

Welcome to C5a Final Conference

19 May 2022
online and on site
in Karlstad, Sweden



C5a

Cluster for Cloud to Coast Climate Change adaptation

Interreg
North Sea Region
C5a

European Regional Development Fund



EUROPEAN UNION

Opening

Members Steering committee

Ambassadors group

The C5a team

Guests

Everybody online



Länsstyrelsen
Värmland



The Old Stone Bridge in Karlstad

**Thanks to Lansstyrelsen Värmland for organizing this
end conference of C5a !!**



Cloud2Coast

Cluster for **C**loud to **C**oast **C**limate **C**hange **A**daptation (C5a)

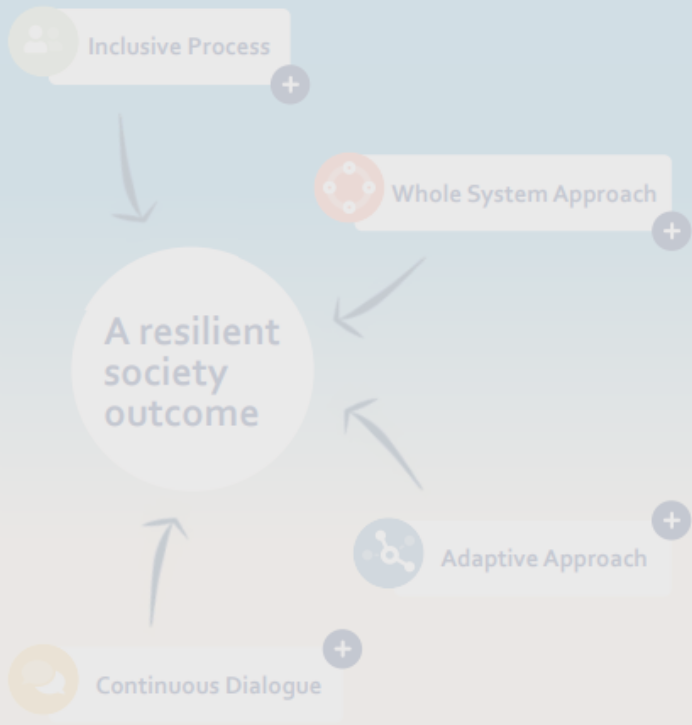
Enabling greater innovation in the adaptation to climate change and managing flood impacts.

Think proactively

Four priority recommendations are presented to support the optimal implementation of the Cloud2Coast approach in practice.

• C5a..

- 1  Focus on place-making, not flood risk alone
- 2  Plan across scales and disciplinary boundaries
- 3  Collaborate and compromise to deliver inclusive outcomes
- 4  Embed "the push" of science and "the pull" of policy



Act proactively

Mainstreaming guidelines to integrate the Cloud2Coast approach into existing governance structure and policy domains.

- Programmatic
- Managerial
- Intra-organisational
- Inter-organisational
- Directed

Developed and validated through real world case studies and supported by tools.







C5a partners



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- Three year project (2019-2022)
- Interreg North Sea Region Programme



Plan proactively

The application of the Cloud2Coast approach starts by adopting its four pillars.

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Four priority recommendations are presented to support the implementation of the Cloud2Coast approach:

- Three year project (2019-2022)
- Interreg North Sea Region Programme
- 10 Partners across the North Sea Region

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Cluster for **C**loud to **C**oast **C**limate **C**hange **A**daptation (C5a)

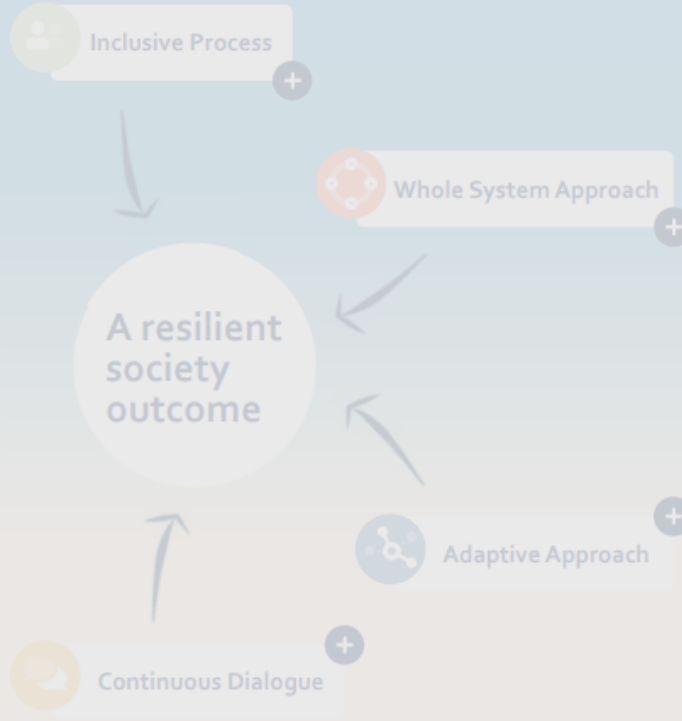
Enabling greater innovation in the adaptation to climate change and managing flood impacts.

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Four priority recommendations are presented to support the optimal implementation of the Cloud2Coast approach.

• Aim..

- 
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Enabling greater innovation in the adaptation to climate change and managing flood impacts.

Think proactively

Four priority recommendations are presented to support the application and implementation of the Cloud2Coast approach.

- To achieve this aim C5a developed the **Cloud2Coast approach**

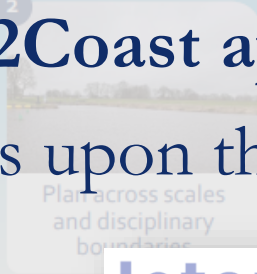
- Builds upon the outcomes of seven Interreg NSR project

1



Focus on place-making, not flood risk alone

2



Plan across scales and disciplinary boundaries

3



Collaborate and compromise to deliver inclusive outcomes

4



Embed "the push" of science and "the pull" of policy



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Toolbox



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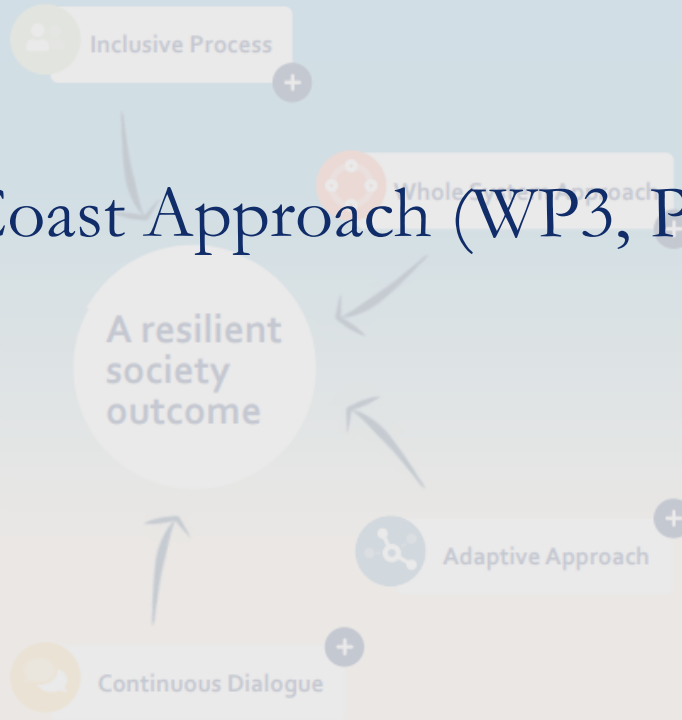
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• PLAN: Cloud2Coast Approach (WP3, Paul Sayers)



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Plan across scales and disciplinary boundaries
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Collaborate and compromise to deliver inclusive outcomes
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Embed "the push" of science and "the pull" of policy

Inclusive Process

Whole Systems Approach

society outcome

Adaptive Approach

Continuous Dialogue

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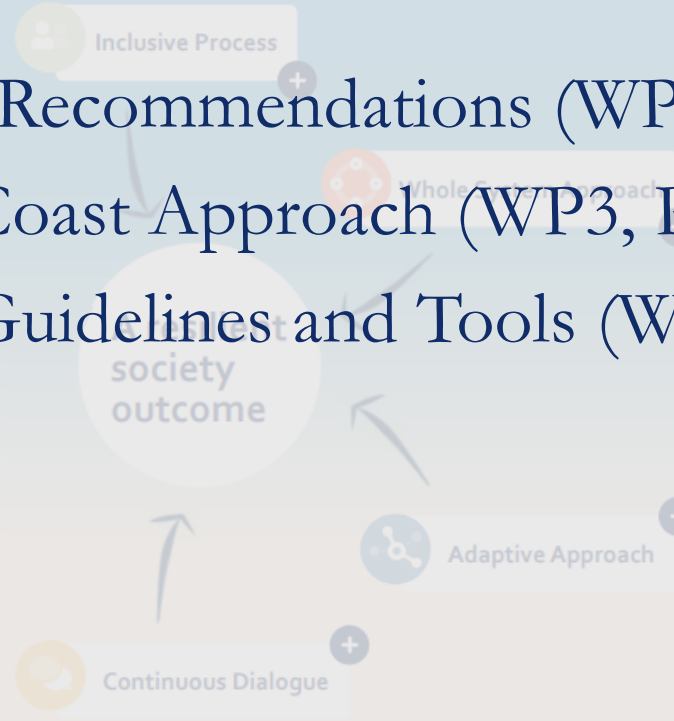
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Act proactively

Mainstreaming guidelines to integrate the Cloud2Coast approach into existing programmes and policies:

- Programmatic
- Inter-organisational
- Directed
- Intra-organisational

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C5a partners




Cloud2Coast


Cluster for Cloud to Coast Climate Change Adaptation (C5a)


Enabling greater innovation in the adaptation to climate change and managing flood impacts.


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Plan proactively

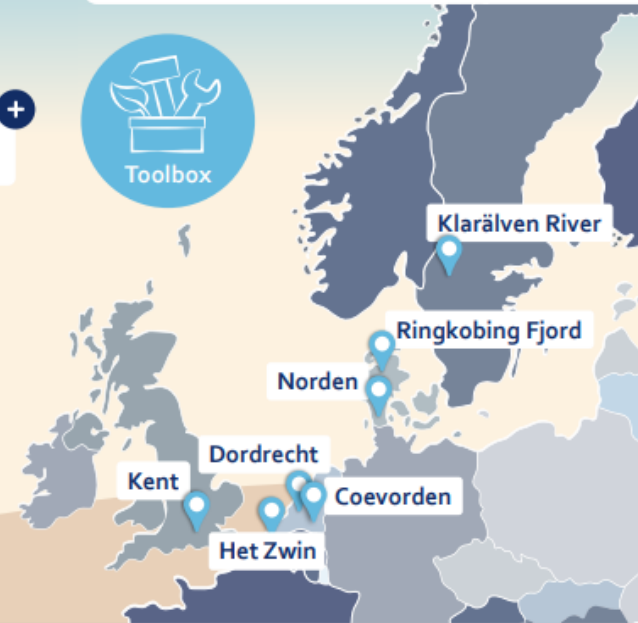
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C5a partners



How did it start..

- Challenge: Increasing intensity of floods in response to climate change
- Flood management approaches need to adapt
- A project that wants to deliver an approach that is both evidence-based and practical



Berry Gersonius



Interreg
North Sea Region
European Regional Development Fund



Paul Sayers



Egon Baldal



February 2019, Brussels

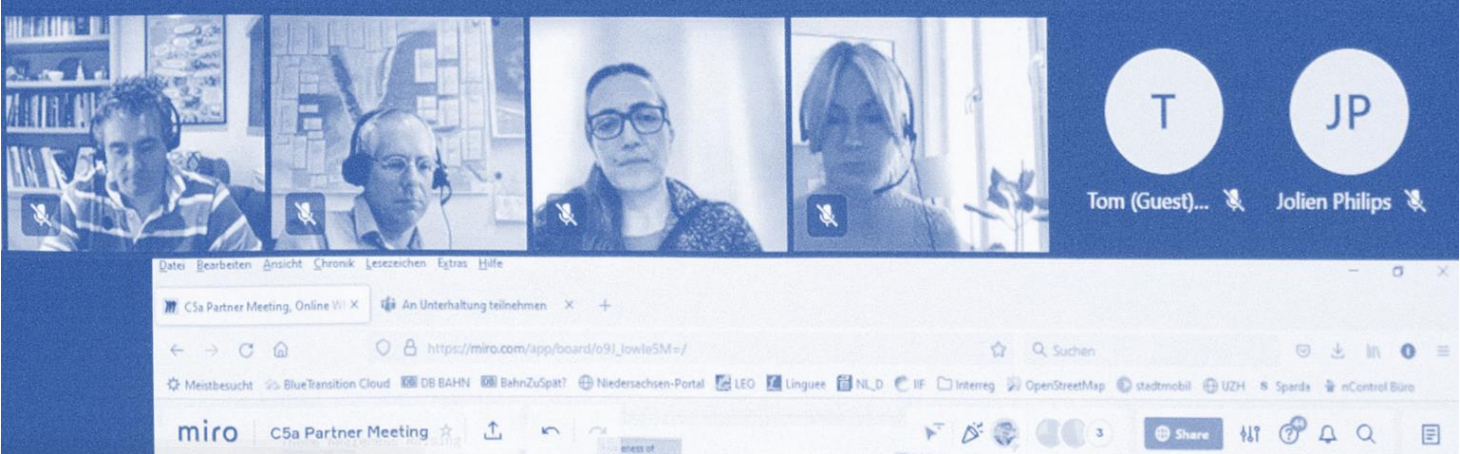


Our journey started..

