Climate in Brazil:
Caatinga and Pantanal

aa2n1150e - GLOBAL AND REGIONAL CLIMATE CHANGE

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Biomes

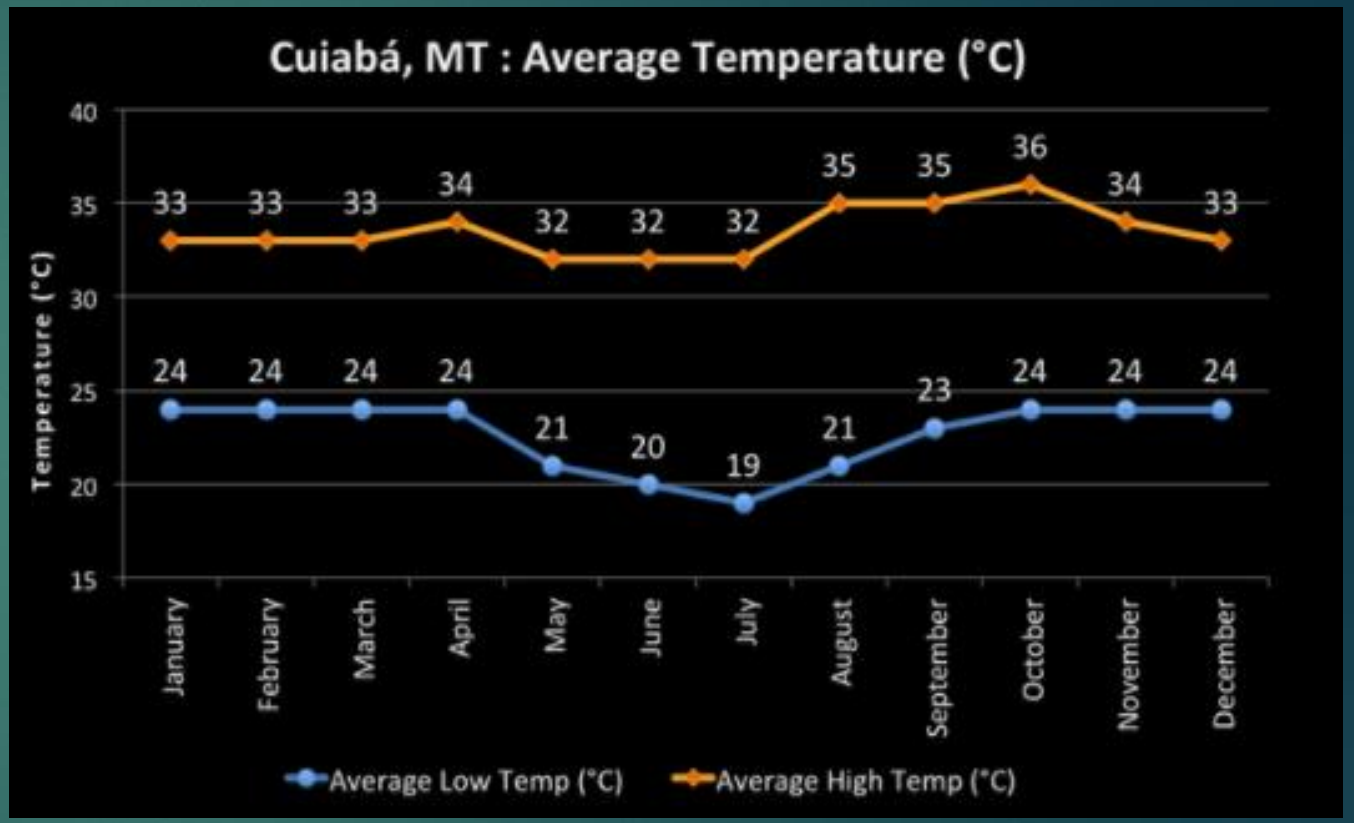

BIOMA AMAZÔNIA
BIOMA CAATINGA
BIOMA CERRADO
BIOMA PANTANAL
BIOMA MATA ATLÂNTICA
BIOMA PAMPA

Pantanal

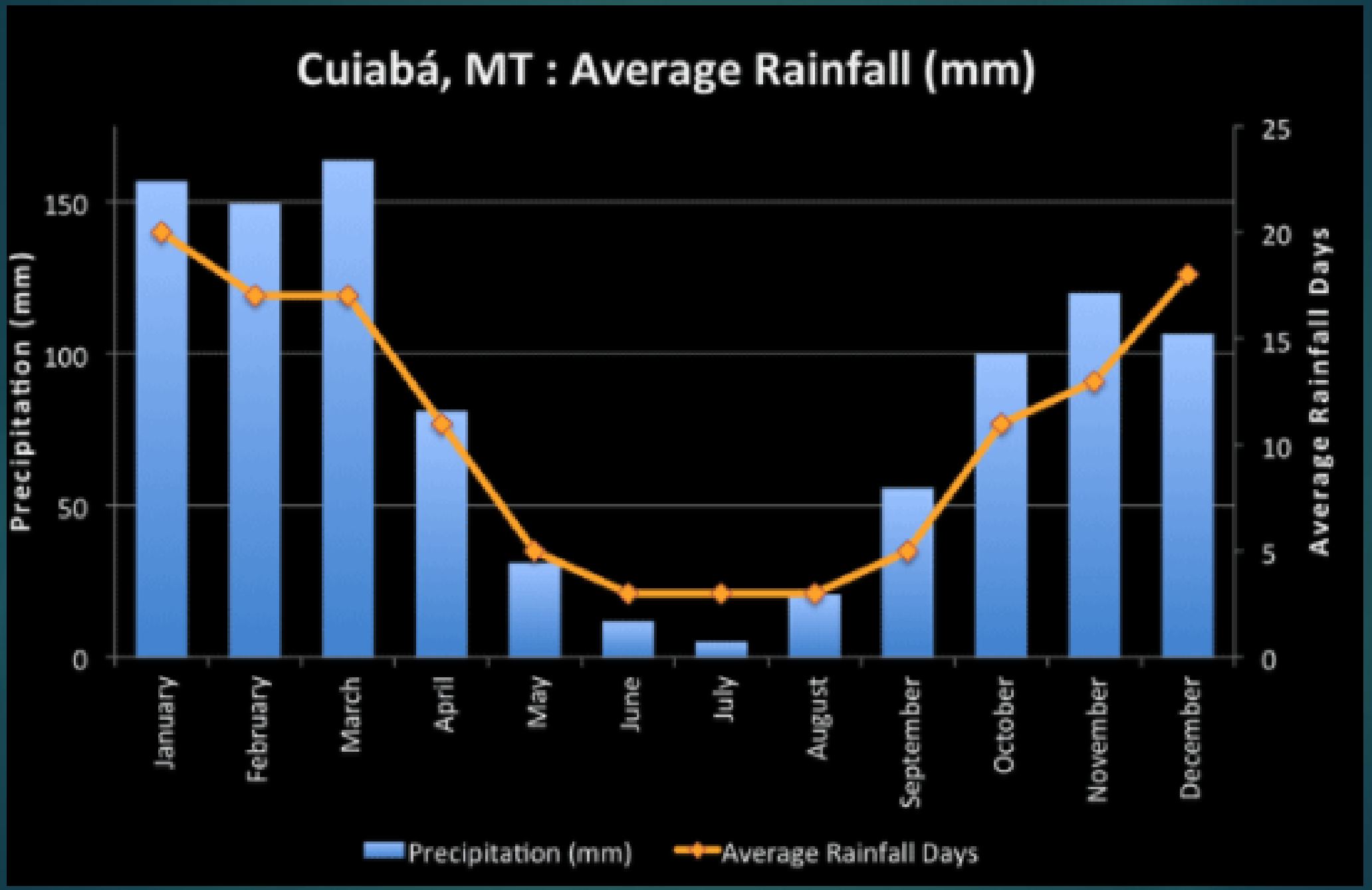
- Largest wetland tropical area. Approximately 195 000 square kilometers
- Extends into Mato Grosso, Bolivia and Paraguay
- Roughly 80% of the floodplains are submerged during the rainy seasons, nurturing an astonishing biodiversity.

