

DESTINATION EARTH

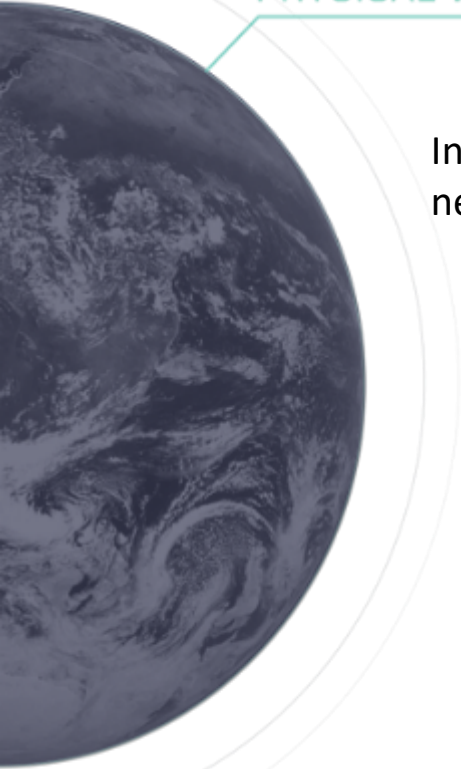
THE DATA STREAMING IN THE CLIMATE DIGITAL TWIN

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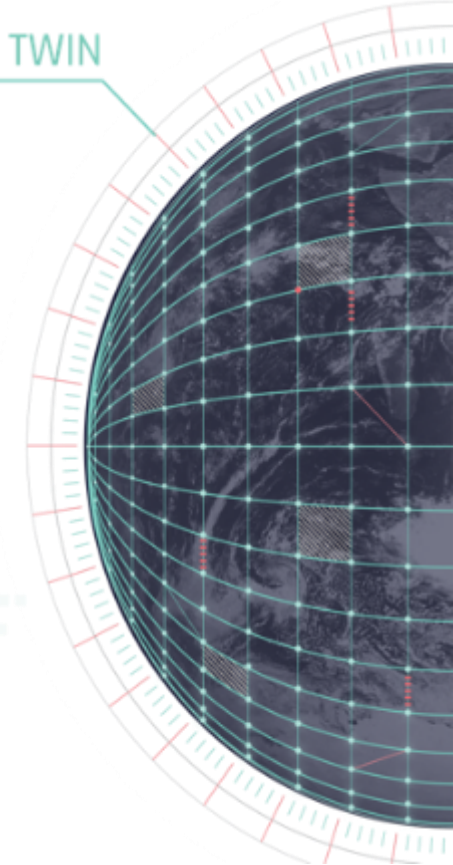
PHYSICAL WORLD



In order to adapt to a changing climate, there is a need of **local information at global scale**.

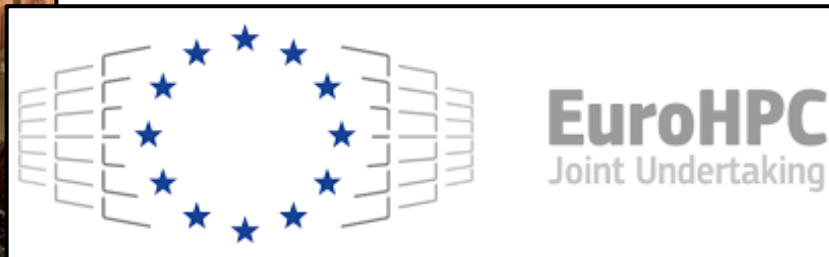
This requires the use of cutting-edge earth models and infrastructure, to obtain **high resolution data, globally**

DIGITAL TWIN



We are currently using some of the **most powerful Supercomputers in Europe:** LUMI, Juwels, MareNostrum4,...

But still, **we can not store all data** the models produce!