Putting the symbolic puzzle together is a nice start...

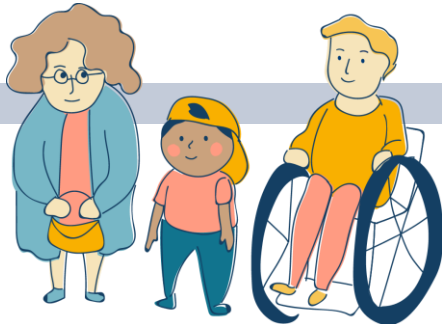


But how do the pieces fit together.. ?



Bringing the puzzle together

- Present our work today at this end conference
- See the results on the website (WP2, Catrin Hasewinkel)



Cloud2Coast

[About](#)

[Approach](#)

[Into Practice](#)

[Into Policy](#)

[Into Stakeholder Actions](#)

[Case Studies](#)

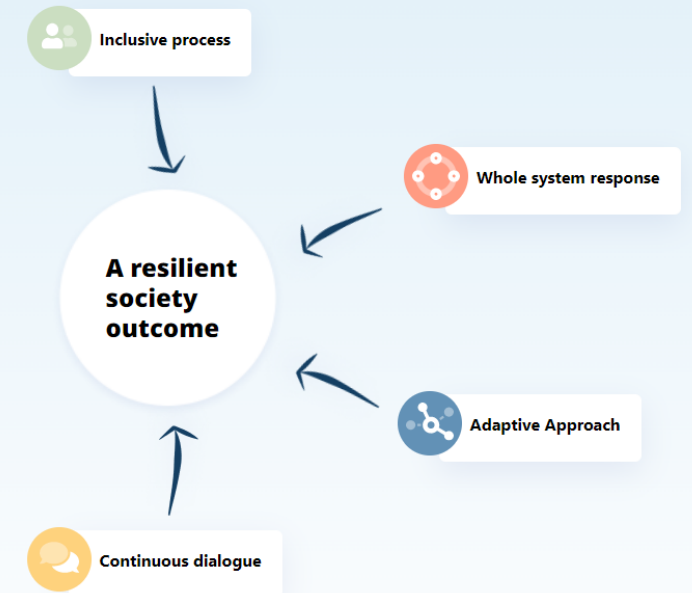
[Tools](#)

A Resilient Society Outcome

The Cloud 2 Coast Approach is an approach that has been developed within the C5a project. It promotes the adoption of a whole-system and long-term perspective to climate change adaptation that is purposeful, collaborative and builds on the principles of social justice, ecosystem health and resilience.

The Cloud 2 Coast Approach is aiming for a resilient society outcome.

[Read More About The Approach](#)



Approach

The Cloud 2 Coast approach has been developed within the C5a project. It promotes the adoption of a whole-system and long-term perspective to climate change adaptation that is purposeful and collaborative.



Inclusive Process



Whole System Approach



Adaptive Approach



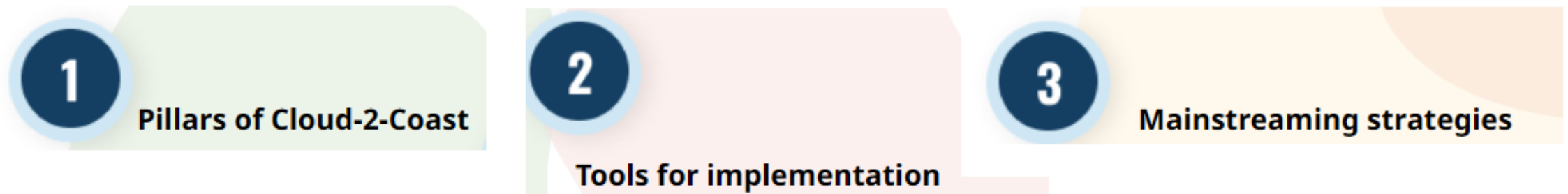
Continuous Dialogue



Into Practice

Practical guidelines are essential to put the Cloud-2-Coast approach into practice. These guidelines target local and sub-national regional organizations that are responsible for climate change adaptation.

The C5a guidelines consist of three complementing categories:



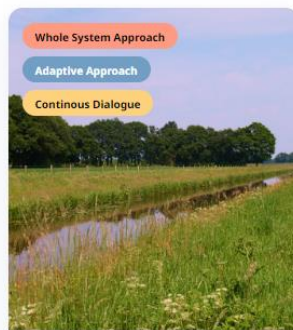
Into Practice

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seven case studies



 Denmark
Ringkøbing Fjord



 Netherlands
Weijerswold



 Netherlands
City of Dordrecht



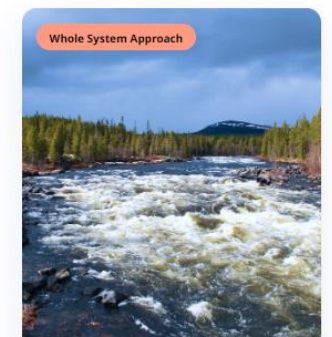
 Belgium
The Zwin



 England
Kent



 Germany
**Lower Saxony
mainland coast**



 Sweden
**River Klarälven,
Värmland**

Into Policy

All over Europe, there are increasing economic and social disparities between places and between people along with environmental risks and pressures. A new Territorial Agenda has been prepared to limit inequalities, which seeks to promote an inclusive and sustainable future for all places and to help achieve the Sustainable Development Goals (SDGs). This agenda emphasises that concerted action at all geographical and governance levels is needed to deliver inclusive outcomes. This points to the need to better understand and address territorial impacts of sector policies, including flood management policy.



More details

The C5a project has produced a Policy Brief with four priority recommendations to support the uptake and implementation of the Cloud-to-Coast approach in practice. These recommendations enable the consideration of risks and opportunities across the whole-system (from Cloud to Coast) and promote multi-level governance arrangements and mechanisms in support of a flood resilient society and the delivery of SDGs.

Want to know more? Visit our website [northsearegion.eu...](https://northsearegion.eu)

Agenda

Thursday 19 May

Venue: Scandic Winn, Norra Strandgatan 9-11 Karlstad

The meeting is also online between 9.00-12.30

Moderator: *Max Hansson, University Lecturer, Centre for Societal Risk Research at Karlstad University*

09.00 Welcome and Opening Remarks

09.00 Opening – *Matthijs Boersema, Project Leader C5a, Ministry of Infrastructure and Watermanagement, NL*

09.10 Welcome to Värmland – *Katarina Nordmark, Head International Secretariat, Värmland County Administrative Board, SE*

09.15 C5a puzzle – *Stanford Wilson, Advisor Flood Risk Management*

09.25 Why C5a? – *Jenny Thomsen, Project Advisor, NSR*



09.30

Towards Climate Resilience in the NSR

09.30

Keynote talk – Climate Mitigation Lessons for Adaptation –
*Avit Bhowmik, Assistant Professor of Risk and Environmental Studies at
Karlstad University, SE*

09.45

Cloud2Coast Approach – Paul Sayers, Sayers and Partners, UK

10.15

Panel Discussion – led by Paul Sayers
Kate Kipling, Environment Agency, UK
Monique Busnach, RWS, NL
Merete Løvschall, DCA, DK
Silke Mollenhauer, OOWV, DE
Katarina Nordmark, Värmland, SE

10.30

Coffee Break



Approach

The Cloud 2 Coast approach has been developed within the C5a project. It promotes the adoption of a whole-system and long-term perspective to climate change adaptation that is purposeful and collaborative.



Inclusive Process



Whole System Approach



Adaptive Approach



Continuous Dialogue



Welcome to Värmland

Katarina Nordmark, Värmland County Administrative Board

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Other logos and text visible in the collage include: Vlaams Gewest Administratieve Raad, Ministry of Environment and Food of Denmark Central Authority, midt Central Denmark Region, NLWKA, SAVERS AND PARTNERS, provincie Drenthe, Kent County Council, Flanders Environment Agency, Flanders State of the Art, and UNIVERSITY OF TWENTE.



Why C5a?

From link:

Why C5a? – Jenny Thomsen, Project Advisor, NSR





Why C5a?

Jenny Thomson, Project Advisor NSR



Towards Climate Resilience in the NSR





**CLIMATE CHANGE ADAPTATION
HOW WE CAN ACT
RAPIDLY, DELIBERATELY AND OPTIMALLY**

AVIT BHOWMIK



**KARLSTADS
UNIVERSITET**

**EXPONENTIAL
ROADMAP**



CRS

A woman with brown hair, wearing a blue scarf and a patterned dress, is wading through floodwaters. She is carrying two large white shopping bags, one with 'it' and the other with 'SWI' visible. In the background, a person in a blue and white uniform is standing near a brick building and a green bush. A grey barrier is visible on the right side of the image.

Why don't we ACT?



