LIAISE – PARTICIPANT MODELS

MODEL participants (affiliation)	(TOP) DEFAULT PARAMETERS (BOTTOM) SENSITIVITIES
MesoNH P. LeMoigne, A. Boone, S. Donier (MeteoFrance) & M.A. Jiménez , J. Cuxart, A. Grau (UIB)	Horizontal resolution: 2km (outer), 400m (inner) Vertical resolution: 4m close to the surface (1st gridpoint at 2m), stretched above (16 levels below 100m) Domain: covering Ebro basin (outer), eastern Ebro subbasin (inner) Irrigation: No irrigation Advection scheme: for U,V,W (centered), for T and scalars (monotonic) Surface scheme: SURFEX (ISBA) Radiation scheme: (ECMWF) & RRTM calling every 300s Turbulence: TKE – 1D (Cuxart et al. 2000) initial & LBC forcing: ECMWF every 6 hours
	→ **resolution**: extra runs over the region of interest at 1.3km and 250m horizontal resolution using AROME as LBC → **initial/lateral boundary conditions**: extra runs using Arpege → **irrigation**: on/off (the previous runs will be made with and without irrigation)

MODEL participants (affiliation)	**(TOP) DEFAULT PARAMETERS** **(BOTTOM) SENSITIVITIES**
RegIPSL S. Bastin, J. Polcher (IPSL/LMD)	Horizontal resolution: 3km (1 domain) Vertical resolution: 46 levels with most levels in the PBL Domain: covering Ebro basin Irrigation: Yes (currently under development) Advection scheme: ? Surface scheme: ORCHIDEE Radiation scheme: type? Called every 5min Turbulence: MYNN2.5 Initial & LBC forcing: MED-CORDEX
	→ ? → ?

MODEL participants (affiliation)	**(TOP) DEFAULT PARAMETERS** **(BOTTOM) SENSITIVITIES**
Unified Model J. Brooke, A. Lock & M. Best (UKMO)	Horizontal resolution : 2.0km (outer), 400m (inner) Vertical resolution : L140_40km (140 levels, 40km top) - 11 levels below 100m, 26 levels below 500m and 38 levels below 1000m Domain: covering Ebro basin (outer), eastern Ebro subbasin (inner) Irrigation: No irrigation Advection scheme: ENDGame Semi-Lagrangian (Reference) Surface scheme: JULES (Best et al. 2011) Radiation scheme: SOCRATES radiative transfer scheme (Edwards and Slingo, 1996; Manners et al., 2015) Turbulence: RA2M Blended Smagorinsky / first order closure with non-local schemes (Boutle et al. 2014) Initial & LBC forcing: ECMWF - every 6 hours – free running simulation.
	→ Initial/lateral boundary conditions: GA6.1 UM - n768 - every 6 hours free-running → Land scheme sensitivities: The UM has a well-known overestimate in latent heat flux in semi-arid regions – we plan to submit a sensitivity test which limits this excess flux e.g. reducing rooting depth or turning off bare soil evaporation. Will confirm extact test in due course.

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WRF J.R. Miró, J. More (SMC)	Horizontal resolution: 2km (outer), 400m (inner) Vertical resolution: Follow the same one (or similar) proposed in Appendix A (Model setup) Domain: covering Ebro basin (outer), eastern Ebro subbasin (inner) Irrigation: No irrigation Advection scheme: Runge-Kutta (RK3), 5th order for horizontal and 3rd order for vertical momentum and scalars, with positive definite limiter for moisture, scalars and tracers (Skamarock et al., 2019). Surface scheme: MM5 similarity theory (Skamarock et al., 2019) for the surface layer and Noah land-surface model (Chen and Dudhia, 2001). Radiation scheme: Dudhia for shortwave (Dudhia, 1989) and RRTM for longwave (Mlawer et al., 1997) calling every 3 minutes. Turbulence: Mellor–Yamada–Nakanishi–Niino (MYNN2) a one-and-half order, local closure scheme. The entrainment process is represented using computed eddy diffusivity from the prognostic TKE near the top of the PBL. Initial & LBC forcing: ECMWF every 6 hours
	→ initial/lateral boundary conditions: test the effect of introducing a coarser WRF simulation before running at 2 km. → test the impact of modifying some static fields (albedo, LAI, land use, etc)

MODEL participants (affiliation)	**(TOP) DEFAULT PARAMETERS** **(BOTTOM) SENSITIVITIES**
MOLOCH A.Tiesi, T.Landi, S.Davolio, O.Drofa., P.Malguzzi (CNR-ISAC, Italy)	Horizontal resolution: 2km (outer), 400m (inner) Vertical resolution: 90 levels, 40km top. First level at 4m, stretched above. 7 levels below 100m, 18 levels below 500m and 27 levels below 1000m. Domain: covering Ebro basin (outer), eastern Ebro subbasin (inner) Irrigation: no irrigation Advection scheme: second order Weighted Average Flux with superbee limiter (Hubbard and Nikiforakis, 2003) Surface scheme: “in-house” soil water and energy budget. Radiation scheme: Morcrette (2008); Ritter and Geleyn Turbulence: E-L 1.5 with Monin-Obukhov surface layer. Initial & LBC forcing: provided by CNR-ISAC global model starting from GFS analysis at 00UT.
	→ Irrigation on/off → Parameterization of soil processes → Test of different initial and lateral BC (ERA5, IFS, GFS)