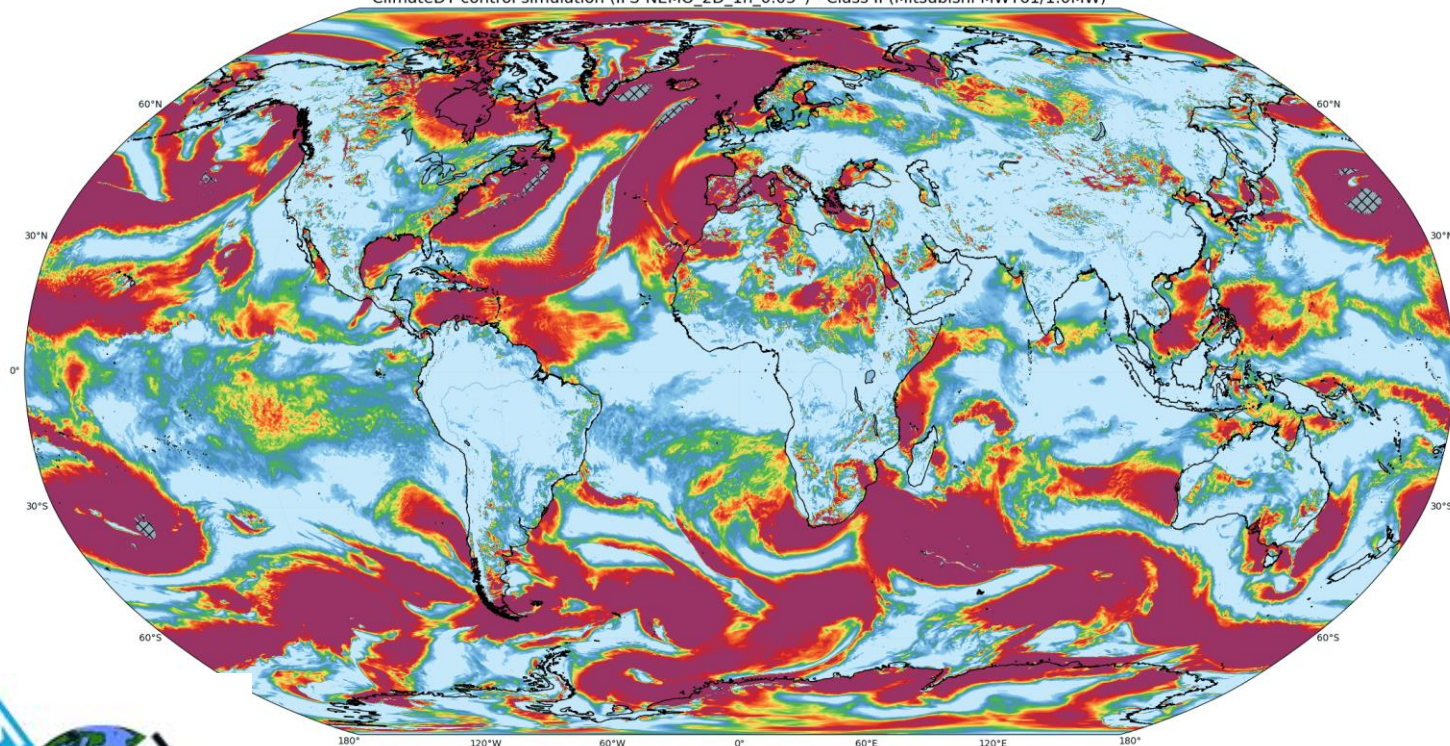
EuroHPC
Joint Undertaking



ClimateDT control simulation (IFS-NEMO_2D_1h_0.05°) - Class II (Mitsubishi MWT61/1.0MW)

~0.5-1PB per
day!

