

# Total vegetation cover soil protection

## Region:LGA Narrogin\_(S) WA

Date: October 2024

This report describes vegetation protecting the soil surface from erosion during a chosen month compared to previous years. This report has been generated using MODIS fractional vegetation cover information available in Rangelands and Pasture Productivity (RAPP) map tool <https://map.geo-rapp.org/#australia>. The report is based on 500 metre pixel data on monthly time steps.

Land use forest cover:

Results can be shown for the whole region (polygon), and separated by land use and forest cover classes which are likely to show different cover patterns and targets. Land use is divided into four broad classes: Conservation and natural environments, Agriculture, production native forests and plantation forests (no report), and other (no report). Agriculture is divided into grazing, crops and horticulture which are sub-divided into non-irrigated and irrigated. If forest is present land use is further divided into: non-forest, woodland forest and non-woodland forest. The area of each land use and forest class are shown as a map and chart. The report content is repeated for each land use and forest cover class that covers at least 1% of the area of the chosen region.

Total vegetation Cover:

The total vegetation cover indicates where soil is likely to be protected from wind and or water hillslope erosion. Total vegetation cover for this month is shown on a map and chart classified into 4 classes.

- 71-100% High cover - protected from wind and usually water erosion (high rainfall, steep slopes, and erodible soils may need greater than 80, 90, 95 and up to 100% cover)
- 51-70% Moderate cover - protected from wind erosion
- 31-50% Low cover - not protected
- 0-30% Very Low cover - not protected

Erosion protection: Wind erosion 50% total vegetation cover

The vegetation cover threshold required to prevent soil erosion is usually 50% to reduce wind erosion, 70% or 80% to reduce water (hillslope) erosion depending on the steepness and rainfall. Areas protected from erosion for the month:

- Map: water erosion protection (>70% cover) percentage area and hectares.
- Map: wind erosion protection (>50% cover) percentage area and hectares.

Comparison with previous years:

- Map: anomaly comparing this month to the average cover from the same month in previous years.
- Map: deciles rank of month against the same month in previous years.

Anomalies and deciles until September 2019 are calculated comparing to the same months 2001 to 2019. Extra monthly data will be used to calculate anomalies and deciles post September 2019 as they become available.

Time series monthly from January 2001 to current:

Erosion protection

- Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month (orange lines). Horizontal lines are 10th (cover target) and 50th percentiles.
- Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month (blue line). Horizontal lines are 10th (cover target) and 50th percentiles.

Rainfall

- Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data.

Water erosion protection for higher rainfall and steeper slopes:

Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion. The thresholds reported are:

- the percentage area with pixels greater than 80% total cover.
- the percentage area with pixels greater than 90% total cover.
- the percentage area with pixels greater than 95% total cover.

### Acknowledgment of data:

1. <http://www.agriculture.gov.au/abares/aclump/land-use/alum-classification>
2. <http://www.agriculture.gov.au/abares/forestsaustralia/sofr/sofr-2018>
3. <https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/establishment-mgmt/production-management2/groundcover>
4. MODIS Fractional cover algorithm:  
<https://doi.org/10.4225/08/5848a3f19a7b3>



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# Vegetation Cover Oct 2024

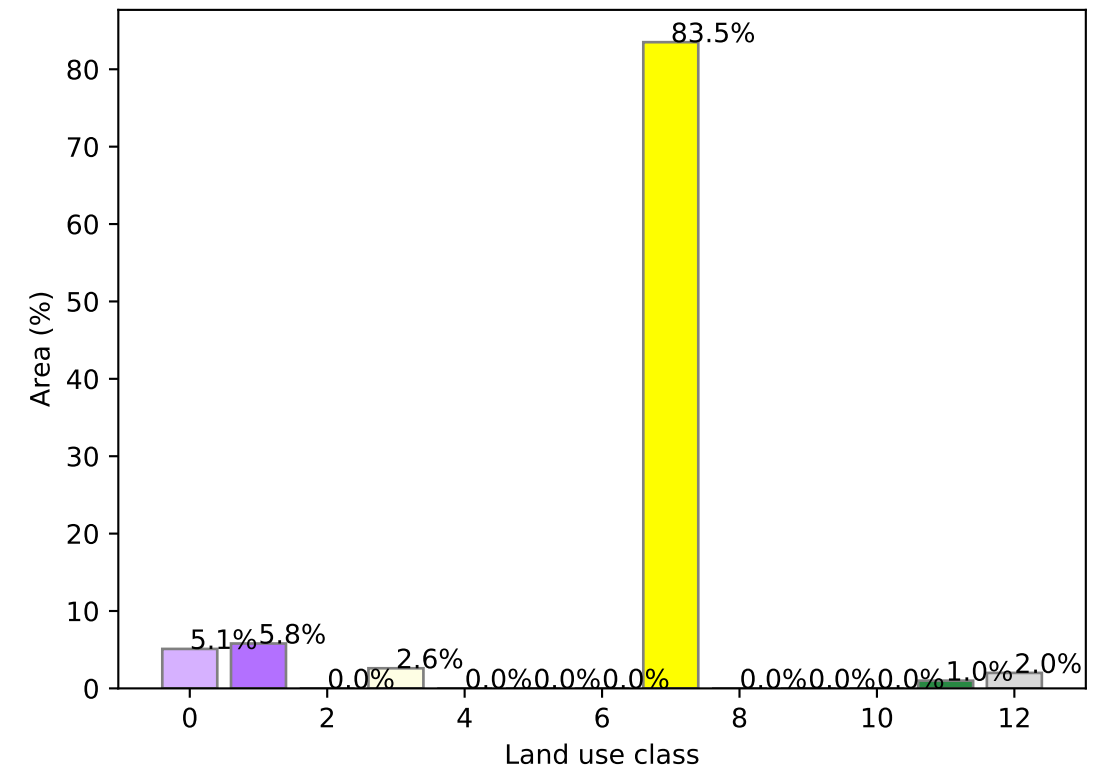
Land use and forest cover

Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)

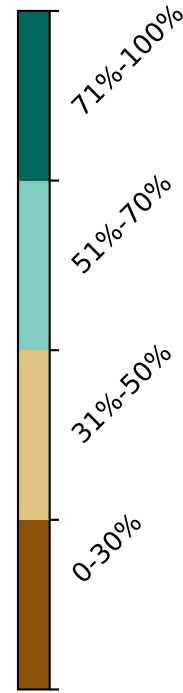
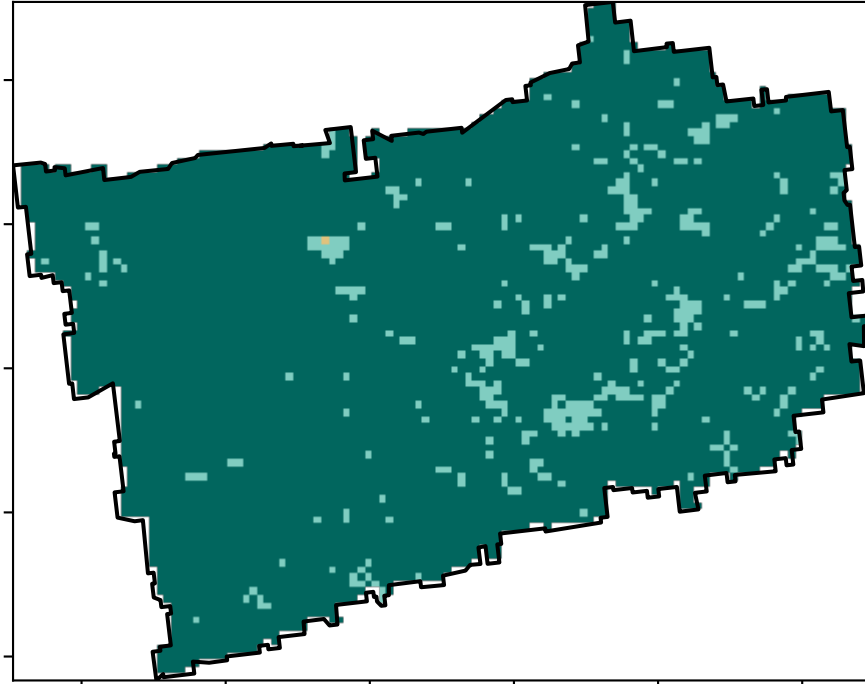


- Legend with land class forest cover and number, i.e. Forests is 12
- 1 Conservation and natural environments - Non-forest
  - 2 Conservation and natural environments - Woodland forest
  - 3 Conservation and natural environments - Non-Woodland forest
  - 4 Agriculture - Grazing - Non-forest
  - 5 Agriculture - Grazing - Woodland forest
  - 6 Agriculture - Grazing - Non-woodland forest
  - 7 Agriculture - Grazing - Irrigated
  - 8 Agriculture - Cropping - Non-irrigated
  - 9 Agriculture - Cropping - Irrigated
  - 10 Agriculture - Horticulture - Non-irrigated
  - 11 Agriculture - Horticulture - Irrigated
  - 12 Production native forests and plantation forests
  - 13 Other uses

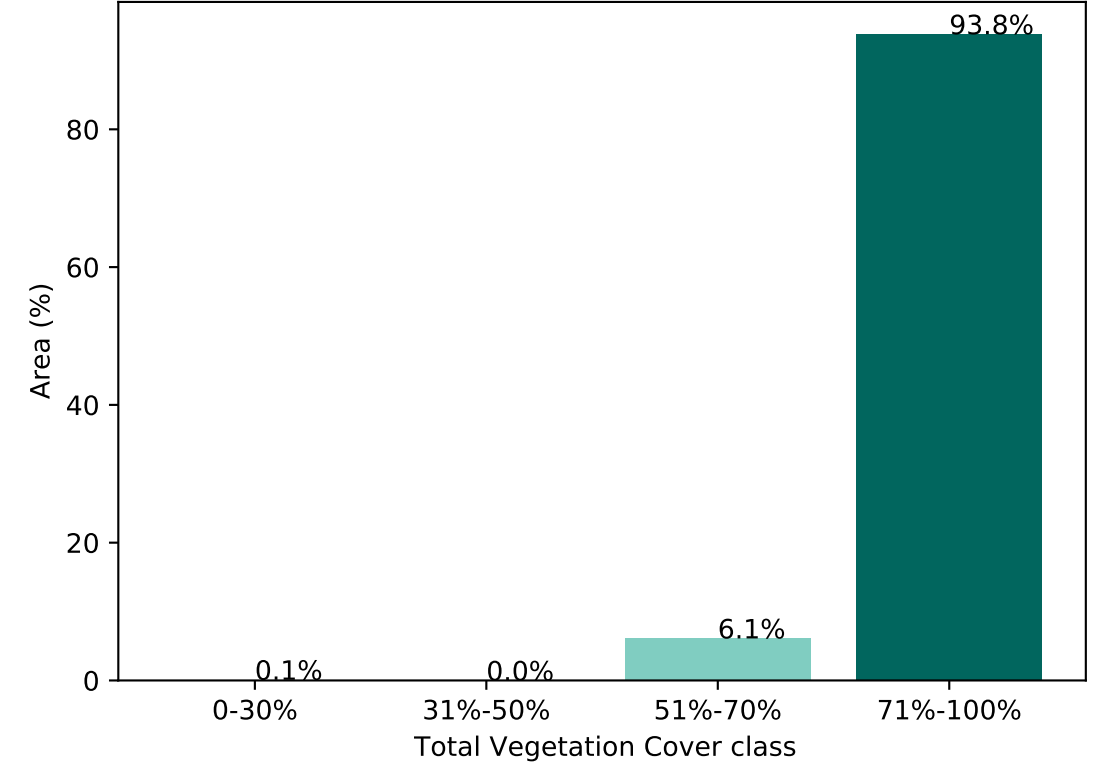
Proportion of each land class in area



Total Vegetation Cover [%]



Proportion of vegetation cover class in area

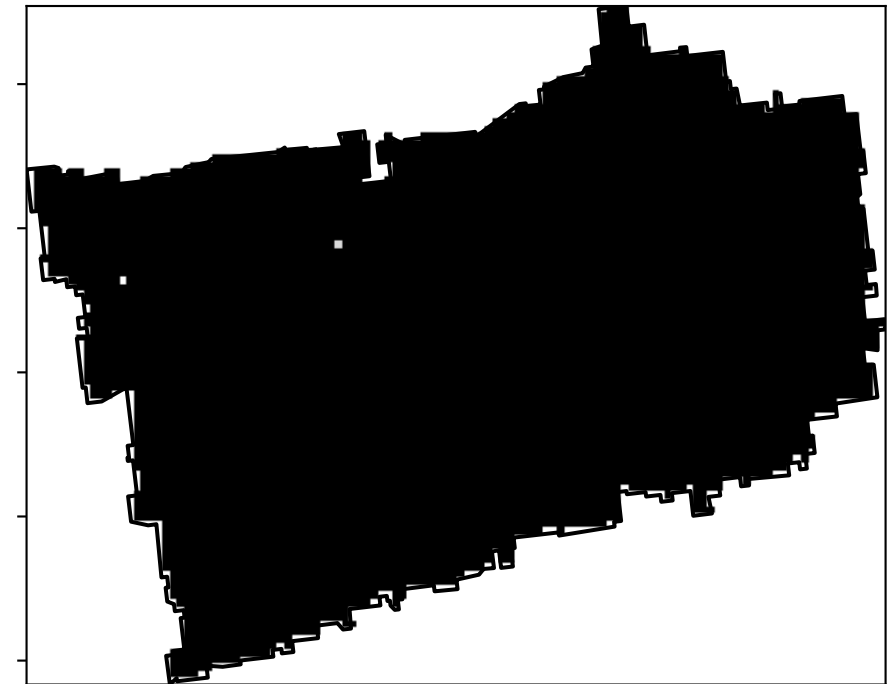


% Area protected from water erosion (>70%)



- Area not protected  
6.2% of region  
(10,108 ha)
- Area protected  
93.8% of region  
(152,917 ha)

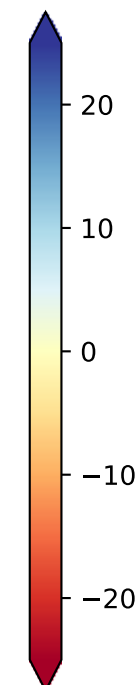
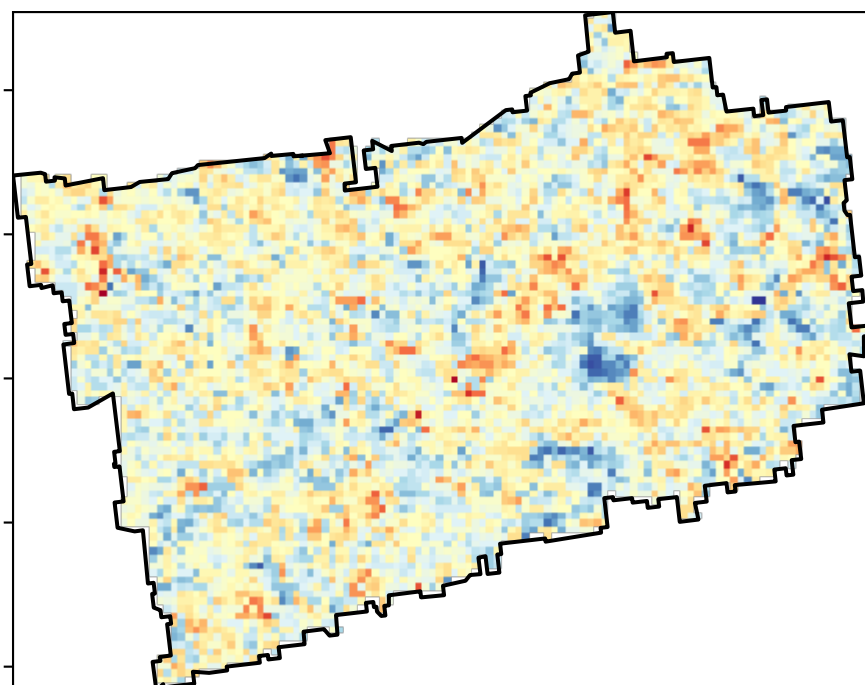
% Area protected from wind erosion (>50%)



- Area not protected  
0.0% of region (0 ha)
- Area protected  
100.0% of region  
(163,025 ha)

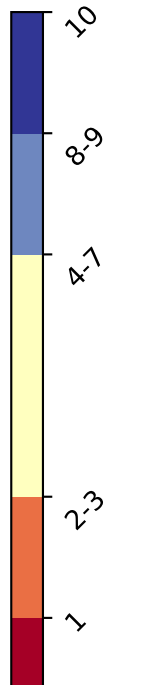
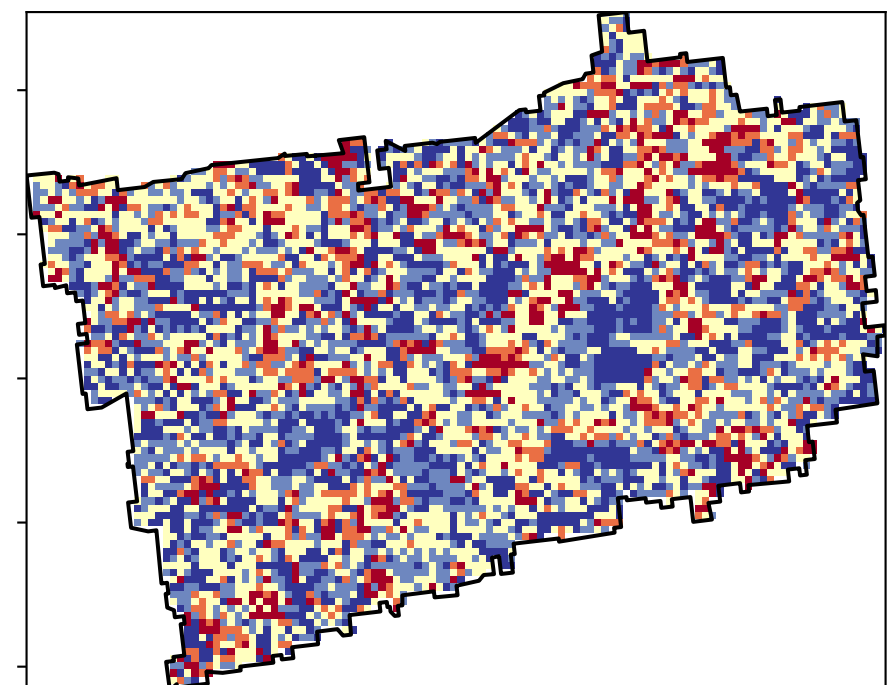
Total Vegetation Cover Anomaly [%]

Anomaly show how many percentage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



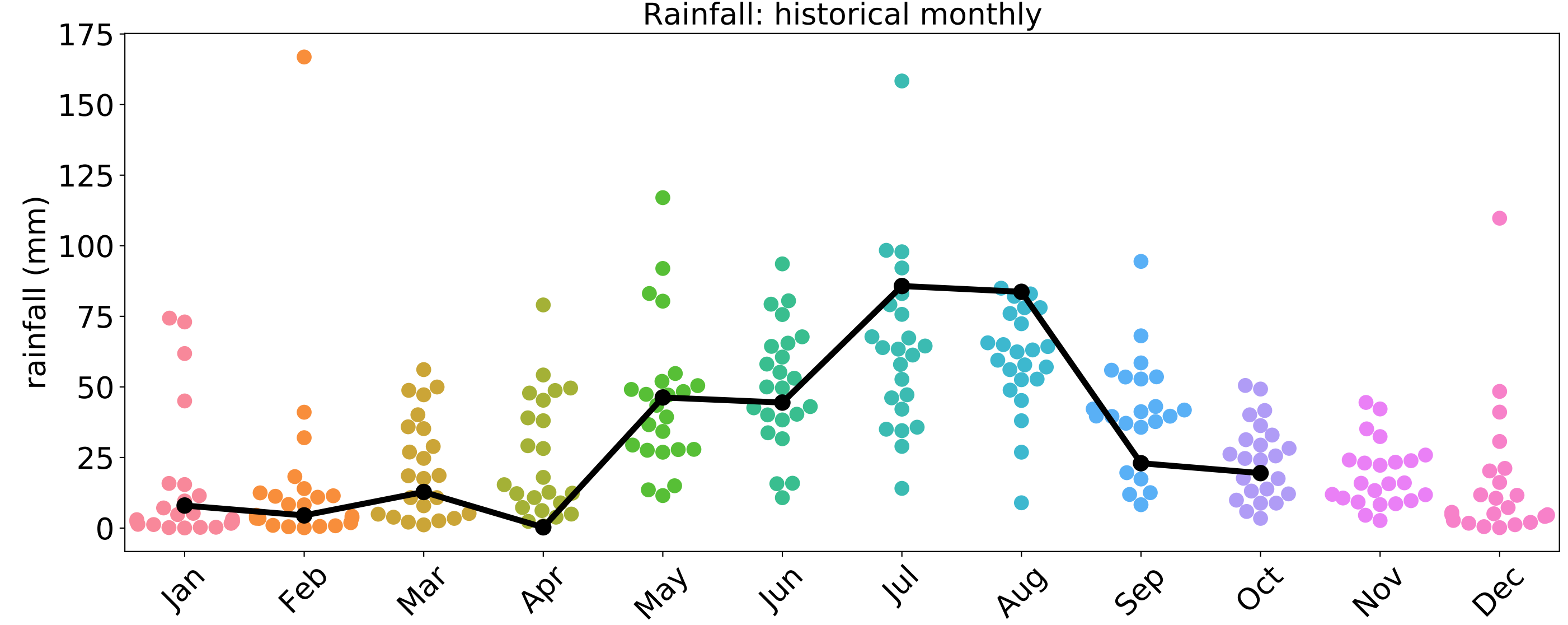
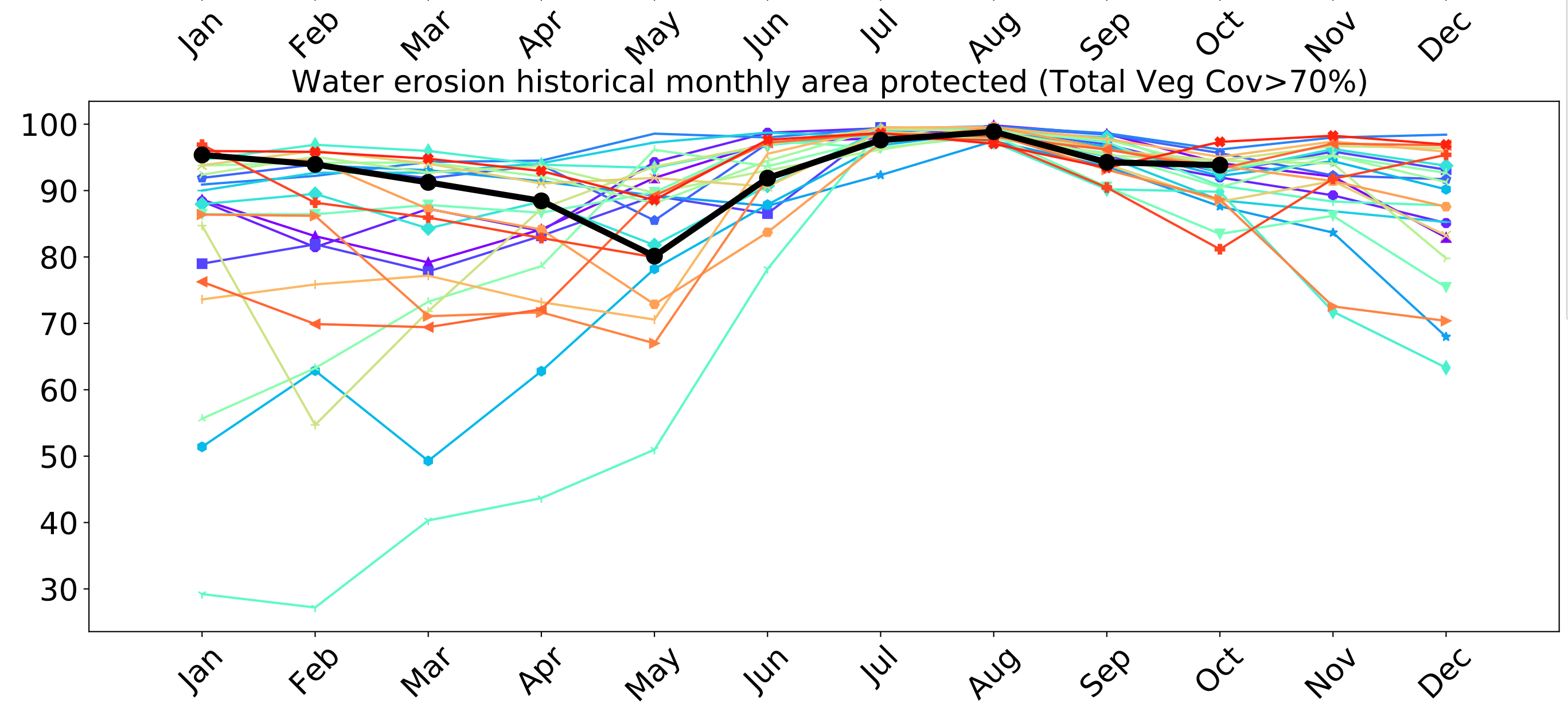
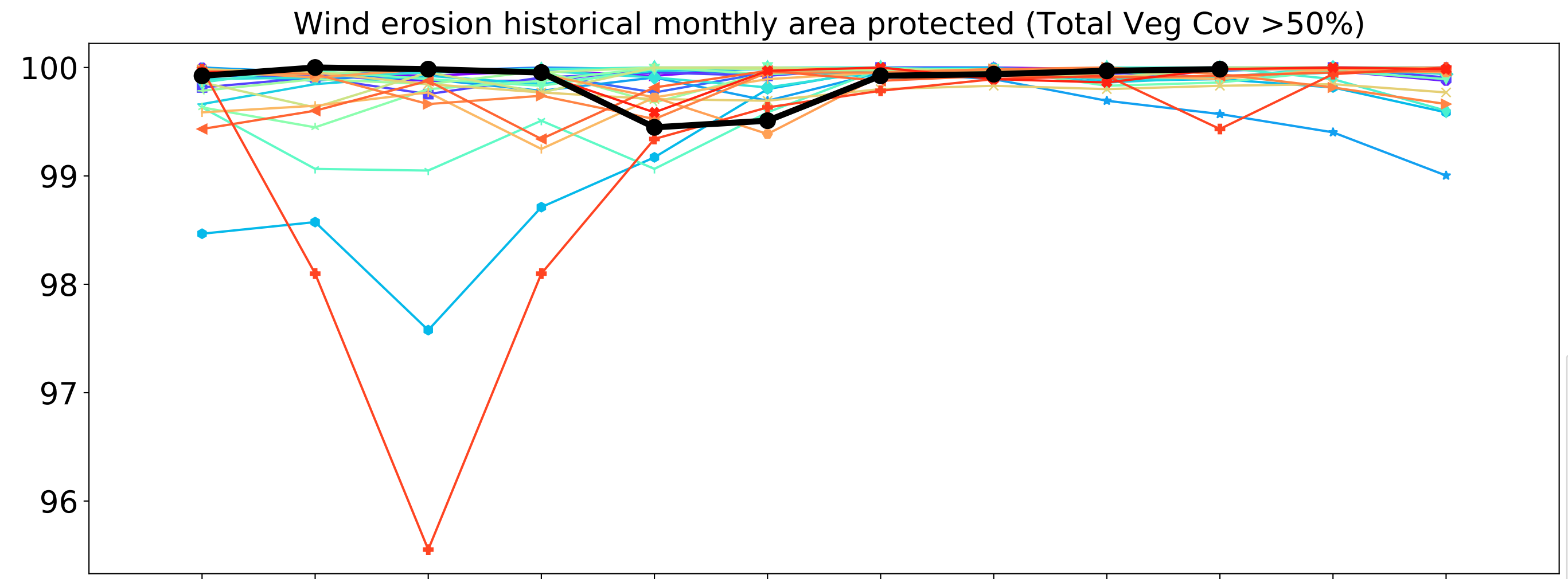
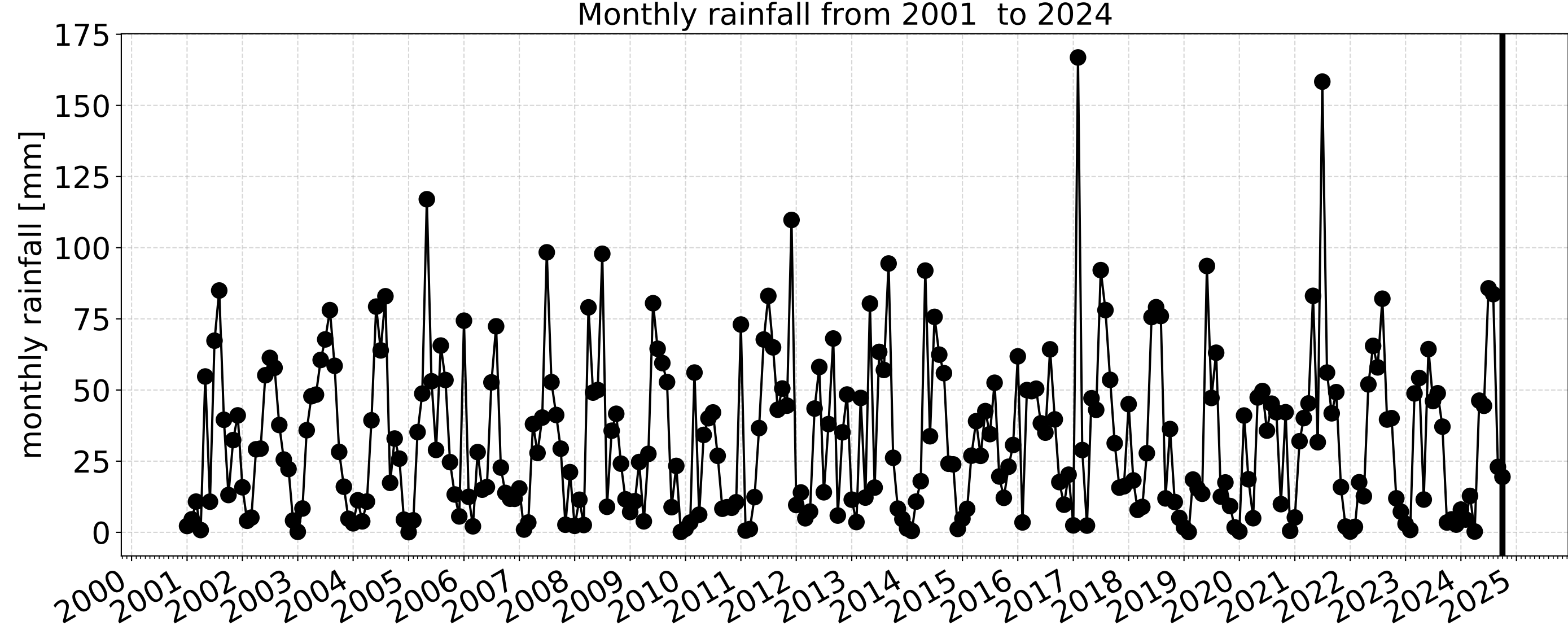
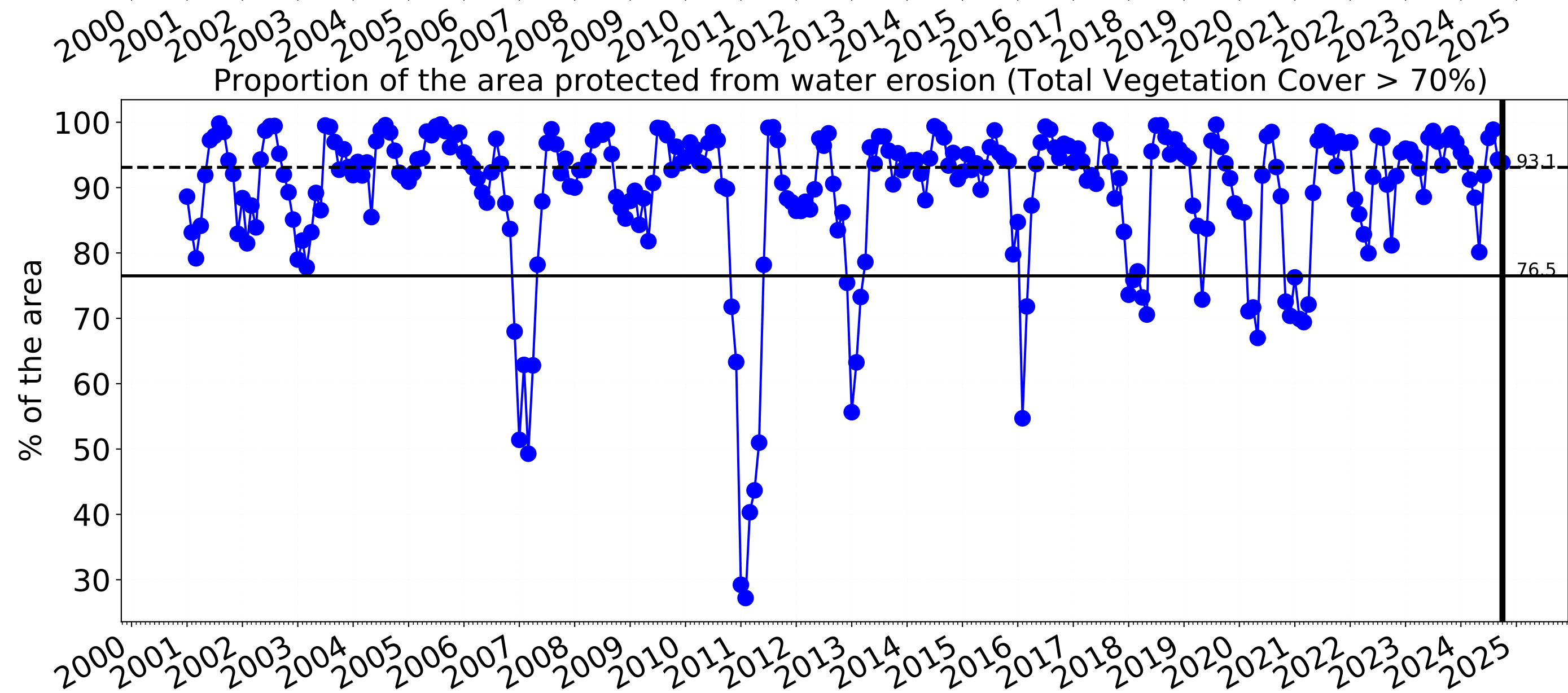
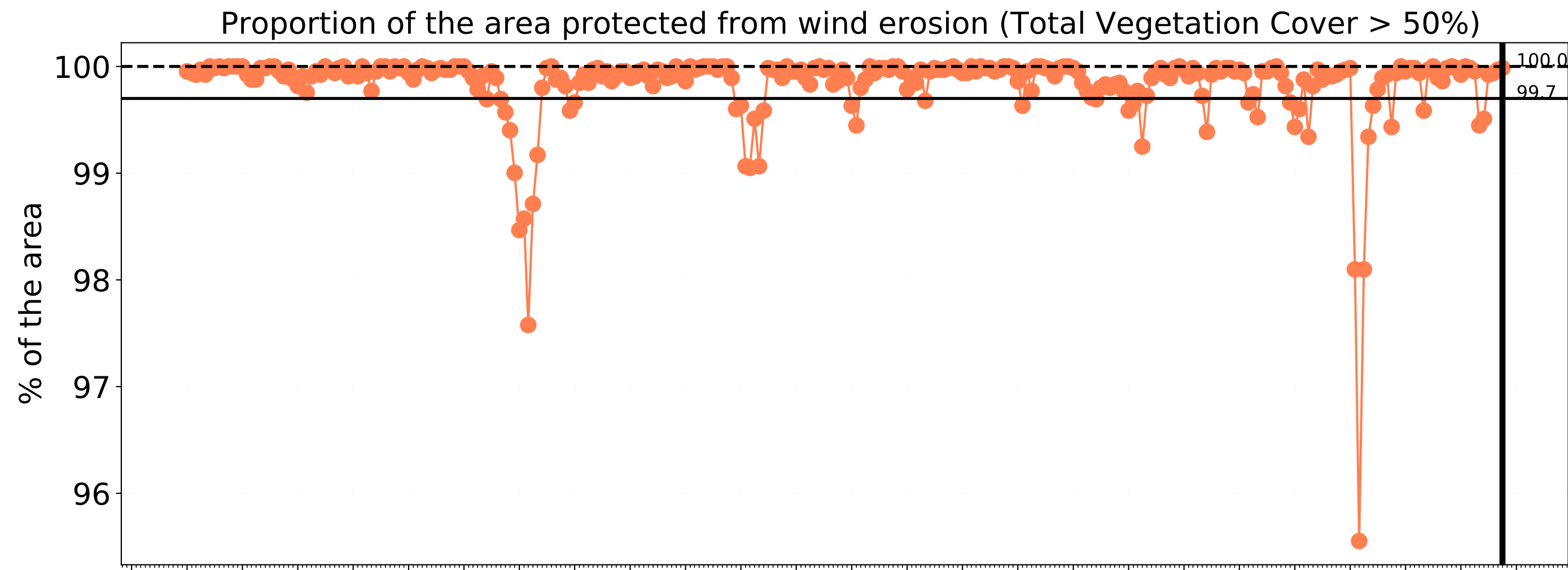
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Conservation and natural environments

Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018)  
Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

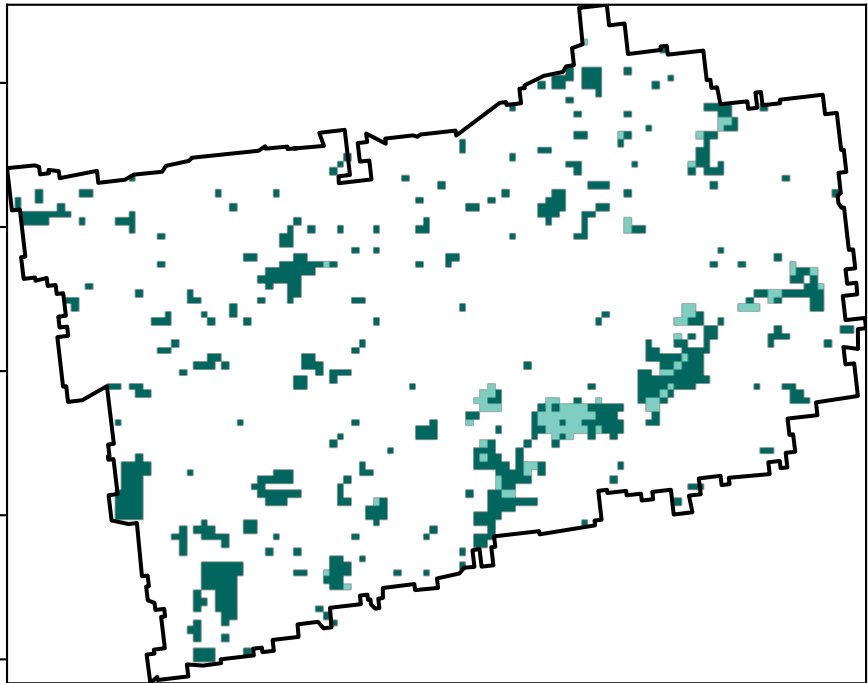


- 1 Conservation and natural environments - Non-forest
- 2 Conservation and natural environments - Woodland forest

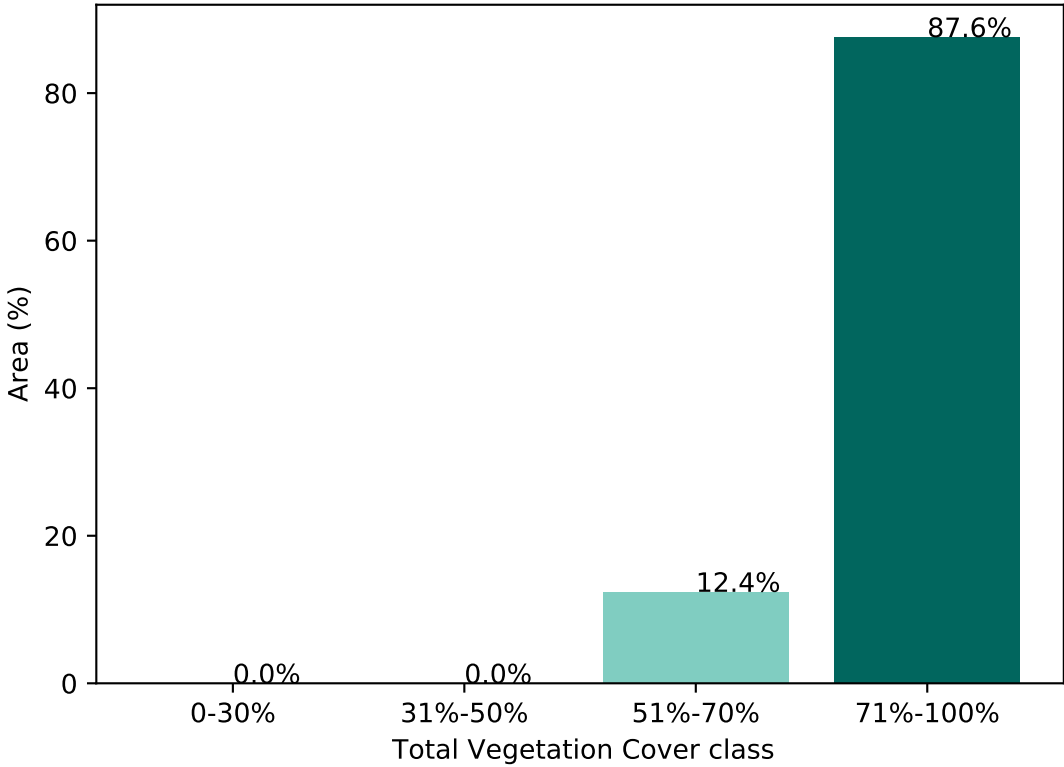
Proportion of each land class in area



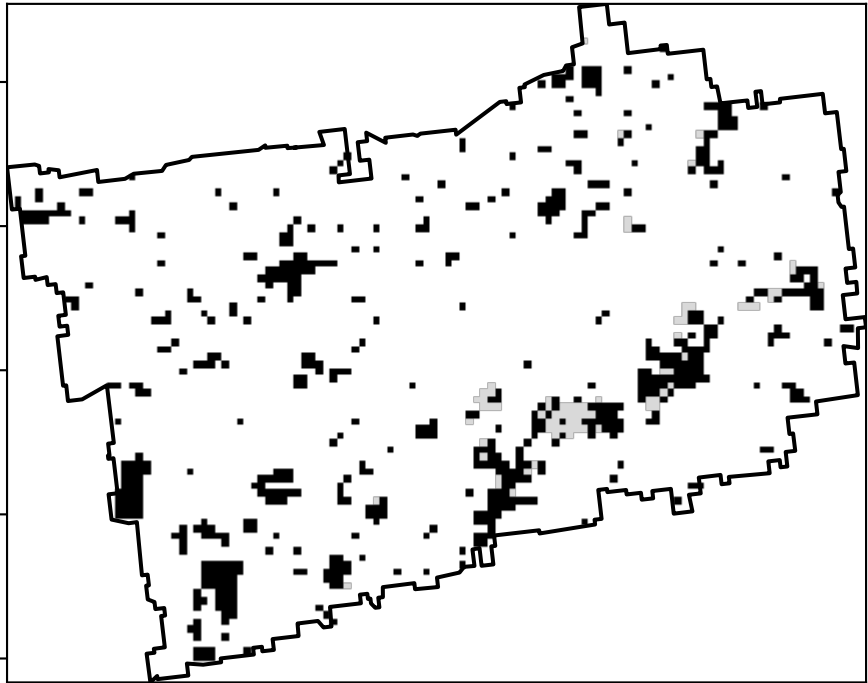
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

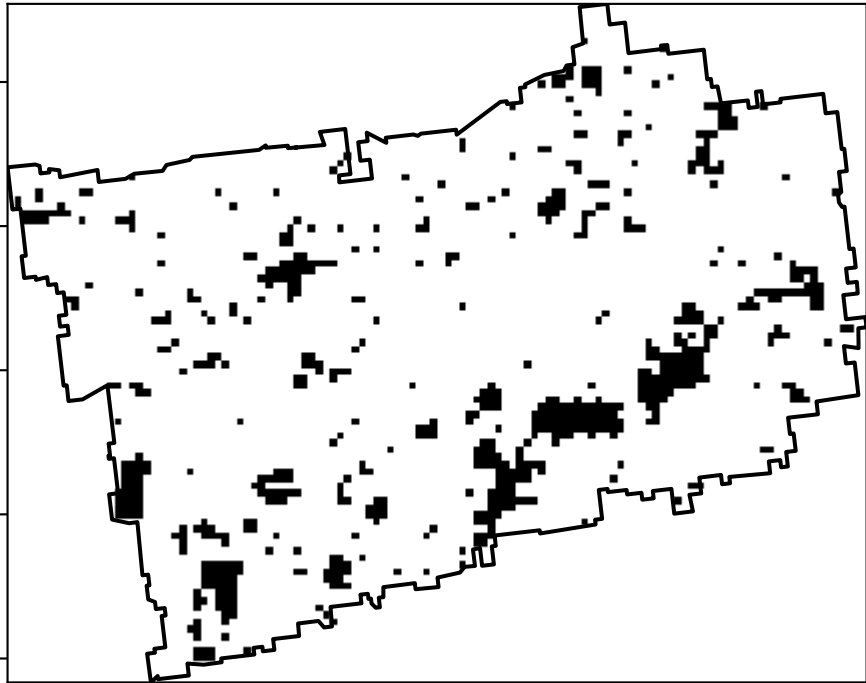


% Area protected from water erosion (>70%)



- Area not protected 12.4% of region (2,201 ha)
- Area protected 87.6% of region (15,549 ha)

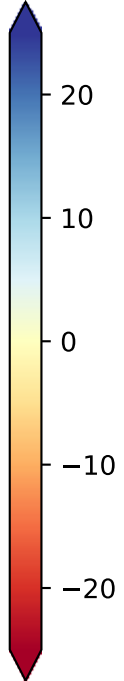
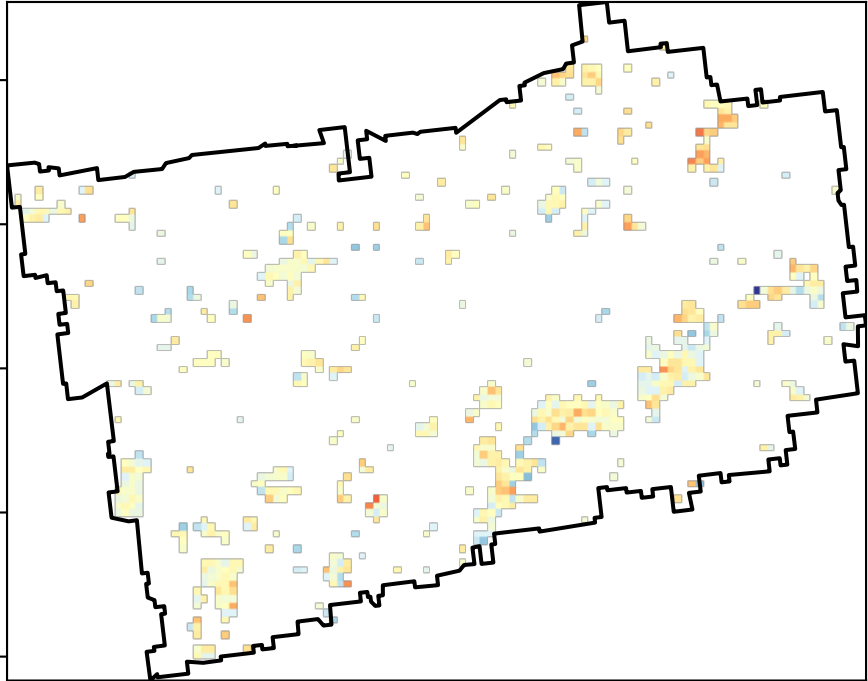
% Area protected from wind erosion (>50%)



- Area protected 100.0% of region (17,750 ha)

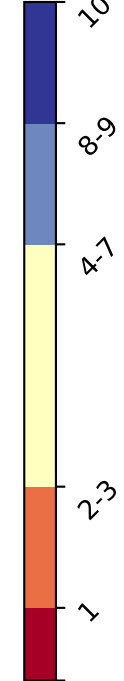
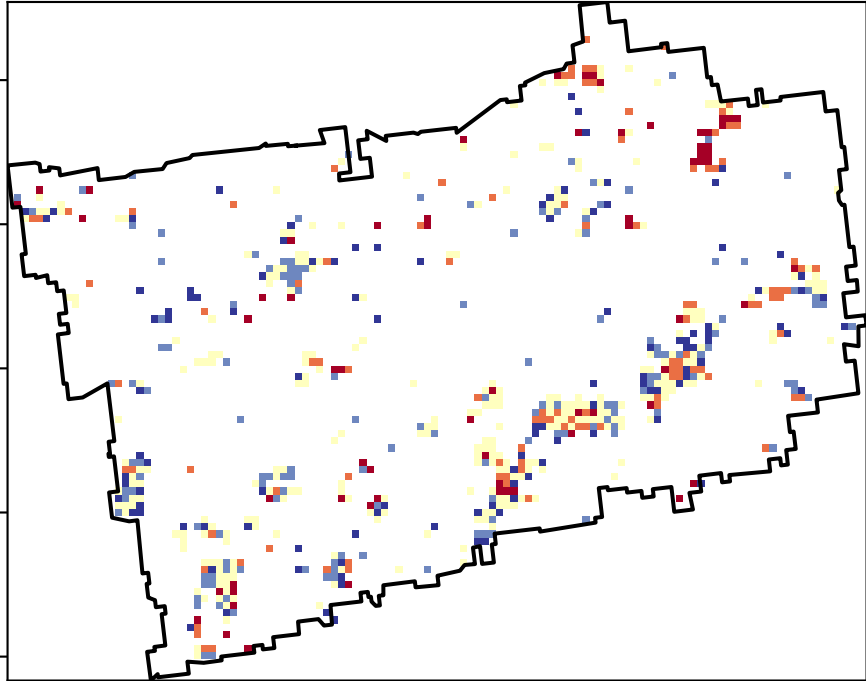
Total Vegetation Cover Anomaly [%]

Anomaly show how many percentage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



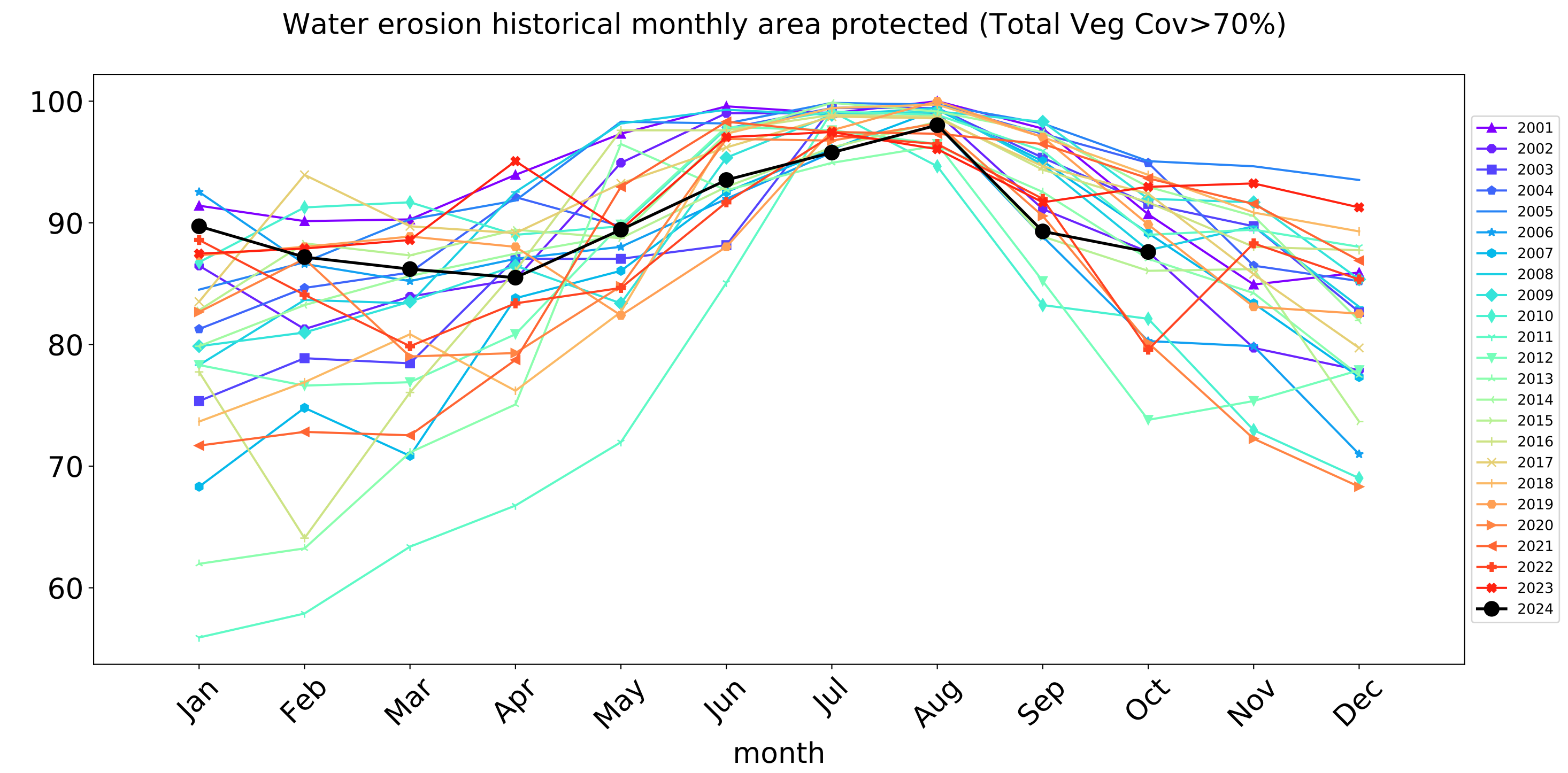
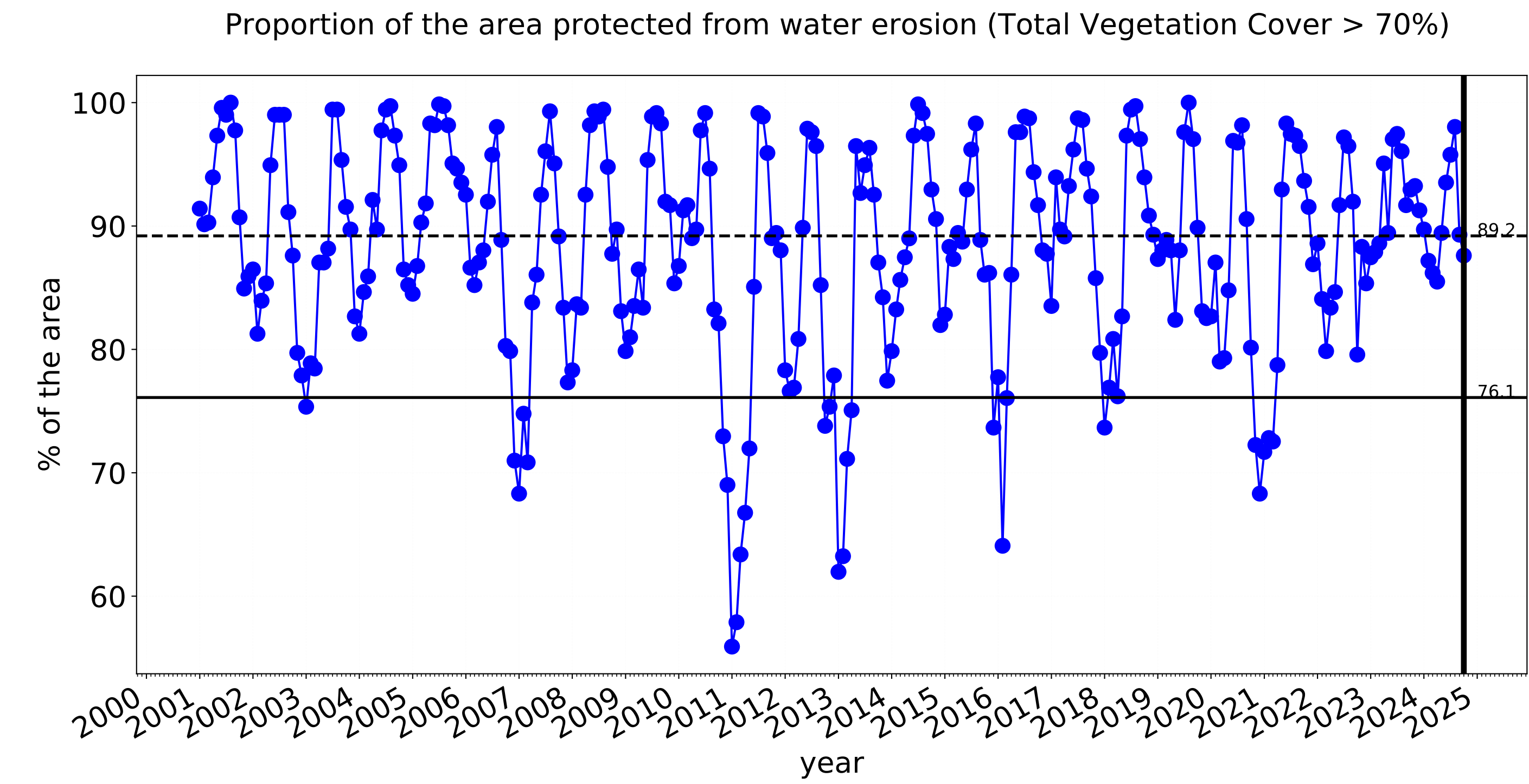
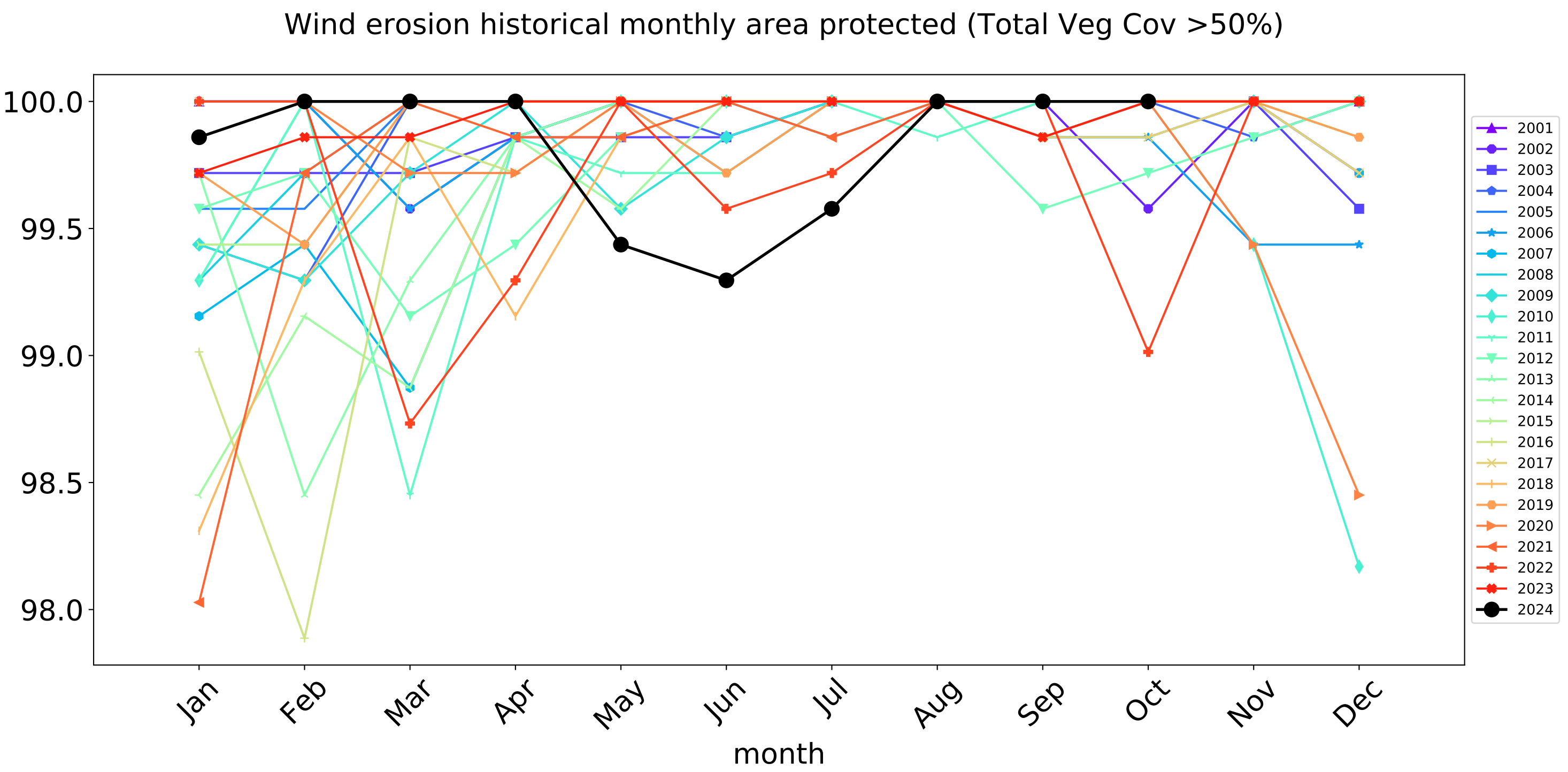
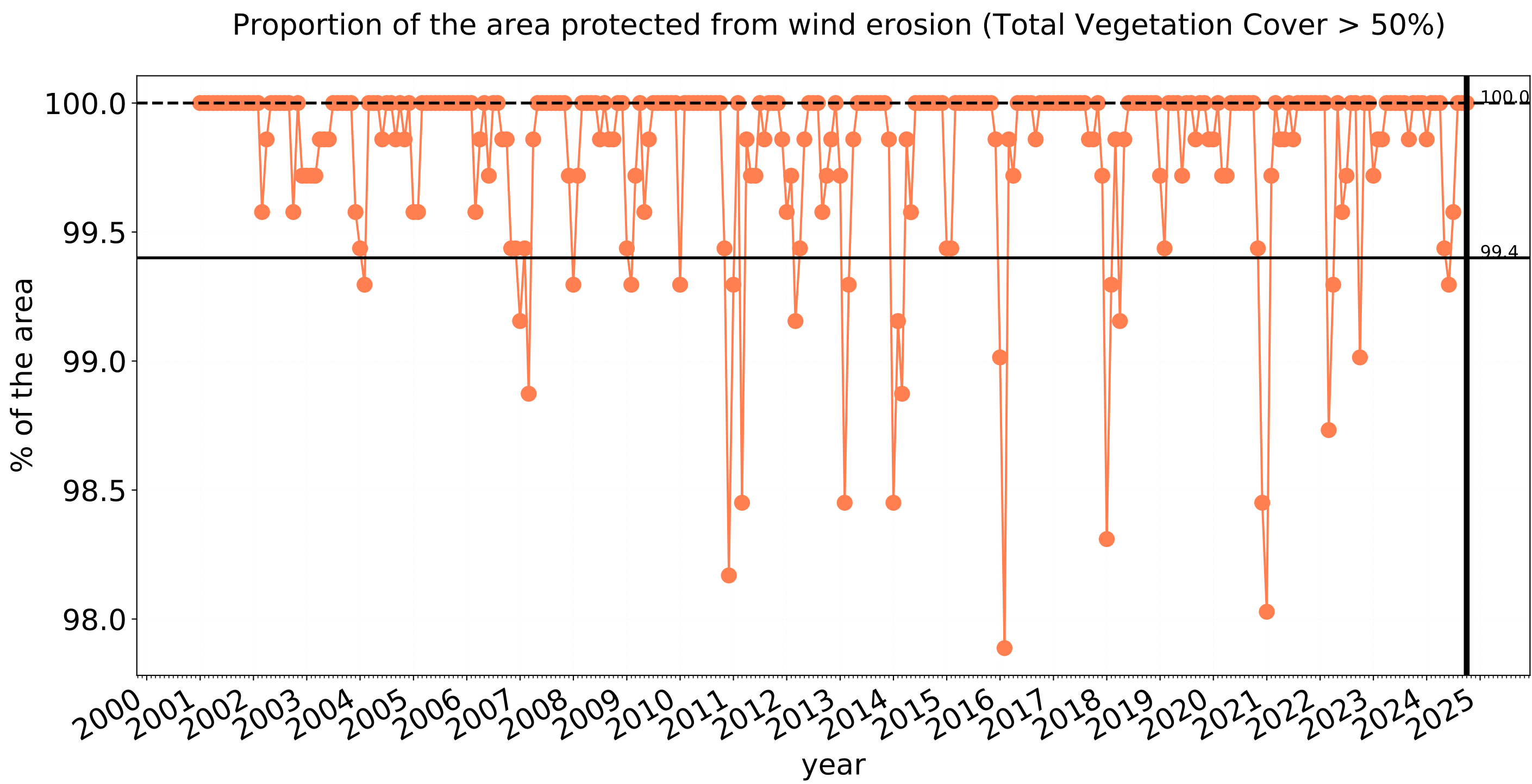
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]





