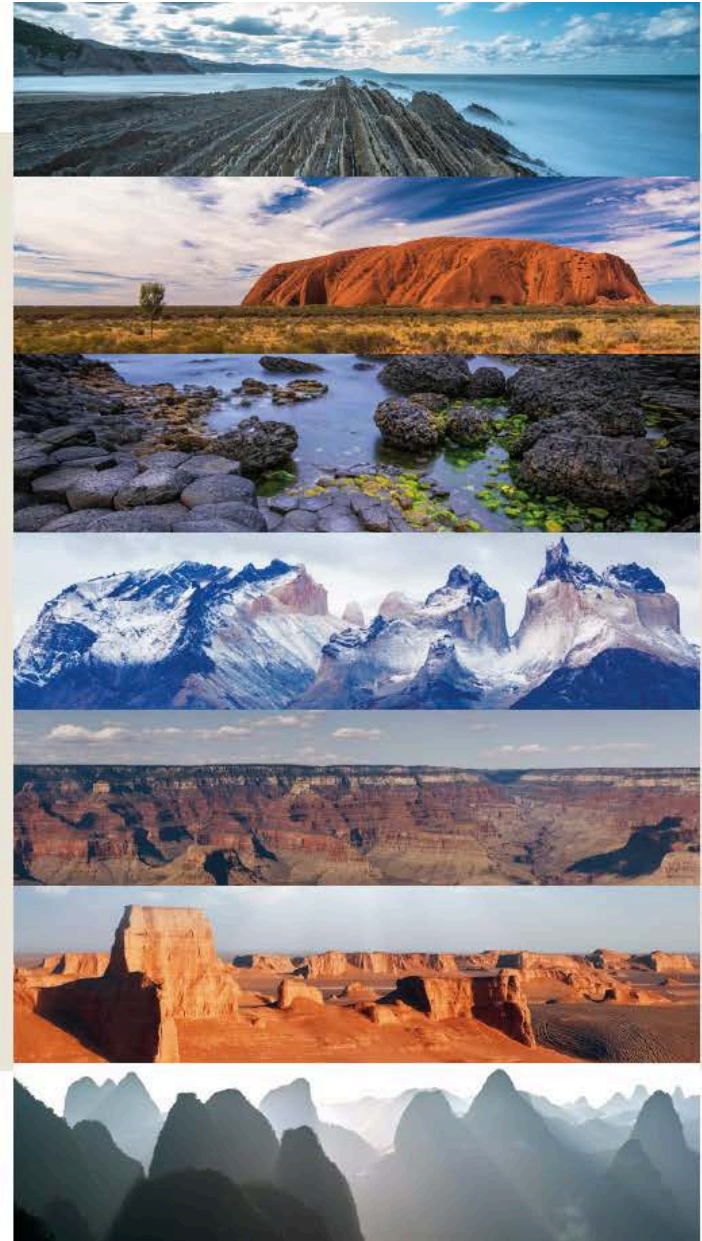


THE FIRST
100 IUGS
GEOLOGICAL
HERITAGE SITES



THE FIRST
100
IUGS GEOLOGICAL
HERITAGE SITES



IGCP 731.

2022



IUGS 60TH
ANNIVERSARY EVENT

OUR MAIN GOAL

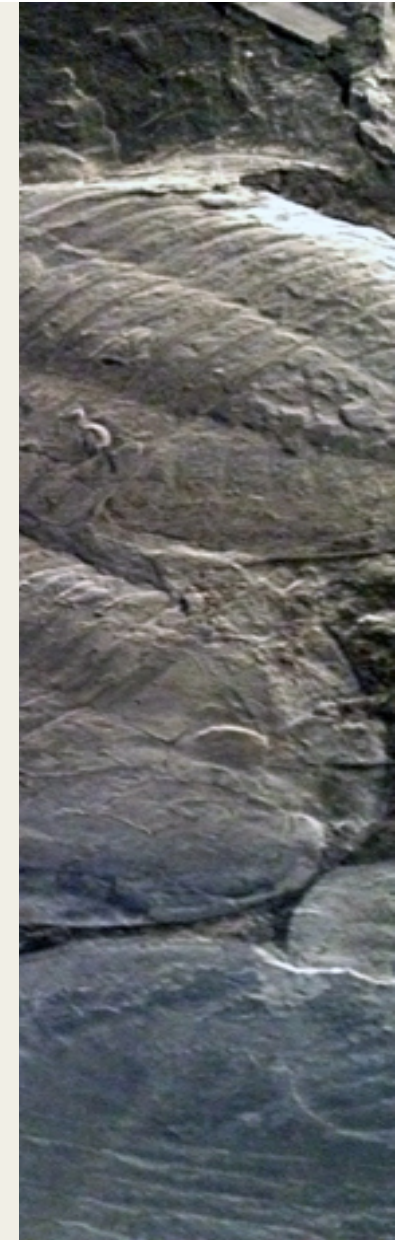
Definition and implementation of a global program led by IUGS -International Commission on Geoheritage for the recognition of geological heritage sites of high international scientific significance (IUGS Global Geosites).

