Seeded and Natural Orographic Wintertime clouds—the Idaho Experiment (SNOWIE)

National Center for Atmospheric Research and Idaho Power Company SNOWIE Precipitation

Gauges

Updated 27 March 2018

1. Dataset Title

Hydrology/Land Based: Precipitation – Idaho Power Company and NCAR SNOWIE Precipitation Gauges

2. Dataset Author(s)

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3. Time of Interest

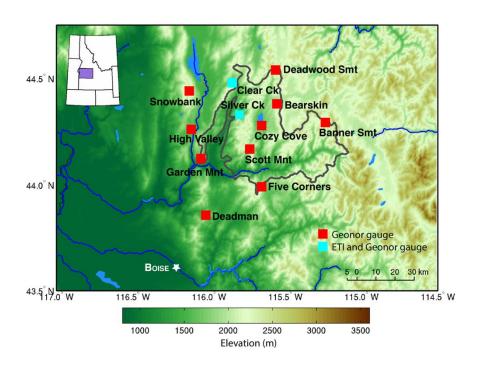
When gauge data are available, precipitation time series for the following dates are provided for each gauge site. All IOP time periods are included.

2017/01/07 00:00 2017/01/07 23:59 2017/01/08 00:00 2017/01/08 23:59 2017/01/09 00:00 2017/01/09 23:59 2017/01/10 00:00 2017/01/10 23:59 2017/01/11 00:00 2017/01/11 23:59 2017/01/18 00:00 2017/01/18 23:59 2017/01/19 00:00 2017/01/19 23:59 2017/01/20 00:00 2017/01/20 23:59 2017/01/21 00:00 2017/01/21 23:59 2017/01/22 00:00 2017/01/22 23:59 2017/01/23 00:00 2017/01/23 23:59 2017/01/31 00:00 2017/01/31 23:59 2017/02/03 00:00 2017/02/03 23:59 2017/02/04 00:00 2017/02/04 23:59 2017/02/05 00:00 2017/02/05 23:59 2017/02/07 00:00 2017/02/07 23:59 2017/02/16 00:00 2017/02/16 23:59 2017/02/17 00:00 2017/02/17 23:59 2017/02/18 00:00 2017/02/18 23:59 2017/02/19 00:00 2017/02/19 23:59 2017/02/20 00:00 2017/02/20 23:59 2017/02/21 00:00 2017/02/21 23:59 2017/02/22 00:00 2017/02/22 23:59 2017/03/04 00:00 2017/03/04 23:59 2017/03/05 00:00 2017/03/05 23:59 2017/03/07 00:00 2017/03/07 23:59 2017/03/09 00:00 2017/03/09 23:59

4. Area of Interest

- Approximately, 43.5 44.75 deg N. and 117.0 114.5 deg W.
- Ten sites in the SNOWIE domain were installed by IPC and equipped with Geonor gauges and two sites installed by NCAR had both ETI and Geonor gauges (total of 12 gauge sites in the SNOWIE domain).
- Site photos are available upon request.

Site Name ID	Location	Equipment	Latitude (deg)	Longitude (deg)	Elevation
BannerSmt	Banner Summit	IPC Geonor	44.3038	-115.2342	-9999
CozyCove	Cozy Cove	IPC Geonor	44.2878	-115.6553	-9999
Deadman	Deadman	IPC Geonor	43.8657	-116.0240	-9999
DeadwoodSmt	Deadwood Summit	IPC Geonor	44.5450	-115.5630	-9999
GardenMtn	Garden Mountain	IPC Geonor	44.1344	-116.0559	-9999
HighValley	High Valley	IPC Geonor	44.2662	-116.1168	-9999
ScottMtn	Scott Mountain	IPC Geonor	44.1758	-115.7267	-9999
SnowbankMountain	Snowbank Mtn Site A	IPC Geonor	44.4402	-116.1261	-9999
5Corners	Five Corners	IPC Geonor	43.9960	-115.6582	-9999
ClearCreek	Clear Creek	NCAR ETI-Geonor	44.4832	-115.8483	-9999
SilverCreek	Silver Creek Plunge	NCAR ETI-Geonor	44.3358	-115.7988	-9999



