IMPETUS 4CHANGE

Social science tools for climate scientists:

Exploring, developing, and evaluating novel, co-produced climate services in Barcelona

Human geographies of climate change adaptation
University of Bergen, May 2024

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Barcelona Supercomputing Center

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Barcelona Supercomputing Center
Centro Nacional de Supercomputación

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BSC

Earth Systems

Services

Knowledge Integration Team (KIT)

- Engagement & knowledge co-production
- Dissemination
- Operationalisation
- Science communication & outreach
- Policy engagement
- Services evaluation
- User experience & product design

What do we do?

We co-design climate, air quality and health resilience services, while facilitating knowledge exchange and technology transfer of state-of-the-art research at local, national, and international levels.

Generalitat de Catalunya
Departament de Recerca i Universitats
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UPC Universitat Politècnica de Catalunya BarcelonaTech
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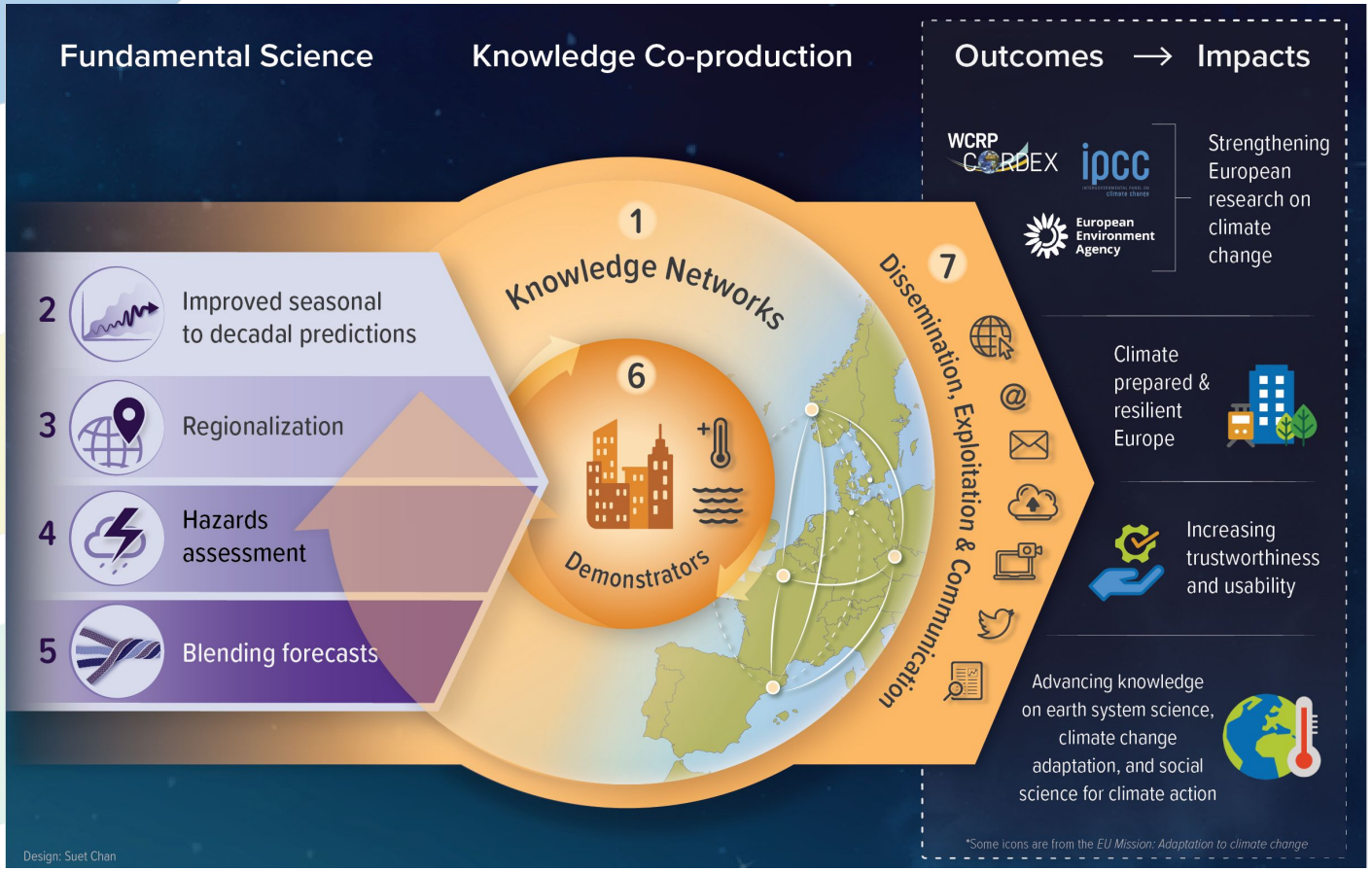
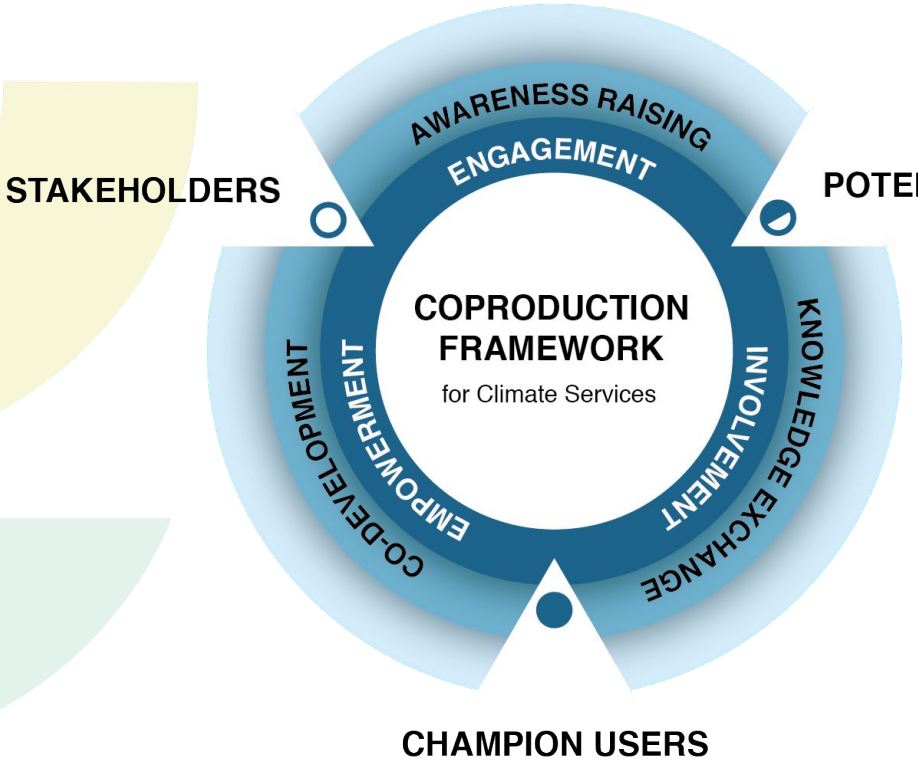
The Impetus4Change Project



