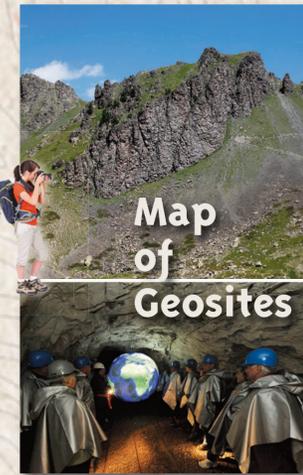


To access the Geopark, prefer public transport:
<http://www.trenitalia.com>
<http://www.sadem.it>
<http://www.voyages-sncf.com>
<http://www.osvoyageurs.com>
 Shuttles are also implemented at several locations during summer (information in tourist offices).

Geosites are vulnerable and need protection. Remember that a broken rock cannot mend itself. Some sites are located in natural reserve, regional or national parks subject to special regulations. Please pay attention to the signs and warnings. Access to certain sites can be made difficult by particular weather conditions. Some old mines are protected as archaeological sites.



The sites in bold are described on the back of the map.

Geosites

- 3 **San Gervasio Gorges**
- 4 Rock glacier della Mulattiera
- 5 Chateau plateau and Fort hill
- 6 Champlas red radiolarites
- 8 Falaise du Collet Vert
- 9 Grotte des 50 Lnes
- 10 **Chenaillé Massif**
- 13 Rochers rouges de Val-des-Prés
- 14 Vallée des Thurès - col de l'Echelle
- 16 Beume cave
- 17 Saule d'Oulx palaeolandslide
- 18 Val di Thuras pseudocarnioles
- 19 Rhuiltes iron mineral springs
- 20 Fenêtre tectonique de Cervières
- 22 Rocher de la Perdrix
- 23 Bloc erratique de Briançon
- 25 Torrent du Verdarel
- 27 **Caves of the Saracens**
- 28 Seguret gorge
- 31 Col de Chaudemaison
- 34 **La Combarine**
- 35 **Glacial Rock Bar**
- 37 **Rocher Blanc**
- 38 Rocher des Gardéoles
- 39 Lac des Béraudes
- 40 **The geological Path of the Sommeiller Glacier**
- 41 Galambra morainic amphitheater
- 42 Cels roche moutonnée
- 43 **Colle dell'Assietta**
- 45 Rocher Roux
- 46 **Casse Déserte**
- 47 Gypse et cagneules du col d'Izoard
- 48 Fond Froid
- 49 Faille de St-Martin-de-Queyrières
- 50 Tunnel de Prelles
- 51 Demoiselles de Sachas
- 52 Cime de la Condamine
- 53 Glacier du Casset
- 54 **Pertus Colombano Roman**
- 55 **Madonna dell'Ecova and Seghino neotectonic deformation**
- 56 Susa ornamental stones
- 57 **Colle delle Finestre**
- 60 **Rocca Bianca marbles**
- 61 **The Thirteen Lake plateau**
- 62 **Bric Bouchet**
- 63 Schistes lustrés d'Aiguilles
- 64 **Fairy chimney**
- 66 Verrou de Chl teau-Queyras
- 69 Fenêtre de l'Argentière
- 70 Bassin flexural du Fournel
- 71 **Thrust of La Meije**
- 72 Front pennique
- 74 Fugera green marble
- 76 **Chianocco and Foresto ravines**
- 78 Fold of the Meitre quarry
- 79 Selleries
- 80 Monte Benedetto abbey
- 81 Colle del Vento
- 82 Rocca del Montone
- 84 **The Malanaggio metadiorite**
- 85 **Pra valley**
- 87 Granero glacial garden
- 88 Granero mountain slopes
- 89 Schistes lustrés du col Vieux
- 92 **FenPtre du Gull**
- 93 L'île briançonnaise
- 95 **Barrachin escarpement**
- 96 Gran Gorgia
- 97 Borgone roches moutonnées
- 98 **The Palé morainic amphitheater**
- 99 Rocca del Gias
- 101 Castellazzo erratic
- 102 **Sacra di san Michele and Picciria quarry**
- 104 Rocca Parei
- 106 **Rocca Sbarua**
- 110 **Cristillan South pass**
- 112 Lac Miroir
- 113 Lac Sainte-Anne
- 114 Gouffre de la Mortice
- 115 Vallon Laugier
- 116 Flyschs de Vars
- 117 **Fluvio-glacial terrace**
- 118 **Petrified fountain**
- 119 Plan de Phazy
- 120 **Recumbent fold**
- 121 Goja del Pis
- 122 **Musiné mount**
- 126 **Rivoli and Avigliana morainic amphitheater**
- 130 Marbres du lac Blanc du Galibier
- 131 Coupe du Lac Noir d'Ambin
- 133 Cône de la Chapelle
- 138 Rocher Roux
- 139 Transition versant-fond de vallée
- 142 Monolithe de Sardières
- 140 Série de Gran Scala
- 141 Ancien plancher océanique d'Avérole
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- 24 Musée de la mine de Briançon
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- 65 Espace géologique de Chl teau-Queyras
- 67 **Fournel silver mine**
- 100 Laboratoire Wmuseum of the prehistory
- 103 Four des forannes (exposition mine de cuivre)
- 107 **The "Le Loze" Ecomuseum**
- 123 Avigliana stones
- 128 **The Grand Filon**
- 2 Rock garden
- 11 Géodrome de Montgenèvre
- 21 Géodrome de Cervières
- 86 Géodrome de Ristollas
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- 71 Mont Chaberton
- 13 La Riposa
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- 109 Grand belvédère du Viso
- 132 Capture de l'Arc par l'Isère
- 134 Glissement de terrain de Montpascal-Pontamafrey
- 135 Panorama du massif de la Croix des Têtes
- 136 Verrou du Pas du Roc
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- 143 Ecoulement du col de la Madeleine
- 7 Cesana green marble
- 15 **Signols gypsum quarries**
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- 32 **Cabane Mine**
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- 111 Carrière de marbre de Ceillac
- 129 **The Grand Filon**