Conservation and natural environments timeseries



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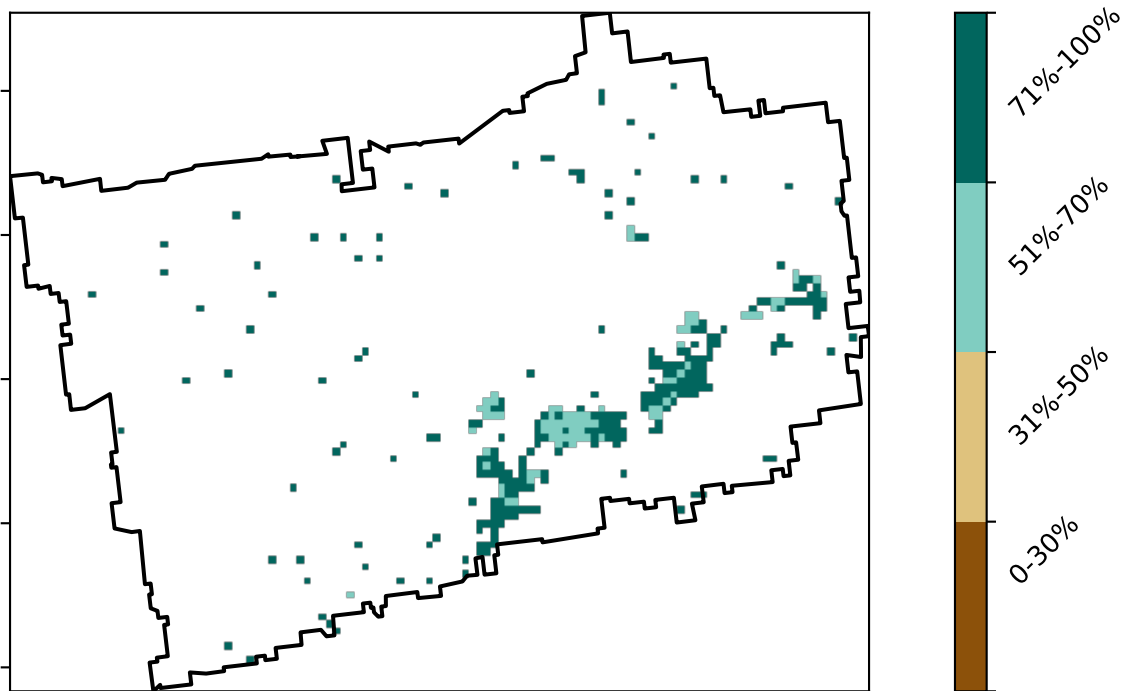


Conservation and natural environments non forest

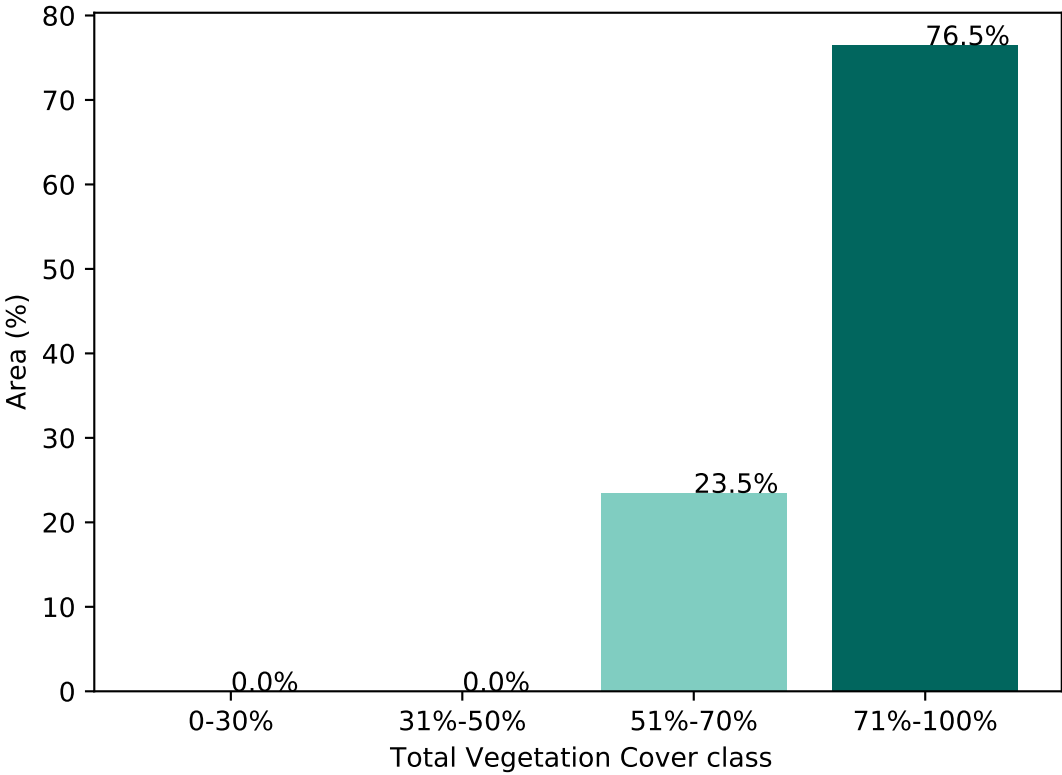
Land use and forest cover



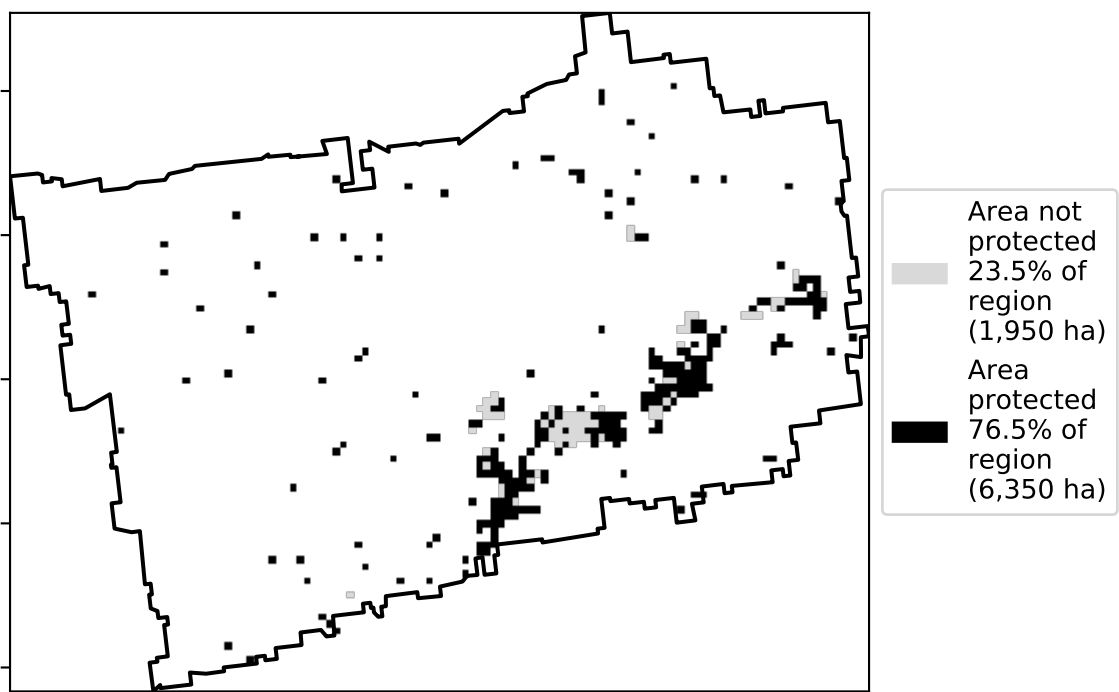
Total Vegetation Cover [%]



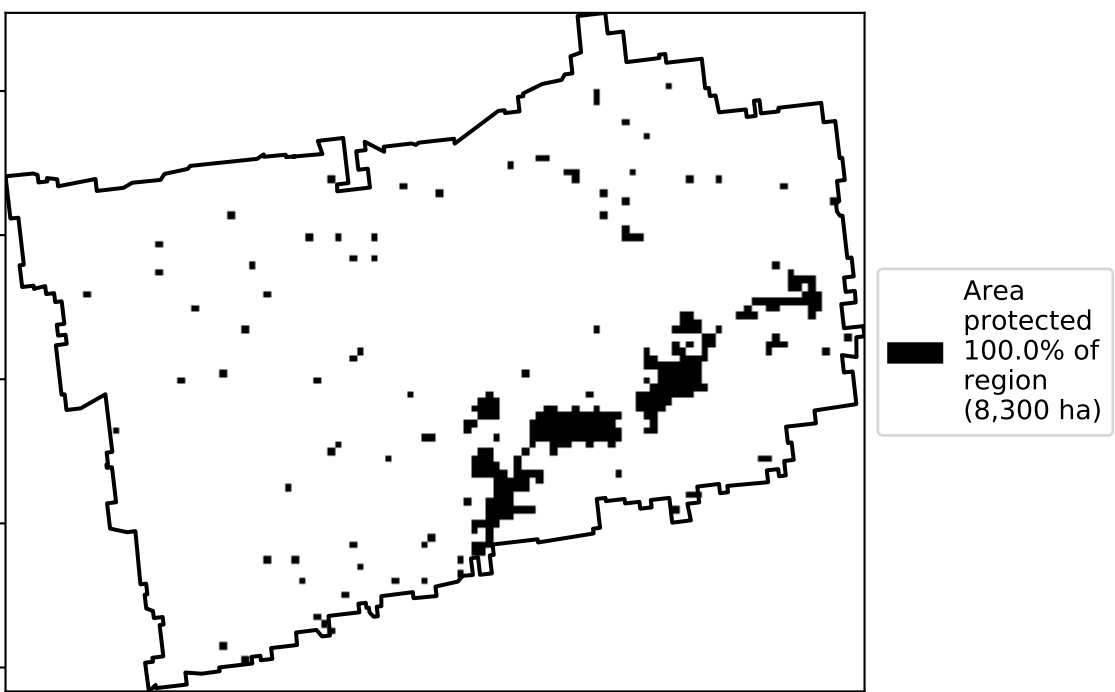
Proportion of vegetation cover class in area



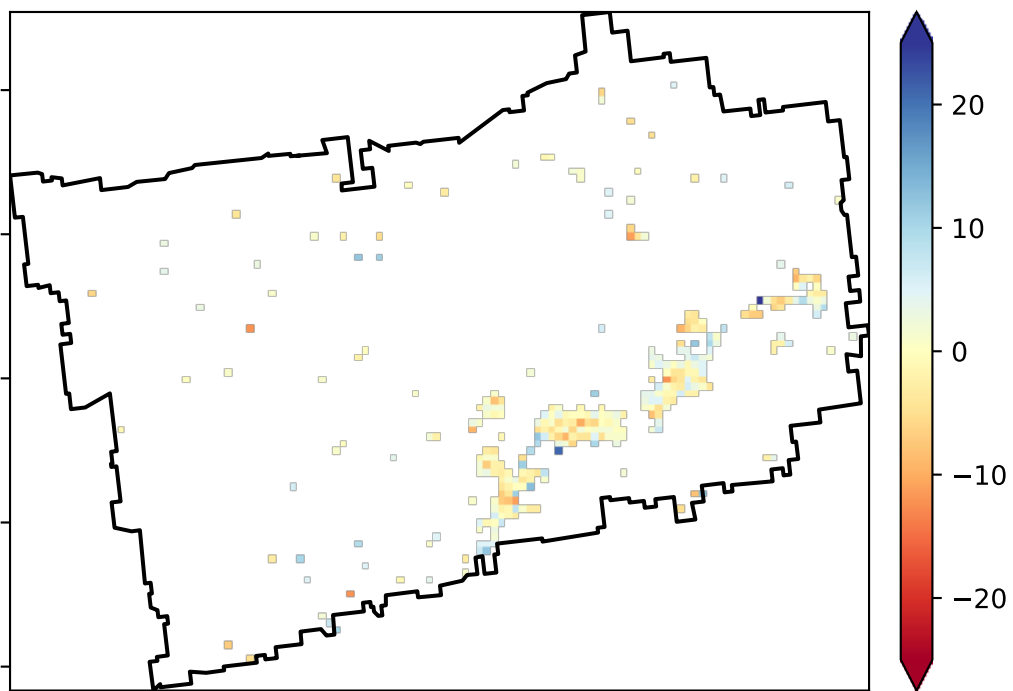
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

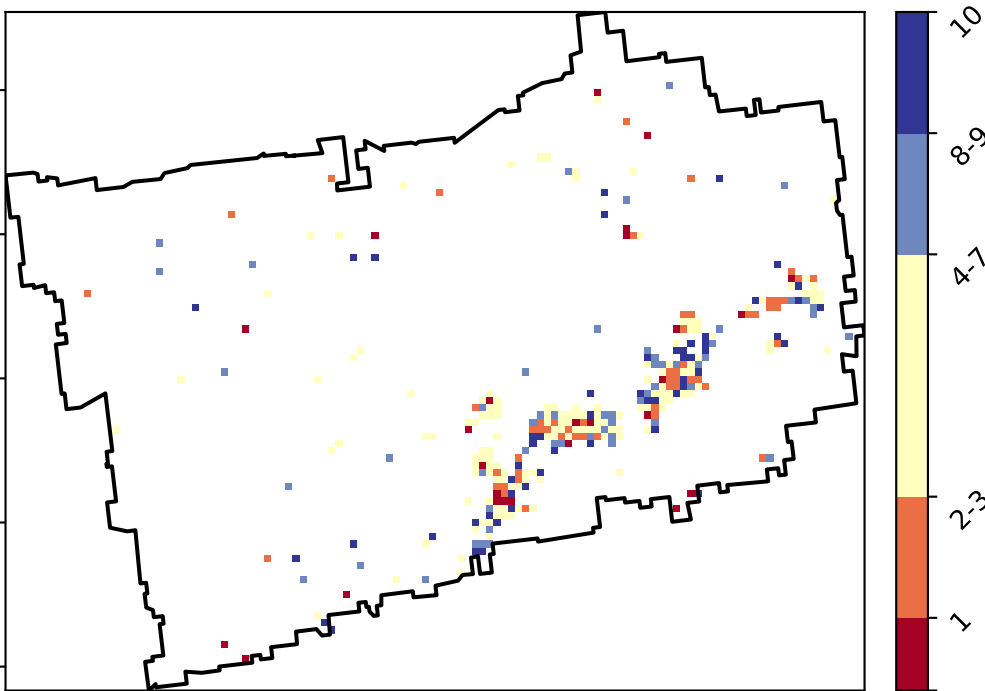


Total Vegetation Cover Anomaly [%]



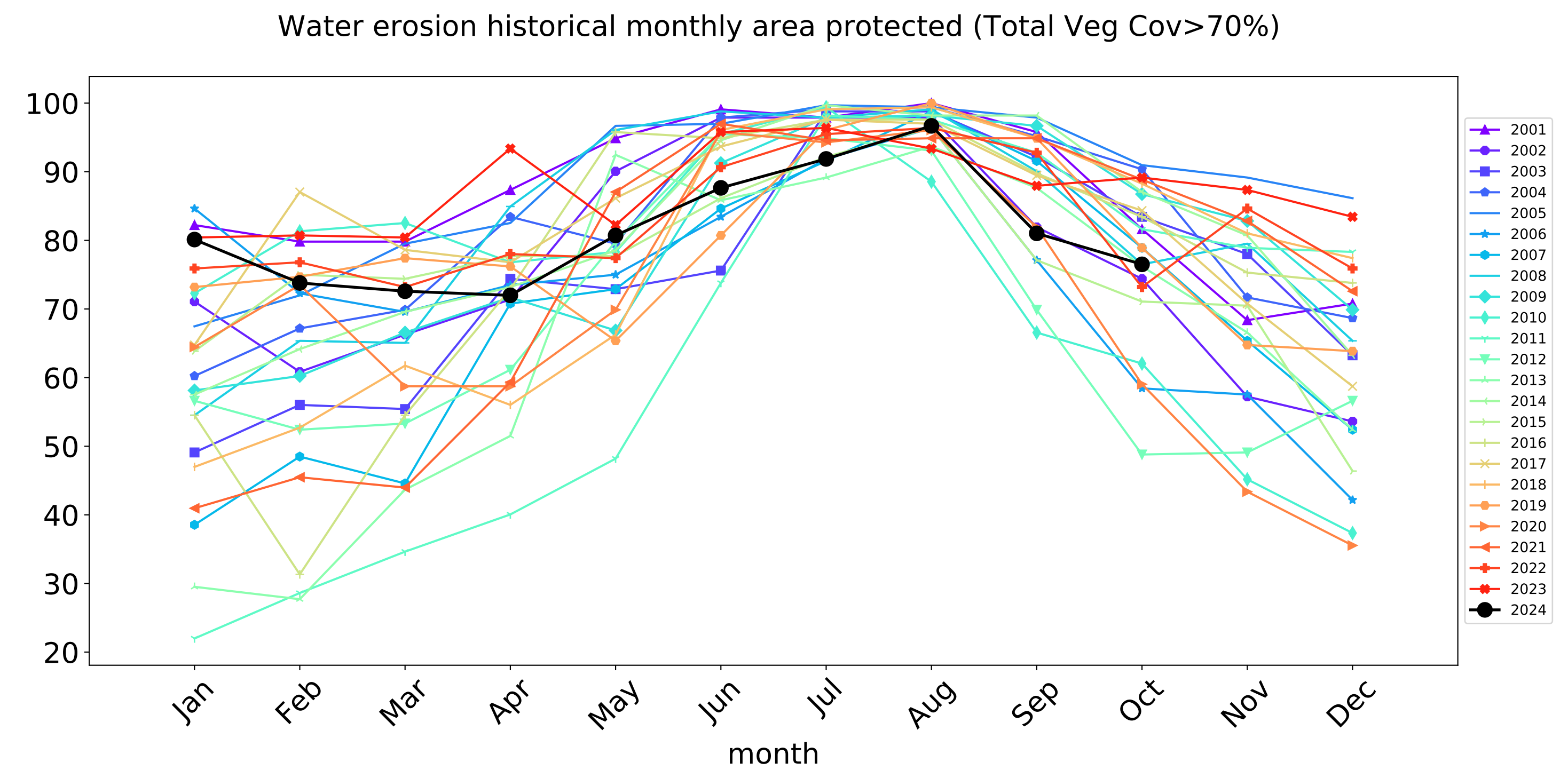
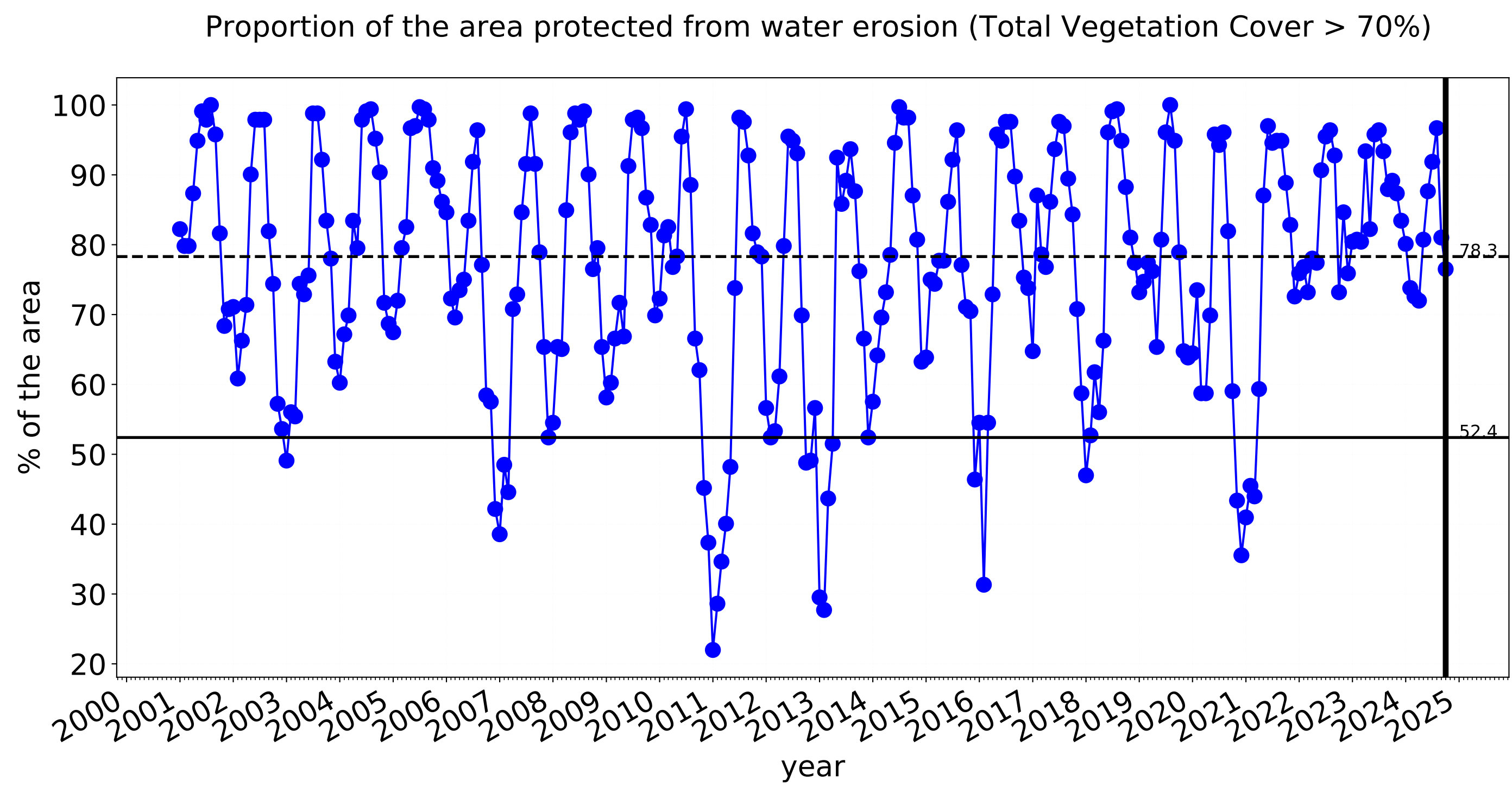
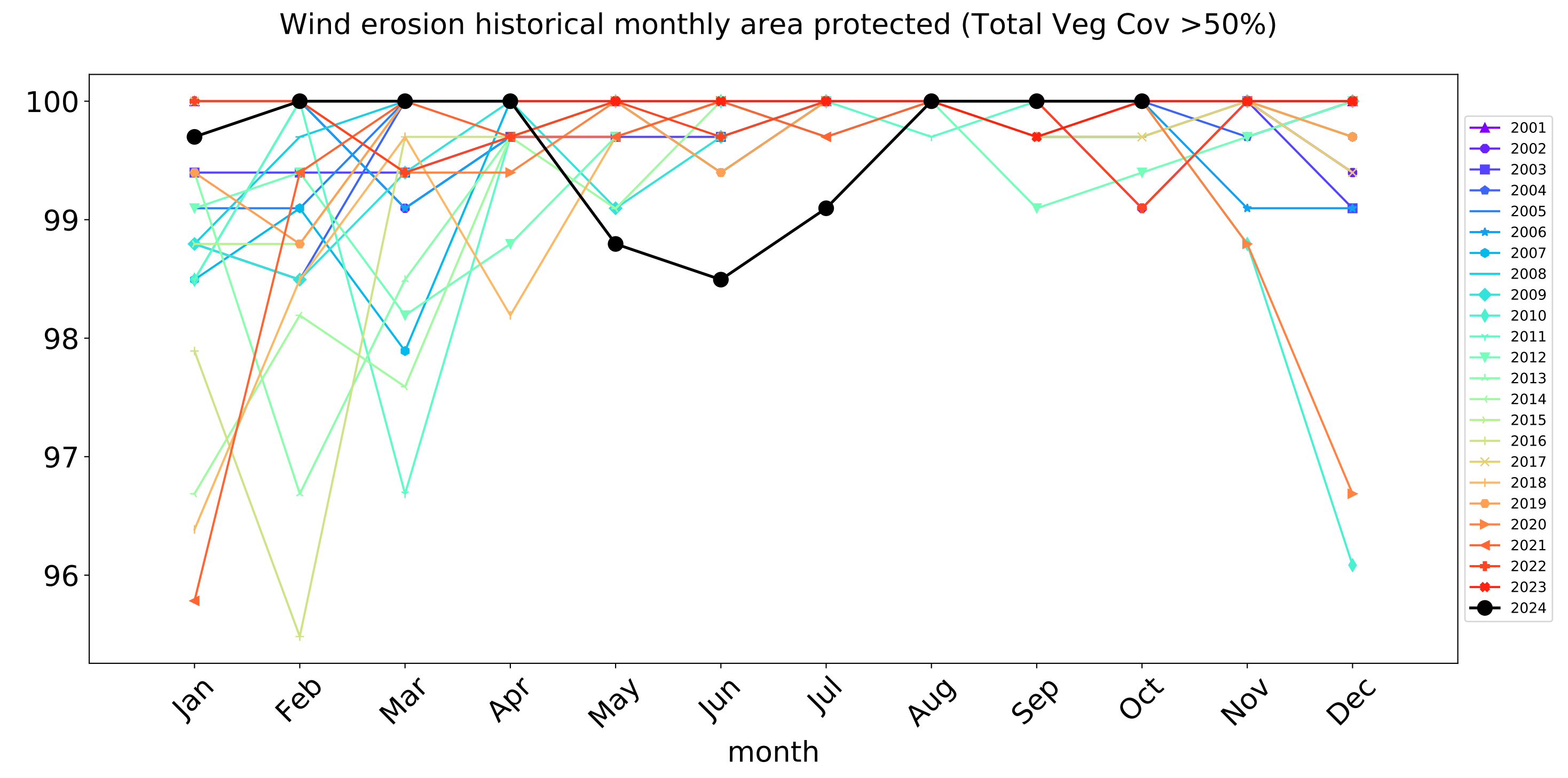
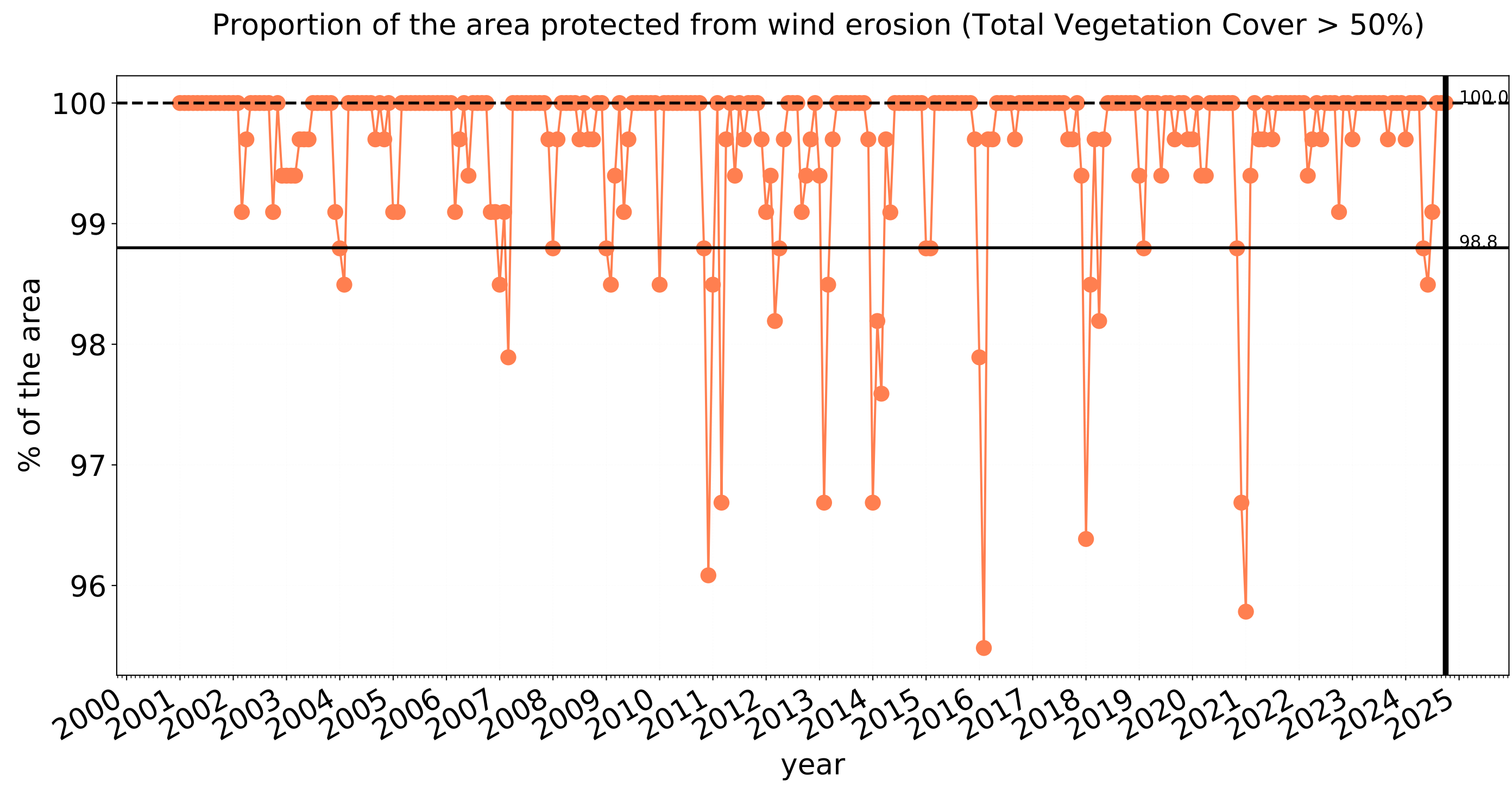
Total Vegetation Cover Decile [%]

Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





Conservation and natural environments non forest timeseries



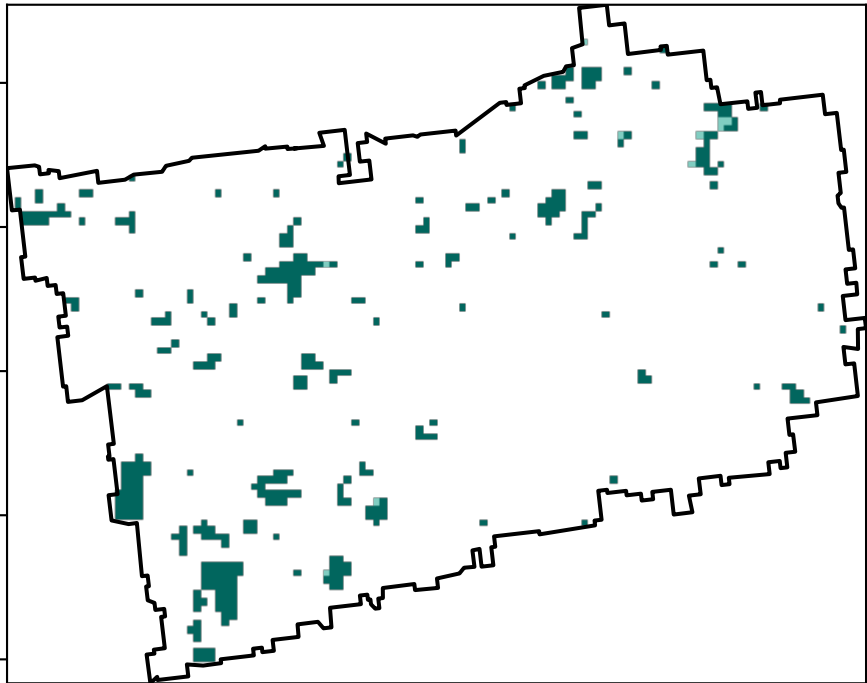
Conservation and natural environments Woodland forest

Land use and forest cover

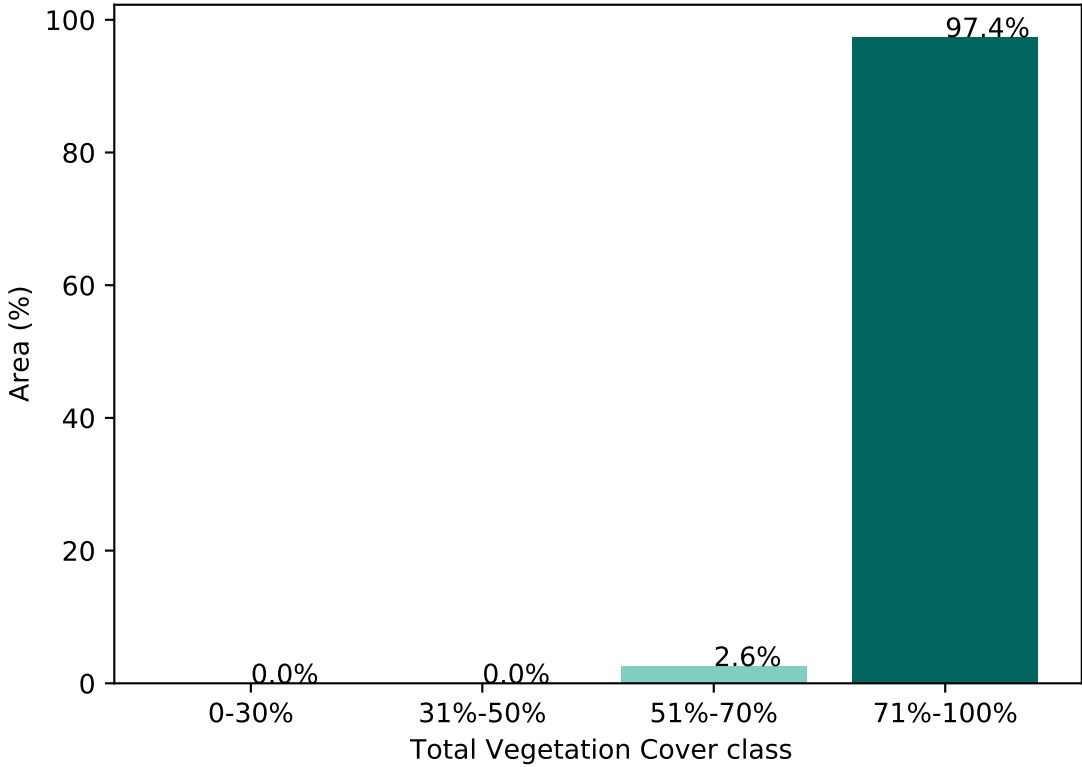
Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)



