Atlas Climatologique de Madagascar

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AVANT-PROPOS

Le développement socio-économique d'un pays est tributaire des ressources naturelles dont il dispose. Un plan de développement ne pourra réussir si l'on ne tient pas suffisamment compte des facteurs entrant en jeu ainsi que de leurs influences. Le temps, le climat et l'eau sont parmi les facteurs importants qui exercent beaucoup d'influence sur les diverses activités humaines.

La Direction Générale de la Météorologie en développant la connaissance des sciences atmosphériques, participe à la protection des biens et des personnes par une information de la prévention des cataclysmes naturels. Par l'intermédiaire du Service de la Climatologie, et du Service Inter-Régional de la Météorologie d'Antananarivo, la Direction Générale de la Météorologie fournit aux usagers les multiples renseignements répondant aux préoccupations de ces derniers.

Pour ce faire, des produits disponibles, dont le présent Atlas Climatique, sont confectionnés pour contribuer à un développement harmonieux du Pays. Cet Atlas comprend des séries de cartes donnant une vue d'ensemble du climat de Madagascar et il comprend :

- La délimitation climatique de Madagascar ;
- Les pluies mensuelles ;
- Les températures mensuelles : - les moyennes
  - les amplitudes
- Les vents moyens et les roses de vent ;
- Les humidités relatives ;
- La durée d'insolation.

Les données utilisées sont celles des stations synoptiques complétées par les données satellitaires :

- 1983 à 2010 pour les pluies ;
- 1981 à 2010 pour les températures et les vents ;
- 2000 à 2010 pour les vents ;
- 1982 à 2010 pour les humidités relatives ;
- 2000 à 2010 pour la durée d'Insolation.

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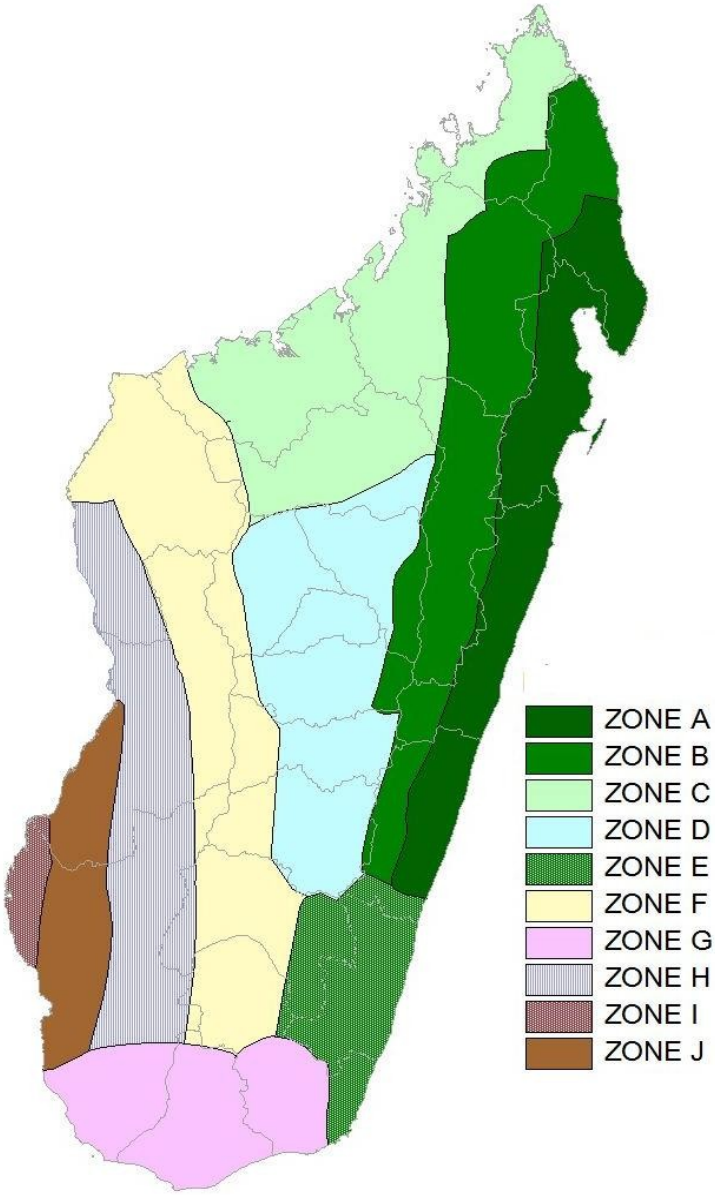
DELIMITATION CLIMATIQUE DE MADAGASCAR



ZONES TRES HUMIDES

ZONE A :*Très humide toute l'année*

Exposée directement aux courants d'alizés.
Précipitation annuelle : 2500 - 3700 mm.
Température moyenne annuelle: ≥ 23,6°C.

ZONE B :*Très humide*

Influence des régimes d'alizé atténuée.
Précipitation annuelle : 1350 – 2500 mm.
Température moyenne annuelle : 18°C - 22°C.

ZONES HUMIDES

ZONE C :*Humide à forte pluviosité*

Exposée directement au régime de mousson en été.
Précipitation annuelle : 1200 – 2000 mm.
Température moyenne annuelle : ≥ 26°C.

ZONE D :*Humide*

Climat adouci par le relief ; pluie concentrée en été.
Précipitation annuelle : 1250 – 1500 mm.
Température moyenne annuelle : ≥ 19°C.

ZONE E :*Humide toute l'année*

Exposée directement au régime d'alizé.
Précipitation annuelle : 1400 – 1700 mm.
Température moyenne annuelle : ≥ 21°C.

ZONE F :*humideà faible précipitation*

Hiver sec.
Précipitation annuelle : 800 – 1100 mm.
Température moyenne annuelle : 18°C - 25°C.

ZONES SEMI HUMIDES

ZONE G :*semi humideventeux*

Influence des régimes d'alizé
Précipitation annuelle : 700 – 1200 mm.
Température moyenne annuelle : ≥ 23°C.

ZONE H :*semi humide*

Influence des effets locaux (brises).
Précipitation annuelle : 600 – 800 mm.
Température moyenne annuelle : ≥ 23°C.

ZONE I :*semi humide à faible pluviosité*

Précipitation annuelle : ~ 500 mm.
Température moyenne annuelle : ≥ 23°C.

ZONE SEMI ARIDE

ZONE J :*semi aride*

Nombre annuel de jours de pluie < 50.
Précipitation annuelle : < 500 mm.
Température moyenne annuelle : ≥ 22°C.

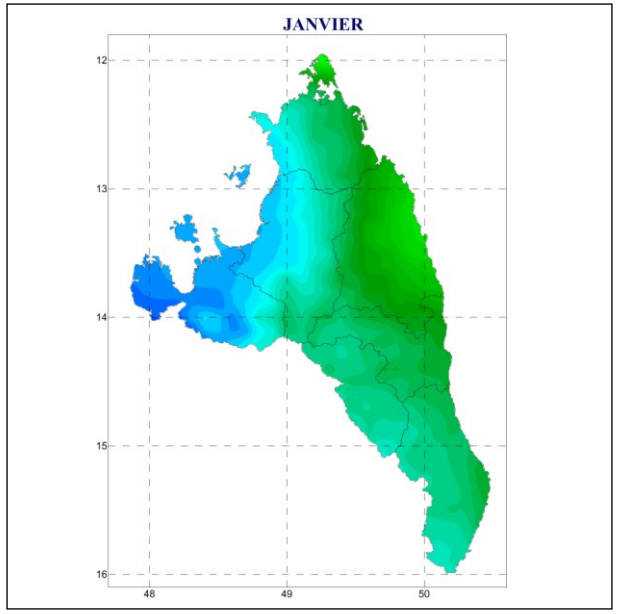
Chaque zone climatique se subdivise en plusieurs sous zones topoclimatiques compte tenu de la topographie, de l'influence maritime, du régime des vents et d'autres facteurs climatiques comme la radiation solaire, l'humidité relative, … relatées par les courbes ombrothérmiques.

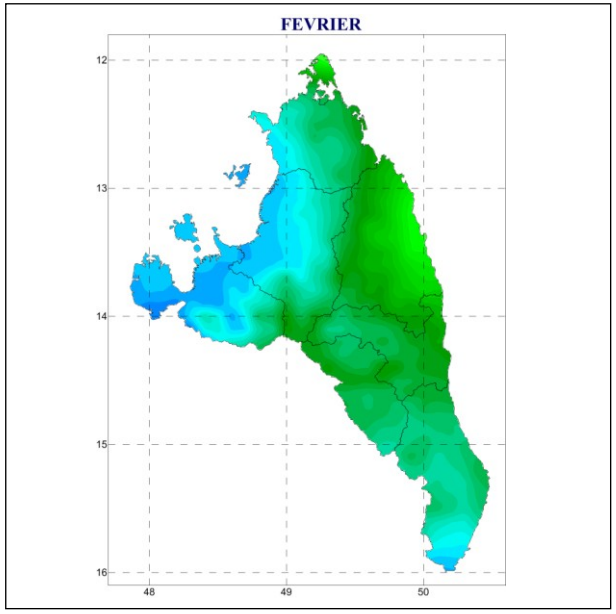
MOYENNES MENSUELLES DES PLUIES

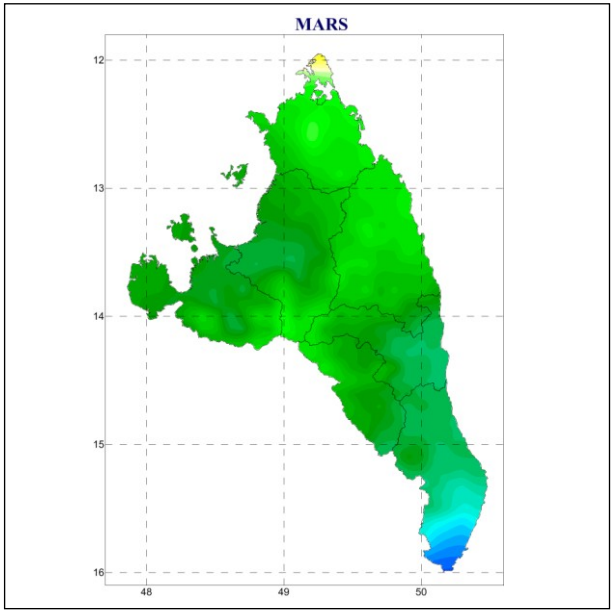
- A Madagascar, la saison chaude et pluvieuse s'étend de Novembre à Avril, et la saison fraîche et sèche s'étend de Mai à Octobre.
- Deux courtes intersaisons les séparent et durent chacune environ un mois.
- Sur la côte Est, les précipitations sont particulièrement abondantes de Janvier à Avril. Elle est généralement arrosée durant la saison fraîche et sèche mais, les précipitations sont relativement faibles durant les mois de Septembre et Octobre.
- Sur les régions des Hautes-Terres, la période propice aux précipitations s'étend d'Octobre à Avril. Une zone large de 50 km à 100 km en bordure de la forêt de l'Est compte de 30 à 40 jours de bruine (crachin) au cours de la saison fraîche.
- Sur la côte Ouest, le maximum de précipitations est observé en Janvier. La saison sèche est particulièrement bien marquée et s'étend de Mai à Octobre.
- Pour l'Extrême Sud, la répartition des précipitations est très irrégulière. On distingue une petite saison de pluies commençant en Octobre ou en Janvier. Des périodes de sécheresse s'étendant sur plusieurs mois consécutifs peuvent se produire.

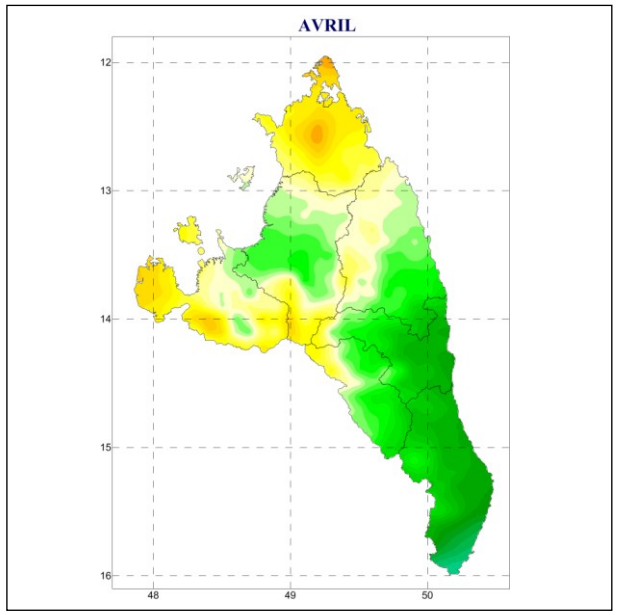
ANTSIRANANA

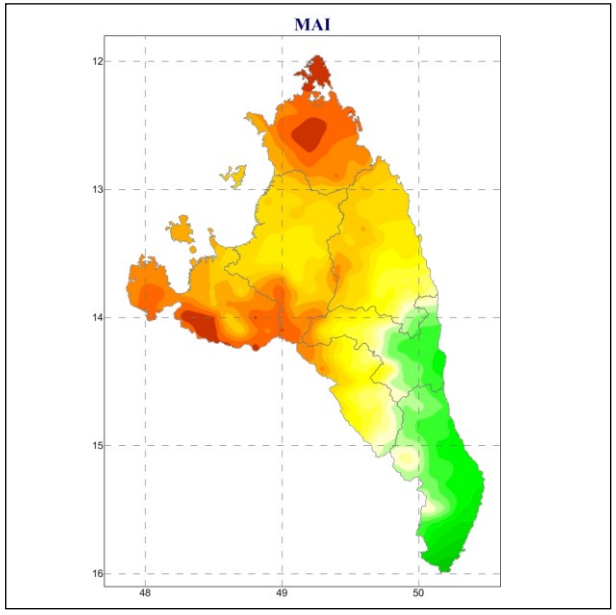
MOYENNES MENSUELLES DES PLUIES

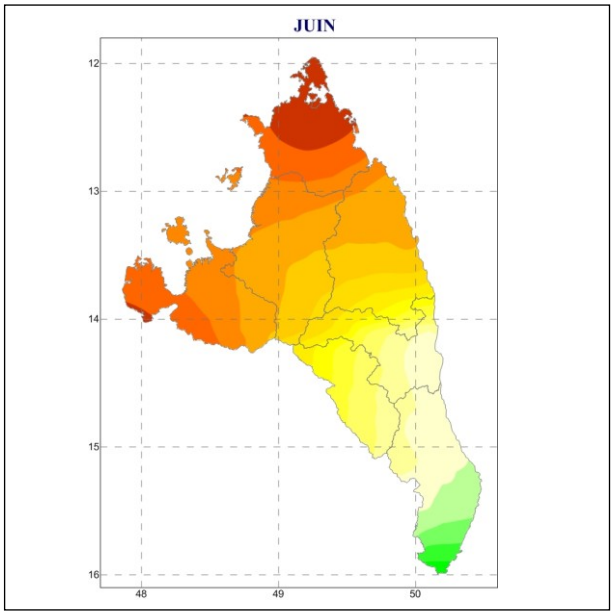


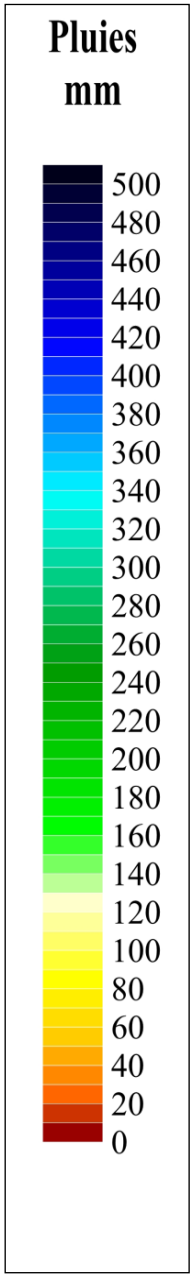






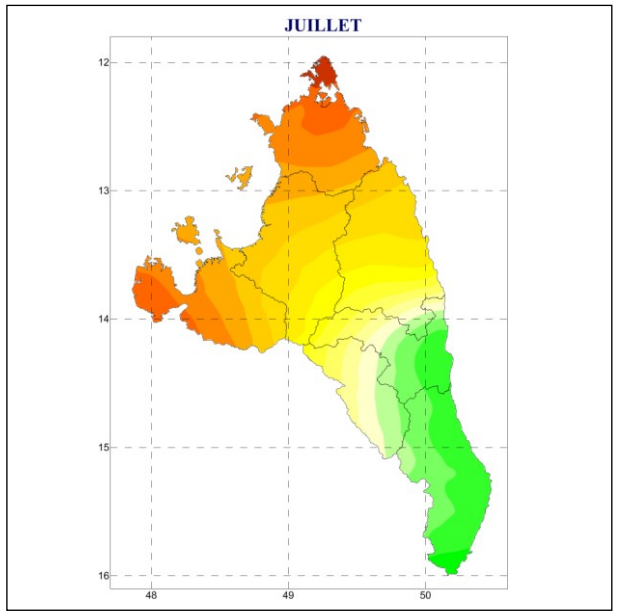


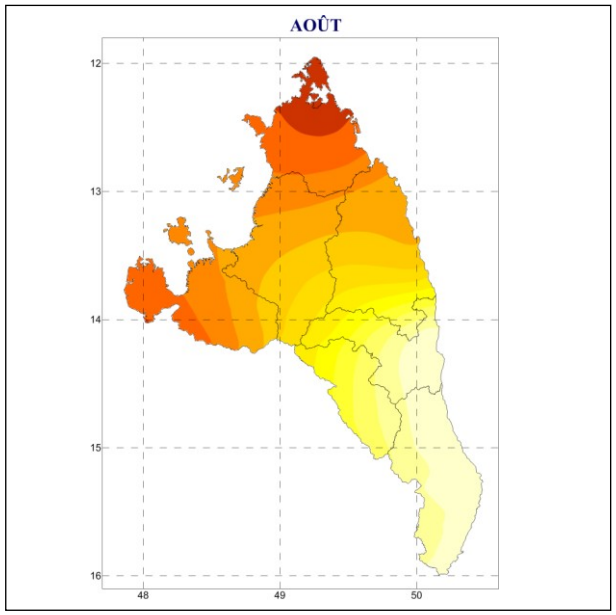


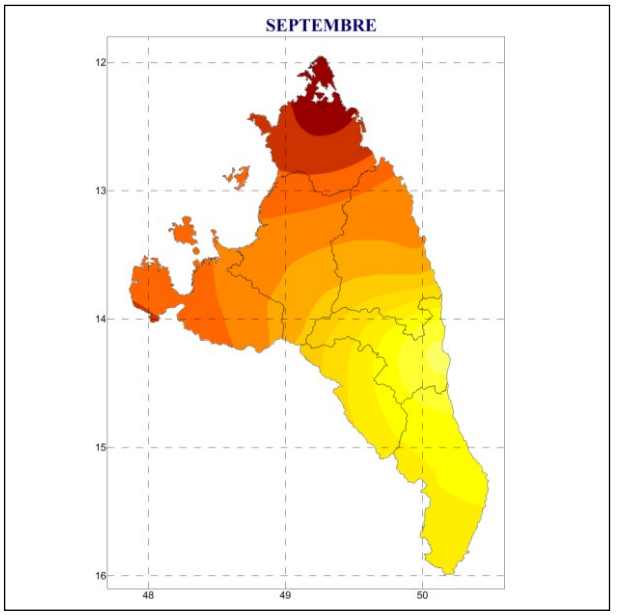


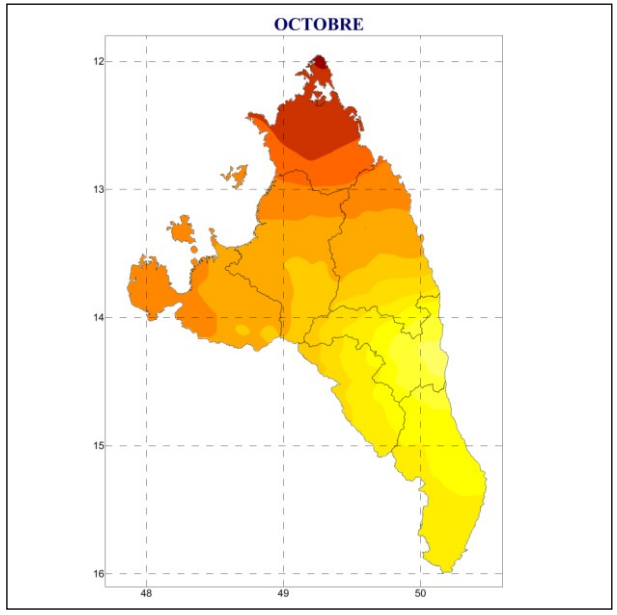
ANTSIRANANA

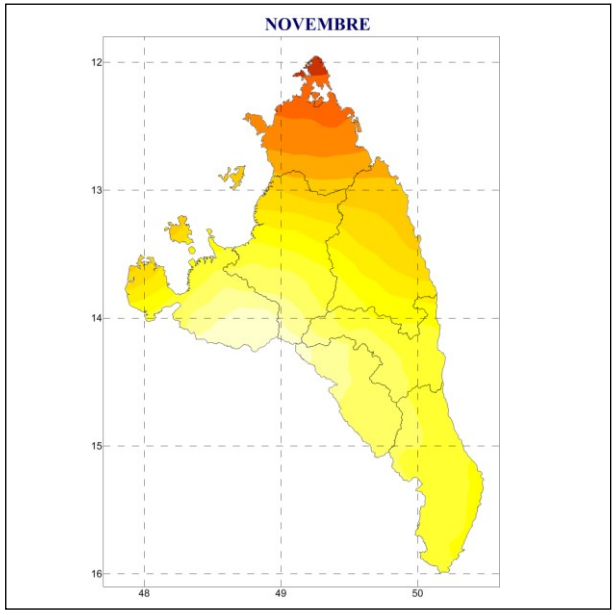
MOYENNES MENSUELLES DES PLUIES

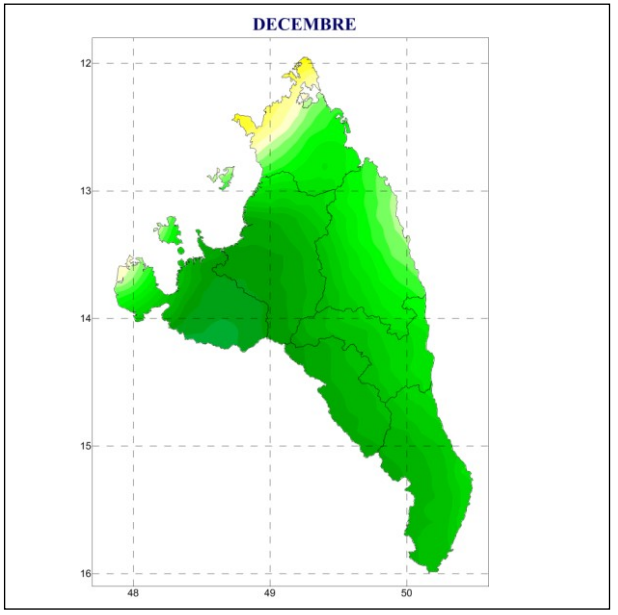


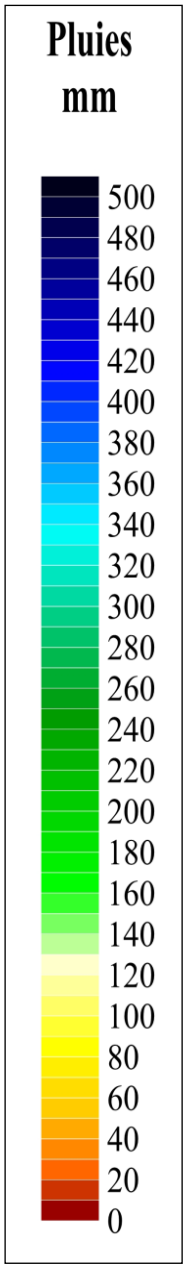






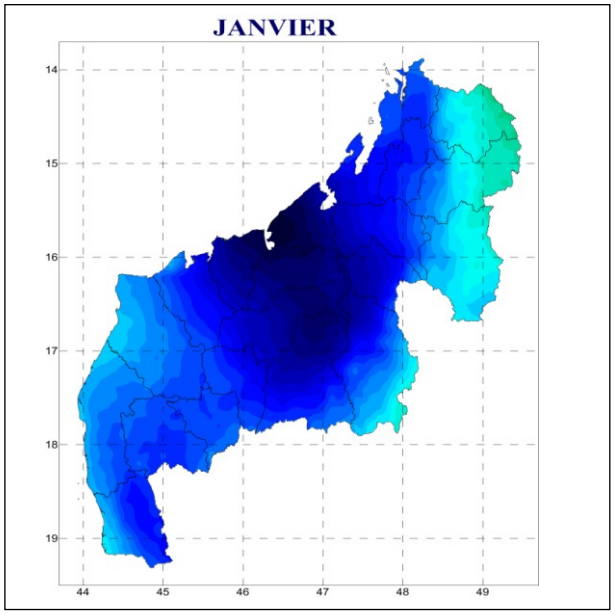


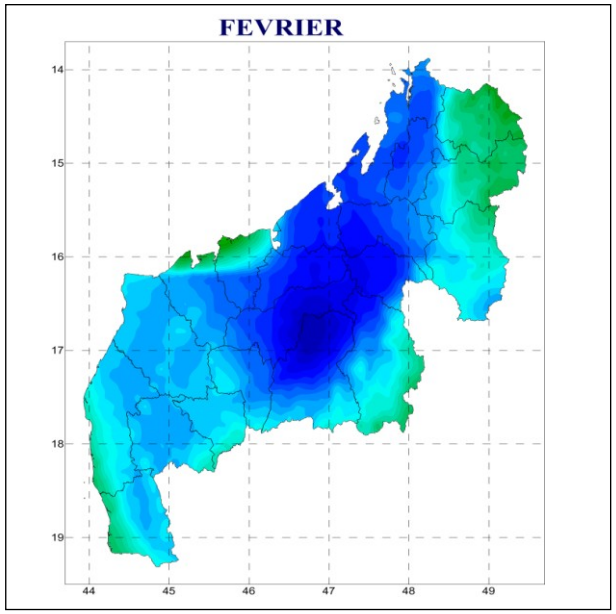


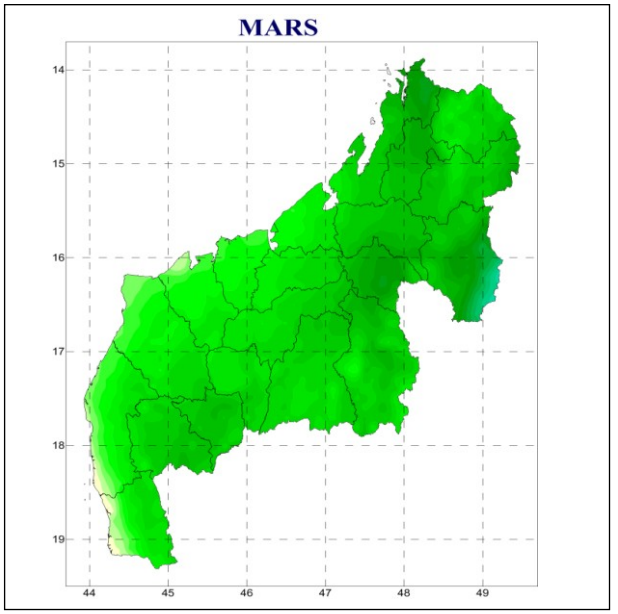


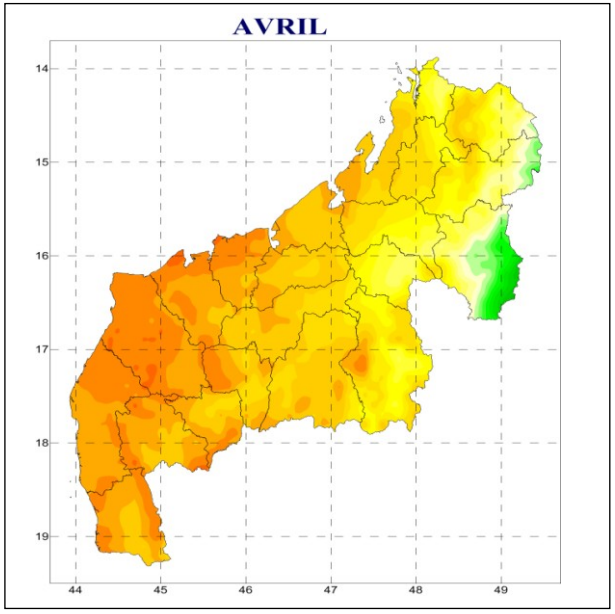
MAHAJANGA

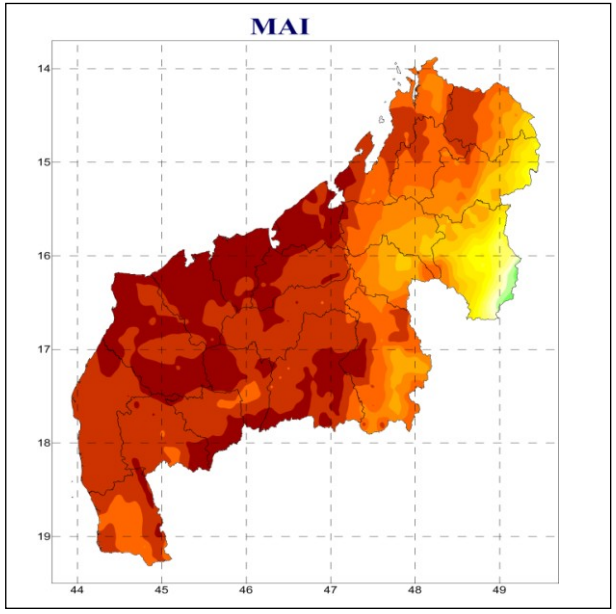
MOYENNES MENSUELLES DES PLUIES

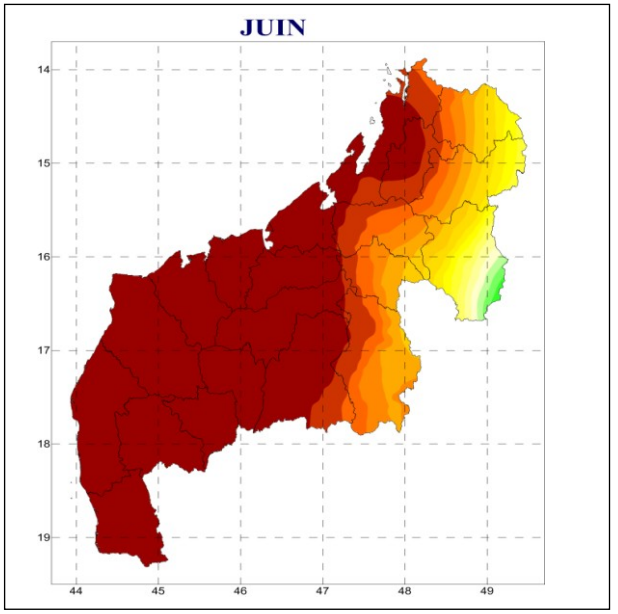


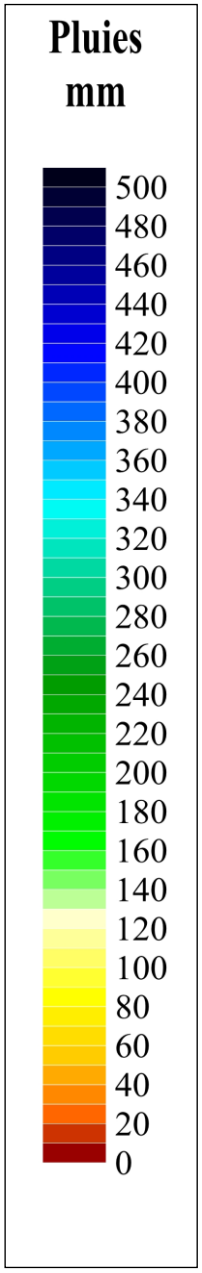






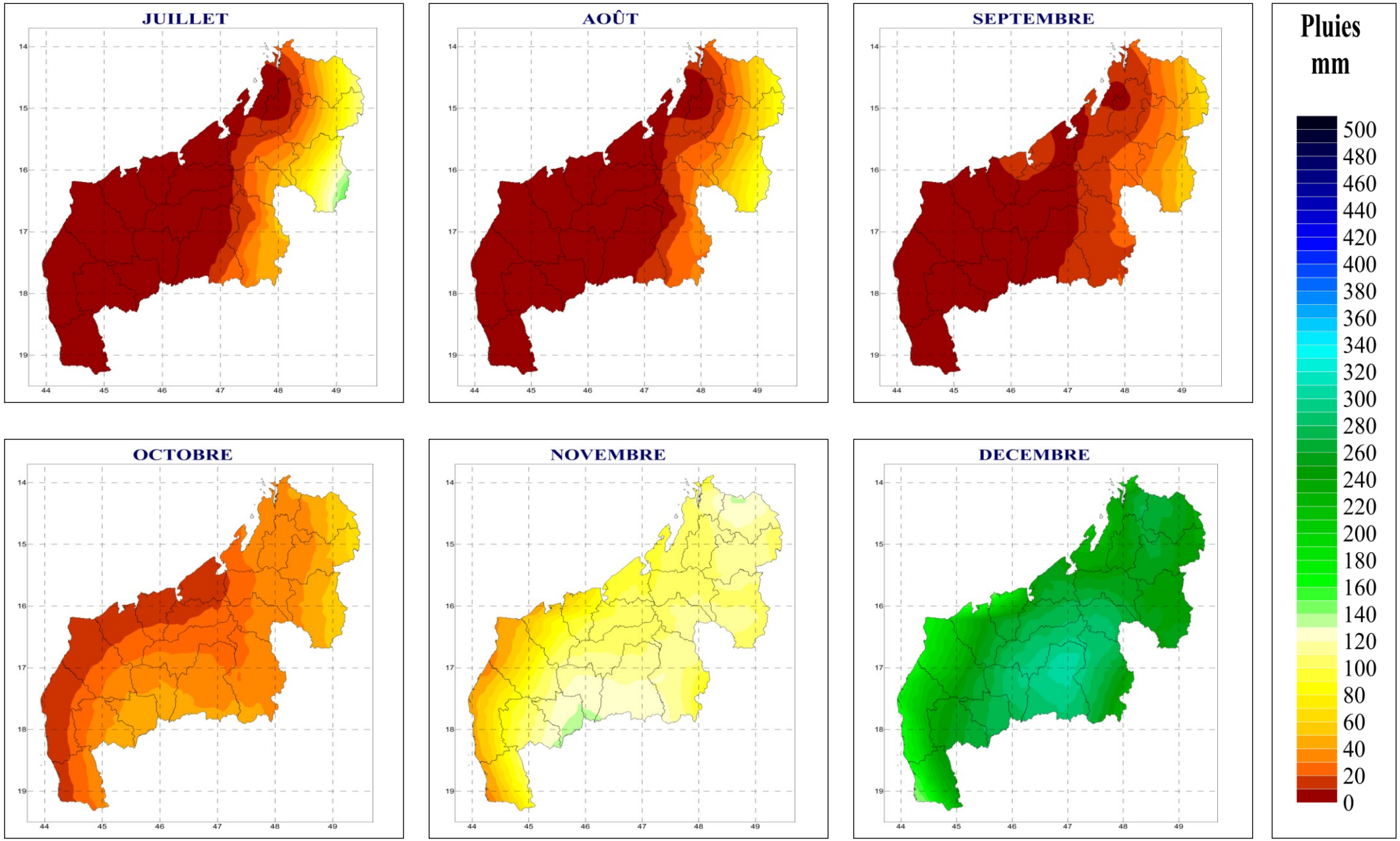






MAHAJANGA

MOYENNES MENSUELLES DES PLUIES



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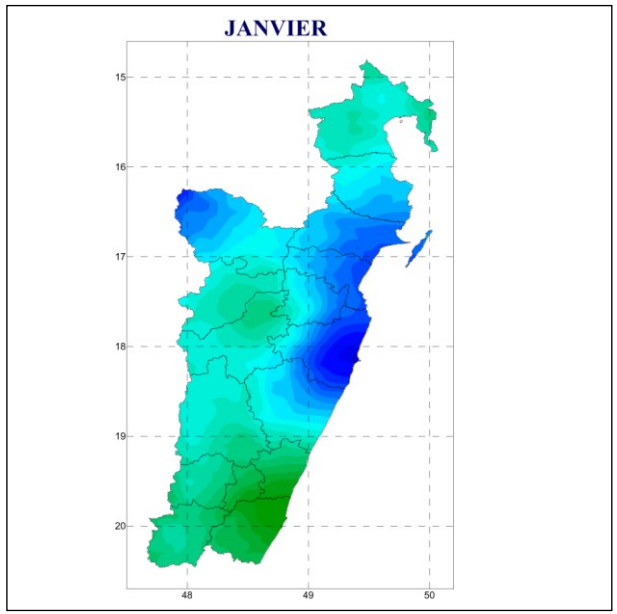
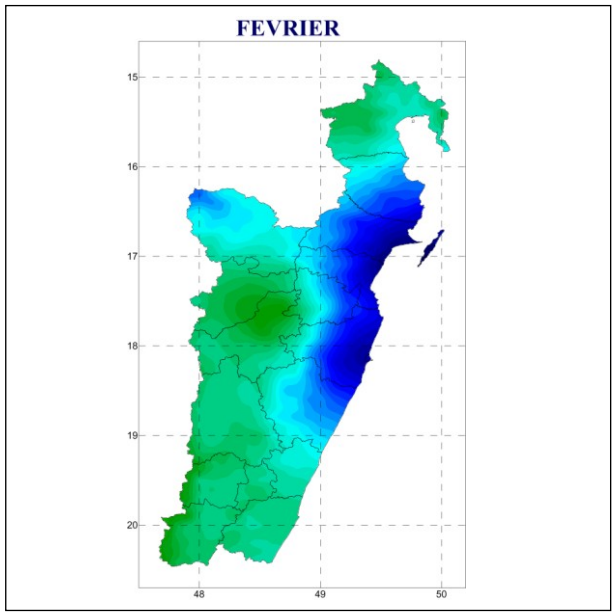
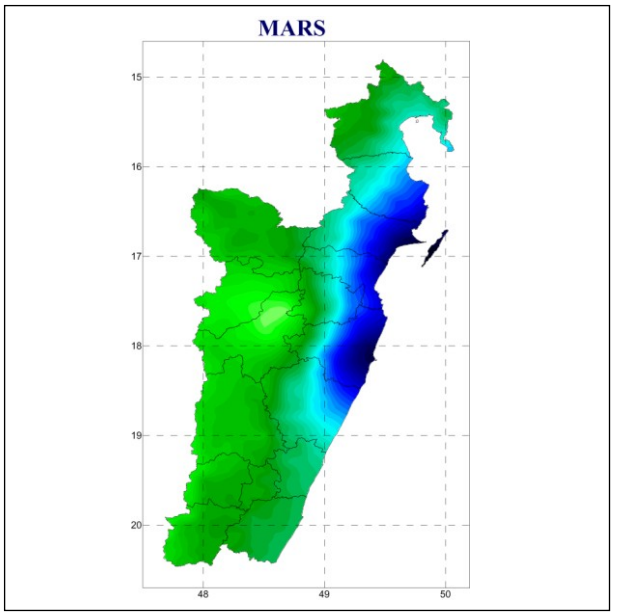
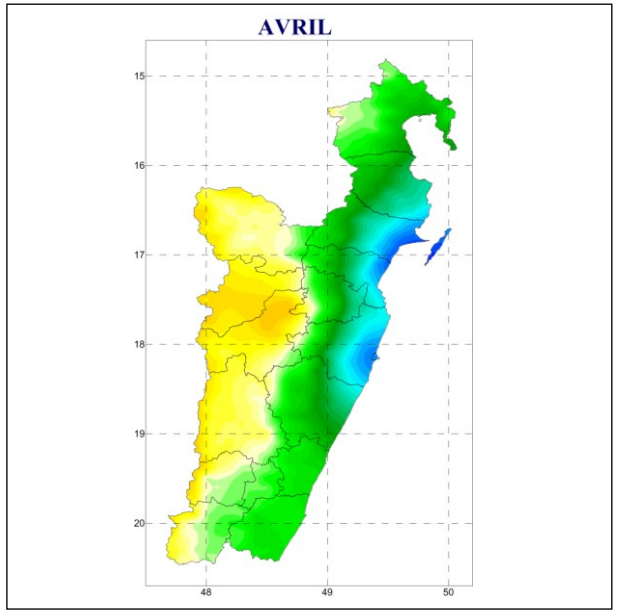
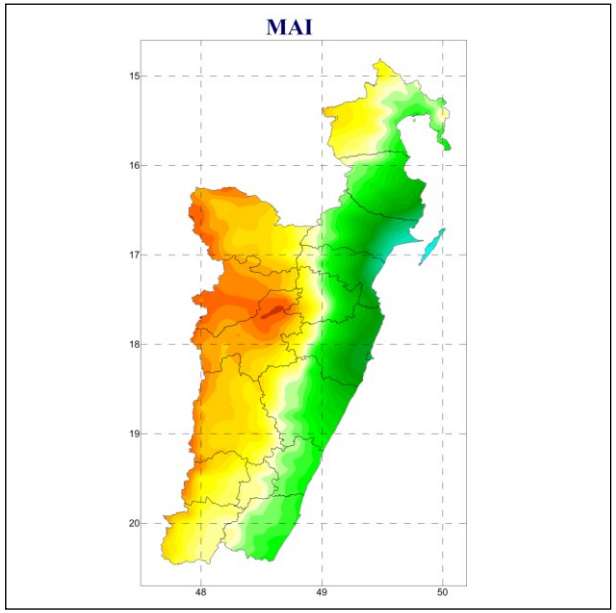
MOYENNES MENSUELLES DES PLUIES

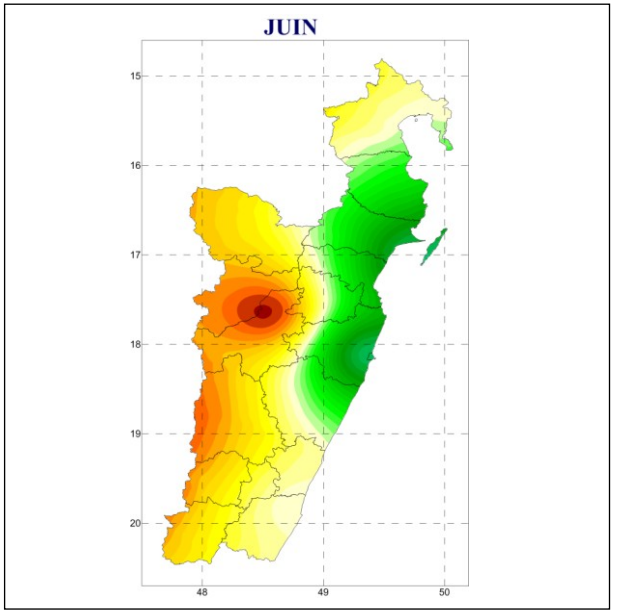


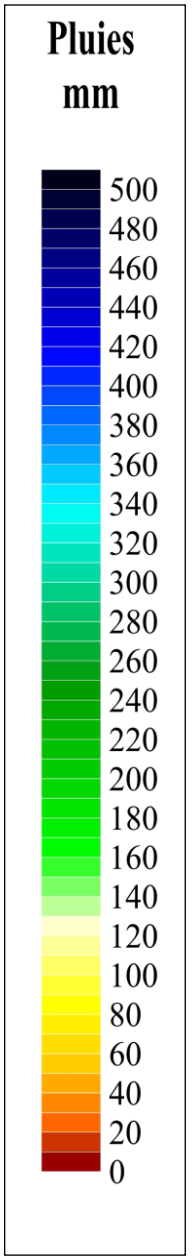












TOAMASINA

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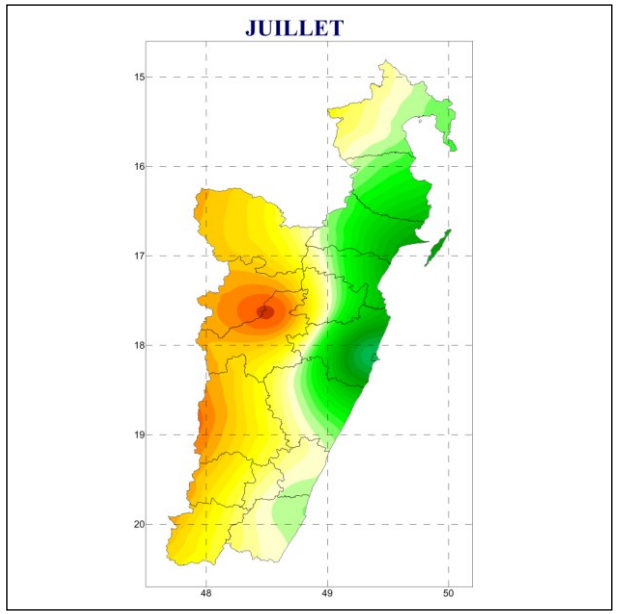
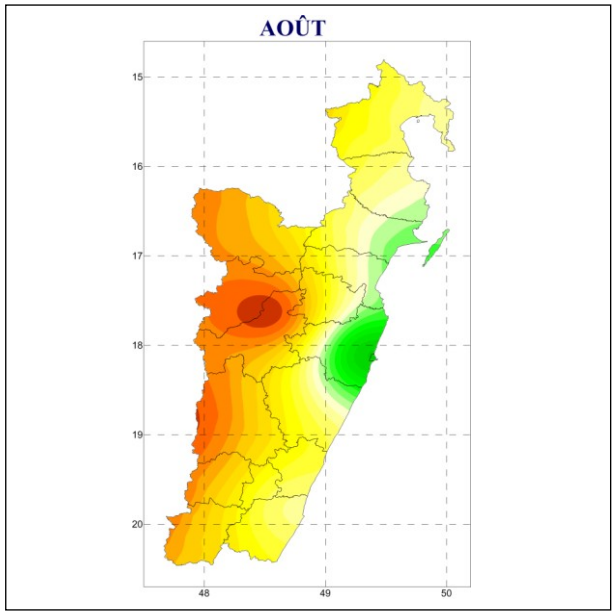
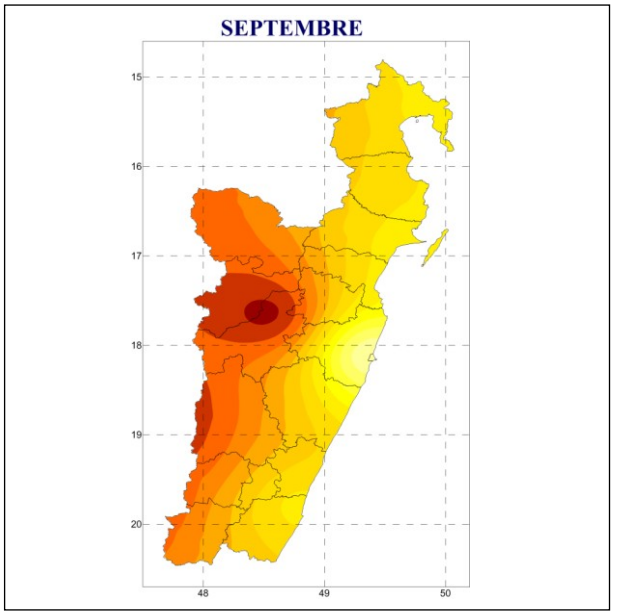
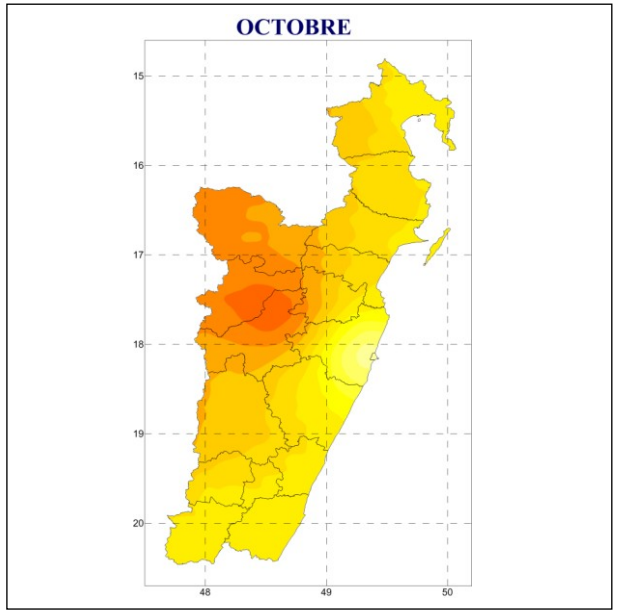
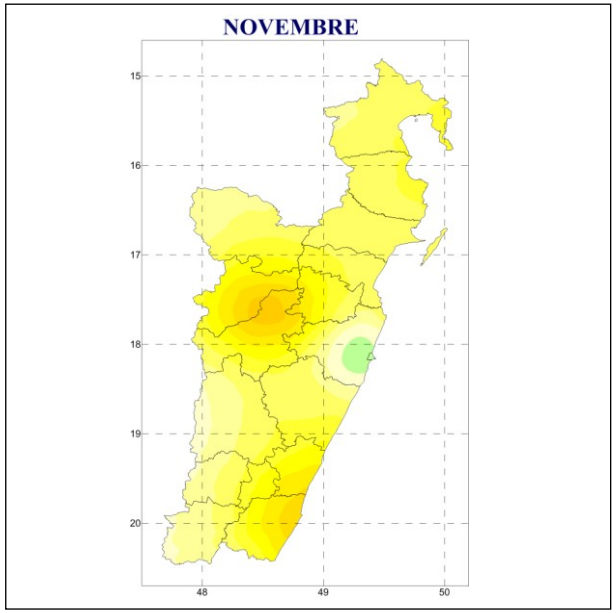
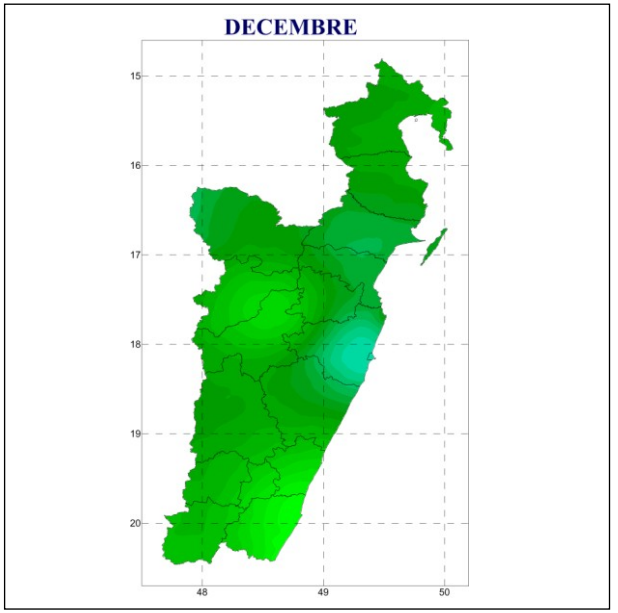


