



Group of Experts on Climate Change Impacts and Adaptation for Transport Networks and Nodes

Geneva, 27-28 March 2017

**Which sections of the Spanish State-owned inland
transport network are potentially more vulnerable
taking into consideration climate change effects?**

Alberto Compte

Approach

In a GIS environment:

- ✓ To classify the sections of the inland transport network according to their criticality (i.e. the impact of the asset loss).
- ✓ To differentiate levels of exposure of the inland transport network to climate change
- ✓ To take into consideration different levels of sensitivity of the transport sections to climate change

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- ✓ To take into consideration different levels of sensitivity of the transport sections to climate change

Climate change projections

Criticality of the
transport network
Road network
Rail network
Ports & Airports

Exposure of the
transport network
to climate change

Sensitivity of the
transport network to
climate change

Questions to consider:

- ✓ **Climate-related stressors**
- ✓ **Climate change scenario/s and time horizon/s**
- ✓ **Source/s of projections**
- ✓ **Some precautions**



Climate change projections

Climate-related stressors

Criticality of the transport network

Road network

Rail network

Ports & Airports

Exposure of the transport network to climate change

Sensitivity of the transport network to climate change

Climate-related stressors		Roads	Railways
Air temperature	Mean temperature	●	●
	Daily maximum temperature	●	●
	Diurnal thermal oscillation	●	●
	Frost days	●	●
	Heat waves	●	●
Precipitation	Mean annual precipitation	●	●
	Intensity of extreme rainfall	●	●
	Duration of heavy rainfall	●	●
	Floods	●	●
	Droughts	●	●
Electrical storms			●
Snow		●	●
Flash floods in rivers		●	●
Water table		●	●
Fog	Fog intensity	●	●
	Frequency of intense fog	●	●
Wind	Intensity of extreme winds	●	●
	Frequency of strong winds	●	●
	Wind direction	●	●

Climate change projections

Climate-related stressors

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Climate change projections

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Climate change projections

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Climate change projections

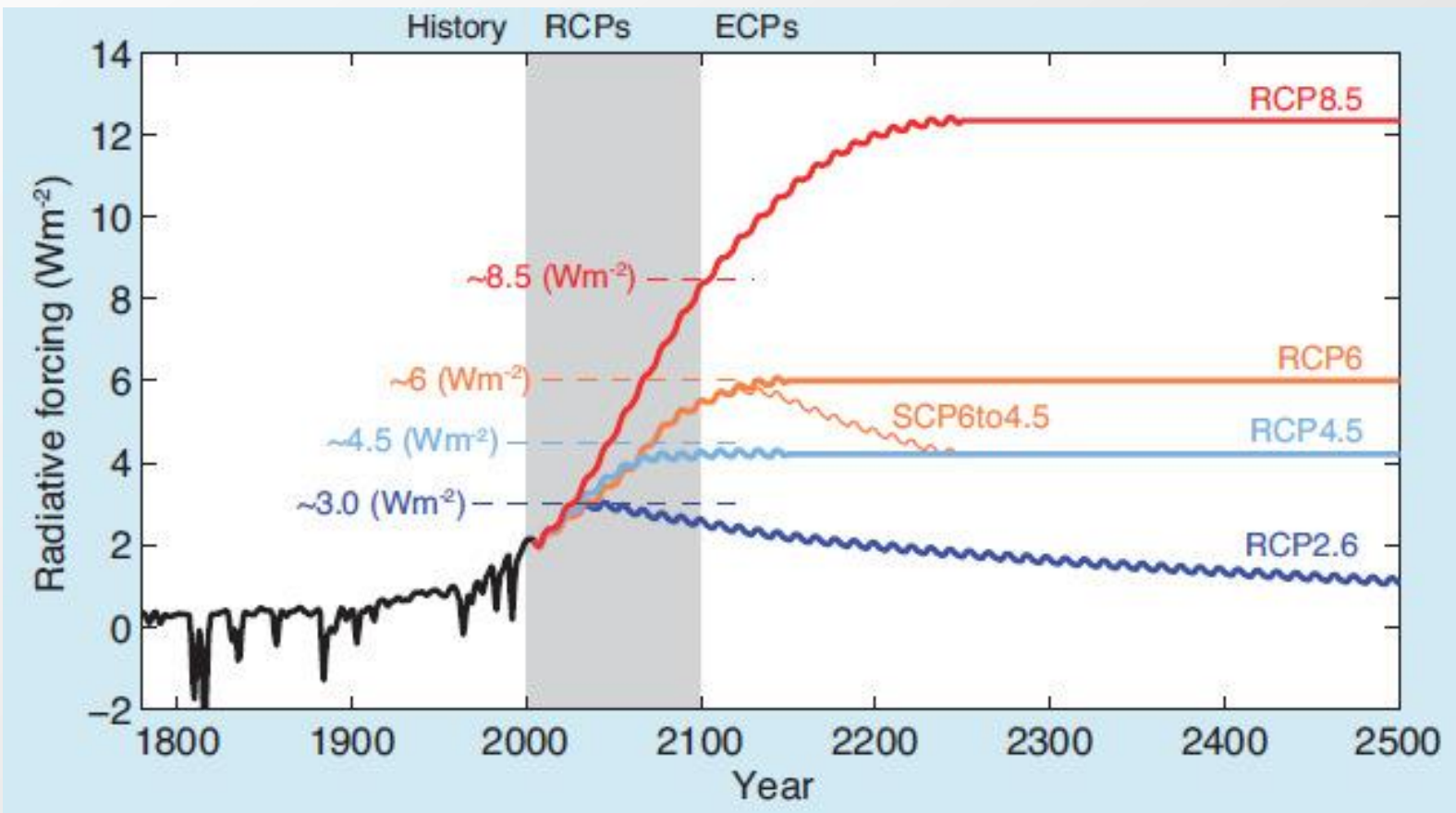
Climate change scenario/s and time horizon/s

