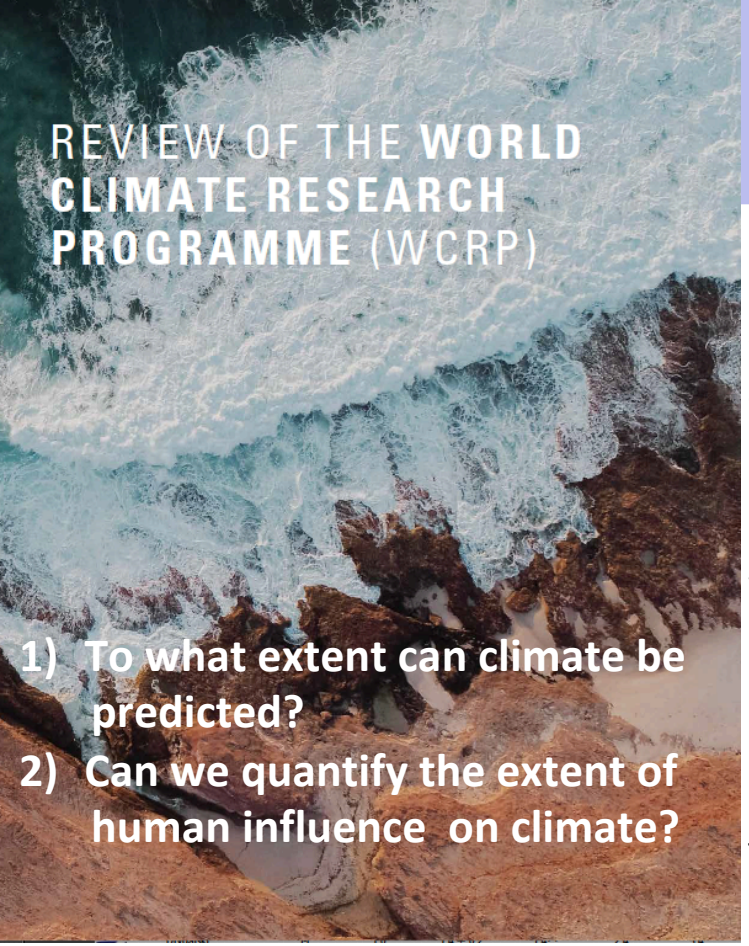
Global Energy and Water EXchanges

co-chair report

- *A primer on GEWEX 2020 strategy*
- *Panels*
- *PROES*
- *Review of Meetings- 2018 GEWEX OSC*



Excerpts:

Moreover, the Panel is adamant that the core, underpinning climate science which WCRP delivers is needed more than ever, as society seeks solutions to climate change (Paris Agreement), to resilience to disasters (Sendai Agreement), and to sustainable development for the planet (UN Sustainable Development Goals).

Without a strong foundation in climate science and prediction, none of these challenges can be addressed in a robust, cost-effective and durable way. However, the Panel is very clear that it is not the role of WCRP to deliver the end products and services, but that it should provide the bedrock knowledge, based on which these can be developed.

Since its inception, the key strength of WCRP has been its focus on cutting-edge physical climate science where international coordination enables scientific advances that would not happen otherwise. This must continue to be its focus….

The Panel stressed that if WCRP does not continue to provide clear leadership, there is a danger of losing the engagement of the scientific community and its funders.

