



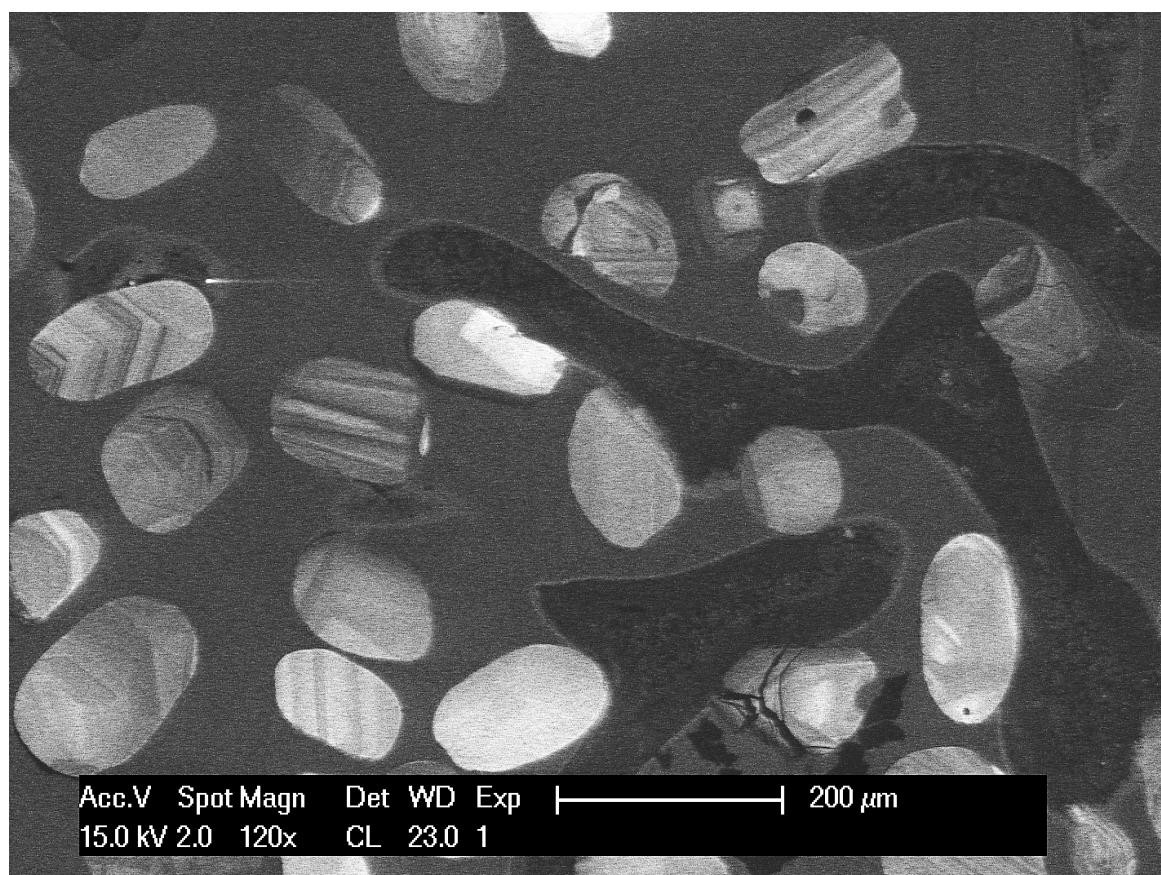
Stockholm
University

Bachelor Thesis

Degree Project in
Geology 15 hp

Detrital zircon U-Pb ages from metasediments of Brooks Range, Alaska using LA-ICP-MS

Jenny Gåling



Stockholm 2017

Department of Geological Sciences
Stockholm University
SE-106 91 Stockholm
Sweden

Detrital zircon U-Pb ages from metasediments of
Brooks Range, Alaska using LA-ICP-MS
Degree Project in Geology 15 hp

Jenny Gåling
Stockholm, 2017-05-31

Front page:

Cathodoluminescent (CL) image of zircon from sample VP16-04 from Alatna River, Brooks Range, Alaska.

Abstract

In contrast to most parts of the world, the Circum Arctic is not yet fully understood from a paleotectonic perspective. The evolution of the Arctic Ocean and its surrounding continental shelves can be unravelled by dating of crustal segments and by investigating the rifting direction of the Amerasia basin, extending from east Siberia to east of Greenland. In this study we date detrital zircon from Devonian and Paleozoic metasediments from the Central- and Schist Belt of the Brooks Range, Alaska, sampled along the Alatna River. The zircon grains were analysed for U and Pb isotopic composition through *in situ* measurements using LA-ICP-MS to determine their zircon age spectra and maximum depositional ages. The analysed zircon grains provide U-Pb crystallization ages, here presented on conventional concordia diagrams as well as kernel density estimate (KDE) plots. The distribution of the detrital zircon, i.e. the age spectra or signature, has a characteristic shape. This is a 'fingerprint' of the source(s) from which it is eroded, then transported and deposited into the sediment. In addition, the difference in stratigraphic age of the sediments and the maximum age of deposition, i.e. the youngest zircon ages, can be used to deduce the tectonic regime during deposition. All samples have very similar detrital zircon U-Pb age signatures, suggesting they must have the same or similar detrital source(s). A similar age spectra to the samples analysed here can be found in several locations over the Brooks Range. We determine the maximum depositional age of the metasediments to be 1221-939 Ma and hence significantly older than its stratigraphic age (541-252 Ma). This indicates that the metasediments derive from an intracratonic source and/or passive margin. We compare the age spectra to known geological units from the Circum Arctic and suggest the sources of the metasediments to be Baltica and Siberia.

Supervisor: Emelie Axelsson and Victoria Pease

Sammanfattning

Till skillnad från de flesta delar av världen är området kring Arktis ännu inte helt förstått från ett geotektoniskt perspektiv. Bildandet av Arktiska oceanen och dess omgivande kontinentalsocklar kan undersökas genom att datera delar av jordskorpan och undersöka riktning på förkastningar kring den Amerasiska bassängen, vilken breder ut sig från östra Sibirien till öster om Grönland. I denna studie daterar vi detritiska zirkoner i metasediment (Devon och Paleozoikum) från det centrala bältet och glimmerskifferbältet utmed Alatna floden i bergskedjan Brooks Range, Alaska. Zirkonkornen analyserades för isotopisk komposition av uran och bly genom *in situ* mätningar med LA-ICP-MS för att bestämma deras maximala depositionsålder och åldersspektrum. De analyserade zirkonkornen ger uran-bly bildningsåldrar och presenteras här i Concordia-diagram och 'kernel' sannolikshetsfördelningskurvor (KDE). Spridningen av de detritiska zirkonerna, d.v.s. åldersspektrumet eller signaturen, har en kännetecknande form och kan länkas till tektonisk bakgrund. Detta är ett 'fingeravtryck' för de olika källor från vilka källan har eroderats, transporterats och avsatts i sedimentet. Proven har mycket liknande detritiska zirkon uran-bly ålderssignaturer och medför att de måste ha samma eller liknande källa. Ett liknande mönster återkommer på flera platser i Brooks Range. Vi bestämmer metasedimentens maximala depositionsålder till 1221-939 miljoner år, vilket är betydligt äldre än dess stratigrafiska ålder (541-252 Ma). Detta indikerar att sedimentet härrör från ett kontinentalblock (inre kraton) och/eller en passiv förkastning. Vi jämför även åldersfördelningen med kända geologiska provinser från området kring Arktis och föreslår här att metasedimentens källa kan vara den Baltiska urbergsskölden och Sibirien.

Handledare: Emelie Axelsson and Victoria Pease

Table of Contents

Abstract	2
Sammanfattning	3
Table of Contents	4
Introduction	5
Project aims	5
Background	5
Zircon	5
The U-Th-Pb isotopic system	6
Detrital zircon age analysis	7
Distribution of ages	7
LA-ICP-MS	8
Downhole fractionation effects	8
Geological setting	9
Geological formation of the Brooks Range	10
Sample descriptions	11
Analytical methods	13
Sample preparation	13
LA-ICP-MS	13
Data reduction	13
Analytical results	14
U-Pb geochronology of detrital zircon	14
Age ranges for detrital zircon samples	16
Discussion	17
Data quality	17
Sample units and age spectra	17
Possible sediment provenance	17
Conclusions	19
Future studies	20
Acknowledgements	20
References	21
Appendix of additional material	23
1. Figure 7. Summary of age distributions based on geologic era in each sample	24
2. Figure 8A-G. Conventional concordia diagrams for each sample	25
3. Table 4. Comprehensive data table of the U-Pb analyses for all samples	29

Introduction

The tectonic history of most of the world is largely well documented back to at least 500 Ma but this is not the case for the Circum Arctic. There is much yet to discover when it comes to the formation of the Arctic Ocean and how the paleogeography has changed through time (Miller, et al., 2006). The Amerasia basin located in the Arctic Ocean is one of the last frontiers for tectonic reconstruction, where age analyses and rifting direction are important pieces when solving the puzzle of how the Amerasia basin formed (Miller, et al., 2010). Through sampling and U-Pb analyses of individual zircon crystals preserved within sediment, their combined crystallisation ages can be used to “fingerprint” the provenance during sediment deposition, which is a powerful tool in the reconstruction of plate tectonics (Vermeesch, 2012; Miller, et al., 2006). In the case of the Amerasia Basin, this could bring clarity to the origin of Arctic Ocean bathymetry and how the surrounding continental shelves have evolved (Miller, et al., 2006).

Project aims

The project aims are to:

- Determine the maximum age of the metasediments along the Alatna River, Alaska, though U-Pb dating of detrital zircons.
- Identify their provenance through correlations with known geological events.
- Investigate the regional tectonic correlations through comparison with other data sets.

Background

Zircon

Zircon (ZrSiO_4) is an accessory mineral occurring naturally in sedimentary, igneous and metamorphic rocks. Zircon can survive geological processes that most other minerals cannot, including magmatism, metamorphism, erosion and chemical alteration (Corfu, et al., 2003). Zircon incorporates many different trace elements in its crystal structure, including the rock forming element Si and high field strength elements such as P, Zr, Hf, REEs (e.g. Y) and up to one percent of radioactive Th and U (Corfu, et al., 2003; Vermeesch, 2012). This makes zircon very useful in studies of crustal evolution and sediment provenance using the U-Th-Pb isotopic system (Cawood, et al., 2012; Miller, et al., 2006) which is described in detail below, and trace element analyses (Grimes, et al., 2015). The morphology and textures of zircon are variable and reflect its geologic history. This is especially the case for magmatic or metamorphic crystallization episodes resulting in growth zones, and alteration in its chemistry from mainly fluid infiltration resulting in partial or total alteration of the zircon grains (Corfu, et al., 2003).

The U-Th-Pb isotopic system

The isotopic composition of lead (Pb) in rocks, in excess of any original Pb, can be derived from the breakdown of uranium (U) and thorium (Th) to Pb through three decay reaction chains (Winter, 2014):

- (1) $^{238}\text{U} \rightarrow ^{234}\text{U} \rightarrow ^{206}\text{Pb}$ ($\lambda = 1.5512 \times 10^{-10} \text{ a}^{-1}$)
- (2) $^{235}\text{U} \rightarrow ^{207}\text{Pb}$ ($\lambda = 9.8485 \times 10^{-10} \text{ a}^{-1}$)
- (3) $^{232}\text{Th} \rightarrow ^{208}\text{Pb}$ ($\lambda = 4.9475 \times 10^{-11} \text{ a}^{-1}$)

The simultaneous evolution of the radiogenic isotopes ^{206}Pb and ^{207}Pb , according to Equations (1) and (2), will result in the isotopic ratios plotting on the ideal curve describing the relative decay of ^{238}U and ^{235}U into ^{206}Pb and ^{207}Pb respectively called the concordia on a concordia diagram (Winter, 2014). This is the case for all natural samples that have consistent U-Pb systems. Since ^{235}U has a smaller decay constant (λ), i.e. shorter half-life, than ^{238}U , it decays faster, resulting in the $(^{207}\text{Pb}/^{235}\text{U}) / (^{206}\text{Pb}/^{238}\text{U})$ ratio increasing with time and a curved concordia as seen Figure 1.

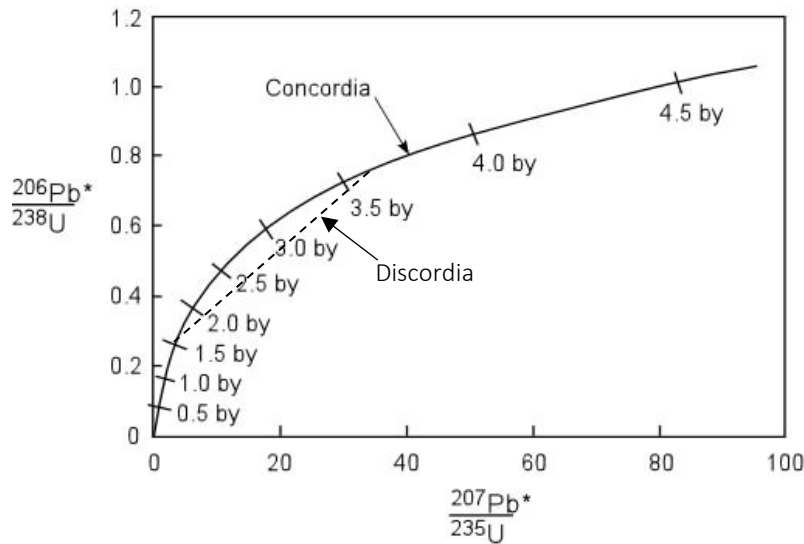


Figure 1. Concordia curve on concordia diagram. The concordia curve is ideal and describes the relative decay of the isotopes ^{238}U and ^{235}U into ^{206}Pb and ^{207}Pb respectively. The discordia line display how the Pb system will move after Pb loss, which is away from its starting point towards the time of loss.

If Pb is removed from the system by a process such as melting, metamorphism, fluid infiltration, etc., all isotopes of Pb are depleted in relation to the rock concentration of Pb, i.e. Pb isotopes do not mass fractionate during depletion (Winter, 2014). Therefore, the Pb system will move from the point where it started towards the time of loss along the path called the discordia, also visible in Figure 1.

Common Pb is non-radiogenic Pb incorporated at any time during the evolution of the zircon grain; it biases the total Pb present and affects the determination of U-Pb ages that assumes only radiogenic Pb is present. ^{204}Hg , with the same mass as ^{204}Pb , is present in the Ar nebuliser gas used in ICP-MS, and compounds the ^{204}Pb signal. Therefore samples with high amounts of non-radiogenic ^{204}Pb , also known as common Pb, are normally excluded or corrected for any ^{204}Pb .

Detrital zircon age analysis

The measured U-Pb age of detrital zircon represents either a crystallisation or resetting (metamorphic) age. Cathodoluminescent (CL) imaging is used to distinguish between igneous and metamorphic processes. In addition, combining the crystallization age with the depositional age of the sediment, the variance and density of all the zircon ages from the sediment can be used for interpreting the geological setting associated with sediment deposition (Cawood, et al., 2012). Sediments containing zircon can be sampled and analysed to determine a ‘fingerprint’ of zircon U-Pb ages and thus provide a signature of the different sources from which detritus is eroded, transported and deposited in the sediment (Vermeesch, 2012). These signatures can be compared with those from other regions to suggest similarity or dissimilarity, and is powerful tool when reconstructing plate tectonic environments (Miller, et al., 2006).

Distribution of ages

The U-Pb age distribution of detrital zircon grains in a sediment has a characteristic shape and tectonic association, which is influenced by several factors. The interaction between tectonics, basin type and sedimentation relates to the occurrence of magmatic activity during sedimentation, the size and age of the source area, and the resulting distribution and proportion of the detrital zircon deposited in the basin (Cawood, et al., 2012). Detrital zircon U-Pb ages are plotted as distribution histograms, which can be simplified into a Kernel Density Estimate (KDE). Different sedimentary basins produce distinctive KDEs (Cawood, et al., 2012).

Sedimentary basins located at passive plate margins may or may not have volcanism occurring during sedimentation and may receive erosional input from a distal ‘hinterland’. The hinterland may vary in shape and size, and contain rocks of different ages. Basins close to the plate margin receive material from nearby and associated with a smaller source area, where the youngest detrital zircon ages may be similar to the sediment depositional age. This basin type produces variable KDEs (Cawood, et al., 2012). Intraplate basins on the other hand are located in stable interiors of tectonic plates and are characterised by continuous sedimentation from relatively flat, large areas (Cawood, et al., 2012). Synchronous igneous activity in these areas is usually absent and can result in detrital zircon ages that are distinctly older than the sediment depositional age.

Generally, basins at active convergent margins have >50 % of the detrital zircon ages near the sediment age (Cawood, et al., 2012). Forearc and trench basins often have unimodal spectra associated with convergent igneous activity, while back-arc basins located closer to stable crust, a craton, receive both the synchronous volcanic input as well as erosional input from the older continental rocks. The input of detrital zircon is variable in collisional basins because it can include material associated with collisional magmatism and the magmatic arcs generated during ocean closure, and also older material from the orogenic wedge and intracratonic setting. The youngest U-Pb detrital zircon ages may be similar to the age of the sediment, but it is usually present in a smaller proportion (only 10-50 % of the ages are within 150 Ma of the sediment depositional age) (Cawood, et al., 2012). Thus, the KDEs from these setting are

variable. Extensional basins are expected to have detrital zircon ages that are much older than the sediment depositional age (<5 % within 150 Ma). Out of its age spectrum, the few younger ages often are associated with (mafic) magmatism related to rifting (Cawood, et al., 2012).

LA-ICP-MS

Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS) is a popular and effective technique for *in situ* analysis of both elemental and isotopic analysis of samples (Mason & Mank, 2001). The mass spectrometer separates and detects different ions produced through ionisation by the ICP. The laser ablates the surface and near-surface sample material, creating fine particles for ionisation. All material is evacuated from the sample chamber and carried in gas to the excitation source of the ICP-MS where it is ionised. Argon gas creates the plasma torch in which the ions are excited. Then the mass spectrometer's detector detect the mass of the excited ions. One of the advantages with LA-ICP-MS is low detection levels, i.e. it is possible to determine chemical compositions down to < 1µg/g for a surface area of 10-500µm (Mason & Mank, 2001) as the laser ablates down into the material. In addition, LA-ICP-MS systems have relatively low operational costs and analyse with fast sample output relative to input (Paton, et al., 2010). One of the weaknesses of the LA-ICP-MS is the large differences that occur in downhole elemental fractionation, which affects the precision and accuracy of the method (Paton, et al., 2010).

Downhole fractionation effects

Inequity in elements or mass during sampling occurs to some degree in all LA-ICP-MS systems (Paton, et al., 2010). As the laser ablates, sample variations in temperature and depth occur with time and the measured ratios between two elements may also vary; this is called downhole elemental fractionation. Downhole fractionation effects must be corrected for. This is done using linear numerical fits to the fractionation versus time curve and is calculated either with separate gradients for each sample or using an earlier observed relationship to spot size and hole depth (Paton, et al., 2010). However, results from non-linear trends will give results that are inaccurate.

Geological setting

Disagreement exists regarding the tectonic evolution of the older part of the Arctic Ocean basin, known as the Amerasia Basin, located north of Arctic Alaska (Moore, et al., 2015). There are similarities in deposits formed during orogenesis found in the main folding and thrusting period in Brooks Range and in Chukotka (Miller, et al., 2006). There is also evidence for them being part of a single continental fragment, e.g. from U-Pb zircon geochronology of Neoproterozoic stratigraphy and volcanic and plutonic rocks of the depositional basement (Miller, et al., 2006). This single continental fragment is called the Arctic Alaska-Chukotka microplate (AACM; Figure 2), and consists of the northernmost parts of Alaska (including Brooks Range), Russian Chukotka, and the large continental shelves north of Russia (Miller, et al., 2006).

Before the formation of the Caledonides, the Iapetus Ocean lay between the continents of Baltica and Laurentia (Miller, et al., 2010). Reconstructions by Miller, et al. (2010) show that Greenland and Arctic Alaska belonged to a different tectonic plate (Laurentia) than Chukotka, which was part of Siberia around 435-450 Ma. After the formation of the Scandinavian Caledonides, the collision between Greenland and Baltica, the Iapetus Ocean closed and is thought to have moved Arctic Alaska and Chukotka to their present locations in relation to each other (Miller, et al., 2010). The tectonic evolution of the Amerasia basin is believed to have started with the rotation of the AACM (Miller, et al., 2006).

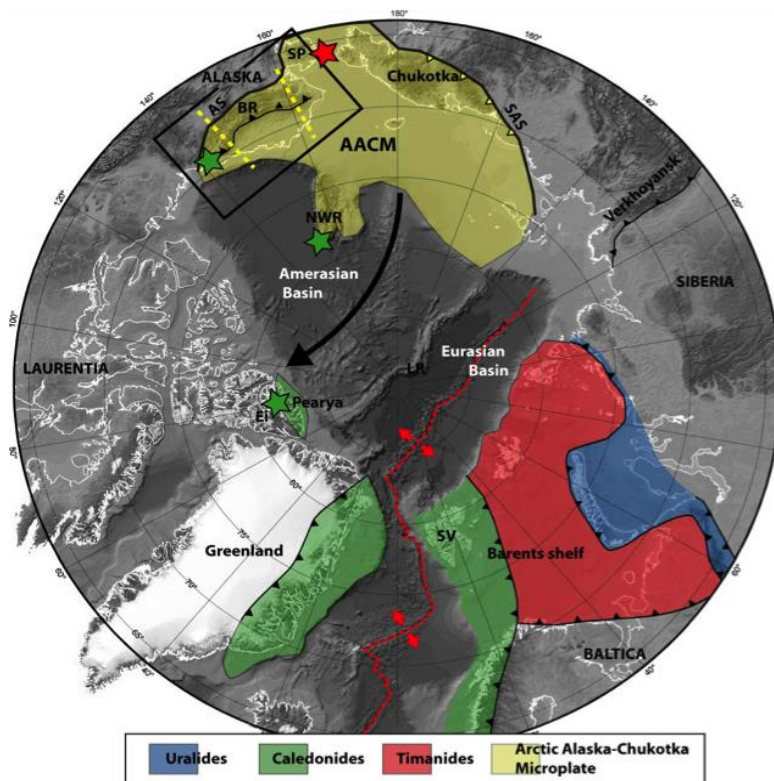


Figure 2. Map of the Circum Arctic (Pease, 2014). The colours represent different orogenic belts. The AACM comprises the Arctic Alaska, including Brooks Range, the northern edge of Russia called Chukotka and the large continental shelves north of Russia (Miller, et al., 2006). The box indicates the region of Brooks Range seen in Figure 3. Abbreviations: AS = Angayucham-Anyui Sea, AACM = Arctic-Alaska-Chukotka microplate, BR = Brooks Range, NWR = Northwind Ridge, SAS = South Anyui suture, LR = Lomonosov Ridge, SP = Seward Peninsula, SV = Svaalbard.

Geological formation of the Brooks Range

Brooks Range (Figure 3) is a large orogenic fold-thrust belt adjacent to the Arctic Ocean, trending east-west across northern Alaska, the Chukchi Sea and further north off the Russian coast of Chukotka (Moore, et al., 2015). Two simultaneous events thought to have occurred during the Jurassic to early Cretaceous are responsible for the formation of the Brooks Range: first, the rifting of the AACM and second, the collision between the Koyukuk arc and the continental margin of Arctic Alaska (Moore, et al., 2015; Miller, et al., 2006).

