

## Geomorphological sites of Albania

*Afat Serjani, Nevila Jozla, Adil Neziraj*

*Geological Research Institute, Tirana, Albania*

**Abstract.** Albania is characterized by a typically alpine accidented mountain relief. About half of the country (48.1 %) belongs to 200-1000 m altitude belt, and 28.5 % belongs to the levels higher than 1000 m. The average altitude is 708 m., i. e., twice more than high average of Europe. As a result the horizontal Smosh coefficient is more than 3 km/km<sup>2</sup>. There are formed some genetical types of relief, and namely, structural-erosional, karstic, river-erosional, erosional-denudated, glacial, seacoast. Geological-tectonical evolution, varied kinds of rocks, climate changes and countinuos action of the atmospheric agents have influenced the formation of different kinds of morphological forms of the relief. In such a manner are formed a number of geomorphological sites of natural aesthetic and scientific importance or with climate-curative features. The very dense river net with common tendence from east to west caused formation of many erosional sites. The large surface of carbonate rocks (6600 km<sup>2</sup>) and evaporite ones favoured formation of karstic plateaus, fields, holes, and caves. Glacial events have their traces as well, especially on the high mountains of Albania. They form lakes, circus, morains, lagoons, etc. often of geomonumental values.

Geomorphological sites in Albania are widespread mainly in the Northern Mountain Region (Albanian Alps), central and southern mountain units and less in the hilly-field near the Adriatic sea coast. They are of local, district's, national and some of Balkan or European importance.

Serjani, A., Jozla, N., Neziraj, A. 1998. Geomorphological sites of Albania - *Geologica Balc.*, 28, 3-4; 129-136

**Key words:** Albania, Geomorphological sites, erosional, karstic, glacial, tectonical, neotectonical, thermal waters, mineral waters

### Introduction

This paper is a contribution for acknowledgement, evaluation and inventory of geological sites and geological heritage conservation in Albania. Scientific activities on the geological heritage are developing within the framework of European Programs of Pro-Geo (The European Association for the Conservation of the Geological Heritage), and due to the financial support by Geological Survey of Albania for Project on Geological Monuments (Geological Heritage) in Albania.

According to the topics of the Annual Meeting of ProGEO '98, where is foreseen a discussion on the inventory of geomorphological sites of each country of South-Eastern Europe we have compiled this contribution focused only on the geomorphological sites of Albania. On the other hand, the main authors of this paper, which are heading Geological Project on Geomonuments (Geological Heritage) in Albania consider as a principal aim the recognition, inventory and description of geomorphological sites. Many of them need protection from natural and social haz-

ards. Thus, for example many of the geomorphological sites formed as erosional remains with a lot of different beautiful and interesting forms need protection against erosion.

The list of geomorphological sites is presented (see appendix of this paper) classifying them according to the main factors of formation: erosional, karstic, glacial, tectonical-lithological-erosional, neotectonic. They are divided in separate groups of landscapes of complex values (geomorphologic, aesthetic-touristic, hydrogeological, climate and curative), thermal and mineral waters as well. Grouping and description of geomorphological monuments is given on the basis of the physical-geographical units of Albanian territory defined by the Center for Geographical Studies of the Albanian Academy of Sciences.

The list, classification and selection of geomorphological sites presented in this contribution are preliminary ones. They have presented to the participants of ProGEO'98 Meeting only some examples of the great amount of different geomorphological landscapes of Albania. At the same time we will do all attempts that the most important of the geomorpho-



Fig. 1 Geographical location of Albania

logical sites of Albania to be known and included in the Balkan and European lists of Geological Heritage.

Unfortunately we could not supply yet all necessary illustrations for each geomorphological site but we will do that in the future. This paper is based on the experience and geological-geomorphological data of tens and hundreds of Albanian specialists, such as geologists, geographers, geomorphologists and other natural science workers.

## Short historical review

Albanian people since the ancient times evaluated natural beauties of his country. For many aesthetic landscapes and varied morphological forms of the relief legends are told and written about their origin and beauties in connection with people's everyday life and human virtues.

The first writings of geographical-geomorphological character about the Albanian territory belong to foreign travellers and geographers. Since the past century the French geographer and geologist Ami Boue wrote on the Dibra and Fushe Kruja (Uje Bardha) thermal waters.

