

In geology, **denudation** involves the processes that cause the wearing away of the Earth's surface by moving water, by ice, by wind and by waves, leading to a reduction in elevation and in relief of landforms and of landscapes.

Endogenous processes such as volcanoes, earthquakes, and plate tectonics uplift and expose continental crust to the exogenous processes of weathering, of erosion, and of mass wasting.



Schematic illustration of regional denudation for felsic alkaline intrusive rock bodies of the State of Rio de Janeiro, Brazil: Cabo Frio Island and Itaúna Body.

^ Processes



Denudation incorporates the mechanical, biological and chemical processes of erosion, weathering and mass wasting. Denudation can involve the removal of both solid particles and dissolved material. These include sub-processes of cryofracture, insolation weathering, [slaking](#), salt weathering, [bioturbation](#) and [anthropogenic](#) impacts.^[1]

Factors affecting denudation include:

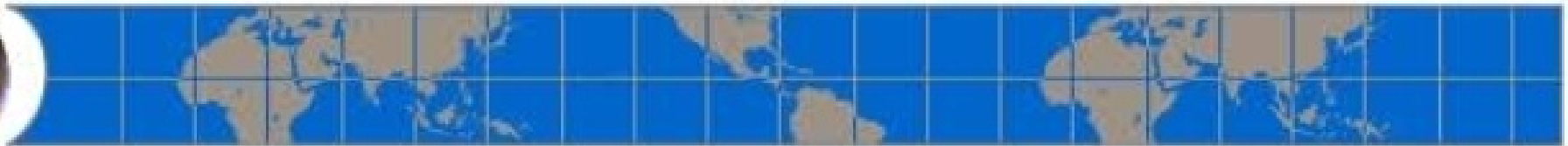
- Anthropogenic activity
- Biosphere
- Climate (most directly in [chemical weathering](#))
- Geology
- Surface [topography](#)
- [Tectonic](#) activity

