

# Steering Committee, November 27-28, 2019, Vientiane

## ECOMORE II Climate Platform

**Climate :** Benjamin Sultan (IRD), Christophe Menkès (IRD), Thanh Ngo-Duc (University of Science & Technology of Hanoi)

**Spatial analyses and modelling:** Vincent Herbreteau (IRD), Morgan Mangeas (IRD), Marc Souris (IRD), Annelise Tran (CIRAD)

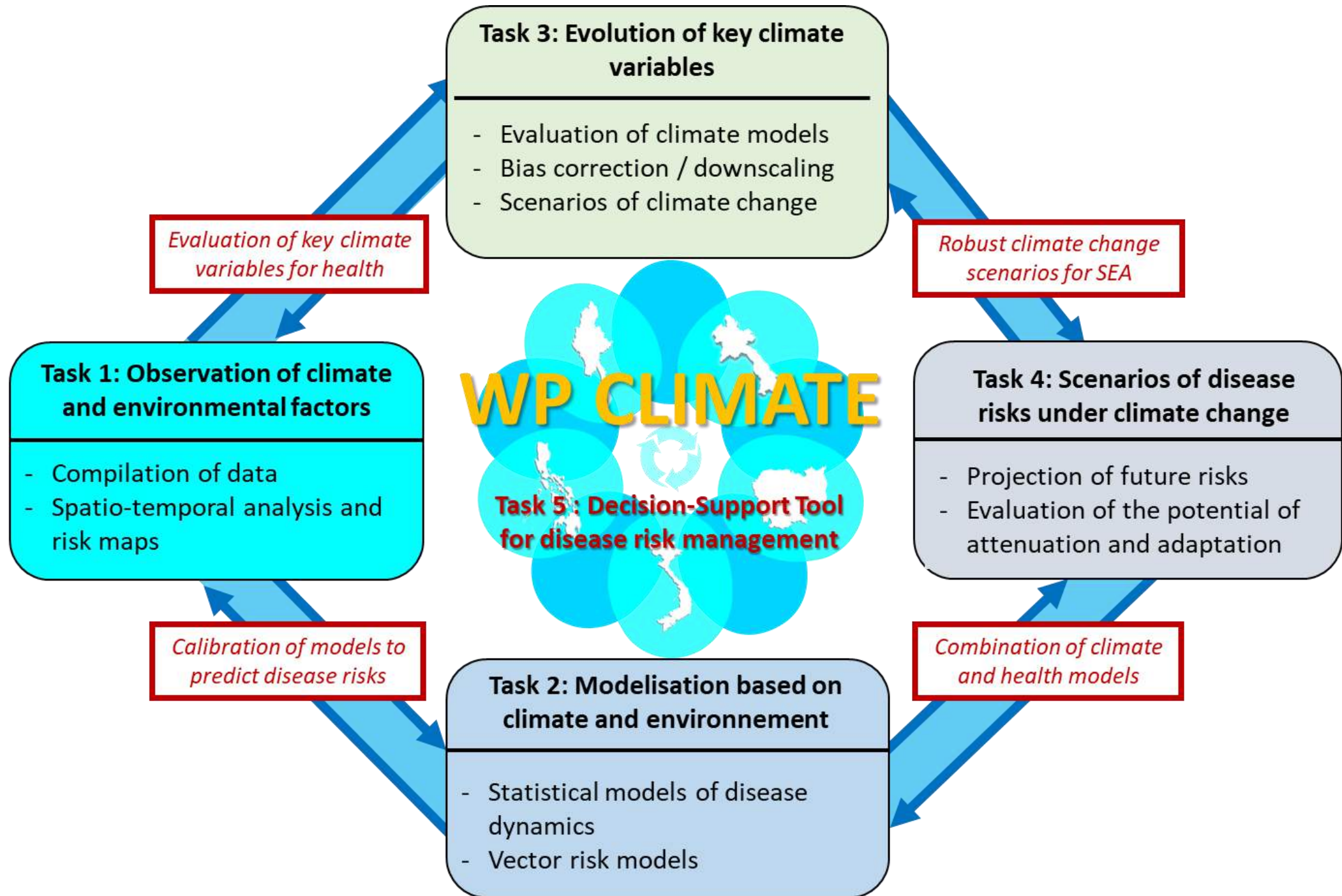
**Decision support tools:** Jean-Philippe Boulanger (ECOCLIMASOL)



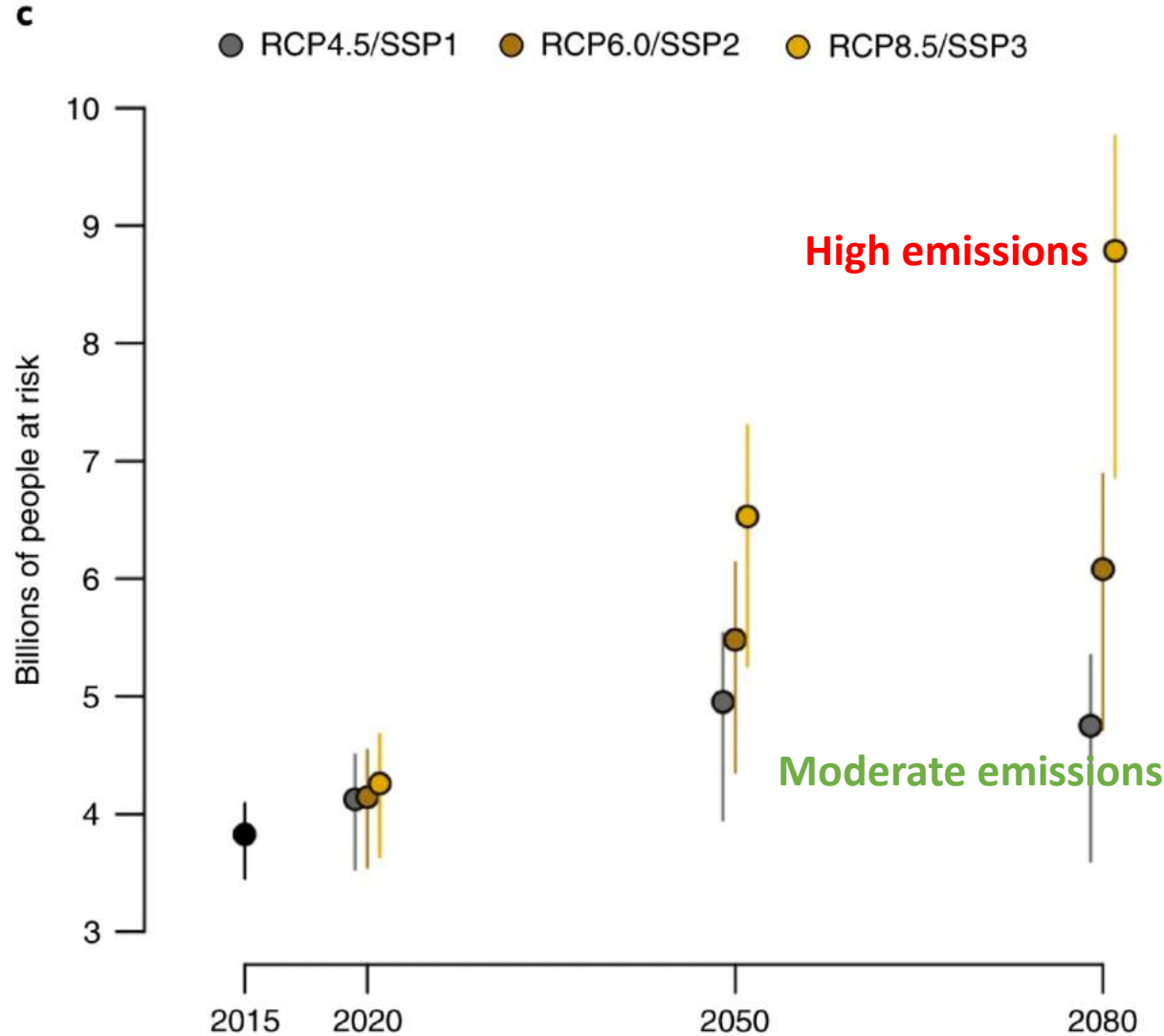
ECOMORE II



WP CLIMATE



# Risk of dengue in the future (mean and 95% credible intervals)



The future trajectory of global dengue depends highly on which emissions scenarios

Reducing emissions offer hope of limiting the future impact of dengue

Messina, J.P., Brady, O.J., Golding, N. *et al.* The current and future global distribution and population at risk of dengue. *Nat Microbiol* **4**, 1508–1515 (2019) doi:10.1038/s41564-019-0476-8

## Decision Support Tool for disease risk management

The logo for the ECOMORE2 Climate Change Web Platform. It features the text "ECOMORE2", "Climate Change", and "Web Platform" stacked vertically in a bold, orange, sans-serif font. The text is overlaid on a graphic of several overlapping, semi-transparent blue circles, each containing a white map of the Americas (North and South America).

### ECOMORE2 Climate Change Web Platform

- Design an interactive open-public platform, where each user will be able to visualize and interact with maps of climate change scenarios and impacts in terms of health of the entire region of the ECOMORE2 Project.
- Highlight regions of major risk under climate change in order to guide public health policies. Researchers and decision-makers could use such information for awareness as well as for teachers and professors for dissemination purpose

*Outputs: Design of a perennial Web-based platform to visualize current and future climate and disease risks (not a prediction tool)*

An example of such platform on climate and  
agriculture in Africa

<http://retd1.teledetection.fr/climap/proj/>



<http://ret1.teledetection.fr/climap/proj/>

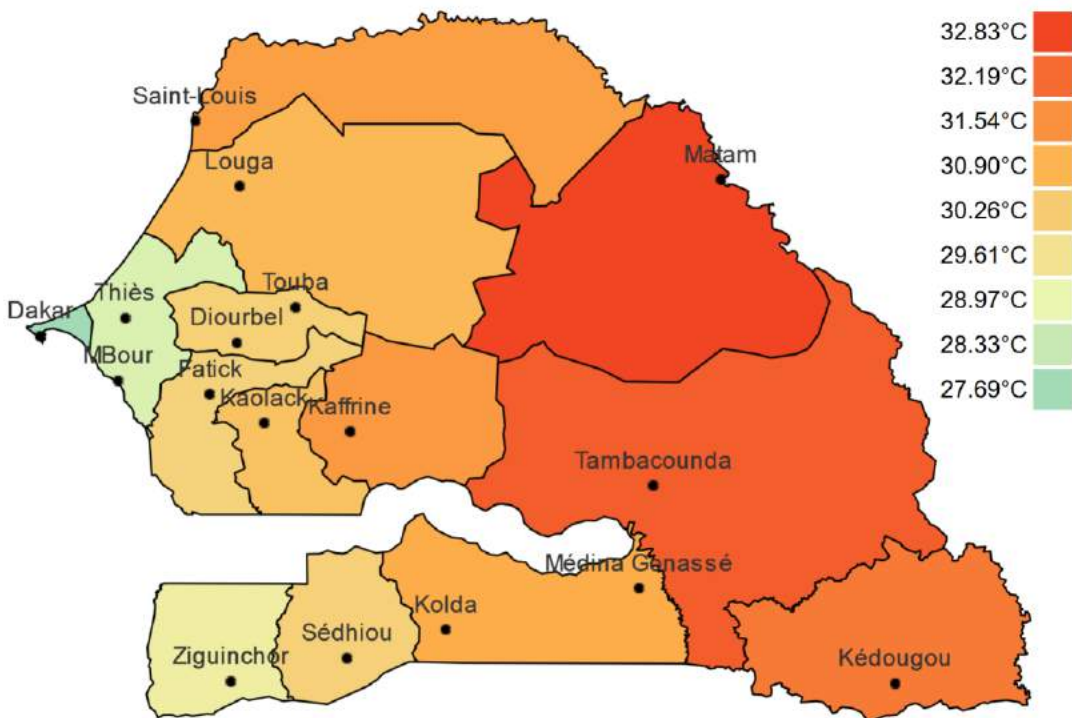
## GÉOPORTAIL SENEGAL - PROJECTIONS

[help sheet](#) · [portal](#) · [download](#) · [en français](#) · [about](#) · [manual](#)

parameter : average temperature | models : 29 | scenario : rcp85 | period : 2051-2080 | export

