



WORLD CLIMATE RESEARCH PROGRAMME

CLIVAR SSG

Session 1.2: Update from JSC Chair and Vice Chair



International
Science Council



World Climate Research Programme

Scope

Session 1.2: A brief update from JSC, including key points from JSC-41 and JSC-41B

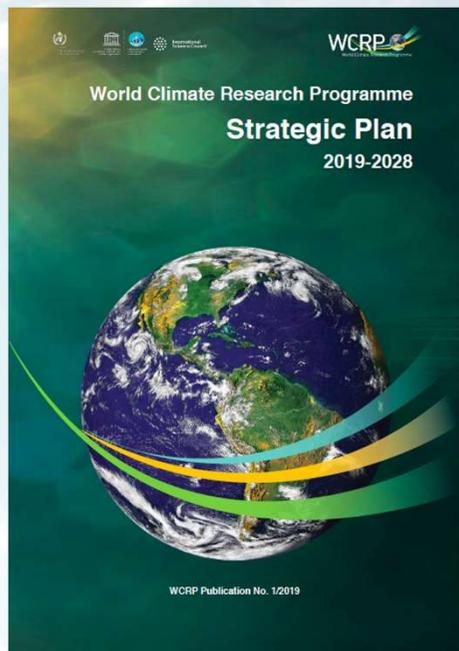
- Progress on rolling out the “new WCRP”: Lighthouse Activities, new Core Projects (“homes”), Supporting arrangements
- Collaborations: Future Earth and Future Earth Programs, ...
- Plans for 2021: Workshops, meetings and travel
- Discussion: Implications for CLIVAR

Session 1.3: Regional Consultations – an update

- Climate Research Forums– brief recap
- Current status
- Discussion

The Future WCRP

A Strategic Plan for this Decade



The Vision *(our aspiration)*

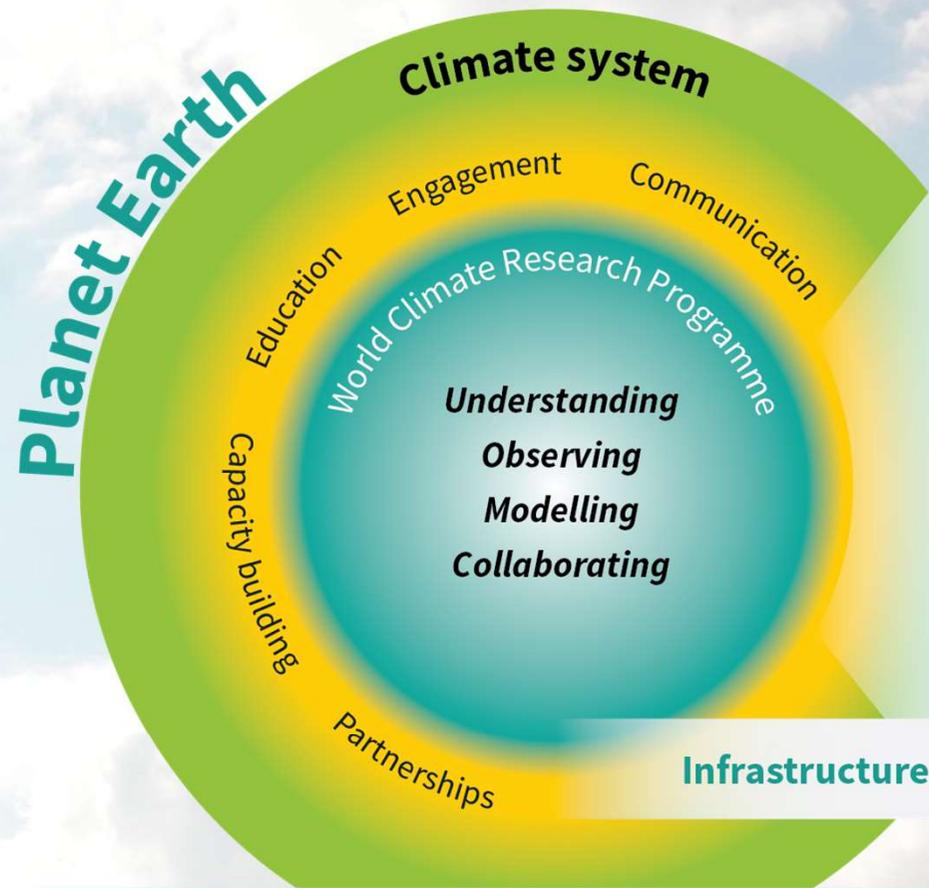
A world that uses sound, relevant, and timely climate science to ensure a more resilient present and sustainable future for humankind.

