria reached its peak intensity of 65 mph (105 km / h) while making landfall on North Carolina near Morehead City . The storm maintained its peak winds as it moved north @-@ northeastward through North Carolina , and weakened slightly to a 60 mph (95 km / h) tropical storm after entering Virginia on August 28 . Doria turned to the northeast , passing through the Chesapeake Bay and Delmarva Peninsula before entering southern New Jersey . It paralleled the state a short distance inland , and after moving through New York City Doria became extratropical over northwestern Maine on August 29 . The extratropical remnant continued northeastward until losing its identity near the border of New Brunswick and Quebec in Canada .

= = Impact = =

= = = Southeast United States and Virginia = = =

Doria passed near or through the northern Caribbean Islands and the Bahamas as a tropical depression , though effects , if any , are unknown . Tropical Storm Doria passed about 160 miles (260 km) east of Charleston , South Carolina , though its large wind field produced 22 mph (35 km / h) winds in the town . The storm also dropped light rainfall of up to 1 @.@ 75 inches (44 mm) , and resulted in a storm tide of 5 @.@ 7 feet (1 @.@ 7 m) above the mean low water level .

Upon making landfall in North Carolina , Doria produced a storm tide of 2 feet (0 @.@ 6 m) above normal at Cape Fear . Sustained winds in the state peaked at 41 mph (66 km / h) in Hatteras , while gusts reached 69 mph (111 km / h) in Atlantic Beach . In most areas , wind damage was

minimal . Tropical Storm Doria dropped moderate rainfall across the state , including a report of 4 @.@ 17 inches (106 mm) in Cape Hatteras . Over 5 inches (125 mm) of rain fell around the Albemarle Sound and near New Bern . The rainfall led to flooding and mudslides , which blocked roads and highways . In localized areas , the flooding caused severe damage to roads and houses . Flooding from Doria also damaged water and sewage systems . Rainfall in the state persisted for two weeks after the passage of Doria .

In Virginia , the storm produced a storm tide of 3 @.@ 6 feet (1 @.@ 1 m) above normal in Norfolk . Sustained winds peaked at 60 mph (95 km / h) in Langley Air Force Base , while gusts reached 71 mph (114 km / h) in Norfolk . The bands of the storm spawned an F1 tornado near Portsmouth and Chesapeake , damaging twelve homes and downing hundreds of trees . Damage from the tornado amounted to $ 250 @,@ 000 (1971 USD , $ 1 @.@ 46 million 2016 USD) . Rainfall from Doria was moderate , peaking at 6 @.@ 44 inches (164 mm) at a location 2 miles (3 @.@ 2 km) south @-@ southeast of Halifax . One person drowned in Alexandria when she fell into a draining ditch . The storm severely damaged a large warehouse in Norfolk , as well . Damage in Virginia totaled $ 375 @,@ 000 (1971 USD , $ 2 @.@ 19 million 2016 USD) . Floodwaters from Doria clogged sewage systems near Norfolk , Virginia with sand and silt . This forced the sewage to be dumped into the Chesapeake Bay , resulting in the closure of several beaches for days .

= = = Mid @-@ Atlantic states = = =

Tropical Storm Doria dropped 3 @.@ 85 inches (98 mm) of rain in Washington National Airport in Washington , D.C. In Maryland , the storm resulted in tides 2 @.@ 7 feet (0 @.@ 8 m) above normal in Fort McHenry . Rainfall in the state peaked at 4 @.@ 39 inches (112 mm) in Baltimore , while wind gusts reached a maximum of 63 mph (101 km / h) at the United States Coast Guard station in Ocean City . The storm produced 5 @.@ 09 inches (129 mm) of rain in Wilmington , Delaware and a storm tide of 3 @.@ 2 feet (1 m) above normal in Lewes . In Pennsylvania , the passage of Tropical Storm Doria resulted in 6 @.@ 57 inches (167 mm) of rain and peak wind gusts of 73 mph (117 km / h) in Philadelphia . Moderate winds downed trees and power lines in Pennsylvania , and one person died in the state . Several rivers in the southeastern portion of the state experienced record @-@ breaking flooding .