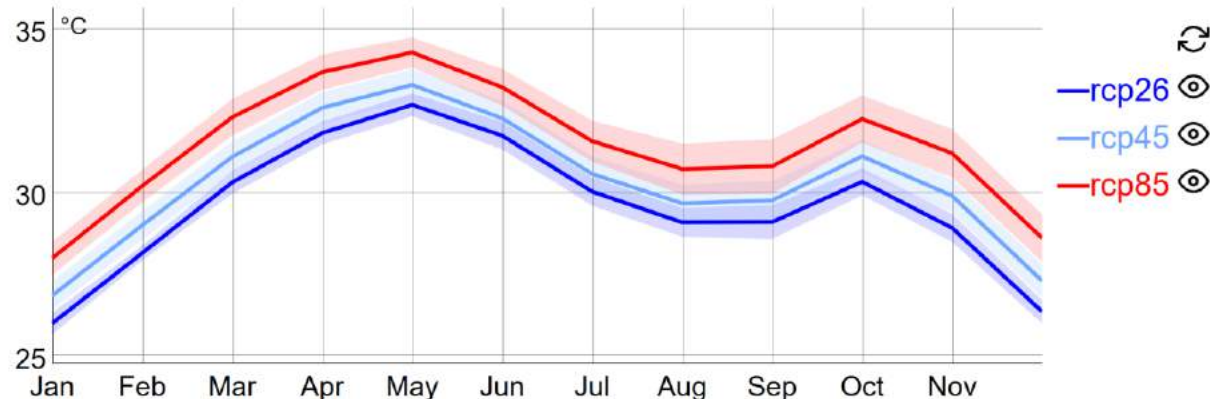
### Spatial distribution in 2051-2080 (rcp85 scenario)

reset view | selection : region | find place

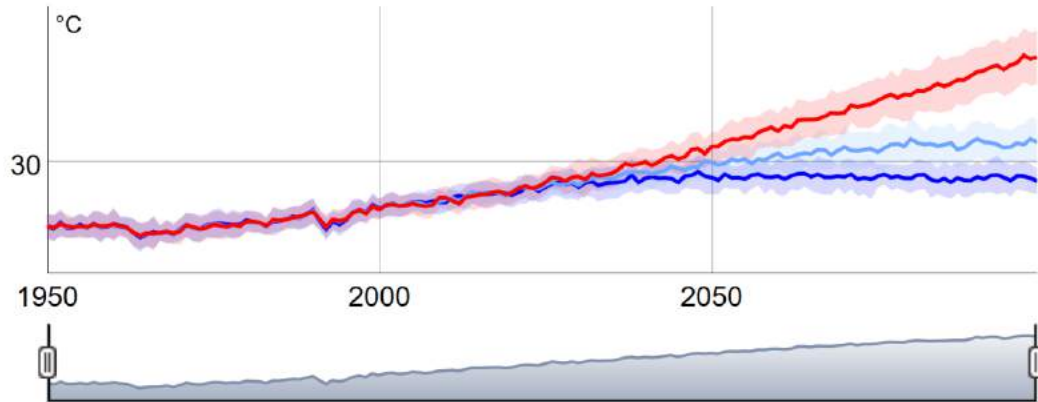


### Values for Senegal Monthly variation in 2051-2080

compare scenarii



### Yearly evolution



The shaded zone in scenario view is the error bar (i.e. standard deviation of available models). Drag-and-click to zoom on bottom chart. Double-click to reset. Use these bounds.

<http://ret1.teledetection.fr/climap/proj/>

# GÉOPORTAIL SENEGAL - PROJECTIONS

[help sheet](#) · [portal](#) · [download](#) · [en français](#) · [about](#) · [manual](#)

parameter : **average temperature** | models : 29 | scenario : **rcp85** | period : 2051-2080 | export

**temperature**

- average temperature
- max temperature
- min temperature
- nr of hot days (>40°C)

**precipitation**

- max precipitation
- nr of raining days
- river runoff *experimental*
- total rainfall

**agriculture**

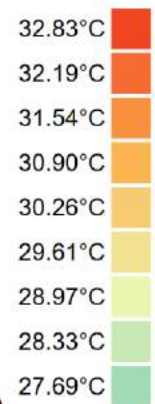
- maize (long cycle) *per year only*
- maize (short cycle) *per year only*
- millet (long cycle) *per year only*
- millet (short cycle) *per year only*
- sorghum (long cycle) *per year only*
- sorghum (short cycle) *per year only*

**custom formula**

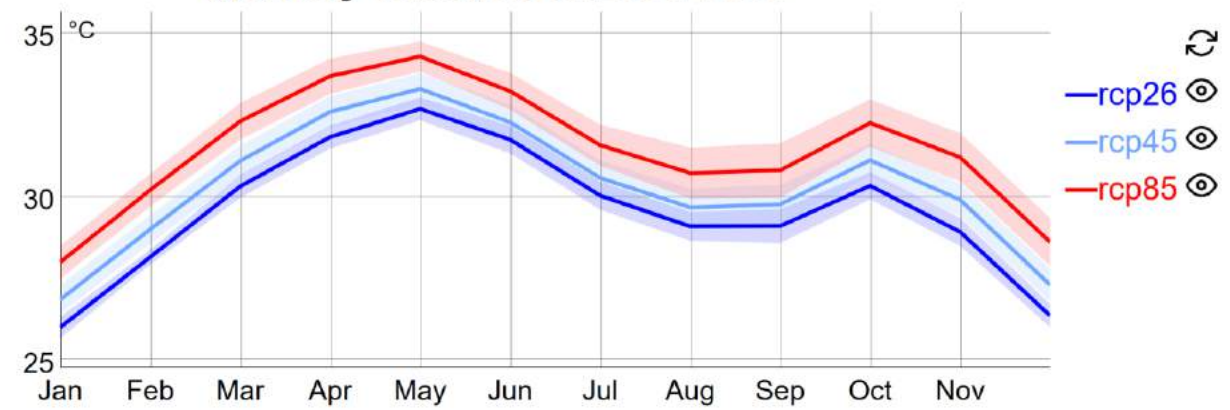
e.g. pr[pr>=3] count

map color : blue->red (temp)

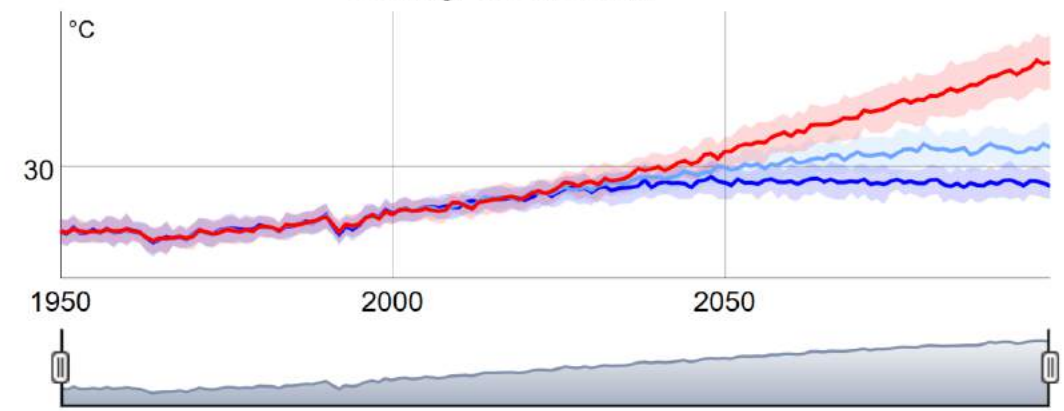
[more about parameters](#) - [custom formula usage](#)



## Values for Senegal Monthly variation in 2051-2080



## Yearly evolution



The shaded zone in scenario view is the error bar (i.e. standard deviation of available models).  
Drag-and-click to zoom on bottom chart. Double-click to reset. Use these bounds.

Saint Louis : 31.29 °C



<http://ret1.teledetection.fr/climap/proj/>

# GÉOPORTAIL SENEGAL - PROJECTIONS

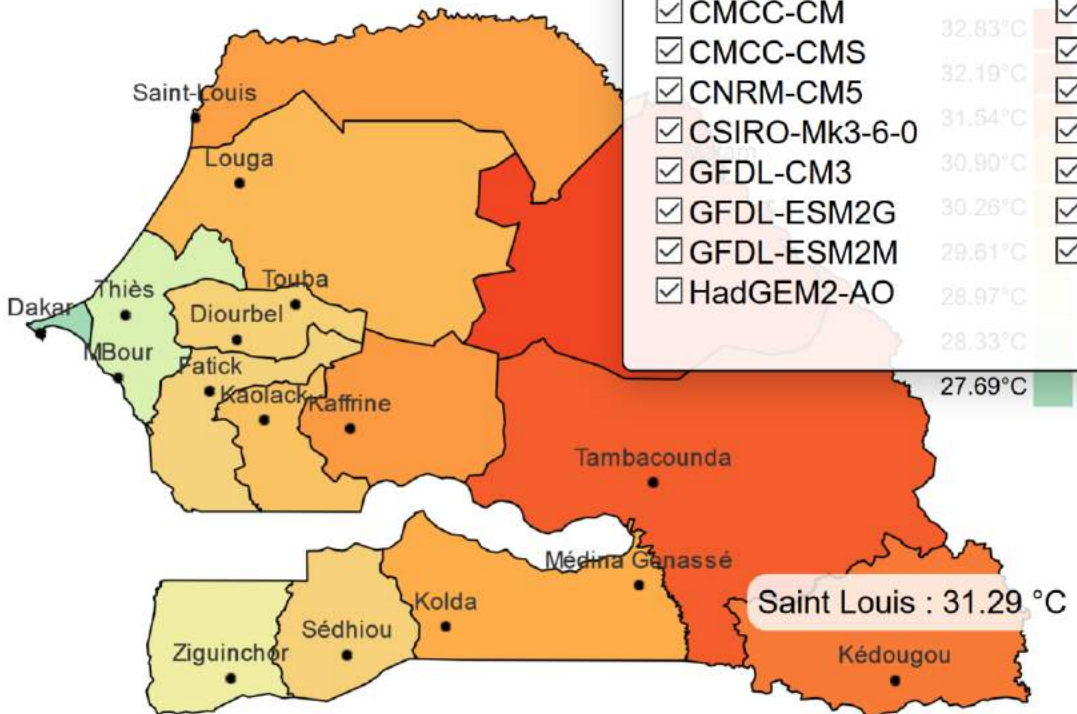
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parameter : average temperature | models : 29 | scenario : rcp85 | period : 2051-2080 | export

