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3. Justification for Inscription

3.a Criteria under which inscription is proposed

In accordance with the guidelines found in section II.D of the “Operational Guidelines for the Implementation of the World Heritage Convention” (february 2005), the Proposal to Inscribe Teide National Park on the World Heritage List is based on criterion (vii), concerning superalative natural phenomena or areas of exceptional natural beauty and aesthetic importance and on criterion (viii), referring to outstanding examples representing major stages of Earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features.

Teide over the clouds

Criterion vii

The Cañadas-Teide volcanic system, located in the centre of the Canarian Archipelago, was created where the Atlantic structural area -environment of the ocean ridge- and that of the African continent -the Atlas mountain range- meet. The configuration of the immense structures emblematic of this volcanic system and that of its lesser elements, form a distinctive geometry that reflects this connection. From Iceland to the Antarctic, it is impossible to find a similar configuration along its longitude, and if you trace a line from east to west along its latitude, from Sinai to the Eastern Sierra Madre, you will not find anything similar either. Tenerife itself is an elevated island topped off by an enormous dormant volcanic structure that towers above the surrounding marine abysses; the imposing silhouette of this unique environment seems to float above the clouds of the subtropical mountains, allowing travellers to locate the island beneath, although they cannot see it.

Another outstanding aspect of its landscape is the uncommon frequency of the eruptive forms, explosive and effusive constructions and different kinds of cones and flows that are found concentrated in a reduced area. Although this area radiates chaos, there is actually a precise order and strict logic found in the activity, spaces, evolution and material of the time periods, rocks and raised shapes found there. The external impression of a sterile, rocky, cold and dry environment belies an ecological and chromatic liveliness; even the distribution of its outlandish, high-altitude vegetation reveals the natural harmony that exists between the plant life and the substrate. This unusual landscape consists of powerful shapes and intense, rough colours covered by only a light film of vegetation that simultaneously reflects both the aesthetics of immense volcanoes and that of vast deserts. The variations in the continuity and coating of the vegetation, along with the different combinations of flower species, emphasize the geomorphological features of the area, further accentuating the different types of raised shapes and their distribution. The originality produced by its geographical location can be seen in certain physiognomic traits of its vegetation. Despite being largely made up of the shrubbery characteristic of temperate mountains, its vegetation includes rare and extremely beautiful elements such as species from the *Echium* genus reminiscent of the vegetation found in the heights of tropical mountains, indicating the transitional nature of this high mountain in the Atlantic.

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Teide neck and black lava flows

The aesthetic qualities that Teide contributes to the landscape change at different times of the year and throughout a single day, creating an ever-changing panorama. For instance, the changing phenology of the Teide landscape is filled with contrasts. Although this kind of variation is found in many places, some of its aspects are quite pronounced on Teide, especially if we consider that it occurs in an environment known for moderate changes between seasons: in the winter the landscape is blanketed by snow; in spring there is an explosion of plants in bloom, such as Spartocytisus supranubius and Echium sp.; the dry summer brings minerals back into the forefront; and autumn is marked by periods of heavy rains and the bright colours of the changing leaves, among them the hierba pajonera's yellow. Throughout the day the intense quality of the light also creates striking contrasts, from daybreak, when the extended rays of light and long shadows highlight the different colours of the lava flows and plants, to the inexorable light of the midday sun at its zenith, to the ephemeral sunset that briefly spreads gentle tones across the landscape putting all of the volcanic shapes into sharp relief. And yet, the night-time sky is even more remarkable. At night the atmosphere is so pure and diaphanous that the sky seems to overflow with uncommonly sharp constellations and the spirals of the Milky Way gleam brightly. The presence of astronomy observatories is testament to the outstanding qualities of Teide's high atmosphere, which provides a singular high-mountain environment at subtropical latitude in the Atlantic Ocean.

In addition to the richness of the natural aspects of the landscapes on Teide, this space also contains the biggest, most accessible and best studied active volcanoes in the world. Because of this accessibility it has become a universal standard for culture and science, as well as a spectacular and world renowned site for geo-tourism. This majestic landscape is a feast for the senses and the mind, equally attractive to tourists and scientists. Despite the fact that some of the geomorphological elements found in the Teide landscape exist in other places, they are only found individually or partially; what sets Teide apart from other areas is that it is the only site where all of these elements can be found in the same place, with easy access for education or research.

Roques de García

Criterion viii

The principal reasons that justify this singularity and universal value are:

- Teide National Park includes a central volcano that, in the final stage of its creation, was shaped by explosive eruptions (plinian eruptions). This volcano has a great caldera on its summit (Las Cañadas Caldera) with the Pico Viejo and the Teide, two large stratovolcanoes, nested in its interior; the still active Teide rises 3.718 m above sea level (7.500 m above the ocean floor), making it the third highest volcanic structure on the Planet.

