

# The Randolph Glacier Inventory

## RGI version 7<sub>(alpha)</sub>

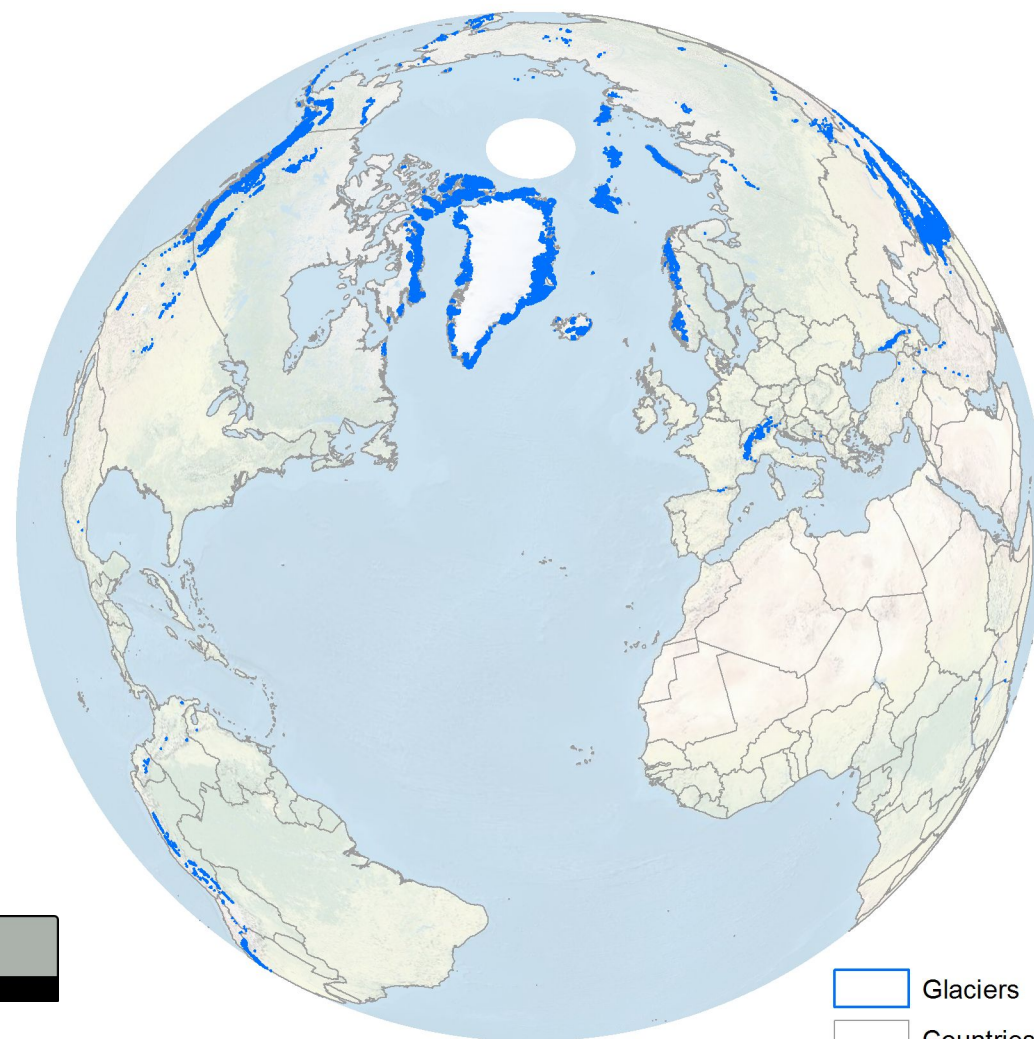
Fabien Maussion, Regine Hock, Frank Paul,  
Bruce Raup, Philipp Raster, Michael Zemp

*& the IACS Working Group on the Randolph  
Glacier Inventory and its role in future glacier  
monitoring and GLIMS*

