Extreme value statistics of wind speeds in an ensemble of regional climate model simulations

Nico Becker

Institut für Meteorologie
Freie Universität Berlin

GeoSim / SFB114 / NatRisk Annual Workshop 2016

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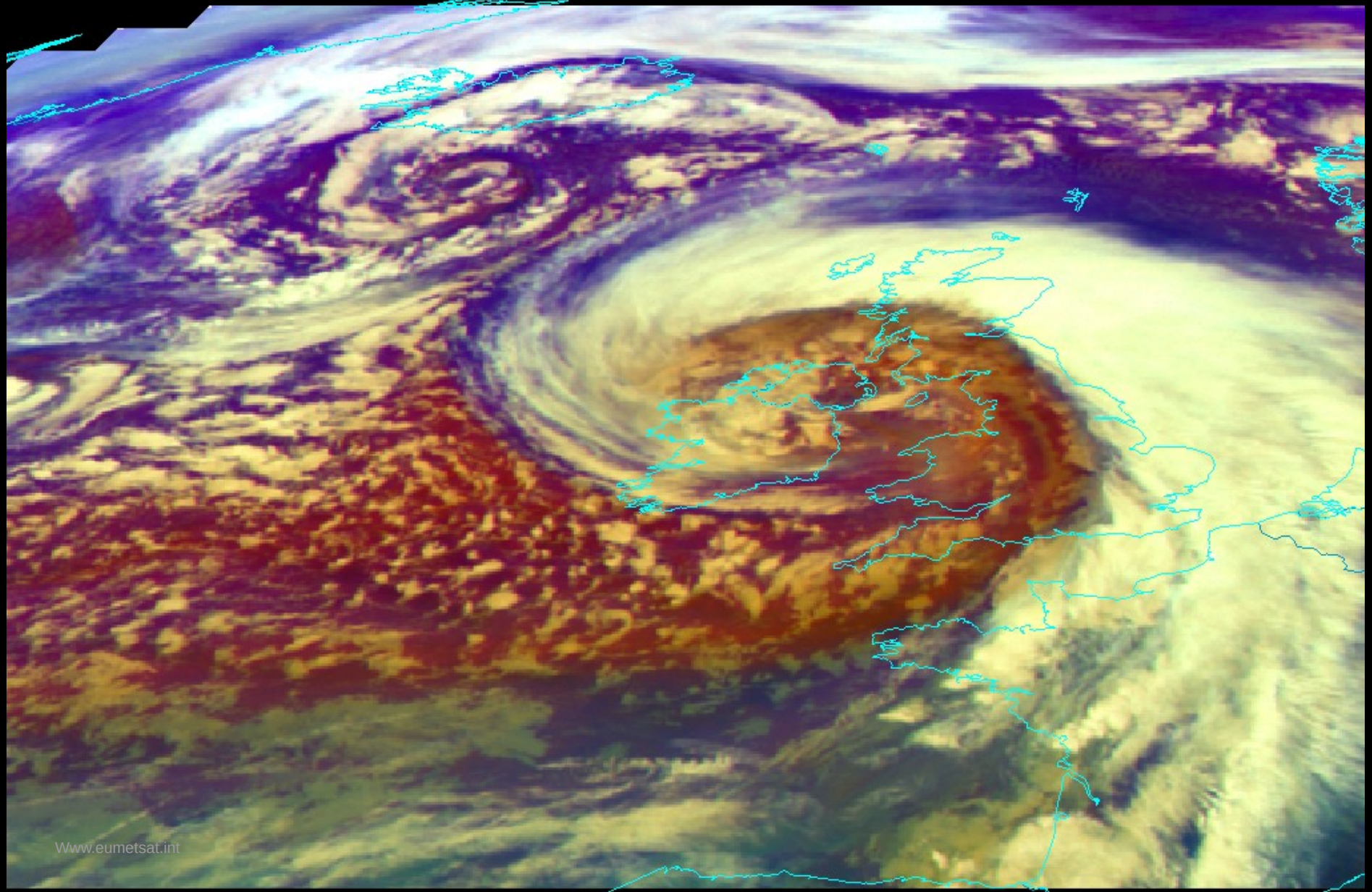

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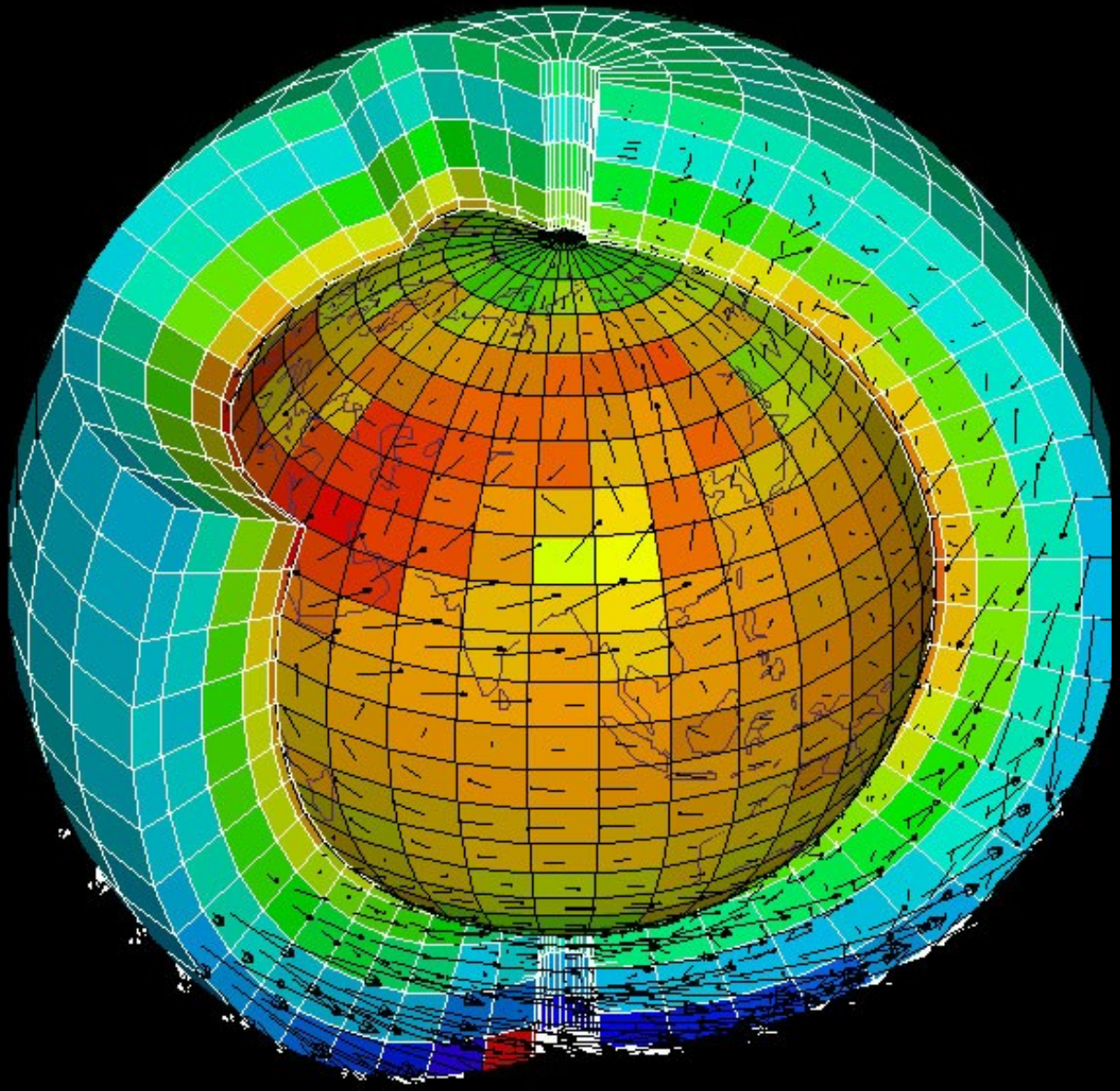

http://www.cs.toronto.edu/~sme/PMU199-climate-computing/pmu199-2012F/Globe_as_a_grid.jpg

3-dimensional grid to compute temporal changes of atmospheric variables

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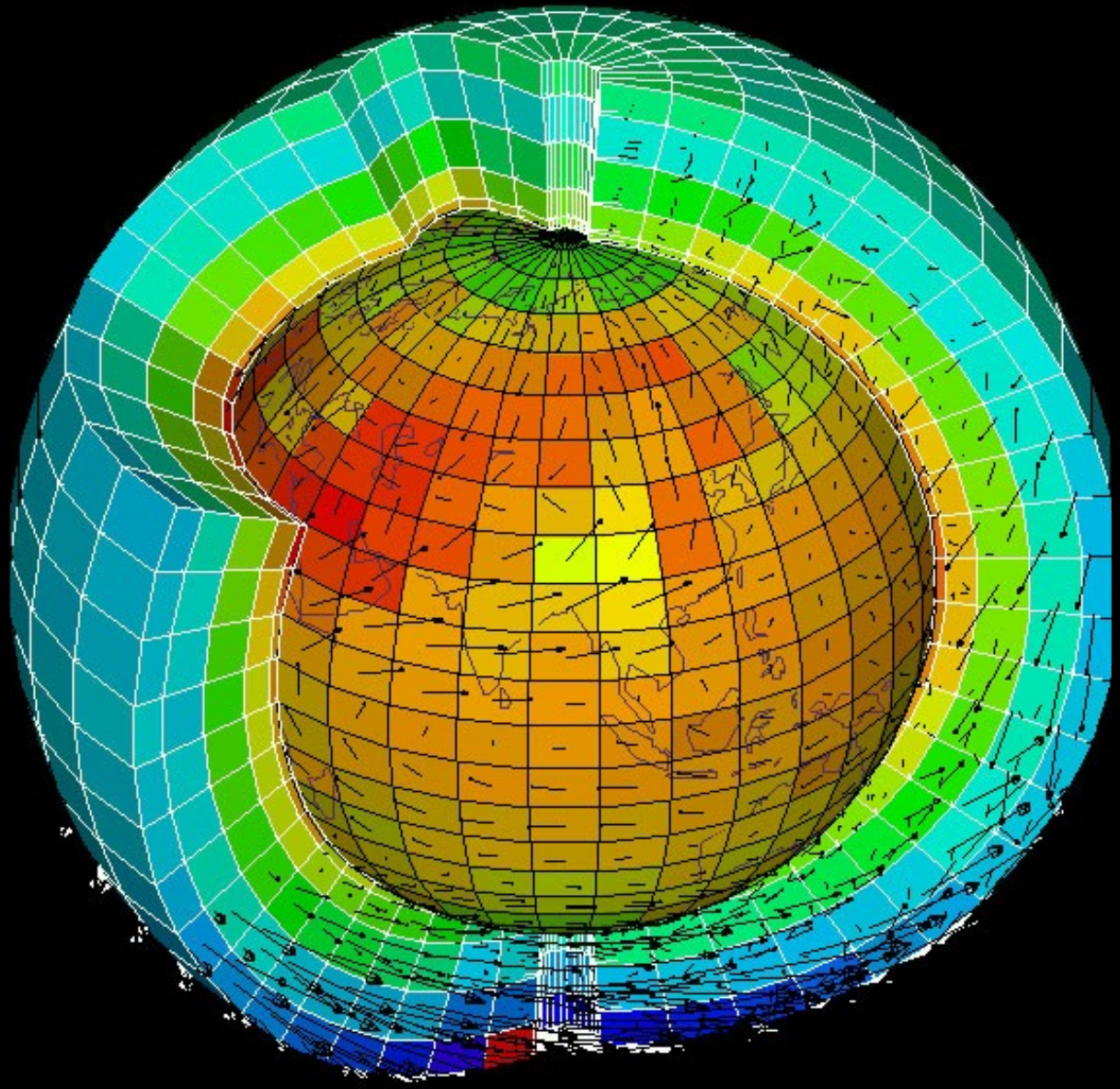

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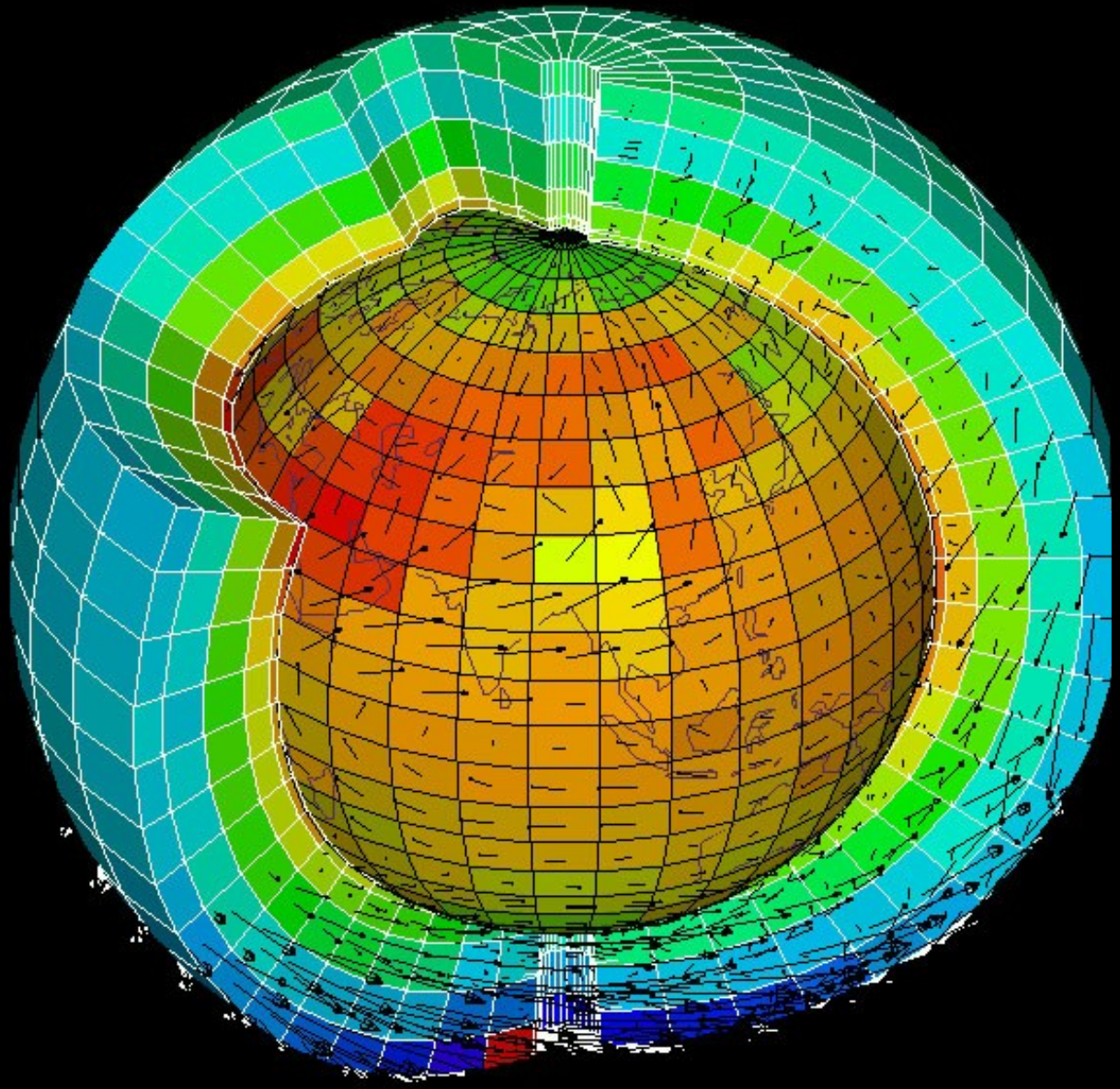

