

# Total vegetation cover soil protection

## Region:LGA Lithgow\_(C) NSW

Date: January 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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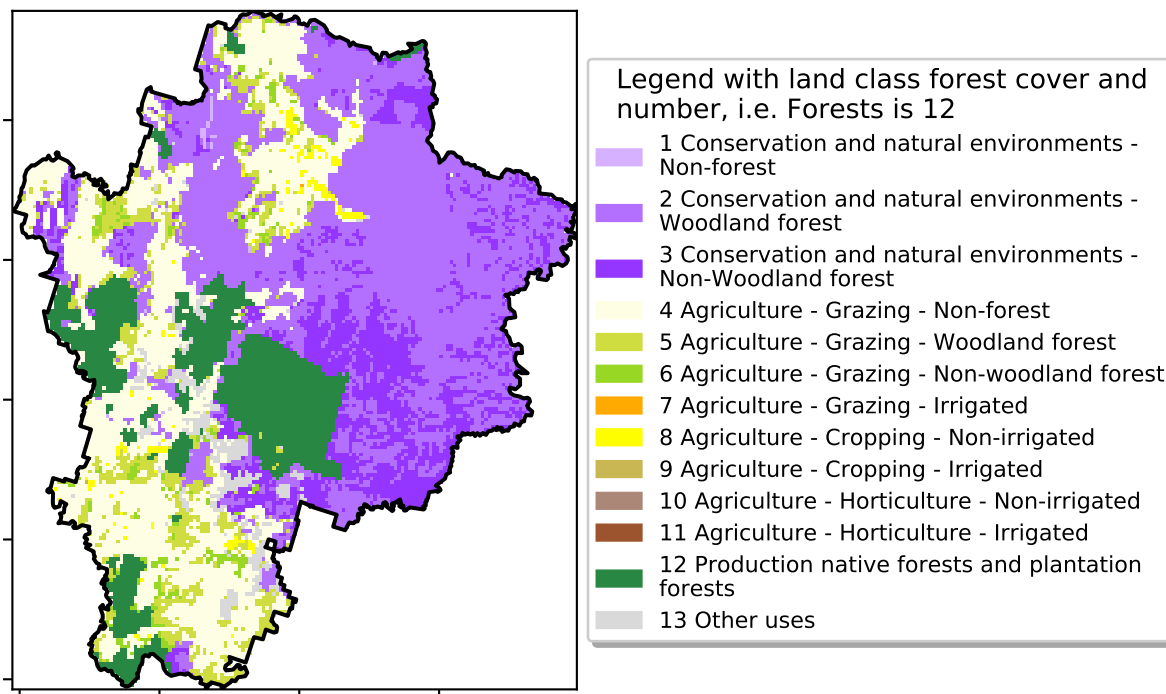


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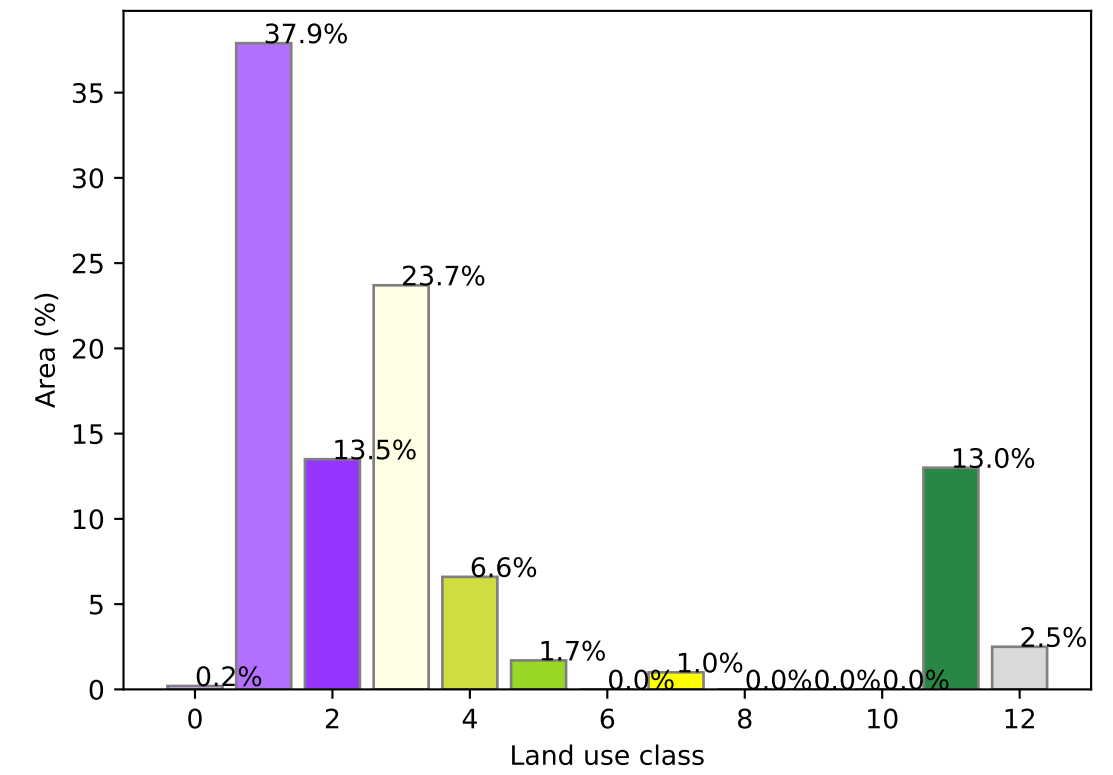
# Vegetation Cover Jan 2024

Land use and forest cover

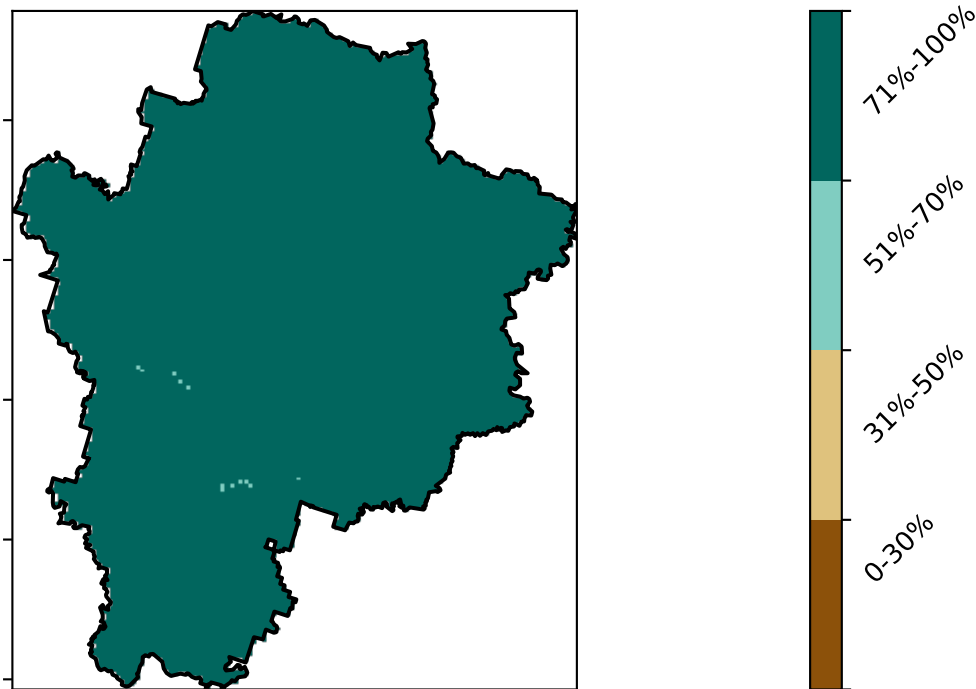


Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)

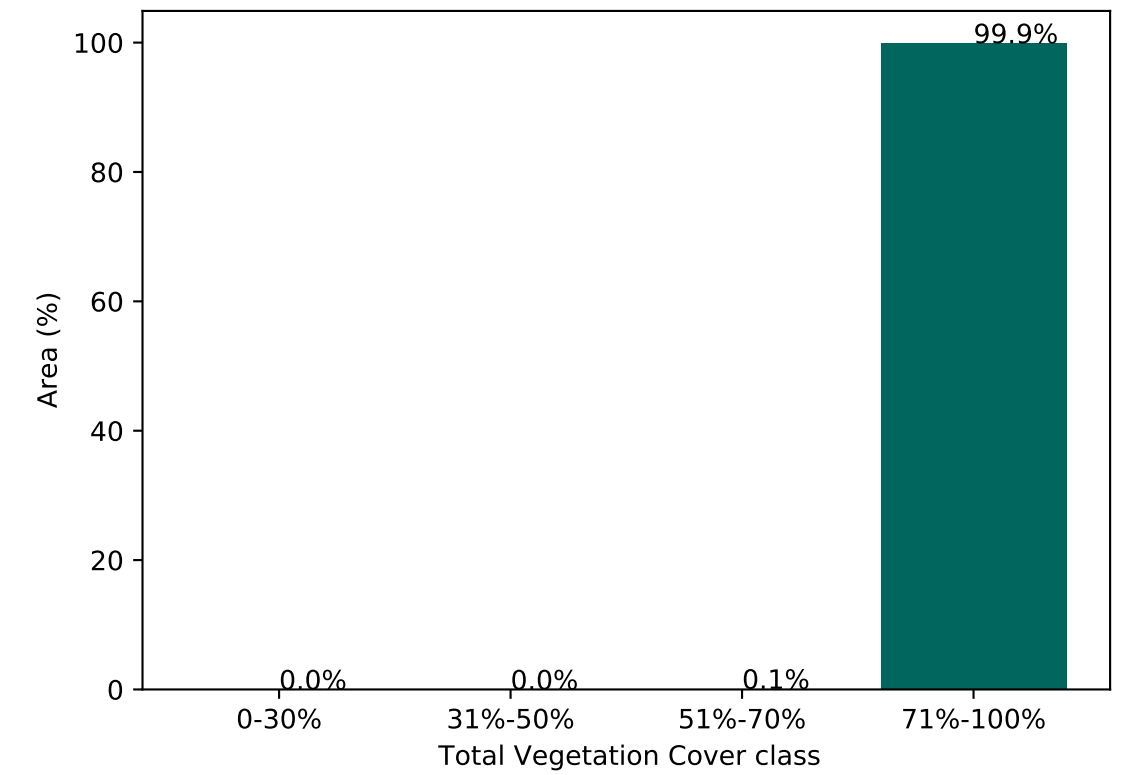
Proportion of each land class in area



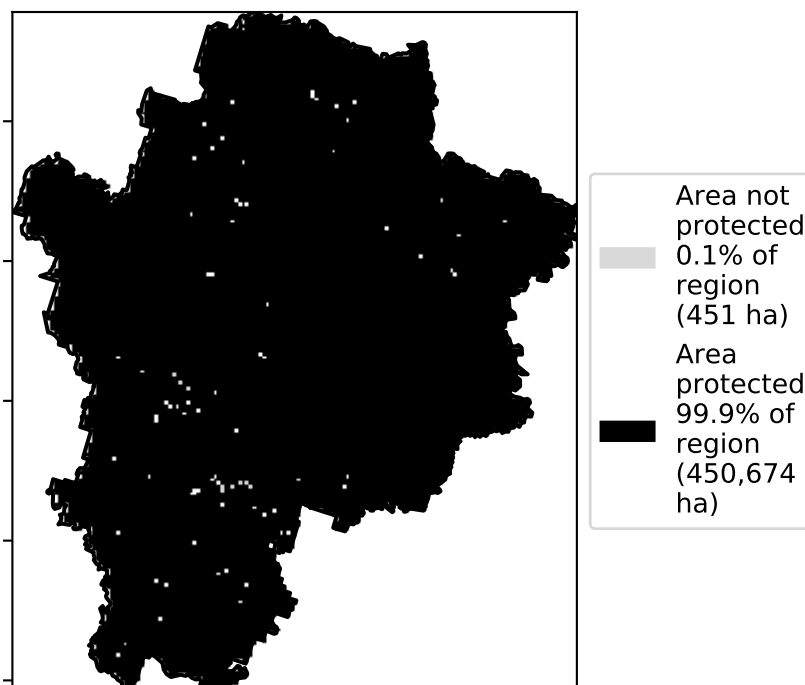
Total Vegetation Cover [%]



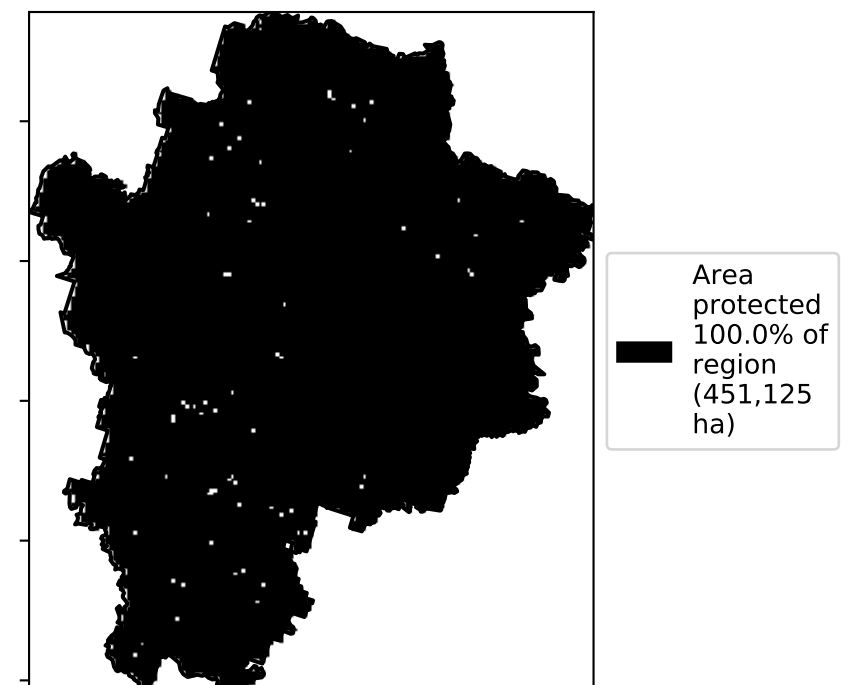
Proportion of vegetation cover class in area



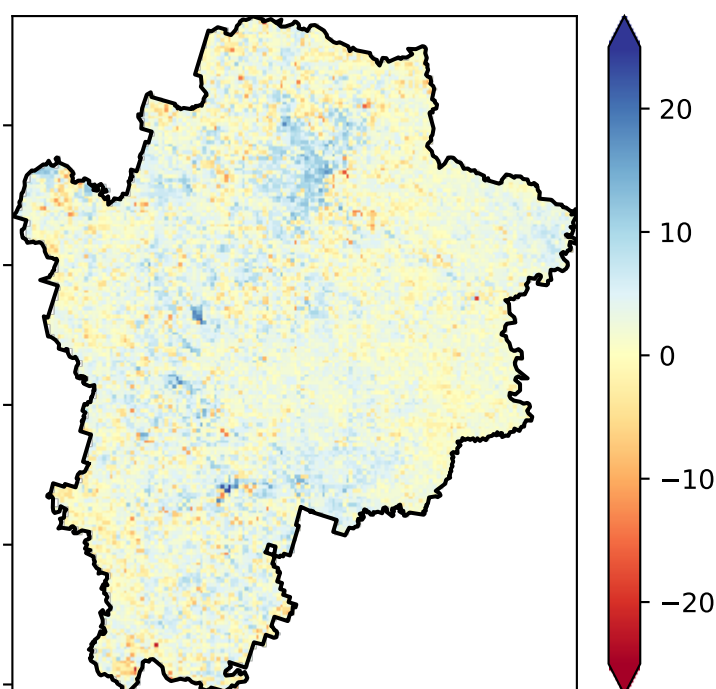
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)



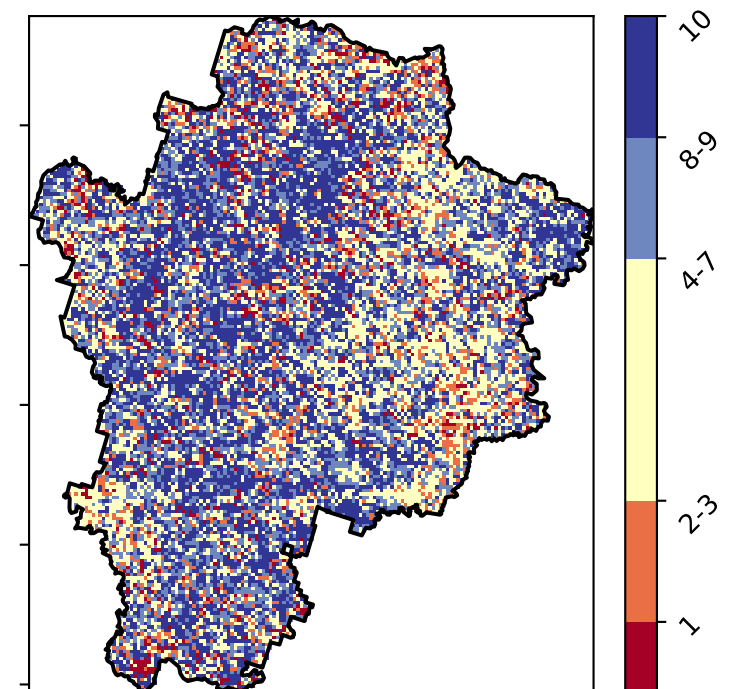
Total Vegetation Cover Anomaly [%]



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 [%]



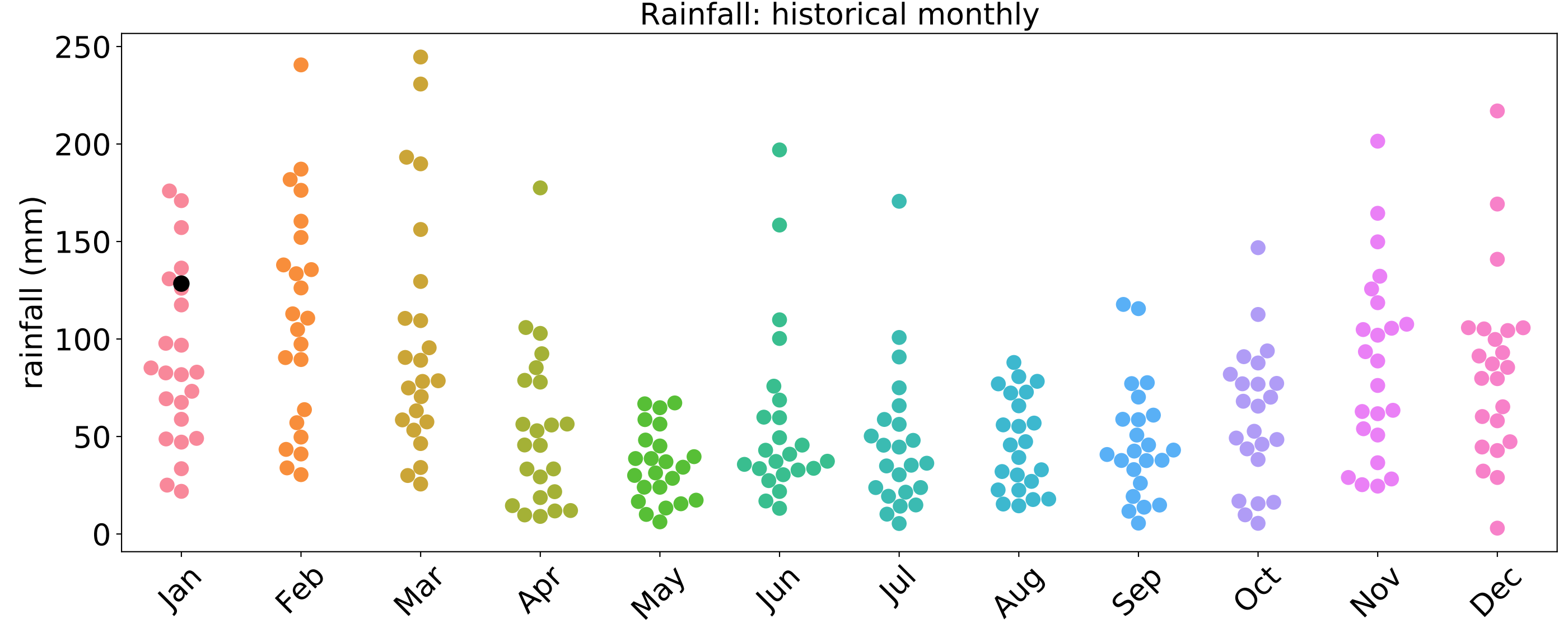
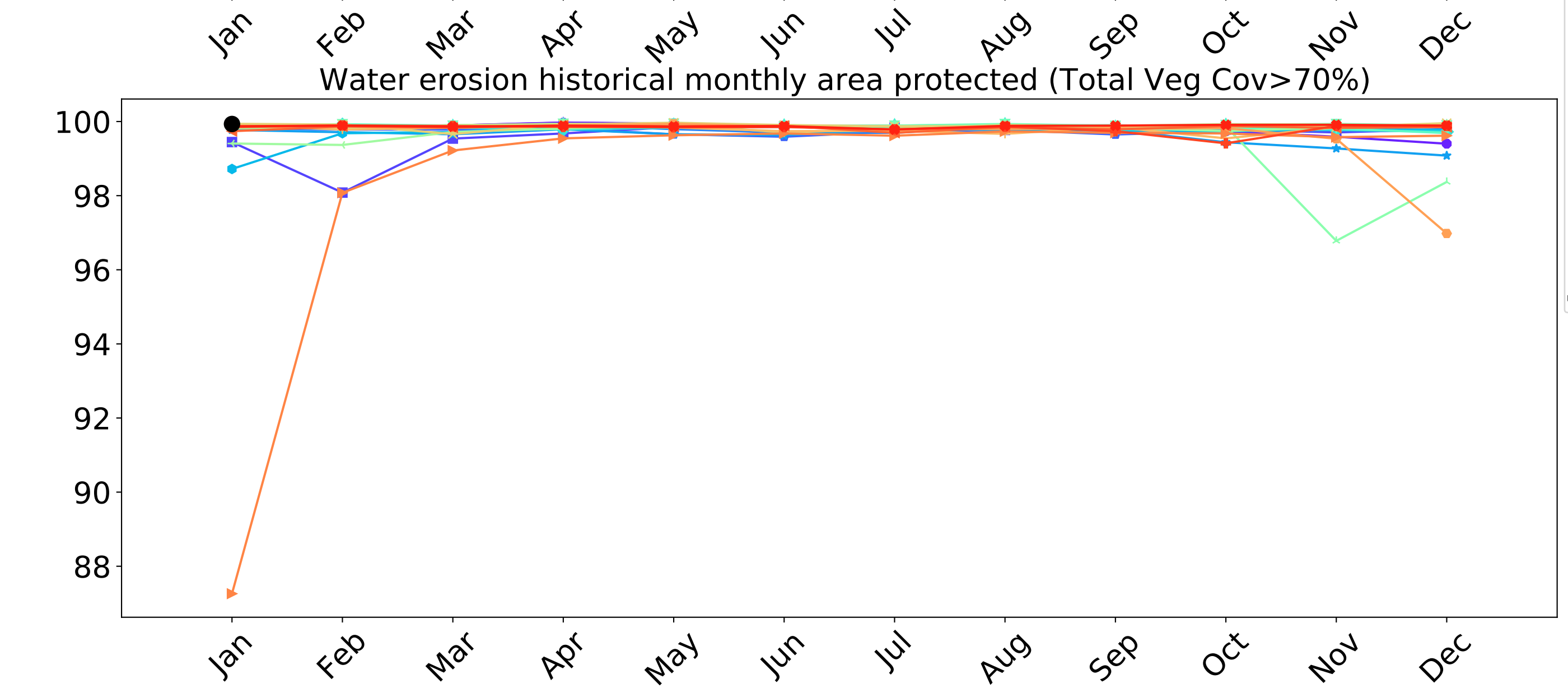
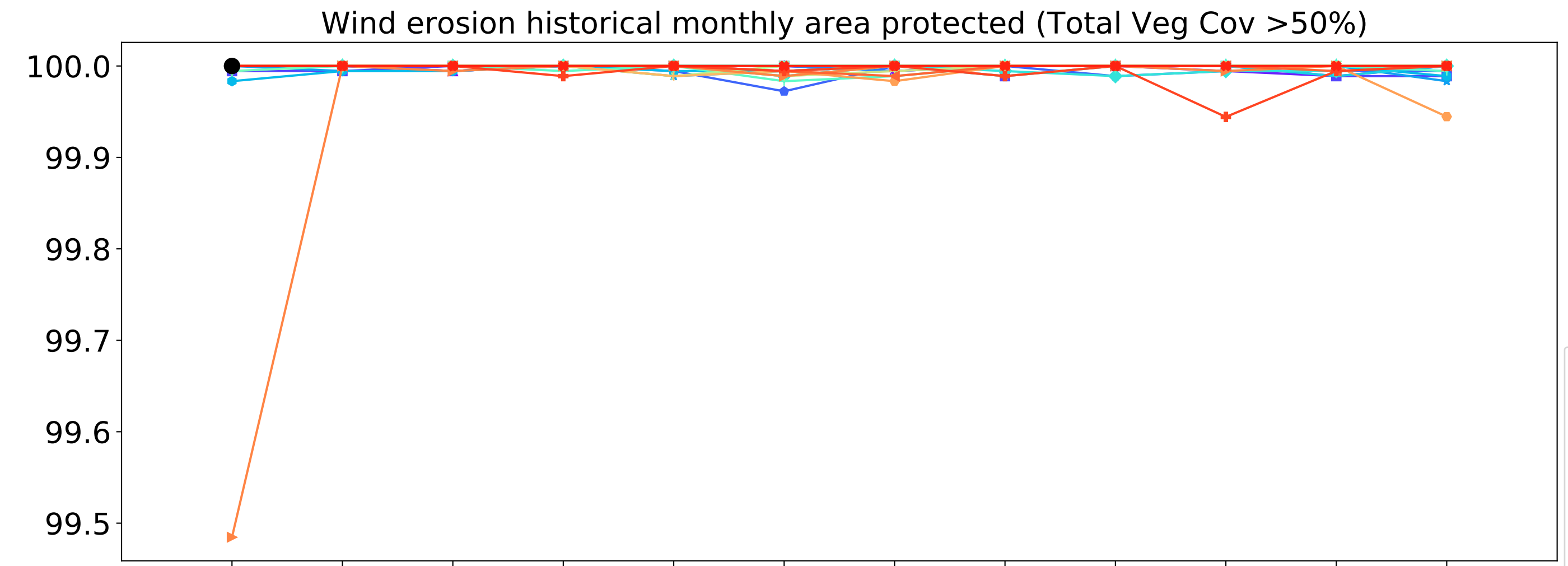
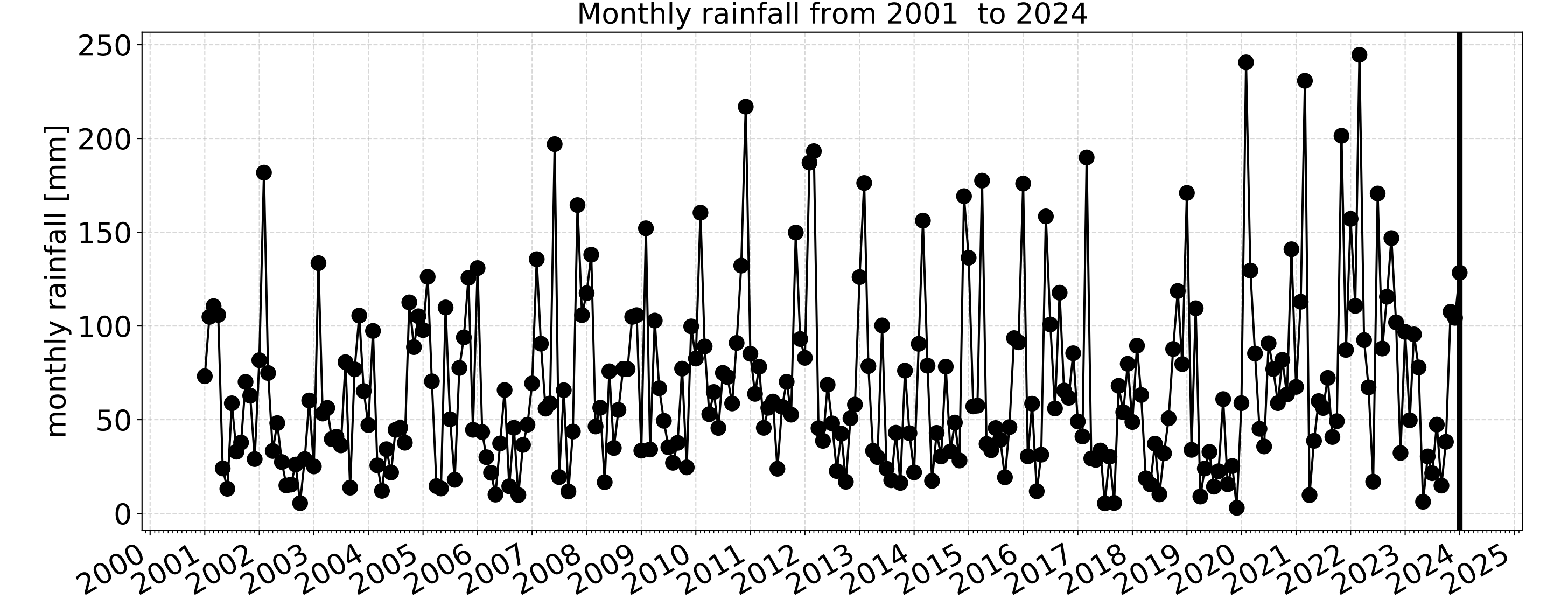
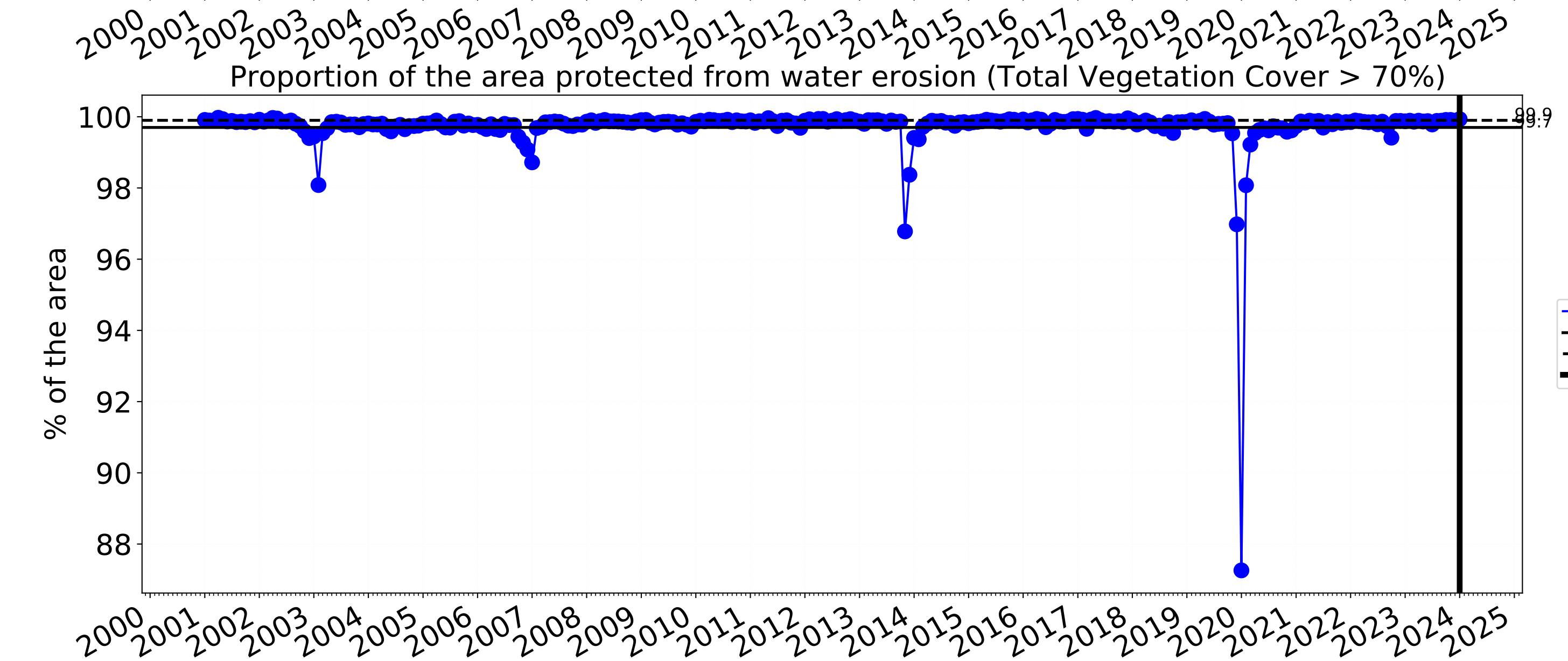
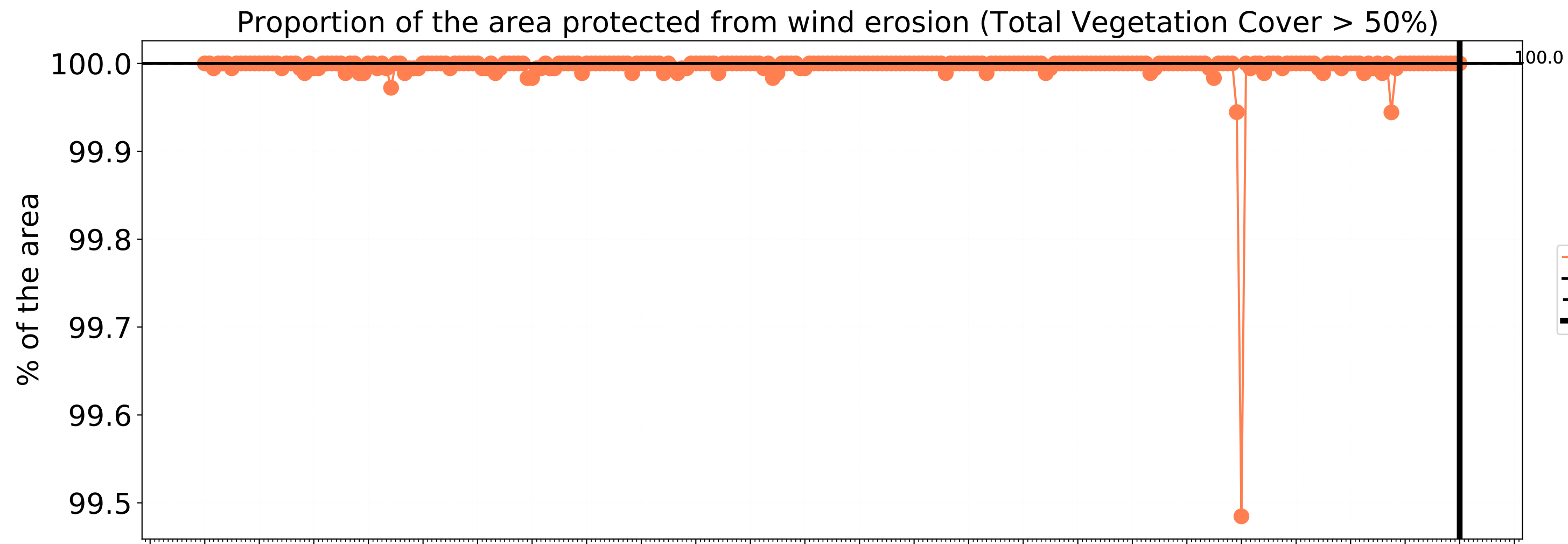
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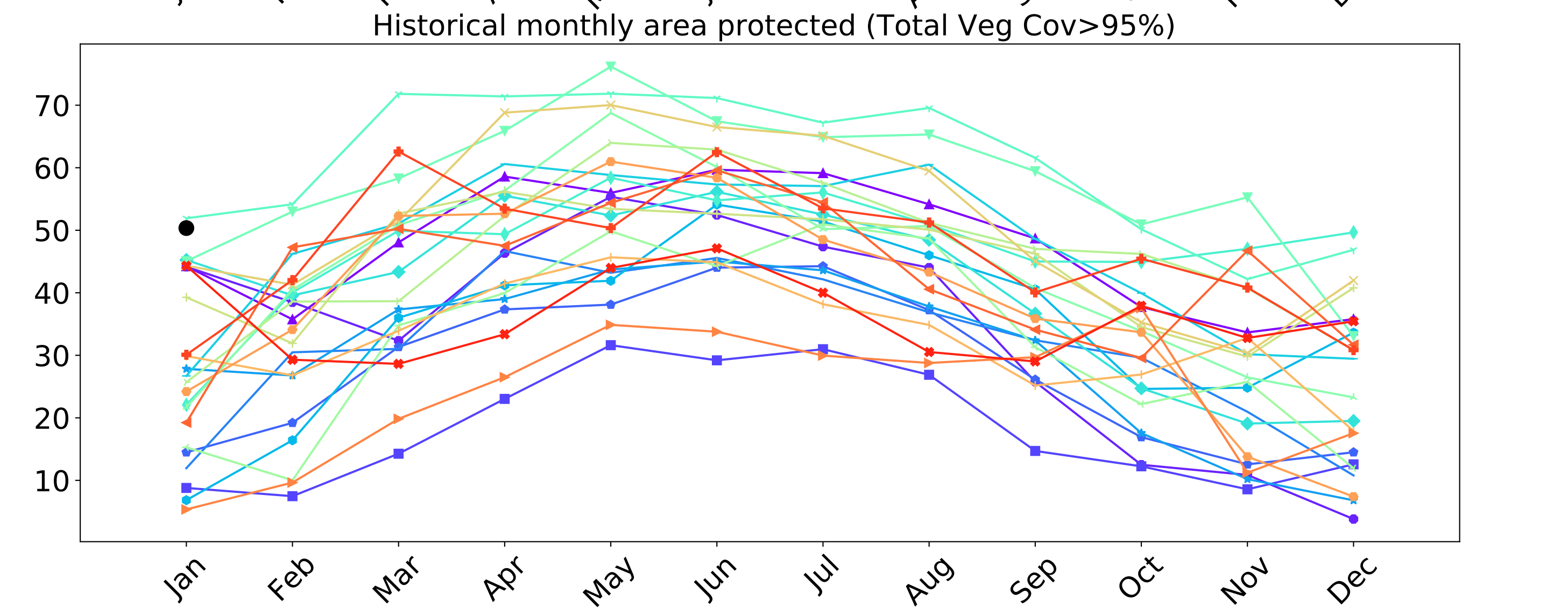
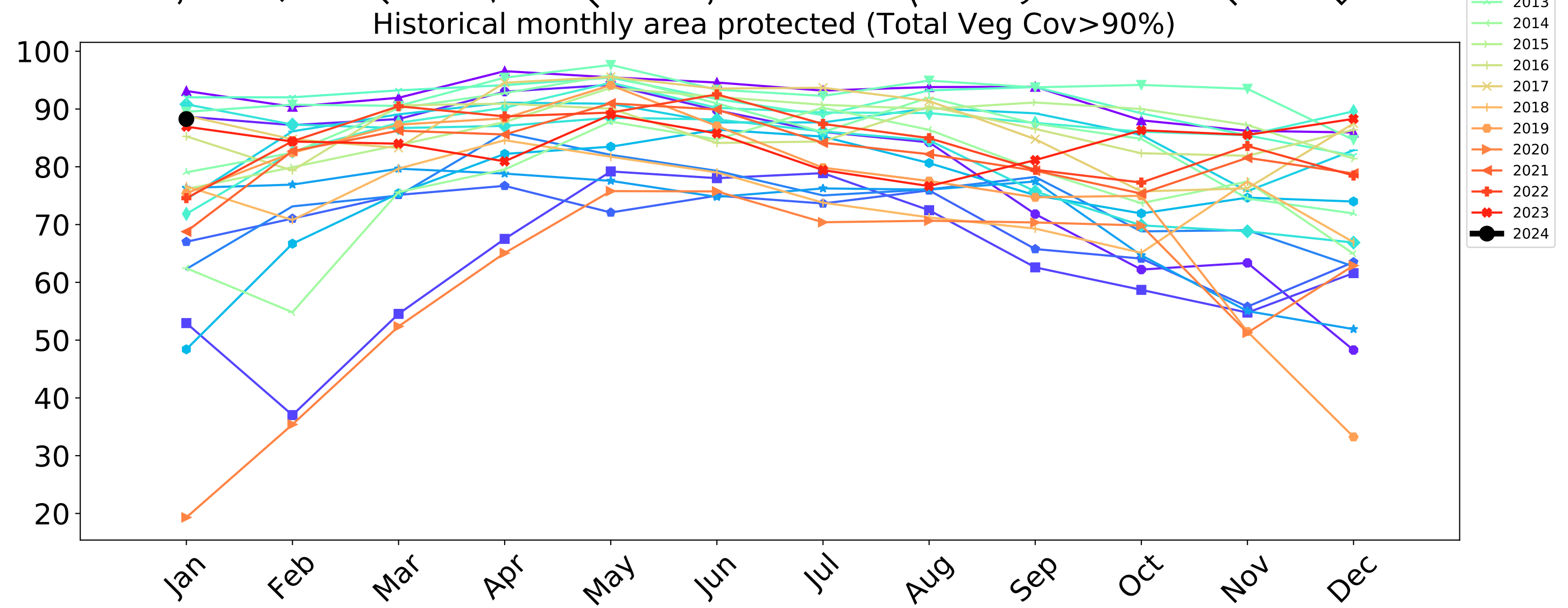
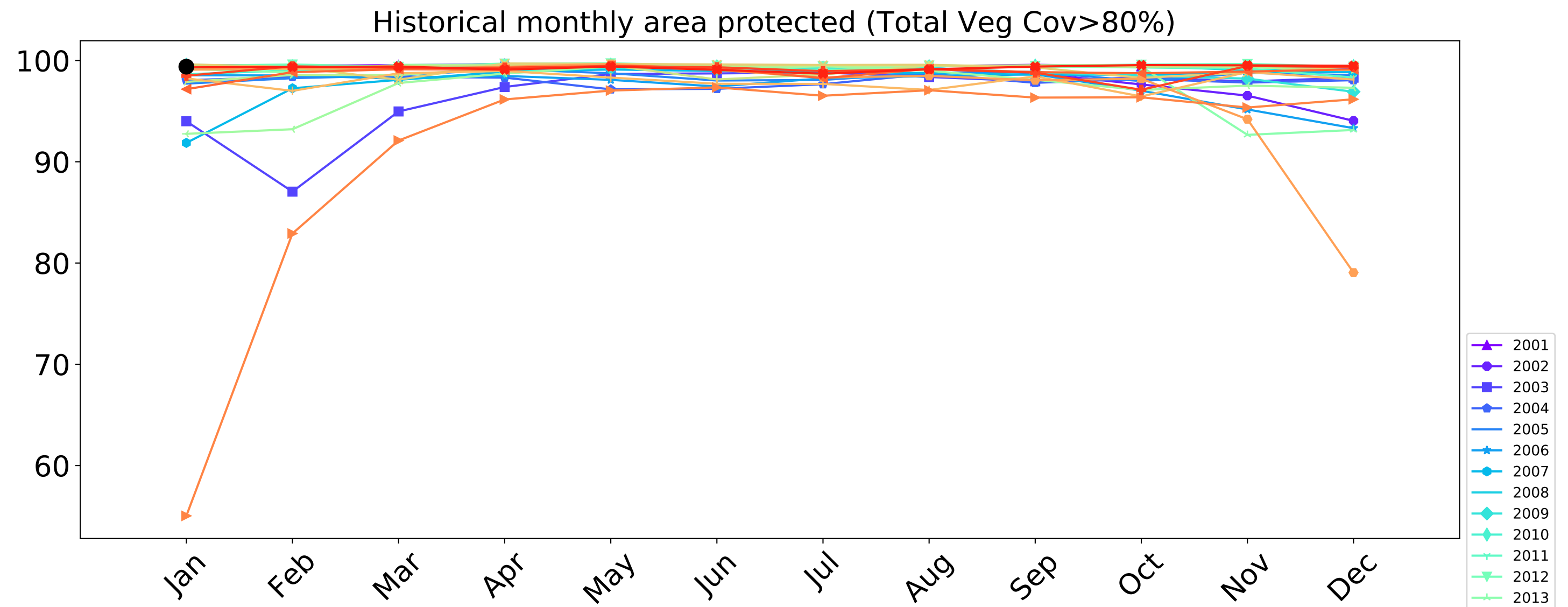
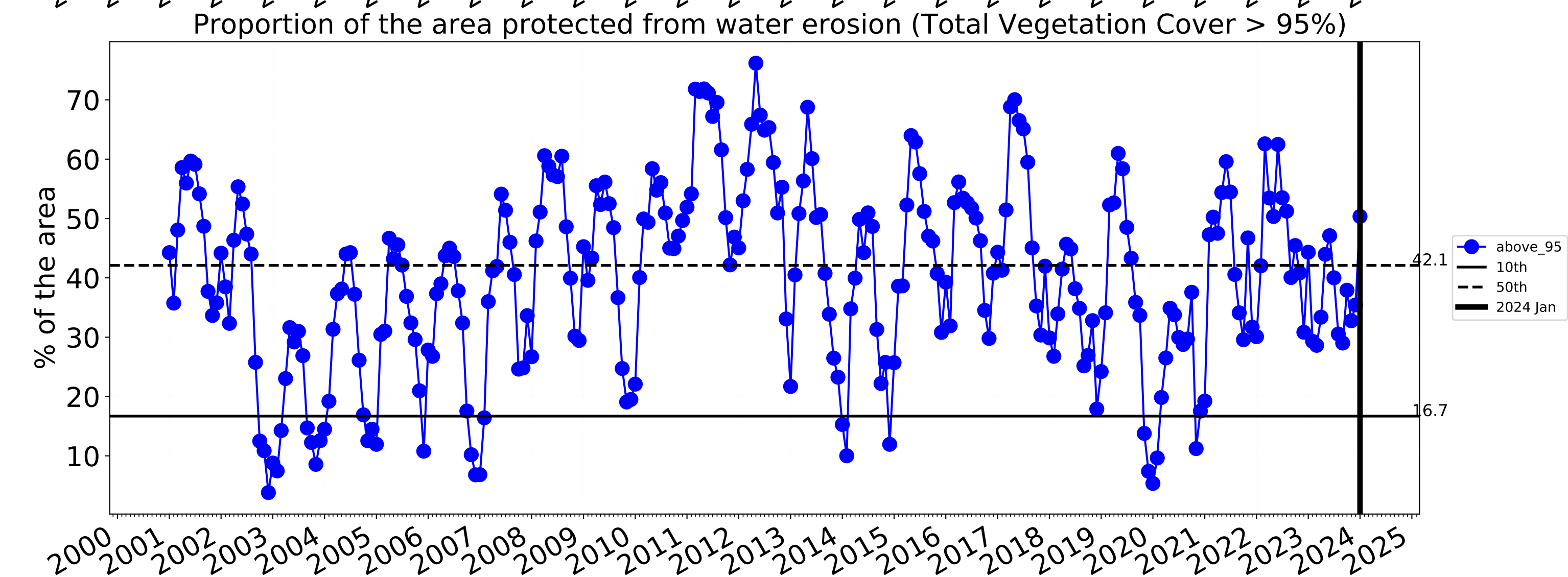
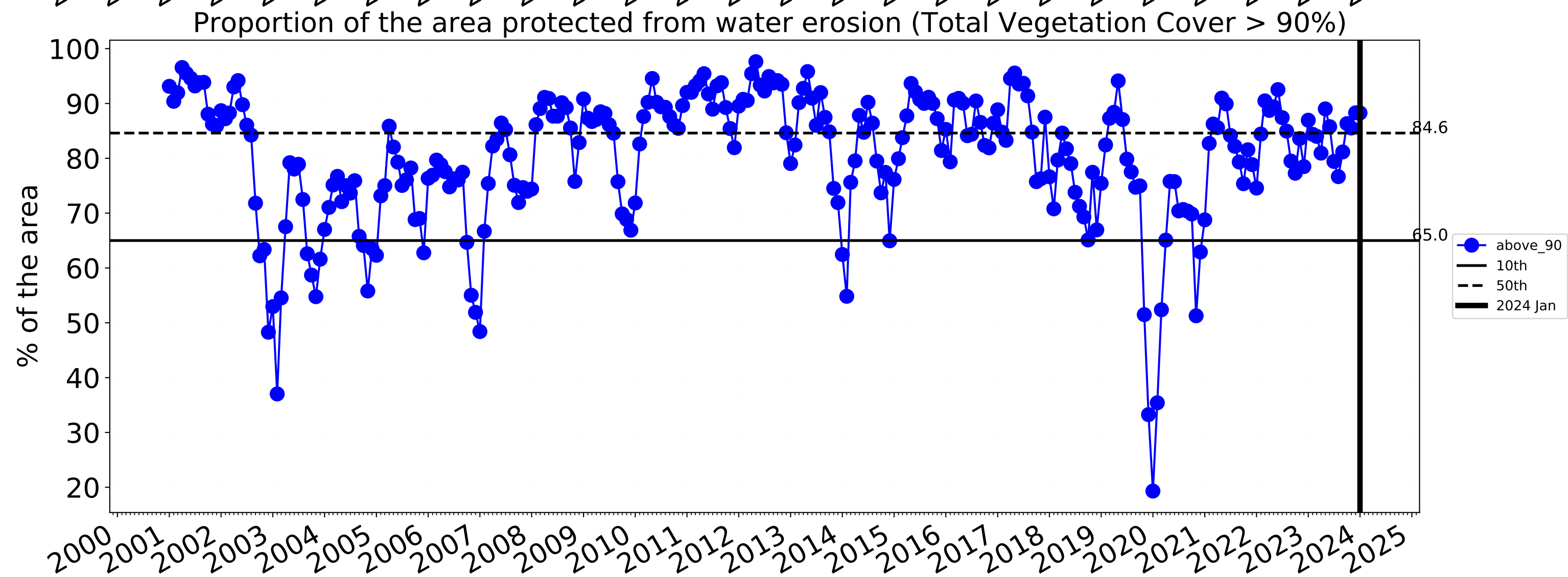
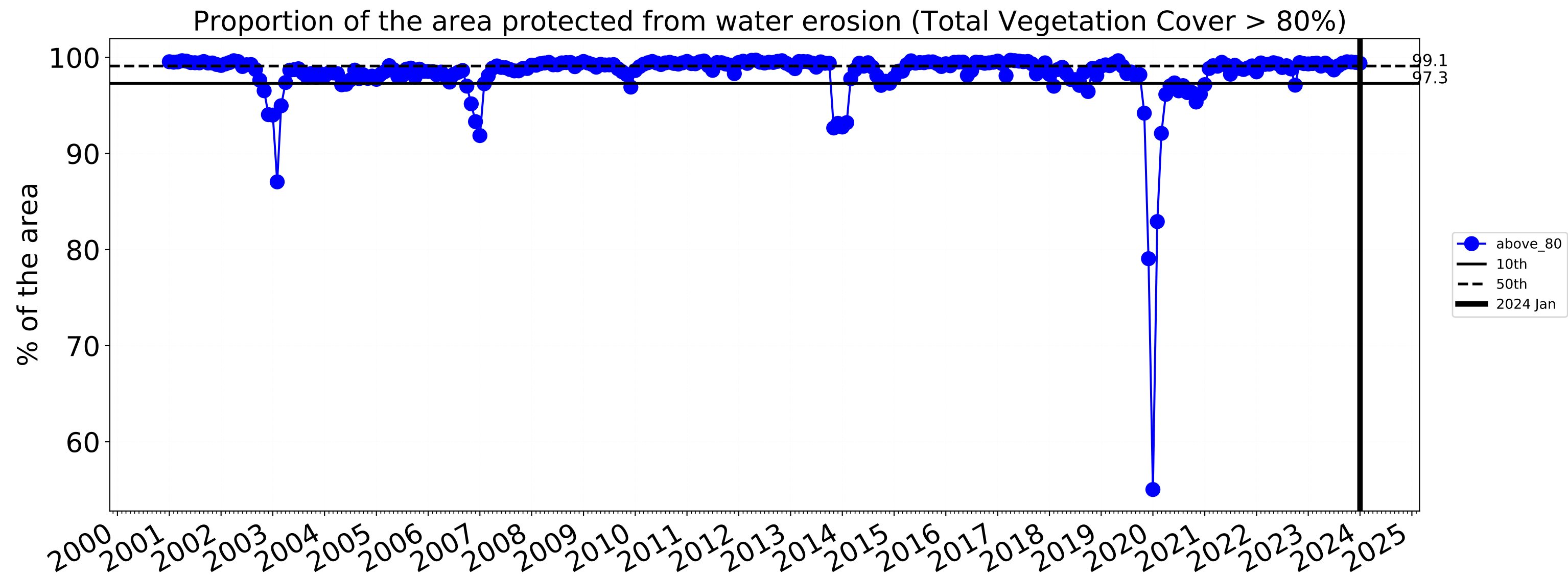
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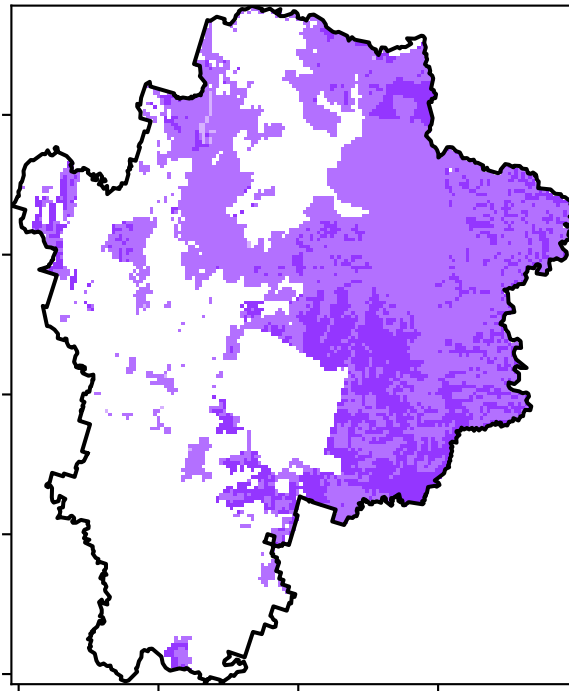






# Conservation and natural environments

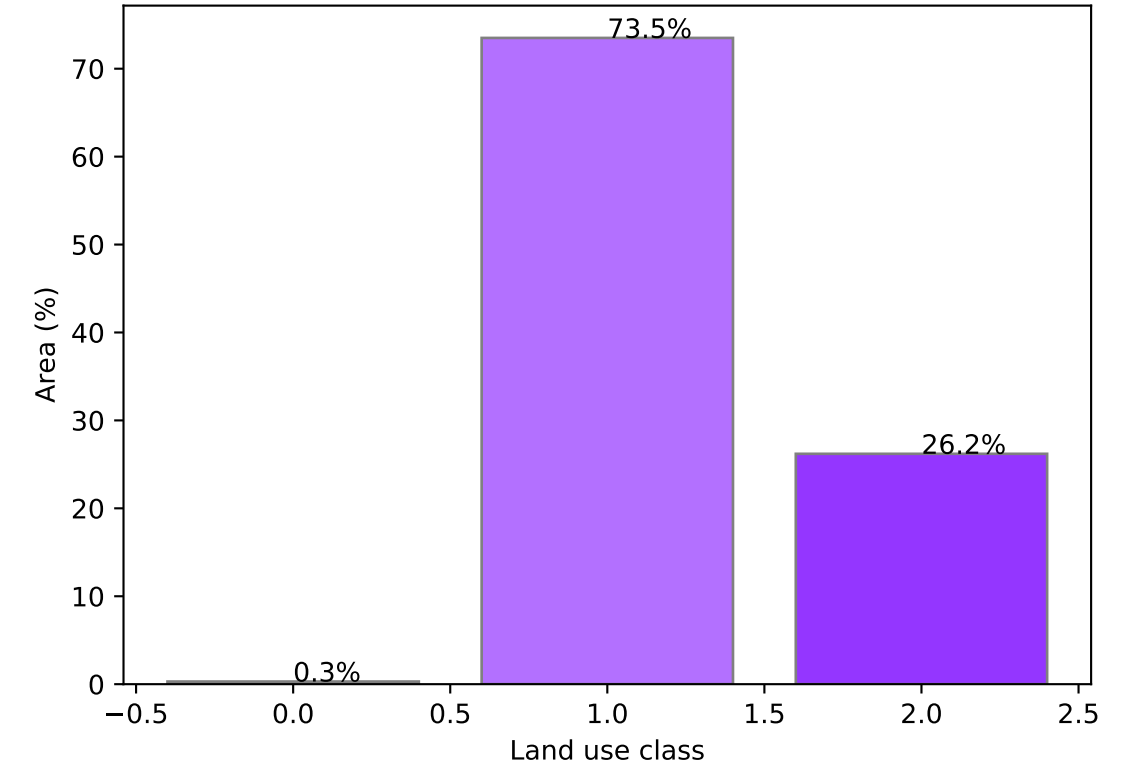
Land use and forest cover



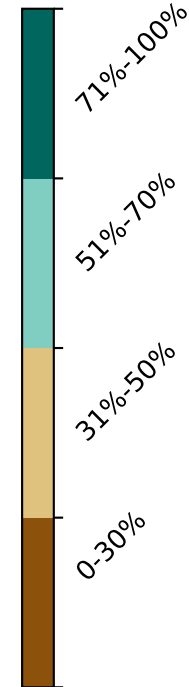
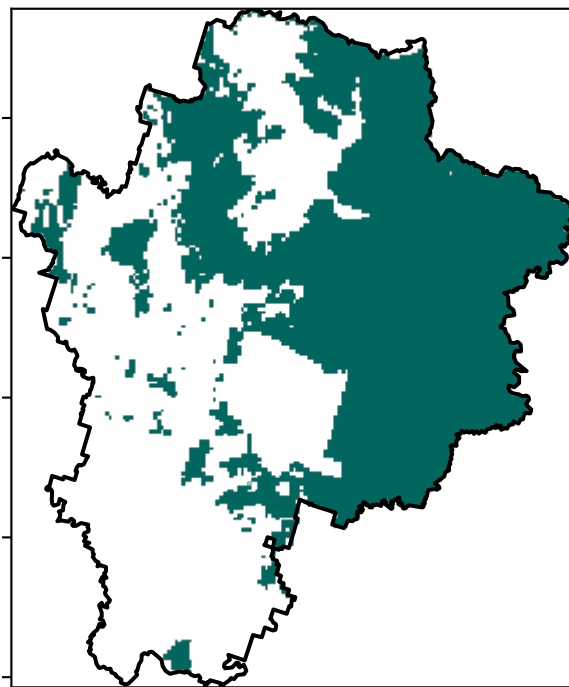
Catchment Scale Land Use and Forests of Australia (2018)  
Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

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

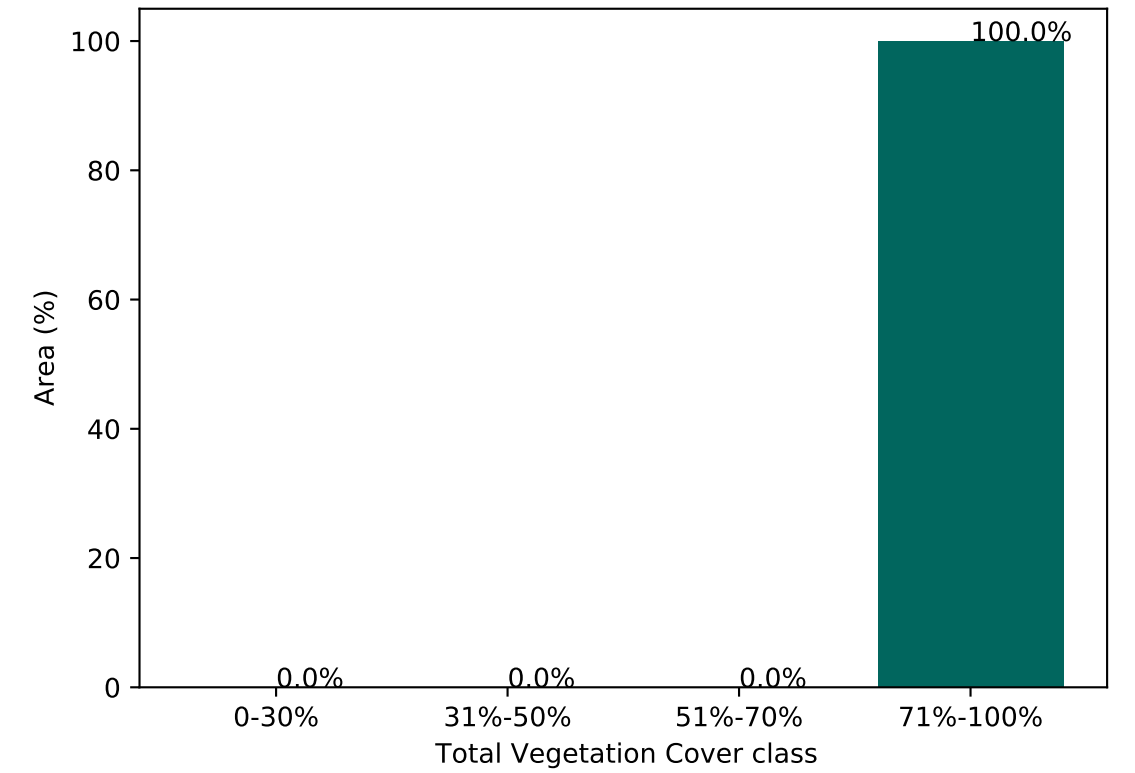
Proportion of each land class in area



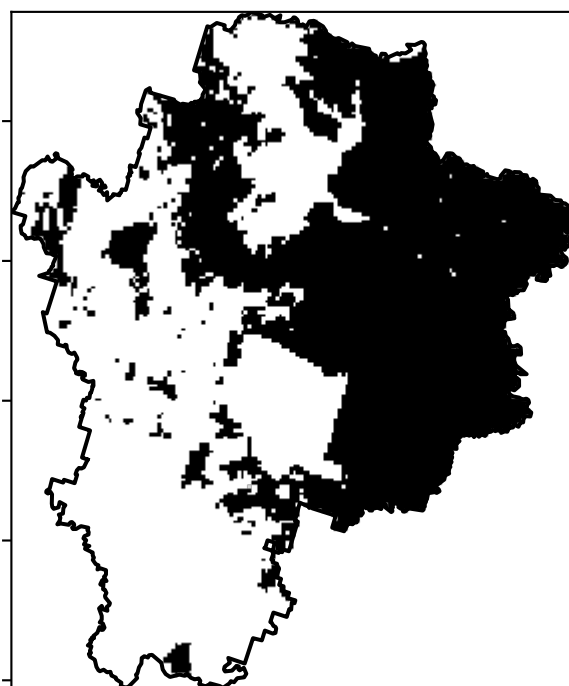
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

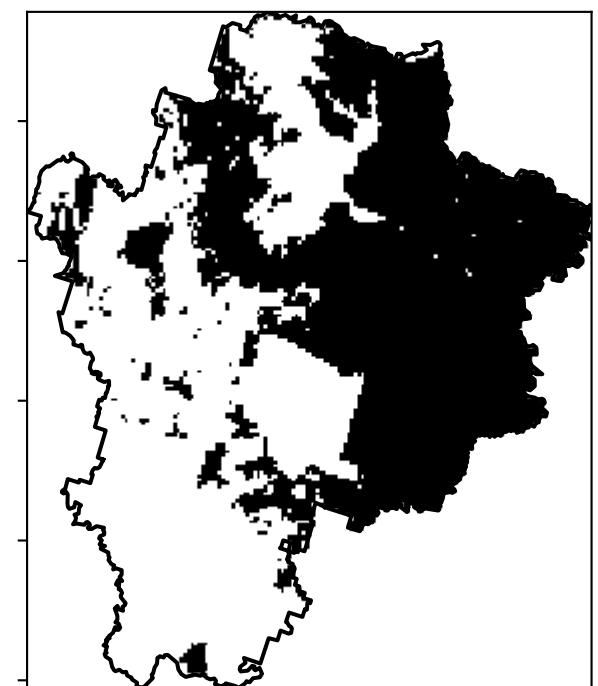


% Area protected from water erosion (>70%)



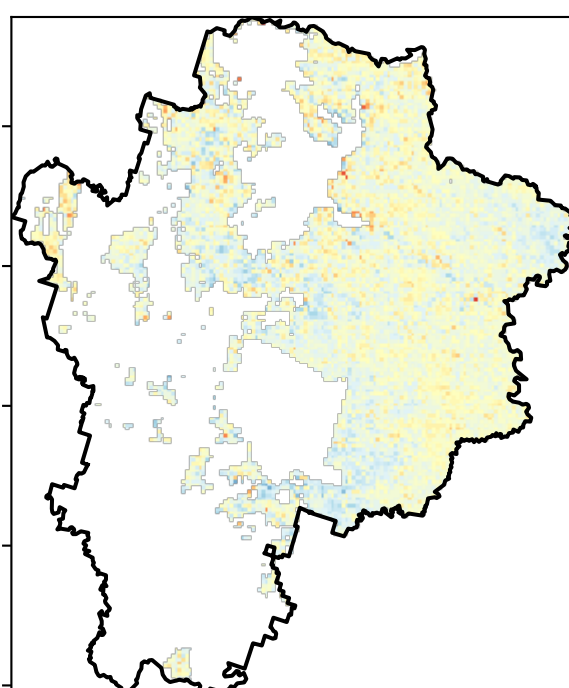
- Area not protected 0.0% of region (0 ha)
- Area protected 100.0% of region (232,475 ha)

% Area protected from wind erosion (>50%)

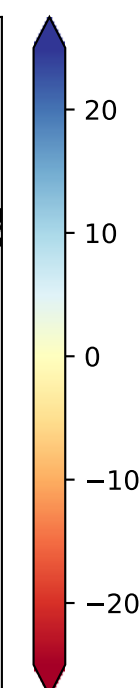


- Area protected 100.0% of region (232,475 ha)

Total Vegetation Cover Anomaly [%]

