

# Total vegetation cover soil protection

## Region:LGA Hepburn\_(S) VIC

Date: March 2022

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>



tern  
Ecosystem Research Infrastructure



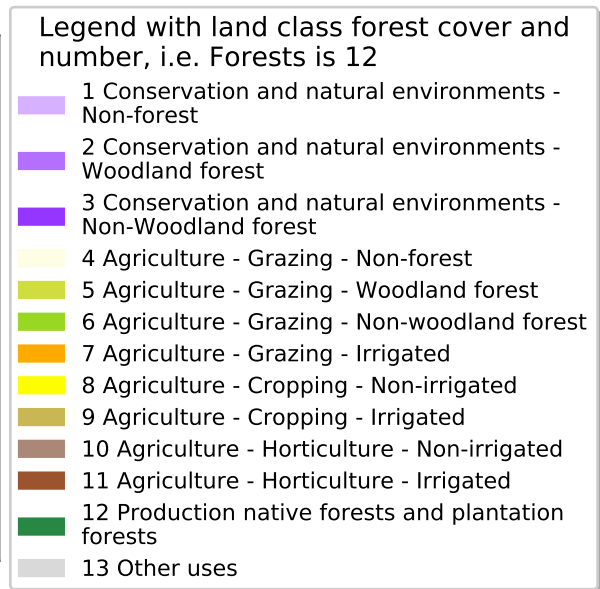
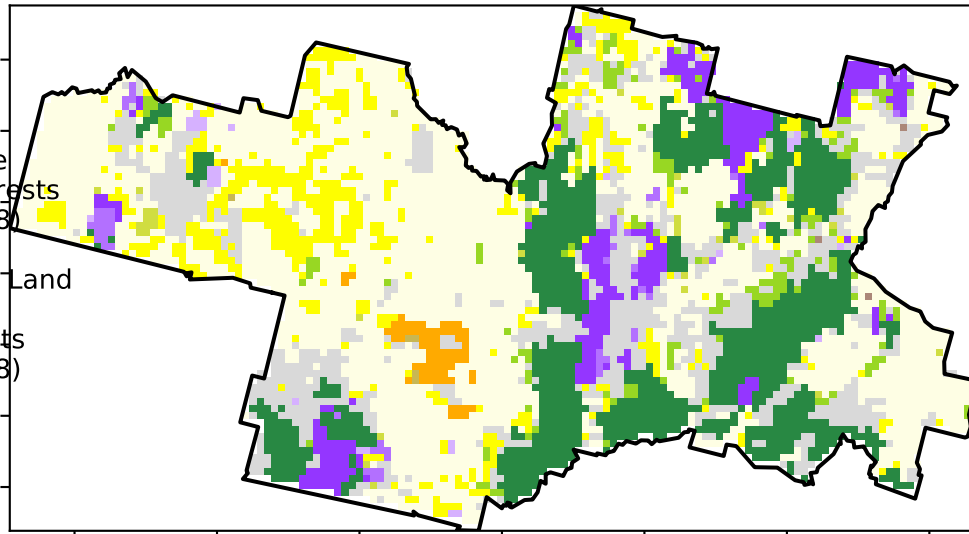
National  
Landcare  
Programme



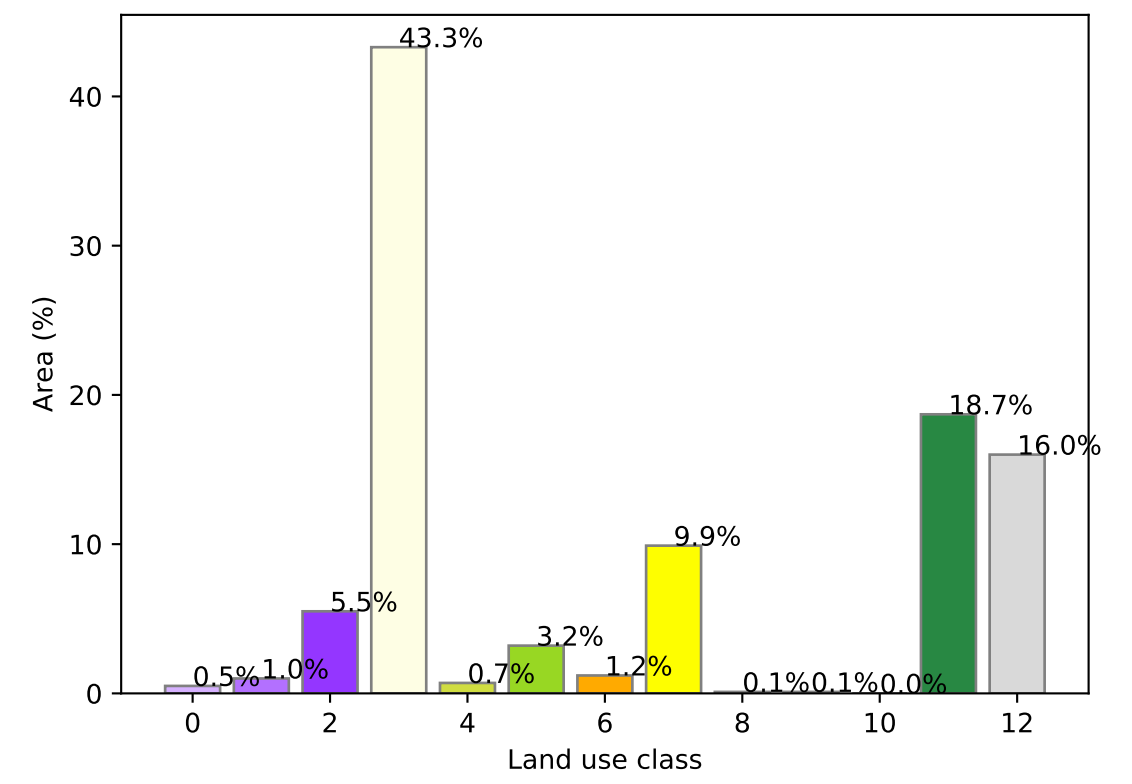
# Vegetation Cover Mar 2022

Land use and forest cover

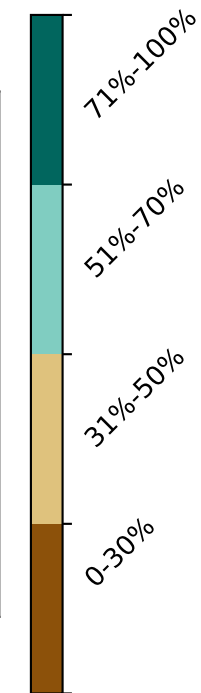
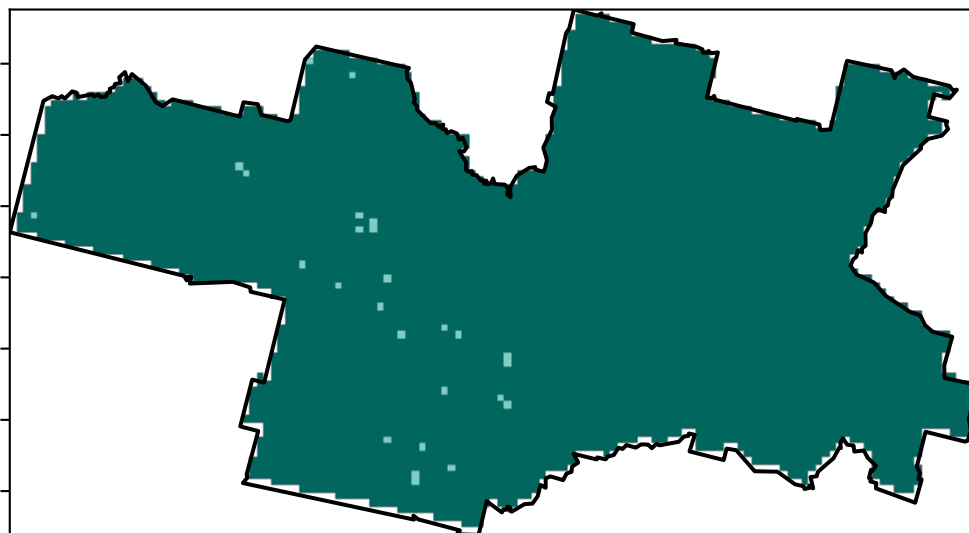
Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)



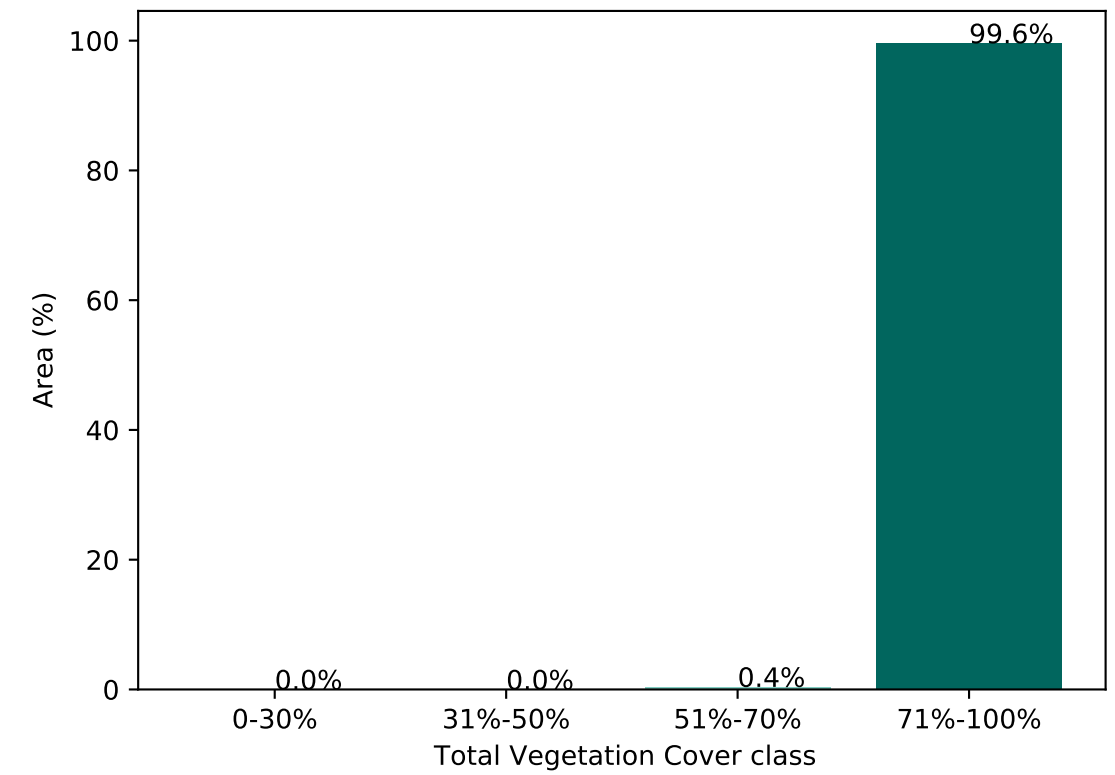
Proportion of each land class in area



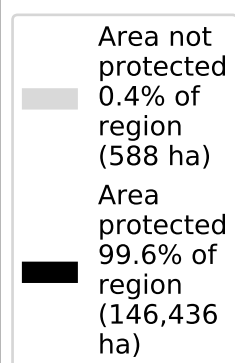
Total Vegetation Cover [%]



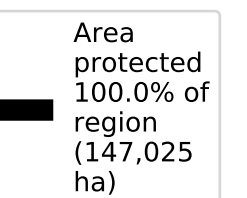
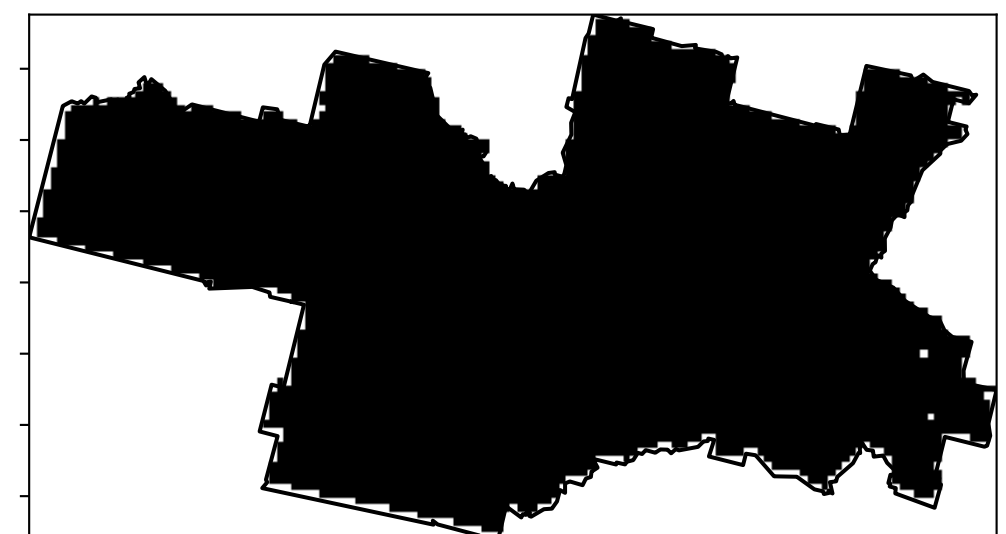
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

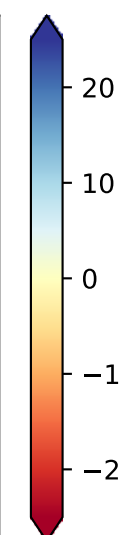
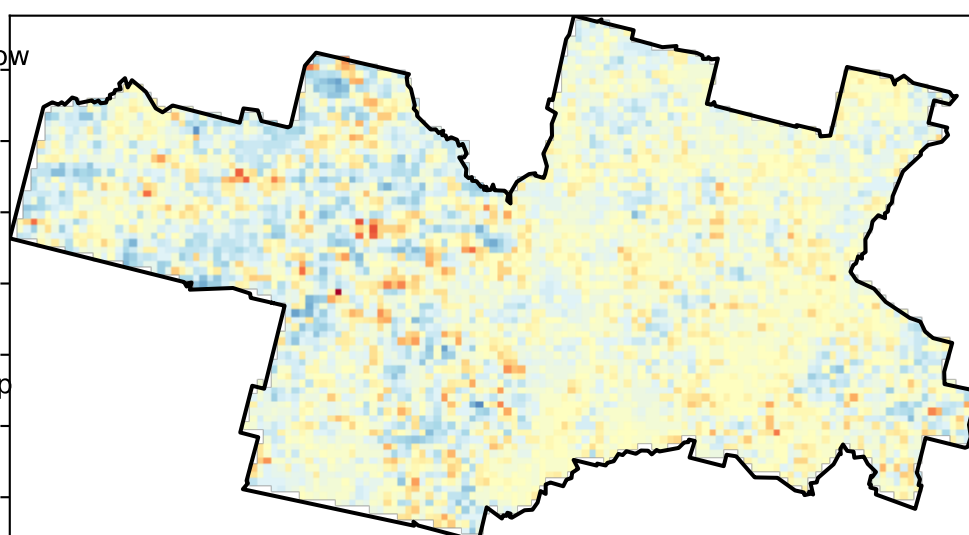


% Area protected from wind erosion (>50%)



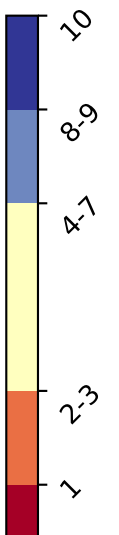
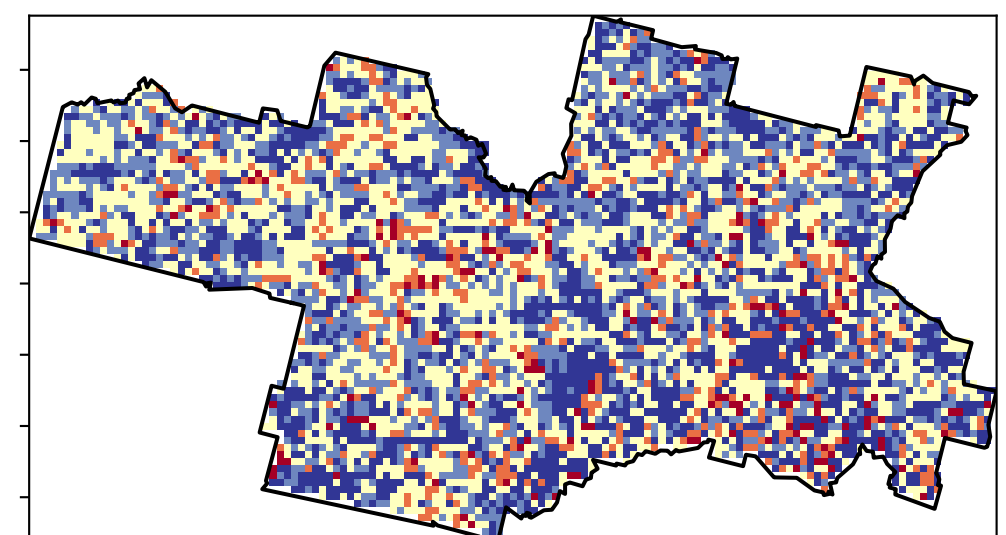
Total Vegetation Cover Anomaly [%]

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 [%]