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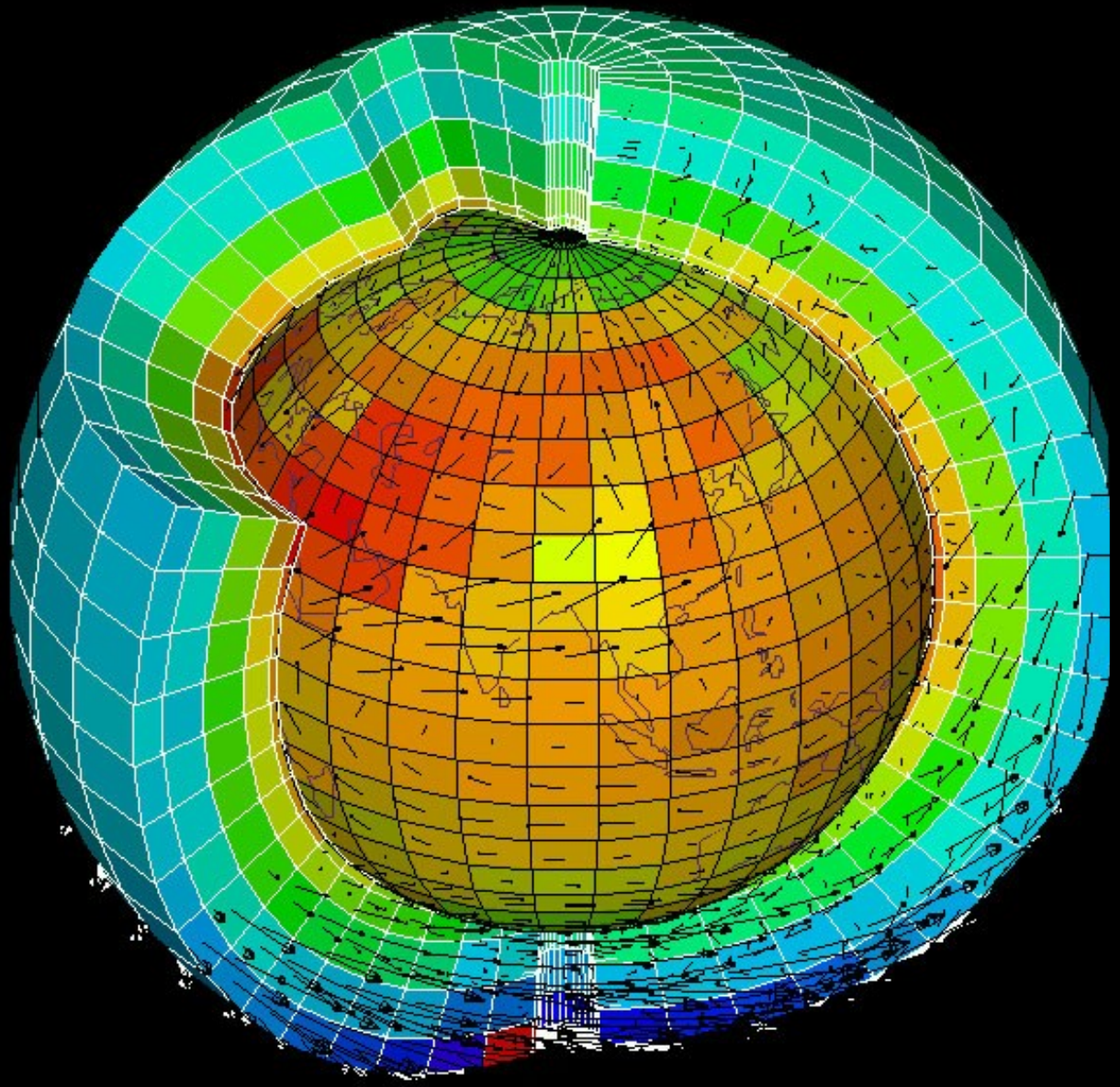

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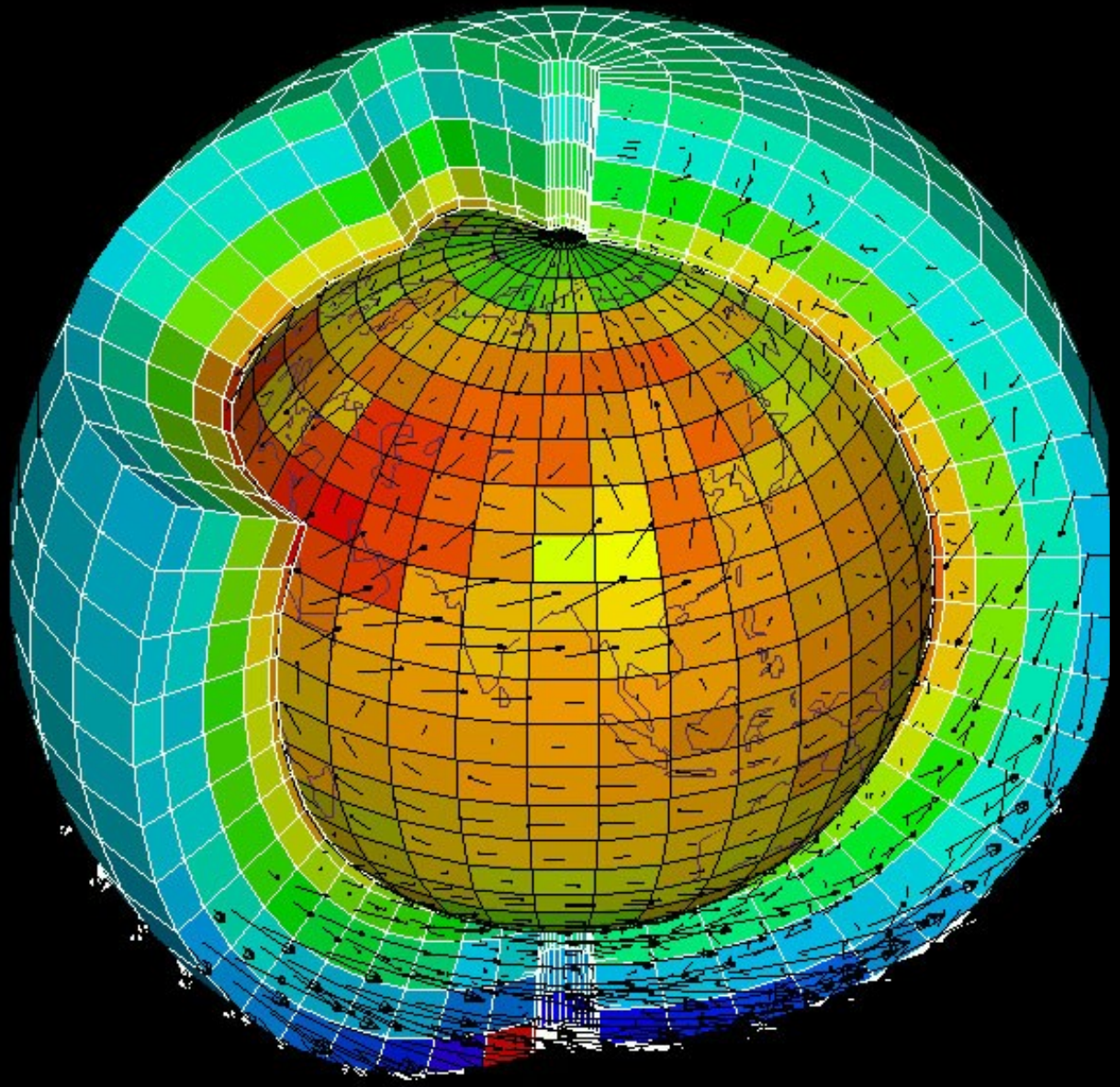

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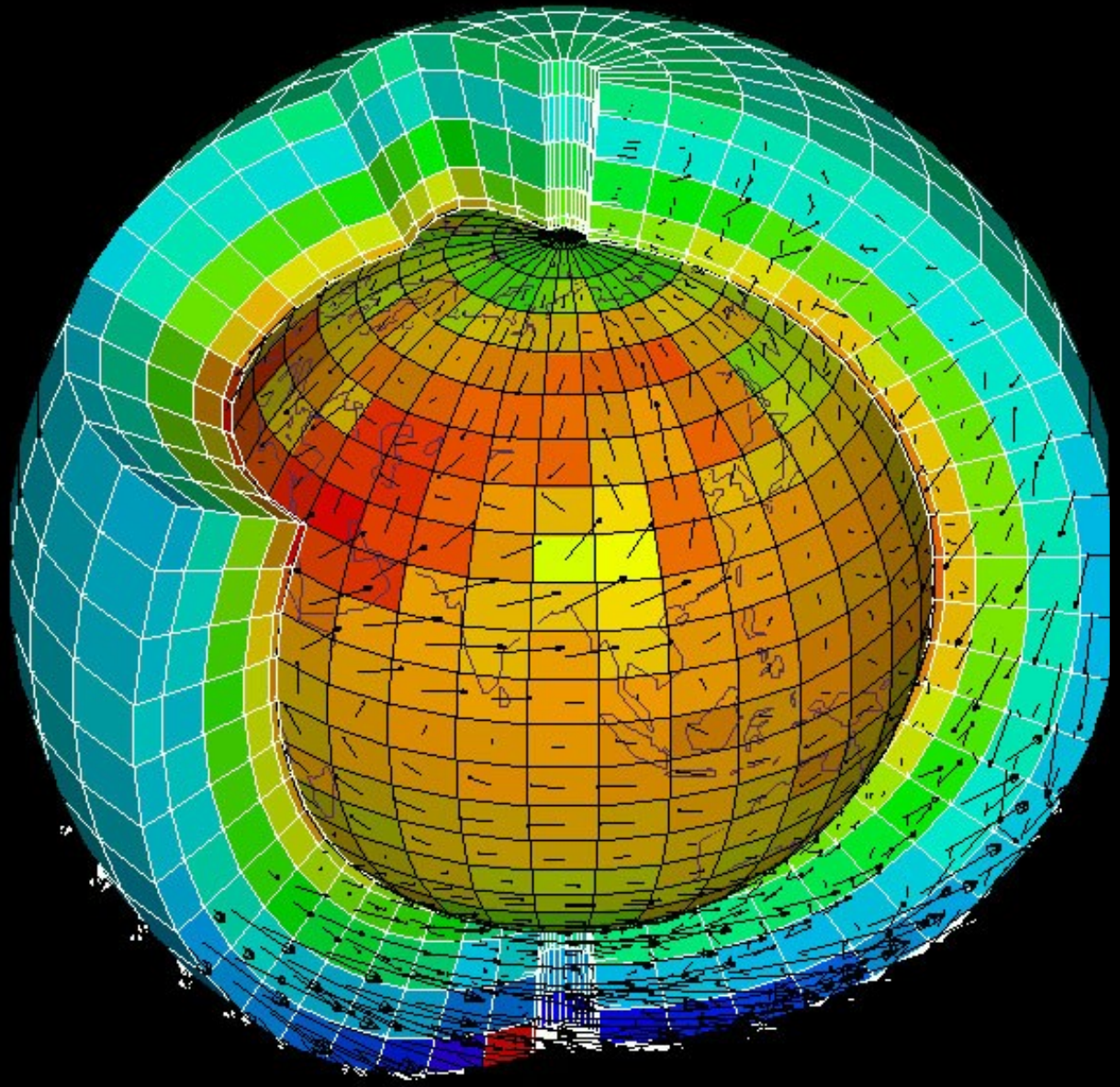

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Horizontal resolution:
→ around 200 km

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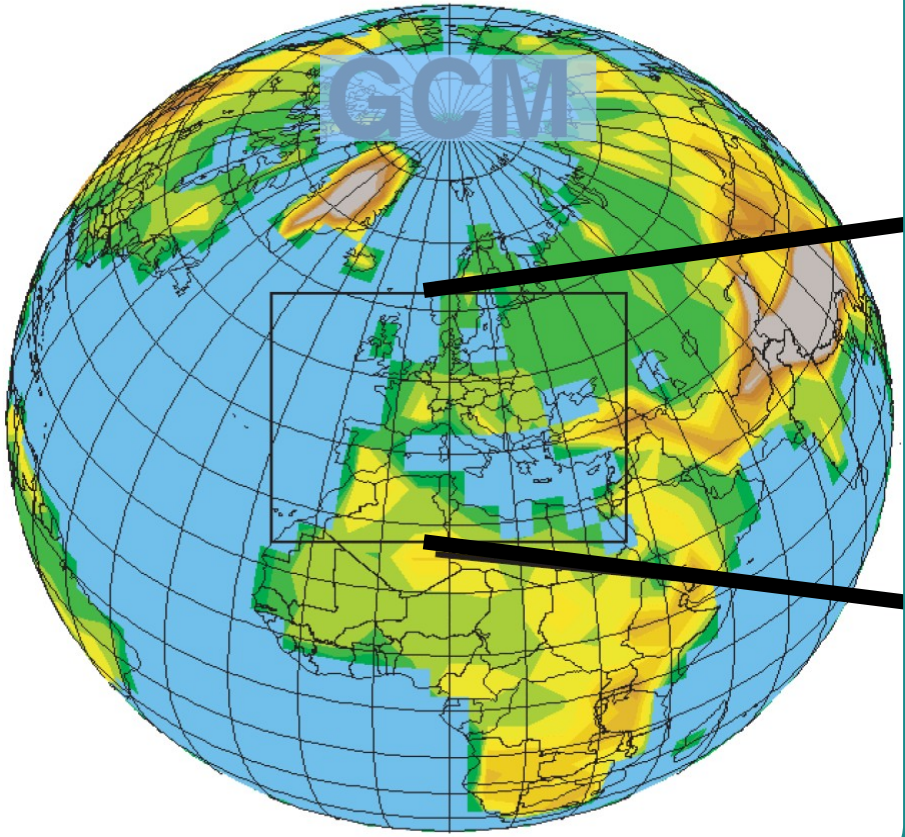
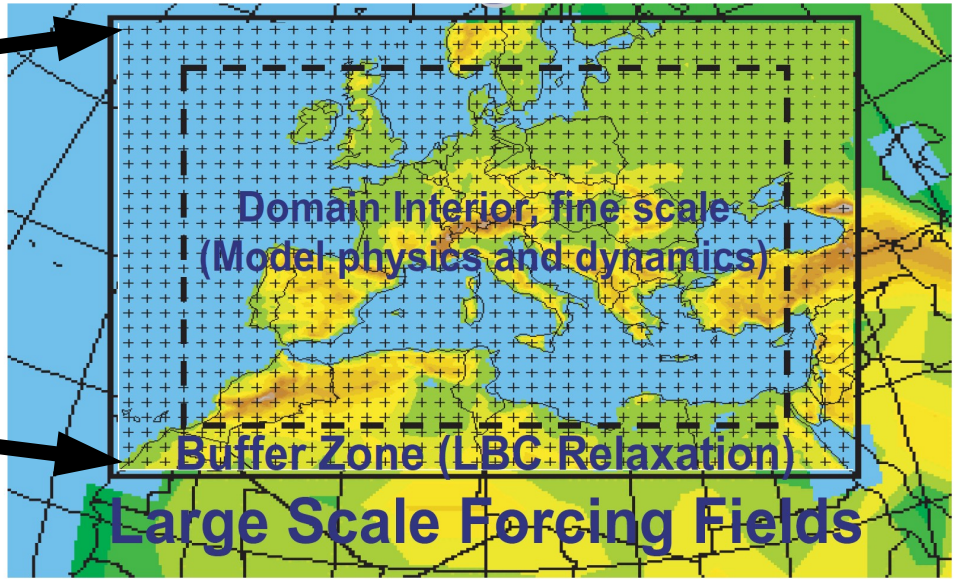
Global Model
Low resolution (~200 km)



Regional Model
High resolution (~20 km)



(Giorgi et al., 2006)

CORDEX

Coordinated **R**egional Climate **D**ownscaling **Ex**periment

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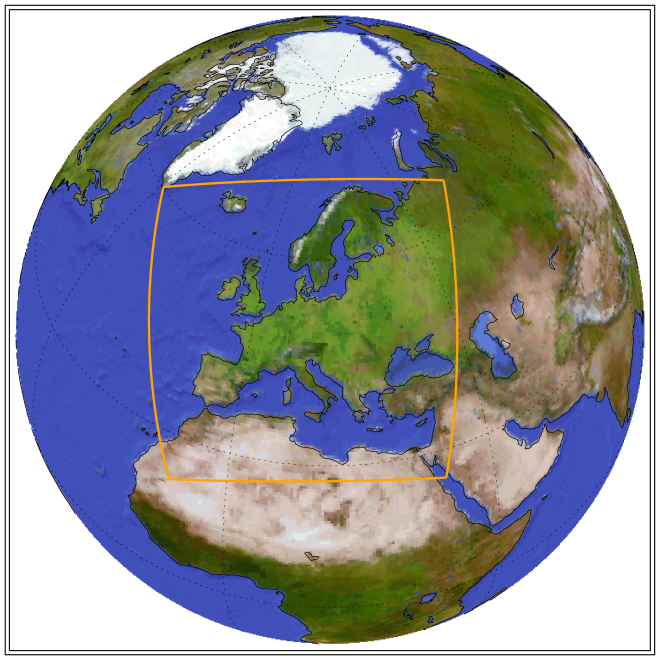

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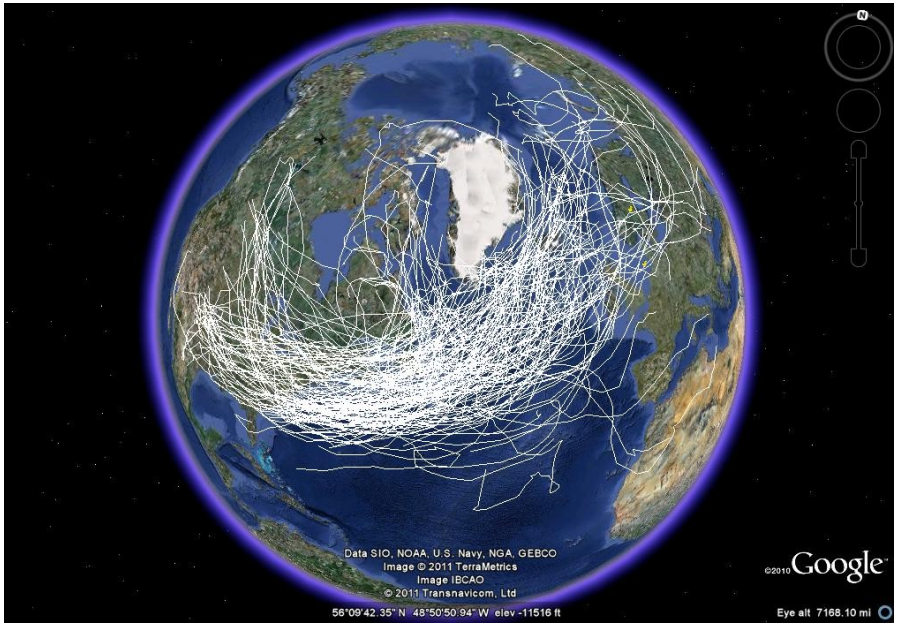

