**Temperature-Depth Estimates for West Virginia University, Morgantown, WV  
DE-EE0008105: Feasibility of Deep Direct-Use Geothermal on the West Virginia University Campus-Morgantown, WV**

The purpose of this document is to describe the contents of information contained within a submission to the Geothermal Data Repository (GDR) node of the National Geothermal Data System (NGDS) in support of Feasibility of Deep Direct-Use Geothermal on the West Virginia University Campus-Morgantown, WV.

**Abstract**: This dataset contains data spreadsheets and figures that summarize the results of a stochastic analysis of temperatures at depth below the West Virginia University campus in Morgantown, WV. These results are extracted from a study by Smith (2019), whose results are included in a GDR submission that provides rasters and shapefiles for the Appalachian Basin states of New York, Pennsylvania, and West Virginia (GDR submission #1182). Uncertainties considered included geologic properties, thermal properties, and uncertainty from geostatistical interpolation of the surface heat flow. A Monte Carlo analysis of these uncertain properties was used to predict temperatures at depth using a 1-D heat conduction model. For the pixel corresponding to West Virginia University, a .csv file containing the 10,000 temperature-depth profiles estimated from a Monte Carlo analysis is provided. Temperatures are provided for depths from 1-5 km in 0.5 km increments. These data are summarized in a figure containing violin plots that illustrates the probability of obtaining certain temperatures at depth for Morgantown. Detailed descriptions of the contents of this repository are provided below.

**Key Words**: Appalachian Basin, West Virginia, West Virginia University, low-temperature geothermal, resource assessment, uncertainty analysis.

**Citation**: When referencing this data, please use the following citation information:

**Title**: WVU DDU: Temperature-Depth Estimates

**Author(s)**: West Virginia University, Cornell University

**Date**:November 12, 2019

**Contents of Submission**:

**Main Folder: WVUMorgantown\_TemperaturesDepthData**

**Contents:**

1. **File: 355347\_MorgantownTemperatureDepthReplicates.csv**

File containing the 10,000 replicates of temperature-depth estimates for the pixel corresponding to West Virginia University in Morgantown, WV, from the Appalachian Basin temperature-depth resource assessment by Smith (2019). The number 355347 is the pixel index number on the maps in the Appalachian Basin Temperature Depth Maps in GDR submission #1182.

Columns:

rep: the replicate ID number, from 0 – 9999.

TXkm, TXp5 km, TBase: temperature estimated at X km, X.5 km, and basement depth, respectively.

1. **File: MorgantownTemperaturesAtDepth.png**

Violin plots of the temperatures at depth for WVU campus-Morgantown. Data for the violin plots are from the 355347\_MorgantownTemperatureDepthReplicates.csv file.

**References**

Cornell University. (2019). Appalachian Basin Temperature-Depth Maps and Structured Data in support of Feasibility Study of Direct District Heating for the Cornell Campus Utilizing Deep Geothermal Energy [data set]. Retrieved from http://gdr.openei.org/submissions/1182.

Cornell University. (2016). Appalachian Basin Play Fairway Analysis Thermal Risk Factor and Quality Analyses [data set]. Retrieved from http://gdr.openei.org/submissions/879.

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Smith, J.D. (2019). Exploratory spatial data analysis and uncertainty propagation for geothermal resource assessment and reservoir models. PhD Thesis, Cornell University, Ithaca, NY.

Smith, J.D. (2016). Analytical and geostatistical heat flow modeling for geothermal resource reconnaissance applied in the Appalachian Basin. MS Thesis, Cornell University, Ithaca, NY.