

# Description of participatory environmental management actions for the Asterousia Mountain Range Biosphere Reserve and the role of the greater Mesara region

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ΣΥΝΔΕΣΜΟΣ ΠΡΟΣΤΑΣΙΑΣ  
ΑΣΤΕΡΟΥΣΙΩΝ



United Nations  
Educational, Scientific and  
Cultural Organization



Hellenic National Committee  
for the Biosphere Programme  
MAB/UNESCO



United Nations  
Educational, Scientific and  
Cultural Organization



UNESCO Chair on  
Sustainable Development Management  
and Education in the Mediterranean  
HELLENIC REPUBLIC  
National and Kapodistrian University of Athens

**MEdIES**

The Mediterranean Education Initiative  
for Environment & Sustainability



European Union  
European Maritime and  
Fisheries Fund



HELLENIC REPUBLIC  
MINISTRY FOR RURAL DEVELOPMENT AND FOOD



With the co-financing of Greece and the European Union

Event implemented within the project “Actions of Environmental – Cultural information and awareness in the intervention area” (code OPSAA 0016524279) the Association for the Protection of Asterousia which has undertaken to implement within the framework of the T.P. CLLD/ LEADER Messaras (RURAL DEVELOPMENT PROGRAM (RDP) 2014-2020), implemented by the Local Action Team of Heraklion Development.



Communication is the process of exchanging information between two or more members for whom the information makes sense, so that its exchange also makes sense as an act. We communicate by exchanging thoughts, messages, feelings or information through speech, image, writing, behavior or between humans and smart machines or between smart machines.

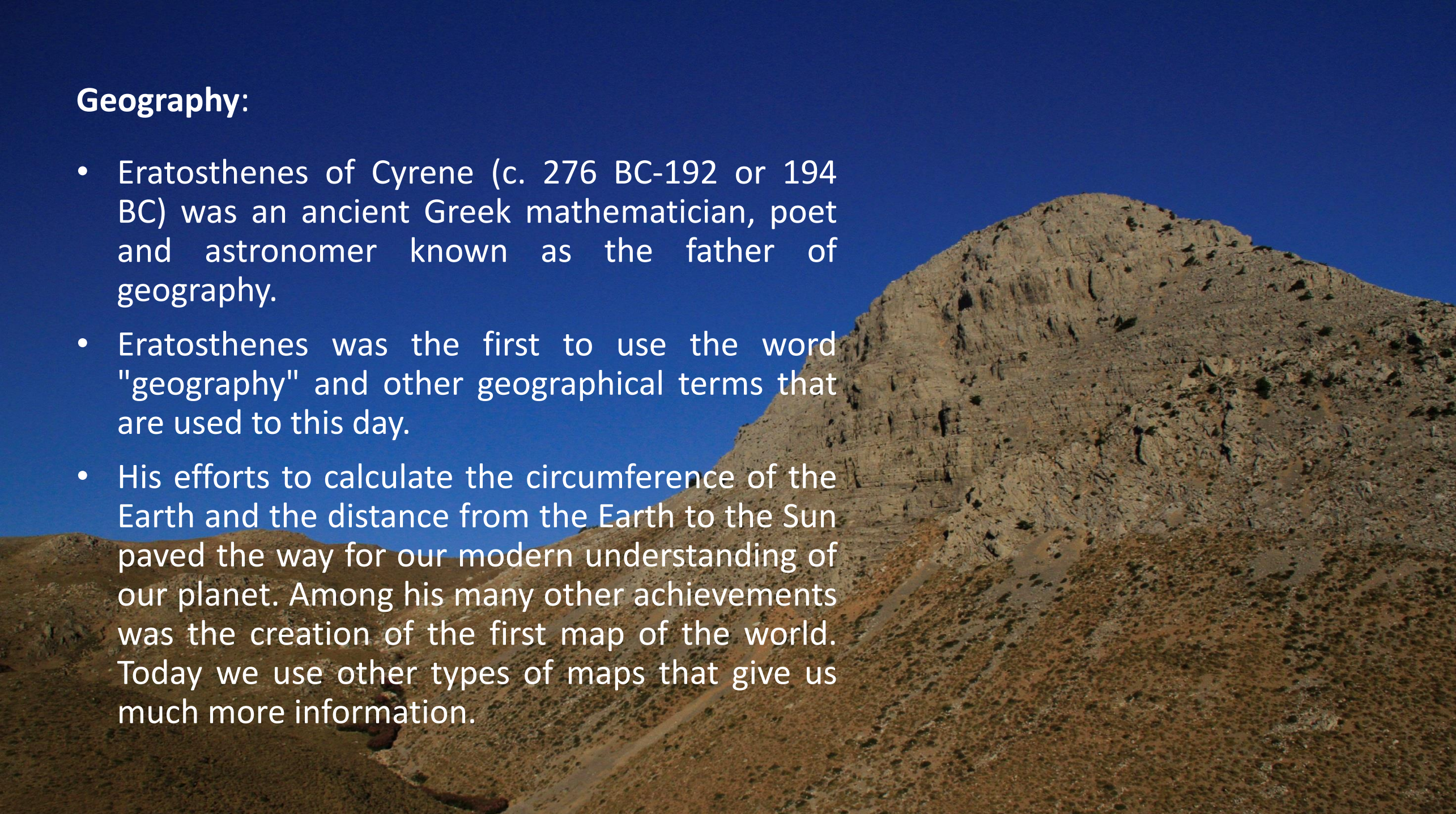
Participatory management is the practice of empowering members of a group, such as the citizens of a community, to participate in organizational decision-making. It is used as an alternative to traditional vertical management structures, which have proven to be less effective.

**The role of the inhabitants of the wider area of Messara for Asterousia Biosphere Reserve is multifaceted. It is simple, clear, visionary and Democratic. It encourages the active citizen with responsible environmental behavior to engage with the public. It is based on the Sustainable Development of the region and supports the development of the inhabitants of the mountainous areas and the promotion of the marine part of the Asterousia BR.**

