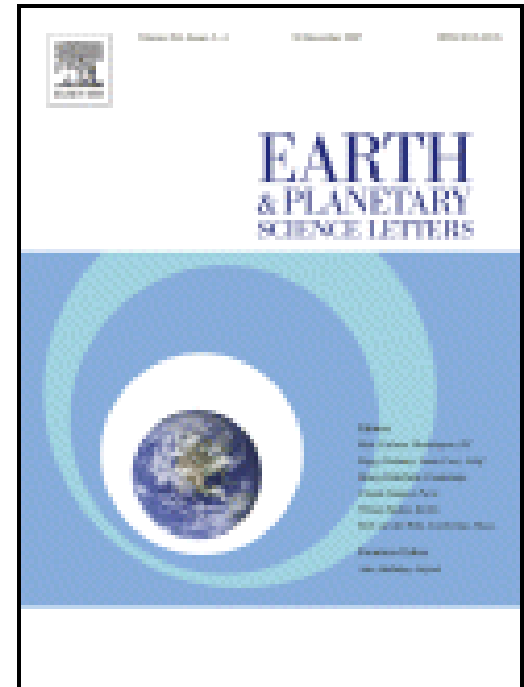


EARTH & PLANETARY SCIENCE LETTERS



EPSL – 2007 Overview

- 1,086 papers submitted
- 559 papers accepted
- 518 papers published (6,814 pages)

- ~5,000 institutional user accounts
- ~15,000 individual users

- ~12,000 papers online (on ScienceDirect)
- ~750 K full-text downloads (mostly PDF)

- Subject Content - Solid Earth and Planetary Science
 - Geochemistry, geochronology, seismology, geodynamics, paleomagnetism, marine chemistry, paleoclimate, landscape evolution (erosion, mountain building, soil development), planetary physics and chemistry, cosmochemistry

Earth and Planetary Science Letters

Earth and Planetary Science Letters (EPSL) is the world's leading journal in **geochemistry & geophysics**, aimed at delivering superior quality, both in the papers published and in the speed, thoroughness and transparency of its editorial process

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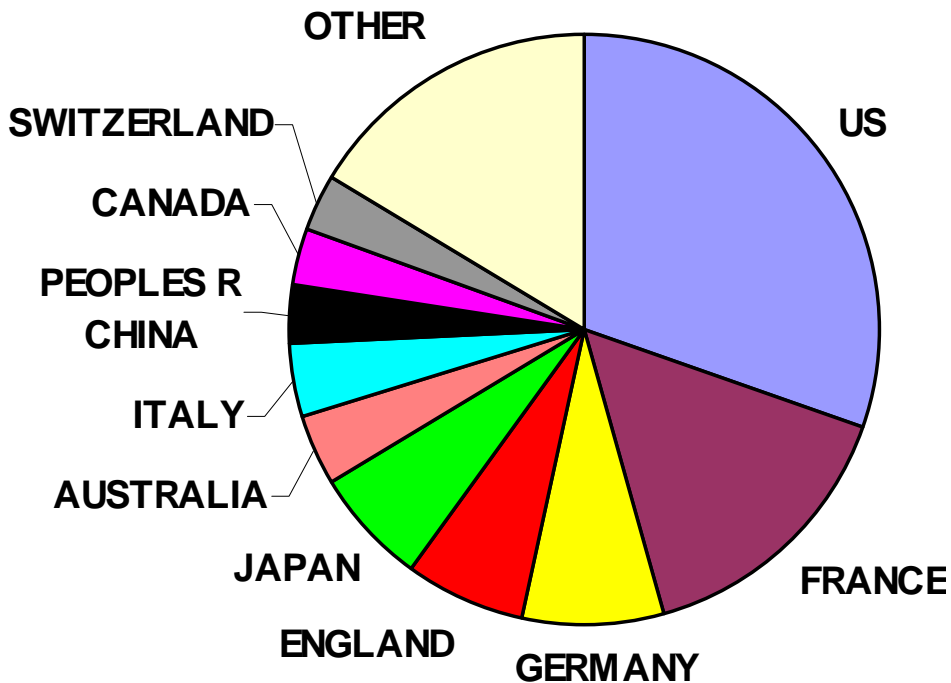
Impact factors compared

	2000	2001	2002	2003	2004	2005	2006
<i>EPSL</i>	2.882	2.700	2.716	3.528	3.499	3.434	3.887
<i>GCA</i>	2.534	2.614	2.756	3.465	3.811	3.897	3.751
<i>Chem Geo</i>	1.824	2.532	2.437	2.330	3.174	2.940	2.716
<i>PEPI</i>	1.715	1.248	1.246	2.034	2.370	2.420	2.440
<i>Paleo.</i>	3.740	3.177	3.871	3.048	3.018	3.233	3.018
<i>JGR</i>	2.680	2.609	2.245	2.992	2.839	2.784	2.800
<i>GRL</i>	2.719	2.516	2.150	2.422	2.378	2.491	2.602
<i>G-cubed</i>	-	-	-	2.623	2.570	2.370	2.384
<i>GJI</i>	1.544	1.366	1.277	1.636	2.014	1.826	2.353