WHAT KIND OF SITES?

All kind of geological sites of international relevance: tectonic, stratigraphical, sedimentological, petrological, mineralogical, hydrogeological paleontological, geomorphological and those related to the history of geological sciences.

WHAT KIND OF VALUE?

- 1) Sites with high **scientific value** at international level
- 2) Key sites that have given a substantial contribution to the **development of geological sciences** through history.



WHY IS THIS INITIATIVE NECCESARY?

The scientific community has **long demanded** the establishment of a global program with global standards for the recognition of geological heritage sites of high international importance.

This program will be of great help for many other national or international initiatives based on the recognition, conservation, geotourism and educational activities related to geological heritage.

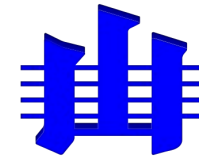
This program will foster international collaboration and will provide a great social and institutional visibility to geological sciences.



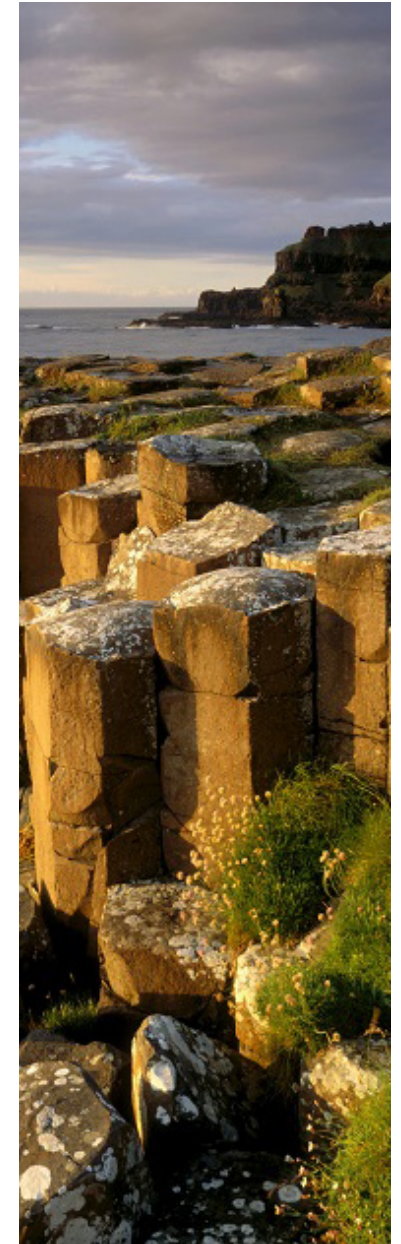
INTERNATIONAL COOPERATION

MORE THAN 200 EXPERTS FROM 55 COUNTRIES

INTERNATIONAL ORGANIZATIONS



TecTask





DEFINITION AND STANDARDS

In Sept – Nov 2021 a group of 20 experts discussed and defined the main standards of an IUGS Geological Heritage Site.

The definition and standards were adopted by the IUGS International Commission on Geoheritage in Nov 2021 in Zumaia (Basque Coast UGGp)

Coordinators:

Luis Carcavilla (Spain), Jianping Zhang (China), Benjamin van Wyk de Vries (France), Joana Sanchez (Brazil), Asfawossen Asrat (Botswana & Ethiopia), Asier Hilario (Spain).

Participants:

Babbis Fassoulas (Greece), Helke Mocke (Namibia), Kirstin Lemon (Northern Ireland), Nicolas Charles (France), José Brilha (Portugal), Paulo Pereira (Portugal), Fernando Miranda (Argentina), Manuel Arenas (Chile), Margaret Brocx (Australia), Enrique Díaz (Spain).

