

The Mesaoria Plain



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Introduction

Between the northern Beşparmak mountains and the southern Troodos mountains, you can find a fruitful alluvial plain, called the Mesaoria. From antiquity (Encomi, Salamis) to modern times, the central plain has constituted both the main agricultural area as well as the favored settlement in Cyprus. With its 276,000 citizens (2016), the plain also includes the most populous city Lefkoşa/Nicosia which is, incidentally, the capital of the Republic of Cyprus and the Turkish Republic of Northern Cyprus. While the area was, formerly, most valuable because of its cultivation of olive and crop, nowadays, citrus fruits and oranges are, by far, the preferred choice, mostly due to improved water supply and irrigation methods.



View in direction of the Mesaoria near Kantara [2].

Geography

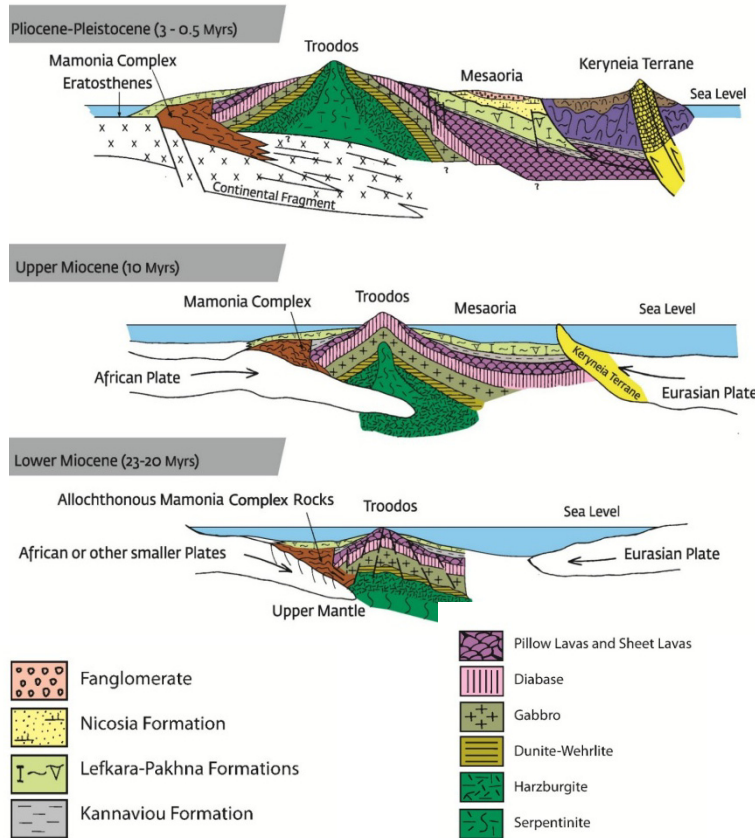
The Mesaoria encompasses an area reaching from the Bay of Güzelyurt in the west to Gazimağusa in the east with a length of 96 kilometers. Having the norther Beşparmak mountains and the southern Troodos mountains as borders, the plain is between 16 and 22 kilometers wide. With its peak at 225 meters, the plain slightly slopes down towards the east.



Location of Lefkoşa, Güzelyurt and Gazimağusa in the Mesaoria plain [3].

If you stand on top of the Beşparmak mountains and look southwards, the Plain of Mesaoria seems quite monotonous, lacking any contour. In closer proximity, however, it reveals a diverse geographical spectrum: Many little hills make up the surface and clear-cut shores of winter streams meander through the landscape. Moreover, rural settlements, scattered across the area, contribute to its unique charm.

