Steering Committee (STC) Report

Yoav Levi

Chairman of COSMO STeering Committee (STC)

STC representatives

Country	Member	Deputy
Germany	Roland Potthast	Günther Zängl
Switzerland	Philippe Steiner	Marco Arpagaus
Italy	Antonio Vocino	Francesca Marcucci
Greece	Panagiotis Skrimizeas	Flora Gofa
Poland	Andrzej Wyszogrodzki	Andrzej Mazur
Romania	Elena Mateescu	Rodica Dumitrace
Russia	Gdaliy Rivin	Michael Tsyrulnikov
Israel	Yoav Levi	Pavel Khain

COSMO Priority Projects and Priority Tasks

WG1	PP KENDAscope Christoph Schraff 09/2020-08/2025	KENDA from surface to cloud observations progressive extension	Ongoing
WG3a	PP CAIIR Harel Muskatel 03/2020-02/2022	Clouds and Aerosols Improvements in ICON Radiation Scheme	Ongoing
WG3b	PT VAINT Merja Tolle 09/2020-08/2022	Vegetation Atmosphere INTeractions	Ongoing
	PP CALMO-MAX Antigoni Voudouri 06/2017-12/2020	CALibration of COSMO Model (CALMO) Methodology Applied on eXtremes (MAX)	Finished
	PT SAINT Sascha Bellaire 09/2017-12/2020	Snow cover Atmosphere INTeractions; multi-layer snow model	Finished
	PT ÆVUS2 Paola Mercogliano 09/2019 - 12/2020	Analysis and Evaluation of TERRA_URB Scheme	Finished
	PT CITTA Jan-Peter Schulz 09/2021 – 08/2024	City Induced Temperature change Through Advanced modelling	NEW PP

CITTA

City Induced Temperature change Through A'dvanced modelling

Jan-Peter Schulz (DWD) and 6 COSMO members

- Transfer the achievements of the COSMO PTs AEVUS and AEVUS2 with respect to the urban canopy parameterisation TERRA_URB and its external parameters from the COSMO to ICON.
- **Numerical experiments**
  - Moscow
  - Turin
  - Naples
  - Bucharest
  - Jerusalem and Tel Aviv

Europe degree of urbanization stands on 75%, Worldwide 56%

COSMO Priority Projects and Priority Tasks

WG4	PP MILEPOST Andrzej Mazur 09/2020-08/2022	MachIne LEarning-based POST-processing	Ongoing
WG4/5	PP AWARE Flora Gofa & A. Bundel 09/2019-12/2021	Appraisal of "Challenging WeAther" FoREcasts	Ongoing Extended
WG5	PP CARMA Amalia Iriza-Burca 04/2018-08/2021	Common Area with Rfdbk/Mec Application	Finished
WG6	PP C2I Daniel Rieger 04/2018-03/2022	COSMO transition to ICON-LAM	Ongoing
	PP IMPACT Carlos Osuna 08/2018-09/2022	Icon on Massively Parallel ArchiteCTures	Ongoing
	PP WG6-SPRT Massimo Milelli … permanent	Support (on-going WG6 tasks)	Ongoing
WG7	PP PROPHECY Chiara Marsigli 09/2020-08/2024	PRObabilistic Prediction at High-resolution with EnhanCed perturbation strategY	Ongoing

COSMO license income and activity proposals

INPUT		OUTPUT	
UAE	20,000 €	TEAMx	35,700 €
Brazil IMET	20,000 €	ICON-in-the-Cloud	~20,000 €
Brazilian Navy	20,000 €	ESSL Testbed	15,000 €
Turkmenistan	20,000 €	Support for NMA	9,500 €
Oman	20,000 €	Publication	~8,000 €
Botswana	20,000 €	Web und Mail Serve	5,000 €
Total	**120,000 €**		**~93,000 €**