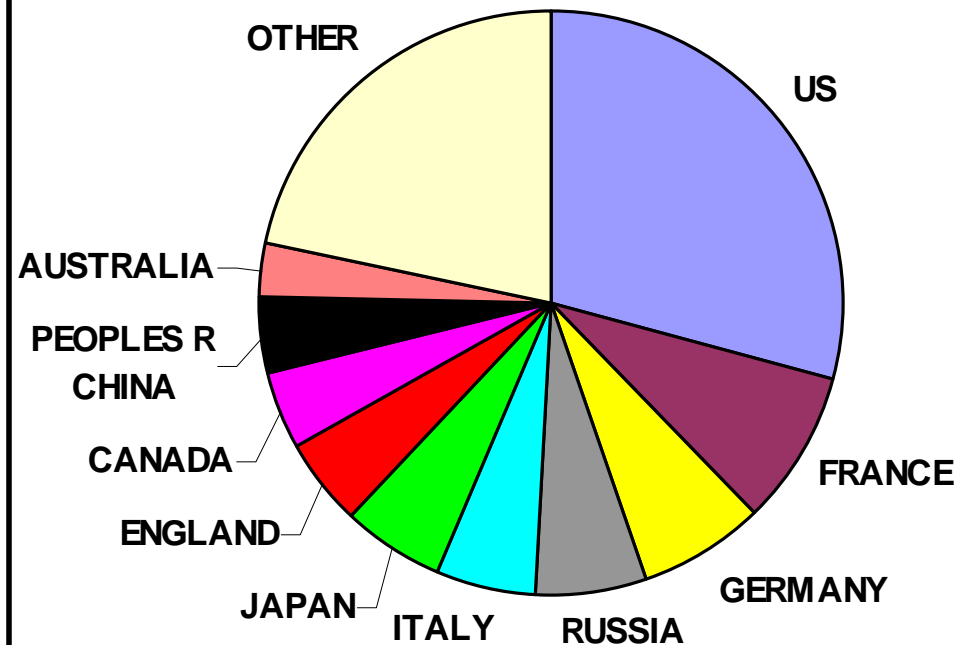
Source: ISI

Origin of EPSL content 2001-2005

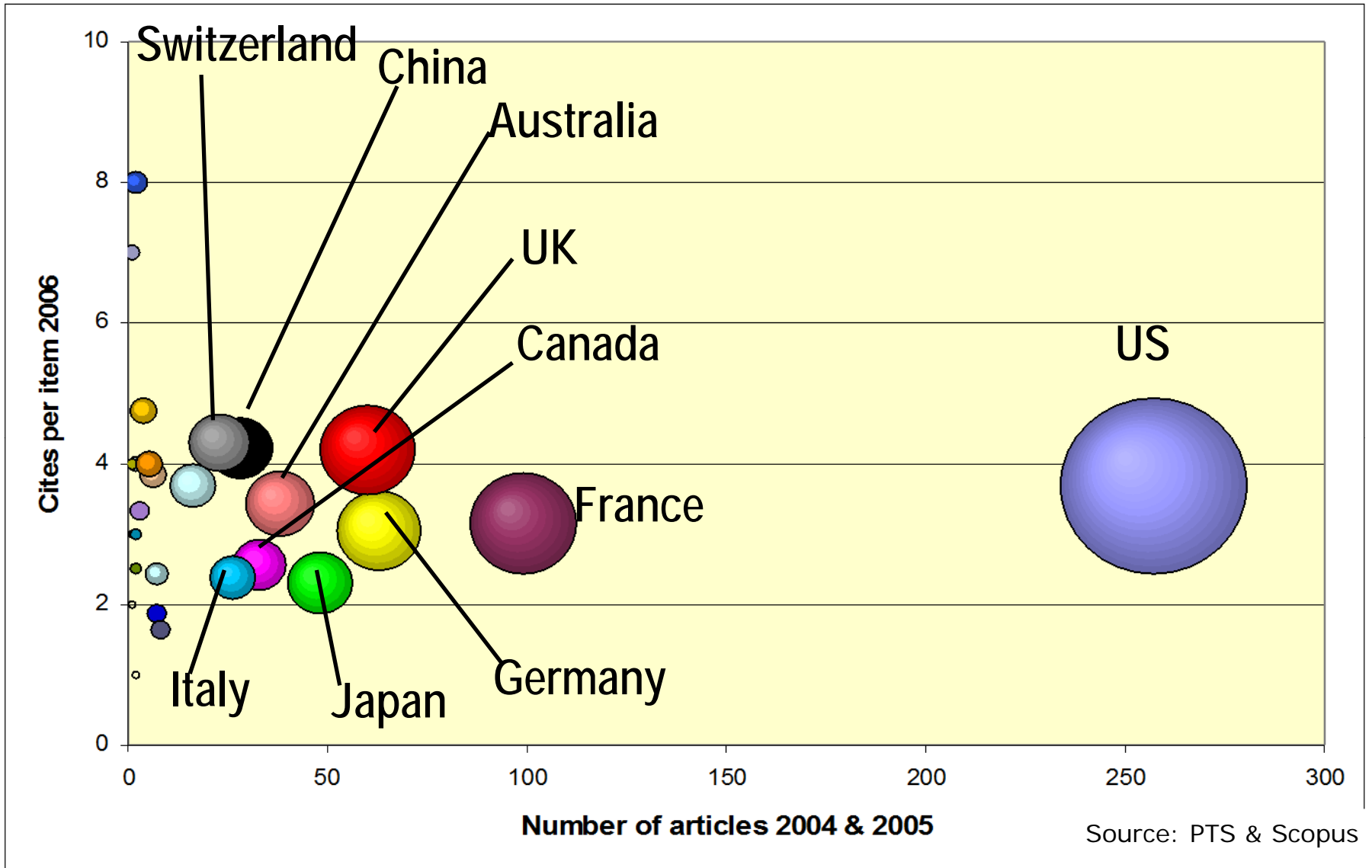
*Earth & Planetary
Science Letters*



**ISI's Geochemistry &
Geophysics category**



EPSL citability by country

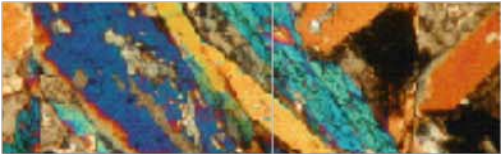


EPSL Data Policy

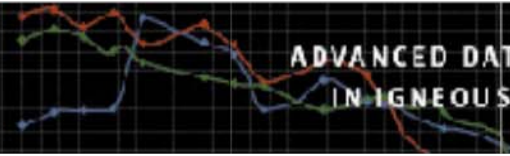
- Data discussed in a paper must either be published with the paper, be in a referenced published paper, or in an open data archive
- Diversity of fields brings diversity of data types:
 - Seismology - analyses of large datasets archived in national data warehouse (IRIS-DMC)
 - Geodynamics - computer codes usually residing with author
 - Geochemistry - sample metadata (location, rock type, etc.) and results. Long term “public” storage just being addressed through NSF-supported geochemistry data management efforts.
- Data increasingly presented as electronic supplemental files due to data volumes.

Data from Journal to User

- The old way - Type data into individual spread sheets
- Improvements
 - Electronic supplements now allow digital data tables
 - Greater concern over metadata content
- The future - Transfer of data to openly accessible relational databases



earthchem



ADVANCED DATA MANAGEMENT
IN IGNEOUS GEOCHEMISTRY

EarthChem: A Consortium for On-Line Access to Geologic, Geochemical and Geochronologic Data