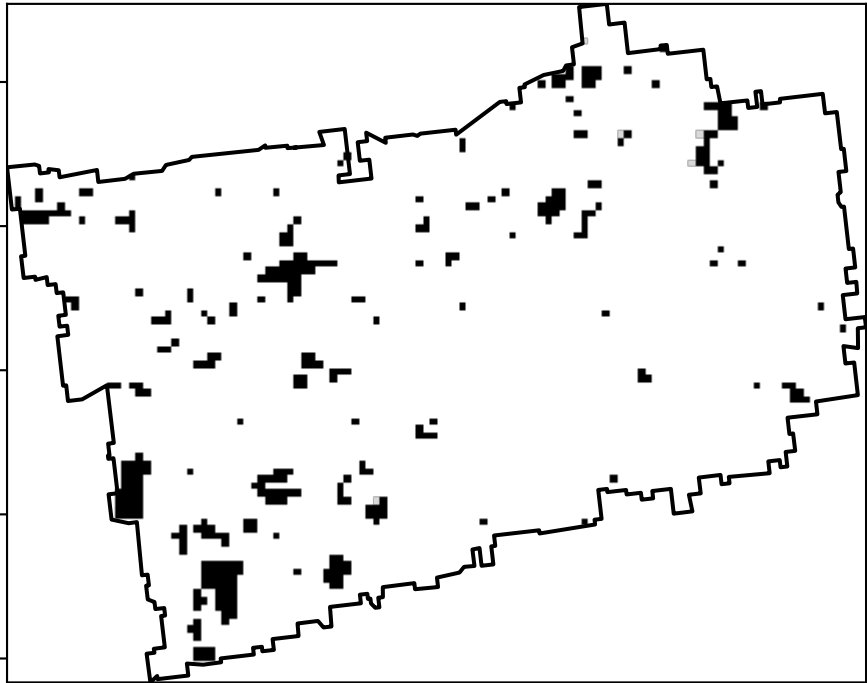
Total Vegetation Cover [%]



Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

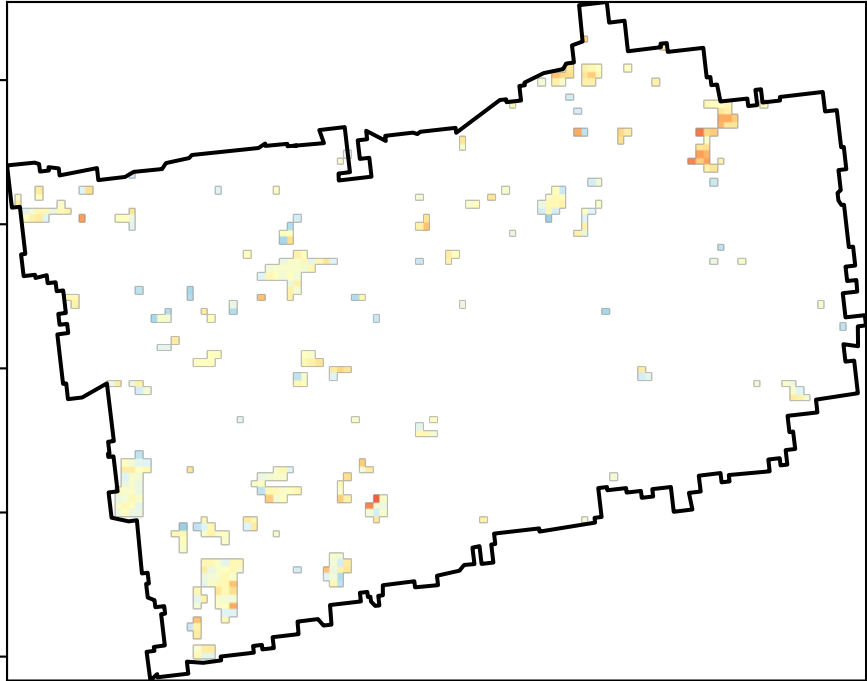


% Area protected from wind erosion (>50%)



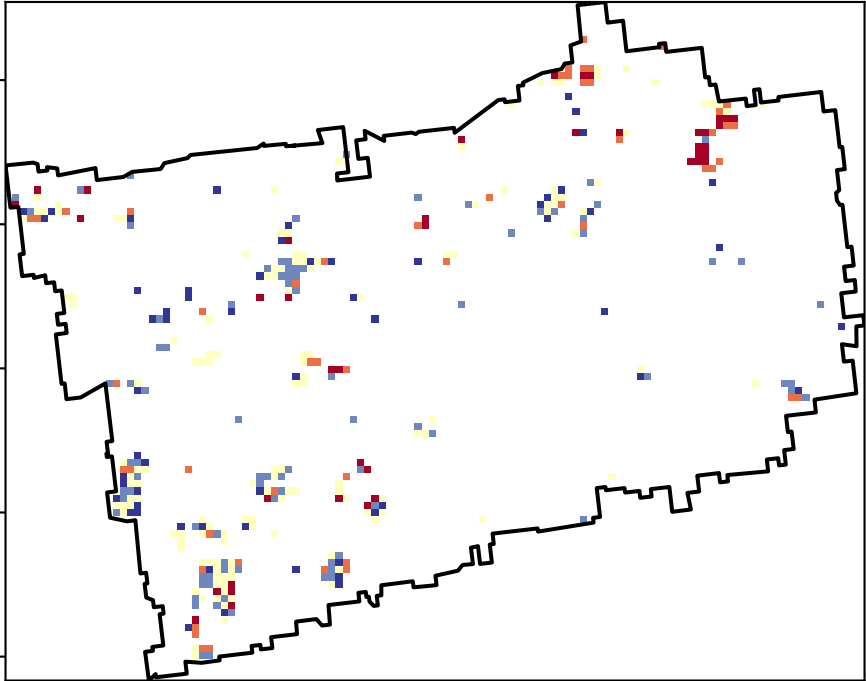
Total Vegetation Cover Anomaly [%]

Anomaly show how  
many percentage  
points each  
pixel is from  
the mean. That  
is, red pixels  
are about 20%  
lower than the  
mean of that  
pixel. The mean  
is only for the  
month of the map  
using baseline  
from 2001 to  
2019.



Deciles show where the  
pixel value lies in the  
record, from highest to  
lowest, for that month.  
That is, red pixels are  
in the lowest 10% of  
records for that month of  
the map using baseline  
from 2001 to 2019.

Total Vegetation Cover Decile [%]



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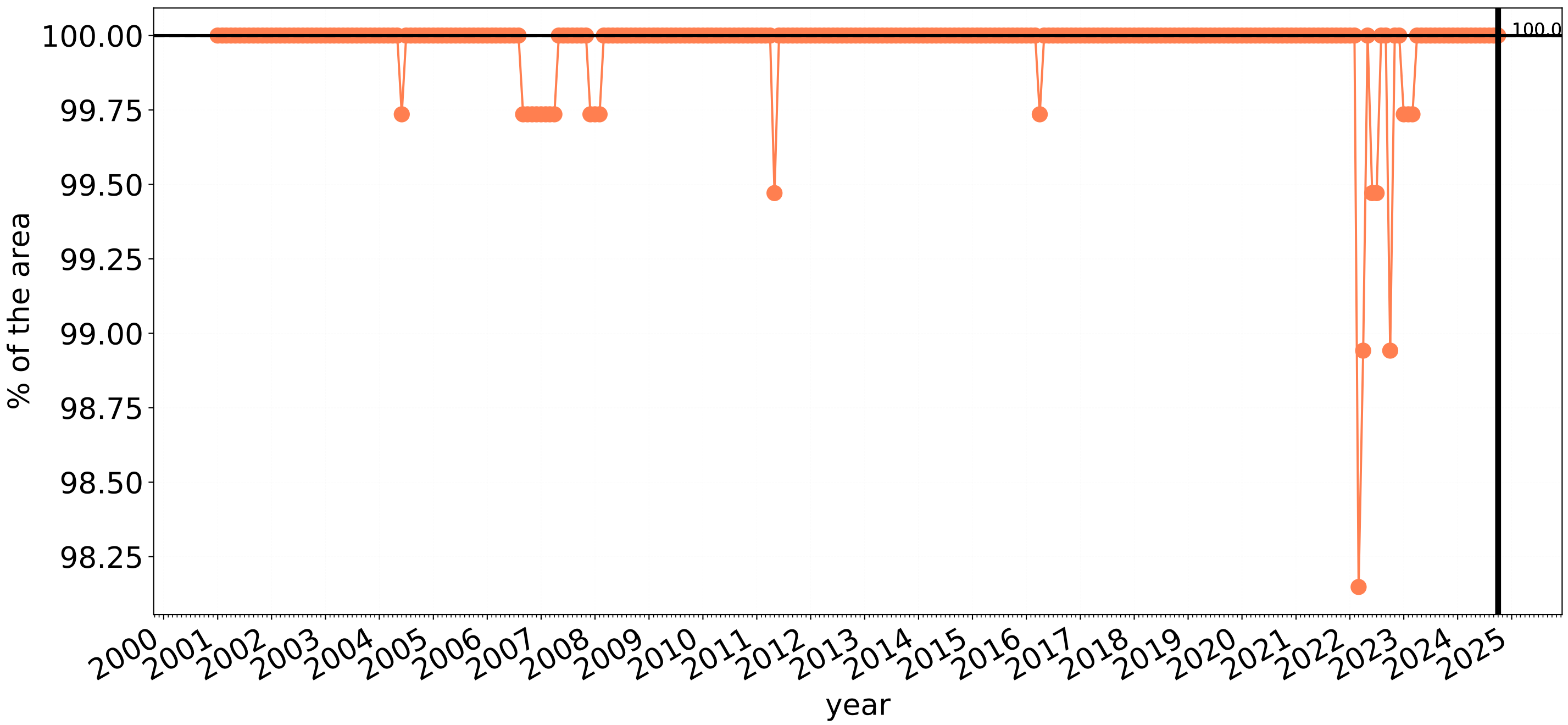
Australian Government

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Landcare  
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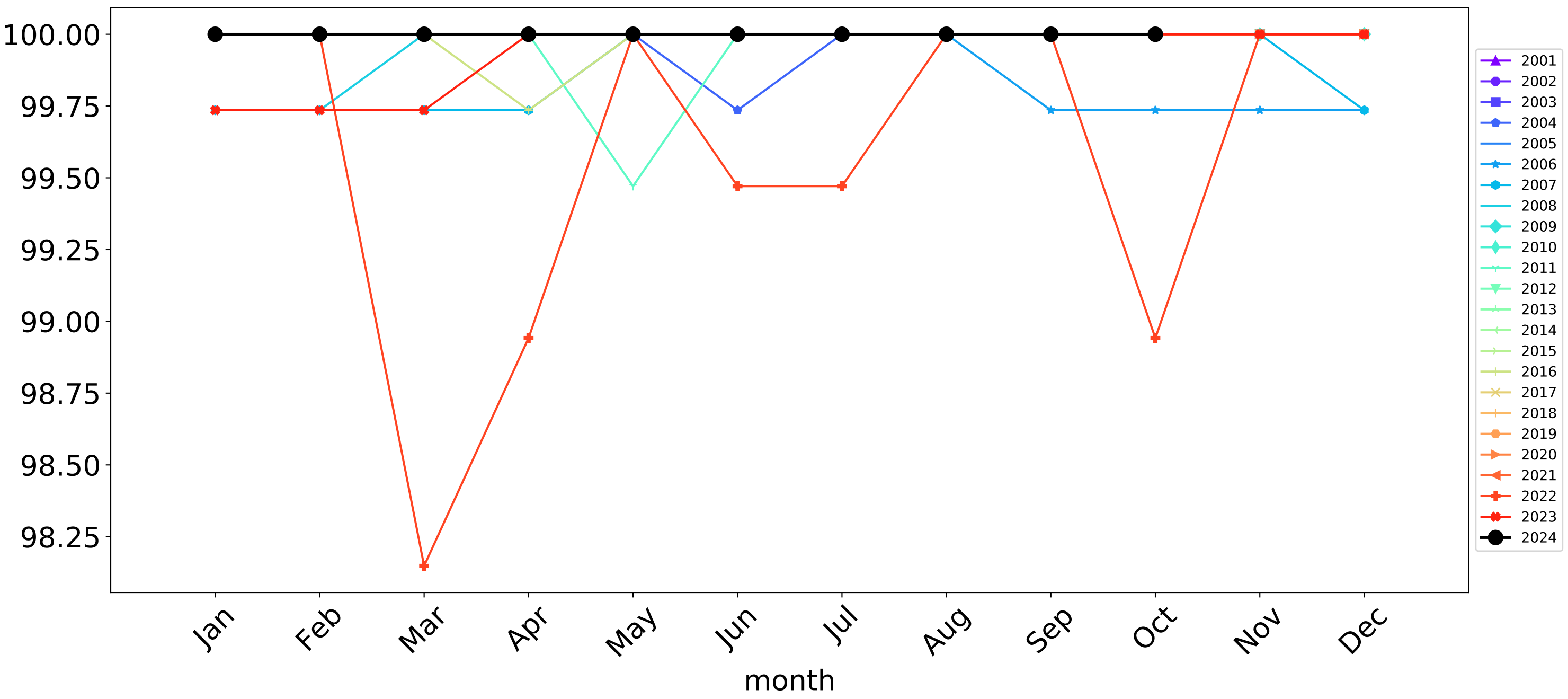




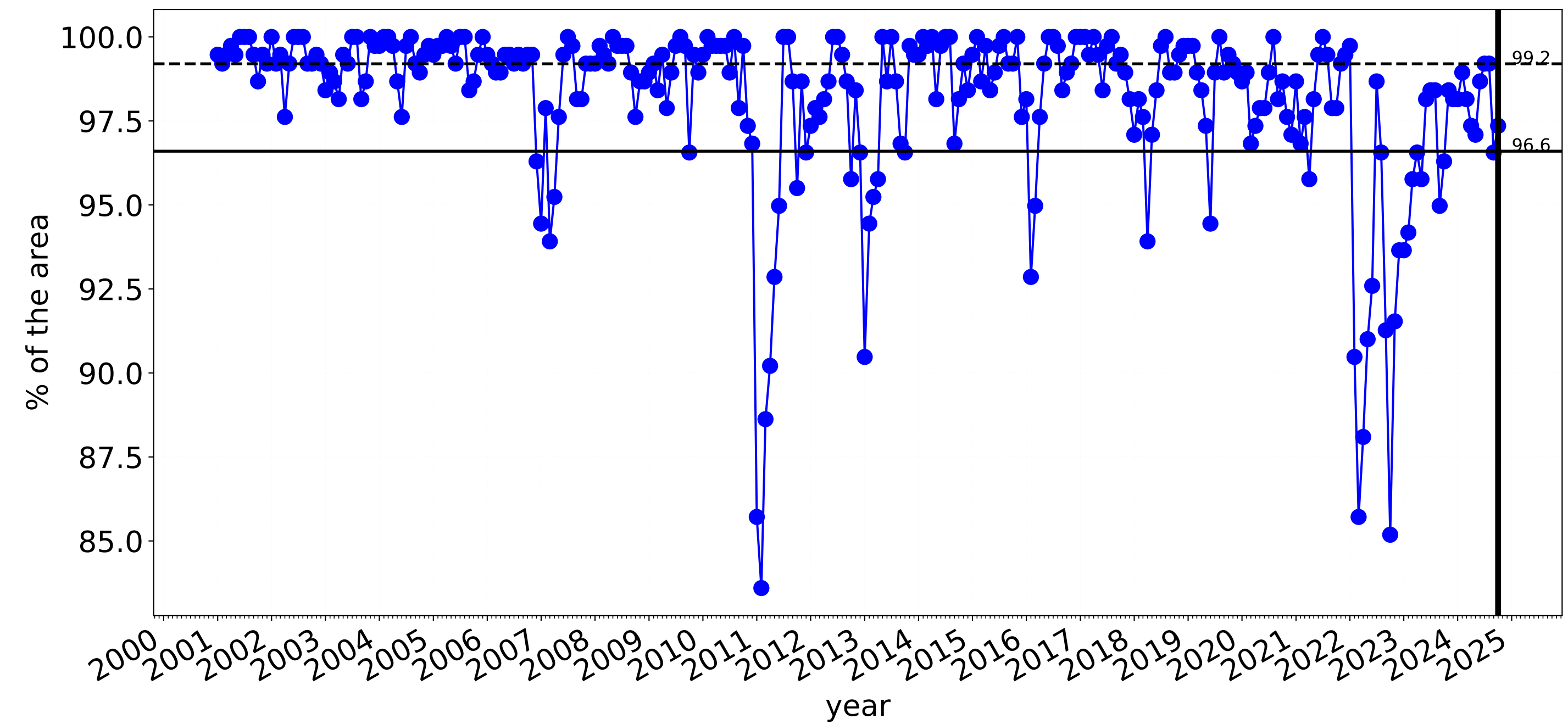
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



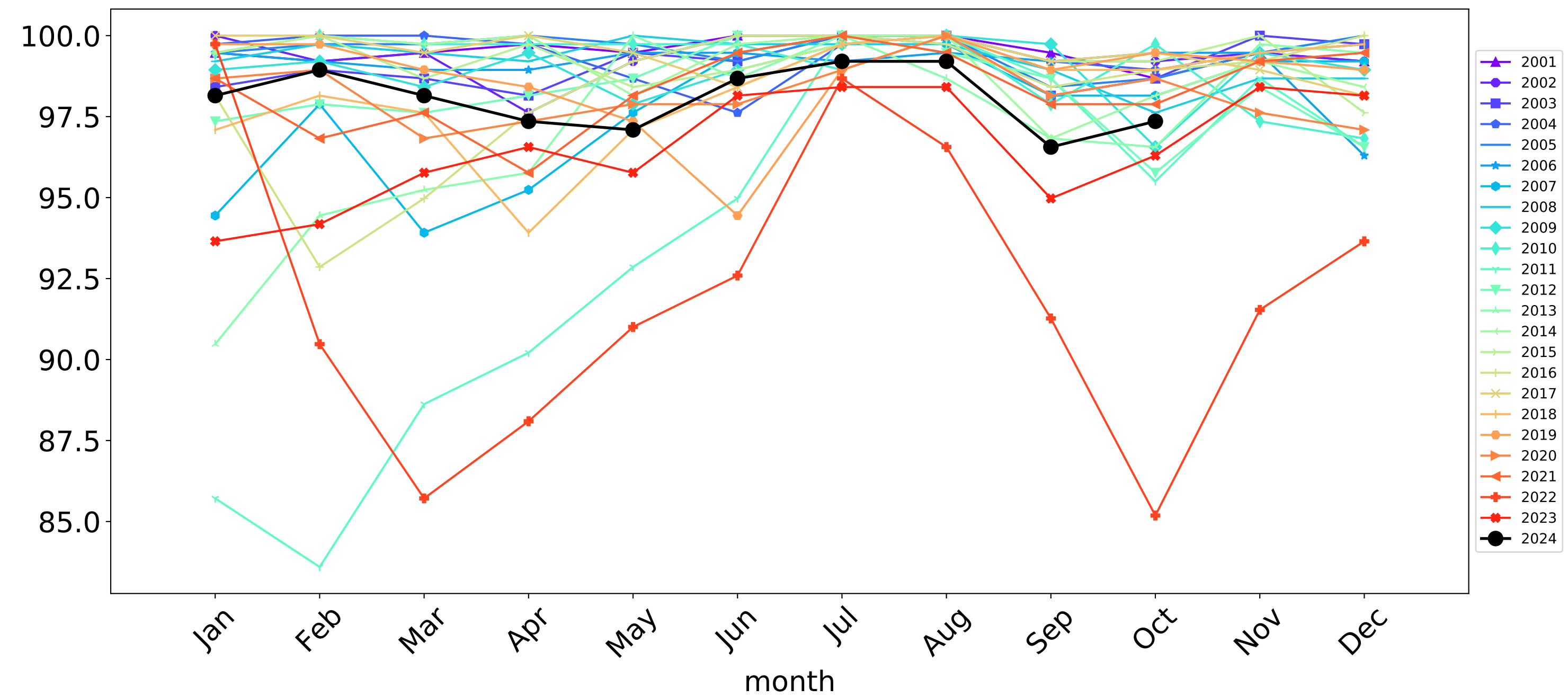
Wind erosion historical monthly area protected (Total Veg Cov >50%)



Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



Water erosion historical monthly area protected (Total Veg Cov>70%)



# Agriculture

Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018)  
Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

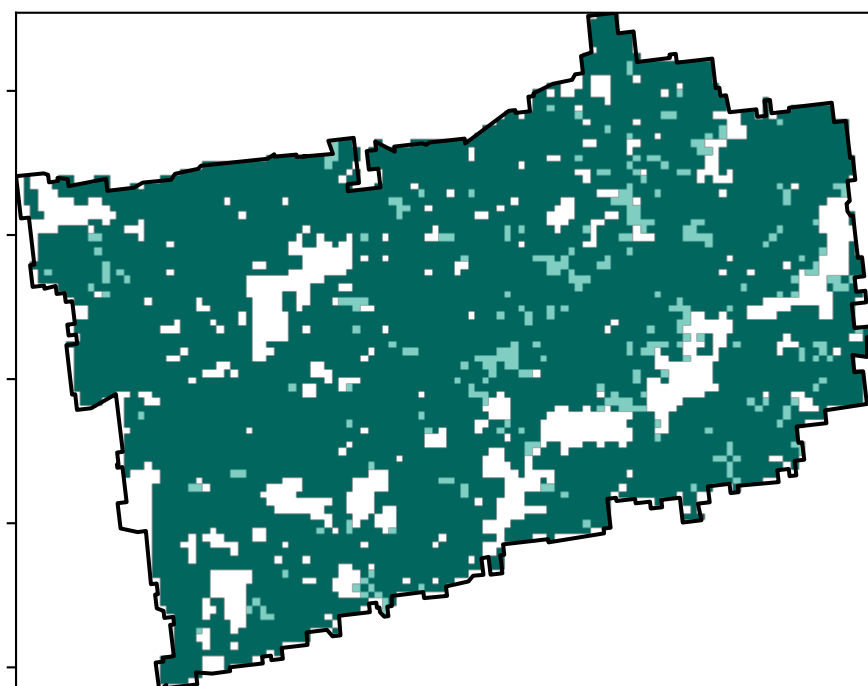


1 Agriculture - Grazing - Non forest  
2 Agriculture - Cropping - Non-irrigated

Proportion of each land class in area

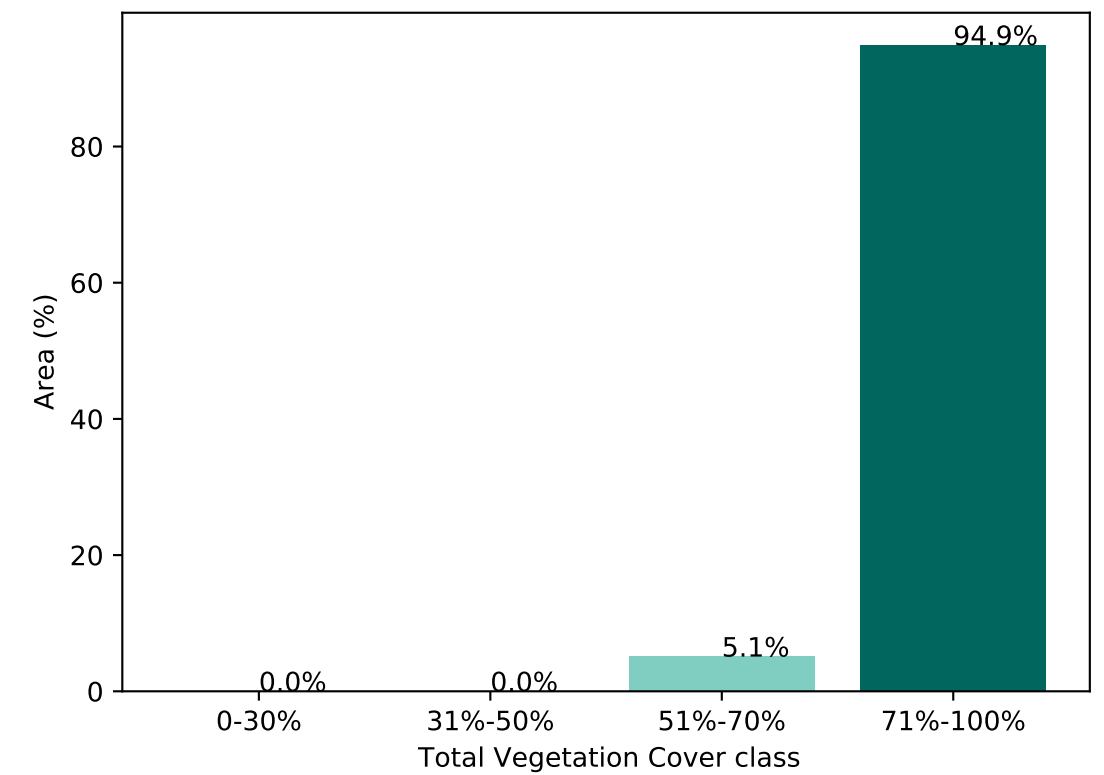


Total Vegetation Cover [%]

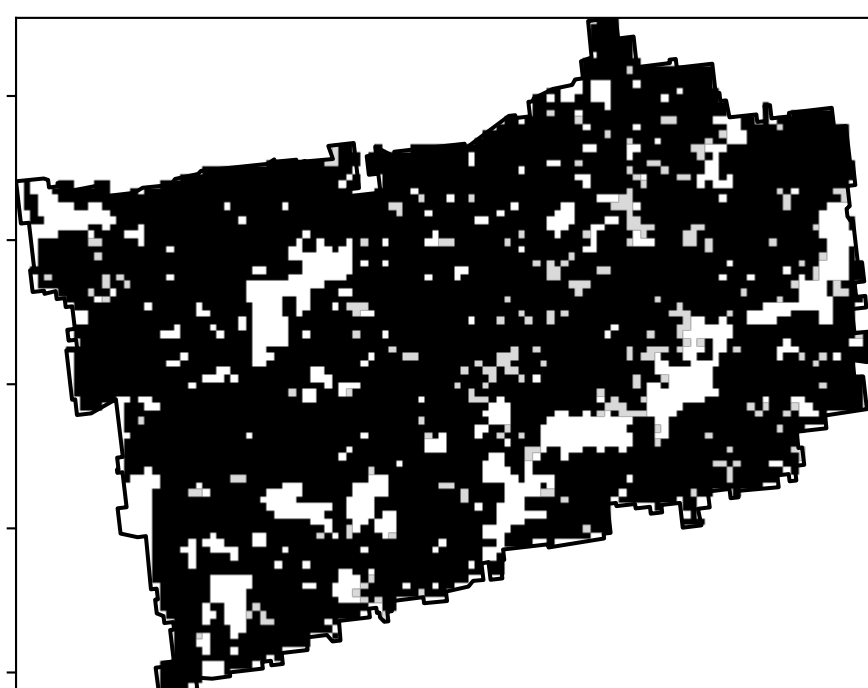


71%-100%  
51%-70%  
31%-50%  
0-30%

Proportion of vegetation cover class in area

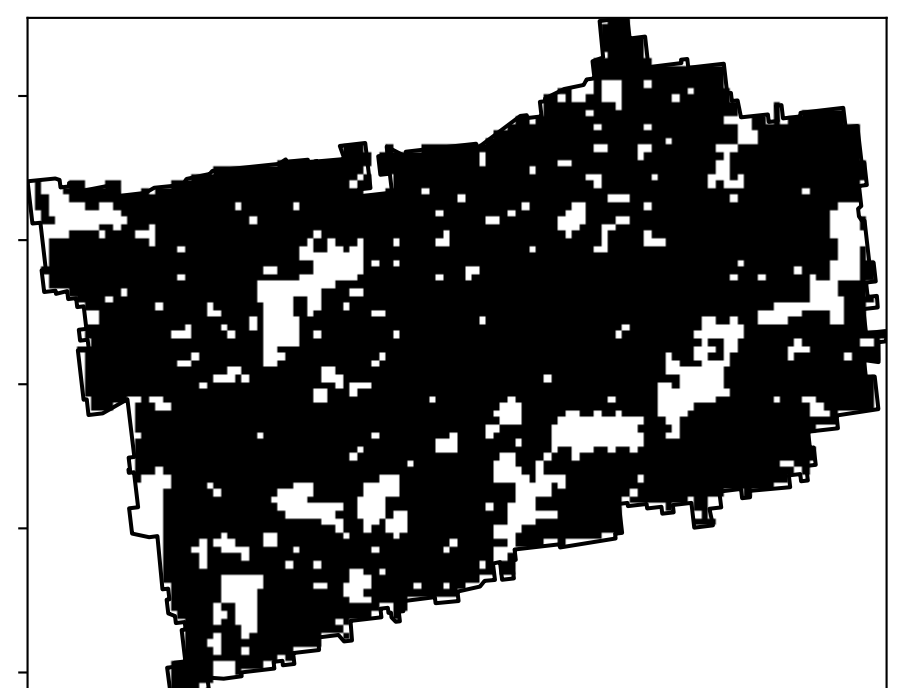


% Area protected from water erosion (>70%)



Area not protected  
5.1% of region  
(7,159 ha)  
Area protected  
94.9% of region  
(133,216 ha)

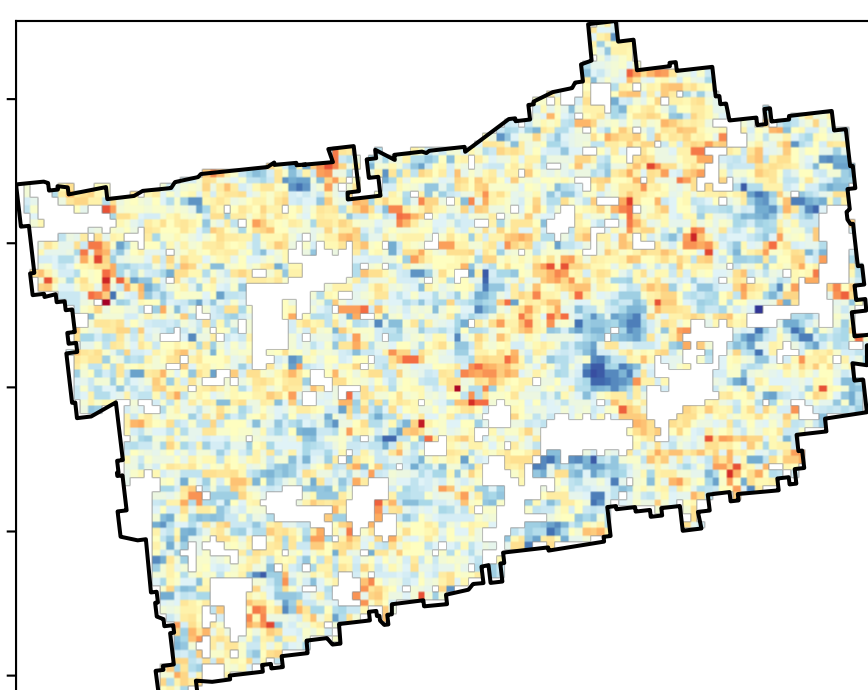
% Area protected from wind erosion (>50%)



Area protected  
100.0% of region  
(140,375 ha)

Total Vegetation Cover Anomaly [%]

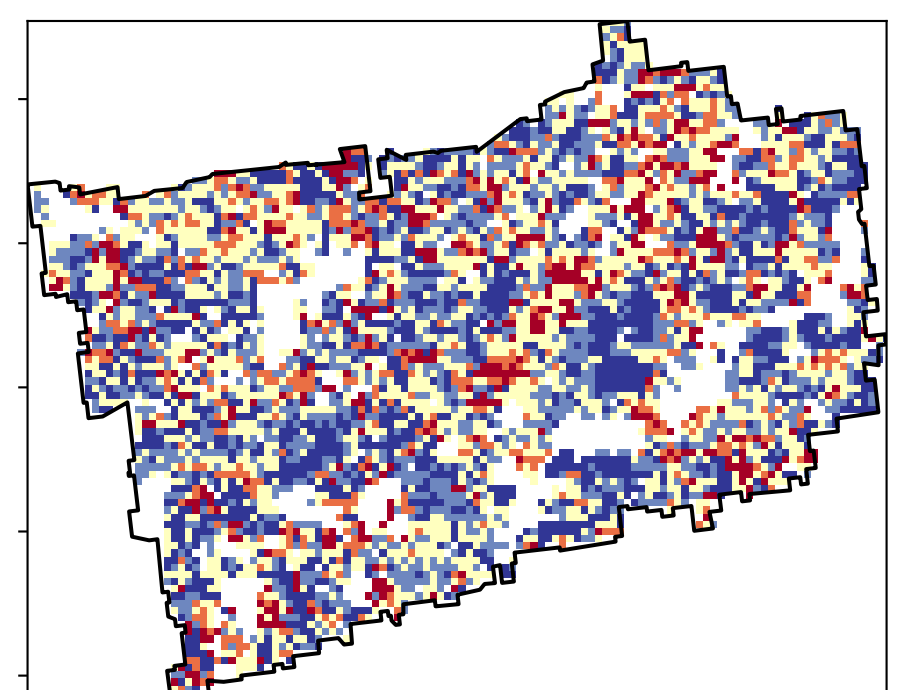
Anomaly show how many percentage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



