ECRA: **Knowledge for climate action**

Newsletter Spring 2021

Dear Readers,

Welcome to the new ECRA Newsletter of April 2021. Twice a year, we deliver updates form the Climate Research world right to your inbox.

In this issue we are highlighting the recent event – we celebrated our **ten-year anniversary** with an online event on 10 March. Find key quotes and a summary in the next pages. Further, we have summarised the system of **EOSC**, the European Open Science Cloud. Further, **upcoming events** and **publications**, relevant for members of the ECRA network. Lastly, we are happy to welcome a **new co-lead** of our polar Collaborative Programme.
Find the Table of Contents on the next page.

We wish you happy and informative reading!

Kind regards,
and see you soon!

Prof. Peter Braesicke, Chair of ECRA
Prof. Len Sheffrey, Co-Chair of ECRA

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10y event

On 10 March 2021, the ECRA commu-nity joined to **celebrate ECRA's tenth anniversary**. Originally, we were sup-posed to meet in person in Square Brus-sels, Belgium, but COVID-19 forced us to move the event online.

We welcomed an **illustrious round of speakers, panellists** and moderator and would like to summarise selected elements of the event in the following pages.

A recording of the full event is available on ecra-climate.eu/10y-recording, and a **18 minutes summary video** with key statements here: ecra-climate.eu/10y-summary (both with time codes for easier watching)

More information on the event can be found at the event site at ecra-climate.eu/10y.

Overview of the four ECRA Collaborative Programmes

"Why do we need a CP on Sea Level Change? Because the climate sea level rise and its impact on coastal areas has serious implications on more than 10% of the world population.
There will be a radical reshaping of the world's coastlines, affecting hundreds of millions of people in the process.
The idea is to have an integral view of problem at regional scale, that means also to look not only at observation and modelling, but also technological and nature-based solutions to face the problem of sea level rise. We try to work towards a coastal climate service.

Gianmaria Sannino

"The focus of this CP is to study the Hydrological Cycle, its components, changes, and also its impacts on both global and regional scales, to understand the processes and mechanisms and the feedback behind the functioning of the water cycle, and on the other hand, understanding the changes which are occurring in response to different climatic conditions.
We want to address is a wider collaboration with other kinds of scientists. This is something we have already started but can be improved a lot, social-economic scientists in particular, because we want to make some research which is more impact-oriented.

Elisa Palazzi

Agenda of the event:

Overview of the ECRA Collaborative Programmes (previous and this page)

Welcome and Moderation by **Peter Gibbs**

Keynote presentation by Jean-Eric Paquet (Director-General, DG-RTD, European Commission)

Keynote presentation by Connie Hedegaard (Mission Board Chair on Adaptation to Climate Change including societal change)

Panel discussion with:

Philippe Tulkens as substitute for Jean-Eric Paquet, who had limited connectivity
Connie Hedegaard
Michel Rixen, WMO
Carlo Buontempo, ECMWF
Rob McSweeney, CarbonBrief
Peter Braesicke, Chair ECRA

Overview of the four ECRA Collaborative Programmes

ECRA CP-HIE
European Climate Research Alliance
Collaborative Programme High Impact Events & Climate Change

"It probably does not elude anyone's attention that actually high impact events – meaning extreme climate events, but also climate events that are linked to socio-economic losses, whether directly caused or interactively caused, or in terms of cascades or compounding events – have gained a lot of attention.
We look at mechanisms, projections, the production of information, and, based on the recent attention on Climate Services.

Martin Drews

ECRA CP-ARC
European Climate Research Alliance
Collaborative Programme Arctic Climate Stability and Change

"Six time the area of France is the estimate of how much loss we had of Arctic Sea Ice in Summer, that's a huge number. Broadly speaking, we are losing one soccer field of Arctic Sea ice every second, if you calculate the change over the years we have observations. That is a very large loss of Sea Ice and that's why I think Arctic Sea Ice loss is the most visible consequence of Global Warming to this day. Why we need to continue Arctic Sea Ice, or Arctic Climate research? We do not know the circulation response, and we are not able to forecast Arctic climate well, and we don't know the ecological consequence of that big Ice loss.

