August 2007

Introducing the Karst Information Portal

Robert Brinkmann
University of South Florida

Todd A. Chavez
University of South Florida, tchavez@usf.edu

George Veni
National Cave & Karst Research Institute

Penelope Boston
New Mexico Tech

Follow this and additional works at: http://scholarcommons.usf.edu/tlar_pub

Part of the American Studies Commons, and the Library and Information Science Commons

Scholar Commons Citation
Brinkmann, Robert; Chavez, Todd A.; Veni, George; and Boston, Penelope, "Introducing the Karst Information Portal" (2007). Academic Resources Faculty and Staff Publications. Paper 9.
http://scholarcommons.usf.edu/tlar_pub/9

This Presentation is brought to you for free and open access by the Tampa Library at Scholar Commons. It has been accepted for inclusion in Academic Resources Faculty and Staff Publications by an authorized administrator of Scholar Commons. For more information, please contact scholarcommons@usf.edu.
Introducing the Karst Information Portal

Robert Brinkmann
University of South Florida

Todd A. Chavez
University of South Florida

Diana E. Northup
University of New Mexico

Penelope J. Boston
New Mexico Tech and NCKRI

George Veni
National Cave and Karst Research Institute
Order of Proceedings

Robert Brinkmann ..... Background, Development, and History
Todd Chavez .............What Is It and What’s In It
Penelope Boston .........KIP as a Research Tool
George Veni .............The KIP Consortium: How You Can Get Involved
Introduction & Background

Robert Brinkmann
What is a portal?

A web portal is a site that functions as a point of access to information on the world wide web -- Wikipedia

Common portals …

Yahoo!

Wikipedia

Google

GPO Access

www.cnn.com

www.usf.edu
New Portals Developed for Scientists:

Global Biodiversity Information Facility

http://data.gbif.org/welcome.htm

Provides “…free and open access to biodiversity data.”
New Portals Developed for Scientists:

The Geoscience Network: GEON
http://www.geongrid.org/

“The Geosciences Network (GEON) project is a collaboration among a dozen PI institutions and a number of other partner projects, institutions, and agencies to develop cyberinfrastructure in support of an environment for integrative geoscience research...”
New Portals Developed for Scientists:

CHRONOS

http://www.chronos.org/

“CHRONOS is a team of geoscientists and information technology specialists creating a cyberinfrastructure that will deliver open access to a global federation of Earth history databases, tools, and services..”
The Challenge

The karst research community and its knowledge base are fragmented, globally distributed, and highly interdisciplinary.

As karst issues move to the forefront of attempts to develop solutions to significant environmental degradation, information integration and linkages promoting collaboration is essential.

The Solution

The Karst Information Portal (KIP) is a growing international community seeking to create an open system for karst-related information..

The goal is a freely accessible web-based information network to inform research, to enhance collaboration, and to address policy decisions in karst environments.
Background

Began as a collaborative effort between University of New Mexico, New Mexico Tech, University of South Florida, and the National Cave and Karst Research Institute in 2005.

Key Efforts:

• Developing an NSF cyberinfrastructure grant.

• Developing an advisory team.
Background

Status of the cyberinfrastructure grant:

• Not funded, but positive comments.

Advisory Team:

Met in Carlsbad in January of 2006. Expanded the idea to include international partners, received advice from stakeholders, and developed plans for future development of the KIP.

Key Development:

• Union Internationale de Spéléologie (UIS) joins team.
Key Developments in 2007

• U.S. project partners meeting in early 2007 in Tampa at USF’s Best of Karst event. Alexander Klimchouk joins discussions on how to partner *Speleogenesis* with the portal.

• Application for an informal education grant around the idea of the Great Karst Trail. Positive reviews, but not funded.

Much goes on behind the scenes:

• Development of the *Guide to Speleological Literature*

• Development of tools for SEM database with Los Alamos

• Growth of the content

• Design of portal, content, and communication

• Many people hours on the part of all participants
Development of the Portal

A major effort by the USF Library in the design and development of the portal took place in 2006-the present. Significant resource commitment.

Design and structure based on feedback from stakeholders.
What is KIP?
What is “in” KIP?

