

NSF Magnetism Information Consortium

<http://earthref.org/MAGIC/>

MagIC: Next Generation

**Update on MagIC's Archived Data,
Search and Analysis Tools**

TOPICS

- **What does MagIC do?**
- **Searching the MagIC Database**
- **MagIC Contribution Statistics**
- **Future Functionalities**

**Anthony Koppers
Cathy Constable
Lisa Tauxe
Rupert Minnett
Nick Jarboe**



MagIC Home Page

EarthRef.org GERM MagIC SBN ERESE

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Magnetics Information Consortium

in Digital Archive

Databases Events Tools Publications Links

Welcome, Anthony Koppers

Magnetics Information Consortium (MagIC)

Promoting information technology infrastructures for the international paleomagnetic, geomagnetic and rock magnetic community.

PMAG PORTAL

Paleomagnetic Database

This portal provides access to paleomagnetic data from a broad range of studies. Data range from individual measurements to specimen, sample or site level results, and include a wide variety of derived parameters or associated rock magnetic measurements. Existing data can be viewed and saved in several formats.

RMAG PORTAL

Rock Magnetic Database

Search for data collected during rock magnetic experiments on remanence, anisotropy, hysteresis and susceptibility.

This portal is currently under construction ...

Your Own Contributions

To upload or update your **MagIC Format** data files, please select an option below and continue by clicking the **Upload** button.

- Upload new data
- Update an existing contribution

You have **3267** previous contribution(s) and you are currently logged in as **Anthony Koppers**.

Upload

News

- The 2011 MagIC Science & Database Workshop will be held from Sept. 19th to 21st, 2011, at UCSD. Sept 21st will be dedicated to a Special Hands-on MagIC Data Upload Workshop requiring separate registration. Scientific talks at the meeting will cover a wide range of magnetic topics with keynotes on biogeomagnetism, magnetic stratigraphy, and magnetic properties under high pressure. The Magnetics Information Consortium (MagIC) will highlight its database for geomagnetic, paleomagnetic, and rock magnetic data with a series of talks and hands-on seminars for uploading data. [See the Meeting's Website for More Information ...](#)

- IODP Expedition 330 to the Louisville Seamount Trail will drill four underwater volcanoes off the NE coast of New Zealand. One hypothesis states that these volcanoes formed above a narrow plume of hot mantle rising from a position deep in the Earth's mantle. For decades scientists assumed these mantle plumes remain anchored there for tens of millions years, but there is mounting evidence that

MagIC Links

- [MagIC Software v2.4](#)
 - [PmagPy Software](#)
-
- [Goals and Philosophy](#)
 - [User and Data Policy](#)
-
- [MagIC Data Model](#)
 - [Method Codes](#)
 - [Instrument Codes](#)
 - [Controlled Vocabularies](#)
 - [Public Web Services](#)

- [MagIC Help Library](#)
- [Frequently Asked Questions](#)
- [History and Timeline](#)

- [Contacting Us](#)

Recent Contributions

- **Turnell, H.B. and Briden, J.C. (1983).** Palaeomagnetism of NW Scotland syenites in relation to local and regional tectonics

What is MagIC (1 of 2)

It is an International Consortium which:

- Provides a resource for rock and paleomagnetic data through a database and an effective research tool on the web for scientists and students
- Allows free uploading of data and access
- Has flexibility in metadata structure, allowing for new experiments and data types
- Drills down to the basic measurements, if available
- Contains only time stamped data
- Allows data owners to update their contributions
- Provides personal “private” workspaces
- Uses community-driven data review system JUST LAUNCHED

What is MagIC (2 of 2)

It is an International Consortium which:

- Uses a data model that allows as much or as little data as any researcher can provide (long term goal is “real time” archiving of data as it is acquired)
- Includes migrated data from existing IAGA databases
- Educates the community in its use through online help and hands-on workshops WEDNESDAY
- Provides separate search portals for PMAG/RMAG IN BETA
- Allows filtering and queries to be saved IN BETA

* At the end of talk we will discuss what MagIC will become by AGU time and thereafter ...