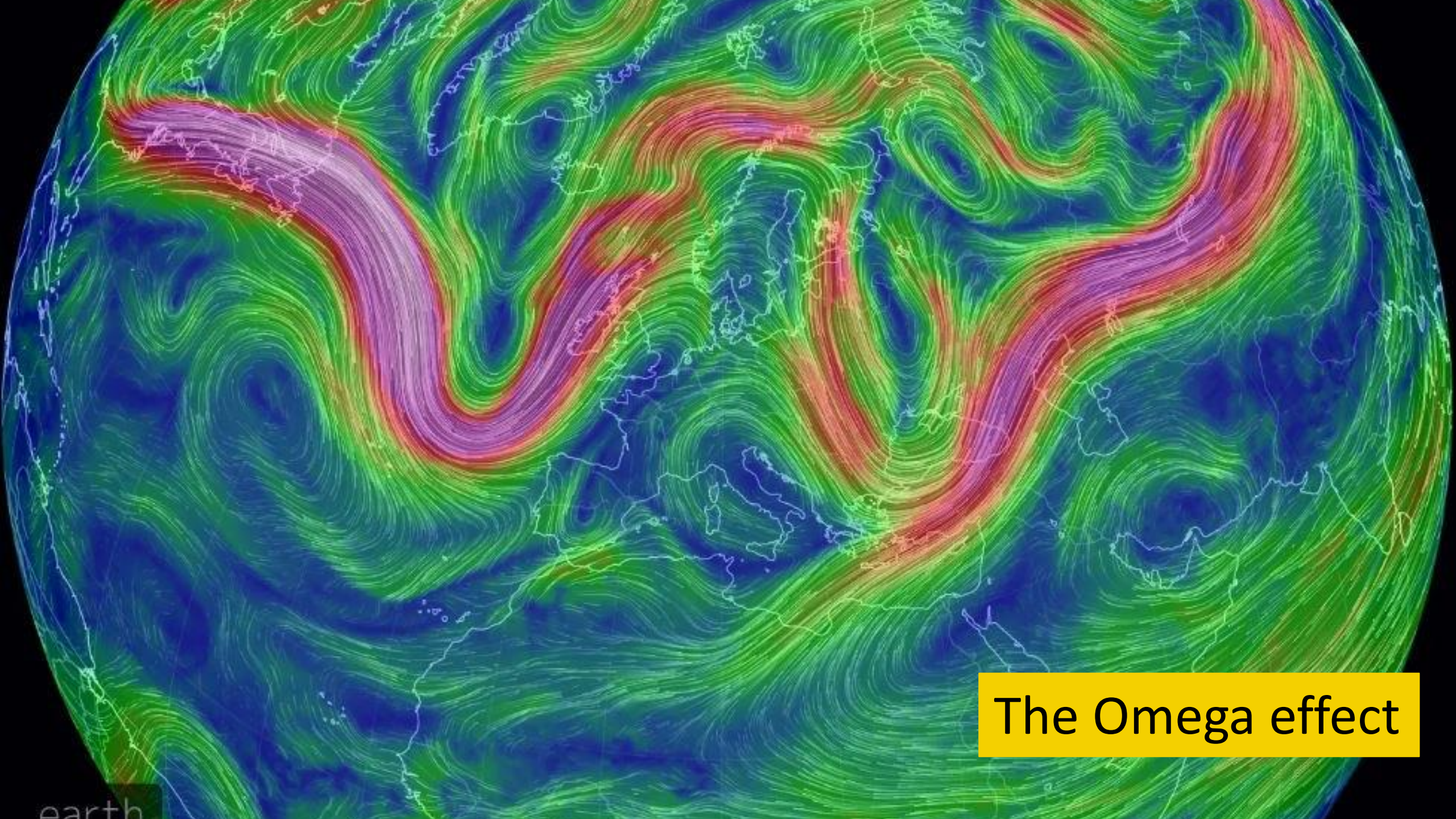
Unprecedented impacts



Climate tipping points

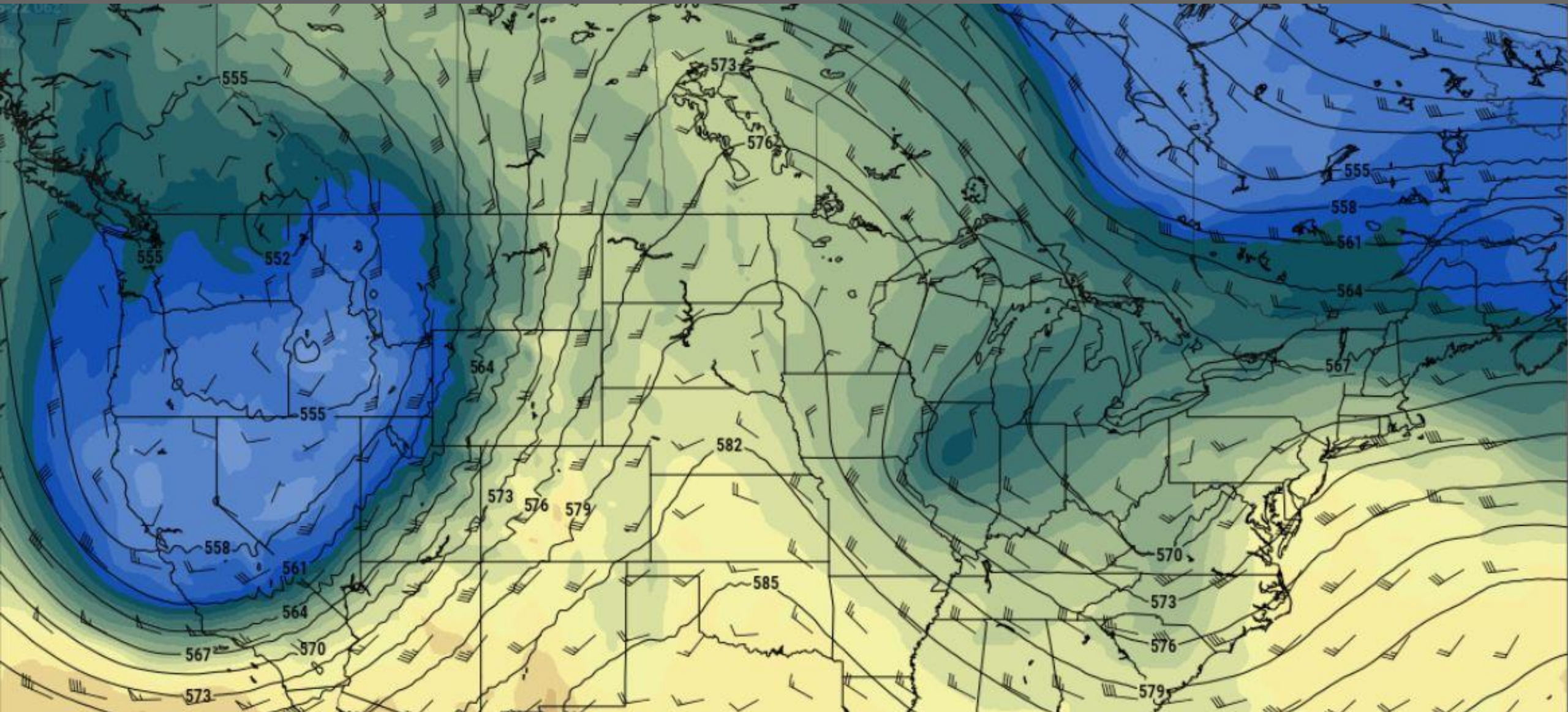


The Jet Stream



The Omega effect

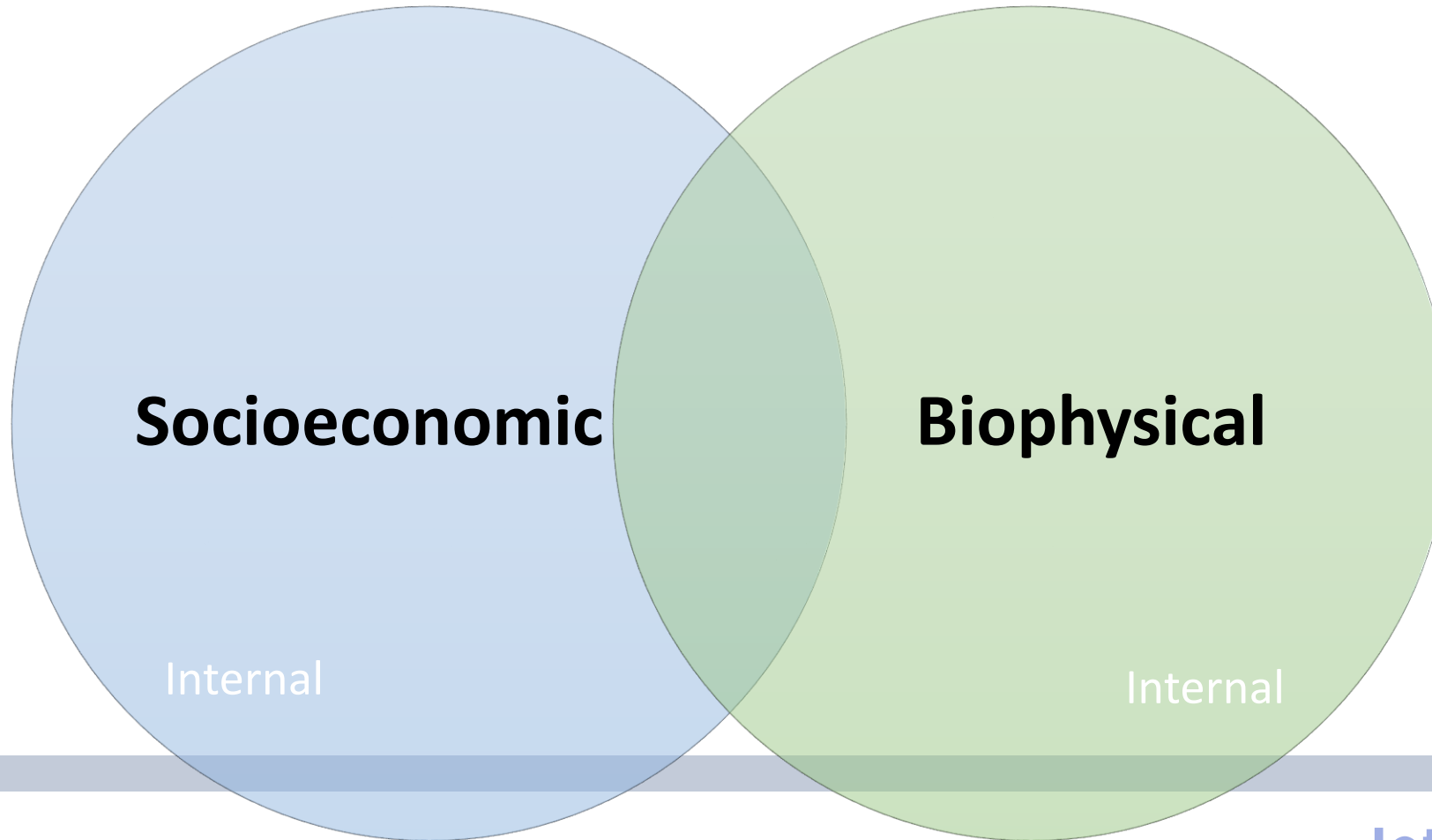
The lock-ins of precipitation





Distant and Discounted Future

Spheres of vulnerability and action





Apathetic Narratives

Apathetic Narratives

Debatt

Professorer: Agera innan den smygande klimatkrisen blir akut

Behovet av ökad motståndskraft mot klimatrisker tenderar att hamna i konflikt med kommunernas strävan efter tillväxt. Detta kan få långtgående effekter när den smygande klimatkrisen omvandlas till en akut händelse, skriver professorerna Mikael Granberg och Lars Nyberg.

Publicerad: 14 september 2021, 05:00

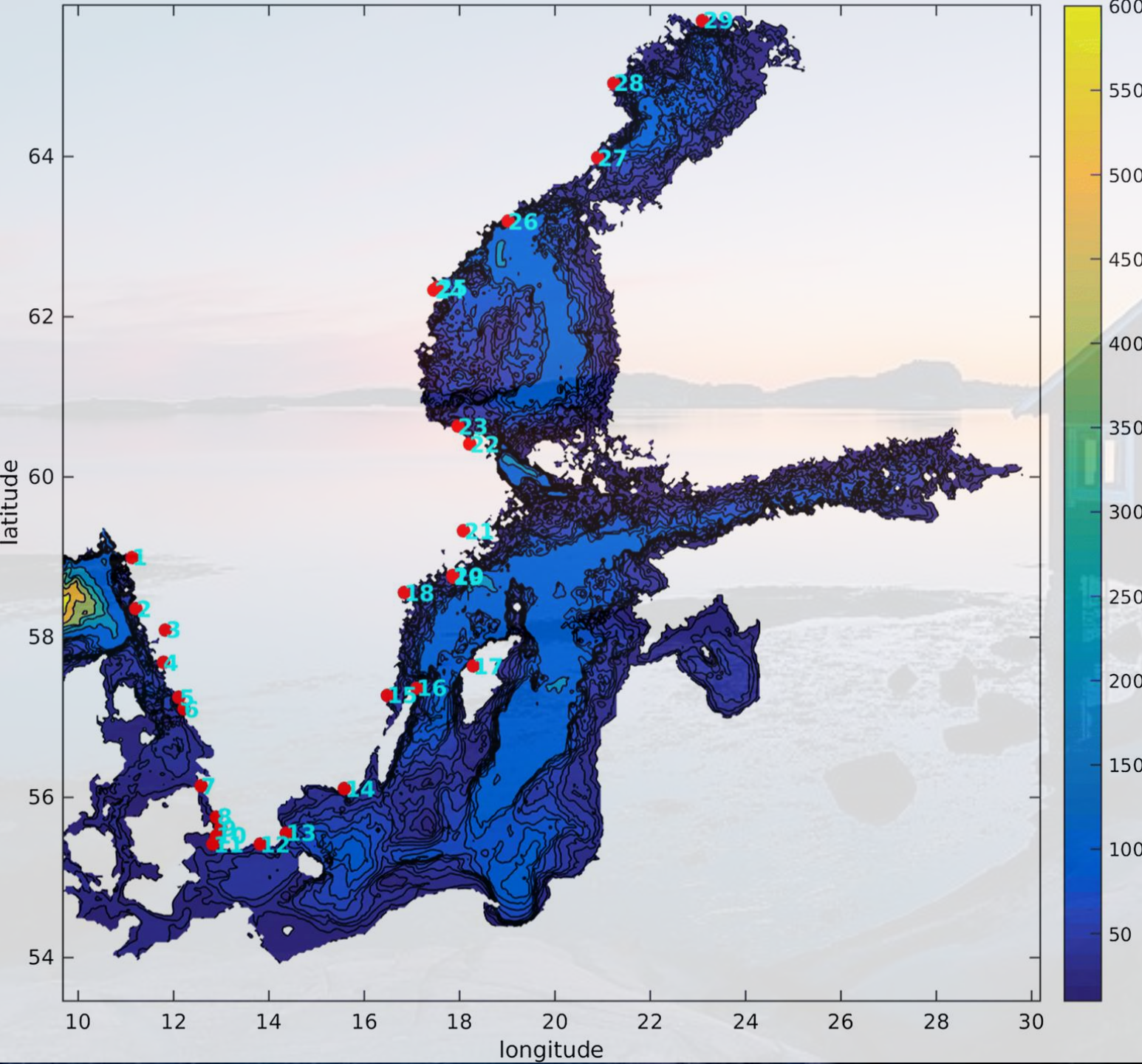


”Klimatförändringarna kan uppfattas som en krypande kris i den meningen att effekterna är långvariga, lågintensiva och gradvis ökande,” skriver debattörerna.

Foto: Fredrik Sandberg/TT, Pressbilder

The image features a dark, night-time view of the Earth from space. A complex, glowing blue network of fiber-optic cables is superimposed over the planet's surface, connecting various landmasses and extending into the surrounding space. The network consists of numerous thin, bright blue lines that form a dense web, with some thicker lines representing major data routes. The Earth's surface is visible as a dark, textured sphere with some city lights and satellite tracks. A prominent yellow horizontal band runs across the middle of the image, containing the text 'The future'.