Coherence with the GHG concentration trajectories (RCPs) adopted by the IPCC for its fifth Assessment Report

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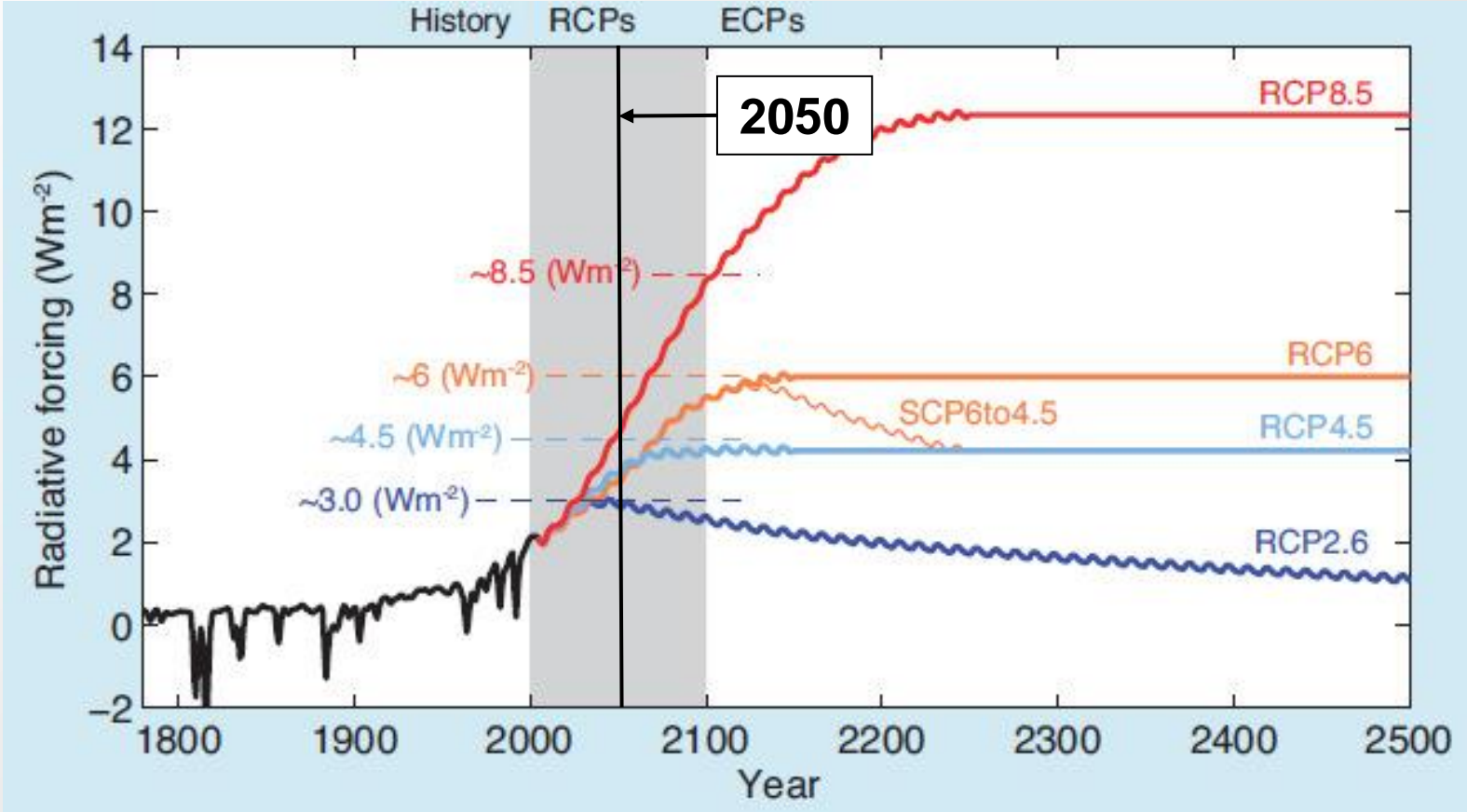
Climate change projections