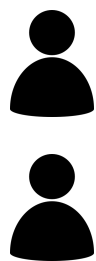
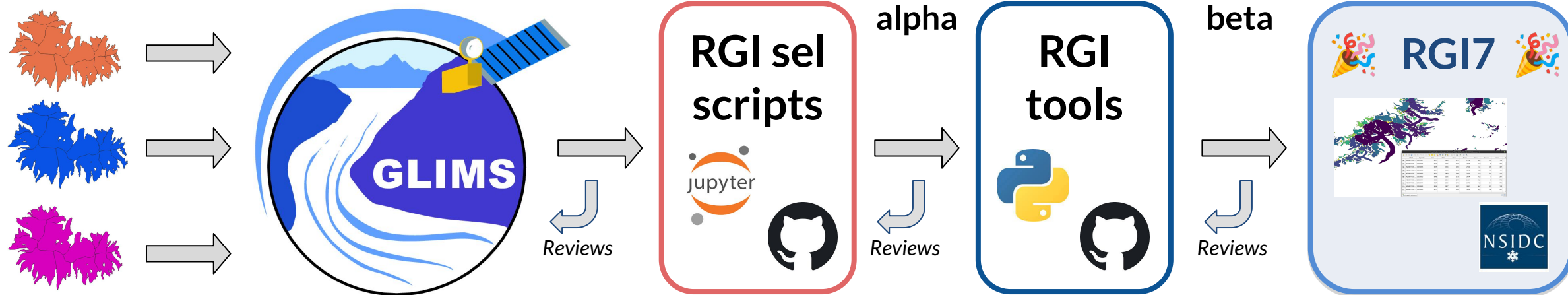
EGU22

CR1.1 - Glaciers and Ice Caps under Climate Change

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# The new RGI production workflow