The future



Arctic summer sea ice

Mean sea level
change up to 44cm

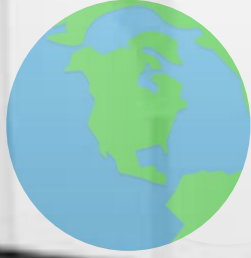
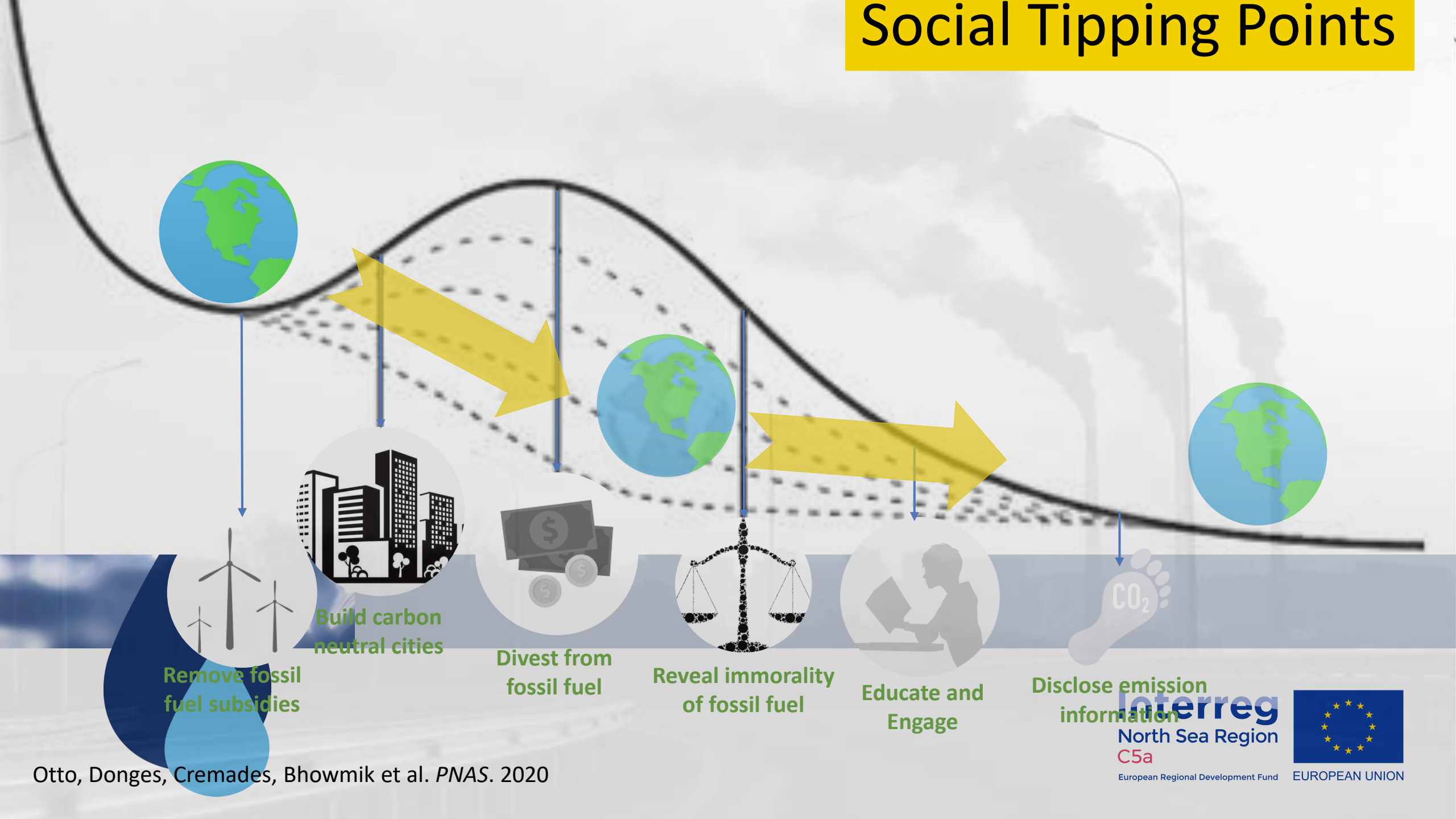
Time for extreme
changes halved



Prepare for the worst

- Early warning
- Preparedness
- Infrastructure

Social Tipping Points



Remove fossil fuel subsidies

Build carbon neutral cities

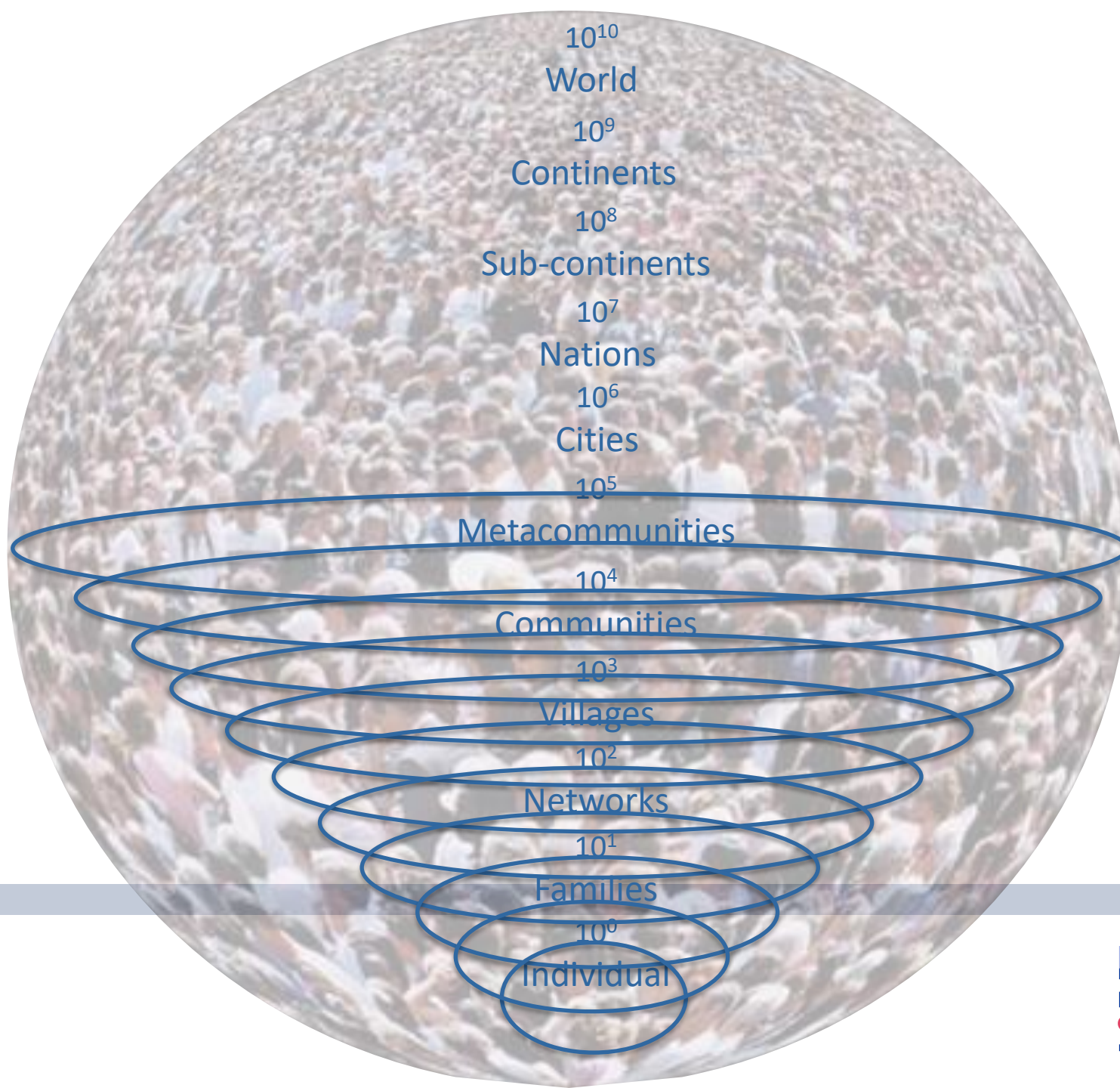
Divest from fossil fuel

Reveal immorality of fossil fuel

Educate and Engage

Disclose emission information

Action
at the
sweet
spot



Powers
of 10



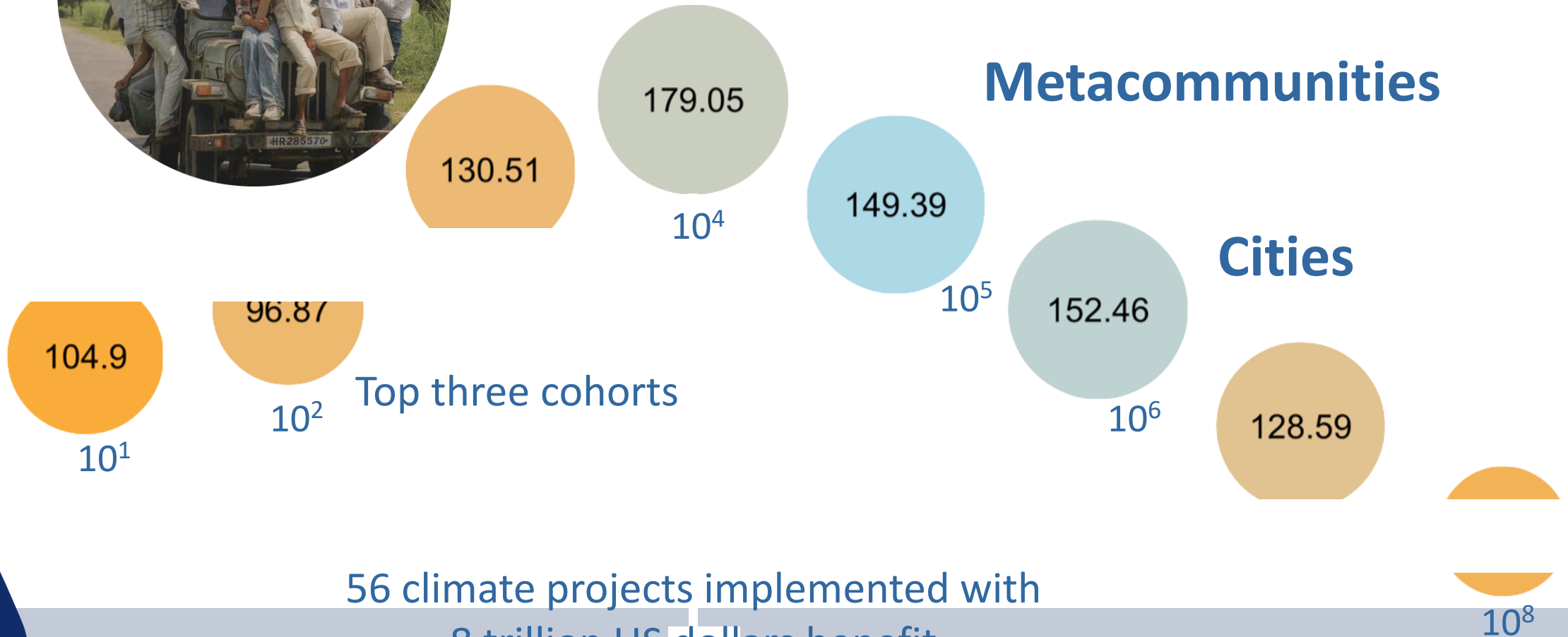
Action at the sweet spot



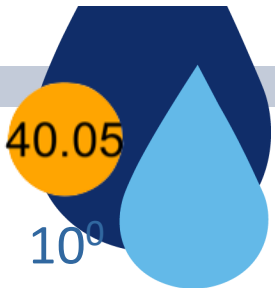
Communities

Metacommunities

Cities



56 climate projects implemented with
8 trillion US dollars benefit



Opportunistic narratives



Prosperity

Clean air

Atmos-fear to
Action

Recreation

Livability



Clean water

Cost-effective

Interreg
North Sea Region
C5a





rapid, deliberate and
optimal climate action

A Cloud-2-Coast approach to climate adaptation End Event

Karlstad, Sweden
May 18, 2022



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Cluster for Cloud to Coast Climate Change adaptation

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C5a
European Regional Development Fund



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Outline

- Why a Cloud-2-Coast Approach
- The basics of the approach
- Finding out more



Why Cloud-to-Coast?



Philosophical motivation

'Would you tell me, please, which way I ought to go from here?' said Alice

'That depends a good deal on where you want to get to' said the Cat.

Alice's Adventures in Wonderland, Lewis Carroll (1865)



Empirical motivation

- Single, local action and conventional built infrastructure does not always work.
- A **new approach is needed** to manage risk in a changing world whilst safeguarding other outcomes we value; healthy ecosystems and social well-being.