The Mission *(what we do, our purpose)*

Coordinate and facilitate international climate research to develop, share, and apply the climate knowledge that contributes to societal well-being.

www.wcrp-climate.org/wcrp-sp-overview

Overview of the WCRP Strategic Plan



Scientific Objectives

1 *Fundamental understanding of the climate system*

2 *Prediction of the near-term evolution of the climate system*

3 *Long-term response of the climate system*

4 *Bridging climate science and society*

Interactions across spatial and temporal scales

- A hierarchy of simulation tools
- Sustained observations and reference data sets
- Need for open access
- High-end computing and data management

JOINT SCIENTIFIC COMMITTEE (JSC)

WCRP MODELLING ADVISORY COUNCIL (WMAC)

WCRP DATA ADVISORY COUNCIL (WDAC)

WORKING GROUPS ON:

SUBSEASONAL TO INTERDECADAL PREDICTION (WGSIP)
NUMERICAL EXPERIMENTATION (WGNE)

COUPLED MODEL
REGIONAL CLIMATE

cliC



**CRYOSPHERE-
CLIMATE**

CLIVAR



GEWEX

**LAND-
ATMOSPHERE**

SPARC



**TROPOSPHERE-
STRATOSPHERE**

CORDEX



**REGIONAL CLIMATE
DOWNSCALING**

WCRP's Past

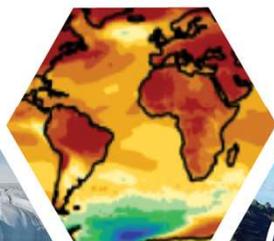
GRAND CHALLENGES:



WATER FOR THE FOOD
BASKETS OF THE WORLD



MELTING ICE AND
GLOBAL CONSEQUENCES



NEAR-TERM
CLIMATE PREDICTION



CARBON FEEDBACKS
IN THE CLIMATE SYSTEM



WEATHER AND
CLIMATE EXTREMES



REGIONAL SEA LEVEL CHANGE
AND COASTAL IMPACTS



CLOUDS,
CIRCULATION AND
CLIMATE SENSITIVITY

WCRP SECRETARIAT

WCRP's New Structure

Joint Scientific Committee

WCRP Secretariat

Lighthouse Activities

International Offices

Core Projects and Research Communities

- Climate and Cryosphere (CliC)
- Global Energy and Water Exchanges (GEWEX)
- Climate and Ocean Variability, Predictability and Change (CLIVAR)
- Stratosphere-troposphere Processes And their Role in Climate (SPARC)
- [Integrated] Earth System Modelling and Observational Capabilities
- Regional [Climate] Information for Societies

Ongoing Activities and Fora

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

WCRP Core Projects and Research Communities

Enduring Capabilities, “Homes” of Expertise

WCRP CLIVAR - Climate and Ocean Variability, Predictability and Change

Understanding the dynamics, interaction, and predictability of the **coupled ocean-atmosphere system**, to better understand climate variability and change.



WCRP GEWEX - Global Energy and Water Exchanges

Observing, understanding and modelling the **hydrological cycle and energy fluxes in the Earth's atmosphere and at the surface**, with a focus on coupled processes and interactions that determine global & regional water cycles, energy budgets and global change.