Regional /  
national  
inventories



**GLIMS**  
data standardization  
licencing  
data access



**RGI Working Group**  
inventory selection  
script development  
open review

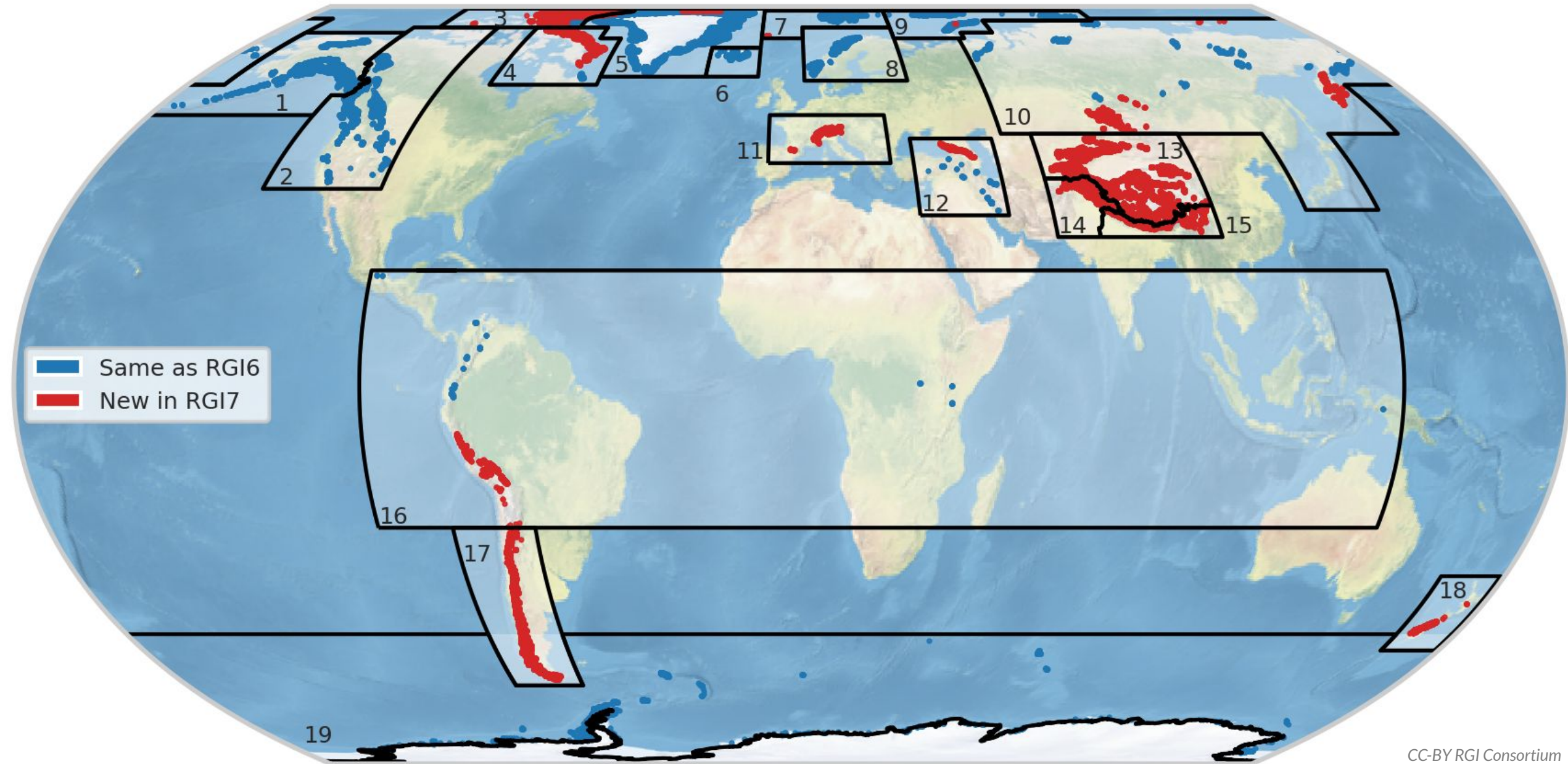
### Advances

- Fully reproducible, semi-automated process
- Fully open source
- Open review and discussion
- Clear licensing model
- Clear attribution to original inventories
- Future oriented

### Challenges

- More actors involved
- Incompatible national inventories requiring manual intervention
- data standardization is hard, which leads to...
- ... GLIMS technical debt
- Institutional funding

## RGI7 alpha



## RGI7 alpha

|        |                                    | Area (km2) |        |          | Number |        |          |
|--------|------------------------------------|------------|--------|----------|--------|--------|----------|
|        |                                    | RGI6       | RGI7a  | Diff (%) | RGI6   | RGI7a  | Diff (%) |
| 01     | Alaska                             | 86725      | 86724  | 0        | 27108  | 27107  | 0        |
| 02     | Western Canada and USA             | 14524      | 14530  | 0        | 18855  | 18859  | 0        |
| 03     | Arctic Canada, North               | 105110     | 105371 | 0.2      | 4556   | 5227   | 14.7     |
| 04     | Arctic Canada, South               | 40888      | 40530  | -0.9     | 7415   | 10934  | 47.5     |
| 05     | Greenland Periphery                | 89717      | 90370  | 0.7      | 19306  | 19888  | 3        |
| 06     | Iceland                            | 11059      | 11059  | 0        | 568    | 568    | 0        |
| 07     | Svalbard and Jan Mayen             | 33958      | 33958  | 0        | 1615   | 1667   | 3.2      |
| 08     | Scandinavia                        | 2949       | 2949   | 0        | 3417   | 3413   | -0.1     |
| 09     | Russian Arctic                     | 51591      | 51595  | 0        | 1069   | 1069   | 0        |
| 10     | Asia, North                        | 2410       | 2638   | 9.5      | 5151   | 7130   | 38.4     |
| 11     | Central Europe                     | 2092       | 2124   | 1.5      | 3927   | 4087   | 4.1      |
| 12     | Caucasus and Middle East           | 1306       | 1432   | 9.6      | 1888   | 2431   | 28.8     |
| 13     | Asia, Central                      | 49303      | 50344  | 2.1      | 54429  | 75614  | 38.9     |
| 14     | Asia, South West                   | 33568      | 33075  | -1.5     | 27988  | 37563  | 34.2     |
| 15     | Asia, South East                   | 14734      | 16044  | 8.9      | 13119  | 18588  | 41.7     |
| 16     | Low Latitudes                      | 2341       | 1928   | -17.6    | 2939   | 3698   | 25.8     |
| 17     | Southern Andes                     | 29429      | 27675  | -6       | 15908  | 30700  | 93       |
| 18     | New Zealand                        | 1161       | 886    | -23.7    | 3537   | 3018   | -14.7    |
| 19     | Subantarctic and Antarctic Islands | 132867     | 132870 | 0        | 2752   | 2752   | 0        |
| Global |                                    | 705738     | 706110 | 0.1      | 215547 | 274313 | 27.3     |

