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## 10 500 cool facts about cyclones

Cyclones are an integral part of an Australian summer. In a normal year, about 11 tropical cyclones develop in Australian waters and four twist land. But what does a cyclone do and what are its impacts? Tropical cyclones, hurricanes and typhoons are names of the same phenomena. Scales and definitions differ around the world, but for general purposes they are all intense, tropical and low-pressure systems with destructive winds. What's a cyclone doing? Spiral super-tormentments usually form in the warm waters of the tropics and affect australia's northern coast. But they can travel the coast or inland and still have big impacts like former tropical cyclones. Examples of cyclones causing damage include Debbie (2017), whose flooding effects spread to New South Wales, and Oswald (2013) and Wanda (1974) who caused major flooding in Brisbane. Tropical cyclones usually cross the coast in northern Australia, but cyclones can still pack a blow like tropical ex-cyclones further south or inland. (ABC Time: Kate Doyle) For a cyclone to form there are some criteria that must be met: Warm waters — more than 26.5 degrees Celsius/Humid, increasing air to give moisture to the stormFor about 500 km or farther from the equator so that the Coriolis effect kicks down the equator so that the air curves as it moves through the world because the earth rotates faster around the equator than around the surrounding area. Just like you're pushed aside when you try to walk in a straight line on a playground merry-go-round. Thanks to the earth spinning faster around the equator, cyclones spin clockwise in the southern hemisphere, but typhoons and hurricanes turn counterclockwise northward. (ABC Time: Kate Doyle) In the southern hemisphere, it means that the winds are pushed to the left, so as the air enters into the cyclone, it is pushed to the left and results in a spiral movement clockwise. In the northern hemisphere, hurricanes and typhoons turn counterclockwise. Vertical shear is when an air layer goes at a different speed or direction than the air layer above it. Too much shear will shatter the storm, so it loses momentum. Even if all these conditions are met, there is no guarantee that a cyclone will form. Cyclones are temperamental, and it can be difficult to know how little disturbance will become rogue and become the next big one. Impacts Cyclone categories are based on wind speed; the faster the winds, the higher the category. Effects drawings based on the Tropical Cyclone Category System of the Bureau of Meteorology. (ABC Time: Kate Doyle) If a cyclone forms, it will feed on all that heat, and spiral into one of the most powerful natural events on the planet. The strength of a cyclone is expressed in categories. In Australia, category five cyclones are the strongest, bringing the most destructive winds. Cyclones may be hundreds of miles wide, but the strongest winds are around the eye around the eerily calm eye in the center of the storm. During a cyclone the wind is faster around the wall of the eye, where the pressure is lower because the air is being sucked into the vortex. (ABC Time: Kate Doyle) If you're in a cyclone and the wind stops suddenly, don't go out. You're likely to be in the eye of the storm, which can take hours to pass, but everything is clear before you leave for safety. The problem with this category system is that it only takes into account the speed of the winds, not the other storm impacts so that it can misrepresent the entire impact. There are other hazards such as storm surge, where the cyclone pushes the ocean over land and can result in water rising more than six meters higher than normal. The storm surge often has the deadliest impact. Although the water may not look deep, you can't see what's going on beneath the surface. (ABC Time: Kate Doyle) If you're reading this article, the answer may be yes. So why not join the time obsession group facilitated by ABC on Facebook - thousands of others are already troppo for the troposphere! Read moreRain can also bring heavy flooding, before, during and after the winds have settled. Precipitation can be especially bad if the storm is traveling slowly or if it stops over an area. So keep up with the warnings and make sure you have a plan for how you're going to respond to an emergency, wherever you are. Published 14 DicDecember 2018FriFriday 14 December 2018 at 5:53am, updated 18 MarMarch 2019Monday 18 MarMarch 2019 at 9:26pm Introduction Tropical cyclones are one of the most dangerous natural hazards for people. Each year, they cause a considerable loss of life and do immense damage to the property. However, tropical cyclones are essential features of the Earth's atmosphere, as they transfer heat and energy