

GEWEX Co-chairs' report

S. Seneviratne, G. Stephens

SSG memberships

GEWEX overview

Main activities (separate reports on most of these):

- Advances in Water availability GC and Extremes GC
- Development of US GEWEX activities
- CMIP6 activities (LandMIPs: LS3MIP & LUMIP, HighResMIP)
- Interactions with other WCRP core projects (CLIVAR, CliC, SPARC)
- GEWEX 2016 meetings: Workshop on Human water management, Workshop on Hydroclimatological sensitivity, GEWEX Soils workshop
- Contribution to other events/conferences: CLIVAR OSC, UNESCO Kovacs colloquium
- Planning of 2018 OSC conference on “Water and Extremes”
- WCRP “out of the box” workshop and future development

GEWEX Scientific Steering Group, 2017



Prof. Sonia Seneviratne
Co-Chair of the SSG



Dr. Graeme Stephens
Co-Chair of the SSG



Prof. Lisa
Alexander



Prof. Richard
O. Anyah



Dr. Gianpaolo
Balsamo



Dr. Mike
Bosilovich



Dr. Branca
Ivankan-Picek



Dr. Nathalie de
Noblet-Ducoudré



Prof. German
Poveda

1 vacancy



Prof. Remko
Uilenjhoet



Prof Peter
Webster



Prof. Sonia Seneviratne
Co-Chair of the SSG



Dr. Graeme Stephens
Co-Chair of the SSG

GEWEX Scientific Steering Group, 2017

Co-chairs' terms extended (2017/2018)



Prof. Lisa
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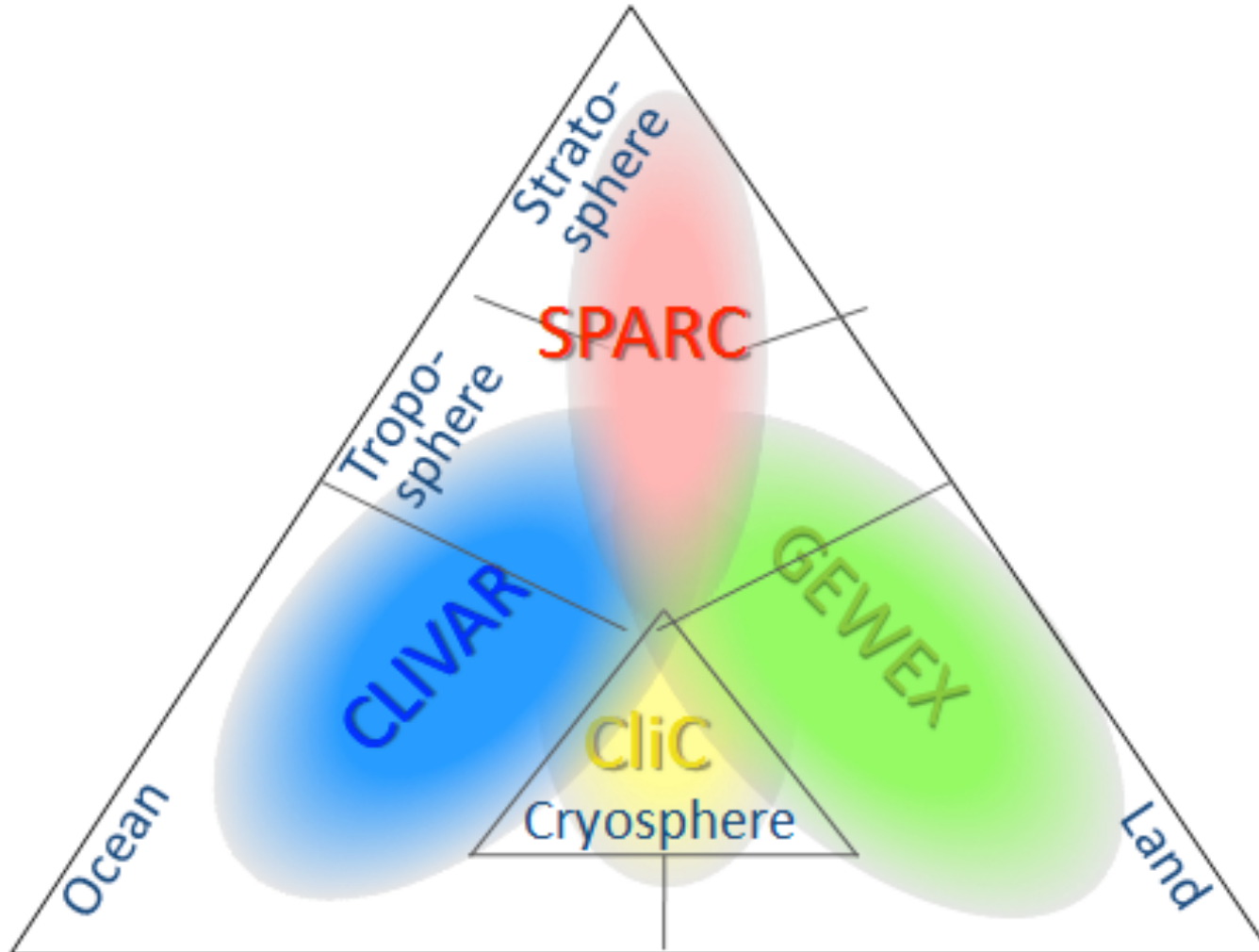


