

**Welcome to the WCRP
Climate Research Forum**

**Climate research
priorities for the next
decade**

Southern Asia: 30 November 2021

09:00 – 12:30 Coordinated Universal Time (UTC)



Technical Guidance and Participation

- Technical guidance:
 - Please have **slido** loaded – link is posted in the Zoom Chat window (*or via the email from WCRP/Eventbrite with the Zoom videoconference link*).
 - Remember to **turn off your microphone and video** unless you are presenting, you are a Chair, Rapporteur, or you have been asked to speak.
 - For technical assistance, please “chat” to **Nico Caltabiano** via **Zoom Chat**.
- Participation in today’s Forum:
 - You can ask **questions of the Speakers using Zoom Q&A**
 - You can vote for (“like”) questions - Chairs will select those questions of greatest relevance and interest.
 - We will aim to answer as many questions as possible in the time available.
 - We encourage **discussion in Zoom Chat** but please use **Zoom Q&A** for questions to the Speakers.
 - We are using **slido** to get your feedback.
- Recording:
 - This Forum is being recorded to assist in documenting the outcomes.
 - This recording will be posted on the WCRP website.

1. Introduction and Welcome

- Welcome from Helen Cleugh and Krishnan Raghavan
Vice Chair and Member of WCRP's Joint Scientific Committee (JSC)
- Purpose of the Climate Research Forums

WCRP Climate Research Forum

Program – Southern Asia region: November 30

Session 1: Introduction and welcome. *WCRP Joint Scientific Committee [JSC] (10 mins).*

Slido Introduction and Icebreaker

Session 2: WCRP's "Our Climate Future" *Speaker: Helen Cleugh (20 mins)*

Session 3: Integrating societal needs for enabling science into action. (70 mins total)

Chair: *Dr Mandira Singh Shrestha. Rapporteur: Ms Feba Francis.*

3.1 Disasters in the Himalayas. *Professor A.P. Dimri, Jawaharlal Nehru University, India. (10 mins)*

3.2 Sector Specific Perspectives (20 mins total):

- Regional climate service activities for South Asia: status and future plans. *Dr D.S. Pai, India Meteorological Department, India.*
- Agriculture - Risk assessment and vulnerability analysis for food security. *Professor Dr Tehmina Mangan, Faculty of Agriculture, Pakistan.*
- Irrigation water management using weather and extended range services. *Professor Subimal Ghosh, Indian Institute of Technology, India.*

3.3 WCRP My Climate Risk Lighthouse Activity – from a stakeholder perspective. *Dr Chi Huyen Truong (Shachi), Himalayan University Consortium, International Centre for Integrated Mountain Development (ICIMOD), Nepal. (10 mins)*

Q&A, Discussion and Slido Poll-1 [30-mins]

WCRP Climate Research Forum

Program – Southern Asia region: November 30

Session 4: Climate science challenges and priorities in the Southern Asia region. (80 mins total)

Chair: Mr Muhammad Amjad. **Rapporteur:** Dr Priyanka Yadav.

4.1 Key regional climate science priorities: opportunities and challenges. *Dr Krishnan Raghavan, Director-In-Charge, Centre for Climate Change Research, Indian Institute of Tropical Meteorology, India.* (10 mins)

4.2 **Keynote Address:** Research strategies and approaches of the Asian Precipitation Experiment (AsiaPEX). *Professor Toru Terao, Kagawa University, Japan.* (15 mins)

4.3 Showcasing WCRP Science (15 mins total):

- Explaining and Predicting Earth System Change Lighthouse Activity. *Dr Zhuo Wang, University of Illinois, USA.*
- CORDEX-South Asia: Providing High Resolution Climate Projections in Southern Asia Region. *Dr J. Sanjay, Indian Institute of Tropical Meteorology, India.*

4.4 **Keynote Address:** Indian Ocean observing system for addressing the challenges and priorities of the next decade. *Dr Roxy Koll and Dr Aditi Modi, Indian Institute of Tropical Meteorology, India.* (10 mins)

Q&A, Discussion and Slido Poll-2 [30-mins]

Session 5: Concluding discussion. *WCRP Joint Scientific Committee [JSC]* (10 mins).

