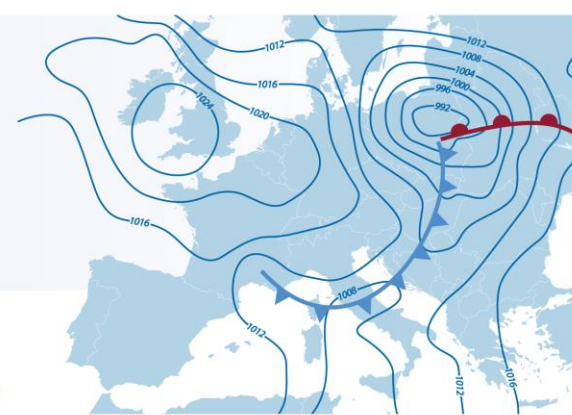**Climate Change**

COPERNICUS Climate Change Service (C3S)
training for EUMETNET

19 October 2021
9:30 to 12:00 CEST
and **21 October 2021**
9:30 to 12:00 CEST

Hands-on training on C3S datasets, data accesss and processing

EUROPEAN UNION · copernicus Europe's eyes on Earth · IMPLEMENTED BY ECMWF · Climate Change Service climate.copernicus.eu · EUMETNET

- Copernicus Climate Change Service (C3S) online training for EUMETNET on mornings of **19 & 21 October 2021**
    - 19 Oct: Overview of C3S, datasets, tools, recent developments and future plans
    - 21 Oct: Practical training on C3S data access and processing using CDS API and toolbox

- Following request from the EUMETNET Climate Expert Team (CET) to provide practical training on C3S data & tools to EUMETNET members.

- Please **register at**
  https://ec.europa.eu/eusurvey/runner/EUMETNET_C3Straining

- **Deadline** for registration
  30 September 2021, 23:59 CEST

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Session 1. 19 October: 09:30 to 12:00 CEST

[2h 30m] Overview of C3S: datasets, tools, recent developments & future outlook:

- 09:30 [5m] *Welcome and housekeeping*
- 09:35 [10m] Introduction and context (EUMETNET)
- 09:45 [10m] General introduction to C3S (**Stijn Vermoote**)
- 09:55 [5m] *Icebreaker (MentiMeter polls)*

- 10:00 [8m] C3S data: Observations and Essential Climate Variables (ECVs) (**Joaquin Sabater**)
- 10:08 [8m] C3S data: Reanalysis and in-situ observations (**Hans Hersbach**)
- 10:16 [8m] C3S data: Seasonal forecasts and climate projections (**András Horányi**)
- 10:24 [6m] *Question & answer session*
- 10: 30 [15m] *Coffee break*

- 10:45 [8m] Sectoral Information Systems (SIS): overview of current and planned datasets, applications & workflows for sector specific support (**Sam Almond**)
- 10:53 [8m] Monthly bulletins, European State of the Climate (ESOTC) (**Francesca Guglielmo**)
- 11:00 [5m] *Question & answer session*

- 11:05 [8m] C3S Evaluation and Quality Control (EQC) (**André Obregon**)
- 11:13 [8m] User engagement, training and user support (**Chris Stewart**)
- 11:20 [5m] *Question & answer session*

- 11:25 [30m] **Discussion (interactive session on EUMETNET requirements & experiences)**
- 11:55 [5m] *Conclusion of session 1 (Menti poll) and teaser for session 2*

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Session 2. 21 October: 09:30 to 12:00 CEST

[2h 30m] Practical session on data access & basic processing through CDS Toolbox & API.

- [5m] Welcome and housekeeping
- [1h] CDS API exercise: data access and analysis through Jupyter notebooks. Example processing of C3S datasets (e.g. ERA5, climate projections, seasonal forecast)

[*3 GROUPS: 2 x BEGINNERS/1 x INTERMEDIATE*] Trainers: Julia Wagemann, Chris Stewart, Rutger Dankers

  – [20m] Interactive demo of CDS API and Jupyter environment
  – [30m] Practical exercises
    o Data selection and download
    o Basic processing using Python, Xarray in Jupyter environment: e.g. calculation of climatology, produce time series of anomalies, plot results in images and graphs
  – [10m] Discussion in plenary and Q&A
- [15 m] Coffee break
- [1h] CDS Toolbox exercise: code editor, documentation and tutorials