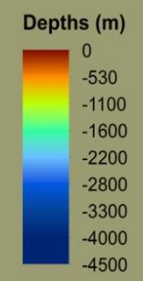
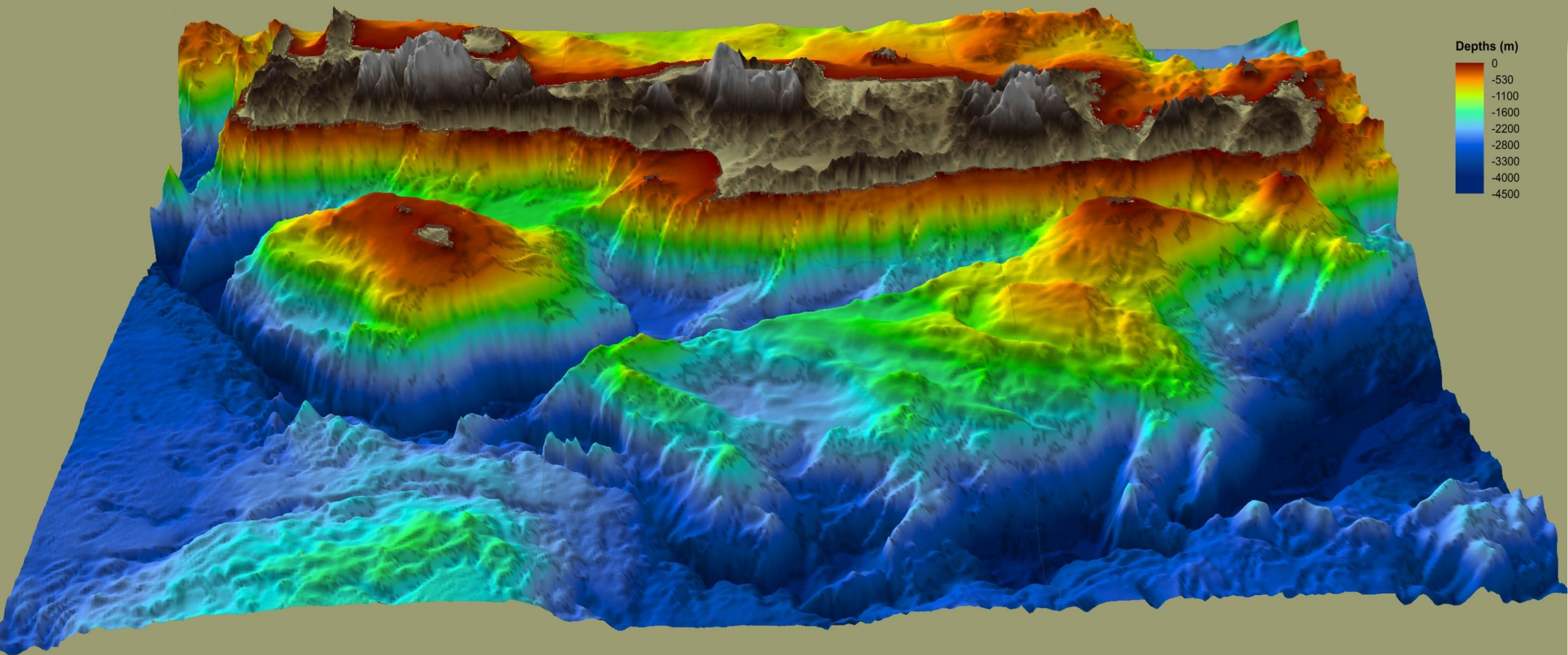


## Geography:

- Eratosthenes of Cyrene (c. 276 BC-192 or 194 BC) was an ancient Greek mathematician, poet and astronomer known as the father of geography.
- Eratosthenes was the first to use the word "geography" and other geographical terms that are used to this day.
- His efforts to calculate the circumference of the Earth and the distance from the Earth to the Sun paved the way for our modern understanding of our planet. Among his many other achievements was the creation of the first map of the world. Today we use other types of maps that give us much more information.

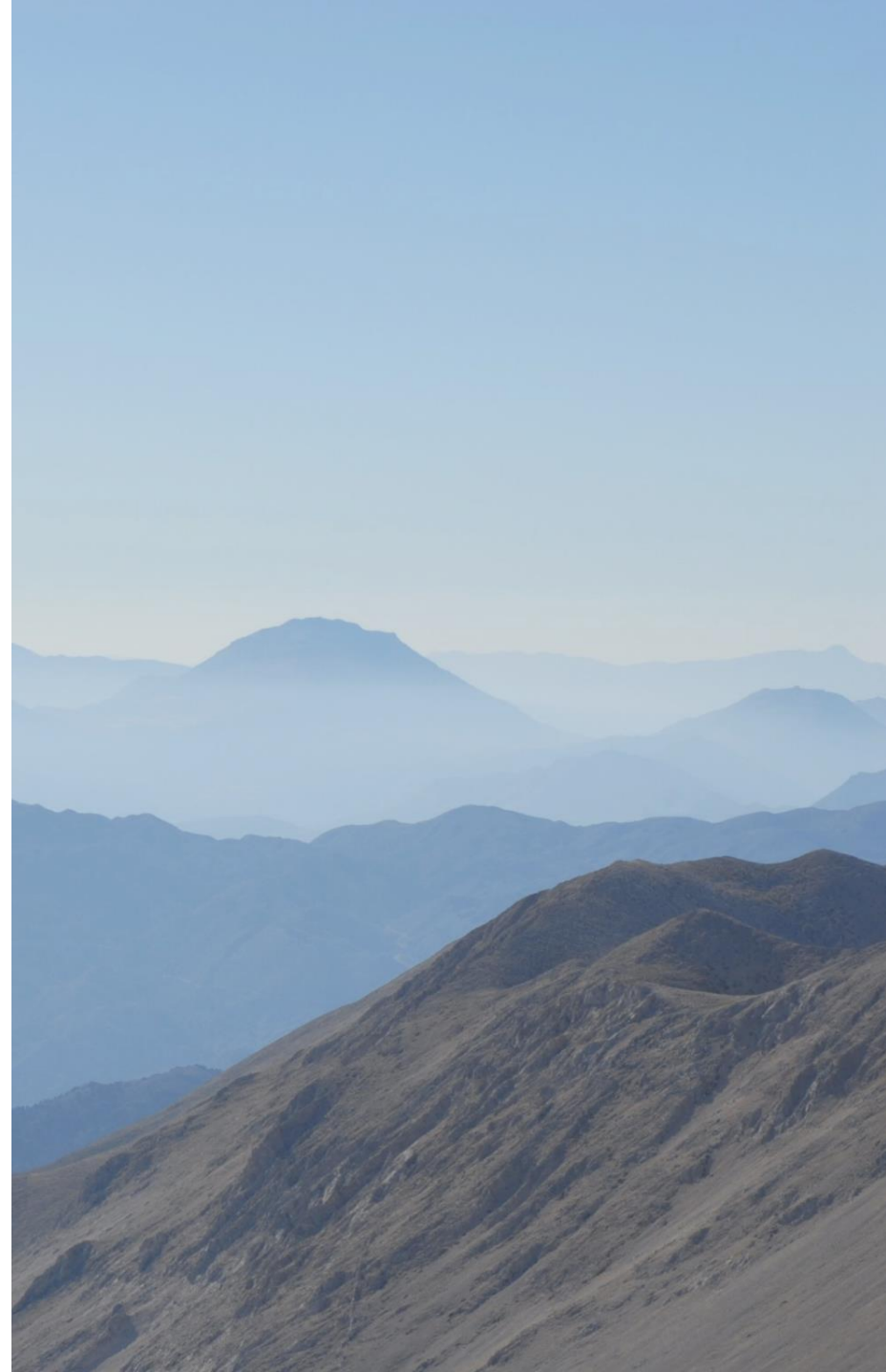






## Mountain Ranges and Plains:

- Endogenous forces create the mountain ranges and mountains of Europe (folds, cracks and ditches).
- External forces, such as water in its various forms (rain, snow, ice, glaciers, etc.), wind and living organisms, "devour" the mountains, constantly changing the terrain of Europe over time.
- Thus was formed the plain of Messara, which is constantly changing.