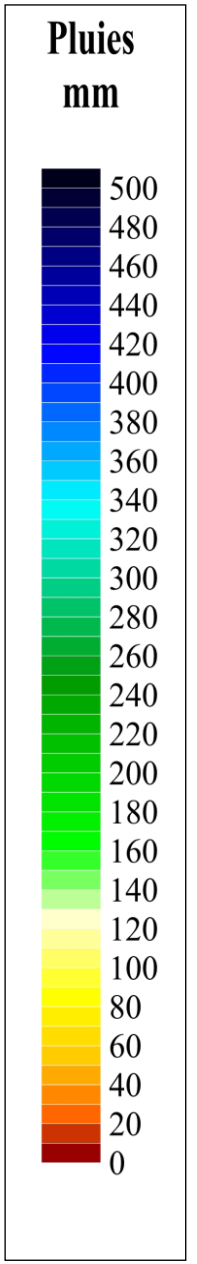






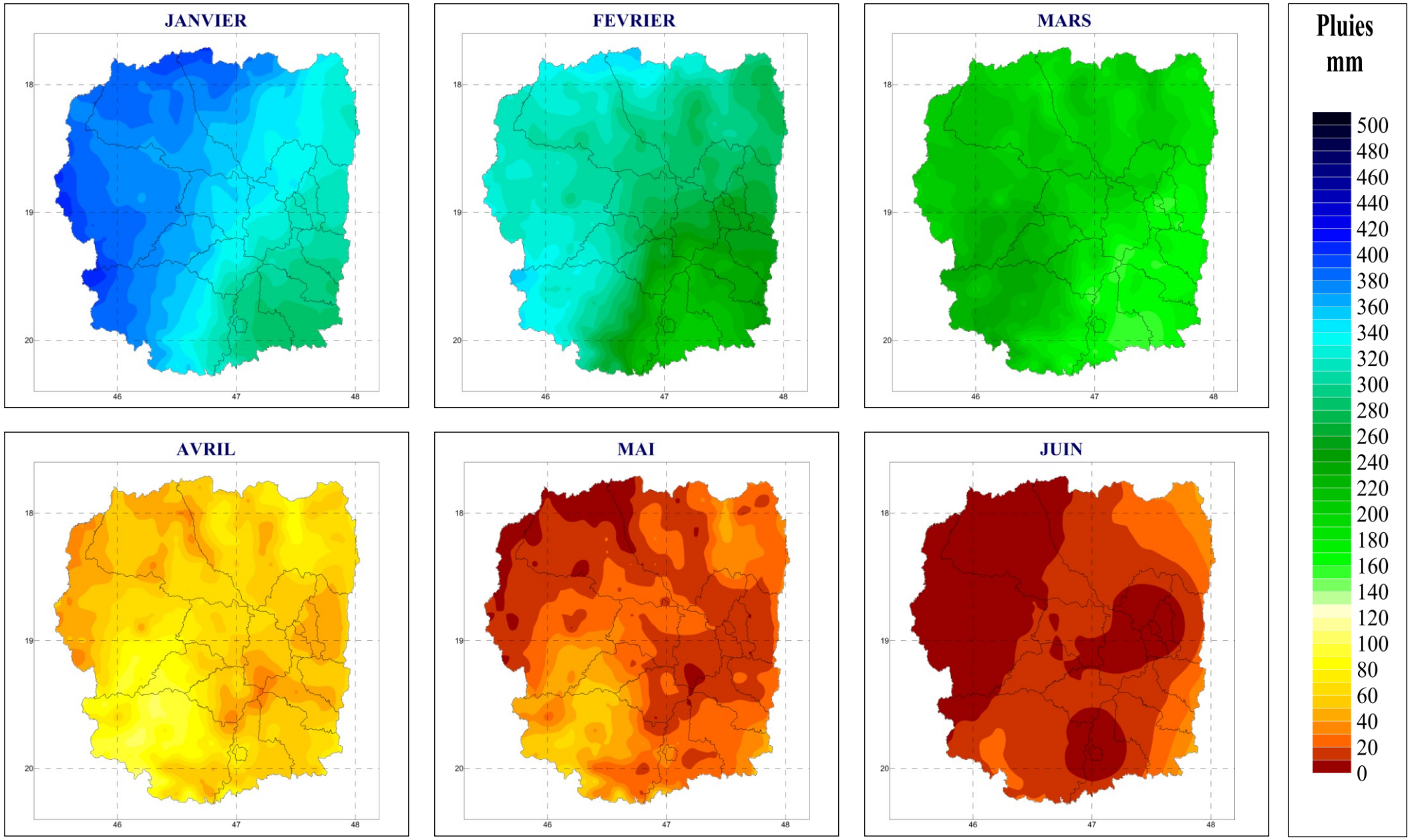






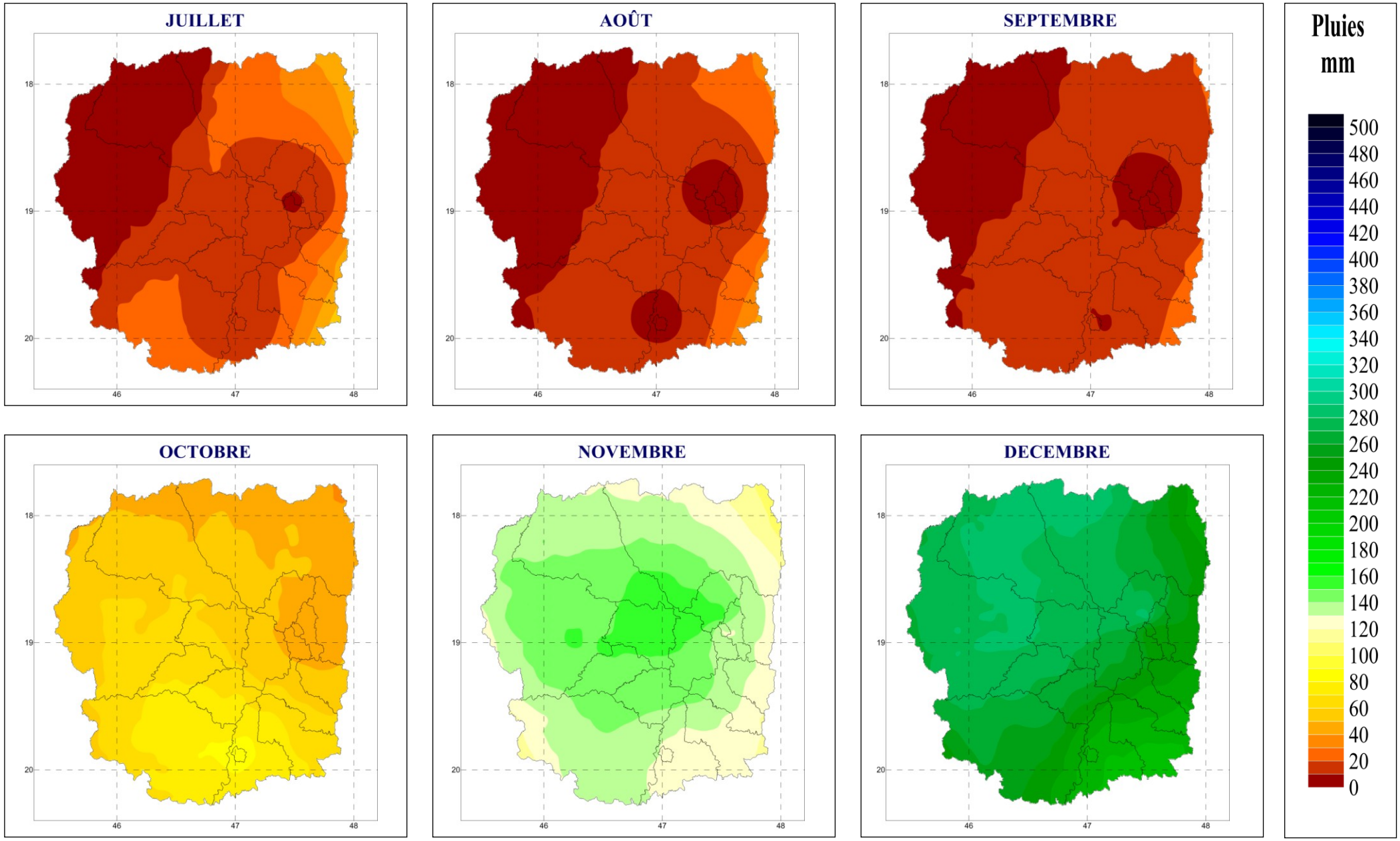
ANTANANARIVO

MOYENNES MENSUELLES DES PLUIES



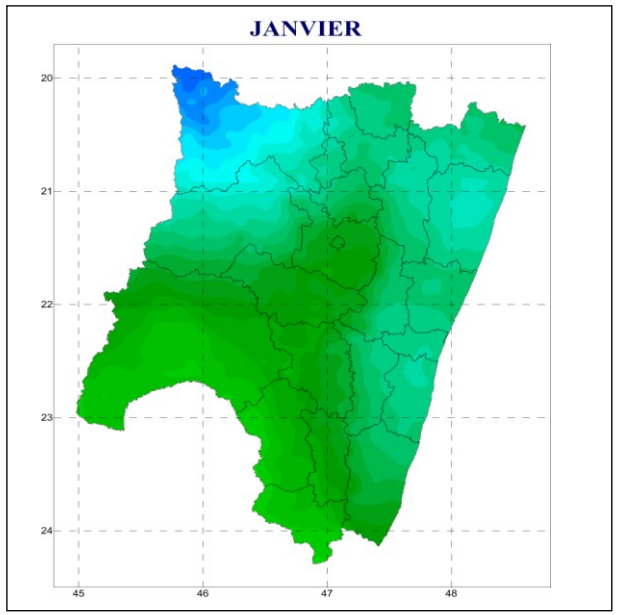
ANTANANARIVO

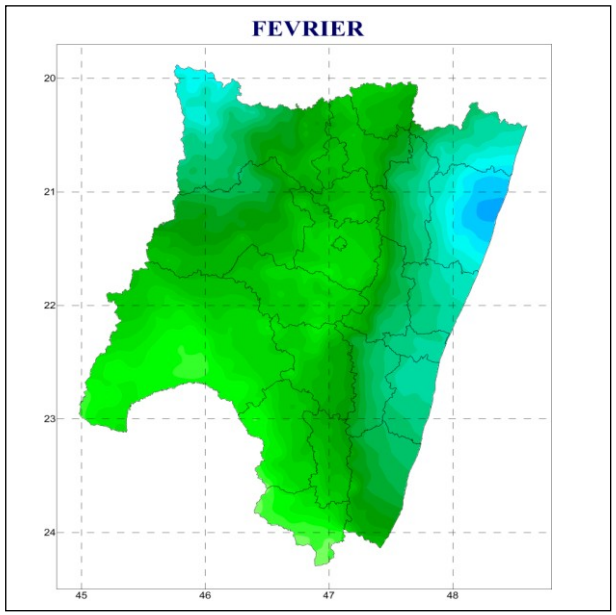
MOYENNES MENSUELLES DES PLUIES

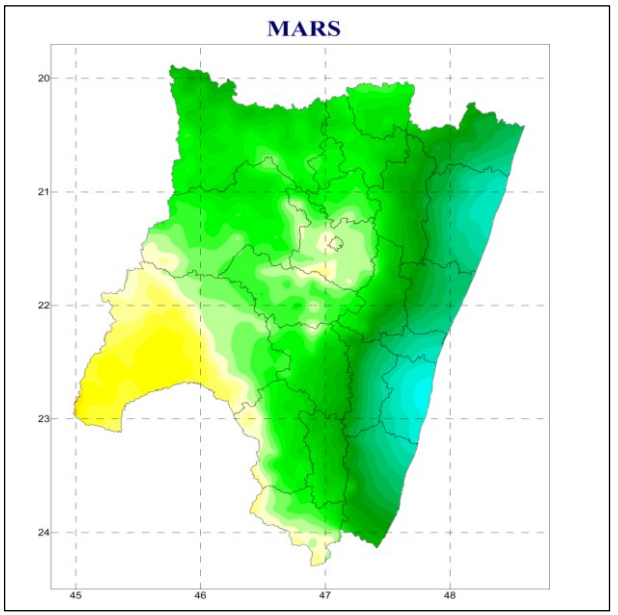


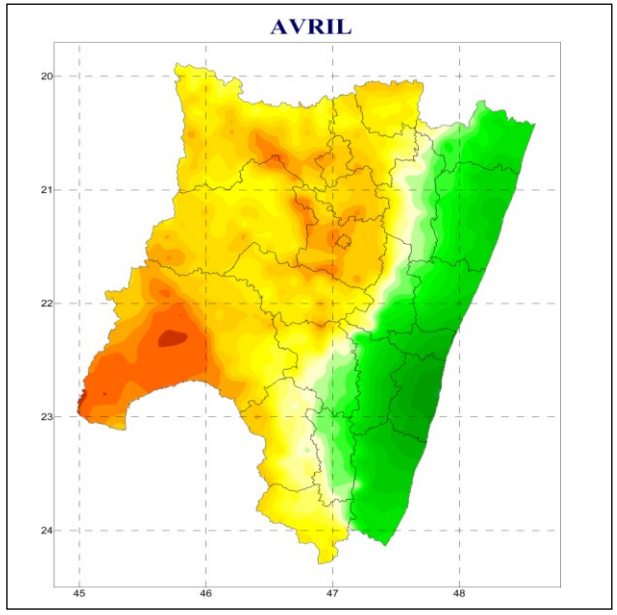
FIANARANTSOA

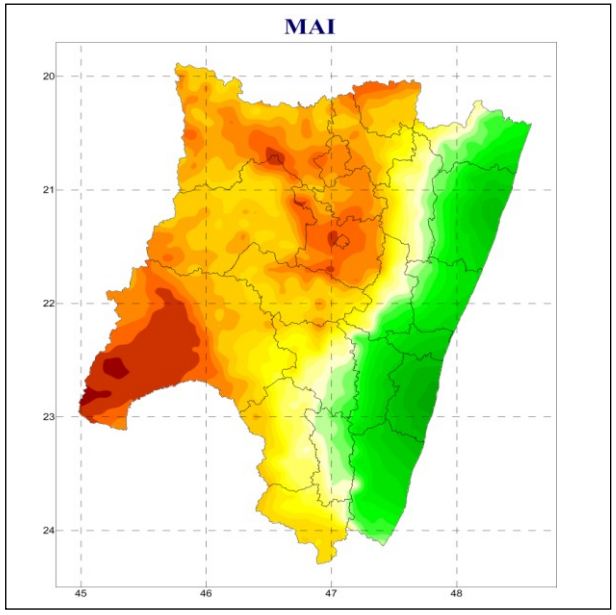
MOYENNES MENSUELLES DES PLUIES

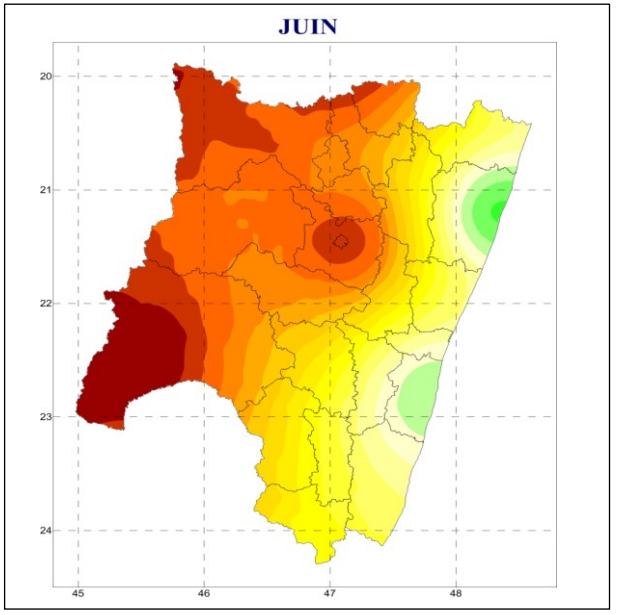


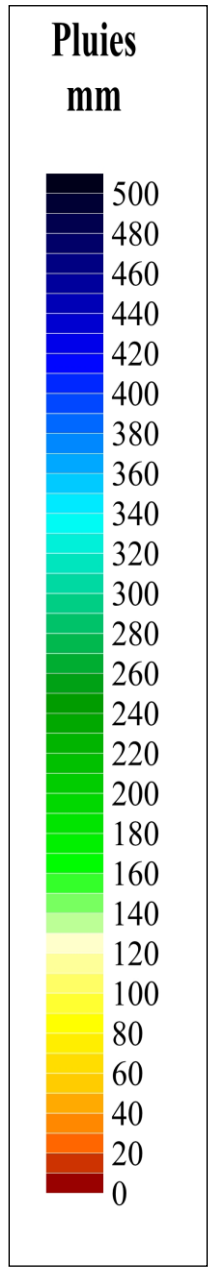






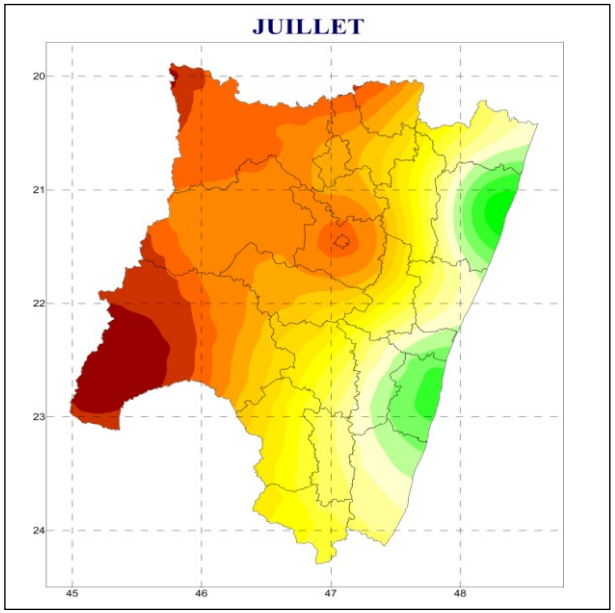


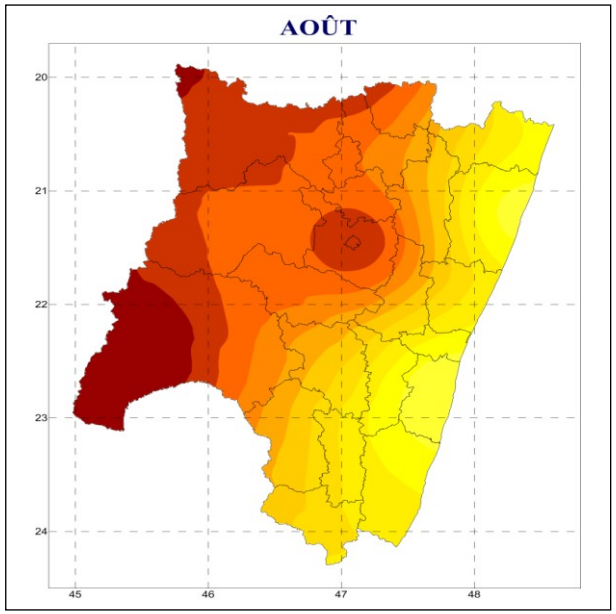


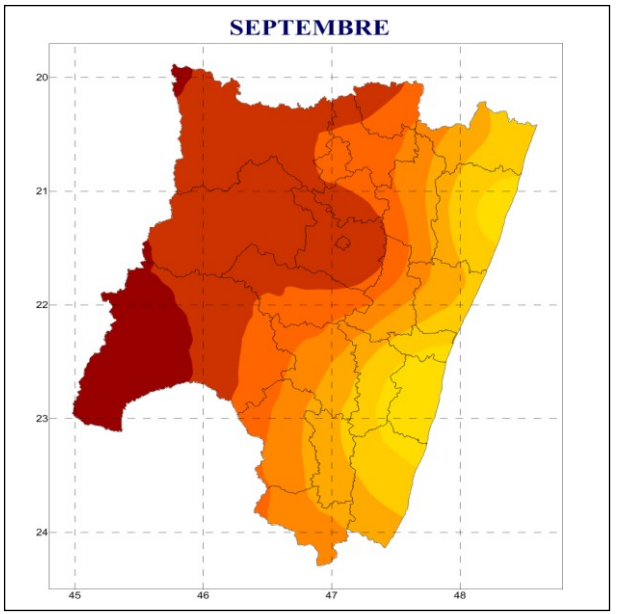


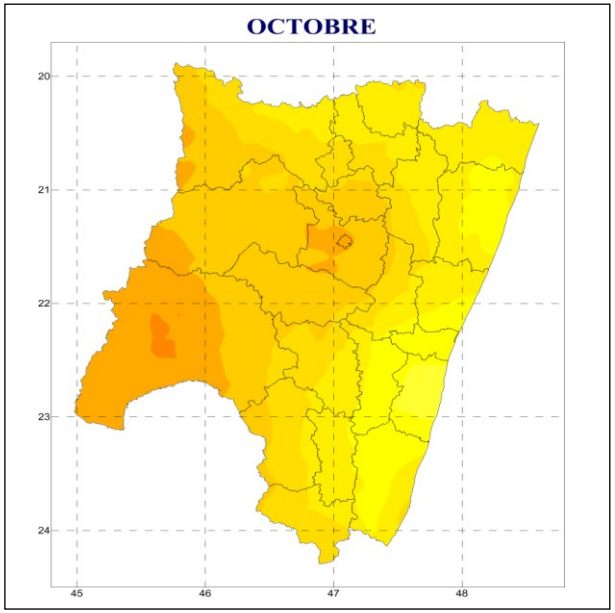
FIANARANTSOA

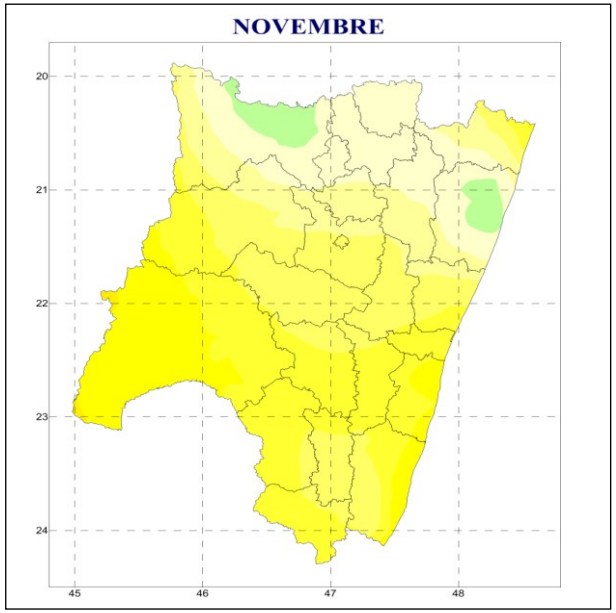
MOYENNES MENSUELLES DES PLUIES

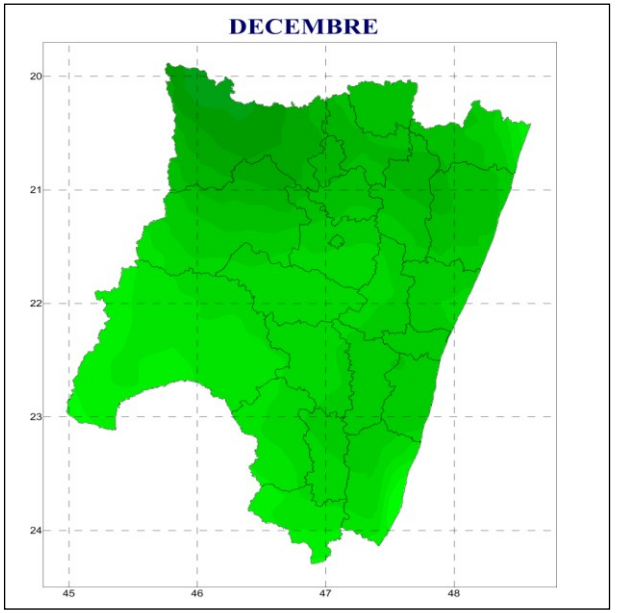


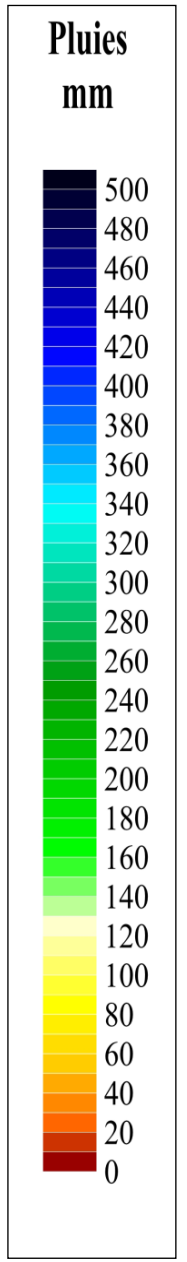






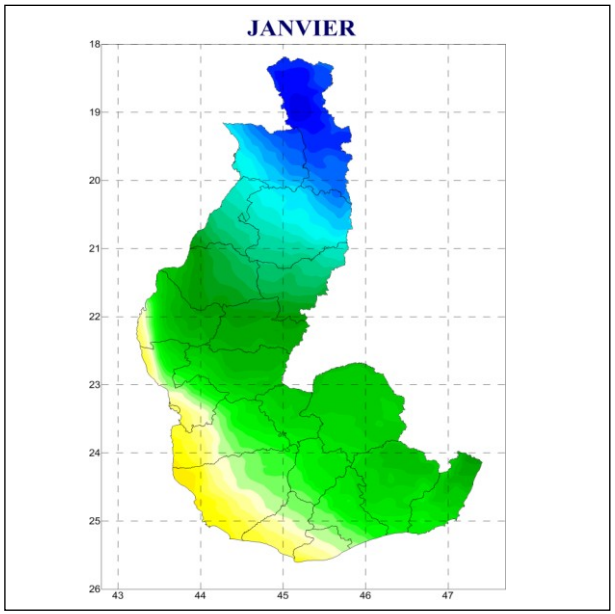


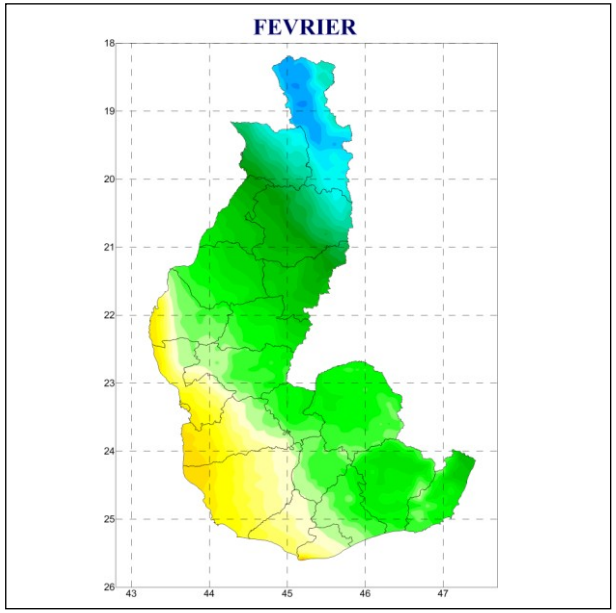


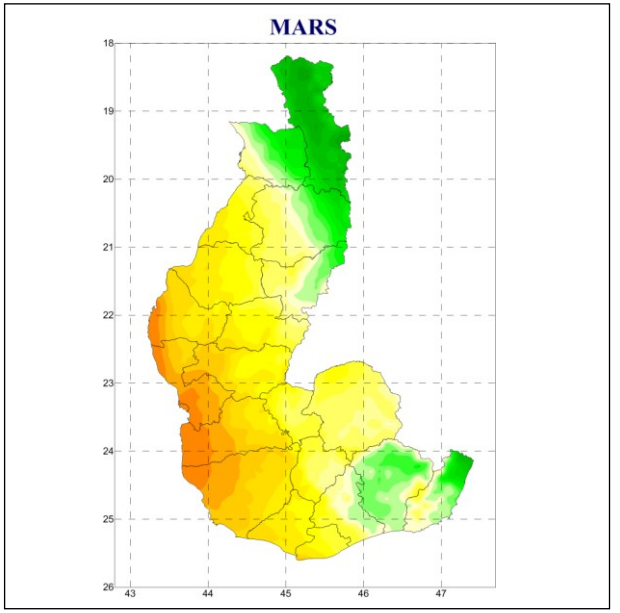


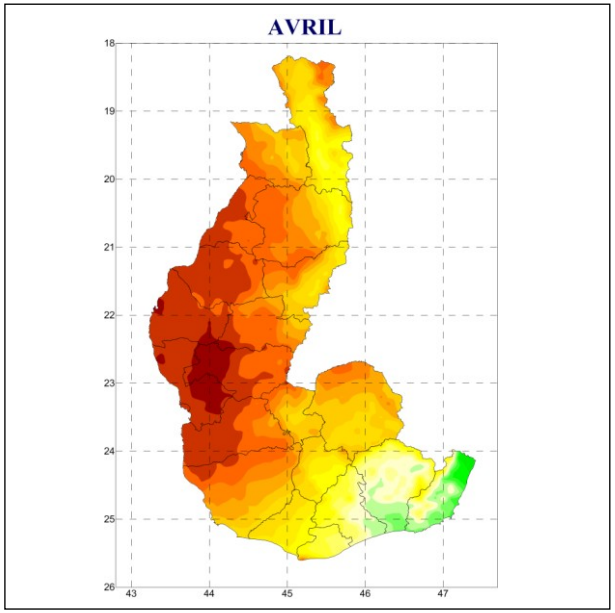
TOLIARA

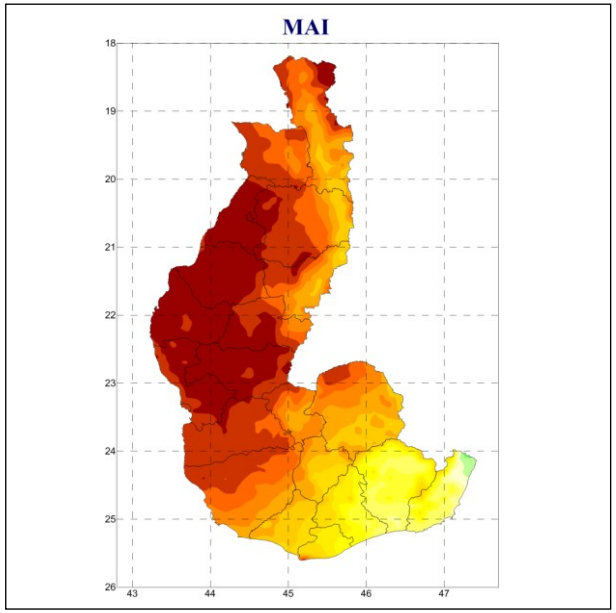
MOYENNES MENSUELLES DES PLUIES

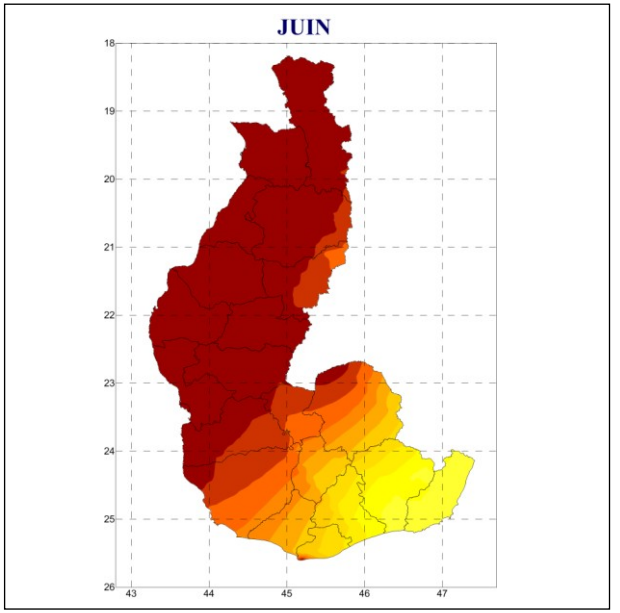


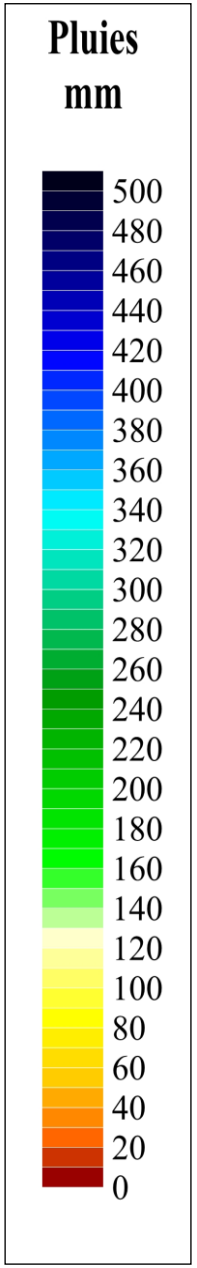






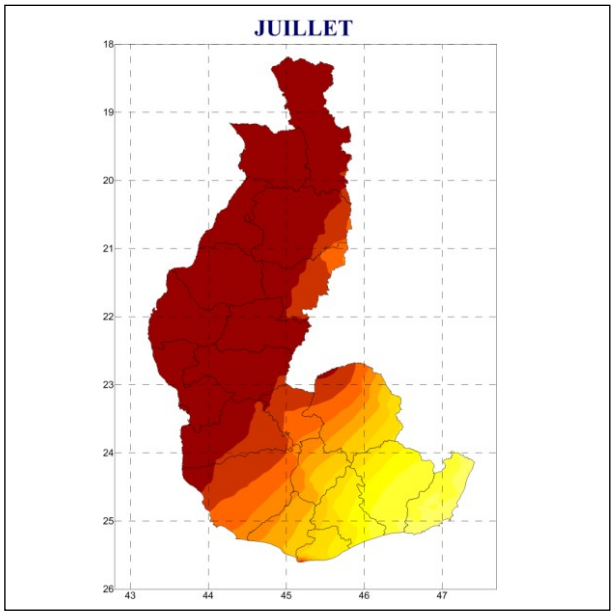


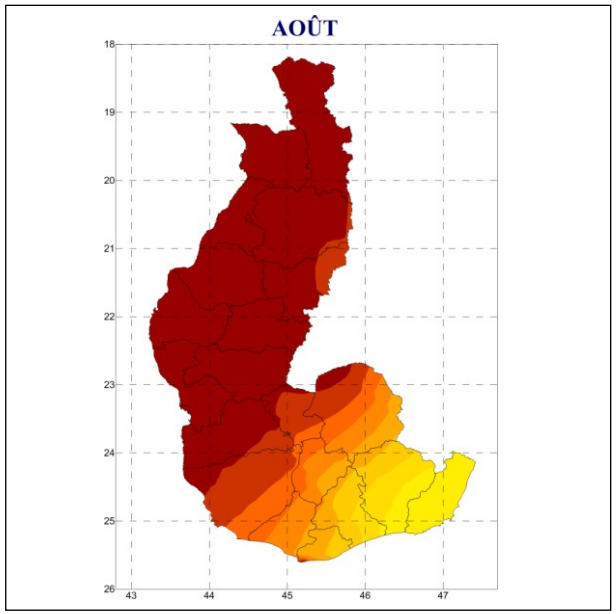


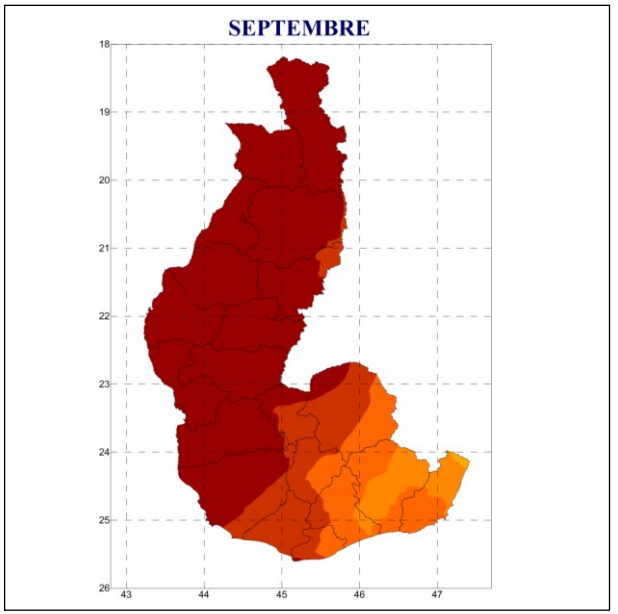


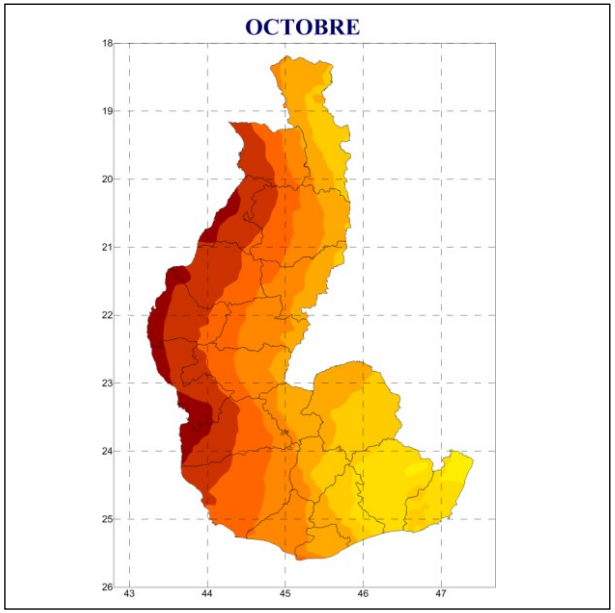
TOLIARA

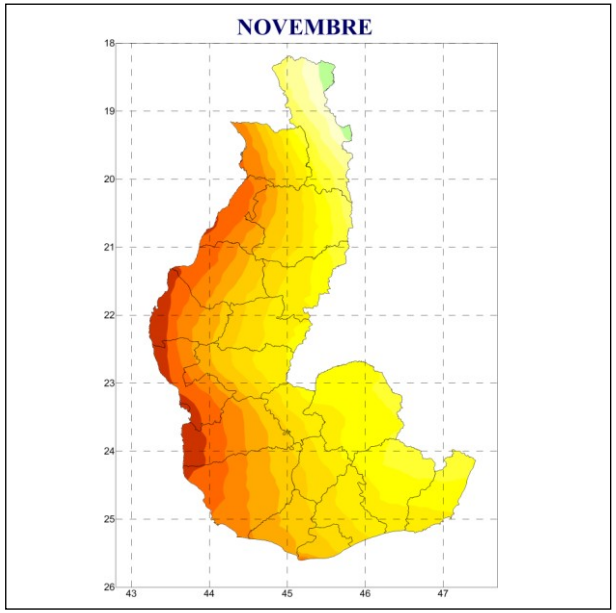
MOYENNES MENSUELLES DES PLUIES

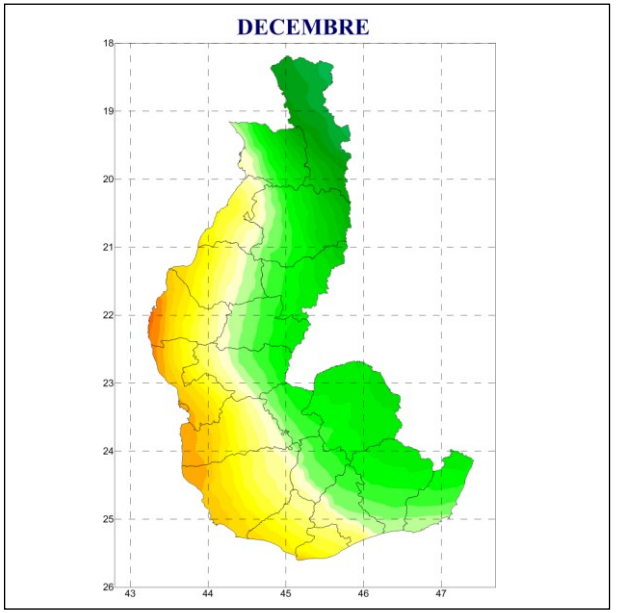


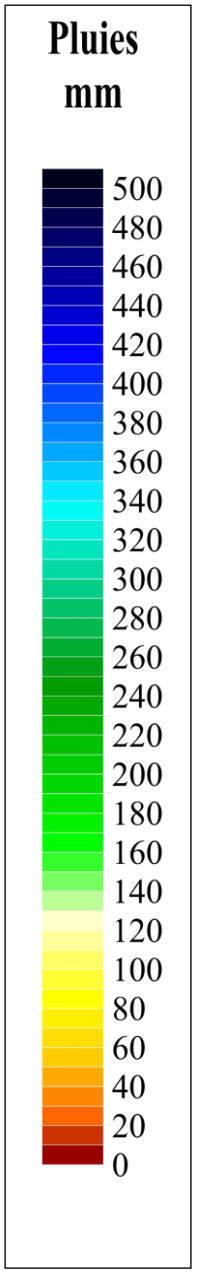










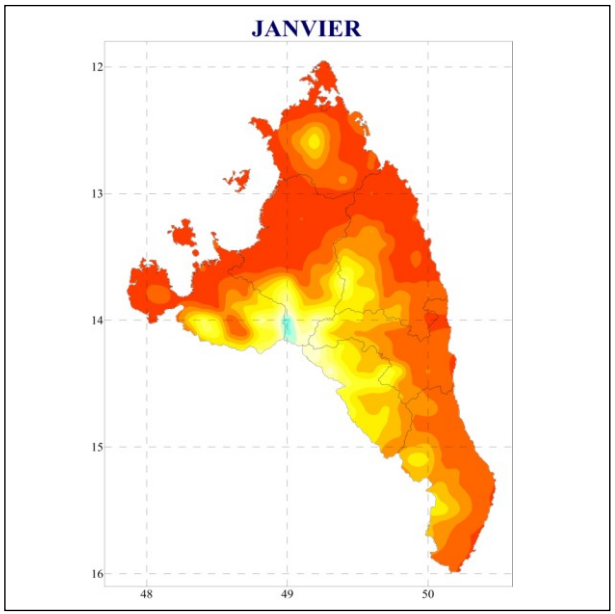


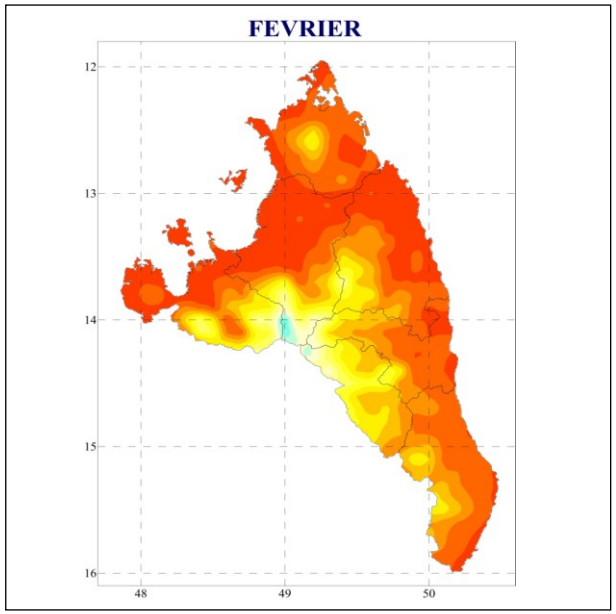
MOYENNES MENSUELLES DES TEMPERATURES

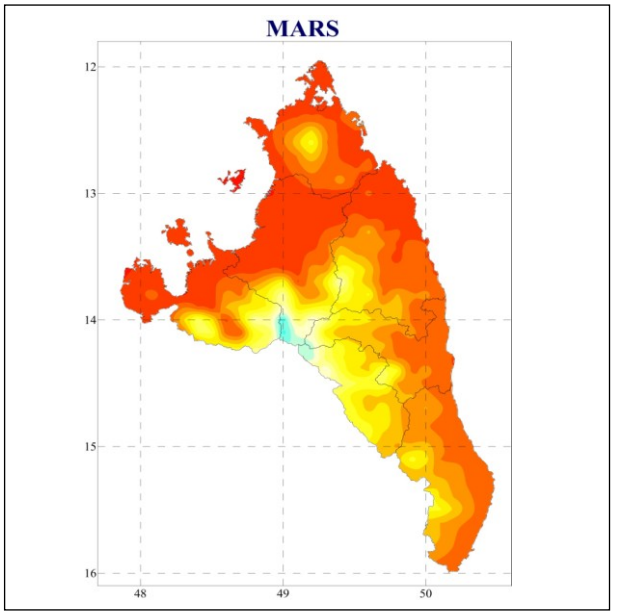
- Pendant la saison chaude, sur le littoral Est, la température moyenne mensuelle décroît de l'Extrême Nord vers le Sud de 27°C à 22°C.
- La côte Ouest est plus chaude que la côte Est.
- Sur les régions des Hautes-Terres, la température moyenne mensuelle atteint son maximum en Janvier et Février.
- A Madagascar, la température hivernale varie de 9°C à 31°C.
- Le minimum de 9°C est observé au mois de Juillet sur les régions des Hautes-Terres, et le maximum de 31°C sur la côte Ouest où la température est toujours élevée (> à 25°C), tandis que sur la côte Est, la moyenne des températures est de 23°C.

