Thematic Bibliography on Geomorphosites

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Thematic bibliography on geomorphosites

Under the auspices of the IAG Working group “Geomorphosites”, the Institute of Geography of the University of Lausanne proposes a thematic bibliography on geomorphosites. The aim of this bibliography is to collect the existing literature on geomorphosites in order to furnish a data base concerning different domains like geomorphosite protection, assessment and promotion; many references also deal with the presentation of regional inventories of geomorphosites. The bibliography contains several types of documents and focuses on European literature. Such a bibliography could not be exhaustive; even so, we hope that it could be useful to people dealing with geoconservation, geosites, geoparks or geotourism.

The bibliography is also available in form of CD-rom containing the list of references in three different formats:

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Thematic bibliography on geomorphosites


This paper presents the promotion project of the geosites of the Torino region (Italy).


This paper presents the geoheritage of the "Parco Nazionale del Cilento" (Italy), its geosites and its geotourist promotion. A geopark project is also proposed.


This report presents the geosite inventory of the Canton of Thurgau (Switzerland).


This contribution contains some short articles about geoconservation, european heritage sites and sites inventory, management and educational use of Earth-science sites and geological sites and raw material exploitation. It contains some examples from Britain, Austria, Norway and Finland.


This paper focus on the protection and promotion of geosites in the Canton of Ticino (Switzerland).


This paper presents the cultural value of the caves of Castiglione (Italy) and a project of geotourist promotion.


This paper presents the volcan of Solfatara, its assessment as a geosite and its geotourist promotion.

The protection of geosites is important because of its scientific and cultural values. This paper presents some legal aspects of their protection in Italy, some criteria to establish a national inventory, and the situation in European lands and in Italian regions. Finally, it proposes some prospects to improve promotion and assessment of geoheritage.


This paper presents the Swiss "Inventory of geotopes of national significance". This inventory doesn't constitute a constraining element for the authorities; it aims to increase public awareness of the concepts of geosite, geoheritage and geoconservation, to provide a grounding for the realisation of other inventories of geosites in Switzerland and to propose a reference for the discussion of a systematic and official inventory at the national level.


This contribution contains a list of geological and geomorphological didactic paths in Switzerland.


Around 1850, it was at last understood that blocks of alpine origin scattered on the Swiss plateau and of the flanks of the Jura Mountains had been brought there by glaciers. Now, at the same time, these blocks were systematically exploited, hence the reaction of some naturalists to try to save a few of them. In the canton of Vaud, this operation was conducted by the Société vaudoise des Sciences naturelles, which created therefore, as early 1868, a commission for erratics, replaced in 1906 by a commission for the protection of Nature. Their activity, encouraged by the canton’s government resulted in the classification of 28 particularly large blocks, of which half actually belong to the society. It was also the prelude of the long lasting Nature’s protection movement in Switzerland.


This paper proposes some excursions to discover some geosites in Switzerland.


This paper aims to explain the concept of geosite and how it is imposed in Switzerland to a large public of readers. It contains some exemples of geosites like erratic blocks and speleological objects and explains the situation of their protection in Switzerland.


This book deals with the concept of geosite and its development in Switzerland. The second part of the book presents a set of field trips on several Swiss geosites.
This paper presents a first inventory of geomorphosites in the Trentino region (Italy). A total of 110 geosites of geomorphological interest were identified thanks to the identification criteria established at a national and international level. The paper contains a list of the selected geosites, their description and their possibilities of exploitation.

Environmental interpretation is the art of explaining the meaning of places of natural or historic importance to the people who visit them and it has become an important part of conservation in the UK. This paper outlines a set of principles for the successful interpretation of Earth science, covering the selection of appropriate sites, identification of audiences, selection of themes, use of interpretative techniques and development of partnerships.

The conservation of the geological heritage is considered in this paper as a problem to be solved not only with legislative and preservationist measures but also with educative use. The first tool to determine the correct management of this kind of public heritage is to inventory and to catalogue the mean geological aspects to constitute a part of it.

This article proposes a valuation procedure of the geological heritage to define sites of geological interest. It is based on the identification of indicators, calculated according to previously established values by consensus, and combined in an index. The application of the methodology proposed to some sites of Cantabria allow to verify the validity of the method.

Earth heritage conservation has long lagged behind developments in wildlife conservation. Some salutary lessons for the promotion of Earth heritage conservation may be learnt from past attempts to promote wildlife conservation in urban areas. The key to success has been found to be local community involvement. If a site is valued and becomes part of the community, then it will be defended and conserved as part of that community.

This report represents a general summary of the knowledges, as well as of the research and promotion activities carried out during the last years in Italy and aimed to the conservation of Geological Heritage. Further scope of this work is
to illustrate a range of possible initiatives aimed to include the Italian contribution in the broader international “Geosites” project, promoted by UNESCO and IUGS.


This paper presents the promotion project of the Modena (Italy) urban geoheritage.


A rich cultural heritage is hidden in the subsoil of many Italian cities. Underground geosites are the historical and territorial memory of the evolution of the urban environment. The aim of the "Sottosopra" Project is to promote the cultural heritage buried beneath the city of Modena thanks to a network of cultural itineraries.


The landscape of the Apuan Alps (Tuscany, Italy) is characterized by numerous geosites, among which the most important is the "Antro del Corchia". The exceptional drawing power of this cave could therefore be used to better divulge information relative to those other lesser known nearby sites thanks to a didactic path.


The remaining glacial landforms of the Apuan Alps (Tuscany, Italy) are of great scientific interest, but they are not adequately exploited, and even their conservation is in peril. This paper describes some sites which are worthy of special attention.


This article focuses on the role played by the canton of Vaud (Switzerland) in geoheritage protection from the middle of the XIX century to the XXI century.


This paper focus on the challenges of tourism affecting speleological sites.


This paper focus on geological conservation, more specifically on its past and present problems and on its future promises. Geoconservation has been retarded by a failure to resolve several important issues which arise from the interplay of conservation policy and geological field studies and it is to be hoped that the present deficiencies will be made good.

This paper focus on the evaluation of karstic geosites. It proposes some criteria for an objective and transparent evaluation.


Confronted with the problem of geomorphological heritage evaluation for applied research, the authors have developed an evaluation process based on the principles of systemic approach and multicriteria analysis. They establish several procedures in order to standardize both the observation and the evaluation of geomorphological heritage. Lastly, the authors test the method in a concrete case: sink-hole evaluation at the Froidevaux site in the Swiss Jura Mountains.


This paper focus on the links that should be established between the European Landscape Convention and geomorphosites.


This book presents the concepts of geoheritage and geodiversity and the reasons of geoconservation. It also presents the geoheritage of Portugal and the strategies to conserve and promote it.


This paper presents the geoheritage of the Angitola drainage area (Italy) and proposes a thought about the way to better conserve it (education, promotion, creation of a geopark,...).


Coasts are of importance to humankind as zones of living, economy and recreation. The paper shows the growing trend to use coasts for settlements and recreation, plus the rising sea level are major factors of stress on coastal ecosystems. Coasts are also geo-systems and geo-archives. Finally, scenarios of the future sea-level rise and its impact on coastal ecosystem are discussed.


