

This readme.txt file was generated on 20171025 by A.D. Parsekian

GENERAL INFORMATION

1. Title of Dataset

NoName_Trench_Hydrology_Geophysics_May_September_2015

2. Author Information

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Institution: Virginia Tech
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3. Date of data collection (single date, range, approximate date)

20150502 to 20150930

4. Geographic location of data collection (where was data collected?):

Centennial WY, USA
Medicine Bow National Forest

-106.2130639849426, 41.34443901064525

-106.2124246166407, 41.34442674143899

-106.2124797768766,41.34341765355751
-106.213102793176,41.34342072147801

5. Information about funding sources that supported the collection of the data:

National Science Foundation through EPSCoR Track I RII award #1208909

SHARING/ACCESS INFORMATION

1. Licenses/restrictions placed on the data:

none.

DATA & FILE OVERVIEW

1. File List

A. Filename: NN_ET_2015.csv

Short description: Evapotranspiration data

B. Filename: NN_PR2_Res.csv

Short description: PR2 water content data and corresponding resistivity inverted results from LL

C. Filename: NN_SapFlux_by_tree_2015.csv

Short description: Sap flux results

D. Filename: NN_snow_2015.csv

Short description: Snow depth results

E. Filename: NNT_Other_Survey_Data_S6.csv

Short description: Survey position locations

F. Filename: NNT_ResLines_Survey_Data_S6.csv

Short description: Survey positions of resistivity lines

- G. Filename: NNT_Snowpit1_20150205.csv
Short description: Snow pit results

- H. Filename: NNT_Snowpit2_20150205.csv
Short description: Snow pit results

- I. Filename: NNT_TDR_VWC_2015.csv
Short description: TDR water content data, calibrated.

- J. Filename: NNT_Tree_Survey_Data_S6.csv
Short description: Survey positions of trees

- K. Filename: NNT_TrenchSnowpit.csv
Short description: Snow pit data

- L. Filename: NNT_VPA_2015_r2.csv
Short description: Ground temperature data up to 3m below surface; water level data as height above bottom of well. Well is 3 m deep.

- M. Filename: XX_WF_15XXXX_XXXX.Data
Short description: Electrical resistivity data from LL, V6 and H3. Wenner array.

- N. Filename: LL_shots_all.sgy
Short description: Shallow seismic refraction data in standard SEGY format. Associated data for elevation, geophone locations, shot notes, and shot locations.

2. Relationship between files:

n/a

3. Additional related data collected that was not included in the current data package:

n/a

4. Are there multiple versions of the dataset? no

METHODOLOGICAL INFORMATION

1. Description of methods used for collection/generation of data:

Data acquisition was done according to standard methods, following procedures as described in these publications:

Binley, A. (2015), Tools and Techniques: DC Electrical Methods, In: Treatise on Geophysics, 2nd Edition, G Schubert (Ed.), Elsevier., Vol. 11, 233–259, doi:10.1016/B978-0-444-53802-4.00192-5

Binley, A., and A. Kemna (2005), DC resistivity and induced polarization methods. Hydrogeophysics, Springer, 129–156.

Cardenas, M. B., and M. R. Kanarek (2014), Soil moisture variation and dynamics across a wildfire burn boundary in a loblolly pine (*Pinus taeda*) forest, Journal of Hydrology, 519, 490–502.

Frank, J. M., W.J. Massman, B.E. Ewers, L.S. Huckaby, and J.F. Negrón (2014), Ecosystem CO₂/H₂O fluxes are explained by hydraulically limited gas exchange during tree mortality from spruce bark beetles. Journal of Geophysical Research: Biogeosciences, 119(6), 1195–1215.

Granier, A. (1987), Evaluation of transpiration in a Douglas–fir stand by means of sap flow measurements. Tree physiology, 3(4), 309–320.

Kelleners, T., G. Paige, and S. Gray (2009), Measurement of the dielectric properties of Wyoming soils using electromagnetic sensors. Soil Science Society of America Journal, 73, 1626–1637.

Keller, G. V., and F. C. Frischknecht (1966), Electrical Methods of Geophysical Prospecting, Int. Ser. Monogr. Electromagn. Waves, vol. 10, Pergamon, Oxford, N. Y.