What MagIC Doesn't Do

MagIC's Ground Rules are:

- No automatic data entry into the database, users have to upload their own (or legacy) data
- Interpretations of data are the user's responsibility
- There is no uploading of “unpublished” data
- Activated data cannot be deleted, MagIC archives these and versions them when updates become available
- Data will not be recalculated but used as published in the peer-reviewed literature *

* Some data might be recombined (e.g. method codes) or translated (e.g. age units) to provide a more seamless experience to the end user when searching for and filtering the MagIC data.

New MagIC Search Interface

Login to Save Search

Magnetics Information Consortium (MagIC) - Database Search Interface

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Home
Data

Contribution
Location
Site
Sample
Specimen
Measurement

Contribution	Records	Map	DOI Link	PDF Link	Contribution SmartBook	Reference Files	Full Reference
<p>Bowles et al. (2009) by Julie Bowles (Original Author) on 13 Oct 2010 (ver. 1)</p>	<p>290068 Measurements</p>						<p>Bowles, J.A., Hildebrand, J., and Tauxe, L. (2009). Magnetic field intensity on synthetic Martian surface magnetized by a 100 kA current. <i>Geophysical Research Letters</i> 36: 10.1029/2009JE005000</p>
<p>Bowles et al. (2006) by MagIC Database Team on 01 Dec 2009 (ver. 4)</p>	<p>1 Locations 248 Sites 230 Samples 919 Specimens 14153 Measurements</p>						<p>Bowles, J., Gee, J., Soule, S. and Foland, K.A. (2006). Applications to time series of magnetic field intensity at 9°-10°N East Pacific Rise. <i>Geophysics, Geophysics International</i> 10.1029/2005GC000900</p>
<p>Bowles et al. (2005) by MagIC Database Team on 25 Mar 2009 (ver. 3)</p>	<p>1 Locations 13 Sites</p>						<p>Bowles, J., Gee, J., and Sinton, J. (2005). Paleointensity estimates in submarine basaltic glass and implications for dating young flows. <i>Geochemistry, Geophysics, Geosystems</i> 6(7): doi: 10.1029/2004GC000900. issn: 1525-2027.</p>
<p>Bowles et al. (2002) by MagIC Database Team on 13 Feb 2009 (ver. 3)</p>	<p>1 Locations 10 Sites</p>						<p>Bowles, J., Gee, J., Hildebrand, J. and Tauxe, L. (2002). Archeomagnetic intensity results from California and Ecuador: evaluation of regional data. <i>Earth and Planetary Science Letters</i> 203: 967-981.</p>
<p>Bowles et al. (2003) by MagIC Database Team on 17 Jan 2007 (ver. 1)</p>	<p>1 Locations 642 Sites</p>						<p>Bowles, J., Tauxe, L., Gee, J., McMillan, D. and Cande, S. (2003). Source of tiny wiggles in Chron C5: A comparison of sedimentary relative intensity and marine magnetic anomalies. <i>Earth and Planetary Science Letters</i> 203: 967-981.</p>

Keyword Key	Description	Example
"and"	"&" logical AND operator	"Tauxe and 1998" requires both "Tauxe" and "1998" to match
"or"	" " logical OR operator	"intensity or direction", "intensity direction"
"not"	"~" logical NOT operator	"Kent not 1991", "Kent ~1991"
"within"	"{" subset search	"Laj within authors", "argon within keywords"
"fuzzy"	"?" similar spellings	"?paleomagnetic" matches both "paleomagnetic" and "palaeomagnetic"
"near"	"~" term proximity	"section near defined" is more narrow than "section and defined"
"%"	"%" wild card	"basa%" matches both "basalt" and "basalts"
"_"	"_" single character wild card	"19_2" matches both "1982" and "1992"

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Home Data

Contribution (112) Location (229) Site (0) Sample (0) Specimen (0) Measurement (0) Reference Text Search Voo

