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What happens when two continental plates collide answers.com

Fig.2.1. Oceanic collision zones for general context, see tectonics. This article includes a list of references related to reading or external links, but its sources remain unclear because embedded quotes are missing. Please help to improve this article by entering more precise quotes. (July 2017) (Learn how and when to remove this template message) A caricature of a tectonic collision between two continents Continental collision is a phenomenon of earth's flat tectonics that occurs within converging boundaries. Continental collision is a variation of the fundamental process of vaulting, in which the area of archproduction is destroyed, produced mountains and two continents stitched together. It is known that a continental collision occurs only on Earth. Continental collisions are not an instant event, but it can take several tens of millions of years before it collapses and folds caused by collisions. The clash between India and Asia has been going on for about 50 million years and shows no signs of abating. Collision between East and West Gondana to form East Africa Orogen takes about 100 million years from the beginning (610 Ma) to the end (510 Ma). A collision between Gondwana and Laurasia to form Pangea occurs in a relatively short interval, about 50 million years long. Subdication zone: the collision site The process begins as two continents (different parts of the continent crust), separated by ocean (and ocean crust), approach each other, while the ocean crust is slowly consumed in a subduction zone. The area of underwater waters along the edge of one of the continents and descends beneath it, rising volcanic mountain ranges some distance behind it, like the Andes of South America today. Subduction includes the entire lithosphere, the density of which is largely controlled by the nature of the crust it carries. The oceanic crust is thin (~6 km thick) and dense (about 3.3 g/cm³), consisting of basalt, gabro and peridot. Therefore, most ocean crust shrinks easily into an ocean trench. By contrast, the continental crust is thick (~45 km thick) and a shaoyant composed mainly of granite rocks (average density about 2.5 g/cm³). The continental crust is stepped with difficulties, but is lowered to depths of 90-150 km or more, as evidenced by the metamorphic joints of ultrahigh pressure (UHP). Normal submarinery lasts as long as the ocean exists, but the subducation system is interrupted as the continent, which is carried by the lower plate, enters an excavation. Because it contains a dense continental crust, this lithosphere is less dense than the main asthanospheric mantle, and normal curvature is disturbed. The volcanic arc of the top plate is slowly extinguished. Resisting underwater wheat, the bark buckles up and under, lifting mountains where it was shunted. The position of the trench becomes an area that between the two continental terrains. Suture areas are often marked by fragments of existing ocean crusts and mantle rocks known as snakes. The deep subordination of the continental crust At the bottom of the plate is deeply subordinated as part of the falling plate during a collision defined as a floating crust entering a subduction zone. An unknown part of the underwater continental crusts returns to the surface as ultra-high pressure metamorphic (UHP) metamorphic, containing a metamorphic goat and/or diamond plus or minus abnormal silicone grenades and/or potassium-bearing pyroxenes. The presence of these minerals indicates that the vault of the continental crust is at least 90–140 km deep. Examples of UHP terranes are known from the Dabi-Sulu Belt of East-Central China, the Western Alps, the Himalayas of India, the Kochs of Kazakhstan, the Bohemian Massif in Europe, north-west China's Qaeda, western Neys, Norway and Mali. Most UHP terrains consist of imbrica sheets or nappy. The fact that most UHP terranes consist of thin sheets suggests that much thicker, voluminously dominant tracts of the continental crust are more deeply submissive. Orogens and collapse mountain formation through reverse debris movement Orogens is underway when the mountains begin to grow in the collision zone. There are other ways of mountain formation and orogenity, but surely continental collision is one of the most important. Precipitation and snowfall increase the mountains as they rise, perhaps at the rate of several millimeters per year (at a growth rate of 1 mm/year, a high 5000 m mountain can form in 5 million years, a period that is less than 10% of the life of a typical collision zone). River systems are formed, and glaciers can grow on the highest peaks. Erosion accelerates as the mountains rise and large volumes of sediment spill into the rivers that carry the sediments away from the mountains to be deferred into sedimentary pools in the surrounding lowlands. They are spread from the rocks of the bark, and the mountain belt expands as it rises in height. Also develops root from the bark, as required by isothasi; the mountains can be high if ground with a thicker crust. The thickening of the bark can occur as a result of rupture of the bark or when one crust is screwed with the other. Thickening is accompanied by heating, so that the bark becomes weaker as it thickens. The lower crust begins to flow and collapses under the growing mountain mass, forming reefs near the crest of the mountain range. The lower crust can partially melt, forming atetic granite, which then rise in the dressing units, forming granite intrusions. The thickening of the bark provides one of the two negative feedback on mountain growth in collision zones, and the other is erosion. erosion is the cause of the destruction of the mountains, it is half right - viscous flow of weak lower mantle also reduces relief over time, especially after the collision is completed and both continents are completely stitched. The rapprochement between the continents continues because