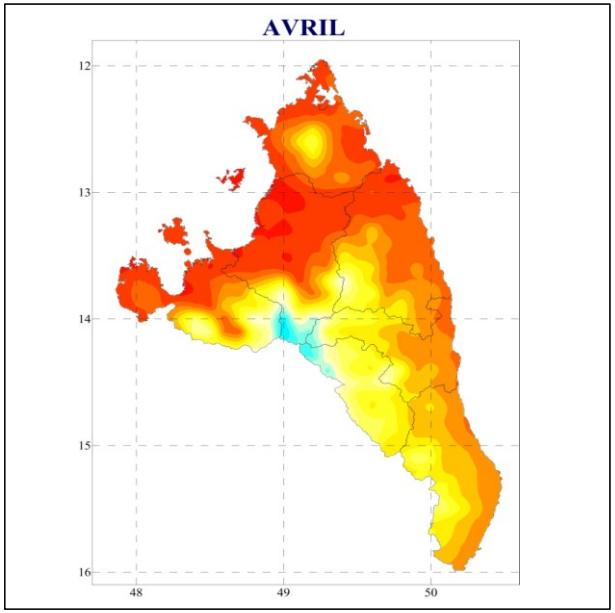
ANTSIRANANA

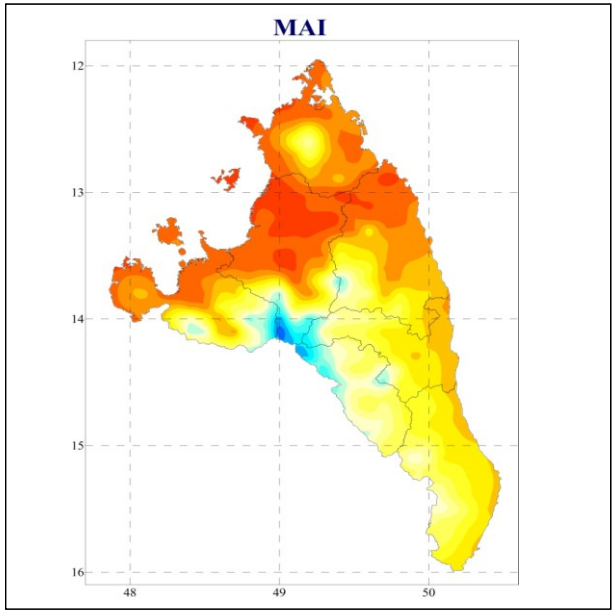
MOYENNES MENSUELLES DES TEMPERATURES

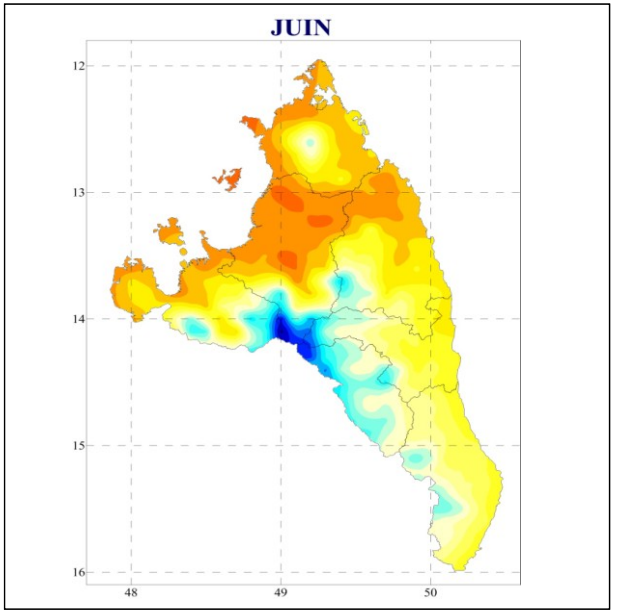


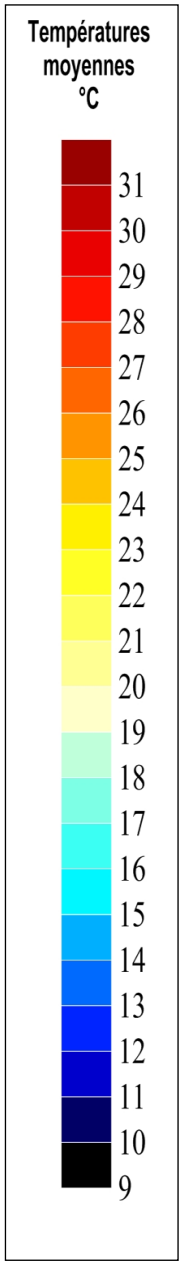






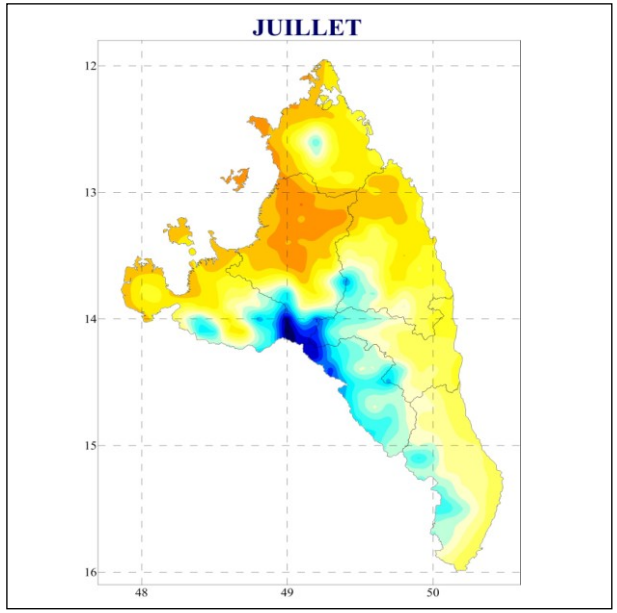


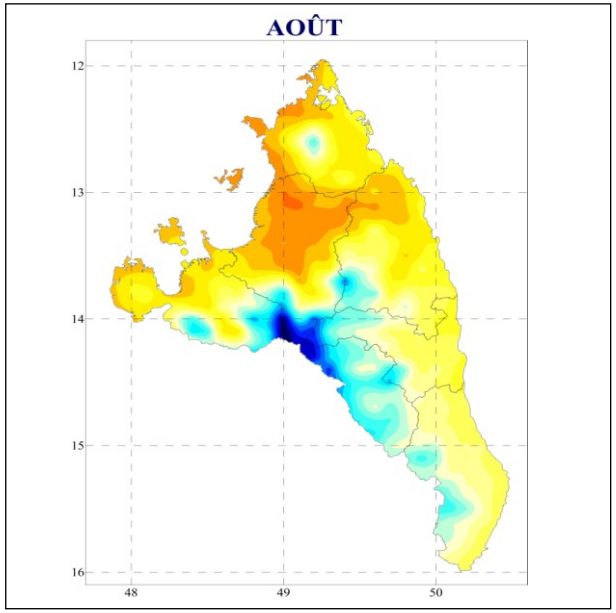


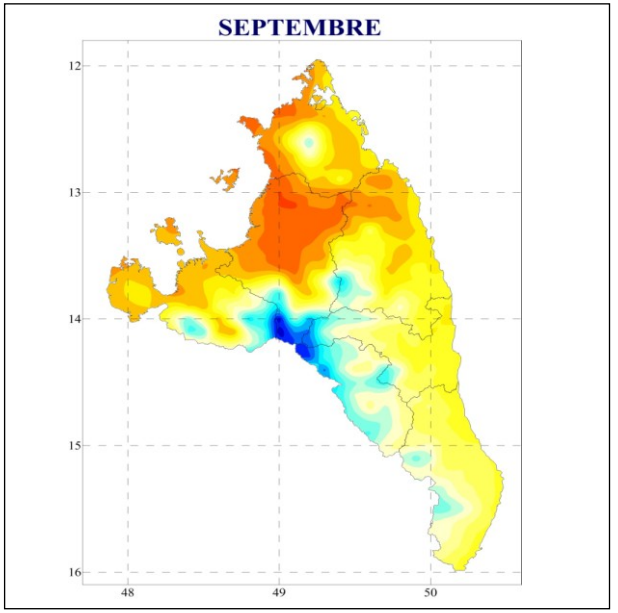


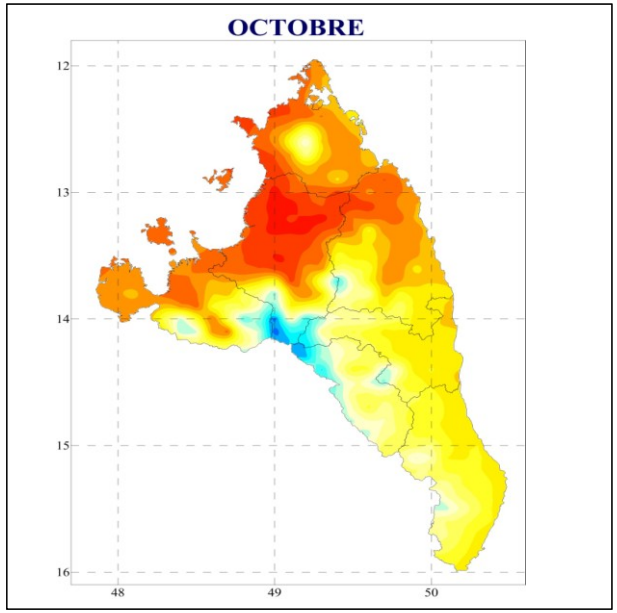
ANTSIRANANA

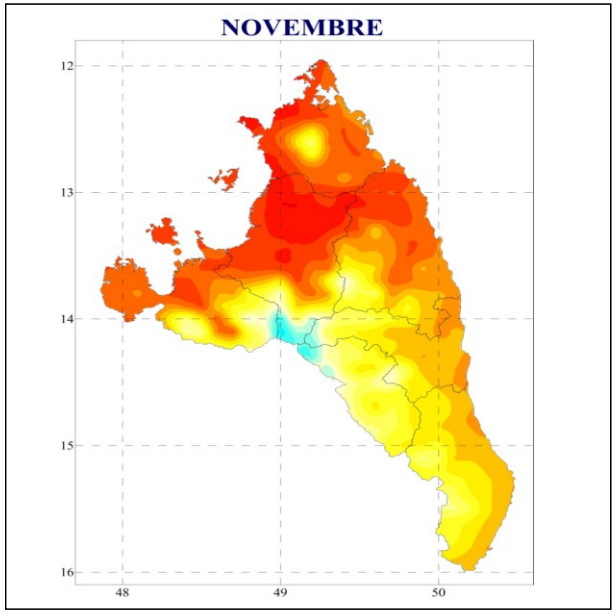
MOYENNES MENSUELLES DES TEMPERATURES

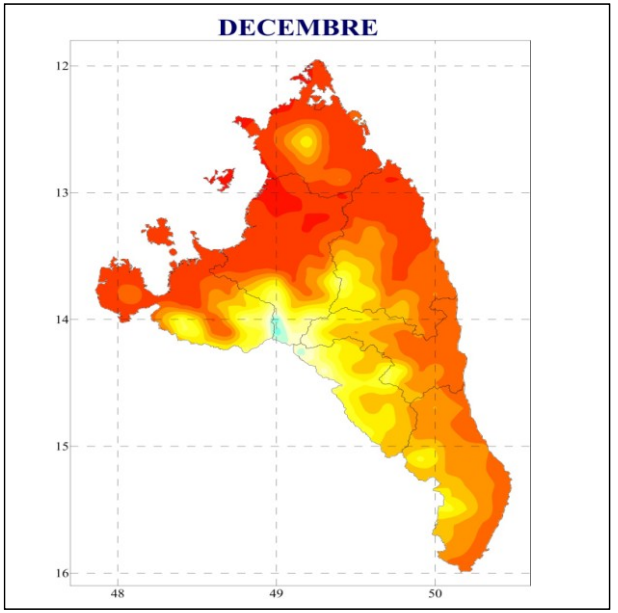


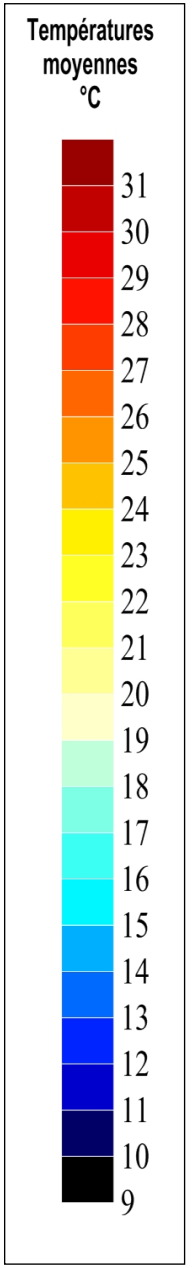






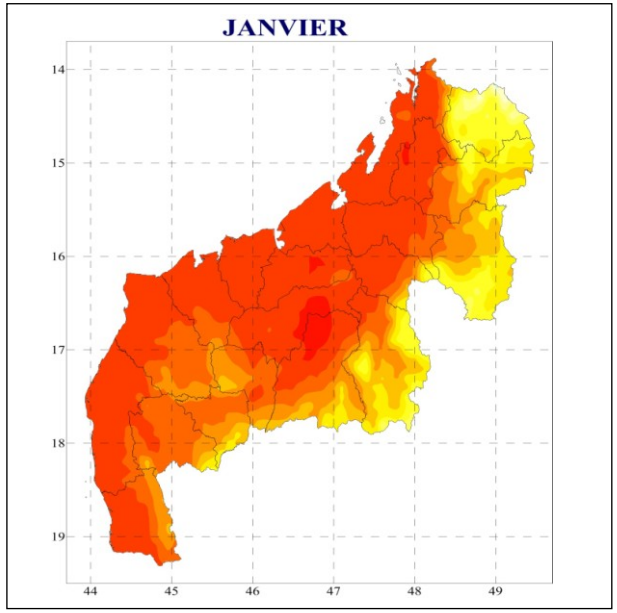


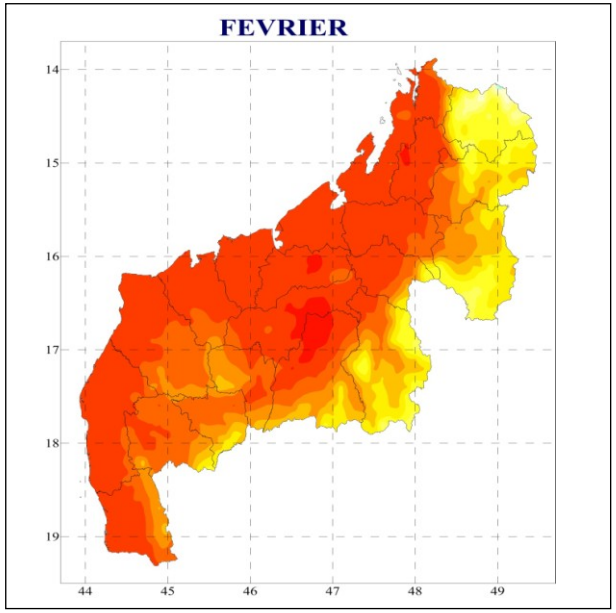


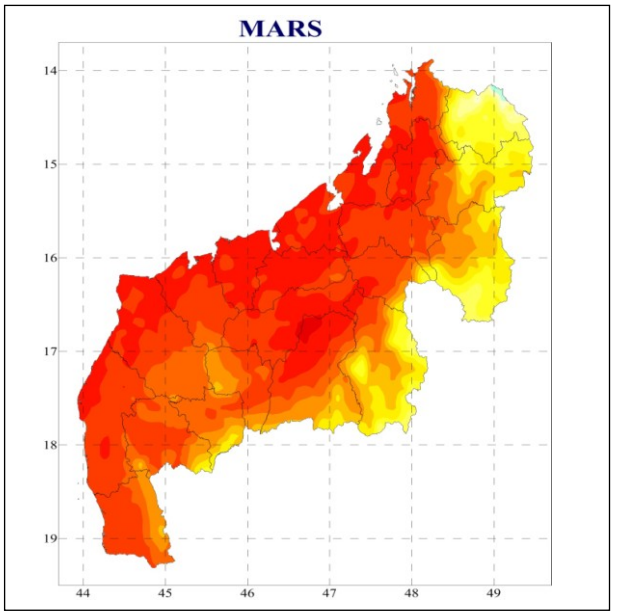


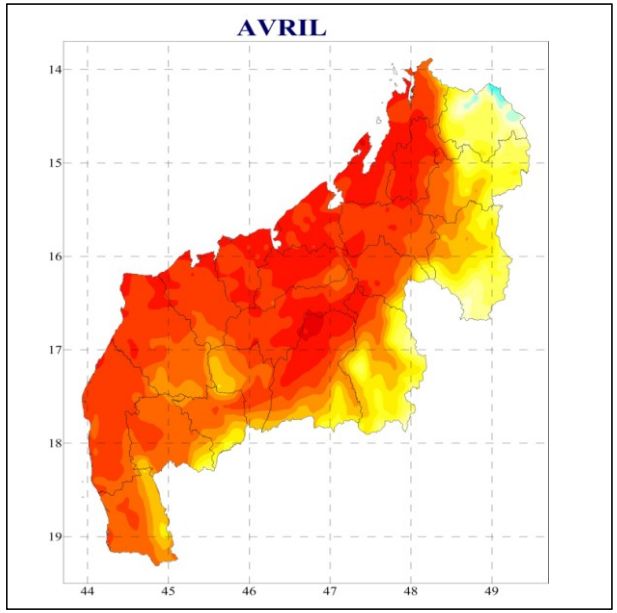
MAHAJANGA

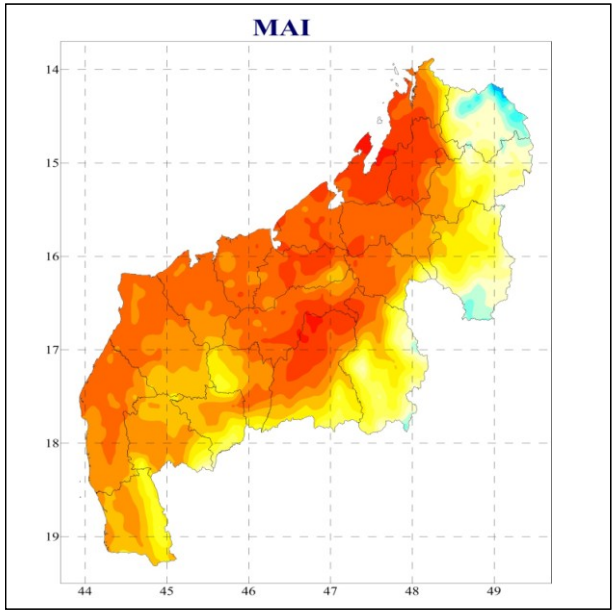
MOYENNES MENSUELLES DES TEMPERATURES

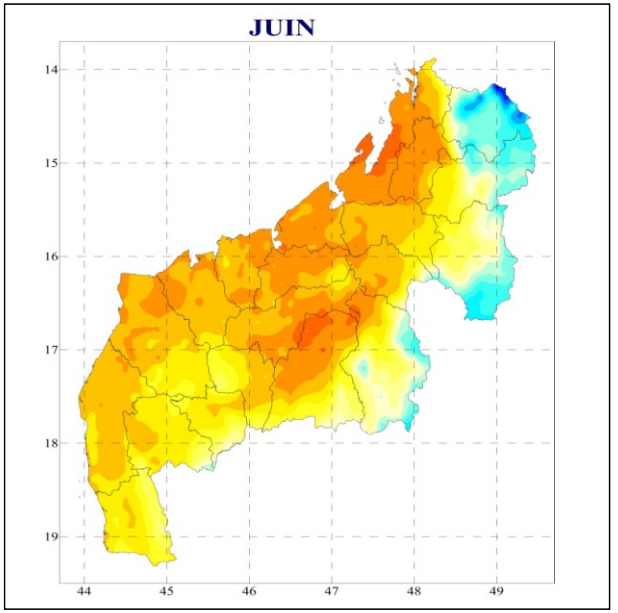


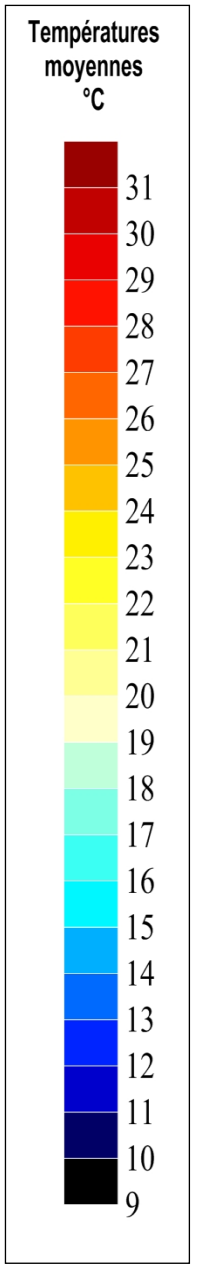






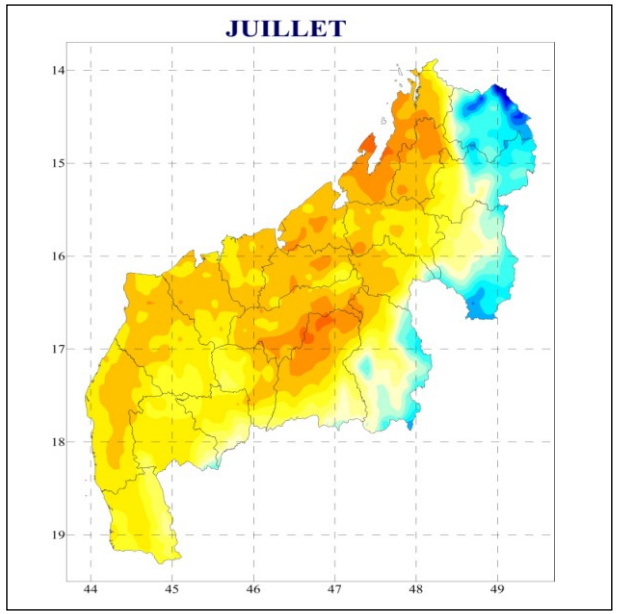


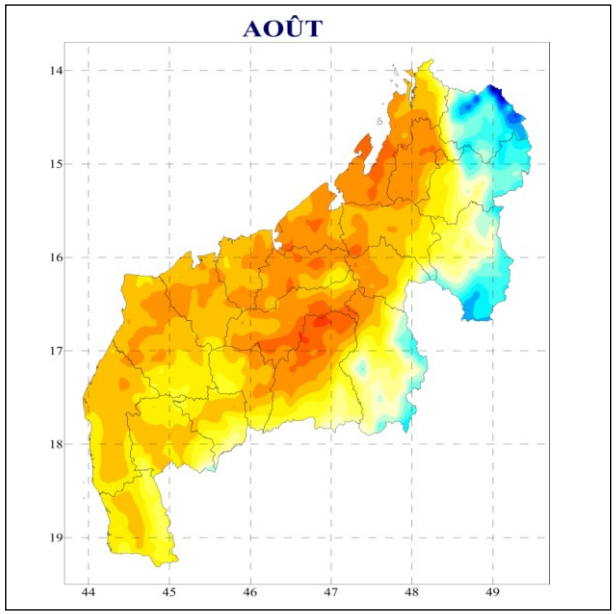


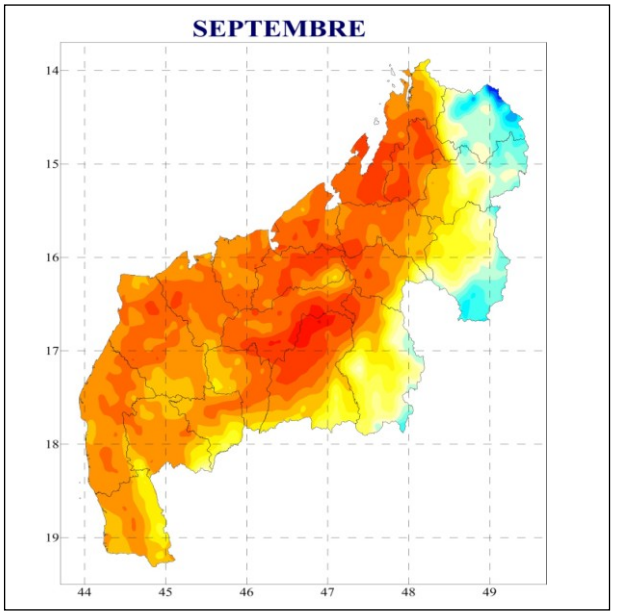


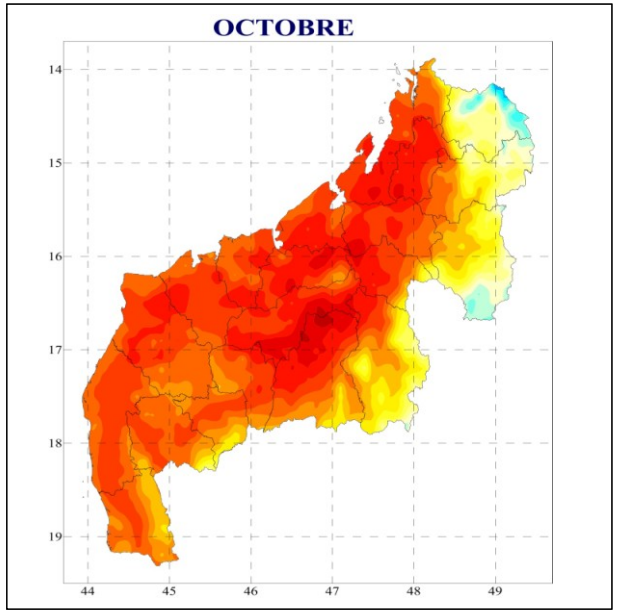
MAHAJANGA

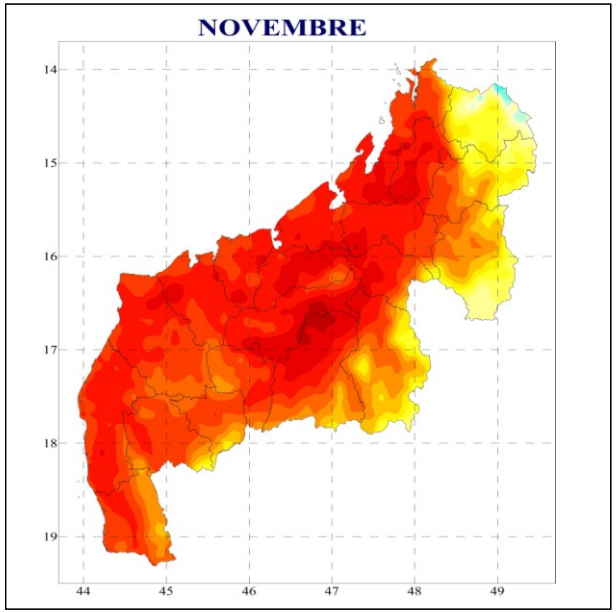
MOYENNES MENSUELLES DES TEMPERATURES

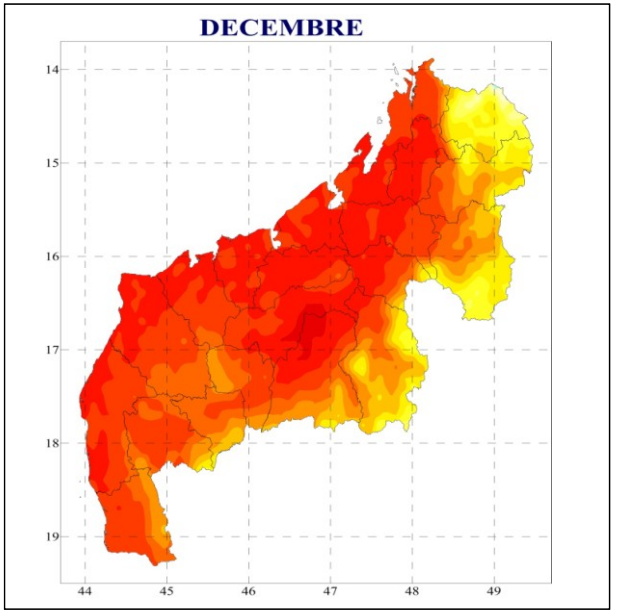


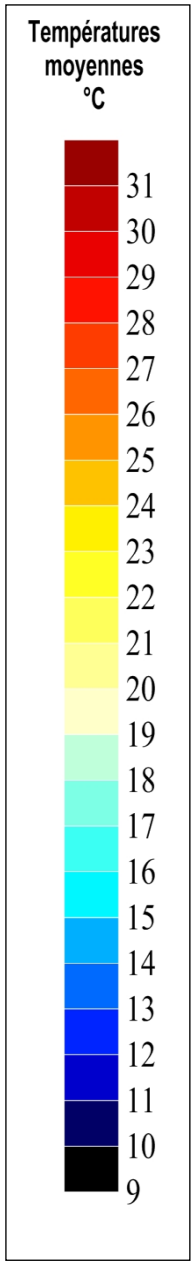






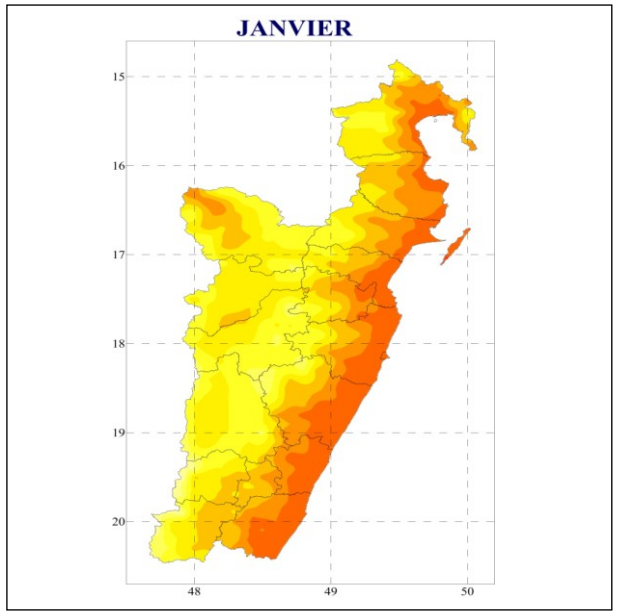


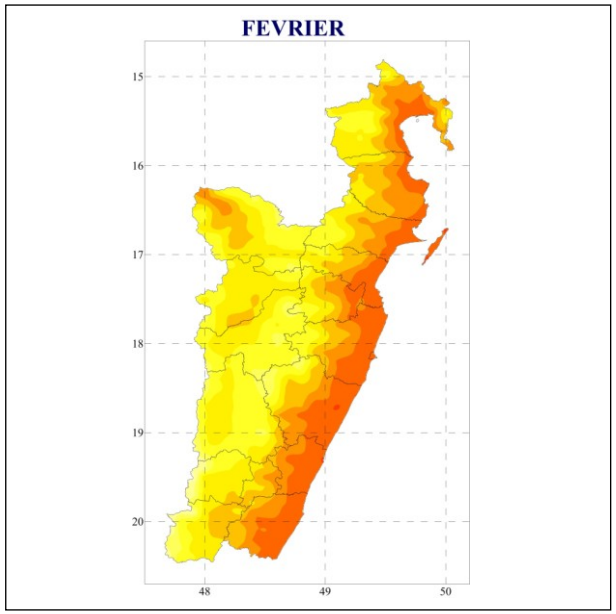


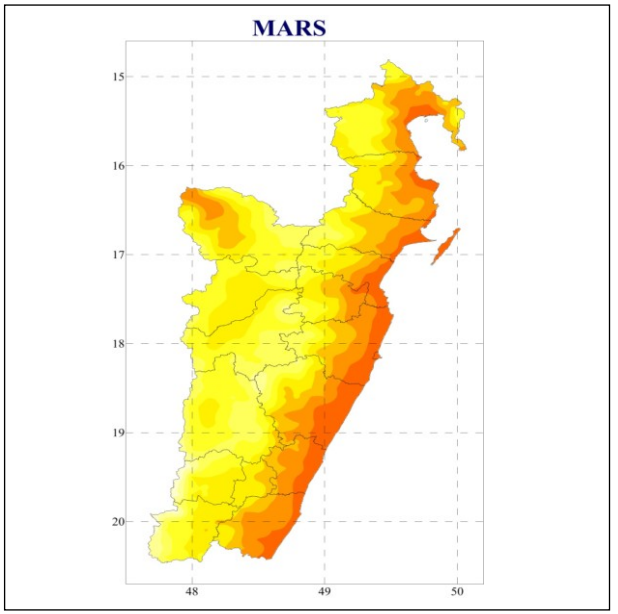


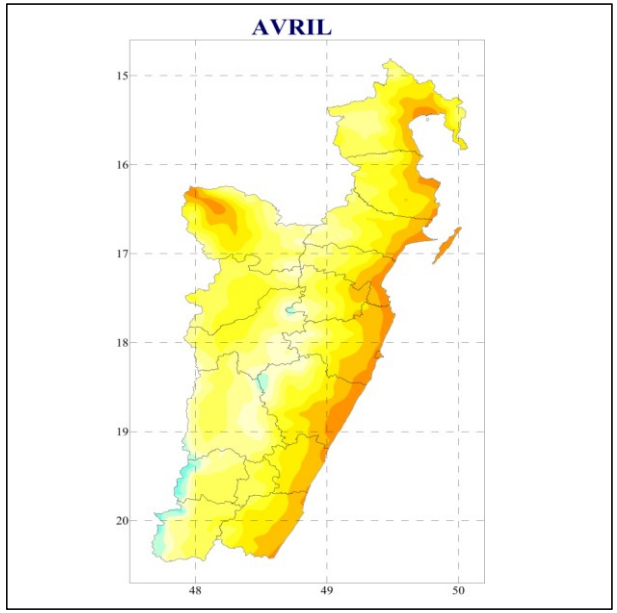
TOAMASINA

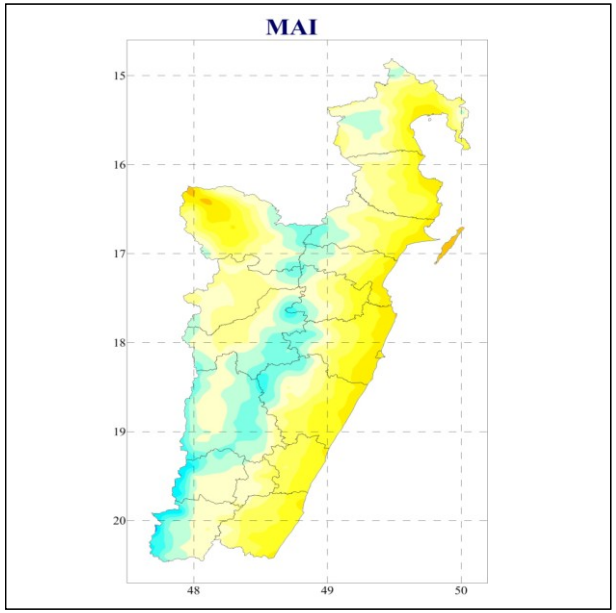
MOYENNES MENSUELLES DES TEMPERATURES

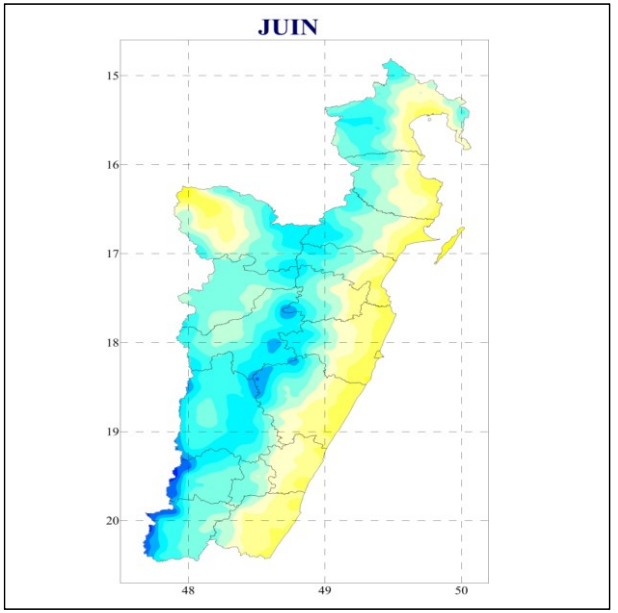


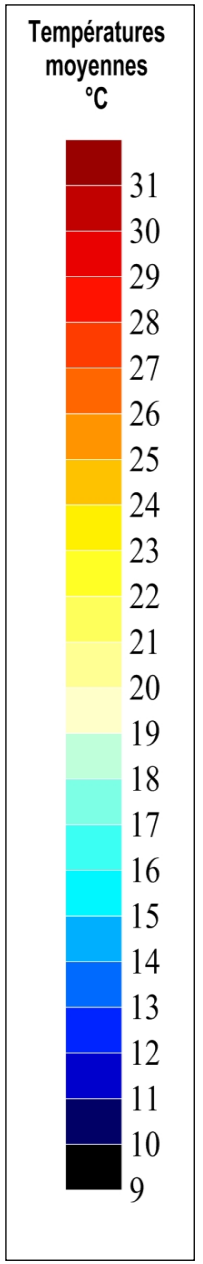






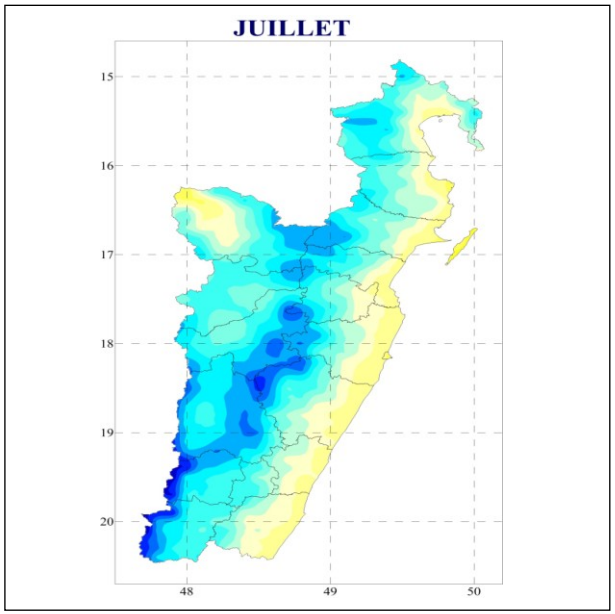


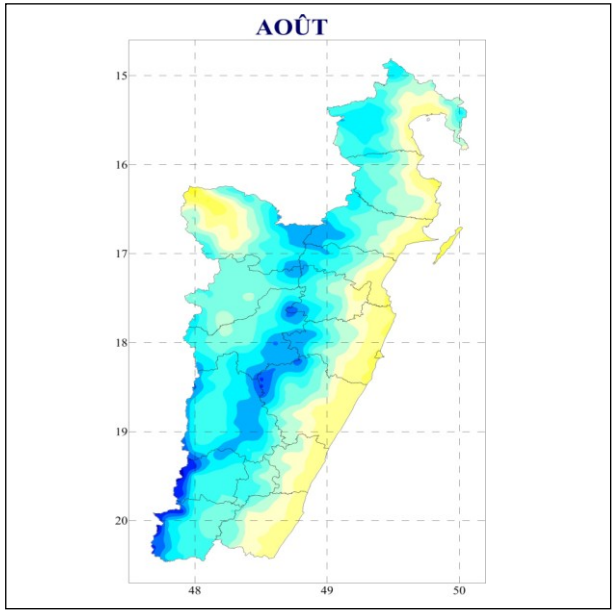


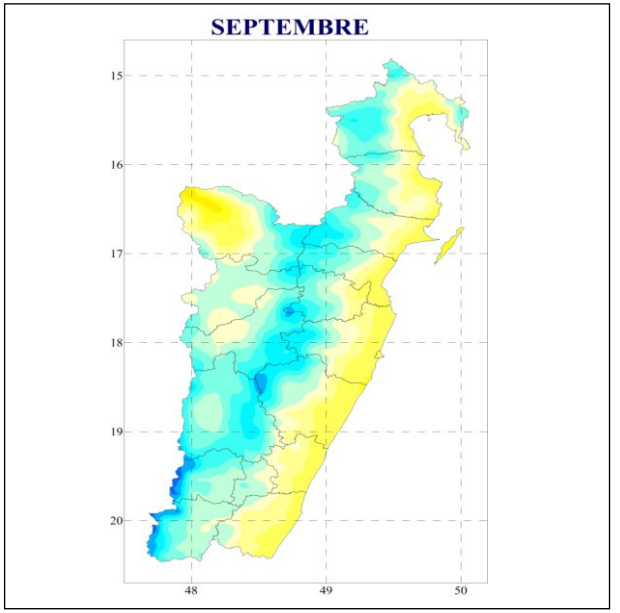


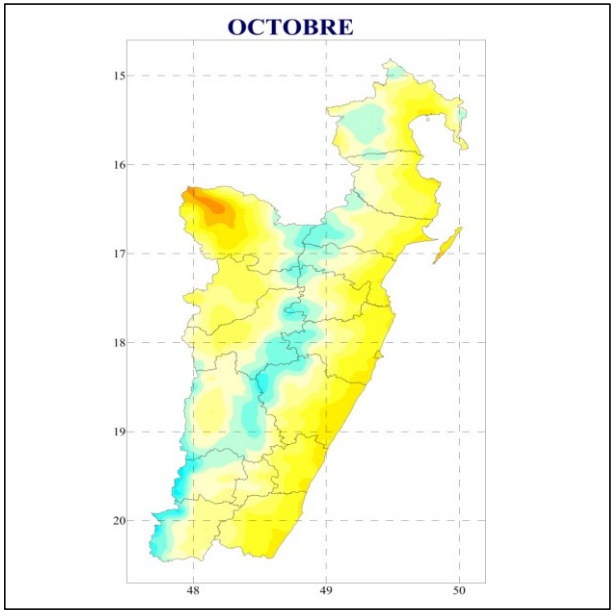
TOAMASINA

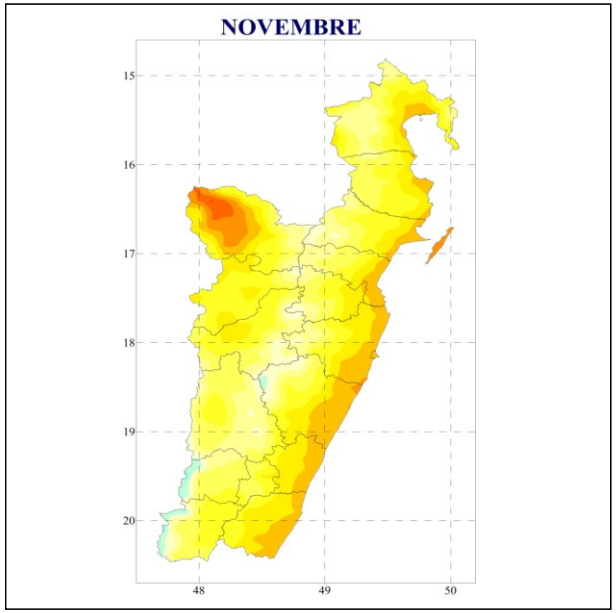
MOYENNES MENSUELLES DES TEMPERATURES

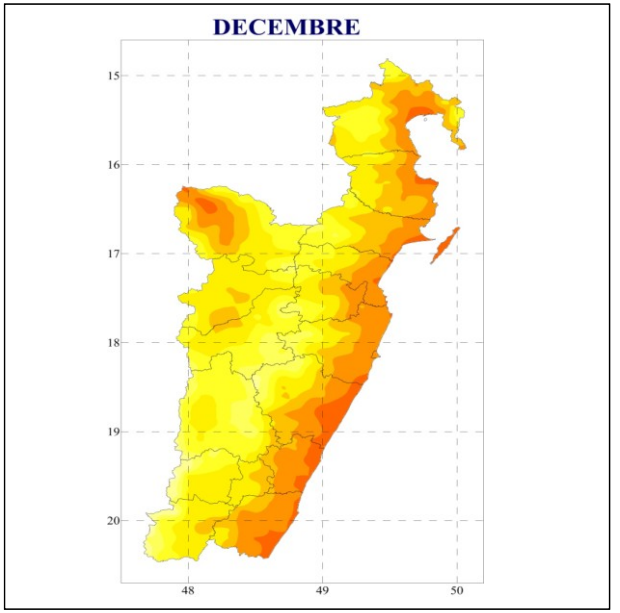


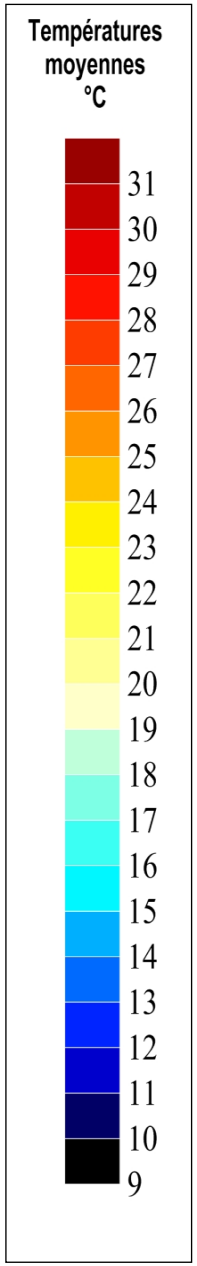






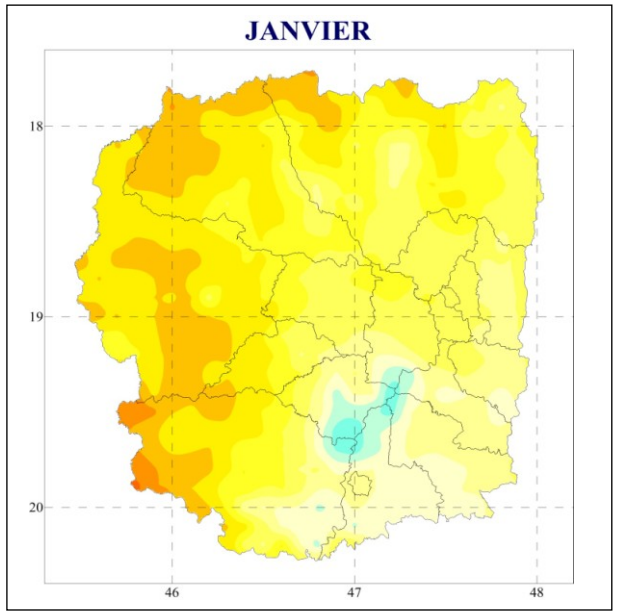


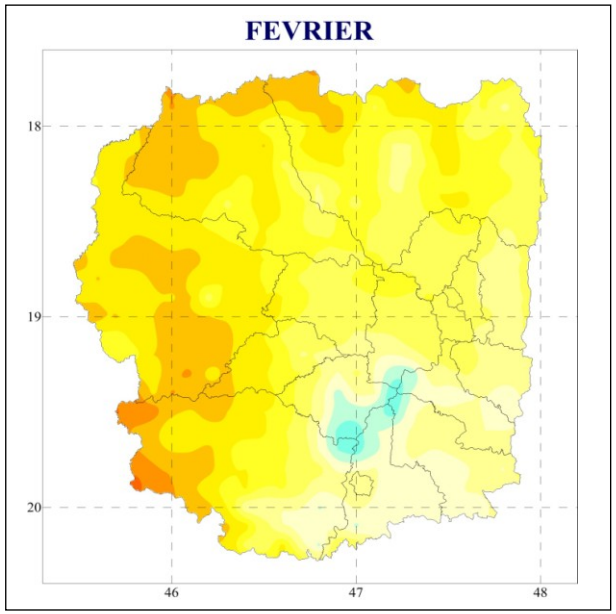


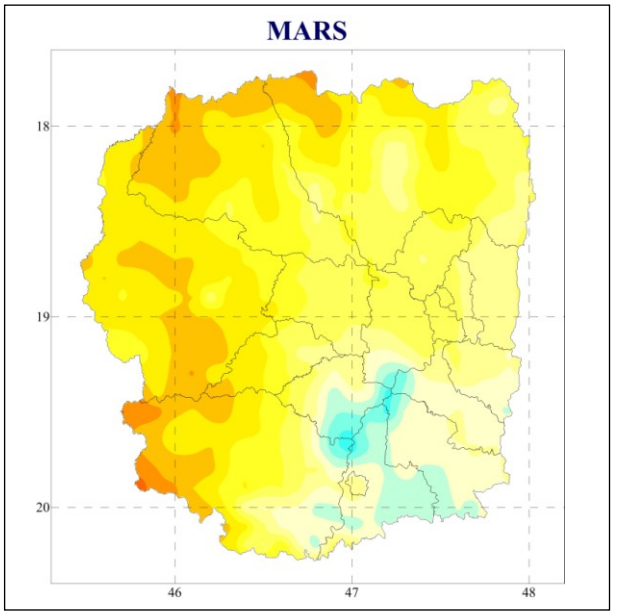


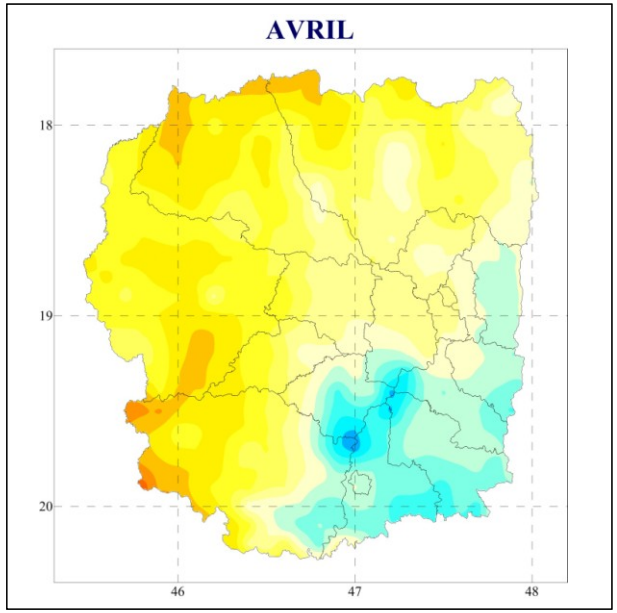
ANTANANARIVO

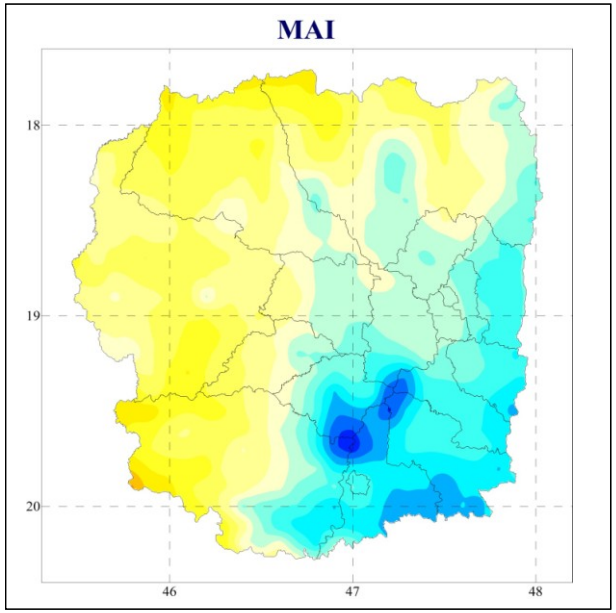
MOYENNES MENSUELLES DES TEMPERATURES

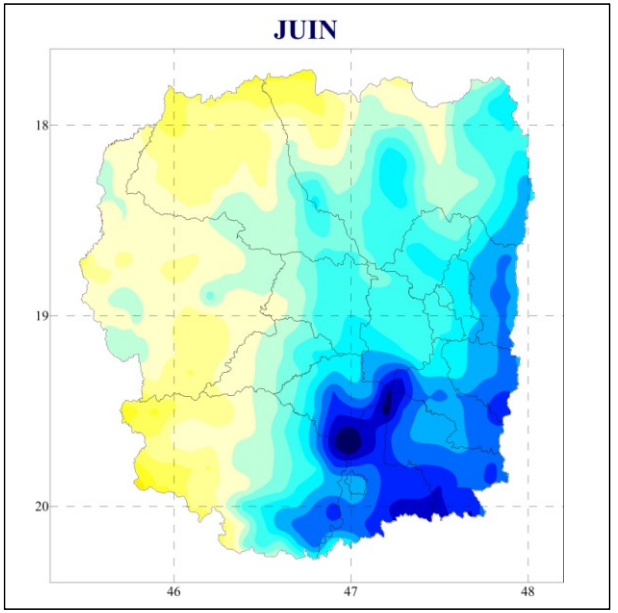


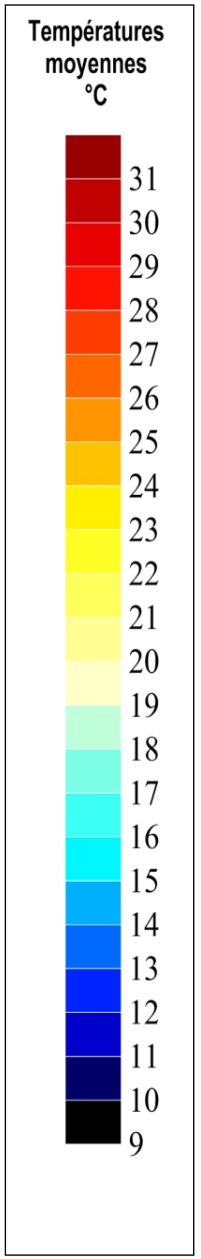






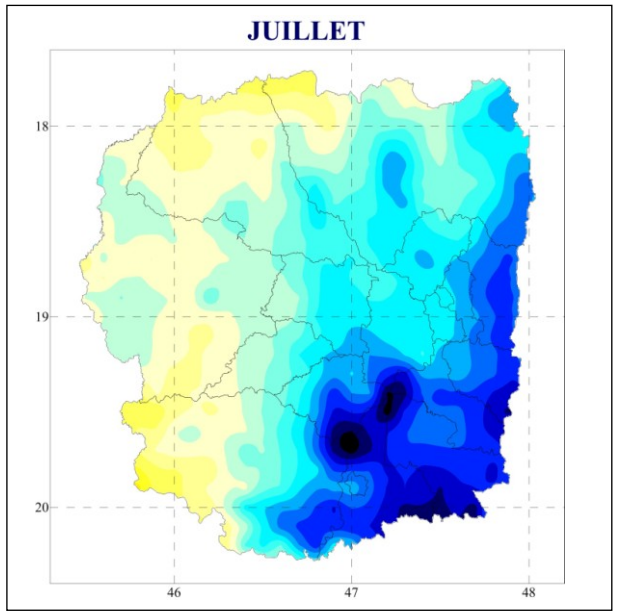


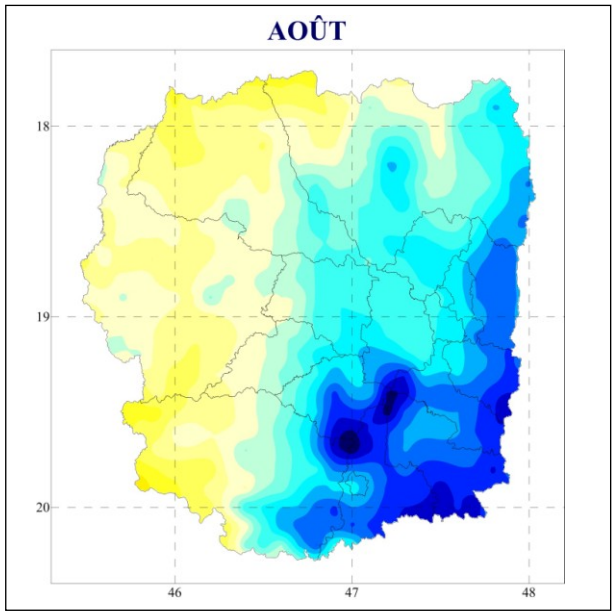


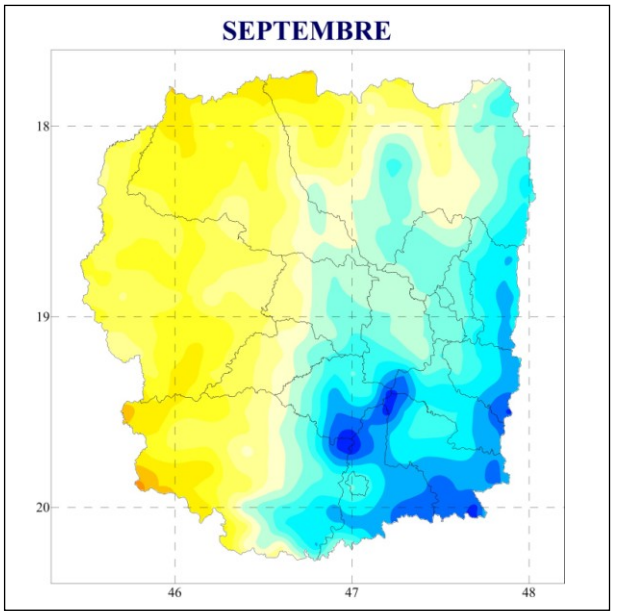


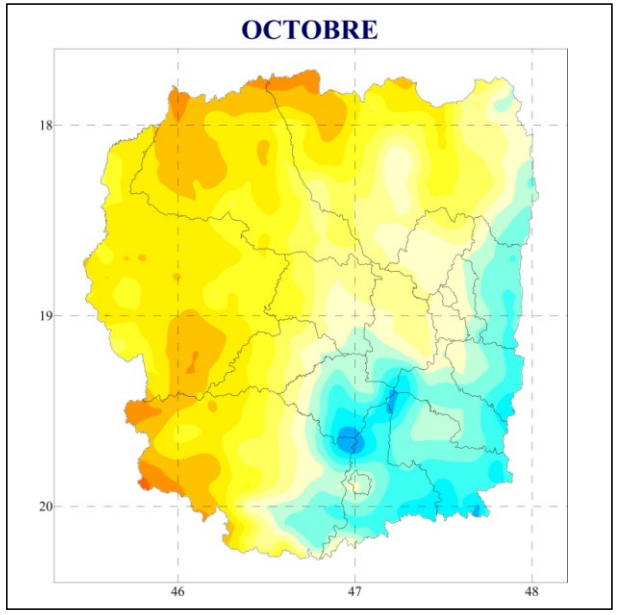
ANTANANARIVO

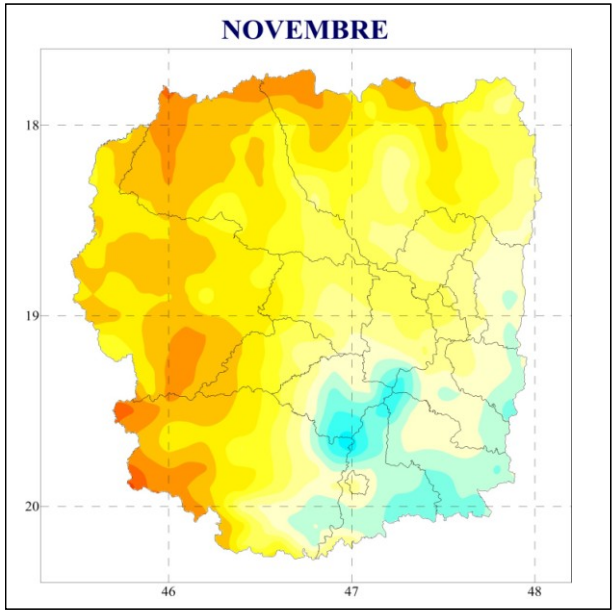
MOYENNES MENSUELLES DES TEMPERATURES

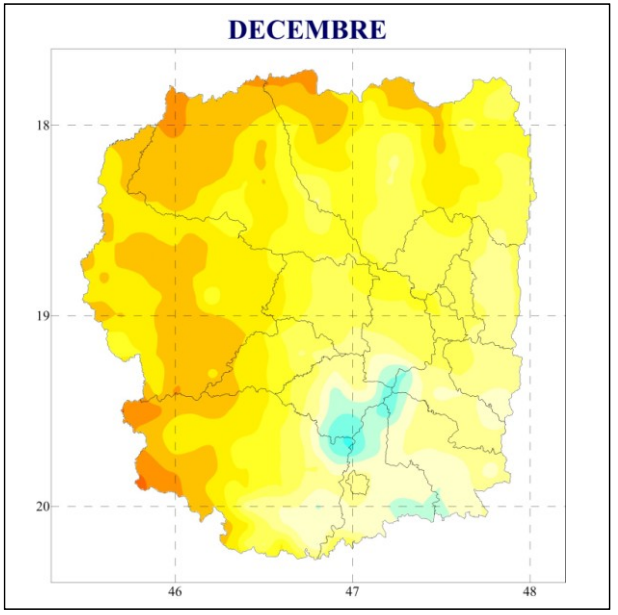


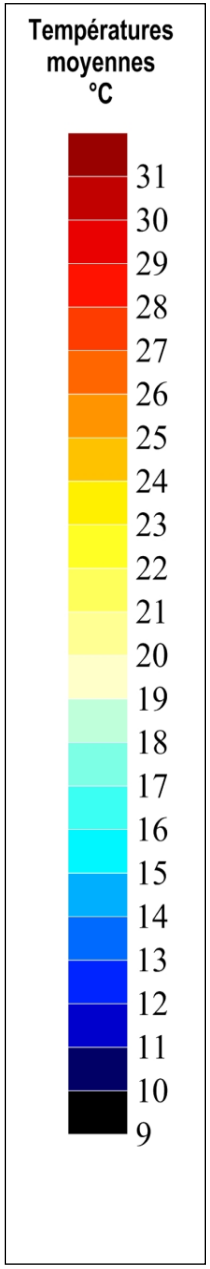












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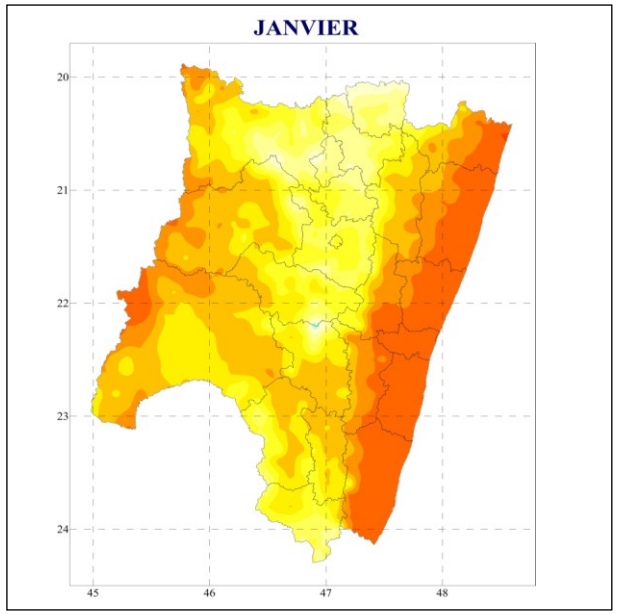
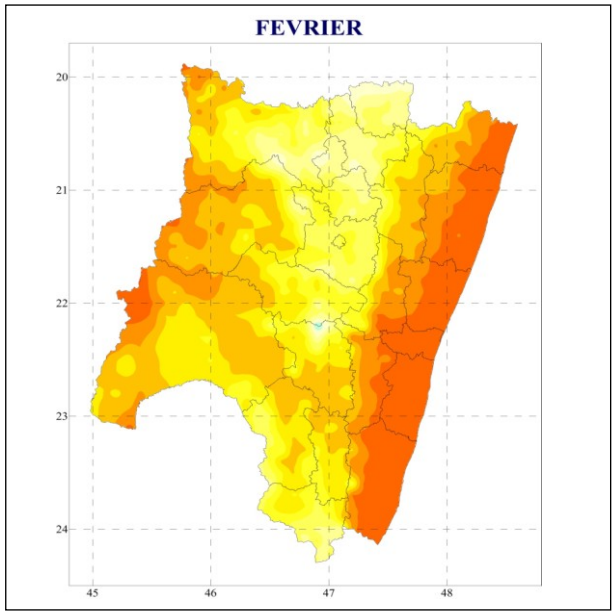
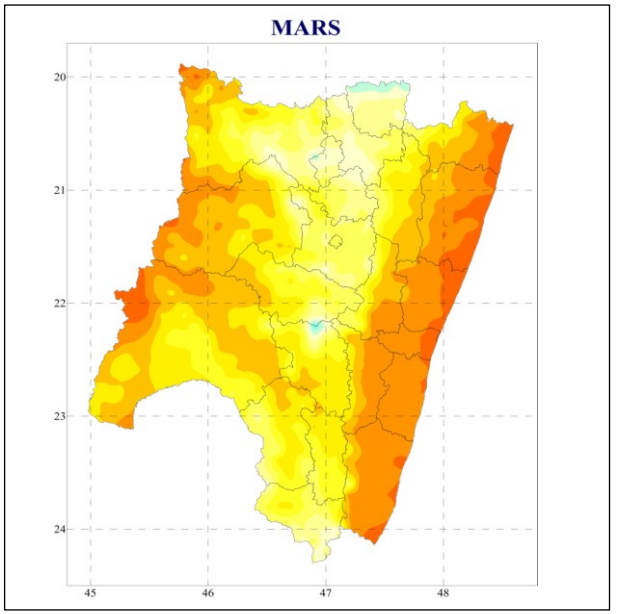
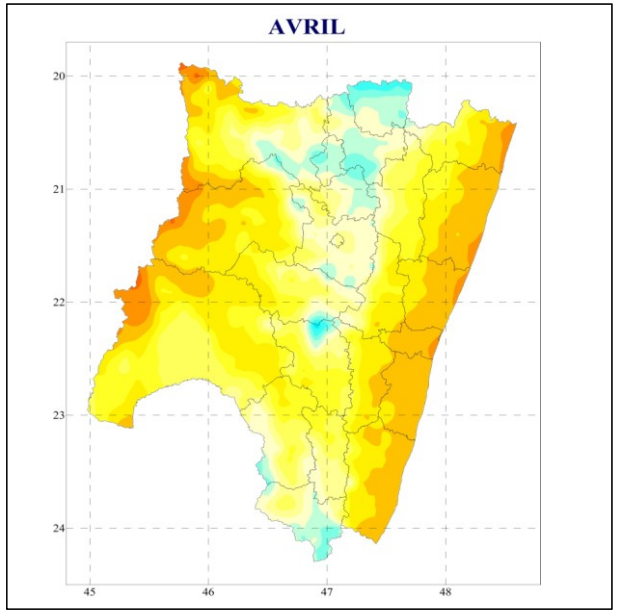
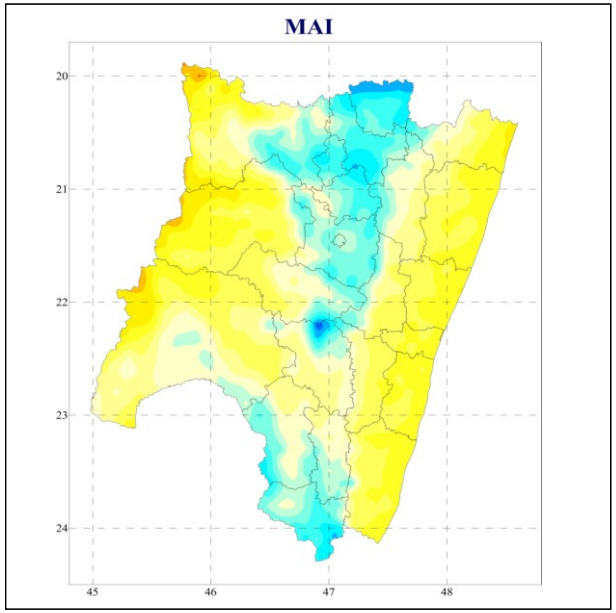
MOYENNES MENSUELLES DES TEMPERATURES