5km - 10km at
hourly resolution



A. Lacima

SOLUTION: DATA LISTENING MECHANISM

A solution deployed in a single workflow

Climate data



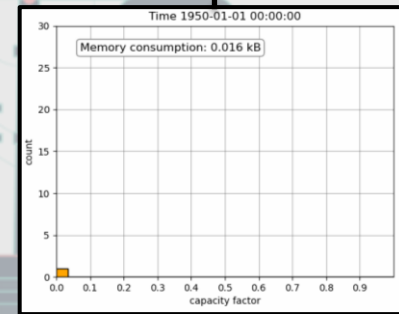
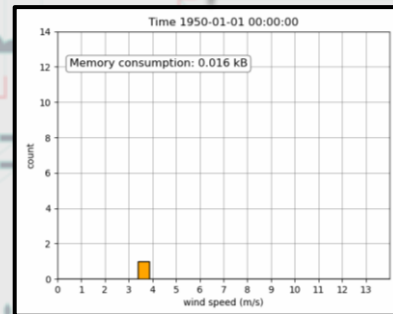
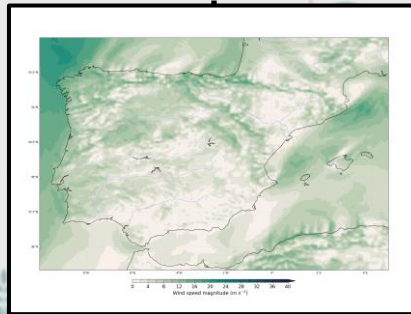
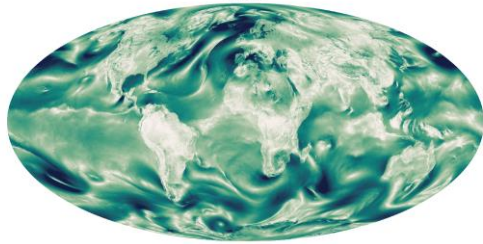
Climate information

Model outputs **raw**
climate variables

Data notifier triggers
application workflow. **Spatial**
selection of specific variables

One-pass algorithms
compute distribution of
weekly wind speed

Use case applications
compute climate
indicators
Weekly CF = 0.3861



Activities Firefox Web Browser 31 May 13:04

Autosubmit GUI

https://earth.bsc.es/autosubmitapp/experiment/a636

Autosubmit Searcher Home About News a636 ACTIVE esarchive 393.00 MB/s 2.00 € Search Experiments SEARCH Trouva Logout

Tree View Graph Log Configuration Statistics Performance Quick View FAQ

CLASSIC DATE-MEMBER STATUS SUMMARY ACTIVATE SELECTION MODE STOP JOB MONITOR

Job Name (e.g. fc0_1_CLEAN) SEARCH BY JOB NAME CHANGE STATUS

HIDE PANEL Max out: 5 | Max in: 2 | Total #Jobs: 26 | Chunk unit: month | Chunk size 4

Selection Wrappers

a636_REMOTE_SETUP

Start: End:
Section: REMOTE_SETUP
Members: Chunk:
Platform: Lumi 0
Processors: 1 Wallclock: 00:05