20  
10  
0  
-10  
-20

Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



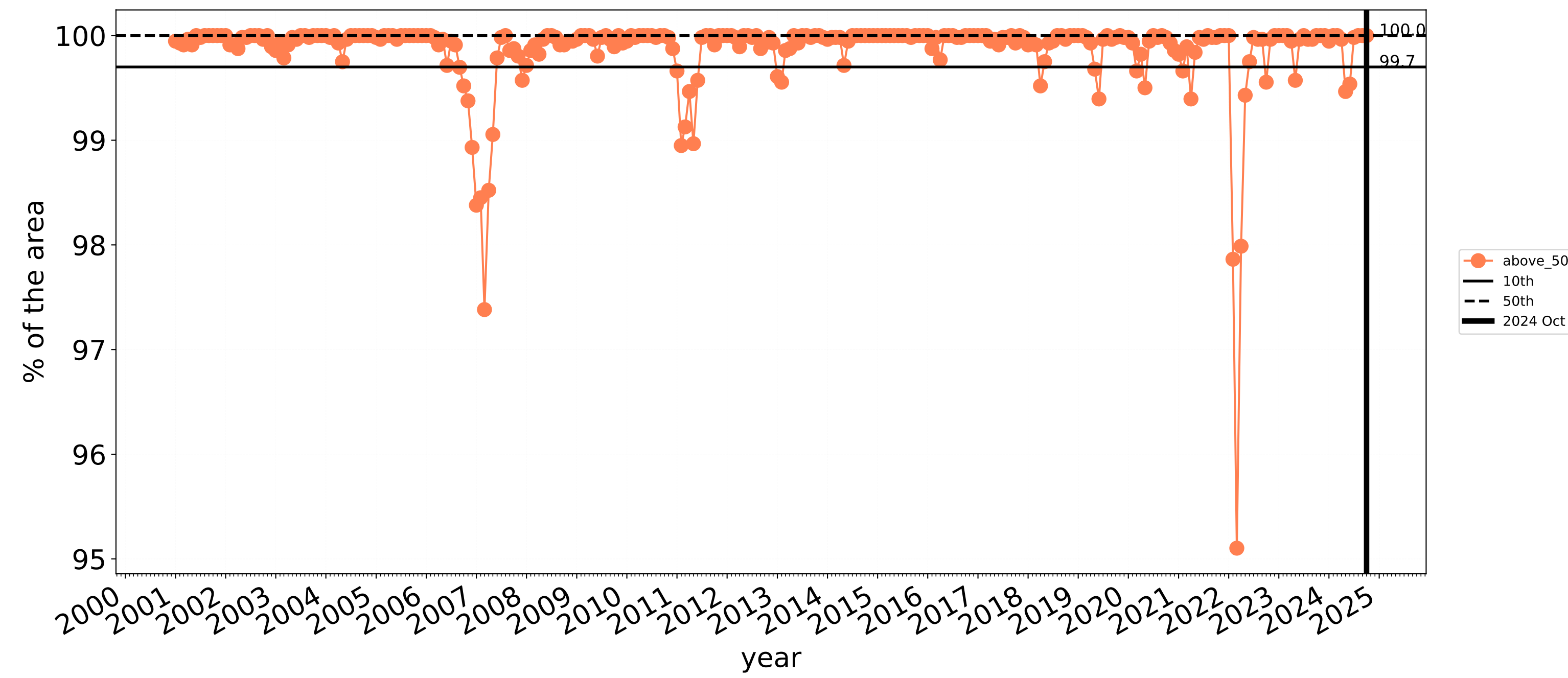
10  
8-9  
4-7  
2-3  
1



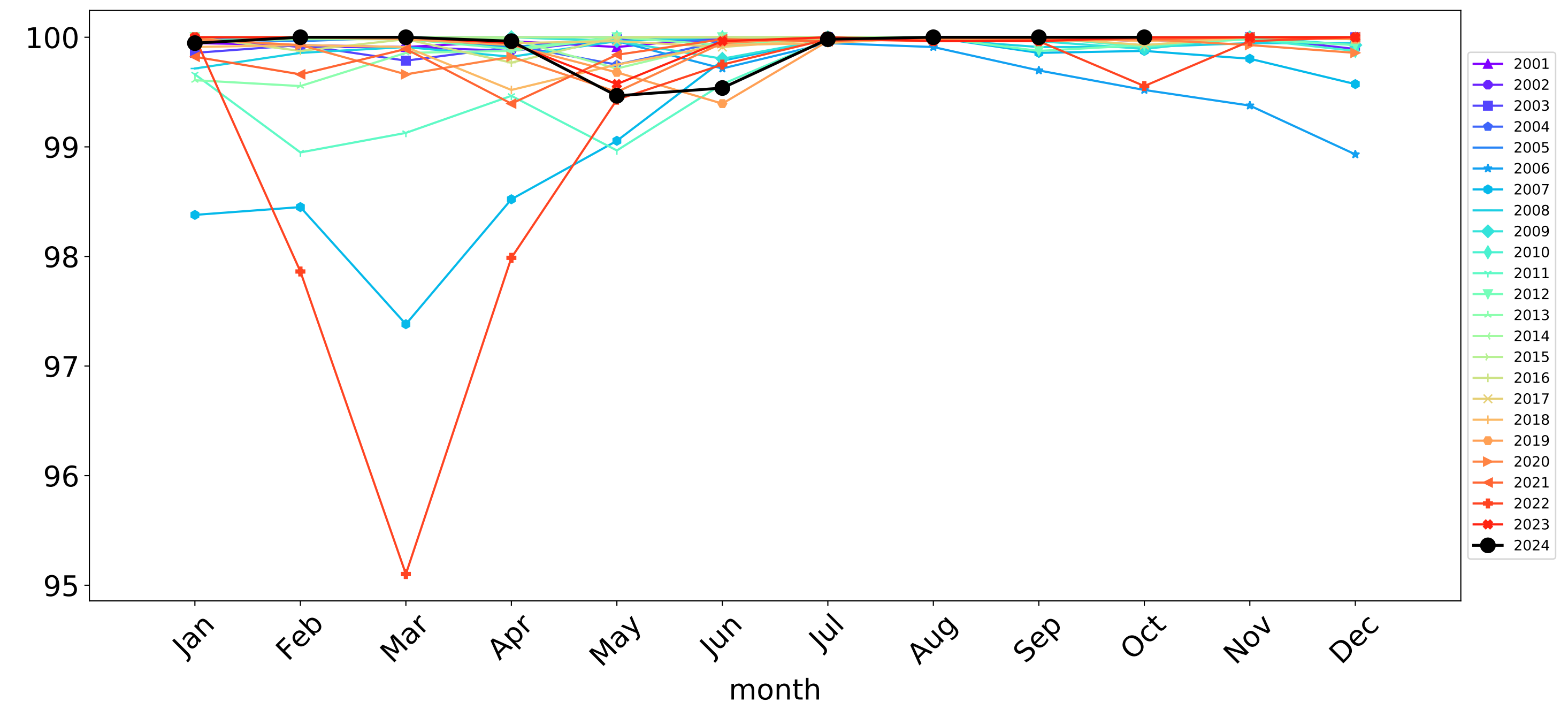


# Agriculture timeseries

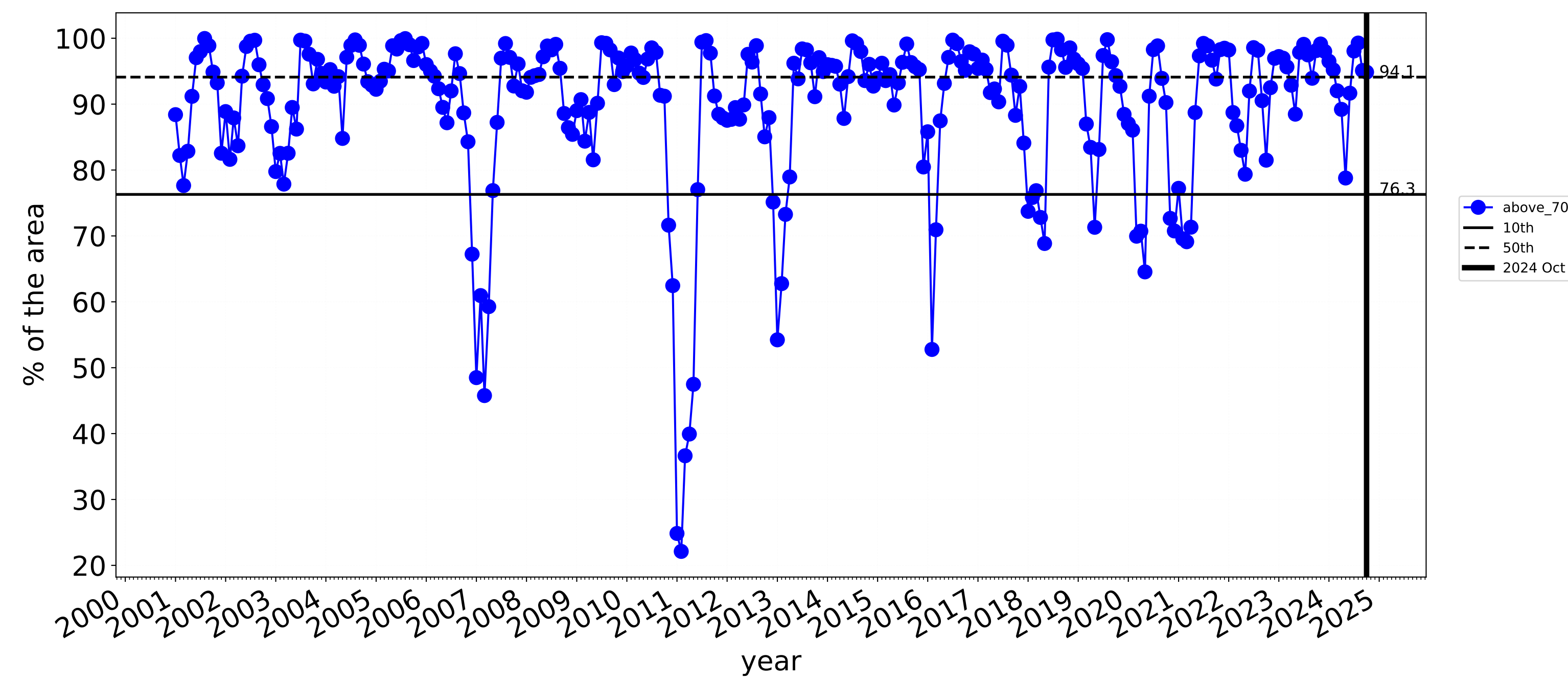
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



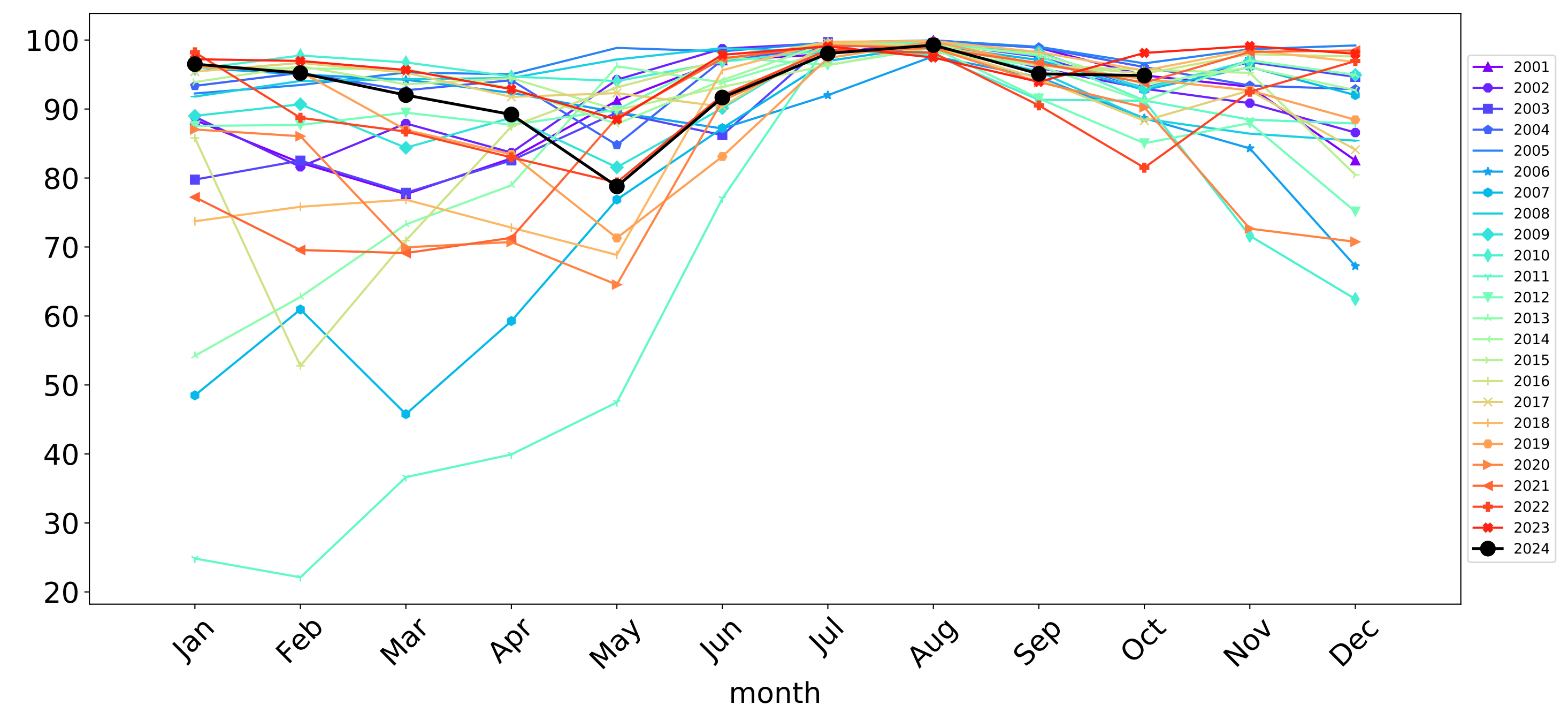
Wind erosion historical monthly area protected (Total Veg Cov >50%)



Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



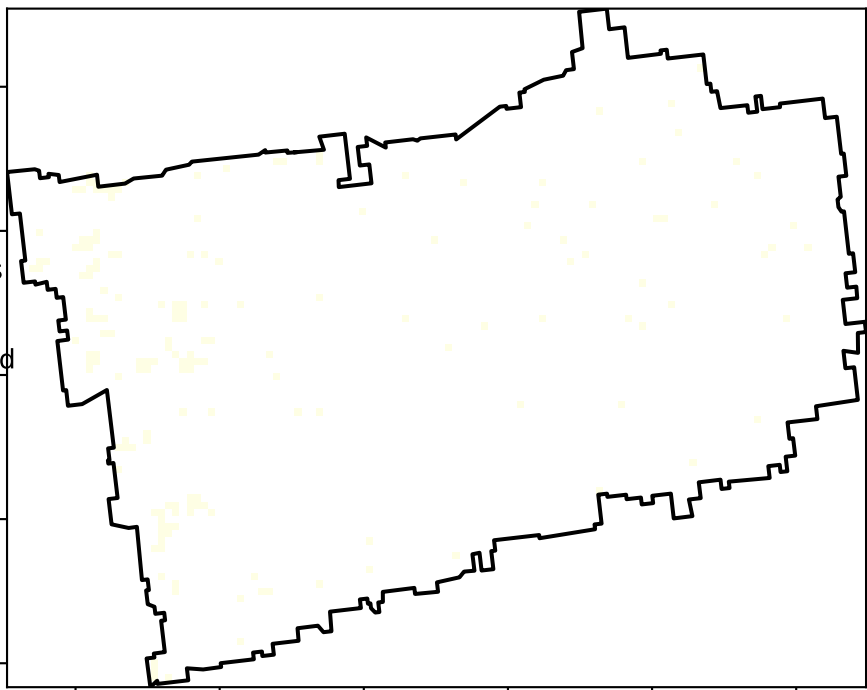
Water erosion historical monthly area protected (Total Veg Cov>70%)



Grazing

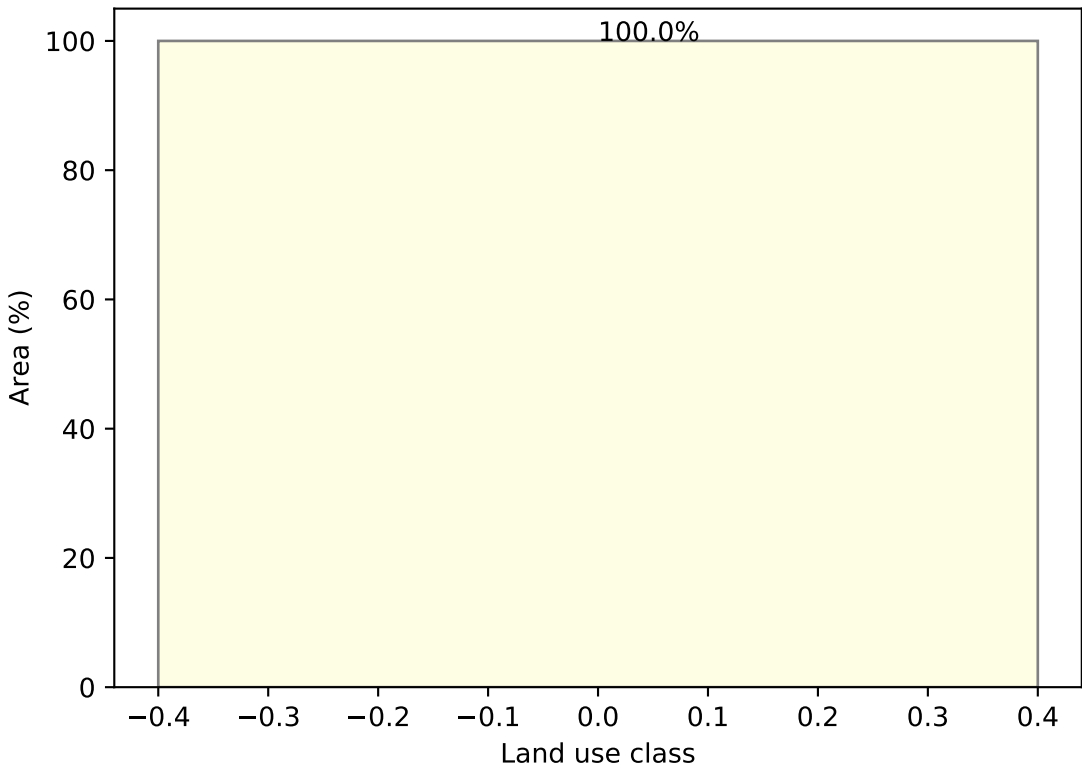
Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018)  
Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

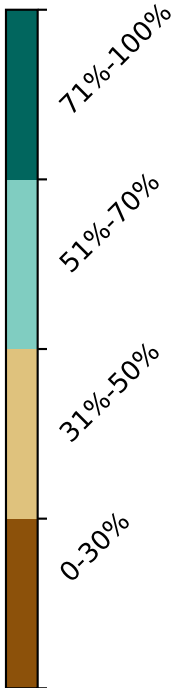
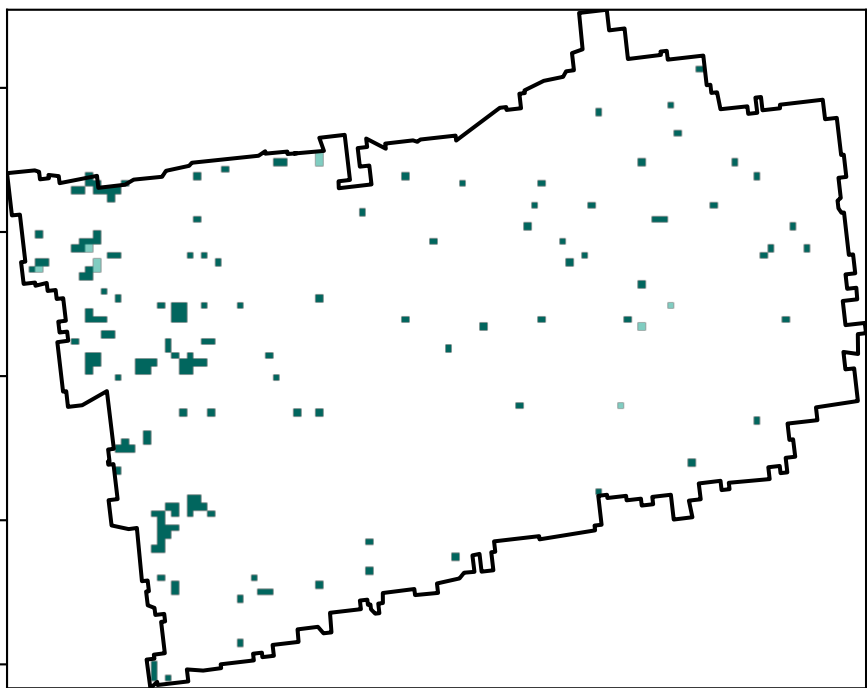


1 Agriculture - Grazing - Non forest

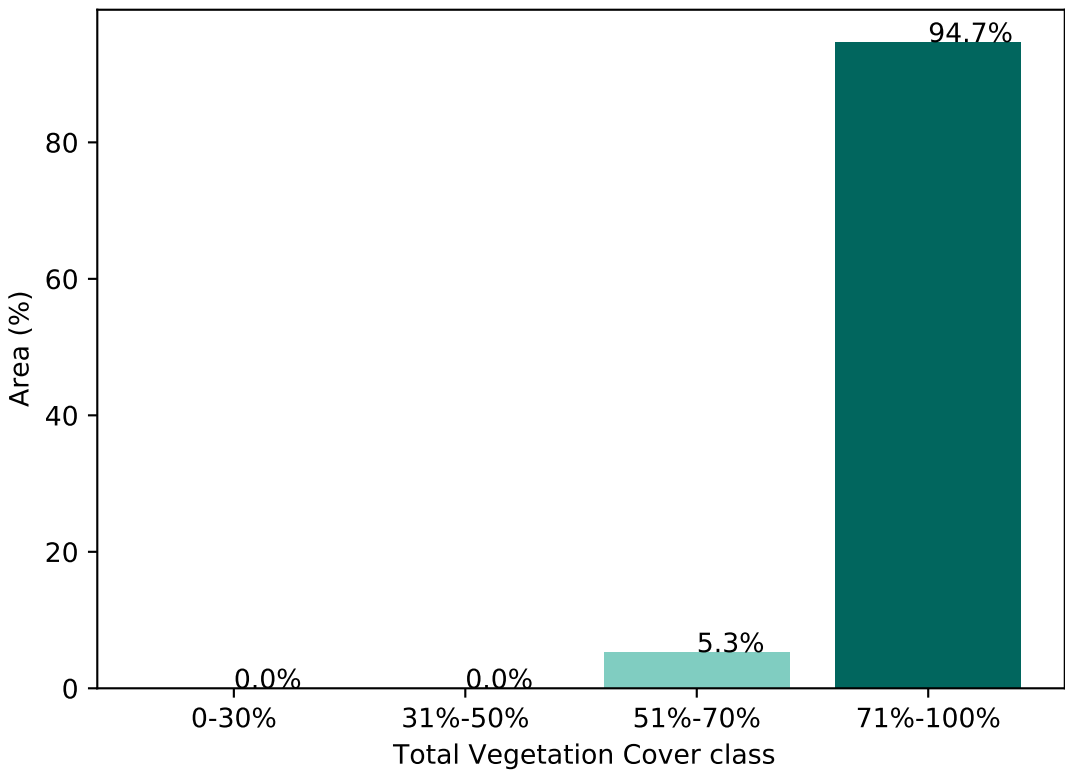
Proportion of each land class in area



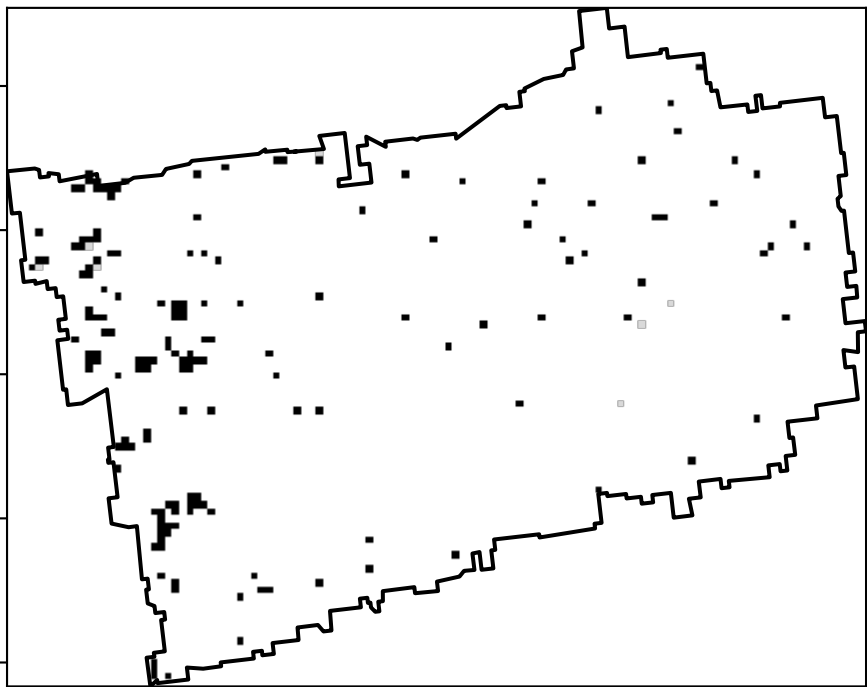
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

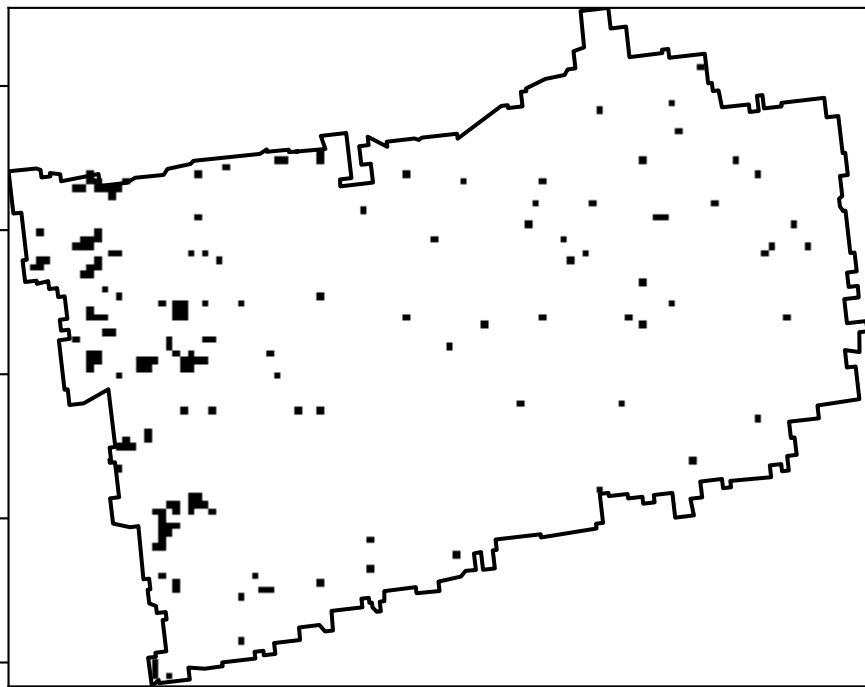


% Area protected from water erosion (>70%)



Area not protected  
5.3% of region  
(227 ha)  
Area protected  
94.7% of region  
(4,048 ha)

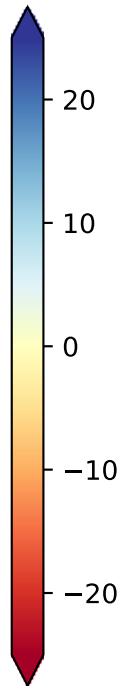
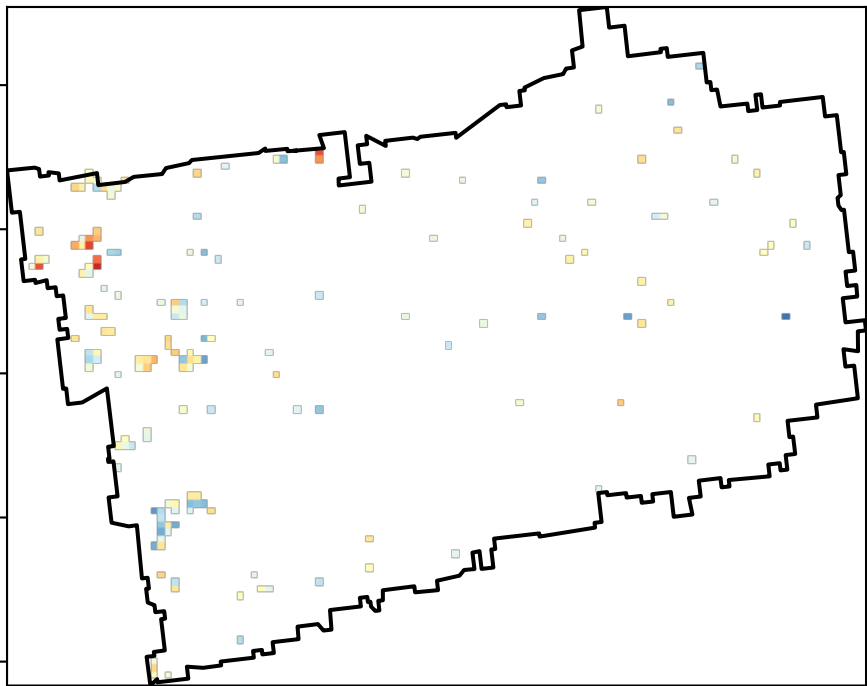
% Area protected from wind erosion (>50%)



Area protected  
100.0% of region  
(4,275 ha)

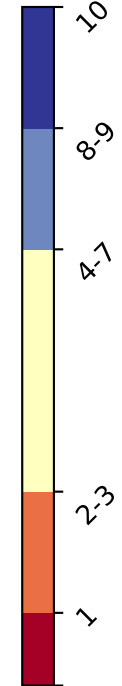
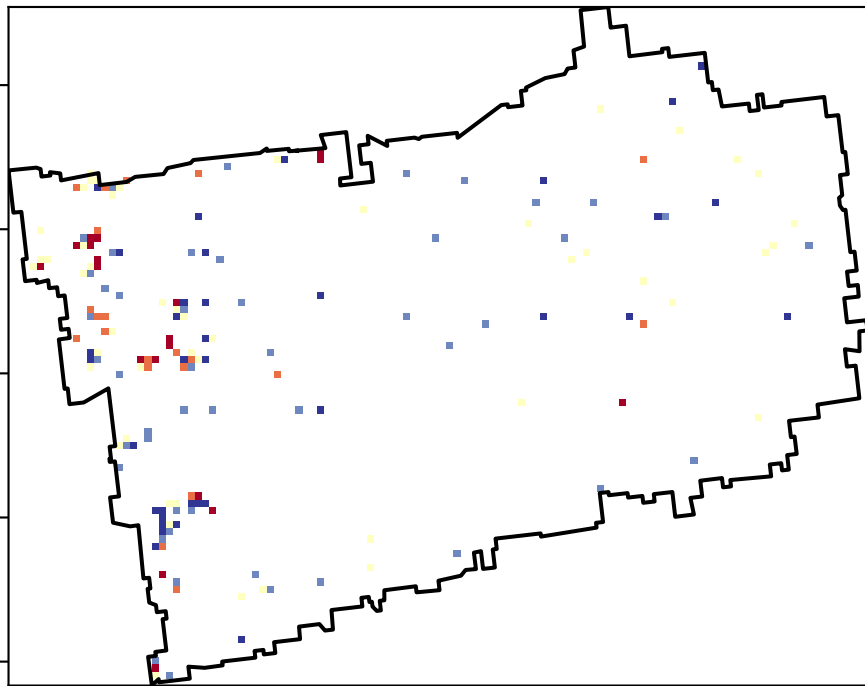
Total Vegetation Cover Anomaly [%]

Anomaly show how many percentage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