Lars H. Smedsrud

Jean-Eric Paquet
European Comission
DG RTD, Director-General

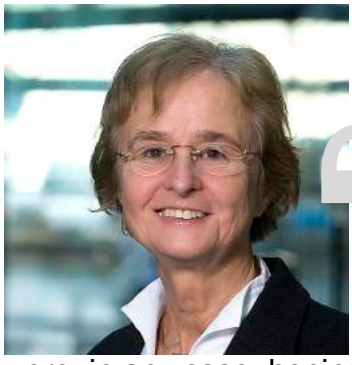
> **I heard your presentations - they were really interesting.** I very much liked the 'football pitch every 0.8 seconds', I mean, this talks! I will certainly use that, I am sure it is solidly grounded in data, so thank you for that.

I wanted to thank you, and hope you are hearing me thanking ECRA for the great work done over the last ten years. **We need climate science, in terms of knowledge, but we also need climate science and scientists in terms of impacting on choices made by policy-makers, and the willingness of society to change.**

I witnessed first-hand several times that where a meeting starts with a scientific presentation, even a short one, setting out what is happening, this focuses minds and allows much better decision-making. So, I am trying now to see whether we can have the benefit of the short presentations for as many meetings as possible. **Because, we all know, that being reminded and confronted with the knowledge by one of your is immensely impactful.**

So, keep it up! And I am sure we will continue to interact on many fronts, and again, happy birthday, and looking forward to your congress in 2022.

A word of **thanks** to somebody who, essentially, made all of this possible ten years ago:



Karin Lochte, the founder and first Chair of ECRA:

> I am **very impressed** how ECRA has developped over these ten years. And we were, in any case, hoping that ECRA would be able to **make a link to the policy-makers**. I think, that has happened, that has worked quite well.
>
> I think there is one thing missing: **economy, and industry or business**, is a very important player and accelerator, also in the changes in the society, next to policy
>
> And finally, I would really like to **thank everyone** to bring ECRA to this really good shape, as it is now, I would like to thank Peter who took over after me, and everyone else who is actually working on this, and I wish you much success, good science, and also a good way of learning to **speak in the different languages: with policy-makers** [and] **with people from industry**.

It is **immensely impactful** what the climate community, the **scientific climate community has been achieving over the recent many years**.

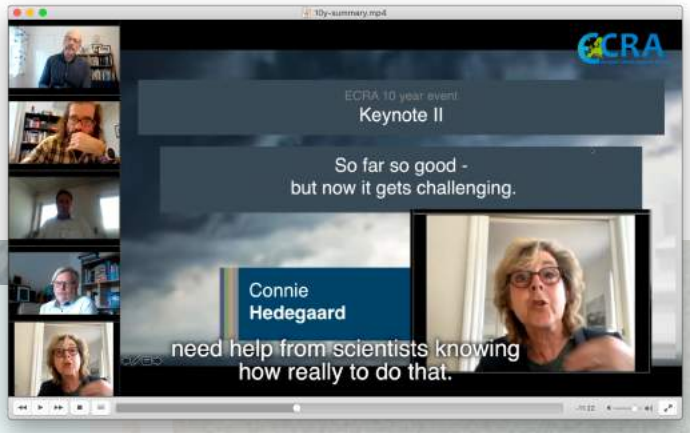
Now, today, the **discussion is not whether there is a climate change** challenge, now people realise that Climate Change is happening, that the **warnings from scientists were for real**.

How can the climate research community contribute?
Continue what you have been doing all the time.
Seen from a policy side, the social science has not been enough in the picture, we need the social sciences, the humanities, a lot about behavioural science, values, ethical questions.