- The geological processes that configured Teide National Park (and continue today) are very representative of intraplate ocean island volcanism, occurring here in exceptional conditions. Several conditions that are very unusual for intraplate ocean islands coincide in the Canary Islands, such as the slow movement of the African plate (which is an order of magnitude lower than that of the Pacific plate), the lower intensity and low fusion rates of the magmatic plume that generated the archipelago, and its uncommon position on the margin of a passive continent (100 km from the coast of Africa), which has prevented the relatively quick sinking (subsidence) that is habitual among this type of islands. This exceptional geodynamic setting has prolonged the volcanic history of the islands (>23 ma, Tenerife 12 ma), giving the magmas time to evolve into highly differentiated products, a process that has never been able to culminate in the remainder of the intraplate volcanic islands where the most differentiated products (felsic) of the magmatic series remain incomplete. Because of these conditions, the Canary Islands have products, features, structures and eruptive processes that only exist in such spectacular variety in this archipelago; and in Tenerife, currently at the peak of its geological development, these elements have their best representation, particularly in Teide National Park.

- The natural landscapes present in Teide National Park are exceptionally beautiful, and their interest is incremented by the outstanding geological processes that created them. A giant instantaneous lateral landslide carved out an extensive horseshoe-shaped depression whose head is the current Las Cañadas caldera, 16 km in diameter bounded by a rim 600 m high. Later eruptive activity completed the construction of two felsic stratovolcanoes -Pico Viejo and Teide-, the latter reaching an altitude of 3718 m, nested in the depression. This landscape, readily viewed because of the scarce vegetation (although a spectacular flora with

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Pared de La Caldera

abundant endemisms) and many lookout points (the peak of the Teide being the most impressive), has in itself outstanding universal interest, complementing the abovementioned geological and volcanological values.

Las Cañadas Caldera

The geological elements that constitute Teide National Park are the final result of differentiation processes and they represent the entire range of the magmatic series, with a large amount and variety of felsic (phonolitic) products, circumstances that do not occur in other volcanic intraplate oceanic islands (for example, the Hawaiian Islands) where these evolved terms are poorly represented. Among the UNESCO World Heritage properties offered by intraplate ocean islands, Teide National Park is unrivalled in this representation. The only natural site in this class that offers geological elements that are equally unique and outstanding is the Hawaii Volcanoes National Park, but this property only affords volcanic eruptions involving the least evolved magmas of the intraplate oceanic island magmatic series (OIB). With the inclusion of the Teide National Park, these two volcanic scenaries represent with greater integrity the entire evolution of intraplate oceanic islands.

The fundamental idea underlying this proposal is that Teide National Park not only does not duplicate or compete with sites that are already integrated into the network of World Heritage sites, but will actually complement and complete the representation of intraplate island volcanism in the world, thereby considerably increasing the value and integrity of the list.

- Among the geological processes important in the formation of the relief and the natural landscape and the relevant geo-morphological and physiographic structures in Teide National Park the following stand out:

    - The Las Cañadas volcano: an exceptional case in intraplate oceanic islands of the growth of differentiated (felsic) volcanoes capable of explosive phonolitic eruptions (plinian eruptions) and probably caldera-forming eruptions.
    - The Las Cañadas caldera: one of the most spectacular, best displayed and accessible calderas on the Planet, its origin is still a subject of scientific debate between vertical collapse, gravitational landslide or a combination of both.
    - The active north-west and north-east rifts: an excellent example of active rifts and the role these structures play in controlling crucial processes in the development of oceanic islands, in their growth and subsequent mass-wasting destruction by giant gravitational landslides.
    - A possibly exceptional example of the role that the rifts play in generating consecutive, complex processes that give place to landslide embayments

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and later fill them in, inducing magmatic differentiation resulting in the construction of felsic stratovolcanoes nested within these depressions.

- Two large phonolitic stratovolcanoes - Pico Viejo and Teide: the Teide, still active and 3.718 m high (7500 m above the ocean floor), the third highest volcanic structure on the Planet. The magnificence and accessibility of these stratovolcanoes are unique among volcanic oceanic islands.
- An excellent example of the complete evolution of the magmatic series pertaining to intraplate oceanic islands (Oceanic Island Basalts or OIB), with an outstanding representation of the initial, intermediate and more evolved products of this series, as well as less frequent processes of mixing of basaltic and phonolitic magmas.

Abejera mountain

These unique geological processes have created exceptionally beautiful natural landscapes that add the purely aesthetic enjoyment of spectacular landforms and relief structures (at certain times of year augmented by a splendid blooming of endemic flora) to the cultural and scientific interest of the area.