Sami Frasherri, - the greatest representative of the Albanian Renaissance of the 19th Century, has written about Albanian landscape as following: "Albania is one of the most beautiful regions of Balkan with high mountains, wide fields, sea coasts with many bays and harbours, with nice rivers and lagoons".

At the beginning of the 20th century the Austro-Hungarian geologist Franz Nopsça described the common geography of Albanian Alps, and the main valleys and passes in his book "Geographie und Geologie Nordalbanians" (Budapest, 1929). Jacques Burchart (1922) described geological-geomorphological features of Southeastern Albania (Korca-Po-

gradeci region). Aldo Sestini in his publications "La pianure costiere del'Albania" (Roma,1940) and "La Riviera del'Albania" (Roma, 1942) described rivers of Albania, terraces and dynamics of the Adriatic coast. B. Castilioni (1949) observed Quaternary glacial activities in Albania.

Complex geological geomorphological studies in Albania were carried out during the period 1950-1990 since the foundation of Geological Survey of Albania (1952), and many Central Scientific institutions such as Faculty of Natural Sciences, Geological-Mining Faculty, Geological Research Institute, Center of Geographical studies in Academy of Sciences of Albania and many geological enterprises all over Albania.

First geological survey on different scales carried out during fifty years of this century mapped many interesting geological-geomorphological phenomena. A lot of modern studies carried out during intensive prospection works (1960-1990) were finalized with compilation of Common Capital Studies on Geology, Hydrogeology, Metallogeny, Geography, Tectonics and Neotectonics of Albania and accompanied by respective maps in scale 1:200 000 (Geology of Albania, 1983, 1990, Physical Geography of Albania, 1991). In these works contributions of a hundred specialists of natural sciences have been included.

Geological Heritage aspect in Albania was treated only during the last years within the framework of ProGEO (Serjani, Cara, 1995; Serjani, Neziraj, Jozja, 1997). The preliminary classification of geological sites was compiled as well (Serjani, Neziraj, Jozja, 1998).

## Geomorphological sites of Albania

### Geographical extent of the sites

Geomorphological sites are found all over the territory of Albania. Prof. P. Geco for the first time (1963) defined four large geographical-physical units in Albania:

- Albanian Alps mountainous region.
- Central Mountain Region (here are included north-eastern, eastern and southeastern mountains parts);
- Southern Mountain Region (including Ionian Seaside);
- Lower Adriatic Coast territory (here are included the western hill and field regions of the Adriatic coast from Buna to Vlora.

Most of the geomorphological landscapes, many of which represent geological monuments are situated in mountain regions of high horizontal relief and especially in high mountain assemblages such as Albanian Alps, Korabi high in Albania plateau, Martaneshi, Shebeniku, Shpat-Guri i Topit-Voskopoje, Tomorr-Kulmaka, Nemercka and Bureto mountain chains, Çika seaside mountain chain, and Kurveleshi Plateau.

On the higher levels of the above-mentioned mountain regions geomorphological sites of glacial origin (glacial lakes, circus, morains, holes and valleys) predominate, as well as erosional sites and especially erosional remains (pyramids, ridges, passes, gorges etc.), and geomorphological sites of karstic origin as well (plateaus and wide karstic fields, karstic holes and valleys and a lot of large deep karstic caves of varied geomorphological forms.

The mild subtropical climate of Mediterranean type influenced the formation of a dense hydrographic net. To this net belong tens of geomorphological sites such as river penetrating passes, canyons and long narrow valleys formed in eastern valleys of Drini, Mati, Erzeni, Shkumbini, Osumi, Devolli and Vjosa rivers. The common flow direction of rivers from East to the West helped to the formation of penetrating passes and gorges, which have served since the ancient times as single paths connecting eastern regions with western regions. Especially Drini, Shkumbini (through is passing Eight Corridor) and Vjosa mature valleys were and remains the favourable roads for the connection of Middle East and Western Asian Countries with Adriatic Coast.

Into the inner depressions there are formed a lot of landscape forms linked with neotectonic processes and lithological-erosional remains of various nice shapes mainly in thick sandstone and conglomerate rocks of the Tortonian.