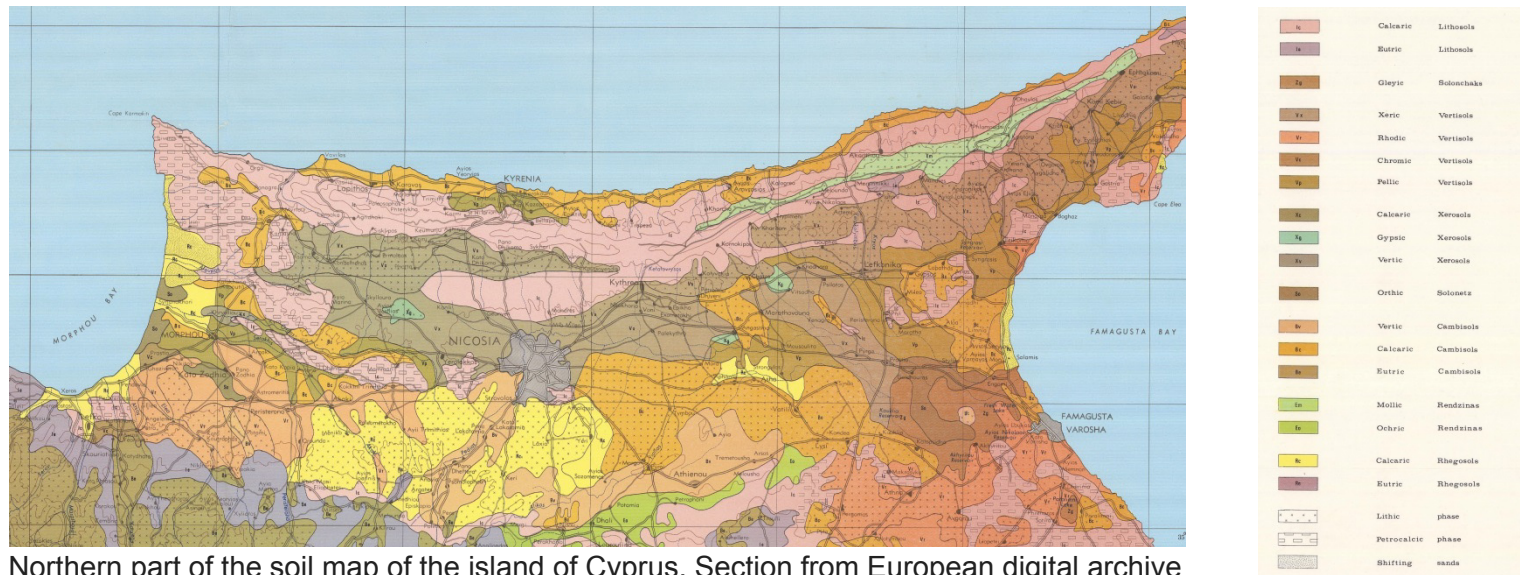
Geology



The emergence of the Troodos mountains and the island of Cyprus, changed according to Geological Survey Department [4].

Thanks to its exceptional geology, the marsh plain has a comparatively high fruitfulness. From a geological point of view, it is a so called subsidence area which has been filled, on the one hand, with marine sediment and, on the other hand, with Neogene (informally Upper Tertiary) as well as Pleistocene deposition of streams, consisting mainly of conglomerate, sandstone, marlstone, gravel and debris (DINTER 2016). The calcareous deposition has started during the Paleocene (65 Ma) with the sedimentation of the Lefkara Formation, followed by the Pachna Formation during the Miocene (23-7 Ma). Subsequently, the conjunction of the Mediterranean Sea with the Atlantic Ocean during the Pliocene (5 Ma) introduced yet another sedimentation, the Nicosia Formation, into the Plain of Mesaoria. Finally, the deposition of clastic sedimentary rocks, such as fanglomerates, occurred during the Pleistocene (2 Ma).

Soils



Northern part of the soil map of the island of Cyprus. Section from European digital archive on soil maps [4].

The overlying deep soils are used for agricultural purposes; however, because of their complex character, they partially constitute limits to its usage. That is, some soils contain high amounts of clay, usually, more than 60% („vertic“) which is why the soil is locally difficult to grow on. In contrast, large sections of the cultivated landscape consist of up to 60% lime („calcaric“). Alongside Cambisols and Vertisols, there are primarily Regosols in the Mesaoria. Regosols are characterized by shallow soils that lack a significant soil horizon due to its early stage of soil development. They accumulate on loose material which is either completely lime-deprived or has a low lime content, such as the sandy sediments that are characteristic for the Mesaoria.