The Teide and the Las Cañadas caldera have had an important role in the History of Science and important contributions were made here to the development of modern Geology and Volcanology. The island of Tenerife, and in particular the present Teide National Park, has attracted the interest of naturalists and geoscientists from all over the world, including pioneer work by naturalists at the beginning of the 19th Century such as Leopold von Buch, Alexander von Humboldt and Charles Lyell, who established the basic concepts of Geology and Volcanology while studying this island. In this cultural and scientific context, Teide National Park could be to Europe what Hawaii Volcanoes National Park is today to the United States and Japan.

The economy of Tenerife is based on tourism and therefore the island is readily accessible, especially from Europe. The number of inhabitants (almost a million, about five times larger than that of Hawaii) and the number of visitors (more than 4 million annually) guarantee that the unique and outstanding geological and scenic value of the Park will be enjoyed by a large number of people. Complementarily, improving and publicizing the knowledge of the island will undoubtedly contribute to reinforce the protective measures already in place.

In addition to the outstanding geological and scenic value, Teide National Park has other qualities that are equally outstanding, such as the endemic flora and fauna, aboriginal archaeological sites and the pureness and transparency of the atmosphere which have made it the seat of one of the most important astrophysics and atmospheric complexes observatories in the world. Without a doubt, these valuable characteristics make this property one of the most complete and extraordinary sites in volcanic oceanic islands on the Planet. The ready access to this property for a large public is guaranteed since tourism is the main economic activity of Tenerife, one of the best connected islands in the world.

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Las Cañadas wall and Teide lava flows

3.b Proposed Statement of Outstanding Universal Value

As indicated in earlier sections, the reasons to propose Teide National Park for inscription on the World Heritage List can be summarised in the following concepts:

- Teide National Park has exceedingly beautiful landscapes and presents outstanding geological and volcanological elements that represent the entire evolution of the magmatic series of intraplate volcanic oceanic islands, whose main episodes include the partial destruction of an earlier evolved and explosive central volcano in its terminal phase, and the subsequent formation of a spectacular depression partially filled by the construction of large felsic nested stratovolcanoes.

- This sequence of processes provides an outstanding example of important milestones in the evolution of a major stage of earth's history such as the intraplate oceanic islands. It is also unique, because the remainder of the islands in this category, with shorter volcanic histories, have not reached the most evolved phases of the magmatic series that give way to the formation of these felsic central volcanoes.

- The universally outstanding geological and volcanological elements located in Teide National Park represent on a large scale and with integrity the complete magmatic series of intraplate oceanic islands, as well as the related products, structures and eruptive processes.

Teide-Pico Viejo stratovolcano

3.c Comparative analysis

The Global Volcanism Program (GVP), the Smithsonian Institute's international database on volcanoes and eruption information has records for approximately 1500 volcanoes active since the start of the Holocene period. Of these, approximately 60% (900) are stratovolcanoes (alternatively known as composite volcanoes), the others being shield or fissure volcanoes, or volcanic domes and monogenic vents, such as maars. The Teide National Park protects the summit area of the Cañadas volcano, which the GVP classifies as a stratovolcano.

While the GVP contains some information on the eruptive history and morphology of individual volcanoes and provides a basis for a simple review, there is no single database anywhere in the world that allows researchers to compare the qualities and values of individual volcanic forms. Indeed, these features will not have been recorded on most volcanoes, and even where they have the details will be hidden in scientific papers. It is not therefore possible for this comparative study to interrogate volcanological databases to demonstrate the Outstanding Universal Value of any particular feature. Rather, such a comparison must rely on summary texts and the personal knowledge of individual scientists.

Geological context for comparative analysis

There are two ways in which a volcano may be classified: by form (morphology) and geophysical context, although the two are inter-related through magma type.

The table that sohws the Sites inscribed for their outstanding volcanic landscapes and active volcanic processes, abstracted from Bloom (1998), and adapted from Rittman (1962), presented at the end of this section, classifies volcanic form under the criteria of magma type, the nature of the volcanic activity, and the volume of material erupted. From this table it will be seen that the forms of stratovolcanoes are usually characterised by large volume, mixed effusive and explosive activity, arising from a magma that is usually more viscous than basalt. Another way of classifying volcanic form is by the history of the activity, whether the form is the product of a single period of activity, in which case it will be monogenetic, or there have been multiple periods of activity from the same vent, in which case the form will be polygenetic. Confusingly, some geologists (e.g., Francis, 1993) classify stratovolcanoes (or composite volcanoes) as simple or composite, although both forms are polygenetic in origin.