Exhibitions - Museums

Geodromes

Panoramas

Mining sites - Quarries



The geological history of the Alps
 The French-Italian Geopark of the Cottian Alps illustrates the different periods of the region's geological history, from the end of the primary Era (more than 300 million years ago) up to the present day.
 - a single continent (Ganggala)
 - the creation and development of the alpine ocean
 - the convergence of European and African plates, the end of the ocean
 - the collision of the two plates and the creation of the Alps.
 Today the Alpine orogenic belt is still alive. Seismic activity and uplift show active tectonic movements among plates. The progressive destruction of mountain relief by different erosional processes is another illustration of it.

The Cottian Alps
 The Cottian Alps were an ancient imperial Roman province. Cottius, the Celtic-Iugurion king who was allied to Rome, gave them his name. This part of the French-Italian Alps lies between the Graian Alps (to the north) and the Maritime Alps (to the south).



To visit the Geopark...
 Discover the sites and museums of the Geopark by car, on foot or on a mountain bike, on your own or with a local guide. A general map and some useful information are available free of charge from the tourism offices and can be downloaded from the Geopark website.

Map made as part of the High valleys Integrated Trans - Border Plan ALcotra 2007/2013
 Edited by Conferenza Alte Valli (CNAV)
 Via Roma, 22 - 10063 PEROSA ARGENTINA (TO)
 Tel. +39 0121 80 25 26 - Fax +39 0121 80 25 40

A few routes to discover the Geopark with a mixture of geology, natural environment and historical heritage
 From St. Georges Hurtières to Rivoli (by car or coach)
 Between Doire and Durance, the history of the Alps, from Rivoli to St-Clement-sur-Durance (by car or coach)
 La Via Alpina, from the north to the south of the Geopark (walking)
 And hundreds of kilometers of marked trails for hikers and mountain bikers.
 Other routes are described on the Geopark website : <http://cottianalps-geoparc.eu>
 Information in tourist offices.



8 10 Chenaillet Massif Montgenèvre - Cervières

The Chenaillet massif is a magnificent testament to the alpine oceanic crust (the most beautiful of the entire alpine arc), easy to access and displaying the rocks visible in the current ocean floor.



Almost the entire very dense alpine ocean crust underwent subduction and consumption when the European and African plates collided. This collision between the two tectonic plates gave birth to the Alps, whose geomorphological landscape was then shaped by the erosion of glaciers and rivers.

But not all the alpine ocean floor disappeared and several walking trails allow you to see the well-preserved remnants of the alpine ocean: the view from the Sarrazles lake, the Collet Vert cliffs, the customs huts, the arête west of Chenaillet, Rocher de la Perdrix, etc.



Mountain walking trails which are open from the end of spring until autumn. You can set off from the Montgenèvre station or driving in Cervières. In summer, the chair lift at Montgenèvre is open for part of the route. There are organised visits in summer. Information: CAGA 04 92 30 56 55. Montgenèvre Tourist 04 92 21 54 52.

