

---

---

# A

---

---

**aa.** A Hawaiian term for black lava flow, which has solidified into a blocky mass; *e.g.*, Mt. Etna in Italy.

**abandoned cliff.** A sea cliff that is no longer under the influence of sea wave due to a relative drop of sea level, or progradation at the cliff base.

**abc soil.** A soil with well developed profile, including A, B, and C horizons.

**abc system.** A procedure for correcting seismic data for the effect of irregular weathering thickness.

**ablation.** 1. The process of wearing away of solid ice from a glacier. It includes surface, internal and basal melting; sublimation, and calving of icebergs. 2. Removal of molten surface layers of meteorites and tektites by direct vaporization during the passage through the atmosphere.

**aborigines.** The earliest known inhabitants of a country. Nowadays the word is applied particularly to the native people of Australia. The Australian aborigines probably came from south-east Asia about 40,000 years ago. When white men first came to Australia in 1788 there were about 300,000 of them, spread all over the continent. They formerly lived by hunting and gathering, using boomerangs to kill birds and animals, and were skilful at finding food in a very

difficult environment. The early settlers treated the aborigines very badly, driving them from their land and killing many of them. Others died of starvation and disease. From the mid-1800s efforts were made to protect them, and reserves were set aside for their use.

**abortion rate.** A measure of the frequency of abortion in a population in a given period, normally a particular year. Abortions may be related to the total population, or to the number of women of reproductive age and may be further specified by age, parity or other characteristics. The term is used with a variety of definitions. Calculation of a rate which is closely related to fertility rates is particularly useful when attempting to measure the significance of induced abortion. This is usually only to be recommended in cases where the legal possibilities of employing it are extensive, since it is frequently misleading to try to quantify illegal abortions.

**absentee landowner.** A farm owner who lives in a town and not on his farm, leaving a manager to run his estate though the owner will collect all the profits.

**absolute stability.** A meteorological term referring to the condition of the atmosphere in which the

## 2 abstraction

environmental lapse rate is less than the saturated adiabatic lapse rate. If air pockets are forced to rise, they will lose heat adiabatically at a rate such that they will be cooler than the surrounding air. Thus if upward movement is terminated, the air pocket will again sink to lower levels. The absence of such forced ascent there will be no upward movement of the air pockets in the first instance, since they would immediately become cooler and heavier than the surrounding air.

**abstraction.** A term used referring to the process by which a stream, by the lateral extension of its valley, takes over the catchments of neighboring streams, thus leading to an overall reduction in number of streams. It usually occurs at the upper end of a drainage line.

**abtragung.** The degradation not resulting directly from stream erosion.

**abundance.** 1. The relative amount (% by weight) of a substance in the earth's crust, including the hydrosphere and atmosphere. The abundance of some of the elements in the earth's crust is :

### **Abundance, % by weight**

Oxygen,	49.2
Silicon,	25.7
Aluminium,	7.5
Iron,	4.7
Sodium,	0.6
Calcium,	3.4
Potassium,	2.4
Magnesium,	1.9
Hydrogen,	0.9
Titanium,	0.6
Chlorine,	0.2
All others,	0.9

It may be noted that on univer-

sal scale, most abundant element is hydrogen. 2. Content of particular isotope in given sample of the natural element, expressed as percentage, e.g., 99.76% of oxygen-16 in natural oxygen. Also known as abundance ratio.

**abyssal.** Pertaining to the zones of greatest depth at which water has more or less uniform temperature, also pertaining to the organisms of that environment.

**abyssal hill.** A common low-relief feature of the ocean floor, usually found seaward of abyssal plains and in basins isolated by ridges, rises, or trenches.

**abyssal plain.** Flat or nearly level area in deepest portions of ocean based, usually found at the base of a continental rise; formed by the deposition of turbidity-current and pelagic sediments that obscure the preexisting topography.