Contribution	Records	Map	DOI Link	PDF Link	Contribution SmartBook	Reference Files	Full Reference	Abstract
Sort Options: Contribution Date Publication Year 1st Author's Last Name Column Filters: Reference text search Voo MDT Code Type a search here Contribution ID Type a search here All contribution versions Yes No								
Retrieved rows 1 - 30 out of 112 matches								
Pares et al. (2003) by MagIC Database Team on 21 Dec 2006 (ver. 1)	4 Locations						Pares, J., Van der Voo, R., Downs, W., Yan, M. and Fang, X. (2003). Northeastward growth and uplift of the Tibetan Plateau: Magnetostratigraphic insights from the Guide Basin. <i>Journal of Geophysical Research</i> 108(B1): doi: 10.1029/2001JB001349. issn: 0148-0227.	Most of the evidence for the uplift of the Tibetan Plateau comes from its southern and central parts. Although the northern rim has been less studied, it may greatly contribute to the understanding of the mechanism and timing of the uplift. Recent studies on the northeastern part of the plateau suggest that the uplift can largely be explained by Cenozoic thrusting and folding linked to the movement of the Indian Plate.
Weil et al. (2003) by MagIC Database Team on 21 Dec 2006 (ver. 1)	2 Locations						Weil, A.B., Geissman, J.W., Heizler, M. and Van der Voo, R. (2003). Paleomagnetism of Middle Proterozoic mafic intrusions and Upper Proterozoic (Nankowep) red beds from the Lower Grand Canyon Supergroup, Arizona. <i>Tectonophysics</i> 375: 199-220.	
Levashova et al. (2003) by MagIC Database Team on 21 Dec 2006 (ver. 2)	2 Locations						Levashova, N.M., Degtyarev, K.E., Bazhenov, M.L., Collins, A.Q. and Van der Voo, R. (2003). Permian palaeomagnetism of East Kazakhstan and the amalgamation of Eurasia. <i>Geophysical Journal International</i> 152: 677-687.	

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Home Data

Contribution (28) Location (49) Site (0) Sample (0) Specimen (0) Measurement (0) Reference Text Search Voo

Contribution SmartBook	Reference Files	Full Reference	Abstract	Combined External Database Names	Combined Method Codes	Combined Citations
Retrieved rows 1 - 28 out of 28 matches						
		Perroud, H. and Van der Voo, R. (1985). Paleomagnetism of the Late Ordovician Thouars Massif, Vendee Province, France. <i>Journal of Geophysical Research</i> 90: 4,611-4,625.		GPMDDB	LP-DC3 DE-VGP LT-AF-Z LT-T-Z ...	Perroud & Van der Voo 1985
	1	Jackson, M. and Van der Voo, R. (1985). A lower Ordovician paleomagnetic pole from the Oneota dolomite, upper Mississippi River Valley. <i>Journal of Geophysical Research</i> 90(B12): doi: 10.1029/OJGREA0000900000B12010449000001. issn: 0148-0227.	Of 149 oriented specimens of the lower Ordovician Oneota dolomite subjected to stepwise thermal or alternating-field demagnetization, 50 contained a characteristic shallow east-southeasterly or west-northwesterly component of magnetization identifiable on orthogonal vector projections. For 48 other specimens the demagnetization trajectories defined great-circle paths which intersect close to the c ...	GPMDDB	LP-DC4 DE-VGP LT-AF-Z LT-T-Z	Jackson & Van der Voo 1985
	1	McCabe, C., Van der Voo, R., Wilkinson, B. and Devaney, K. (1985). A middle/late Silurian paleomagnetic pole from limestone reefs of the wabash formation, Indiana, U.S.A.. <i>Journal of Geophysical Research</i> 90(B4): doi: 10.1029/OJGREA0000900000B4002959000001. issn: 0148-0227.	A Middle/Late Silurian paleomagnetic pole has been obtained from reefal limestones in north central Indiana. Eleven of 25 collected sites yielded well clustered characteristic directions after stepwise alternating field demagnetization. One additional site gave the same characteristic direction after great circle analysis. These 12 site-level directions were used to calculate the mean paleomagneti ...	GPMDDB		
		Schwartz, S.Y. and Van der Voo, R. (1984). Paleomagnetic study of thrust sheet rotation during foreland impingement in the Wyoming-Idaho overthrust belt. <i>Journal of Geophysical Research</i> 89: 10,077-10,086.		GPMDDB		984
	1	McCabe, C., Van der Voo, R. and Ballard, M. (1984). Late paleozoic remagnetization of the Trenton Limestone. <i>Geophysical Research Letters</i> 11(10): doi:	Samples of the Middle Ordovician Trenton Limestone were collected from 8 sites in Quebec, Ontario, and New York State for paleomagnetic study. Stepwise thermal demagnetization reveals a very well	GPMDDB	LP-DC4 DE-VGP LT-AF-Z LT-T-Z	Schwartz, S.Y. and Van der Voo, R. (1984). Paleomagnetic study of thrust sheet rotation during foreland impingement in the Wyoming-Idaho overthrust belt. <i>Journal of Geophysical Research</i> 89: 10,077-10,086.