In the Adriatic coast zone predominate landscapes formed as result of neotectonic events and dynamics of coast line such as new beaches, lagoons, marshes,

bays and sandy hills or seacoast dunes. While the Ionian seaside is characterized by geomorphological sites of marine erosion such as narrow bays, and beaches, under sea caves and undersea water springs.

On the medium flow of main rivers especially in Vjosa river are widespread some levels of thick river terraces.

The Dumre Plateau is built up by evaporites of Permian-Triassic age. On the surface of salt rocks there are formed a lot of karstic landscapes: lakes, tunnels and holes. Most of them are of interesting forms and a rare beauty. The Belshi touristic spot with large, blue, karstic lakes is popular all over Albania.

## Preliminary classification and selection of geomorphological sites of Albania

The preliminary classification or grouping of geomorphological sites is based on the genetical criteria, taking in consideration only the main factor which have influenced to the formation of the landscape. Different simultaneously acting factors contributed for formation of each site and it is difficult to designate the main factor for the formation of each geomorphological site.

Geomorphological forms: of landscapes and, consequently geomorphological sites are divided in seven main groups (Table 1) as follows:

First Group: Geological sites of erosional origin. This group is divided in three subgroups:

Table 1

GROUP OF SITES	SUBGROUP	NUMBER OF SITES	
I. EROSIONAL	- EROSIONAL		
	REMAINS	49	
	(Pyramids), ridges	61	
	- RIVER EROSION	19	
	(valleys, gorges, canyons, waterfalls)		Total
	-MARINE EROSION	129	
	(seasides, beaches, caverns)		
II. KARSTIC	Lakes	8	
	Caves	31	
	Karstic-fields, plateaus, holes,	54	
		93	Total
III. GLACIAL	Lakes	15	
	Glacial circus, morains	24	
	" valleys and fields	12	
			Total
		51	
IV. TECTONICAL	Passes, gorges	33	
EROSIONAL-			
LITHOLOGICAL			
V. NEOTECTONICAL	Lagoons, marine swamps, fluvial and marine terraces	20	
VI. COMPLEX SITES	Geomorphological, aesthetic, hydrogeological, touristic, climatic sites	22	
VII. THERMAL AND MINERAL WATERS		16	

Geological sites formed by influence of atmospheric agents. Here are mentioned erosional remains with a lot of varies forms such as: pyramids, pillars, columns and mountain monocline ridges.

Geological sites formed as result of river activity: valleys, penetrating gorges, canyons, waterfalls etc.

Geomorphological sites formed as result of marine activity: coast line, beaches and caves.

Second Group: Here are included geomorphological sites formed as result of karstic phenomena such as: karstic lakes, caves, fields, plateaus karstic slopes and karstic underground springs as well.

Third Group: Glacial-geomorphological landscape such as: glacial lakes, cirrus, morains, holes, funnels and glacial valleys.

Fourth Group: Geological-geomorphological sites formed by influence of tectonical-erosional events as result of lithological differences of the rocks.

Fifth Group: Geological sites formed by the neotectonic activity.

Sixth Group: Contains geomorphological sites which are characterized by complex features: geomorphological, hydrogeological, aesthetic, touristic, climatic curative values etc.

Seventh Group: Includes thermal and mineral underground water springs.

## Selection of the geomorphological sites of Albania

Amongst the classification we have done a preliminary selection of geomorphological sites as well. There are defined four groups of sites according to this values and importance (Table 2): geomorphological sites of local importance. Here are included common, most wide spread sites.

District (geographic province) sites, which represent typical sites for separate tectonic zones and for each geographical-physical unit of Albania.

Table 2

Group of sites	Total
Local sites	246
Districts tectonic sites	43
National sites	43
Regional sites	16

In the National group are selected sites with values of national importance in the framework of Albanides.

At last, in the group of international values (regional sites) are separated those sites, which in comparison with similar sites in the Eastern Alpine Mediterranean Chain (Dinarides-Albanides-Hellenides), and in Balkan Peninsula represent beauties and values of regional importance.