EarthChem Data Portal

✓ Access to data from disparate databases

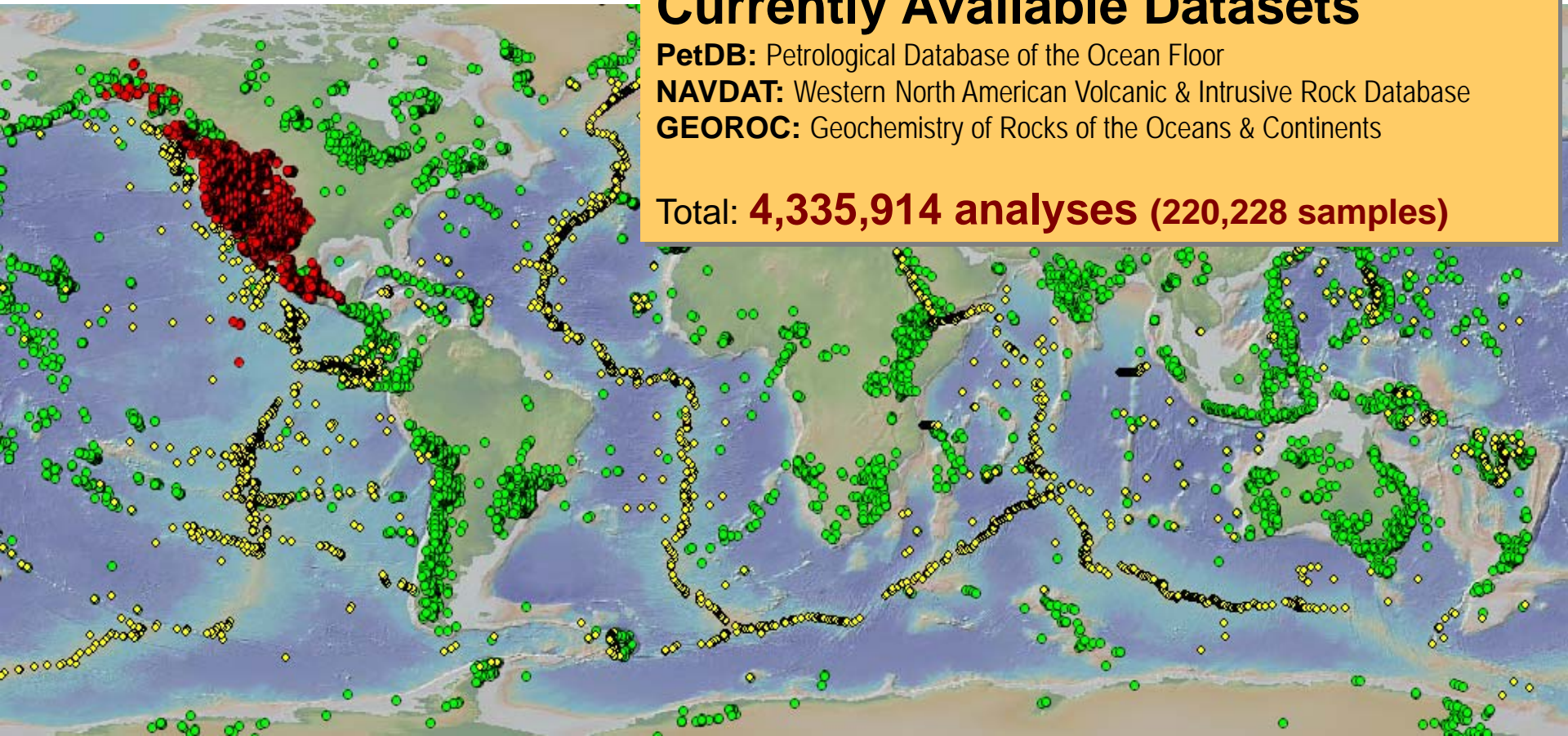
Currently Available Datasets

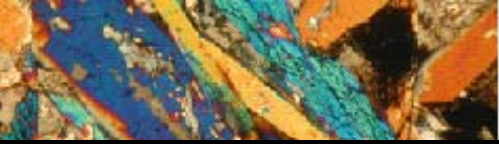
PetDB: Petrological Database of the Ocean Floor

NAVDAT: Western North American Volcanic & Intrusive Rock Database

GEOROC: Geochemistry of Rocks of the Oceans & Continents

Total: **4,335,914 analyses (220,228 samples)**





GEOROC

Oceanic Islands

Convergent Margins

Large Igneous Provinces

A.W. Hofmann
B. Sarbas
U. Nohl

[Home Content](#)

GEOROC

Query by

[Bibliography](#)

[Tectonic Setting](#)

[Geography](#)

[Chemistry](#)

[Petrography](#)

[Precompiled Files](#)

State: 09/29/2003

© MPI für Chemie, Mainz,
[Germany](#)

GEOROC

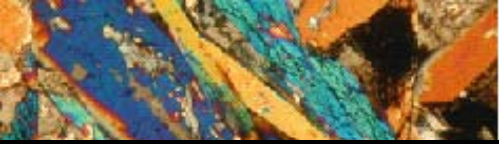
GEOROC is part of [EarthChem](#), a new consortium consisting of [PetDB](#), [NAVDAT](#) and [GEOROC](#). [EarthChem](#) serves the international geochemical community with chemical and isotope data of igneous rocks and minerals, together with metadata about samples and analytical procedures.

GEOROC currently covers igneous rocks from
Convergent Margins
Oceanic Islands and **Large Igneous Provinces**

GEOROC is being compiled by the database team at the Max-Planck-Institut für Chemie in Mainz, Germany.

Please direct e-mail comments to
sarbas@mpch-mainz.mpg.de

Server administration by
[GWDG](#)



PetDB

Oceanic Crust Generated at Mid-Ocean Ridges (incl. BAB, Seamounts, Old Oceanic Crust)

K. Lehnert
C.H. Langmuir
W.C. Lenhardt
S. Vinayagamoorthy

PETDB
Petrological Database of the Ocean Floor

[About PETDB](#) | [Registration](#) | [EarthChem](#) | [Related Sites](#) | [Feedback](#) | [Statistics](#)

PetDB is a data management and information system for geochemical and petrological data of igneous and metamorphic rocks from the ocean floor generated at spreading centers (mid-ocean ridges, back-arc basins, young near-axis seamounts, and old oceanic crust).

PetDB contains all types of published analytical data measured on rocks, glasses, minerals, and melt inclusions (major and trace element data, stable and radiogenic isotope ratios, noble gas data, etc.).

PetDB contains all essential metadata about the samples and the analytical values including detailed information about the sample location, sampling process, petrography, analytical method, and data quality. Every analytical value in PetDB is linked to its original reference.