Todd Chavez
The Realm of Geoscience Information

Sources & Inputs
- Information Producers
  - Publishers
  - Government Agencies
  - Manufacturers
  - Consultants
  - Universities

- Raw data
  - observational
  - experimental
- Samples
- Analyses
- Equations & algorithms
- Statistics
- More …

Information Products
- Abstracts
- Books
- Collections
- Computer programs
- Conference proceedings
- Databases
- Data matrices
- Images
- Lectures/speeches
- Maps
- Multimedia
- Periodicals
- Reports
- Theses & dissertations
- Trip & guidebooks
- More …

Search Methods
- Search Internet
  - Product Sources: booksellers, Internet, libraries, personal collections, bookstore, meetings, publishers
  - More …
- Ask librarian
- Ask expert
  - Information Seekers: General Public, Researchers, Students, Teachers

“Haze of Confusion”

Adapted from “The Realm of Geoscience Information,” Ira D. Sasowsky
Design Goals

Open-access to quality information
- Organized for discovery
- Vetted for inclusion
- Described by the community of users

Facilitate information preservation & digitization

Promote collaboration

Benefits to Community

Informs research, filters the “information avalanche,” reduces impact of economic & access limitations

Ensures long-term access to information resources

Facilitates research & information sharing
Portal Implementation
Navigation

Persistent headers & footers.

Footer links to …
  – Site map
  – Contact link
  – Links to RSS feeds

“Breadcrumbs” orient to site hierarchy.

Context-valid menus guide access to sub-sections.
Home

Quick access to

- Announcements
- News
- Events
- Research updates

INTERNATIONAL CONFERENCE ON KARST HYDROGEOLOGY AND ECOSYSTEMS

Tuesday, July 31, 2007

The conference will be held at Western Kentucky University in Bowling Green, Kentucky, August 13, 14, and 15, 2007, followed by a four-day field trip (August 16-19) to the karst of the Cumberland Plateau and southern Appalachian Mountains of Kentucky and Tennessee. August 13 will be for business meetings of the four groups, followed by a plenary session, followed by two days of technical sessions. This meeting follows successful meetings of IGCP 379 in 1998 and IGCP 449 in 2003, in collaboration with the other karst commissions.


RECENT NEWS...

Karst Horizons: 15th International Congress of Speleology
Sunday, July 19, 2009

The National Speleological Society (NSS) of the United States is honored to host the 15th International Congress of Speleology (ICS). The ICS, a function of the International Union of Speleology, occurs every four years to su... Read More

1st International Symposium on Scientific and Tourist Speleology
Wednesday, April 23, 2008


RESEARCH UPDATES...

Geologic and anthropogenic factors influencing karst development in the Frederick region of Maryland
Tuesday, July 31, 2007

Karst features pervade the outcrop belts of Triassic, Ordovician, and Cambrian rocks in the Frederick Valley region of Maryland's western Piedmont. Detailed stratigraphic analysis and geologic and karst mapping demonstrate that individual stratigraphic units have differing susceptibilities of karst feature creation. Although the Triassic Leesburg Member of the Bull Run Formation and Rocky Springs Station Member of the Cambrian Frederick Formation have many surface depressions within their outcrop belts, the Lime Kiln Member of the Frederick Formation and the Cresella, Fountain Rock, and Woodsboro members of the Ordovician Grove Formation have the greatest potential for development of catastrophic
Resources

The “information core” with access to ...

- Online publications
- Research reports
- Scanning Electronic Micrograph (SEM) database (UNM)
- Topics
- Links
Resources:
Online Publications

Links to current/past online content.

Content representation can accommodate variable access rights.

KIP invites inquiries from those who would use KIP infrastructure for their publications.
Resources: Research Reports

Report abstracts with links to preprints or full document.

Recommend Creative Commons licensing model to protect rights.
- Creator assigns rights and protections

THE IMPACT OF GREY LITERATURE IN ADVANCING GLOBAL KARST RESEARCH

Todd A. Chavez, Dr. Anna H. Perrault, and Pete Reehling, University of South Florida
Courtney Crummett, National Library of Medicine

A survey of the global karst community was conducted in 2006. The survey was distributed via the World Wide Web to known karst researchers. The instrument was designed to generate an initial inventory of core grey information types, to assess levels of usage of grey information by the respondents, and to gauge the karst community's willingness to participate in building and expanding both this collection and the associated controlled vocabularies.