How to better at bringing knowledge to the table?
What the policy-makers are faced with is a complexity that the systems are not really well fit to handle.
I really believe that policy makers need help from scientists knowing how really to do that.

EU's five Missions: The idea was to try and pool the resources in a different manner than we normally do in Europe, in order to shortcut better solutions, faster. However I can also say that it is easier said than done.
We very much would like to have your input, also in that work: What kind of research is already out there, and really to understand where can such a project really make a difference!

Connie Hedegaard
Chair: Mission Board on Adaptation to Climate Change including societal change



Watch summary online!
or: full recording

With this audience, I don't need to remind you that Climate Change is a reality.

The research community is at the source of producing the indispensable scientific knowledge, but also in developing innovative solutions needed to mitigate and adapt to Climate Change. We need to further strengthen the efforts on development of knowledge, and ensure that the uptake of solutions developed through Research and Innovation activities by society is happening, effectively, efficiently and at an accelerated pace.

This **notion of urgency** is key.

On the supply side of climate solution, Research and Innovation was, as it should, ahead of policy.
For the coming years, **Horizon Europe will be a key instrument to accelerate Europe's recovery, preparedness and resilience**, and to achieve the Green Deal objectives.

Science needs to be brought closer to civil society - this is not a slogan, it needs to happen. This can be achieved through greater outreach, more active engagement of citizens and local communities, including nurturing social innovation.
Horizon Europe's Missions, such as the Mission on Adaptation to Climate Change, to which Connie Hedegaard referred, **aim to mobilise a vast range of stakeholders and resources** towards this objective, and accelerate the demonstration that solutions exist for climate resilience.

Philippe Tulkens
European Commission
DG RTD, Deputy Head of Unit

We go away from the principle that a single model will just beat every other model and be the solution, all the time and everywhere.
This is why we have implemented these **Multi-model Intercomparison Projects** to really come up with an ensemble approach to capture those uncertainties, which ultimately are allowing us assessing risk and come up with solutions.
[Those] are gradually now making their way into operations and services, not only within WMO but also in Europe through Climate Services, of Copernicus Climate Change Ser-

Michel Rixen
WMO, WCRP,
Senior Scientific Officer

vice, for example. Many building blocks [are now] in place, we can start **closing gaps between research operations and services**. We see many elements which are starting to take shape.

We have seen **ten year of ECRA's successes, and surely, ECRA is more relevant than ever. My recommendation is that the EU and Commission makes full use of this fantastic network.**

Carlo Buontempo
ECMWF, Copernicus Climate Change Service (C3S)

If you look at the Copernicus Climate Change Service, we now have over **75.000 users who access the** data and to these people, we pass daily some 100 terabytes of climate data. These are big numbers.
If you look at the way in which these users are using the data, while many of them look at them of a way of **predicting the future condition**, there is a small but non-negligible fraction, mostly related to insurance, who actually look at the **seasonal prediction mostly in the hindcast, to see what could have happened and has not happened**. This means, the priority is not so much, for these users, to **improve the skill of the forecast system**, but to improve the model realism, the **reduce the systematic biases.**

The question is **not just an issue of communication,** it's a re-thinking of the down-stream part, **how we transform the communication into something that is actionable** through accepted methodology and standards and quality control measures.

Rob McSweeney
CarbonBrief

A very brief look at a couple of examples, on how **attribution has been covered in the media**:
The **first** formal attribution peer-review study was **published in 2004**, it concerned the European heatwave of the year before.
The research was something very new and the media coverage reflected this novelty with different papers, taking different angels on the story.

While the first attribution study was published around 16 months after the event, here it's a matter of days. From a communication perspective, this can **help the public make that connection** between their experiences of Climate Change and its causes and impacts.

Panel discussion (selected quotes)

Peter Braesicke: We are looking at a system that we need to balance well, where we basically want foundations, science, that basically produces **information that is useful for policy-makers**.
We have learned in the past, that sometimes **foundation science can just create things** you haven't thought about before, monitor the system, and be ready for surprises, and then putting those surprising things into the next generation of models, enhancing our capacity and capability.

