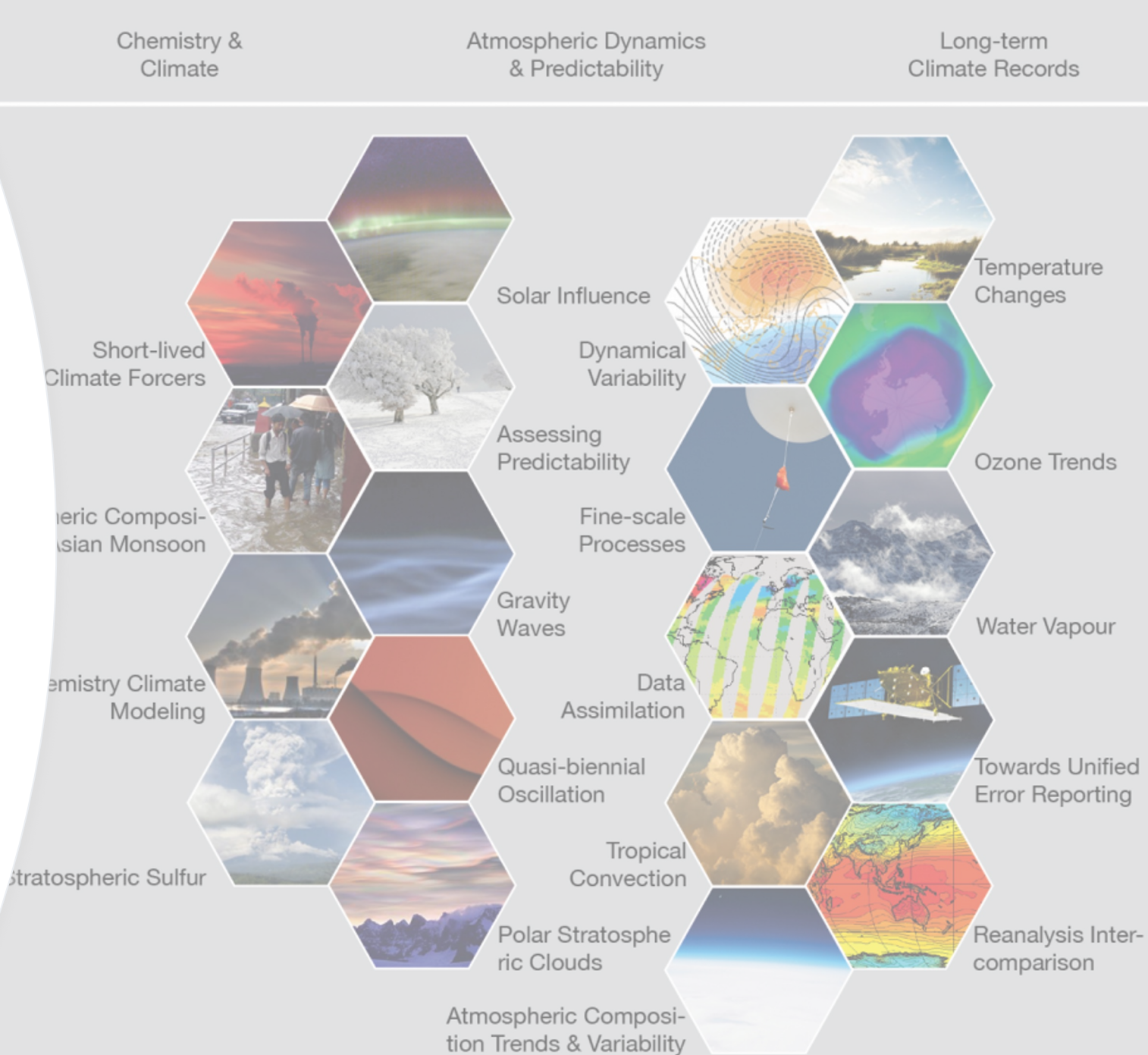




Stratosphere-troposphere Processes and their Role in Climate (SPARC)

Co-chairs: Seok-Woo Son; Amanda Maycock; and Karen Rosenlof



SPARC SSG 2022

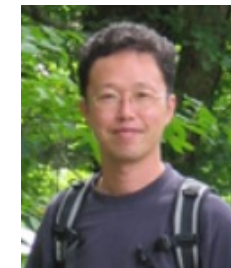


SPARC co-chairs

Karen	Rosenlof	USA
Amanda	Maycock	UK
Seok-Woo	Son	Korea

SSG members

Gufran	Beig	India
Sophie	Szopa	France
Wenshou	Tian	China
Andrea	Carril	Argentina
Wen	Chen	China
Nili	Harnik	Israel
Harry	Hendon	Australia
Takeshi	Horinouchi	Japan
Nathaniel	Livesey	USA
Michael	Prather	USA
Viktoria	Sofieva	Finland
Don	Wuebbles	USA



SPARC's Mission and Vision



Mission

SPARC supports its community to address pressing science questions relevant to our rapidly changing planet. In a world where atmospheric and climate sciences are increasingly a focus of decision-makers across policy and industry, SPARC has **an opportunity to leverage its community strength to provide the foundations of the knowledge, data, and information required to transform our society in the next decade.** This will be rooted in SPARC's support for cutting edge fundamental sciences, alongside dedicated efforts to strengthen partnerships and to demonstrate the societal benefits arising from SPARC's work.

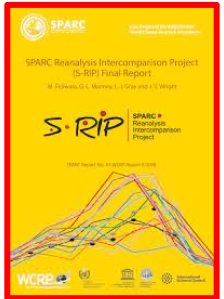
Vision

To establish a comprehensive body of **scientific knowledge on the role of the atmosphere in the global climate system** with an emphasis on process understanding.