Forthcoming in Publishing Research Quarterly

Read the preprint.

Attribution - Non-Commercial - No Derivatives
Resources:
SEM Database

Links to the DSpaceUNM collection of scanning electron micrographs.

• 1076 image dataset + metadata
• Plans to mirror the UNM implementation
Resources:

Topics

Highlights significant ongoing research projects on a range of karst topics.

Flexible criteria rely on active community participation/input.

Current examples …

• Karst Oral History Project
• Human Dimensions Research
Community

Connect with …
- Discussion forums
- Karst organizations
- People (no email)

All community content is searchable.
Registered users can participate in discussions.
Community Forums

Discuss current issues in karst research.

Post comments to discussion topics.

Subscribe to and track the activity of specific forums.
News

Browse and search …

- Announcements
- Events
- New publications
- Research updates

GEOLOGIC AND ANTHROPOGENIC FACTORS INFLUENCING KARST DEVELOPMENT IN THE FREDERICK REGION OF MARYLAND

David K. Brezinski

KARST regions of Maryland (Brezinski & Reger, 2002)

July 21, 2007

Kart features provide the extant belts of Tertiary, Ordovician, and Cambrian rocks in the Frederick Valley region of Maryland’s eastern Piedmont. Detailed stratigraphic analysis and geologic and karst mapping demonstrate that individual stratigraphic units have differing susceptibilities of karst feature creation. Although the Tertiary Lehigh Member of the Ball Run Formation and Rocky Springs Station Member of the Cambrian Frederick Formation have many surface depressions within their settings belts, the Lime Kill Member of the Frederick Ferronian and the Cerroville, Fountain Rock, and Woodbine members of the Ordovician Cove Formation have the greatest potential for development of catastrophic collapse sinkholes. Although these four members have the highest relative susceptibility, human activity can increase the potential for sinkhole activation in all units. Reconfiguring of surface drainage patterns, unlined drainage, and streamside management areas and removal of significant confining deposits significantly increase sinkhole development, but mainly, these units are inherently more susceptible to begin with.


Alpine Underground 2007

Friday, November 9, 2007

KARST HORIZONS: 15TH INTERNATIONAL CONGRESS OF SPELEOLOGY

2009 July 19-26, Kerrville, Texas USA

KWI Special Publication 11 (2007)

BENCHMARK PAPERS IN KARST SCIENCE

Go
Stay Current

RSS feeds

• Capture changes in the collection, forums, news, and events
• Read in the browser
• Access individual records by subscribing
• Add “Google Gadget”
Core Function: Information Discovery

Searching the Portal
Accessing Information
Five options tailor search targets:

- Karst Information Portal (comprehensive)
- Karst Collection
- Forums
  - Posts/comments
- News
  - Announcements
  - Events
  - New publications
  - Research updates
- KIP Google Co-op

Over 4,000 references for karst-related data and information sources forms the core of the collection.

Queries a Google-powered customized search engine leveraging participant expertise with Google’s search technologies.
Searches can be refined using several criteria:

- Geographic location (uses the United Nations Statistics Division Geographical Region and Composition standard)
- Document type
- Language
- Terms (based on the UIS’s Speleological Subject Classifications)
KIP search is powered by Adobe ColdFusion Verity application.

Relevance ranking and results order are based on Verity’s search algorithm.
Tags link users to related resources.

KARST COLLECTION RESULTS

Associated File:

DESCRIPTIVE METADATA...

Resource Title:
Borehole geophysical techniques to determine groundwater flow in the freshwater/saline-water transition zone of the Edwards aquifer, south-central Texas

Authors:
Lambert, R.B.; Hunt, A.G.; Stanton, G.P.; Waugh, J.