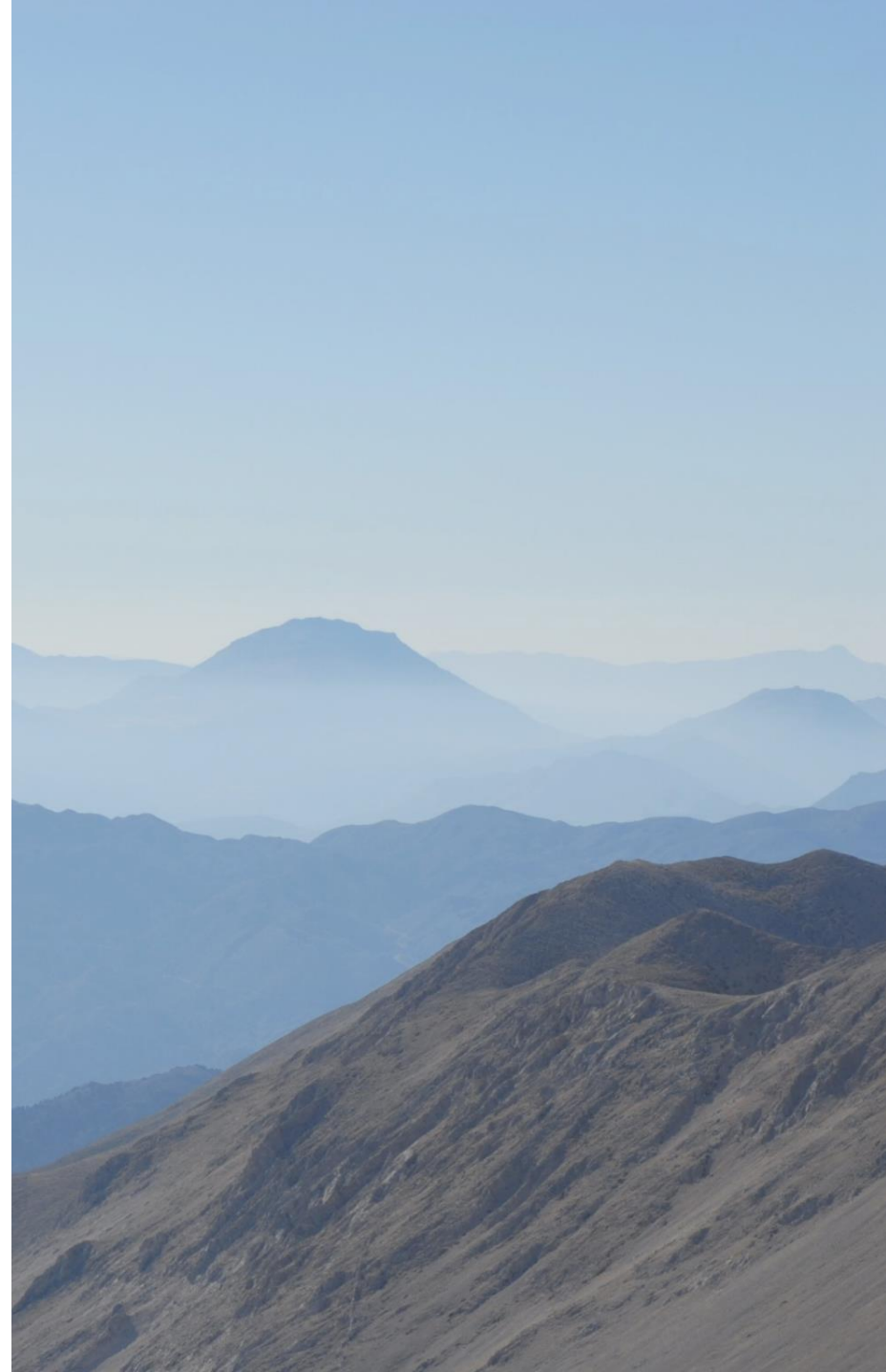




## Seas, Rivers and Lakes:

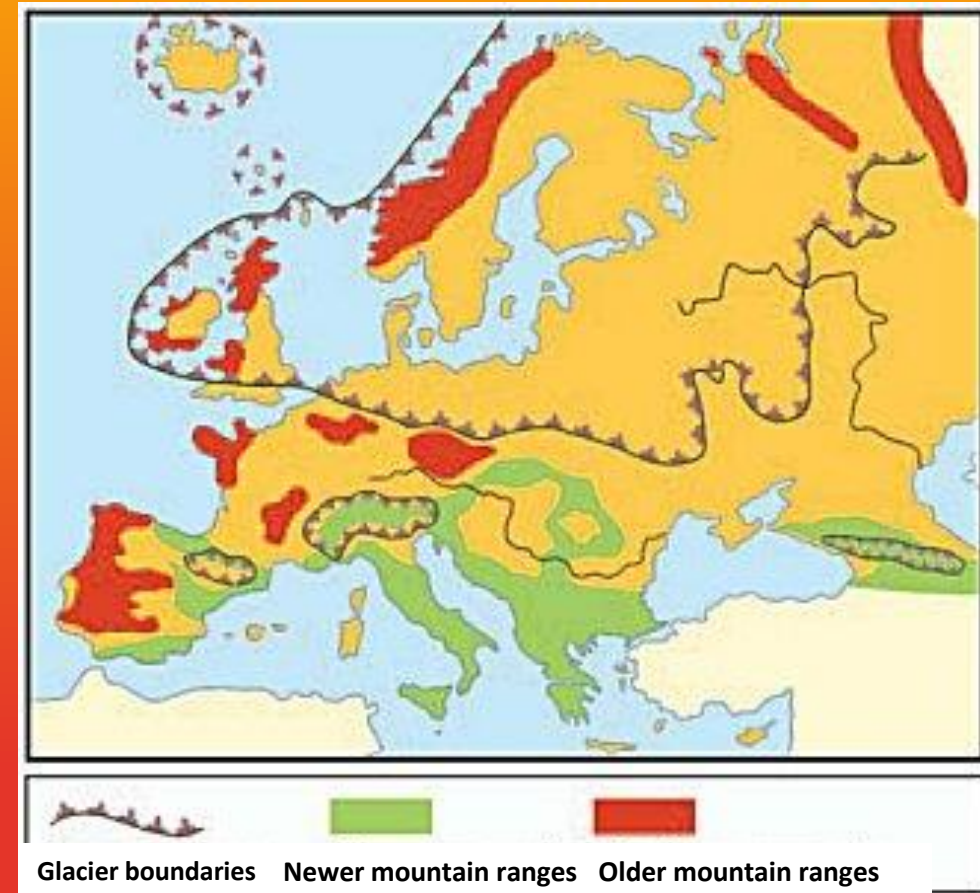
### The local sea level varies

- Like the surface of the earth on our planet, the surface of the oceans is not flat. The surface of the oceans and seas varies from place to place and from minute to minute based on many different factors.
- Local sea levels can fluctuate due to high or low air pressure, thunderstorms, high and low tides, snowstorms, rainfall and river flow in the oceans as part of the current hydrological cycle.



# Climate and climate change

- **The climate is not constant but changing** and it even follows certain cycles related to the Earth - Sun distance (Milankovitch cycles), etc.
- The most recent glacial period in the world began about 110,000 years ago and ended about 12,500 years ago.
- The maximum extent of this glacial period was the Last Glacial Maximum (LGM) and appeared about 20,000 years ago.
- A stable pattern of icy ice, sea level and carbon in the atmosphere has existed for about 6,700 years.