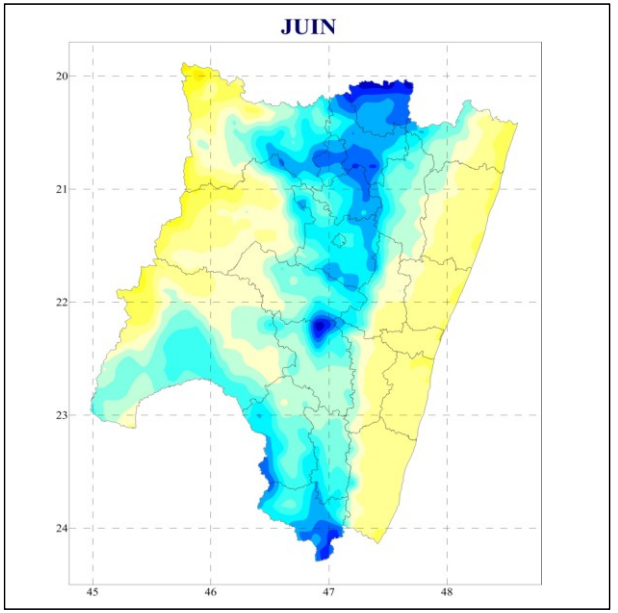


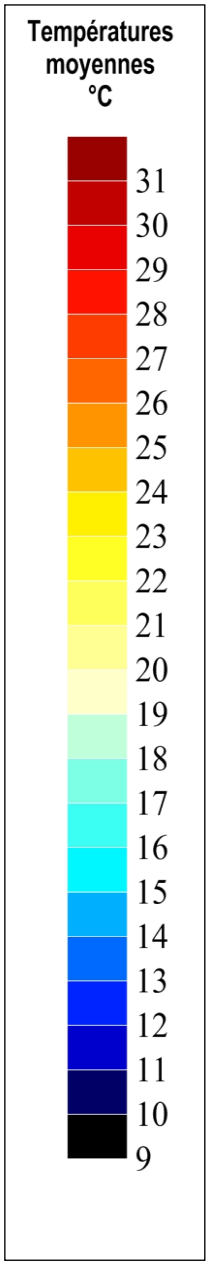






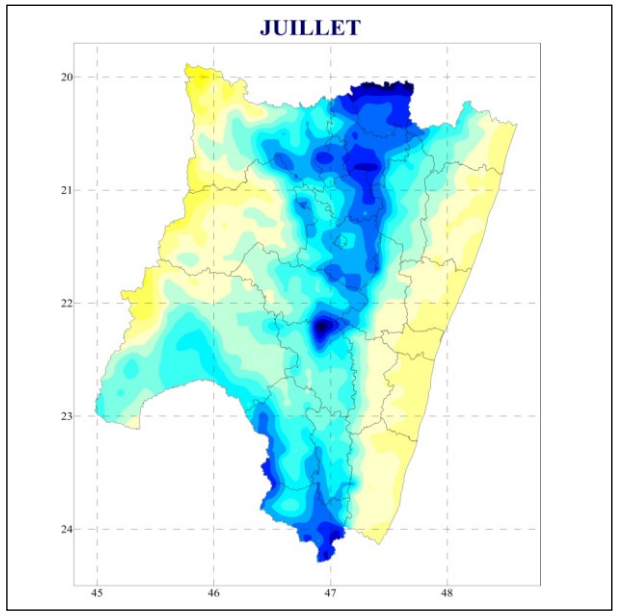


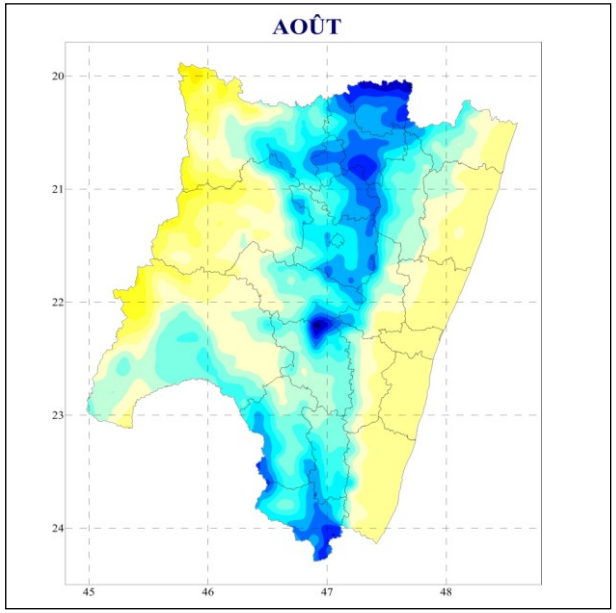


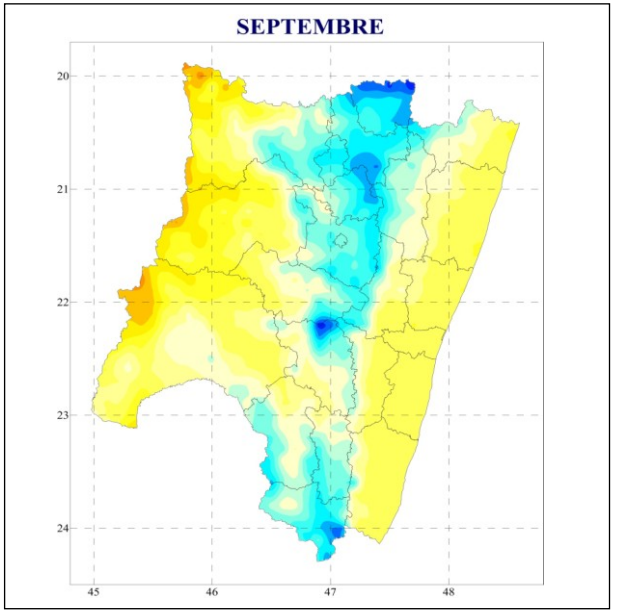


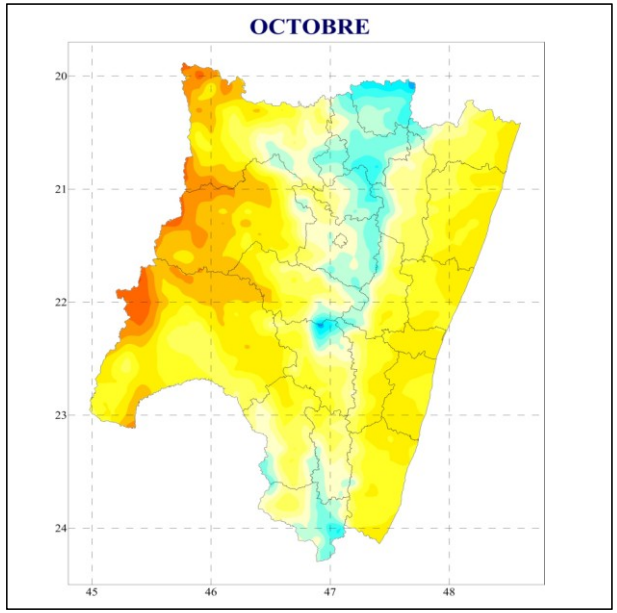
FIANARANTSOA

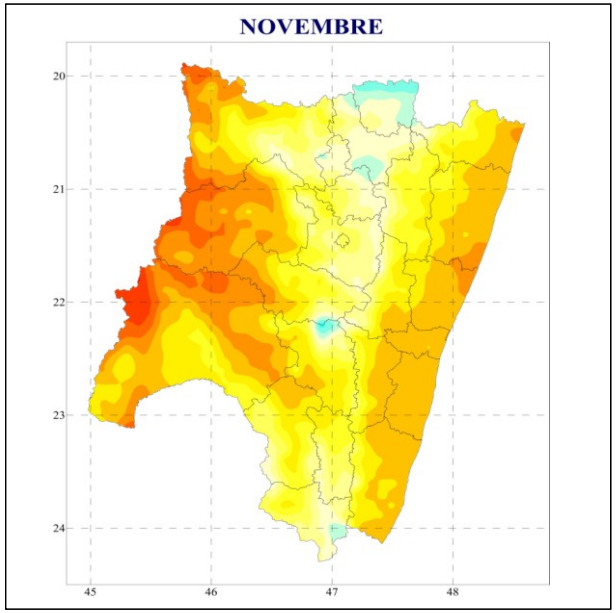
MOYENNES MENSUELLES DES TEMPERATURES

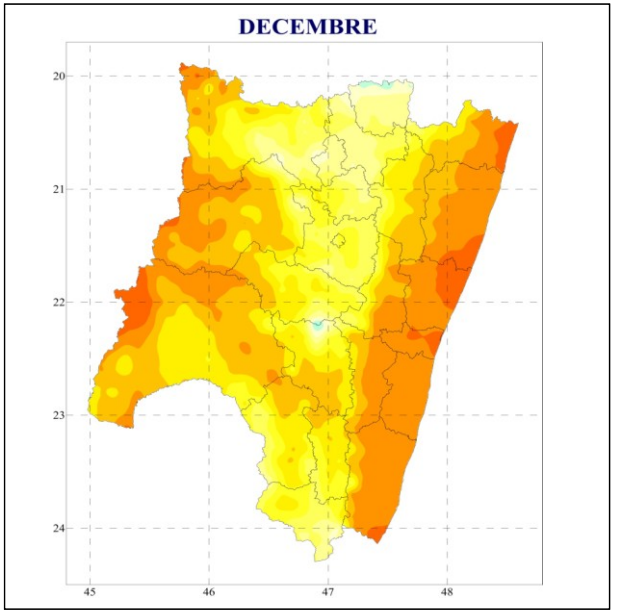


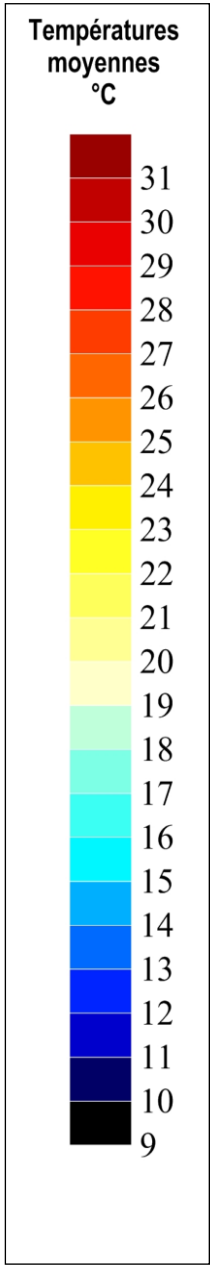






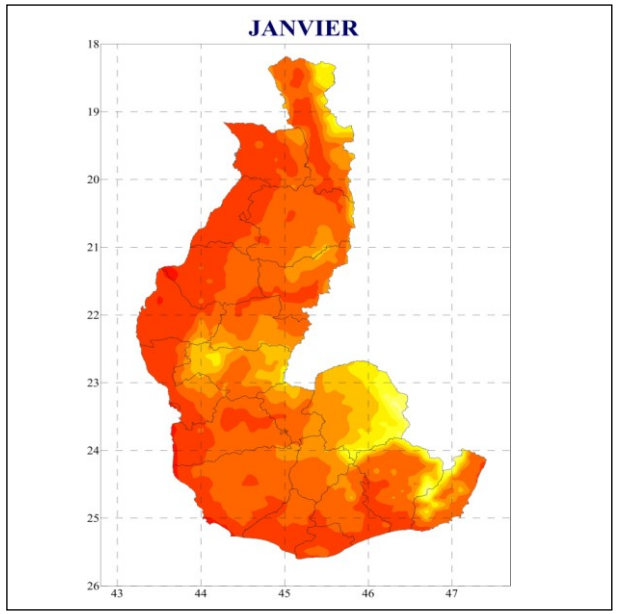


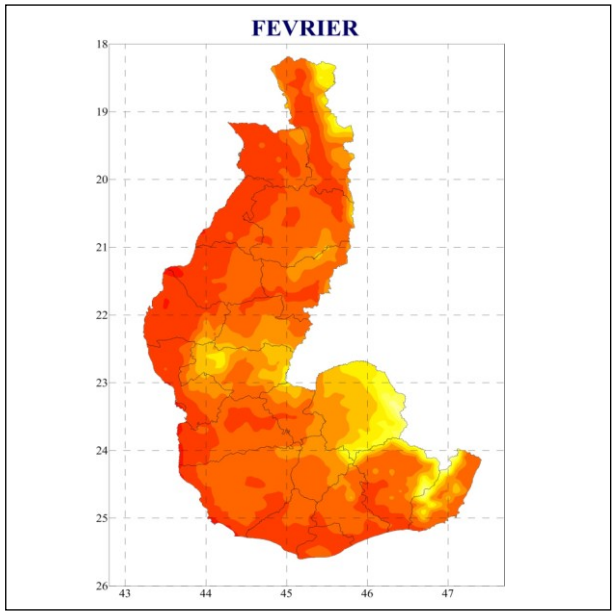


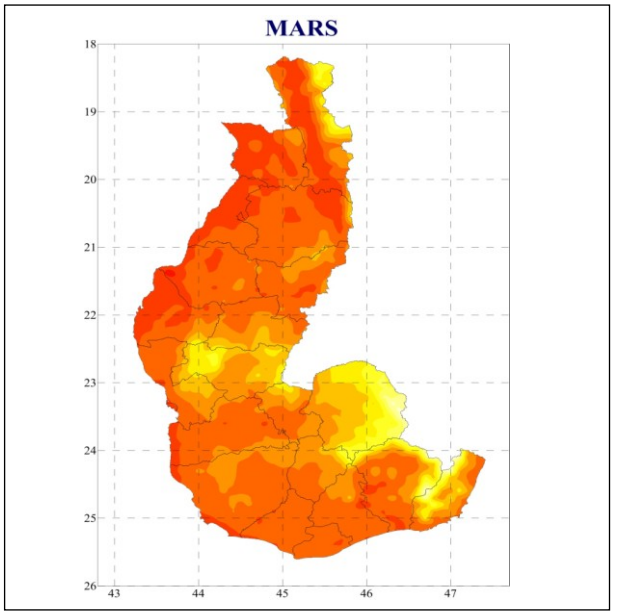


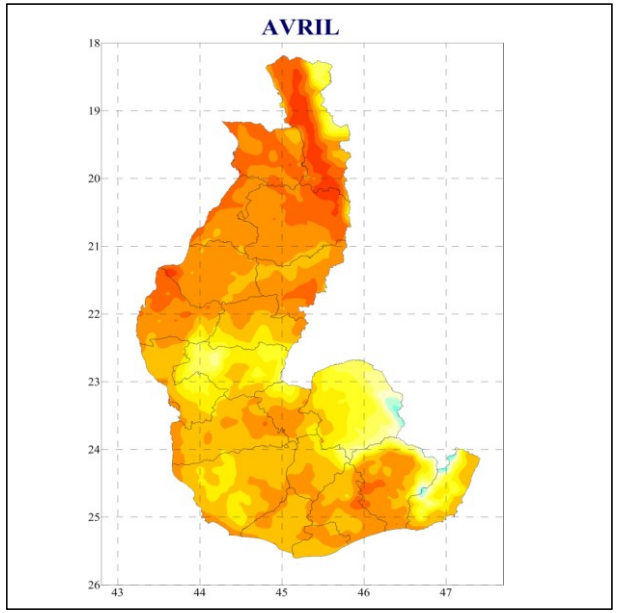
TOLIARA

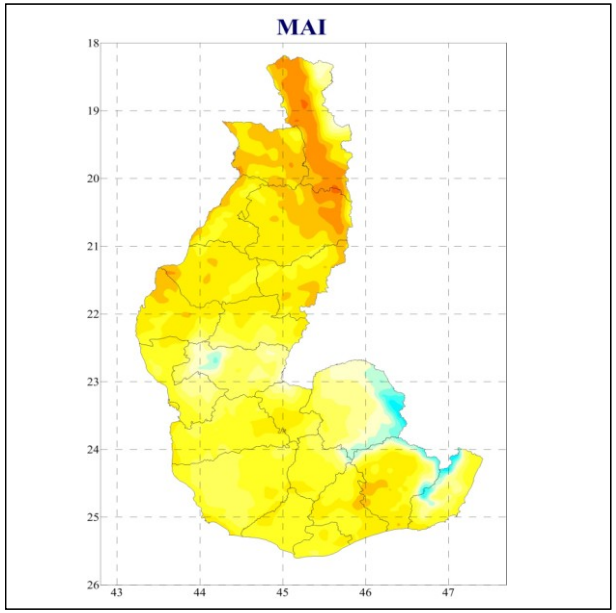
MOYENNES MENSUELLES DES TEMPERATURES

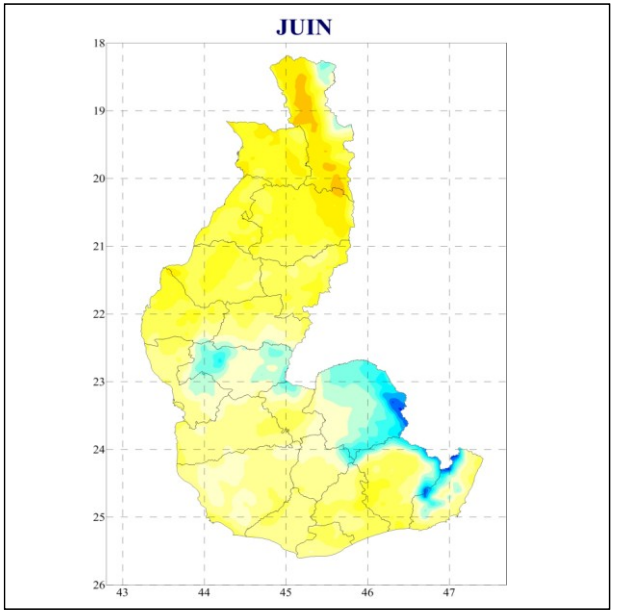


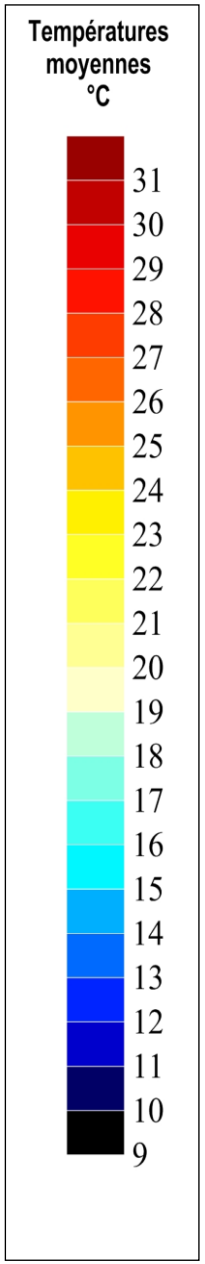






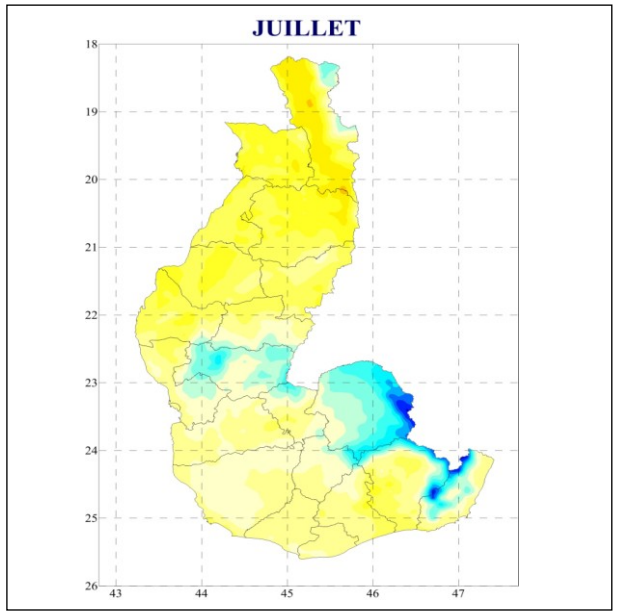


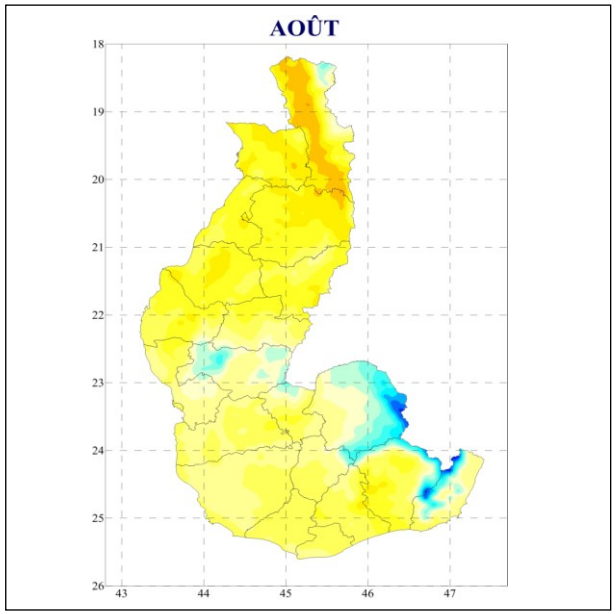


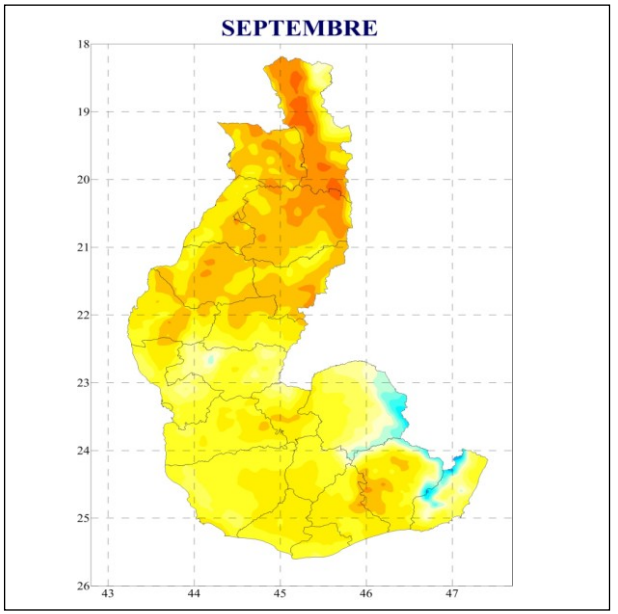


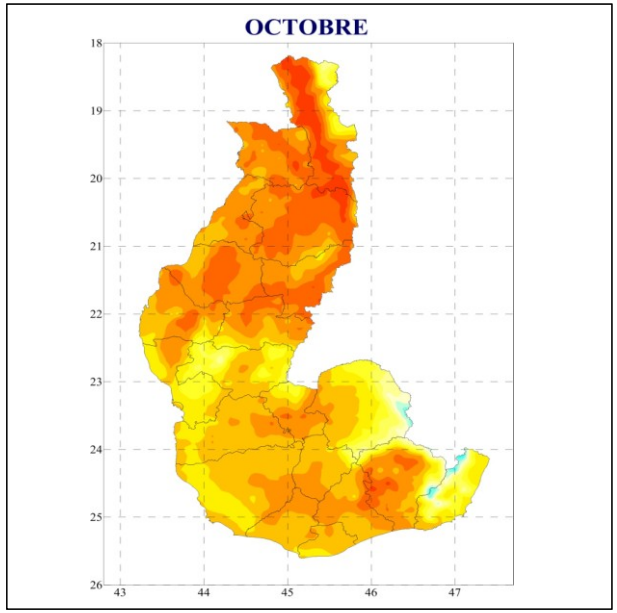
TOLIARA

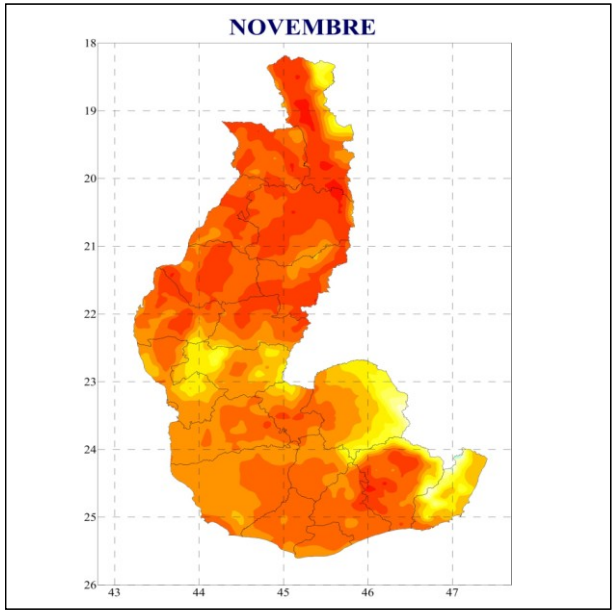
MOYENNES MENSUELLES DES TEMPERATURES

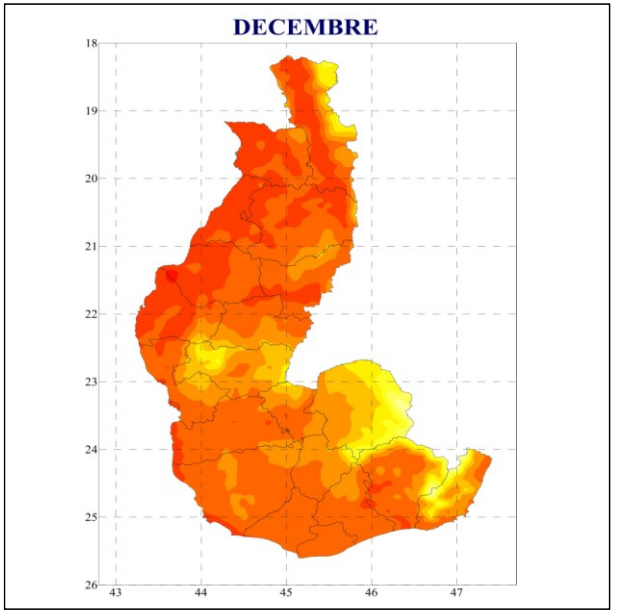


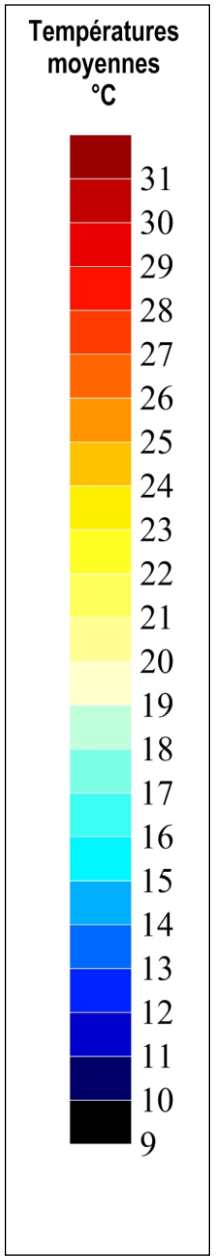










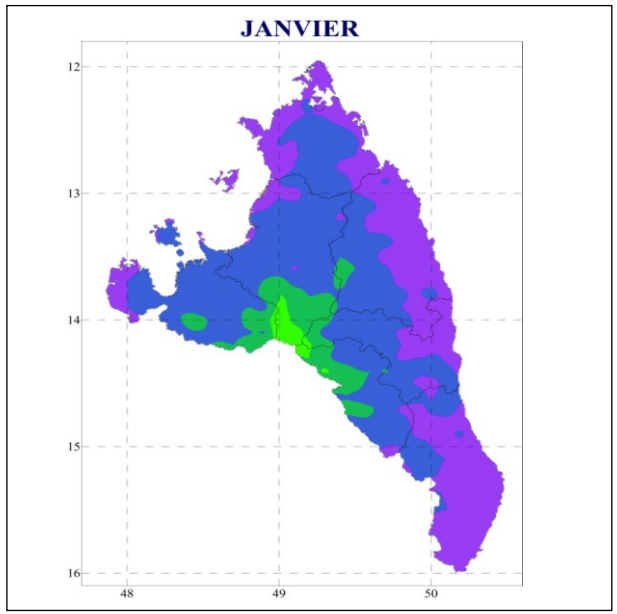


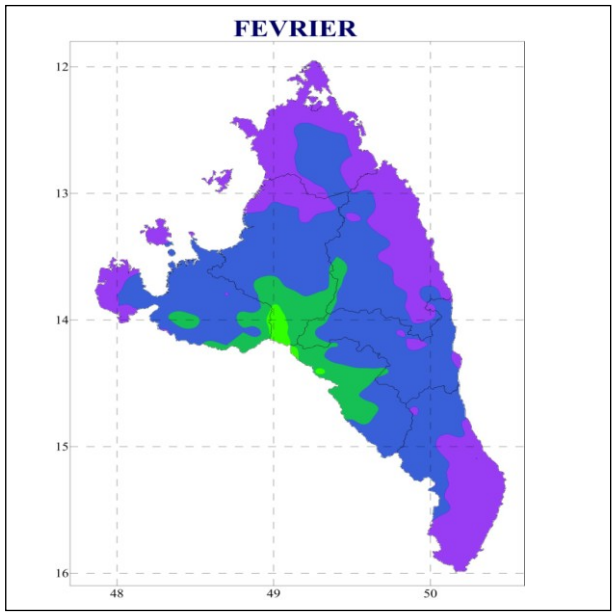
AMPLITUDE DES TEMPERATURES

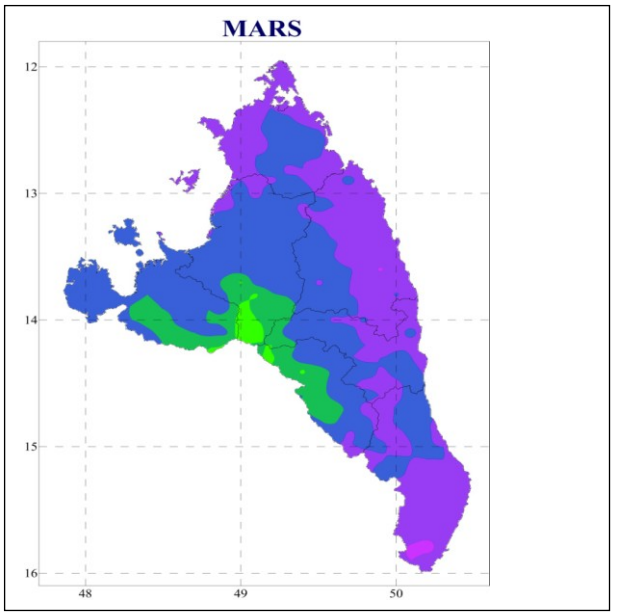
- L'amplitude de températures moyennes est la différence entre la moyenne des températures maximales et la moyenne des températures minimales.
- Au cours de la saison chaude, le minimum de la valeur de l'amplitude (entre 4°C et 5°C) est observé sur le Sud-Est.
- En général, l'amplitude moyenne des températures reste faible sur la côte Est, ailleurs elle est élevée avec une maximale très marquée dans les régions des Hautes-Terres, et Atsimo-Andrefana.

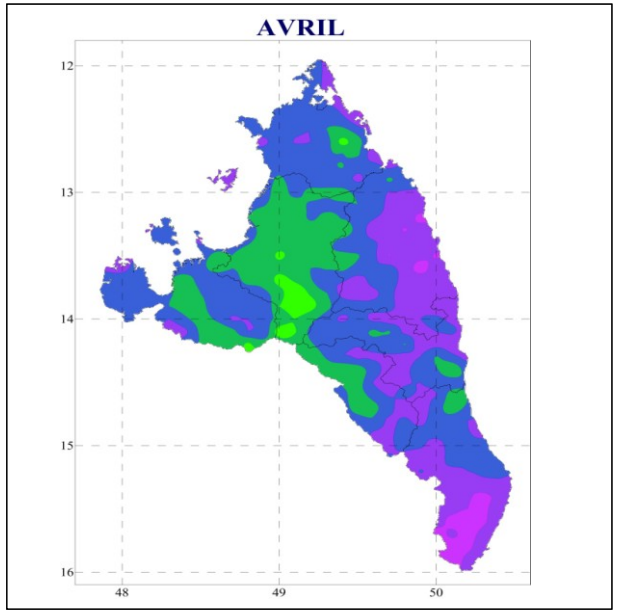
ANTSIRANANA

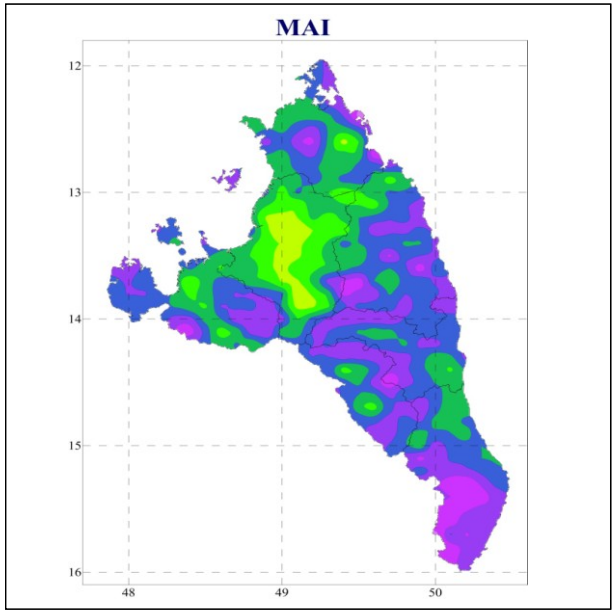
MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES

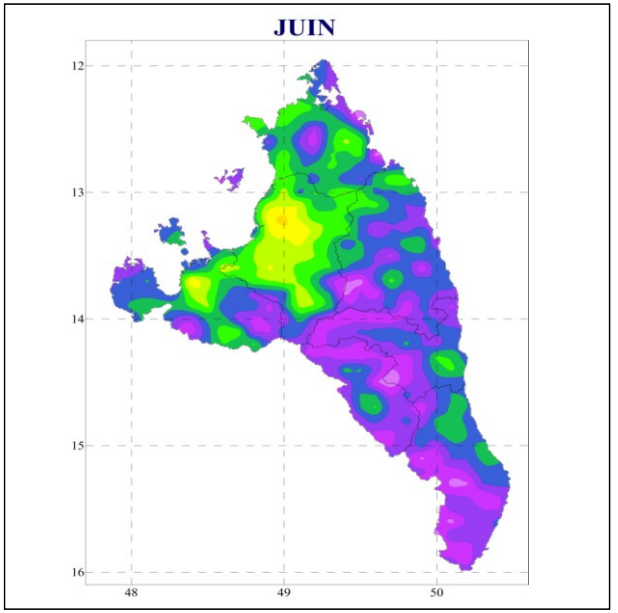


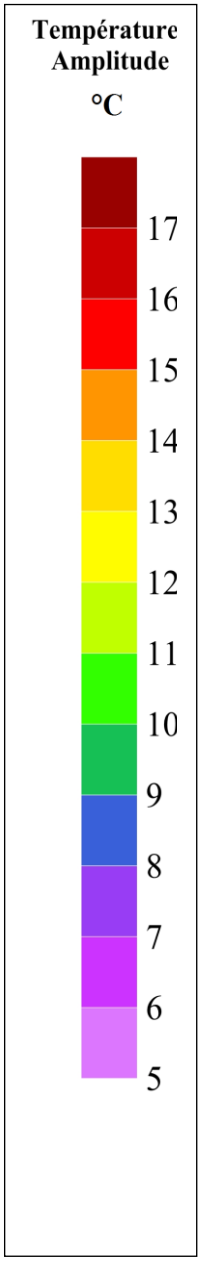






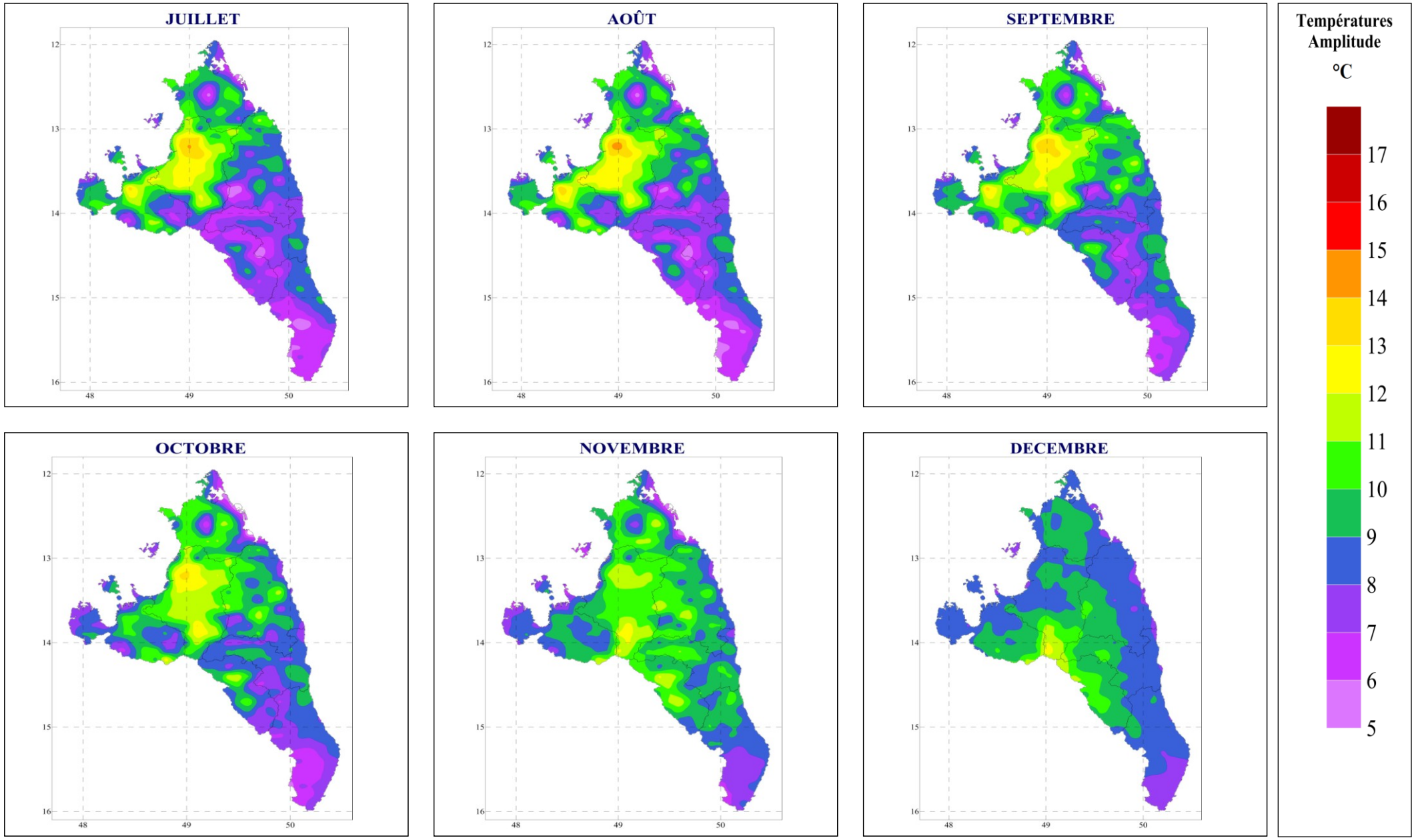






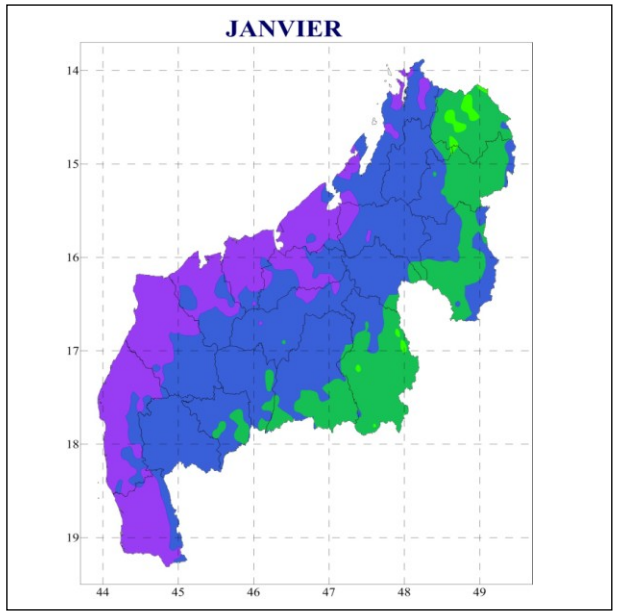
ANTSIRANANA

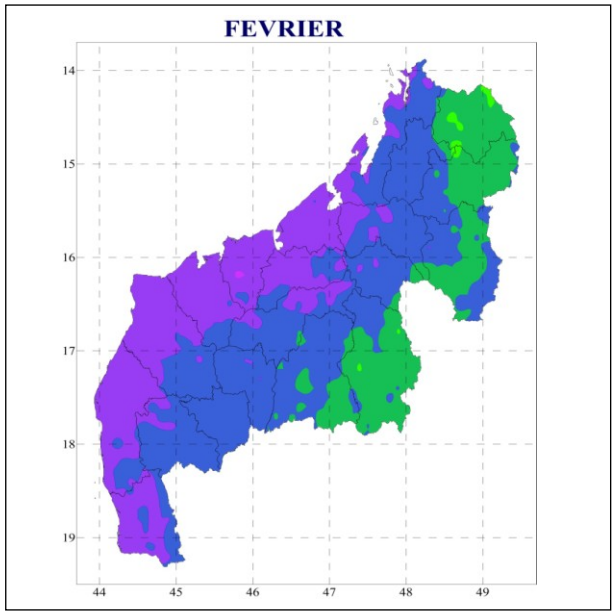
MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES

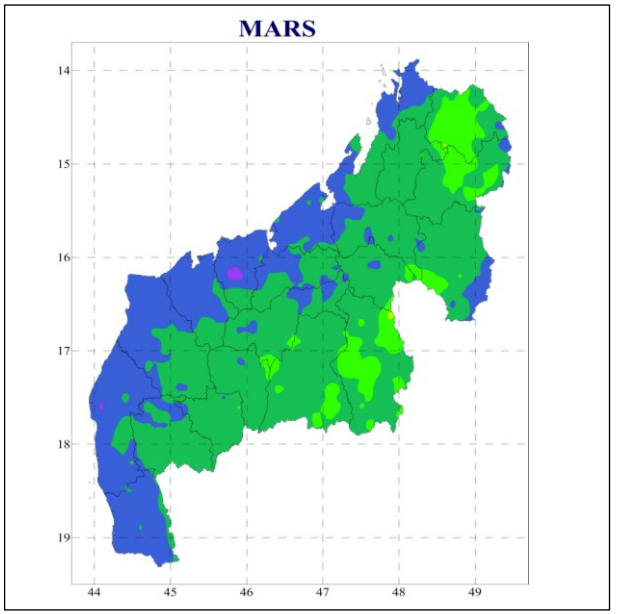


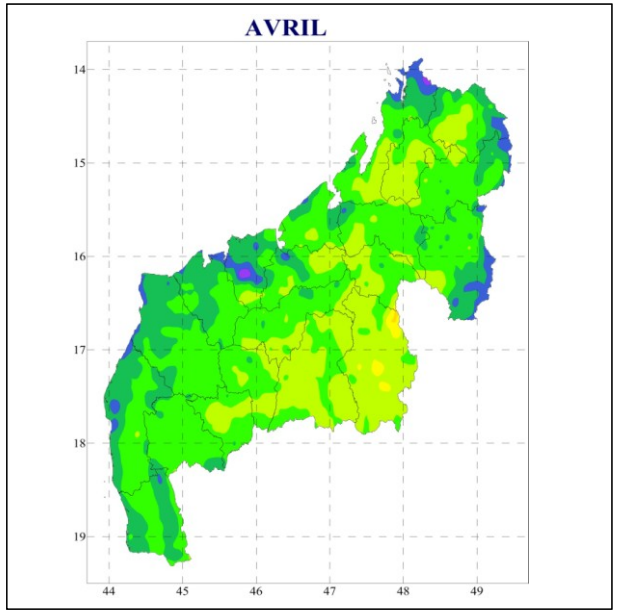
MAHAJANGA

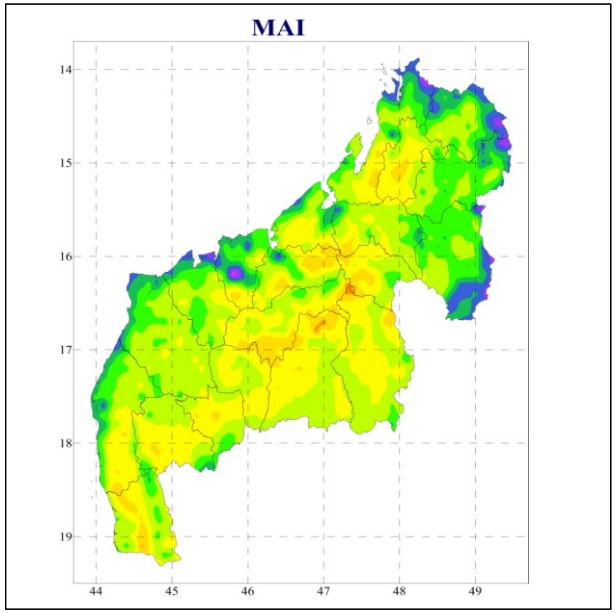
MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES

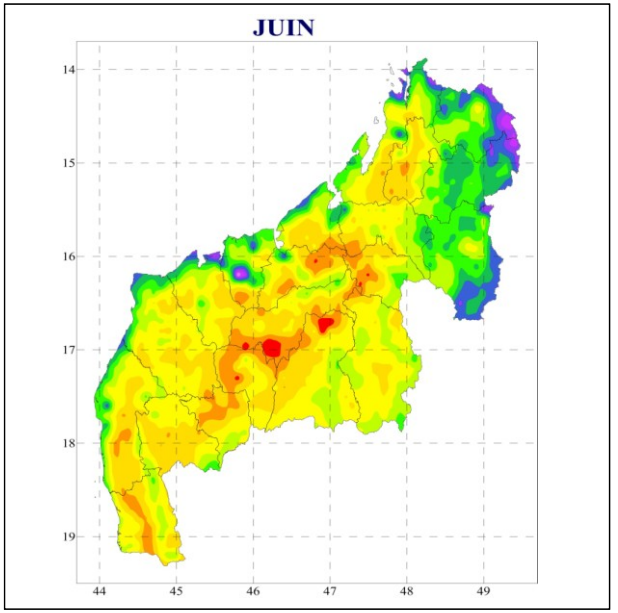


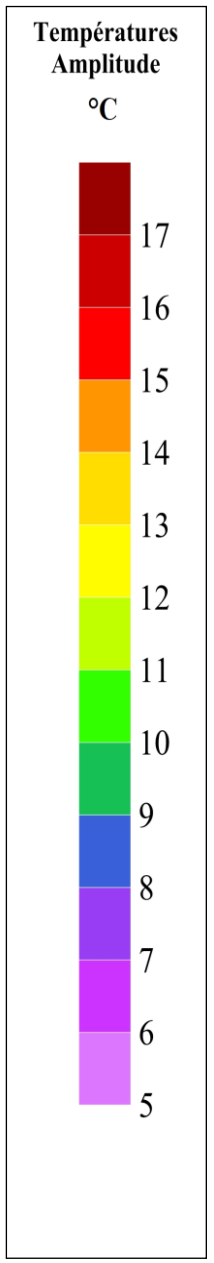






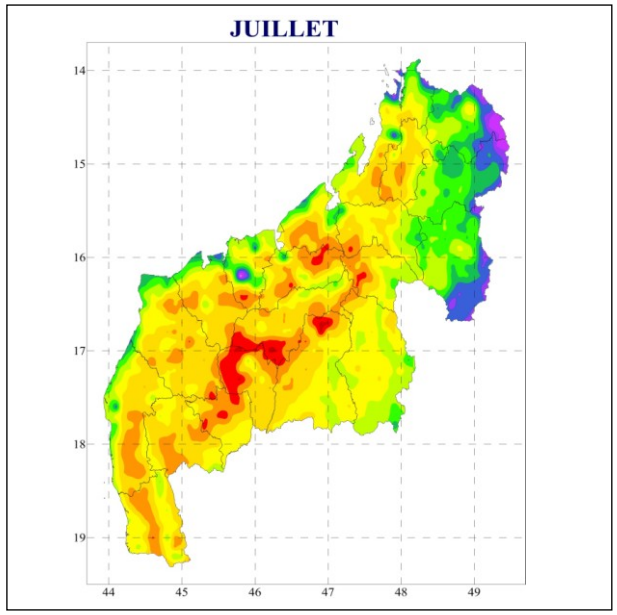


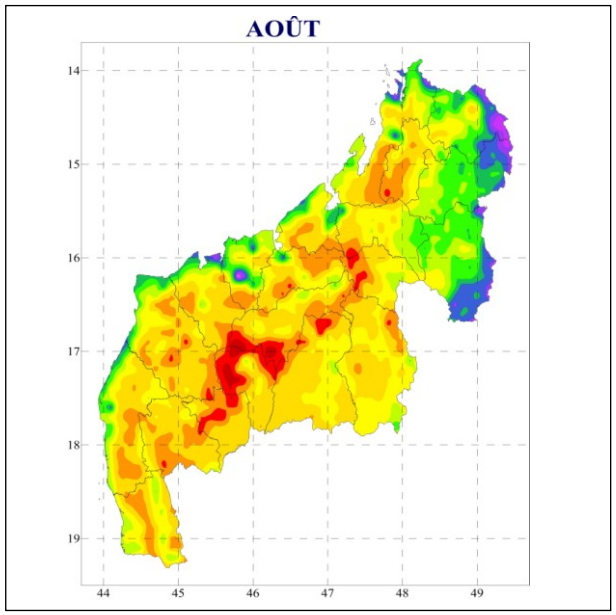


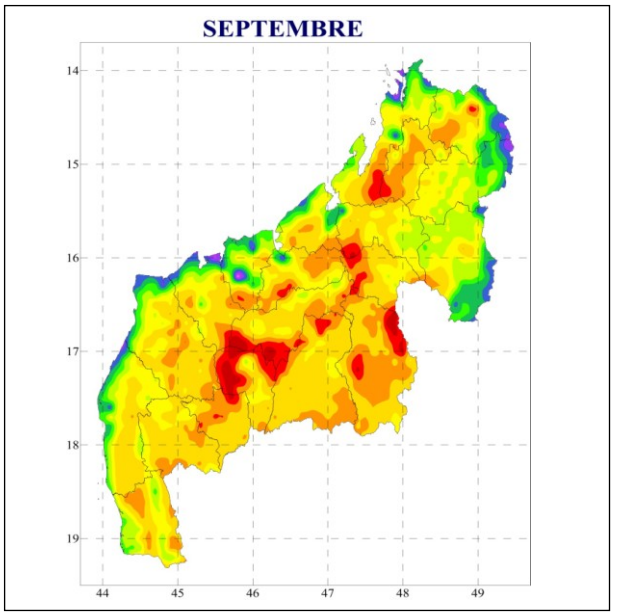


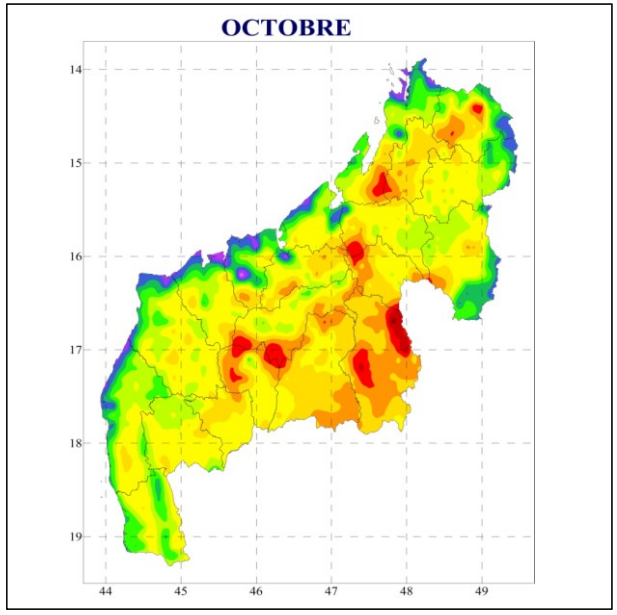
MAHAJANGA

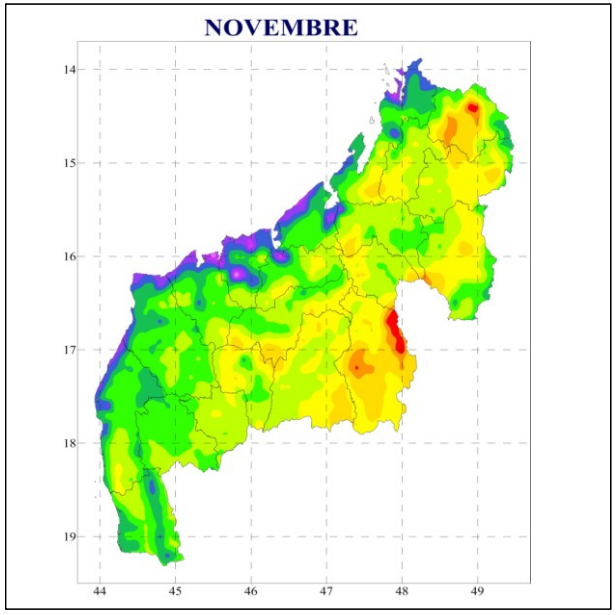
MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES

