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The Equator is the imaginary on the Earths surface that is equidistant from the two poles of the Earth, thus dividing the planet into the Northern and the Southern Hemispheres. The length of the Equator is about 40,075 km, and 78.7% of the imaginary line passes through water and the rest through the land. The Equator is designated as the 0 latitude and is among the five most important latitudes of the Earth (the other four being the Arctic Circle, Antarctic Circle, Tropic of Cancer, and the Tropic of Capricorn) used to denote the relative locations of countries and other places on the planet. The Equator passes through the land of 11 countries of the world. Also, the equator traverses the territories of two island nations but does not make a landfall in either. The 11 countries traversed by the equator include So Tom and Pncipe, Gabon, Republic of the Congo, The Democratic Republic of the Congo, Uganda, Kenya, Somalia, Indonesia, Ecuador, Colombia, and Brazil. Some notable aquatic features through which the Equator passes include the Atlantic Ocean, Lake Victoria, the Indian Ocean, the Karimata Strait, the Makassar Strait, the Gulf of Tomini, Molucca Sea, Halmahera Sea, and the Pacific Ocean. Climate Of Countries On The Equator The countries on the equator generally have a tropical rainforest or equatorial climate. Distinct seasons are usually absent. In some places, however, cold currents trigger tropical monsoon climates accompanied by a dry season. The average temperature of the equatorial countries is around 30 C during the day. Average annual rainfall is quite high at around 2,500 to 3,500 mm per year. Highest Point On The Equator The highest point on the equator is located on the Volcn Cayambes southern slopes at an elevation of 4,690 meters in Ecuador. This is the only place on the equator where snow can be found on the ground. Ecuador Derives Its Name From The Equator Ecuador is the worlds only country that is named after a geographical feature. The official name of the nation is Repblica del Ecuador, which in English translates to The Republic of the Equator. Countries On The Equator Are Ideal Locations Of Spaceports The Earth bulges slightly at the Equator, and its diameter along this imaginary line is approximately 43 km greater than that at the poles. Thus, this feature makes the countries on the Equator or sites near the imaginary line ideal places for spaceports, i.e., spacecraft launching stations. The faster rotational speed and added velocity reduce fuel required for launching spacecrafts. The equator is an imaginary line that circles Earth. It divides the planet into the Northern and Southern Hemispheres. The equator is exactly at 0 degrees latitude. Here, the sun is almost directly overhead at noon. The equator is an imaginary line that circles the Earth, positioned halfway between the North and South Poles. How many miles is the equator? The equator is a long, invisible line that spans 40,075 kilometers (24,901 miles) around Earth. The equators length is slightly longer than the meridians (lines running from the North Pole to the South Pole. This is due to Earths bulge at the equator. So, this means that the equator is the widest part of Earth. When youre at the equator, youre as close to space as you can be on Earths surface. The equator passes through 13 countries, along the 0 line of latitude. Heres a table that shows these countries CountryDescriptionEcuadorThe equator runs directly through the country, even giving it its name. It includes both coastal and Andean regions.ColombiaThe equator crosses its southern part, encompassing parts of its Amazon rainforest and Andean regions.BrazilThe largest country crossed by the equator, it includes vast areas of the Amazon rainforest.Sao Tome and PrincipeThis small island nation off the west coast of Africa is crossed by the equator in its northern part.GabonThe equator runs through its central part, covering rainforest and coastal areas.Republic of the CongoThe equator crosses its southern part, including parts of its rainforest regions.Democratic Republic of the CongoThe equator cuts across the country, covering significant portions of the Congo rainforest.UgandaThe equator runs through the southern part of the country, including lakes and parts of its protected areas.KenyaIt crosses near the center, affecting its climate and ecosystems, including savannas and forests.SomaliaThe equator grazes the southernmost tip of Somalia, impacting its arid and semi-arid zones.IndonesiaThe equator runs across several of its islands, including Sumatra, Borneo, Sulawesi, and the Moluccas.KiribatiSome of the countrys islands are crossed by the equator in the Pacific Ocean, affecting its tropical climate.MaldivesAlthough not directly crossed by the equator, one of its southernmost atolls lies close to the equatorial line. What about our 5 oceans? The equator crosses through only the Atlantic, Pacific, and Indian Oceans. This list describes some of the unique features of the equator:Location: The equator is right in the middle of Earth. It divides the planet into two halves. This means you can stand in both the Northern and Southern Hemispheres at once.Climate: Because its at the center, its warm and sunny all year. It experiences little seasonal variation, with temperatures consistently around 30C (86F).Day and Night: Because its evenly distant from the poles, the equator experiences nearly equal lengths of day and night. You also get plenty of sunlight throughout the year.Wildlife: The equator is home to diverse plants and animals. At the equator, you can find the only place in the world where penguins and coral reefs coexist, the Galpagos Islands.Another interesting fact is that you weigh slightly less than if you were at the poles at the equator. This is because of the centrifugal force caused by Earths rotation. The equator is an imaginary line that circles the Earth, positioned halfway between the North and South Poles. It marks 0 degrees