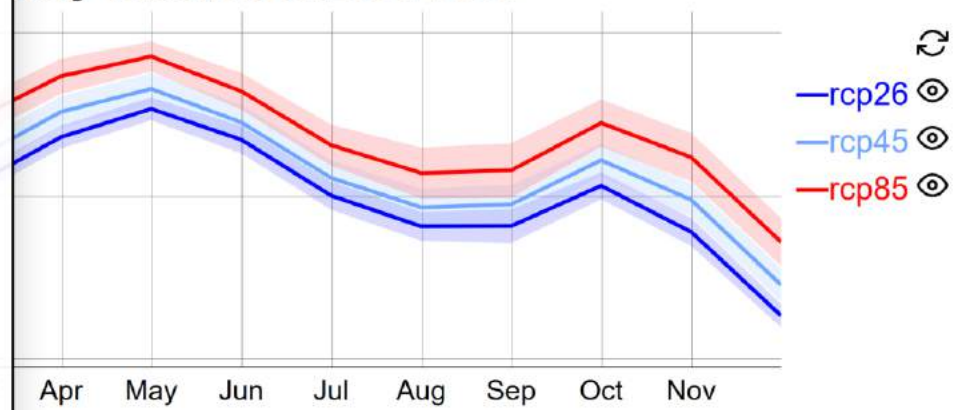
## Spatial distribution in 2051-2080

reset view | selection : region

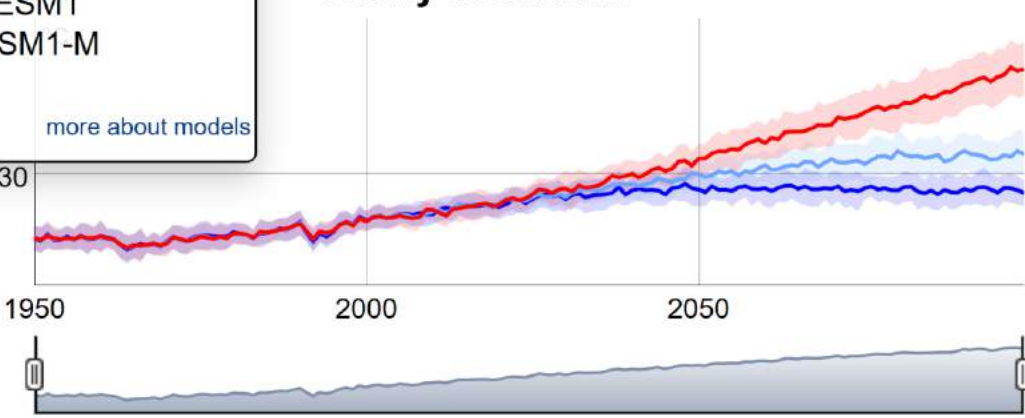
- all models  
If unsure, it is best to keep all models selected.
- ACCESS1-0
- ACCESS1-3
- bcc-csm1-1
- bcc-csm1-1-m
- BNU-ESM
- CanESM2
- CMCC-CESM
- CMCC-CM
- CMCC-CMS
- CNRM-CM5
- CSIRO-Mk3-6-0
- GFDL-CM3
- GFDL-ESM2G
- GFDL-ESM2M
- HadGEM2-AO
- HadGEM2-CC
- HadGEM2-ES
- Inmcm4
- IPSL-CM5A-LR
- IPSL-CM5A-MR
- IPSL-CM5B-LR
- MIROC5
- MIROC-ESM
- MIROC-ESM-CHEM
- MPI-ESM-LR
- MPI-ESM-MR
- MRI-CGCM3
- MRI-ESM1
- NorESM1-M



## Values for Senegal Monthly variation in 2051-2080



## Yearly evolution



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<http://ret1.teledetection.fr/climap/proj/>

# GÉOPORTAIL SENEGAL - PROJECTIONS

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parameter : average temperature | models : 29 | scenario : rcp85 | period : 2051-2080 | export

Spatial distribution in 2051-2080 (rcp85 scenario)

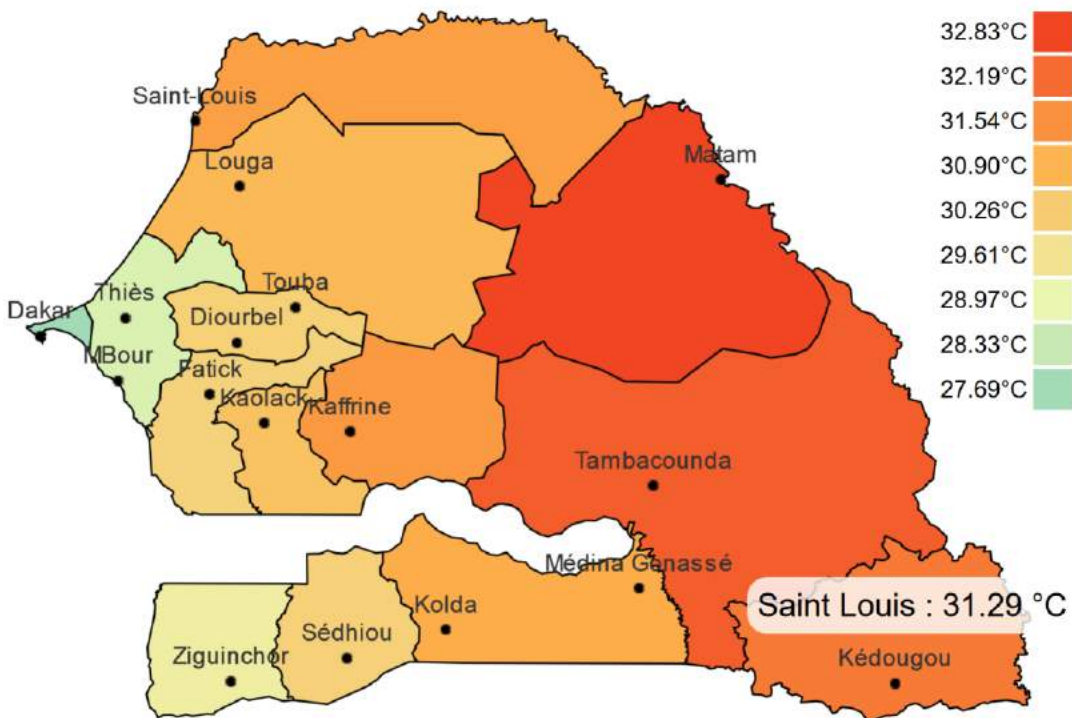
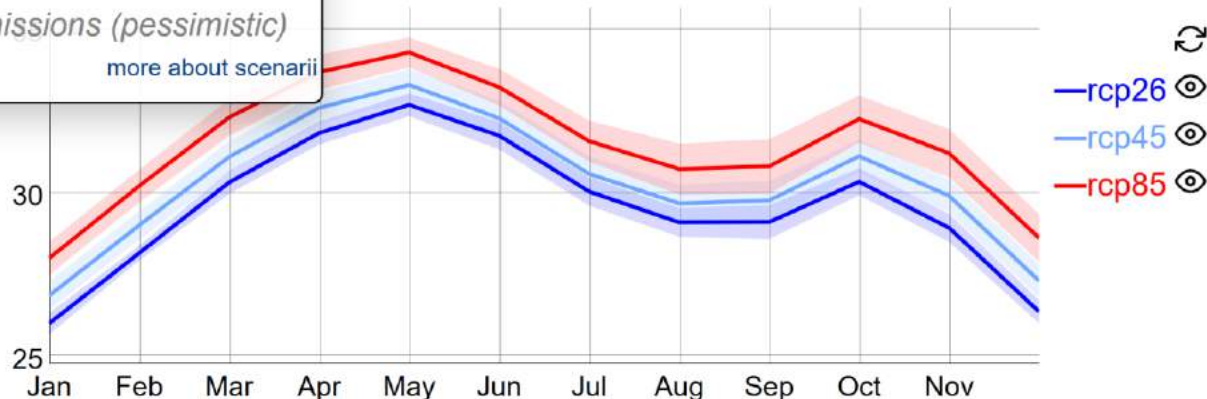
- rcp26 low emissions (optimistic)
- rcp45 medium emissions
- rcp85 high emissions (pessimistic)

[more about scenarios](#)

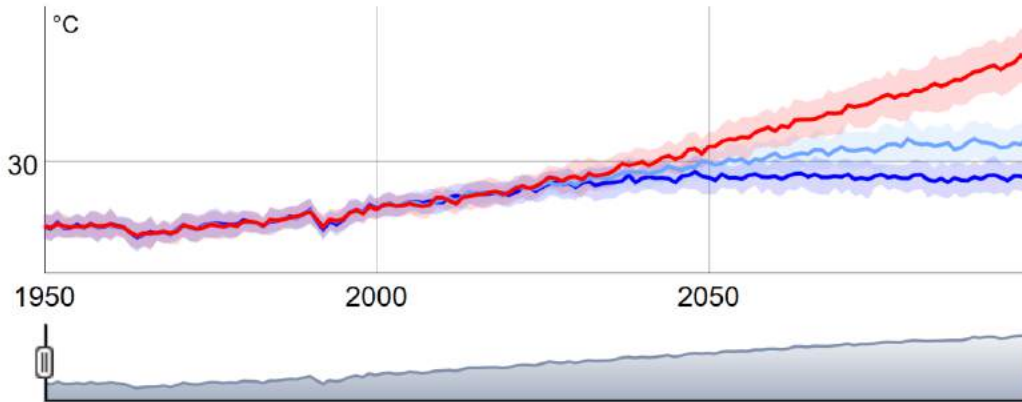
## Values for Senegal

### Monthly variation in 2051-2080

compare scenarios



## Yearly evolution



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<http://ret1.teledetection.fr/climap/proj/>

