
Evolution climatiques en cours sur le Massif central

Résultats du projet AP3C

Vincent CAILLIEZ (SIDAM)

Webinaire Commissariat du Massif central

le 28/11/2023



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**AGENCE
NATIONALE
DE LA COHÉSION
DES TERRITOIRES**
Commissariat du Massif central



La Région 
Auvergne-Rhône-Alpes

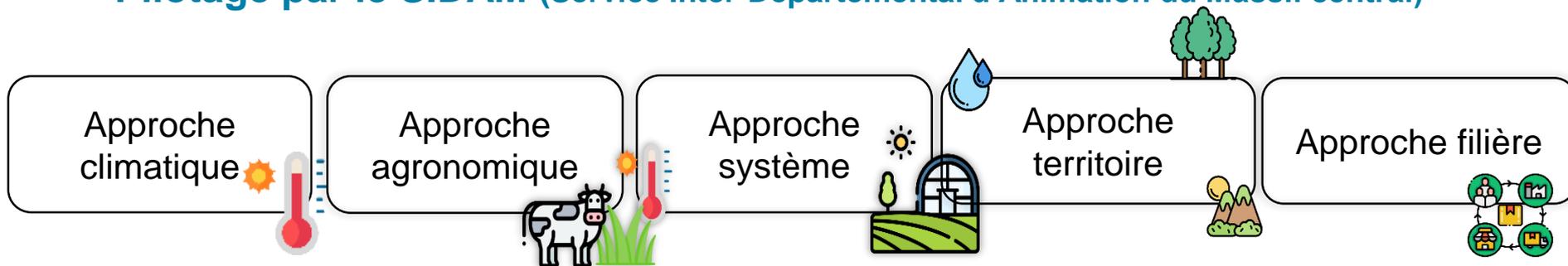
 **RÉGION
Nouvelle-
Aquitaine**

➤ Le projet AP3C

(Adaptation des Pratiques Culturelles au
Changement Climatique)

Le projet AP3C

Pilotage par le SIDAM (Service Inter-Départemental d'Animation du Massif central)



- Quelles évolutions du climat sur le Massif central à l'horizon 2050 ?
- Quels impacts du changement climatique sur l'agriculture du Massif central (37 IAC, 65 IAPC)? Quels leviers d'adaptation à l'échelle parcellaire ?
- Quels impacts du changement climatique et quels leviers d'adaptation à l'échelle du système agricole ?
- Quels impacts du changement climatique à l'échelle du territoire du Massif central ?
- Quels impacts du changement climatique à l'échelle des filières ?

Approche climatique

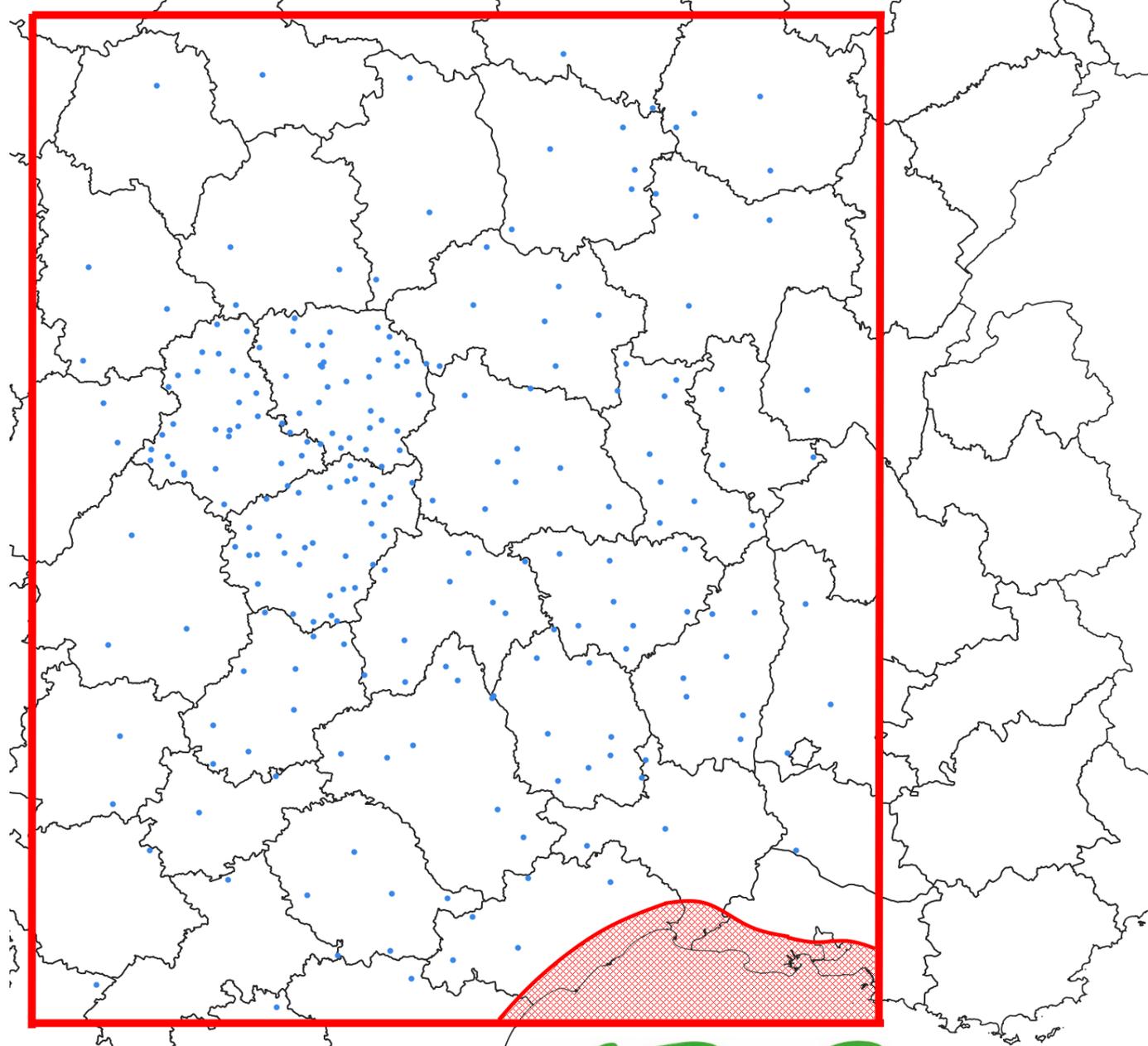
➤ Projections habituellement mises à disposition (DRIAS - les futurs du climat, ...)

- Modèles physiques de Recherche
- Compréhension des phénomènes

➤ Projections AP3C

- Outil de description
- 10 000 projections
- Pixel 500 mètres
- Compatibilité avec les trajectoires engagées sur le territoire

AP3C:
réseaux



➤ Projections climatiques AP3C

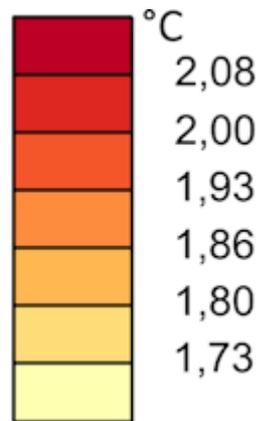
Evolution

des températures

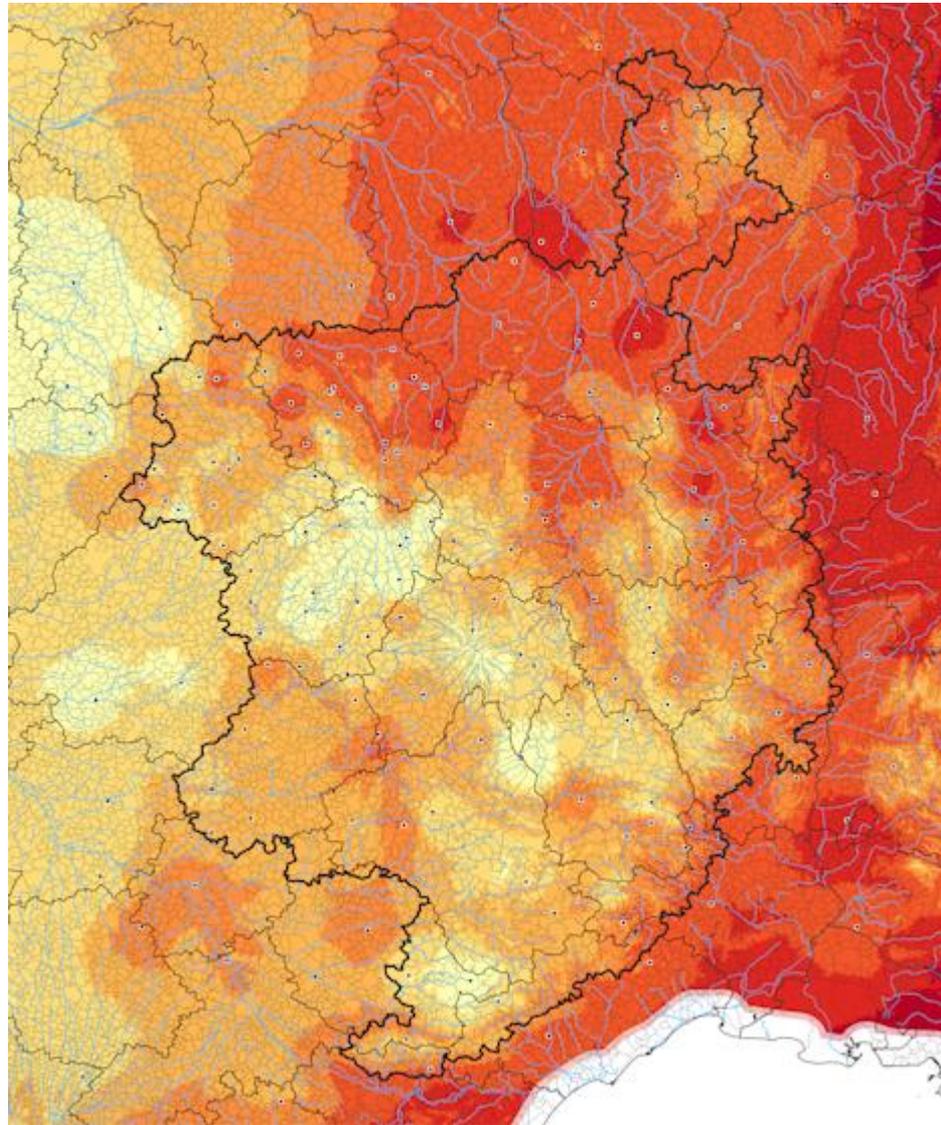
des précipitations

du bilan hydrique potentiel (pluie –ETP)

Température moyenne annuelle



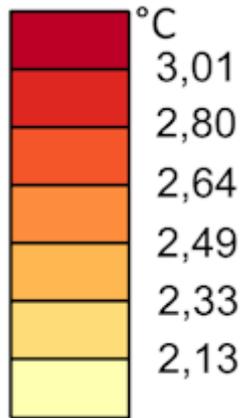
Evolution
2000-2050



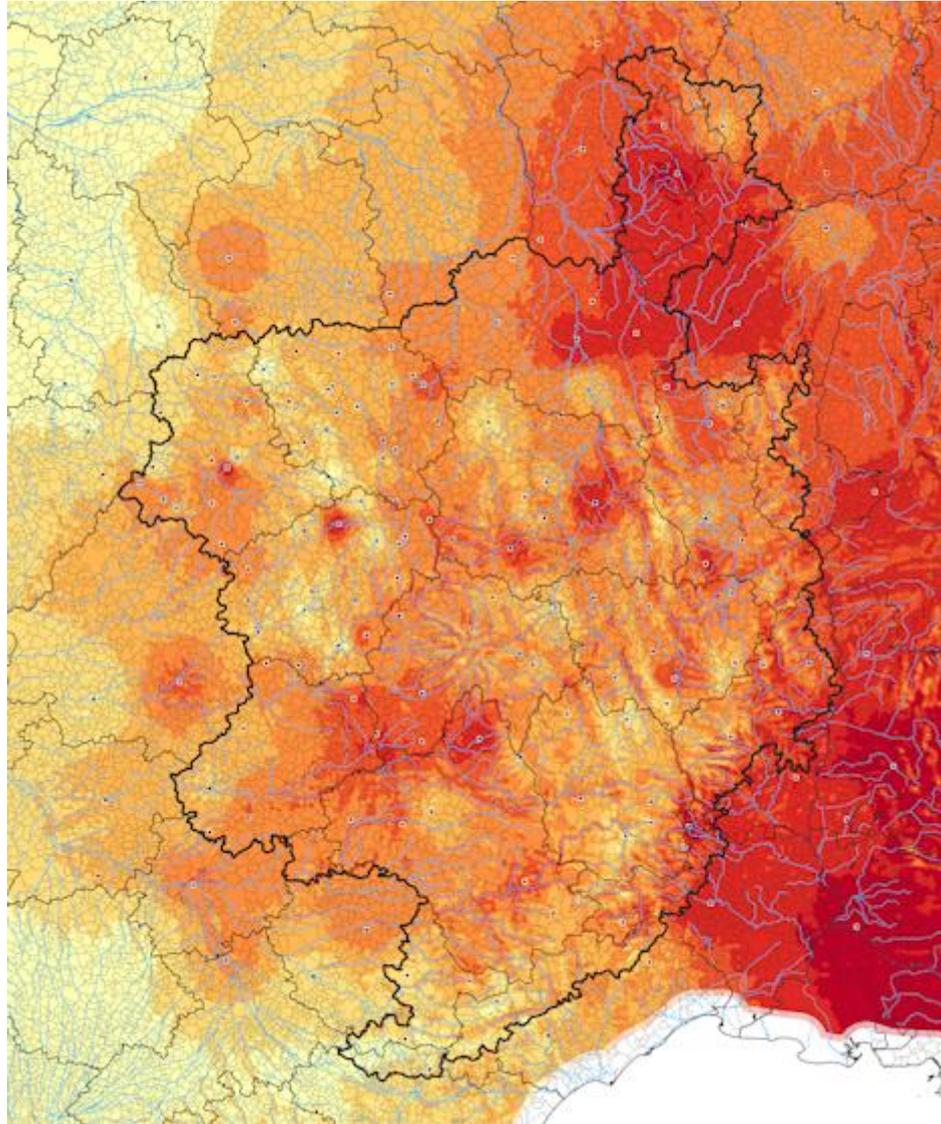
Grand domaine
(version 2023)

