PANGAEA® –
Long-term archiving and publication of
earth science data

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Alfred-Wegener-Institut, Bremerhaven
hdl:10013/epic.46894
What is PANGAEA®?

Pangaea is an open access data library for earth system research.

Data are stored georeferenced in space and time in a relational database and a tape archive.

Datasets have a citation and a DOI.

The data content is accessible on the internet via a search engine, a data warehouse and web services.

The system is open to any scientist or project to archive and publish data.
Both institutions have committed to long-term operate PANGAEA
Data Model

**Where?**
- Latitude/Longitude

**When?**
- Date time or geological age

**What?**
- Parameter [unit]

**How?**
- Method

**Who?**
- Investigator/Author/Reference

**Numeric**
- air

**Text**
- ice

**Object**
- water

**Sediment**
Data in PANGAEA - Supplement

Citation: Allan, ASR et al. (2008): Geochemistry of lahar from the Taupo Volcanic Zone. doi:10.1594/PANGAEA.815949

Abstract: The Taupo Volcanic Zone (TVZ), central North Island, New Zealand, is the most active Quaternary volcanic system in the world. Silicic tephra recovered from Ocean Drilling Programme Site 1123 (1°41'07"S, 171°29'54"W; 3690 m water depth) in the southwest Pacific Ocean provide a well-dated record of explosive TVZ volcanism since ~1.85 Ma. We present major, minor and trace element data for 70 Quaternary tephra layers from Site 1123 determined by electron probe microanalysis (1314 analyses) and laser ablation inductively coupled plasma mass spectrometry (654 analyses). Trace element data allow for the discrimination of different tephras with similar major element chemistries and the establishment of isochronous tie-lines between three sediment cores (1123A, 1123B and 1123C) recovered from Site 1123. These tephra tie-lines are used to evaluate the stratigraphy and accurately tuned stable isotope age model of the Site 1123 composite record. Trace element fingerprinting of tephras identifies ~4.5 m and ~7.9 m thick sections of repeated sediments in 1123A (49.5-53.5 mbsf metres below seafloor) and 1123C (48.1-56.0 mbsf), respectively. These previously unrecognised repeated sections have resulted in significant errors in the Site 1123 composite stratigraphy and age model for the interval 1.15-1.38 Ma and can explain the poor correspondence between d18O profiles for Site 1123 and Site 840 (equatorial Pacific) during this interval. The revised composite stratigraphy for Site 1123 shows that the 70 tephra layers, when correlated between cores, correspond to ~37-38 individual eruptive events (tephras), 7 of which can be correlated to onshore TVZ deposits. The frequency of large-volume TVZ-derived silicic eruptions, as recorded by the deposition of tephra at Site 1123, has not been uniform through time. Rather it has been typified by short periods (25-30 ka) of intense activity bracketed by longer periods (100-130 ka) of quiescence. The most active period (at least 1 event per 7 ka) occurred between 1.53 and 1.96 Ma, corresponding to the first ~130 ka of TVZ volcanic magnetism. Since 1.2 Ma, ~90% of tephras preserved at Site 1123 and the more proximal Site 1124 were erupted and deposited during glacial periods. This feature may reflect either enhanced atmospheric transport of volcanic ash to these sites (up to 1000 km from source) during glacial conditions or, more speculatively, that these events are triggered by changes in crustal stress accumulation associated with large amplitude sea-level changes. Only 8-10% of site 1123 tephras (~25%) can be found in all three cores, and 22 tephra units (~60%) are only preserved in one of the three cores. Whether a tephra is preserved in all three cores does not have a direct relationship to eruptive volume. Instead it is postulated that tephra preservation at Site 1123 is 'patchy' and influenced by the vigorous nature of their deposition to the deep ocean floor and onshore environments. At this site, at least 5 cores would have to be drilled within a proximity of 10 to 100's of metres of each other to yield a 99% chance of recovering all the silicic tephras deposited on the seafloor above it in the past 1.85 Ma.
Cooperation with Elsevier

Acknowledgements:
For supplementary data see: doi:10.1594/PANGAEA.815949
Data Description

Citation: Allan, ASR et al. (2008): Geochemistry of tephas from the Taupo Volcanic Zone. doi:10.1594/PANGAEA.815949.

