Possible design for volcanic data platform (PePPEr)

Samuel Mitchell

PePPEr: A **Pe**rmeability **P**orosity and **P**ycnometry volcanic **Er**uption sample database

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Polydispersivity tool

Literature finder

Welcome to PePPEr

Description of the database [will add this at a later date]

Basic functions:

- Plotter for existing porosity, permeability and pycnometry data
- Download database or upload new data
- Calculate polydispersivity for particle size distributions

[Example images of plots of volcanic rock ← Sam will provide]

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Plotting data of interest using PePPEr

Use this tool to explore the entire PePPEr database. Select what categories you wish to view data by and use the plotter to visualize those selections:

Choose data by category selection

Plot of: x-axis vs. y-axis

Categories:
Publication
Volcano
Eruption
Chemistry
Rock/experiment type
Subaerial/submarine
Eff/exp

	Chemistry	Count of Field1
[√]	Basalt	1656
[√]	Andesite	1050
[√]	Rhyolite	743
[√]	Trachyte	661
[√]	Dacite	528
[√]	Foidite	361
[√]	Phonolite	270
[√]	Phono-tephrite	195
[√]	Rhyodacite	185
[√]	Silicate	109
[√]	Tephri-phonolite	86
[√]	Basaltic andesite	63
[√]	Borosilicate	47
[√]	MIXED	42
[√]	Rhyolitic glass with wollastonite/corundum crystals	34
[√]	Basaltic andesite/Andesite	33
[√]	Rhyolite and dacite with minor andesites	14
[√]	Silicic	8
[√]	Basanite	6

Measurements:
Bulk SiO2 (wt. %)
Bulk Na2O+K2O (wt.%)
Glass SiO2 (wt. %)
Glass Na2O+K2O (wt.%)
Bulk porosity (%)
Connected porosity (%)
Connectivity
Permeability (k1) (m-2)
Permeability (k2) (m-1)
vesicle number density (m-3)
S (polydispersivity)
total crystallinity (%)
phenocrystallinity (%)
microcrystallinity (%)

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Plot selection >>>

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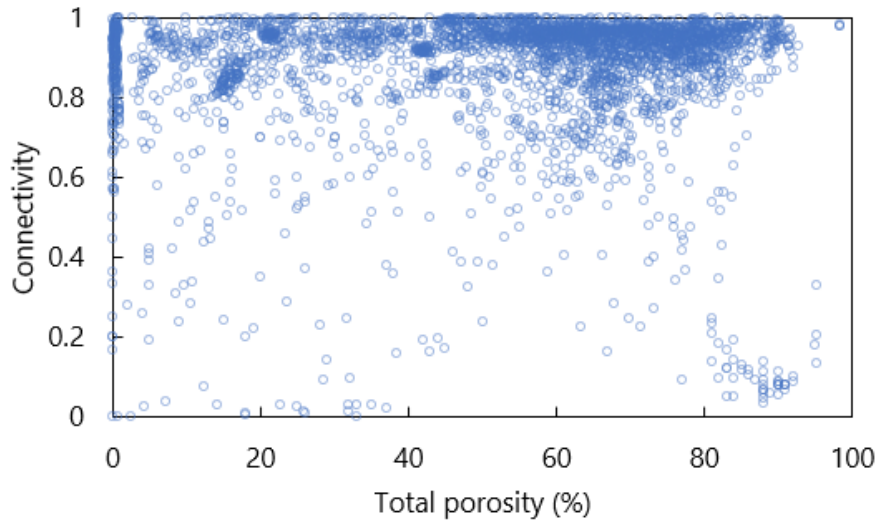

Graphical tools

X-limits
Y-limits
Colour scheme

Capture plot image

Download plot data

<< Create another plot

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Downloading the PePPEr database

Last updated: XX/XX/XXXX

From here you can download either the entire PePPEr database, or choose from a selection of popular data choices. Use the data plotter tool to download specific data you have plotted.

Download whole database

Download explosive only

Download effusive only

Download experimental only

Download natural rocks only

Download subaerial only

Download submarine only

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Uploading new data to PePPEr

Have you collected your own data (new or existing) that is not yet within the database? Download the database template and follow the data instructions to have your data included in the database.

Note, all data submitted will be reviewed before updating PePPEr to ensure that formatting and units are all consistent with existing data.