## References

- Gjeografia fizike e Shqiperise*. 1991. Vell I, Tirane.  
*Gjeografia fizike e Shqiperise*. 1992. Vell II, Tirane.  
*Gjeologjia e Shqiperise*. 1983. Tirane.  
 Palmentola, G. 1994. Glacial features and snow-line trend during the last glacial age in Albanian and Greek mountains. - *Proceedings of the 7 Congress of the Geol. Soc. Greece*, Thessaloniki.  
 Serjani, A., Cara, F. 1996. List of sites of geological importance which should be proposed for protection by the Albanian state. - *Geologica Balc.*, 26, 1; 57-60.  
 Serjani, A., Neziraj, A., Jozja, N. 1997. Methods and principles used for classification of Geological Sites of Albania.- *ProGEO 97, Proceedings*. Tallinn.  
 Serjani, A., Neziraj, A., Jozja, N. 1998. Preliminary classification of the Geological sites of Albania. - *Proceedings of the 8 Congress of the Geol. Soc. of Greece*, Patra, May, 1998.  
 Zagorchev, I. 1996. Geological Heritage of the Balkan Peninsula: Geological Setting (an overview). - *Geologica Balc.*, 26.2. Sofia; 3-10.  
*Geological Map of Albania* (in sc. 1:200 000), 1982. Tirana.  
*Hydrogeological Map of Albania* (in sc. 1:200 000), 1984. Tirana.  
*Tectonic Map of Albania* (in sc. 1:500 000), 1985. Tirana.  
*Neotectonic Map of Albania* (in sc. 1:200 000), 1983. Tirana.

## List of geomorphological sites of Albania

*1-EROSIONAL GEOLOGICAL SITES:***1-Geological sites formed as result of atmospheric agents:****1-Regional sites (Eastern Mediterranean chain, Balkan Peninsula):**

- Jezerca Tower (2692 m) with surrounding erosional pyramids
- Kamja stone Pick (1481 m).

- Guri i Cjapit erosional site (he-goat/billy-goat stone).

**2-National sites:**

- Gryka e hapet, Pick (2625 m), high erosional pyramid with three glacial cirque.
- Granite erosional pyramid in Fierza Dam
- Trebinja geological site with a lot of different erosional forms in Tortonian sandstones; (elephant foots, mushrooms, pyramids etc).

- Muzina Gorge (Pass) (570 m).
- Shpiragu slope with a lot of erosional symmetric streams
- Lekdush-erosional pyramids of carbonate breccia.

**3-District's (geographic province or geological zone) sites:**

- Gigantic (enormous) clay spheres of Tortonian in Currila, Durres-Kazani Gorge (Pass).
- High erosional pyramids of Kollata Mountain (2553 m).
- High Shkelzeni pyramids (2407 m)
- Kaltanji-Lubonja pyramids of sandstones
- Kavaja Rock-Wall with a lot of erosional forms on the surface.

- Çajupi Pass.
- Gjarperi (Snake) Pass (1525 m).
- Kreshta Pass (1057 m).
- Boti Pass (Konispol).

**4-Local sites:**

- Muzhaqi stone with a karstik phenomena views around Qytet (Town) Gorge (1200 m) (Pass).
- Erosional pyramid of Brumbulli (Beetle) Mountain.
- "Terra rossa" erosional remains in Muzina-Peca region.
- "Terra rossa" outcrops, Bajza, Kastrat
- Erosional pyramid of Niça Mountain
- Dhembeli Gorge (Pass).
- Kulmaka Pass, 1473m
- Bleta (Bec) mountain pyramid (1409 m).
- Kozeli mountain pyramid (1492 m).
- Zhulati carbonate erosional pyramid.
- Pine Pass (Qafa e Pishes).
- Qafa e Gjashtes (Six's Pass) (Saranda).
- Vineyard (Maja e Vreshtes) Mountain
- Shengjergji Pass (1252 m).

- Vertopi Pass
- Stavroi Pass.
- Renz Ridge
- Dellinja Pass.
- Rehova Gorge
- Rock Pass (1100 m).
- Devrie Pass, 1300m
- Martini Gorge (Pass)
- Kruath Pass, 1055m
- Frasheri Pass, 650m.
- Vale Pass (1250 m).
- Siraku Pass, 1360m.
- Six' oaks Gorge (Pass) (Shebenik)
- Kameniku Gorge (Pass) (1300 m).
- Shendelli Gorge (Pass) (1300 m).