Source : SIDAM-AP3C Vincent Cailliez 2023

Température moyenne printemps (MAM)

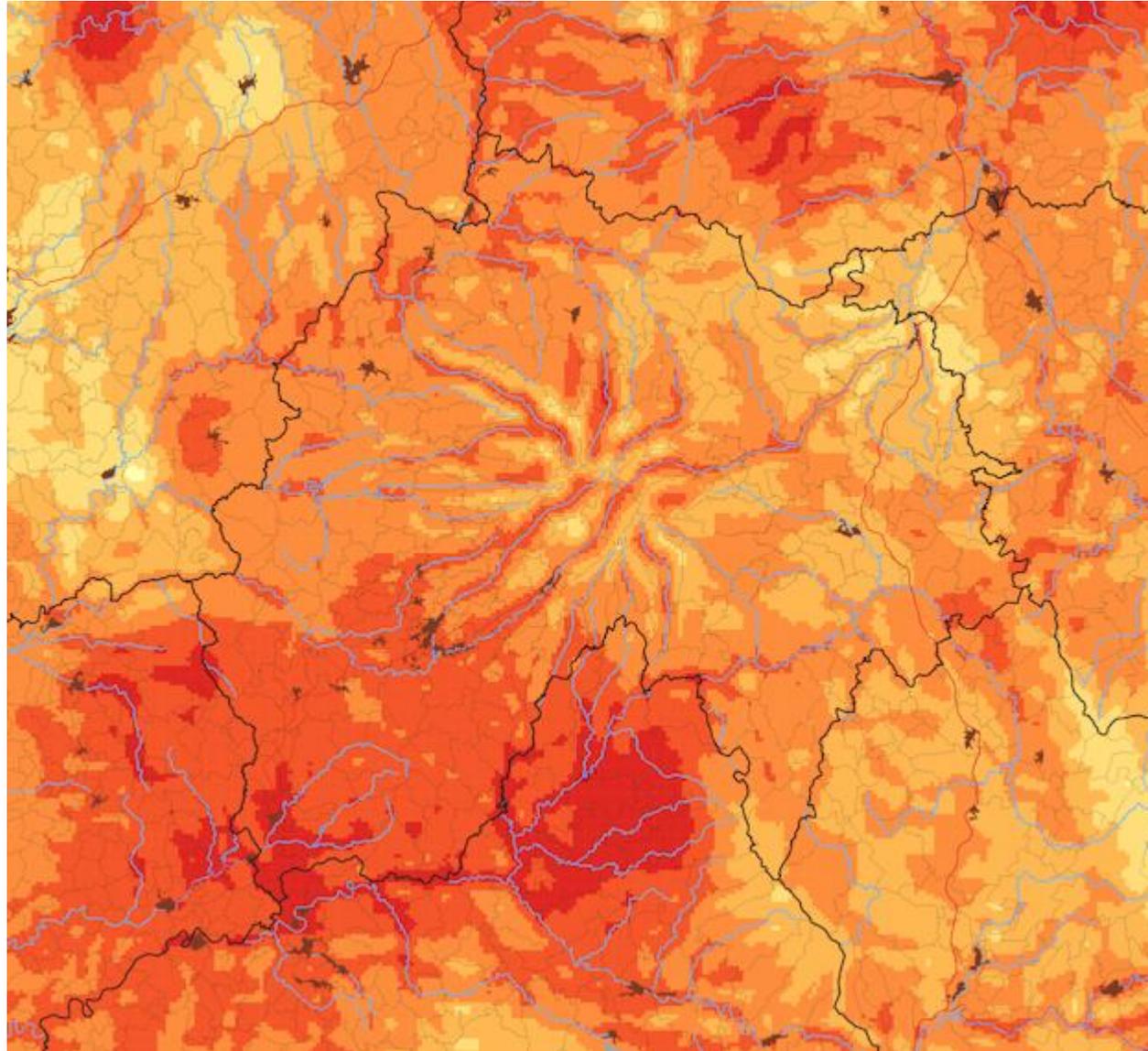
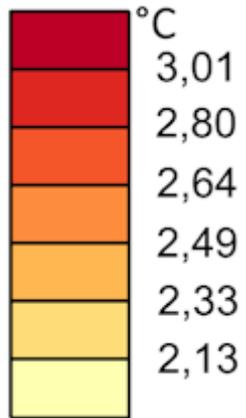


Evolution
2000-2050



Source : SIDAM-AP3C Vincent Cailliez 2023

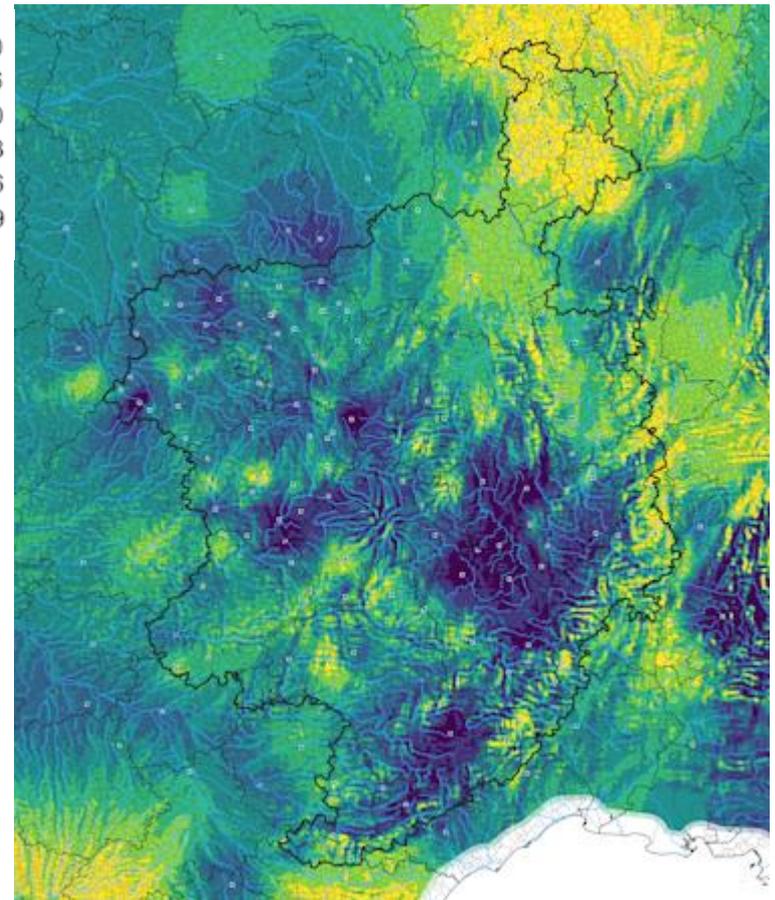
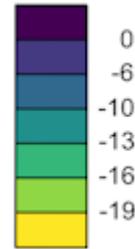
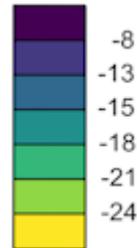
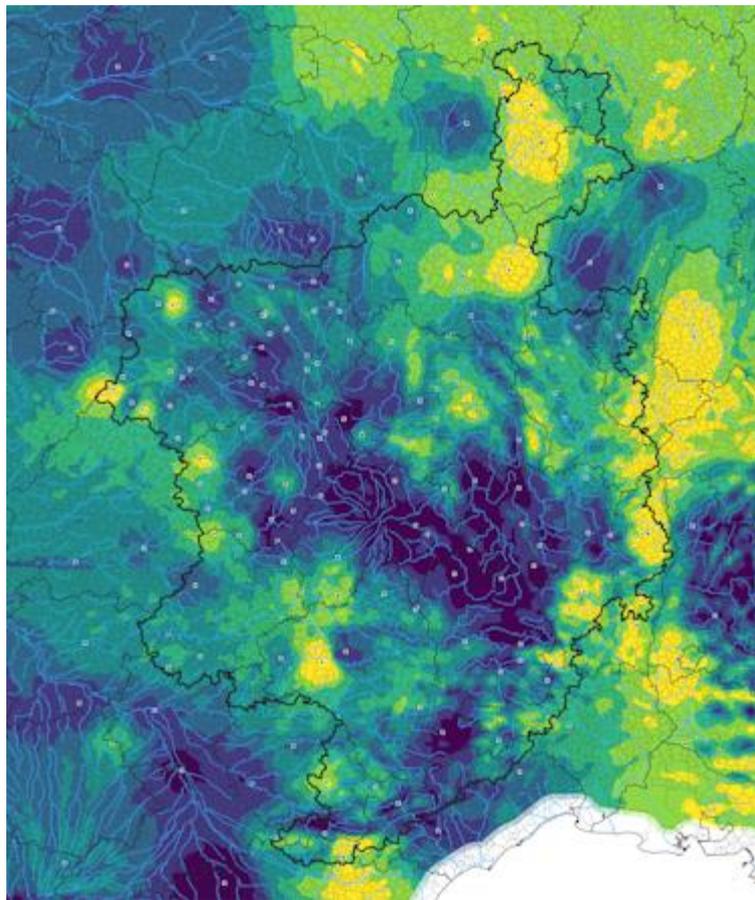
Température moyenne printemps (Cantal)



Evolution
2000-2050

Source : SIDAM-AP3C Vincent Cailliez 2023

Date de dernière gelée de printemps (n° jour)



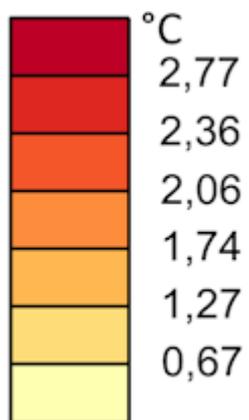
Années décennales précoces

Années décennales tardives

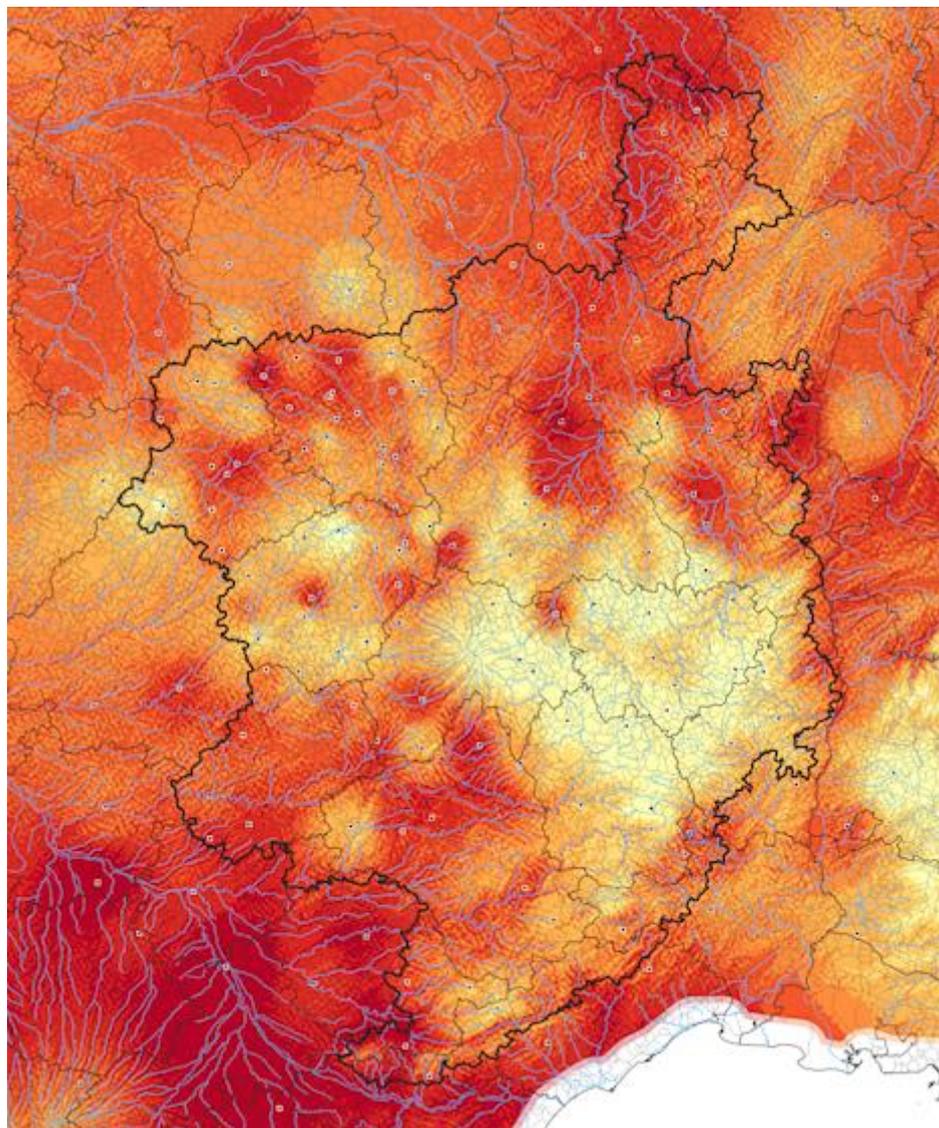
Evolution 2000-2050

Source : SIDAM-AP3C Vincent Cailliez 2023

Température moyenne été (JJA)

