Leading climate science in the XXI Century

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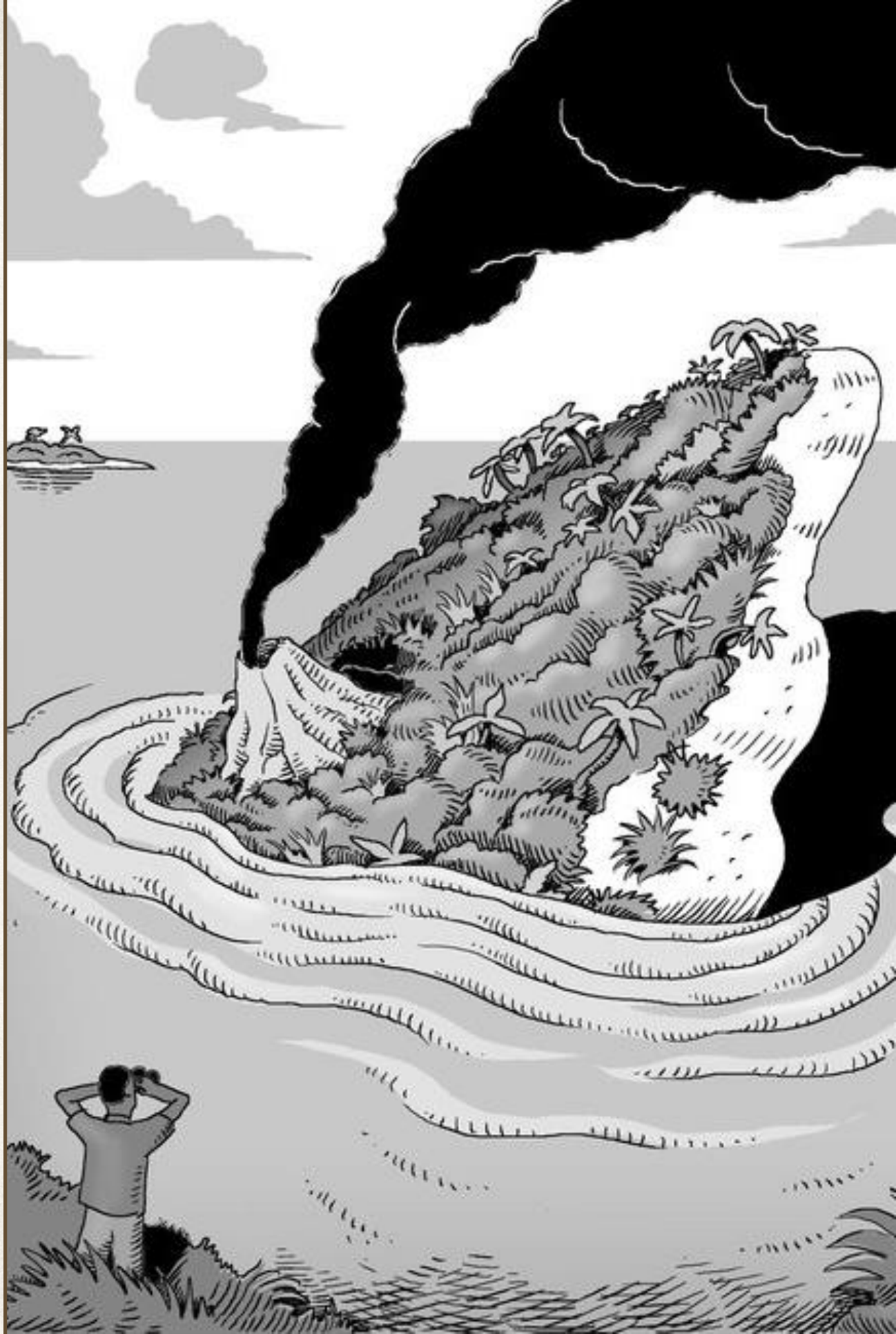
Powerful narratives have supported our social license to operate

- 50's — Weather Forecast
- 60's — General Circulation models
- 70's — Extended range forecasts
- 80-90's — Seasonal Forecasts
- 00, 10's — Climate Change
- 2020 — ???