Rifting of northern Alaska from Canada and subsequent sea-floor spreading, which later formed the Amerasian basin, is believed to have started in the late Jurassic (190-200 Ma) and peaked in the early Cretaceous (130-140 Ma) (Miller, et al., 2006). Earlier studies suggest several different models based on rifting reconstructions for the Amerasia Basin, where either the Canadian Arctic margin or the Lomonosov Ridge are proposed to have been the rift (or transform) boundaries that displaced the AACM (Miller, et al., 2006). In the former suggestion, the rifting is implied to be the result from counter clockwise rotation of the AACM (Moore, et al., 2015), as indicated by Figure 2. Brooks Range contains a variety of lithologies as a result of structural stacking of allochthons. Synorogenic deposits are preserved with zircon populations peaking at the late Paleozoic and Triassic (359-200 Ma), the early Paleozoic (542-359 Ma) and the Paleoproterozoic (2000-1750 Ma) (Moore, et al., 2015).

Among others, Hoiland, et al. (in press) have done studies of detrital zircon in sediments from southern Brooks Range, more specifically from locations in the Central- and Schist Belt (in Figure 3, box “Year 1”). They recognize six different signatures in their sample selection, which describe different depositional systems. In their analyses, they compare with published work from Ruby Terrain and Seward Peninsula, also located in southern or south of Brooks Range.

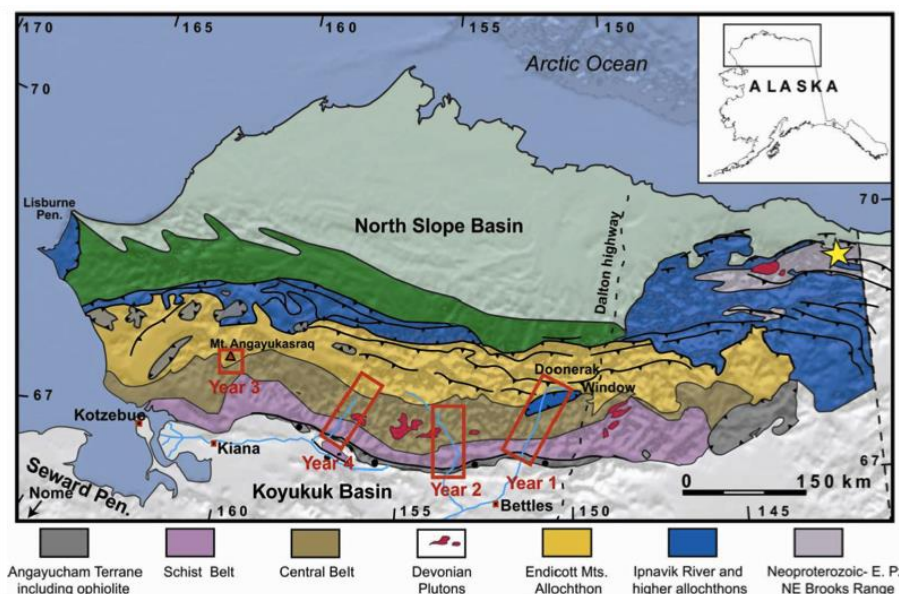


Figure 3. Overview map of the fold and thrust belt Brooks Range in Alaska. The red box labelled “Year 2” represents the study area of samples from this report, located in the middle of Brooks Range along the Alatna River. The transect crosses the Schist and Central Belts. The figure is modified after Moore et al. (1994).

Sample descriptions

The seven samples selected for detrital zircon U-Pb analysis are summarised in Table 1. The samples were collected from the Central and Schist Belts in Brooks Range, Alaska along the Alatna River (Figure 3). Locations, map units, stratigraphic age, and rock type are given in Table 1. The stratigraphic ages of the metasediments are Devonian (359-419 Ma) or Paleozoic (252-541 Ma). The rock types include quartzite, schist, and carbonate and their sample locations are shown in Figure 4.

Table 1. Summary of samples from the Alatna River, Brooks Range, Alaska, selected for detrital zircon U-Pb analysis. The map units correspond to those of Figure 4, the rock age is the depositional age of the sediment and the rock types are described for the sample location.

<i>Sample name</i>	<i>Location</i>	<i>Map unit</i>	<i>Rock type</i>	<i>Rock age</i>
EA16-02	67°26'37.5"N, 154°02'05.6"W	Pzmsm	Quartzite within Marble	Paleozoic
EA16-03	67°27'14.4"N, 154°00'17.1"W	Dssk (Pzmsm?)	Biotite schist	Devonian
EA16-05	67°22'17.2"N, 153°48'42.0"W	Pzmsm	Quartz-rich layer in schist (bt, ms, qz)	Paleozoic
VP16-04	67°28'81.6"N, 153°47'75"W	Dssk	Impure carbonate	Devonian
VP16-05	67°27'33.2"N, 153°50'21.2"W	Dssk	Quartzite	Devonian
VP16-11a	67°16'84.2"N, 153°33'40.7"W	Dssk	Chl schist	Devonian
VP16-14a	67°16'53.5"N, 153°35'43.2"W	Dssk	Quartzite	Devonian

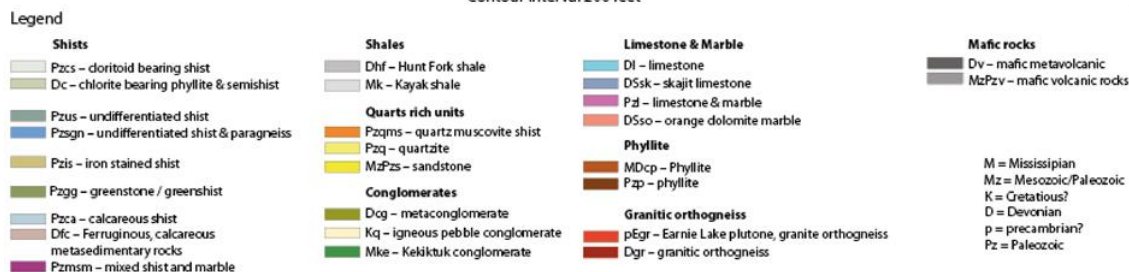
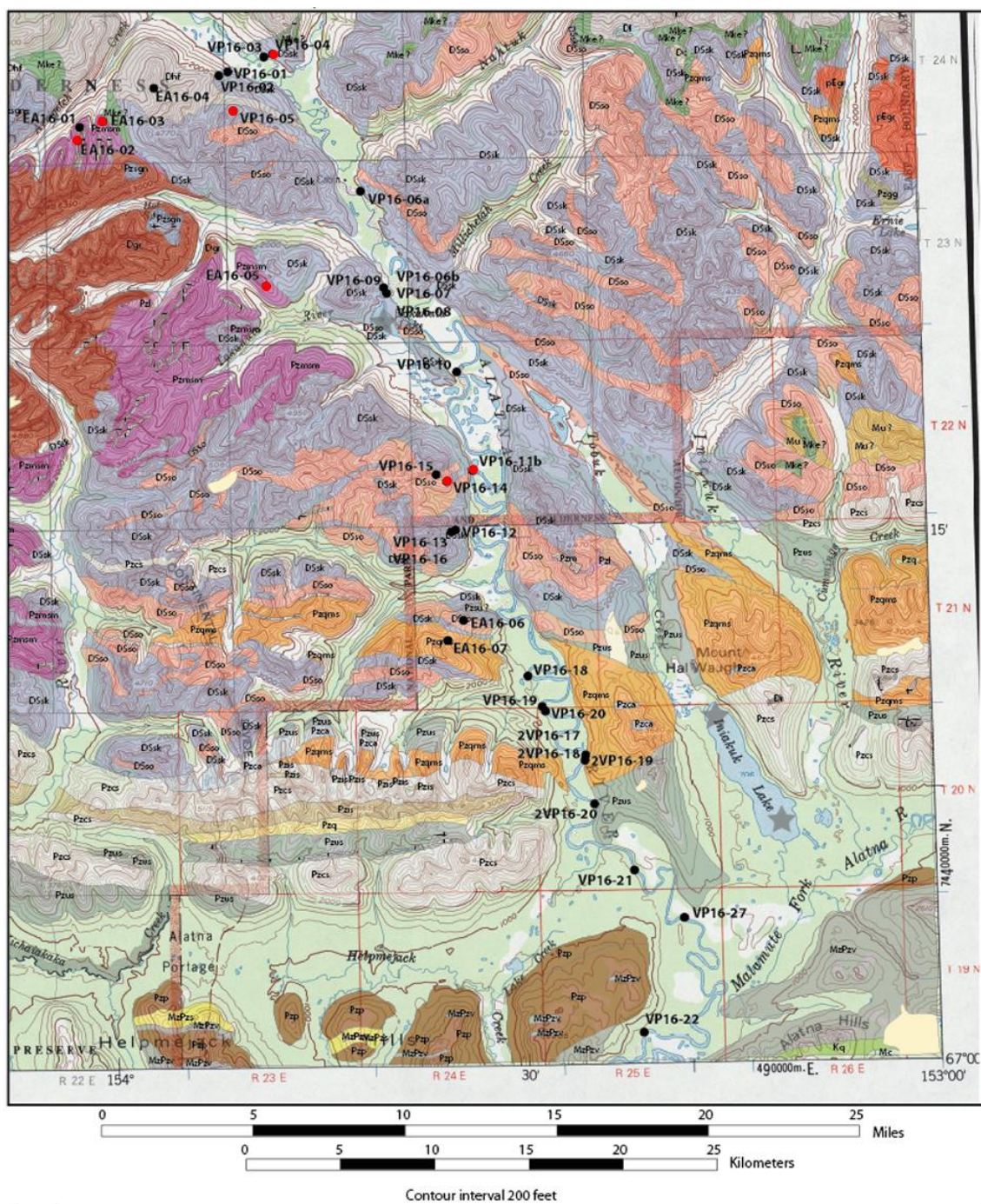


Figure 4. Overlay map with geological (Nelson & Grybeck, 1980) and topographic (USGS, 1982) features with sample locations along the Alatna River, Brooks Range, Alaska. Samples from this study show locations in red. The localities VP16-11b and VP16-14 also refer to the samples VP16-11a and VP16-14a analysed here. The different map units correspond to rock types present in the area and are described in more detail in the map legend.

Analytical methods

Sample preparation

Zircon was separated at Stockholm University by crushing the whole rock using a stainless steel jaw crusher. The crushed material was further processed with a swing mill into a coarse powder. The zircon was separated first on a Wilfley water table and then with Methylene Iodide heavy liquid. The clean separate was hand-picked using a binocular microscope and mounted in epoxy. Prior to LA-ICPMS analyses the zircons were imaged with a scanning electron microscope using the CL detector at the Natural History Museum, Sweden.

LA-ICP-MS

All samples were analysed at the PetroTectonics Analytical Facility, Department of Geological Sciences, Stockholm University, using an LA-ICP-MS A New Wave Research-193 Excimer Laser Ablation system coupled to a Thermo XSeries™ II quadrupole mass spectrometer. The analytical settings are given in Table 2. The U, Pb and Th concentrations were obtained relative to international standards. Precision and accuracy were determined using the Plešovice zircon standard (Sláma, et al., 2008) used as the bracketing standard between every 12 samples, plus four analyses at the start and four at the end of the analyse sequence. The Duluth gabbro zircon FC-5z (Paces & Miller, 1993) was analysed as an ‘unknown’ to insure correct functioning of the instrument. The grains were randomly selected from a variety of sizes and textures; however, grains with inclusions or fractures were excluded.

Table 2. Analytical conditions associated with LA-ICP-MS analyses.

<i>Laser ablation</i>	<i>New Wave Research-193 Excimer</i>		<i>ICP-MS</i>	<i>Thermo XSeries™ II quadrupole MS</i>
Spot size	20 and 25 μm		Forward power	1400 W
Wavelength	193 nm		Nebuliser gas (Ar) flow	0.95 l/min
Energy density	7 J/cm ²		Cooling gas	13 l/min
Laser Frequency	10 Hz			
He carrier gas	500 ml/min			

Data reduction

Data reduction was performed using the software Iolite (Hellstrom, et al., 2008; Paton, et al., 2011). The program uses the VisualAge data reduction scheme of Petrus & Kamber (2012). Common Pb is controlled by measuring mass 204, which includes the isotopes ²⁰⁴Pb and ²⁰⁴Hg. Analyses with ²⁰⁴Pb <100 cps or ²⁰⁴Pb + ²⁰⁴Hg < ²⁰²Hg were regarded as acceptable. The data was filtered with respect to discordance (>10 %) and error (²⁰⁷Pb/²³⁵U 2 σ >50 Ma). U-Pb data was plotted as conventional concordia diagrams using Isoplot (Ludwig, 2012), a macro add-in for Microsoft Excel.

Kernel Density Estimation (KDE) plots with embedded histograms were created using DensityPlotter (Vermeesch, 2012) for the filtered data. A KDE is created by adding a kernel with a certain bandwidth above each measurement which are plotted along a time axis so that the relative height of the peaks resemble the relative abundance of that age population. For samples with $n > 70$, the optimal bandwidth called “adaptive KDE” was used, while samples with $n < 70$ were plotted with a constant bandwidth approximately equal to the mean 2σ for the $^{207}\text{Pb}/^{235}\text{U}$ dates. Depending on the spread in ages, the adaptive KDE changes the bandwidth to what fits the data best: areas with less data will be smoothed (broader bandwidth) while areas with more data are shown with higher resolution (narrower bandwidth) (Vermeesch, 2012). All histograms were produced with bin widths of 150 Ma on a scale of 0 to 3000 Ma.

Analytical results

U-Pb geochronology of detrital zircon

A total of 674 zircon grains were analysed and according to the data filtering criteria stated above, 514 analyses were acceptable. A comprehensive list of the detrital zircon U-Pb age results are given in the Appendix of additional material (Table 4). The samples represent Devonian or Paleozoic aged metasediments with all sample locations plotted in Figure 4. The maximum ages of deposition for each sample, which is equal to the average age of the three youngest U-Pb dated zircon grains, are summarised with the stratigraphic ages of the sediment in Table 3. In summary, all samples have maximum ages 939-1221 (averaged over three grains) million years *older* than their inferred depositional ages.

Table 3. Maximum U-Pb ages for the samples from Alatna River, Alaska averaged for the three youngest zircon grains in each sample. The table also shows stratigraphic age for the metasediments and the corresponding geologic era.

<i>Sample name</i>	<i>Stratigraphic era or period</i>	<i>Stratigraphic age (Ma)</i>	<i>Maximum age (Ma)</i>
EA16-02	Paleozoic	252-541	970
EA16-03	Devonian	359-419	939
EA16-05	Paleozoic	252-541	1163
VP16-04	Devonian	359-419	1047
VP16-05	Devonian	359-419	978
VP16-11a	Devonian	359-419	1221
VP16-14a	Devonian	359-419	972

Figure 5 shows Kernel Density Estimation plots for all acceptable $^{207}\text{Pb}/^{235}\text{U}$ ages for the samples. The KDE plots also show the depositional age of the sediment (from Table 3) with two vertical lines. While the samples display highly varying amounts of acceptable analyses, they show relatively uniform age signatures. The detrital zircon spectra for all samples show

only Precambrian U-Pb ages, specifically from the Proterozoic and Archean; the samples are dominated by detritus from the Mesoproterozoic (70%) and Paleoproterozoic (19%). There is also minor input from the Neoproterozoic and the Neoproterozoic, where the former is not present in EA16-02 or VP16-04 and the latter is absent from VP16-11a. Concordia diagrams for the samples are shown in Figure 8A-G.

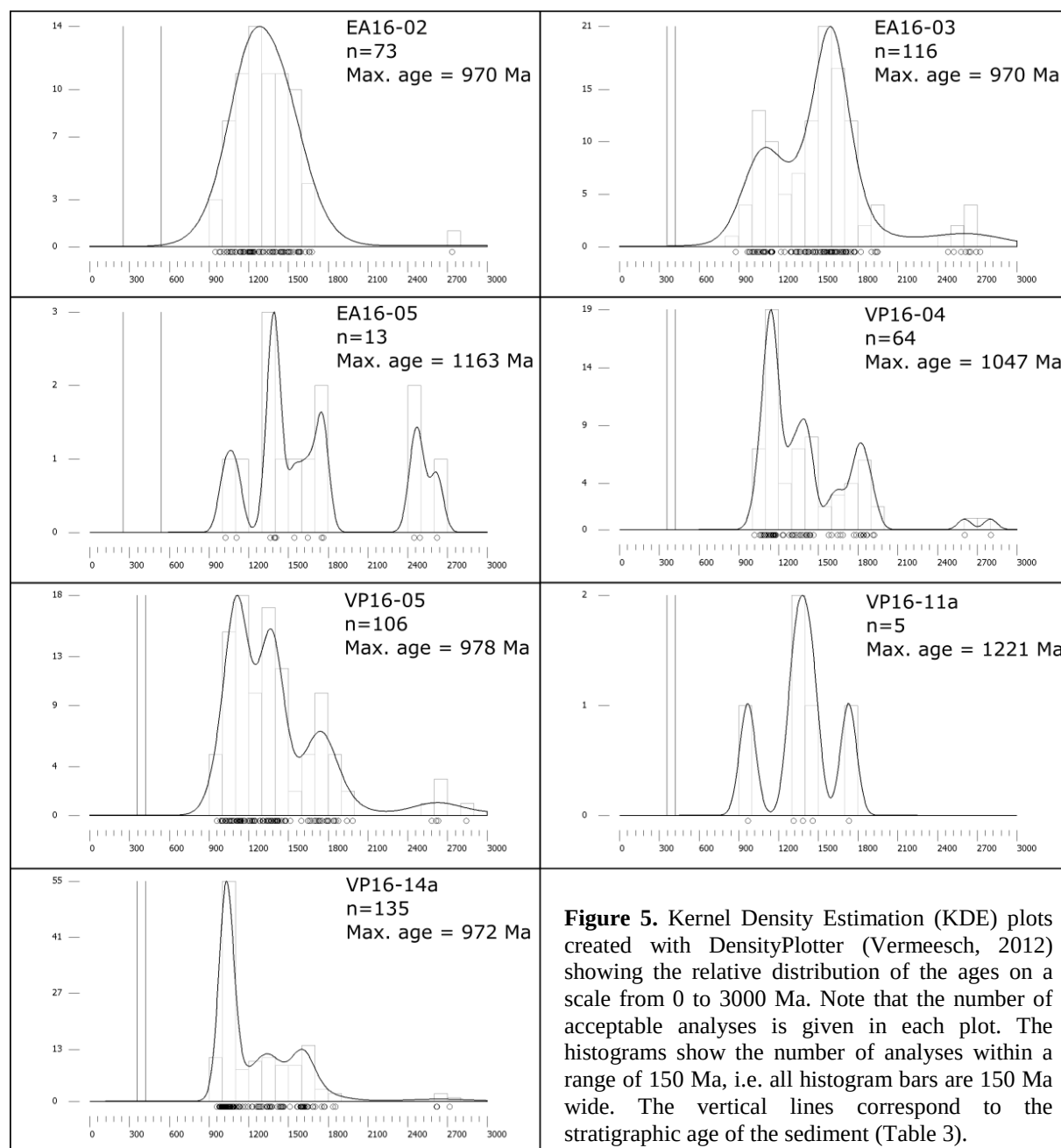


Figure 5. Kernel Density Estimation (KDE) plots created with DensityPlotter (Vermeesch, 2012) showing the relative distribution of the ages on a scale from 0 to 3000 Ma. Note that the number of acceptable analyses is given in each plot. The histograms show the number of analyses within a range of 150 Ma, i.e. all histogram bars are 150 Ma wide. The vertical lines correspond to the stratigraphic age of the sediment (Table 3).

Age ranges for detrital zircon samples

EA16-02 is a sample of quartzite within marble from the Paleozoic mixed schist and marble assemblage. The KDE plot (Figure 5) and concordia diagram (Figure 8A) show a detrital age spectrum largely dominated by Mesoproterozoic ages (89%) with a peak at 1290 Ma. A few percent detrital zircon are dated to the Neoproterozoic, Paleoproterozoic and the Neoarchean each.

EA16-03 is a sample of a biotite schist from the presumed skagit limestone succession of Devonian age. The age spectrum seen in the KDE plot (Figure 5) and the concordia diagram (Figure 8B) indicates three peaks, with the main peak at 1590 Ma since the sample contain 29% Mesoproterozoic and 30% Paleoproterozoic ages. A significant peak at 1080 Ma marks a group of early Mesoproterozoic aged detrital zircon. Neoproterozoic detritus accounts for 4% of the population. The sample also shows a smaller peak at 2610 Ma with Neoarchean ages.

EA16-05 is a sample of a quartz-rich layer in schist within the Paleozoic aged unit of mixed schist and marble. The sample has few (only 13) acceptable analyses, but these define a wide range of detrital zircon U-Pb ages shown in its KDE (Figure 5) and concordia diagram (Figure 8C). The majority of the ages are Mesoproterozoic (54%) and Paleoproterozoic (30%), with the main peak at 1380 Ma. Early Neoarchean aged detrital zircon are also present in the sample.

VP16-04 is an impure carbonate sample of the Devonian skagit limestone unit. Of 64 acceptable detrital zircon analyses, the age spectrum from the KDE (Figure 5) and the concordia diagram (Figure 8D) defines three main peaks of ages. The majority of the ages define a dominant early Mesoproterozoic age peak. A subordinate Paleoproterozoic peak is also present. peak in the middle of the era. Finally, a couple of analyses are of early Neo-Archean age.

VP16-05 is quartzite collected from Devonian aged skagit limestone sediments. There are 106 acceptable detrital zircon ages shown in the KDE (Figure 5) and the concordia diagram (Figure 8E), mainly from the Mesoproterozoic (69%) with two peaks at 1080 Ma and 1380 Ma. 21% of the detrital zircon ages are from the Paleoproterozoic and 5% from the Neoproterozoic. A small fraction of the ages are Neo-Archean with a peak at 1640 Ma.

VP1611a is a sample of chlorite schist collected from the Devonian aged unit skagit limestone. It has a very small detrital zircon age spectrum (five acceptable ages) shown in the KDE (Figure 5) and the concordia diagram (Figure 8F). 60% of the ages are of mid-Mesoproterozoic age while the two other are of late Neoproterozoic age (968 Ma, $2\sigma = 22$) and early Paleoproterozoic age (1458 Ma, $2\sigma = 33$).

VP16-14a is a quartzite collected from the skagit limestone unit of Devonian age. There are 156 acceptable analyses shown in the KDE (Figure 5) and the concordia diagram (Figure 8G) and the detrital zircon ages are spread mainly over the Mesoproterozoic (72%) with a pronounced peak in the early Mesoproterozoic (1080 Ma). There are also 12% from the Neoproterozoic and 13% from the Paleoproterozoic, with smaller peaks at 1380 Ma and 1680 Ma. A small fraction of the ages are from the Neoarchean with a peak at ~2640 Ma.

Discussion

Data quality

The number of acceptable analyses varies between the samples. The majority of the samples have a large number of acceptable analyses, $n > 60$, generating robust KDE plots. The quantity is lower for sample VP16-11a and EA16-05, which have 5 and 13 acceptable analyses respectively. The low n reduces the credibility of the KDE and the calculated maximum depositional age for these two samples. However, their existing age data show similarities with the other samples and can be used for general comparison.

Sample units and age spectra

All analysed detrital zircon have similar $^{207}\text{Pb}/^{235}\text{U}$ age spectra. 50-90% of the acceptable analyses for each sample give Mesoproterozoic (~ 1200 Ma) to late Neoproterozoic (~ 900 Ma) ages. Six out of seven samples show a minor peak in the Neoproterozoic (2800 Ma) to late Paleoproterozoic (2400 Ma). The samples come from two different map units, Pzmsm and Dsso (Figure 4), but these are not distinguishable in their age spectra.

Hoiland, et al. (in press) presents a comparison between their U-Pb detrital zircon age data from the John River (in Figure 3, box “Year 1”) and data of several studies from various locations in the southern Brooks Range. Ten samples from the Schist Belt of Devonian to late Neoproterozoic stratigraphic age, distinguished as “Signature A”, are different from other age spectra from the area. Signature A has no Proterozoic ages, but instead ages between 1800-1000 Ma and a small Archean peak (~ 2800 -2450). This age spectra, “Signature A”, can be recognized in the age signature of the samples from this study. Figure 6 show KDE plots for detrital zircon U-Pb age data from this thesis compared to age spectra distinguished by Hoiland, et al. (in press) marked as shaded areas in Figure 6 and presents a good agreement between the data sets.

