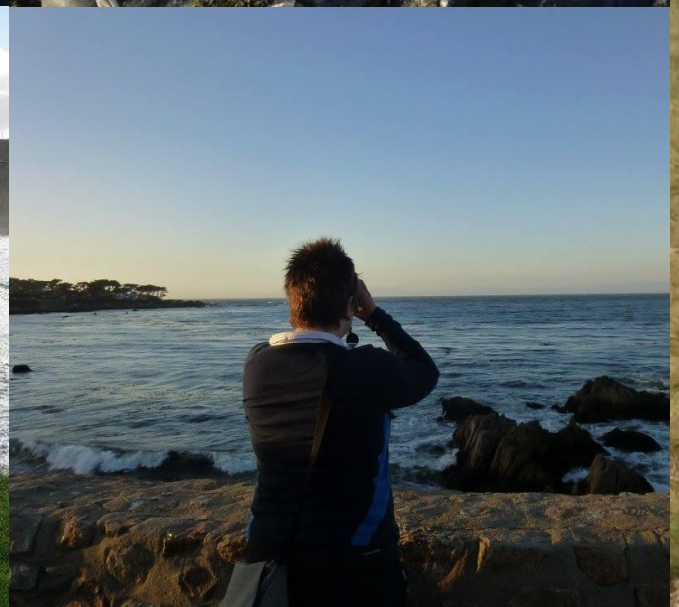
Understanding Climate Complexity: Science Through Art

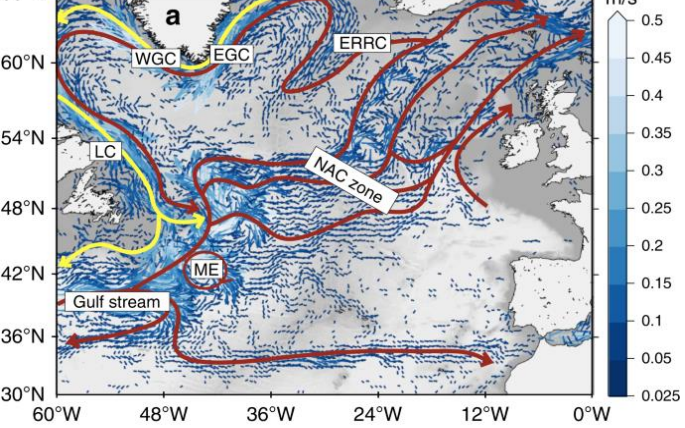
Creative Carbon Scotland: Green Tease event

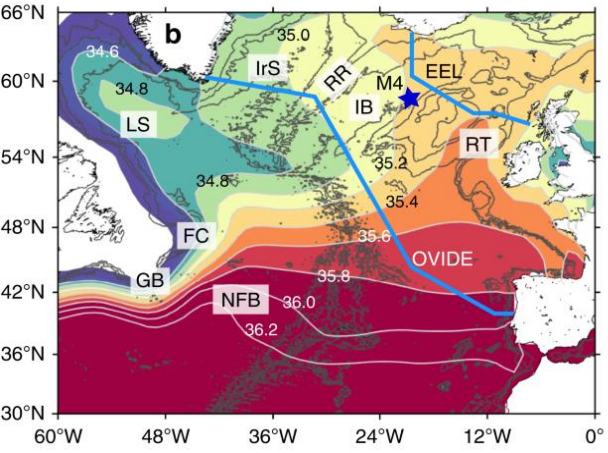
The Blue-Action project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727852.

