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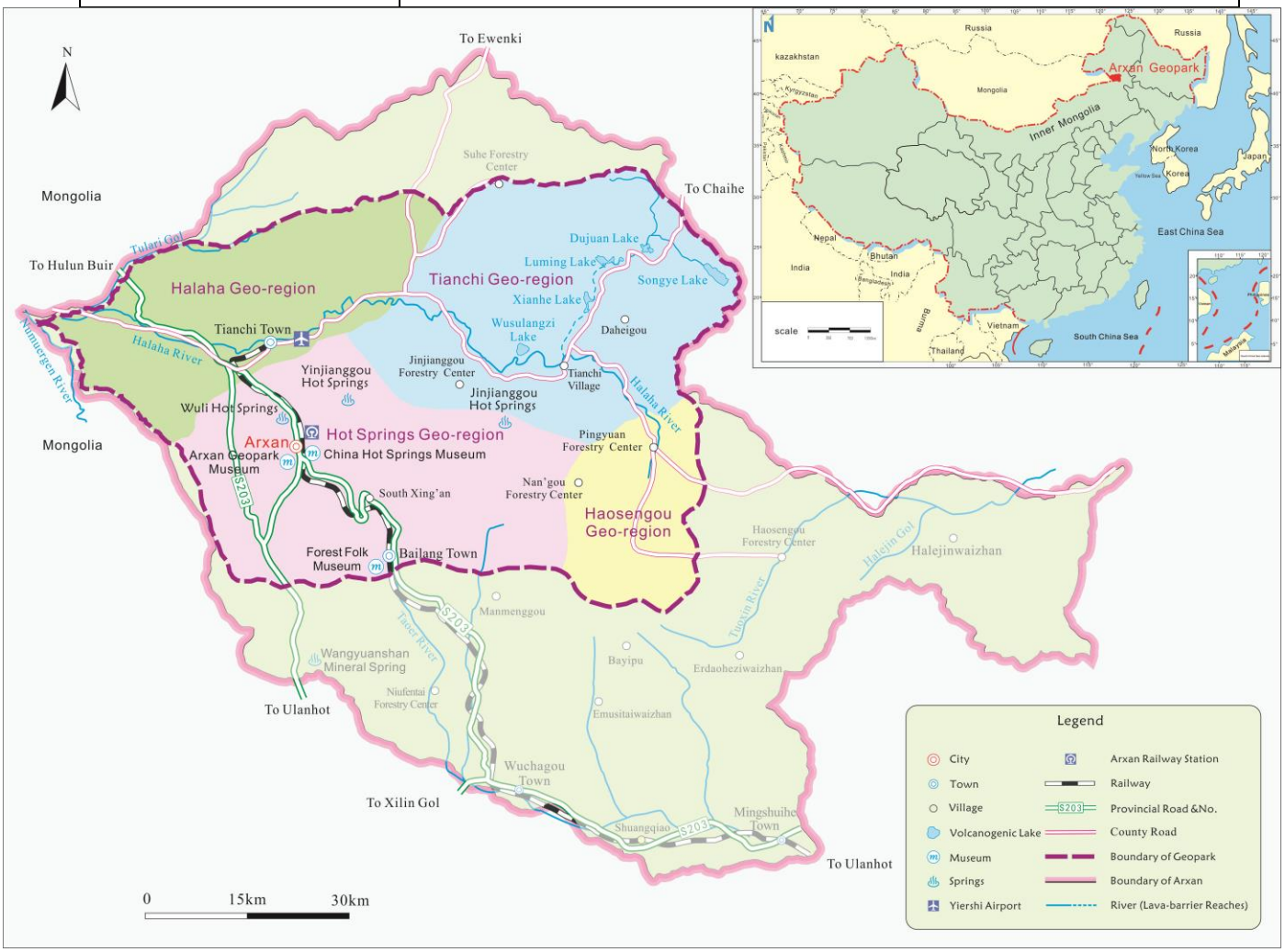
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Arxan, People's Republic of China

Geographical and geological summary



The area is located in the jurisdiction of Xing'an League, Inner Mongolia Autonomous Region, the People's Republic of China, with geographical coordinates 119°29'24.33"-120°43'39.66" E; 46°58'57.07"-47°30'42.99" N. The total area is 3,653.21 $km^{2.}$

Arxan is a mid-low mountain region situated in the southwestern part of the middle section of the Daxing'anling range. Its major topographic features are mid-low hills formed from tectonic denudation, as well as basalt platforms and alluvial valley plains. The elevation ranges from 820 to 1,750 meters, with an average of 1,100 meters.

The area is located at the point where the eastern Tianshan-Xing'an fold zone compounds with the Daxing'anling giant uplift belt of the Cathaysian tectonic system. It is a topographic boundary zone of China and a crust transition zone. As a volcanic-tectonic unit, it is part of the Datong-Daxing'anling Cenozoic volcanic activity zone. The area has abundant geoheritage of significant national and global value, including geomorphological landforms (volcanic landforms, granite landforms, fluvial landforms), water landscapes (natural springs, volcanogenic lakes, scenic river reaches), etc. The great variety of volcanic landforms, volcanogenic lakes and natural spring groups is highlight attraction.

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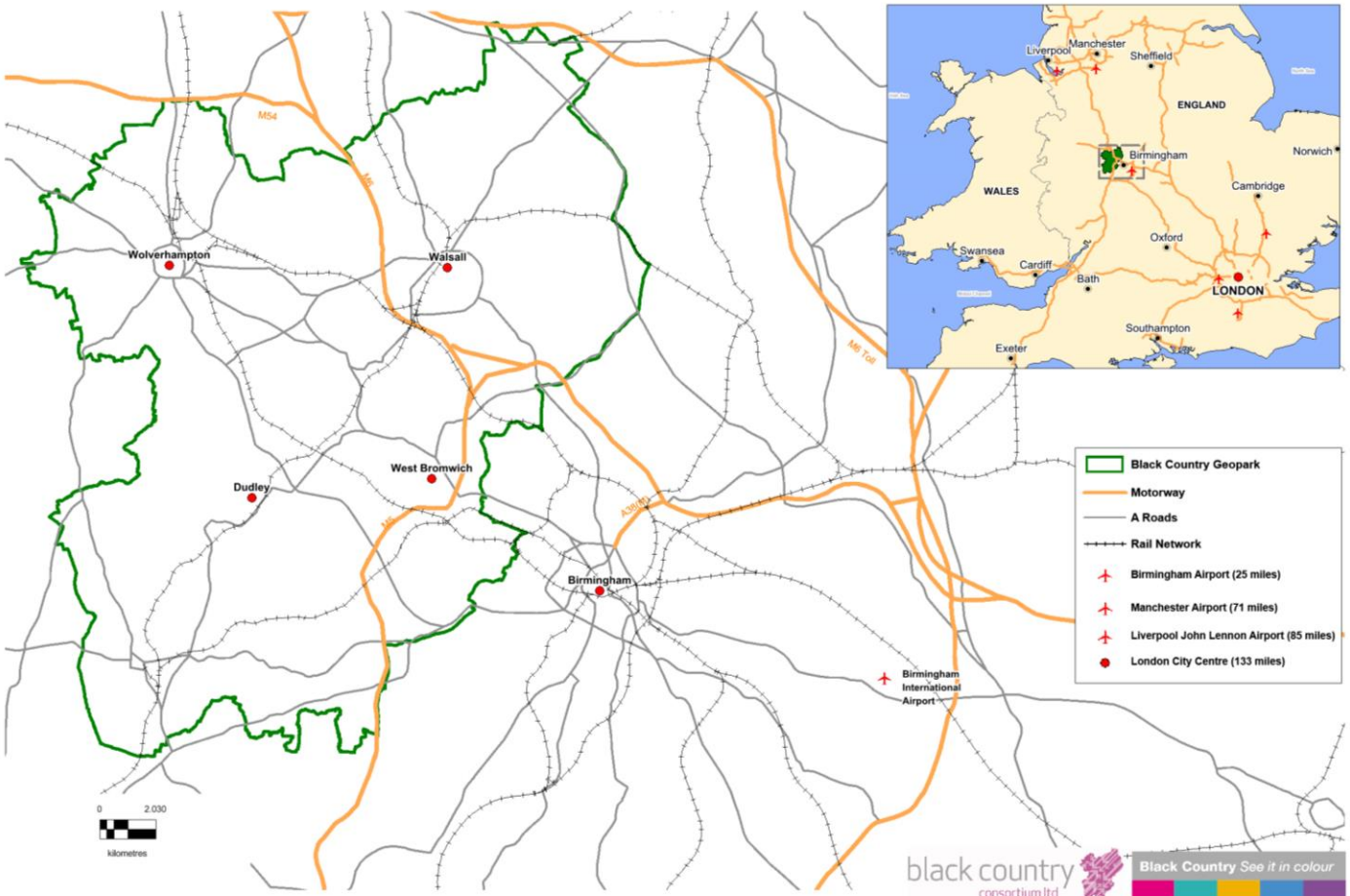
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Black Country, United Kingdom of Great Britain and Northern Ireland

Geographical and geological summary



The area is located in the centre of England. Its easternmost point is a kilometer from the centre of the city of Birmingham. The surface area is 256 km^2 and its boundary is defined by the outer edge of the four urban metropolitan boroughs of Dudley, Sandwell, Walsall and Wolverhampton. This area, currently home to 1.1 million people living in more than 200 communities, is a patchwork of dense urban townships spread across a series of low hills and river valleys. The most competent hard sedimentary and igneous rocks produce the highest land. Pleistocene and post-Pleistocene drainage structures relate to the melting of ice fronts and the isostatic rebound of the landmass subsequently formed deeply incised river channels

For its size, the Black Country has some of the most diverse geology anywhere in the world. With very few exceptions all of the geological exposures are the remnants of mining and engineering endeavours of the Industrial Revolution and contain some of the most important geological evidence in the world for certain aspects of Earth science. The geology exposed and the wider geodiversity and industrial heritage features across the Black Country link together to provide an enthralling geological narrative that is testimony to changing environments through some 430 million years of geological time. Evidence of the deeper geology is represented in the historic geological collections of the Black Country, and in every well-appointed natural history collection in the world. This material was collected during the days of mining or from borehole cores taken to explore the deeper geology.

