

GEWEX Hydroclimate Panel – RHPs

How are they developed?

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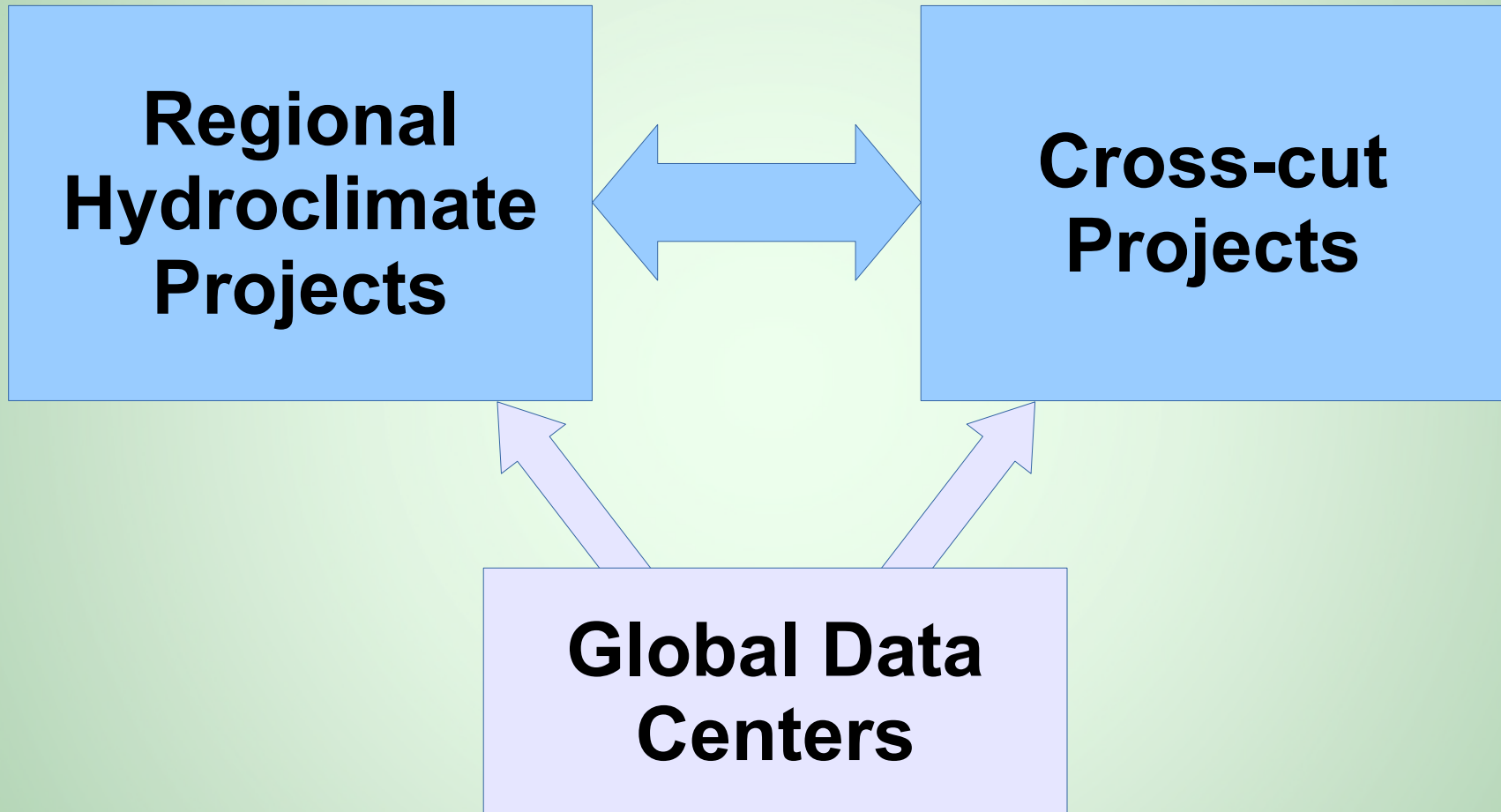


The role of GHP within GEWEX

The GHP aims to address the GEWEX Science Questions from a regional and integrated perspective.