Status: WAITING out: 1 in: 1

Not Available COPY OUT
Not Available COPY ERR

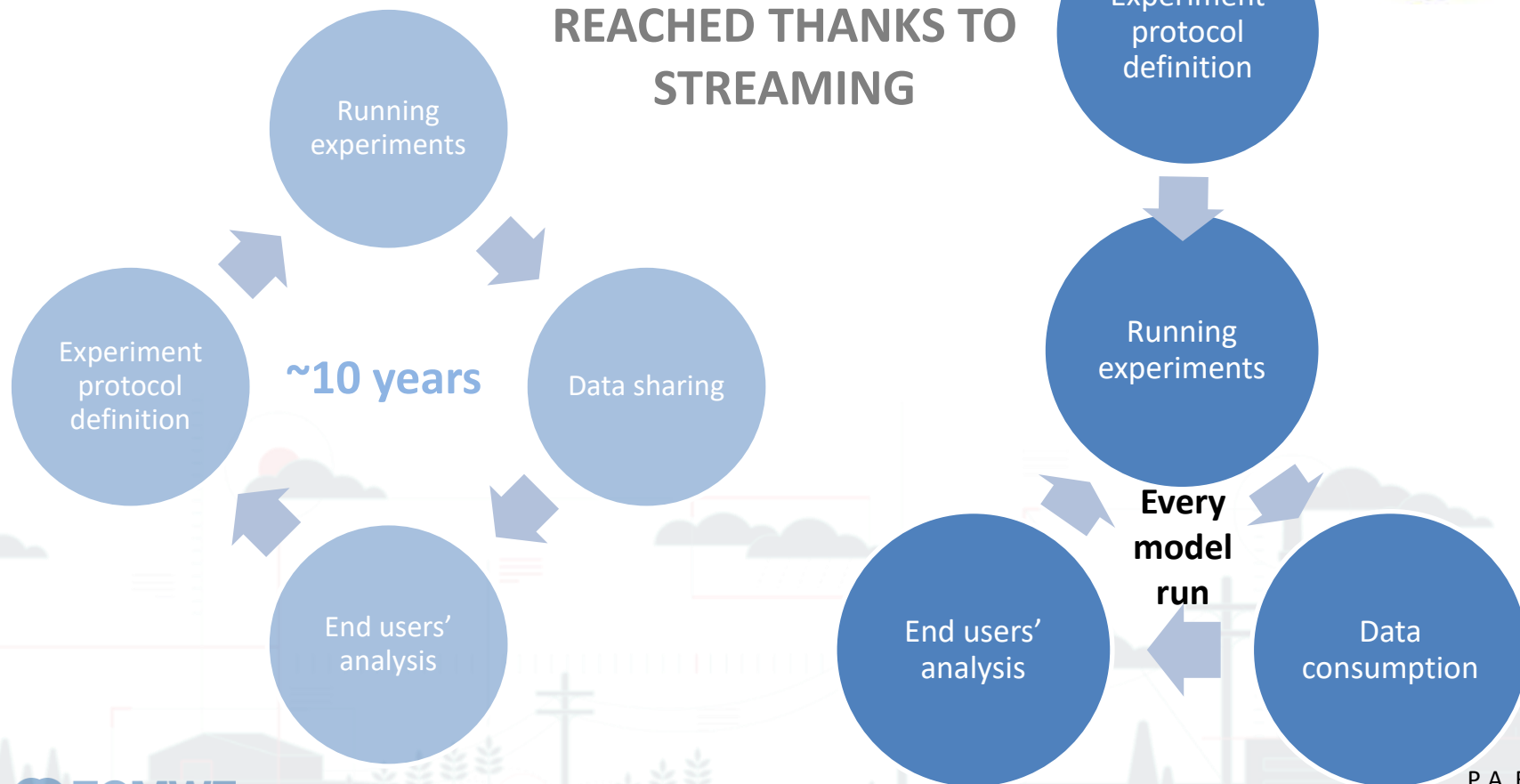
Monitor Ready Jobs

Monitoring jobs...