Download database template

Uploading data instructions

Upload new data

Submit for review

Any questions regarding the upload can be directed to sam.mitchell@bristol.ac.uk

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Polydispersivity tool

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Calculate polydispersivity (*S*) of your data

Calculate polydispersivity (*S)* for your particle size distribution (bubbles, vesicles, crystals, grains). [Add some more information about polydispersivity in volcanic literature].

Input data as particle diameter (in mm) and volume fraction (of 1.00) below:

Eq D (mm)	Volume fraction
0.007765	0.002615
0.009862	0.004639
0.012296	0.010248
0.015399	0.017869
0.019610	0.037058
0.024466	0.063332
0.030370	0.088113
0.038497	0.110200
0.048143	0.121142
0.061089	0.095633
0.076979	0.104647
0.096151	0.056368
0.122250	0.051540
0.152396	0.034397
0.190787	0.035024
0.239757	0.022620
0.299058	0.024612
0.382225	0.022577
0.477094	0.018510
0.593433	0.014244
0.756592	0.013556
0.946016	0.012883
1.191757	0.012110
1.491121	0.006181
1.856814	0.004009
2.351465	0.007550
2.967182	0.006137

Calculated S =

Calculated Md50 =

Calculated sorting (1sig) =

Calculated IQR (25-74)=

Calculated IPR (10-90)=

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Literature of the PePPEr database

Here you can find all of the literature and sources currently included in the PePPEr database. [Scrolling inbuilt table?]

Publication	Pub. Y	DOI	Title
Adams et al. 2006a	2006	https://doi.org/10.1130/B25768.1	
Adams et al. 2006b	2006	https://doi.org/10.1007/s00445-006-0067-4	
Alfano et al. 2012	2012	https://doi.org/10.1007/s00445-012-0648-3	
Bernard and Bouvet de Maisonneuve 2020	2020	https://doi.org/10.1016/j.jvolgeores.2020.107068	
Bernard et al. 2007	2007	https://doi.org/10.1029/2006JB004385	
Bouvet de Maisonneuve et al. 2009	2009	https://doi.org/10.1007/s00445-008-0250-x	
Carey et al. 2009	2009	https://doi.org/10.1016/j.jvolgeores.2009.04.003	
Cashman et al. 1994	1994	https://doi.org/10.1016/0377-0273(94)00015-8	
Chavrit et al. 2012	2012	https://doi.org/10.1016/j.epsl.2012.09.042	
Clark (unplublished)	2023?	-	
Colombier et al. 2017a	2017	https://doi.org/10.1016/j.epsl.2017.01.011	
Colombier et al. 2017b	2017	https://doi.org/10.1007/s00445-017-1099-7	
Colombier et al. 2020	2020	https://doi.org/10.1007/s00445-020-1370-1	
Colombier et al. 2021	2021	https://doi.org/10.1016/j.epsl.2021.117134	
Colombier et al. 2022	2022	https://doi.org/10.1007/s00445-022-01612-1	
Colombier et al., 2018	2018	https://doi.org/10.1029/2017JB015357	
deGraffenried et al. 2019	2019	https://doi.org/10.1029/2018GL081822	
Eichelberger et al. 1986	1986	https://doi.org/10.1038/323598a0	
Farquharson et al. 2015	2015	https://doi.org/10.1016/j.jvolgeores.2015.03.016	
Formenti and Druitt. 2003	2003	https://doi.org/10.1016/S0012-821X(03)00386-8	
Formenti and Druitt. 2003	2003	https://doi.org/10.1016/S0012-821X(03)00386-8	
Giachetti et al. 2010	2010	https://doi.org/10.1016/j.jvolgeores.2010.04.001	
Giachetti et al. 2019	2019	https://doi.org/10.1029/2018GC008006	
Graham et al., 2023	2023	https://doi.org/10.1016/j.epsl.2022.117891	
Gurioli et al. 2005	2005	https://doi.org/10.1007/s00445-004-0368-4	
Gurioli et al. 2008	2008	https://doi.org/10.1029/2007JB005328	
Gurioli et al. 2014	2014	https://doi.org/10.1002/2013JB010355	
Gurioli et al. 2018	2018	https://doi.org/10.5194/se-9-431-2018	
Heap et al. 2015	2015	https://doi.org/10.1016/j.epsl.2015.07.053	
Heap et al. 2018	2018	https://doi.org/10.1016/j.jvolgeores.2018.02.002	
Houghton et al. 2010	2010	https://doi.org/10.1016/j.jvolgeores.2010.06.002	
Jones 2019 (PhD thesis)	2019	-	

Download literature list