Chapitre I

1/ Topography :

Topography is a term used to describe the Earth's surface. it includes a

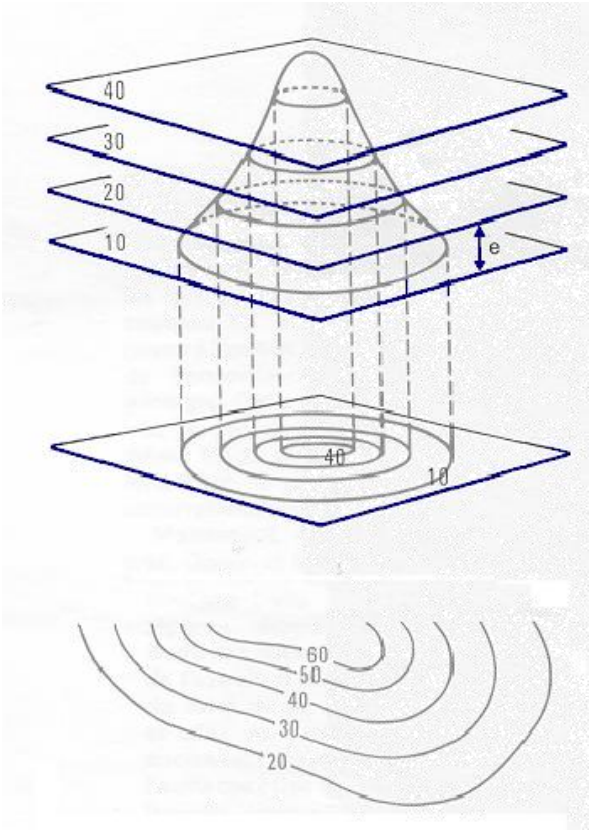
variety of different features, collectively called landforms.

Topography (from the Greek topos, "place", and graphein, "to draw") is the science which allows the measurement and then the representation on a plan or map of the shapes and details visible on the ground, whether natural (in particular relief and hydrography) or artificial (such as buildings, roads, etc.).

Topography is the discipline that measures and represents on a map (projected representation in two dimensions) the shapes and visible details of a terrain or region (elements in two or three dimensions)

Topography is measured by elevation differences on the Earth's surface.

The differences between high and low elevations are called relief changes.

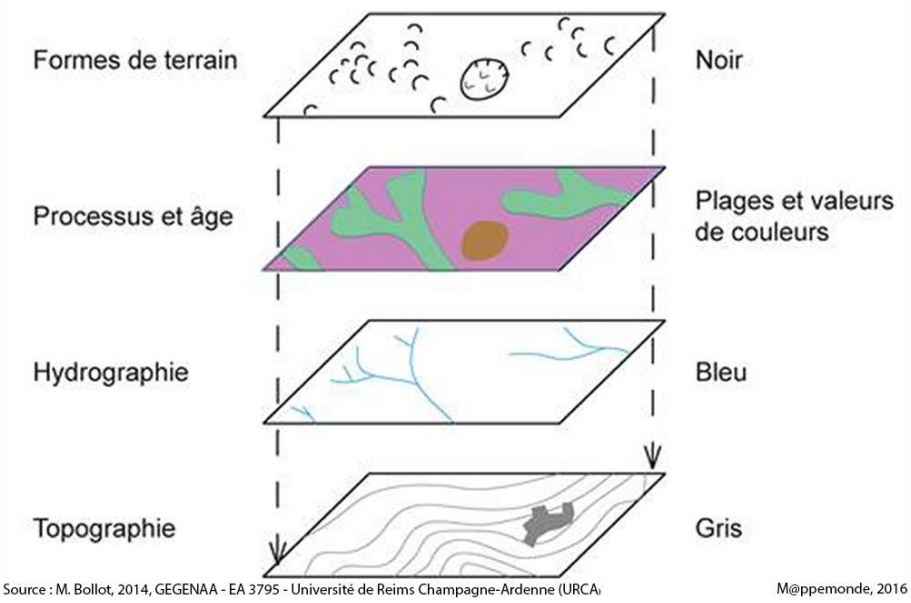


Scientists examine topography using a variety of different sources ranging from paper topographic maps to digital elevation models developed using specialized geographic information systems commonly known as GIS.

A geographic information system (GIS) is an information system designed to collect, store, process, analyze, manage and present all types of spatial and geographic data.

2/ Geomorphology::

Geomorphology: Is the scientific study of reliefs and these processes which seek to understand the history and evolution through a combination of field observation of the physical, morphological and structural aspects characteristic of reliefs as well as their genesis.