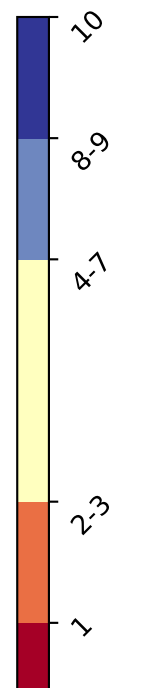
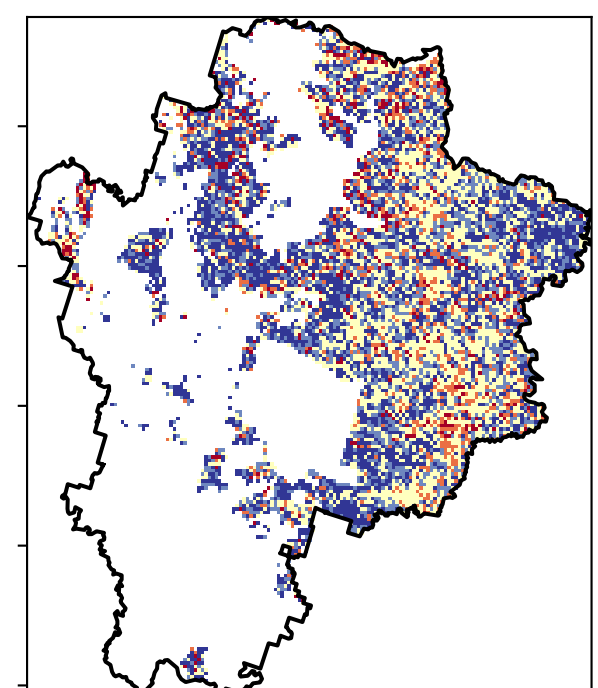


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Total Vegetation Cover Decile [%]



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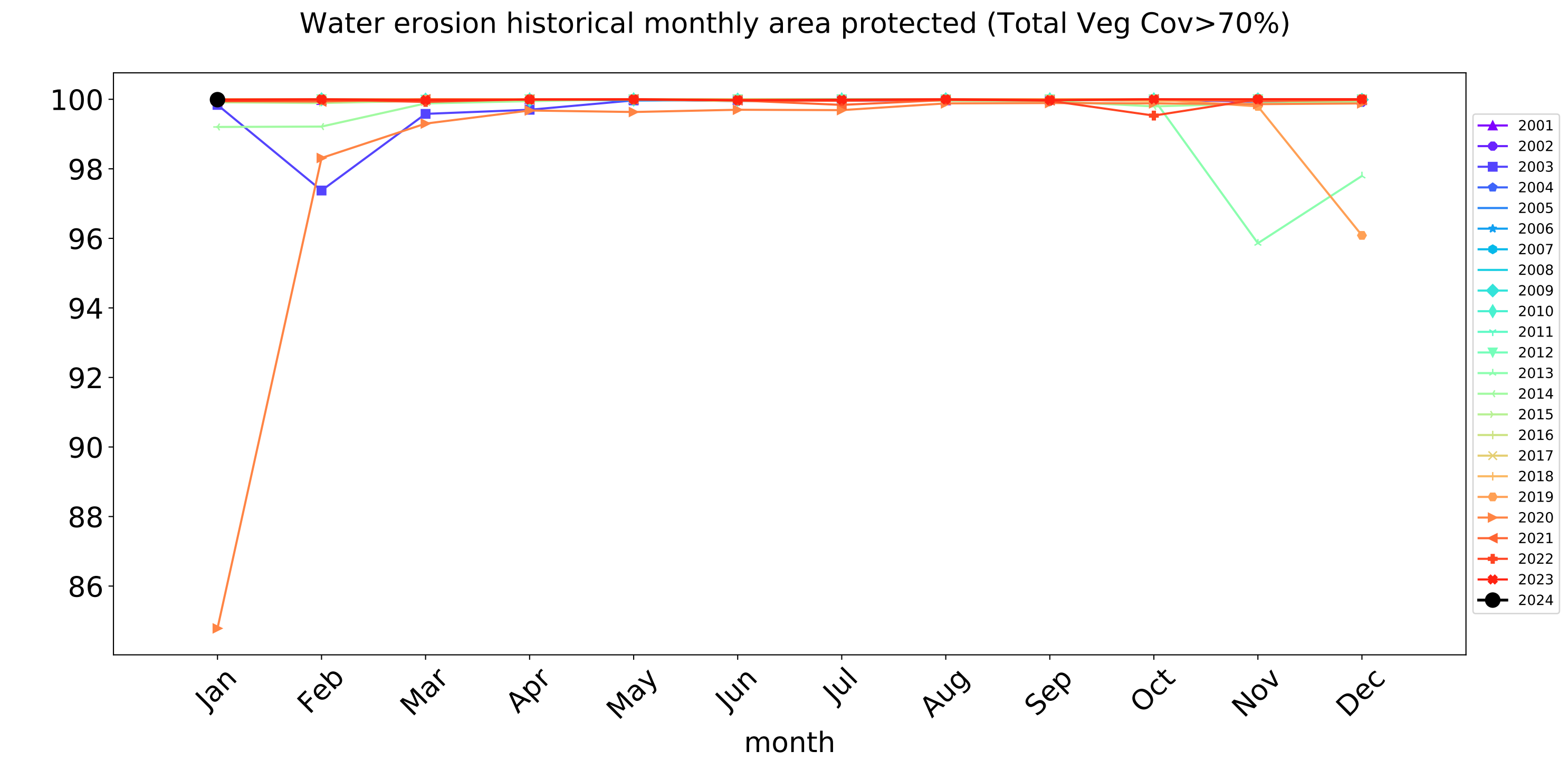
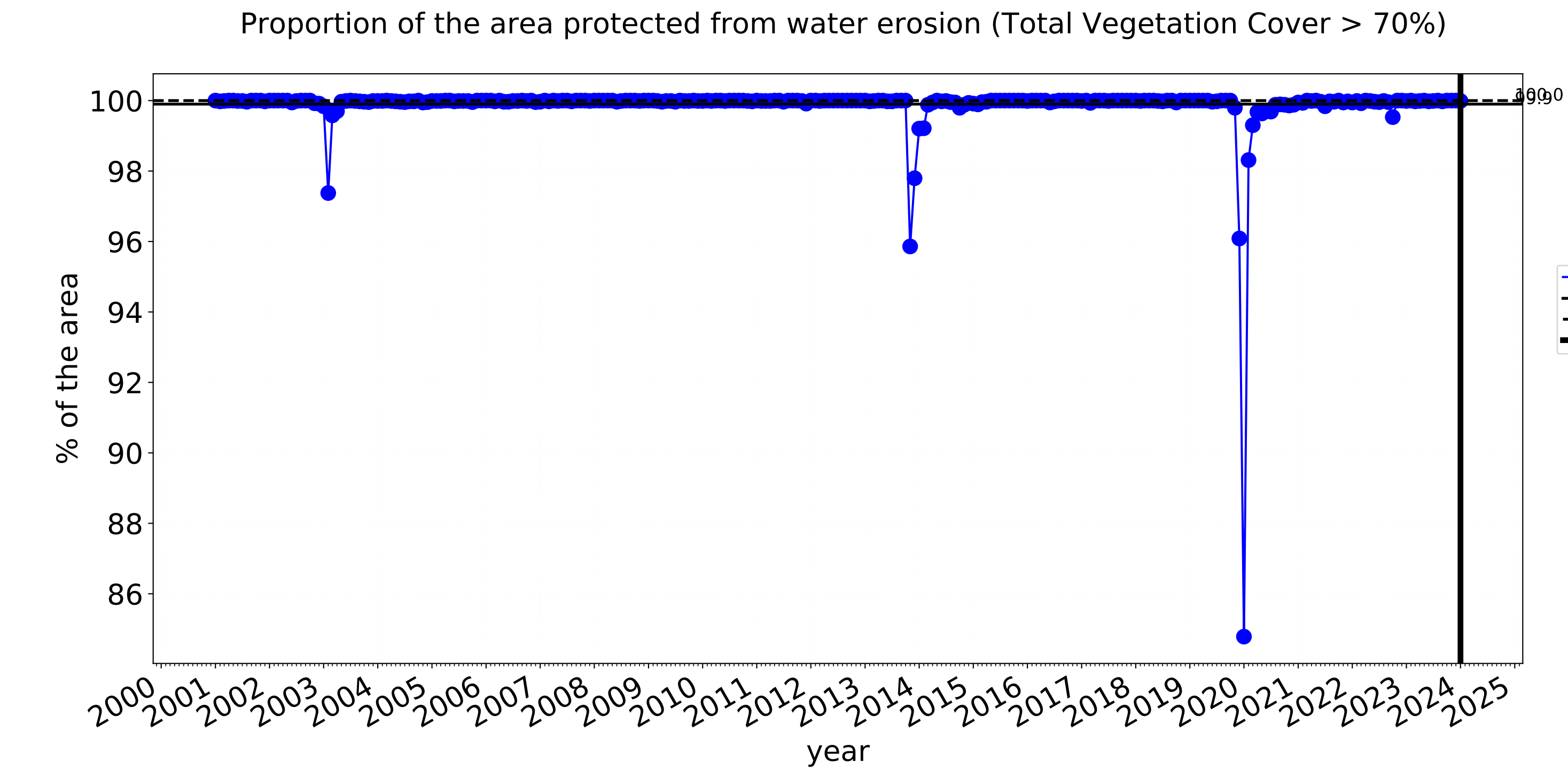
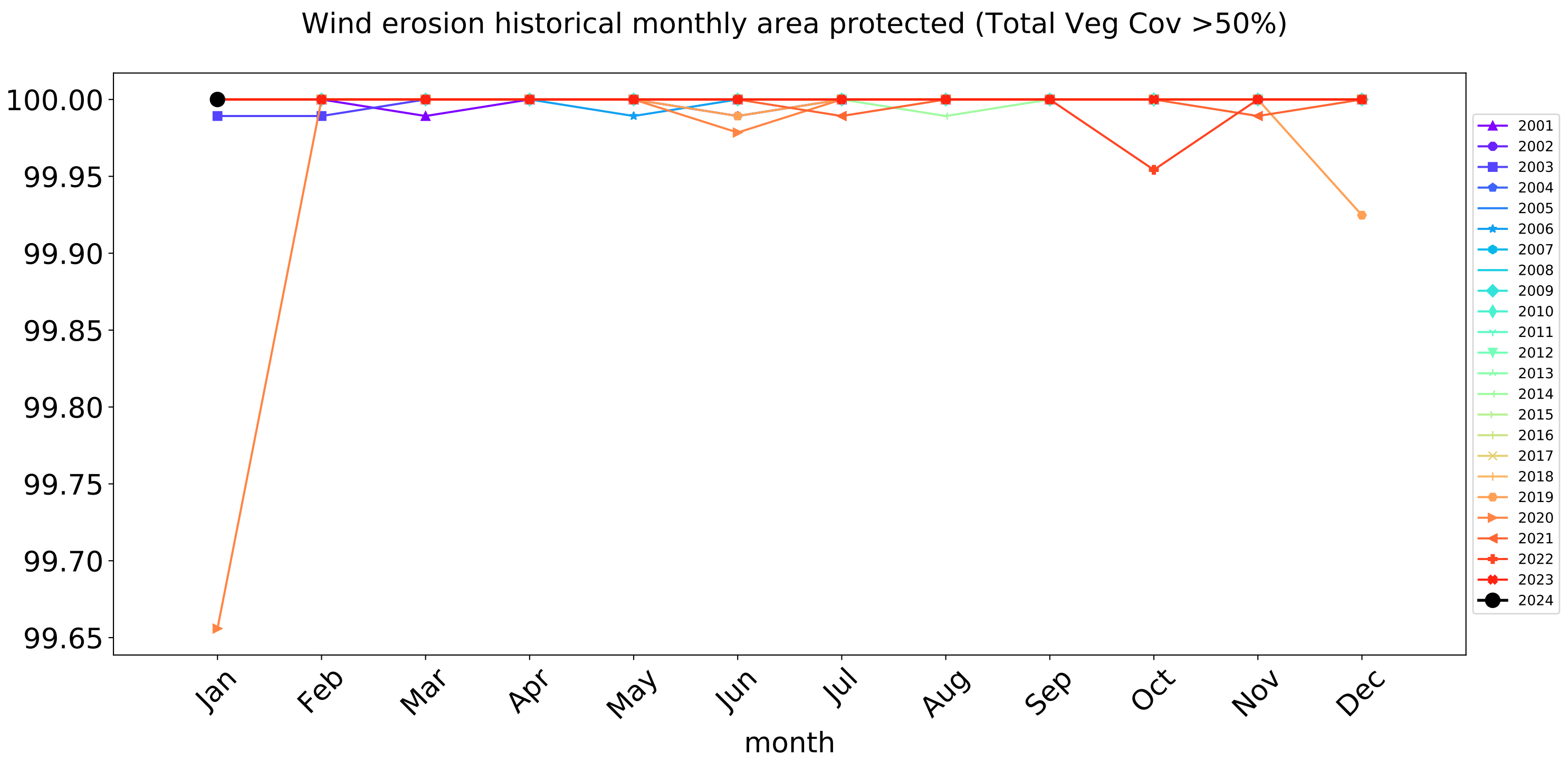
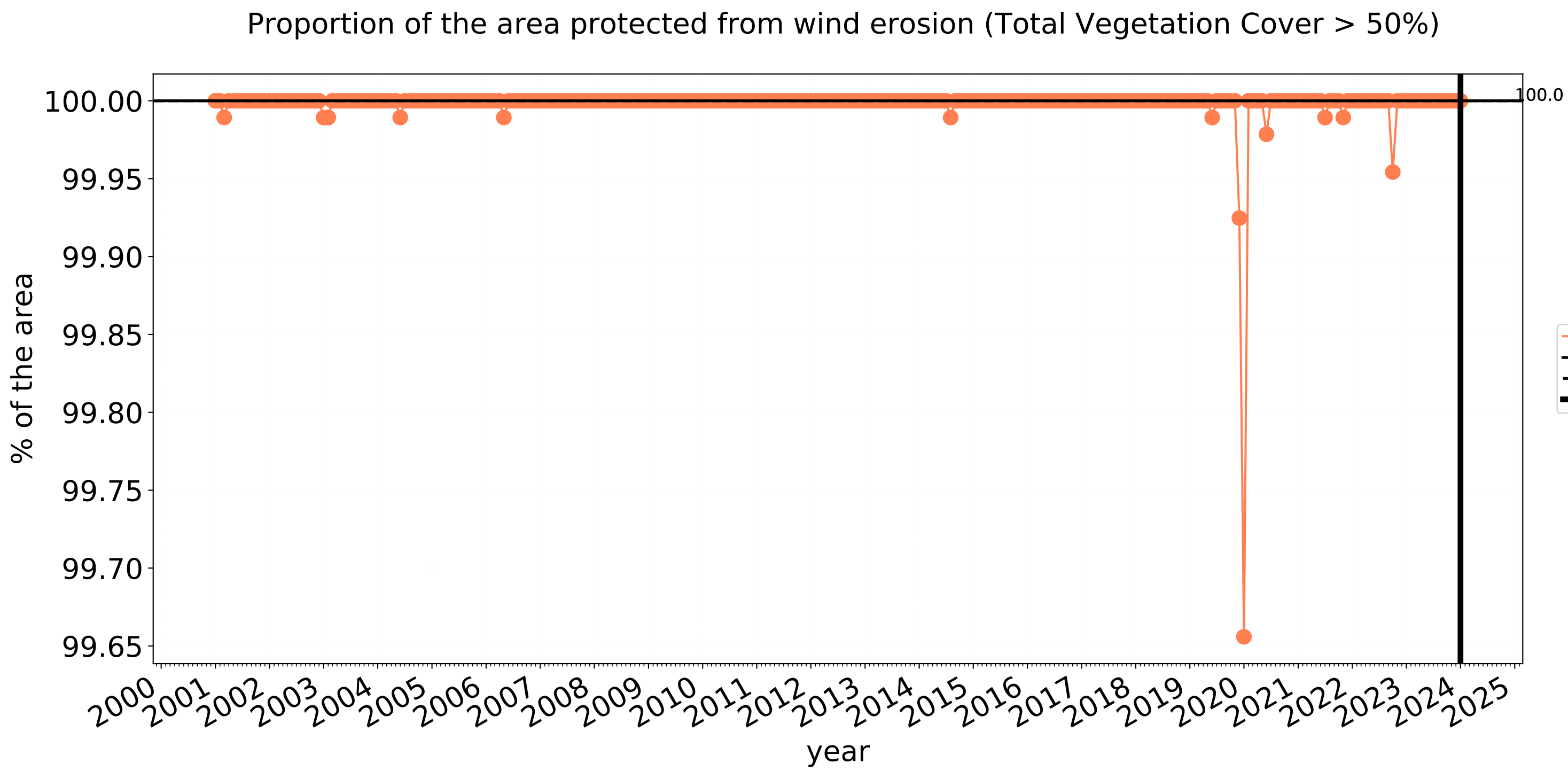
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Conservation and natural environments timeseries

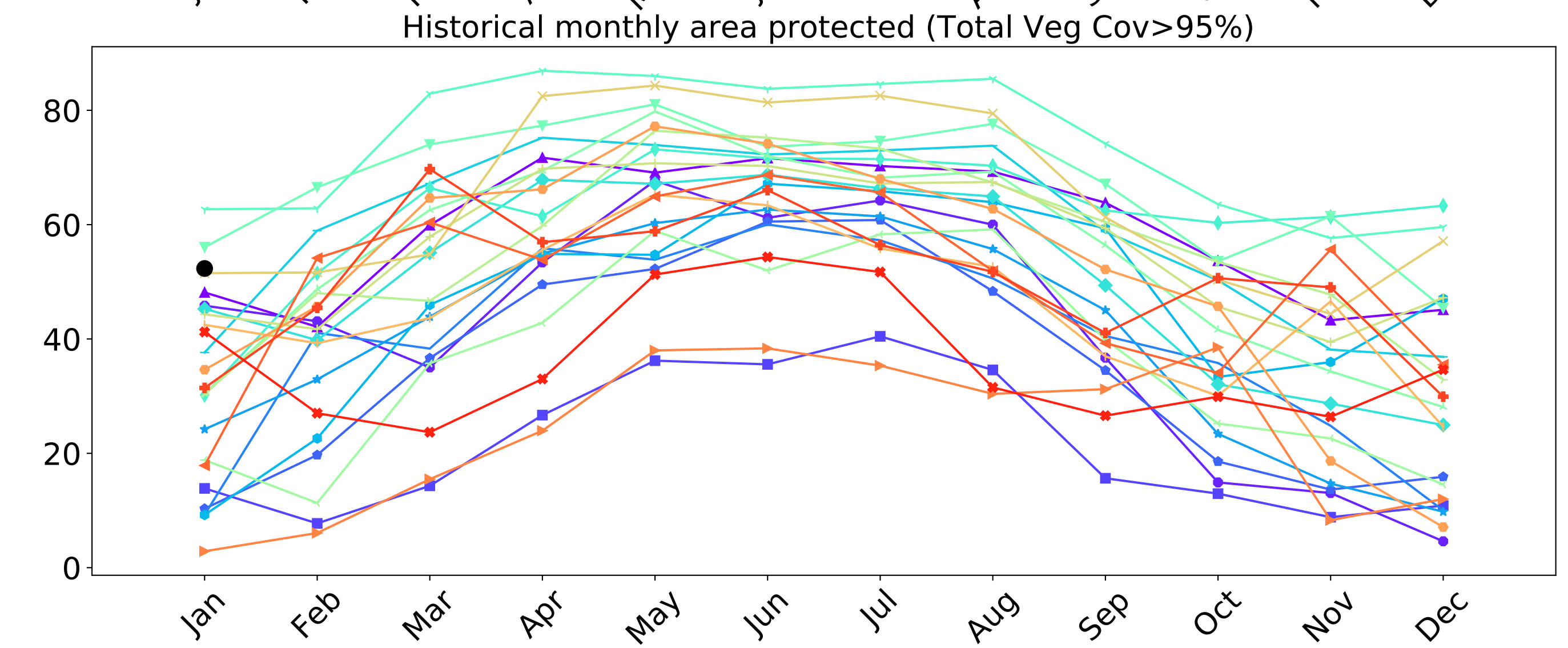
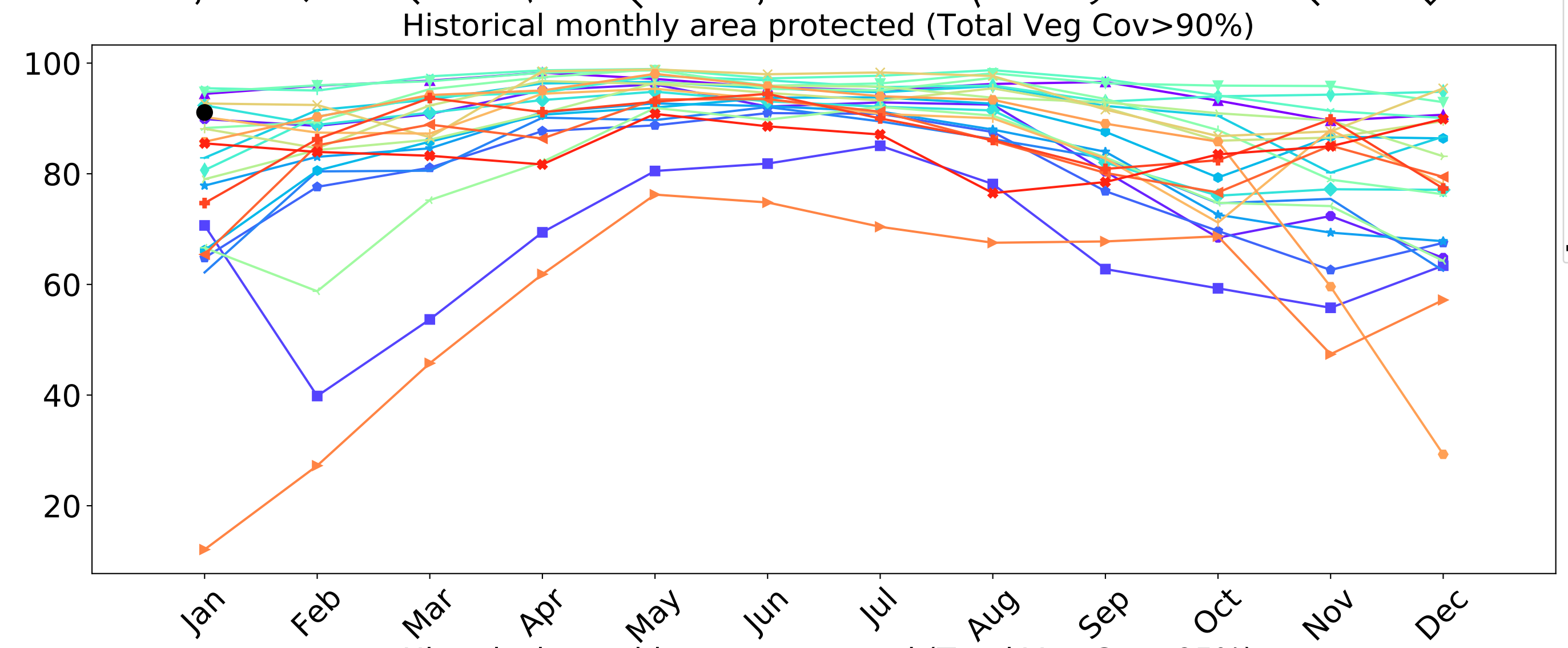
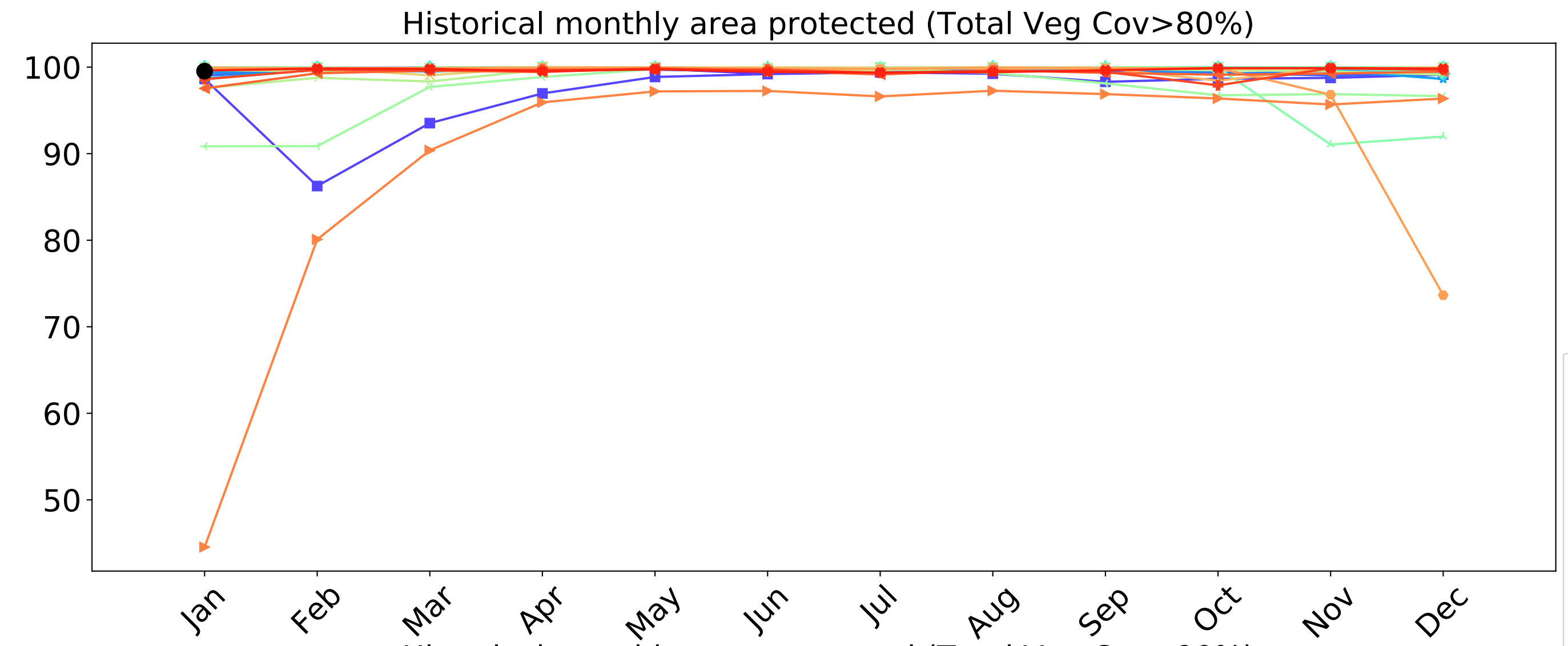
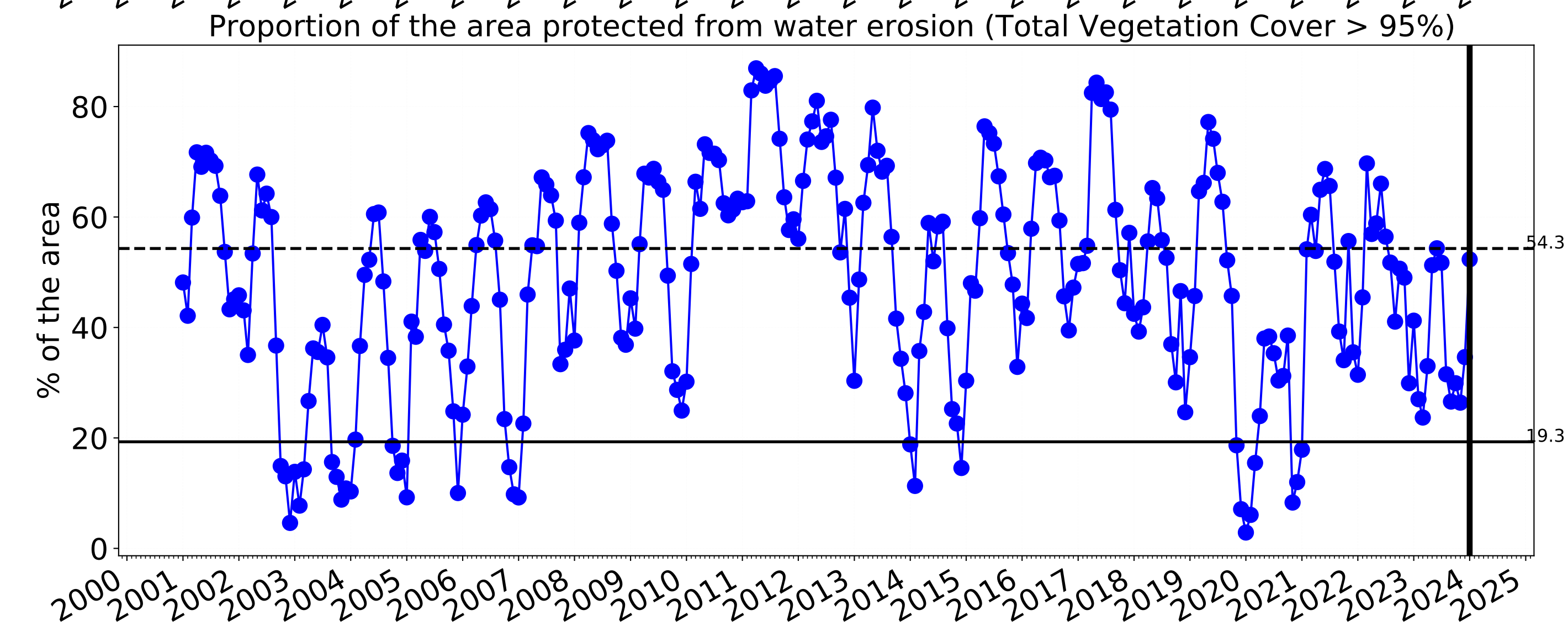
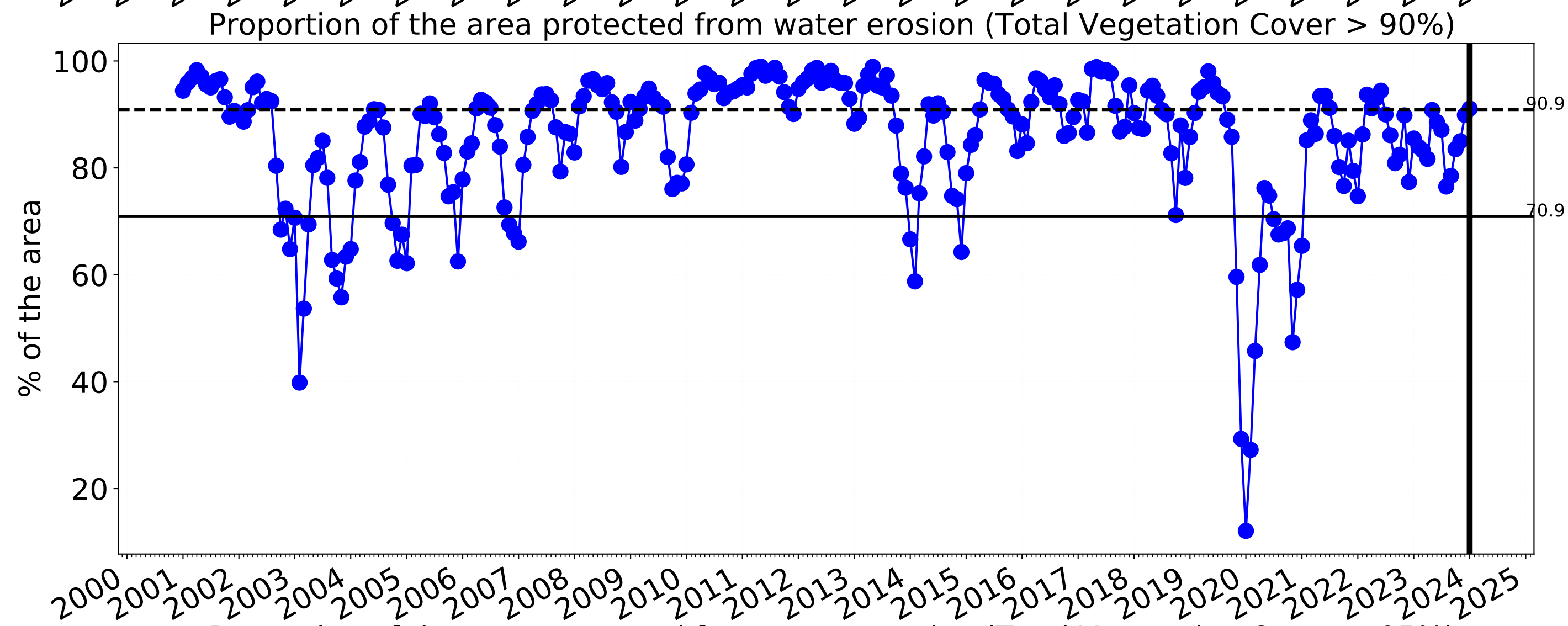
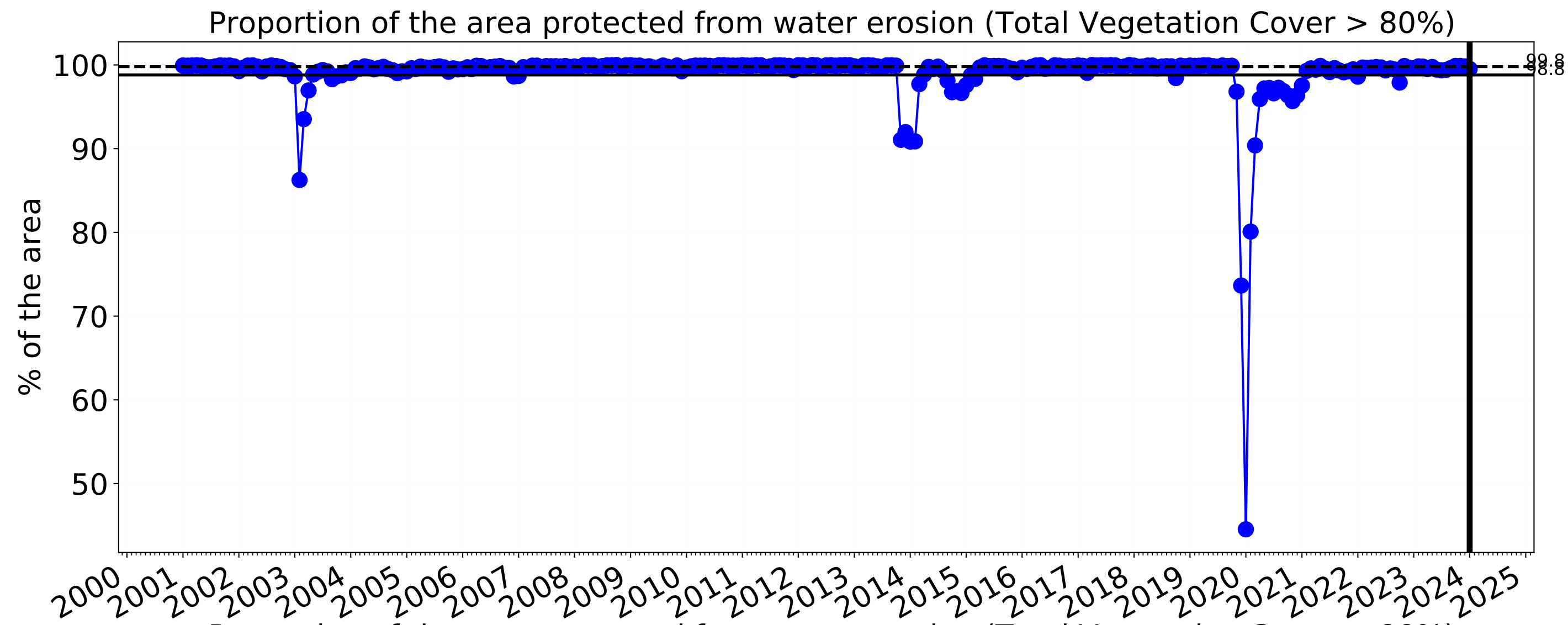


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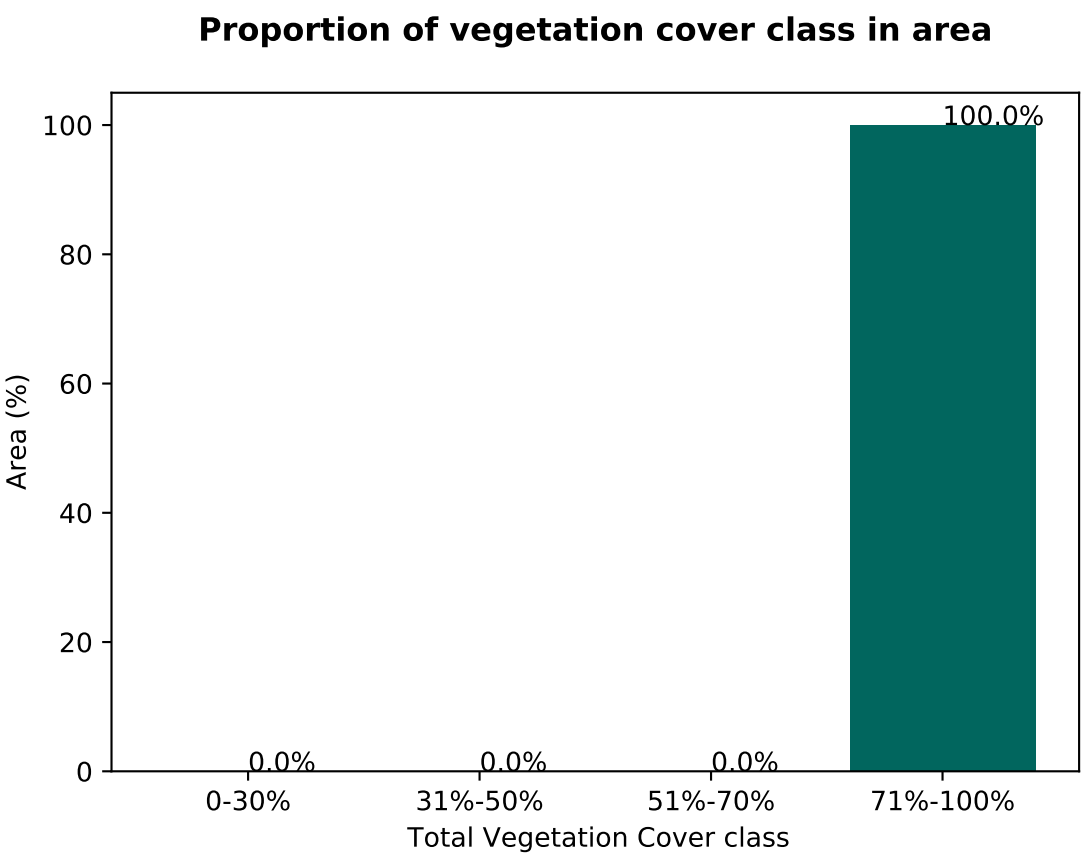
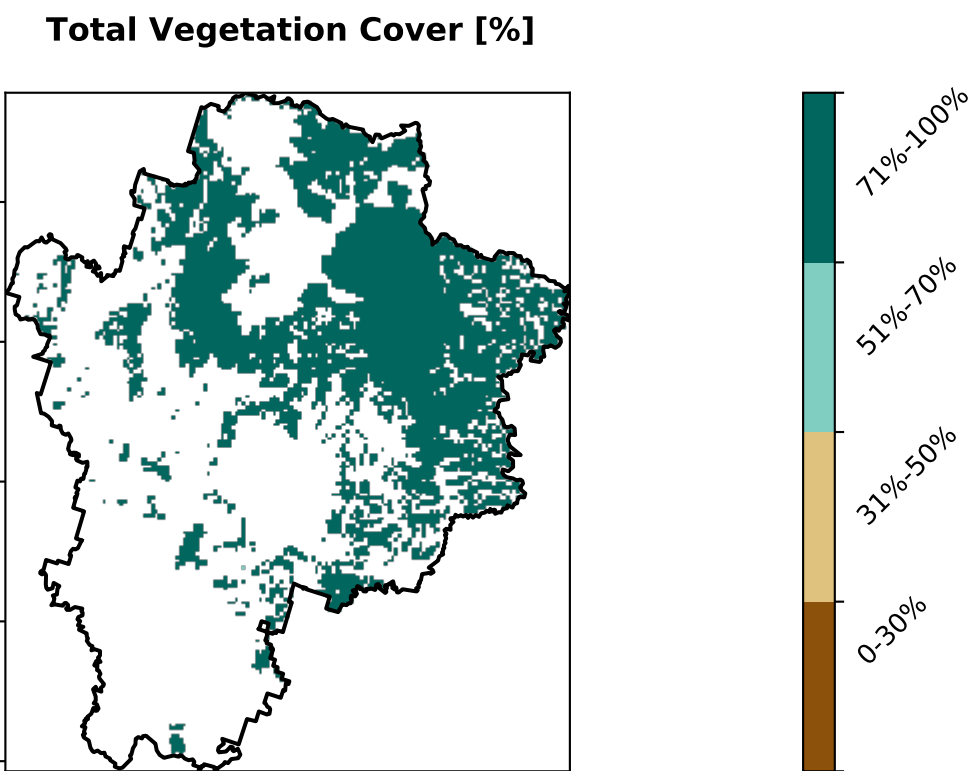
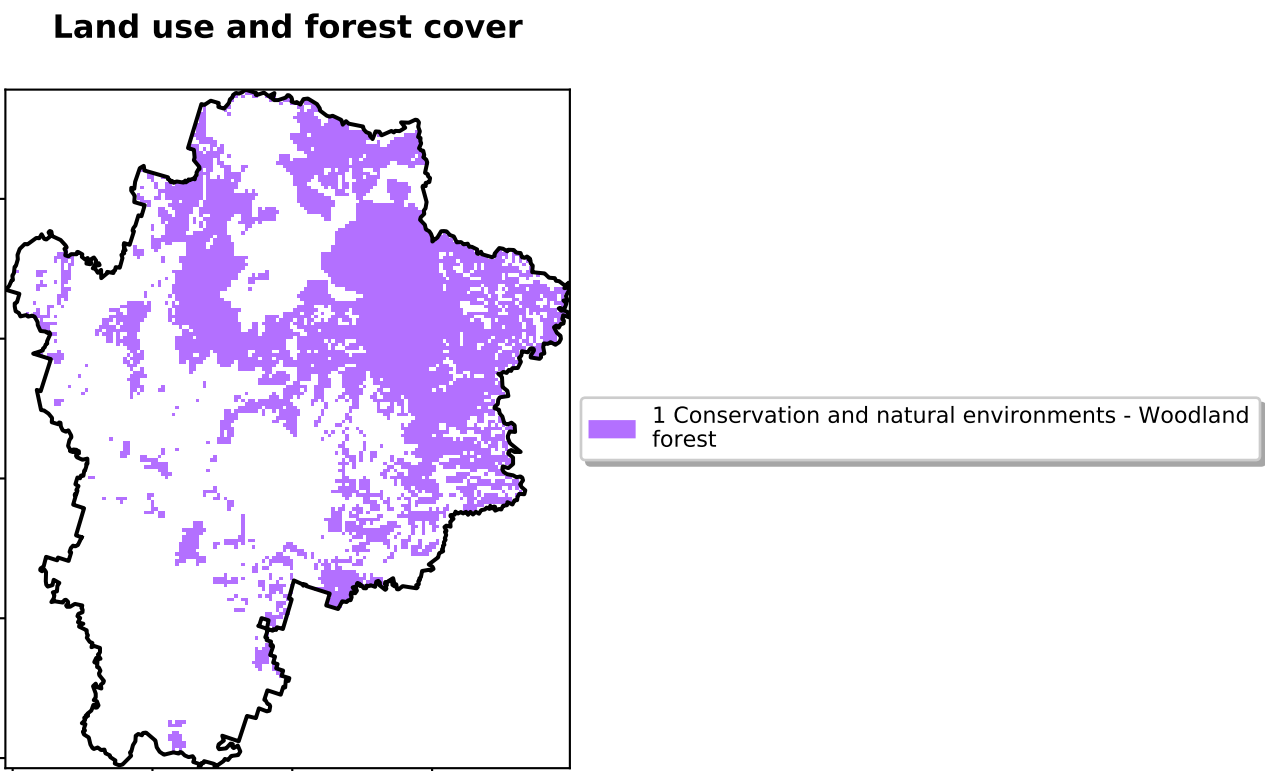




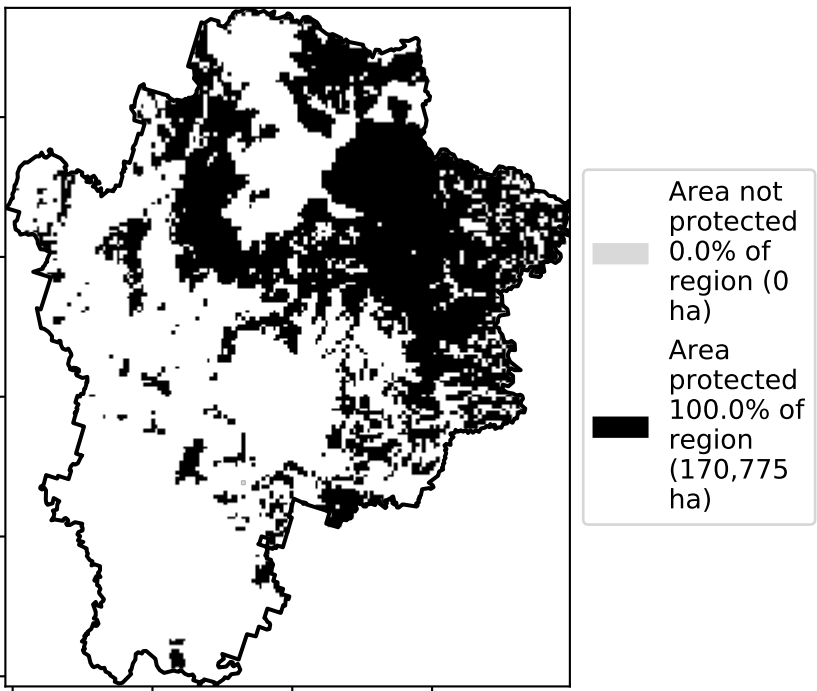


Conservation and natural environments Woodland forest

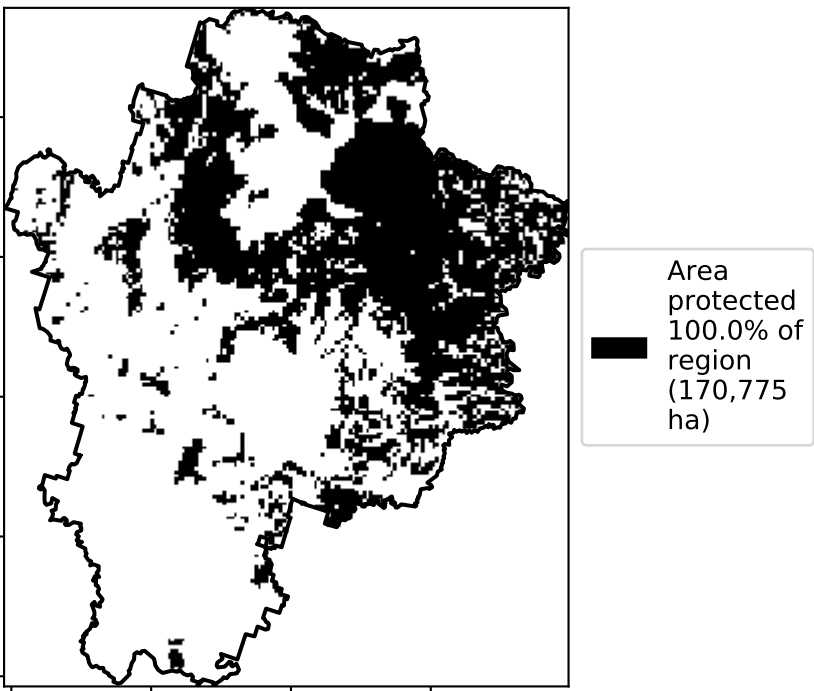
Catchment Scale  
Land Use and Forests  
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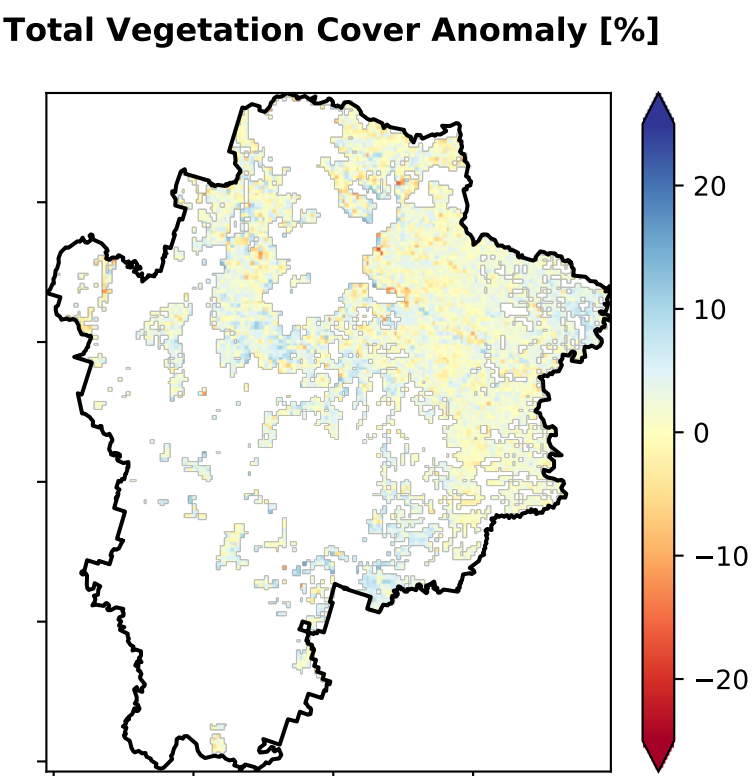
% Area protected from water erosion (>70%)



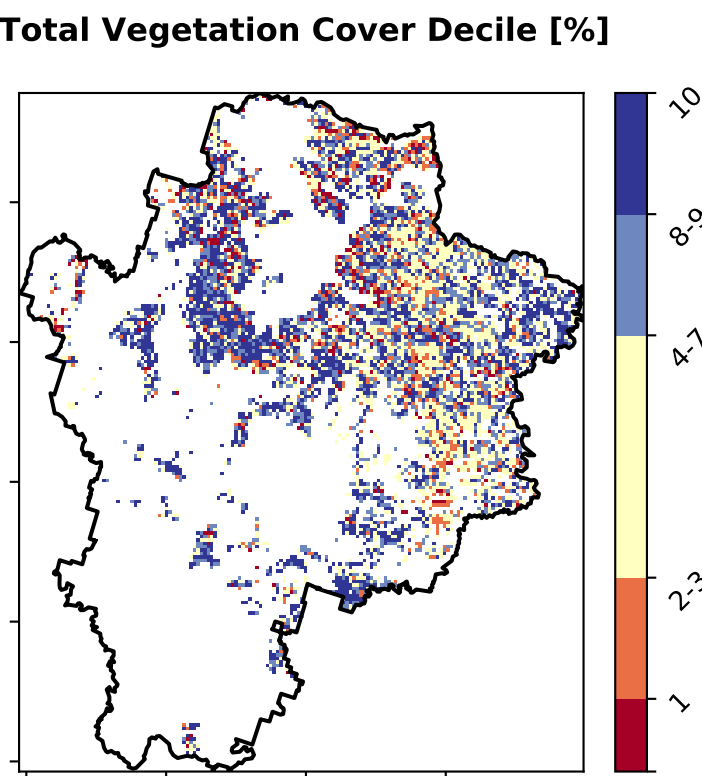
% Area protected from wind erosion (>50%)



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.



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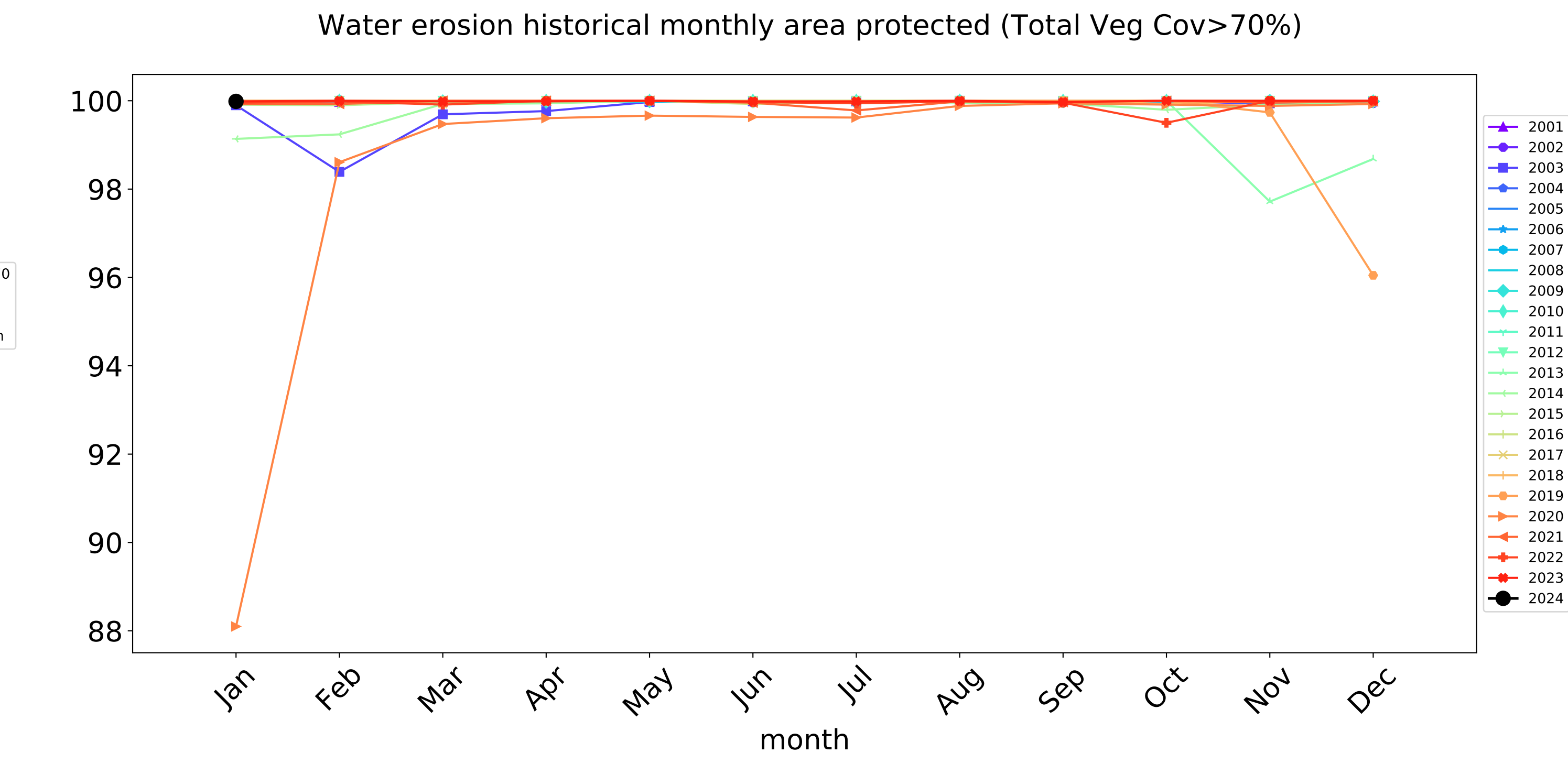
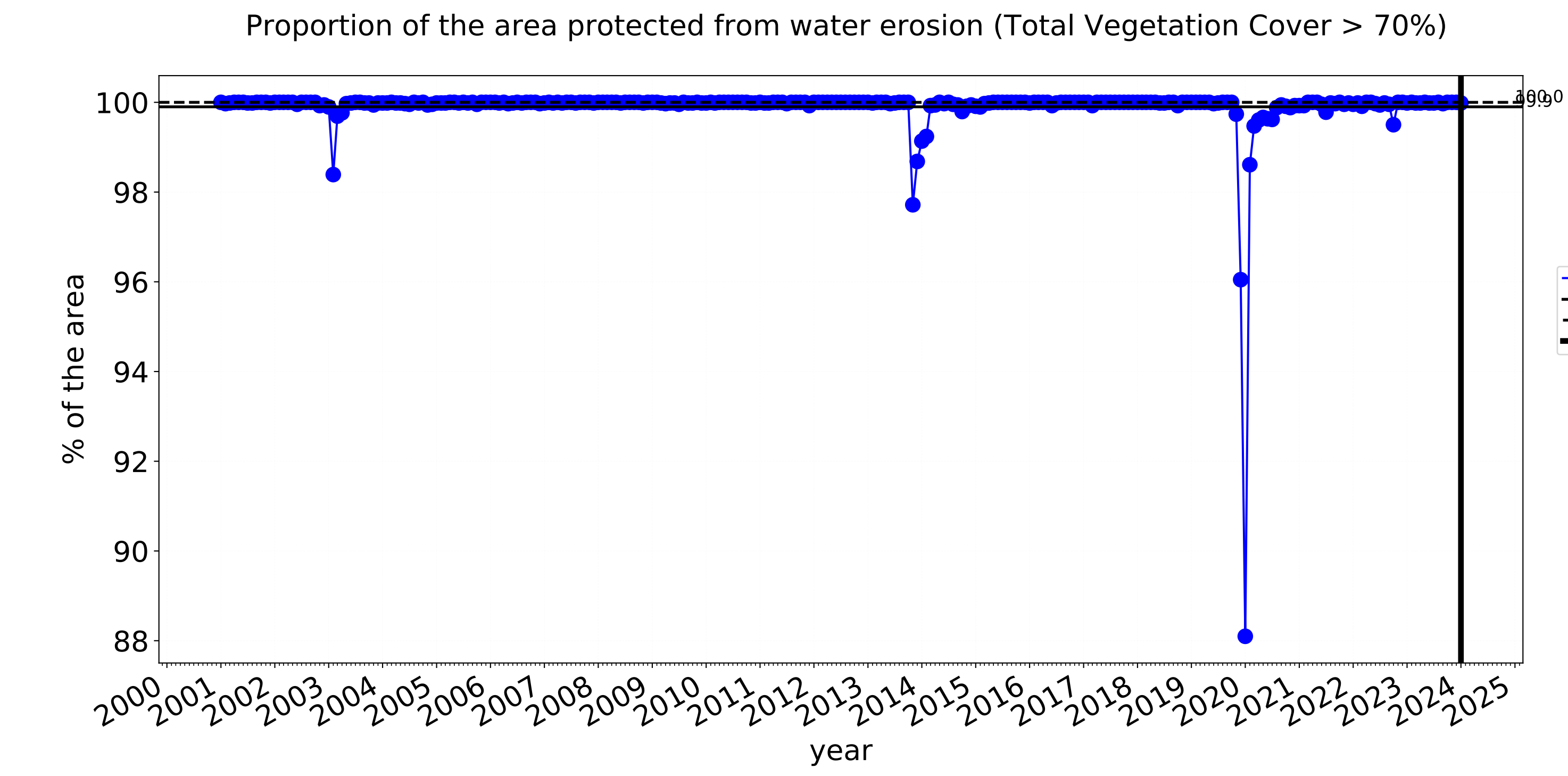
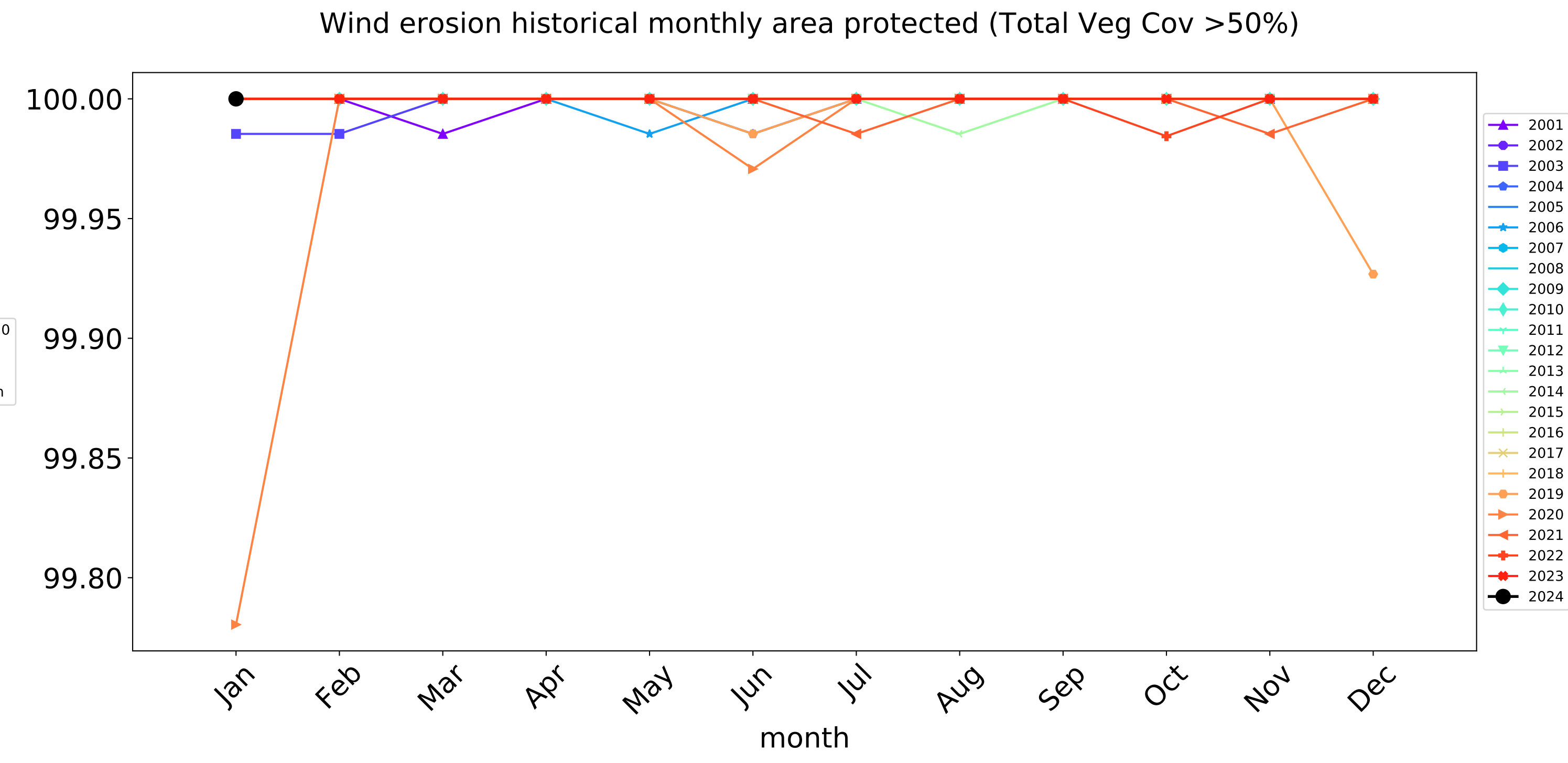
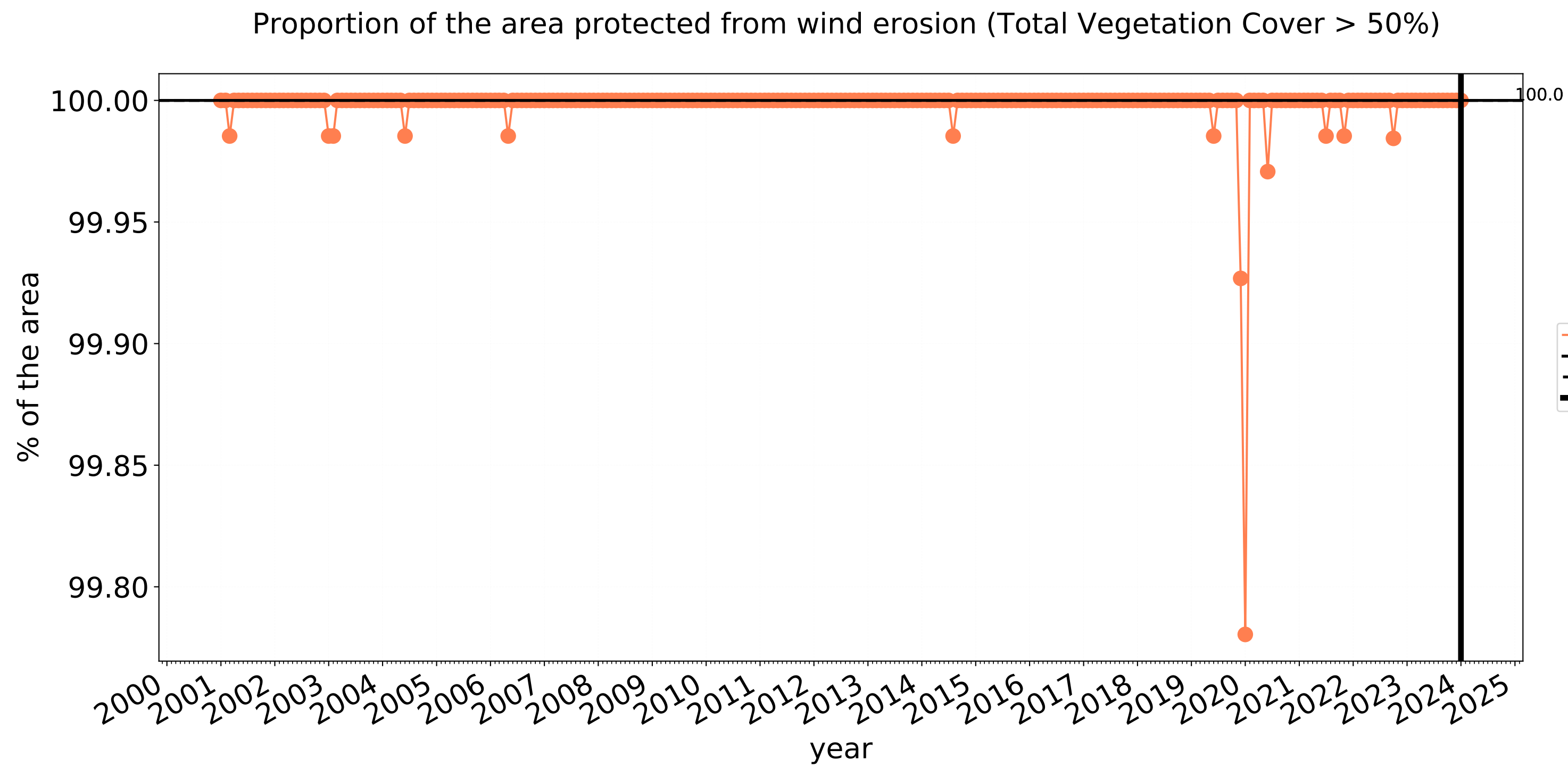