Year Published:
2006

Keywords:
USGS, Edwards Aquifer, Groundwater flow, Boreholes

Description:

Abstract:
The Edwards aquifer is the primary water supply for nearly 2 million people in the San Antonio area of south-central Texas. The freshwater/saline-water transition zone in this carbonate aquifer is fresh to moderately saline with dissolved-solids concentrations ranging from 1,000 to 10,000 milligrams per liter. Recent work by the U.S. Geological Survey in cooperation with the San Antonio Water System has shown that the transition zone is physically and chemically more dynamic than previously thought, and that there is vertical and horizontal stratification within the transition zone. Borehole geophysical techniques including fluid profiling of conductance and temperature, acoustic telemetry surveys, and flowmeter surveys are being used in monitor well transects to indicate which fractures and hydrostratigraphic subdivisions in the Edwards aquifer are more transmissive. When combined with other geologic, geochemical, and hydrologic information, these data can provide a two-dimensional subsurface representation of the freshwater/saline-water transition zone. This information is needed to improve the understanding of how water moves in and near the transition zone.

Journal Title:
U.S. Geological Survey Karst Interest Group Proceedings

Pages:
39

Place of Publication:
Rapid City, SD

RESEARCH OVERVIEW MENU

- Search the Karst Collection
- Contribute to the Karst Collection

RELATED TAGS
- Boreholes
- Edwards Aquifer
- Groundwater Flow
- US Geological Survey

KARST COLLECTION TAG

GROUNDWATER FLOW (10 RECORDS)

- Borehole geophysical techniques to determine groundwater flow in the freshwater/saline-water transition zone of the Edwards aquifer, south-central Texas
  Submitted: 2007-06-21 10:14 AM

- Comparisons Among Ground-Water Flow Models and Analysis of Discrepancies in Simulated Transmissivities of the Upper Floridan Aquifer in Ground-Water Flow Model Overlap Areas
  Submitted: 2007-06-14 12:32 PM
  From USGS Water-Resources Investigations Report 01-4011.

- Conceptualization and Simulation of the Edwards Aquifer, San Antonio Region, Texas
  Submitted: 2007-06-21 11:11 AM

- Dual Conductivity Module (DCM), A MODFLOW Package for Modeling Flow in Karst Aquifers
  Submitted: 2007-06-21 11:08 AM
Access to Resources

Links to select resources external and/or internal to KIP.

When content is not available online and is limited in distribution … information about host repository functions as location aid.

Requirements for access and copyright.

- Submitted by contributors
- Clarified by editors
KIP as a Research Tool

Penelope Boston
Research Uses for KIP

Provide new science from existing data

Data mining of existing data sets

New sets of eyes and brains can bring fresh perspective to “old” data

Could recruit non-cavers, and non-field scientists to karst and cave studies, as long as they didn’t have to go into holes in the ground!

Development of new collections of existing data to facilitate comparison and insight
Karst Images Exist at Different Scales
• Scanning electron micrographs (SEMs) are a rich source of information that is difficult to share.

• Journal articles typically only contain a few SEMs.

• Interpretation, discovery, and sharing of new information from visual info is impeded.
KIP SEM Database

Solution?

• Online database of images
  • Searchable & sharable
  • Ability to place a group of images in a collaborative workspace
  • Opportunity for discussion between researchers
  • Users able to tag with their own keywords

• Test database: SEM images
Example

User requirements and scenarios …

To answer the questions …

Are ferromanganese deposits of different colors occurring in different geological/geochemical settings and do the biological morphologies that occur with each color vary across colors?
To pursue these questions a scientist would want to:

1. Pull up a Compass map of a cave with lots of ferromanganese deposits (FMDs) such as Lechuguilla Cave and see a plot of where FMDs occur and have been sampled.

2. Call up images of biological morphologies that have been samples from these FMDs. Obtain data on the color of the FMDs from which the biological forms came.

3. Query what chemistry is known about these FMDs and their substrate.

4. Be able to see a map of where reef and backreef (geological setting) occur in the cave vis a vis the FMD deposits.

5. See associated macroscopic images of the deposits in color.

6. Find information about FMD mineralogical setting.

7. Create a dataset of biological morphologies found in FMDs and associated mineralogical setting data.

8. Run statistical tests on the dataset. Be able to plot different geochemical trends on a map to give geographical information (both horizontal and vertical depth information).

