Project: Transformational Change in Sustainable Forest Management in Transboundary Landscapes of the Congo Basin

Climate analysis and policy recommendation on incorporating climate change considerations in ILUMPs in the Congo Basin

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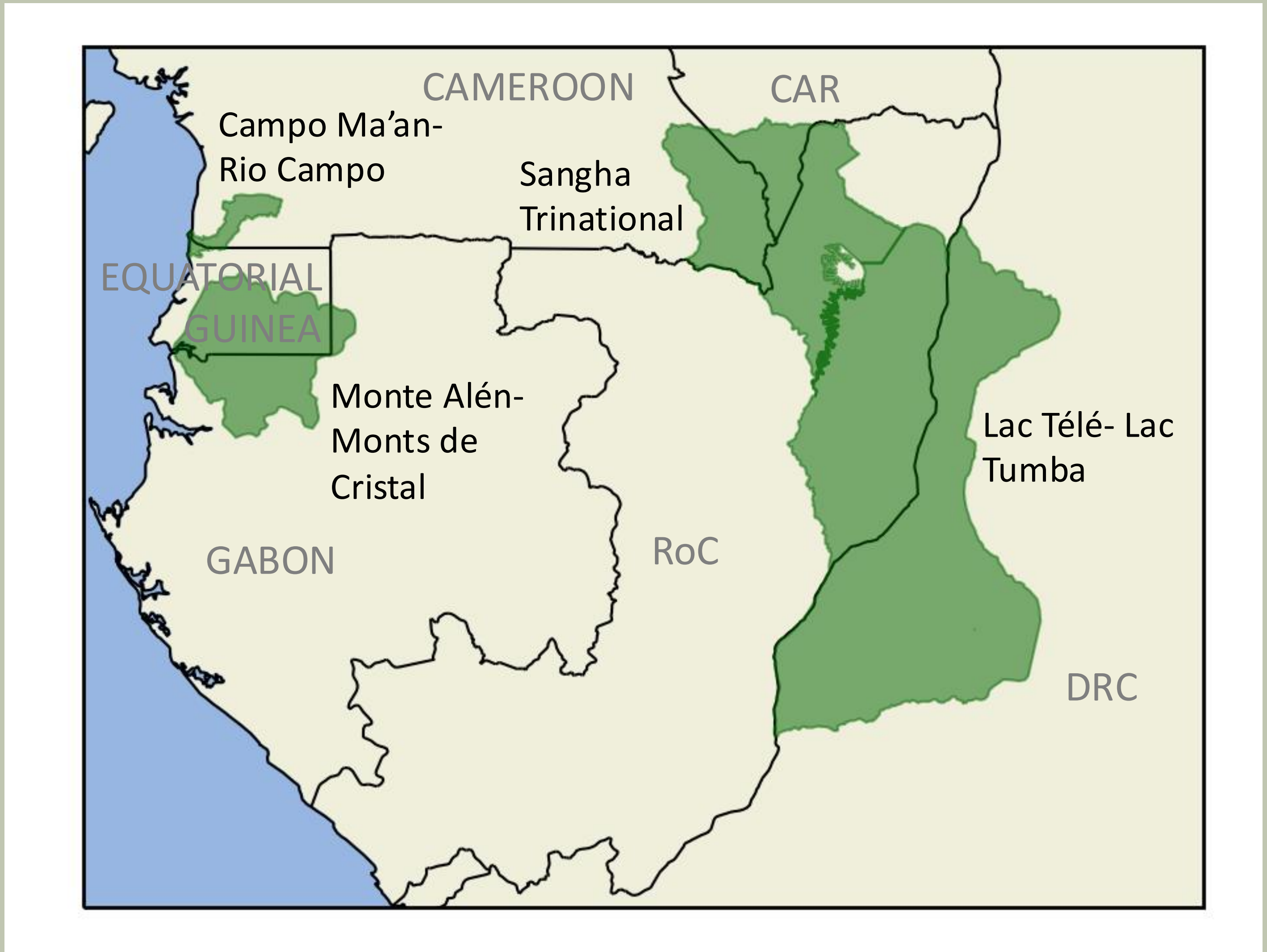
Priority Transboundary Landscapes



Campo Ma’an- Rio Campo

Monte Alén-Monts de Cristal

Sangha Tri-national

Lac Télé- Lac Tumba

Observed Climate Trends in the Congo Basin

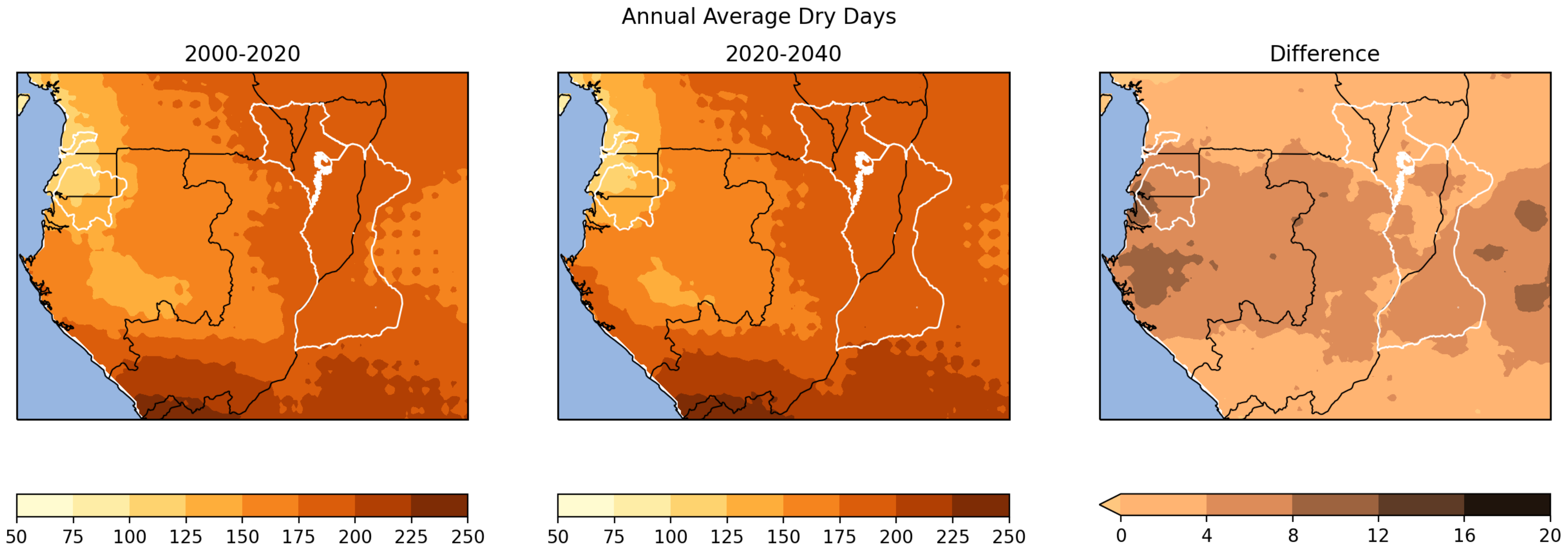
- General warming trend
- Intensification of the seasonal precipitation cycle (i.e., wetter wet seasons, drier dry seasons) and extreme precipitation
- Longer JJA dry seasons

Methodology

- Downscale and bias-adjust 19 individual GCMs from CMIP6 to a spatial resolution of 10 km; use the ensemble average
- SSP5-8.5
- Reference period: 2000 – 2020; two future time periods: 2020 – 2040, 2040 – 2060
- Map and analyze changes in climate impacts, with a focus on heat and precipitation patterns