Possible sediment provenance

The maximum ages of deposition, i.e. the average of the three youngest grains of a sample, range from 939-1221 Ma for the sample set. This is considerably older than the inferred Devonian and Paleozoic stratigraphic ages of the sediments (Table 1). If the stratigraphic age of a sediment is known, it can be plotted together with the detrital zircon ages in a KDE plot as in Figure 6. Assuming the given stratigraphic age is correct, the difference in the age of the sediment and the youngest detrital zircon ages can be used to deduce the geological setting at the time of sediment deposition (Cawood, et al., 2012). The age of clastic material deposited into sedimentary basins, like detrital zircon, is controlled mainly by the tectonic setting and hydrogeological processes (Cawood, et al., 2012). A large age difference in stratigraphic age and the youngest zircon ages are characteristic to extensional tectonic settings where the occurrence of synchronous magmatic activity during sedimentation is absent (Cawood, Hawkesworth, & Dhuime, 2012). In contrast, a sedimentary basin associated with an active margin of subduction type would have small or no difference in age between the stratigraphic age and the age of the youngest zircon, as the zircon would originate from the subduction magmatism (Cawood et al., 2012). Further more, the age spectra of the sediments will present

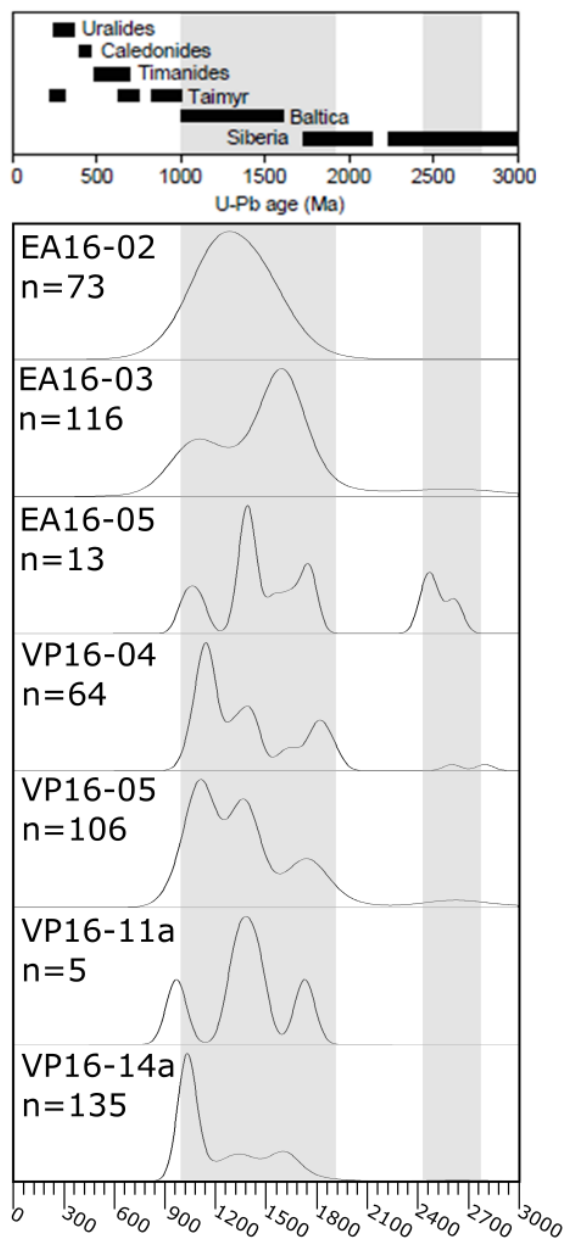


Figure 6. The figure shows KDE plots created with DensityPlotter (Vermeesch, 2012) for the samples in comparison with known geologic events (Hoiland, et al., in press) in the Arctic from 3000 million years ago until present day. Each sample is described with number of acceptable analyses. The grey areas represent important age ranges from Hoiland, et al. (in press) of ~1900-1000 and ~2800-2450 Ma, describing their “Signature A” age spectra. As seen by the shading, the detrital zircon age signatures range over the geologic units of Baltica and Siberia.

a similar pattern to that of the terrain they are derived from, and in the case of several source terrains a mixed age spectra containing elements from all source. Consequently, the provenance of sedimentary basins can be studied through detrital zircon analysis.

For the Alatna River samples of this study there are large age differences between the stratigraphic age (Devonian to Paleozoic, table 1) and the maximum age of deposition (Neoproterozoic to late Mesoproterozoic, table 3, figure 5). Thus, the sediment basin associated with the deposition of these metasediments was most likely located in a passive margin with no input of newly formed zircon (Cawood, et al., 2012). This indicates that the sediment has received detritus from a large province of stable, intracratonic type distal to active margin(s).

In studies of sediment provenance around the Brooks Range, some of the major detrital inputs are thought to be from the AACM itself (Neoproterozoic to Cretaceous age) (Miller, et al., 2010). If this would be the case for the metasediments of this study, it does not explain the Proterozoic and Archean input present, nor the lack of the Cretaceous ages in samples presented here. In fact, the AACM has not been found to contain any crystalline basement rocks of pre-Neoproterozoic age (Hoiland, et al., in press; Moore, et al., 2015). From this, it seems likely that detritus of Mesoproterozoic age or older has eroded from an intracratonic region such as Baltica or Laurentia.

Detritus with Mesoproterozoic or late Neoproterozoic ages could have eroded from several different parts of Baltica or Laurentia in association with the break-up of the supercontinent Rodinia around 700 Ma (Hoiland, et al., in press). Before the Rodinia break up, Mesoproterozoic crystalline basement were already eroded and sedimented

widely across both Baltica and Laurentia (Hoiland, et al., in press). This makes the distinction of provenance of pre-Mesoproterozoic detrital zircon problematic, as the detritus could be recycled and already at the time of Rodinia have been transported far from their source rock. However, broad age spectra approximately at 2000-900 Ma could, according to Miller, et al. (2010), be associated with detritus from the Baltic shield. If this is the case, the AACM and the sedimentary basin of the Alatna River metasediments was located close to the Barents Shelf before the Arctic Ocean was formed (Miller, et al., 2010).

At the top of Figure 6 the ages of major geological units in the Circum Arctic are presented (Hoiland, et al., in press) while their present location is shown in Figure 2. The grey intervals mark the “Signature A” from Hoiland et al., (in press). When compared, the detrital zircon U-Pb age signature from the Alatna River of this study and samples with corresponding age signatures (“Signature A”) from the southern Brooks Range (Hoiland, et al., in press) span over two geologic source units: Baltica, and Siberia.

The similarities in zircon U-Pb ages within the sample set suggest that the samples were sedimented in the same basin weathered from the same source(s). The difference between stratigraphic ages and maximum depositional ages of the sediment and the wide age spectra different from local geological units on the AACM together suggest a sediment provenance from an intracratonic setting of Precambrian age. From the comparison of these “Signature A” samples with possible source terrains in the Circum Arctic the signature from the samples of this study can be linked to detritus eroded from a mixture of Baltic and Siberian sources.

Conclusions

- The samples collected along Alatna River, Alaska, represent two rock units, the Devonian skagit limestone (Dssk) and the Paleozoic mixed schist and marble (Pzmsm) of the Central- and Schist Belt of the Brooks Range.
- About 50-90 % of the zircon grains show ages from the early Mesoproterozoic (~ 1200 Ma) to late Neoproterozoic (~ 900 Ma). All but one sample show minor peaks in the late Paleoproterozoic (2400 Ma) to Neoarchean (2800 Ma).
- The two rock units cannot be distinguished based on their detrital zircon U-Pb age signatures, suggesting they must have the same or similar detrital source.
- The samples detrital zircon U-Pb age spectra agrees well with “Signature A” of Hoiland, et al. (in press), which is found at several localities in the Southern Brooks Range.
- The maximum depositional ages (1221-939 Ma) and stratigraphic ages (~541-252 Ma) do not overlap for the samples. Following the logic of Cawood, et al. (2012) this indicate that the sediments derive from an intracratonic source and/or passive margin.
- Comparison of the detrital zircon U-Pb age spectra from the Alatna River with known ages of geological units from the Circum Arctic proposes the sedimentary sources to be Baltica and Siberia.

Future studies

Studying the correlations between the samples detrital zircon age spectra within context of the Circum Arctic region will give a greater understanding of the large-scale tectonic movements and the opening of the Arctic Sea. In particular, correlations between several sample locations, rock units and age spectra would give a more complete picture of the sedimentary provenance(s) and the change in sediment origin over time. It would also be of interest to look deeper into the discordant ages of the data set to see whether it is possible to detect late metamorphic events affecting the area.

Acknowledgements

Many thanks to my supervisor Emelie Axelsson for her fantastic help with the LA-ICP-MS analyses, data reduction and encouraging feedback during the writing of the thesis. I would also like to thank my other supervisor Victoria Pease for her thorough feedback on the text and her expertise in the area, which has deepened my understanding of the tectonic evolution in the Circum Arctic.

References

- Cawood, P. A., Hawkesworth, C. J. & Dhuime, B., 2012. Detrital zircon record and tectonic setting. *Geology*, 40(10), pp. 875-878.
- Corfu, F., Hanchar, J. M., Hoskin, P. W. & Kinny, P., 2003. Atlas of Zircon Textures. *Reviews in Mineralogy and Geochemistry*, 53(1), pp. 469-500.
- Grimes, C., Wooden, J., Cheadle, M. & John, B., 2015. "Fingerprinting" tectono-magnetic provenance using trace elements in igneous zircon. *Contributions to Mineralogy and Petrology*, 170(46).
- Hellstrom, J., Paton, C., Woodhead, J. & Hergt, J., 2008. Iolite: software for spatially resolved LA-(quad and MC) ICPMS analysis. *Mineralogical Association of Canada short course series*, Volume 40, pp. 343-348.
- Hoiland, C., Miller, E. L., Pease, V. & Hourigan, J., in press. Detrital zircon U-Pb geochronology and Hf isotope geochemistry of metasedimentary strata in the southern Brooks Range: Constraints on Neoproterozoic-Cretaceous evolution of Arctic Alaska. *Circum Arctic Lithosphere Evolution. Geological Society, London, Special Publications*, Volume 460.
- Ludwig, K. R., 2012. *Users manual for Isoplot 3.75: A geochronological toolkit for Microsoft Excel*. 5 ed. Berkeley, Canada: Berkeley Geochronology Centre Special Publication.
- Mason, P. R. & Mank, A. J., 2001. Depth Analysis by Laser-Ablation ICP-MS. In: P. J. Sylvester, ed. *Laser-Ablation-ICPMS in Earth Sciences: Principles and Applications*. Ottawa, Ont., Canada: Mineralogical Association of Canada, pp. 93-105.
- Miller, E. L., Gehrels, G. E., Pease, V. & Sokolov, S., 2010. Stratigraphy and U-Pb detrital zircon geochronology of Wrangel Island Russia: Implications for Arctic paleogeography. *AAPG Bulletin*, 94(5), pp. 665-692.
- Miller, E. L. et al., 2006. New insight into Arctic paleogeography and tectonics from U-Pb detrital zircon geochronology. *Tectonics*, Volume 25, pp. 1-19.
- Moore, T. E., Sullivan, P. B., Potter, C. J. & Donelick, R. A., 2015. Provenance and detrital zircon geochronologic evolution of lower Brookian foreland basin deposits of the western Brooks Range, Alaska, and implications for early Brookian tectonism. *Geosphere*, 11(1), pp. 93-122.
- Moore, T. E. et al., 1994. Geology of northern Alaska. *The Geology of Alaska*.
- Nelson, S. W. & Grybeck, D., 1980. Geologic map of the Survey Pass quadrangle. *Brooks Range, Alaska: US Geological Survey Miscellaneous Field Studies Map MF-1176-A*, scale, 1:250,000, p. 2.
- Paces, J. B. & Miller, J. D., 1993. Precise U-Pb ages of Duluth complex and related mafic intrusions, northeastern Minnesota: Geochronological insights to physical, petrogenetic, paleomagnetic and tectonomagmatic processes associated with the 1.1 Ga midcontinent rift system. *Journal of Geophysical Research: Solid Earth*, 98(B8), pp. 13997-14013.
- Paton, C. et al., 2011. Iolite: Freeware for the visualisation and processing of mass spectrometric data. *Journal of Analytical Atomic Spectrometry*, Volume 26, pp. 2508-2518.

- Paton, C. et al., 2010. Improved laser ablation U-Pb zircon geochronometry through robust downhole fractionation correction. *Geochemistry, Geophysics, Geosystems*, Volume 11, pp. 1-36.
- Pease, V., 2014. *Project Grant # 2014-1651-114118-27 (Title: Arctic Alaska and Eurasian Orogens)*. s.l.:Swedish Research Council.
- Petrus, J. A. & Kamber, B. S., 2012. VizualAge: A novel approach to laser ablation ICP-MS U-Pb geochronology data reduction. *Geostandards and Geoanalytical Research*, 36(3), pp. 247-270.
- Sláma, J. et al., 2008. Plesovice zircon -- A new natural reference material for U-Pb and Hf isotopic microanalysis. *Chemical Geology*, Volume 249, pp. 1-35.
- USGS, 1982. Survey Pass, Alaska - 67153-A1-TF-250. *United States Department of the Interior Geological Survey - Alaska Topographic Series*.
- Vermeesch, P., 2012. On the visualisation of detrital age distributions. *Chemical Geology*, Volume 312-313, pp. 190-194.
- Winter, J. D., 2014. *Principles of Igneous and Metamorphic Petrology*. 2nd ed. Harlow, Essex, U.K.: Pearson Education Ltd..

Appendix of additional material

1. Figure 7. Summary of age distributions based on geologic era in each sample
2. Figure 8A-G. Conventional concordia diagrams for each sample
3. Table 4. Comprehensive data table of the U-Pb analyses for all samples

1. Figure 7. Summary of age distributions based on geologic era in each sample

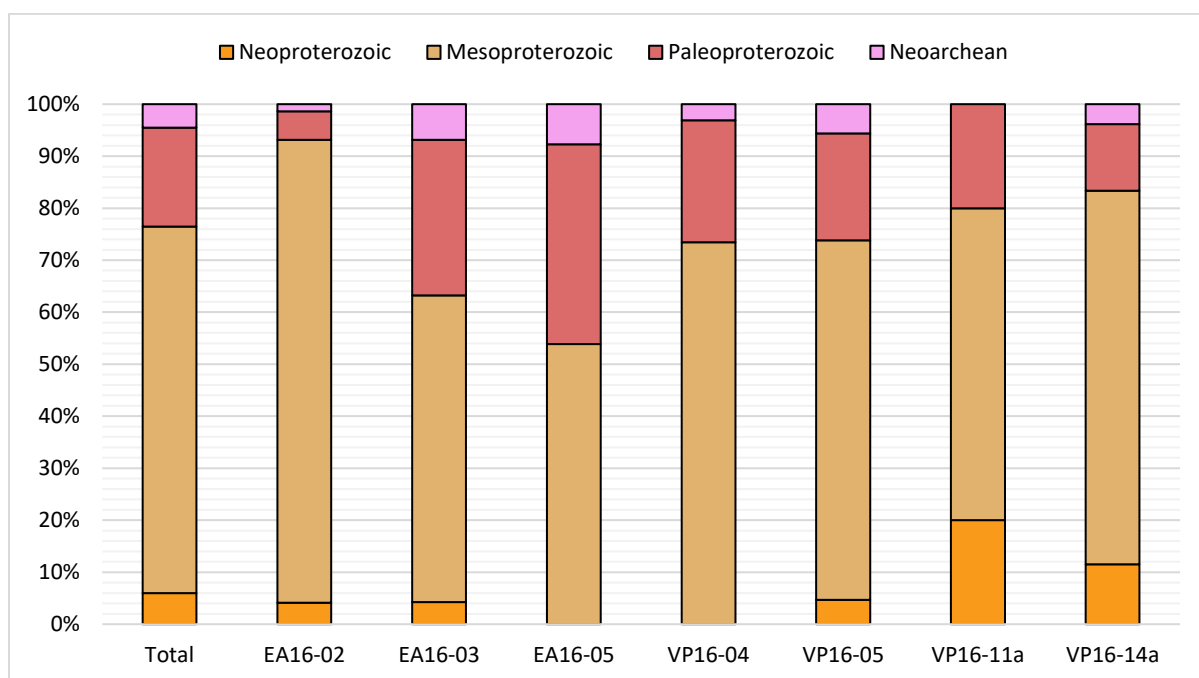
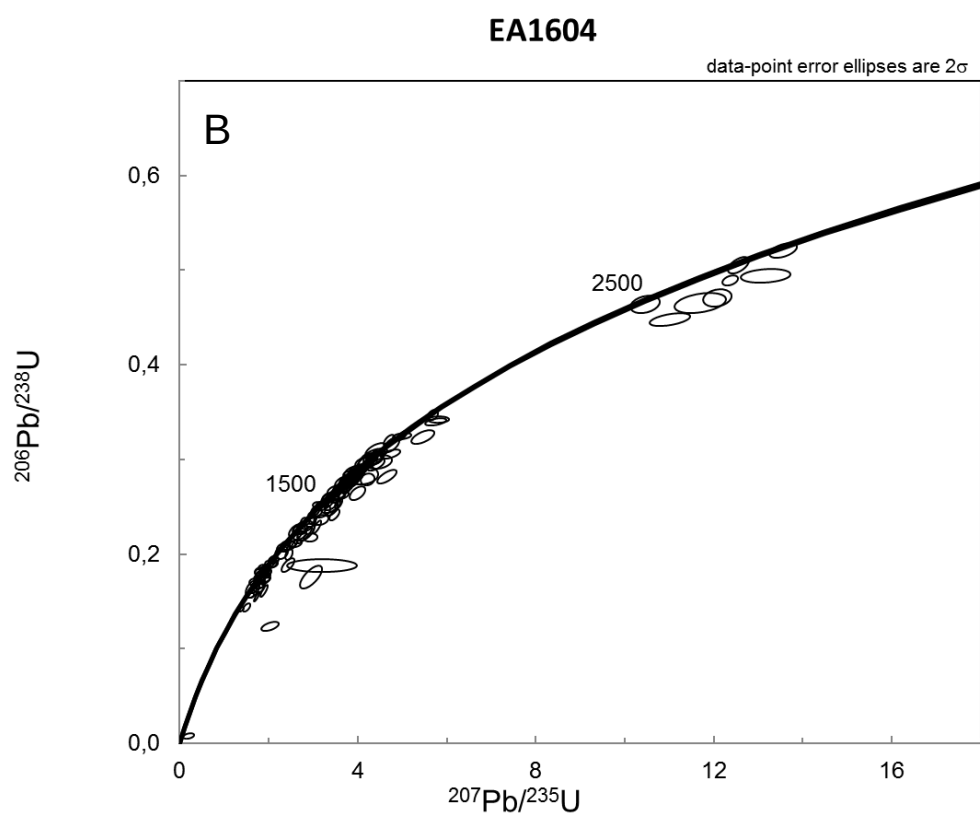
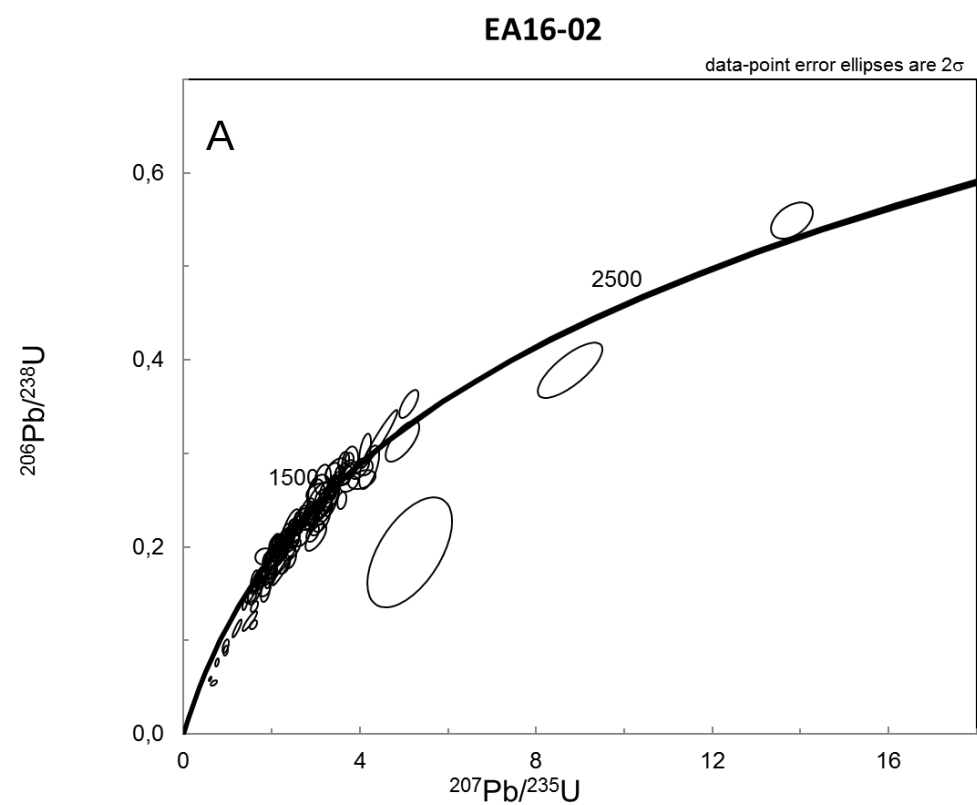
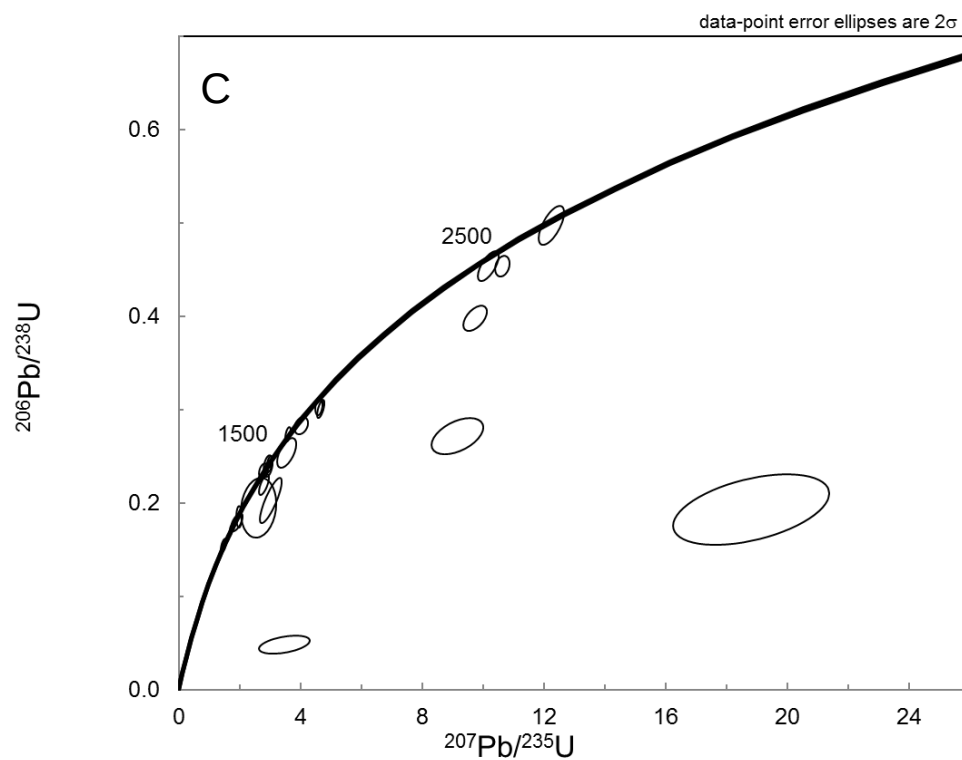


Figure 7. Detrital zircon U-Pb age distributions based on geologic era for the seven samples and the total. The figure shows a similar age distribution through all samples with dominating Mesoproterozoic ages (~70%) followed by around 19% Paleoproterozoic ages. A smaller amount of Neoproterozoic and Neoarchean ages are also present.