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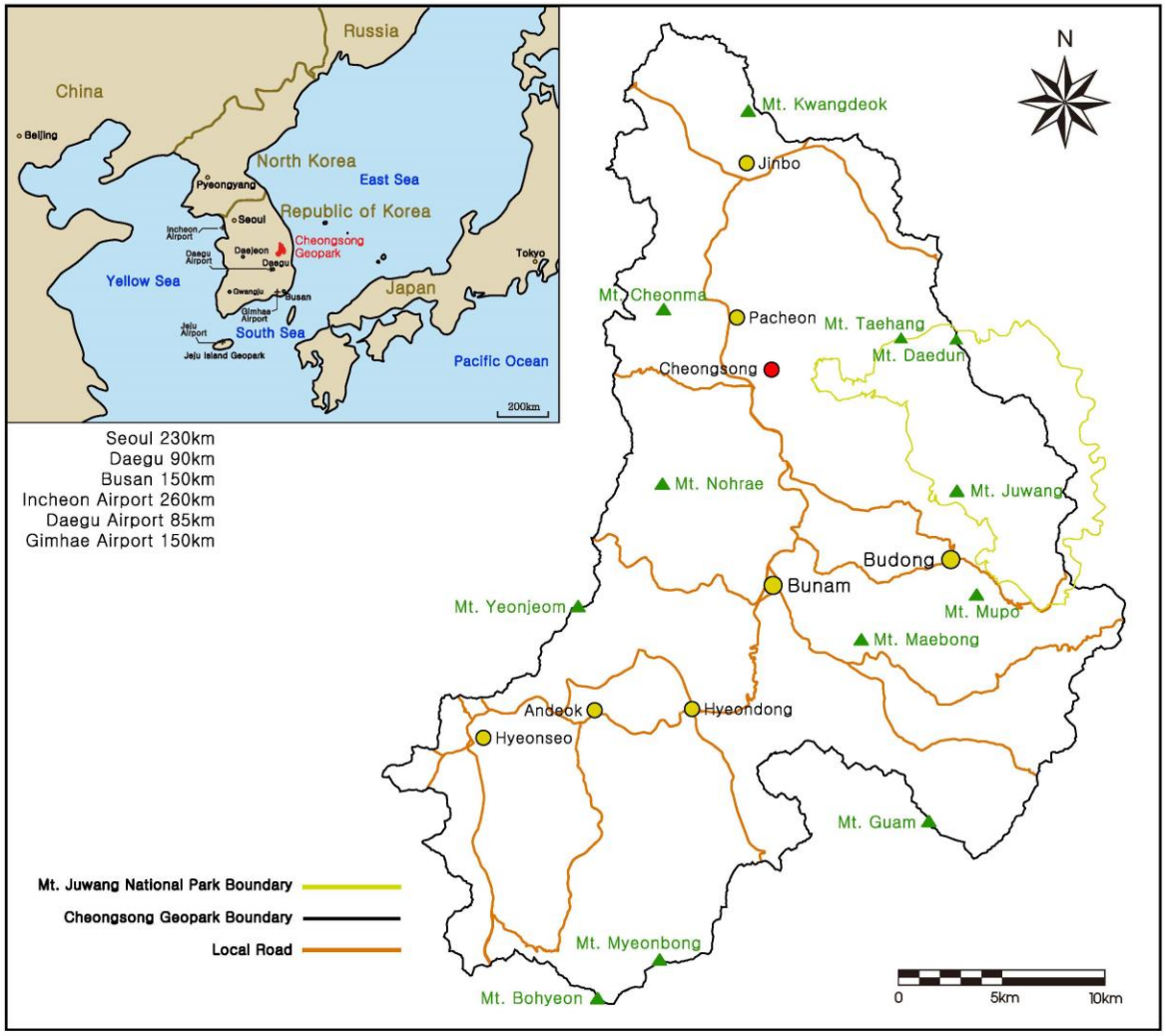
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Cheongsong, Republic of Korea

Geographical and geological summary



Enclosed by a mountain range originating from a part of North Korea near China, Cheongsong is located in the central eastern area of the Republic of South Korea at 129.05712° E, 36.43627° N. The administrative district is located in Gyeongsangbuk-doIt and is comprised of 8 small towns. The administrative boundary of the region also marks the boundary of the proposed UNESCO Global Geopark. Its surface is 845.71 km², which comprises 652 km² of forest lands, 56 km² of rice paddies, 29 km² of fields, and 109 km² of orchards. Officially, Cheongsong-gun is divided into eight administrative districts, each of which has its own geological and other attractions.

South Korea is on the eastern margin of the Eurasian Plate, which is subducted under the Pacific Plate, with the Japanese archipelago located on the subduction boundary. Aspiring Cheongsong UNESCO Global Geopark located in the southeastern Korea belongs to the Kyongsang Basin, the biggest sedimentary basin in South Korea. The area presents igneous, metamorphic and sedimentary rocks, formed from the Precambrian period through the Cenozoic period. From the bottom, the geological layers of Cheongsong comprise metamorphic rock in the Precambrian period; plutonic rock in the Triassic period; sedimentary and volcanic rocks in the Cretaceous period; intrusive, plutonic, and other rocks in the Tertiary period; and allusive layers in the Quaternary period. Distinctive features of interconnection like interaction between the rhyolitic volcanic activity and water which formed the Cheongsong spherulitic rhyolite and the Dalgi Mineral Spring Site respectively, two representative geosites of the area.

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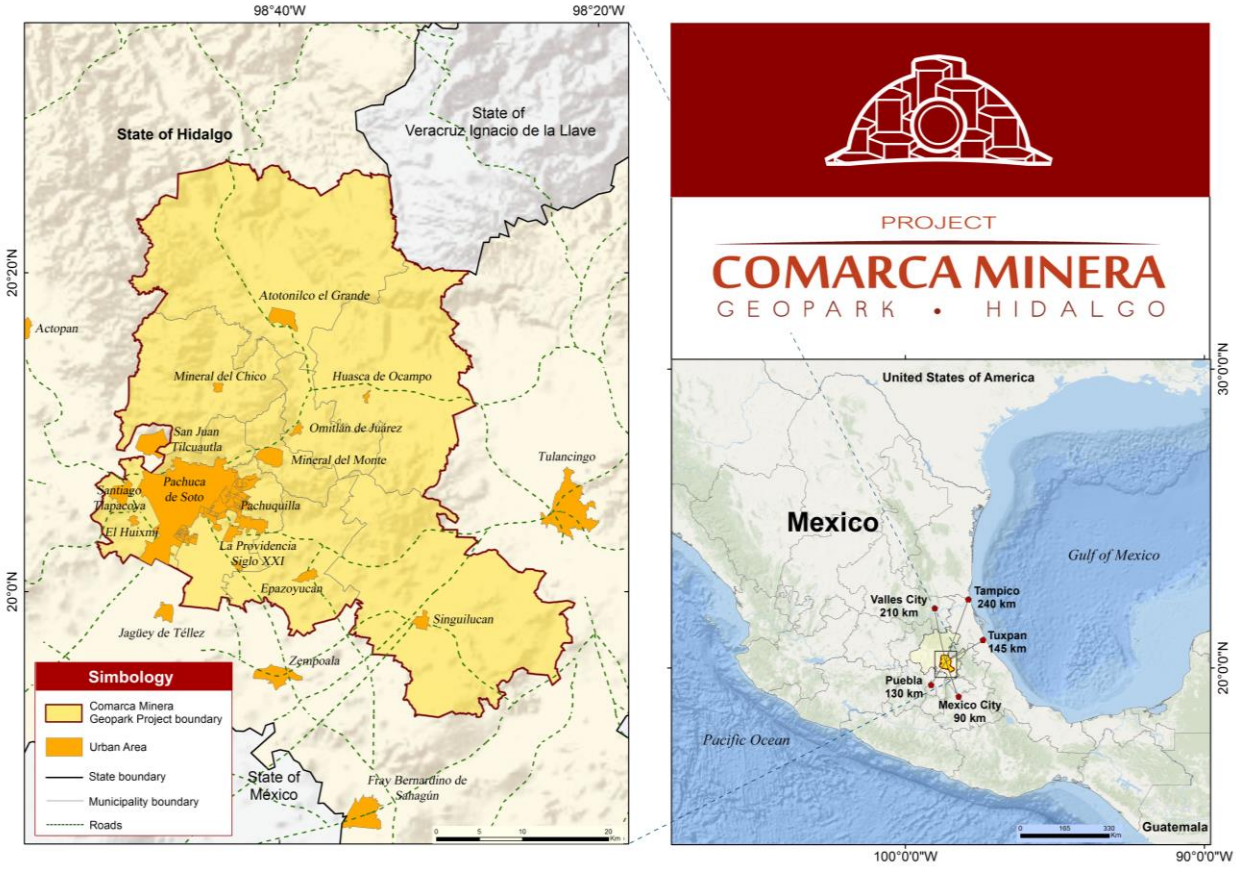
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Comarca Minera, Mexico

Geographical and geological summary



The name of the area comes from one of the ten geographical regions in the State of Hidalgo, named Comarca Minera, because it almost totally belongs to it. The region is characterized by worldwide recognized argentiferous affinity ore deposits that have been exploited since the 15th century, modifying the natural environment and inheriting an architectonic, cultural and social legacy in the region. The territory is located between 19°52' – 20°27' north latitude and 98°21' – 98°51' west latitude. The territory of the area is located in the center-east portion of Mexico, in the State of Hidalgo. It has an approximate extension of 1910 square kilometers, covering 9 of the 84 municipalities that define the State, representing the 9% of its total surface. The 97% of the area belong to the physiographic province named *Eje Neovolcanico Transmexicano*, characterized by the presence of volcanic terrains and landforms whose ages oscillate between Eocene and Pleistocene. The remaining 3% is located within the *Sierra Madre Oriental* physiographic province, which shows terrigenous and carbonated sequences from Cretaceous. The zone presents relief with altitudes in the range of 1300 – 3200 metres above sea level; it is fundamentally composed of hills, plateaus, canyons and plains.