37 Rocher Blanc Saint-Chaffrey

This route (starting at the Proréi pass and passing by the / hite Rock peak) runs through 250 million years of Briançonnais geological history from the Cambrian (500 million years) to the Tertiary (20 million years). The path intersects a succession of sedimentary layers: the normal stacking order, that is to say from the oldest to the most recent. /arning: the path is marked but there are some tricky parts. Representative outcrops are identified by small numbered plates.



Access by cable car SummerW from Saint-Chaffrey or Briançon followed by a short half-day walk.

46 Casse Déserte Arvieux

This famous site which is often on the route of the Tour de France presents strange carnegue needles in different shapes. The scree at Casse Déserte, some 200 to 300 metres high, results from the fragmentation of the limestone and dolomite outcrops at the Côte Belle crest just above.



Access: board pass road between Cervières - Briançonnais and Arvieux W ueyazW parking at the side of the road. The road is closed in winter. Information: Tourist 04 92 46 75 76.

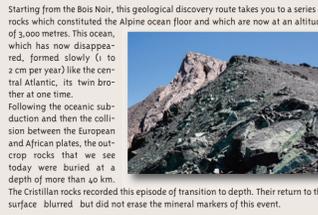
71 Thrust of La Meije La Grave



La Meije is made up of European continental base rocks (granites, gneiss). It rests on dark rock attacked by erosion. The rock pattern constitutes a surprising geometric anomaly. The older rocks are above the most recent ones rocks. Geologists explain this geometry by the Alpine orogenesis. This caused a general shortening of the tectonic stacks and spaces causing thrusting and thickening of the continental crust. It is the result of the collision between the European and African plates. The thickening of the continental crust resulted in the mountain belt uplift which were subsequently shaped by erosion.

View visible from the road between La Grave and the hamlet of Chazetel.

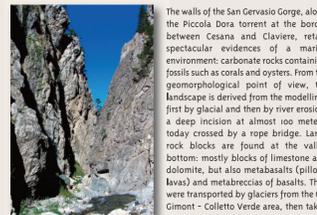
110 Cristillan South pass Ceillac



Starting from the Bois Noir, this geological discovery route takes you to a series of rocks which constituted the Alpine ocean floor and which are now at an altitude of 3,000 metres. This ocean, which has now disappeared, formed slowly (1 to 2 cm per year) like the central Atlantic, its twin brother at one time. Following the oceanic subduction and then the collision between the European and African plates, the outcrop rocks that we see today were buried at a depth of more than 40 km. The Cristillan rocks recorded this episode of transition to depth. Their return to the surface blurred but did not erase the mineral markers of this event.

Mountain route accessible in summer and autumn. From Ceillac, take the direction of the Cristillan valley to the parking of Bois Noir. Information: Tourist 04 92 45 93 74.

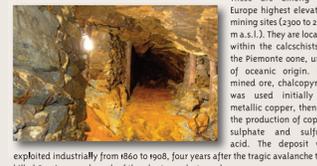
3 San Gervasio Gorges Wesana - ClaviereW



The walls of the San Gervasio Gorge, along the Piccola Dora torrent at the border between Cesana and Claviere, retain spectacular evidences of a marine environment: carbonate rocks containing fossils such as corals and oysters. From the geomorphological point of view, the landscape is derived from the modelling, first by glacial and then by river erosion: a deep incision at almost 100 meters, today crossed by a rope bridge. Large rock blocks are found at the valley bottom: mostly blocks of limestone and dolomite, but also metabasalts (pillows lavas) and metabasalts of basalts. They were transported by glaciers from the Col Gimont - Collette Verde area, then taken up and mobilized by torrent.

Arriving in Claviere by Cesana meet on the left directions to the trails' access point, to the via ferrata and to the rope bridge.

44 Beth mines Troncea Valley



These are among the Europe highest elevation mines (2300 to 2000 m.s.l.). They are located within the calcoschists of the Piemonte zone, units of oceanic origin. The mined ore, chalcopyrite, was used initially for the production of copper sulphate and sulfuric acid. The deposit was exploited industrially from 1860 to 1908, four years after the tragic avalanche that killed 80 miners and much of the plant was destroyed.

The remains of the old entrances and the mining infrastructures are located within the protected area of the Troncea Valley Wlpi Cozie Regional Park Access is through reported routes and geosite illustrated by explanatory panels.