PetDB allows you to select customized subsets of the data through customized queries providing means to search the database with a wide range of criteria. You can download the data sets to your computer.

PetDB currently contains more than 700,000 chemical values for more than 30,000 rock samples from all of the Earth's oceans.

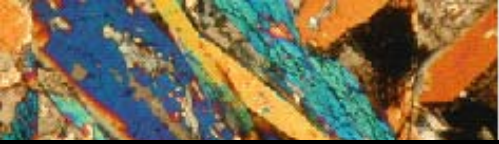
PetDB is a founding member of [EarthChem](#), the consortium for Solid Earth Geochemical databases.

PetDB is optimized for Internet Explorer and Netscape Browsers versions 6 and above and requires that javascript be enabled

Build Query
Pre-defined Queries
Tools

Red dots are current station locations included in the database.

Sponsored by Ridge Interdisciplinary Global Experiments
 Presented by Lamont-Doherty Earth Observatory of Columbia University
 Database hosted by Center for International Earth Science Information Network
 Supported by National Science Foundation



NAVDAT

Cenozoic igneous rocks from
Western North America



**NAVDAT: A Western
North America Volcanic
and Intrusive Rock
Database**

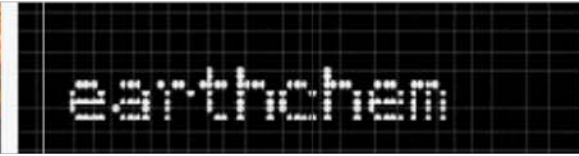
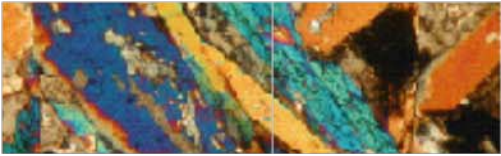
**J.D. Walker
R.A. Black
A.F. Glazner
G.L. Farmer
R.W. Carlson
J.N. Grossman
L. Ferrari**

[Enter the Database](#) (Requires Latest Netscape or Explorer Browser)

What is NAVDAT?

The NAVDAT project is compiling existing age, chemical, and isotopic data from Late Cretaceous to Holocene extrusive and intrusive igneous rocks from the western United States, British Columbia, and northern Mexico into a web-accessible electronic database. NAVDAT will be integrated into a geographic information system (GIS) to allow visualization of complex age-compositional patterns in volcanism throughout the study region. The addition of necessary relational and graphical tools will allow users of the database to address a wide variety of issues concerning the geologic evolution and present volcanic state of western North America.

Slide Courtesy of Kerstin Lehnert

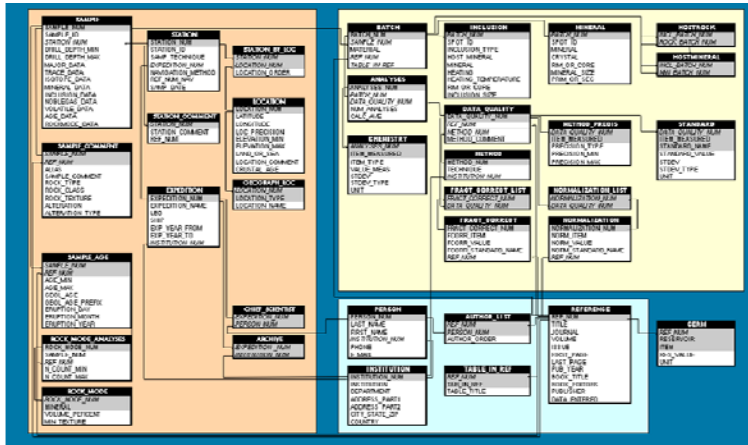


Geology, Geochemistry, Geochronology

- “Individual” nature of research provides no obvious central organization for data management
 - GERM (Geochemical Earth Reference Model)
 - GEOROC (Volcanic Rock Geochemistry)
 - PetDB (Ocean Floor Igneous Rock Geochemistry)
 - NAVDAT (North American Cenozoic Igneous Rock Geochemistry and Geochronology)
 - CHRONOS (Paleostratigraphy, Geochronology)
 - GEON (Advanced ITR for Comparing Diverse Geologic Data Sets)

Achievements

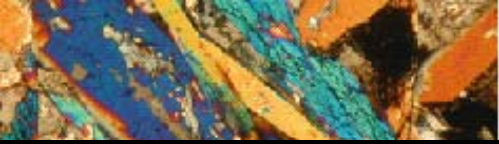
✓ Data Model for Rock Geochemistry



(LEHNERT et al. 2000)

- Accommodates all essential metadata
- Generally applicable for sample-based petrological and chemical data for rocks
- All 3 databases use the same schema

✓ Compatibility



Achievements

✓ Dynamic interactive web-based user interfaces

Build Database Query

Geographic Parameters	<input type="radio"/> Latitude/Longitude <input type="radio"/> State <input checked="" type="radio"/> none
Age Parameters	<input type="radio"/> Minimum and Maximum Age <input checked="" type="radio"/> None
Chemistry Parameters	<input type="radio"/> Isotopes <input type="radio"/> Major Elements <input checked="" type="radio"/> None
Reference Parameters	<input type="radio"/> GEORef <input checked="" type="radio"/> None

DIRECTIONS

Select items to use in list. Press the "continue" button will take you to a new page or comments please mail

Geographic
If geographic parameter will prompt for state or latitude selected, then the entire

Age
If you would like to get "Minimum and Maximum Age" then select "None."