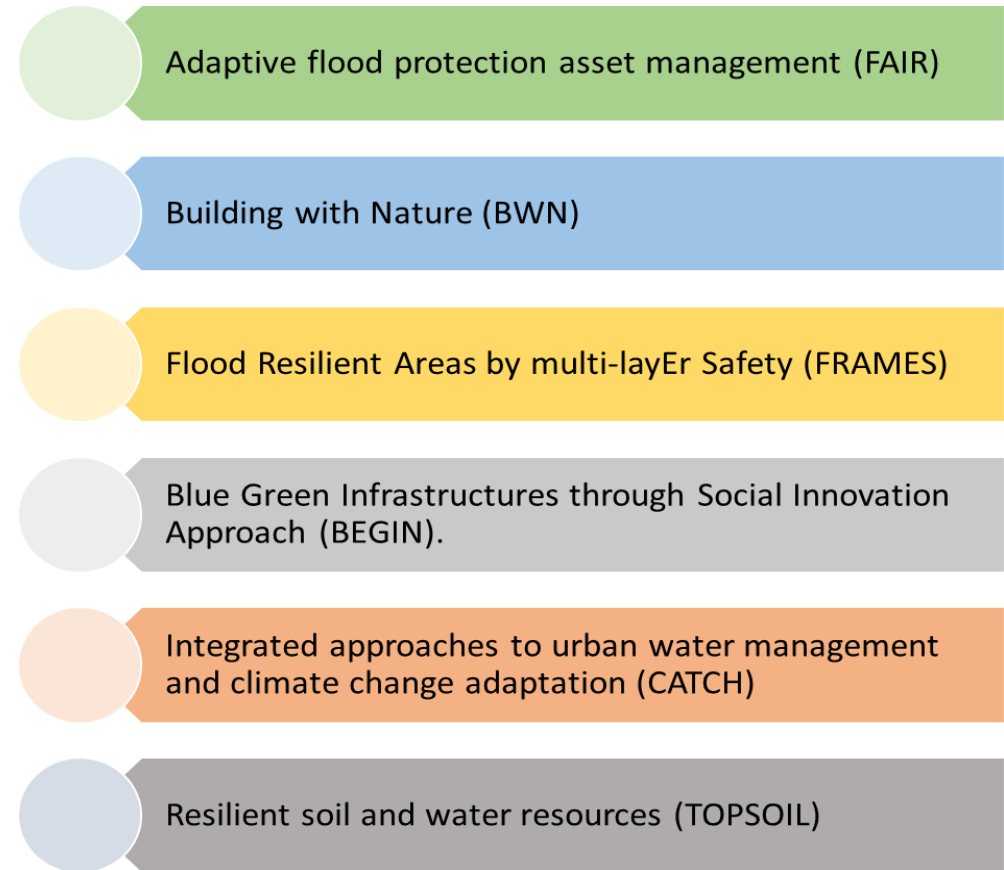


Basis of the C2C

- The aim is to enable “**Cloud-to-Coast adaptation**” that is:
 - **Purposeful** and **collaborative**
 - Promotes **social justice**, **ecosystem health** and **resilience**.



Draw knowledge from all of these projects – the concepts, the tools and the understanding



Supporting projects

....its tricky....

- there is no blueprint of the 'right' solution – place-based solutions are needed

....**but**

- common challenges exist and common concepts and practice have been shared



Credit: Paul Sayers from Samphire Hoe/White cliffs countryside project

Discussion 1 - What do you understand by 'resilience' in a practical sense?



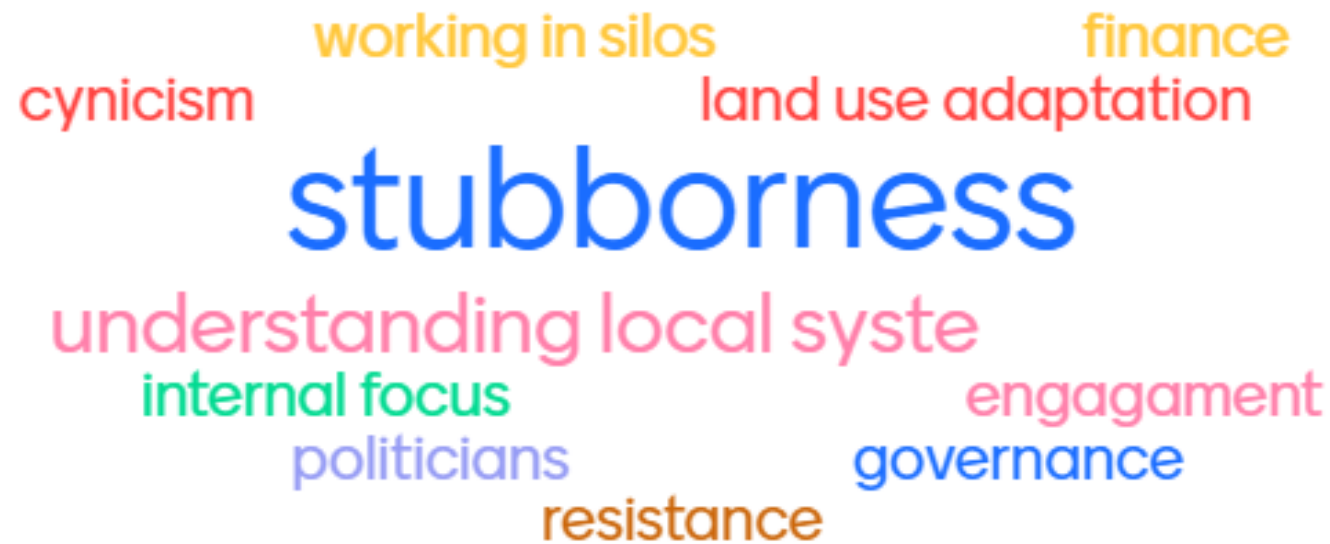
Multiple definitions?..
Resilience is fundamentally 'intuitive'...
All these aspects are part of it

Go to www.menti.com and use the code 74 03 19

The code lets your audience join the presentation. It expires in 2 days.

 Mentimeter

Question 2 – What issues present the greatest challenges to achieving resilience in practice?



The Cloud-2-Coast approach

.....adaptation looks different in different places.....the approach however has some common attributes

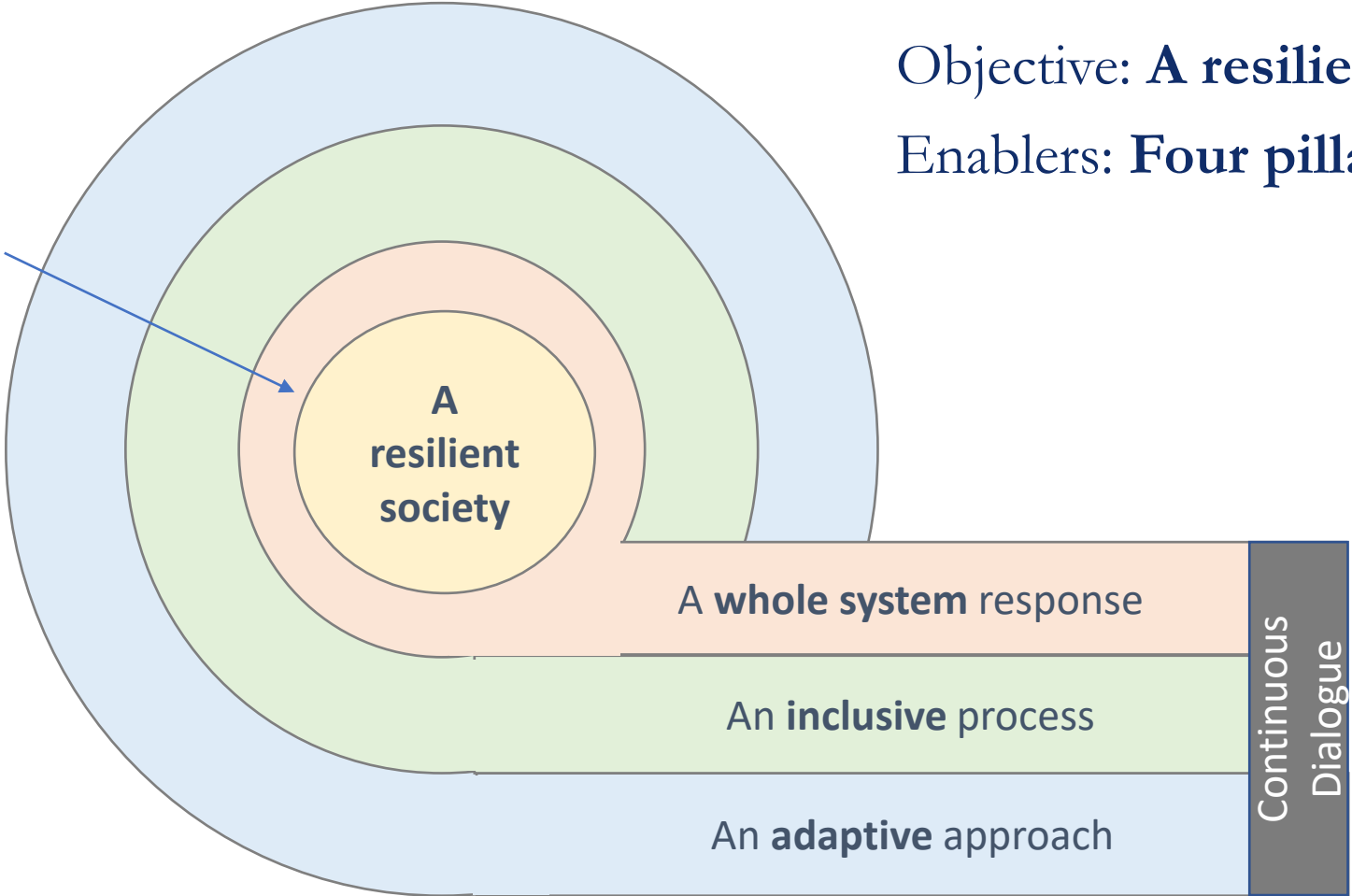


Cloud-to-Coast Framework

Resilience is seen as an outcome of society that is:

- Appropriately prepared
- Appropriately protected
- Capable of adapting
- Capable of transforming

Objective: **A resilient society**
Enablers: **Four pillars**



Cloud-to-Coast: An adaptive approach



'Decisions taken today will have a profound impact on the size of flood risks that future generations will need to manage. They will also strongly influence the options available for managing those risks' (Foresight Future Flood Study, Evans et al., 2004a,b).

Explore the future

How might it be different from today? What are the opportunities and risks?
How do we reduce the risks and realise the opportunities? Where and when are the key decision points?



Cloud-to-Coast: An adaptive approach

Explore the Future

Making adaptation happen in practice – four core ingredients



Conceive

- Collaborate
- Innovate
- Think 'whole system'
- Think 'long term'
- Consider 'uncertainty'



Visualise

- Storyline and Scrollytelling
- Dynamic adaptive pathways
- Decision trees



Appraise

- Real options
- Info-gap methods
- Robustness
- Valuing adaptive capacity



Promote

- Awareness of the challenge
- Understanding of the strategy
- Conviction to act



Cloud-to-Coast: An inclusive process



To identify and embrace complexity, we should not merely look at the physical components of the system.

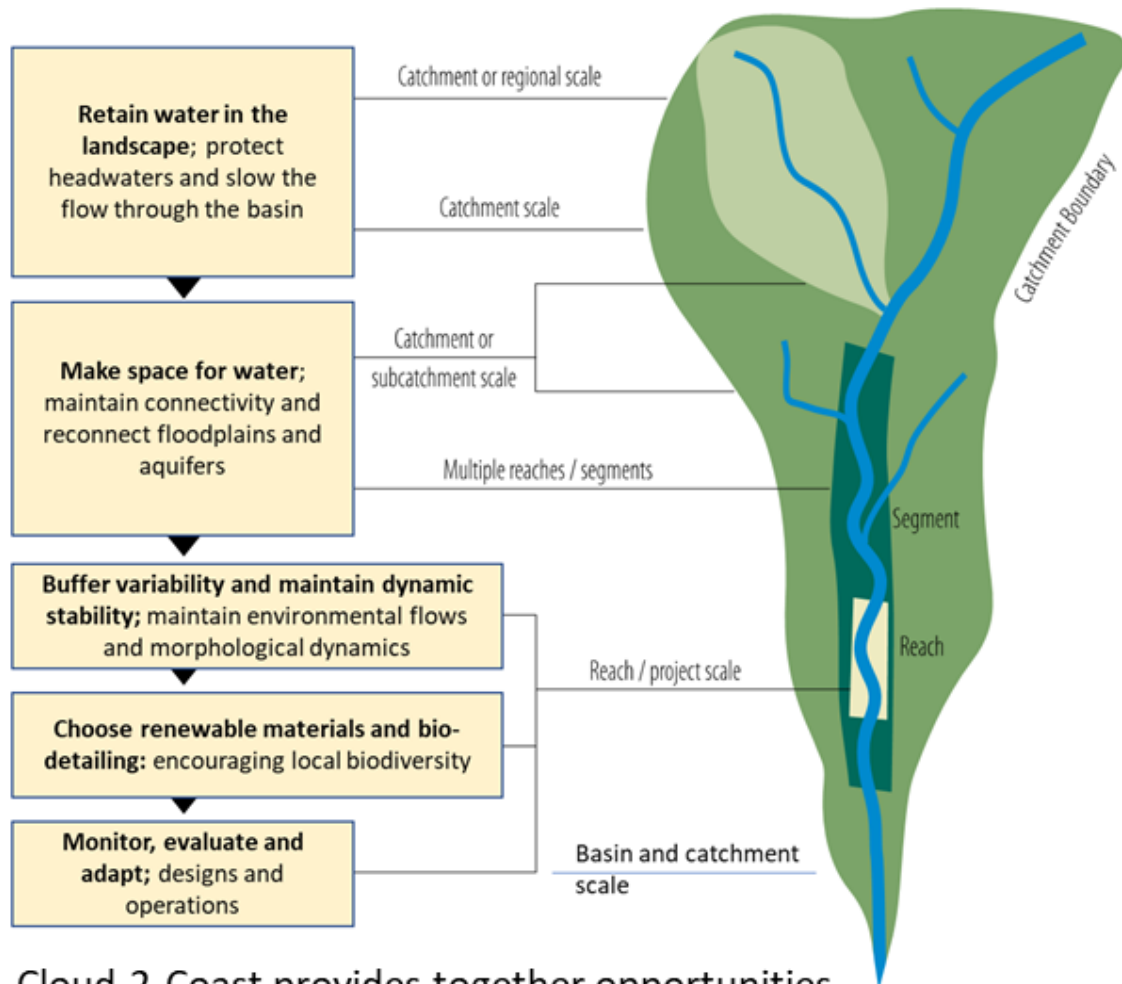
People, with their livelihoods, jobs and leisure activities, are inseparable parts of the system.