latitude and stretches about 40,075 kilometers or 24,901 miles around the planet. This line passes through 13 countries, including Ecuador, Brazil, and Kenya, as well as three oceans: the Atlantic, Pacific, and Indian. The region around the equator is known for its consistently warm climate and diverse ecosystems. Do you have any questions? Please let us know what you have to say in the comment section below.Subscribe to our newsletter:The equator is an imaginary line between the Northern and Southern Hemispheres. It divides the globe in half at 0 degrees latitude.The equator is an imaginary line that divides the globe in half at 0 latitude.timeanddate.comThe equator is an imaginary line dividing Earth into the Northern and Southern Hemispheres. It is located halfway between the North and South poles.The equator is 40,075 kilometers (24,901 miles) long. Earth isnt a perfect sphere. Because of its spin, it bulges slightly at the equator. This makes Earths circumference the equator longer than its circumference at the poles.13 Countries Along the EquatorLongitude and LatitudeWe use a grid of lines known as latitude and longitude to map the Earths surface.Circles of latitude wrap around the planet from east to west, while lines of longitude go from north to south.Earths equator is at 0 degrees latitude and intersects with the Prime Meridian at 0 degrees longitude.The equator passes through 13 countries.11 of the countries are in direct contact with the equator, while it runs through the territorial waters of Kiribati and the Maldives.Time zone mapThe equator runs through 13 countries.timeanddate.comNo Traditional SeasonsCountries along the equator dont have traditional seasons like spring, summer, fall (autumn), and winter. Generally speaking, regions around the equator have wet and dry seasons.The Northern and Southern Hemispheres tilt toward and away from the Sun at opposite times of the year. This tilt of Earths axis is known as axial tilt and is the reason why we have seasons in the north and south of Earth.The weather at the equator isnt affected by the axial tilt. There, the Suns roughly directly above every day, giving stable and warm temperatures year-round. However, like in the rest of the world, local differences occur, and factors other than the longitude determine the climate and weather.Earth is tilted towards the Sun, which gives us seasons in the north and south. At the equator (the middle of the globe), the amount of sunlight received is roughly the same throughout the year.timeanddate.comThe Suns Movement Across the SkyThe Celestial EquatorImagine Earths equator extending into space. This is the celestial equator: an imaginary circle dividing one celestial sphere from another at an equal distance from the poles.The word equator is derived from the medieval Latin equator, from the phrase circulus equator diei et noctis, meaning circle equalizing day and night, and from aequare, which means make equal.Around the equator, the Sunmore or less rises vertically and passes directly overhead Twice a year, on the March and September equinox, the Sun passes precisely over the equator. This means that when the Sun is at its highest point in the sky, known as the zenith, it will be directly overhead.At that perfect time of the equinoxwhen the Sun is both directly overhead and at its highest in the skythe shadows of everything on the ground disappear. If you can picture yourself standing on the equator with the Sun directly above you, youd only see a tiny sliver of your shadow beneath you. The only reason there will be some shadow is that our bodies are uneven, but if you set up a long and even pole, the Sun would shine directly at the top, and the pole wouldnt make a shadow at all.The Sun is home starEqual Day and NightDay and night are approximately the same length along the equator: around 12 hours of daytime and 12 hours of nighttime. However, the days are a few minutes longer than the night. There are two reasons why the day is a few minutes longer than the night:How sunrise and sunset are defined: Sunrise is defined as the moment the top edge of the Suns disk appears above the horizon, and sunset is when the last bit of the disks edge vanishes below the horizon. Atmospheric refraction: Earths atmosphere bends the light from the Sun, making it appear higher than its actual position on the horizon. Equinox: Day and night the same!Moon smile: A Waxing Crescent Moon setting like a smile over downtown Coxistox, Ireland.iStockphoto.comPradnya PaitihankarVIDEO: Moon phases explainedMoon Phases Look DifferentWe are all looking at the same Moon, but the most apparent difference between the hemispheres is the orientation of the lit-up side of the Moon as it goes through its phases.The Moon Smiles!t the equator, the bottom sliver of the Waxing Crescent Moon is illuminated, and the Moon sets as a smile just after sunset.The Waning Crescent Moon rises as a smile before sunrise.See the Moon set as a smile in Singapore (hit play!)The First Quarter Moon rises about midday, tagging behind the Sun. At the equator, the Sun and Moon more or less rise straight up, and because the Moon follows below the Sun, the top half is illuminated. At First Quarter, it is always the same half of the Moon that is illuminated, but if you were to look at it at moonset, it would look like the opposite side is lit up. So, from the perspective around the equator, we see the top half of the First Quarter Moon illuminated at moonrise and the bottom half illuminated at moonset. Watch the First Quarter Moon over Quito, Ecuador (hit play)Quick Nightfall at the EquatorNightfall comes about more quickly near the equatorial line. This is because the Sun nears and drops below the horizon at an almost 90-degree angle. The Sun moves quicker than at the more northerly or southerly latitudes, approaching the horizon at a less steep angle.A similar thing happens at moonrise when the moon rises almost straight up from the horizon, making for a swift transition between night and day. For example, if we