

# New scenarios, new models: the latest climate change projections.

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# Scenarios: An Overview

2000's

SRES

2010

RCPs

2012

CMIP5

2013

AR5

2014

SSP narratives

SSP drivers

(GDP, Pop)

2016

2017

SSP emission scenarios

Now

CMIP6

AR6

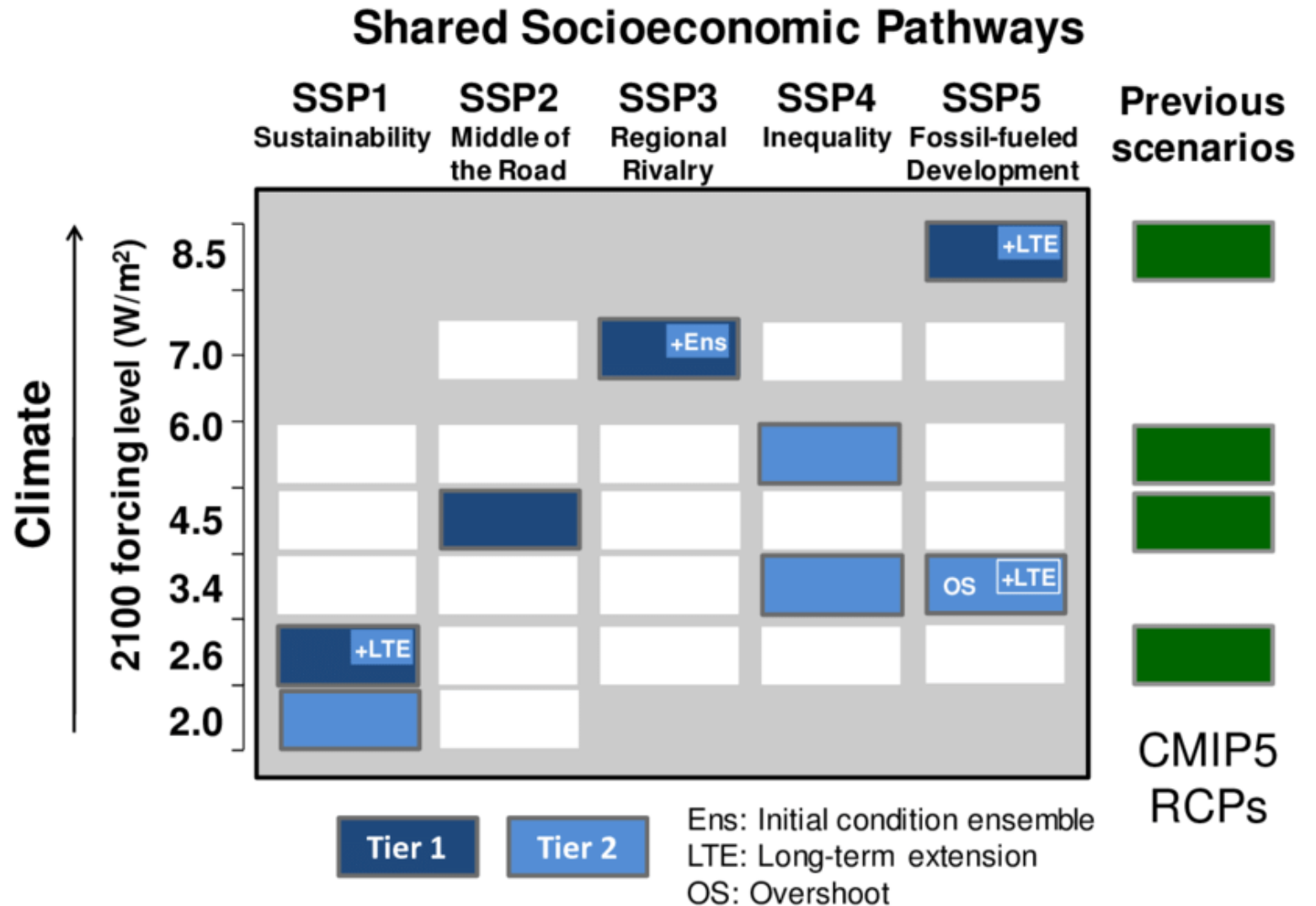
# The new SSP scenarios

## Shared Socio-economic Pathways (SSPs)

New storylines and quantitative elements span a future world with different degrees of challenges to mitigation and adaptation