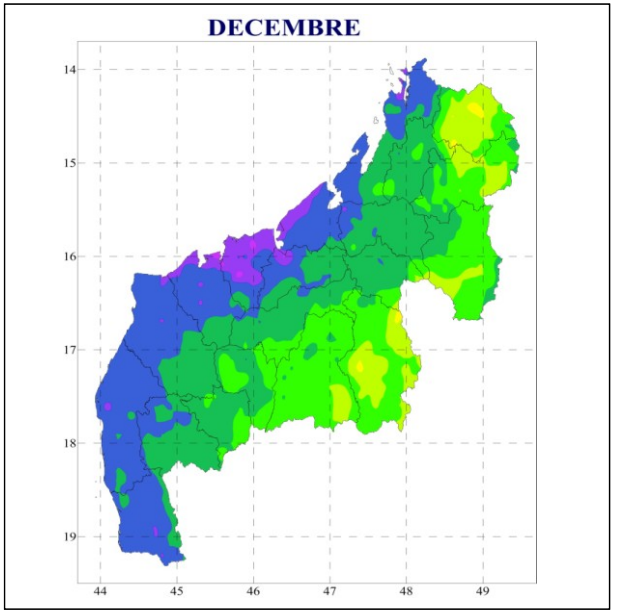


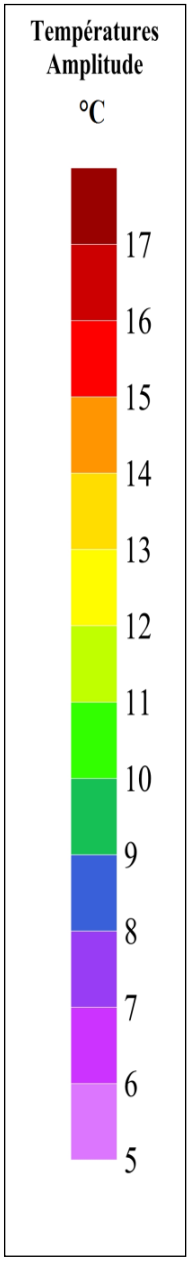






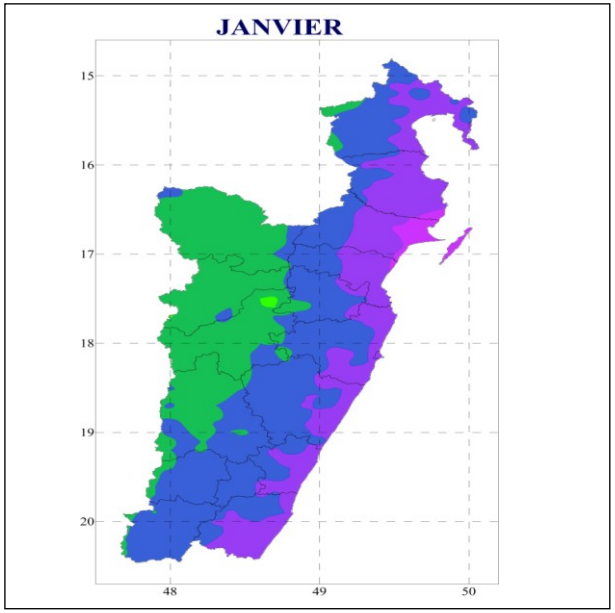


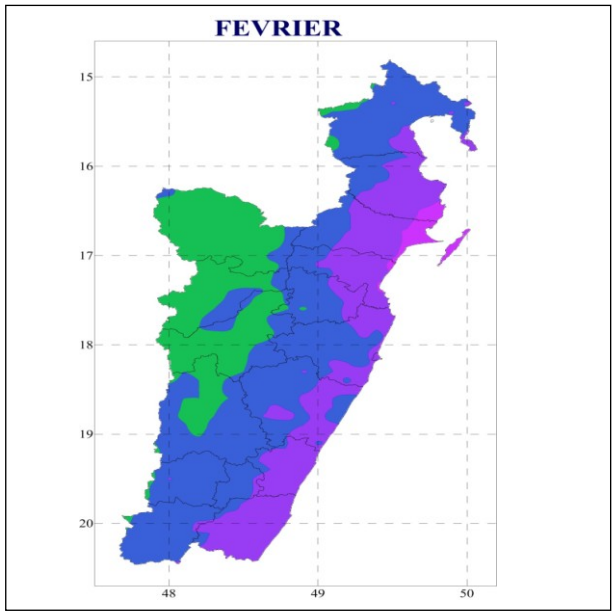


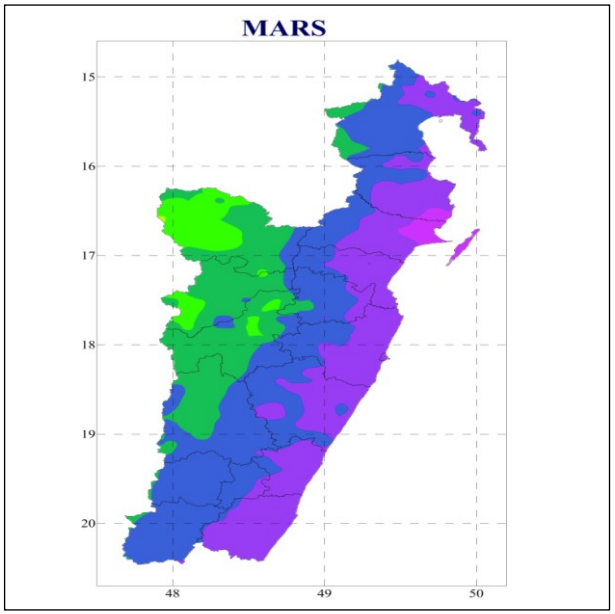


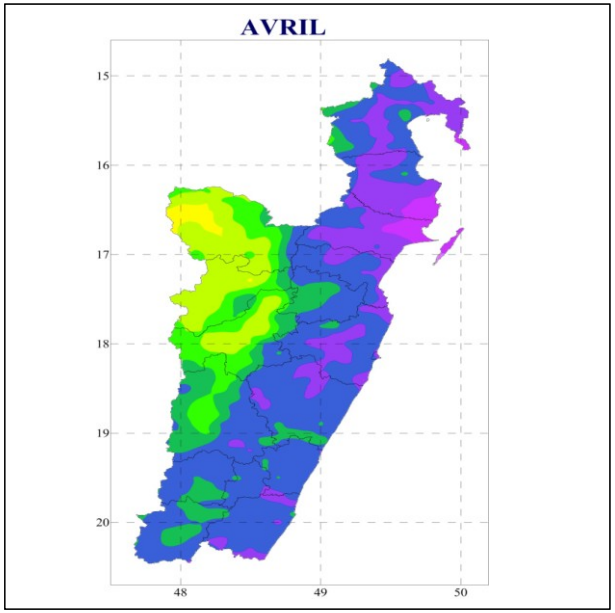
TOAMASINA

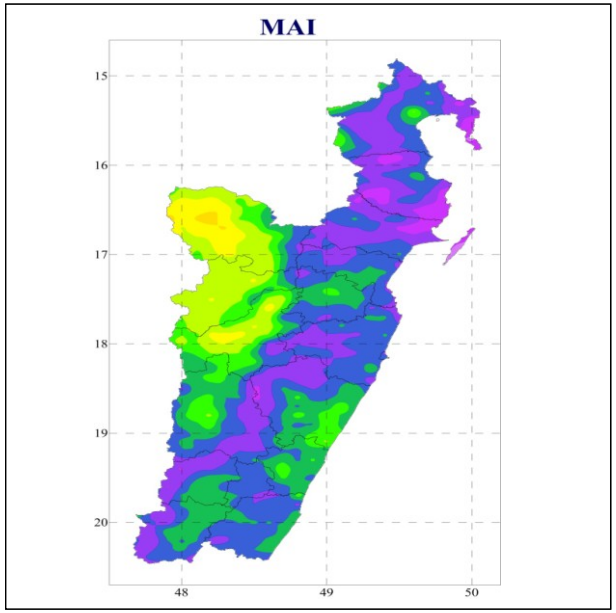
MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES

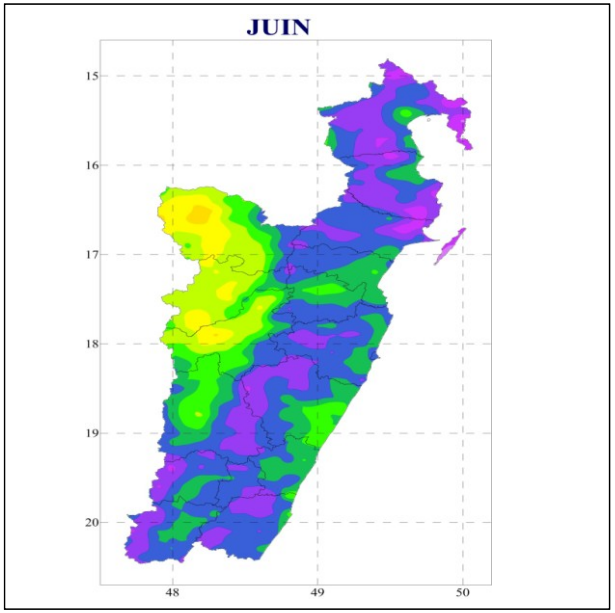


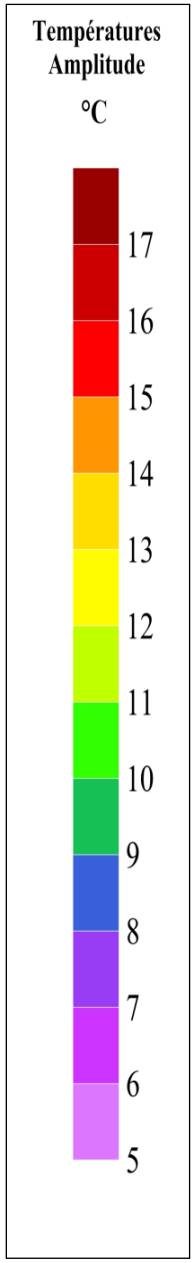






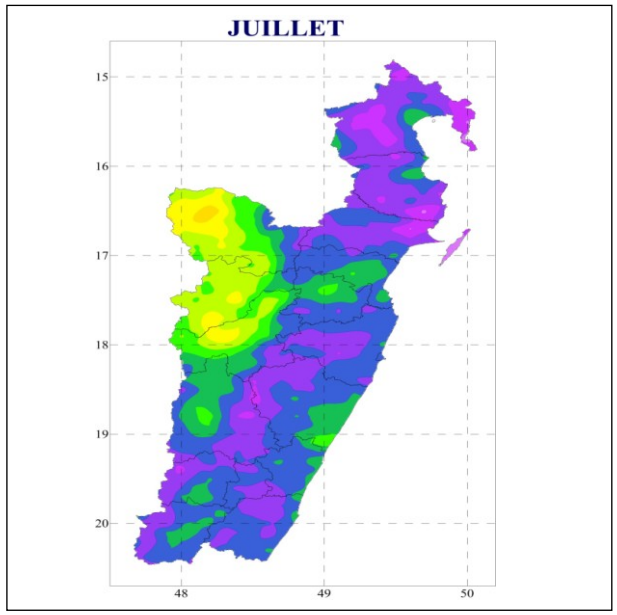


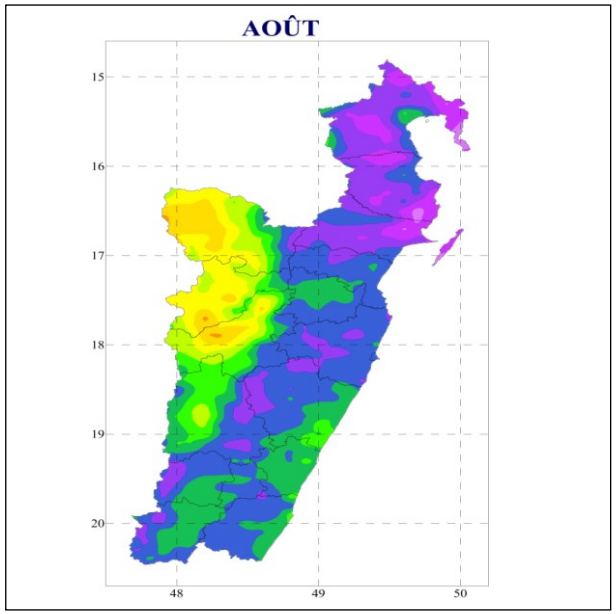


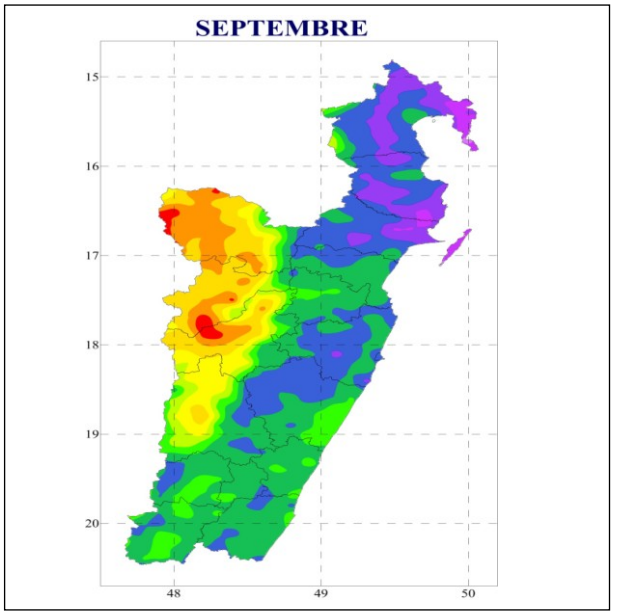


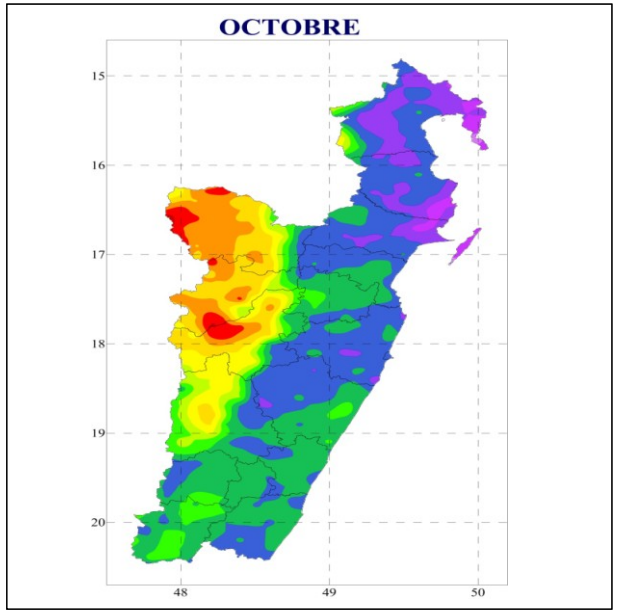
TOAMASINA

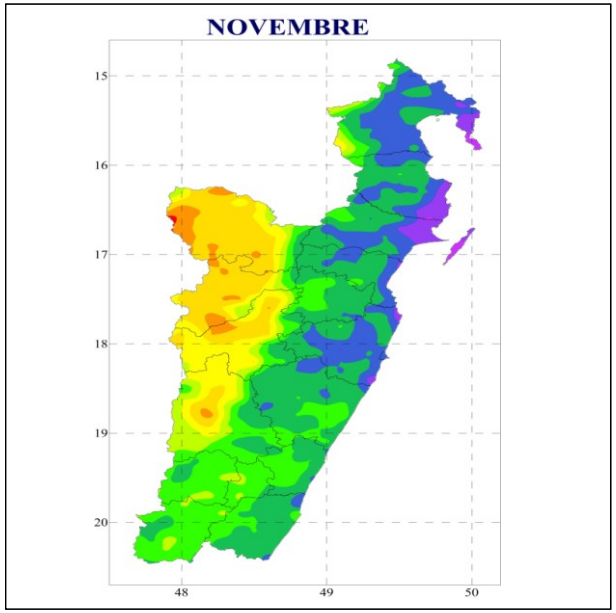
MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES

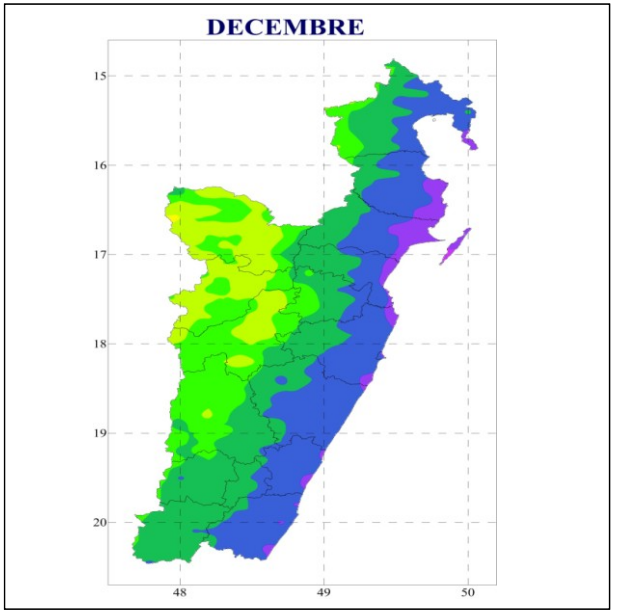


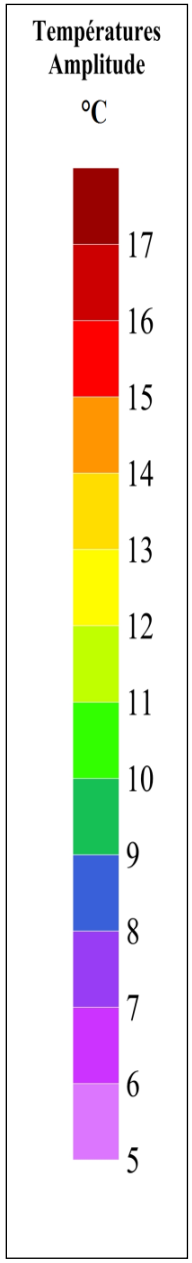






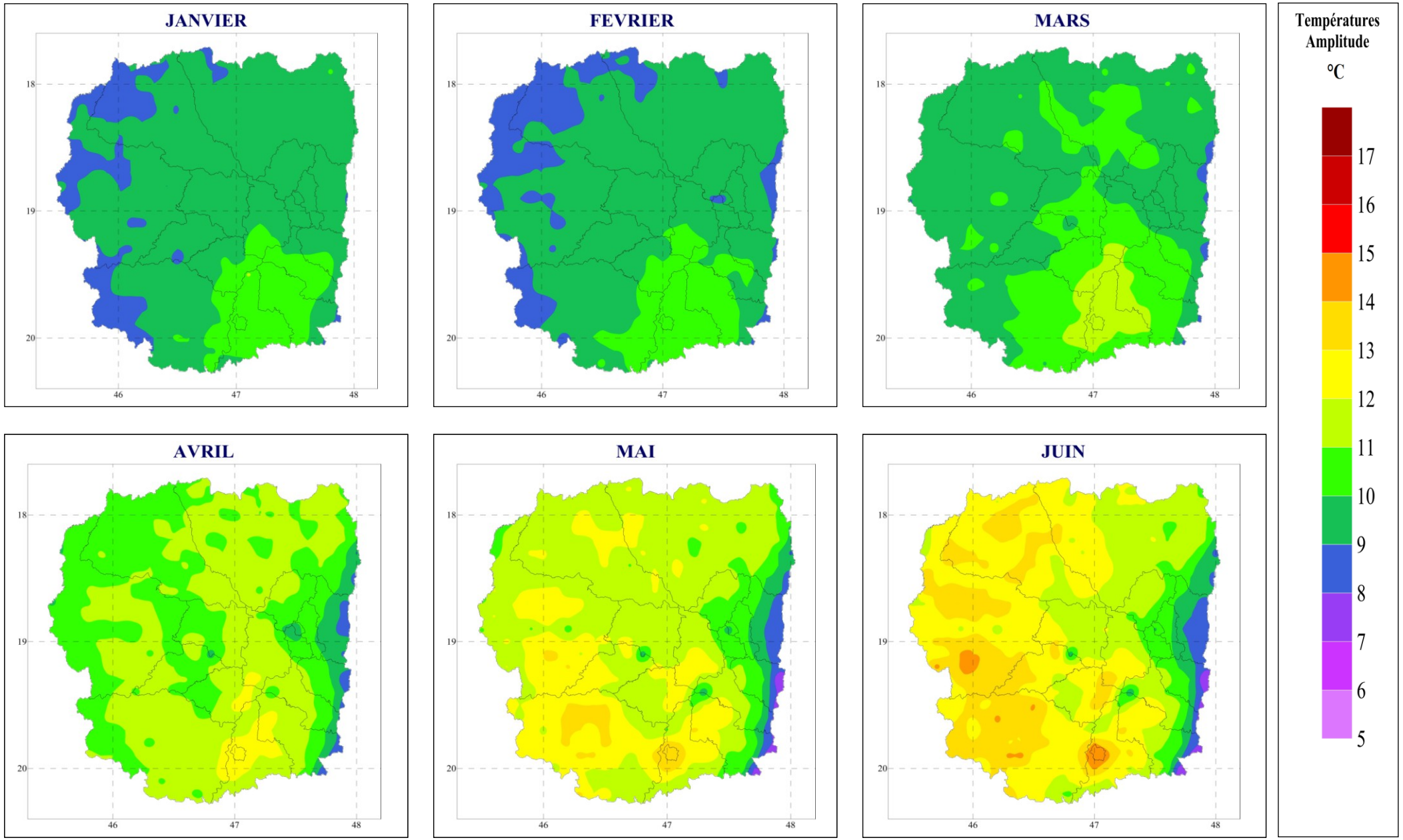






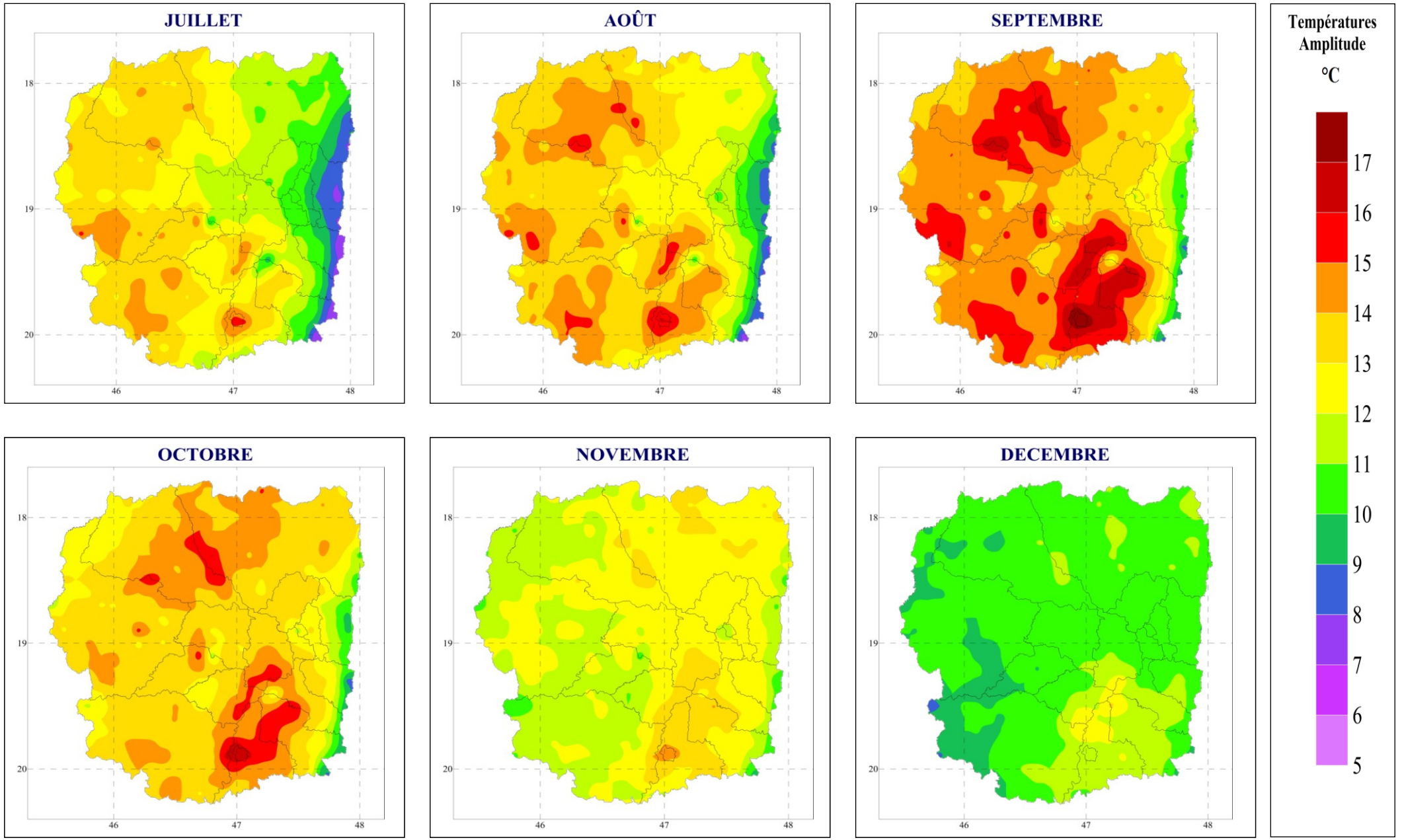
ANTANANARIVO

MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES



ANTANANARIVO

MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES



FIANARANTSOA

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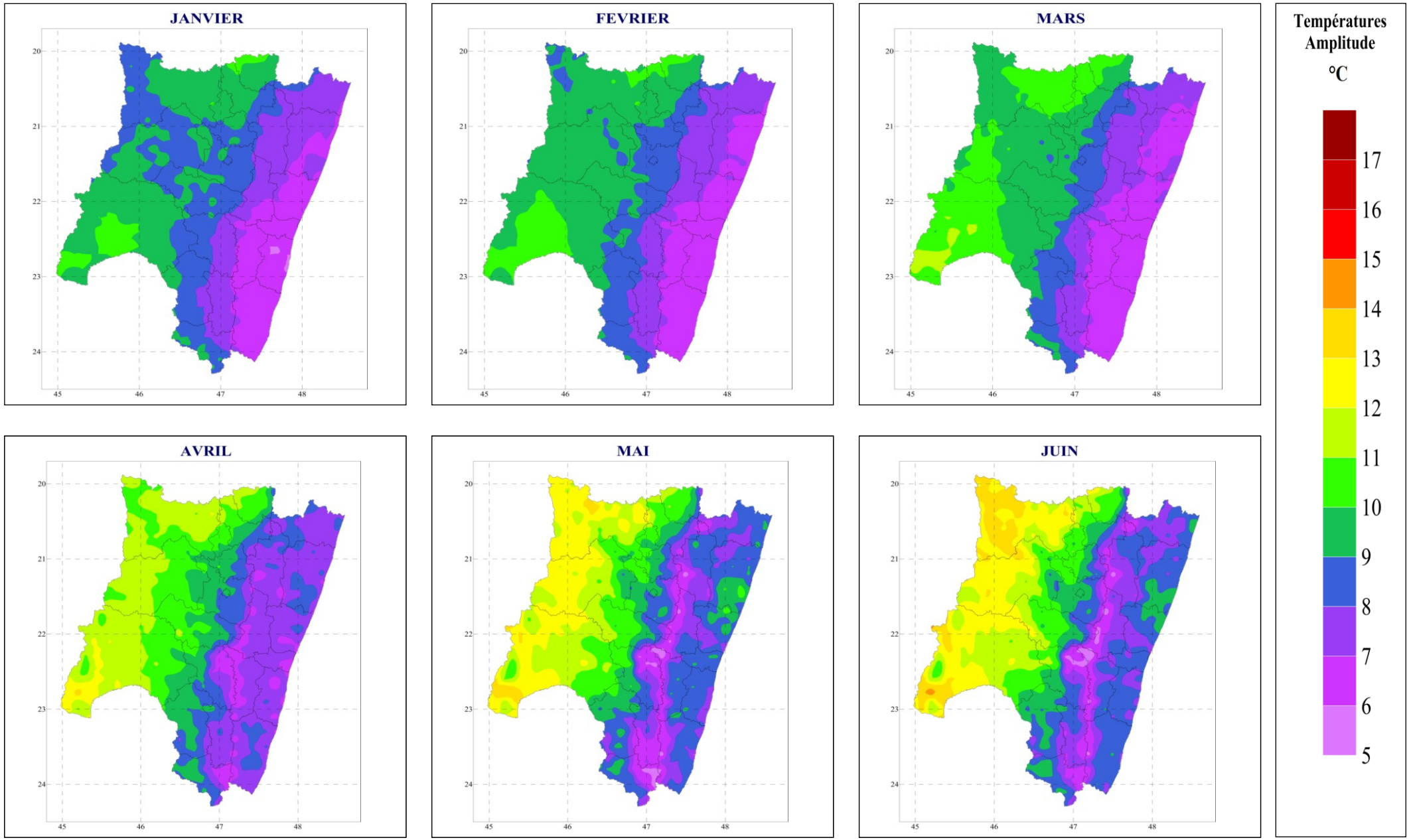

FIANARANTSOA

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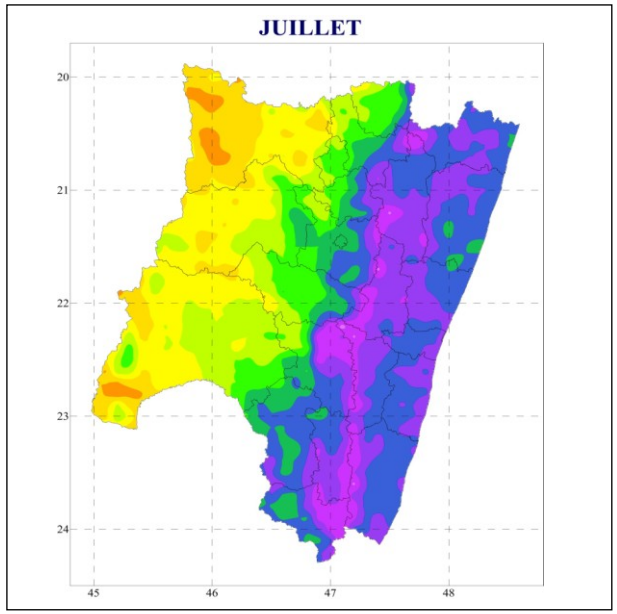
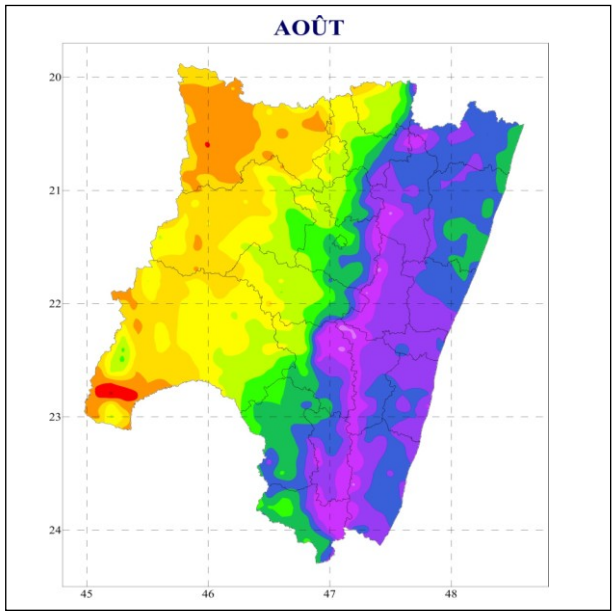
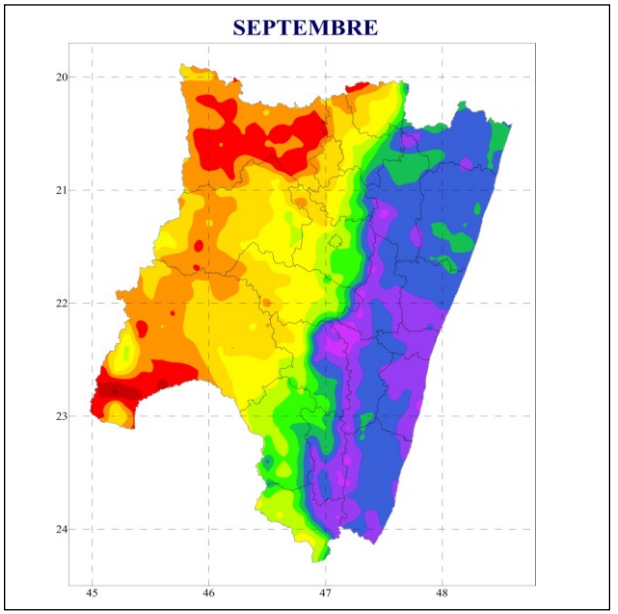
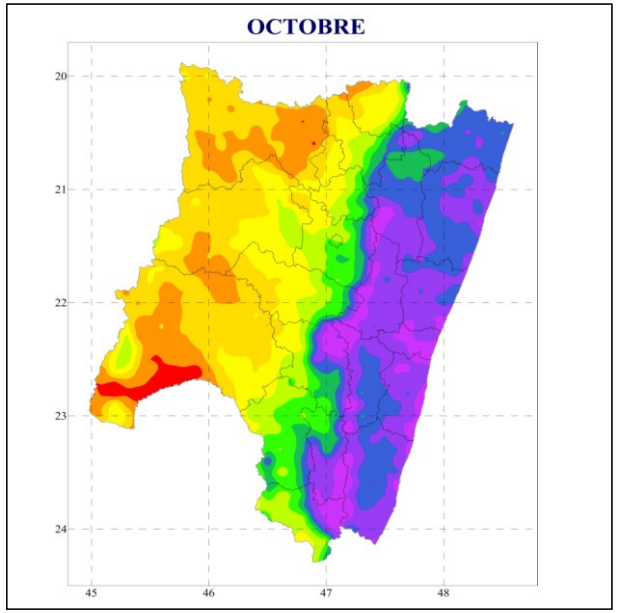
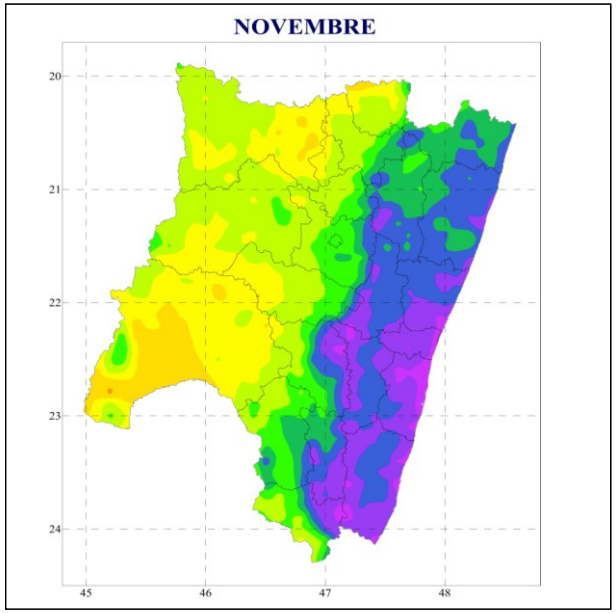
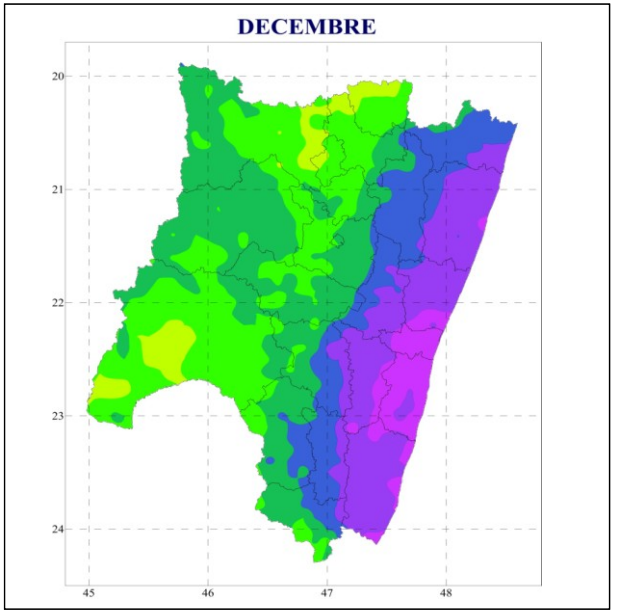


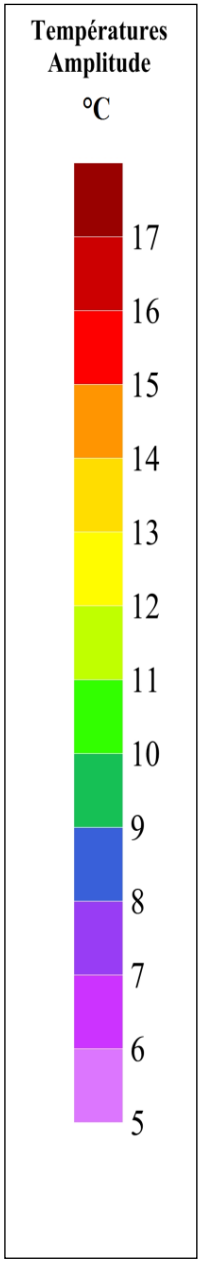






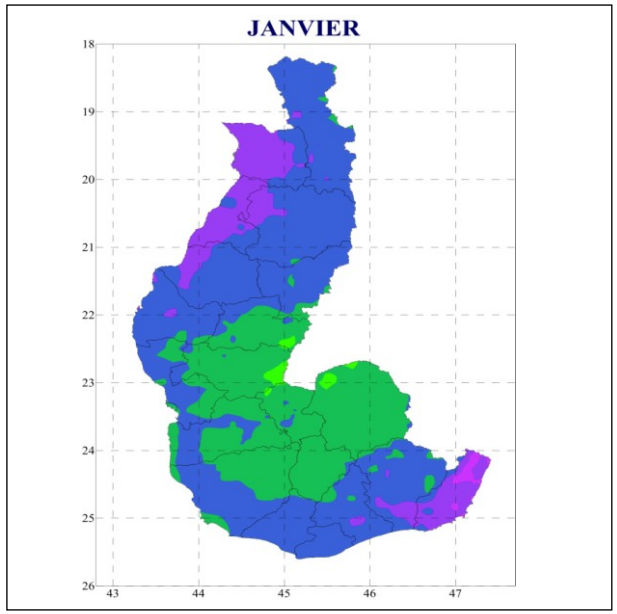


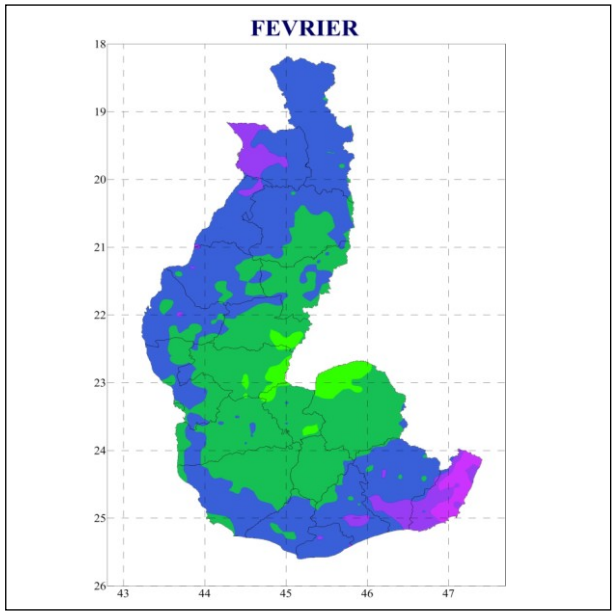


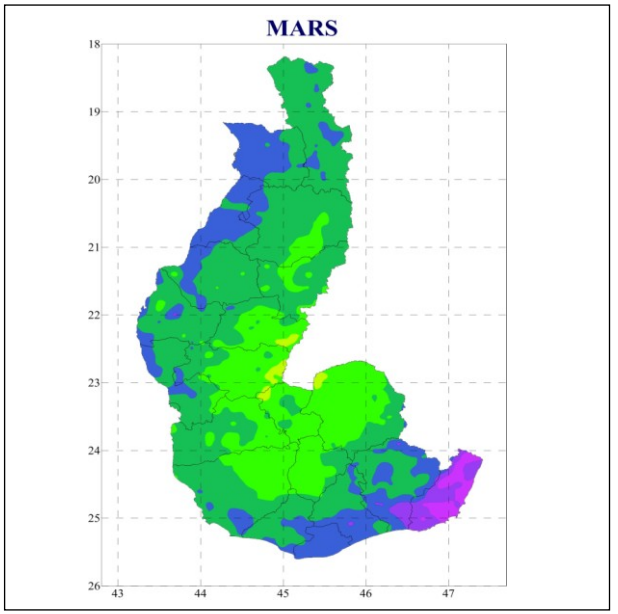


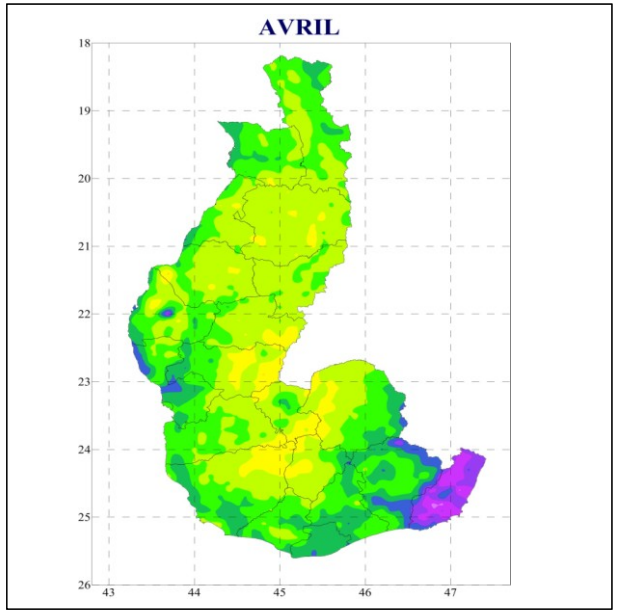
TOLIARA

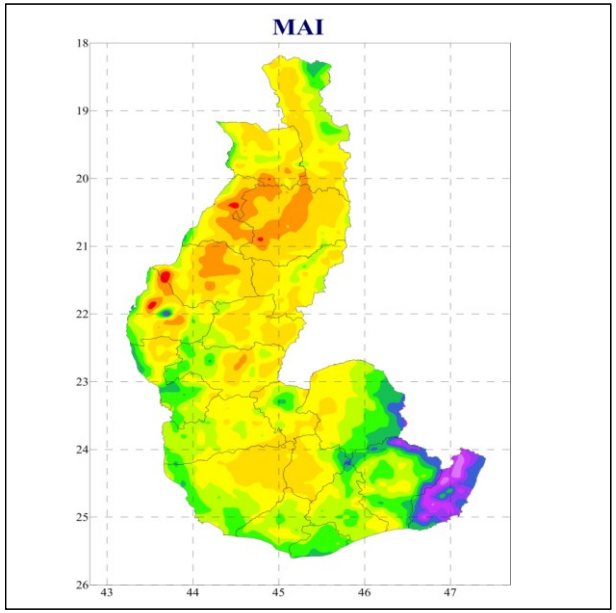
MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES

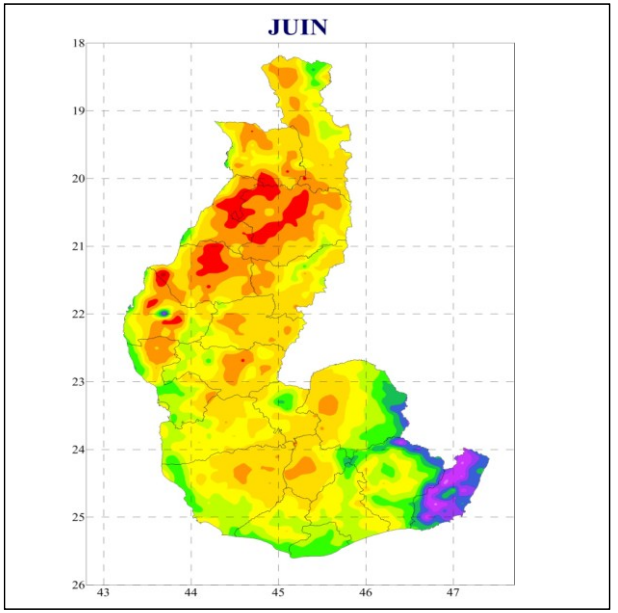


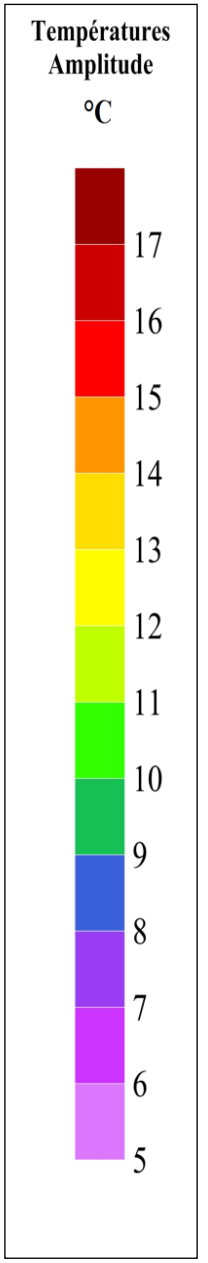






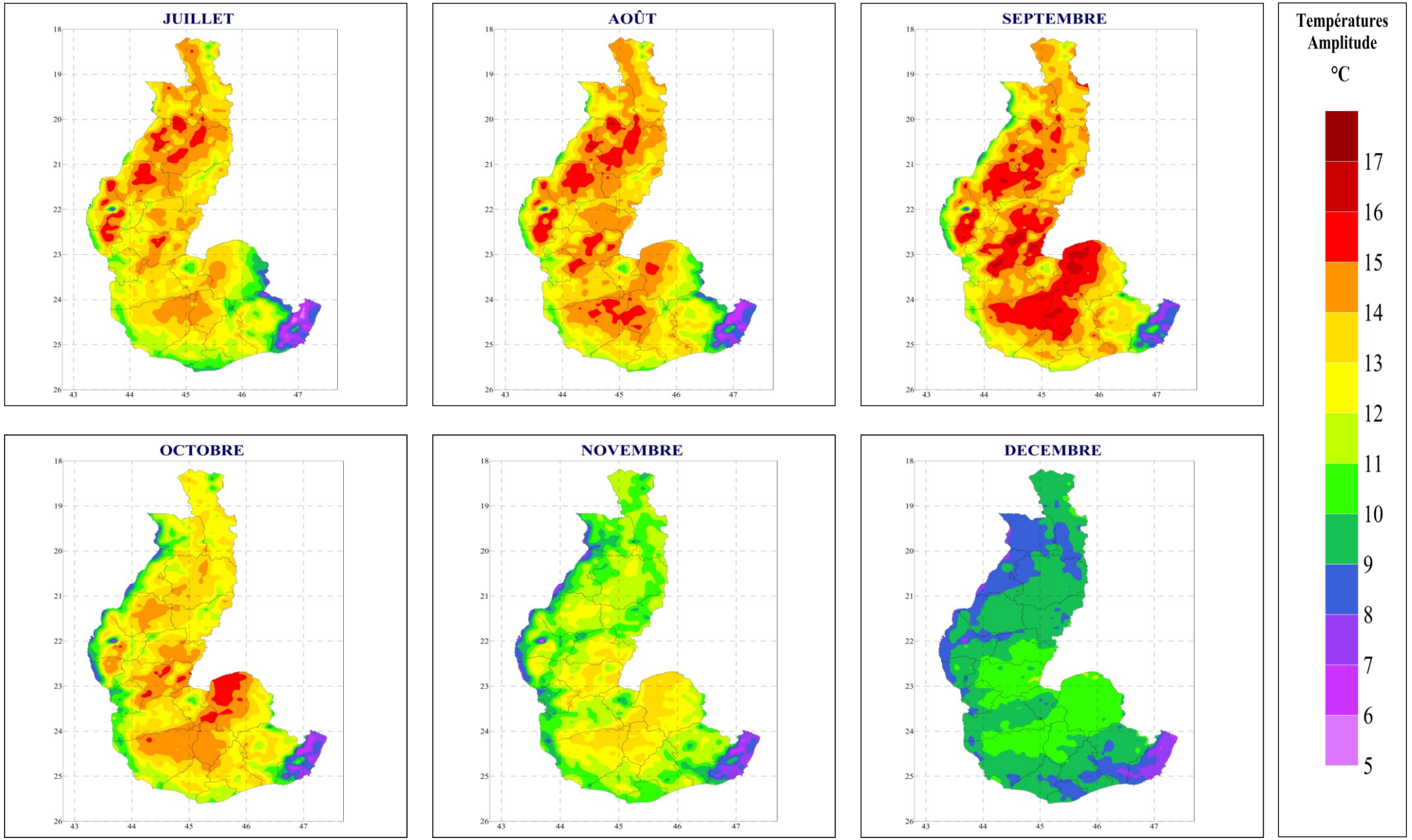






TOLIARA

MOYENNES MENSUELLES D'AMPLITUDE DES TEMPERATURES

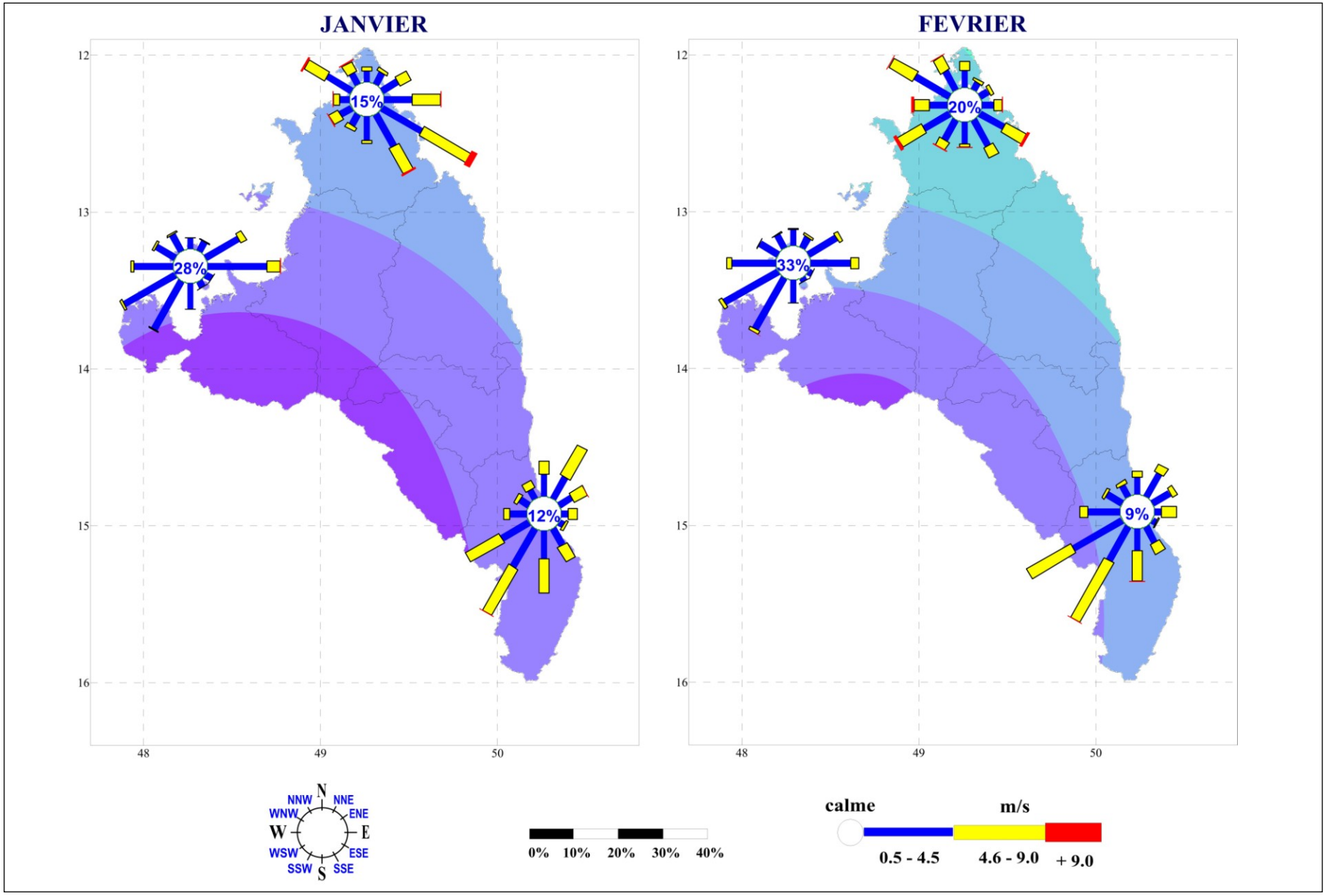


VENTS MOYENS ET ROSES DE VENT

- En été, le vent de Nord-Ouest (la mousson) s'établit sur le Nord-Ouest et Centre-Ouest, ainsi que sur les parties occidentales des Hautes-Terres.
- Pendant la saison fraîche, le vent principal de Madagascar est l'alizé de Sud-Est provenant de l'anticyclone semi-permanent de l'Océan Indien et dont la régularité est remarquable de Juin à Août. Le maximum de force de vents supérieur à 9 m/s est enregistré sur les régions de Sava, et Diana.

