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The Engineering ToolBox provides a wide range of free tools, calculators, and information resources aimed at engineers and designers. It offers detailed technical data and calculations for various fields such as fluid mechanics, material properties, HVAC systems, electrical engineering, and more.The site includes resources for common engineering tasks, such as calculating physical properties (e.g., density, viscosity, thermal conductivity), converting units, and designing systems like heating and water distribution. With sections on everything from acoustics to hydraulics, it serves as a comprehensive tool for both students and professionals in technical and engineering disciplines. Air pressure decreases exponentially with increasing altitude. This means that the higher you go, the less the air above you weighs down, resulting in a lower atmospheric pressure. Understanding Atmospheric Pressure and Altitude Atmospheric pressure, often referred to as air pressure, is the force exerted by the weight of the air above a given point. At sea level, the average air pressure is approximately 1013.25 hectopascals (hPa) or 29.92 inches of mercury (inHg). However, this pressure is not constant and changes based on several factors, the most significant being altitude. The Physics Behind the Pressure-Altitude Relationship The decrease in air pressure with altitude stems from the simple fact that there is less air above you at higher elevations. Imagine a column of air stretching from sea level to the top of the atmosphere. At sea level, the pressure you experience is the weight of that entire column. As you ascend, the height of the air column above you shrinks, so its weight, and therefore the pressure, decreases. This decrease is not linear. The density of air is highest at sea level due to the compression caused by the weight of the air above. As altitude increases, the air becomes less dense, and the rate of pressure decrease slows down. This is why the relationship between air pressure and altitude is described as exponential or, more accurately, follows a barometric formula that considers temperature variations. Factors Influencing Air Pressure at Altitude While altitude is the primary factor determining air pressure, other elements also play a role: Temperature Air pressure is directly related to temperature. Warmer air is less dense than cooler air. Therefore, warm air at a given altitude will exert less pressure than cooler air at the same altitude. This explains why air pressure can vary significantly even at the same elevation depending on the weather. Humidity Humidity, or the amount of water vapor in the air, also affects air pressure. Water vapor is lighter than the other gases that make up air, such as nitrogen and oxygen. Therefore, humid air is less dense than dry air, leading to slightly lower air pressure. However, the effect of humidity on air pressure is generally less significant than that of altitude or temperature. Weather Systems Weather systems like high and low-pressure systems can significantly influence air pressure at any given altitude. High-pressure systems typically bring cooler, denser air, resulting in higher air pressure readings. Low-pressure systems, on the other hand, are associated with warmer, less dense air and lower air pressure. These systems are dynamic and constantly shifting, causing variations in air pressure even at the same location. Measuring Air Pressure at Altitude Air pressure is measured using instruments called barometers. There are two main types: Aneroid Barometers Aneroid barometers use a small, sealed metal box that expands and contracts in response to changes in air pressure. These movements are mechanically amplified and displayed on a dial, providing a reading of the air pressure. Aneroid barometers are commonly used in aviation and for home weather stations. Altimeters Altimeters are essentially aneroid barometers calibrated to display altitude rather than pressure. They work by measuring the ambient air pressure and using a predetermined relationship between pressure and altitude to determine the aircraft’s or the user’s height above sea level. It is important to remember that altimeters need to be calibrated for local atmospheric pressure to provide accurate readings. Practical Implications of Changing Air Pressure with Altitude Understanding how air pressure changes with altitude has several important practical implications: Aviation Pilots rely heavily on altimeters to maintain safe flight altitudes. Accurate altitude readings are crucial for navigation, avoiding terrain, and maintaining separation from other aircraft. Understanding the effects of temperature and pressure variations on altimeter readings is an essential part of pilot training. Meteorology Meteorologists use air pressure readings at different altitudes to create weather forecasts. Changes in air pressure can indicate the movement of weather systems and the potential for storms or other severe weather events. Mountaineering and High-Altitude Activities At high altitudes, the lower air pressure means that there is less oxygen available in each breath. This can lead to altitude sickness, a potentially life-threatening condition. Mountaineers and others engaging in high-altitude activities need to acclimatize gradually to the lower oxygen levels to avoid altitude sickness. They also need to be aware of the potential for changes in weather patterns due to the rapidly changing air pressure. FAQs: Delving Deeper into Air Pressure and Altitude Here are some frequently asked questions to further clarify the relationship between air pressure and altitude: FAQ 1: What is standard sea level pressure? Standard sea level pressure is defined as 1013.25 hPa (hectopascals) or 29.92 inHg (inches of mercury). This is the average air pressure at sea level under standard atmospheric conditions. FAQ 2: How quickly does air pressure decrease with altitude? Air pressure decreases rapidly at lower altitudes and more slowly at higher altitudes. A rough rule of thumb is that air pressure decreases by about 1 hPa for every 8 meters (26 feet) of altitude gained near sea level. FAQ 3: What causes altitude sickness? Altitude sickness is caused by the lower partial pressure of oxygen at high altitudes. This means there is less oxygen available in each breath, leading to symptoms like headache, nausea, fatigue, and in severe cases, pulmonary edema (fluid in the lungs) or cerebral edema (fluid in the brain). FAQ 4: Can I use a barometer to predict the weather? Yes, you can use a barometer to predict the weather. A falling barometer usually indicates approaching bad weather, while a rising barometer suggests improving weather. However, it’s important to consider other weather indicators as well. FAQ 5: How do airplanes compensate for changes in air pressure? Airplanes use pressurization systems to maintain a comfortable and safe cabin pressure at high altitudes. These systems pump air into the cabin to keep the pressure at a level equivalent to a lower altitude, typically around 8,000 feet. FAQ 6: What is the relationship between air density and altitude? Air density decreases with increasing altitude. This is because the air becomes less compressed by the weight of the air above. FAQ 7: Does air pressure ever increase with altitude? In general, air pressure decreases with altitude. However, under specific atmospheric conditions, such as temperature inversions (where temperature increases with altitude), there may be localized and temporary deviations from this general trend. FAQ 8: How does humidity affect air pressure readings? Humidity lowers air pressure slightly because water vapor is less dense than dry air. FAQ 9: What is the tropopause, and how does it affect air pressure? The tropopause is the boundary between the troposphere (the lowest layer of the atmosphere) and the stratosphere. The rate of pressure decrease changes at the tropopause. In the troposphere, pressure decreases more rapidly with altitude. FAQ 10: Are there regional variations in air pressure at the same altitude? Yes, regional variations exist due to differences in temperature, humidity, and the presence of high or low-pressure systems. These variations are factored into weather forecasting and aviation planning. FAQ 11: How is air pressure used in weather maps? Isobars, lines connecting points of equal air pressure, are used on weather maps to depict pressure gradients and identify high and low-pressure systems. The closer the isobars are together, the stronger the pressure gradient, and the stronger the winds. FAQ 12: What is the difference between absolute pressure and gauge