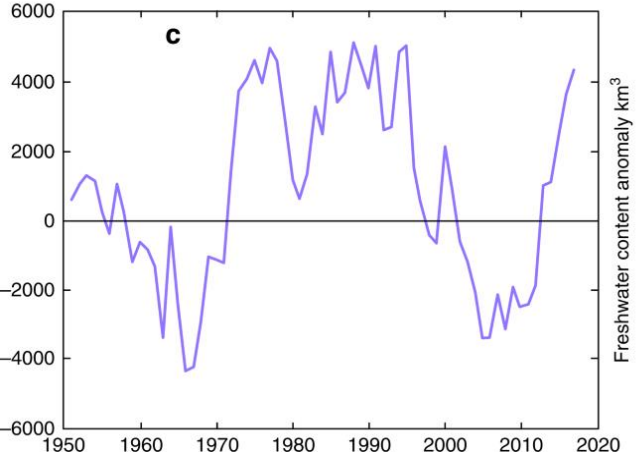
BLUE ACTION

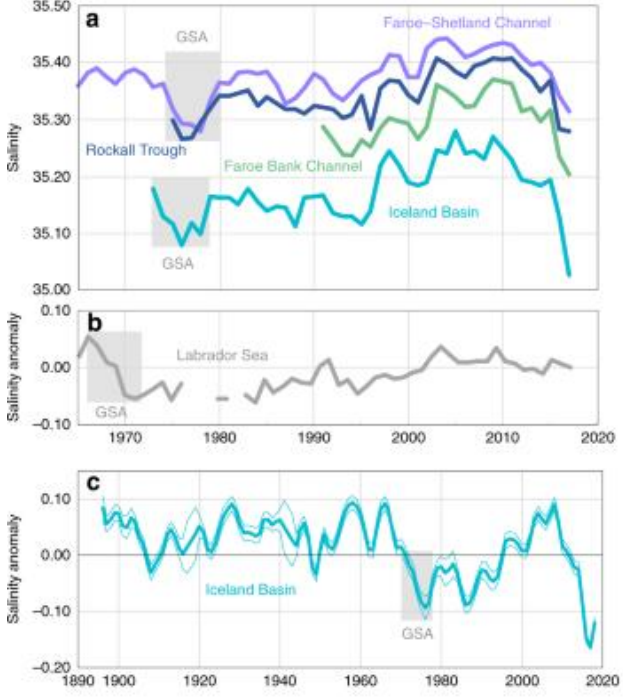
SCOTTISH
ASSOCIATION
for MARINE
SCIENCE

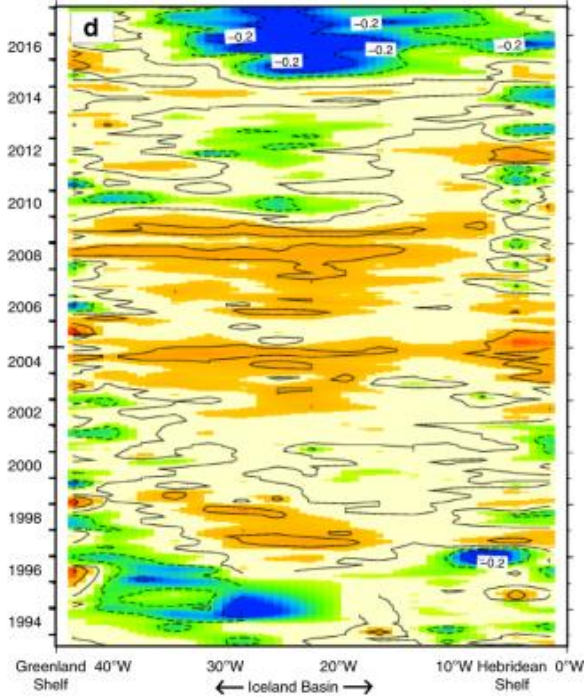


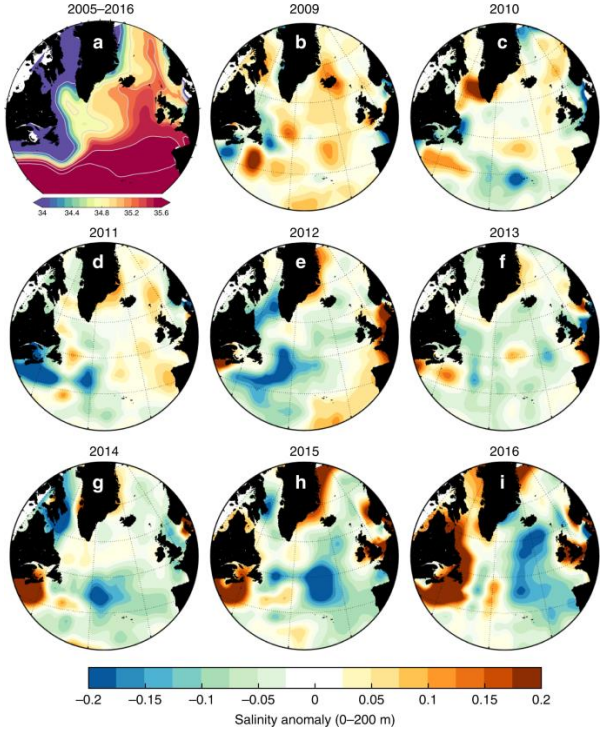


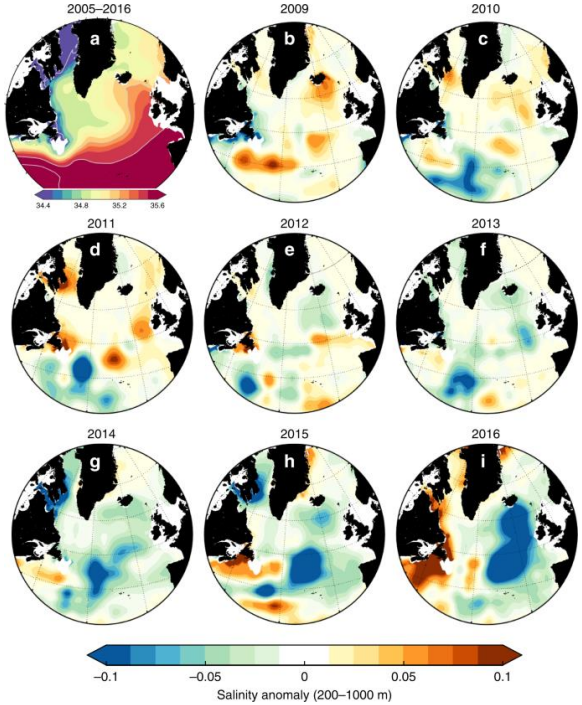










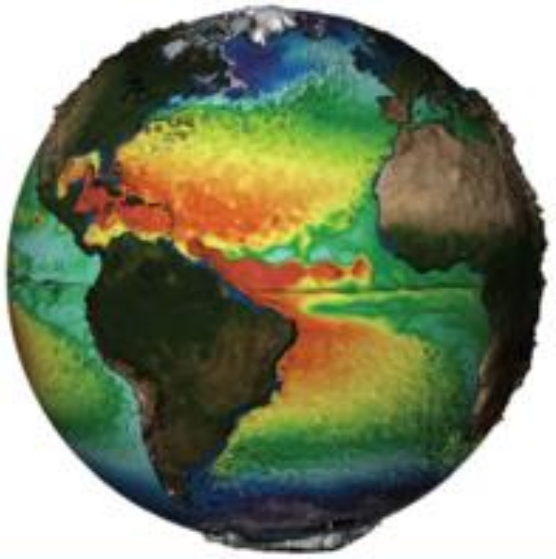


Holliday et al. 2020

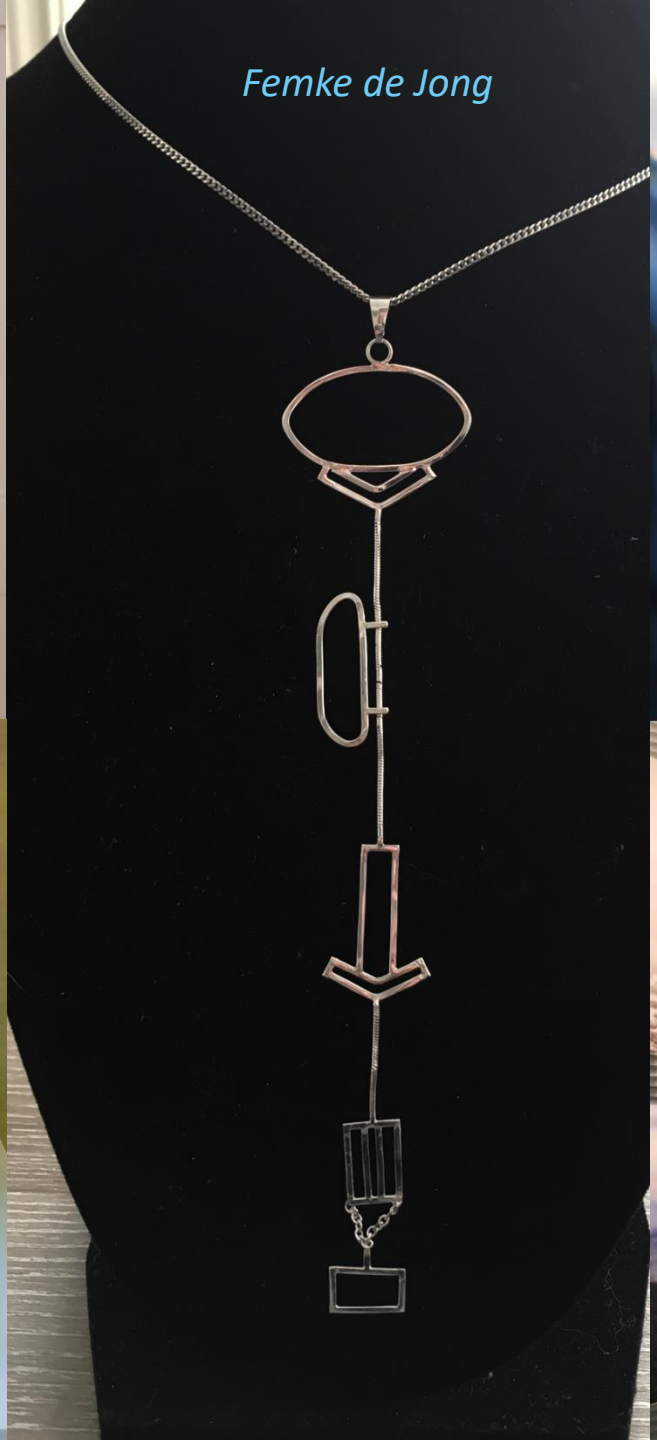
BLUE ACTION

BLUE ACTION

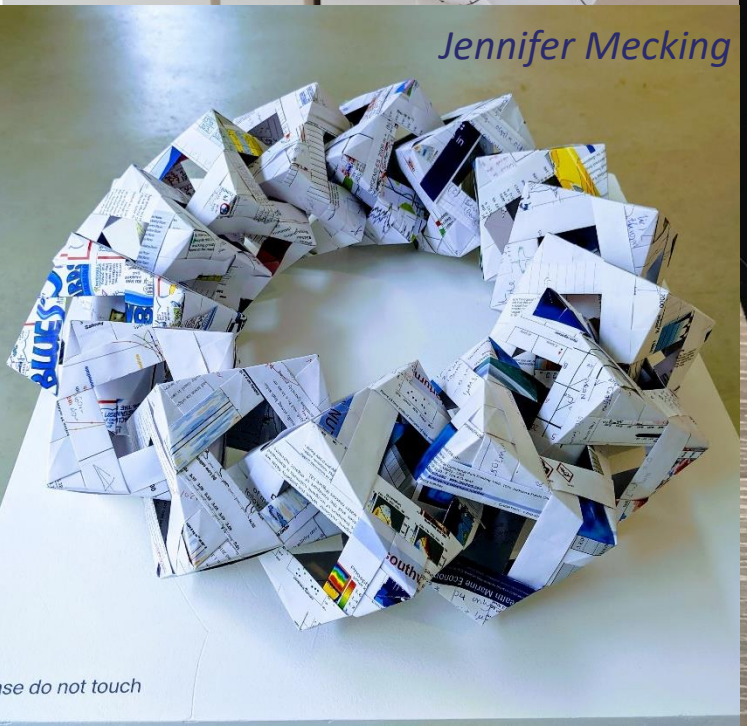
Blue-Action is a major European research project investigating the effect of a changing Arctic on weather and climate.

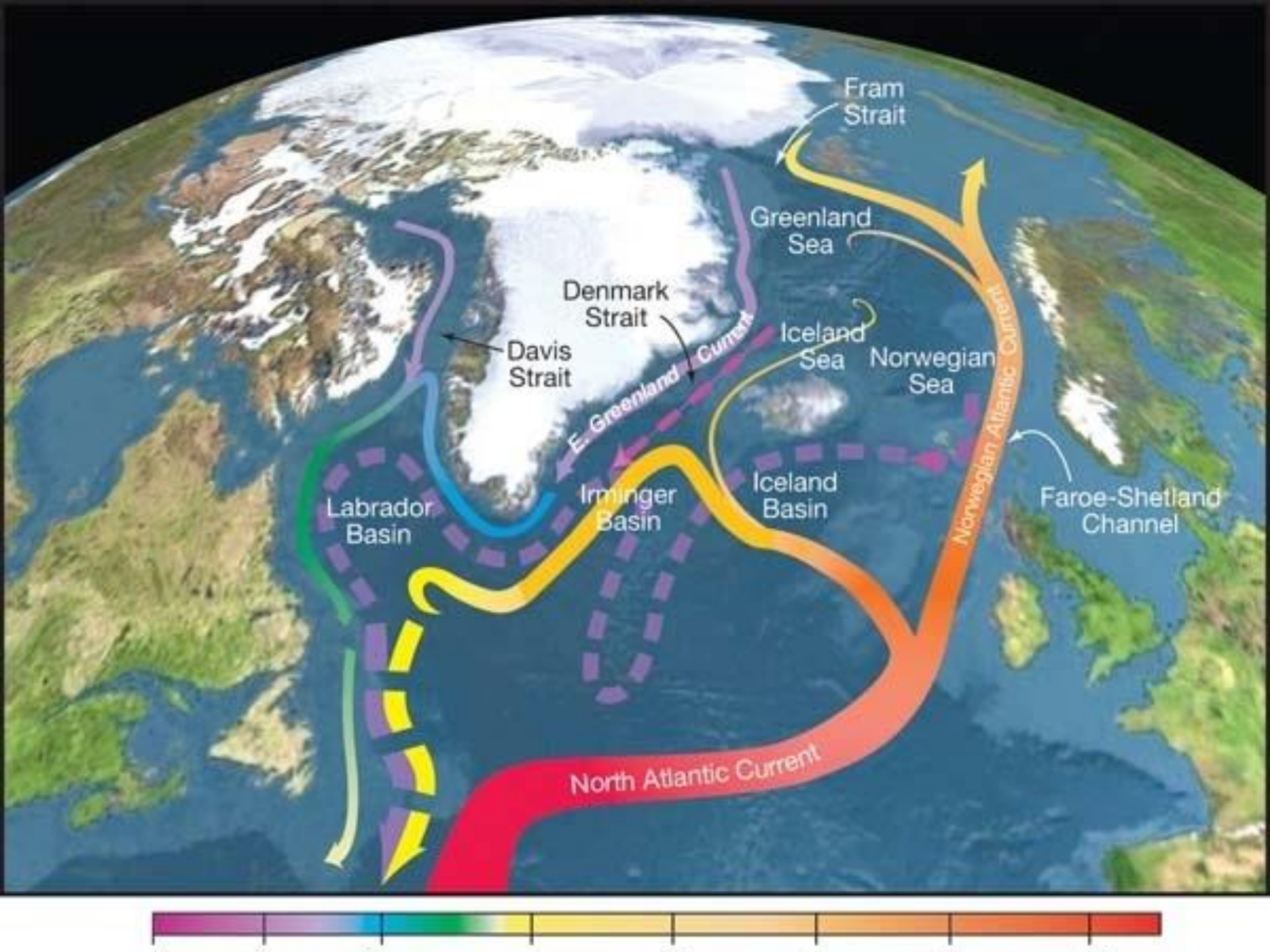


Iuliia Polkova


Femke de Jong

Ilona Mettiainen


Jennifer Mecking


Fram Strait
Greenland Sea
Denmark Strait
Davis Strait
E. Greenland Current
Iceland Sea
Norwegian Sea
Norwegian Atlantic Current
Labrador Basin
Irminger Basin
Iceland Basin
Faroe-Shetland Channel
North Atlantic Current

Ben Nevis Inn
WEATHER FORECASTING STONE
CONDITION
FORECAST
Stone is Wet
Rain
Stone is Dry
Not Raining
Shadow on Ground
Sunny
White on Top
Snowing
Can't see Stone
Foggy
Swinging Stone
Windy
Stone Jumping Up & Down
Earthquake
Stone Gone
Tornado

Thank you!

@BG10BlueAction

www.blue-action.eu

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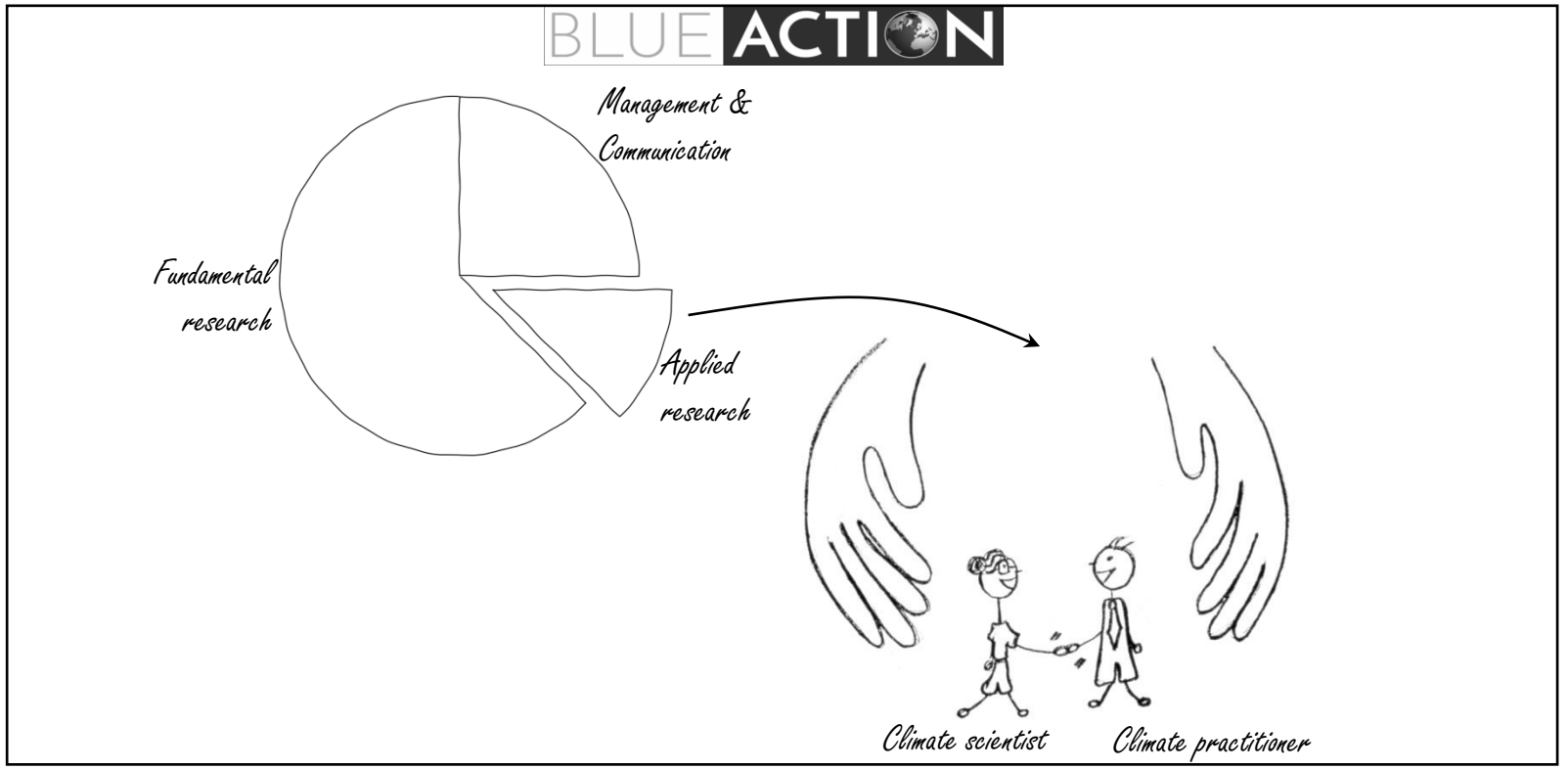
From a study on application of climate predictions