A proposed WCRP structure

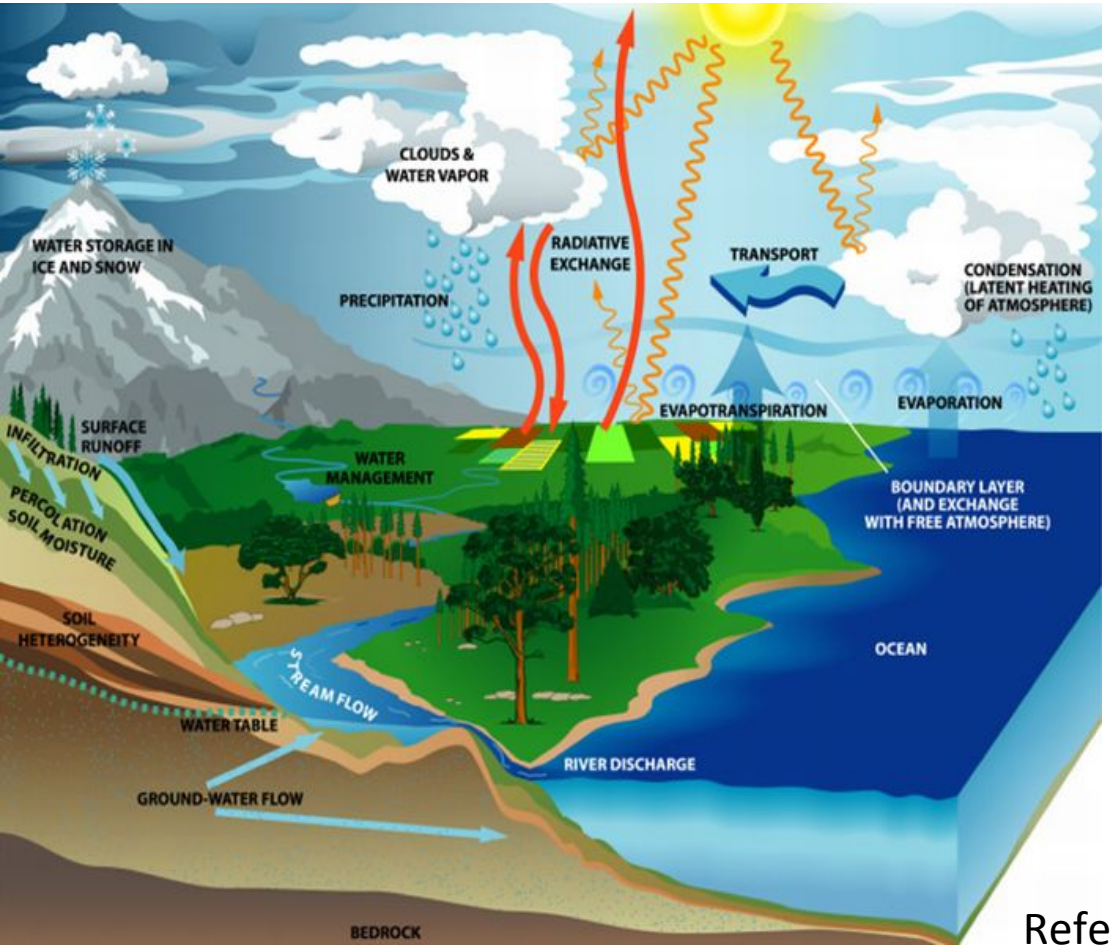
The GEWEX Approach is

an integrated approach to quantify links between energy & water and critical Earth System feedbacks that result: The approach involves:

- Stewardship of observations, observing system assessment
- Advance process understanding fundamental to hydrological applications and to climate change
- Promote improvement in global, regional and process level modeling,

JSC-39,Nanjing, April 2018

The GEWEX fundamentally addresses its goals framed around the activity of its four main core projects and cross-cut projects (like PROES)



GASS: Global Atmospheric System study

GLASS: Global Land System Study

GDAP: GEWEX Data Analysis Panel

GHP: GEWEX Hydroclimatology Panel

Refer to Panel co-chair reports for highlight

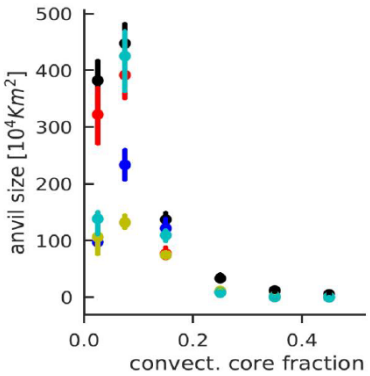
The GEWEX approach to supporting foundational/ bedrock science is based on process-level science

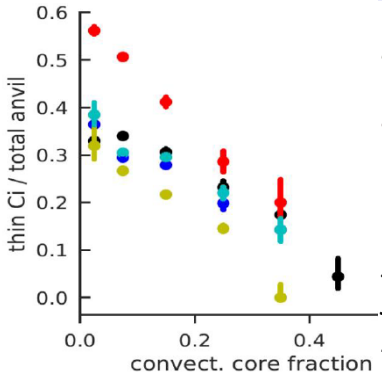
A unique GEWEX initiative - PROES

The PROES initiative grew out of the obs4mip meeting where it was clear alternative ways of promoting observations were needed. PROES seeks to push use of observations in a less traditional and less rigid model format to probe process understanding. PROES is a bottom-up effort and the projects vary in size, scope and approach

Existing PROES activities under GASS:

1) GEWEX Process Evaluation Study on Upper Tropospheric Clouds and Convection (UTCC PROES)- Stubenrauch





Data

control v_m =0.3 x f(IWC) D_{eff} = f(T)