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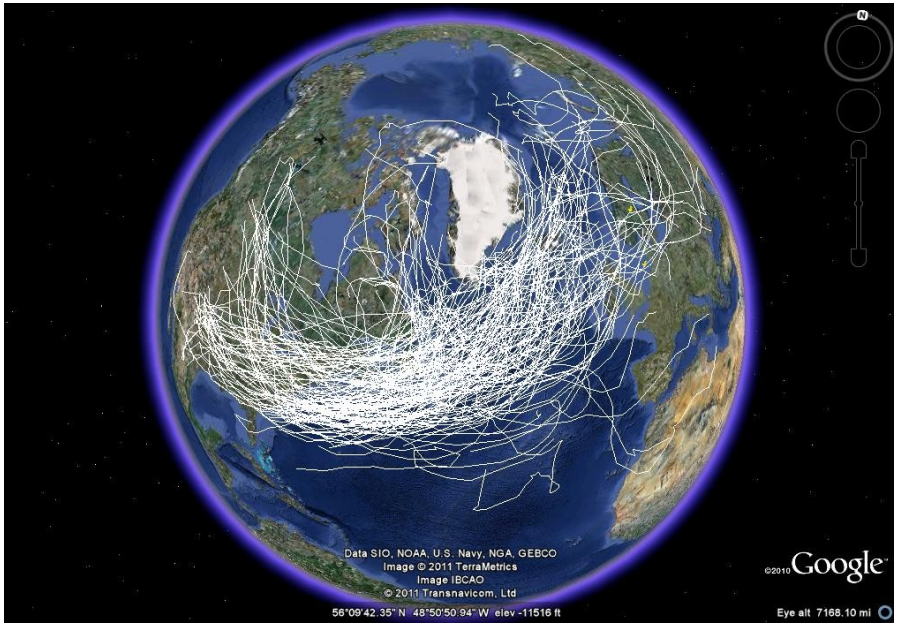

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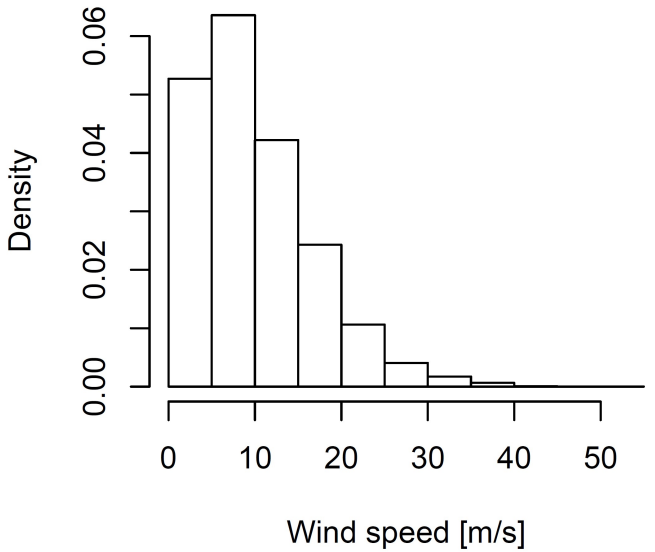
- **Impact oriented**
  - ➔ study the wind climate at a certain point in space



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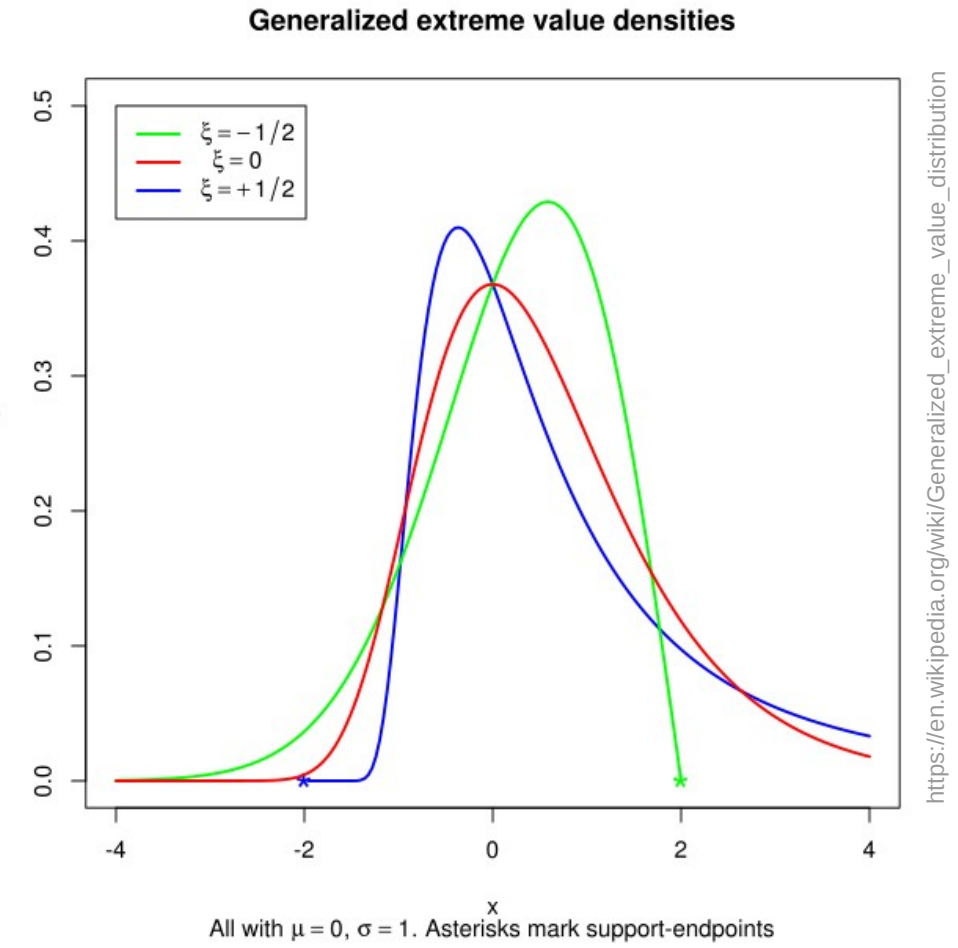

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- Building regulations are usually based on the local return levels of wind speeds

An example

Data: regional climate model output for one grid point in Germany

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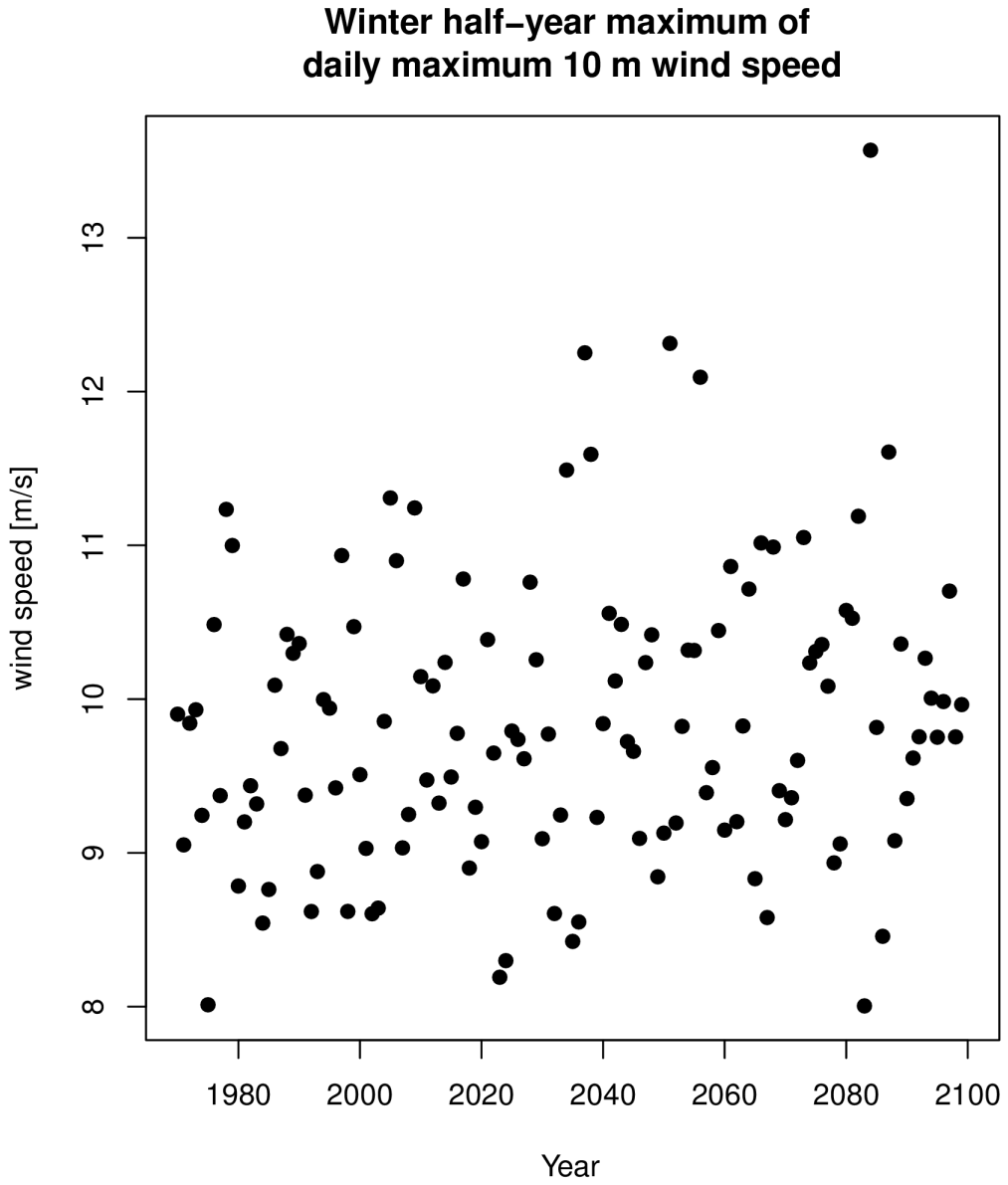

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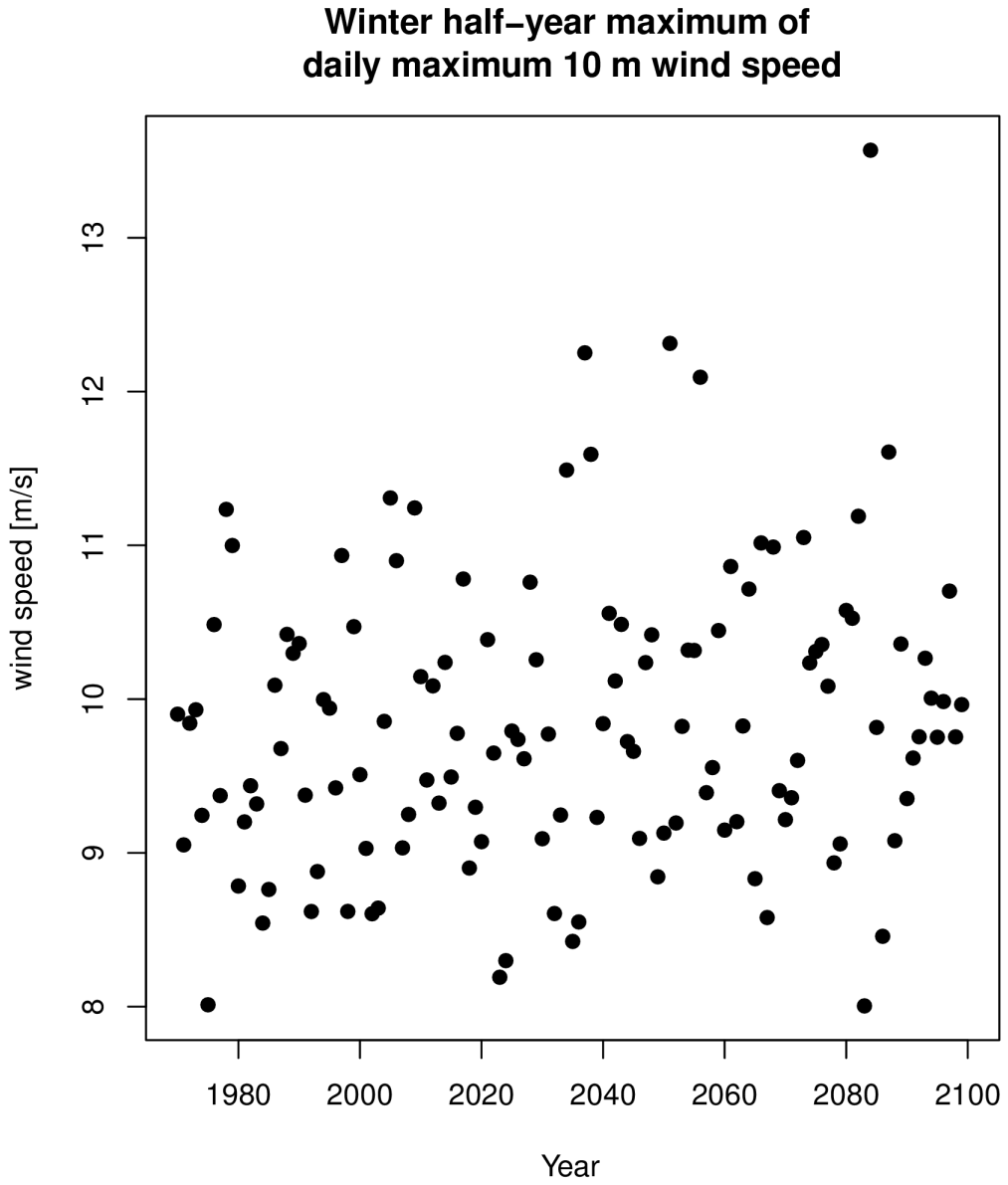