Prof. Remko
Uilenjhoet



Prof Peter
Webster

GEWEX within WCRP



GEWEX within WCRP

Joint Scientific Committee

Joint Planning Staff

Modeling Advisory Council

Data Advisory Council

Working Groups on: Coupled Modeling (WGCM), Numerical Experiment (WGNE), Regional Climate (WGRC), Seasonal to Interannual Prediction (WGSIP)

CLiC

Cryosphere-
Climate



CLIVAR

Ocean-
Atmosphere



GEWEX

Land-
Atmosphere



SPARC

Troposphere -
Stratosphere



CORDEX

Regional
Climate
Downscaling



Grand Challenges

Joint Scientific Committee

Joint Planning Staff

Modeling Advisory Council

Data Advisory Council

Working Groups...

CLIC

CLIVAR

GEWEX

SPARC

CORDEX

Melting Ice & Global Consequences

Regional Sea Level & Coastal Impacts

Water for Food Baskets

Climate & Weather Extremes

Cloud & Circulation

Near-Term Prediction (Decadal)

Carbon & Climate

focused

measurable

collaborative

innovative



WCRP out-of the box workshop

See separate report

Proposed 3 questions taken up in document outlining possible WCRP future directions:

- Where does the carbon go?
- How does weather change with climate?
- How does climate influence habitability?