tern

Ecosystem Research Infrastructure

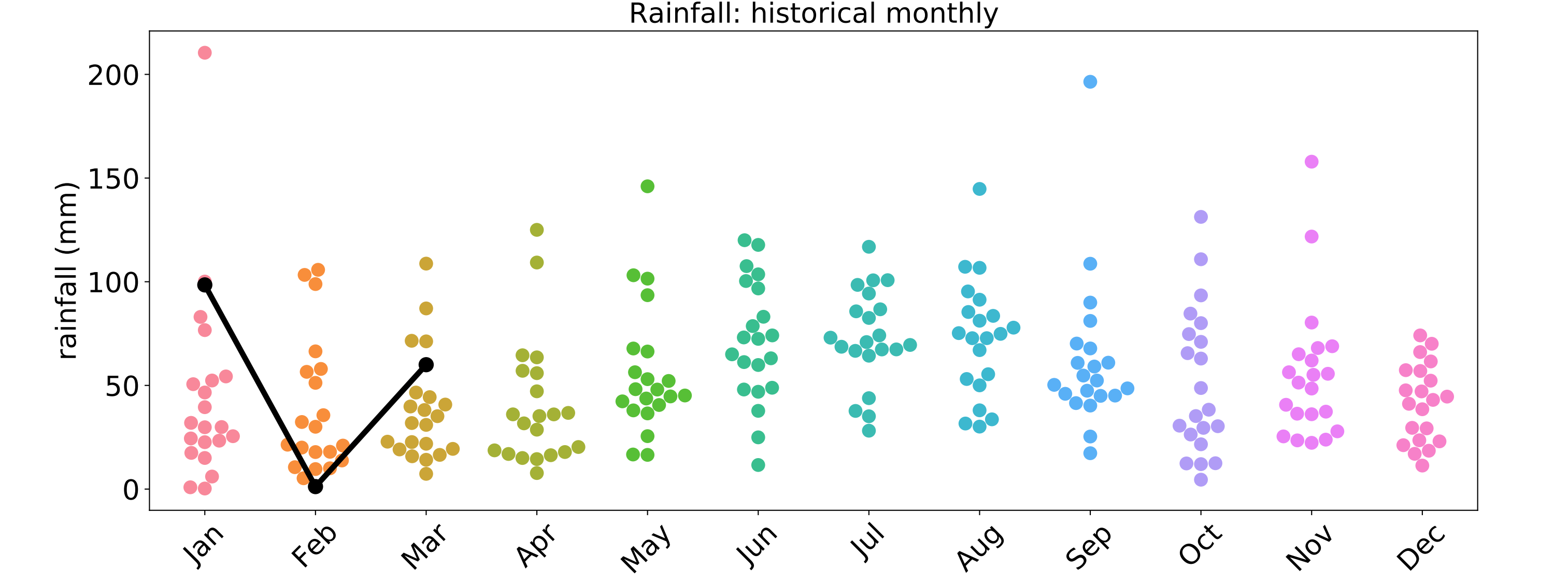
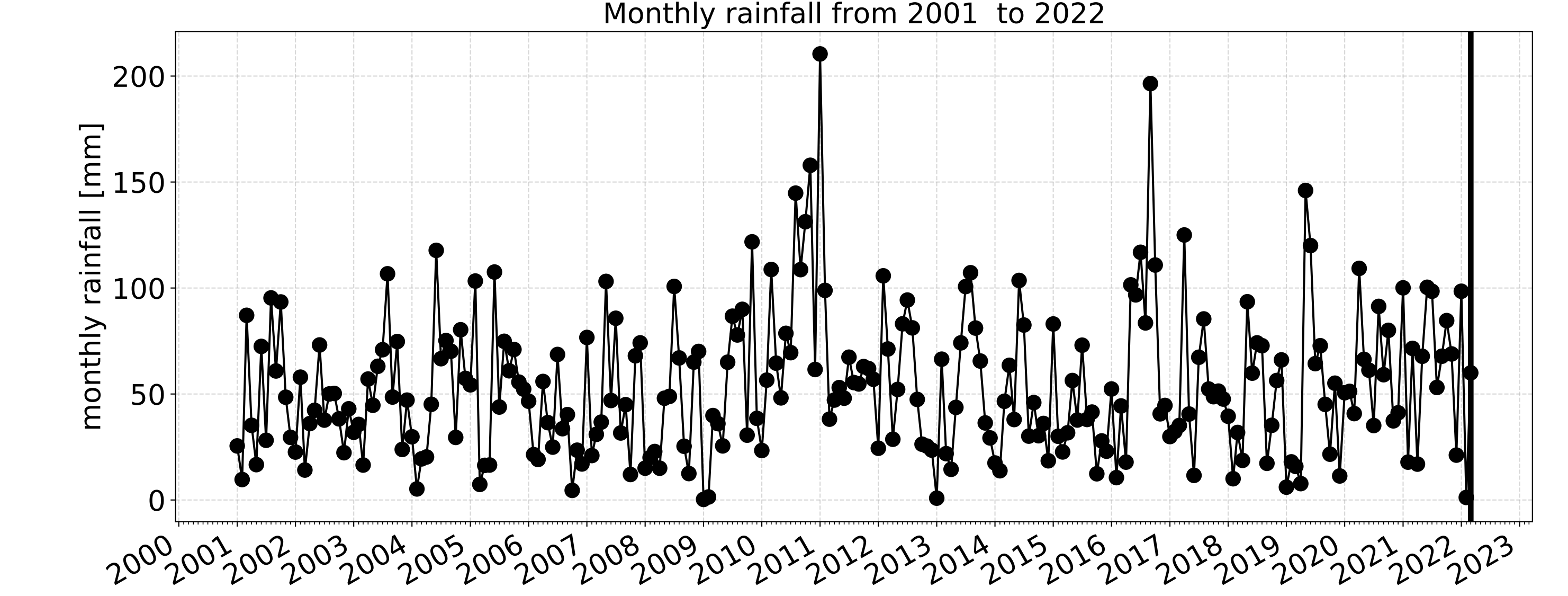
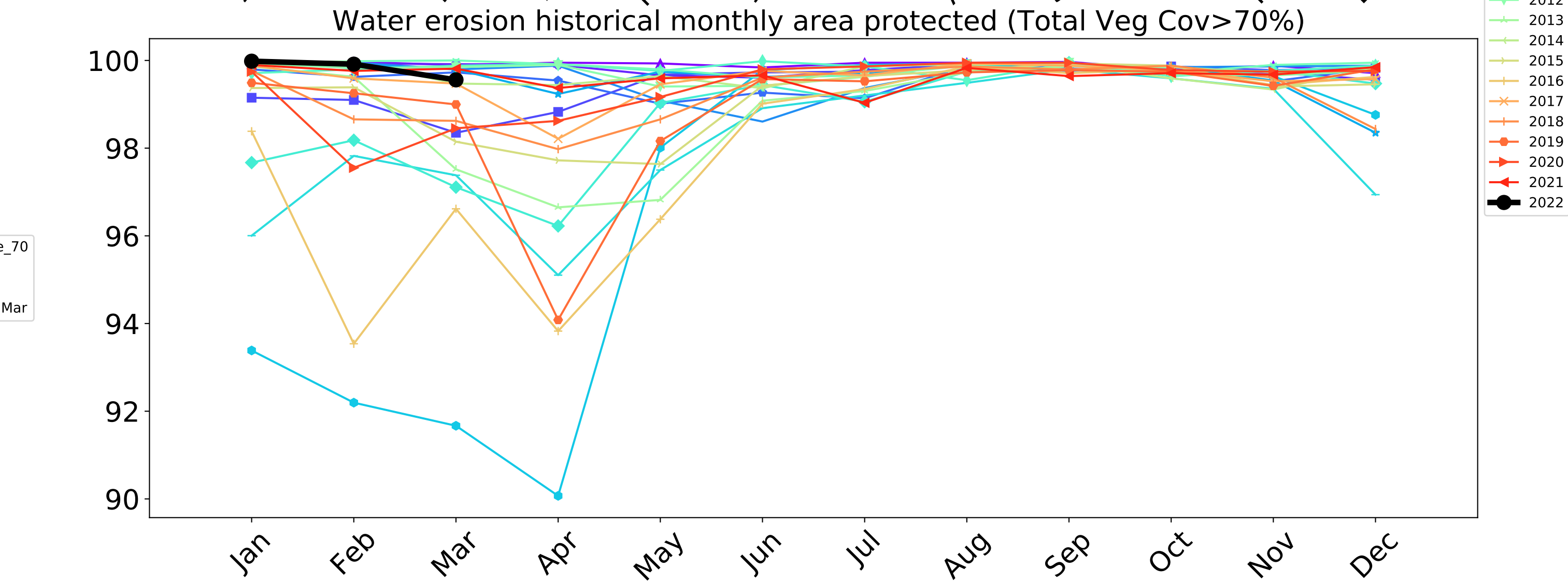
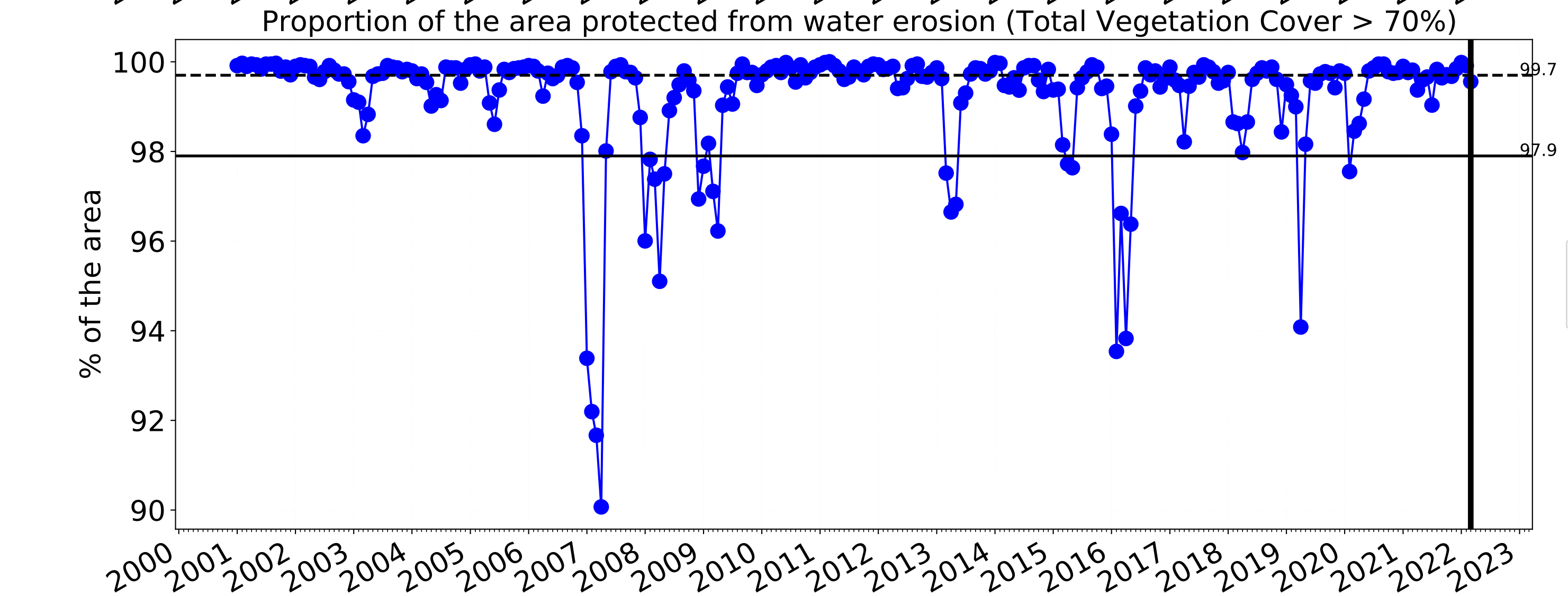
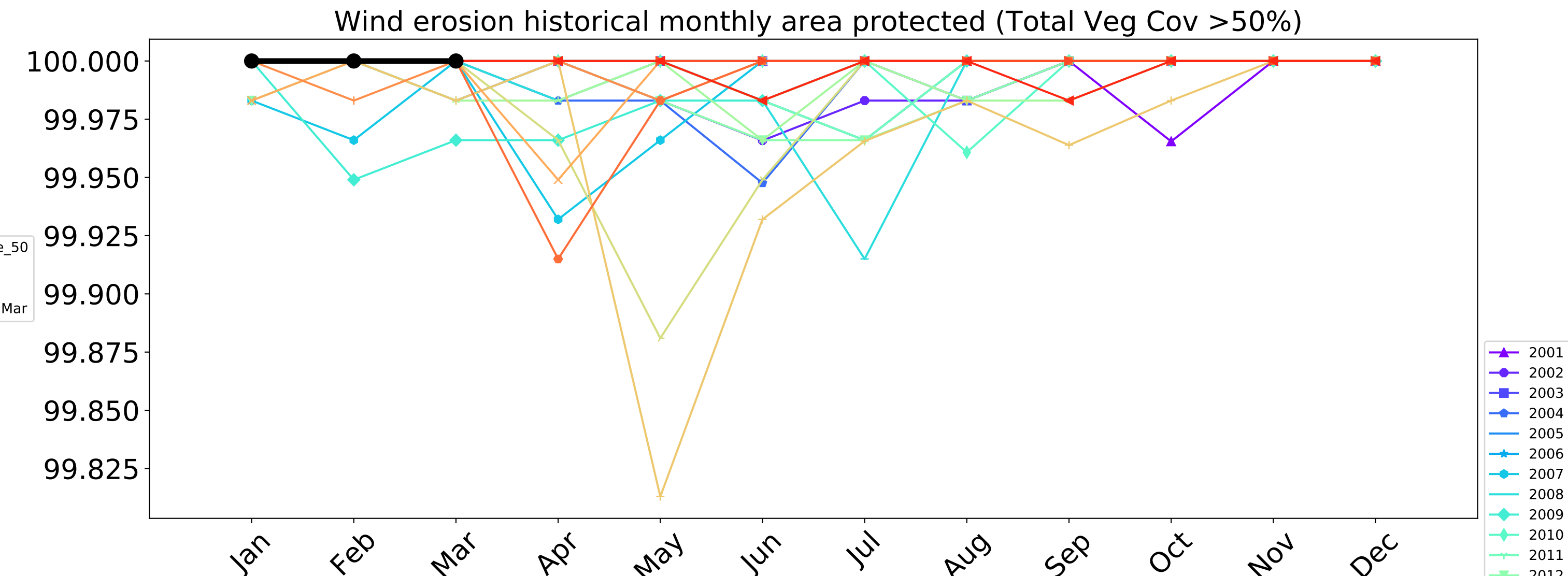
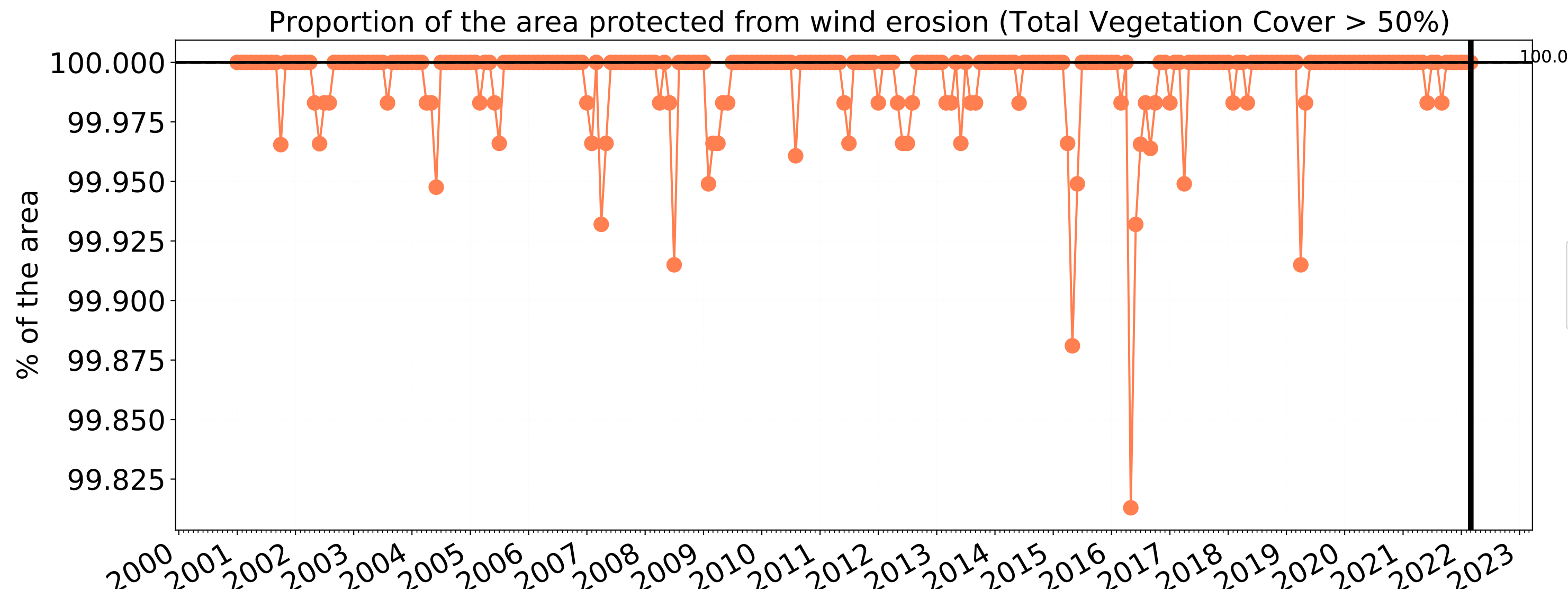


Australian Government

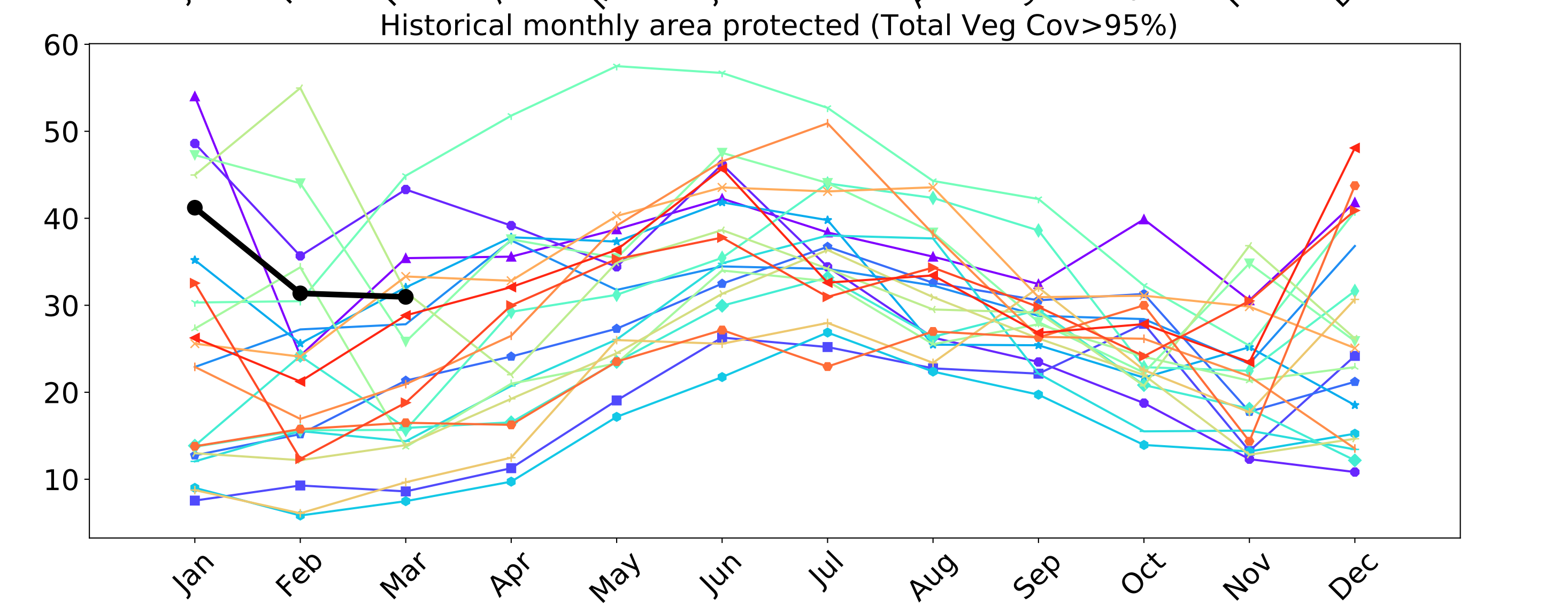
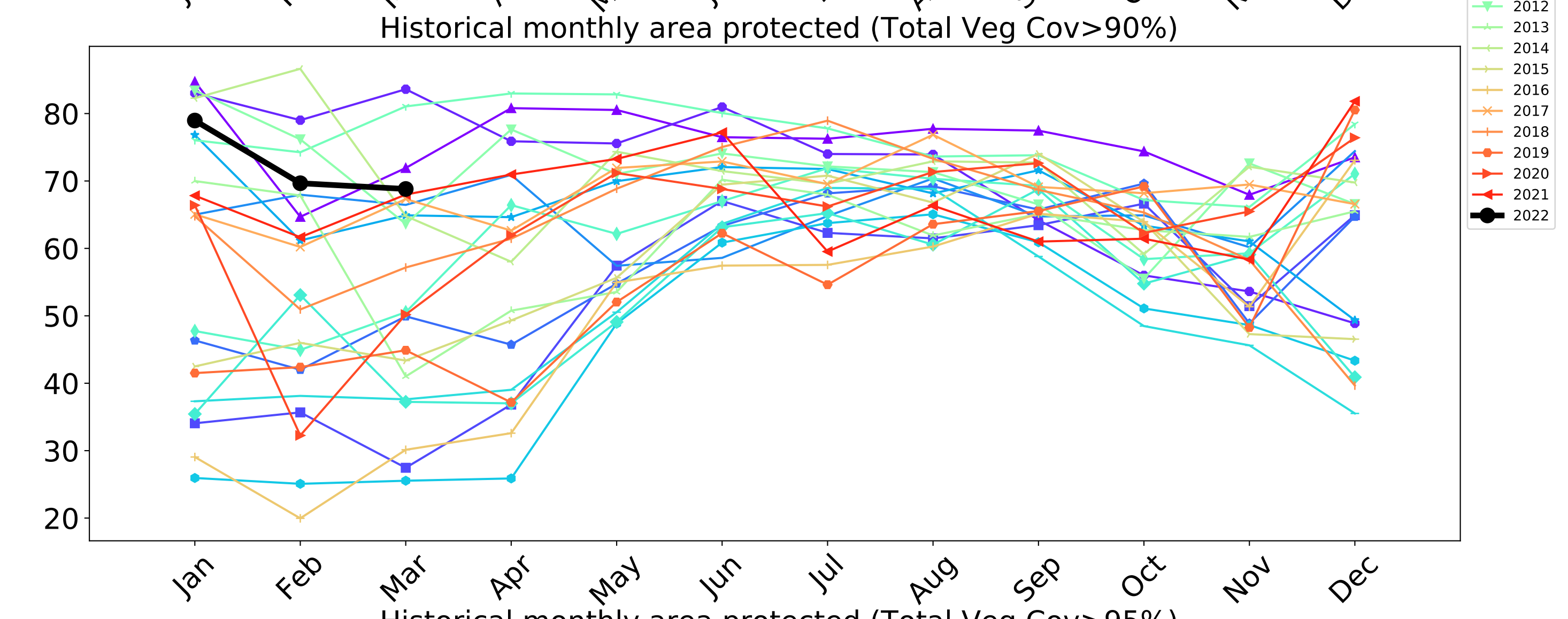
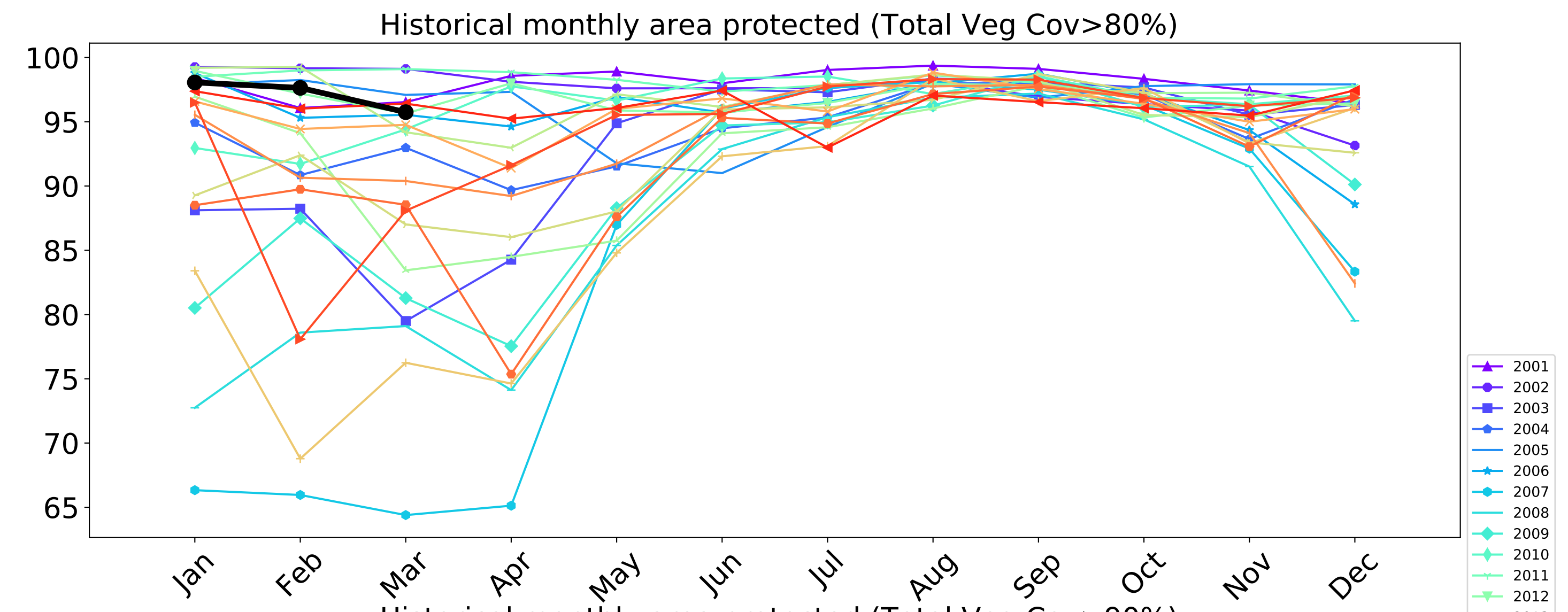
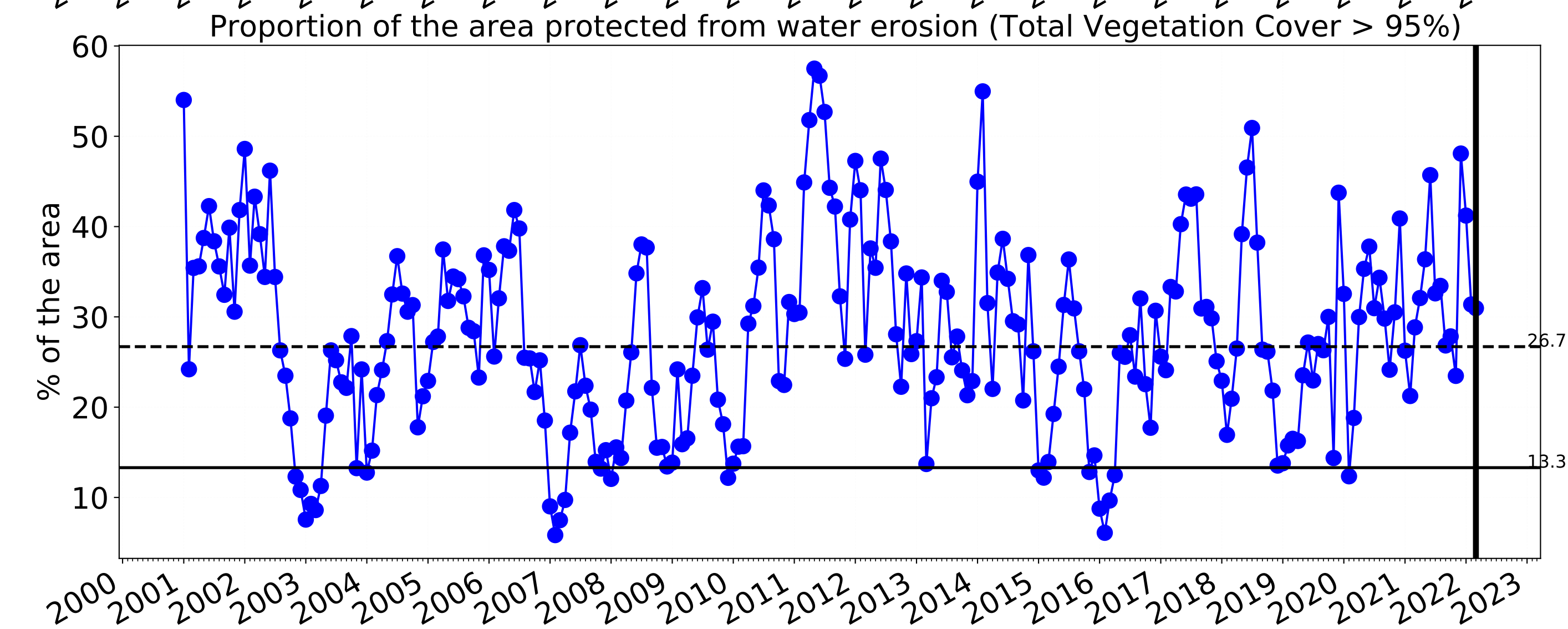
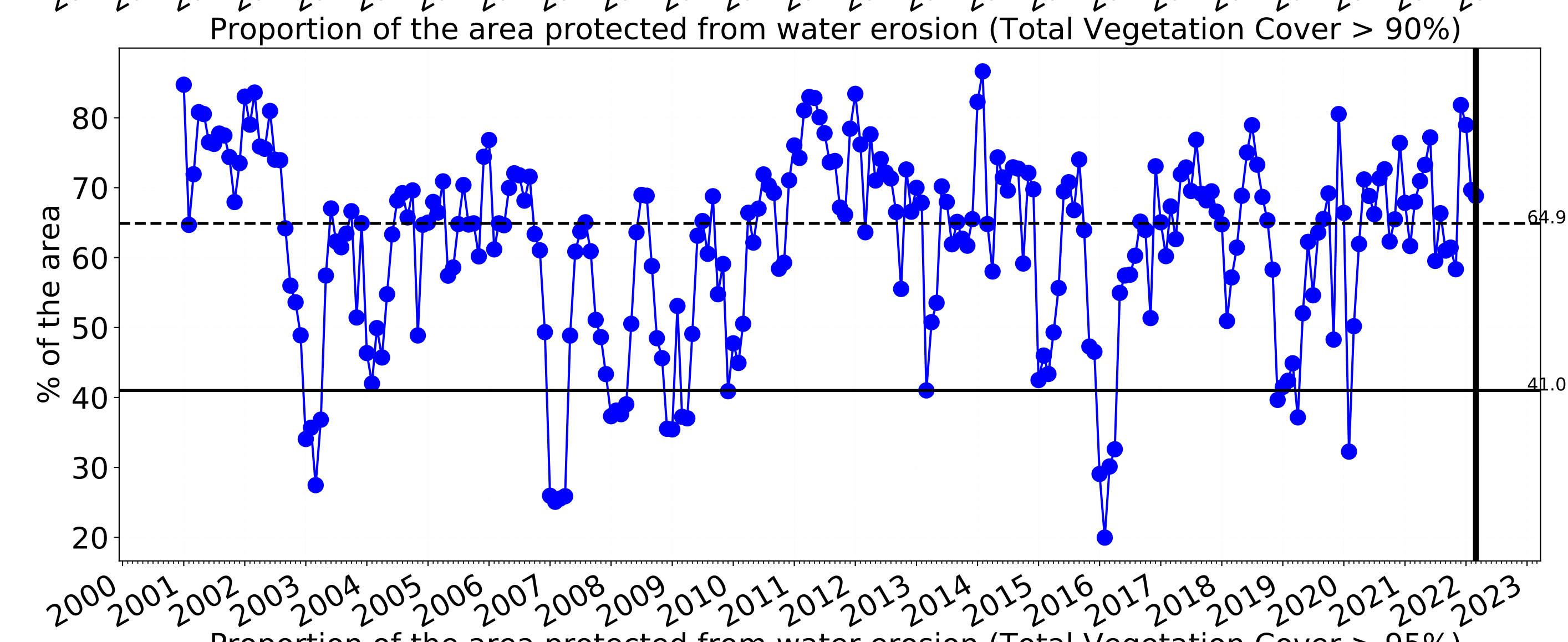
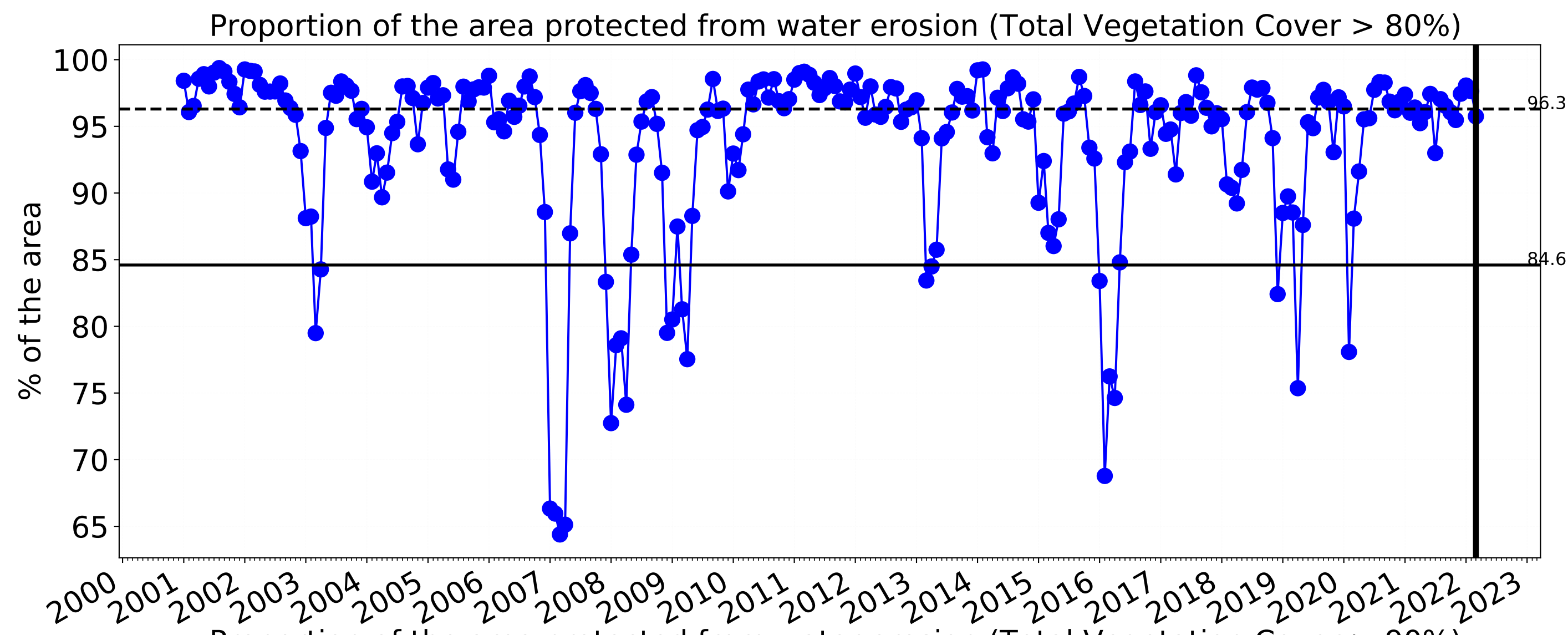
National Landcare Programme