ANTSIRANANA

MOYENNES MENSUELLES DE VENTS ET ROSE DES VENTS



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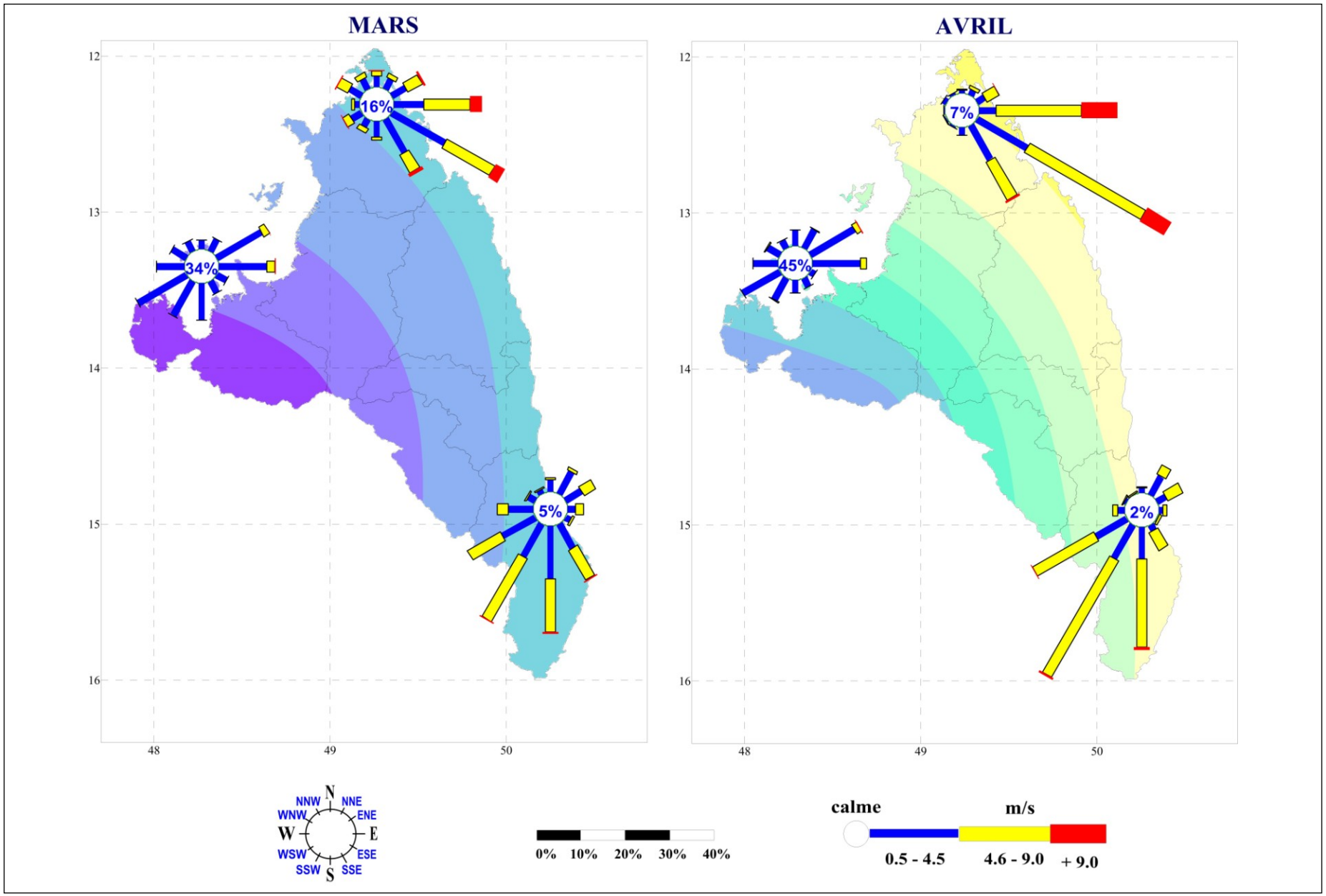

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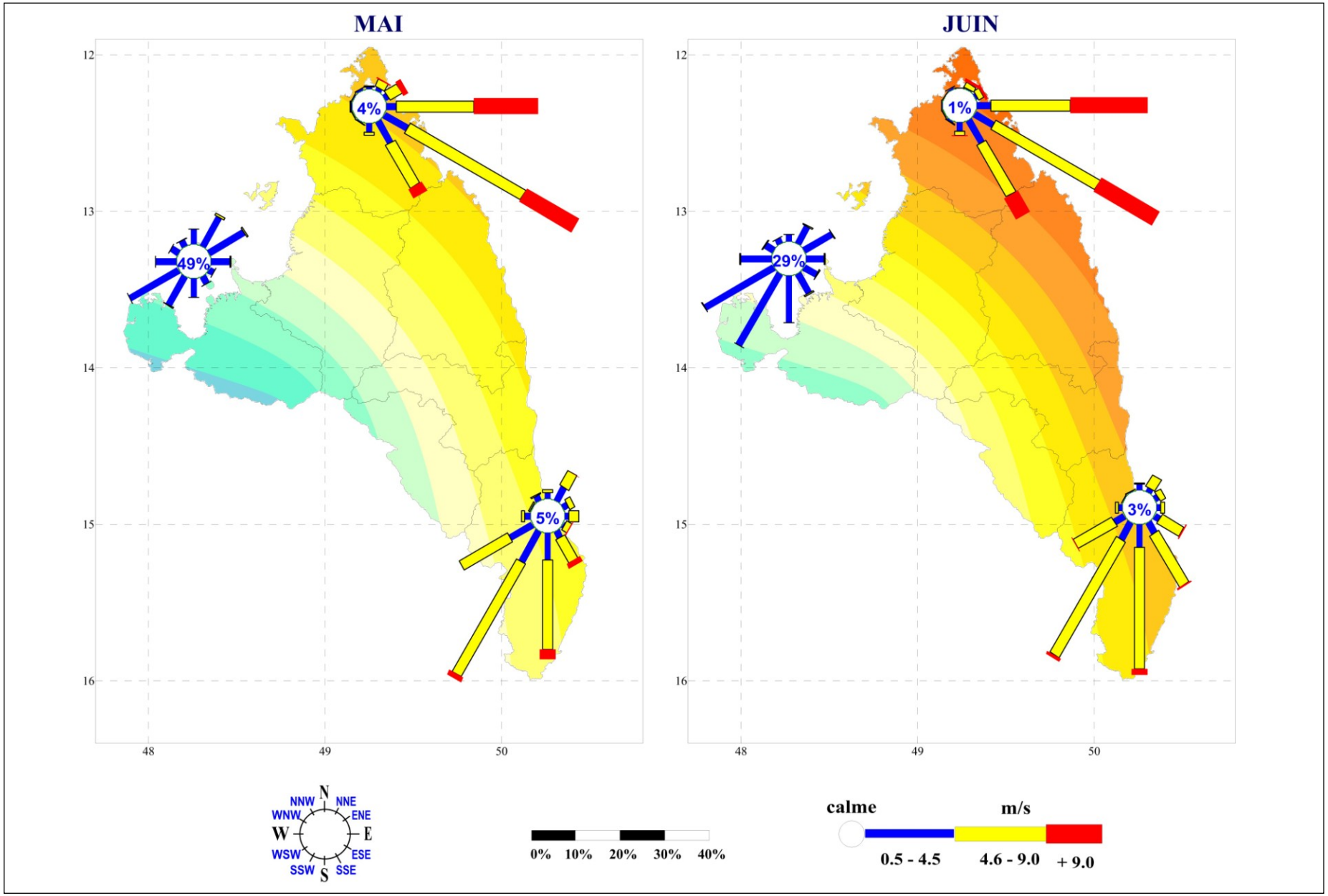

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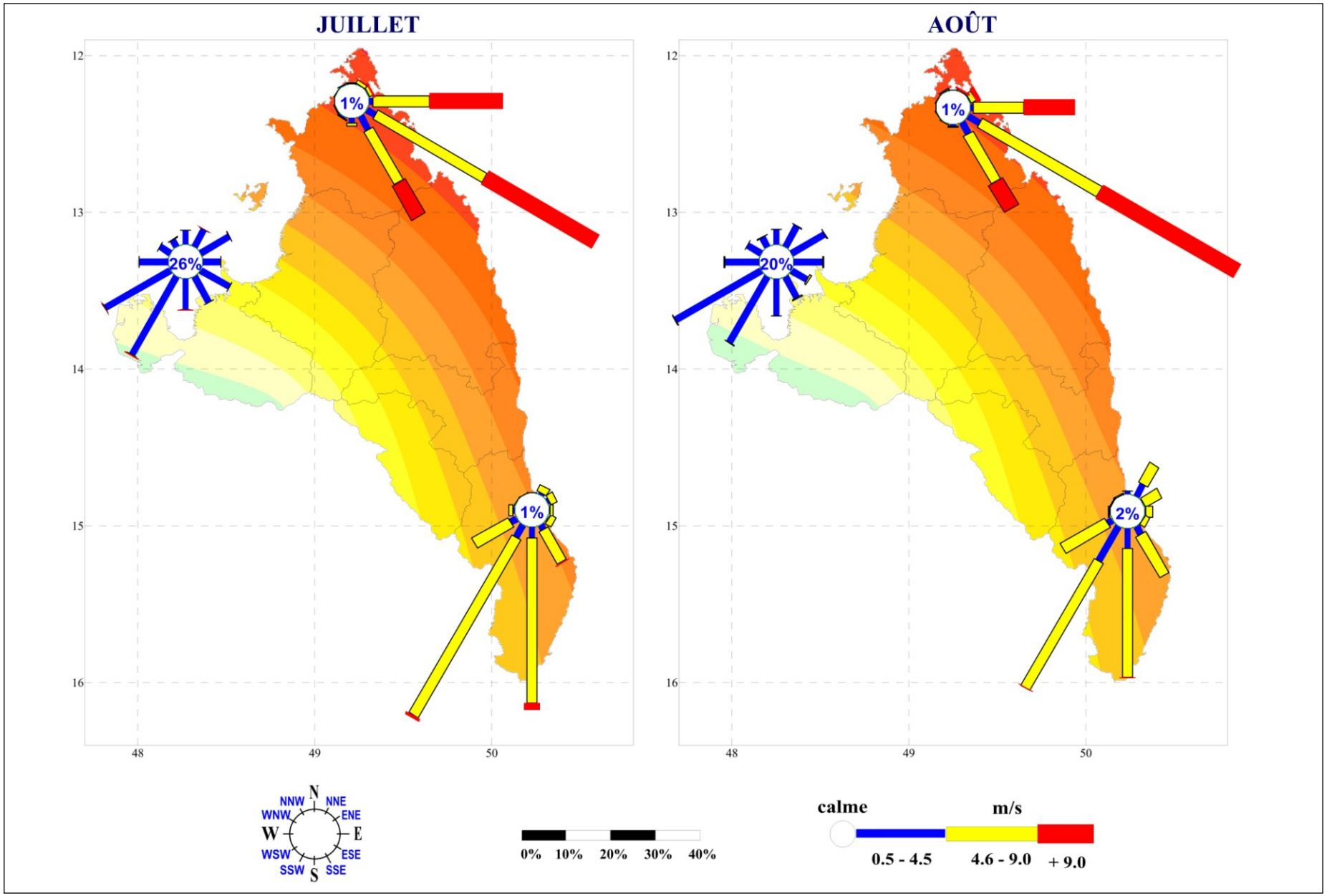

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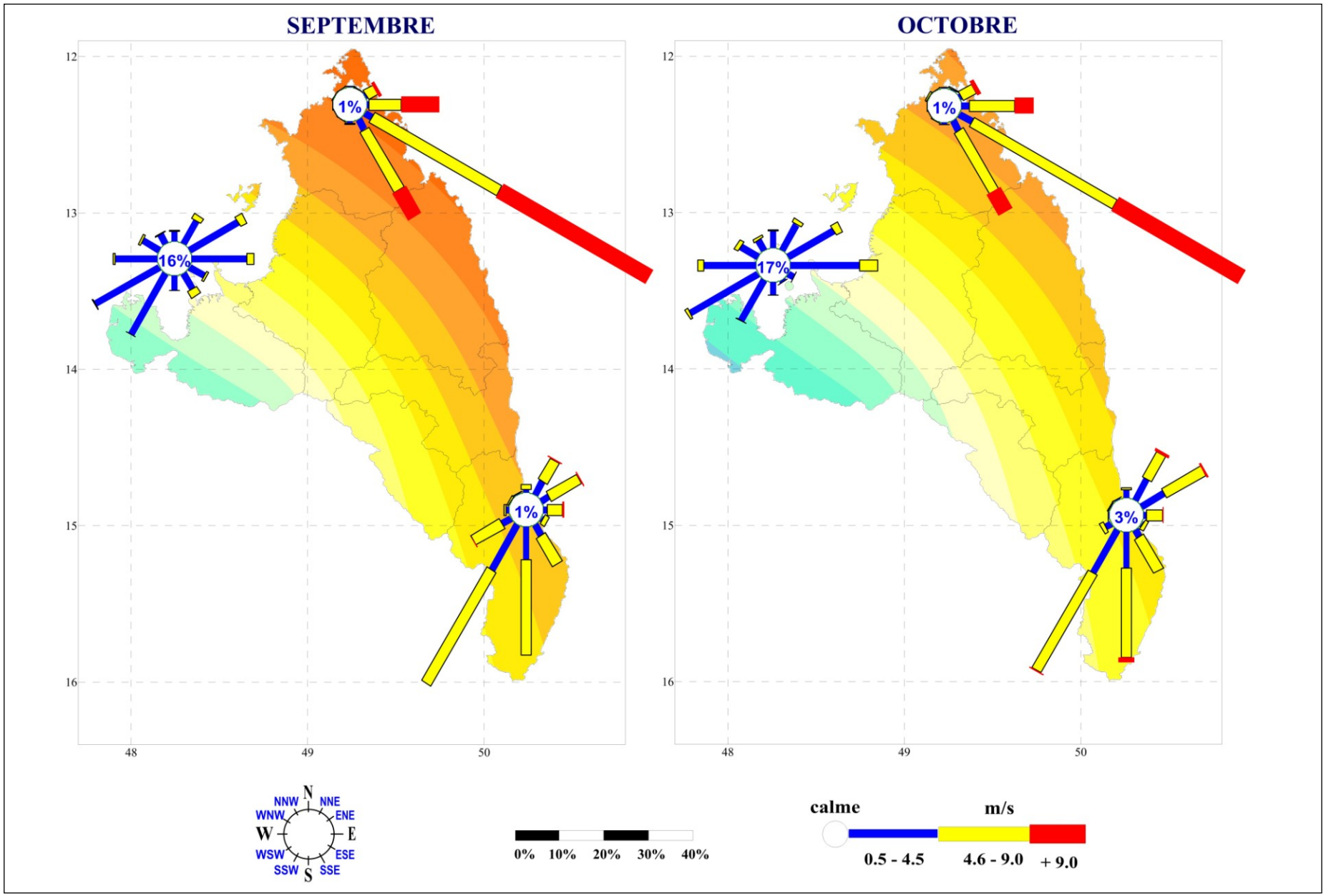

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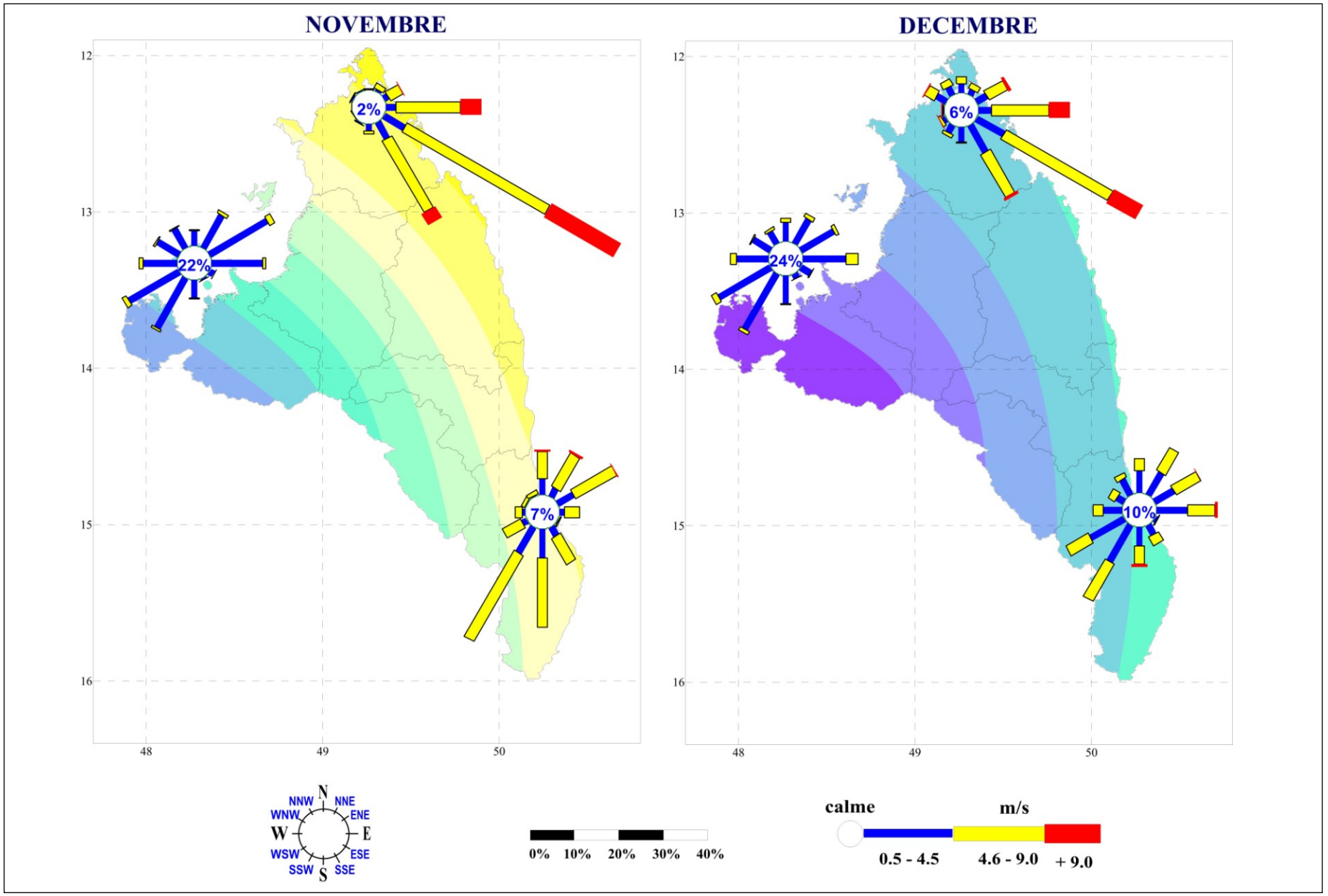
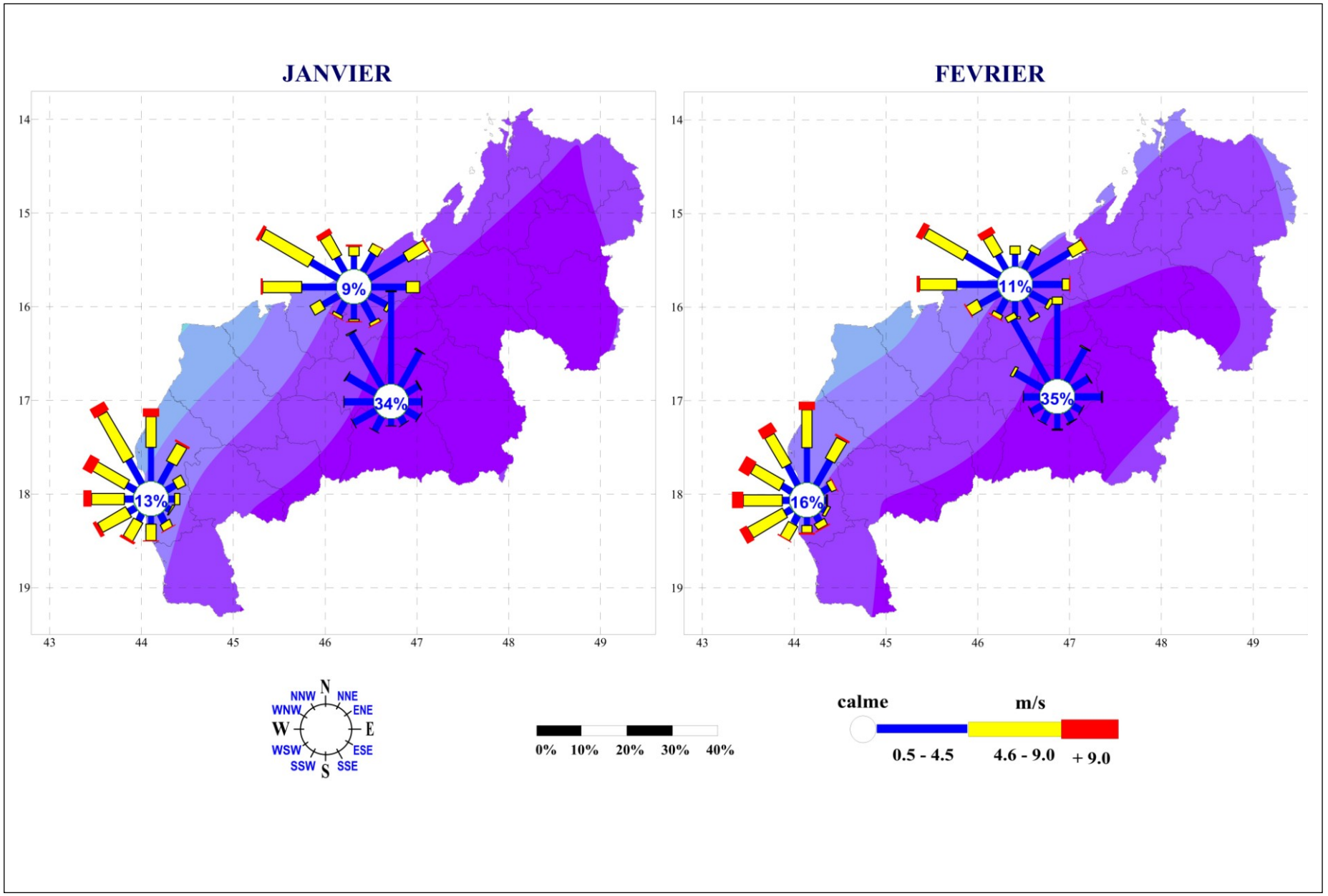
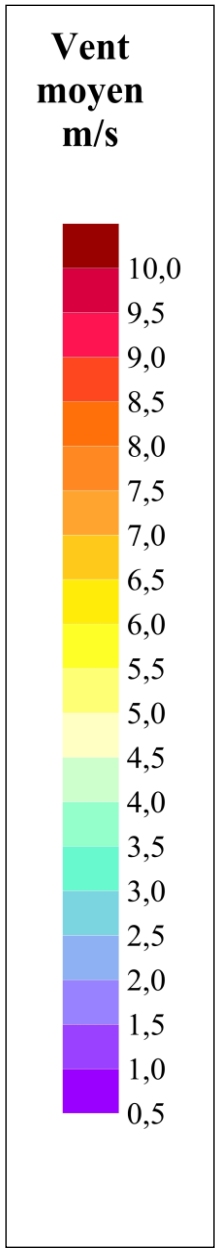


MAHAJANGA

MOYENNES MENSUELLES DE VENTS ET ROSE DES VENTS





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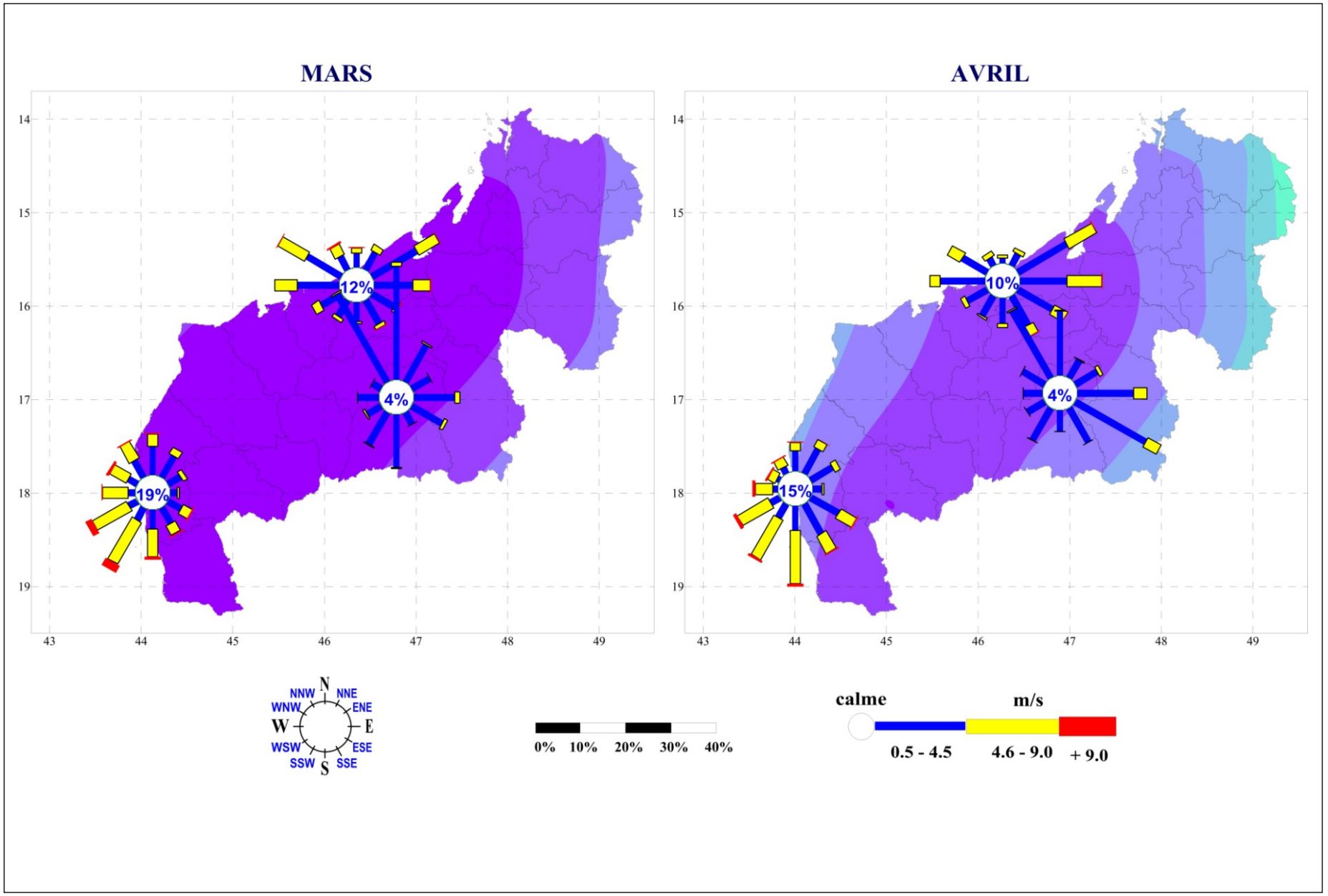

MAHAJANGA

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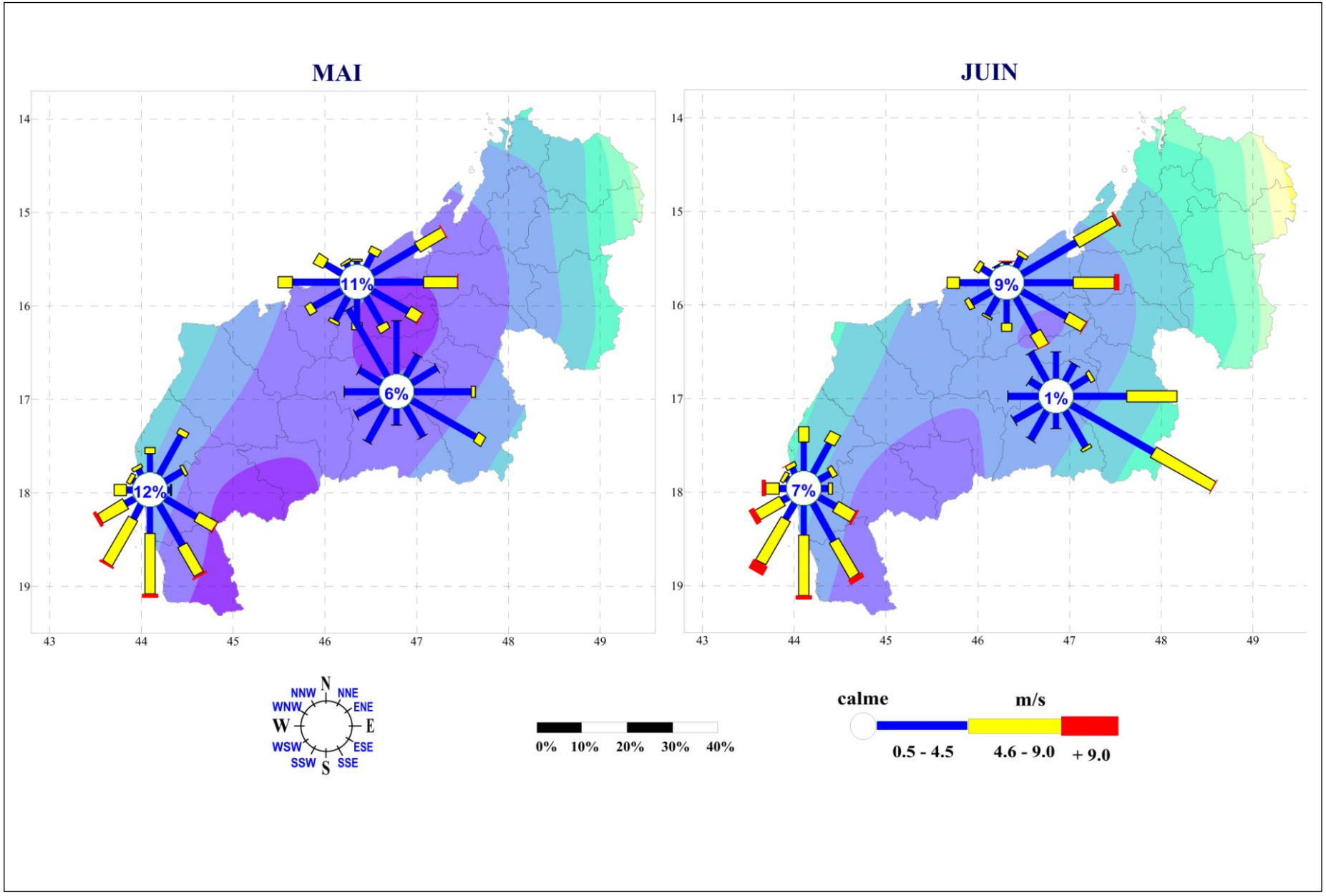

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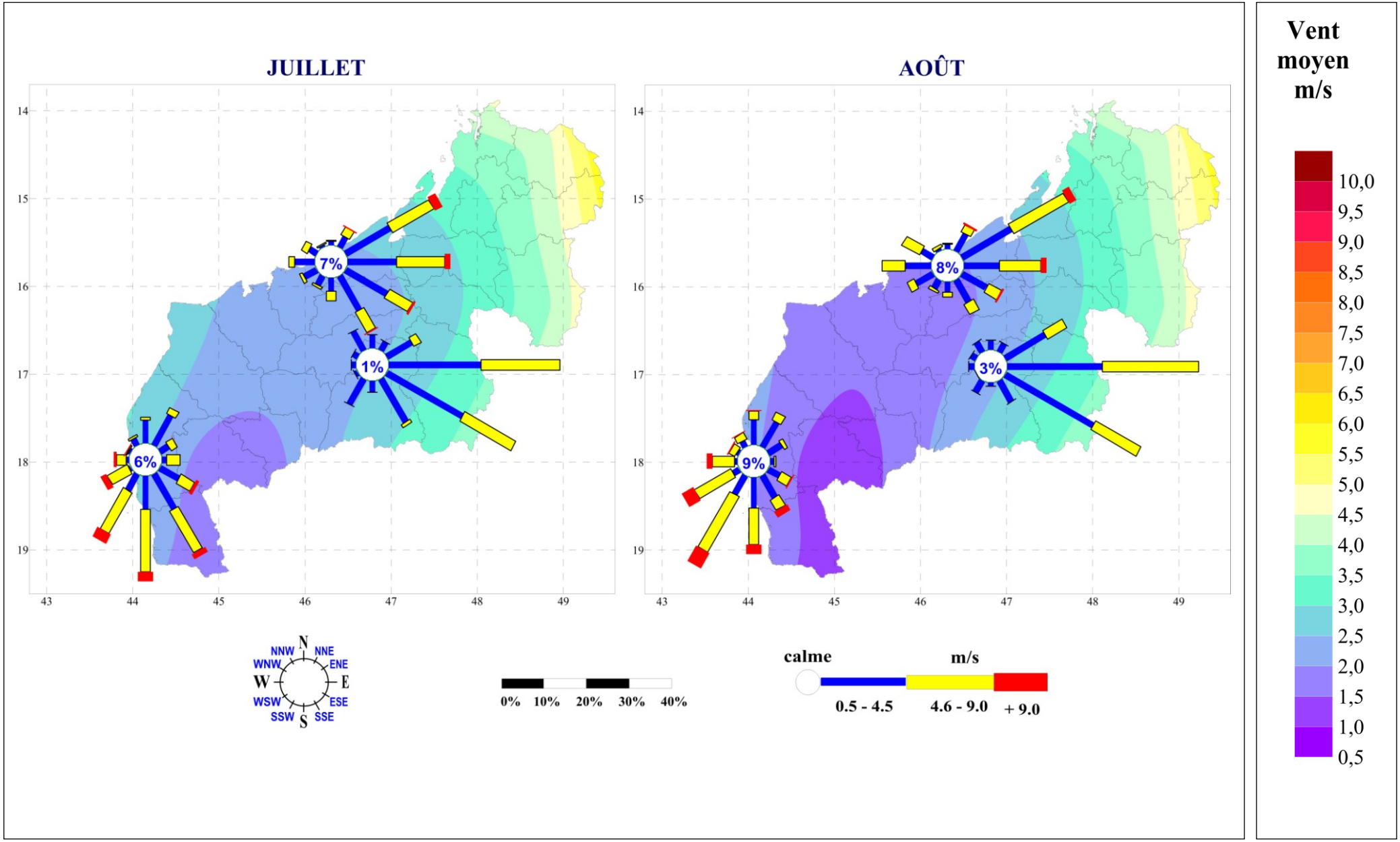

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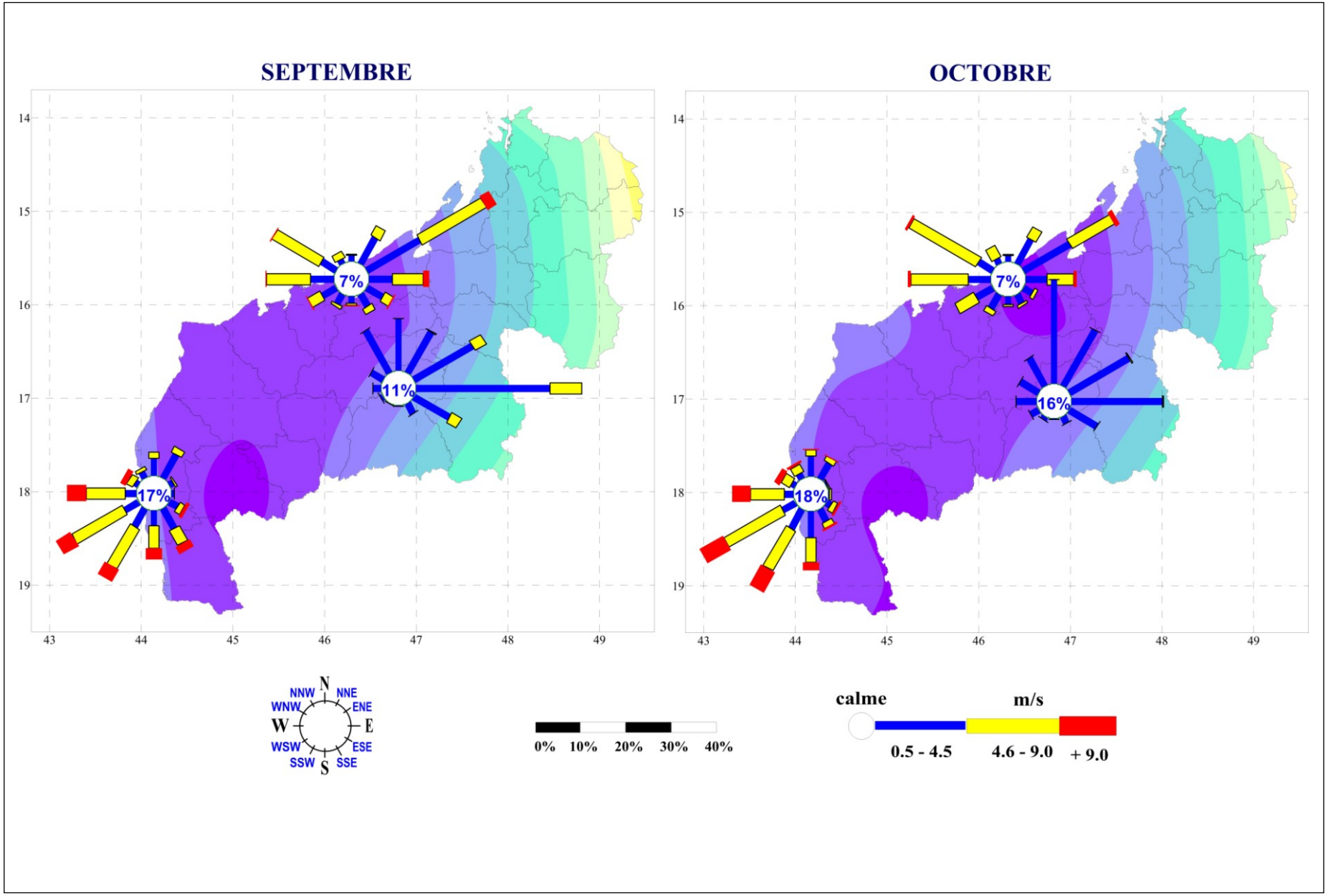

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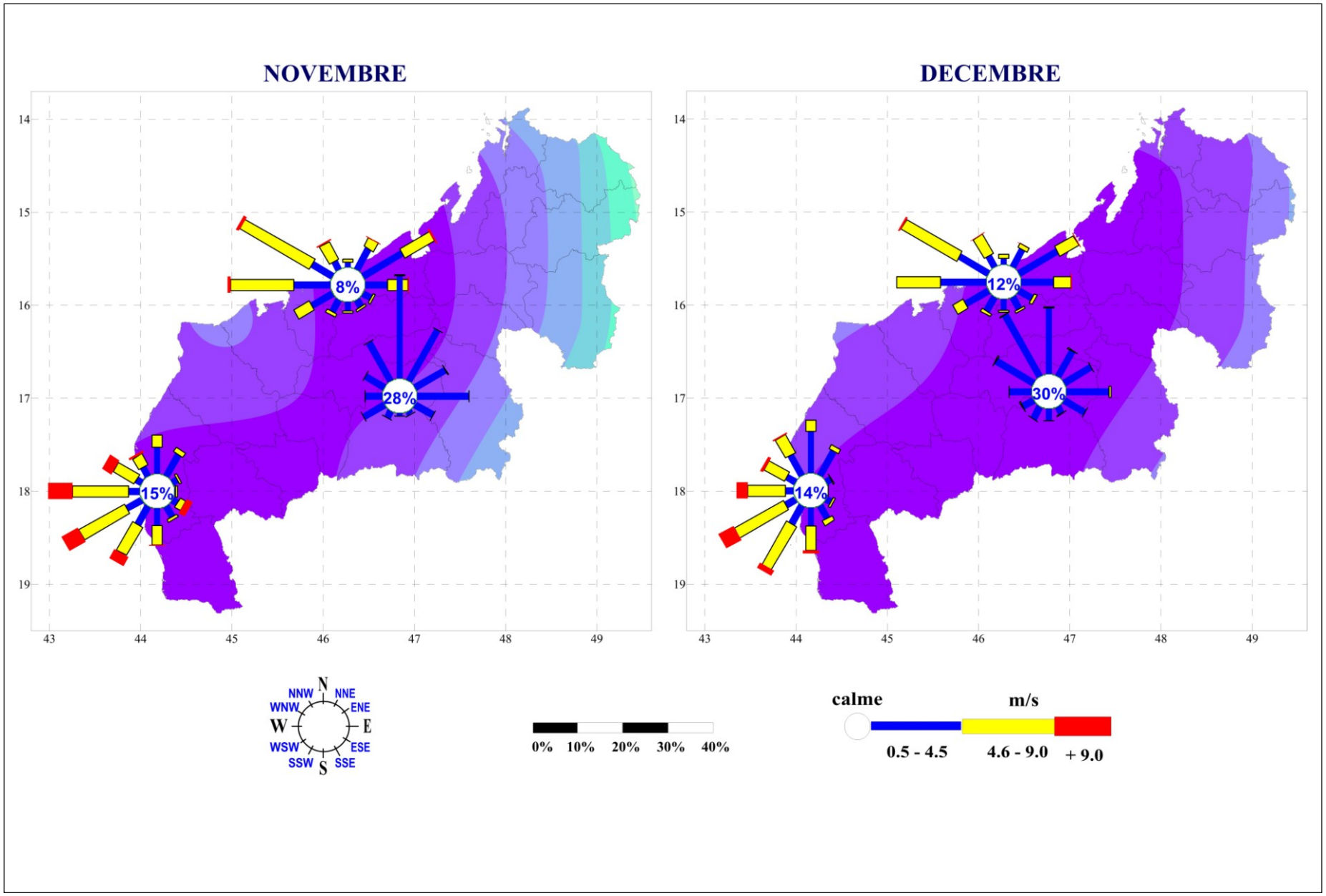
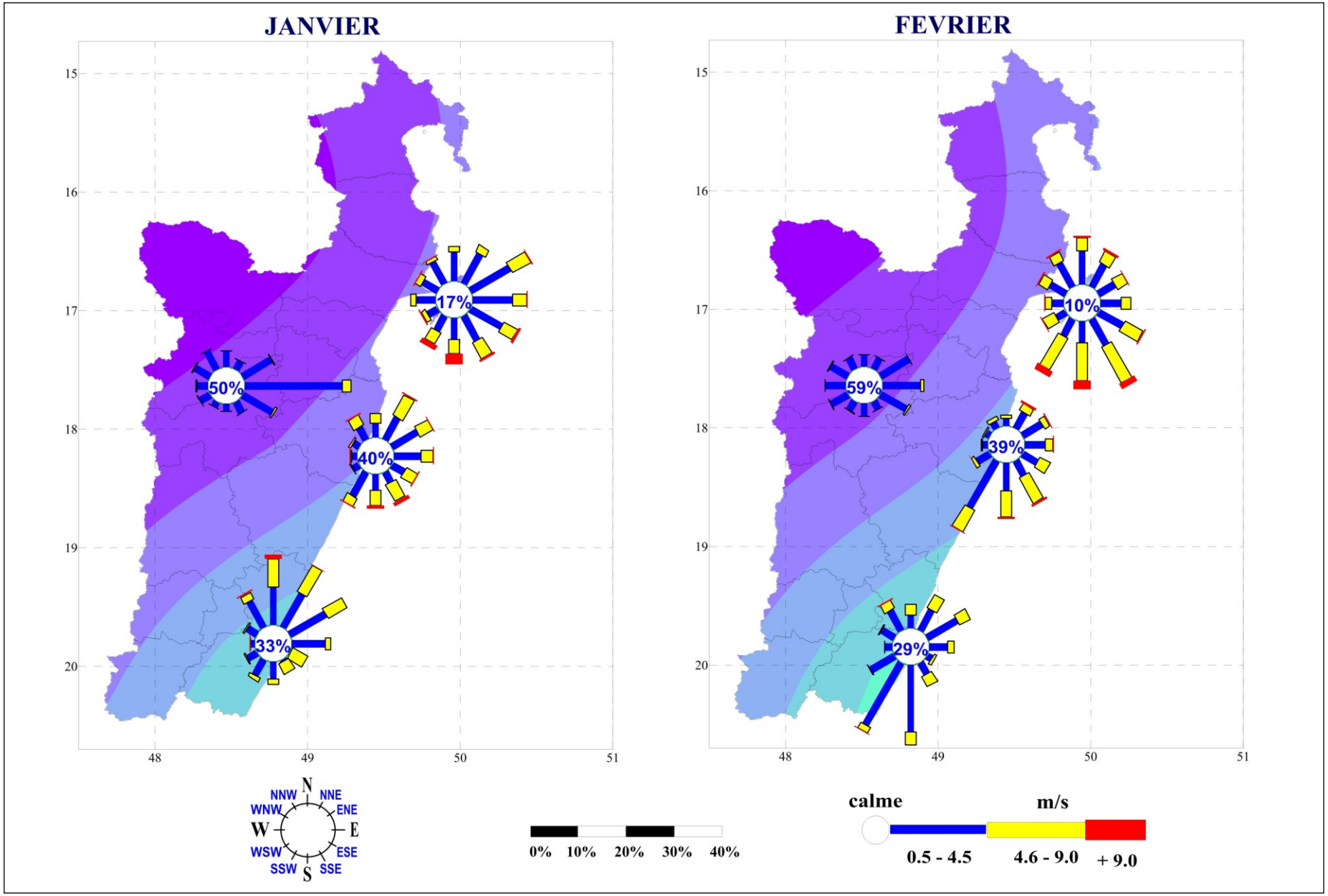


TOAMASINA

MOYENNES MENSUELLES DE VENTS ET ROSE DES VENTS



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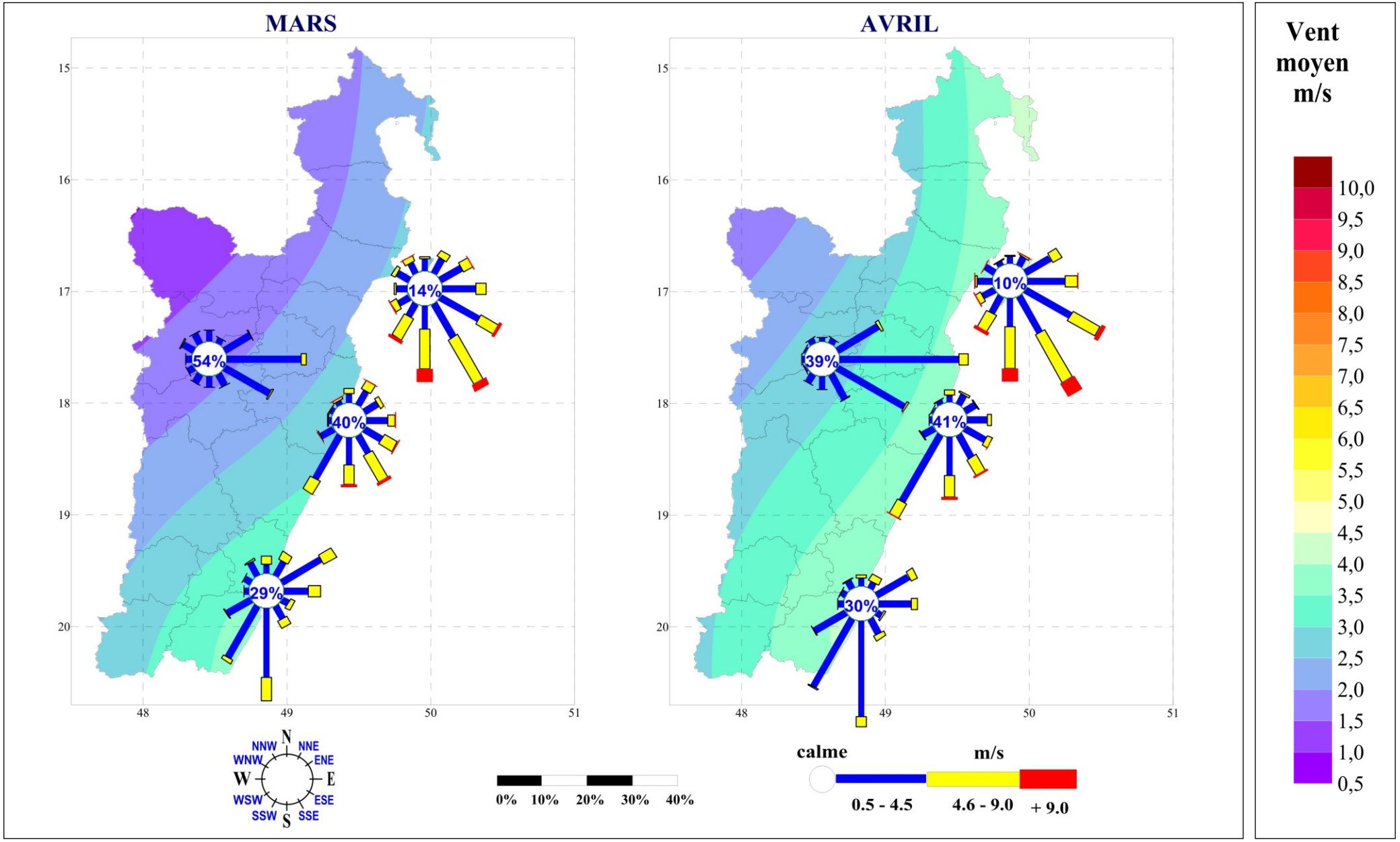

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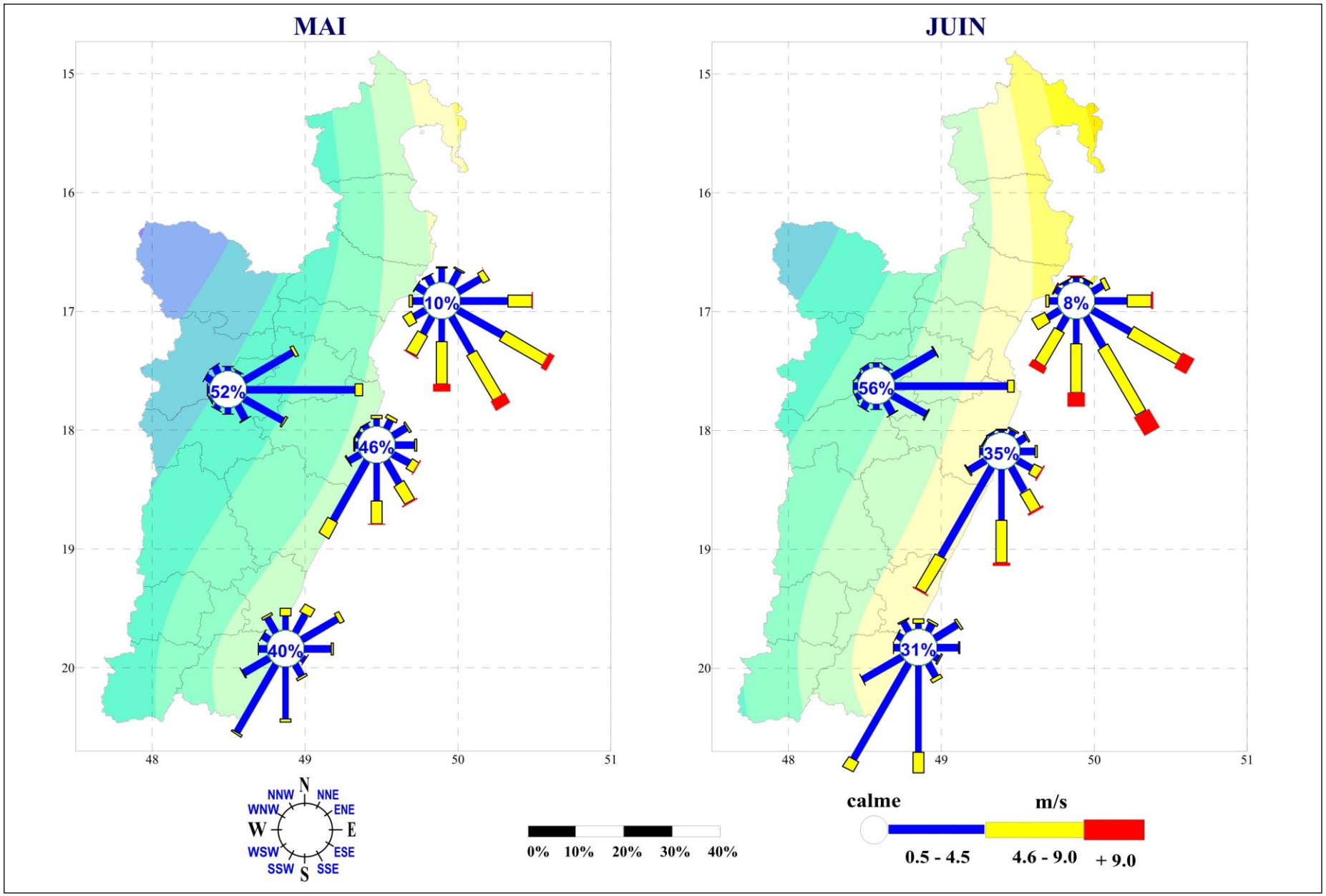

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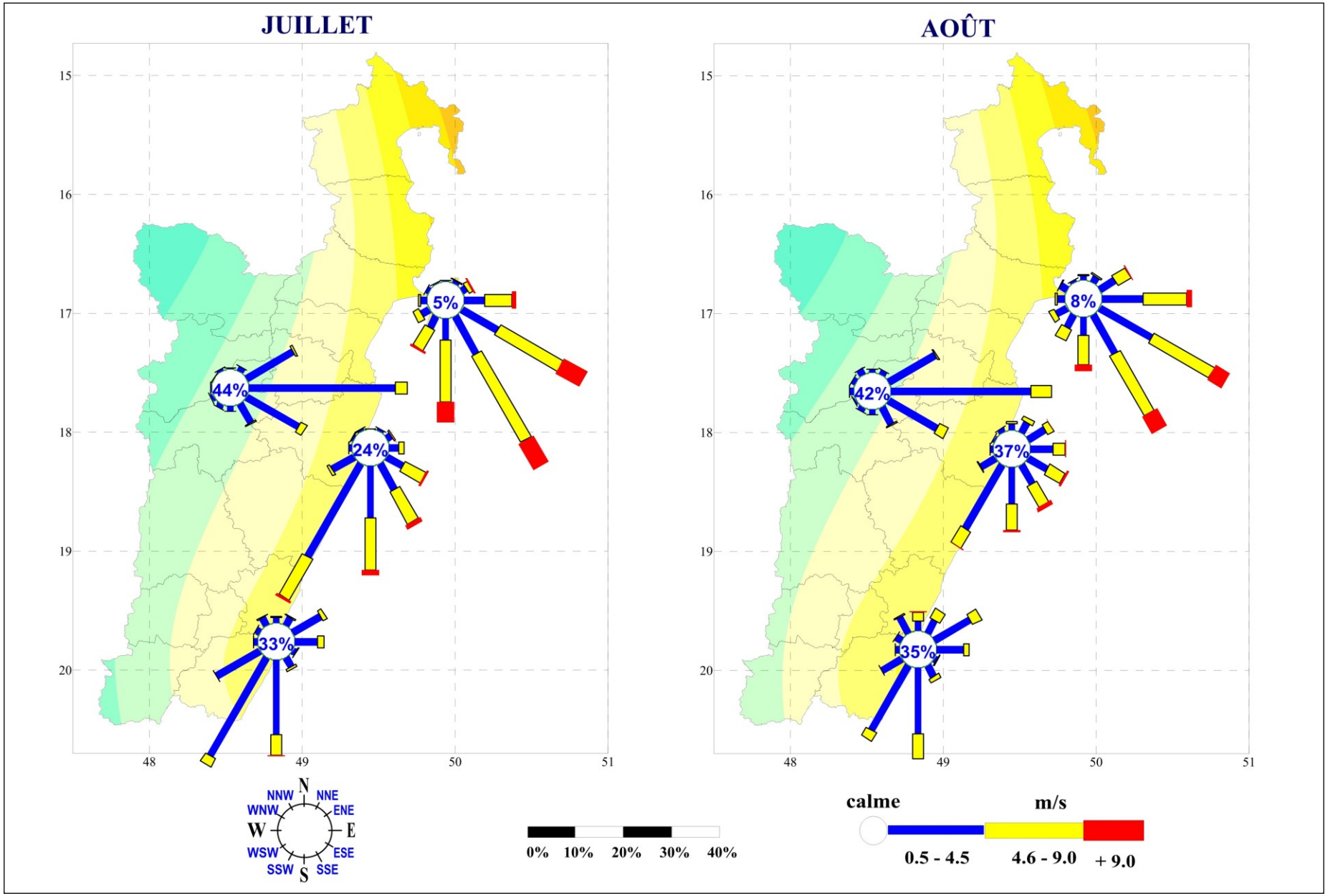