The new experiments based on the new SSP scenarios



# ScenarioMIP Experiments

**Tier 1: SSP1-2.6**

**SSP2-4.5**

**SSP 3-7.0**

**SSP5-8.5**

**Tier2: SSP1-1.9**

**SSP4-3.4**

**SSP5-3.4OS**

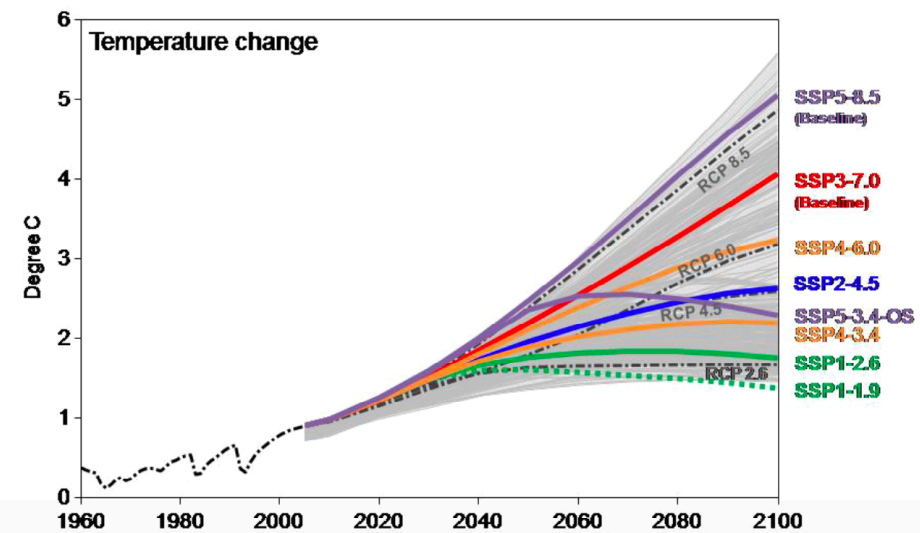
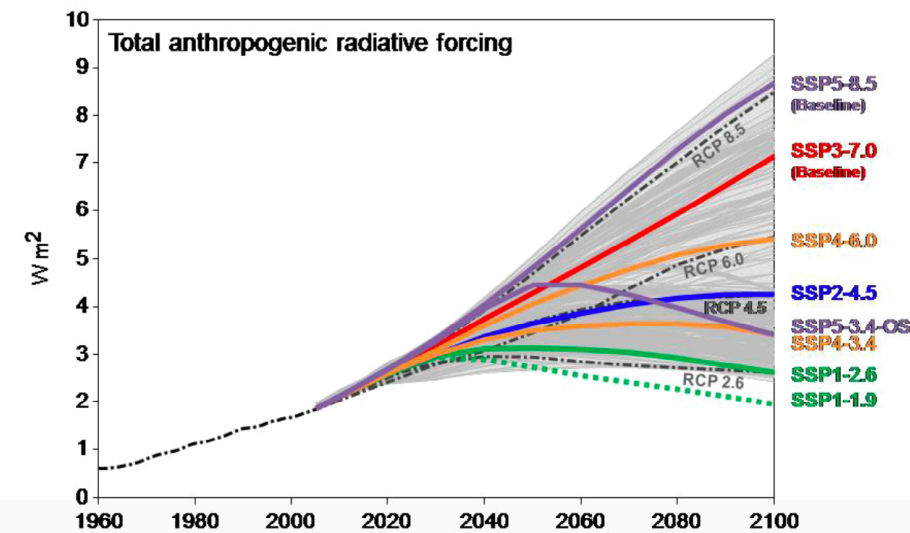
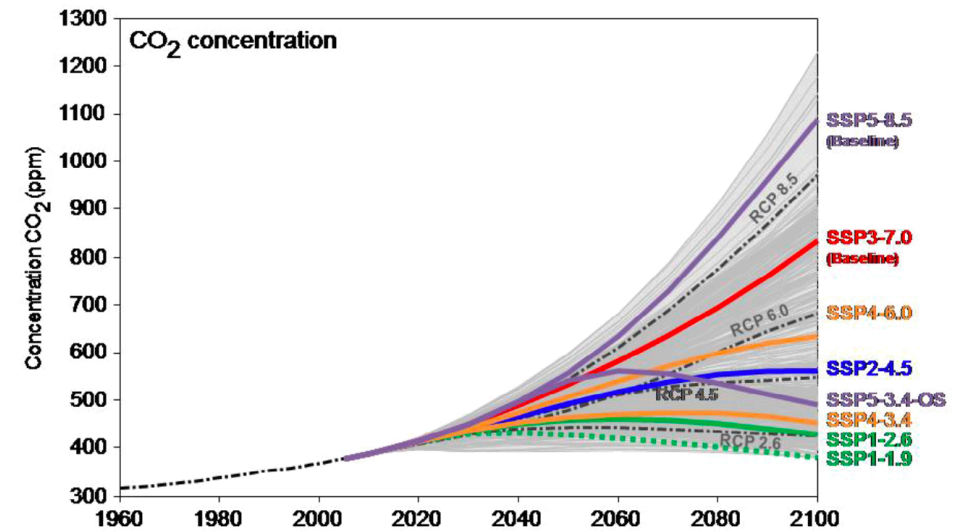
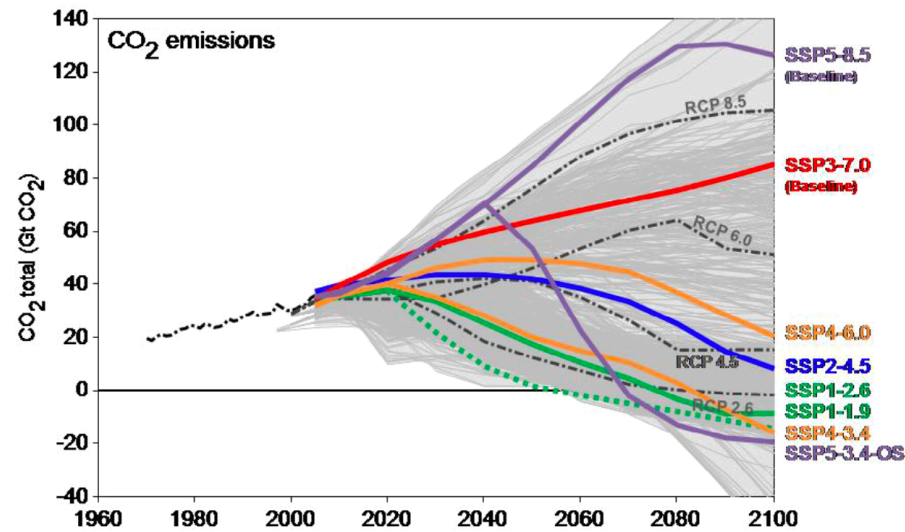
**SSP4-6.0**