Yulia Polkova

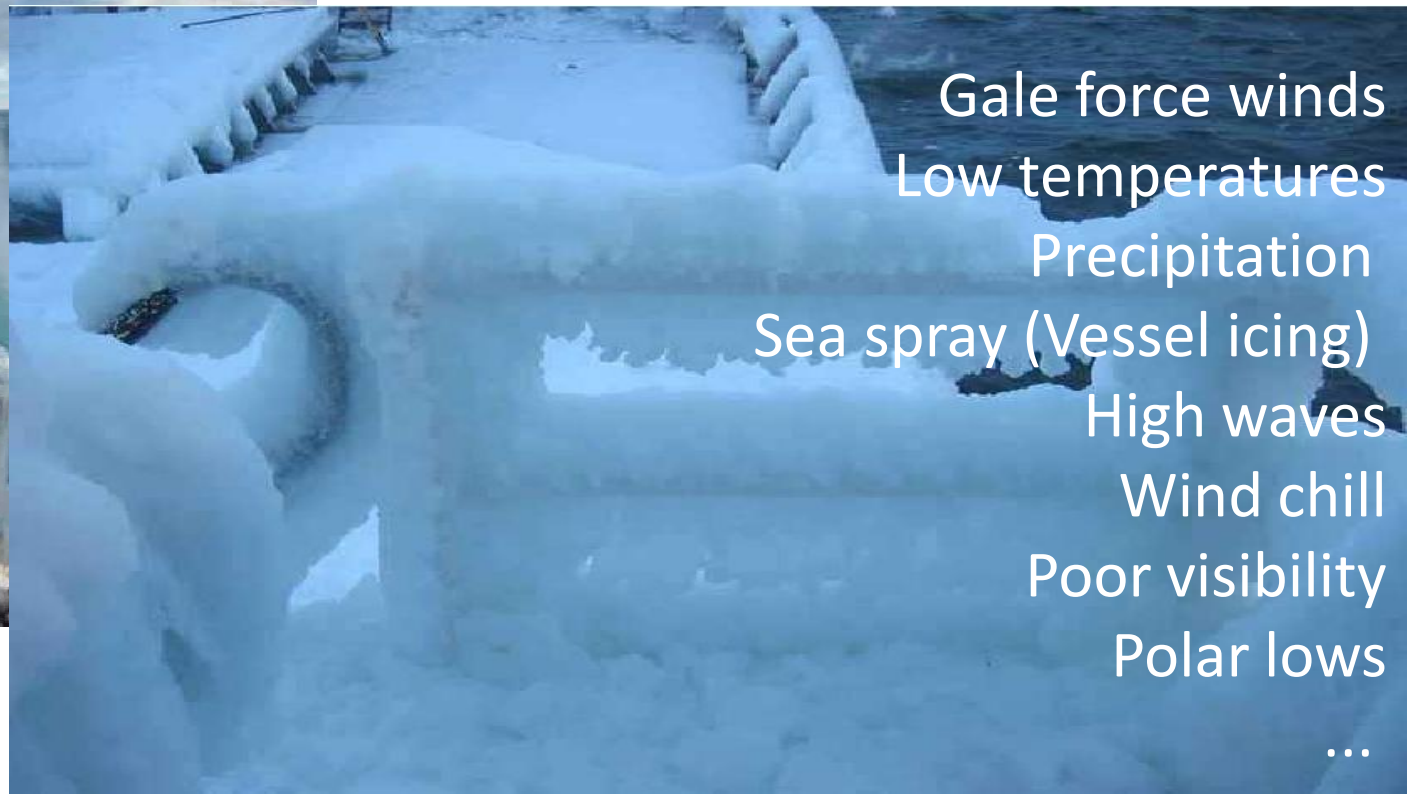


BLUE ACTION

Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

Funded by
DFG Deutsche Forschungsgemeinschaft
German Research Foundation

Seafarers experience extreme sea conditions in the Arctic region



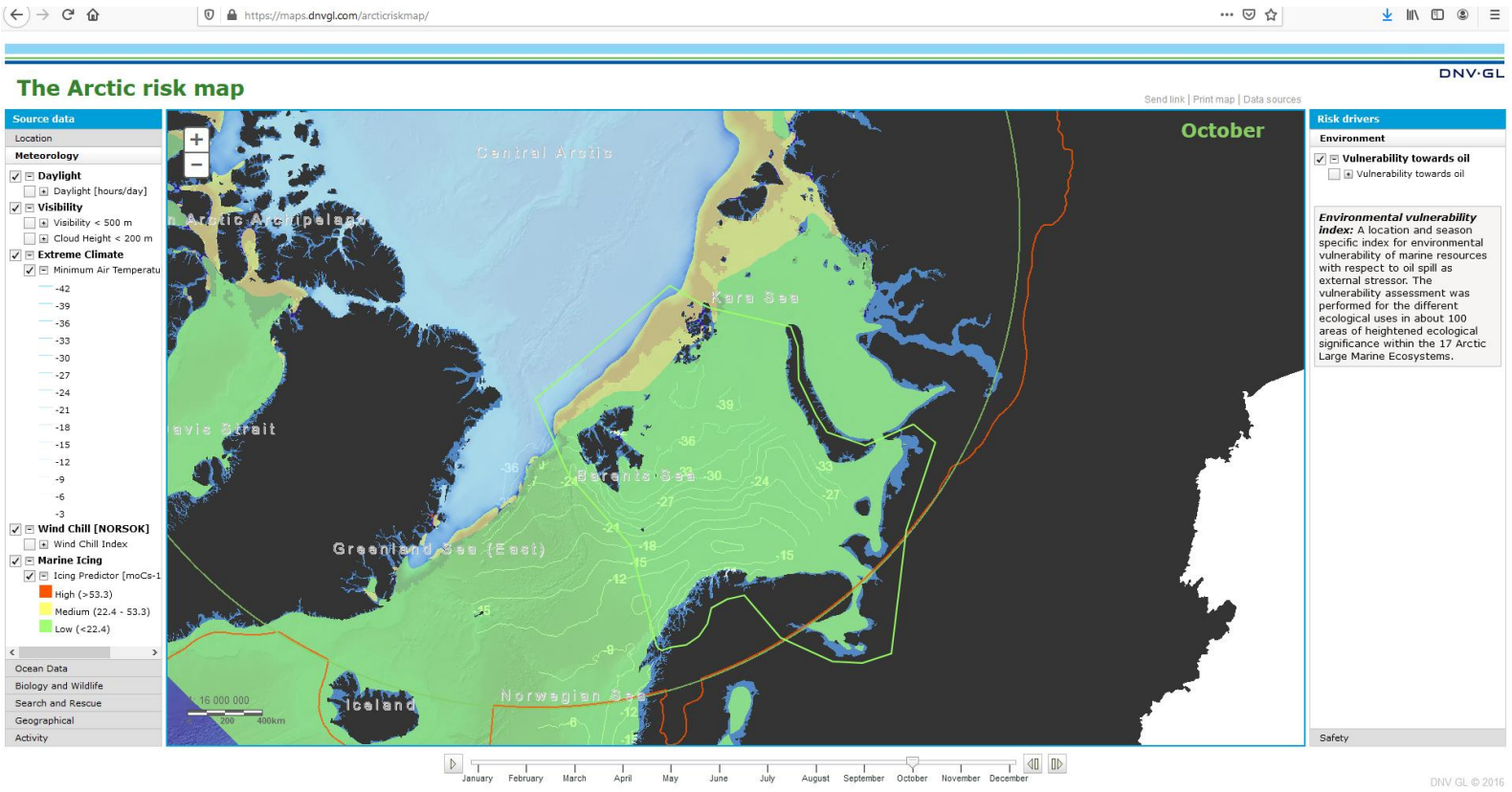
Gale force winds
Low temperatures
Precipitation
Sea spray (Vessel icing)
High waves
Wind chill
Poor visibility
Polar lows
…

Photo: Cook & Chatterton (2008)

DNV GL provides marine services for ship operators

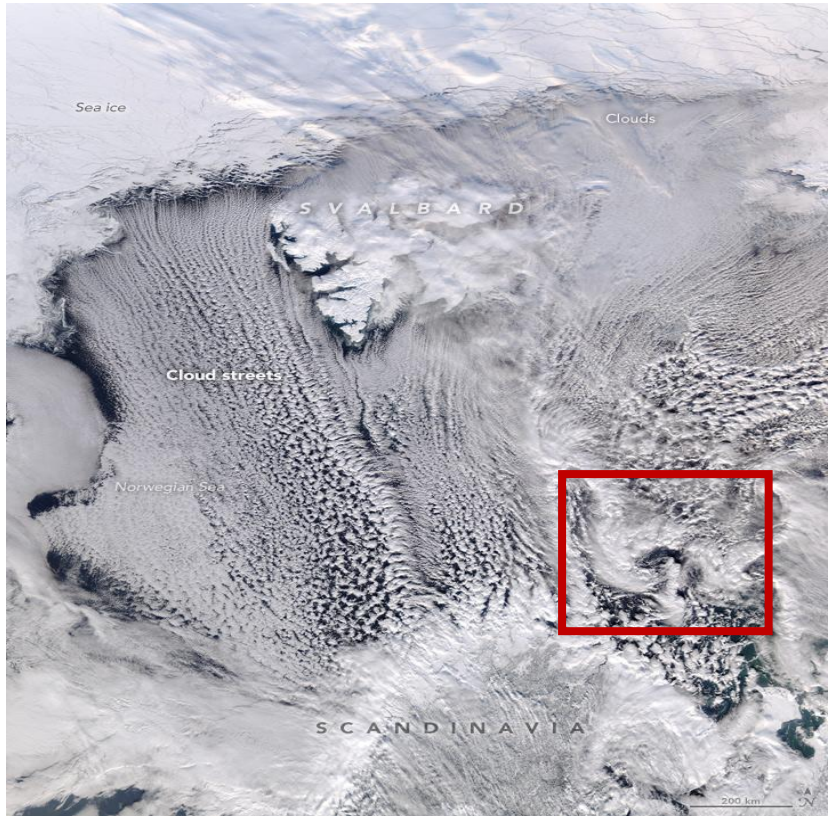
- For short-term planning:
  weather forecasts
- For long-term planning:
  previous experience
- For long-term planning:
  climate predictions