between the equator and the colder regions closest to the poles. What is a tropical cyclone? A tropical cyclone is the generic term for a low pressure system over tropical or subtropical waters, with organized convection (i.e. thunderstorm activity) and low-level winds circulating counterclockwise (in the northern hemisphere) or clockwise (in the southern hemisphere). The entire storm system can be five to six miles high and 300 to 400 miles wide, although it can sometimes be even larger. It usually advances at speeds of 10-15 m.p.h., but can travel as fast as 40 m.p.h. In its very early and weak stages it is called Tropical Depression. When the winds reach 39 .m. is called Tropical Storm. If the wind reaches 74 m.p.h. or higher, the tropical storm is called a hurricane in the Atlantic and North Pacific or a typhoon in the western North Pacific. In other parts of the world, such as the Indian Ocean and the South Pacific, the term Cyclone or Tropical Cyclone is used. NOAA Tropical Cyclone FAQs How do tropical cyclones form? In the tropics there is a wide area of low pressure that extends to both sides of Ecuador. Winds on the north side of this area blow from the northeast (the northeast trades) and on the south side blow from the southeast (southeast trades). Within this low pressure zone the air warms over the warm tropical ocean. This air rises in discrete packages, causing the formation of thunderous rains. These showers usually come and go, but from time to time, they are grouped into large groups of thunderstorms. This creates a very warm, humid and rapidly increasing airflow, leading to the development of a low pressure center, or depression, on the surface. There are several trigger mechanisms needed to transform these cloud clusters into a tropical cyclone. These activation mechanisms depend on multiple conditions being correct at the same time. The most influential factors are: a source of warm and humid air derived from tropical oceans with sea surface temperatures normally in the region of, or in excess, of 27 oC; winds near the surface of the ocean blowing from different converging directions and causing air to rise and storm clouds to form; winds that do not vary much with height -- known as low wind shear. This allows storm clouds to rise vertically to high levels; sufficient distance from the equator to provide rotation or turn. The Coriolis force caused by earth's rotation helps turn this column of rising air. The development of surface depression causes an increase in the strength of trade winds. Spiral winds accelerate inwards and upwards, releasing heat and moisture as they do so. As the depression strengthens it becomes a tropical storm and then a hurricane or typhoon. A mature hurricane or typhoon takes the form of a cylinder of clouds of deep thunder around a center that is relatively cloud-free. There is a relatively small area of intense horizontal winds on the surface, often more than 100 m.p.h., while the air rises strongly above, keeping the deep cumulonimbus clouds. Later, about six miles away, cloud tops are carried outwards to give thick-layer clouds due to spiraling outward winds coming out of the tropical cyclone core. At the center of the tropical cyclone, the air is subsiding, making it dry and often cloud-free, and there is little or no wind on the surface. This is called the eye of the storm. How does the tropical cyclone get its energy? Large amounts of energy are transferred when hot water evaporates from tropical seas. This energy is stored inside the water vapour contained in wet air. As this air rises, 90% of the stored energy is released by condensation, resulting in towering cluster clouds and rain. Releasing thermal energy heats the air causing further pressure to decrease at the top. As a result, the air rises faster to fill this area with low pressure, and warmer, wetter air is extracted from the sea, feeding more energy to the system. Therefore, a self-sustaining heat engine is created. As little as 3% of thermal energy can be converted mechanical energy from circulating winds. This relatively small amount of mechanical energy is equivalent to a 1.5x1012 watt power supply, equivalent to about half the power generation capacity worldwide! How do tropical cyclones get their names? Tropical cyclones are called to facilitate communication between forecasters and the general public regarding forecasts, clocks and warnings. Because storms can often last a week or even longer, and more than one may be occurring in the same region at the same time, names can reduce confusion about which storm is being described. The names were first widely used in World War II and were subsequently adopted by all regions. In most regions, default alphabetical lists of alternate male and female names are used. However, in