**Extensions**

**Ensemble for SSP3-7.0**

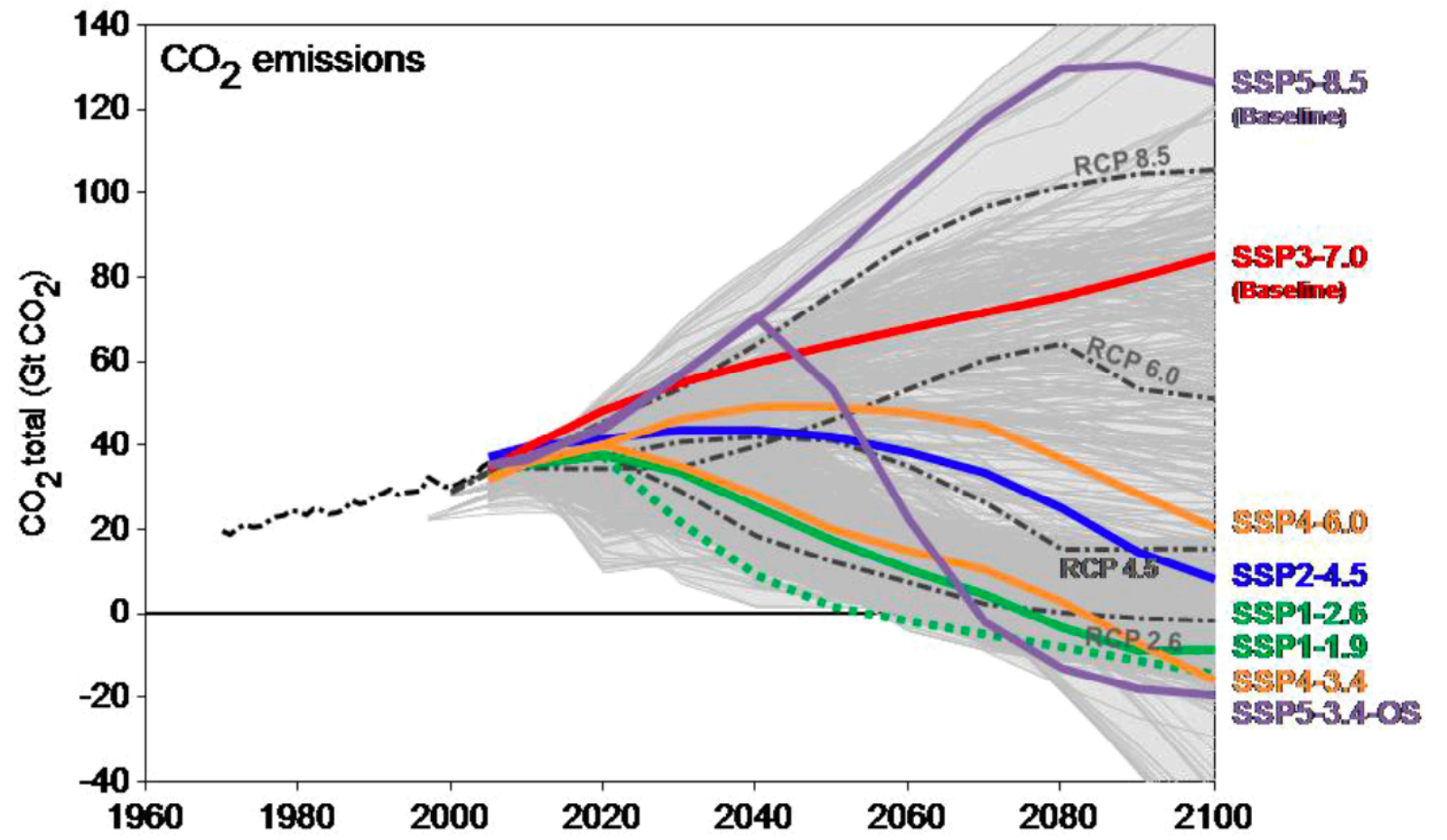
# Scenarios:

## RCPs VS SSPs



# Scenario CO<sub>2</sub> outcomes:

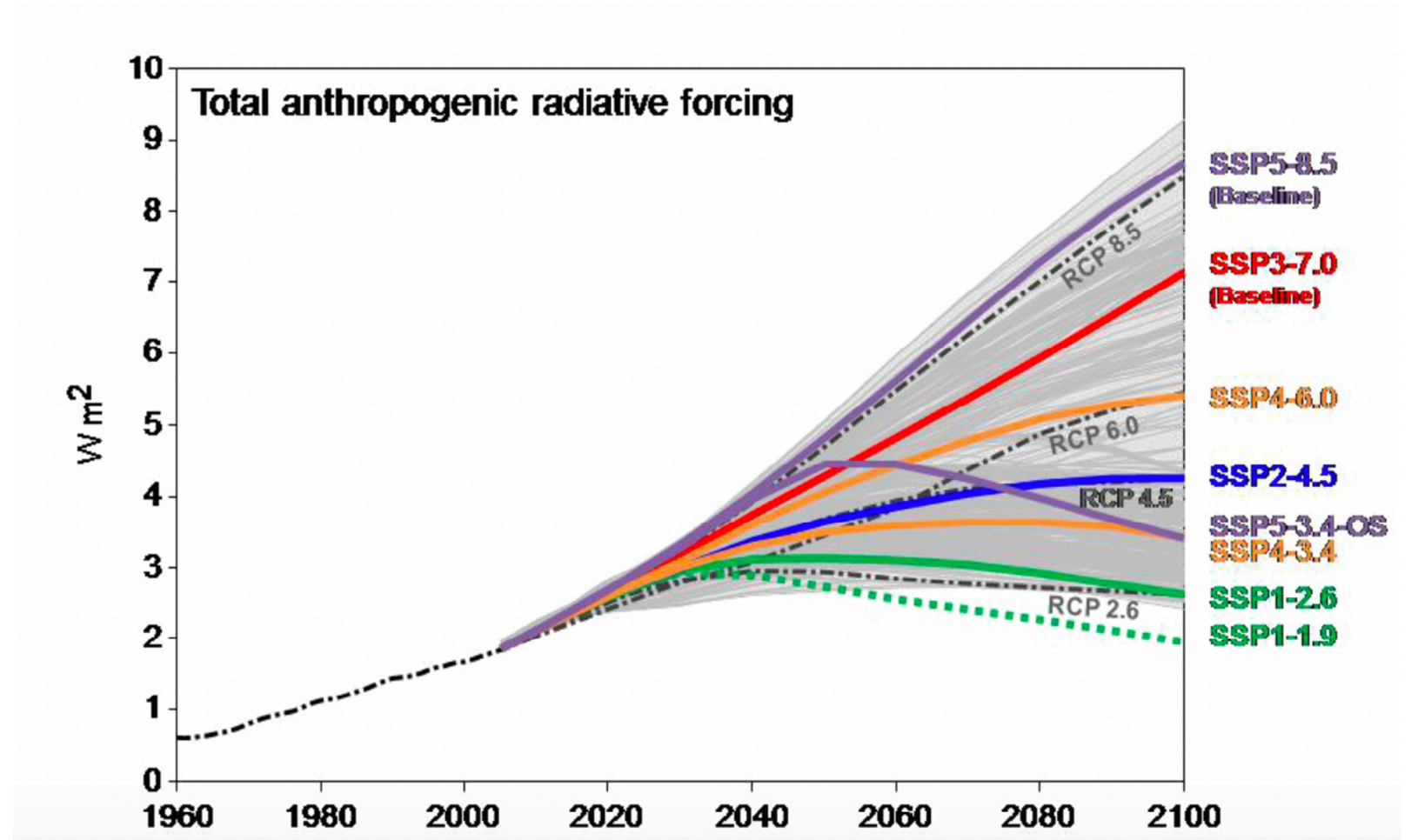
RCPs  
vs  
SSPs





# Scenario warming outcomes:

RCPs  
vs  
SSPs





# New Models

## CMIP5 VS CMIP6

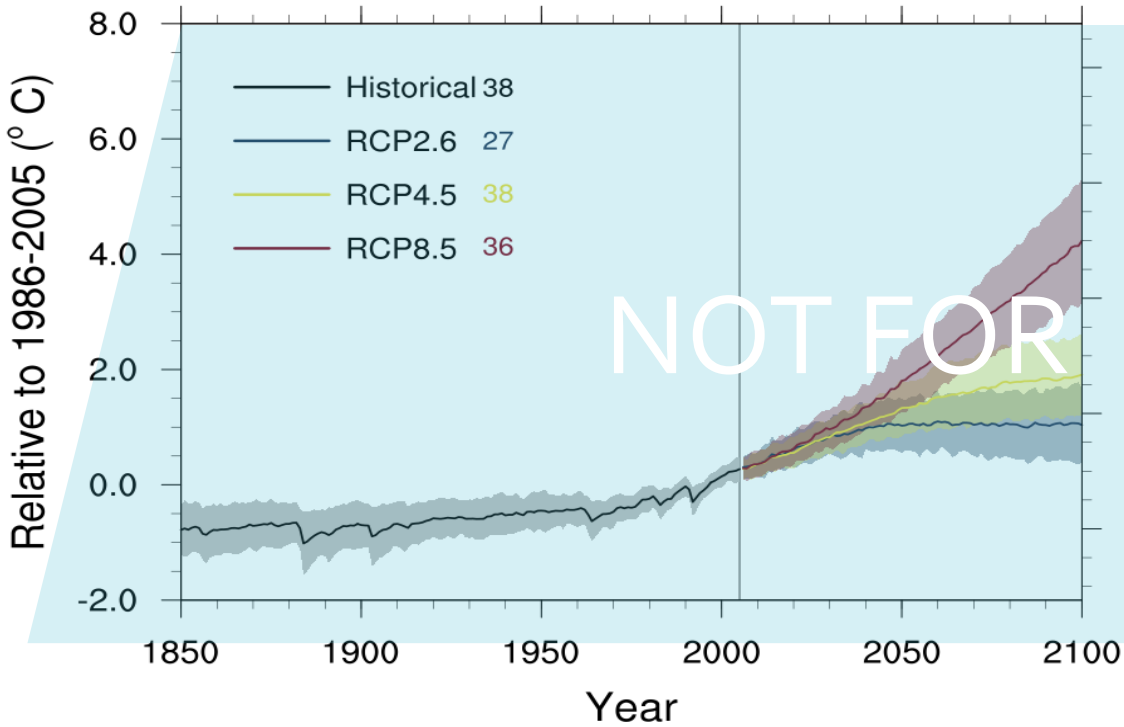
	Institute	Country		Institute	Country		Institute	Country		Institute	Country
<b>1</b>	AS-RCEC	Taiwan	<b>11</b>	CSIR-CSIRO	South Africa	<b>21</b>	IPSL	France	<b>31</b>	NERC	UK
<b>2</b>	AWI	Germany	<b>12</b>	CSIRO	Australia	<b>22</b>	KIOST	Korea	<b>32</b>	NIMS-KMA	Korea
<b>3</b>	BCC	China	<b>13</b>	CSIRO-ARCCSS-BoM	Australia	<b>23</b>	MESSy-Consortium	Germany	<b>33</b>	NIWA	New Zealand
<b>4</b>	BNU	China	<b>14</b>	E3SM-Project	USA	<b>24</b>	MIROC	Japan	<b>34</b>	NOAA-GFDL	USA
