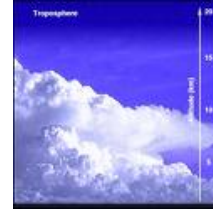


Atmosphere



Source: http://en.wikipedia.org/wiki/File:Top_of_Atmosphere.jpg

Troposphere



Source: <http://atschool.eduweb.co.uk/kingwoc/departments/geography/nottingham/atmosphere/pages/troposphere.html>

This term:

- layer of gases that may surround a material body of sufficient mass,
- retained by the gravity of the body and for a longer duration if gravity is high and temperature is low

This atmospheric layer:

- lowest portion of the atmosphere
- contains approximately 75% of the atmosphere's mass and almost all of its water vapor and aerosols
- constantly convecting air

Mesosphere



Source: http://www.astrocappella.com/background/aim_background.shtml

Thermosphere



Source: http://www.terradaily.com/reports/Climate_Change_Affecting_Outermost_Atmosphere_Of_Earth_999.html

This atmospheric layer:

- directly above the stratosphere and directly below the thermosphere
- located from about 50 km to 80-90 km altitude above the Earth's surface
- temperature decreases with increasing altitude due to decreasing solar heating and increasing cooling by CO₂ radiative emission

This atmospheric layer:

- directly above the mesosphere and directly below the exosphere
- within this layer, ultraviolet radiation causes ionization
- begins about 90 km above Earth's surface

Ionosphere



Source: <http://www.sunearthplan.net/5/ionosphere-atmosphere>

This atmospheric layer:

- is in the uppermost part of the atmosphere
- ionized by solar radiation
- plays an important part in atmospheric electricity and forms the inner edge of the magnetosphere
- influences radio propagation to distant places on the Earth
- located in the thermosphere

Exosphere

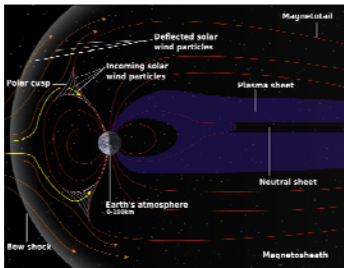


Source: http://www.windows.ucar.edu/tour/link=/earth_science/images/atm_exo-big_jpg_image.html

This atmospheric layer:

- uppermost layer of the atmosphere
- main gases within are the lightest gases, including hydrogen, with some helium, carbon dioxide, and atomic oxygen near the exobase
- last layer before space

Magnetosphere



Source: http://en.wikipedia.org/wiki/File:Structure_of_the_magnetosphere_mod.svg

This atmospheric layer:

- highly magnetized region around and possessed by an astronomical object
- region in space whose shape is determined by the extent of Earth's internal magnetic field, the solar wind plasma, and the interplanetary magnetic field
- distinctly non-spherical

Barometer

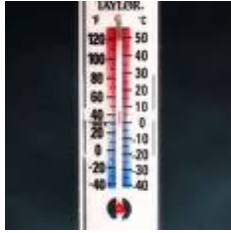


Source: <http://www.accumall.com/Weather-Instruments/Barometers/Admiral-Barometer.html>

This device:

- is used to measure atmospheric pressure

Thermometer



Source: <http://innovationcharterschool.wikidot.com/mss:king-weather-tools>

This device:

- is used to measure temperature

Meteorology

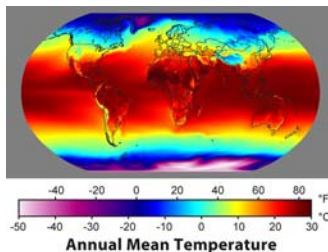


Source: <http://www.black-collegian.com/career/career-reports/meteorology2006-2nd.shtml>

This science:

- study of the atmosphere that focuses on weather processes and forecasting

Climatology

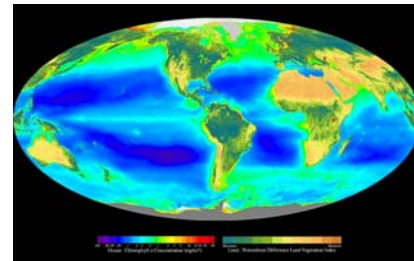


Source: http://en.wikipedia.org/wiki/File:Annual_Average_Temperature_Map.jpg

This science:

- study of weather conditions averaged over a period of time

Biosphere

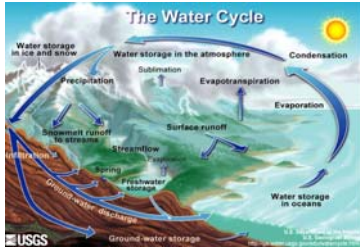


Source: http://en.wikipedia.org/wiki/File:Seawifs_global_biosphere.jpg

This sphere:

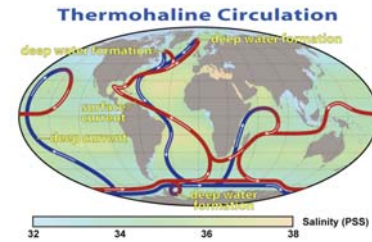
- broadest level of ecological study
- global sum of all ecosystems integrating all living beings and their relationships, interaction with the elements of the lithosphere, hydrosphere, and atmosphere

Hydrosphere



Source: http://en.wikipedia.org/wiki/File:Water_cycle.png

Oceanography



Source: http://en.wikipedia.org/wiki/File:Thermohaline_Circulation_2.png

This sphere:

- combined mass of water found on, under, and over the surface of a planet

This science:

- study of marine organisms and ecosystem dynamics, ocean currents, waves, and geophysical fluid dynamics, plate tectonics and the geology of the sea floor, and fluxes of various chemical substances and physical properties within the ocean and across its boundaries

Limnology



Source: <http://www.umb.no/?viewID=13111>

Cryosphere



Source: http://www.uen.org/utahlink/tours/tourElement.cgi?element_id=32966&tour_id=17182&category_id=27175

This science:

- study of inland waters (running and standing waters, both fresh and saline), including their biological, physical, chemical, geological and hydrological aspects
- includes the study of (natural and man-made) lakes and ponds, rivers and streams, wetlands and groundwater

This sphere:

- portions of Earth's surface where water is solid, includes sea ice, lake ice, river ice, snow cover, glaciers, ice caps and ice sheets, and frozen ground
- integral part of global climate system with important linkages and feedbacks generated through its influence on surface energy and moisture fluxes, clouds, precipitation, hydrology, and atmospheric and oceanic circulation

Glaciology



Source: <http://en.wikipedia.org/wiki/File:Glacier.zermatt.arp.750pix.jpg>

Geography



Source: <http://en.wikipedia.org/wiki/File:World-map-2004-cia-factbook-large-1.7m-whitespace-removed.jpg>

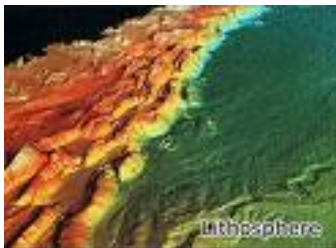
This science:

- study of glaciers, ice, and natural phenomena that involve ice

This discipline:

- study of the Earth and its lands, features, inhabitants, and phenomena

Lithosphere



Source: <http://www.kidsgeo.com/geology-for-kids/0001-the-lithosphere.php>

Crust



Source: <http://www.answersingenesis.org/articles/nab/catastrophic-plate-tectonics>

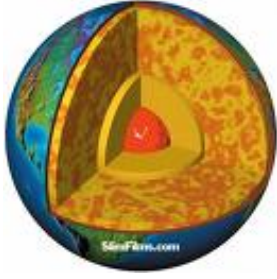
This Earth layer:

- solid outermost shell
- includes the crust and the uppermost mantle
- lies above the asthenosphere

This Earth layer:

- outermost solid shell
- part of the lithosphere
- composed of a great variety of igneous, metamorphic, and sedimentary rocks

Inner Core



Source: <http://www.slimfilms.com/naturalpage.html>

Pedosphere



Source: <http://earthscienceinformation.blogspot.com/>

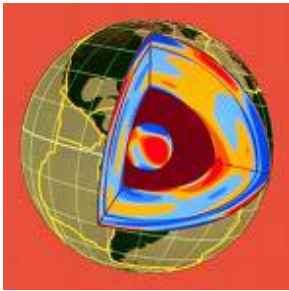
This Earth layer:

- innermost as detected by seismological studies
- primarily solid sphere about 1,220 km in radius
- likely consists of an iron-nickel alloy
- may be hotter than the Sun's surface

This sphere:

- outermost layer of the Earth that is composed of soil and subject to soil formation processes
- exists at the interface of the lithosphere, atmosphere, hydrosphere and biosphere

Seismology



Source: <http://www.seismology.harvard.edu/projects/3D/>

Cartography



Source: <http://www.city-data.com/forum/tucson/196341-sahuarita-commute.html>

This science:

- study of earthquakes and the propagation of elastic waves through Earth
- studies of earthquake effects, such as tsunamis as well as diverse seismic sources such as volcanic, tectonic, oceanic, atmospheric, and artificial processes

This discipline:

- study and practice of making representations of the Earth on a flat surface

Sedimentology

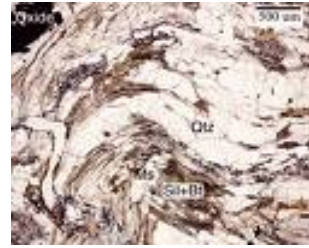


Source: http://en.wikipedia.org/wiki/File:Triassic_Utah.JPG

This science:

- encompasses the study of modern sediments such as sand, silt and clay, and understanding the processes that deposit them
- compares observations to studies of ancient sedimentary rocks and sedimentary structures

Petrology

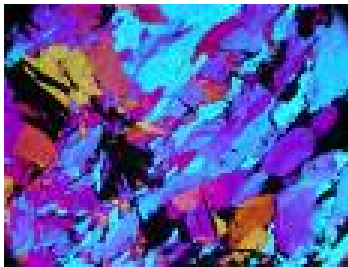


Source: http://www.facstaff.bucknell.edu/cdaniel/cgd_WebSite/RinconPage/RRPetrologyPg.html

This science:

- study of rocks, and the conditions in which they form

Mineralogy



Source: http://www.geo.arizona.edu/~mdbarton/MDB_Teaching.html

This science:

- study of the chemistry, crystal structure, and physical, including optical, properties of minerals

Speleology



Source: <http://getahike.wordpress.com/2007/10/07/kartchner-caverns-call-to-me/>

This science:

- study of caves and other karst features, their make-up, structure, physical properties, history, life forms, and the processes by which they form and change over time

Volcanology



Source: <http://kilauealavaflowmount.wordpress.com/2008/03/17/hello-world/>

Life



Source: <http://www.livelifewell.nsw.gov.au/>

This science:

- study of volcanoes, lava, magma, and related geological and geophysical phenomena

This term:

- process that distinguishes organisms from non-living objects
- organisms are capable of growth and reproduction, some can communicate and many can adapt to their environment through changes originating internally
- takes energy from the environment and releases it in alternate forms

Water



Source: http://en.wikipedia.org/wiki/File:Iceberg_with_hole_near_sanderson_hope_2007-07-28_2.jpg

Chronology



Source: http://goeasteurope.about.com/od/czechrepublic/ss/oldtownprague_2.htm

This term:

- common chemical substance that is essential for the survival of all known forms of life
- covers about 71% of Earth's surface

This science :

- study of locating and resolution of temporal sequence of past events in time
- arrangement of events in their occurrence order

Paleontology



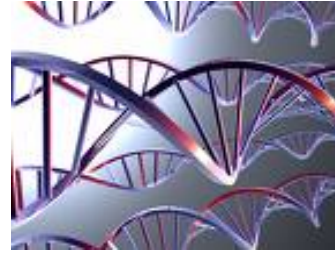
Source:

http://commons.wikimedia.org/wiki/File:Museo_di_Storia_Naturale_di_Firenze_-_paleontology.JPG

This science:

- study of prehistoric life, including organisms' evolution and interactions with each other and their environments
- tries to explain causes rather than conduct experiments to observe effects

Biochemistry

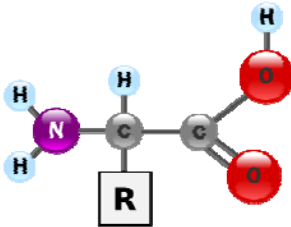


Source: <http://serc.carleton.edu/cismi/biochemistry/>

This science:

- study of the chemical processes in living organisms
- deals with the structure and function of cellular components, such as proteins, carbohydrates, lipids, nucleic acids, and other biomolecules

Amino Acid

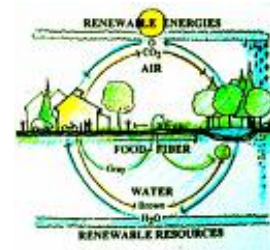


Source: <http://en.wikipedia.org/wiki/File:AminoAcidball.svg>

This term:

- critical to life
- have a variety of roles in metabolism
- building blocks of proteins
- important in nutrition

Ecology



Source:

<http://www.arch.wsu.edu/09%20publications/sustain/modlsust.htm>

This science:

- study of the distribution and abundance of life and the interactions between organisms and their natural environment

Ecosystem



Source: http://en.wikipedia.org/wiki/File:Nwhi_-_French_Frigate_Shoals_reef_-_many_fish.jpg