The oldest rocks of the Comarca Minera's date from the Albian, when a transgressive event occurred and a carbonate platform developed (Carrasco-Velásquez, 1971). In the Turonian a clastic platform environment formed and evolved to deeper conditions during the Santonian (Arellano-Gil, 2005). By the Cretaceous-Tertiaty limit, the rocks were folded as consequence of the Laramidic Orogeny, caused by the convergence between the Farallon and North American plates (Eguiluz *et al*., 2000; Salvador-Flores, 2001; Arellano-Gil, 2005). During the Oligocene-Late Miocene, the subduction of the Cocos Plate originated calcalkaline volcanism, producing an andesitic to rhyolitic volcanic sequence (Geyne *et al.,* 1963; McKee *et al.,* 1992), with dacites and trachytes in the Pliocene-Pleistocene (SGM, 2007b). The Real del Monte word-class silver deposit occurs in the Comarca Minera. It consists in a low-sulfidation epithermal deposit that was mined for over more than 400 years (Ortega, 1997; Probert, 2011).

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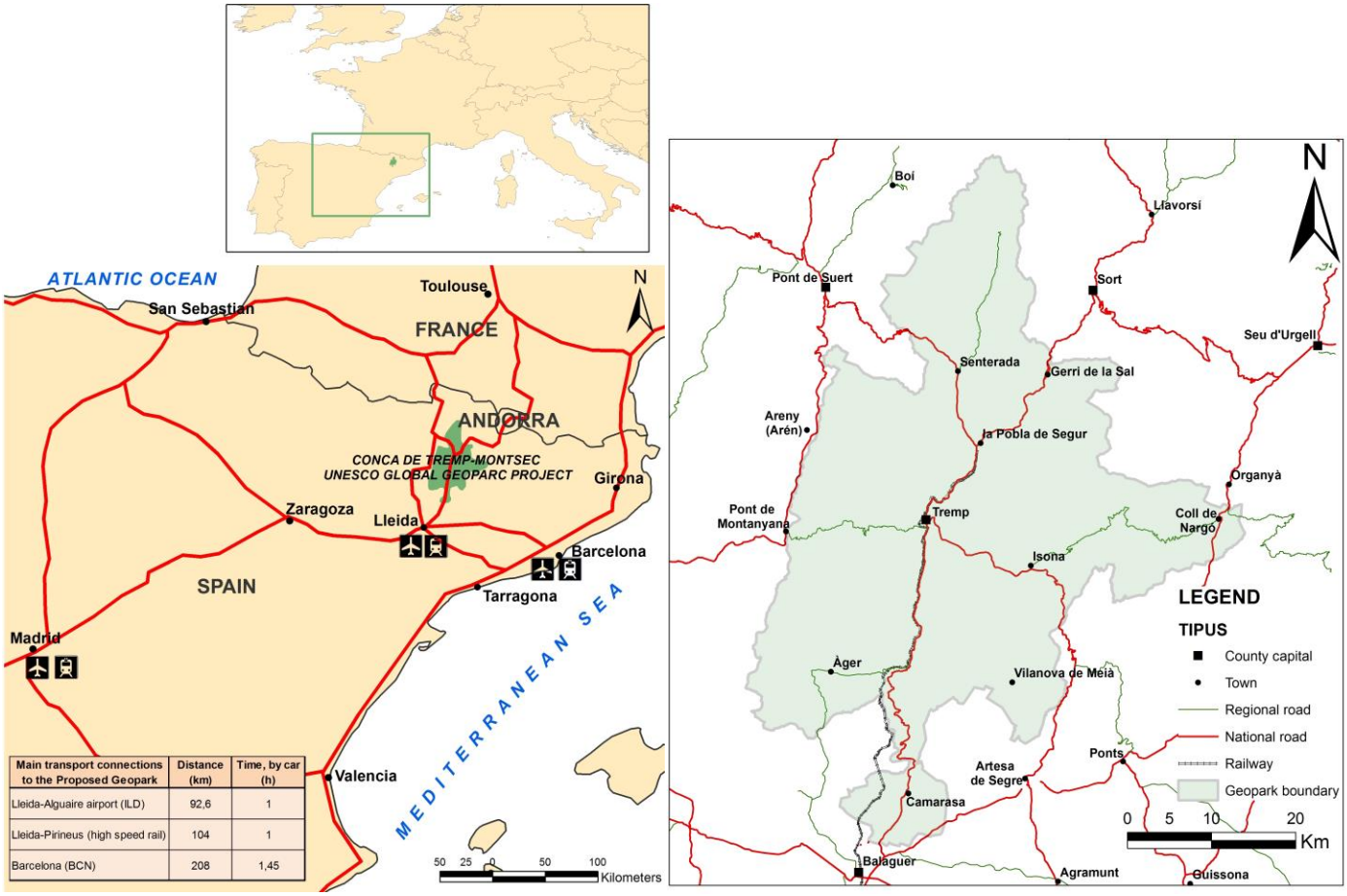
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Conca de Tremp-Montsec, Spain

Geographical and geological summary



The proposed area covers 2,050 km2, representing 17% of the province of Lleida and 6% of Catalonia, and is located between 41º 52' and 42º 33' latitude north and between 0º 40' and 1º 19' longitude east, at the north-east part of Spain, relatively close to the southern borders of France and Andorra.

The area consists of geographical units that are very clearly separated by many valleys. The hydrographic basin that drains water from north to south shows three main arteries: the rivers Noguera Ribagorçana, Noguera Pallaresa and Segre (from west to east), crossing the ranges parallel to the axial Pyrenees orientated from east to west and forming various valleys, characterized by very rich geodiversity.

The candidate region is characterized by a set of mountain ranges and basins oriented east-west, determined by the arrangement of various overthrust nappes making up the southern slope of the Central Pyrenees. It covers the geological record of the past 550 million years. In the north, in the Axial zone, is the antiform pileup of overthrust nappes associated with the Alpine orogeny. The materials outcropping in this zone, in the Vall Fosca, are largely from the Paleozoic and have been strongly deformed by the effects of the Hercynian orogeny and related to mineral deposits of interest. To the south of the axial zone, the thrust sheets basically formed by Mesozoic and Palaeogene rocks can be identified. Contemporary with the establishment of these sheets piggyback basin-type intermountain basins originated (Tremp basin, Àger basin). In the Upper Cretaceous rocks, the remains of the last dinosaurs in Europe have been preserved, constituting the distinctive feature of the paleontological heritage of the proposed geopark.

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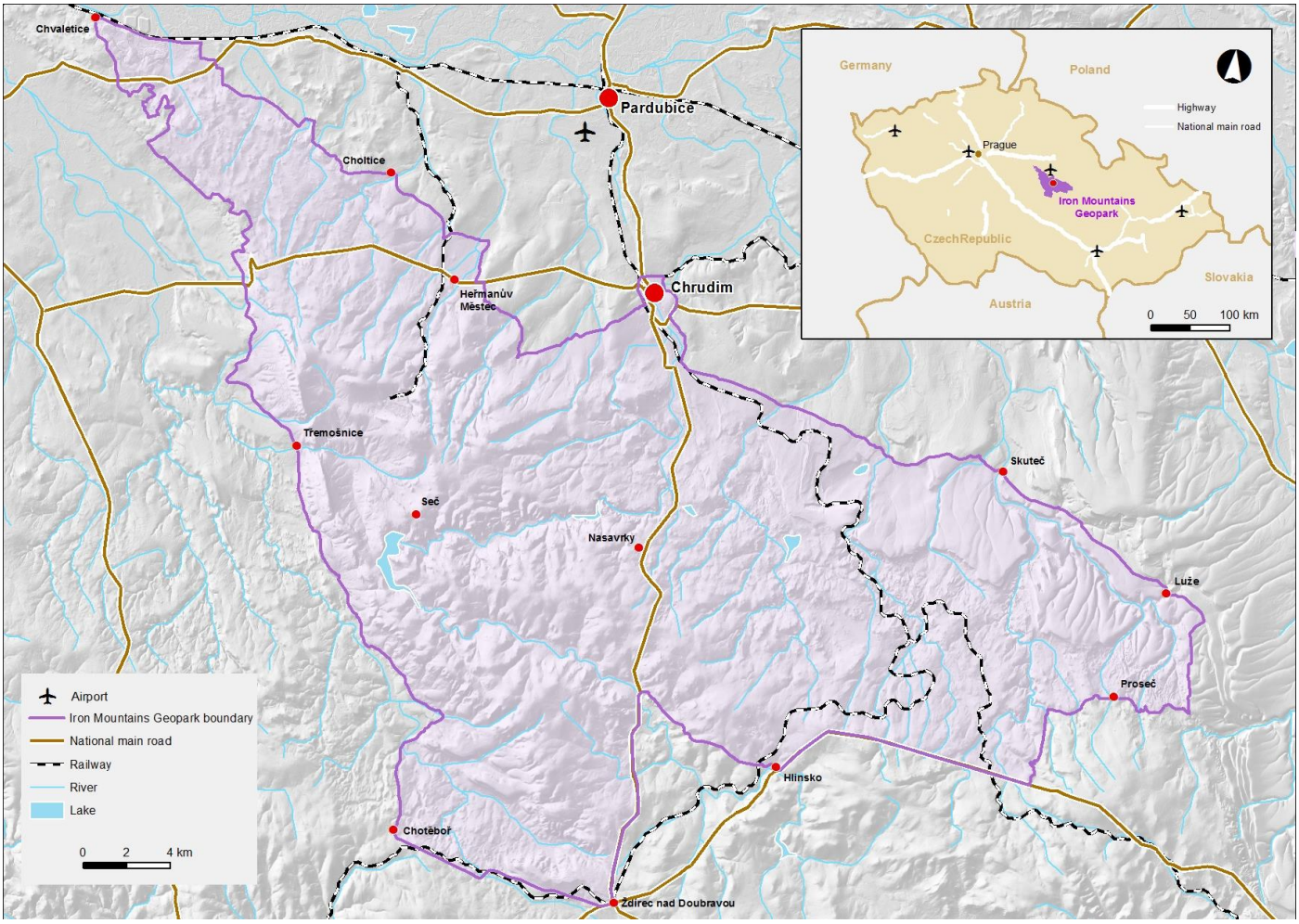
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Iron Mountains, Czech Republic