WCRP CliC - Climate and Cryosphere

Improving our understanding of the **cryosphere and its interactions with the global climate system**; and how to best use the cryosphere to detect climate change.



WCRP SPARC - Stratosphere-troposphere Processes and their Role in Climate

The **role of the atmosphere** on climate variability and prediction, with a focus on atmospheric dynamics and predictability; chemistry and climate; and long-term records for climate understanding.



WCRP Core Projects and Research Communities

Enduring Capabilities, “Homes” of Expertise

WCRP Earth System Modelling and Observational Capabilities (new)

Modelling, observing and model – data fusion science and technologies.

Unite and strengthen the following communities and groups, and their work:

- WCRP Modelling and Data Advisory Councils: WMAC and WDAC
- Working Groups on:
 - Coupled Modelling (WGCM) incl. CMIP (CMIP & Infrastructure Panels)
 - Numerical Experimentation (WGNE)
 - Sub-seasonal to Interdecadal Prediction (WGSIP)



WCRP Regional [Climate] Information for Societies (new)

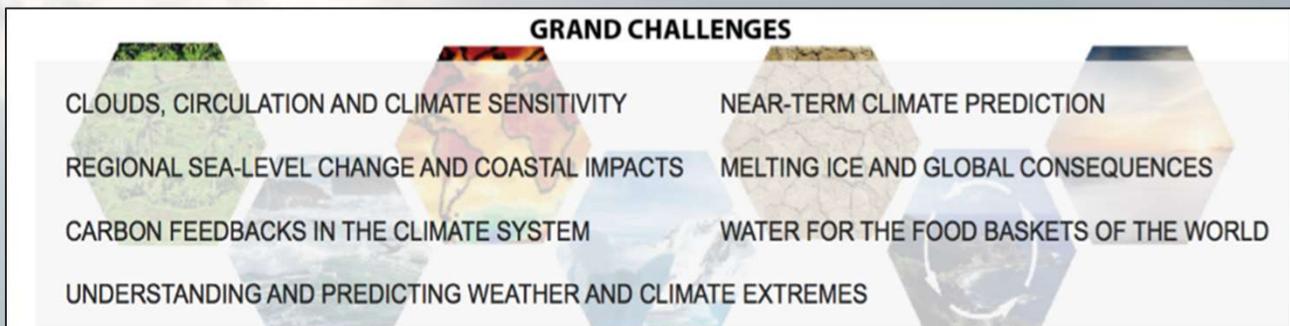
Science and capability needed to provide societally-relevant climate information for regions.

Unite and strengthen the following communities and groups, and their work:

- CORDEX (science and application of regional climate downscaling)
- Working Group on Regional Climate (WGRC)



WCRP Grand Challenges
will “sunset” by 2022; i.e.
transition to other research
activities and/or conclude.



High-level Science Questions

Considering all scales



Implementing the Strategy

WCRP will prioritize its science while implementing its Strategy by pursuing a series of Lighthouse Activities, along with other core research activities, to deliver and achieve critical outcomes over the next decade



WCRP Lighthouse Activities

Explaining and
Predicting Earth
System Change

My Climate
Risk

Digital Earths

Safe Landing
Climates

WCRP
Academy

New scientific approaches, technologies, and institutional frameworks that are required to meet societal needs for robust and actionable climate information

WCRP Lighthouse Activities



Explaining and Predicting Earth System Change

To design, and take major steps toward delivery of, an integrated capability for quantitative observation, explanation, early warning and prediction of Earth System Change on global and regional scales, with a focus on multi-annual to decadal timescales.

My Climate Risk

To develop a new framework for assessing and explaining regional climate risk to deliver climate information that is meaningful at the local scale.

Safe Landing Climates

To explore the routes to climate-safe landing 'spaces' for human and natural systems, on multi-decadal to centennial timescales; connecting climate, Earth system and socio-economic sciences. Explore present-to-future "pathways" for achievement of key SDGs.

