

# The Main Geotourism Resources of Turkey

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## Abstract

The main aim of this paper is to determine “The Main Geotourism Resources of Turkey”. Defined as all kinds of travel and accommodation causing to consumption for purposes including relaxation, entertainment, seeing new places and people, health, education and culture, tourism today is one of the biggest industries of the world. Nowadays this industry has also been adding geotourism, which is a new trend and it’s a new dimension. Geotourism is able to define to the utilization of geological and geomorphology heritage resources, as (including) mountain ranges, rift valley, volcanoes, karst landscapes and arid environments in context education-based tourism.

Turkey is a country with immense tourism potential thanks to its rich natural and cultural landscape unique among Mediterranean countries and its location connecting Asia, Europe and Africa. Moreover, it has an important richness in terms of archaeological, cultural and natural attractions which are an excellent basis for developing geotourism. In this study the author tried to determination geological and geomorphology heritage resources of Turkey and submitted proposals, future plans and applications for developing geotourism.

Key Words: Geology Heritage, Geotourism, Geopark and tourist

## Introduction

Tourism has an important socio-cultural and economic place in Turkey. In 2007, 23,340,911 tourists have visited Turkey with an income of \$13,990bn. Turkey is one of the most tourist visited countries in the world, it has a rich culture and beautiful natural environment. However it must not use this resource too much. The main type of tourism in Turkey is beach-based tourism.

One of the new tourism developments is geotourism. Geotourism is rapidly being recognized as an exciting new direction for tourism surrounding geological and geomorphology attractions and destinations. Geotourism is concerned with sustaining or enhancing a destination’s geographic character (Wartiti *et al.*, 2007: 2). This tourism has some differences compared to the other types of tourism. Geotourism depends on scientific value, geotourism appeal, educational and historical values, international significance, cultural, social structure, biodiversity and appearance. Thus the types of tourist who are visiting these places are also different.

Geotourism sits within a spectrum of definitions. Because of this, it can be considered to be a part of concepts of sustainable tourism and ecotourism. Geotourism is a sustainable tourism activity and has contributed more economically than other tourism to local people who are taken the place in tourism (Newsome, 2006; Efe *et al.*, 2008: 323).<sup>1</sup> Turkey has an important potential for geotourism. It is essential to determine this potential.

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<sup>1</sup> The National Geographic Society has drawn up a "Geotourism Charter" based on 13 principles:

1. Integrity of place: Enhance geographical character by developing and improving it in ways distinctive to the local, reflective of its natural and cultural heritage, so as to encourage market differentiation and cultural pride.

Turkey is a Eurasian country that stretches across the Anatolian peninsula in western Asia and Thrace in the Balkan region of southeastern Europe. Turkey is a peninsula which is bordered the Black Sea, the Mediterranean and the Aegean. It has a total coastline of 8,333 km including the Marmara Sea. Turkey also shares borders of 269 km with Bulgaria and 203 km with Greece to the northwest; 276 km with Georgia, 325 km with Armenia, 18 km with Azerbaijan (Nahjivan) to the northeast; 529 km with Iran to the east; 378 km with Iraq to the southeast and 877 km with Syria to the south. Turkey is a large country with the area of 814,578 km<sup>2</sup> and has a population of over 70 million people. The highest mountain in Turkey is Ağrı Mountain with 5,137 m followed by Buzul Mountain (4,116 m), Uludoruk (4,135 m), Süphan Mountain (4,058 m), Erciyes Mountain (3,917 m) and Small Mount Ararat (3,896 m). Its biggest lake is Lake Van with 3,712 km<sup>2</sup>. This is followed by Lake Tuz with 1,500 km<sup>2</sup>. Its longest river is Kızılırmak with 1,355 km. and after its 1,263 km of the Euphrates River and

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2. International codes: Adhere to the principles embodied in the World Tourism Organization's Global Code of Ethics for Tourism and the Principles of the Cultural Tourism Charter established by the International Council on Monuments and Sites (ICOMOS).

3. Market selectivity: Encourage growth in tourism market segments most likely to appreciate, respect, and disseminate information about the distinctive assets of the locale.

4. Market diversity: Encourage a full range of appropriate food and lodging facilities, so as to appeal to the entire demographic spectrum of the geotourism market and so maximize economic resiliency over both the short and long term.

5. Tourist satisfaction: Ensure that satisfied, excited geotourists bring new vacation stories home and send friends off to experience the same thing, thus providing continuing demand for the destination.

6. Community involvement: Base tourism on community resources to the extent possible, encouraging local small businesses and civic groups to build partnerships to promote and provide a distinctive, honest visitor experience and market their locales effectively. Help businesses develop approaches to tourism that build on the area's nature, history and culture, including food and drink, artisanry, performance arts, etc.