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Teide crater

Pico Viejo crater

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In geophysical terms, volcanoes may be classified according to their location relative to the boundaries of the Earth's lithospheric plates. Fissure and shield volcanoes are typical of the divergent boundaries, while stratovolcanoes are the type volcano of the convergent boundaries (subduction zones). This is a gross simplification, however, and varying volcanic forms may also develop over point heat sources thought to be caused by ascending plumes of hot magma in the mantle (or 'hot spots') and/or by the chemical evolution of the magma supply. Volcanoes forming over hot-spots on the ocean floor typically erupt more fluid basalts and build shield structures. However, as the movement of an ocean lithospheric plate carries a volcano and its magma chamber away from the heat source, the magma may become more silicic by the process of fractional crystallization, resulting in more explosive activity and the construction of a stratocone on the basalt plinth. Hot spot activity may also occur beneath continental crust, where partial melting and assimilation of continental rocks may cause the eruption of highly felsic magma, giving give rise to the construction of very explosive stratovolcanoes, caldera complexes and domes (Mount St. Helens, USA; Emi Koussa, Chad).

Thus, while chemical evolution of the magma occurs to a varying extent beneath most ocean floor intra-plate volcanoes, it is only in a slower moving, longer-lived, volcano that differentiation continues sufficiently to generate felsic magma and cause explosive activity, with the construction of a significant composite stratocone and caldera. While there are other intra-plate ocean floor stratovolcanoes (e.g., Pico do Pico, Azores; Fogo, Cape Verde Islands), only a handful (e.g., Mount Halla, Korea) are located on slow-moving or stationary lithosphere. However, none of the latter are as well studied, as large, or exhibit as wide a diversity of structures and landforms as the Cañadas volcano. The Cañadas volcano on Tenerife therefore represents the world's finest example of this type of structure.

Regional significance

Europe and the North Atlantic region have some highly significant volcanoes, both in terms of their geology and history of scientific study. These include the famous Italian volcanoes of Vesuvius, Etna, Campi Flegri, Vulcano, and Stromboli, Thera in Greece, the Eiffel district in Germany, the Puy district in France, the Tertiary volcanic province in the UK, and the Atlantic Ocean volcano groups in Jan Mayan, Iceland, Azore, Madiera, Selvagens, and the Canary Islands. The Cañadas volcano stands out in this group because it is the dominant intra-plate structure, the largest and most complex stratovolcano, and with Vesuvius and Etna, one of the best studied volcanoes in the region. It is has the most impressive caldera, eruptive rift system, and felsic lava flows. Within the boundary of Teide National Park the summit area with its diversity of landforms and special ecosystems is especially well protected, and it is the most visited of any volcano in the region.

Importance of the volcanic system

Like all other stratovolcanoes, the Cañadas edifice possesses a range of associated forms and structures, although on Tenerife these are particularly well defined and comprehensive. Especially important is the fact that all the associated landforms are represented within the boundary of the Teide National Park, a situation that make the Cañadas volcano one of the most important protected volcanic landscape in the world (see below). In addition to the edifice of the volcano itself, the site contains an internationally significant caldera, a clearly defined eruptive rift system, sector collapse scars, subsidiary cones and vents, domes and explosive and effusive deposits. While individually each of these features may be found on other stratovolcanoes, it is unusual for all of them to be so well displayed in the summit area of a single edifice. In addition, some of these features stand out as having special scientific qualities and values. For example, the caldera is larger than most others associated with stratovolcanoes (for example, Crater Lake, Idaho; Tambora, Java), and its formation has revealed some of the best and most accessible rock exposures known on any volcano. Particularly relevant also are the huge gravity slides that scallop the flanks of the volcano and the unique magma system that erupts both basaltic and phonolitic lavas.

Meridian wall of Las Cañadas Caldera

Comparison with other volcanoes on the WH List

Investigation of the World Heritage List reveals that there are 26 sites located in volcanic terrain (this contrasts with UNESCO's Draft Global Strategy for Geological World Heritage Sites, March 2004, which lists only 17 sites under the category Volcanoes/Volcanic Features). The 26 sites are included in the table that shows the Sites inscribed for their outstanding volcanic landscapes and active volcanic processes. While some of these sites (e.g., Kamchatka, Russian Fed.; Hawaii Volcanoes National Park, USA; Tongariro National Park, New Zealand; Aeolian Islands, Italy) were inscribed for their natural values in which volcanic landforms and processes figure significantly, many others were inscribed for their biological or cultural values and their geology is secondary to their inscription (e.g., Ngorongoro Crater, Kenya; Pico Vineyard Culture, Azores, Portugal; Central Eastern Rainforest Reserve, Australia).