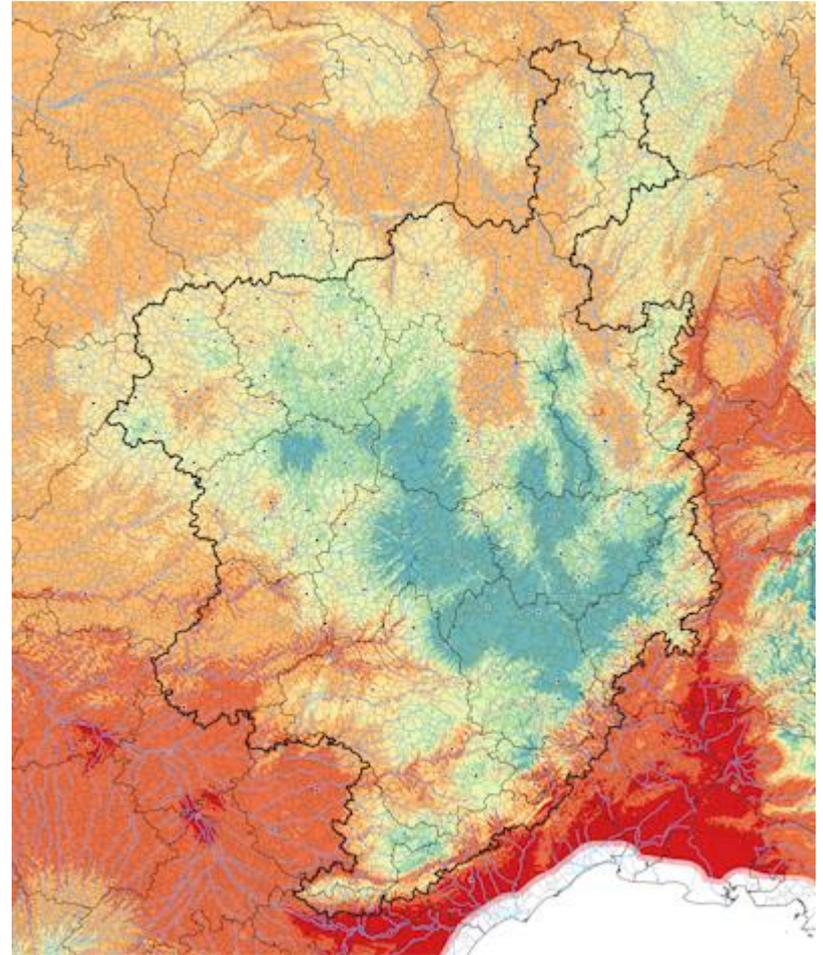
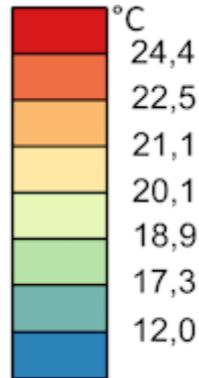
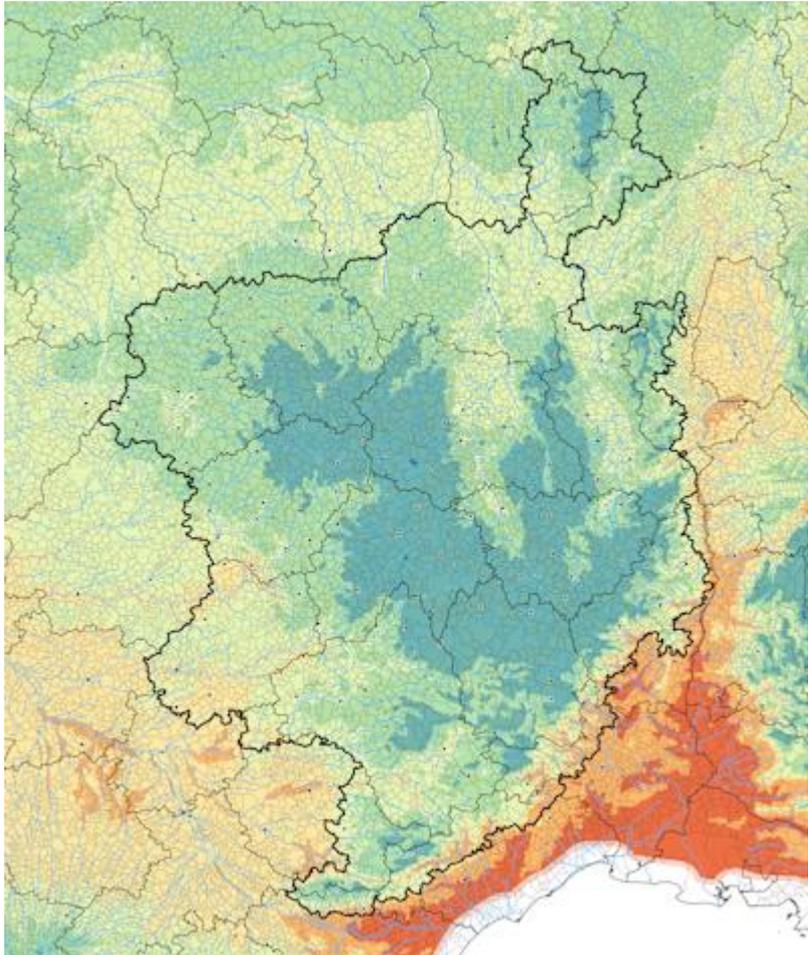


Evolution
2000-2050



Source : SIDAM-AP3C Vincent Cailliez 2023

Température moyenne été

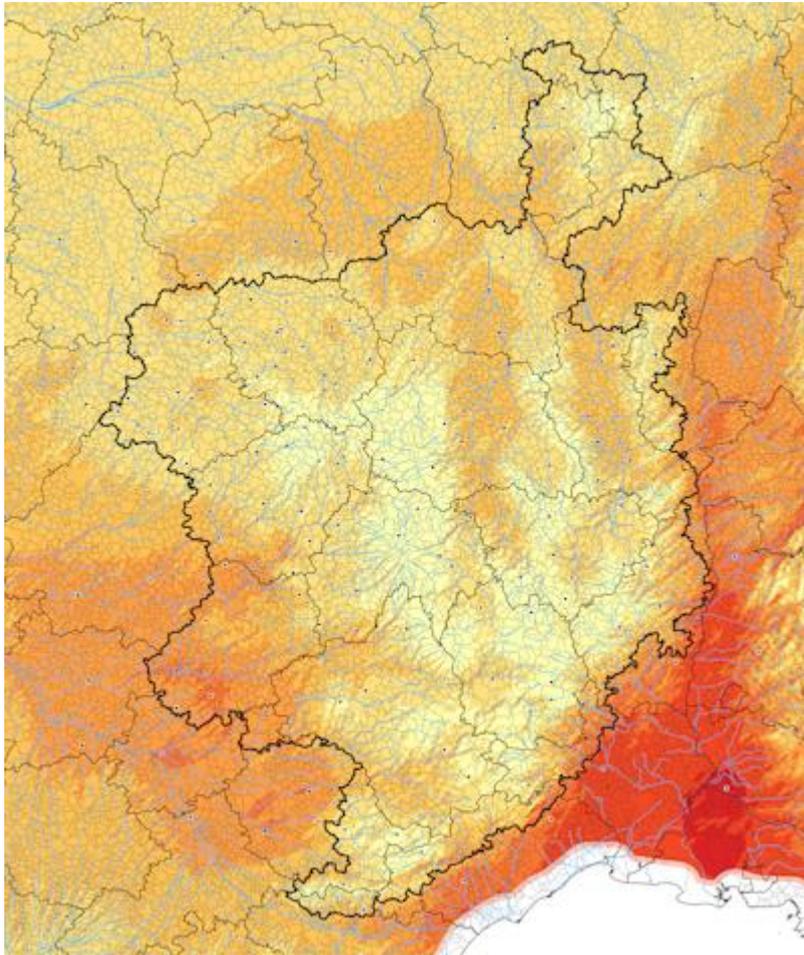


Source : SIDAM-AP3C Vincent Cailliez 2023

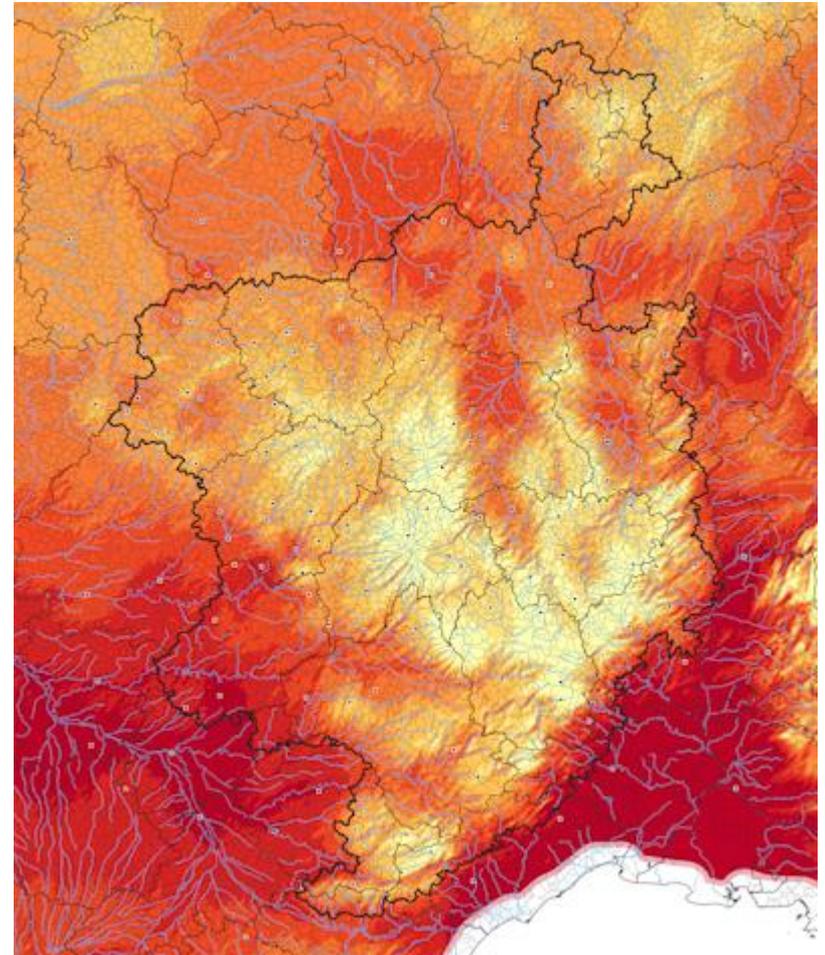
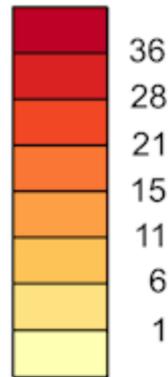
Situation 2000

Situation 2050

Températures élevées (nb jours où Temp.>32°C)



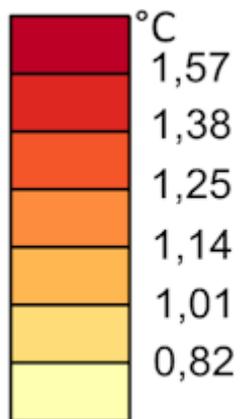
Situation 2000



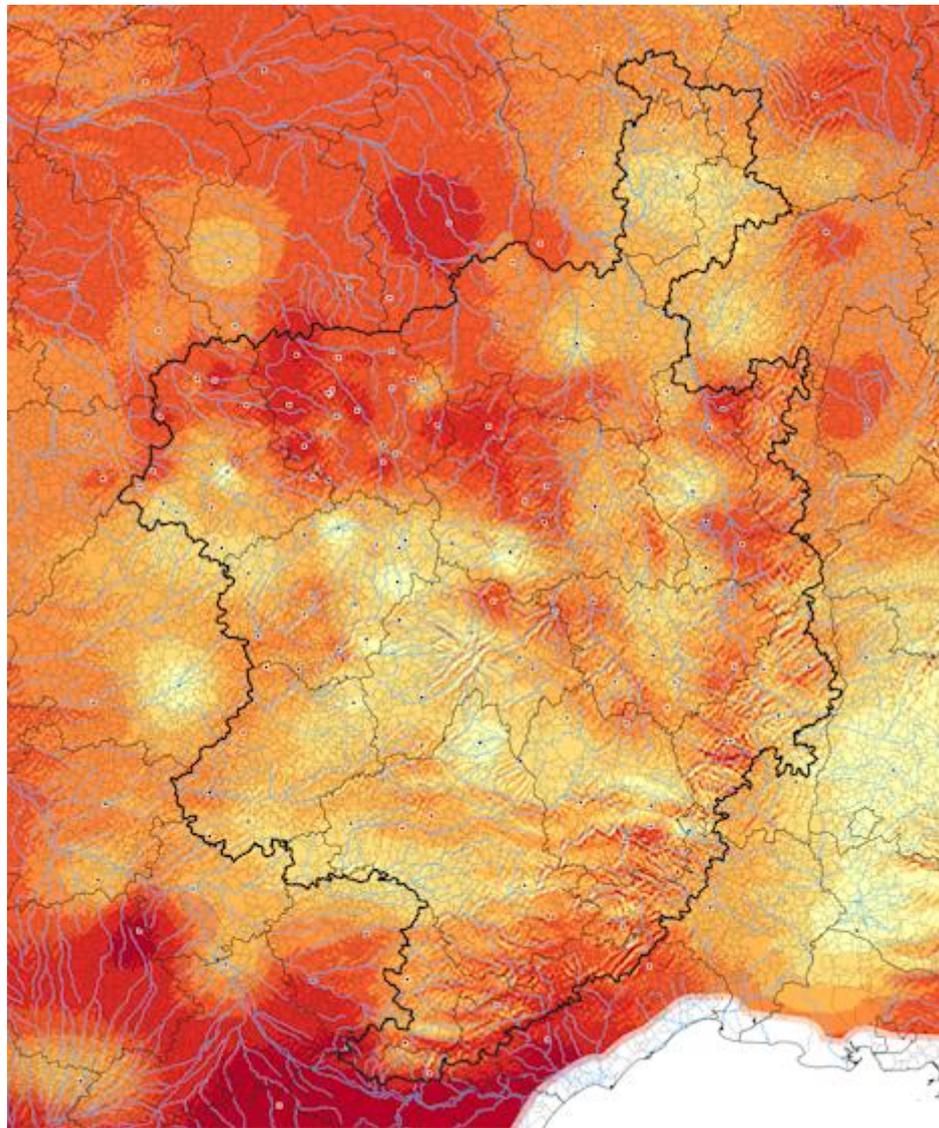
Source : SIDAM-AP3C Vincent Cailliez 2023

Situation 2050

Température moyenne automne (SON)