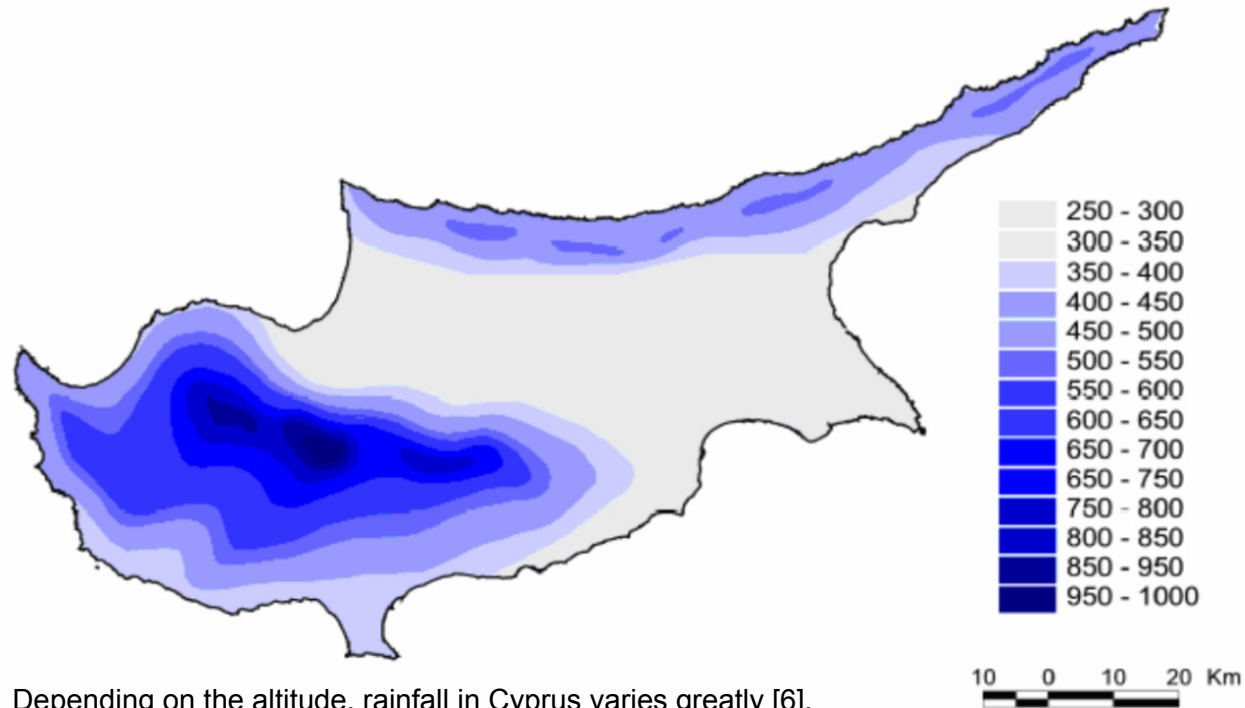
Soils

Sand can barely retain water and nutrients. Due to the nutrient deficiency of the sandy starting material, the yield of this soil is extremely low which is why only crops with low nutritional and water demands were used. But with systematical fertilization and modern irrigation methods, like faucets and sprinklers that waste less water, the use of Regosolic farmland could be improved significantly.



Watering a field with using a sprinkler [5].

