Workshop Output WS 1.1.C

Title of workshop: Past climate change – proxies and modeling

Prepared by Fabien Maussion, Karin Koinig & Kurt Nicolussi

Moderators	Fabien Maussion, Kurt Nicolussi
Participants*	Elena Mitrofanova, Bruno Wilhelm, Kurt Nicolussi, Karin Koinig, Rachid Cheddadi, Matthias Dusch

* Workshop participants that have submitted contributions to the workshop

General questions to please be answered in the workshop reporting

1) What was the focus of the workshop? Methodological issues and advancements or thematic issues (systems knowledge, transformation knowledge, target knowledge). Please check and fill in the matrix in the output section.

Methodological issues and advancements	Thematic issues		
	System knowledge	Transformation knowledge	Target Knowledge
		-	-

1) *Which key points were discussed in the workshop as a whole? (This should be more a synthesis and not simply a summary of the key points in each presentation)*

Regarding research on past, i.e., Holocene climate change, mountain regions are often characterized by a large number of climate archives and related proxies available in a comparatively small area. In the workshop itself, the proxy-related contributions - and here those that used the climate archives lakes and glacier - outweighed those that were based on modelling or included model results. However, the goal to use numerical models or at least model results in their investigations was given at least for a part of the proxy-related presenters. This willingness certainly reflects the **development of the paleoclimate community in recent years towards the increasing use of numerical models in research.**

Recent years have seen a **number of advances** in paleoclimate research, e.g., i) often **higher resolved measurements are possible based on new devices**, ii) **new proxies, e.g. DNA**, have been introduced alongside traditional ones, iii) radiometric dating techniques have become more precise and their statistical evaluation more sophisticated, and iv) **extended data exchange has** allowed the production and analysis of **new regional and global data sets**.

2) What is your opinion on the current state of knowledge concerning your topic(s) (focusing on mountain regions)? *Please check and fill in the matrix on the following page.*

Overall assessment of the state of:

What is your personal opinion on the current state of knowledge concerning the topic(s) addressed in your workshop. Please tick the appropriate field. Brief explanations are appreciated.

State of knowledge	Very good	Good	Poor	Very poor	Not appropriate	Comments
Global		▓	▓	▓		*The ==overall picture regarding Holocene climate becomes more clear== in recent years, however, there are ==still major, i.e., regional gaps== but **also** regarding **numerical model results: globally and highly resolved model output is still missing beyond the last millennium***
Regional					▓	*Which region?*
Scattered case study-based knowledge					▓	*Where?*
Knowledge about past states/trends		▓	▓	▓		*Depends on proxies and time windows, numerical model data are limited*
Knowledge about current situation	▓					
Knowledge about future states/trends/thresholds		▓				***Regional averages of glaciers***
Knowledge about the system		▓	▓	**Knowledge about future states/trends/thresholds**		
Knowledge about shaping pathways to more sustainable development (transformation knowledge)					▓	
Knowledge about envisaged goals (target knowledge)					▓	

<u>Ideas for questions to potentially be answered by the moderators after the workshop in the reporting (please delete what is not useful):</u>

1) *Were there any new insights and/or findings presented? If yes, which ones?*
New results of regional events and evolutions in the past, e.g. in Siberia and the Alps, and, e.g., **new assessments regarding current state of glaciers in the Alps** in relation to past climatic situations and regarding trends of and causes for flood event in past and present in the Alps.

2) *What was the main message/consensus of your workshop?*
<mark>**The cooperation of proxy researchers and modelers should be further strengthened to mutual advantage.**</mark>

3) *Was there any significant controversy (if so, what?) that requires new data (or further exploration of existing data) to resolve the issue? (explain)*
No

Further Comments