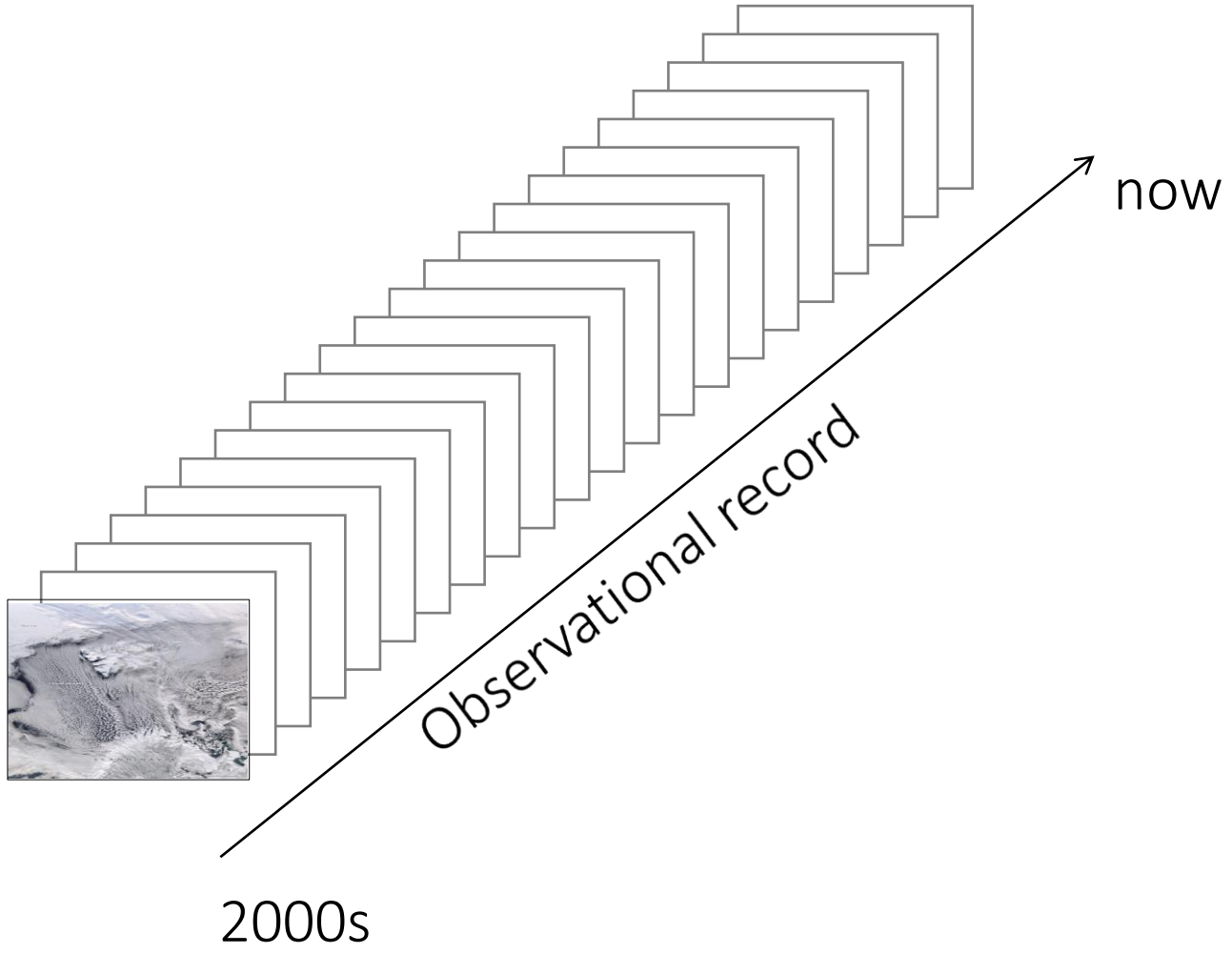
(Aarnes, King, Schaffer, Polkova)



Screenshot: https://maps.dnvgl.com/arcticriskmap/

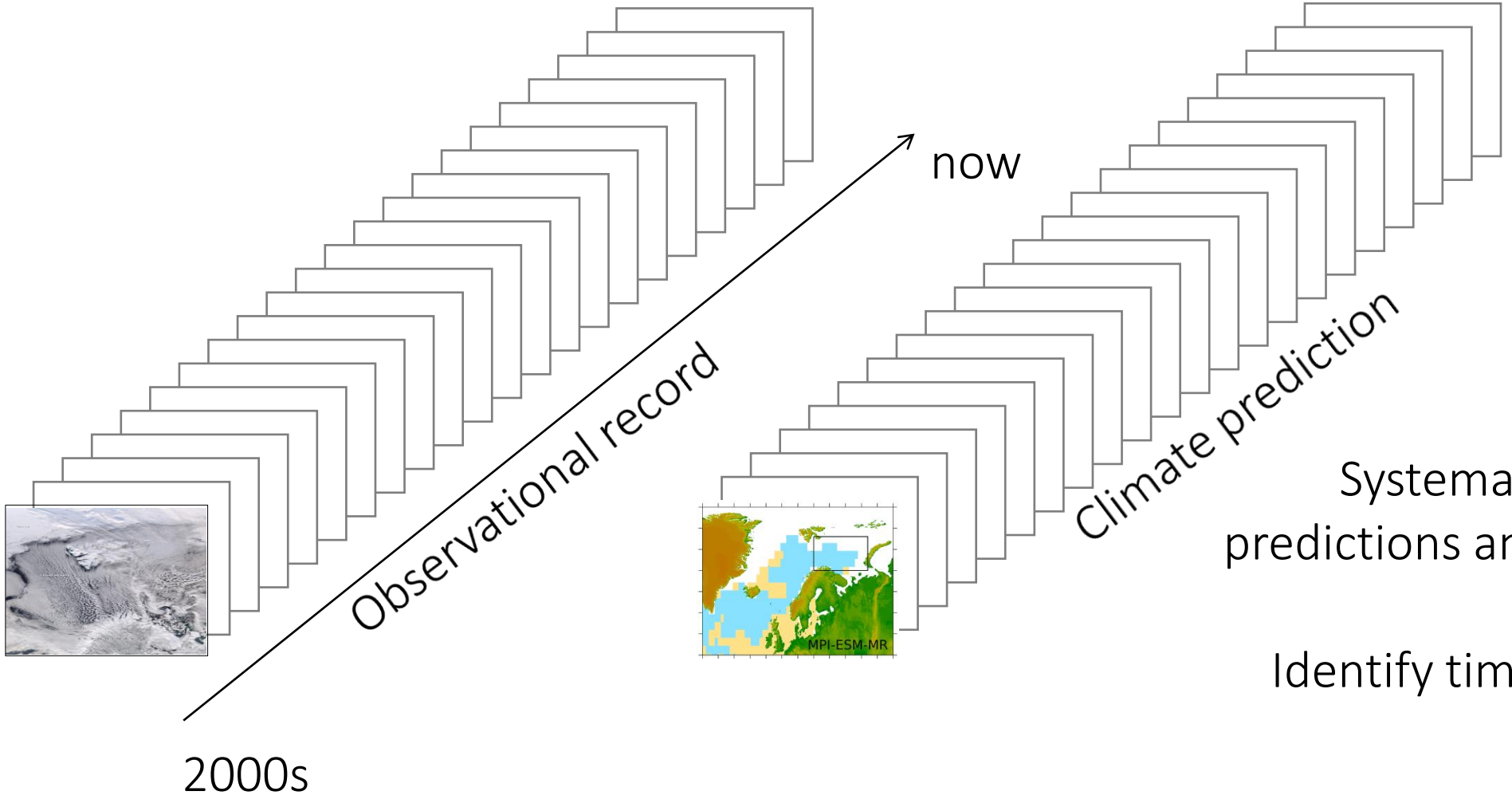
Extreme conditions from observations





Satellite image: NASA Aqua – MODIS by Jeff Schmaltz

Predictability of conditions favouring extreme weather



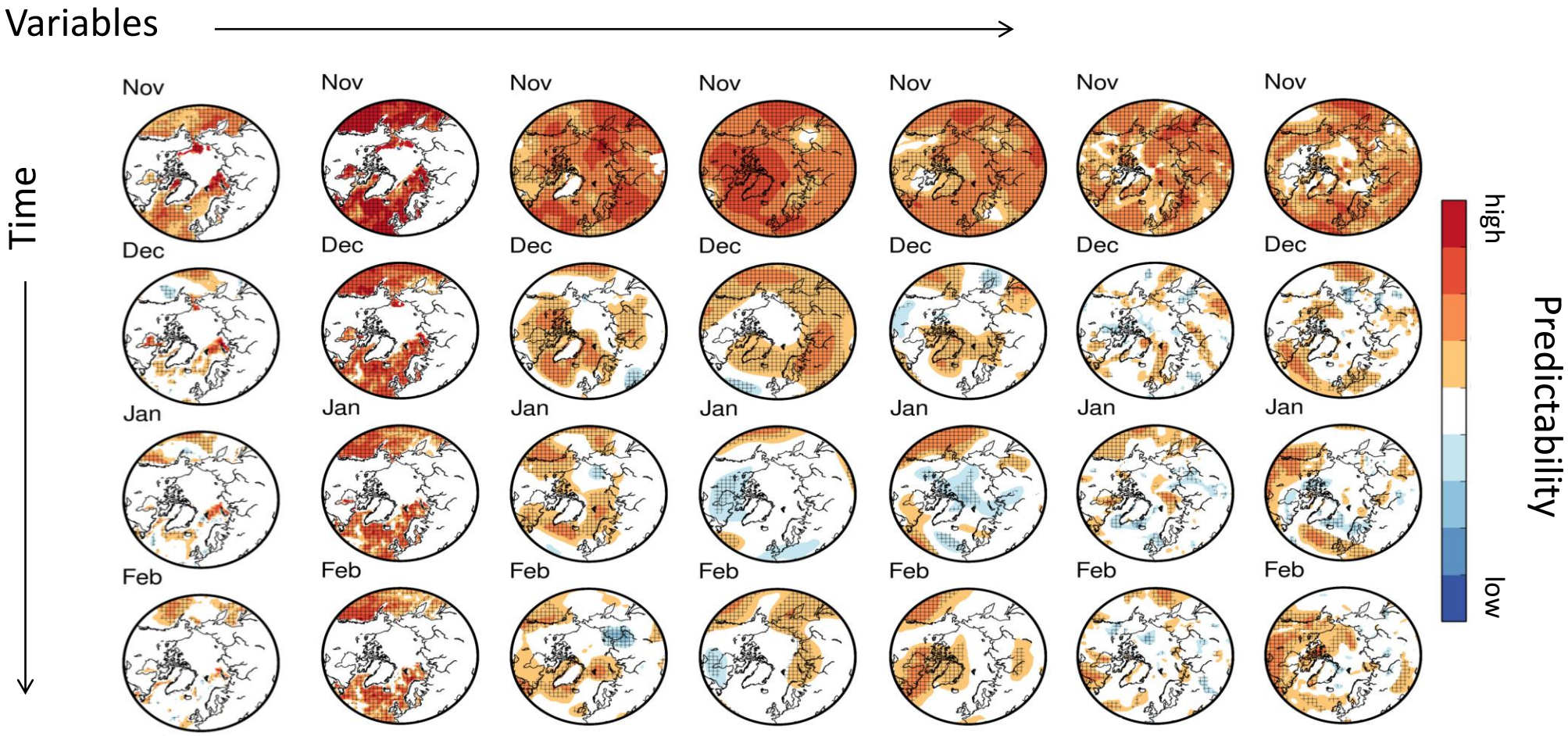
Systematically compare predictions and observations

Identify time and region of agreement

iuliia.polkova@uni-hamburg.de

Everything was easy until it was not...