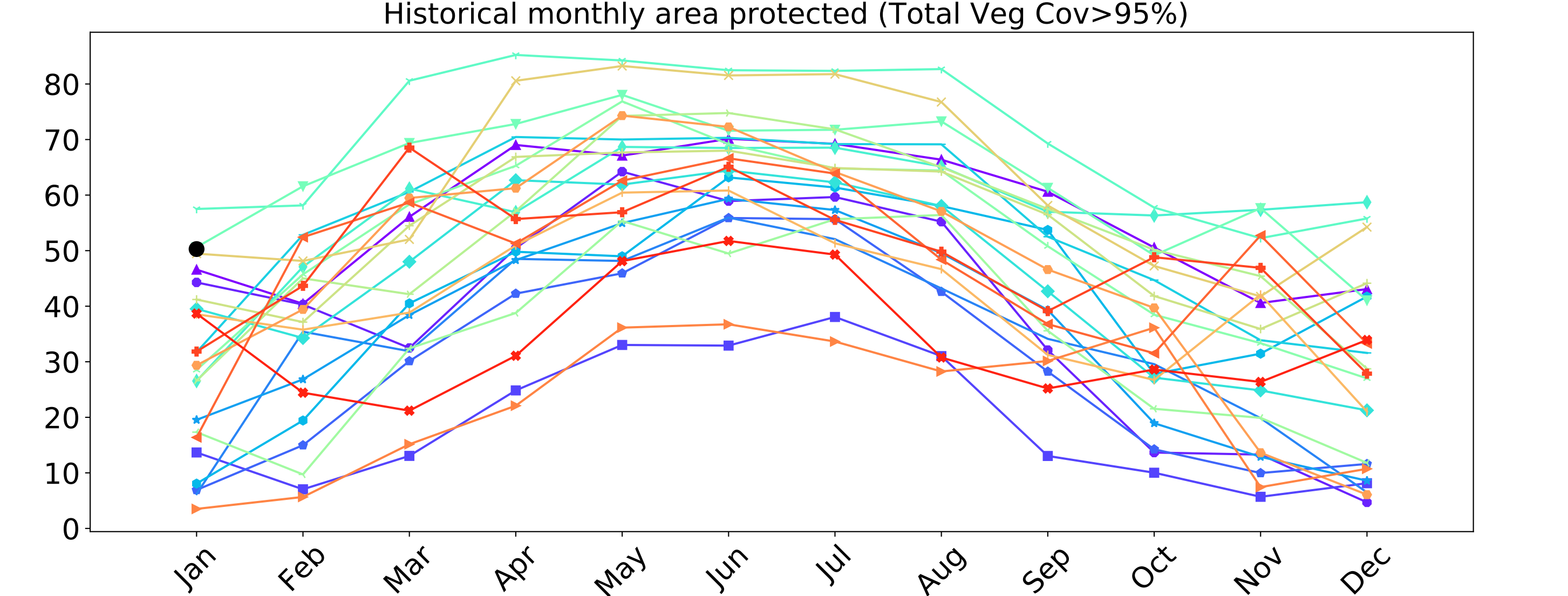
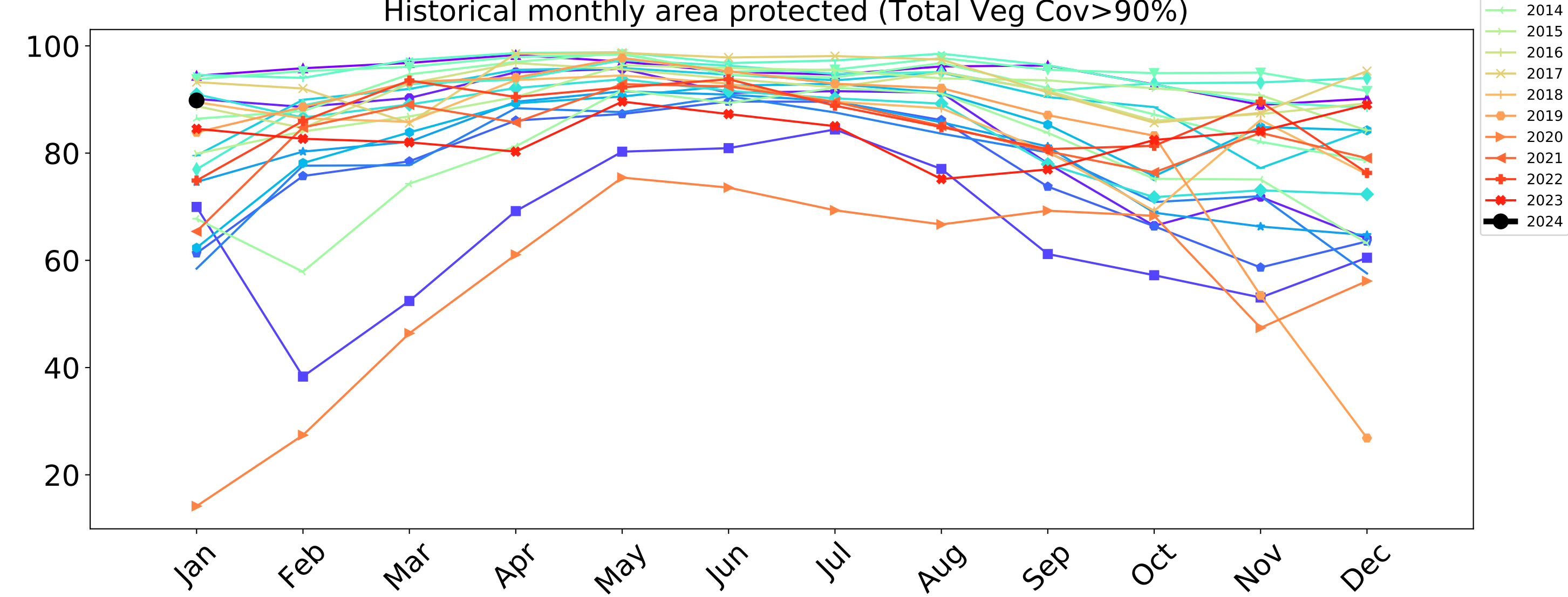
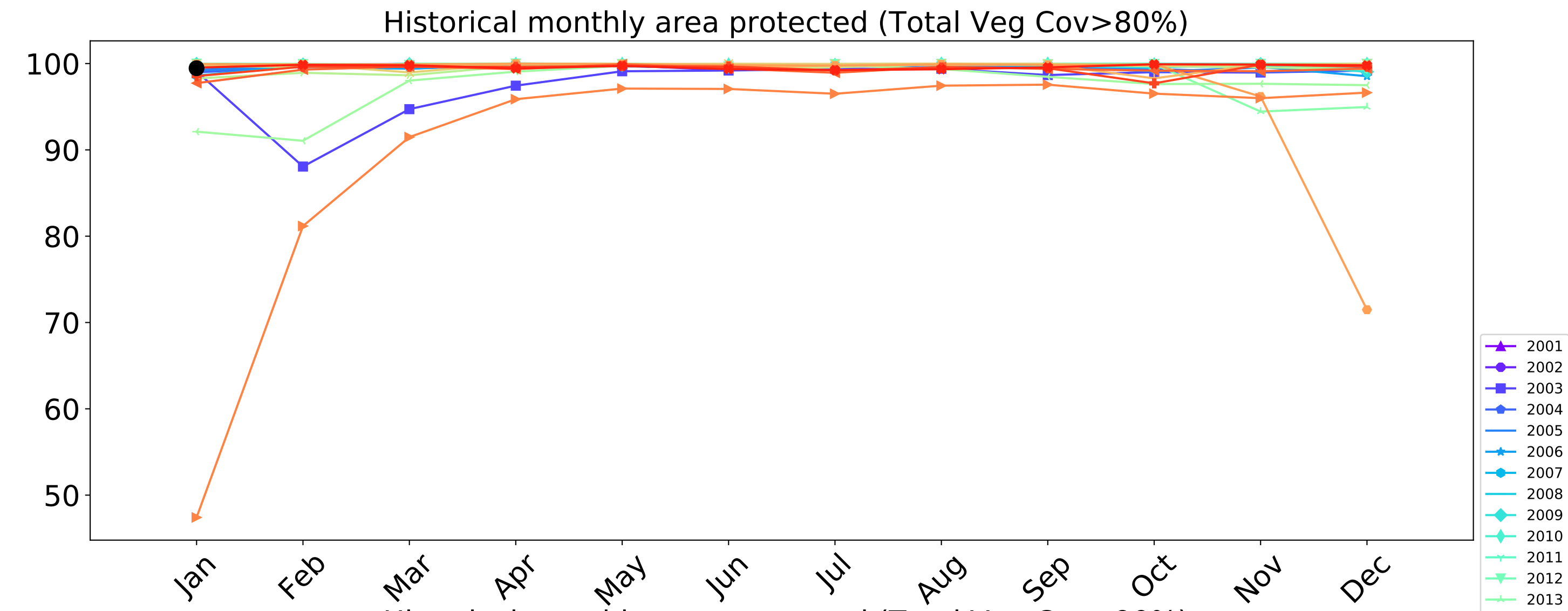
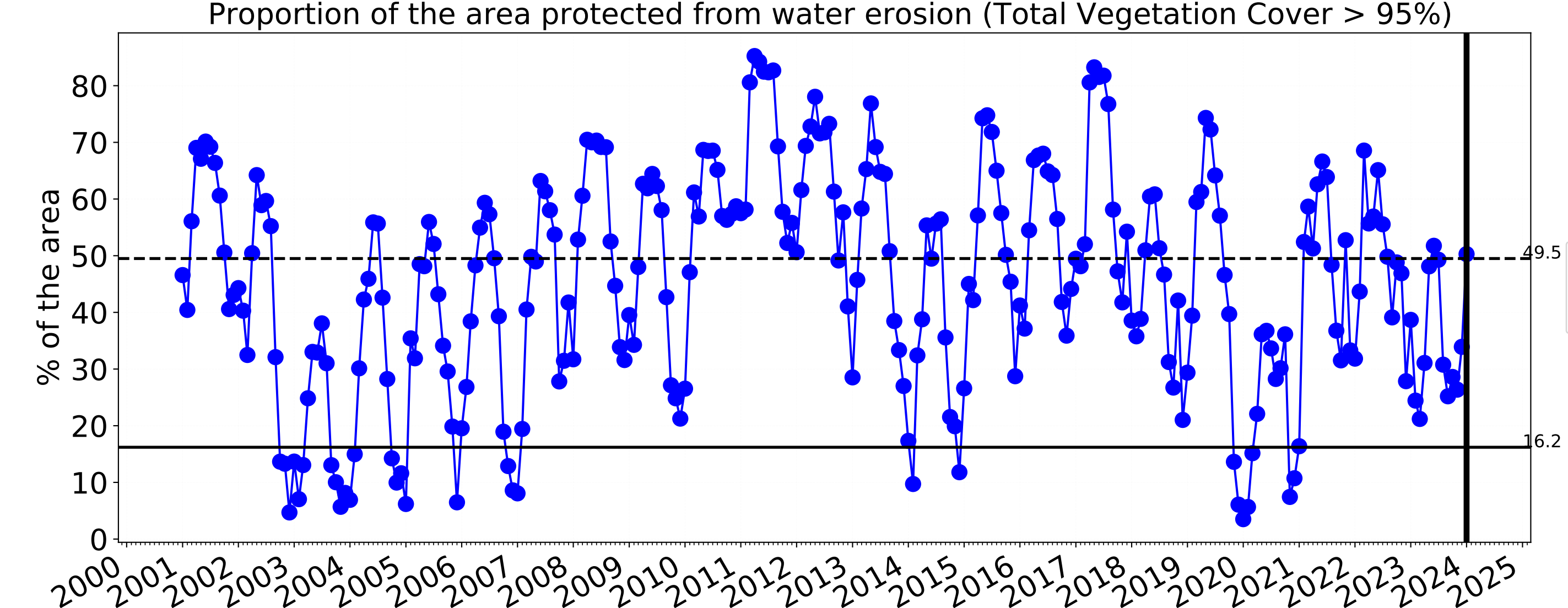
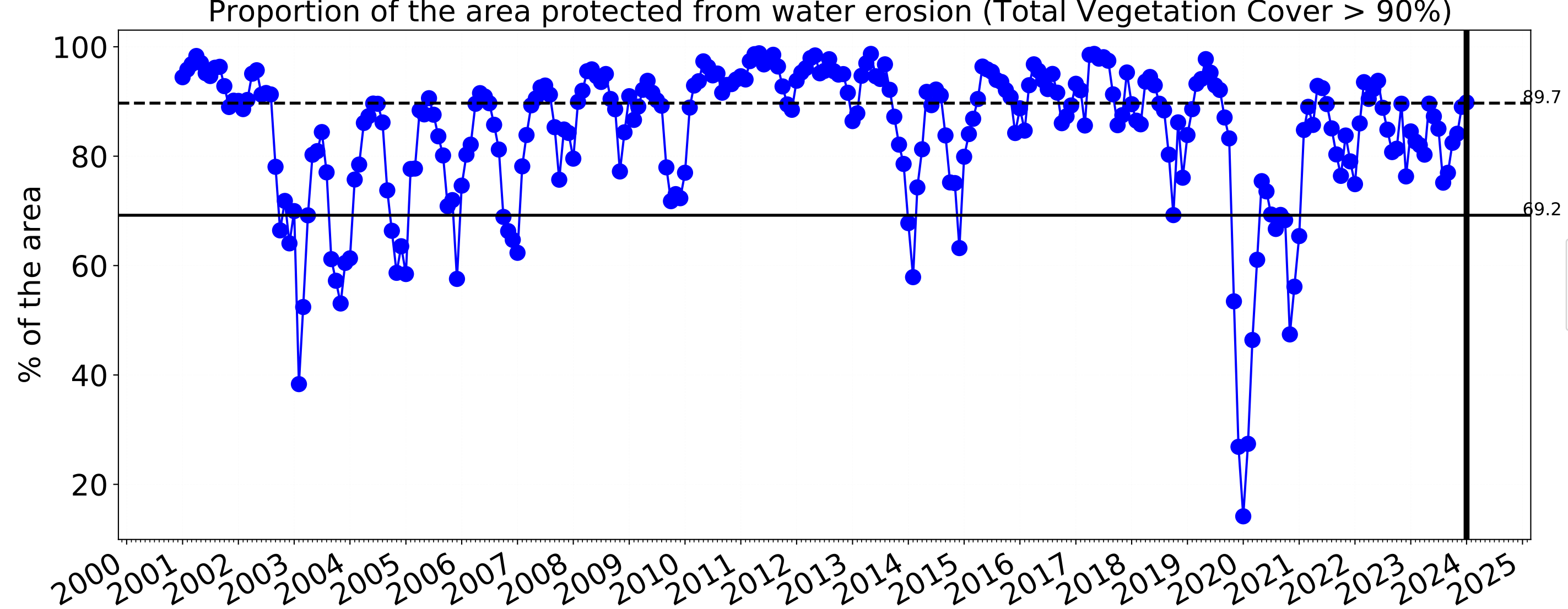
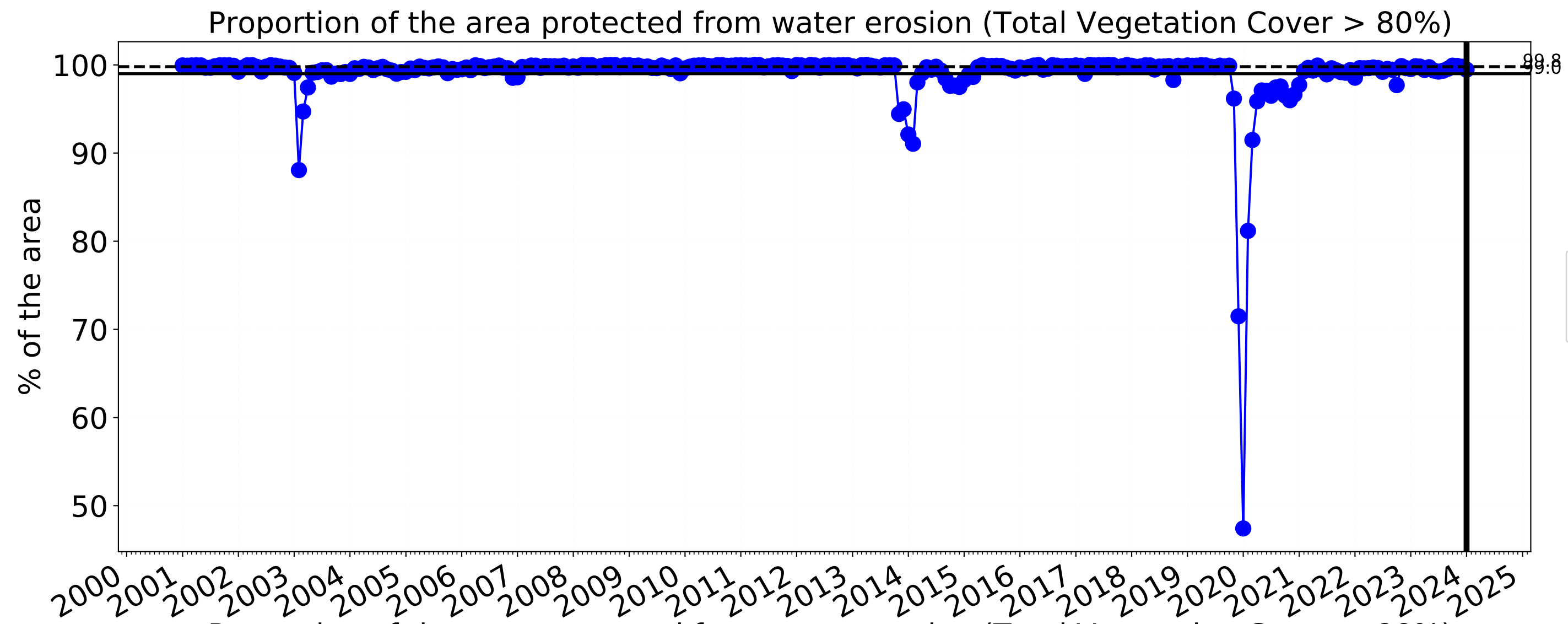
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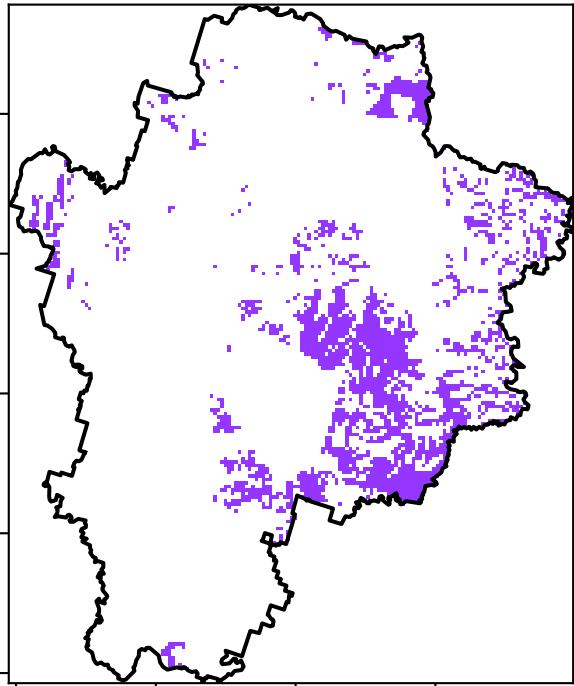




Conservation and natural environments Forest (non woodland)

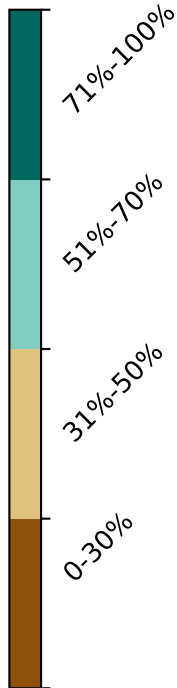
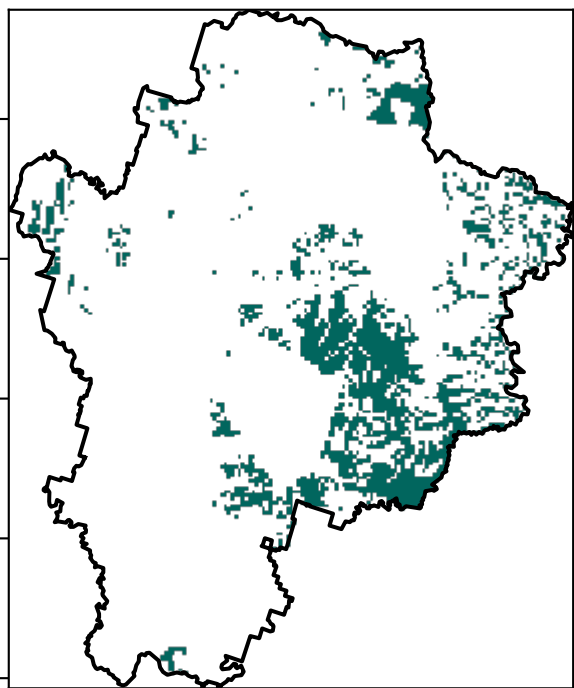
Land use and forest cover

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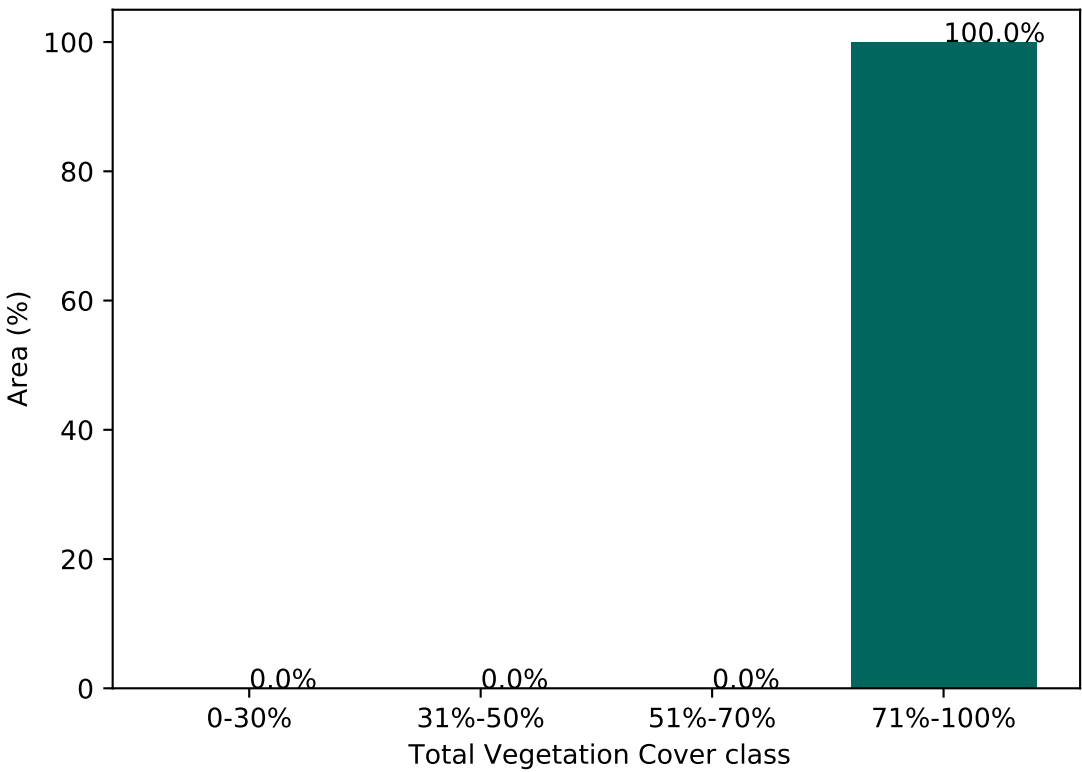


1 Conservation and natural environments - Non-woodland forest

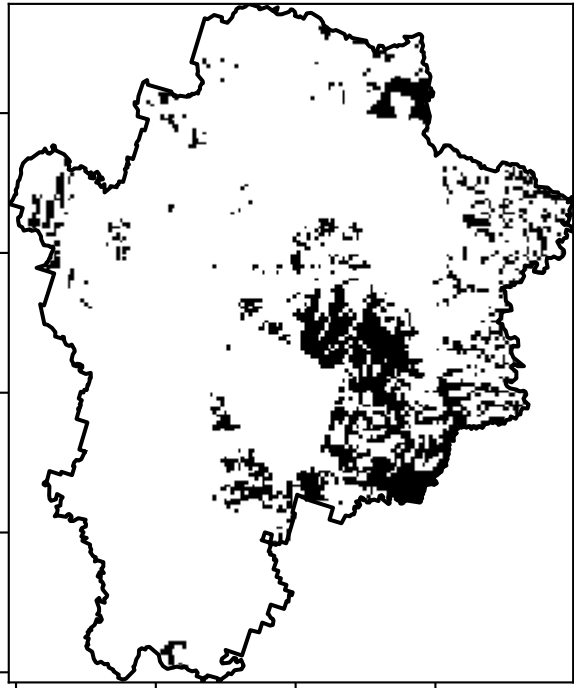
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

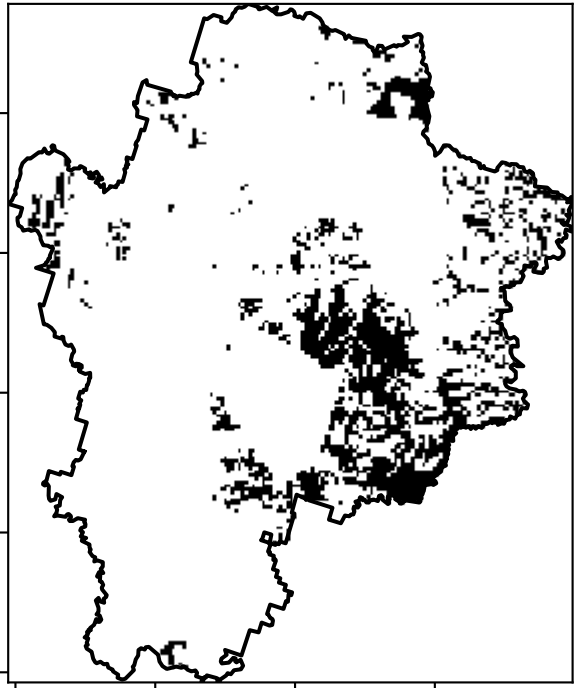


% Area protected from water erosion (>70%)



Area protected 100.0% of region (60,950 ha)

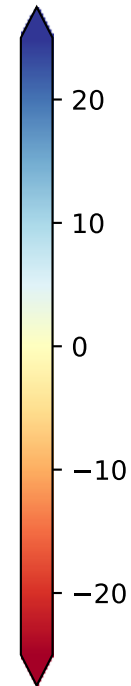
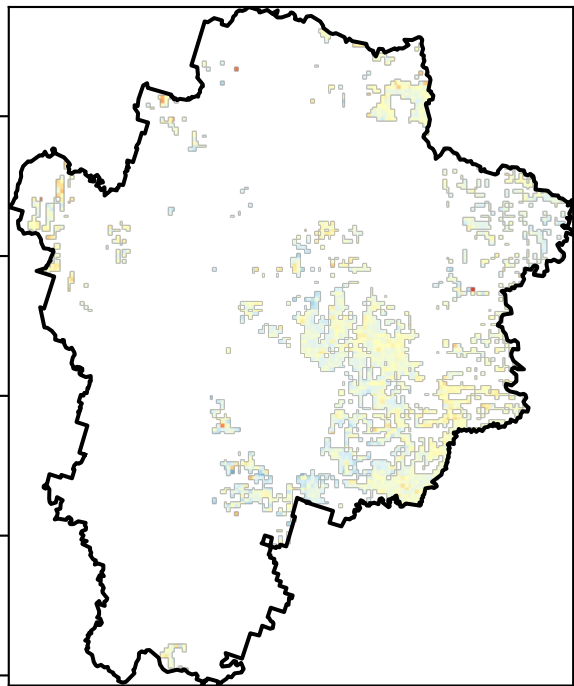
% Area protected from wind erosion (>50%)



Area protected 100.0% of region (60,950 ha)

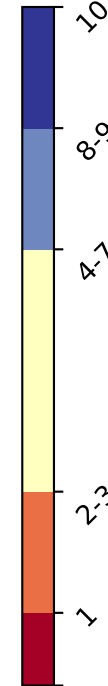
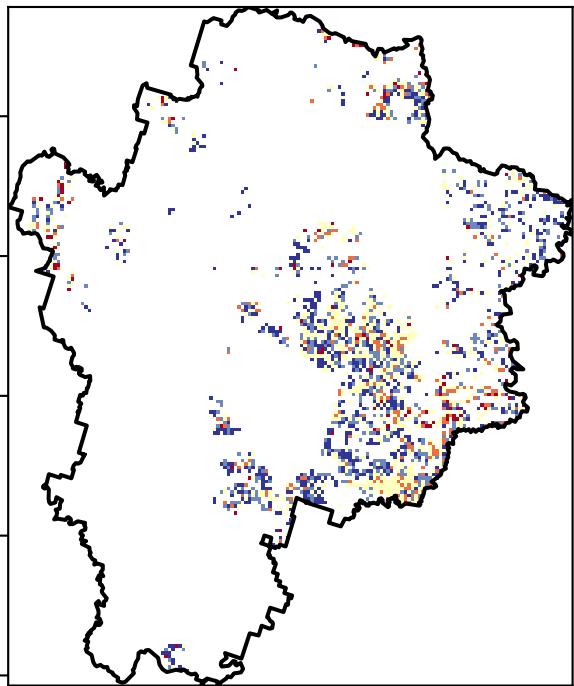
Total Vegetation Cover Anomaly [%]

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Total Vegetation Cover Decile [%]



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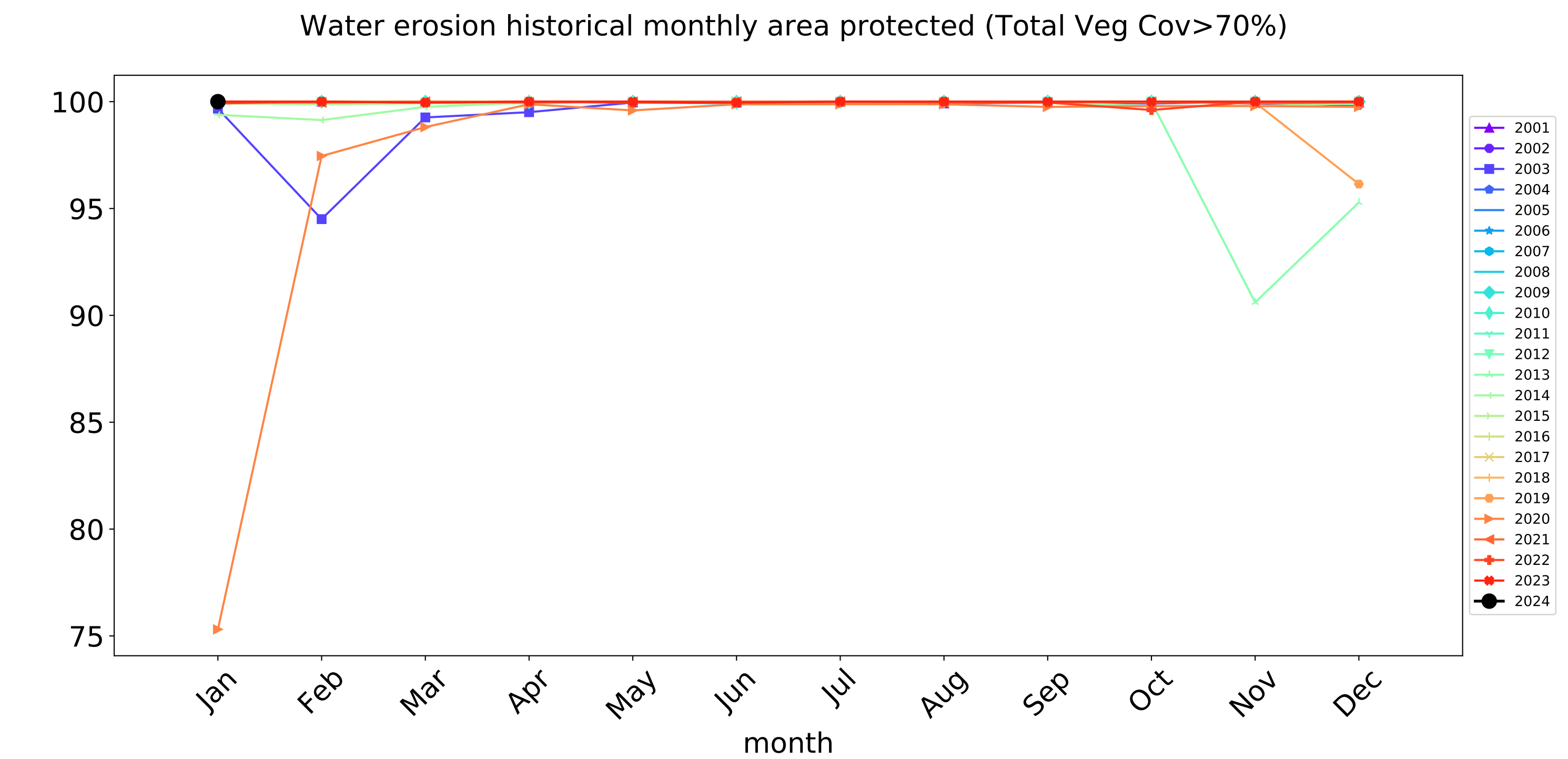
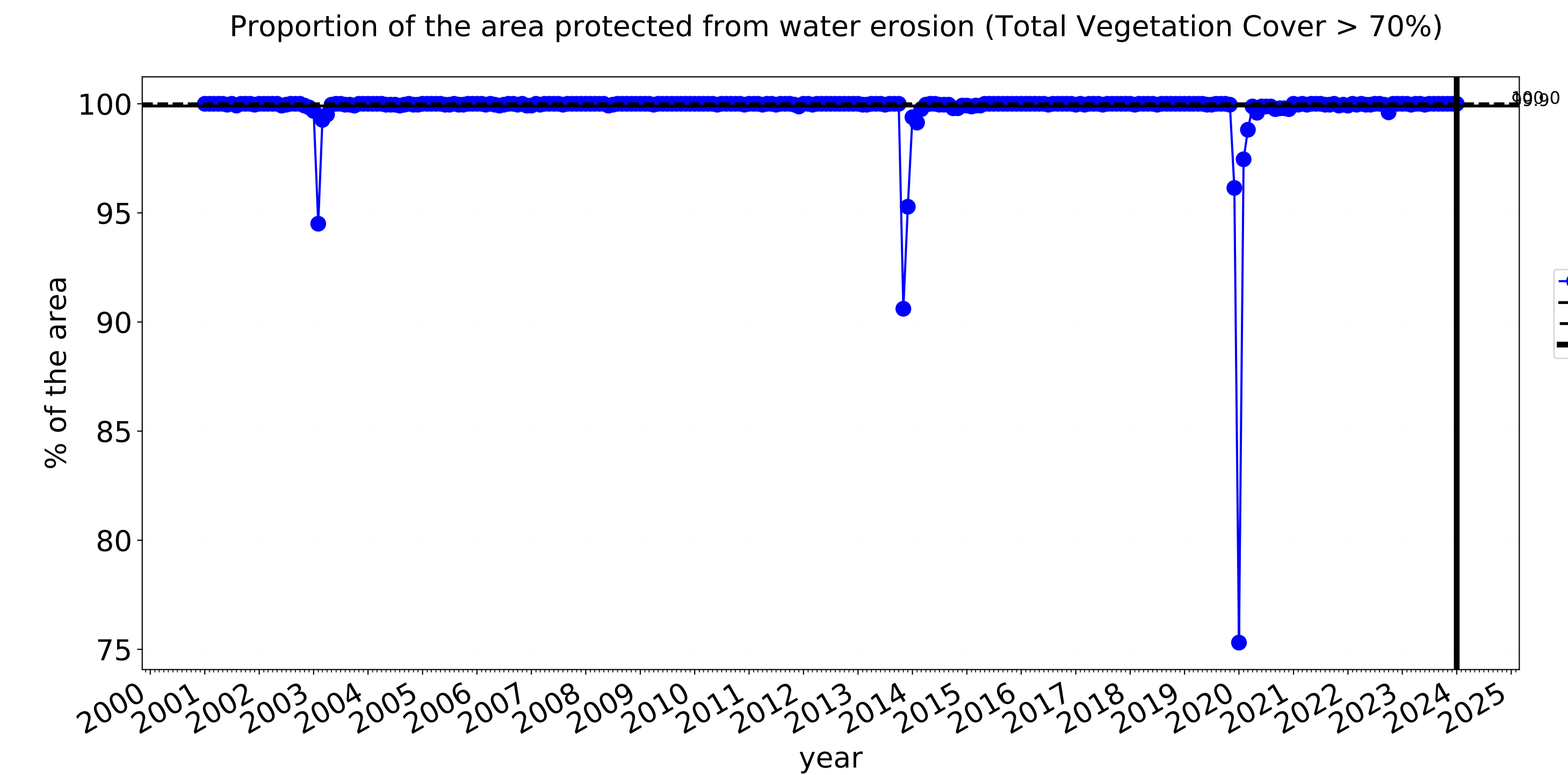
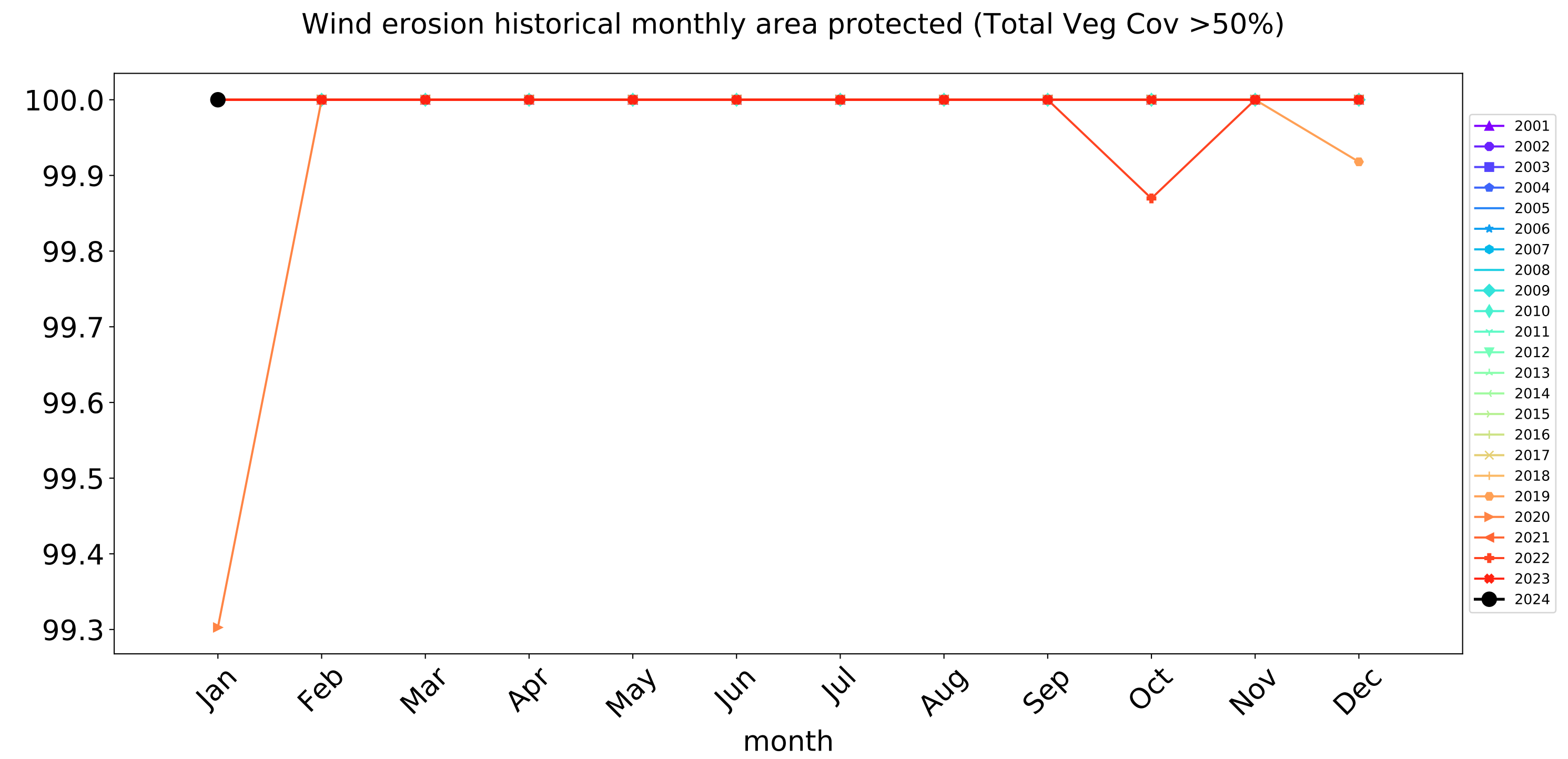
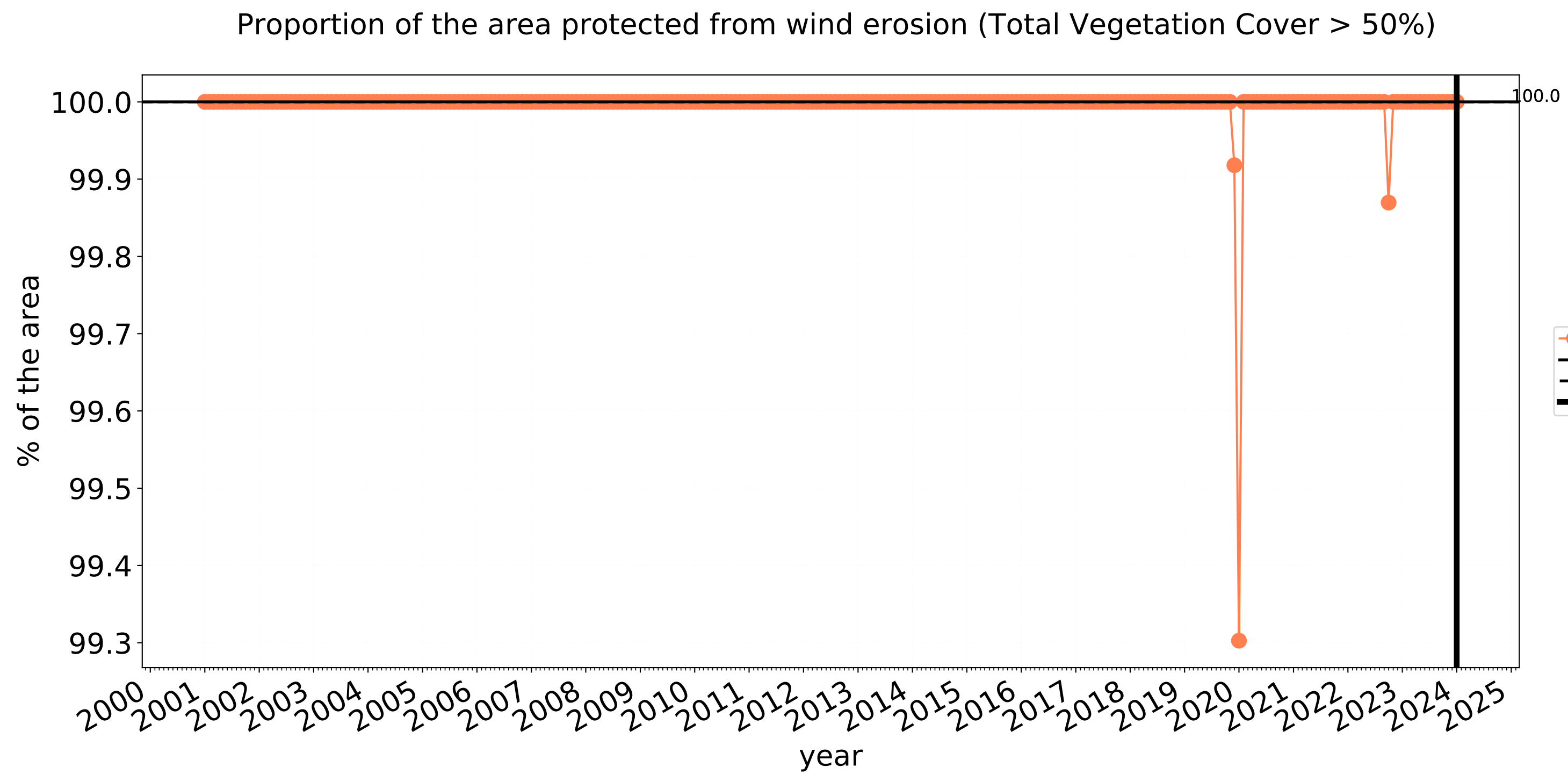


Australian Government

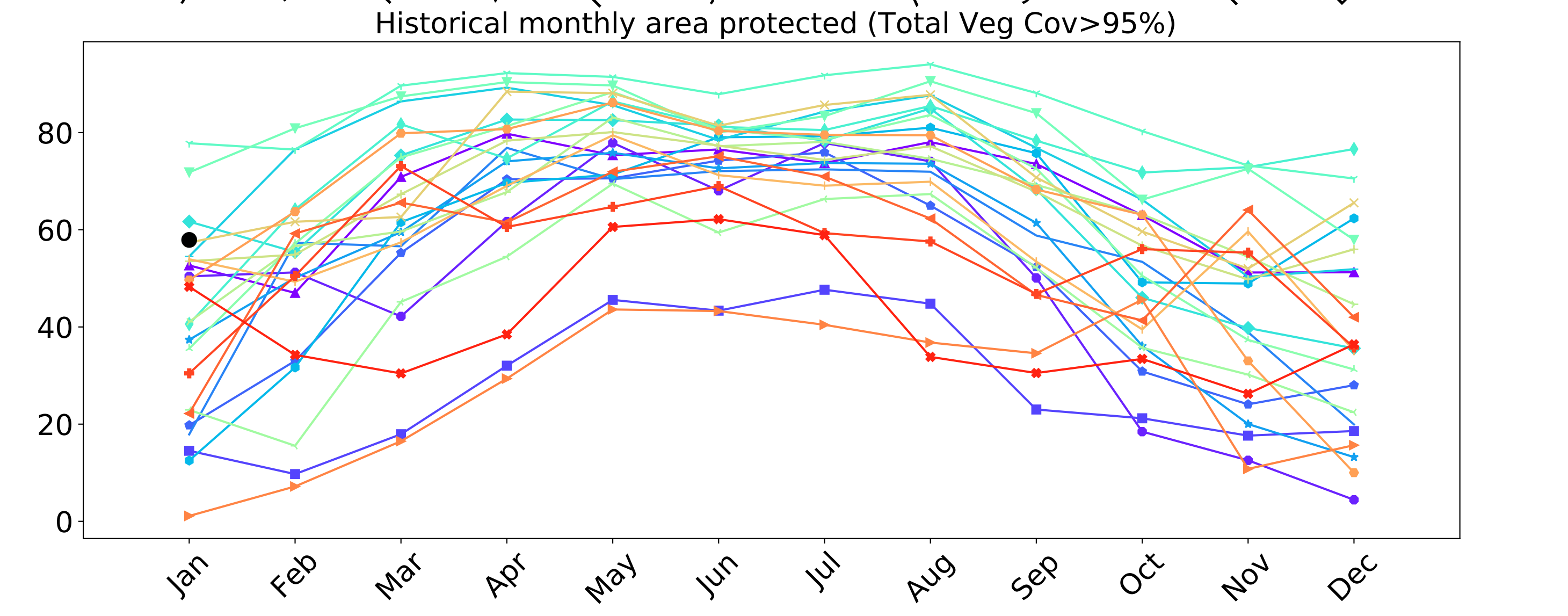
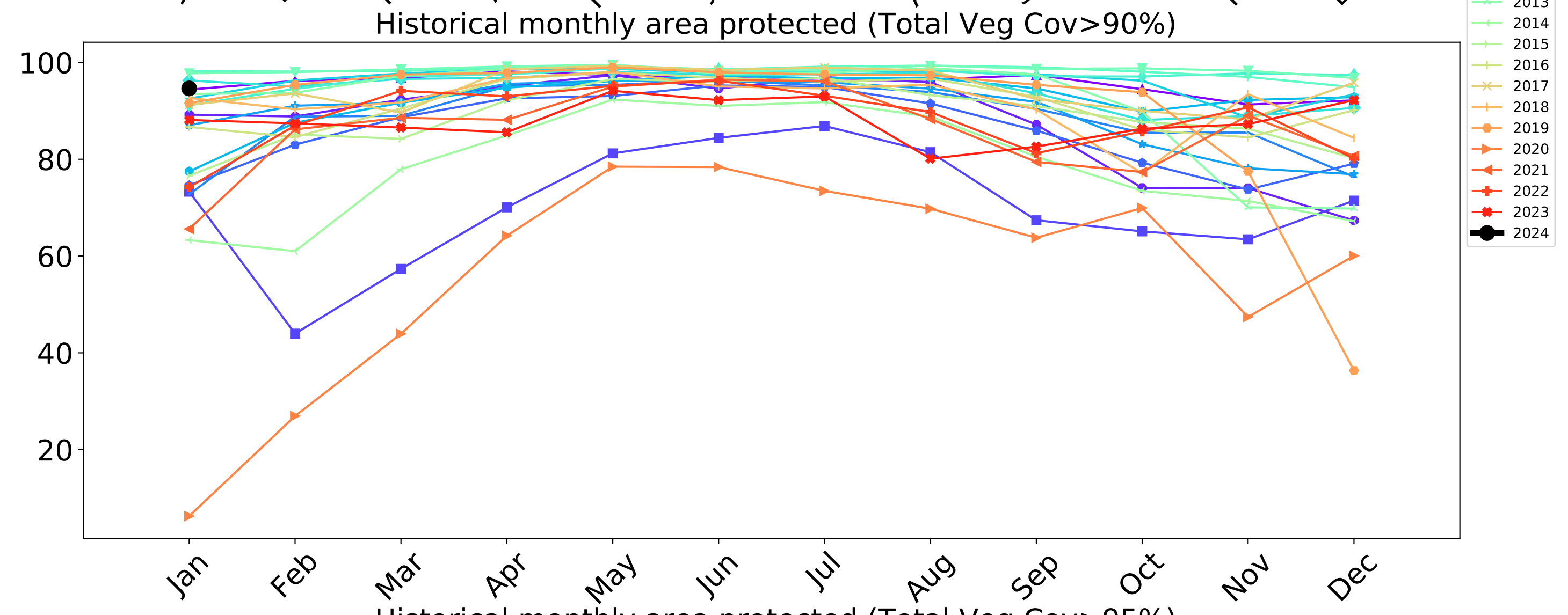
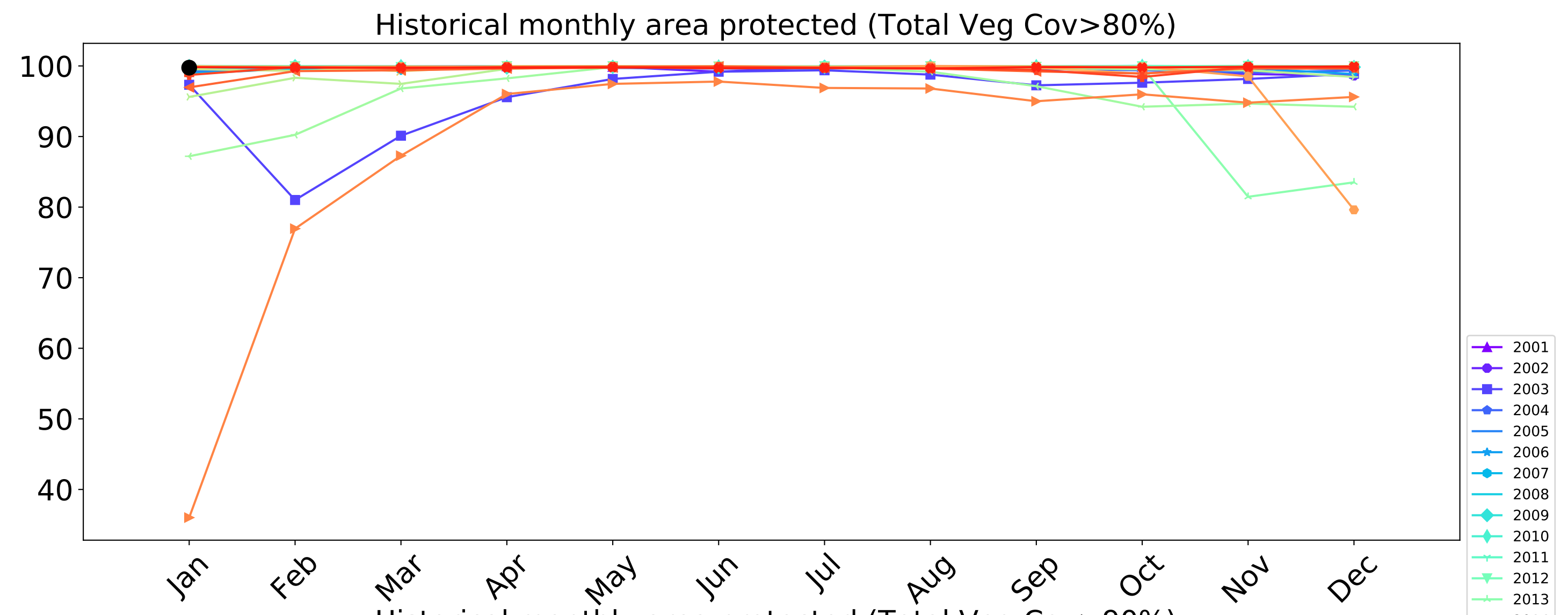
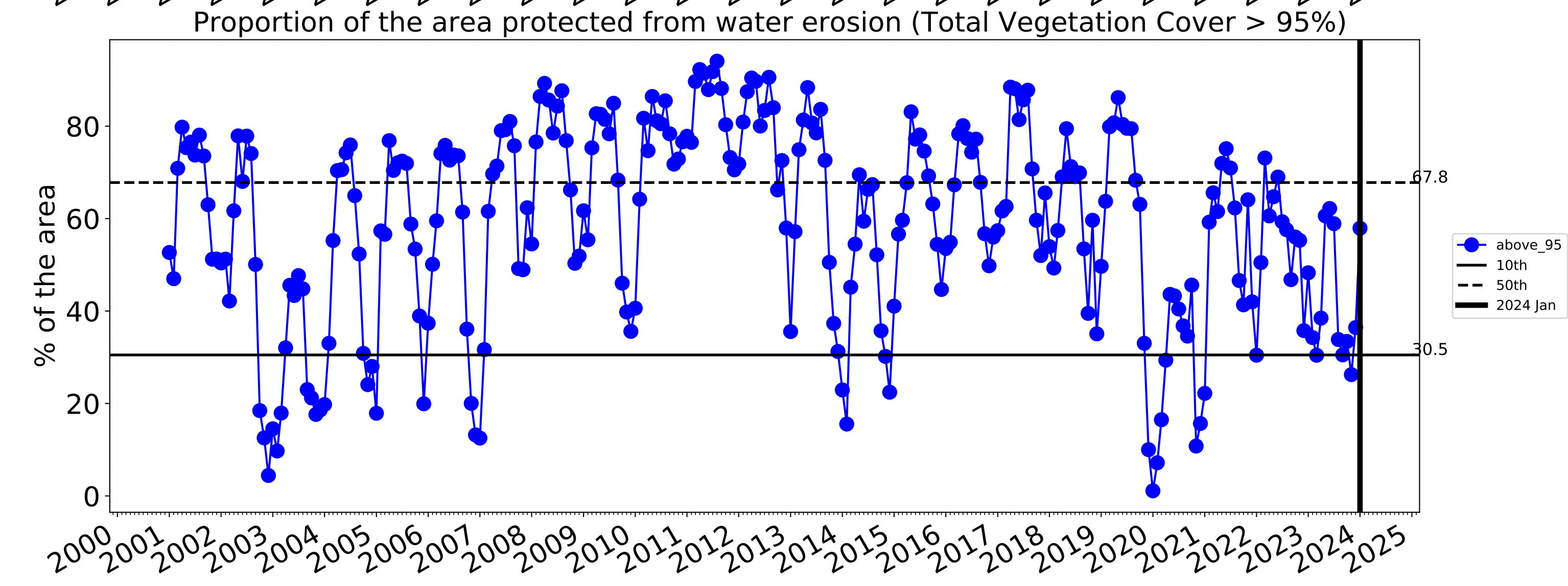
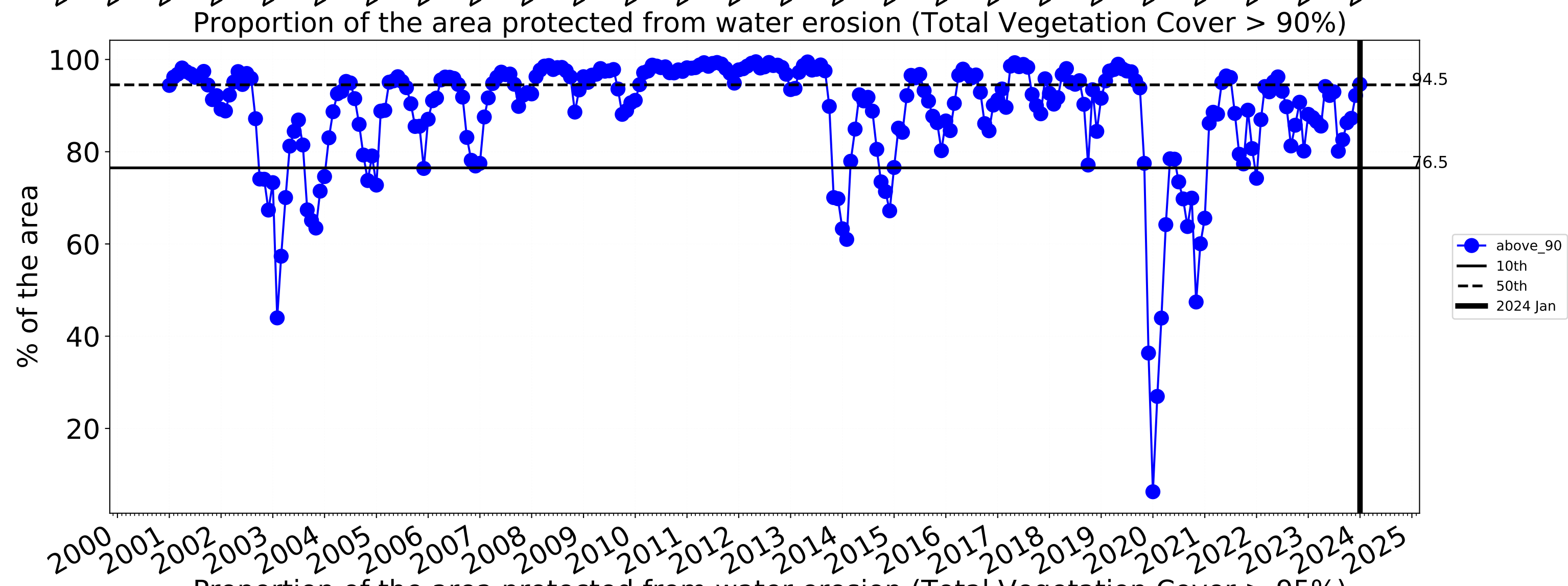
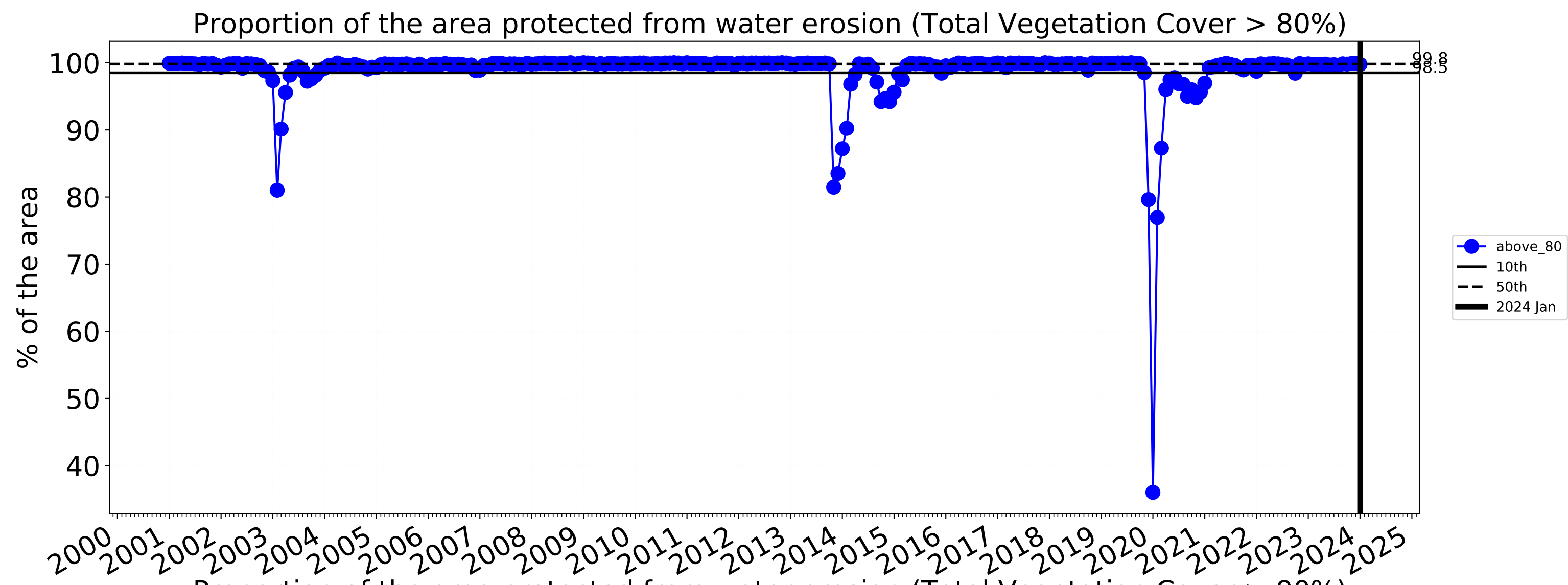
National  
Landcare  
Programme