pressure? Absolute pressure is the total pressure, including atmospheric pressure, while gauge pressure is the pressure relative to atmospheric pressure. For example, a tire pressure of 32 psi (gauge) means the pressure is 32 psi above atmospheric pressure. By understanding the complexities of how air pressure changes with altitude, we gain a deeper appreciation for the workings of our atmosphere and its profound impact on our lives, from the heights of aviation to the challenges of mountaineering. In order to continue enjoying our site, we ask that you confirm your identity as a human. Thank you very much for your cooperation. By continuing to use this site, you consent to the terms of our cookie policy, which can be found in our Privacy Notice. × Our research and measurement solutions support innovation and product development. We work with companies to deliver business advantage and commercial success. Contact our Customer Services team on +44 20 8943 7070 Atmospheric pressure or barometric pressure is the pressure within the atmosphere of Earth. For most purposes it can be approximated by the hydrostatic pressure exerted by the weight of the air above a surface. We can perform an approximate calculation of the atmospheric pressure at sea level assuming that, on average, the air above a 1 cm2 surface at sea level has roughly a mass m = 1.03 kg and thus its weight is 10.1 N (see figure below) Therefore, using the definition of pressure: More precise measurements yield a value of the atmospheric pressure of: This page contains affiliate links and I earn a commission if you make a purchase through one of the links, at no cost to you. As an Amazon Associate I earn from qualifying purchases. This does not affect the information provided on the pages of this website. Product prices and availability displayed on this page are updated multiple times daily. They are accurate as of the date/time indicated and are subject to change. Any price and availability information displayed on Amazon.de at the time of purchase will apply to the purchase of the products. Before the use of the SI units became widely accepted, the standard atmosphere (atm) was used as a unit of atmospheric pressure. It is approximately equal to the atmospheric pressure at sea level. Therefore: Atmospheric pressure varies with the altitude; since the air mass above a certain surface is smaller as we climb up a mountain, air pressure on mountains is usually lower than air pressure at sea level. We can obtain an expression for the atmospheric pressure as a function of elevation. If we assume that the atmospheric circulation is not relevant in this situation, we can start from the differential expression of the hydrostatic pressure and integrate it. In order to do so, let’s assume that the atmosphere is a gas which obeys the equation of state of an ideal gas: We will take as reference point the atmospheric pressure at sea level p0. The density of the atmosphere at this altitude is ρ0. If we apply the equation of state of an ideal gas to both the reference point and to a point at height h above sea level we have: Isolating RT from both equations and equalizing: Now we can substitute into the differential expression of the hydrostatic pressure” target=”_blank” rel=”noopener”> and perform the integral: We can isolate the pressure as a function of the altitude h: In the figure below a plot of this model is shown. We have assumed that the atmosphere is at t = 150C, and that its relative humidity is 0%. Atmospheric pressure at sea level is p0 = 101 325 Pa. Under those conditions the density of air is ρ0 = 1.225 kg/m3 The atmospheric pressure can be measured with a mercury barometer. It is a glass tube closed at the top and placed in an open container filled with mercury. At equilibrium, the height of the mercury column inside the tube equals the atmospheric pressure. At sea level, this height is h = 760 mm. That’s the reason why the millimeter of mercury was formerly used as a unit of pressure. If the barometer is placed at a higher altitude, the mercury drops to a lower level in the column. The post Atmospheric pressure - Altitude variation appeared first on YouPhysics Atmospheric pressure drops as you go higher up in the atmosphere. Pressure at sea level is around a thousand millibars. Five kilometers (about 16 thousand feet) up pressure is only about half as much. Click on image for full size Original artwork by Windows to the Universe staff (Randy Russell). Air gets 'thinner' with increasing altitude. That's why mountain climbers sometimes need bottled oxygen to breathe, and why it is so easy to get 'winded' while hiking in high mountains or even visiting someplace at elevation. Atmospheric pressure is around 1,014 millibars (14.7 pounds/inch2) at sea level. At an elevation of 10 km (6 miles or about 30,000 feet), roughly the height of Mt. Everest, pressure drops to 265 millibars. That's less than 30% of the pressure at sea level! Both atmospheric pressure and the density of air decrease with altitude. The concept of air pressure and its relationship with altitude is a complex one. It is important to understand this relationship in order to accurately assess weather patterns and the impact of altitude changes on air pressure. This article will discuss how air pressure changes with an increase in altitude, examining the effects of rising altitude on air pressure, and understanding the relationship between altitude and air pressure. With this information, readers can gain a better understanding of how air pressure works and how altitude can impact the air pressure around us. 1. How Does Air Pressure Change with Altitude Increase? Air pressure is the force exerted by air molecules on a given area. It is affected by both temperature and altitude, with air pressure decreasing as altitude increases. When altitude increases, the air becomes thinner and less dense, meaning fewer air molecules are present in a given area. This causes the air pressure to decrease. At sea level, the air pressure is around 101.3 kiloPascals (kPa). As altitude increases, the air pressure decreases exponentially. For example, at an altitude of 1,500 meters, the air pressure is around 78.7 kPa. At an altitude of 3,000 meters, the air pressure is around 68 kPa. By the time you reach 8,000 meters, the air pressure has dropped to around 25.9 kPa. In general, the air pressure decreases by roughly 1 kPa for every 100 meters of altitude gained. This means that if you climb 1,000 meters in altitude, you can expect the air pressure to drop by around 10 kPa. This is an important factor to consider when climbing mountains or flying in an aircraft. At higher altitudes, the air pressure can become too low for humans to survive, which is why mountaineers and pilots must take precautions against altitude sickness. Altitude sickness is caused by a lack of oxygen in the blood due to the low air pressure. Symptoms of altitude sickness include headache, nausea, and fatigue. In conclusion, air pressure decreases with an increase in altitude. The rate at which the pressure decreases varies, but in general, the air pressure decreases by about 1 kPa for every 100 meters of altitude gained. Climbers and pilots should be aware of the effects of air pressure on their bodies and take the necessary precautions to prevent altitude sickness. 2. Examining the Effects of Rising Altitude on Air Pressure The effects of rising altitude on air pressure are an important factor to understand when considering the atmosphere. As you ascend, air pressure decreases, and the higher you go, the less pressure you experience. This is because the air molecules become more spread out as you rise, therefore having a reduced impact on the surrounding environment. At sea level, the air pressure is typically around 1013.25 mb, but this decreases as you rise in altitude. As the air pressure decreases, the air becomes less dense and oxygen levels drop. This means that as you climb higher, the air pressure will continue to decrease, and you will need to take precautions to ensure that you can still breathe properly. In addition to the decrease in air pressure, temperature also decreases with an increase in altitude. This is because the air is less dense, and it is able to absorb heat more efficiently, causing the temperature to drop. The decrease in air pressure and temperature can have a major impact on the environment, as it affects wind patterns and the amount of moisture in the atmosphere. The atmosphere is a complex system that relies on these factors to remain balanced, and understanding how air pressure changes with an increase in altitude is a key part of understanding the environment. 