Communication: unintentionally overwhelm the audience



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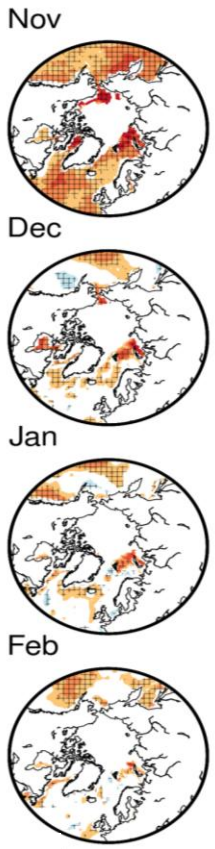
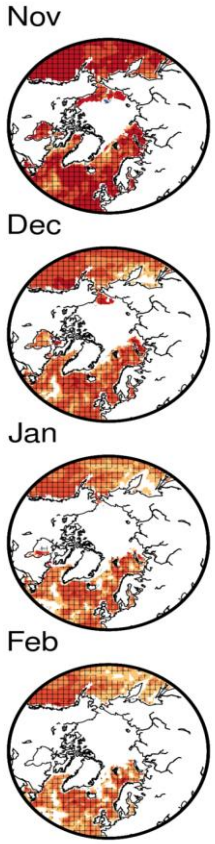
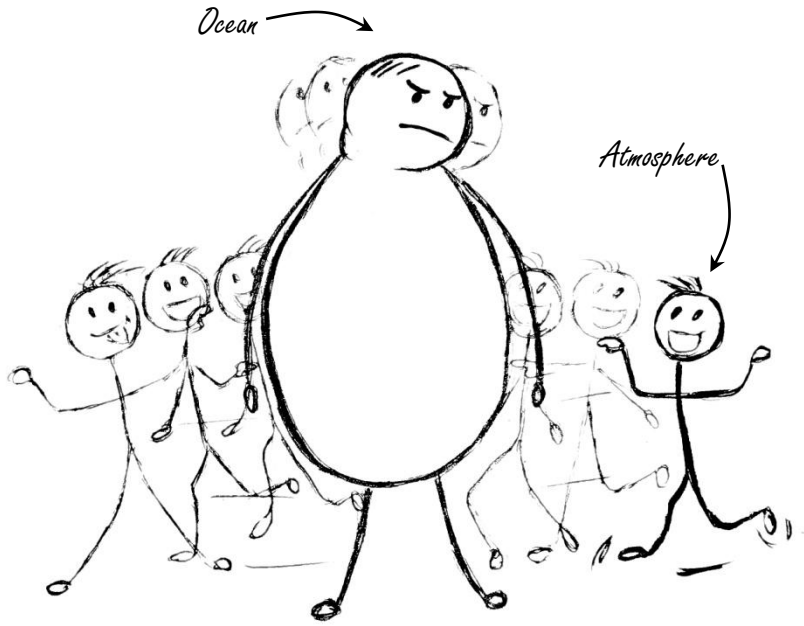
Communication: win back attention of the audience

cold air outbreak



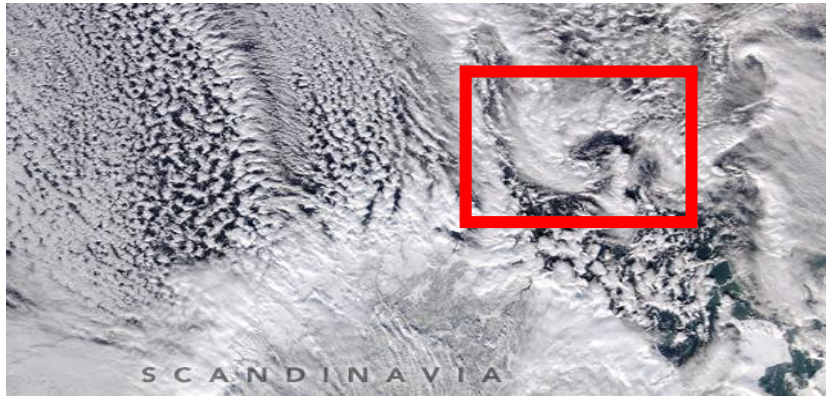
sea surface temperature

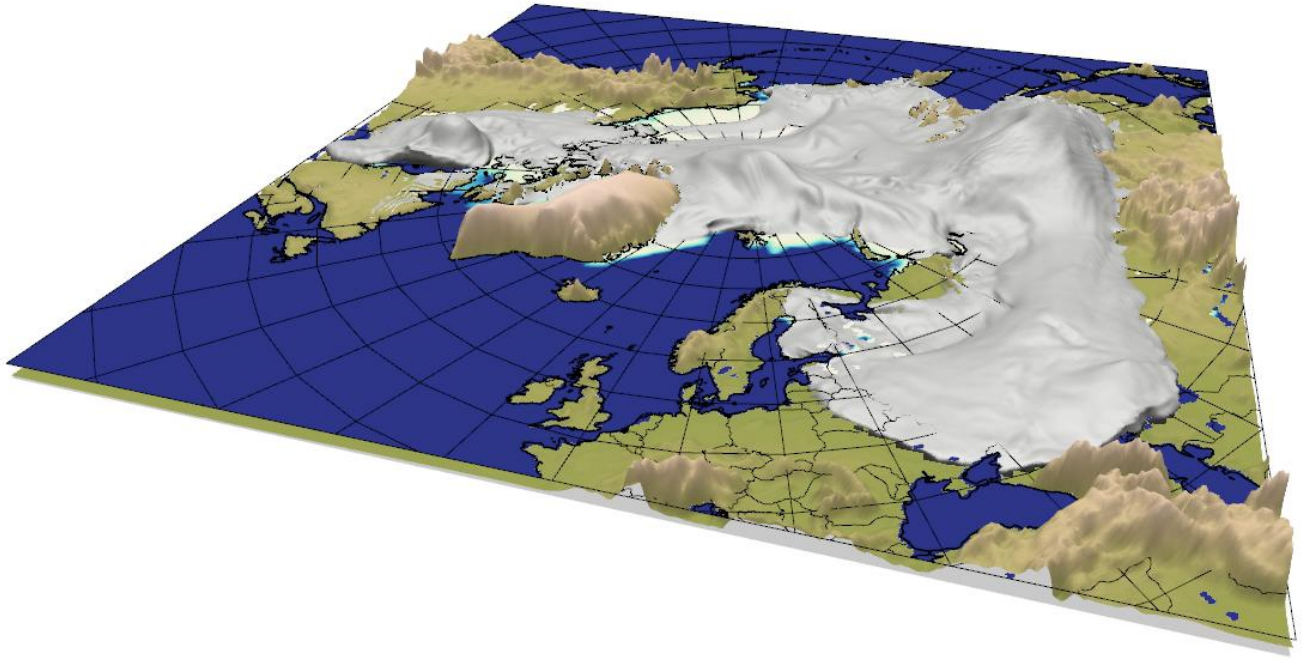




Slow varying ocean processes – **more predictability**,
fast chaotic atmosphere – **less predictability**

Communication: find common ground





using Met.3D by Marcel Meyer, Marc Rautenhaus and Yulia Polkova
met3d.wavestoweather.de

Communication: lessons learned from our case study

All involved want to co-create new value

This helps to overcome communication difficulties

- Scientific jargon; complex problems; no easy answers; concern to be misunderstood; scientists with different backgrounds

Art is the universal language

- Find common ground
- “One picture says more than thousand words”

Art can be interpreted in different ways

- Science conveys a concrete message, which ideally should not be interpreted in different ways

Thank you! Contact me:
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Co-design Viewed Simply

A model for discussion

Martin Coath

Senior Affiliated Researcher – University of Lapland

creative carbon scotland

BLUE ACTION

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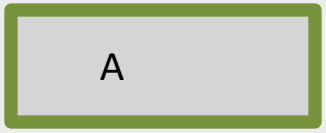
Introduction

- Talk about co-creation/co-design
- In the simplest possible terms
- Cartoon approach
- Give a shape and a vocabulary
- Often overlooked or overcomplicated

Anticipate the end

- Co-creation is the management of the tension/equilibrium between conversations between team members, and the establishment of common frames
- Neither the conversations nor the frames are usually stable enough to give rise to the output
- If the management is successful then this will give rise to the output

Preamble I



- A is for ‘Actor’

Preamble II

- A is for ‘Actor’
- V is for ‘View’

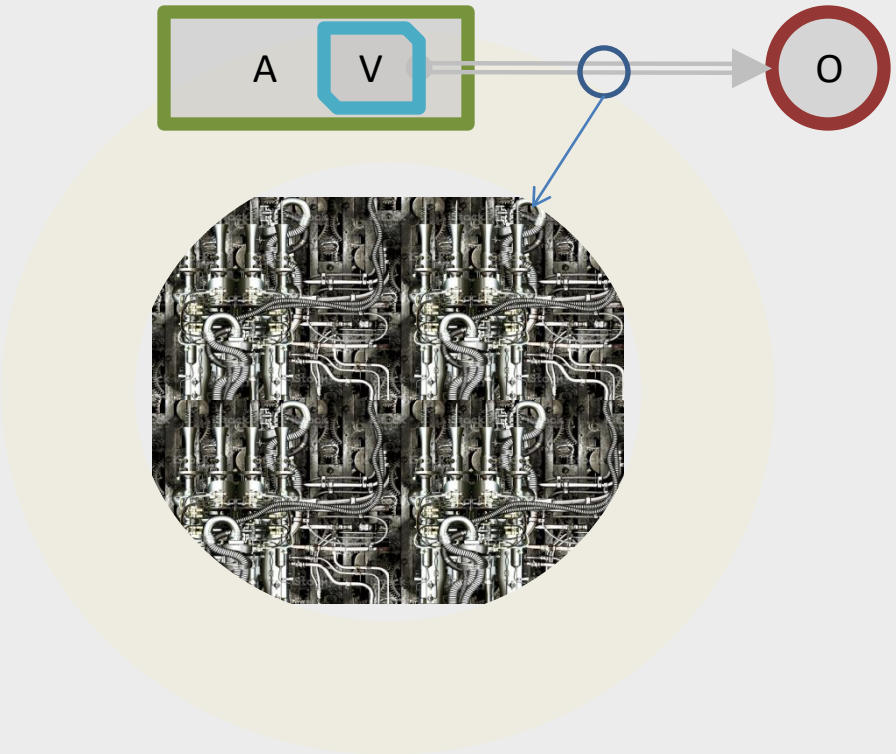
Preamble III

- A is for ‘Actor’
- V is for ‘View’
- O is for ‘Output’

Creation I

- Bad comparison
- Not perfect, unitary
- Or complete

Creation II

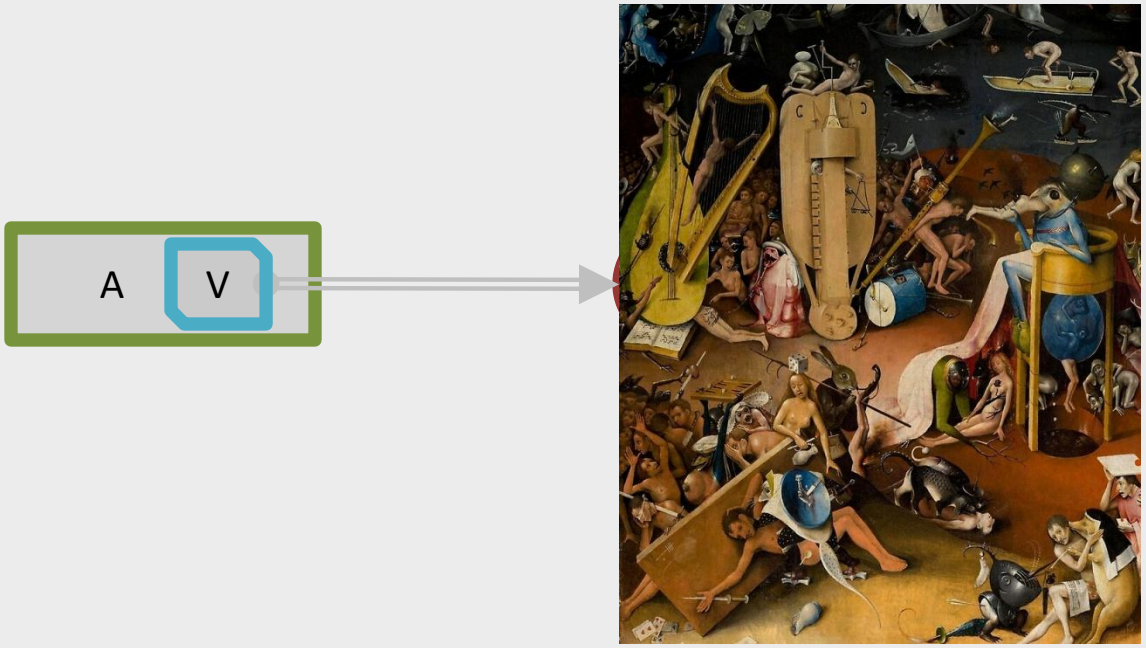


- Complex
- Only partially explicable
- Is the process judged?