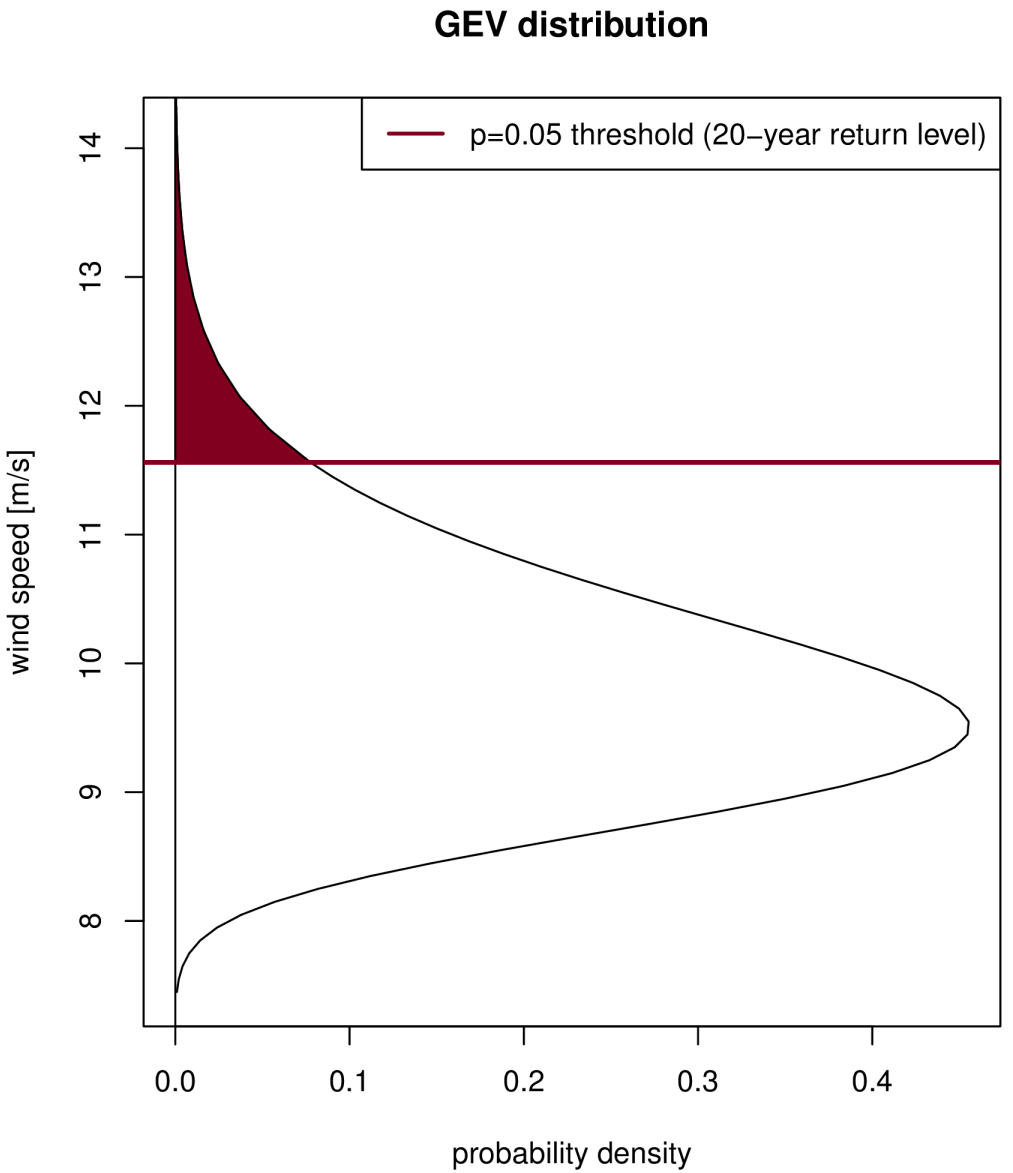

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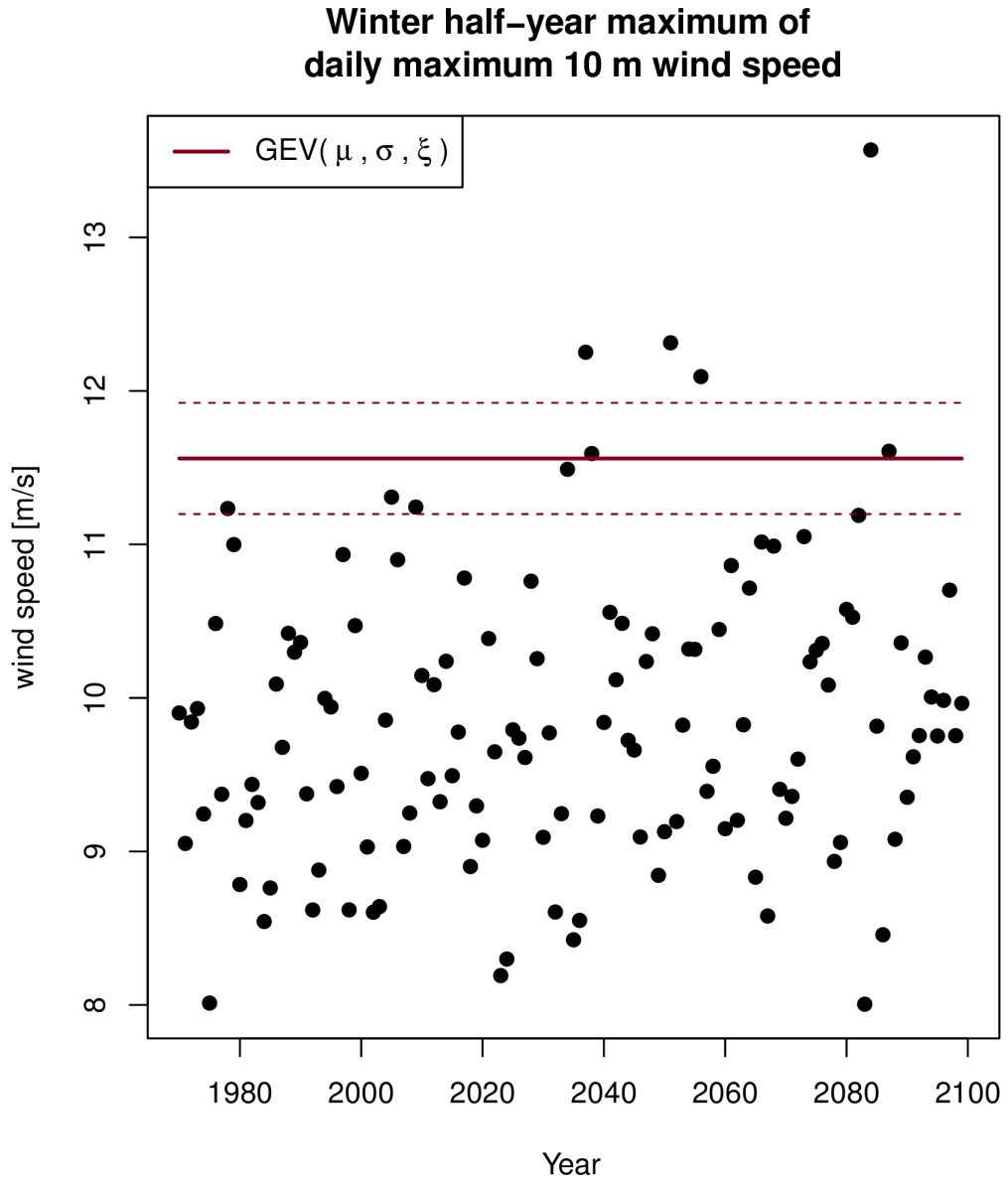

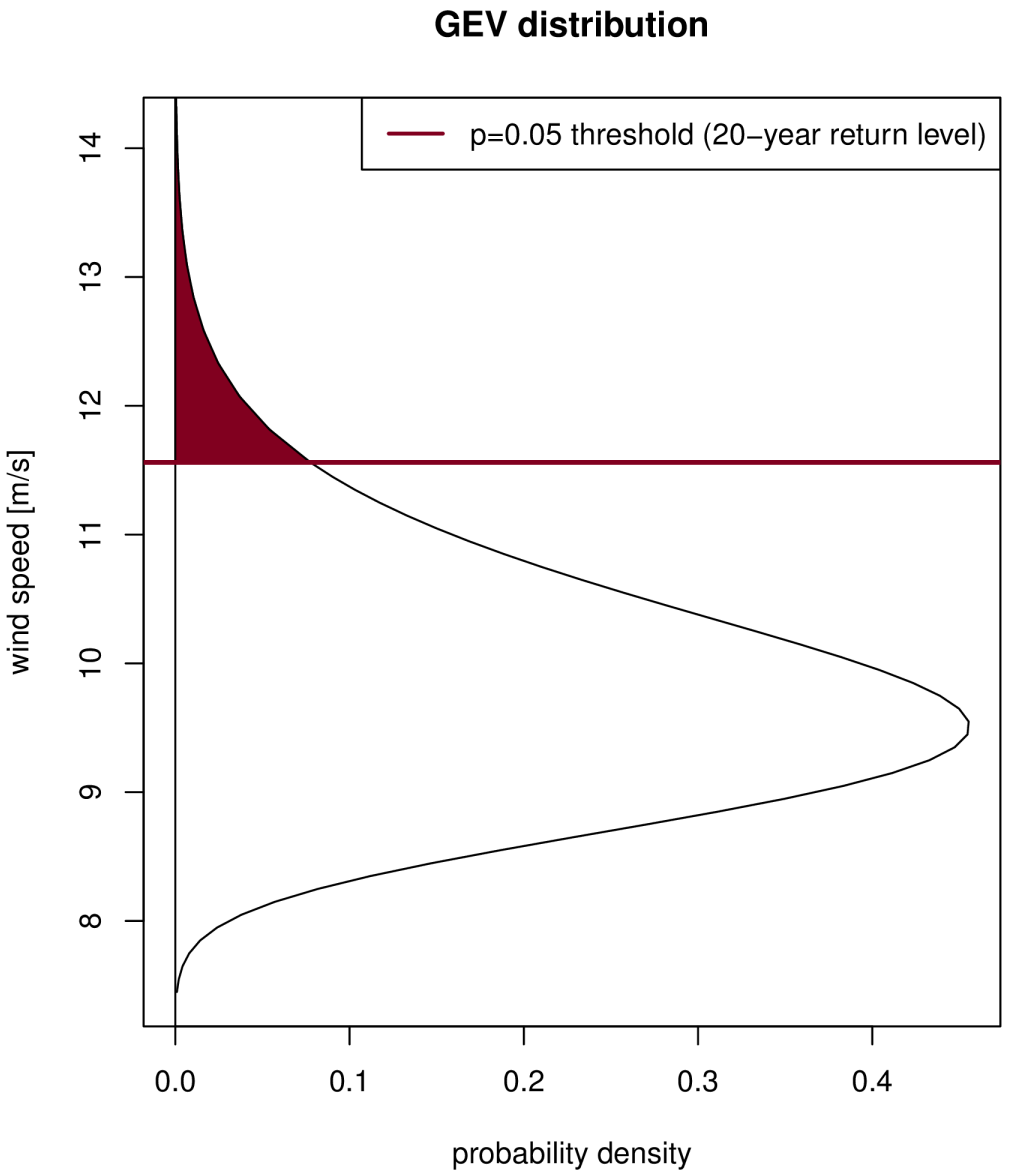

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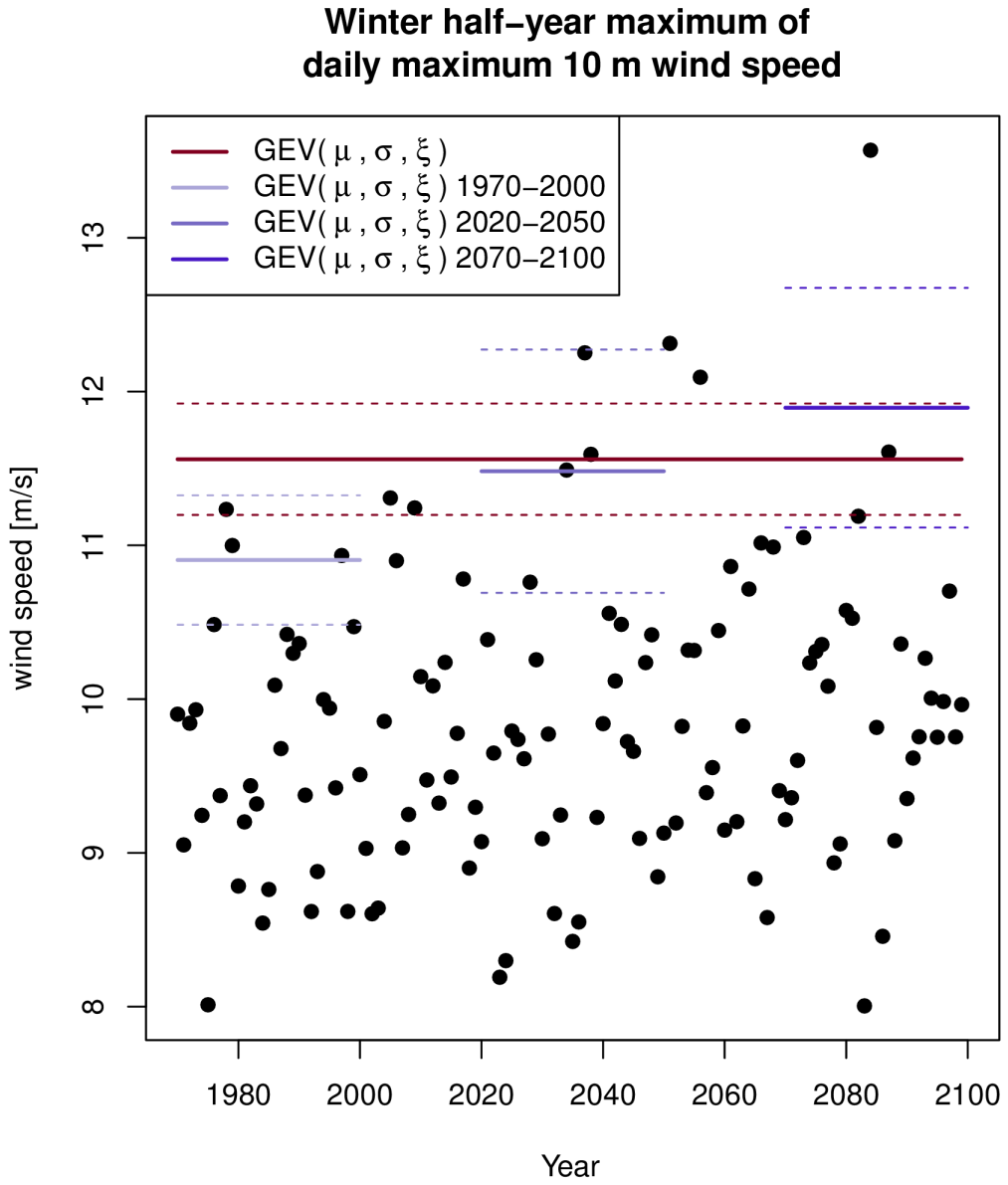

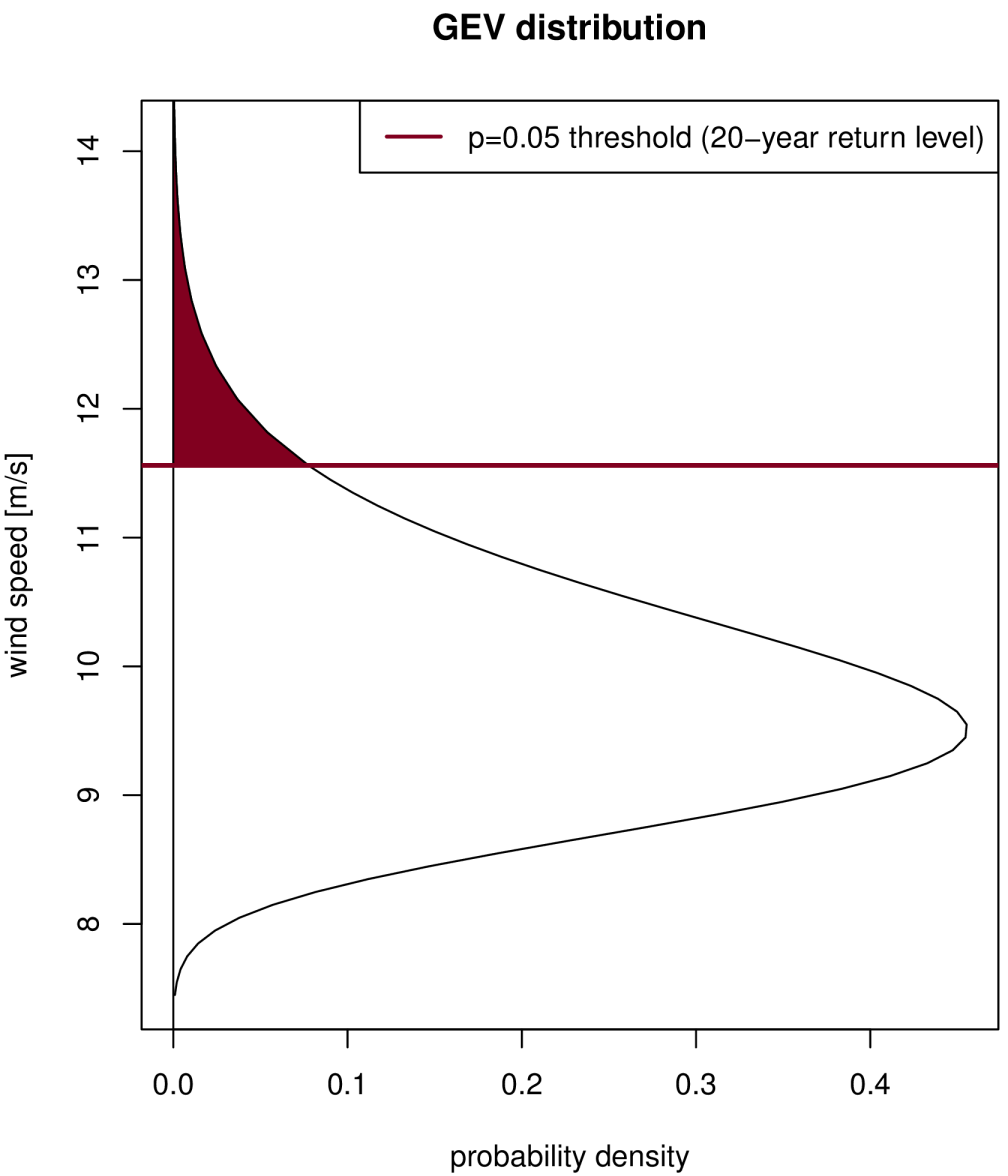

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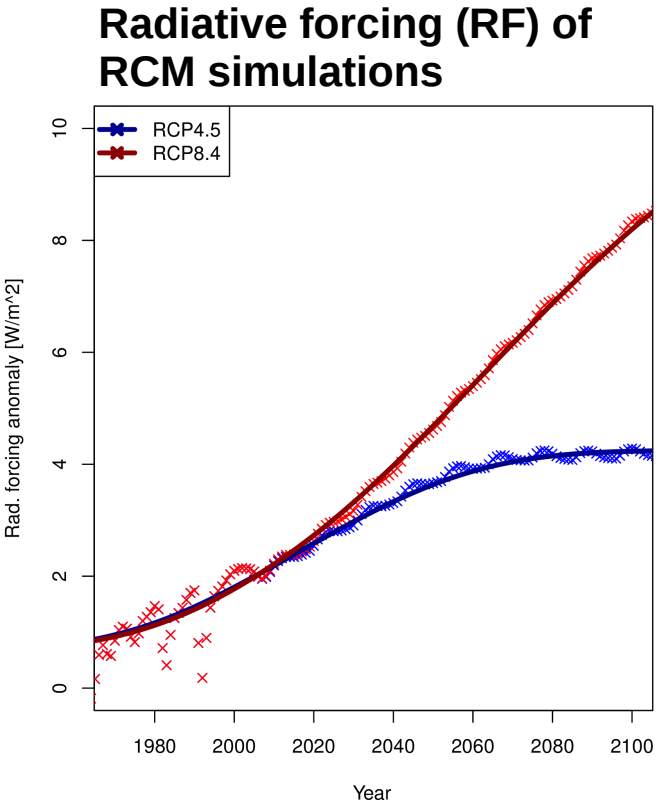

