



# Climate and Cryosphere

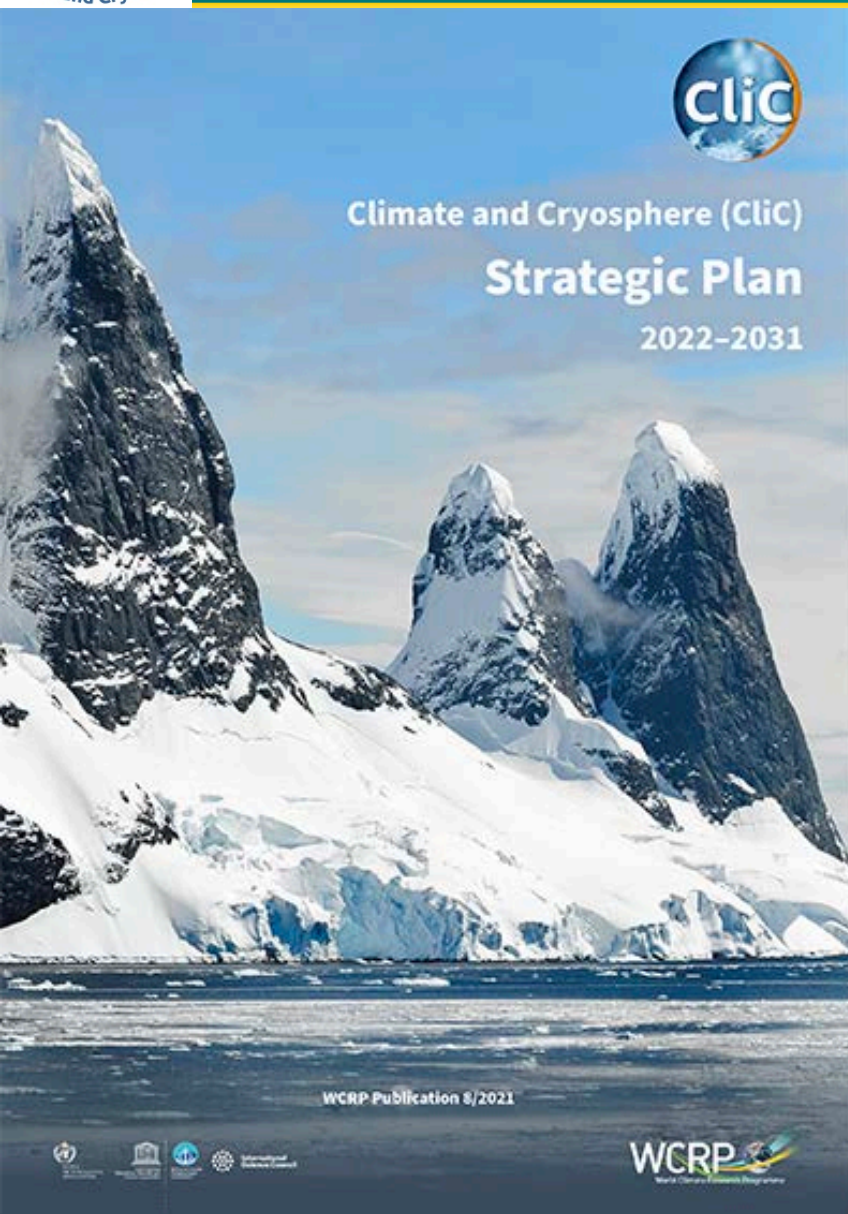
## 43rd Session of the WCRP Joint Scientific Committee

*Edward Hanna, co-chair*  
28 June 2022  
Online



International Science Council





## *Expanding the scope of CliC in the next decade*

### **Goal:**

#### **A system understanding of cryosphere and its services**

- \* Bridge climate, ecosystems and societies at all scales
- \* Produce knowledge from collaborative teams
- \* Analyse feedbacks to global climate & society
- \* Promote best practices

### **Approach**

Co-design of research with natural, social, and geophysical scientists, stakeholders, and affected communities



## Objectives

- \* Provide integrated assessments of global cryosphere change
- \* Provide a forum for new activities addressing the strategic areas
- \* Leverage cross-disciplinary and international collaboration
- \* Address cryosphere priorities
- \* Link to WCRP Lighthouse Activities