A discussion on issues to be addressed in the process of cataloguing and assessing geosites is presented. Different stages of the process are considered: identification, classification, inventory, evaluation, protection and
use. An approach is presented based on the definition of three groups of criteria, related to intrinsic quality of sites, potential threats and protection needs and potential for use. Two Spanish applications to case studies for cataloguing and assessing are then presented.


This paper presents the geoheritage of the Algarve region (Portugal). This region is tourist-vocationed but it is also particulary relevant by still pristine landfroms and outstanding geological features. Several examples with potential for geoconservation and geotourist development are discussed.


This paper presents the geoheritage of the Malfatano coast (Sardinia, Italy). The geosites inventory of the region is also described and a map of them is proposed.


This paper presents a method for the elaboration of geomorphological asset maps. Manual and computer techniques to elaborate thematic maps are reported as applied to different test sites in the Alps, Apennins and Po Plain.


This paper deals with mapping of geomorphosites on the basis of studies carried out in Italy in order to develop geomorphological maps useful for the identification, selection and assessment of geomorphosites, and to create archive maps which can give the public access to information on these subjects.


This paper is a proposal for a reasoned cataloguing of the published bibliography before the existence of the concepts of geosite and geoconservation. The aim of this type of bibliographical collection is to provide a detailed bibliography to whoever requires information on a particular geographical area. This information can also be popularized in form and accompany the excursionists during a visit to the areas.


This article focus on the geomorphological characteristics of the Salse di Nirano area (Italy) and on the changes in the landscape induced by the establishment of a Natural Reserve in this area.
This article illustrates the criteria and methods applied for implementing a Geotourist map of the Natural Reserve of "Salse di Nirano" (Italy), which combines the most evident geomorphologic features with fundamental tourist information.


This paper aims to define the role of Geomorphology in the assessment of the impact of human activities on the environment. Environmental impact assessment (EIA) should be carried out for specific projects, in order to evaluate their suitability for the quality of the environment. The natural component must be examined in terms of geomorphological hazards, which may endanger a project, and of geomorphological assets, which may be damaged to various extents by human activities.


In this paper the geomorphological components of Environmental Impact Assessment (EIA) are discussed using a practical and schematic approach. Firstly the relations between the project and geomorphology (in terms of landforms) are treated and Impact (direct and indirect) is defined. To evaluate the impact of a project on geomorphological assets and the risk for the project and/or the surrounding settlements related to natural hazard (induced or not), the aspects that have to be studied are presented.


This paper presents the strategy of the Emilia Romagna region (Italy) to better protect its geoheritage thanks to promotion activities.


A few considerations concerning the state and contribution of geomorphology to the process of Environmental Impact Assessment are presented. The following issues are commented briefly: actual presence of geomorphology in the existing norms and regulations as well as in the current practice; general conceptual framework; the problem of quantifying the assessment; impact prediction and audits.


This paper presents some reflexions about the way to inventory, promote and use geological heritage.

This paper presents the cultural value and promotion of the stone extraction activities in the region of Fiesole (Italy).

COLLECTIF (1978). Protection de sites géologiques, Protection de la nature, 4, 4-23.

This paper contains a short presentation of some geosites in Switzerland (erratic blocks, landscapes, minerals, fossils) and of the legislation concerning their protection.


This paper presents legal acts and objectives of French National and Regional natural parks. It contains also a geological description and a list of interesting geological sites of each park.


This report presents a general summary of the knowledges, as well as of the researach and promotion activities carried out in Italy and aimed to the conservation of Geological Heritage.


This paper presents the concept of geosite, the geoheritage of the Canton of Thurgau (Switzerland) and some examples of geological and geomorphological sites in this region.


This book presents the results of the geosite inventory in the Modena region (Italy).


This journal special issue focuses on the concept of geosite; it summarizes the state of the art of Italian research in this domain and presents some examples of geosite conservation and management.


This abstract book focus on geomorphic hazards, but it also includes a section about the vulnerability and the assessment of geomorphological sites.


Proceedings of the 2nd Italian National Conference on geology and tourism. The following themes are discussed: tourism and territory, mapping and geotourism, promotion of geology by tourism.

COLLECTIF (2004). Geologia e turismo. Opportunità nell'economia del paesaggio, Secondo Convegno Nazionale dell'Associazione Italiana Geologia e Turismo, Sessione
Proceedings of the 2nd Italian National Conference on geology and tourism. The following themes are discussed: islands, geosites, caves, ophiolites, dolomites, glacialism in Italy, touristic mapping, geology of parks.


Proceedings of the 3th Italian National Conference on geology and tourism. The following themes are discussed: geotourist maps and guidebooks, geology and enogastronomic tourism, popularisation and education, geology for everybody, tourism and territory.


Proceedings of the 3th Italian National Conference on Geology and Tourism.


This paper focuses on the need to find new ways and strategies to increase the awareness to geosciences not only of the scientific world and institutions but also of society in general. From this viewpoint, a project of inventory and assessment of geosites and of development of didactic paths is presented. Finally, some examples from the Emilia-Romagna Region are proposed.


This volume constitute the abstract book of the international workshop "Geomorphological Sites: research, assessment and improvement" (Modena, Italy, 19-22.06.2002), that focus on the research, the assessment and the improvement of geomorphosites.

Coratza, P., Giusti, C. (2005). Methodological proposal for the assessment of the scientific quality of geomorphosites. This method is quantitative, but a series of qualitative guidelines have been elaborated, in order to give a support for the attribution of values.

This paper presents the first results of a geomorphosites inventory of the central Piemonte (Italy).


This paper focus on the promotion of the geosites included in the natural reserves of the region of Siena (Italy).


This paper presents the sulfuric source of Lavino (Italy).


This paper presents the geoheritage and geosite inventory of the Lazio region (Italy).


This paper presents the geoheritage of the "Rosandra" Valley, its value and some propositions to promote it.


This paper summarizes the contributions resulting from the 32° International Geological Congress about geotourism.


Approaches to conservation of the geological heritage vary across northern Europe. The paper develops the concept of an integrated approach to the conservation of Earth science features, and analyses these variations as subsets of such an integrated approach. It is shown that there is a broad distinction between the geographical approach adopted in densely populated, low relief areas and that in less populated, high relief areas. An analysis of the relative merits of both approaches is attempted and they are presented as end members of a continuum.

This book proposes some itineraries to discover the Swiss geoheritage, especially in the frenchspeaking regions. It aims to increase awareness towards the concept of geosite among the wider public.


This paper presents the mining and speleological heritage of the Monte San Giovanni (Italy) and proposes a thought about the challenges of the geotourism in Sardegna.


This paper presents a project for the study of the geosites of the Tozeur region (Tunisia), with the purpose of constituting a network of geosites in these arid and semi-arid areas. The linking of these geomorphosites thanks to a didactic path is an interesting opportunity to promote earth sciences to the local people and to the visitors.