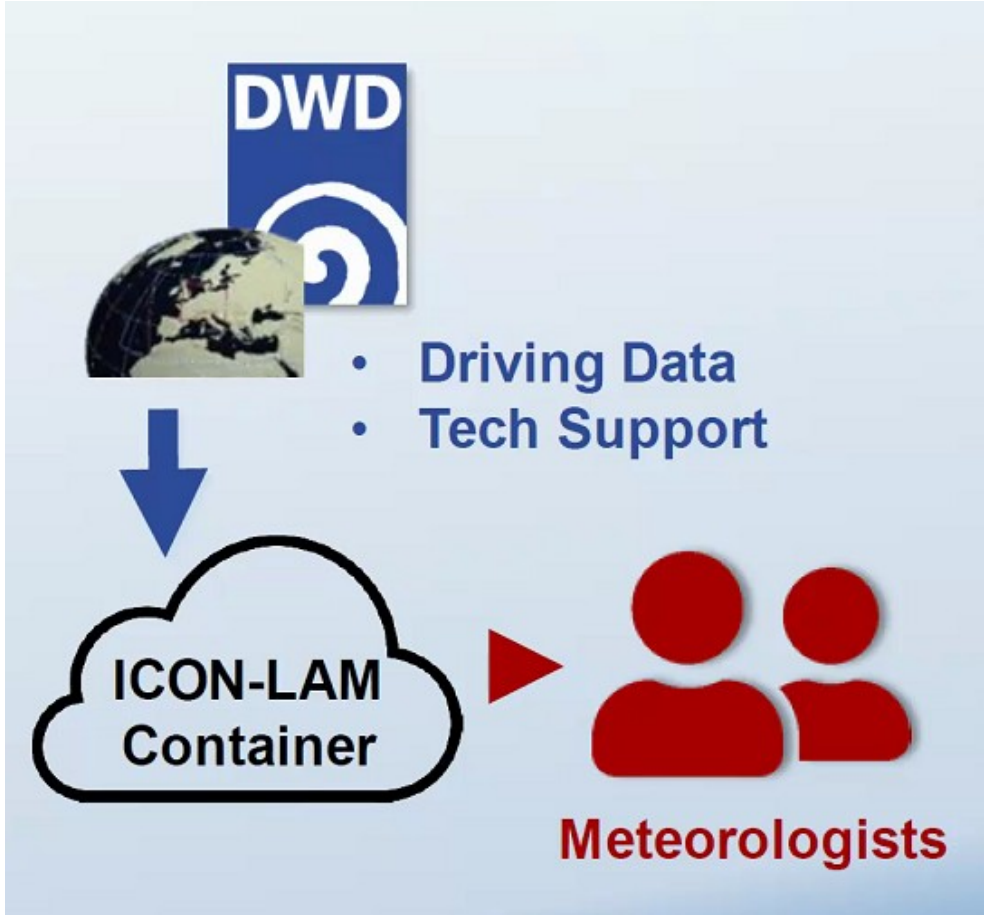
- We should not take it as granted that countries will continue to pay 20,000 € forever.
- For discussion: Do we need to start C2I for our COSMO users and to establish an ICON user community? ICON Training?

ICONIC - ICON-in-the-Cloud

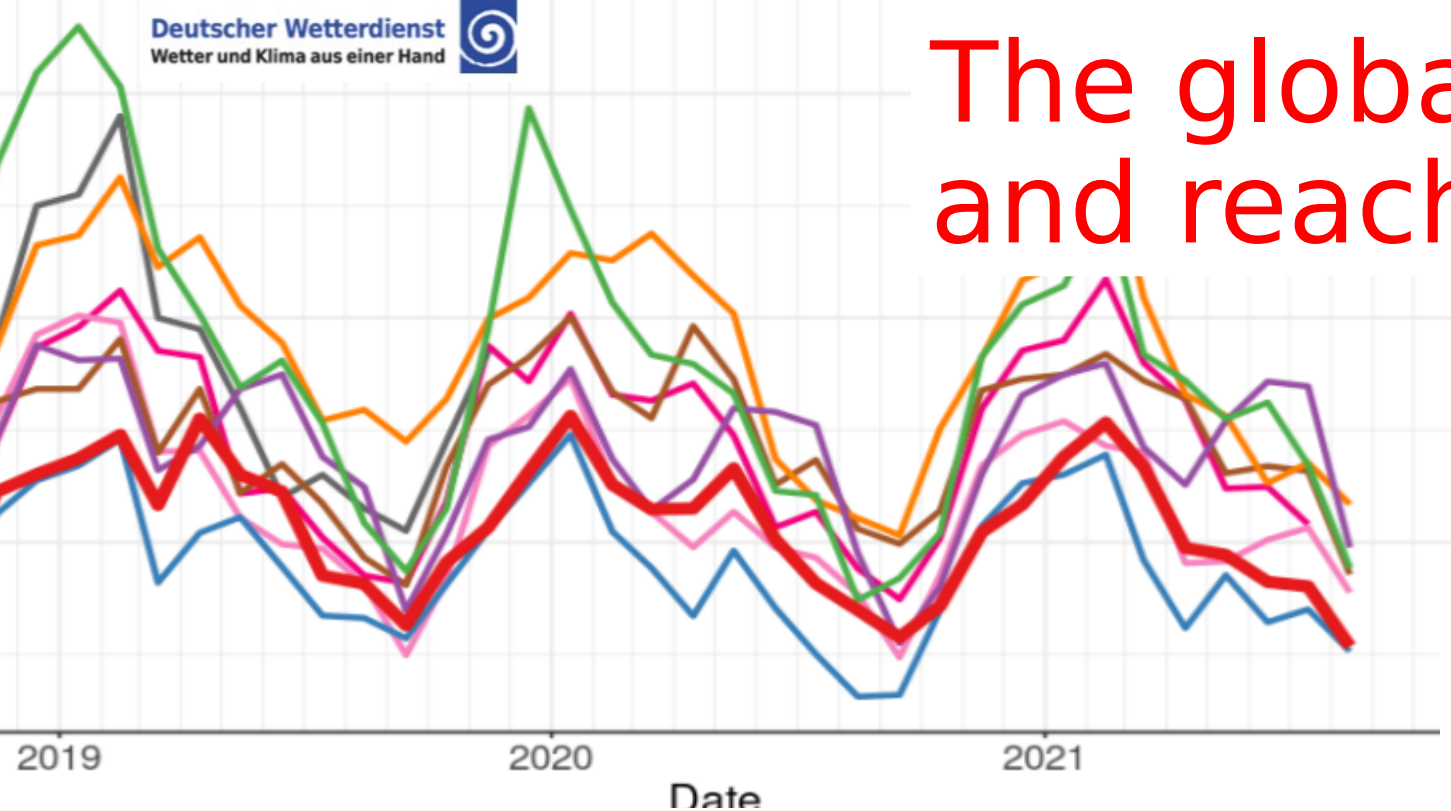
- Many countries have a problem to maintain a HPC and download BC/IC
- ICONIC may be a solution