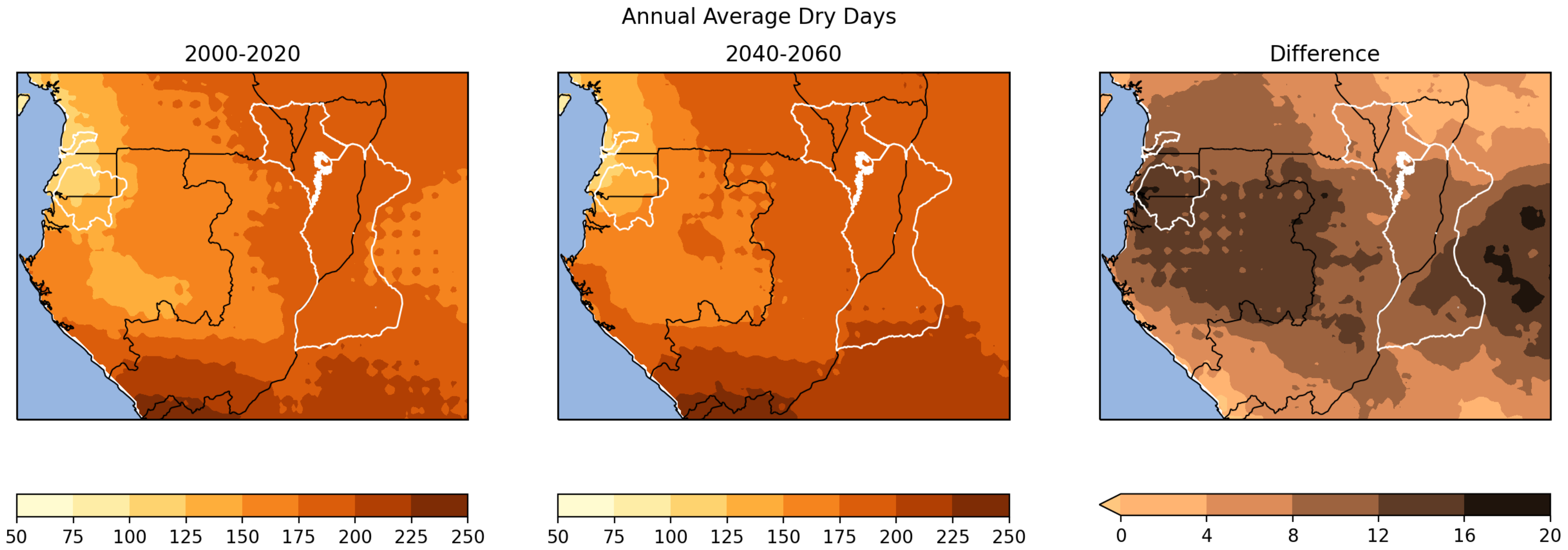
Results

Dry Days: Near-term



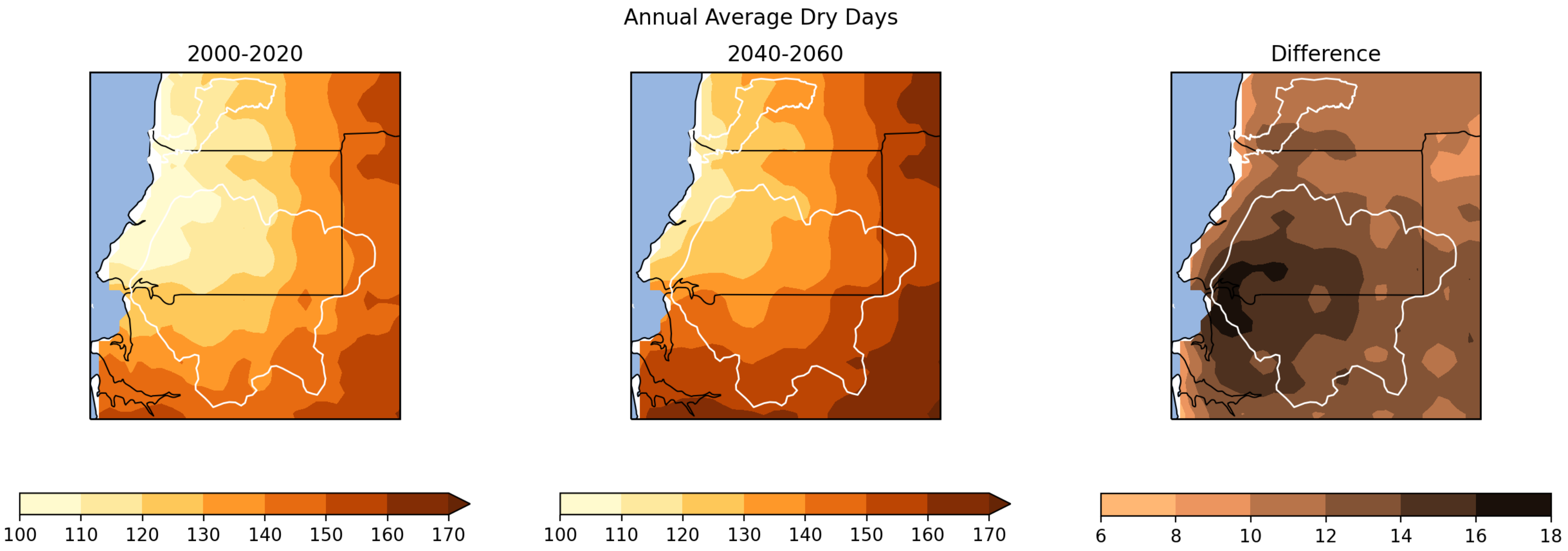
- Dry days are defined as days with less than 1 mm of rainfall.
- The third panel on the right shows that all transboundary landscapes will see an increase in annual average dry days in the 2020 – 2040 period relative to the baseline period. The MAMC landscape is the most affected, with some parts projected to see up to 16 additional dry days each year.

Dry Days: Mid-term

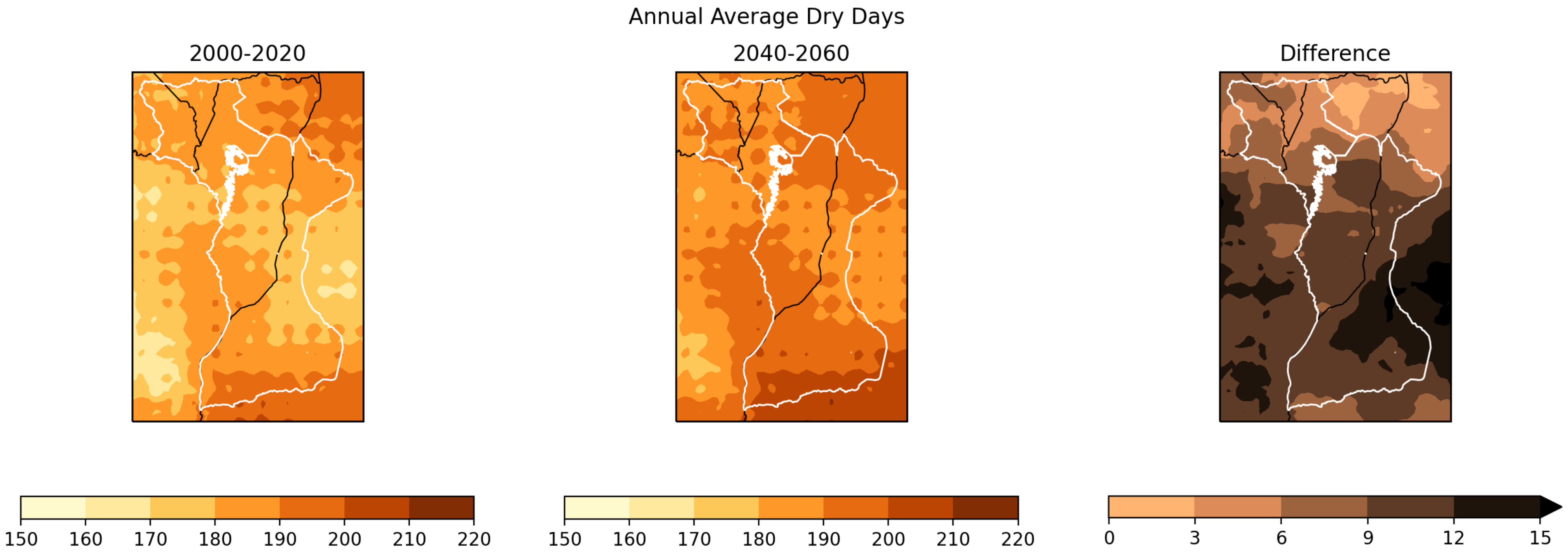


- The third panel on the right shows that all transboundary landscapes will see an increase in annual average dry days in the 2040 – 2060 period relative to the baseline period. The MAMC landscape is the most affected, followed by LTLT.