IUGS final review and aproval

Stanley Finney (IUGS Secretary General / USA)
Asier Hilario (IUGS – ICG chair / Spain)
Benjamin van Wyk de Vries (IUGS – Subcommission on Site Chair / France)
Juana Vegas (IUGS – ICG Secretary General / Spain)

"An *IUGS Geological Heritage Site* is a key place with geological elements and/or processes of scientific international relevance, used as a reference, and/or with a substantial contribution to the development of geological sciences through history "

IUGS – IGCP 731

ZUMAIA. NOV.2021



181 CANDIDATES

FROM

56 COUNTRIES



EVALUATION PROCESS

In March 2022 **181 applications** from **56 countries** were received.

All proposals were evaluated by **34 voting members**

Every proposal was evaluated by at least three voting members who graded each candidate according to:

- 3. The site clearly fulfils the standards and should be selected for the First 100 for its exemplary / iconic value for geological sciences.*
- 2. The site fulfils the standards but could be postponed for a future designation.*
- 1. I am not sure if the site fulfils the standards.*

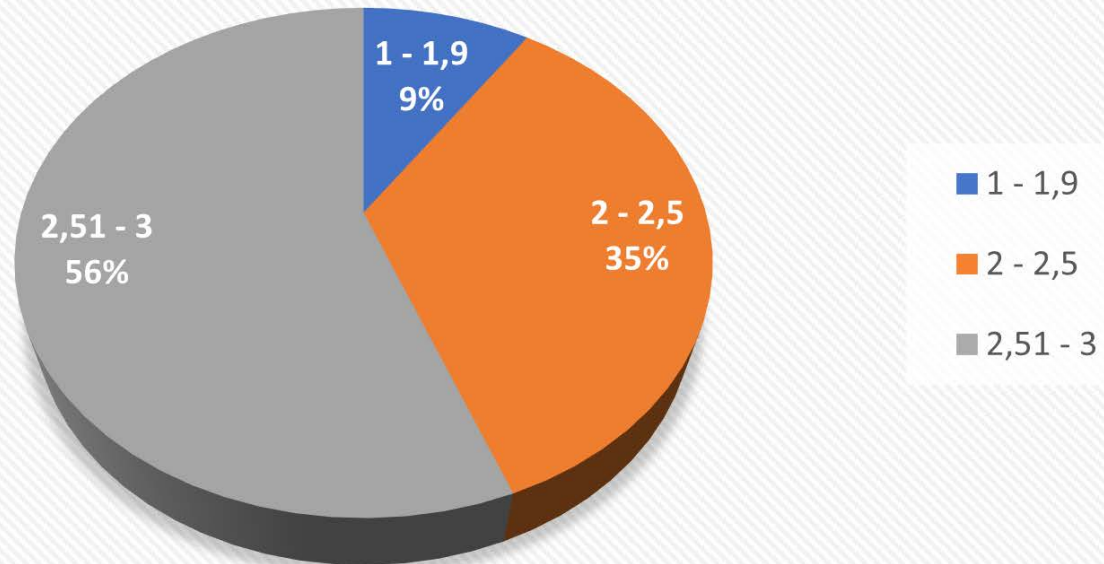


550 evaluations
were completed

Thank you very much to all voting members!

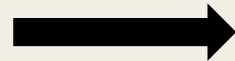


EVALUATION SCORE DISTRIBUTION



56% of the sites (101)

35% of the sites (63)



3 - 2,5 points.

2,5 - 2 points



SELECTION

An IUGS selection committee was established.

All 550 evaluations were reviewed to double check and ensure quality control.

150 sites clearly fulfil the definition and standards

150 SITES

have been accepted as

IUGS GEOLOGICAL HERITAGE SITES

Only THE FIRST 100 will be designated in 2022. The rest will be designated in 2023.

Another 31 sites have been deferred.