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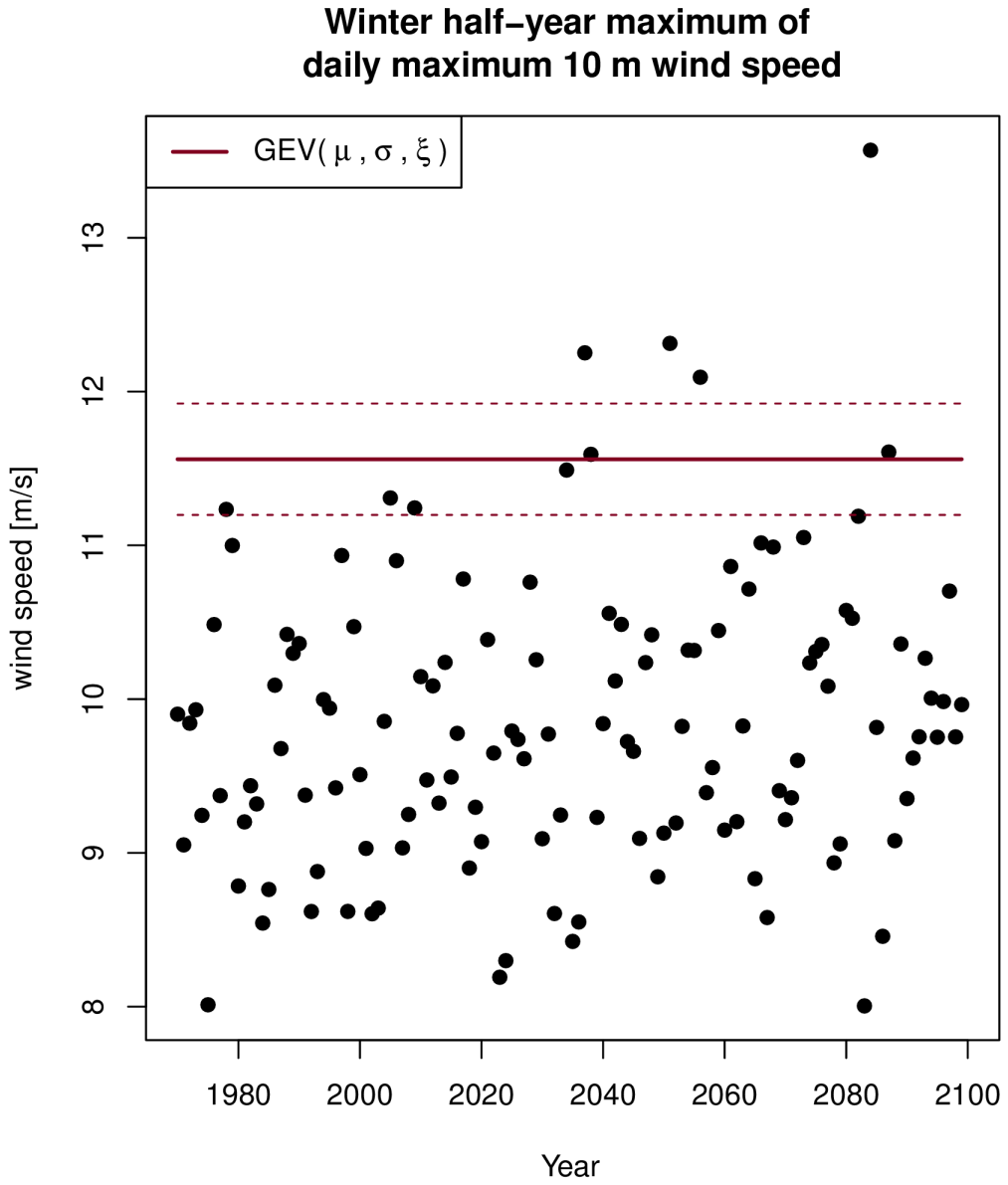

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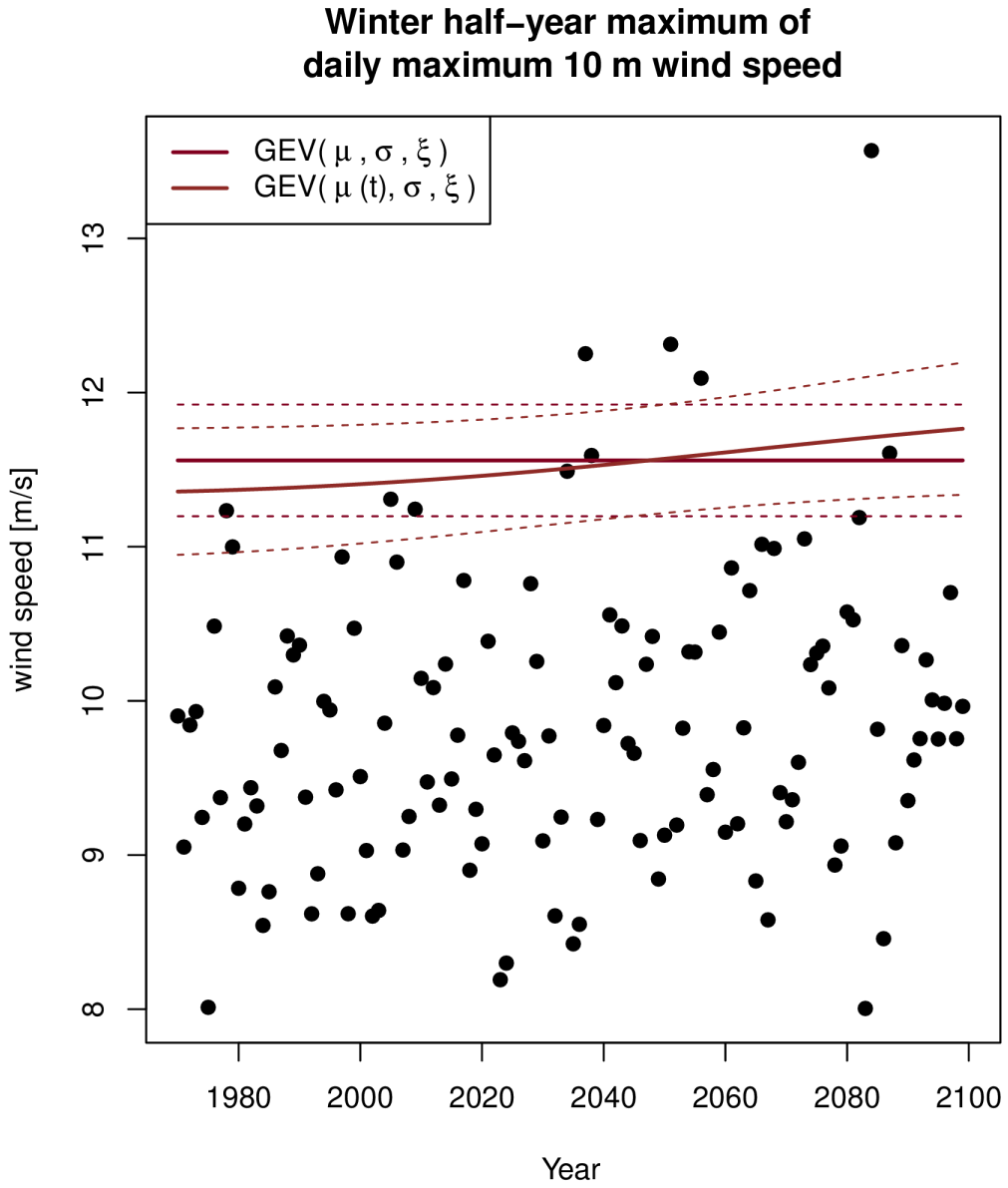

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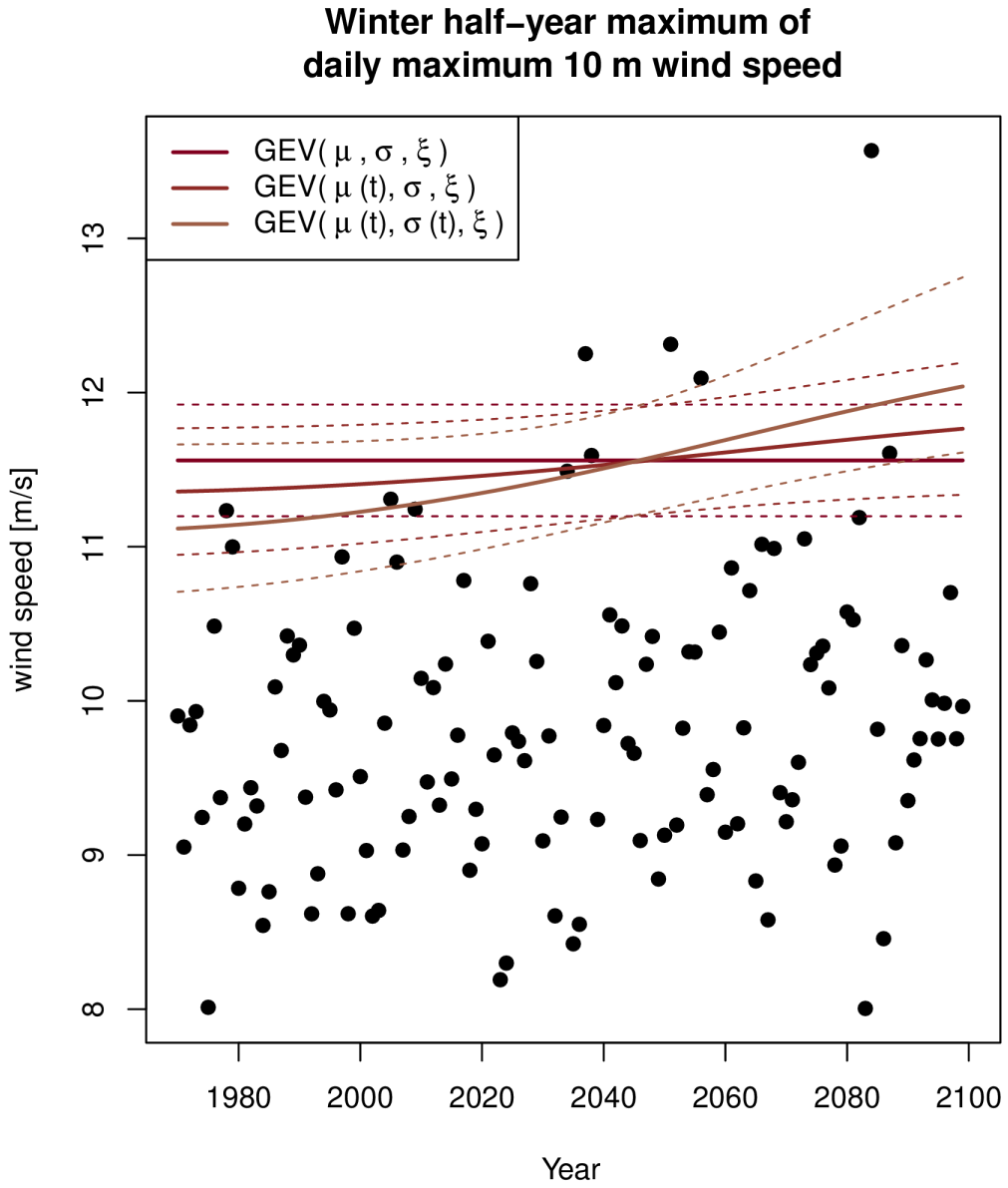

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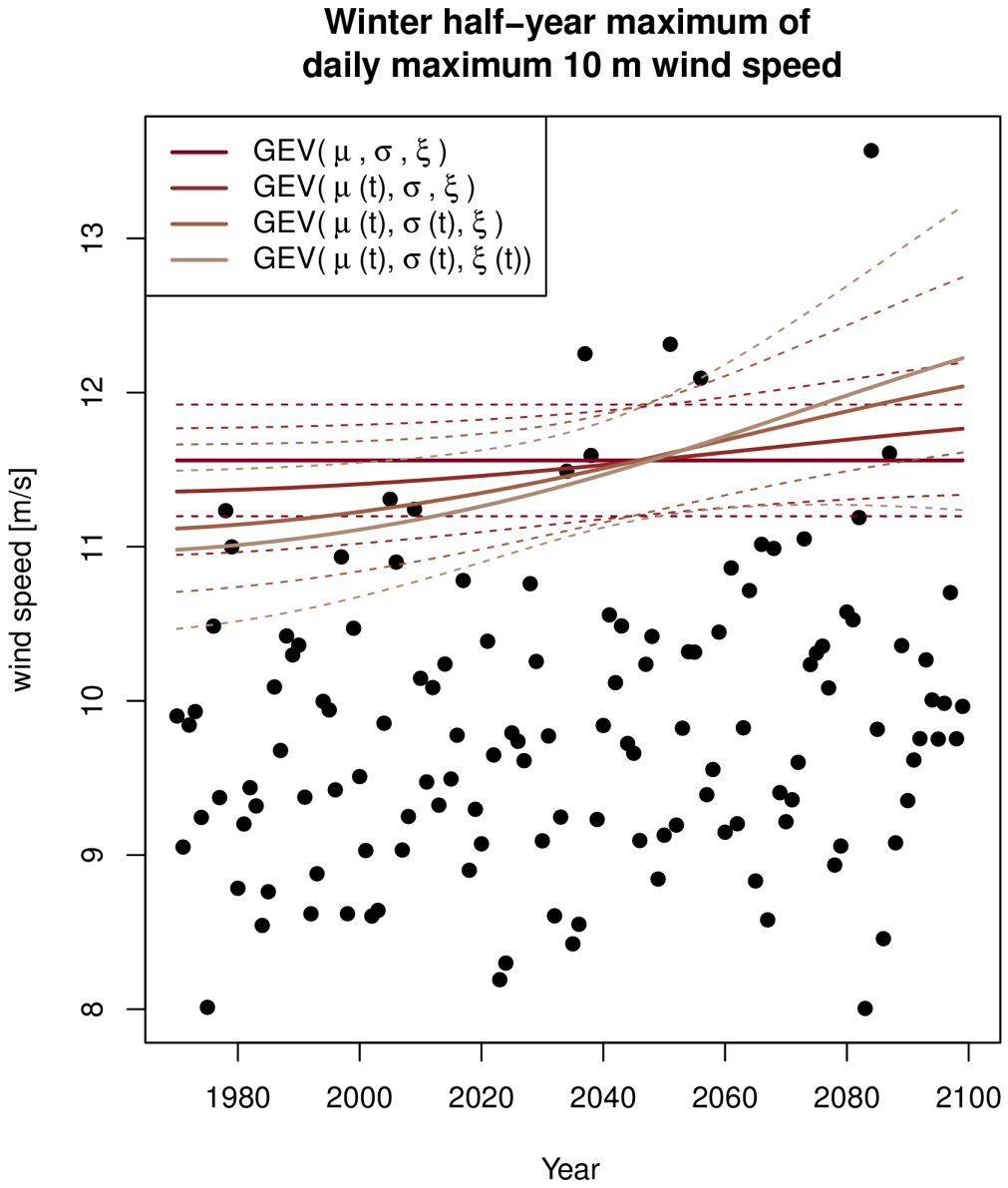