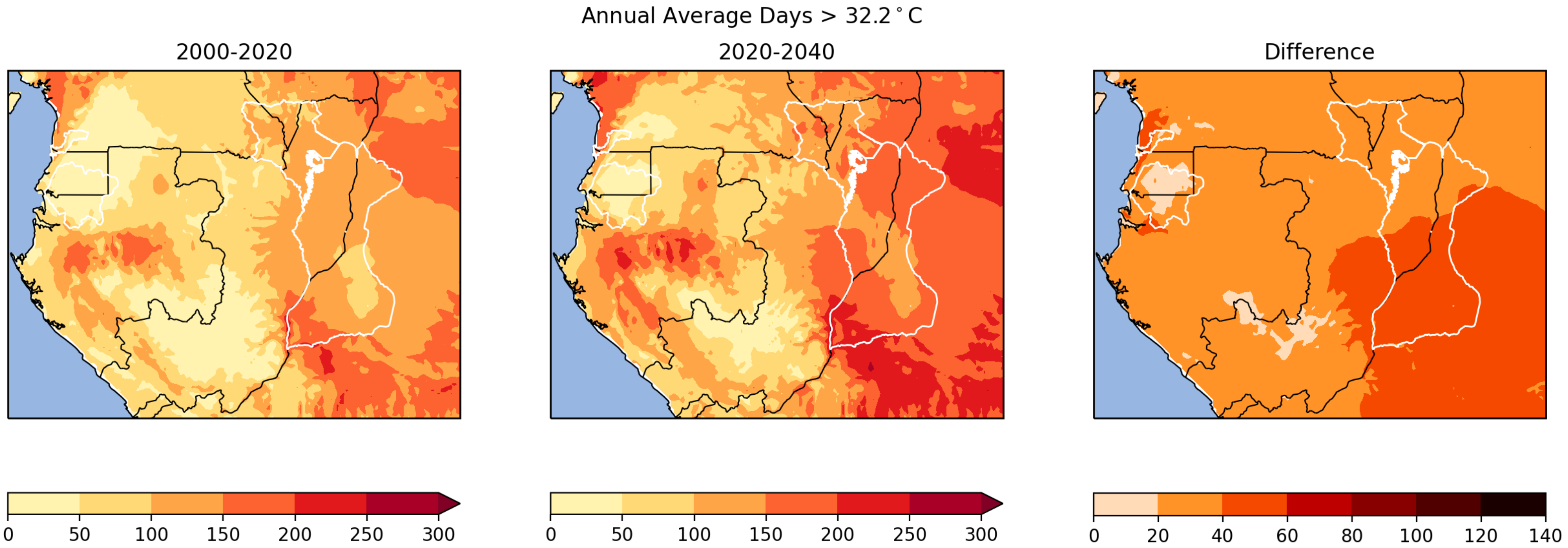
Western Region: CMRC & MAMC



Eastern Region: TNS & LTLT

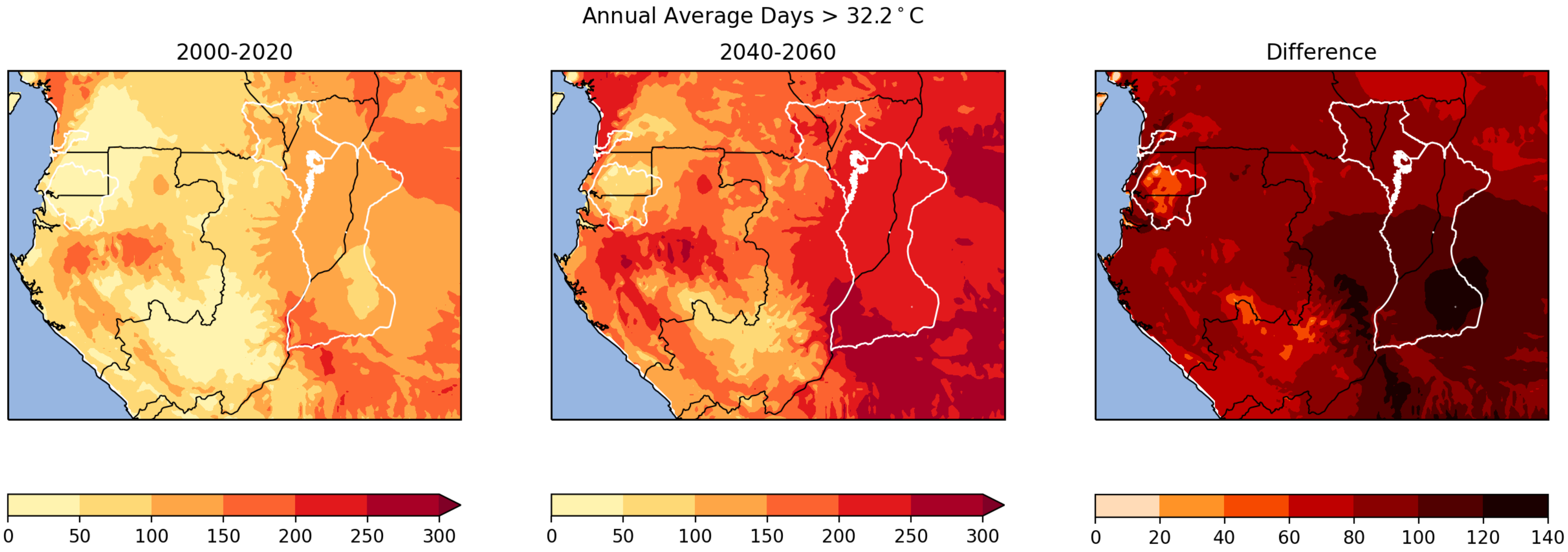


Hot Days: Near-term



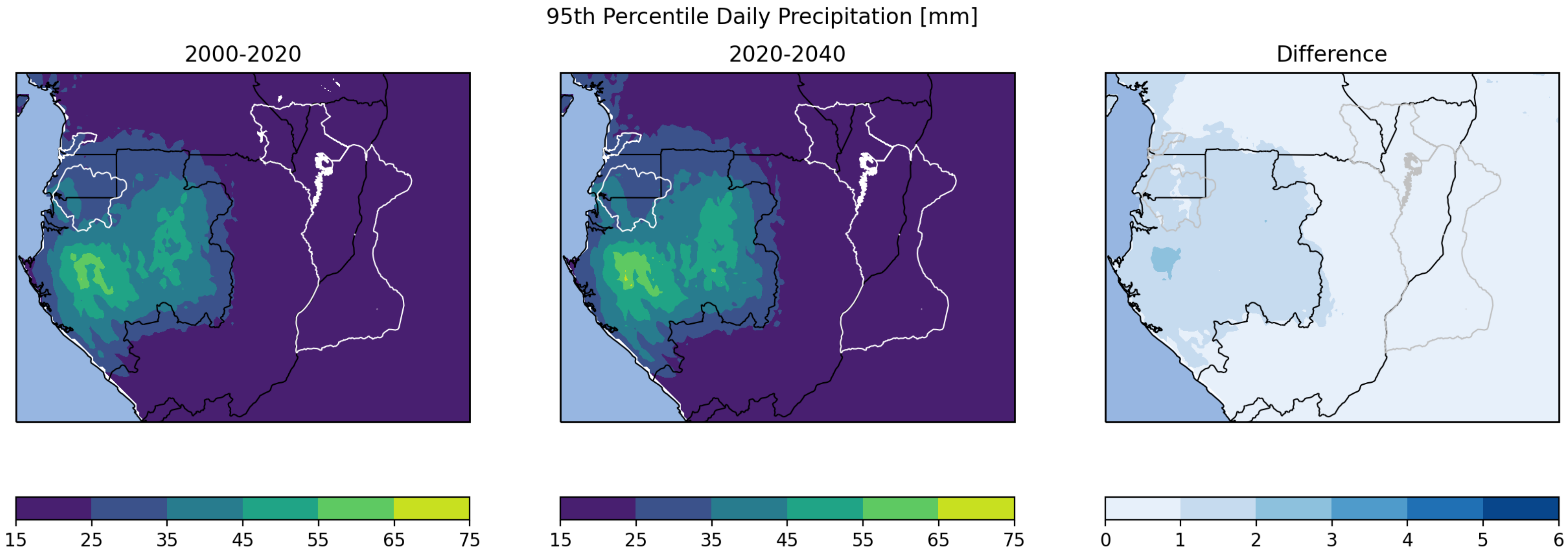
- Hot days are defined as days above 32.2°C—the threshold above which the relationship between carbon stocks and maximum daily temperature became more negative (Sullivan et al., 2020).
- Parts of TNS and LTLC are projected to see up to 250 days above 32.2°C in the near-term.

Hot Days: Mid-term



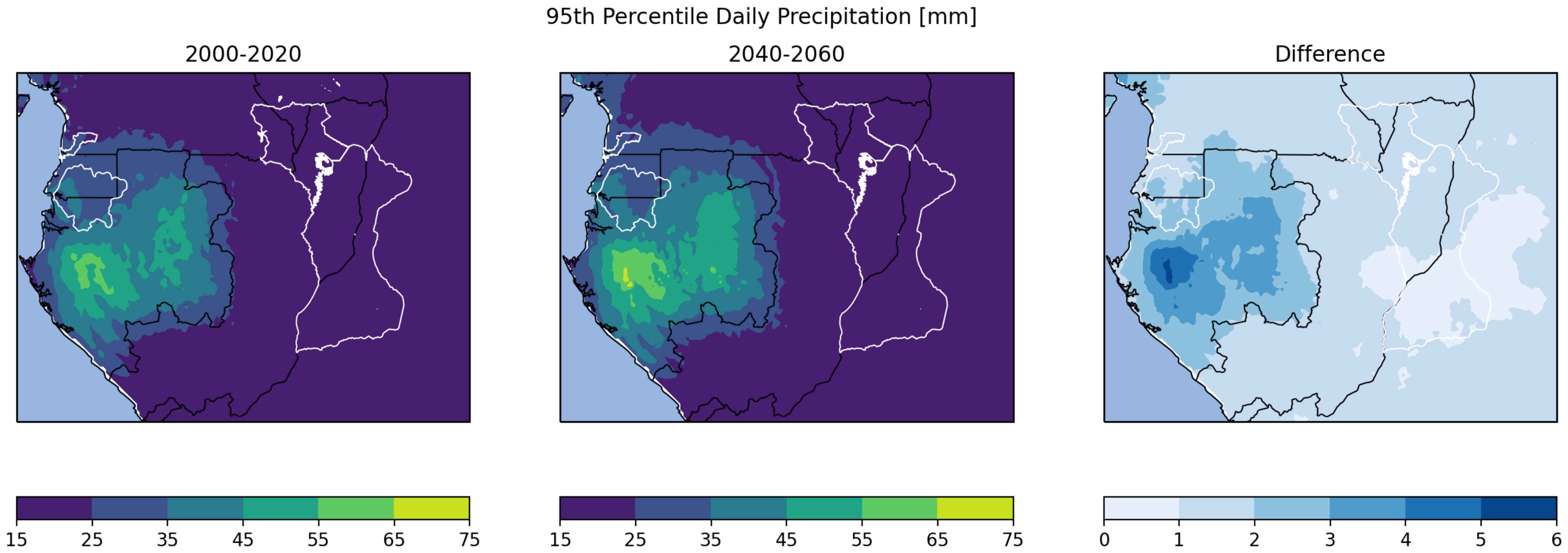
- Parts of TNS and LTLC are projected to see up to 30 days above 32.2°C in the near-term.