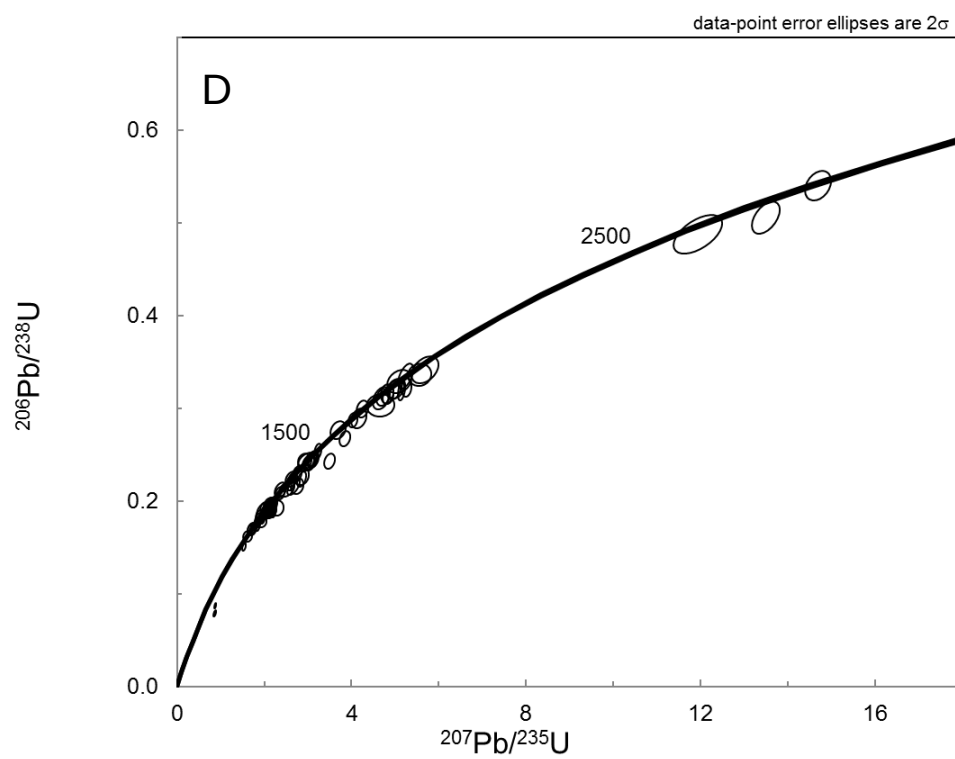
2. Figure 8A-G. Conventional Concordia diagrams for each sample

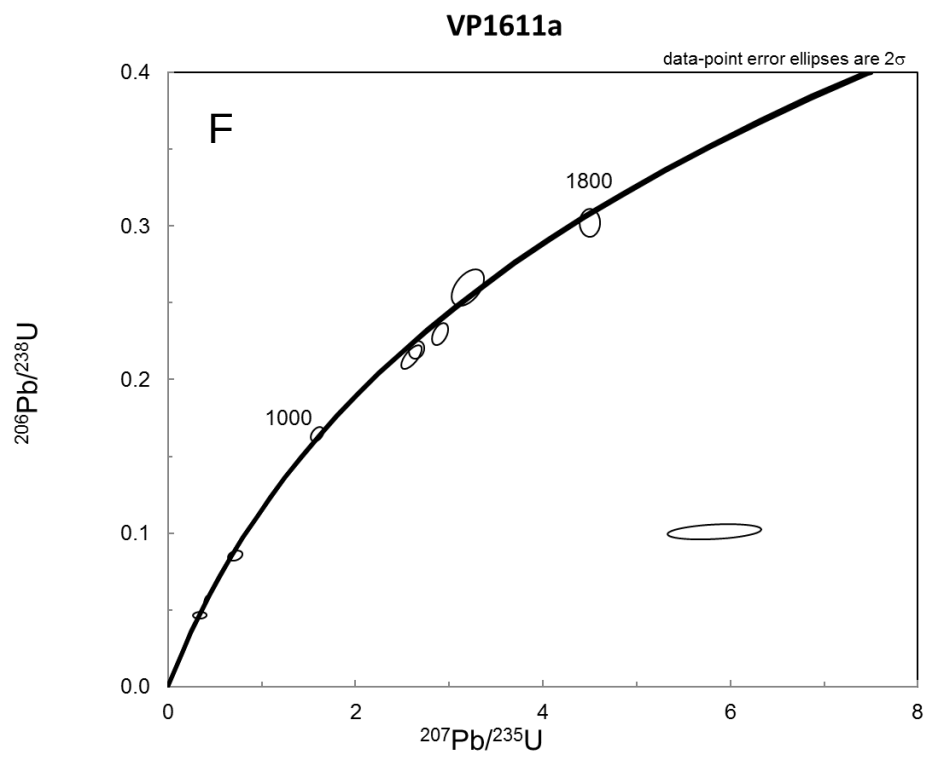
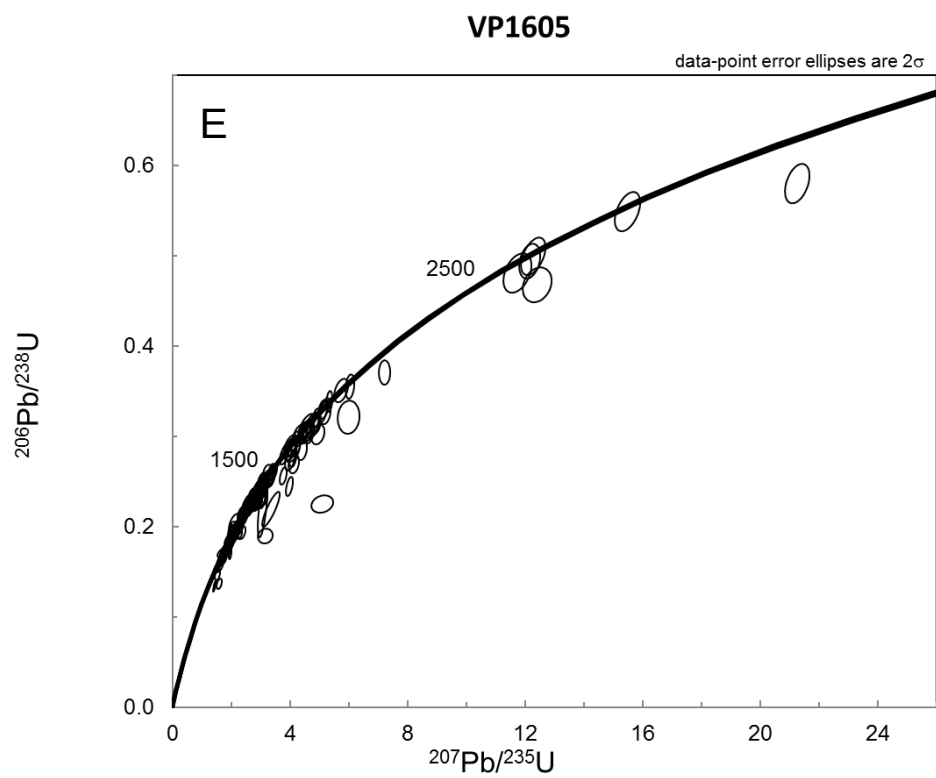


EA1605



VP1604





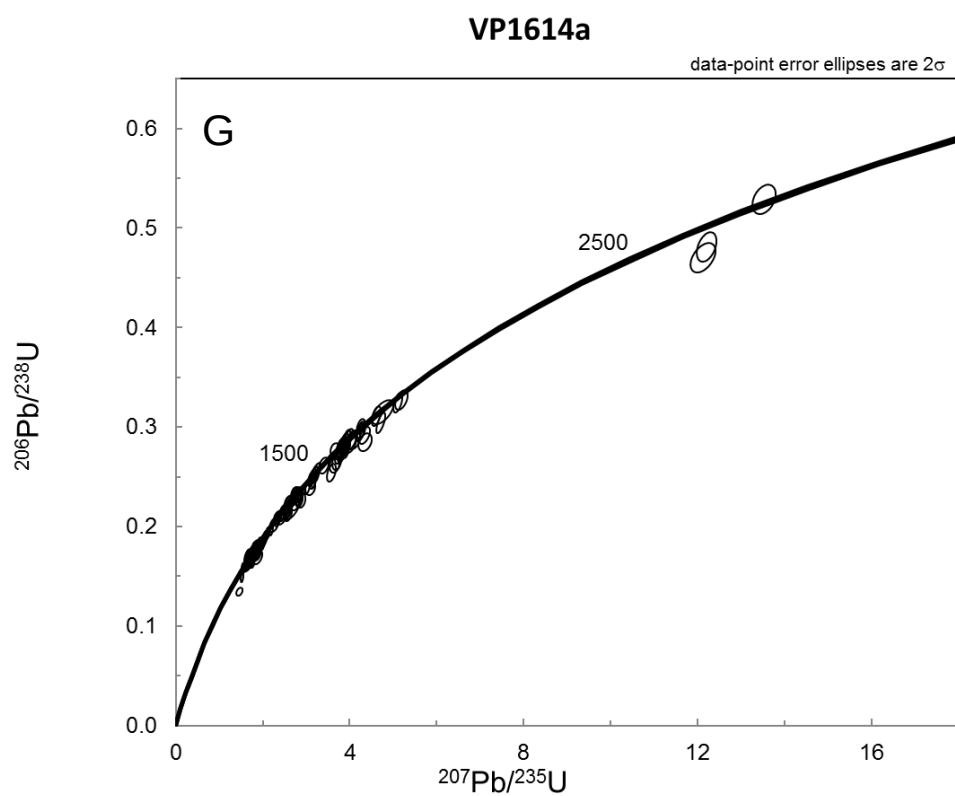


Figure 8A-G. Conventional concordia diagrams for the seven samples calculated with Isoplot (Ludwig, 2012), with ages in million years described along the concordia curve. The axes show the uncorrected ratios for the ratios $^{207}\text{Pb}/^{235}\text{U}$ and $^{206}\text{Pb}/^{238}\text{U}$. All error ellipses are 2σ .

3. Table 4. Comprehensive data table of the U-Pb analyses for all samples

Table 4. Comprehensive list of detrital zircon ages from LA-ICP-MS U-Pb dating. Light-grey coloured rows symbolise analyses where the final age of either $^{206}\text{Pb}/^{238}\text{U}$ or both $^{206}\text{Pb}/^{238}\text{U}$ and $^{207}\text{Pb}/^{235}\text{U}$ has an error over or equal to 50 Ma. All detrital zircon ages used in data analyses are $^{207}\text{Pb}/^{235}\text{U}$ ages, why error over or equal to 50 Ma are accepted for the second ratio of $^{206}\text{Pb}/^{238}\text{U}$ for those samples with acceptable error margins for the $^{207}\text{Pb}/^{235}\text{U}$ ratio. The error is given as two standard deviations (2σ).

Run name	U (ppm)	Pb (ppm)	U/Th	$^{207}\text{Pb}/^{206}\text{Pb}$	2σ	$^{207}\text{Pb}/^{235}\text{U}$	2σ	$^{206}\text{Pb}/^{238}\text{U}$	2σ	Error corr.	Final age for $^{206}\text{Pb}/^{238}\text{U}$ (Ma)	+ - (Ma)	Final age for $^{207}\text{Pb}/^{235}\text{U}$ (Ma)	+ - (Ma)	Disc. (%)
EA1603-1	232	112	5	0.0736	0.0028	1.637	0.073	0.162	0.0025	0.33601	968	14	984	27	3
EA1603-2	309	424	2	0.0986	0.0028	3.68	0.13	0.2716	0.0035	0.38912	1548	18	1568	30	2
EA1603-3	163	130	3	0.081	0.0029	2.314	0.099	0.2069	0.0033	0.32446	1212	18	1216	29	-2
EA1603-4	369	450	2	0.0997	0.003	3.86	0.14	0.2789	0.0042	0.36215	1585	21	1609	30	2
EA1603-5	406	545	2	0.0994	0.0026	3.56	0.13	0.2611	0.0036	0.64318	1495	18	1543	27	7
EA1603-6	556	893	2	0.0995	0.0026	3.57	0.14	0.2604	0.0054	0.78596	1495	28	1547	31	6
EA1603-7	220	227	2	0.0915	0.0028	3.04	0.12	0.2428	0.0033	0.50103	1401	17	1421	30	3
EA1603-8	230	156	3	0.0738	0.0024	1.752	0.065	0.1716	0.0025	0.25759	1021	14	1032	26	-5
EA1603-9	117	93	3	0.0872	0.0035	2.7	0.13	0.2262	0.0041	0.4281	1314	22	1328	34	-2
EA1603-10	173	225	2	0.0999	0.0033	3.84	0.14	0.2838	0.0038	0.10192	1610	19	1608	30	-1
EA1603-12	384	193	6	0.1079	0.003	4.41	0.16	0.2948	0.0052	0.64017	1665	26	1713	31	7
EA1603-13	518	295	2	0.0736	0.0022	1.689	0.061	0.1674	0.0018	0.21911	998	10	1004	24	0
EA1603-14	104	211	1	0.1012	0.004	3.82	0.18	0.2779	0.0069	0.40723	1580	35	1592	38	1
EA1603-18	323	229	2	0.105	0.003	4.36	0.15	0.2992	0.0045	0.378	1687	22	1705	28	1
EA1603-19	415	334	2	0.0999	0.0032	3.79	0.15	0.2788	0.0051	0.42243	1585	26	1594	29	4
EA1603-20	320	269	2	0.0939	0.0026	3.36	0.12	0.2603	0.0029	0.29445	1491	15	1493	27	0
EA1603-21	228	80	3	0.079	0.0032	1.945	0.097	0.1811	0.0029	0.23256	1073	16	1104	34	7
EA1603-22	380	145	3	0.0745	0.0028	1.804	0.076	0.1783	0.0023	0.11749	1057	13	1050	27	-8
EA1603-23	201	151	2	0.0935	0.003	3.49	0.14	0.2679	0.0039	0.46003	1530	20	1522	32	-4
EA1603-25	316	185	4	0.0988	0.0028	3.56	0.13	0.2609	0.0032	0.45392	1494	16	1540	29	6
EA1603-26	171	249	2	0.102	0.003	4.12	0.15	0.2955	0.0049	0.25037	1669	25	1660	31	-1
EA1603-27	722	383	3	0.0847	0.0026	2.57	0.1	0.2243	0.0052	0.57581	1304	27	1291	30	1
EA1603-28	620	133	7	0.0756	0.0022	1.937	0.075	0.1869	0.0027	0.57336	1106	14	1092	26	-3
EA1603-30	268	125	5	0.1042	0.0036	4.41	0.19	0.3096	0.0064	0.57225	1738	32	1711	36	-4
EA1603-31	239	178	3	0.1006	0.0034	4.01	0.16	0.2888	0.0039	0.25575	1635	20	1639	31	-2
EA1603-33	74	25	6	0.0935	0.0047	3.16	0.18	0.2458	0.0056	0.26034	1416	29	1458	42	1

<i>Run name</i>	<i>U (ppm)</i>	<i>Pb (ppm)</i>	<i>U/Th</i>	<i>207Pb/ 206Pb</i>	<i>2σ</i>	<i>207Pb/ 235U</i>	<i>2σ</i>	<i>206Pb/ 238U</i>	<i>2σ</i>	<i>Error corr.</i>	<i>Final age for 206Pb/ 238U7 (Ma)</i>	<i>+ - (Ma)</i>	<i>Final age for 207Pb/ 235U8 (Ma)</i>	<i>+ - (Ma)</i>	<i>Disc. (%)</i>
EA1603-34	389	339	3	0.1119	0.003	5	0.17	0.3248	0.0029	0.33838	1813	14	1820	30	0
EA1603-36	364	546	3	0.1776	0.0045	11.01	0.37	0.4481	0.0055	0.5033	2386	24	2523	31	9
EA1603-38	255	344	2	0.1067	0.0047	4.32	0.24	0.3017	0.008	0.60239	1699	40	1691	45	3
EA1603-39	366	170	4	0.0907	0.0038	2.84	0.16	0.2231	0.0076	0.60716	1298	40	1361	42	8
EA1603-40	173	80	4	0.0886	0.0038	2.81	0.14	0.2297	0.0046	0.28567	1332	24	1364	37	3
EA1603-41	1280	756	4	0.1006	0.0025	3.83	0.12	0.275	0.0026	0.3863	1566	13	1598	26	4
EA1603-42	74	50	4	0.0996	0.0035	3.78	0.16	0.2775	0.0045	0.34103	1578	23	1582	34	2
EA1603-43	322	97	7	0.1025	0.0035	3.98	0.16	0.2862	0.0048	0.38954	1622	24	1635	32	3
EA1603-44	264	177	2	0.0803	0.0029	2.08	0.1	0.1893	0.0038	0.57507	1117	21	1148	29	6
EA1603-45	318	375	2	0.1012	0.0036	3.94	0.17	0.2837	0.0061	0.45589	1609	31	1620	35	2
EA1603-46	323	111	7	0.1003	0.0029	3.84	0.15	0.2792	0.0038	0.51885	1587	19	1600	30	3
EA1603-47	145	89	3	0.0885	0.0035	2.6	0.11	0.2112	0.0034	0.32952	1235	18	1296	33	5
EA1603-48	259	217	4	0.1224	0.0033	5.81	0.19	0.3422	0.003	0.052751	1897	14	1947	29	4
EA1603-49	327	470	2	0.0993	0.0031	3.62	0.14	0.2621	0.0034	0.34586	1500	17	1556	31	6
EA1603-50	732	312	5	0.0958	0.0024	3.44	0.12	0.2626	0.0039	0.67088	1503	20	1513	27	2
EA1603-51	327	769	2	0.1912	0.0054	13.17	0.46	0.4943	0.0061	0.22338	2593	27	2691	33	6
EA1603-53	392	840	1	0.1023	0.0033	4.17	0.17	0.2954	0.0072	0.59269	1667	36	1670	34	-2
EA1603-54	183	332	1	0.1108	0.0035	4.74	0.18	0.3057	0.0041	0.58255	1719	20	1771	32	4
EA1603-55	516	346	4	0.1221	0.003	5.75	0.19	0.3398	0.0033	0.4855	1885	16	1940	30	5
EA1603-57	1161	937	2	0.0782	0.0032	1.921	0.096	0.1819	0.0038	0.59685	1077	21	1086	34	9
EA1603-58	50	178	1	0.1084	0.0047	4.48	0.23	0.297	0.006	0.26995	1675	30	1726	42	3
EA1603-59	214	130	3	0.0782	0.0031	2.113	0.088	0.1933	0.0032	0.24897	1139	17	1151	29	0
EA1603-60	116	152	2	0.0957	0.0036	3.68	0.16	0.2757	0.0057	0.41298	1573	29	1566	35	-2
EA1603-61	274	967	1	0.1208	0.0036	5.46	0.21	0.3237	0.0061	0.60935	1807	30	1900	32	8
EA1603-64	317	345	2	0.0876	0.0027	2.72	0.097	0.2241	0.0026	0.15541	1303	14	1337	27	5
EA1603-65	332	731	1	0.0967	0.0034	3.37	0.15	0.2494	0.0046	0.46449	1435	24	1495	34	6
EA1603-66	383	380	2	0.0783	0.0028	2.089	0.092	0.19	0.0032	0.21949	1121	17	1143	30	2
EA1603-69	326	692	1	0.1002	0.0041	3.81	0.17	0.2772	0.0062	0.35978	1577	31	1598	37	1
EA1603-70	253	522	1	0.0932	0.0031	3.2	0.12	0.2509	0.004	0.23814	1442	21	1456	28	2
EA1603-71	131	86	3	0.0841	0.0041	2.43	0.13	0.2092	0.0037	0.16283	1224	20	1245	38	-9
EA1603-73	372	557	1	0.1009	0.003	3.97	0.15	0.2847	0.0045	0.47026	1614	22	1627	30	1
EA1603-74	52	212	1	0.1799	0.0059	11.7	0.47	0.4653	0.0086	0.36265	2466	39	2578	39	7

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
EA1603-75	125	171	1	0.0879	0.003	2.7	0.12	0.2192	0.0036	0.52215	1282	19	1331	33	8
EA1603-76	322	370	2	0.102	0.0027	3.94	0.13	0.2804	0.0035	0.54702	1593	17	1620	28	4
EA1603-77	602	99	10	0.0739	0.0023	1.764	0.069	0.1728	0.0044	0.58522	1027	24	1031	26	0
EA1603-78	788	557	1	0.0704	0.0019	1.369	0.049	0.1412	0.002	0.57496	851	11	875	21	8
EA1603-80	167	253	1	0.0738	0.0028	1.593	0.067	0.1569	0.0025	0.14048	939	14	966	26	0
EA1603-81	300	106	3	0.0735	0.0022	1.676	0.066	0.1664	0.0033	0.58186	992	18	999	26	1
EA1603-83	89	74	1	0.0787	0.0035	1.78	0.092	0.164	0.0032	0.2295	978	18	1033	34	5
EA1603-85	344	243	7	0.0934	0.0027	3.244	0.06	0.2544	0.0031	0.52696	1461	16	1466	14	2
EA1603-86	207	145	6	0.0895	0.0026	2.963	0.051	0.2409	0.0031	0.55304	1391	16	1402	14	1
EA1603-87	37	60	4	0.1658	0.006	10.45	0.27	0.4641	0.0077	0.29201	2456	34	2479	24	2
EA1603-88	339	189	5	0.0748	0.0029	1.718	0.048	0.1685	0.003	0.30577	1003	17	1014	18	5
EA1603-90	429	205	8	0.1065	0.003	4.35	0.1	0.3024	0.0061	0.69727	1703	30	1702	19	2
EA1603-91	231	307	2	0.1	0.0034	3.595	0.098	0.2692	0.0064	0.63726	1536	32	1547	22	5
EA1603-92	294	276	3	0.0959	0.0028	3.526	0.058	0.2689	0.0033	0.35161	1535	17	1533	13	0
EA1603-93	676	657	3	0.094	0.0026	3.276	0.047	0.2553	0.0026	0.47434	1466	13	1476	11	3
EA1603-94	371	249	6	0.1139	0.0031	4.998	0.082	0.325	0.0041	0.66965	1814	20	1819	14	3
EA1603-95	299	325	2	0.0784	0.0024	2.061	0.05	0.1941	0.0032	0.53983	1143	17	1136	17	1
EA1603-96	411	249	3	0.1052	0.0029	4.283	0.052	0.3	0.0029	0.37691	1691	14	1692	10	1
EA1603-97	127	112	2	0.0945	0.0042	3.32	0.12	0.2569	0.0064	0.33615	1473	33	1481	29	-1
EA1603-98	612	60	15	0.0989	0.0026	3.661	0.058	0.2738	0.0027	0.68111	1560	14	1565	12	2
EA1603-99	586	843	1	0.0772	0.0021	1.958	0.031	0.1866	0.0017	0.48321	1104.2	8.9	1101	10	2
EA1603-100	280	476	1	0.1075	0.0029	4.387	0.066	0.3057	0.0032	0.40343	1719	16	1708	12	2
EA1603-102	176	125	3	0.1095	0.0033	4.7	0.1	0.3198	0.0053	0.55309	1788	26	1769	19	-1
EA1603-103	118	99	2	0.0905	0.0032	3.089	0.076	0.2521	0.0027	0.14589	1449	14	1430	19	-2
EA1603-104	254	295	2	0.0988	0.003	3.574	0.083	0.2688	0.0045	0.50026	1534	23	1546	19	2
EA1603-105	137	252	1	0.1196	0.0036	5.684	0.094	0.3471	0.0043	0.323	1922	20	1929	14	1
EA1603-107	424	487	1	0.0867	0.0025	2.778	0.047	0.2349	0.0028	0.42012	1360	15	1348	13	0
EA1603-108	281	244	3	0.0905	0.003	3.064	0.077	0.2462	0.0049	0.54905	1418	25	1425	20	1
EA1603-109	724	461	2	0.0739	0.0022	1.615	0.033	0.1612	0.0021	0.6254	963	11	976	13	7
EA1603-111	159	98	3	0.0767	0.0027	1.967	0.049	0.1897	0.0023	0.15734	1120	13	1102	17	-7
EA1603-112	113	65	3	0.0768	0.0031	1.931	0.066	0.1825	0.0028	0.34963	1084	15	1087	23	-4
EA1603-113	89	91	3	0.1044	0.0035	4.27	0.11	0.3003	0.0049	0.30881	1695	24	1687	20	-1