Conservation and natural environments Forest (non woodland) timeseries

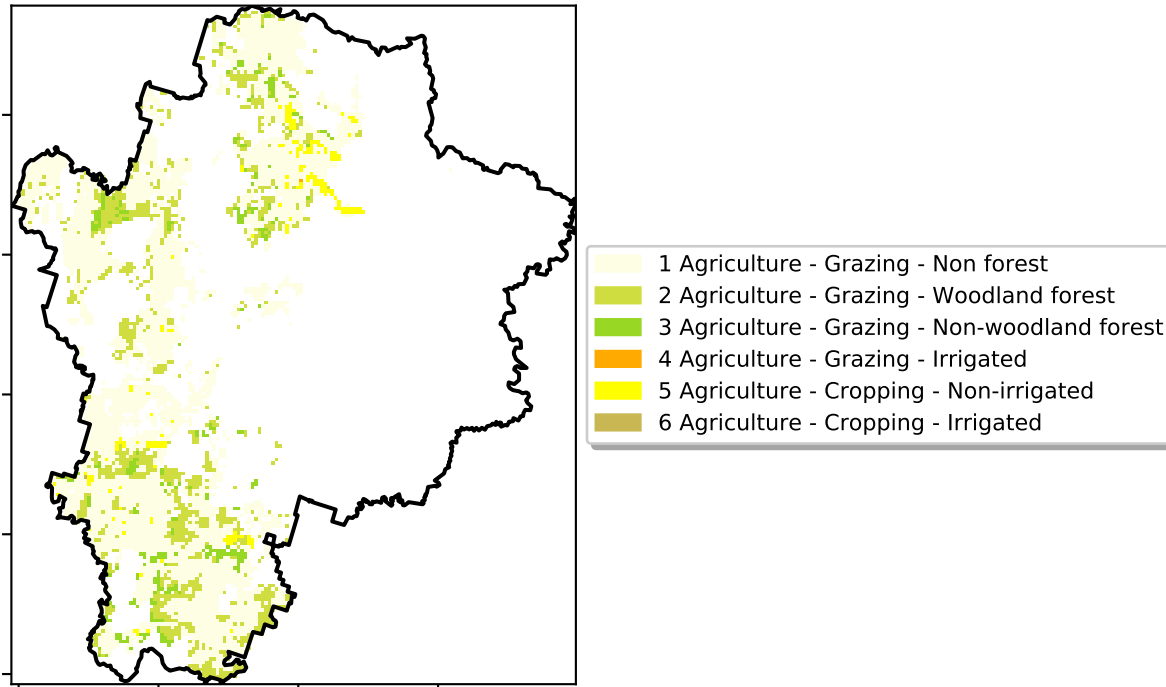




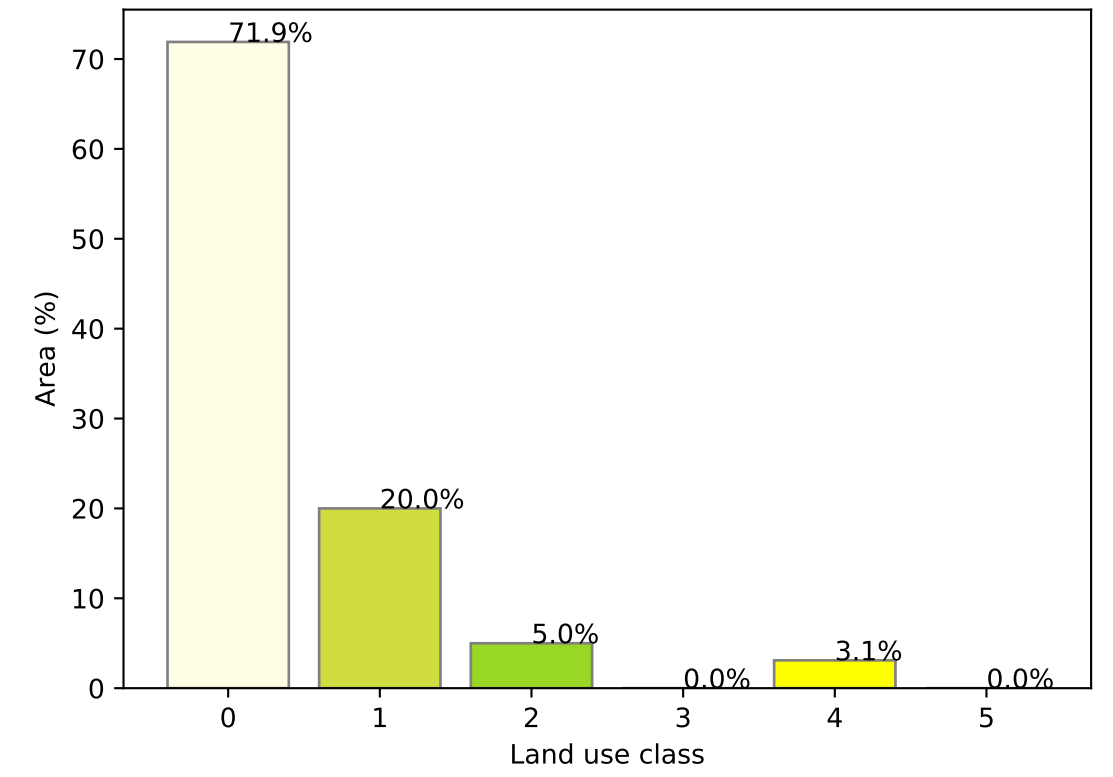


# Agriculture

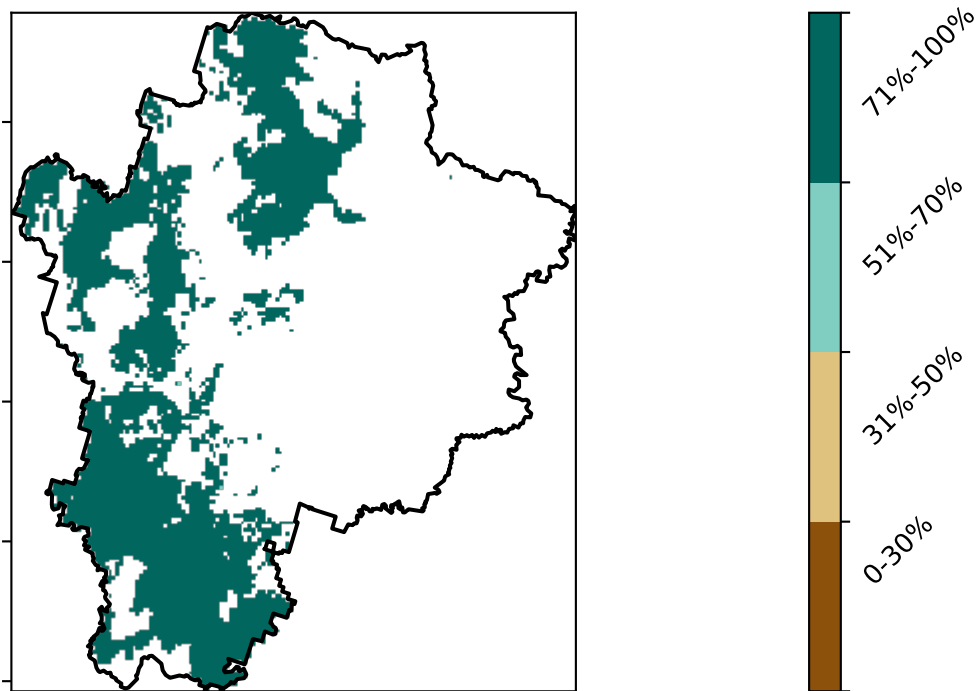
Land use and forest cover



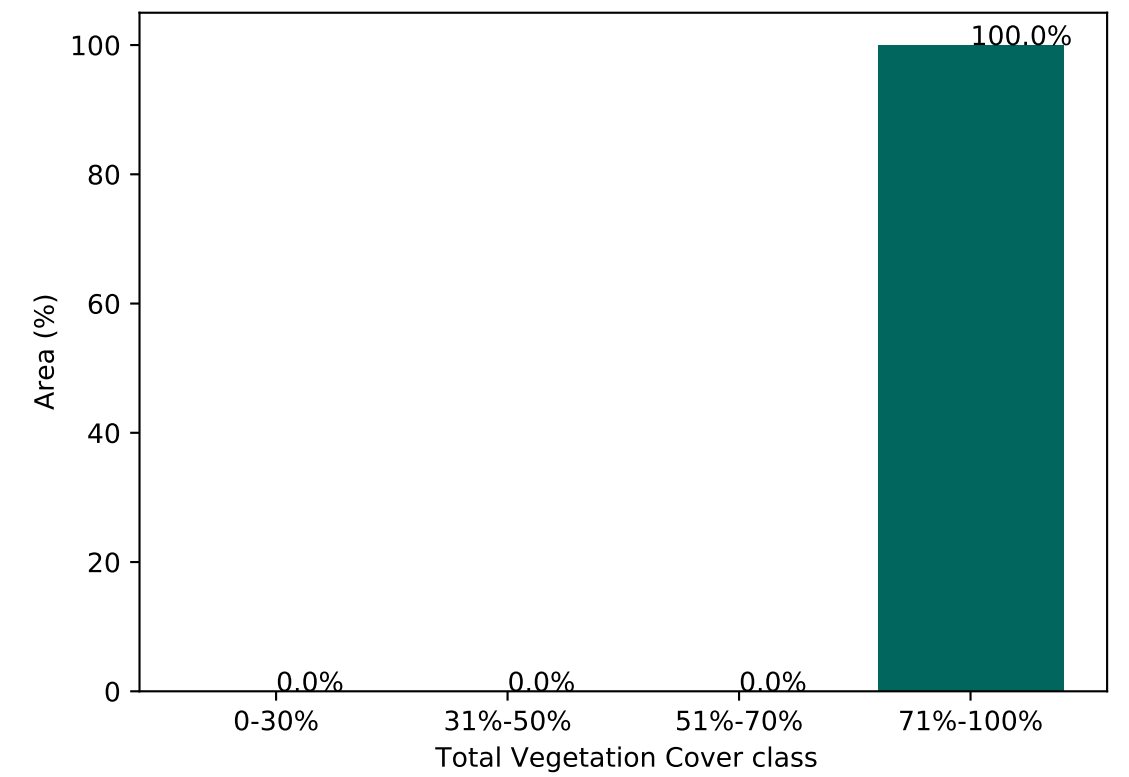
Proportion of each land class in area



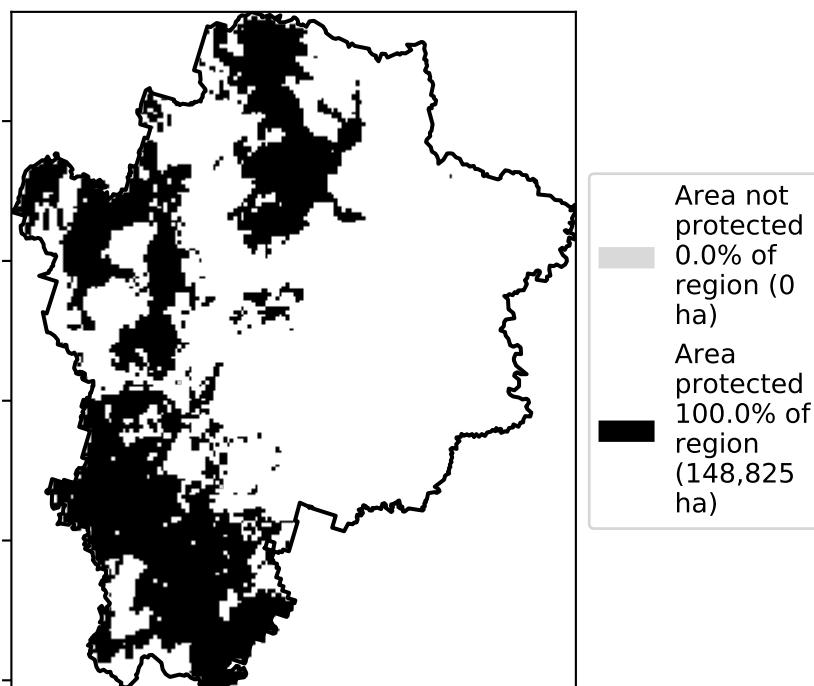
Total Vegetation Cover [%]



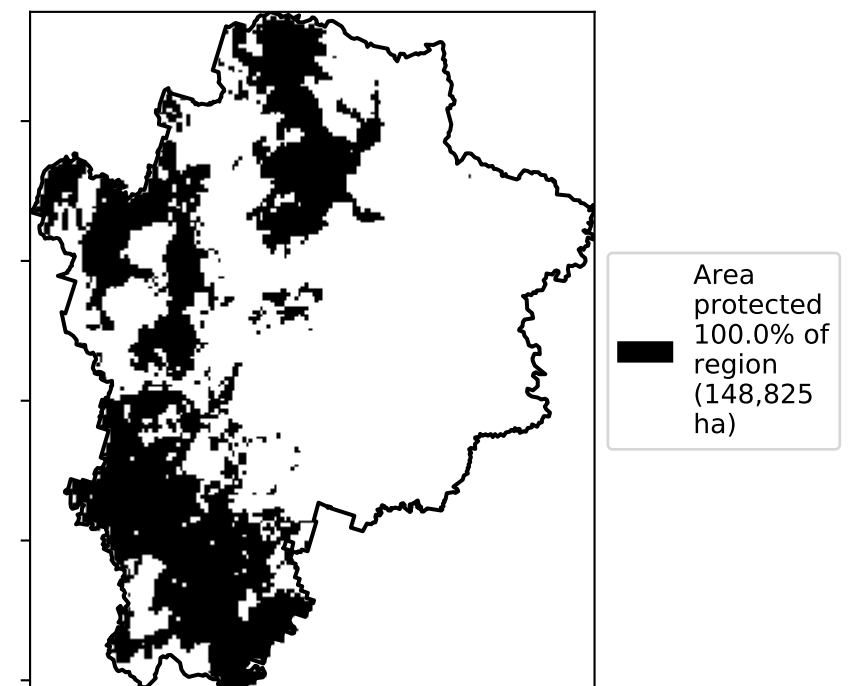
Proportion of vegetation cover class in area



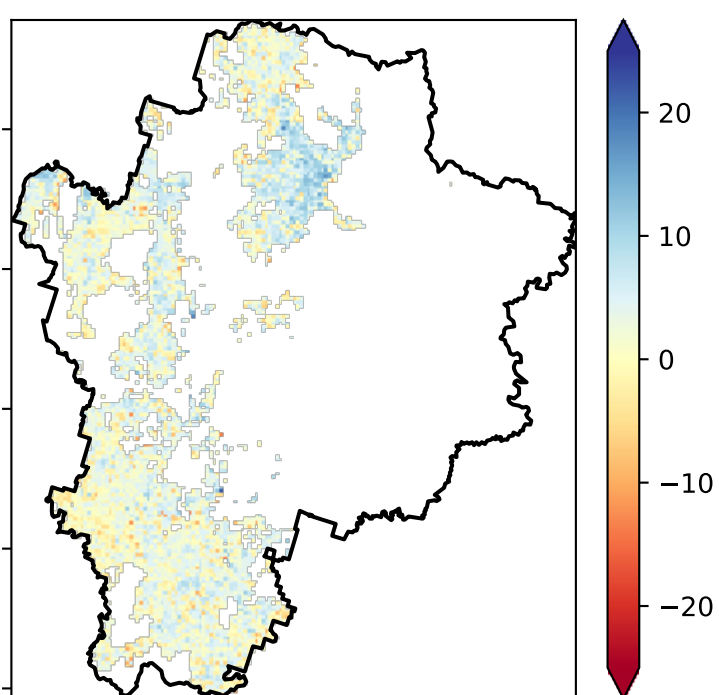
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)



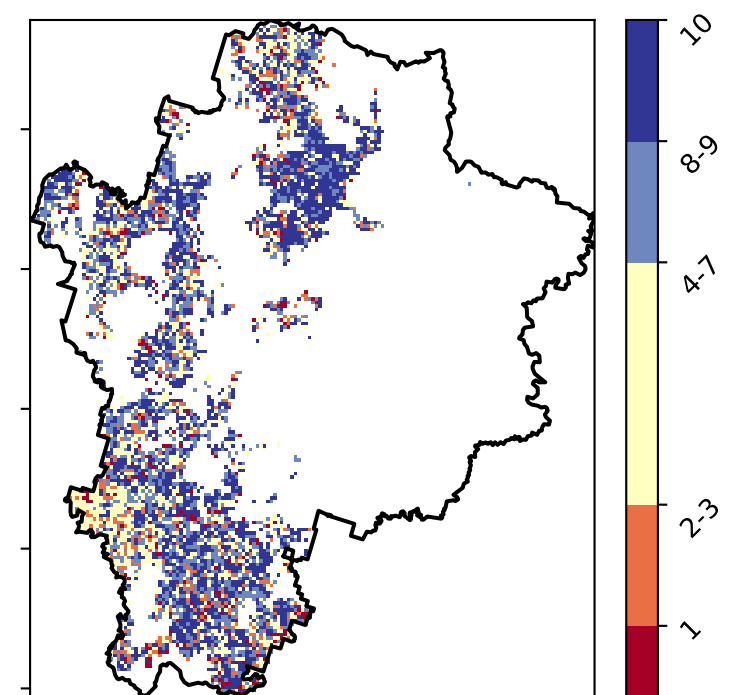
Total Vegetation Cover Anomaly [%]



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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Ecosystem Research Infrastructure



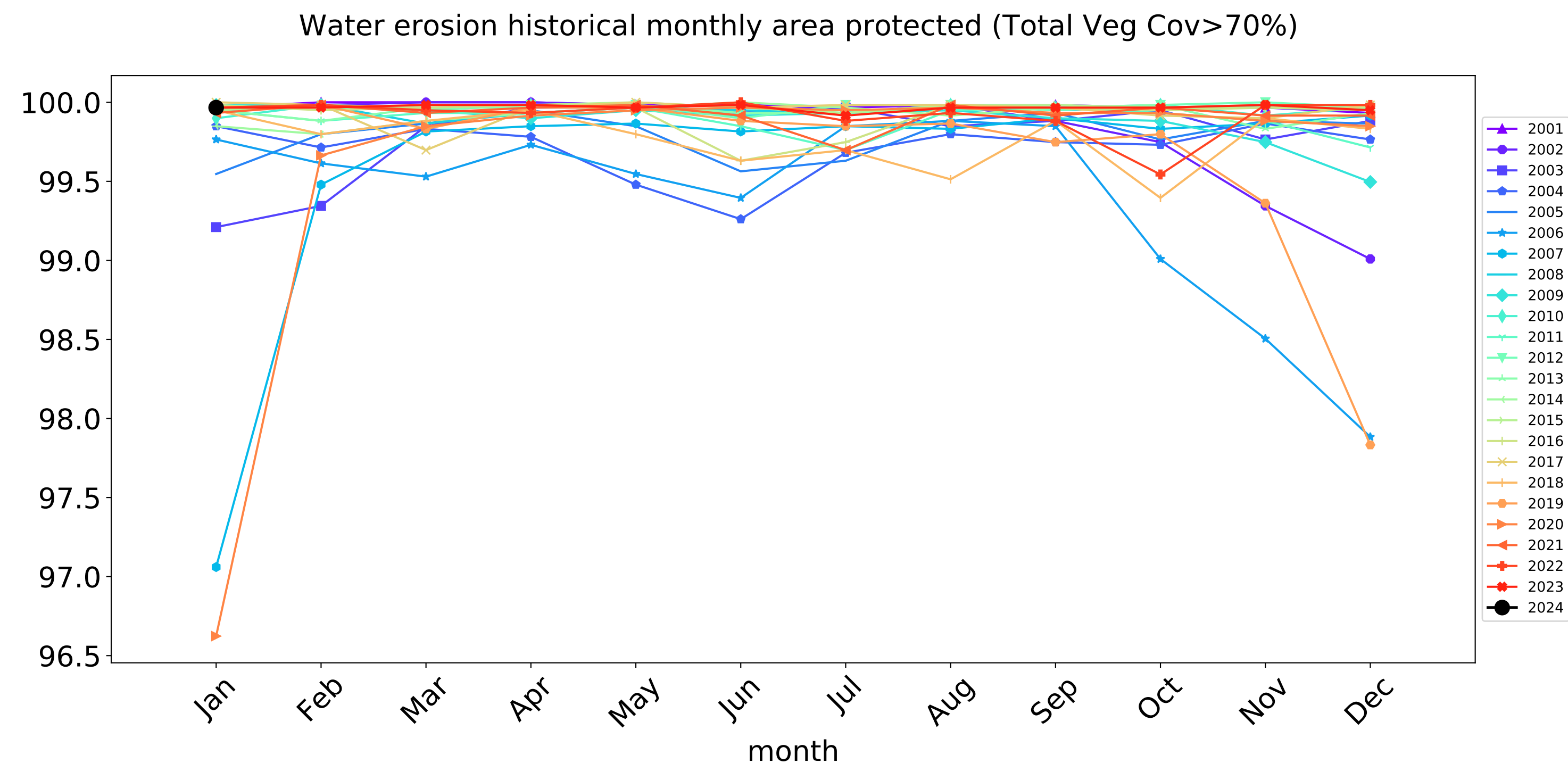
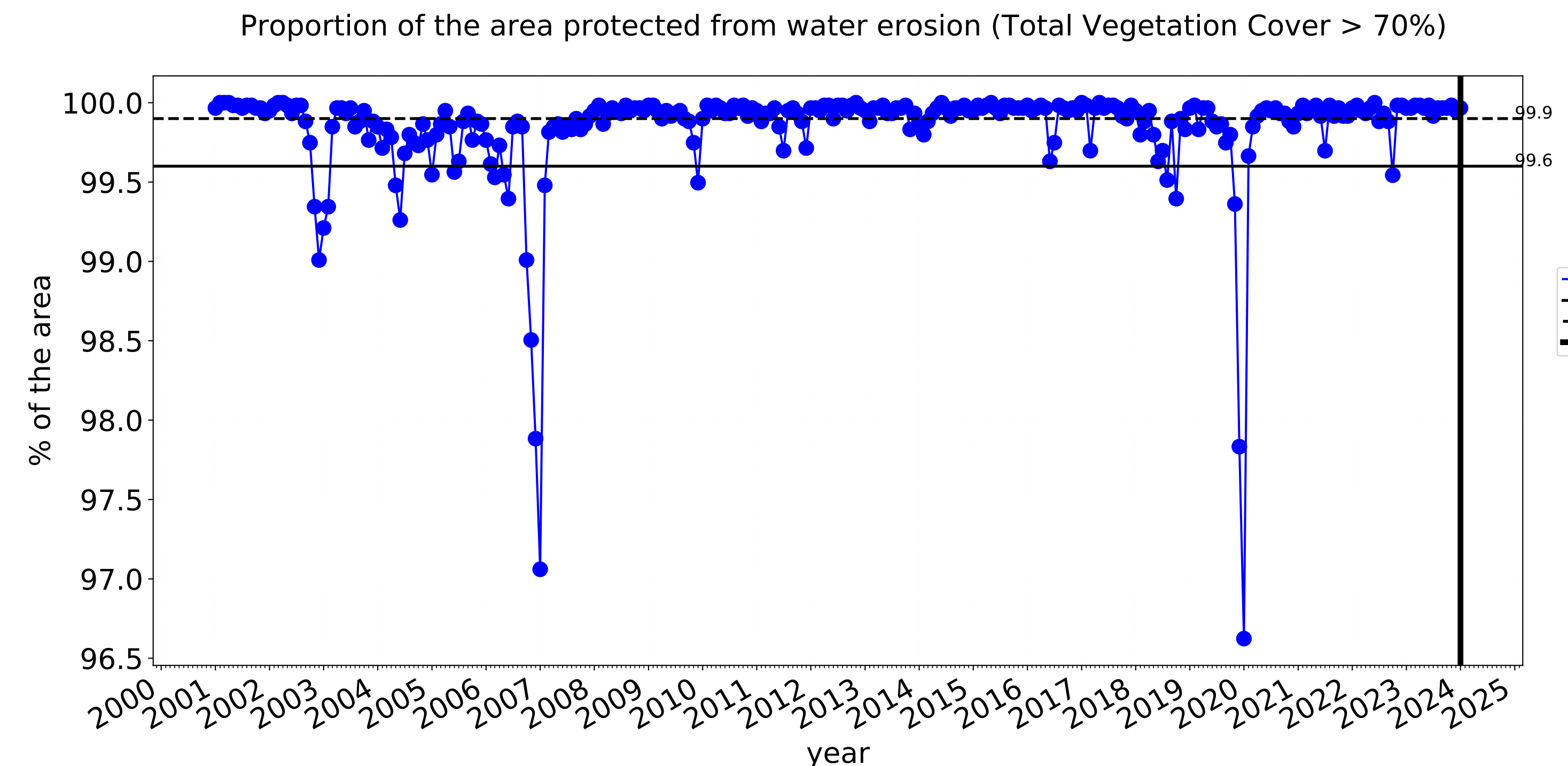
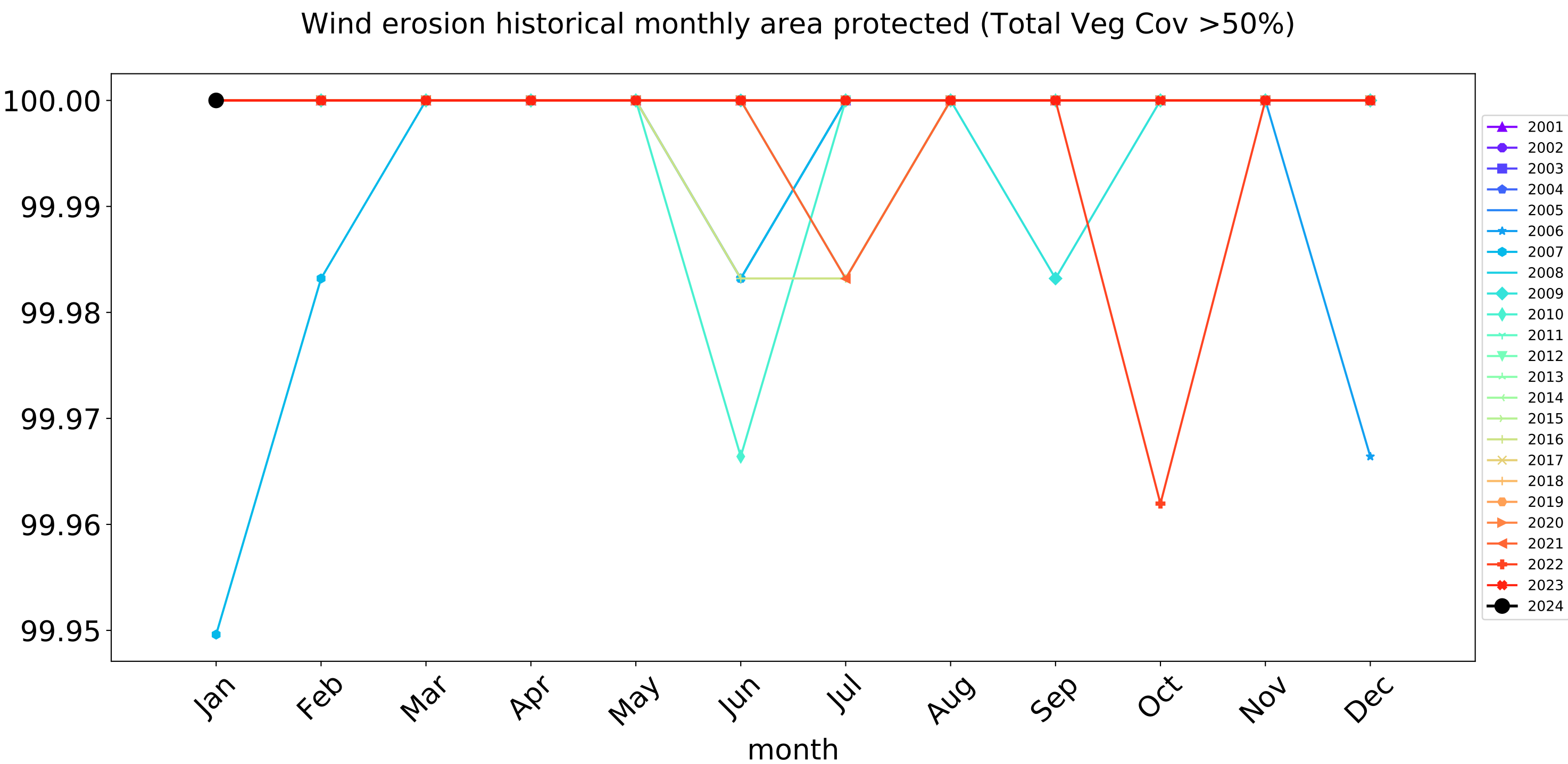
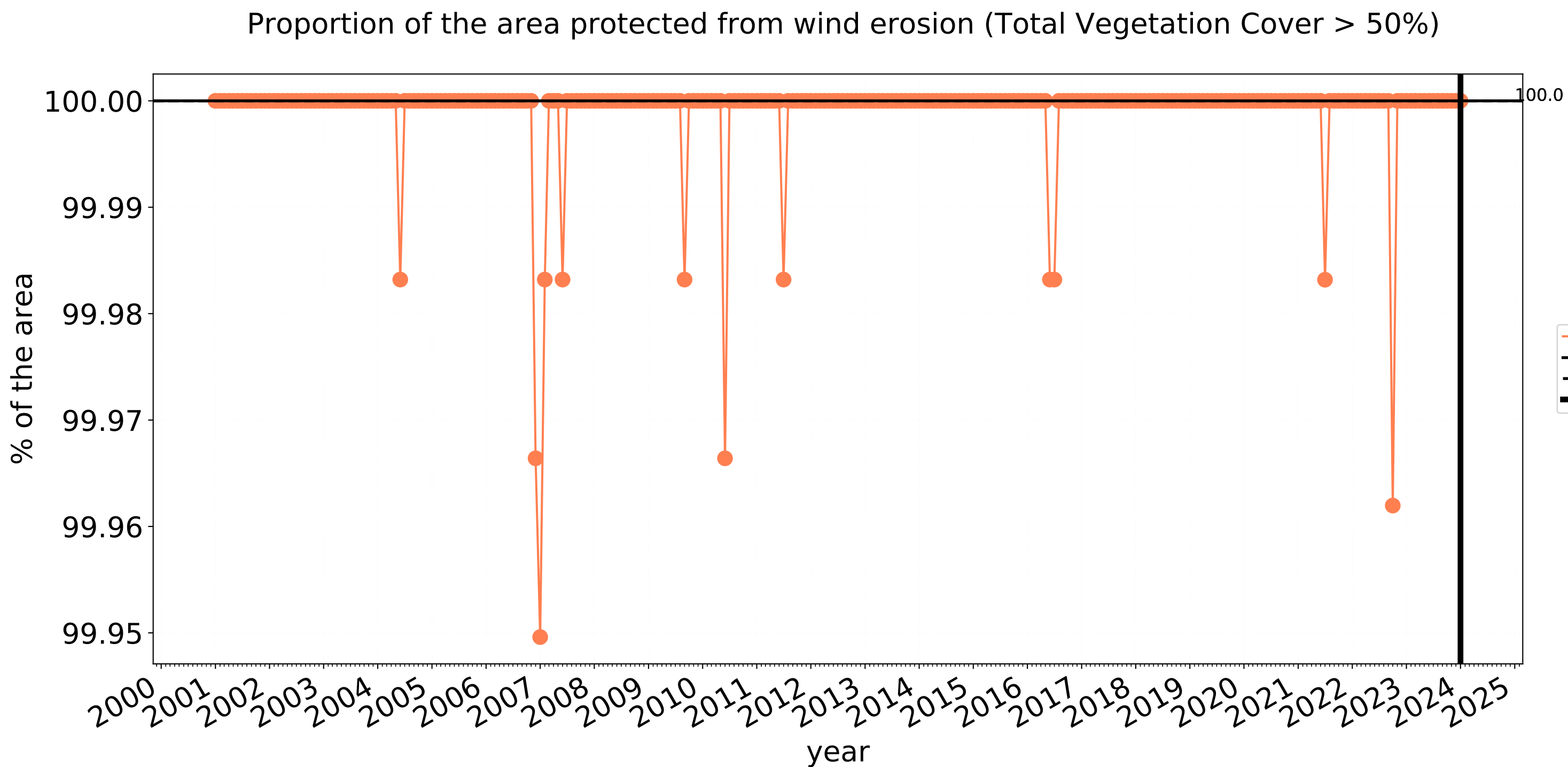
Australian Government

National  
Landcare  
Programme

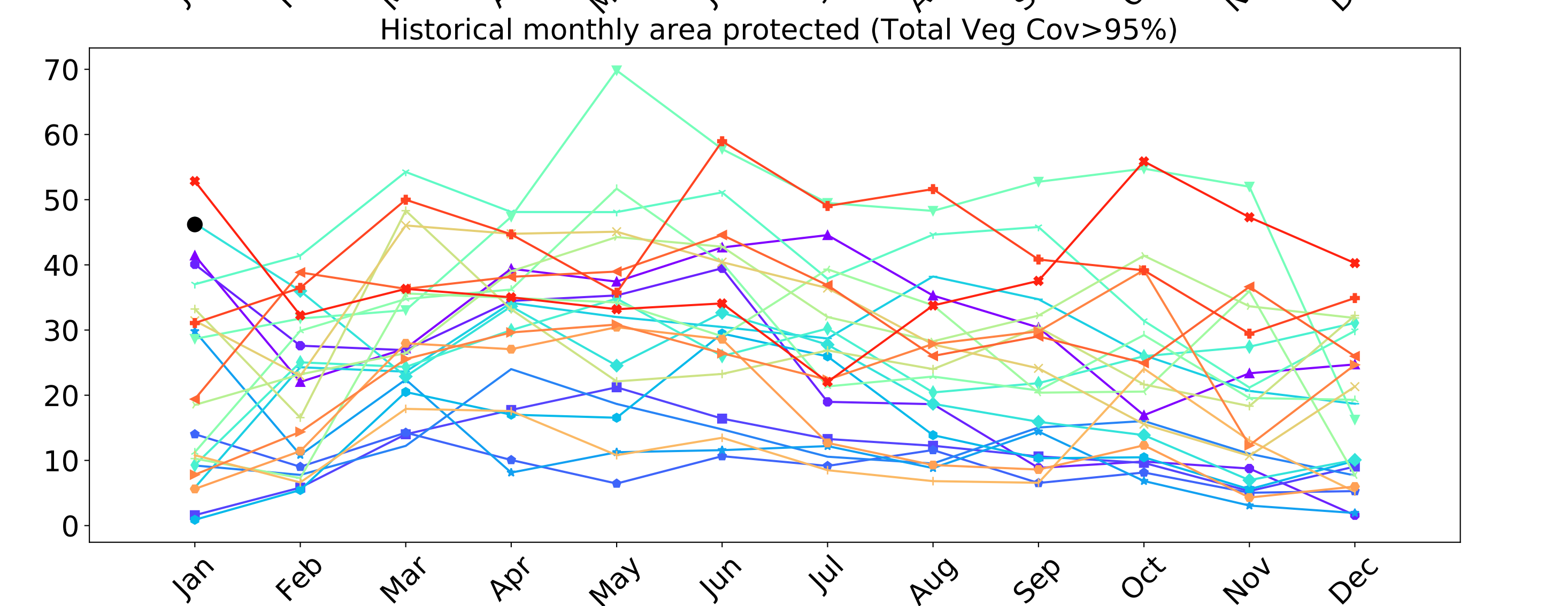
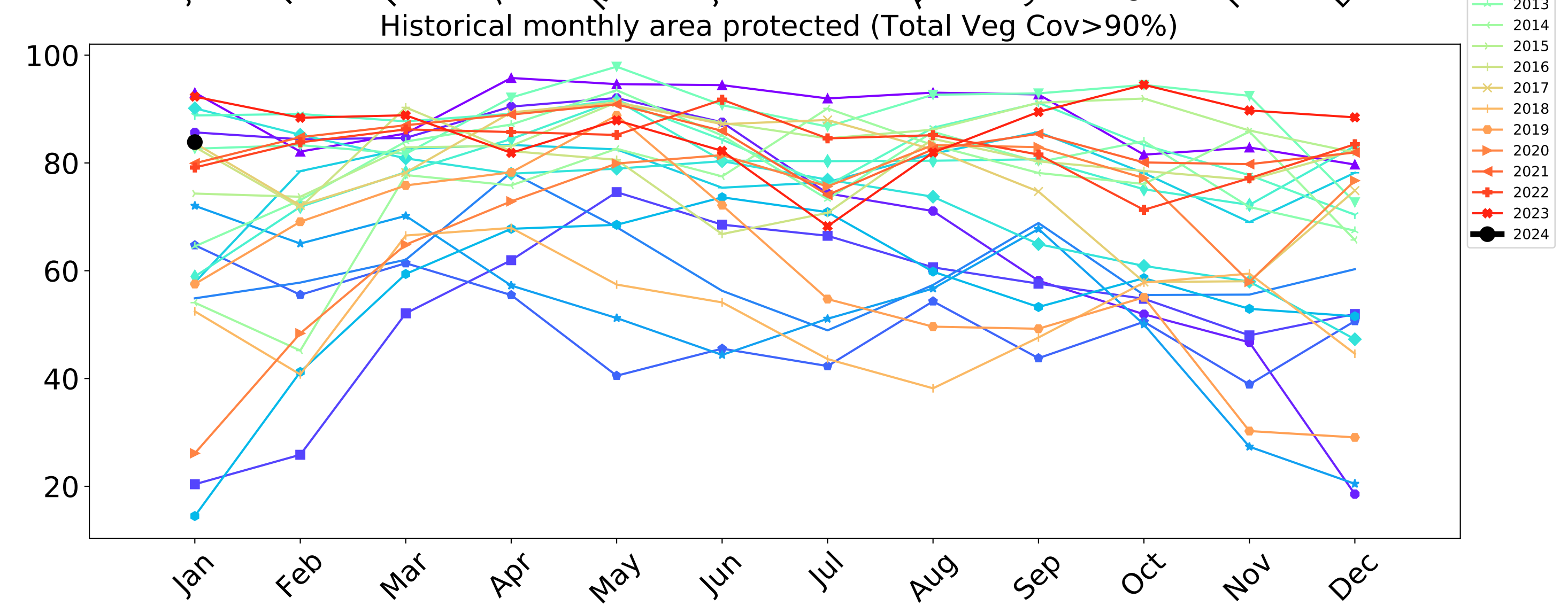
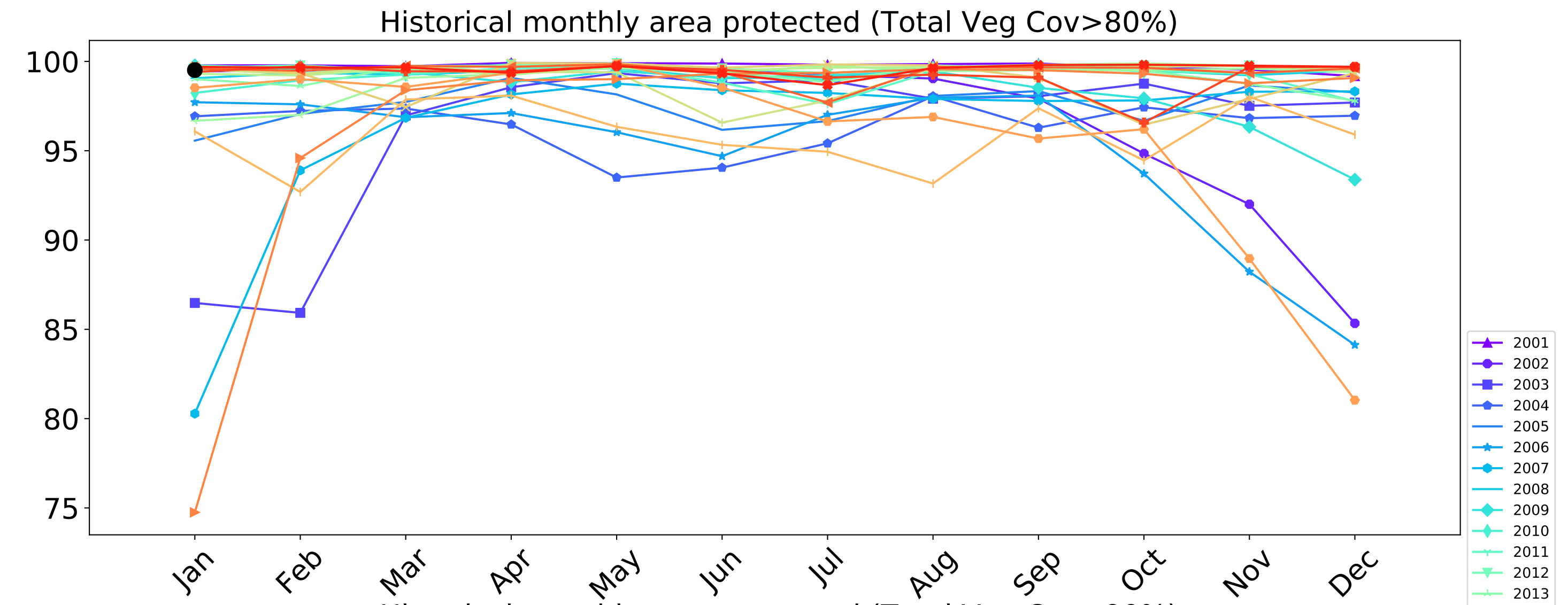
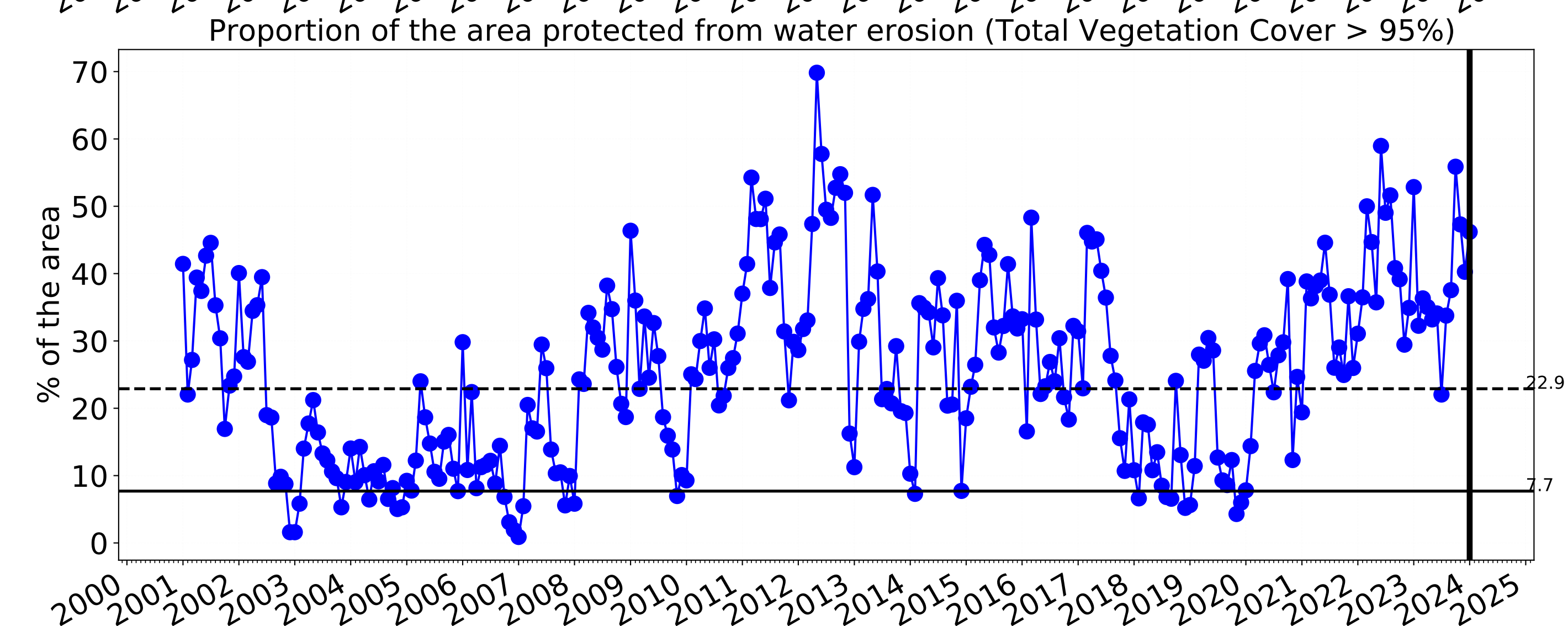
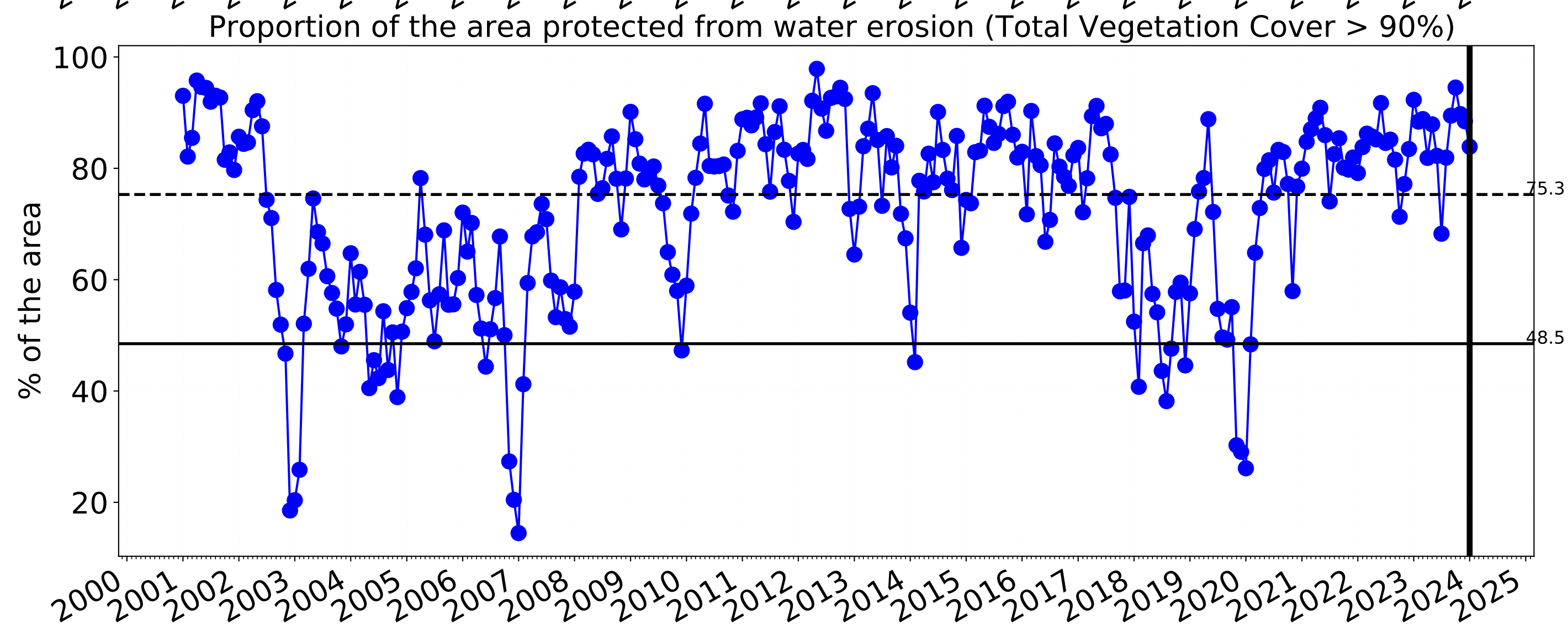
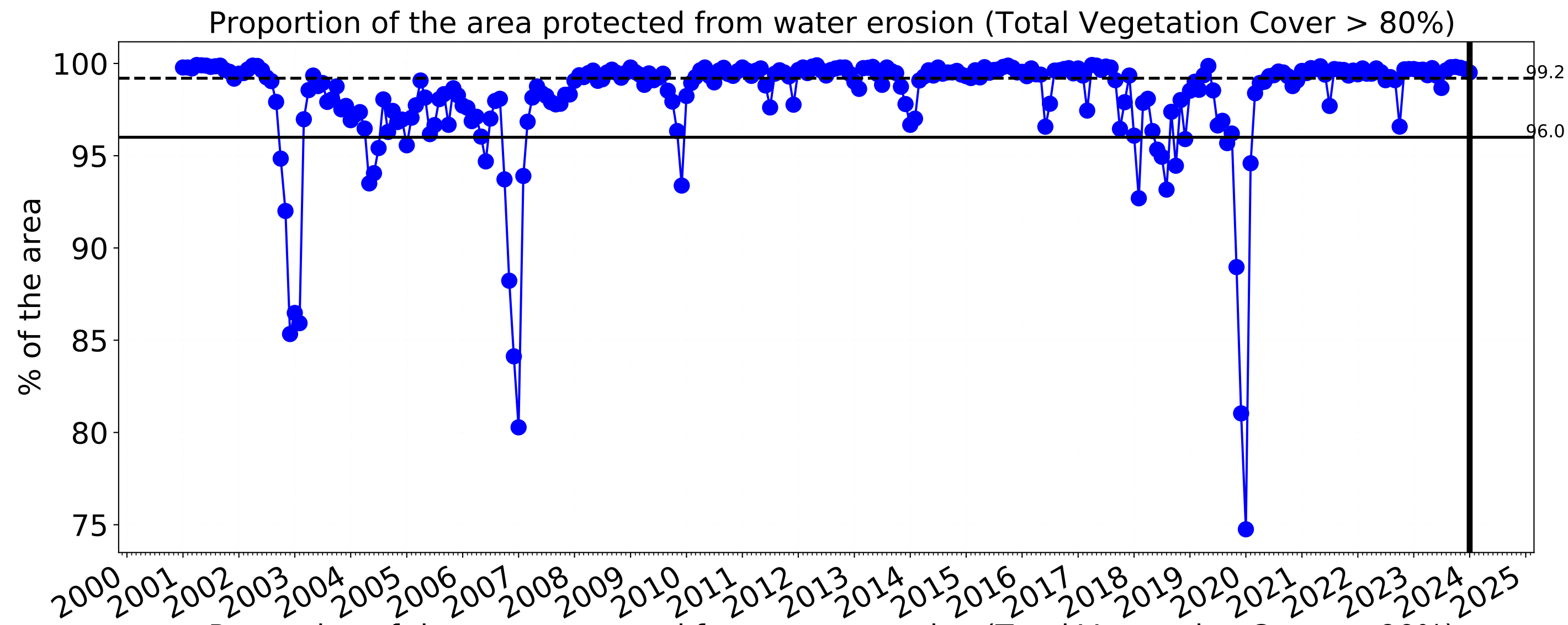




Agriculture timeseries





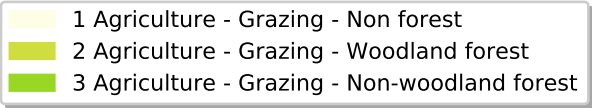
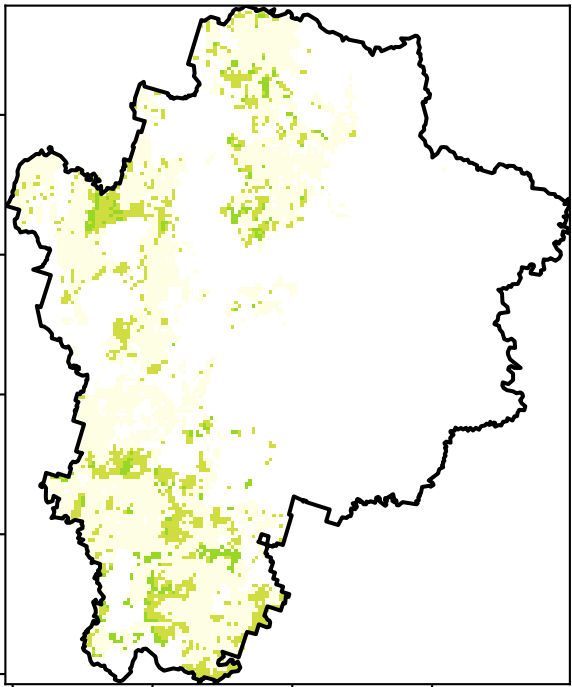




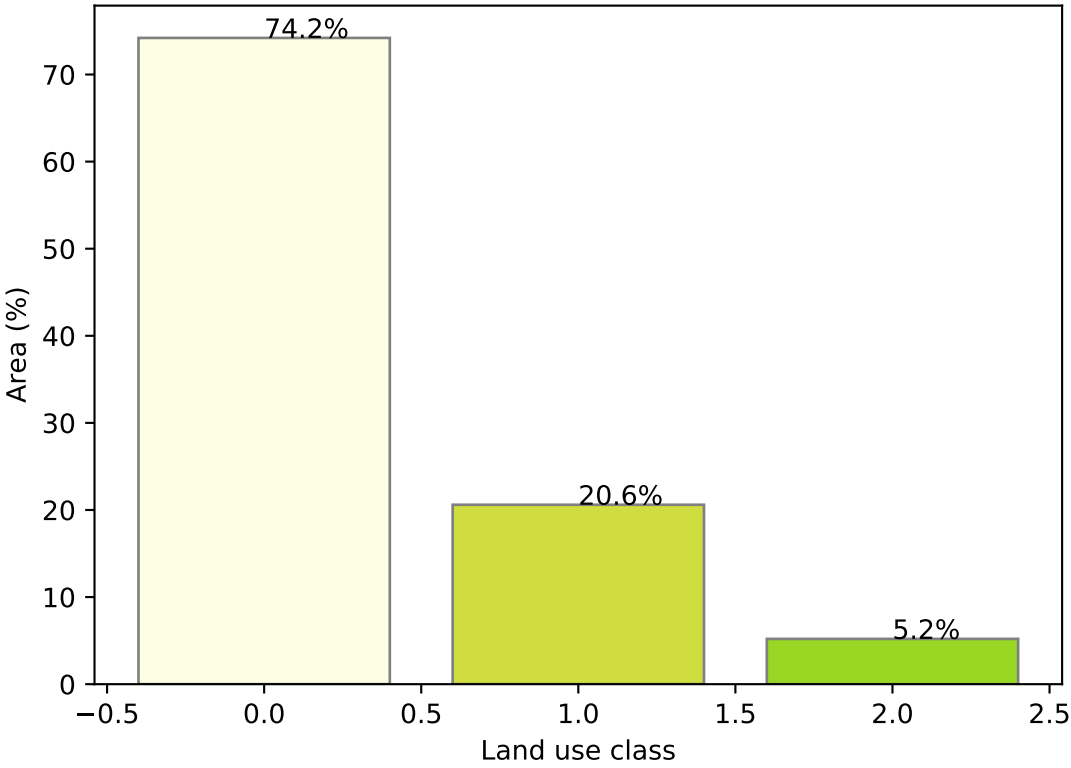
Grazing

Land use and forest cover

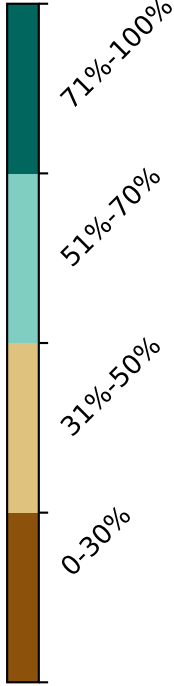
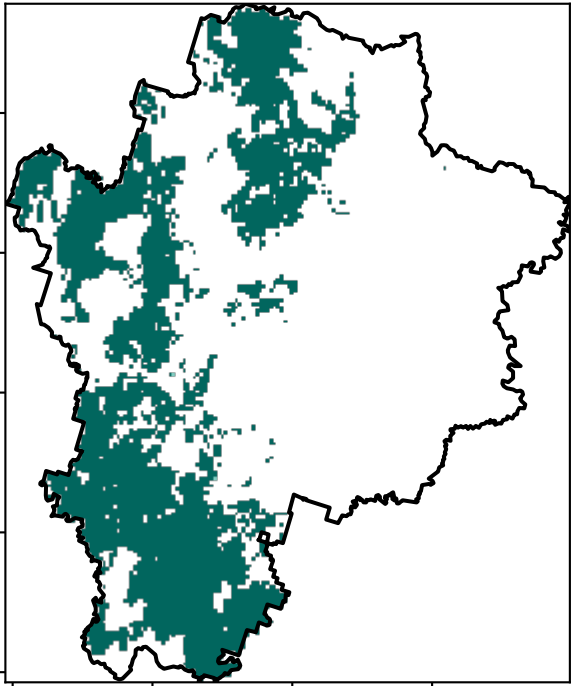
Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)



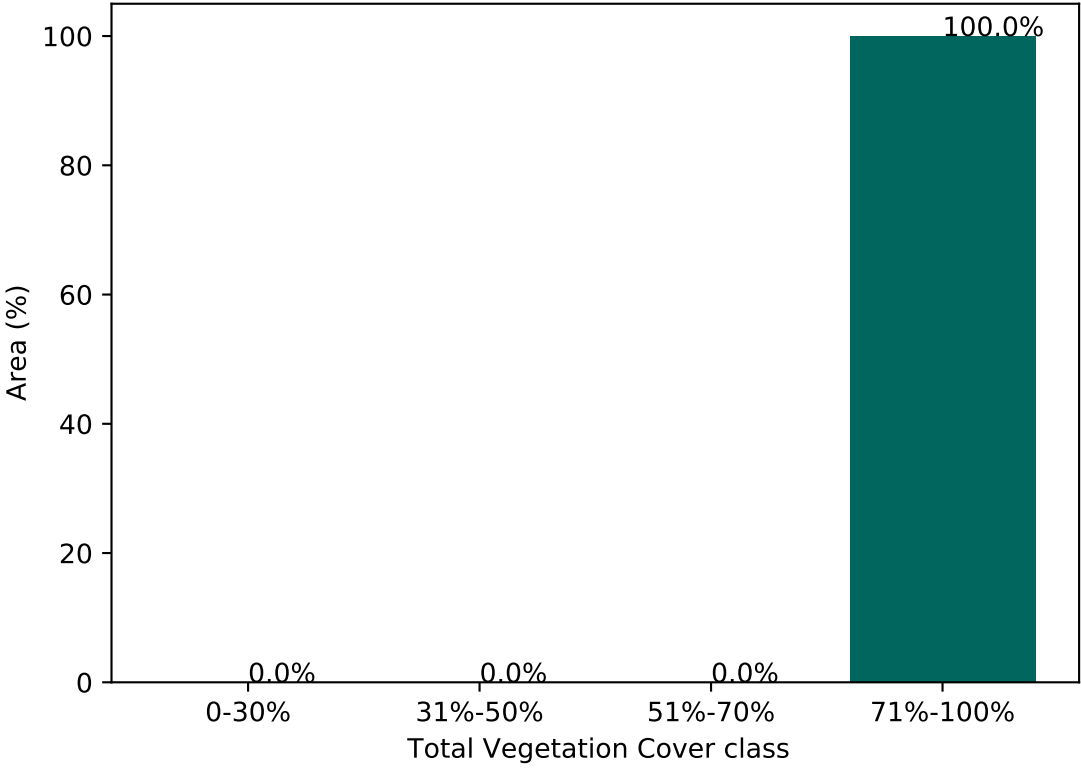
Proportion of each land class in area



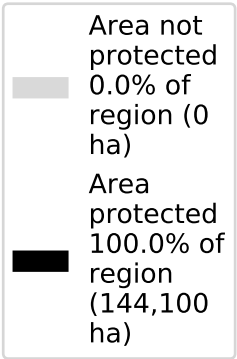
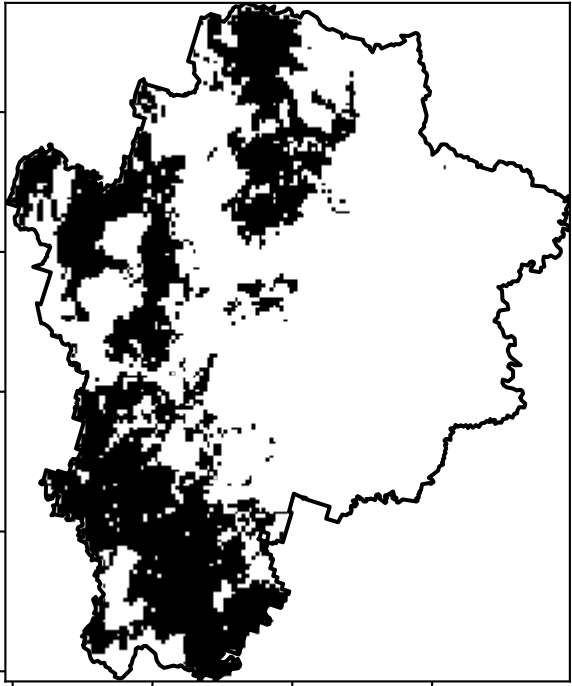
Total Vegetation Cover [%]



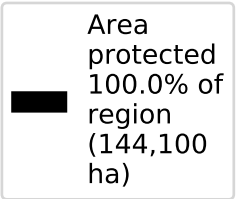
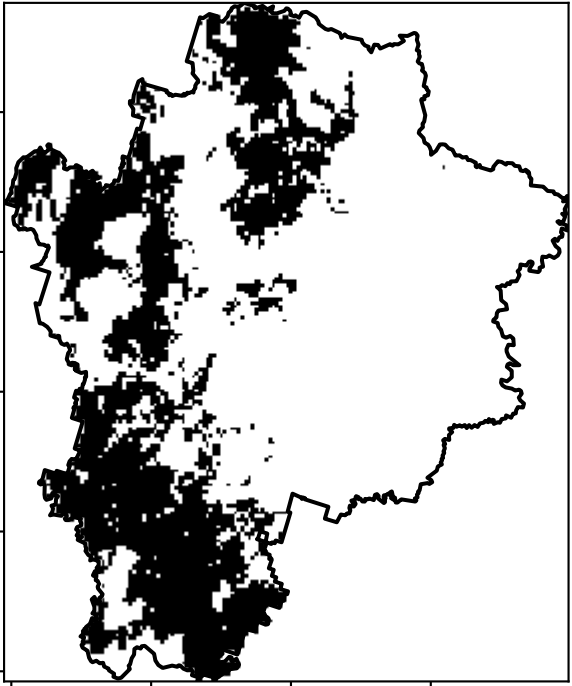
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

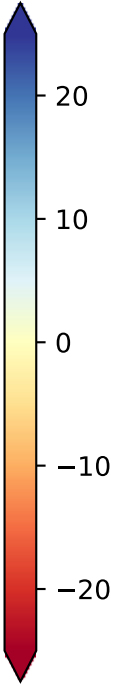
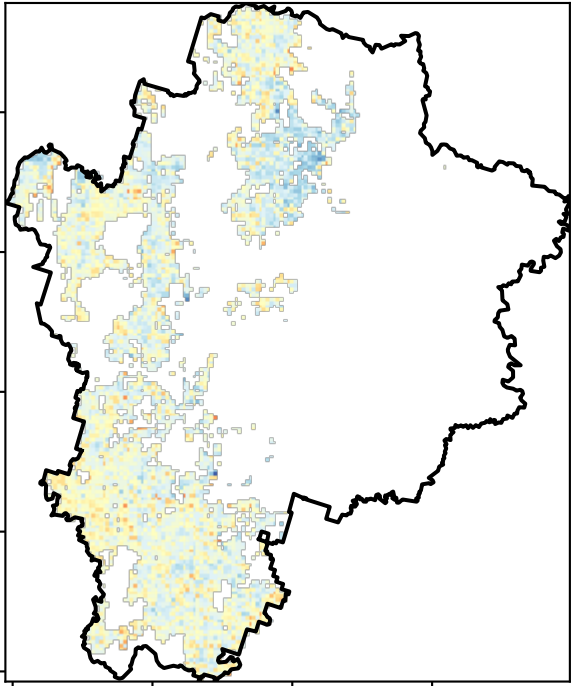


% Area protected from wind erosion (>50%)



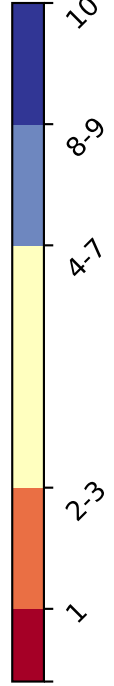
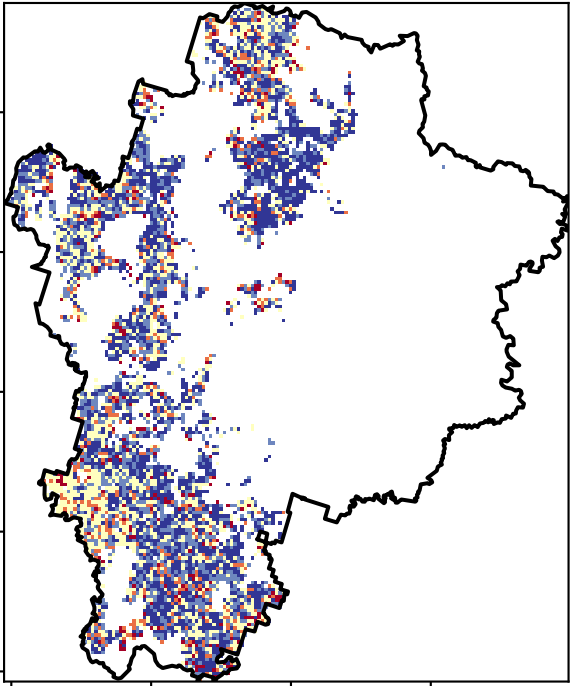
Total Vegetation Cover Anomaly [%]

