

The World Climate Research Programme (WCRP)

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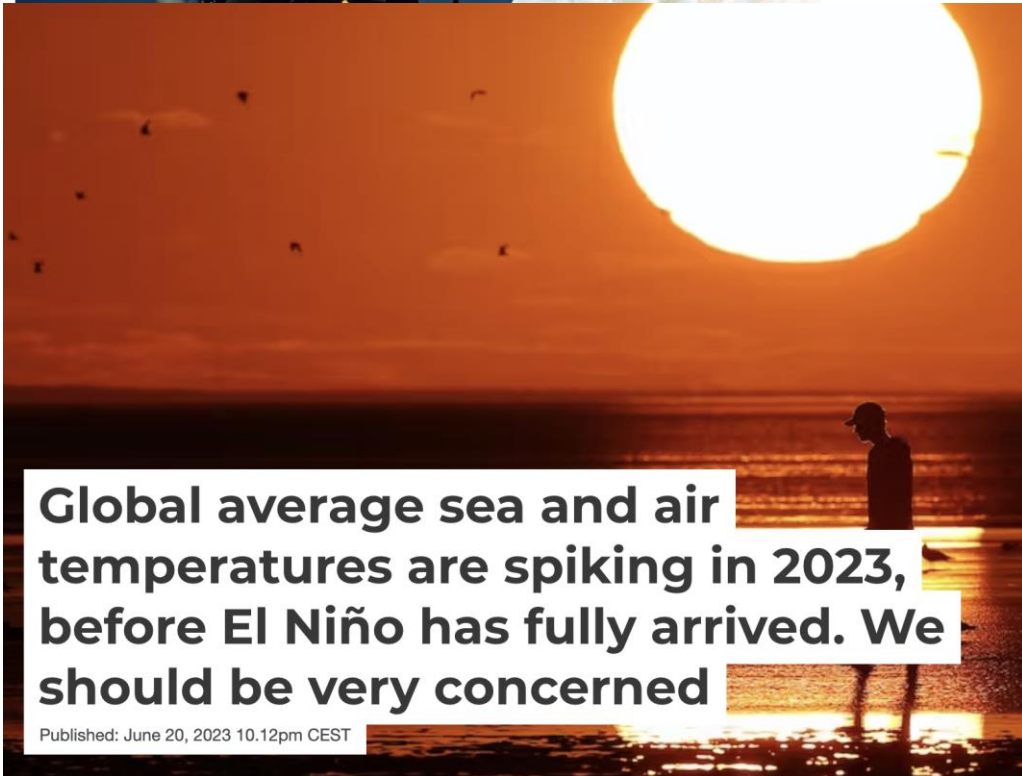
The message is clear...

Ocean heat record broken, with grim implications for the planet

4 August · Comments



Climate change



Global average sea and air temperatures are spiking in 2023, before El Niño has fully arrived. We should be very concerned

Published: June 20, 2023 10.12pm CEST

Too late now to save Arctic summer ice, climate scientists find

Ice-free summers inevitable even with sharp emissions cuts and likely to result in more extreme heatwaves and floods



Antarctic sea ice shrinks to lowest annual maximum level on record, data shows

Scientists fear global heating may have shifted region into new era of disappearing ice with far-reaching consequences

