



PAGES

PAST GLOBAL CHANGES

www.pastglobalchanges.org

Marie-France Loutre



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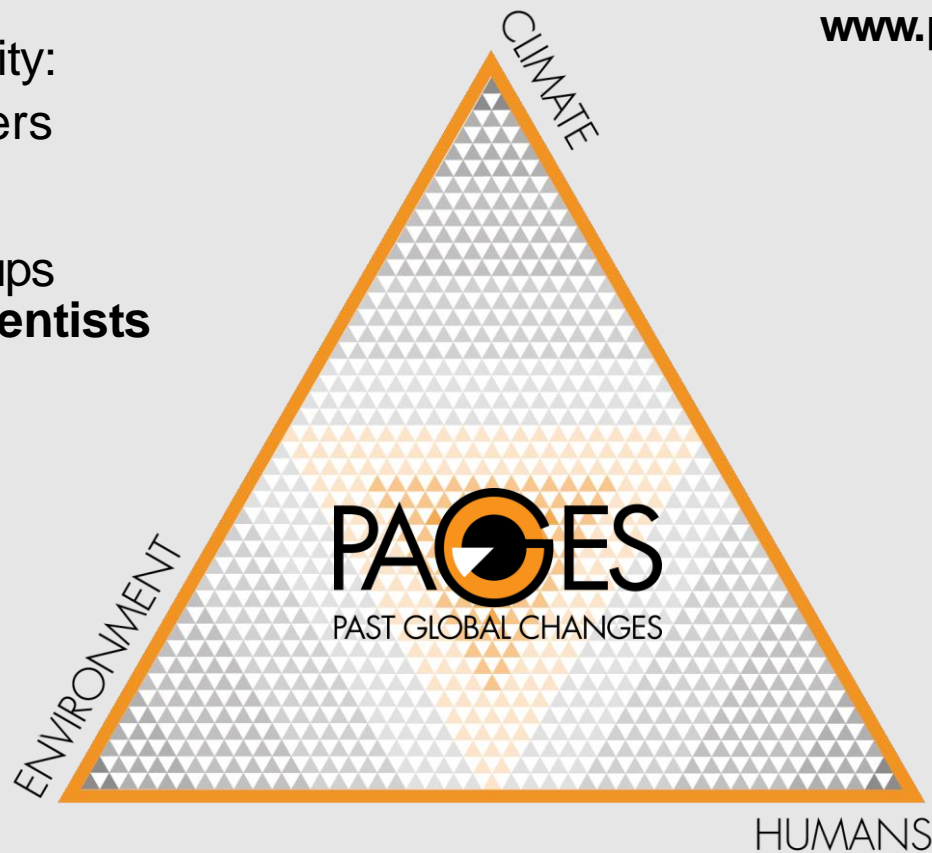
Swiss Academy of Sciences
Akademie der Naturwissenschaften
Accademia di scienze naturali
Académie des sciences naturelles

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UNIVERSITÄT
BERN



-  PAGES community:
 - > **5600** subscribers
 - > **125** countries
-  **18** Working Groups
 - > **700 active scientists**



Core project of



Scientific partner



PAGES is an international organization which coordinates community-based research on the study of climate and environment of the past.



Global Challenges for our Common Future: a paleoscience perspective.

Meeting– 7-13 May 2017.



PAGES Zaragoza 2017

5th Open Science Meeting

Global Challenges for our Common Future:
a paleoscience perspective

9-13 May 2017



PAGES Morillo de Tou 2017

3rd Young Scientists Meeting

Global Challenges for our Common Future:
a paleoscience perspective

7-9 May 2017



Grand Challenge on Weather and Climate Extremes

PAGES Zaragoza 2017

5th Open Science Meeting

Global Challenges for our Common Future:
a paleoscience perspective

During her invited talk at PAGES OSM, **Gabi Hegerl** underlined the importance of the long-term background (from paleoclimate) to study changes in extremes.

National Centre for Atmospheric Science
THE UNIVERSITY OF EDINBURGH
ERC
NERC

Determining the causes of climate change:
from large-scale temperatures to extreme events

Gabriele Hegerl
Lisa Alexander; Xuebin Zhang, Sonia Seneviratne (grand challenge team);
Andrew Schurer, Tim Cowan, Carley Iles, Christian Pfister; Stefan Broennimann; Juerg Luterbacher, Simon Tett





PAGES and WCRP can benefit from each other.