**1-Geological sites formed as result of river erosional activity:****1-Regional sites (Eastern Mediterranean chain, Balkan Peninsula):**

- Gurra-Lekdush-Progonat Canyons.
- Sineci Canyon (2 km long, 200-250 m deep)

- Shkopeti Gorge

**2-National sites:**

- Skavica Gorge (Drini River).
- Çorovoda canyons and Waterfall.
- Doçi Canyon (60-80 m deep).
- Seta Canyon (300 m deep).
- Vajkali Valley

- Holta Canyon
- Miçan-Qeshibeshi Canyons.
- Lami Canyon (300 m deep).
- Kelcyra Gorge (Vjosa River).

**3-District's (geographic province or geological zone) sites:**

- Skorani Gorge (Erzeni River).
- Poçemi Gorge (Vjosa River).
- Grunas Canyon (Shala River)
- Shala Gates Canyon (Shala River).
- Miraka Gorge (Shkumbini River).
- Bicaj Gorge and Canyons

- Kapshtica Pass
- Valbona Canyons
- Llenga Gorge (Shkumbini).
- Dedaj Canyon (Dry Stream).
- Lengarica Canyon

**4-Local sites:**

- Grabova Gorge (Devoll).
- Doreza Gorge (Vjosa River).
- Vanai Gorge (Luma River).
- Bushtrica Gorge (Drini River).
- Zemblak (Cangonji) Gorge
- Bogazi Gorge (Pavlla River).
- Vithkuqi (Osumi) Canyon.
- Maliqi (Bratile) Canyon (?)
- Miras (Devoll) Canyon.
- Burimet e Klosit Canyon.
- Preli Bridge Canyon (Shebenik).
- Ura e Murrathit (Murathi Bridge) Canyon
- Plani i Bardhe Valley

- Taçi Gorge
- Devolli Gorge.
- Selcka Gorge
- Povla Gorge
- Kremenara Pass
- Uraka Gorge.
- Voskopoja Canyon
- Borocka Canyon
- Kamenica Canyon.
- Murriz-Pass-Canyon
- Okshun Valley
- Vodica Gorge.
- Borova Gorge

- Molla e Lures Gorge
- Kaçineti Canyon
- Borshi Canyon.
- Pogoman Gorge
- Çevaci Canyon

- Seta Gorge
- Virka Gorge
- Arni Canyon
- Barmashi Gorge
- Qikami Gorge.

**c-Geological-erosional sites formed as result of sea wave activity:**

**1-Regional sites (Eastern Mediterranean chain, Balkan Peninsula):**

- Zverneci Beach.
- Divjaka Dunes.

**2-National sites:**

- Kakome Bay.
- Shengjini Beach
- Dhermi Beach
- Haxhi Alia Cave in karaburun.
- Velipoja Dunes.
- Semani Dunes

**3-District's (geographic province or geological zone) sites:**

- Pirate Cavebin Himara Town.
- Dafina Bay.
- Gjon Gjileka Cave.
- Brisani Bay.

**4-Local sites:**

- Pirate cave in Dhermi beach.
- Xhehenen Gorge in Sazani iceland.
- Dove Cave in Karaburun.
- Pavla Cap.
- Currila Beach.
- Gjuheza Cap.
- Zhak Poro Dunes.
- Bear Bay

**II-GEOMORPHOLOGICAL SITES OF KARSTIC ORIGIN:**

**a-Karstik Lakes and Depressions:**

**2-National sites:**

- Belshi Lakes (touristic spot).

**3-District's (geographic province or geological zone) sites:**

- Kalcoi Lake, Kolonja-Gjirokaster

**4-Local sites:**

- Large Lukova Lake, Poraçan
- Paroska-Çerage Lakes.
- Zgjanç-Çestije Lakes and Depression
- Moçal-Çana Lakes
- Dega-Merhoje Lakes.
- Ndergozhda-Seferan Lakes

**b-Caves:**

**1-Regional sites (Eastern Mediterranean chain, Balkan Peninsula):**

- Jubani Cave, Shkoder (remains of living since the Paleolithic times).

**2-National sites:**

- Gajtani Cave.
- Duk Gjoni Cave (Rreze Kanalit) (40-45 m long with water).
- Black cave, Erzen
- Skotini Cave, Vanister.

