In general, the authors have improved their work compared to the previous version published as a preprint in ESSD. The structure of the database is now much clearer and easier to understand. Here I noticed only a few editing errors that the authors may want to fix before the final publication (frame of Excel cells or two columns for thermal conductivity, but only one is backed with data). Most of the reviewers' comments have also been implemented. In particular, the authors have expanded the results section and included several diagrams with petrophysical data.

We thank the reviewer for their comments and suggestions. The extra column for thermal conductivity has been deleted from the Excel file.

There are only a few minor points that should be addressed prior to publication:

• Both reviewers mentioned the small number of mechanical data and the lack of thermal properties. In their response, the authors mentioned that they added further thermal conductivity data to improve their database. However, heat capacity and thermal diffusivity are still missing completely in this database. When reading the abstract and introduction etc. the additional thermal conductivity data is not mentioned. The term “thermal conductivity” does not appear in the text until section 3.6 “thermal properties” on page 26. To improve the structure of the article and for the sake of completeness, I suggest mentioning thermal conductivity already in the abstract and beginning of the article (e.g., in section 2 p.4 l. 95 you list all the petrophysical properties but not thermal conductivity and the mechanical properties). Furthermore, I recommend also evaluating the thermal conductivity and rock mechanical data and including the data in tables 4 and 5 as well as in the results section (thermal conductivity). I understand that the focus of this database lies on hydraulic properties. However, I strongly disagree with some of the author's responses stating that thermal properties are less important, in particular for geothermal assessments. Thus, the authors should clearly address the limitations of their work here. By e.g., adding the respective information to table 4, the reader is able to see which parameters can be correlated and which data was obtained on a separate sample set. Furthermore, the range of thermal conductivity of 1 W m-1K-1 is not small as stated by the authors (“1.5 to 2.5 W m-1K-1”). When looking at the original data in the database the data even ranges between 0.97 to 2.77 W m 1K 1. These rather large differences within one lithology should be addressed in combination with porosity/permeability and rock type/alteration in the results section.

The term “thermal conductivity” has been added to the abstract and the line in question in section 2. The number of samples analyzed for thermal conductivity as well as mechanical (strength) and acoustic properties has been added to Table 4. However, we choose not to include the averages for these properties into Table 5, as this table is focused on the best characterized properties (porosity, grain density, and intrinsic permeability). As noted in the manuscript, 52 out of the total 54 data points for thermal conductivity originate from samples obtained from a single lava flow, which shows a variability in thermal conductivity of ~1-2 W m^{-1} K^{-1}. The other two data points originate from downhole core samples, which show higher thermal conductivity (~2.5-2.8 W m^{-1} K^{-1}).

Due to the limited amount of data for thermal conductivity, we believe this data is insufficient to quantify how alteration and lithology control thermal conductivity. However, we have added the following text and figure to the results section on lines 704-716:

> Previous studies of Hawaiian basalts have shown that thermal conductivity decreases with increasing porosity and increases if the samples are saturated with water (Robertson and Peck, 1974). Although the thermal conductivity data in this study is mainly limited to samples derived a single unaltered lava flow in the Reykjavik area (Guðlaugsson, 2000), the

data suggest a similar relationship (Figure 16). Thermal conductivity measured at unsaturated conditions ranges from ~1-2 W m^{-1} K^{-1}, with a general trend suggesting increasing thermal conductivity at lower connected porosity. In contrast, thermal conductivity measured under saturated conditions on two hyaloclastite samples obtained from the ÖJ-1 borehole is significantly higher, ranging from 2.5-2.75 W m^{-1} K^{-1}. Although at present there is insufficient data to characterize the effect of lithology and alteration zone on thermal conductivity, Figure 16 indicates that significant variability in thermal conductivity within a single lithological unit results from the heterogenous distribution of pore space.

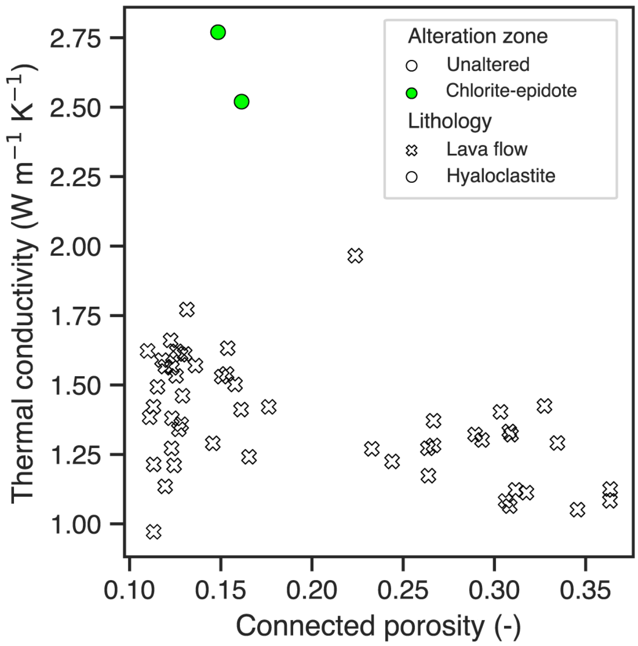

Figure 16. Thermal conductivity as a function of connected porosity. Note that most of the available data is derived from a single unaltered lava flow (Guðlaugsson, 2000). Measurements on the lava flows were performed at unsaturated conditions, whereas measurements on the hyaloclastite samples were performed under water-saturated conditions.