GEWEX vision

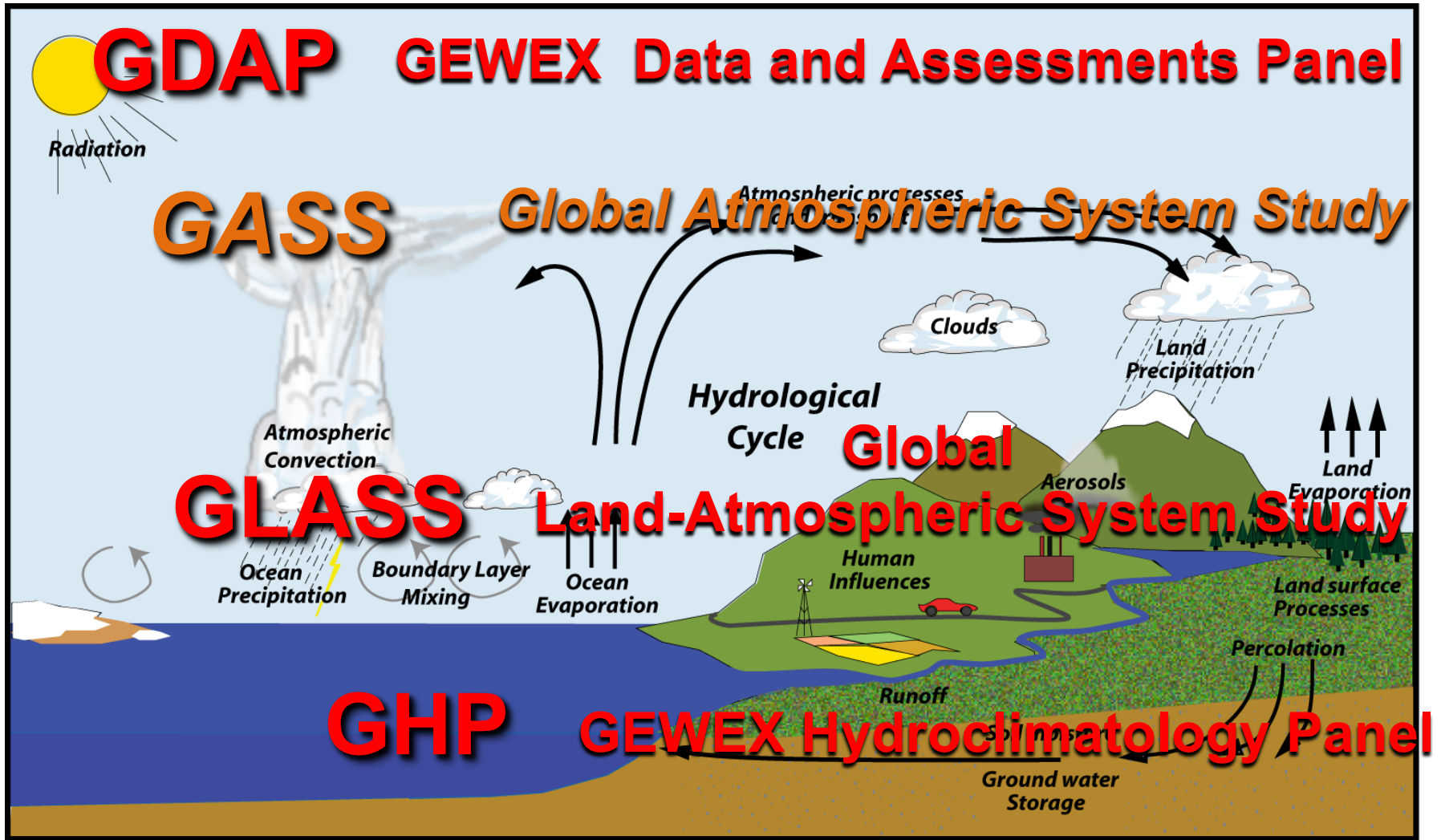
Water and energy are fundamental for life on Earth. Fresh water is a major pressure point for society owing to increasing demand and climate change.

Extremes of droughts, heat waves as well as floods, heavy rains and intense storms are substantially affected by climate change.

Better observations and analysis of these phenomena, and improving our ability to model and predict them (in particular related to the representation of land and atmospheric processes), will contribute to increasing information needed by society and decision makers for future planning.

Need to be updated?