- This pattern has been destabilized by global warming as a result of the Industrial Revolution and has changed dramatically in recent times (anthropogenic effect).





# THE GEOLOGICAL EVOLUTION OF GREECE

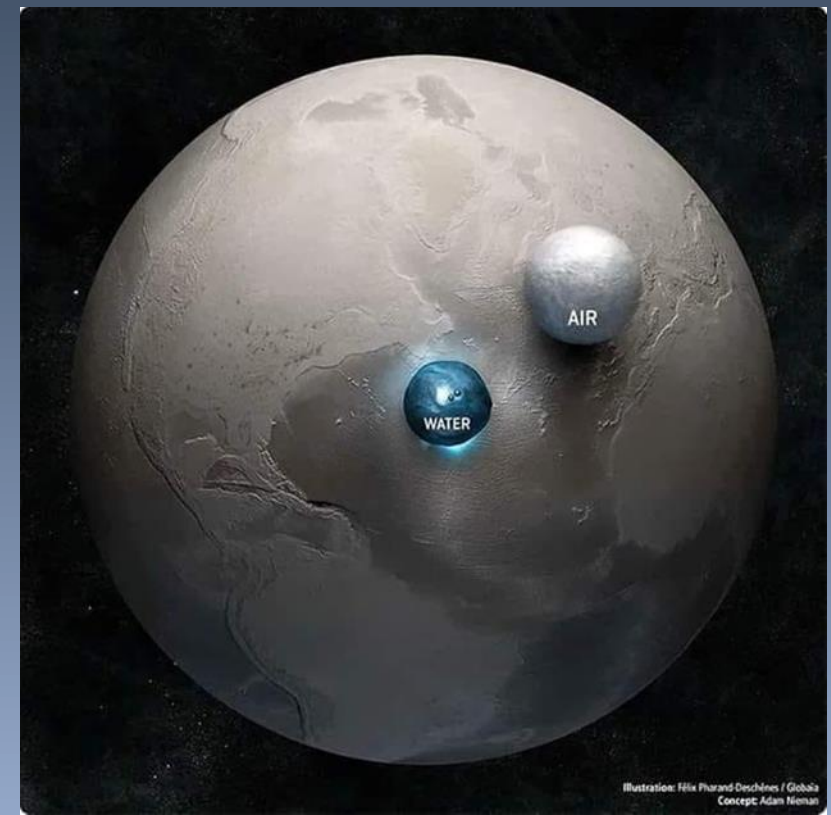
The relationship between land and sea in the region of today's Greece-Aegean area did not always have the form in which we know it today. The geomorphology of space was constantly changing, following the general geological rearrangements that occurred on our planet millions of years ago. Inextricably linked to geomorphological, were also the climatic changes, which further determined the type and behavior of every form of life: fauna, flora and man.

During the Miocene geological period, and specifically 30 million years ago, the Aegean Sea rose from the depths of what we now call the Mediterranean Sea. It was a single land, which included the present-day southern Balkan Peninsula, the Aegean Sea and Asia Minor, and extended from the Adriatic Sea to Crete.

At the end of the Miocene period, about 5 million years ago, due to subsidence and elevation huge volumes of water entered this huge part, forming part of the Aegean Sea and large inland lakes.