H2020: Societal Challenges

- This pillar reflects the policy priorities of the Europe 2020 strategy and addresses major concerns shared by citizens in Europe and elsewhere.
- Challenge-based approach will bring together resources and knowledge across different fields , technologies and disciplines, including social sciences and the humanities.

- Health, demographic change and wellbeing 7.5B
- Food security, sustainable agriculture, marine and maritime research & the Bioeconomy 4B
- Secure, clean and efficient energy 6B
- Smart, green and integrated transport 6B
- Climate action, resource efficiency and raw materials 3B
- Inclusive and reflective societies 1B
- Secure societies 1.7B



Climate action, environment, resource efficiency and raw materials

- The objective of the Societal Challenge 'Climate action, environment, resource efficiency and raw materials' is to achieve an efficient and climate change resilient economy and society, the protection and sustainable management of natural resources and ecosystems, and a sustainable supply and use of raw materials, in order to meet the needs of a growing global population within the sustainable limits of the planet's natural resources and eco-systems.

- Actions will address gaps in the knowledge base needed to understand changes in the environment, identify the policies, methods and tools that would most effectively tackle the above mentioned challenges, and support innovators and businesses to bring green solutions to the market. A special focus will be given to waste and water.

Climate Services

Climate System Science

User Community

Observa-tions & Database

HP ITC INFRA

Earth System Models

Socio-economic scenario models

Model simulations

Week-Month THORPEX

Year-Decade DCCP

Decade-Century CMIP

Reanalysis

Climate information & knowledge

Operational production

(incl; uncertainties)

Climate Translation

Regional Downscaling CORDEX

Climate Impacts models

Socio-economic impacts models

Uncertainties

Translation Services

(incl. adaptation)

Governements – International, national, local

Public / Society

Business/commercial – International, national, local

Integration + Quality Assessment/Labelling
+ SSH to analyze interaction & promote dialogue

2015 BF/JPI-C Call

2014-15 H2020

2016 ERA4CS

2016-17 H2020

COPERNICUS

KIC Climate

ERA4CS Overall : User & action-oriented research, Regional with clear EU added value, Multi-level coherence, Integration

CERA: 0.5 to 5M€ research projects for large mobilization

KERA: Institutional integration on specific targets as urban areas, critical infrastructure, groundwater, snow… ?

JPI Connecting Climate Knowledge for Europe
(*JPI Climate)*

Towards collaborative practice-oriented climate research in Europe

www.jpi-climate.eu

The role of JPIs in the European Research Area

- **What is the Joint Programming Initiative (JPI)?**

The joint programming concept was introduced by the European Commission in July **2008** to support implementation of the **European Research Area**.

The objective of joint programming is to '**increase the value of relevant national and EU R&D funding by concerted and joint planning, implementation and evaluation of national research programmes**'.

JPI Climate

10 JPIs in key research areas responding to grand societal challenges

- Alzheimer and other Neurodegenerative Diseases (JPND)
- **Agriculture, Food Security and Climate Change (FACCE)**
- A Healthy Diet for a Healthy Life
- Cultural Heritage and Global Change: A New Challenge for Europe
- **Urban Europe - Global Urban Challenges, Joint European Solutions**
- **Connecting Climate Knowledge for Europe (JPI Climate) - since 2010**
- More Years, Better Lives - The Potential and Challenges of Demographic Change
- Antimicrobial Resistance- The Microbial Challenge - An Emerging Threat to Human Health
- **Water Challenges for a Changing World**
- **Healthy and Productive Seas and Oceans**