Extreme Precipitation: Near-term



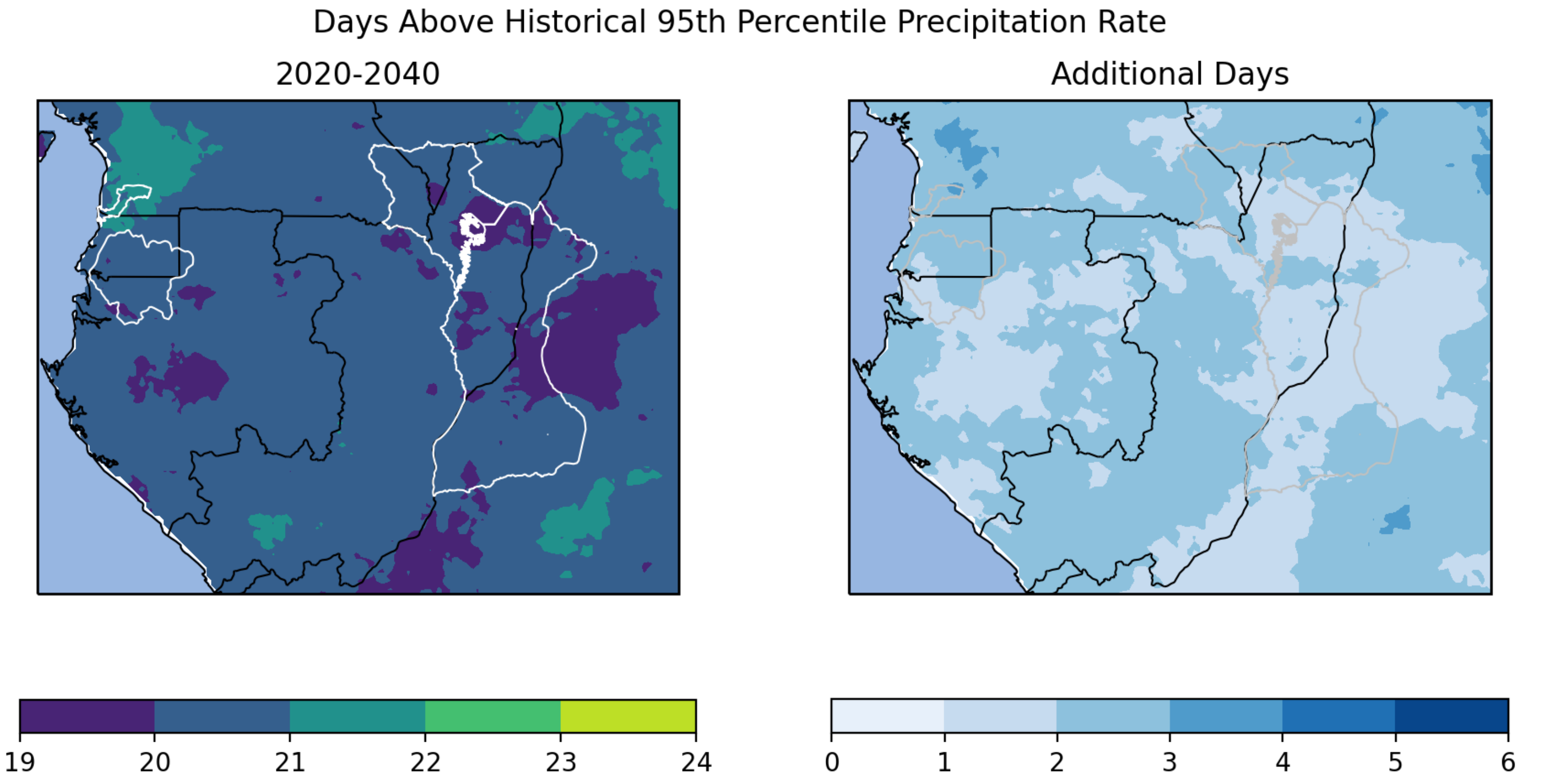
- Extreme precipitation is defined as the 95th percentile daily precipitation rate.
- Extreme precipitation rates in the near-coastal landscapes are significantly higher than in the inland landscapes. Near-term changes in extreme precipitation rates are < 2 mm/day.

Extreme Precipitation: Mid-term

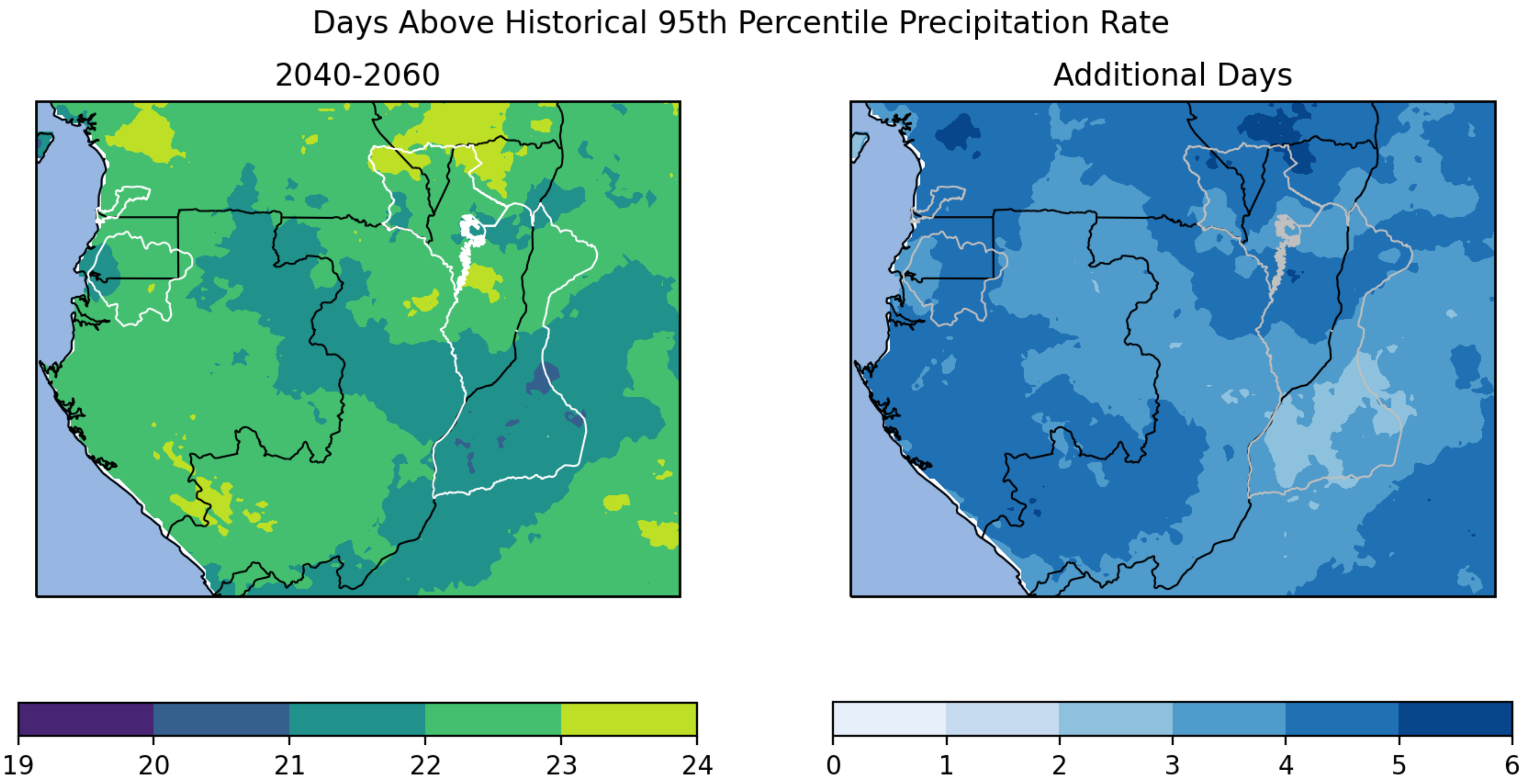


- Extreme precipitation rates in the near-coastal landscapes are significantly higher than in the inland landscapes. Mid-term changes in extreme precipitation rates are < 3 mm/day.