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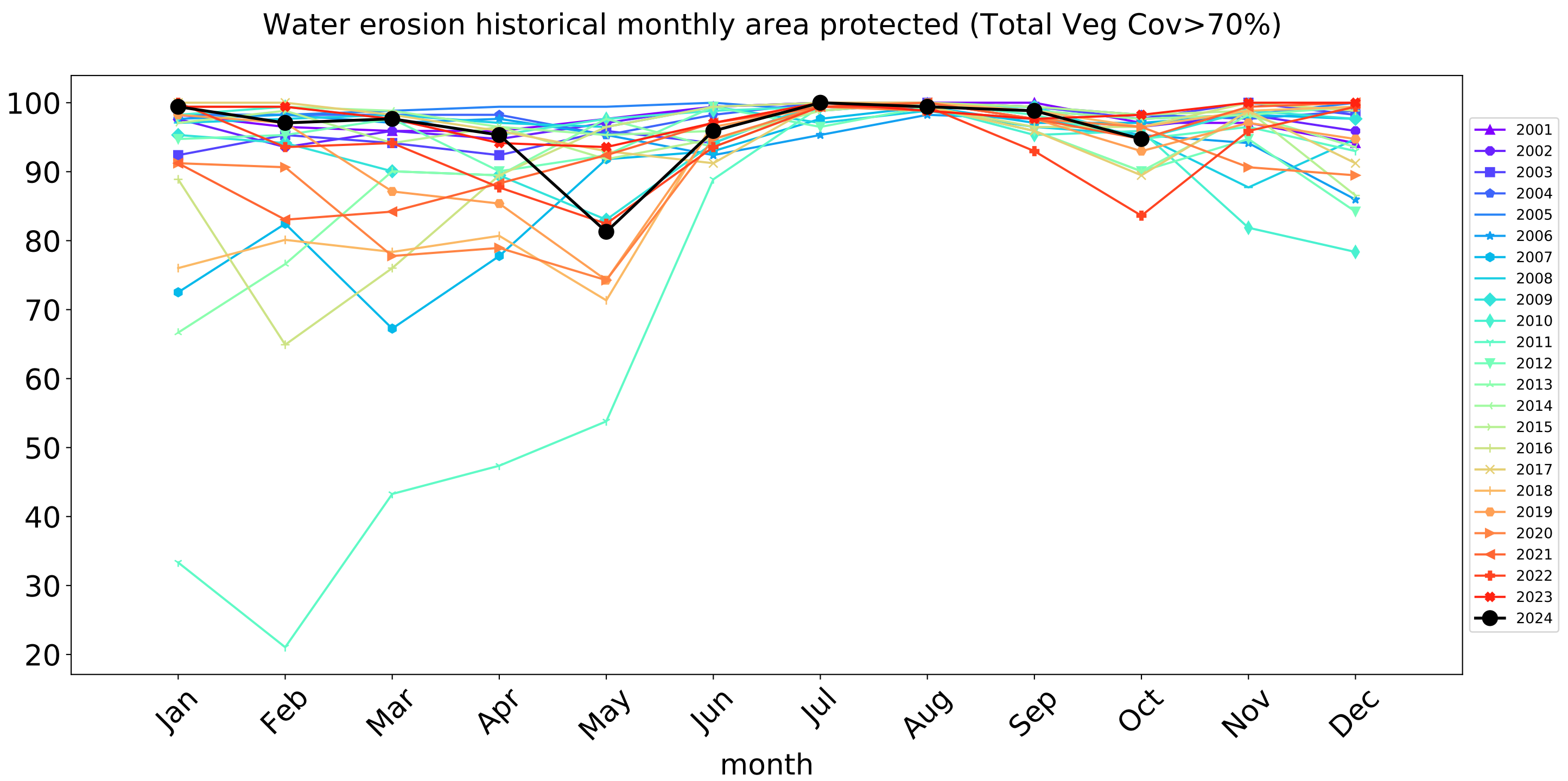
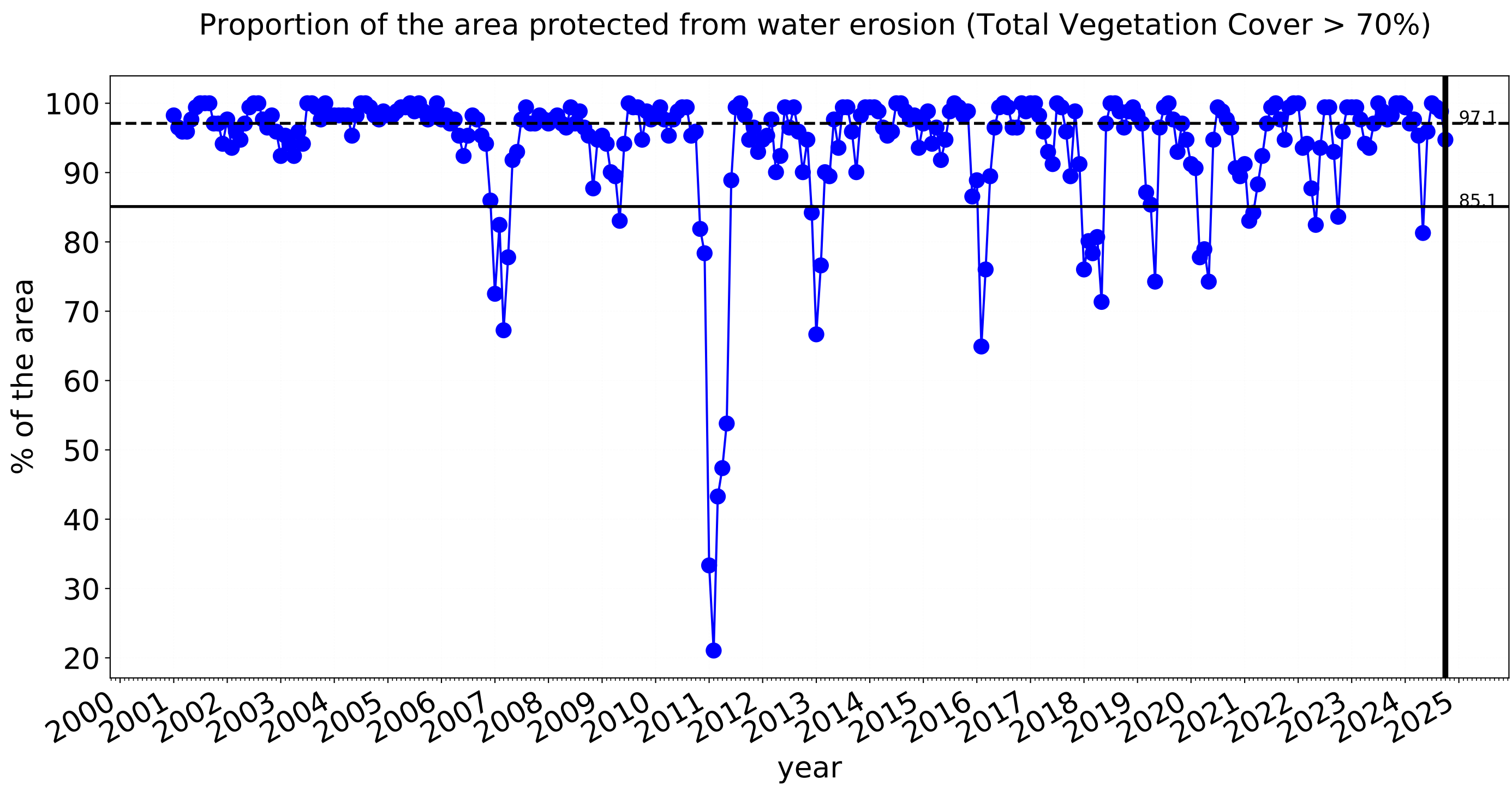
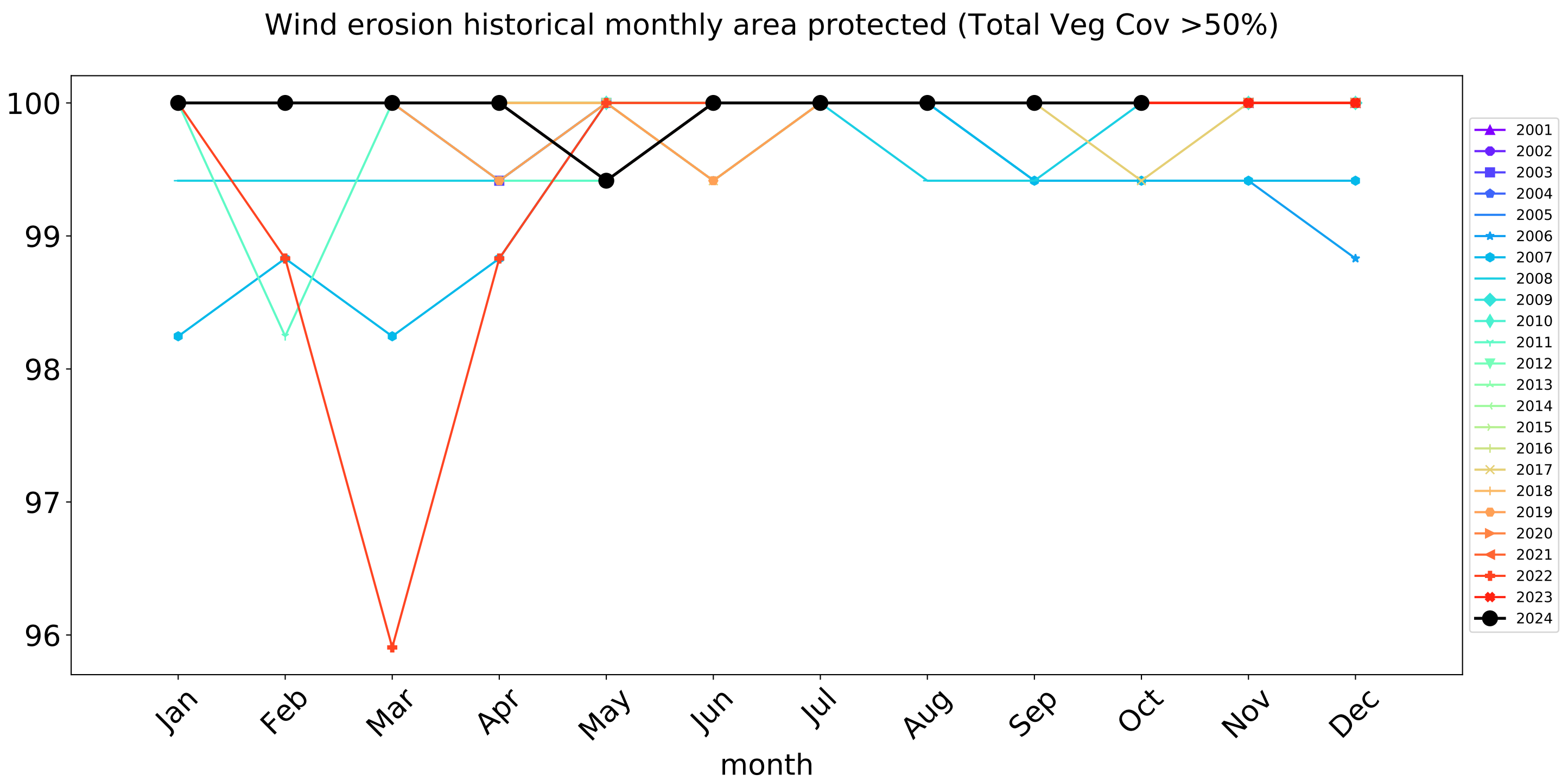
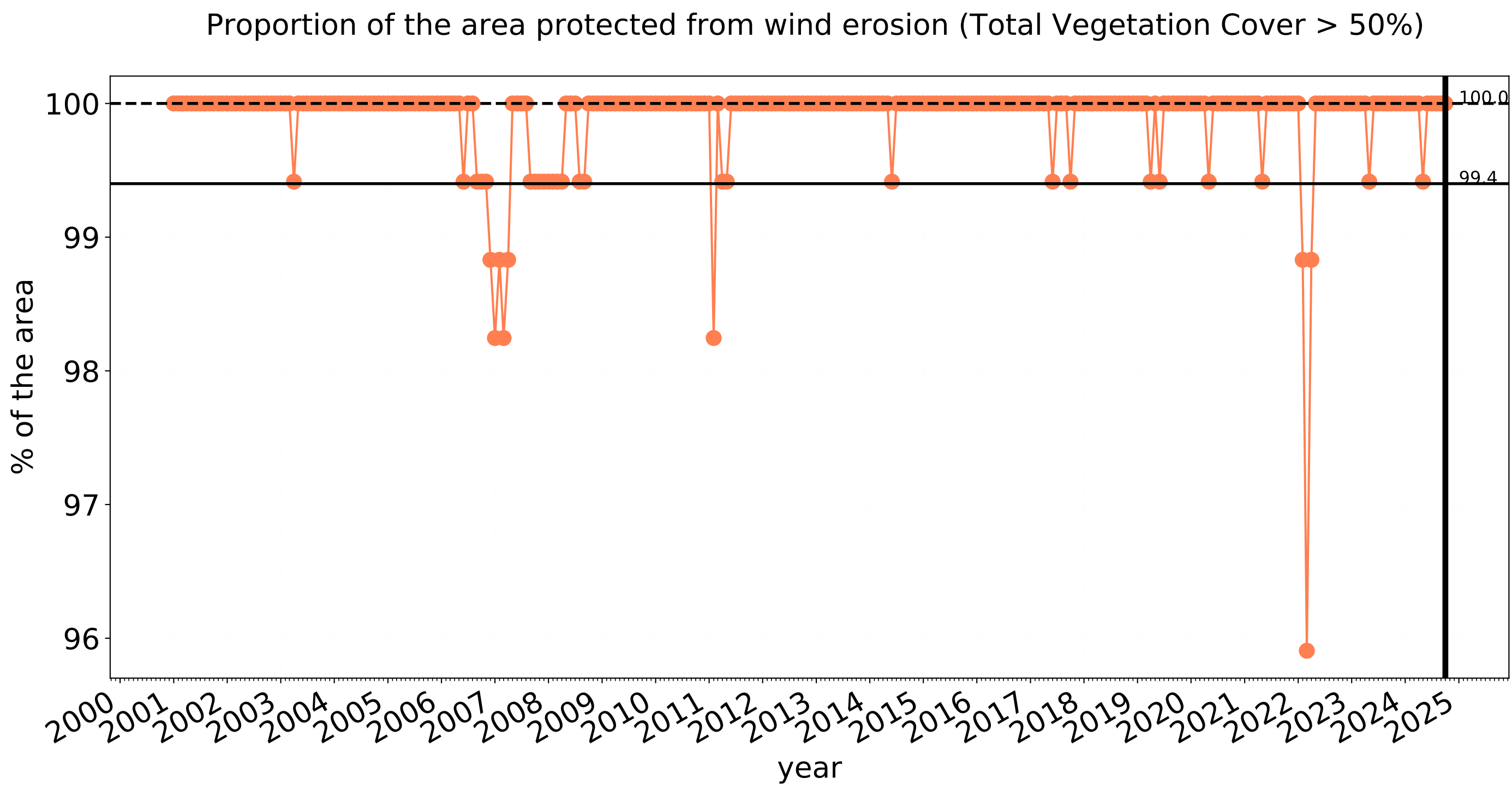
Australian Government

National  
Landcare  
Programme





Grazing timeseries



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Ecosystem Research Infrastructure



National  
Landcare  
Programme



Grazing non forest

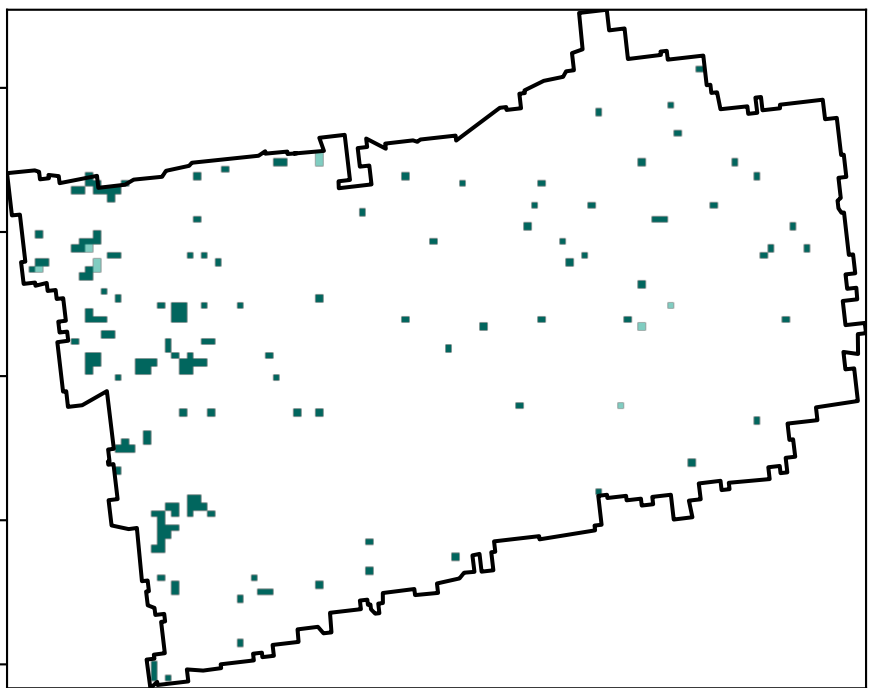
Land use and forest cover

Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)

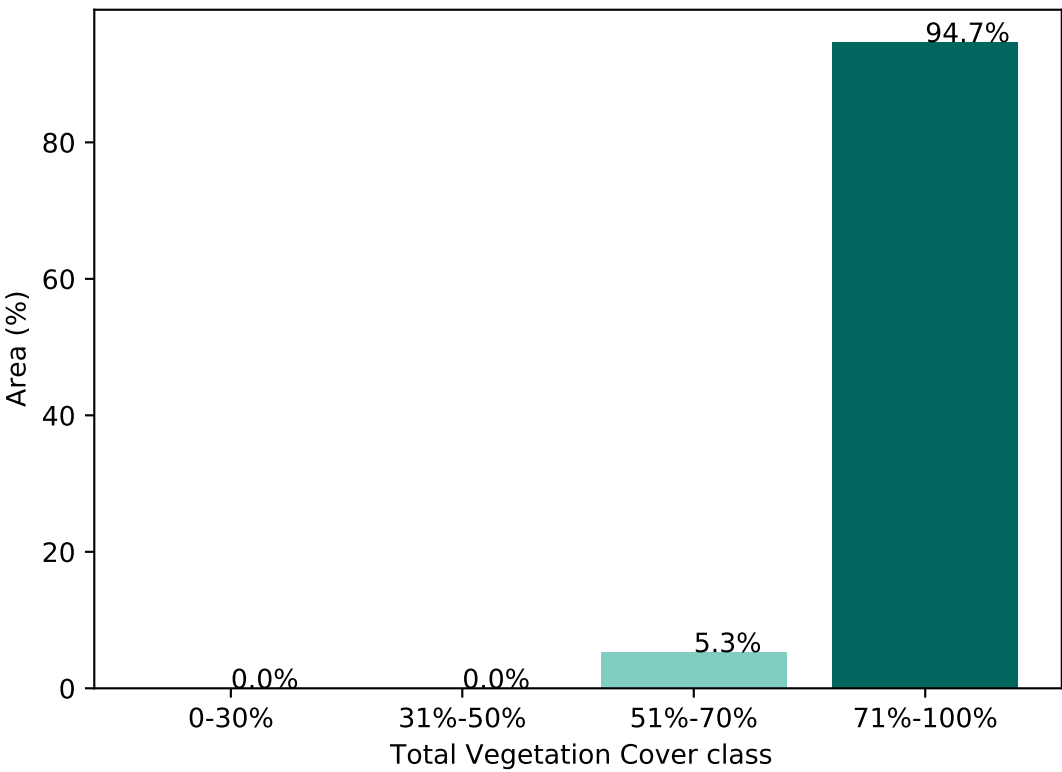


1 Agriculture - Grazing - Non forest

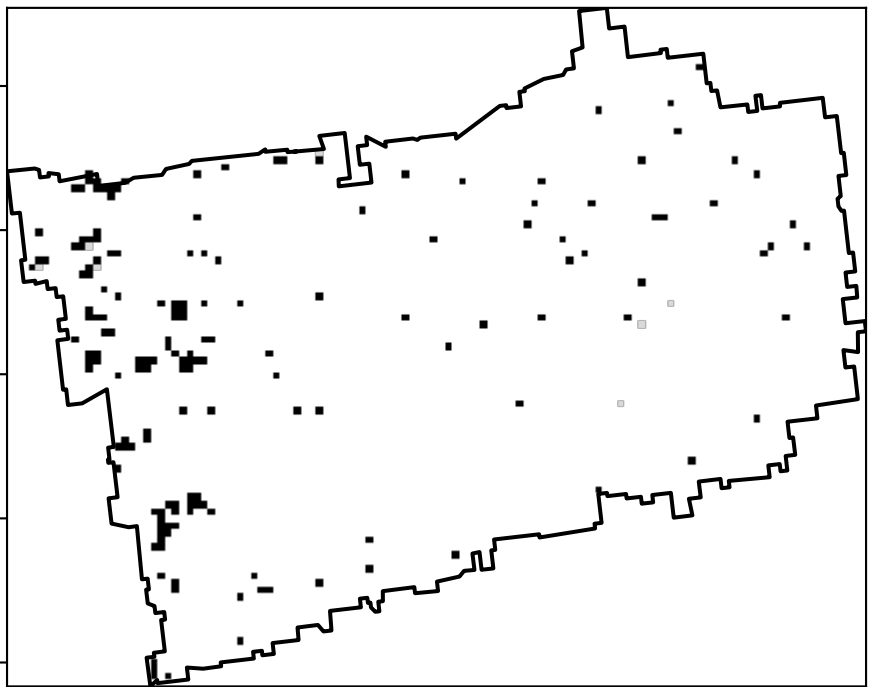
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

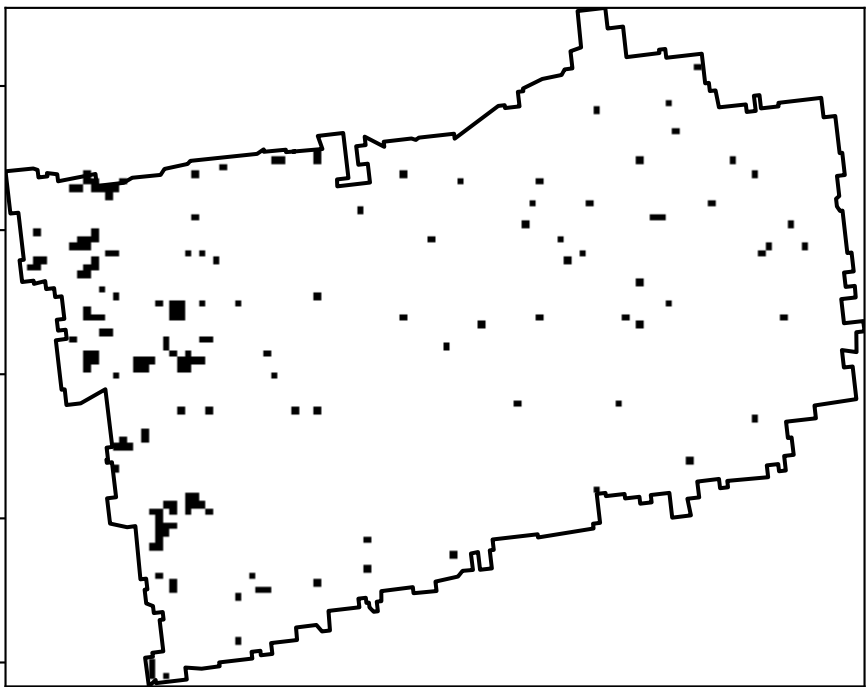


% Area protected from water erosion (>70%)



Area not  
protected  
5.3% of  
region  
(227 ha)  
Area  
protected  
94.7% of  
region  
(4,048 ha)

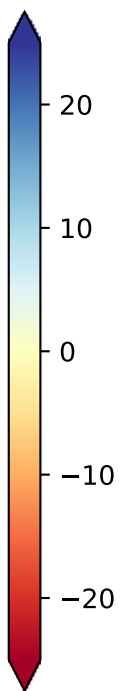
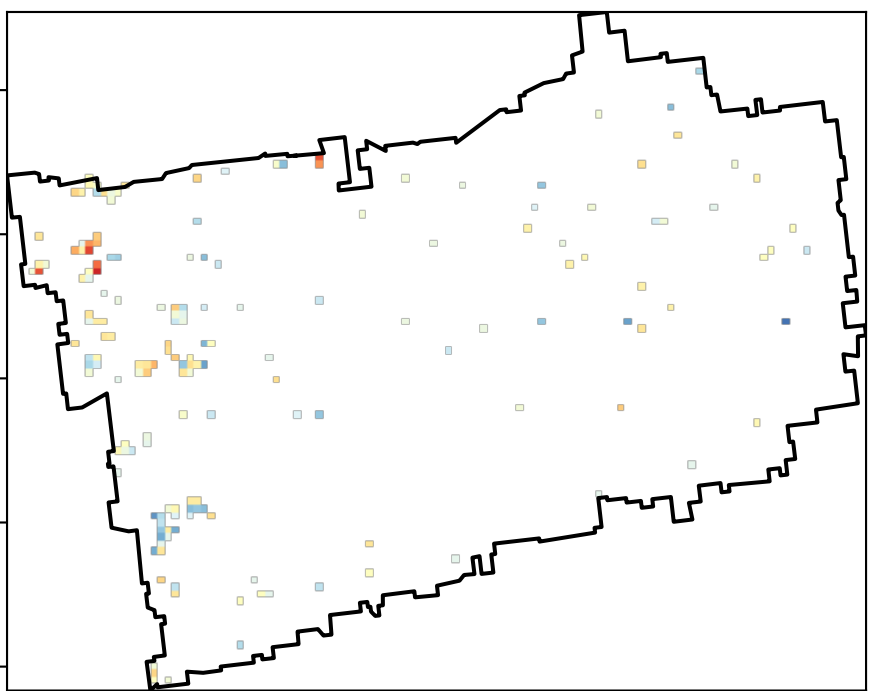
% Area protected from wind erosion (>50%)



Area  
protected  
100.0% of  
region  
(4,275 ha)

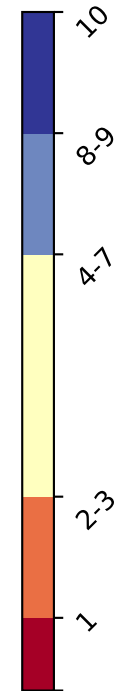
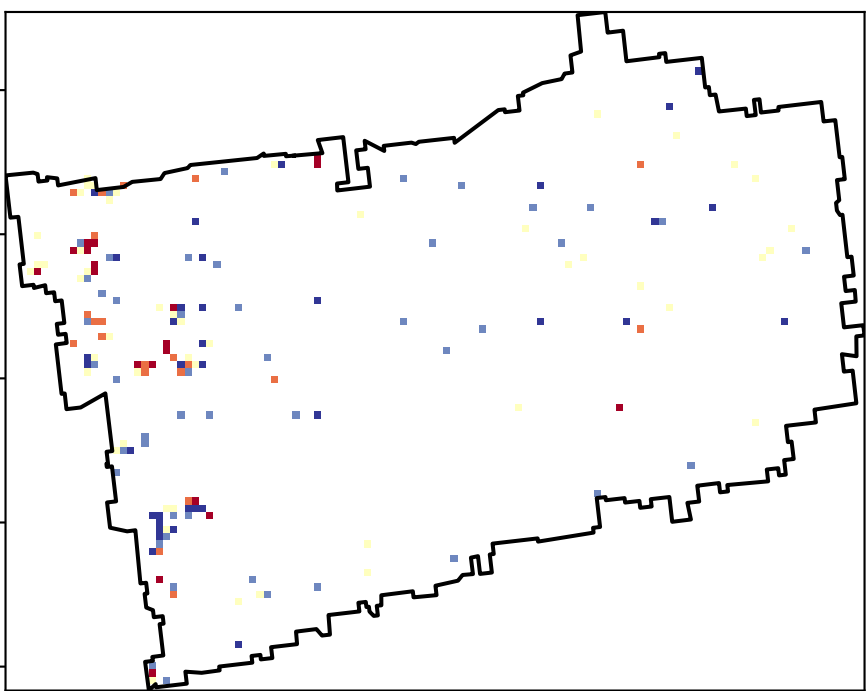
Total Vegetation Cover Anomaly [%]

Anomaly show how  
many percentage  
points each  
pixel is from  
the mean. That  
is, red pixels  
are about 20%  
lower than the  
mean of that  
pixel. The mean  
is only for the  
month of the map  
using baseline  
from 2001 to  
2019.



Deciles show where the  
pixel value lies in the  
record, from highest to  
lowest, for that month.  
That is, red pixels are  
in the lowest 10% of  
records for that month of  
the map using baseline  
from 2001 to 2019.