Connie Hedegaard: There is another side of this coin: The dilemma that we have **increasing complexity**, and we have a media picture, at least media for the many, that are getting more and more, brief, superficial, inviting for **black-white ways of presenting things**. My experience is also that there are too many researchers who simply do not understand policy-making. No wonder, because that is [their] primary job, but I mean, to **understand how politics is being made**, is also essential in order to be able to bring the knowledge you have provided into play.

Philippe Tulkens: **I think we have progressed quite a lot**. There is no better period now to communicate with politicians. **Politicians have understood that science has a major role to play.**

Peter Gibbs: Later this year, we have **COP26** - what are your expectations?

Connie Hedegaard: **The big risk is: to fail to deliver**. I already now see tendencies among a **frustrated, impatient, young generation** that if they cannot see the established system really starting to deliver some of the big structural change that is also needed, then I would feel we would end up in a **polarisation**.

Philippe Tulkens: **COPs have a taboo**, which is the sound debate on the economics of Climate Change. **There is no report on how much [Climate Change] has cost**, or how much it has benefited in economic terms.

Michel Rixen: Hopefully there is going to be a stronger **commitment** and consensus towards a solution. We have also the **Global Stocktake** around the corner, to assess progress. **And, I think - we are not ready**.

Rob McSweeney: It would be great for the **Article 6 rules to be agreed on**, on Carbon markets and other forms of international cooperation. That is the last piece of the **original Paris puzzle**.

Carlo Buontempo: **Climate is taken seriously in Europe, much than in other countries**. In that sense, I would like the next COP to be an **opportunity for Europe** and the U.K, to jointly play a major strategic role and take leadership.

Peter Braesicke: **The knowledge is there, the time is now. It would be really cool to see an acceleration of those structural changes in the energy sector, in the transport sector, so that people really see: something is happening, we are changing now.**

Thank you

to the speakers and the participants!

The 10 year anniversary event took place in stead of the ECRA General Assembly (due to the ongoing COVID-19 pandemic). ECRA has postponed this GA to the 8 and 9 March 2022, in Brussels, Belgium.

We are looking forward to seeing you there!

The conference theme will be:
Extreme events under climate change
– understanding, communicating, and managing the risks

For more information:
ecra-climate.eu/GA22

To receive updates on this event:
GA22@ecra-climate.eu

Upcoming events

Virtual EGU GA 2021

Online, 19-30 April

Advances in understanding of the multi-scale and multi-disciplinary dynamics of the Southern European Seas (Mediterranean and Black Sea)
Convener: Gianmaria Sannino, et al.
https://meetingorganizer.copernicus.org/EGU21/session/39708

Nordic Seas Heat Loss, Atlantic Inflow, and Arctic Sea Ice cover over the last century
Pico by Lars H. Smedsrud et al
https://meetingorganizer.copernicus.org/EGU21/session/40666

EMS Annual Meeting 2021

online, 6–10 September

From hazards to impacts: understanding the mechanisms behind single and compound climate events
Conveners: Martin Drews, Hilppa Gregow, Bart van den Hurk
https://meetingorganizer.copernicus.org/EMS2021/session/41250 / Abstract submission

Other things?

The **MiDi network** with **Isabelle LaJeunesse**, University of Tours, France, will organise the event "**Extreme events, water and environments" in May 2021**.

Due to COVID-19, the meeting will take place as a **webinar** (online) on **25-27 May 2021**. To facilitate an open forum of exchange, another event will be organised in **2022**, with the original format and place (in Tourse, France).

A number of talks will be organised; **Ralf Ludwig** (LMU, DE), **Elisa Palazzi** (ENEA, IT), **Martin Drews (**DTU, DK), **Hilppa Gregow** (FMI, FI), and **Peter Braesicke** (ECRA & KIT, DE) will all be presenting and hold a Panel Discussion.