Extreme Precipitation: Near-term



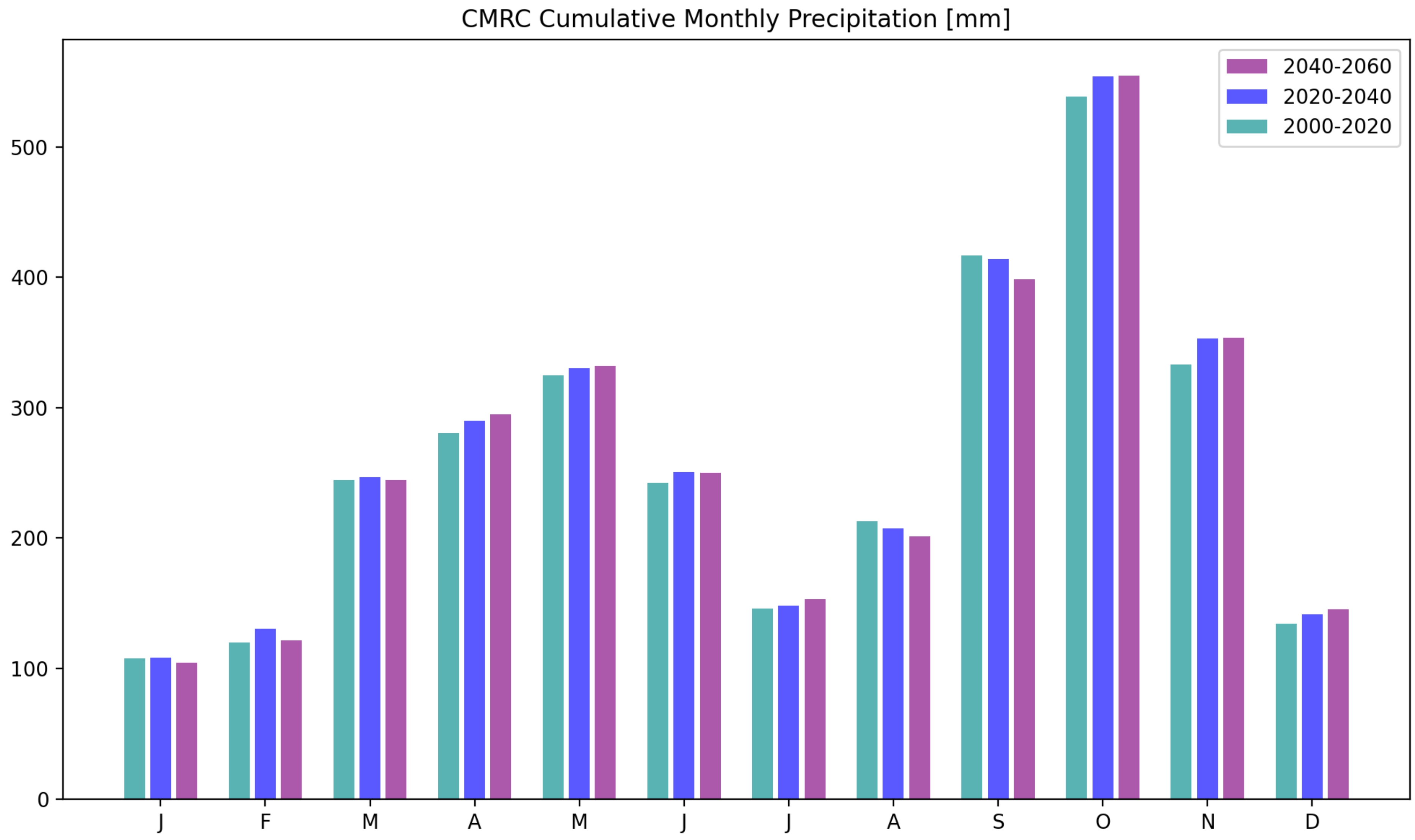
Extreme Precipitation: Mid-term



Seasonal Precipitation Patterns

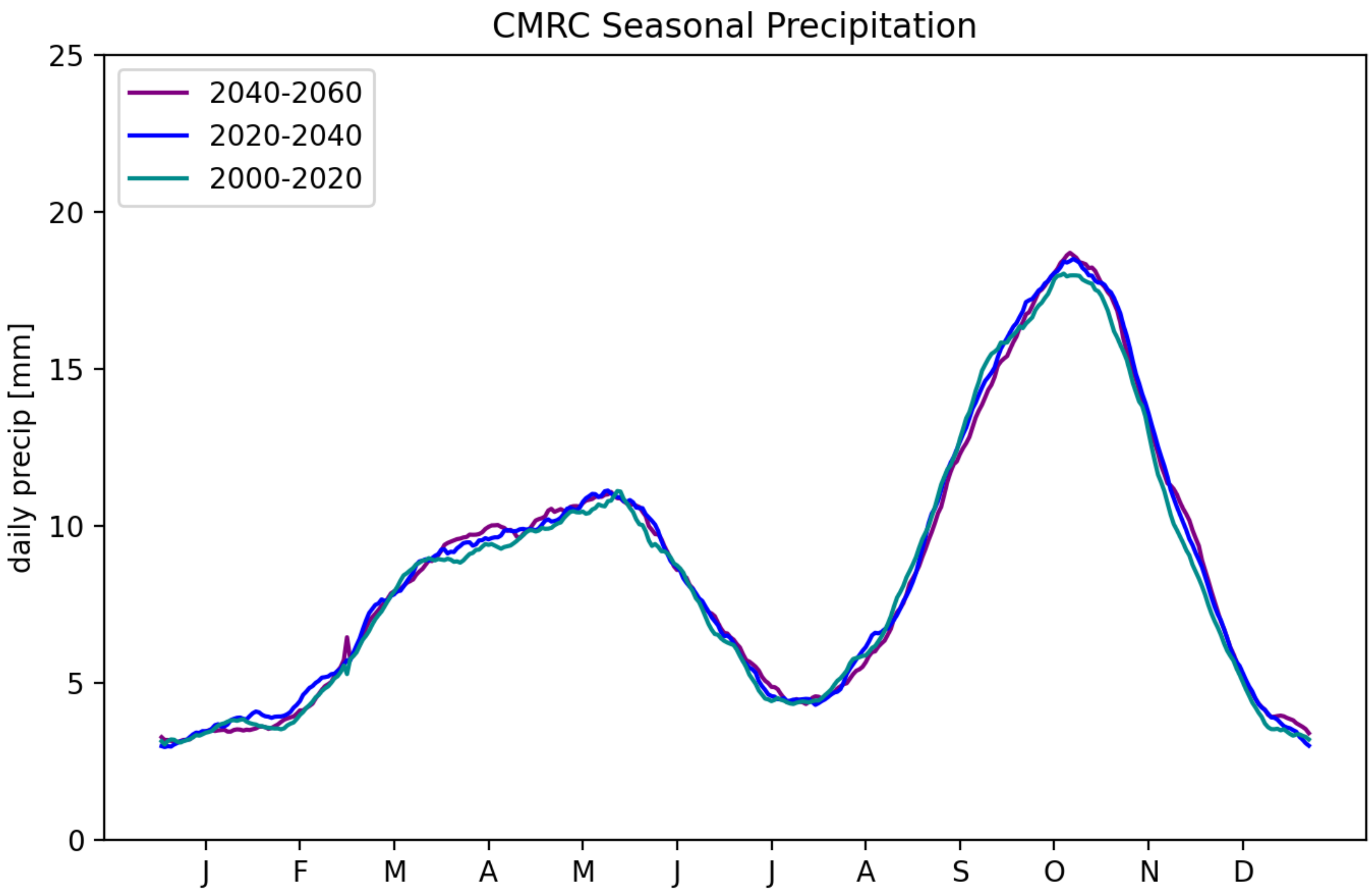
- The climatological cumulative monthly precipitation and the 10-day running mean of the daily precipitation rate
- All landscapes are characterized by bimodal precipitation distributions, with two wet seasons (*approximately* March – May and September – November) and two dry seasons (*approximately* December – February and June – August). Within each landscape, the two wet (and dry) seasons have distinct intensities.
- The timing of the transition between wet and dry seasons is more impacted in the inland landscapes (i.e., TNS and LTLT) than in the near-coastal landscapes.

Campo Ma'an-Rio Campo

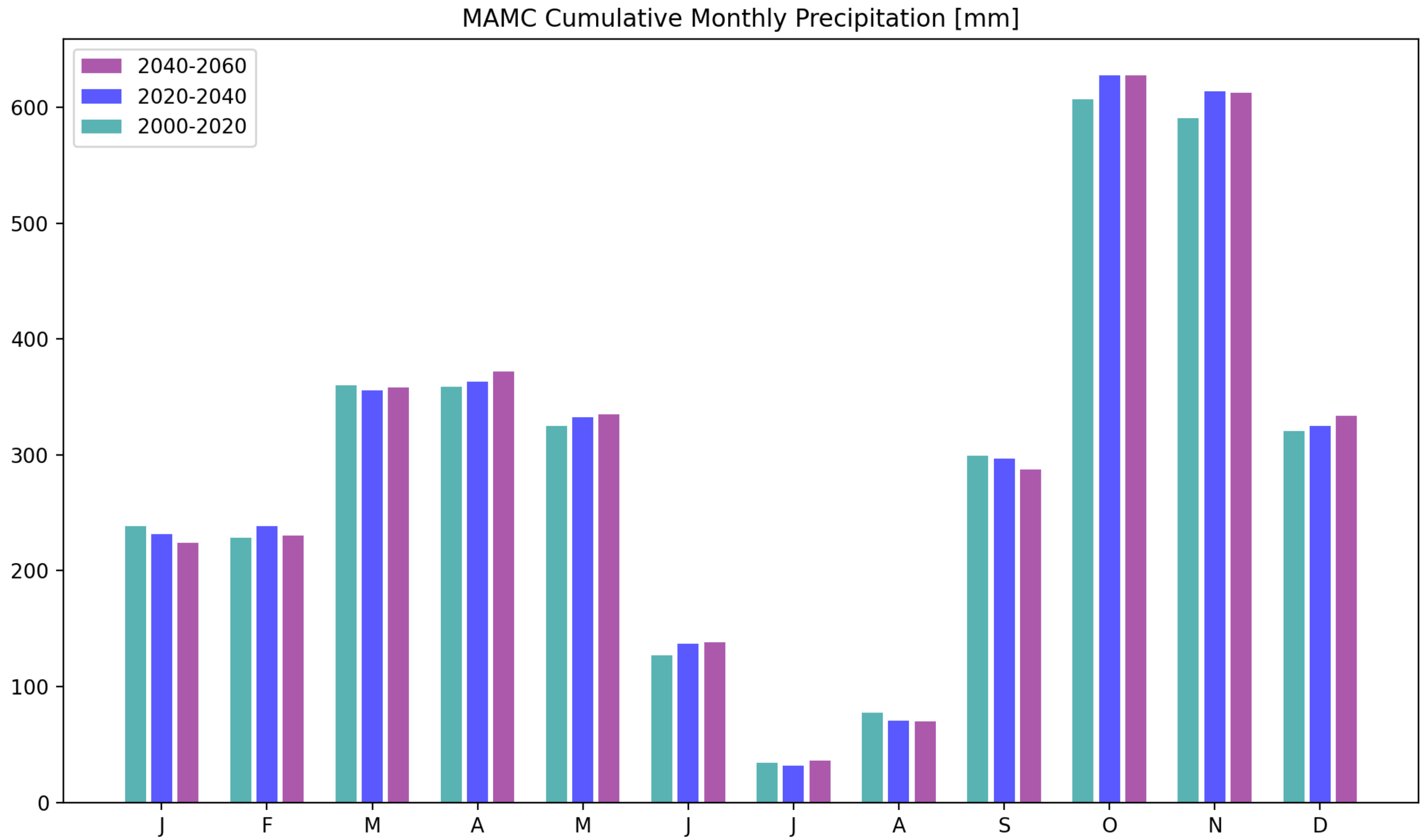


Campo Ma’an – Rio Campo

Both wet seasons are projected to see a modest increase in precipitation in the future; more so in the SON wet season.