Pantanal

- The climate of Pantanal is **tropical**
- **Hot** and **rainy** summers, and **dry** and **sunny** winters, characterized by **warm** days and **cold** nights.



Data source: worldweatheronline.com



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Perspective for the future

- Since the Pantanal functions as a gigantic flood regulation system for the Paraguay River watershed, alterations in **rainfall** can **significantly** affect the system's capacity to retain floodwaters and control flood events.

- Projected change in annual temperature
- Annual mean warming in the region varies from 2.5–3.5°C in 2011–2040 to above 5 - 7°C in 2071-2100.

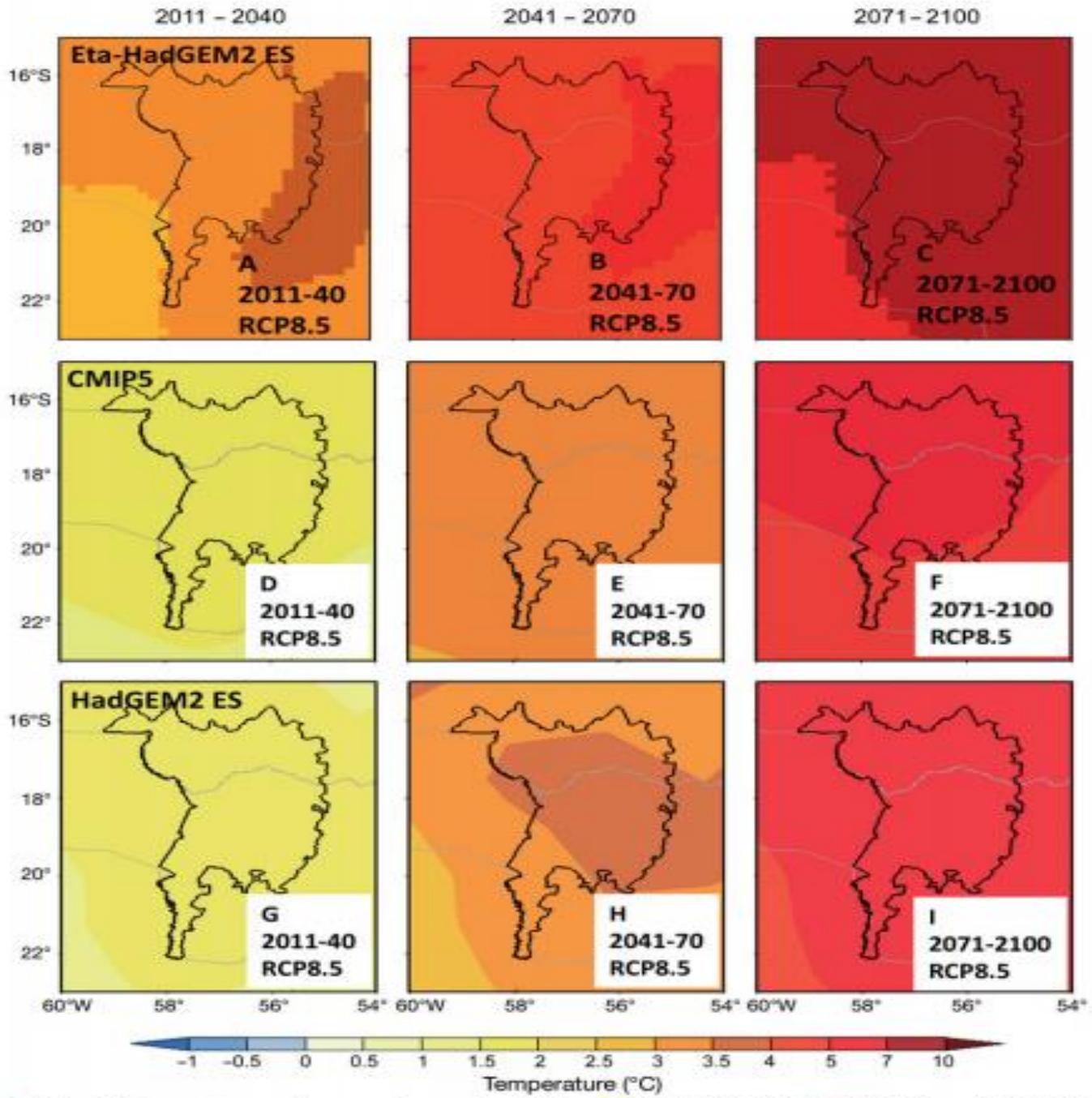


Fig. 3. Projected change in annual average temperature (°C) for (A) 2011–2040, (B,E,H) 2041–2070, and (C,F,I) 2071–2100, relative to the reference 1961–1990, under the RCP8.5 scenario. Color scale is located below the panel

- As for precipitation, the Eta projects rainfall reductions of the order of 10-20% in 2010-204 and 30% by 2071-2100.

