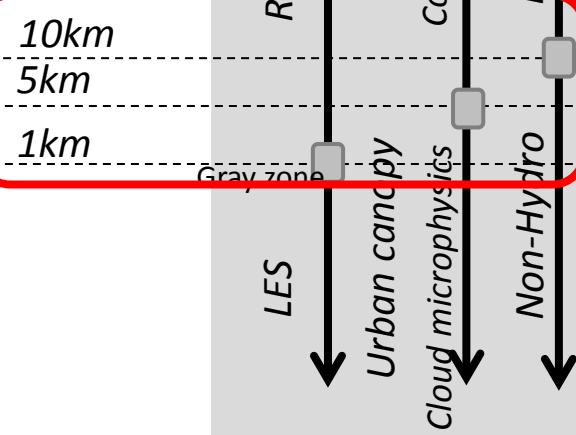


**Gray zone**

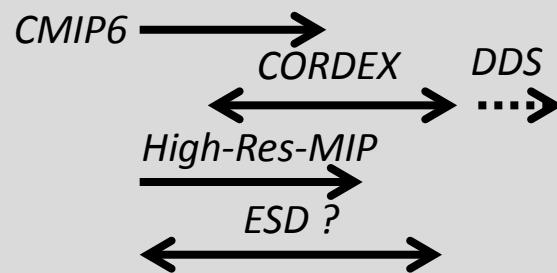


RCM's structure

Projects

Temporal scale & space scale is strongly connected in dynamical approach

Ls	Ts	1month	1day	1hour	1min.	1sec.
Macro $\alpha$ scale		El-Nino Tidal waves, Blockings Planetary scale waves Tropical waves				<b>Planetary scale</b>
$10^4$ km						
Macro $\beta$			Baroclinic waves			
$2 \times 10^3$ km						<b>Nation scale</b>
Meso $\alpha$			fronts Tropical depressions			
$2 \times 10^2$ km						
Meso $\beta$			Land-Sea winds, Föhn Squall lines Heavy rain/snow events Cloud clusters			
$2 \times 10^1$ km						
Meso $\gamma$			Thunder storms Clear air turbulences			
$2$ km						<b>Urban scale</b>
Micro $\alpha$					Tornadoes Cumulonimbus	
$200$ m						
Micro $\beta$						<b>Soccer field scale</b>
$20$ m						<b>Wind chime scale</b>
Micro $\gamma$ scale						Whirlwinds Thermals Plumes Turbulences



**Take communications within users, or between climate modelers and impact study researchers are indispensable**

## VALUE: A framework to validate downscaling approaches for climate change studies

Maraun, D., Widmann, M., Gutiérrez, J. M., Kotlarski, S., Chandler, R. E., Hertig, E., Wibig, J., Huth, R. and Wilcke, R. A.I. (2015), Earth's Future, 3: 1–14. doi:10.1002/2014EF000259