Total Vegetation Cover Decile [%]



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Ecosystem Research Infrastructure



Australian Government

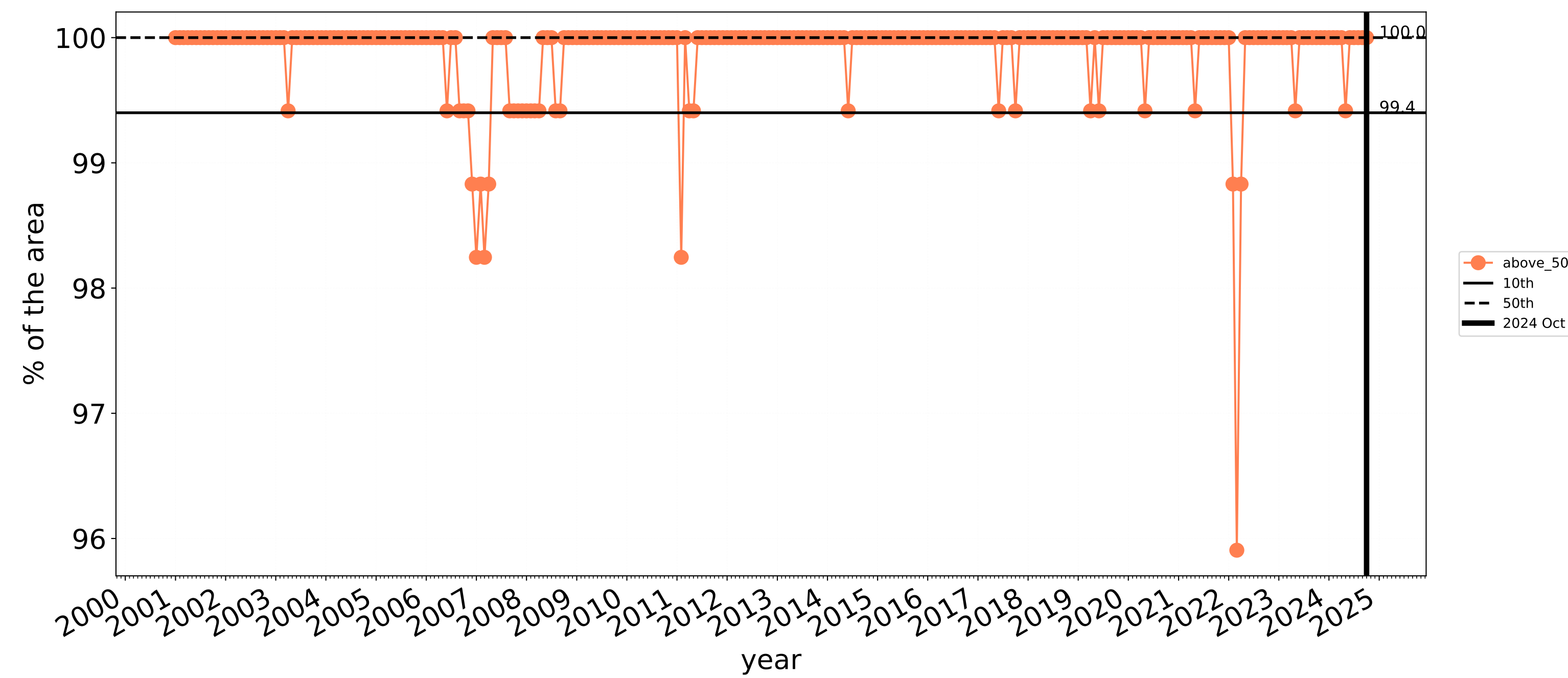
National  
Landcare  
Programme



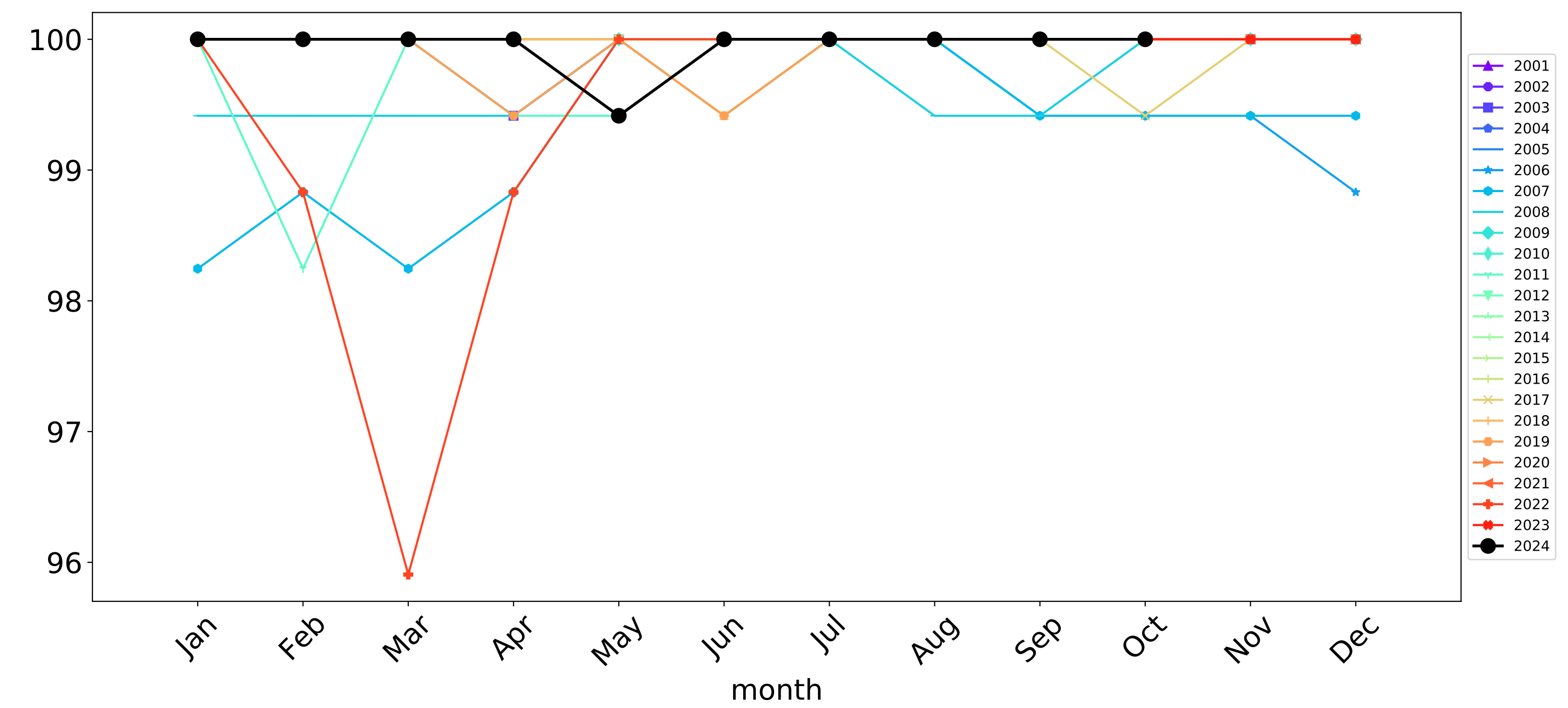


# Grazing non forest timeseries

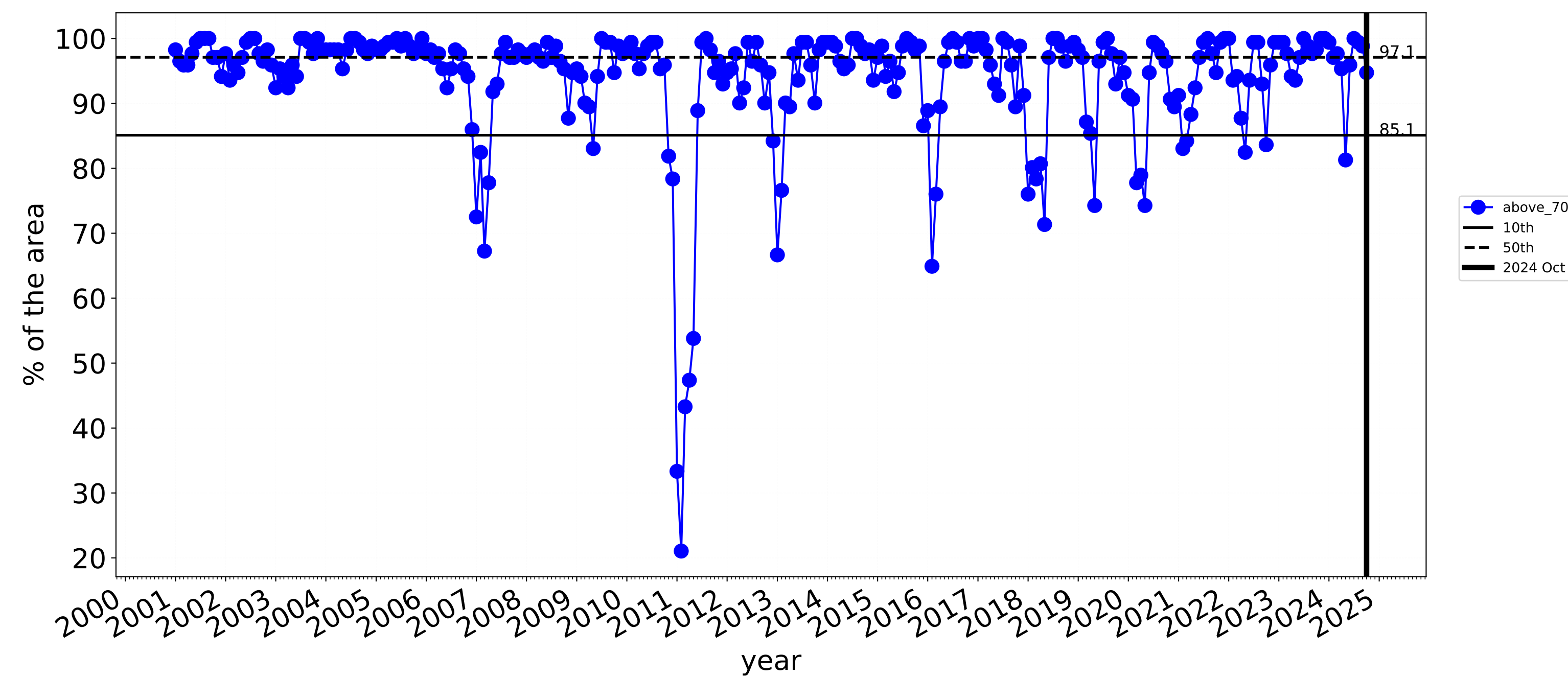
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



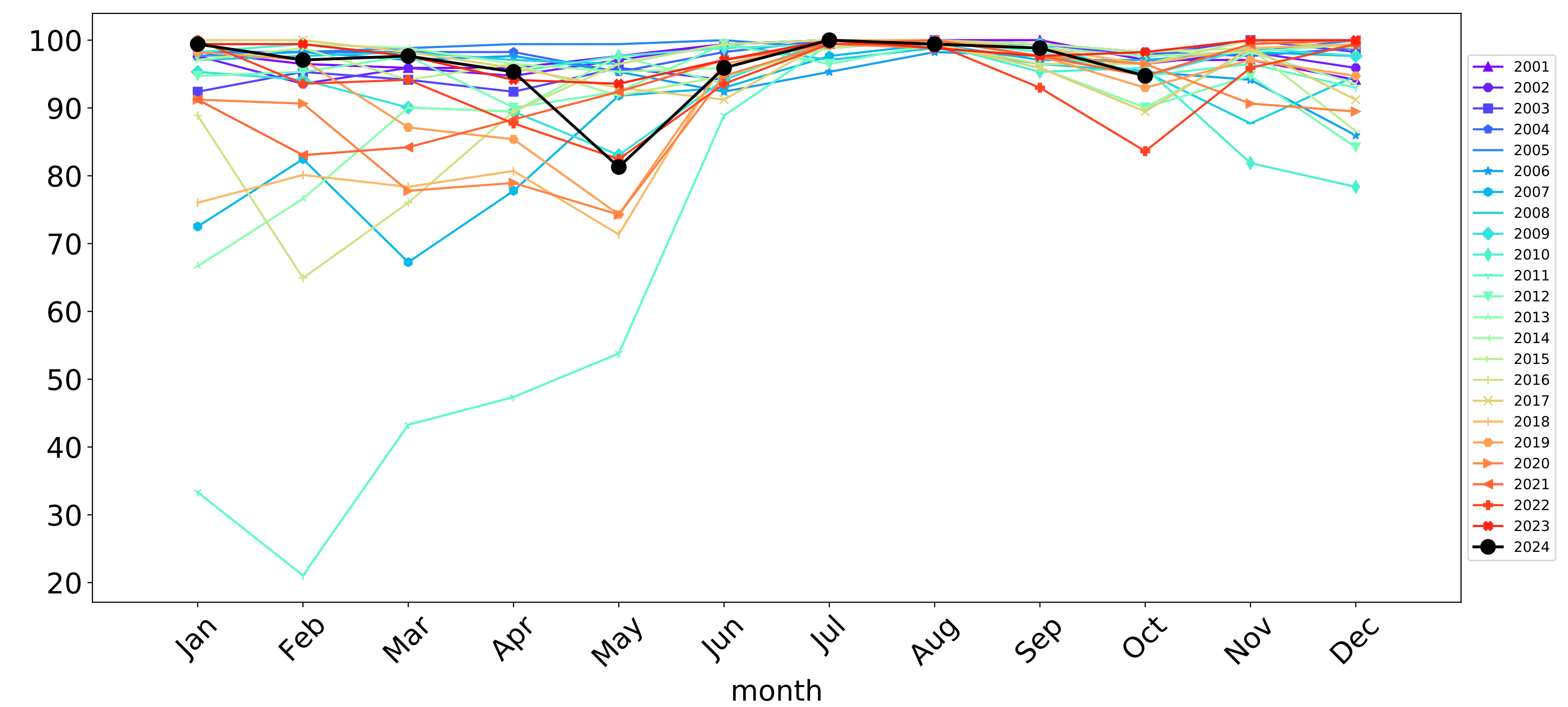
Wind erosion historical monthly area protected (Total Veg Cov >50%)



Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



Water erosion historical monthly area protected (Total Veg Cov>70%)



# Cropping

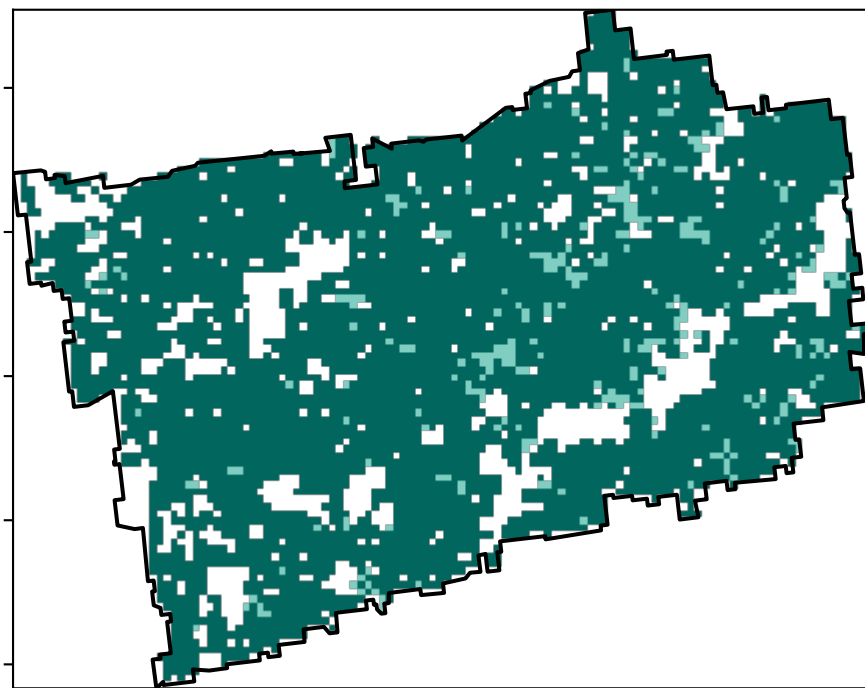
Land use and forest cover

Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)

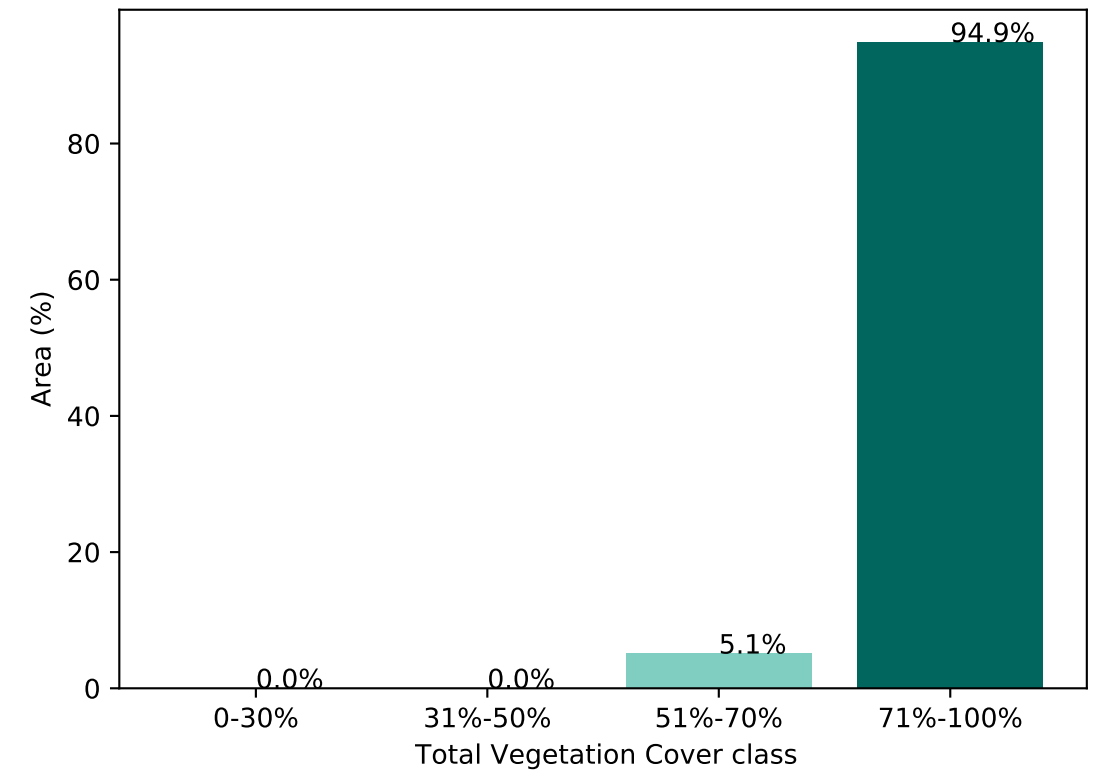


1 Agriculture - Cropping - Non-irrigated

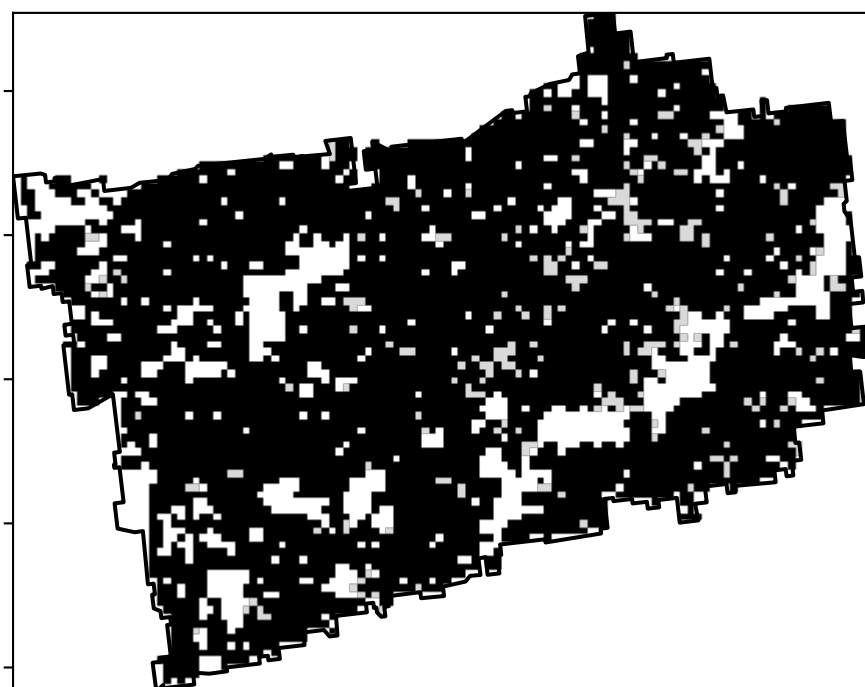
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

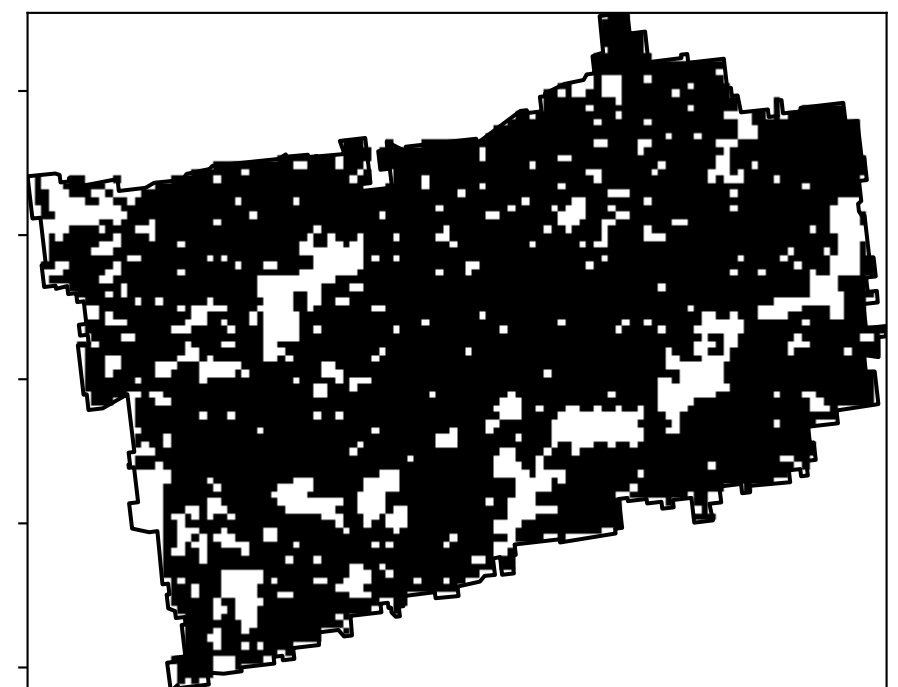


% Area protected from water erosion (>70%)



Area not protected  
5.1% of region  
(6,941 ha)  
Area protected  
94.9% of region  
(129,159 ha)

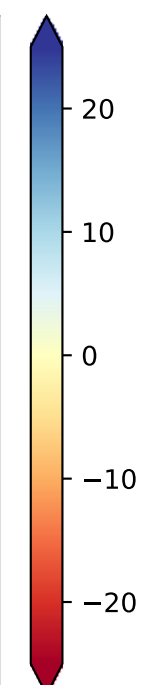
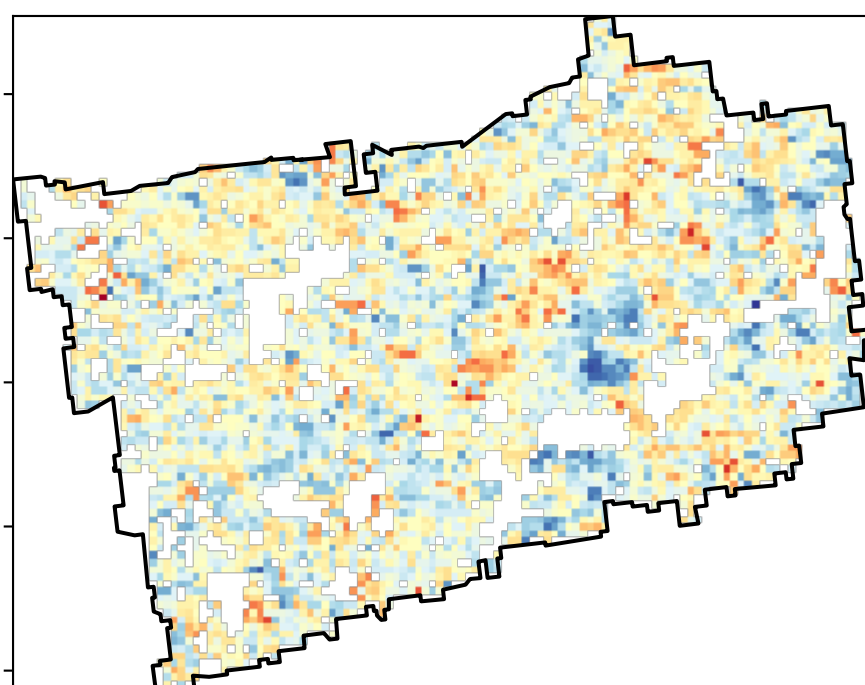
% Area protected from wind erosion (>50%)



Area protected  
100.0% of region  
(136,100 ha)

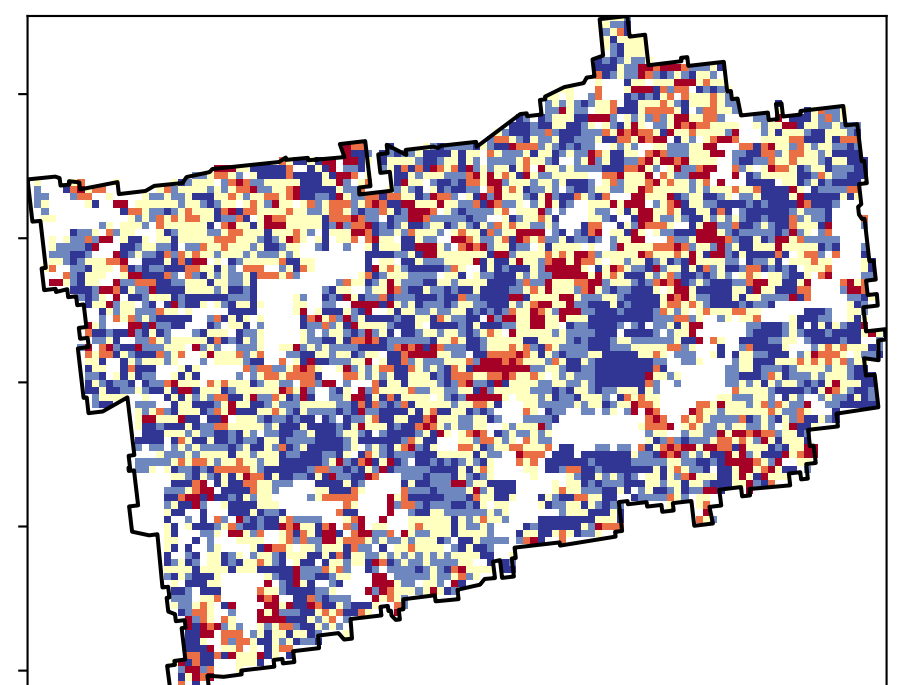
Total Vegetation Cover Anomaly [%]

Anomaly show how many percentage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



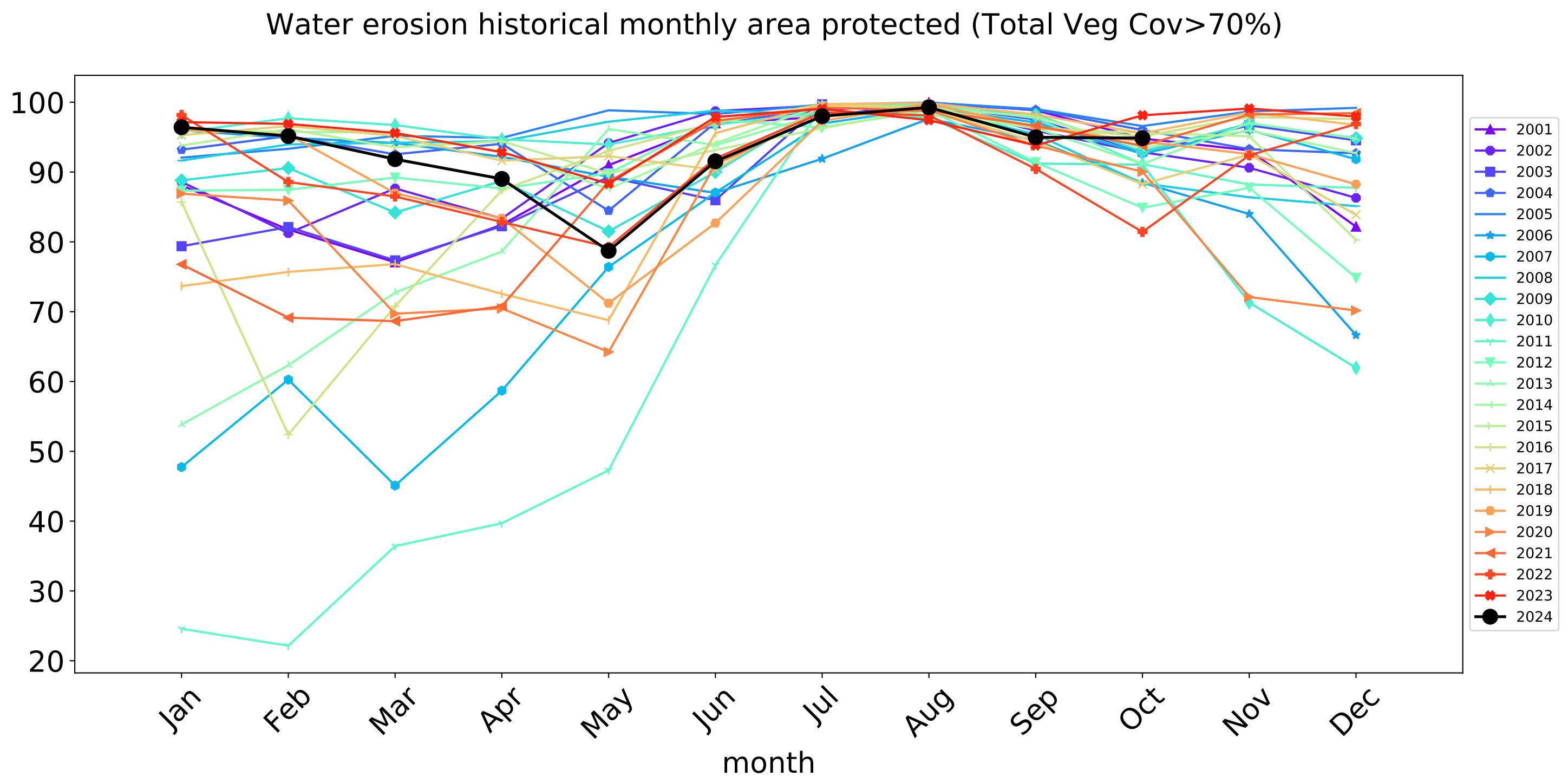
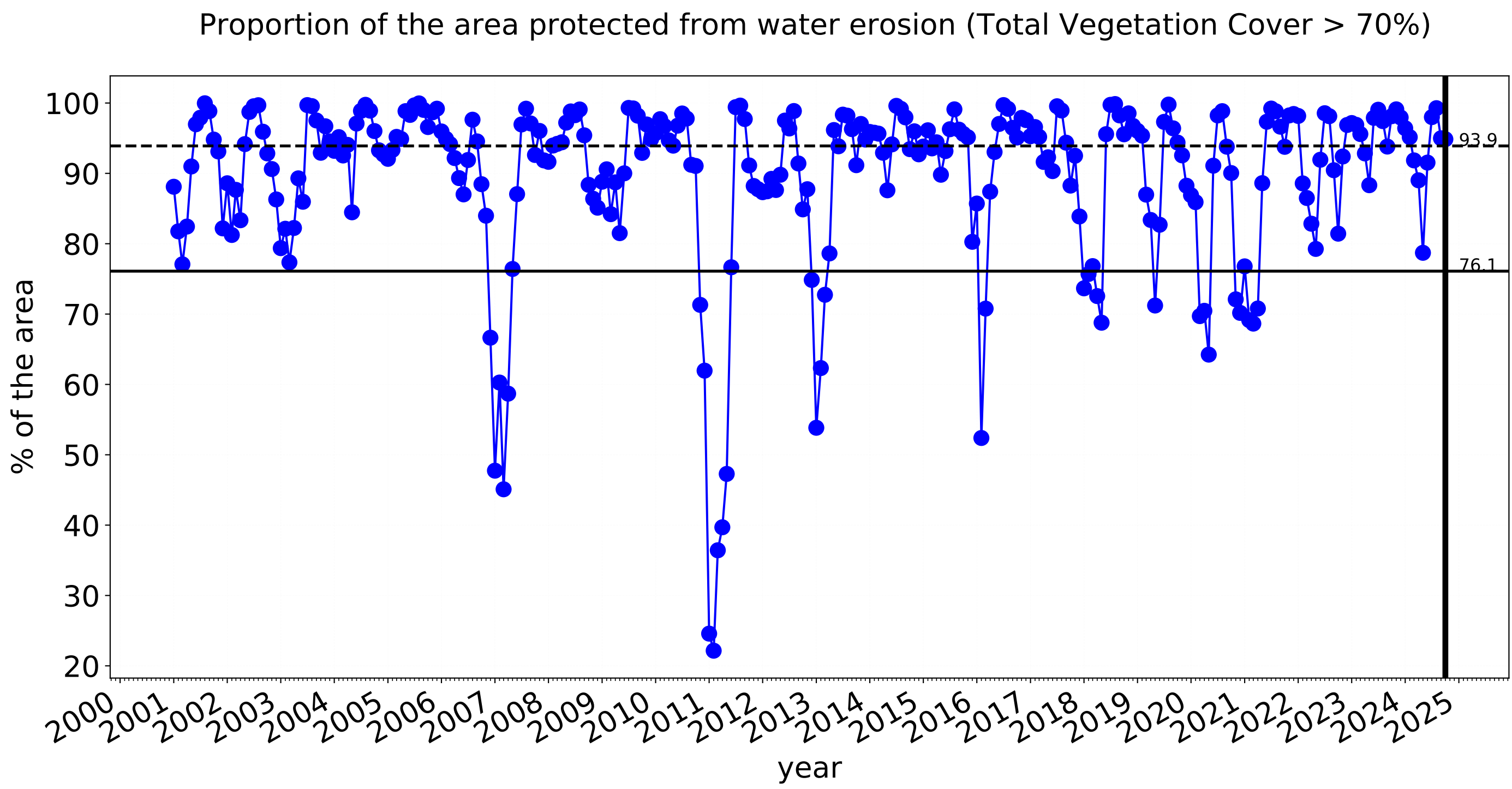
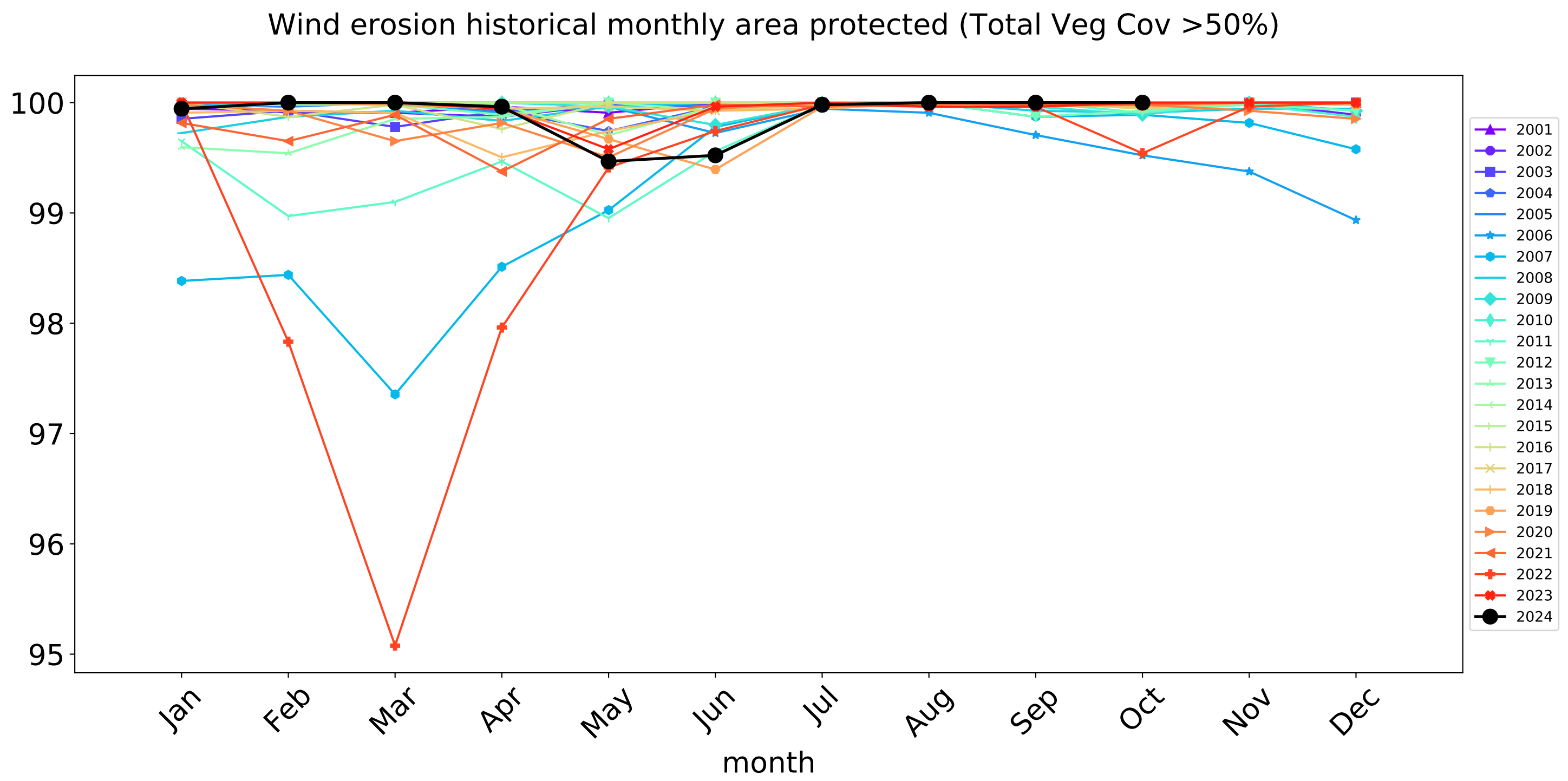
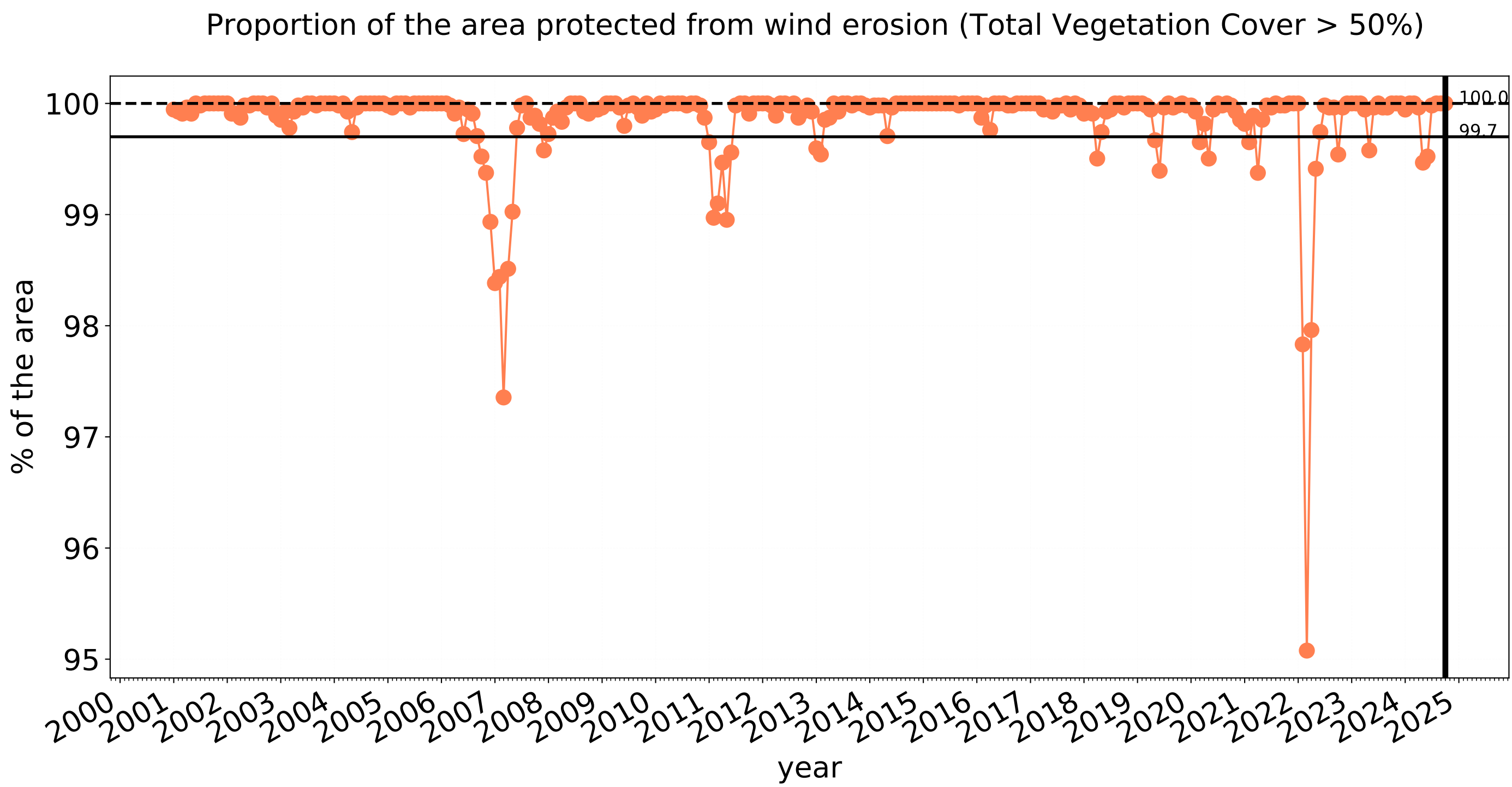
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]