Navigation buttons: WAITING READY PREPARED SUBMITTED QUEUING RUNNING COMPLETED FAILED SUSPENDED UNKNOWN HOLD SKIPPED

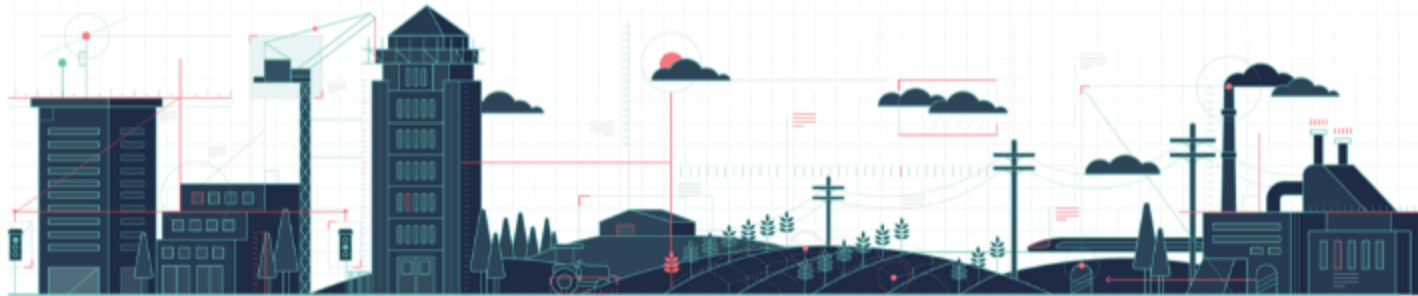


NEW PARADIGM REACHED THANKS TO STREAMING

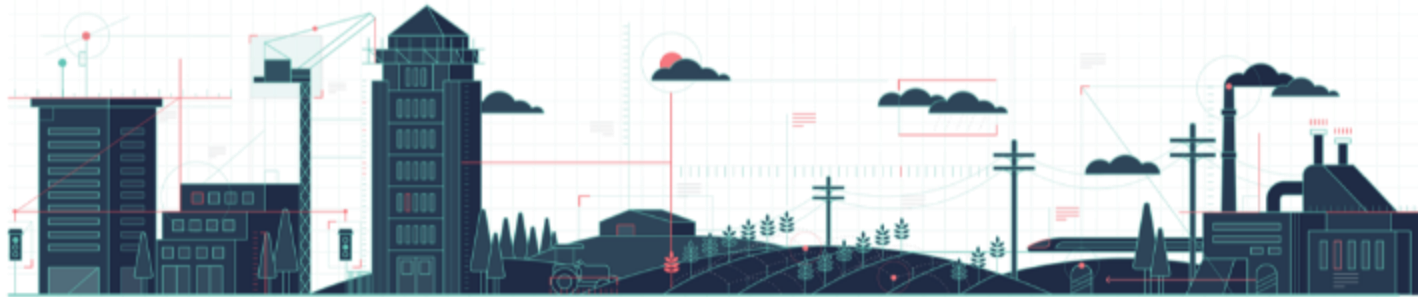


TAKE HOME MESSAGES:

- **New paradigm will be reached thanks to streaming: User Interactivity.**
- **Streaming provides the solution to issues related to data storage.**



QUESTIONS?



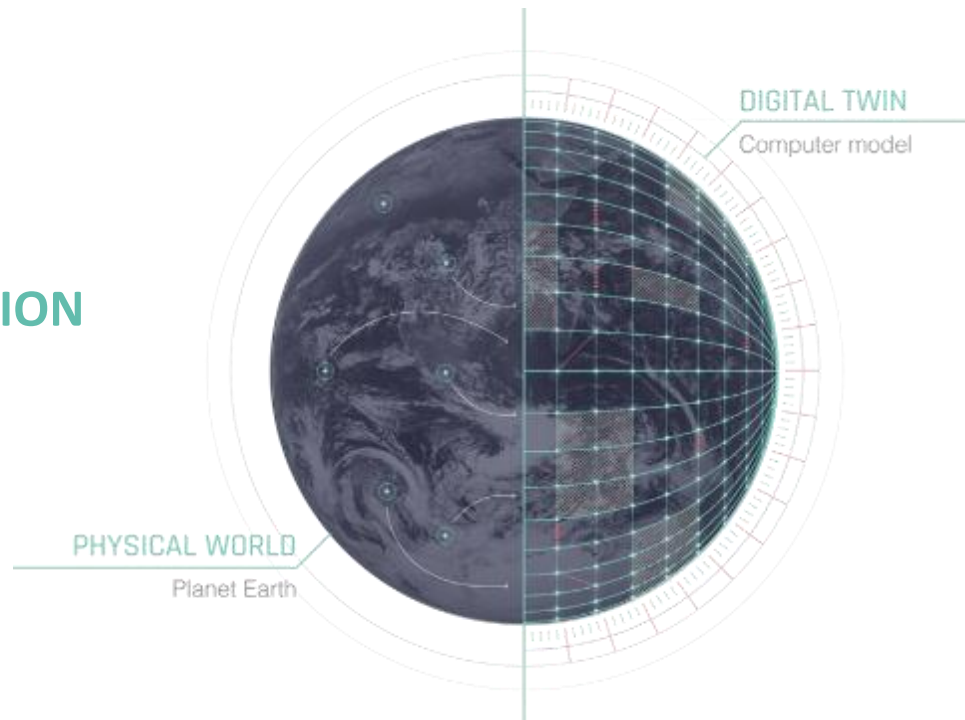
CONTACT AND FURTHER INFORMATION

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Supercomputing
Center**
Centro Nacional de Supercomputación



Funded by
the European Union

Destination Earth

implemented by