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
EA1603-114	83	90	3	0.104	0.0035	4.23	0.1	0.2955	0.0036	0.32335	1668	18	1677	20	2
EA1603-115	65	125	2	0.1048	0.0044	4.38	0.15	0.3013	0.0053	0.227	1697	26	1706	28	0
EA1603-116	71	375	1	0.1914	0.0057	13.56	0.25	0.5206	0.0065	0.49001	2701	28	2723	19	1
EA1603-117	198	694	1	0.1829	0.005	12.55	0.19	0.5054	0.0069	0.56963	2636	30	2647	14	1
EA1603-118	125	199	2	0.1007	0.0032	4.036	0.091	0.29	0.0041	0.42713	1641	20	1641	18	-1
EA1603-119	320	159	4	0.0778	0.0026	2.096	0.058	0.1935	0.0031	0.47756	1140	16	1145	19	-1
EA1603-121	230	362	2	0.0977	0.0029	3.681	0.077	0.2741	0.0041	0.50556	1564	20	1565	17	1
EA1603-122	274	191	4	0.1068	0.0031	4.577	0.068	0.3088	0.0025	0.093146	1735	13	1746	12	1
EA1603-123	213	137	3	0.0804	0.0028	2.078	0.063	0.192	0.0042	0.56334	1132	22	1146	22	3
EA1603-124	353	386	2	0.1005	0.0028	3.749	0.072	0.2686	0.0036	0.53425	1533	18	1583	15	6
EA1603-125	99	93	2	0.0754	0.0031	1.902	0.06	0.1789	0.0029	0.11668	1061	16	1078	21	-9
EA1603-126	235	199	2	0.085	0.004	2.561	0.087	0.2149	0.0061	0.30912	1255	32	1295	22	3
EA1603-132	144	112	4	0.1065	0.0042	4.22	0.12	0.2787	0.0052	0.16623	1584	26	1677	24	8
EA1603-133	60	30	4	0.0754	0.005	1.79	0.1	0.1683	0.0037	0.19588	1005	20	1041	38	8
EA1603-135	238	106	4	0.0762	0.0035	1.837	0.069	0.1752	0.0037	0.35786	1040	21	1060	24	-1
EA1603-138	207	98	5	0.0985	0.0032	3.782	0.08	0.2715	0.003	0.19321	1548	15	1586	17	3
EA1603-139	79	265	1	0.1816	0.0062	12.08	0.26	0.4707	0.0075	0.21685	2486	33	2610	20	6
EA1603-144	359	605	1	0.1034	0.0031	4.327	0.095	0.2974	0.0041	0.53568	1678	20	1704	17	1
EA1603-146	304	1230	0	0.1803	0.0048	12.37	0.15	0.4893	0.0043	0.38729	2567	19	2634	12	3
EA1603-148	171	228	1	0.1071	0.0036	4.76	0.14	0.3152	0.0062	0.58488	1765	31	1777	23	-2
EA1603-149	338	428	1	0.0983	0.003	3.97	0.11	0.2851	0.0053	0.66353	1616	27	1623	22	-1
EA1603-150	997	896	1	0.0963	0.0026	3.534	0.042	0.262	0.0031	0.54761	1499	16	1533.9	9.4	3
EA1603-151	344	318	1	0.0749	0.0028	1.957	0.05	0.1845	0.0024	0.047497	1091	13	1100	17	-3
EA1603-152	404	328	1	0.0899	0.0028	2.994	0.072	0.2361	0.0037	0.5334	1366	19	1407	19	4
EA1603-153	100	160	1	0.0885	0.0037	2.94	0.1	0.2337	0.0041	0.25547	1353	22	1394	27	1
EA1603-155	884	7	112	0.0726	0.0021	1.724	0.04	0.1691	0.0028	0.61142	1007	15	1016	15	-2
EA1603-141	416	382	3	0.0991	0.0028	3.574	0.068	0.2536	0.0045	0.6004	1456	23	1544	15	10
EA1603-17	65	119	1	0.1038	0.0088	4.08	0.31	0.2838	0.008	0.060545	1610	40	1642	62	0
EA1603-11	111	60	3	0.0764	0.0032	1.916	0.09	0.1842	0.0026	0.26277	1089	14	1091	33	-13
EA1603-15	560	529	2	0.0994	0.0025	3.42	0.13	0.2521	0.0044	0.69536	1448	23	1511	28	10
EA1603-16	67	81	1	0.0731	0.0041	1.81	0.1	0.1811	0.0031	0.1429	1073	17	1041	37	-46
EA1603-24	342	262	2	0.1014	0.0031	3.44	0.14	0.2506	0.0081	0.57479	1441	42	1511	33	12

<i>Run name</i>	<i>U (ppm)</i>	<i>Pb (ppm)</i>	<i>U/Th</i>	<i>207Pb/ 206Pb</i>	<i>2σ</i>	<i>207Pb/ 235U</i>	<i>2σ</i>	<i>206Pb/ 238U</i>	<i>2σ</i>	<i>Error corr.</i>	<i>Final age for 206Pb/ 238U7 (Ma)</i>	<i>+ - (Ma)</i>	<i>Final age for 207Pb/ 235U8 (Ma)</i>	<i>+ - (Ma)</i>	<i>Disc. (%)</i>
EA1603-29	230	121	3	0.0732	0.0024	1.803	0.073	0.1789	0.0032	0.48272	1060	18	1048	27	-12
EA1603-32	189	133	2	0.0732	0.0034	1.873	0.092	0.1853	0.0028	0.065255	1096	15	1068	33	-17
EA1603-35	185	113	3	0.0735	0.0041	1.83	0.11	0.181	0.0043	0.028144	1072	24	1052	37	-14
EA1603-37	194	132	4	0.1175	0.0058	2.95	0.2	0.1757	0.0098	0.69553	1039	54	1386	51	43
EA1603-52	77	103	1	0.0758	0.0041	1.81	0.11	0.1761	0.0044	0.39111	1045	24	1047	39	-26
EA1603-56	572	389	2	0.0806	0.0023	1.923	0.074	0.1717	0.003	0.62851	1023	16	1091	26	15
EA1603-62	429	562	1	0.0931	0.0032	2.43	0.12	0.1883	0.0061	0.67311	1112	33	1248	34	24
EA1603-63	283	355	2	0.0921	0.0028	2.8	0.14	0.22	0.0073	0.85949	1280	39	1351	39	14
EA1603-67	492	639	2	0.1191	0.0031	4.66	0.18	0.282	0.0057	0.70882	1601	29	1758	32	17
EA1603-68	1154	971	2	0.0795	0.0021	1.846	0.063	0.1673	0.0023	0.46319	997	13	1061	23	15
EA1603-72	20	3	26	0.2	0.1	0.19	0.1	0.0078	0.0022	0.37095	50	14	189	95	100
EA1603-75b	56	80	1	0.119	0.0078	2.02	0.16	0.1234	0.004	0.55593	749	23	1127	54	59
EA1603-79	133	74	2	0.0733	0.0057	1.64	0.13	0.1632	0.0073	0.45156	974	41	992	48	-14
EA1603-82	436	325	1	0.077	0.0027	1.496	0.07	0.1433	0.0034	0.59596	863	19	930	29	20
EA1603-84	60	72	4	0.0998	0.0048	3.18	0.13	0.2362	0.0043	0.3245	1366	23	1449	32	15
EA1603-89	138	108	3	0.0707	0.0039	1.666	0.084	0.1706	0.0033	0.12741	1015	18	991	31	-13
EA1603-101	66	37	2	0.0857	0.0039	2.369	0.088	0.2061	0.0033	0.044627	1208	17	1234	27	-13
EA1603-106	514	442	1	0.0861	0.0025	1.898	0.063	0.161	0.0049	0.84119	961	27	1081	22	28
EA1603-110	808	368	5	0.0986	0.0028	3.076	0.078	0.2289	0.0057	0.80324	1327	30	1424	19	17
EA1603-120	1262	510	5	0.0892	0.0023	2.577	0.044	0.2104	0.0036	0.79981	1230	19	1295	13	12
EA1603-127	1352	1492	2	0.0882	0.0027	2.446	0.065	0.1993	0.0046	0.43695	1171	24	1254	19	16
EA1603-130	158	167	4	0.133	0.027	3.2	0.64	0.188	0.0058	0.0058467	1109	31	1356	88	33
EA1603-131	130	146	2	0.0969	0.0046	2.94	0.12	0.2176	0.0033	0.11569	1269	17	1383	32	14
EA1603-134	98	42	6	0.1069	0.004	3.99	0.14	0.2645	0.006	0.52739	1511	30	1629	28	11
EA1603-136	45	22	4	0.0757	0.0056	1.87	0.13	0.1748	0.0035	0.03971	1038	19	1079	44	38
EA1603-137	68	82	2	0.0839	0.0041	2.7	0.11	0.2262	0.0041	0.046098	1314	21	1324	29	-16
EA1603-140	72	78	1	0.0736	0.0042	1.809	0.089	0.1729	0.0028	0.010595	1028	15	1051	33	-30
EA1603-142	221	218	3	0.1022	0.0033	3.474	0.091	0.2413	0.005	0.64208	1393	26	1518	20	16
EA1603-143	735	366	3	0.08	0.0024	2.004	0.03	0.1777	0.0016	0.19613	1054.3	8.5	1119	10	12
EA1603-145	93	64	1	0.0777	0.004	2.29	0.12	0.2017	0.0054	0.26751	1187	30	1211	35	-15
EA1603-154	1328	535	2	0.0788	0.0022	1.73	0.053	0.1545	0.004	0.89112	925	22	1016	19	21
EA1603-147	228	391	4	0.164	0.023	7.5	1.1	0.323	0.011	0.33607	1815	52	2130	120	21

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
EA1603-128	233	415	4	0.123	0.017	4.18	0.55	0.2504	0.0081	0.0085174	1438	41	1589	66	9
EA1603-129	39	381	2	0.29	0.11	10.7	3.1	0.322	0.052	0.0079296	1760	240	2260	250	0
VP1604-2	59	79	1	0.0973	0.0043	3.69	0.14	0.2767	0.0076	0.27664	1574	38	1576	30	-1
VP1604-5	73	79	1	0.0885	0.0041	2.91	0.11	0.2438	0.0061	0.22233	1406	32	1383	28	-6
VP1604-8	123	242	1	0.1125	0.0044	4.81	0.12	0.3153	0.0086	0.062097	1766	42	1785	21	3
VP1604-9	147	176	2	0.1049	0.004	4.25	0.11	0.2994	0.0073	0.22728	1688	36	1684	21	1
VP1604-10	109	309	1	0.1125	0.0041	4.83	0.1	0.3144	0.0078	0.37506	1762	38	1787	18	3
VP1604-11	187	122	3	0.0926	0.0033	3.078	0.061	0.2451	0.0057	0.20457	1413	29	1428	15	4
VP1604-15	461	342	3	0.1034	0.0037	4.029	0.078	0.2875	0.0065	0.21048	1629	33	1645	16	3
VP1604-16	190	182	2	0.0791	0.0033	2.147	0.067	0.1974	0.0051	0.081037	1161	28	1162	22	-2
VP1604-17	94	305	0	0.0787	0.0038	2.084	0.079	0.192	0.0057	0.13236	1132	31	1142	25	-8
VP1604-18	79	212	1	0.0843	0.0044	2.61	0.11	0.2234	0.0067	0.31839	1299	35	1304	33	0
VP1604-19	291	979	1	0.1128	0.0041	4.97	0.13	0.3198	0.0081	0.30258	1789	40	1816	22	2
VP1604-20	358	298	3	0.0918	0.0033	3.22	0.067	0.2537	0.0069	0.35787	1460	34	1463	16	0
VP1604-21	79	193	1	0.0798	0.0055	1.97	0.12	0.1883	0.0079	0.34467	1111	43	1108	44	0
VP1604-22	47	55	2	0.0878	0.0053	2.99	0.18	0.2426	0.0076	0.32437	1399	39	1400	44	-4
VP1604-23	393	250	3	0.0789	0.0033	2.077	0.058	0.1911	0.0052	0.22106	1127	28	1140	19	3
VP1604-24	333	262	2	0.0789	0.0029	2.07	0.044	0.1918	0.0054	0.43814	1131	29	1138	15	3
VP1604-25	109	191	1	0.0767	0.0042	2.114	0.097	0.1965	0.0059	0.31321	1156	32	1148	32	-6
VP1604-26	265	395	2	0.1092	0.0039	4.72	0.12	0.3121	0.0076	0.23303	1751	37	1768	21	2
VP1604-27	167	302	1	0.1022	0.0039	3.84	0.1	0.2674	0.0069	0.27437	1527	35	1597	21	6
VP1604-28	316	257	2	0.0781	0.0028	2.138	0.055	0.1953	0.0053	0.32961	1150	29	1162	17	-1
VP1604-30	168	174	2	0.0884	0.0033	2.987	0.077	0.242	0.0061	0.43869	1397	32	1402	20	-2
VP1604-31	376	220	3	0.0782	0.0033	2.067	0.055	0.1898	0.0051	0.18082	1120	27	1136	18	0
VP1604-32	557	171	5	0.0716	0.0026	1.729	0.035	0.1703	0.0043	0.19333	1014	23	1018	13	-2
VP1604-33	463	180	4	0.0758	0.0025	1.938	0.04	0.184	0.0048	0.53163	1088	26	1093	14	-1
VP1604-34	144	198	2	0.1013	0.0047	4.17	0.14	0.2892	0.0089	0.28246	1637	44	1666	28	0
VP1604-35	155	154	2	0.0807	0.0037	2.364	0.084	0.2087	0.0056	0.21369	1222	30	1229	25	-1
VP1604-36	175	161	2	0.0776	0.0034	2.146	0.072	0.1951	0.0056	0.2243	1152	29	1164	23	0
VP1604-37	124	121	2	0.0781	0.004	2.37	0.11	0.2122	0.0066	0.38156	1240	35	1234	34	-10
VP1604-38	235	415	1	0.0912	0.0037	3.111	0.097	0.2437	0.0068	0.40741	1415	39	1437	23	3

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1604-39	112	85	2	0.076	0.0039	2.047	0.088	0.1896	0.0055	0.28103	1119	30	1137	27	-4
VP1604-40	120	108	2	0.0784	0.0039	2.165	0.09	0.1971	0.0054	0.28775	1159	29	1165	29	-8
VP1604-41	116	202	1	0.0878	0.0043	3.02	0.12	0.2417	0.0066	0.3532	1395	34	1412	31	-5
VP1604-42	195	122	3	0.0826	0.0046	2.51	0.14	0.2126	0.0067	0.39339	1242	36	1279	43	2
VP1604-44	53	263	1	0.1102	0.0057	5.09	0.23	0.329	0.01	0.2751	1834	48	1838	36	-2
VP1604-50	298	414	2	0.1158	0.004	5.259	0.086	0.3226	0.0082	0.15513	1802	40	1864	14	6
VP1604-51	352	491	1	0.0786	0.0034	2.154	0.069	0.1953	0.0055	0.28823	1150	30	1170	21	0
VP1604-53	408	449	2	0.0914	0.0034	2.855	0.09	0.2237	0.0064	0.48304	1301	34	1367	23	9
VP1604-54	165	152	2	0.0882	0.004	2.67	0.12	0.2162	0.0075	0.60799	1261	40	1323	36	6
VP1604-57	135	130	2	0.0792	0.0047	2.08	0.096	0.1884	0.0054	0.093866	1112	29	1158	33	-1
VP1604-58	257	745	1	0.1183	0.0062	5.55	0.22	0.3362	0.0098	0.074901	1868	47	1912	36	3
VP1604-60	63	64	2	0.0868	0.0056	2.83	0.15	0.2278	0.0086	0.074237	1322	45	1355	40	-3
VP1604-61	186	229	1	0.0775	0.0041	2.035	0.09	0.1885	0.0063	0.21948	1113	34	1122	30	-5
VP1604-62	84	243	1	0.109	0.0046	4.68	0.16	0.311	0.01	0.3831	1750	49	1768	32	-1
VP1604-63	397	398	2	0.0793	0.0031	2.17	0.064	0.1968	0.0057	0.4765	1158	31	1173	21	1
VP1604-64	238	198	2	0.0783	0.0032	2.087	0.063	0.1938	0.0056	0.319	1141	31	1143	21	-3
VP1604-67	114	97	2	0.0816	0.0055	2.12	0.13	0.1895	0.0063	0.23444	1118	34	1155	39	1
VP1604-68	280	277	2	0.0836	0.0034	2.612	0.075	0.221	0.0076	0.41731	1286	40	1305	20	-1
VP1604-69	394	541	1	0.0803	0.0035	2.207	0.077	0.1968	0.0065	0.27917	1158	35	1181	24	4
VP1604-70	446	226	3	0.0755	0.0028	1.901	0.056	0.1809	0.0052	0.65186	1071	28	1078	19	-1
VP1604-71	168	278	2	0.091	0.0041	3.11	0.11	0.2446	0.0075	0.33594	1410	39	1434	28	0
VP1604-72	270	248	2	0.0786	0.0033	2.117	0.067	0.1939	0.0059	0.38451	1142	32	1161	22	2
VP1604-73	212	580	1	0.0863	0.0036	2.739	0.093	0.2281	0.0064	0.41784	1324	33	1336	25	1
VP1604-74	394	333	3	0.0742	0.0026	1.839	0.04	0.1774	0.0044	0.41743	1052	24	1058	14	-3
VP1604-76	339	964	2	0.1158	0.004	5.145	0.067	0.3191	0.0087	0.42287	1785	43	1843	11	6
VP1604-77	303	385	2	0.0747	0.003	1.852	0.058	0.1804	0.0055	0.51164	1068	30	1065	20	-5
VP1604-78	339	520	2	0.0783	0.0034	1.931	0.057	0.1816	0.0047	0.091745	1076	26	1096	21	5
VP1604-80	236	471	2	0.0909	0.0041	3.04	0.1	0.2409	0.0067	0.32506	1396	33	1414	26	0
VP1604-81	316	408	4	0.1123	0.005	5.01	0.16	0.321	0.0086	0.27603	1794	42	1819	28	2
VP1604-82	170	156	4	0.0854	0.0036	2.598	0.079	0.2194	0.0062	0.24449	1278	33	1296	22	-3
VP1604-83	308	425	2	0.0767	0.0031	1.933	0.047	0.1822	0.0053	0.29683	1078	29	1091	16	0
VP1604-7	138	245	2	0.1994	0.0067	14.7	0.24	0.54	0.013	0.31996	2782	56	2800	16	1

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1604-14	87	148	2	0.1812	0.0085	11.94	0.46	0.488	0.017	0.56259	2560	72	2605	39	3
VP1604-45	59	436	0	0.1189	0.0056	5.68	0.25	0.342	0.012	0.3856	1892	60	1921	37	0
VP1604-75	151	420	2	0.1133	0.0043	5.24	0.14	0.335	0.011	0.55055	1860	52	1866	20	-1
VP1604-84	103	369	2	0.1953	0.0066	13.5	0.26	0.506	0.014	0.48928	2639	58	2718	18	5
VP1604-1	92	79	2	0.0758	0.0036	1.999	0.08	0.1921	0.0052	0.2372	1133	28	1111	27	-15
VP1604-3	559	784	1	0.079	0.0026	1.846	0.041	0.1737	0.0046	0.47856	1032	25	1064	14	12
VP1604-4	87	173	1	0.0777	0.0037	2.072	0.089	0.193	0.0053	0.32308	1137	29	1133	30	-11
VP1604-6	661	152	5	0.0738	0.0024	1.534	0.03	0.1507	0.0037	0.48367	905	21	945	12	12
VP1604-12	59	60	1	0.0749	0.0041	1.909	0.092	0.1841	0.0055	0.28033	1089	30	1076	33	-31
VP1604-13	122	76	2	0.0761	0.003	1.828	0.054	0.1765	0.0046	0.37067	1048	25	1058	20	-12
VP1604-29	1423	214	5	0.0715	0.0023	0.873	0.017	0.0873	0.0022	0.62324	539	13	638.1	9.3	46
VP1604-43	39	49	1	0.0851	0.0052	2.29	0.12	0.1925	0.0065	0.083427	1134	35	1203	39	-12
VP1604-46	91	228	1	0.0794	0.0055	2.11	0.12	0.1909	0.0061	0.11058	1126	33	1151	38	-19
VP1604-47	75	76	2	0.0789	0.0046	2.13	0.1	0.1915	0.006	0.25957	1133	34	1154	34	-11
VP1604-48	212	361	1	0.1014	0.0042	3.49	0.1	0.2431	0.0068	0.27502	1403	35	1531	23	14
VP1604-49	505	752	1	0.0831	0.003	2.2	0.041	0.1886	0.0053	0.27674	1113	29	1180	13	13
VP1604-52	1596	312	4	0.0769	0.0027	0.852	0.026	0.0787	0.0026	0.67592	488	16	626	14	56
VP1604-55	82	142	2	0.1101	0.0075	4.66	0.26	0.303	0.01	0.051478	1703	51	1787	50	4
VP1604-56	71	36	4	0.077	0.0047	1.921	0.098	0.1778	0.0051	0.058456	1054	28	1083	34	-18
VP1604-59	131	102	2	0.0717	0.004	1.622	0.083	0.1621	0.0045	0.13104	973	26	975	31	-15
VP1604-65	131	154	1	0.0721	0.004	1.724	0.085	0.1698	0.0054	0.30676	1010	30	1015	30	-36
VP1604-66	273	177	2	0.0735	0.0037	1.705	0.071	0.1703	0.0054	0.31611	1013	30	1011	27	-16
VP1604-79	284	896	1	0.0908	0.0043	2.75	0.12	0.2164	0.0072	0.1716	1263	38	1346	31	10
VP1605-2	519	345	1	0.0758	0.0031	1.874	0.054	0.1819	0.0062	0.079913	1081	33	1070	19	-6
VP1605-3	827	407	2	0.0744	0.0025	1.923	0.052	0.1845	0.0058	0.20428	1091	31	1087	18	-4
VP1605-4	251	174	1	0.0779	0.0031	2.031	0.083	0.188	0.0065	0.35148	1110	35	1124	27	-3
VP1605-5	266	454	1	0.115	0.0042	4.86	0.15	0.315	0.01	0.2882	1766	49	1796	26	7
VP1605-7	263	233	2	0.093	0.0032	2.978	0.089	0.2452	0.0092	0.38541	1412	48	1399	22	5
VP1605-10	121	162	1	0.0857	0.0047	2.39	0.14	0.2126	0.0072	0.37894	1242	39	1249	36	-1
VP1605-13	208	331	1	0.0872	0.0035	2.562	0.093	0.2203	0.0069	0.22365	1283	37	1286	26	3
VP1605-14	328	579	1	0.0769	0.0028	2.136	0.064	0.1974	0.006	0.16401	1164	32	1163	21	-5