Slido Poll-3 [will remain open during and after Session 5]

1. Introduction and Welcome

Special thanks to:

Our WCRP Regional Focal Points, who organized the Forum and are participating in today's Forum, and their institutions:

- Mandira Singh Shrestha (International Centre for Integrated Mountain Development, Nepal)
- Muhammad Amjad (Global Change Impact Studies Centre, Pakistan)
- A. P. Dimri (Jawaharlal Nehru University, India)
- Roxy Mathew Koll (Indian Institute of Tropical Meteorology, India)
- Krishnan Raghavan, JSC Member (Indian Institute of Tropical Meteorology, India)

The following Early Career Scientists, who are our Rapporteurs:

- Priyanka Yadav, Postdoc researcher, Young Earth System Scientists (YESS).
- Feba Francis, PhD researcher, WCRP Academy.

For their support and assistance in organising and running the Forum

- International Monsoons Project Office, Indian Institute of Tropical Meteorology, India (Susmitha Joseph, Somnath Mahapatra, Rupa Kumar Kolli).
- WCRP Secretariat (Hindumathi Palanisamy, Narelle van der Wel, Nico Calabiano).
- WMO for hosting the Forum and supporting the Zoom videoconference platform.

Slido Introduction and Icebreaker question(s)

We are using **slido polls** to get your feedback

- We value your answers to our questions, your feedback and ideas.
- As an icebreaker, and to practice using slido, please launch slido ...



2. WORLD CLIMATE RESEARCH PROGRAMME (WCRP)

Our Climate Future


Helen Cleugh, WCRP JSC Vice Chair



International
Science Council



Introduction



After more than 40 successful years, the **World Climate Research Programme (WCRP)** continues to lead the way in addressing frontier scientific questions related to the coupled climate system — questions that are too large and too complex to be tackled by a single nation, agency or scientific discipline.

Introduction

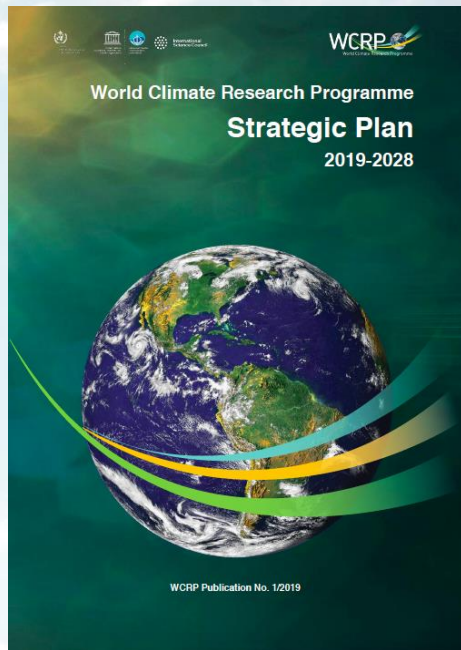
In the past, WCRP pioneered international climate research advancing our understanding of the climate system and how it is being affected by humans.

The next decade will bring even bigger challenges that can only be addressed through a worldwide coordinated effort; involving co-design and stakeholder engagement conducted by a prepared scientific workforce.

Society requires decision-relevant, evidence-based climate information to support adaptation planning and mitigation strategies.