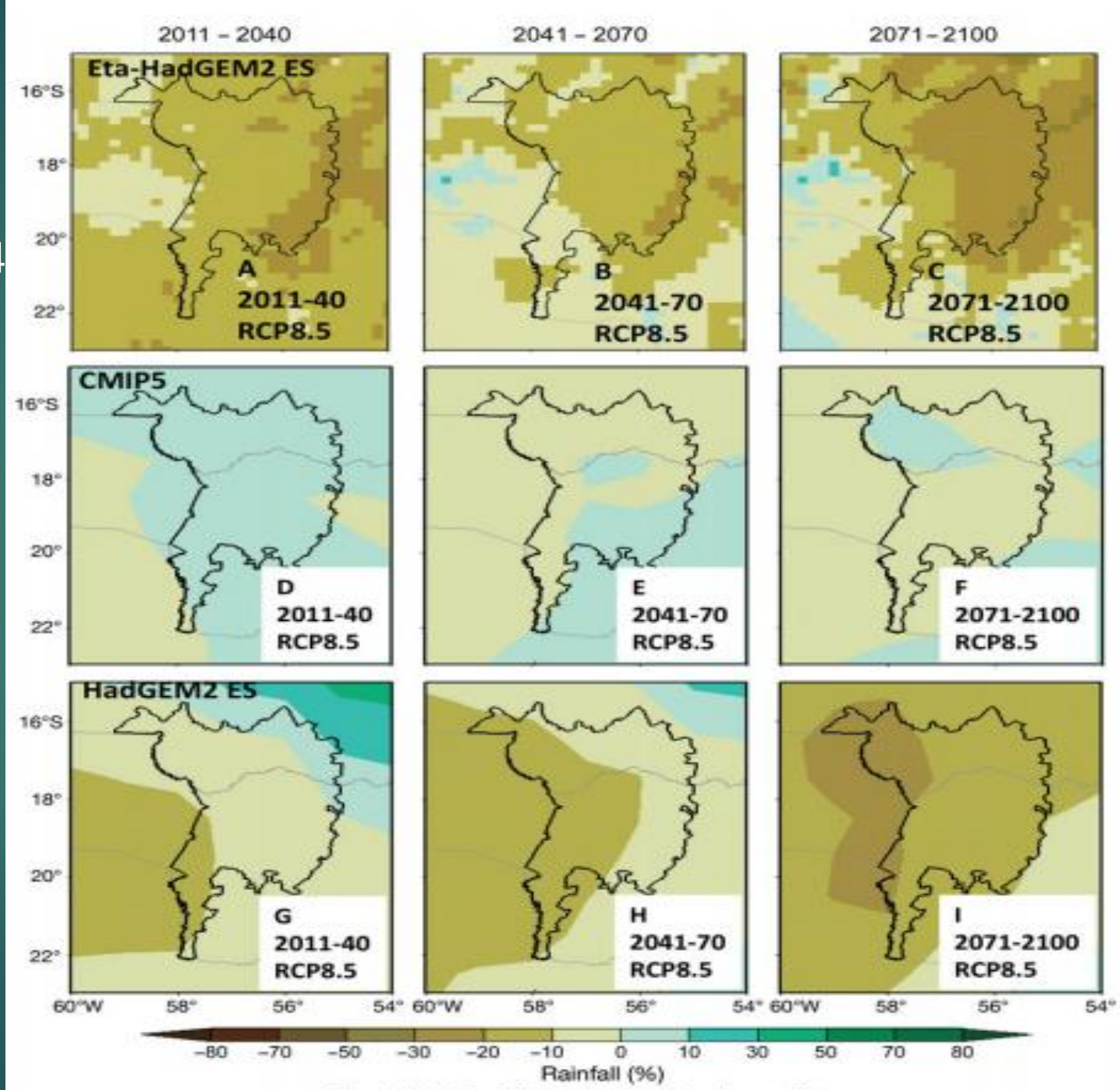


Fig. 4. As in Fig. 3, but for precipitation change (%)

- Changes in P−E suggest that the region will become drier in the future.
- There is a broad signal that the magnitudes of P−E will decrease, with a mean value of approximately 40% during the 21st century

