

# IACS Working Group on the Randolph Glacier Inventory (RGI) and its role in future glacier monitoring and GLIMS

## Annual Status Report of the Working Group, June 2023

*Activities of the WG since the last report in August 2022*

### 1. WG meetings

The steering committee has held online meetings at least every two months on average. An in-person RGI Working Group meeting is scheduled to be held on 13 July 2023 during the IUGG General Assembly in Berlin.

### 2. Completion and release of RGI 7.0)

The WG has primarily focused on completing the RGI version 7.0 and preparing its release now scheduled for July 2023. The RGI version 7.0 is nearly completed. Specifically, the following steps were completed:

- a) We continued to generate new outlines for RGI 7.0 and performed quality control in some regions.
- b) Outlines chosen for the RGI but not yet submitted to GLIMS or submitted but not yet ingested were ingested into GLIMS.
- c) A RGI alpha version was generated from the GLIMS data, and sent for review to the RGI Consortium on 21 Dec 2021, and then in an updated version on 13 Feb 2023. The version included all outlines but no attributes or additional information.
- d) Corrections were applied to outlines in some regions based on the feedback.
- e) A RGI 7.0 beta version was generated based on the previously developed novel workflow. The beta version included all RGI products, attributes and auxiliary files that accompany the RGI, such as elevation-dependent hypsometries for all glaciers.
- f) A detailed online User Guide was written including a detailed description of the RGI products and data files, and all changes compared to RGI 6.0, as well as some summary statistics.
- g) The beta version and the User Guide were sent for review to the entire RGI Consortium on 15 June 2023. The deadline for feedback is 3 July 2023.

RGI 7.0 is substantially improved and enhanced compared to RGI 6.0 . **73 % of all RGI 7.0 glacier outlines are new or updated, representing an improvement for 42 % of the global area.** In summary:

- New attributes are available, while others were removed or renamed/redefined.
- Outlines of contiguous glacier complexes are available (“glacier complex” product) in addition to the outlines of each individual glaciers.
- New data files including shapefiles of common boundaries of individual glaciers as well as glacier centerlines have been added (“intersects” and “centerlines” products).
- All outlines and attributes are now derived exclusively from GLIMS using a new largely automated workflow with the code publicly available to ensure reproducibility.
- Filename conventions are updated.

### 3. Online documentation of the WG activities

The IACS homepage is the main outreach page of the WG.:

<https://cryosphericsscience.org/activities/working-groups/rgi-working-group>

The new documentation web page for the RGI (the “user guide”) is published online:

[https://www.glims.org/rgi\\_user\\_guide](https://www.glims.org/rgi_user_guide)

In addition, all WG meeting notes, scripts, and discussions are fully documented online, in several thematic repositories:

- <https://github.com/GLIMS-RGI/rgidocs> : all WG meeting notes, reports, archives of sent emails, etc.
- [https://github.com/GLIMS-RGI/rgi7\\_scripts](https://github.com/GLIMS-RGI/rgi7_scripts) : code and documentation for the generation of the RGI out of the GLIMS database. This contains the main bulk of the work of the last two years.
- [https://github.com/GLIMS-RGI/rgi7\\_scripts/wiki](https://github.com/GLIMS-RGI/rgi7_scripts/wiki) : description of the various RGI7 datasets and production workflow.
- <https://github.com/GLIMS-RGI/rgitools>: code and documentation of the tools used to generate the attributes of the RGI7 outline files.

### 4. Integration into GLIMS

The Working Group has reached its goal of full integration of the RGI into GLIMS. For the first time all RGI outlines used in the RGI are extracted exclusively from GLIMS. The new RGI will be hosted and released on the GLIMS homepage. Furthermore, we continue our efforts to coordinate the RGI efforts with GLIMS:

- As a full member of the [GLIMS core team](#), Fabien Maussion continued to coordinate GLIMS and RGI activities.
- Regine Hock, Fabien Maussion and Bruce Raup continued to be in communication with the NSIDC director to secure improved further long term support from NSIDC to both GLIMS and RGI activities to remedy some issues faced in finalizing RGI 7.0.

### 5. Conferences

The status of the RGI will be presented at the IUGG General Assembly in Berlin. Frank Paul presented the new Peruvian inventory that was included in the RGI 7.0: at the Alpine Glaciology Meeting in Zurich in February 2023 and at the EGU meeting in Vienna in April 2023.

### 6. Future work

The RGI7 will officially be released in July 2023. The next steps will then be the preparation and submission of a manuscript including a scientific description of the RGI to a peer-reviewed journal in fall 2023.

### 7. Continuation of the Working Group

We plan to submit a follow-up proposal to continue RGI work. Specifically we envision a release of RGI 7.1 that includes minor but significant improvements. For example, some attribute values are no longer available in RGI 7.0 (e.g. lake-terminating glaciers are labeled as ‘Unassigned’ even where the data were available in RGI 6.0). All previous RGI versions have outlines with target year

2000. We plan the compilation and release of a version of the RGI with a more recent date.

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