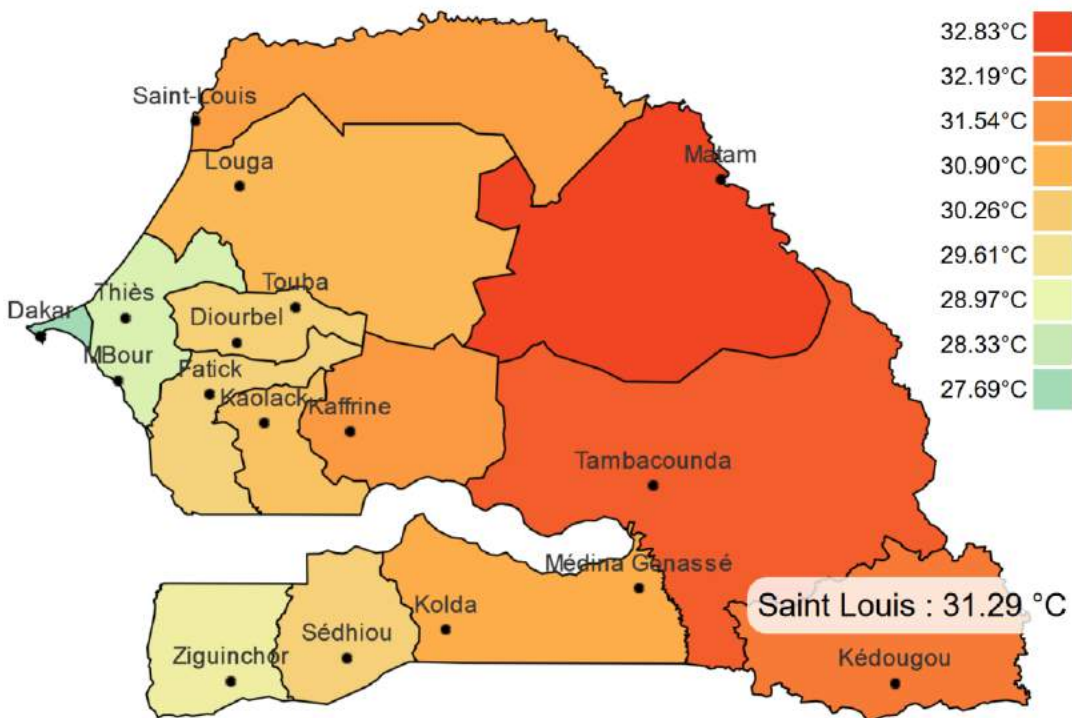
## GÉOPORTAIL SENEGAL - PROJECTIONS

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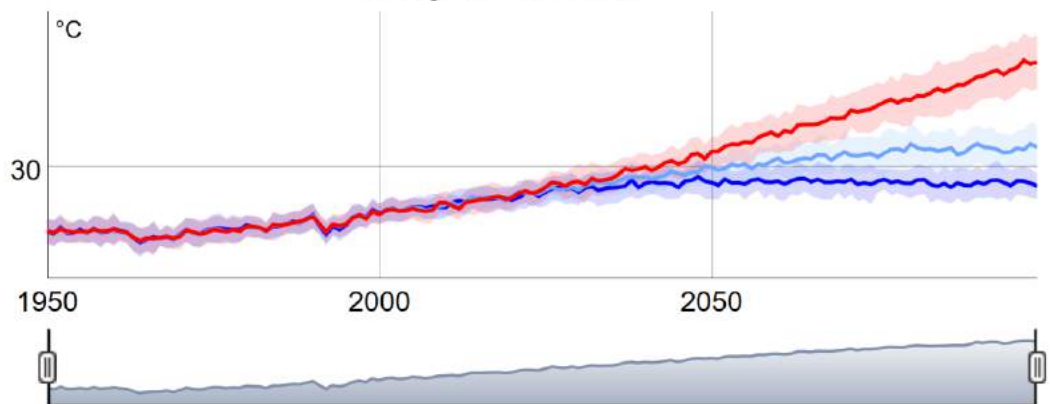
parameter : average temperature | models : 29 | scenario : rcp85 | period : 2051-2080 | export

### Spatial distribution in 2051-2080 (rcp85 scenario)

reset view | selection : region | find place



### Yearly evolution



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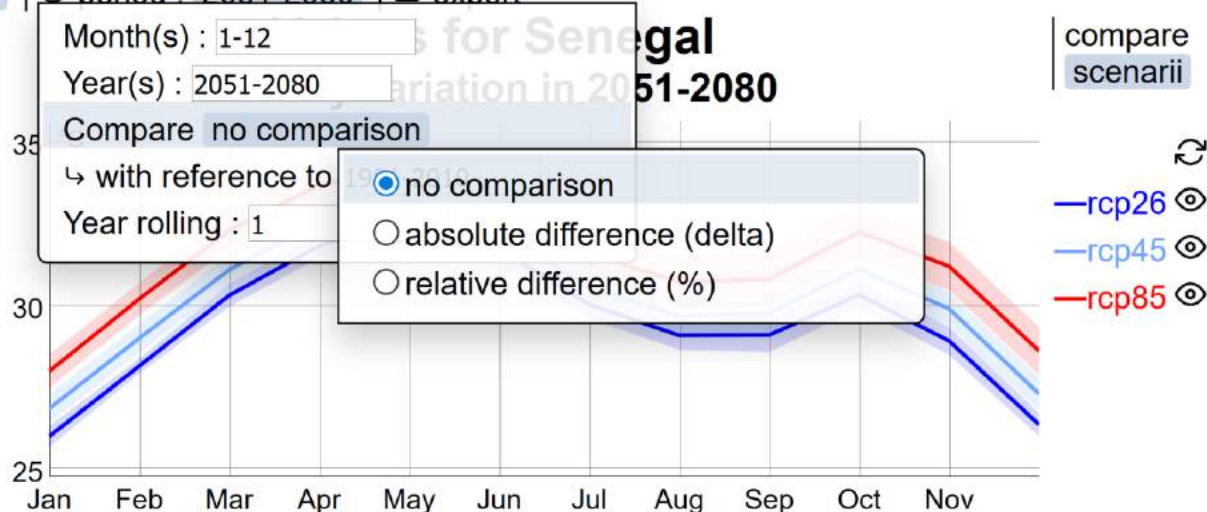
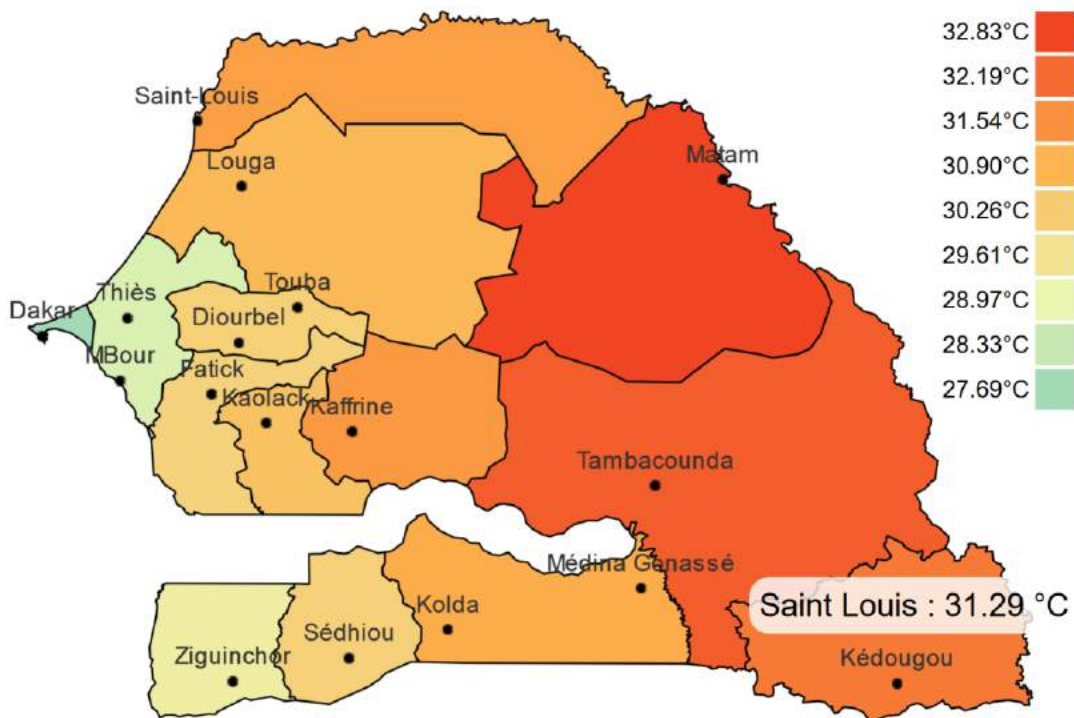
<http://ret1.teledetection.fr/climap/proj/>

## GÉOPORTAIL SENEGAL - PROJECTIONS

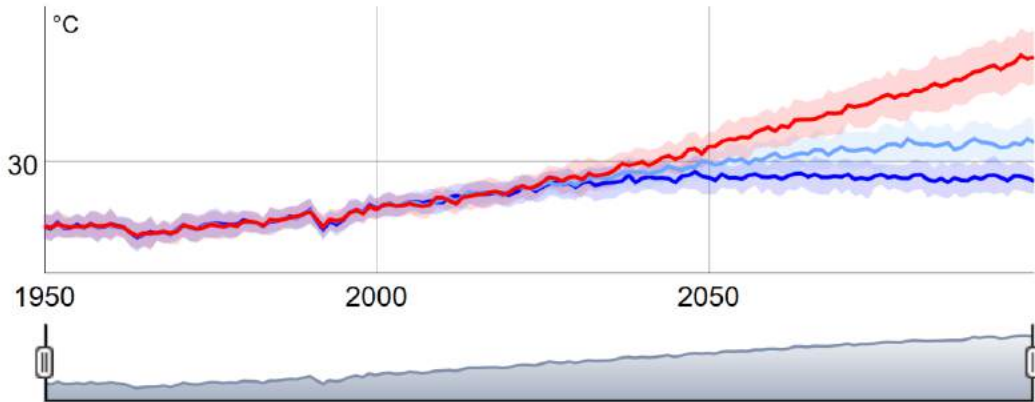
parameter : average temperature | models : 29 | scenario : rcp85 | period : 2051-2080 | export