- Only at the regional scale can the water cycle be addressed from its physical to human and socioeconomic dimensions
- The Regional Hydroclimate Projects (RHPs) are an essential tool in this endeavour as they bring together various disciplines on water issues.
- The cross-cut projects allow GHP to propagate knowledge from one region to another and synthesize results at the global scale. They also allow development and testing of applications developed with the new knowledge. (actionable science)

GHP Structure



How did existing RHPs do it?

- Some older RHPs were more top-down, being driven by funding agency priorities.

So if you can influence these priorities it can really help!

- More recent RHPs have been created through a more strongly bottom-up approach, being driven by research needs as seen by researchers.

RHP Status

Active in 4 continents:

- Europe: **HyMEX** (2010-2020) =====> High-impact weather events, societal response
- Baltic Earth** (2016-) =====> Sea and land changes, biogeochemical processes
- PannEx** (2018-) =====> Agronomy, air quality, sustainability & water mgnt
- Australia: **OzEWEX** (2015-2020) =====> Water and energy cycle in Australia
- Africa: **HyVic** (2015-2024) =====> Hydroclimatic variability over Lake Victoria basin

Recently finished:

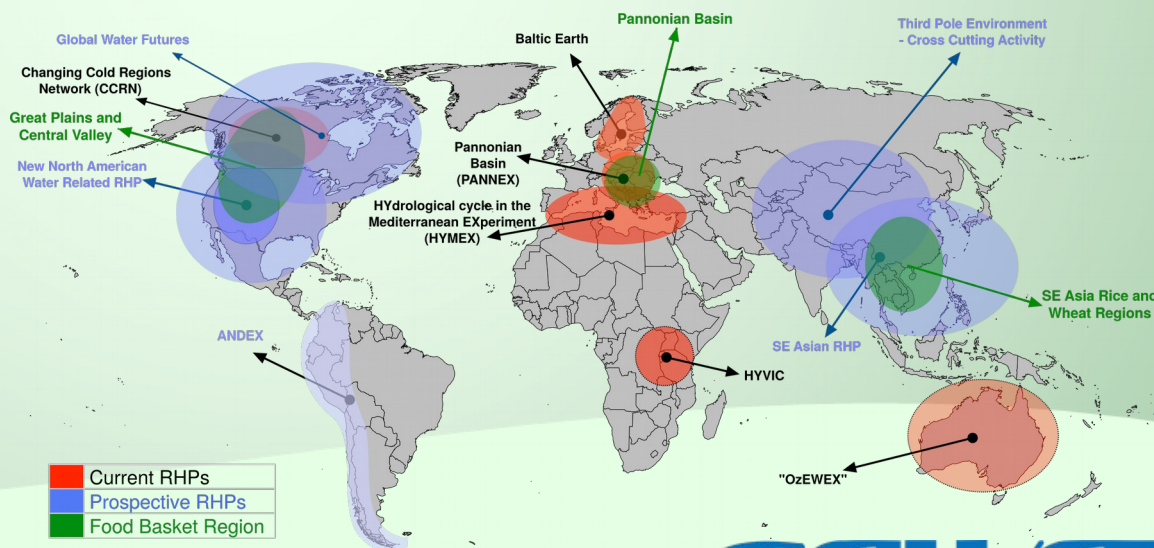
- Asia: **MAHASRI** (2007-2016) =====> Asian Monsoon
- Eurasia: **NEESPI** (2004-2015) =====> Northern Eurasian climate-ecosystem-societal interact.
- North America: **CCRN** (2014-2018) => Cryospheric, ecological, hydrological interactions

Prospective:

- America: **AndEx** (2019?-) =====> Andes hydroclimate, high impact events, cryosphere...
- North America: **GWF** (2018-2023) => Cryospheric, ecological, hydrological interactions

In discussion:

Exploring new possibilities in the Americas and Asia.



Multiple formats and origins

RHPs usually take the form of a network, which structure varies between RHPs

Some are former initiatives that become RHPs

Others are formed with the RHP structure in mind

Some have clear institutional leaderships, other are more transversal

Relation with GEWEX's Science questions and imperatives

- i) understanding the precipitation variability,
- ii) changing water availability,
- iii) extreme events like drought and floods,
- iv) processes in the water and energy cycles

Most of the RHP are in line with the questions and address most of the 7 imperatives:

- i) Data sets; ii) analysis; iii) processes; iv) modelling; v) applications; vi) technology Transfer & vii) capacity building.