Creation III

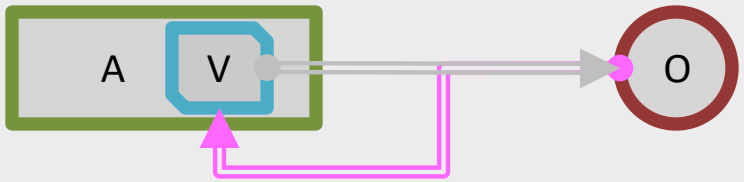
- For example - this presentation
- A is M. Coath
- V is ‘a simple view of co-design’
- O is a Powerpoint

Creation IV



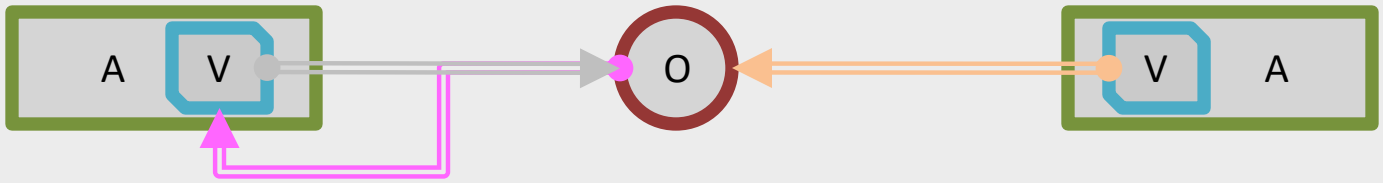
- A is H. Bosch
- V is ‘the infernal realm’
- O is a painting

Creation V



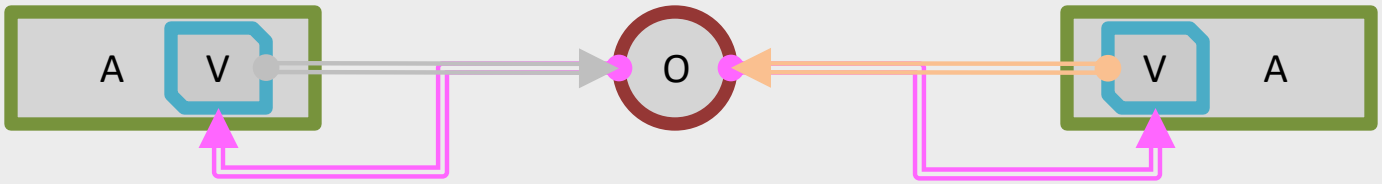
- By virtue of creation
- We learn stuff
- And have our view changed

Creation with observer I



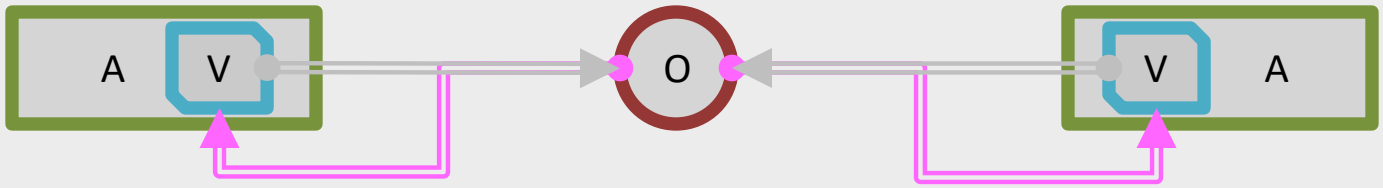
- Orange is for ‘Observer’
- They bring their view to the interaction

Creation with observer II



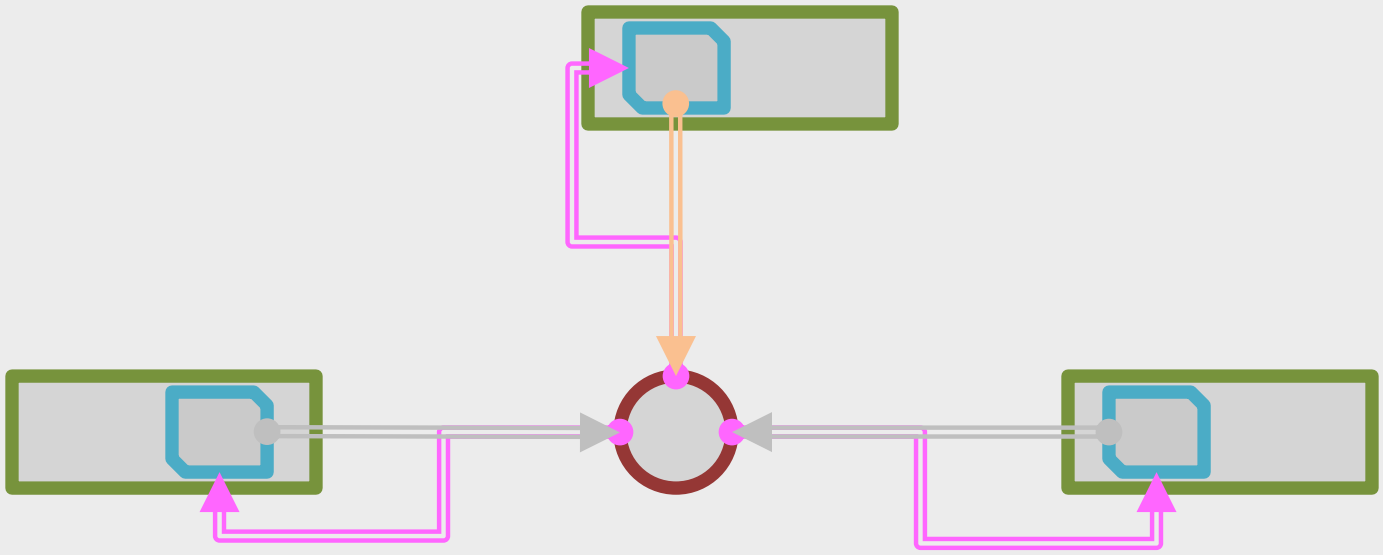
- Orange -> Pink = ‘Impact’
- Although all parts have value
- Parallel to Hermeneutics

Co-creation?



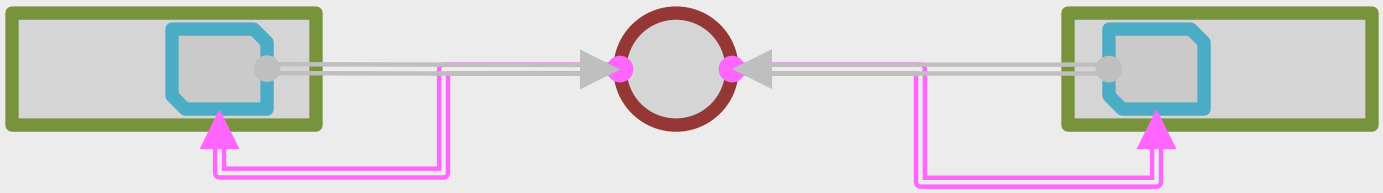
- Just change the orange arrow to grey
- Co-creation?
- Where is the observer?

Co-creation with observer?



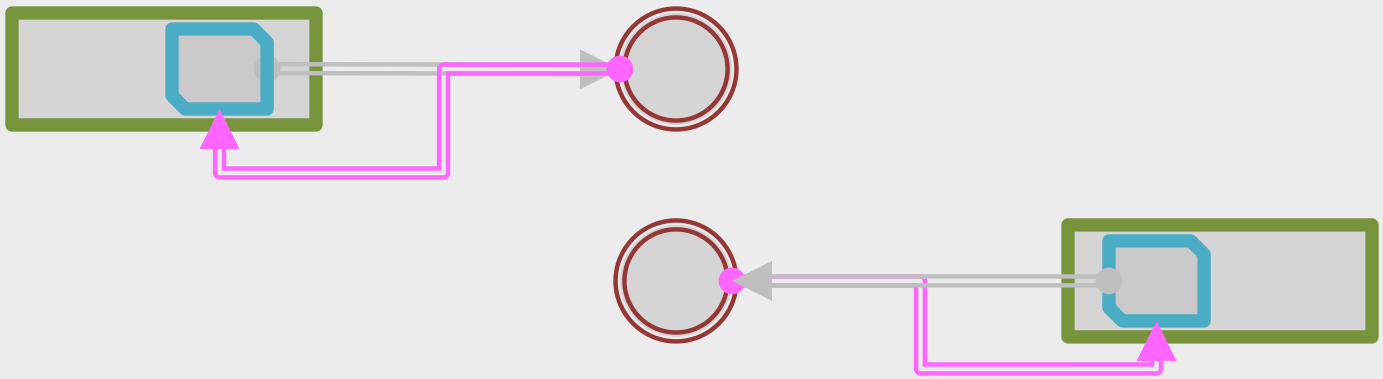
- Easy to add an observer
- I have dropped the letter labels

Co-creation I



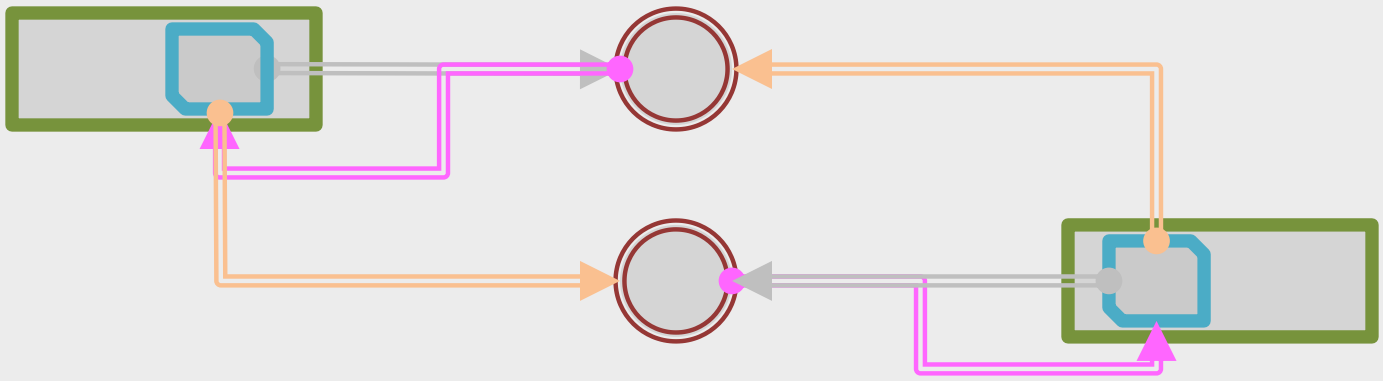
- This is far too simple

Co-creation II



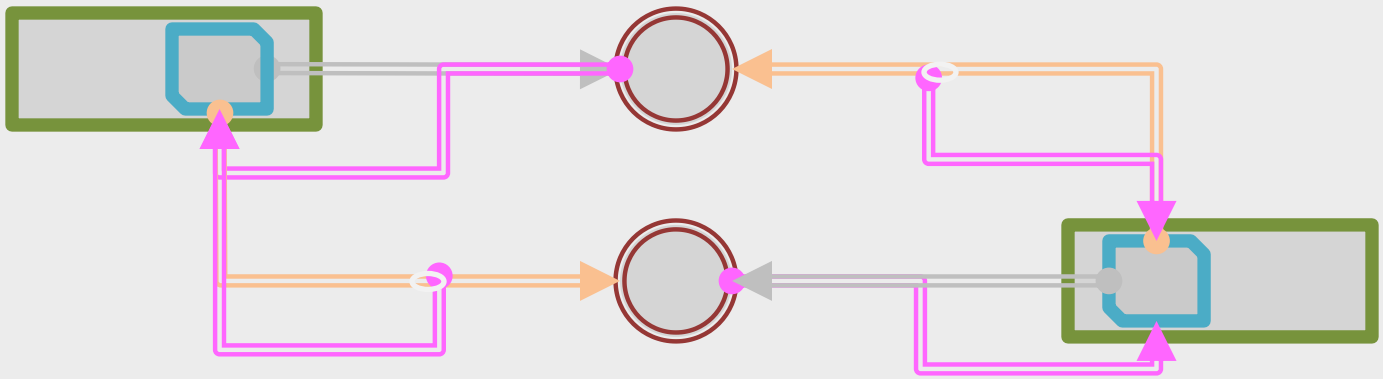
- Actors from very different CODs
- All actors contribute something
- But different things