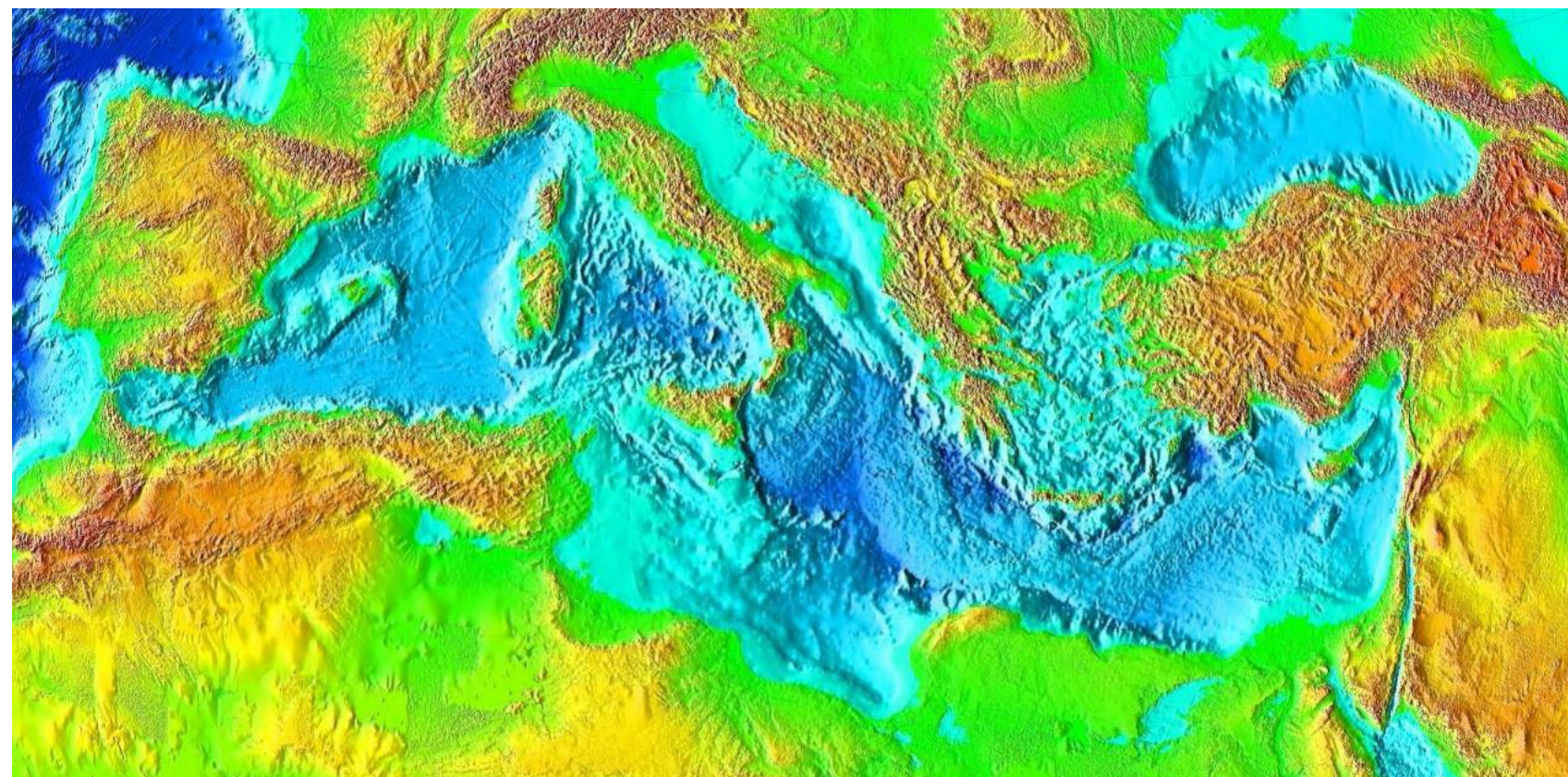
During the Pleistocene period (Ice Age) about 400,000 years ago many of today's islands were part of the same mainland (e.g. the Cyclades) or met in today's mainland (e.g. Sporades, northern and eastern Aegean islands), since the sea level was about 200 meters deeper than today. At this time, which corresponds to the Paleolithic period, the mainland of Greece was covered by forests. Neanderthals and other fauna lived in Greece, such as: mammoths, cave bears, elephants and dwarf elephants, ancient hippopotamus, deer, Equidae and cattle.

During the Holocene (Post-Glacial) period, around 9000 years ago, the sea level rose by 30 meters. The Aegean acquire almost its current form and is characterized by warm climatic conditions, favorable for permanent establishment. Differences are observed only in the course of the coastlines, as a consequence of sea level fluctuations and seismic phenomena, which occurred during the last millennia. The Early and Middle Holocene period, culturally correspond to the Mesolithic, Neolithic and Bronze Ages.



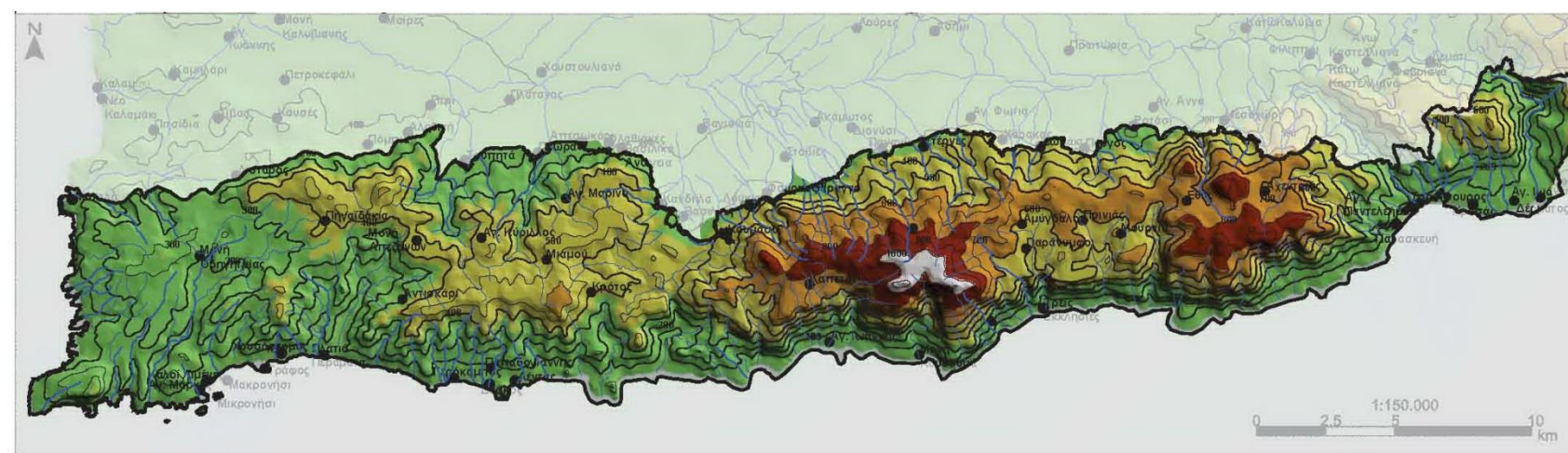
<https://www.youtube.com/watch?v=GNmUd43pabg&t=10s>





The Mediterranean was formed by the convergence of the tectonic plates of Africa and Europe. Fifteen million years ago, the collision of the African plate and the Eurasian led to the separation of Tethys (early Mediterranean) from the Indian Ocean, causing drastic changes in ocean currents and changing the climate to colder conditions. Today's opening of Gibraltar was formed early in the Pleistocene period (5-2 million years ago).