Inclusive is more than 'including'
Are all those that may be impacted or have a role to play in the future management appropriately involved?
Is their involvement purposeful and meaningful; to them and to you?
Are the risks for the **most vulnerable** well managed?



Cloud-to-Coast: A whole system response

In physical terms



Cloud-2-Coast provides together opportunities work with natural process (after Sayers et al., 2020)

A whole system response requires us to challenge our own 'silo' and become 'system thinkers'

Nature-based approaches are central weapons in a system thinkers arsenal.

In conceptual terms

"When we try to pick out anything by itself, we find it hitched to everything else in the Universe." John Muir

Challenge and agree – what is the appropriate whole system?

Develop a **common understanding** of the physical extent of the system

Are there significant interactions across these boundaries? If so, consider again? **Record your decisions.**

What are the time bounds of the system?

Cloud-to-Coast: A continuous dialogue



Enabling mutual learning and through an iterative process of deliberation approaches to evolve, priorities to change and collaboration to strengthen.

Future decisions will need to be made
Putting in place mechanisms for co-learning and understanding of how will future choices be made; who will make them, and the plans evolved

Access the detail of insights...



Summary infographic...

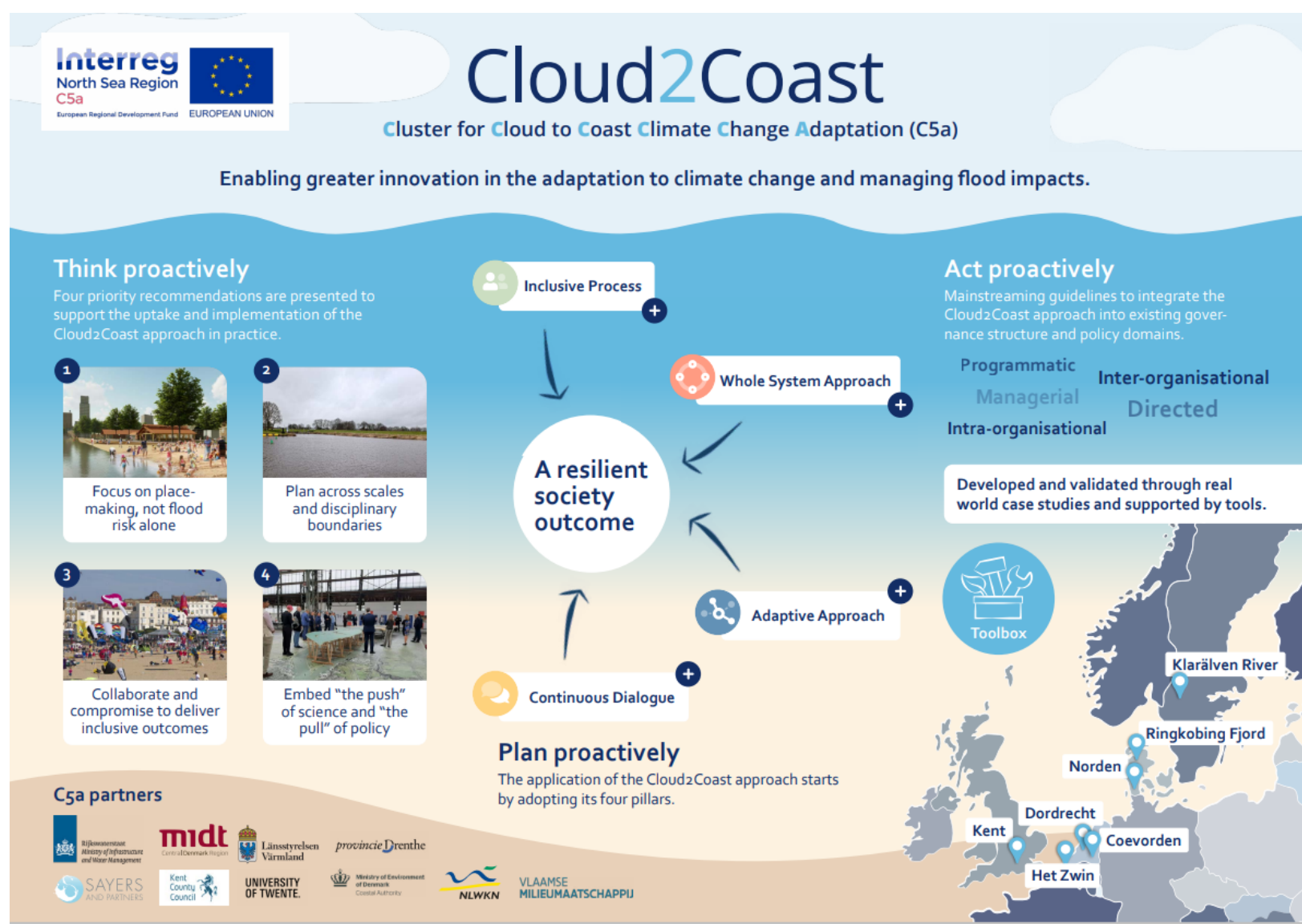
- **Think**
- **Plan**
- **Act**

Plus an interactive website of

- **Concepts**
- **Guidance**
- **Tools**
- **Case studies**



www.C5aCloud2Coast.eu



Thank you!

Paul Sayers paul.sayers@sayersandpartners.co.uk





Panel Discussion

led by *Paul Sayers*

Kate Kipling, Environment Agency, UK

Monique Busnach, RWS, NL

Merete Løvschall, DCA, DK

Silke Mollenhauer, OOWV, DE

Katarina Nordmark, Värmland, SE



Coffee Break
10.30-11.00





Cloud2Coast in Practice



Panel Session: Paul Sayers Cloud-2-Coast in Practice

Whole System
And
Adaptative



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Whole System

Why?

- In a connected world – understanding how flood hazards and risks are generated is a pre-requisite to understanding how they should be managed

How?

- **Beware the bear trap...** *Everything is hitched to everything* **but** not everything is material in the choices we make. Source-Pathway-Receptor framing enables the practical whole systems to be developed.

What have we learnt through C5a?

- A whole risk understanding can unlock decisions; making progress faster not slower



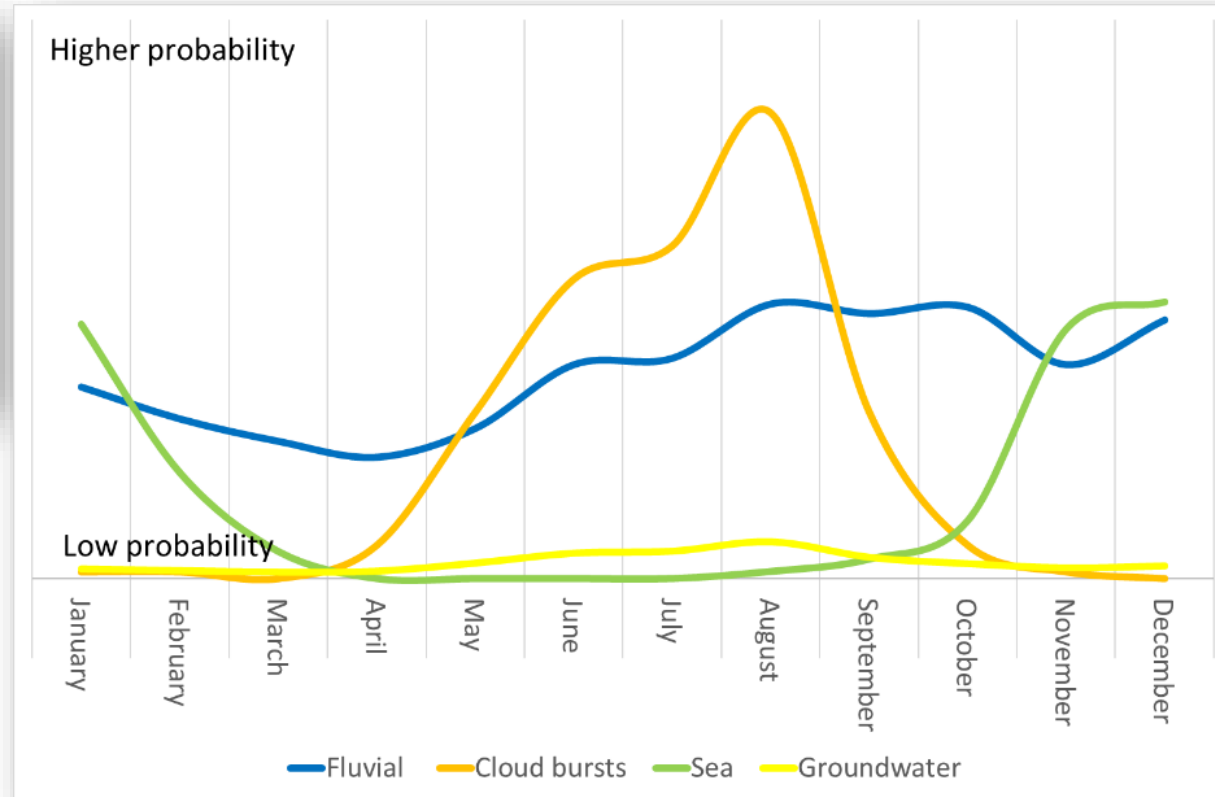
Whole physical system

Multiple sources of flooding in Ringkøbing, Denmark

Source: DCA



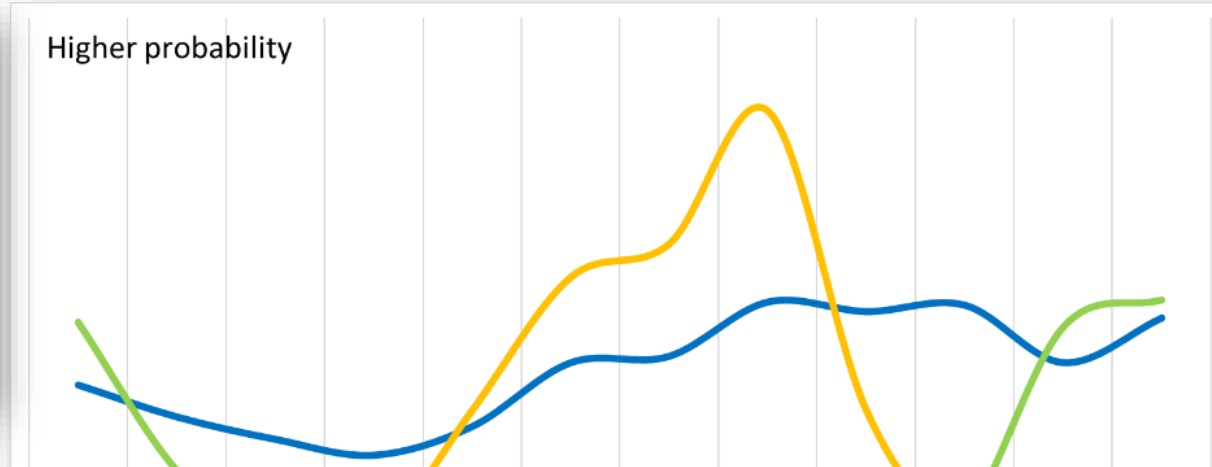
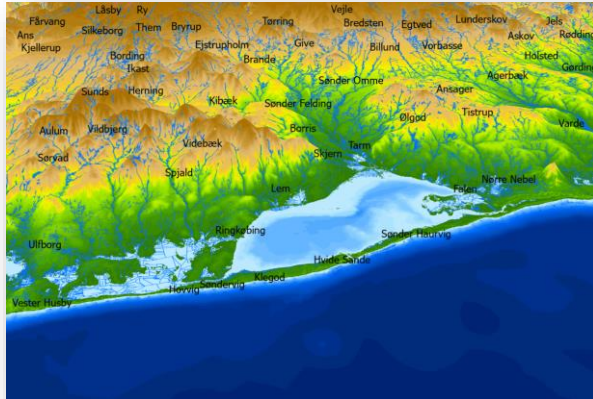
Understanding the interaction between sources