This term:

- natural unit consisting of all plants, animals and micro-organisms (biotic factors) in an area functioning together with all of the non-living physical (abiotic) factors of the environment

Archaeology



Source: http://en.wikipedia.org/wiki/File:Mohenjodaro_Sindh.jpeg

This science:

- study of human cultures through the recovery, documentation, analysis, and interpretation of material remains and environmental data, including architecture, artifacts, features, biofacts, and landscapes

Hydrology



Source:
http://en.wikipedia.org/wiki/File:Land_ocean_ice_cloud_1024.jpg

This science:

- study of the movement, distribution, and quality of water throughout the Earth, and thus addresses both the hydrologic cycle and water resources

Geomorphology



Source: http://en.wikipedia.org/wiki/File:Delicate_Arch_LaSalle.jpg

This science:

- study of landforms and the processes that shape them

Weather



Source:

<http://www.metoffice.gov.uk/education/secondary/students/forecasting.html>

Geodesy



Source: http://en.wikipedia.org/wiki/File:Geodetic_Control_Mark.jpg

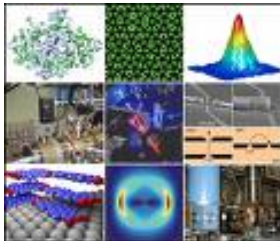
This term:

- set of all the phenomena occurring in a given atmosphere at a given time
- phenomena lie in the hydrosphere and troposphere
- refers to current activity, as opposed to the term climate, which refers to the average atmospheric conditions over longer periods of time

This science:

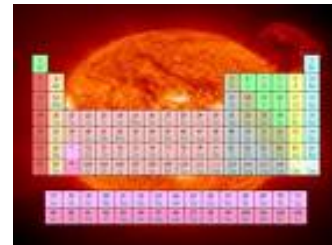
- study of the measurement and representation of the Earth, including its gravitational field, in a three-dimensional time-varying space, geodynamical phenomena such as crustal motion, tides, and polar motion
- uses global and national control networks, using space and terrestrial techniques while relying on data and coordinate systems

Physics



Source: <http://www.msc.physics.uni-stuttgart.de/>

Chemistry



Source: <http://www.success.co.il/knowledge/Map/Pillar3-Matter-and-Energy.html>

This science:

- study of energy, force, and spacetime and all that derives from these, such as mass, charge, matter, and its motion
- general analysis of nature, conducted in order to understand how the world and universe behave

This science:

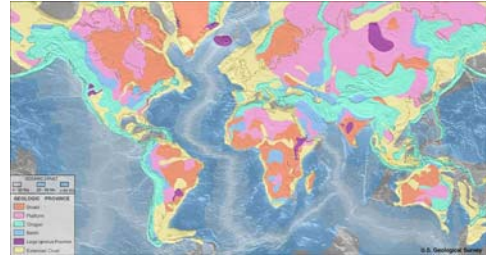
- study of the composition, structure, and properties of matter, including atoms, molecules, crystals and other aggregates of matter

Technology



Source: <http://www.fotolia.com/id/5070222>

Geology



Source: http://en.wikipedia.org/wiki/File:World_geologic_provinces.jpg

This term:

- concept that deals with an animal species' usage and knowledge of tools and crafts, and how it affects an animal species' ability to control and adapt to its environment
- can refer to material objects of use to humanity, such as machines, hardware or utensils, but can also encompass broader themes, including systems, methods of organization, and techniques

This science:

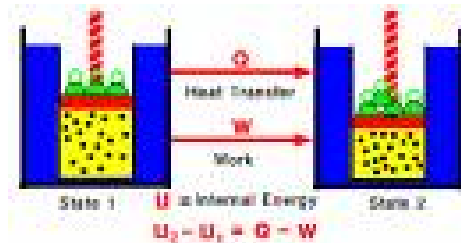
- study of the solid and liquid matter that constitutes Earth
- encompasses composition, structure, physical properties, dynamics, and history of Earth materials, and the processes by which they are formed, moved, and changed

Mathematics



Source: <http://technicalstudies.youngester.com/2008/05/mathematics-in-photos.html>

Thermodynamics



Source: <http://www.astrosciences.info/Ergodynamics.htm>

This science:

- study of such concepts as quantity, structure, space, and change
- seeks patterns in numbers, science, and imaginary abstractions
- forms new conjectures by rigorous deduction from axioms and definitions
- uses abstraction and logical reasoning
- evolved from counting, calculation, measurement, and the systematic study of the shapes and motions of physical objects