Time: May 26, 14:00-16:30 CET

Registration is open, please contact the Secretariat for more information and to receive updates. The event homepage is https://ccw2021.sciencesconf.org/

EOSC

The European Open Science Cloud initiative

Here, we will **provide an overview of the European Open Science Cloud from an ECRA perspective.** ECRA is a network of Climate Researchers, and **where there is research, there is also data**. In particular in light of developments of **open science** and **open access,** we believe it to be an important task to **make sure that EOSC is widely known** and that networks like ECRA promote the possibilities that exist.

EOSC History

In 2015, the Commissioner for Research and Science of the European Commission announced[1] the new priorities of the Commission: "**Open Innovation, Open Science, and Openness to the World**." One year later, there was already a shared understanding of the **importance of data for research** and other applications (including the maximisation of "the **growth potential** of the European digital economy"[2]) - especially if data from all sources are freely accessible, understandable and usable. **Data comes from various sources, with different flavours, purposes, and underlying governances and structures**. With research (publications, data, software) becoming increasingly 'open access', the **European Commission suggested**[3] **the EOSC**, the European Open Science Cloud as a potential solution. It aims to "offer 1.7 million European researchers and 70 million professionals in science and technology a virtual environment with free at the point of use, open and seamless services for storage, management, analysis and re-use of research data, across borders and scientific disciplines"[4].

In 2018, the **EOSC Portal** was launched and can be seen as the central piece of the EOSC. It provides **access to existing data, open for researchers**. "The EOSC Portal is the result of the progressive integration and consolidation of e-infrastructure projects, with the help of Horizon 2020 funding. It started as a collective effort from the OpenAIRE, EOSC-hub, eInfraCentral and EOSCpilot projects building on the experience and technology of major pan-European e-infrastructures, universities and research infrastructures."[5] The site can be accessed now for networking, computing, storage, sharing and publishing data, on environmental, physical, weather, and other domains → https://www.eosc-portal.eu/eosc-in-practice/use-cases

EOSC values

The EOSC Summit[6] in June 2017 "marked the beginning [of the EOSC] process" by publishing the EOSC Declaration[7] with the following aims and steps:

- "the implementation of the EOSC is a process, not a project, by its nature iterative and based on constant learning and mutual alignment"[8].
- a common culture of data, open access by-default, rewarding research data sharing, skills and education in research data management, data stewardship and data science
- FAIR data - "Data that is Findable, accessible, interoperable and re-usable"; FAIR Data governance: inclusive stakeholder participation, based on a solid stakeholder engagement strategy, etc.

- **technical, semantic, legal and organisational standards**: global standards for open research data, as well as standards for EOSC based services for collaboration through the EOSC (e.g. to facilitate inter-disciplinarity and avoid fragmentation)
- **Research data repositories** (find, re-use, deposit and share, provision of DOI numbers), Accreditation and certification, Data Management Plans, Technical Implementation, Data expert organisations, etc.
- **Research data services and architecture**: "The EOSC will be developed as a data infrastructure commons serving the needs of scientists. (..) Indeed, the EOSC will federate existing resources across national data centres, European e-infrastructures (..) it will top-up mature capacity through the acquisition of resources at pan-European level by EOSC operators"[9].
- User needs: "a **one-stop-shop to find, access, and use research data and services from multiple disciplines and platforms**"[10]
- The **funding** of the EOSC comes from instruments of the European Union (Horizon 2020, Horizon Europe, Connecting Europe Facility (CEF), European Structural and Investment Funds (ESIF), European Fund for Strategic Investments (EFSI) and potentially other sources in the future[11].

OESC Governance

The Governance of the EOSC ensures **co-design and inclusion** of member states and other stakeholders. The Executive Board is responsible for implementation and coordination of efforts, and has advisory and an implementing role[12]. A Governance Board consists of member states and Commission representatives and is supervising the implementation of the EOSC. A Stakeholder Forum consists of organisations, projects and initiatives actively supporting the EOSC work. Further information and background can be found in the European Commission Staff Working Document Implementation Roadmap for the European Open Science Cloud.