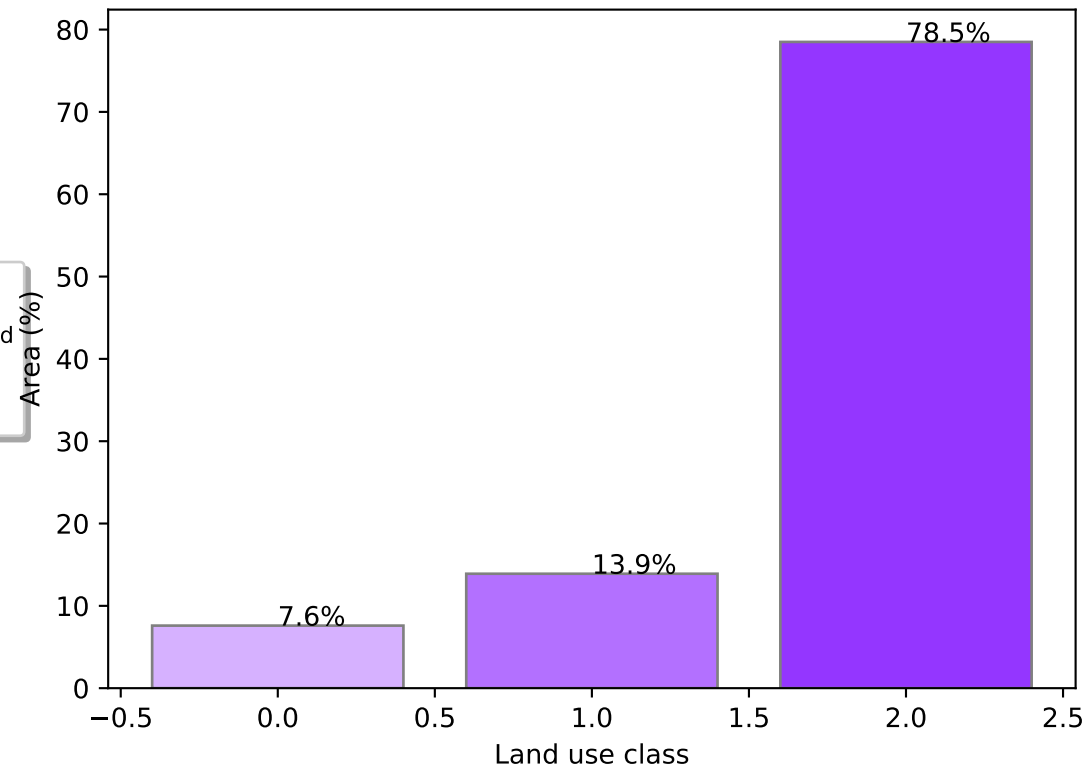


Conservation and natural environments

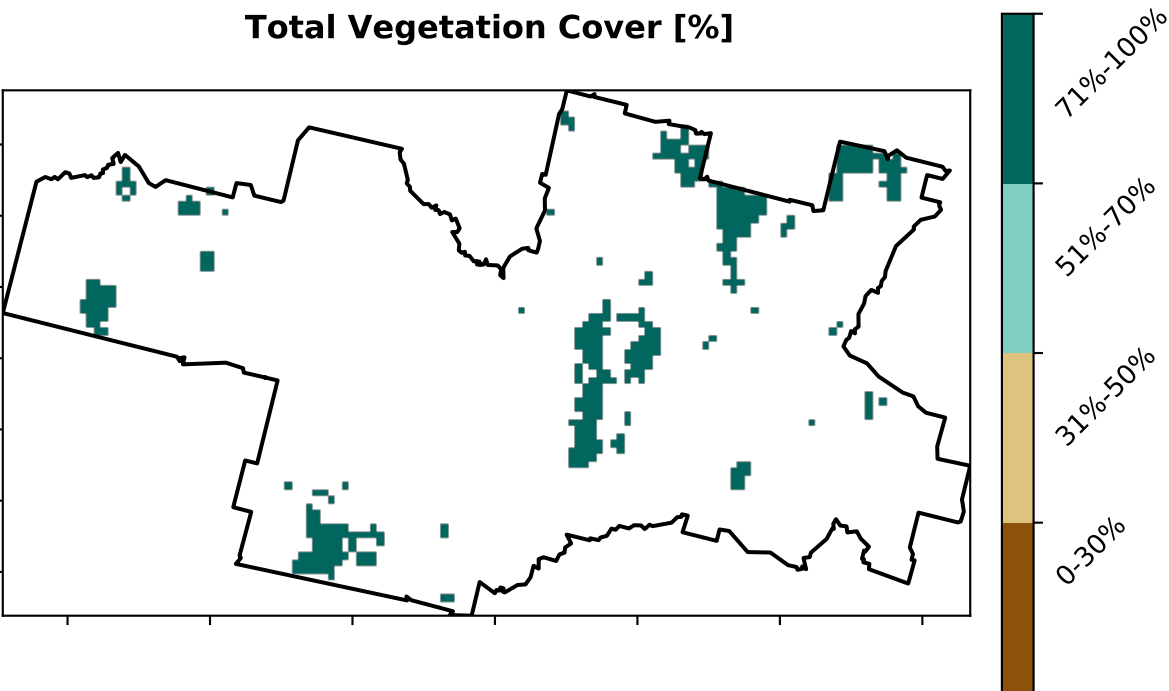
Land use and forest cover



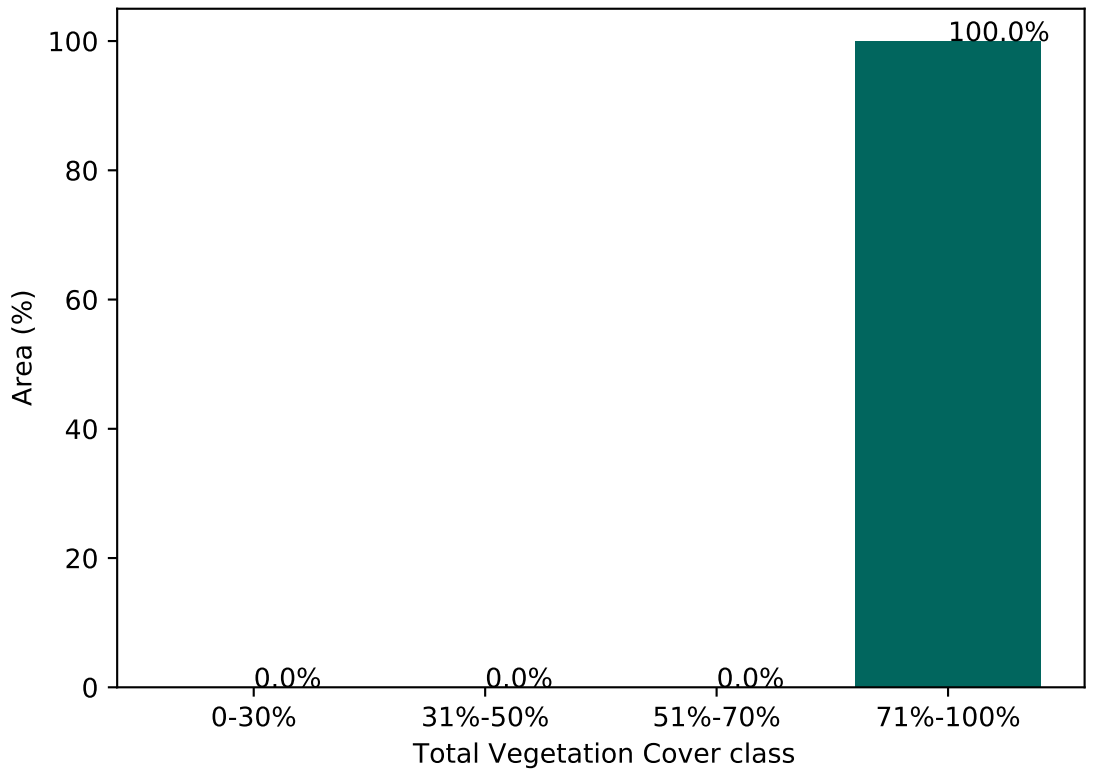
Proportion of each land class in area



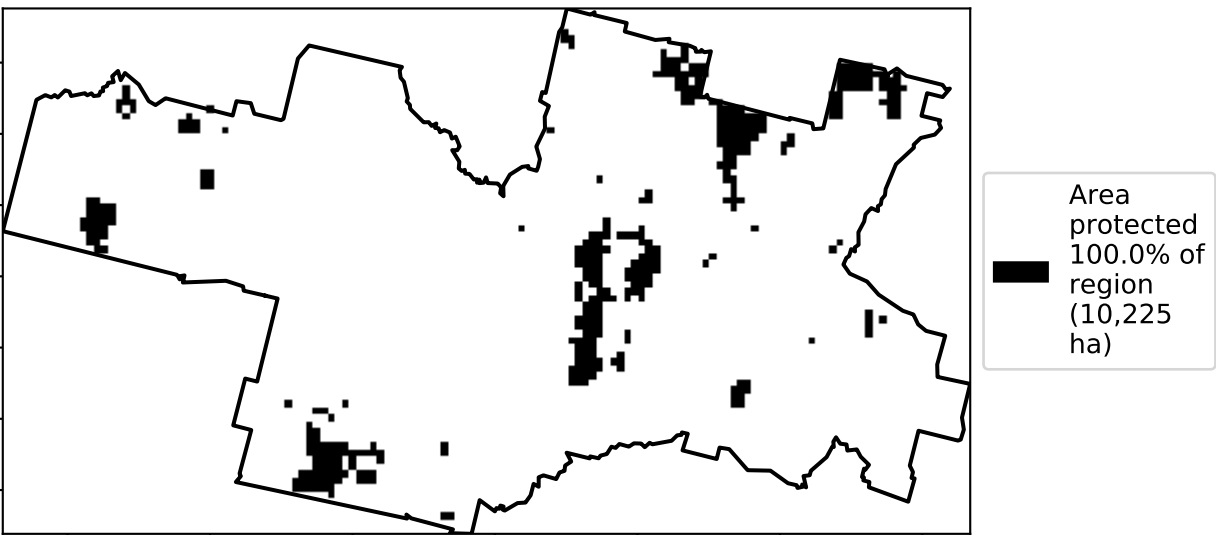
Total Vegetation Cover [%]



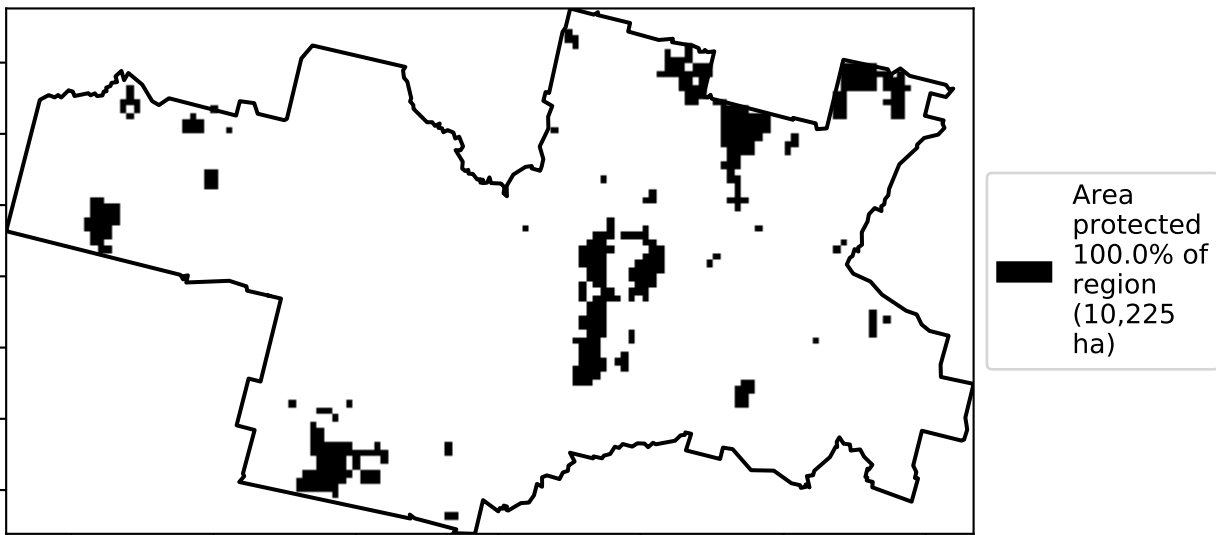
Proportion of vegetation cover class in area



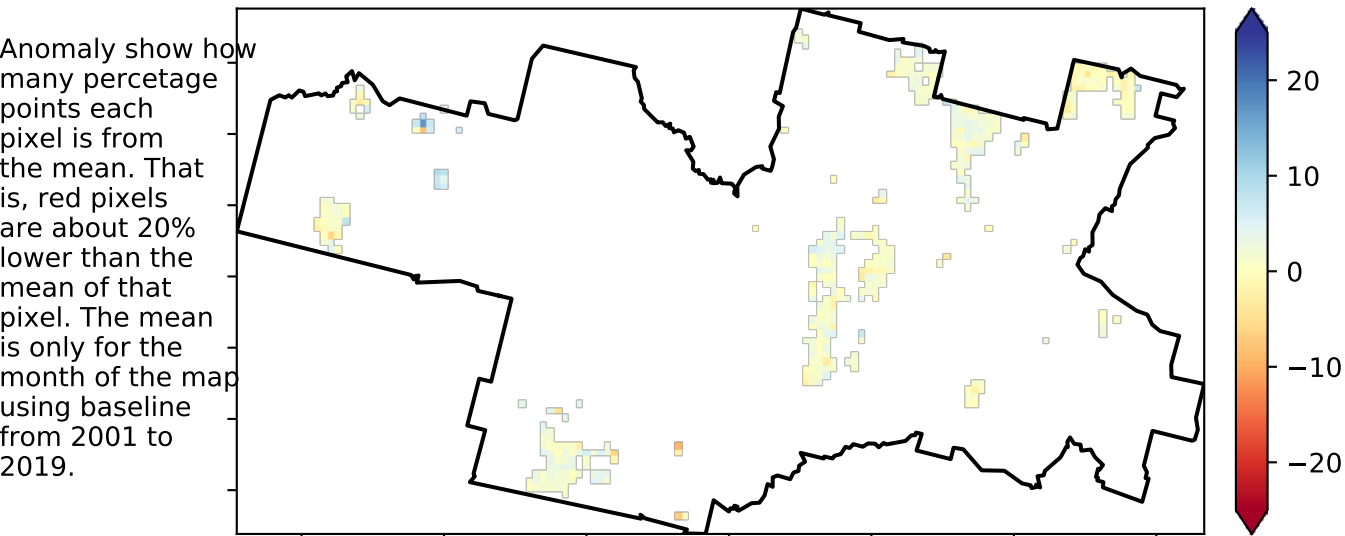
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

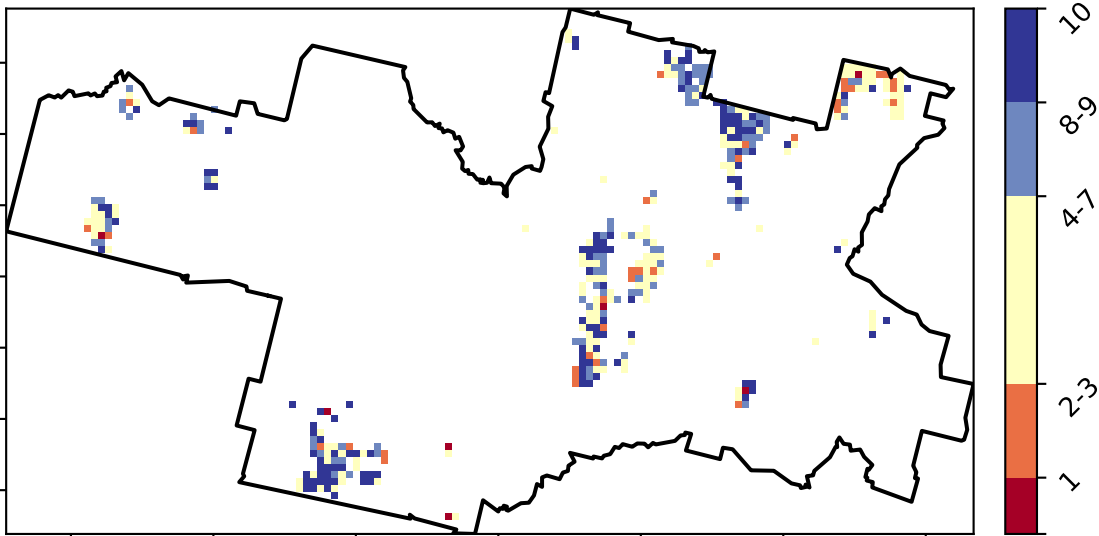


Total Vegetation Cover Anomaly [%]