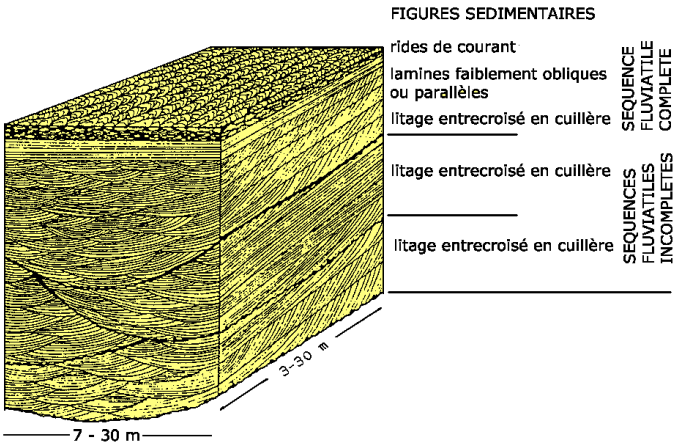
Geo-morph-ology comes from the Greek: Geo meaning “Earth”, morph meaning its "form", and ology refers to "the study of".

. The subject has traditionally been studied both qualitatively, i.e. describing landforms, and quantitatively, i.e. process-based and describing the forces acting on the Earth's surface to produce reliefs and changes in relief. There are many subdisciplines in geomorphology, including tectonics, river, storms, winds, floodplains, glacial waters, groundwater, climate, tsunamis, and many others.

These subdisciplines are primarily driven by distinctions in the mechanics and dynamics involved in the processes. Studies of human geomorphology have an impact on the reshaping of landforms around the world. It is therefore difficult to imagine a place or circumstance that has not been impacted by geomorphological processes. This article focuses on geomorphological processes as a balance of forces that result in the varied landforms observed on the Earth's surface. For this article, these processes can be considered by the following sequence of events: tectonic forces, fluvial processes, mass loss, glaciation, and human activity.

The object of this study is the description and analytical explanation of the shapes of reliefs and synthetic for the constituents of each set, two areas share the scientific field of geomorphology: 1) Structural geomorphology concerns the influence of structure (lithology, tectonics) on the relief at different scales from plate tectonics to elementary structural forms (surface, scarps) 2) Dynamic geomorphology is the study which contributes to the formation and evolution of relief forms (erosion, alteration, transport and deposition) which modify the formations (coastalities, hydrographic network) according to a current climate or the legacies of a past climate

Synsedimentary structures form during sediment deposition and reflect the speed, nature, direction and direction of transport agents. A good example is cross layering. Post-sedimentary structures develop in the sediment after its deposition. We note hydrostatic rearrangements,



structures due to lateral movements of sediment masses, involving processes linked to the physico-chemical modification of sediments under subsurface pressure and temperature conditions.

Finally, it must be remembered that certain sedimentary structures are used, in folded series, to determine the polarity of the layers.

The degradation of rocks produces numerous blocks and particles which can be moved in dissolved form in the circulation of water or in solid form by gravity, this is the state of balance-disequilibrium. Example: traces of sliding objects on the bottom. Many of these structures provide indications of the direction and direction of currents.

3/Landforms

Landforms are the individual topographic features exposed on the Earth‟s surface. Relief is the strong vertical variation of a solid surface, either positively, protruding, or negatively, recessed. This word is often used to characterize the shape of the Earth's lithosphere.

Landforms vary in size and shape and include features such as small creeks or sand dunes, or large features such as the Mississippi River or Blue Ridge Mountains.

Landforms develop over a range of different time-scales. Some landforms develop rather quickly (over a few seconds, minutes, or hours), such as a landslide,while others may involve many millions of years to form, such as a mountainrange. Landform development can be relatively simple and involve only a few processes,or very complex and involve a combination of multiple processes and agents.