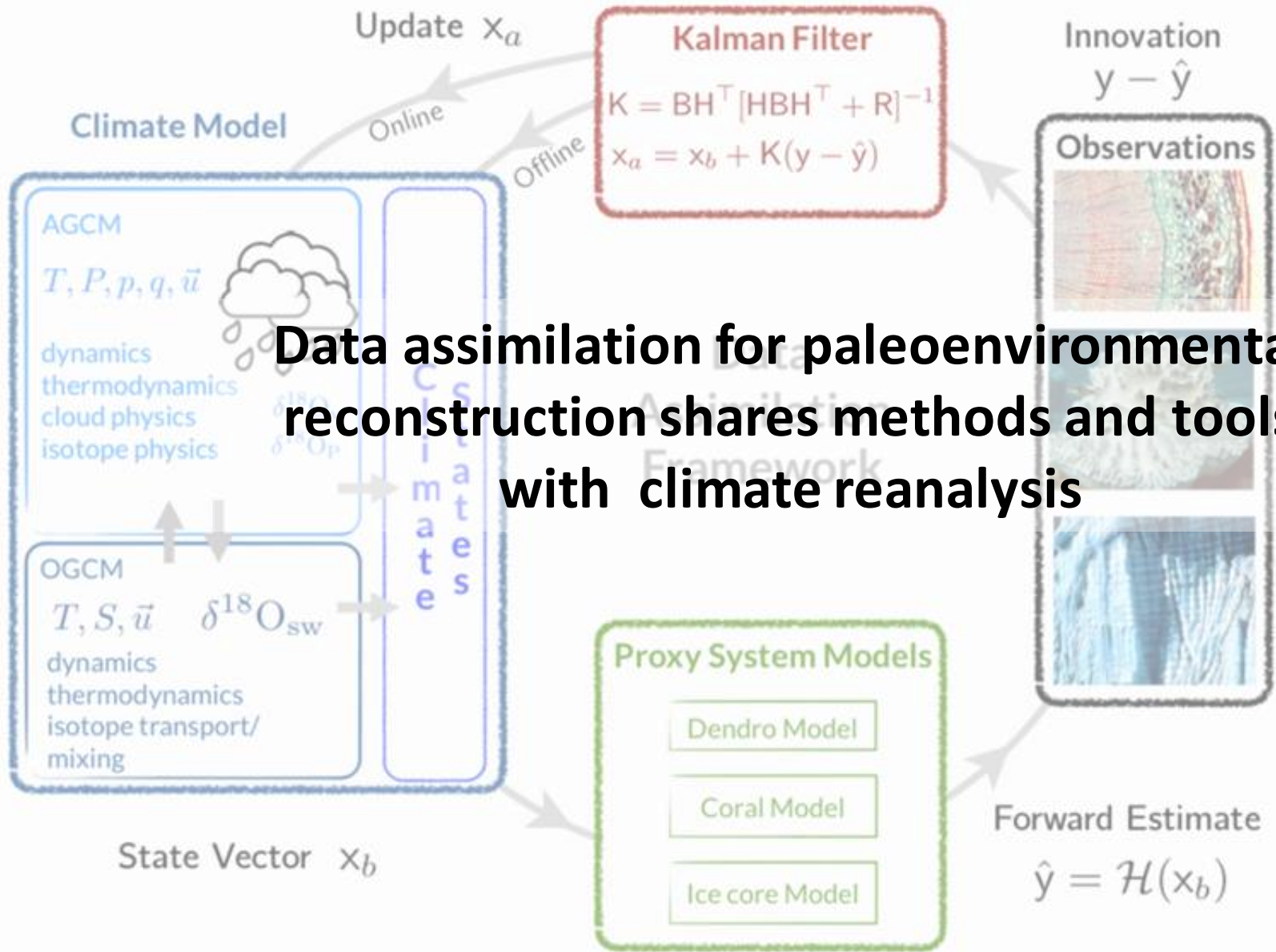
Paleo-information can be used to understand climate variability, climate processes and the functioning of the earth system, and to improve climate predictions.

Observation can be used to validate climate reconstructions.

As an implementation step,

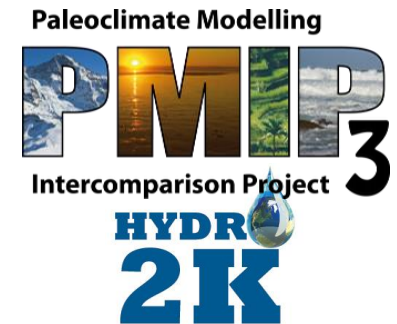
[Gabi Hegerl](#) and [Hugues Goosse](#) agreed to serve as a link between the [WCRP](#) grand challenge on [weather and climate extremes](#) and the [PAGES](#) integrative activity on [Extreme events and risk assessment](#).