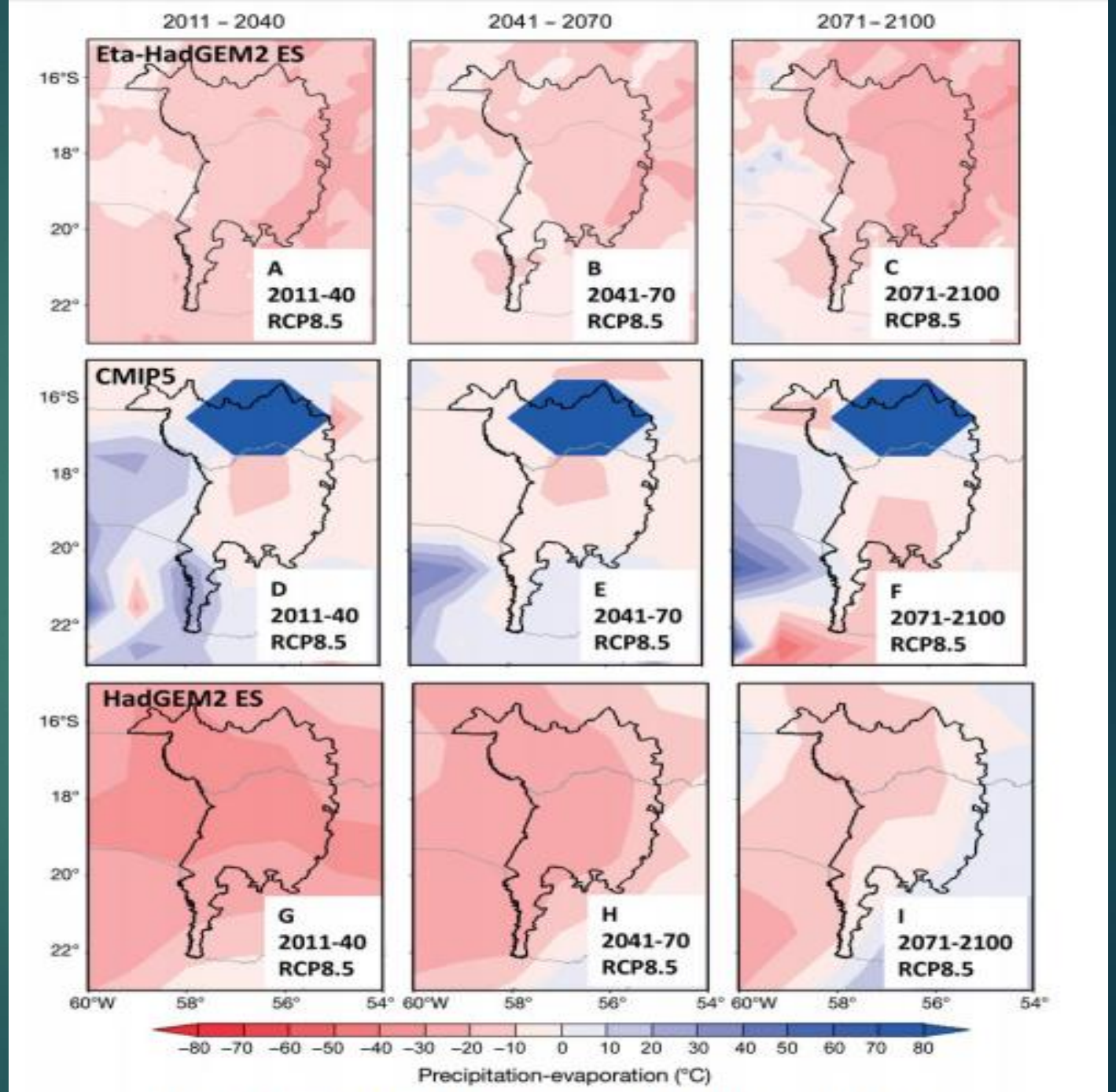
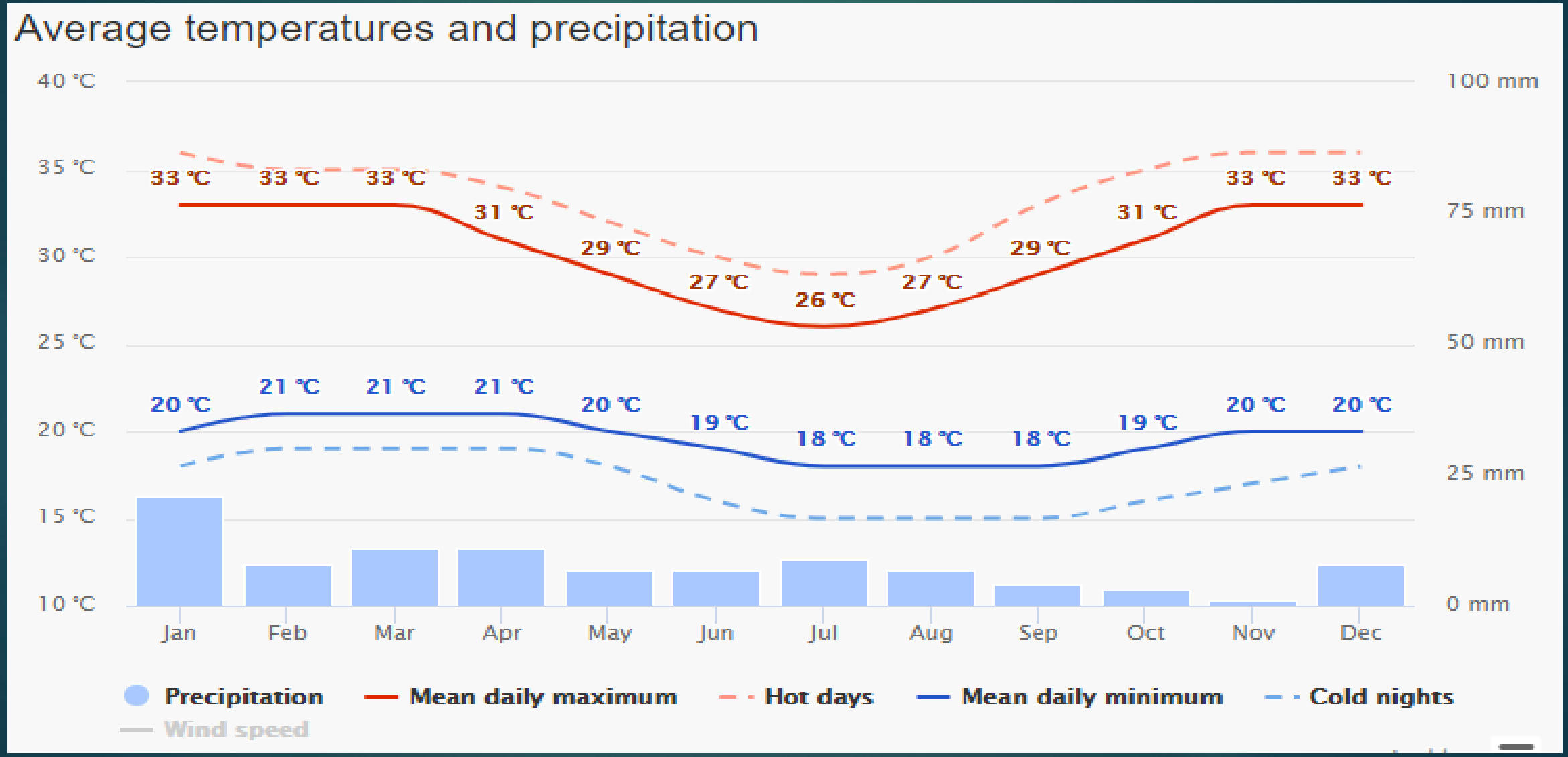


Fig. 5. As in Fig. 3, but for precipitation–evaporation (indicator of the water balance) (%)