3. Understanding the Relationship between Altitude and Air Pressure Atmospheric air pressure is the force exerted by the atmosphere on the surface of the Earth. As altitude increases, air pressure decreases. The decrease in air pressure with an increase in altitude is due to the fact that the air is less dense at higher altitudes. As the air becomes less dense at higher altitudes, its ability to hold onto and transfer pressure decreases, resulting in a decrease in air pressure. At sea level, air pressure is approximately 101.3 kilopascals (kPa). As altitude increases, air pressure decreases at a rate of about 1 kPa per 8 meters of altitude. This means that if you go up 8 meters above sea level, air pressure will decrease by 1 kPa. In addition to the decrease in air pressure with an increase in altitude, the temperature of the air also decreases. This means that as altitude increases, the air becomes colder. Understanding the relationship between altitude and air pressure is important for a variety of reasons. Knowing how air pressure changes with an increase in altitude can help predict weather patterns, as well as atmospheric phenomena such as thunderstorms and tornadoes. It is also important for aircrafts to understand the relationship between altitude and air pressure, as it affects the performance of the aircraft and the safety of the crew and passengers. As altitude rises, air pressure drops. In other words, if the indicated altitude is high, the air pressure is low. How do you solve pressure problems? If you don’t have access to an altimeter, you can determine pressure altitude by using this formula: (standard pressure minus your current pressure setting) times 1,000 plus field elevation equals pressure altitude. See also What is the physics of water pressure?How do you find the change in altitude? An easy-to-remember equation for finding change in elevation as a decimal is “rise over run,” meaning the rise (the change in vertical distance) divided by the run (the change in horizontal distance). Why atmospheric pressure decreases as we go higher up above the earth’s surface? c) The pressure decreases as we go higher up above the earth’s surface because the gravitational force acting on the air molecules at higher altitude is less. When the air mass is not strong enough to get pulled down by the gravity, the atmospheric pressure decreases. As you increase in elevation, there is less air above you thus the pressure decreases. As the pressure decreases, air molecules spread out further (i.e. air expands) and the temperature decreases. If the humidity is at 100 percent (because it’s snowing), the temperature decreases more slowly with height. What is the formula to calculate pressure? Simply the pressure formula is. P = F / A. Derivation. P = Pressure in Pascal. 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Atmospheric pressure decreases with increasing altitude: it is half of the sea level value at an altitude of about 3.1 mi (5 km) and falls to only 20% of the surface pressure at the cruising altitude of a jetliner. See also How is power calculated in an elevator motor?Why is there less pressure when you are higher up? Pressure with Height: pressure decreases with increasing altitude. The pressure at any level in the atmosphere may be interpreted as the total weight of the air above a unit area at any elevation. At higher elevations, there are fewer air molecules above a given surface than a similar surface at lower levels. Does air pressure increase when you go higher? The pressure exerted by the air in the atmosphere is greater close to Earth’s surface and decreases as you go higher above the surface. Atmospheric pressure drops as altitude increases. Why it gets colder as you go higher up a mountain? 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To define the pressure at a specific point, the pressure is defined as the force dF exerted by a fluid over an infinitesimal element of area dA containing the point, resulting in p=dFdA p = d F d A . What is the formula of pressure with example? The basic formula for pressure is F/A (Force per unit area). Unit of pressure is Pascals (Pa). Types of Pressures are Absolute, Atmospheric, Differential, and Gauge Pressure. For the given question we can use the formula, F=mg where F is the gravitational force, m is the mass of the body and g is the acceleration due to gravity. We know that, P=FA where P is the pressure exerted by a body, F is the force acting on the body and A is the area where the force acts. What is Boyle’s law P1V1 P2V2? Boyle’s law: For a fixed amount of an ideal gas kept at a fixed temperature, pressure and volume are inversely proportional. so PV= constant. or P1V1=P2V2. What formula is P1V1 P2V2? 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See also Is gravity negative or positive?Why is there less pressure when you are higher up? Pressure with Height: pressure decreases with increasing altitude. The pressure at any level in the atmosphere may be interpreted as the total weight of the air above a unit area at any elevation. At higher elevations, there are fewer air molecules above a given surface than a similar surface at lower levels. Does air pressure increase when you go higher? The pressure exerted by the air in the atmosphere is greater close to Earth’s surface and decreases as you go higher above the surface. Atmospheric pressure drops as altitude increases. Why it gets colder as you go higher up a mountain? The basic answer is that the farther away you get from the earth, the thinner the atmosphere gets. The total heat content of a system is directly related to the amount of matter present, so it is cooler at higher elevations. The heating of the earth itself also plays a role. 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See also How do you calculate water pressure due to gravity?What are the two formulas of pressure? Pressure (p) is defined as the normal force F per unit area A over which the force is applied, or p=FA. p = F A . To define the pressure at a specific point, the pressure is defined as the force dF exerted by a fluid over an infinitesimal element of area dA containing the point, resulting in p=dFdA p = d F d A . What is the formula of pressure with example? The basic formula for pressure is F/A (Force per unit area). Unit of pressure is Pascals (Pa). Types of Pressures are Absolute, Atmospheric, Differential, and Gauge Pressure. For the given question we can use the formula, F=mg where F is the gravitational force, m is the mass of the body and g is the acceleration due to gravity. We know that, P=FA where P is the pressure exerted by a body, F is the force acting on the body and A is the area where the force acts. What is Boyle’s law P1V1 P2V2? Boyle’s law: For a fixed amount of an ideal gas kept at a fixed temperature, pressure and volume are inversely proportional. so PV= constant. or P1V1=P2V2. What formula is P1V1 P2V2? Boyle expressed his results in a relationship that is known as Boyle’s law equation or Boyle’s law formula: P1V1 = P2V2 . This law assumes the temperature remains constant. Encyclopædia Britannica, Inc. The atmosphere that surrounds Earth has weight and pushes down on anything below it. The weight of air above a given area on Earth’s surface is called atmospheric pressure. It is an important factor influencing Earth’s weather and climate. Atmospheric pressure can be measured with an instrument called a barometer and thus is also known as barometric pressure. It is usually measured in millibars (mb) or kilopascals (kPa). Atmospheric pressure changes at different altitudes. Pressure is greatest at sea level and decreases with height. Air is heaviest at sea level because the air molecules are compressed by the weight of the air above them. Air becomes lighter farther away from Earth’s surface as the air molecules become separated by more space. As the weight of the air decreases, so does the air pressure. At sea level, atmospheric pressure is about 1,000 mb (100 kPa). At the top of Mt. Everest—a height of 29,032 feet (8.85 kilometers)—pressure drops to about 300 mb (30 kPa). The air is so thin at an altitude of 31 miles (50 kilometers) that it exerts a pressure of only 1 mb (0.1 kPa). Even at a height of 5,000 feet (1,500 meters), the atmospheric pressure is low enough to produce mountain (altitude) sickness and other severe physical problems in some people. Uneven heating by the Sun causes differences in Earth’s atmospheric pressure. These pressure differences affect the motion of the atmosphere, as air moves from areas of high pressure to areas of low pressure. The result is wind, which has a great effect on weather and climate. Meteorologists monitor changes in pressure as one indication of upcoming weather changes. Falling pressure generally indicates that stormy weather is on the way. Rising pressure usually indicates the approach or continuation of fair weather. On weather maps, points of equal pressure are connected by curved lines called isobars. Choose a language from the menu above to view a computer-translated version of this page. Please note: Text within images is not translated, some features may not work properly after translation, and the translation may not accurately convey the intended meaning. Britannica does not review the converted text. After translating an article, all tools except font up/font down will be disabled. To re-enable the tools or to convert back to English, click "view original" on the Google Translate toolbar. 