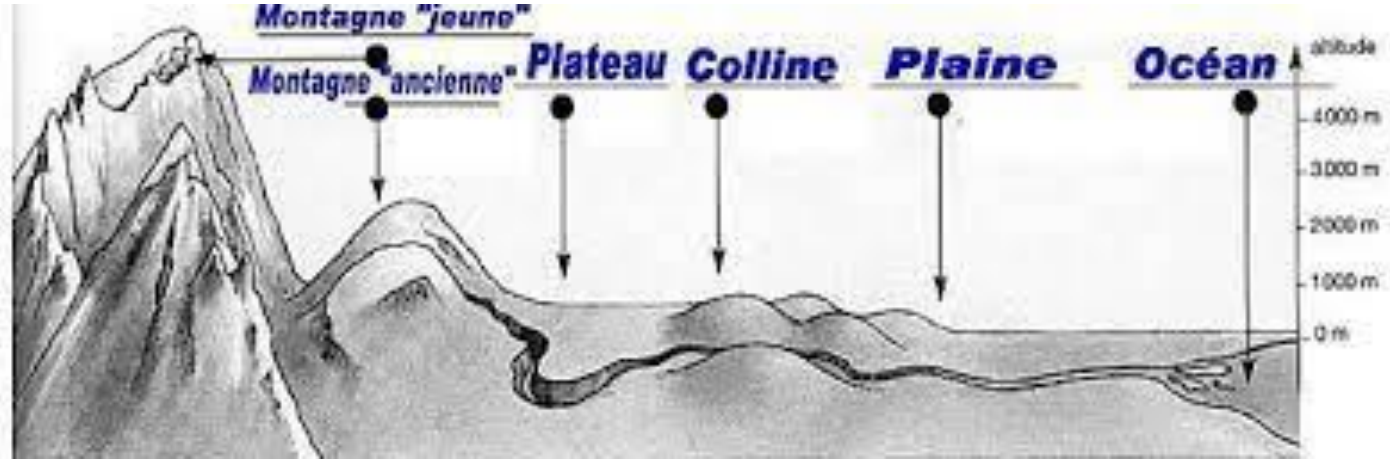
Landforms are dynamic features that are continually affected by a variety of earthsurface processes including weathering, erosion, and deposition.

Earth scientists who study landforms provide decision makers with information to make natural resource, cultural management, and infrastructure decisions,

That affect humans and the environment. Geomorphology traditionally distinguishes three main types of relief:

- The plain ;
- the tray ;
- the mountain.

Other landform types include valley, hill, fjord, gorge and, submerged, shoal, seamount, ridge and ocean trench.



Height difference is the difference in altitude between two points on the ground. The slope and the position relative to sea level also characterize the relief. Topography measures aerial landforms while bathymetry measures underwater

landforms. In cartography, relief is represented in the form of topographical maps. The relief modifies the trajectories of fluid flows (atmosphere, hydrosphere, sea current, etc.).

4/ Crustal relief orders :

a/ First aid order:

At the first order, the formation of geomorphological models results from the interactions between two major processes of geology, the tectonic processes generated by the movement of the different continents, and the surface processes which redistribute the different terrains through erosion and sedimentation. The broadest scale of relief is divided into continental masses, all of which include crust above sea level (30% of the Earth's surface) and ocean basins, which include crustal zones located below sea level (70% of the earth's surface)

b/ Second emergency order:

The second order of relief includes continental features on a regional scale such as mountain ranges, plateaus, plains and lowlands. Examples include the Rocky

Mountains, Atlantic coastal plain and Tibetan plateau. The major features of ocean basins, including continental shelves, slopes, abyssal plains, mid-ocean ridges, and trenches, are all second-order landforms.

c/ Third emergency order: The third order of relief includes individual landform features that, collectively,

the larger second-order relief features. Examples include individual volcanoes,

glaciers, valleys, rivers, floodplains, lakes, marine terraces, beaches and dunes.

 Each major relief classified in the third order of relief may also contain

many smaller features or different types of a single feature. For example, even if a the floodplain is an individual relief; it can also contain a mosaic of smaller reliefs including score bars, undead lakes and natural sea walls. Rivers, although only one relief, can be classified according to various types of channels, including straight, sinuous or braided.

The vast morpholithological or morphostructural ensembles, conditioned by lithology and endogenous factors, are the direct expression of tectonics (epirogenesis, orogenesis, volcanism and earthquakes). Altered by exogenous factors (weathering, erosion), these large groups become geomorphological models. Geomorphologists then speak of geodynamic, morphodynamic, or even morphoclimatic sets or systems when climate is an essential factor in relation to eustatism.

The lithological types are: - Formation intersected by a vein - Flexible (folds) and brittle (fault) formation affecting a sedimentary series - Formation in angular unconformity by stratification joint of the two series are not parallel (horizontal sedimentary series can rest on a other which undergoes deformation (folds or faults) - Formation of regulated slopes, this phenomenon mobilizes large volumes of rocks which accumulate in a cone of deposits by elementary fall from a rock wall. - Formation in magnifying glass of solifluctions, deposits on slopes in the form of mud flows after torrential rains - Formation in mowing is a tilting in the form of disconnected upper geological layers.