Caatinga

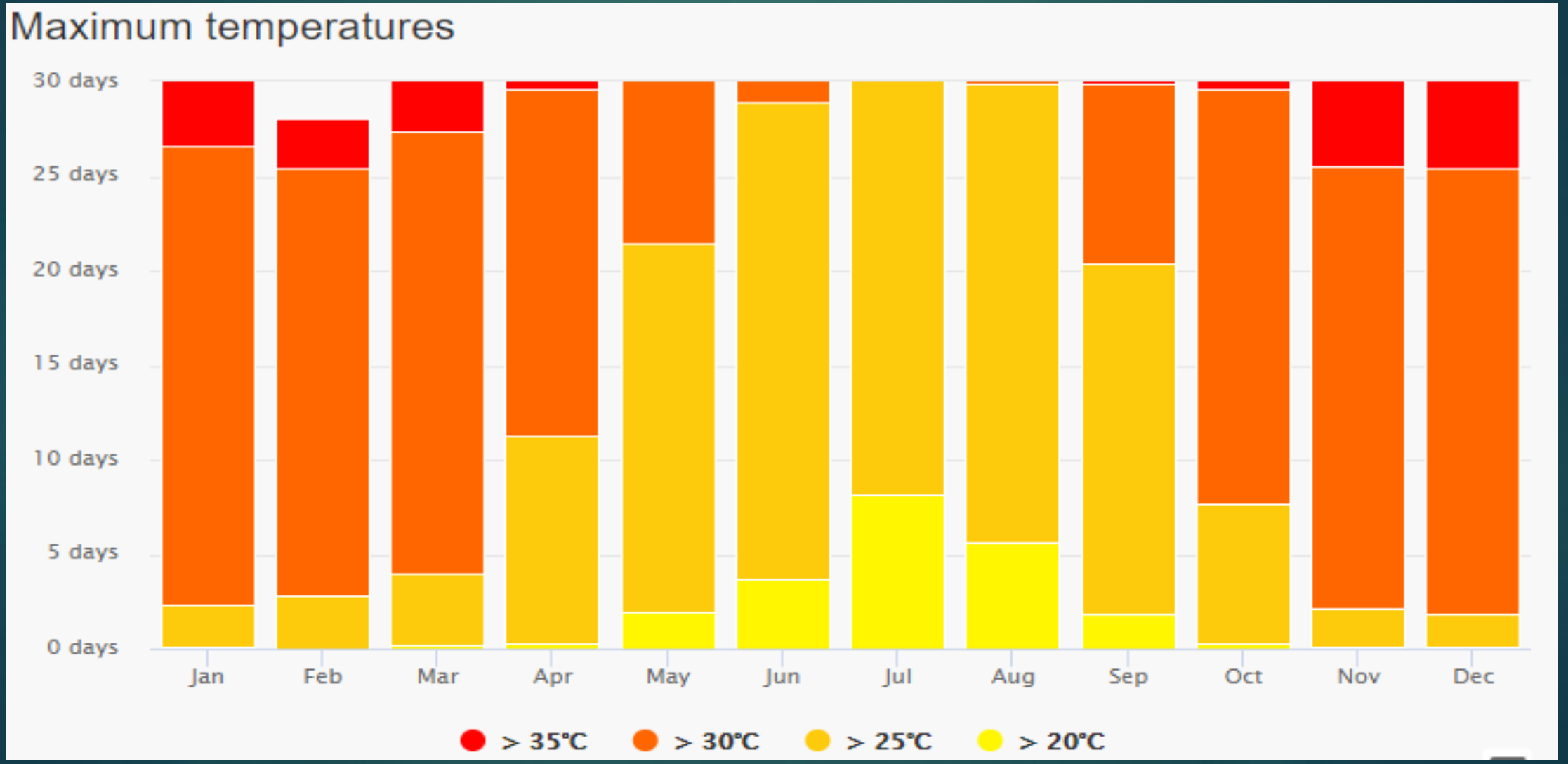
- Caracterized by a type of desert vegetation; thorn forest
- Small thorn trees that shed their leaves seasonally
- Only two seasons: Winter, when it is **hot** and **dry**, and summer, when is **very hot** and **rainy**