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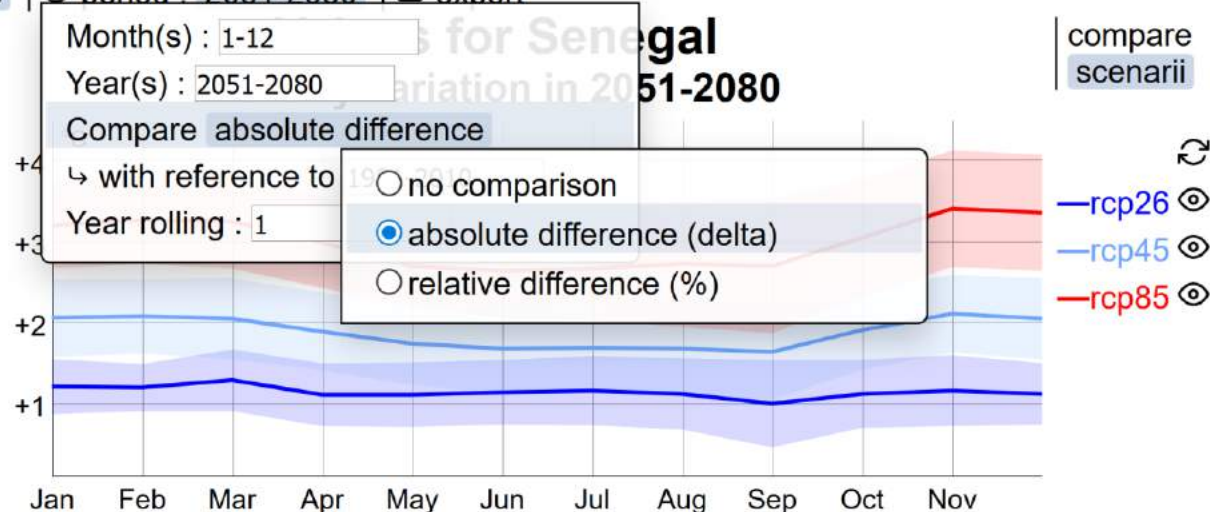
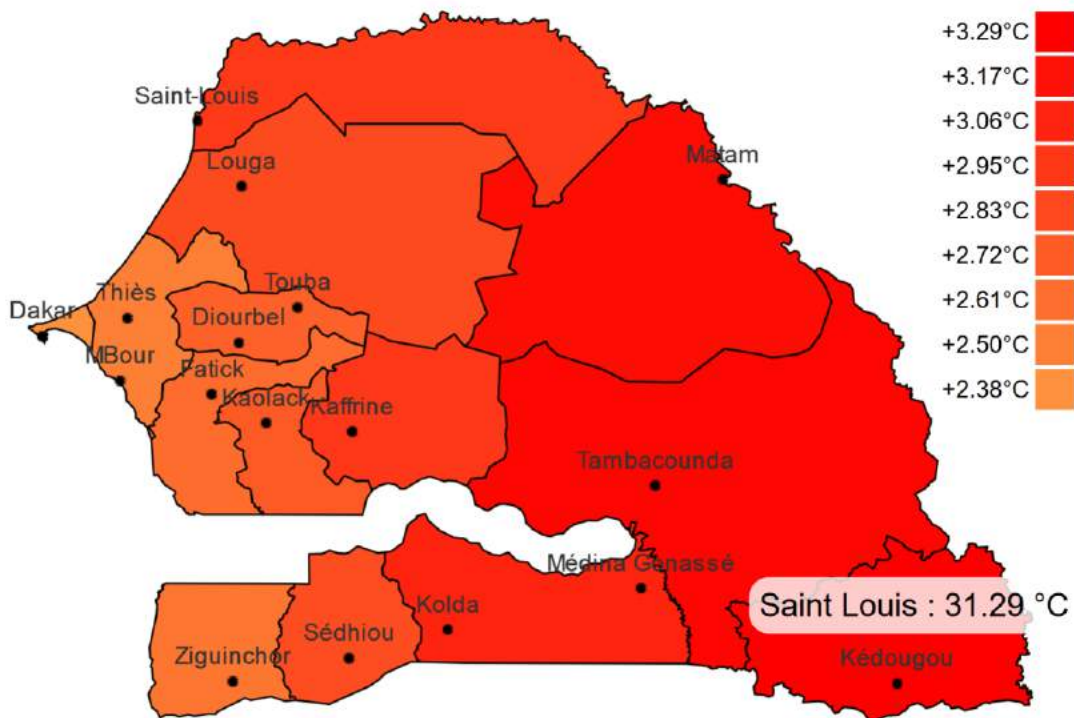
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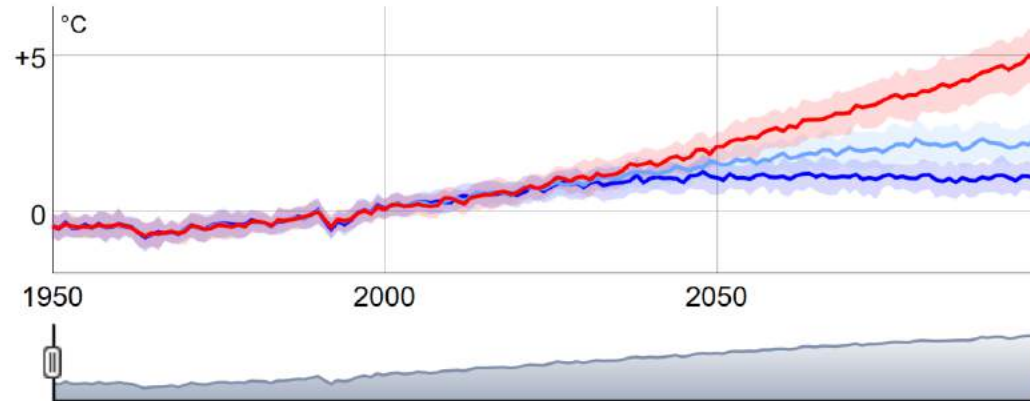
parameter : average temperature | models : 29 | scenario : rcp85 | period : 2051-2080 | export

### Spatial distribution in 2051-2080 (rcp85 scenario)

reset view | selection : region | find place



### Yearly evolution



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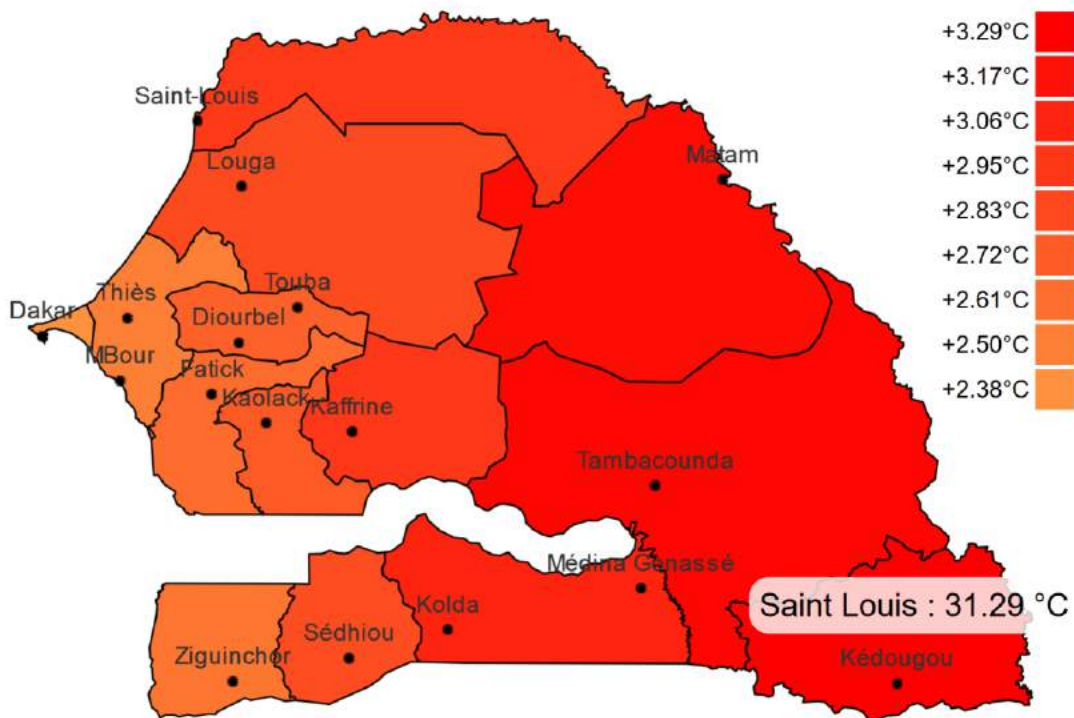
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parameter : average temperature | models : 29 | scenario : rcp85 | period : 2051-2080 | export

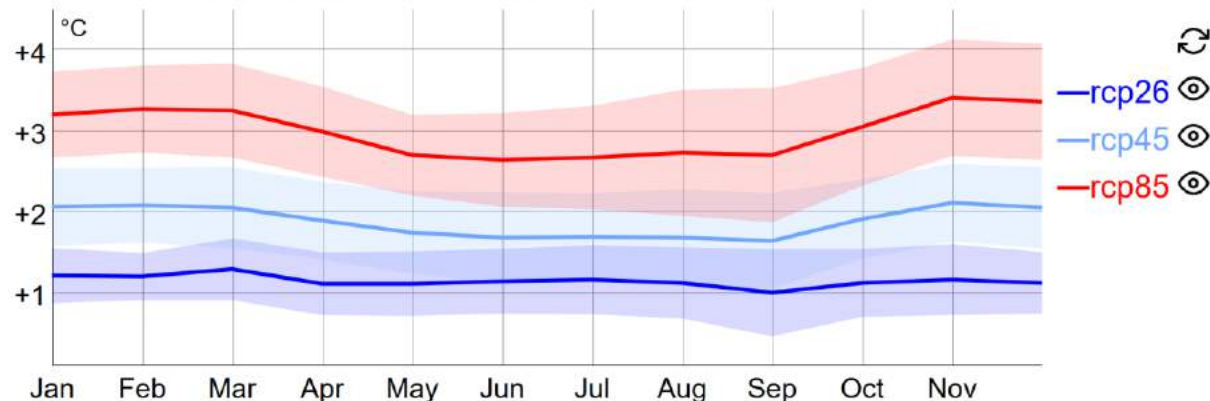
### Spatial distribution in 2051-2080 (rcp85 scenario)

reset view | selection : region | find place

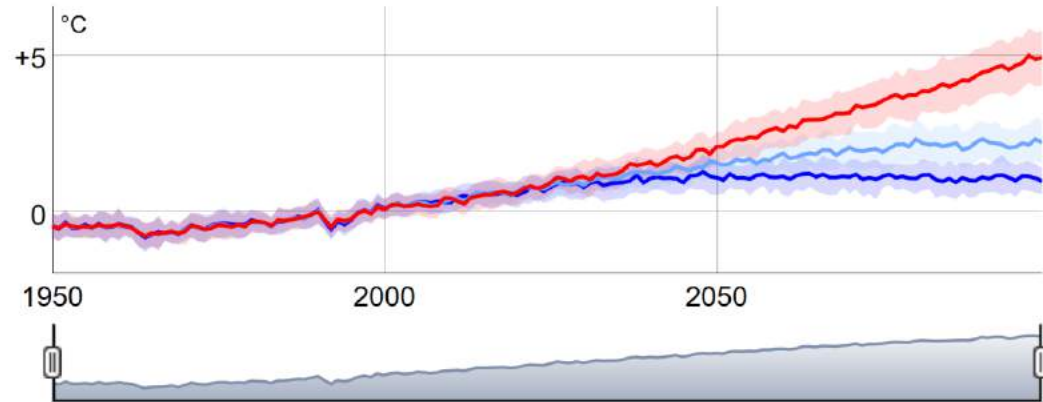


### Values for Senegal Monthly variation in 2051-2080

compare  
scenarii



### Yearly evolution



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<http://ret1.teledetection.fr/climap/proj/>

## GÉOPORTAIL SENEGAL - PROJECTIONS

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parameter : **average temperature** | models : 29 | scenario : **rcp26** | period : **2051-2080** | export

### temperature

- average temperature
- max temperature
- min temperature
- nr of hot days (>40°C)

### precipitation

- max precipitation
- nr of raining days
- river runoff *experimental*
- total rainfall