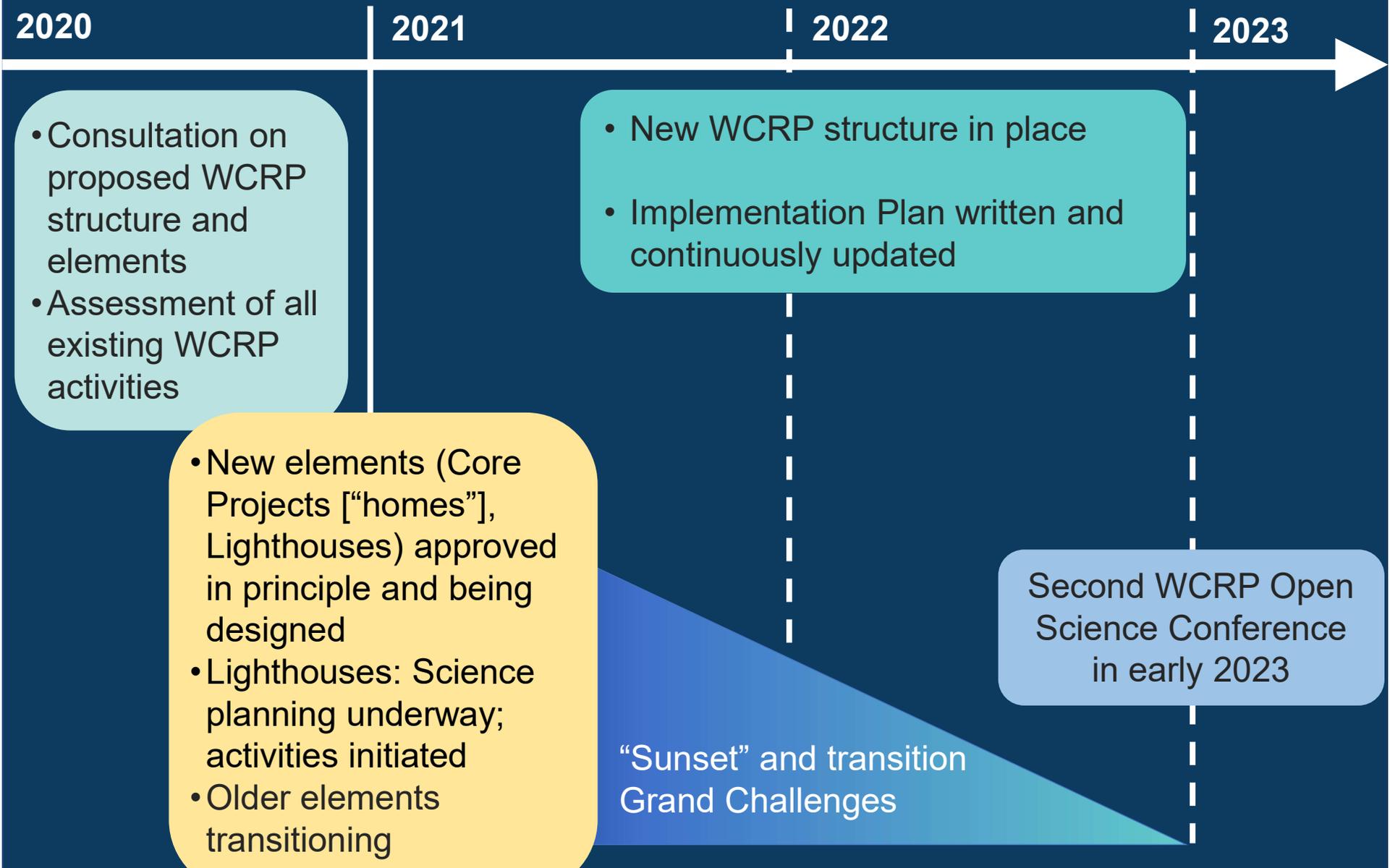
Digital Earths

To develop a digital and dynamic representation of the Earth system, optimally blending models and observations, to enable an exploration of past, present and possible futures of the Earth system.