Pilón de azucar

Analysis of the citated table reveals the following relevant facts:

- The list does not contain any example of an ocean floor inter-plate stratovolcano (although as explained above the shield volcanoes of the Hawaiian Volcanoes National Park site are representative of ocean floor intra-plate volcanism).
- With the exception of the volcanoes within the Hawaiian Volcanoes National Park, none has received the depth of study that the Cañadas edifice has.
- Three of the volcanic sites exposed in the table fall within the Europe/North Atlantic region, although two of these (Thingvellir National Park, Iceland, Pico Vineyard Culture, Azores) do not include a major volcanic edifice. The remaining Aeolian Island WHS lies over a convergent plate boundary (subduction zone), rather than ocean floor.
- Calderas are represented on the World Heritage List, but the caldera of Yellowstone National Park is of the resurgent type, while others associated with stratovolcanoes (e.g., in Kamchatka and Tongariro National Park) are far less imposing or accessible than the Cañadas caldera. With the exception of Yellowstone, the only other large caldera is Ngorongoro, but because of its great age this has been extensively modified by weathering and erosion.
- Sector collapse or gravity slide is a feature ubiquitous to stratovolcanoes and ocean shield volcanoes, and while collapse will be a feature of most volcanoes on the World Heritage List, it is only specifically mentioned in the inscription of the Pitons Management Area WHS, St. Lucia (although the central features of this site are two prominent dacite lava domes).
- The World Heritage List contains representatives of ocean island volcanic groups (e.g., Lord Howe Island Group, Heard and McDonald Islands, Galapogos Islands, Rapa Nui, Gough and Inaccessible Islands, NewZealand Sub-Antarctic Islands), but with the exception of Heard and McDonald Island these islands are generally built from seamounts or shields, and even the stratovolcano of Mawson Peak on Heard Island is far less mature and studied than the Cañadas edifice.

Thus, in summary, while there are sites with stratovolcanoes inscribed on the World Heritage List, these are usually located over convergent plate margins (e.g., Kamchatka, Russion Fed.; Tongariro National Park, New Zealand; Aeolian Islands, Italy; Pitons Management Area, St. Lucia). Some ocean floor island group WH Sites do contain stratovolcanoes, but the majority of these are formed from seamounts and shield vlcanoes, and none of the stratovolcanoes rival the Cañadas volcano in size, complexity, age, depth of study, or relevance to science. The

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World Heritage List also contains examples of calderas and sector collapse, as well as other associated volcanic features, but these are no-where displayed so dramatically, so comprehensively, and as an integral part of the volcanic system, as on the Cañadas edifice and within the Teide National Park.

Acrettion balls

Educational values

The Cañadas volcano and Teide National Park receives millions of visitors annually specifically to view the caldera and ascend to the summit of the Teide stratocone. Visitors are attracted by the unusual landforms, the fact that this is an active volcano, and the majestic scenery and colourful beauty of the National Park. There are many other volcanoes in the world that attract a significant number of tourists to view their volcanic landforms and, if lucky, an eruption (e.g., the US volcanic National Parks, Vesuvius and Mt Etna in Italy, Iceland, Undara National Park in Queensland, Australia, Roturua in New Zealand, etc.). Nevertheless, as reveals the table that showns the annual recreational visits in 2004 to the world's most popular volcanic geotourism sites, Teide National Park (with 3.5 million annual visits) can justifiably claim to be the most visited for the purpose of geotourism of all the volcanic sites in the world. In the Teide National Park the high educational values of this form of geotourism are reinforced by education and interpretation programmes that are as good, if not better, than those of other important world volcano sites.

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Teide stratovolcanoand adjacent cones