The aim of the presented project is to conserve the geodiversity and the multiple valences of the Tacchi region (Sardinia, Italy) and comprises the promotion of the geosites in line with principles of sustainable development. This promotion foresees the realisation of a local network of geosites and the arrangement of didactic paths.


In this paper the authors present the results of a study performed on the geomorphosites of the Monte Albo chain (Sardinia, Italy). Within the context of a tourist promotion of the geoheritage, the selected geomorphosites should be connected in a local network through the realisation of didactic paths and of a website.


This paper sumerizes the state of knowledge of the conservation and promotion of the geoheritage of the Sardegna (Italy).


In this paper a geomorphosites map of the Monte Arci (Sardinia, Italy) is presented in which these sites are inserted in Landscape Units. This kind of map constitutes a valid basic information for territorial and landscape planning and in Environmental Impact Assessment studies.

This paper presents the cultural value of the caves of Chemtou (Tunisia).


This paper presents the geoconservation strategies adopted in the Duoro Natural Park (Portugal).


This paper presents the geoheritage and some geomorphosites of the Monti del Furlo region (Marche, Italy).


The paper presents the preliminary results obtained through an experimental project focused on the use of GIS software to manage environmental data surveyed in a sample area in the high Italian Alps. The processing of the data made it possible to obtain geomorphological and vegetational maps. Geosites has also been identified. The identification of the environmental assets represent the first phase of a tourist promotion of the area.


This paper focus on assessment of river conservation sites with an exemple from a survey in UK. It is concluded that the site evaluation needs to be seen in the context of the drainage basin and that sensitivity can be developed to provide a series of scale values that will further assist in landscape conservation techniques.


The article focus on the utility of geological conservation in Britain, especially for paleontological sites.


England has been reviewing in the 1990s the approach to wildlife and geological conservation with the goal of bringing these areas much closer together. Natural Areas allow the development of this new approach that recognizes the bond between geodiversity and biodiversity and provides an opportunity to an holistic approach to conservation.

This paper presents the inventory of geosites of the Canton of Aargau (Switzerland).


Through the creation of a world network of natural parks with significant geological features, labelled UNESCO Geopark, UNESCO promotes the twin goals of conserving a healthy environment and enhancing sustainable economic development. Geoparks are designed to become a tool for a better understanding of the geological heritage. Geoparks are territories where the geological heritage of the Earth is safeguarded and sustainably managed.


This paper focuses on the challenges on a site that is both a geosite and a biotope in the Canton of Solothurn (Switzerland).


This paper presents the volcanic heritage of the region of Campi Flegrei (Italy) and the didactic instruments to promote it.


This paper presents the geology and geomorphology of the Canton of Schwyz (Switzerland) and its geosite inventory.


This paper presents the geoheritage of the Monte Fenera (Italy) and the projects to promote it.


This paper presents a project of geotourist promotion of the Monte dell'Ascensione (Italy).


The paper proposes several strategies for the preservation and protection of mud volcanoes in the Marche region (Italy). The procedure for safeguarding
them should start from an analysis of the territory and of its resources; it should also formulate proposals for their use and enhancement.


This paper presents the activities of the Working Group for the protection of Geotopes in Switzerland.


This paper presents some geological and geomorphological sites in the Canton of Ticino (Switzerland).


The swiss inventory of geosites includes 33 mining geosites as mines and mining layers. These sites are special because of their historical, archeological and socio-economic value; a tourist and didactic promotion is often already done.


This paper presents the cultural and economic value of the geoheritage of the Alto Douro region (Portugal). In particular, the links between geology, geomorphology and vineyards are discussed.


This paper presents the promotion of the geoheritage of the Gorges du Trient (Switzerland).


Dense settlement and human-initiated changes within the large city of Koblenz obstruct the discovery of visible marks of the geological past. A "geological walking tour " was finally installed in 1992.


This article presents the inventory of the geomorphosites of the future Regional Natural Park of Doubs, situated in the Jura range. The procedure that has led to the realisation of the inventory is based on th works of V. Grandgirard.

This paper presents the coastal geomorphosites of the Aeolian Islands (Italy) and the project of two didactic paths to promote geotourism.


This paper focuses on the way to develop a sustainable geotourism. Because of the varied nature of geological and geomorphological regional histories, it is recommended to develop a suitable concept for optimal tourist exploitation according to local needs. However, consideration must be given to environmentally sensitive areas, as well as geosites that need to be protected.


This paper presents the projects of didactic promotion of the fossil forest of the Stura di Lanzo torrent (Italy).


This paper proposes a methodological approach for the study of one component of the geomorphological asset: the intrinsic quality. The new methodology is based on the classification of the geomorphological asset on the basis of digital geomorphological maps.


This paper summarizes the situation of geosite protection in the canton of Vaud (Switzerland).


The importance of geoconservation has been underestimated by the nature conservation organisations and the Earth science community for quite a long time. This article presents the concept of geoconservation and its situation in Europe.


This paper examines the application of geomorphology to sustainable land management and outlines an approach that addresses the requirements of both Earth science conservation in its narrow sense and also aspects of wider landscape conservation.

This paper presents a large overview of rocks as important building material and geoheritage in France.


The author proposes a method to make an inventory and an assessment of geosites. This method is developed within the framework of the inventory of geosites of the Canton of Fribourg (Switzerland).


This paper focus on the relation between geology, geomorphology and environment impact assessment. It presents a definition of geosites and of legal acts concerning them. It clarifies also the way to consider them during an environmental impact assessment to minimize impacts of projects.


This paper focus on the management of geoheritage in Switzerland and presents a method to make an inventory and an assessment of geosites developed within the framework of the inventory of geosites of the Canton of Fribourg (Switzerland).


For many years, the researchers of the RGiG (Research Group in Geomorphology, Institute of Geography, University of Fribourg) have often been called upon to contribute to environmental impact studies (EIS), especially to those related to the building of the A16 highway in the Jura mountains of western Switzerland (Transjurane). On the basis of these experiences, the author presents the tasks which should be entrusted to geomorphologists in an EIS, in the feasibility study as well as in both the preliminary survey and the main survey.


In the 1990s, the government of the canton of Fribourg (Switzerland) has decided to establish a sector plan that includes directives specific to nature conservation: the Sector Plan for Landscapes and Sites. The integration of geomorphological characteristics in this land-use plan has promoted further reflection on geomorphology’s contributions to this field, as well as on the modalities necessary for its integration in management of the natural environment. This article evokes challenges to be met in the following domains: fundamental research, applied research, legislation and information.


This thesis focus on the protection and management of geoheritage, geosites and landscapes; it contains the following sections: "Landscapes, Interfaces between a Society and its Environment"; "Géomorphologie et gestion du
patrimoine naturel. La mémoire de la Terre est notre mémoire"; "An Inventory of Geomorphological Geotopes in the Canton of Fribourg (Switzerland)"; "Les géotopes karstiques du canton de Fribourg (Suisse)"; "Auswahl und Schutz bedeutender Findlinge im Kanton Freiburg (Schweiz)"; "L'inventaire des géotopes d'importance nationale".