LP-DC4 Principal component analysis carried out from analysis of Zijdeveld diagrams
 DE-VGP Pole latitude and longitude calculation from mean VGP
 LT-T-Z Specimen cooling: In zero field
 FS-FD Field drilling using a hand-held portable drill
 SO-SM Magnetic and/or sun compass
 GM-KAR 40K-40Ar age determination
 LP-DIR-T Directional data: Step-wise thermal demagnetization
 LP-PI-ALT-PTRM Paleointensity experiment: Alteration check using a pTRM check
 LP-PI-TRM Paleointensity experiment: Using a laboratory TRM
[More information about these method codes ...](#)

[More information about these citations ...](#)

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Home **Data**

Contribution (46) Location (84) Site (750) Sample (149) Specimen (136) Measurement (0) Reference Text Search

Location	Records	Map	Location Name String(50) Required	Location Name Alternatives List(300) Optional	Location Type String(50) Required	Geographic Begin Latitude Number in Degrees Required	Geographic Begin Longitude Number in Degrees Required
<input type="button" value="Save Results"/> <input type="button" value="Search Filters (1)"/> <input type="button" value="Collapse All Groups"/> <input type="button" value="Show Empty Columns (5)"/> <input type="button" value="Show Column Groups (7)"/> Retrieved rows 1 - 30 out of 84 matches							
Jarboe et al. (2008) ver. 5							
North Mickey 42.7676 # 241.7020 42.7717 # 241.7043 1308.5 - 1628 m above s.l.	24 Sites		North Mickey		Stratigraphic Section	42.76763	241.70203
Pueblo Mountains 41.9114 # 241.2638 42.0629 # 241.3140 1343 - 2336 m above s.l.	18 Sites 2 Samples		Pueblo Mountains		Stratigraphic Section	41.91142	241.26377
Summit Springs 43.1083 # 241.7297 43.1124 # 241.7551 1540 - 1843 m above s.l.	17 Sites 5 Samples		Summit Springs		Stratigraphic Section	43.10825667	241.72974
Guano Rim 42.0850 # 240.5340 42.0890 # 240.5410 1653 - 1795 m above s.l.	39 Sites		Guano Rim		Stratigraphic Section	42.085	240.534
Garcia et al. (2006) ver. 1							
Great Whin Sill Intrusive Complex 55.5000 # 358.0000	43 Sites		Great Whin Sill Intrusive Complex		Region	55.5	358
Macouin et al. (2006) ver. 1							
Machapungwe Data System 4 Sites	4 Sites		Machapungwe Data System		Region	20.70	244.00

Hidden Column Groups:

-
-
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Contribution (46) Location (84) Site (750) Sample (149) Specimen (136) Measurement (0) Reference Text Search coe