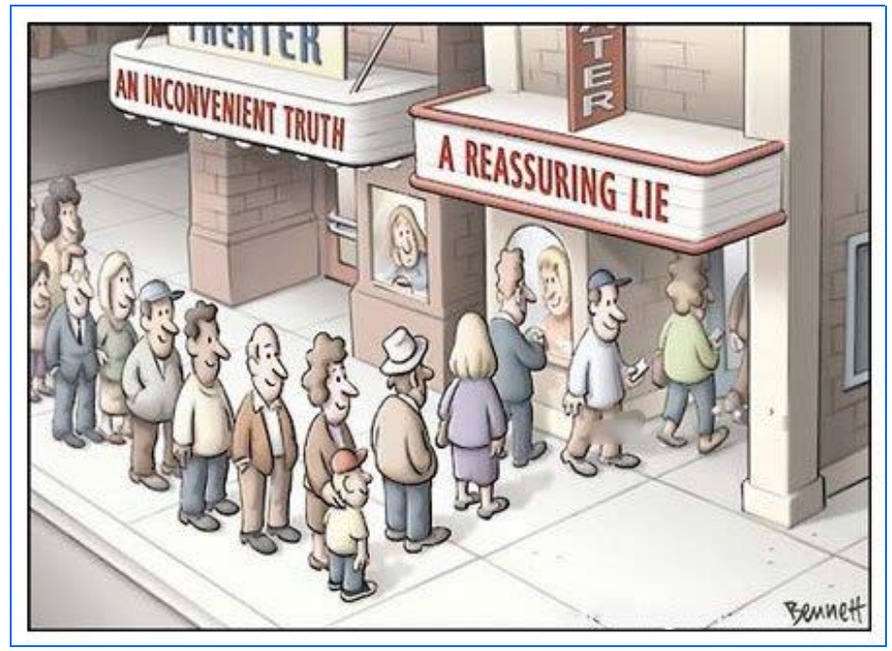
Those in bold deal with climate issues

JPI Climate

JPI Climate: Point of Departure and Motivation

Climate Research in Europe

- Multitude of players: 562 partners involved in FP7 projects in 2007-2010
- Considerable national research contributions:
  - EC-FP7: 141,7 Mio EUR (2007-2010)
  - JPI-National Research Programmes: more than 200 Mio EUR per year
- Predominantly natural-science based
- Weak link between knowledge production and application (science and decision-makers)



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It is a structured process on a voluntary basis and in a partnership approach to coordinate climate research and fund new transnational research initiatives.

- *aims* to respond to the knowledge needs of policy and the European society at large to address climate change
- *provides* a platform to align national research priorities according to a jointly agreed Strategic Research Agenda (SRA)
- *facilitates* the coordination, collaboration and exploitation of synergies in climate change research
- *connects* different disciplinary approaches in natural and social sciences; top researchers and research groups from different European countries; and scientific insights with the demands of policy makers, decision makers and other stakeholders

JPI Climate

The added value of JPI Climate

- Enhanced societal relevance
- Higher scientific quality
- Long-term continuity
- Higher effectiveness
- Stronger global position