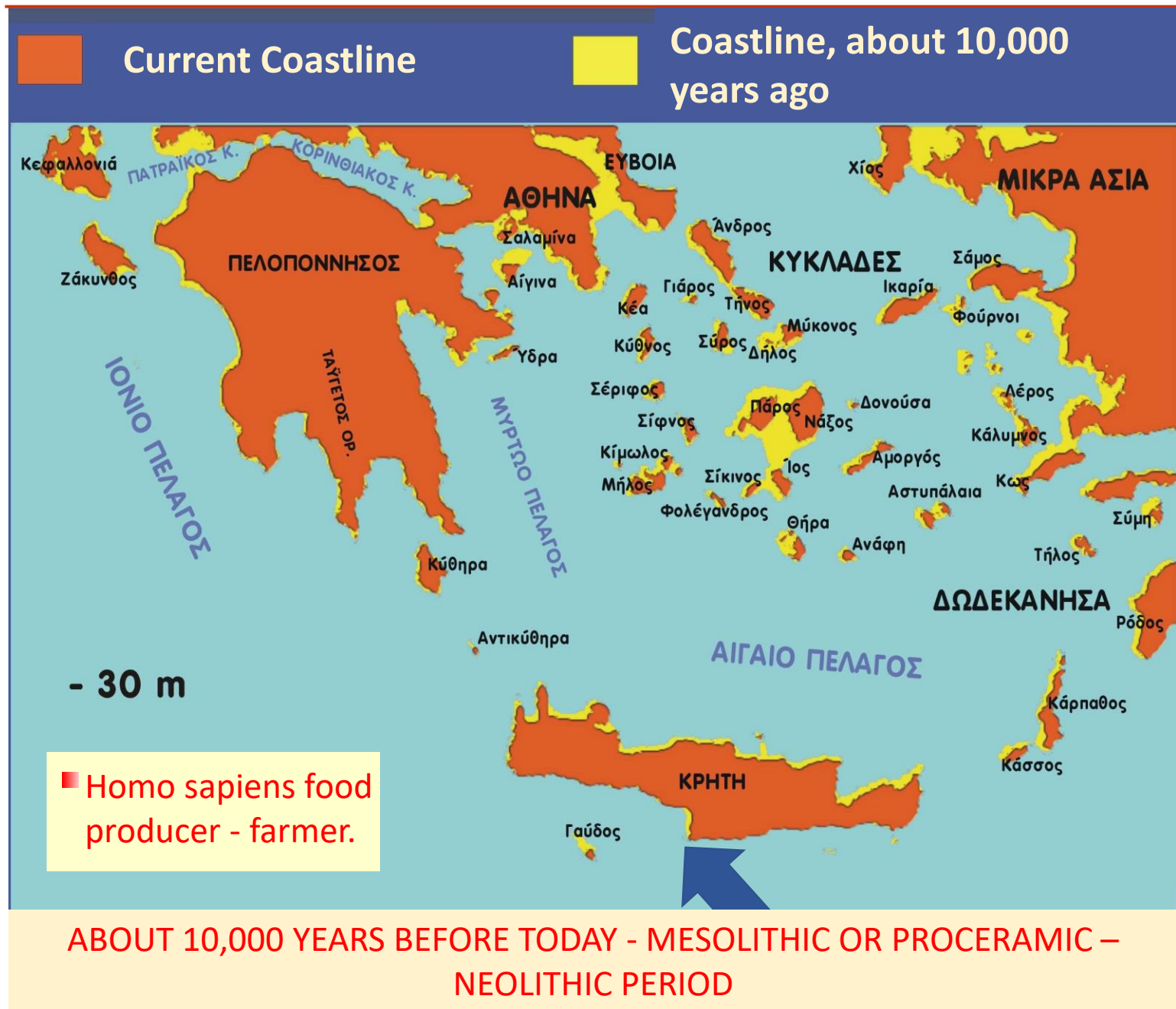
In the past, two other openings existed between the Atlantic and the Mediterranean in southern Spain and northern Morocco. These closed between the time 11.6-7.3 million years ago causing a crisis of salinity, well before the crisis of salinity of Messinia. The salinity crisis of Messinia is the period during which the Mediterranean Sea evaporated during the Upper Miocene 5.96 million years ago.



<https://www.youtube.com/watch?v=BemsLUldVAo&t=56s>

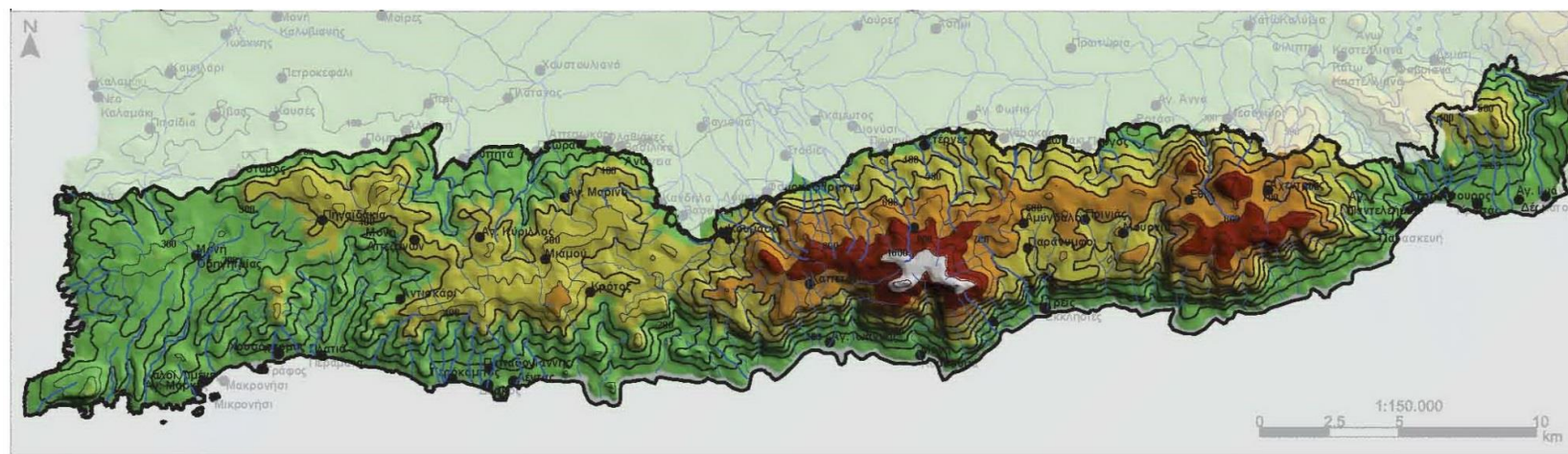


- 20,000 years ago, the average sea level was about 120 meters lower
- 10,000 years ago, the average sea level was about 30 meters lower
- The Minoan civilization flourished in the *Bronze Age* on the island of Crete and other Aegean islands, flourishing from 3,000 BC. until 1,450 BC. After a long period of decline, it finally ended around 1,100 BC. It represents the first advanced civilization in Europe, which left behind large building complexes, tools, works of art, writing systems and an extensive commercial network.
- The Neolithic period in Crete begins around 7,000 BC.



# Today and in the Future

- Current socio-economic conditions
- Recognition of the **Asterousia Mountain Range Biosphere Reserve (AMRBR)**
- The proximity of the wider area with the Asterousia BR
- The role of the wider area of the Messara valley
- Why the Asterousia BR is valuable to everyone





An aerial photograph of a rugged, rocky mountain range. The terrain is arid and brownish, with a winding road visible on the right side. A small, simple building is situated on a rocky outcrop in the lower center. The sky is clear and blue.