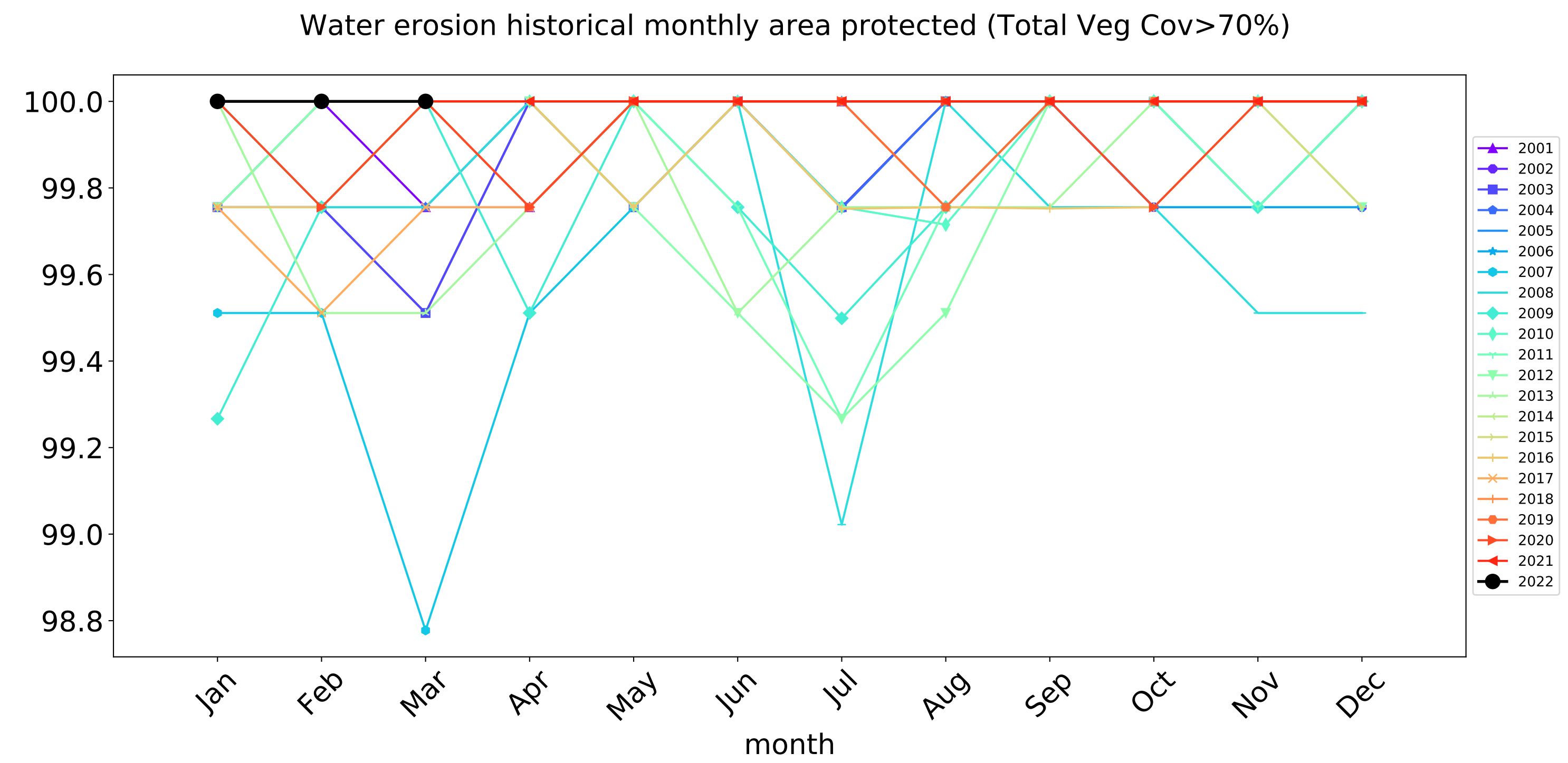
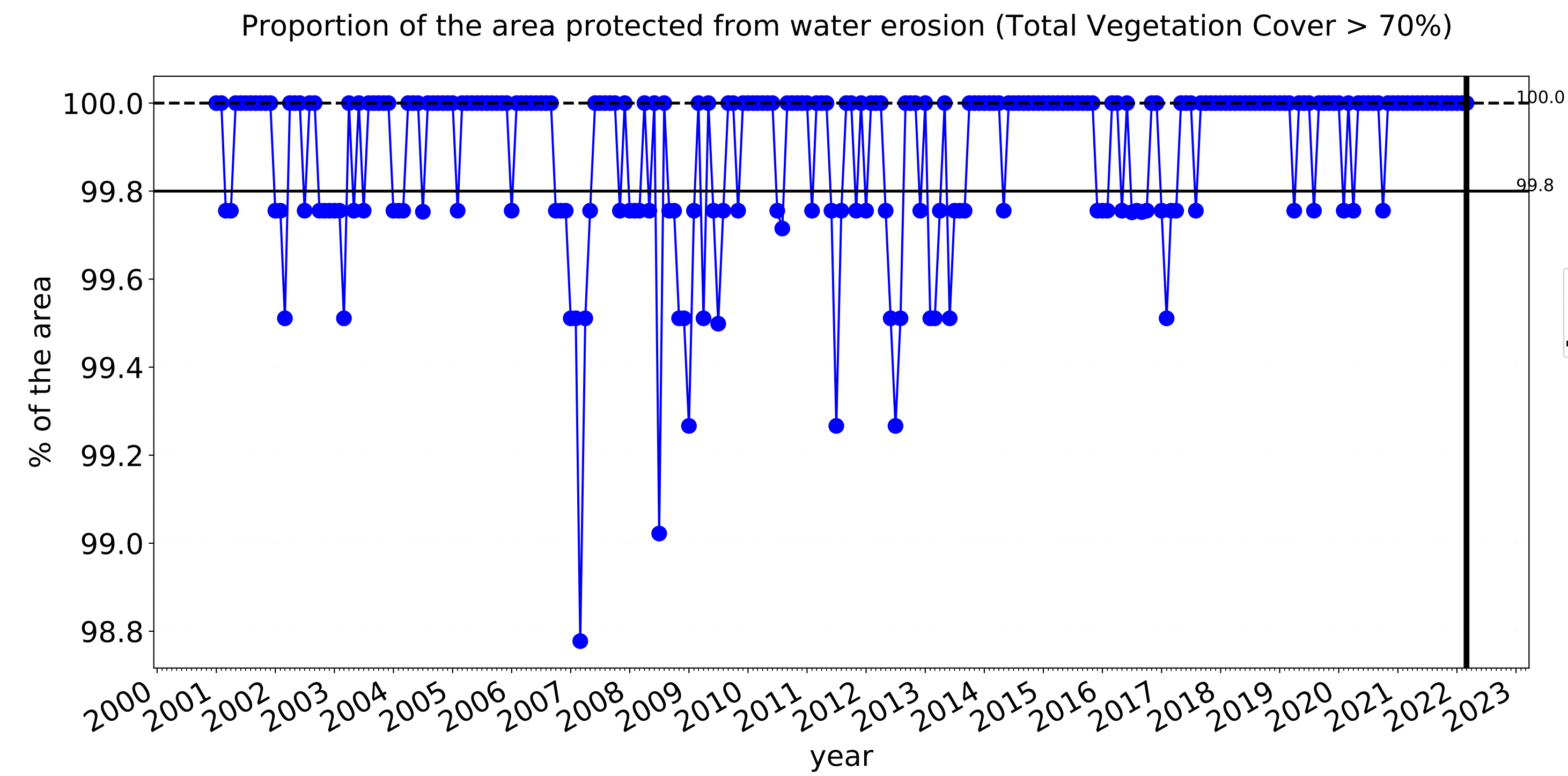
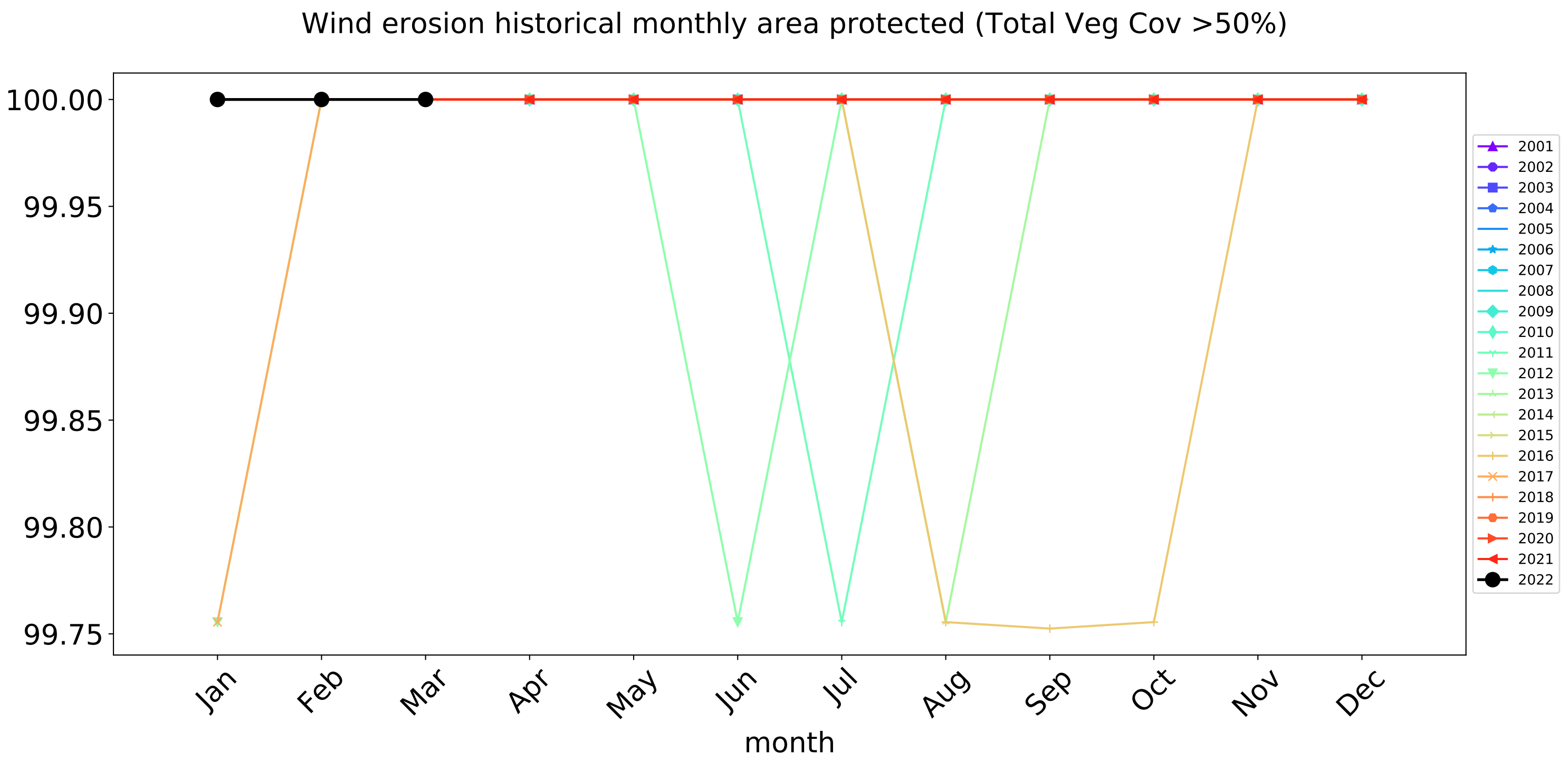
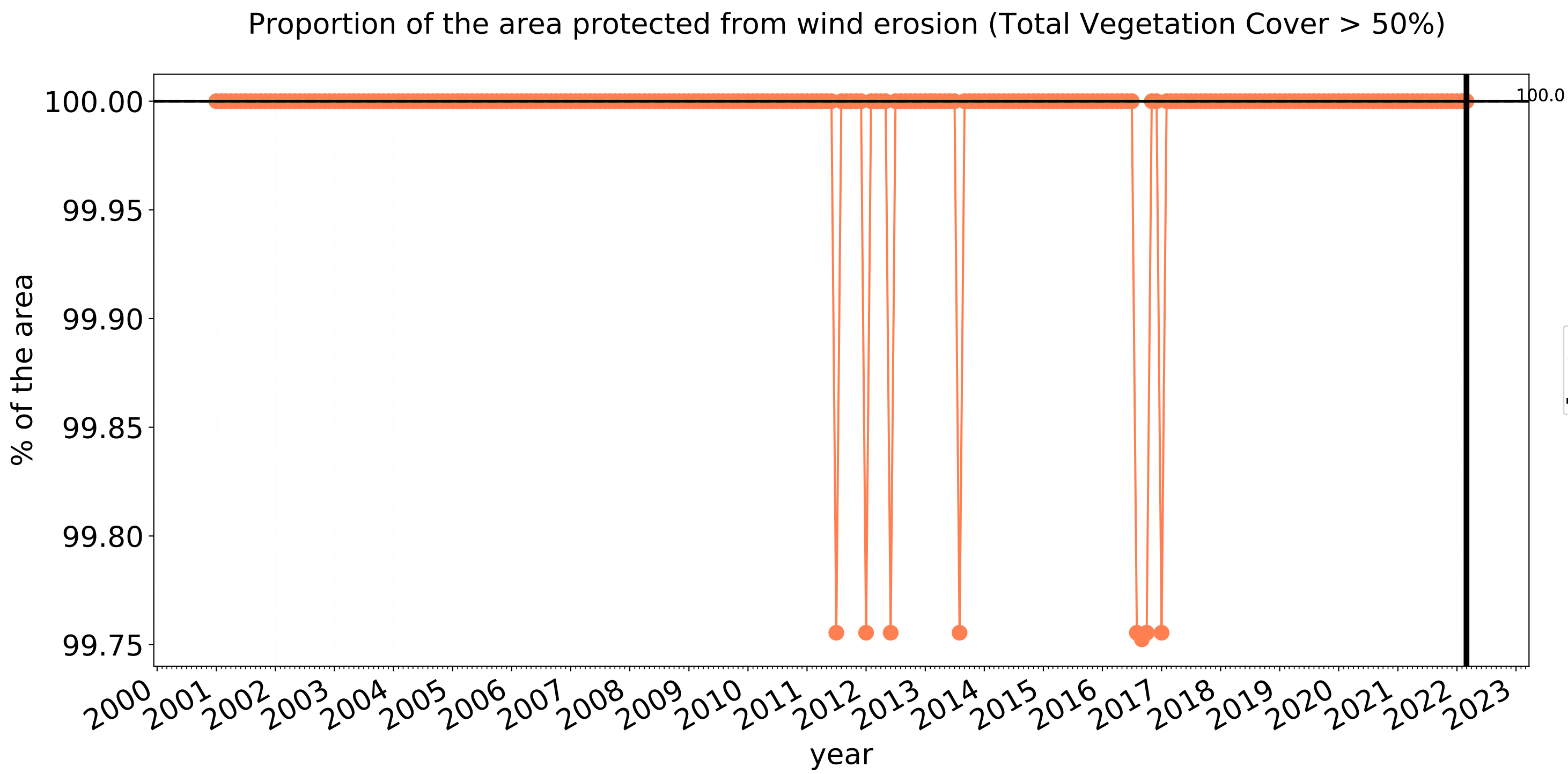


Total Vegetation Cover Decile [%]

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 timeseries



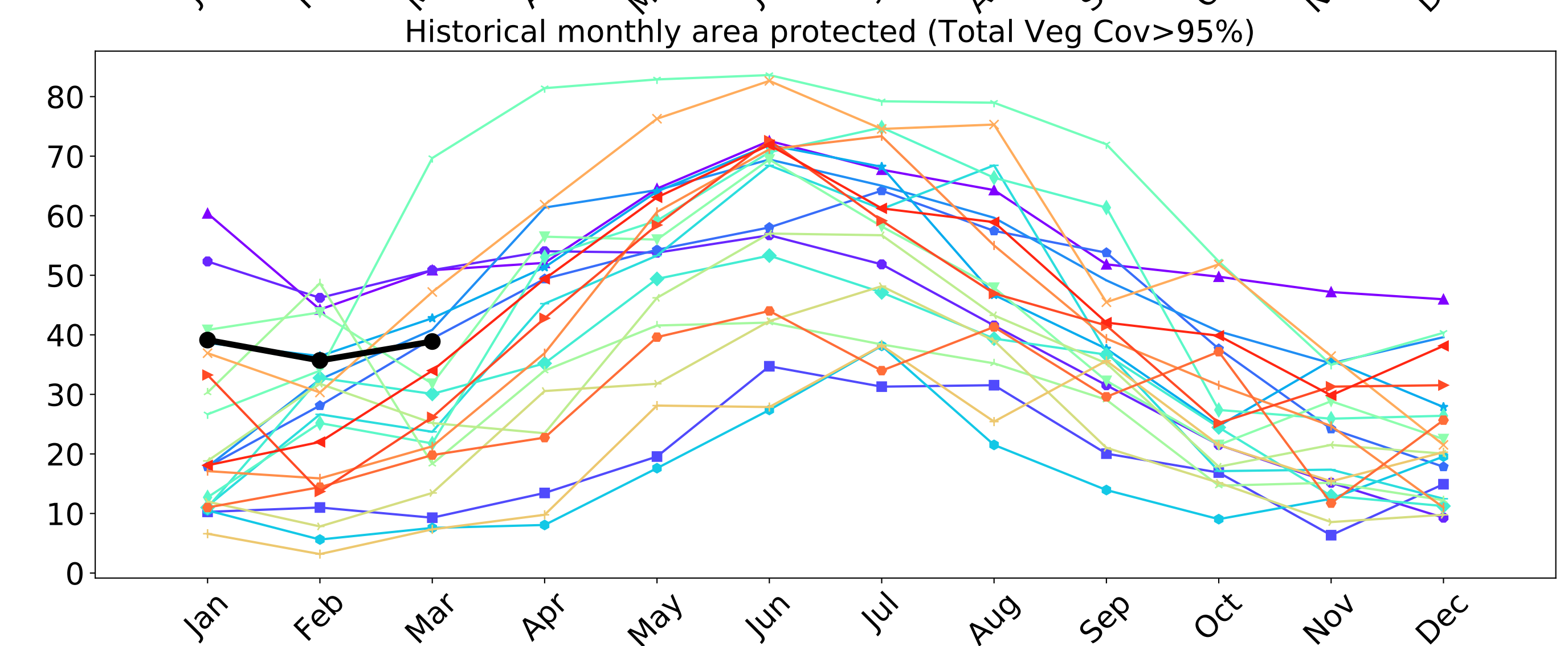
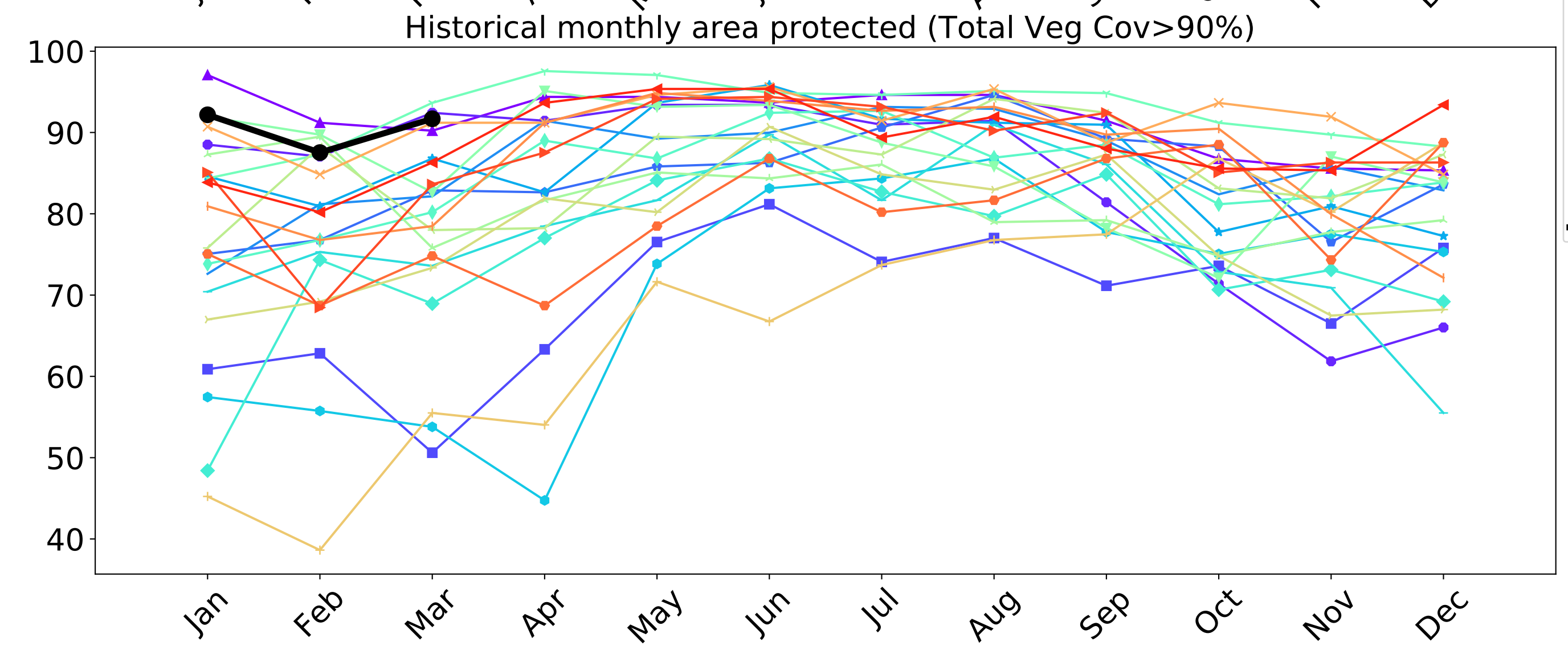
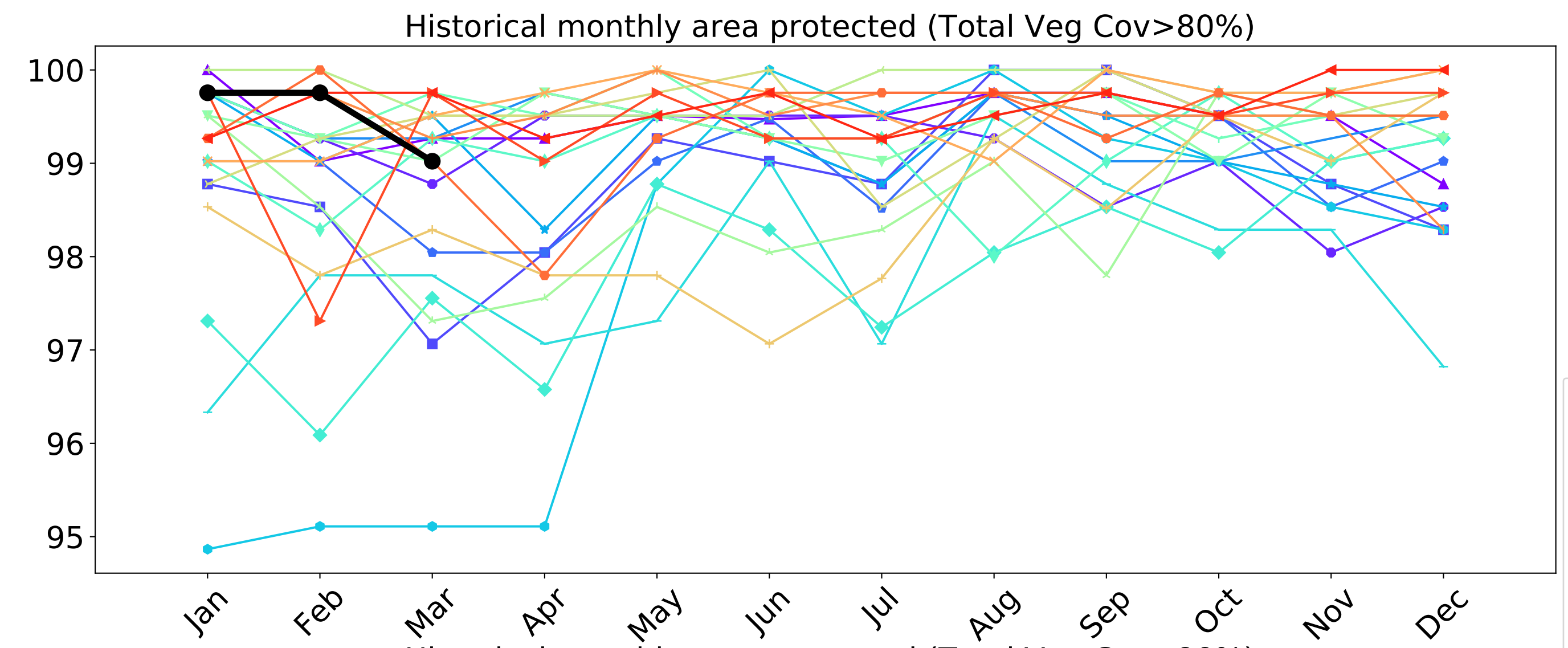
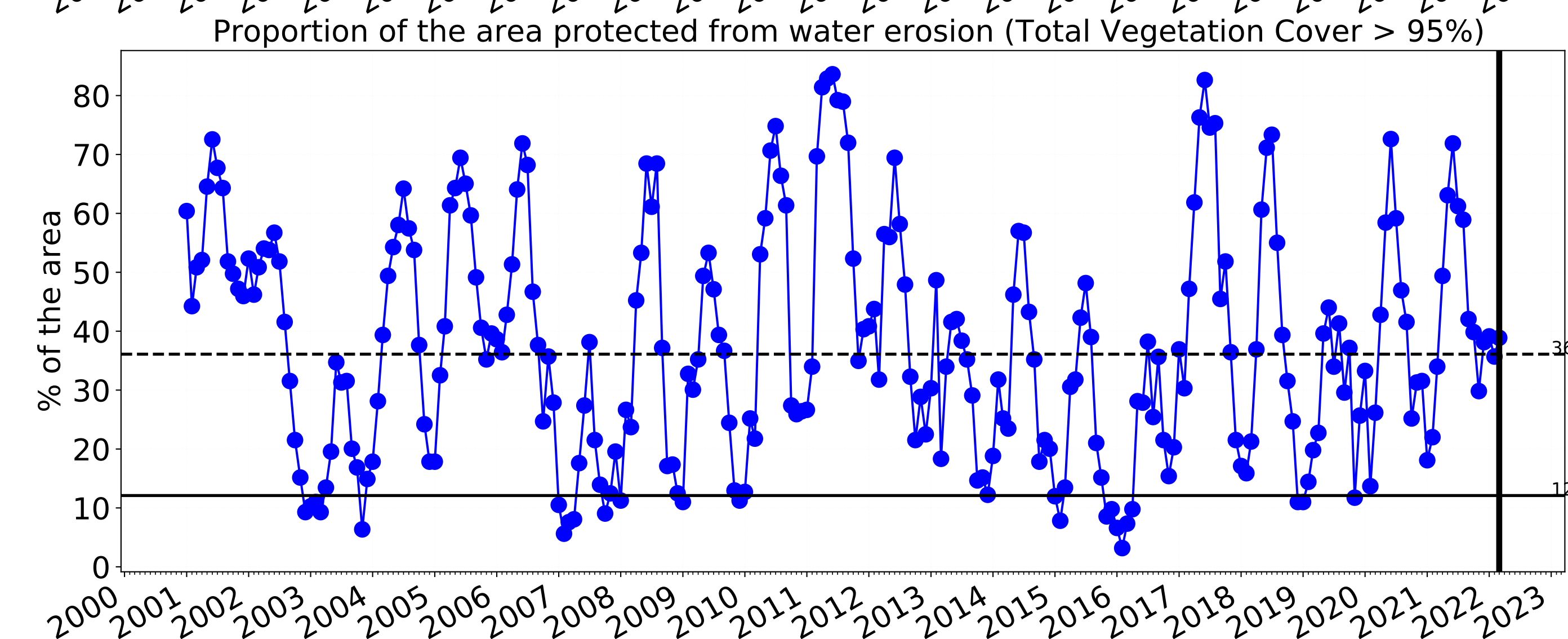
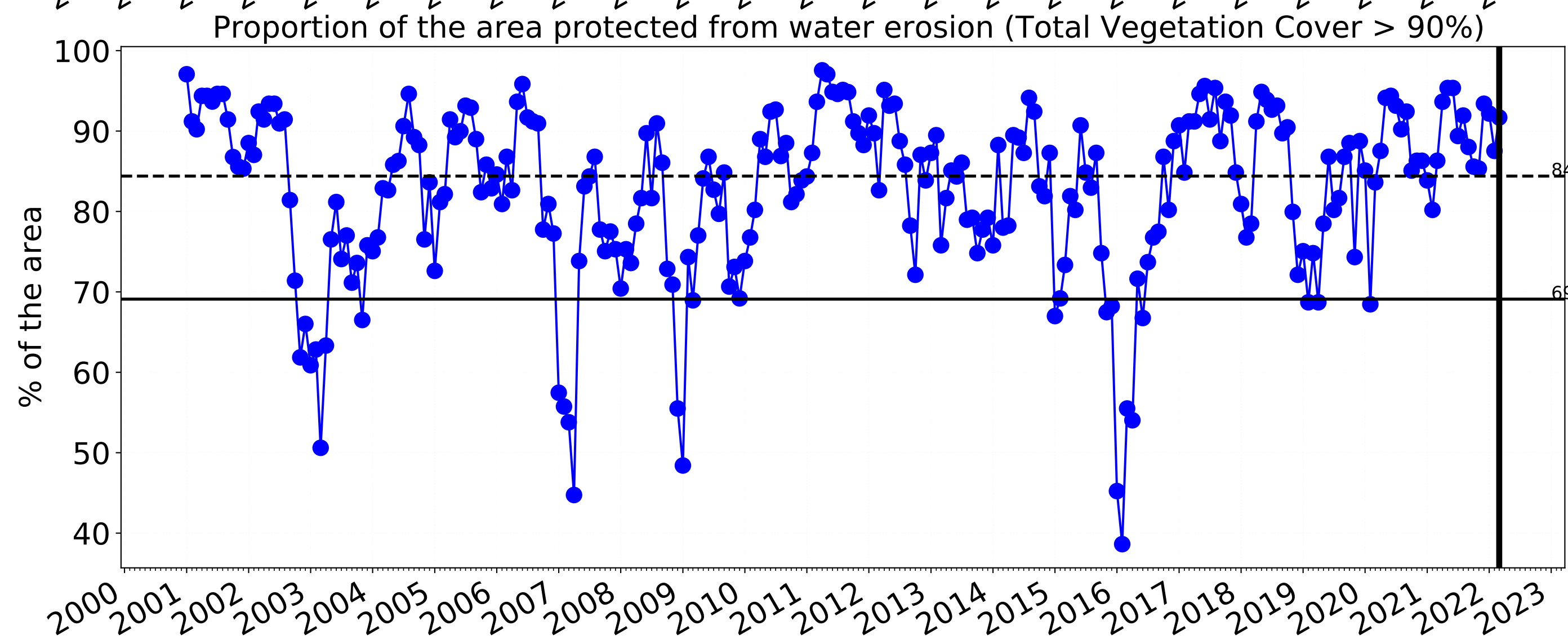
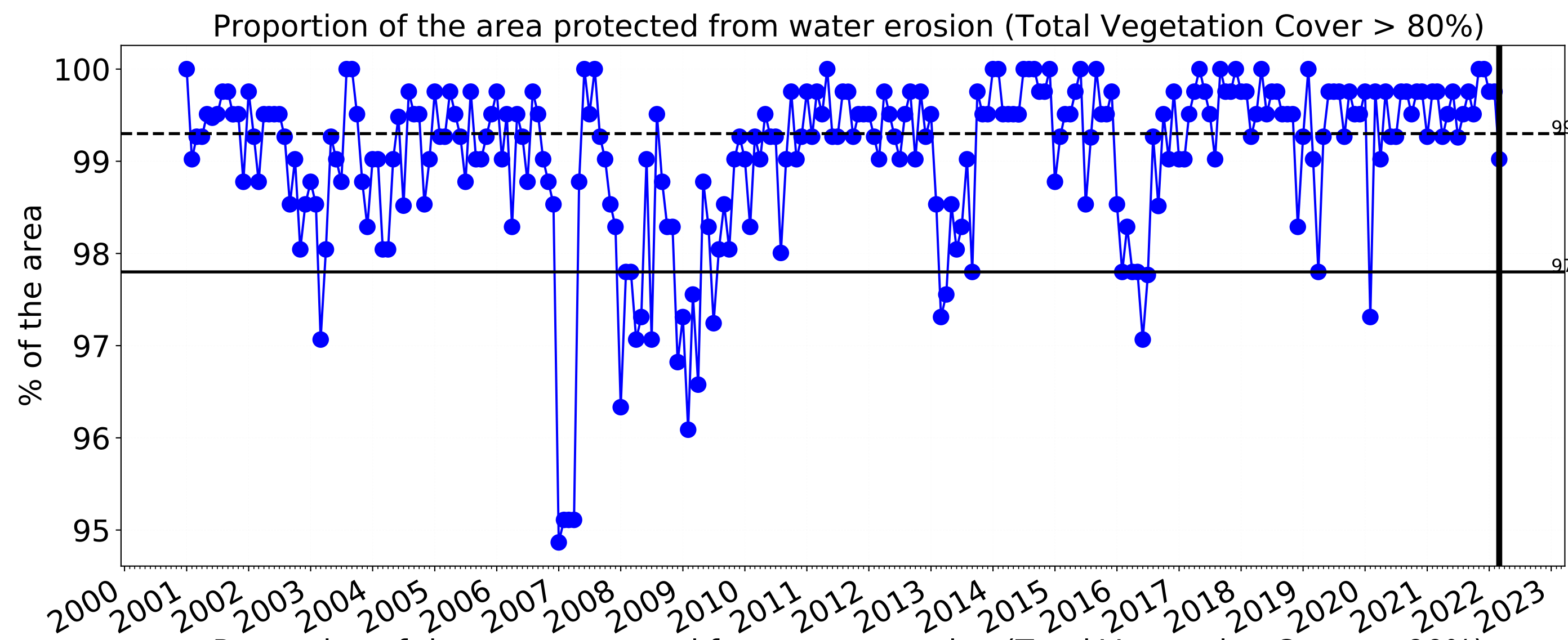
TERN  
Ecosystem Research Infrastructure