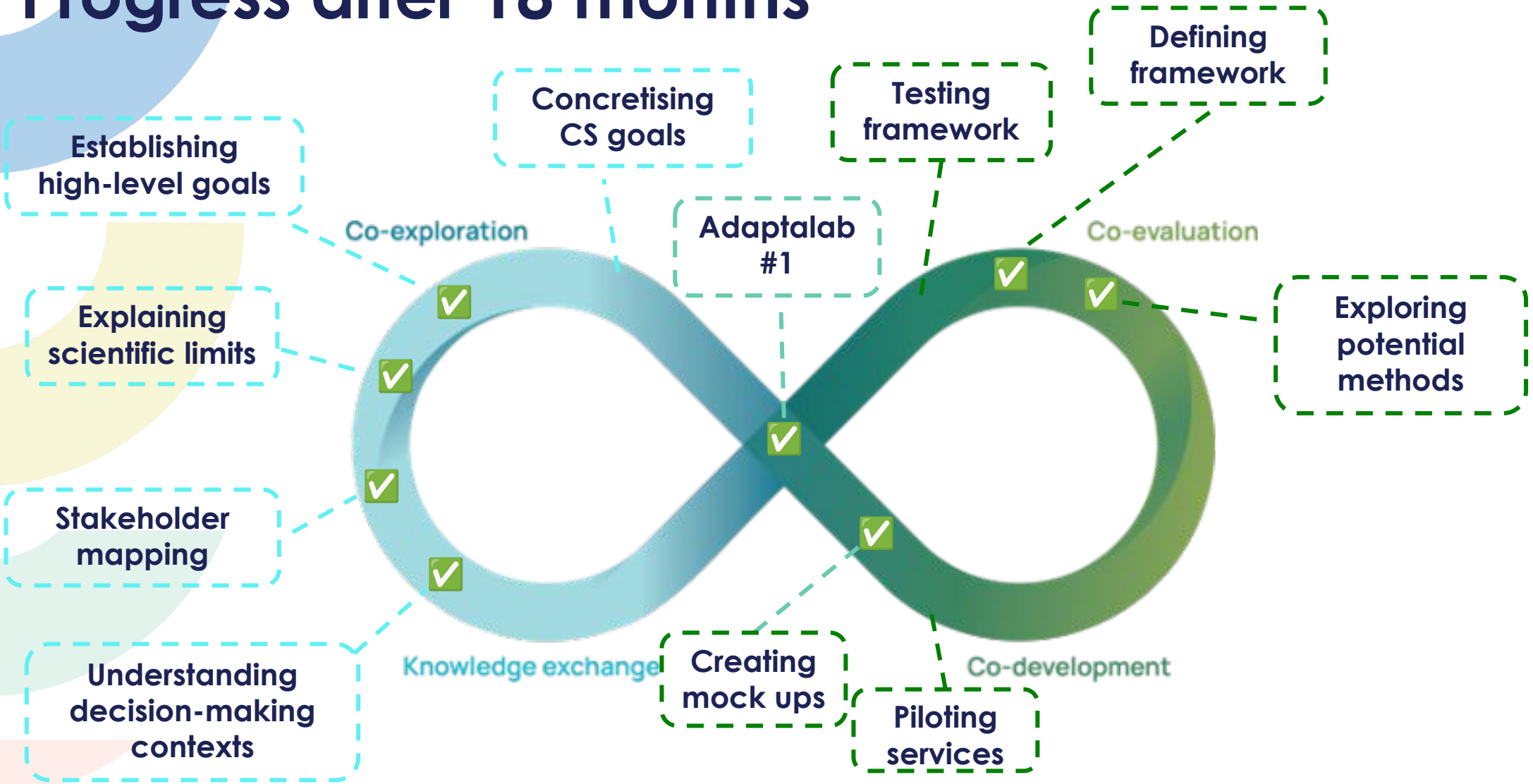
The overall objective of I4C is to improve the quality, accessibility and usability of short-term climate information and climate services at local and regional scales, where the impacts are most intensely felt, to strengthen and support final users in adaptation planning and action.