Climate change scenario/s and time horizon/s

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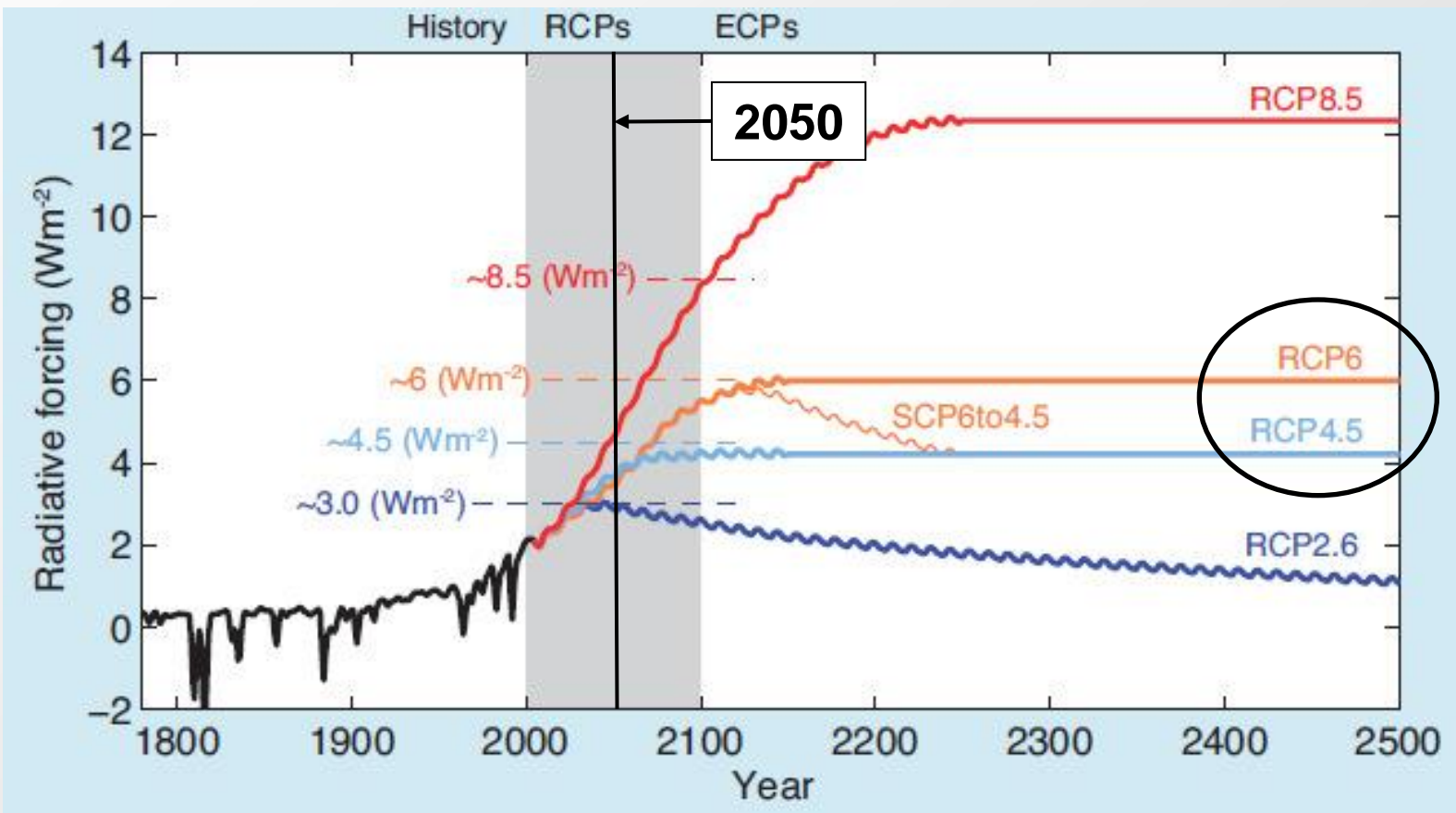