Caatinga

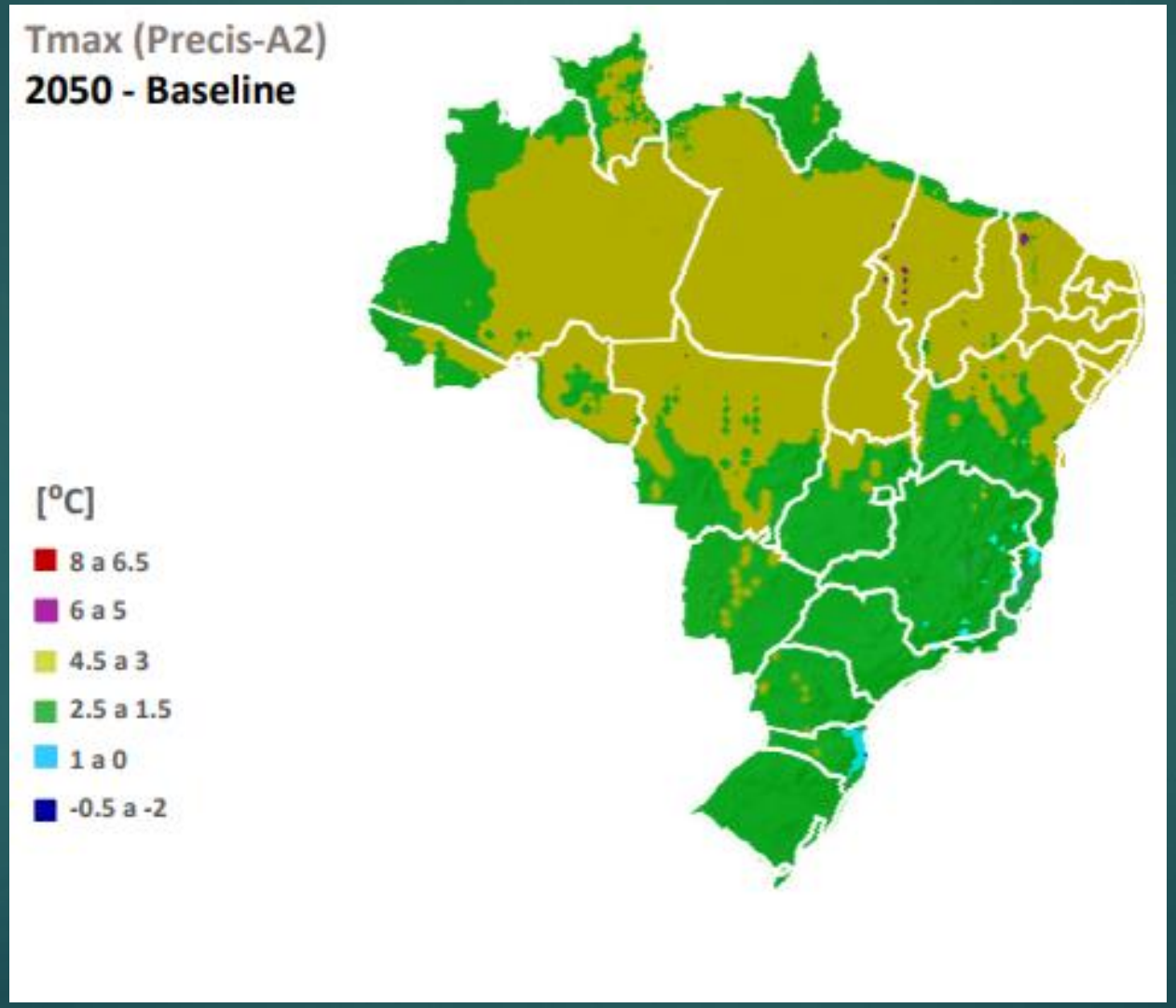


Data source: meteoblue model climate

Caatinga

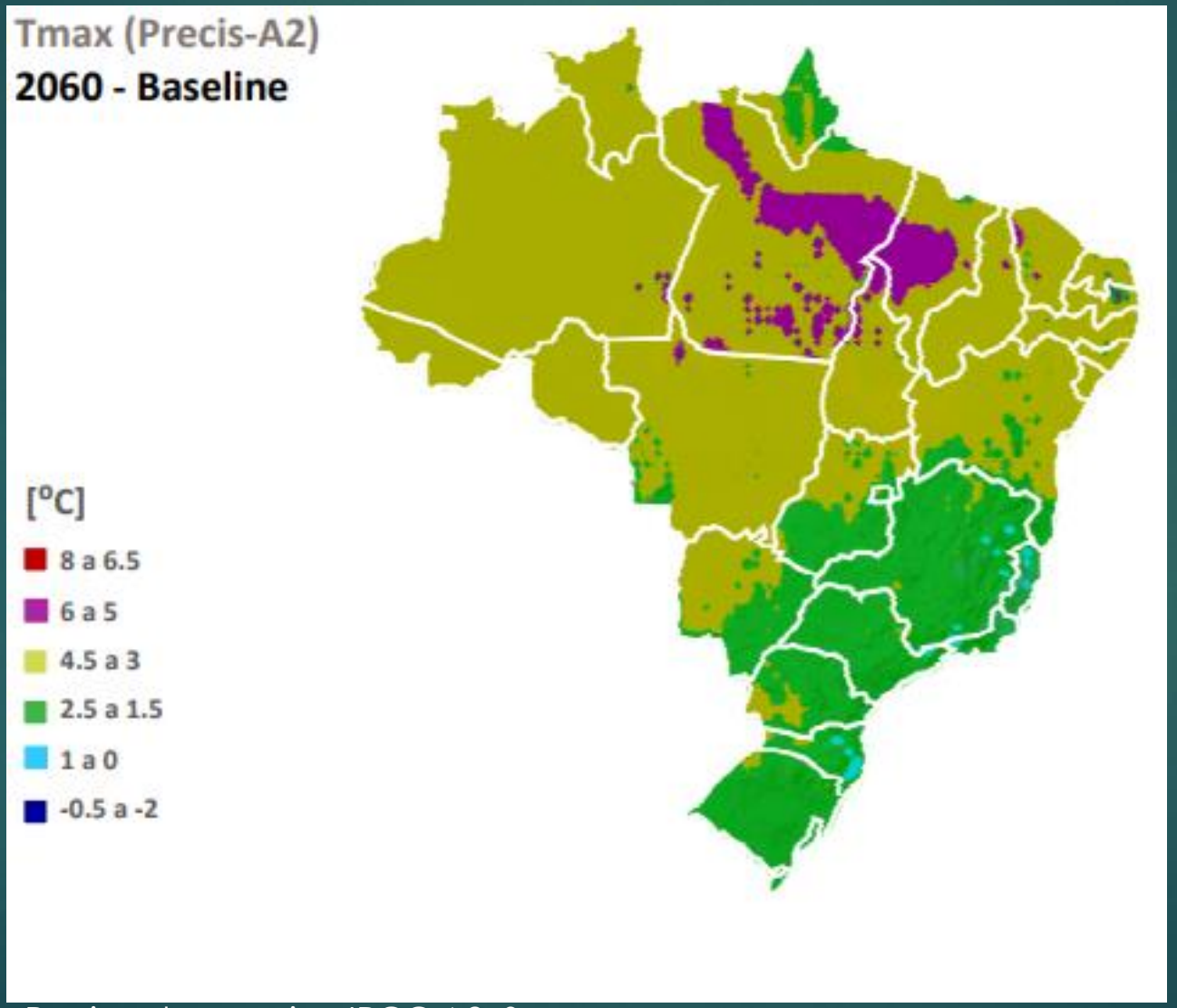

Maximum temperatures
30 days
25 days
20 days
15 days
10 days
5 days
0 days
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
> 35°C
> 30°C
> 25°C
> 20°C

Perspective for the future



Regional scenario - IPCC A2. Source: greenpeace.org

Perspective for the future



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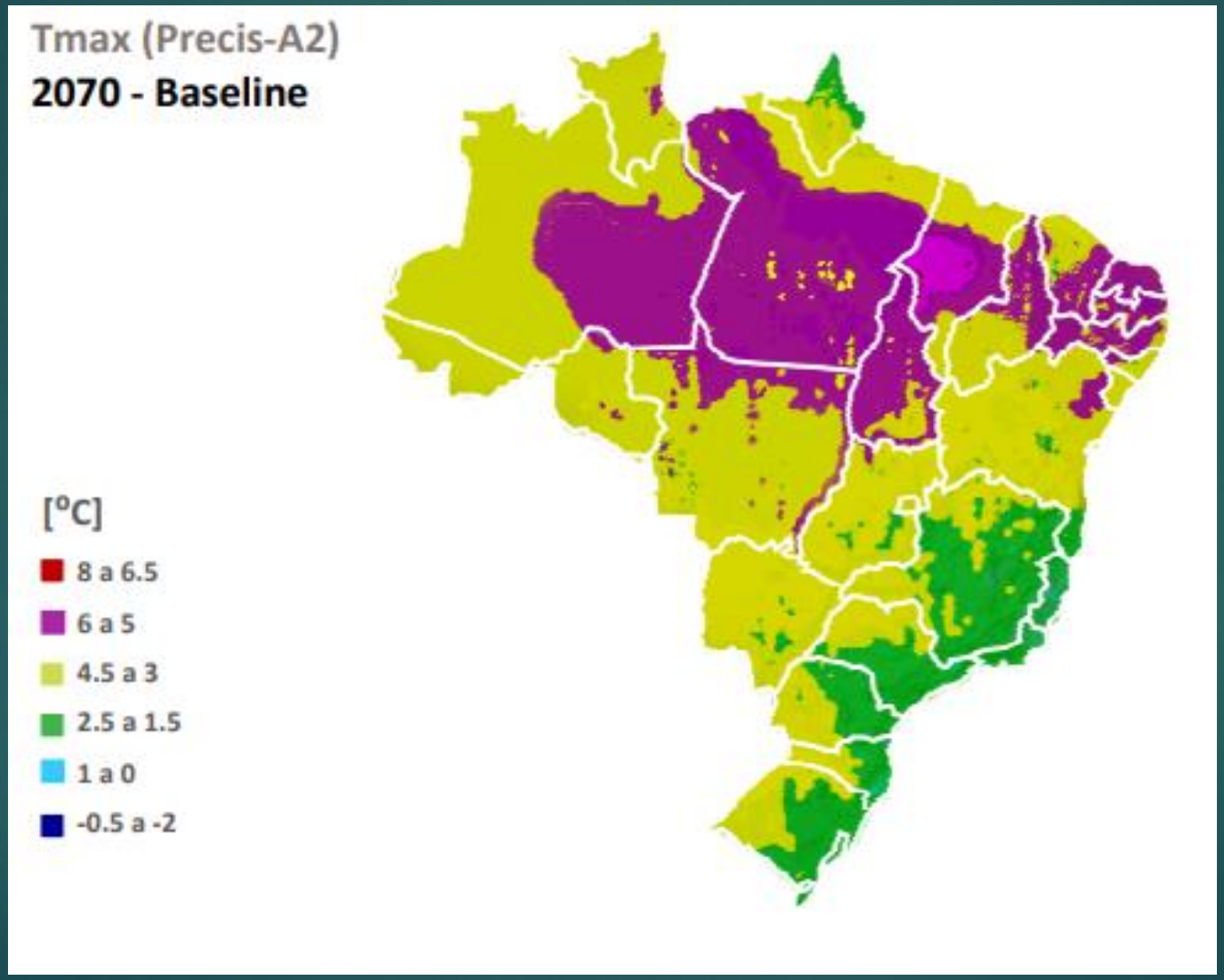
Perspective for the future