Cropping timeseries

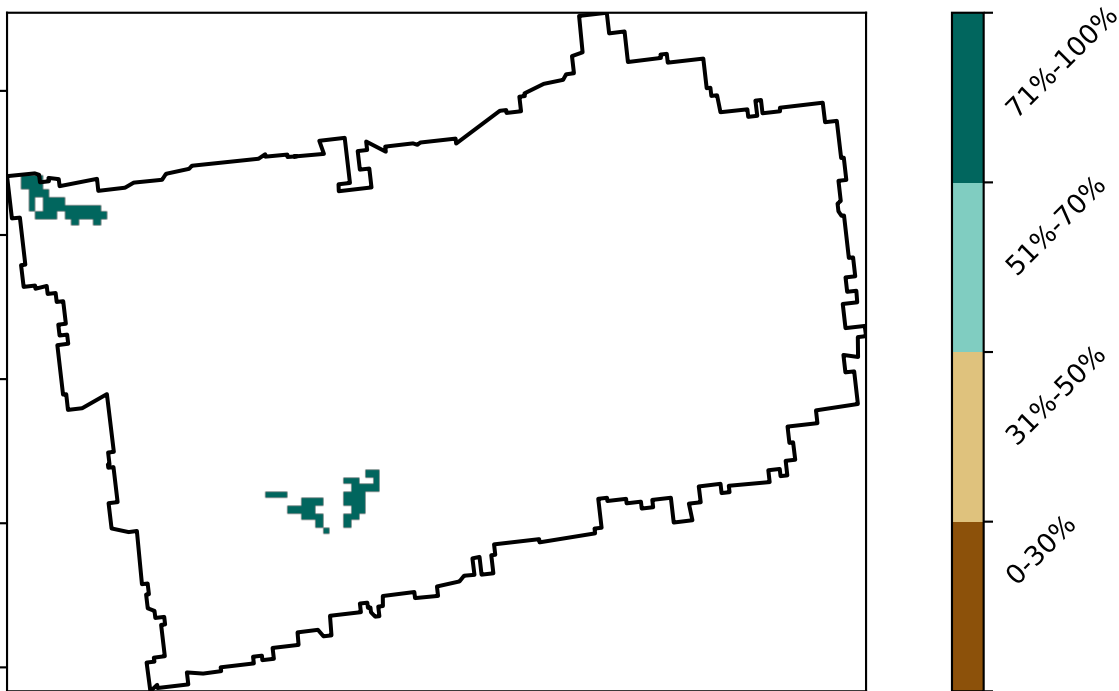


Production native forests and plantation forests

Land use and forest cover



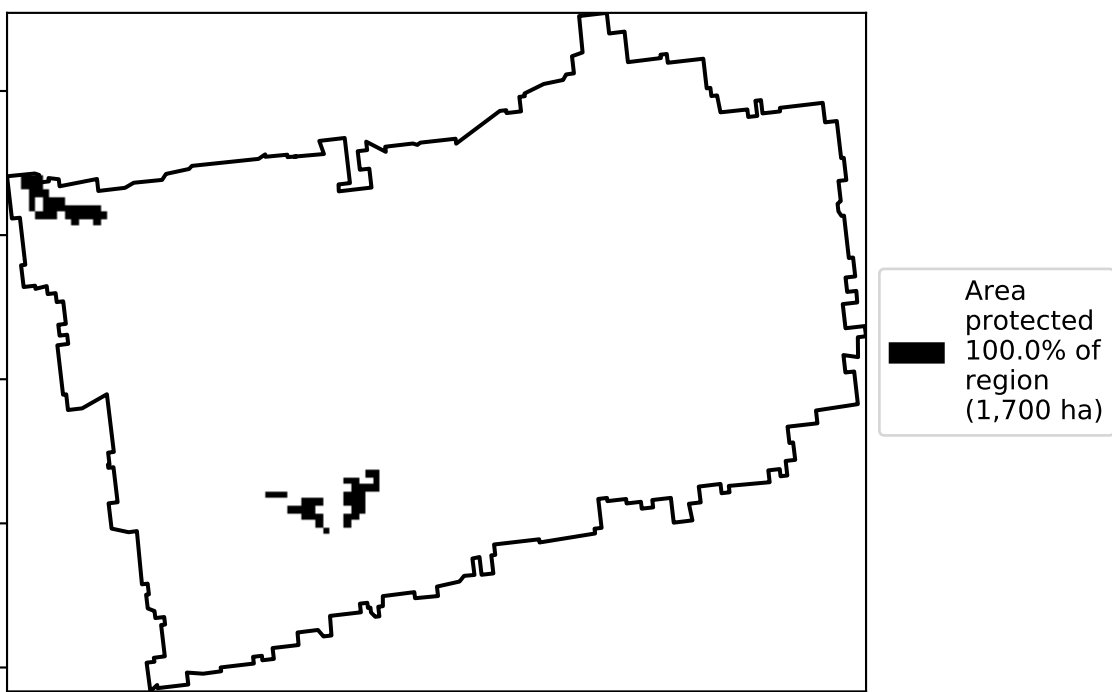
Total Vegetation Cover [%]



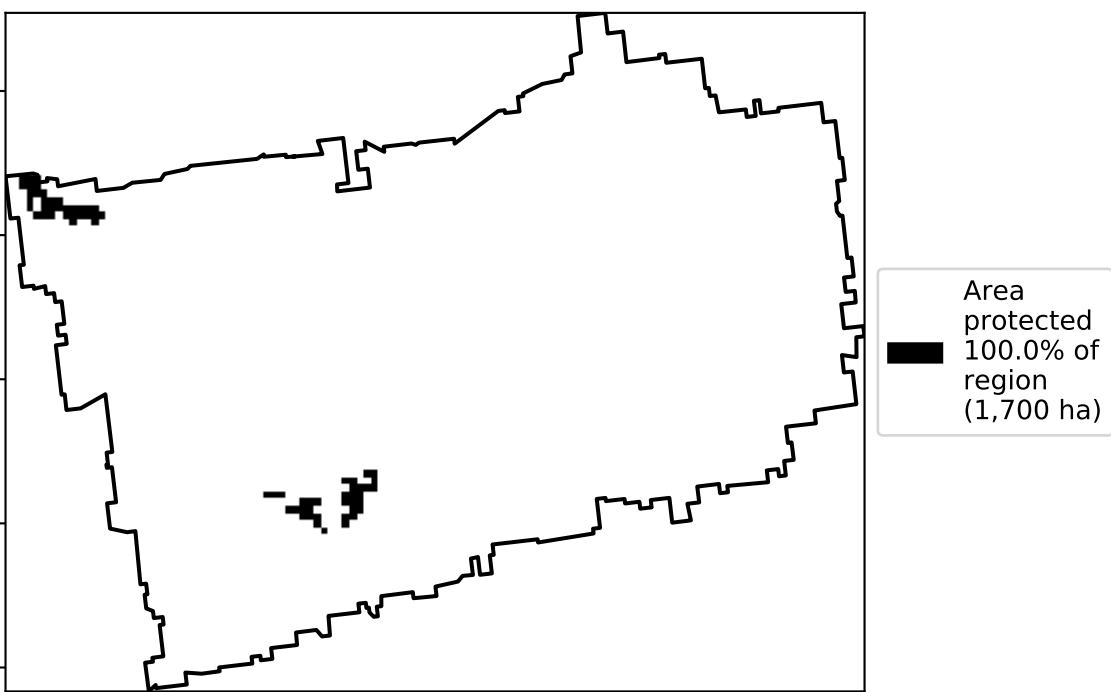
Proportion of vegetation cover class in area



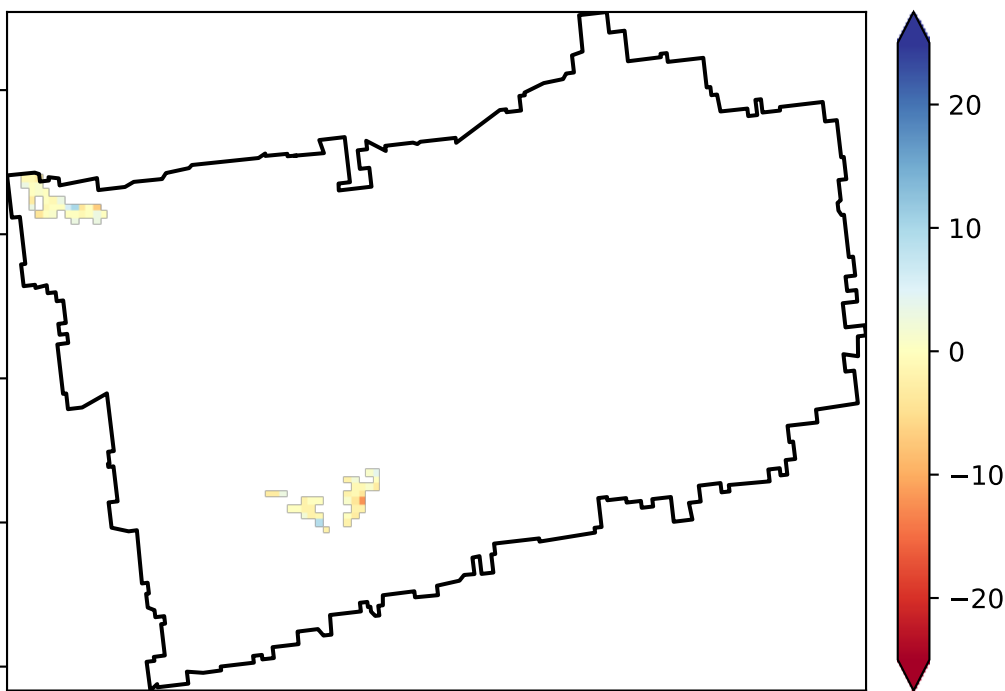
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

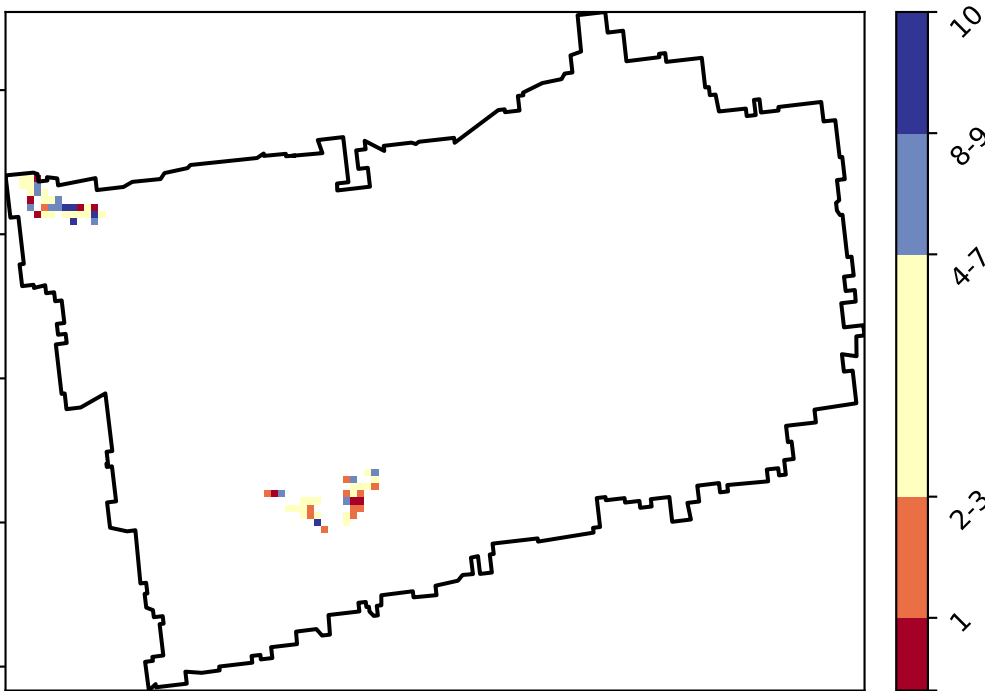


Total Vegetation Cover Anomaly [%]



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



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Ecosystem Research Infrastructure



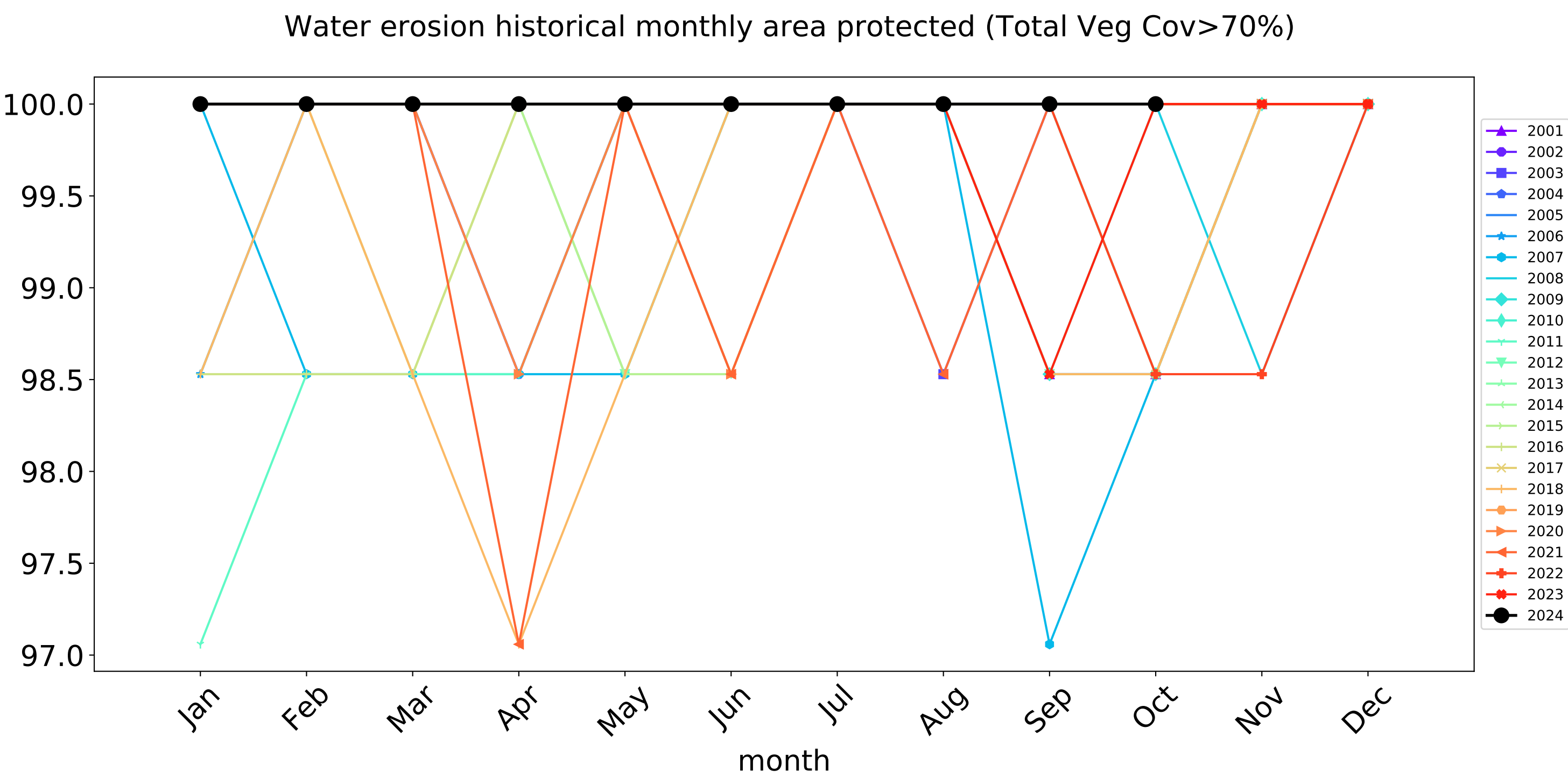
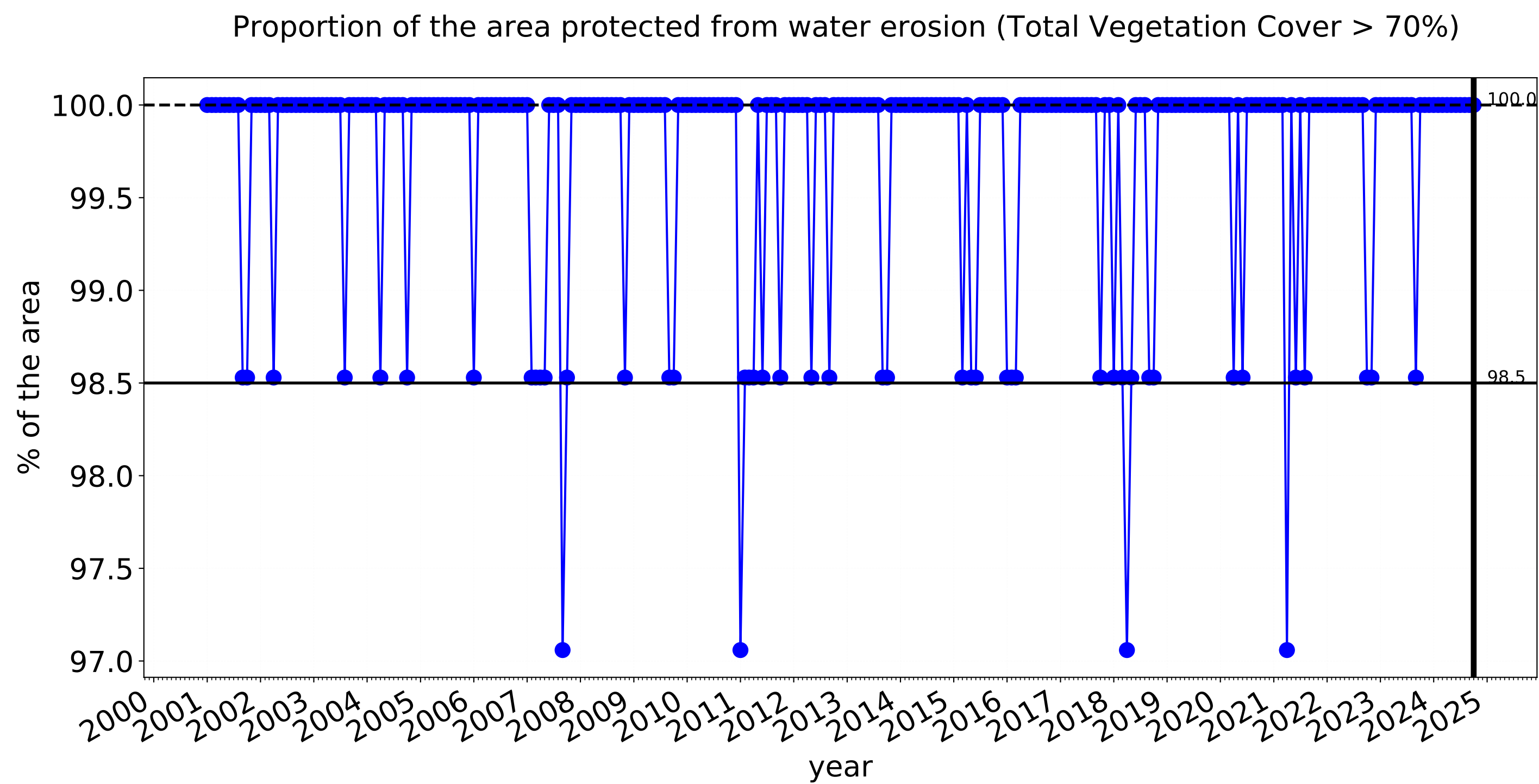
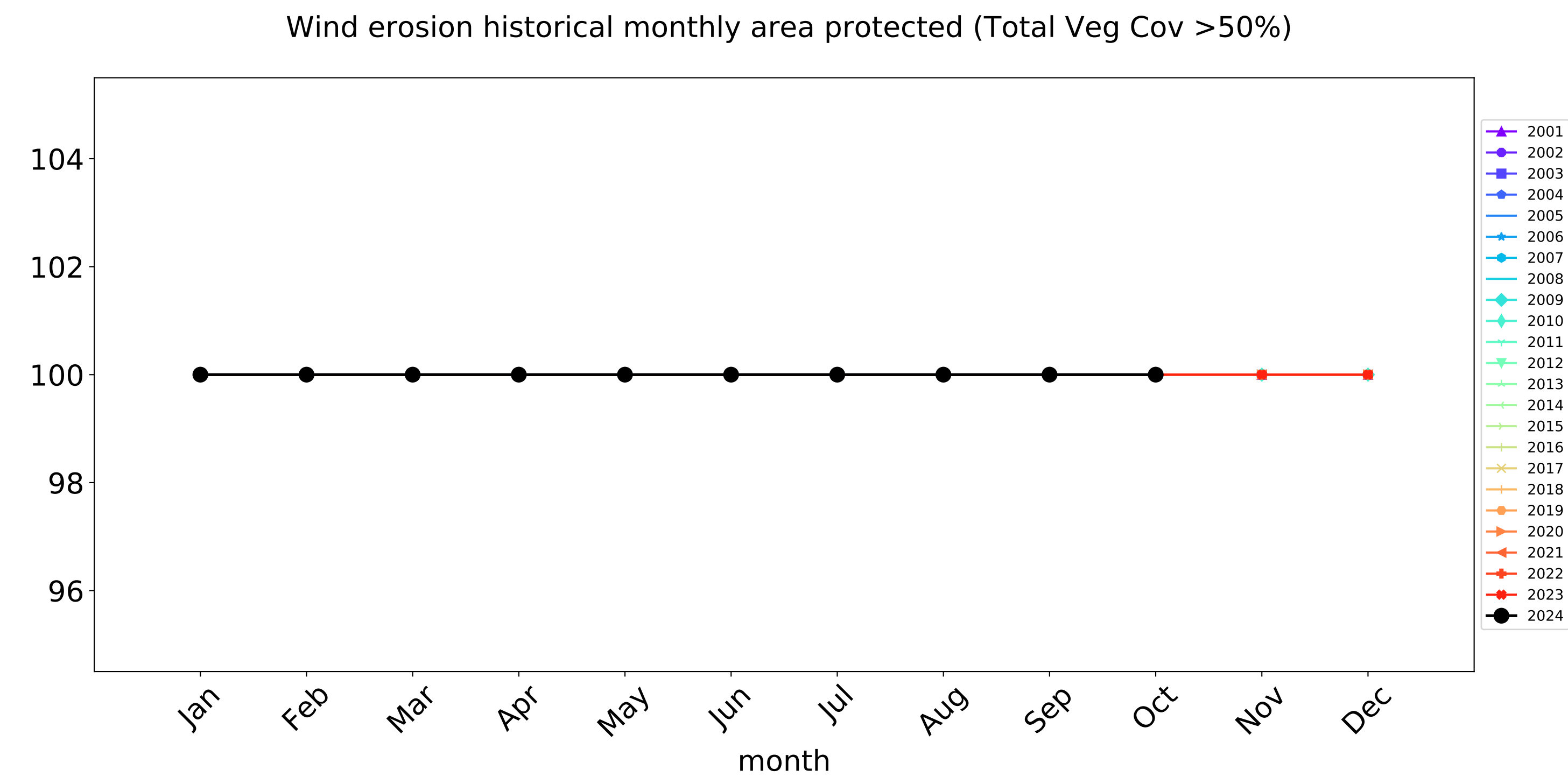
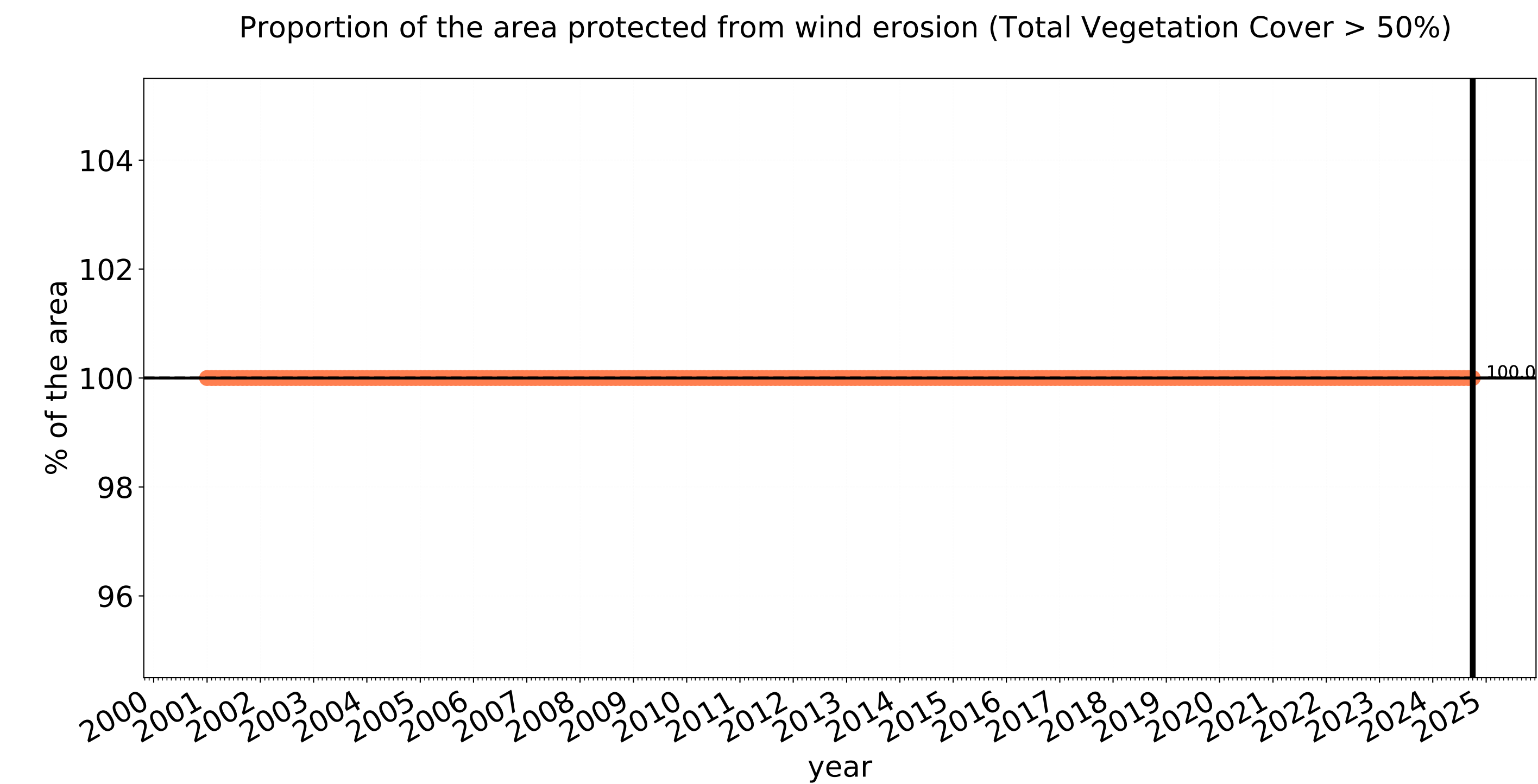
Australian Government

National Landcare Programme





Production native forests and plantation forests timeseries



Narrogin\_(S) (163,025 ha and no data 86 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	163,025	100.0% 163,025	100.0% 163,000	93.8% 152,975	63.2% 103,050	14.6% 23,800	4.3% 7,000
Conservation and natural environments	17,750	100.0% 17,750	100.0% 17,750	87.6% 15,550	53.9% 9,575	10.0% 1,775	0.3% 50
Conservation and natural environments non forest	8,300	100.0% 8,300	100.0% 8,300	76.5% 6,350	29.5% 2,450	3.6% 300	0.3% 25
Conservation and natural environments Woodland forest	9,450	100.0% 9,450	100.0% 9,450	97.4% 9,200	75.4% 7,125	15.6% 1,475	0.3% 25
Agriculture	140,375	100.0% 140,375	100.0% 140,375	94.9% 133,150	64.4% 90,425	15.0% 21,100	4.8% 6,750
Grazing	4,275	100.0% 4,275	100.0% 4,275	94.7% 4,050	74.9% 3,200	21.6% 925	9.4% 400
Grazing non forest	4,275	100.0% 4,275	100.0% 4,275	94.7% 4,050	74.9% 3,200	21.6% 925	9.4% 400
Cropping	136,100	100.0% 136,100	100.0% 136,100	94.9% 129,100	64.1% 87,225	14.8% 20,175	4.7% 6,350
Production native forests and plantation forests	1,700	100.0% 1,700	100.0% 1,700	100.0% 1,700	95.6% 1,625	25.0% 425	0.0% 0