Average Age High Number Recommended	Average Age Unit String(30) Recommended	Average Inclination Number in Degrees Recommended	Average Declination Number in Degrees Recommended	Average Alpha 95% Number in Degrees Recommended	Number of Sites Integer Recommended	Number of Samples Integer Recommended	Average K Number Recommended	VGP Latitude Number in Degrees Recommended	VGP Longitude Number in Degrees Recommended
Save 84 rows to <i>magic_download_text_file</i> Save .txt					15	150	51.6	56	139
36	Ma	60.8	63.7	5.7	29	87	17.3	45.1	307.8
125	Ma	62	50.2	5.4	4	15	286.6	51.2	191.7

Retrieved rows 1 - 40 out of 84 matches

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Home Data

Contribution (0) Location (0) Site (129) Sample (0) Specimen (0) Measurement (0) Reference Text Search

Site	Records	Map	Images	Site Name String(50) Required	Location Name String(50) Required	Site Definition String(1) Required	Site Class String(50) Required	Site Lithology String(200) Required	Site Type String(50) Required	Site Latitude Number in Degrees Required	Site Longitude Number in Degrees Required
<p>Save Results Search Filters (1) Collapse All Groups Show Empty Columns (80) Show Column Groups (7) Hide Column Groups (1) Retrieved rows 1 - 30 out of 129 matches</p> <p>Lawrence et al. (2009) ver. 2 » McMurdo</p>											
<p>mc108 -78.2470 # 163.3230</p>	<p>11 Samples 8 Specimens 176 Measurements</p>			mc108	McMurdo	s	Igneous, Extrusive	Basalt	Lava Flow	-78.247	163.323
<p>mc118 -78.2410 # 163.1410</p>	<p>12 Samples 7 Specimens 92 Measurements</p>			mc118	McMurdo	s	Igneous, Extrusive	Basalt	Lava Flow	-78.241	163.141
<p>mc119 -78.2390 # 162.9570</p>	<p>12 Samples 6 Specimens 161 Measurements</p>			mc119	McMurdo	s	Igneous, Extrusive	Basalt	Lava Flow	-78.239	162.957
<p>mc150 -77.7140 # 162.6370</p>	<p>10 Samples 5 Specimens 57 Measurements</p>			mc150	McMurdo	s	Igneous, Extrusive	Basalt	Lava Flow	-77.714	162.637
<p>mc152 -77.7180 # 162.6450</p>	<p>11 Samples 8 Specimens 172 Measurements</p>			mc152	McMurdo	s	Igneous, Intrusive	Basalt	Volcanic Dike	-77.716	162.645
<p>mc154 -77.7190 # 162.6260</p>	<p>10 Samples 7 Specimens 129 Measurements</p>			mc154	McMurdo	s	Igneous, Extrusive	Basalt	Lava Flow	-77.719	162.626

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Home

Data

Welcome to the MagIC Search Interface

Open the Data Tab to Start Searching!

Suggested Searches

- **Recent Contributions**
http://earthref.org/MAGIC/search#recent_contributions
- **My Contributions**
http://earthref.org/MAGIC/search#my_contributions
- **Paleointensity Studies**
<http://earthref.org/MAGIC/search#LP-PI>
- **Directional Studies**
<http://earthref.org/MAGIC/search#LP-DIR>
- **Sites with Images**
http://earthref.org/MAGIC/search#sites_with_images
- **GPMD Database**
<http://earthref.org/MAGIC/search#GPMD>
- **PINT Database**
<http://earthref.org/MAGIC/search#PINT>
- **PSVRL Database**
<http://earthref.org/MAGIC/search#PSVRL>

My Saved Searches

No saved searches yet. Use the "Save Search" button in the top right to save searches.