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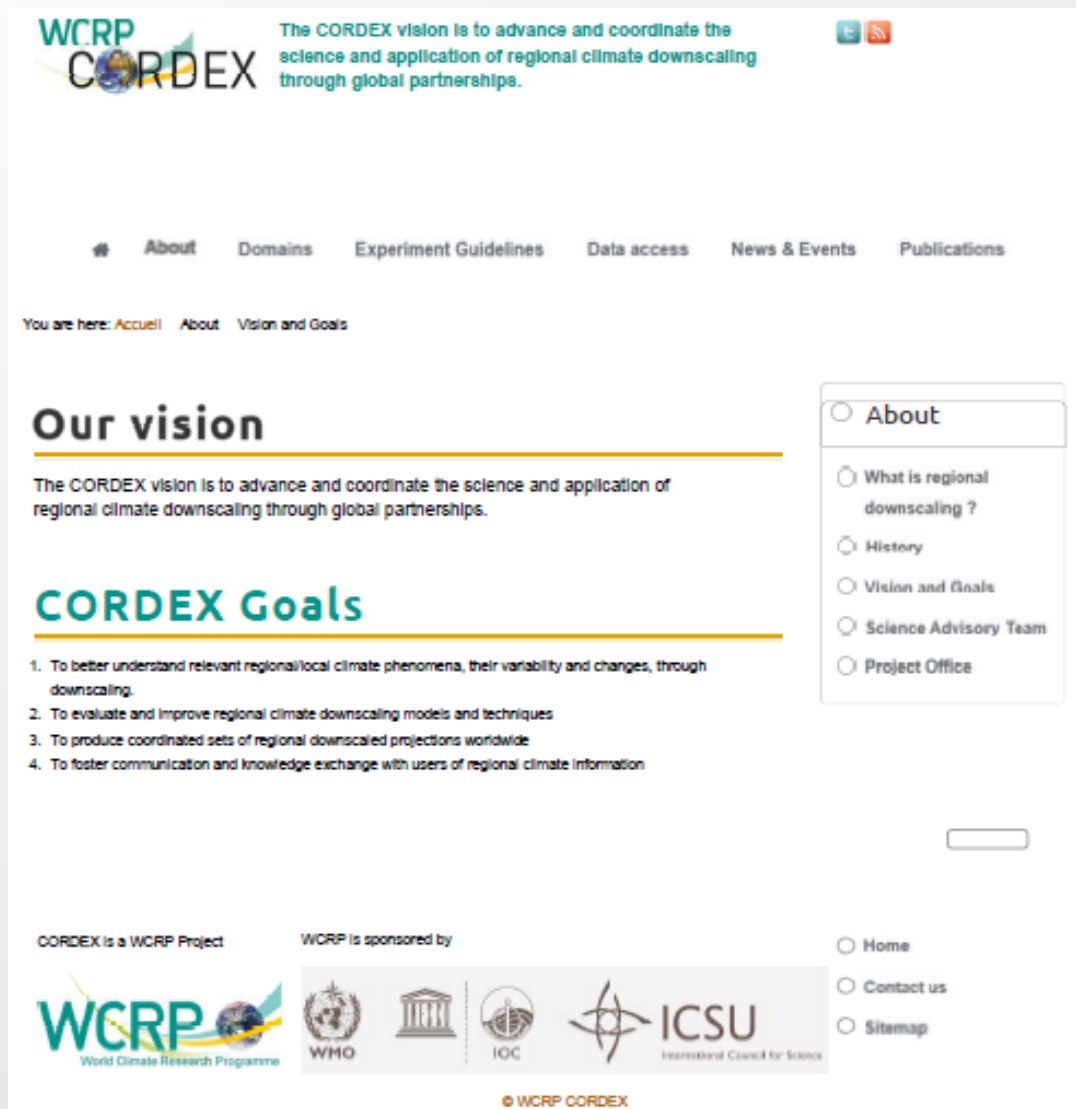
Climate change projections