Geographical and geological summary



The area is located in the central part of the Czech Republic. It occupies the major part of the Iron Mountains and their surroundings. The main geological phenomenon is the great variety of geological environments and the presence of almost all stratigraphic units - from the Proterozoic through the Tertiary. The area is located along the southern limit of the Pardubice Region some 100 km east of Prague. Geographical coordinates are (Google maps): N 49.949507, E 15.796201. The aspiring Iron Mountains region covers the area of 777 km^2 and its border is 190 km long.

Iron Mountains are the key to geological history of central Europe. Proterozoic gneisses and volcanosedimentary complexes (subaerial and submarine volcanism) are present. The earliest life forms have been found – stromatolites. The Paleozoic comprises Cambrian siltstones, Ordovician quartzites, Silurian shales, Devonian limestones and Carboniferous sediments. Rare fossils include trilobite and graptolite fauna. The third oldest ichnofossil of *Zoophycos* type in the world has been reported. The Mesozoic (Upper Cretaceous) sedimentary cover has a unique development, with abundant fauna and flora. Sandstones and spiculitic marlstones provide excellent conditions for groundwater accumulation. Tertiary rocks are represented by basalt enclosing olivine-rich xenoliths. Geological story of the area is completed by Quaternary loess and sandy gravel.

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UNESCO Global Geoparks

Applicant UNESCO Global Geopark Keketuohai, People's Republic of China

Geographical and geological summary

The area is a National Geopark, located in Xinjiang Uygur Autonomous Region, the People's Republic of China, in Altay Prefecture, in the inland area of Central Asia; the geographic coordinates are from 89°29'45" to 90°11'54" E and from 46°42'04" to 47°43' 45" N. Keketuohai territory has a floor area of 2337.90 km^2. The area is 50 km away from Mongolia in the northeast, about 33 km away from Fuyun County in the west, about 580 km away from Urumchi, with a distance of travel of about 6 hours, and about 300 km away from Altay City, with a distance of travel of about 3 hours. With a distance of about 30 km to National Highway 216, it boasts convenient transportation.

The altitude is 1072 to 3234 m, and there are many incised valleys. The areas along Fuyun Seismic Fault Zone are characterized by bead-like basins or lake basins. Kalaxianger is located in the transitional zone between the mountainous region and the plain. The area has abundant geomorphic types, especially the granite gorges and basins distributed at the source of the Irtysh River, they are typical and of high ornamental value and research value.

Located on the south slope in the middle section of the Altay Mountains (well-known mountain ranges in Middle Asia), the area plays an important role in interpreting geological evolution of Altay Prefecture including several times of sea-land changes, Longmenshan orogenic belt and magma intrusion, etc. In the area, granites of different periods develop forming the Altay granitic geomorphologic landscape characterized by the combination of campanulate, quaquaversal, pyramidal, angular and platypeaks and making it the world-renowned No. 3 granite pegmatite rare-metal ore deposit of Keketuohai.

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UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Las Loras, Spain

Geographical and geological summary

The area comprises 950,76 km^2 and is located in Spain, to the north of Castilla and León Autonomous Community, occupying a part of the northwest of Burgos' region and a part of the northeast of Palencia's region. The proposed area is located among the UTM, Datum ETRS89, Huso 30N coordinates, Xmin= 383540 Xmax= 438390 Ymin= 4709470 Ymax= 4747325.

The territory of Las Loras is located north of the Iberian Peninsula, in the most southern sector of the Basque Cantabrian Basin. The area provides important information about the stratigraphy and sedimentary evolution of southwestern Europe and allows for a better understanding of paleoclimatic and phitogeografic of this region. There is an almost complete record from the Triassic to Paleogene with exceptional conditions outcrop. The territory has a high structural interest since it allows for a detailed reconstruction of the fracturing process ("rift") that occurred during the Lower Cretaceous and of the building of structures during the Alpine orogeny. Paleontology and geomorphology are other highlights of the geological heritage of the territory. There are many important paleontological sites and the magnificent examples of morphogenetic systems remain some of the most spectacular karst forms and deposits.

United Nations Educational, Scientific and Cultural Organization

UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Leiqiong, People's Republic of China

Geographical and geological summary

Leiqiong applicant territory is located in Guangdong Province and Province, People's Republic of China. Its geographic coordinates are:

Latitude 19 ° 49 ′ 42.55 ″ — 21 ° 11 ′ 43.86″

Longitude 110°1′2.86″—110°31′ 56.48″

The surface area of 3050 km^2 comprises different scenic districts: Zhanjiang (2529 km^2), Haikou (186 km^2), Qiongzhou Strait (335 km^2). The area was accredited GGN membership in 2006. Based on revalidation of the area in 2014 by the GGN, Leiqiong restructured its territory into a unified single area under a strong central management permitting for local sustainable development. To comply with all the requirements of a UNESCO Global Geopark, the area was increased by 379 km^2 to 3050 km^2 including the geoheritages of Zhanjiang Scenic District, Haikou Scenic District and Qiongzhou Strait.

The Leiqiong volcanic belt comprises a total of 39 volcanoes and is an important and typical representation of the Quaternary volcanoes in China. It has various types of volcanoes formed by magmatic as well as Maar volcanoes formed by phreatomagmatic eruption. It has important scientific and aesthetic value and is often referred to as a "volcano museum". Together with its diversified and abundant geological and cultural heritage, it has also been regarded as a "long lasting volcano textbook". The sedimentation, sea erosional and depositional features record the significant changes of the geological environment.

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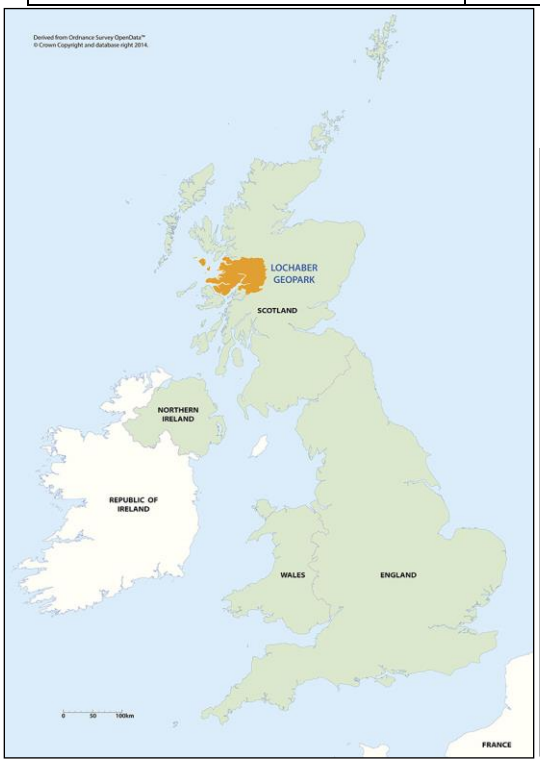
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Lochaber, United Kingdom of Great Britain and Northern Ireland

Geographical and geological summary



The Scottish Highlands are divided into eight Districts, administered by the Highland Council. Lochaber is the southern-most district, with an area of 4,648 km^2. The Lochaber aspiring Global Geopark occupies the whole of the District of Lochaber. It stretches from Rannoch Moor in the south to Glen Garry in the north, to Loch Laggan in the east, and includes the Small Isles of Eigg, Muck, Rum and Canna in the Sea of the Hebrides to the west.

The area is of an irregular shape defined by the boundary of the administrative district of Lochaber set by the Highland Council. To the west it is bounded by the Sea of the Hebrides, and inland largely by physiographic features such as mountain ridges. The area is considerably larger than the average Global Geopark in Europe and more lightly populated. The geographical coordinates of the Geopark office in Fort Willam are 56° 49’ N, 5° 06’ W.

The geological narrative of this area begins with Archaean Lewisian Gneiss, and ends with recent glacial retreat. Mountainous terrain and a fjord coastline reveal rocks of many different ages. Several localities acquired classic status during the 19th and early 20th centuries. The transcurrent Great Glen Fault separates the Northern Highland Terrane, composed of the Moine Supergroup, from the Grampian Terrane, built from the Dalradian Supergroup. Both Supergroups were deposited in the Neoproterozoic but have different lithologies and different metamorphic histories. Striking folding can be seen on all scales. Subduction-related late Silurian magmatism gave rise to the caldera complexes of Ben Nevis and Glen Coe, the first caldera recognized in ancient rocks. In the west, Palaeocene volcanicity during the opening of the North Atlantic gave rise to the celebrated Ardnamurchan ring-complex and Isle-of-Rum layered intrusion. Evidence of glaciation is widespread and includes the famous 'Parallel Roads' of Glen Roy.