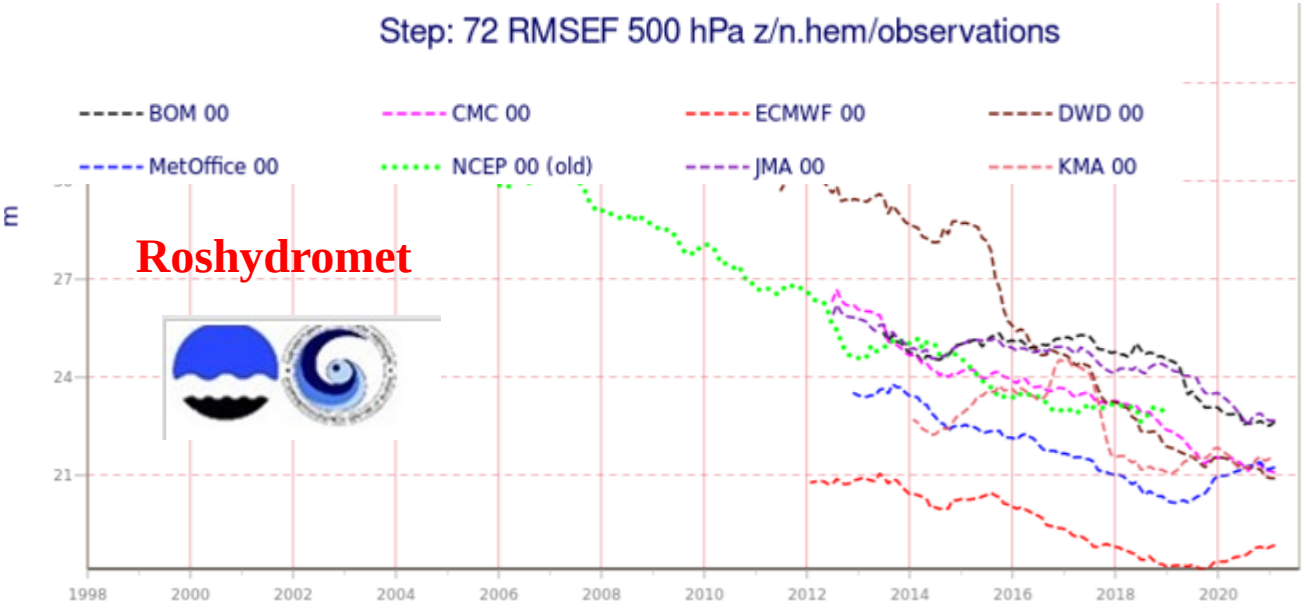
aws

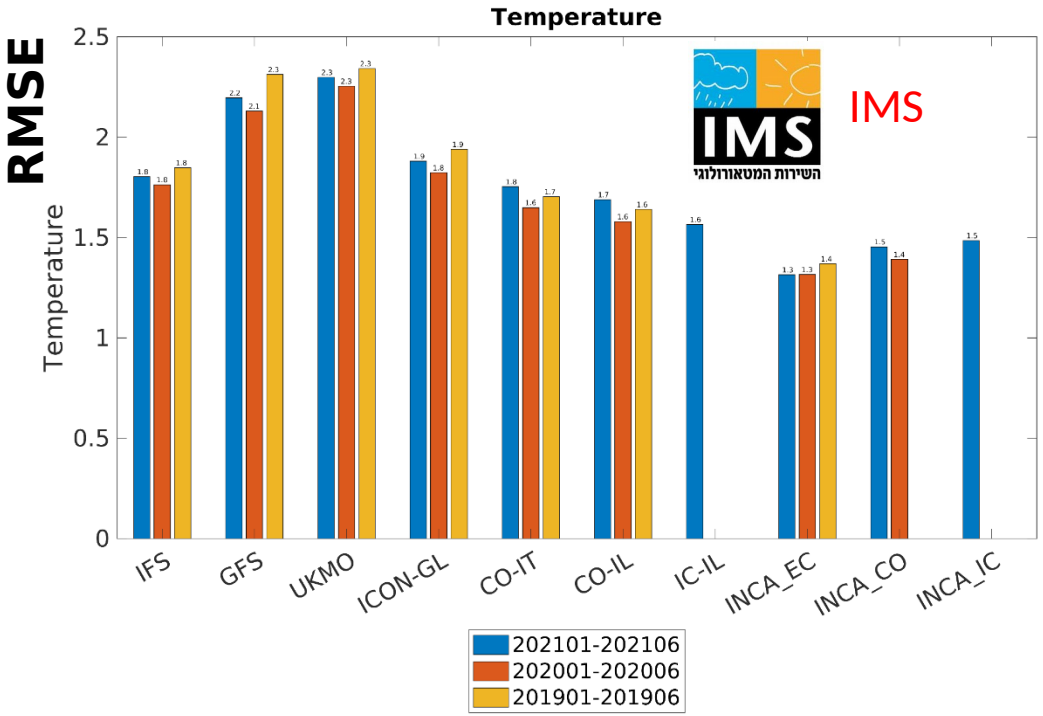
Microsoft Azure



The global ICON is improving and reaching the IFS skill







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Update on ICON-Agreement: Governance

Deutscher Wetterdienst
Wetter und Klima aus einer Hand

Max-Planck-Institut für Meteorologie

KIT Karlsruher Institut für Technologie

C2SM Center for Climate Systems Modeling

DKRZ

Deutscher Wetterdienst
Wetter und Klima aus einer Hand

CONSORTIUM FOR SMALL SCALE MODELING
COSMO

1. **ICON Directors Meeting** (D5) 3-monthly
   Sarah Jones, Jochem Marotzke, Thomas Ludwig, Corinna Hose, Nikolas Gruber

2. **ICON Coordination** Group (C5) bi-weekly
   Daniel Klocke, Bernhard Vogel, Roland Potthast, Xavier Lapillonne, Hendryk Bockelmann

3. **ICON Seamless** Coordination, 4/6-weekly
   Roland Potthast, Barbara Früh (DWD), Wolfgang Müller, Peter Korn (MPI)

   with **ICON NWP**, led by Günther Zängl (DWD)

4. **ICON-Consolidated** (C5 plus working groups)

For discussion: Coordination of development of COSMO WGs with ICON Development Groups

Discussion on future of licenses and support

Deutscher Wetterdienst
Wetter und Klima aus einer Hand
DWD

Current Status:

- **ICON for Research**: institutional or personal licence
- **ICON for NHMS** currently under preparation