This should ensure the palaeo perspective has weight, and weather and climate are placed in a broader perspective.



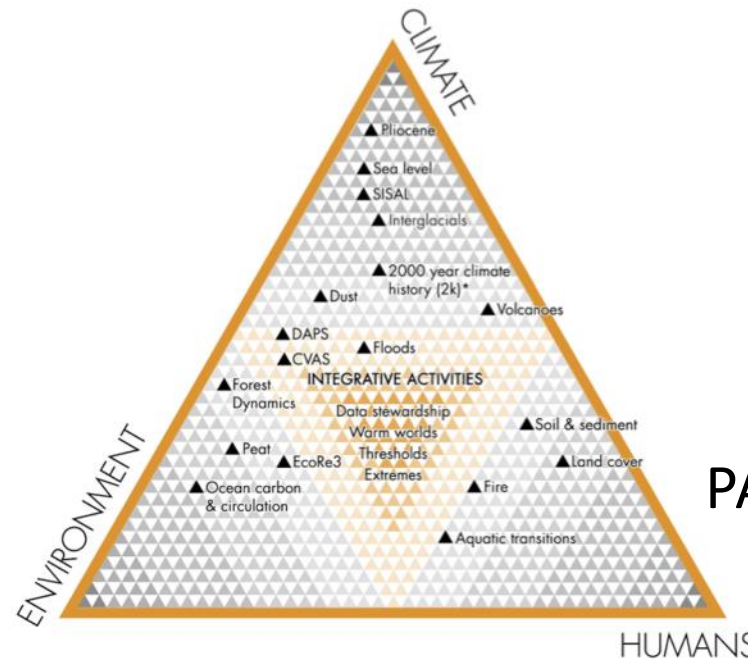
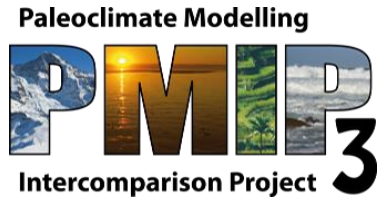
Data assimilation for paleoenvironmental reconstruction shares methods and tools with climate reanalysis

Comparing proxy and model estimates of hydroclimate variability and change over the Common Era



Comparison of the hydroclimate reconstructions with the multi-model simulations of the past millennium in order to *understand* climate change at regional scales and the mechanisms of climate variability at decadal to centennial timescales.

PAGES and PMIP - WG Emerging Datasets



PAGES working groups

PMIP + other PaleoMIPs	PAGES Working Group
Last millennium (850-1850 CE)	PAGES2k
Mid Holocene (6 ka)	SISAL; LandCover6k
Transient Holocene; early Holocene; 8.2 ka	SISAL
Last Glacial Maximum (21 ka)	SISAL; OC3; PALSEA2
Last Interglacial (127 ka)	QUIGS; PALSEA2
Transient: 128-122 ka; 116 ka; H11	QUIGS
Mid-Pliocene 3.2 Ma	PlioVAR
OMIP — ocean low frequency	CVAS; OC3
ISMIP6 — cryosphere and sea level	PALSEA2
AerChemMIP — aerosols	DICE
LS3MIP — land surface processes	GloSS; LandCover6k; Floods

Workshop – 6-9 September 2018.

Scientific questions

Changes in the deep ocean circulation during the last deglaciation.

Changes in the ocean carbon cycling and storage during the last deglaciation.

Their effects on climate and atmospheric CO₂.

Ref: Calibration of the carbon isotope composition ($\delta^{13}\text{C}$) of benthic foraminifera, *Schmittner et al.*, *Paleoceanography*, 2017.



Workshop – 10-13 May 2018.

C-PEAT aims to synthesize data and knowledge on all topics related to peat carbon.



INQUA-PAGES Conference for Early-Career Researchers

Impacts of sea-level rise from past to present

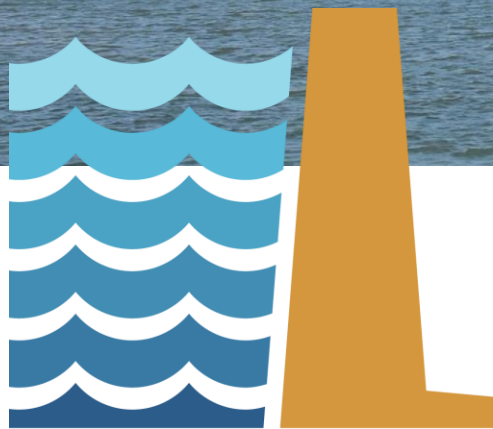
26-29 August 2018, Utrecht, The Netherlands

Past sea-level changes

Submerged landscapes

Recent and future sea-level changes

Mitigation, adaptation and coastal impacts



iSLR18

<http://www.islr18.org>

futureearth

research for global sustainability

Future Earth is an international research platform providing the knowledge and support to accelerate transformations to a sustainable world.