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The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. The number of molecules in the atmosphere decreases with height. The atoms and molecules that make up the various layers of the atmosphere are constantly moving in random directions. Despite their tiny size, when they strike a surface, they exert a force on that surface in what we observe as pressure. Each molecule is too small to feel and only exerts a tiny bit of force. However, when we sum the total forces from the large number of molecules that strike a surface each moment, then the total observed pressure can be considerable. Air pressure can be increased or decreased in one of two ways. First, simply adding molecules to a container will increase the pressure because a larger number of molecules will increase the number of collisions with the container's boundary. This is observed as an increase in pressure. A good example of this is adding or subtracting air in an automobile tire. By adding air, the number of molecules increases, as does the total number of the collisions with the tire's inner boundary. The increased number of collisions increases the pressure and forces the tire to expand in size. The second way of changing air pressure is by the addition or subtraction of heat. Adding heat to a container can transfer energy to air molecules. Heated molecules move with increased velocity, striking the container's boundary with greater force, which is observed as an increase in pressure. Learning Lesson: Heavy Air Since molecules move in all directions, they can even exert air pressure upwards as they smash into object from underneath. In the atmosphere, air pressure can be exerted in all directions. In the International Space Station, the density of the air is maintained so that it is similar to the density at the Earth's surface, 14.7 pounds per square inch. Learning Lesson: A Pressing Engagement Learning Lesson: Going with the Flow Back on Earth, as elevation increases, the number of molecules decreases and the density of air therefore is less, which means there is a decrease in air pressure. In fact, while the atmosphere extends hundreds of miles up, one half of the air molecules in the atmosphere are contained within the first 18,000 feet (5.6 km). This decrease in pressure with height makes it very hard to compare the air pressure at ground level from one location to another, especially when the elevations of each site differ. Therefore, to give meaning to the pressure values observed at each station, we convert the station air pressures reading to a value with a common denominator. The common denominator we use is the sea-level elevation. At observation stations around the world, the air pressure reading, regardless of the observation station elevation, is converted to a value that would be observed if that instrument were located at sea level. The two most common units in the United States to measure the pressure are "Inches of Mercury" and "Millibars". Inches of mercury refers to the height of a column of mercury measured in hundredths of inches. This is what you will usually hear from the NOAA Weather Radio or from your favorite weather or news source. At sea level, standard air pressure is 29.92 inches of mercury. Millibars comes from the original term for pressure: "bar". Bar is from the Greek "báros", meaning weight. A millibar is 1/1000th of a bar and is approximately equal to 1000 dynes (one dyne is the amount of force it takes to accelerate an object with a mass of one gram at the rate of one centimeter per second squared). Millibar values used in meteorology range from about 100 to 1050. At sea level, standard air pressure in millibars is 1013.2. Weather maps showing the pressure at the surface are drawn using millibars. Although the changes are usually too slow to observe directly, air pressure is almost always changing. This change in pressure is caused by changes in air density, and air density is related to temperature. Warm air is less dense than cooler air because the gas molecules in warm air have a greater velocity and are farther apart than in cooler air. So, while the average altitude of the 500 millibar level is around 18,000 feet (5,600 meters) the actual elevation will be higher in warm air than in cold air. How temperature affects the height of pressure. Learning Lesson: Crunch Time The most basic change in pressure is the twice daily rise and fall due to the heat from the sun. Each day, the pressure is at its lowest around 4 a.m./p.m., and at its highest around 10 a.m./p.m. The magnitude of the daily cycle is greatest near the equator, decreasing toward the poles. On top of the daily fluctuations are the larger pressure changes as a result of the migrating weather systems. These weather systems are identified by the blue H's and red L's seen on weather maps. Learning Lesson: Measure the Pressure: The "Wet" Barometer How are changes in weather related to changes in pressure? From his vantage point in England

Khalifa, signs a treaty with the British to prevent and combat the slave trade in the Arabian Gulf. May 31 – Second Treaty of Erzurum: the Ottoman Empire cedes Abadan Island to the Persian Empire. May – The Architectural Association School of Architecture is founded in London. June 1 – The first congress of the Communist League is held in London. June 9 – Radley College, an English public school, is founded near Oxford as a High Anglican institution.[4] June 26 – The first passenger railway wholly within modern-day Denmark opens, from Copenhagen to Roskilde.[5] June – E. H. Booth & Co. Ltd, which becomes the northern England supermarket chain Booths, is founded when tea dealer Edwin Henry Booth, 19, opens a shop called "The China House" in Blackpool. July 1 – The United States issues its first postage stamps. July 24: Mormons expelled from Illinois arrive at the Great Salt Lake in what is now Utah. July 24 – After 17 months of travel, Brigham Young leads 148 Mormon pioneers into Salt Lake Valley, resulting in the establishment of Salt Lake City. July 26 – The nation of Liberia, founded as a haven for freed African-American slaves, becomes independent. July 29 – The Cumberland School of Law is founded at Cumberland University, in Lebanon, Tennessee. At the end of this year, only 15 law schools exist in the United States. August 12 – Mexican–American War: U.S. troops of General Winfield Scott begin to advance along the aqueduct around Lakes Chalco and Xochimilco in Mexico. August 20 – Mexican–American War – Battle of Churubusco: U.S. troops defeat Mexican forces. August – Yale Corporation establishes the first graduate school in the United States, as Department of Philosophy and the Arts (renamed Graduate School of Arts and Sciences in 1892). September 14 – Mexican–American War: U.S. general Winfield Scott enters Mexico City, marking the end of organized Mexican resistance. September 30 – The Vegetarian Society is formed in the United Kingdom (it remains the oldest in the world). October 12 – German inventors and industrialists Werner von Siemens and Johann Georg Halske found Siemens & Halske to develop the electrical telegraph. October 19 – Charlotte Brontë publishes Jane Eyre under the pen name of Currer Bell in England. October 31 – Theta Delta Chi is founded as a social fraternity at Union College, Schenectady, New York. October – The last volcanic eruption of Mount Guntur in West Java occurs. November 3–29 – Sonderbund War: In Switzerland, General Guillaume-Henri Dufour's Federal Army defeats the Sonderbund (an alliance of seven Catholic cantons) in a civil war, with a total of only 86 deaths. November 4–8 – James Young Simpson discovers the anesthetic properties of chloroform and first uses it, successfully, on a patient, in an obstetric case in Edinburgh.