This article constitutes a plea for the management of the geomorphological heritage. The Author presents the reflections carried out in the context of an inventory of geomorphological sites in the Canton of Fribourg. The different stages of the inventory, especially categorisation and evaluation, are discussed.


Methodological problems linked to the evaluation of geosites are generally insufficiently considered. This contribution proposes a fundamental reflection about geosites evaluation; it focus on the choice of objects and on the objectives and different methods of evaluation. This paper serves as a kind of check-list for scientists in charge of geosites evaluation.


Within the context of the inventory of geomorphological sites in the Canton of Fribourg (Switzerland), two different methods have been used to assess the value of about 400 erratic blocks. Some blocks were then selected as geotopes of cantonal value. Some management measures are proposed to avoid the irreparable loss of this heritage.


This paper presents the inventory of geomorphosites of the Canton of Fribourg (Switzerland) and focus on the karstic geomorphosites. It also contains a thought about their management.


The conservation movement has recently extended its attention on geosites. However, it has yet to embrace the need for a wider perspective on landform conservation: too many changes in the countryside show little respect for geomorphology. In spite of some changes in policy and practice, a greater understanding of geomorphology amongst landscape architects, planners and the wider public is still necessary.


This book focus specifically on the geodiversity of the planet and on the threats to this diversity, to explain the value of inanimate nature and to assess the approaches that should be taken to conserve it.

The diversity of landforms is the most important element in producing landscape variations and in influencing biodiversity and has intrinsic, cultural, aesthetic, functional and research and education value. People often forget that not only biological world is vulnerable, but geological and geomorphological objects too. The paper shows that it would be necessary to protect geodiversity outside protected areas and to have a greater understanding of geomorphological heritage amongst landscape architects, planners and the wider public.


The concept of geodiversity provides a fundamental basis for geoconservation. Geodiversity would need a better protection because of its intrinsic, cultural, aesthetic, economic, functional and scientific value and the real and potential threats to it. Too many nature conservation organisations and objectives are riddled with institutional biocentrism: it is often forgotten that without geodiversity there would be little biodiversity.


The paper proposes to enhance the tourist attention towards geomorphosite, through the use of more traditional and better known interests and of GIS. Some examples of the Umbria region (Italy) are also proposed.


This work proposes an inventory of the main geomorphosites of the Umbria region (Italy), based on their historical, geomorphological and landscape characteristics.


Geotopes can be endangered in their existence by anthropogenic measures and natural processes; can be worthy of preservation and protection owing to their natural characteristics and for their beauty or rarity. Geotope protection includes all kinds of measures of preservation, development and management of geotopes in their natural diversity and characteristics. Geotope protection is an inherent part of the geosciences and land use planning.


This paper presents the World Heritage Geological Sites of UNESCO.


In England, important Earth science sites are protected within one or two nationwide site networks. There are different kinds of network: Sites of Special Scientific Interest (SSSIs) at national level and Regionally Important Geological/Geomorphological Sites (RIGS) at local level. Sites are selected for their educational, research, historical and aesthetic importance, and are conserved through local authority planning policies, the involvement of landowners, and through management by RIGS group members.
This article summarizes the situation of geosite protection in Switzerland. The legal framework of nature protection and territorial planning is presented and the creation of new types of protected areas is discussed. The existing geoparks and the projected ones are also presented. In spite of the efforts made by the Swiss geosite working group, no national inventory of geosites has been realised and these assets are still protected thanks to other indirect measures.


The state geological surveys of Germany have developed a system for the protection of geosites. The necessary information is collected and evaluated in a standardised way in order to submit comprehensive applications for legal protection to the authorities.


This article presents the situation concerning the protection of geotopes in the Thurgau canton. It shows how data obtained from the cantonal survey of geotopes can be used by the cantonal and local authorities and how individual and flexible solutions must be often established in collaboration with land owners and concerned parties.


This paper presents the situation of geoheritage protection in Austria. In 1999, 639 geosites were already protected. One of the most important results of Geotop-research in Austria is the affinity of geotopes and biotopes. According to a holistic point of view, Geotop-research offers a new chance especially for geotourism.


Modern geotourism shows to the user, in a simplified way, the interactive network of geology in its widest sense, ranging from stratigraphy to geomorphology and natural resources. The greatest success in transmitting information to a wide audience has been achieved with weatherproof poster boards in the open air which outline a “geotrail”, together with an accompanying handbook. As well as a better understanding of the Earth sciences in general, the need arises for the protection of geotopes as unique geological sites for the future.


Geomorphosites are important from scientific value, from understanding the provide of processes and development of landforms and from scenic and amenity value. Dynamic sites present particular problems through their activeness. There are two major strands for conserving and sustaining such
areas: understanding of sites and possible management techniques through scientific analysis. The present paper also present possible strategies of management and education.


Site interpretation plays an important part in raising interest in the conservation of geological sites. Geotourism is the provision of interpretative and service facilities which enable visitors to gain some knowledge and understanding of geology. Increasing the impact of geotourism will increase the awareness of the need for the conservation of geological sites. The results of several surveys of the visitors to geological sites are presented and the implications for site interpretation considered.

Hose, T.A. (1998). Mountains of fire from the present to the past - or effectively communicating the wonder of geology to tourists, Geologica Balcanica, 28, 77-85.

In Europe, much has been achieved in site recording, conservation and latterly, focused on the scientifically important interpretation and preservation. Some sites and collections are tourist attraction and some others still await geotourism development. Interpretative media and visitors typology are presented and a geotourism development strategy is proposed.


In this work the geomorphosite of Cerrada of Utrero-Lanchor of Linarejos, located in the Natural Park of Cazorla, is presented. In this geosite three short itineraries have been established; along of these ones, a variety of constructive and destructive exokarstic forms can be observed, at different scales.


This book presents the geoheritage and some interesting geosites of France and of its natural reserves to popularize Earth sciences.


In Switzerland, the legal base for the protection of single geological monuments seams to be sufficient. However, neither the federal nor the cantonal administrations are obliged to make a systematic survey and to preserve geotopes. The today Federal Inventory of Landscapes and Natural monuments (BLN) includes rather picturesque landscapes and biotopes than geotopes. Additionally, the status of the inventory is relatively low and it has no legal significance to land-owners or authorities except the federal administration. Actually, there are some attempts to improve the actual situation. On the other hand, there are some cantonal inventories of various legal significance and technical standard.

This paper presents the concept of geosite and explains the reasons to protect them. It also presents didactic paths and geoparks in Switzerland as means of sensibilisation.


Geological features and sites must be assessed to determine their significance in terms of geological type, uniqueness or representativeness, scientific or educational value, management and accessibility. They can be classed as important at local, regional, national, international or World heritage level. Assessment of significance must be in part subjective, but a working procedure carried out by an export group will provide an assessment which can be justified and defended. Such a working procedure is outlined.


Western Victoria and Southeastern South Australia have a volcanic history extending over the past five million years. The cultural heritage of the volcanic features is also high. Volcanic heritage information can be used to raise awareness in the local community of past activity, and so allow the study of volcanic risk to be promoted in the future.