Lee, S. G., and M.H. de Freitas (1990), Seismic refraction surveys for predicting the intensity and depth of weathering and fracturing in granitic masses. Geological Society, London, Engineering Geology Special Publications, 6(1), 241 LP–256.

Ohara, N., M.L. Kavvas, D. Easton, E.C. Dogrul, J.Y. Yoon, and Z.Q. Chen (2010), Role of snow in runoff processes in a subalpine hillslope: field study in the Ward Creek Watershed, Lake Tahoe, California, during 2000 and 2001 water years. Journal of Hydrologic Engineering, 16(6), 521–533.

Oldenburg, D. W., and Y. Li (1999) Estimating depth of investigation

in dc resistivity and IP surveys, *Geophysics*, 64, 403–416.

Oren, R., and D.E., Pataki (2001), Transpiration in response to variation in microclimate and soil moisture in southeastern deciduous forests. *Oecologia*, 127(4).

Whalley, W., R. Cope, C. Nicholl, and A. Whitmore (2004), In-field calibration of a dielectric soil moisture meter designed for use in an access tube, *Soil Use and Management*, 20, 203–206.

2. Methods for processing the data: <describe how the submitted data were generated from the raw or collected data>

Data processing was done according to standard methods, following procedures as described in these publications:

Binley, A. (2015), Tools and Techniques: DC Electrical Methods, In: *Treatise on Geophysics*, 2nd Edition, G Schubert (Ed.), Elsevier., Vol. 11, 233–259, doi:10.1016/B978-0-444-53802-4.00192-5

Binley, A., and A. Kemna (2005), DC resistivity and induced polarization methods. *Hydrogeophysics*, Springer, 129–156.

Cardenas, M. B., and M. R. Kanarek (2014), Soil moisture variation and dynamics across a wildfire burn boundary in a loblolly pine (*Pinus taeda*) forest, *Journal of Hydrology*, 519, 490–502.

Frank, J. M., W.J. Massman, B.E. Ewers, L.S. Huckaby, and J.F. Negrón (2014), Ecosystem CO₂/H₂O fluxes are explained by hydraulically limited gas exchange during tree mortality from spruce bark beetles. *Journal of Geophysical Research: Biogeosciences*, 119(6), 1195–1215.

Granier, A. (1987), Evaluation of transpiration in a Douglas–fir stand by means of sap flow measurements. *Tree physiology*, 3(4), 309–320.

Kelleners, T., G. Paige, and S. Gray (2009), Measurement of the dielectric properties of Wyoming soils using electromagnetic sensors. *Soil Science Society of America Journal*, 73, 1626–1637.

Keller, G. V., and F. C. Frischknecht (1966), *Electrical Methods of Geophysical Prospecting*, Int. Ser. Monogr. Electromagn. Waves, vol. 10, Pergamon, Oxford, N. Y.

Lee, S. G., and M.H. de Freitas (1990), Seismic refraction surveys for predicting the intensity and depth of weathering and fracturing in granitic masses. Geological Society, London, *Engineering Geology Special Publications*, 6(1), 241 LP–256.

Ohara, N., M.L. Kavvas, D. Easton, E.C. Dogrul, J.Y. Yoon, and Z.Q.

Chen (2010), Role of snow in runoff processes in a subalpine hillslope: field study in the Ward Creek Watershed, Lake Tahoe, California, during 2000 and 2001 water years. *Journal of Hydrologic Engineering*, 16(6), 521–533.

Oldenburg, D. W., and Y. Li (1999) Estimating depth of investigation in dc resistivity and IP surveys, *Geophysics*, 64, 403–416.

Oren, R., and D.E., Pataki (2001), Transpiration in response to variation in microclimate and soil moisture in southeastern deciduous forests. *Oecologia*, 127(4).

Whalley, W., R. Cope, C. Nicholl, and A. Whitmore (2004), In-field calibration of a dielectric soil moisture meter designed for use in an access tube, *Soil Use and Management*, 20, 203–206.