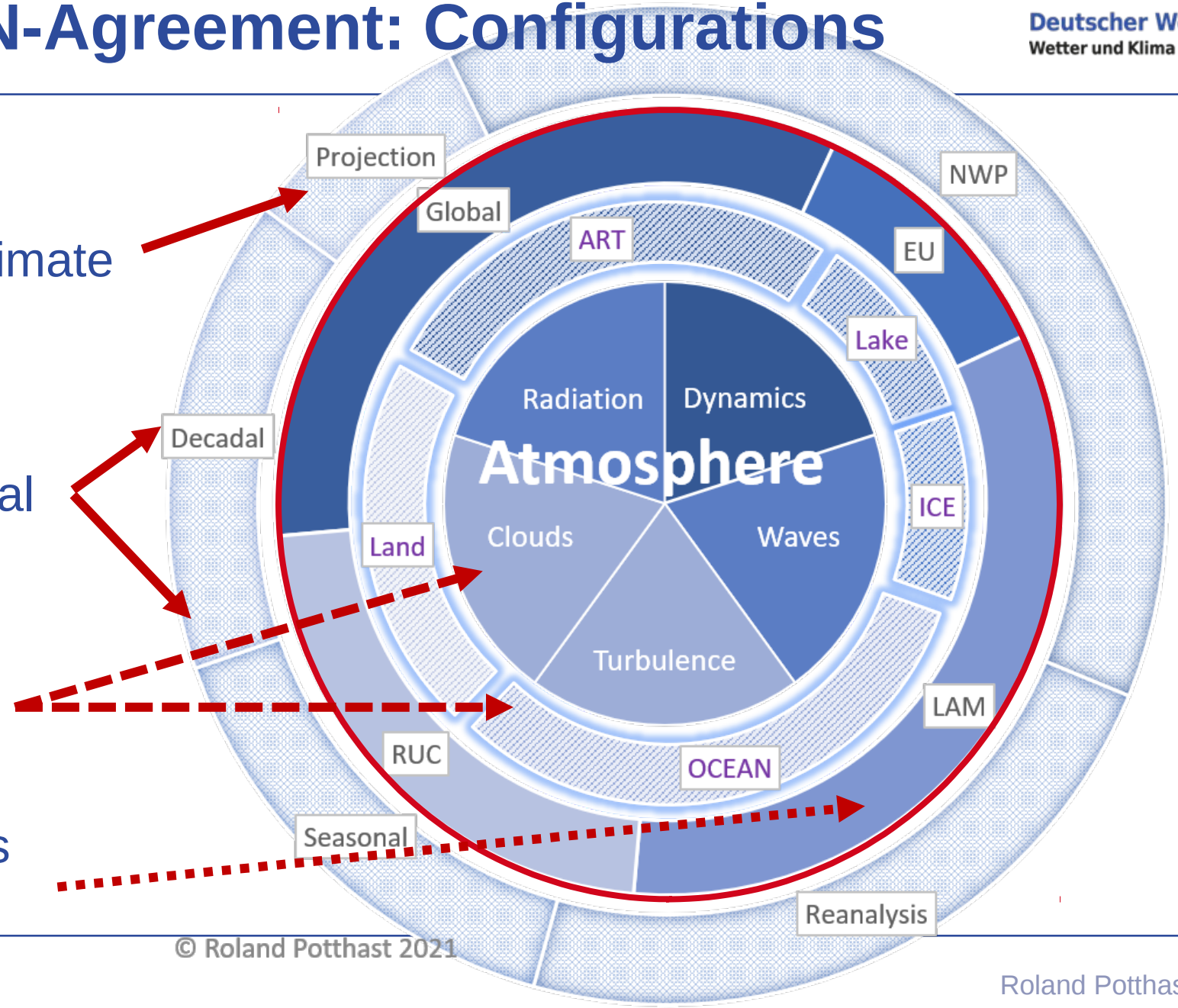
For discussion: COSMO ver. 6 or ICON

Update on ICON-Agreement: Configurations

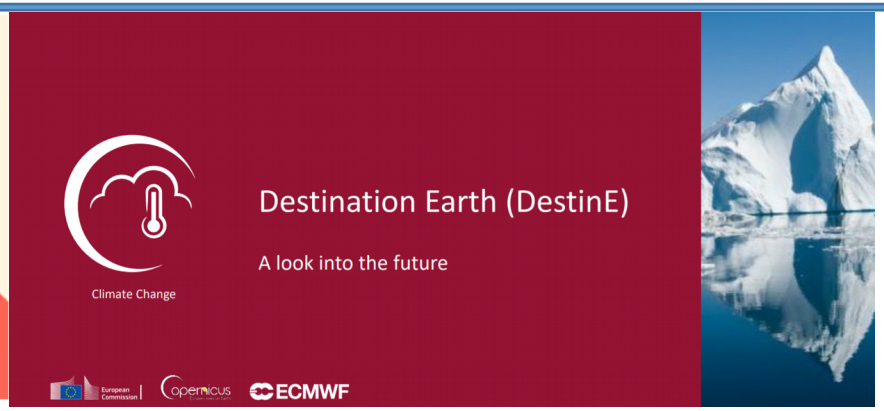
Deutscher Wetterdienst
Wetter und Klima aus einer Hand

Weather to Climate

- **Storm-Resolving** Climate Models via ICON
- **ICON-ESM2** Seasonal and Decadal
- **ICON-ESM-W** Atmosphere, Ocean coupled 0-10 days
- **NWP** with Operations Global, EU, **LAM**



COSMO and the new buzzwords