**Tremendous improvements in many regions** (snow patches, divides, etc)

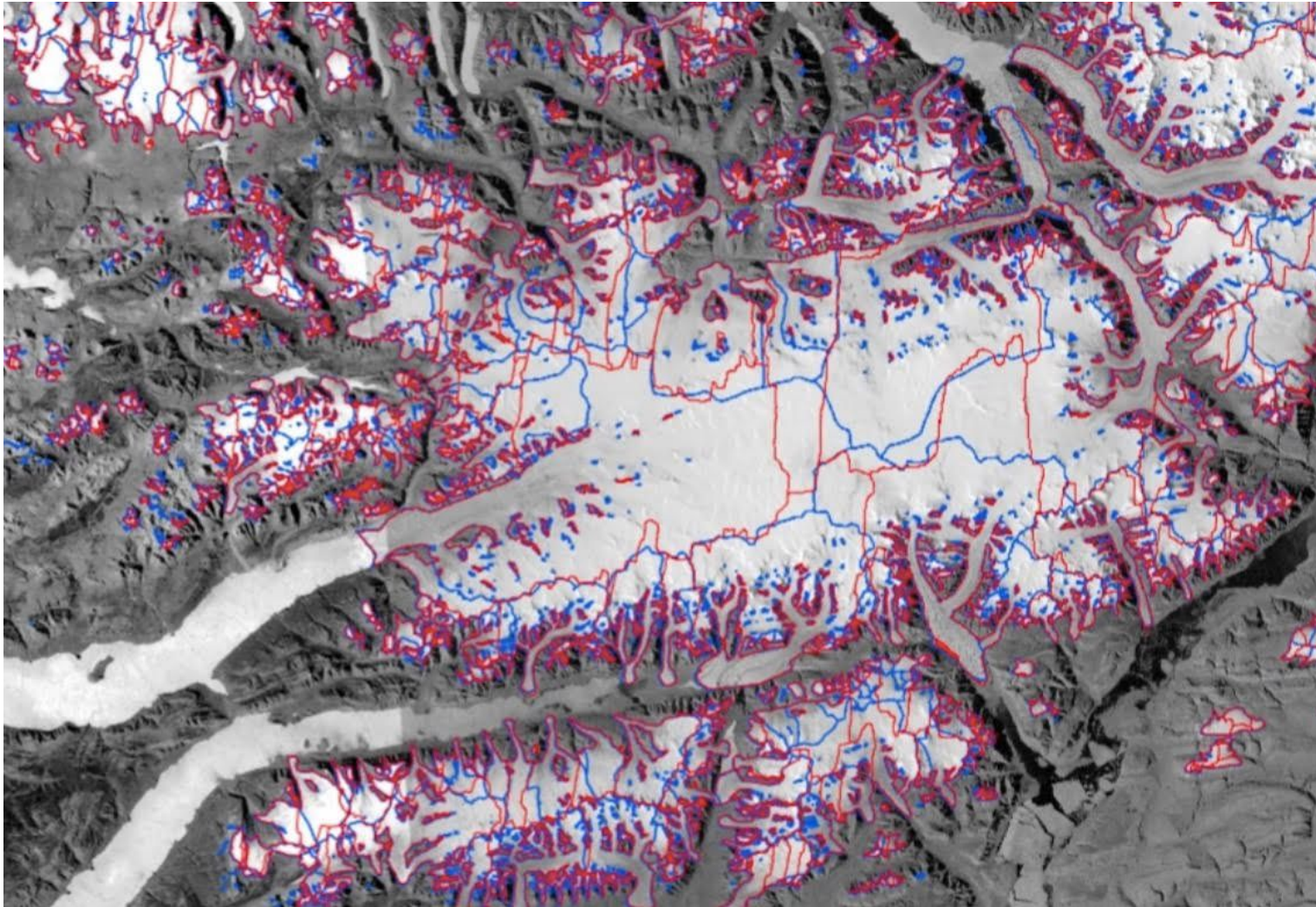
**Global area largely unchanged**

**Significant area changes in several regions.**

**New inventories often results in increase of number of outlines (+27% globally)**

## RGI7 alpha : example improvements

Ellesmere Island. Red: RGI6, Blue: RGI7



## Roadmap

**Final call for review on alpha**  
**New products (“glacier” and “glacier complex”)**  
**Automatic generation of attributes**  
**Call for review on beta**  
**Technical document**  
**Publication**

**Next RGIs will be much faster to generate (we believe)**

Check out our work at [https://github.com/GLIMS-RGI/rgi7\\_scripts](https://github.com/GLIMS-RGI/rgi7_scripts)