**abyssopelagic.** Pertaining to that portion of the ocean which lies below depths of 3,700 meters, and to ocean-derived sediments found at that depth.

**accessory minerals.** The minerals which may be present or absent in a crystalline rock without prejudice to the identification of that rock, and are thus contrasted with the essential minerals, on which identification is based.

**accordant drainage.** A drainage pattern in which the streams are mainly guided by the underlying geological structure.

**accordant summits.** A series or hilltops and plateau summits rising to approximately same height.

**accretion vein.** A type of vein formed by the repeated filling of channels followed by their opening because of the development of

fractures in the zone undergoing mineralization.

**accumulation area.** The part of a glacier of snowfield in which during a year's time, the mass balance is positive *i.e.*, accumulation exceeds ablation.

**Acheulian.** Stratigraphic stage name for European Lower Pleistocene; does not contain the chondrules that are found in chondrites.

**acid clay.** A variety of clay that gives off hydrogen ions when dissolved or suspended in water; it is used in the treatment of alkaline water and effluents.

**acid rain.** Rainfall occurring when atmospheric water vapour combines with oxides of sulphur and nitrogen. In relatively unpolluted atmosphere, acidity of rainwater is mainly due to dissolved carbon dioxide. The pH of rainwater in equilibrium with carbon dioxide is in the range of 5.6-5.7. The origin of the acid rain is attributed primarily to the presence of sulphates, sulphites, and nitrates in the atmosphere. The pollutants result from the burning of fossil fuels, especially in thermal power stations, but they can also be caused by factories and car exhausts. Once they are in the atmosphere, pollutants can be washed down to earth by rainfall in the form of sulphuric and nitric acids. The oxides and other species of nitrogen and sulphur can be incorporated in to liquid water droplets in several different ways. They may be soluble enough to dissolve in water, may attach through diffusional processes, may be incorporated through impaction and collision; and acid

aerosol species may act as nuclei for water droplet formation. The acids formed in the rainwater are although dilute, but they are powerful enough to poison lakes and rivers, leach soil, rocks, and pipes, damage crops, kill trees and speed up the erosion of buildings. Most industrial countries now have strict regulations to control the amount of pollution which is sent into the atmosphere.

**acid rock.** An igneous rock containing 10% or more free quartz, *e.g.*, granite and rhyolite; former definition; a rock containing more than 66% silica.

**accounting demographic.** The process of constructing tables that show how populations, classified into a variety of states, change over time. These tables are known as demographic accounts. The states used in demographic accounting must include all those in which people can originate and all those to which people can move over a specified period. Origin states include birth as well as existence in a region. Destination states cover, at a minimum, survival in a region and death in a region. Both origins and destinations must include a rest of the world state in order to complete the account. These minimum origin and destination states can be further broken down into a variety of different socioeconomic categories such as sex, ages, race, occupation, educational grade and many others depending on the purpose of the demographic analysis. Demographic accounts differ according to their treatment of time (open or closed accounts), and because of differences in the

#### 4 acritarch

nature of the flows incorporated (transition or movement accounts).

**acritarch.** A group of organic microfossils of unknown biological affinity, generally characterized by a smooth or spiny texture. The presence of the remains of these organisms in sedimentary rocks of marine origin indicates they were planktonic. Acritarchs range from the Precambrian to the present, but are most abundant in the Precambrian and early Paleozoic.

**acrobatholitic.** A stage in the batholitic erosion where summits of cupolas and stocks are exposed without any exposure of the surface separating the barren interior of the batholith from the mineralized upper part.

**active fault.** Any type of fault in which there is recurrent movement in the form of continuous creep, small, abrupt displacements, or seismic activity.

**active layer.** The part of the soil which is within the supra-permafrost layer and which usually freezes in winter and thaws in summer. Also known as frost zone.

**active permafrost.** Permanently frozen surface which after thawing by artificial means, reverts to permafrost under normal climatic conditions.