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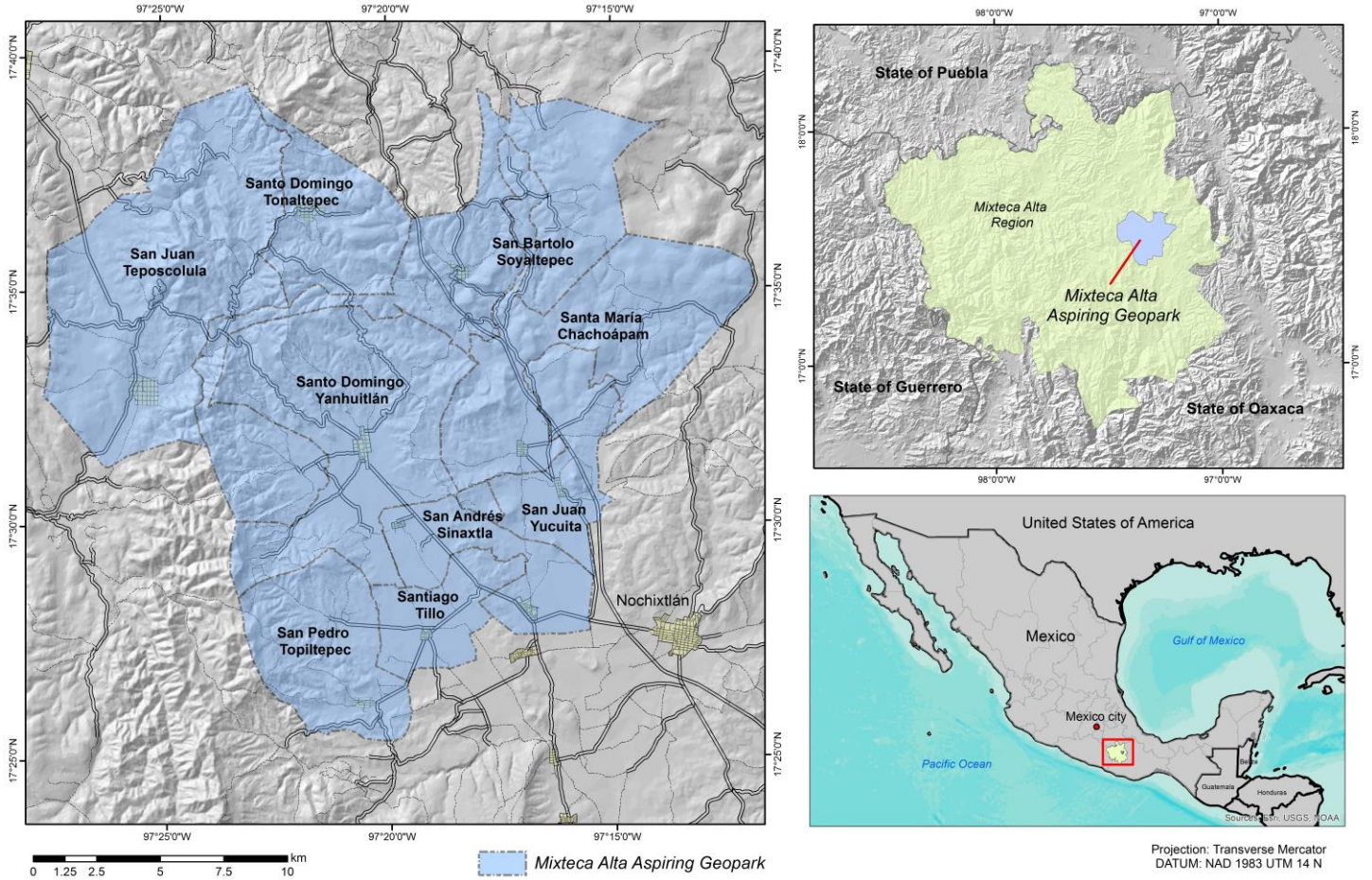
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Mixteca Alta, Mexico

Geographical and geological summary



The area is geographically diverse and located in western part of Oaxaca and neighboring states of Puebla and Guerrero, southeastern Mexico. Its topography results from the Sierra Madre del Sur and the Sierra Madre Oriental, two main mountain ranges with altitudes ranging between 2000 and 2500 m, the highest altitude is the Cerro Verde, or Nudo Mixteco (2892 m). The area includes nine municipalities with a total surface of 415.4 km^2 (17° 25´ 20´´ and 17° 39´ 27´´ N, and 97° 11´ 53´´ and 97° 27´ 40´´ W). It is 80 km from the City of Oaxaca (the State Capital), 220 km of the City of Puebla and about 350 km from Mexico City.

The area is located in the Sierra Madre del Sur physiographic province, a mountain region bounded on the north by the Mexican Volcanic Belt. From the geological point of view, this region is considered the most complex of Mexico (Centeno, 2004). It consists of Precambrian and Paleozoic metamorphic and plutonic rocks that make up the complex basement, a carpet of Mesozoic rocks, marine for the most part, and Cenozoic volcanic flow rock and continental sediments. Three main rivers have their headwaters in the area, the Nudo Mixteco or Cerro Verde which is the highest point inside the Geopark is 2892 meters above sea level and represents a water continental divide. The Papaloapan river drains a small portion of the northwestern part of the area and flows into the Gulf of Mexico; the Verde river drains a portion of the southeastern part and flows towards the Pacific Ocean and the Balsas river drains the northwestern area and also flows into the Pacific Ocean.

United Nations Educational, Scientific and Cultural Organization

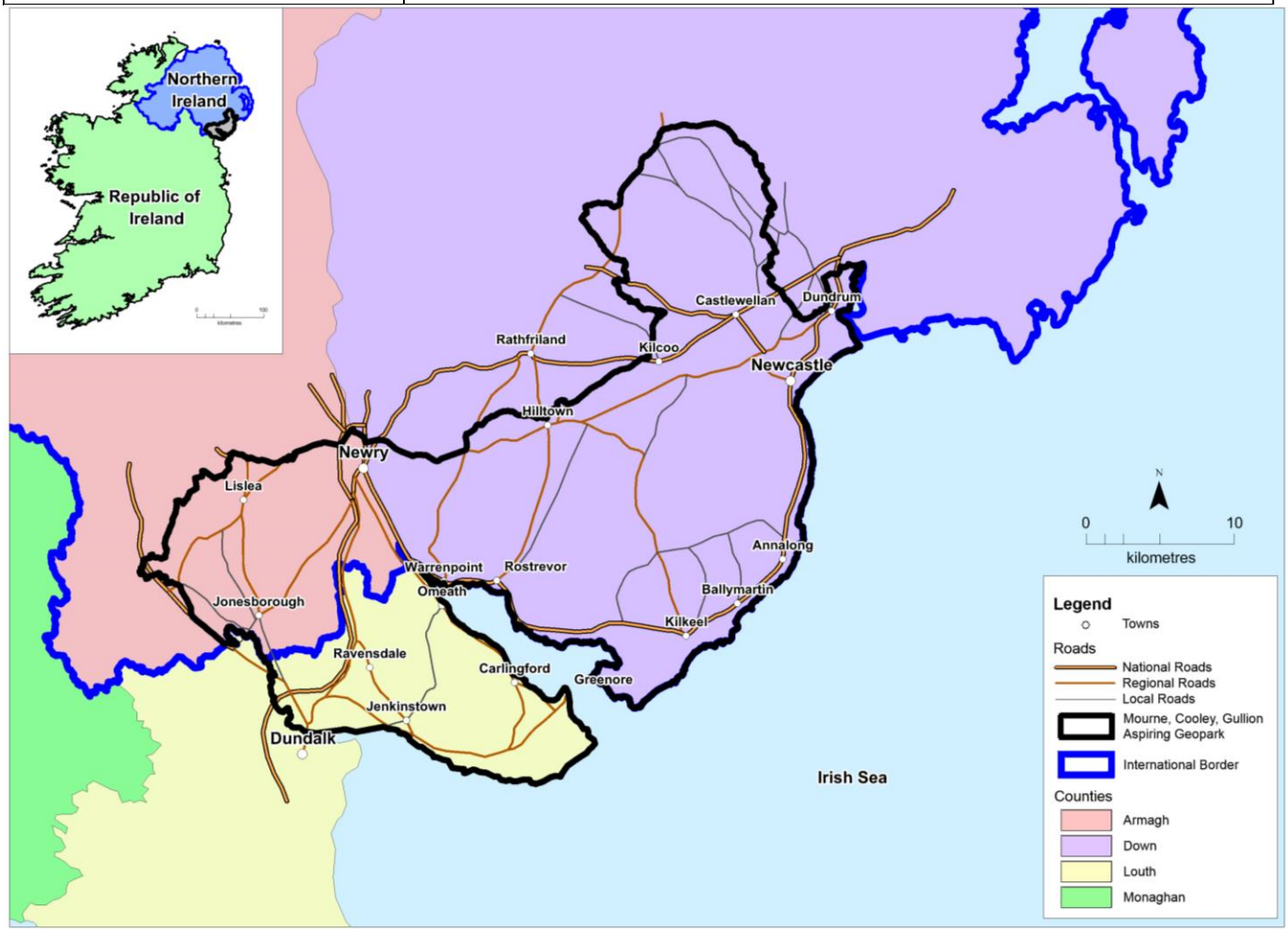
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Mourne-Cooley-Gullion,

Republic of Ireland - Northern Ireland (UK)

Geographical and geological summary



The area is midway between the cities of Belfast and Dublin on the main road and rail network. Newry city is the main urban and administrative centre in the region. Its longitude and latitude coordinates are 45.176 – 6.338. It has an area of 940.96 km^2, with 107.44 km of coastline, and a population of 100,322. Scientifically, the region was defined to encompass the three Palaeogene Igneous Complexes now seen as the Mourne Mountains (County Down, Northern Ireland), the Cooley Peninsula (County Louth, Ireland), and the Ring of Gullion (County Armagh, Northern Ireland).