Europe and US heatwaves near 'impossible' without climate change

25 July · Comments



Europe heatwaves



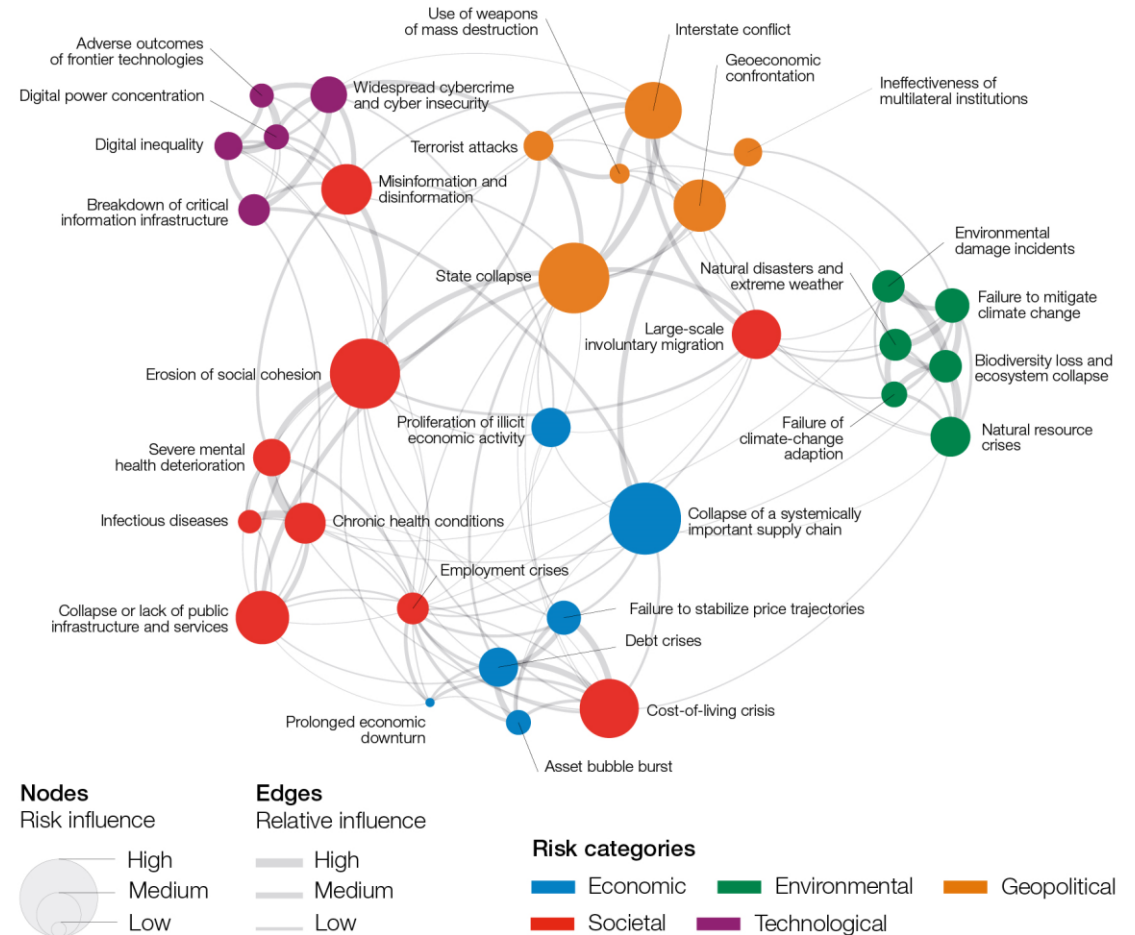
... in September each year but this year's maximum was about low in 1986. Composite: Mario Tama/Getty/University of

Climate Change and Risk

- Anthropogenic climate change – even 1.5 C warming - brings significant challenges and risks that affect almost all aspects of life
- Droughts, heavy rain and flooding, heatwaves, extreme fire weather, loss of mountainous water storage, and coastal inundation.
- These are just some examples of what is already occurring and where amplified risks and impacts in the future will threaten millions of people around the world.