The Future WCRP

A Strategic Plan for this Decade



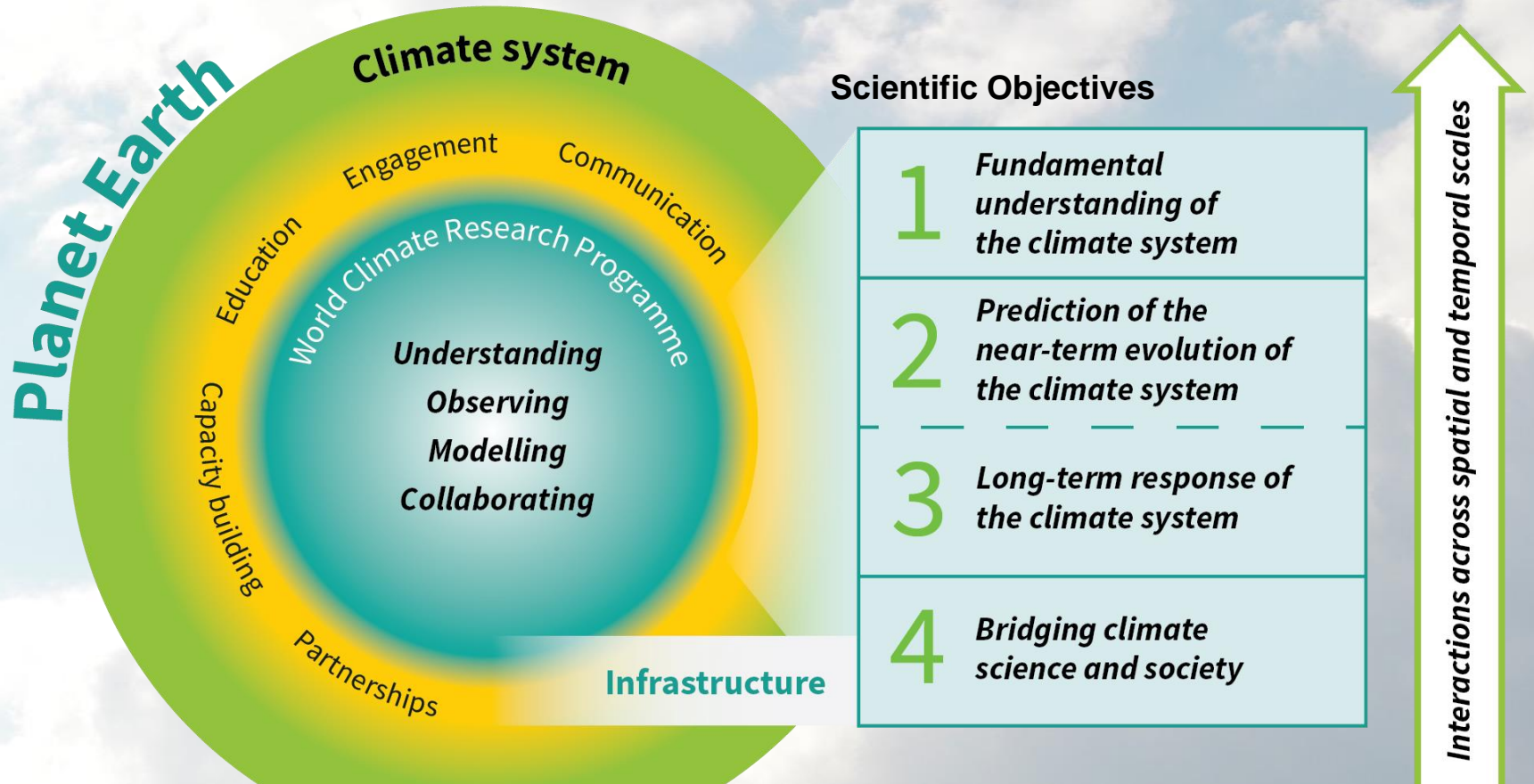
The Vision *(our aspiration)*

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.

Overview of the WCRP Strategic Plan



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

Implementing the Strategy

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



Explaining and
Predicting Earth
System Change

My Climate
Risk

Digital Earths

Safe Landing
Climates

WCRP
Academy

WCRP Lighthouse Activities are the major and new scientific approaches, technologies, and institutional frameworks – required to meet society’s need for robust and actionable climate information

New frameworks for assessing and explaining regional climate risk to deliver climate information that is meaningful at local scales.

My Climate Risk

Explaining and Predicting Earth System Change

Design and deliver an integrated capability for observation, explanation, early warning and prediction of Earth System Change - with a focus on multi-annual to decadal timescales.