In New Jersey , Doria produced wind gusts of up to 54 mph (87 km / h) and storm tides 5 @.@ 3 feet (1 @.@ 6 m) above normal in Atlantic City . The outer bands of the storm spawned an F2 tornado near Cape May . It moved quickly northward through Cape May County , and caused about $ 250 @,@ 000 in damage (1971 USD , $ 1 @.@ 46 million 2016 USD) in damage along its 29 mile (47 km) path . The storm dropped heavy rainfall , peaking at 10 @.@ 29 inches (261 mm) in Little Falls . Record 24 @-@ hour rainfall totals occurred in Newark with 7 @.@ 84 inches (199 mm) and Trenton with 7 @.@ 55 inches (192 mm) . The rainfall led to record flooding on several small streams in the state . The Beden Brook crested at over 5 feet (1 @.@ 5 m) above normal , which destroyed a bridge near Princeton . The Raritan River at Manville crested at 9 @.@ 8 feet (3 m) , a record that stood until the passage of Hurricane Floyd in 1999 . The heavy rainfall overtopped the levee system in Zarephath , causing severe damage to the Alma White College and preventing it from opening in the fall of 1971 . The rainfall also flooded two fire houses in Somerville with several feet of water , and the water treatment plant in Bridgewater Township with 18 inches (457 mm) of floodwaters in what was catalogued as a 50 @-@ year flood event . Following the flooding to the water treatment plant , officials raised the beams of the plant to withstand a 500 @-@ year flood event . Eleven houses experienced flooding damage in Montgomery Township . Doria killed three people and caused $ 138 million in damage (1971 USD) in the state .

= = = Northeast United States and Canada = = =

Tropical Storm Doria produced moderate winds in New York City with gusts to 48 mph (77 km / h) . The storm tide reached 3 @.@ 8 feet (1 @.@ 2 m) above normal at Battery Park , and rainfall peaked at 5 @.@ 96 inches (151 mm) . LaGuardia Airport recorded 2 @.@ 29 inches (58 mm) of

rain in a one @-@ hour period . The threat of the storm cancelled a baseball game between the Los Angeles Dodgers and the New York Mets . Heavy rainfall flooded streets and subways in New York . In Connecticut , Doria produced up to 3 @.@ 12 inches (79 mm) of rain and wind gusts peaking at 48 mph (77 km / h) in Hartford . Doria dropped light rain in Rhode Island , including a report of 0 @.@ 97 inches (25 mm) in Providence . The storm also produced wind gusts of up to 61 mph (98 km / h) and a storm tide of 5 @.@ 9 feet (1 @.@ 8 m) above mean water level . In Boston , rainfall totaled to 0 @.@ 83 inches (21 mm) , while wind gusts peaked at 80 mph (130 km / h) at the Blue Hill Meteorological Observatory . Two people drowned in Marblehead when they were swept away by surf from the storm .

The storm dropped moderate rainfall in Vermont , including a total of 5 @.@ 73 inches (141 mm) in Mays Mill . The rainfall caused road washouts , landslides , and damage to bridges in the southeast portion of the state . The center of Tropical Storm Doria passed over south @-@ central New Hampshire , resulting in heavy rains and damaging winds . Sustained winds in Maine were generally around 30 mph (48 km / h) , while gusts peaked at 61 mph (98 km / h) in Lewiston . The strong winds resulted in downed trees and widespread outages to power and telephone service . The winds also damaged a mobile home in Sabattus and a steel shed in Lewiston . Doria produced moderate rainfall , including a total of 1 @.@ 75 inches (44 mm) in Lewiston , though little flooding occurred .

Moisture from Tropical Storm Doria entered southeastern Canada , peaking at over 3 inches (75 mm) in the Montérégie region of Quebec . The rainfall led to severe flooding in Victoriaville , causing damage to roads , bridges , and crops . Damage totalled to about $ 250 @,@ 000 (1971 CND , $ 245 @,@ 000 1971 USD) .

Throughout its path , Tropical Storm Doria caused seven deaths and $ 147 @.@ 6 million in damage (1971 USD) .

In early September 1971 , President Richard Nixon declared counties in New Jersey , New York , and Pennsylvania as disaster areas due to heavy rains and flooding . This allowed citizens in disaster areas to apply for federal assistance .