JPI Climate

Interesting publications

- Strategic Research Agenda ***(currently being updated)***

- Climate-friendly Climate Research

- Open Access and Open Knowledge

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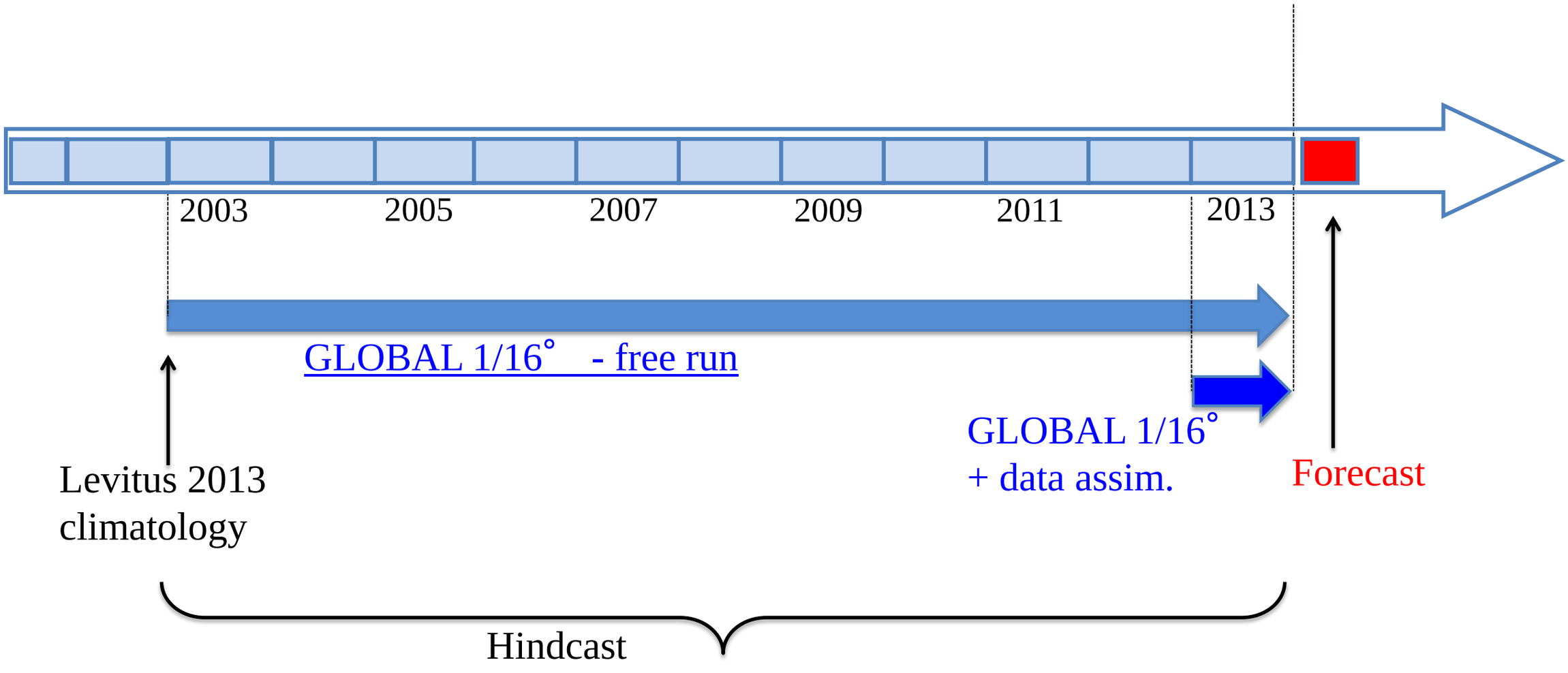
Activities

- Alignment of national research programmes
- Conferences, workshops and academic courses
- Policy support actions
- Collaboration with other research programmes, networks and initiatives

TOWARD A GLOBAL OCEAN FORECASTING SYSTEM AT HIGH RESOLUTION

Following and extending the study with the 3DVar operational analyses (with data assimilation) at 1/16° resolution toward a real-time forecasting system