Digital Earths

Safe Landing Climates

WCRP Academy

WCRP Lighthouse Activities are the major and new scientific approaches, technologies, and institutional frameworks – required to meet society’s need for robust and actionable climate information

WCRP Lighthouse Activities

Safe Landing Climates

To explore the routes to climate-safe landing 'spaces' for human and natural systems, on multi-decadal to millennial timescales; connecting climate, Earth system and socio-economic sciences. Explore present-to-future "pathways" for achievement of key SDGs. *Co-leads: Steven Sherwood and Gabi Hegerl*

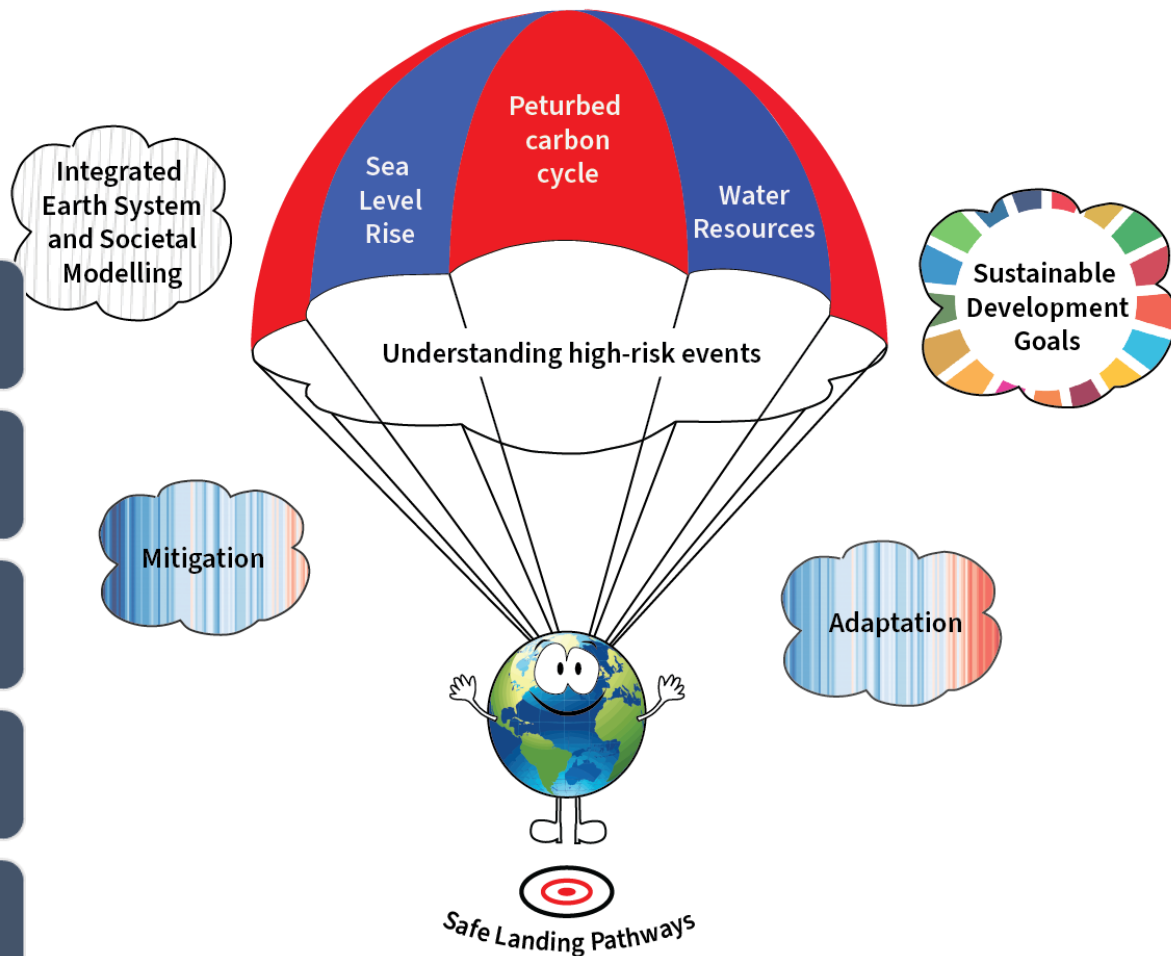
1. Safe Landing Pathways

2. Understanding High Risk Events

3. Perturbed carbon cycle

4. Water Resources

5. Sea Level Rise

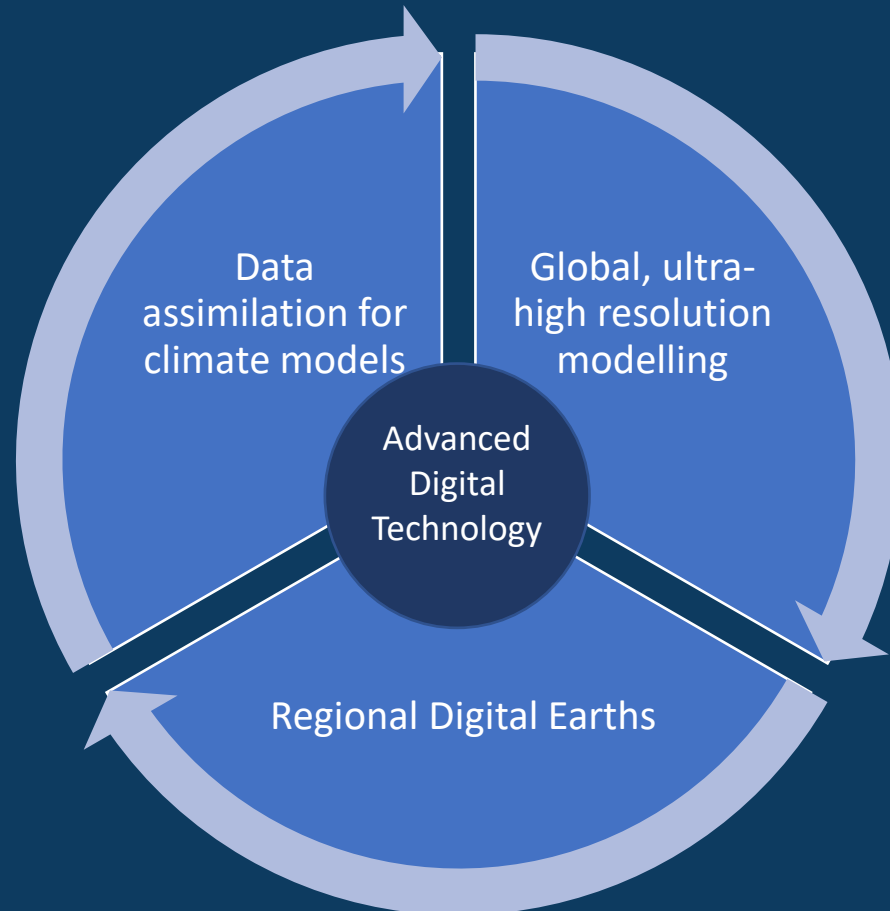


WCRP Lighthouse Activities

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. *Co-leads: Peter Bauer and Christian Jakob*