So Pragaletto, at the headwaters of the Park, there is also a small permanent exhibition that offers a 360 view over the natural resources of the park. Wlpi Cozie WueyazW http://www.parchialpiccoie.it/ Val Troncea Nature Park - Via Della Pineta, Fraz RuW - 10060 Pragaletto W Phone and Fax W99. 002.78849 - parco.valtroncea W uparpiemonte.it

60 Rocca Bianca Marbles Wermanasca ValleyW



From the lower Germanasca valley, looking at its northeast side it is possible to recognize the Rocca Bianca mountain (1379 m). The mountain takes its name from the white colour of the rocks at the top: a 30-meters wall of marble. They are deformed by a km-fold, whose hinge (line of maximum curvature) is located right at the Rocca Bianca. The geosite also shows the recent Maiera marble quarry and an older abandoned quarry, where it is still preserved the workers' village built almost entirely of marble stones. The mining activities interacted with a deep gravitational movement of the slope, as shown by the traces of deformation along the path that leads to the quarry.

To get to the quarry: take the dirt road that starts just before Sordutti Wlpi Pralithere up to the vicinity of the Maiera quarry. From here, in about an hour you can reach both the abandoned quarry and the observation point for an overview of the geosite.

102 Sacra di San Michele Abbey Pinerolese



The Sacra di San Michele Abbey is located at the very top of the Pichiniano Mount, which is included in the building. For its historical architectural, religious and symbolic values, it has been recognized as a symbol of the Piedmont region. Among the grounds for appeal of this site, there are geological, geomorphological and landscape features: the rocks of oceanic origin shaped by the glacier Susa, erratic boulders, stone-wall terraces and historic quarries.

The Abbey can be reached by car or bus from Giaveno and Avigliana. There are also many trails that start at Avigliana, Chiusa San Michele or Sant'Ambrrogio Train accessible locations, then 2-hours walk to the topW. Alternatively there is also a via ferrata from Sant'Ambrrogio.

106 Rocca Sbarua Pinerolese



The Rocca Sbarua is a relief modelled within rocks of the Dora Maira massif: gneiss, metamorphic products of ancient granite, as a result of high temperatures and pressures of the Alpine orogeny. These rock walls are very attractive to climbers: for over 80 years a playground and a gym for famous climbers of the Piemonte Region such as Gabriele Boscacatte, Giusto Geravattini, Gian Piero Motti and Gian Carlo Grassi. Today you can use a climbing gym with 100 routes that are spread over different lengths between 20 and 200 metres and are exposed to the south. A didactic laboratory and a path equipped with boards and lecterns help the understanding of the area, while at Casa Canada is a multimedia system that allows you to explore the themes of the Geopark, the history of climbing in Sbarua, geological characteristics and the relationships between climbing and characteristics of the rock. Pichiniano Melano Casa Canada W http://www.casacanada.eu Tel. W99. 002.53596 gestioWcasacanada.eu

32 Cabane Mine Villard-Saint-Pancrace

From the beginning of the 19th century, numerous coal seams were active. There are several hundred peasant mines in Briançonnais. One of them, the Cabane Mine, has been restored and can be visited.



Information: Centre Montagne Town hall 04 92 21 05 27. Another museum dedicated to peasant mines is on the walkway of the 'id Town of Briançon: http://sgmb.fr

62 Bric Bouchet Abriès

From Valpèverre, the landscape encountered on the way up the Bouchon valley was varied. The greenish colored, hard rocks, resistant to erosion, of which the Bric Bouchet itself is one, appear embedded in the softer grey coloured rocks. The trail offers a route through calcoschists and rocks of the alpine ocean floor.



The rocks and minerals seen retrace an eventful history with one section at a depth of more than 400m followed by a return to the surface. /arning: regulated traffic on the Clausis trail, shuttle service in Wily and August. Information: Festi'Saint-Véran 04 92 51 04 33 http://www.saintveran.com 04 92 45 82 21.

91 Copper mine Saint-Véran

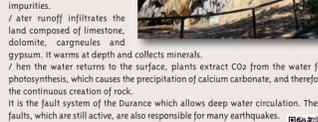
The copper mine plunges you into ancient history. The discovery and exploitation of bornite goes back 4,000 years and asks a lot of questions about this valley's past. Modern operating methods were used from 1901 and were responsible for the digging of numerous galleries and the construction of buildings: the remains of which are still visible. Mining was permanently stopped in 1960.



Information: Festi'Saint-Véran 04 92 51 04 33 http://www.saintveran.com 04 92 45 82 21.