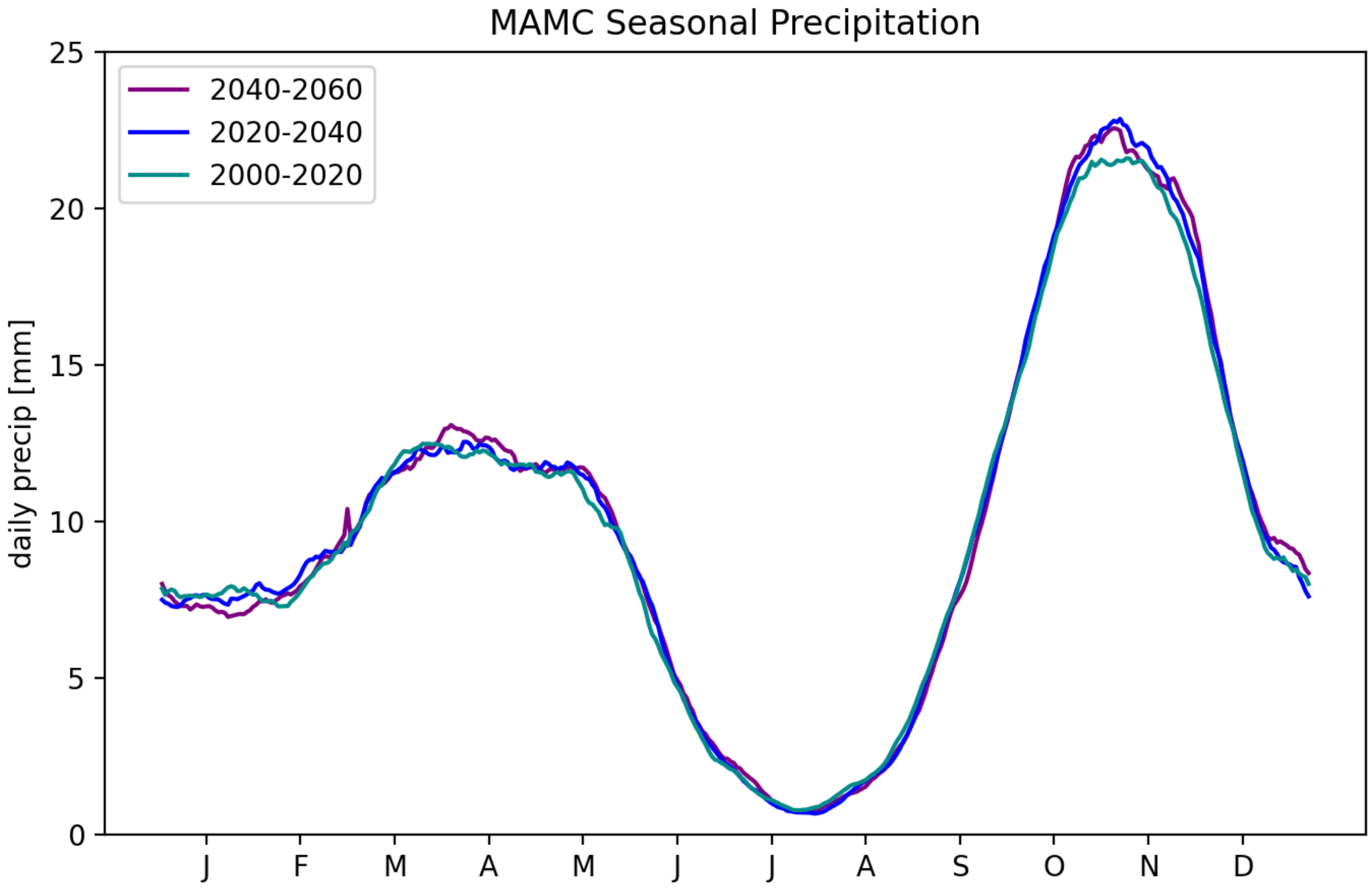
Monte Alén-Monts de Cristal



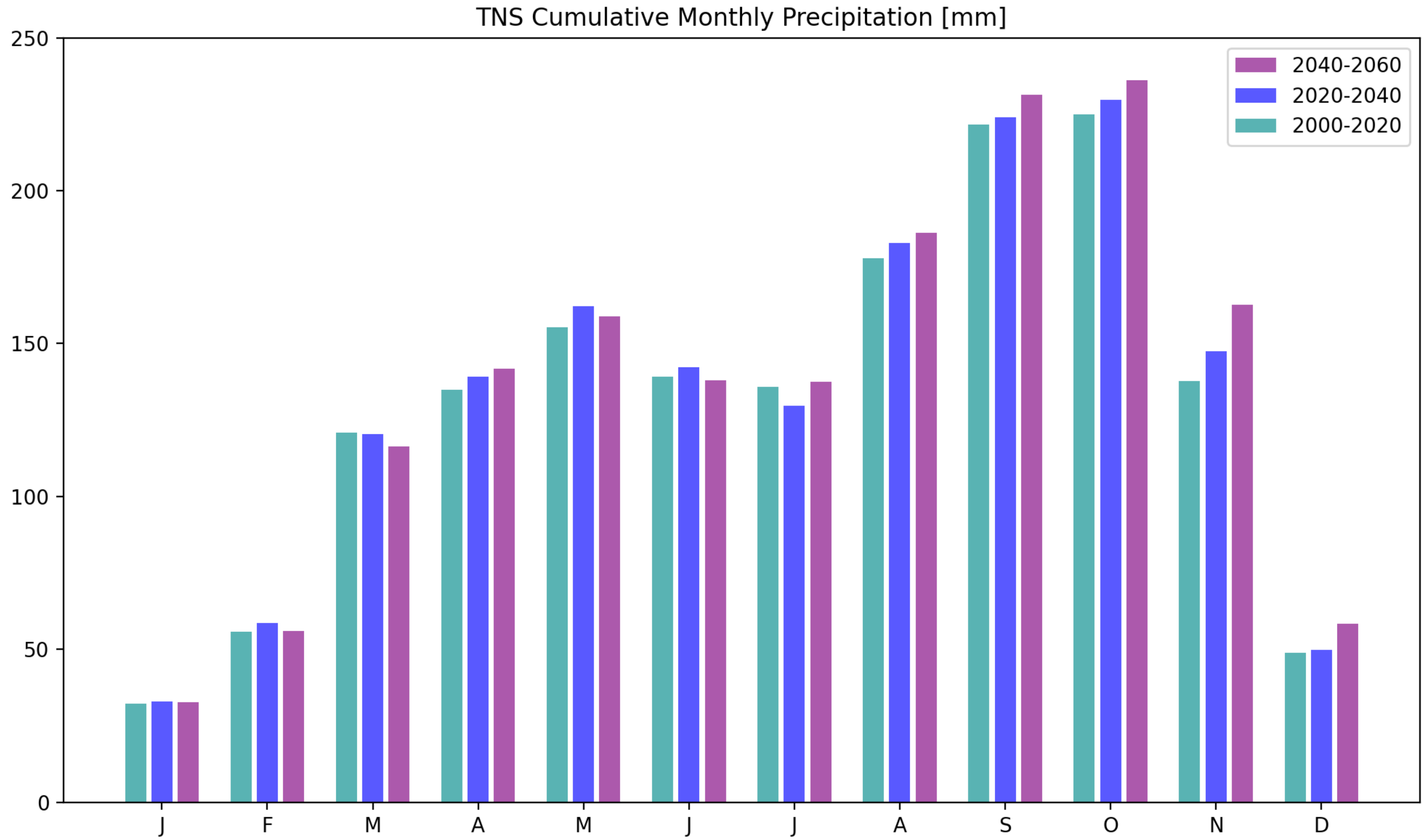
Monte Alén-Monts de Cristal

The SON wet season is projected to see a more significant increase in cumulative precipitation in the future, although the MAM season is also projected to see more intense rain events.

January and February are projected to become drier.