An integrated information system describing past, present and future states

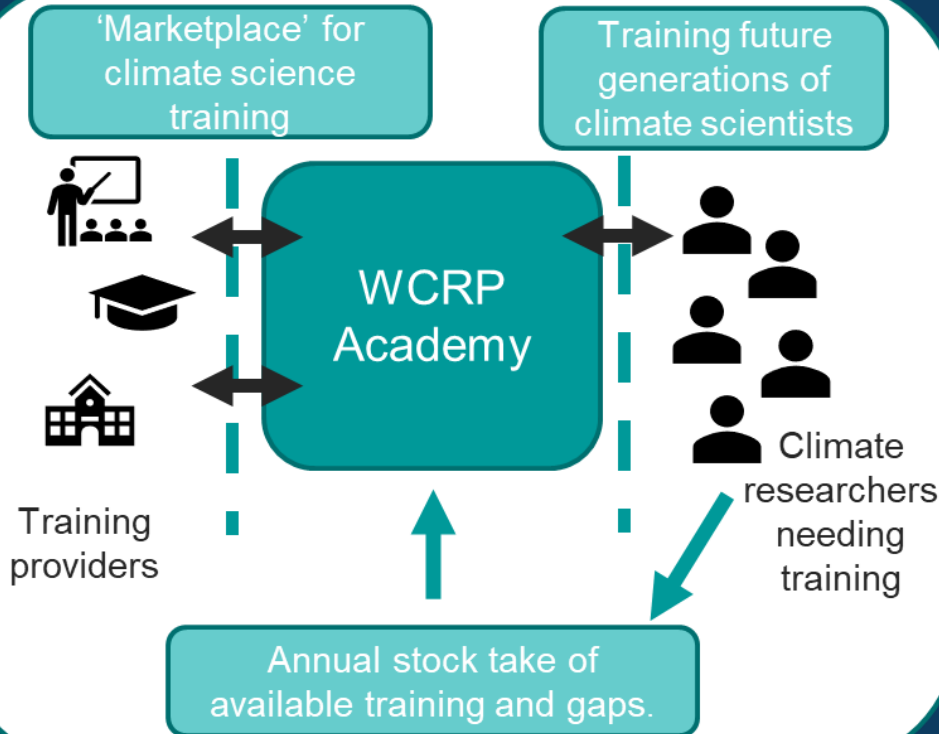


WCRP Lighthouse Activities

WCRP Academy

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

Co-leads: Angela Maharaj and Chris Lennard



Get involved!

- *Take part in our stock take at:*
<https://www.wcrp-climate.org/academy-survey>
- *Could your organisation fill the training gaps? Watch for results of stock take in 2022.*
- *We need people with expertise in working with philanthropic donors and in setting up non-profit organisations.*

Contact Narelle Van Der Wel: nvanderwel@wmo.int

WCRP Lighthouse Activities: Status

Draft Science / Business Plans for each Lighthouse Activity were submitted and reviewed in June 2021.

See <https://www.wcrp-climate.org/lha-overview> for **Science Plans and initial planned activities**

Consultation and engagement are a key implementation step:

- **Enhance the diversity** of the science community - as both contributors to, and users of, research.
- **Co-design the activities** with key partners and get input from our stakeholders.
- We are also seeking interest from **potential funding partners**.
- **Build and strengthen links** to WCRP's core research activities.

More information on how you can connect later

WCRP Core Projects and Research Communities

Enduring Capabilities, “Homes” of Expertise

Prioritize the research and technologies needed to advance our understanding of the multi-scale dynamics of the Earth’s climate system, and co-develop climate information needed for decision support, adaptation planning and climate mitigation.

This requires:

- Expertise and capabilities across oceans, cryosphere, land and atmospheric science domains.
- Process studies, observations, modelling and simulation.
- Capability for providing regional climate information.
- Model – data fusion science.
- Modelling and observing technologies and infrastructure.

WCRP's Ongoing Core Projects

Enduring Capabilities, Research Community "Homes"

CLIVAR - Climate and Ocean Variability, Predictability and Change

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

www.clivar.org



GEWEX - Global Energy and Water Exchanges

Observing, understanding and modelling the **global and regional water cycles and energy budgets** in the Earth's atmosphere and at the surface.

www.gewex.org



CliC - Climate and Cryosphere

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

www.climate-cryosphere.org



SPARC - Stratosphere-troposphere Processes and their Role in Climate

The **role of the atmosphere**: atmospheric dynamics and predictability; chemistry and climate; and long-term records for climate understanding.

www.sparc-climate.org



WCRP's New Core Projects

Enduring Capabilities, Research Community "Homes"

Earth System Modelling and Observations [ESMO] (new)

- Science and technologies for modelling, observations and model – data fusion.
- Unite and strengthen the work of our Working Groups on:
 - Coupled Modelling (WGCM) incl. CMIP (CMIP & Infrastructure Panels)
 - Numerical Experimentation (WGNE)
 - Sub-seasonal to Interdecadal Prediction (WGSIP)
- Replaces WCRP Modelling and Data Advisory Councils (WMAC and WDAC)



Regional Information for Society [RIFS] (new)

- Science and capability needed for providing societally-relevant climate information for regions.
- Unite and strengthen the work of these communities and groups:
 - CORDEX (science and applications of regional climate downscaling)
 - Former Working Group on Regional Climate (WGRC)