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Robertson, E. C. and Peck, D. L.: Thermal conductivity of vesicular basalt from Hawaii, 79, 4875–4888, https://doi.org/10.1029/jb079i032p04875, 1974.

• Since this work represents a collection of data measured over 5 decades, I wonder why the authors do not include other available data measured on Icelandic rocks? In the comments, the author state that e.g., data included in Bär et al. (2020) is not included in this work. I believe it would be beneficial to add further literature data whenever available. In particular to complement the thermal and mechanical data.

We have aimed to make the database as comprehensive as possible, while satisfying two additional conditions: 1) measurements are made at near-ambient temperature and pressure, in order to facilitate comparison among the different studies and ensure consistency within the database, and 2) adequate metadata concerning sample location, lithology, and alteration zone are provided. Since Bär et al. (2020) incorporated data that was in the previous version of the Valgarður database (the samples from Gudmundsson et al., 1995 and Franzson et al., 2011), the new version of the database does contain data also contained in Bär et al. (2020). The latter samples comprise most of the Icelandic data contained in Bär et al. (2020). The other Icelandic data contained in Bär et al. (2020) was either collected at elevated temperatures/pressures (e.g. Kristinsdóttir et al, 2010; Jaya et al., 2010), or does not provide sufficiently detailed information regarding lithology or alteration zone.

To our knowledge, all Icelandic data meeting the conditions described above are included in the database at this point. However, we plan to add data to the Valgarður database in future releases as it becomes available. In particular, due to the relative paucity of thermal and mechanical data in the existing data, we anticipate that future releases of the database will provide more comprehensive data for these properties.

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Jaya, M. S., Shapiro, S. A., Kristinsdóttir, L. H., Bruhn, D., Milsch, H., and Spangenberg, E.: Temperature dependence of seismic properties in geothermal rocks at reservoir conditions, Geothermics, 39, 115–123, https://doi.org/ 10.1016/j.geothermics.2009.12.002, 2010.

Kristinsdóttir, L. H., Flóvenz, Ó. G., Árnason, K., Bruhn, D., Milsch, H., Spangenberg, E., and Kulenkampff, J.: Electrical conductivity and P-wave velocity in rock samples from high-temperature Icelandic geothermal fields, 39, 94–105, https://doi.org/10.1016/j.geothermics.2009.12.001, 2010.

• I suggest enhancing the discussion regarding the data application (e.g., for reservoir modeling) and covering some aspects like upscaling of the properties and limitations regarding the spatial coverage of the data points. Additionally, in the result section, you could go a little bit beyond Iceland and compare especially the property changes due to alteration with other high-temperature geothermal fields in New Zealand, the USA, and Mexico. In the introduction, the authors mention the abundance of basalts in the Earth's crust ("most common rock type exposed on the surface of the Earth if the area of the ocean floor is included"). This suggests that the data presented in this work can be transferred and used for other sites as well. However, in the remaining text, this topic is not mentioned again. I believe a short section about the transferability of this data and its possible usage beyond Iceland could be very interesting and beneficial for the reader.

Throughout the results section, we have added references to numerous previous studies of the relationship between alteration, lithology, and petrophysical properties. These studies were performed on the basis of data collected in a wide range of locations, including those locations mentioned by the reviewer. Below are a number of sentences where the data is compared with other settings:

Lines 559-563:

> Whether alteration leads to porosity creation or destruction depends on both the type and extent of alteration as well as the primary connected porosity of the rock (e.g., Mordensky et al., 2018; Villeneuve et al., 2019). Different volcanic rocks lithologies show variability in pore connectivity linked to the geometry of the pore network formed during magma crystallization, vesiculation, fragmentation, and densification (e.g., Blower, 2001; Bernard et al., 2007; Yokoyama and Takeuchi, 2009; Wright et al., 2009; Kennedy et al., 2010; Heap et al., 2014; Colombier et al., 2017).