### agriculture

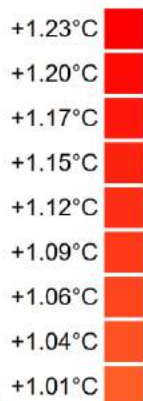
- maize (long cycle) *per year only*
- maize (short cycle) *per year only*
- millet (long cycle) *per year only*
- millet (short cycle) *per year only*
- sorghum (long cycle) *per year only*
- sorghum (short cycle) *per year only*

### custom formula

e.g. `pr[pr>=3]` count

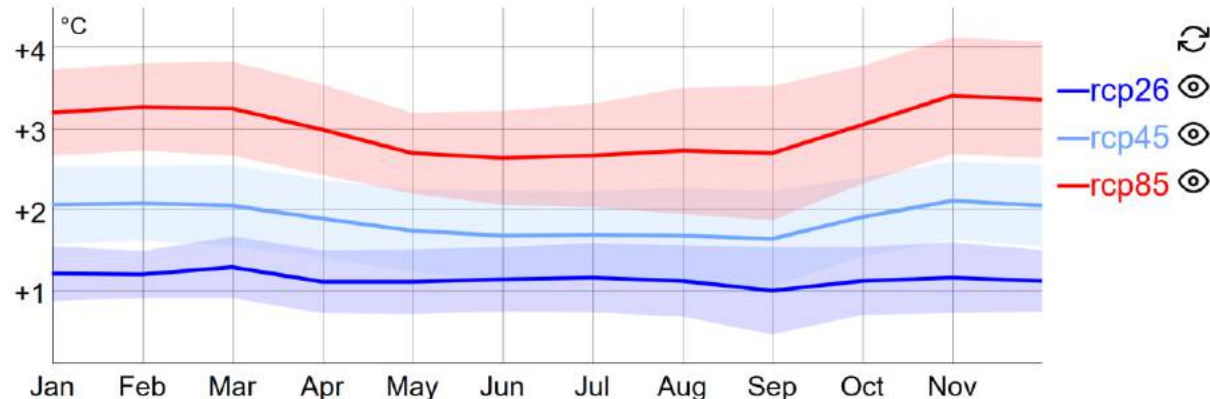
map color : **blue->red (temp)**

[more about parameters](#) - [custom formula usage](#)

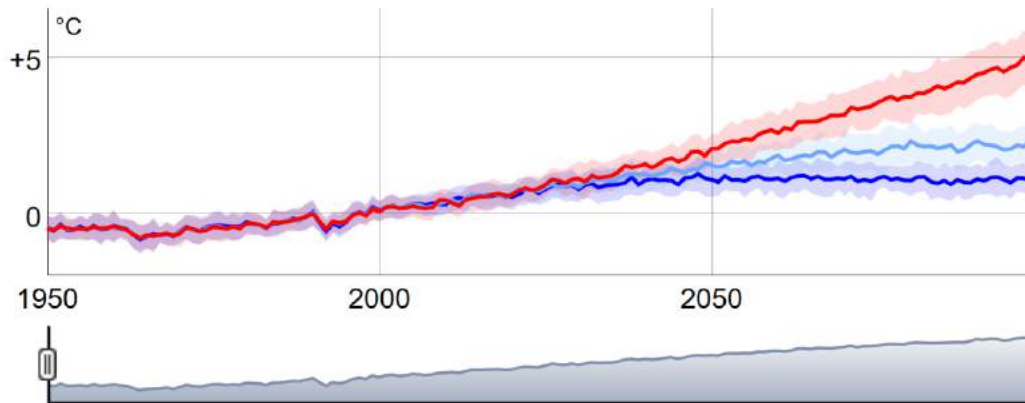


Saint Louis : 31.29 °C

## Values for Senegal Monthly variation in 2051-2080



## Yearly evolution



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Drag-and-click to zoom on bottom chart. Double-click to reset. [Use these bounds](#).



<http://retd1.teledetection.fr/climap/proj/>

## GÉOPORTAIL SENEGAL - PROJECTIONS

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parameter : **maize (short cycle)** | models : 29 | scenario : **rcp26** | period : 2051-2080 | export

### Values for Senegal

compare  
scenarii

#### temperature

- average temperature
- max temperature
- min temperature
- nr of hot days (>40°C)

#### precipitation

- max precipitation
- nr of raining days
- river runoff *experimental*
- total rainfall

#### agriculture

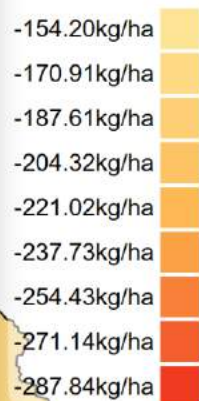
- maize (long cycle) *per year only*
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- millet (long cycle) *per year only*
- millet (short cycle) *per year only*
- sorghum (long cycle) *per year only*
- sorghum (short cycle) *per year only*

#### custom formula

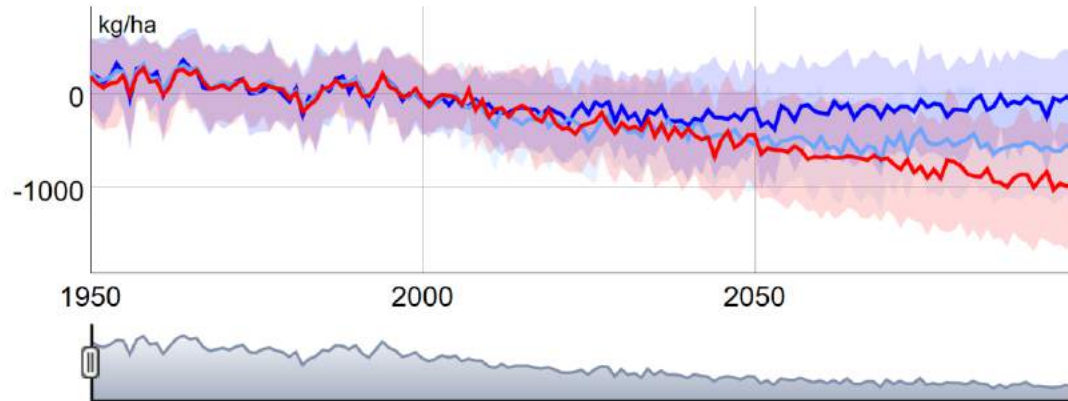
e.g. pr[pr>=3] count

map color : blue->red (temp)

[more about parameters](#) - [custom formula usage](#)



### Yearly evolution



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Drag-and-click to zoom on bottom chart. Double-click to reset. [Use these bounds.](#)

<http://ret1.teledetection.fr/climap/proj/>

## GÉOPORTAIL SENEGAL - PROJECTIONS

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parameter : **maize (short cycle)** | models : 29 | scenario : **rcp26** | period : **2051-2080** | export

Spatial distribution in 2051-2080 (rcp26 scenario)

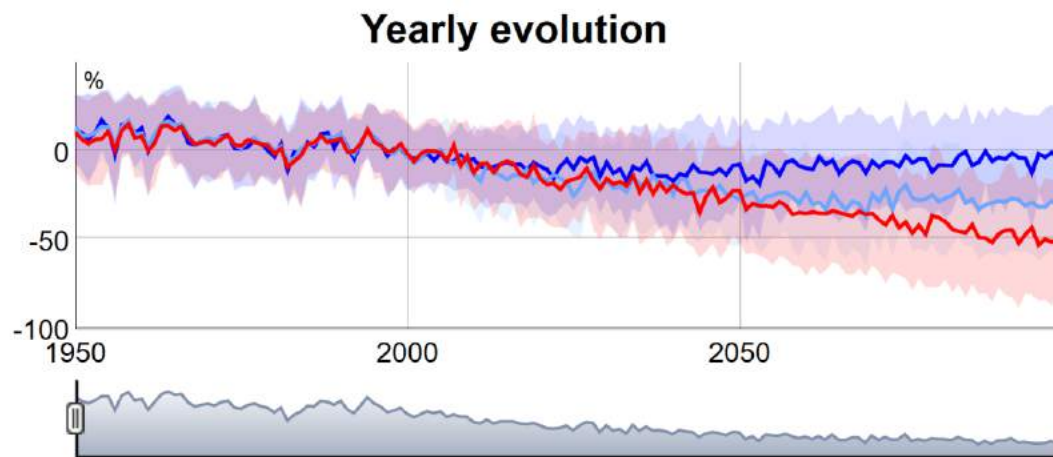
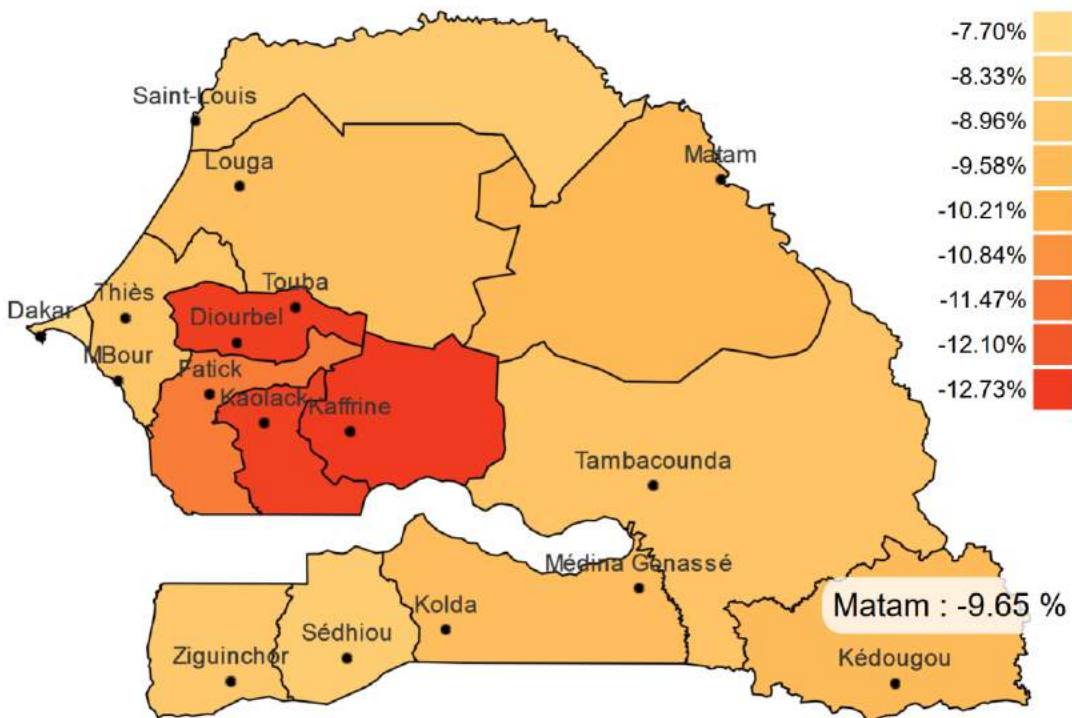
- rcp26 *low emissions (optimistic)*
  - rcp45 *medium emissions*
  - rcp85 *high emissions (pessimistic)*
- [more about scenarii](#)