7. Community benefit: Encourage micro- to medium-size enterprises and tourism business strategies that emphasize economic and social benefits to involved communities, especially poverty alleviation, with clear communication of the destination stewardship policies required to maintain those benefits.

8. Protection and enhancement of destination appeal: Encourage businesses to sustain natural habitats, heritage sites, aesthetic appeal, and local culture. Prevent degradation by keeping volumes of tourists within maximum acceptable limits. Seek business models that can operate profitably within those limits. Use persuasion, incentives, and legal enforcement as needed.

9. Land use: Anticipate development pressures and apply techniques to prevent undesired overdevelopment and degradation. Contain resort and vacation-home sprawl, especially on coasts and islands, so as to retain a diversity of natural and scenic environments and ensure continued resident access to waterfronts. Encourage major self-contained tourism attractions, such as large-scale theme parks and convention centers unrelated to character of place, to be sited in needier locations with no significant ecological, scenic, or cultural assets.

10. Conservation of resources: Encourage businesses to minimize water pollution, solid waste, energy consumption, water usage, landscaping chemicals, and overly bright nighttime lighting. Advertise these measures in a way that attracts the large, environmentally sympathetic tourist market.

11. Planning: Recognize and respect immediate economic needs without sacrificing long-term character and the geotourism potential of the destination. Where tourism attracts in-migration of workers, develop new communities that constitute themselves a destination enhancement. Strive to diversify the economy and limit population influx to sustainable levels. Adopt public strategies for mitigating practices that are incompatible with geotourism and damaging to the image of the destination.

12. Interactive interpretation: Engage both visitors and hosts in learning about the place. Encourage residents to show off the natural and cultural heritage of their communities, so that tourists gain a richer experience and residents develop pride in their locales.

13. Evaluation: Establish an evaluation process to be conducted on a regular basis by an independent panel representing all stakeholder interests, and publicize evaluation results (<http://en.wikipedia.org/wiki/Geotourism> 12.03.2009).

523 km of the Tigris, both of which originate in Turkey, are located within the country's borders.

The coastal areas of Turkey, bordering the Mediterranean Sea, have a temperate Mediterranean climate with hot, dry summers and mild, wet and cold winters. Interior of Turkey, called central Anatolian plateau, has a continental climate with dry summers and cold winters. Annual temperature averages changes according to regions because of the effect of mountains, altitude and inclination, so at the different regions are occurred the different climate at the same time. Annual precipitation averages about 500 millimetres (Doğanay, 1994; Atalay, 1994). This paper tries to present general information about Turkey's geology and geomorphology and places where it occurs, as well as some examples of geotourism products. However, it is clear that the future development of geotourism requires a comprehensive inventory and detailed planning.

## **Geotourism Resources of Turkey**

Turkey, which is located Alpine-Himalayan orogenic belt, has a very rugged and high topographic structure. The geological structure in Turkey is complex. Main causes of these situations are related to orogenic movements that occurred during the Tertiary era and epirogenic and volcanic activities took places between the Tertiary and Quaternary eras (Atalay, 2002: 12), so Turkey has an important richness from geological and geomorphology heritage resources points of view.

The mountains in Turkey can be divided into three groups in terms of their formations: Orogenic, volcanic mountains and horst. Orogenic mountains extend both in the northern and southern section of Anatolia. The northern ranges are called Northern Anatolia Mountains and the southern ranges are named the Taurus Mountains. Horsts, which occurred to uplifted blocks along the normal faults, are common in the western part of Anatolia. Volcanic mountains in Anatolia have formed with the accumulation of lavas and fine and coarse materials such as tuffs, volcanic sands, ash and gravels. Between the highest volcanic mountains in Turkey can be show Ağrı Mountain, Süphan and Erciyes (Atalay, 2002: 12). Mountain areas in Turkey lead to the altitude ecological belts and have very big potential from endemic or relic animal and plants points of view. At the same time, these areas provides for the irrigation of the agricultural lands and drinking water of the urban centers. Mountains cover above half of Turkey are also important resources for geotourism because of nature structures, local architecture, cultural characteristic and mountains sports such as mountain biking and parachute of slope.