SITES INSCRIBED FOR THEIR OUTSTANDING VOLCANIC LANDSCAPES AND ACTIVE VOLCANIC PROCESSES			
Name of World Heritage Site	**Country**	**Type of volcanic features**	**C***
Giants Causeway	UK	Columnar basalt	
Hawaii Volcanoes National Park	USA	Kilauea and Mauna Loa volcanic shields, calderas, basaltic volcanism.	✓
Galápagos Islands	Equador	Whole archipelago, basaltic lavas and shield volcanoes, some with summit calderas	
Isole Eoliae (Aeolian Islands)	Italy	Stratovolcanoes Stromboli, Vulcano, Lipari, sector collapse	✓
Pitons Management Area	St. Lucia	Dacite domes, collapsed stratovolcano, sector collapse	✓
Sanguy National Park	Equator	Stratovolcanoes Tungurahua, El Altar, Sanguy, caldera	✓
Tongariro National Park	New Zeland	Stratovolcanoes in two groups, with other vents, domes and craters: In N group - Kakramea, Tihia, Pihanga; in S group - Tongariro, Ngauruhoa, Ruapehu.	✓
Ujong Kulon National Park	Indonesia	Stratovolcano and caldera Krakatoa	
Virunga National Park	Congo	Stratovolcano Nyamulagira, shield volcano Nyiragongo	✓
Volcanoes of Kamchatka	Russian Fed.	As many as 300 volcanoes, most being stratovolcanoes with all associated features represented	✓
Yellowstone National Park	USA	Resurgent caldera.	
OTHER INSCRIBED SITES NOTABLE FOR THEIR VOLCANIC INTEREST			
Name of World Heritage Site	**Country**	**Type of volcanic features**	**C***
Central Eastern Rainforest Reserve	Australia	Dispersed (serial) site with dissected Tertiary basaltic structures, incl. the Tweed shield volcano.	
Gough and Inaccessible Islands	UK	Eroded summit of Tertiary volcano	
Heard and McDonald Islands	Australia	Basaltic stratovolcanoes incl. active Mount Mawson	✓
Komodo National Park	Indonesia	Volcanic bedrock	
Kahuzi-Biega National Park	Congo	Part of W mountains of Gt Rift Valley - Mt Kahuzi and Mt Biega are Tertairy volcanoes	
Lord Howe Island Group	Australia	Eroded shield volcano - part of 1300 km seamount chain	✓
Mount Kenya	Kenya	Tertiary volcanic complex	
Mount Kilimanjaro	Tanzania	3 large stratovolcanoes	✓
Morne Trois Pitons National Park	Dominica	Dissected Tertiary stratovolcano, with domes and fumaroles	
New Zealand Sub-Antarctic Islands	New Zeland	Basaltic lavas and shields	
Ngorongoro Conservation Area	Tanzania	17 km diameter Tertiary caldera	✓
Pico Island, Azores	Portugal	Walled vineyard landscape on basaltic lava flows (site does not include Pico stratovolcano)	
Rapa Nui (Easter Island)	Chile	Basaltic shield and lavas	
St. Kilda	UK	Volcanic bedrock	
Thingvellir National Park	Iceland	Holocene basaltic lava field, graben	

C*: inscribed volcanic properties that have characteristics similar to those of Teide National Park.

ANNUAL RECREATIONAL VISITS IN 2004 TO THE WORLD'S MOST POPULAR VOLCANIC GEOTOURISM SITES	
NAME OF SITE	ANNUAL NUMBER OF VISITS
Teide National Park, Spain *Source: pers.comm.park admin.*	3,540,195
Vesuvio National Park, Italy *Source: Report by Park Director in the Journal Iniziativa Meridionale per il Mezzogiorno Del Europe, nov. 2001.*	1,000,000
Aeolian Islands WHS (Vulcano, Stromboli, etc.), Italy *Source: UNEP/WCMC WHS datasheet.*	200,000*
Mount Etna Provincial Park, Sicily, Italy *Uncertain source: local web-site.*	240,000*
Giant's Causeway, UK *Source: Northern Ireland Tourist Board.*	500,000*
Yellowstone National Park, Wyoming, USA	2,868,317
Mount Rainier National Park, Washington, USA	1,217,750
Haleakala National Park, Hawaii, USA *Source: US NPS Public.*	1,455,477
Hawai Volcanoes National Park, Hawaii, USA *Source: Use Statistics Office.*	1,307,391
Crater Lake National Park, Oregon, USA	417,066
Lassen Volcanic National Park, California, USA	379,667
Galápagos Islands, Equador *Source: UNEP/WCMC WHS datasheet.*	60,000*
Geysir, Iceland *Source: pers. comm..*	122,000*
Tongarira National Park, New Zeland *Source: UNEP/WCMC WHS datasheet.*	1,000,000*
Monte Fuji, Japón *Source: these are unofficial figures from http://web-japan.org/atlas/nature/ nat25.html. N.B. - 1) the larger figure is the number of visitors to the Fuji-Hakore-Izu National Park, which is a popular holiday destination with lakes and resort villages; 2) Fuji has spiritual significance and it is the intention of every Japanese citizen to visit it at least once in their lifetime-therefore visits are not specifically made for geotourism.*	103,000,000*

(*) Numbers approximated

Montón de Trigo wall and dale

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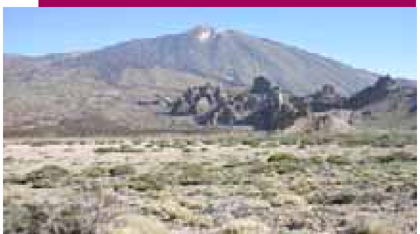
La Fortaleza wall



Stratovolcano and Roques de García

3.d Integrity and/or Authenticity

Teide National Park meets all of the integrity conditions required to be declared a World Heritage Site, including in this case not only the primitive magmas, but also the intermediate and more evolved terms of the magmatic series. This circumstance is based on the longer volcanic history of Tenerife (12 million years, as opposed to the 6 million years of the oldest island in the Hawaiian Archipelago), which unlike the Hawaiian Islands is not affected by subsidence and early submersion.