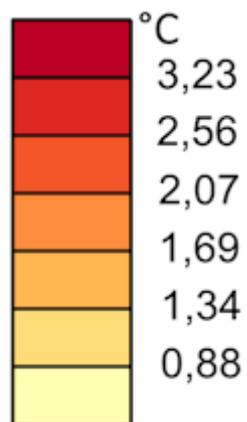


Evolution
2000-2050

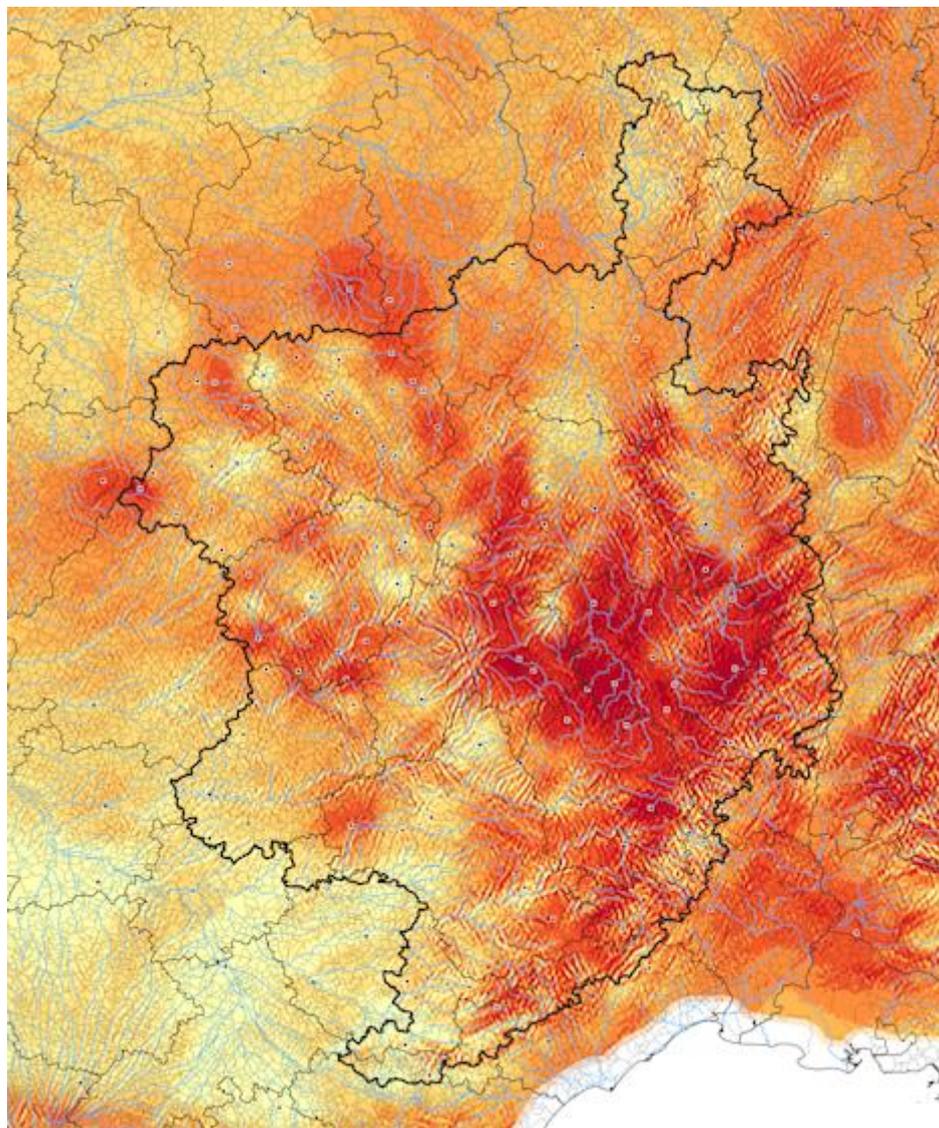


Source : SIDAM-AP3C Vincent Cailliez 2023

Température moyenne hiver (DJF)

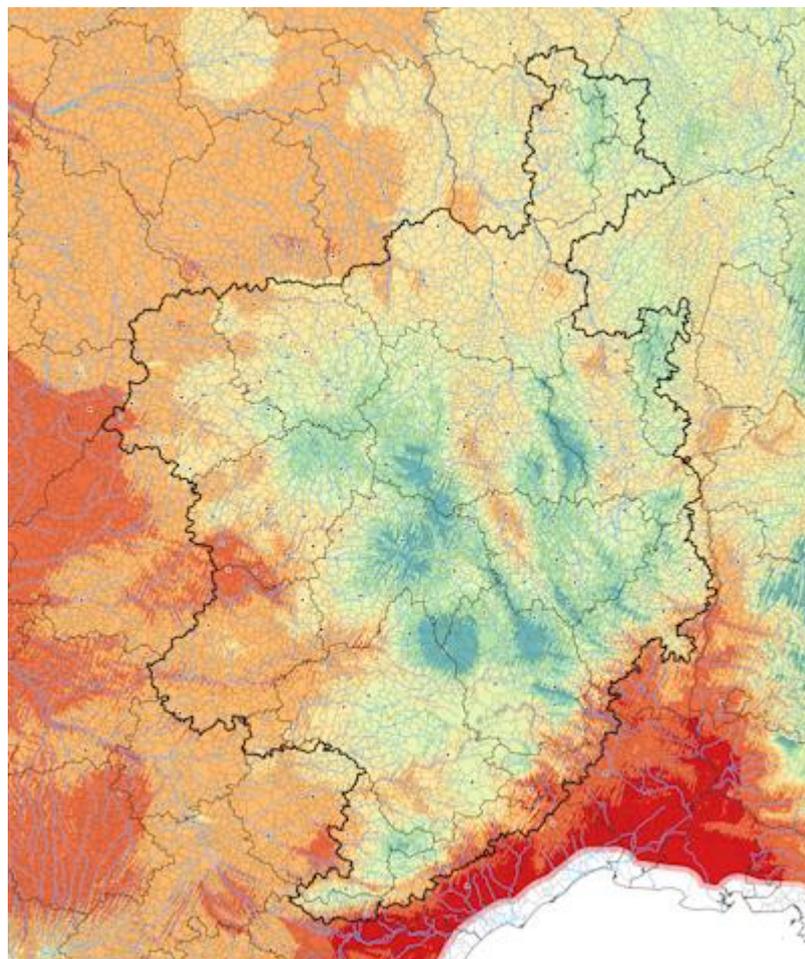
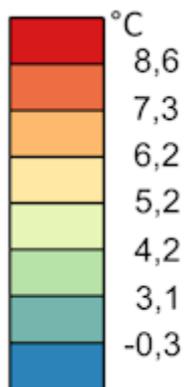
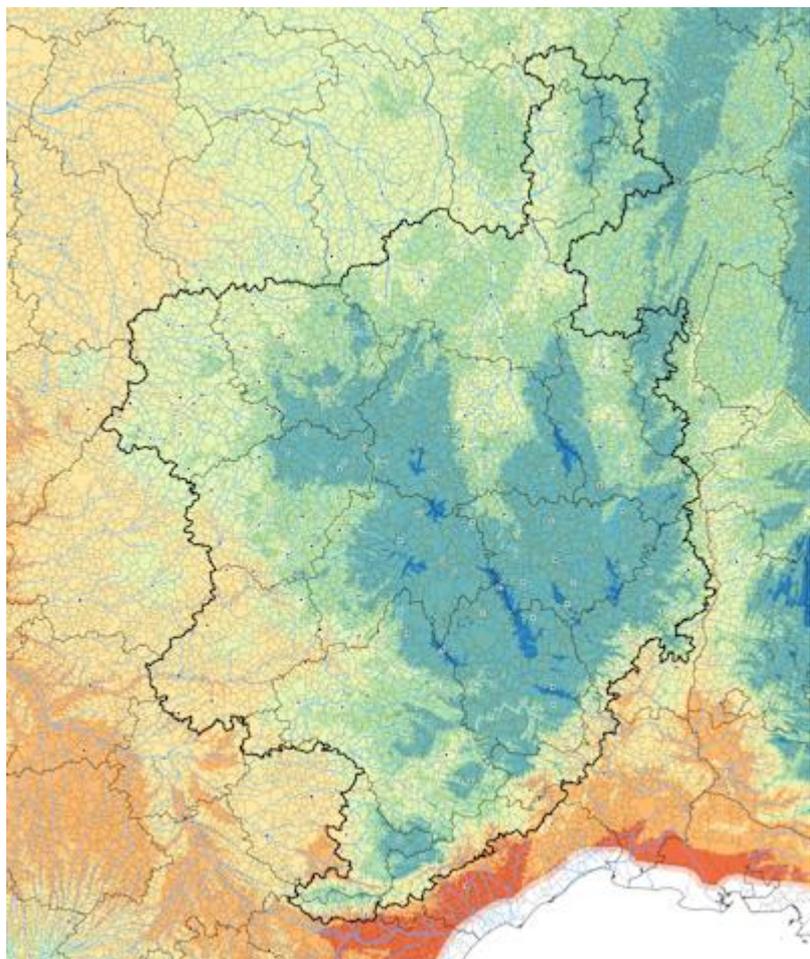


Evolution
2000-2050



Source : SIDAM-AP3C Vincent Cailliez 2023

Température moyenne hiver (DJF)

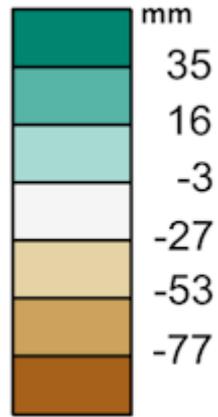


Source : SIDAM-AP3C Vincent Cailliez 2023

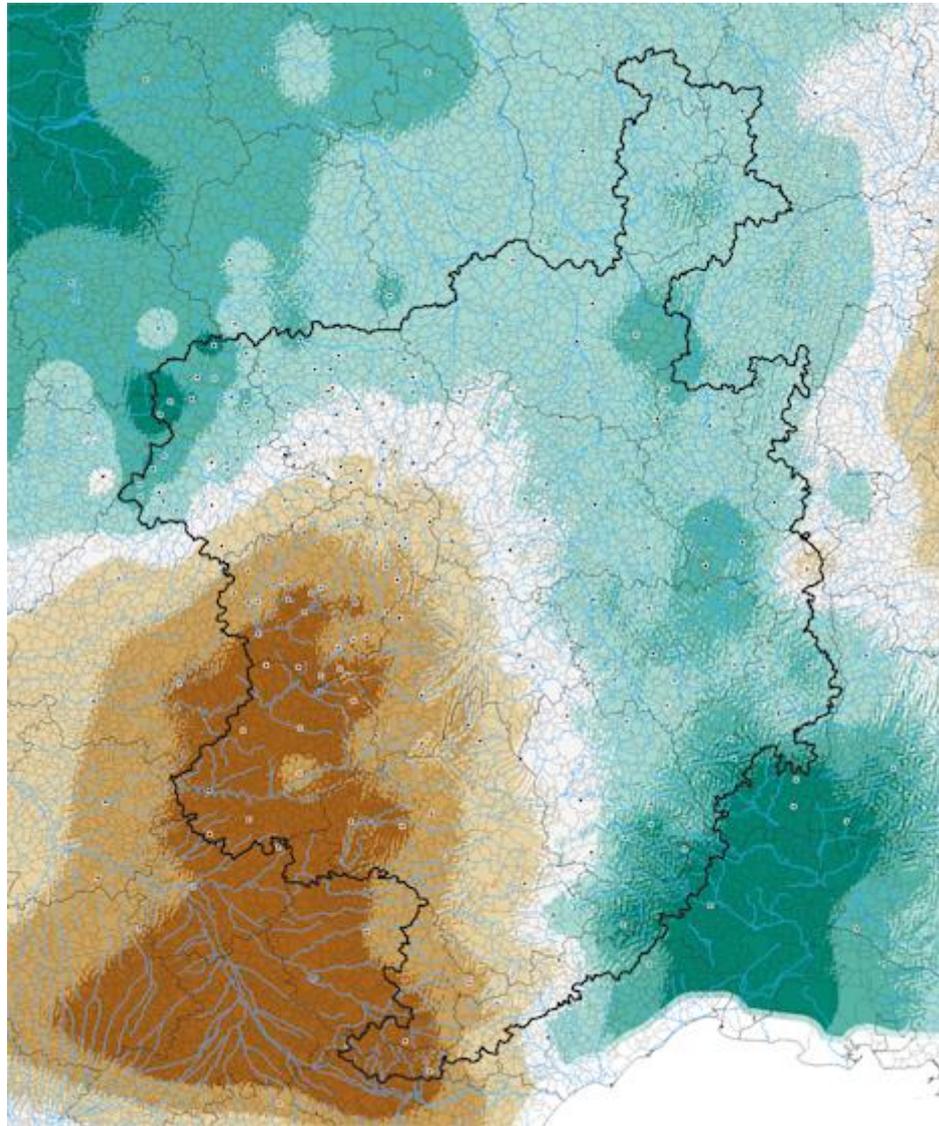
Situation 2000

Situation 2050

Précipitations cumul annuel

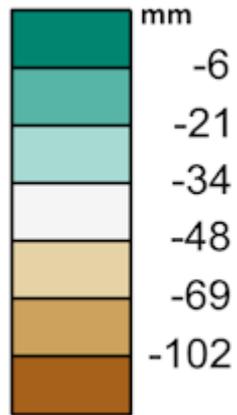


Evolution
2000-2050

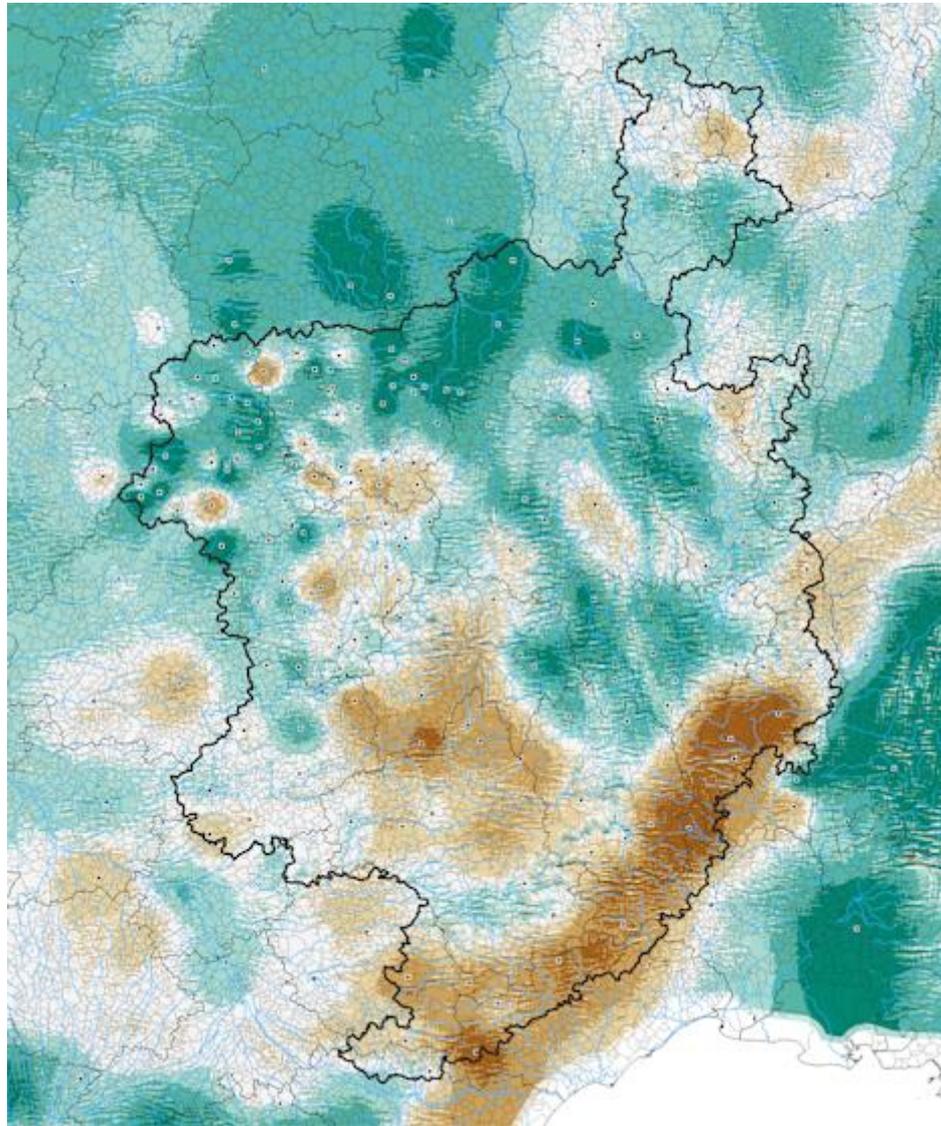


Source : SIDAM-AP3C Vincent Cailliez 2023

Précipitations cumul printemps (MAM)