Regional scenario - IPCC A2. Source: greenpeace.org

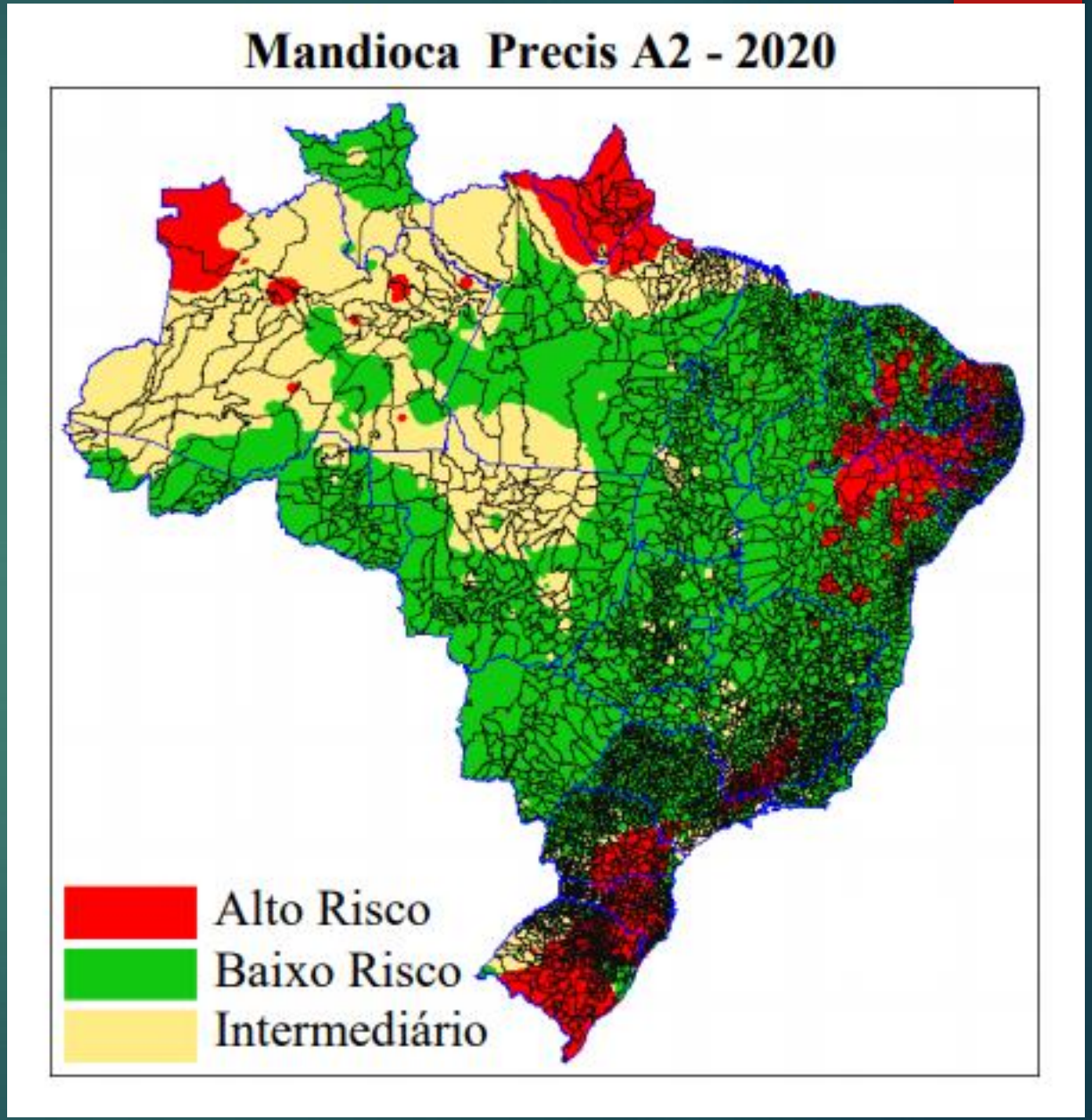
Impacts on local agriculture

- Reduction of the area suitable for agriculture
- Desertification
- Reduction in food supply

Mandioca - Cassava

- Nutritional value
- Culinary
- Animal feed
- Biofuel
- Medicinal use

- Risk of reduction of the area suitable for Mandioca culture due to increase in temperature