Some examples about areas, which have geotourism potential are:

1. Ağrı Mountain (Ararat).<sup>2</sup> Located approximately 65 % in the Iğdir Province and 35 % in the Ağrı Province in the northeast of country, Ağrı Mountain is a young stratovolcano that formed in the Pliocene. It is the highest mountain of Turkey with its peak of 5,137 m and above the height of 4,200 m. The mountain mostly consists of rocks covered by an ice sheet (Güner, 2000: 385). Ağrı Mountain is important for both national and international dimensions. The mountain is sacred by three big religion, so many people has been believed that there is Noah ark, which a large wooden ship built by Noah in order to save his family and a male and female of every type of animal when the world was covered by a flood, in the

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<sup>2</sup> Ağrı Mountain, which is called Kuh-i Nus by Iranians, is still known as "Ararat" in the Western world. Ararat is not a concept from Armenian language, it is the name given to Urartu Country by Assyrians. It is highly probable that the name "Ağrı" came from Turkish of Shamanism period. For in the Dictionary of Yakut Language written by Pekarsky, "Ağr" or "Ağrı" means "Huge" or "God" (Güner, 2000: 386).

Ağrı Mountain. Some researchers have come to examine about this subject to Ağrı Mountain (Arınç and Kaya, 2004: 438). Ağrı Mountain has nature attractives such as Cehennem Valley, which is the greatest and the most famous of these and caves. Located on the northeastern slope of the mountain, in this valley, there is an iceberg, which is 6-7 km long. On the northern part of the valley there are two small caves in a place about 2500 m. One of them is called "Lawrence Cave". Lawrence, an English spy, was said to have stayed in this cave and launced the revolt of Ağrı. The other cave is also called "the Fountain of Prophet". It is said that Prophet Jacob came there and took ablution and prayed (Güner, 2000: 386). Except these caves, there are various caves at the feet of the Great Ağrı Mountain, which is named "Cow Valley" by the local people. These caves which can hold hundreds of animals have been used as mountain pasture by people. Ağrı Mountain is able to do various sports such as nature sports, camping, mountain biking and parachute of slope (Güner, 2000: 386). There are also touristic attractive such as Fish Lake, Ice Cave, meteor depression, İshak Paşa Palace and Bayezit Mosque in the near of Ağrı Mountain (Arınç and Kaya, 2004: 439).

2. Mountain areas in Anatolia, Nemrut Volcanic Mountain. The volcano is called after King Nimrod who lived this area in about 2100 BC. Nemrut Mountain is on the west coast of Van Lake, a soda lake covering a surface of 3574 km<sup>2</sup>, in the East Anatolia Region of Turkey. This mountain is a stratovolcano and continued to be active until 1597 A.D (Aydar et al., 2003: 302). There is caldera, lakes, mineral spring and trees such as oak and brich in the Nemrut Mountain. The Nemrut Caldera, which is one of the largest calderas in the world, is on the Nemrut Mountain. The caldera was formed by the collapse of the peak of the cone of the volcano. It can be seen that emmissions from several outlets took place in the caldera. There is still one outlet from where emission of gas continues. The depth of the caldera is approximately 450-500 m. There are two lakes in the caldera. One of them is located the western part of the caldera. The other is also a small warm lake which tempature reaches 60°C (Gürbüz, 1995: 255). This tempature show that it's continuing volcanic activity. The Nemrut Caldera is very interesting with its natural and beautiful look. This sition makes it very important from the touristic point of view. Except for this mountains, there are many mountains which have important touristic attractive in Turkey such as Süphan, Erciyes, Tendürek and Hasan mountains. It is important to use in the best manner of mountain in tourism.

3. Cappadocia, which is unique in the world, including local open air museums, and is a miraculous natural wonder. It is the common name for the field covered by the provinces of Aksaray, Nevsehir, Nigde, Kayseri and Kirsehir in the Inner Anatolia region (Tosun, 1998: 598). In the upper Myosen period in the Cappadocia region as a result of the volcanic eruptions occurred in Erciyes, Hasandag and Gulludag, in the region was formed a large tableland from the volcanic tufas and together with the erosion of the Kizilirmak river. There are geological structures of volcanic origin that are as the "fairy chimneys" Fairy Chimneys are quite a rare landform all over the world. These landforms have been evaluated in visual respect in geotourism constitute an attractive force of high values in Ürgüp-Göreme district in regarding form, color, intensity and dimensions (Doğaner, 1995: 25). The geological history of the region is based on volcanicity from Oligocene times, approximately 38 million years ago (Bowen, 1990: 35). Göreme, Zelve, Kızıl, Güllüdere, Bağlıdere, Killik, Görkün creek, Zemi creek, Pancarlık and Halaç creek valleys between Göreme, Ürgüp and Avonos and in their near surrounding are mostly attractive points for tourism (Doğaner, 1995: 25).

In the old Bronze Age the Cappadocia, which was the population zone of the Assyrian civilization later has hosted the Hittite, Frig, Pers, Byzantine, Seljuk and Ottoman civilizations (Tosun, 1998: 598). Cappadocia, where there were many underground cities, used by early Christians escaped from the persecution of the Roman Empire times, as hiding

places. Due that they had live in the underground cities for long duration without being able to go out they have developed these underground cities by making provisions rooms, ventilation chimneys, wine production places, churches, abbeys, water wells, toilets and meeting rooms (Doğaner, 1995: 34-35). There are many touristic attractive places in the Cappadocia. Today, these areas are a famous and popular tourist destinations, as it has many areas with unique geological, historic and cultural features. Cappadocia is visited every year by hundred thousands of tourists coming from every part of the world.