Interdisciplinarity

Future Earth



2013



Earth System
Science Partnership

2001

WCRP

World Climate Research Programme

Established
1980

GLOBAL
IGBP
CHANGE

International
Geosphere-Biosphere
Programme

1987



DIVERSITAS

1991



IHDP

International Human Dimensions Programme
on Global Environmental Change

1996

Research programme

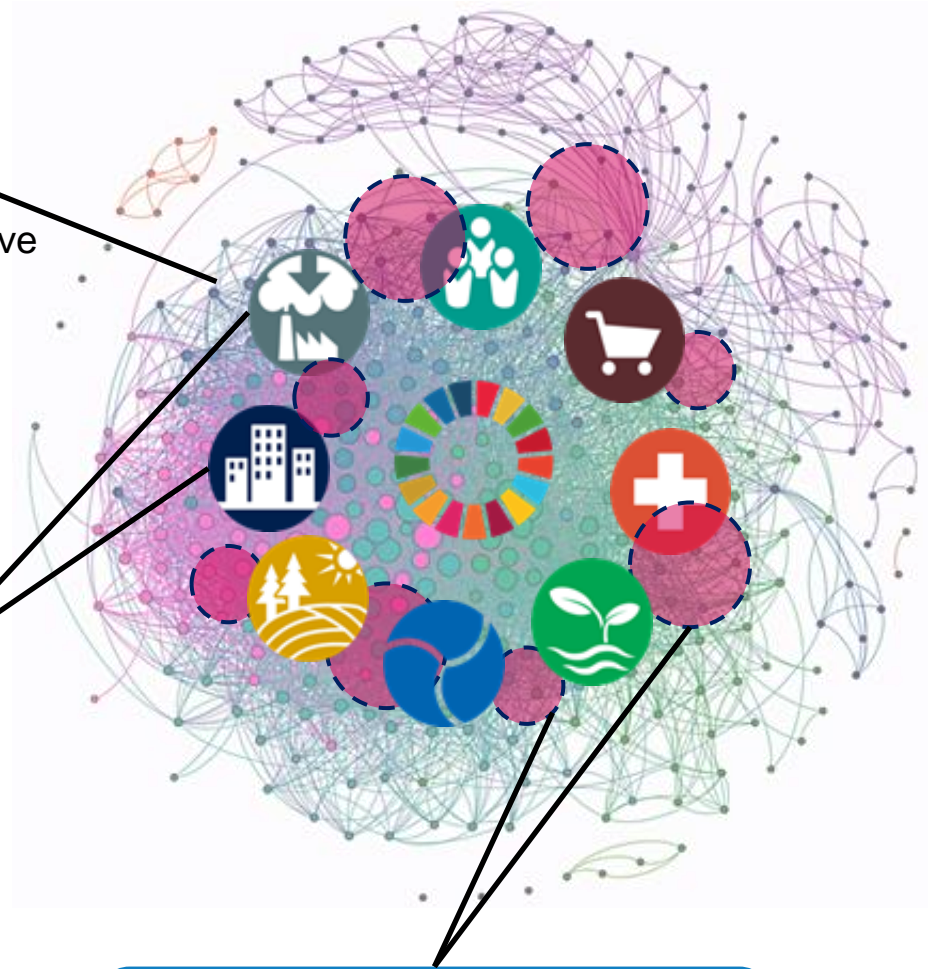
Open Network

We are an **OPEN NETWORK** - a collaborative and inclusive space for a broad community to contribute to our vision and **research agenda**.

Knowledge-Action Networks

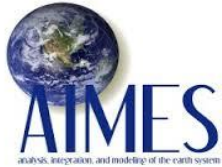
Knowledge-Action Networks are structured networks catalysing new research and deep engagement with society around our key priorities.

Global Research Programs:
over 20 established
international communities



Global Research Programmes

Expertise pools for Future Earth



ecoHEALTH



Knowledge-Action Networks



*Knowledge-Action Networks are collaborative frameworks of Future Earth that **facilitate** highly **integrative sustainability** research with the aim to generate the multifaceted knowledge required to inform **solutions** for complex **societal issues**.*



Thank you for your attention