**active volcano.** A volcano capable of venting lava, pyroclastic material, and/or gases.

**adaptive radiation.** Process of natural selection whereby lineages separate physically and genetically within a short interval of geologic time.

**adit.** A type of mining in which the

miners dig in horizontally from the side of a valley. It was used extensively in the coal mines of South Wales. It is cheaper than having to sink a deep shaft, but can be used only when erosion has exposed the coal seam.

**adobe.** Mud which has been dried in the sun and used as bricks. Adobe bricks are used in the southern United States and Mexico, and also in Argentina and other parts of South America. Similar mud bricks, often containing straw to make them stronger are used in many parts of Africa. Heavy rain will gradually soften them, and so adobe houses tend not to last for a long time.

**adriatic sea.** An arm of the Mediterranean Sea, between Italy, Yugoslavia and Albania. Covering 155,400 sq km, it is a major tourist area.

**advection.** 1. Horizontal transport of air or atmospheric properties within the earth's atmosphere. 2. The horizontal or vertical movement of sea water as a current. 3. Lateral mass movement of material in the earth's mantle.

**adventive cone.** A volcanic cone which is on the flank of and subsidiary to a larger volcano. Also known as parasitic cone.

**aerogeology.** The geologic study of the earth features by means of aerial observations including aerial photography.

**aerolite.** A class of meteorite comprising of silicate material. Also known as stony meteorite.

**aerosols.** Liquid particles with or without particulates, that are larger than molecules, but small enough to remain suspended and dispersed in a gas for a period of

time. It can be regarded as a gas containing particles with a very low settling velocity. Thus, atmosphere can be regarded as an aerosol since it always has some particulate matter of small size, for example, in a smoke-filled room there may be 1,000,000 to 10,000,000 particles per  $\text{cm}^3$ . Combustion products from cars, industry and home heating represent by far the biggest source of air pollution caused by man's activities. Of the substances released into the atmosphere in this way, over 100 have been identified as contaminants. The proportion of organic compounds is much higher, which includes aromatic (unsaturated as well as annular) hydrocarbons, phenols, acids, bases, and many other compounds. Due to photochemical and other reactions, between contaminants upon their arrival in the earth's atmosphere, new compounds can also be formed. Among the atmospheric pollutants, substances in suspension consisting of solid and/or liquid particles are known as aerosols. These emanate either from condensation processes, by which molecular masses combine to form bigger particles (*e.g.*, cloud formation from liquid particles), or from dispersion processes, by which coarse material is split into finer particles (*e.g.*, flue dust from coal dust combustion). An essential feature of aerosols is the size of their particles. Coarse dust and soot, flue dust and the like, whose particles are over 10 micrometre in size, settle very quickly from the atmosphere under the force of gravity. Finer particles, on the other hand, with a diameter of

less than 5 micrometre, remain suspended in the atmosphere. In this case the force of gravity is outweighed by the Brownian molecular movement in the atmosphere. For particles so small, the force of gravity is overruled by Brownian movement, or the random motion of particles caused by their collision with molecules in the surrounding air. The velocity of aerosol particles due to Brownian movement is greater than their rate of vertical descent. Consequently, aerosols can be distributed by air currents almost like gases. Owing to their effect as condensation nuclei, on which water vapor can be deposited, they also affect the formation of mist or fog.

**affine deformation.** A type of deformation involving slipping of very thin layers against each other in such a way that each layer moves equally with respect to its neighbor layer; generally does not lead to folding.

**afforestation.** The planting of trees, generally in an area which has not had trees in the past. For example, the Forestry Commission has planted trees on moorland areas of Wales and Scotland, and the Soviet government has planted millions of trees on the dry steppes of Kazakhstan. Trees may be planted in order to produce wood or pulp some time in the future, or as windbreaks, or to hold the soil together and reduce soil erosion. In some Third World countries they are now being planted to provide firewood.

**Africa.** The second largest continent after Asia. About two-thirds of Africa is in the tropics and the