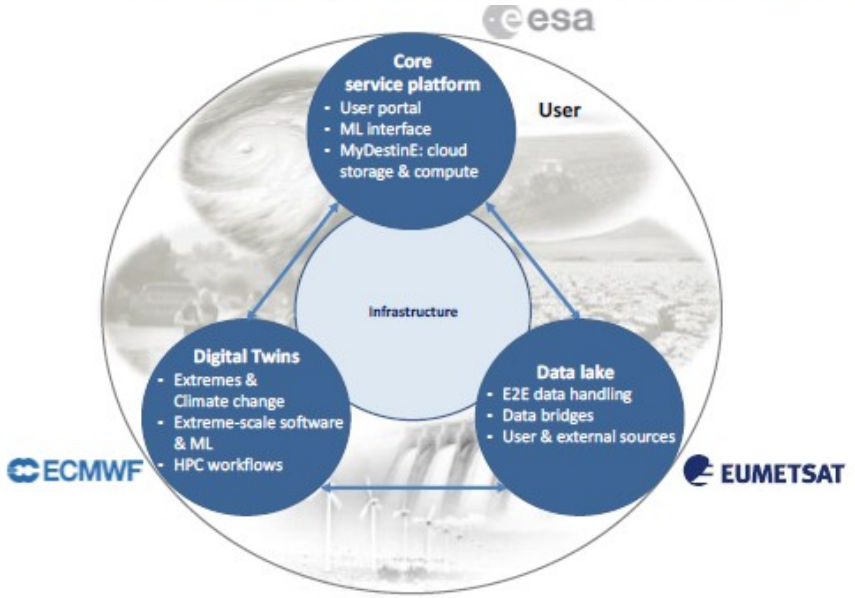


- **ESA (~50 Million €)**:
  key role of system integrator
  and implementer of the core platform
- **EUMETSAT (~40 Million €)**:
  responsible for the big data lake and data integration
- **ECMWF (~60 Million €)**:
  Digital Twin (DT) implementer
  - DT1: Weather-induced and Geophysical Extremes
  - DT2: Climate Change Adaptation

Can deep learning beat numerical weather prediction?