Co-creation III



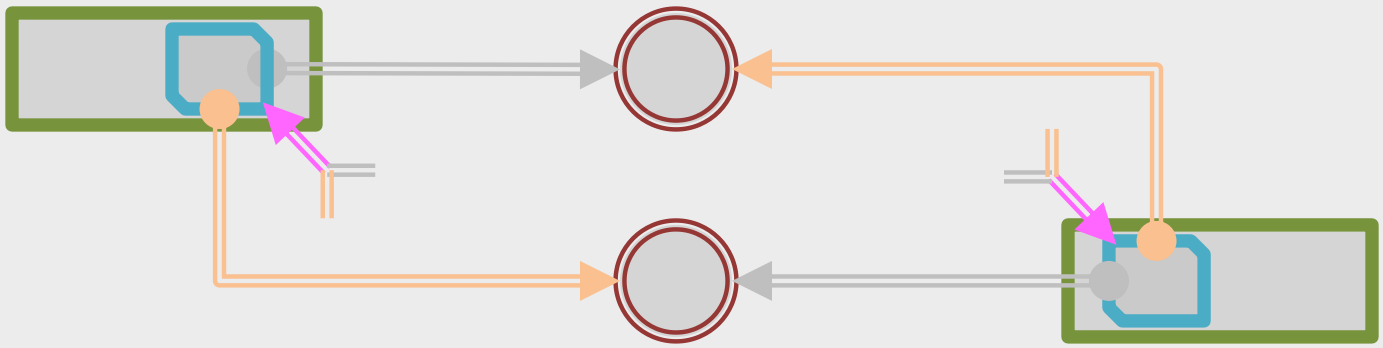
- And all actors observe

The conversation



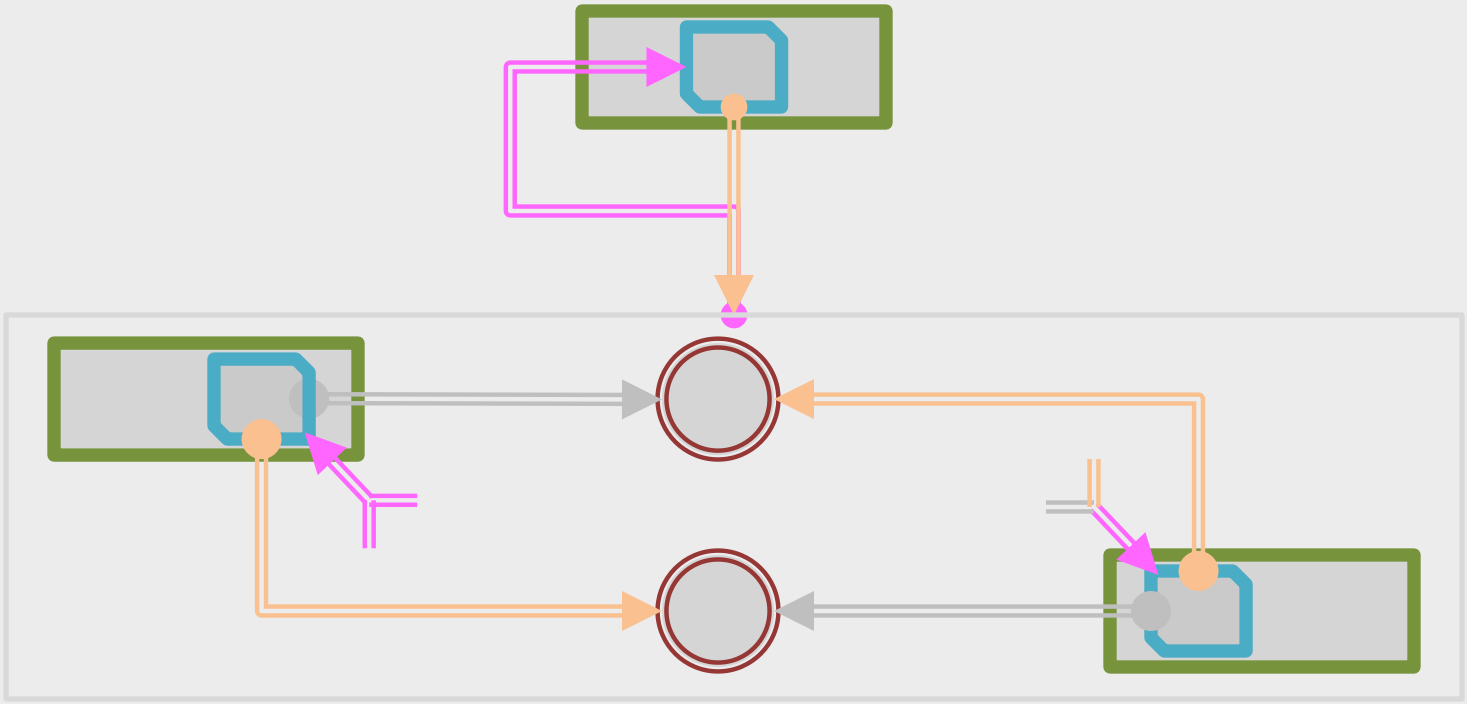
- And these observations have impact

Conversation simplified



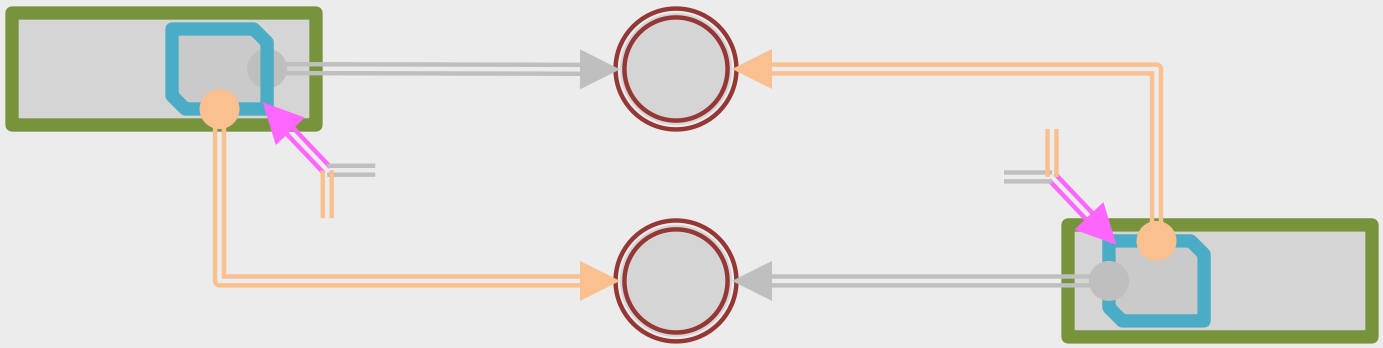
- Simplified diagram
- Epistemic Leakage
- Transgressive Knowledge

Performance



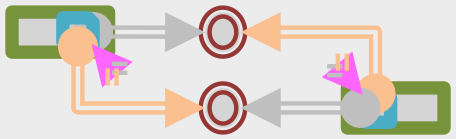
- Easy to add an observer
- Interview, Jazz Concert
- Performance?
- The actors are visible/constrained

Critical stage I



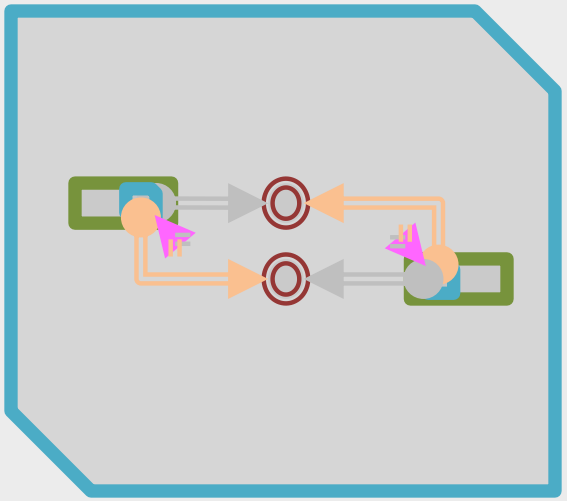
- Critical stage

The critical stage II



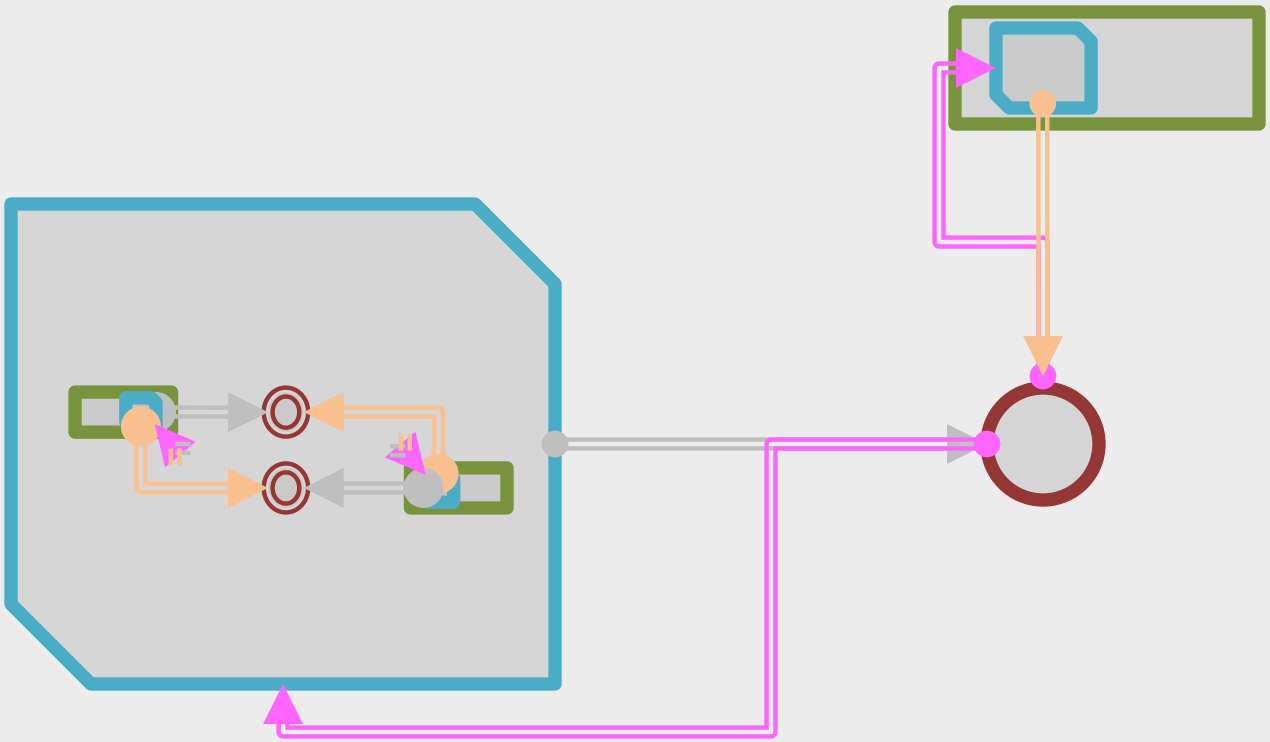
- Can we take this ...