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



WCRP Structure



International
Science Council



United Nations
Educational, Scientific and
Cultural Organization



Intergovernmental
Oceanographic
Commission

Joint Scientific Committee (JSC)

WCRP Secretariat

Lighthouse Activities

International Offices

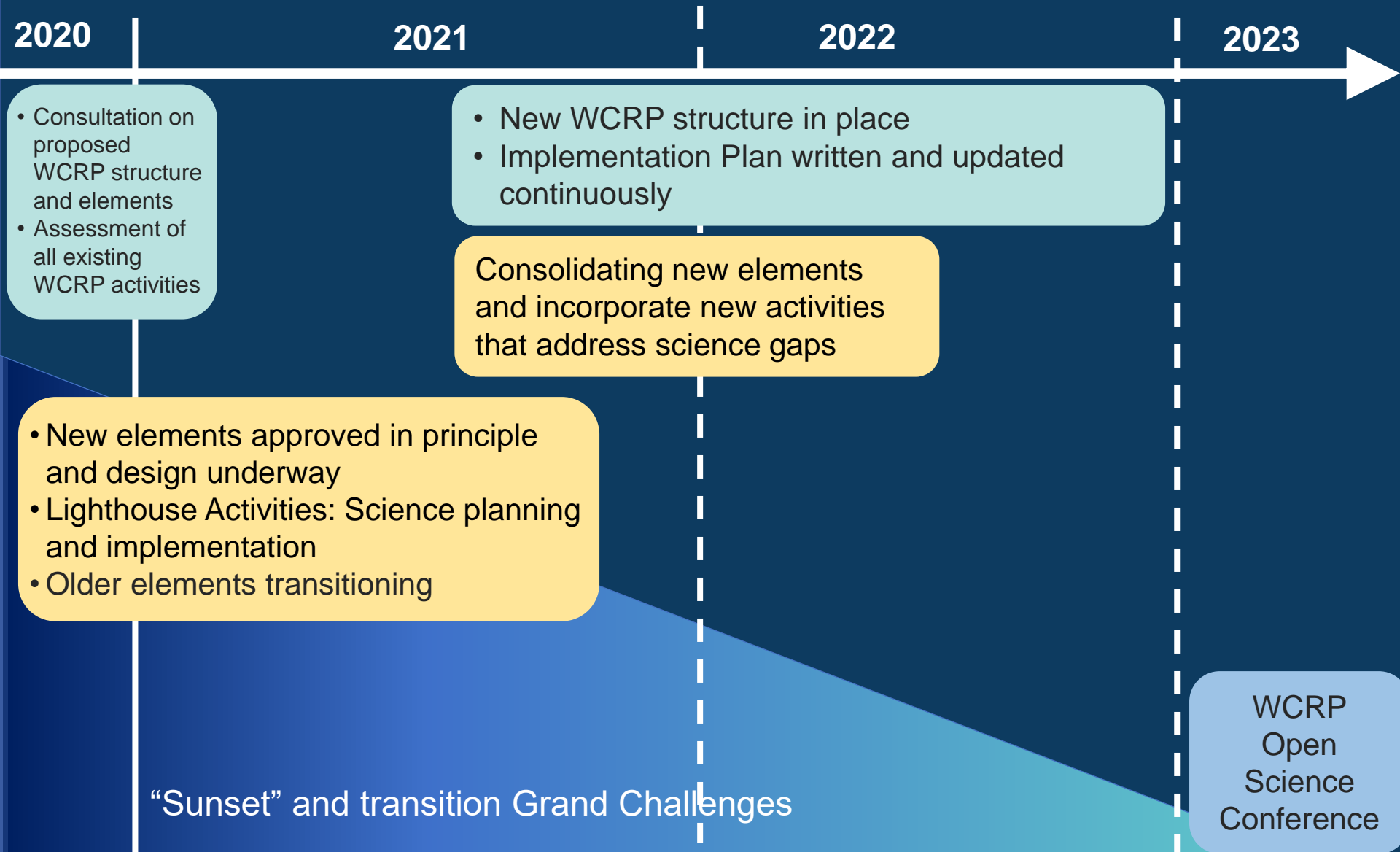
Core Projects and Research Communities

- 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)
- *Earth System Modelling and Observations (ESMO)*
- *Regional Information for Society (RIfS)*