**3-District's (geographic province or geological zone) sites:**

- Poçem Cave, Mallakaster.
- Kolonja Cave, Gjirokaster
- Pirogoshi Cave, Çorovode
- Gusmari Cave.

**4-Local sites:**

- Vali Cave, Erzen.
- Xoxa Cave, Konispol.
- Mbilqeth Cave, Cukal.
- Treni Cave (Small Prespa)
- Leke Peta Cave, Kurvelesh.
- Brovnik Cave, Albanian Alps.
- Shpaniku Cave, Albanian Alps.
- Bora (Snow) Cave, Kunora e Lohes.
- Tresi Cave, Korçe. 32-Velça Cave, Vlore.
- Black Cave in Curraj i Eperm (Albanian Alps)
- Maja e Molles Cave, (Kurveleshi plateau).
- Neziri Cave, Mat (Trace of living since the Paleolithic times).
- Krevenica Cave, Mbi Shkoder.
- Kurbneshe Cave, Merkurth, Mirdita region.
- Drela Cave in Curraj i Eperm (Albanian Alps)
- Xara Cave, Sarande (Trace of living since the Paleolithic times).
- Velça Cave, Vlore.
- Guva Cave, Pode village
- Drogan Cave, Skrel Progonat.
- Boga (Drogana) Cave
- Kakver Cave, Albanian Alps.
- Terova Cave, Skrapar.
- Daci Cave (K. Mountain).
- Dove Cave, Permet.
- Mezhgorani Cave.
- Zhyla Cave, Prekal
- Vali Cave, Erzen.
- Dragoti Cave.
- Radhima Cave-Mazhari Cave
- Klllogjeni Cave, Kunora e Lohes.
- Dom Gjoni Cave (East of Munella M.)

**c-Karstic valleys and karstic fields:**

**3-District's (geographic province or geological zone) sites:**

- M. Pusit karstic field.
- Mountain of karstic holes (east of Tirana).

**4-Local sites:**

- M. Kanalit karstic field.
- Miçani karstic field.
- High mountain karstic field of Kurveleshi plateau (Lekdush-Progonat-Golem, 1500 m above the sea level).
- Verfa karstic field.
- Karstic Field Bjeshket e Oroshit (1300-1400 m)
- Poliçani karstic field (Zagori).
- Karstic field of Munella Mountain.
- Hasi karstic slopes.
- Arni karstic field.
- Krej-Lura karstic field.
- Merkurthi karstic field.
- Miraka karstic field.
- Qarrishta karstic gorge.

- Vanova karstic field.
- Vumlos karstic field.
- Studa karstic field.
- Klenja karstic field.
- Golloborda karstic field.
- Prespa karstic field.
- Ivanai, Koplík, karstic field.
- Villa karstic valley.
- Nenzat karstic valley.
- Kajeli karstic hole.
- Kamsholli karstic hole.
- Paruni karstic hole.
- Veleçik-Bridash karstic slope.
- "Black Field" karstic field (1.2 km<sup>2</sup>).
- Vrini karstic holes field (4.7 km<sup>2</sup>).
- Krekeza karstic hole.
- Mekzeza karstic hole (2.3 km<sup>2</sup>).
- Liqethi karstic hole (3.2 km<sup>2</sup>).
- Karstic Field (Bec holes) in Mountain of Holes.
- Karstic Field in Dry Mountain.
- Rungaja karstic slope.
- Shala karstic slope.
- Poda karstic slope.
- Barmashi karstic slope.
- Kunora Round karstic slope (Shebenik).
- Trishillka karstic slope.
- Pusi karstic slope.
- Çardhaku karstic slope.
- Mias karstic slope.
- Zonja (Mrs) karstic slope.
- Tomorr-Kulmaka- karstic field (plateau).
- Vali i Vunoit karstic field (60-70 ha).
- Shashica karstic field.
- Rrunja karstic hole (Llogora, 900 m above the sea level).
- Rovena karstic ridge.
- Zagora karstic field.
- Rragami karstic field.
- Kusha karstic field.
- Graca karstic field (2.5 km long).

### III-GEOMORPHOLOGICAL SITES OF GLACIAL ORIGIN:

#### a-Glacial Lakes:

##### 1-Regional sites (Eastern Mediterranean chain, Balkan Peninsula):

-Nezhda e Lures: Large Lake; Black Lake; Cow's Lake; Flower's Lake (about 1800-2000 m above the sea level) and Lura glacial Circus (7-8 circus, 1600-1700 m above the sea level).