GEWEX: Major components



GEWEX: Major components

GDAP GEWEX Data and Assessments Panel

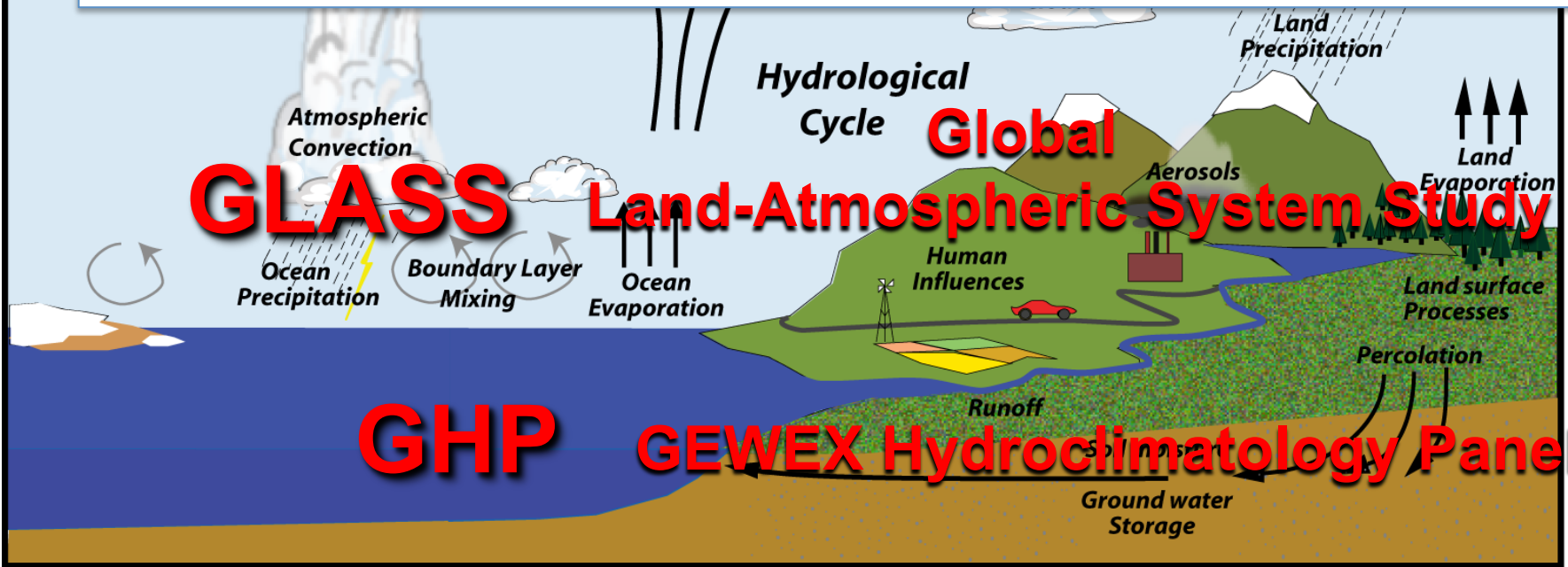
Radiation

GASS *Global Atmospheric System Study*

Status and future unclear: To be discussed at SSG (included new proposed GAP activity)

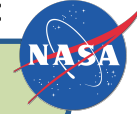
GLASS *Global Land-Atmospheric System Study*

GHP GEWEX Hydroclimatology Panel





IGPO graciously sponsored:



Scientific Steering Group

International GEWEX Project Office

GEWEX Data and Assessments Panel

GEWEX Hydroclimatology Panel

Global Atmospheric System Studies

Global Land–Atmosphere System Studies

Extremes GC

Assessments

Regional Hydroclimate Projects

Parameterization Evaluation

Benchmarking

Water Availability GC

Global Data Products

Cross-Cuts

Model Diagnosis

Model Data Fusion

**WMAC
WDAC**

In Situ Observations

Global Data Centers

Radiation Code Comparison

Land–Atmosphere Coupling

Radiation Code Comparison

Mission: To measure and predict global and regional energy and water variations, trends, and extremes (such as heat waves, floods and droughts), through improved observations and modeling of land, atmosphere and their interactions; thereby providing the scientific underpinnings of climate services.

GEWEX Science Questions

- **Observations and Predictions of Precipitation**

How can we better understand and predict precipitation variability and changes?

- **Global Water Resource Systems**

How do changes in the land surface and hydrology influence past and future changes in water availability and security?

- **Changes in Extremes**

How does a warming world affect climate extremes, and especially droughts, floods and heat waves, and how do land processes, in particular, contribute?

- **Water and Energy Cycles and Processes**

How can understanding of the effects and uncertainties of water and energy exchanges in the current and changing climate be improved and conveyed?

Need to be updated?

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WCRP grand challenge on water availability

Water for the Food Baskets of the World

Based on Version: 1.0.0 (April 2016)

BASED UPON CONTRIBUTIONS FROM: JAN POLCHER, ROY RASMUSSEN, PETER VAN OEVELEN, YAHYA ABAWI, GRAEME STEPHENS, SONIA SENEVIRATNE, KEVIN TRENBERTH, YAOMING MA, MICHAEL EK, MATT RODELL, ERIC WOOD, JOERG SCHULZ, CHRIS KUMMEROW, ROBERT A. SCHIFFER, JUN MATSUMOTO, TOSHIO KOIKE, TAIKAN OKI, AND MANY MORE...

WCRP Grand Challenge on Water Availability: Water for the Food Baskets of the World



- Water Cycle Main Driver of Food Production
- A Warmer Climate Pushes the Water Cycle into Unknown Territory
- The Terrestrial Water Cycle is not Natural Anymore
- Urgency to Understand the New State of the Water Cycle in which Natural and Anthropogenic Processes Interact

WCRP Grand Challenge on Water Availability: Water for the Food Baskets of the World



How will a warming world affect the available fresh water resources globally, the human interactions with these water resources, as well as their value to society and how does this translate specifically to the food basket regions of the world?