The geological history of the region spans over 400 million years and is dominated by Silurian and Palaeogene rocks, making it the only place on the island of Ireland where the story of the closing of the Iapetus Ocean, its passage through tropical latitudes, the birth of the North Atlantic Ocean, and finally the shaping of the landscape by ice during the last glaciation can be told together. The region boasts four discrete upland regions in the Dromara Hills, Mourne Mountains, Cooley Mountains, and Slieve Gullion and the Slieve Gullion ring-dyke. The uplands are surrounded by lowlands covered in glacial sediment, much of which is in the form of drumlins. The mountains are dissected by valleys formed by ice during the last glaciation. The highest point in the Mournes is Slieve Donard at 850 metres but the Mournes have seven peaks over 700 metres, the highest point in Cooley is Slieve Foye at 588 metres and the highest point in Gullion is Slieve Gullion at 573 metres.

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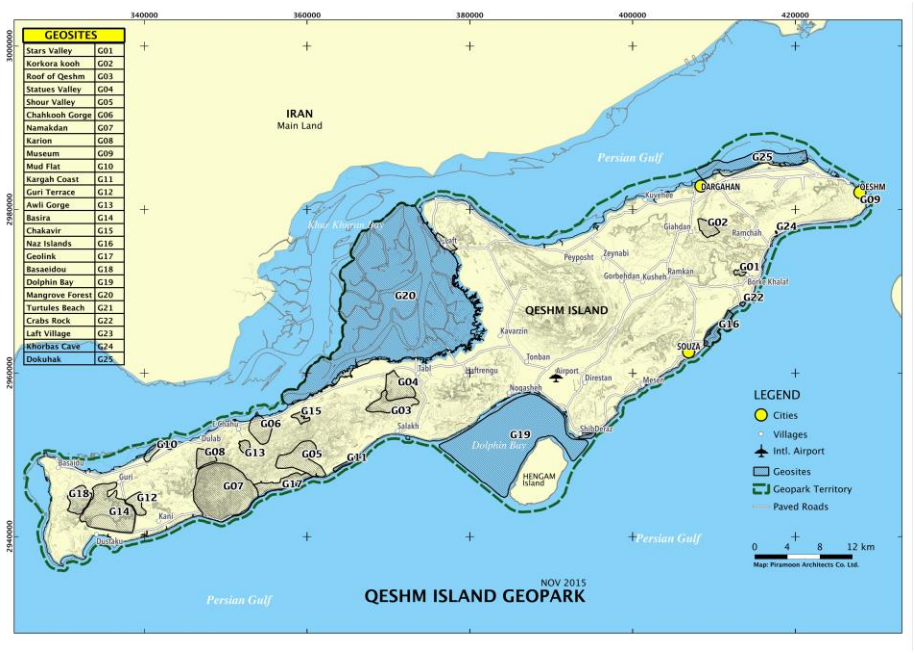
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Qeshm, Islamic Republic of Iran

Geographical and geological summary



Qeshm Island, which has the shape of a dolphin, stands parallel to the south coasts of Iran in the Hormoz Strait between the north axes 26°, 30′and 27°,05′ and the meridian axes 55°, 15′ and 56°, 40′ in the Persian Gulf. There are smaller islands in the vicinity of the Qeshm among which the most important ones are: Hormoz, Larak and Hengam. There are also other very small islands in its neighborhood such as Naz Island. The average area of Qeshm Island (The region between low tide and high tide) is 1,565km2 and the applicant area also includes the Mangrove forest area, Hengam Island and Dolphins' Bay is 2063Km2. The length of the island is near to 130km and its width at the most is 30km while its average width is 10km. The highest point in the island is 397m high –the peak of Namakdan Mount. The headland of Qeshm is at the 22km distance from Bandar Abbas Port and its nearest distance from the mainland 1.8km is within the distance between old Laft and Pohl Port.

The Qeshm Area of the Persian Gulf Region off the southern coast of Iran forms part of south and eastern extreme foreland of the Zagros geological and structural Province, expressed in the NW-SE trending Zagros Mountain ranges. The more southerly part of the Zagros Fold Belt faces but is separated from the Oman Region with its Paleozoic and Mesozoic formations and arced zone of thrust blocks of ophiolites, while the Makran geological and structural Province lies to the east, beyond the Minab-Oman fracture zone. The highest mountain peak on Qeshm Island, is related to the Kish Kuh Anticline structures that have increased the height in part as an effect of diapirism tectonics, related to the Namakdan Salt Plug.

In addition to the salt formation and complex, some of normal sedimentary formations are exposed in the different anticline structures on the island. The succession consists of conformable Neogene (Mio-Pliocene) units, with a total thickness of about 1200 to 1850 meters from the eastern to western ends of this island, respectively. In general, mountainous or high ranges nearly coincide with the folds having anticline structure, or in part as salt dome diapers, and the relative lowlands are mainly within or based on intermediate forms or synclines.

United Nations Educational, Scientific and Cultural Organization

UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Les Causses du Quercy, France

Geographical and geological summary

The territory covers 1 855 km^2 and is located in the southwest quarter of France, at the northern end of the Midi-Pyrénées region, 100 km from Toulouse (4th largest city in France by population). It is essentially a rural area covering the central third of the Lot County, between the Dordogne River in the north and the Tarn-et-Garonne County in the south. Its contours are those of the municipalities that ratified the Charter of the Causses du Quercy Regional Nature Park following those of the limestone plateau of the Quercy, called Causses, whose average elevation is 300 m. This plateau stands out from the low plains of the Aquitaine Basin bordering them to the south (avg. 135 m above sea level) and from the mountainous area of the Massif Central situated to the north and east (avg. 700 m above sea level, culminating at 1 885 m).

The area belongs to the northeastern edge of the Aquitaine Basin. The Causse is a vast plateau formed by Jurassic carbonate rocks deposited during the opening of the Atlantic Ocean, and is the result of an intense karstic polyphaser activity that started 70 million years ago. As the result of unique geological circumstances, the Quercy “phosphatières” form an exceptional fossiliferous recording. Those ancient phosphorite caves were carved during a first karstic period, and then sealed by phosphate-rich clay containing thousands of fossils in perfect conditions of preservation. The Quercy paleokarst is the longest chronological sequence currently known in a continental domain worldwide and enabled the recording of the climatic, environmental and conditions for life evolution (European reference for the upper Eocene and Oligocene epochs). Since 3.5 Ma, resumed karstic activity allows to observe typical karst landforms (swallow holes, resurgences, caves, chasms, dolines…).

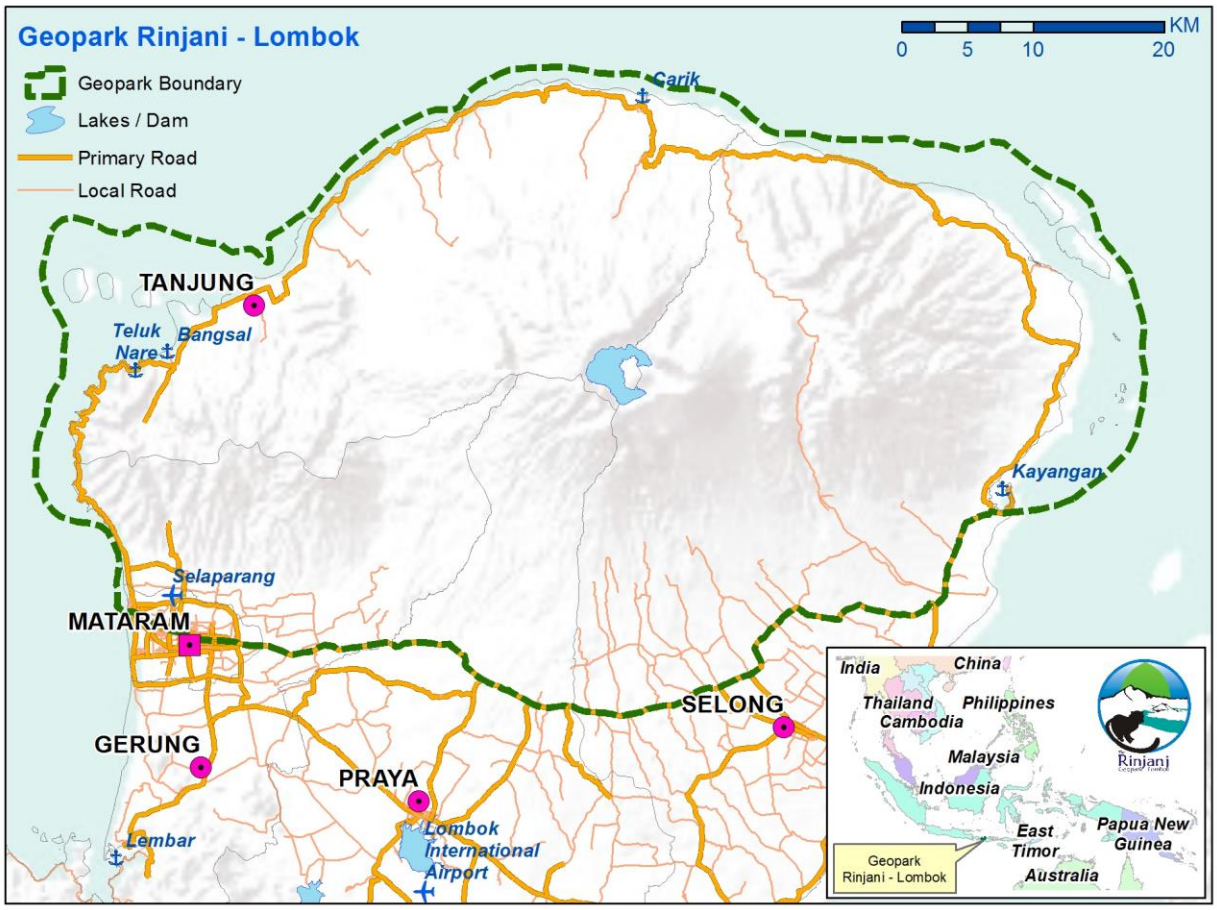
United Nations Educational, Scientific and Cultural Organization

UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Rinjani-Lombok, Indonesia

Geographical and geological summary



Lombok Island is located in Sunda Kecil Islands or West Nusa Tenggara, between Bali Island, separated by Lombok Strait in its western side, and Sumbawa Island, separated by Alas Strait in the eastern side. Lombok Island is nearly ball-shaped with a 70 kilometres "tail" on its southwest. It covers an area of 5,435 km^2 and its population number reached 3,142,195 people in 2009. The main city in the island is Mataram.