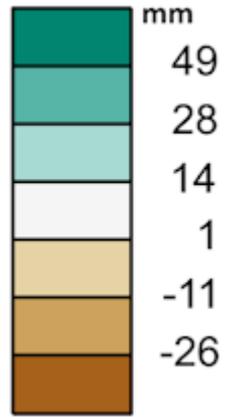


Evolution
2000-2050

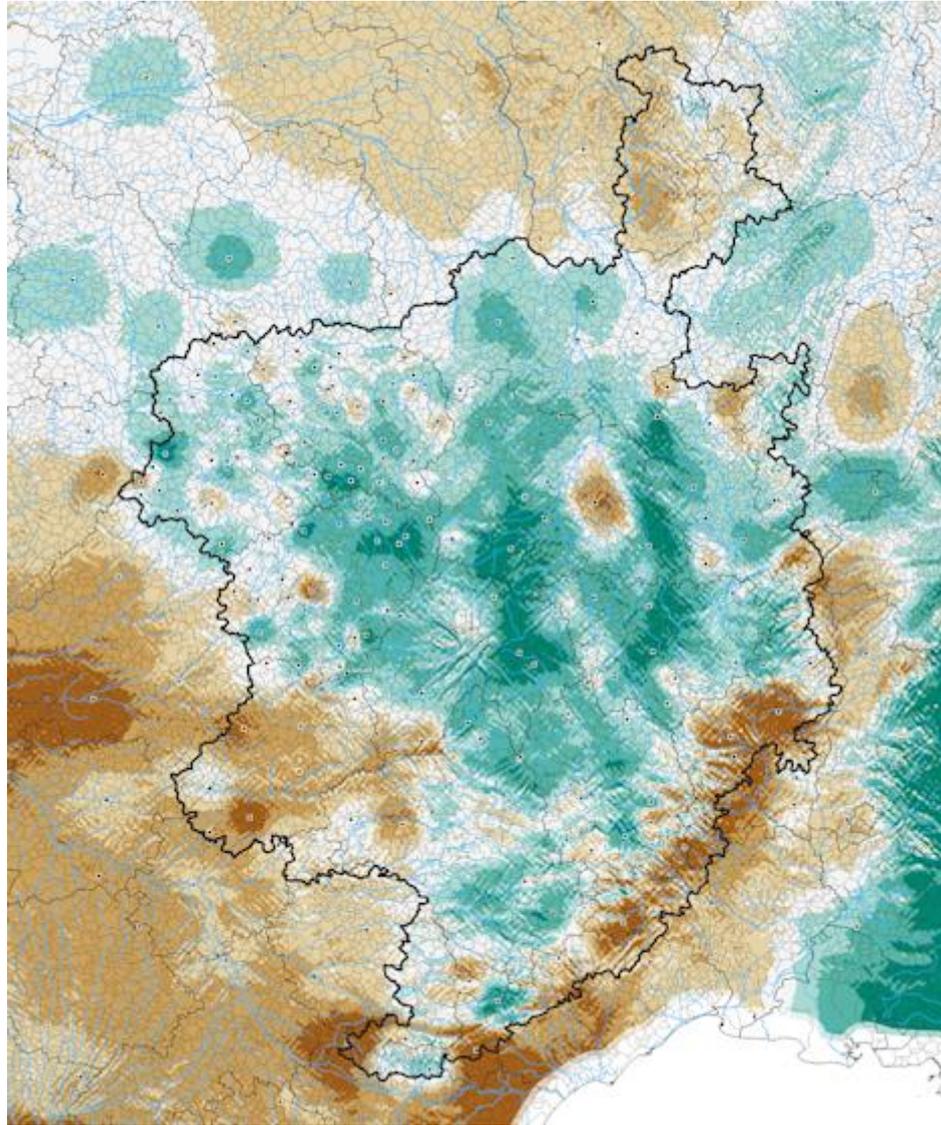


Source : SIDAM-AP3C Vincent Cailliez 2023

Précipitations cumul été (JJA)

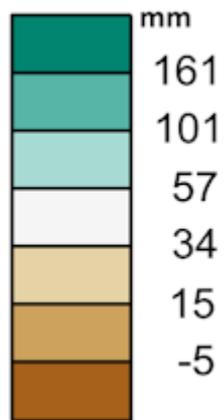


Evolution
2000-2050

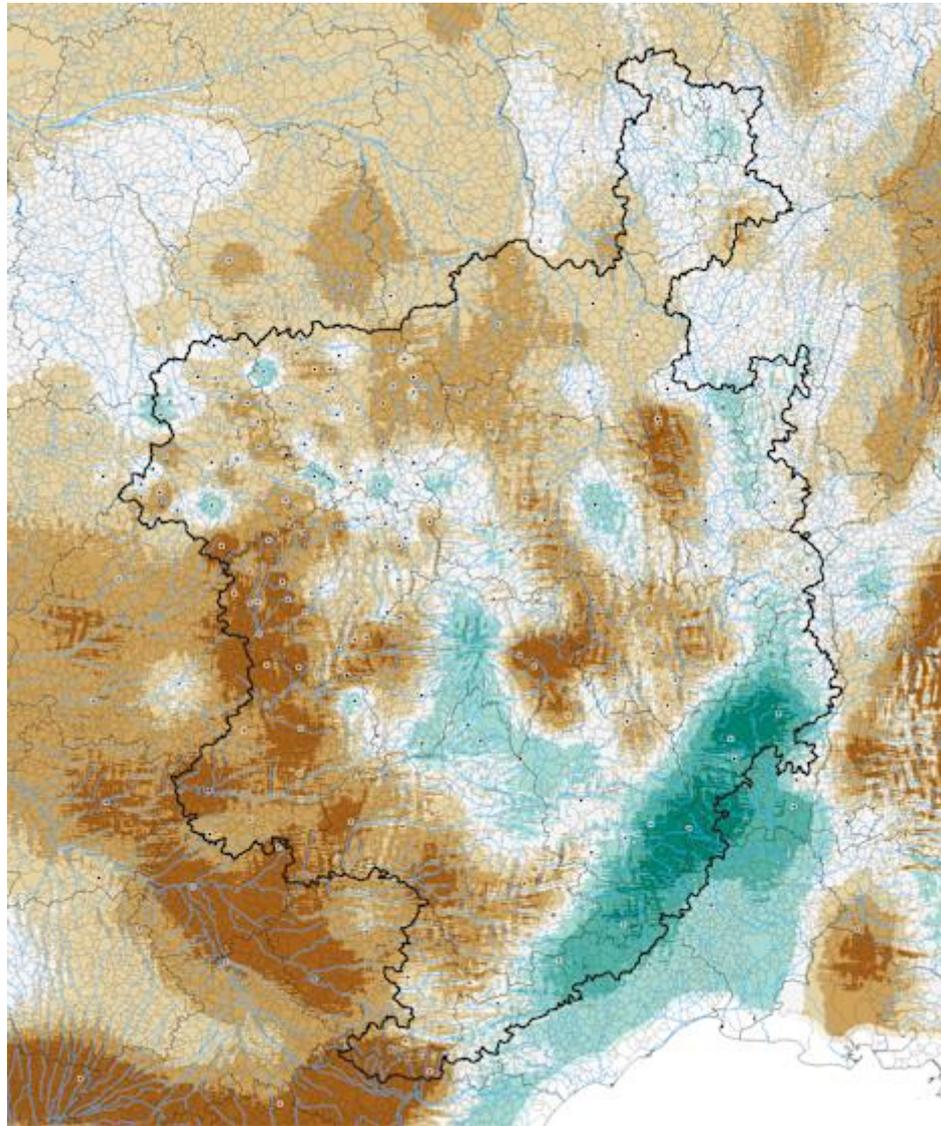


Source : SIDAM-AP3C Vincent Cailliez 2023

Précipitations cumul automne (SON)

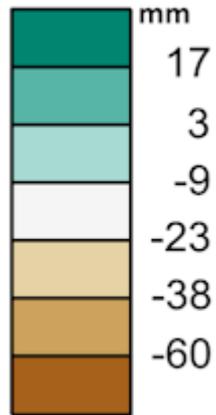


Evolution
2000-2050

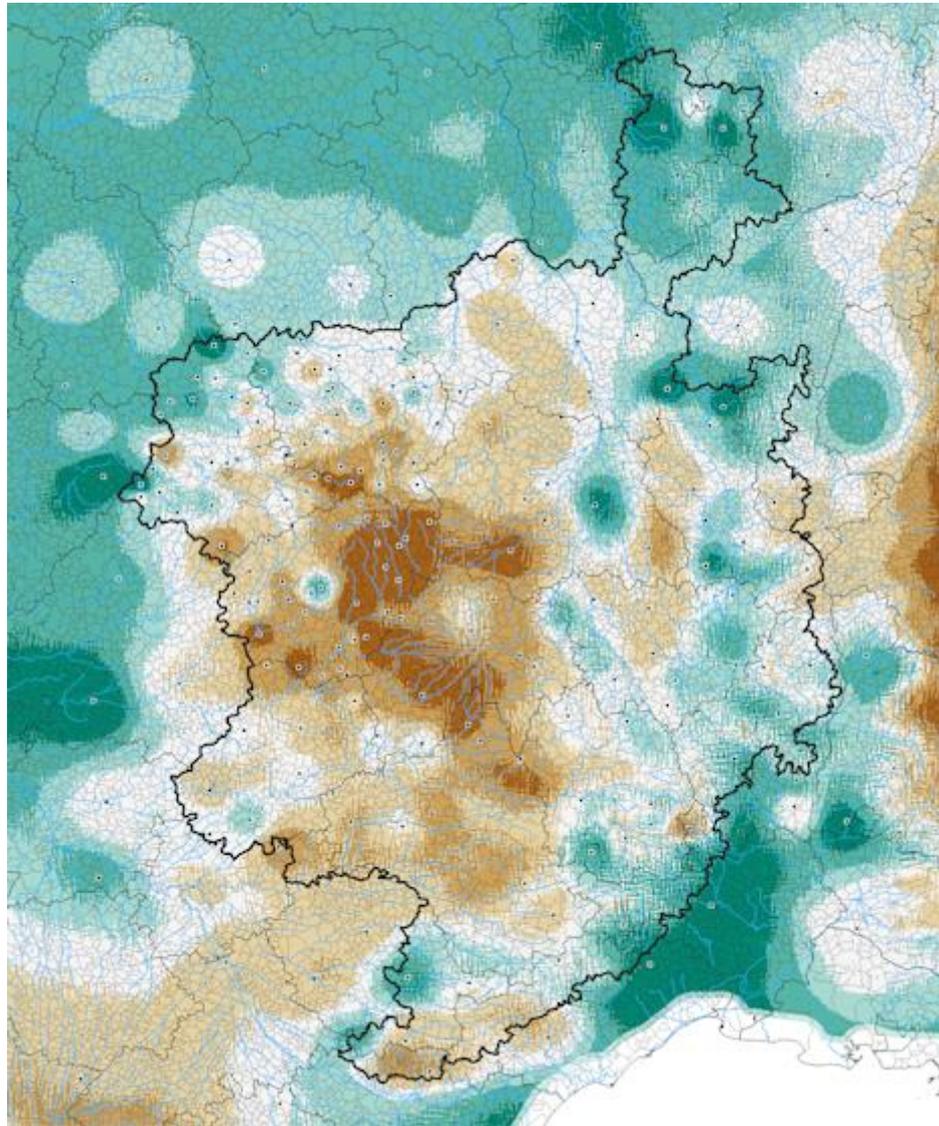


Source : SIDAM-AP3C Vincent Cailliez 2023

Précipitations cumul hiver (DJF)