The new CMCC climate system model: CESM-NEMO

Atmosphere
Community Atmosphere Model
CAM5.2

River routing
River Tranport Model
RTM

Coupler / Driver
CPL7

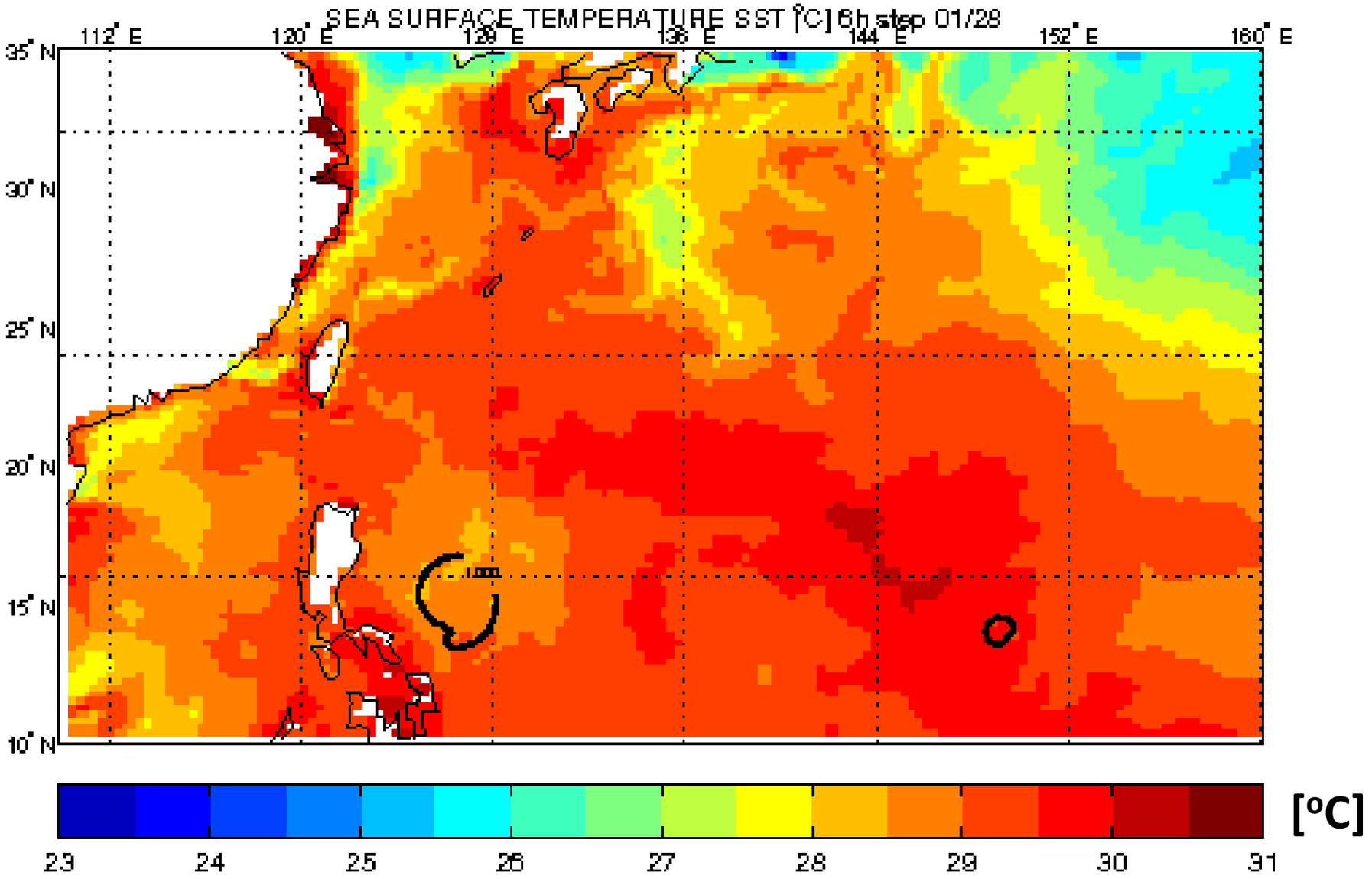
Land / Vegetation
Community Land Model
CLM4.0/CLM4.5

Ocean
Nucleus for European
Modelling of the Ocean
NEMO 3.4

Sea Ice
Community Ice Code
CICE4

A simulated CAT5 Typhoon in HF simulation (hourly Atm-Oce coupling)

SST [patterns] and SLP [contours]