Geological features and sites must be assessed to determine their significance in terms of geological type, uniqueness or representativeness, scientific or educational value, management, and accessibility. They can be classed as important at local, regional, national, international or World heritage level.


There is a need for an international convention to care for important geological sites and features. To do this, experience developed in Australia could be applied at the international level. Geological and geomorphological sites, modern processes, and the landscape itself, should all be part of this effort at looking after our Earth heritage.


With the increasing tourist interest in the Pilbara region (Western Australia) there is a need for clear and simple geological and geomorphological information on this region. This paper is a start in the direction of a better knowledge of the landscape story of the Pilbara region.


This paper focus on geosite definitions, inventories, policies and protection in Germany. It also deals with bonds between geosites and biotopes, education, vulgarisation and geotourism.

The image of geologists comes not up to modern professional requirements every young geologist has to face up. Geosites can help to rise geology and the profession of geologists into public interest being important for a necessary change of geologists' image.


Protection of geosites in Austria is the matter of the 9 counties. A first provisional list contains about 700 sites; 630 of them are somehow protected. Only few fossils sites and mineral sites are protected. Up to now there are only few efforts to unify the system of classification and only few beginning of geotop-inventories, and nearly no management or information to the public.


This paper summarizes the situation of geosites conservation in Europe.


This paper focus on the didactic activities that can be developed thanks to a geosite or a geopark. It demonstrates that guidelines for an ideal design of information panels, brochures etc. still should be developed.


This paper focus on the need of integration of biotope and geosite protection to a global nature protection. It also analyzes the potential conflicts which could emerge between these two domains.


This paper focuses on geosite definitions, objectives, inventories, assessment and protection in Bayern (Germany).


This paper focuses ont the need to drow up an official inventory of geosites in the Canton of Valais (Switzerland) for a better protection, conservation and promotion of geosites.


This paper presents the volcanic heritage of the Azores Islands.

An example of a procedure to evaluate the geomorphological assets in the Fànes Dolomites (Italy) is presented. The studies in progress for the assessment of the geomorphological asset imply the attribution of a specific level of interest to those forms that have a significant scientific character.


A French law on the protection of nature covers geological sites of national importance. According to this law dated July 1976, geological sites are considered as geological reserves belonging to the 100 French natural reserves created by the Ministry of Environment. The eight French geological reserves are organized within a national network. Besides the natural reserves that cover a small area only, the French geological heritage has no legal existence. Therefore, the Research Department of the Ministry of the Environment is preparing a global review of the geological heritage. This review should lead in the middle term to national regulations that should be more appropriate than the present ones.

Massoli-Novelli, R. (2005). The main geomorphosites of the Egadi Islands (Sicily, Italy), Il Quaternario, 18 (1), 137-143.

This article describes the main geological and geomorphological features of the three main Egadi Islands (Sicily, Italy). It also identifies the main geomorphosites of these three islands for the first time.


This paper presents the geoheritage and some geosites of the region “Penisola di Sinis - Isola di Mal di Ventre” (Italy).


The effective conservation of geomorphological site and landforms heritage for research, education and aesthetic reasons is an important area of Earth science conservation in the United Kingdom. This paper addresses the key issues and challenges facing geomorphological conservation of river systems in the 1990s at a national, regional and local level.


Many organizations have developed creative ways to conserve areas with natural, historical, cultural and industrial heritage value. The “homeland initiative” is proposed as a model for educating the international public about the need for building an international network for collaboration on development of heritage sites.

This article develops the Scottish Natural Heritage (SNH) initiatives on how to use the landscape as a basis for interpretation to raise public awareness of the Earth sciences.


This paper presents the geosite inventory of the region of Monti Peloritani (Italy).


This article is about the importance of protection of significant geological structures for improving society's awareness of the geosciences. The concepts of conservation and the practical requirements for the establishment of geo-trails are discussed.


Up to the present, environmental impact studies in Switzerland have applied very little geomorphology in their considerations. The importance of considering geomorphology in environmental impact studies is underlined in this article. The basic role of the professional geomorphologist in the evaluation process is also examined.


This paper presents the geomorphosite inventory of the Canton of Jura (Switzerland).


Two areas are proposed as representative of as many quite different geological and structural domains of the Marche region (Italy). Although similar morphoclimatic conditions, many landforms are quite different from one area to the other. Thus, the two areas are suitable for highlighting interrelationships between geology and landforms both from scientific and educational standpoint.


The Geological Conservation Review (GCR) has provided protection to sites which are of national research importance, while the locally based RIGS (Regionally Important GeoSites) schemes employ a wider range of criteria, including aesthetic and heritage value in selecting and protecting local and regionally important sites. Specially commissioned research studies are now providing solutions of practical problems in protecting sites from threats such as coastal protection, infill of quarries and afforestation, and are making a very
real contribution to effective conservation.


This work wants to experiment and to verify the applicability of the methodologies of assessment and census of geosites in submerged areas. The aim of the project is to gather the data on the characteristics of submerged resources, both for scientific purpose and for a possible geotourist promotion.


The understanding of geology by the public is generally very low. Once on a site, conservationists and Earth scientists have a golden opportunity to grasp the general public's attention and introduce them to Earth science and Earth science conservation. The philosophy and principles behind the process of design and installation of site information signs at Earth science sites are discussed and three basic categories of sign presented, namely: standardized site management signs; site specific information plaques and interpretative site information boards.


This paper presents a summary of geoconservation in the World and in Spain. It contains also a definition of geoheritage and an explanation of the necessity of geoconservation.


This paper presents some coastal geomorphosites of the Salento Peninsula (Italy). The variety of well preserved and easy accessible landforms and their concentration in a not wide coastal sector constitute a good opportunity for both didactic and popularization of the processes that characterize the coastal dynamics. A didactic path has therefore been realised and is presented in the article.


This paper presents the cultural and economic value of the karstic caves at Le Col-des-Roches (Neuchâtel, Switzerland). Some underground mills were built in these caves and are currently one of the jewels of tourism in the Neuchâtel region.


Short presentation of geosites in the catchment area of the Panaro river (Italy). This paper contains also a presentation of the concept of cultural geoheritage.

The author develops two points of view of evaluation of environmental assets: an aesthetic type (of purely intuitive nature) and a cultural type (based on the scientific understanding of the asset in question).


After having pointed out the fundamental concepts of the relationship between man and geomorphological environment, the author presents the first results of a scientific research on these subjects, and a method to evaluate some types of natural assets.


Some fundamental concepts on geomorphological assets are reviewed and methodology for their survey and assessment is presented and pointed out. A case study regarding geosites in the province of Modena (Italy) is also presented.


First, some concepts for the definition and the assessment of geosites are presented. Then, the different types of risk and impact derived from the relationship between geomorphology and a project are discussed. Finally, the author proposes a methodology for the evaluation of the quality of a landform and for the quantification of the possible impacts.


Some fundamental concepts of geomorphosites are reviewed and a methodology for their survey and assessment is presented and pointed out. A case study in the province of Modena (Italy) is presented.