Abstract: The Taupo Volcanic Zone (TVZ), central North Island, New Zealand, is the most frequently active Quaternary rift system in the world. Silicic tephas recovered from Ocean Drilling Programme Site 1123 (14°17.18’S, 171°29.94’W; 3280 m water depth) in the southwestern Pacific Ocean provide a well-dated record of explosive TVZ volcanism since ~1.85 Ma. We present major, minor and trace element data for 70 Quaternary tepha layers from Site 1123 determined by electron probe microanalysis (1314 analyses) and laser ablation inductively coupled plasma mass spectrometry (654 analyses). Trace element data allow for the discrimination of different tephas with similar major element chemistries and the establishment of isochronous tie-lines between three sediment cores (1123A, 1123B and 1123C) recovered from Site 1123. These tepha tie-lines are used to evaluate the stratigraphy and orbitally tuned stable isotopic age model of the Site 1123 composite record. Trace element fingerprinting of tephas identifies ~4.5 m and ~7.6 m thick sections of repeated sediments in 1123A (49.0-53.0 mbsf, 38.9 mbsf below seafloor) and 1123C (46.0-50.0 mbsf, respectively). These previously unrecognised repeated sections have resulted in significant errors in the Site 1123 composite stratigraphy and age model for the interval 1.15-1.36 Ma and can explain the poor correspondence between ODP profiles for Site 1123 and Site 849 (equatorial Pacific) during this interval. The revised composite stratigraphy for Site 1123 shows that the 70 tepha layers, when correlated between cores, correspond to ~37-38 individual eruptive events (tephas), 7 of which can be correlated to onshore TVZ deposits. The frequency of large-volume TVZ-derived silicic eruptions, as recorded by the deposition of tephas at Site 1123, has not been uniform through time. Rather it has been typified by short periods (25-50 ka) of intense activity bracketed by longer periods (100-150 ka) of quiescence. The most active period (at least 1 event per 7 ka) occurred between ~1.53 and ~1.69 Ma, corresponding to the first ~130 ka of TVZ rift phase magmatism. Since ~1.2 Ma ~90% of tephas preserved at Site 1123 and the more proximal Site 1124 were erupted and deposited during glacial periods. This feature may reflect either enhanced transport of tephas from sites (>1000 km from source) during glacial conditions or, more speculatively, that these events are triggered by changes in crustal stress accumulation associated with large amplitude sea-level changes. Only 8 ~37.38 Site 1123 tephas (up to 25%) can be found in all three cores, and 22 tephas (up to 40%) are only present in one of the three cores. Whether a tepha is preserved in all three cores does not have any direct relationship to eruptive volume. Instead it is postulated that tephas preservation at Site 1123 is ‘patchy’ and influenced by the vigorous nature of their deposition to the deep ocean floor as vertical density currents. At this site, at least 5 cores would have to be drilled within a proximity of 10’s to 100’s of metres of each other to yield a >95% chance of recovering all the silicic tephas deposited on the ocean surface above it in the past 1.65 Ma.

Other versions: GEOROC Sample information - Coromandel-Taupo

Further details: Table 1. Summary of laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) instrumental and analytical conditions

Properties: Ocean Drilling Program (ODP)


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Downloaded Data

Download ZIP file containing all datasets as tab-delimited text (see the following character encoding: UTF-8; Uncompressed (PANGAEA default))

Datasets listed in this Collection

1. Allan, ASR, Baker, JA, Carter, L et al. (2008): (Table 2) Mean major and trace element compositions of representative tephas from the four melt types identified in ODP Site 181-1123. doi:10.1594/PANGAEA.815915
10. Allan, ASR, Baker, JA, Carter, L et al. (2008): (Table 5) Tephra tie-lines established between the Site ODP 181-1123 sediment cores. doi:10.1594/PANGAEA.815948
Data in PANGAEA - Supplement

Data Description

Citation: Allan, ASR et al. (2008): (Table S3a) Major element compositions of ODP Hole 181-1123A tephras. doi:10.1594/PANGAEA.815920, In Supplement to: Allan, Adrian SR; Baker, Joel A; Carter, Lionel; Wysoczanski, Richard J (2008): Reconstructing the Quaternary evolution of the world's most active silicic volcanic system: insights from an ~1.65 Ma deep ocean tephra record sourced from Taupo Volcanic Zone, New Zealand. Quaternary Science Reviews, 27(25-26), 2341-2360, doi:10.1016/j.quascirev.2008.09.003