READ MORE

To read the full version of this text, including a more detailed history of EOSC and information about EOSC-related projects, go to the ECRA homepage at
Insert link here

[1] A new start for Europe: Opening up to an ERA of Innovation, Press Release, European Commission, 22.6.2015. https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_15_5243 [2,3,4,11] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions: European Cloud Initiative - Building a competitive data and knowledge economy in Europe, 19.4.2016, page 3. Via: http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=15266 [5] European Open Science Cloud, Strategy document, 29.10.2020. https://ec.europa.eu/digital-single-market/en/european-open-science-cloud [6] European Open Science Cloud Summit, 12 June 2017, Brussels, Belgium, event page: http://ec.europa.eu/research/index.cfm?eventcode=44D86060-FBA1-1BD1-9355822B162BB0EE&pg=events [7,8,9,10,12] EOSC Declaration: New Research & Innovation Opportunities, 26.10.2017, p. 4. Via https://ec.europa.eu/research/openscience/pdf/eosc_declaration.pdf Illustration: own illustration (ECRA)

Science Update

Testing a simple formula for calculating approximate intensity-duration-frequency curves - If you need a very simple formula for downscaling IDF curves. Let us know if you want to test it for your countries. More information (ERL, Rasmus Benestad)

A thought on the WMO and its **set of global climate indicators**. It may need to be expanded to **include hydro-logical indicators**, such as the global amount of precipitation that falls on the earth each day, the global area of precipitation each day, and the mean precipitation amount falling over regions with rainfall (mean intensity). Today, these estimates can be derived from high-resolution (IFS) analyses and Copernicus ERA5 reanalyses. If you are interested in why these global indicators are important, Rasmus Benestad wrote a paper on it in ERL in 2019.

The **International Association of Geodesy** (IAG) has established "IAG Inter-Commission Committee on ‚**Geodesy for Climate Research**' (ICCC)". ICCC aims to optimise data such as earth rotation, gravity for the climate research community. Ingo Sasgen (CP-SLC) is co-leading the working group on **'Geodesy for the Cryosphere**'. For more information, contact us.

Ten-year return levels of sub-daily extreme precipitation over Europe
Benjamin Poschlod, Ralf Ludwig (both LMU, DE), and Jana Sillmann (CICERO, NO): (…) our data set shows good agreement with the observations for 3 to 24 h durations in large parts of the study area. However, for an hourly duration and topographically complex regions such as the Alps and Norway, we argue that higher-resolution climate model simulations are needed to improve the results. The 10-year return level data are publicly available (…) More information

To learn about CzechGlobe's research results, please have a look at their news section, in particular:
'Data from **CzechGlobe** ecosystem stations **helped to clarify the relationship between temperature and respiration of ecosystems**' (more information).