<i>Run name</i>	<i>U (ppm)</i>	<i>Pb (ppm)</i>	<i>U/Th</i>	<i>207Pb/ 206Pb</i>	<i>2σ</i>	<i>207Pb/ 235U</i>	<i>2σ</i>	<i>206Pb/ 238U</i>	<i>2σ</i>	<i>Error corr.</i>	<i>Final age for 206Pb/ 238U7 (Ma)</i>	<i>+ - (Ma)</i>	<i>Final age for 207Pb/ 235U8 (Ma)</i>	<i>+ - (Ma)</i>	<i>Disc. (%)</i>
VP1605-16	205	446	1	0.0903	0.004	2.91	0.15	0.2341	0.009	0.54895	1355	47	1391	37	6
VP1605-17	403	510	2	0.0879	0.0032	2.604	0.08	0.2215	0.0074	0.27543	1289	39	1303	21	8
VP1605-18	340	505	1	0.0811	0.0036	2.074	0.081	0.1896	0.006	0.25834	1119	32	1137	27	5
VP1605-19	942	1908	1	0.0761	0.0028	1.673	0.064	0.1683	0.0066	0.65705	1002	36	996	24	6
VP1605-20	766	380	4	0.0738	0.0025	1.651	0.05	0.1643	0.0052	0.30118	980	29	987	19	1
VP1605-22	153	185	2	0.0822	0.0046	2.03	0.12	0.189	0.0061	0.37866	1115	33	1118	40	-1
VP1605-24	57	88	2	0.0909	0.0055	2.81	0.15	0.2284	0.0079	0.10413	1325	42	1354	40	-8
VP1605-25	690	420	3	0.0763	0.0027	1.82	0.05	0.1757	0.0055	0.28313	1043	30	1053	18	4
VP1605-27	799	253	6	0.0739	0.0023	1.644	0.056	0.1642	0.0054	0.49635	980	30	987	21	4
VP1605-29	120	341	1	0.0753	0.0039	1.781	0.092	0.1712	0.0067	0.29599	1018	37	1033	33	-2
VP1605-30	656	1130	1	0.0737	0.0024	1.746	0.056	0.173	0.0056	0.36149	1028	31	1023	21	1
VP1605-32	251	300	2	0.0799	0.003	2.02	0.07	0.1907	0.0063	0.43773	1125	34	1131	23	6
VP1605-36	131	234	1	0.0903	0.0041	2.9	0.11	0.2371	0.008	0.096834	1371	42	1376	28	4
VP1605-39	85	180	1	0.0797	0.0046	1.92	0.11	0.1815	0.0058	0.25733	1075	32	1086	39	-4
VP1605-41	131	177	1	0.0846	0.0054	2.07	0.12	0.1963	0.0076	0.14105	1155	41	1140	38	9
VP1605-45	186	219	2	0.0981	0.0044	3.25	0.13	0.2537	0.0077	0.32324	1457	40	1474	30	9
VP1605-46	826	267	5	0.0771	0.0024	1.837	0.056	0.1757	0.0057	0.51466	1043	31	1059	20	6
VP1605-47	306	280	3	0.093	0.0037	3.145	0.072	0.2466	0.008	0.026058	1421	41	1449	20	5
VP1605-52	418	402	2	0.0839	0.0027	2.236	0.056	0.2005	0.0066	0.47011	1178	36	1191	17	8
VP1605-53	446	368	3	0.0901	0.003	2.837	0.069	0.2374	0.0074	0.07296	1373	38	1364	18	3
VP1605-55	124	271	1	0.0947	0.0048	3.04	0.14	0.2407	0.0083	0.27295	1390	43	1418	34	6
VP1605-56	264	312	2	0.0866	0.0031	2.55	0.1	0.2202	0.0078	0.61128	1282	42	1284	29	5
VP1605-57	327	452	2	0.1073	0.0031	4.07	0.12	0.289	0.0086	0.60118	1636	43	1657	24	6
VP1605-58	163	127	2	0.0772	0.0033	1.989	0.082	0.1901	0.0062	0.36144	1124	33	1109	29	-9
VP1605-60	274	148	3	0.0732	0.0026	1.646	0.059	0.1621	0.0051	0.30899	968	28	987	22	3
VP1605-61	261	279	1	0.0734	0.0026	1.714	0.064	0.1707	0.005	0.24964	1016	28	1019	22	-8
VP1605-62	62	108	1	0.0919	0.0054	2.99	0.17	0.2423	0.0085	0.22803	1398	44	1404	43	-5
VP1605-64	231	168	2	0.0814	0.003	1.971	0.055	0.1878	0.0063	0.18514	1109	34	1106	18	4
VP1605-65	264	366	2	0.0948	0.0043	3.3	0.13	0.2536	0.0081	0.32263	1457	41	1478	31	7
VP1605-69	308	492	1	0.0917	0.0034	3.05	0.1	0.233	0.0085	0.43475	1349	44	1417	25	9
VP1605-70	136	179	1	0.0898	0.0037	2.78	0.12	0.2355	0.0075	0.47285	1362	39	1355	32	4
VP1605-71	98	117	2	0.0906	0.0047	2.72	0.13	0.2322	0.0081	0.33287	1345	42	1332	37	-1

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1605-77	316	422	1	0.0827	0.0026	2.407	0.08	0.213	0.0063	0.47389	1244	34	1242	24	2
VP1605-78	325	1088	1	0.1158	0.003	5.331	0.085	0.3385	0.0094	0.28004	1879	45	1875	14	1
VP1605-79	201	219	2	0.0921	0.0029	3.014	0.096	0.2475	0.0075	0.57262	1425	39	1410	25	4
VP1605-80	67	116	1	0.0849	0.0039	2.27	0.1	0.201	0.0062	0.23216	1180	33	1205	32	4
VP1605-82	128	100	3	0.0894	0.0038	3.04	0.12	0.2499	0.008	0.40638	1437	41	1429	32	-2
VP1605-83	185	580	1	0.1133	0.0033	5.16	0.14	0.3311	0.0096	0.60115	1843	46	1844	23	0
VP1605-85	158	226	2	0.0905	0.0041	3.25	0.13	0.2591	0.0082	0.21241	1484	42	1470	32	-4
VP1605-90	85	96	2	0.0836	0.0035	2.355	0.087	0.2078	0.0062	0.22567	1217	33	1223	27	2
VP1605-91	432	158	4	0.0746	0.0024	1.703	0.052	0.1701	0.0051	0.43836	1013	28	1006	20	2
VP1605-92	302	375	2	0.0915	0.0027	3.026	0.091	0.2464	0.0075	0.59927	1419	39	1415	22	2
VP1605-96	166	296	2	0.1025	0.0033	4.46	0.12	0.3052	0.0085	0.5148	1717	42	1721	22	-2
VP1605-98	147	125	2	0.0808	0.0035	2.048	0.076	0.1915	0.007	0.28638	1129	38	1133	24	3
VP1605-100	344	359	3	0.108	0.003	4.56	0.16	0.3071	0.0092	0.73614	1725	45	1738	30	1
VP1605-101	117	282	1	0.095	0.0031	3.42	0.1	0.2606	0.0077	0.51279	1492	39	1511	24	3
VP1605-102	278	435	2	0.1024	0.0031	3.81	0.14	0.2803	0.0094	0.61336	1592	47	1594	30	6
VP1605-104	57	67	2	0.0776	0.0038	2.06	0.12	0.1906	0.0069	0.30128	1124	37	1131	39	-1
VP1605-106	289	387	1	0.0839	0.0034	2.04	0.053	0.1908	0.0063	0.044549	1125	34	1136	18	9
VP1605-112	197	131	3	0.0806	0.0031	2.022	0.079	0.1879	0.0066	0.59924	1110	36	1130	30	6
VP1605-113	252	520	1	0.0892	0.003	2.79	0.098	0.2313	0.0071	0.53224	1341	37	1349	26	5
VP1605-114	319	450	2	0.1033	0.0032	4.104	0.096	0.2759	0.0079	0.40308	1570	40	1657	18	7
VP1605-116	103	113	2	0.078	0.0032	2.039	0.09	0.1882	0.0065	0.51402	1111	35	1130	30	-2
VP1605-119	71	49	4	0.0927	0.0041	3.04	0.11	0.2411	0.0073	0.10713	1392	38	1421	29	4
VP1605-120	48	174	1	0.1178	0.005	4.94	0.19	0.3024	0.0094	0.27476	1702	47	1805	32	9
VP1605-121	109	405	0	0.0817	0.0039	2.01	0.1	0.1934	0.0068	0.26238	1139	37	1112	34	3
VP1605-122	41	43	2	0.0923	0.0056	2.79	0.17	0.2268	0.008	0.1112	1317	42	1348	43	-5
VP1605-123	379	164	3	0.0738	0.0026	1.686	0.039	0.169	0.0056	0.22076	1006	31	1002	15	-1
VP1605-124	262	216	2	0.0809	0.0027	2.091	0.066	0.1928	0.0071	0.36111	1136	38	1149	21	4
VP1605-126	112	84	2	0.0827	0.0032	2.371	0.086	0.2097	0.0068	0.27314	1227	36	1235	25	-4
VP1605-129	94	71	2	0.0827	0.0037	2.156	0.079	0.1959	0.006	0.16797	1153	32	1163	25	5
VP1605-130	229	241	2	0.0878	0.0025	2.772	0.071	0.2312	0.0071	0.40327	1346	39	1347	19	3
VP1605-131	161	392	1	0.0951	0.0029	2.968	0.099	0.2389	0.0074	0.53215	1380	38	1398	26	8
VP1605-132	159	230	1	0.0901	0.0032	2.844	0.09	0.2375	0.0074	0.34757	1373	39	1364	24	5

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1605-134	301	1008	1	0.0829	0.0016	2.295	0.044	0.2049	0.0049	0.35218	1201	26	1211	13	5
VP1605-135	215	1166	1	0.1136	0.0023	5.12	0.12	0.3269	0.0097	0.55586	1822	47	1838	20	1
VP1605-136	287	370	3	0.0783	0.0017	1.918	0.045	0.1837	0.0047	0.45296	1087	26	1086	16	4
VP1605-137	205	568	1	0.0862	0.0027	2.638	0.079	0.2239	0.0061	0.068352	1302	32	1309	22	3
VP1605-138	263	454	2	0.0737	0.0022	1.83	0.043	0.1805	0.0048	0.057974	1069	26	1060	16	-4
VP1605-141	283	403	2	0.0758	0.0017	1.826	0.035	0.1772	0.0043	0.1453	1052	23	1054	13	1
VP1605-144	133	299	1	0.0921	0.0041	3.04	0.1	0.2439	0.007	0.10899	1407	36	1421	25	5
VP1605-146	85	95	1	0.0872	0.0059	2.56	0.17	0.2215	0.0086	0.48102	1289	45	1282	48	0
VP1605-147	433	353	2	0.0815	0.0022	2.336	0.068	0.2063	0.0059	0.28074	1209	31	1227	20	1
VP1605-148	396	478	1	0.0804	0.0029	2.168	0.08	0.1957	0.006	0.42113	1152	32	1169	26	4
VP1605-151	185	143	2	0.0862	0.0021	2.61	0.057	0.2231	0.0056	0.095105	1298	30	1307	16	3
VP1605-152	94	146	1	0.0881	0.003	2.845	0.09	0.234	0.0063	0.21046	1358	32	1368	24	0
VP1605-153	456	217	3	0.078	0.0016	1.874	0.035	0.1745	0.0042	0.22423	1036	23	1071	12	6
VP1605-154	62	62	2	0.0901	0.004	2.75	0.12	0.2263	0.0064	0.34424	1315	34	1337	34	3
VP1605-155	719	78	13	0.076	0.0012	1.807	0.033	0.1753	0.0047	0.6402	1041	26	1049	12	4
VP1605-156	371	281	2	0.0719	0.0018	1.575	0.038	0.1591	0.0043	0.40567	951	24	959	15	2
VP1605-1	264	315	1	0.1044	0.0046	4.39	0.15	0.286	0.01	0.19558	1618	51	1707	28	5
VP1605-9	214	459	1	0.1164	0.0037	5.73	0.2	0.351	0.011	0.4344	1940	50	1939	28	-3
VP1605-11	93	154	2	0.1881	0.0071	12.4	0.4	0.468	0.016	0.23223	2473	69	2630	30	9
VP1605-15	276	906	2	0.2097	0.0062	15.47	0.36	0.549	0.018	0.46163	2820	75	2842	22	2
VP1605-21	588	767	2	0.1111	0.0032	4.85	0.11	0.317	0.011	0.56794	1772	54	1791	20	2
VP1605-23	201	526	1	0.1156	0.0044	5.16	0.17	0.327	0.011	0.15152	1824	53	1856	27	2
VP1605-28	299	755	1	0.1012	0.0039	4.19	0.13	0.292	0.011	0.35505	1651	56	1672	26	-5
VP1605-34	75	224	2	0.1769	0.0062	12.26	0.34	0.5	0.017	0.4834	2610	74	2628	25	1
VP1605-37	113	284	1	0.1118	0.0047	4.5	0.19	0.304	0.01	0.28461	1710	50	1721	36	5
VP1605-84	296	391	2	0.1233	0.0036	6.03	0.13	0.355	0.011	0.25598	1957	53	1984	17	2
VP1605-87	196	313	2	0.1144	0.0037	4.5	0.16	0.304	0.01	0.61776	1709	50	1731	29	8
VP1605-89	183	808	1	0.1756	0.0065	12.15	0.3	0.494	0.016	0.29275	2588	67	2614	23	0
VP1605-93	165	342	1	0.1148	0.0047	4.63	0.14	0.306	0.011	0.23079	1719	55	1752	24	8
VP1605-99	64	187	1	0.1113	0.0039	4.57	0.21	0.312	0.011	0.61649	1747	52	1751	39	3
VP1605-105	108	180	2	0.1075	0.0042	4.02	0.18	0.29	0.01	0.52213	1639	52	1644	35	5
VP1605-107	75	410	1	0.177	0.0073	11.73	0.39	0.481	0.018	0.38797	2531	79	2580	31	2

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1605-109	284	388	5	0.2607	0.0068	21.25	0.34	0.58	0.018	0.40158	2946	72	3150	16	9
VP1605-117	109	211	2	0.1137	0.0042	4.76	0.19	0.312	0.011	0.35415	1757	55	1783	34	7
VP1605-125	27	172	0	0.1015	0.0047	4.33	0.2	0.301	0.01	0.42786	1696	50	1694	39	-4
VP1605-6	137	122	1	0.0745	0.0042	1.711	0.089	0.1664	0.0057	0.12103	991	31	1007	33	-13
VP1605-8	190	651	0	0.0758	0.0034	2.068	0.073	0.1942	0.0063	0.021584	1144	34	1136	25	-22
VP1605-12	319	259	2	0.0832	0.0038	1.581	0.075	0.1367	0.0048	0.42842	826	27	959	29	34
VP1605-26	1262	336	6	0.0765	0.0024	1.558	0.043	0.1571	0.0063	0.45384	940	35	952	17	15
VP1605-31	432	983	1	0.1195	0.0037	3.977	0.092	0.2446	0.0089	0.52652	1414	45	1627	19	27
VP1605-33	405	1585	1	0.1045	0.004	3.35	0.11	0.2577	0.0099	0.42617	1477	51	1496	29	13
VP1605-35	87	84	2	0.0771	0.0038	1.877	0.092	0.18	0.006	0.3154	1066	33	1084	34	-12
VP1605-38	194	107	4	0.0765	0.0033	2.022	0.069	0.193	0.0068	0.19453	1140	38	1125	24	-11
VP1605-40	310	520	1	0.0849	0.0031	1.98	0.064	0.1836	0.0072	0.34892	1086	39	1107	22	18
VP1605-42	359	182	4	0.0883	0.0039	1.99	0.11	0.1851	0.0067	0.40897	1095	37	1118	38	21
VP1605-43	195	99	4	0.0811	0.0037	1.53	0.078	0.1466	0.0052	0.45863	881	29	943	33	15
VP1605-44	260	194	3	0.0936	0.0051	2.57	0.16	0.2233	0.009	0.4678	1299	47	1286	47	13
VP1605-48	838	474	4	0.0863	0.0026	2.369	0.057	0.2091	0.0065	0.3636	1224	35	1232	17	10
VP1605-49	990	711	2	0.0764	0.0033	1.671	0.06	0.1605	0.0065	0.48676	959	36	996	23	11
VP1605-50	78	209	1	0.1221	0.0089	3.15	0.21	0.1898	0.0068	0.10327	1119	37	1440	48	38
VP1605-51	208	503	1	0.1223	0.0048	4.62	0.15	0.307	0.01	0.31466	1725	52	1751	28	14
VP1605-54	202	355	2	0.1486	0.0053	7.2	0.16	0.371	0.011	0.012206	2033	53	2143	20	13
VP1605-59	229	210	2	0.0893	0.003	2.429	0.09	0.2114	0.0067	0.48677	1236	36	1247	27	13
VP1605-63	73	194	1	0.1088	0.0047	4.12	0.14	0.2699	0.0089	0.23793	1539	45	1653	27	12
VP1605-66	331	431	2	0.0917	0.0033	2.752	0.07	0.2297	0.0075	0.1614	1332	40	1348	18	10
VP1605-67	200	161	2	0.0776	0.0033	1.914	0.07	0.1852	0.0061	0.37085	1095	33	1081	25	-11
VP1605-68	58	87	1	0.0955	0.0073	2.69	0.2	0.2264	0.0083	0.14795	1315	43	1313	53	9
VP1605-72	121	327	1	0.1284	0.0082	5.98	0.3	0.321	0.015	0.073637	1792	74	1966	44	13
VP1605-73	121	74	3	0.0864	0.0039	2.267	0.079	0.1931	0.0057	0.26472	1138	31	1211	23	14
VP1605-75	1075	416	4	0.086	0.0026	1.956	0.043	0.1701	0.0051	0.52736	1013	28	1099	15	25
VP1605-76	100	241	2	0.178	0.014	5.09	0.3	0.2253	0.0079	0.20725	1309	42	1830	50	48
VP1605-81	37	19	3	0.0846	0.0053	2.24	0.13	0.1997	0.0073	0.27792	1173	39	1198	41	47
VP1605-86	298	191	2	0.0778	0.0029	1.677	0.066	0.1665	0.005	0.28454	993	28	996	25	12
VP1605-88	702	552	2	0.0824	0.0026	2.001	0.074	0.1868	0.007	0.57801	1103	38	1112	25	10

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1605-94	51	471	0	0.1117	0.0057	4.05	0.22	0.285	0.011	0.37886	1616	53	1643	45	10
VP1605-95	66	71	2	0.0809	0.004	2.1	0.11	0.1943	0.0061	0.26096	1144	33	1142	35	-16
VP1605-97	241	221	2	0.0874	0.0041	2.39	0.14	0.2135	0.0078	0.34142	1247	42	1232	42	11
VP1605-103	315	647	1	0.1045	0.003	3.773	0.093	0.2564	0.0077	0.48132	1471	40	1586	20	13
VP1605-108	756	318	4	0.0771	0.0022	1.584	0.035	0.1602	0.0053	0.5265	958	29	969	12	13
VP1605-110	116	145	2	0.0947	0.003	3.063	0.097	0.2297	0.0073	0.58859	1332	38	1418	25	11
VP1605-111	78	46	3	0.0767	0.0035	1.914	0.077	0.1796	0.0055	0.28075	1065	30	1086	28	-16
VP1605-115	66	42	4	0.0844	0.0067	2.12	0.17	0.202	0.01	0.42054	1183	54	1146	57	8
VP1605-118	109	232	2	0.1105	0.0045	4.04	0.15	0.2849	0.0095	0.52853	1621	49	1639	30	11
VP1605-127	58	246	1	0.1077	0.0042	3.99	0.14	0.2737	0.0096	0.44539	1558	49	1633	30	10
VP1605-128	373	485	1	0.1008	0.0039	3.15	0.12	0.2478	0.0081	0.25645	1431	43	1447	30	11
VP1605-133	118	509	1	0.094	0.0029	2.928	0.098	0.2276	0.0062	0.33486	1321	32	1390	25	12
VP1605-139	86	143	2	0.0891	0.0032	2.359	0.089	0.1935	0.006	0.41277	1140	33	1225	27	17
VP1605-140	498	408	3	0.0777	0.0022	1.805	0.048	0.1705	0.0053	0.57957	1014	29	1046	17	12
VP1605-142	43	52	2	0.075	0.01	1.76	0.2	0.1713	0.0053	0.46212	1019	29	1019	76	-38
VP1605-143	1151	747	2	0.0778	0.0013	1.428	0.043	0.1334	0.0047	0.8108	807	27	898	18	29
VP1605-145	271	345	2	0.112	0.0034	3.34	0.24	0.219	0.016	0.85533	1268	87	1465	60	32
VP1605-149	313	410	1	0.0978	0.0027	3.106	0.091	0.2323	0.0063	0.2423	1346	33	1432	23	14
VP1605-150	405	408	2	0.108	0.01	3.06	0.14	0.22	0.026	0.65107	1280	140	1430	38	17
VP1605-74	274	335	3	0.1213	0.0077	4.53	0.24	0.2593	0.0081	0.24555	1486	41	1730	44	23
VP1614a-1	303	152	3	0.0768	0.0017	1.876	0.051	0.1801	0.0047	0.44227	1067	26	1071	18	2
VP1614a-2	585	379	3	0.0757	0.0013	1.827	0.031	0.1774	0.0044	0.38882	1053	24	1056	11	1
VP1614a-3	286	198	2	0.077	0.0014	1.782	0.038	0.1691	0.0039	0.3791	1007	22	1037	14	8
VP1614a-4	264	200	3	0.1008	0.0016	3.959	0.088	0.2888	0.0081	0.69827	1634	41	1623	18	0
VP1614a-6	100	119	2	0.0958	0.0025	3.402	0.089	0.2616	0.0066	0.37073	1498	34	1510	19	3
VP1614a-8	103	171	1	0.076	0.0026	1.841	0.052	0.1766	0.0047	0.07249	1050	25	1057	18	0
VP1614a-9	580	257	3	0.0753	0.0011	1.82	0.031	0.178	0.0045	0.62665	1056	24	1052	11	1
VP1614a-11	261	312	2	0.1138	0.0016	5.103	0.089	0.3246	0.0081	0.56033	1811	39	1835	15	3
VP1614a-14	294	308	2	0.1044	0.0017	4.252	0.08	0.2959	0.0077	0.54938	1670	38	1684	16	2
VP1614a-15	63	70	2	0.0881	0.0023	2.612	0.075	0.2233	0.0064	0.40403	1298	34	1303	21	4
VP1614a-16	117	60	3	0.0739	0.0025	1.699	0.053	0.1666	0.0046	0.28491	995	26	1005	20	-2