Chemistry
Depending on the parameter fill in Major, Isotope, Trace next page. If "None" is selected to enter chemical ranges

Reference
You can limit the sea number. If "none" is selected

[Home Content](#)
GEOROC
 Query by
[Bibliography](#)
[Tectonic Setting](#)

Query by Petrography

Note: Rock names are those of the original paper.
 Please choose rock type

- [1. Volcanic Rocks](#)
- [2. Plutonic Rocks](#)
- [3. Mantle Xenoliths](#)

(with classification by $[\text{Na}_2\text{O} + \text{K}_2\text{O}]/\text{SiO}_2$)

OLIVINE >= <= Search Clear

or substring, case insensitive:

or substring, case insensitive:

with Rock Mode Analyses, check the Box Search Clear

only partly (as a substring), e.g., entering andesite returns both andesite and anditic, entering andesite doesn't return andesitic!

PETDB
 Petrological Database of the Ocean Floor

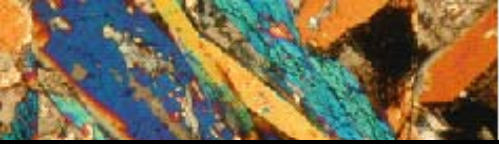
About This Database | Contact Us | Links | Help | Abbreviations

Select items

(Note: There are two checkboxes for each item. When the left-side one is checked, data for this item will be returned. When the right-side one is checked, this item will be used to constrain sample set based on its chemical concentration.)

Select All Groups Clear All Groups
 (All the buttons are designed for left-side checkboxes ONLY.)

Major	REE	Trace	Isotopic_ratio	Volatile	Noble_Gas
[All]	[All]	[All]	[All]	[All]	[All]
Clear	Clear	Clear	Clear	Clear	Clear
<input type="checkbox"/> Al2O3	<input type="checkbox"/> Ce	<input type="checkbox"/> Ba	<input type="checkbox"/> Hf176_Hf177	<input type="checkbox"/> CO2	<input type="checkbox"/> He3_He4(R/Ra)
<input type="checkbox"/> CaO	<input type="checkbox"/> Dy	<input type="checkbox"/> Co	<input type="checkbox"/> Lu176_Lu177	<input type="checkbox"/> Cl	
<input type="checkbox"/> Fe2O3	<input type="checkbox"/> Er	<input type="checkbox"/> Cr	<input type="checkbox"/> Nd143_Nd144	<input type="checkbox"/> F	
<input type="checkbox"/> FeO	<input type="checkbox"/> Eu	<input type="checkbox"/> Cs	<input type="checkbox"/> Pb206_Pb204		
<input type="checkbox"/> FeOT	<input type="checkbox"/> Gd	<input type="checkbox"/> Cu	<input type="checkbox"/> Pb207_Pb204		
<input type="checkbox"/> H2O	<input type="checkbox"/> La	<input type="checkbox"/> Hf	<input type="checkbox"/> Pb208_Pb204		
<input type="checkbox"/> H2OP	<input type="checkbox"/> Lu	<input type="checkbox"/> K	<input type="checkbox"/> Sm147_Nd144		
<input type="checkbox"/> K2O	<input type="checkbox"/> Nd	<input type="checkbox"/> Mo	<input type="checkbox"/> Sr87_Sr86		
<input type="checkbox"/> LOI	<input type="checkbox"/> Sm	<input type="checkbox"/> Nb			
<input type="checkbox"/> MgO	<input type="checkbox"/> Tb	<input type="checkbox"/> Ni			
<input type="checkbox"/> MnO	<input type="checkbox"/> Yb	<input type="checkbox"/> Rb			
<input type="checkbox"/> Na2O		<input type="checkbox"/> S			
<input type="checkbox"/> P2O5		<input type="checkbox"/> Sc			
<input type="checkbox"/> S		<input type="checkbox"/> Sr			
<input type="checkbox"/> SO3		<input type="checkbox"/> Ta			
<input type="checkbox"/> SiO2		<input type="checkbox"/> Th			
<input type="checkbox"/> TiO2		<input type="checkbox"/> U			
		<input type="checkbox"/> V			



NAVDAT Versatile User Interface

Rough Map,
All Samples
from Nevada

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

Element Variation Diagram for
Nevada Dataset. Each Point is
Active and Returns the Tabled
Information Shown Above.
Samples Keyed to GEOREF
number of reference.