118 Petrified fountain Réotier

The structure of the fountain consists of limestone tuff or travertine, a sedimentary rock riddled with small cavities. / hite in its pure state, the grey, yellowish or brown colouring is a function of its impurities. / ater runoff infiltrates the land composed of limestone, dolomite, carnegules and gypsum. It warms at depth and collects minerals. / hen the water returns to the surface, plants extract CO2 from the water for photosynthesis, which causes the precipitation of calcium carbonate, and therefore the continuous creation of rock. It is the fault system of the Durance which allows deep water circulation. These faults, which are still active, are also responsible for many earthquakes. Park at the start of the path, then 5 mins on foot.



The geological site is reached: Wby car from Fenils, along a partly unpaved road Wlten heavily rutted Wby mountain bike, from the Salbertrand train station W km hand gibly feet, from 'ula following the route to the 'trido del Seguret Wlute for experienced hikersW

27 Caves of the Saracens 'ulx

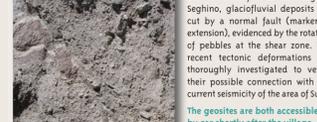
The Seguret mountain consists of different carbonate rocks (mostly dolomite) superimposed on the Amain crystalline basement. Deep water circulation led to the dissolution of gypsum and anhydrite rocks, long-term karst processes originated large caves and sinkholes. Tectonic uplift and glacial retreat triggered erosion along the Seguret valley leading to the collapse of entire portions of the ancient valley, or, as in the case of the Caves of the Saracens, the unweaving of the effects of deep karst.



The geological site is reached: Wby car from Fenils, along a partly unpaved road Wlten heavily rutted Wby mountain bike, from the Salbertrand train station W km hand gibly feet, from 'ula following the route to the 'trido del Seguret Wlute for experienced hikersW

55 Madonna dell'Ecova and Seghino neotectonic deformation WmopanteroW

In the lower Susa Valley, near the village of Madonna dell'Ecova have been described deformed Quaternary deposits from the Quaternary tectonic activity. Near the village of Seghino, glacialifluvial deposits are cut by a normal fault (marker of extension), evidenced by the rotation of pebbles at the shear zone. The recent tectonic deformations are thoroughly investigated to verify their possible contribution to the current seismicity of the area of Susa. The geosites are both accessible by car shortly after the village of Mopantero.



The geosites are both accessible by car shortly after the village of Mopantero.

76 Chianocco and Foresto Ravines Bussoleno

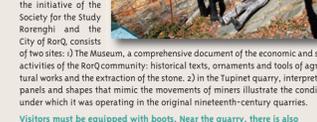
The Chianocco and Foresto ravines are deep rocky gorges originated by intense erosion processes, both contemporary and subsequent to the retreat of the Segusino glacier. These processes took place within carbonate rocks, easily eroded by karstic phenomena. The Chianocco ravine develops within dolomitic limestone and hosts the Rio Prebica, a stream with a high average slope, regulated by man to reduce debris flow hazards. The rock walls are fracture systems with signs of karst activity and of modeling by subglacial waters. The Foresto ravine is a deep cleft carved by the Rio Roccalemone, whose erosion action is favoured by the imposing slopes and by the nature of bedrock: carbonatic schists and impure marbles. Inside the ravine human artifacts have been found dating back to the third millennium BC. Local white marbles were quarried for the Turin Cathedral and the Arch of Augustus at Susa.



The gorges are reached with the Susa Valley cycle path or in an hourW walk from the Bussoleno train station: Chianocco through a path marked as Wrain-ParkW Foresto following the directions for the management of the Park Authority 'miera-Rocclavé and Reserves of the Ravines. A via ferrata and a rock-climbing site allow a diverse appreciation of the geosites.

107 The "Le Loze" EcoMuseum RorW

The Le Loze or EcoMuseum of the stone was founded in 1999 by the Pellice valley Mountain Community and the Province of Turin on the initiative of the Society for the Study Rorenghi and the City of RorW, consists of two sites: 1) The Museum, a comprehensive document of the economic and social evolution of a series of straight or curved hills (moraine) of ultramafic rocks (gabbroite) and the extraction of the stone. 2) In the Tupert quarry, interpretative panels and shapes that mimic the movements of minerals illustrate the conditions under which it was operating in the original nineteenth-century quarries.