9. Access contact information of scientists who have entered FMD images or data.
Dspace SEM sample image.
Layer

Issue Date: 22-Jan-2006

Abstract: Another cholla bridging between crystals. Thin section of small, dense pool fingers, cut perpendicular to long dimension. Etched 15sec in 5% HCl. Images tied to thin section photomicrograph. 1-25 in micritic core, 26-63 spar to micrite area in outer layer

URI: http://hdl.handle.net/1928/1273

Appears in Collections: Scanning Electron Photomicrographs and Spectra

Files in This Item:

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
<th>Size</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>H302A_45.TIF</td>
<td></td>
<td>770Kb</td>
<td>TIFF</td>
</tr>
</tbody>
</table>

View/Open

Show full item record
Recommend this item

[Comment] [Mark]
<table>
<thead>
<tr>
<th>Morphotype Photos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below are type photos of key morphological shapes seen in scanning electron micrographs (SEM). Use these as a reference for keywords to use in searching the SEM database.</td>
</tr>
<tr>
<td>Attachment: Circular or semi-circular ring of material attached to mineral, restricted to those about 1 micron in size; likely former attachment site for microbes.</td>
</tr>
<tr>
<td>Bridging: Film or filaments that bridge between crystals.</td>
</tr>
<tr>
<td>Cholla: Filaments with cross-hatch texture (like dead cholla cactus)</td>
</tr>
<tr>
<td>Clay: Protruding areas of clays, usually an insoluble residue in etched samples.</td>
</tr>
<tr>
<td>Crust: Hollow-looking shapes, when etched through they are seen to be very thin coatings (&lt;1μm thick) on mineral. Can form irregular sphere shapes that sometimes connect to form worm-tube like shapes or may form on dogtooth spar.</td>
</tr>
<tr>
<td>Elongate: Very small, equant to elongate calcite crystals (&lt; 1 μm); may form outer layer of large crystal.</td>
</tr>
</tbody>
</table>
Initial DSpaceUNM Metadata

**Title:** H302A_45.TIF

**Authors:** Spilde, Mike  
Melim, Leslie

**Keywords:** "cholla, bridging"  
Microbiology -- SEM photography -- Magnification 10000X  
Microbiology -- SEM photography -- Speleothem type -- pool finger  
Microbiology -- SEM photography -- 15kV accelerating voltage  
Microbiology -- SEM photography -- Location -- UNM  
Microbiology -- SEM photography -- Camera type -- JEOL 5800LV  
Microbiology -- SEM photography -- Resolution -- high  
Microbiology -- SEM photography -- Scan -- med  
Microbiology -- SEM photography -- Spot size -- 6  
Microbiology -- SEM photography -- Working distance -- 15  
Microbiology -- SEM photography -- Coating type --  
Microbiology -- SEM photography -- Thin Section -- QCY-13  
Caves -- Hidden Cave -- Lily Pad Room -- 704-03 -- Pool Precipitates -- Sample No. HC040730-2a -- Sample  
Description: Thin section of small, dense pool fingers, cut perpendicular to long dimension. Etched 15 sec in 5% HCl. Images tied to thin section photomicrograph. 1-25 in micritic core, 26-63 spar to micrite area in outer layer

**Issue Date:** 22-Jan-2006

**Abstract:** Another cholla bridging between crystals.. Thin section of small, dense pool fingers, cut perpendicular to long dimension. Etched 15 sec in 5% HCl. Images tied to thin section photomicrograph. 1-25 in micritic core, 26-63 spar to micrite area in outer layer

**URI:** [http://hdl.handle.net/1928/1273](http://hdl.handle.net/1928/1273)
The KIP Consortium: How Can You Get Involved?

George Veni
Questions?

The KIP Project Partners Thank You

NATIONAL CAVE & KARST RESEARCH INSTITUTE
http://www.nckri.org/

UNIVERSITY OF SOUTH FLORIDA LIBRARIES
http://www.lib.usf.edu/

UNIVERSITY LIBRARIES, UNIVERSITY OF NEW MEXICO
http://elibrary.unm.edu/

UNION INTERNATIONALE de SPÉLÉOLOGIE (UIS)
http://www.uis-speleo.org/