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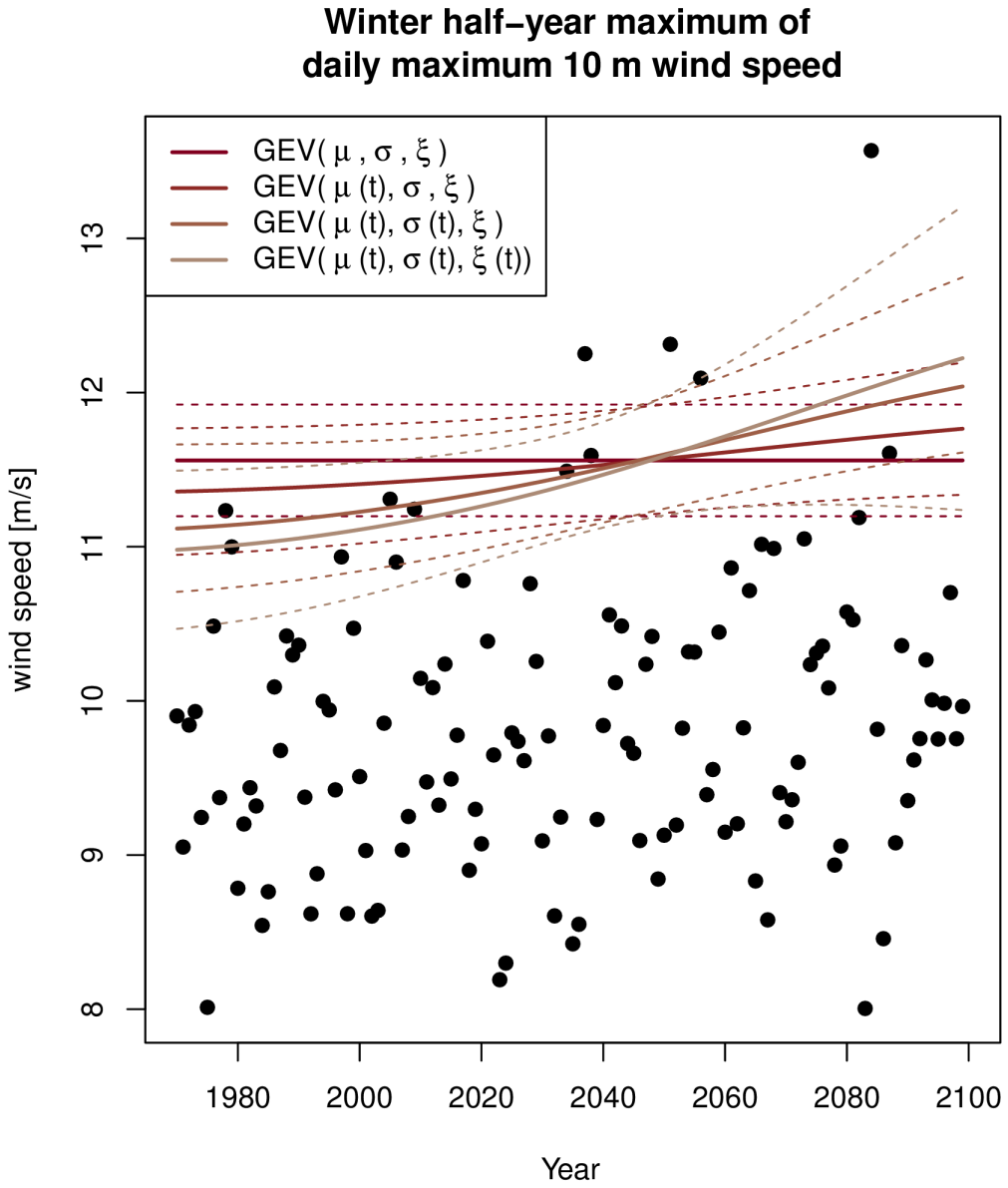

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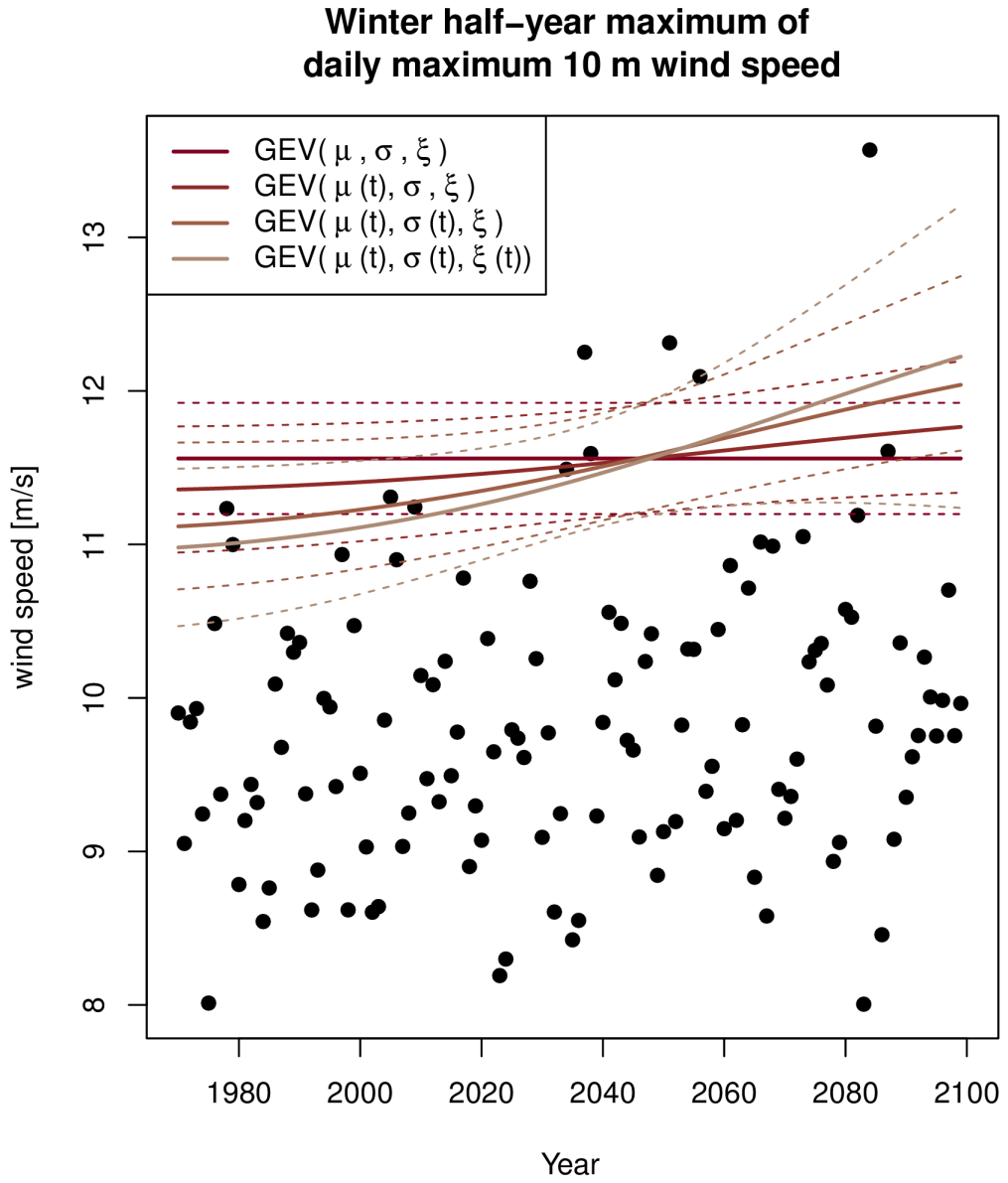

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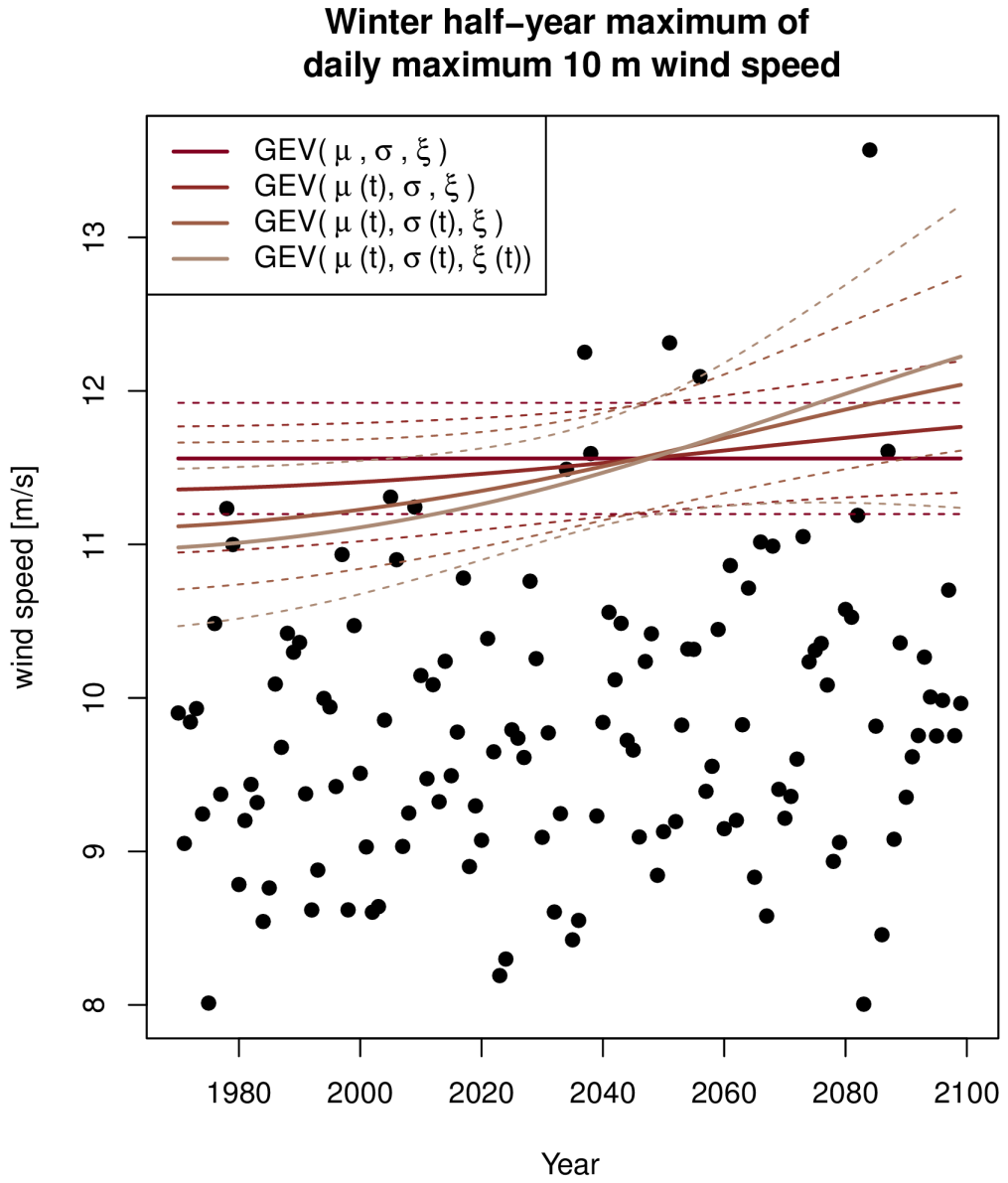

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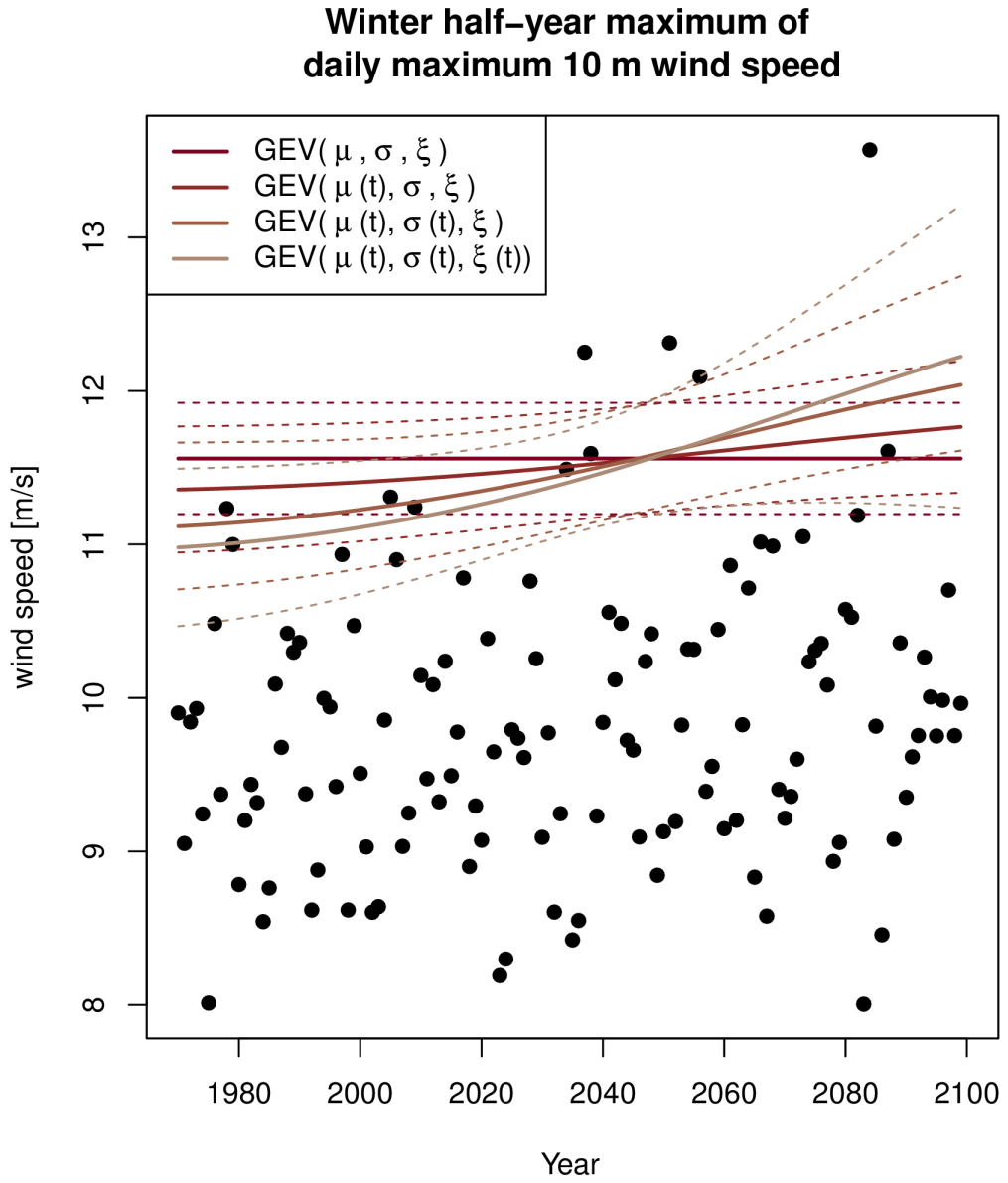

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AIC values for different models

$GEV(\mu, \sigma, \xi)$	AIC= 347.6
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$GEV(\mu(t), \sigma(t), \xi(t))$	AIC= 348.8

Spatial maps

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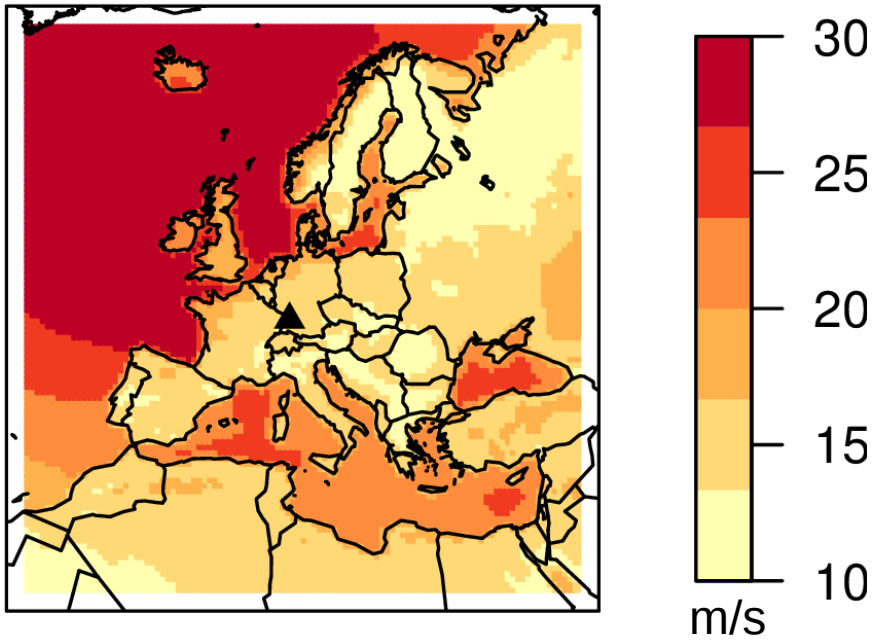

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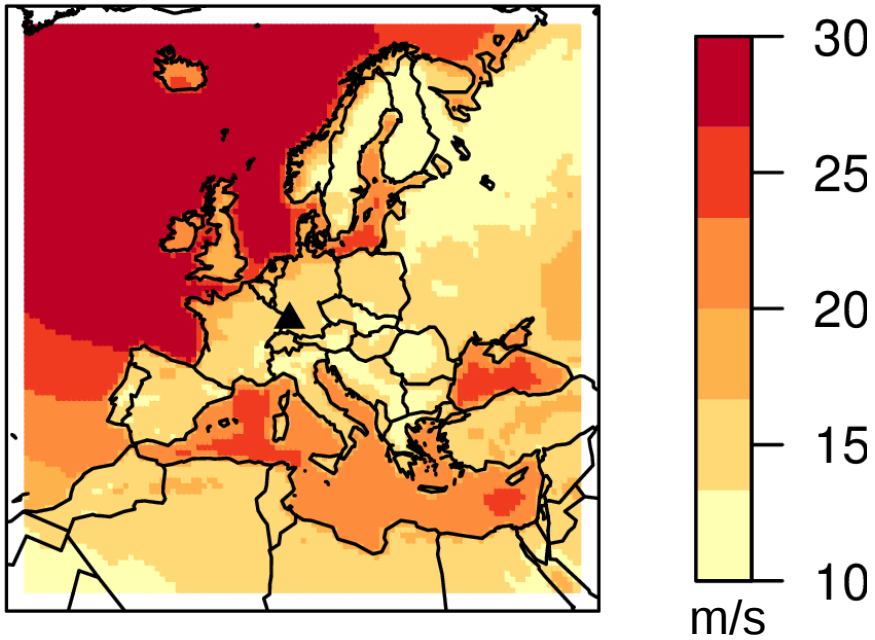