Co-production in four demonstrator cities

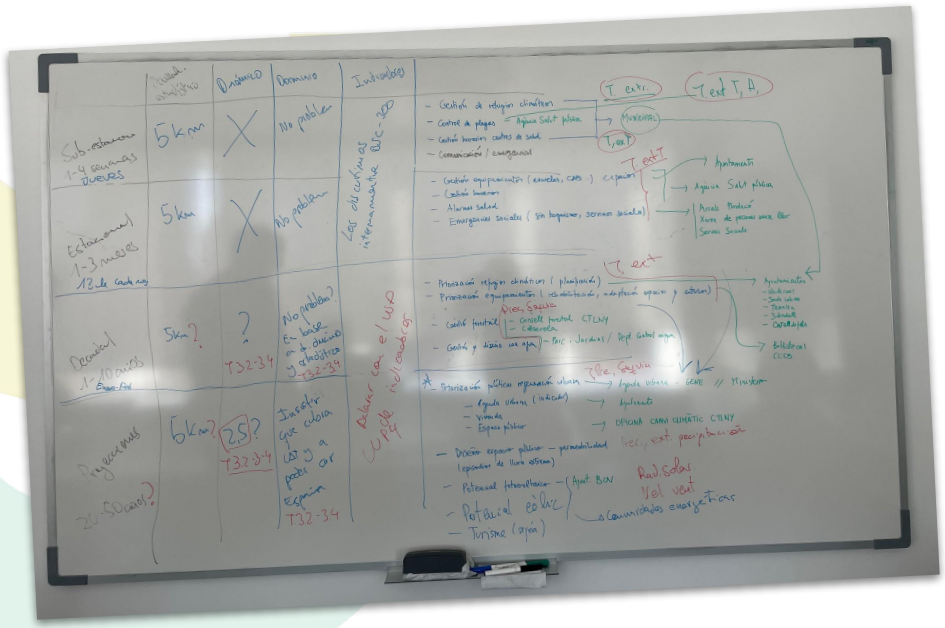


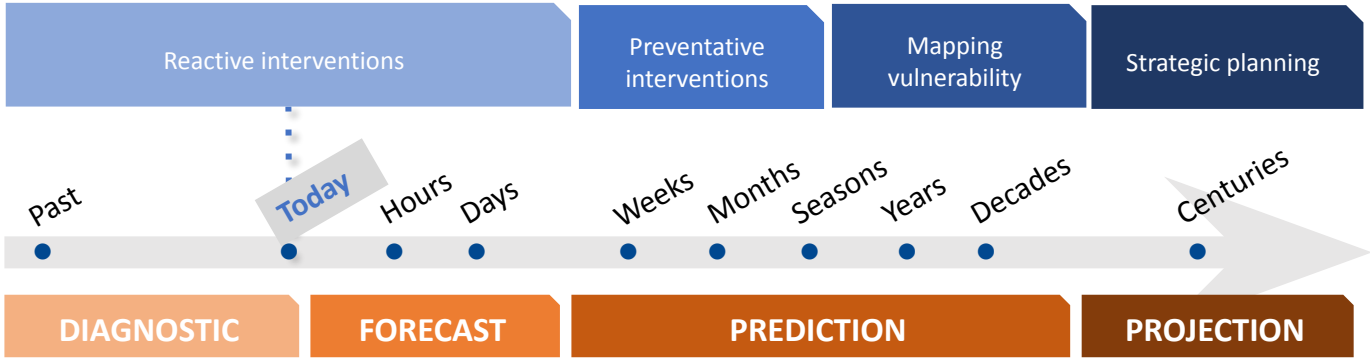
Bojovic, D. et al. (2021). Engagement, involvement and empowerment: Three realms of a coproduction framework for climate services. *Global Environmental Change*, *68*