PetDB Integration of Distributed Data

Aliases

Alias	reference
CTW 9D-1	VERMA, S P: 1982
CTW-9D1	FISK, M R: 1982
CTW 9D-1	SCHILLING, J G: 1982
9D-1	SCHILLING, J G: 1976
CTW9D-1G	MARTY, B: 1986
CTW9D-1	MARTY, B: 1987

Sample info

Sample	Station
SampleID: MELCCTW-009-001	Station: MELCCTW-009
Rock description: v, basalt	Expedition: COCOTOW
Alteration: f	Sampling Technique: dr
	Tectonic setting: SPREADING_CENTER
	Sampling site: 0.78°N; 89.23°W; -1777 to -1845 meters

Rock chemistry analyses

analyses_num	material	reference	method and data quality	item_measured
706	glass	FISK.1982(4)	EMP(2)	Al2O3, CaO, Cr2O3, FeOT, K2O, MgO, MnO, Na2O, SiO2, TiO2
1636	not specified	VERMA.1982(3)	MS(25)	Rb87_Sr86, Sr87_Sr86
1673	not specified	VERMA.1982(3)	MS-ID(26)	Ba, Cs, K, Rb, Sr
1818	whole rock	SCHILLING.1982(11)	INAA(30)	Ce, Co, Cr, Eu, La, Lu, Sc, Sm, Tb, Tm, V, Yb
31088	whole rock	SCHILLING.1976(444)	INAA(845)	Ce, Eu, La, Lu, Sm, Tb, Tm, Yb
31089	whole rock	SCHILLING.1976(444)	WET(846)	FeOT, MgO, TiO2
91756	glass	MARTY.1987(914)	MS(2495)	CO2, DELTA_C13
91757	glass	MARTY.1987(914)	MS(2496)	CO2, DELTA_C13
98747	glass	MARTY.1986(878)	MS(2707)	He3_He4, He3_He4(R/RA), He4, Ne20

Required:

Unique Sample Identification

Mineral chemistry analyses

analyses_num	mineral	reference	method and data quality	item_measured
495	OL	FISK.1982(4)	EMP(2)	CaO, FeOT, MgO, MnO, SiO2
530	PLAG	FISK.1982(4)	EMP(2)	Al2O3, CaO, K2O, MgO, Na2O, SiO2

Ambiguous Sample Naming

Name	Location	Publication	Cruise
D3-1	SEIR	<i>ANDERSON, 1980</i>	VM3301 (Vema)
D3-1	North Fiji Basin	<i>EISSEN 1994</i>	Starmer 1 (Nadir)
D3-1	Shimada Smt	<i>GRAHAM 1988</i>	S1-79 (Sea Sounder)
D3-1	Gorda Ridge	<i>CLAGUE 1984</i>	KK2-83NP (Kana Keoki)
3-1	Lamont Smts	<i>BATIZA 1982</i>	RISE III (New Horizon)



Sample names are duplicated.

Sample names are modified or changed.



Dredge sample 3, Amphitrite Cruise 1963/4	
D3	<i>Engel 1964</i>
D-3	<i>Scheidegger 1981, Schilling 1971</i>
PD3	<i>Tatsumoto 1965, 1966</i>
PD-3	<i>Hedge 1970, Muehlenbach 1972</i>
PV D-3	<i>Engel 1965</i>
AMPH3D	<i>Pineau 1976</i>
AMPH-D3	<i>MacDougall 1986</i>
AMPH D-3	<i>Sun 1980, Schilling 1975</i>
AMPH 3-PD-3	<i>Hart 1971</i>
S-10	<i>Subbarao 1972</i>

DSDP Leg 46, Hole 396B, Section 22, Sample 3, 28-33cm

46396B 22 3,28-38	<i>Dungan 1978</i>
396B 22 3,28-38	<i>Muehlenbach 1979</i>
249	<i>Dungan 1978</i>
DSDP046-0396B-022-003/28-38	<i>PetDB</i>

**Examples from the
PetDB Database**

IGSN **SESAR** System for Earth SAmples Registration



[About SESAR](#) || [Partners](#) || [News](#) || [Contact Us](#)

How to use SESAR

Register Samples

Query Sample Catalog

For Developers

Batch registration forms

SESAR Home

SESAR is a centralized registry that provides and administers unique identifiers for Geoscience samples - the International Geo Sample Number IGSN.

Use of the IGSN will help to avoid ambiguity, systematize sample designation, and ensure that all information associated with a sample is preserved and accessible on a global scale.

Unique sample identification will aid the preservation and curation of samples, and facilitate sharing of samples and sample-based data. By registering your samples, you automatically contribute to building a global catalog of Geoscience samples.

"I found SESAR!"...writes a Japanese colleague

SESAR use is expanding across the globe...