<b>5</b>	CAMS	China	<b>15</b>	EC-Earth-Consortium	Sweden	<b>25</b>	MOHC	UK	<b>35</b>	NUIST	China
<b>6</b>	CAS	China	<b>16</b>	ECMWF	UK	<b>26</b>	MPI-M	Germany	<b>36</b>	SNU	Korea
<b>7</b>	CCCma	Canada	<b>17</b>	FIO-QLNM	China	<b>27</b>	MRI	Japan	<b>37</b>	THU	China
<b>8</b>	CCCR-IITM	India	<b>18</b>	HAMMOZ-Consortium	Switzerland	<b>28</b>	NASA-GISS	USA	<b>38</b>	UA	USA
<b>9</b>	CMCC	Italy	<b>19</b>	INM	Russia	<b>29</b>	NCAR	USA	<b>39</b>	UofT	Canada
<b>10</b>	CNRM-CERFACS	France	<b>20</b>	INPE	Brazil	<b>30</b>	NCC	Norway	<b>40</b>	UTAS	Australia

# New Models New Climate Sensitivities

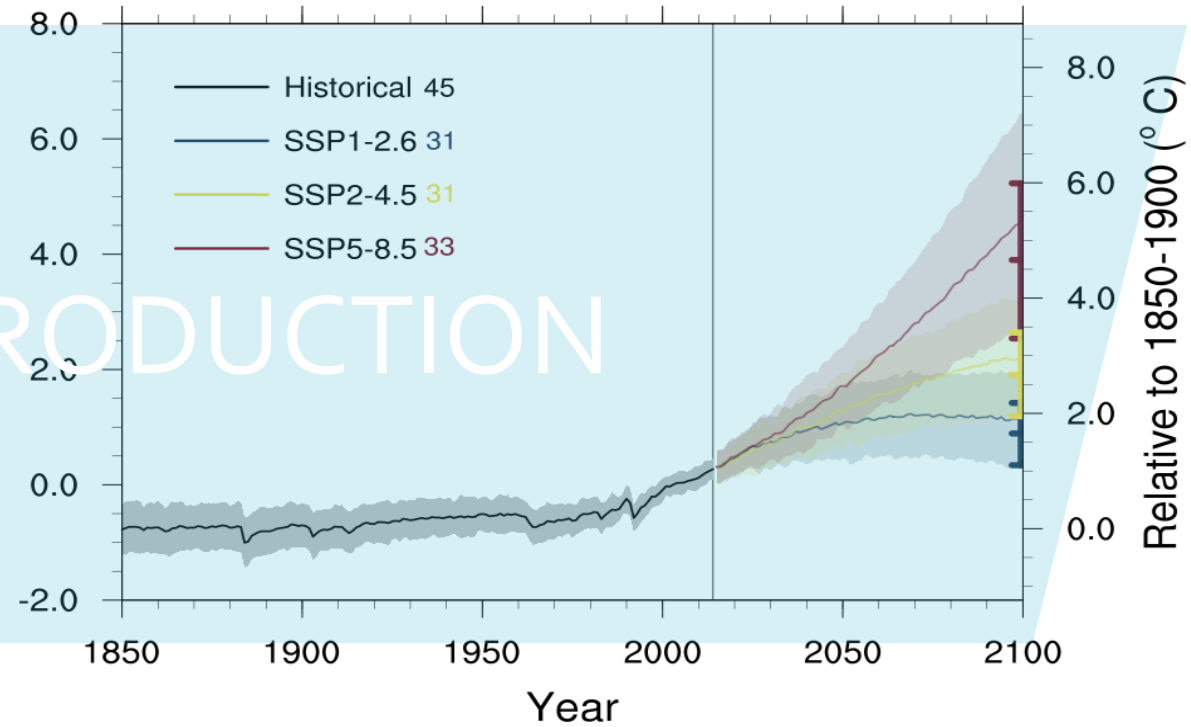
- The CMIP6 models show higher climate sensitivity on average.