Climate

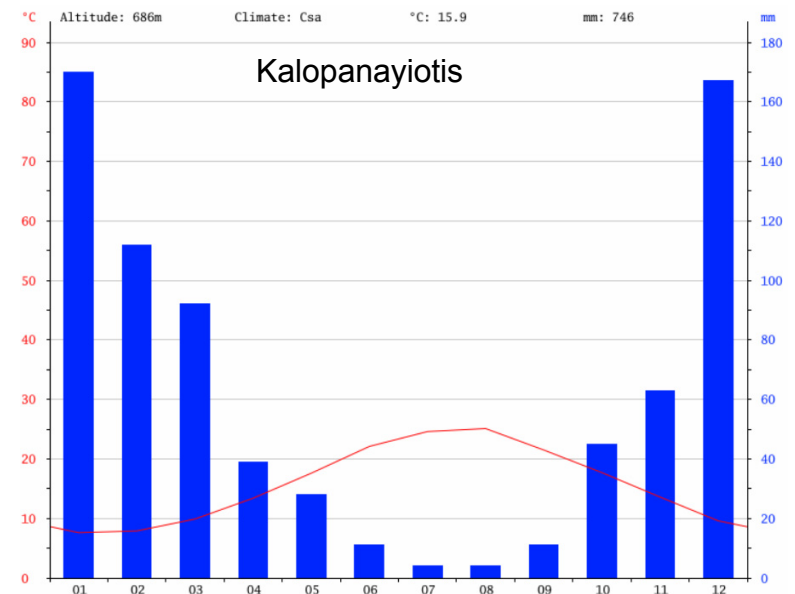
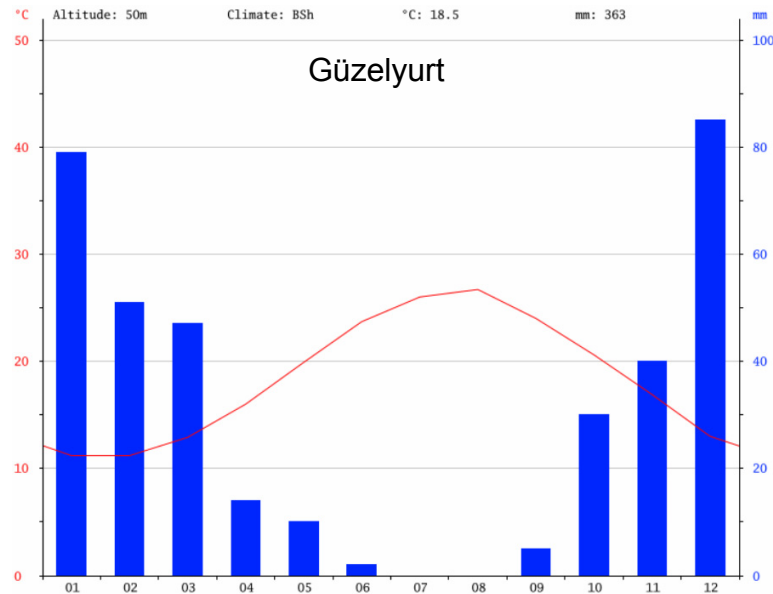


Depending on the altitude, rainfall in Cyprus varies greatly [6].

The island Cyprus belongs to the zoniobiome of the arido-humid winter-rain region and, thus, has a xero(-arid) Mediterranean climate (WALTER & BRECKLE 1999). On average, precipitation amounts to around 500 millimeters per year which, however, distributes quite unevenly throughout the island. While those parts of the Troodos mountains with the highest altitude have a share of up to 1000 millimeters of rainfall, the main cultivation area for citrus fruits (by Güzelyurt) receives, on average, only 363 millimeters per year.

Climate

KÖPPEN (1936) classifies large parts of the island as Mediterranean climate (Csa), in particular, parts of higher altitudes. Because of the low annual precipitation and even higher daily and seasonal temperature fluctuations, many parts of the Mesaoria plain contain steppe climate (BSh). In Lefkoşa, in the middle of the plain, the maximum mean monthly temperatures in July and August increase up to 36 °C.



Climate of the city Güzelyurt in the west of the Mesaoria and Kalopanayiotis on the north side of the Troodos Mountains: Comparing the precipitation for various stations in Cyprus that the main precipitation in the winter months fall from October to March. While the summer months in the mesaoria are generally free of precipitation, higher elevations can cause year-round rainfall. Climate diagrams from <http://de.climate-data.org> [7].

Water supply



In the summer months, agriculture relies on an additional water supply [8].

Soils which hardly retain any water, together with high daily temperatures, necessitate artificial irrigation. During summer, approximately 80% of the surface water is lost due to evaporation. The refilling of the aquifers is restricted to the winter months (from December until February), during which roughly 60% of the annual precipitation occurs. While agriculture contributes only slightly to the gross domestic product, it is considered the biggest user of Cyprus's water resources with 64%, followed by private households and tourism. Initially, the rivers that originated from the northwestern slopes of the Troodos mountains are sufficient for the water supply. Investigations show that there has been a tendency to lower volumes of rainfall in the last three decades (TSIOURTIS 2002). Predictions anticipate this decline in precipitation to continue, with an additional increase in temperatures. Because of the increasing water scarcity, further steps had to be taken to improve both water supply and irrigation.