WCRP Academy

To determine the requirements for climate research education and to build enabling mechanisms. To achieve this, the Academy will work with WCRP core activities, including the other Lighthouse Activities and established climate education providers, including universities.

A soft transition to the new WCRP: Timeline



A soft transition to the new WCRP: 2021

Consultations with global community on WCRP's Strategic Plan and new science activities and structure:

- Core Project Meetings with WCRP “family”
- Regional Consultations with climate researchers, funders and users
- Discussions with Partners and Co-sponsors

Existing Core Projects

- Internal review of structure and science

New Core Projects [“homes”] are being designed:

- [Integrated] Earth System Modelling and Observational Capabilities
- Regional [Climate] Information for Society

Lighthouse Activity draft science plans are being developed and co-designed with our science community and partners ...

Supporting arrangements for new WCRP elements and structure:

- Governance, Communications, Project office support: work in progress

WCRP Lighthouse Activities: status

Draft Science / Business Plans for each Lighthouse Activity are being developed by the WCRP community, with the goal of broader consultation through 2021.

We are also aiming to:

- **Enhance the diversity** of, and engage with, the broader science community - as contributors and users of research.
- **Co-design the activities** with key partners and get input from our stakeholders.
- **Ensure they are dynamic and responsive** to changing needs, and **integrate with** other WCRP core research.

We are also seeking interest from potential funding partners.



Collaborations

1. Joint Statement with Future Earth in December 2020.
2. Future Earth Programs – refreshing Scientific Cooperation Agreements (MoUs) through 2021:
 - IMBeR
 - AIMES
 - iLEAPS
 - SOLAS
 - PAGES (seminar in May 2021)
 - GCP
 - IGAC
3. US Global Change Research Program.
4. Others: START, IAI.



Plans for 2021: Meetings (all online)

1. Regional Consultations - Climate Research Forums:

- Oceania (early February)
- Eastern Asia (early April)
- North and Central America, Caribbean and Greenland (early May)
- Europe, Western Asia: mid-May (TBC)
- Southeast Asia and Southern Asia: late May (TBC)
- South America (TBD)
- Africa (TBD)

2. SRI Conference and Joint Pre-Workshop (Future Earth, Belmont Forum et al): June (TBC)

3. JSC 42: June 28 - July 2

4. Future of Climate Modeling: September (Date TBC, First Circular pending)

5. Joint Data Assimilation and Reanalysis Symposium: 13 – 17 September

6. 2nd GCOS Climate Observations Conference: 12 – 14 October

7. Workshops: WCRP Lighthouses, Core Projects and activities

8. Workshop to acknowledge and celebrate achievements of modelling groups and councils (TBD)

9. Regional Climate Information for Societies Workshop (TBD)

10. New CMIP IPO established

Travel in 2021 and beyond

- International travel highly unlikely in 2021
- In future maybe only 50% of meetings to be in-person
- Keen to hear from all the Core Projects regarding what they need to support this new mode of working e.g., software, platforms for collaboration as well as funding requirements

Beyond 2021

Second WCRP Open Science Conference

- Planned for early 2023, following the WCRP Open Science Conference that took place in 2011 in Denver.
- Intended to celebrate WCRP's past success, especially results and advances that emerged from the WCRP Grand Challenges.
- At the same time, it will roll out and advertise the new WCRP, especially to Early Career Scientists and to communities from the global South.



International
Science Council



Discussion

Implications for CLIVAR?

- How to stimulate dialogue and discussion with the Lighthouse Activities?
- Establish and / or strengthen links between CLIVAR and Core Projects, e.g.
 - CLIVAR Modelling Panels and the “Model-data” CP
 - Existing CPs, e.g. GEWEX
 - Governance (Joint Working Groups) and Projects?
 - Other?
- Other