look at the time it takes for the Sun to move from 6 degrees above the horizon to 6 degrees below takes the Sun around 50 minutes to set in Quito, Ecuador. Whereas in London, UK, it can take as much as 100 minutes. Equinox sunset in Quito, Ecuador (hit play)Twilight is the time between day and night when there is light outside, but the Sun is below the horizon. The equatorial regions have the shortest twilight on Earth.Crossing the LineLine-crossing ceremonies for ships crossing the equator, known as crossing the line, involve initiation rites, rituals, and celebrations and feature the mythical King Neptune.They are primarily done in the navy but are also sometimes practiced for passengers entertainment on civilian ships.Topics: Time Zone, Earth, Geography The EQUATOR Network executive group have recently published a position statement on data sharing reporting. The statement sets out the EQUATOR Networks support for data sharing practices and the importance of reporting data management and sharing plans. 2/05/2024 - New partnership announced between the EQUATOR Network and the Center for Open Science (COS) Among many of its goals, Open Science is a movement toward better, clearer research. Working toward that goal requires coordinated effort, and it is for that reason that a partnership between the EQUATOR Network and the Center for Open Science (COS) makes sense. The EQUATOR Canada Publication School team (consisting of patient partners and researchers) have launched an educational video resource, titled How do I publish a paper? The introductory video provides viewers with practical guidance on how the publication team, consisting of patient/public partners and research team members, can work together to define roles and contributions throughout the publication process. Centre for Journalismology Speaker Series video The Canadian EQUATOR Centre, home to the Centre for Journalismology, has started a new Speaker Series for 2021. The first session in the series was held on the 14th of January and was presented by Dr Lisa Cauley, Dr Robert Frank, Hassan Khan, and Alicia Ricketts, from the Centre. They spoke about recent research on reporting guidelines, planned research examining open science hiring practices, and journal transparency. The recording of the talks is freely available. The equator is an imaginary line that circles the Earth at the midway point between the North and South Poles. It has a latitude of 0 degrees and separates the Northern Hemisphere from the Southern Hemisphere. The length of the equator is 40,075.16 kilometres. While the equator is at 0 degrees latitude, northern latitudes increase as they move away from the equator and toward the North Pole, which is 90; southern latitudes decrease as they move away from the equator and toward the South Pole, which is 90. Where is the equator? The equator map below tells its location. It shows the line of the equator as it circles the Earth, and the countries on the equator are highlighted in red. Equator Map As well as being part of the coordinate system used to determine any point in the world, the equator has the highest linear velocity of any location on Earth due to being the location where the Earths circumference is largest. Lines of longitude are also farthest apart at the equator, where they are separated by about 111 kilometers (69 miles). This distance shrinks to zero at the Earths poles. Equatorial regions are defined with the help of the Tropic of Cancer, located 23.4 north of the equator, and the Tropic of Capricorn, located 23.4 south of the equator. Along the equator, the suns rays land upon the Earth at a full right angle at noon twice a year. This occurs at the spring and autumn equinoxes in March and September. Days and nights are of equal lengths at the equator because it does not tilt toward or away from the suns location throughout the year. The climate along the equator is tropical, resulting in warm weather year-round as well as plenty of rainfall. Countries that the equator passes through are: Gabon Congo Democratic Republic of Congo Uganda Kenya Somalia So Tom and Pncipe Maldives Kiribati Indonesia Ecuador Colombia Brazil In Asia, the equator passes through three countries: the Maldives, Indonesia, and Kiribati, which is in Oceania. These are all island nations, and Indonesia is the largest and most populous of the group by a large margin. Noonu Atoll, Maldives The Maldives is a South Asian archipelagic nation in the Indian Ocean made up of 27 atolls. The equator passes through the country, and the Fuvahmulah and Addu Atolls are the only two that are located in the Southern Hemisphere. With a territory of about 90,000 square kilometers (35,000 square miles), the Maldives is the smallest country in Asia. Fishing and tourism are two large parts of the countrys economy. The Maldives is known for beautiful beaches and for providing luxury tourism services. Millions of tourists visit the nation every year, and there are six Maldivian coral mosques listed as tentative UNESCO World Heritage Sites. Padar Island, Indonesia Indonesia is a country in Southeast Asia that is made up of over 17,000 islands, several of which lie directly on the path of the equator. This is the worlds largest archipelagic state and the fourth most populous country in the world. The city of Pontianak, the capital of West Kalimantan, is home to an Equator Monument. The island of Java, which lies just south of the equator, is the most populous in the country. Indonesia is also the most populous Muslim-majority country in the world. Despite this large population, the country is so vast that it supports a very high level of biodiversity. This biodiversity, along with stunning beaches and excellent surfing on islands like Bali, is part of what makes tourism in Indonesia so popular. Fanning Island, Kiribati Kiribati is an island country in the central Pacific Ocean and is considered part of Oceania. The 32 atolls that make up Kiribati lie on either side of the equator, and it is the only country in the