350 universität innsbruck
Wir bauen Brücken. Seit 1669

IMC2019, Innsbruck

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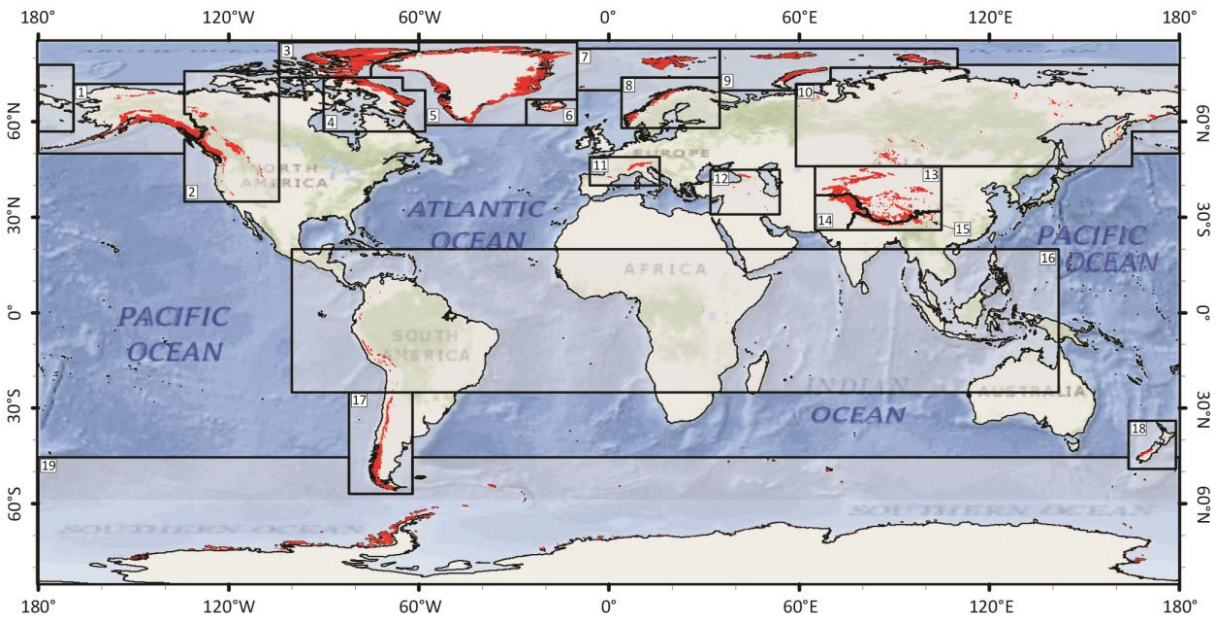
# Climate data for large scale glacier modeling

## Large scale glacier modeling?

- more than 200k glaciers worldwide
- glaciers tend to be located in regions with (very) few observations
- relatively new but growing field (first glacier inventory: 2012)
- community: GlacierMIP, IACS working groups, etc.




## Fabien Maussion?

- main developer of open-source model OGGM (oggm.org, see poster WS 2.3.B)
- active in the community
- arguably more “atmosphere aware” than most glaciologists
- http://fabienmaussion.info
  fabien.maussion@uibk.ac.at

OGGM
Open Global Glacier Model

# Glacier models as impact models: a subjective review

- Most models use the simple but efficient: *mass-balance* = $P_{Solid}$ – *melt* $T_{>0°C}$
  → *presence of "melt threshold" raises questions wrt variance correction*

- Innovation impeded by the general consensus that GCM/RCM uncertainties are too large
  → BUT this has never been formally proven or even assessed

- At global scale, data homogeneity is important (IPCC prefers global assessments)
  → global studies use GCM, no RCM

- RCMs (CORDEX) just start to be used at regional scale
  → BUT no proper study of "added value" of RCM vs GCM yet

- ALL models do some sort of "downscaling" (read: bias correction). Delta method most popular.
  → No "global" solution available of course

- Question of coupling in ESM still a thing: feedbacks glaciers ↔ atmosphere ↔ hydrosphere

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