# Global Temperature change. CMIP5 vs. CMIP6 for the three 'common' scenarios

TAS, global, CMIP5.



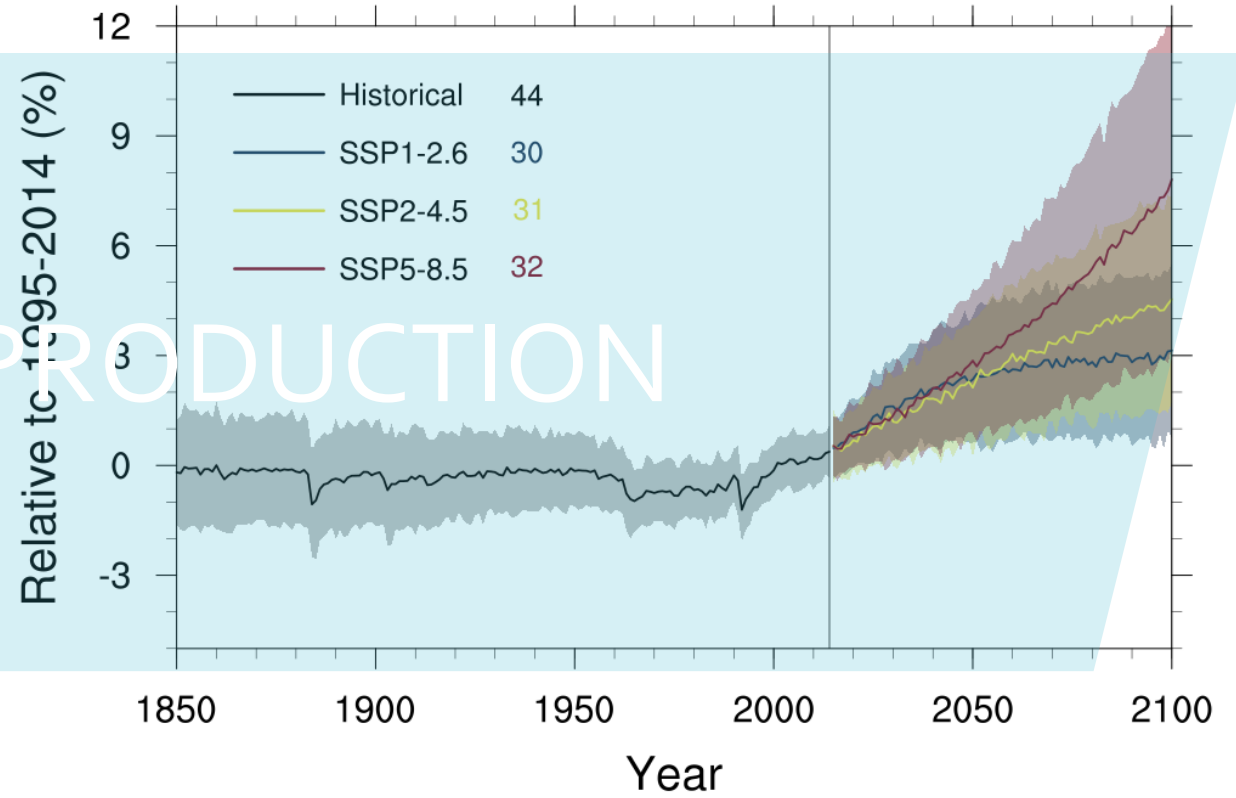
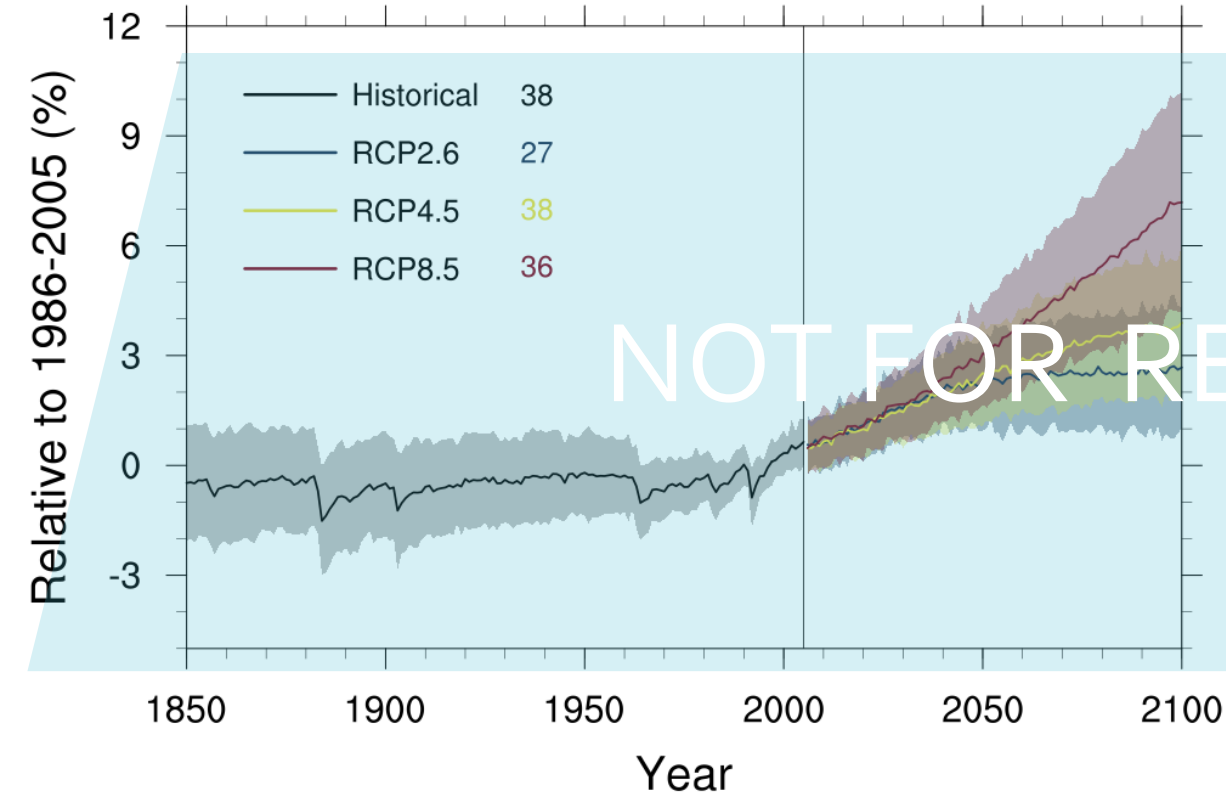
TAS, global, CMIP6.