This science:

- study of the conversion of heat energy into mechanical, chemical, and electrical energy
- relation to macroscopic variables such as temperature, pressure, and volume

Earth's Spheres Card Data Set #1 Color: maroon

A	B	A	B	A	B	A	B
Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)
1	W	14	GG	27	DD	40	PP
2	I	15	R	28	XX	41	S
3	Z	16	TT	29	H	42	HH
4	LL	17	KK	30	BB	43	SS
5	RR	18	J	31	NN	44	M
6	A	19	OO	32	X	45	E
7	YY	20	V	33	F	46	VV
8	CC	21	U	34	O	47	P
9	FF	22	K	35	EE	48	ZZ
10	Q	23	II	36	WW	49	B
11	D	24	QQ	37	L	50	Y
12	UU	25	N	38	JJ	51	AA
13	C	26	G	39	T	52	MM

Earth's Spheres Card Data Set #2 Color: yellow

A	B	A	B	A	B	A	B
Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)
1	G	14	T	27	V	40	DD
2	FF	15	H	28	II	41	MM
3	S	16	QQ	29	B	42	KK
4	RR	17	I	30	N	43	X
5	D	18	PP	31	BB	44	UU
6	VV	19	HH	32	XX	45	L
7	P	20	U	33	W	46	Y
8	ZZ	21	CC	34	K	47	LL
9	R	22	O	35	JJ	48	Z
10	F	23	C	36	NN	49	A
11	EE	24	WW	37	E	50	AA
12	SS	25	OO	38	TT	51	YY
13	GG	26	J	39	Q	52	M

Earth's Spheres Card Data Set #3 Color: tan

A	B	A	B	A	B	A	B
Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)
1	S	14	O	27	BB	40	UU
2	G	15	JJ	28	W	41	Q
3	R	16	NN	29	M	42	I
4	FF	17	F	30	LL	43	HH
5	L	18	T	31	XX	44	PP
6	N	19	EE	32	ZZ	45	H
7	KK	20	SS	33	A	46	R
8	MM	21	J	34	Y	47	GG
9	X	22	P	35	Z	48	QQ
10	AA	23	OO	36	YY	49	U
11	B	24	II	37	V	50	E
12	WW	25	VV	38	CC	51	TT
13	K	26	C	39	D	52	DD

Earth's Spheres Card Data Set #4 Color: green

A	B	A	B	A	B	A	B
Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)
1	D	14	O	27	Z	40	H
2	V	15	K	28	XX	41	G
3	CC	16	LL	29	I	42	FF
4	SS	17	X	30	Q	43	S
5	DD	18	B	31	HH	44	PP
6	E	19	VV	32	NN	45	P
7	RR	20	YY	33	W	46	II
8	U	21	AA	34	BB	47	MM
9	L	22	Y	35	C	48	J
10	KK	23	WW	36	UU	49	F
11	M	24	ZZ	37	R	50	T
12	TT	25	A	38	GG	51	QQ
13	JJ	26	N	39	OO	52	EE

Earth's Spheres Card Data Set #5 Color: blue

A	B	A	B	A	B	A	B
Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)
1	T	14	U	27	EE	40	KK
2	I	15	FF	28	RR	41	B
3	PP	16	QQ	29	J	42	UU
4	GG	17	Q	30	S	43	Z
5	D	18	L	31	OO	44	AA
6	X	19	MM	32	HH	45	A
7	CC	20	JJ	33	F	46	ZZ
8	E	21	BB	34	W	47	XX
9	K	22	Y	35	DD	48	YY
10	R	23	C	36	SS	49	N
11	II	24	TT	37	M	50	WW
12	NN	25	V	38	P	51	LL
13	H	26	G	39	VV	52	O

Earth's Spheres Card Data Set #6 Color: gray

A	B	A	B	A	B	A	B
Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)	Question card number	Answer card letter(s)
1	N	14	WW	27	GG	40	X
2	LL	15	Z	28	QQ	41	HH
3	XX	16	VV	29	G	42	J
4	ZZ	17	O	30	EE	43	R
5	Y	18	KK	31	U	44	PP
6	C	19	M	32	SS	45	OO
7	B	20	MM	33	E	46	II
8	AA	21	DD	34	CC	47	K
9	H	22	F	35	TT	48	Q
10	T	23	V	36	W	49	P
11	FF	24	YY	37	UU	50	L
12	RR	25	I	38	BB	51	JJ
13	A	26	S	39	D	52	NN