Visitors must be equipped with boots. Near the quarry, there is also a lime kiln, recently renovated, and panels illustrating the use of the geins. A complete visit to the location and the museum takes about two hours. No access to the Tupert quarry in case of rain or snow. http://societaestudiorenghi.wordpress.com/museo-valdesse-edla-ecomuseo-della-pietra

35 House of Geology and Geopark - Puy-Saint-André

Close to Briançon, along national highway 94, an information, exhibition and conference centre. Documentation centre for alpine geology and the geopark. Outside there is the geodome (rock garden) which is free to enter and tells the geological history of the Alps through the rocks found in the region.



These till deposits have been eroded over time but parts of them have resisted better than others, one of them being this fairy chimney (also called rock pedestal) which is clearly visible in the landscape. Visible from the road between ChLteau-Ville-Vieille and Molines-en-) ueyras. Parking Information: Tourist 04 92 46 86 89.

64 Fairy chimney ChLteau-Ville-Vieille

On both sides of the river, the grassy and wooded slopes are set on till deposits (of ancient glaciers now disappeared) made up of loose sand and gravel with blocks of all sizes.



Information boards along the route and a panoramic platform at the end of the walk allow visitors to discover the chronology of the rocks and to understand the ' anomaly' affecting themW. Hiking or cycling route along old road) ueyras, riding called the Viste. Time Wound-tripW 1 hour.

92 Thrust sheet of the Guil Guillette

The scenic walk along route de la Viste (exit Guillette towards Queyras) is historic because it crosses the anticline nappes of Guil described by alpine geologists in the 1930s. It is one of the first examples of the 'thrust sheet' so characteristic of Briançon.



Information boards along the route and a panoramic platform at the end of the walk allow visitors to discover the chronology of the rocks and to understand the ' anomaly' affecting themW. Hiking or cycling route along old road) ueyras, riding called the Viste. Time Wound-tripW 1 hour.

120 Recumbent fold Saint-Clément-sur-Durance

The recumbent fold reflects the colossal forces involved when the European and African tectonic plates moved closer together. As the space had been shortened, the rocks were folded or stacked. This thickening of the continental crust marks the origin of the formation of Alpine mountains which were later shaped by glacial erosion and tectonic forces.



Parking of base of living watersat the side of national highway.

30 Nature Museum Val Troncea Park

This is a museum on the nature and human presence in the Troncea Valley, along centuries of rich history and natural changes of the alpine environment. The exposed boards illustrate the Park, its environment, its forests, the landscape's features and finally the traditional architecture and the history of its territory, with the events of the 'aldensian revolt'. The geological section shows samples of the most common rocks of the geomorphic activity of the Chisone torrent, and the typical resulting deposits. The botanic drawers, accompanied by herbarium specimens, show the most characteristic local species and environments. Diorama shows main environments of the Troncea Valley, from limestone cliffs to the carbonatic sources, with their typical fauna and flora. At the centre of the room, a large painting of the mountains of Val Troncea backdrop to some stuffed animals, on the other side description of the story of the Beth mines, with an exhibition of some work tools.



Parco naturale Val Troncea - Via Della Pineta, Fraz. RuW. 10060 Pragaletto W Phone and Fax W99. 002.78849 - parco.valtroncea W uparpiemonte.it

57 Colle delle Finestre -sseaux

This geosite shows the effects of recent tectonic and gravitational dynamics in the alpine landscape. First, the Colle delle Finestre, a real saddle between the valleys of Susa and Chisone: it represents the surface expression of a major multi-km fault zone. In addition, the landforms at the base of the western slope of Mount Français Pelouze (mountain peak overlooking the Colle) a series of landscape scars testifying to the detachment of portions of the rocky slope.



Colle delle Finestre is accessible from the road of the same name, either from Dapag in Fenestrelle WWhitsona ValleyW or from Meana Susa ValleyW

84 The Malanaggio metadiorites Wmalanaggio, PorteW

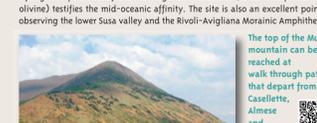
The Malanaggio metadiorites outcropping in the lower Chisone Valley derive from the metamorphism of original magmatic rocks of Late Permian age, intruded in the Pinerolese graphic complex. The metadiorite is a fine-grained, massive rock grey-green color is due to its minerals: albite, chlorite, amphibole, but also garnet, epidote which may have replaced the original magmatic phases. This rock is a local geosource exploited since ancient times: it has been widely used as an ornamental stone and construction material in Piedmont (e.g. some sarcophagi in the Sacra di San Michele Abbey, and the pillars of Church of the Gran Madre in Turin).



The Malanaggio quarry is easily accessible since it is located just a few meters from the local highway to the village of Porte and San Germano you can find other outcrops of metadiorites.