## Strategic areas

1. Quantification of global cryosphere loss and cost to society
2. Projection of future ice loss (global, regional and per component)
3. Integrated description of cryosphere regions bridging across natural and social components, including ecosystems
4. Critical services provided by the cryosphere
5. Knowledge synthesis (including Indigenous and local knowledge) and communication to stakeholders and residents

# Progress and achievements (II)

## CliC Fellowships and Grants 2022

**Glacier related hazards in the Northern Patagonian Andes of Argentina**

PhD student: Lautaro Clavero  
Supervisor: Lucas Ruiz

IANIGLA  
CONICET

**cliC fellowship 2022**

University of Reading

Developing meteorological forecasts for the early warning of hazards in the glacierized catchments of Central Asia

Gavkhar Mamadjanova (Hydrometeorological Research Institute, Uzbekistan) & Maria Shahgedanova (University of Reading, UK)

- 1** Development of database
  - GLOF and DF
  - ECMWF forecast products
  - Observational data (temperature & precipitation)
- 2** Verifying and applying forecast data
  - Standard Ensemble Forecast
  - State-of-the-art ECMWF ecPoint-Rainfall product\*\*
- 3** Implementation
  - Uzhymetrom
  - Kazhymetrom
  - Disseminate the outcomes (AGU2022)
  - Publication
  - Executive summary

cliC Strategic Priority 4 'System description of the cryosphere regions'

cliC Strategic Priority 5 'Knowledge syntheses and communication to stakeholders'

Arctic Science Summit Week (ASSW 2022) 26 March 2022

**Analysing snowpack characteristics in the Karakoram mountains via in-situ measurements and surface modeling**

PI: Jawairia Ahmad (Ph.D.)  
Pakistan

Climate and Cryosphere Fellow 2022

Arctic Science Summit Week (ASSW2022)



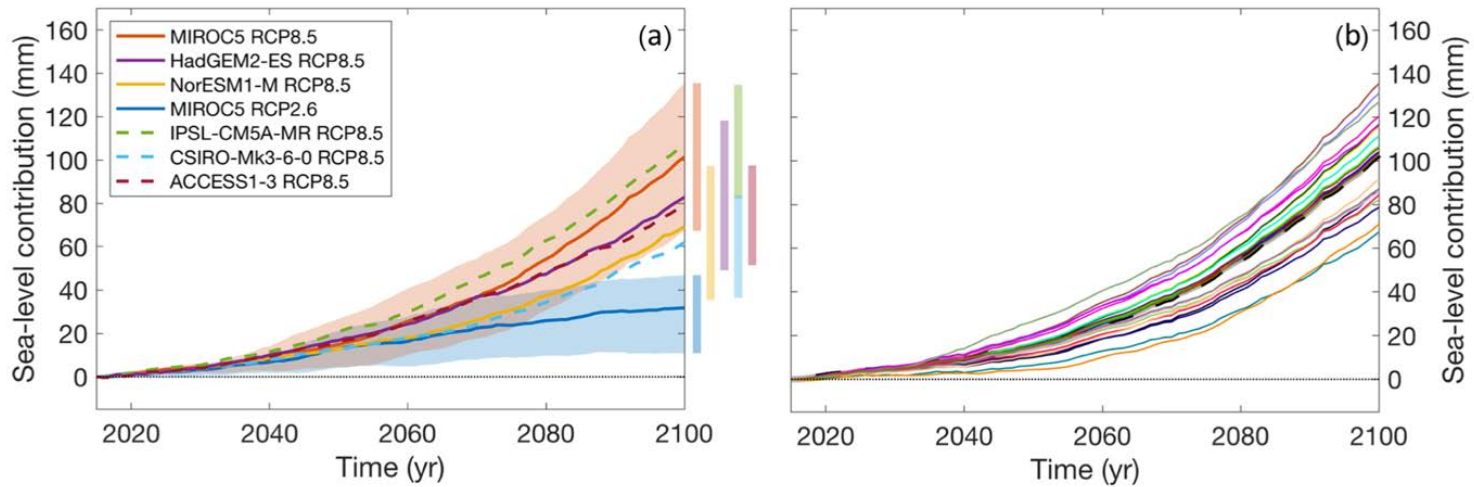
Glacier monitoring and educational activities in the Karakoram, Pakistan

Dr. Alexander R. Groos, Glacier Systems Group,  
Friedrich-Alexander University Erlangen-Nürnberg

## Projected sea level increase due to melting of Greenland & Antarctica ice sheets over the 21<sup>st</sup> century

Co-leads:

Sophie Nowicki, U Buffalo, USA  
 Tony Payne, U Bristol, UK  
 Eric Larour, NASA JPL, USA



\* *ISMIP6* involved **40 institutions during 7 years** of international **interdisciplinary** collaboration among oceanographers, meteorologists, glaciologist and statisticians.