5. Data Frequency

- Frequency of data collection was continuous during IOPs.
- The data frequency of IPC Geonor gauges is 1/60 second with the following exceptions.
 - a) Deadwood Summit: The 1-min data are not available from this site. 15-min data (instantaneous amount at the data valid time) are provided from this site.
 - b) Banner: No measurements were available from Banner after IOP 8.
 - c) Snowbank: No 1-min data from Snowbank after IOP 9, so 5-min instantaneous data are provided from IOP 10 24.
- NCAR gauges at Clear Creek and Silver Creek (ETI and GEONOR) are 1-min data.

6. Data Spatial Type

Readable ASCII text.

```
# Project : SNOWIE 2017
# NCAR, RAL 15-Mar-2018
# Gauge Type
                      : Geonor
# Gauge Site Name
                      : Five Corners
# Site Latitude (deg): 43.99597
# Site Longitude (deg): -115.65819
# Site Elevation (m) :
# Data version : Level 1
                                -9999
# Remarks : 1) Raw 1-min data with no bad vibrating wires
             2) Data have not been smoothed and could have high frequency noise.
                Running average smoothing can be applied.
             3) Capped and dumped gauge data are still in this data file (version 1).
                Version 2 have capped and dumped data period filtered out.
yyyymmdd HHMMSS avg_accumulation
              UTC
20170106
           235900
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20170107
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20170107
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20170107
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20170107
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20170107
           001200
                          0.01
20170107
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7. General Dataset Description

Data files include general site information followed by three columns indicating date and time (in UTC) and precipitation accumulation in mm (see the above image).

Data provided are level 1 data.

a) All Geonor vibrating wires (some had three and some others had four vibrating wires) were visually inspected, and the measurements from bad vibrating wires were eliminated. The precipitation accumulation in the data files (third column) are the

average precipitation accumulation (in mm) from good vibrating wires. If data from the previous day is available, the last data record from the previous day is the initial time of accumulation; otherwise, the accumulation starts from the first record of the day. If all vibrating wires misbehaved at a site, -999 was assigned to indicate bad values.

- b) Diurnal temperature variations affect the ETI measurement. Thus, temperature-based corrections have been performed to the raw data. This involves applying a correction factor (which varies with time and is not the same for all gauges), which is determined from the air temperature and depth indicator on clear days, to each day of interest. More detailed description of this technique is available upon request. No data smoothing has been performed for level 1 data.
- Each ETI data file also starts from the last record from the previous day if available; otherwise, the accumulation starts from the first record of the day. -999 indicates unusable data.
- d) For level 1 data, the time series contain all available data. However, there are signs of *capping* (when snow adheres/accumulates around the gauge orifice excessively and causes an under-accumulation until a sudden precipitation increase when the adhered snow falls into the gauge) and *dumping* (when the capped snow dumps into the gauge, often occurs due to warming in the morning) noted during the visual inspection. Users of the data should carefully inspect the data for these features when using the data initially.
- e) Large negative data were identified as bad data as best possible. However, small oscillations from vibrating wires can produce small negative accumulation. These negative accumulations are left in the data.
- f) If the gauge was not working during the entire day, then the data file was not generated.
- g) Level 2 data (will be released at a later time) will filter capping and dumping.

Raw precipitation data that includes measurements from all vibrating wires are available upon request.

8. Notes about the data published in September 2017 and March 2018 (current version)

- The data published to the EOL data portal in September 2017 had wrong time definition in the IPC Geonor data files. Times were indicated as UTC but they were in Mountain Prevailing Time. This updated version of data has time stamps in UTC.
- Only coarse time resolution data were available from IPC gauges in the previous version (5-15 minute per instantaneous measurement). The current version contains IPC gauges with 1 minute output. If 1-min data were missing/not available, the coarser time resolution data were provided. See Section 5.