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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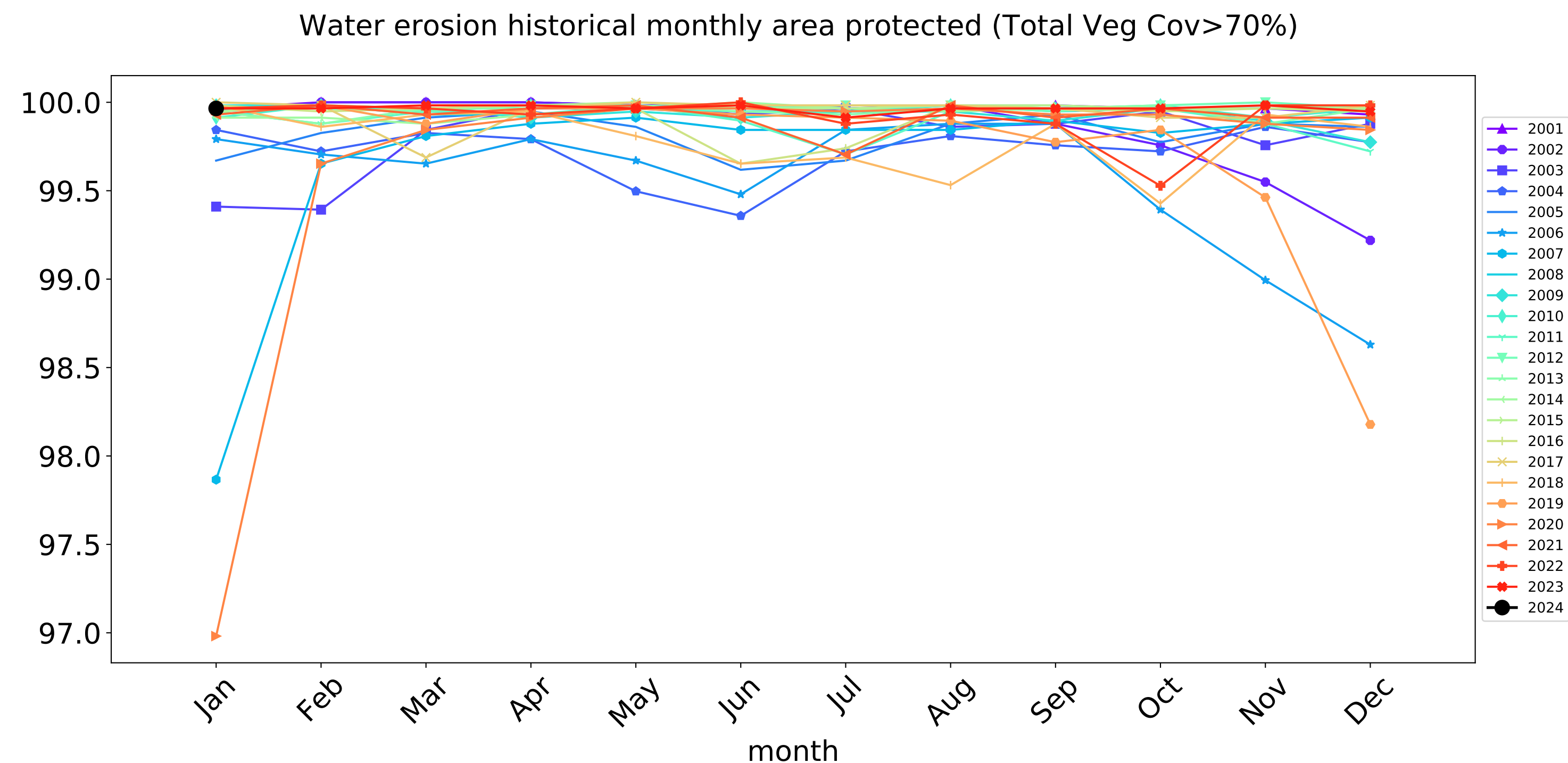
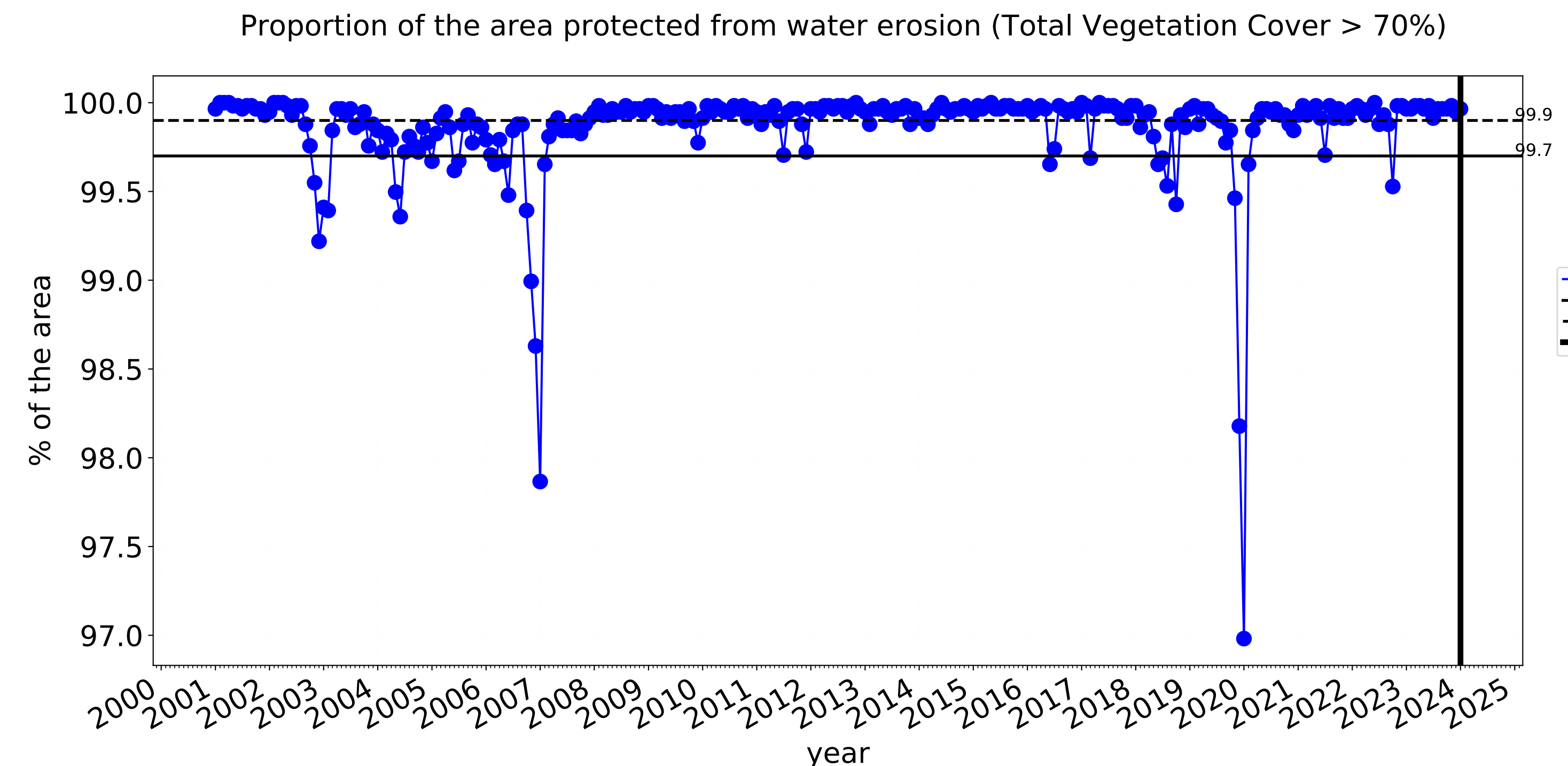
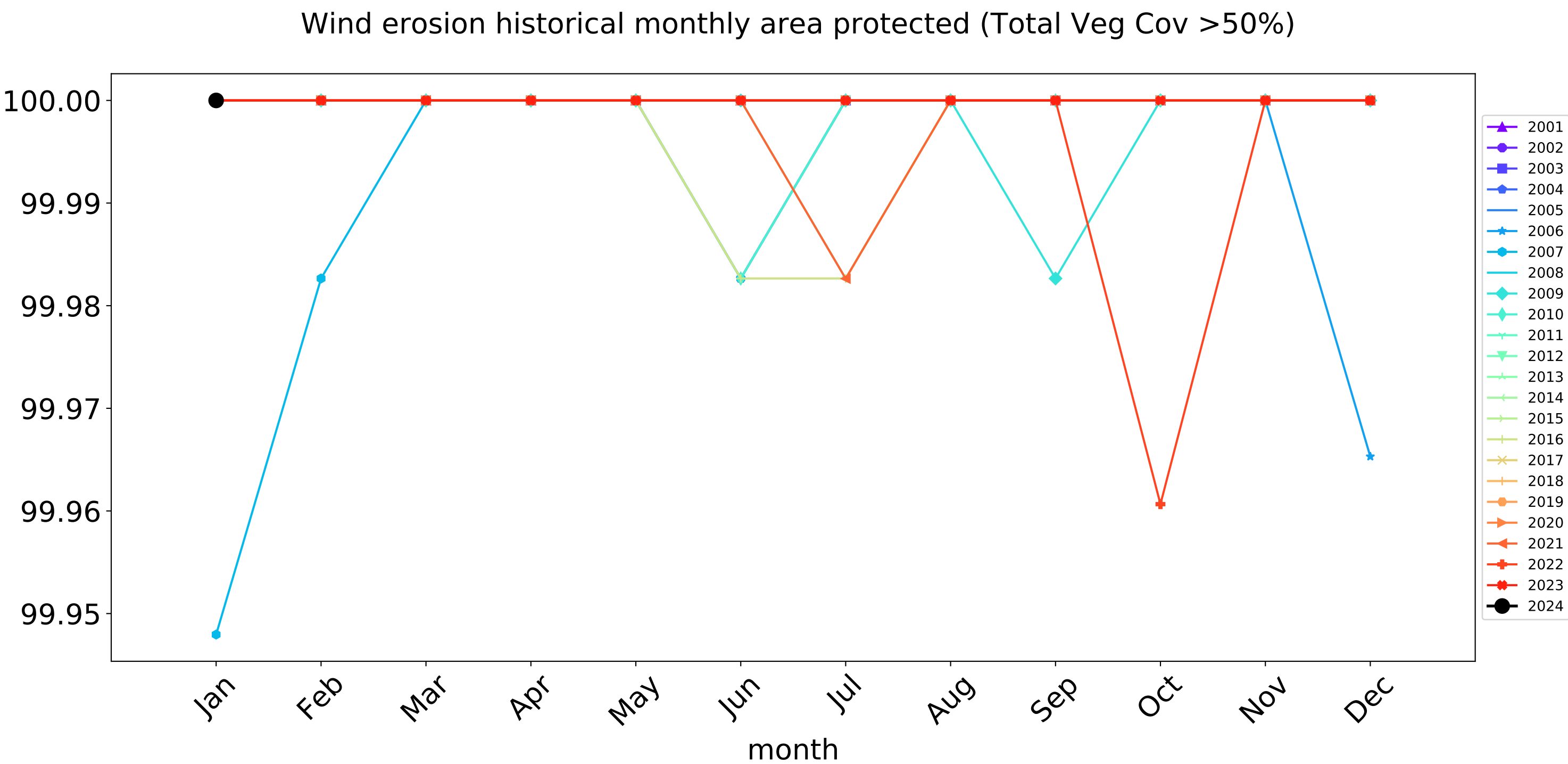
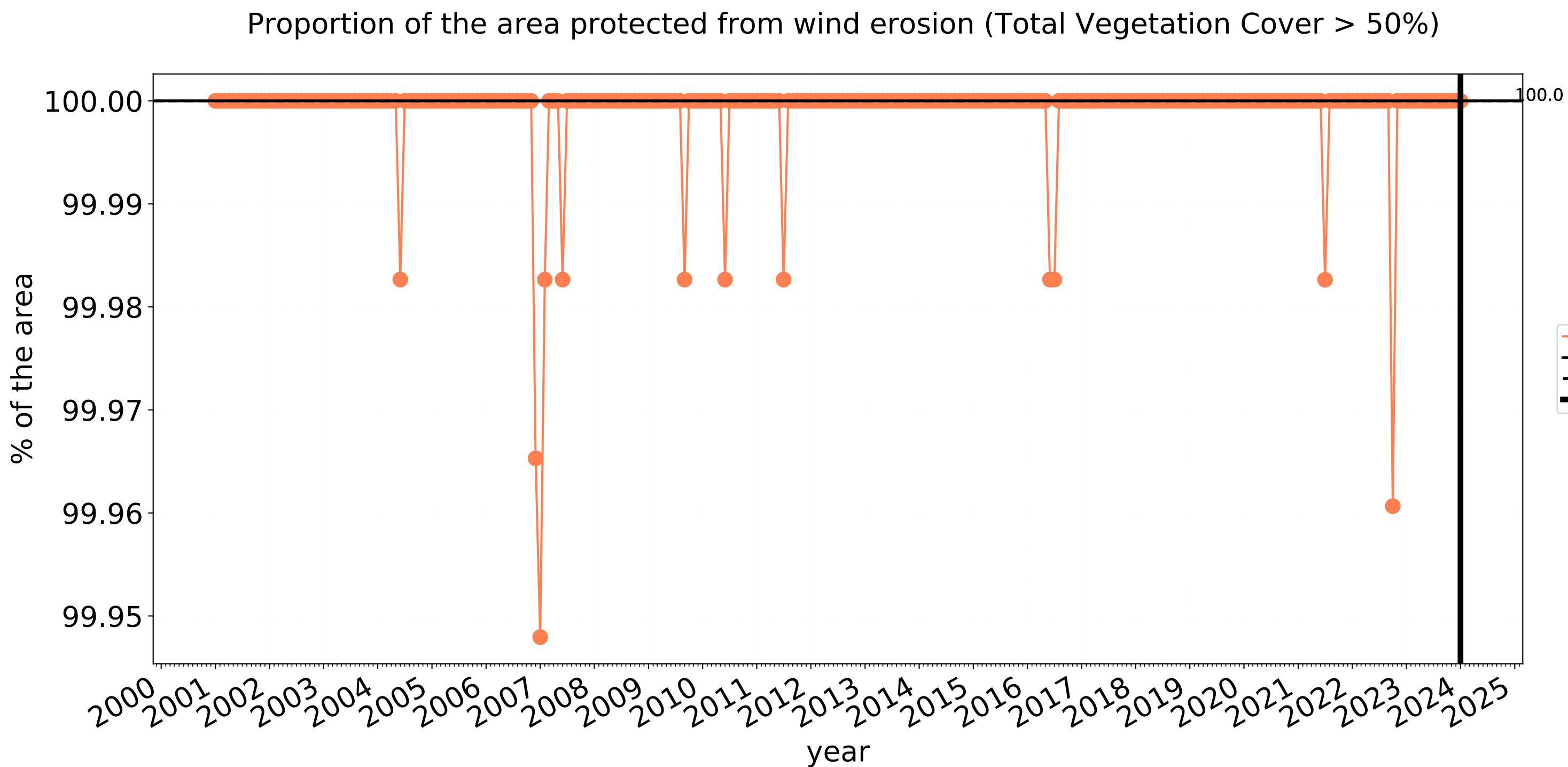


Australian Government

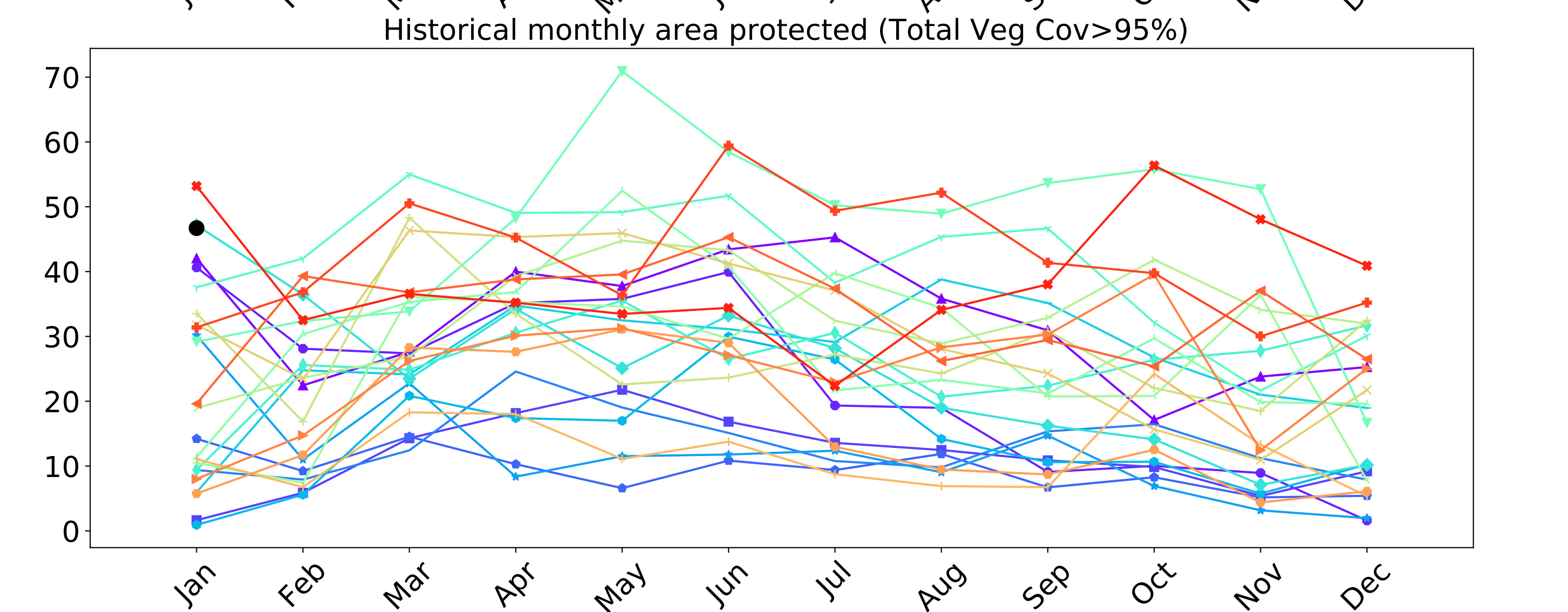
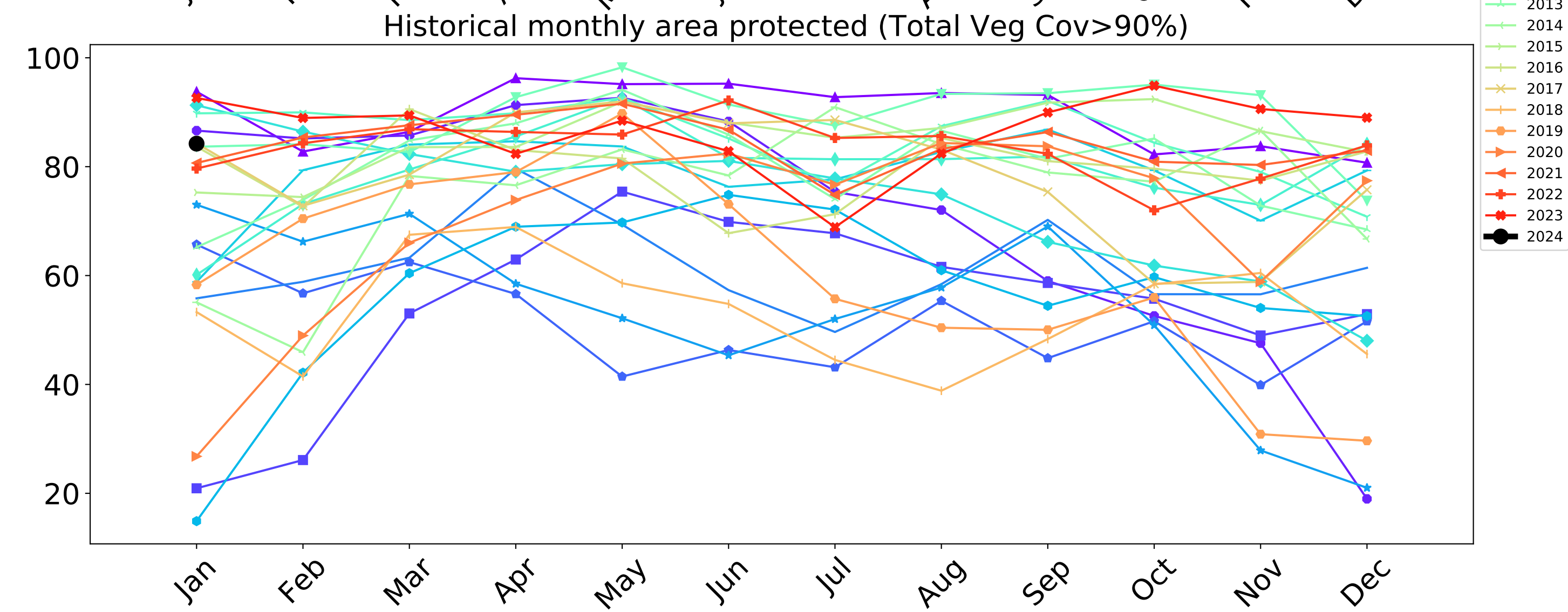
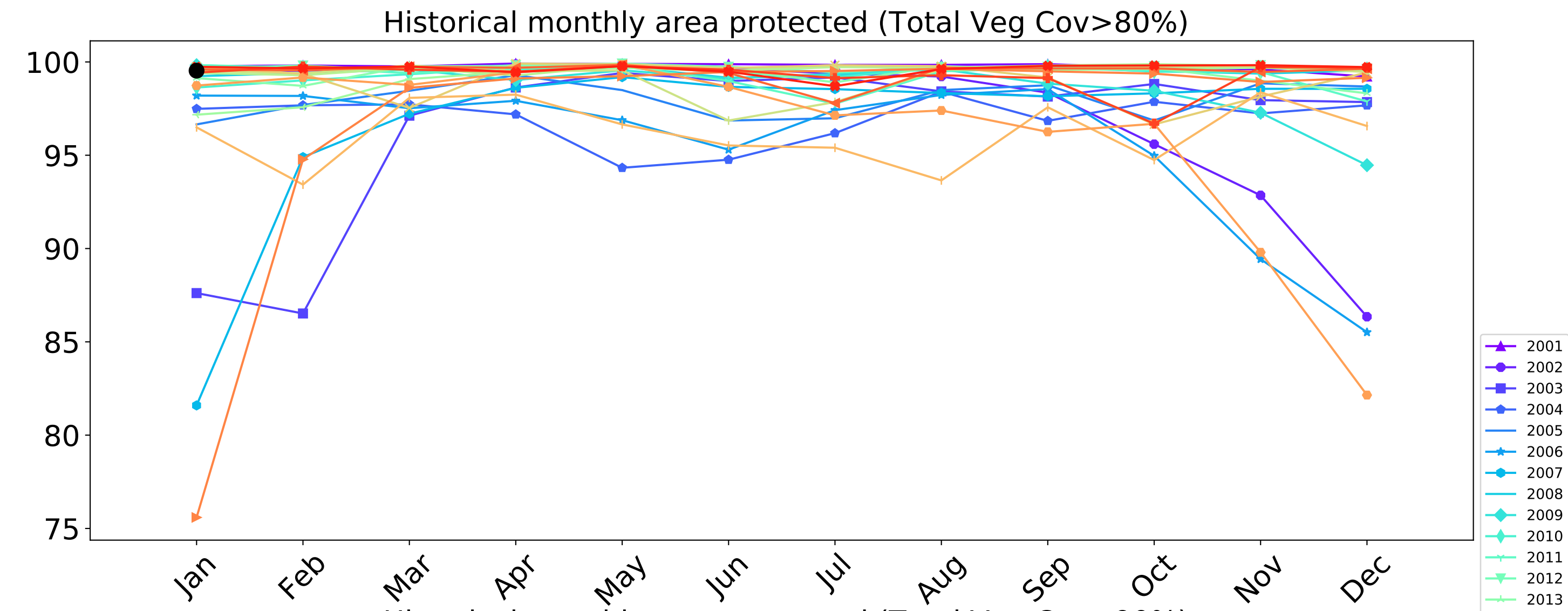
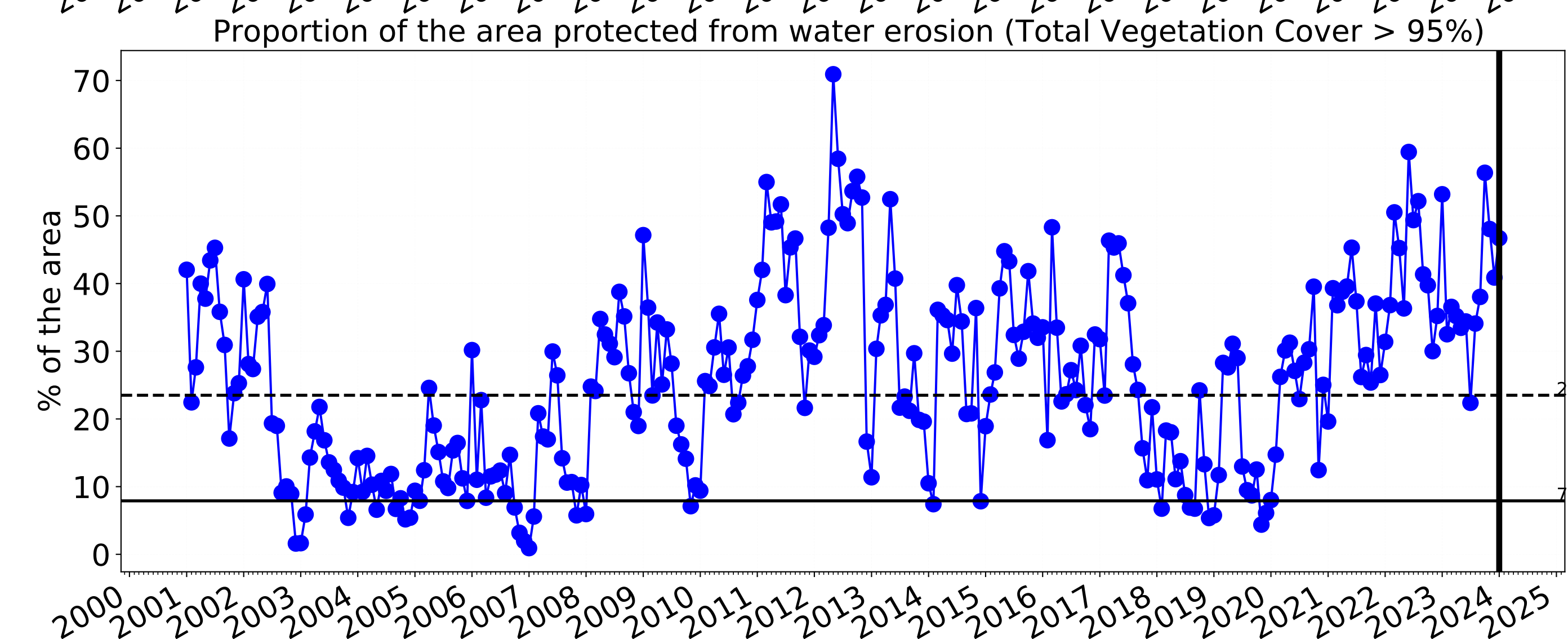
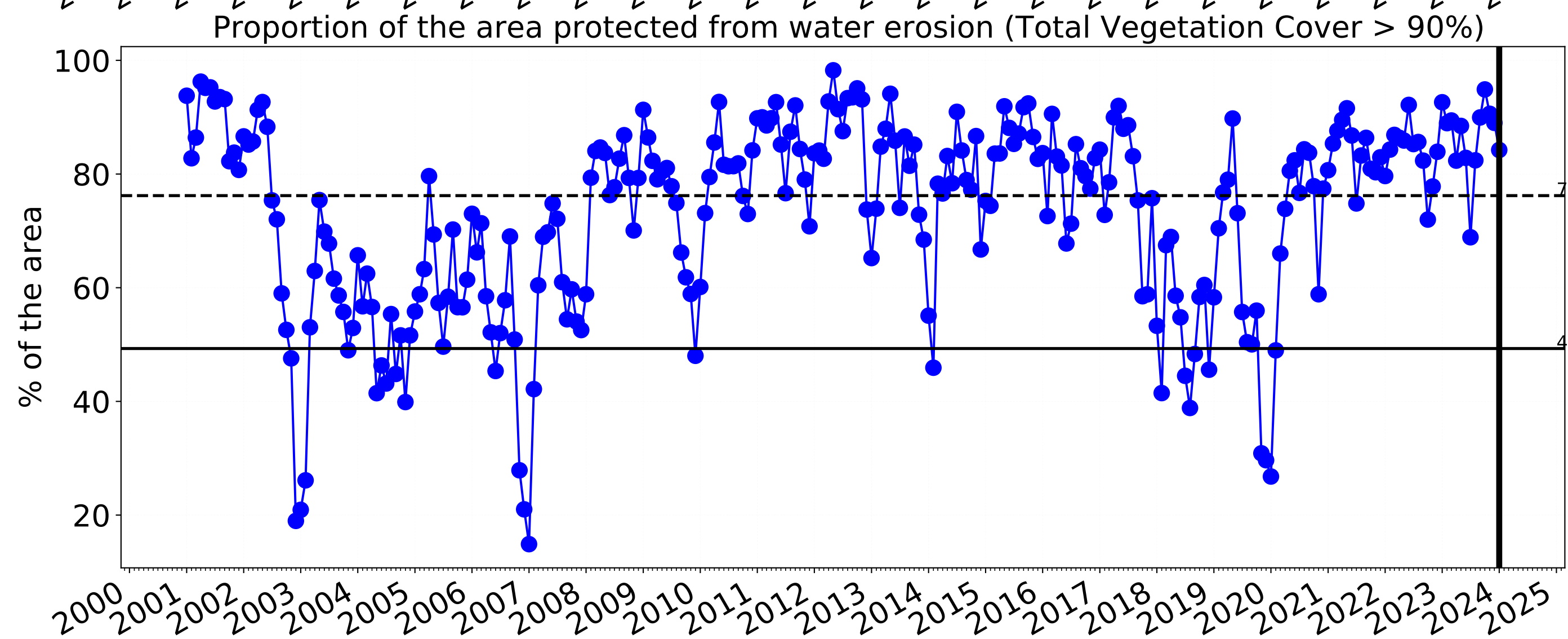
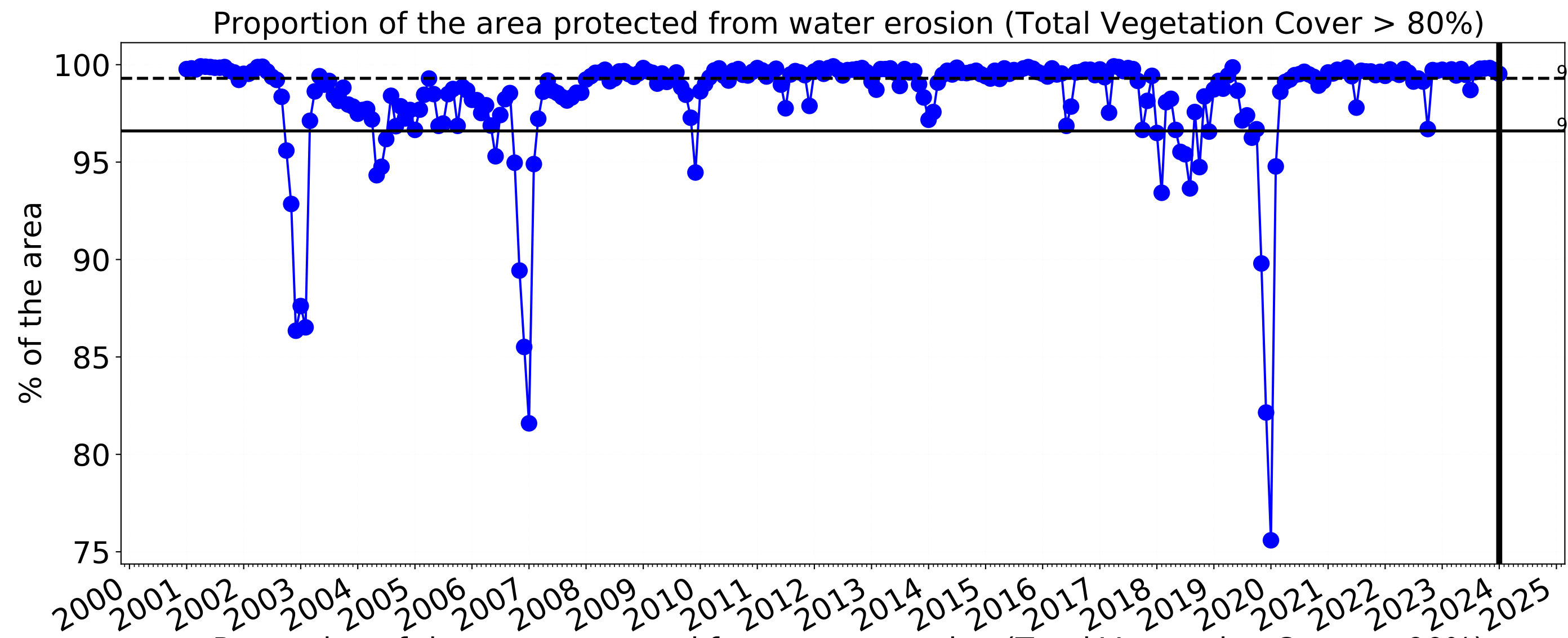
National  
Landcare  
Programme



Grazing timeseries



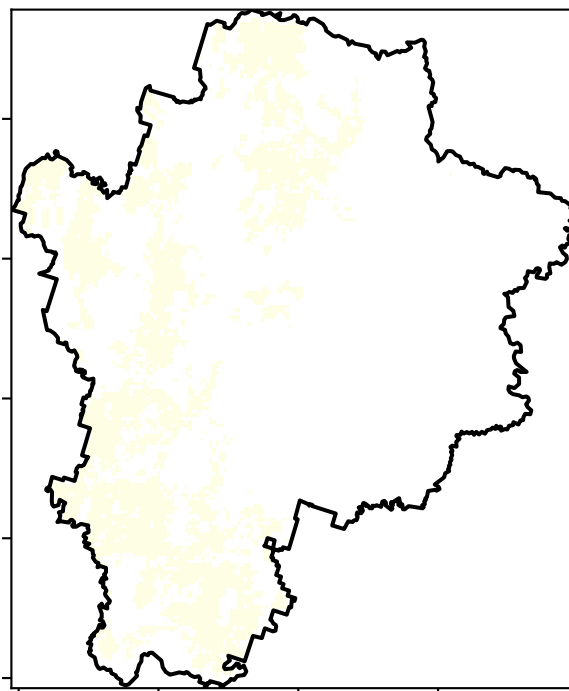






# Grazing non forest

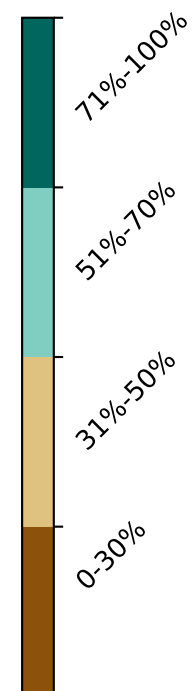
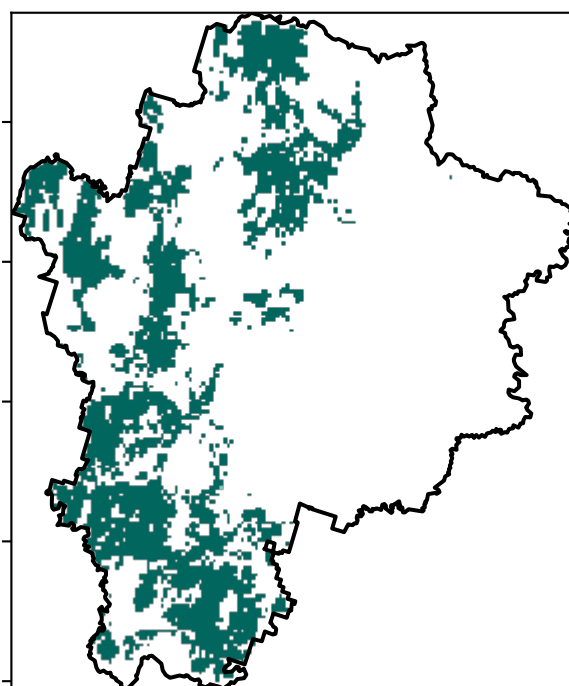
Land use and forest cover



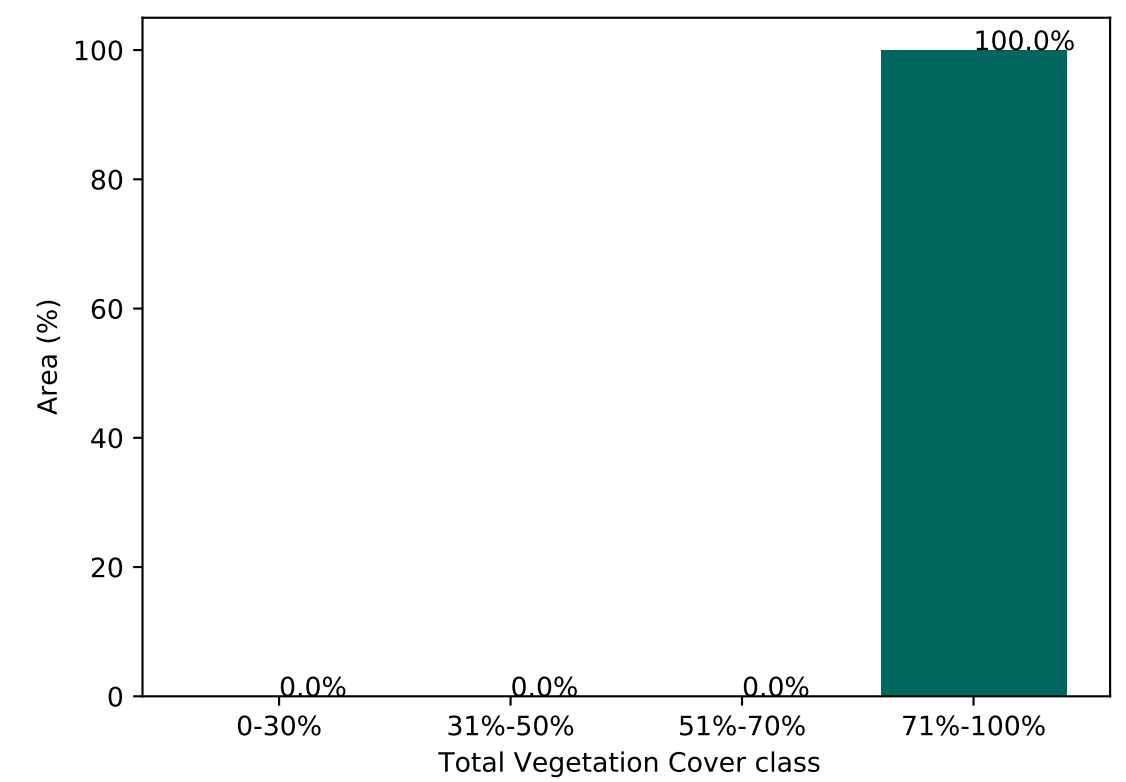
1 Agriculture - Grazing - Non forest

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

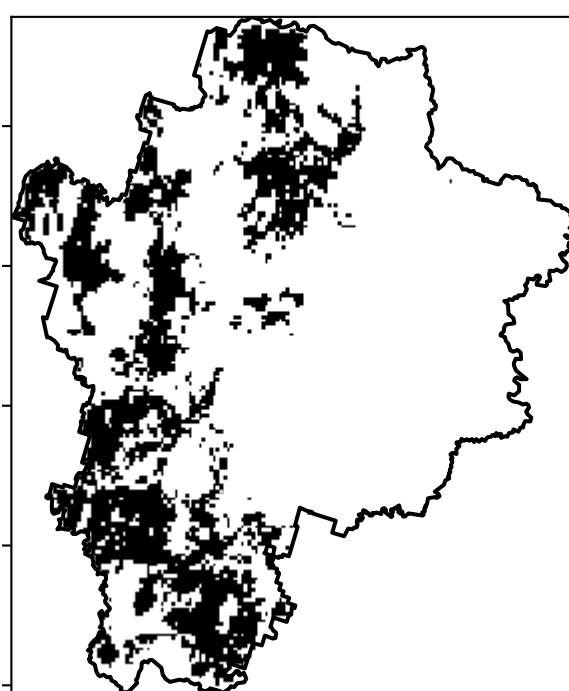
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

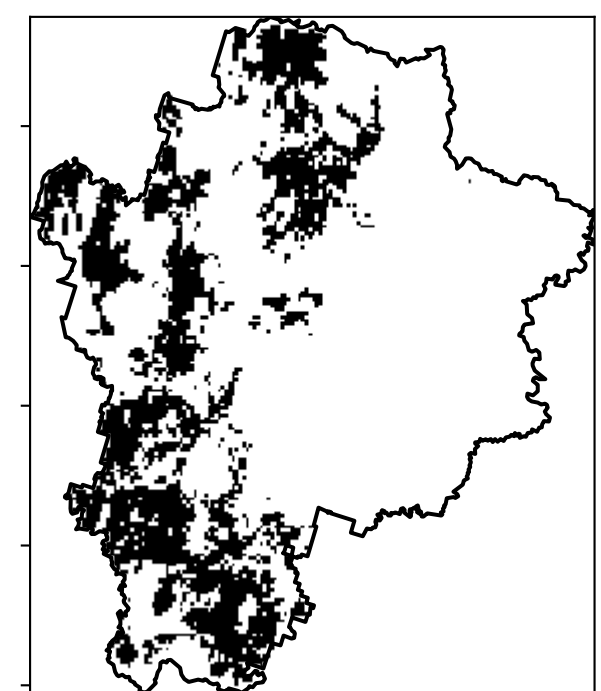


% Area protected from water erosion (>70%)



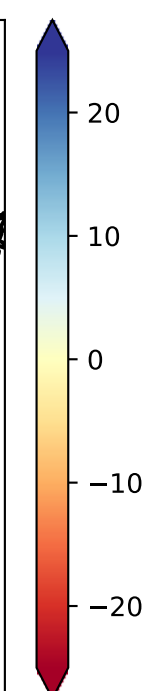
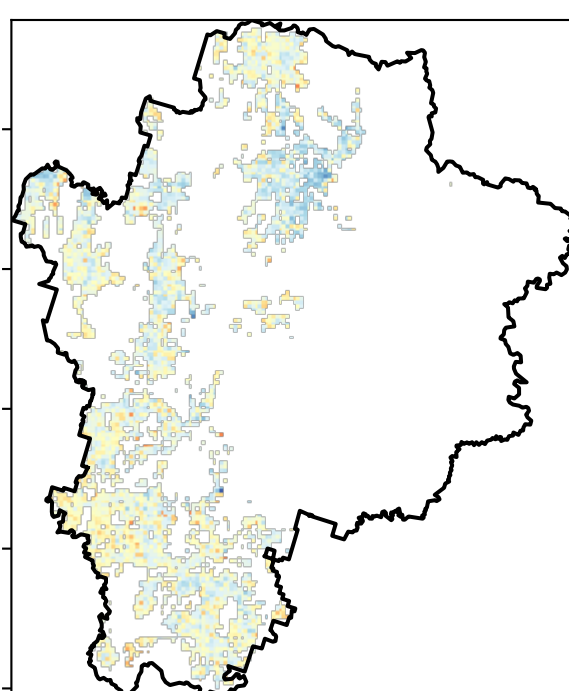
Area not protected  
0.0% of  
region (0  
ha)  
Area protected  
100.0% of  
region  
(106,950  
ha)

% Area protected from wind erosion (>50%)



Area  
protected  
100.0% of  
region  
(106,950  
ha)

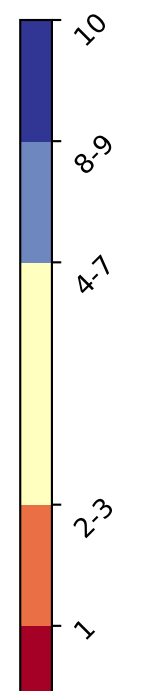
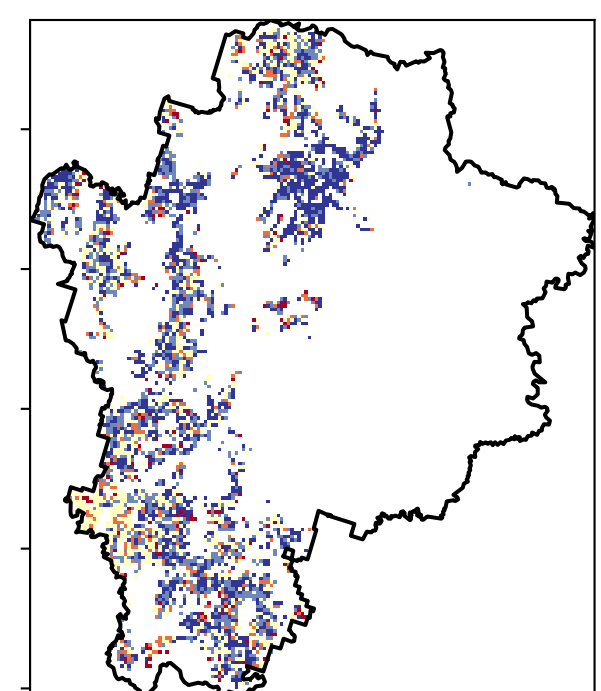
Total Vegetation Cover Anomaly [%]



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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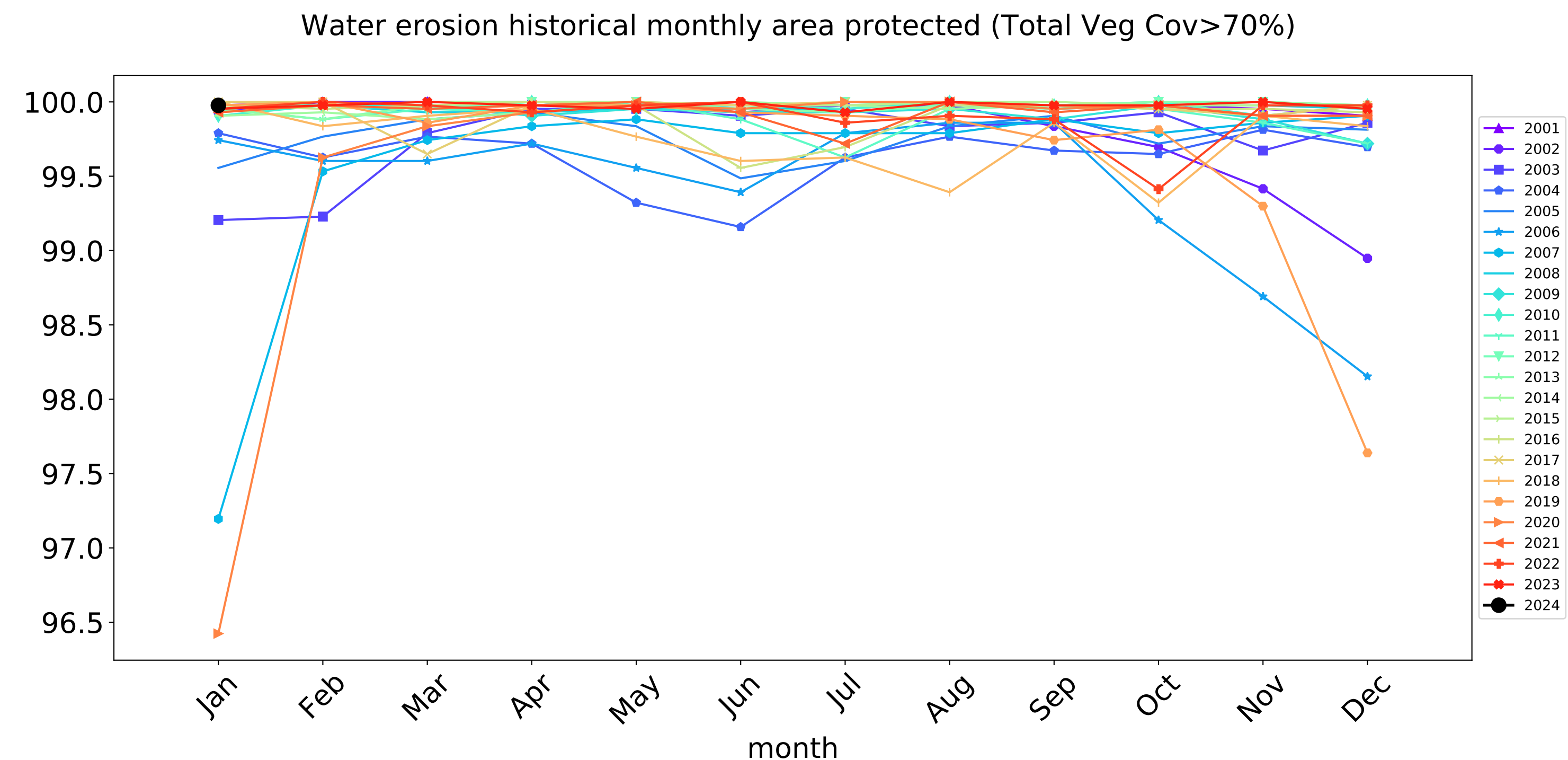
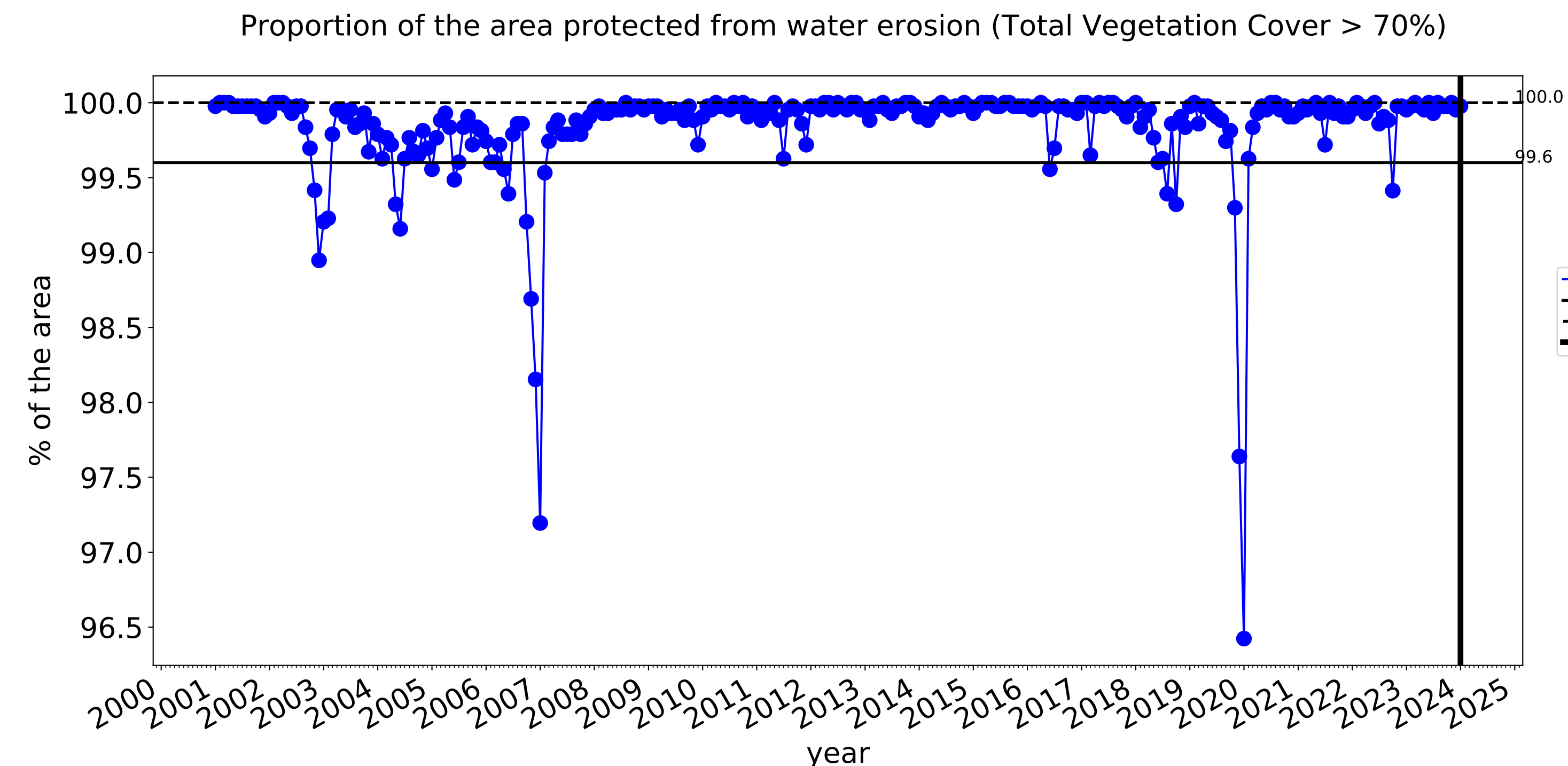
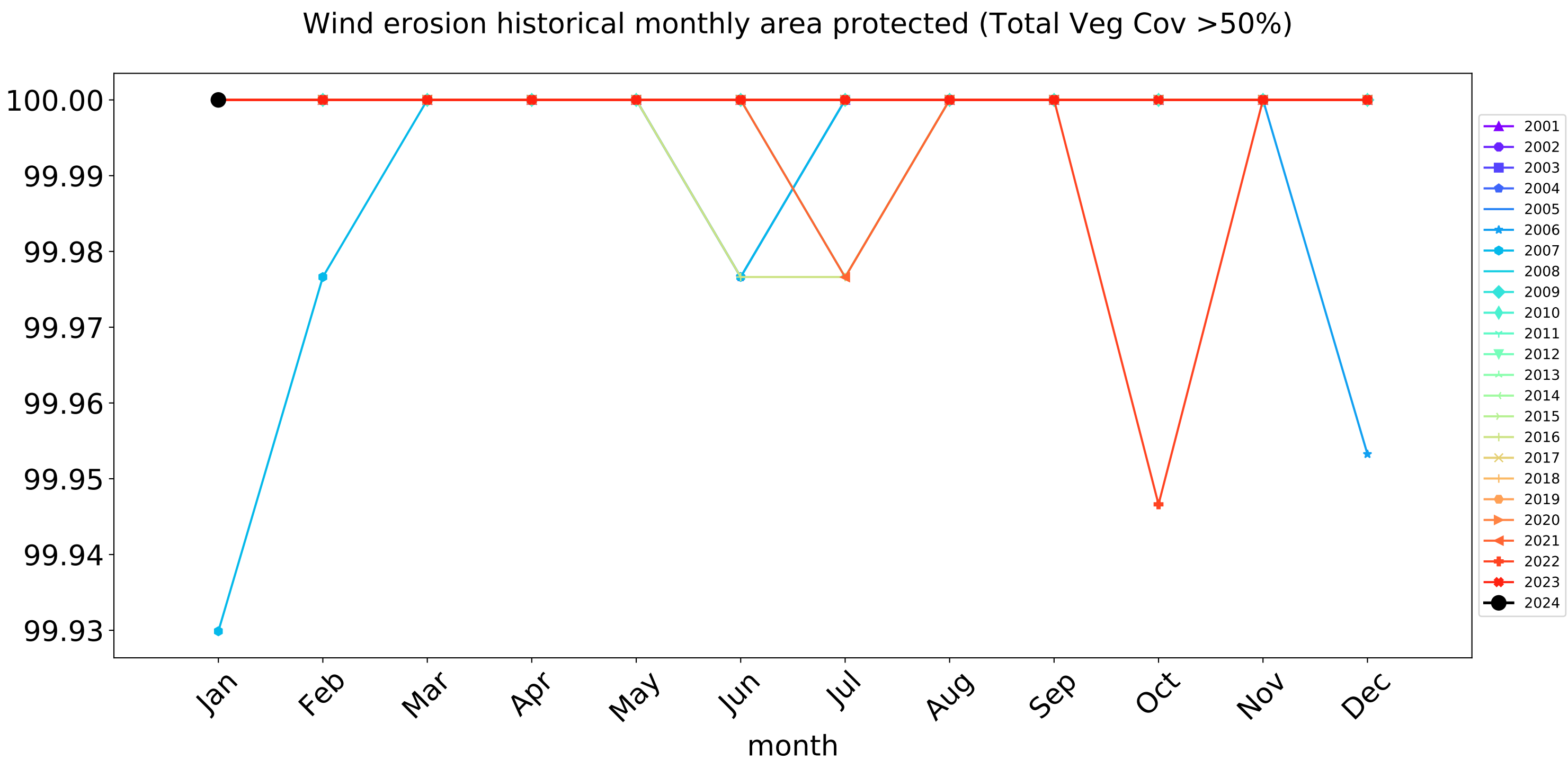
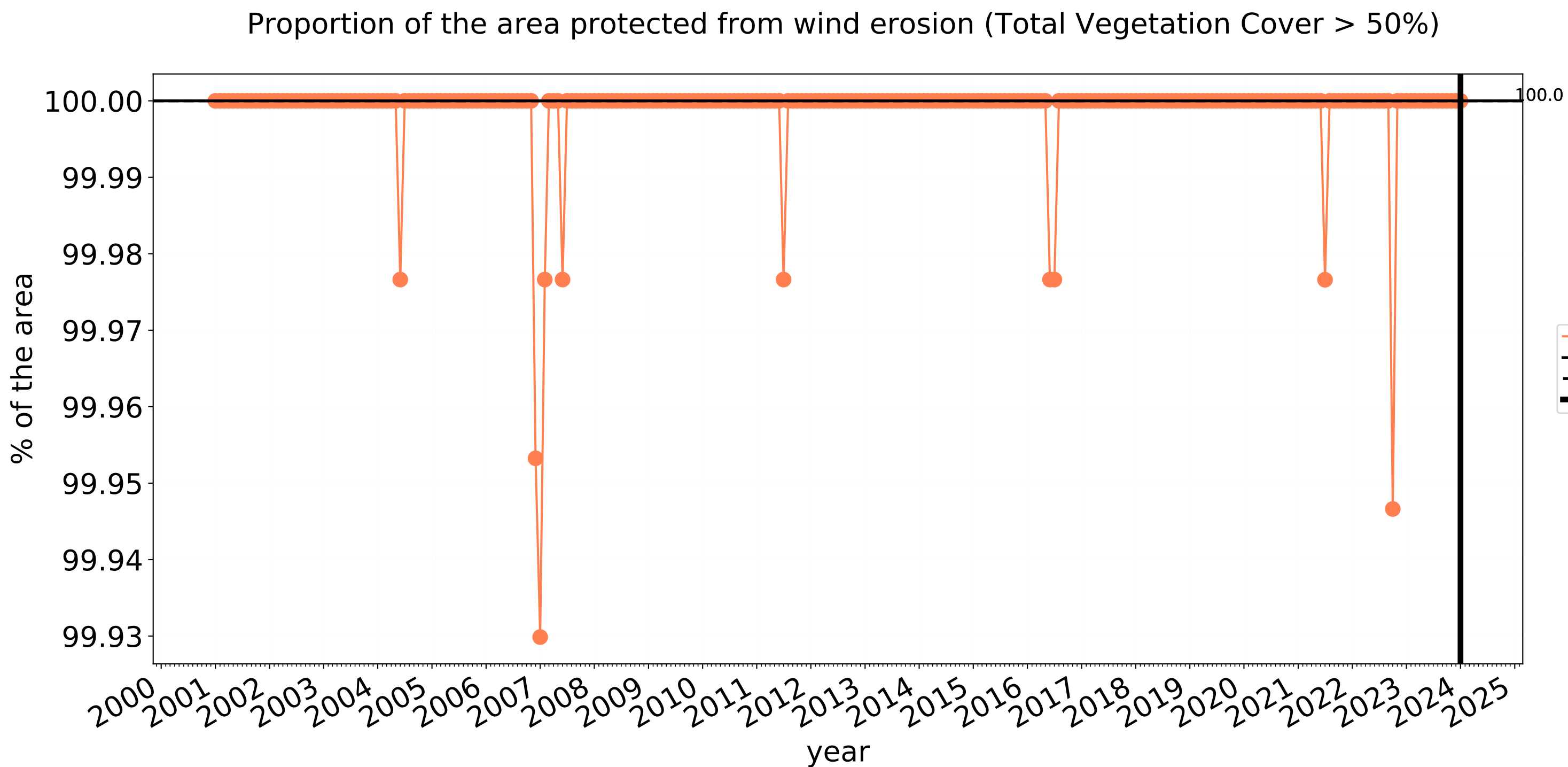
Australian Government