Source/s of projections

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The screenshot shows the WCRP CORDEX website. At the top, there is a navigation menu with links for 'About', 'Domains', 'Experiment Guidelines', 'Data access', 'News & Events', and 'Publications'. Below the menu, a breadcrumb trail reads 'You are here: [Accueil](#) > [About](#) > [Vision and Goals](#)'. The main content area features a section titled 'Our vision' with the text: 'The CORDEX vision is to advance and coordinate the science and application of regional climate downscaling through global partnerships.' Below this is a section titled 'CORDEX Goals' with a list of four goals: 1. To better understand relevant regional/local climate phenomena, their variability and changes, through downscaling. 2. To evaluate and improve regional climate downscaling models and techniques. 3. To produce coordinated sets of regional downscaled projections worldwide. 4. To foster communication and knowledge exchange with users of regional climate information. On the right side of the page, there is a sidebar menu with radio buttons for 'About', 'What is regional downscaling?', 'History', 'Vision and Goals', 'Science Advisory Team', and 'Project Office'. At the bottom of the page, there is a footer section that states 'CORDEX is a WCRP Project' and 'WCRP is sponsored by', followed by logos for WCRP, WHO, IOC, and ICSU. A second sidebar menu at the bottom right contains radio buttons for 'Home', 'Contact us', and 'Sitemap'. The copyright notice at the very bottom reads '© WCRP CORDEX'.

Climate change projections

Source/s of projections

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Projections available through  taken from CORDEX considering RCP4.5 with a resolution of 0.11 degrees:

- ✓ Maximum temperature, in a year
- ✓ Number of days with minimum temperature below 0°C, in a year
- ✓ Daily maximum precipitation, in a year
- ✓ Maximum number of consecutive days with precipitation < 1mm, in a year
- ✓ Maximum wind speed at 10 m, in a year