The selection of

THE FIRST 100

has been done according to:

1. Voting members scoring

The higher scorings have been preferably selected

2. Geographical distribution

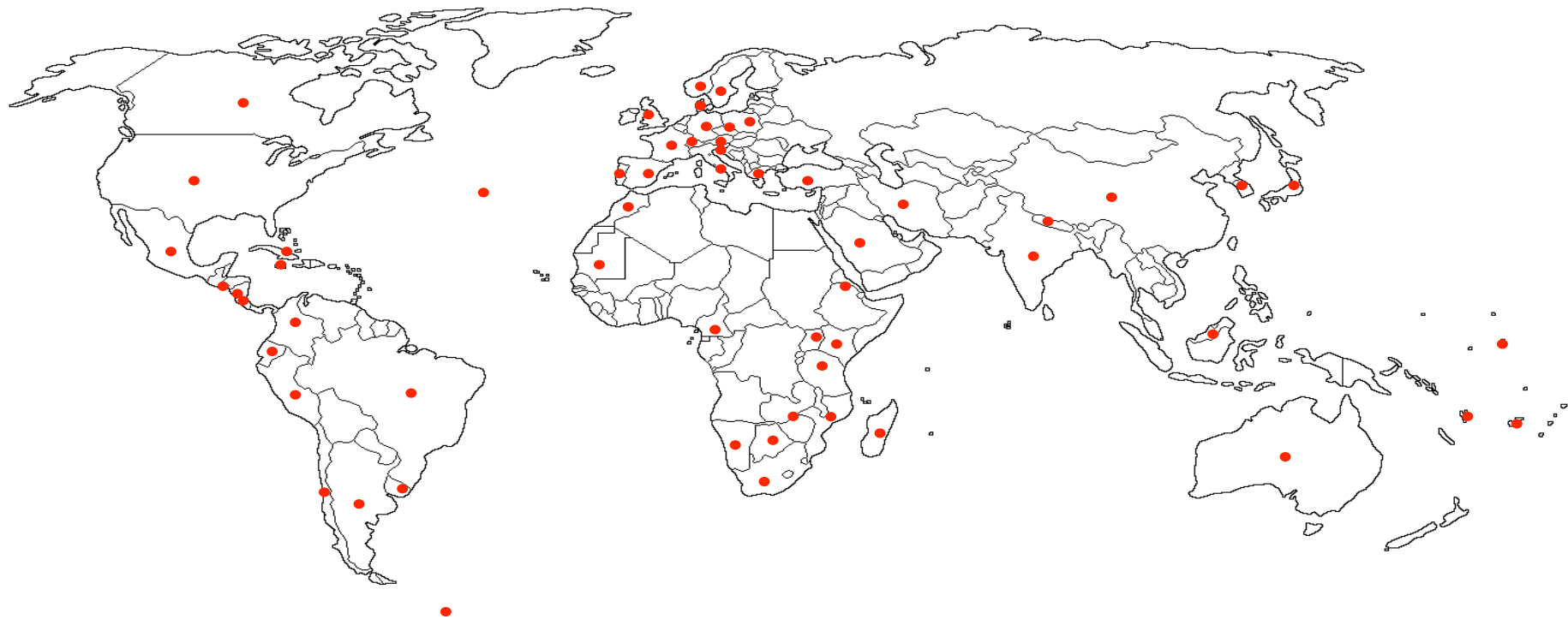
A wide and balanced geographical distribution has been guaranteed