9. File Names

General format: PG_Geonor_1min_SITENAME_YYYYMMDD_lv1.txt for 1-min Geonor data from IPC gauge sites. PG_Geonor_SITENAME_YYYYMMDD_lv1.txt for IPC's Geonor with coarser time resolution (data point every 5-15 min). PG_Geonor_SITENAME_YYYYMMDD_lv1.txt and PG_ETI_SITENAME_YYYYMMDD_lv1.txt for Silver Creek and Spring Creek sites for

NCAR's Geonor and ETI gauges, repectively. Iv1 is the level of quality control performed (see data description of Iv1 data).

IPC Geonor gauges:

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PG_Geonor_1min_5Corners_20170107_lv1.txt
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PG_Geonor_lmin_5Corners_20170109_lv1.txt
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PG_Geonor_lmin_5Corners_20170111_lv1.txt
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PG_Geonor_lmin_ScottMtn_20170217_lv1.txt
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PG_Geonor_1min_5Corners_20170119_lv1.txt
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PG_Geonor_lmin_5Corners_20170123_lv1.txt
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PG_Geonor_lmin_5Corners_20170203_lv1.txt
PG_Geonor_lmin_5Corners_20170204_lv1.txt
PG_Geonor_lmin_5Corners_20170205_lv1.txt
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PG_Geonor_1min_HighValley_20170131_lv1.txt
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                                                                                                                                                                                                                                                                                                          PG Geonor SnowbankMountain 20170218 lv1.txt
PG Geonor SnowbankMountain 20170219 lv1.txt
  PG Geonor Imin Deadman 20170118 1V1.txt
PG Geonor Imin Deadman 20170119 1V1.txt
PG Geonor Imin Deadman 20170120 1V1.txt
PG Geonor Imin Deadman 20170122 1V1.txt
PG Geonor Imin Deadman 20170122 1V1.txt
PG Geonor Imin Deadman 20170123 1V1.txt
                                                                                                                                                       PG_Geonor_1min_ScottMtn_20170111_lv1.txt
                                                                                                                                                                                                                                                                                                           PG_Geonor_SnowbankMountain_20170220_lv1.txt
                                                                                                                                                     PG Geonor lmin ScottMtn 20170118 lv1.xxt
PG Geonor lmin ScottMtn 20170119 lv1.xxt
PG Geonor lmin ScottMtn 20170119 lv1.xxt
PG Geonor lmin ScottMtn 20170120 lv1.xxt
PG Geonor lmin ScottMtn 20170121 lv1.txt
                                                                                                                                                                                                                                                                                                          PG Geonor SnowbankMountain 20170221 lv1.txt
PG Geonor SnowbankMountain 20170222 lv1.txt
PG Geonor SnowbankMountain 20170222 lv1.txt
PG Geonor SnowbankMountain 20170305 lv1.txt
  PG_Geonor_lmin_Deadman_20170131_lv1.txt
PG_Geonor_lmin_Deadman_20170203_lv1.txt
                                                                                                                                                      PG_Geonor_lmin_ScottMtn_20170122_lv1.txt
PG_Geonor_lmin_ScottMtn_20170123_lv1.txt
                                                                                                                                                                                                                                                                                                          PG_Geonor_SnowbankMountain_20170307_lv1.txt
PG_Geonor_SnowbankMountain_20170309_lv1.txt
                                                                                                                                                      PG_Geonor_lmin_ScottMtn_20170131_lv1.txt
PG_Geonor_lmin_ScottMtn_20170203_lv1.txt
  PG Geonor 1min Deadman 20170204 lv1.txt
                                                                                                                                                                                                                                                                                                          PG Geonor SnowbankMountain 20170316 lv1.txt
  PG_Geonor_lmin_Deadman_20170205_lv1.txt
```