**The path of development of the Asterousia Mountain Range Biosphere Reserve area is based on the empowerment and protection of its natural and cultural capital. But also the protection of the area is based on its development!**





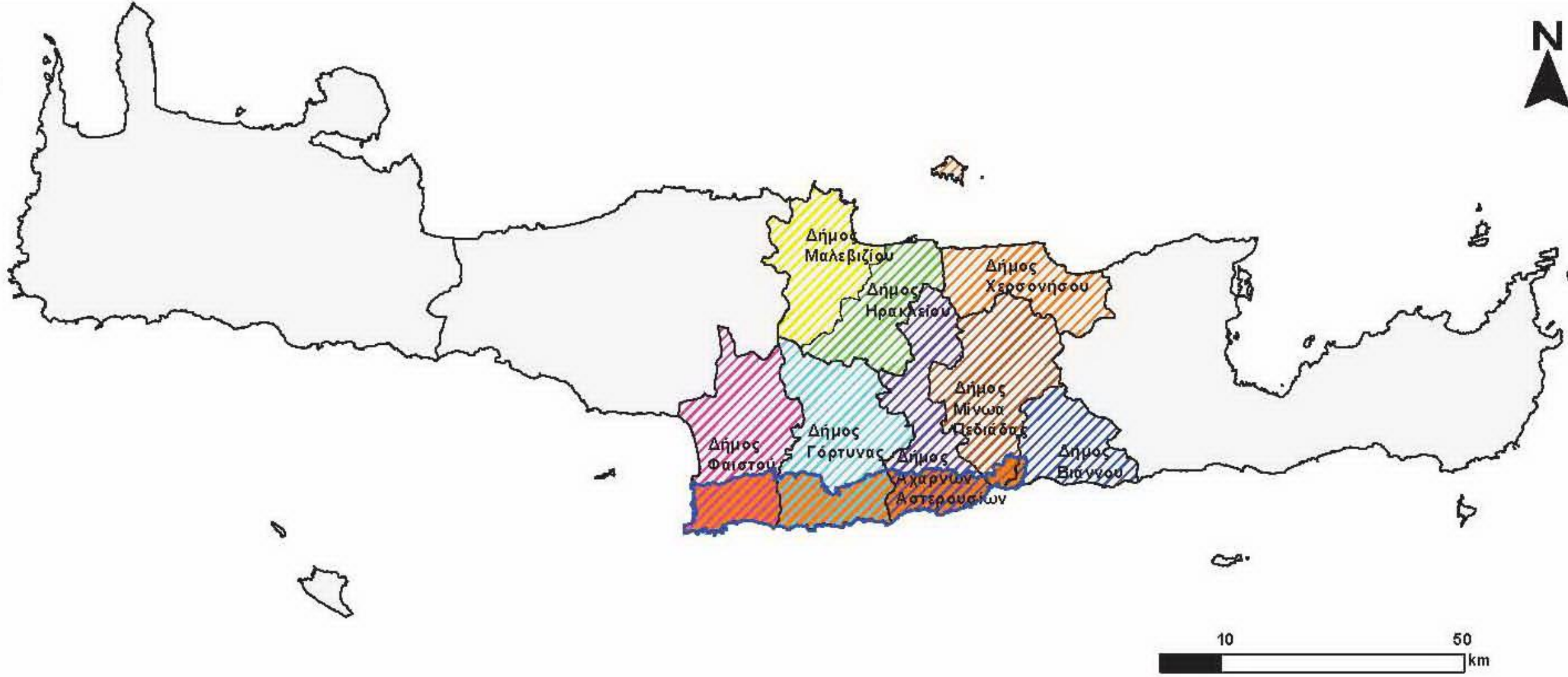
The **terrestrial** part of the **Asterousia Mountain Range Biosphere Reserve** consists of a semi-mountainous-mountainous zone 5-15 km wide and 55 km long.

The altitude varies from sea level in coastal areas to **1,231** meters at the highest peak of the mountain range, *Kofinas*.

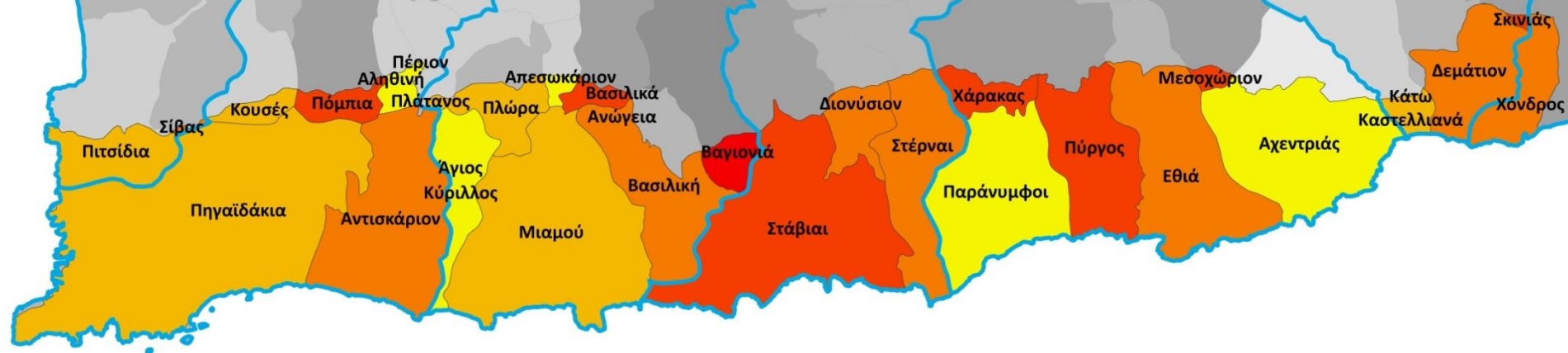
It is a single mountain limestone mass that extends from the gulf of Messara to the western borders of the Municipality of Viannos (area **371.6 sq.km.**).

The **maritime** section includes part of the Greek Moat, and the moats of *Plinio* and *Strabona*, with impressive relief from the coast to the deep waters of the Mediterranean sea, with depths exceeding **3,000 meters** (area 885.8 sq.km.).

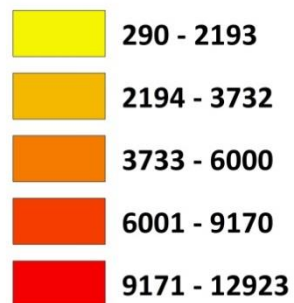




# Υπάρχουν αντίστοιχοι χάρτες για όλα τα προϊόντα



Εκτάσεις δενδρωδών καλλιεργειών σε στρέμματα



Όρια Δήμων







# Today and in the Future

- Current socio-economic conditions
- Recognition of the Asterousia Biosphere Reserve (ABR)
- The proximity of the wider area with the Asterousia BR
- The role of the wider area of the Messara valley
- **Why the Asterousia Mountain Range Biosphere Reserve is valuable to everyone (Natural Resources and Social Capital)**
- **Who is the role of youth (return and social inclusion)**
- **Who is the role of women?**



The example of Latin America



## The return of youth to mountainous areas

According to the International Labor Organization, more than 200 million people are currently unemployed worldwide, the majority of those employed have inadequate financial security, material prosperity and equal opportunities.