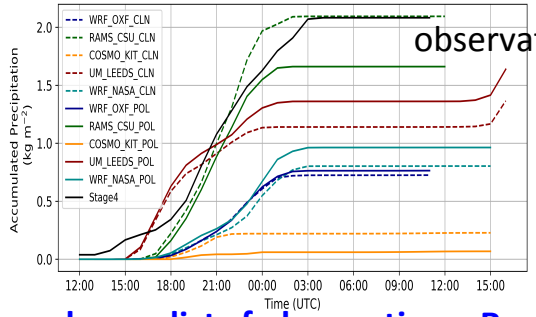
empirical v_m & D_{eff} = f(v_m)

PSDM v_m & D_{eff} = f(v_m)

PSDM v_m, D_m & D_{eff} = f(D_m)

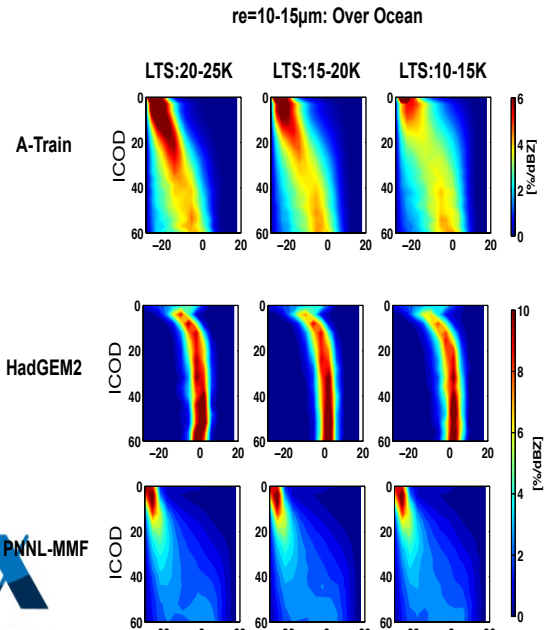
Stubenrauch et al., JAMES, subm. Jan 2019

2) GEWEX Aerosol-Precipitation (GAP) van den Heever/ Stier (& works closely with ACPC)



observations

Models underpredict cf observations: Range in aerosol response smaller than differences due to the microphysics and/or other model physics