GHP activities in relation to GSQs

<u>GEWEX Science Questions</u>		Regional Hydroclimate Projects					Cross-cut activities
		HyMex	Pannex	HyVic	OzEWEX	Baltic Earth	
Observations and Predictions of Precipitation	How well can precipitation be described?	y	y	y	y	y	Near 0°C precipitation Mountain precipitation Sub-daily precipitation INTENSE
	How do changes in climate affect the characteristics?	y	y	y	y	y	
	How much confidence do we have in predictions?	y					
Global Water Resource Systems	How do changes in the land surface and hydrology influence water resources?	y	y	y	y	y	Mountain hydrology INARCH Human management in land-surface models GDAP integrated product evaluation
	How does climate change impact water resource systems?	y	y	y	y	y	
	How can new observations lead to improved management?		y	y	y		
Changes in extremes	Observing system requirements	y	y	y	y		GDAP integrated product evaluation
	Modelling capabilities	y	y	y	y	y	
	Modelling processes involved in extremes	y	y	y	y	y	
	Improved early warning systems		y	y	y		
Water and energy cycles	Can we balance the budget at TOA?						GDAP integrated product evaluation
	Can we balance the budgets at the surface?	y	y			y	
	Can we track the changes over time?	y				y	
	Can we relate changes and processes?						
	Cloud-aerosol-precipitation feedbacks	y	y				

Steps towards creating an RHP

1) Networking

Gather researchers who would like to participate in a large interdisciplinary project because: big science questions require expertise from many disciplines, they believe more can be achieved working together than alone.

2) Collaboration

Together identify: key science questions; ways these could be addressed; resources needed to do this; possible sources of funding. Also identify collaborative work that can be pursued immediately given existing resources and do this.

3) Write a white paper / science plan

Drafting a document allows you to refine your ideas, reach explicit agreement on science priorities, expand the collaborative network, get feedback from outside (GEWEX, existing RHPs,...) - ALSO agree a governance structure, data sharing arrangements,...

4) Apply for RHP status and funding

Finding funding is key for success of a RHP. The minimum is funding for a project office/secretariat.

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HyMeX

1) Networking

Started by French researchers who saw a need for a coordinated, modern experimental field campaign to inform research on aspects of the Mediterranean Hydroclimate.

2) Collaboration

Workshop was held with the stated aim of beginning the drafting of a white paper.

3) Write a white paper / science plan

They wrote a white paper which was widely distributed and used to expand the contributing network internationally. A subsequent international science plan was written by this larger group.

4) Apply for RHP status and funding

They applied for RHP status at the same time as applying for funding through various routes. They have had enough funding success (largely through national mechanisms) to achieve much of the science plan.

OzEWEX

1) Networking

Started with conversations with researchers at various events leading to a video conference with ~25 attending.

2) Collaboration

Workshop was arranged with the intention of proposing a RHP

3) Write a white paper / science plan

A science plan was drafted and circulated and improved.

4) Apply for RHP status and funding

Initiating RHP status was obtained. Funding for collaboration and development activities has been consistent but no real success at research funding yet.

Baltic Earth

1) Networking

Researcher network largely inherited from BALTEX.

2) Collaboration

Through the BALTEX series of workshops collaborations were built for a new phase called “Baltic Earth”.

3) Write a white paper / science plan

A science plan for this new phase was written and circulated.

4) Apply for RHP status and funding

RHP status was obtained. They have a funded secretariat. They consistently seek funding for the research through various national and regional mechanisms.

Pannex

1) Networking

Likely researchers were contacted through known contacts and networks

2) Collaboration

A workshop was arranged with the intent of establishing better international collaborations and starting the drafting of a white paper.

3) Write a white paper / science plan

White paper drafted, circulated and improved.

4) Apply for RHP status and funding

Initiating RHP status obtained. Funding being sought.

Summary

- Every RHP develops differently
- Some common steps: networking, collaboration, white paper, apply for RHP status and funding
- Having some collaborative, senior, active and enthusiastic people lead the initiative can be a key for success.