Project(s): Ocean Drilling Program (ODP)

Coverage: Latitude: -41.786230 * Longitude: -171.494900
Date/Time Start: 1998-08-12T08:00:00 * Date/Time End: 1998-09-14T23:55:00
Minimum DEPTH, sediment-rock: 1.01 m * Maximum DEPTH, sediment-rock: 60.88 m

Event(s): 181-1123A * Latitude: -41.786230 * Longitude: -171.494900 * Date/Time Start: 1998-08-12T08:00:00 * Date/Time End: 1998-09-14T23:55:00 * Elevation: -3290.1 m * Penetration: 158.1 m * Recovery: 158.63 m * Location: South Pacific Ocean * Campaign: Leg181 * Basic: Joides Resolution * Device: Drilling/Drill rig (DSS) * Comment: 17 cores; 158.1 m cored; 0 m drilled; 100.3 % recovery

Comment: All standard deviations = 2sd.

Parameter(s):

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<th>Name</th>
<th>Short Name</th>
<th>Unit</th>
<th>Principal Investigator</th>
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Downloaded dataset as tab-delimited text (with the following character encoding: UTF-8).
Data in PANGAEA

PANGAEA®
Data Publisher for Earth & Environmental Science

Data Description

Citation: Monien, Patrick; Schnetger, Bernhard; Brumsack, Hans-Jürgen (2015): Geochemistry of sediment core PS68/339-1. Institute for Chemistry and Biology of the Marine Environment, Carl-von-Ossietzky University of Oldenburg, Germany, doi:10.1594/PANGAEA.844917

Project(s): Impact of climatic Induced glacier melt on marine coastal systems, Antarctica (IMCOAST/IMCONet)

Coverage:
- Latitude: 62.201300
- Longitude: -58.858200
- Date/Time Start: 2006-04-06T21:38:00
- Date/Time End: 2006-04-06T21:38:00
- Minimum DEPTH, sediment/trock: 0.01 m
- Maximum DEPTH, sediment/trock: 7.25 m

Event(s): PS68/339-1
- Latitude: 62.201300
- Longitude: -58.858200
- Date/Time: 2006-04-06T21:38:00
- Elevation: 268.0 m
- Recovery: 7.25 m
- Location: Potter Cove, King George Island, Antarctic Peninsula
- Campaign: ANT-XXII/4 (PS68)
- Basis: Polarstern
- Device: Gravity corer (GC)
- Comment: 8 sections: 0-37, 37-132, 132-228, 228-329, 329-428, 428-528, 528-628, 628-728

Comment: Data are given in weight fractions (mass %) and are not corrected for sea salt.

Parameter(s):

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<th>Name</th>
<th>Short Name</th>
<th>Unit</th>
<th>Principal Investigator</th>
<th>Method</th>
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<td>mass percentages</td>
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<td>%</td>
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</tbody>
</table>

Download Data (login required)

Download dataset as tab-delimited text (see the following character encoding: UTF-8, Unicode (PANGAEA default))

View dataset as HTML (shows only first 2000 rows)
Data Search

Search engines

Google

Projecte

WRMC-BSRN
World Radiation Monitoring Center-Baseline Surface Radiation Network

IODP
International Ocean Discovery Program

Library catalogues

TIB
Technische Informationsbibliothek

ePIC

Portals

Data Portal
German Marine Research

OAIster
Find the pearls

GBIF.ORG
Free and open access to biodiversity data
   Size: 29778 data points
   doi:10.1594/PANGAEA.674135 - Score: 1.29 - Similar datasets

   Size: 150016 data points
   doi:10.1594/PANGAEA.674423 - Score: 1.29 - Similar datasets

www.pangaea.de
Data search: www.pangaea.de

   Size: 99778 data points
   doi: 10.1594/PANGAEA.874470 - Score: 1.28 - Similar datasets

   Size: 160815 data points
   doi: 10.1594/PANGAEA.874418 - Score: 1.29 - Similar datasets

Data visualisation: ODV

Data Compilation

30-year record of Ozone

![Graph showing ozone levels over time and altitude.](image)
Data diversity
Thank You!