3. Typology

All different types of sites and geological interest have been included



GEOGRAPHICAL DISTRIBUTION OF THE FIRST 100



● Country with one or more sites within the First 100

100 SITES
56 COUNTRIES

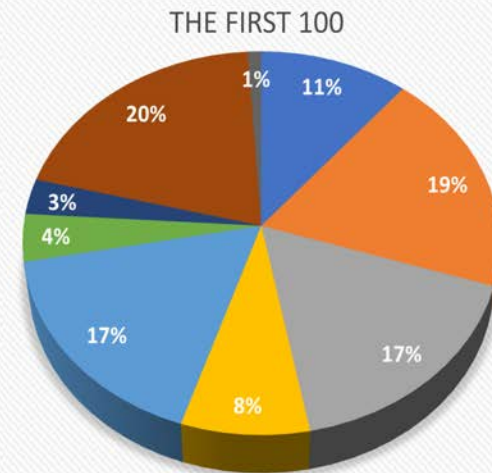
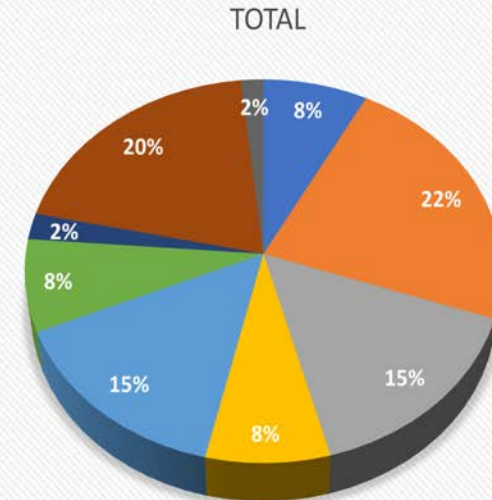
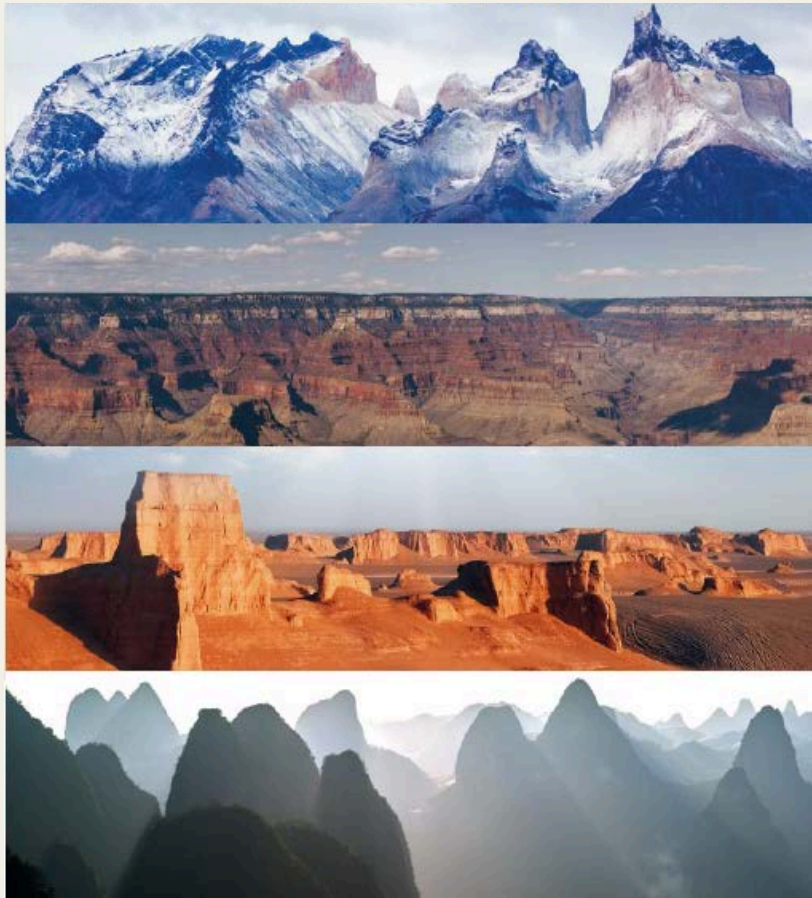
AMERICA **34** sites

EUROPE **28** AFRICA **15**

ASIA - PACIFIC – MIDDLE EAST **23**



GEOLOGICAL INTEREST



- 1. History of geosciences
- 2. Stratigraphy and sedimentology
- 3. Paleontology
- 4. Igneous and Metamorphic petrology
- 5. Volcanology
- 6. Tectonics
- 7. Mineralogy
- 8. Geomorphology and active geological processes
- 9. Impact structures and extraterrestrial rocks

THE BOOK



“The First 100” have been compiled in a high quality and inspiring book that will set up the standards for the future. 500 paper copies have been printed. Most of them will be distributed during the event and among the authors and participants.

A free digital version will be uploaded in the new webpage of the IUGS International Commission on Geoheritage

www.iugs-geoheritage.org

THE FIRST 100 IUGS GEOLOGICAL HERITAGE SITES

THE FIRST
100

IUGS GEOLOGICAL HERITAGE SITES

**IUGS 60TH
ANNIVERSARY**

The Edlunds Hills was the locality where we preserved Dickinsonian faunal assemblages. It was first found globally (Spring, 2007). At this location the Dickinson fossil life forms exhibit diversity (Cottrell et al., 2006) with over 20 species of fossils recorded including *Burronotia*, *Roscoffella*, *Schuchertella*, *Trochilium*, *Murchisonella*, *Kimberville*, *Chamaediscus* and *Vergilia*. In addition to being the type section for the newly established Edlunds Desert, the Edlunds Hills contains one of the best-exposed and most complete successions of Neoproterozoic to early Paleozoic rocks in the world.

brachiopods, trilobites, Chonetes and Yorgia. In addition to being the type section for the newly established Ediacara District, the Ediacara Hills contains one of the best exposed and most complete successions of Neoproterozoic to early Paleozoic rocks in the world.