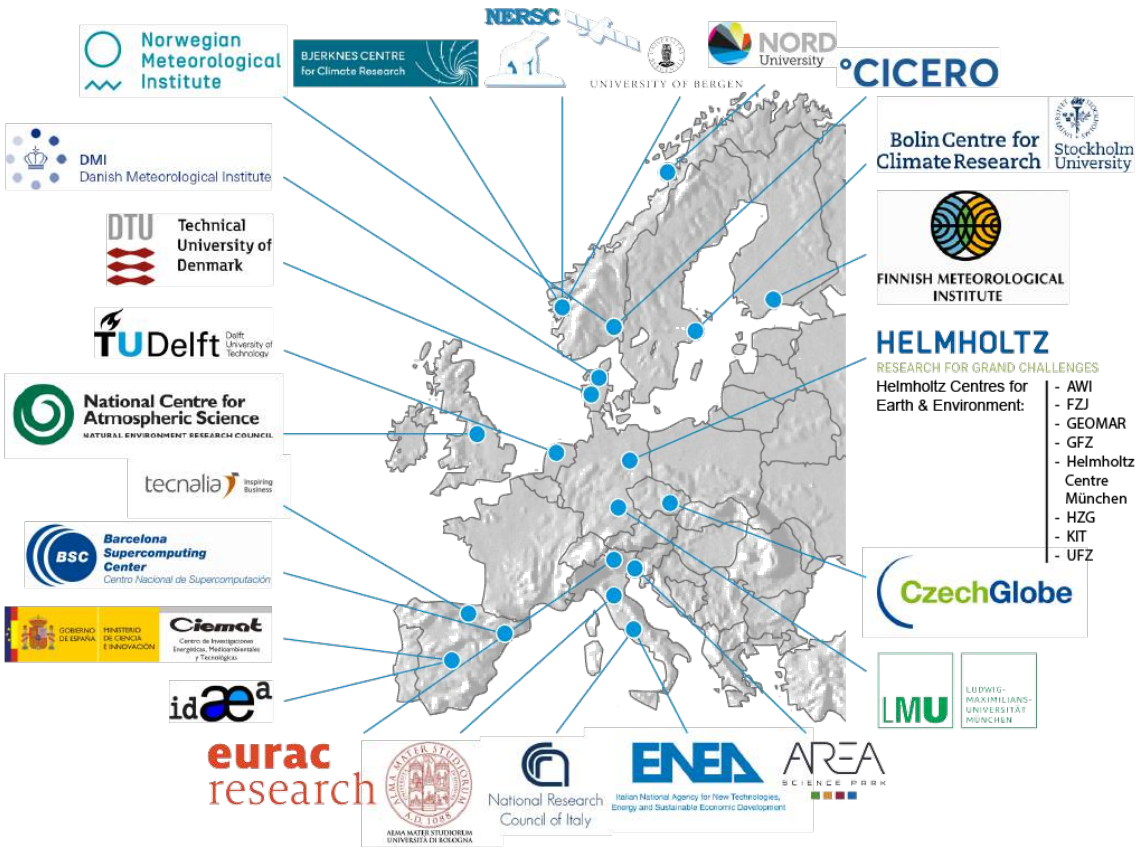
UN Decade for Ocean Science for Sustainable Development - Arctic Action Plan
The **United Nations Decade of Ocean Science for Sustainable Development** (2021-2030) ('Ocean Decade') represents a unique opportunity to rally global scientific and societal capacities towards addressing

pressing societal challenges for sustainable development. While the marine environment on planet earth may be viewed as one extended ocean, sustainable development consists of highly complex regional challenges spanning both environmental, economic and social dimensions. **Actions to address these challenges** therefore require coordinated **implementation** at global, regional and local levels, including **in the Arctic**.
Lars H. Smedsrud (ECRA Arctic Co-Chair) took part in the writing and discussions:
https://www.oceandecade.dk/

- Review article: **Sea-level rise in Venice**: historic and future trends
- Article: Return to **rapid ice loss in Greenland** and record loss in 2019 detected by the GRACE-FO satellites
- Centennial response of Greenland's three largest outlet **glaciers**
- Sea Level Rise and Coastal Impacts: Innovation and Improvement of the **Local Urban Plan for a Climate-Proof Adaptation Strategy**
- The ENEA-Reg system, a multi-component regional earth system model, sensitivity to different atmospheric components over Med-Cordex region

Contact us for more information

ECRA Partners



New co-lead

ECRA CP-ARC
European Climate Research Alliance
Collaborative Programme Arctic Climate Stability and Change

Thomas Bracegirdle

Atmospheric and Climate Scientist at the British Antarctic Survey (BAS)

ECRA welcomes Tom as new co-lead for our Polar Collaborative Programme!
His area of expertise is polar meteorology and climatology.
Read more about his profile on his homepage at
https://www.bas.ac.uk/profile/tjbra/

ECRA: **Knowledge for climate action**

For any questions...

European Climate Research Alliance

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