# % Precipitation change CMIP5 vs. CMIP6 for the three 'common' scenarios

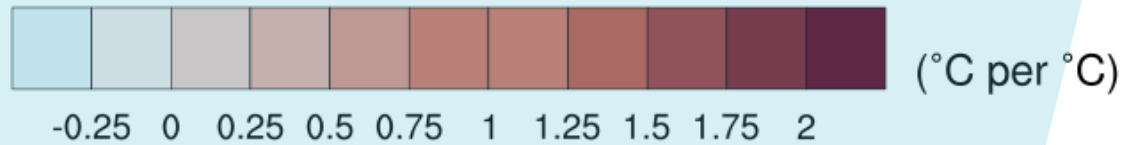
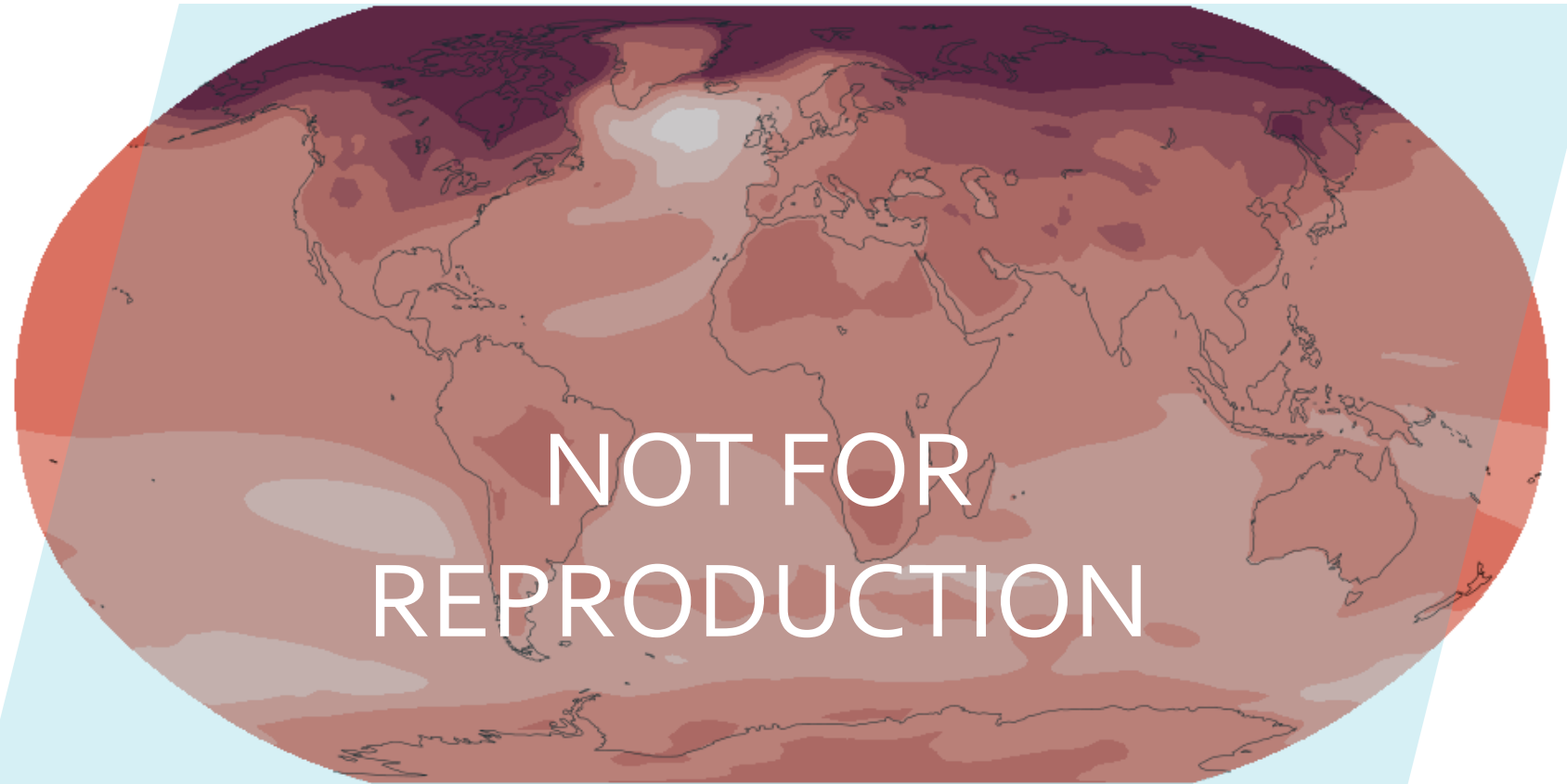
PR, global, CMIP5.