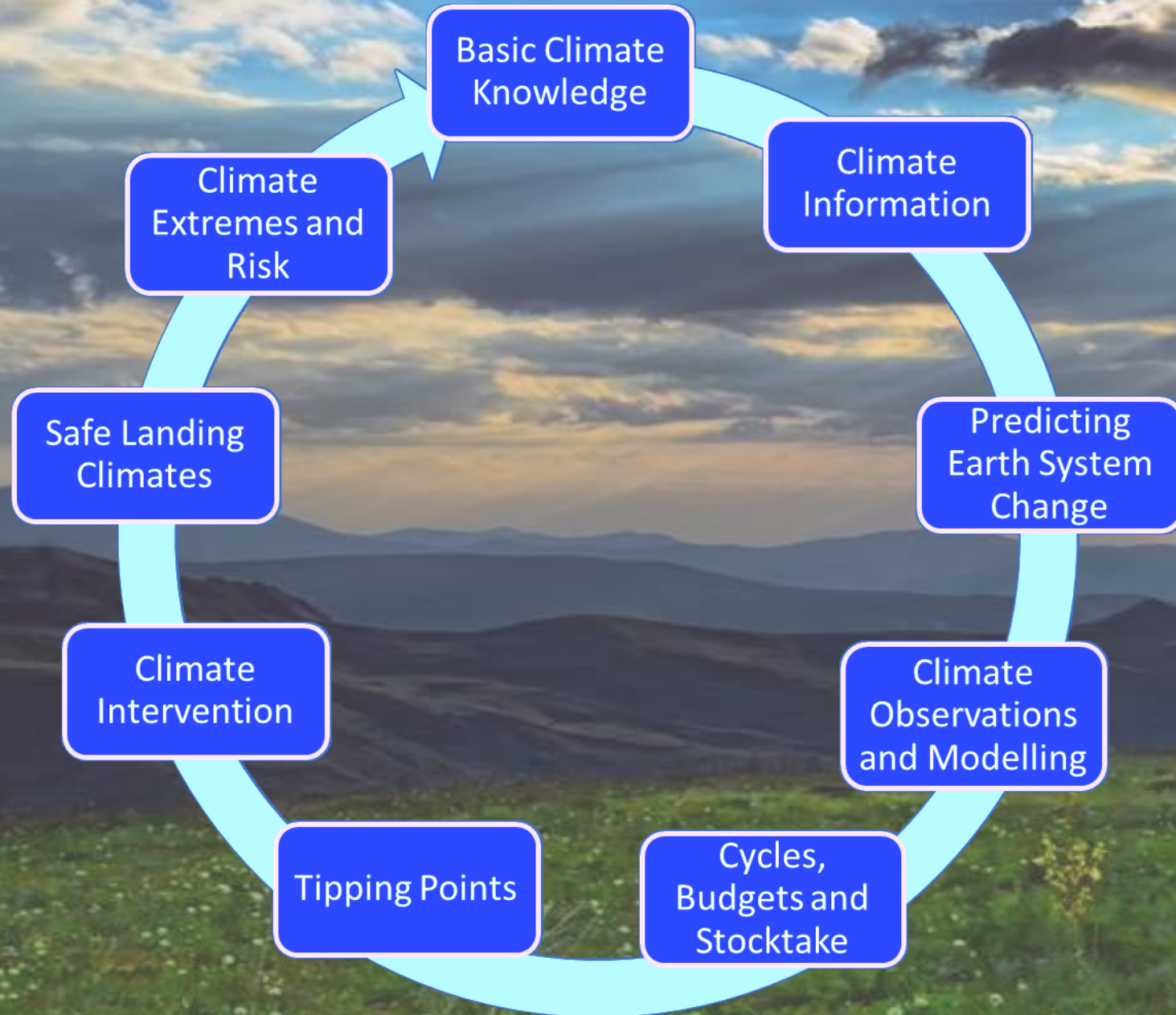
Global Risks Report 2023

Global risks landscape: an interconnections map