the western North Pacific and the northern Indian oceans most of the names used are not personal names. While there are some male and female names, most are names of flowers, animals, birds, trees, food or descriptive adjectives. Names are also not assigned in alphabetical order, but are organized by the name of the Asian country that provided the name. Tropical cyclone names Where and when do tropical cyclones occur? Tropical cyclones form between approximately 5o and 30o latitude and initially move westward (due to east winds) and slightly towards the poles. Many tropical cyclones eventually stray far enough from the equator to move in areas dominated by the west winds (found in the mid-latitudes). These winds tend to reverse the direction of the tropical cyclone towards a path to the east. As the tropical cyclone moves toward the pole, it increases speed and can reach 30 m.p.h. or more. An average tropical cyclone can travel about 300 to 400 miles a day, or about 3,000 miles before it dies. Tropical cyclones that occur in the Atlantic region and affect the Caribbean and the United States typically comprise less than 15% of the world's tropical cyclone activity. Tropical cyclones also occur in various parts of the Pacific Ocean, and can affect the coastal regions of Mexico, Southeast Asia, northeastern Australia, and the South Pacific islands. Those forming in the Indian Ocean can affect India, Bangladesh, northwestern Australia, parts of Eastern Africa and the Islands of the Indian Ocean such as Mauritius and Madagascar. In the northern hemisphere most tropical cyclones occur between June and November with a peak in September. However, in the western North Pacific it is not unusual to have the occasional tropical cyclone outside of Period. In the southern hemisphere the season usually lasts from November to April. Tropical cyclones are occasionally observed in the South Atlantic, but this is a very rare occurrence. The map above shows the areas of the world affected by tropical cyclones. Past tropical cyclones Learn more about NOAA's climate FAQs Although tropical cyclones are tropical features and require much higher sea temperatures than those across the UK, even in the summer. Therefore, hurricanes cannot form at our latitudes. However, we are sometimes affected by deep depressions that were originally tropical cyclones that have moved to higher latitudes, such as the former Hurricane Ophelia in 2017. Intense mid-latitude depressions can produce winds close to the hurricane force surface, even those that don't originate from a tropical cyclone. The most publicized depression of its kind occurred on October 16, 1987, known as The Great Storm. Some wind gusts were more than 100 m.p.h., but these were not the strongest near surface winds ever recorded over the British Isles. On 13 February 1989, a deep depression passed just north of Scotland producing a 142 m.p.h. burst in Fraserburgh. The reason The Great Storm of October 1987 gained such publicity was that it occurred in a densely populated area causing loss of life and enormous damage to trees. Is Climate Change Affecting Tropical Cyclones the Great Storm of 1987? The impact of climate change - specifically global warming caused by burning fossil fuels - on tropical cyclone activity is the subject of ongoing debate and research in the scientific community. Recent catastrophic events, such as Typhoon Haiyan and Hurricanes Harvey, Irma and Maria, have given the debate a higher profile. While more evidence has been presented to indicate a recent uptick in tropical cyclone activity in some parts of the world, others have argued that natural variations in tropical cyclone activity - regionally, annually and interlockingly - mask any signs of the impact of global warming, which remains relatively small. However there is no clear consensus on whether global warming is currently having any measurable impact on tropical cyclones, climate models indicate that there may be an increase in the intensity of tropical cyclones in the future, under the continued Global. However, models also indicate that the frequency of tropical cyclones will remain unchanged or decrease. Several of the leading tropical cyclone scientists have teamed up to issue a statement backed by the World Meteorological Organization and publish the latest research on the state of understanding and research on tropical cyclones and climate change. WMO Statement on Tropical Cyclones and Changing Nature Geoscience's article on Tropical Cyclones and Climate Change More from NOAA FAQs on Tropical Cyclones and Climate Change Learn more The following links provide more information on tropical cyclones. Tropical Cyclones Tropical Cyclones Frequently Asked Questions The Met Office is not responsible for the content of external sites. Sites.