Source: greenpeace.org/embrapa

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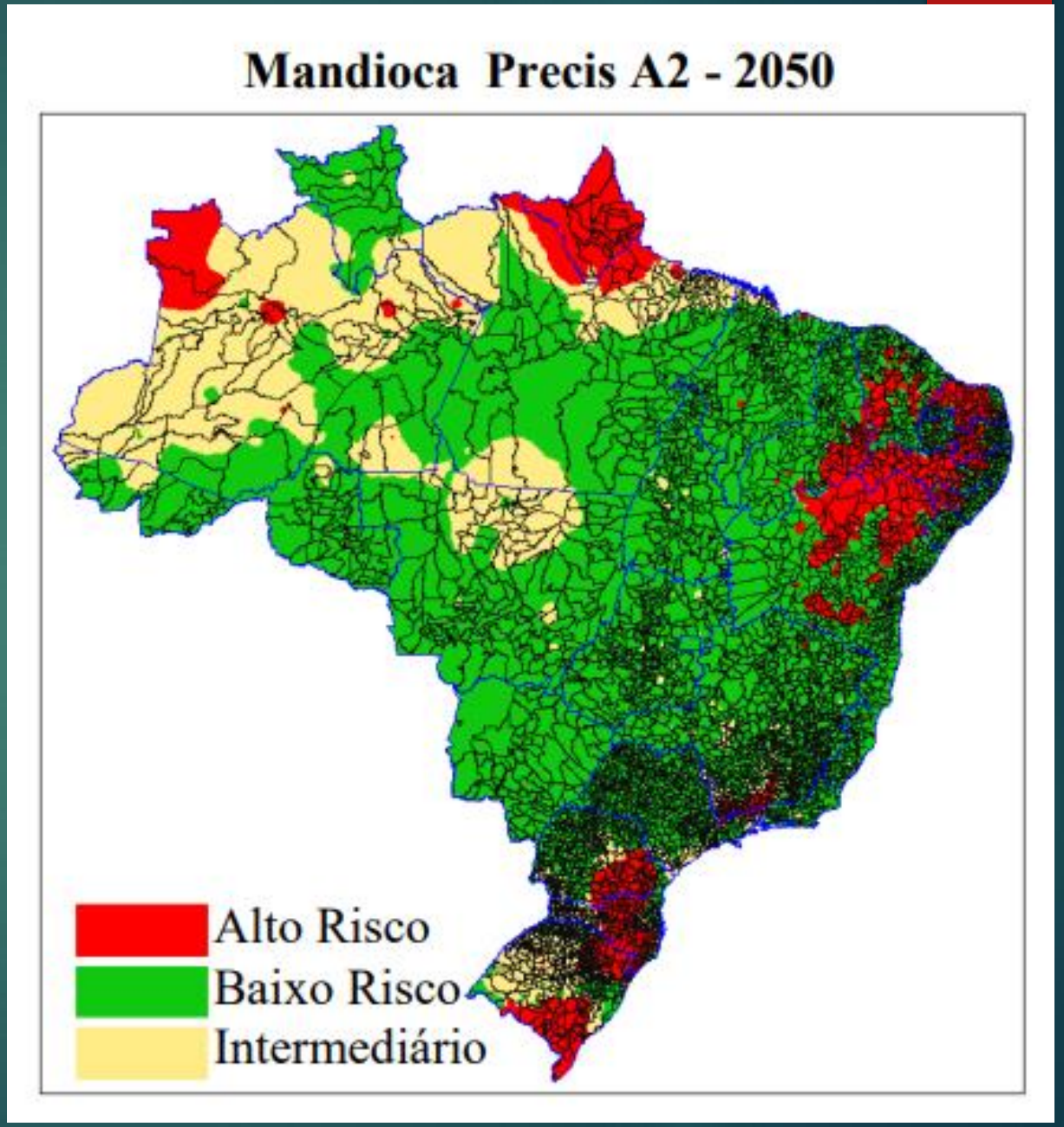

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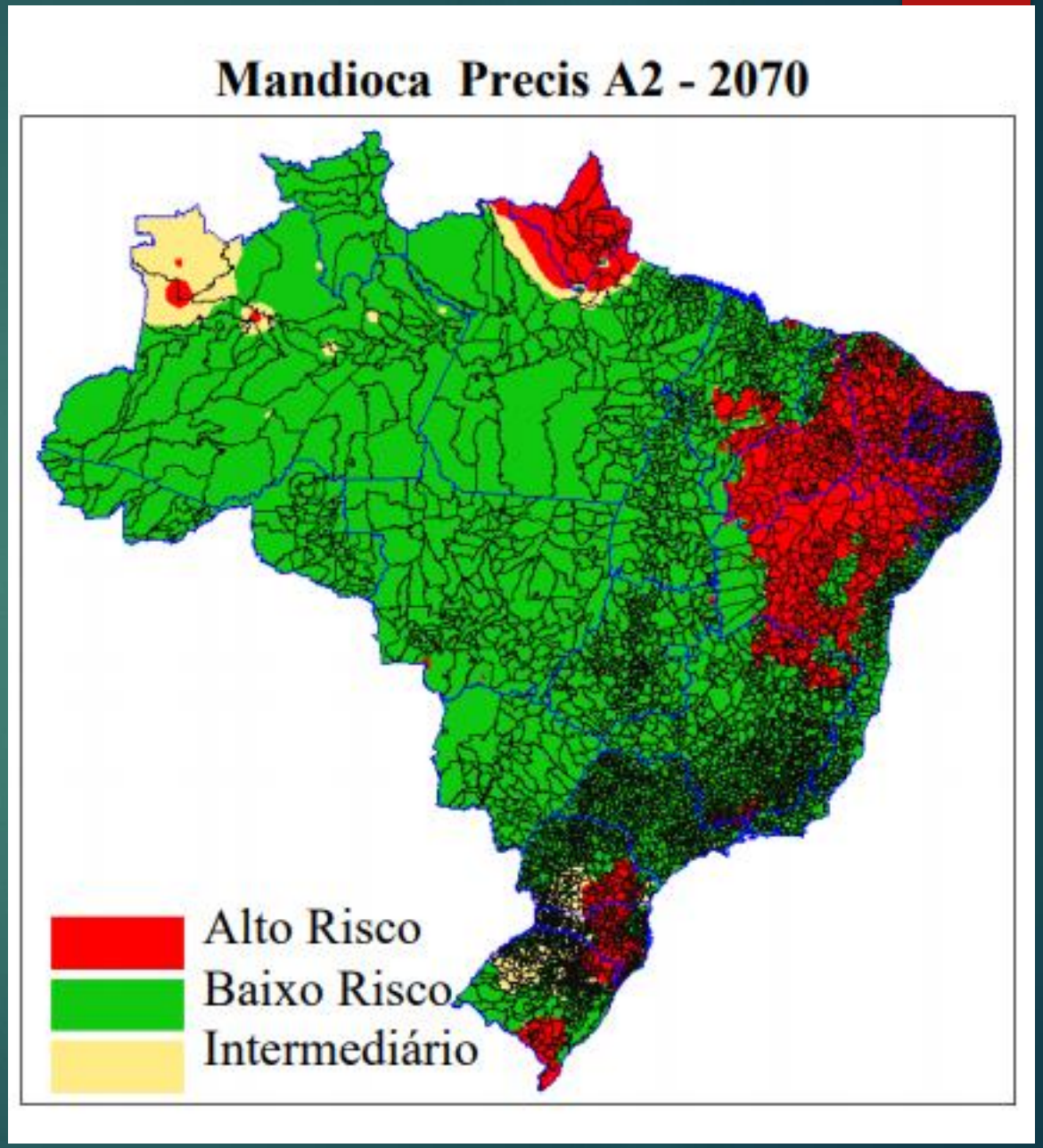

Source: greenpeace.org/embrapa

Final considerations

- **Pantanal:** The ecosystem is considered to be sensitive due to its climate and other geographical features.
- While there is the potential for very large impacts on the hydrology of the area, the models are not yet able to give us useful information on rainfall changes due to uncertainty in the projections.

- **Caatinga:** Important impacts on the local agriculture.

References

Marengo, Jose & Sampaio, Gilvan & Alves, Lincoln. (2015). Climate Change Scenarios in the Pantanal. 227-238. 10.1007/698_2015_357.

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