National  
Landcare  
Programme









Conservation and natural environments Woodland forest

Land use and forest cover



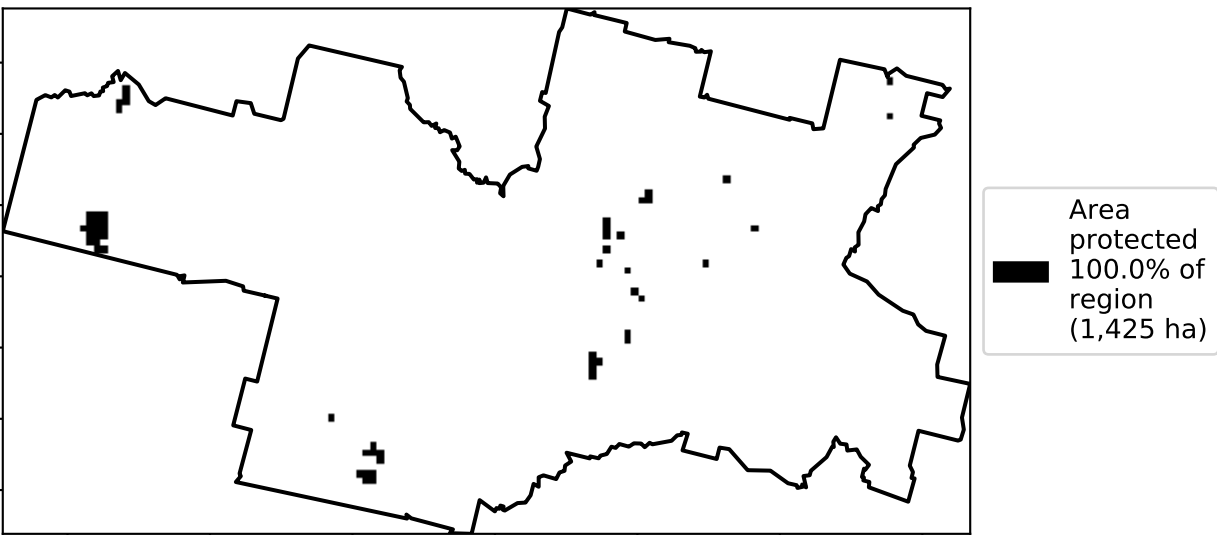
Total Vegetation Cover [%]



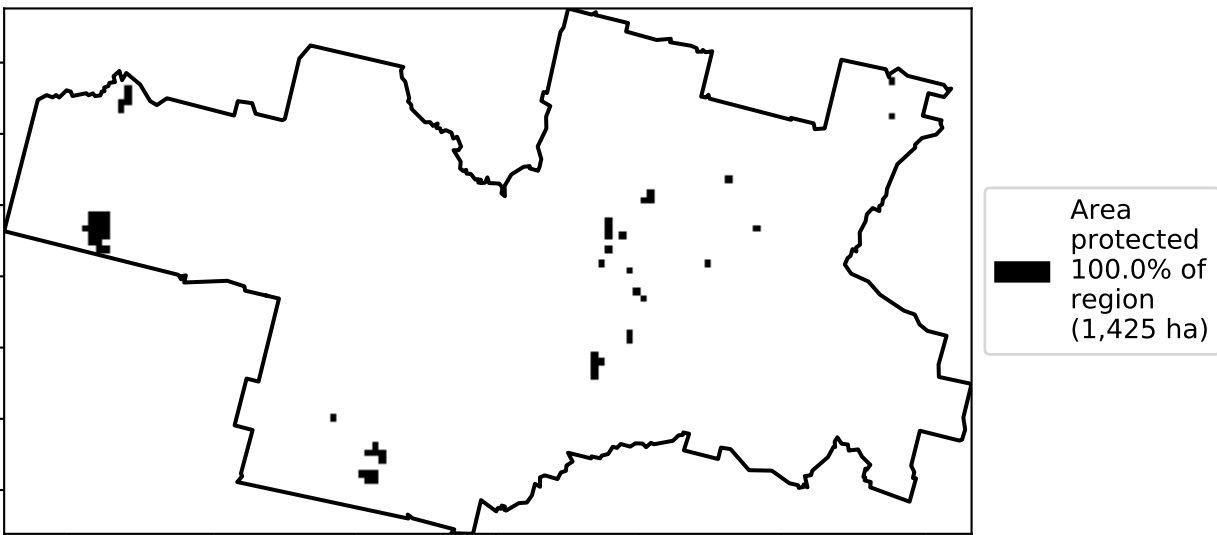
Proportion of vegetation cover class in area



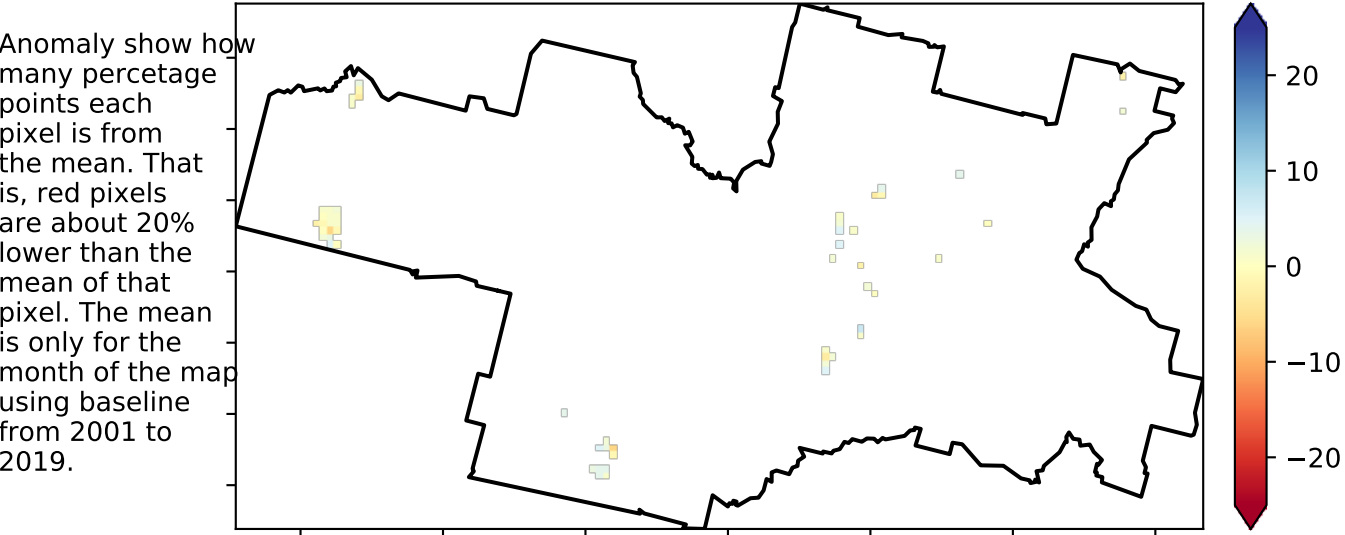
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

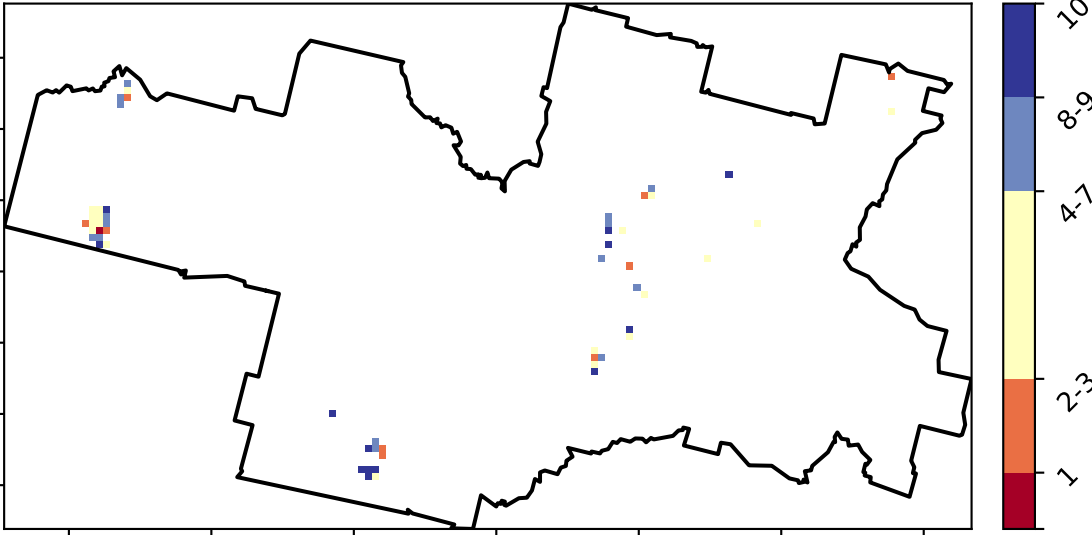


Total Vegetation Cover Anomaly [%]



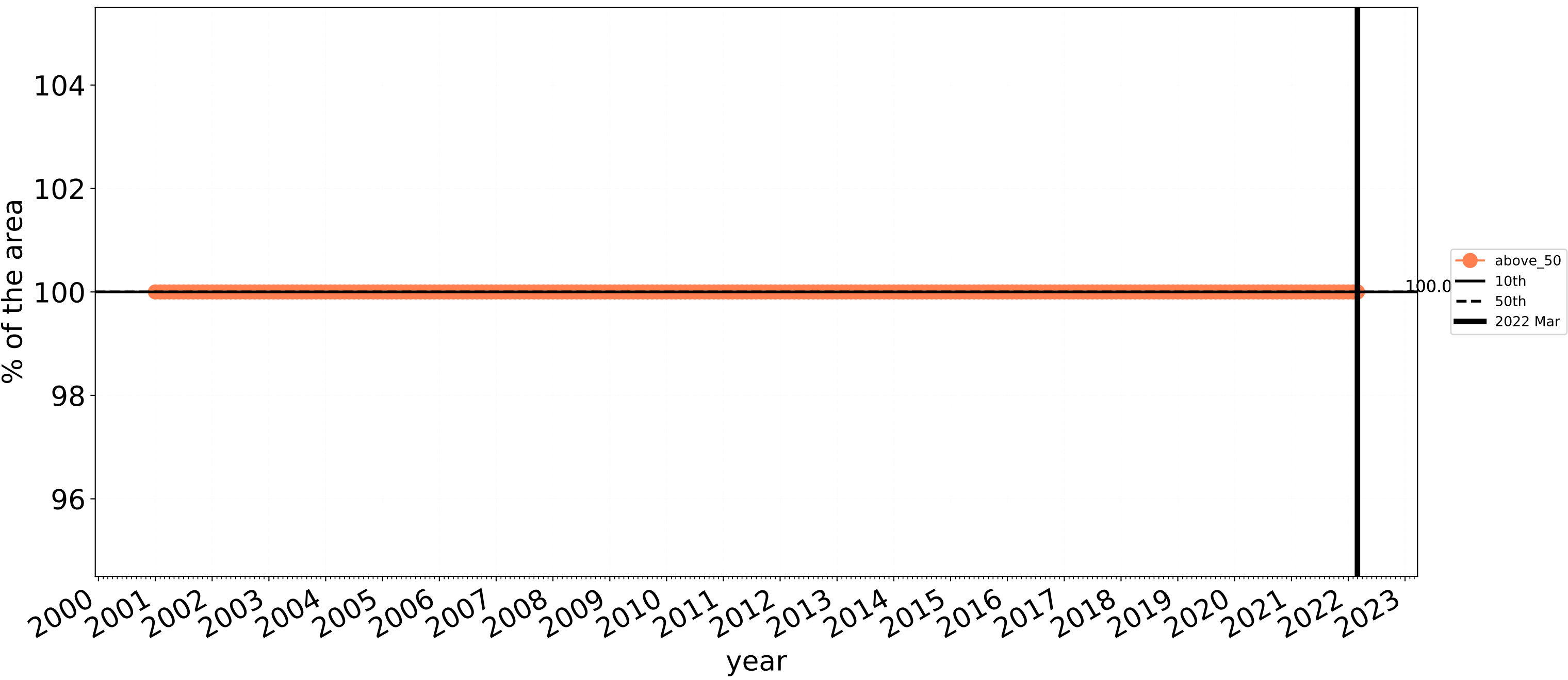
Total Vegetation Cover Decile [%]

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.