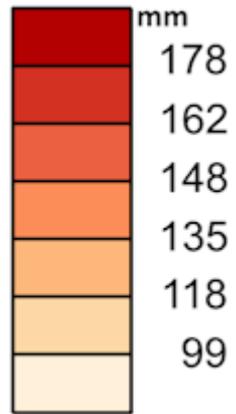


Evolution
2000-2050

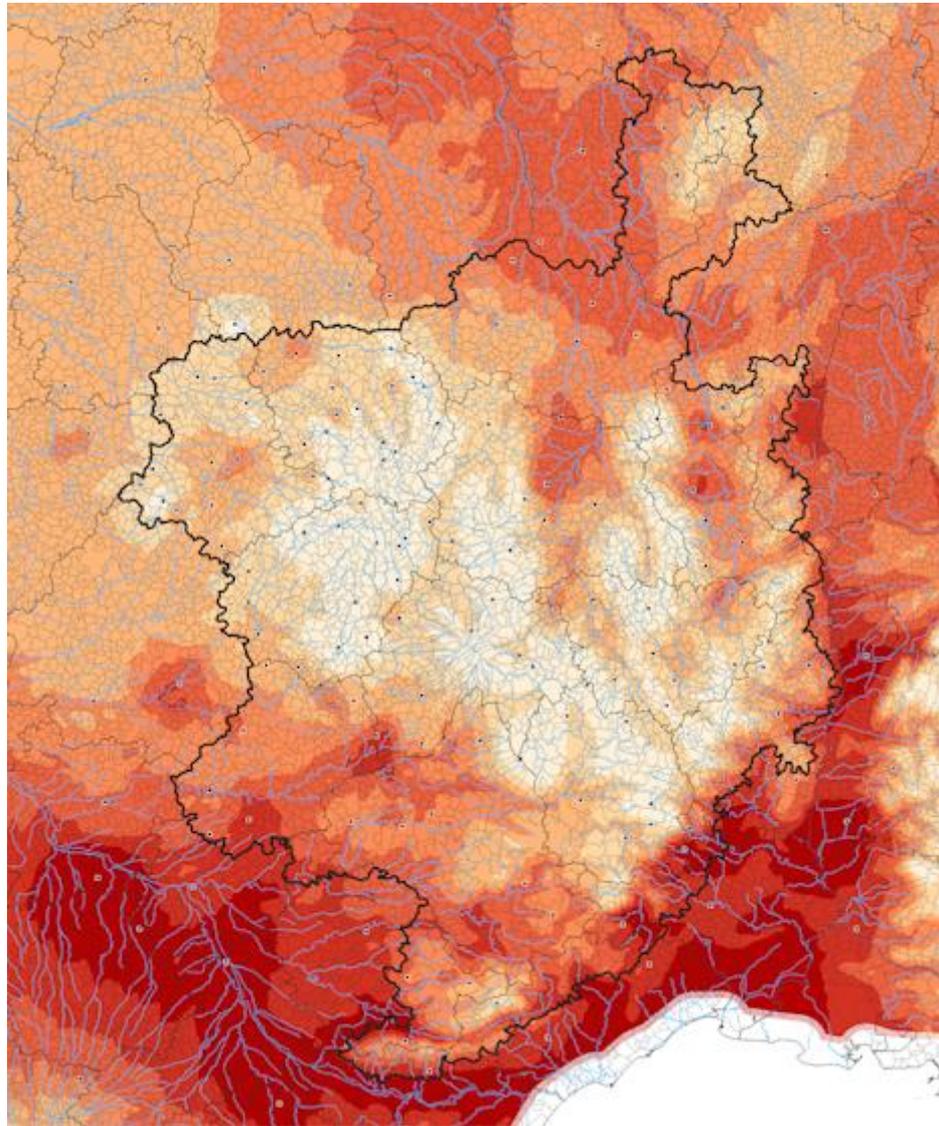


Source : SIDAM-AP3C Vincent Cailliez 2023

Evapo-transpiration annuelle (ETP)

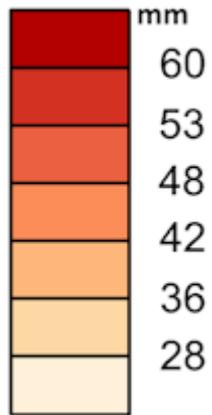


Evolution
2000-2050

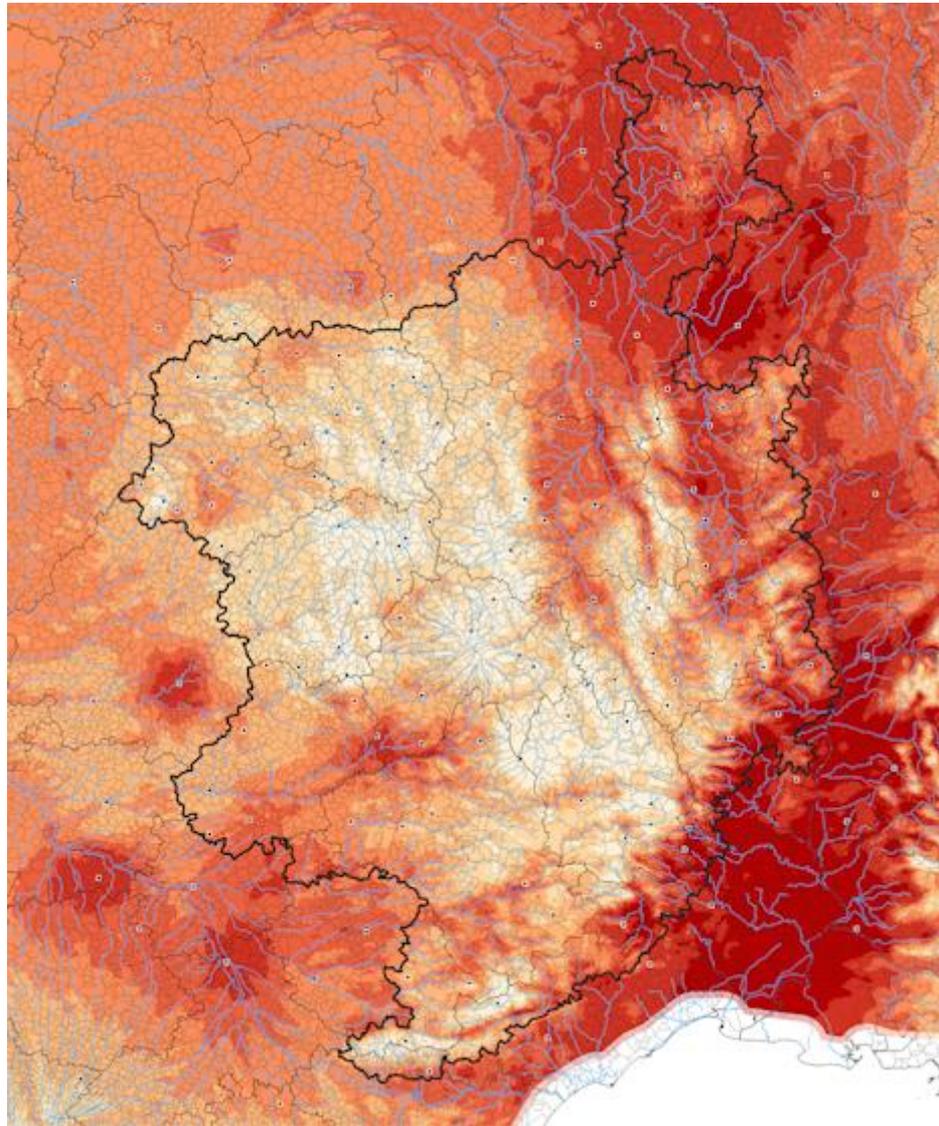


Source : SIDAM-AP3C Vincent Cailliez 2023

Evapo-transpiration printemps (ETP)

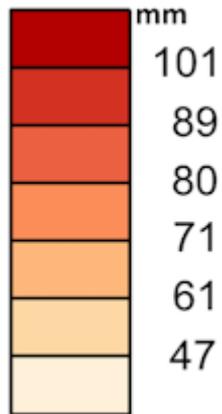


Evolution
2000-2050

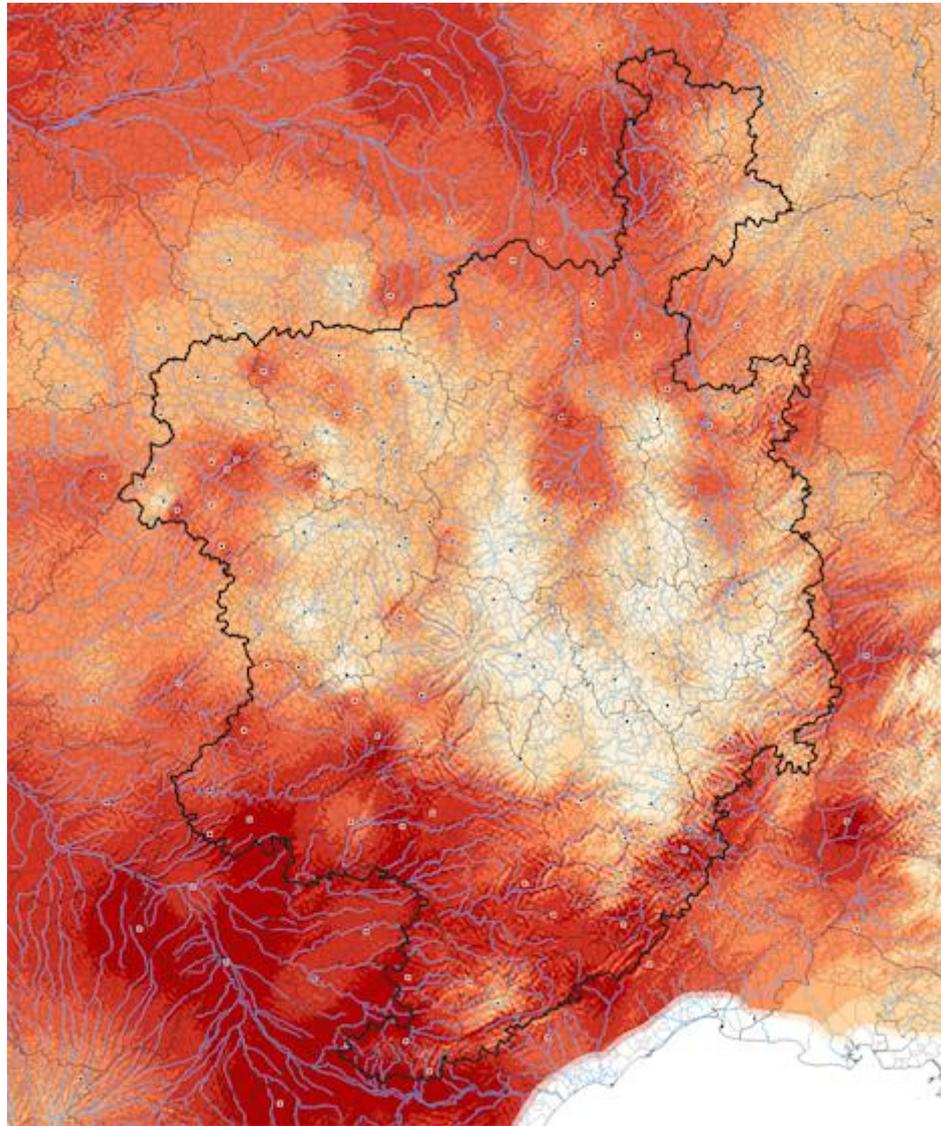


Source : SIDAM-AP3C Vincent Cailliez 2023

Evapo-transpiration été (ETP)

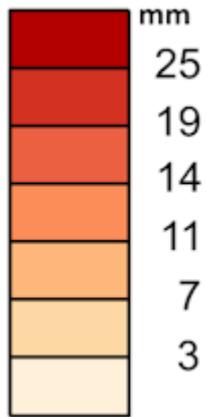


Evolution
2000-2050

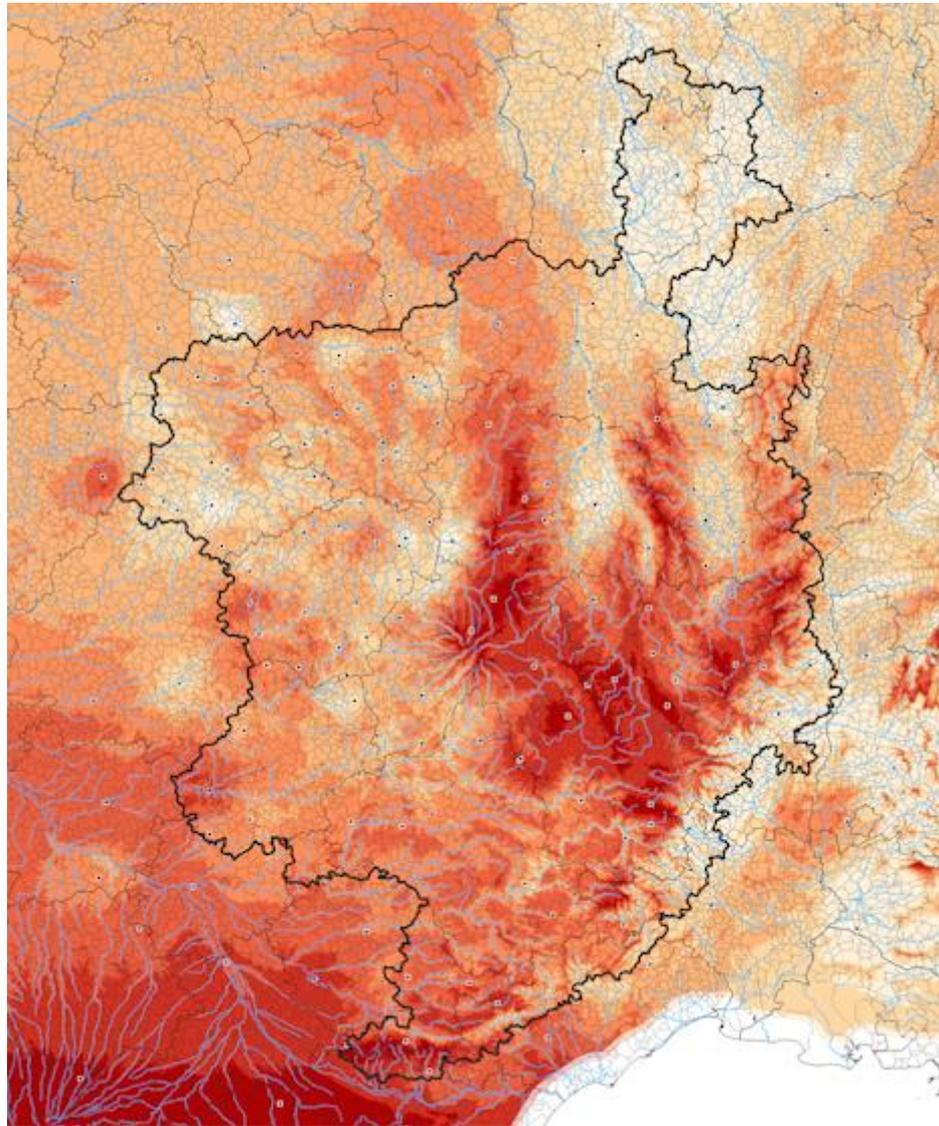


Source : SIDAM-AP3C Vincent Cailliez 2023

Evapo-transpiration automne (ETP)