### Values for Senegal

compare scenarii

reset view | selection : **region** | find place

—rcp26   
—rcp45   
—rcp85



The shaded zone in scenario view is the error bar (i.e. standard deviation of available models). Drag-and-click to zoom on bottom chart. Double-click to reset. [Use these bounds.](#)



<http://ret1.teledetection.fr/climap/proj/>

## GÉOPORTAIL SÉNÉGAL - PROJECTIONS

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parameter : **maize (short cycle)** | models : 29 | scenario : **rcp85** | period : 2051-2080 | export

Spatial distribution in 2051-2080 (rcp85 scenario)

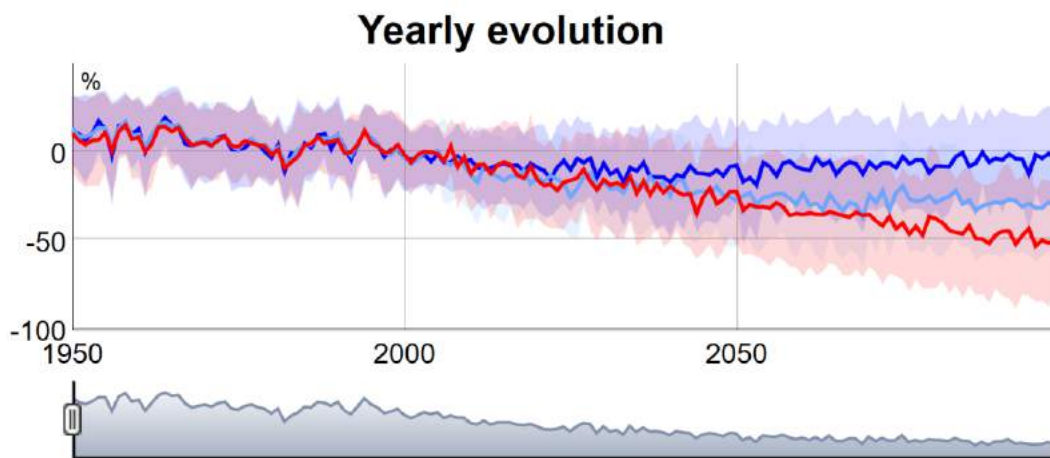
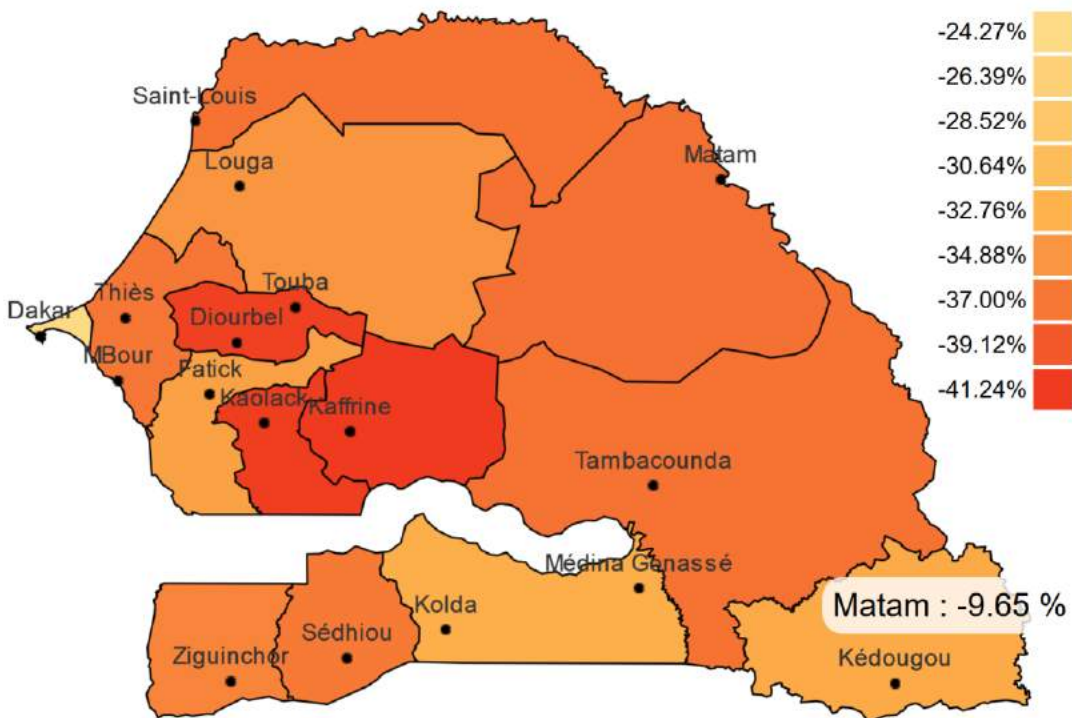
### Values for Senegal

- rcp26 *low emissions (optimistic)*
  - rcp45 *medium emissions*
  - rcp85 *high emissions (pessimistic)*
- [more about scenarii](#)

compare scenarii

reset view | selection : **region** | find place

- rcp26
- rcp45
- rcp85



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<http://ret1.teledetection.fr/climap/proj/>

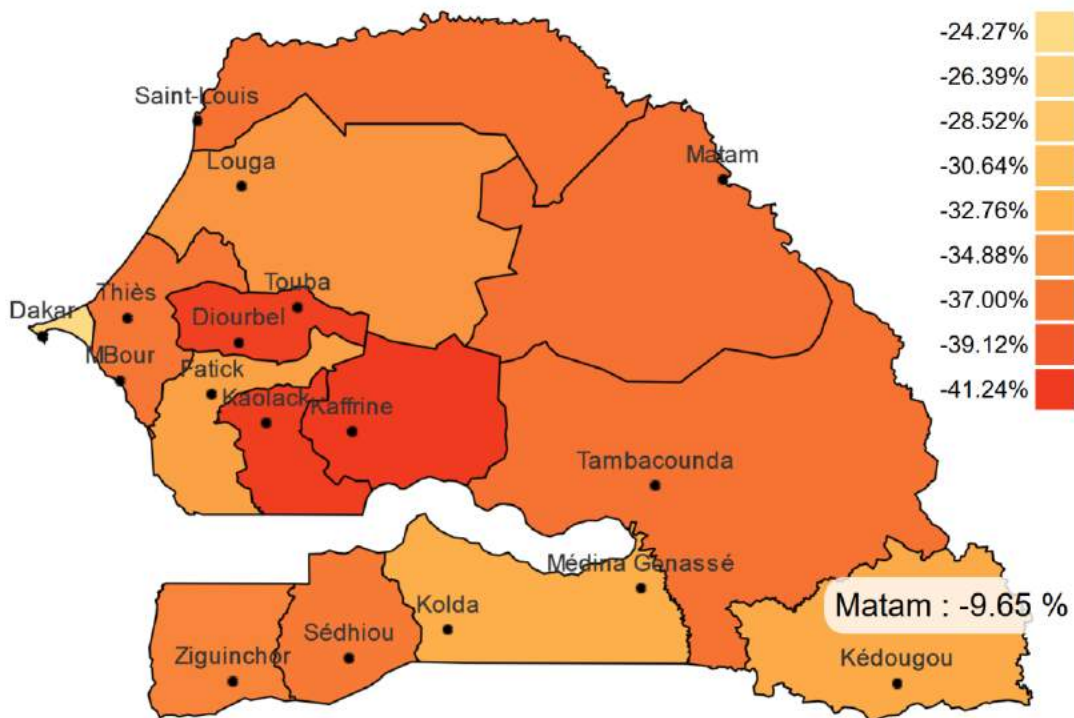
## GÉOPORTAIL SENEGAL - PROJECTIONS

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parameter : **maize (short cycle)** | models : 29 | scenario : **rcp85** | period : 2051-2080 | export

### Spatial distribution in 2051-2080 (rcp85 scenario)

reset view | selection : **region** | find place



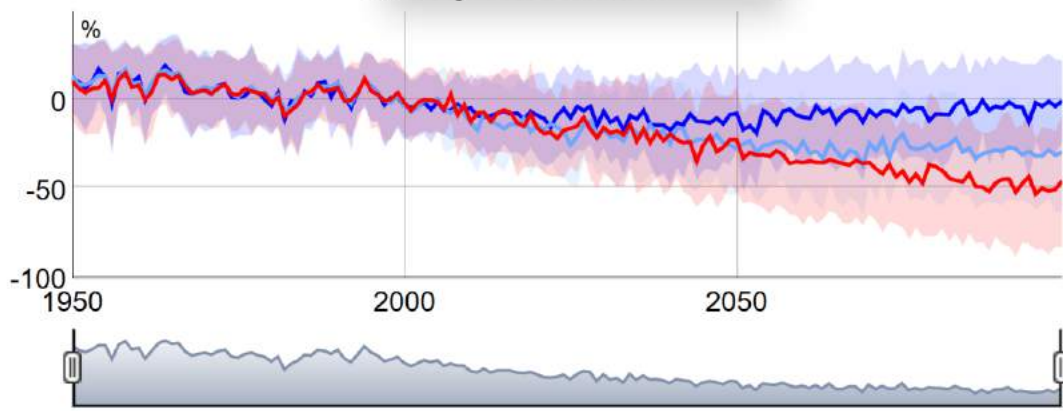
Value

- as image
  - png (image)
  - jpg (image)
  - svg (scalable vector)
  - pdf (document)
- data only
  - yearly csv · xls
- direct download
- metrics :
  - averaged
  - by model
  - raw parameters

compare scenarii

- rcp26
- rcp45
- rcp85

Yearly evolution



The shaded zone in scenario view is the error bar (i.e. standard deviation of available models). Drag-and-click to zoom on bottom chart. Double-click to reset. Use these bounds.