Within the framework of geomorphology, a stimulating perspective of training and research activities is given by the relationship between this discipline and cultural heritage or, more in general, between these assets and the whole landscape in which they are located. Research activities may then be carried out according three approaches: environmental, historical and cultural-philosophical.


Geomorphological assets have always aroused interest owing to their spectacular features; nevertheless their intrinsic value cannot be based just
on these characteristics, but rather on the cultural, scientific, educational and
giodiversity aspects. This paper proposes some considerations about the
links between geomorphology and tourism and the way to develop geotourism
in the context of a cultural landscape.


This book focuses on the application of geomorphology in the context of risk
management and resources exploitation. The geosite concept is also
discussed. Within this framework, the problems linked with territorial planning,
environmental impact assessment and sustainable development are identified
as fundamental aspects.

Suppl.-Bd. 87, 13-18.

After a general introduction into the problems of evaluation of
geomorphological assets, the authors discuss the relationships between
geomorphology and Environmental Impact Assessment.

evaluation in environmental impact assessment, Enschede, ITC.

This book focuses on the relationships between geomorphology and
environmental impact assessment. It contains the following parts: A
conceptual approach connecting geomorphology and environmental impact
assessment (EIA). Geomorphology and EIA: a methodologic approach. EIA and
landforms. EIA and processes. EIA and raw materials. GIS and EIA.
Environnemental indicators.


The relations which bind a cultural asset to the natural environment in which it
fits are presented in a conceptual diagram. This diagram can assume the role
of methodology of research to provide operative proposals for the
management of architectonics assets and of the environment.

Panizza, M., Piacente, S. (2000). Relazioni tra scienze della terra e patrimonio storico-
archeologico, Convegno GeoBen 2000. Condizionamenti Geologici e Geotecnic
nella Conservazione del Patrimonio Storico Culturale, Torino (Italy), 7-9.06.2000,
Torino, CNR-IRPI, 723-730.

The relations which bind a cultural asset to the natural environment in which it
fits are presented in a conceptual diagram. This diagram can assume the role
of methodology of research to provide operative proposals for the
management of architectonics assets and of the environment.

Panizza, M., Piacente, S. (2002). Geomorphosites: a bridge between scientific research,
cultural integration and artistic suggestion, Geomorphological Sites: research,
assessment and improvement, Modena (Italy), 19-22.06.2002, Università degli Studi
di Modena e Reggio Emilia, Dipartimento di scienze della Terra, 15-20.

In this article, the research on geomorphological sites (inventoring,
assessment, protection), their cultural integration and their artistic suggestion
are discussed by making reference to examples at a local, national and
international level.

This book proposes the integration of the culture in the geomorphological studies. It presents some basic concepts of the geomorphology, the importance of this discipline within the context of risk and environmental impact assessment and the cultural value of geomorphosites.


The geological aspects has not yet assumed its proper value as a Cultural Asset because of a static approach of the geoheritage current in society. The paper shows that new occasions for re-launching Geology as a cultural and social discipline has recently developed in the fields of scientific research on geosites, of cultural integration between the geological-geomorphological aspects of a territory and the other landscape components and of artistic suggestion of those geosites which have been source of inspiration.


The workshop "Geomorphological Sites: assessment and mapping (Cagliari, Italy, 1-5.10.2003) focuses on the research concerning geomorphosites, on their assessment and mapping in particular.


This paper presents the world network of natural parks labelled "UNESCO Geopark". These parks are designed to become a tool for a better understanding of the geoheritage and a better use of the abiotic resources, by increasing public awareness for a balanced relationship between the humans and the Earth.


This paper presents the efforts made by UNESCO towards the geoconservation, in particular the cooperation with the European Geoparks Network.


This paper focuses on the risks of geomorphological processes for tourists that visit glacial geomorphosites or glaciological paths.


This paper presents the geomorphosites inventory of the region of Lombardy (Italy).

This paper presents the geoheritage of the Montesinho Natural Park (Portugal) and discusses the relationships between geology, geomorphology and landscape in the context of this park.


This paper presents the links between geological and cultural heritage with the example of the Duoro river (Portugal).

Pereira, D., Pereira, P. (eds.) (2005). Geology as background for a top-class geological and cultural heritage in the Douro region (Northern Portugal), Braga (Portugal), University of Minho.

This field trip guide book focuses on the cultural value of the geoheritage in the Douro region (Portugal).


In western culture there always seems to have been an inherent difficulty in acknowledging the importance of Nature diversity. In the twentieth century, particularly during the last few decades, there has been a reversal of this tendency. In this context, a new need of contact with the nature has developed and consequently the geodiversity is becoming more important.


This paper presents a project of promotion of the geoheritage in Italy. Besides carrying out the listing and assessment of the most important sites of geological interest, this project is directed to the development of educational and tourist routes and cultural itineraries, in order to emphasise the potential opportunities for knowledge and fruition of the regional geological heritage.


The idea behind the creation of this volume is to put together the results of investigations that aim to show Geology’s more attractive side; not the "severe" face linked to hazards and risks but the "milder" face made up of attractive diversities, history and visual and emotional enjoyment.


This paper presents the preliminary report of the Italian register of natural hypogean geosites, defined as subterranean natural voids that represent exceptional naturalistic and/or cultural value. A provisional list of these sites is proposed and already shows the exceptionality of the Italian hypogean heritage. The aim of this project is to increase public awareness of this heritage.


The importance of Regionally Important Geological/Geomorphological Sites
(RIGS) is discussed with reference to the Greater Bristol areas. The public perception of three urban geomorphological sites is examined via a simple questionnaire. The results demonstrate a clear interest on the part of the general public in the landscape around them and a wish to see it conserved. Education, public awareness and local planning are the keys to the effective conservation of such sites.


The aim of this paper is to present a general view of geodidactic use of geosites in the areas of Crans-Montana-Sierre (Valais, Switzerland) and Chamonix-Mont-Blanc (Haute Savoie, France). Characteristics, functioning and consequences of such activities are discussed by taking into account the steps of promotion, exploitation and transformation, defined as necessary for implementing and developing geotourism.

This article proposes a method to increase the value of geosites and landscapes of the Alps. This method suggests to popularize Earth sciences by showing the depth of the concepts of time and history and by showing the links between different kinds of heritage (geo(morpho)logical, cultural, historical, biological).


This article proposes a method to increase the value of geosites and landscapes of the Alps. This method suggests to popularize Earth sciences by showing the depth of the concepts of time and history and by showing the links between different kinds of heritage (geo(morpho)logical, cultural, historical, biological).


This paper presents a method for assessing tourist and exploitation values of geomorphological sites in a tourist and recreational context. Its aim is to propose criteria to quantify and qualify their potential in terms of scenic/aesthetic, scientific, cultural/historical, and socio/economic values, and to use this potential in terms of degree and modality of exploitation.


This paper focuses on the use of superficial and underground karstic sites for tourist and recreational purposes. Risk management and site preservation as well as optimization and number of visitors seem to be the major aspects to take into account and to study.