Furthermore:

- TNP includes all of the required elements to show its outstanding universal value and with a sufficient representation.
- The landscapes and geological elements are superbly preserved.
- Teide National Park encompasses the entire series of geological and landscape-forming processes concurring in the formation of a landslide caldera and felsic nested stratovolcanoes:
    - The pre-caldera explosive volcano (Las Cañadas volcano).
    - The gravitational collapse that formed the caldera (Las Cañadas caldera).
    - The rifts (NW and NE) that partially filled the depression.
    - The magmatic differentiation processes that supplied the magmas to form the stratovolcanoes nested within the caldera (Pico Viejo and Teide).

- The magmatic series can be observed in its integrity in Teide National Park, with all of its products (basaltic, intermediate and felsic rocks, as well as interesting mixes of basaltic and phonolitic magmas); volcanic forms (pyroclastics, “aa” and “pahoe-hoe” flows, blocks lavs, volcanic channels and tubes, dikes, plugs, etc.); and volcanic structures (basaltic lapilli and phonolitic pumice strombolian cones, domes and lava domes, phreatomagmatic vents, stratovolcanoes, etc.).

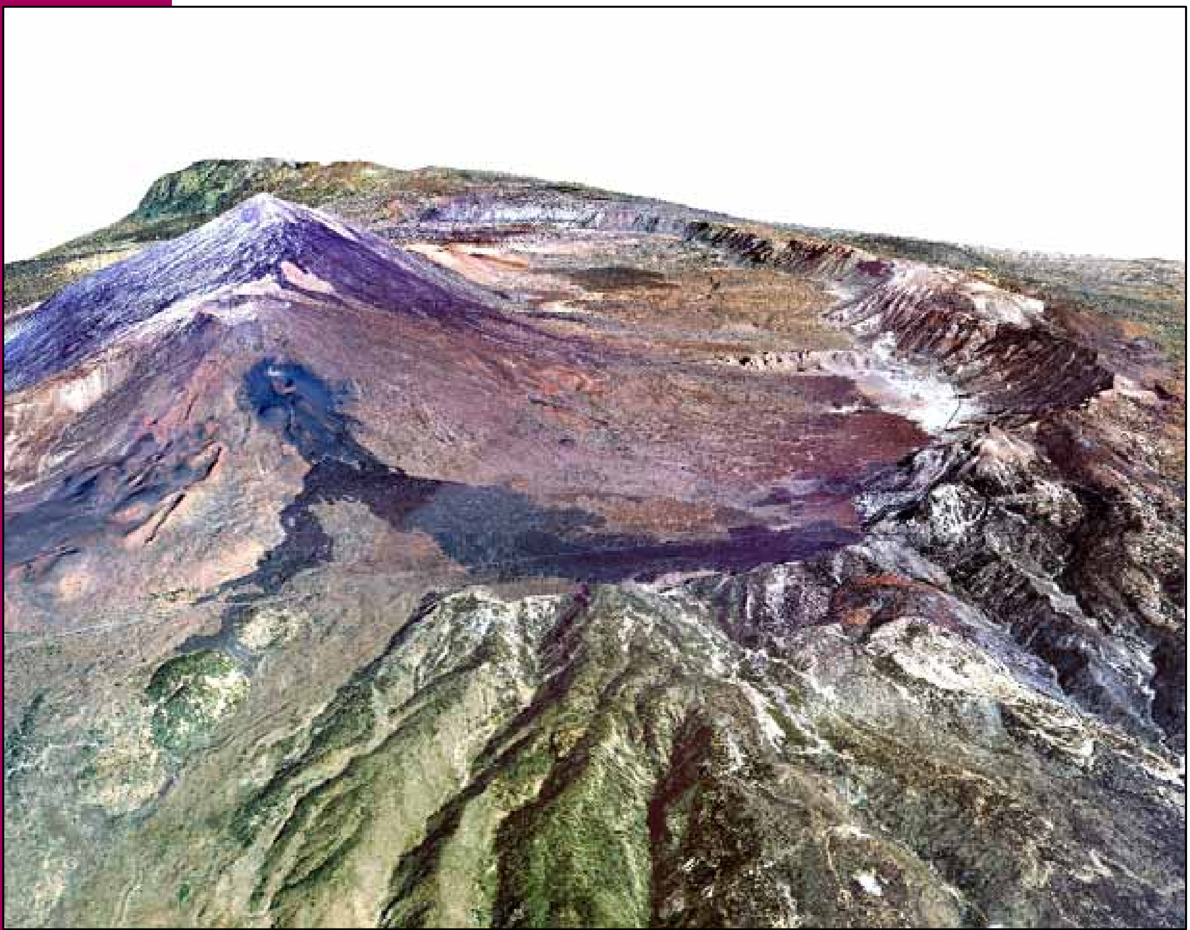
- The volcanic processes represented in Teide National Park correspond to the same series of intraplate oceanic island magmatism, but appear only in Tenerife on a large scale since the rest of the islands in this class have not reached the same stage of evolution. Therefore including this property on the World Heritage List would afford integrity to the global representation of intraplate oceanic islands by providing geological and volcanological elements related to the intermediate and evolved lavas of this magmatic series, thereby completing the equally extraordinary elements displayed by Hawaii Volcanoes National Park, focused on the less evolved, juvenile stages of this magmatic series.