NCAR ETI-Geonor gauges at Clear Creek and Silver Creek sites: ETI and Geonor data are stored separately.

```
PG ETI ClearCreek 20170107 lv1.txt
                                           PG Geonor ClearCreek 20170107 lv1.txt
PG_ETI_ClearCreek_20170108_lv1.txt
                                           PG_Geonor_ClearCreek_20170108_lv1.txt
PG ETI ClearCreek 20170109 lv1.txt
                                           PG Geonor ClearCreek 20170109 lv1.txt
PG_ETI_ClearCreek_20170110_lv1.txt
                                           PG_Geonor_ClearCreek_20170110_lv1.txt
PG ETI ClearCreek 20170111 lv1.txt
                                           PG Geonor ClearCreek 20170111 lv1.txt
PG ETI ClearCreek 20170118 lv1.txt
                                           PG Geonor ClearCreek 20170118 lv1.txt
PG_ETI_ClearCreek_20170120_lv1.txt
                                           PG_Geonor_ClearCreek_20170120_lv1.txt
PG_ETI_ClearCreek_20170121_lv1.txt
                                           PG_Geonor_ClearCreek_20170121_lv1.txt
PG ETI ClearCreek 20170122 lv1.txt
                                           PG Geonor ClearCreek 20170122 lv1.txt
PG_ETI_ClearCreek_20170123_lv1.txt
                                           PG Geonor ClearCreek 20170123 lv1.txt
PG ETI ClearCreek 20170131 lv1.txt
                                           PG Geonor ClearCreek 20170131 lv1.txt
PG_ETI_ClearCreek_20170203_lv1.txt
PG_ETI_ClearCreek_20170204_lv1.txt
                                           PG_Geonor_ClearCreek_20170203_lv1.txt
PG_Geonor_ClearCreek_20170204_lv1.txt
PG_ETI_ClearCreek_20170205_lv1.txt
PG_ETI_ClearCreek_20170207_lv1.txt
                                           PG Geonor ClearCreek 20170205 lv1.txt
                                           PG Geonor ClearCreek 20170207 lv1.txt
PG_ETI_ClearCreek_20170216_lv1.txt
PG_ETI_ClearCreek_20170217_lv1.txt
                                           PG Geonor ClearCreek 20170216 lv1.txt
PG Geonor ClearCreek 20170217 lv1.txt
                                           PG Geonor_ClearCreek_20170218_lv1.txt
PG_ETI_ClearCreek_20170218_lv1.txt
PG_ETI_ClearCreek_20170219_lv1.txt
                                           PG Geonor ClearCreek 20170219 lv1.txt
PG_ETI_ClearCreek_20170220_lv1.txt
                                           PG_Geonor_ClearCreek_20170220_lv1.txt
PG_ETI_ClearCreek 20170221 lv1.txt
                                           PG Geonor ClearCreek 20170221 lv1.txt
PG_ETI_ClearCreek_20170222_lv1.txt
PG_ETI_ClearCreek_20170304_lv1.txt
                                           PG_Geonor_ClearCreek_20170222_lv1.txt
                                           PG Geonor ClearCreek 20170304 lv1.txt
PG_ETI_ClearCreek_20170305_lv1.txt
PG_ETI_ClearCreek_20170307_lv1.txt
                                           PG_Geonor_ClearCreek_20170305_lv1.txt
                                           PG Geonor ClearCreek 20170307 lv1.txt
PG_ETI_SilverCreek_20170107_lv1.txt
                                           PG_Geonor_SilverCreek_20170107_lv1.txt
                                           PG_Geonor_SilverCreek_20170108_lv1.txt
PG_ETI_SilverCreek_20170108_lv1.txt
PG_ETI_SilverCreek_20170109_lv1.txt
                                           PG_Geonor_SilverCreek_20170109_lv1.txt
PG_ETI_SilverCreek_20170110_lv1.txt