^ Proposed cycles

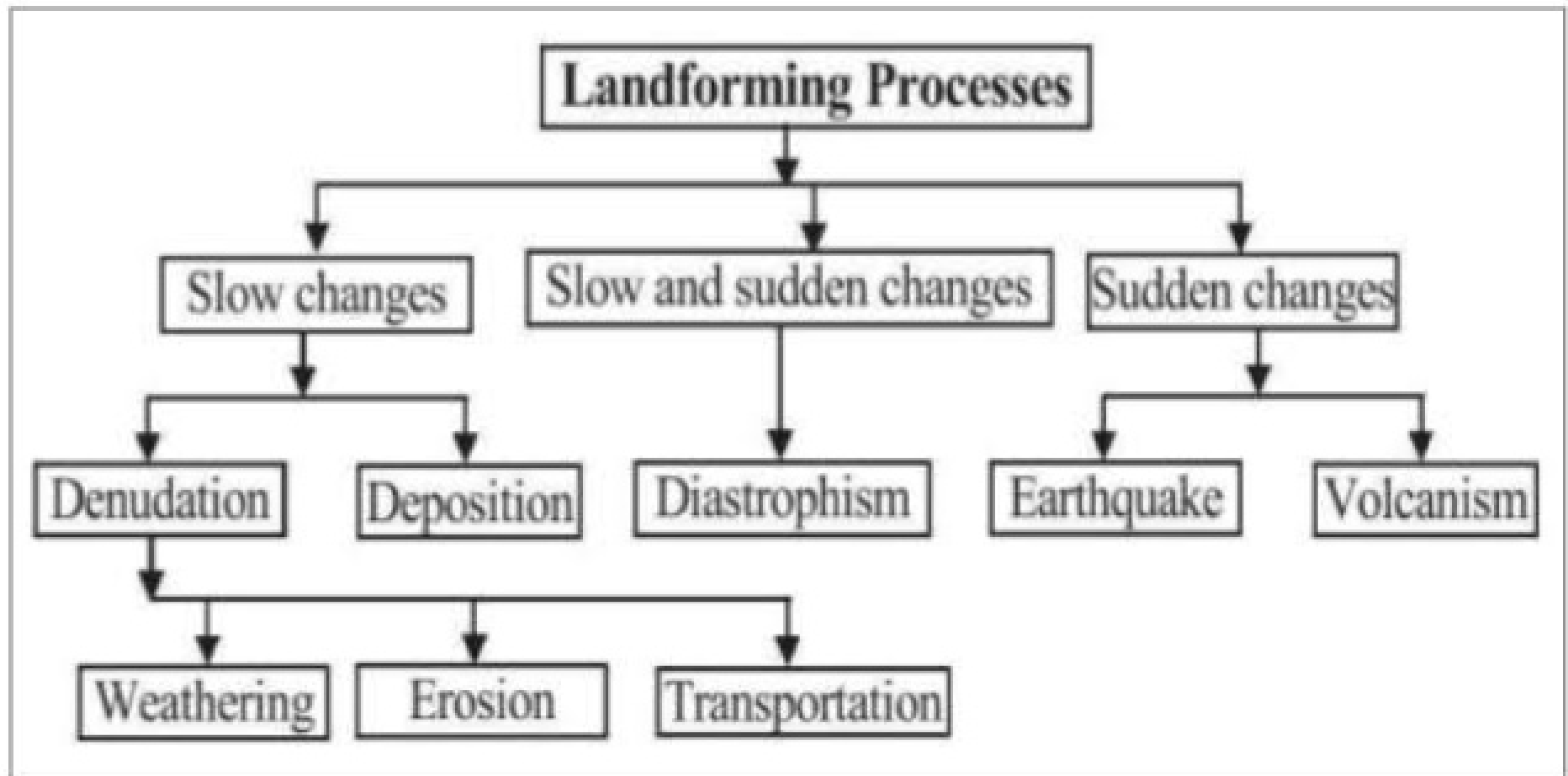


Early studies prompted the formation of denudation cycle hypotheses to describe land formations. Although at present they are mostly discounted, many of these models are enduring due to their simplicity and seemingly obvious assumptions.

In the 1890s [W. M. Davis](#) proposed a cycle of 'wearing down' in which so called 'young' landscapes had high gradients and elevations, and waning, low elevation topography through middle age to old age. Landscapes of Britain and Wales were thought to reflect these multiple [peneplanation](#) and rejuvenation cycles, such as the 3,000-foot remnant summit plateau in North Wales. A number of assumptions of fluvial and glacial dynamics in temperate areas were made in the formation of this model.