##### 2-National sites:

-Jezerca Lakes (Albanian Alps) (Large Lake; Lohaj Lake; Kolaj Lake).

##### 3-District's (geographic province or geological zone) sites:

-Shebeniku glacial lakes-Rajce, Bushtrice, Pike,-Balgjaj Lakes (18 lakes).

(1500-2000 m above the sea level).

-Bjeshka e Zonjave Lake and glacial landscape

##### 4-Local sites:

-Gashi-Doberdol glacial lakes (Albanian Alps).-Vallamara Lake

-Dashi Lake (2175 m above the sea level)

(Albanian Alps).

-Sulbica Lake.

-Mojani glacial lake (Albanian Alps).

-Fusha e Ndermetme Lake.

-Radomira Lake.

-Stanet e Preshit Lake

-Lapsi Lake (Dhoksi Mountain).

-Martaneshi Lakes (18 lakes)

#### b-Circus, moraines, glacial holes:

##### 2-National sites:

-Bjeshket e Nemuna (Klogjen, Shterpore, Radohime, Livadhi i Boges).

##### 3-District's (geographic province or geological zone) sites:

-Çajupi field, Gjirokastra.

-Markfica glacial circus.

-Beautiful holes (Jezerca Mountain). -Balgjaj glacial circus (5 circus).

-Grebani glacial cirque (Fan form, 2 km<sup>2</sup>;  
above the sea level).

-Nemerçka glacial circus (7-8 circus on the 1700 m 1500 m above the sea level).

##### 4-Local sites:

-Ujaniku glacial field (NE of Tomorri Mountain). -Bjeshka e Zonjave glacial circus.

-Poroçani glacial circus.

-Vallamara glacial circus.

-Kollata-Rupe-Mijushe glacial landscapes

-Luca glacial circus.

-Lugu i Madh glacial hole.

-Çika glacial circus.

-Griba glacial circus.

-Tomorri glacial circus.

-Çajupi glacial circus.

-Qorre glacial circus (Eastern slopes).

-Markaj Lake and Hole.

-Snake stream glacial circus.

-Rupa holes of the glacial circus.

-Bjeshket e Shehut glacial circus.

#### c-Glacial Valleys:

##### 1-Regional sites (Eastern Mediterranean chain, Balkan Peninsula):

-Valbona touristic valley (the highest part).

##### 2-National sites:

-Rudina valley (2.5 km long, 25.-300 m wide).

##### 3-District's (geographic province or geological zone) sites:

-"Pear" glacial hole in Jezerca Mountain.

-Korabi glacial Plan.

##### 4-Local sites:

-Doberdoli glacial valley.

-Sylbica glacial valley.

-Boga glacial valley.

-Vukli glacial valley

-Illica-Tershana glacial valley

-Curraj glacial valley.

-Vermoshi glacial valley.

-Gashi glacial valley

### IV-GEOLOGICAL SITES OF TECTONICAL-LITHOLOGICAL-EROSIONAL ORIGIN:

#### 2-National sites:

-Zvezda Pass (tectonical).

#### 3-District's (geographic province or geological zone) sites:

- Llogara Pass (1025 m above the sea level).
- Skerrica Pass (900 m above the sea level).
- Rushta Pass (2020 m, in contact between magmatic rocks and flysch formations).
- Kiçoku Pass.
- Langonj (hunting dog's) Pass, 2156 m.

**4-Local sites:**

- Shen Vasili (Nivice-Bubar) tectonic Pass.
- Zhuri i Edhave Pass (Denelli Pass).
- Bishkazi Pass (Albanian Pass).
- Kstec Pass (1600 m).
- Rrethi i Bardhe (White Round) Pass
- Rupa Pass (Red Pass) (2130 m).
- Kolçi Pass (1260 m).
- Shengjergji Pass, Dukat (1252 m).
- Derrasa Pass (Kuçi Pass) -Muherr Pass
- Agri Pass (1320 m).
- Mertenza Pass.
- Droça Pass.
- Gronda Pass.
- Doberdoli Pass.
- Trojani Pass.
- Lipova Pass.
- Gjo Luli Gorge
- Belaj Gorge.
- Kakia Pass.
- Bene Pass.
- Lurzi Pass.
- Mojani Pass.