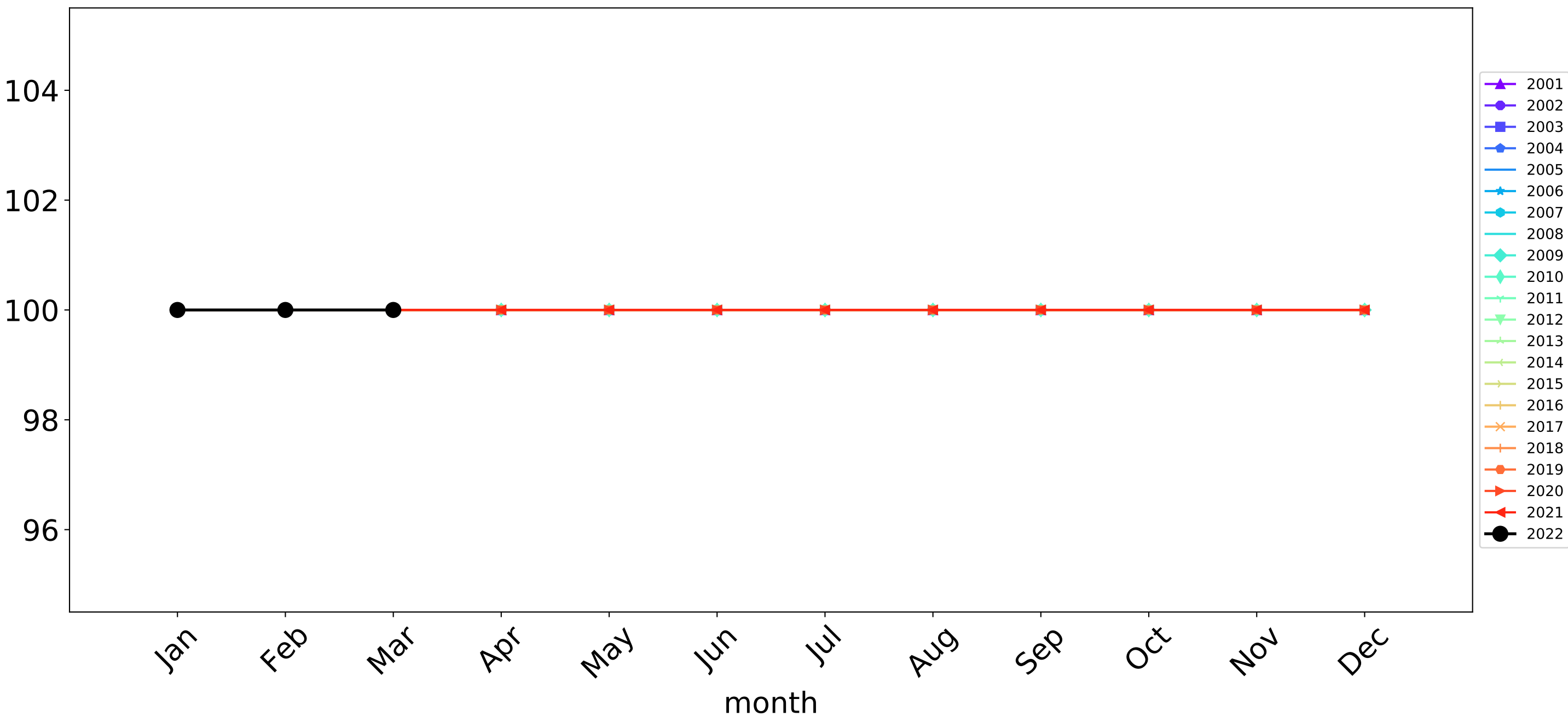




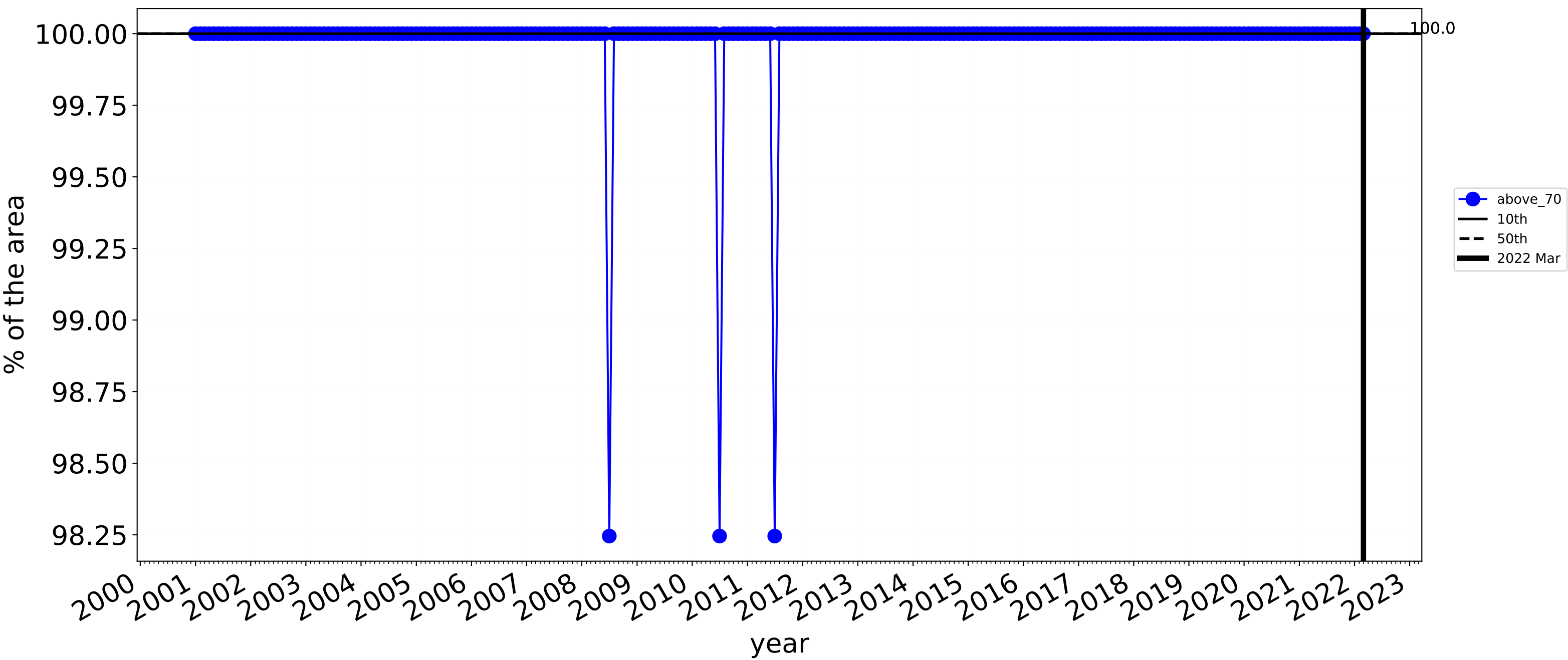
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



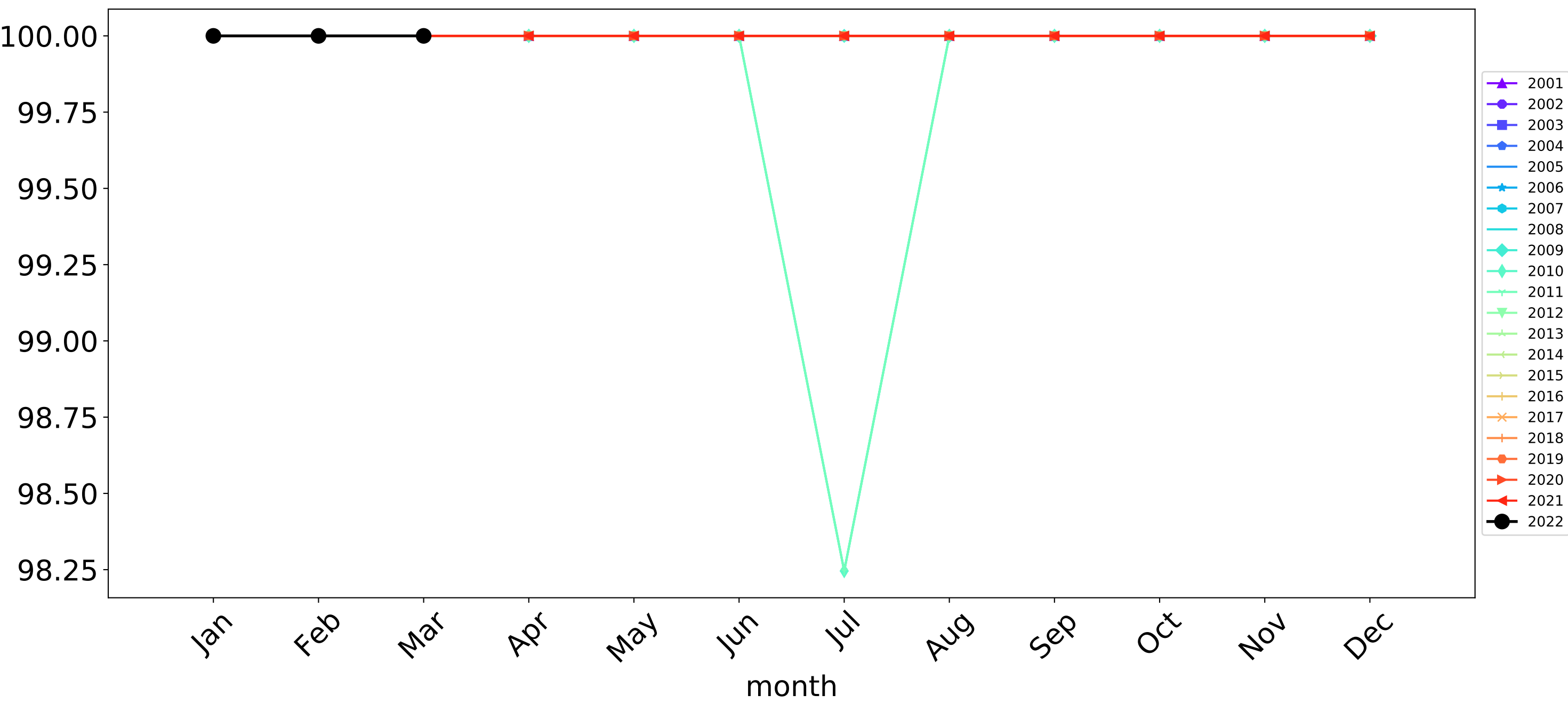
Wind erosion historical monthly area protected (Total Veg Cov >50%)



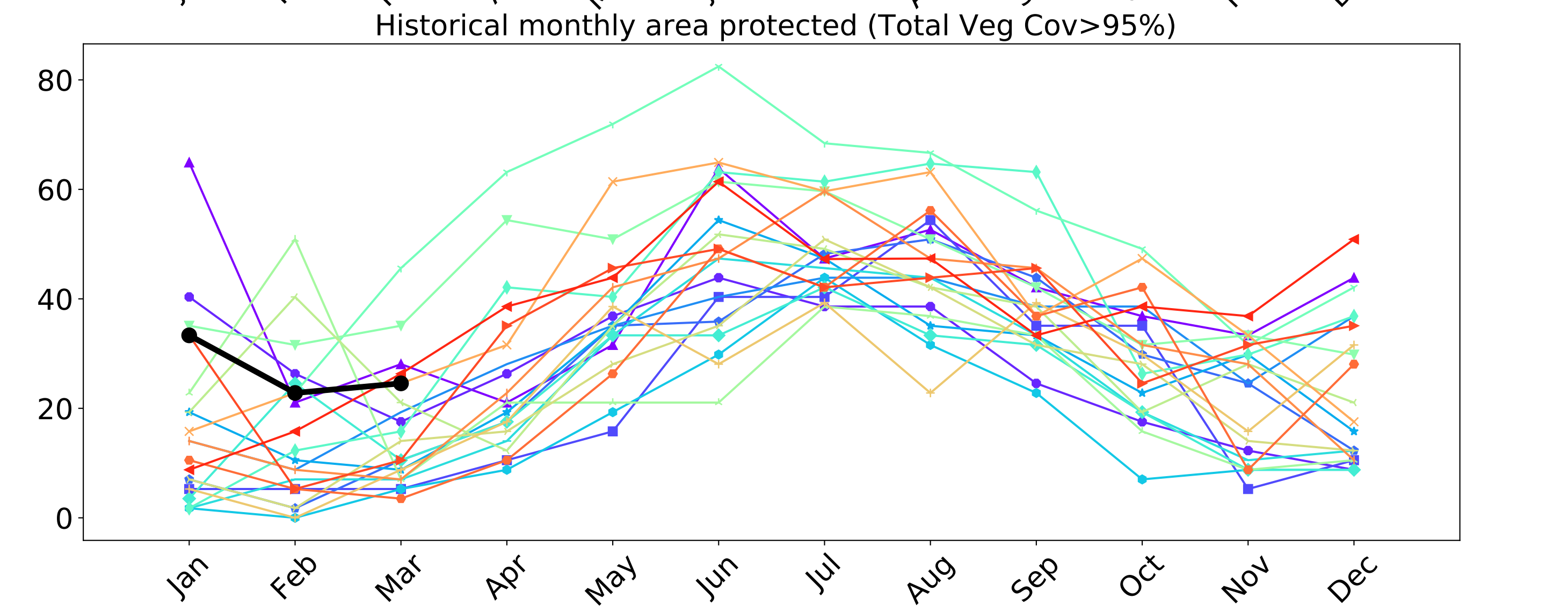
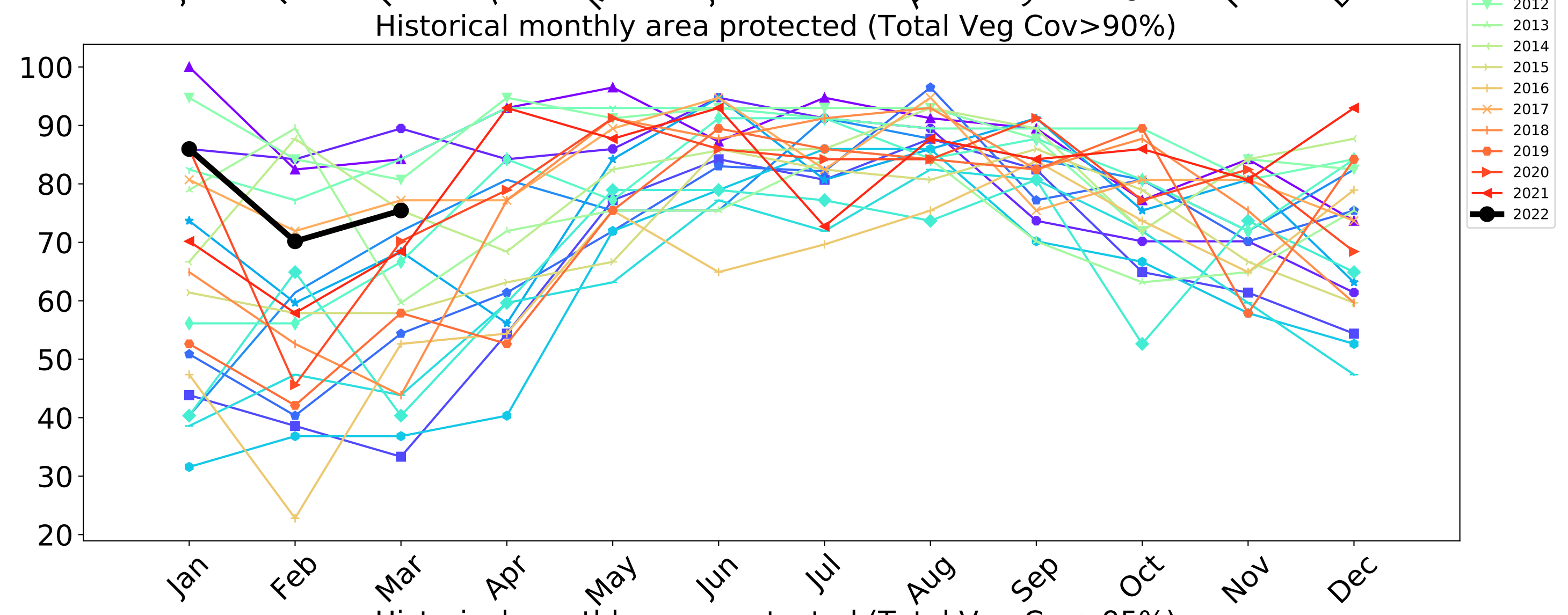
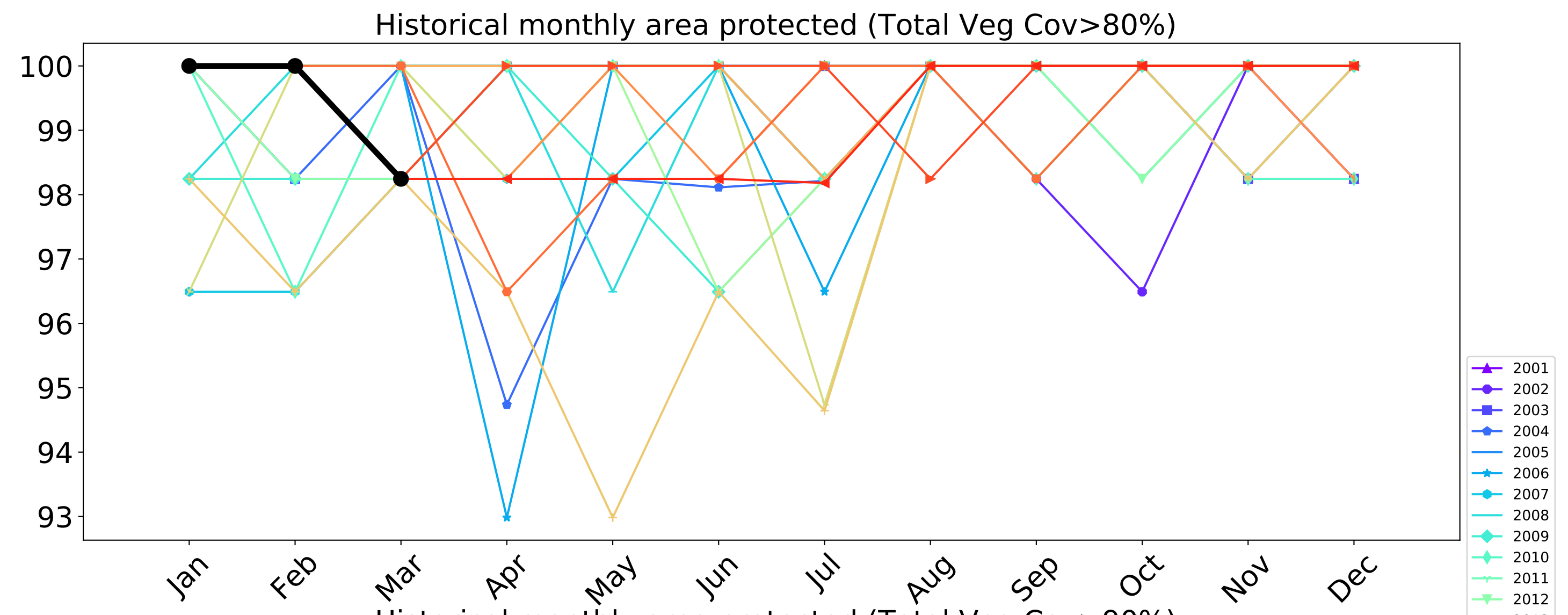
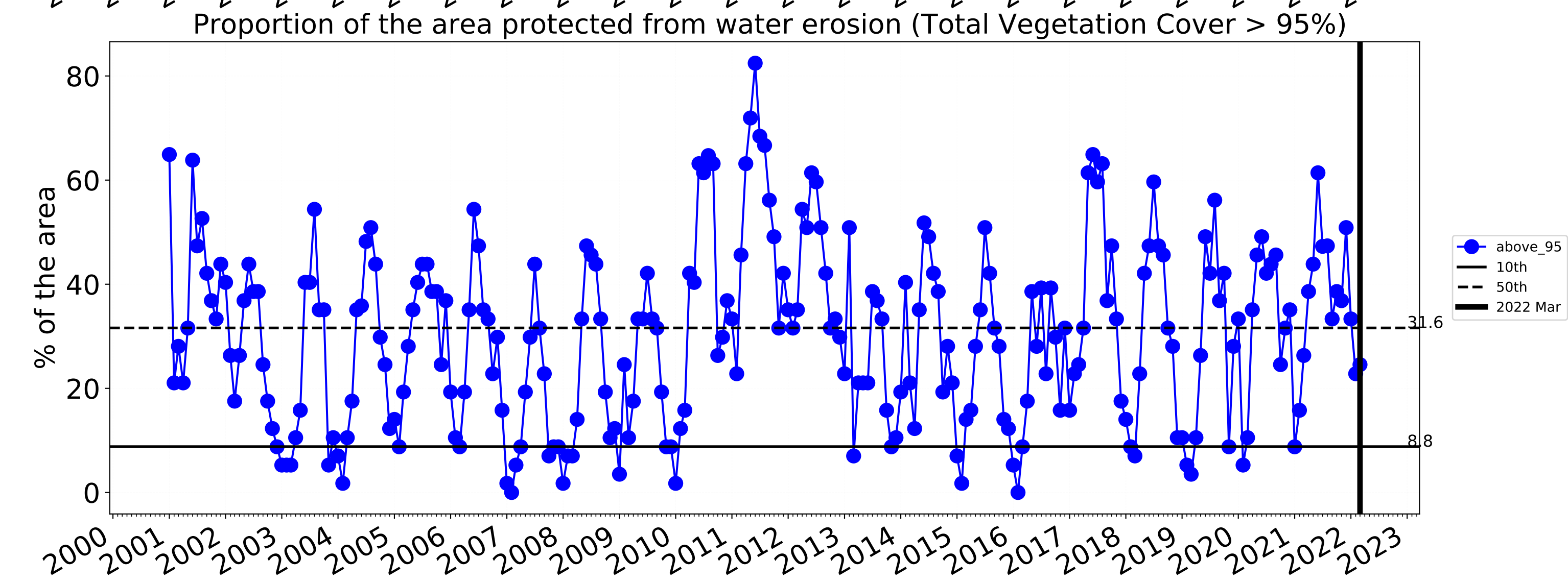
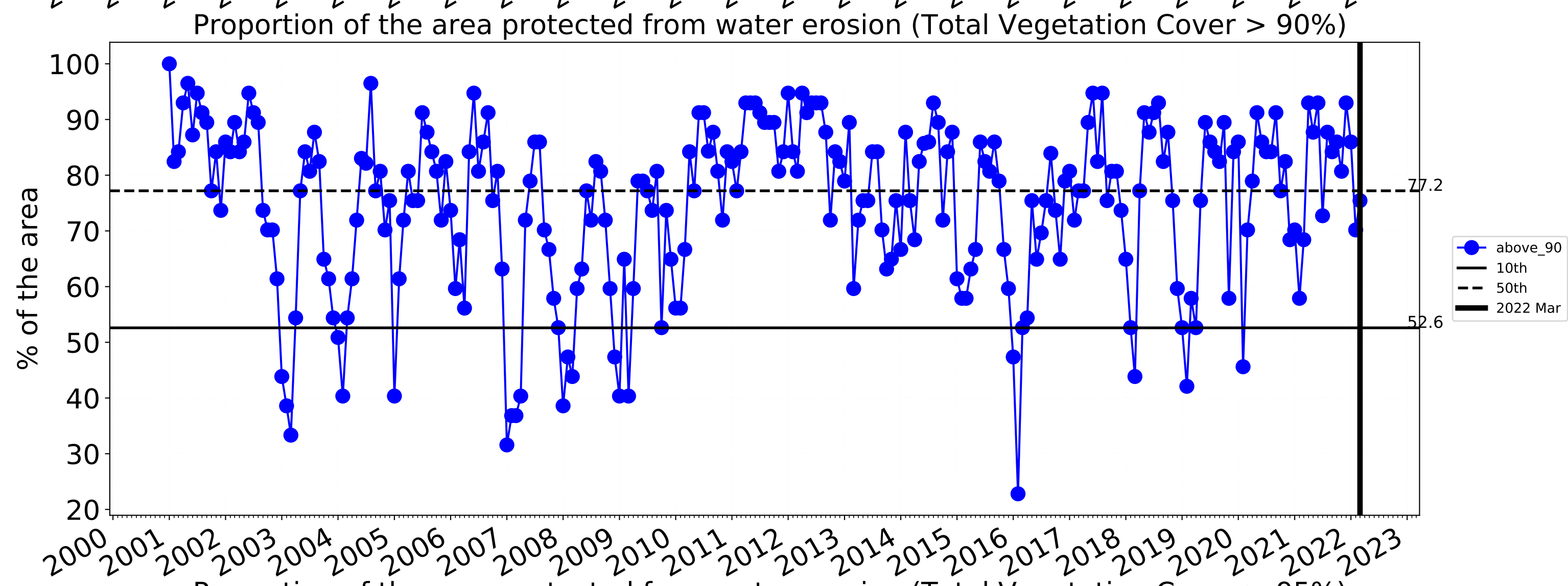
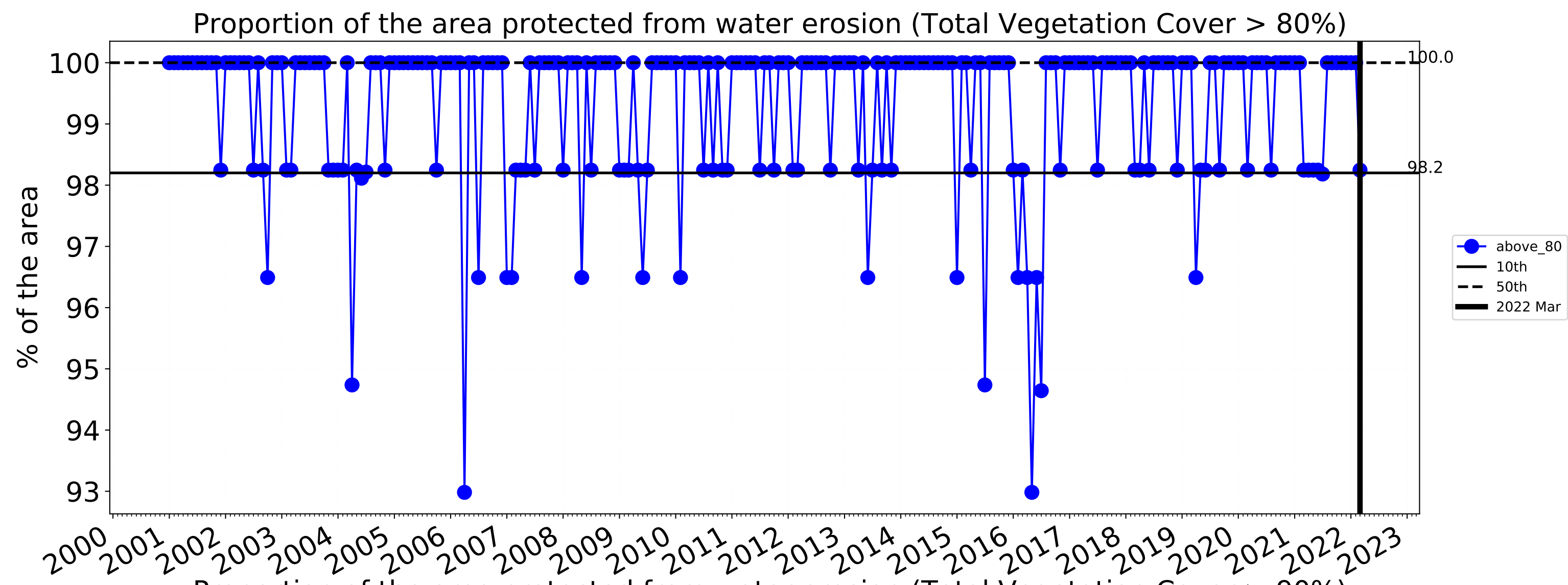
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