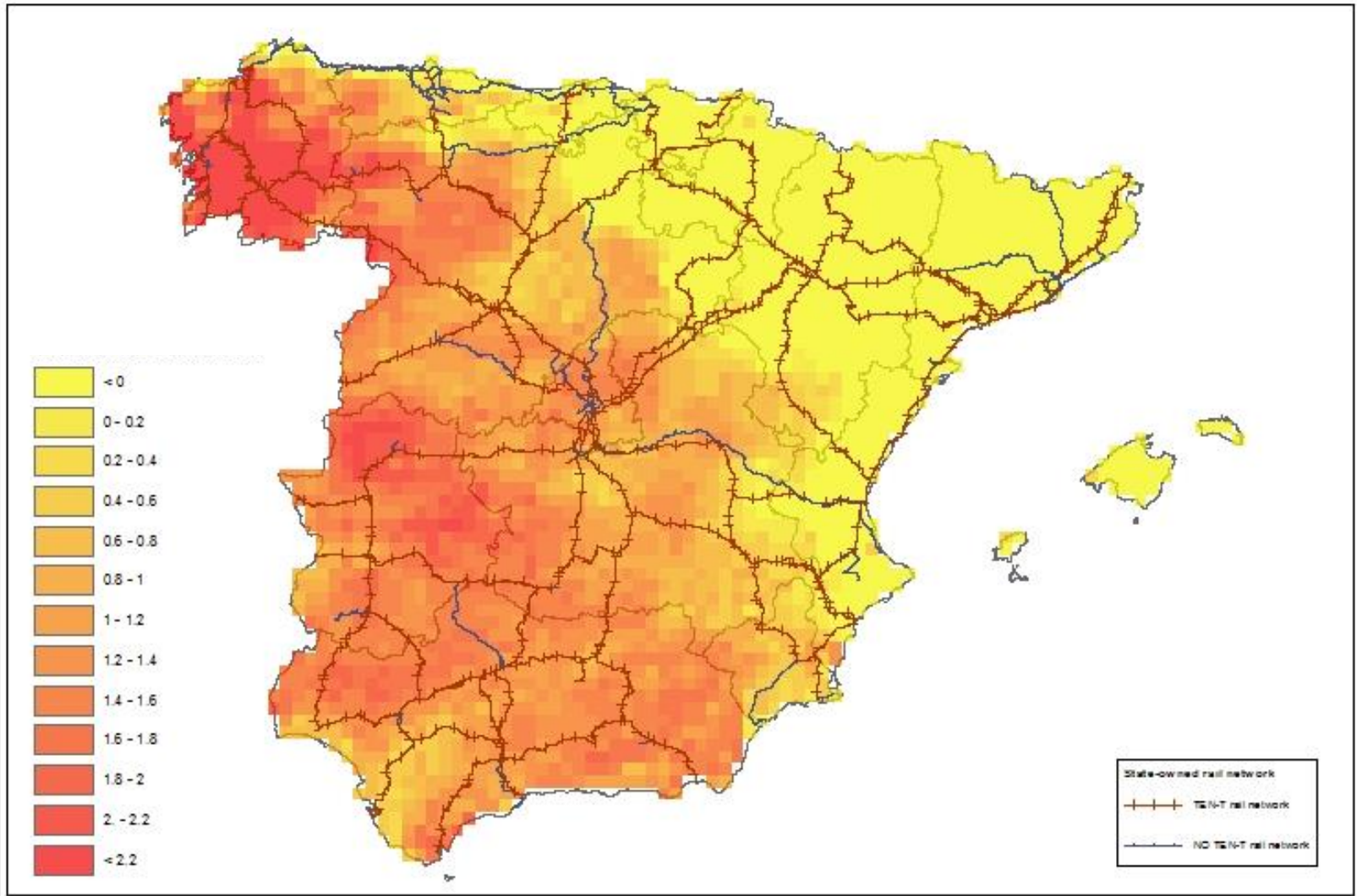
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