PR, global, CMIP6.



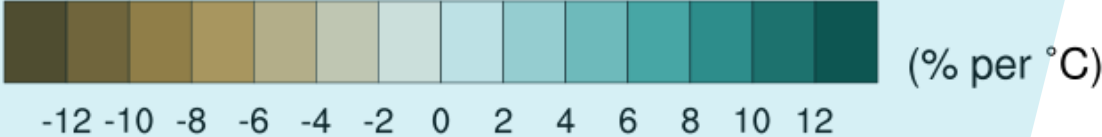
Temperature change scaled by global T  
**2081-2100**

Temperature  
changes  
per degree of  
warming



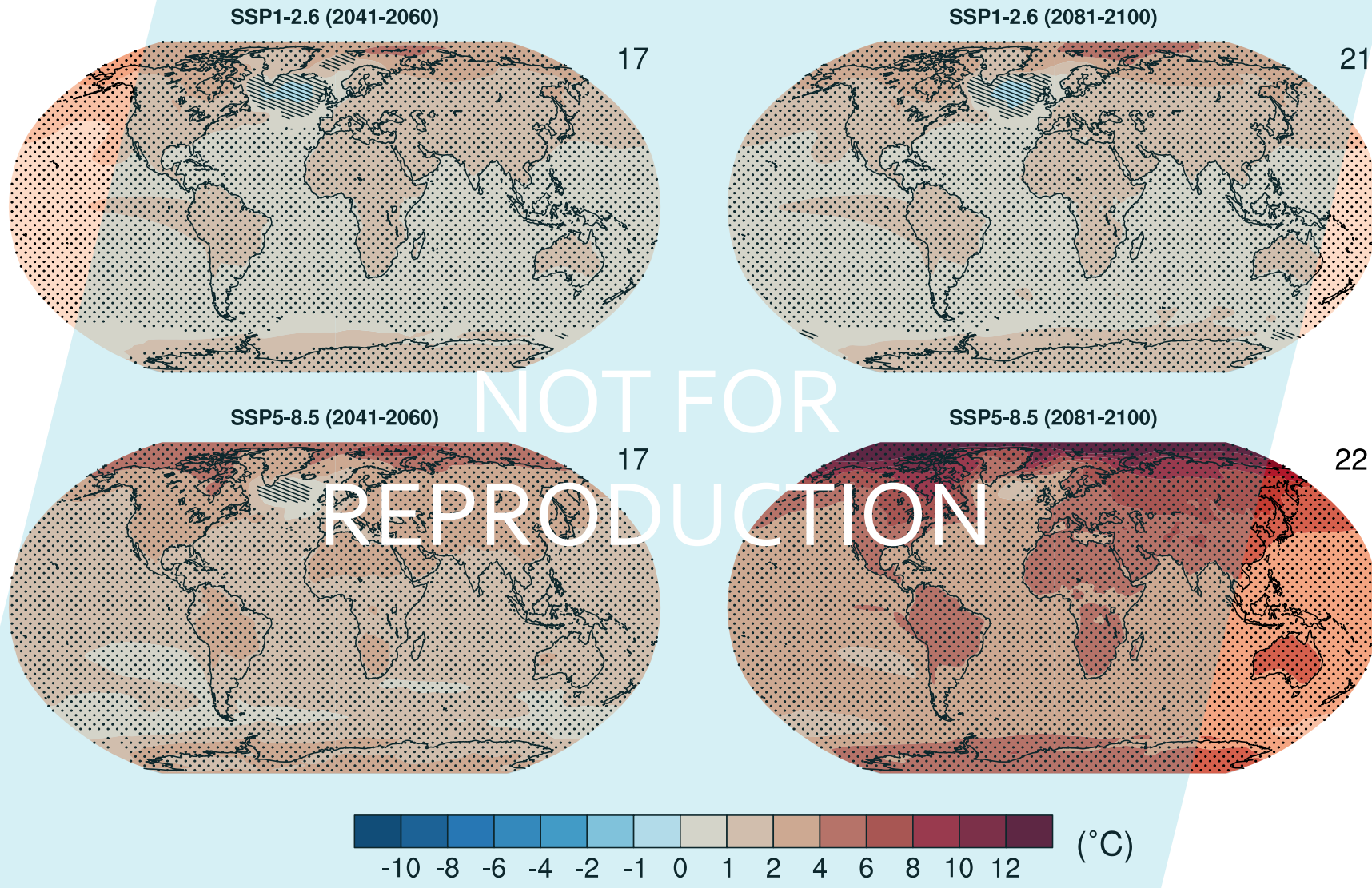
Precipitation change scaled by global T  
**2081-2100**

% Precipitation  
changes  
per degree of  
warming



# Temperature Patterns

## Annual mean temperature change





**The End**