4. A further example is Pamukkale. Pamukkale is located in Denizli province. The famous carbonate terraces are in the world heritage list of UNESCO. Pamukkale has a large white limestone formations which are occurred because of the hot spring and the high of its is approximately 160 m and long 2700 m. Pamukkale also used as a spa. This area has the natural and archaeological site of Pamukkale-Hierapolis. It is possible to see Antique Pool, Antique Theater, and Archaeology Museum there (Doğaner, 1997; <http://tr.wikipedia.org/wiki/Pamukkale> 23.03.2009). Pamukkale has got some problems. There are only a few hotels. These hotels were using the hot water from the spa. In a short time, Pamukkale began to lose its white limestone formations. At the same time, many tourists walked on its and it was spoiled and began to change its colour. Environmental conditions related Pamukkale heritage didn't plan this very carefully and not take into account a sustainability tourism dimension and did daily practises, whereas environmental performance is very important to improve of geotourism.

In addition to these heritage areas, there are many other unique landforms with geotourism potential in Turkey. They include lakes, waterfalls, mineral springs, canyon valleys, wind features and caves. We can give some example such as *Meke maar* where are located in Konya Province and *Red happiness valley* which is a very important sample for yardang, Pliocene era red coloured sandstones are located South of Narman of Erzurum province and *Lake Tuz* in Inner Anatolia and *Lake Van* in East Anatolia and *Karapınar* which is sand dunes and travertine cones lies within the city boundaries of Konya and *Asarlık Hills* where are located in Ankara and *Cehennem Canyon* where are located Artvin, *Botan River Valley* where is located in Siirt *Karain Cave* where is located in Antalya and *Sivas Karst features* and *Kula volcanics*, which can be an area of interest for geotourism with its volcanic formations and structures and meet the expectations of people with its cultural values has an important for tourism of Turkey (Garipağaoğlu, 1996; Yaşar, 1995; Koçman and Koçman, 2006). For example the karstic lands in the Sivas, which is not known in Turkey very much, could be provided for geotourism. There are many karstic lakes such as Lota lakes, Dipsiz, Hafik and Tödürge and interesting features. Formation in here is called karst of gypsum. The geological history of the karst of gypsum is based on Oligocene times. Many tourism activities such as water sports, ornitology, lake camping, discovered new karstic features, fauna and flora (Akpınar and Akbulut, 2007: 1).

## Conclusions

Today, geotourism is less significant compared to coastal tourism in Turkey, but geological and geomorphology heritage resources are an important tourism development resource, so in order to determine the potential of geotourism of Turkey local people's situations, flora and fauna, traditional land use as well as geological and geomorphology heritage resources all need to be taken into consideration as a whole. Based on this information Turkey's geotourism properties can be assessed. Hence, it is possible to draw some general conclusions from this study.

First, there are many geohéritages in Turkey. These resources are not used for tourism. Turkey has to determine geotourism policies, where it can establish geotourism resources and preserve their geohéritage for present and future generations. National Park Laws should be used to protect geological and geomorphology heritage resources.

Second, geotourism ensure sustainable socio-economic and culturel development for local people. Geological heritage sites, properly managed can generate employment and new economic activities, especially in regions in need of new or additional sources of income (Tosun, 1998: 559). Local people need to be educated about subjects such as geography, geological sciences and their relation to environmental matters. They also serve a sustainable development and for illustrating methods of site conservation as well as remembering that rocks, minerals, fossils, soils, landforms form an integral part of the natural world. Education and training courses should be open. Children must be given enviromental education.

Third, while geotourism provides business for local people, it also brings negative environmental consequences. In particular, accommodation, including hotels, resorts and campgrounds continue to be developed as the most criticised tourism component because of their potential negative impacts on the natural and cultural environmental (Erdoğan and Tosun, 2009: 407). Investments must be considered in the long term for tourism locations. Environmental conditions meed to be considered including the natural, cultural and economic properties of tourist heritage as a whole. Tourists should be kept at a minimum distance from fragile geohéritage sites in order to protect them.

Fourth, local goverment must advertise these heritages in Turkey. They can use modern information technology such as Internet and documentaries. Cultural ambassadors must provide iformation to other countries.

Finally, if Turkey can use its potential geotourism sites and the geological and geomorphology attractions can be protected, it can contribute successful to sustainable Turkish tourism.

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