122 Musinè Mount

The Monte Musinè is known in the geological academic world to be one of the most important outcrops of the Earth's mantle. It consists of ultramafic rocks (gabbroite) to olivine, pyroxene, spinel) almost untouched by the Alpine metamorphic transformations. It is interpreted as a portion of subcontinental mantle exhumed during rifting. The presence of diatritic magmatic intrusions (rocks with predominant olivine) testifies the mid-oceanic affinity. The site is also an excellent point for observing the lower Susa valley and the Rivoli-Avigliana Moraine Amphitheatre.



The top of the Musinè mountain can be reached at walk through paths that depart from Caselle, Almese and Val della Torre, with a height difference of 600-800 metres.

34 La Combarine Puy-Saint-Pierre

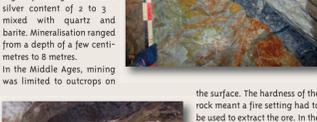
This route allows you to discover the most complete coal series in the South East of France in the area of the old mine of Combarine. Artisanal mining of coal until 1959 has made it possible to access different stratigraphic levels and observe many fossils and carboniferous sedimentary structures (300 million years). These rocks are the oldest sediments in the Briançonnais and can be accessed easily along a landscaped, marked trail.



Access is possible from spring to autumn via a mountain lift. The facts observed and well characterized (7 km). Knowledge of this site has been brought to the public through an exhibition at the Mining Museum. More than a kilometre of underground structures have been turned into a tourist mine open to the public.

67 Fournel silver mine L'Argentière-La-Bessée

The seams and mining works are located to the west of the town in the Fournel valley, at an altitude of 1,050 to 1,200 m. The mineral mined was argentiferous galena with a silver content of 2 to 3 mixed with quartz and barite. Mineralisation ranged from a depth of a few centimetres to 8 metres. In the Middle Ages, mining was limited to outcrops on the surface. The hardness of the rock meant a fire setting had to be used to extract the ore. In the 19th century almost all the deposit was found as a result of several kilometres of exploration tunnels being dug and a processing factory being built at the bottom of the gorge.



Since 1992, this old mine has been a centre for historical and archaeological study and the mining work is explored, topographical and well characterized (7 km). Knowledge of this site has been brought to the public through an exhibition at the Mining Museum. More than a kilometre of underground structures have been turned into a tourist mine open to the public.

95 Barrachin escarpment Saint-Crépin

The sedimentary rocks of the Barrachin escarpment recorded the paleoenvironments (landscape, climate) of the Briançonnais area between 240 and 220 million years. Several signs at the site will guide you in your observations and your investigation in the location. - Next use this information to make it readable by applying simple principles such as referring to the present to reconstruct the past. - Reconstruct the timeline of the facts observed and build up a history with successive episodes recorded. - Finally, suggest mechanisms to explain the facts and rebuild the geological history of the Briançonnais area.



Near to air field at St-Crépin, there is a geodome (rock garden) which is free to enter and tells the geological history of the Alps through the rocks found in the region.

128 The Grand Filon Saint-Georges-d'Hurtières

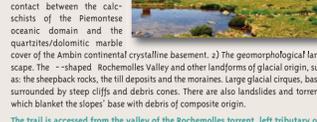
At an altitude of 900m among the greenery, the Grand Filon is a house on the theme of the mines of Saint-Georges-d'Hurtières (Maurierme). Iron and copper extraction over a period of more than 700 years has left a network of 22 km of mine tunnels in the massif. The Grand Filon offers a visit to the performance centre (trips, shows), - Reconstruct the timeline of the facts observed and build up a history with successive episodes recorded. - Finally, suggest mechanisms to explain the facts and rebuild the geological history of the Briançonnais area.



The Grand Filon offers a visit to the performance centre (trips, shows), - Reconstruct the timeline of the facts observed and build up a history with successive episodes recorded. - Finally, suggest mechanisms to explain the facts and rebuild the geological history of the Briançonnais area.

40 The geological Path of the Sommelier Glacier - Bardonecchia

The geological Path of the Sommièr glacier presents geological and geomorphological features of great interest for understanding the Alpine structure and the stages of Quaternary modelling. 1) The contact between the calcoschists of the Piemonte oceanic domain and the quartzites/dolomitic marble cover of the Amain continent. 2) The geomorphological landscape: isolated rocky outcrops of calcoschists, a plateau characterized by large hills, small depressions, a lake, double valleys and a sort of summit valley. All these testify to a particular evolution of the relief, dominated by large deep-seated gravitational slope deformations and post-glacial modelling. A complex geomorphological setting that provided an opportunity for humans to meet and clash on the one hand, it has facilitated exchanges between local populations, on the other it was the military theatre of the Assietta battle, fought July 19, 1717 between the Savoy and the French troops.