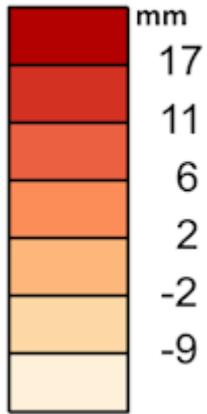


Evolution
2000-2050

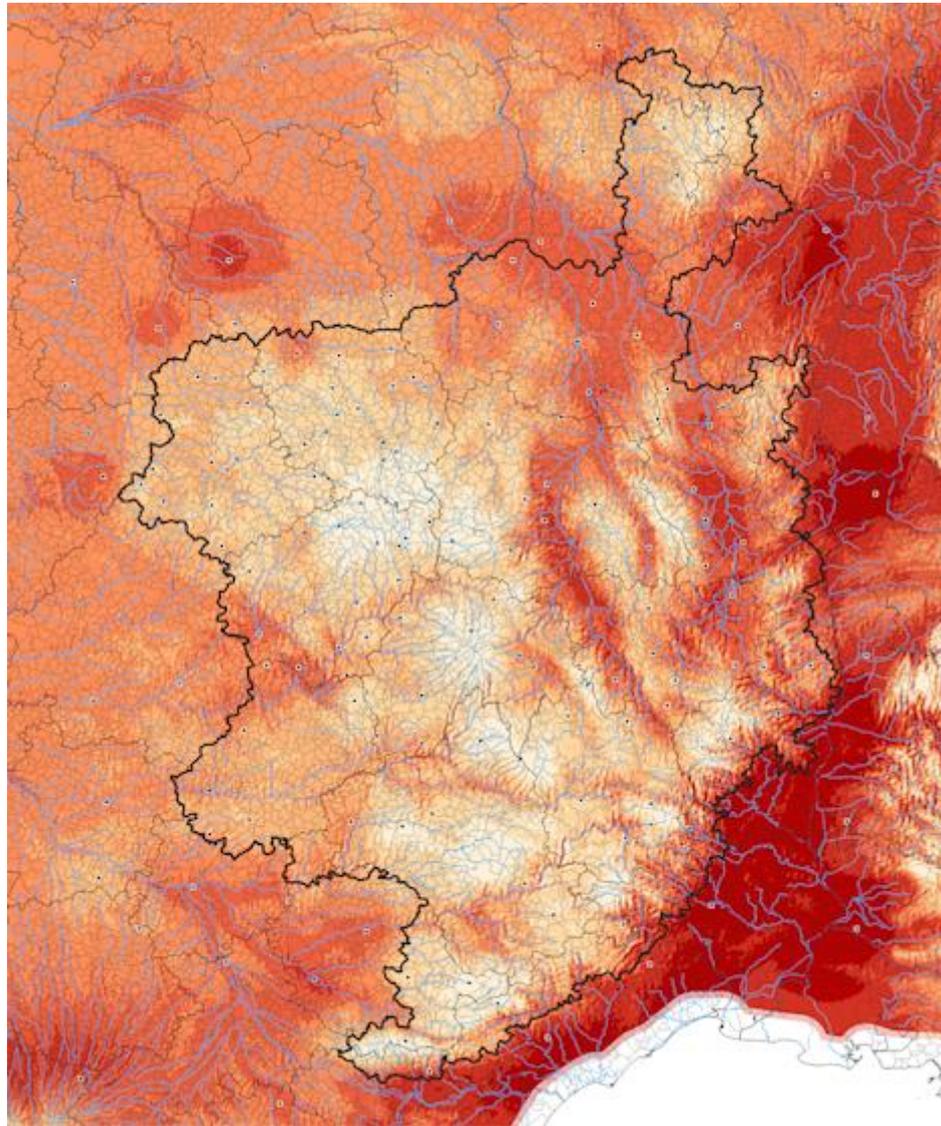


Source : SIDAM-AP3C Vincent Cailliez 2023

Evapo-transpiration hiver (ETP)

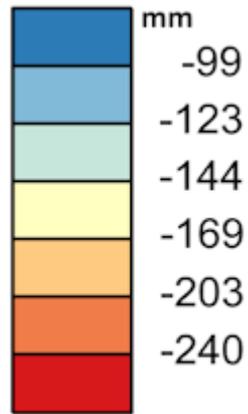


Evolution
2000-2050

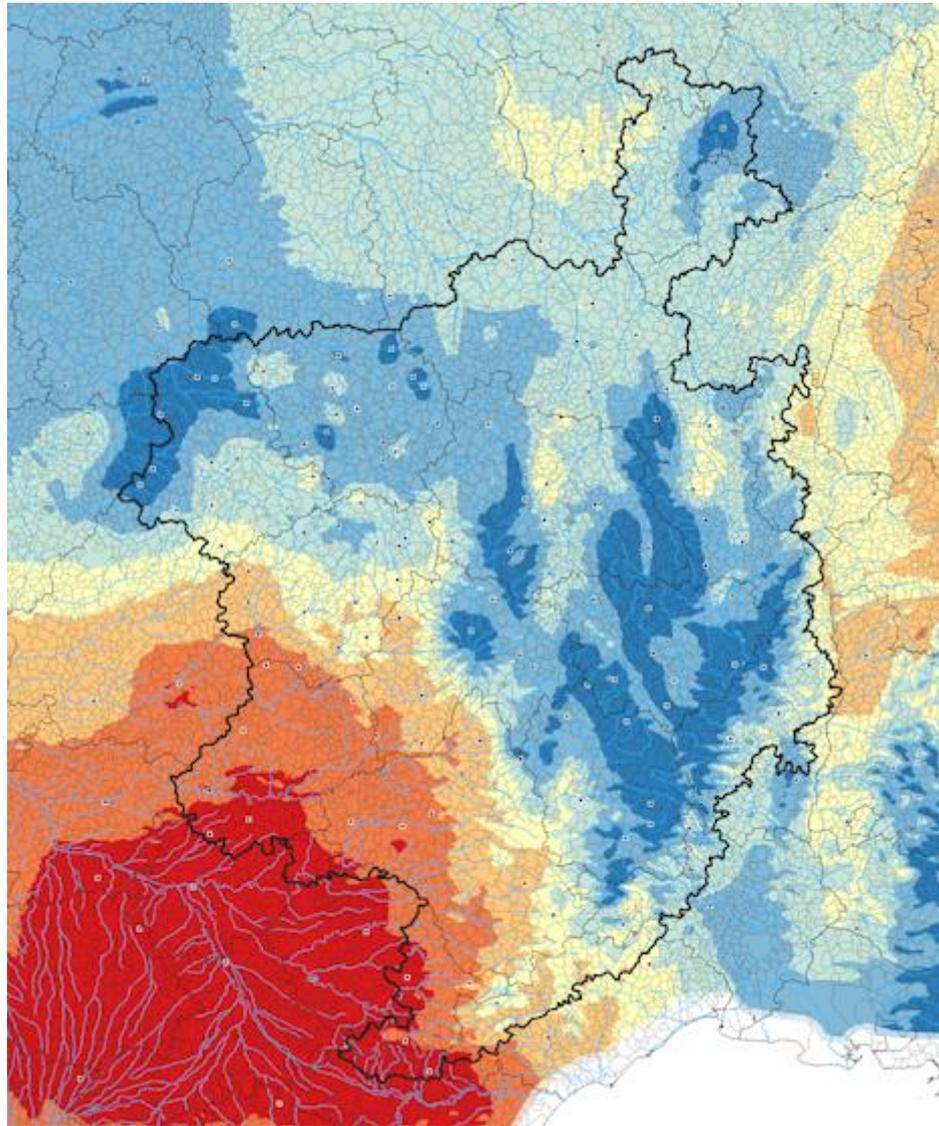


Source : SIDAM-AP3C Vincent Cailliez 2023

Bilan Hydrique Potentiel annuel (pluie-ETP)

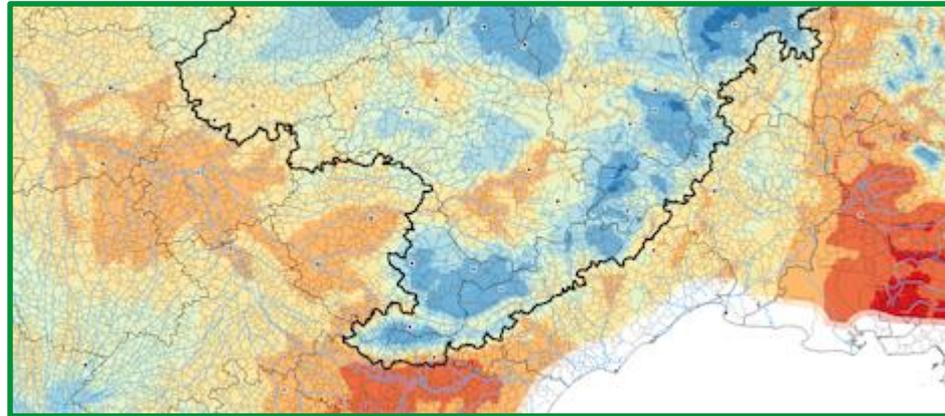
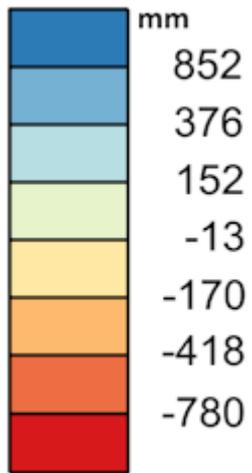


Evolution
2000-2050

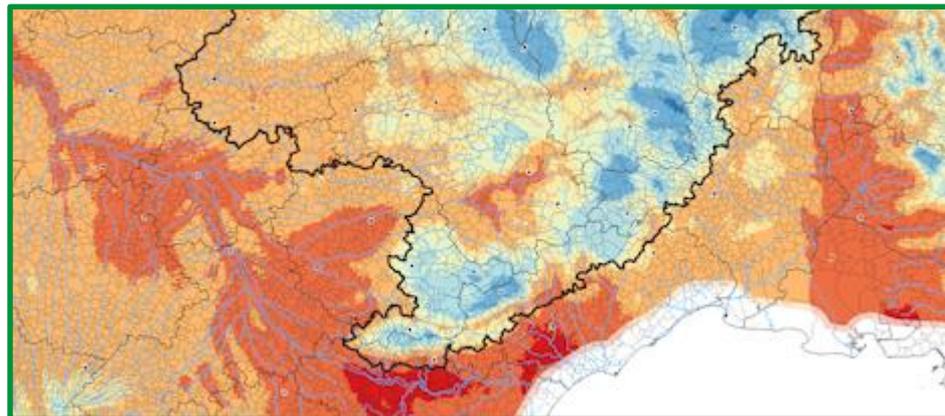


Source : SIDAM-AP3C Vincent Cailliez 2023

Bilan Hydrique Potentiel annuel (pluie-ETP)

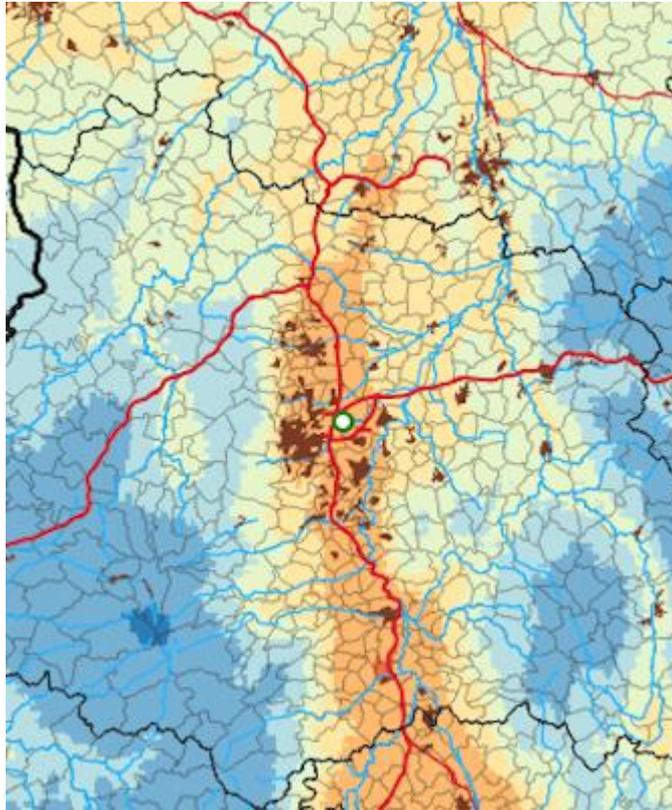


Climat 2000

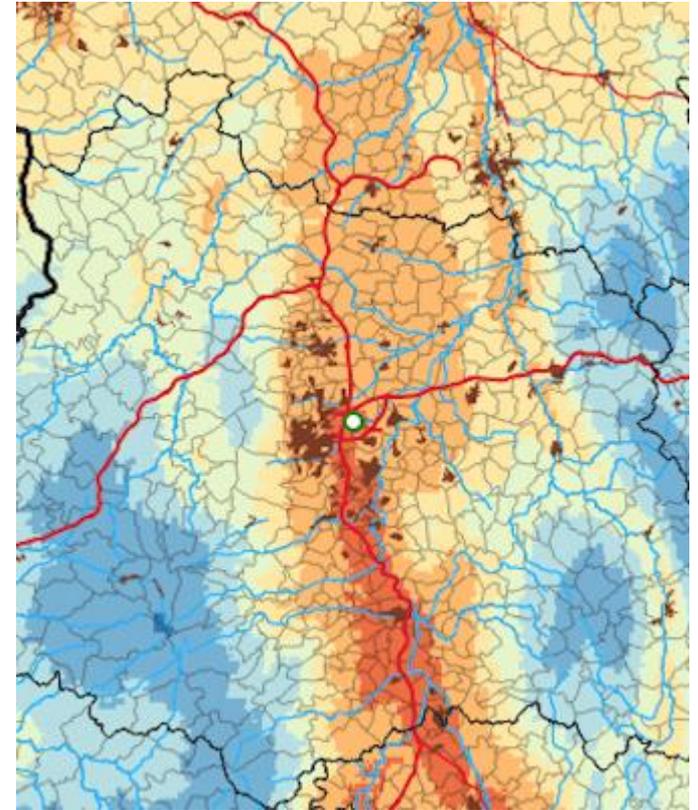
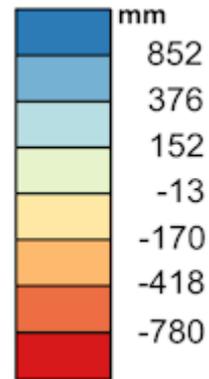