My Recent Searches

Clear

- **#1316350717855** -- Data Tab -- 3 Filter(s)
<http://earthref.org/MAGIC/search#1316350717855>
Sunday, September 18, 2011 5:58:37 AM
- **#1316350709496** -- Data Tab -- 2 Filter(s)
<http://earthref.org/MAGIC/search#1316350709496>
Sunday, September 18, 2011 5:58:29 AM
- **#1316350680729** -- Data Tab -- 2 Filter(s)
<http://earthref.org/MAGIC/search#1316350680729>
Sunday, September 18, 2011 5:58:00 AM
- **#1316350489429** -- Data Tab -- 2 Filter(s)
<http://earthref.org/MAGIC/search#1316350489429>
Sunday, September 18, 2011 5:54:49 AM
- **#1316316074591** -- Data Tab -- 1 Filter(s)
<http://earthref.org/MAGIC/search#1316316074591>
Saturday, September 17, 2011 8:21:14 PM
- **#1316315663619** -- Data Tab -- 1 Filter(s)
<http://earthref.org/MAGIC/search#1316315663619>
Saturday, September 17, 2011 8:14:23 PM
- **#1316315598079** -- Data Tab -- 0 Filter(s)
<http://earthref.org/MAGIC/search#1316315598079>
Saturday, September 17, 2011 8:13:18 PM
- **#1316315584308** -- Data Tab -- 0 Filter(s)
<http://earthref.org/MAGIC/search#1316315584308>
Saturday, September 17, 2011 8:13:04 PM
- **#1316315578023** -- Data Tab -- 1 Filter(s)
<http://earthref.org/MAGIC/search#1316315578023>
Saturday, September 17, 2011 8:12:58 PM

Scalability Issues and Solutions

Database and Physical Storage

- San Diego Supercomputer Center (SDSC)
- Professional outfit and latest hardware
- Relatively inexpensive in terms of storage / help

Database Query Speeds

- Inheritance and adoption of important data
- Oracle multiple column and text indexing
- Query caching in Oracle

MagIC Web Interface

- Fast-CGI server / Apache web server / CGI Perl
- JQuery JavaScript / Ajax / Web 2.0 technology

EarthRef.org Database Usage

Jan 1 – Jul 13, 2010 *

- **18,716** Visits
- **10,885** Unique Visitors
- **107,862** Page Views (5.8 on average per session)
- **5:19** Time on Site per Session

Sept 14, 2010 – Sept 14, 2011 *

- **38,487** Visits
- **19,923** Unique Visitors
- **201,543** Page Views (5.3 on average per session)
- **5:32** Time on Site per Session

* This only includes views for all the EarthRef.org database portals, but not any of the static pages, such as workshops, who's who, etc.

Contribution Statistics

March 2007	Sept 2011	(private)	Increase *	
● 3,738	3,985	(282)	7%	Contributions
● 8,742	9,878	(373)	12%	Locations
● 75,488	112,101	(7,503)	49%	Sites
● 1,037	11,780	(9,148)	1136%	Samples
● 1,586	13,283	(8,898)	838%	Specimens
● 179,457	662,782	(14,741)	369%	Measurements

* These numbers only include only the latest versions.

Method Codes and Compilations Included

- **534** Method Codes (from 500 in March 2007)
- **GPMDB, PINT, PSVRL, SECVR, TRANS, GEOMAGIA, TAFI, SEDPI, 20D, BC02, CALS7K.2+3, Q94, SWUS**

Future Developments (1 of 2)

Web Interface

- Provide access to published compilations and allow users to make their own compilations
- Customizable web interface (e.g. user preferences such as units or which columns to view)
- Full MagIC SmartBook saves
- Real time MagIC visualizations IN BETA
- Google Maps linking IN BETA
- KML export for Google Earth and Maps

Future Developments (2 of 2)

Database

- Moving to new Linux database server 11 Oct 2011
- Moving to Oracle 11g 11 Oct 2011

Data and Data Model

- Extend data model as necessary (e.g. images, physical properties of samples analyzed)
- Systematically go through literature and add as much low-level data into MagIC database
- Add full AGU reference database to EarthRef.org
- Add cited references via Thomson Reuters Web of Knowledge (Web Services) to the reference database of EarthRef.org