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1614a-17	182	102	3	0.0744	0.002	1.649	0.048	0.162	0.0045	0.29642	967	25	988	18	0
VP1614a-18	84	116	1	0.0774	0.0027	1.846	0.078	0.177	0.0058	0.60641	1053	32	1055	28	-2
VP1614a-19	322	139	4	0.0757	0.0019	1.84	0.047	0.1792	0.0056	0.48324	1062	30	1061	18	0
VP1614a-20	178	151	2	0.0766	0.0016	1.872	0.04	0.1792	0.0047	0.41076	1062	26	1071	14	3
VP1614a-21	236	98	4	0.0722	0.0014	1.674	0.04	0.1684	0.0043	0.49149	1003	24	1000	16	-3
VP1614a-22	183	183	2	0.0865	0.002	2.721	0.067	0.2319	0.0067	0.47324	1350	33	1333	18	-2
VP1614a-23	147	89	3	0.0743	0.0019	1.815	0.051	0.1795	0.005	0.42077	1066	27	1057	19	-8
VP1614a-24	155	87	3	0.0743	0.002	1.747	0.05	0.1701	0.0045	0.36403	1012	25	1025	18	-4
VP1614a-27	87	70	3	0.0808	0.0024	2.255	0.084	0.2015	0.0059	0.4613	1183	32	1194	26	0
VP1614a-28	70	50	2	0.075	0.0033	1.666	0.061	0.1629	0.0044	0.10867	973	25	995	23	-7
VP1614a-29	227	140	3	0.0739	0.0019	1.688	0.039	0.1668	0.0045	0.28269	994	25	1002	15	1
VP1614a-30	146	90	3	0.0755	0.0023	1.834	0.053	0.1782	0.0045	0.2395	1057	24	1057	20	-5
VP1614a-32	314	377	2	0.1028	0.0018	4.045	0.089	0.2871	0.0076	0.52045	1627	38	1642	18	3
VP1614a-33	290	141	4	0.0719	0.0017	1.71	0.043	0.1706	0.0049	0.4947	1015	27	1010	16	-4
VP1614a-34	584	323	4	0.081	0.0011	2.185	0.033	0.197	0.0046	0.51999	1159	25	1175	11	5
VP1614a-35	235	117	4	0.0741	0.0019	1.718	0.046	0.1696	0.0043	0.28467	1009	24	1014	17	2
VP1614a-36	81	126	1	0.0778	0.0035	1.799	0.082	0.1732	0.0055	0.19727	1029	30	1046	32	1
VP1614a-37	114	98	2	0.0782	0.0032	1.905	0.075	0.1803	0.0053	0.13479	1072	30	1086	28	-7
VP1614a-41	427	227	3	0.0751	0.0017	1.739	0.044	0.1709	0.005	0.54401	1016	28	1025	16	5
VP1614a-42	371	226	3	0.0742	0.0015	1.69	0.038	0.1666	0.0047	0.53844	993	26	1005	15	2
VP1614a-43	1580	1118	4	0.094	0.0014	3.179	0.046	0.2464	0.0064	0.54342	1419	33	1453	12	6
VP1614a-44	449	372	3	0.0846	0.0018	2.444	0.055	0.2124	0.0058	0.33106	1241	31	1256	16	5
VP1614a-45	440	415	2	0.0931	0.0018	3.146	0.071	0.2504	0.0062	0.56328	1440	32	1447	18	1
VP1614a-46	172	164	2	0.0775	0.0021	1.838	0.046	0.1722	0.0042	0.12122	1025	23	1057	16	7
VP1614a-47	266	237	3	0.0939	0.0018	3.216	0.064	0.2528	0.0059	0.32514	1453	30	1462	16	4
VP1614a-48	291	153	4	0.0877	0.0019	2.715	0.07	0.2278	0.0057	0.47344	1323	30	1333	20	4
VP1614a-49	83	179	1	0.0997	0.0029	3.83	0.13	0.2779	0.0079	0.42527	1580	40	1604	27	2
VP1614a-50	346	521	2	0.1073	0.0018	4.341	0.095	0.2916	0.007	0.55497	1649	35	1699	18	5
VP1614a-51	82	81	1	0.0769	0.0027	1.815	0.071	0.1738	0.0052	0.44642	1033	29	1048	25	-8
VP1614a-52	229	101	3	0.0733	0.0019	1.718	0.044	0.1719	0.0041	0.33602	1022	23	1015	17	-7
VP1614a-53	59	60	2	0.0938	0.0028	3.092	0.096	0.2395	0.0064	0.23655	1383	33	1428	25	5
VP1614a-54	171	116	2	0.0739	0.002	1.681	0.045	0.1664	0.0042	0.27573	992	23	999	17	0

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1614a-55	245	125	3	0.0826	0.0017	2.351	0.057	0.209	0.0052	0.39574	1223	27	1226	17	2
VP1614a-56	401	19	33	0.0762	0.0014	1.908	0.04	0.1831	0.0049	0.50406	1084	26	1084	14	0
VP1614a-57	248	112	4	0.0788	0.0016	2.051	0.042	0.1901	0.0045	0.27649	1122	24	1131	14	3
VP1614a-58	132	116	3	0.101	0.0023	3.696	0.083	0.2654	0.0068	0.28987	1517	35	1568	18	7
VP1614a-59	231	73	4	0.0752	0.0025	1.725	0.057	0.17	0.0052	0.39246	1012	29	1016	21	1
VP1614a-60	344	145	3	0.0743	0.0014	1.73	0.035	0.1706	0.0043	0.35232	1015	24	1020	13	-1
VP1614a-61	233	110	3	0.074	0.0017	1.729	0.038	0.1693	0.0043	0.30085	1008	24	1018	14	3
VP1614a-62	403	12	68	0.0792	0.0013	2.024	0.04	0.185	0.0048	0.48824	1094	26	1122	13	6
VP1614a-63	191	72	4	0.0743	0.0018	1.734	0.038	0.1694	0.0043	0.1758	1008	24	1021	14	1
VP1614a-64	257	178	3	0.0916	0.0019	3.21	0.1	0.254	0.0083	0.75029	1458	42	1455	24	0
VP1614a-65	371	340	2	0.0731	0.0014	1.619	0.033	0.1622	0.004	0.35807	969	22	976	13	4
VP1614a-66	74	44	3	0.0788	0.0025	1.852	0.06	0.1731	0.0047	0.35771	1029	26	1062	22	3
VP1614a-67	199	196	2	0.0755	0.0018	1.806	0.041	0.1751	0.0043	0.181	1040	23	1048	15	0
VP1614a-68	54	58	2	0.0882	0.0039	2.51	0.094	0.2147	0.0063	0.20112	1253	33	1276	26	6
VP1614a-69	139	62	4	0.0738	0.0025	1.736	0.064	0.1718	0.0043	0.39043	1022	24	1030	26	-3
VP1614a-70	200	55	5	0.0742	0.0032	1.726	0.07	0.1665	0.0052	0.17441	992	29	1015	26	-2
VP1614a-71	114	81	2	0.0751	0.003	1.704	0.063	0.1661	0.0042	0.0041885	990	23	1012	24	2
VP1614a-72	247	166	3	0.0819	0.0021	2.352	0.059	0.2087	0.005	0.30332	1222	27	1227	18	0
VP1614a-73	128	63	3	0.072	0.0022	1.678	0.053	0.1659	0.0049	0.14861	989	27	997	20	-2
VP1614a-74	140	81	3	0.0737	0.0021	1.709	0.051	0.1682	0.0043	0.28365	1002	24	1017	18	-2
VP1614a-77	274	261	2	0.0857	0.003	2.576	0.079	0.2219	0.0074	0.40414	1292	39	1292	22	3
VP1614a-79	451	349	4	0.1119	0.0016	4.71	0.089	0.3041	0.0086	0.70549	1715	44	1768	16	6
VP1614a-80	179	251	2	0.1013	0.0014	3.793	0.058	0.2719	0.0065	0.44406	1550	33	1590	12	6
VP1614a-82	211	287	2	0.1083	0.0019	4.604	0.083	0.311	0.0078	0.52177	1745	38	1748	15	2
VP1614a-83	95	70	3	0.0886	0.0018	2.809	0.066	0.2318	0.0061	0.40663	1344	32	1357	18	3
VP1614a-84	74	70	2	0.086	0.0025	2.74	0.075	0.2319	0.0062	0.23389	1344	32	1338	21	-3
VP1614a-85	52	71	1	0.0742	0.0033	1.8	0.089	0.1747	0.005	0.30082	1037	27	1050	34	-7
VP1614a-86	153	256	1	0.0718	0.0021	1.569	0.04	0.1591	0.0039	0.078447	952	22	958	16	0
VP1614a-87	215	142	3	0.0858	0.002	2.535	0.063	0.2169	0.0063	0.45722	1265	34	1281	18	6
VP1614a-88	208	440	2	0.1005	0.0016	3.82	0.1	0.2794	0.0078	0.72516	1591	39	1594	21	3
VP1614a-89	116	121	2	0.0888	0.0026	2.743	0.077	0.2237	0.0063	0.30302	1301	33	1344	23	4
VP1614a-91	288	220	2	0.0727	0.0021	1.746	0.049	0.171	0.005	0.22882	1017	27	1024	18	-2

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1614a-92	113	59	3	0.075	0.0022	1.76	0.049	0.1713	0.0045	0.2699	1019	25	1033	19	1
VP1614a-93	353	282	3	0.092	0.0014	3.019	0.052	0.2394	0.0058	0.47934	1383	30	1413	13	6
VP1614a-94	207	227	1	0.0749	0.0016	1.791	0.041	0.1721	0.0043	0.27108	1025	24	1040	15	3
VP1614a-95	195	147	3	0.0893	0.0014	2.852	0.046	0.2309	0.0055	0.40305	1339	29	1370	12	5
VP1614a-96	143	130	2	0.0932	0.0018	3.14	0.06	0.2453	0.0057	0.23571	1416	29	1442	15	4
VP1614a-97	317	273	2	0.0753	0.0021	1.649	0.049	0.161	0.0043	0.43501	962	24	988	19	6
VP1614a-99	451	529	2	0.0749	0.0016	1.836	0.047	0.1789	0.0049	0.53578	1061	27	1060	17	-1
VP1614a-100	219	205	2	0.0745	0.0024	1.672	0.063	0.1643	0.0043	0.39884	980	24	996	24	0
VP1614a-102	212	385	1	0.1162	0.0023	5.19	0.12	0.3272	0.0082	0.48158	1824	40	1855	20	4
VP1614a-103	399	1872	1	0.1023	0.0015	3.91	0.069	0.2765	0.0067	0.50968	1573	34	1614	14	5
VP1614a-104	539	401	2	0.0742	0.0014	1.697	0.034	0.1664	0.0042	0.44706	992	23	1006	13	2
VP1614a-105	324	562	1	0.0777	0.0016	1.842	0.049	0.1747	0.0048	0.53471	1038	27	1064	17	5
VP1614a-106	638	1261	1	0.0731	0.0016	1.641	0.041	0.1632	0.0041	0.51026	974	23	984	16	0
VP1614a-108	535	675	1	0.0741	0.0013	1.729	0.036	0.1692	0.0042	0.52444	1008	23	1021	13	4
VP1614a-109	152	150	2	0.0857	0.0025	2.559	0.078	0.2162	0.0066	0.31789	1261	35	1290	21	3
VP1614a-111	170	128	3	0.0878	0.002	2.775	0.067	0.2326	0.0056	0.451	1347	30	1351	19	1
VP1614a-112	277	236	2	0.0724	0.0014	1.791	0.042	0.1786	0.0051	0.49924	1061	28	1044	15	-4
VP1614a-114	142	159	2	0.0932	0.0021	3.201	0.078	0.2518	0.0065	0.50153	1447	33	1457	18	1
VP1614a-115	236	113	3	0.0732	0.0017	1.674	0.044	0.1654	0.0042	0.36442	986	23	1000	16	-1
VP1614a-116	296	292	2	0.0767	0.0015	1.883	0.042	0.1797	0.0046	0.5067	1067	24	1076	15	5
VP1614a-117	152	113	3	0.0908	0.002	2.837	0.065	0.2265	0.0057	0.29159	1316	30	1363	17	6
VP1614a-118	111	233	1	0.0993	0.0022	3.846	0.09	0.2818	0.0073	0.49955	1599	37	1599	19	0
VP1614a-119	268	116	3	0.0741	0.0017	1.697	0.045	0.1672	0.0044	0.45105	998	24	1007	17	2
VP1614a-121	278	392	2	0.1017	0.0019	3.868	0.073	0.2788	0.0072	0.32132	1585	37	1609	15	5
VP1614a-122	261	576	1	0.0924	0.0017	3.117	0.061	0.2475	0.0059	0.48235	1425	31	1438	15	1
VP1614a-123	48	65	2	0.1036	0.0034	4.08	0.13	0.2872	0.0075	0.31487	1627	37	1646	25	0
VP1614a-124	196	209	3	0.0989	0.0016	3.918	0.07	0.2875	0.0084	0.66103	1628	42	1618	15	-2
VP1614a-125	150	81	3	0.0751	0.0018	1.711	0.04	0.1636	0.004	0.28877	976	22	1011	15	7
VP1614a-127	363	45	13	0.0776	0.0016	1.955	0.064	0.1837	0.0056	0.71877	1087	30	1104	22	1
VP1614a-128	239	376	1	0.0998	0.0019	3.879	0.077	0.2843	0.0076	0.54802	1619	36	1607	16	-1
VP1614a-129	331	231	2	0.0744	0.0018	1.783	0.042	0.172	0.0046	0.40348	1023	26	1038	15	1
VP1614a-130	118	209	1	0.088	0.0024	2.579	0.07	0.2119	0.0056	0.49343	1238	30	1291	20	9

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
VP1614a-131	468	417	2	0.0826	0.0015	2.332	0.044	0.2066	0.0051	0.26187	1210	27	1223	14	3
VP1614a-132	188	112	3	0.0787	0.0017	1.97	0.047	0.1813	0.0048	0.37426	1076	27	1105	16	5
VP1614a-133	364	331	2	0.0849	0.0015	2.487	0.05	0.2137	0.0051	0.36526	1250	28	1268	14	4
VP1614a-134	186	146	2	0.0768	0.0018	1.84	0.048	0.1737	0.0045	0.26365	1034	25	1059	17	4
VP1614a-136	336	518	1	0.0787	0.0015	2.041	0.039	0.1877	0.0047	0.33646	1108	25	1128	13	5
VP1614a-137	79	129	1	0.0782	0.004	1.833	0.09	0.1726	0.0059	0.15937	1026	33	1061	33	-2
VP1614a-139	187	123	3	0.0743	0.003	1.724	0.074	0.1688	0.0072	0.47393	1005	40	1014	28	3
VP1614a-140	136	209	2	0.1039	0.0021	4.25	0.086	0.2983	0.0079	0.34558	1685	38	1684	17	2
VP1614a-141	618	252	5	0.0787	0.0015	2.117	0.049	0.1936	0.0054	0.56244	1141	29	1153	16	1
VP1614a-142	112	45	5	0.0781	0.0024	1.905	0.06	0.1785	0.0047	0.3721	1059	26	1082	22	2
VP1614a-143	267	1403	0	0.1023	0.0024	3.8	0.12	0.2736	0.0086	0.65152	1558	44	1589	27	6
VP1614a-144	265	6566	0	0.1006	0.0026	3.811	0.09	0.2798	0.0078	0.41337	1595	41	1598	21	3
VP1614a-145	37	14	5	0.0777	0.0032	1.916	0.088	0.1806	0.0055	0.34538	1070	30	1089	30	-10
VP1614a-146	250	66	6	0.0759	0.0014	1.892	0.037	0.1805	0.0043	0.35772	1069	24	1077	13	2
VP1614a-147	162	177	2	0.1022	0.002	3.793	0.073	0.2748	0.0068	0.22808	1565	34	1593	16	6
VP1614a-148	66	106	2	0.103	0.0024	4.02	0.11	0.2841	0.0079	0.50819	1611	39	1635	23	3
VP1614a-150	104	62	4	0.0914	0.003	2.875	0.09	0.2264	0.0063	0.19716	1315	33	1375	23	7
VP1614a-151	88	120	2	0.1014	0.0021	3.903	0.095	0.2802	0.0069	0.37682	1592	35	1616	19	4
VP1614a-152	194	181	2	0.0752	0.0028	1.634	0.057	0.1618	0.0042	0.26618	967	23	981	22	5
VP1614a-153	141	62	4	0.0733	0.002	1.64	0.047	0.1623	0.0043	0.39459	970	24	983	18	-1
VP1614a-154	116	47	4	0.0757	0.0023	1.771	0.054	0.1709	0.0045	0.32757	1017	25	1041	20	-1
VP1614a-155	229	255	3	0.1049	0.0019	4.233	0.084	0.2948	0.0073	0.50327	1665	36	1681	16	2
VP1614a-5	132	242	1	0.0973	0.003	3.679	0.098	0.2757	0.0068	0.040668	1569	35	1564	21	-1
VP1614a-7	128	484	1	0.186	0.0029	13.53	0.22	0.529	0.012	0.36246	2737	52	2716	15	-1
VP1614a-39	193	117	4	0.088	0.0036	2.68	0.16	0.221	0.011	0.61303	1284	59	1338	40	8
VP1614a-76	185	526	1	0.1873	0.0033	12.13	0.24	0.47	0.012	0.46775	2487	51	2617	18	8
VP1614a-120	55	142	1	0.1093	0.0042	4.75	0.2	0.315	0.01	0.59725	1766	50	1770	36	1
VP1614a-149	88	212	2	0.184	0.003	12.21	0.19	0.481	0.012	0.40415	2531	51	2621	14	5
VP1614a-10	69	78	1	0.0734	0.0024	1.72	0.055	0.1706	0.0043	0.11612	1015	24	1020	20	-13
VP1614a-12	162	175	1	0.0796	0.0029	1.876	0.082	0.169	0.0055	0.49969	1006	30	1073	29	13
VP1614a-13	140	207	2	0.1116	0.0033	4.35	0.13	0.2847	0.0076	0.32387	1614	38	1706	25	10
VP1614a-25	57	57	2	0.0724	0.0031	1.668	0.065	0.17	0.0046	0.15861	1012	25	995	26	-28

<i>Run name</i>	<i>U (ppm)</i>	<i>Pb (ppm)</i>	<i>U/Th</i>	<i>207Pb/ 206Pb</i>	<i>2σ</i>	<i>207Pb/ 235U</i>	<i>2σ</i>	<i>206Pb/ 238U</i>	<i>2σ</i>	<i>Error corr.</i>	<i>Final age for 206Pb/ 238U7 (Ma)</i>	<i>+ - (Ma)</i>	<i>Final age for 207Pb/ 235U8 (Ma)</i>	<i>+ - (Ma)</i>	<i>Disc. (%)</i>
VP1614a-26	92	61	2	0.074	0.0026	1.682	0.059	0.1673	0.0045	0.13446	999	24	1000	22	-20
VP1614a-31	44	51	2	0.0838	0.0036	2.39	0.11	0.209	0.0059	0.23018	1226	32	1240	34	-12
VP1614a-38	222	192	3	0.1028	0.0023	3.577	0.081	0.2541	0.0073	0.47323	1459	38	1544	18	12
VP1614a-40	177	94	4	0.0786	0.0025	1.462	0.056	0.1346	0.0036	0.39568	814	21	910	23	21
VP1614a-75	68	117	1	0.1018	0.0027	3.656	0.094	0.2623	0.0063	0.25675	1501	32	1563	21	10
VP1614a-78	72	43	3	0.0741	0.0036	1.69	0.096	0.1695	0.0058	0.37266	1009	32	998	36	-15
VP1614a-81	45	51	1	0.0763	0.0036	1.86	0.088	0.1777	0.0051	0.068359	1054	28	1066	30	-14
VP1614a-90	43	26	3	0.0727	0.0039	1.673	0.086	0.1647	0.0047	0.0040811	982	26	1001	33	-13
VP1614a-98	1354	3140	1	0.073	0.0011	1.514	0.024	0.1489	0.0038	0.50613	894	21	935.2	9.7	10
VP1614a-101	113	186	1	0.0708	0.0022	1.669	0.064	0.1715	0.0048	0.43053	1020	26	995	25	-18
VP1614a-107	196	448	1	0.0746	0.0024	1.621	0.053	0.1604	0.0044	0.19326	959	24	982	21	-211
VP1614a-110	779	557	2	0.0757	0.0014	1.687	0.033	0.1622	0.004	0.43373	969	22	1005	12	10
VP1614a-113	121	71	2	0.0743	0.0023	1.791	0.066	0.1745	0.0051	0.45068	1036	28	1040	24	-12
VP1614a-126	61	69	1	0.074	0.0031	1.783	0.071	0.175	0.005	0.17712	1039	27	1039	26	-31
VP1614a-135	33	49	1	0.0756	0.0043	1.8	0.1	0.1744	0.0056	0.26156	1035	31	1040	39	-13
VP1614a-138	81	197	1	0.0735	0.0028	1.65	0.064	0.1634	0.0048	0.20237	978	26	987	24	-11
VP1614a-156	186	87	4	0.0773	0.0018	1.753	0.042	0.163	0.0039	0.25152	973	22	1026	15	14
EA1605-1	339	144	5	0.091	0.0037	2.94	0.11	0.2393	0.0058	0.59248	1382	30	1392	28	3
EA1605-5	213	159	3	0.0896	0.0032	2.996	0.071	0.2441	0.0048	0.41613	1407	25	1406	18	0
EA1605-10	402	506	1	0.0741	0.0027	1.741	0.041	0.1725	0.0032	0.28559	1026	18	1022	15	-1
EA1605-14	154	151	2	0.0914	0.0049	2.93	0.12	0.2398	0.0093	0.35212	1385	48	1396	33	1
EA1605-16	400	414	2	0.0965	0.0032	3.579	0.072	0.2739	0.0063	0.47921	1566	31	1544	16	0
EA1605-17	478	341	2	0.0875	0.0043	2.78	0.12	0.2347	0.0068	0.32154	1359	35	1363	32	2
EA1605-18	366	423	2	0.1116	0.0042	4.601	0.093	0.3038	0.0076	0.25568	1709	37	1748	17	6
EA1605-20	791	952	2	0.1734	0.0061	10.62	0.2	0.4541	0.0091	0.26068	2413	40	2491	18	6
EA1605-29	222	441	1	0.1066	0.006	4.02	0.19	0.2829	0.0076	0.30606	1606	38	1644	35	9
EA1605-13	270	118	3	0.0774	0.0047	1.972	0.074	0.1855	0.0093	0.020481	1096	51	1105	25	9
EA1605-21	593	643	2	0.1651	0.0058	10.16	0.28	0.454	0.013	0.66943	2411	57	2447	25	3
EA1605-2	151	519	1	0.1789	0.0058	12.23	0.34	0.498	0.017	0.65619	2603	73	2619	26	0
EA1605-24	966	633	3	0.1144	0.0039	4.67	0.1	0.3011	0.0079	0.65279	1696	39	1760	19	10
EA1605-4	3	33	6	0.72	0.13	18.8	2.1	0.193	0.031	0.45806	1160	160	3040	100	75