Geomorphological Processes at a glance



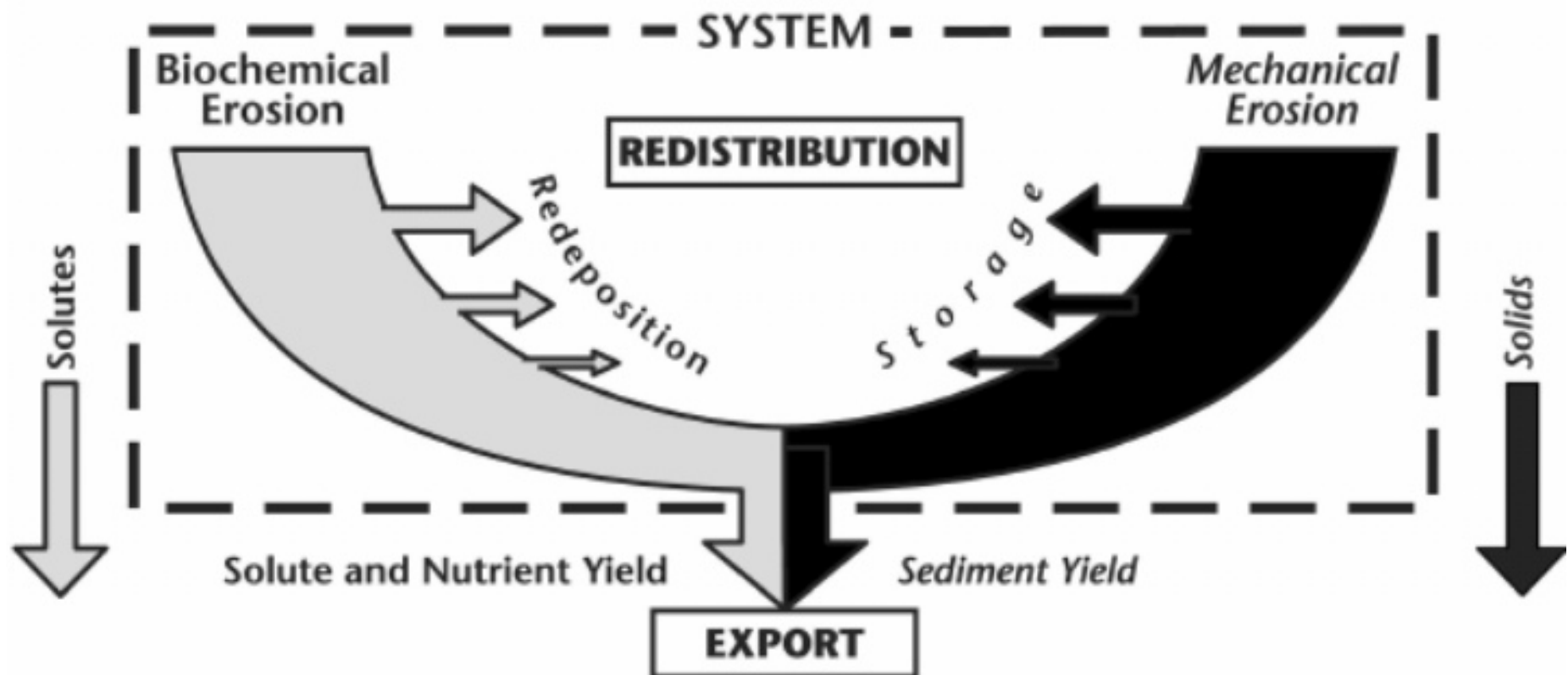
WEATHERING, EROSION & DENUDATION



WEATHERING: Alteration by atmospheric & biologic agents of rocks & minerals, modifying their physical, mineralogical & chemical preparation for erosion.

EROSION: Either mechanical or biochemical mobilization, transport & carrying away of rock & soil materials, by external agents, surface (e.g. overland flow) or subsurface (e.g. soil & groundwater)

DENUDDATION: Export = total erosion - redistribution (N.B. the larger the system, the larger is the redistribution, & the smaller is the denudation)



GEOMORPHOLOGICAL PROCESSES

Terrestrial Processes

Extra-terrestrial Processes

Exogenous Processes

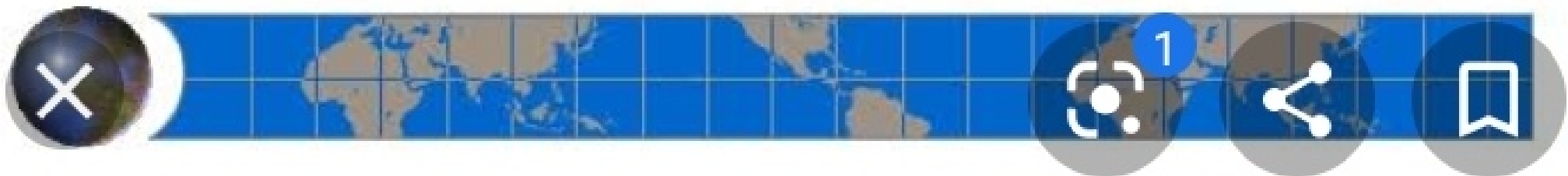
Endogenous Processes

- i. Weathering
- ii. Erosion/Degradation
- iii. Transportation
- iv. Deposition/Aggradation
- v. Mass movement

Denudation

- i. Faulting and Folding
- ii. Volcanism
- iii. Earthquake
- iv. Landslide
- v. Diastrophism
- vi. Metamorphism

- Physical Weathering
- Chemical Weathering
- Biological Weathering



Activities of the Agent of Geomorphic Processes