                                           PG_Geonor_SilverCreek_20170110_lv1.txt
PG_ETI_SilverCreek_20170111_lv1.txt
                                           PG_Geonor_SilverCreek_20170111_lv1.txt
PG_ETI_SilverCreek_20170118_lv1.txt
                                           PG_Geonor_SilverCreek_20170118_lv1.txt
PG_ETI_SilverCreek_20170119_lv1.txt
                                           PG_Geonor_SilverCreek_20170119_lv1.txt
PG_ETI_SilverCreek_20170120_lv1.txt
                                           PG_Geonor_SilverCreek_20170120_lv1.txt
                                           PG_Geonor_SilverCreek_20170121_lv1.txt
PG_ETI_SilverCreek_20170121_lv1.txt
PG_ETI_SilverCreek_20170122_lv1.txt
                                           PG_Geonor_SilverCreek_20170122_lv1.txt
PG_ETI_SilverCreek_20170123_lv1.txt
                                           PG_Geonor_SilverCreek_20170123_lv1.txt
PG_ETI_SilverCreek_20170131_lv1.txt
                                           PG_Geonor_SilverCreek_20170131_lv1.txt
PG_ETI_SilverCreek_20170203_lv1.txt
                                           PG_Geonor_SilverCreek_20170203_lv1.txt
PG_ETI_SilverCreek_20170204_lv1.txt
                                           PG_Geonor_SilverCreek_20170204_lv1.txt
PG_ETI_SilverCreek_20170205_lv1.txt
                                           PG_Geonor_SilverCreek_20170205_lv1.txt
PG_ETI_SilverCreek_20170207_lv1.txt
                                           PG_Geonor_SilverCreek_20170207_lv1.txt
PG_ETI_SilverCreek_20170216_lv1.txt
                                           PG_Geonor_SilverCreek_20170216_lv1.txt
PG_ETI_SilverCreek_20170217_lv1.txt
                                           PG_Geonor_SilverCreek_20170217_lv1.txt
PG_ETI_SilverCreek_20170218_lv1.txt
                                           PG_Geonor_SilverCreek_20170218_lv1.txt
PG_ETI_SilverCreek_20170219_lv1.txt
                                           PG_Geonor_SilverCreek_20170219_lv1.txt
PG_ETI_SilverCreek_20170220_lv1.txt
                                           PG_Geonor_SilverCreek_20170220_lv1.txt
PG_ETI_SilverCreek_20170221_lv1.txt
                                           PG_Geonor_SilverCreek_20170221_lv1.txt
PG_ETI_SilverCreek_20170222_lv1.txt
                                           PG_Geonor_SilverCreek_20170222_lv1.txt
PG_ETI_SilverCreek_20170304_lv1.txt
                                           PG_Geonor_SilverCreek_20170304_lv1.txt
PG_ETI_SilverCreek_20170305_lv1.txt
                                           PG_Geonor_SilverCreek_20170305_lv1.txt
PG_ETI_SilverCreek_20170307_lv1.txt
                                           PG_Geonor_SilverCreek_20170307_lv1.txt
PG_ETI_SilverCreek_20170309_lv1.txt
                                           PG_Geonor_SilverCreek_20170309_lv1.txt
PG_ETI_SilverCreek_20170316_lv1.txt
                                           PG_Geonor_SilverCreek_20170316_lv1.txt
```

10. Data restrictions

No data restriction

11. Digital Object Identifier (DOI)

No DOI available, please generate DOI

12. GCMD Keywords

Earth science, atmosphere, precipitation, precipitation amount, precipitation rate

See also

http://gcmdservices.gsfc.nasa.gov/static/kms/sciencekeywords/sciencekeywords.csv?ed_wiki_keywords_page

13. Publications -

None as of March 2018.