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**Economic Commission for Europe****Inland Transport Committee****Working Party on Transport Trends and Economics****Group of Experts on Assessment of Climate Change  
Impacts and Adaptation for Inland Transport****Nineteenth session**

Geneva, 1 and 2 October 2020

Item 4 of the provisional agenda

**Climate change and transport assets data****CORDEX-CORE Data for the United Nations Economic  
Commission for Europe Expert Group on Assessment of  
Climate Change Impacts and Adaptation for Inland  
Transport****Note by the secretariat****I. Background**

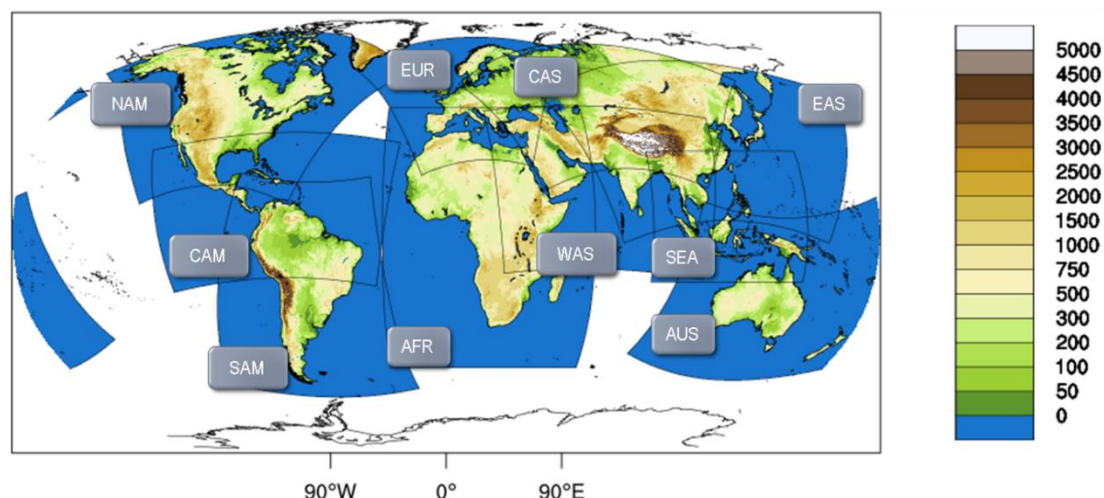
1. The former Group of Experts on Climate Change Impacts and Adaptation for Transport Networks and Nodes in the report concluding its 2015—2019 mandate recommended that efforts should be undertaken in the future to obtain a consistent climate projections data set for the entire United Nations Economic Commission for Europe (ECE) region. This document briefly introduces CORDEX-CORE project which offer an opportunity for consistent region-wide climate projections data set. It was prepared by the secretariat in collaboration with Mr. Paul Bowyer (Climate Service Center Germany).

**II. What is CORDEX-CORE, and why do we need it**

2. Currently, not all areas of the world benefit from the availability of high spatial resolution regionally downscaled climate projections that can be used to help inform adaptation planning. The Coordinated Output for Regional Evaluations (CORE) simulation ensemble is an initiative of the World Climate Research Programme (WCRP) Coordinated Regional Climate Downscaling Experiment (CORDEX) community, which is intended to improve this situation, by providing high spatial resolution regional climate change information for the major inhabited areas of the world. Figure 1 shows the domains or parts of the world for which the CORDEX-CORE simulations are being run.



The CORDEX-CORE model domains shown in black polygons. The elevation of the Earth surface is shown and the units are in metres. The domains are: Europe (EUR), Central Asia (CAS), East Asia (EAS), South-east Asia (SEA), Australasia (AUS), West Asia (WAS), Africa (AFR), South America (SAM), Central America (CAM), North America (NAM)



Source: Remedio et al. (2019)

### III. What are the advantages of CORDEX-CORE for the ECE Expert Group

3. Given the areal extent of the ECE region, previously it would only have been possible to produce a consistent analysis of projected climate change with global climate models, which have a much coarser spatial resolution. Now, with the availability of CORDEX-CORE data, such a consistent analysis across the ECE region can be carried out. This is important, since it means that an analysis of for example, a transport corridor that spanned Europe and Central Asia would be possible.

### IV. What is the spatial resolution of the CORDEX-CORE data

4. The spatial resolution of the CORDEX-CORE data are ~25 km.

### V. Which climate models have been used in CORDEX-CORE

5. There are two main regional climate models (RCMs) that have been used, the REMO2015 model from the Climate Service Center Germany (GERICS), and RegCM from the Abdus Salam International Centre for Theoretical Physics (ICTP). In addition, there are additional simulations being made by other modelling groups and these data will be made available over time.

6. The simulations from the RCMs have been driven by a number of different global climate models (GCMs) from the CMIP5 project, which are shown in the below table.

**List of the global climate models from CMIP5 that have been used in CORDEX-CORE. The institutions affiliated to the GCMs are the following: Norwegian Climate Centre (NCC), Geophysical Fluid Dynamics Laboratory (GFDL), Max Planck Institute for Meteorology (MPI-M), Met Office Hadley Centre (MOHC), and Atmosphere and Ocean Research Institute, the University of Tokyo (AORI), National Institute for Environmental Studies (NIES), and the Japan Agency for Marine-Earth Science and Technology (JAMSTEC)**

	Name	Institution	horizontal resolution	vertical levels	References
GCM-L1	NorESM1-M	NCC	1.8947°x 2.5°	26	Bentsen et al (2013)
GCM-L2	GFDL-ESM2M	GFDL	2.0225°x 2.5°	48	Dunne et al (2012)
GCM-M1	MPI-ESM-LR	MPI-M	1.8653°x 1.875°	47	Giorgetta et al (2013)
GCM-M2	MPI-ESM-MR	MPI-M	1.8653°x 1.875°	95	Giorgetta et al (2013)
GCM-H1	HadGEM2-ES	MOHC	1.25°x 1.85°	38	Jones et al (2011)
GCM-H2	MIROC5	AORI, NIES, JAMSTEC	1.4008x 1.40625	49	Watanabe et al (2010)

Source: Teichmann et al. submitted

## VI. What data are currently available

7. There are currently two main groups contributing to CORDEX-CORE, but other groups have been joining and are also making their data available when the simulations have been completed and quality controlled. As such, data availability in terms of the number of simulations will improve over time. Currently there are data available for all CORDEX-CORE domains from GERICS, and for some other domains the ICTP has also already made some data available. The availability of the data can be checked at the Earth System Grid Federation, for example here: [esgf-data.dkrz.de/projects/esgf-dkrz/](http://esgf-data.dkrz.de/projects/esgf-dkrz/).

## VII. References

Remedio, A. R., et al. 2019, Evaluation of New CORDEX Simulations Using an Updated Köppen–Trewartha Climate Classification, Atmosphere, doi.org/10.3390/atmos10110726

Teichmann, C., et al. submitted, Assessing mean climate change signals in the global CORDEX-CORE ensemble