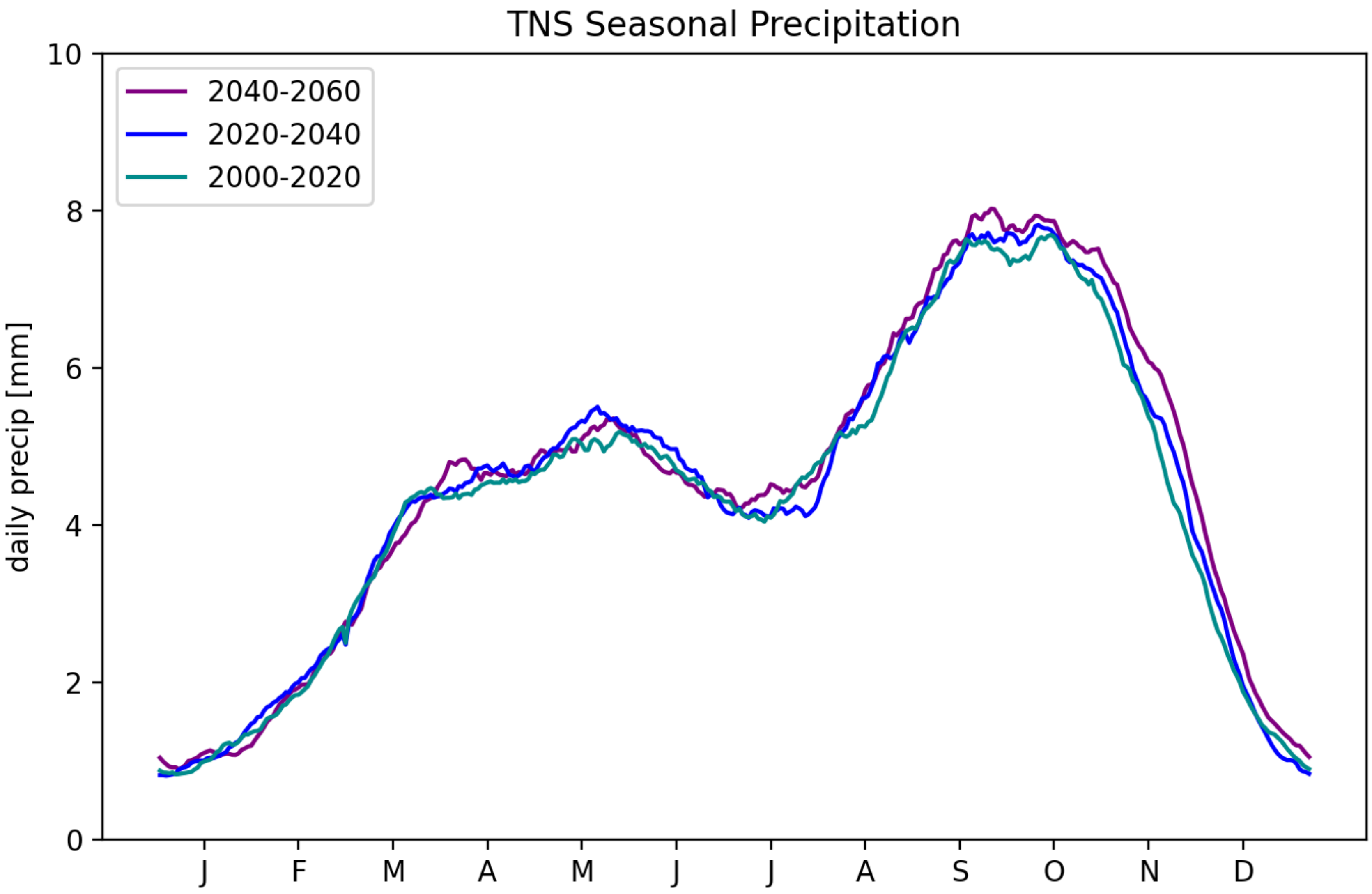
Sangha Tri-National



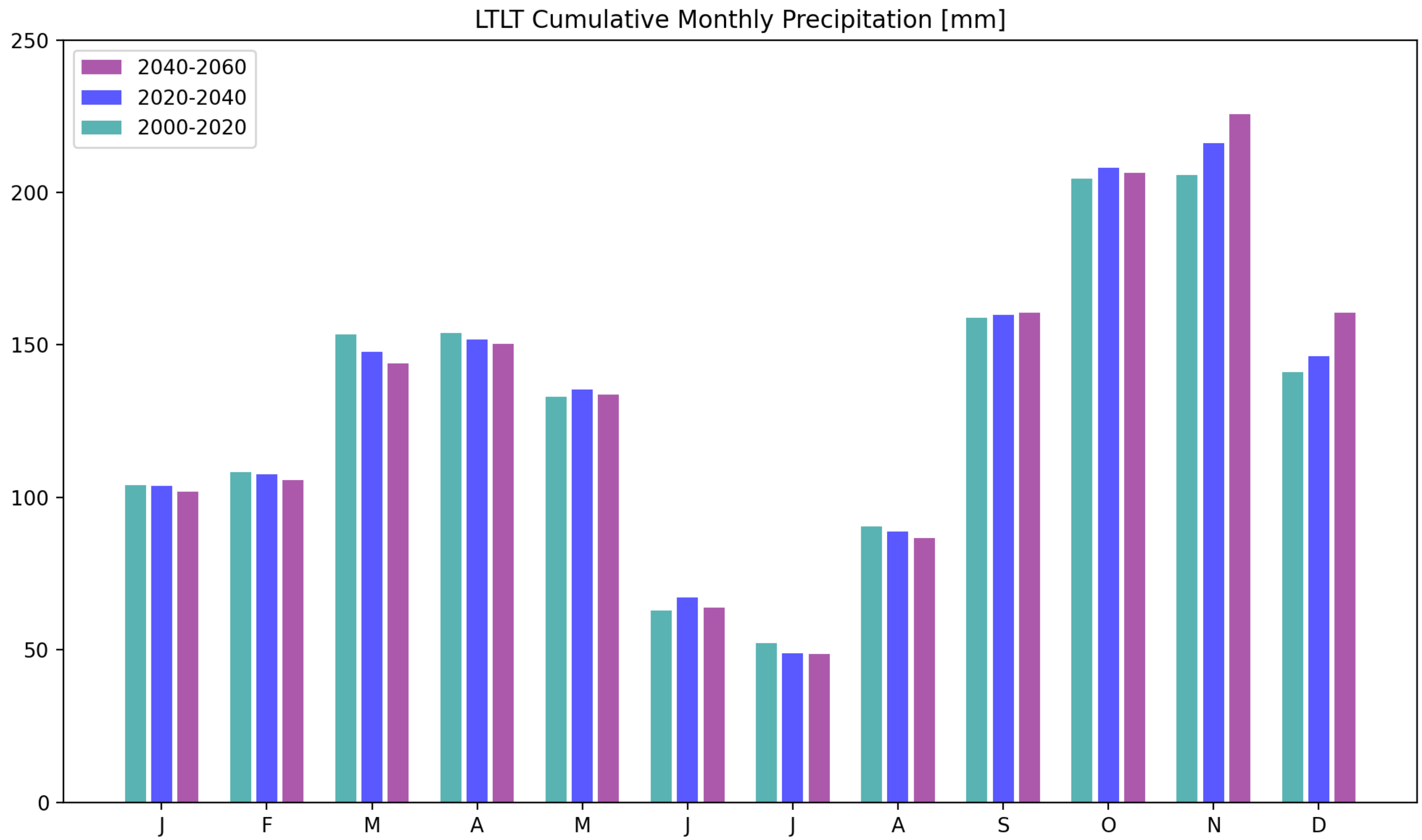
Sangha Tri-National

TNS is projected to have a wetter SON wet season.

The timing of the transition between wet and dry seasons is more impacted than in the near-coastal landscapes.



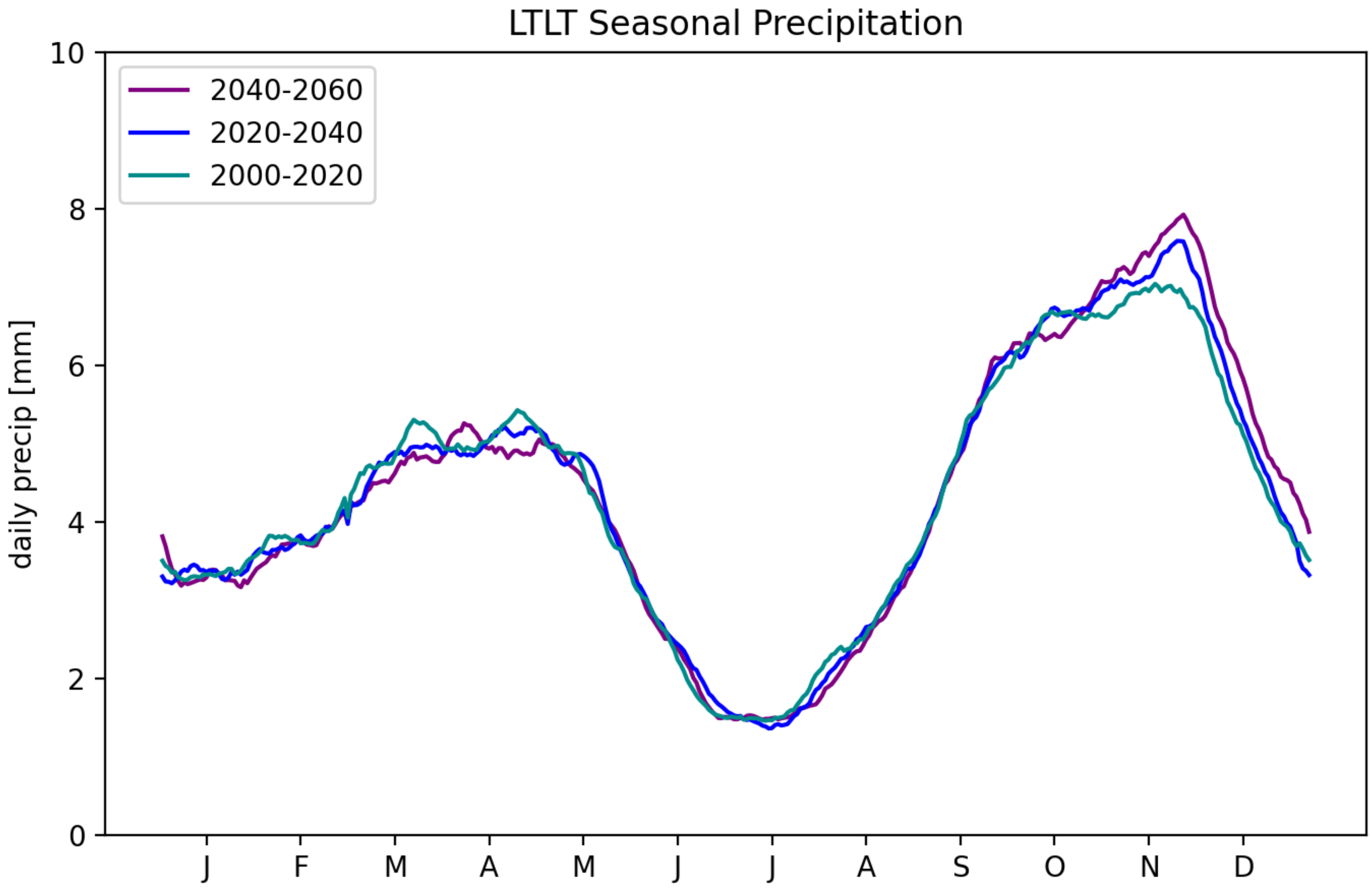
Lac Télé-Lac Tumba



Lac Télé-Lac Tumba

A noticeable spike in precipitation is projected in November/December, with more variable impacts observed in the MAM wet season.