The geology of Lombok Island is generally dominated by quaternary calc-alkaline volcano and covered the Neogen clastic sedimentary rocks, Oligo-Miocene volcanics and Tertiary-aged breaktrough. The building of the Pleistocene-Holocene volcanic complex is due to the subducting process of Australia Continental plate under Eurasia plate (Cardwell and Isacks, 1978; Hamilton, 1979). The Quaternary volcano could further be categorized into old and young volcanoes complex. The old volcano complex consists of two complexes which are Punikan Mountain and Nangi Mountain on the west and Sembalun mountain on the east. The youngest volcanic complex is Rinjani Volcano with a volcanic cone formed approximately 12.000–6.000 years ago. During pre-Samalas eruption in 13th century there were two volcanic cones which were Samalas and Rinjani volcano both with separate caldera. Samalas eruption in 1257 resulted in the formation of huge caldera and pyroclastic flow in Kokok Putik. The eruption also caused part of Rinjani's cone collapsed to the caldera of Samalas. Samalas post eruption era was marked by volcanic activity in the caldera in the form of active volcano. Today Rinjani Volcano with its 3726 m above sea level cone is the highest peak in that volcanic complex. Samalas' caldera, which is filled with water, a combination of meteoric water and hydrothermal, formed a warm water pond named Segara Anak. In the middle of the caldera emerges a young volcanic cone called Rombongan Mountain and Barujari Mountain.

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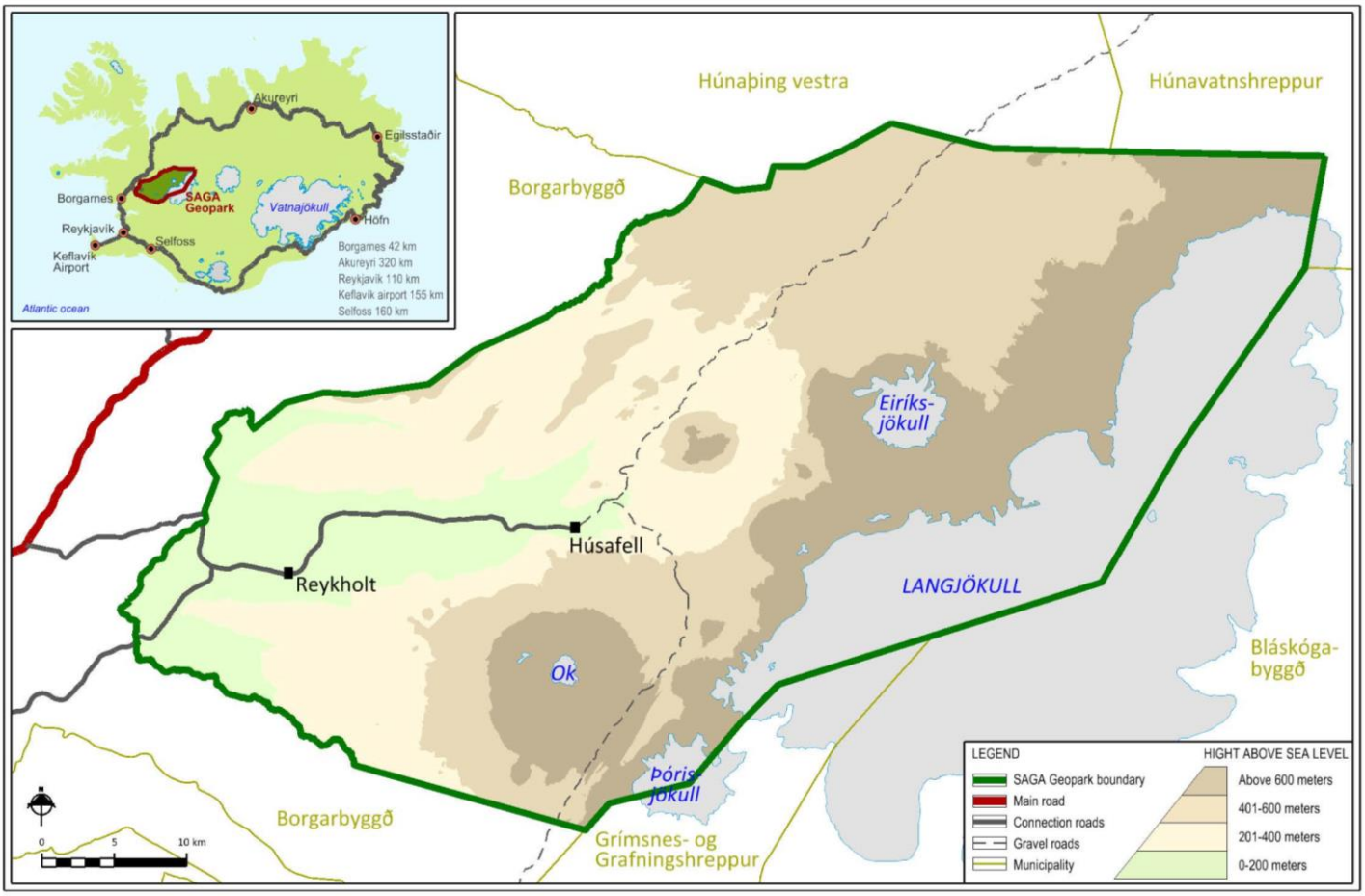
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Saga, Iceland

Geographical and geological summary



The applicant area is located in Borgarfjördur district in western Iceland and covers 2,270 km^2. It is located at the edge of the volcanic rift zone in SW Iceland, which is characterised by diverse subglacial and intra-glacial volcanic formations. Among the interesting aspects of the area is its extensive geothermal activity and the various uses that people have made of the available geothermal resources ever since the country was settled in the 8th century. The area includes the largest low/medium enthalpy geothermal area in Iceland as well as the world's largest boiling hot water spring, "Deildartunguhver". Saga aspiring UNESCO Global Geopark is located in Borgarbyggd Municipality, covering almost half of its geographical territory but harbouring only 10.2 per cent of its population or 360 out of 3,535 inhabitants. The main road connecting north and south Iceland runs a few kilometres west of the area.

Iceland straddles the Mid-Atlantic Ridge at a point where the rate of tectonic plate spreading is 1 cm a year in each direction. A mantle plume has been active there since the opening of the North Atlantic some 60 million years ago. The axial volcanic rift zone intersects Iceland from the southwest to the north, connecting with different segments of the Mid-Atlantic Ridge at each end. The proposed Saga Geopark will be situated within the western branch of the volcanic rift zone at a location where an old transform zone is still active. Volcanic eruptions occur every four years on average in Iceland. Crust permeability and heat flow are both high, favouring the existence of hot springs of various types. The proposed geopark will operate within an area uniquely suited to learning about the interaction of ice and lava, the formation of various subglacial and subaerial volcanic products, the nature of geothermal fields, and details of glaciation and deglaciation during the ice age.

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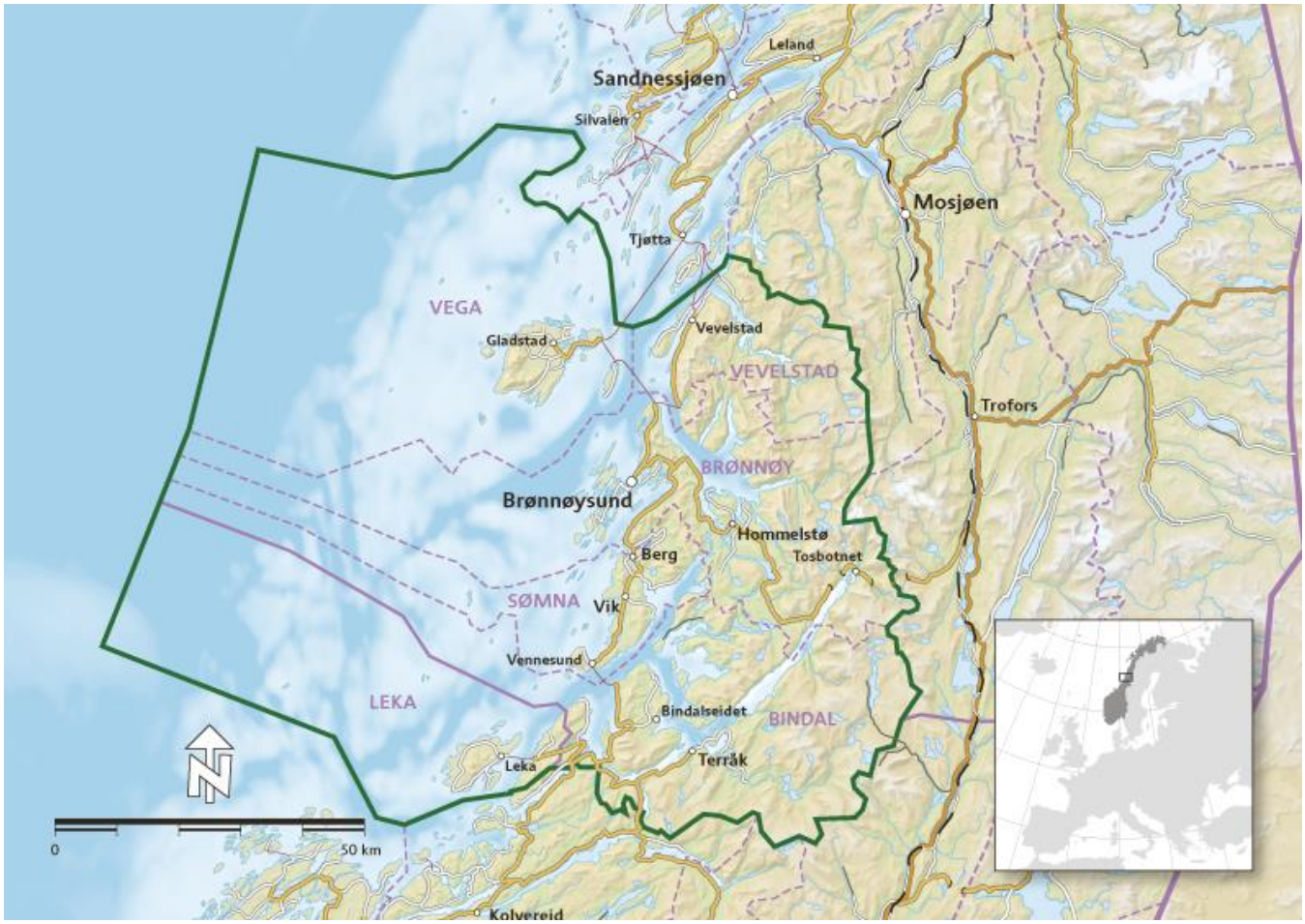
UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Trollfjell, Norway