[6] November 10 – The first brew of Carlsberg beer is finished in Copenhagen. November 17 – The Battle of Um Swayya Spring takes place near a spring in Qatar, after a Bahraini force under Shaikh Ali bin Khalifa Deputy Ruler of Bahrain defeats the Al Binali tribe. The chief of the Al Binali, Isa bin Tureef, is slain in battle with over 70 fatalities from his side. December 14 – Emily Brontë and Anne Brontë publish Wuthering Heights and Agnes Grey, respectively, in a 3-volume set under the pen names of Ellis Bell and Acton Bell in England. December 20 – British Royal Navy steam frigate HMS Avenger (1845) is wrecked on the Sorelle Rocks in the Mediterranean Sea with the loss of 246 lives and only eight survivors.[7] December 21 – Emir Abdelkader surrenders to the French in Algeria.[8] The Great Famine continues in Ireland. The North Carolina General Assembly incorporates the railroad town of Goldsborough, and the Wayne county seat is moved to the new town. Welfare in Sweden takes its first step with the introduction of the 1847 års fattigvårdförordning. Cartier, a luxury brand in France, is founded. January 5 – Oku Yasukata, Japanese field marshal, leading figure in the early Imperial Japanese Army (d. 1930) January 7 – Caspar F. Goodrich, American admiral (d. 1925) January 24 – Radomir Putnik, Serbian field marshal (d. 1917) January 28 – Dorus Rijkers, Dutch naval hero (d. 1928) February 3 – Warington Baden-Powell, British admiralty lawyer (d. 1921) February 4 – Remus von Woyrsch, German field marshal (d. 1920) February 5 – João Maria Correia Ayres de Campos, 1st Count of Ameal, Portuguese politician and antiquarian (d. 1920) February 8 – Hugh Price Hughes, Methodist social reformer, first Superintendent of the West London Mission (d. 1902) February 11 – Thomas Alva Edison, American inventor (d. 1931) February 13 – Sir Robert McAlpine, Scottish builder (d. 1930) February 15 – Robert Fuchs, Austrian composer (d. 1927) February 16 – Philipp Scharwenka, Polish-German composer (d. 1917) February 17 – Otto Blehr, Norwegian attorney, Liberal Party politician, 7th Prime Minister of Norway (d. 1927) March 1 – Sir Thomas Brock, English sculptor (d. 1922) March 2 Isaac Barr, Anglican clergyman, promoter of British colonial settlement schemes (d. 1937) Cayetano Arellano, first Chief Justice of the Supreme Court of the Philippines under the American Civil Government (d. 1920) March 3 – Alexander Graham Bell, Scottish-born Canadian inventor (d. 1922) March 4 – Carl Josef Bayer, Austrian chemist (d. 1904) March 11 – Sidney Sonnino, Prime Minister of Italy (d. 1922)[9] March 14 – Castro Alves, Brazilian poet (d. 1871) March 18 – William O'Connell Bradley, American politician from Kentucky (d. 1914) March 23 – Edmund Gurney, British psychologist (d. 1888) March 27 Otto Wallach, German chemist, Nobel Prize laureate (d. 1931) Garret Barry, Irish musician (d. 1899) April 2 – Charles Frederic Moberly Bell, British journalist, editor (d. 1911) April 10 – Joseph Pulitzer, Hungarian-born journalist, newspaper publisher (d. 1911) April 15 – Yehudah Aryeh Leib Alter, Polish Hasidic rabbi (d. 1905) April 27 – Emma Irene Åström, Finnish teacher, Finland's first female university graduate (d. 1934) May 7 – Archibald Primrose, 5th Earl of Rosebery, Prime Minister of the United Kingdom (d. 1929) May 14 – Sir Frederick William Borden, Canadian politician (d. 1917) June 8 Oleksander Barvinsky, Ukrainian politician (d. 1926) Ida Saxton McKinley, First Lady of the United States (d. 1907) June 10 – Gina Krog, Norwegian suffragist (d. 1916) June 11 – Dame Milicent Fawcett, British suffragist (d. 1929) June 16 – Luella Dowd Smith, American educator, author, and reformer (d. 1941) Paul von Hindenburg Bram Stoker July 2 – Marcel Alexandre Bertrand, French geologist (d. 1907) July 9 – Wong Fei-hung, Chinese healer, revolutionary (d. 1925) July 13 – Damian Sawczak, Ukrainian judge (d. 1912) July 19 – Alexander Meyrick Broadley, British historian (d. 1916) July 20 Lord William Beresford, Irish army officer, Victoria Cross recipient (d. 1900) Max Liebermann, German painter, printmaker (d. 1935) July 25 – Paul Langerhans, German pathologist, biologist (d. 1888) August 3 – John Hamilton-Gordon, 1st Marquess of Aberdeen and Temair, Canadian politician, Governor General (d. 1934) August 5 – Andrey Selivanov, Russian general and politician (d. 1917) August 21 – Hale Johnson, American temperance movement leader (d. 1902) September 3 – Charles Stillman Sperry, American admiral (d. 1911) September 5 Jesse James, American outlaw (d. 1882) Joseph Bucklin Bishop, American journalist, publisher (d. 1928) September 17 – John I. Beggs, American businessman (d. 1925) September 22 – Enrique Almaraz y Santos, Spanish Catholic cardinal (d. 1922) September 23 – Anandamohan Bose, Indian politician, academic and social reformer (d. 1906) September 30 – Wilhelmina Drucker, Dutch feminist (d. 1925) Maria Pia of Savoy Thomas F. Porter October 1 – Annie Besant, English women's rights activist, writer and orator (d. 1933)[10] October 2 – Paul von Hindenburg, German field marshal, President of Germany (d. 1934) October 13 Sir Arthur Dyke Acland, 13th Baronet, British politician (d. 1926) Maurice Bailloud, French general (d. 1921) October 14 – Wilgelm Vitgeft, Russian admiral (d. 1904) October 15 – Ralph Albert Blakelock, American romanticist painter (d. 1919) October 16 – Maria Pia of Savoy, Queen consort of Portugal (d. 1911) October 17 – Chiquinha Gonzaga, Brazilian composer (d. 1935) October 19 – Aurilla Furber, American author, editor, and activist (d. 1898) October 20 – Mifflin E. Bell, American architect (d. 1904) October 22 – Koos de la Rey, Boer general (d. 1914) October 30 Charlie Bassett, American sheriff (d. 1896) Thomas F. Porter, American politician, 32nd Mayor of Lynn, Massachusetts (d. 1927) November 1 – Dame Emma Albani, Canadian operatic soprano (d. 1930) November 2 – Georges Sorel, French socialist philosopher (d. 1922) November 6 – Ugo Balzani, Italian historian (d. 1916) November 7 – Lotta Crabtree, American stage actress (d. 1924) November 8 Jean Casimir-Perier, 6th President of France (d. 1907) Bram Stoker, Irish author of the Gothic novel Dracula (d. 1912) November 17 – Carlo Mirabello, Italian admiral and politician (d. 1910)[11] November 26 – Dagmar of Denmark, empress of Tsar Alexander III of Russia (d. 1928) November 30 – Afonso Pena, Brazilian president (d. 1909) December 1 – Agathe Backer-Grøndahl, Norwegian pianist, composer (d. 1907) December 9 – George Grossmith, English comic writer and performer (d. 1912) December 17 Émile Faguet, French writer, critic (d. 1916) Michel-Joseph Maunoury, French general during World War I (d. 1923) December 18 – Augusta Holmès, French composer (d. 1903) December 21 – John Chard, British Officer (d. 1897) December 29 – Alexis-Xyste Bernard, Canadian Catholic bishop (d. 1923) December 30 – John Peter Altgeld, American politician, 20th Governor of Illinois (d. 1902) Fanny Mendelssohn January 19 – Charles Bent, first Governor of New Mexico Territory (b. 1799) (assassinated) February 3 – Marie Duplessis, French courtesan (b. 1824) February 5 – Luis José de Orbegoso, Peruvian general and politician, 11th and 12th President of Peru (b. 1795) March 9 – Mary Anning, British paleontologist (b. 1799) March 3 – Charles Hatchett, English chemist (b. 1765)[12] April 21 – Barbara Spooner Wilberforce, wife of British abolitionist William Wilberforce (b. 1777) April 30 – Archduke Charles of Austria, Austrian general (b. 1771) May 14 – Fanny Mendelssohn, German composer, pianist (b. 1805) May 15 – Daniel O'Connell, Irish politician who promoted the Roman Catholic Relief Act 1829 (b. 1775) May 16 – Vicente Rocafuerte, 2nd President of Ecuador (b. 1783) May 29 – Emmanuel de Grouchy, Marquis de Grouchy, French marshal (b. 1766) June 11 – Afonso, Prince Imperial of Brazil (b. 1845) June 11 – Sir John Franklin, British explorer (b. 1786) Felix Mendelssohn July 7 – Thomas Carpenter, American glassmaker (b. 1752) July 16 – Karl Friedrich Burdach, German physiologist (b. 1776) September 4 – František Vladislav Hek, Czech patriot (b. 1769) September 13 – Nicolas Oudinot, French marshal (b. 1767) October 2 – Vasil Aprilov, Bulgarian educator, merchant and writer (b. 1789)[13] October 22 Henriette Herz, German salonnière (b. 1764) Negus Sahle Selassie of Shewa (b. c. 1795) November 4 – Felix Mendelssohn, German composer (b. 1809) November 18 – Zebulon Crocker, American congregationalist pastor (b. 1802) December 14 Dorothy Ann Thrupp, British psalmist (b. 1779) Manuel José Arce, Central American politician (b. 1787) Barbarita Nieves, Venezuelan mistress of José Antonio Páez (b. 1803) Unknown: Jeanne Geneviève Labrosse, French balloonist and parachutist (b. 1775) ^ The Knickerbocker, or The New York Monthly, March 1847, p. 283. ^ "The History of Birkenhead Park". 