This paper presents theoretical frameworks concerning the relationships between geomorphological landforms and processes and tourist and recreational activities. Some models of this relationship are proposed. Finally, an ensuing classification of geomorphological sites according to the use of their scenic, scientific, cultural and economic values is developed.


This book contains the contributions presented at the conference "Dimension
Stone 2004" (Prague, 14-17.06.2004), that aimed to bring together experts from many fields of research including geology, rock mechanics, geotechnics, stone extractive industry, restoration and architecture. This book provides a state-of-the-art information on recent developments in the use and application of dimension stones throughout the World.


In Italy, the most active legislative source for territorial development is the region. Thanks to its small size, it can acquire flexible and selective institutional tools. The need for such tools to protect geological features is not obvious to the members of the Regional Council. The Regional Natural Science Museum aims mostly at setting up a scientific attitude, for a geological awareness of the great wealth of the area's natural and traditional landscapes.


This paper presents the ProGEO project to compile a list of European significant geosites to better conserve and promote the geoheritage and the geodiversity. The article contains a preliminary list of such sites for several European countries.


This paper focuses on the concept of geosite and shows its usefulness in environmental impact studies. It also proposes an example from the Dolomites (Italy).


In urbanized areas, new development continually creates temporary exposure whilst threatening existing ones. This paper describes how the GIS is being used within the English authorities to monitor and protect Sites of Importance for Nature Conservation and Sites of Special Scientific Interest.


In heavily urbanized areas new development threatens existing geosites. Within the Metropolitan Borough of Dudley a newly adopted code of practice aims to monitor and control this development and to improve the interaction between the geologist and the developer.


This paper aims to present the concept of Institutional Resource Regime and to show the possible application of this institutional approach for improving
the management of geomorphological sites.


This paper focuses on the application of the Institutional Resource Regime concept on the protection of geosites.


This paper presents the concept of geosite. It gives a definition of geosites and presents their values and the threats affecting them. It also focuses on conservation strategies and on assessment methods.


This article defines and characterises geomorphological sites. It also approaches their various characteristics and proposes a classification of ten principal types of geosites, including geomorphosites. After having discussed the vulnerability of geosites, the author studies the question of the value of geosites and finishes by presenting some recently developed methods for assessing geosites.


This paper focuses on geosite assessment in Switzerland. Improvements have been made on geomorphological site assessment during the last decade in four main domains: theoretical reflections by V. Grandgirard in his PhD thesis, geosite inventories, environmental impact assessment and natural objects inventories.


This paper gives some research outlooks issues from the conference "Paysages géomorphologiques. Séminaire de 3ème cycle CUSO 2003" (Lausanne - Fribourg, 10-14.02.03, 25-29.08.2003) concerning the relationships between landscape and geomorphology, landscape and institutions, landscape and geomorphosites. It also focuses on geoheritage and on the way to promote it.


Because of their high value in reconstructing former glacial extensions, erratic blocks are considered as important geosites in Switzerland. In the 19th century, most of them were endangered by the granite extraction industry. This paper recalls the principal steps that permitted the conservation of major erratic blocks in Switzerland, and some recent actions for conserving and
promoting them.


The paper analyses the importance of institutional rules for protecting and managing geomorphological sites. A framework, called Institutional Resource Regime, is proposed. It combines the analysis of the property rights concerning the resource and the public policies regulating its exploitation and protection. Two Swiss examples are presented to illustrate the analytical possibilities offered by this concept.


Landscape research has been divided in two main domains, the naturalistic approach and the social one. The author proposes to define the geomorphological landscape as a portion of the Earth surface, which is viewed, perceived and sometimes exploited by Man. The perception of the geomorphology of an area confers values to it. In all processes of analysis, protection and optimisation of geomorphosites, this double component, objective and subjective, has to be taken into account.


This paper develops the principal elements that constitute the geomorphological value of the Tsanfleuron glaciokarst and presents the main steps of tourist development in the area, and its impacts on landscape and landforms. It also presents the way to develop geotourism in this area.


Proceedings of the conference "Géomorphologie et tourisme" (Finhaut, Switzerland, 21-23.09.2001).


The geomorphology of the Sanetsch area (Switzerland) is rich and diverse. During the 1990s, the tourist pressure accentuated and created many negative impacts on the landscape: destruction of landforms, soil erosion, impacts on the landscape. Various measures attempted to promote and protect the geomorphology of the area, but they still had little concrete effects. Special planning should be a solution for improving the geomorphological protection of the area.

This paper presents the management of the geoheritage in Switzerland. It focuses on geoparks, geosites and geotourism.


Proceedings of the "Séminaire de troisième cycle romand de géographie" on geomorphosites and landscapes (Lausanne - Fribourg, Switzerland, 10-14.02.2003 - 25-29.08.2003).


This paper pleads for a better acknowledgement of the intrinsic value of geoheritage within the framework of Swiss nature protection. An integration of the assessment of the geoheritage in the protection of nature, landscape and heritage and an integration of protection and promotion of natural environments are proposed.


This paper focuses on geomorphosite definition, assessment methodology, mapping methods and site protection to achieve the goal of assessing and protecting geomorphosites.


A methodological approach is proposed for the incorporation of geomorphological features into environmental impact assessments. A series of quantitative indicators and indices are proposed, so that impacts on both consumable and non-consumable geomorphological resources can be objectively determined. Procedures for the integration of individual indices into general impact assessments are also proposed.


This paper describes the German initiatives on geotope conservation and the implementation of National geoparks and their use for education and tourism.


This paper proposes a better coordination in management of similar geosites. An example of the management of ophiolitic geosites in Italy is proposed.

This paper proposes a geosite management method based on GIS.


This paper analyzes the various threats to geological heritage and proposes some non administrative measures to conserve it.


The purpose of this work is to present a preliminary identification and inventory of the main geosites of the Cilento-Vallo di Diano National Park (Campania, Italy). Geomorphosites are surely widely represented. This inventory represents a first step for the knowledge and promotion of the geoheritage of this region.


The consumption of sand and gravel per capita in Switzerland is considerable. A seminal conflict over the conservation of a key Quaternary section in a pit at Jaberg in 1978 led to an awareness amongst Earth scientists, the extractive industry and planners that geoscience understanding was an important element in effective planning of aggregates extraction. Discussions with representatives of the aggregate mining industry since 1978 have ended in the successful establishment of a “Foundation for Aggregates and Landscape”. This partnership between industry and Earth scientists offers the prospect of a sustainable approach to managing the sand and gravel resource.


In 1713 a river (Kander, Switzerland) was diverted directly into a lake through an artificially excavated tunnel. Since then, a man-made river landscape with a dry sector and with a deep gorge has evolved. The river incision since 1713 has lowered the groundwater table regionally, which has made gravel and sand mining possible. Conflicts between sand and gravel mining and conservation tendencies rise the question of the legal situation of a man-made landscape with regard to the establishment of geological heritage policies.


This paper proposes a walk in the Gros de Vaud area (Vaud, Switzerland) to discover some geological sites of this region.


This article focuses on geosites and on their relationships with biotopes and landscapes. A concept for a more integrated protection and management of landscape is also proposed.

