

Annual report 2020 for domain Med-CORDEX

“Med-CORDEX is an open club of Mediterranean climate model developers and users ; self-organised and based on voluntary efforts. It is currently financially supported by the MISTRALS meta-programme and endorsed by WCRP CORDEX, Med-CLIVAR and MedECC.”

Scientific highlights

Med-CORDEX phase 2 simulations

- The Med-CORDEX phase 2 is now running (see the summary of the phase 2 organisation here www.medcordex.eu/simulations-phase2.php)
- Baseline runs: 10 modelling groups have achieved the preparation of their fully-coupled Regional Climate System Models (RCSM) and are currently running it. They come from France (LMD, IPSL, CNRM), Italy (ICTP, CMCC, ENEA), Germany (GUF), Spain (AWI-GERICS), Serbia (UBELGRADE) and Turkey (ITU). 6 evaluation runs have been performed for this phase 2 as well as 7 scenario runs.
- FPS-convection (<https://www.hymex.org/cordexfps-convection/wiki/doku.php>): 30 modelling groups are now participating to the initiative using 6 different RCMs at kilometer scales. 17 evaluation runs are completed over the alpin domain (at least 10-year time slices) as well as 21 scenario runs (end of the 21st century, RCP8.5, 10-year time slices).
- FPS-aerosol (<https://www.hymex.org/cordexfps-aerosol/wiki/doku.php?id=start>) : simulations have been performed for the 5 defined protocols, in particular 8 sensitivity runs are available for protocol 1B (futur scenario runs with/without evolving aerosol in the future) and 3 runs for protocol 2C (future scenario runs with interactive aerosols).
- FPS-airsea: Sensitivity tests to the sea representation and air-sea coupling representation have been run in evaluation mode and scenario mode in particular concerning the effect of the tidal mixing representation.
- Free Modelling Zone runs: no new activity in 2020 (see the list on www.medcordex.eu/list-activities_Med-CORDEX-FMZ.pdf)

Med-CORDEX dissemination

- The valorisation and dissemination of the phase 1 simulations is still on-going.
- Up to now, the Med-CORDEX database (phase 1 simulations) includes 113 datasets, provided by 15 institutes, 7.4 To uploaded, 38 To downloaded by 281 users (find more information here <https://www.medcordex.eu/medcordex.php>)
- The assessment reports MedECC-MAR1 (published in December 2020) and IPCC-AR6 WG1 (to be published in 2021) have used publications based on Med-CORDEX simulations. Med-CORDEX-based literature was used for the assesement of various scientific topics such as Marine heatwaves, Mediterranean Heavy Precipitation Events, Sea level, Medicanes, Regional wind system, Ocean deep convection, climate change impact of water ressources and marine ecosystems, ...

- The COPERNICUS Climate Data Store is currently ingesting Med-CORDEX phase 1 simulations to provide them in a user-friendly format to the numerous C3S users
- The Med-CORDEX sea surface temperature projections for the Mediterranean Sea (9 RCSMs, 16 projection runs, 3 RCP scenarios, 6 driving GCMs) have been provided to the IPCC Interactive Atlas developed in the framework of the IPCC-AR6. To our knowledge, this will be the only high-resolution ocean projection dataset provided in this reference IPCC portal aside the low-resolution GCM dataset.
- In 2020, 10 scientific articles have been published using Med-CORDEX simulations (list available on www.medcordex.eu/publications.php and <https://www.hymex.org/cordexfps-aerosol/wiki/doku.php?id=publications>). This includes in particular multi-model studies on the climate-aerosol interactions, future evolution of the Mediterranean Sea, future evolution of the extreme precipitations and drying conditions
- The first Med-CORDEX dataset has been published on the ESGF in 2020 and the standard format for river and ocean variables publications have been set. This opens the door to the publication of the Med-CORDEX phase 2 simulations on the ESGF whatever the components (atmosphere, surface, ocean, river, aerosol, marine biogeochemistry, wave)

Med-CORDEX organization

- The Med-CORDEX Steering Committee includes 6 members from Italy, Germany, France and Spain. It has been very active this year to promote and organize the dissemination of the Med-CORDEX phase 1 simulations and to lead the Med-CORDEX-related FPS activities
- The annual FPS-convection meeting was held remotely in December 2020 (2-day meeting). The meetings of the other FPS were cancelled.
- The FPS-convection has created a lively chat using Slack facility to increase the participant interactions.
- Various scientific visits between partners have been postponed due to the covid crisis.

Summary of each workshop/activity held during the year

Title, date, short description, location, website, links	Responsible person/-s	Funder
FPS-convection annual meeting	E. Coppola (Med-CORDEX), S. Sobolowski (Euro-CORDEX)	none

Domain related publications during the year

Title, journal and link to publication	Author/-s	Date
See the publication lists: www.medcordex.eu/publications.php https://www.hymex.org/cordexfps-aerosol/wiki/doku.php?id=publications		

Planned activities for next year

Med-CORDEX organization

- Annual workshops for the 3 Med-CORDEX-related FPS (FPS-convection, FPS-aerosol, FPS-airsea) will likely be organized in 2021.
- A joint workshop with Baltic Earth was planned for 2021 before the covid crisis but its status is currently unclear.
- Preparation of the next General Assembly of Med-CORDEX (Spring 2022)
- Discussions about the future form of the 3 Med-CORDEX related FPS should be engaged as they are currently supposed to finish by the end of 2021
- The positioning of Med-CORDEX in the new WCRP organisation structure should be discussed
- Med-CORDEX should engage discussions concerning its funding after the end of the MISTRALS programme in December 2020 who has financially supported Med-CORDEX over the last 10 years.

Med-CORDEX dissemination

- More phase 1 simulations distributed through ESGF, the COPERNICUS Data Store and in the IPCC Interactive Atlas
- Scientific publications of multi-model studies based on the phase 2 simulations (baseline, FPS-convection, FPS-aerosols, FPS-airsea)
- Start of the publications on the ESGF for phase 2 simulations (Baseline runs, FPS-convection)
- We hope that scientific exchanges between partners will start again.

Med-CORDEX simulations

- Most of the planned simulations in the 3 FPS will be completed before the end of 2021.
- Availability of large ensemble of scenario simulations for phase 2 (Baseline runs, FPS)

Additional relevant information

If more space is needed just add rows in the table.

The report should be sent to ipoc@cordex.org before the 15th December each year.