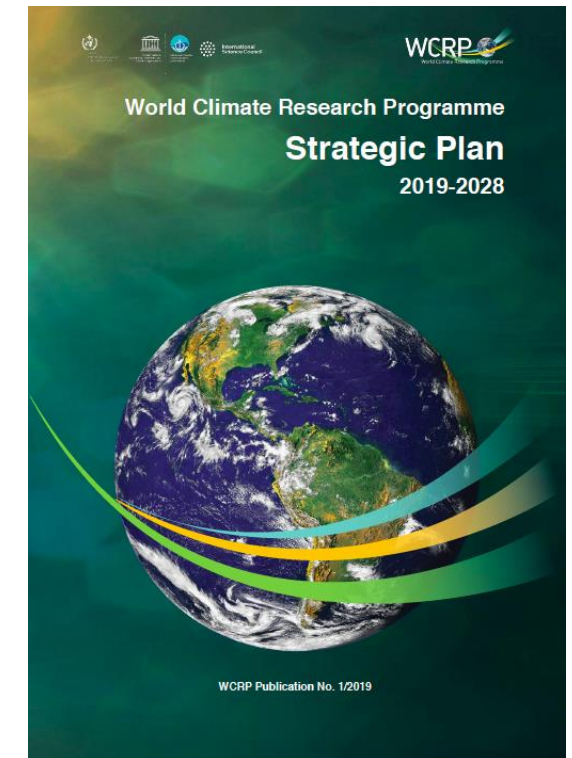
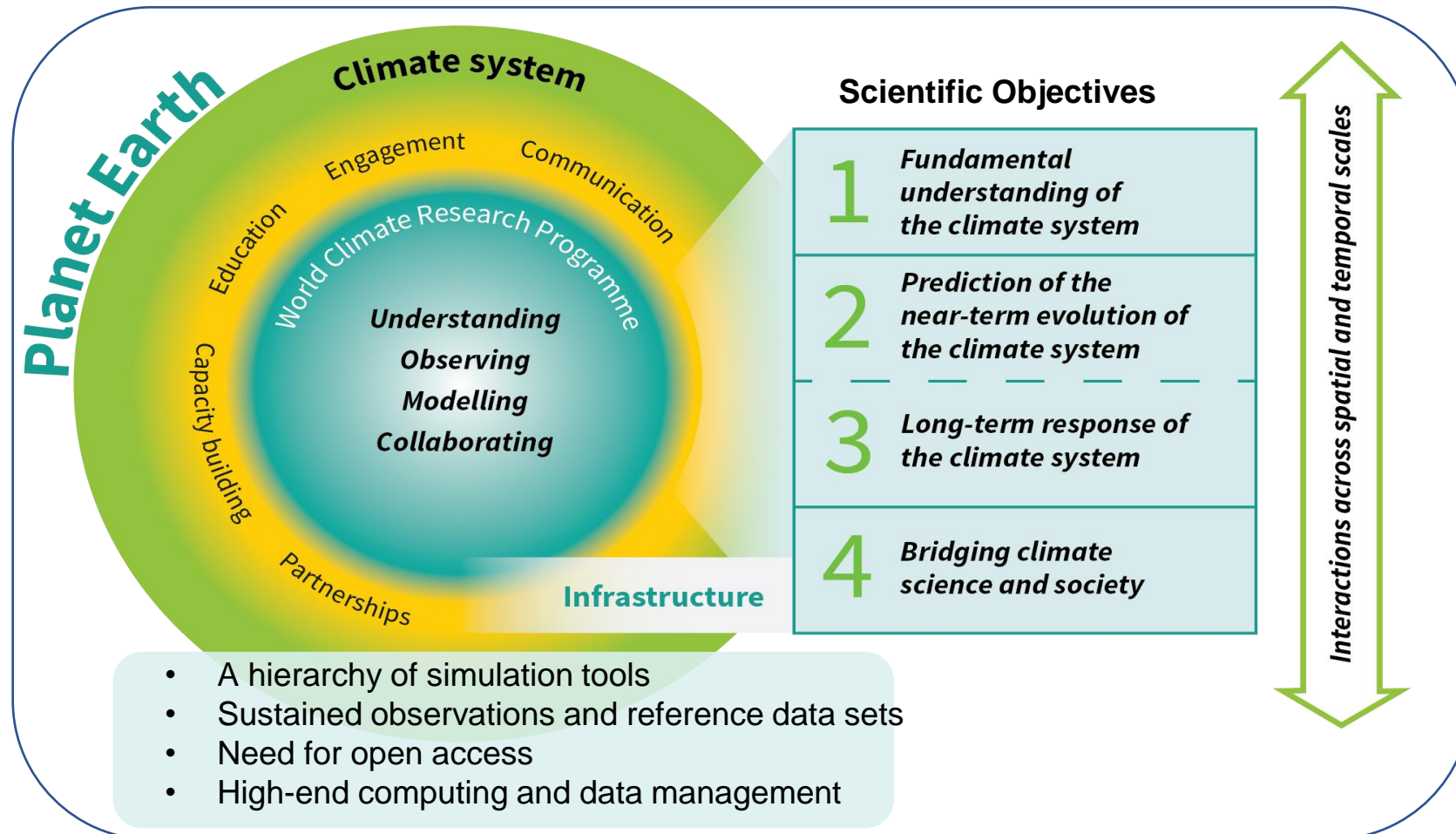
Source: World Economic Forum, Global Risks Perception Survey 2022-2023