## Direct data download

- metrics
  - averaged
  - by model
- raw parameters

## Average metrics

Monthly or **yearly** data csv files with regions as columns, filled with average model value.

	rcp26	rcp45	rcp85
total rainfall	<a href="#">cumul_rcp26</a>	<a href="#">cumul_rcp45</a>	<a href="#">cumul_rcp85</a>
nr of raining days	<a href="#">prdays_rcp26</a>	<a href="#">prdays_rcp45</a>	<a href="#">prdays_rcp85</a>
max precipitation	<a href="#">prmax_rcp26</a>	<a href="#">prmax_rcp45</a>	<a href="#">prmax_rcp85</a>
river runoff	<a href="#">runoff_rcp26</a>	<a href="#">runoff_rcp45</a>	<a href="#">runoff_rcp85</a>
nr of hot days (>40°C)	<a href="#">hotdays_rcp26</a>	<a href="#">hotdays_rcp45</a>	<a href="#">hotdays_rcp85</a>
average temperature	<a href="#">tasavr_rcp26</a>	<a href="#">tasavr_rcp45</a>	<a href="#">tasavr_rcp85</a>
max temperature	<a href="#">tasmax_rcp26</a>	<a href="#">tasmax_rcp45</a>	<a href="#">tasmax_rcp85</a>
min temperature	<a href="#">tasmin_rcp26</a>	<a href="#">tasmin_rcp45</a>	<a href="#">tasmin_rcp85</a>
maize (long cycle)	<a href="#">mais120_rcp26</a>	<a href="#">mais120_rcp45</a>	<a href="#">mais120_rcp85</a>
maize (short cycle)	<a href="#">mais90_rcp26</a>	<a href="#">mais90_rcp45</a>	<a href="#">mais90_rcp85</a>
millet (long cycle)	<a href="#">mil120_rcp26</a>	<a href="#">mil120_rcp45</a>	<a href="#">mil120_rcp85</a>
millet (short cycle)	<a href="#">mil90_rcp26</a>	<a href="#">mil90_rcp45</a>	<a href="#">mil90_rcp85</a>
sorghum (long cycle)	<a href="#">sor120_rcp26</a>	<a href="#">sor120_rcp45</a>	<a href="#">sor120_rcp85</a>
sorghum (short cycle)	<a href="#">sor90_rcp26</a>	<a href="#">sor90_rcp45</a>	<a href="#">sor90_rcp85</a>



# ECOMORE2 PLATFORM CALENDAR



**T0+3months**

First list of data to be displayed

Identification of expected services

First draft of the platform

**T0+6months**

Final list of data to be displayed

Final list of the platform services

Improved draft of the platform

**T0+9months**

Final list of data to be displayed

Second draft of the platform

**T0+12months**

Version 1 of the ECOMORE2 platform with manual

**T0+18months**

Second and final improved version of the ECOMORE2 platform with manual



# First work on data to feed the platform

## 1. Climate observations

- Historical data

## 2. Climate models

- Historical period
- RCP4.5 and 8.5 projections

## 3. Health risks

- Climate indicators related to health
- Health model outputs

**For each dataset, we need to decide the rights and put some restricted access. If climate data should be accessible for all, health indicators or impact model outputs may need restricted access**

# First work on data to feed the platform

- Format: downloadable images, downloadable data
- Ecomore2 contact: Country referents and data providers were identified during a transversal meeting on March 2018 at Bangkok.
- Display expectations: maps (pixels, provinces), geographical points on a map, seasonal cycle, interannual time series, time horizons...
- Should be open for new data even after ECOMORE2: collaboration with GEMMES, integration of monitoring and forecasting tools

**Any feedback welcome!**

Link to the Project web site



[Project Partners](#) | [Regional Maps](#) | [Vietnam Maps](#) | [References](#)

# Brief introduction of the platform and Ecomore2 Project objectives





Link to the Project web site



[Project Partners](#) | [Climate change Maps](#) | [References](#)

**Presentation of the Ecomore2 partners and especially of those contributing to the platform. References to the data displayed and the method to generate them.**





Link to the Project web site



ECOMORE II

Project Partners | **Climate change Maps** | References

Regional or Country

Variable

Emission scenario

Period

Spatial resolution

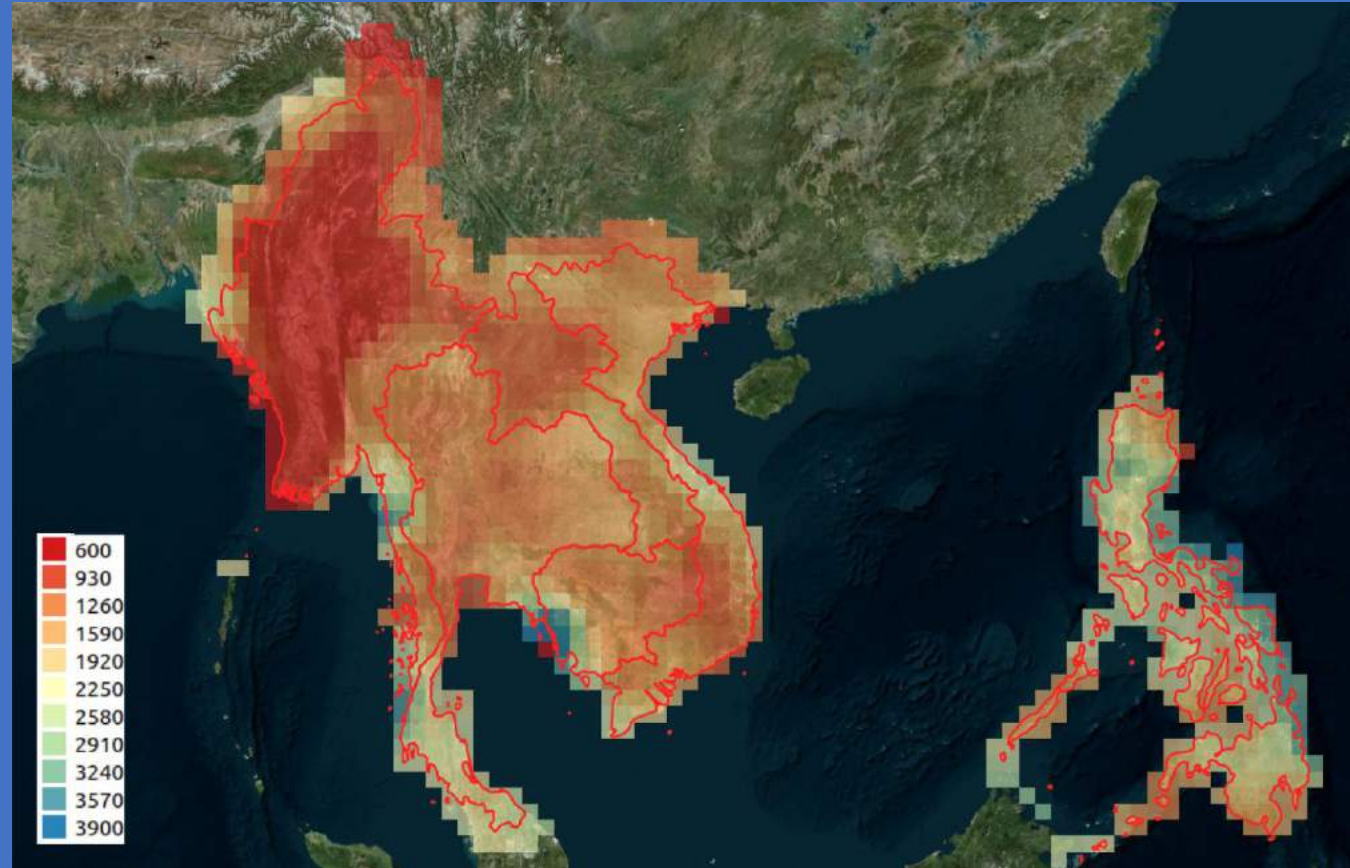
(25km/Province)

Value (abs., diff)

Options:

Modify color scale

Select export



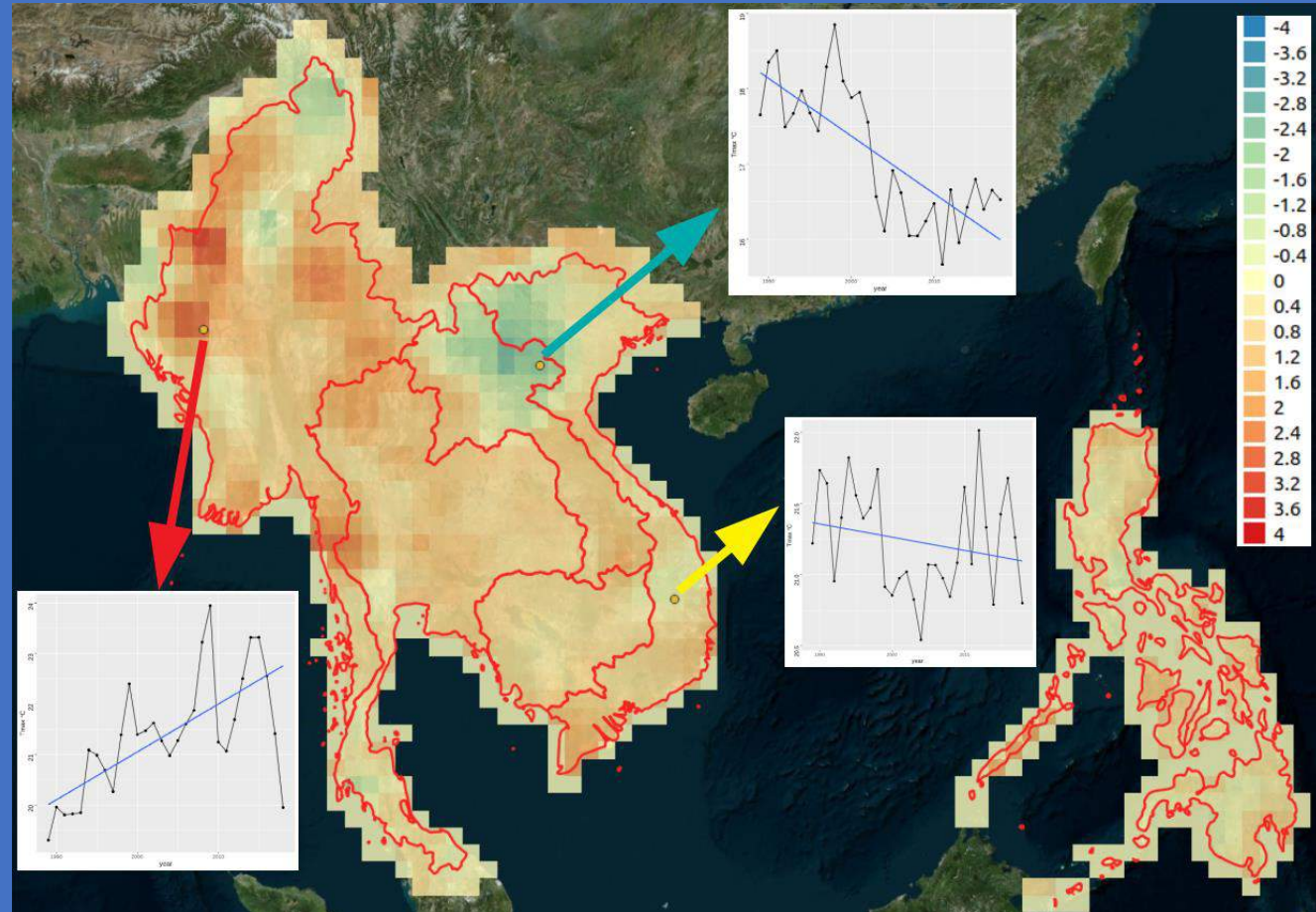
Link to the Project web site



Project Partners | **Climate change Maps** | References

Regional or Country

When selecting a Province or pixel, open a pop-up with time series: seasonal cycle, daily histogram,...



# Decision Support Tool for disease risk management



The co-production of knowledge with end-users is crucial for ECOMORE2

- Authorities must be the final users of this tool. We need to identify the users in each country with authorities. By the end of the year, we need to decide in each country which authorities we have to involve.
- Within the Knowledge Translation activities, we will constitute working groups for each ECOMORE2 country. A video-meeting with ECOCLIMASOL presenting the progress of the platform to each working group could be organized every 3 months to get feedbacks.



Decision Support Tool for disease risk management

**ECOMORE2**  
**Climate Change**  
**Web Platform**



Thank you for your attention