This paper focuses on the challenges of the protection of a dynamic geosite (Venoge, Switzerland).


This paper presents some projects to promote the geoheritage of the mining area of Calisio (Trentino, Italy).


Albania is rich in geological sites testifying about the history of the Earth during past geological epochs. In Albania, the aspect of Geological Heritage Conservation has been never treated up to the last years. On the ground of publications and discussions of the European Association of the Geological Heritage Conservation in the framework of ProGEO and the experience, Albanian geologists have defined the criteria and methods for classification and selection of geological sites of Albania. At the same time, is being compiled preliminary classification and selection of geological sites of special scientific importance, and a preliminary list of outstanding geological sites.


Albania is characterized by a typically alpine accidented mountain relief. Different types of relief, and namely, structural-erosional, karstic, river-erosional, erosional-denuded, glacial, seacoast landforms are present. In such a manner are formed a number of geomorphological sites of natural aesthetic and scientific importance or with climate-curative features. Geomorphological sites in Albania are of local, district’s, national and some of Balkan or European importance. In appendix: List of geomorphological sites of Albania.


Albania is one of the most karst-developed countries in Europe. The most widespread karst landforms in carbonate rocks there are valleys, caves, cones etc., while into salt rocks there are formed many karstic lakes and depressions. Up to now about 80 karstic caves, karst fields, valleys, and plains have been determined.


The protected areas of South Shetland islands are linked to the uses and human history. Today, they are combined of disconnected areas where tourism, national policies and science have the main importance to proclaim, to conserve and the territorial use of protection figures. In this work, it is proposed to unify management of Antarctic protected areas.


The assessment and protection of geomorphological heritage is a necessity at
different scales, from the landforms association as landscape constituents until the individual and isolated landforms. This paper presents the example of the Los Asnos rock glacier, that has been destroyed by ski resorts works.


This paper summerizes the state of knowledge of the management and conservation of the geoheritage in Spain.


The development of Antarctic tourism has led to more frequent landings of cruise ships at an extremely limited number of sites, resulting in serious problems of overcrowding in coastal areas which are ecologically very fragile. The tourists generally visit the ice-free areas and particularly those areas with exceptional landscapes. From an ecological point of view, such sites are not only the richest, they are also the most sensitive. Today, tourist activity must be regulated to ensure the management of protected areas and conservation of the environment.


This paper focus on the evolution of the understanding of mountains and contains the following sections: Myth, science and religion in the perception of mountains; The physical discovery of a strange world: Opening the mountain up to knowledge of the 18th century; The mountain as a source of knowledge: Romanticism and the study of glaciers; Global and planetary exploration, education and understanding: the meaning of mountains.


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This paper aims to propose a methodology for the assessment of geomorphosites that could be applied to natural protected areas at the local scale.


This work connects tourism and natural assets and presents some aspects of the protection of natural resources and of economic aspects related to tourism and environment.

This article explains the geological background and significance of the Giant's Causeway World Heritage Site. The geological and geomorphological importance of this site is underestimated: in effects, its protection focuses on biodiversity.


This report focuses on the protection of geosites in Switzerland. It presents their values and the actual legislation concerning them. It also explains the situation of protection of geosites in Switzerland and in foreign countries. Finally, it proposes a way to improve their protection.


In spite of the long Swiss tradition in the field of geoconservation (protection of erratic blocks for example), the legislation actually does not focus on it. Therefore, a working group for the protection of geosites was created in 1994. This article presents the various tasks carried out by the working group and proposes a definition of "geosite" and of "zone of geosite protection".


This article points out the place of geomorphology and Earth heritage protection in the Swiss legislation.


Short summary of geosite protection in Switzerland.


Moraines are typical forms of the landscape in the center of Switzerland. During the last years gravel exploitation has endommaged them. The article stresses the need of protection of this important type of geosite.


Even in a progressive and relatively well-developed planning system as the Swiss, the field of Earth science conservation is scarcely integrated and therefore plays a minor role. A kind of catalyst, which is at work in favour of the conservation of Earth science sites, is missing. A planning category called geotope could overtake that catalytic function. The term geotope could play the same role as the term biotope. Strong impulses from international level are necessary. An International Convention on the Conservation of Geological Heritage could initiate and support the desirable development in the different signatory states.

This paper focuses on the way to increase geosite protection thanks to territorial planning. Geosite protection areas could affect subsequent plan settings and could determine the future intervention possibilities. In this way town and country planning could provide powerful instruments by which effective site conservation could be achieved. Existing deficiencies in the legislative framework could be sorted out with the help of an International Convention.


This paper focuses on the way to increase geosite protection thanks to territorial planning.


This paper focuses on the way to increase geosite protection thanks to territorial planning. Geosite protection areas could affect subsequent plan settings and could determine the future intervention possibilities. In this way town and country planning could provide powerful instruments by which effective site conservation could be achieved. This article gives a brief overview of the Swiss planning system. An example shows how geotope protection can be successfully integrated in town and country planning.


This paper focuses on geoconservation in Iceland. It presents the different possibilities to protect volcanoes and the threats affecting them.


The conservation of geological remains in China, especially in renowned sites with historical or cultural significance, has long been paid attention to. As the urban residents become more interested in returning to an harmony with the nature, tourism related sciences and knowledge gets more attractive. Geosites and geoparks can definitely play an important role to lead this historic tendency.


The article focuses on the problems evolving from the interdisciplinary character of geopark and geotourism research. It tries to integrate geosites and geoparks into the existing systems of planning regulated by public law.


This paper presents the cultural (archaeological) value of some blocks in Engadin (Switzerland).
This paper presents the conflicts between gravel extraction and geosite protection.

This short article presents the concept of geosites and the situation of their protection in Switzerland.

This article focuses on the meaning of geoconservation for spare time activities and tourism.

Geotope protection includes all kinds of measures of preservation, development and management of sites of Earth science heritage – geotopes. The aim of geotope protection is the preservation of geodiversity. In the framework of Earth science conservation, the term can perform the same function as the term biotope does in land use planning and nature protection.

This paper focuses on karstic geosites in Switzerland. It defines the concept of geosite, explains their assessment and gives an outline of the Swiss legislation in this field. The authors focuses then on karstic geosites and gives a list and a description of the ones who have a national importance.

This paper focuses on the need to raise public awareness of the value of Earth science conservation and to provide training materials to enable more people to become involved in practical conservation activities.

This article focuses on the conservation of the geological heritage in Britain. It recalls the historical background of geoconservation in Britain and presents the Geological Conservation Review as the fuller and most comparatively-justified site assessment programme in the World.

This paper presents the geoheritage of the Strona valley (Italy).
This paper focuses on geosites in Italy. It describes the legislation concerning them and their management.


The European Geoparks Network was established in June 2000. Its main objective is to cooperate on the protection of the geological heritage and the promotion of sustainable development in their territories. The purpose of the "European Geopark" trademark would be to share information and expertise, and to define certain common tools in areas of common interest.


This paper focuses on the geoheritage of the Aegean area (Greece). It presents the situation of the assessment, protection and promotion of geosites in this area.