\* Provided the **first fully process-based predictions of ice sheets' future for IPCC AR6**





**Co-leads:** Heiko Goelzer (Chair)

Gudfinna Adalgeirsdottir (IASC), Edward Hanna (CliC), Frank Pattyn (SCAR)

Forthcoming workshop

“Ice sheets: weather versus  
climate”

23 & 24 August, Reykjavik

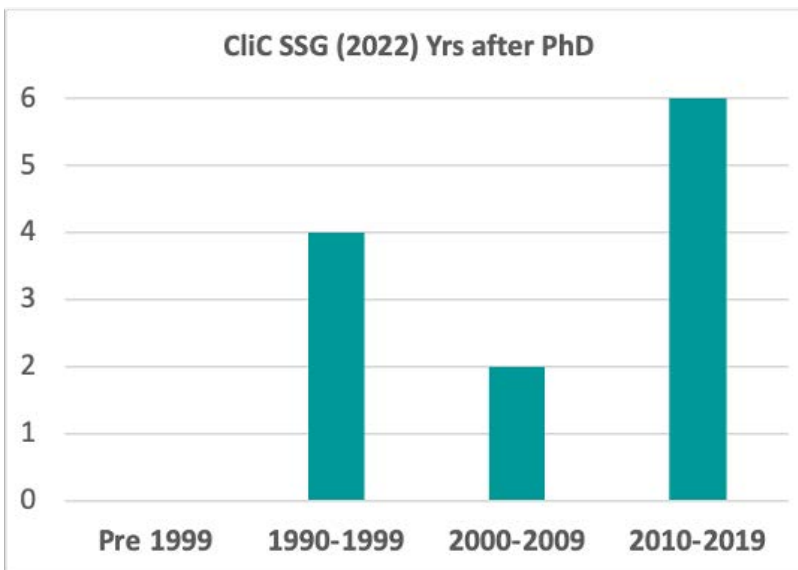
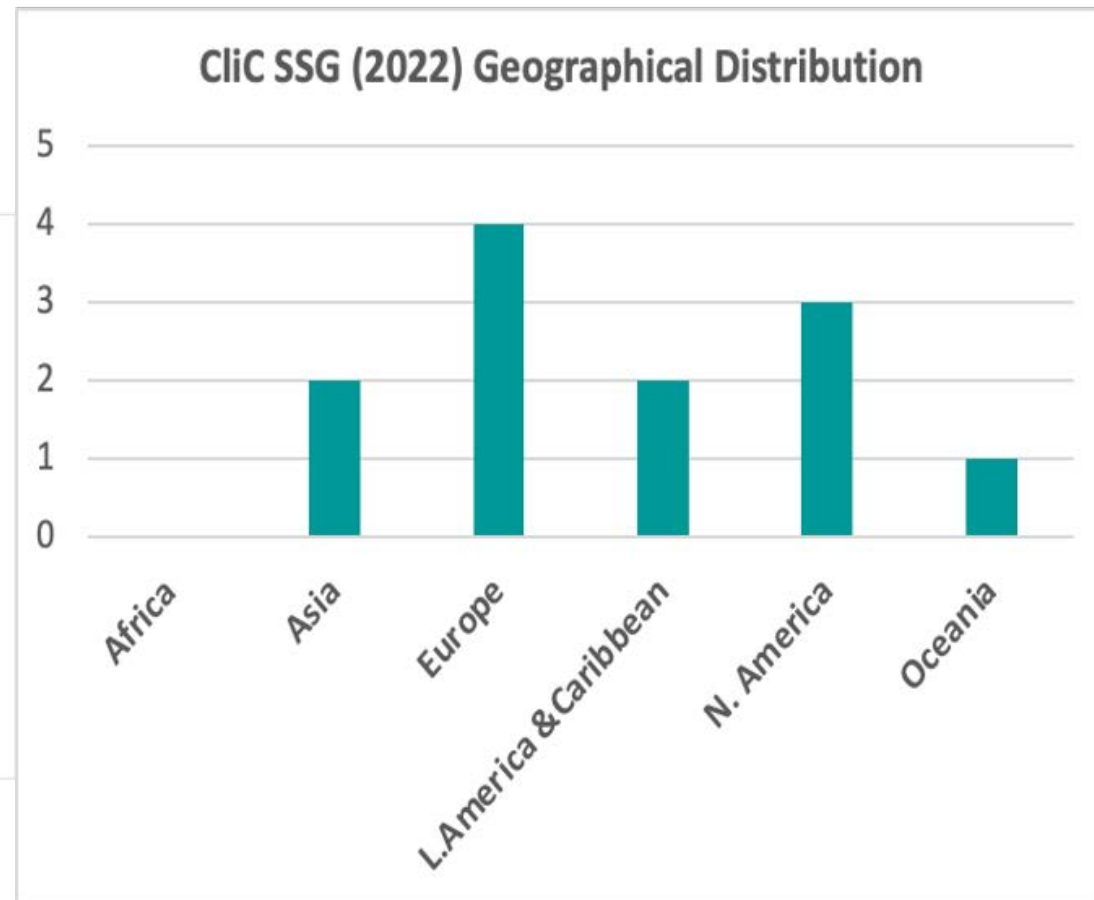
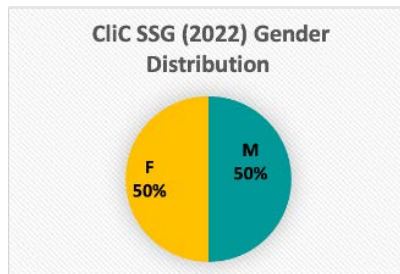