3. Instrument- or software-specific information needed to interpret the data:

Shallow seismic refraction may be processed with many free or commercial packages, such as:

Geogiga Technology Corp.
Suite 1030, 396 -11 Avenue SW
Calgary, Alberta, T2R 0C5
Canada

Electrical resistivity tomography data may be processed with many free or commercial packages, such as:

R2
Andrew Binley
Lancaster University
<http://www.es.lancs.ac.uk/people/amb/Freeware/R2/R2.htm>

4. Standards and calibration information, if appropriate:
n/a

5. Environmental/experimental conditions:
Various.

6. Describe any quality-assurance procedures performed on the data:
All data was visually checked for consistency.

7. People involved with sample collection, processing, analysis and/or submission:

As described in author list.

DATA-SPECIFIC INFORMATION FOR: NN_ET_2015.csv

1. Number of variables: 3

2. Number of cases/rows: 200

3. Missing data codes:

Code/symbol	Definition	
NA		Not Available

4. Variable List

A. Name: DOY

Description: Day of year

B. Name: ET_mm_per_day_daily_values

Description: mm/day

C. Name: ET_mm_day_spline_fit

Description: mm/day

DATA-SPECIFIC INFORMATION FOR: NN_PR2_Res.csv

1. Number of variables: 5

2. Number of cases/rows: 58

3. Missing data codes: none

4. Variable List

A. Name: PR2 LOC

Description: Location name letter

B. Name: PR2 VWC

Description: volumetric water content, m^3/m^3

C. Name: ERT RES

Description: Resistivity from ERT at coincident location

D. Name: UTM LONG

Description: Longitude

E. Name: UTM LAT

Description: Latitude

DATA-SPECIFIC INFORMATION FOR: NN_SapFlux_by_tree_2015

1. Number of variables:2
2. Number of cases/rows: 16756
3. Missing data codes:

Code/symbol	Definition
NA	Not Available
4. Variable List
 - A. Name: TIMESTAMP
Description: Date and time, MST
 - B. Name: Sap FLOW
Description: cm³ m⁻² s⁻¹, 108 trees

DATA-SPECIFIC INFORMATION FOR: NN_snow_2015.csv

1. Number of variables:2
2. Number of cases/rows: 156
3. Missing data codes: none
4. Variable List
 - A. Name: DOY
Description: Day of year
 - B. Name: snow height meter
Description: snow height from SR50A; meters from ground surface

DATA-SPECIFIC INFORMATION FOR: NNT_Other_Survey_Data_S6.csv

1. Number of variables:5
2. Number of cases/rows: 19

3. Missing data codes: none
4. Variable List
 - A. Name: POINT
Description: point number
 - B. Name: LONGITUDE
Description: UTM easting, WGS84 meters
 - C. Name: LATTITUDE
Description: UTM northing, WGS84 meters
 - D. Name: ELEV
Description: elevation, meters
 - E. Name: Attr2
Description: attribute name, text

DATA-SPECIFIC INFORMATION FOR: NNT_ResLines_Survey_Data_S6.csv

1. Number of variables:5
2. Number of cases/rows: 173
3. Missing data codes: none
4. Variable List
 - A. Name: POINT
Description: point number
 - B. Name: LONGITUDE
Description: UTM easting, WGS84 meters
 - C. Name: LATTITUDE
Description: UTM northing, WGS84 meters
 - D. Name: ELEV
Description: elevation, meters
 - E. Name: TYPE
Description: attribute name, text

DATA-SPECIFIC INFORMATION FOR: NNT_Snowpit1_20150205.csv

1. Number of variables:6
2. Number of cases/rows: 11
3. Missing data codes: none
4. Variable List
 - A. Name: NO
Description: number
 - B. Name: depth
Description: meters
 - C. Name: mass
Description: grams
 - D. Name: temperature
Description: degrees C
 - E. Name: hardness
Description: VS is very soft, S is soft, MH is medium hard, H is hard, VH is very hard
 - F. Name: density
Description: g/cm³

DATA-SPECIFIC INFORMATION FOR: NNT_Snowpit2_20150205.csv

1. Number of variables:6
2. Number of cases/rows: 20
3. Missing data codes: none
4. Variable List
 - A. Name: NO
Description: number
 - B. Name: depth
Description: meters
 - C. Name: mass
Description: grams
 - D. Name: temperature
Description: degrees C