<i>Run name</i>	<i>U (ppm)</i>	<i>Pb (ppm)</i>	<i>U/Th</i>	<i>207Pb/ 206Pb</i>	<i>2σ</i>	<i>207Pb/ 235U</i>	<i>2σ</i>	<i>206Pb/ 238U</i>	<i>2σ</i>	<i>Error corr.</i>	<i>Final age for 206Pb/ 238U7 (Ma)</i>	<i>+ - (Ma)</i>	<i>Final age for 207Pb/ 235U8 (Ma)</i>	<i>+ - (Ma)</i>	<i>Disc. (%)</i>
EA1605-6	169	210	2	0.1057	0.0074	3.55	0.26	0.254	0.013	0.58741	1460	69	1547	61	17
EA1605-12	382	999	1	0.1801	0.0072	9.73	0.32	0.398	0.011	0.53397	2159	48	2422	29	18
EA1605-15	61	66	1	0.101	0.017	2.62	0.47	0.195	0.026	0.14192	1140	140	1270	130	23
EA1605-19	96	183	2	0.232	0.015	9.15	0.69	0.272	0.016	0.48396	1540	82	2305	71	49
EA1605-22	388	377	2	0.096	0.0042	2.8	0.14	0.2198	0.009	0.69707	1280	47	1352	38	16
EA1605-25	19	40	13	0.505	0.079	3.47	0.68	0.0486	0.0079	0.4441	305	48	1580	160	92
EA1605-26	288	189	2	0.0692	0.0037	1.48	0.072	0.1544	0.0059	0.59873	925	33	920	30	-14
EA1605-28	110	84	2	0.0757	0.0054	1.9	0.17	0.1794	0.0082	0.63003	1072	42	1068	60	-2
EA1605-30	1060	384	6	0.1086	0.0054	3.02	0.3	0.203	0.02	0.83137	1190	110	1397	81	35
VP1611a-4	273	187	3	0.0713	0.0031	1.594	0.055	0.1645	0.004	0.41557	981	22	968	22	-8
VP1611a-8	364	522	11	0.1087	0.0045	4.501	0.089	0.3023	0.0074	0.010764	1702	37	1730	17	4
VP1611a-9	281	545	7	0.0884	0.0035	2.651	0.065	0.2194	0.0046	0.18372	1278	25	1313	18	6
VP1611a-10	254	73	60	0.0921	0.0044	3.2	0.14	0.2601	0.0097	0.48459	1489	50	1458	33	-1
VP1611a-7	473	560	9	0.0935	0.0035	2.903	0.069	0.2298	0.0058	0.4384	1337	29	1383	17	10
VP1611a-1	33	11	2	0.0534	0.0095	0.338	0.057	0.0466	0.0017	0.054386	296	10	291	44	100
VP1611a-2	303	94	5	0.0889	0.0033	2.598	0.092	0.2148	0.0063	0.68625	1253	33	1299	27	12
VP1611a-3	1459	213	4	0.0545	0.0026	0.409	0.018	0.0562	0.0027	0.62884	352	16	348	13	-69
VP1611a-5	99	61	1	0.0616	0.0053	0.719	0.063	0.0852	0.0027	0.29866	527	16	560	37	65
VP1611a-6	31	137	0	0.421	0.031	5.83	0.41	0.1009	0.0041	0.30474	619	24	1950	62	84
EA1602-3	396	243	3	0.0771	0.0032	2.042	0.05	0.1903	0.0048	0.29958	1123	26	1131	16	-1
EA1602-4	271	129	4	0.0851	0.0037	2.629	0.073	0.2219	0.0061	0.28415	1292	32	1308	21	0
EA1602-5	412	97	7	0.0809	0.0034	2.366	0.086	0.2085	0.0068	0.46804	1220	36	1230	26	-1
EA1602-6	293	196	3	0.0939	0.0038	3.357	0.086	0.2567	0.0056	0.17787	1473	29	1496	21	0
EA1602-7	526	531	2	0.0896	0.0051	2.92	0.12	0.2317	0.0065	0.16653	1343	34	1383	32	1
EA1602-9	183	96	3	0.0725	0.0037	1.767	0.069	0.1708	0.0065	0.29718	1016	36	1031	25	-9
EA1602-13	128	108	3	0.0912	0.0039	3.37	0.13	0.261	0.006	0.38546	1494	31	1500	28	-4
EA1602-14	544	302	4	0.0911	0.0043	2.96	0.11	0.2385	0.0075	0.32968	1379	39	1396	27	4
EA1602-15	78	37	4	0.0763	0.0051	1.84	0.1	0.1724	0.0049	0.055244	1025	27	1064	38	2
EA1602-17	314	181	3	0.0737	0.0034	1.827	0.051	0.1753	0.0053	0.18609	1040	29	1057	18	-5
EA1602-19	318	779	1	0.0787	0.0039	2.418	0.086	0.2136	0.0049	0.026931	1248	26	1245	26	-8

<i>Run name</i>	<i>U (ppm)</i>	<i>Pb (ppm)</i>		<i>207Pb/ 206Pb</i>	<i>2σ</i>	<i>207Pb/ 235U</i>	<i>2σ</i>	<i>206Pb/ 238U</i>	<i>2σ</i>	<i>Error corr.</i>	<i>Final age for 206Pb/ 238U7 (Ma)</i>	<i>+ - (Ma)</i>	<i>Final age for 207Pb/ 235U8 (Ma)</i>	<i>+ - (Ma)</i>	<i>Disc. (%)</i>
EA1602-21	128	77	3	0.0791	0.0051	2.31	0.13	0.2108	0.0076	0.48328	1232	40	1219	37	-8
EA1602-22	189	191	2	0.0892	0.0046	2.896	0.079	0.2329	0.0087	0.33465	1349	46	1380	21	1
EA1602-23	100	44	3	0.0745	0.0052	1.52	0.1	0.1462	0.0049	0.46128	879	27	945	46	6
EA1602-24	214	258	2	0.0853	0.0035	2.814	0.088	0.2358	0.0062	0.4803	1364	33	1357	23	-4
EA1602-25	41	43	2	0.0888	0.0064	2.95	0.16	0.2403	0.0066	0.15274	1388	35	1396	44	-7
EA1602-27	119	127	3	0.1031	0.0048	4	0.17	0.2836	0.0092	0.57257	1608	46	1627	35	4
EA1602-28	473	263	4	0.0749	0.0034	1.78	0.061	0.1699	0.0054	0.47607	1011	30	1037	22	4
EA1602-29	285	127	5	0.0769	0.003	2.072	0.055	0.1967	0.0046	0.33079	1157	25	1138	18	-4
EA1602-30	546	180	5	0.0731	0.0032	1.709	0.061	0.1698	0.0049	0.49759	1011	27	1010	23	1
EA1602-32	123	87	4	0.0823	0.0041	2.393	0.099	0.2085	0.0082	0.33401	1219	44	1236	30	2
EA1602-34	179	436	1	0.0982	0.0039	3.715	0.092	0.2766	0.0077	0.47914	1573	39	1576	19	0
EA1602-35	127	146	3	0.0934	0.004	3.73	0.14	0.2848	0.0067	0.40408	1615	34	1573	29	-7
EA1602-37	516	413	3	0.0796	0.0036	2.123	0.06	0.2009	0.0083	0.31425	1179	45	1155	20	-2
EA1602-38	777	484	3	0.0832	0.0032	2.521	0.059	0.2219	0.0065	0.52477	1291	35	1277	17	-3
EA1602-40	313	648	1	0.0936	0.004	3.465	0.082	0.2718	0.0072	0.41544	1549	36	1518	18	-1
EA1602-41	283	436	2	0.0933	0.0039	3.765	0.074	0.294	0.0058	0.039353	1661	29	1591	16	-10
EA1602-43	98	107	3	0.0903	0.005	2.88	0.14	0.2331	0.0078	0.42536	1350	41	1373	36	4
EA1602-44	471	242	5	0.089	0.0038	3.216	0.096	0.2599	0.0076	0.3304	1488	39	1459	23	-3
EA1602-50	214	155	4	0.0855	0.0045	2.531	0.086	0.2127	0.0065	0.098484	1243	35	1279	25	6
EA1602-52	333	672	1	0.0771	0.0029	2.139	0.048	0.2002	0.0044	0.42308	1176	23	1160	16	-8
EA1602-53	174	165	3	0.0809	0.0038	2.48	0.074	0.2221	0.0061	0.12815	1297	33	1271	20	-6
EA1602-54	211	222	2	0.0962	0.004	3.24	0.1	0.2434	0.0077	0.56504	1403	40	1469	23	9
EA1602-55	397	257	3	0.0772	0.0045	1.97	0.1	0.1883	0.0088	0.3044	1111	48	1102	33	5
EA1602-57	299	256	3	0.0879	0.0042	3.13	0.12	0.2547	0.0062	0.4544	1462	32	1445	31	-6
EA1602-58	587	80	12	0.0754	0.0035	1.88	0.046	0.1832	0.0049	0.17237	1084	26	1073	16	1
EA1602-67	285	376	2	0.0949	0.0045	3.42	0.1	0.2656	0.0085	0.49418	1518	43	1508	23	0
EA1602-69	891	357	5	0.0775	0.0033	2.074	0.052	0.1916	0.0052	0.34617	1130	28	1142	18	1
EA1602-78	434	154	7	0.0796	0.0035	2.299	0.086	0.208	0.0062	0.74733	1218	33	1210	27	-1
EA1602-83	362	506	2	0.0914	0.005	3.546	0.092	0.2772	0.0083	0.23207	1576	42	1536	21	-9
EA1602-86	283	234	2	0.0837	0.0041	2.584	0.08	0.2209	0.0057	0.14374	1286	30	1294	23	-2
EA1602-87	520	785	2	0.0899	0.0037	3.12	0.1	0.2445	0.0062	0.58437	1410	32	1442	27	1
EA1602-88	549	130	7	0.0799	0.0039	2.301	0.072	0.2046	0.0058	0.20843	1199	31	1214	23	-4

Run name	U (ppm)	Pb (ppm)	U/Th	207Pb/ 206Pb	2σ	207Pb/ 235U	2σ	206Pb/ 238U	2σ	Error corr.	Final age for 206Pb/ 238U7 (Ma)	+ - (Ma)	Final age for 207Pb/ 235U8 (Ma)	+ - (Ma)	Disc. (%)
EA1602-92	606	39	22	0.0738	0.0034	1.885	0.068	0.1873	0.0051	0.24676	1106	28	1074	24	-9
EA1602-97	955	93	12	0.0742	0.0036	1.647	0.069	0.1596	0.0062	0.33998	954	35	987	27	9
EA1602-99	638	51	16	0.0826	0.0027	2.275	0.054	0.1984	0.0047	0.44289	1167	25	1204	17	9
EA1602-103	182	142	2	0.0996	0.0047	3.75	0.17	0.2674	0.0069	0.43722	1527	35	1579	36	2
EA1602-108	124	102	2	0.087	0.005	2.8	0.17	0.2277	0.0078	0.42691	1322	41	1358	43	1
EA1602-110	129	260	3	0.0808	0.0037	2.29	0.1	0.2033	0.005	0.32405	1193	27	1207	30	3
EA1602-112	255	211	12	0.0898	0.0028	3.38	0.1	0.2686	0.0069	0.5631	1533	35	1497	24	-10
EA1602-113	139	62	20	0.0783	0.0035	2.166	0.082	0.2039	0.0053	0.32767	1195	28	1167	27	-8
EA1602-116	141	144	12	0.105	0.0053	4.08	0.17	0.2858	0.0073	0.074321	1620	36	1655	32	6
EA1602-119	222	131	11	0.0806	0.0034	2.23	0.12	0.2026	0.008	0.58494	1189	43	1198	36	-3
EA1602-120	306	256	8	0.0828	0.0039	2.721	0.089	0.2375	0.0055	0.17351	1373	29	1333	24	-10
EA1602-128	929	746	1	0.0737	0.0042	1.602	0.071	0.1656	0.0078	0.58449	987	43	978	28	4
EA1602-31	287	266	3	0.0976	0.0041	3.69	0.14	0.278	0.01	0.63326	1581	52	1566	30	-1
EA1602-60	422	833	2	0.098	0.0051	4.12	0.11	0.303	0.015	0.50218	1703	77	1657	22	-8
EA1602-65	152	124	2	0.0838	0.0043	2.32	0.14	0.202	0.011	0.70263	1183	60	1221	41	8
EA1602-71	532	529	2	0.0958	0.0041	3.35	0.15	0.25	0.011	0.77382	1437	59	1488	34	6
EA1602-85	185	963	1	0.1794	0.0075	13.81	0.39	0.549	0.016	0.43912	2820	66	2734	27	-5
EA1602-95	641	183	7	0.0777	0.0042	2.05	0.13	0.19	0.013	0.75484	1116	69	1133	46	-1
EA1602-98	398	406	2	0.0916	0.0034	3.21	0.16	0.245	0.014	0.80167	1413	75	1457	38	8
EA1602-124	178	115	2	0.0916	0.0071	3.09	0.21	0.259	0.015	0.22993	1483	74	1434	47	-6
EA1602-127	131	90	2	0.0796	0.0066	1.94	0.13	0.183	0.01	0.11356	1085	55	1090	45	-2
EA1602-129	237	198	2	0.0928	0.0063	3.01	0.16	0.255	0.014	0.25034	1464	71	1406	41	-2
EA1602-131	504	929	1	0.0997	0.006	3.78	0.15	0.29	0.014	0.28293	1641	70	1587	31	-1
EA1602-133	250	173	2	0.0893	0.0056	3.16	0.15	0.272	0.013	0.29808	1548	66	1449	38	-9
EA1602-134	424	496	1	0.0931	0.0059	2.81	0.14	0.237	0.012	0.42213	1370	60	1355	38	8
EA1602-137	741	765	1	0.0873	0.0049	2.625	0.093	0.224	0.01	0.4227	1308	53	1306	27	4
EA1602-140	180	135	2	0.0802	0.0059	2.04	0.13	0.1892	0.0094	0.4883	1117	51	1143	44	1
EA1602-142	1090	1223	2	0.107	0.0074	4.21	0.19	0.285	0.019	0.59822	1615	94	1674	36	7
EA1602-150	619	303	3	0.0822	0.0047	2.213	0.099	0.1925	0.0094	0.65843	1134	51	1190	31	6
EA1602-158	257	52	7	0.0831	0.0049	2.29	0.13	0.206	0.013	0.72037	1205	68	1223	47	5
EA1602-115	102	75	16	0.0827	0.0047	2.69	0.17	0.2317	0.0088	0.6012	1342	46	1331	51	-9
EA1602-42	58	63	2	0.0826	0.0048	2.52	0.11	0.2236	0.0048	0.050365	1300	25	1278	32	-17

<i>Run name</i>	<i>U (ppm)</i>	<i>Pb (ppm)</i>	<i>U/Th</i>	<i>207Pb/ 206Pb</i>	<i>2σ</i>	<i>207Pb/ 235U</i>	<i>2σ</i>	<i>206Pb/ 238U</i>	<i>2σ</i>	<i>Error corr.</i>	<i>Final age for 206Pb/ 238U7 (Ma)</i>	<i>+ - (Ma)</i>	<i>Final age for 207Pb/ 235U8 (Ma)</i>	<i>+ - (Ma)</i>	<i>Disc. (%)</i>
EA1602-1	486	645	1	0.0991	0.0046	2.93	0.12	0.215	0.0075	0.44205	1255	40	1388	32	22
EA1602-2	290	146	6	0.0859	0.0058	2.16	0.29	0.178	0.016	0.94851	1054	87	1159	93	19
EA1602-8	925	1289	1	0.0965	0.0045	3.03	0.12	0.2198	0.0064	0.60205	1280	34	1413	32	16
EA1602-10	675	465	2	0.077	0.0034	1.761	0.063	0.1613	0.0045	0.39499	964	25	1029	23	15
EA1602-11	1489	879	2	0.0893	0.0032	2.24	0.18	0.175	0.013	0.96071	1036	68	1183	55	26
EA1602-16	876	193	8	0.084	0.004	1.603	0.062	0.1365	0.0047	0.54435	825	27	969	24	38
EA1602-18	668	1041	2	0.1004	0.0044	3.591	0.081	0.2499	0.0074	0.2843	1437	38	1547	18	12
EA1602-20	248	362	2	0.1148	0.006	4.96	0.31	0.313	0.018	0.69259	1753	87	1806	51	7
EA1602-26	302	79	10	0.0853	0.0055	2.12	0.11	0.1868	0.0069	0.43138	1104	38	1152	35	14
EA1602-33	173	155	3	0.0904	0.0043	3.63	0.1	0.2911	0.0088	0.31547	1646	44	1555	22	-17
EA1602-36	92	245	1	0.0904	0.0052	3.45	0.19	0.2832	0.0092	0.55693	1607	46	1511	43	-13
EA1602-39	322	46	12	0.0784	0.0037	1.736	0.067	0.1609	0.0067	0.73315	970	40	1020	25	15
EA1602-45	140	202	2	0.1032	0.0039	5.11	0.17	0.353	0.012	0.68959	1945	58	1840	27	-15
EA1602-46	148	280	1	0.103	0.0053	3	0.19	0.21	0.012	0.68109	1227	63	1401	49	26
EA1602-47	174	209	2	0.0893	0.0042	3.38	0.13	0.2793	0.0088	0.36766	1587	44	1503	29	-16
EA1602-48	597	79	18	0.0768	0.0042	2.141	0.095	0.2049	0.0067	0.2843	1201	36	1175	31	-11
EA1602-49	1040	185	15	0.0904	0.0046	1.5	0.14	0.1207	0.0087	0.89162	733	50	928	59	49
EA1602-51	1400	177	9	0.0931	0.007	0.691	0.058	0.0544	0.0021	0.57841	342	13	529	34	77
EA1602-56	86	77	3	0.238	0.04	5.13	0.79	0.194	0.048	0.5672	1011	77	1710	120	52
EA1602-59	95	174	2	0.1021	0.005	4.44	0.33	0.316	0.025	0.959	1730	100	1697	60	-1
EA1602-61	397	120	6	0.0773	0.004	2.358	0.092	0.2162	0.0073	0.20139	1261	39	1227	28	-15
EA1602-62	291	1107	1	0.1642	0.0089	8.78	0.6	0.389	0.024	0.75993	2110	110	2307	63	16
EA1602-66	178	161	2	0.081	0.0037	2.581	0.062	0.2294	0.0064	0.16076	1331	34	1293	17	-15
EA1602-68	261	206	2	0.0753	0.0033	2.113	0.089	0.2055	0.0061	0.57202	1211	35	1157	31	-14
EA1602-70	1970	1356	1	0.0981	0.0048	1.584	0.064	0.1169	0.0042	0.47843	713	24	963	24	55
EA1602-72	495	86	10	0.0729	0.0032	2.045	0.049	0.2017	0.0065	0.22794	1184	35	1130	16	-15
EA1602-75	412	444	2	0.0808	0.0047	2.016	0.084	0.1776	0.0057	0.32699	1054	31	1119	28	13
EA1602-77	193	225	3	0.1086	0.0071	4.04	0.25	0.2722	0.0086	0.37945	1560	40	1635	50	11
EA1602-79	2513	56	31	0.073	0.0028	0.6	0.019	0.0589	0.0022	0.72112	369	14	477	12	64
EA1602-80	764	793	2	0.0956	0.0045	3.19	0.15	0.236	0.01	0.71774	1362	53	1449	36	11
EA1602-84	2088	298	8	0.0735	0.0033	1.401	0.046	0.1399	0.0065	0.66305	844	37	889	19	17
EA1602-89	1476	1511	2	0.0867	0.0041	2.49	0.13	0.197	0.0089	0.73465	1158	48	1264	38	15

<i>Run name</i>	<i>U (ppm)</i>	<i>Pb (ppm)</i>	<i>U/Th</i>	<i>207Pb/ 206Pb</i>	<i>2σ</i>	<i>207Pb/ 235U</i>	<i>2σ</i>	<i>206Pb/ 238U</i>	<i>2σ</i>	<i>Error corr.</i>	<i>Final age for 206Pb/ 238U7 (Ma)</i>	<i>+ - (Ma)</i>	<i>Final age for 207Pb/ 235U8 (Ma)</i>	<i>+ - (Ma)</i>	<i>Disc. (%)</i>
EA1602-90	372	437	1	0.082	0.0037	2.239	0.089	0.1959	0.0096	0.81562	1152	52	1191	28	10
EA1602-91	47	105	1	0.0873	0.0083	3.11	0.27	0.2579	0.009	0.24841	1478	46	1424	66	-16
EA1602-93	1628	284	4	0.075	0.005	0.952	0.065	0.0939	0.0063	0.53302	578	37	684	32	43
EA1602-94	1314	68	39	0.0764	0.0059	1.65	0.16	0.158	0.016	0.71561	946	90	981	63	14
EA1602-96	177	168	2	0.075	0.0043	2.116	0.089	0.2037	0.0084	0.19677	1194	45	1158	31	-11
EA1602-100	196	53	5	0.0806	0.0039	2.561	0.091	0.2257	0.0057	0.29895	1312	30	1292	27	-15
EA1602-102	36	57	1	0.0681	0.0065	1.84	0.17	0.1897	0.0072	0.1184	1119	39	1062	65	-48
EA1602-104	817	468	2	0.0769	0.0027	1.825	0.089	0.17	0.007	0.61865	1011	38	1052	32	10
EA1602-105	156	168	1	0.0873	0.0045	3.05	0.21	0.252	0.014	0.71777	1447	71	1414	52	-4
EA1602-107	37	28	2	0.0828	0.0064	2.41	0.17	0.2074	0.0069	0.22722	1214	37	1237	51	-11
EA1602-111	513	201	16	0.0783	0.0034	1.823	0.058	0.1681	0.0057	0.25977	1001	31	1052	21	13
EA1602-114	761	564	11	0.0752	0.0028	1.659	0.099	0.1607	0.0092	0.7894	960	51	989	39	13
EA1602-118	812	650	9	0.0887	0.0032	2.546	0.081	0.2069	0.0072	0.6779	1220	41	1284	23	12
EA1602-121	226	331	1	0.0805	0.0048	2.42	0.18	0.218	0.018	0.68563	1282	90	1247	57	-13
EA1602-123	582	221	4	0.09	0.0065	1.849	0.089	0.1518	0.0084	0.40013	911	47	1068	34	33
EA1602-125	375	157	3	0.0959	0.0066	3.19	0.28	0.248	0.02	0.86412	1420	100	1460	64	5
EA1602-126	88	108	1	0.0796	0.0058	2.09	0.13	0.2	0.01	0.17736	1176	54	1141	42	-16
EA1602-130	629	452	1	0.0771	0.005	1.52	0.1	0.1512	0.0088	0.75803	907	49	940	38	16
EA1602-132	560	299	2	0.0839	0.0059	2	0.12	0.18	0.011	0.55579	1068	60	1126	46	16
EA1602-135	684	336	4	0.0944	0.006	2.91	0.14	0.232	0.012	0.41645	1346	61	1383	35	10
EA1602-136	197	187	2	0.0853	0.0066	1.82	0.12	0.1563	0.0074	0.24248	936	41	1044	43	23
EA1602-141	2449	110	31	0.0775	0.0045	0.958	0.042	0.0889	0.0041	0.35807	549	24	681	22	51
EA1602-143	199	190	2	0.0973	0.0064	3.13	0.16	0.23	0.011	0.48697	1333	58	1435	41	12
EA1602-147	1739	192	10	0.0746	0.0042	1.211	0.086	0.1129	0.0078	0.88813	689	45	809	41	34
EA1602-148	319	94	5	0.0841	0.0051	1.99	0.11	0.169	0.011	0.75095	1007	62	1110	37	22
EA1602-153	1776	288	4	0.0721	0.0042	0.754	0.033	0.0761	0.0037	0.49035	473	22	569	19	49
EA1602-154	658	54	20	0.0903	0.0058	2.42	0.11	0.1889	0.0098	0.33328	1115	53	1246	33	23
EA1602-156	119	89	2	0.0922	0.0077	2.64	0.19	0.215	0.012	0.21796	1255	64	1315	58	6
EA1602-161	346	284	4	0.081	0.0055	2	0.1	0.177	0.0094	0.34658	1050	51	1113	34	16
EA1602-163	140	127	6	0.089	0.0063	2.25	0.13	0.1821	0.0086	0.22253	1078	47	1196	40	13
EA1602-165	479	351	10	0.1007	0.0059	3.36	0.13	0.251	0.015	0.6548	1441	76	1500	28	12
EA1602-12	669	744	3	0.1253	0.0066	3.332	0.092	0.1899	0.0077	0.41065	1120	42	1493	23	44

<i>Run name</i>	<i>U (ppm)</i>	<i>Pb (ppm)</i>	<i>U/Th</i>	<i>207Pb/ 206Pb</i>	<i>2σ</i>	<i>207Pb/ 235U</i>	<i>2σ</i>	<i>206Pb/ 238U</i>	<i>2σ</i>	<i>Error corr.</i>	<i>Final age for 206Pb/ 238U7 (Ma)</i>	<i>+ - (Ma)</i>	<i>Final age for 207Pb/ 235U8 (Ma)</i>	<i>+ - (Ma)</i>	<i>Disc. (%)</i>
EA1602-63	1974	330	11	0.0983	0.0081	1.46	0.48	0.09	0.028	0.89366	490	130	630	100	59
EA1602-64	1207	632	2	0.0974	0.0085	1.38	0.14	0.096	0.0034	0.36187	591	20	878	59	60
EA1602-81	1210	1861	1	0.1113	0.0059	3.32	0.15	0.215	0.0083	0.62281	1255	44	1482	36	31