**USGS Benchmark Glacier Mass Balance and Project Data: 1966-2016**

Metadata also available as - [[Questions & Answers](https://mrdata.usgs.gov/validation/phpgSbn9X.faq.html)] - [[Parseable text](https://mrdata.usgs.gov/validation/phpgSbn9X-new.txt" \o "This metadata record in an alternative format)] - [[XML](https://mrdata.usgs.gov/validation/phpgSbn9X-new.xml)]

**Metadata:**

* [Identification\_Information](https://mrdata.usgs.gov/validation/phpgSbn9X.html#1)
* [Data\_Quality\_Information](https://mrdata.usgs.gov/validation/phpgSbn9X.html#2)
* [Entity\_and\_Attribute\_Information](https://mrdata.usgs.gov/validation/phpgSbn9X.html#3)
* [Distribution\_Information](https://mrdata.usgs.gov/validation/phpgSbn9X.html#4)
* [Metadata\_Reference\_Information](https://mrdata.usgs.gov/validation/phpgSbn9X.html#5)

*Identification\_Information:*

*Citation:*

*Citation\_Information:*

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*Publication\_Date:* 20180101  
*Title:* USGS Benchmark Glacier Mass Balance and Project Data: 1966-2016  
*Geospatial\_Data\_Presentation\_Form:* website  
*Publication\_Information:*

*Publication\_Place:* Anchorage, AK  
*Publisher:* U.S. Geological Survey, Alaska Science Center

Other\_Citation\_Details:

*Online\_Linkage:* <https://doi.org/10.5066/xxxxxxx>

Larger\_work\_citation

*Description:*

*Abstract:*

Since the late 1950s, the USGS has maintained a long-term glacier mass-balance program at three North American glaciers. Measurements began on South Cascade Glacier, WA in 1958, expanding to Gulkana and Wolverine glaciers, AK in 1966, and later Sperry Glacier, MT in 2005. Additional measurements have been made on Lemon Creek and Taku glaciers, AK to compliment data collected by the Juneau Icefield Research Program (JIRP; Pelto et al., 2013). Direct field measurements of point glaciological data are combined with weather and geodetic data to derive glacier-wide seasonal and annual surface mass balance solutions of each glacier in conventional and reference surface formats (Cogley et al., 2011). Additional details on the calculation of glacier-wide surface mass balance is described in Van Beusekom et al. (2010).

*Purpose:*

The purpose of this project is to quantitatively record changes in mass at specified glaciers over the period of record. Although this data was primarily collected for the purpose of mass balance, there are many other potential uses for this data, including ecological assessments, remote sensing validation, or water resource applications. Data is included as available, though the history of the project. Additional older, undigitized records may be available via digitized scans of field notebooks.

*Supplemental\_Information:*

This data release is composed of the varied datasets used by the USGS Benchmark Glacier program to measure seasonal and annual mass balance. Products within the release range frow raw field data to processed glacier-wide mass balance measurements.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 19700101  
*Ending\_Date:* 20170101

*Currentness\_Reference:* publication date

*Status:*

*Progress:* Planned  
*Maintenance\_and\_Update\_Frequency:* Annually

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -148.95  
*East\_Bounding\_Coordinate:* -145.33  
*North\_Bounding\_Coordinate:* 63.35  
*South\_Bounding\_Coordinate:* 60.35

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* None  
*Theme\_Keyword:* geophysics  
*Theme\_Keyword:* Glaciology

*Theme:*

*Theme\_Keyword\_Thesaurus:* NASA Earth Science Thesaurus  
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*Theme\_Keyword:* Glaciers/Ice Sheets  
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*Theme\_Keyword:* Ablation Zones/Accumulation Zones  
*Theme\_Keyword:* Glacier Elevation/Ice Sheet Elevation  
*Theme\_Keyword:* Glacier Mass Balance/Ice Sheet Mass Balance

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*Theme\_Keyword:* Geomorphology  
*Theme\_Keyword:* Geology  
*Theme\_Keyword:* Remote Sensing

Theme:

Theme\_Keyword\_Thesaurus: ISO 19115 Topic Cateogory

Theme:

Theme\_Keyword\_Thesaurus: USGS Thesaurus

*Place:*

*Place\_Keyword\_Thesaurus:* USGS Geographic Names Information System  
*Place\_Keyword:* Wolverine Glacier  
*Place\_Keyword:* Gulkana Glacier

*Access\_Constraints:* none  
*Use\_Constraints:*

Please cite U.S. Geological Survey/listed authors and give credit for the data. When appropriate, please consider co-authorship with the owners of the database. These data are the result of efforts by many government and non-government participants in the field, including USGS and various researchers and managers. All publications based on these data should acknowledge all of these efforts. If a publication is based solely on the analysis of this data, we suggest that you involve the authors of this data with the writing and/or review of the manuscript. We would also appreciate receiving notification of any publications or reports that make use of the data.

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Cross\_Reference:

*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*Attribute\_Accuracy\_Report:*

Attribute accuracy is assessed for each child entity separately, and should be viewed there.

*Logical\_Consistency\_Report:*

No formal logical accuray tests were conducted, or were performed at the entity and attribute level and are detailed within.

*Completeness\_Report:*

Data set is considered complete for the information presented, as described in the abstract. Users are advised to read the rest of the metadata record carefully for additional details.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

Positions are reported to 1 m and are generally know to better than this scale. However, sites located on the glacier are moving, and the coordinates represent an average location that the measurement site flows through on an annual basis.

*Lineage:*

*Process\_Step:*

*Process\_Description:*

Processing steps are detailed separately for each item in the collection.

*Process\_Date:* 2018

*Entity\_and\_Attribute\_Information:*

*Overview\_Description:*

*Entity\_and\_Attribute\_Overview:*

Since the late 1950s, the USGS has maintained a long-term glacier mass-balance program at three North American glaciers. Measurements began on South Cascade Glacier, WA in 1958, expanding to Gulkana and Wolverine glaciers, AK in 1966, and later Sperry Glacier, MT in 2005. Additional measurements have been made on Lemon Creek and Taku glaciers, AK to compliment data collected by the Juneau Icefield Research Program (JIRP; Pelto et al., 2013). Direct field measurements are combined with weather and geodetic data to derive seasonal and annual surface mass balance solutions of each glacier in conventional and reference surface formats (Cogley et al., 2011).

The purpose of this project is to quantitatively record changes in mass at specified glaciers over the period of record. Although data within this collection was primarily collected for the purpose of mass balance, there are multiple other uses for this data, including ecological assessments, remote sensing validation, or water resource applications. Data is included as available, though the history of the project. Additional undigitized records remain, but may be added in a future update.

*Entity\_and\_Attribute\_Detail\_Citation:*

Cogley, J. G., Hock, R., Rasmussen, L. A., Arendt, A. A., Bauder, A., Braithwaite, R. J., et al. (2011). Glossary of GlacierMass Balance and Related Terms. IHP-VII Technical Documents in Hydrology, 86.

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*Distribution\_Liability:*

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*Standard\_Order\_Process:*

*Digital\_Form:*

*Digital\_Transfer\_Information:*

*Format\_Name:* Digital Data

*Digital\_Transfer\_Option:*

*Online\_Option:*

*Computer\_Contact\_Information:*

*Network\_Address:*

*Network\_Resource\_Name:* <https://doi.org/10.5066/xxxxxxxxxxxxx>

*Fees:* none

*Metadata\_Reference\_Information:*

*Metadata\_Date:* 20180201  
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*Metadata\_Standard\_Name:* FGDC CSDGM  
*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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