WCRP major ongoing Science Foci



A new WCRP Strategic Plan for this decade

WCRP's Mission (Purpose) is to coordinate and facilitate international climate research to develop, share and apply the climate knowledge that contributes to societal well-being



WCRP Structure

Joint Scientific Committee (JSC)

WCRP Secretariat

WCRP Lighthouse Activities



- Explaining and Predicting Earth System Change
- Safe Landing Climates
- My Climate Risk
- Digital Earths
- WCRP Academy

International Project Offices

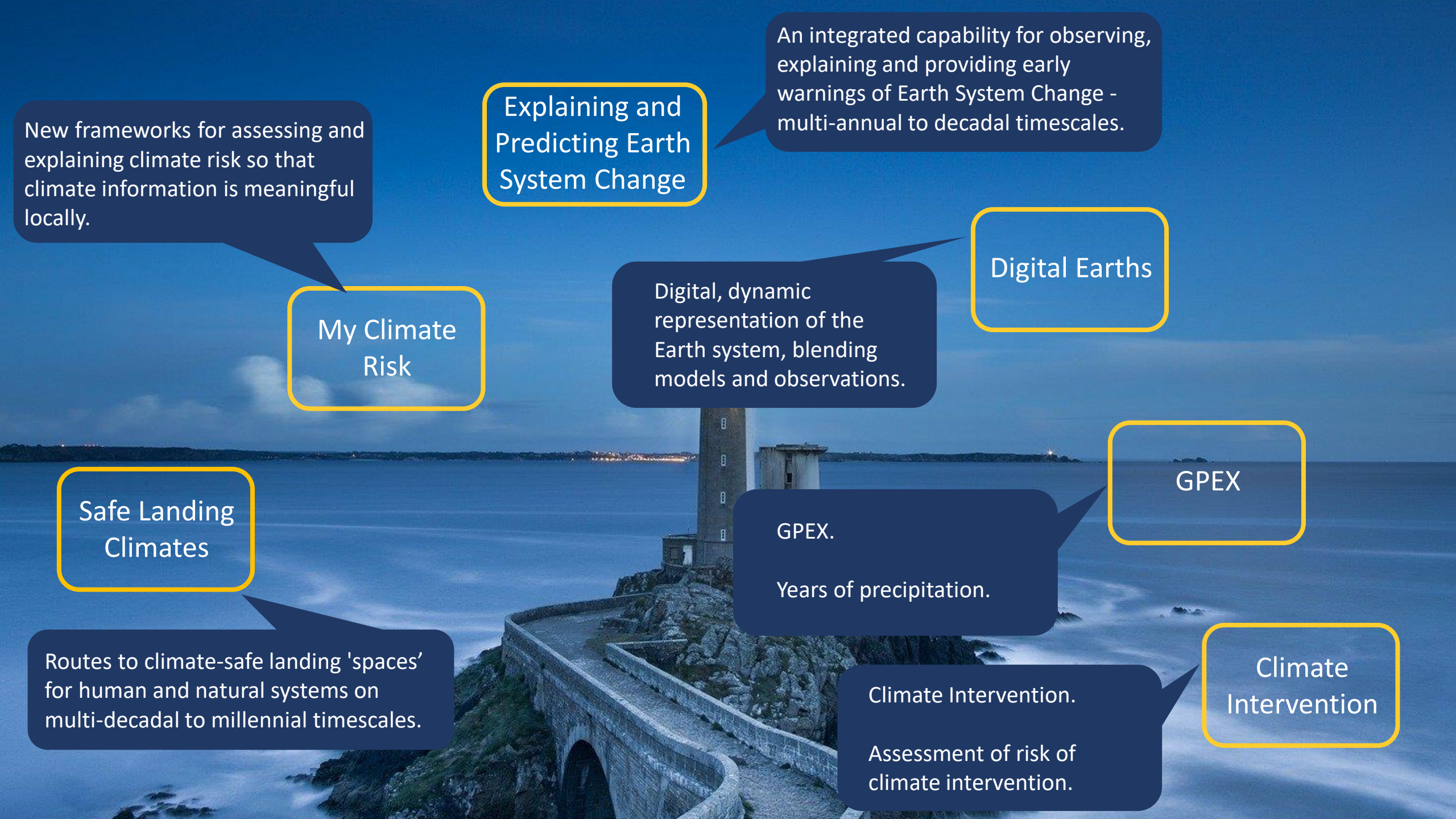
Core Projects and Research Communities

- Climate and Ocean Variability, Predictability and Change (CLIVAR)
- Global Energy and Water Exchanges (GEWEX)
- Climate and Cryosphere (CliC)
- Stratosphere-troposphere Processes And their Role in Climate (SPARC)
- Earth System Modelling and Observations (ESMO)
- Regional Information for Society (RifS)