SITE 025		
GEOLOGICAL PERIOD	Ediacaran	
LOCATION	Extonite Creek, South Australia 30° 49' 52" S 138° 38' 12" E	
MAIN GEOLOGICAL INTEREST	Paleontology stratigraphy and sedimentology	

The Eskimo was an in-situ and intermittently migratory folk of the Arctic (now mostly Siberian) soft-bodied mollusks, the *Chama*, 3000 years a remnant of the early period; the one contains a fossilized early interglacial faunal and flora record, described by AGU International Commission on Stratigraphy (ICS) as an interglacially agreed upon baseline point in a stratigraphic section which defines the lower boundary of a stage on the geologic time scale – this boundary is marked by a Golden Spike. The GSSP in the Flinders ranges, located in Chinese Creek within the Flinders Group National Park, was ratified by the ICS in 2004 and represents the lower boundary of the then newly assigned Subcommission System (SSS). The base of the Eskimo System (SSS) is defined by the base of the Eskimo System, the Australian formation, also currently subject of research to help develop Subcommission (SSS) and Johnson, 1994 (which also dated the base and present-day).

Steps of the study: Topographic map showing location of the study area (inset map) and the location of the study area (inset map) and the location of the study area (inset map).

From their first discovery in 1946 (Storrs, 2007), Devonian fossils of this system have been researched to investigate the origins of life, the chemistry of life in the Precambrian, and aspects of its paleoecology. Cherted Creek also is a Great Boundary Stratigraphic Section and Data (GSSDP) locality in 1994.

DUE TO CONTINENTAL CLIMATE CONDITIONS, HIGH ELEVATION AND HIGH WEATHERING RATES, THE ENGADINE IS ONE OF THE ROCKGLACIER HOTSPOTS IN THE WORLD AND THE HOME OF RESEARCH ON ROCKGLACIERS.

- when
- what
- where
- why
- how
- who
- what
- when

GEOLOGICAL PERIOD	Quaternary / Holocene	
LOCATION	Engelke / Glaston, Switzerland at 2000 m a.s.l. at 2000 m a.s.l.	
MAIN GEOLOGICAL INTEREST	Geomorphology and active geological processes	

[illegible]

Scientific research and tradition

investigated systematically. The two basic hypotheses are supported by phylogenetic analysis and geographic investigations: (1) the HbA_{1c} of the Murut is a distinct haplotype and (2) the Murut is a distinct population. The HbA_{1c} haplotype of the Murut is distinct from the HbA_{1c} haplotype of the other populations in the Murut, which is the largest area in the Murut.

ONE OF THE MOST PROFOUND
UNCONFORMITIES ON EARTH,
WITH UP TO 1.3 BILLION
YEARS OF EARTH'S HISTORY
REMOVED BY EROSION

[illegible]

study works (doi:10.1175/JCLI12007.0127). In your
next issue, see Figure 4 (lower right) on the
probe page. Important concepts for pub-
lic science education: concentrations in
the mixing tank would find those in
rock record to provide an understanding
of geologic time (Shaw and Crook
1988). The site is part of the Great Canyon
National Park (NPS) where the National

GEOLOGICAL REGION	Neogene/Quaternary Neogene/Quaternary and Cretaceous
LOCATION	Almond Canyon National Monument, Alameda, NM, 34° 40' N 107° 02' W
MAIN GEOLOGICAL INTEREST	Stratigraphy and sedimentology



The diagram illustrates a cross-section of a reaction vessel. At the top, a central tube is surrounded by a layer of reactants. Below this, a layer of products is shown. The central tube is labeled 'Reactants' and 'Products'. The diagram is labeled with 'Reactants' and 'Products'.

scientific research and tradition

THE "EYE OF AFRICA"
NIGHT STRUCTURE IN
THE SAHARA DESERT IS A
SPECTACULAR EXAMPLE OF
A MAGNETIC CONCENTRIC

It is one of the most important steps in the design of a new product. It is a process that involves a lot of research and development. It is a process that involves a lot of research and development. It is a process that involves a lot of research and development.