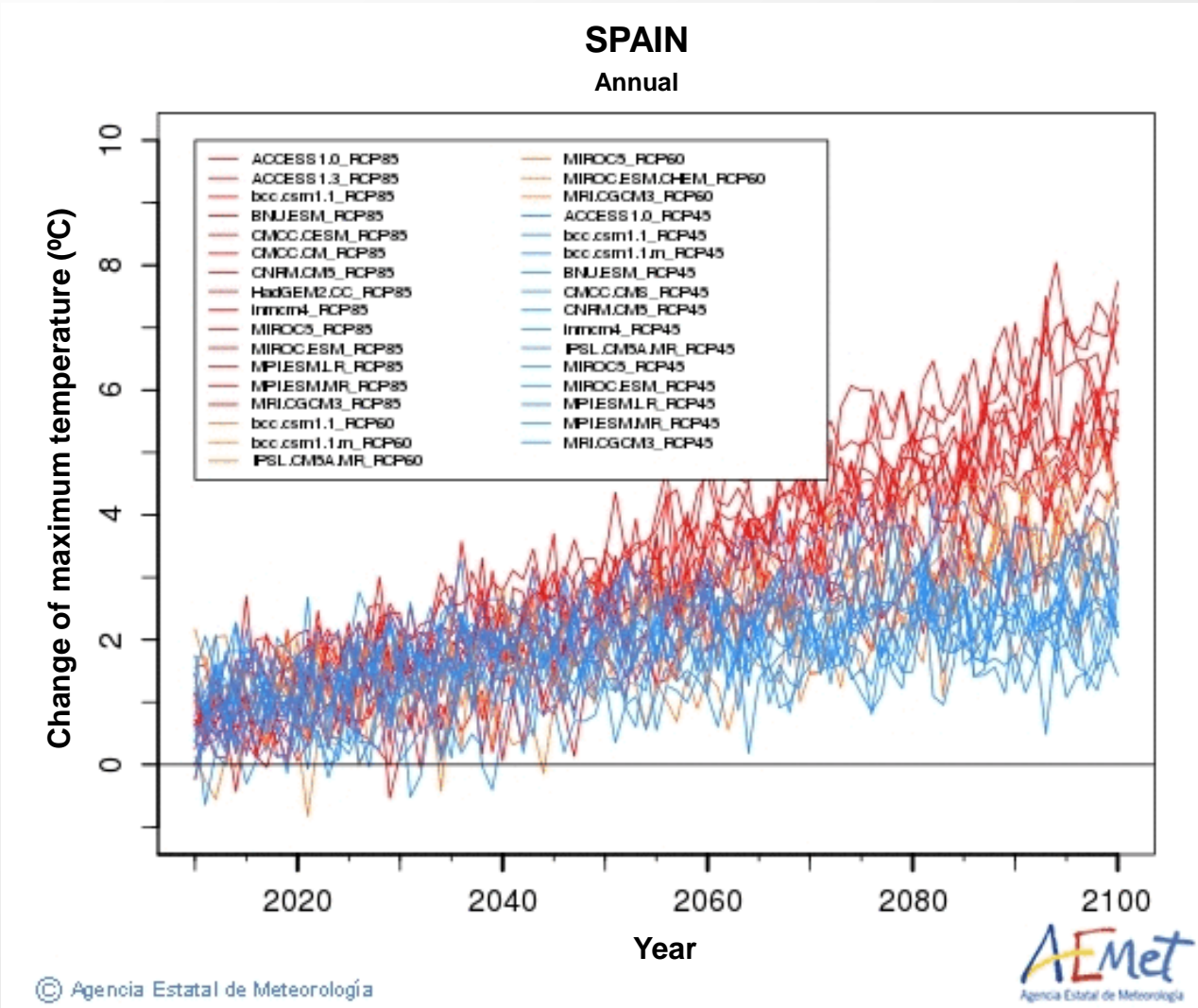
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Some precautions