Water supply

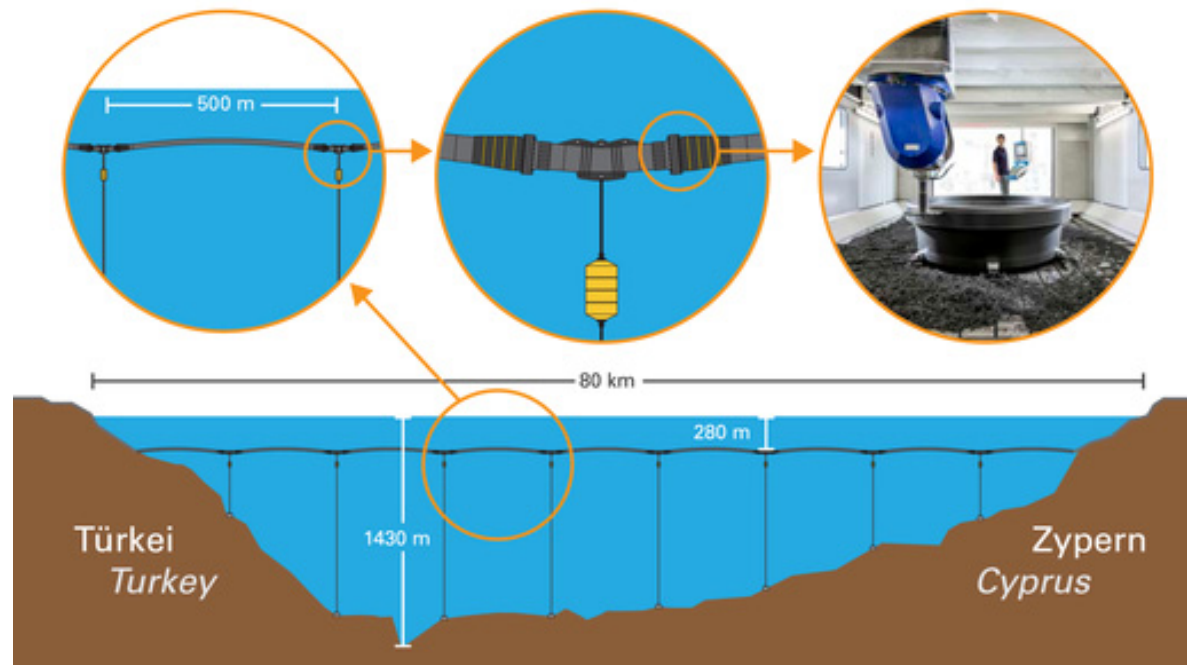
Financed by Turkey, a 1.2 billion dollar (US) project is supposed to remedy the water scarcity of Cyprus. An 80-kilometer-long underwater pipeline, originating from the Alaköprü Dam in the south of Turkey, will be transporting up to 75 million m³ of freshwater per year across the Mediterranean Sea to Cyprus. Deriving from the rainy Taurus mountains and after intermediate storage in the Geçitköy Dam, the water will be distributed further, of which about 85 % serves as irrigation for the Mesaoria plain. The remaining 15 % will be purified in a waterworks near Lefkoşa and used as drinking water.



An 80 kilometer long water pipeline connects the Alaköprü Dam with the Geçitköy Dam [9].

Water supply

Since the sea underneath the pipeline is, with up to 1430 meters, enormously deep, a pipe on the seabed was not considered an option. Furthermore, given equal temperatures, freshwater is less dense than saltwater, which is why the pipes would rise up to the water's surface, if they weren't attached to the ground. In order to ensure shipping that works smoothly, the pipeline was, eventually, fixated in a 280-meter-deep floating position by attaching the pipe on steel strings which are, in turn, anchored on the seabed.



Elevation of the trans-Mediterranean pipeline route between Turkey and North Cyprus [10].



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illustrations

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