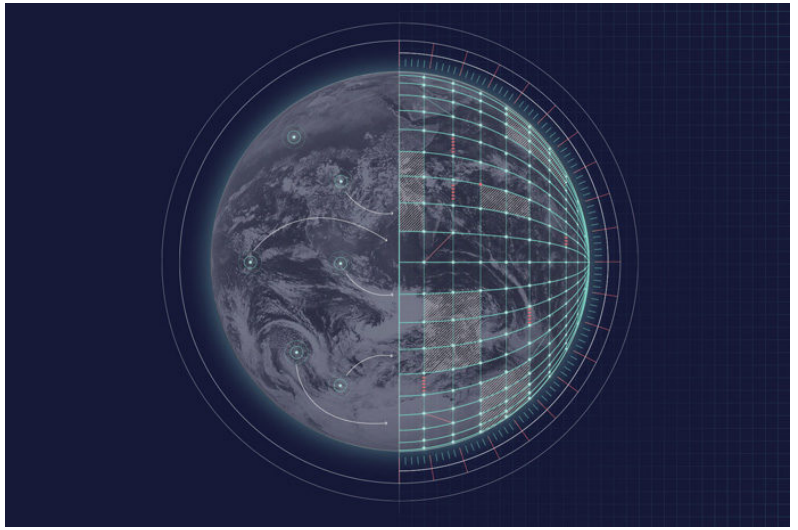
M. G. Schultz, C. Betancourt, B. Gong, F. Kleinert,
M. Langguth, L. H. Leufen, A. Mozaffari and
S. Stadtler

Jülich Supercomputing Centre, Forschungszentrum Jülich, Germany



DestinE : Digital Twins

- DestinE will be implemented gradually over the next 7-10 years, starting in 2022.
- One aim is to create Digital Twins (DT) of the earth
- The digital twins created in DestinE will give expert and non-expert users tailored access to high-quality information, services, models, scenarios, forecasts and visualisations
- Digital climate and nwp/extreme twins : planned to have on demand capabilities over Europe, running on EU HPC infrastructures



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IMS
השירות המטאורולוגי

CONNECTING URBAN ENVIRONMENTS WITH IOT AND DIGITAL TWINS

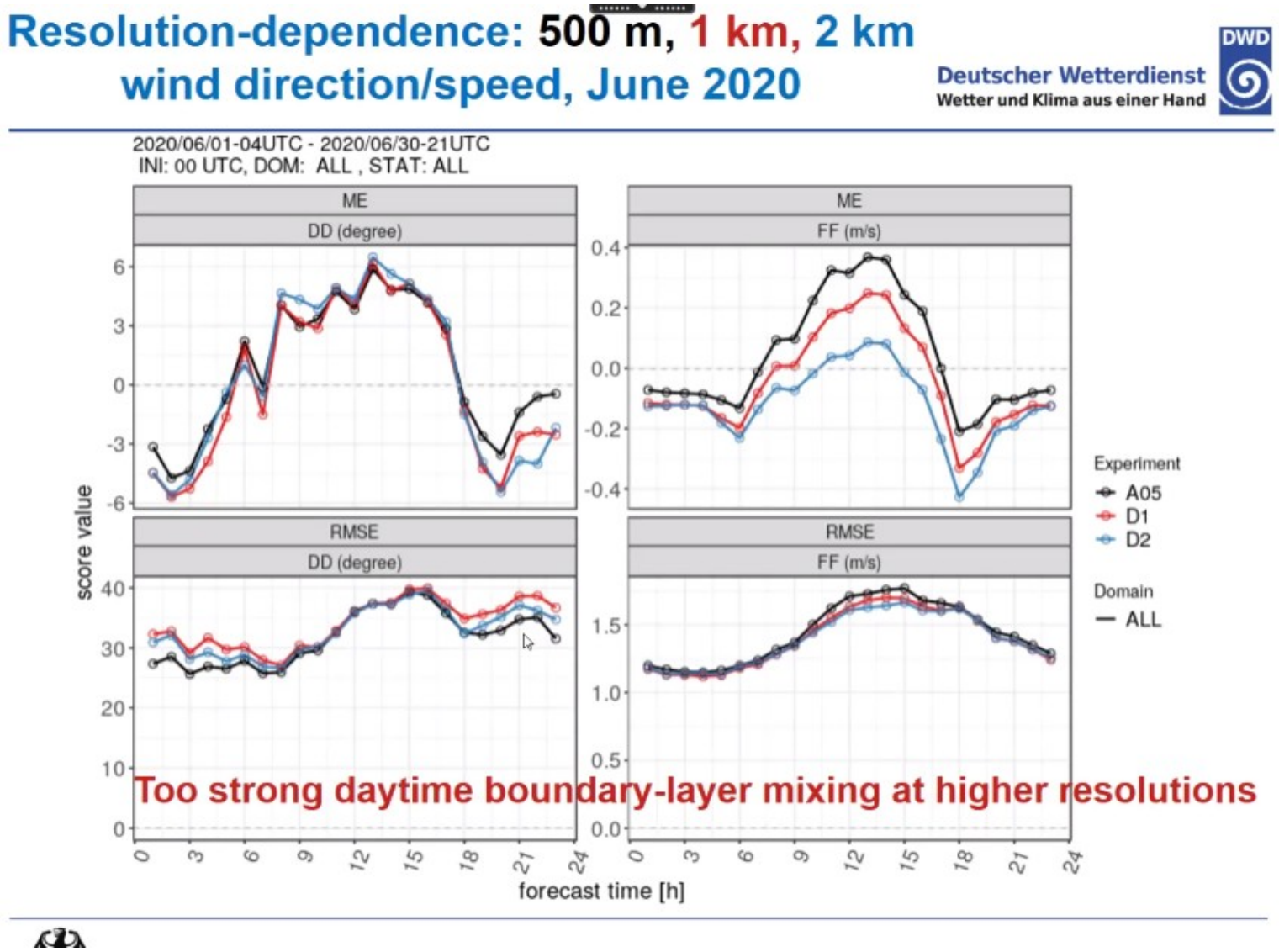
Probable participation of ICON&COSMO Partners in Extremes DT Phase 1 (2022-2023)