Supports and facilitates coordination and collaboration

Core Activities include:

- Fixed-term projects
- Conferences and workshops
- Reference datasets, evaluations and benchmarking
- Diversity and capacity building: ECRs, regions, and global south
- Rapid updates, syntheses, assessments and gap analysis
- Communications and outreach



New frameworks for assessing and explaining climate risk so that climate information is meaningful locally.

My Climate Risk

Explaining and Predicting Earth System Change

An integrated capability for observing, explaining and providing early warnings of Earth System Change - multi-annual to decadal timescales.

Digital Earths

Digital, dynamic representation of the Earth system, blending models and observations.

Safe Landing Climates

Routes to climate-safe landing 'spaces' for human and natural systems on multi-decadal to millennial timescales.

GPEX

GPEX.
Years of precipitation.

Climate Intervention.
Assessment of risk of climate intervention.

Climate Intervention

New Lighthouse Activity: GPEX

- WCRP leading a *Global Precipitation Experiment (GPEX)*
- Will include “Years of Precipitation” and a “Water Decade”
- Should support establishment of *global and regional precipitation databases, multi-model databases, national and/or regional activities* (e.g., AsiaPEX, African Precipitation initiative with START...), *capacity development* etc.
- Improved information on water availability and risk assessment
- Will require many partnerships e.g., the World Weather Research Programme, START, satellite agencies ...