Geographical and geological summary



The area is located on the coast in the middle of Norway. It covers six municipalities: Brønnøy, Vega, Vevelstad, Sømna, Bindal (Nordland county) and Leka (Nord-Trøndelag county). The aspiring Trollfjell Global Geopark covers an area of 10,082 km^2, 6,763 km^2 (67 %) of which is sea and 3,319 km^2 (33 %) land and its boundary has been set to coincide with the municipal boundaries. Torghatten is approximately in the centre (65° 23’ 898’’N and 12° 05’ 385’’E). The area includes more than 12,000 islands and skerries (small rocky islands).

The Trollfjell area displays a 500 million years long geological macro-cycle, from ocean to ocean. The bedrock is composed of rocks that once were formed beneath, in and along an ancient ocean - The Iapetus. They display the architecture of an oceanic crust and the transition to continental settings, as well as the final closing of this ocean resulting in the continent-continent collision forming the Caledonian mountain chain 400 million years ago. The present landscape forms the margin of a ‘new’ ocean, the Atlantic. Glacial erosion has uncovered the rocks from the past, and shaped a unique coastal landscape of monumental mountains rising from the strandflat with its numerous islands. The land has been lifted more than 100 meters by isostatic rebound since the last ice age. Ancient shorelines can be seen up to this level, where traces from the first settlers arriving 11.000 years ago are found.

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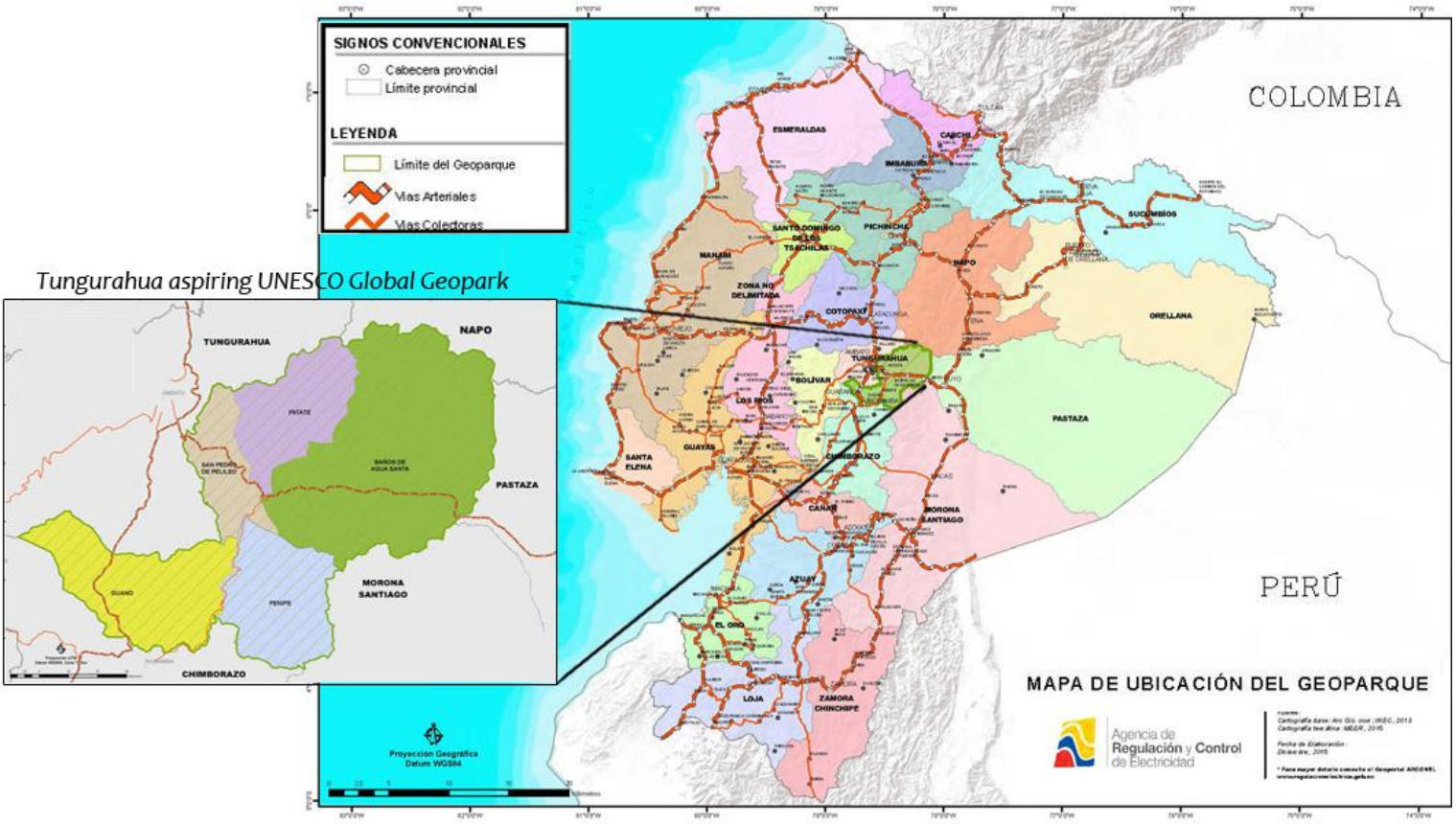
Applicant UNESCO Global Geopark

Tungurahua, Ecuador

Geographical and geological summary



The area is located in Ecuador (00º55'00 and 01º34 S, 78º06'51" and 78º31'60"W) covering cantons within the provinces of Tungurahua and Chimborazo, both of which are named after the most important volcanoes in their area. Patate, San Pedro de Pelileo and Baños de Agua Santa belong to Tungurahua, (Tungurahua, 5,023 masl) and Guano and Penipe are in the province of Chimborazo, also home to the volcano of the same name (Chimborazo at 6,310 masl, the closest point to the sun on Earth) together with El Altar (extinct, standing at 5,320 masl) and Carihuairazo (likewise extinct and standing at 5,102 msnm). The total surface area is 2,427 km^2.

The area, located in the Central Andes of Ecuador, with volcanoes from the Cordillera Occidental and Cordillera Oriental together with a large fault system that runs under some of the volcanoes (Sud-Andean Fault) and parallel to others in the Inter-Andean Valley is an open-air classroom for Earth Sciences. The area is dominated by volcanic material coming from eruptions of active volcanoes, such as Tungurahua, and supposedly inactive but potentially active volcanoes such as Puñalica and Chimborazo, and from volcanoes now classified as totally inactive (Igualata, Altar, Mulmul Huisla and Carihuairazo). All of these have generated different types of phenomenon from tephra fallout through to sector collapses of the volcanic edifice. There are many different geomorphological formations to be observed: nappe tectonics, lagoons, glaciars and evidences of mass displacements in general. Tungurahua volcano reactivated in 1999 and has caused volcanic ash fallout, lahars and pyroclast lava flows that have altered the life of the surrounding populations, above all in the rural areas, changing their lives, lifestyles, and future plans while leading to mass emigration that endangers the identity of the region.

United Nations Educational, Scientific and Cultural Organization

UNESCO Global Geoparks

Applicant UNESCO Global Geopark

Zigong, People's Republic of China

Geographical and geological summary

The area covers an area of 1630.46 km^2 and is located in the territory of Zigong City, Sichuan Province of China and its geographical position is: east longitude 104° 02′ 58″- 104° 54′ 41″, north latitude 29° 11′ 38″ to 29° 36′ 55″; altitude: 241 – 901 m, average altitude is between 250 and 500 m. The area is about 200 km away from Chengdu city, the capital of Sichuan and Chongqing Metropolis respectively and it is only 67 km away from Yibin airport; besides, the highway network can easily get access to the major cities in Sichuan Province.

After the demise of the Paleotethys, the area has been left to be limited saltwater sea with enriched evaporated salts. After Mesotethys demised during the end of the Triassic, the Sichuan Foreland Basin was formed due to isostasy of Longmen Mountain Orogenic Belt (a part of the Eastern margin of the Tibet Plateau since then). Thus the middle-late Jurassic, creatures like dinosaurs have been prosperous in the basin where plains, rivers and lakes are distributed alternately, but large numbers of dinosaurs and trees died and were buried under sediment quickly due to intense tectonic activities, developing into the fossil site of dinosaurs and petrified woods. Since the 1st century A.D., the splendid Salt civilization has been created through mining the salt deposits formed by the Paleotethys residual sea.