[*3 GROUPS: 2 x BEGINNERS/1 x INTERMEDIATE*] Trainers: Julie Berckmans, Rutger Dankers, Chris Stewart

  – [20m] Interactive demo of code editor with example scripts
  – [30m] Exercise where participants write/edit a toolbox script and create applications
  – [10m] Discussion in plenary and Q&A
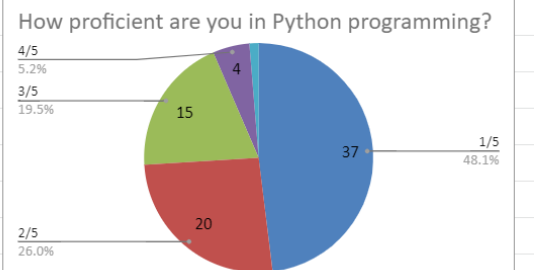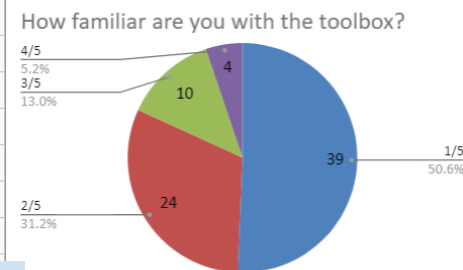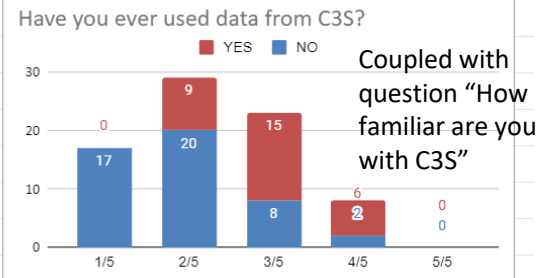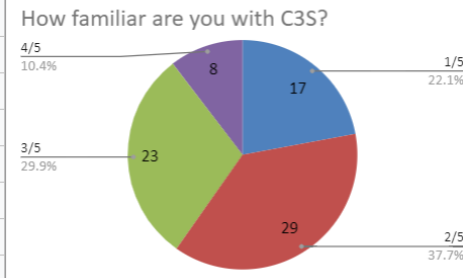- [10m] Closure by EUMETNET and ECMWF

77 registered participants from European NMHS. Please see accompanying excel (EUMETNET_training_participants _no-contact.xlsx) for full details on participants.

SCALE
1 = no knowledge
5 = very familiar

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Update: October 1, 2021

How familiar are you with C3S?
- 1/5: 17 (22.1%)
- 2/5: 29 (37.7%)
- 3/5: 23 (29.9%)
- 4/5: 8 (10.4%)

Have you ever used data from C3S?
- YES / NO
- 1/5: NO 17, YES 0
- 2/5: NO 20, YES 9
- 3/5: NO 8, YES 15
- 4/5: NO 2, YES 6
- 5/5: NO 0, YES 0

Coupled with question "How familiar are you with C3S"

How familiar are you with the toolbox?
- 1/5: 39 (50.6%)
- 2/5: 24 (31.2%)
- 3/5: 10 (13.0%)
- 4/5: 4 (5.2%)

How proficient are you in Python programming?
- 1/5: 37 (48.1%)
- 2/5: 20 (26.0%)
- 3/5: 15 (19.5%)
- 4/5: 4 (5.2%)

1 (no knowledge) to 5 (in-depth knowledge)	How familiar are you with C3S?		Have you ever used data from C3S?		How familiar are you with the toolbox?		How proficient are you in Python programming?	
			NO	YES				
1/5	17	22.1%	17	0	39	50.6%	37	48.1%
2/5	29	37.7%	20	9	24	31.2%	20	26.0%
3/5	23	29.9%	8	15	10	13.0%	15	19.5%
4/5	8	10.4%	2	6	4	5.2%	4	5.2%
5/5	0	0.0%	0	0	0	0.0%	1	1.3%
Total	77	100%	47	30	77	100%	77	100%

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