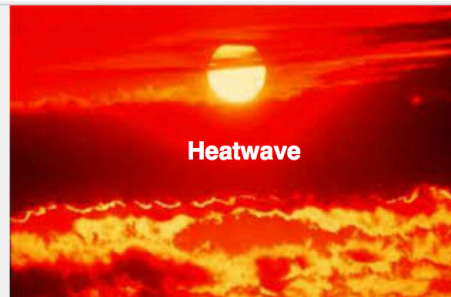
*Within the context of the World Climate Research Programme the focus will be on the geophysical processes and the anthropogenic influences on these processes

See separate presentation

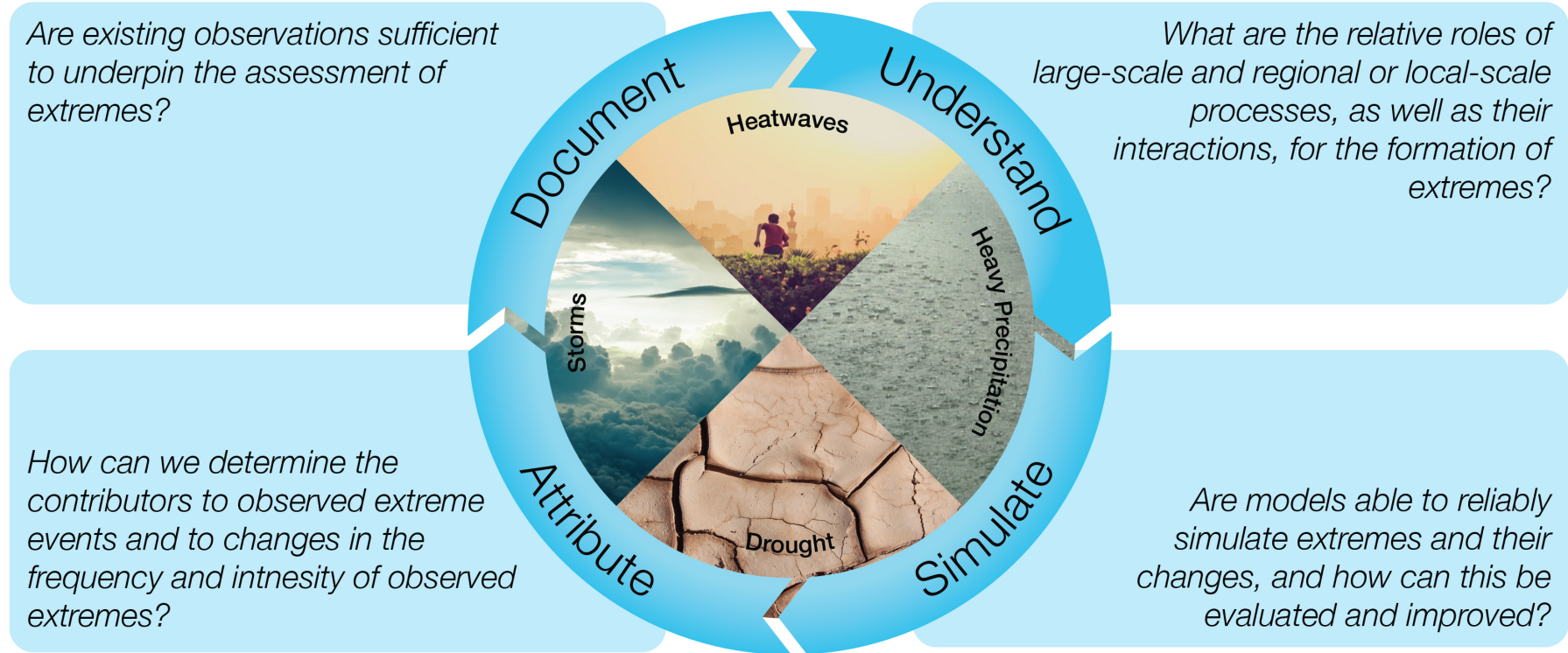
WCRP grand challenge on climate and weather extremes

Co-Chairs: L. Alexander, G. Hegerl, S. Seneviratne, X. Zhang

- Completed first implementation plan (available on web page)
- Co-leads for activities identified
- Several workshops and activities initiated
- Review article in preparation



4 main extremes, 4 over arching themes



WCRP Extremes GC



Lisa Alexander



Ali Behrangi



Gabi Hegerl



Erich Fischer



Jana Sillmann



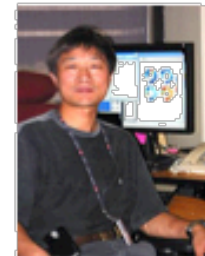
Sonia Seneviratne



Olivia Martius



Robert Vautard



Xuebin Zhang



Fredi Otto

See separate presentation