world that exists in the Northern, Southern, Western, and Eastern Hemispheres. With few natural resources and an isolated location, Kiribati is one of the least developed nations in the world and has the lowest GDP of any sovereign state in Oceania. International development assistance programs make up some of the countrys economy, as do fishing licenses, transport, and some tourism. Kiribati is located in the UTC+14:00 timezone, which is the earliest in the world, meaning it is the first timezone to see a new calendar day. Interestingly, this timezone is located directly south of the UTC+10:00 timezone, which is exactly one day behind. There are seven countries that are traversed by the equator in Africa. These are Gabon, the Republic of the Congo, the Democratic Republic of the Congo, Uganda, Kenya, Somalia, and So Tom and Pncipe. Sao Tome and Principe is the only African island nation to lie along the equator, and there is a landmark monument on its island of Ilheu das Rolas. Mont Brazza in Lop, Gabon Gabon is a country on Africas west coast and is located south of Equatorial Guinea and to the north of the Republic of the Congo. Almost 90% of Gabon is forested, and the country experiences an equatorial climate. Mountains, savanna, and coastal plains also make up the countrys landscape. With a population of around 2.3 million, Gabon has one of the lowest population densities in Africa. There are over 40 ethnic groups living in Gabon, including roughly 10,000 native French inhabitants, of whom about 2,000 are dual nationals. French is the only official language of Gabon, but the majority of the population speaks an indigenous language. Brazzaville-Kinshasa Bridge, Republic of the Congo The Republic of the Congo is a Central African country with a coastline on the Atlantic Ocean. It is located west of the Congo River and is bordered by five countries. The equator crosses the country just north of its middle, and the landscape is made up of mountains, forests, savanna plains, and a coastal plain. Most of the countrys population of about 5.8 million lives in the southwestern region, leaving large areas of tropical jungle in the north uninhabited. Around 70% of the countrys population lives in urban areas like Brazzaville, the capital of the Congo, and Pointe-Noire. Brazzaville is located on the banks of the Congo River, across from Kinshasa in the Democratic Republic of Congo. This is the only place in the world where two national capitals are located on either side of a river within sight of each other. Kinshasa, Democratic Republic of the Congo Smaller only than Algeria, the Democratic Republic of the Congo is the second-largest country in Africa. It is located in Central Africa and borders nine different countries. The equator crosses the country and separates its northern third from its southern two-thirds. The climate in the immediate proximity of the equator experiences very heavy rainfall throughout the year as well as the highest concentration of thunderstorms anywhere on Earth. This climate supports the Congo Rainforest, which is the second largest rainforest in the world after the Amazon. French is the official and most widely spoken language in the Democratic Republic of the Congo, but about 242 languages are spoken. Four of these languages, Kikongo, Lingala, Tshiluba, and Swahili, are considered national languages. The Rwenzori Mountains in Fort Portal, Uganda Uganda is a landlocked country situated in East Africa that borders five other nations. The capital of Uganda is Kampala, and the equator passes through the country just south of the city. The equator also passes through Lake Victoria, one of the African Great Lakes and the largest lake on the continent. Full of natural beauty, Uganda is home to 60 protected natural areas and ten national parks, two of which are UNESCO World Heritage Sites: Bwindi Impenetrable National Park and Rwenzori Mountains National Park. There are many different animals living in Uganda, and its parks are home to populations of mountain gorillas, golden monkeys, hippos, and much more. The economy of Uganda has been consistently growing, and much of its income is generated from product exports as well as the services sector. Its largest product export is coffee, followed by oil and metals. There is also a significant amount of untapped natural gas and crude oil reserves. View of Mt. Kilimanjaro from Amboseli National Park, Kenya Kenya is a country in East Africa that borders Somalia, Ethiopia, South Sudan, Uganda, and Tanzania. It also has an Indian Ocean coastline in the southeastern part of the country. The oldest city in Kenya is Mombasa, though the largest city and capital of Kenya is Nairobi. The equator passes through approximately the center of the country, bisecting it into Northern and Southern Hemisphere sections. Geographically, Kenya is diverse. There are low coastal plains along the Indian Ocean that rise to its central highlands. The Kenyan Highlands are very fertile and make up one of the most productive agricultural areas in Africa. Because of rapid population growth, Kenya has a very young population, with over 70% of the population under the age of 30. English and Swahili are the countrys national languages, and 69 other languages are also spoken. Somaliian coast, south of Mogadishu Somalia is a country in East Africa that contains the continents easternmost point and has the longest coastline of any country on the African mainland. The country extends into the Arabian Sea, forming the Somali Peninsula, also known as the Horn of Africa. The equator crosses the southern tip of Somalia, and the country is the only country in South America to have coastlines and islands on both the Pacific and Atlantic Oceans. The countrys territory has been inhabited by various groups since the 10th century. The majority of the population is ethnic Somali, and other non-Somali ethnic groups such as Bravasse, Bantus, and Ethiopians live in the southern regions of the country. Islands of So Tom So Tom and Principe