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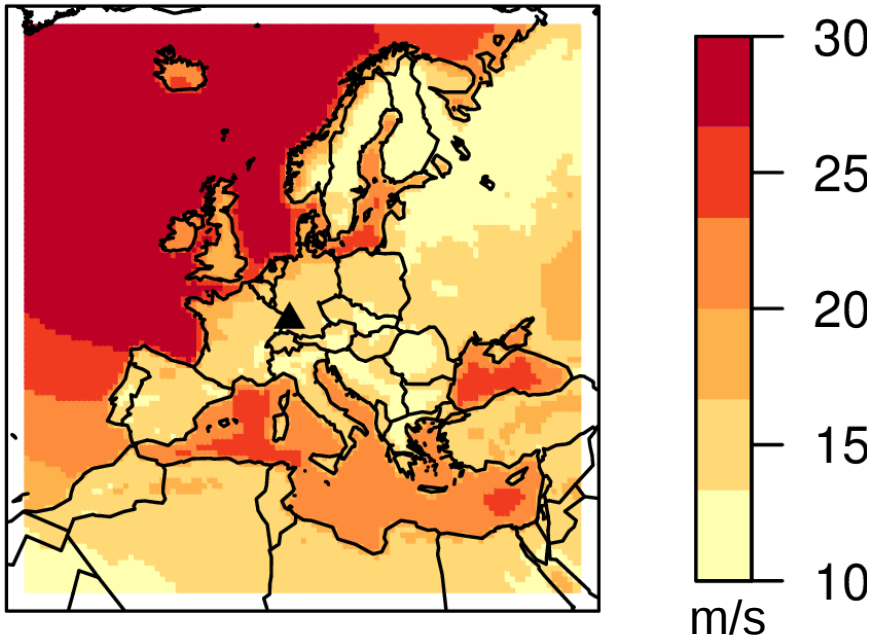

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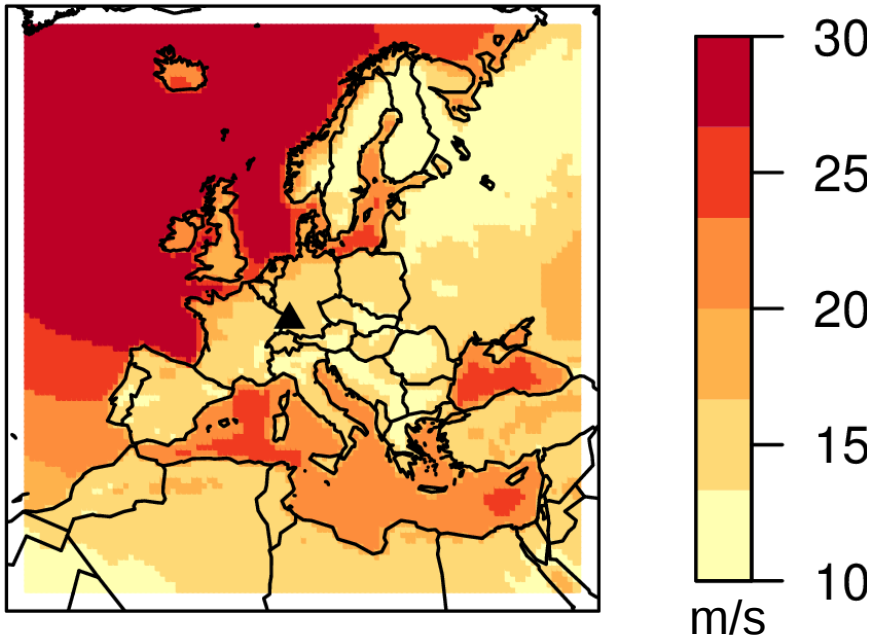

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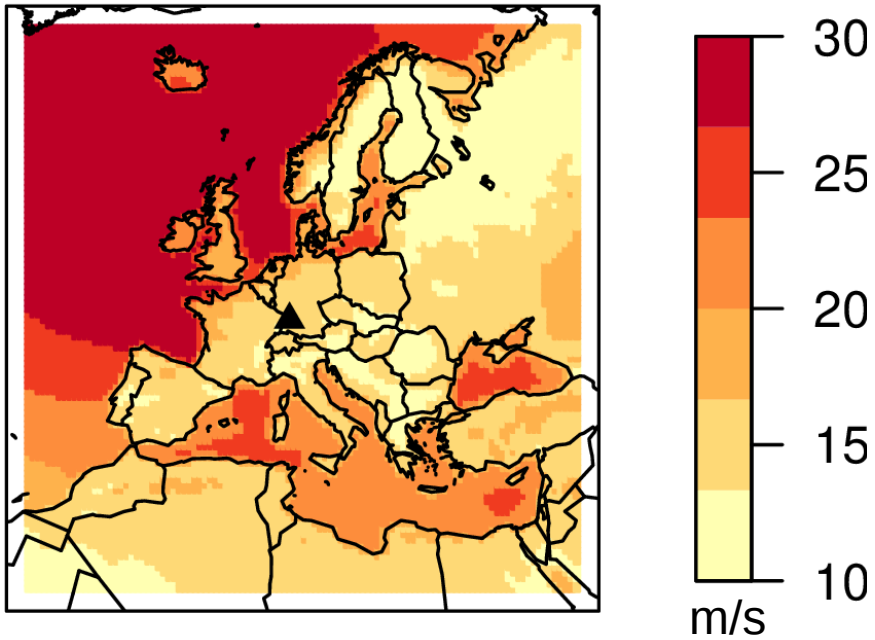

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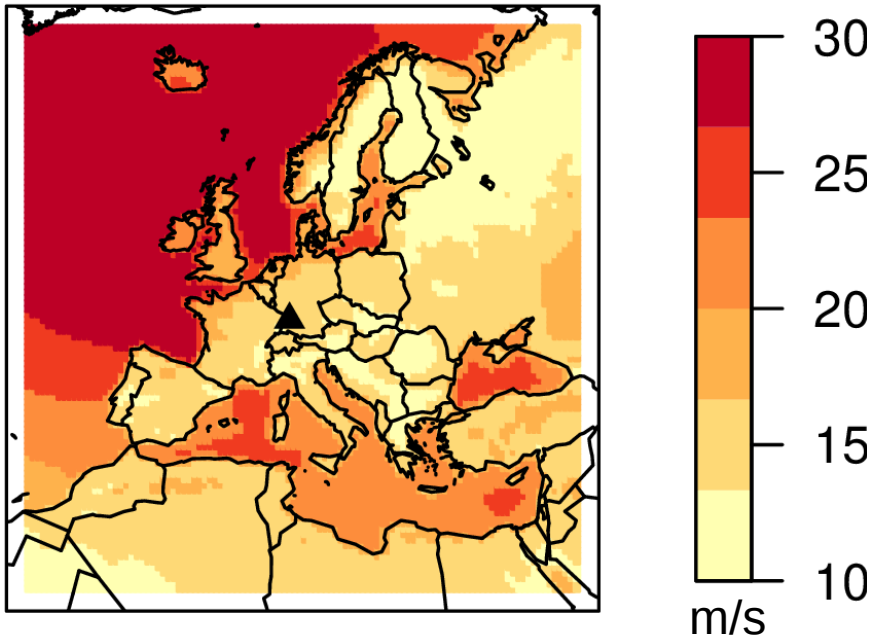

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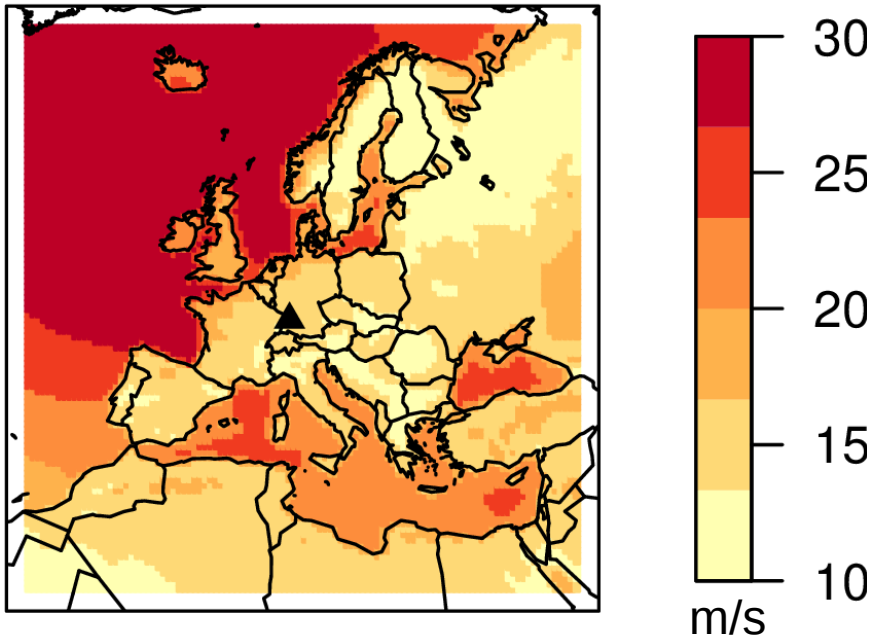

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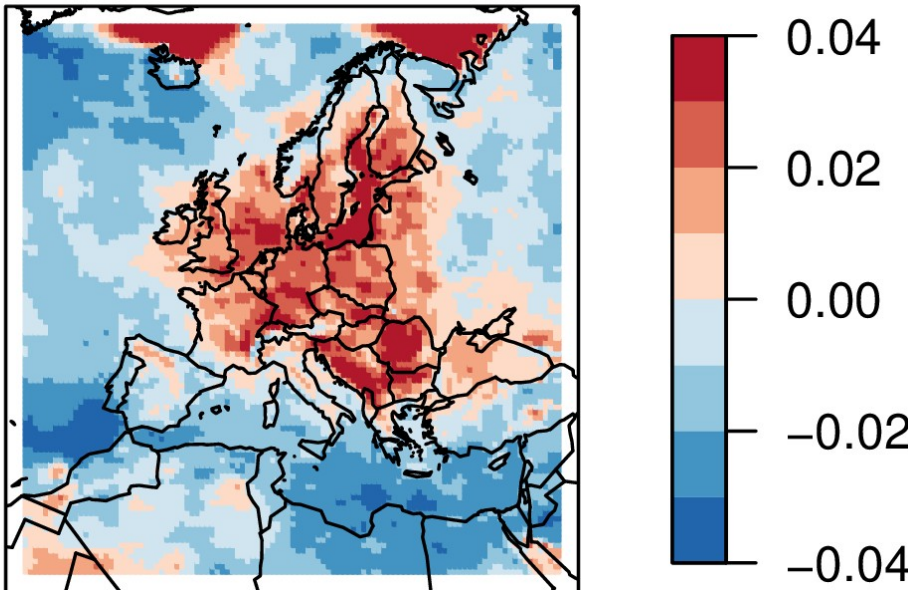

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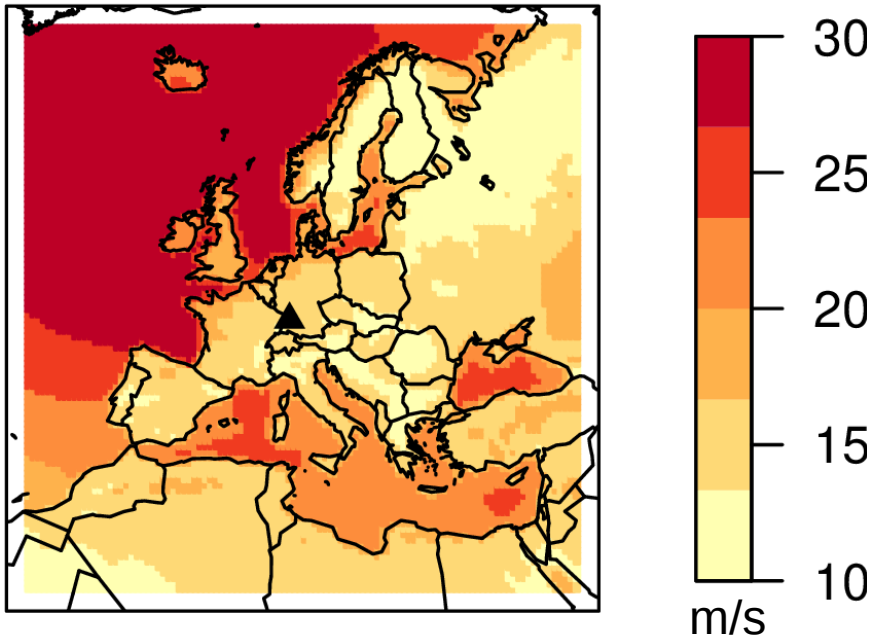

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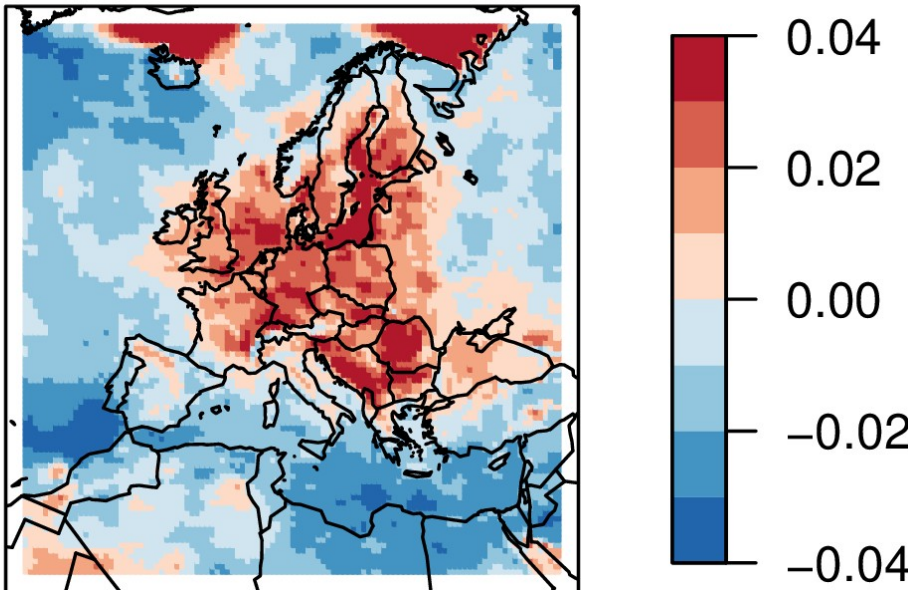

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exceedance probability 0.05

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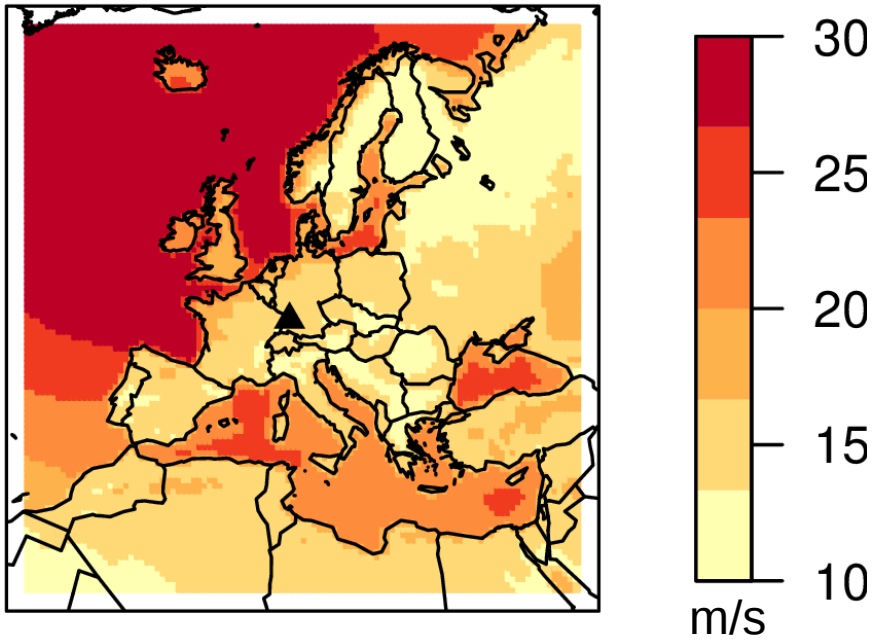