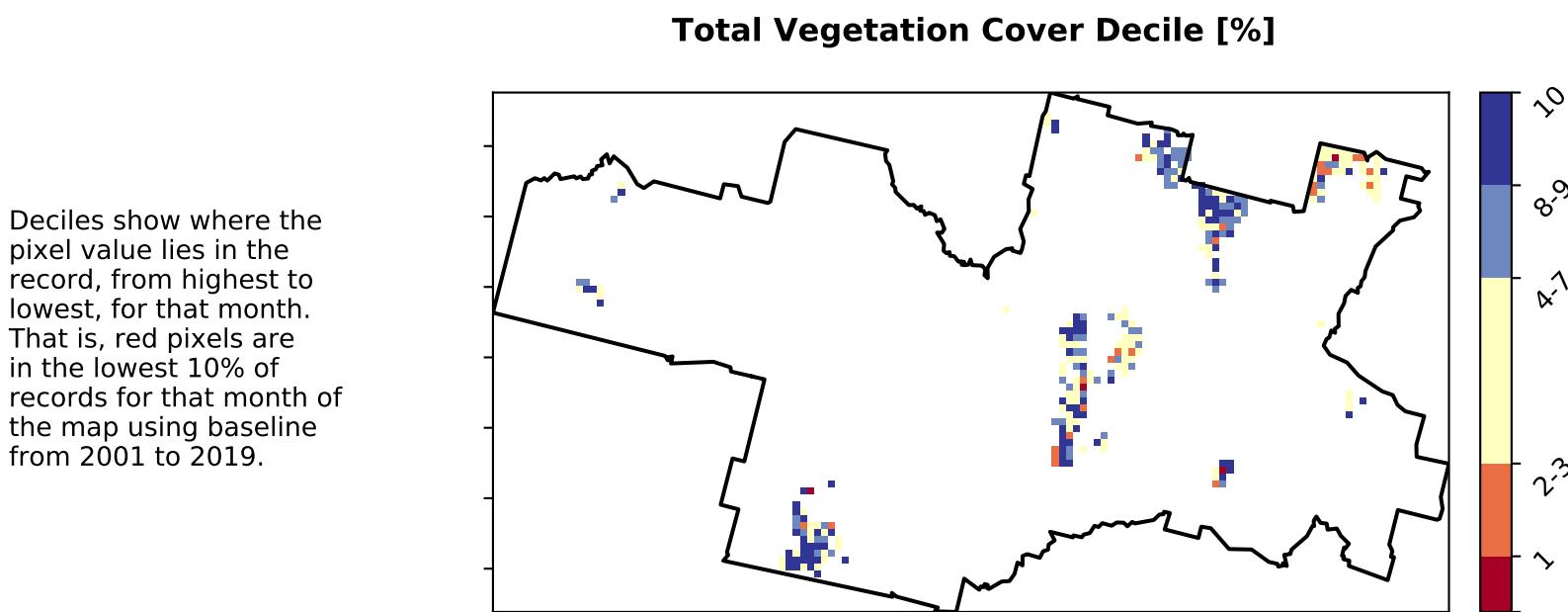
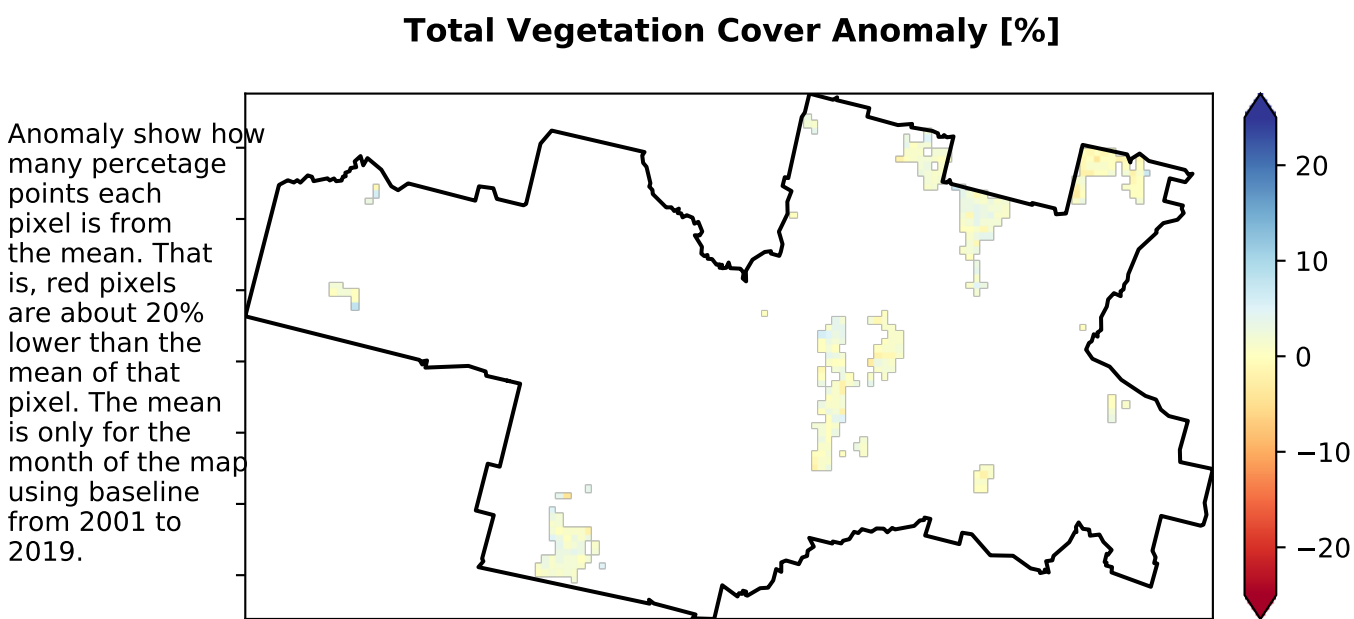
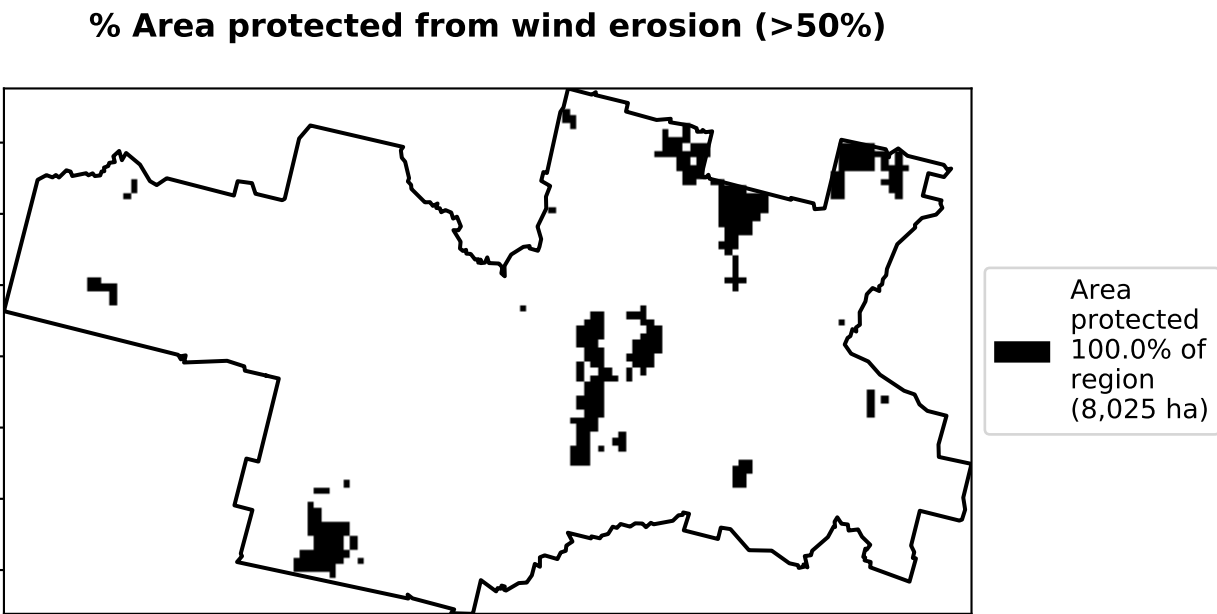
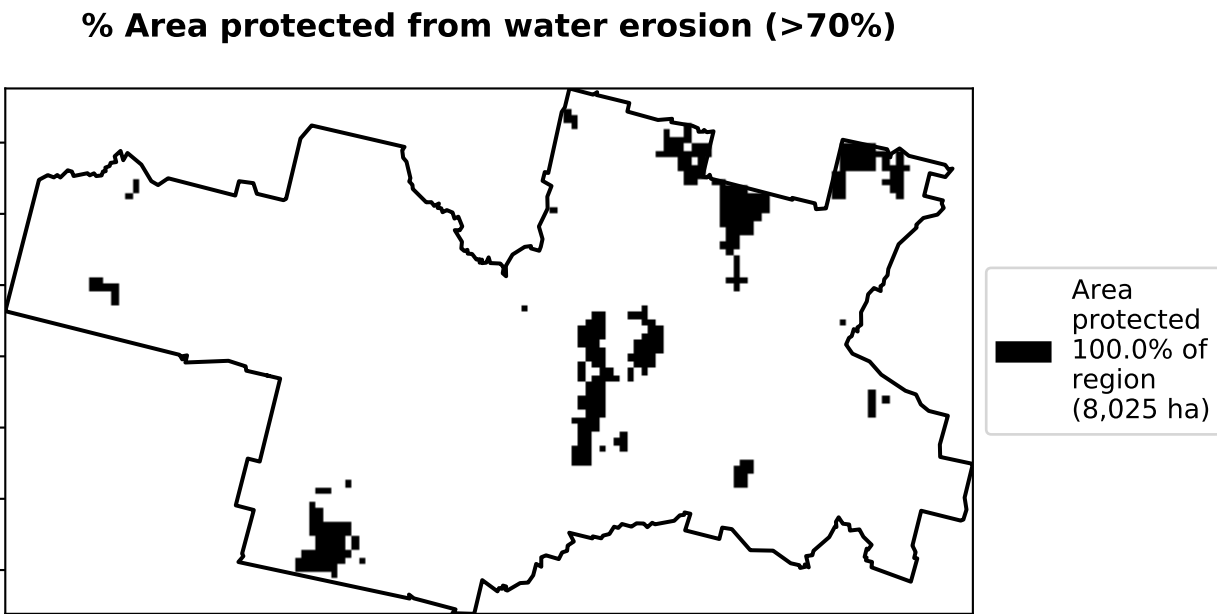
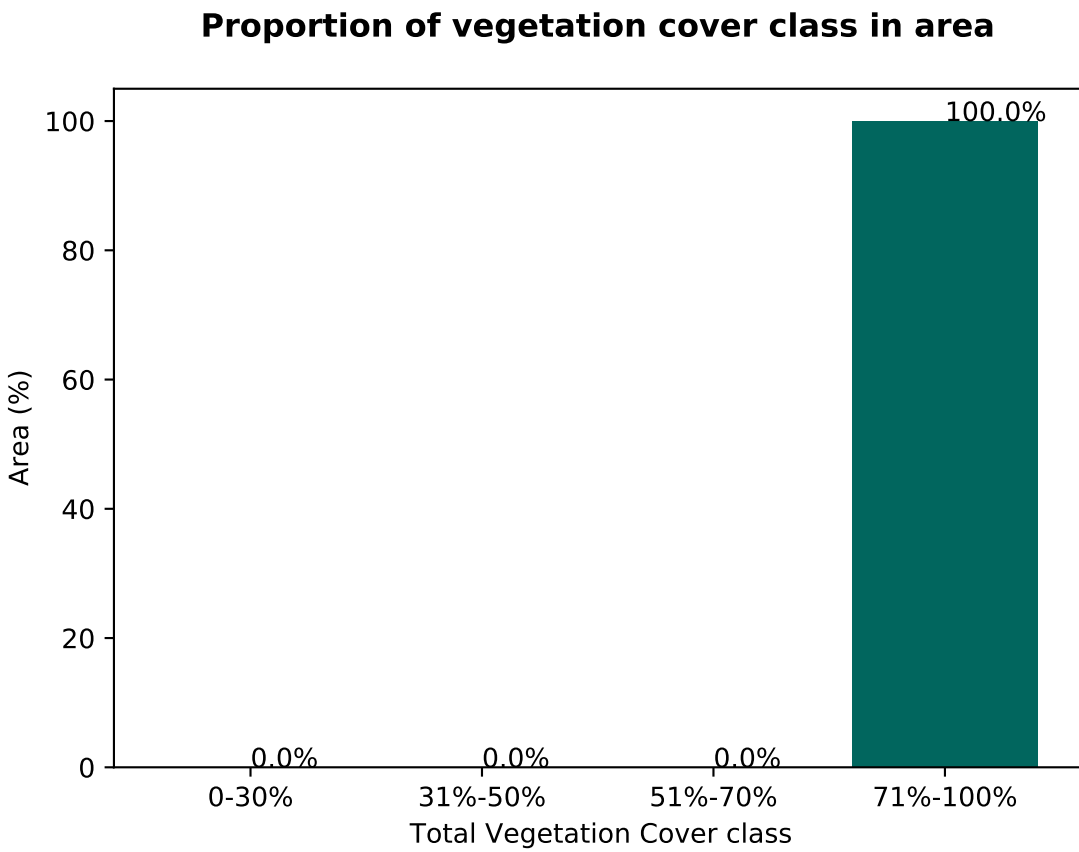
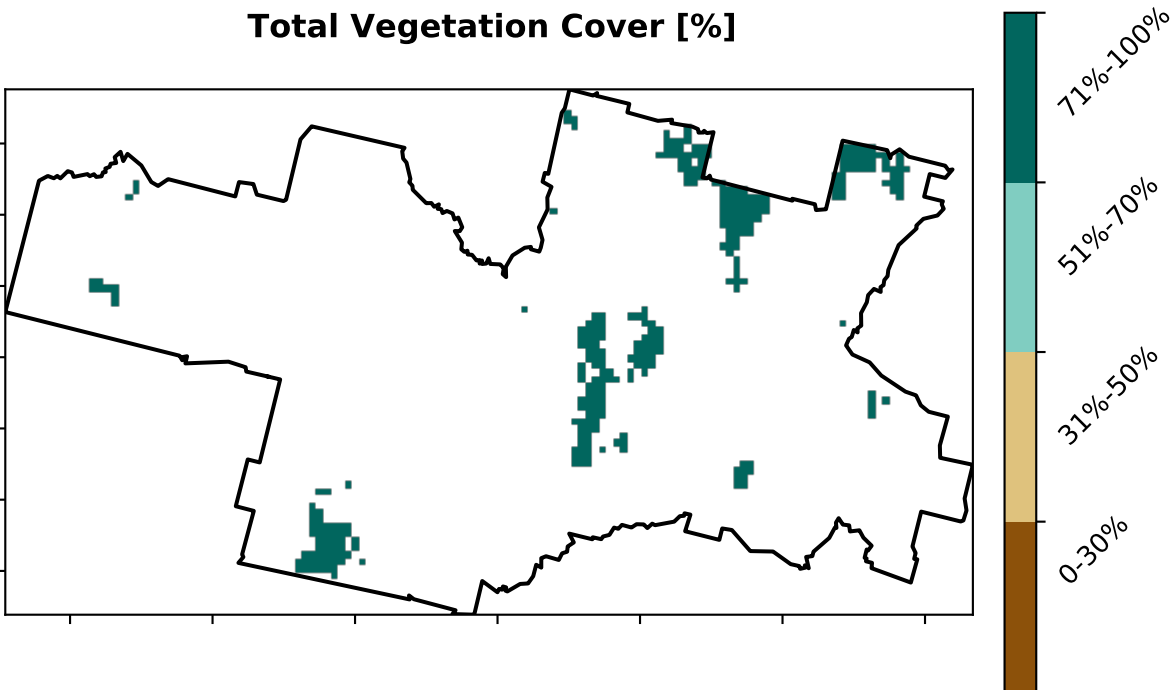
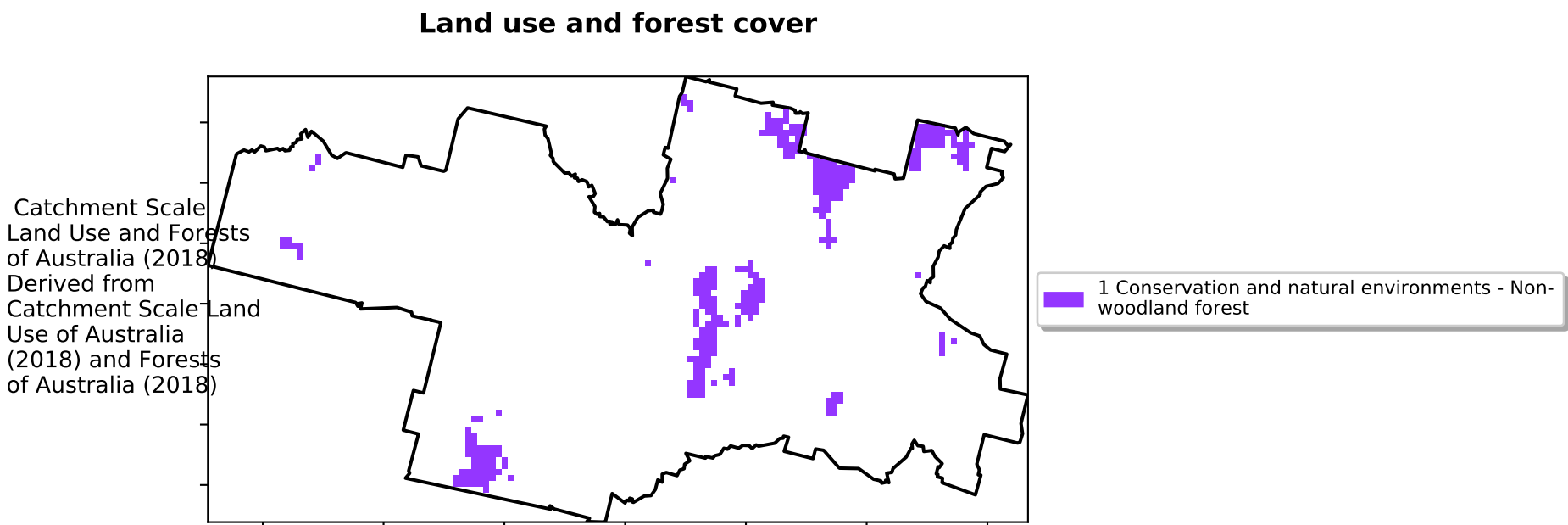