Whole physical system

Multiple sources of flooding in Ringkøbing, Denmark

Source: DCA



Helps to
breakdown silos in
their management

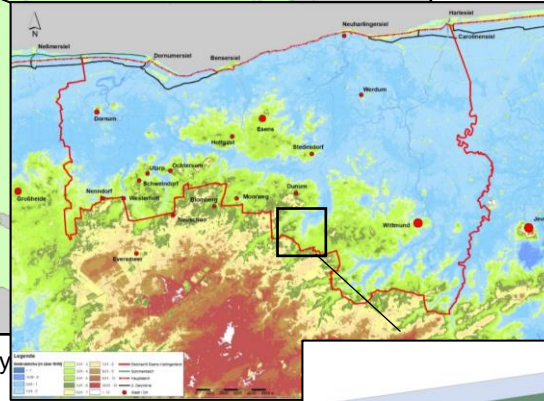
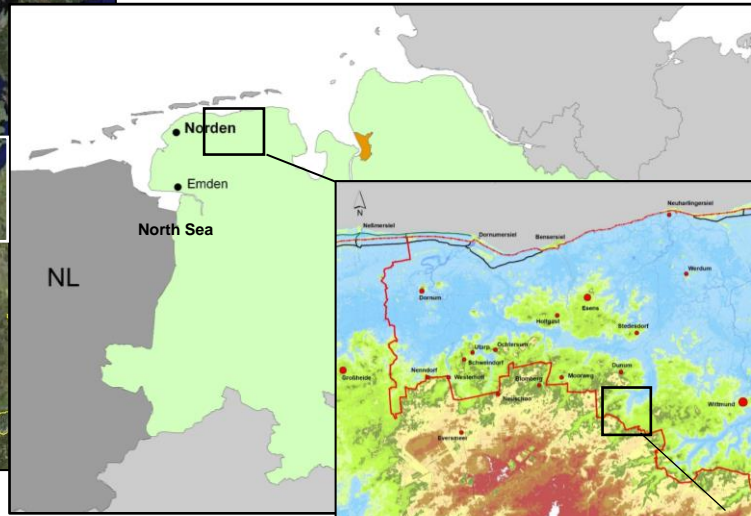
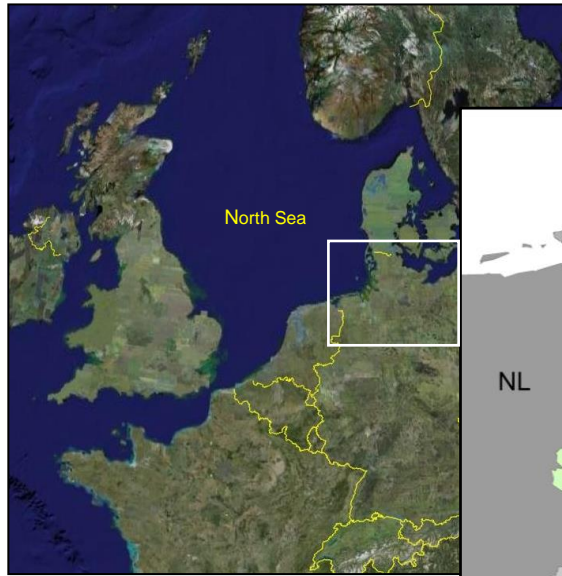
Sea	Rivers	Ground water	Cloud bursts
RKSK municipality	Storm council	RKSK municipality	Utility company
Storm council	Landowners	Danish rail	Infrastructure owners
Emergency responders	Naturkraft	Citizens	Emergency responders
Hvide sande port	Insurance companies	Pumping organizations	
Ringkøbing port	Farmer organization	Infrastructure owners	
Fishing organizations (4)	Hotel Fjordgården	Insurance companies	
Landowners	RKSK museum	Farmer organization	
Insurance companies	Bundsæk windmill	Rural council	
		Utility company	



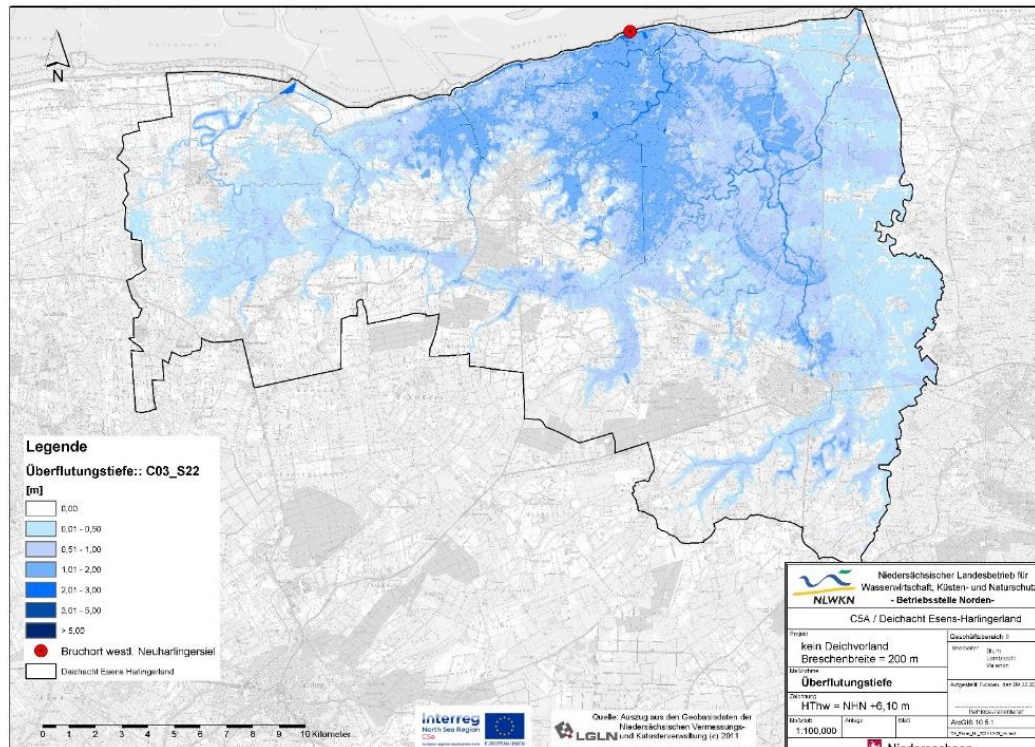
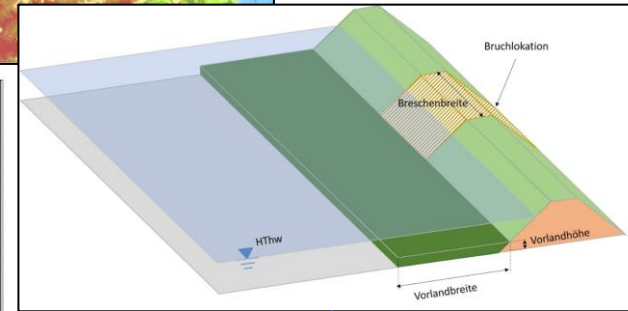
Whole physical system

Nested scales of system understanding – Lower Saxony, Germany

Understanding dyke failure influences dyke management but also spatial and emergency planning decisions.



Lower Saxony



Whole System and Adaptation

Why?

- The future is not yet known – we have an idea but do not know for sure.

How?

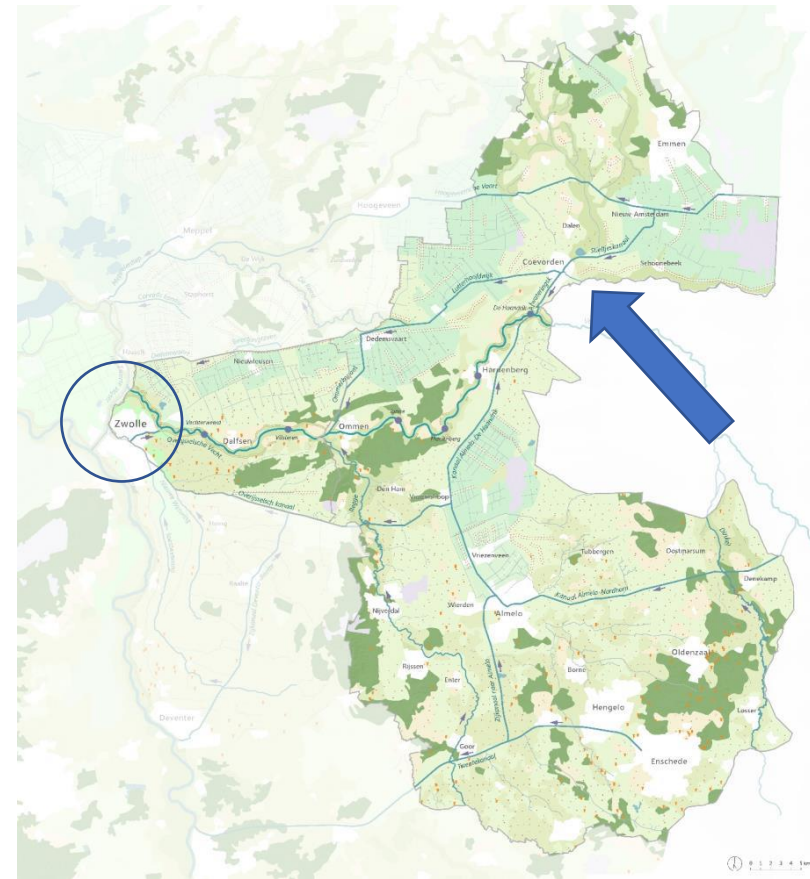
- Develop plans that are sufficiently firm to enable action (where needed), but sufficiently flexible to respond to changing needs

What have we learnt through C5a?

- Adaptation is fundamentally a people thing, not a technical endeavour.
- Tools can help explore the future to encourage working beyond traditional silos.



Adaptation - is not just about local actions but making appropriate choices throughout the system



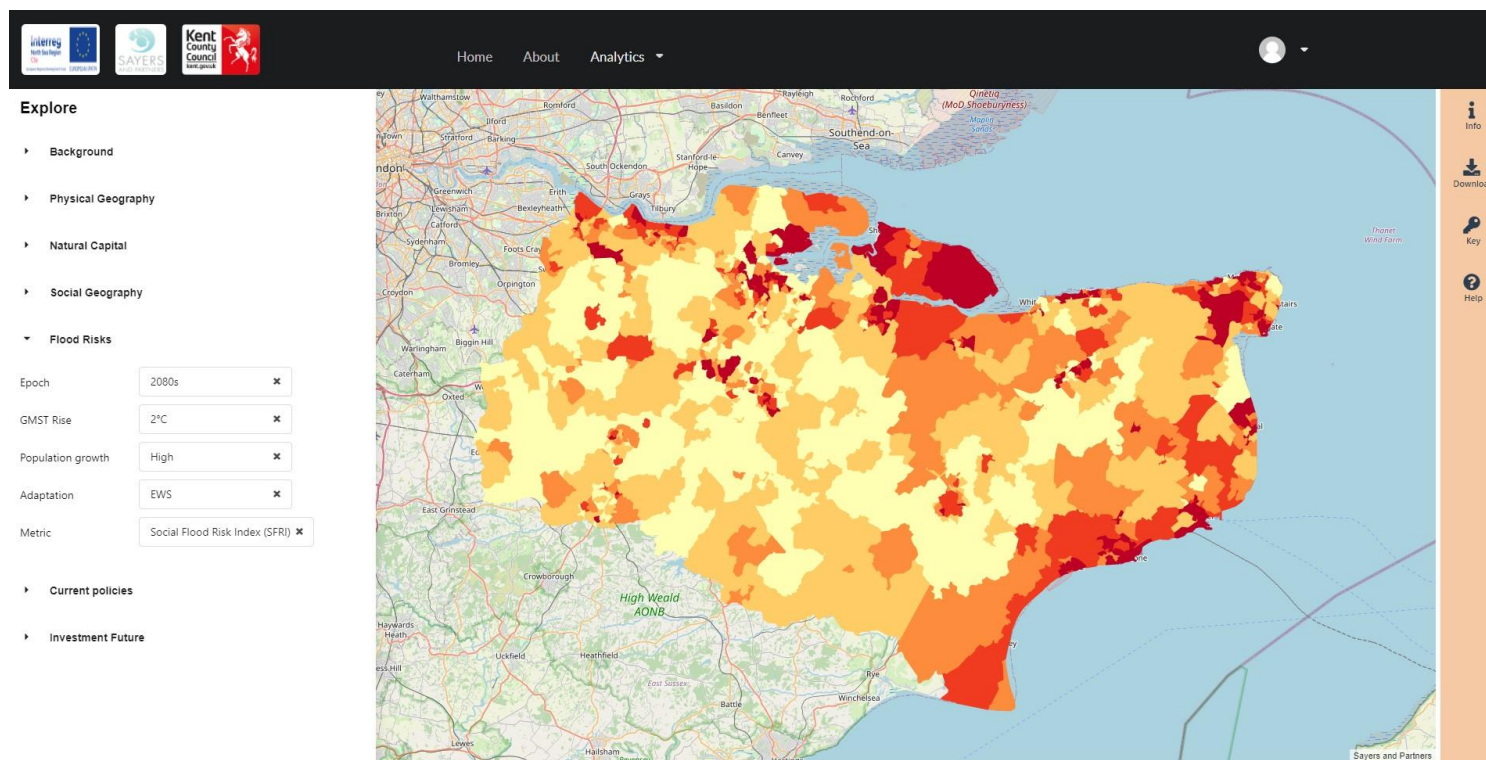
Left: Klarälven River poses flood, erosion and landslides challenges, requiring a joined up adaptation response – in space and time