The critical stage III



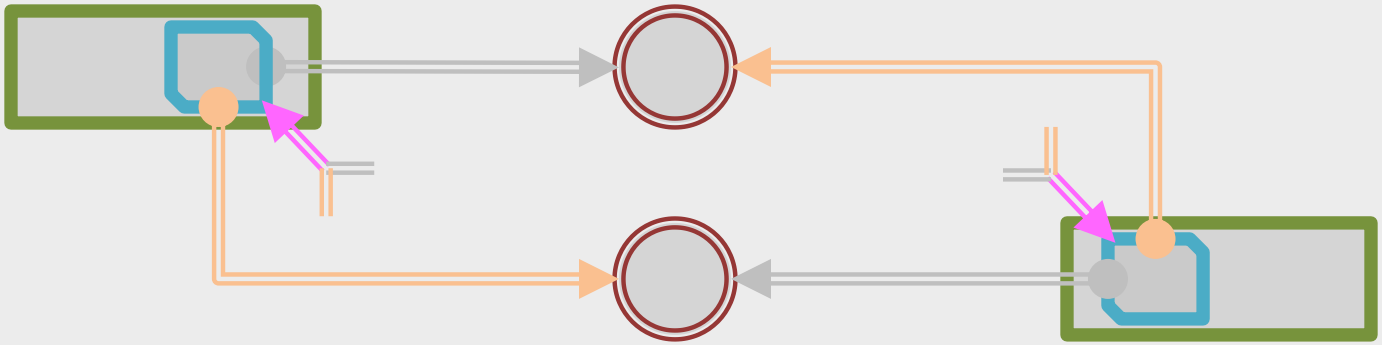
- And make a
- Synthetic world view
- A common frame

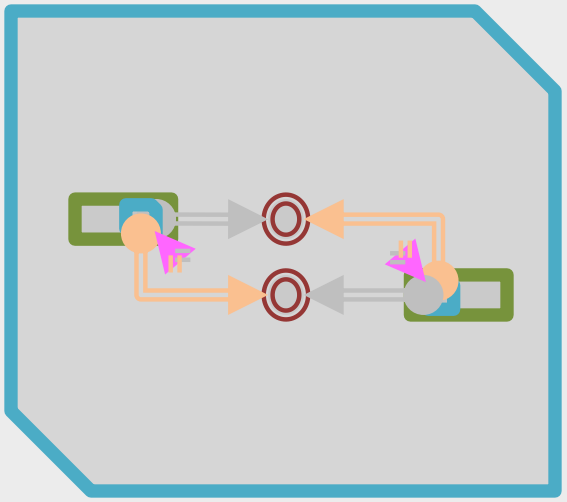
The critical stage IV

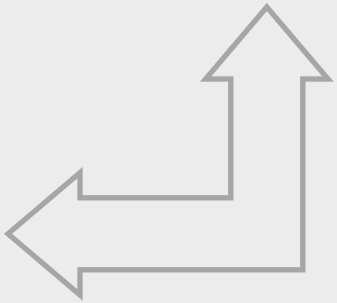


- The ideal result
- Common frame established
- Output arises from it

Management of co-creation I

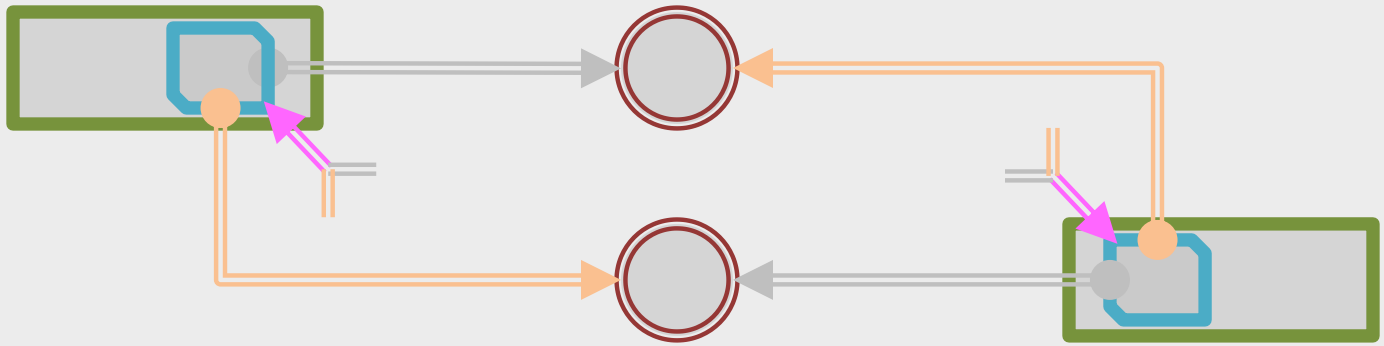


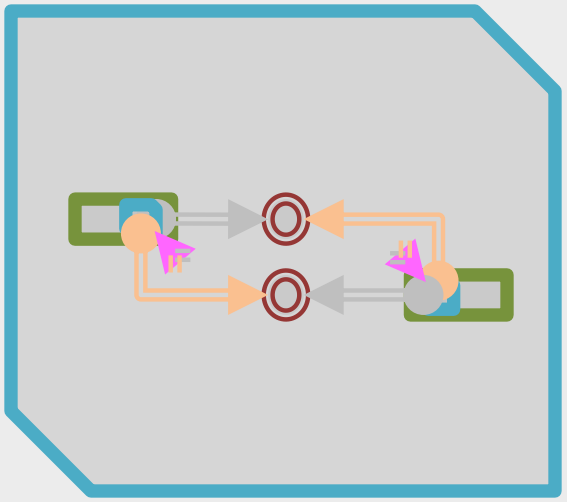


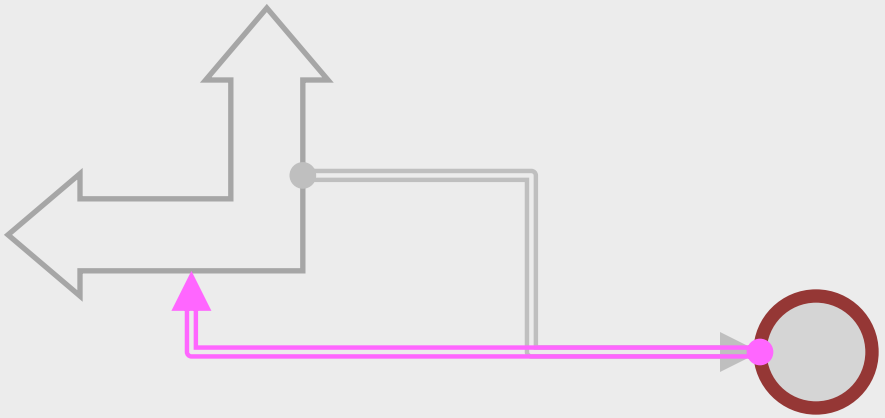


- More realistic
- Tension or equilibrium
- Conversation(s) and common frame(s)
- The equilibrium can be harnessed

Management of co-creation II





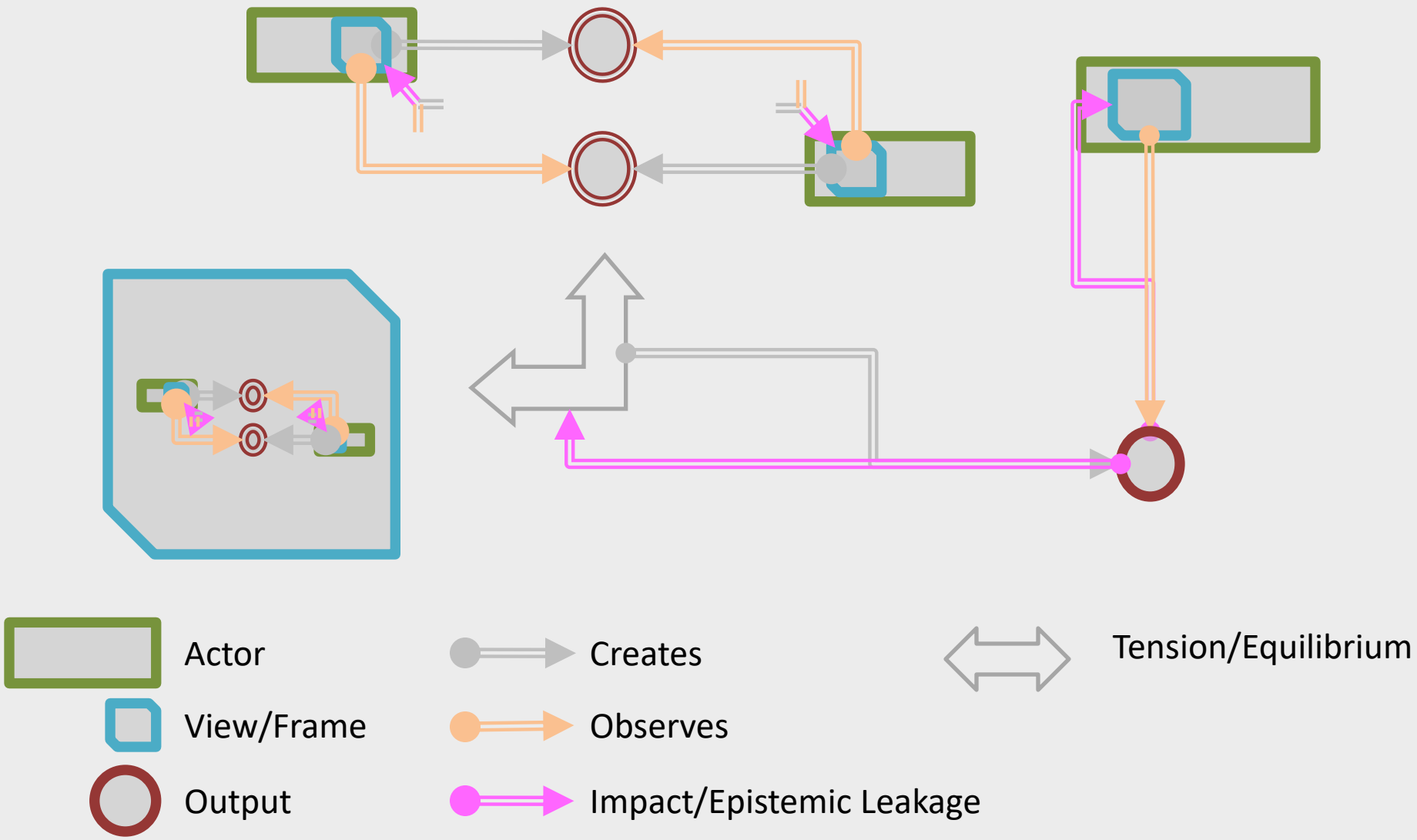


•The equilibrium can be harnessed

Summary

- Co-creation is the management of the tension/equilibrium between conversations between team members, and the establishment of common frames
- Neither the conversations nor the frames are usually stable enough to give rise to the output
- If the management is successful then this will give rise to the output

The end


Actor
View/Frame
Output
Creates
Observes
Impact/Epistemic Leakage
Tension/Equilibrium

Thank you