is the only island nation of Africa that the equator passes through. It is located in the Gulf of Guinea off the western coast of Central Africa, and the closest mainland country is Gabon. The country consists of two small archipelagos, each surrounding the island of So Tom or Pncipe. The country has a population of close to 200,000 which makes it the second-least populous country in Africa. Its also the second smallest. Economically, plantation agriculture has been the most important industry in the country since the 19th century. While large amounts of cocoa are exported each year, the country must import the vast majority of its food needs. In South America, the equator passes through three countries: Ecuador, Colombia, and Brazil. Church in the city of Guayaquil, Ecuador on Santa Ana Hill. Whats in a name? No, its no coincidence that the name Ecuador looks a whole lot like equator. Ecuadors official name is Repblica del Ecuador, which translates to Republic of the Equator. The equator runs through the northern portion of the country, just north of Quito. There is even a great monument about 45-minutes away from Quito where you can stand in both the Northern and Southern Hemispheres at the same time. While its common knowledge that Mount Everest is the tallest mountain on Earth, its not actually the point on the globe that extends furthest into the atmosphere. This is due to the fact that the Earth is not a perfect sphere. Due to the rotation of the world, the Earths swell slightly at the equator. This global bulge is responsible for the extra 1.5 miles Mount Chimborazo in Ecuador has on Mount Everest when measuring from the center of the Earth. However, mountain peaks are measured with reference to sea level, and with this in mind, Mount Everest is significantly taller. This is because the seas around Everest are elevated. Bogotá, Colombia Located in northwestern South America, the equator passes through the southern end of Colombia. Colombia is the only country in South America to have coastlines and islands on both the Pacific and Atlantic Oceans. The countrys territory has been inhabited by various indigenous people since around 12,000 BCE or longer. Today, the official language of the country is Spanish, but over 70 languages are spoken. The landscape in Colombia includes parts of the Amazon rainforest, highlands, grasslands, and deserts. This diversity in geography is partly responsible for the country having the second-highest biodiversity of any in the world. Its also considered one of the worlds 17 megadiverse countries. Caracol Waterfall in Brazil Brazil is the fifth-largest country in the world and the largest in South America, so perhaps its no wonder the equator passes through it. In fact, the country is so long from north to south that it is the only one in the world to have both the equator and the Tropic of Capricorn running through it. The capital of Brazil is Braslia, though the two most populous cities in Brazil are So Paulo and Rio de Janeiro. Brazils economy is the largest in South America and is diversified among agriculture, industry, and many services. Ecotourism is also popular in the country, and the tourism sector in general is growing, as there are many things to do in Brazil. Due to many years of mass immigration, Brazil has one of the most multicultural and diverse populations in the world. The official language in the country is Portuguese, which makes it the largest Lusophone country in the world and the only one in the Americas. Equatorial Guinea and bordering countries Its tempting to think that the country of Equatorial Guinea lies along the equator, but its name actually refers to its proximity to the equator. The country lies approximately 100 kilometers (68.4 miles) north of the equator along the Gulf of Guinea in eastern Africa. Due to its closeness to the equator, the country has a similar climate to other equatorial countries. The equator is an imaginary line that divides the world in two and is determined by geodetic calculations. It is 40,075 kilometers long and is 0 latitude. The exact position of the equator is not fixed because the equatorial plane is perpendicular to the axis of rotation of the Earth, which drifts about 2.7 meters (9 feet) a year. This is an effect that has to be accounted for with detailed geophysical measurements. In two commonly used geodesic standards, the equator is modeled as a circle with an integer radius in meters. In 1976, the International Astronomical Union (IAU-1976). The International Union of Geodesy and Geophysics later revised this to 6,378,137 kilometers in the World Geodetic System (WGS-84). Despite this change, the newer IAU-2000 has retained the former IAU-1976 value. If it were truly circular, the equator would be exactly 2 times the radius, 40,075,036 kilometers in length. However, due to the impact of tides on the surface of the Earth, the actual length of the equator is about 40,075.16 kilometers. The Amazon rainforest Seasons are a result of the fact that the Earths axis is tilted relative to the plane of its revolution around the Sun. During the year, the northern and southern hemispheres take turns being tilted toward the sun. When a hemisphere is tilted toward the sun, it receives sunlight at a more direct angle and sees more hours of sunlight. This is what happens during a hemispheres summer months. Conversely, the half of the Earth that is tilted away from the Sun receives light at more of an indirect angle and gets fewer hours of sunlight. This is known as winter. The equator passes through three major oceans: the Atlantic Ocean, the Indian Ocean, and the Pacific Ocean. Although there are dramatic differences in rain and humidity around the equator, there is little change in temperature throughout the year. Unlike locations further from the equator, there are generally not four seasons in close proximity to the equator. Equatorial climates are typically warm and see a great deal of rainfall. The seasons are often classified as wet and dry in this