Right: Floodplains of Coevorden are part of the river Vecht system



Whole risk system

Understanding present and future risks and the benefits and costs of alternative adaptation choices, Kent, UK



Source: SPL/KCC

Exploring the future – Kent



Case Study Leads - Panel Discussion

Kent, UK

Paul Sayers – SPL

Tom Henderson - KCC

Ringkøbing-Denmark

Per Soerensen, DCA

Drenthe, Netherlands

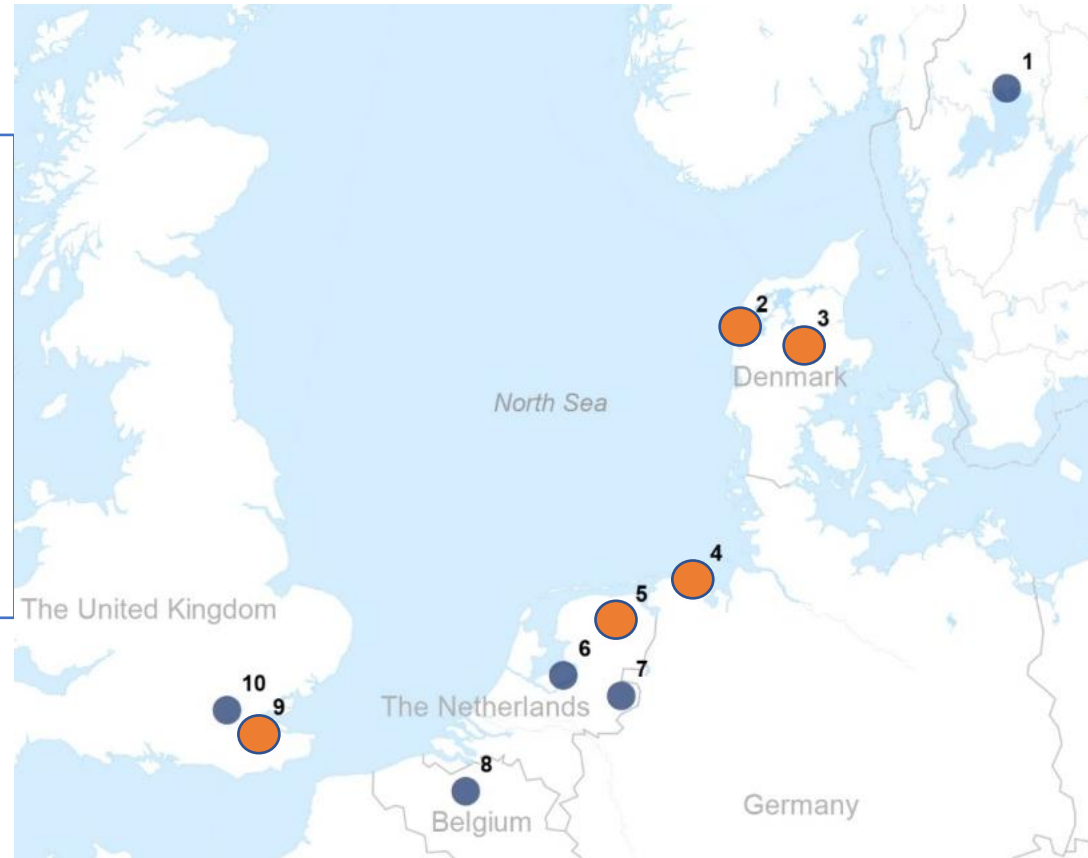
Rinke van Veen, Drenthe

Varmland, Sweden

Karin de Beer, Lansstyrelsen

Lower Saxony, Germany

Holger Blum, NLWKN



Pillars: Whole System and Adaptive Approach

- Pillars: Whole system and adaptive approach
 - Video from case study – 2-3 mins [Case study C5a, Ringkøbing Fjord - YouTube](#)
 - Presentation introduction (Paul) – 5 min
 - Panel discussion + interaction online – 20 mins

Case study leads in the panel: Kent (Paul replacing Tom), Drenthe (Rinke), Sweden (Karin not joining), NLWKN (Holger). DCA (Per)



Pillars: Inclusive Process and Continuous Dialogue

- Pillars: Inclusive process and continuous dialogue
 - Video from case study (Dordrecht) – 2-3 min [C5a Case study - City of Dordrecht - YouTube](#)
 - Presentation introduction ([Gül](#)) – 5 min
 - Panel discussion + interaction online - 20 mins

Case study leads in the panel: Dordrecht (Myrthe), Zwin (Jolien), Denmark (Per)



Panel Session Cloud-2-Coast in Practice

Inclusive process and
continuous dialogue



C5a





Cluster for Cloud to Coast Climate Change adaptation

Interreg
North Sea Region
C5a
European Regional Development Fund



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Inclusive process

-  Stakeholder relationships that limit participation and cooperation, such as lacking or different interests (Klarälven, Kent, Ringkøbing-Skjern, Weijerswold) and unclear responsibilities (Lower Saxony, Weijerswold and Ringkøbing-Skjern).
-  Lack of awareness and interest from the grassroot level. (Ringkøbing-Skjern)
-  Addressing multiple climate issues, such as flood, drought and water quality, through the involvement of large stakeholder groups and the use of a common language. (Weijerswold and Ringkøbing-Skjern)
-  Showing the whole organization that Cloud-2-Coast approach has benefits for all work areas, so that they realize that they need each other and seek each other out. (Klarälven)



Continuous dialogue

- 🔗 Responsibilities, interests and objectives about climate adaptation differ between the departments of the same organization. (Weijerswold and Het Zwin)
- 🔗 Difficult to maintain in the long run (beyond C5a) without a champion / process manager of the cooperation. (Dordrecht)

- ✿ Science-policy integration to sustain dialogue and incorporation into practice. (Dordrecht, Klarälven and Lower Saxony)
- ✿ Innovative agreement on the management of the area that existed years before the works. (Het Zwin)



Ringkøbing-Skjern Municipality, Denmark

*Danish Coastal Authority and
Central Denmark Region*

Per Sørensen



Het Zwin Nature Reserve, Belgium and the Netherlands

Flanders Environment Agency

Jolien Philips



Dordrecht City, The Netherlands

Rijkswaterstaat

Myrthe Leijstra





Transition to Policies

*Stevie Swenne, Head International Cooperation,
Flanders Environment Agency (BE)*





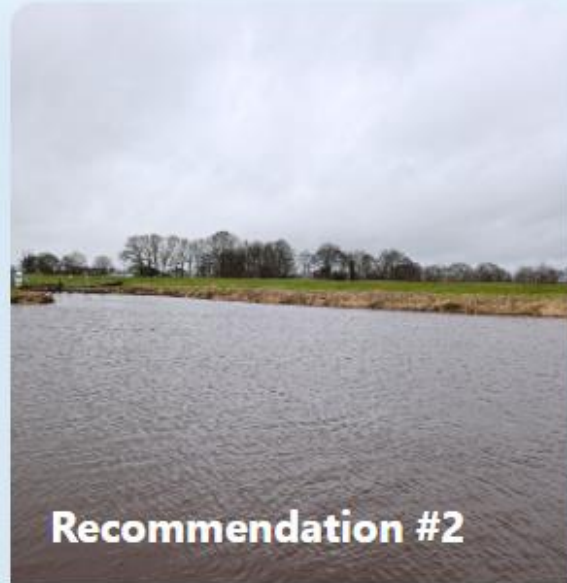
Recommendation #1

**Focus on liveability,
not flood risk alone**



More details

Recommendation #1



Recommendation #2

**Plan across scales and
disciplinary
boundaries**



More details

Recommendation #2



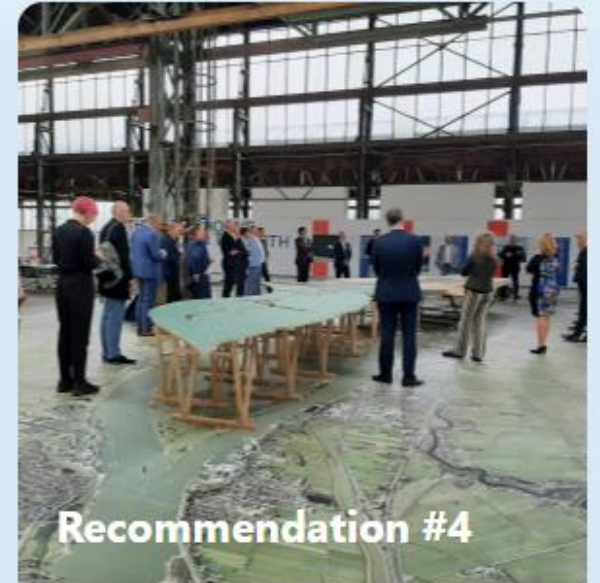
Recommendation #3

**Collaborate and
compromise to deliver
inclusive outcomes**



More details

Recommendation #3



Recommendation #4

**Embed “the push” of
science and “the pull”
of policy**



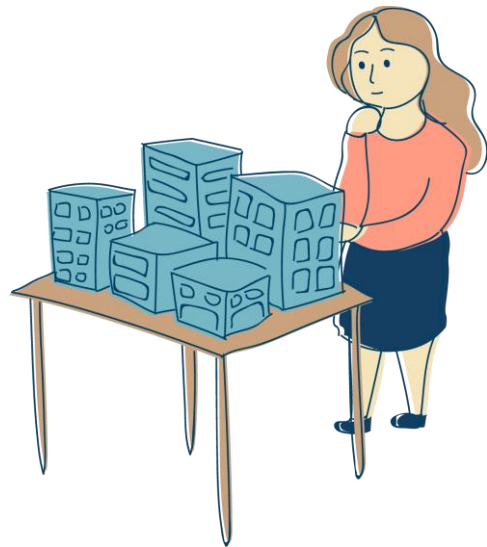
More details

Recommendation #4

Erwin Nugraha (University Twente), **Stevie** Swenne (Vlaamse Milieumaatschappij), **Jolien** Philips (Vlaamse Milieumaatschappij), **Leo** de Vree (Provincie Drenthe), **Deirdre** Buist-Murphy (Provincie Drenthe), **Rinke** van Veen (Provincie Drenthe), **Cor** Schipper (Rijkswaterstaat), **Stanford** Wilson (Rijkswaterstaat), **Matthijs** Boersema (Rijkswaterstaat), **Christian** Billund Dehlbæk (Region Midtjylland), **Holger** Blum (NLWKN), **Gül** Özerol (University Twente), **Paul** Sayers (Sayers and Partners), **Per** Sørensen (Kystdirektoratet), **Rolf** Johnsen (Region Midtjylland), **Lene** Blonde (Kystdirektoratet), **Laura** Storm Henriksen (Kystdirektoratet), **Catrin** Hasewinkel (Länsstyrelsen Värmland), **Elin** Ljunggren (Länsstyrelsen Värmland), **Karin** de Beer (Länsstyrelsen Värmland), **Tom** Henderson (Kent County Council), **Lyke** Bosma (Rijkswaterstaat), **Ilke** Borowski-Maaser (Interessen Im Fluss), **Lene** Bonde (Kystdirektoratet), **Anna** Grude (Länsstyrelsen Värmland), **Berry** Gersonius (ResilienServices), **Kate** Kipling (Environment Agency), **Monique** Busnach, (Rijkswaterstaat), **Merete** Løvschall (Kystdirektoratet), **Silke** Mollenhauer, (OOWV), **Katarina** Nordmark (Värmland,), **Myrthe** Leijstra (Rijkswaterstaat), **Egon** Baldal (Ministry of IenW), **Helen** Shulver (Kent County Council), **Martien** Haasjes (Provincie Drenthe), **Kris** Lulofs (University Twente), **Frank** Thorenz (NLWKN)



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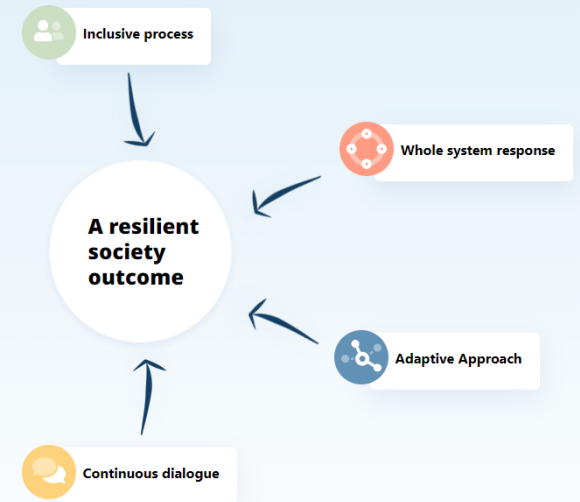


A Resilient Society Outcome

The Cloud 2 Coast Approach is an approach that has been developed within the C5a project. It promotes the adoption of a whole-system and long-term perspective to climate change adaptation that is purposeful, collaborative and builds on the principles of social justice, ecosystem health and resilience.

The Cloud 2 Coast Approach is aiming for a resilient society outcome.

[Read More About The Approach](#)



Thank you for attending!

www.C5aCloud2Coast.eu



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