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Millennia 2nd millennium Centuries 17th century 18th century 19th century Timelines 17th century 18th century 19th century State leaders 17th century 18th century 19th century Decades 1700s 1710s 1720s 1730s 1740s 1750s 1760s 1770s 1780s 1790s Categories: Births – Deaths Establishments – Disestablishments vte Political boundaries at the beginning of year 1700 Storming of the Bastille, 14 July 1789, an iconic event of the French Revolution. Development of the Watt steam engine in the late 18th century was an important element in the Industrial Revolution in Europe. The American Revolutionary War took place in the late 18th century. The 18th century lasted from 1 January 1701 (represented by the Roman numerals MDCCI) to 31 December 1800 (MDCCC). During the 18th century, elements of Enlightenment thinking culminated in the Atlantic Revolutions. Revolutions began to challenge the legitimacy of monarchical and aristocratic power structures. The Industrial Revolution began mid-century, leading to radical changes in human society and the environment. The European colonization of the Americas and other parts of the world intensified and associated mass migrations of people grew in size as part of the Age of Sail. During the century, slave trading expanded across the shores of the Atlantic Ocean, while declining in Russia[1] and China.[2] Western historians have occasionally defined the 18th century otherwise for the purposes of their work. For example, the "short" 18th century may be defined as 1715–1789, denoting the period of time between the death of Louis XIV of France and the start of the French Revolution, with an emphasis on directly interconnected events.[3][4] To historians who expand the century to include larger historical movements, the "long" 18th century[5] may run from the Glorious Revolution of 1688 to the Battle of Waterloo in 1815[6] or even later.[7] France was the sole world superpower from 1659, after it defeated Spain, until 1815, when it was defeated by Britain and its coalitions following the Napoleonic Wars. In Europe, philosophers ushered in the Age of Enlightenment. This period coincided with the French Revolution of 1789, and was later compromised by the excesses of the Reign of Terror. At first, many monarchies of Europe embraced Enlightenment ideals, but in the wake of the French Revolution they feared loss of power and formed broad coalitions to oppose the French Republic in the French Revolutionary Wars. Various conflicts throughout the century, including the War of the Spanish Succession and the Seven Years' War, saw Great Britain triumph over its rivals to become the preeminent power in Europe. However, Britain's attempts to exert its authority over the Thirteen Colonies became a catalyst for the American Revolution. The 18th century also marked the end of the Polish–Lithuanian Commonwealth as an independent state. Its semi-democratic government system was not robust enough to prevent partition by the neighboring states of Austria, Prussia, and Russia. In West Asia, Nader Shah led Persia in successful military campaigns. The Ottoman Empire experienced a period of peace, taking no part in European wars from 1740 to 1768. As a result, the empire was not exposed to Europe's military improvements during the Seven Years' War. The Ottoman military consequently lagged behind and suffered several defeats against Russia in the second half of the century. In South Asia, the death of Mughal emperor Aurangzeb was followed by the expansion of the Maratha Confederacy and an increasing level of European influence and control in the region. In 1739, Persian emperor Nader Shah invaded and plundered Delhi, the capital of the Mughal Empire. Later, his general Ahmad Shah Durrani scored another victory against the Marathas, the then dominant power in India, in the Third Battle of Panipat in 1761.[8] By the middle of the century, the British East India Company began to conquer eastern India,[9][8] and by the end of the century, the Anglo-Mysore Wars against Tipu Sultan and his father Hyder Ali, led to Company rule over the south.[10][11] In East Asia, the century was marked by the High Qing era, a period characterized by significant cultural and territorial expansion. This period also experienced relative peace and prosperity, allowing for societal growth, increasing literacy rates, flourishing trade, and consolidating imperial power across the vast Qing dynasty's territories. Conversely, the continual seclusion policy of the Tokugawa shogunate also brought a peaceful era called Pax Tokugawa and experienced a flourishment of the arts as well as scientific knowledge and advancements, which were introduced to Japan through the Dutch port of Nagasaki. In Southeast Asia, the Konbaung–Ayutthaya Wars and the Tây Sơn Wars broke out while the Dutch East India Company established increasing levels of control over the Mataram Sultanate. In Africa, the Ethiopian Empire underwent the Zemene Mesafint, a period when the country was ruled by a class of regional noblemen and the emperor was merely a figurehead. The Atlantic slave trade also saw the continued involvement of states such as the Oyo Empire. In Oceania, the European colonization of Australia and New Zealand began during the late half of the century. In the Americas, the United States declared its independence from Great Britain. In 1776, Thomas Jefferson wrote the Declaration of Independence. In 1789, George Washington was inaugurated as the first president. Benjamin Franklin traveled to Europe where he was hailed as an inventor. Examples of his inventions include the lightning rod and bifocal glasses. Túpac Amaru II led an uprising that sought to end Spanish colonial rule in Peru. For a chronological guide, see Timeline of the 18th century. See also: Georgian era Main articles: 1700s, 1710s, 1720s, 1730s, and 1740s Europe at the beginning of the War of the Spanish Succession, 1700 The Battle of Poltava in 1709 turned the Russian Empire into a European power. John Churchill, 1st Duke of Marlborough 1700–1721: Great Northern War between the Russian and Swedish Empires. 1701: Kingdom of Prussia declared under King Frederick I. 1701: The Battle of Feyiase marks the rise of the Ashanti Empire. 1701–1714: The War of the Spanish Succession is fought, involving most of continental Europe.[12] 1702–1715: Camisard rebellion in France. 1703: Saint Petersburg is founded by Peter the Great; it is the Russian capital until 1918. 1703–1711: The Rákóczi uprising against the Habsburg monarchy. 1704: End of Japan's Genroku period. 1704: First Javanese War of Succession.[13] 1706–1713: The War of the Spanish Succession: French troops defeated at the Battle of Ramillies and the Siege of Turin. 1707: Death of Mughal Emperor Aurangzeb leads to the fragmentation of the Mughal Empire. 1707: The Act of Union is passed, merging the Scottish and English Parliaments, thus establishing the Kingdom of Great Britain.[14] 1708: The Company of Merchants of London Trading into the East Indies and English Company Trading to the East Indies merge to form the United Company of Merchants of England Trading to the East Indies. 1708–1709: Famine kills one-third of East Prussia's population. 1709: Foundation of the Hotak Empire. 1709: The Great Frost of 1709 marks the coldest winter in 500 years, contributing to the defeat of Sweden at Poltava. 1710: The world's first copyright legislation, Britain's Statute of Anne, takes effect. 1710–1711: Ottoman Empire fights Russia in the Russo-Turkish War and regains Azov. 1711: Bukhara Khanate dissolves as local begs seize power. 1711–1715: Tuscarora War between British, Dutch, and German settlers and the Tuscarora people of North Carolina. 1713: The Kangxi Emperor acknowledges the full recovery of the Chinese economy since its apex during the Ming. 1714: In Amsterdam, Daniel Gabriel Fahrenheit invents the mercury-in-glass thermometer, which remains the most reliable and accurate thermometer until the electronic era. 1715: The first Jacobite rising breaks out; the British halt the Jacobite advance at the Battle of Sheriffmuir; Battle of Preston. 1716: Establishment of the Sikh Confederacy along the present-day India-Pakistan border. 1716–1718: Austro-Venetian-Turkish War. 1718: The city of New Orleans is founded by the French in North America. 1718–1720: War of the Quadruple Alliance with Spain versus France, Britain, Austria, and the Netherlands. 1718–1730: Tulip period of the Ottoman Empire. 1719: Second Javanese War of Succession.[15] 1720: The South Sea Bubble. 1720–1721: The Great Plague of Marseille. 1720: Qing forces oust Dzungar invaders from Tibet. 