The dirt road to the Assietta now makes it possible to access the watershed and visit the military works, an entrenched camp made local stone materials Wcalcschists, micaschists quartzites and phyllitesWlven accordance with the forms of geomorphological landscape.

38 ScopriAlpi WScopriMiniera

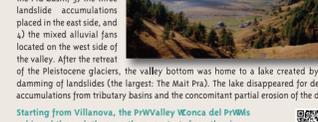
At about 70 km south-west of Turin, in the municipalities of Prali and Salza di Pinerolo, ScopriAlpi and ScopriMiniera are two geotourist facilities hosted in former talc mines of the Germanasca Valley in both locations, visitors are pra to go on 15 exciting experiences. 3) The -shaped glacial valley, the Pral basin, 3) the three landslide accumulations placed in the east side, and 4) the mixed alluvial fans located on the west side of the valley. After the retreat of the Pleistocene glaciers, the valley bottom was home to a lake created by the damming of landslides (the lake: the Malt Pral). The lake disappeared for debris accumulations from tributary basins and the concomitant partial erosion of the dam.



mine, thanks to the presence of a major tectonic contact between continental and oceanic rocks allows visitors to live a scientific expedition to the discovery of the Alpine orogenesis. Visitors are given the task of penetrating the heart of the mountain, along the Geological Ages around the Time Machine. They will uncover the still hidden mysteries, bringing to light what wonders give life to our planet. 3) PSENIERA, with a 1,5 km-long visit to the Zoala mine, offers the public an extraordinary journey into the life of the farmer-miner. The tour begins above the miners train, then a blast from the past through the tunnels and work sites. All the senses are involved in a whirlwind of sensations. Hear the sound of an explosion, grip a running drill, go into the dark tunnel with only the light of an acetylene lamp: two hours of total immersion in the miners life.

95 Pra valley Bobbio Pellice

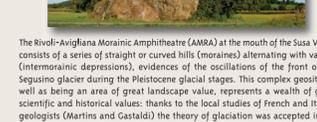
This is an example of post-glacial geomorphological evolution. The most significant geomorphological elements are: 1) The -shaped glacial valley, the Pral basin, 3) the three landslide accumulations placed in the east side, and 4) the mixed alluvial fans located on the west side of the valley. After the retreat of the Pleistocene glaciers, the valley bottom was home to a lake created by the damming of landslides (the lake: the Malt Pral). The lake disappeared for debris accumulations from tributary basins and the concomitant partial erosion of the dam.



Starting from Villanova, the PralValley Wcollet del PralW mine, thanks to the presence of a major tectonic contact between continental and oceanic rocks allows visitors to live a scientific expedition to the discovery of the Alpine orogenesis. Visitors are given the task of penetrating the heart of the mountain, along the Geological Ages around the Time Machine. They will uncover the still hidden mysteries, bringing to light what wonders give life to our planet. 3) PSENIERA, with a 1,5 km-long visit to the Zoala mine, offers the public an extraordinary journey into the life of the farmer-miner. The tour begins above the miners train, then a blast from the past through the tunnels and work sites. All the senses are involved in a whirlwind of sensations. Hear the sound of an explosion, grip a running drill, go into the dark tunnel with only the light of an acetylene lamp: two hours of total immersion in the miners life.

126 Rivoli-Avigliana Moraine Amphitheatre

The Rivoli-Avigliana Moraine Amphitheatre (AMRA) at the mouth of the Susa Valley consists of a series of straight or curved hills (moraine) of ultramafic rocks (gabbroite) to olivine, pyroxene, spinel) almost untouched by the Alpine metamorphic transformations. It is interpreted as a portion of subcontinental mantle exhumed during rifting. The presence of diatritic magmatic intrusions (rocks with predominant olivine) testifies the mid-oceanic affinity. The site is also an excellent point for observing the lower Susa valley and the Rivoli-Avigliana Moraine Amphitheatre.



AMRA can be visited through automobile, cycling or hiking routes. - You can start from the Rivoli Castle, built on the western end of a late Pleistocene moraine. The Marschi marsh paths, the most famous paths with valleys (intermoraine depressions), evidence of the oscillations of the front of the Segusino glacier during the Pleistocene glacial stages. This complex geosite, as well as being an area of great landscape value, represents