National  
Landcare  
Programme





Grazing non forest timeseries



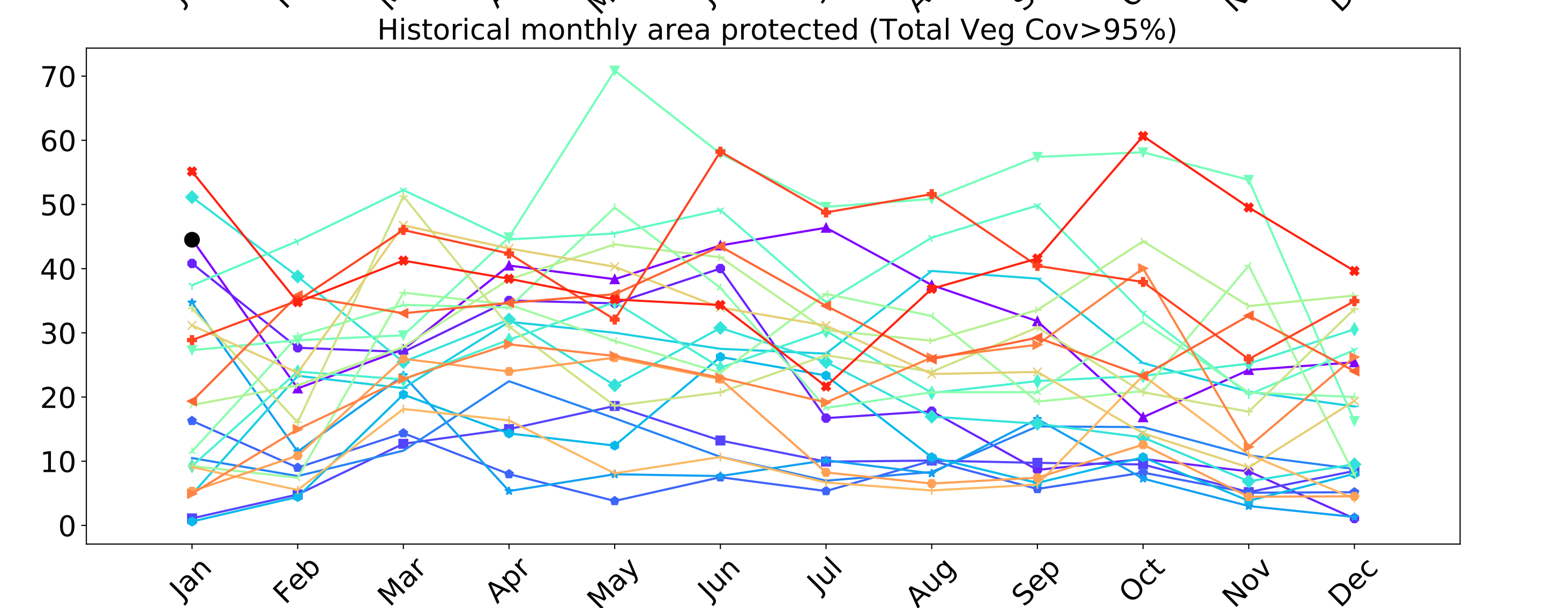
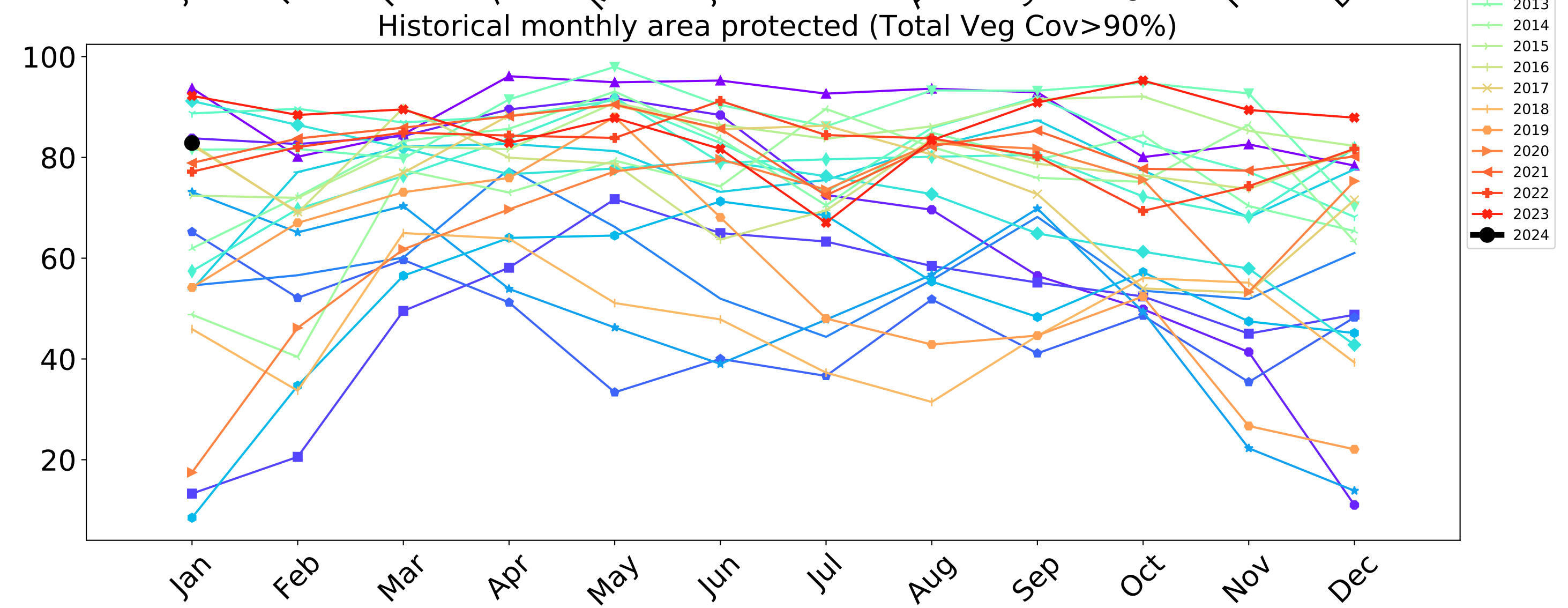
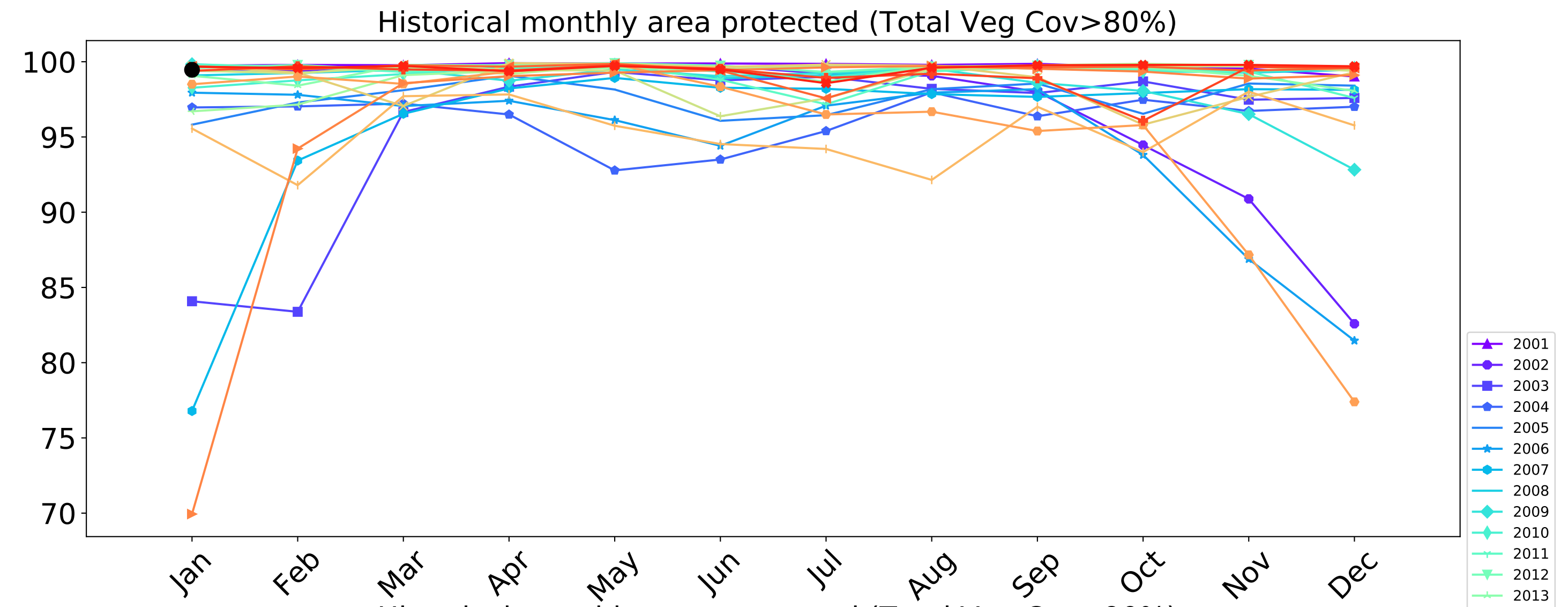
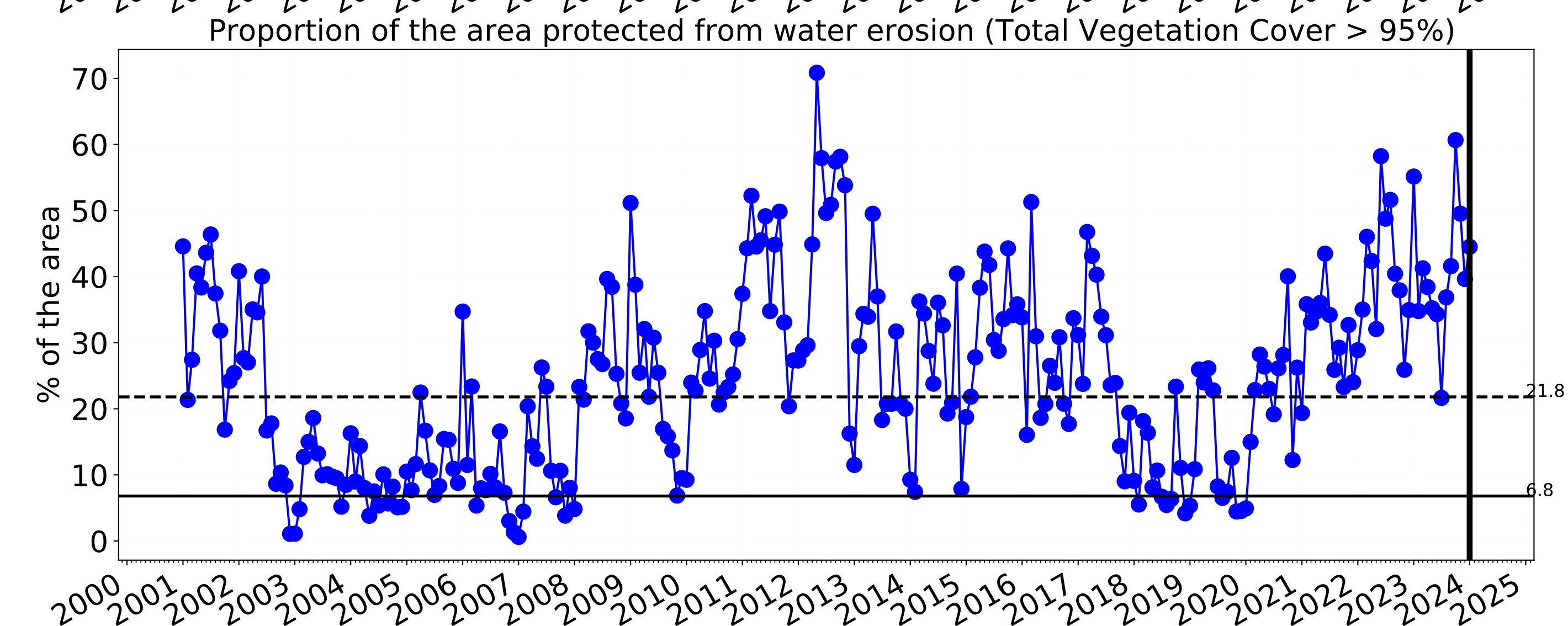
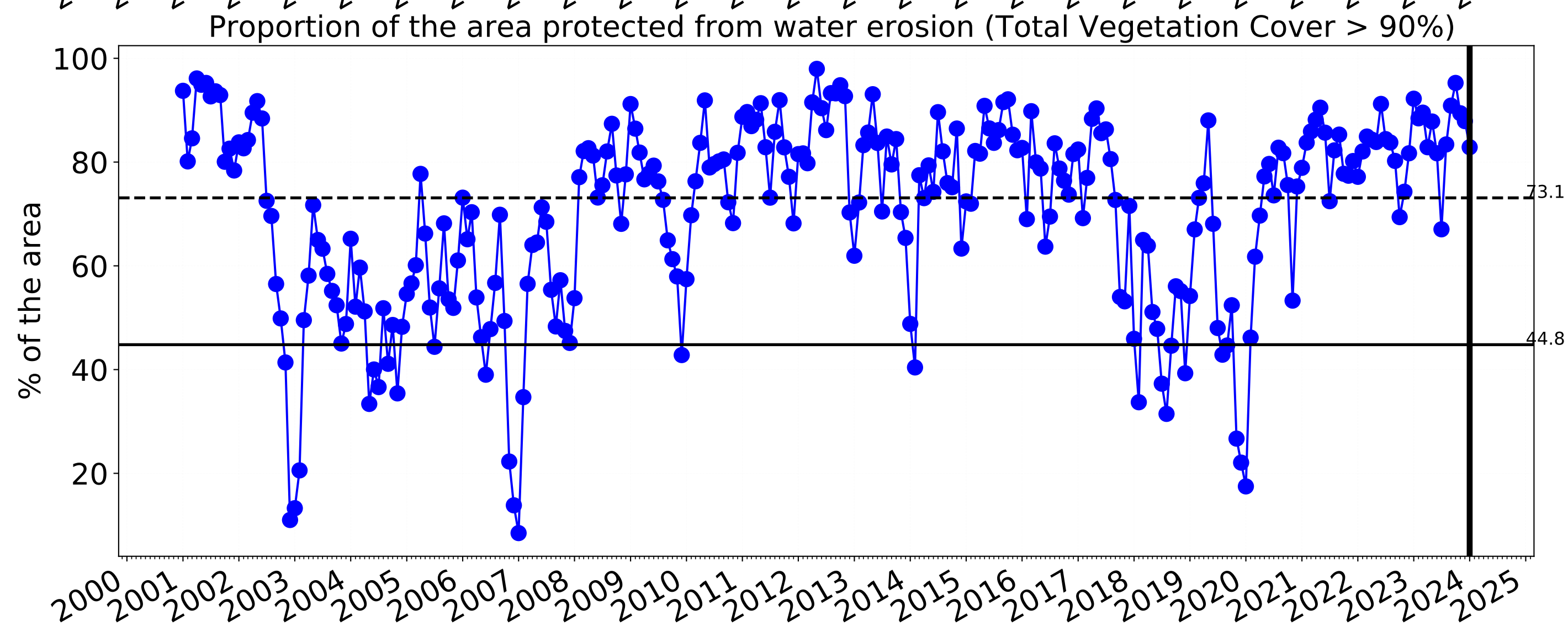
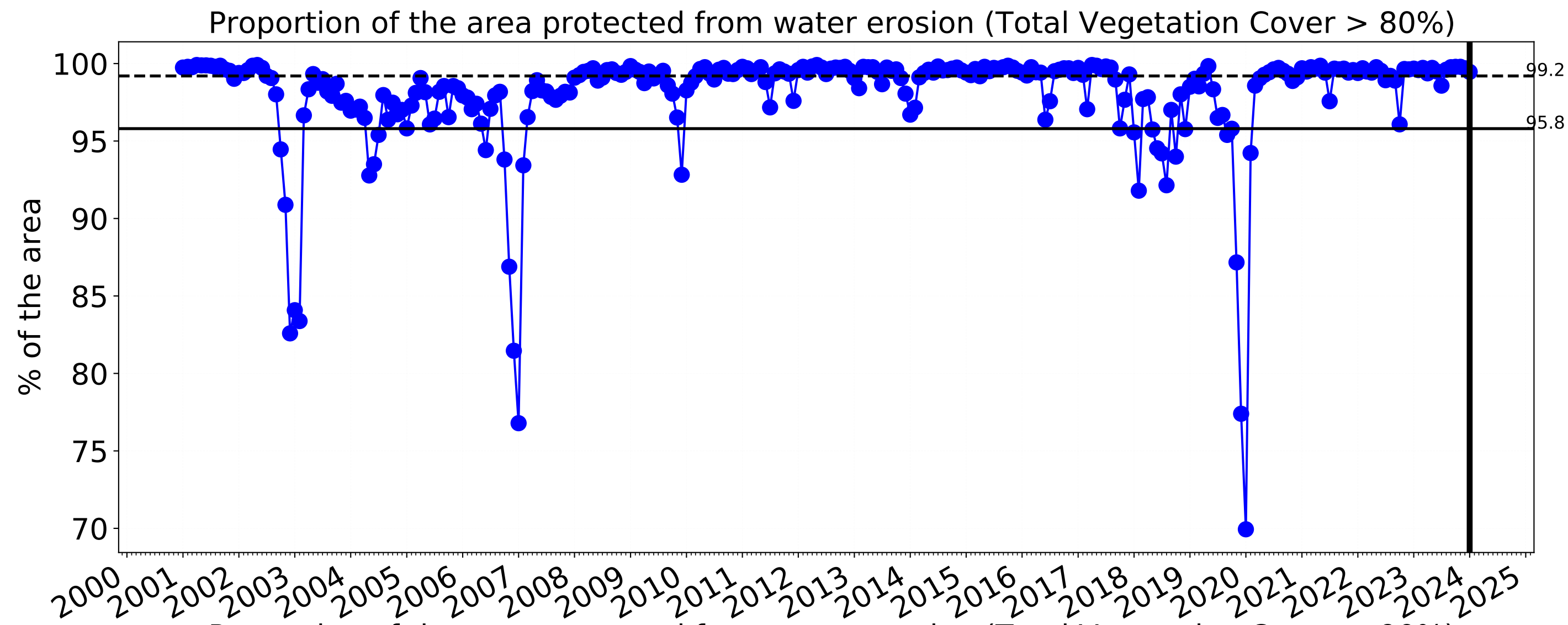
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Ecosystem Research Infrastructure



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Landcare  
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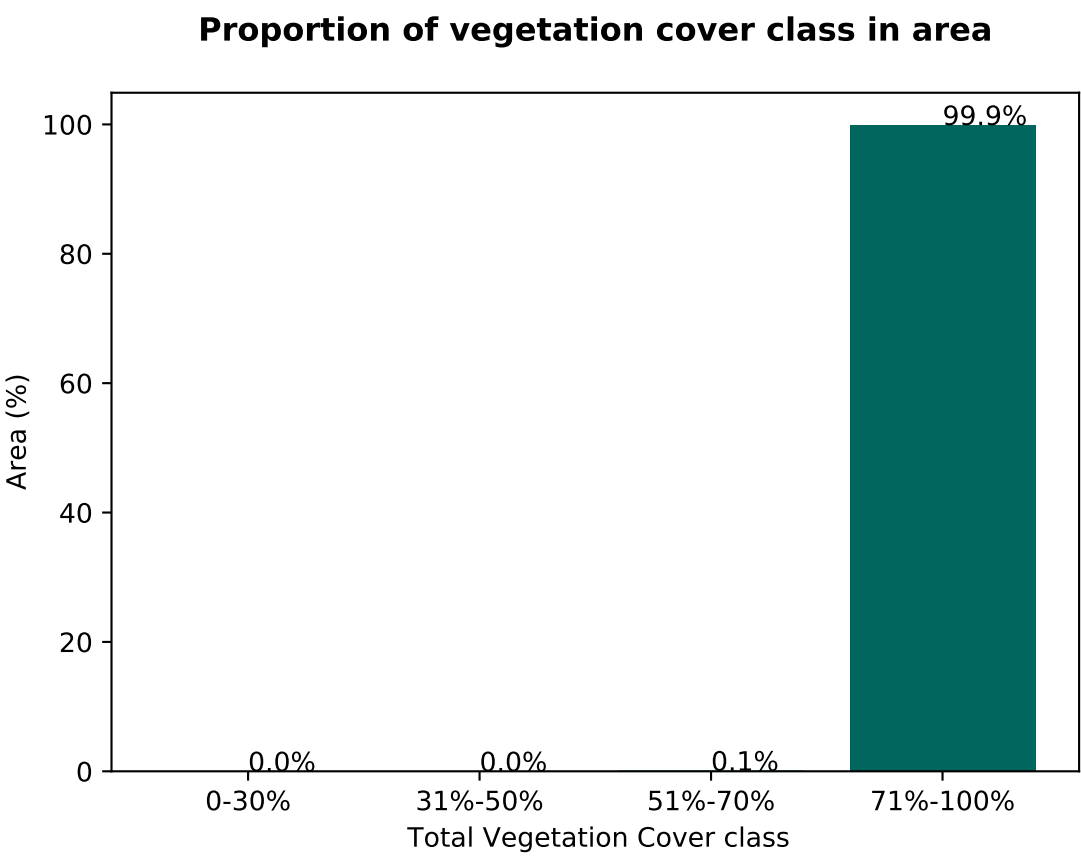
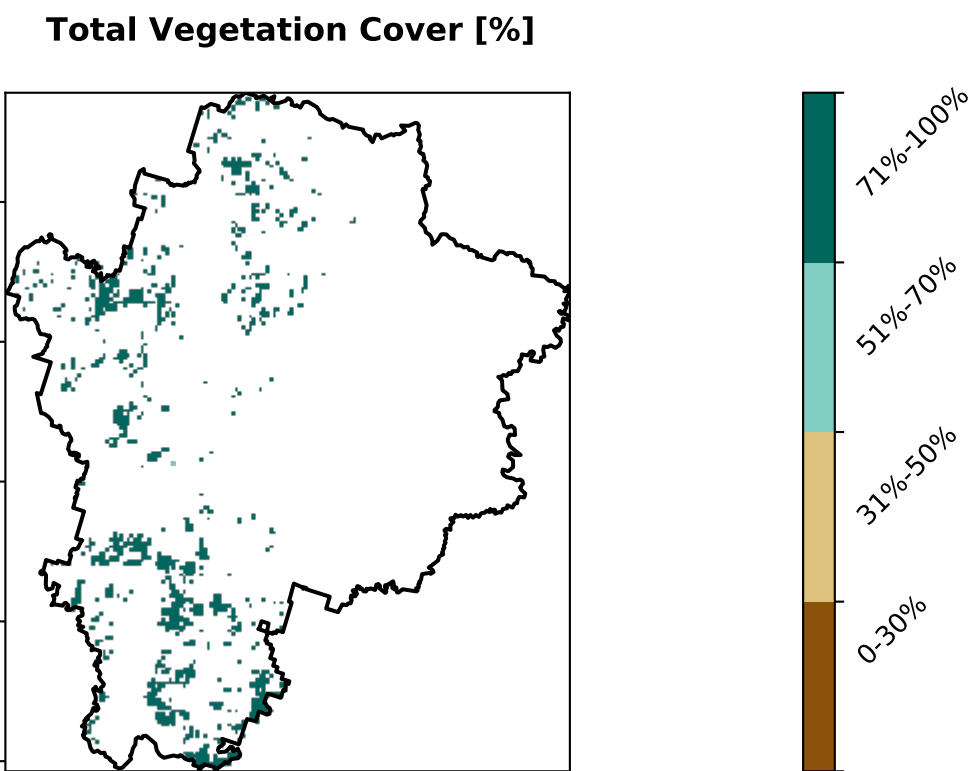
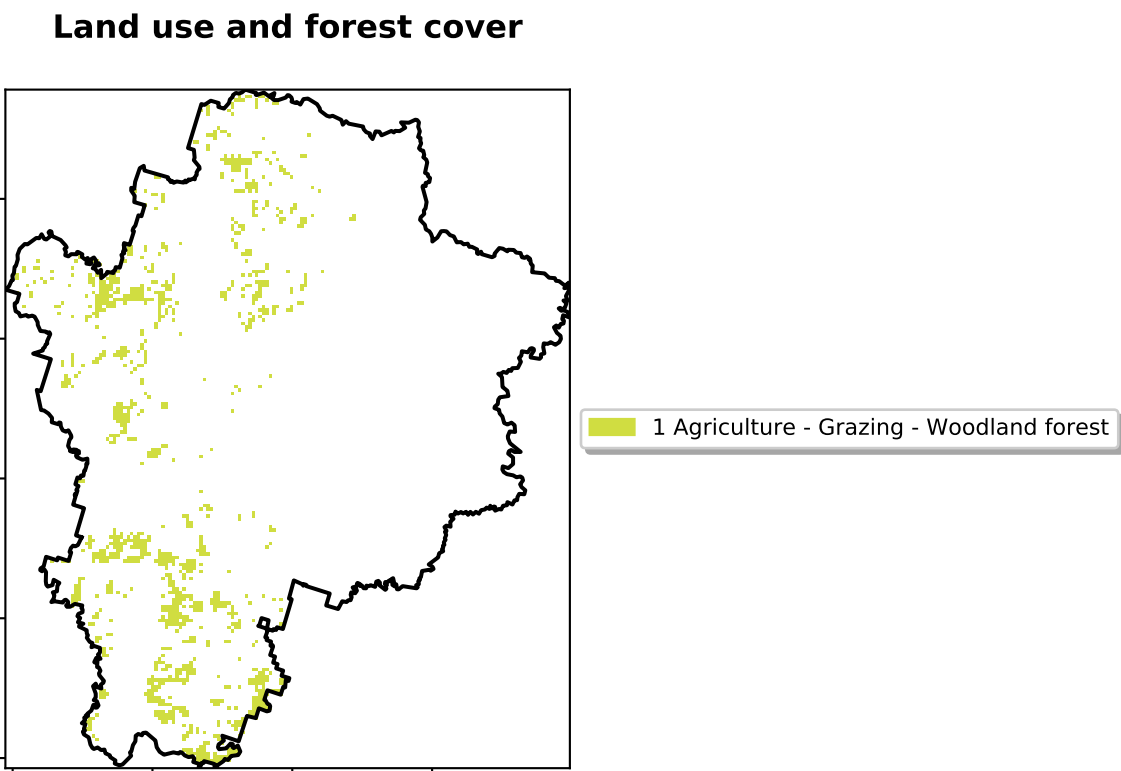




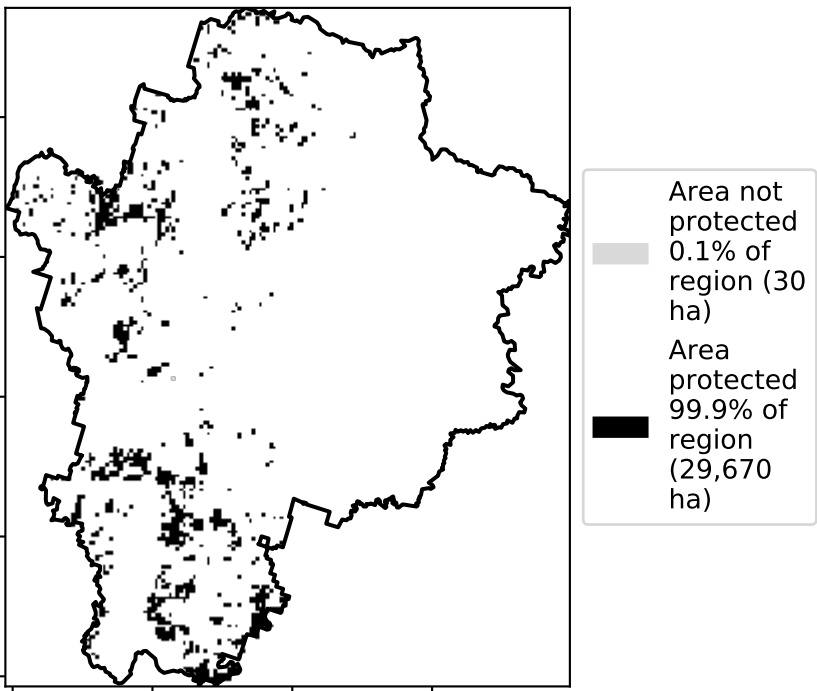


Grazing Woodland forest

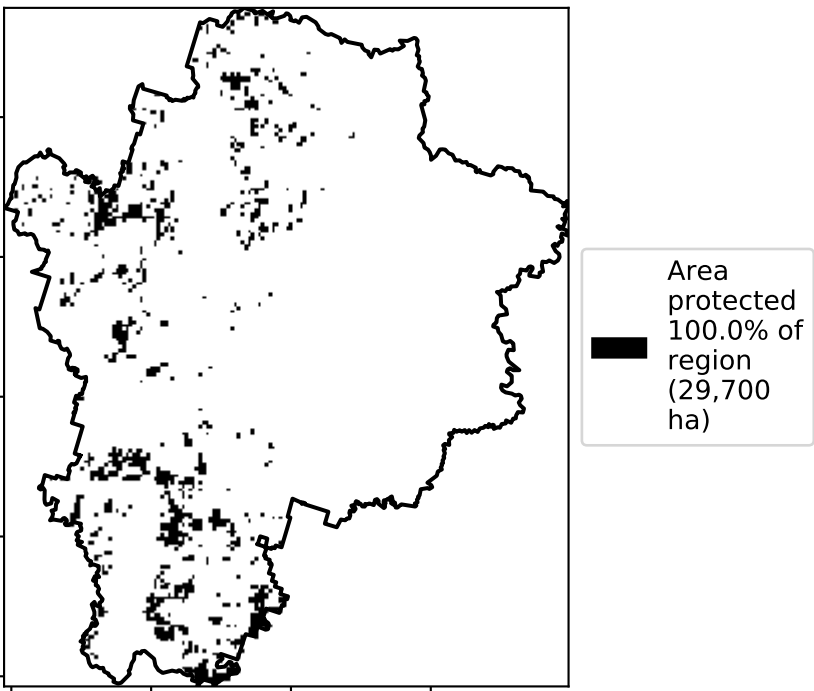
Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)



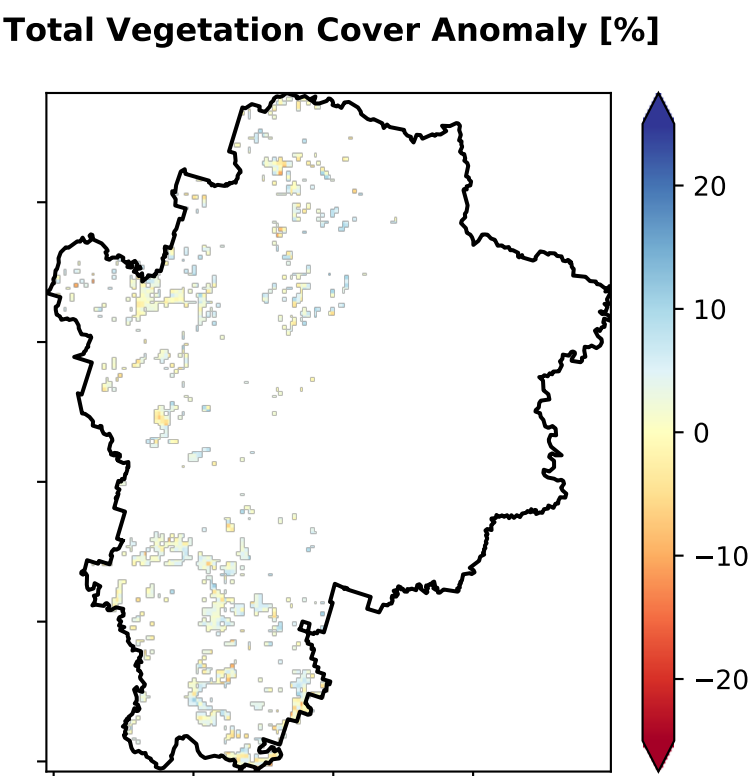
% Area protected from water erosion (>70%)



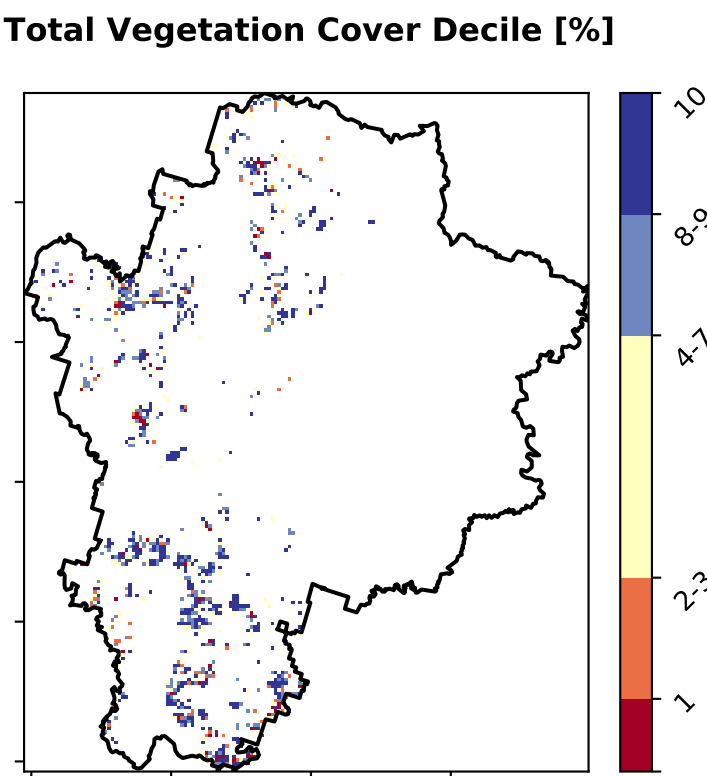
% Area protected from wind erosion (>50%)



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.



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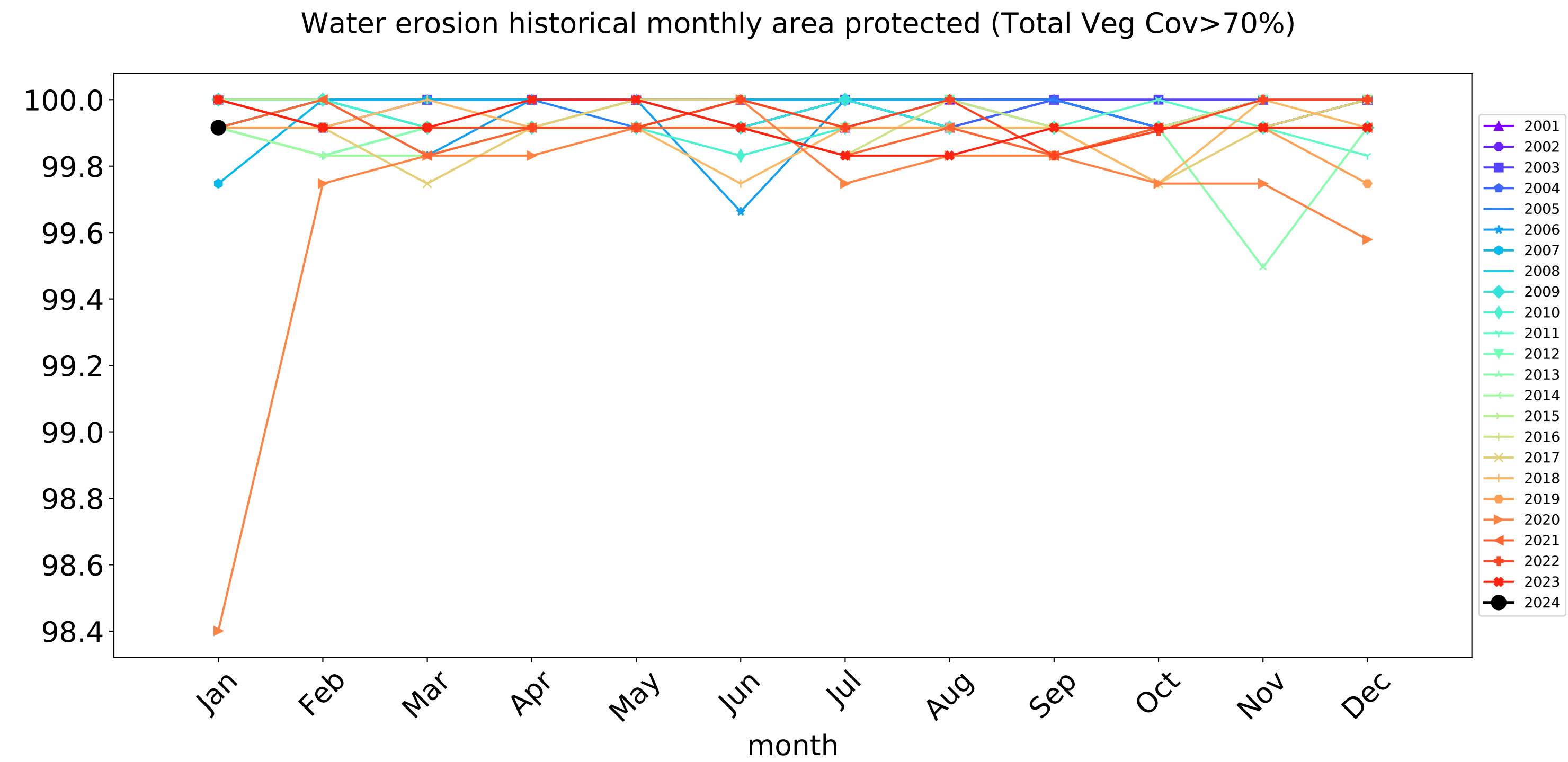
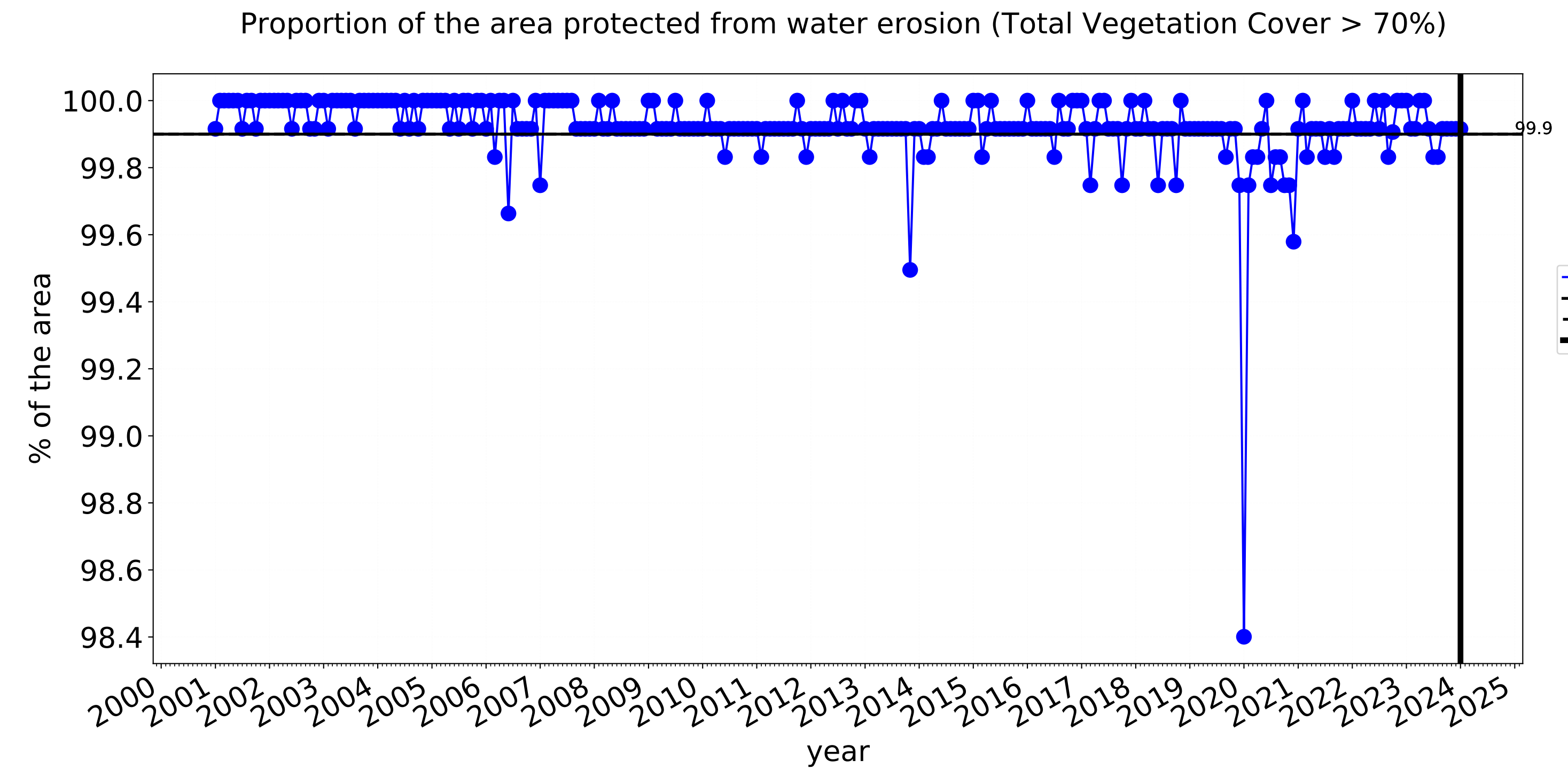
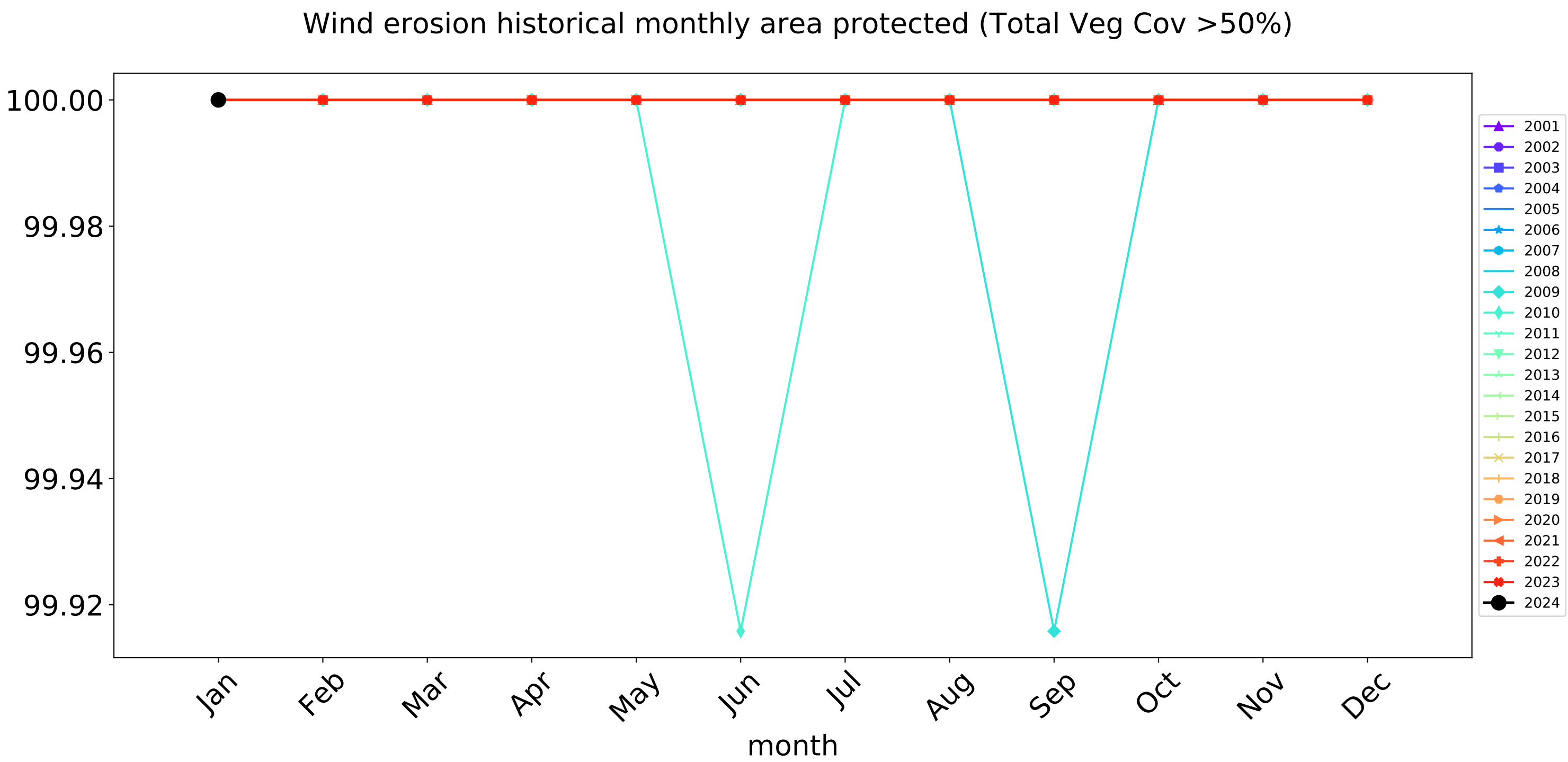
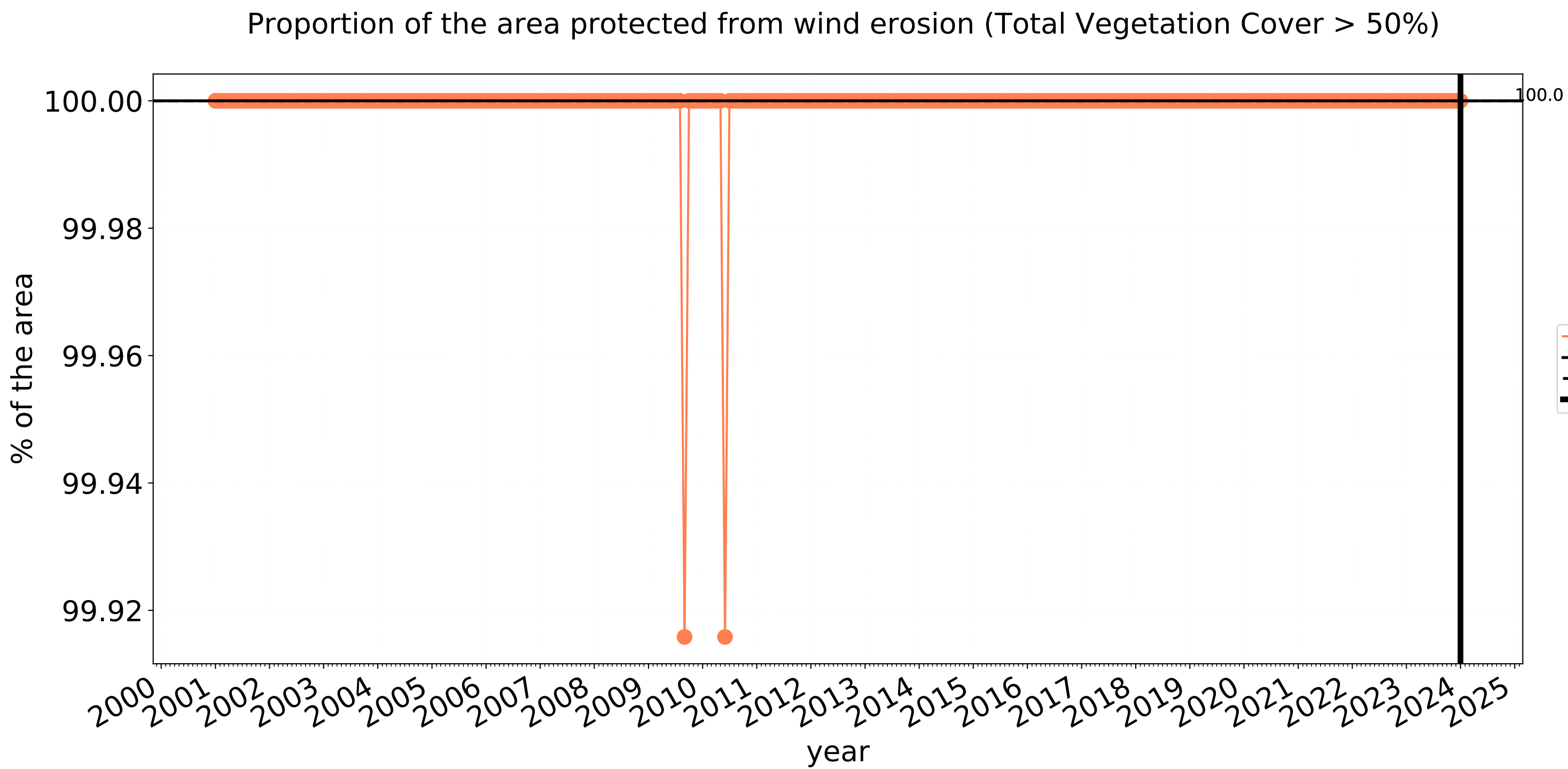


Australian Government

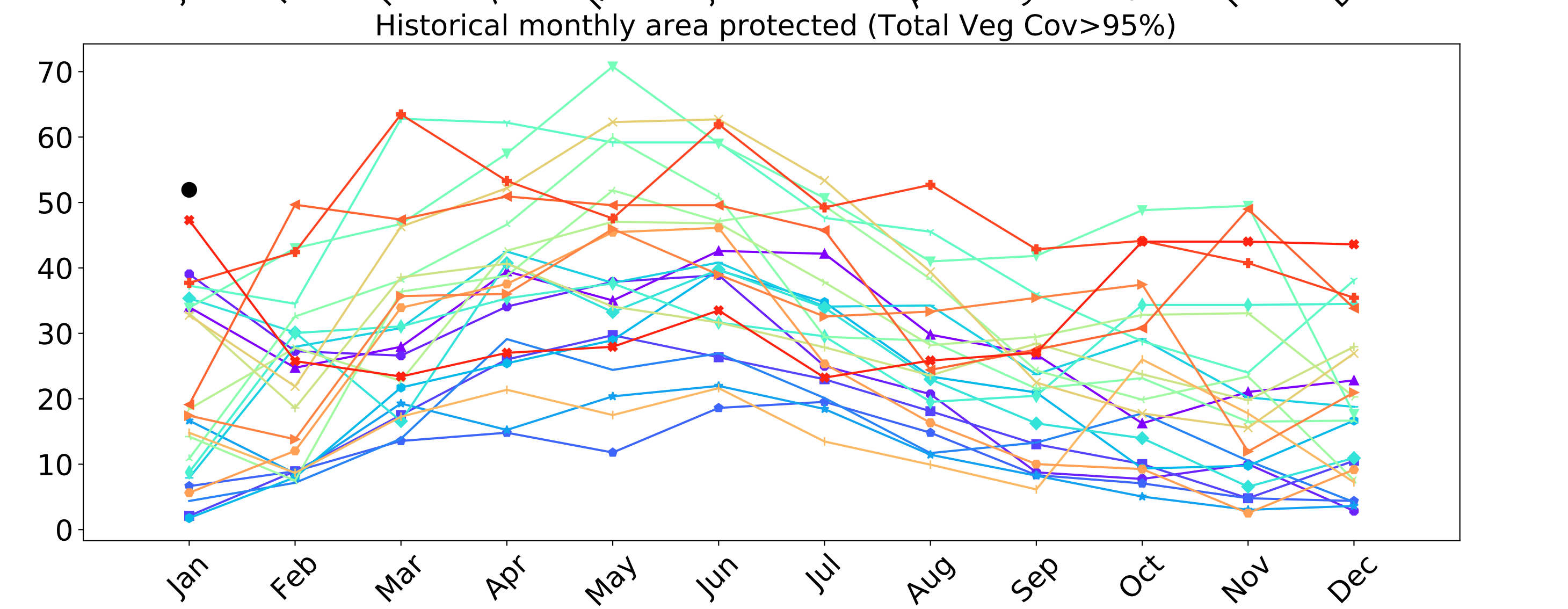
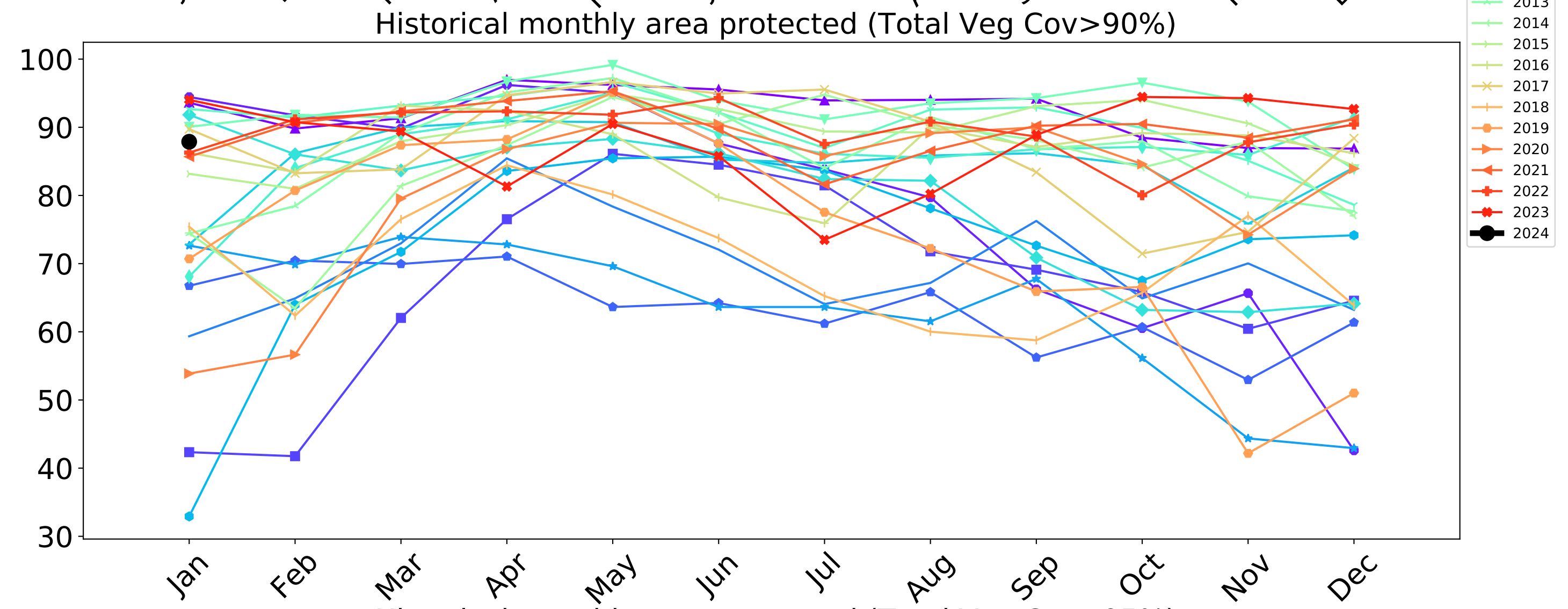
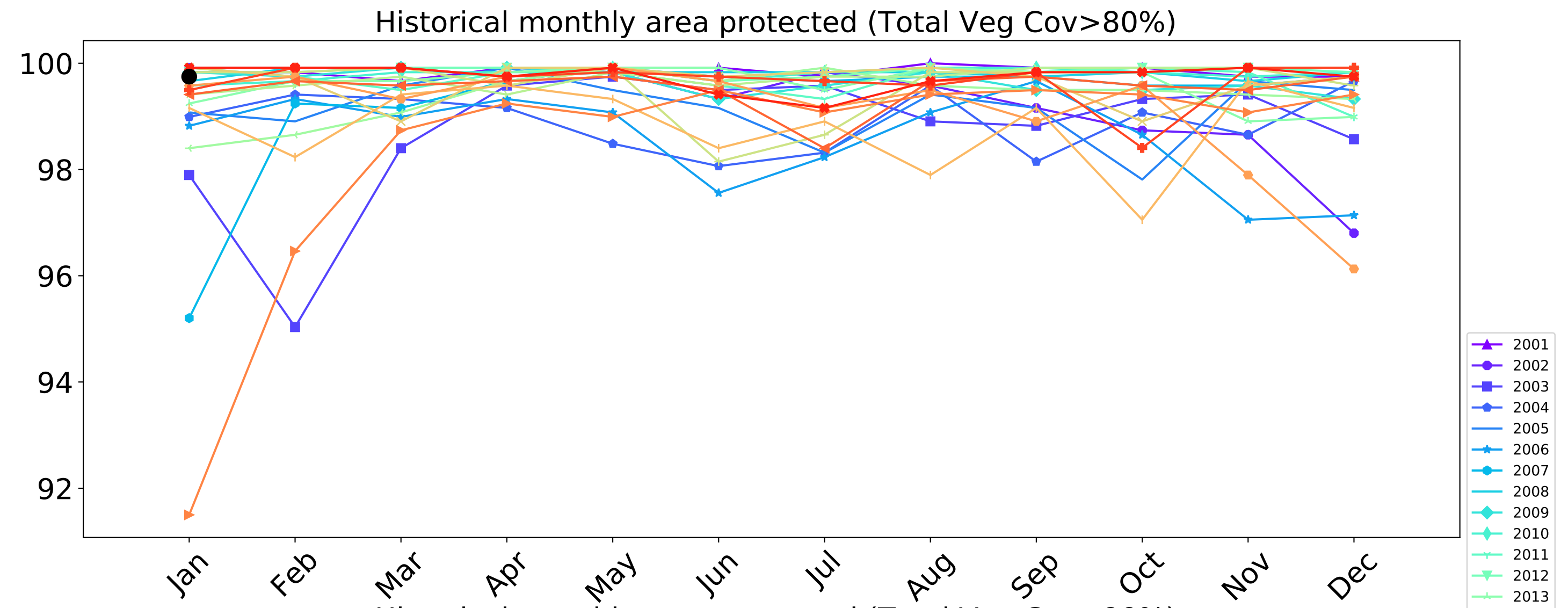
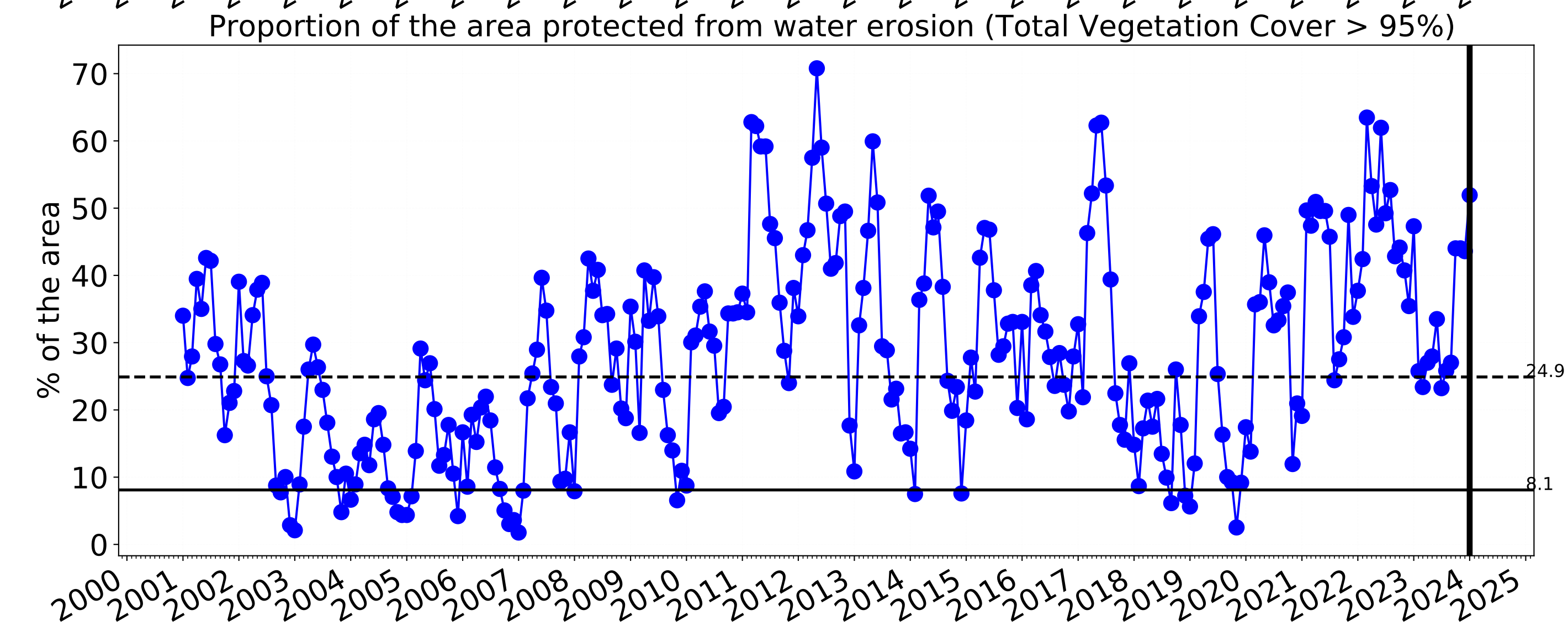
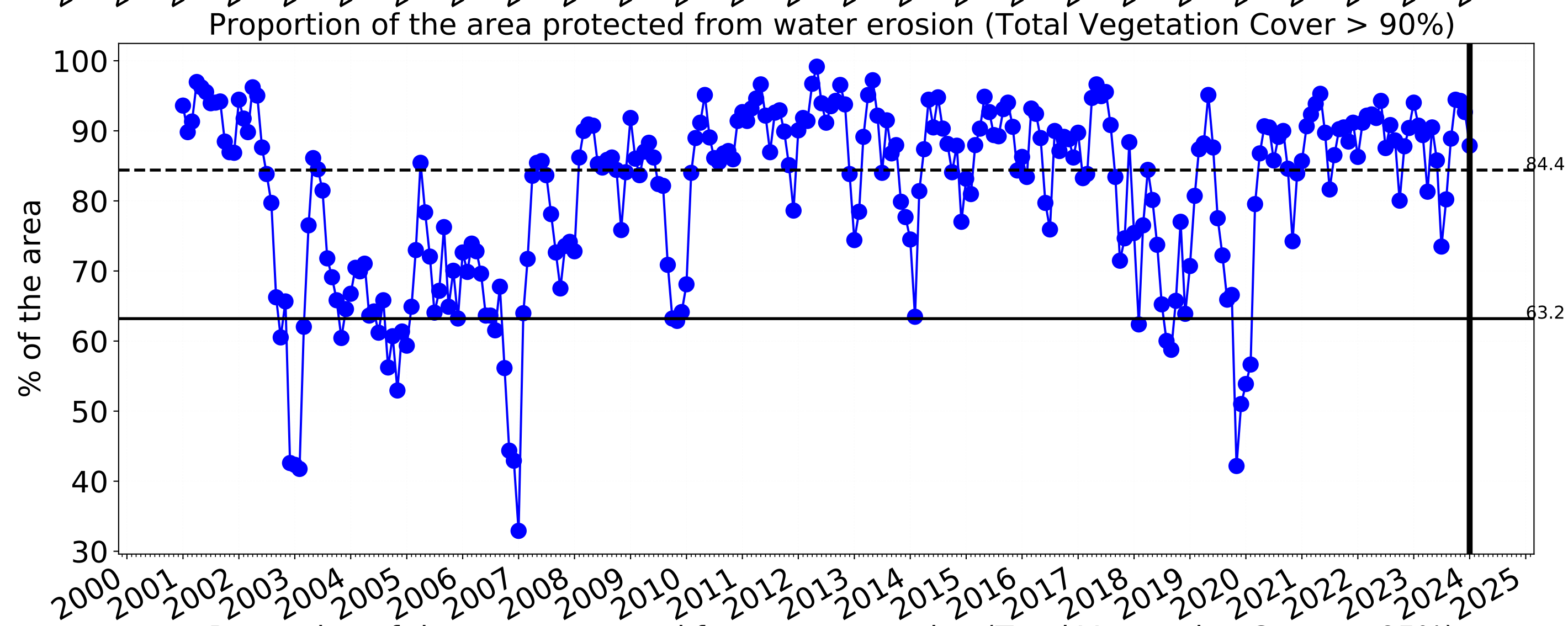
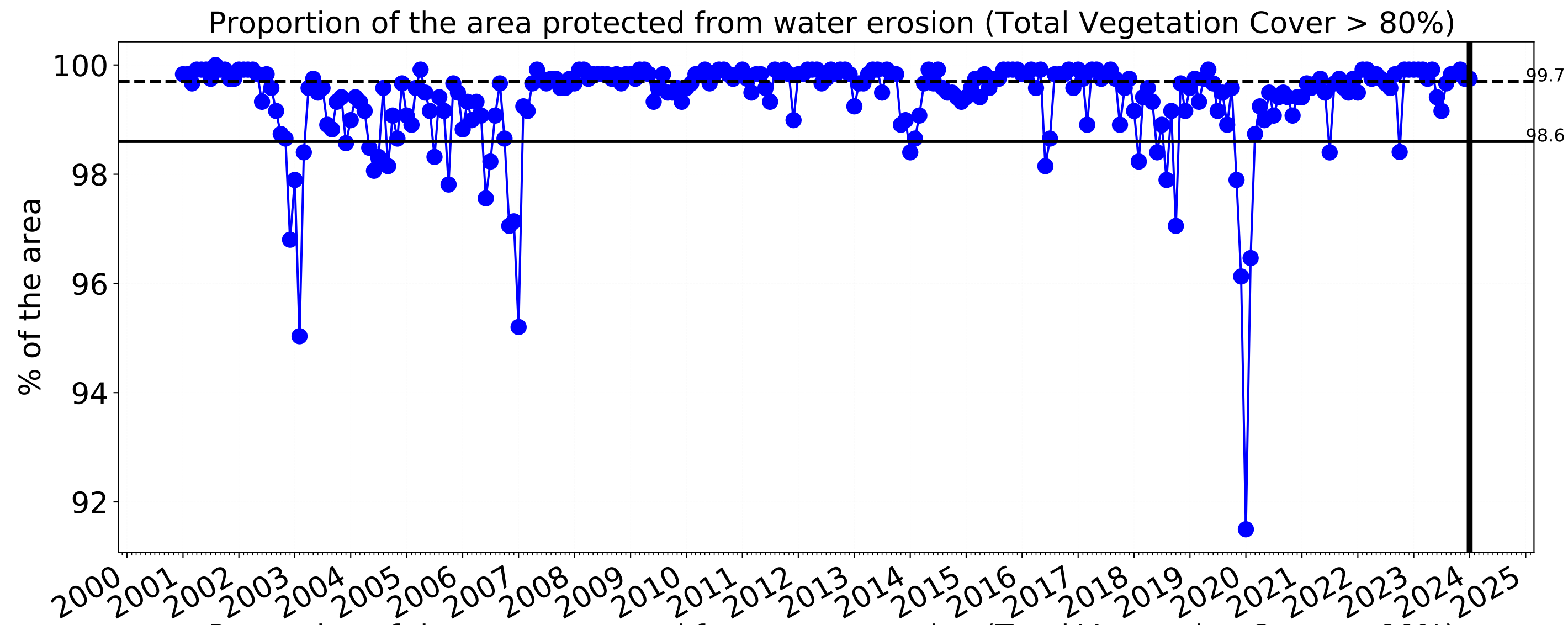
National  
Landcare  
Programme



Grazing Woodland forest timeseries



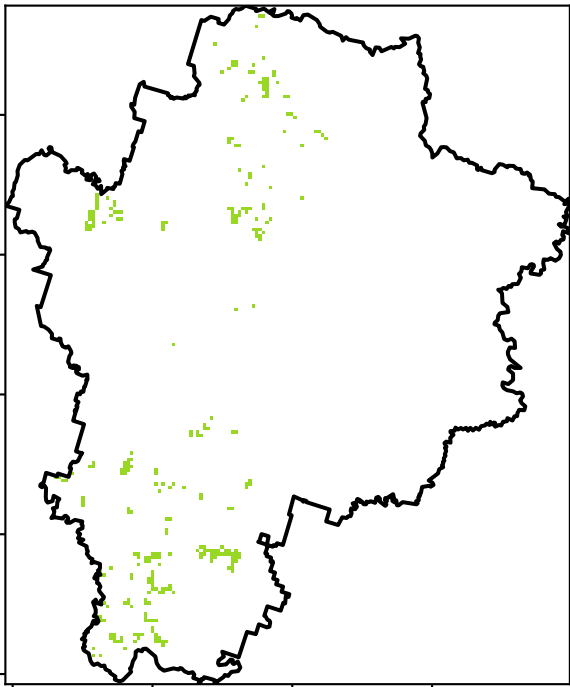




Grazing - Forest (non woodland)

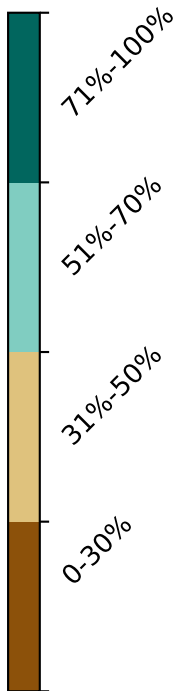
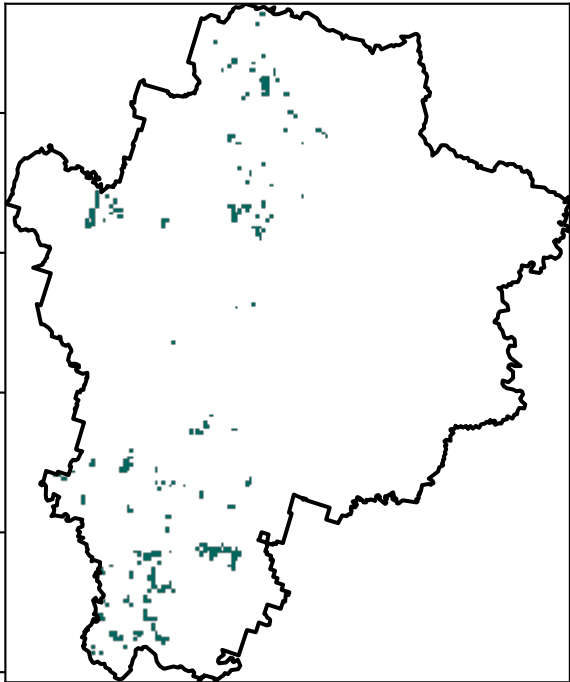
Land use and forest cover

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

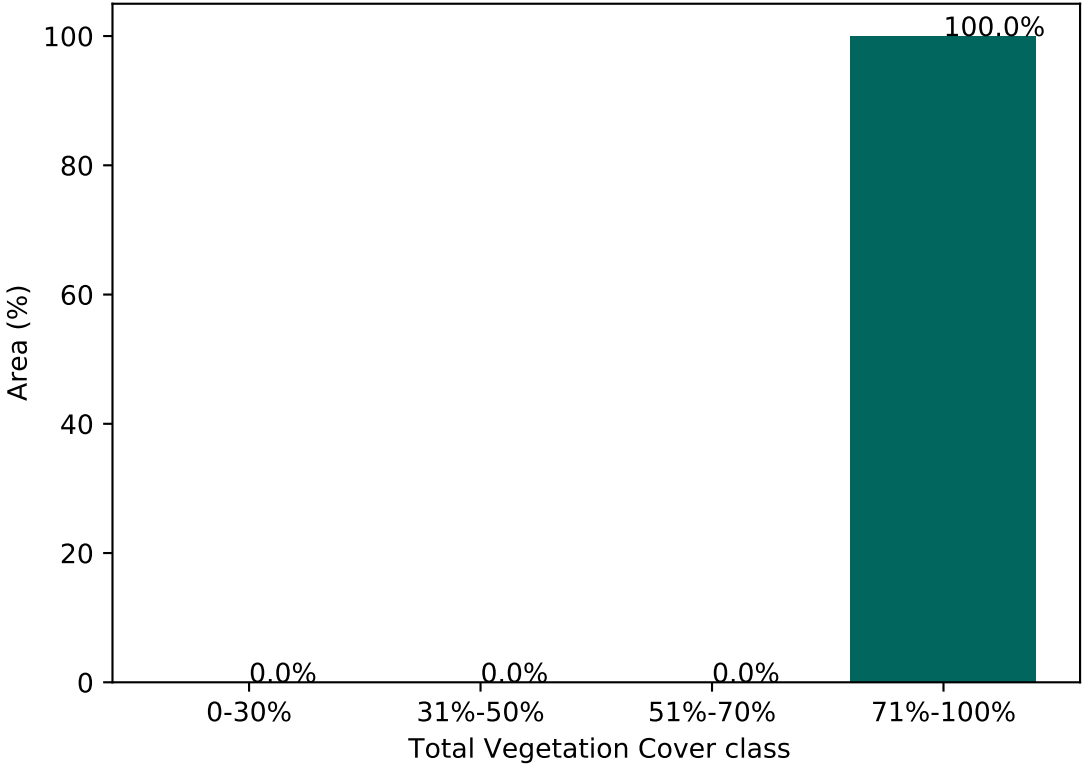


1 Agriculture - Grazing - Non-woodland forest

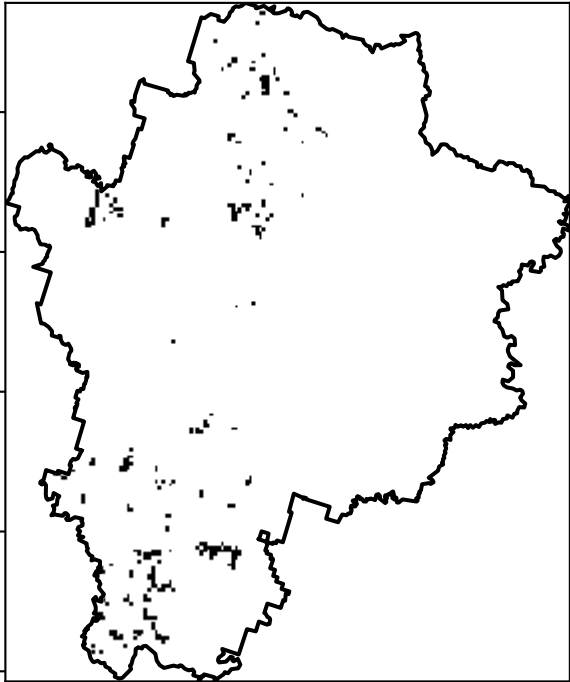
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

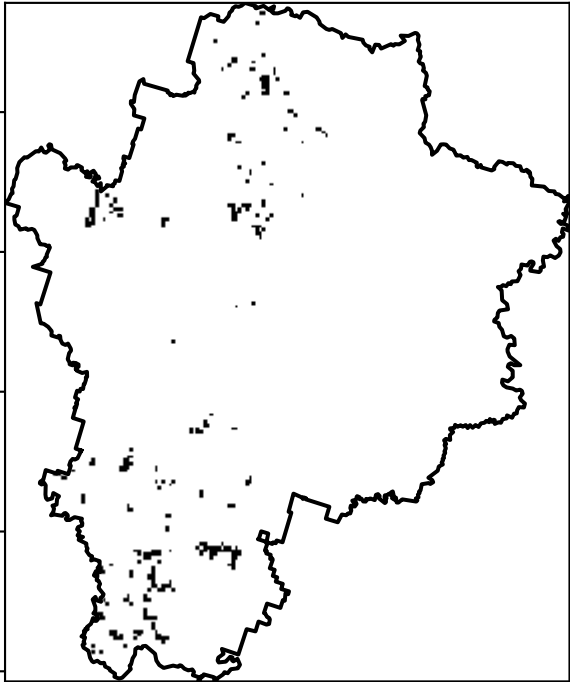


% Area protected from water erosion (>70%)



Area  
protected  
100.0% of  
region  
(7,450 ha)

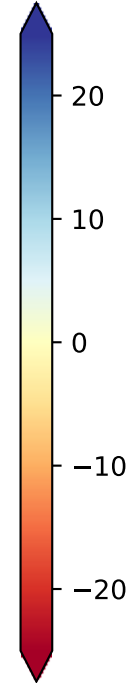
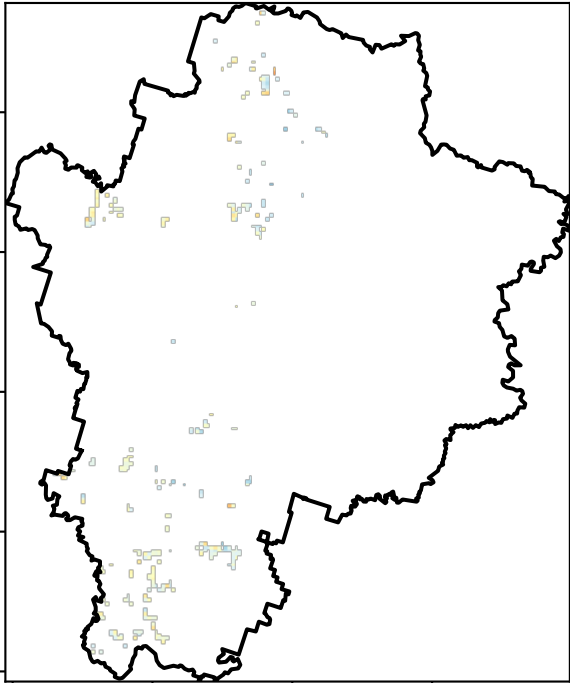
% Area protected from wind erosion (>50%)



Area  
protected  
100.0% of  
region  
(7,450 ha)

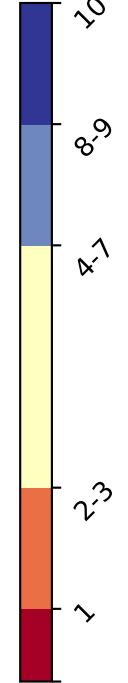
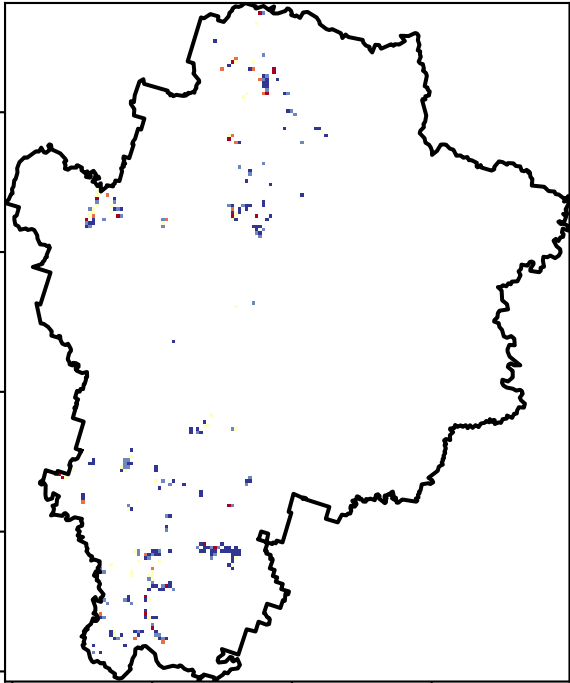
Total Vegetation Cover Anomaly [%]

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  
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month of the map  
using baseline  
from 2001 to  
2019.