Lines 601-604:

> While many previous studies have found that permeability of volcanic rocks tends to increase with increasing porosity (e.g., Saar and Manga, 1999; Blower, 2001; Farquharson et al., 2015; Wadsworth et al., 2016; Colombier et al., 2017), studies have also shown that the permeability of unaltered and altered volcanic rocks can be quite variable (e.g., Heap et al. 2017a; Mordensky et al., 2018; Villeneuve et al., 2019).

Lines 660-661:

> The lower resistivity of smectite-rich rocks has long been known both based on field measurements described above as well as experimental studies (e.g., Flovenz et al., 1985).

Lines 670-673:

> Figure 13a shows that compressional (P-wave) velocities are inversely correlated to porosity: basaltic intrusions show the highest velocities and the lowest porosities, while hyaloclastites have the lowest velocities and higher porosities. This relationship has been seen in several previous studies of volcanic rocks (e.g., Pola et al., 2014; Frolova et al., 2014; Wyering et al., 2014; Heap et al., 2015; Durán et al., 2019; Frolova et al., 2021).

Lines 684-691:

> Alteration impacts rock strength and thereby exerts an influence on rock mechanical behavior and failure mode (e.g., Pola et al., 2014; Heap and Violay, 2021). Depending on the porosity changes during hydrothermal alteration and the abundance and type of clay minerals, alteration can increase or decrease rock strength (e.g., Wyering et al., 2014; Frolova et al., 2014; Pola et al., 2014; Mordensky et al., 2018; Farquharson et al., 2019; Heap et al., 2020a; Frolova et al., 2021). Figure 14 shows that uniaxial compressive strength (UCS) (Fig. 14a) and Young's modulus (Fig. 14b) decrease with increasing porosity, as has been observed in several previous studies of volcanic rocks (e.g., Al-Harthi et al., 1999; Pola et al., 2014; Wyering et al., 2014; Heap et al., 2014; Schaefer et al., 2015; Mordensky et al., 2018; Coats et al., 2018; Harnett et al., 2019). However, also consistent with these studies, the data reveal significant scatter; for example, at a porosity of 0.2, UCS can range from ~10 MPa to ~100 MPa. Heap and Violay (2021) describe how such variability in rock strength can result from variable hydrothermal alteration and the partitioning of porosity between pores and microcracks and their geometrical properties.

Thus, we have sought to emphasize in the text where observations derived from this dataset have also been seen in previous studies. In the interest of limiting the amount of text, we have sought to restrict the comparison to a general, rather than site-specific, level. However, in the revised version of the manuscript, we have added the following sentence to the Concluding remarks section (lines 749-753):

Although the database is restricted to Iceland, we believe that the data contained in this database provides useful constraints on the petrophysical properties of basaltic rocks outside of Iceland. Similar relationships between alteration type/extent and petrophysical properties have been observed in previous studies performed using altered volcanic rocks obtained from geothermal systems in New Zealand (Heap et al. 2017a; Mordensky et al., 2018; Villeneuve et al., 2019) and Mexico (Weydt et al., 2022).

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• I disagree with some of the author's responses regarding the structure of the database and citing original data. The authors used another database published here in ESSD as a template to create their own database. Thus, a comment stating “modified from source XX” or “following the example of database XY” should be included in section 2. It clarifies on which basis this database was developed and acknowledges the original source and ideas.

There are several reasons why we believe that the link between this database and (presumably) Bär et al. (2020) is not as strong as the reviewer is suggesting:

- We had been working for more than a year on updating the previous version of the Valgarður database prior to ever seeing any files associated with Bär et al. (2020).
- We did not copy any data from Bär et al. (2020) directly into our database file; thus, it is not accurate to say that the database was “modified” from Bär et al. (2020). Although the two databases overlap, in both cases data was obtained from the primary sources (Gudmundsson et al., 1995; Franzson et al., 2011).

In addition, there are substantive differences in the structure of the two databases:

- In Bär et al. (2020), each row corresponds to an individual measurement on a sample; in our database, each row corresponds to a unique sample.
- The numerical petrographic classification scheme of Bär et al. (2020) is not incorporated in this database
- A description of alteration zone is not provided for most of the Iceland samples presented in Bär et al. (2020)
- Measurement conditions are not listed in separate columns as is the case for Bär et al. (2020), as the data presented in this database is collected at near-ambient pressure and temperature.
- Columns for the standard deviation, maximum and minimum value, number of measurements are not provided for each property

In the revised manuscript, we explicitly state the aspects of the Bär et al. (2020) database that served as a template for our database. We have added the following sentence to section 2 (lines 100-103) accordingly:

> “Following the example of Bär et al. (2020), we provide information about how each measurement was acquired in a ‘Remarks’ column adjacent to the reported value and set the fill colour of cells based on the type of data contained in the cell (e.g., cells listing the primary and secondary references are coloured yellow, cells containing sample meta-data are coloured blue, cells related to lithological characterization are coloured orange, etc.).”