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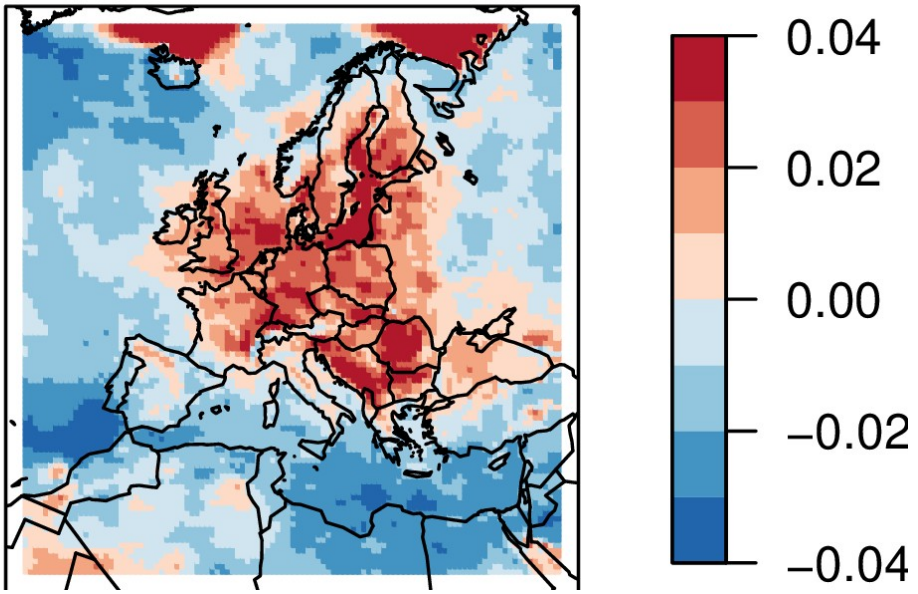

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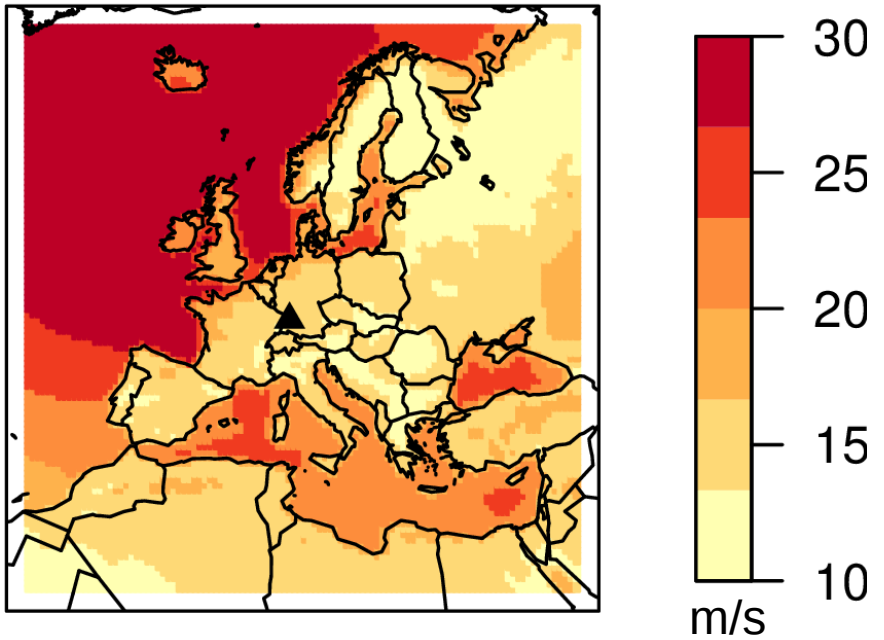

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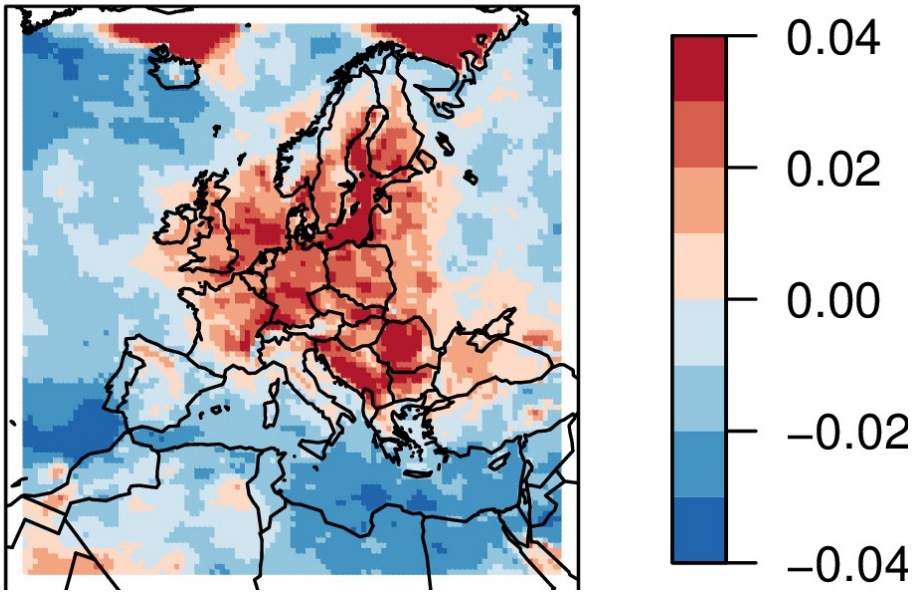

	1970	**2100**
exceedance probability	0.05	+ 0.02 = 0.07
	↓	
return period	20 years	

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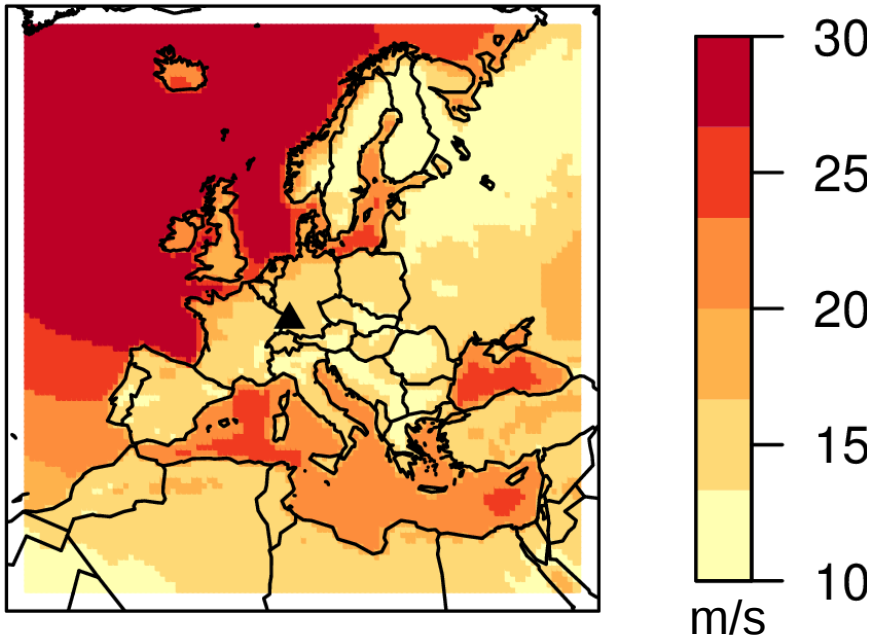

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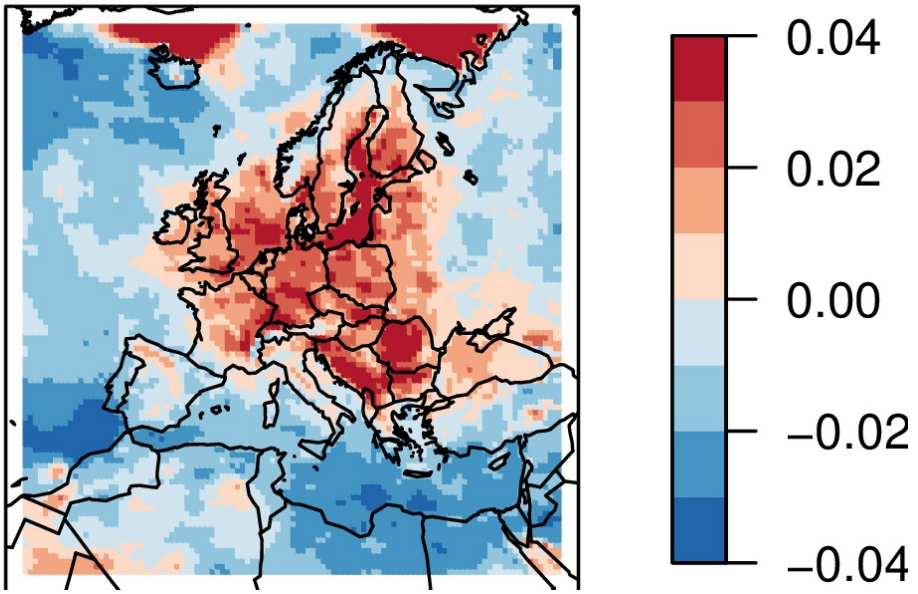

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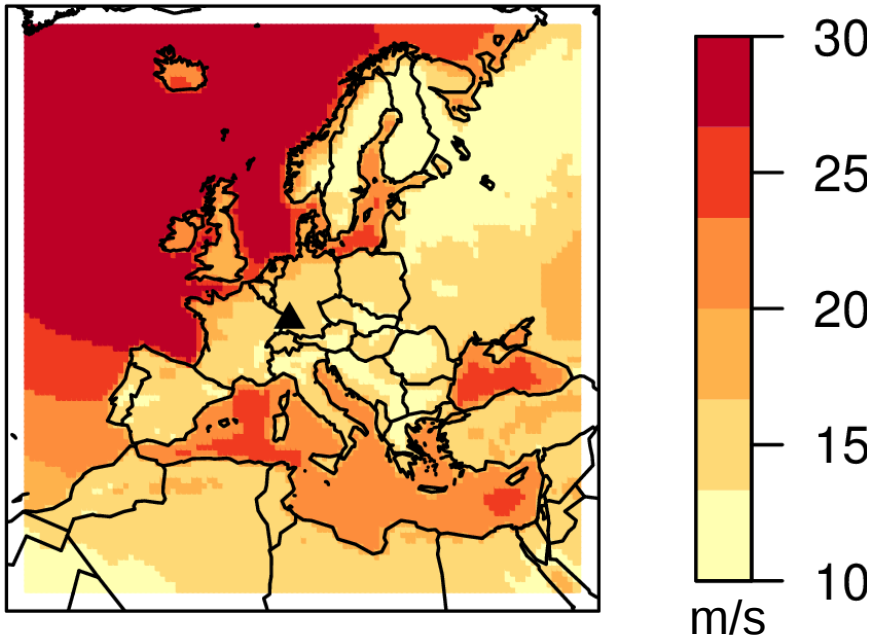

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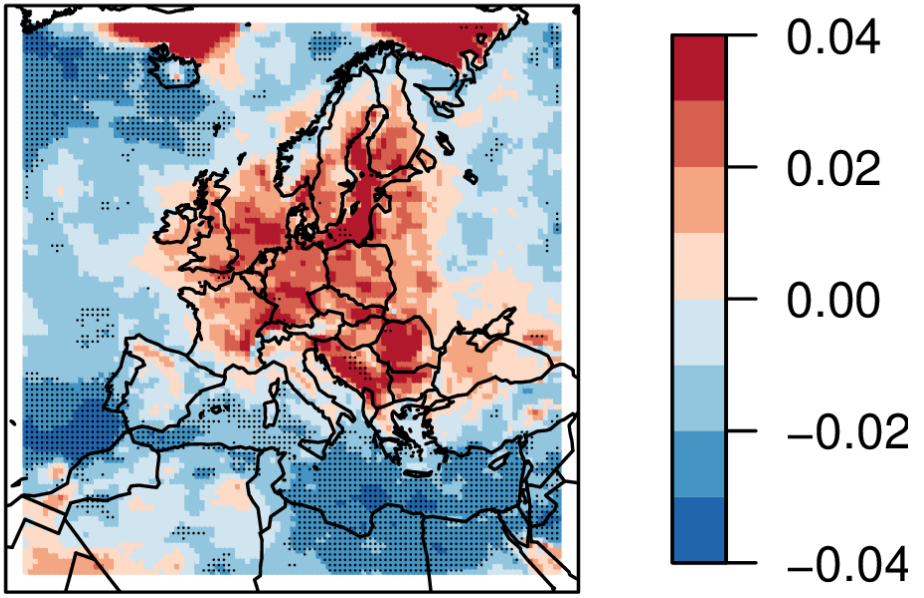

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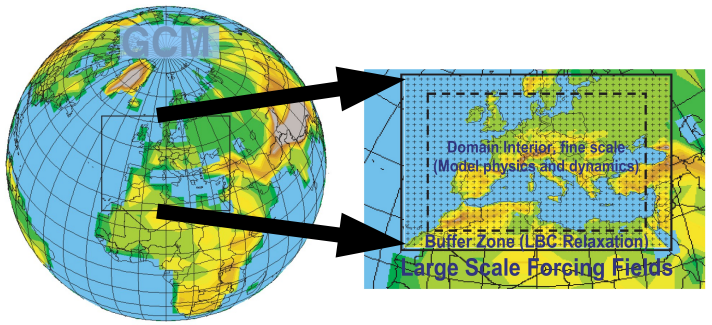

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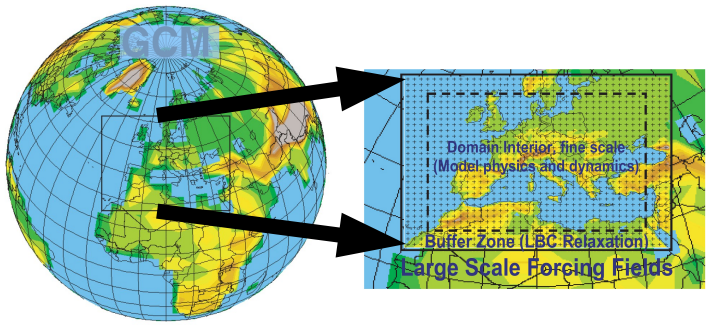

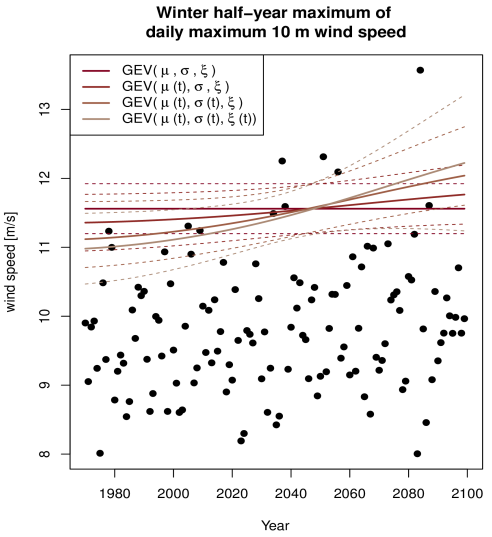

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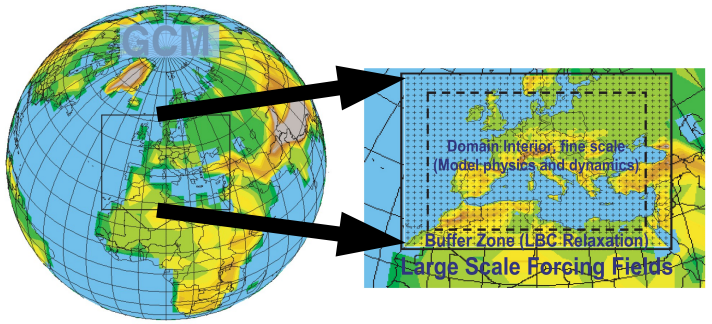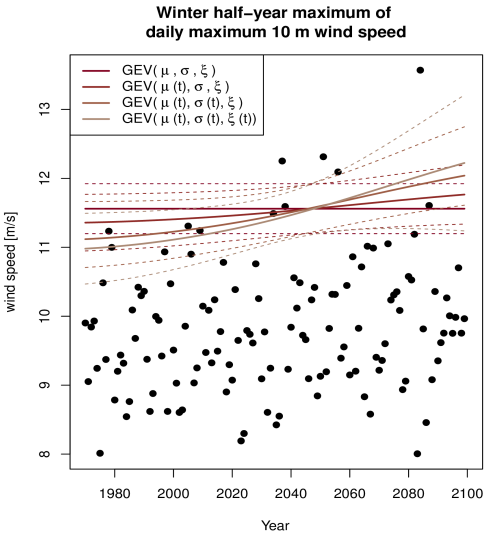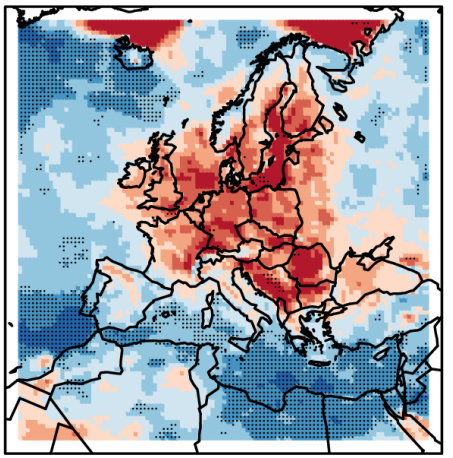
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