Biosphere Reserves strive not only to create opportunities, but also to improve the quality of jobs. The main goal of this project is to create a comprehensive framework for improving the socio-economic development of young people living in UNESCO Biosphere Reserves.

The project is in close collaboration with Latin American and Caribbean youth to identify the main challenges they face. However, the project is fully aware of regional, national and local differences, as well as the **fact that youth is not a homogeneous group and includes differences in age, religion, gender and education.**



The overall framework should therefore be seen as a guideline for subsequent use in other areas to help them identify and address their main challenges.

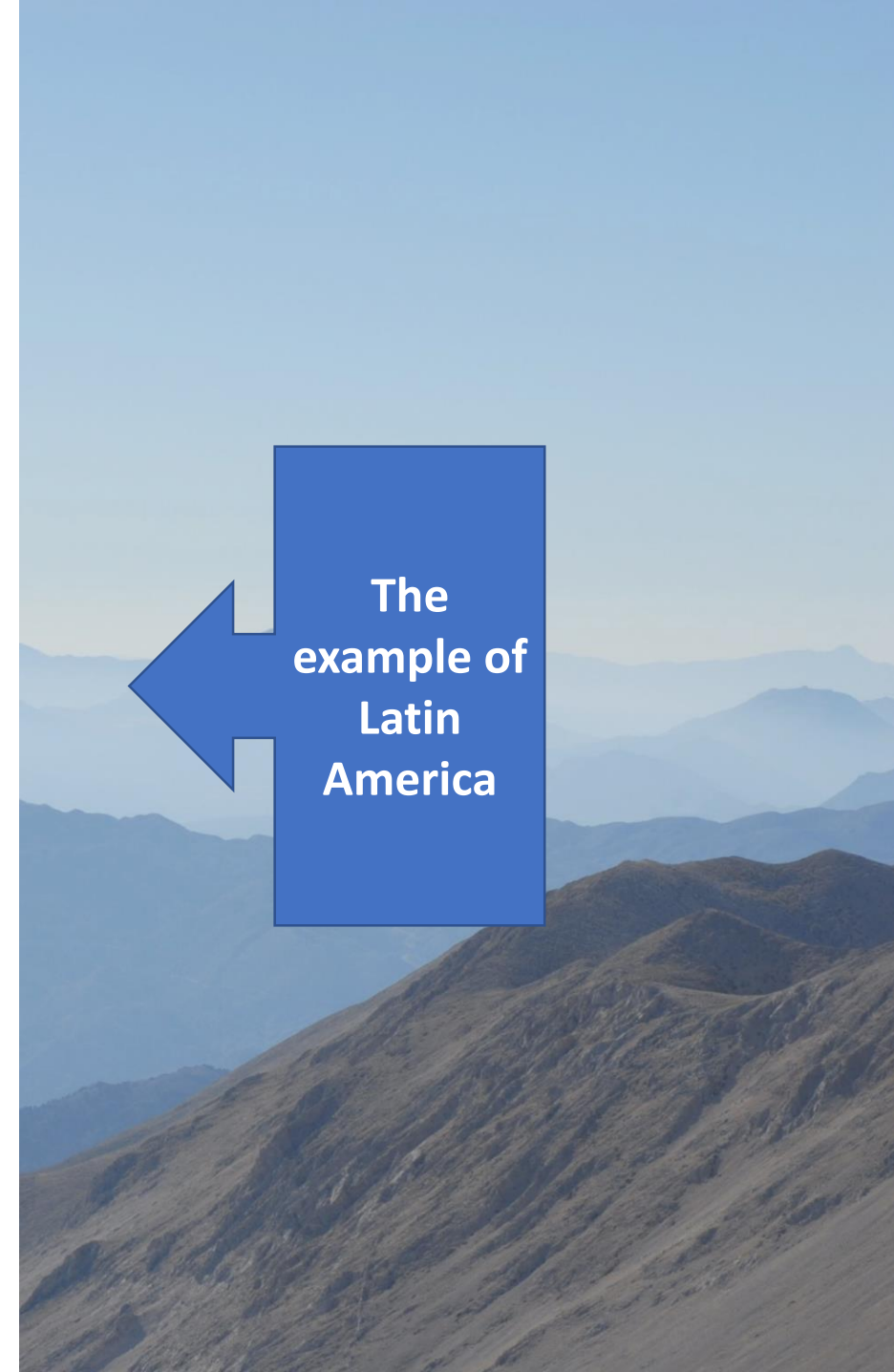
There was a call for 5 projects from different countries for youth and youth organizations of Latin America and the Caribbean (LAC), operating in Biosphere Reserves.

A successful example was the "***Bee the Buzz of the Reserve***" program, which promoted beekeeping for (1) pollinators in crops and (2) production of beekeeping products.

This activity teaches young people in a practical way how to produce honey, wax and other organic products by setting up a unit for demonstration.

It contributes to the green economy by giving young people the opportunity to become entrepreneurs in beekeeping and offers employment opportunities.

In particular, the inclusion of young women of the **Asterousia Mountain Range Biosphere Reserve**, in beekeeping activities, should be a priority.



The  
example of  
Latin  
America



## Other selected projects are:

- Strengthening ecotourism services for young people in the Ciénaga Grande de Santa Marta Biosphere Reserve (Colombia).
- Integrated management of plastic waste generated on the banks of the Napo River through the support of youth groups in the Limoncocha area of the Yasuni Biosphere Reserve.
- Strengthening the brand name of the Xiriualtique-Jiquilizco Biosphere Reserve and conservation of sea turtles through ecotourism (El Salvador).
- Creation of a radio program to promote effective communication of youth-oriented environmental initiatives and environmental activities in the Huayabamba River Basin (Gran Pajatén BR - Peru).

The projects developed at a local and regional level are related to the main themes of the UNESCO Department of Natural Sciences.

It is important to note that the selected projects do not only include the youth of these areas, but also new/ upcoming producers.



# Google Earth



[Gortyna.mp4](#)

3:57



Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
Image Landsat / Copernicus  
Image IBCAO

Google Earth

5

GENDER  
EQUALITY



## The role of women

- Scientific evidence shows that the empowerment of women and girls **provides a significant impetus to economic growth.**
- In an environment where more and more women are receiving adequate education and access to the labor market, new challenges such as the effects of climate change, conflict and migration are putting this progress to the test.
- At the Asterousia BR, initiatives to address these issues include creating new opportunities while ensuring equal rights and equal participation.





The emblematic species the *Vulture* (+1.231 meters) and the *Blower whale* (-2,500 meters) live at an altitude difference of about 3,700 meters.





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