the crust is still descending from the ocean lithosphere, sinking into the subduction zone on both sides of the collision, as well as under the darkened continent. The pace of the mountain building associated with the collision is measured by radiometric dating of magma rocks or units that were metamorphized at the time of the collision and by examining the records of sediment spilled from the rising mountains in the surrounding basins. The rate of ancient convergence can be determined by paleomagnetic measurements, while the current convergence rate can be measured with GPS. Effects of distant fields The effects of the collision are felt far beyond the immediate site of collision and construction of a mountain. As convergence between the two continents continues, the area of thickening and elevation will become wider. If there is a free ocean face, the adjacent blocks of crusts can move towards it. As an example, India's clash with Asia forced large crust regions to move south to form modern Southeast Asia. Another example is Arabia's clash with Asia, which is pushing the Anatolian Plate (present-day Turkey). As a result, Turkey is moving west and south towards the Mediterranean sea and away from the collision zone. These distant effects can lead to the formation of reefs, and rift valleys such as those occupied by Lake Baikal, the deepest lake on Earth. Areas of fossil collisions Additional information: Seam (geology) Continental collisions are an important part of the supercontinental cycle and have happened many times in the past. The ancient collision zones are deeply eroded, but can still be recognized because these places of intense deformation, metamorphism and plutonic activity, which divide the treatise of the continental crust, having different geysers before the collision. Old collision zones are usually called stitching areas by geologists, because this is where two previous continents connect or stitch together. References Ernst, B.D. (2006). Preservation/exhumation of underwater tena with ultra-high pressure. Lithos. 92 (3–4): 321–335. 2006 Lyto.. 10.1016/j.lithos.2006.03.049. Ernst, W. G.; Maruyama, S. Wallis; 1997: Floating, rapid exhumation of high pressure metamorphosed continental crust. 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External connections Where the continents collide with the dynamics of the continental collision zones Wilson Cycle Extracted from In order to continue to enjoy our site, we ask you to confirm your identity as a person. Thank you so much for your cooperation. At converging boundaries, tectonic plates collide. The events that occur at these limits are related to the types of plates that interact. The subduction zones and volcanoes in some convergent boundaries, an ocean plate collide with a continental plate. The ocean crust is thicker and thinner than the continental crust, so the denser ocean crust bends and pulls under or shrinks under the lighter and thicker continental crust. This forms what is called an underwater vault zone. As the ocean crust sinks, a deep ocean trench or valley forms on the edge of the continent. The crust continues to be forced to plunge into the ground, where high heat and pressure cause water and other gases to be released from it. This in turn makes the base of the melt, forming the magma Forming in a subduction zone rises to the Earth's surface and accumulates in the chambers of the magma, where volcanoes are fed and created on the primary plate. When this magma reaches the surface through an outlet in the crust, the volcano erupts, pushing lava and ash. An example is the group of active volcanoes that surround the Pacific Ocean, often called the Ring of Fire. An illustration depicting how island arcs are formed. An underwater zone is also created when two ocean slabs collide - the older slab is forced under the younger one - and leads to the formation of chains of volcanic islands known as island arcs. Examples include the Mariana Islands in the Western Pacific and the Aleuthian Islands, off the coast of Alaska. Since collision and vaulting of plates are not smooth processes, large, powerful earthquakes are another phenomenon that results from this type of interaction. Earthquakes generated in area may result in a tsunami. The tsunami is a huge ocean wave caused by a sudden change in the seabed, like an underwater earthquake. If the wave reaches land, it could cause incredible destruction, such as the Asian tsunami that killed more than 200,000 people in 11 countries in the Indian Ocean region in December 2004. Collision zones and mountains What happens when two continental plates collide? Since the rock that makes up continental plates is usually lighter and less dense than the ocean rock, it is too light to be pulled underground and turned into magmas. Instead, a collision between two continental plates shrinks and folds the rock on the border, lifting it and leading to the formation of mountains and mountain ranges. An example of this mountain-building process is the Himalai range in South Asia. Containing the highest mountain peaks in the world and crossing the modern countries of India, Pakistan, China (Tibet), Bhutan and Nepal, the Himalayas are formed by the collision of the Indian and Eurasian plates. This process began after the collapse of Pangya, when India became an island continent and began to travel north to Asia. India's island got stuck in Asia about 40 to 50 million years ago near present-day Tibet, smashing and folding the plates to form the Himalayan mountain range. Its most famous peaks, Everest and K2, are among several that measure over 8,000 meters (26,000 feet) high on their peaks. As the Indian plate continues in its northern direction towards Asia, the Himalayas continue to grow higher each year with small amounts (5 to 20 mm or 1 inch per year). Image images: Animations and illustrations of ocean-ocean collision slabs adapted from Jane Russell's drawings by Jacqueline Keish and Robert Tealing, This Dynamic Earth, USGS, p. 1. 40.