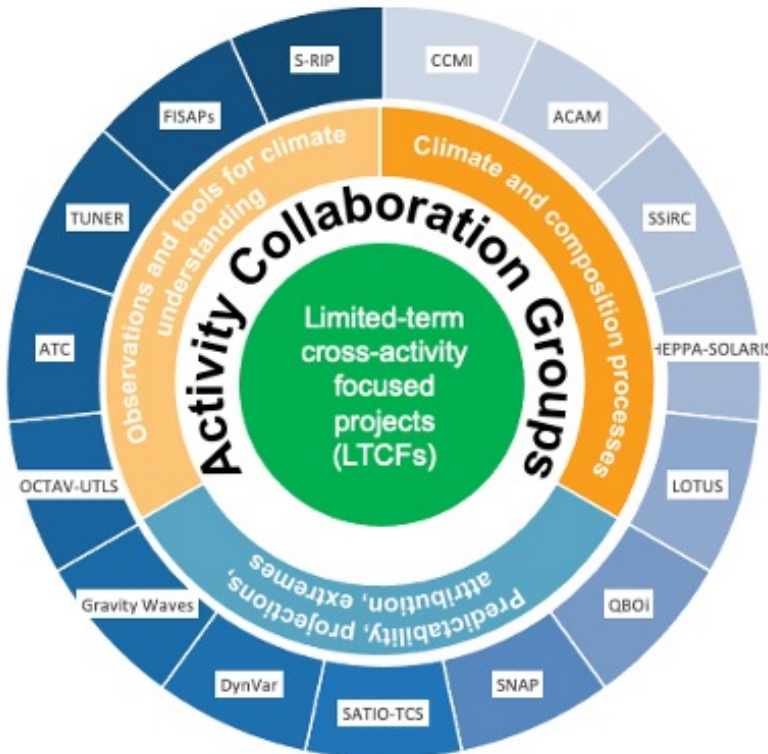
SPARC Activities – as of today



- Most SPARC activities are self-organised with ideas coming from the research community, and provide network opportunities centred on topical research.
- Currently 15 SPARC activities – this is where the science happens.
- SPARC activities formed when new science questions arise.
- SPARC activities develop reports published by SPARC, e.g., S-RIP report (SPARC Report No. 10).
- SPARC activities generate community papers.
- SPARC activities contribute to assessment panels such as IPCC and WMO/UNEP Ozone assessment.
- Capacity building through involvement of ECRs in activity leadership, organisation of training schools, and travel supports to ECRs.
- SPARC has established collaborations with other communities, e.g. other WCRP projects, WWRP (in particular with S2S), GAW, IGAC, Future Earth.



SPARC's New Structure



Engagement Panels



- Partnerships Panel to include external representatives from other WCRP projects such as GEWEX with whom SPARC wants to collaborate & engage.
- This will ensure that SPARC is well connected with other WCRP projects and beyond who have complementary remits to SPARC.

Collaboration between GEWEX & SPARC



- Past collaboration between GEWEX and SPARC included G-VAP
 - The SPARC “water vapor II” activity has updated the SPARC Water Vapour Assessment (WAVAS-1) report from 2000 - focus was on water vapour in the stratosphere. In contrast, the main objective of G-VAP is the characterisation of long-term satellite data records of water vapour in the troposphere.
 - Clear need for the consistent generation and validation of water vapor and temperature profiles that span the whole atmosphere → cooperation between SPARC and G-VAP aimed at establishing a common basis in terms of metrics and data records.
- GEWEX/CLIVAR Monsoons Panel
 - Monsoons Panel engaged in interactions with SPARC on the role of atmospheric composition in processes relevant for the monsoon addressed by the Atmospheric Composition and Asian Monsoon (ACAM) activity.
 - SPARC to facilitate online discussions on establishing closer connection between SPARC, the monsoon panel, and others with shared interest in different aspects of monsoon research across WCRP core projects and lighthouse activities.
- WCRP Global Precipitation Experiment (GPEX) Tiger team:
 - SPARC representative Takeshi Horinouchi
 - SPARC/GEWEX and other projects to work together to define mission, visions and goals of GPEX – opportunity to work together.

Collaboration between GEWEX & SPARC



- GEWEX has a specific crosscutting project on process understanding the upper troposphere-lower stratosphere (led by Claudia Stubenrauch) – strong link to SPARC and opportunity to collaborate.
- Joint SPARC/GEWEX activity
 - As a part of new SPARC structure, new joint activities might be defined so foster collaborations between the two projects.
 - Common research interests include cyclones, convection, and high resolution modelling. For example, SPARC is working on sub-km processes in the atmosphere which include turbulence and gravity waves. This could be a good connection between GEWEX and SPARC, leading to a joint activity on high-resolution processes.
- Joint SPARC/GEWEX workshops & webinars
 - Build on example from the past, e.g. the SPARC-GEWEX-IGAC workshop in 2006 on ‘Modelling of Deep Convection and of Chemistry and their Roles in the Tropical Tropopause Layer’ and find common topics that could be part of a workshop or webinar.

SPARC General Assembly – Oct 2022



7th SPARC General Assembly

- Three Hubs to lower carbon footprint.
- >300 submitted abstracts
- 6 scientific themes
- 16 confirmed invited speakers

Scientific Themes

- New ways of viewing the atmosphere through observations and re-analyses.
- New understanding of atmospheric composition and variability.
- Coupling between climate, radiation, and dynamics.
- How do dynamical processes shape climate variability and trends?
- Climate prediction from sub-seasonal to decades.
- Past and future of SPARC.



Participation of GEWEX scientists encouraged and welcomed – provides the opportunity to discuss common interests.