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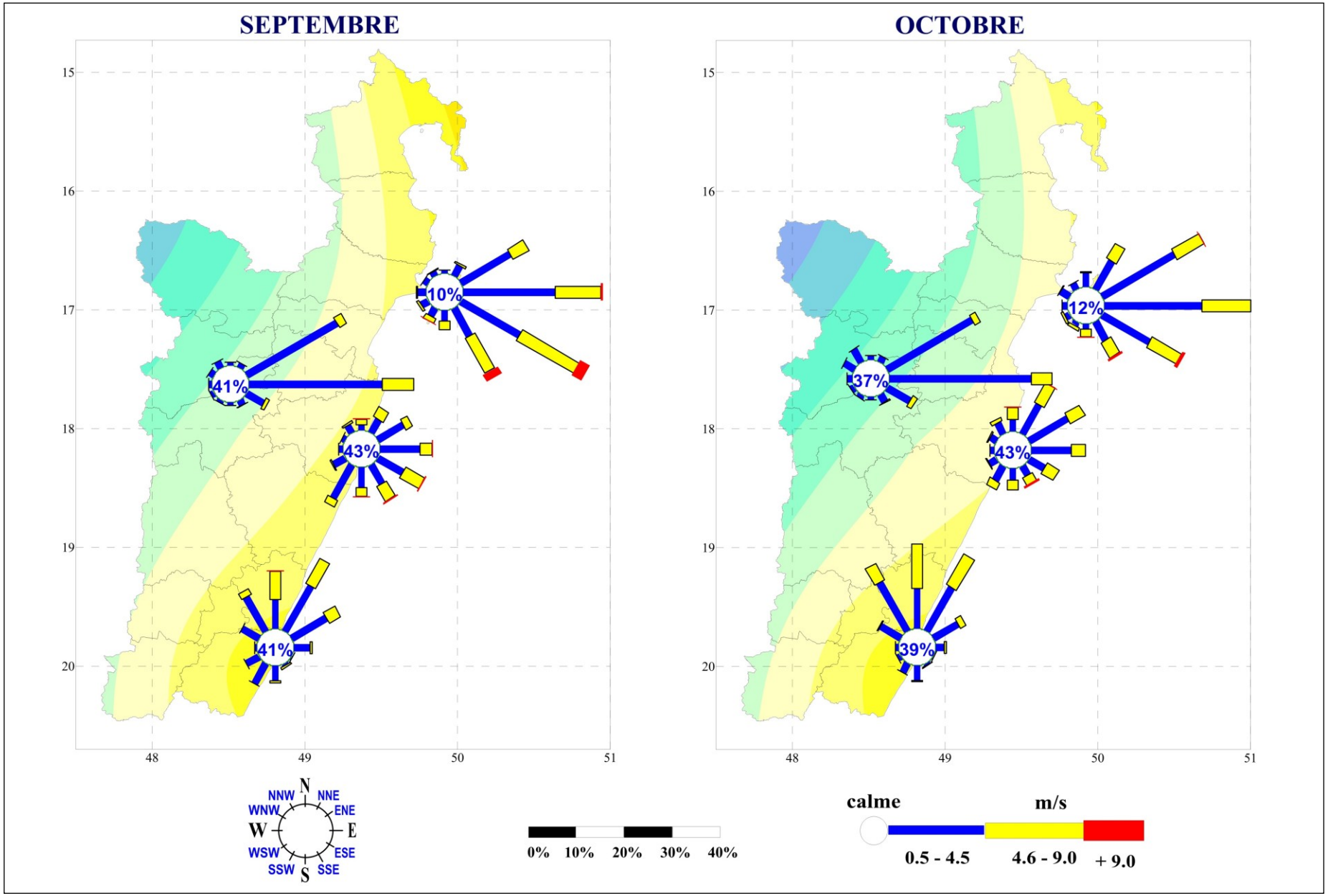

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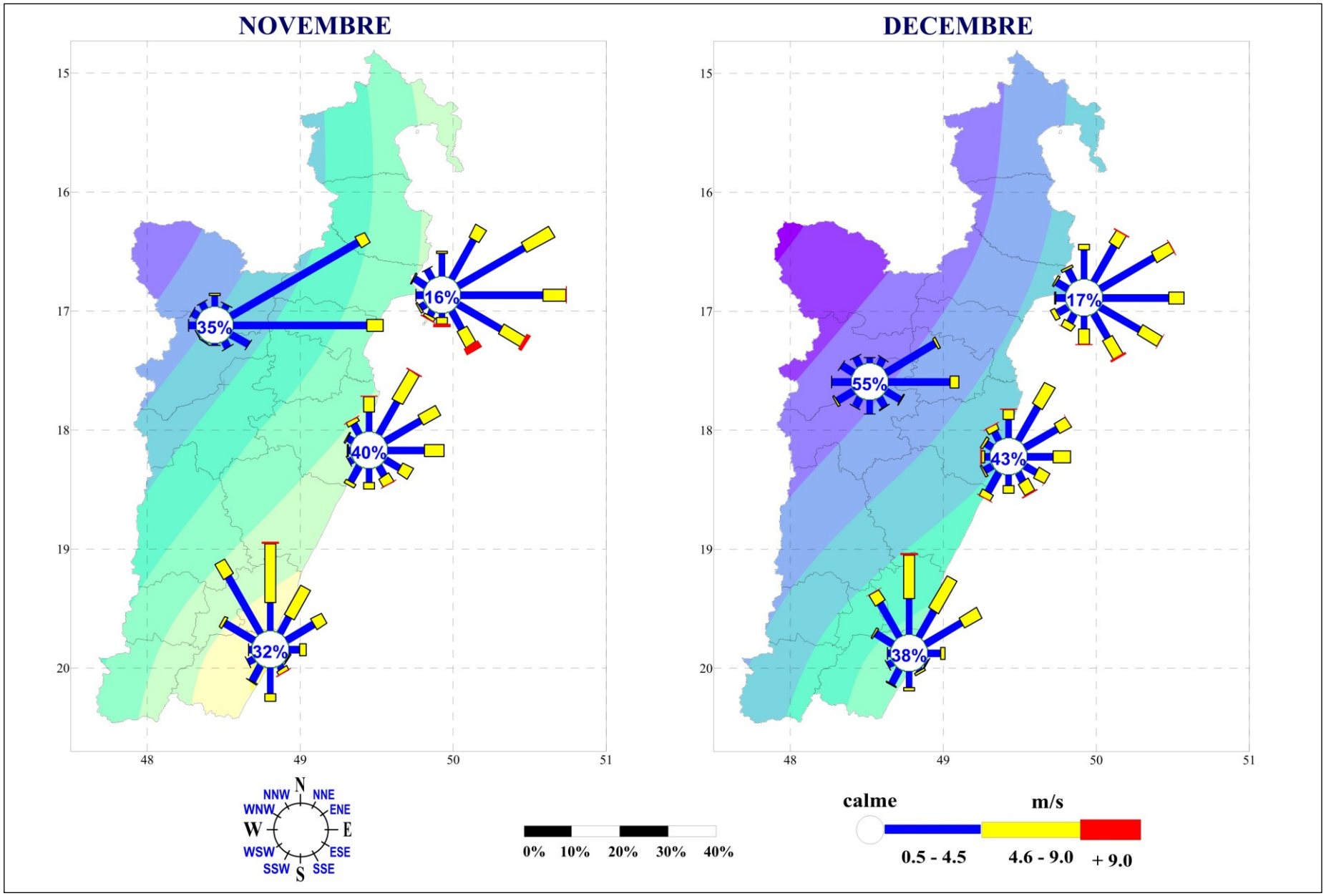

ANTANANARIVO

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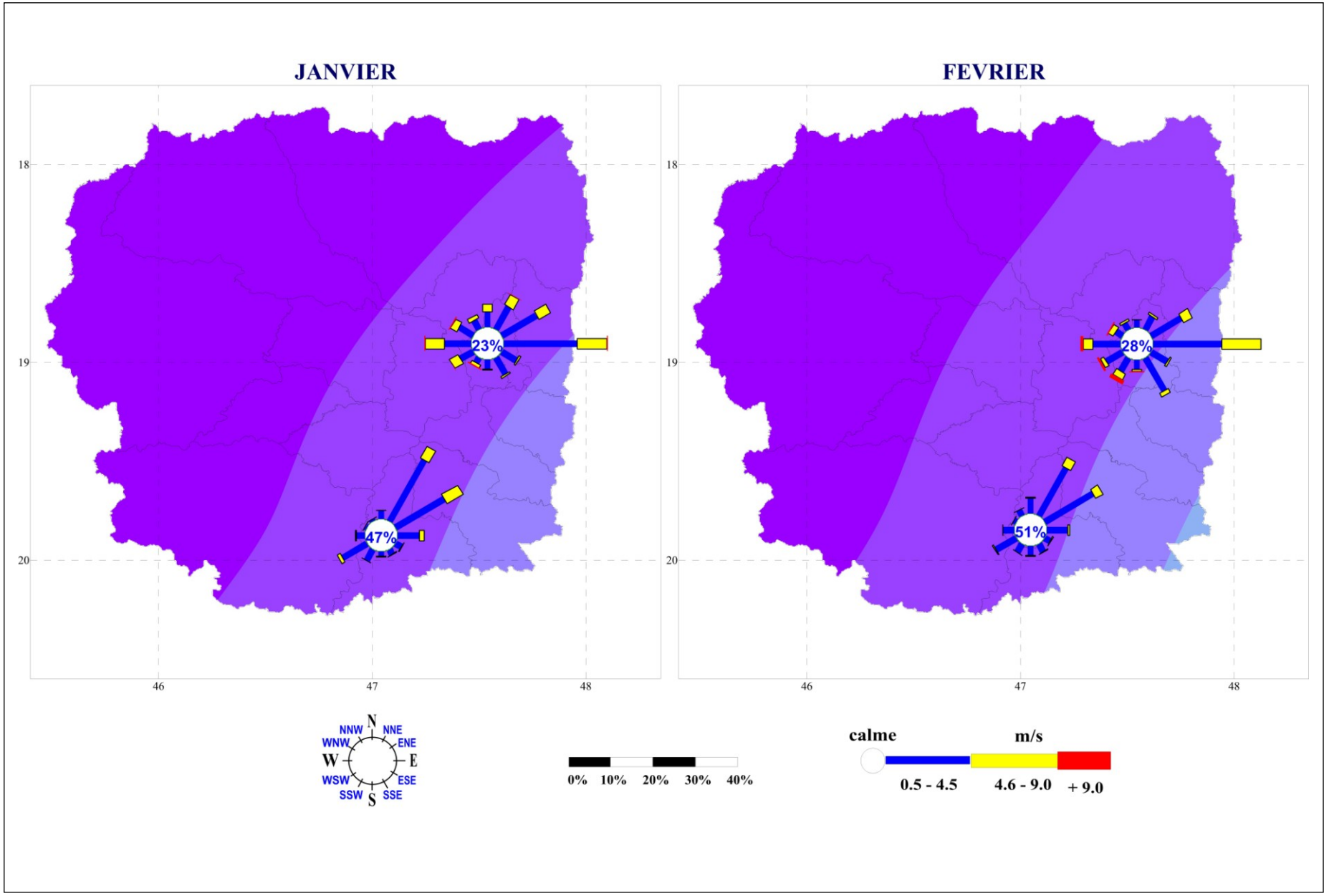

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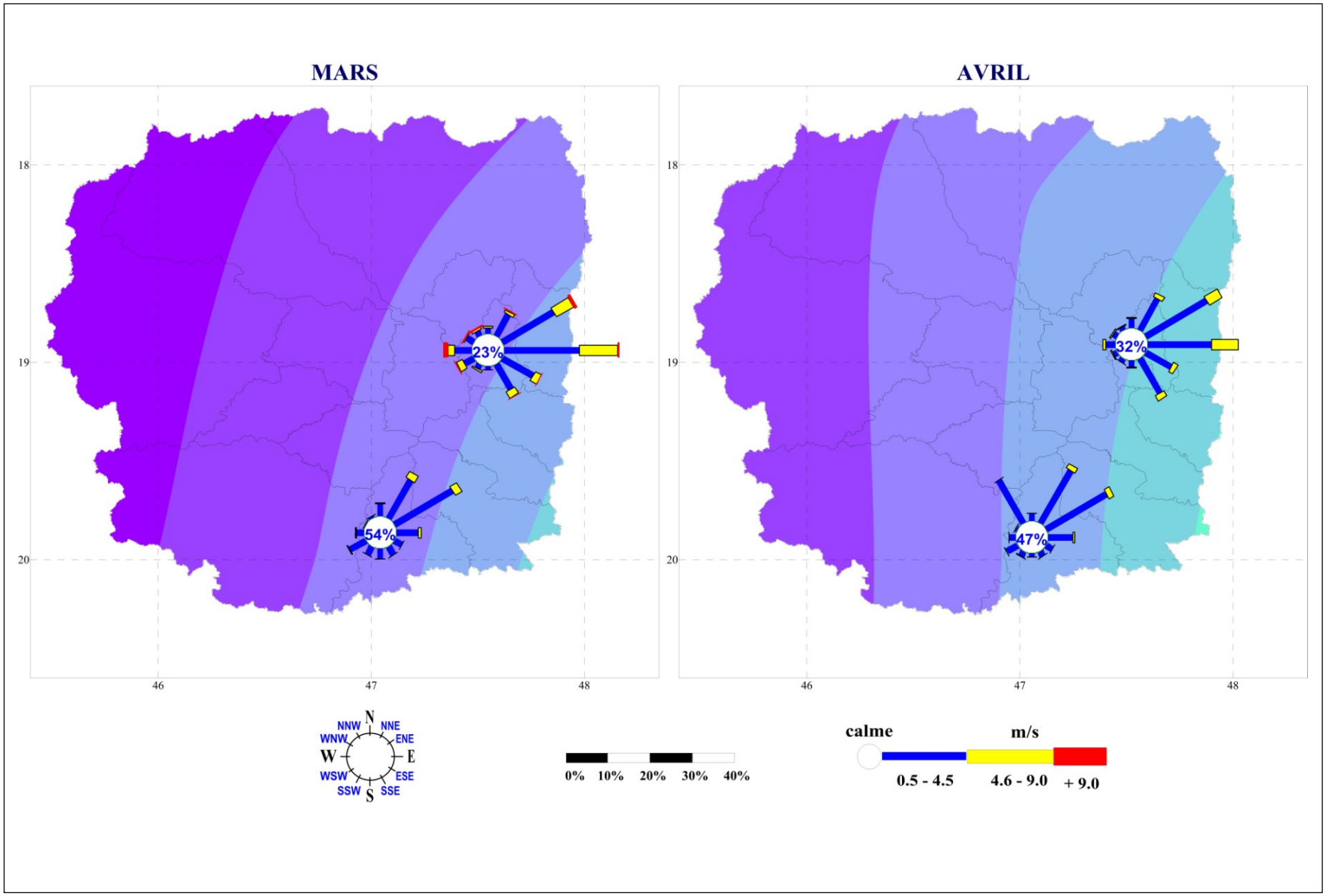

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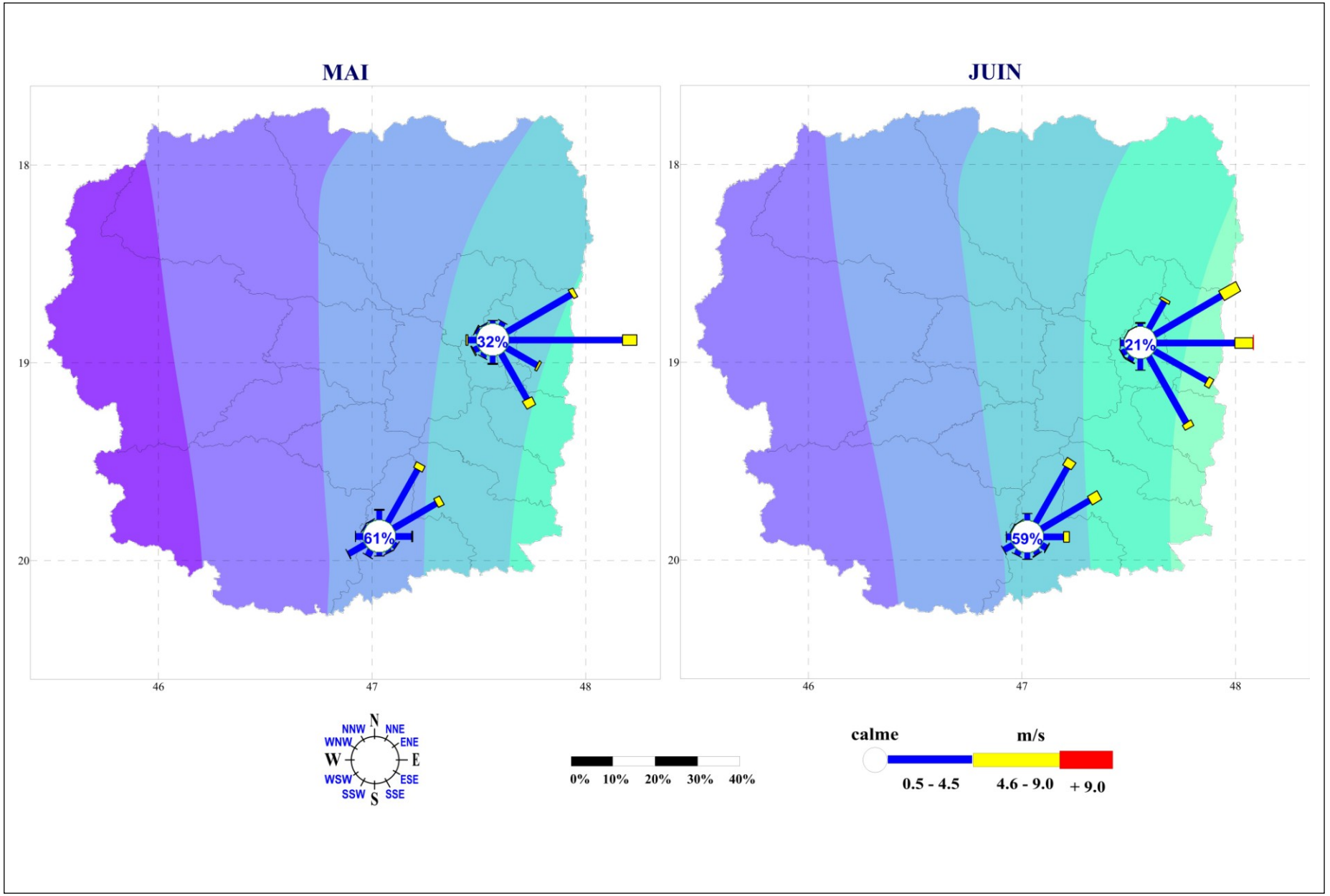

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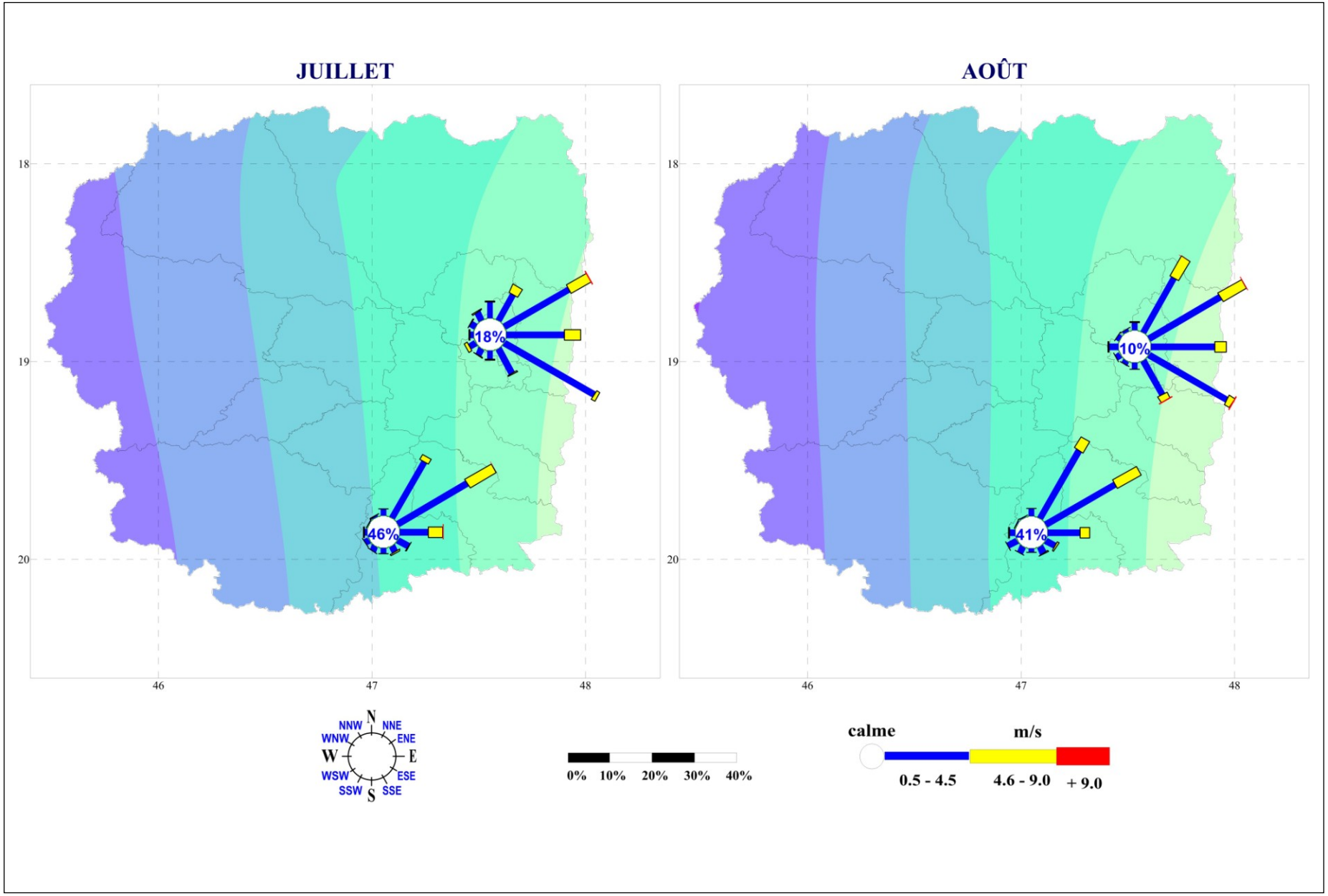

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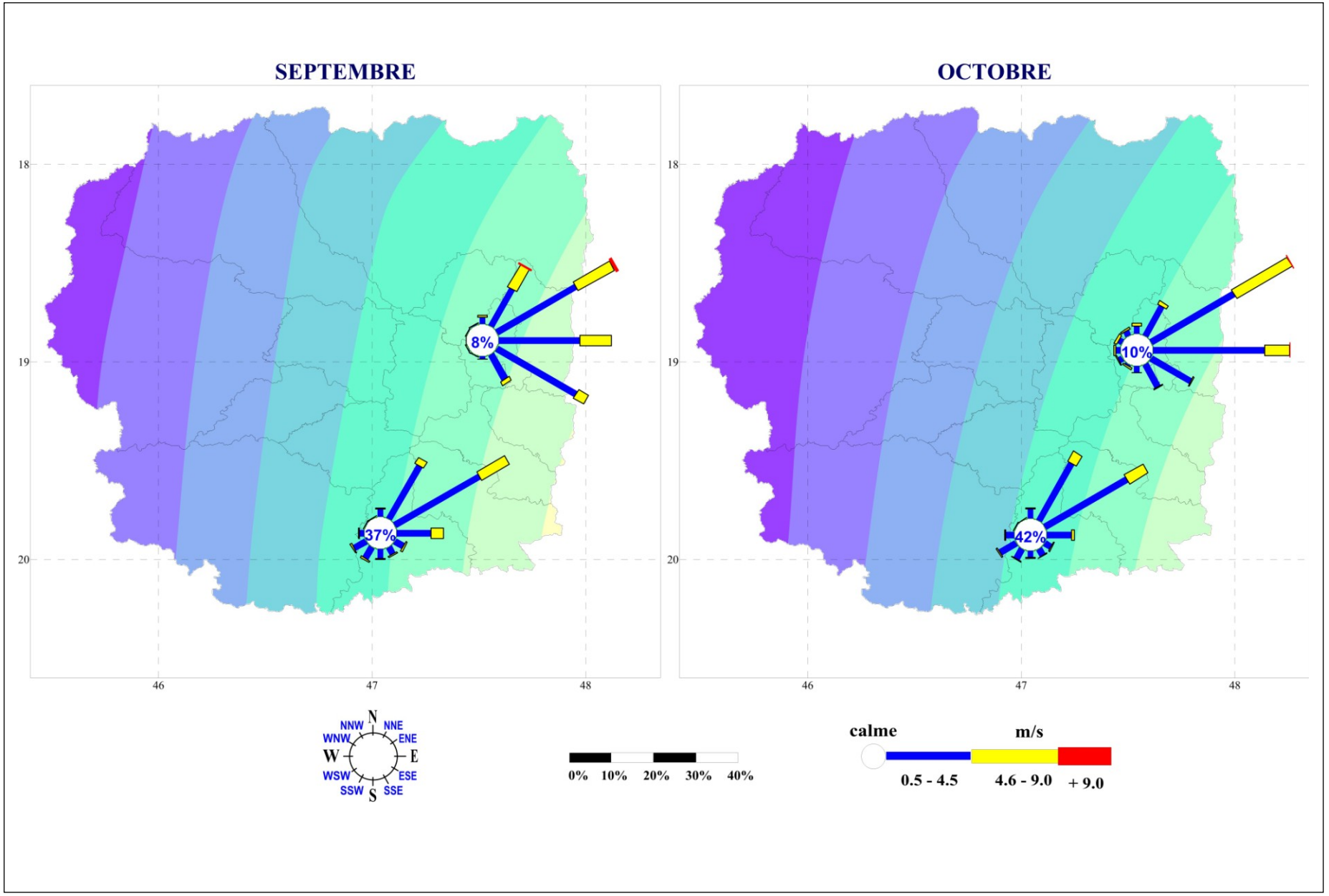

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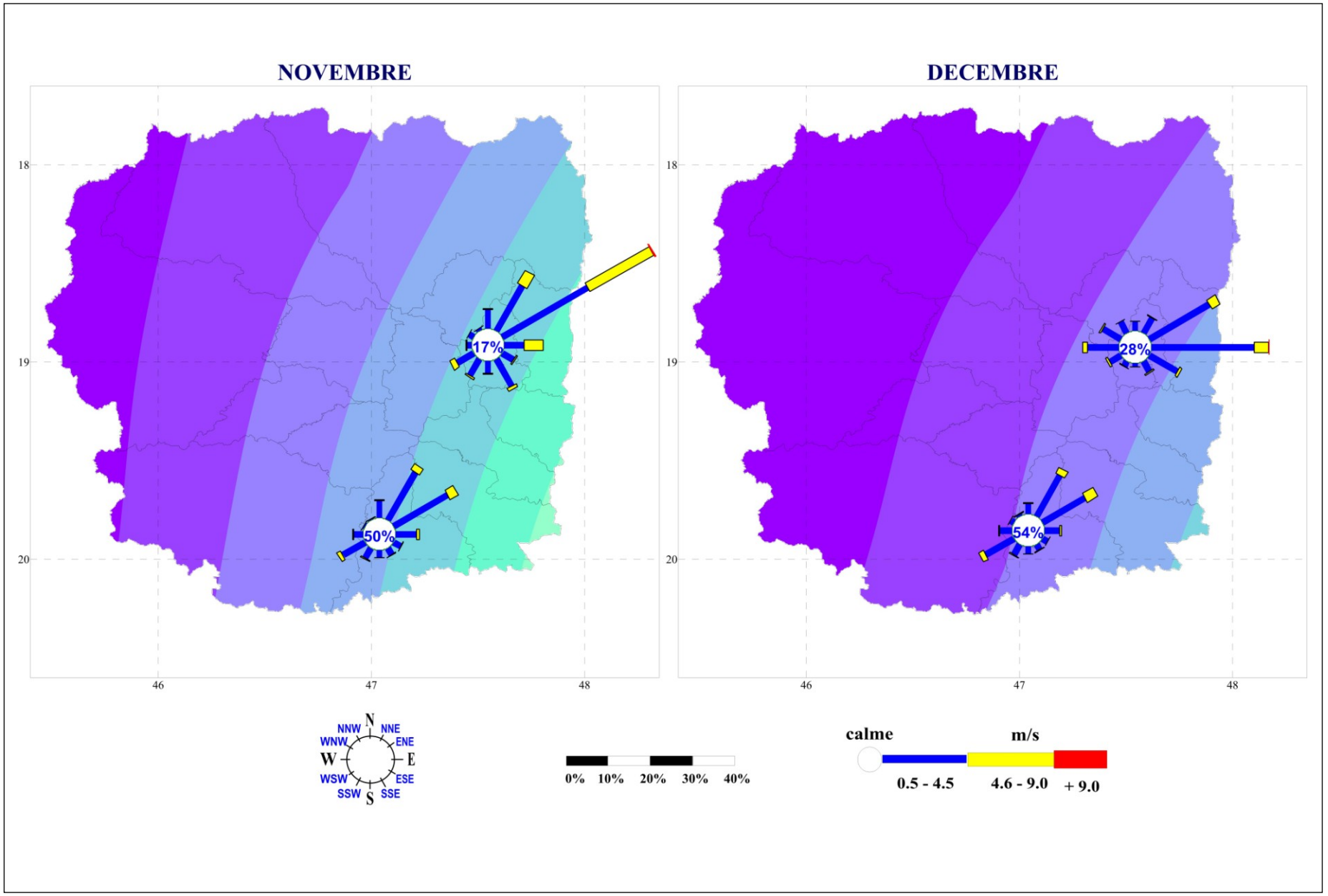

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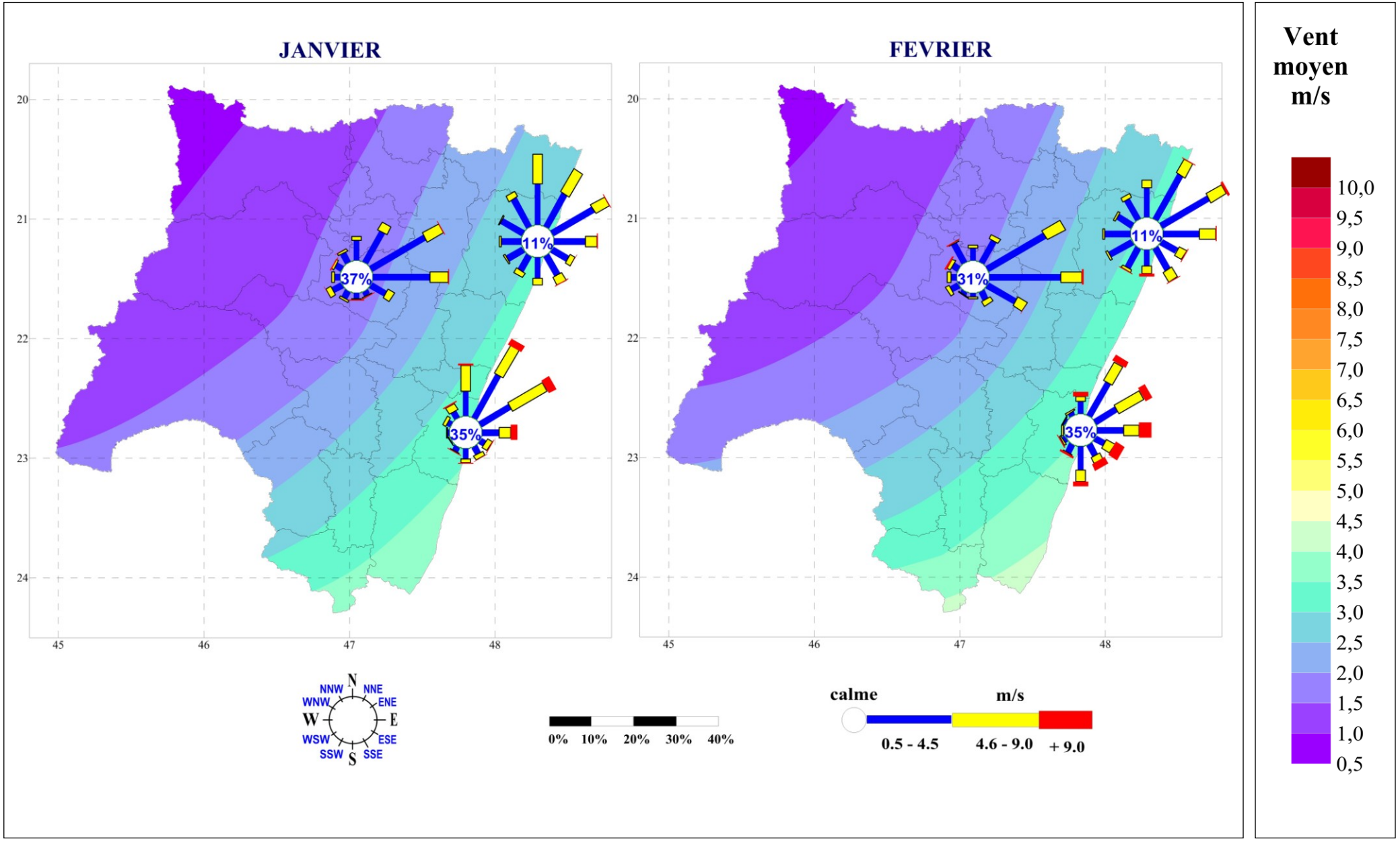

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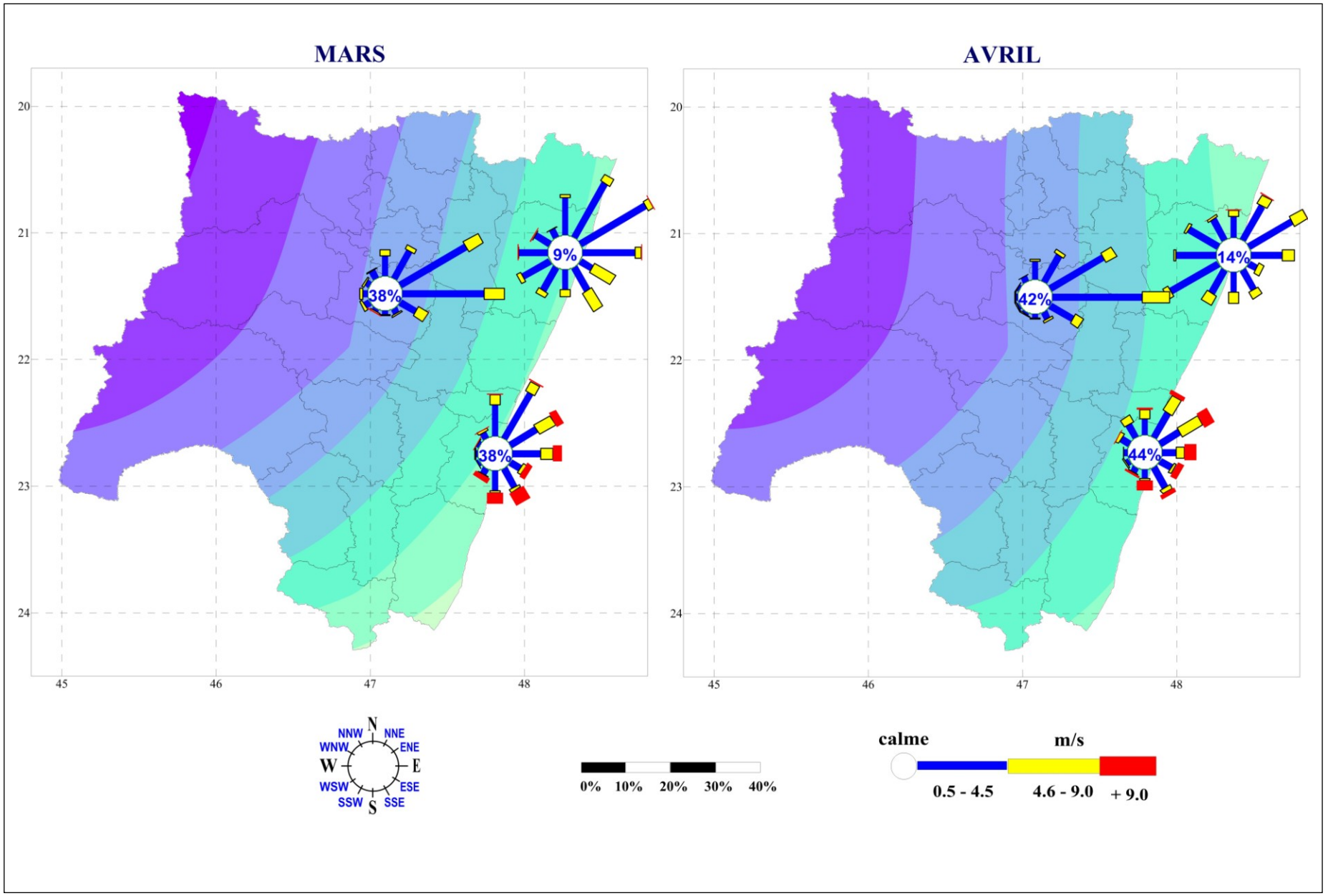

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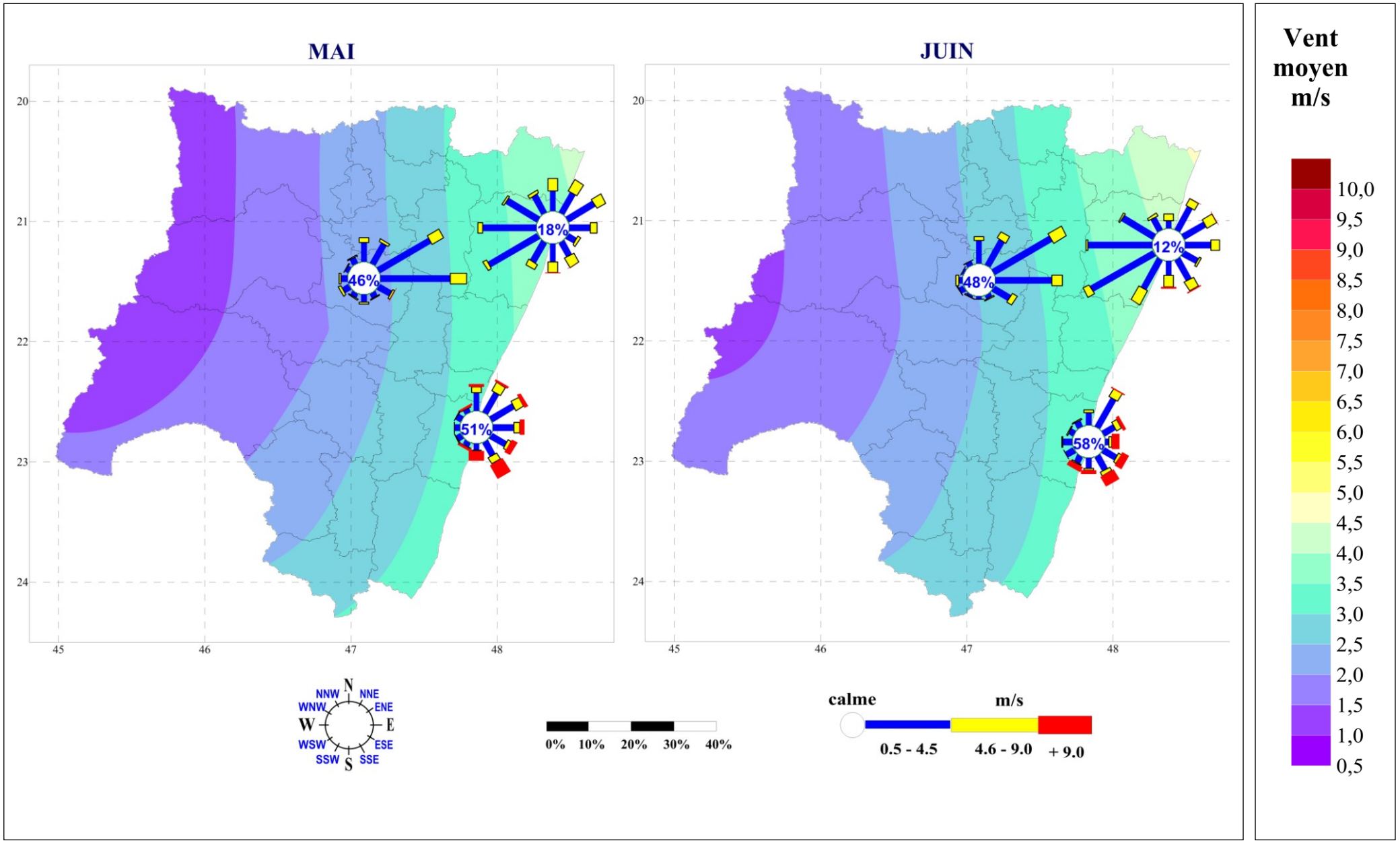

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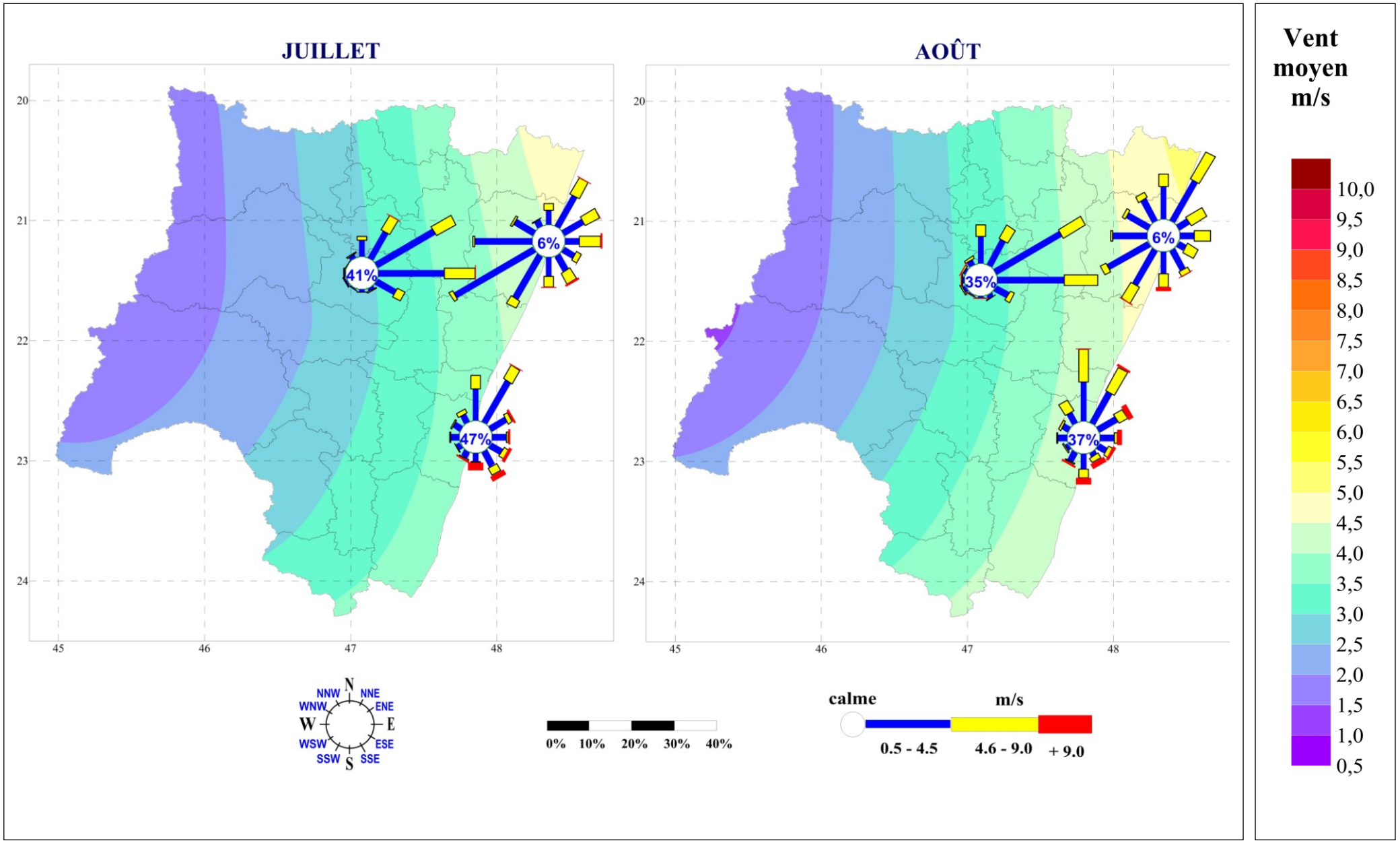

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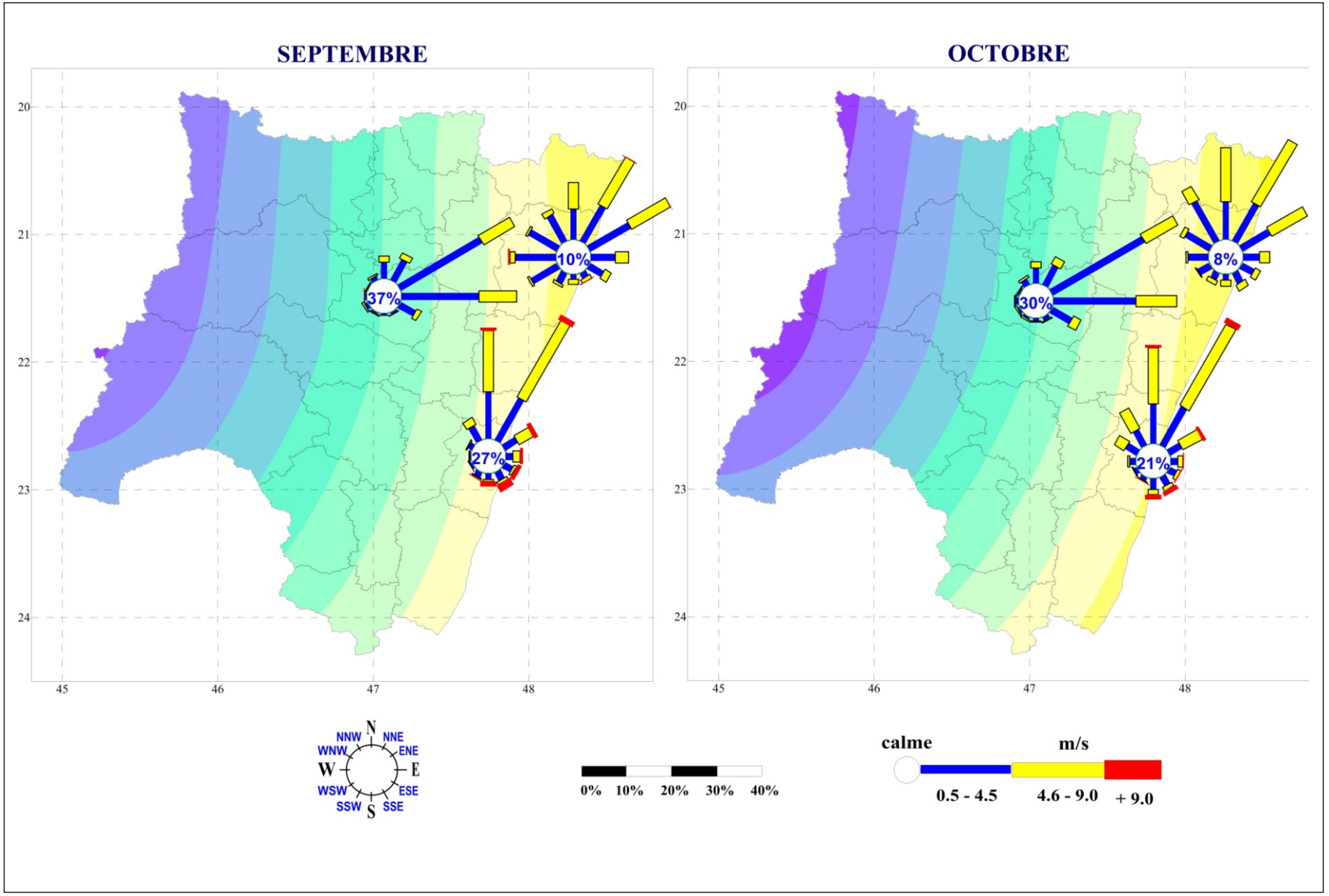

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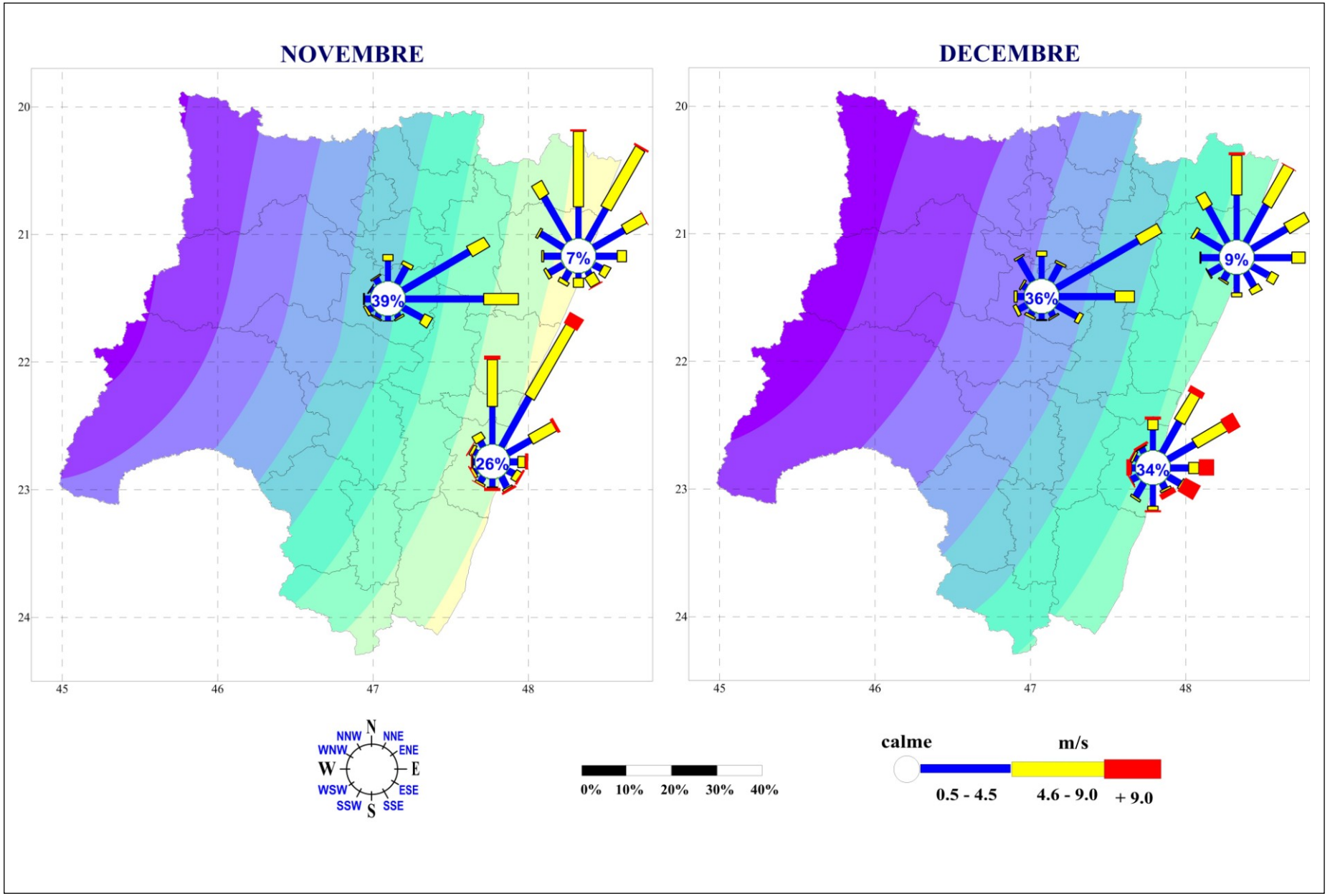