- Possible partnership with the ACCORD Consortium for the configurable/on-demand procurement
- A configurable / on-demand global-regional short-range high resolution prediction capability with ICON - using ECMWF as baseline but providing more timely information needed for decision making
- **Short-range global km-scale (~3 km horizontal) predictions using coarser resolution ensemble data assimilation**
- On-demand high resolution (~ 500m -1 km horizontal) predictions for the **Alpine region**
- On-demand predictions of selected atmospheric composition elements such as mineral dust for energy applications and pollen for health applications
- Priority given to developing current operational systems to run on heterogeneous **GPU-CPU** architecture at higher resolution and with significantly increased model output volume transferred into the DestinE Data Lake
- Conditions for the participation of Switzerland not defined yet

Finer NWP horizontal resolution

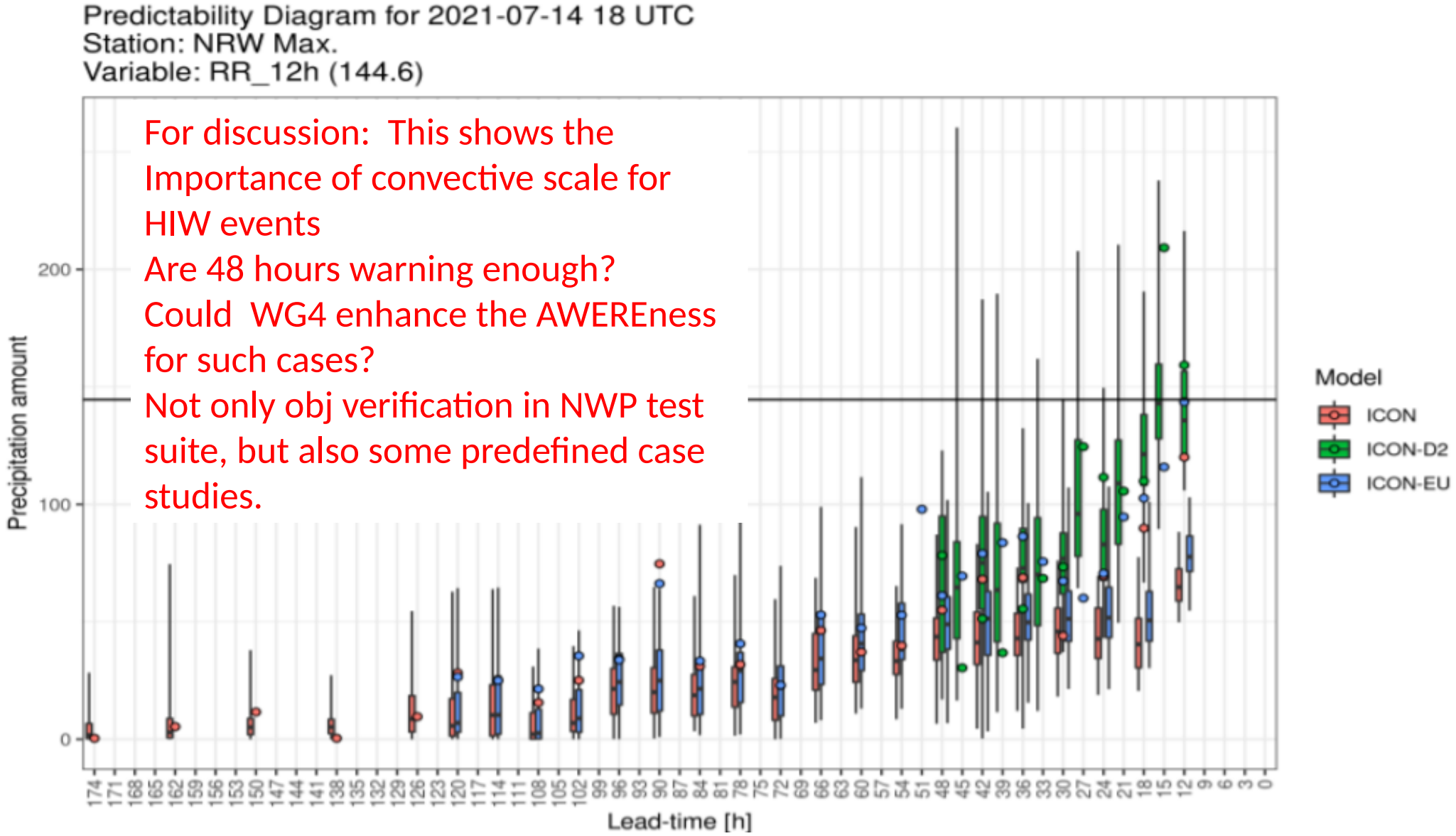
- Convective permitting is not convection resolving
- Entering the gray zones not only for convection but also turbulence length and time scale