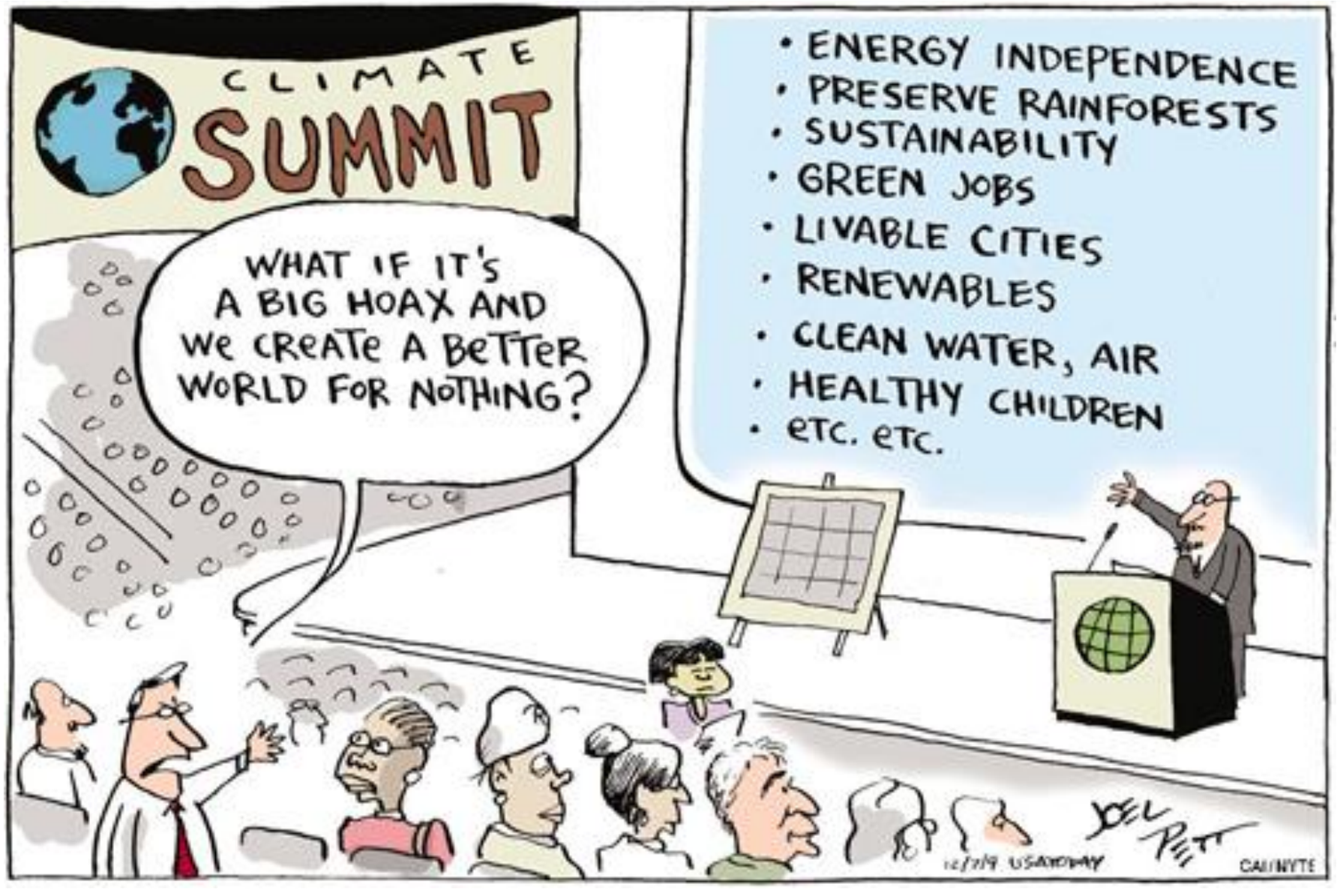
[6 hourly steps covering one week]

Decarbonizzare la societa’

- La riduzione delle emissioni di GHG sia nei settori ETS che non ETS
- Il costo della riduzione delle emissioni di GHG ovvero l’impatto della decarbonizzazione/ policy in termini di variazione del GDP rispetto allo scenario di riferimento.
- Gli investimenti necessari a conseguire gli obiettivi di decarbonizzazione
- L’impatto sull’occupazione per possibili “effetti di sostituzione” tra nuovi settori vs settori tradizionali
- L’impatto sulla competitività del sistema imprese

Benefici

- Minore mortalità e impatti sulla salute
- Maggiore produttività in agricoltura
- Riduzione della dipendenza energetica
- Minori danni sul patrimonio artistico
- Migliore qualità dell'aria
- Migliore Competitivita' del sistema economico



THANK YOU

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