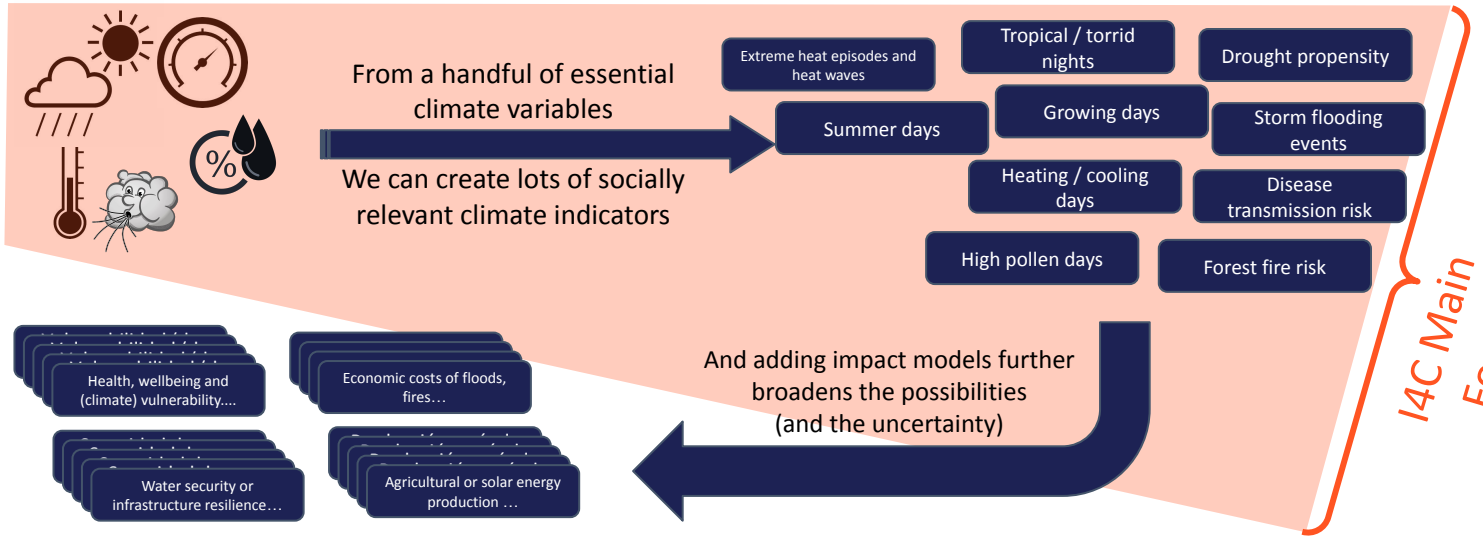
Progress after 18 months



Matching needs, scales, data…







Stakeholder mapping & user selection

What	Where	Whom	WHY	Which intensity	How
high-level goal conceptualization	defining the case	to include in the user selection	criteria for engaging which stakeholders	defining engagement intensity	iterate, adding the co- component to each step with the users

Baulenas et al. (2023) User Selection and Engagement for Climate Services Coproduction. *Weather, Climate and Society 15*

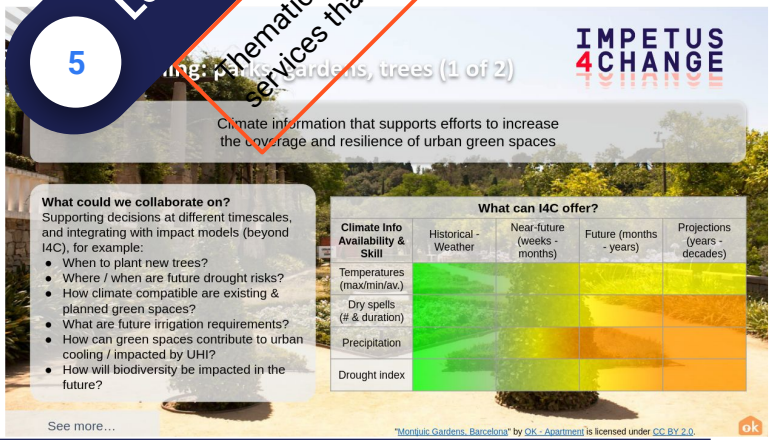
Adaptalab #1: Practising co-design

Village Green

Developing a catalogue of potential services

1. **Existing services & likely users**
   Brainstorming with climate scientists and key user
2. **Data requirements**
   Assessing data requirements and availability for provisional use cases
3. **Key user decision contexts**
   Checking potential indicators / uses with SHs
4. **Revised data needs & knowledge**
   Revisiting, condensing, clarifying limits of climate services (projects)
5. **Locally adapted catalogue (v.1)**
   Thematic presentation of potential climate services that could be **co**-developed

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1		Example Social Contexts by Planning Timescale						Availability in Climate Timescale						
2	Phenomena	Immediate / Short Term / Reactive (this month, this season)	Medium Term / Allocation & Protocols	Long Term / Strategy and Infrastructure	Variables / Indices	Potential links (e.g. impact models)	In universal terms	Forecast (link to existing)	Subseasonal	Seasonal	Decadal (1/2 - 10 years)			Projections (>= 30 years)
3	Forest fire risk	Forestry resou	Forestry / national park manag		FWI (Temperature, Precipitatic	This index provides an estimat	The index has	Applicable but			Applicable but we should expect a significant i			The same cons
4	Heatwaves	Emergency	Public Services (telephone contac		Excess Heat Factor / Tempera	It quantifies heat wave severity	Applicable, bec	Applicable						Useful to comp
5	Temperature extremes in summer	combine with heatwaves?			Temperature	An estimate of the number of s	Applicable but	Applicable. It w	Applicable but we should expect a significant i					They can be pr