By the other hand, it is extremely rare to find a volcanic landscape that in such a limited space contains so many major variations, minor modifications and gradations in materials, structures, forms, plant species and mosaics of vegetation as Mt. Teide. Teide National Park encompasses the distinctive landscape of the Tenerife highlands, including the old Cañadas Edifice, which consists of the Las Cañadas wall, La Fortaleza, Los Roques de Garcia. It also includes the Teide-Pico Viejo double stratovolcano, with its adventitious basaltic volcanoes surrounded by basal domes, as well as an intermediate plain that shows few signs of recent monogenic eruptions and, most characteristically, the lava flows genetically associated with the stratovolcano and the detritus-accumulating plains that have formed between the tallest relief forms. The western and eastern edges of this protected space come in contact with the volcanic macrostructure complex and the two adjacent and simplest of the volcanic dorsals known as Pedro Gil and Abeque, characterized by recent volcanic eruptions that are concentrated both in time and space, creating a diverse landscape within the general features of the rest of the heights of the island. Not only do these peripheral areas contribute to the variety of volcanic forms and types of vegetation landscape, but they also allow us to better understand the spectacular central structure, located where these two volcanic dorsals intersect in perpendicularly opposite directions.

Remarkably, all of the different landscapes produced by the geomorphological and ecological processes occurring in this tectonic and bioclimatic area can be identified in this relatively compact space, along with their successive temporal variants. The varying landscapes are in harmony with each other and within the space as a whole, connecting or mixing together according to how closely they are observed. This National Park is set apart from the rest of the island and the rest of the high mountain volcanoes on the planet by its absolutely unique geography, a geography which enclosing a hierarchy of successively smaller worlds within its cosmos. In the Park, one can see Teide and its Planets.

Despite the fact that humans have been present at this site and used it for different purposes since well before the conquest of the islands, there are few places as accessible as this volcanic landscape that have been conserved so well. Although many of the directly volcanic forms are extremely ancient, they still appear as fresh as they did when they were created, with vast lava flows, needles protruding from the domes, the perfect lava channels of Teide’s black lava flows and the spectacular Pico Viejo crater that in and of itself is a veritable museum of volcanic forms. The Teide landscape's dynamism is closely related to the preservation of these forms. The fact that the lava flows remain in contact with the craters that emitted them, although they are occasionally hidden by other lava flows superimposed on them, coupled with the abundance and diversity of petrified flows that have been shaped by the unevenness of the terrain, create a particular aesthetic that makes us feel as if we are witnessing a real eruption.

In some areas, only the passage of time has eroded the sharpness of the volcanic forms. Torrential deposits that have covered the lower sides of Pico Viejo have diversified the landscape, leading to the creation of a unique mosaic of vegetation that bears witness to natural processes in accord with a precise combination of climatic conditions, forms, rock types and the slopes. Even in the Las Cañadas wall, which is the area where erosion has had the most time to degrade the volcanic structures, all of the relief features continue having a harmonious organization congruent with the volcanic history of the edifice and its recent morphoclimatic evolution.



View of Teide National Park

Although at present the vegetation of the landscape is allowed to grow spontaneously, throughout history it has been the element most affected by human activity. But ever since this space was declared a National Park, thereby prohibiting its use for pasturing, the association between the morphological components and vegetation has become increasingly evident. The fact that both travellers and scientists in the 19th and 20th Centuries noted that the sparse vegetation found in this area almost exclusively consisted of the shrub *Spartocytisus supranubius*, coupled with the plant evolution reported by people who habitually trek through the Park, indicates that there has been a progressive biological occupation of the area over the last 50 years that has established diverse habitats and ecological niches that have not yet been completely defined. This is why from a scientific point of view Teide is not only a volcano laboratory but also a remarkable example of the vegetation landscape of a subtropical mountain in volcanic territory.

The outstanding natural aspects of Teide National Park are mainly a product of the processes that generated the relief forms. These processes are fundamentally related to volcanic eruptions and, to a lesser degree, the modifications of original forms by torrential and periglacial processes and slippage. They are all related in that gravitational pull conditions the positioning of the resulting forms in the same place that they are generated and in the spaces directly below them in altitude. The fact that the National Park is located in precisely the highest part of the island of Tenerife guarantees that none of the spaces genetically related to the Teide landscape is located outside of the Park.

Aerial projection deposit