- E. Name: hardness
Description: VS is very soft, S is soft, MH is medium hard, H is hard, VH is very hard
- F. Name: density
Description: g/cm³

DATA-SPECIFIC INFORMATION FOR: NNT_TDR_VWC_2015.csv

1. Number of variables:2
2. Number of cases/rows: 3276
3. Missing data codes: none
4. Variable List
 - A. Name: DOY
Description: day of year
 - B. Name: TDR VWC
Description: volumetric water content, m³/m⁻³

DATA-SPECIFIC INFORMATION FOR: NNT_Tree_Survey_Data_S6.csv

1. Number of variables:7
2. Number of cases/rows: 439
3. Missing data codes: none
4. Variable List
 - A. Name: POINT
Description: point number
 - B. Name: LONGITUDE
Description: UTM easting, WGS84 meters
 - C. Name: LATTITUDE
Description: UTM northing, WGS84 meters
 - D. Name: ELEV
Description: elevation, meters
 - E. Name: Species
Description: text

- F. Name: DBH
Description: diameter breast height, cm
- G. Name: HEALTH
Description: text

DATA-SPECIFIC INFORMATION FOR: NNT_TrenchSnowpit.csv

1. Number of variables:16
2. Number of cases/rows: 35
3. Missing data codes: blank, not available
4. Variable List
 - A. Name: SampDate
Description: date, YYYYMMDD
 - B. Name: PitName
Description: snow pit name code, text
 - C. Name: top
Description: top of sample interval, cm
 - D. Name: bottom
Description: bottom of sample interval, cm
 - G. Name: Density_calc
Description: density, km/m⁻³
 - H. Name: snodepth
Description: depth, cm
 - I. Name: temp
Description: snow temperature, degrees C
 - J. Name: class
Description: snow classification
 - K. Name: hardness
Description:snow classification

DATA-SPECIFIC INFORMATION FOR: NNT_VPA_2015_r2.csv

1. Number of variables:9

2. Number of cases/rows: 57873
3. Missing data codes: none
4. Variable List
 - A. Name: T_0.0m
Description: ground temperature, degrees C, @ ground surface
 - B. Name: T_0.5m
Description: ground temperature, degrees C, 0.5m below surface
 - C. Name: T_1.0m
Description: ground temperature, degrees C 1.0m below surface
 - D. Name: T_1.5m
Description: ground temperature, degrees C 1.5m below surface
 - E. Name: T_2.0m
Description: ground temperature, degrees C 2.0m below surface
 - F. Name: T_2.5m
Description: ground temperature, degrees C 2.5m below surface
 - G. Name: T_3.0m
Description: ground temperature, degrees C 3.0m below surface
 - H. Name: water_m
Description: water level, height in meter above bottom of well
(3m deep)

DATA-SPECIFIC INFORMATION FOR: ert/XX_WF_15XXXX_XXXX.Data

1. Number of variables: [variables defined in headers of raw data]
2. Number of cases/rows: 1021
3. Missing data codes: none
4. Variable List
[see headers and column headings of data files for details]

DATA-SPECIFIC INFORMATION FOR: LL_shots_all.sgy

1. Number of variables: n/a – proprietary data format

2. Number of cases/rows:

Record Length 0.75 sec

Sample Interval 0.125 ms

5 Meter spacing with 4 stacks

4.5 Hertz Geophones

Running line from south to north, little wind. 90-96 meters there is a cliff

X	File	Note
0	101.dat	Tanner is hammering
5	102.dat	
10	103.dat	
15	104.dat	
20	105.dat	
25	106.dat	
30	107.dat	
35	108.dat	
40	109.dat	
45	110.dat	
50	111.dat	
55	112.dat	
60	113.dat	
65	114.dat	
70	115.dat	
75	116.dat	
80	117.dat	
85	118.dat	hammering on a rock
90	119.dat	
95	120.dat	

3. Missing data codes: none

4. Variable List

A. Name: n/a – proprietary data format