For discussion: Do we need a new PP to test new parametrizations and tune NWP at 1 km and finer resolutions?



Flood Prediction by **ICON-global, ICON-EU, ICON-D2**

Deutscher Wetterdienst
Wetter und Klima aus einer Hand



Announcements

- Thanks to NMA team for facilitating CGM 2021
- Good luck for Massimo in his new passion:

massimo.milelli@cimafoundation.org

- Thanks to Theodore Andreadis (HNMS) for doing a lot of work behind the scenes

http://www.cosmo-model.org/view/repository/GM2021

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COSMO

Organization | Model System | COSMO Tasks | Home

you are in home ➔ repository ➔ GM2021

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plenary

parallel 8 items

plenary 4 items

14 7 items

15 5 items

16 2 items

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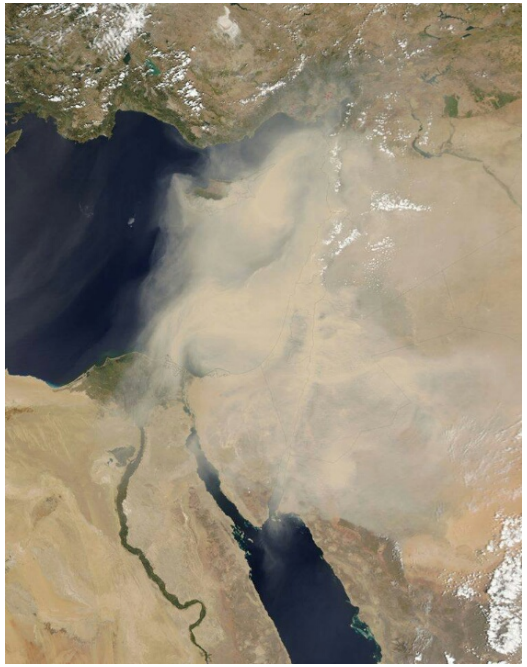
Bernhard Vogel retirement

- With 195 publications and 5,309 Citations Bernhard enriched COSMO with a deep academic point of view.
- He lead KIT to become a key ICON partner



I presented this dust storm that occurred during the GM 2015 in Wrocław, that all the dust model failed to precinct.

Bernhard group demonstrated and published that a convection-permitting model is crucial not only for precipitation but also to produce dust.

Philippe Steiner retirement

- Joined MeteoSwiss and COSMO in 2004
- Represent Switzerland in the STC since September 2008
- Chair of the STC from 2012 to 2015
- lead the elaboration of the current COSMO strategy, with the "convergence" to ICON, and the related new COSMO Agreement.

- As Philippe wrote the COSMO agreement he always was the balanced voice at the STC and gave the wise arguments to lead to the hopefully correct decisions.

- Welcome back Oliver Fuhrer

Philippe Steiner retirement

ICON/COSMO/CLM/ART User Seminar (ICCARUS) 2022

- Virtual meeting 07-11 March 2022

- For discussion: Should CLM – COSMO combine forces and perhaps even merging groups?

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COSMO

24th COSMO GM

ΕΘΝΙΚΗ ΜΕΤΕΩΡΟΛΟΓΙΚΗ ΥΠΗΡΕΣΙΑ
HELLENIC NATIONAL METEOROLOGICAL SERVICE

12-16 September 2022

COVID will not overcome COSMO spirit

CONSORTIUM FOR SMALL SCALE MODELING

Hope we will have a new group picture for 2022