region. Although temperatures are generally high, the high amount of precipitation means that they arent the hottest in the world. The average annual temperatures in the equatorial plains are around 22 C to 27 C. There are about 200 rainy days a year and the annual solar hours are around 2,000. Despite warm year-round temperatures at sea level, there are some tropical glaciers at high altitudes like Mount Andes and Mount Kilimanjaro near the equator. The highest point on the equator is the 4,690-meter peak on the southern slopes of the Volcn Cayambe. This is also the only region directly along the equator that experiences snowfall. Equinox dates are the starting dates of the spring and autumn seasons for the worlds two hemispheres. On these dates, the suns rays fall down at a perpendicular angle to the equator and herald the beginning of a new season for the hemispheres. An illustration of the Earths orbit around the sun showing the tilt of the Earth. In addition to orbiting the Sun, the Earth rotates around its own axis, which is tilted in relation to its orbital path. These phenomena are responsible for the experiences of night, day, and seasons. There are a few dates throughout the year that are especially important in relation to the seasons and the position of the Earth around the Sun. Two of these important dates are the equinoxes. One equinox happens between March 19 to 21 every year and marks the beginning of spring in the Northern Hemisphere and autumn in the Southern Hemisphere. The second equinox occurs between September 21 to 24 and marks the onset of autumn in the Northern Hemisphere and spring in the Southern Hemisphere. As well as marking the beginning of seasons, these dates are when the suns rays land vertically upon the equator at a 90-degree angle. It is also during the equinoxes that day and night are of equal length in all parts of the world. Image Sources and Copyright Information Colorful Cityscape of Guayaquil, Ecuador: Jess Kraft/Shutterstock World map showing the line of the equator in red.The equator is the intersection of the Earth's surface with the plane perpendicular to the Earth's axis of rotation and containing the Earth's center of mass. In more simple language, it is an imaginary line on the Earth's surface that is everywhere equidistant from the North Pole and South Pole. It is from this point that latitude is calculated, in other words, it is the 0 latitude line. This geographic, or terrestrial, Equator divides the Earth into a Northern Hemisphere and a Southern Hemisphere. The equators of other planets and astronomical bodies are defined analogously. The word "equator" comes from the Latin, circulus equator diei et noctis, meaning "circle equalizing day and night." This term was originally coined in reference to the Celestial Equator, but has come to mean that which divides a sphere into two equal parts. While the equator is a significant marker for the geographer, dividing the two hemispheres and providing an important point of calculation, for the sea-faring navigator it is simply a line on a map!The point of measurement (previously in the stars) lies in instruments which relate to the earth's magnetic poles. Geodesy of the equatorThe latitude of the equator is, by definition, 0. The length of Earth's equator is about 40,075 kilometers (24,901.5 mi). The equator is one of the five major circles of latitude that are based on the relationship between the Earth's axis of rotation and the plane of the Earth's orbit around the sun. It is the only line of latitude which is also a great circle. The imaginary circle obtained when the Earth's equator is projected onto the sky is called the celestial equator.The Sun, in its seasonal movement through the sky, passes directly over the equator twice each year, on the March and September equinoxes. At the equator, the rays of the sun are perpendicular to the surface of the earth on these dates.Places on the equator experience the quickest rates of sunrise and sunset in the world. Such places also have a theoretical constant 12 hours of day and night throughout the year (in practice there are variations of a few minutes due to the effects of atmospheric refraction and because sunrise and sunset are measured from the time the edge of the Sun's disc is on the horizon, rather than its center). North or south of the equator day length increasingly varies with the seasons.The Earth bulges slightly at the equator. It has an average diameter of 12,750kilometers (7,922mi), but at the equator the diameter is approximately 43kilometers (27mi) greater.Locations near the equator are good sites for spaceports, such as the Guiana Space Centre in Kourou, French Guiana, as they are already moving faster than any other point on the Earth due to the Earth's rotation, and the added velocity reduces the amount of fuel needed to launch spacecraft. Spacecraft launched in this manner must launch to the east to use this effect.For high precision work, the equator is not quite as fixed as the above discussion implies. The true equatorial plane must always be perpendicular to the Earth's spin axis. Although this axis is relatively stable, its position wanders in approximately a 9meters (30ft) radius circularmotion each year. Thus, the true equator moves slightly. This, however, is only important for detailed scientific studies. The effect is quite small, and the width of a line marking the equator on almost any map will be much wider than the error of equatorial climateTemperatures near the equator are high year round with the exception for periods during the wet season and at higher altitudes. In many tropical regions people identify two seasons: Wet and dry. However, most places close to the equator are wet throughout the year, and seasons can vary depending on a variety of factors including elevation and proximity to an ocean. The rainy and humid conditions mean that the equatorial climate is not the hottest in the world.The surface of the Earth at the equator is mostly ocean. The highest point on the