Climat 2050

Bilan Hydrique Potentiel annuel (pluie-ETP)



Station de
Clermont-Aulnat



Situation 2000

Situation 2050

➤ Projections agro-climatiques AP3C
(Exemple)

Exemple d'indicateur agro-climatique

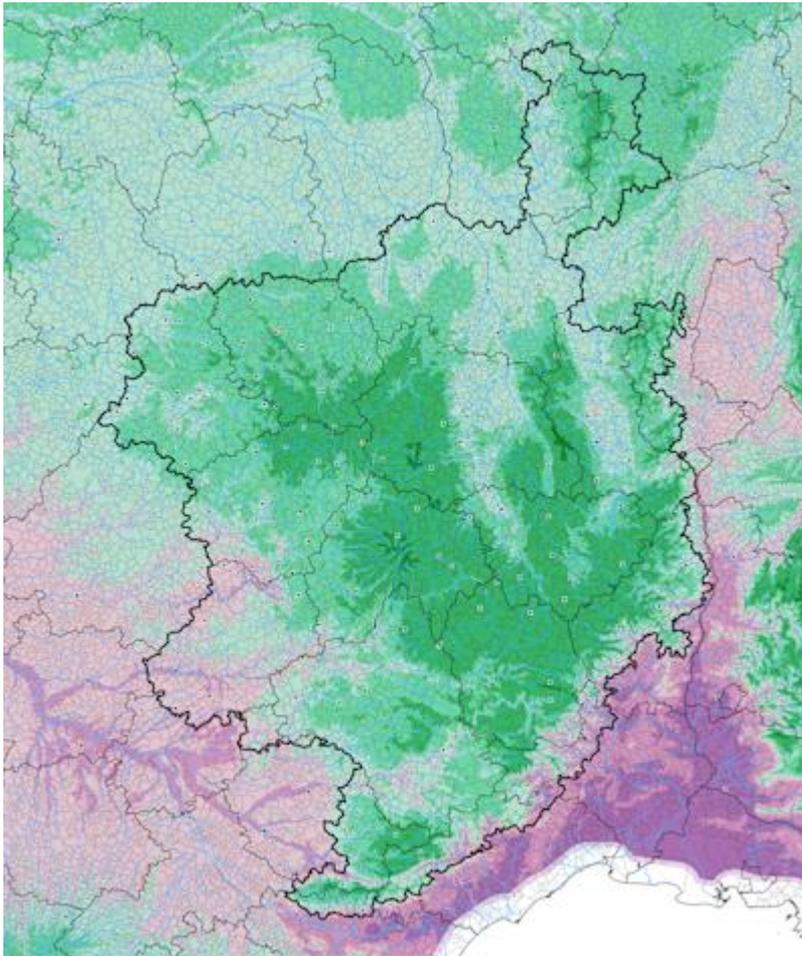
Indice héliothermique de Huglin

huglin H ^[1]	Vine
$H < 1,500$	Aucune recommandation de la culture
$\leq 1,500 H < 1,600$	Müller Thurgau , portugais bleu
$\leq 1,600 H < 1,700$	Pinot Blanc , Pinot Gris , Aligoté , Gamay Noir , Gewürztraminer
$\leq 1,700 H < 1,800$	Riesling , Chardonnay , Sylvaner , Sauvignon Blanc , Pinot Noir , Riesling
$\leq 1,800 H < 1,900$	Cabernet Franc ,
$\leq 1,900 H < 2,000$	Chenin Blanc , Cabernet Sauvignon , Merlot , Sémillon , Riesling
$\leq 2,000 H < 2,100$	Ugni Blanc
$\leq 2,100 H < 2,200$	Grenache , Syrah , Cinsault
$\leq 2,200 H < 2,300$	Carignan
$\leq 2,300 H < 2,400$	Aramon

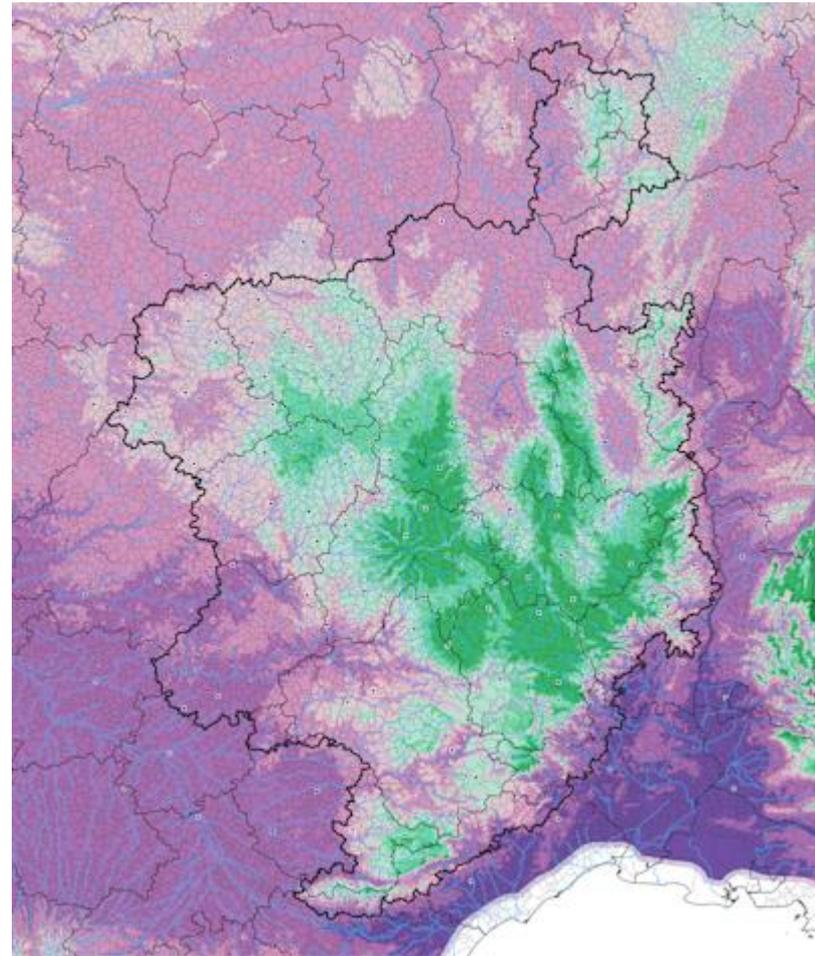
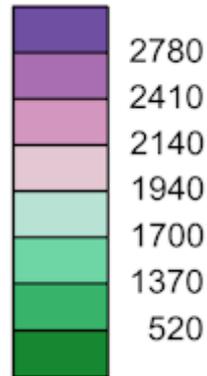


© 2015, Lams, Marey sur Tille.

Viticulture indice de Huglin (somme de dg-jours, base 10°C)

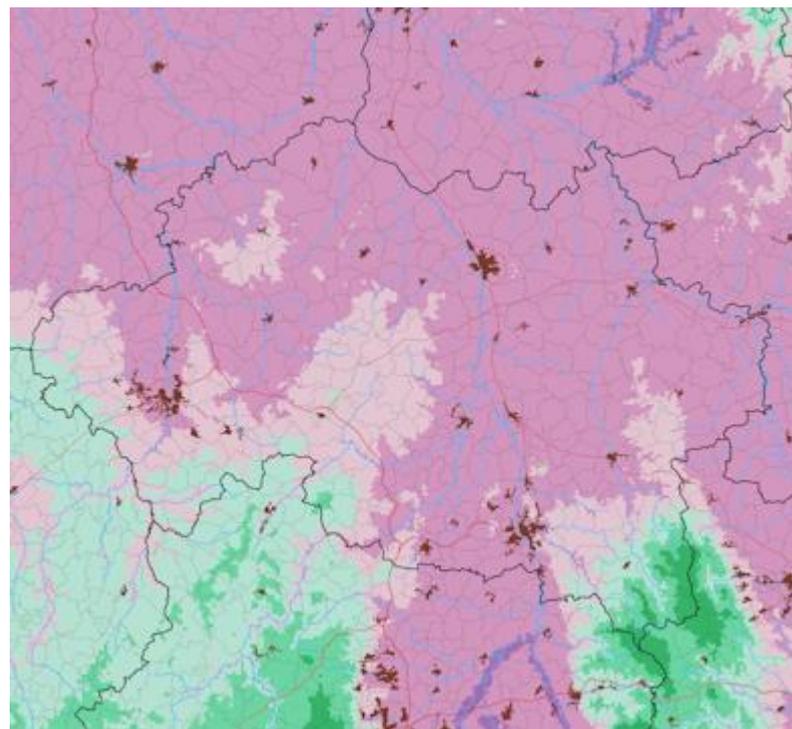
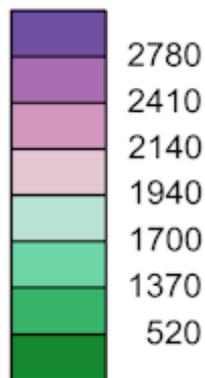
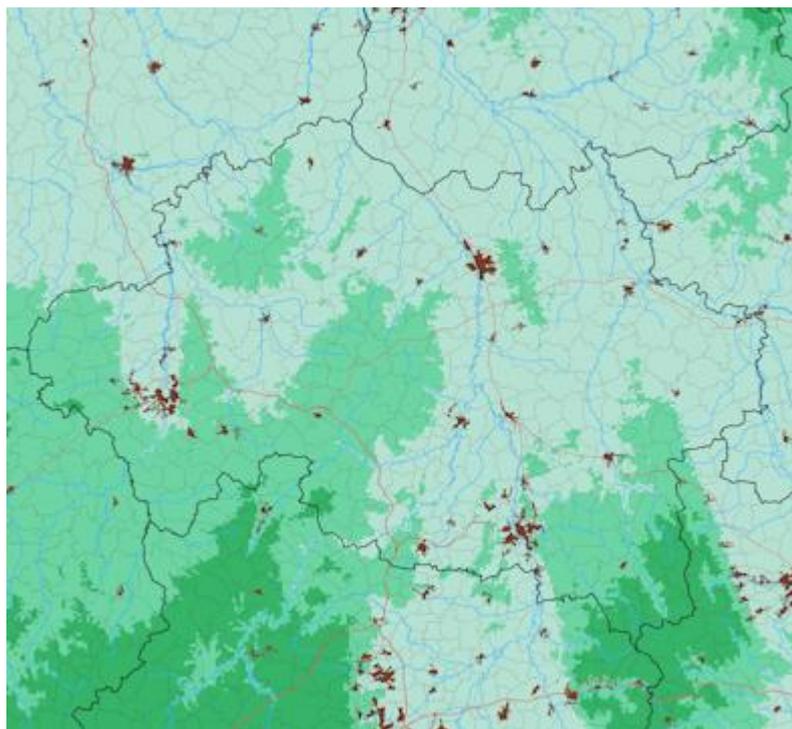


Climat-type 2000



Climat-type 2050

Viticulture indice de Huglin (Allier)



Climat-type 2000

Climat-type 2050

Quelques liens AP3C

- Documents et vidéos

- Site du projet AP3C

- <https://www.sidam-massifcentral.fr/developpement/ap3c/>

- La chaîne Youtube du SIDAM (2 dossiers AP3C)

- <https://www.youtube.com/channel/UCsW2xs8vQxlvJR5sRT31bDQ>

- Des conférences climatiques localisées (PNRs)

- <https://www.youtube.com/watch?v=z8bdmxGDfT4> (Livradois-Forez)
- https://www.youtube.com/watch?v=qpAM1_eWwnU (Pilat)

- Des conférences agro-climatiques localisées

- https://www.youtube.com/watch?v=m5USZd_SEuI (Corrèze)
- <https://www.youtube.com/watch?v=kM5k-OICcBc> (Aveyron)
- <https://www.youtube.com/watch?v=Mh21fZGgVcl> (Cantal)

Quelques références de AP3C

- Colloques scientifiques (publication revue ou sur invitation)
 - IPSL, journées climat et impacts, Orsay 11/2014
 - http://geops.geol.u-psud.fr/IMG/pdf/programme_journees_climat_et_impacts_2014.pdf
 - UNESCO, « Our common future under climate change », Paris 07/2015
 - http://pool7.kermeet.com/C/ewe/ewex/unesco/DOCS/CFCC_abstractBook.pdf
 - Centre Henri Lebesgue, SWGEN 2016, Vannes 05/2016
 - <https://perso.univ-rennes1.fr/valerie.monbet/SWGEN2016/Cailliez.pdf>
 - Université du Colorado, SWGEN 2018, Boulder 10/2018
 - <https://www2.cisl.ucar.edu/events/328/agenda>
 - ENS Ulm, CERES, diversités sociales et écologiques, Paris 05/2019
 - <http://www.ceres.ens.fr/evenements-scientifiques/colloques/diversite-sociale-et-diversite-ecologique/resume-des-communications/>
 - IPSL, journées climat et impacts, Saclay 11/2020
 - https://premc.org/doc/Climat-Impacts-2020/Session_9.pdf
 - IPSL, journées climat et impacts, Saclay 11/2022
 - https://premc.org/doc/Climat-Impacts-2022/Climat_Impacts_2022_Book_of_Abstracts.pdf

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DE LA COHÉSION
DES TERRITOIRES**
Commissariat du Massif central



La Région 
Auvergne-Rhône-Alpes



et du Préfet de la Région Auvergne-Rhône-Alpes / DRAAF

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<https://www.sidam-massifcentral.fr/developpement/ap3c/>