Deciles show where the  
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record, from highest to  
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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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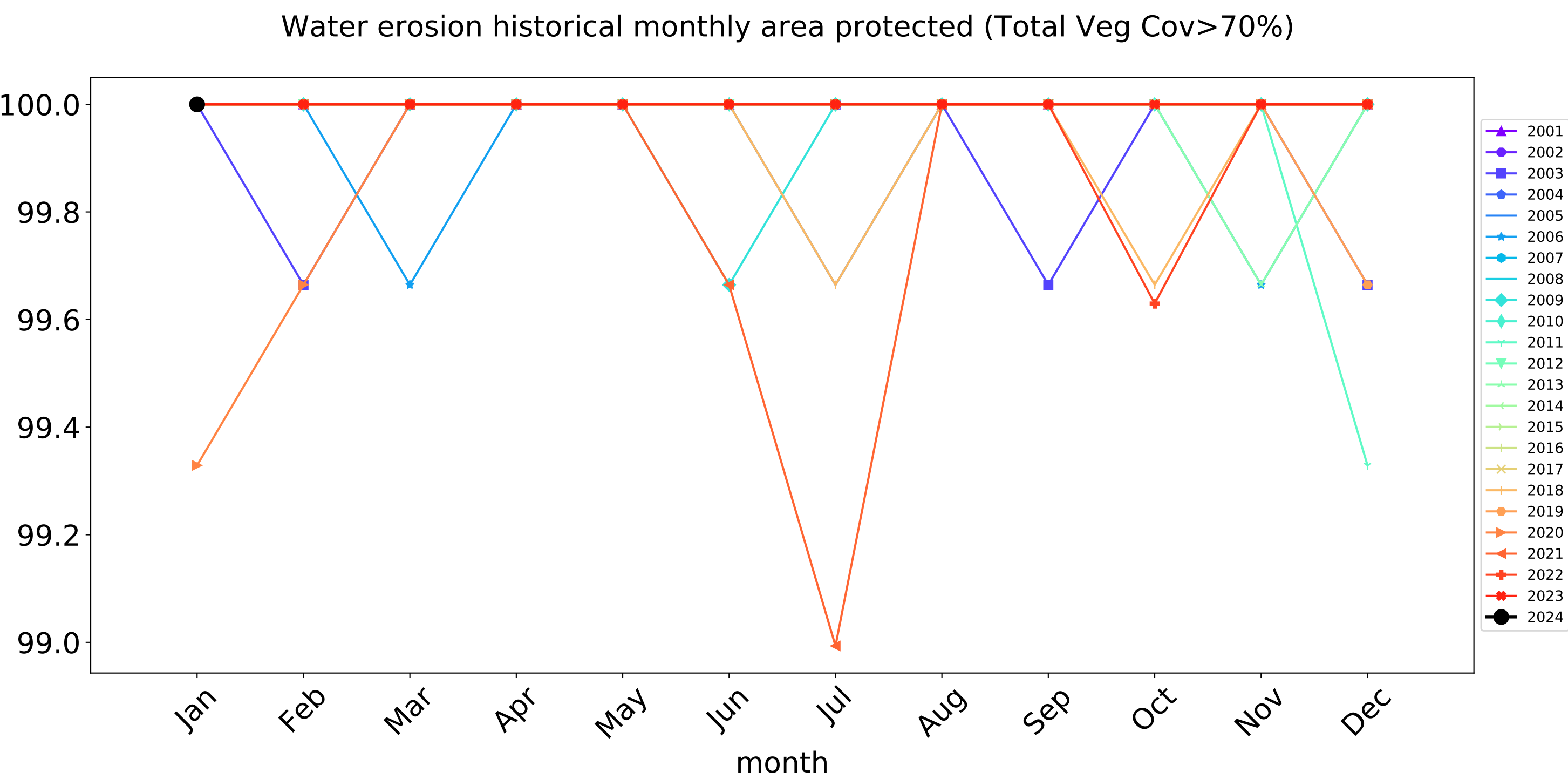
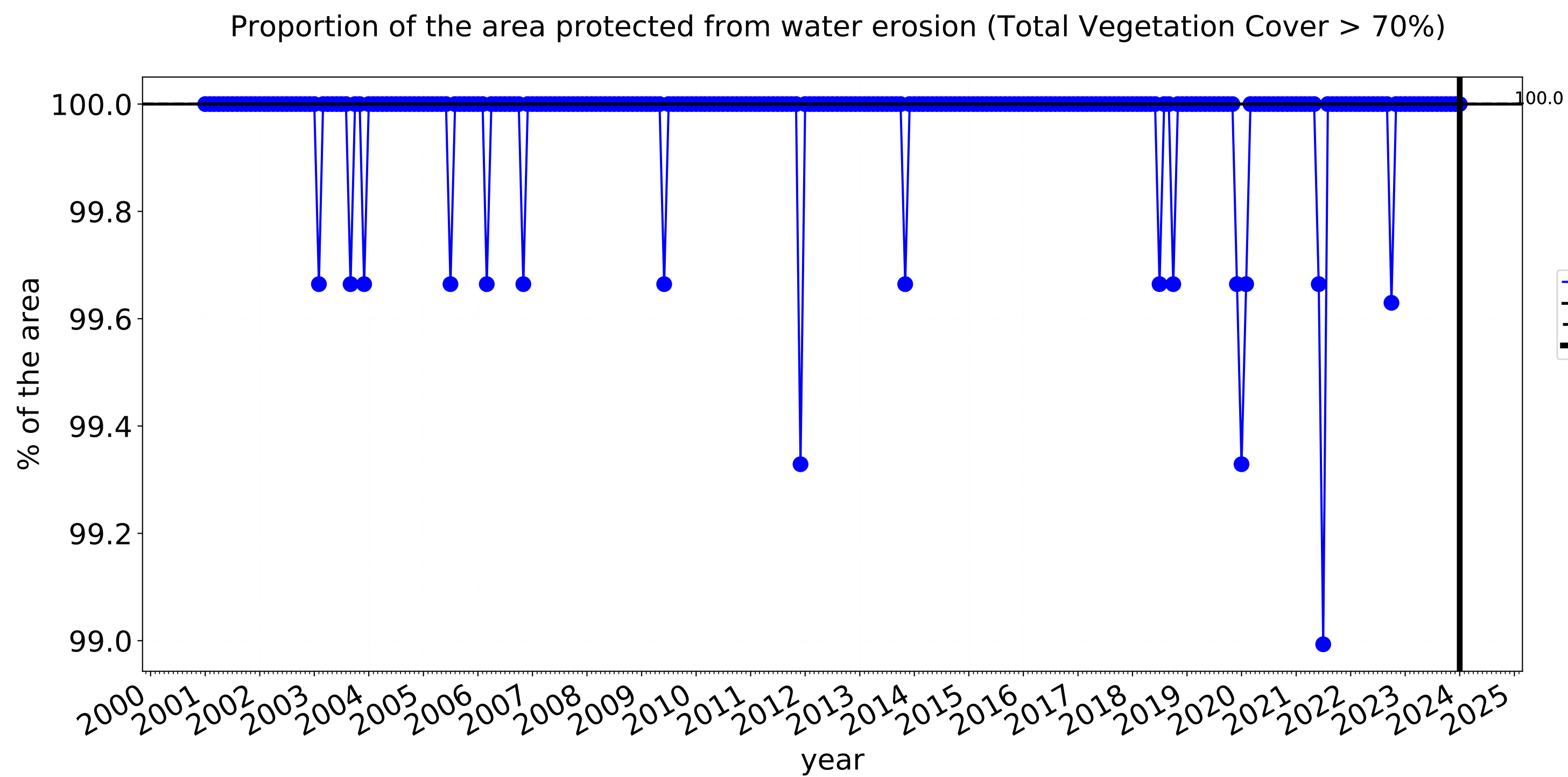
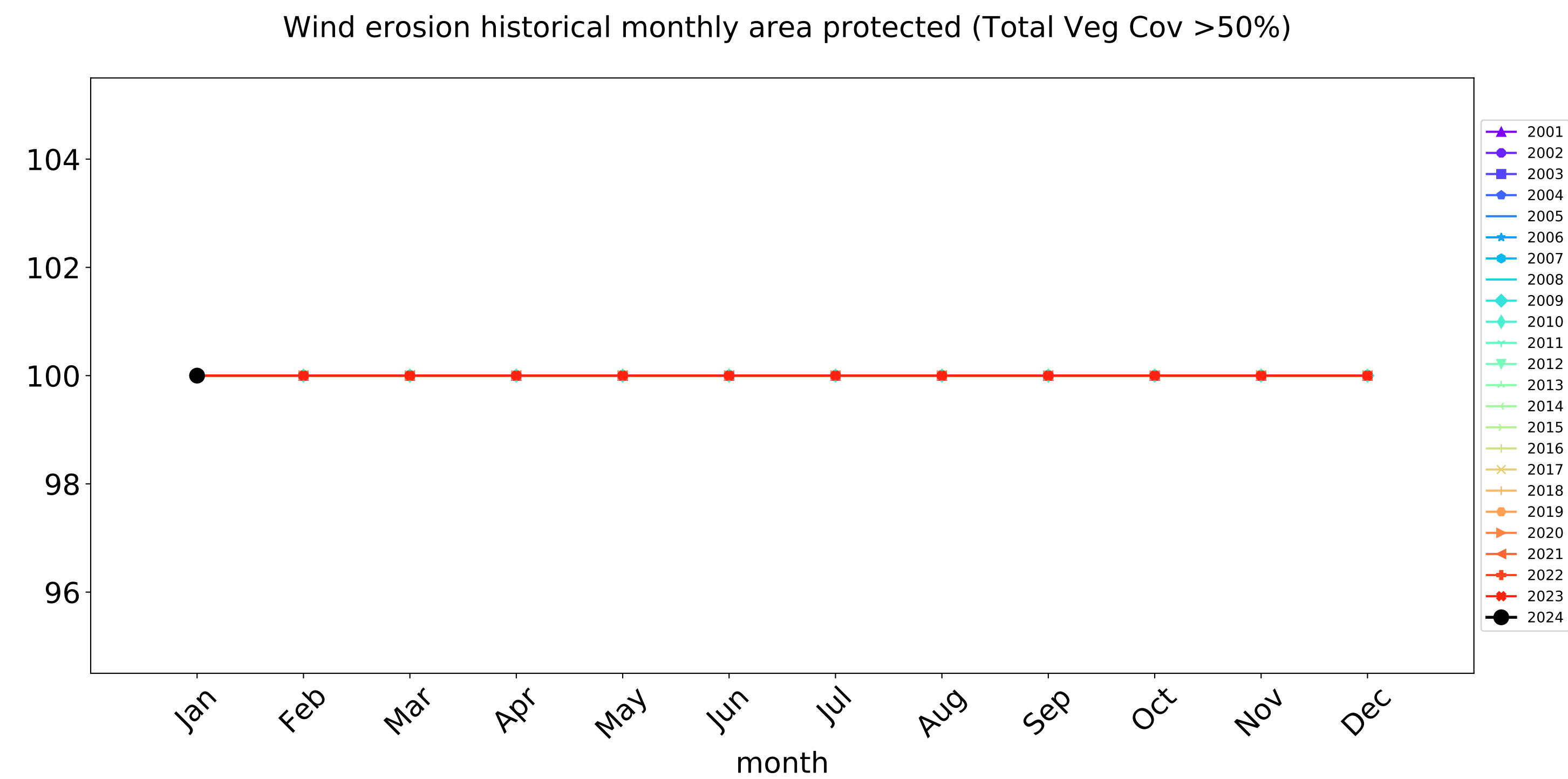
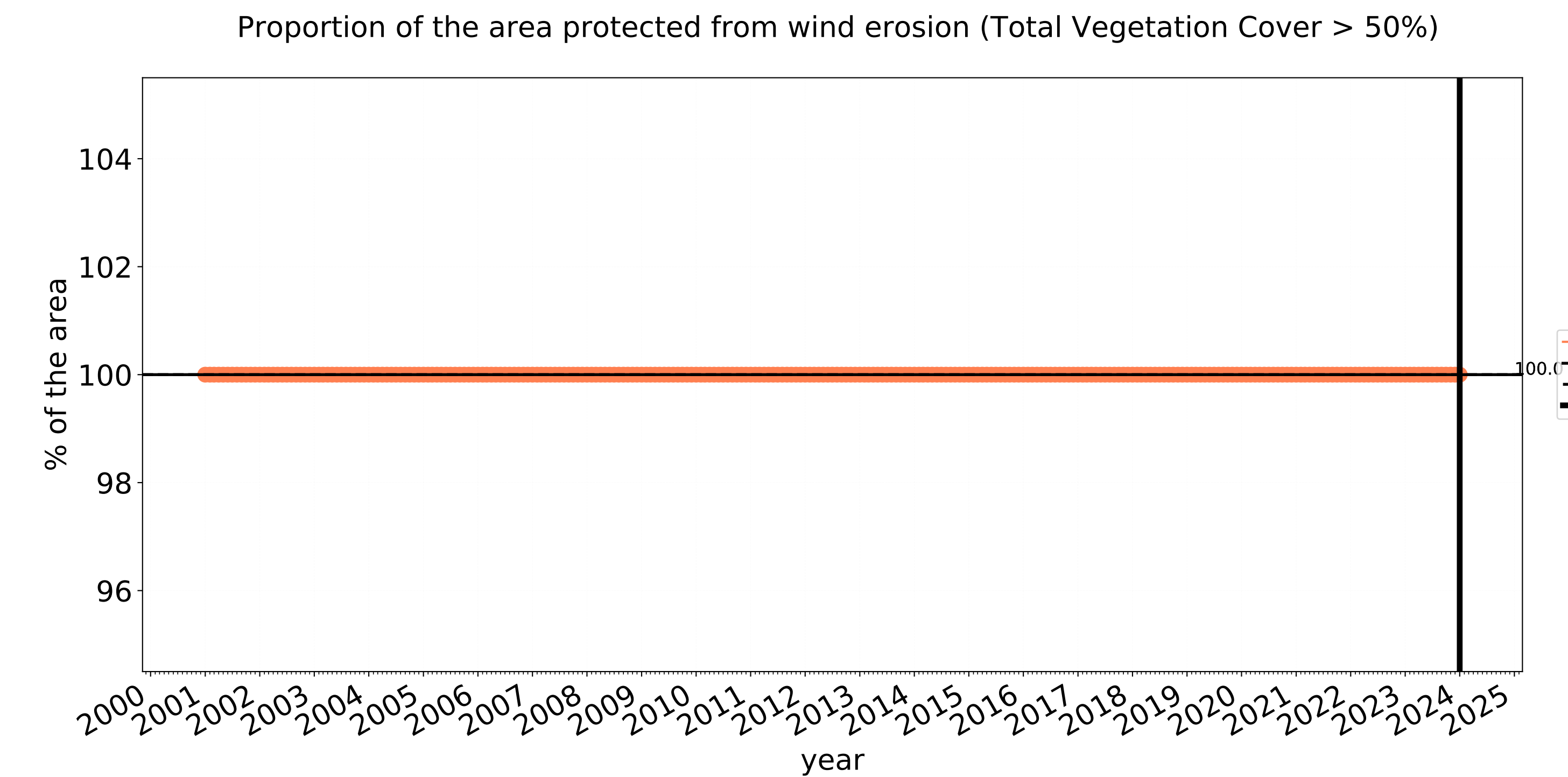
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Grazing - Forest (non woodland) timeseries



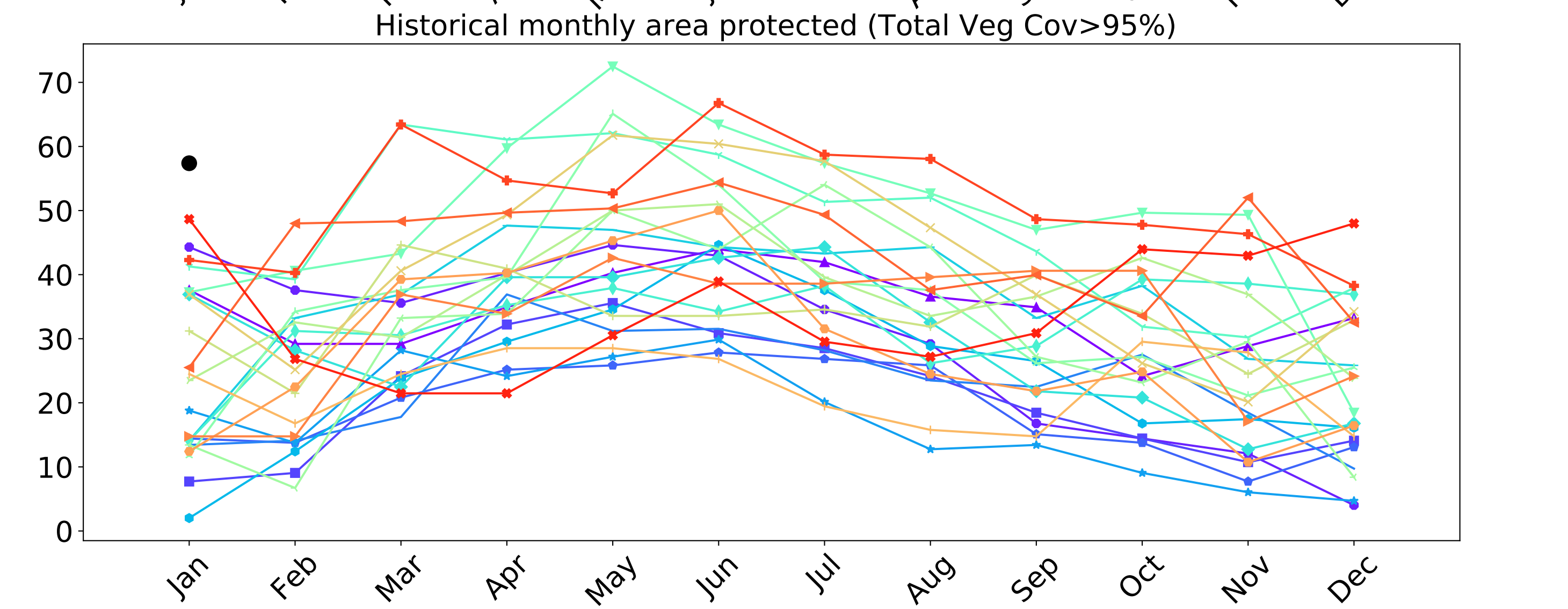
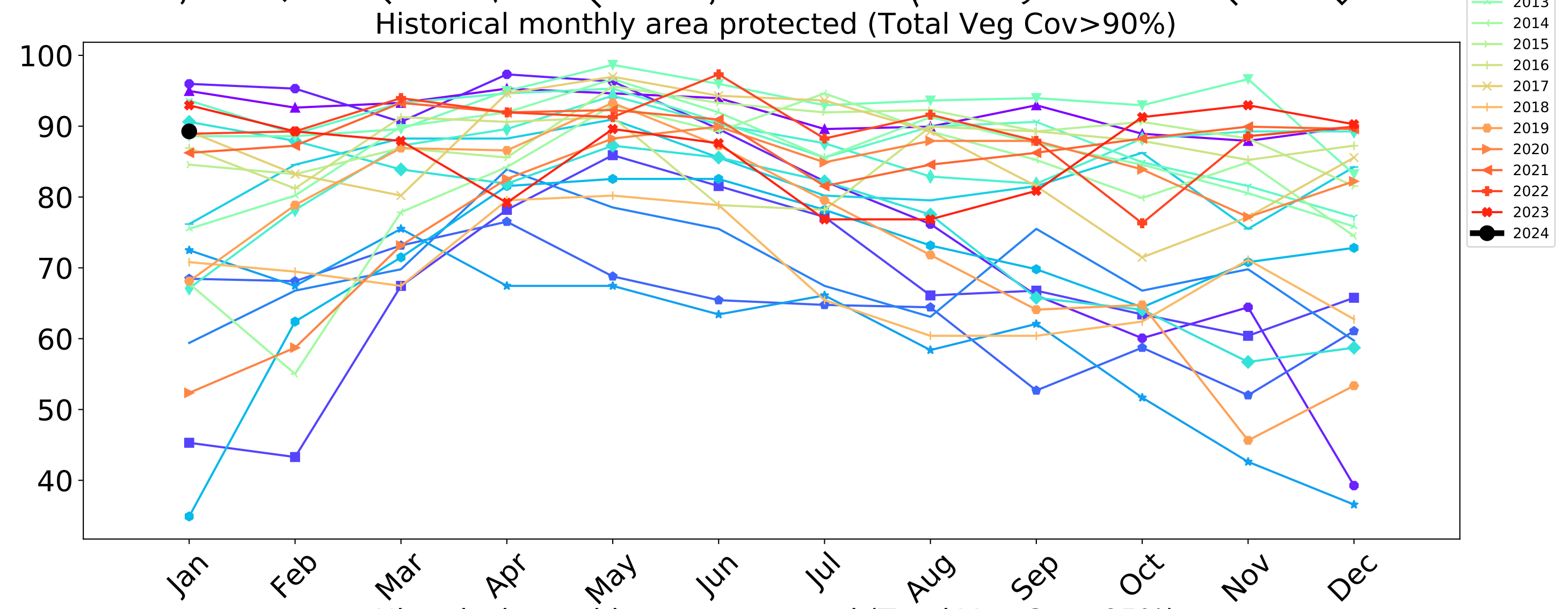
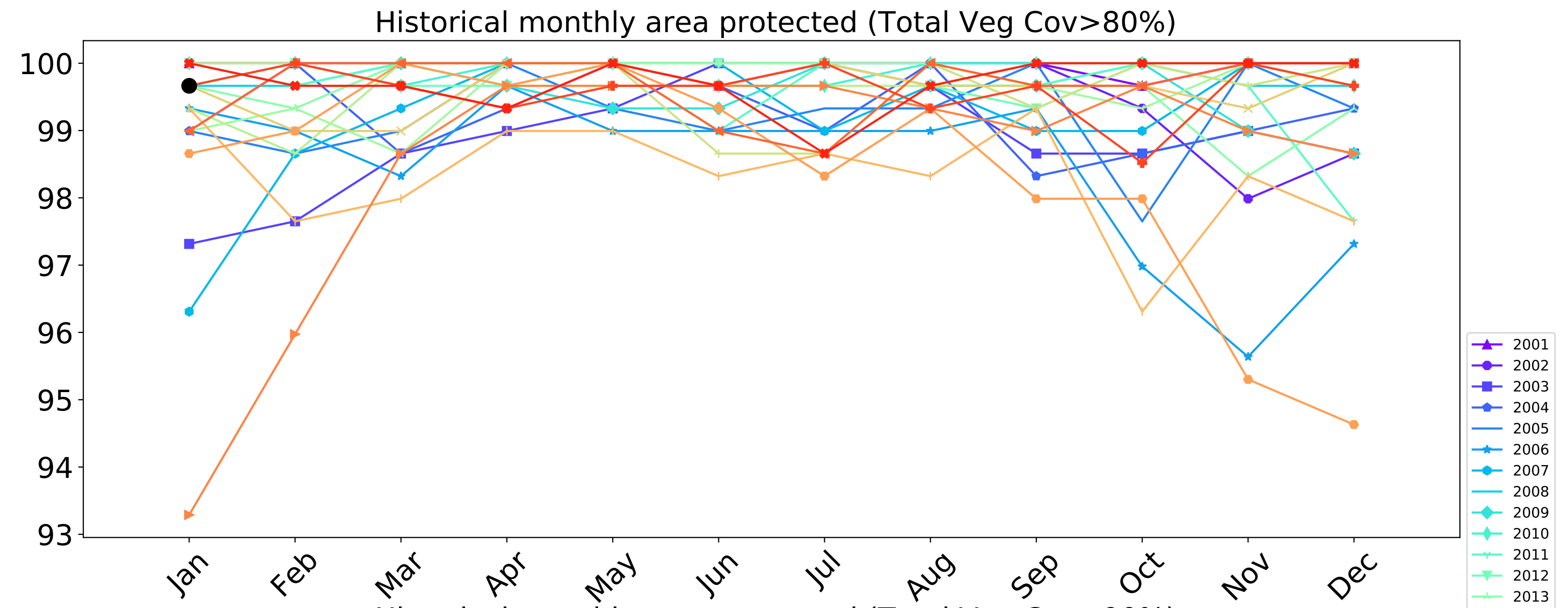
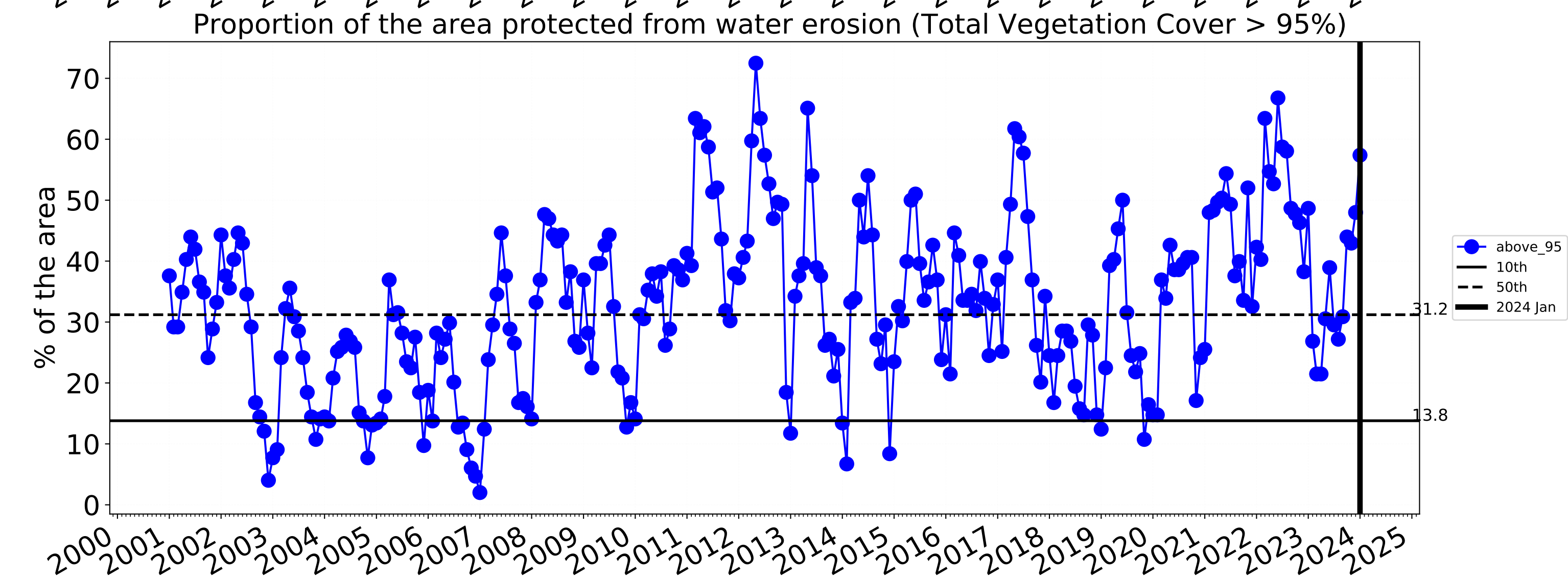
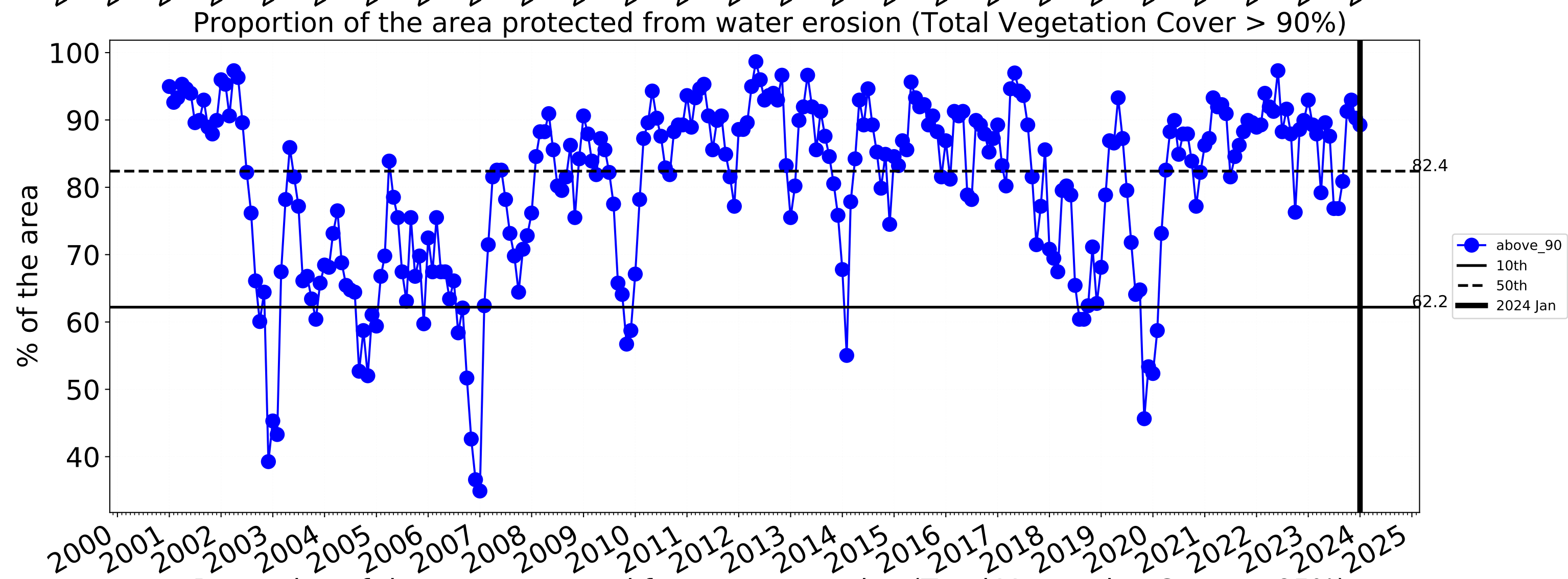
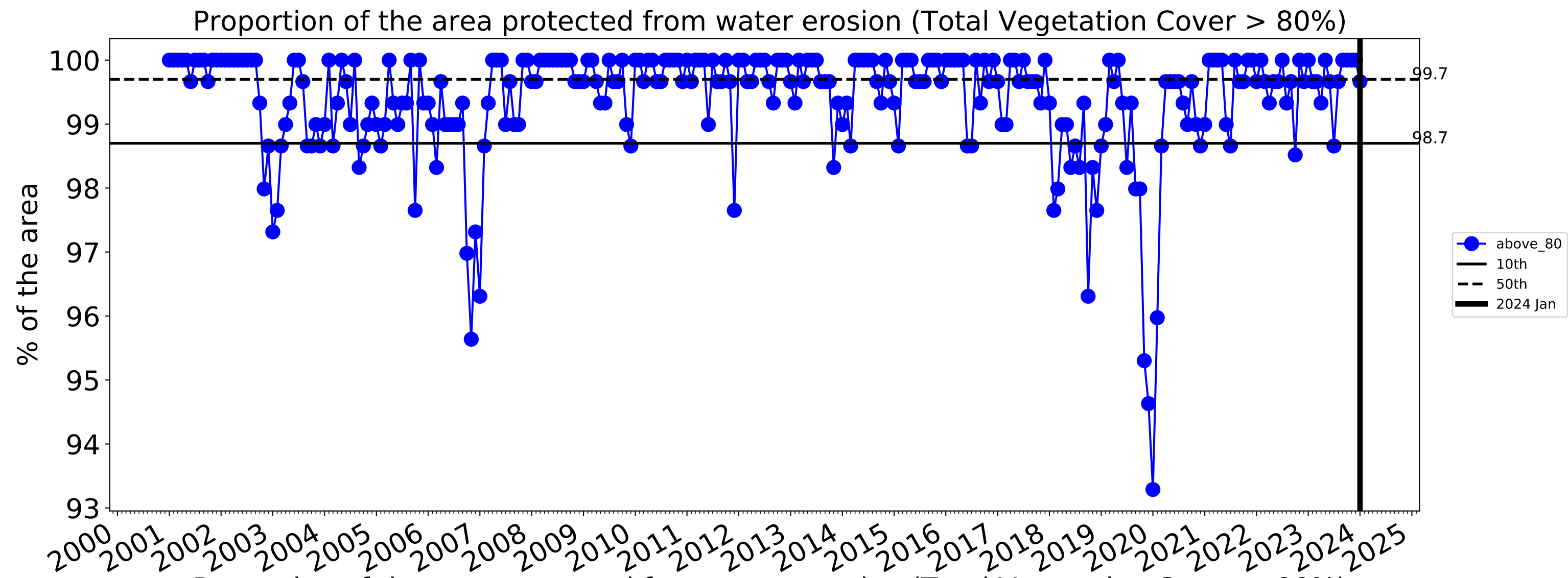
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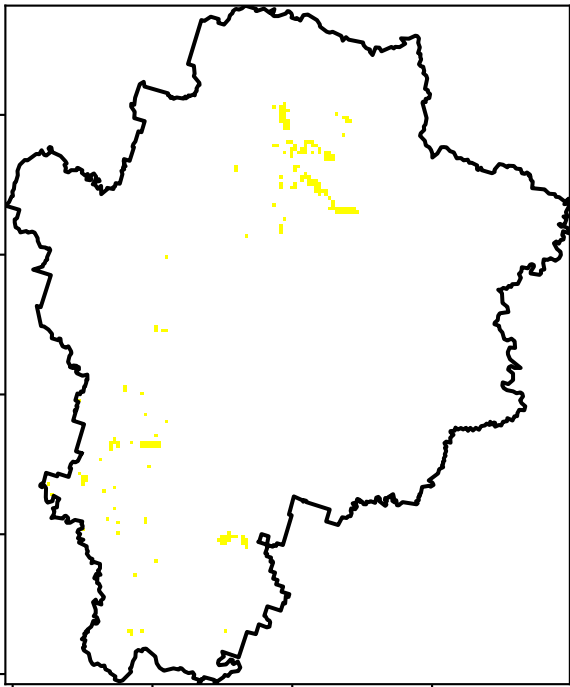




Cropping

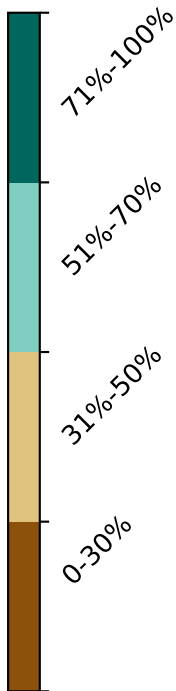
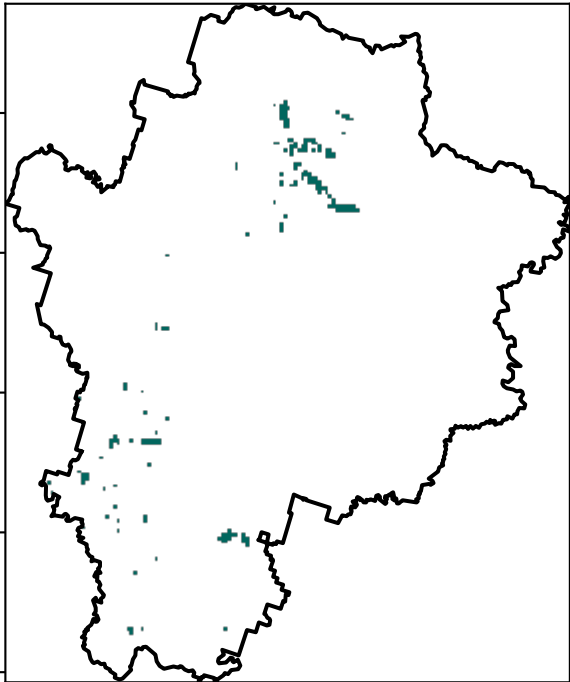
Land use and forest cover

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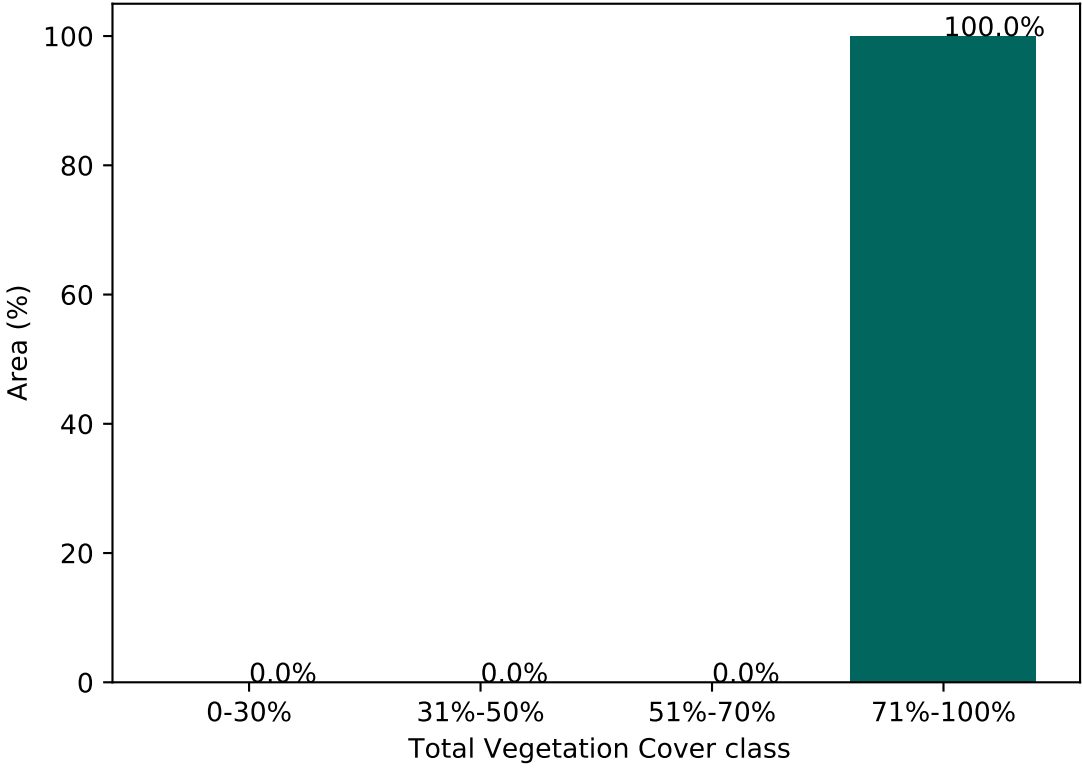


1 Agriculture - Cropping - Non-irrigated

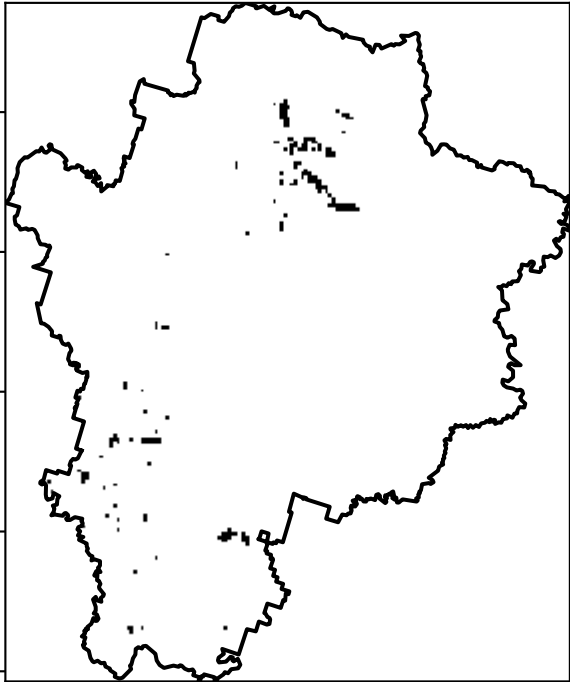
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

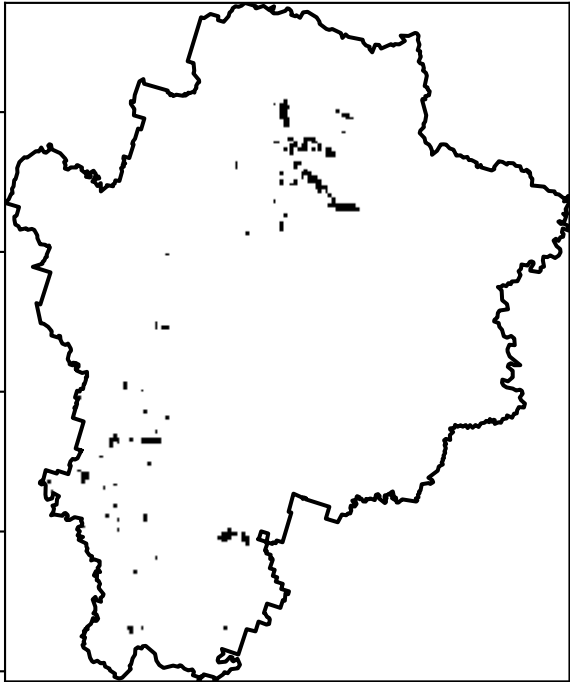


% Area protected from water erosion (>70%)



Area  
protected  
100.0% of  
region  
(4,675 ha)

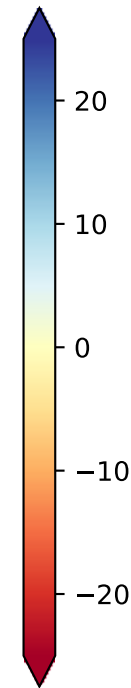
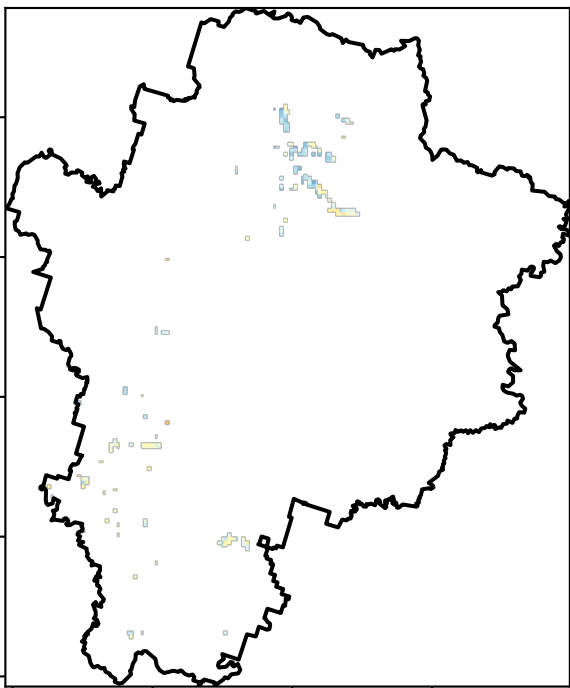
% Area protected from wind erosion (>50%)



Area  
protected  
100.0% of  
region  
(4,675 ha)

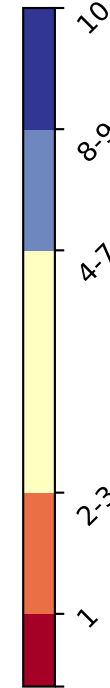
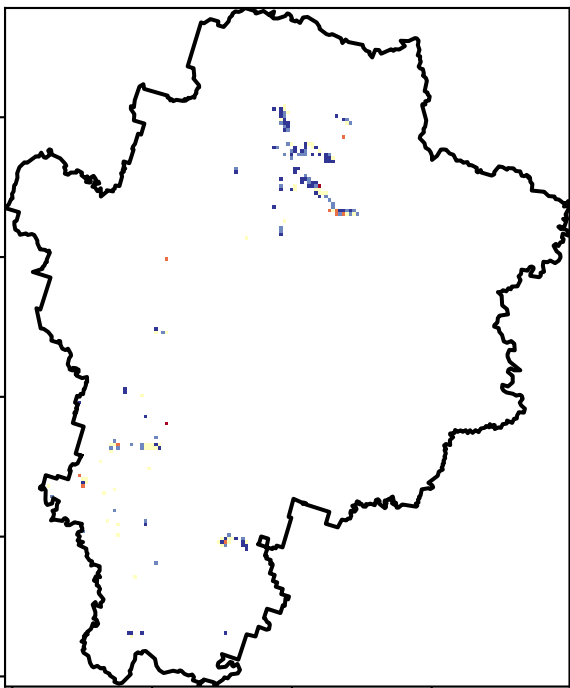
Total Vegetation Cover Anomaly [%]

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Total Vegetation Cover Decile [%]



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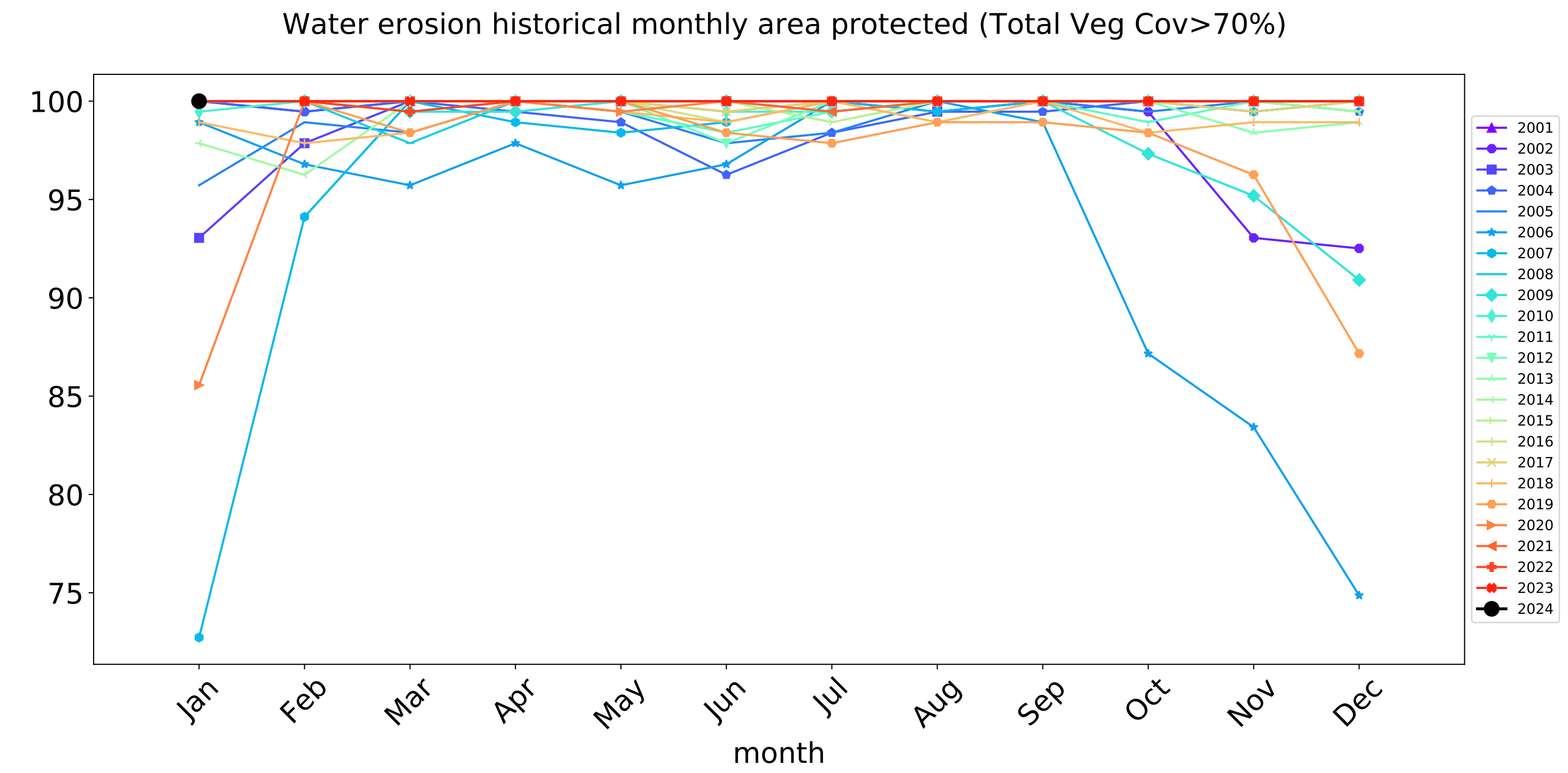
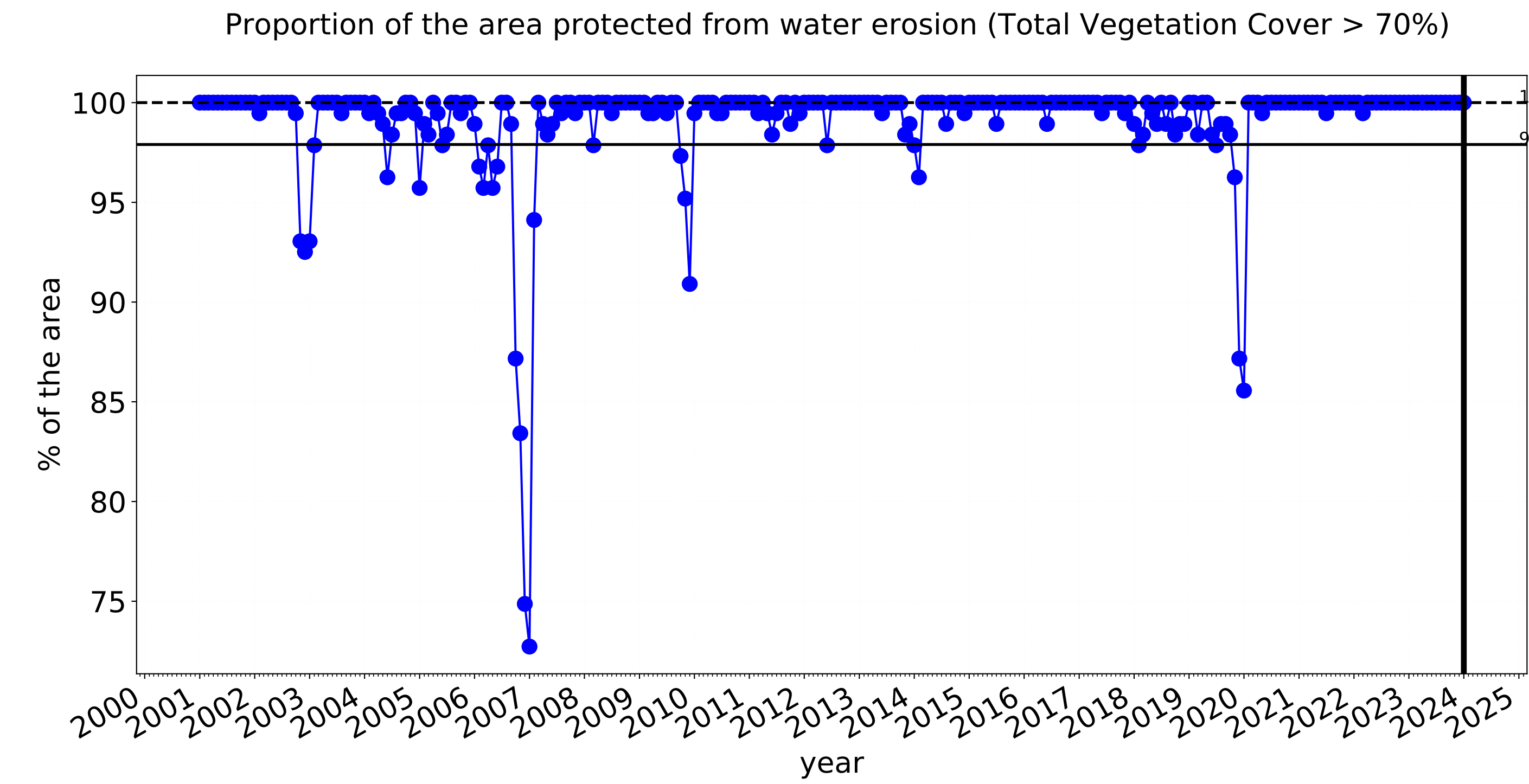
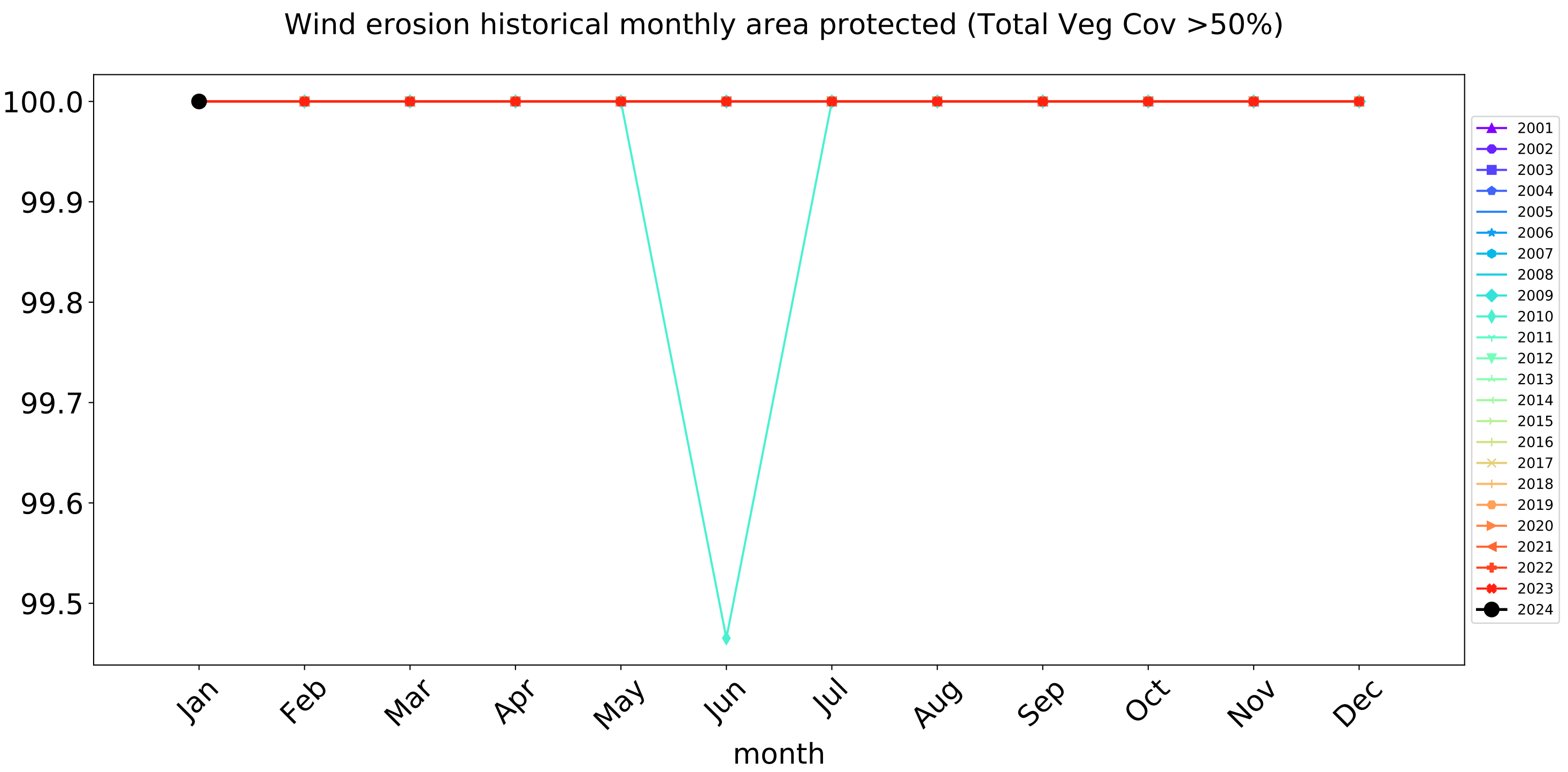
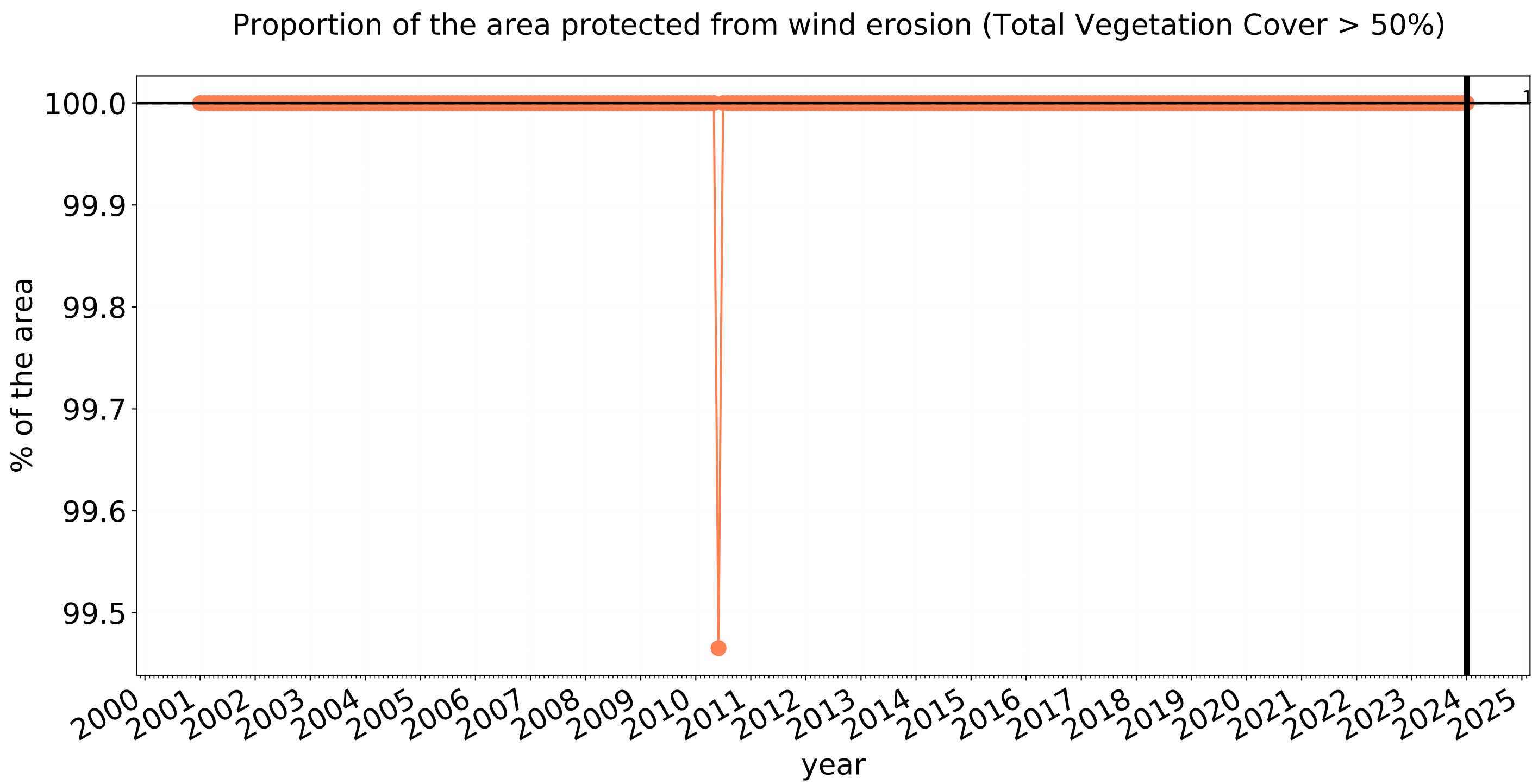