CONCRETE

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[illegible][illegible]

THE EVENT

THE FIRST 100 aspires to be a memorable encounter and anniversary event that culminates in a spectacular celebration.

LIMITED PLACES: **200 PARTICIPANTS**

Information of the event

www.geoparkea.eus/iugs-globalgeosites

IUGS 60TH ANNIVERSARY EVENT



THE FIRST
100 IUGS
GEOLOGICAL
HERITAGE SITES

October 25 - 28 th
Zumaia. Basque Coast UGGp. Spain

Save the dates!

Limited places. Registration available from June 15th:
www.geoparkea.eus/iugs-globalgeosites



THE EVENT / PROGRAM

Main scientific activities

- Presentation of some of the the First 100 IUGS Geological Heritage Sites.
- IUGS medals and keynote lectures by leaders of International Geological organizations
- Dedication ceremony to the First 100 IUGS Geological Heritage Sites.
- IUGS declaration of Zumaia

Parallel scientific activities

- Discussion seminars about Geoheritage and the IUGS Global Geosite Program development
- Presentation of 10 new IUGS Stone Heritage and Geo-collections program

Cultural, gastronomic and geological activities

Welcome event, geological boat trips to Zumaia section (flysch), gastronomic events, Basque performance...

[Scientific program](#)

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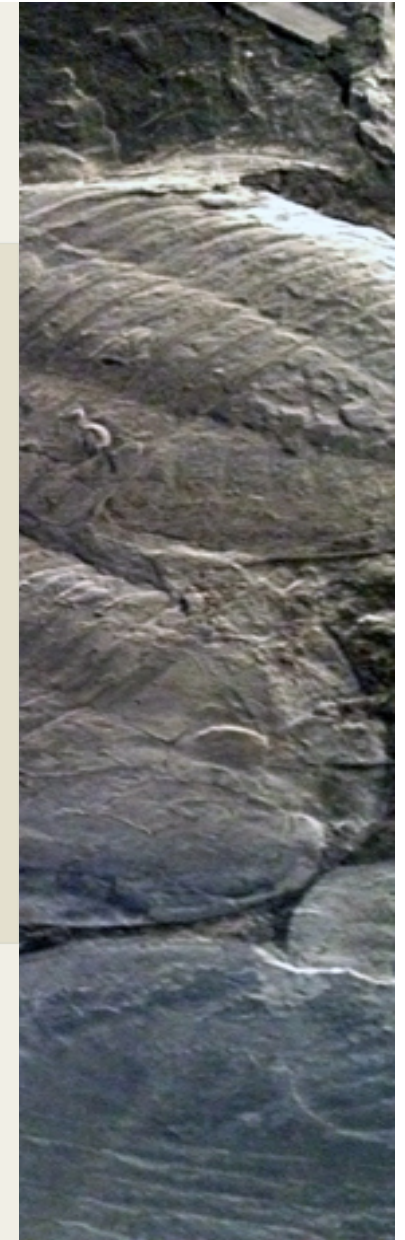


During its main 60th anniversary celebration, the IUGS is pleased to present “**The First 100 IUGS Geological Heritage Sites**” at an event in Zumaia, Basque Coast UGGp (Spain).

This announcement will kick off an endeavour to designate geological sites from around the world that are iconic, recognized by all geoscience community for their impact in understanding the Earth and its history.

The First 100 aspires to be a memorable event that culminates in a spectacular celebration.

Mark your calendars. October 25-28th.



SEE YOU IN ZUMAIA

THE FIRST 100

<https://iugs60.org/100-geosites/>

www.geoparkea.eus/iugs-globalgeosites



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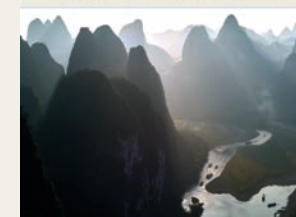
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THE FIRST 100 IUGS GEOLOGICAL HERITAGE SITES



EUSKADI
BASQUE COUNTRY

SPONSORING

Gipuzkoako
Foru Aldundia
Deputazioaren
Batzarria



ETORKIZUNA ORAIN
Es futuro

Euskadi, arrotzara, bien común

EUSKO JAURLARITZA



GOBIERNO VASCO



Geoparkea
Euskal Kastraketa - Costa Vasca



SECRETARIAT
CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS
IGME
INSTITUTO GEOGRÁFICO NACIONAL