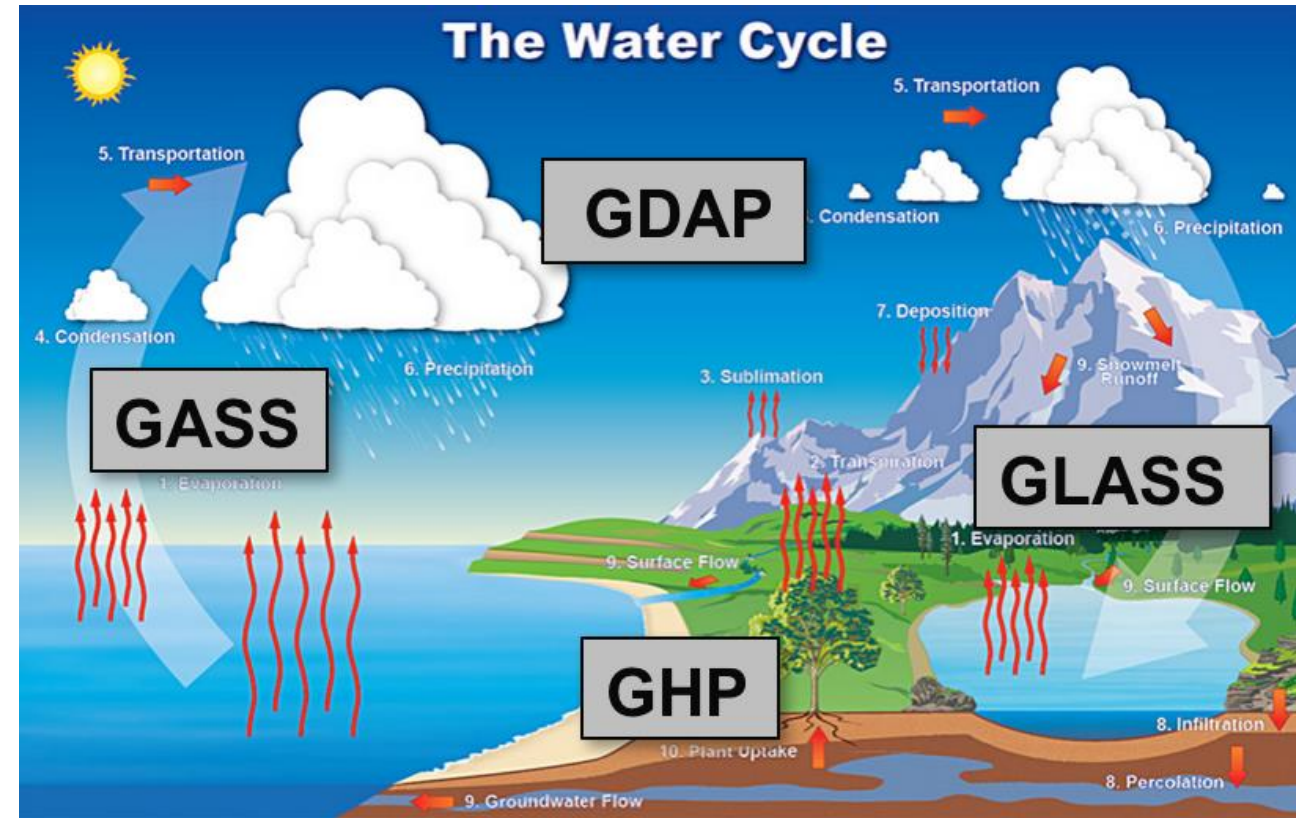


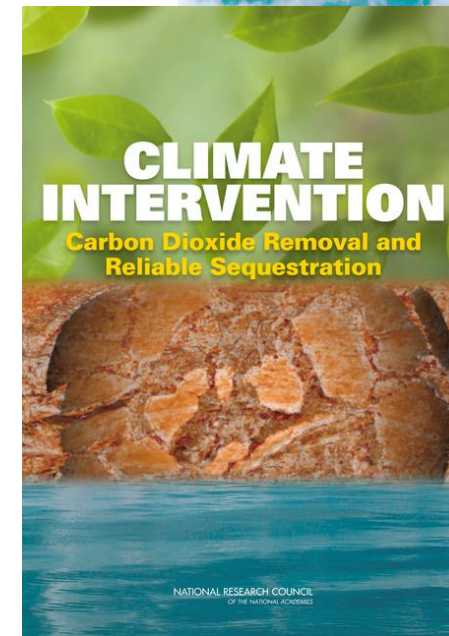
Figure: WCRP GEWEX Core Project relevant activities

New Lighthouse Activity: Science of Climate Intervention

Climate Intervention (CI) is an emergent and critical research topic that is rapidly gaining increased attention internationally. Large amount of research and coordination required. This includes coordination with social scientists and other international programs, such as Future Earth.

Many scientific knowledge gaps and uncertainties exist around the potential benefits, risks and sustainable scale potential of CI, calling for a rigorous international research effort as a basis for a comprehensive assessment process.

The new LHA on CI research will provide a platform for CI research that is conducted transparently with engagement from scientists around the world. Will be an honest broker and respected community voice in the assessment of risks of proposed CI approaches.



Advancing Climate Science for a Sustainable Future

WCRP Academy

Determine climate research education needs. Build enabling mechanisms by working with WCRP core activities and education providers, including universities. wcrp-academy.org

The WCRP OSC and the 'Kigali Declaration'....

- **The world is in a state of 'polycrises' leading to cascading systemic risk and increasing inequality**, with unabated climate change being one of the greatest threats to humanity.
- **Probability is rising for complex and compound extremes**, leading to cascading hazards, severe weather events, prolonged droughts, heatwaves, devastating floods and landslides, and wild/forest fires.
- **Human-induced changes have led to profound and widespread changes**; global surface temperatures soon surpassing 1.5°C.
- **Any further delays to climate change mitigation and societal transformations (adaptation) will exacerbate the impacts** and demand enhanced adaptation and mitigation responses.
- **Requires urgent unprecedented societal and technological transformation on a global scale**, for immediately attaining net zero carbon emissions.



Opportunities and needs

- WCRP cannot do what it needs to do without partnerships ... and has several important new activities starting up
- We have been relatively successful in fund-raising (~1 million USD for the Open Science Conference) as well as annual grants (US and UK) and crucial annual ISC Member contributions
- We are somewhat “a victim of our own success” – a lot of activities supported by a small secretariat (4 WMO staff and one part time in Paris)... we need additional secondments/staff time to support our activities



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