**V-GEOMORPHOLOGICAL SITES OF NEOTECTONICAL ORIGIN:**

**1-Regional sites (Eastern Mediterranean chain, Balkan Peninsula):**

- Butrinti Lake-Lagoon
- Divjaka Lagoon.

-Karavasta swamp

**2-National sites:**

- Kelcyra Terraces (Vjosa River).
- Lezha Lagoon.

**3-District's (geographic province or geological zone) sites:**

- Narta swamp (marsh), Zvernec.
- Shiroka Beach.
- Patok Lagoon.
- Permeti Terraces (Vjosa River)
- Pashaliman Lagoon
- Viluni Lagoon.

**4-Local sites:**

- Kabashi Terraces.
- Blushi Terraces.
- Orgocka Terraces
- Osumi Terraces.
- Çarshova Terraces (Vjosa River).
- Iliar-Vuno marine terraces
- Borshi marine terraces.
- Mulleti Terraces
- Iba Terraces. Borshi marine terraces
- River Terraces in Tresova, Gramsh.
- Ura e Shenjte Terraces (2 levels 4-5 m thick).

**VI-GEOMORPHOLOGICAL SITES OF THE COMPLEX ORIGIN OF LANDSCAPES:**

**1-Regional sites (Eastern Mediterranean chain, Balkan Peninsula):**

- Lura touristic spot.
- Ksamili touristic spot.

**2-National sites:**

- Llogara touristic spot.
- Blue Eyes touristic spot
- Himara touristic spot.
- Thethi touristic spot.
- Driloni touristic spot.

**3-District's (geographic province or geological zone) sites:**

- Boga touristic spot.
- Borshi touristic spot.
- Cold Water Springs (Vlora, 40 springs).
- Voskopoja touristic spot.
- Cold Water Springs (Tepelena).
- Kelcyra touristic spot.
- Razma touristic spot
- Dajti touristic spot

**4-Local sites:**

- Black Water (Black Eyes), Kelcyra.
- Dardha touristic spot.
- Hoston (Borsh-Qeparo) Springs.
- Prespa touristic spot.
- Selita karstic water springs.
- Viroi Spring (Gjirokastra)
- Karaburuni-Rreze kanalit water springs (below the sea level).
- Gjinari touristic spot.

**VII-THERMAL AND MINERAL WATER SPRINGS:**

**2-National sites:**

**-Glina spring of mineral water with curative features.**

- Elbasani thermal springs (and baths) that contain: Cl; Na; H<sub>2</sub>S. T=+54°C
- Peshkopia thermal springs (and baths) that contain: Ca; H<sub>2</sub>S; SO<sub>4</sub>. T=+30°C
- Leskoviku thermal springs (and baths) that contain: Cl; Ca; H<sub>2</sub>S;Na. T=+27°C

**3-District's (geographic province or geological zone) sites:**

- Matogjini salt spring (Vlora) that contains: Cl; Na
- Bufi (Butrinti) salt spring (Saranda) that contains: Cl; Na; H<sub>2</sub>S. T=+16°C
- Benjat e Permetit thermal springs (and baths) that contain: Ca; Na; H<sub>2</sub>S. T=+30°C

**4-Local sites:**

- Skela e Semanit thermal spring that contains: Ca; H<sub>2</sub>S; SO<sub>4</sub>. T=+67°C
- Holta thermal spring (Gramsh) that contains: Cl; Na. T=+24°C.
- Krane (Saranda) thermal spring that contains: Cl; Na. T=+34°C
- Treblova Spring (Mallakastra) that contains: Cl; Na; H<sub>2</sub>S
- Greshica spring (Mallakastra) that contains: SO<sub>4</sub>; Mg; Na
- Qeparo spring (Himara) that contains: Cl; Na. T=+16°C
- Mamurrasi spring (Laçi) that contains: Cl; Na; H<sub>2</sub>S
- Fushe Kruja spring (Kruja) that contains: Cl; Na; H<sub>2</sub>S
- Ardenica spring (Lushnja) that contains: Cl; Na; J