1721: The Treaty of Nystad is signed, ending the Great Northern War. 1721: Sack of Shamakhi, massacre of its Shia population by Sunni Lezgins. 1722: Siege of Isfahan results in the handover of Iran to the Hotaki Afghans. 1722–1723: Russo-Persian War. 1722–1725: Controversy over William Wood's halfpence leads to the Drapier's Letters and begins the Irish economic independence from England movement. Mughal emperor Muhammad Shah with the Persian invader Nader Shah. 1723: Slavery is abolished in Russia; Peter the Great converts household slaves into house serfs.[16] 1723–1730: The "Great Disaster", an invasion of Kazakh territories by the Dzungars. 1723–1732: The Qing and the Dzungars fight a series of wars across Qinghai, Dzungaria, and Outer Mongolia, with inconclusive results. 1724: Daniel Gabriel Fahrenheit proposes the Fahrenheit temperature scale. 1725: Austro-Spanish alliance revived. Russia joins in 1726. 1727–1729: Anglo-Spanish War ends inconclusively. 1730: Mahmud I takes over Ottoman Empire after the Patrona Halil revolt, ending the Tulip period. 1730–1760: The First Great Awakening takes place in Great Britain and North America. 1732–1734: Crimean Tatar raids into Russia.[17] 1733–1738: War of the Polish Succession. Qianlong Emperor 1735–1739: Austro-Russo-Turkish War. 1735–1799: The Qianlong Emperor of China oversees a huge expansion in territory. 1738–1756: Famine across the Sahel; half the population of Timbuktu dies.[18] 1737–1738: Hotak Empire ends after the siege of Kandahar by Nader Shah. 1739: Great Britain and Spain fight the War of Jenkins' Ear in the Caribbean. 1739: Nader Shah defeats a pan-Indian army of 300,000 at the Battle of Karnal. Taxation is stopped in Iran for three years. 1739–1740: Nader Shah's Sindh expedition. 1740: George Whitefield brings the First Great Awakening to New England 1740–1741: Famine in Ireland kills 20 percent of the population. 1741–1743: Iran invades Uzbekistan, Khwarazm, Dagestan, and Oman. 1741–1751: Maratha invasions of Bengal. 1740–1748: War of the Austrian Succession. 1742: Marvel's Mill, the first water-powered cotton mill, begins operation in England.[19] 1742: Anders Celsius proposes an inverted form of the centigrade temperature, which is later renamed Celsius in his honor. 1742: Premiere of George Frideric Handel's Messiah. 1743–1746: Another Ottoman-Persian War involves 375,000 men but ultimately ends in a stalemate. The extinction of the Scottish clan system came with the defeat of the clansmen at the Battle of Culloden in 1746.[20] 1744: The First Saudi State is founded by Mohammed Ibn Saud.[21] 1744: Battle of Toulon is fought off the coast of France. 1744–1748: The First Carnatic War is fought between the British, the French, the Marathas, and Mysore in India. 1745: Second Jacobite rising is begun by Charles Edward Stuart in Scotland. 1747: The Durrani Empire is founded by Ahmad Shah Durrani. 1748: The Treaty of Aix-La-Chapelle ends the War of the Austrian Succession and First Carnatic War. 1748–1754: The Second Carnatic War is fought between the British, the French, the Marathas, and Mysore in India. 1750: Peak of the Little Ice Age. Main articles: 1750s, 1760s, 1770s, 1780s, 1790s, and 1800s 1752: The British Empire adopts the Gregorian Calendar, skipping 11 days from 3 September to 13 September. On the calendar, 2 September is followed directly by 14 September. 1754: The Treaty of Pondicherry ends the Second Carnatic War and recognizes Muhammed Ali Khan Wallajah as Nawab of the Carnatic. 1754: King's College is founded by a royal charter of George II of Great Britain.[22] 1754–1763: The French and Indian War, the North American chapter of the Seven Years' War, is fought in colonial North America, mostly by the French and their allies against the English and their allies. 1755: The great Lisbon earthquake destroys most of Portugal's capital and kills up to 100,000. 1755: The Dzungar genocide depopulates much of northern Xinjiang, allowing for Han, Uyghur, Khalkha Mongol, and Manchu colonization. 1755–1763: The Great Upheaval forces transfer of the French Acadian population from Nova Scotia and New Brunswick. 1756–1763: The Seven Years' War is fought among European powers in various theaters around the world. 1756–1763: The Third Carnatic War is fought between the British, the French, and Mysore in India. 1757: British conquest of Bengal. Catherine the Great, Empress of Russia. 1760: George III becomes King of Britain. 1761: Maratha Empire defeated at Battle of Panipat. 1762–1796: Reign of Catherine the Great of Russia. 1763: The Treaty of Paris ends the Seven Years' War and Third Carnatic War. 1764: Dahomey and the Oyo Empire defeat the Ashanti army at the Battle of Atakpamé. 1764: The Mughals are defeated at the Battle of Buxar. 1765: The Stamp Act is introduced into the American colonies by the British Parliament. 1765–1767: The Burmese invade Thailand and utterly destroy Attuthaya. 1765–1769: Burma under Hsinbyushin repels four invasions from Qing China, securing hegemony over the Shan states. 1766: Christian VII becomes king of Denmark. He was king of Denmark to 1808. 1766–1799: Anglo-Mysore Wars. 1767: Taksin expels Burmese invaders and reunites Thailand under an authoritarian regime. 1768–1772: War of the Bar Confederation. 1768–1774: Russo-Turkish War. 1769: Spanish missionaries establish the first of 21 missions in California. 1769–1770: James Cook explores and maps New Zealand and Australia. 1769–1773: The Bengal famine of 1770 kills one-third of the Bengal population. 1769: The French East India Company dissolves, only to be revived in 1785. 1769: French expeditions capture clove plants in Ambon, ending the Dutch East India Company's (VOC) monopoly of the plant.[23] 1770–1771: Famine in Czech lands kills hundreds of thousands. 1771: The Plague Riot in Moscow. 1771: The Kalmyk Khanate dissolves as the territory becomes colonized by Russians. More than a hundred thousand Kalmyks migrate back to Qing Dzungaria. 1772: Gustav III of Sweden stages a coup d'état, becoming almost an absolute monarch. Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers 1772–1779: Maratha Empire fights Britain and Raghunathrao's forces during the First Anglo-Maratha War. 1772–1795: The Partitions of Poland end the Polish–Lithuanian Commonwealth and erase Poland from the map for 123 years. 1773–1775: Pugachev's Rebellion, the largest peasant revolt in Russian history. 1773: East India Company starts operations in Bengal to smuggle opium into China. 1775: Russia imposes a reduction in autonomy on the Zaporizhian Cossacks of Ukraine. 1775–1782: First Anglo-Maratha War. 1775–1783: American Revolutionary War. 1776: Several kongsi republics are founded by Chinese settlers in the island of Borneo. They are some of the first democracies in Asia. 1776–1777: A Spanish-Portuguese War occurs over land in the South American frontiers. 1776: Illuminati founded by Adam Weishaupt. 1776: The United States Declaration of Independence is adopted by the Second Continental Congress in Philadelphia. 1776: Adam Smith publishes The Wealth of Nations. 1778: James Cook becomes the first European to land on the Hawaiian Islands. 1778: Franco-American alliance signed. 1778: Spain acquires its first permanent holding in Africa from the Portuguese, which is administered by the newly-established La Plata Viceroyalty. 1778: Vietnam is reunified for the first time in 200 years by the Tay Son brothers. The Tây Sơn dynasty has been established, terminating the Lê dynasty. 1779–1879: Xhosa Wars between British and Boer settlers and the Xhosas in the South African Republic. 1779–1783: Britain loses several islands and colonial outposts all over the world to the combined Franco-Spanish navy. 1779: Iran enters yet another period of conflict and civil war after the prosperous reign of Karim Khan Zand. 1780: Outbreak of the indigenous rebellion against Spanish colonization led by Túpac Amaru II in Peru. 1781: The city of Los Angeles is founded by Spanish settlers.George Washington 1781–1785: Serfdom is abolished in the Austrian monarchy (first step; second step in 1848). 1782: The Thonburi Kingdom of Thailand is dissolved after a palace coup. 1783: The Treaty of Paris formally ends the American Revolutionary War. 1783: Russian annexation of Crimea. 1785–1791: Imam Sheikh Mansur, a Chechen warrior and Muslim mystic, leads a coalition of Muslim Caucasian tribes from throughout the Caucasus in a holy war against Russian settlers and military bases in the Caucasus, as well as against local traditionalists, who followed the traditional customs and common law (Adat) rather than the theocratic Sharia.[24] 1785–1795: The Northwest Indian War is fought between the United States and Native Americans. 