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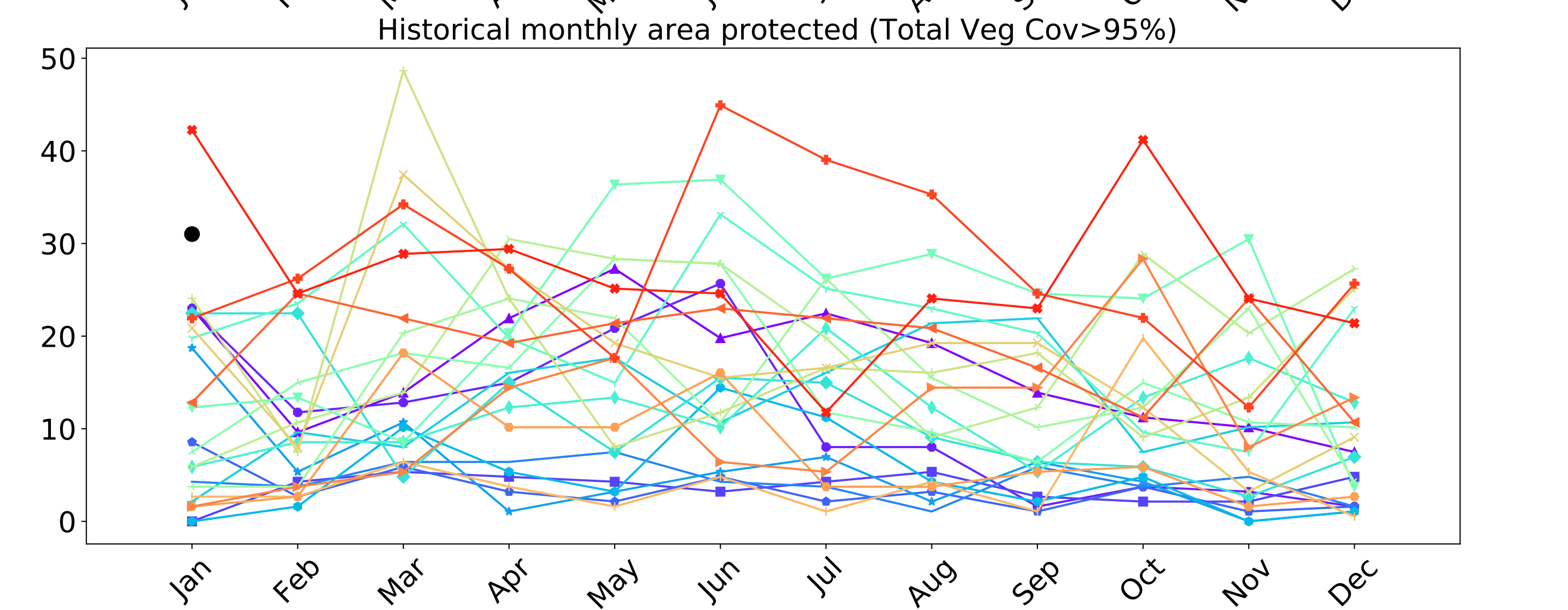
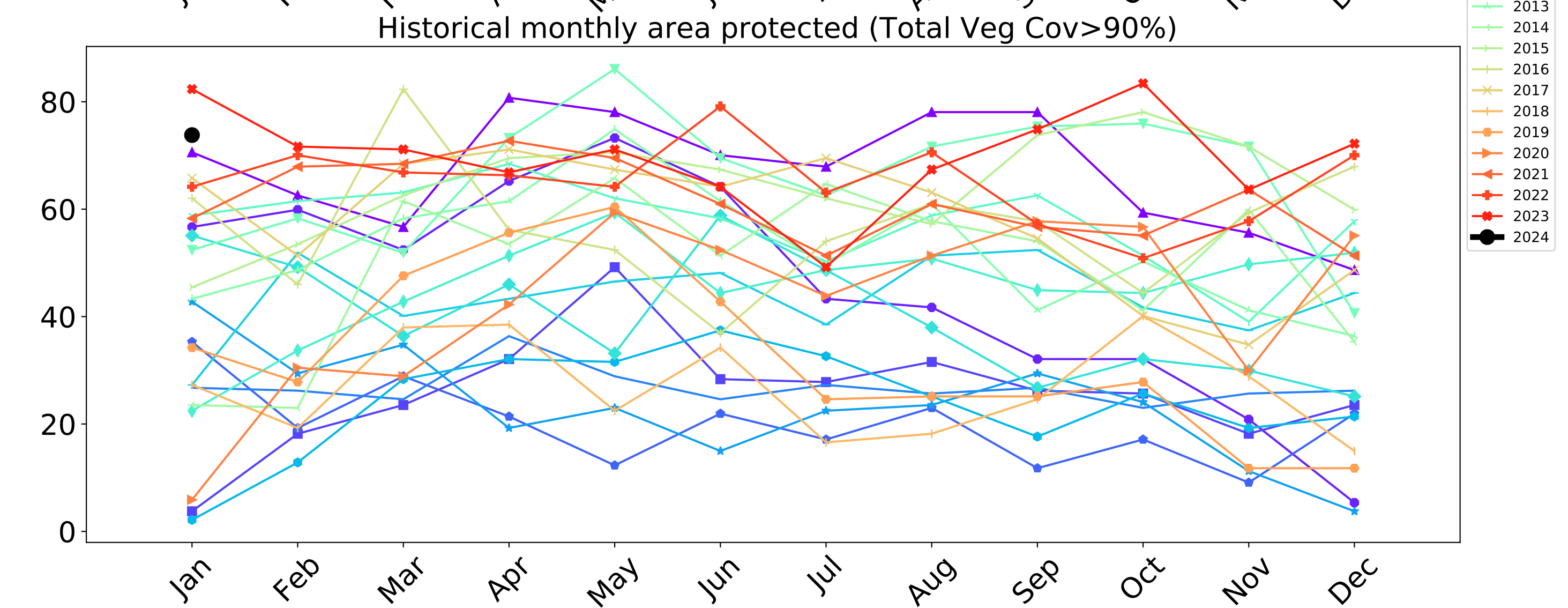
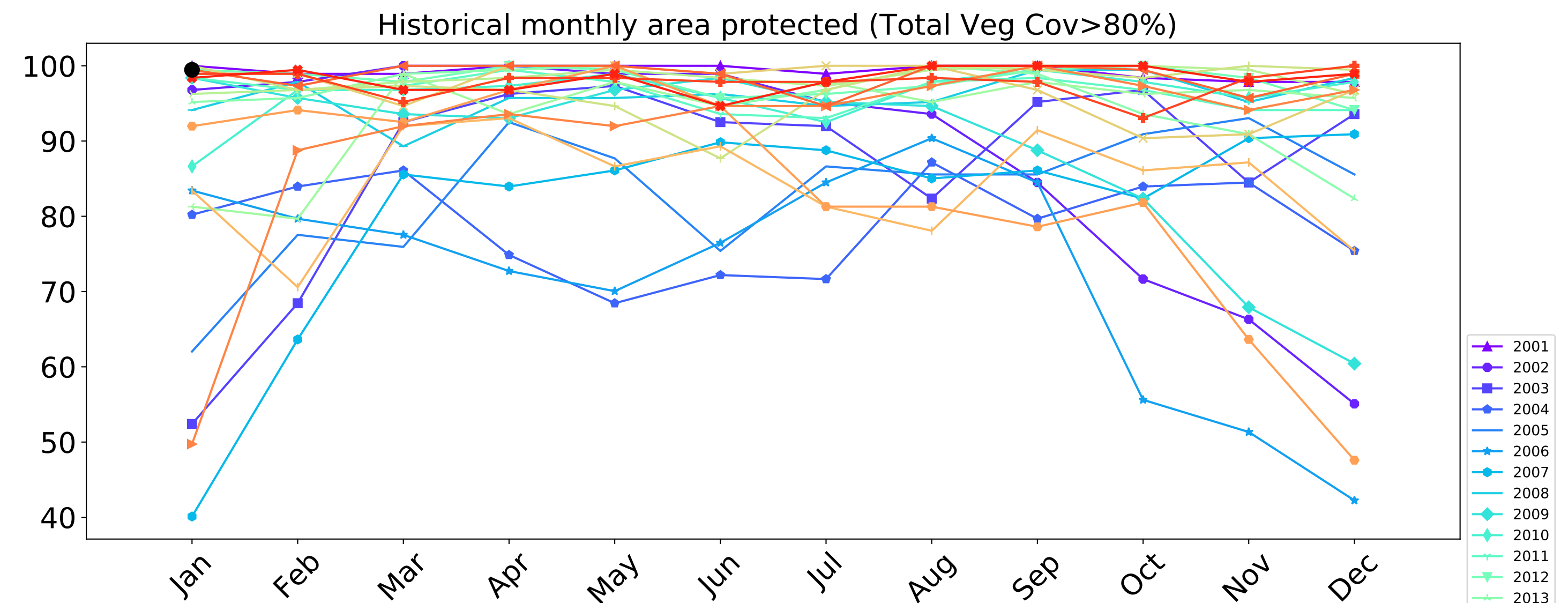
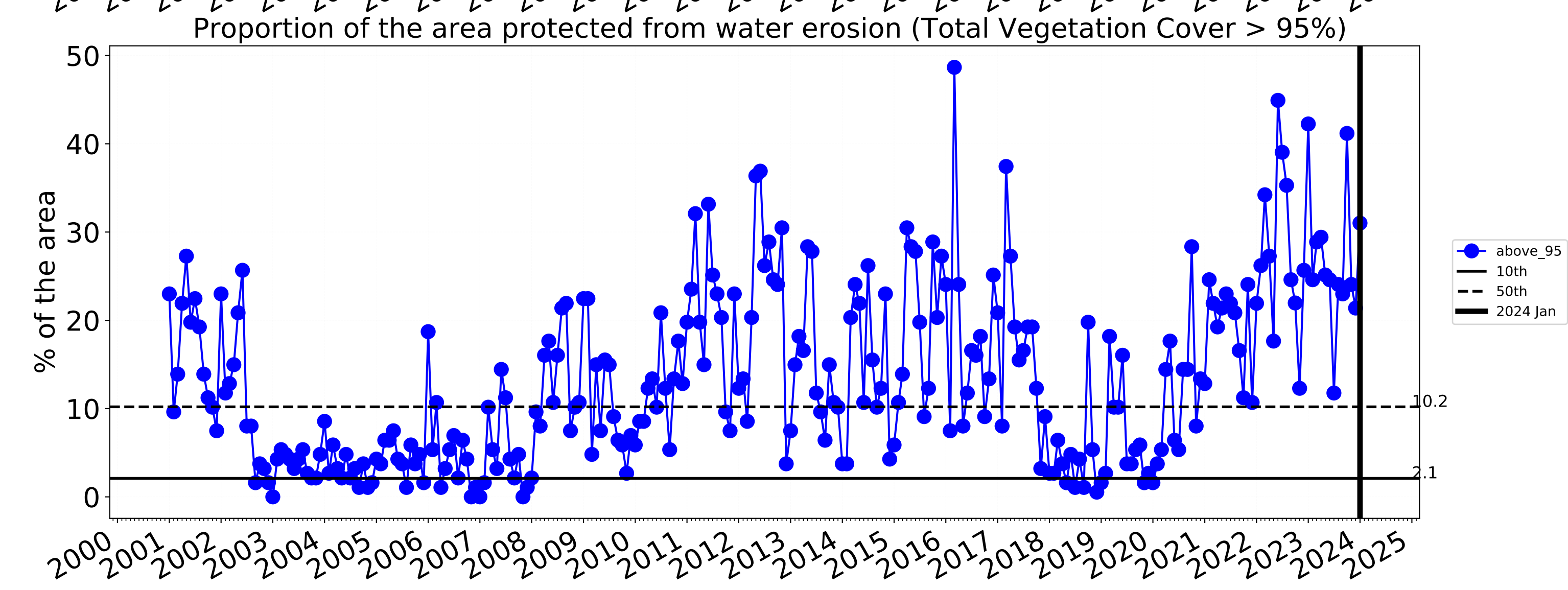
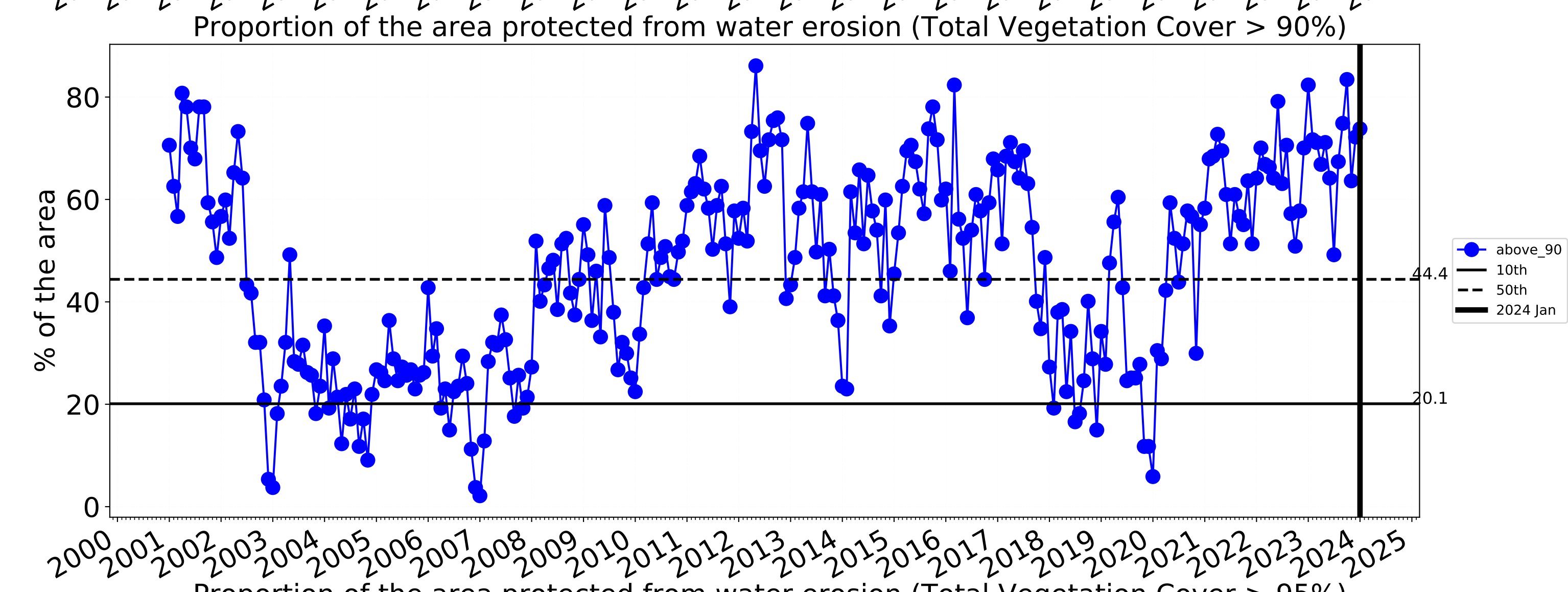
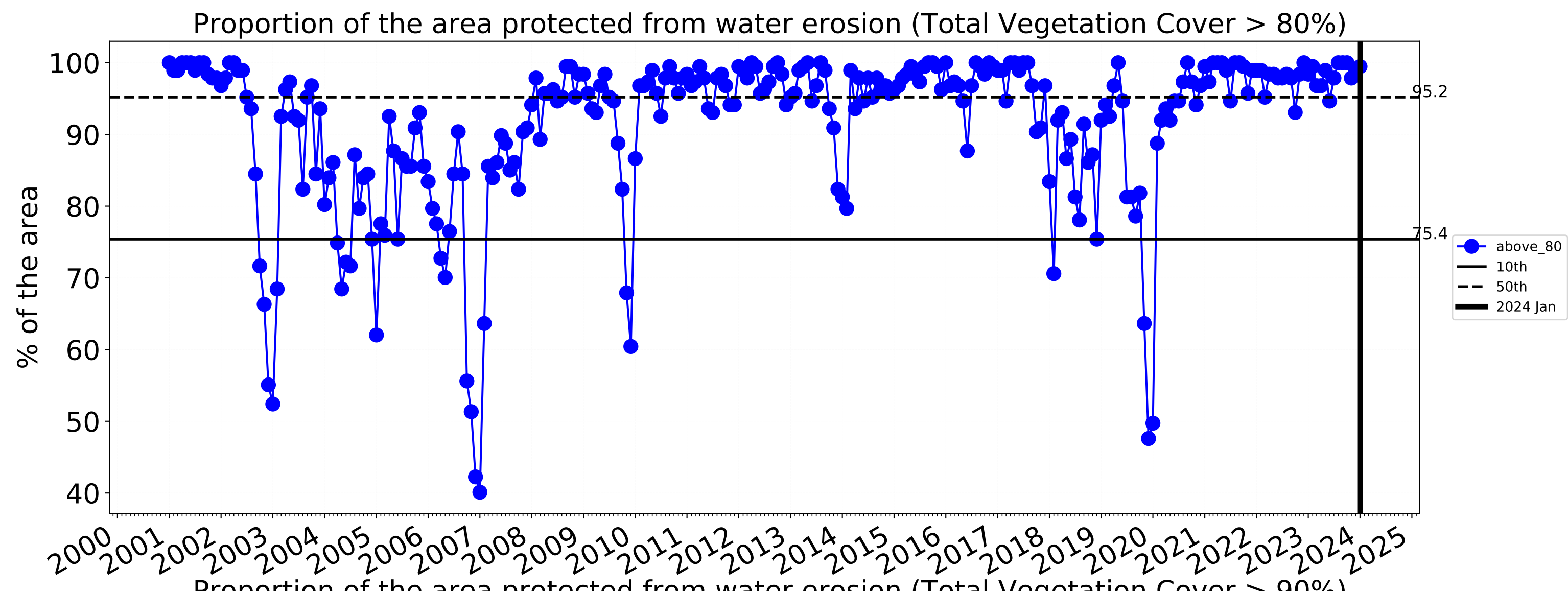
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Cropping timeseries



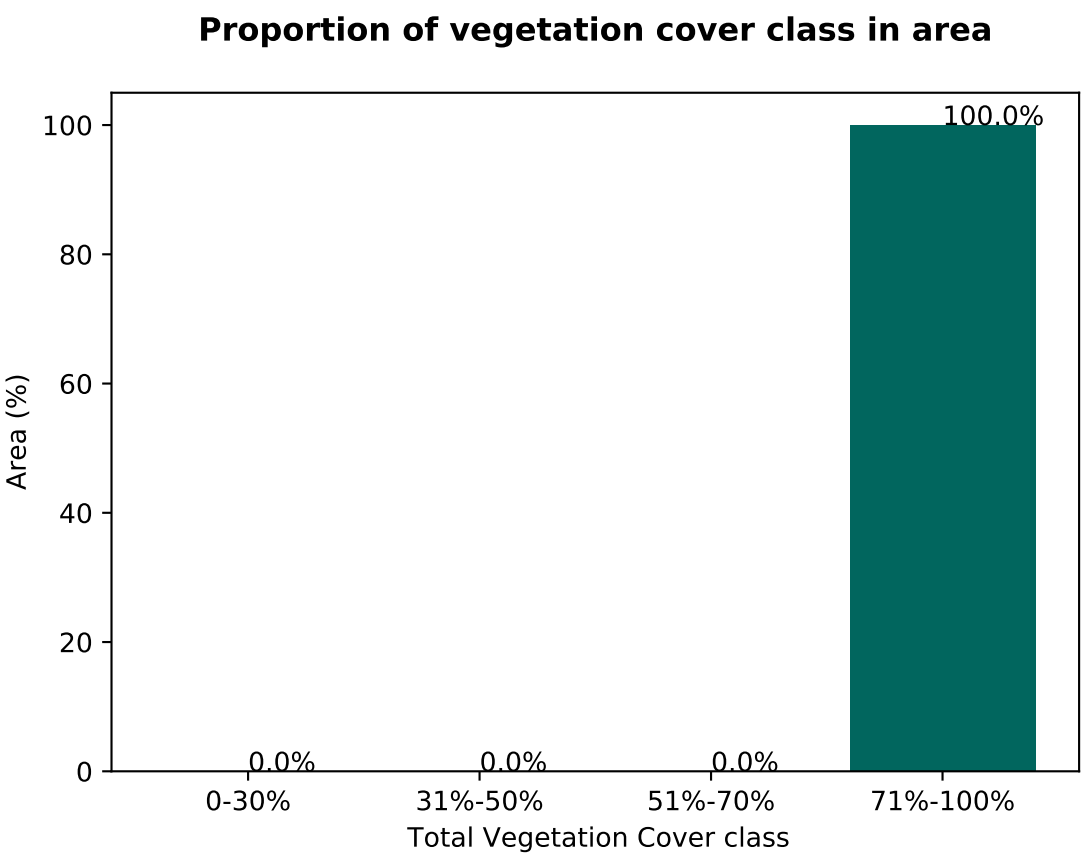
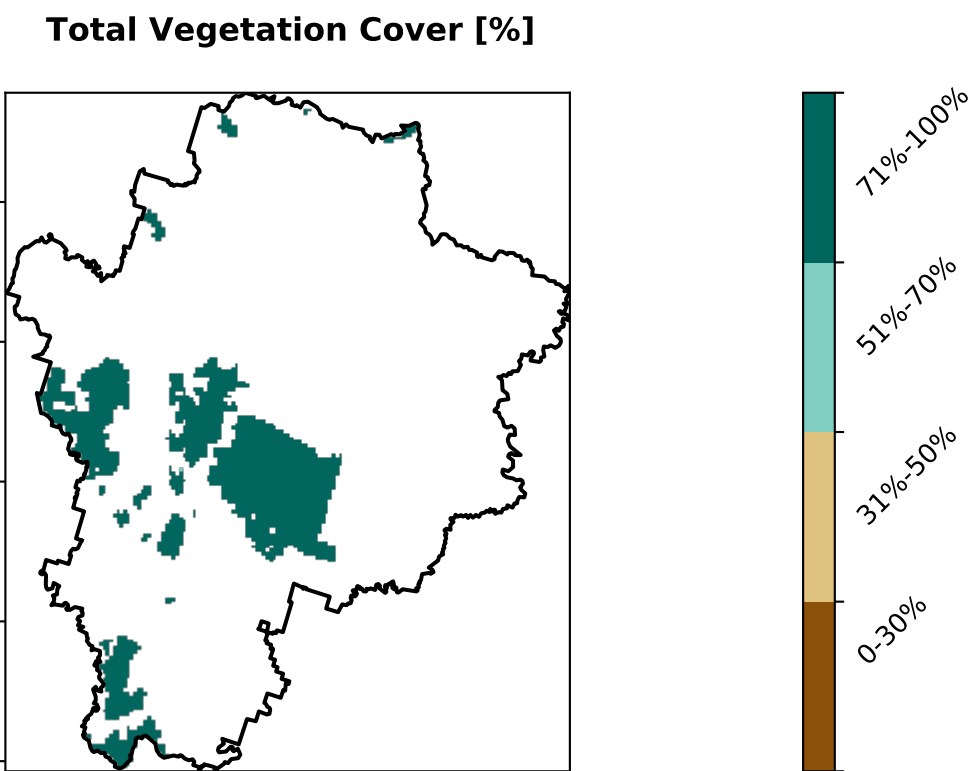
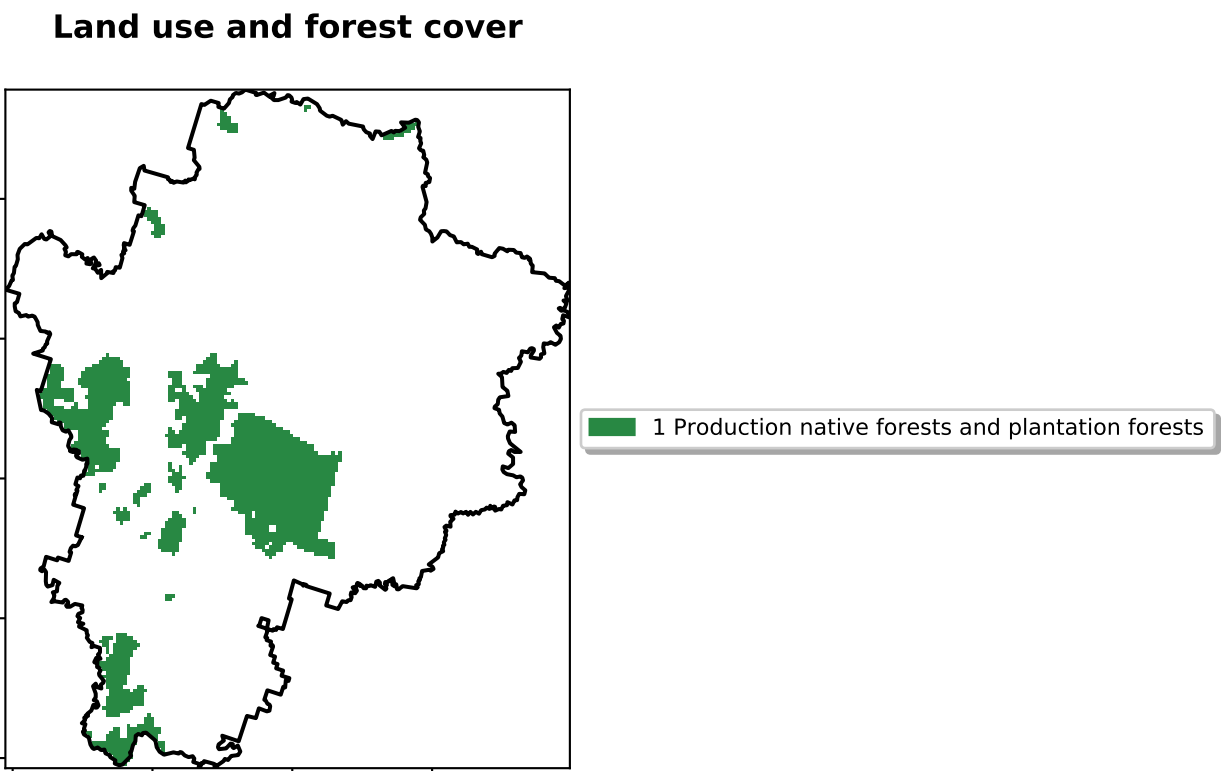




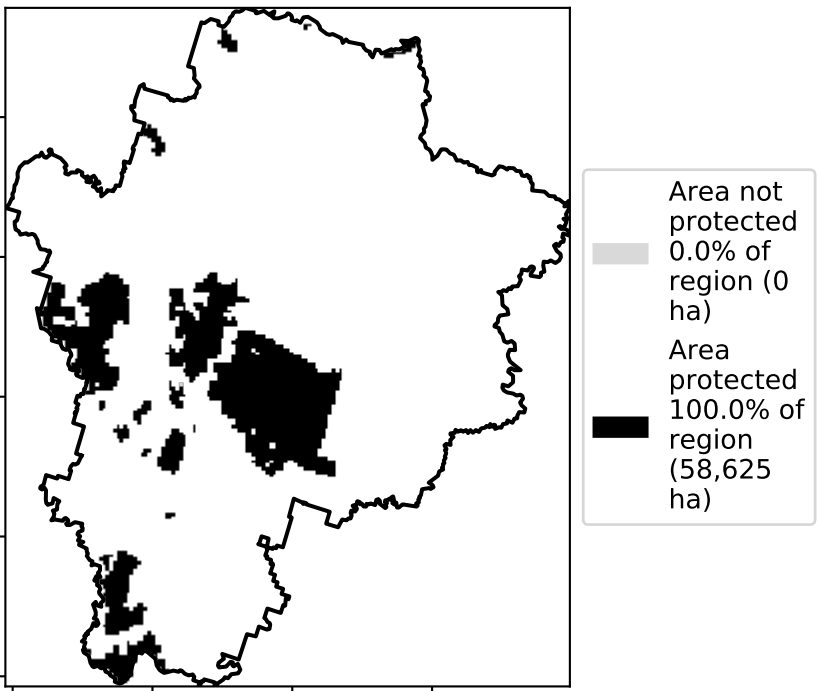


Production native forests and plantation forests

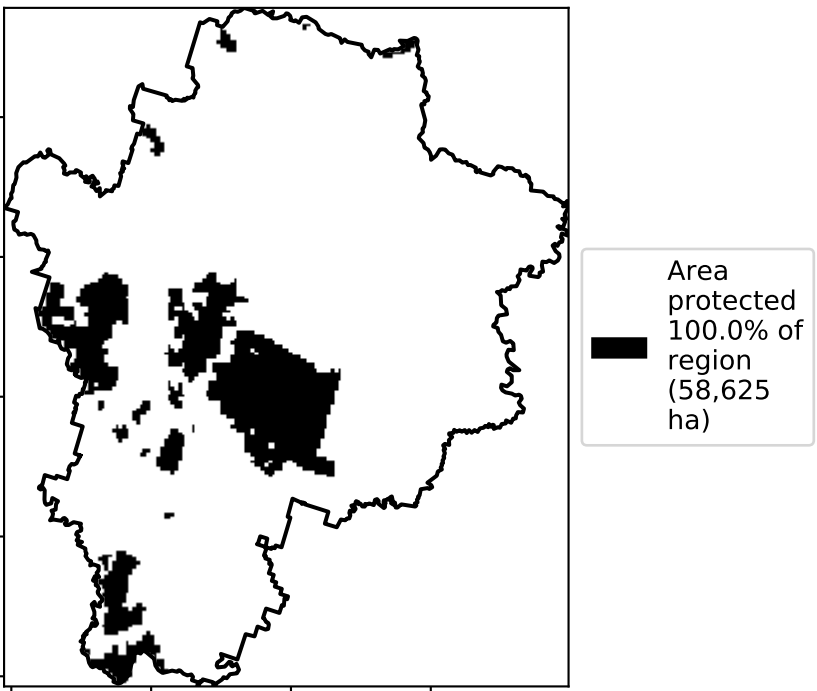
Catchment Scale  
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Use of Australia  
(2018) and Forests  
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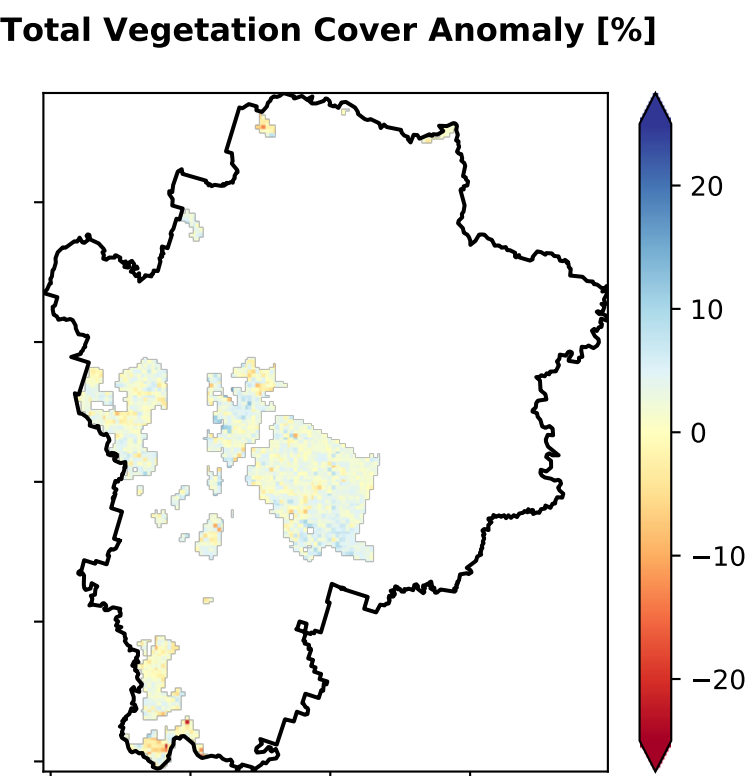
% Area protected from water erosion (>70%)



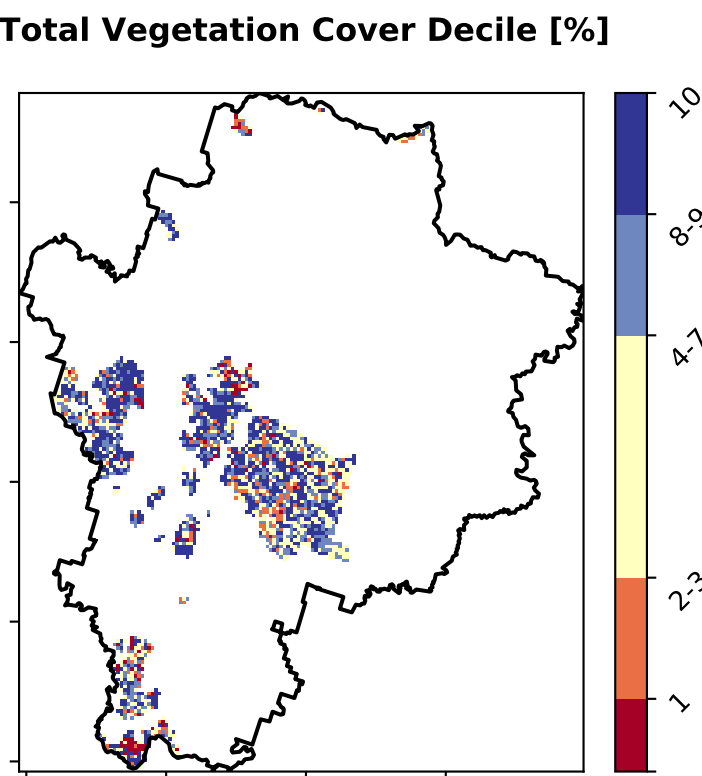
% Area protected from wind erosion (>50%)



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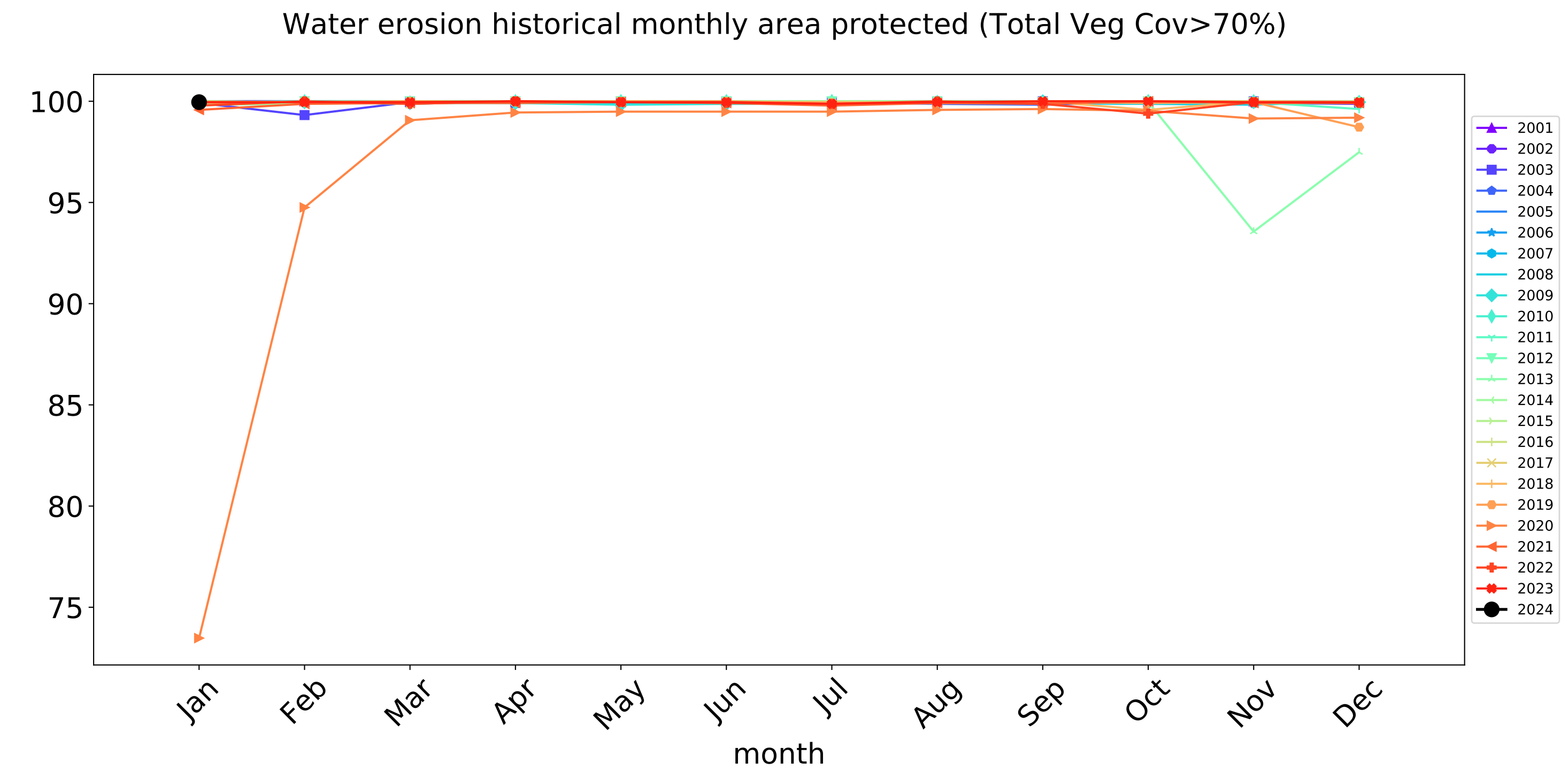
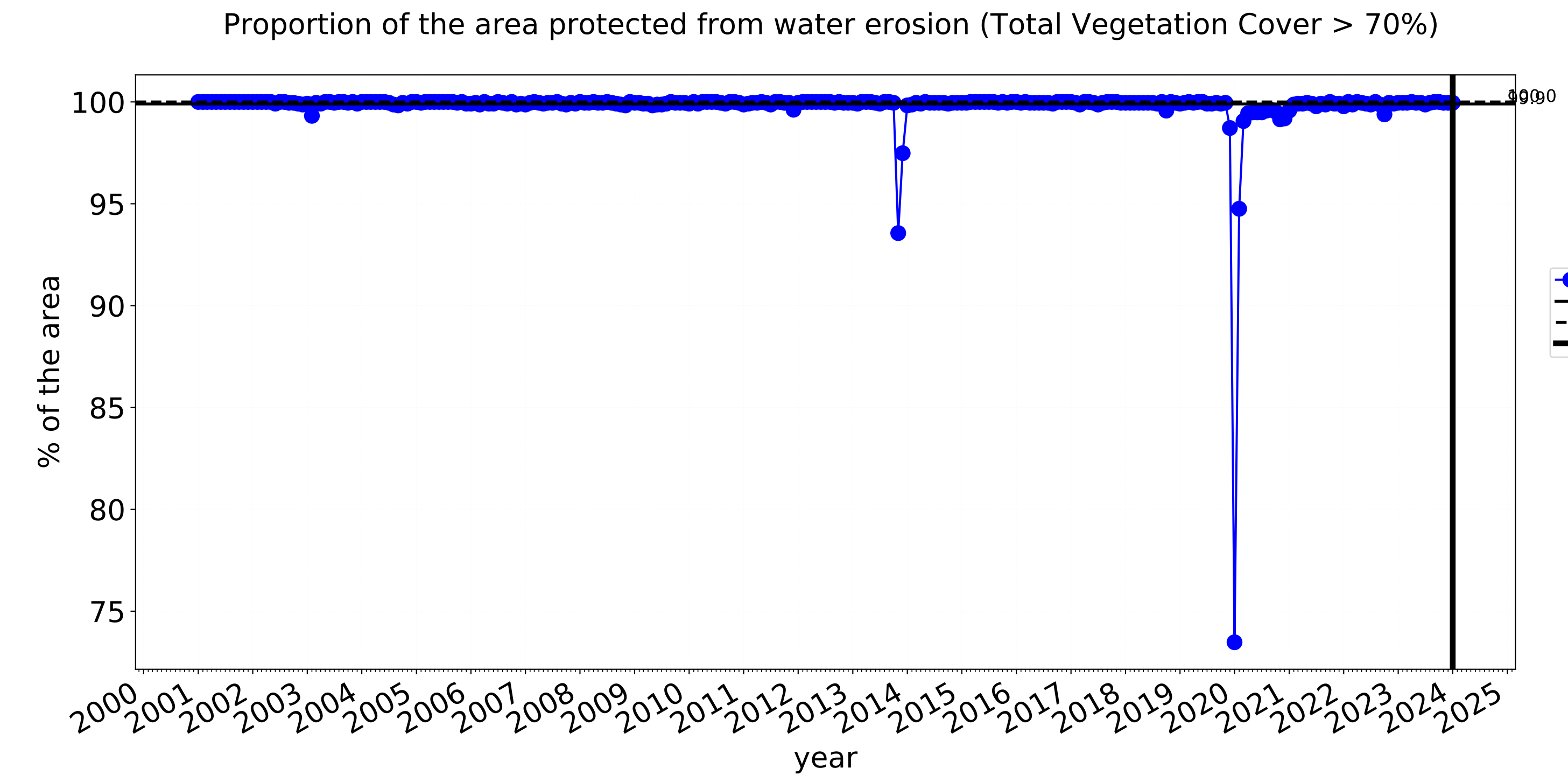
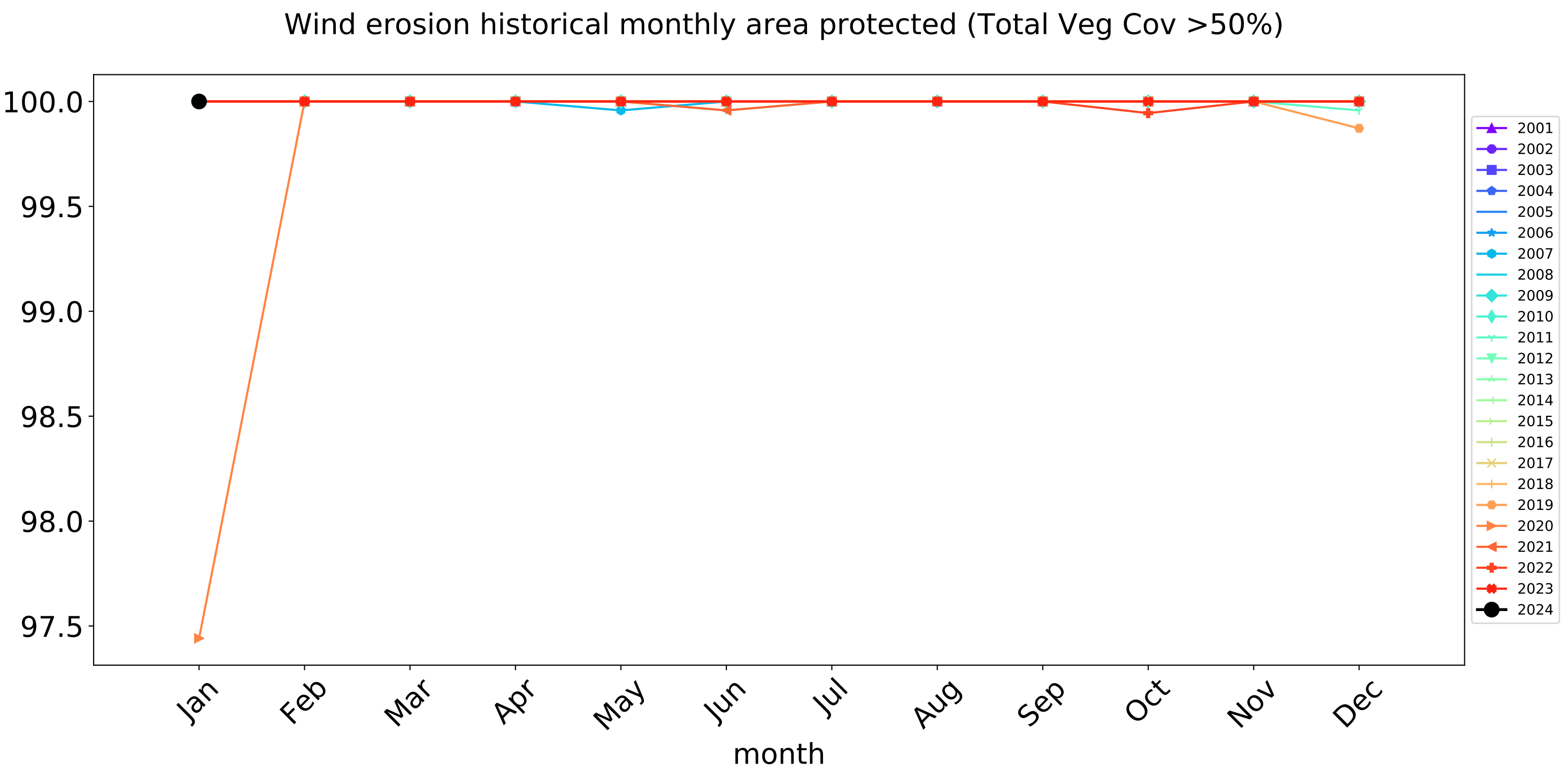
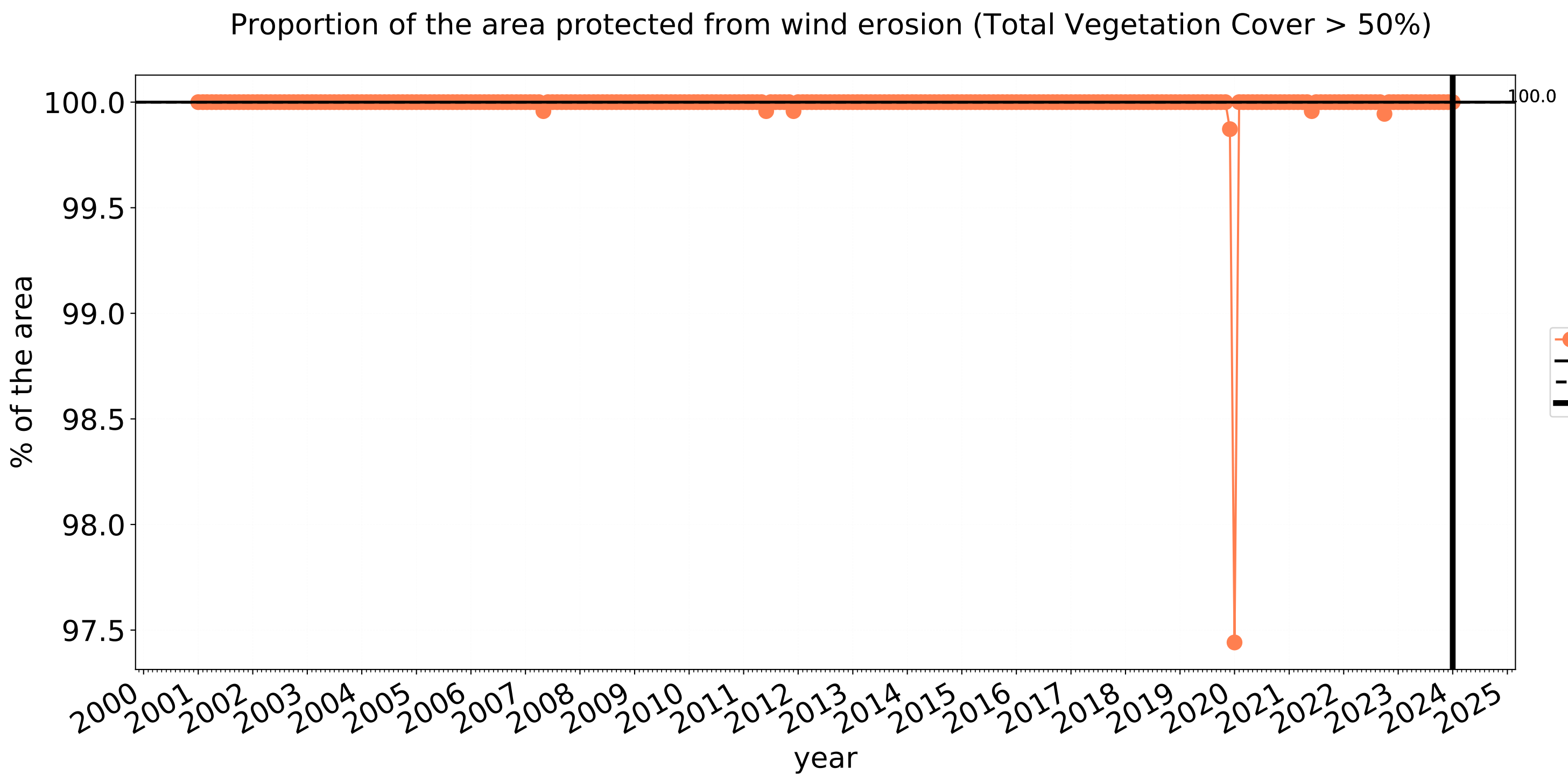
Australian Government

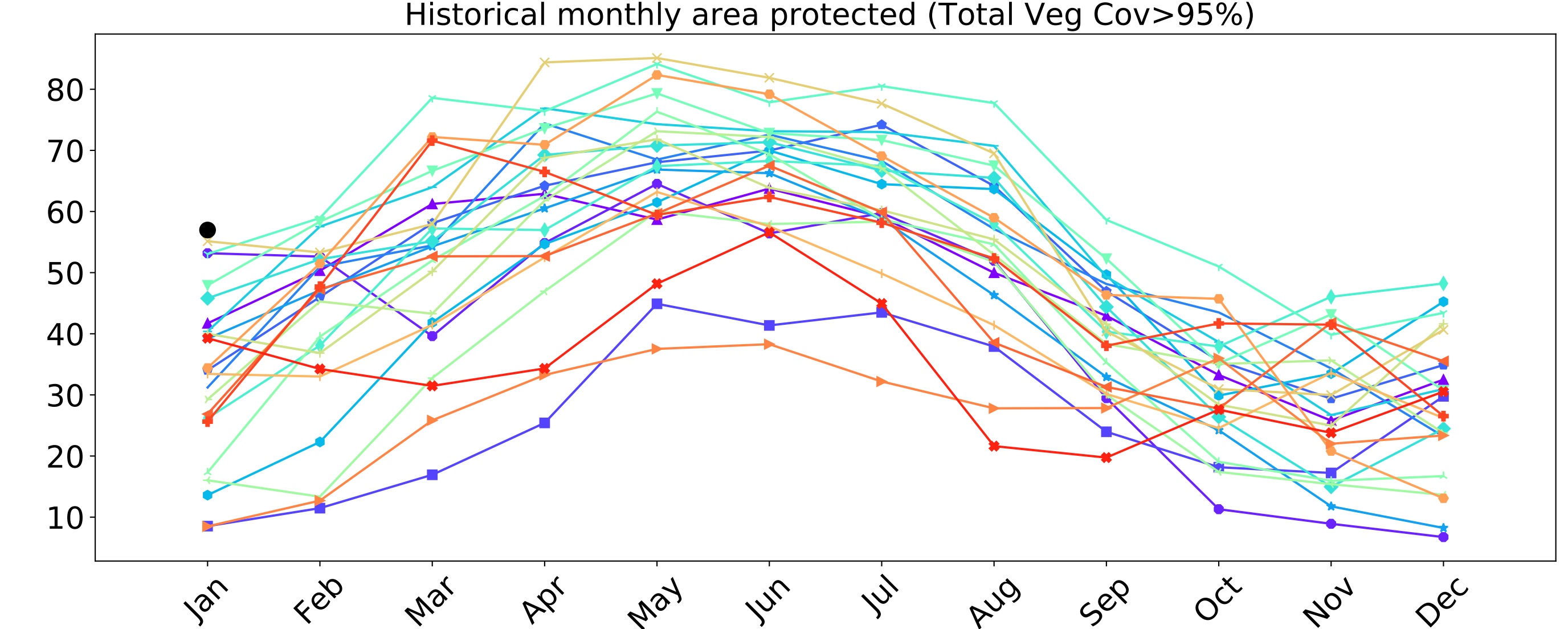
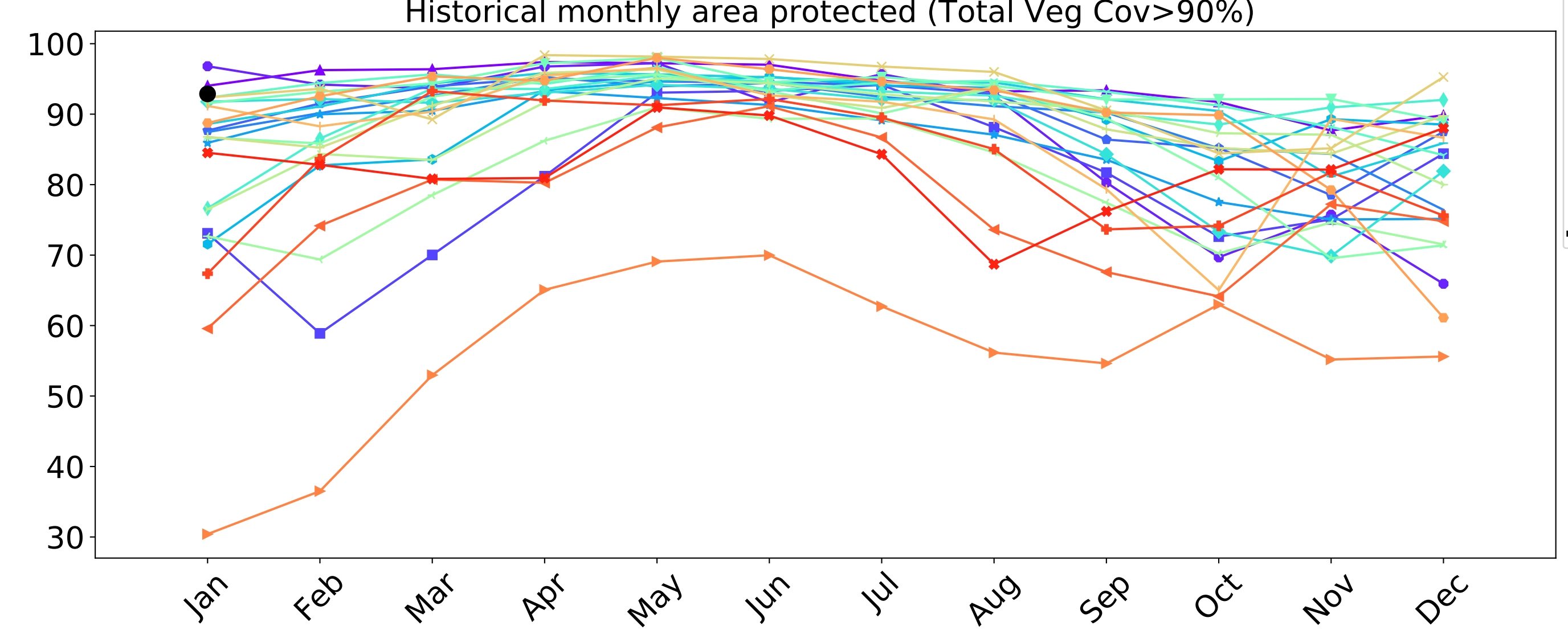
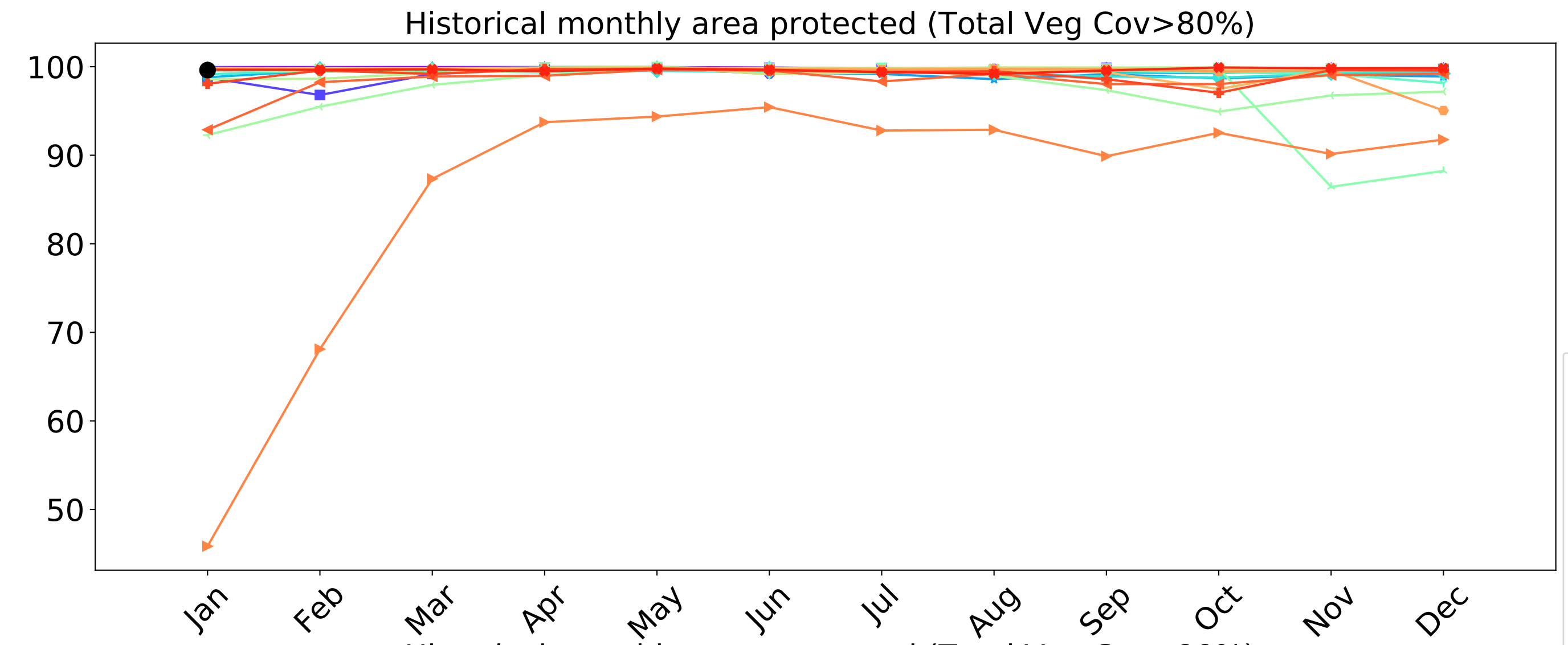
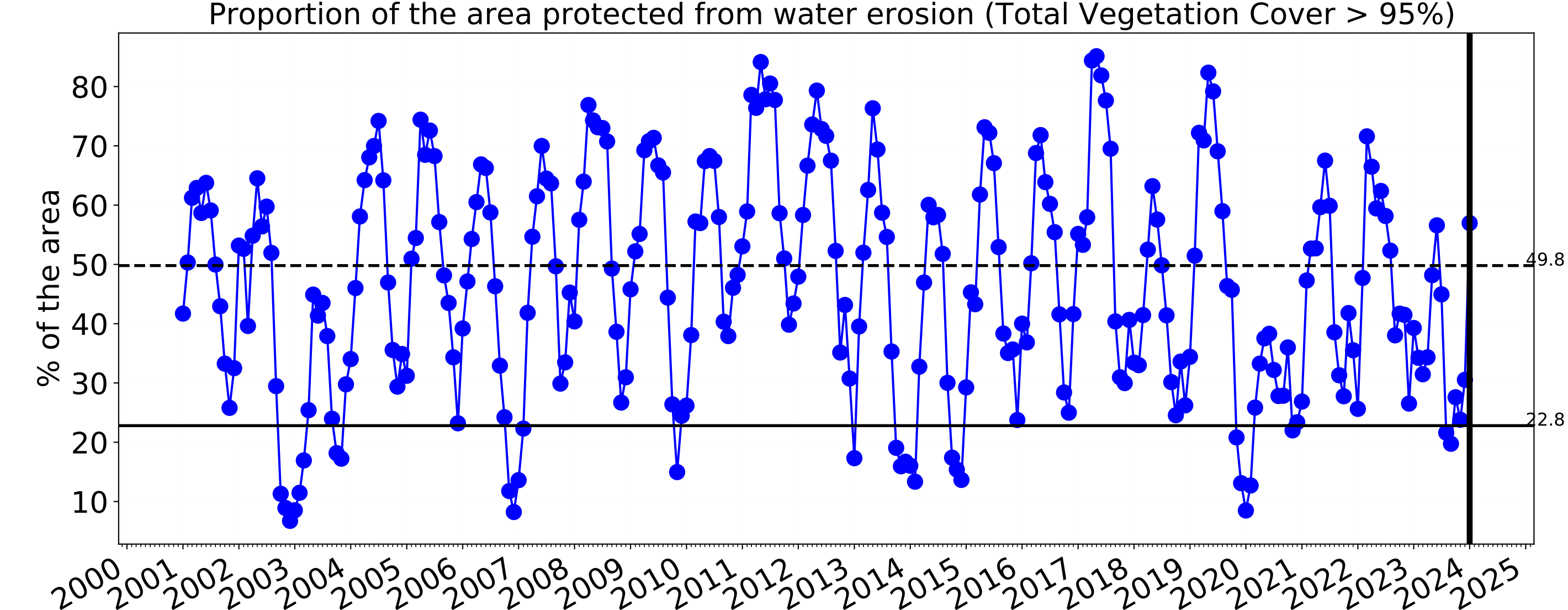
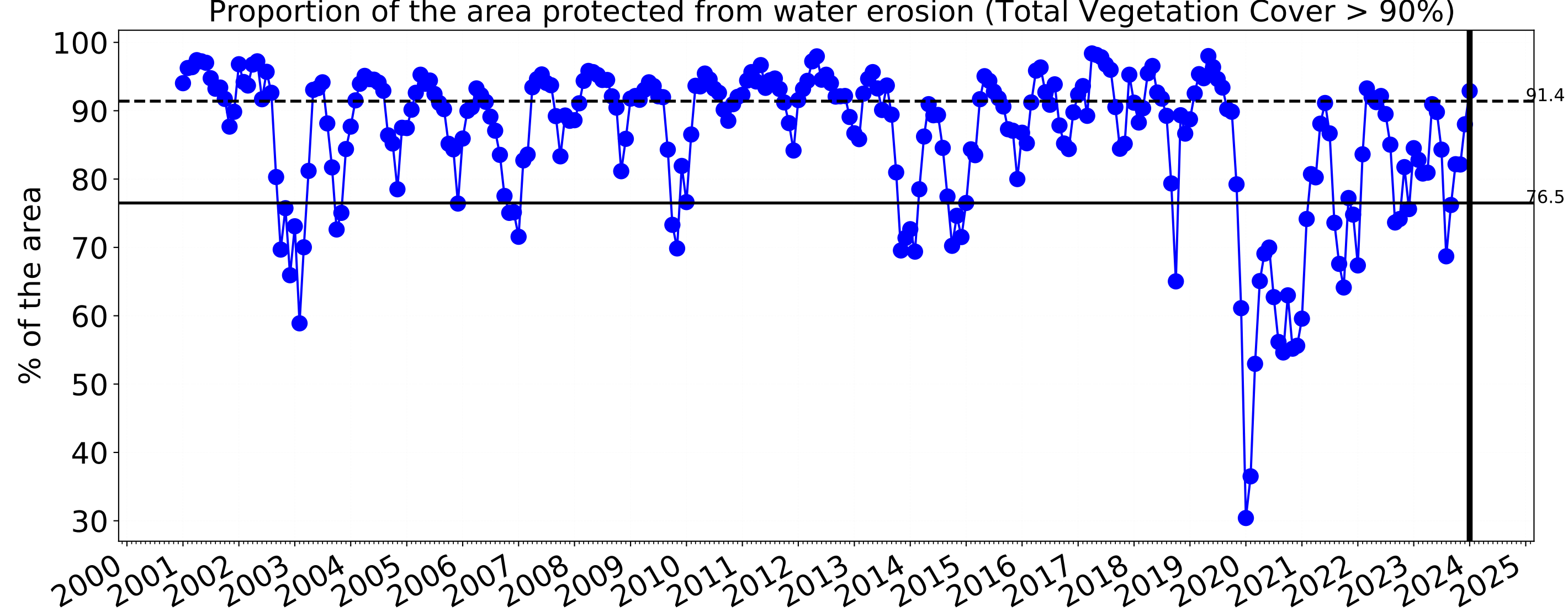
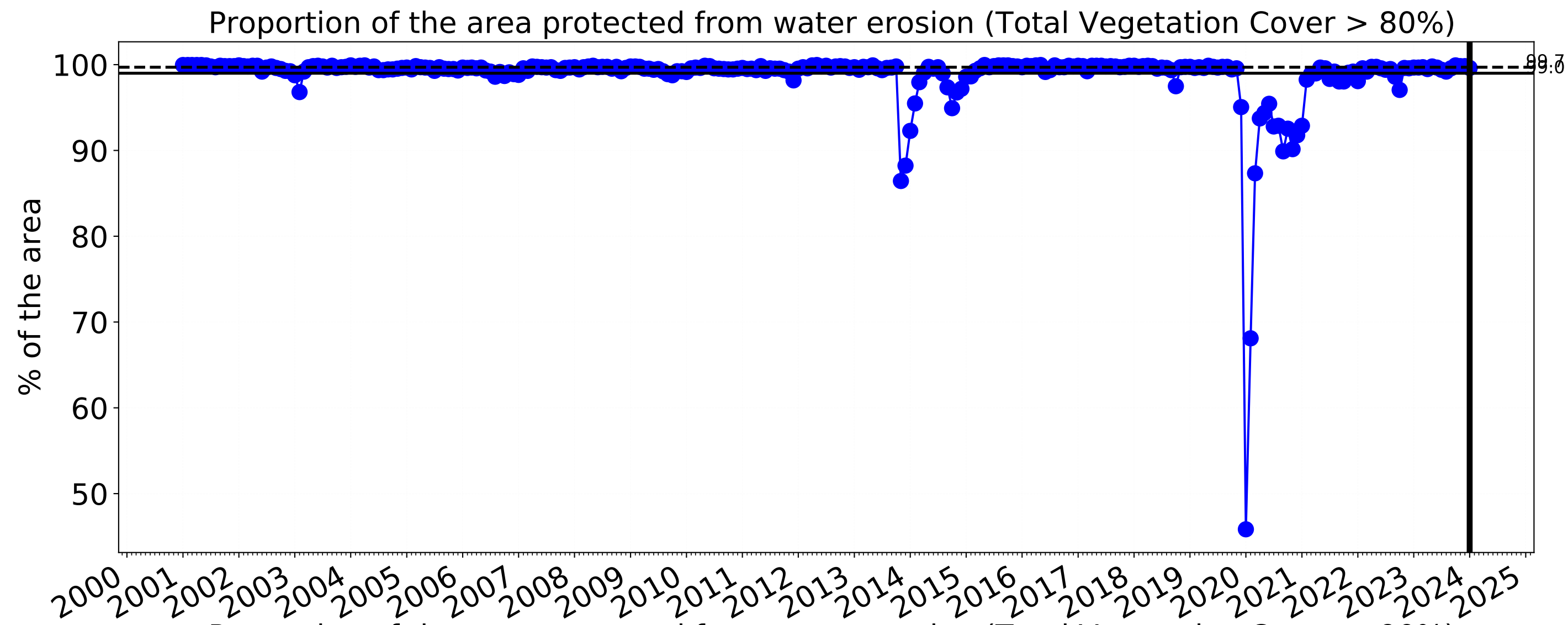
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Production native forests and plantation forests timeseries







Lithgow\_(C) (451,125 ha and no data 155 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	451,125	100.0% 451,125	100.0% 451,125	99.9% 450,825	99.4% 448,375	88.3% 398,200	50.4% 227,150
Conservation and natural environments	232,475	100.0% 232,475	100.0% 232,475	100.0% 232,450	99.5% 231,375	91.1% 211,750	52.3% 121,650
Conservation and natural environments Woodland forest	170,775	100.0% 170,775	100.0% 170,775	100.0% 170,750	99.5% 169,850	89.8% 153,400	50.3% 85,875
Conservation and natural environments Forest (non woodland)	60,950	100.0% 60,950	100.0% 60,950	100.0% 60,950	99.8% 60,800	94.6% 57,675	57.9% 35,300
Agriculture	148,825	100.0% 148,825	100.0% 148,825	100.0% 148,775	99.5% 148,100	83.9% 124,825	46.2% 68,750
Grazing	144,100	100.0% 144,100	100.0% 144,100	100.0% 144,050	99.5% 143,425	84.2% 121,375	46.7% 67,300
Grazing non forest	106,950	100.0% 106,950	100.0% 106,950	100.0% 106,925	99.5% 106,375	82.9% 88,625	44.5% 47,600
Grazing Woodland forest	29,700	100.0% 29,700	100.0% 29,700	99.9% 29,675	99.7% 29,625	87.9% 26,100	51.9% 15,425
Grazing - Forest (non woodland)	7,450	100.0% 7,450	100.0% 7,450	100.0% 7,450	99.7% 7,425	89.3% 6,650	57.4% 4,275
Cropping	4,675	100.0% 4,675	100.0% 4,675	100.0% 4,675	99.5% 4,650	73.8% 3,450	31.0% 1,450
Production native forests and plantation forests	58,625	100.0% 58,625	100.0% 58,625	100.0% 58,600	99.6% 58,400	92.9% 54,450	57.0% 33,400