The (D)JF dry season is projected to have a later onset in the future.



Implications

… for forest carbon

- Maximum daily temperature is the most important predictor of aboveground biomass in tropical forests (Sullivan et al., 2020).

- 32.2 °C is the threshold for steep reductions in tropical forest carbon stocks

- A regime of sustained extreme heat (i.e., an additional 100 days above 32.2 °C) could trigger a rapid decline in its capacity to sequester carbon

… for biodiversity

- “Fruit collapse” has been observed in Lopé National Park (Gabon) as an 80% reduction in fruit production from a range of fruiting trees; some primates shift diets, but chimpanzees do not show dietary flexibility

- An observed 11% reduction in forest elephant body mass has been linked to precipitation decline and a reduction of fruiting events

- Declining food resources force communities to shift agricultural calendars and increase hunting frequency, putting additional pressures on already vulnerable wildlife species

Recommendations

Landscape Recommendations

- Humid Forests: conservation of forest resources
- Grasslands: reduction of drought and fire pressures
- Peatlands: protection and monitoring of peatlands
- Across all landscapes:
  - Develop alternative livelihoods that replace poaching and improve incomes
  - Support local communities and Indigenous people in the sustainable management of natural resources
  - Monitor wildlife to inform conservation planning and anti-poaching work

1) Binding, cross-sectoral land use planning that uses climate hazard projections to inform spatial planning and to strengthen protected areas and ecological corridors for elephants, gorillas, and endemic species.

2) Fiscal reforms that reward forest stewardship, such as **Payment for Ecosystem Services (PES) schemes.**

3) The recognition of biodiversity as productive capital and strategic natural infrastructure for climate and water security >> **investment in ecological monitoring systems.**

4) Stronger links between rural livelihoods, ecosystems, and national growth strategies, in which ILUMPs offer a pathway to formally recognize and protect community and Indigenous land rights, reducing conflict, enabling long-term stewardship, and strengthening access to climate and conservation finance.

ILUMPS…

- Translate fragmented data and policy objectives into coherent, jurisdiction-scale investment propositions.
- Are intentionally structured to function in data-limited environments such as the Congo Basin.
- Emphasize iterative and adaptive planning, participatory processes, and spatially explicit analysis that focuses on trends, risks, and trade-offs instead of precise forecasts.

Unlocking Forest Finance:

The role of integrated land use management plants

Summary – 4/5

Six solutions can help bridge the annual finance gap by 2030 and provide a menu of options for tropical forest countries

Innovative financial mechanisms

JREDD+

Increasing demand for high-integrity jurisdictional-scale forest carbon credits

Could generate **$3-6 billion**

Assuming 300 million credits sold at an average price between $10-20/tonne

TFFF

Establishing the Tropical Forest Forever Facility

Could generate **$4 billion**

Assuming $25 billion sponsor capital and $100 billion senior debt tranche raised

Mobilizing private investment

Sustainable Forest Bioeconomy

Accelerating private investment in restoration and other forest-based enterprises

Could generate **$15 billion**

Assuming $5 billion public finance available for de-risking

Sustainable Value Chain Finance

Alignment of agricultural and other investments, including through increased disclosure of forest-related risks

Could generate **$10 billion**

Assuming companies invest the equivalent of 20% of reported value at risk and 20% of what's necessary to capture financial opportunities from the transition

Aligning fiscal policies

Targeted Public Finance

Using fiscal tools to reward and incentivize private investment in sustainability

Could generate **$8 billion**

Assuming only 10% of current annual agricultural subsidies were aligned with forest objectives

Sovereign Debt Management

Reducing and managing sovereign debt in ways that reward investment in resilience

Could generate **$4.9 billion**

Assuming only 1% of current debt service payments by developing countries were released and invested in forests

To be effective, a portfolio of solutions designed to close the forest finance gap must meet the following criteria:

Development compatible

The timing and sequencing of options within the portfolio must be compatible with the pursuit of legitimate development aspirations by forest countries and communities and not increase debt burdens

Complementary

The limited fungibility of sources of finance and financial instruments to address needs related to enabling conditions, forest conservation, sustainable management, and restoration, means that solutions within the portfolio must complement each other

Mobilization potential

Solutions must have the potential to generate significant volumes of finance and be feasible to implement in the timeframe necessary to meet the 2030 goal

Coherence potential

Solutions must be amenable to coordination at national and/or subnational scales to ensure the coherence of forest-related activities across the landscape

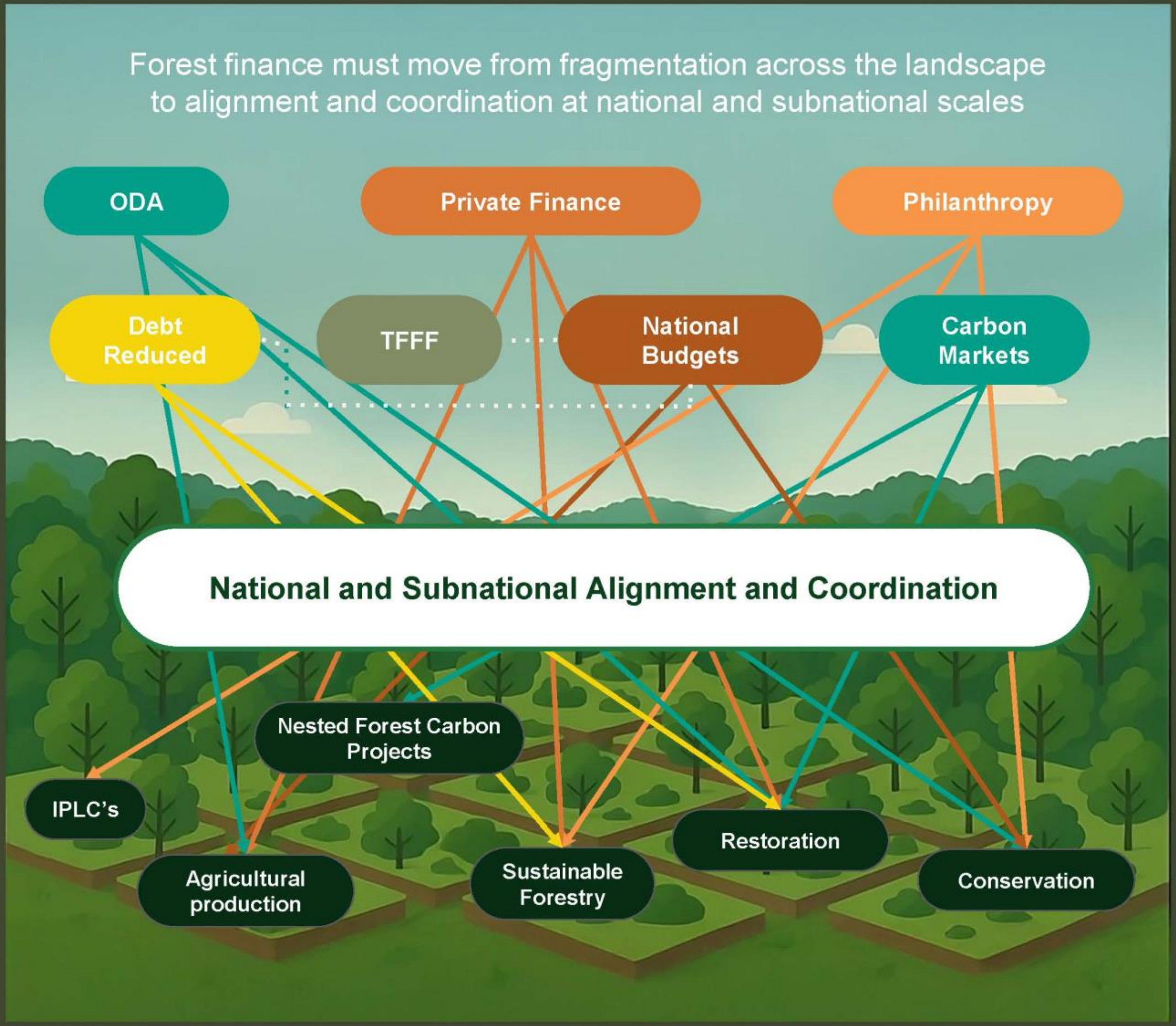
Aligned

Solutions must align with broader climate finance principles and goals, inclusion of IP&LCs, and other COP30 Action Agenda objectives

Coherence potential

Country platforms and other mechanisms for government-led coordination can increase impact and efficiency

- Ensure policy coherence across sectors, especially between forestry and agriculture
- Realize economies of scale, e.g., in monitoring forest cover for results-based finance and implementation of deforestation-free value chains
- Enable aggregation of projects to match the scale of commercial investment opportunities
- Ensure nested accounting for forest carbon crediting activities
- Establish inclusive processes for IP&LC and other stakeholder engagement in program design and collaboration in implementation
- Target public finance to incentivize private investment in priority areas and activities



Key Points

Results show increasing dry periods, extended high heat conditions, and an intensification of precipitation seasonality and extreme precipitation.

These changes threaten wildlife and the capacity of tropical forests to efficiently store carbon.

ILUMPs play a critical enabling role in unlocking forest and landscape finance to secure the long-term ecological integrity of the world's second-largest rainforest.

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