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, August 2021
Activities of the WG since the last report in October 2020

1. WG meetings

The steering committee has held **online meetings** at least once a month on average. The **next WG-wide meeting** (including all WG members and contributors) is planned for September 2021, to plan the review process of the version 7 of the RGI.

2. New members

After the open call for members which was closed in 2020, **9 new contributors joined the WG** based on their activity and involvement in the RGI process. The WG currently has ~20 members and ~30 contributors from more than 15 countries.

3. Preparation and release of new version of the RGI (RGI7.0)

The WG has primarily focused on preparing an updated version of the current RGI version (v.6.0). This has involved the following steps:

a. Ater the call for outlines in 2020, the WG has carefully considered all submissions and developed objective criteria to justify a particular choice of outlines in case there are multiple available outlines for the same region. In a WG-wide call on October 23 2020, all parties were invited to provide feedback on the steering committee's recommendations.

b. Once the outlines to update from RGI6 were agreed upon, activities focused on developing the RGI generation workflow from the GLIMS database. This process is now largely finished, and the main work of the last 3 months has been the implementation of this workflow.

c. A suite of scripts has been developed to download the outlines automatically from GLIMS, processing and selecting them to generate the RGI7 outline files in a status called "RGI7alpha" (see figure). This workflow has already been applied to about half of the world's glacierized regions.

Overall, the preparation of the RGI has been considerably more time and labor-intensive than originally anticipated, in particular also due to rigorous quality control of updated outlines and documentation of the workflow and outline selection.

The targeted release date for RGI7alpha is the end of September. This will be followed by an open review process and prior to the release of a RGI7beta version by the end of the year. We expect the final RGI7 to be released in early 2022.
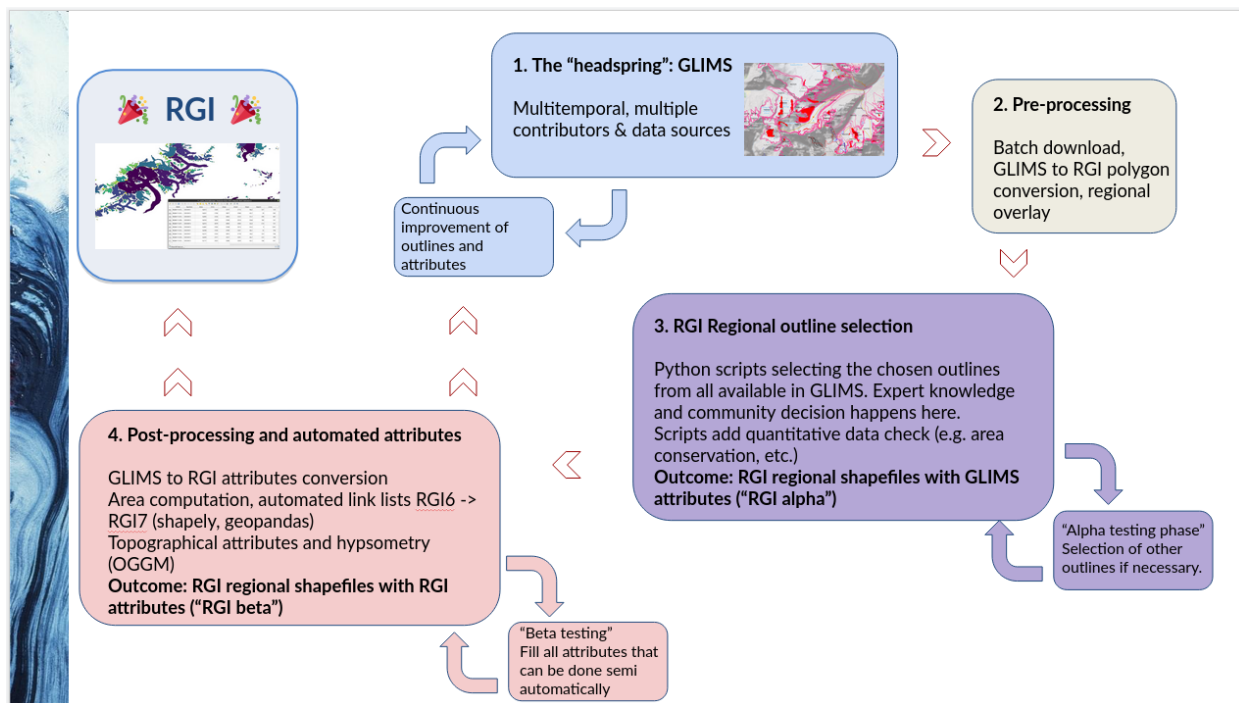
Figure 1. RGI generation workflow. The slide was presented at the RAGMAC conference

4. Online documentation of the WG activities

The IACS homepage is the main outreach page of the WG: https://cryosphericsciences.org/activities/working-groups/rgi-working-group We updated the homepage continuously to keep it up to date.

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/rgi_issue_tracker : issue tracker for the RGI. Here, users can report issues in the stable version of the RGI (currently version 6).
- https://github.com/GLIMS-RGI/glims_issue_tracker : issue tracker for the GLIMS database. Most entries here are relevant for the RGI as well.
- 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 few months.
- https://github.com/GLIMS-RGI/rgitools: code and documentation of the tools used to generate the attributes of the RGI7 outline files.

5. Integration into GLIMS

For the first time all outlines to be considered in the new version of the RGI have to be submitted to GLIMS. Thus we continue our efforts to coordinate the RGI efforts with GLIMS and avoid that RGI outlines are not in GLIMS. The new RGI will be hosted and

released on the GLIMS homepage. As of August 2021, Fabien Maussion is now a full member of the [GLIMS core team](#) with the task to better coordinate GLIMS and RGI activities.

6. Conferences

The status of the RGI was presented by Fabien Maussion at the RAGMAC virtual conference on June 30th 2021.

7. Requested funding

Due to the uncertain future of travel given the COVID pandemic we had no requests for funding to support WG in-person meetings in 2021. However, we have been granted to use 5000 Euros from IACS to hire a researcher (Dr. Stephan Galos, University of Innsbruck) to work part-time on RGI7alpha. Most of the work on the RGI generation has been conducted by Stephan.

8. Future work

The next steps include finalizing the generation and release of RGI7.0 and updating the technical note that documents in detail for each region the updates made to the previous version of the RGI. Since the data production workflow of RGI7 is entirely novel, we will also strive to submit a manuscript to a peer-reviewed journal in 2022.

Acknowledgements