3) Warm rain process study – Suzuki UofTokyo , and 6 modeling centers

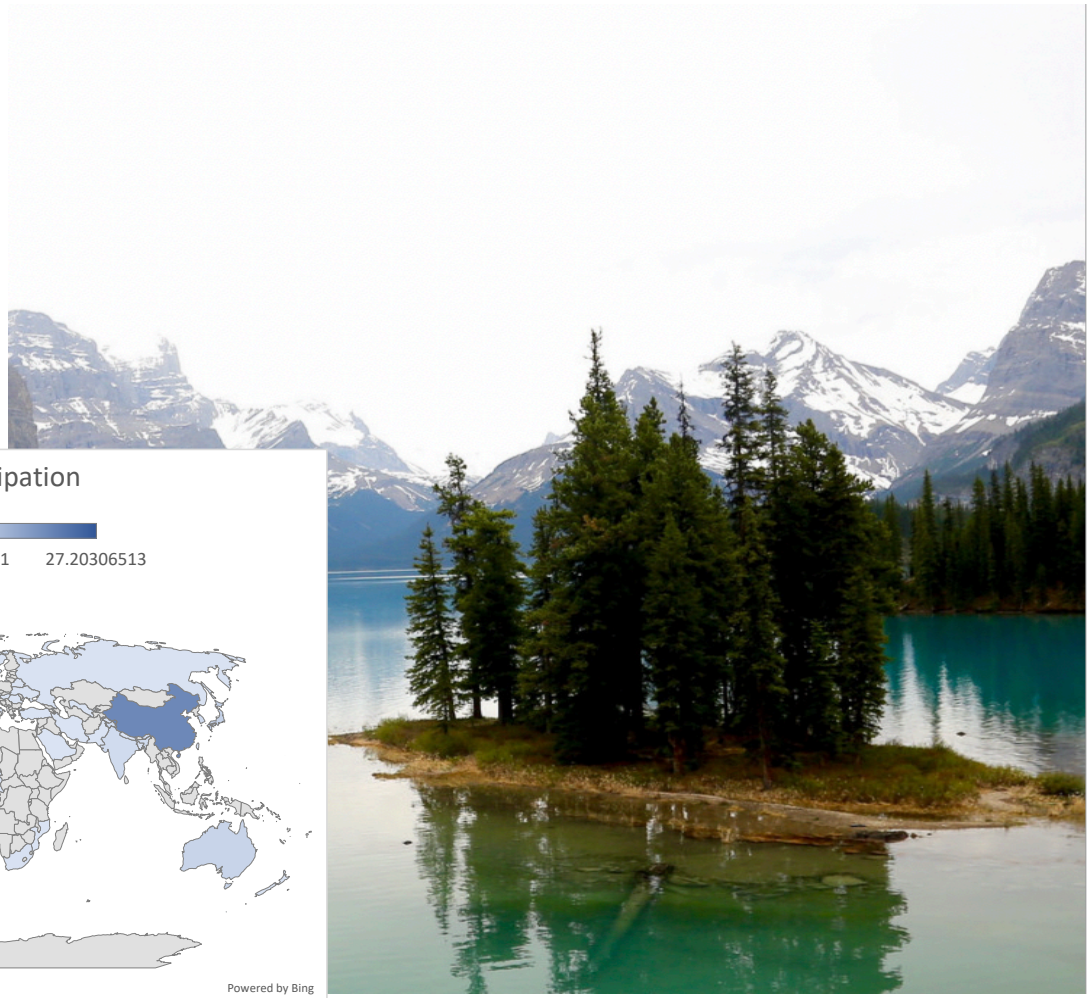
Other activities/meetings

- **Grand challenges**
- **AgMIP Meeting, San Jose, CR May 23 – 27**
- **11th HyMeX Workshop – Lecce, Italy May 29 – Jun 2 all-day**
- **2nd Baltic Earth Conference Jun 11 – Jun 15 all-day**
- **The 15th BSRN Scientific Review and Workshop Jul 16 – Jul 20 all-day**
- **NASA JPL Center for Climate Sciences Summer School 2018 Aug 27 – Aug 31 all-day**
- **2nd GEWEX Convection-Permitting Climate Modeling Workshop, Boulder, CO Sept 4 -6**
- **GHP/ANDEX Workshop – Santiago, Chili Oct 22 – Oct 26 all-day**
- **UTCC PROES Workshop Oct 22 @ 9:00 am – Oct 23 @ 5:00 pm**
- **2018 WCRP Workshop: Toulouse The Earth's Energy Imbalance (EEI) Nov 13 – Nov 16**

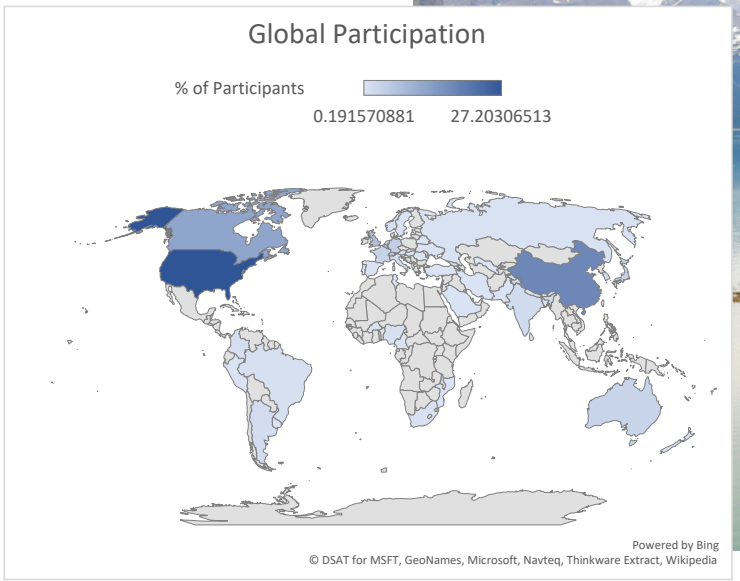
Extremes and Water on the Edge

2018 GEWEX Science Conference
Canmore, Alberta, Canada | May 6-11, 2018

Topics included:
Nexus of water, energy, and food | Climate extremes | Extreme weather | Atmospheric modeling and observations | Land modeling and observations | Global energy and water cycles, Mountain and high-latitude hydrology



> 388 Attendees
44 Countries
200 Oral Pres.
164 Poster Pres.
>200 ECRs



The sponsors:

Environment and Climate Change Canada

Environnement et Changement climatique Canada

GEWEX

Before the Conference

Conference Highlights

People






Conference Highlights

Science

- Many great presentations, showcasing fantastic research and results
- High resolution modeling is just one clear theme of the many shown in this conference
- High Mountainous Terrain – critical for e.g. regional water supply and access yet it is still a frontier with many unanswered questions, lack of –research- infrastructure!