1785–1787: The Maratha–Mysore Wars concludes with an exchange of territories in the Deccan. 1786–1787: Wolfgang Amadeus Mozart premieres The Marriage of Figaro and Don Giovanni. 1787: The Tuareg occupy Timbuktu until the 19th century. 1787–1792: Russo-Turkish War. 1788: First Fleet arrives in Australia 1788–1790: Russo-Swedish War (1788–1790). 1788: Dutch Geert Adriaans Boomgaard (1788–1899) would become the first generally accepted validated case of a supercentenarian on record.[25][26] Declaration of the Rights of Man and of the Citizen 1788–1789: A Qing attempt to reinstall an exiled Vietnamese king in northern Vietnam ends in disaster. 1789: George Washington is elected the first President of the United States; he serves until 1797. 1789: Quang Trung defeats the Qing army. 1789–1799: French Revolution. 1789: The Liège Revolution. 1789: The Brabant Revolution. 1789: The Inconfidência Mineira, an unsuccessful separatist movement in central Brazil led by Tiradentes 1791: Suppression of the Liège Revolution by Austrian forces and re-establishment of the Prince-Bishopric of Liège. 1791–1795: George Vancouver explores the world during the Vancouver Expedition. 1791–1804: The Haitian Revolution. 1791: Mozart premieres The Magic Flute. 1792–1802: The French Revolutionary Wars lead into the Napoleonic Wars, which last from 1803–1815. 1792: The New York Stock & Exchange Board is founded. 1792: Polish–Russian War of 1792. 1792: Margaret Ann Neve (1792–1903) would become the first recorded female supercentenarian to reach the age of 110.[27][28] 1793: Upper Canada bans slavery. 1793: The largest yellow fever epidemic in American history kills as many as 5,000 people in Philadelphia, roughly 10% of the population.[29] 1793–1796: Revolt in the Vendée against the French Republic at the time of the Revolution. 1794–1816: The Hawkesbury and Nepean Wars, which were a series of incidents between settlers and New South Wales Corps and the Aboriginal Australian clans of the Hawkesbury river in Sydney, Australia. 1795: The Marseillaise is officially adopted as the French national anthem.Napoleon at the Bridge of the Arcole 1795: The Battle of Nu'uanu in the final days of King Kamehameha I's wars to unify the Hawaiian Islands. 1795–1796: Iran invades and devastates Georgia, prompting Russia to intervene and march on Tehran. 1796: Edward Jenner administers the first smallpox vaccination; smallpox killed an estimated 400,000 Europeans each year during the 18th century, including five reigning monarchs.[30] 1796: War of the First Coalition: The Battle of Montenotte marks Napoleon Bonaparte's first victory as an army commander. 1796: The British eject the Dutch from Ceylon and South Africa. 1796–1804: The White Lotus Rebellion against the Manchu dynasty in China. 1797: John Adams is elected the second President of the United States; he serves until 1801. 1798: The Irish Rebellion fails to overthrow British rule in Ireland. 1798–1800: The Quasi-War is fought between the United States and France. 1799: Dutch East India Company is dissolved. 1799: Austro-Russian forces under Alexander Suvorov liberates much of Italy and Switzerland from French occupation. 1799: Coup of 18 Brumaire - Napoleon's coup d'etat brings the end of the French Revolution. 1799: Death of the Qianlong Emperor after 60 years of rule over China. His favorite official, Heshen, is ordered to commit suicide. 1800: On 1 January, the bankrupt VOC is formally dissolved and the nationalized Dutch East Indies are established.[31] Main articles: Timeline of historic inventions § 18th century, and Timeline of scientific discoveries § 18th century The spinning jenny 1709: The first piano was built by Bartolomeo Cristofori 1711: Tuning fork was invented by John Shore 1712: Steam engine invented by Thomas Newcomen 1714: Mercury thermometer by Daniel Gabriel Fahrenheit 1717: Diving bell was successfully tested by Edmond Halley, sustainable to a depth of 55 ft c. 1730: Octant navigational tool was developed by John Hadley in England, and Thomas Godfrey in America 1733: Flying shuttle invented by John Kay 1736: Europeans encountered rubber – the discovery was made by Charles Marie de La Condamine while on expedition in South America. It was named in 1770 by Joseph Priestley c. 1740: Modern steel was developed by Benjamin Huntsman 1741: Vitus Bering discovers Alaska 1745: Leyden jar invented by Ewald Georg von Kleist was the first electrical capacitor 1751: Jacques de Vaucanson perfects the first precision lathe 1752: Lightning rod invented by Benjamin Franklin 1753: The first clock to be built in the New World (North America) was invented by Benjamin Banneker. 1755: The tallest wooden Bodhisattva statue in the world is erected at Puning Temple, Chengde, China. 1764: Spinning jenny created by James Hargreaves brought on the Industrial Revolution 1765: James Watt enhances Newcomen's steam engine, allowing new steel technologies 1761: The problem of longitude was finally resolved by the fourth chronometer of John Harrison 1763: Thomas Bayes publishes first version of Bayes' theorem, paving the way for Bayesian probability 1768–1779: James Cook mapped the boundaries of the Pacific Ocean and discovered many Pacific Islands 1774: Joseph Priestley discovers "dephlogisticated air", oxygen The Chinese Putuo Zongcheng Temple of Chengde, completed in 1771, during the reign of the Qianlong Emperor. 1775: Joseph Priestley's first synthesis of "phlogisticated nitrous air", nitrous oxide, "laughing gas" 1776: First improved steam engines installed by James Watt 1776: Steamboat invented by Claude de Jouffroy 1777: Circular saw invented by Samuel Miller 1779: Photosynthesis was first discovered by Jan Ingenhousz 1781: William Herschel announces discovery of Uranus 1784: Bifocals invented by Benjamin Franklin 1784: Argand lamp invented by Aimé Argand[32] 1785: Power loom invented by Edmund Cartwright 1785: Automatic flour mill invented by Oliver Evans 1786: Threshing machine invented by Andrew Meikle 1787: Jacques Charles discovers Charles's law 1789: Antoine Lavoisier discovers the law of conservation of mass, the basis for chemistry, and begins modern chemistry 1798: Edward Jenner publishes a treatise about smallpox vaccination 1798: The Lithographic printing process invented by Alois Senefelder[33] 1799: Rosetta Stone discovered by Napoleon's troops Main articles: 18th century in literature and 18th century in philosophy 1703: The Love Suicides at Sonezaki by Chikamatsu first performed 1704–1717: One Thousand and One Nights translated into French by Antoine Galland. The work becomes immensely popular throughout Europe. 1704: A Tale of a Tub by Jonathan Swift first published 1712: The Rape of the Lock by Alexander Pope (publication of first version) 1719: Robinson Crusoe by Daniel Defoe 1725: The New Science by Giambattista Vico 1726: Gulliver's Travels by Jonathan Swift 1728: The Dunciad by Alexander Pope (publication of first version) 1744: A Little Pretty Pocket-Book becomes one of the first books marketed for children 1748: Chushingura (The Treasury of Loyal Retainers), popular Japanese puppet play, composed 1748: Clarissa; or, The History of a Young Lady by Samuel Richardson 1749: The History of Tom Jones, a Foundling by Henry Fielding 1751: Elegy Written in a Country Churchyard by Thomas Gray published 1751–1785: The French Encyclopédie 1755: A Dictionary of the English Language by Samuel Johnson 1758: Arithmetika Horvatzka by Mihalj Šilobod Bolšić 1759: Candide by Voltaire 1759: The Theory of Moral Sentiments by Adam Smith 1759–1767: Tristram Shandy by Laurence Sterne 1762: Emile: or, On Education by Jean-Jacques Rousseau 1762: The Social Contract, Or Principles of Political Right by Jean-Jacques Rousseau 1774: The Sorrows of Young Werther by Goethe first published 1776: Ugetsu Monogatari (Tales of Moonlight and Rain) by Ueda Akinari 1776: The Wealth of Nations, foundation of the modern theory of economy, was published by Adam Smith 1776–1789: The History of the Decline and Fall of the Roman Empire was published by Edward Gibbon 1779: Amazing Grace published by John Newton 1779–1782: Lives of the Most Eminent English Poets by Samuel Johnson 1781: Critique of Pure Reason by Immanuel Kant (publication of first edition) 1781: The Robbers by Friedrich Schiller first published 1782: Les Liaisons dangereuses by Pierre Choderlos de Laclos 1786: Poems, Chiefly in the Scottish Dialect by Robert Burns 1787–1788: The Federalist Papers by Alexander Hamilton, James Madison, and John Jay 1788: Critique of Practical Reason by Immanuel Kant 1789: Songs of Innocence by William Blake 1789: The Interesting Narrative of the Life of Olaudah Equiano by Olaudah Equiano 1790: Journey from St. Petersburg to Moscow by Alexander Rad