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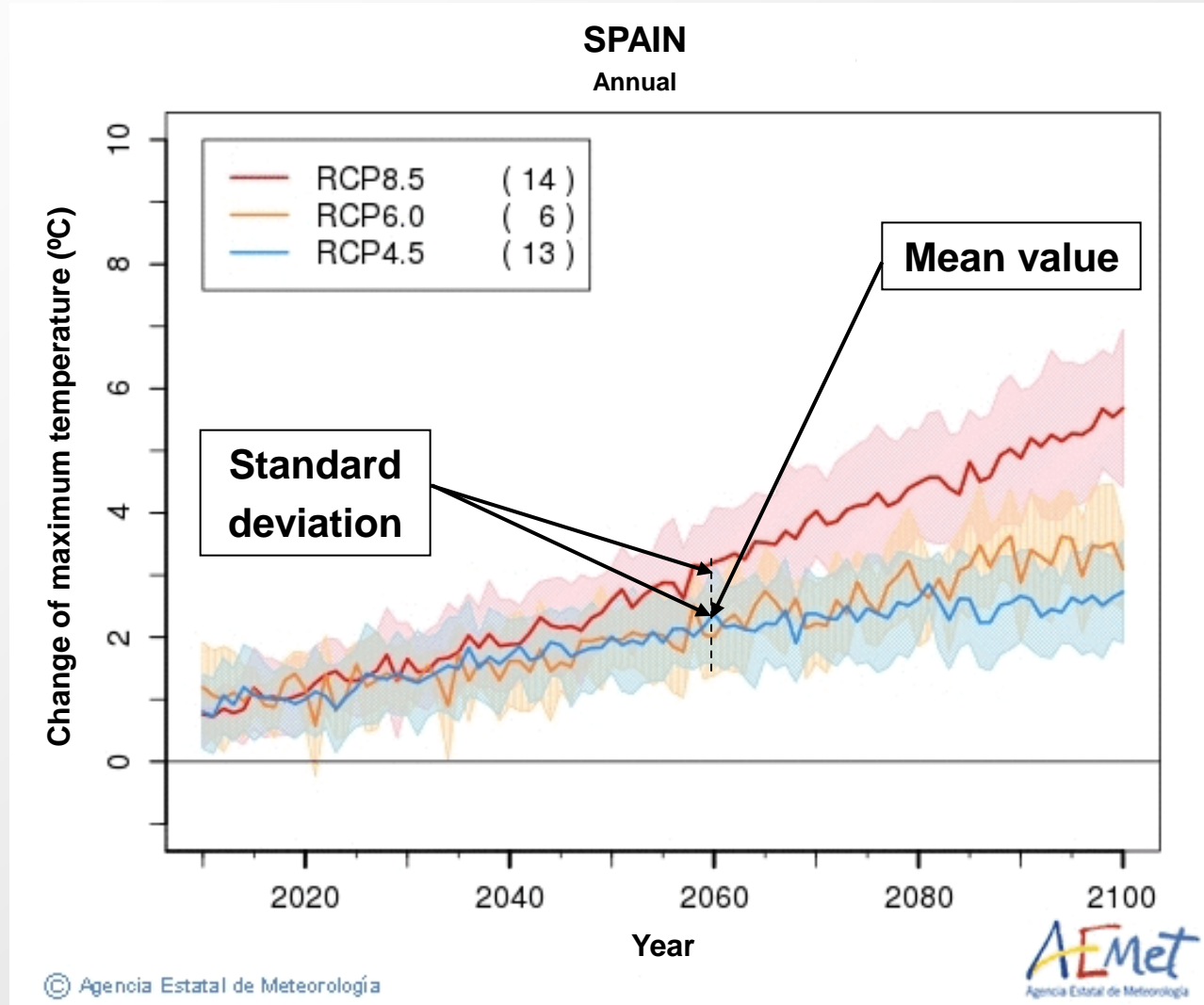
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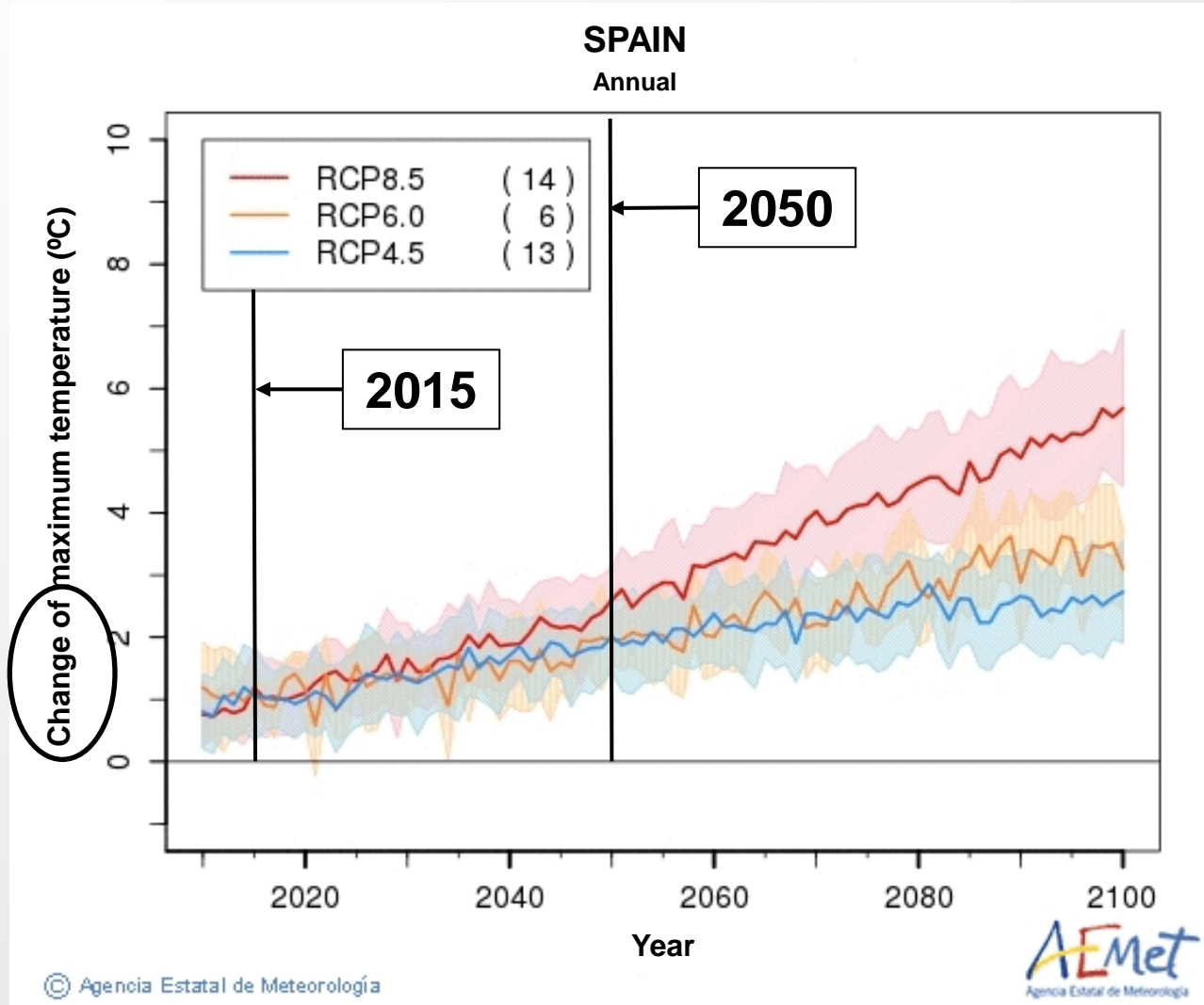
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