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

A soft transition to the new WCRP: Timeline



A soft transition to the new WCRP: Timeline

2020

- Consultation on proposed WCRP structure and elements
- Assessment of all existing WCRP activities

2021

- New WCRP structure
- Implementation of new structure

Consolidation and incorporation of activities that address


- New elements approved in principle and design underway
- Lighthouse Activities: Science planning and implementation
- Older elements transitioning

2023



WCRP Open Science Conference 2023
Advancing climate science for a sustainable future

FIRST CIRCULAR



A FULLY HYBRID EVENT

Themes

- Recent advances in climate science
- Climate research challenges and opportunities
- Regional climate extremes and risks
- Useful and useable climate information

WCRP World Climate Research Programme

For more information and to register your interest please visit the Conference webpage
www.wcrp-climate.org/WCRP-OSC23

“Sunset” and transition Grand Challenges

WCRP Open Science Conference

Our Joint Climate Future

WCRP's community stands ready to work with our co-sponsors and partners, and to support nations, to ensure that society has the climate knowledge and information needed.

It is also important for WCRP to engage the next generation of scientists and improve our diversity – across nations, regions and disciplines.

We want to explore ways to better connect and work with you, *during and after this Forum.*

Final slide explains how you can connect with us



WORLD
METEOROLOGICAL
ORGANIZATION



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World Climate Research Programme



You can help shape the future WCRP

We welcome your suggestions and feedback on our new Lighthouse activities, new and ongoing Core Projects, and new structure.

We are very grateful to all our sponsors, nations and agencies who have supported us so far.

We welcome you to continue this journey with us, to foster, coordinate and co-design the science that is important for you.

Final slide explains how you can connect with us

WCRP is here to support you

Sponsors, Partners and Nations: WCRP stands ready to support your needs for relevant, accessible and credible climate knowledge and information, by:

- Working with you to jointly identify research frontiers, challenges and collaborations.
- Directing our scientific expertise towards innovation in new scientific, technological and institutional approaches.

Through WCRP's core activities, i.e. Core Projects, Lighthouse activities etc.

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Our Climate Future – Key Contacts

We are keen to hear from you and continue the conversation.

If you want to know more, or wish to be involved in any of our activities, then you can:

1. Email us with questions or ideas at climatefuture@wcrp-climate.org
2. Register for our newsletter at:
<https://www.wcrp-climate.org/news/wcrp-newsletter/subscribe>
or via the link at:
<https://www.wcrp-climate.org/wcrp-ip-connect>
3. Register at www.wcrp-climate.org/climate-research-forums to tell us more about you and your interests
4. Check website for updates at www.wcrp-climate.org/wcrp-ip-overview

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5. WORLD CLIMATE RESEARCH PROGRAMME

Concluding Discussion

Helen Cleugh
WCRP JSC Vice Chair

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Today's Forum is just the beginning

We welcome your ideas for follow-up activities, for example:

- Forums to focus on specific research themes, from our Core Projects and Lighthouse activities.
- Further engagement with partners and sponsors, to:
 - Build and strengthen partnerships
 - Identify research priorities of mutual benefit
 - Co-design research
- Connecting with Early to Mid-Career Researchers, including YESS (Young Earth System Scientists).

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Our Climate Future – Key Contacts

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1. Email us with questions or ideas at climatefuture@wcrp-climate.org
2. Register for our newsletter at:
<https://www.wcrp-climate.org/news/wcrp-newsletter/subscribe>
or via the link at:
<https://www.wcrp-climate.org/wcrp-ip-connect>
3. Register at www.wcrp-climate.org/climate-research-forums to tell us more about you and your interests
4. Check website for updates at www.wcrp-climate.org/wcrp-ip-overview



Thank you from WCRP
climatefuture@wcrp-climate.org