TOLIARA

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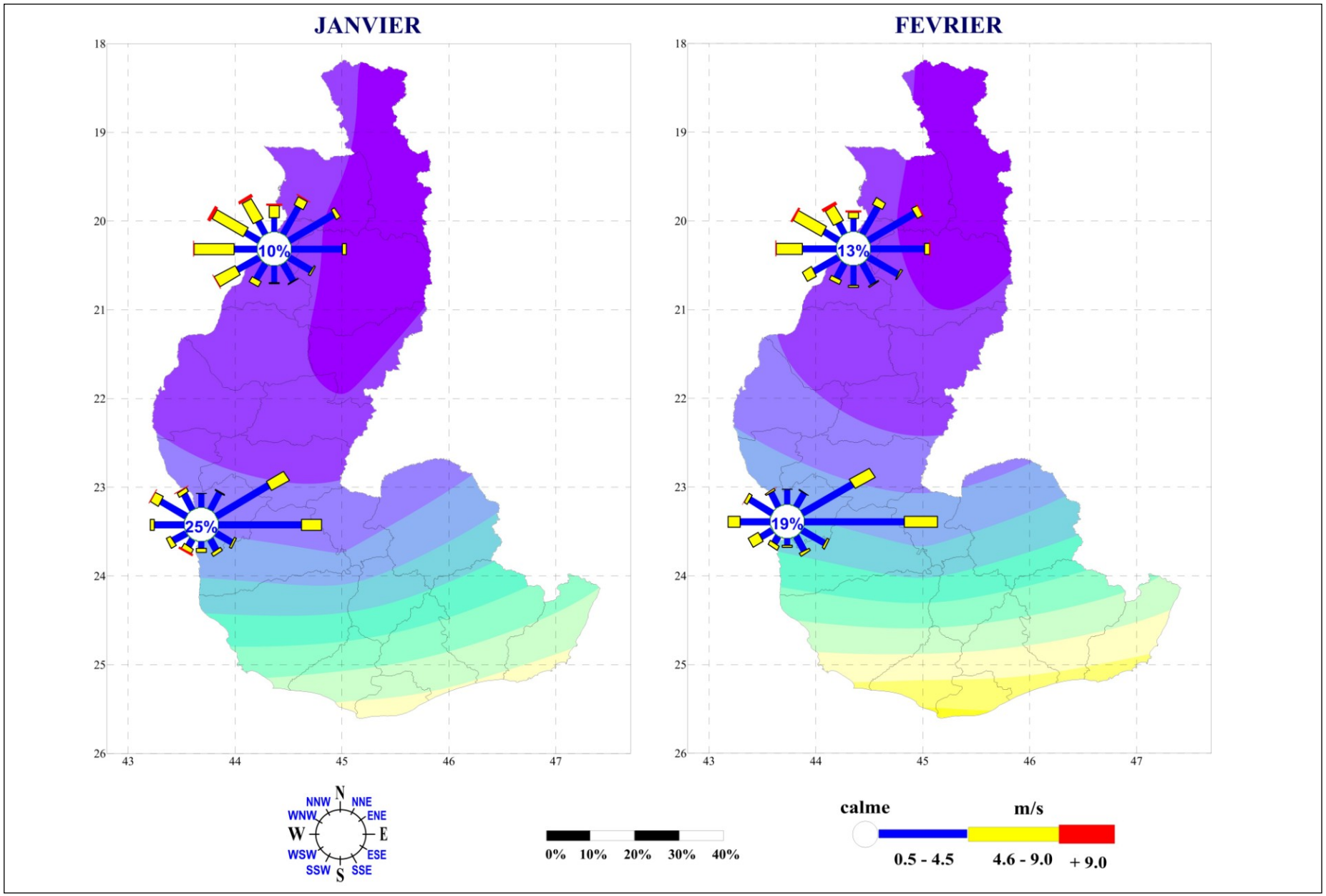

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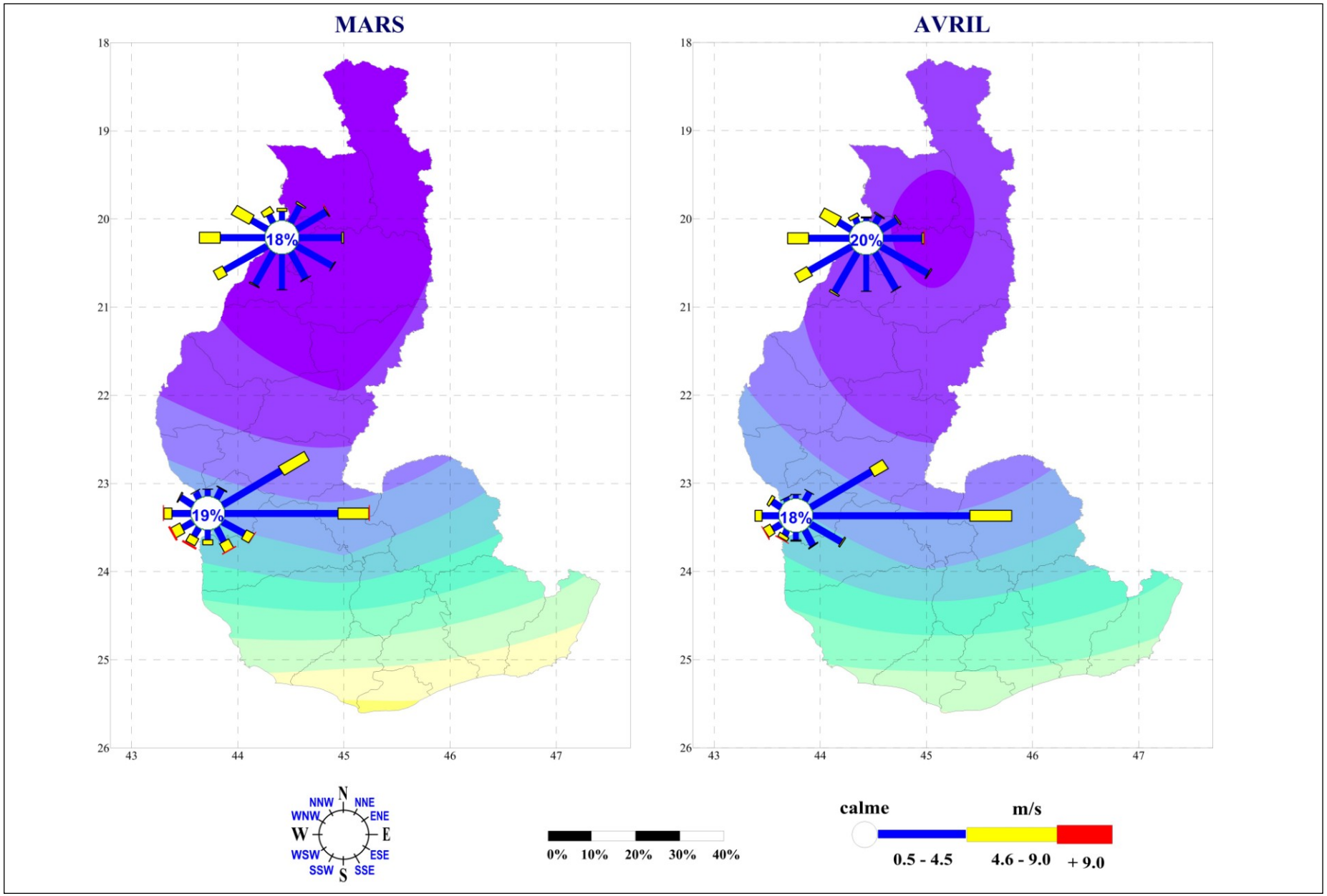

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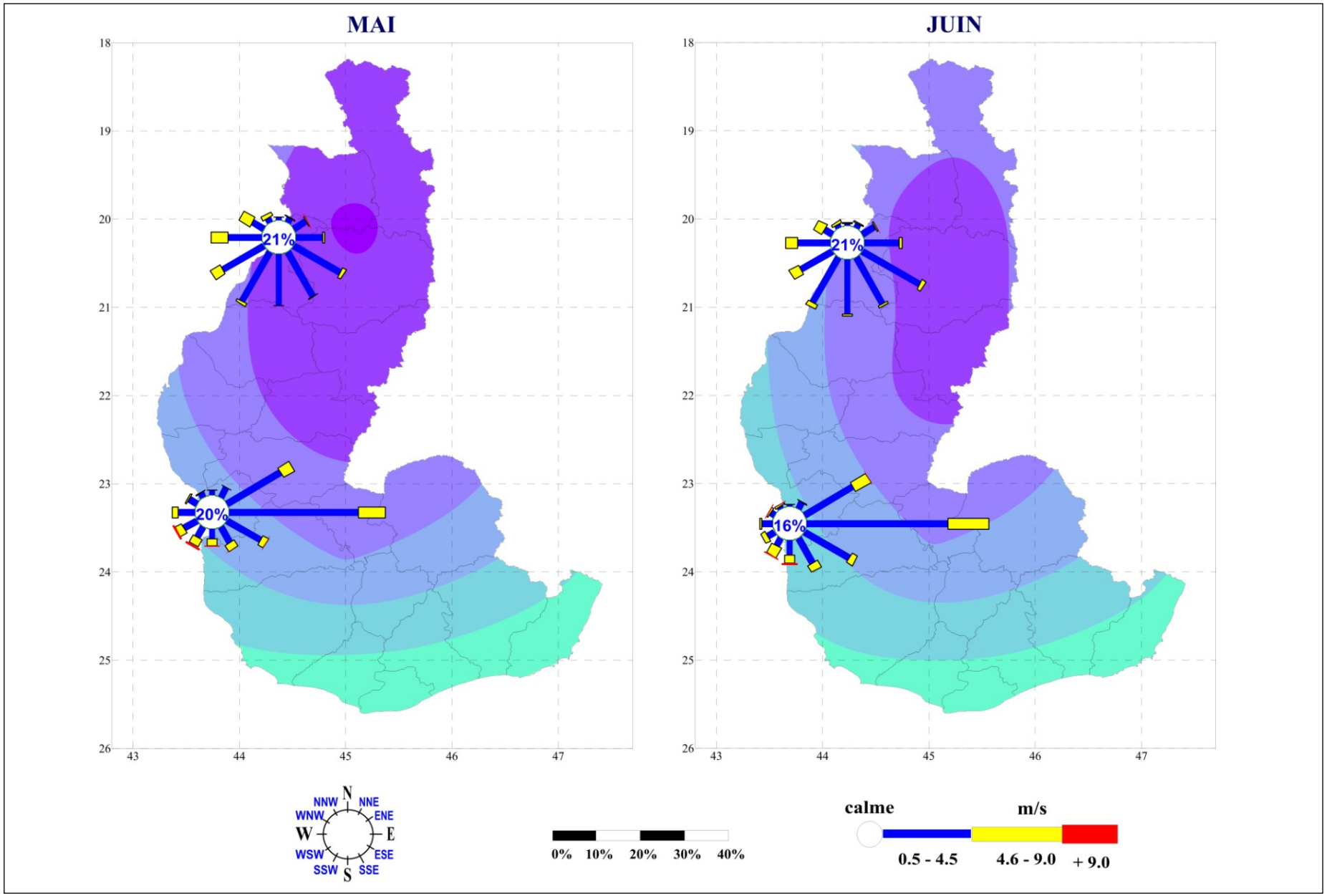

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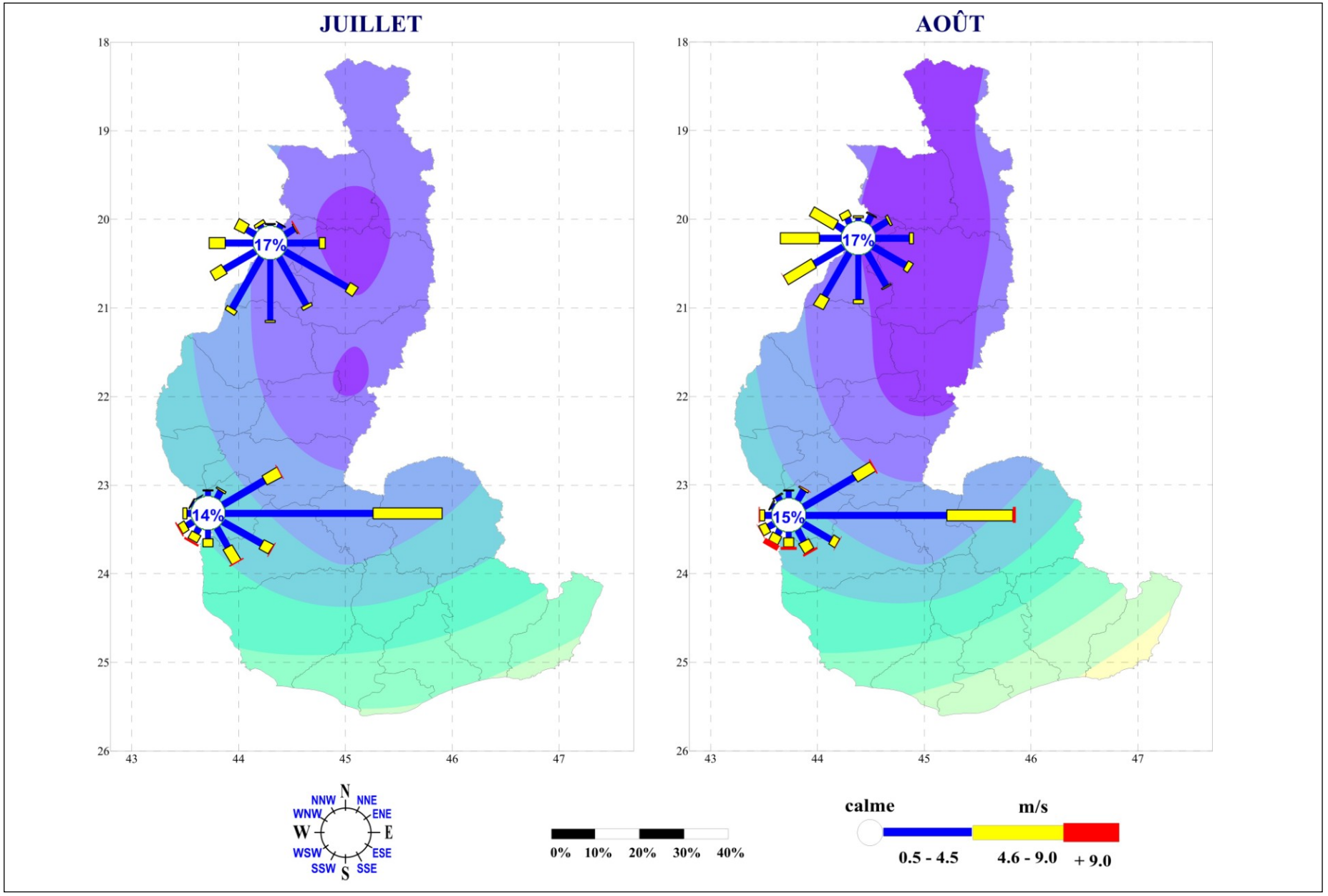

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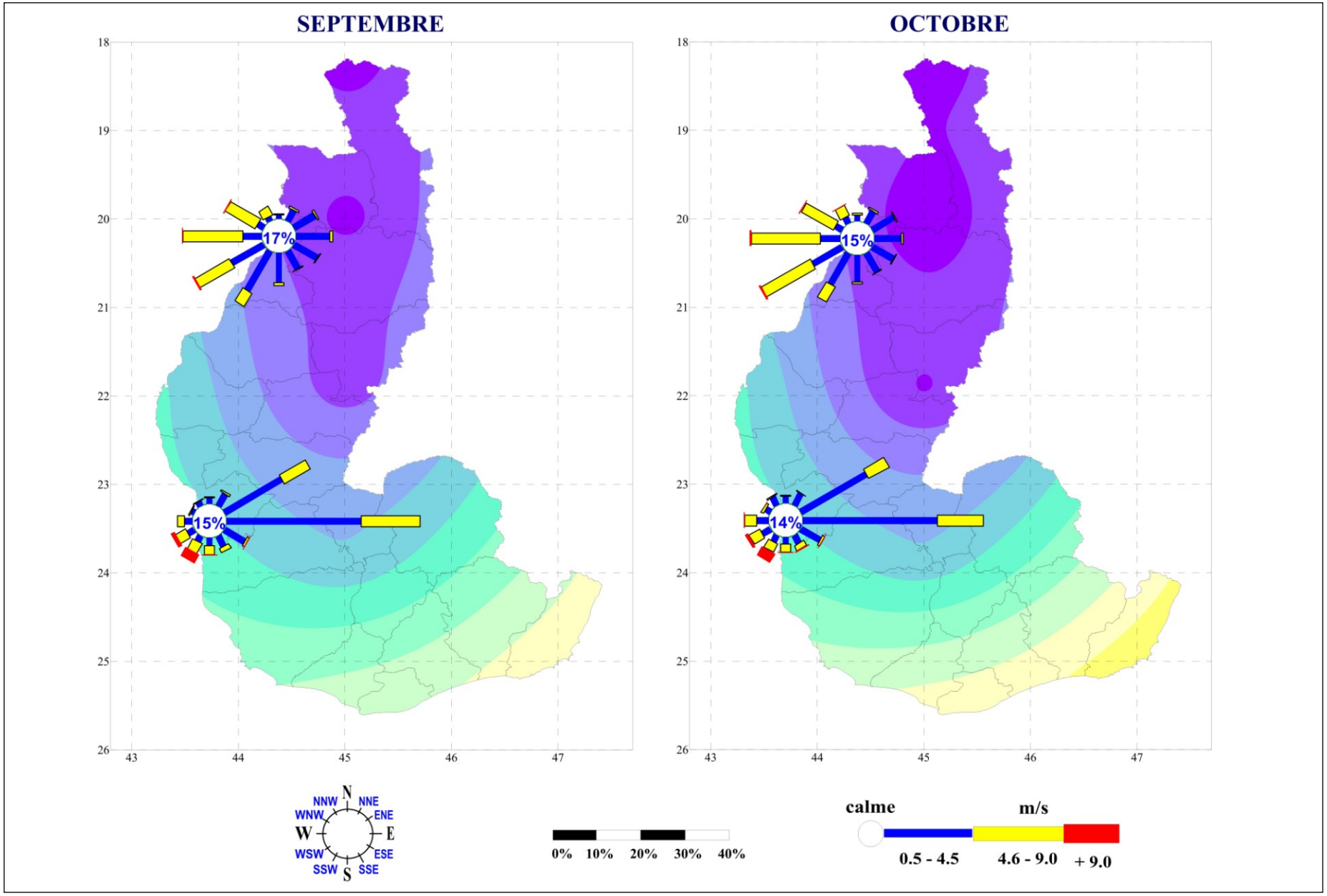

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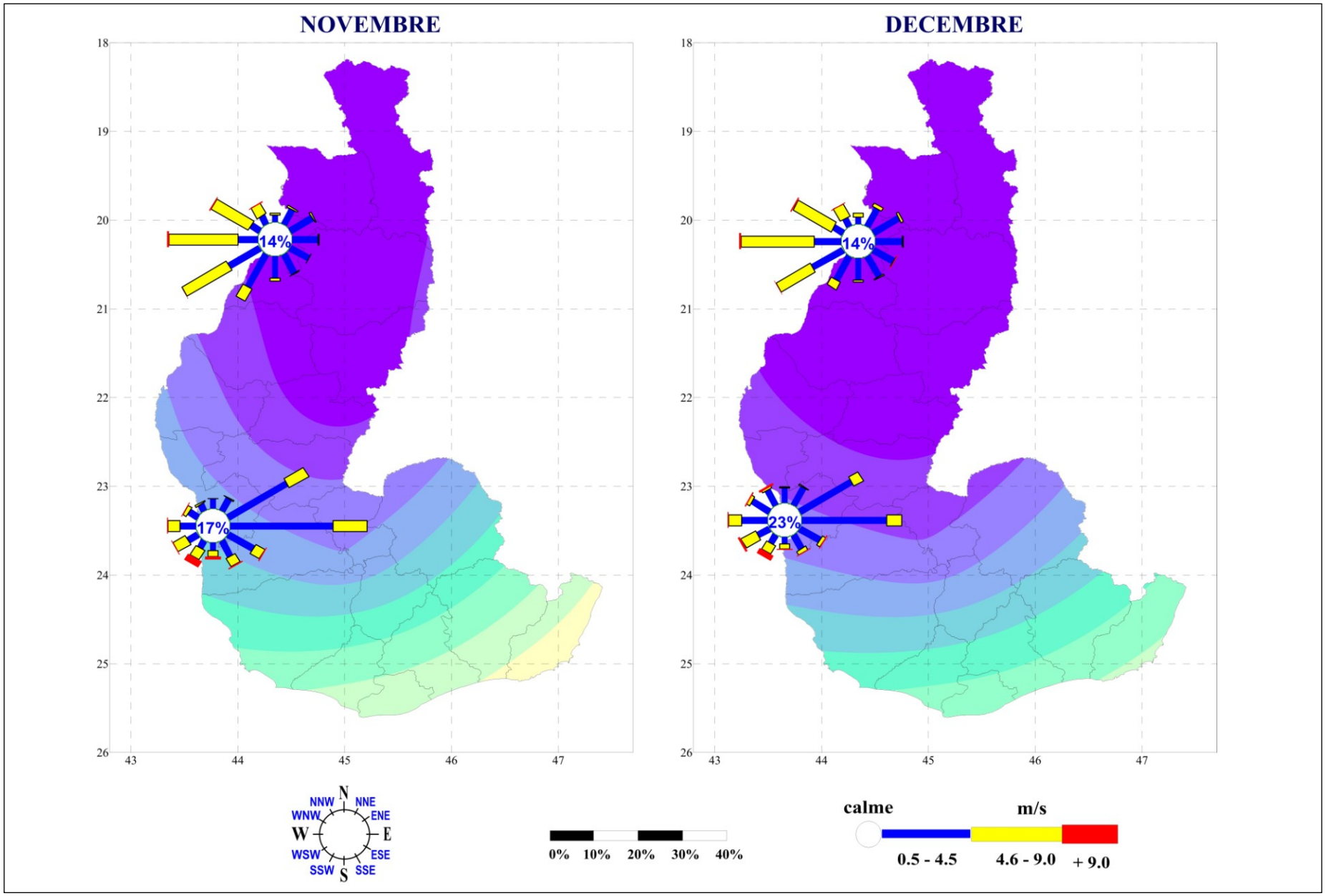
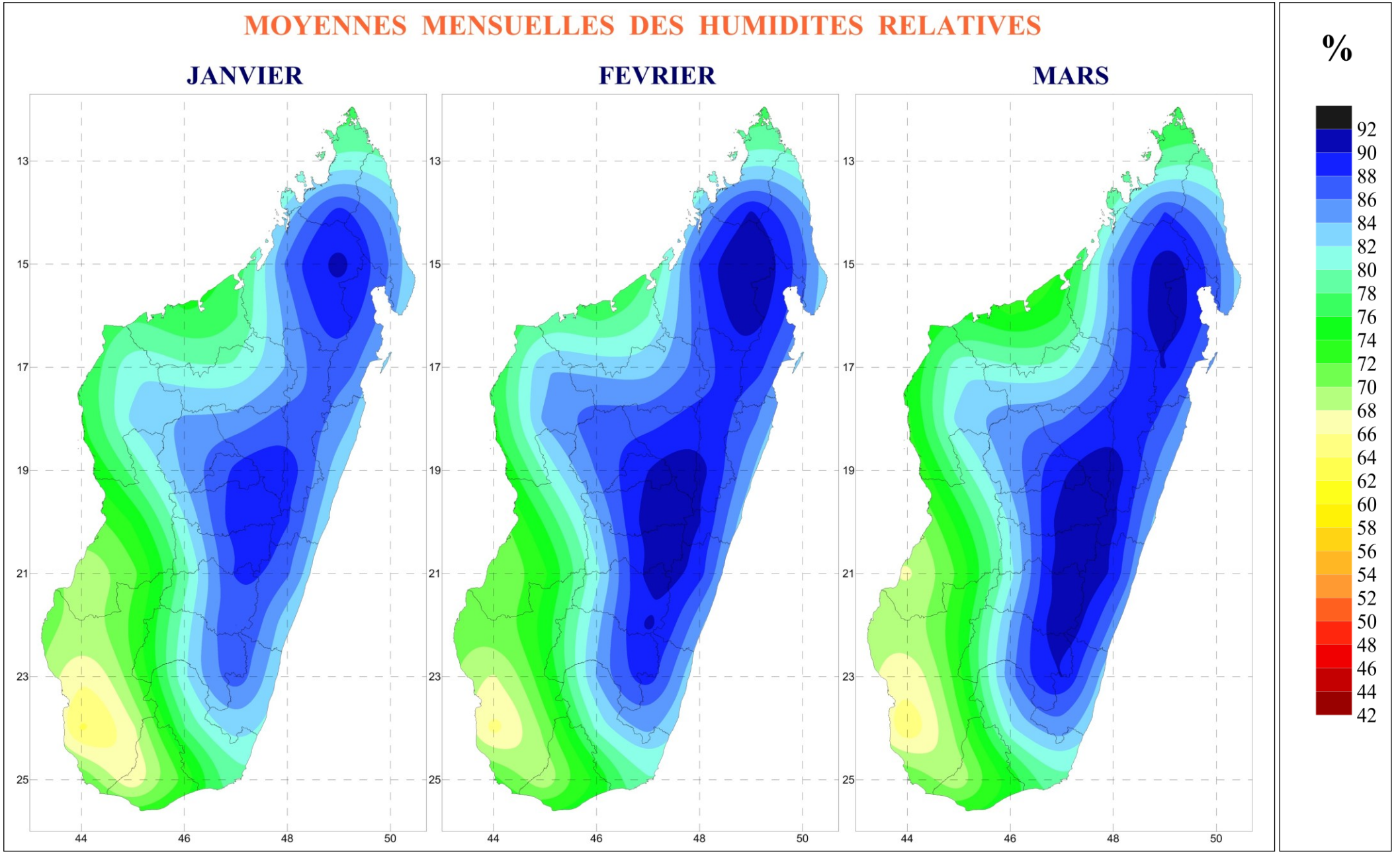


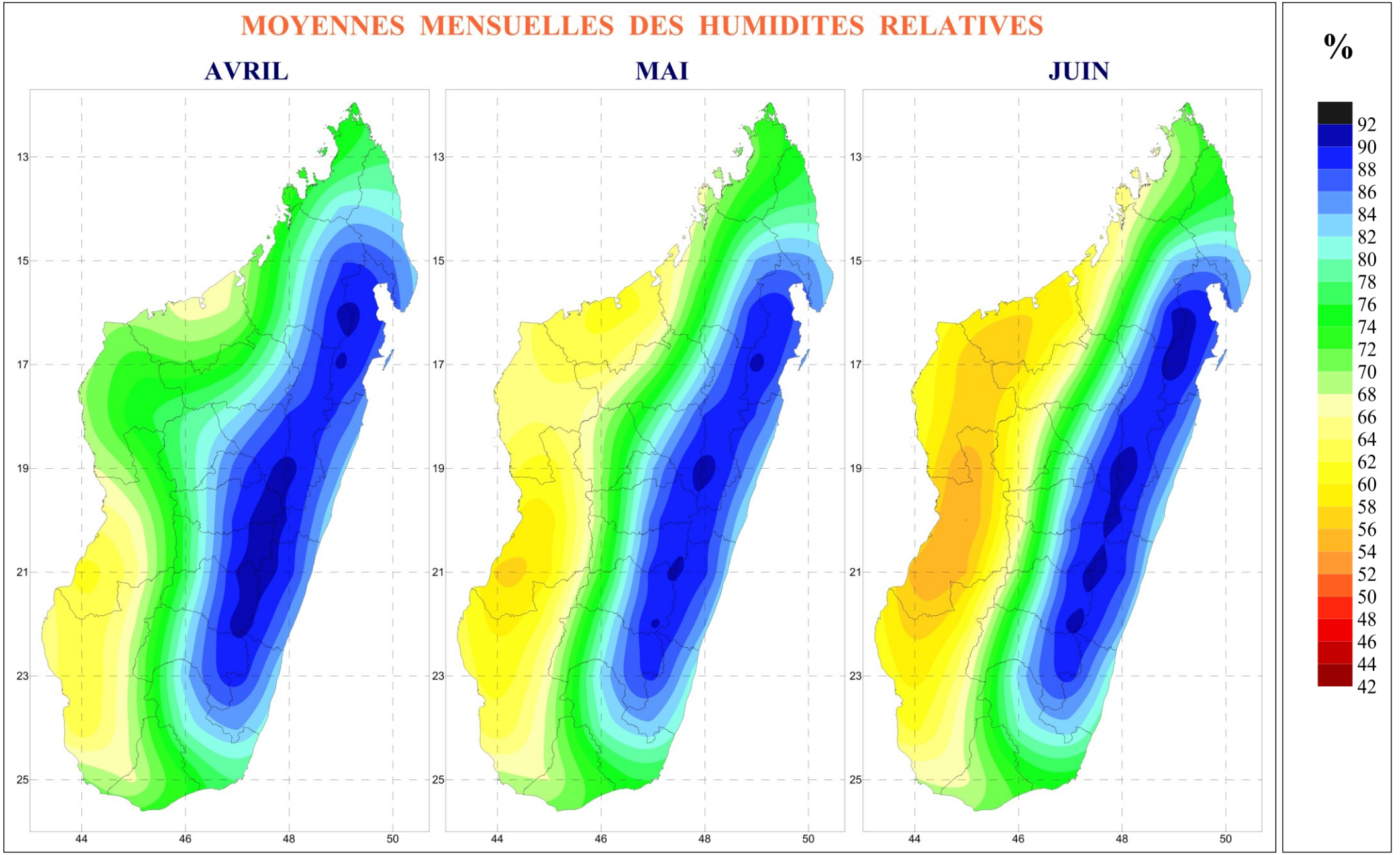
MOYENNES DES HUMIDITES RELATIVES DE 1982 A 2010

- La valeur de l'humidité relative varie de 60% à 90% pendant la saison chaude. Le maximum supérieur à 90% est observé sur la partie orientale de l'Ile, le minimum de 60% sur les régions d'Atsimo-Andrefana.
- Le versant oriental est toujours humide avec une valeur de l'humidité relative supérieure à 80%.
- La partie occidentale est pratiquement sèche avec une valeur de l'humidité relative comprise entre 40% et 60% ; 42% est observée dans la région d'Atsimo-Andrefana.

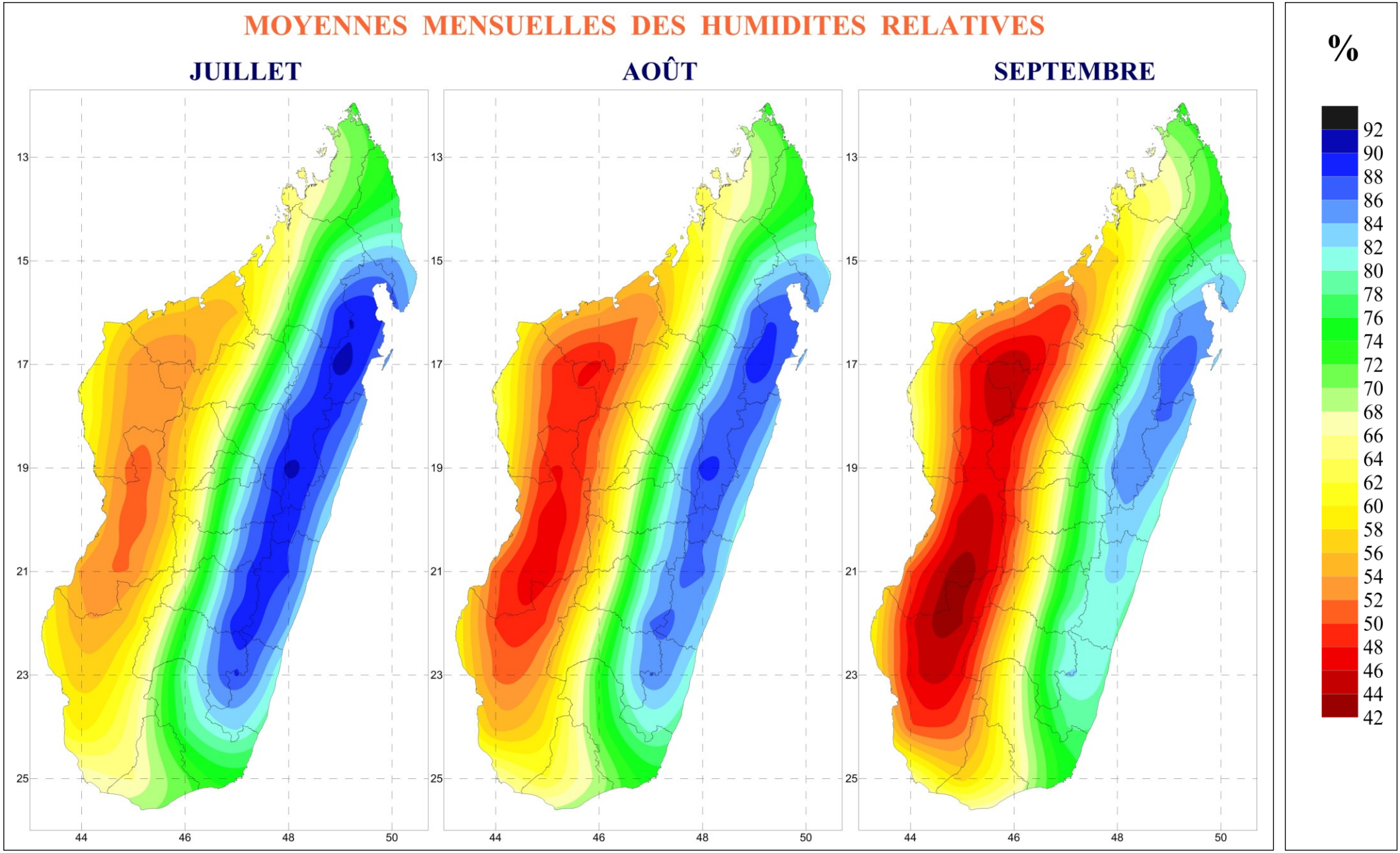
MOYENNES MENSUELLES DES HUMIDITES RELATIVES



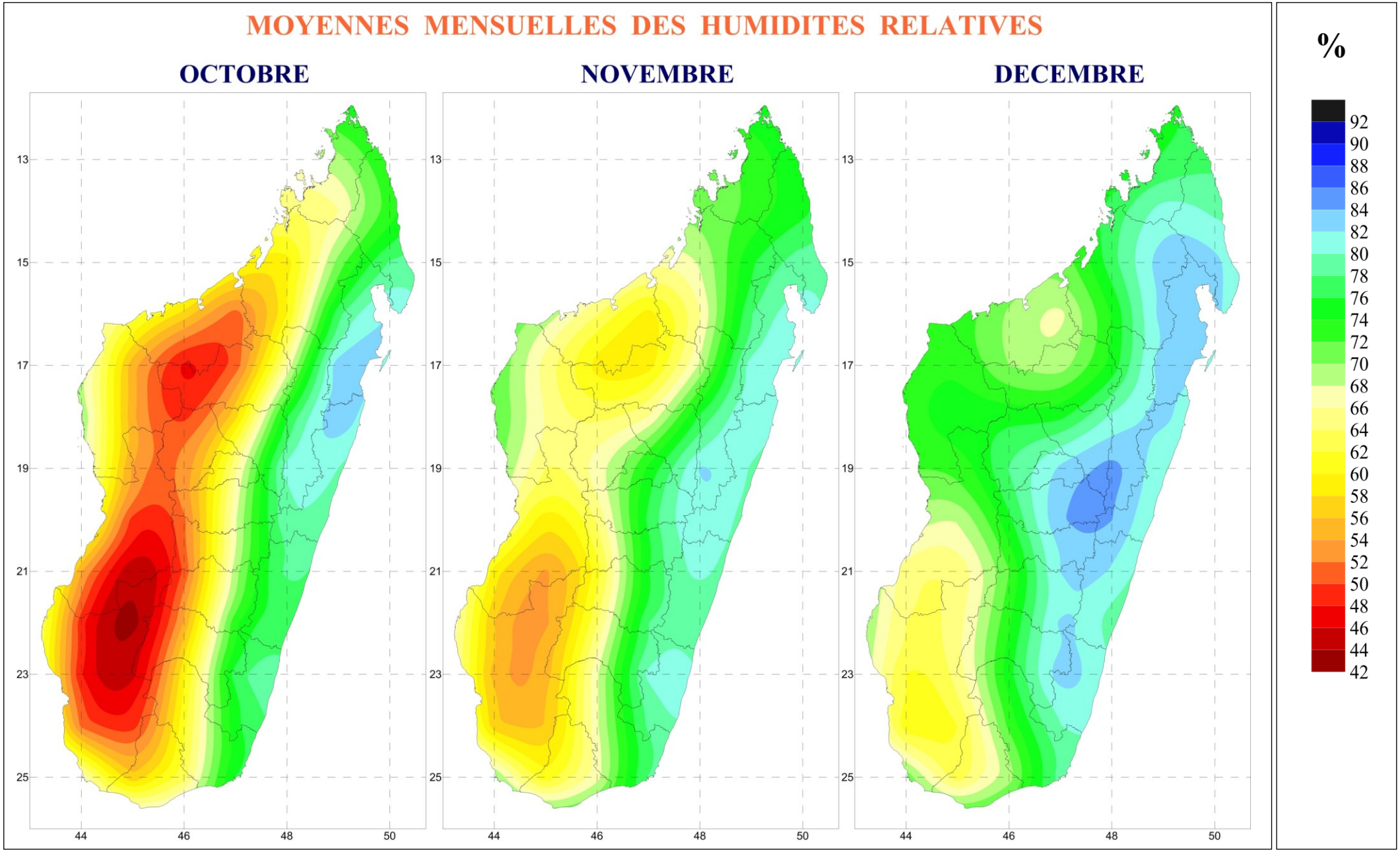
MOYENNES MENSUELLES DES HUMIDITES RELATIVES



MOYENNES MENSUELLES DES HUMIDITES RELATIVES



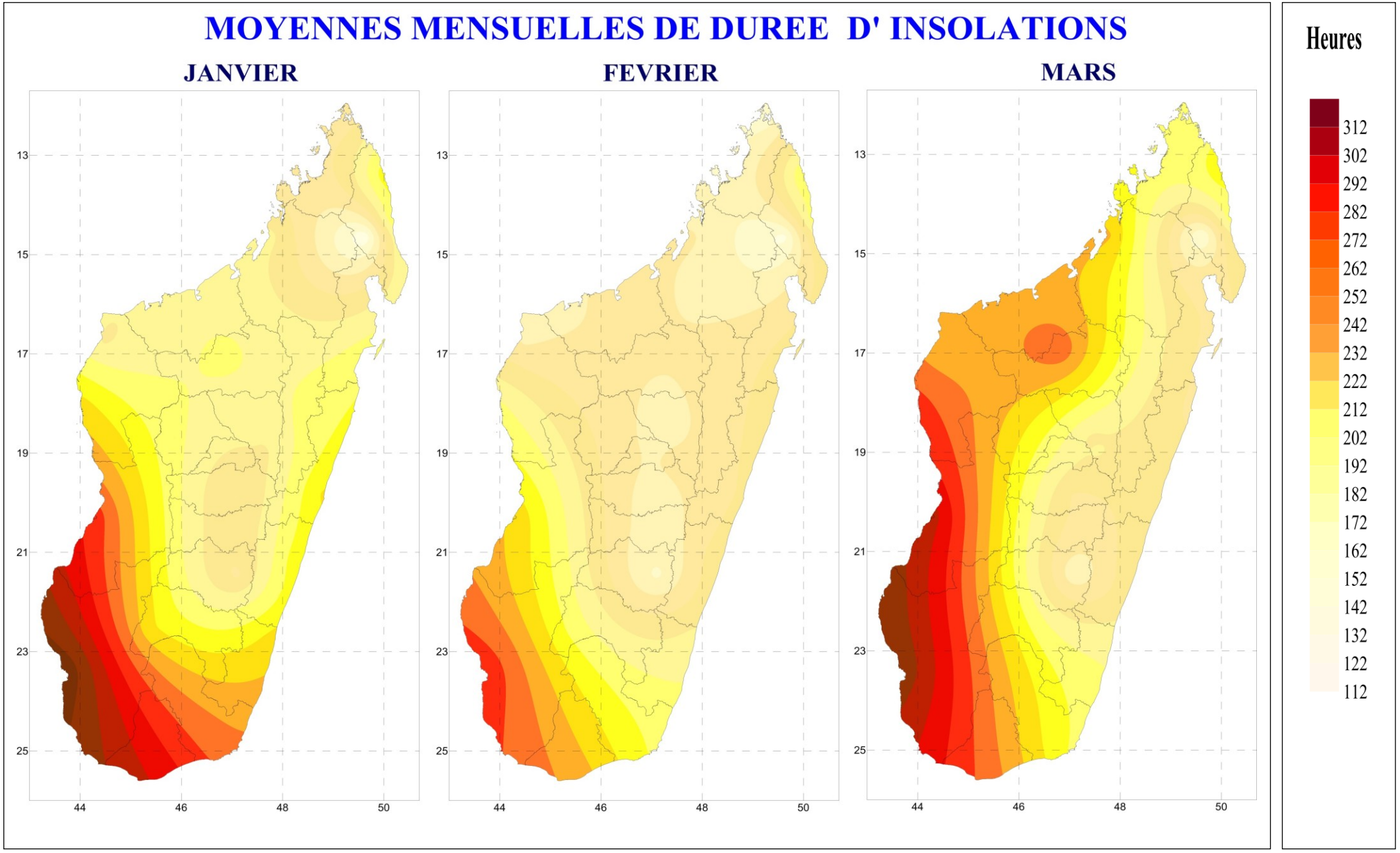
MOYENNES MENSUELLES DES HUMIDITES RELATIVES



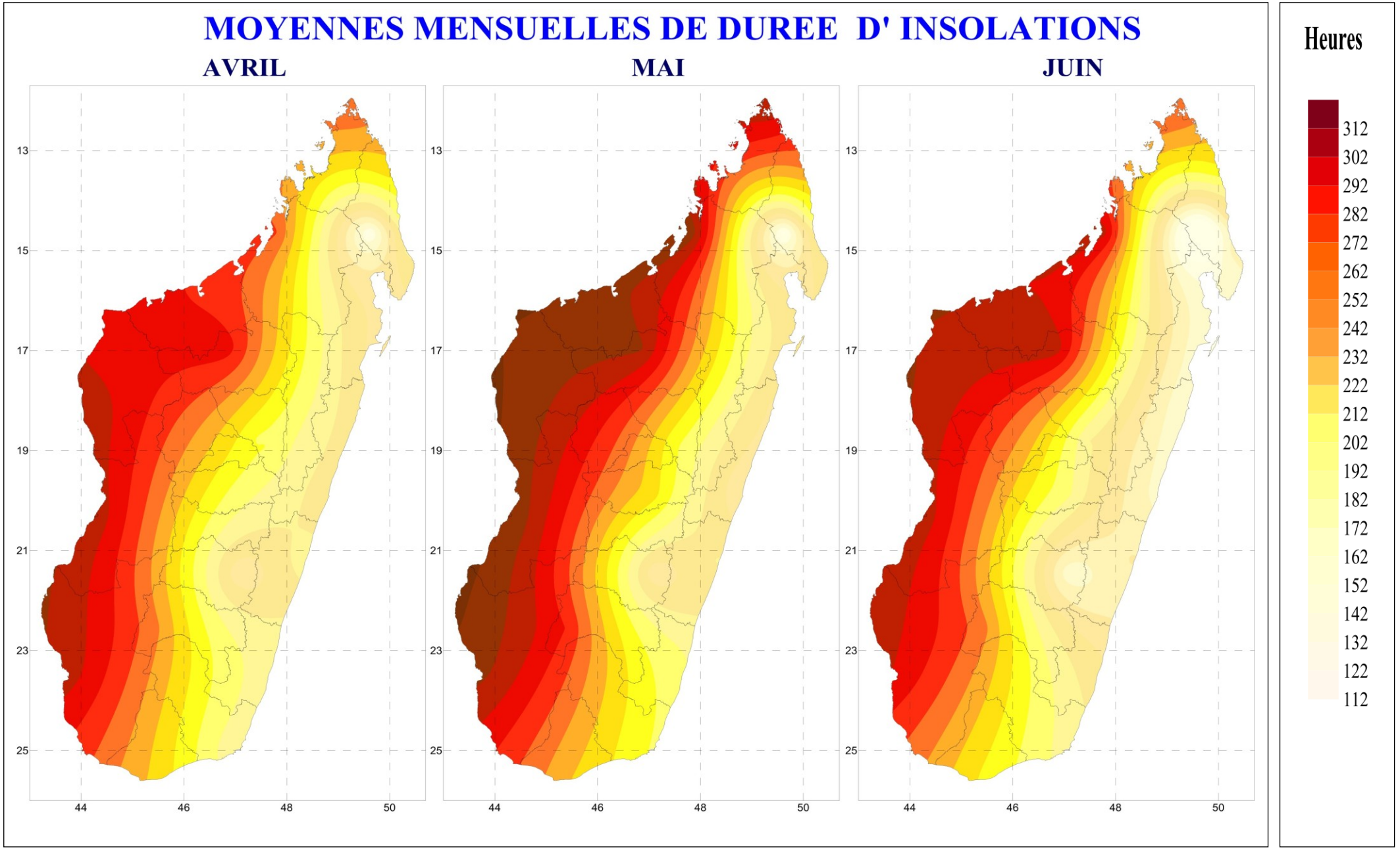
MOYENNES MENSUELLES D'INSOLATIONS

- En général, la partie occidentale est plus exposée au soleil que la partie orientale.
- Durant la saison chaude, la durée maximale d'insolation augmente d'Est en Ouest de 190 heures à 312 heures. Le maximum, supérieur à 312 heures est observé dans le district de Morombe.
- Pendant la saison sèche, la valeur maximale se trouve sur la partie occidentale et la valeur minimale (120 heures) sur la région de Sava.

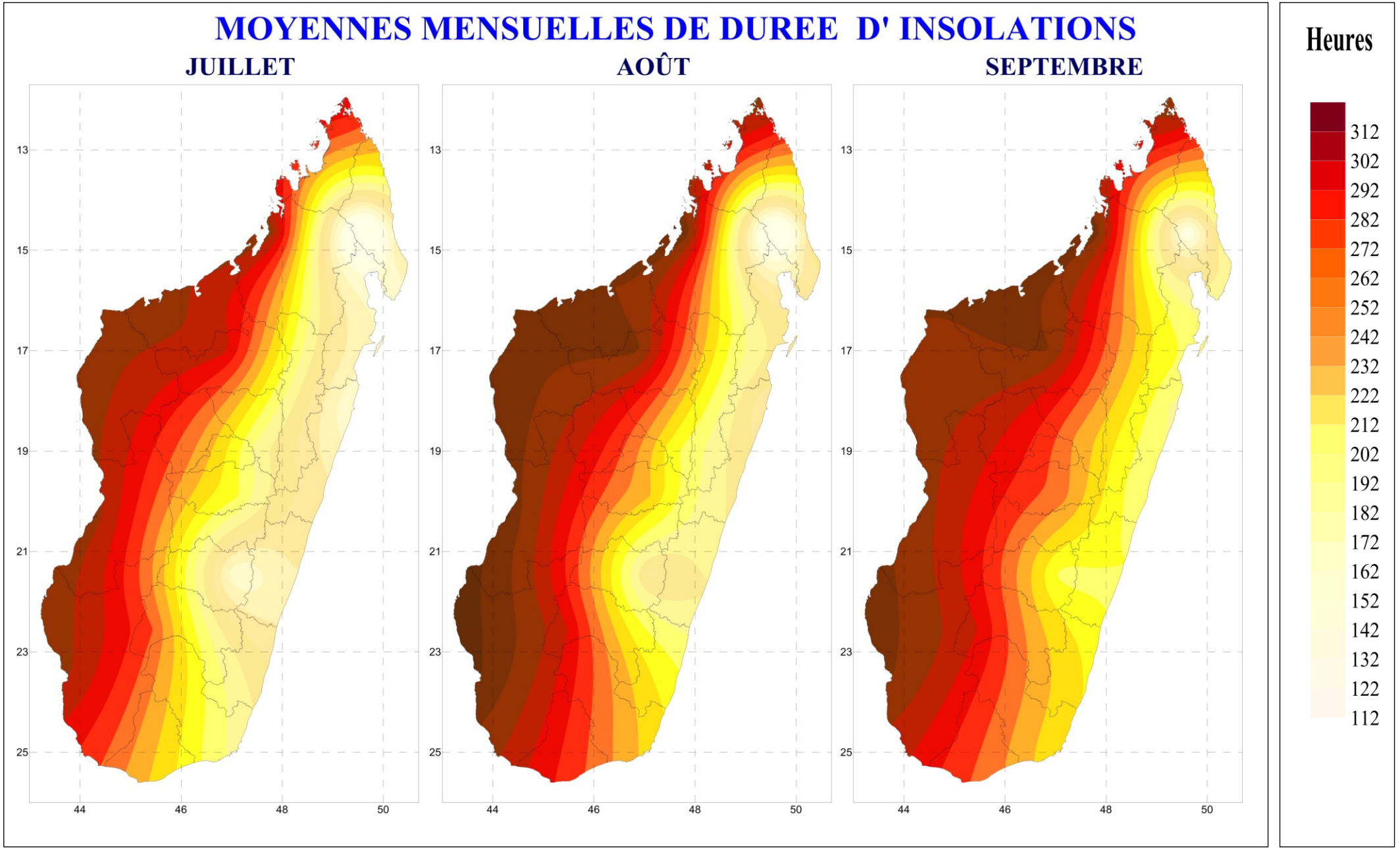
MOYENNES MENSUELLES DE DUREE D' INSOLATIONS



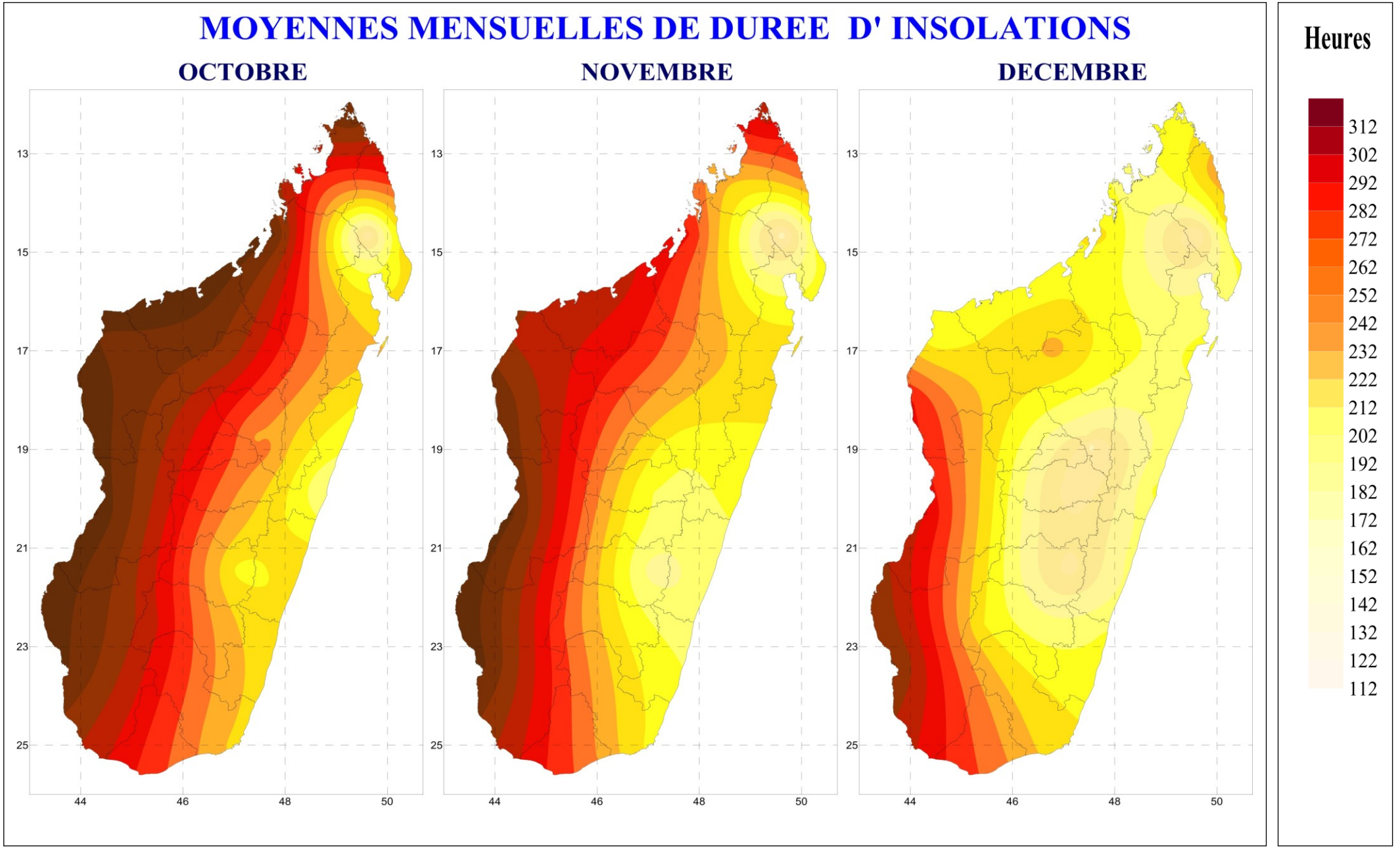
MOYENNES MENSUELLES DE DUREE D' INSOLATIONS



MOYENNES MENSUELLES DE DUREE D' INSOLATIONS



MOYENNES MENSUELLES DE DUREE D' INSOLATIONS



CONCLUSION

Fournir des services pour le public est, par tradition, la mission d'un Service Météorologique National. Actuellement, un Service Météorologique National dont la Direction Générale de la Météorologie, se doit aussi d'appliquer les connaissances météorologiques pour appuyer les efforts de développement du pays donc, de mettre à disposition des données climatiques de plus en plus fiables.

L'Atlas climatologique constitue un outil de travail et pourrait aider les différents secteurs dans leur prise de décision et dans l'identification des actions appropriées pour assurer le développement socio-économique du Pays.

Le présent ouvrage n'est qu'un extrait de l'Atlas climatologique de Madagascar.

Les deux méthodes suivantes sont utilisées pour la fusion des données satellitaires et celle en provenance des stations synoptiques de résolution de 10 km sur tout le territoire national.

- Régression linéaire par la méthode de Krigeage
- Interpolation Inverse à Distance Pondérée (IDW)

Ainsi en terme de répartition dans l'espace des paramètres climatologiques cités dans cet ouvrage, une descente d'échelle jusqu'au niveau des ex-provinces, voire même au niveau des districts, est réalisée et ceci s'étend sur d'autres paramètres également.

La Direction générale de la Météorologie invite alors les acteurs œuvrant dans le domaine du développement à visiter son site web et à prendre contact à son siège.