equator is 4,690meters (15,387ft), at 0000005, 775931W, on the south slopes of Volcn Cayambe (summit 5,790meters (18,996ft) in Ecuador. This is a short distance above the snow line, and this point and its immediate vicinity form the only section of the equator where snow lies on the ground.Equatorial countries and territories In tourist areas, the equator is often marked on the sides of roads. The equator marked as it crosses Ilhu das Rolas, in So Tom and Pncipe.The equator traverses the land and/or territorial waters of 14 countries. Starting at the Prime Meridian and heading eastward, the equator passes through: Despite its name, no part of Equatorial Guinea's territory lies on the equator. However, its island of Annobn is about 156kilometers (100mi) south of the equator, and the rest of the country lies to the north. The country that comes closest to the equator without actually touching it is Peru.Length of the equatorThe equator is modeled exactly in two widely used standards as a circle of radius an integer number of meters. In 1976, the International Astronomical Union (IAU) standardized this radius as 6,378,140meters (20,925,656ft), subsequently refined by the International Union of Geodesy and Geophysics (IUGG) to 6,378,137meters (20,925,646ft) and adopted in World Geodetic System (WGS-84), though the yet more recent IAU-2000 has retained the old IAU-1976 value. In either case, the length of the equator is by definition exactly 2 times the given standard, which to the nearest millimeter is 40,075,016.686meters (131,479,713.54ft) in WGS-84 and 40,075,035.535meters (131,479,775.38ft) in IAU-1976 and IAU-2000.[1]The geographical mile is defined as one arc minute of the equator, and therefore has different values depending on which standard equator is used, namely 1,855.5248meters (6,087.024ft) or 1,855.5257meters (6,087.027ft) for respectively WGS-84 and IAU-2000, a difference of nearly a millimeter.The earth is standardly modeled as a sphere flattened about 0.336 percent along its axis. This results in the equator being about 0.16 percent longer than a meridian (as a great circle passing through the two poles). The IUGG standard meridian is to the nearest millimeter 40,007,862.917meters (131,259,392.77ft), one arc minute of which is 1,852.216meters (6,076.82ft), explaining the International System of Units (SI) standardization of the nautical mile as 1,852meters (6,076ft), more than 3meters (10ft) short of the geographical mile.Celestial equator The celestial equator is inclined by ~23.5 to the ecliptic plane. The image shows the relations between Earth's axial tilt (or obliquity), rotation axis and plane of orbit.The celestial equator is a great circle on the imaginary celestial sphere, in the same plane as the Earth's equator. In other words, it is a projection of the terrestrial equator out into space. As result of the Earth's axial tilt, the celestial equator is inclined by ~23.5 with respect to the ecliptic plane.An observer standing on the Earth's equator visualizes the celestial equator as a semicircle passing directly overhead through the zenith. As the observer moves north (or south), the celestial equator tilts towards the southern (or northern) horizon. The celestial equator is defined to be infinitely distant (since it is on the celestial sphere); thus the observer always sees the ends of the semicircle disappear over the horizon exactly due east and due west, regardless of the observer's position on Earth. (At the poles, though, the celestial equator would be parallel to the horizon.)Celestial objects near the celestial equator are visible worldwide, but they culminate the highest in the sky in the tropics. The celestial equator passes through these constellations:PiscesCetusTaurusEridanusOrionMonocerosCanis MinorHydraSextansLeoVirgoSerpensOphiuchusAquilaAquariusNotes Although millimeter precision can be important up to the scale of a mile, it has negligible physical significance at the scale of a geographic feature such as the equator. From a computational standpoint, however, millimeter precision or better can be valuable for maintaining consistent results when used in programs for surveying and other applications that require precise measurements. As an overly simple example, if a program were to convert back and forth between the radius and the circumference of the earth sufficiently often while maintaining precision only to a meter each time, errors might accumulate until they became noticeable. Clarke, Thurston. Equator: A Journey. New York: Morrow, 1988. ISBN 978-0688069018."Geodetic Reference System 1980 by H. Moritz." Journal of Geodesy. 74 (1) (2000): 128. ISSN 0949-7714.Rosenberg, Matt. The Equator, Hemispheres, Tropic of Cancer, and Tropic of Capricorn. The New York Times Company>About.com. (April 16, 1999). Retrieved February 12, 2022.Taff, Laurence G. Computational Spherical Astronomy. New York: Wiley, 1981. ISBN 047106257X. The Equator is an imaginary line around the middle of Earth. It is halfway between the North and South Poles, and divides Earth into the Northern and Southern Hemispheres. Earth Science, Meteorology, Geography, Physical GeographyAn equator is an imaginary line around the middle of a planet or other celestial body. It is halfway between the north pole and the south pole, at 0 degrees latitude. An equator divides the planet into a northern hemisphere and a southern hemisphere.Earth is widest at its Equator. The distance around Earth at the Equator, its circumference, is 40,075 kilometers (24,901 miles).Earth's diameter is also wider at the Equator, creating a phenomenon called an equatorial bulge. The diameter of a circle is measured by a straight line that passes through the center of the circle and has its endpoints on the boundary of that circle. Scientists can calculate the diameter of latitudes, such as the Equator and Arctic Circle.Earth's diameter at the Equator is about 12,756 kilometers (7,926 miles). At the poles, the diameter is about 12,714 kilometers (7,900 miles).Earth's equatorial bulge