Affiliated with the Cryosphere 2022 symposium. Places are available on a ‘*first come, first served*’ basis by emailing Edward Hanna [ehanna@lincoln.ac.uk](mailto:ehanna@lincoln.ac.uk)

More info at [https://climate-cryosphere.org/wp-content/uploads/2022/01/ISMASS\\_workshop2022.pdf](https://climate-cryosphere.org/wp-content/uploads/2022/01/ISMASS_workshop2022.pdf)

# Progress and achievements (IV)

From 2022 SSG has expanded its expertise, geographical coverage and the number of early career scientists while keeping the gender balance



# Future plans 1-3 years (I)

## Implementation of CliC Strategic Plan:

- \*Solicit the formation of **new Working Groups/ activities** targeting CliC research priorities for the next decade. New activities shall promote collaboration and co-ordination of interdisciplinary regional (including applied) research targeting CliC priorities. They shall involve ERCs and scientists from under-represented regions and the Global South. Participation of co-sponsors and partner organisations shall be encouraged. New activities shall be time-limited and specify expected outcomes and deliverables. New activities shall showcase the impact of CliC contribution to local communities and enhance CliC and WCRP visibility.
- \*Lead a series of **hands-on workshops** to address gaps in knowledge at regional level, involving local scientists and communities. Topics: synthesis /review scientific papers, grant proposal writing, capacity building...
- \***Join forces** with pertinent **organisations and partners** (e.g., SCAR, IASC, SOOS, APECS, GCW, Future Earth, etc.) in co-ordination of activities and avoid duplication of efforts.
- \*Promote activities to establish **long-term monitoring of key cryospheric parameters** in regions of poor data coverage by local communities with limited funding.
- \*Share of CliC expertise for **capacity building**.



# Future plans 1-3 years (II)

- \*Liaise with WCRP pertinent lighthouses: **Academy, My Climate Risk & Safe Landing Climates.**
- \*Explore venues of collaboration with new Core Projects **ESMO and RifS**
- \*Use CliC Grants and Fellowships to engage ECR to target CliC's new research priorities.
- \*Link to ongoing WCRP activities such as GEWEX regarding Andes; WCRP Monsoon Panel in Asia, etc.
- \*Revise and/or renew CliC partnerships with research and policy partners
- \*Meet with leaders of current activities to discuss their long-term future plans to explore venues of integration or contribution to CliC's new priorities. This includes the Grand Challenge Melting Ice & Global Consequences.

## Future of CLIC International Project Office

\*Contract termination with present host at Bjerknes Centre, Norway on 31<sup>st</sup> December 2022

\*Proposal from University of Massachusetts to NSF & NASA: 2023-2027  
– under revision

\*If U Mass fails, then a call to host the IPO must be launched ASAP.