Contribute to the Global Sample Catalog!



Quick Login:

Username:

Password:

IGSN

International Geo Sample Number

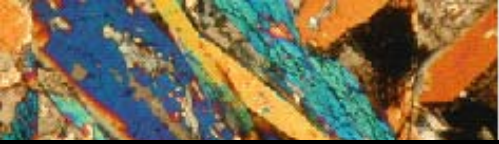
The IGSN is a persistent unique identifier for all types of Geoscience sample, e.g. cores, rocks, minerals, fossils, and fluids, that is used in sample curation, data publication, and digital data management.

More ... ▶▶

News



February 2007: Curation of mine samples



EarthChem: Action Items

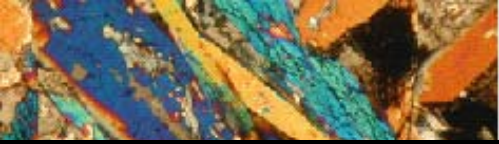
- **Standards for metadata and data reporting**
- **Unique sample identification**
- **Develop map interfaces**
- **Develop visualization tools for data selection**
- **Integrate tools for data analysis**
- **Implement standards for data encoding and exchange (XML, OAI, OGC, etc.)**
- **Define common vocabularies**

Details can be found in CSEG (Cyberinfrastructure for Solid Earth Geochemistry) workshop report

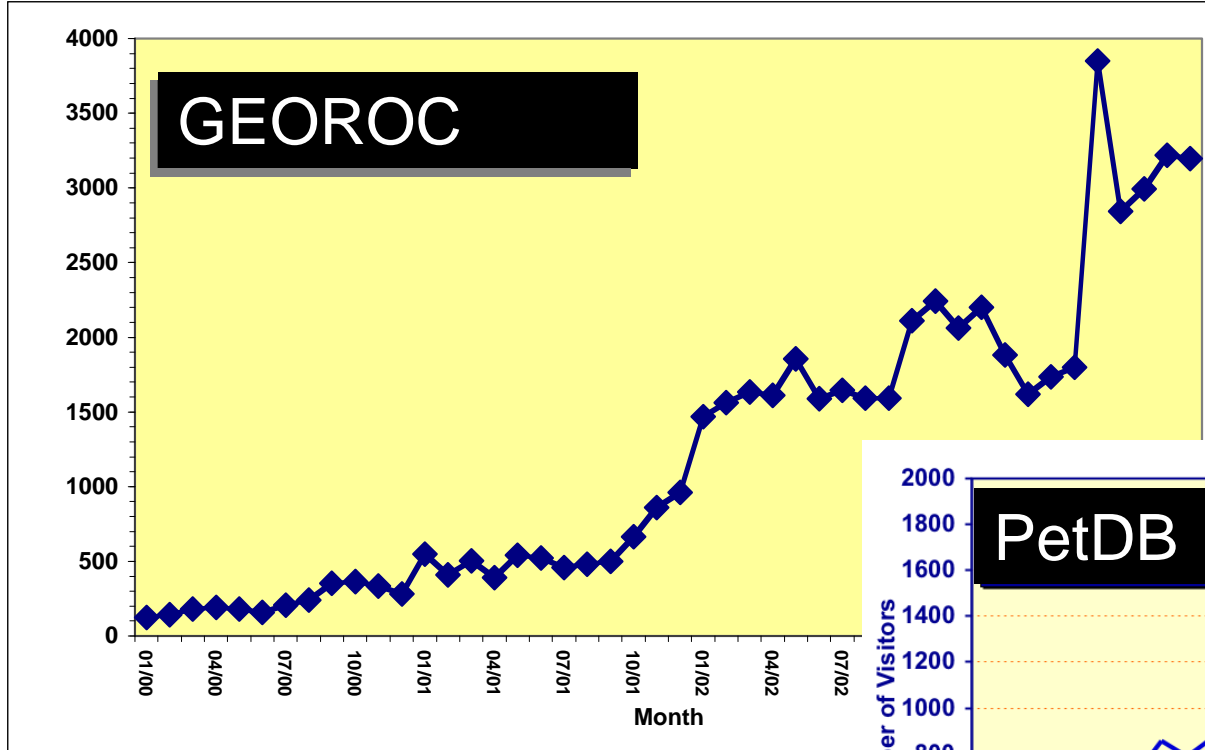
Journal - Database Connection

“The Editors Roundtable”

- Complete data publication
 - Require authors to include tables presenting all data used in a publication (“if it is plotted it should be tabulated”).
- Metadata
 - Require sample metadata, e.g. latitude and longitude
 - Strive for unique sample names.
 - Strive to standardize policies regarding analytical metadata across journals.
- Open access
 - If a relevant database exists, editors should adopt policies to insure that the data will be deposited there.
 - Incorporation into the databases should be as seamless as possible.



A Growing User Community



Unique Users
per month