is about 43 kilometers (27 miles).The equatorial bulge means that people standing at sea level near the poles are closer to the center of Earth than people standing at sea level near the Equator. The equatorial bulge affects the ocean, toosea levels are slightly higher in equatorial regions than near the poles. The equatorial bulge is created by Earth's rotation. As lines of latitude increase in size, a point has to travel faster to complete a circle (revolution) in the same amount of time. The rotational speed, or spin, at the Arctic Circle is slower than the spin at the Tropic of Cancer, because the circumference of the Arctic Circle is much smaller and a point doesn't have to travel as far to complete a revolution. The spin at the Tropic of Cancer is much slower than the spin at the Equator. Near the poles, Earth's rotational speed, or spin, is near zero. At the Equator, the spin is about 1,670 kilometers per hour (1,038 miles per hour).Earth's gravitational pull is slightly weaker at the Equator due to its equatorial bulge.The slightly weaker gravitational pull and momentum of spinning Earth makes equatorial regions ideal places for space launches. It takes an enormous amount of energy to launch a satellite or other spacecraft out of Earth's atmosphere. It takes less energy (rocket fuel) to launch in lower gravity. It also takes less energy to launch when spinning Earth is already giving the satellite a push of 1,670 kilometers per hour (1,038 miles per hour).The United States launches most spacecraft from the Kennedy Space Center in southern Florida, which is almost as close to the Equator as possible in the continental U.S. Other rocket-launching facilities near the Equator include Shaba North, Democratic Republic of Congo, and Gan Island, Maldives.Recently, mobile launch platforms, such as Ocean Odyssey, have successfully launched satellites into orbit from the equatorial Pacific Ocean.Equatorial ClimatesTwice a year, during the spring and autumn equinoxes, the sun passes directly over the Equator. Even during the rest of the year, equatorial regions often experience a hot climate with little seasonal variation.As a result, many equatorial climates recognize two seasonswet and dry. The wet, or rainy, season often lasts most of the year. The long, warm, rainy season creates tropical rainforests. Some of the most expansive rainforests in the world are in equatorial regions: the Amazon rainforest of South America, the Congo rainforest of Central Africa, and the varied Southeast Asian rainforest stretching from India to Vietnam.Humid weather means that equatorial regions are not the hottest in the world, even though they are among the closest to the sun. The water in the equatorial air cools it slightly.Many cultures thrive in warm equatorial regions. The Fang people of Gabon, for instance, are successful farmers who take advantage of the warm temperature and long rainy season to cultivate crops such as corn, yams, and plantains. The Fang also raise livestock that have adapted to the climate, such as goats and chickens.Not all equatorial regions are hot and humid, however. Mount Kilimanjaro, Tanzania, is only 330 kilometers (205 miles) from the Equator, but its elevation creates a climate with cool, dry weather and even alpine glaciers.The Andes are another equatorial region lacking the hot, humid climate often associated with the Equator. The mountain range includes a desert with almost no rain (the Atacama), as well as some of the tallest peaks on Earth. Here, too, cultures have thrived for thousands of years. The Aymara people of the Altiplano of Bolivia, Peru, and Chile, are primarily an urban people who identify strongly with the innovative navigational successes of their ancestors. In the 20th century, the Aymara helped build railroads through the high, equatorial Andes.Many plant and animal species thrive in equatorial climates. The Amazon and Congo rain forest ecosystems, for example, are amazingly rich in biodiversity. A single hectare (2.47 acres) of rainforest in Brazil may contain 750 species of trees and twice that many species of insects. The equatorial savanna of Kenya includes mammals such as lions (Panthera leo), cheetahs (Acinonyx jubatus), and elephants. The chilly equatorial Andes are famous for its camellid species: llamas (Lama glama), alpacas (Lama pacos), vicuas (Vicugna vicugna), and guanacos (Lama guanicoe).Fast FactBulging through EcuadorMount Chimborazo, Ecuador, not Mount Everest, is the highest point on Earth. Earth's equatorial bulge pushes Mount Chimborazo, near the Equator in the Ecuadorian Andes, farther from the center of the Earth.However, elevation is measured from sea level, not the center of Earth. Mount Everest is 8,848 meters (29,035 feet) above sea level, while Mount Chimborazo is 6,310 meters (20,702 feet) above sea level.Fast FactCrossing the LineSailors have elaborate rituals and celebrations when they cross the Equator, which they call crossing the line. Sailors who have never crossed the line are called pollywogs. Pollywogs are usually the target of embarrassing practical jokes.Fast FactShort SunsetsThe time it takes for the sun to set and rise at the Equator is the fastest on Earth. The transition from day to night takes only a few minutes.The media illustration photos, and the video are credited beneath the media assets, except for the page that contains the media credit. The Rights Holder for media is the person or group credited.Jeanne Evers, Emdash Editing, Emdash EditingNational Geographic SocietyotherFor information on user permissions, please read our Terms of Service. If you have questions about how to cite anything on our website in your project or classroom presentation, please contact your teacher. They will best know the preferred format. When you reach out to them, you will need the page title, URL, and the date you accessed the resource.MediaIf a media asset is downloadable, a download button appears in the corner of the media viewer. 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