Building a co-evaluation framework

Process	Outputs	Outcomes	Impacts
Engagement & Collaboration	Relevance & Usefulness	Application & Use	Ecomonic & Financial Benefits
Inclusivity & Diversity	Accessibility	Enhanced knowledge	Social Benefits
Communication & Understanding	Understandability	Influence on Actions & Decisions	Policy & Regulatory Benefits
Transparency & Reliability	Usability	User Feedback	Positive Feedback
Goal-setting & Relevance	Feasibility	Measurability	Measurability
Feasibility	Reliability		
	Suitability & Adaptability		
	Up-to-date & Timely Scope		

1. are inclusively co-produced by the actors they will impact
2. foster open and clear communication that develops climate knowledge
3. contribute to real, relevant and impactful adaptation action
4. are reliable, transparent and trusted

	This is very important to the climate service	This applies to: The co-production **processs**	This applies to: The direct **outputs**	This applies to: The **broader effects**	How could you evaluate or measure this?
	(1 disagree – 3 neither agree nor disagree – 5 agree				
1. Inclusive co-production	inclusivity	5	5	1	Diaries of interactions, checking the SH mapping
	collaboration	3	5	3	1 The number of meetings / points of contact
	usability	3	1	5	1 SH interviews
…	…	…	…	…	… …
…	…	…	…	…	… …
5. Any other dimensions?	…	…	…	…	… …

Closing remarks

- Key terms often interpreted differently (magnified when working across institutions / languages)
- Challenges in recognising both amount and quality of work required across disciplines
- Collaboration adds iterative rounds and effort, but gains buy in & builds relationships
- Internal relationship building at least as important as external co-production with stakeholders
- Keep a diary!

- First test service now up and running
- Ongoing tests of SSH tools, then extending them to other demonstrators


PREDICCIONS CLIMÀTIQUES A CURT TERMINI PER A LA PRESA DE DECISIONS

DINS EL CONTEXT DE CRISI CLIMÀTICA S'ESPERA UN INCREMENT D'ESDEVENIMENTS CLIMÀTICS MÉS ALEATORIS I EXTREMS. PER AQUEST MOTIU, ÉS NECESSARI DISPOSAR DE NOUS INSTRUMENTS QUE PROPORCIONIN PREDICCIONS A CURT TERMINI PER DONAR SUPORT A LES DECISIONS D'ADAPTACIÓ ACTUALS I FUTURES.

IMPETUS 4CHANGE

Predicció probabilística subestacional de temperatura

Setmana 1 · Setmana 2 · Setmana 3 · Setmana 4

Barcelona

Probabilitat dels tercils

Sobre I4C

Impetus4Change (I4C) és un projecte Horizon Europe format per més de 20 entitats líders en la recerca climàtica.

Per què necessitem prediccions climàtiques a curt termini?

Les previsions meteorològiques donen informació sobre els propers 7 dies aproximadament i les projeccions climàtiques proporcionen dades a llarg termini.

- Les prediccions subestacionals poden predir temperatures (donant informació fins a 4 setmanes vista) per donar suport a la planificació de riscos relacionats amb la calor.
- Els models climàtics descriuen què succeirà tenint en compte el canvi climàtic i la variabilitat climàtica a diferents escales temporals.

Els nostres objectius:

- Donar suport en la presa de decisions en la implementació d'accions d'adaptació allà on els impactes climàtics són més severs.
- Co-dissenyar amb els usuaris els serveis climàtics a escala local i regional.
- Millorar la qualitat, l'accessibilitat i la usabilitat de la informació climàtica a curt termini.

Com podem ajudar?

- Accés al nou pilot de serveis climàtics.
- Amb prediccions de temperatures setmanals de fins a 4 setmanes.
- Dades que inclouen valors màxims, mínims i mitjans.
- Amb avaluació de la qualitat de la predicció.
- A escala local, a resolucions de fins a 5 km.
- Finançat dins el marc del projecte I4C.

Com ho fem?

- Proporcionem fins a 5 prediccions.
- Cada predicció és de fins a 4 setmanes vista.
- Proporcionem sessions de formació.
- Per a un període temporal que va de juny a juliol.

Estàs interessat?

Aquestes prediccions climàtiques poden donar suport a les teves decisions? Pots proporcionar-nos informació per a la millora del servei?

No ho dubtis, contacta'ns:

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Barcelona Supercomputing Center

300.000 Km/s

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Thank you!

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