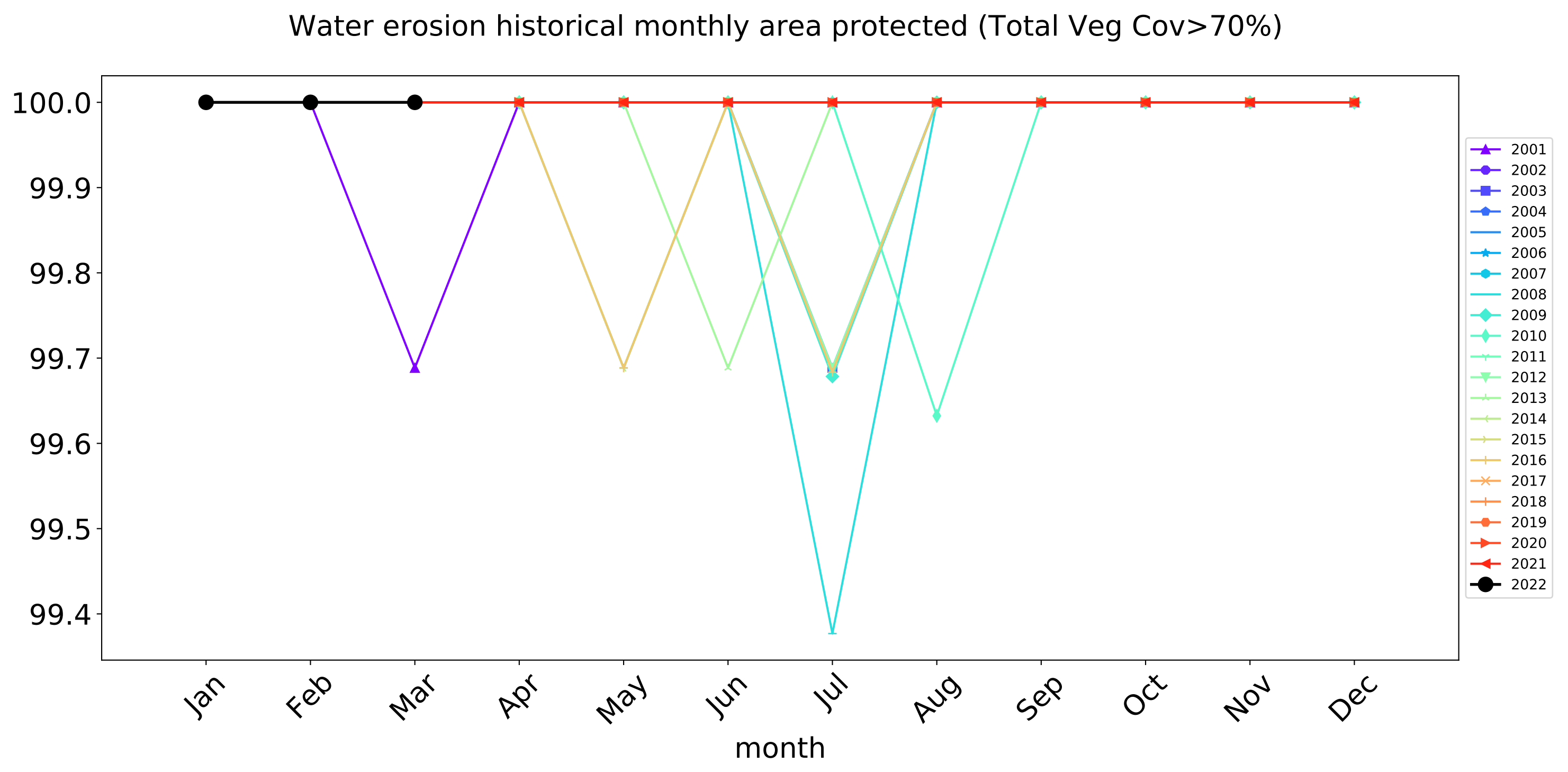
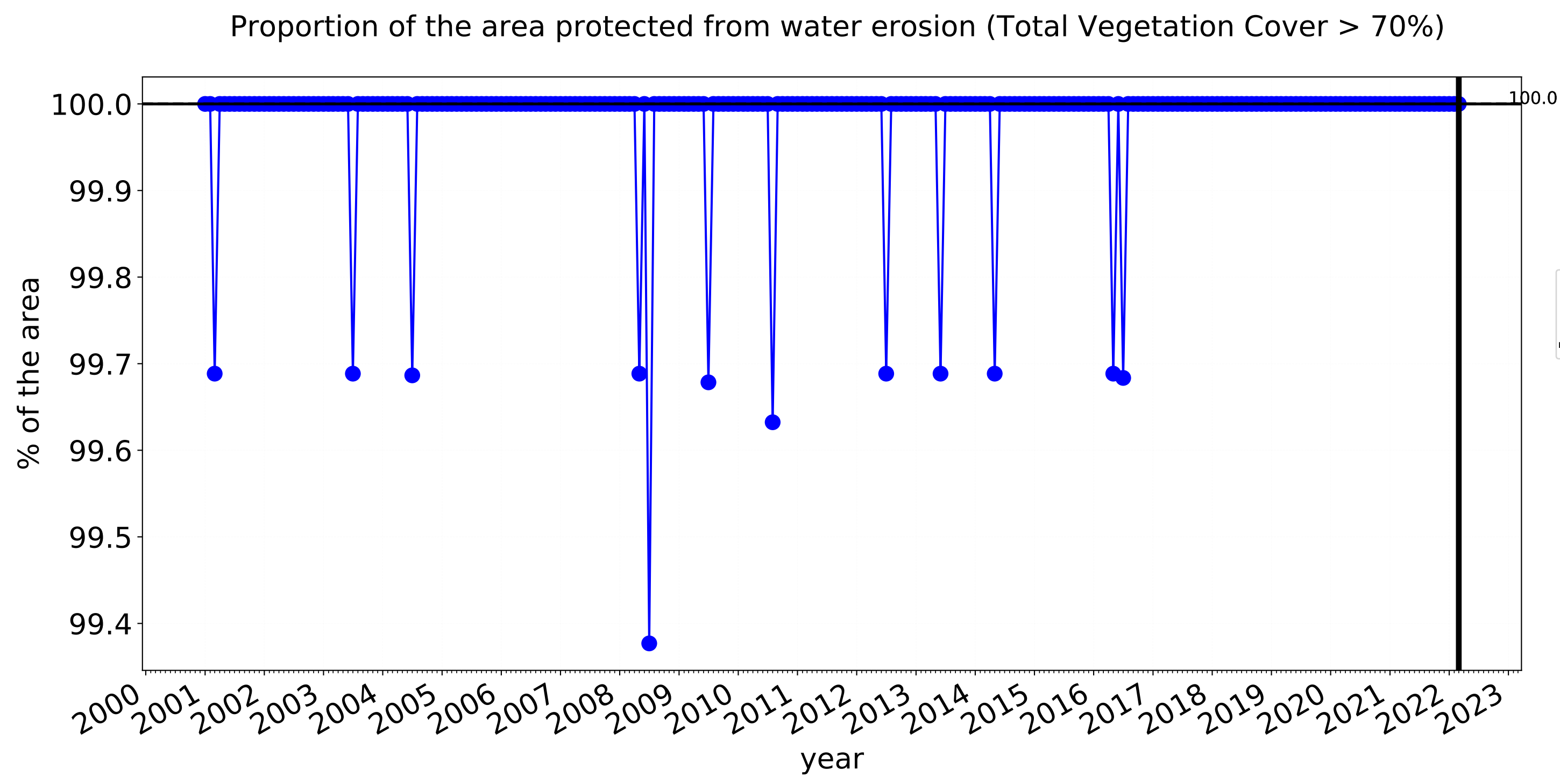
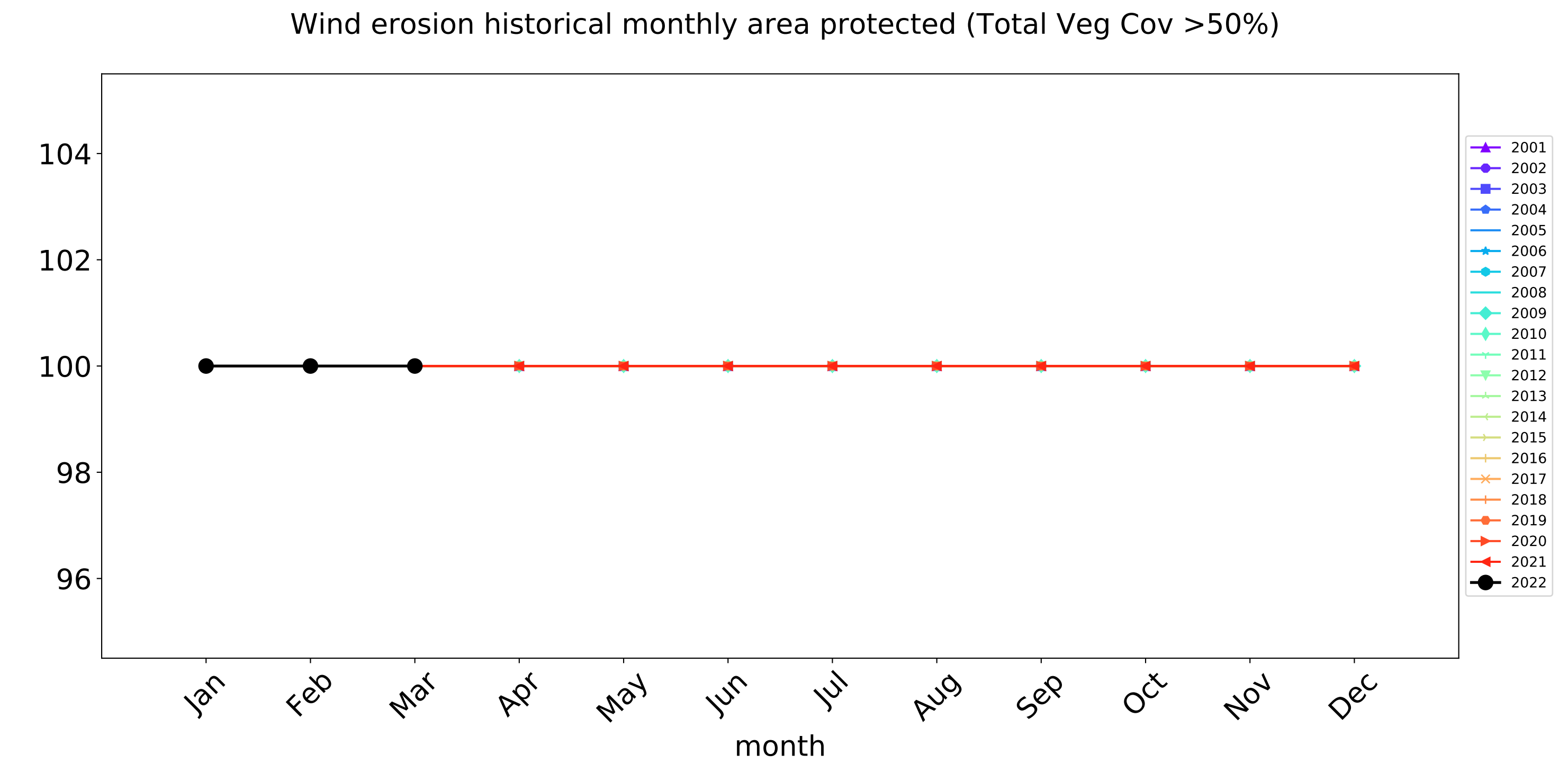
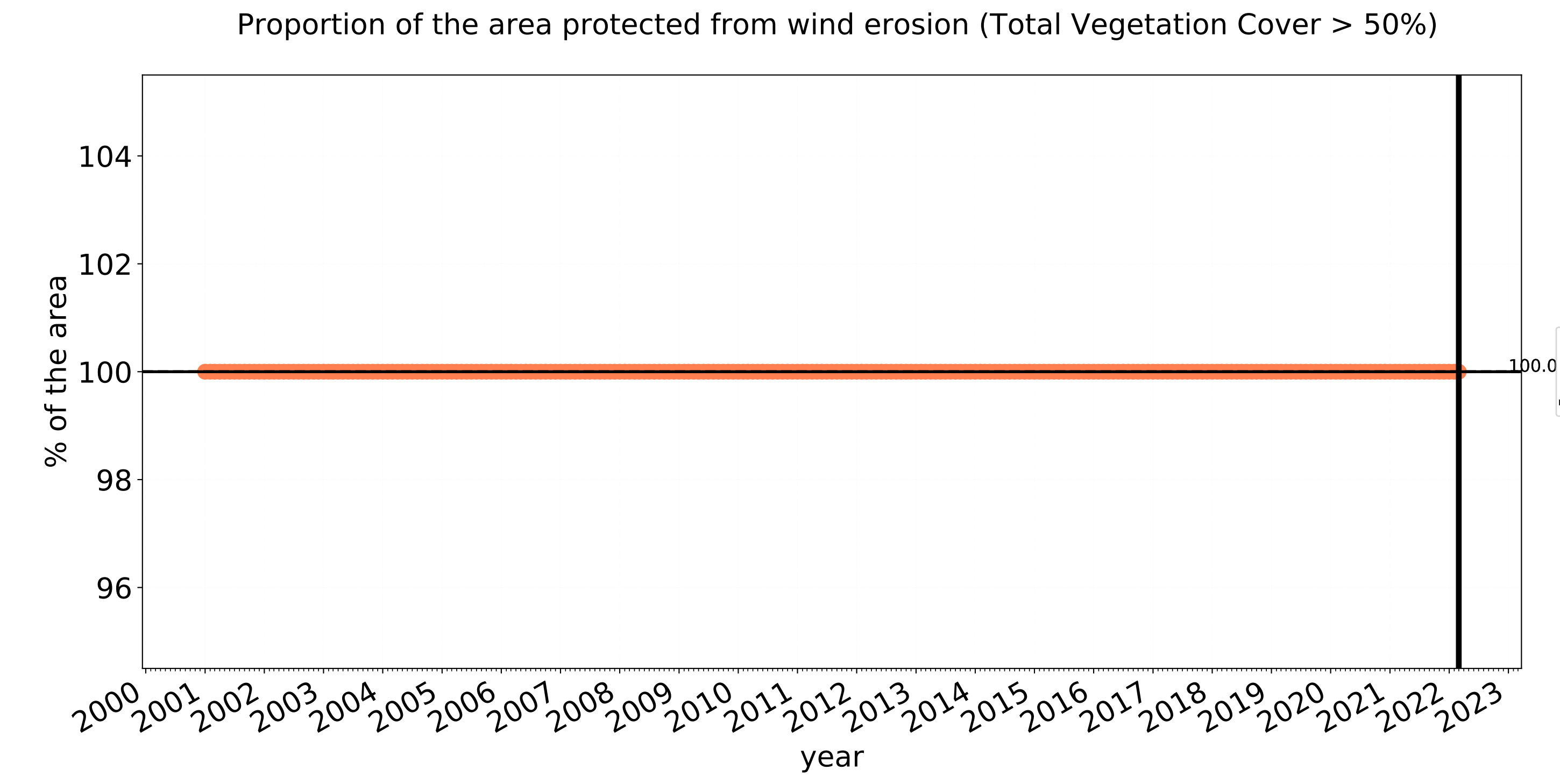




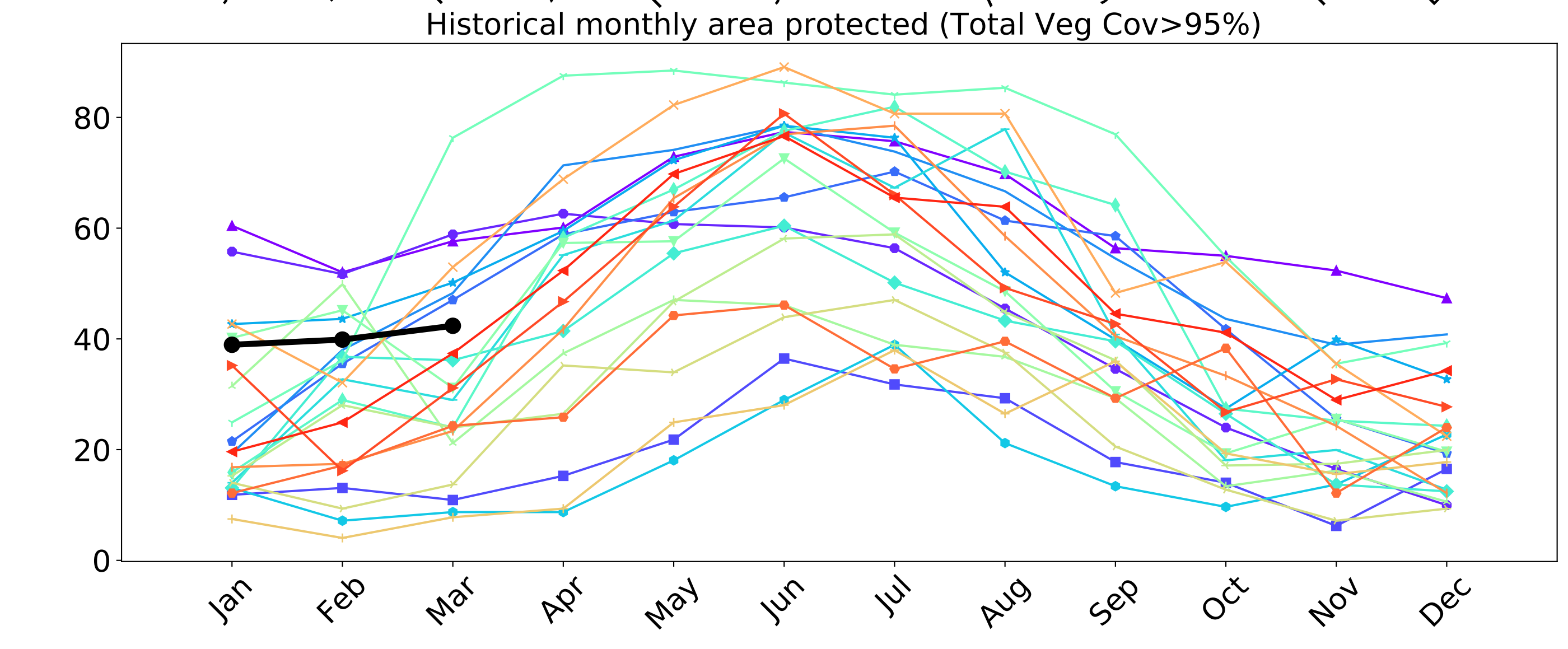
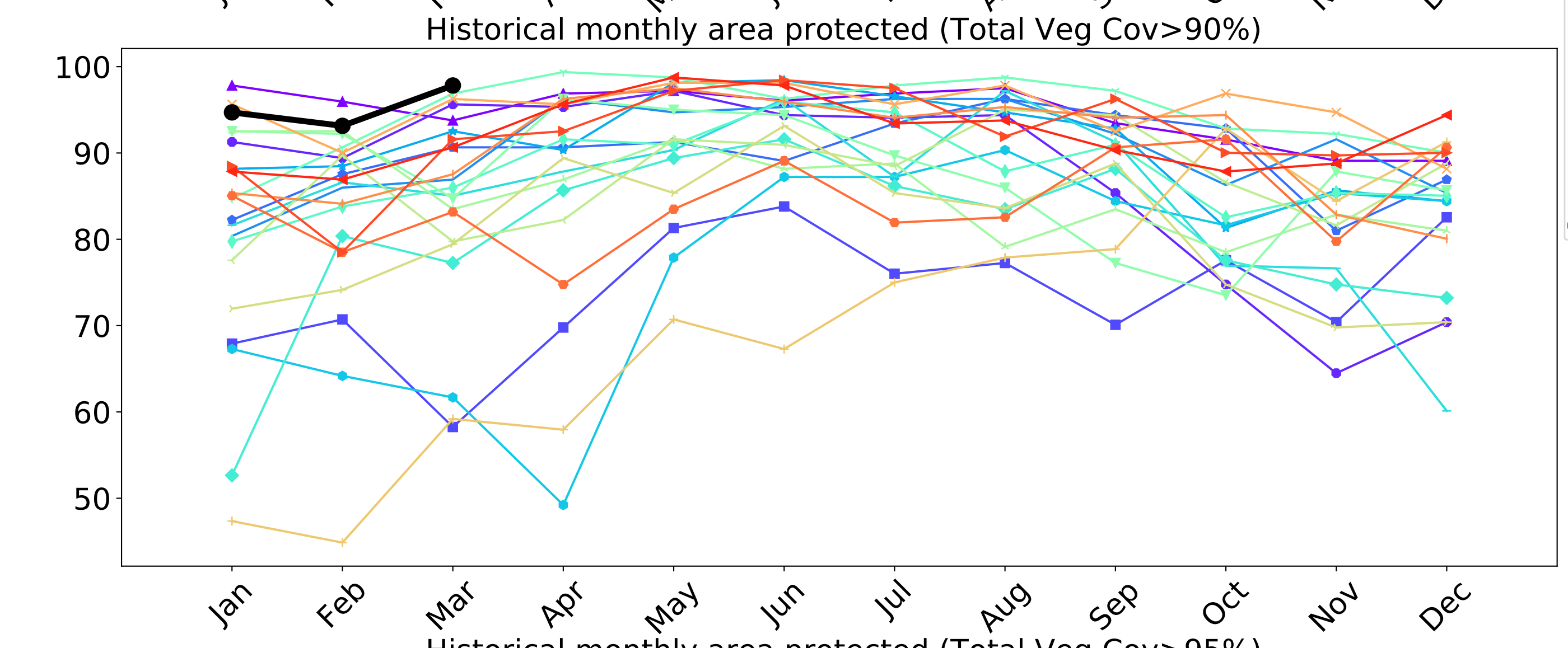
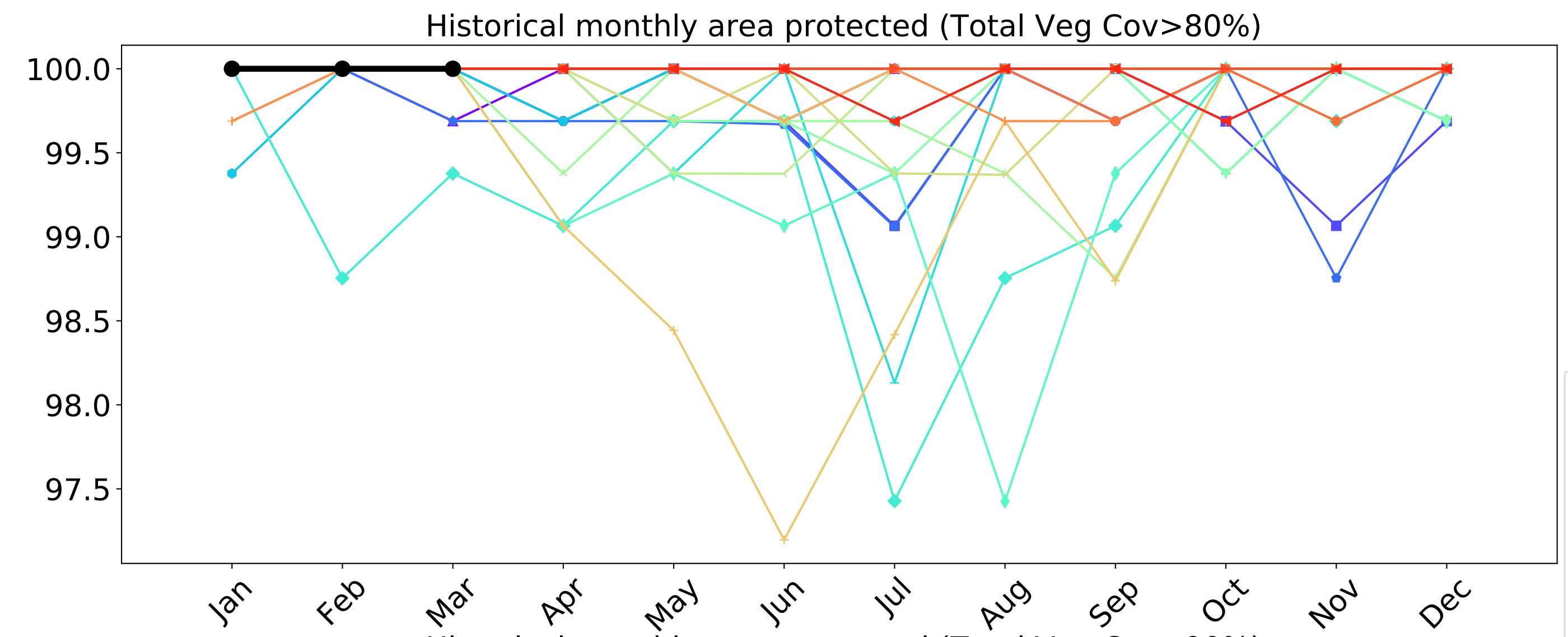
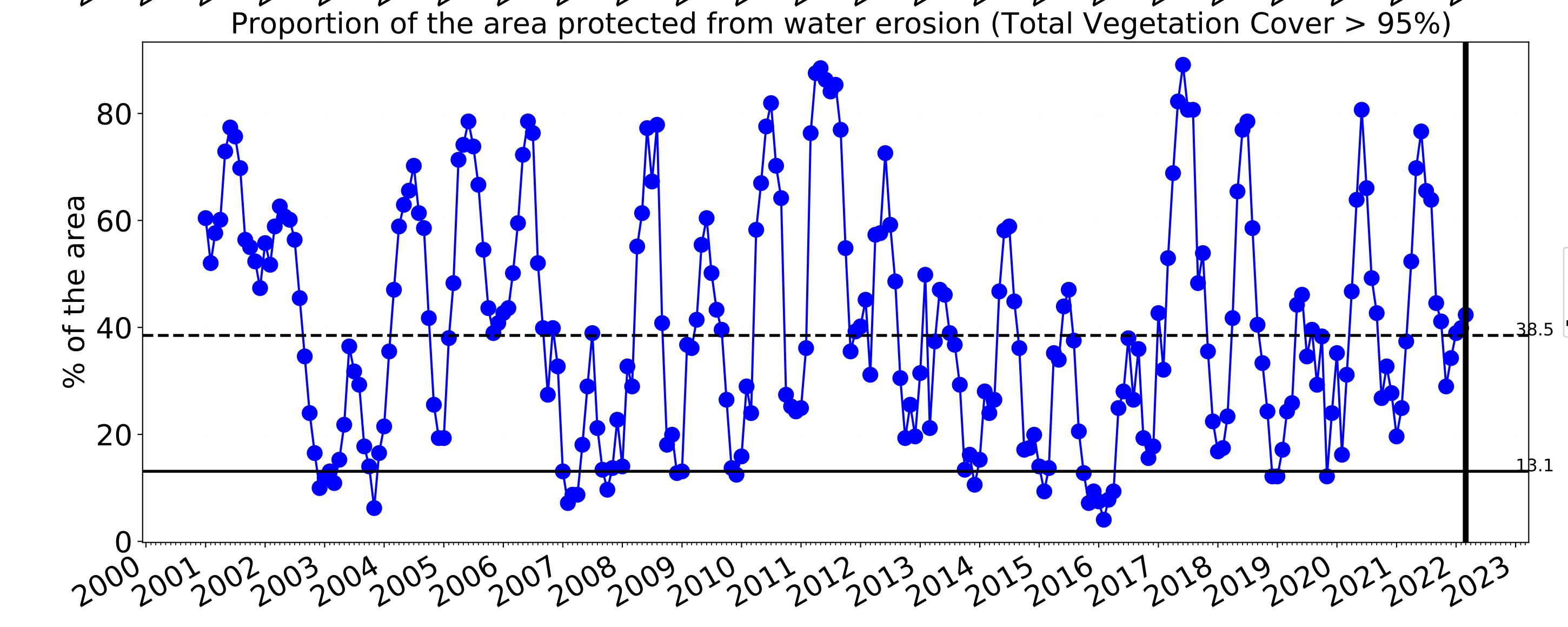
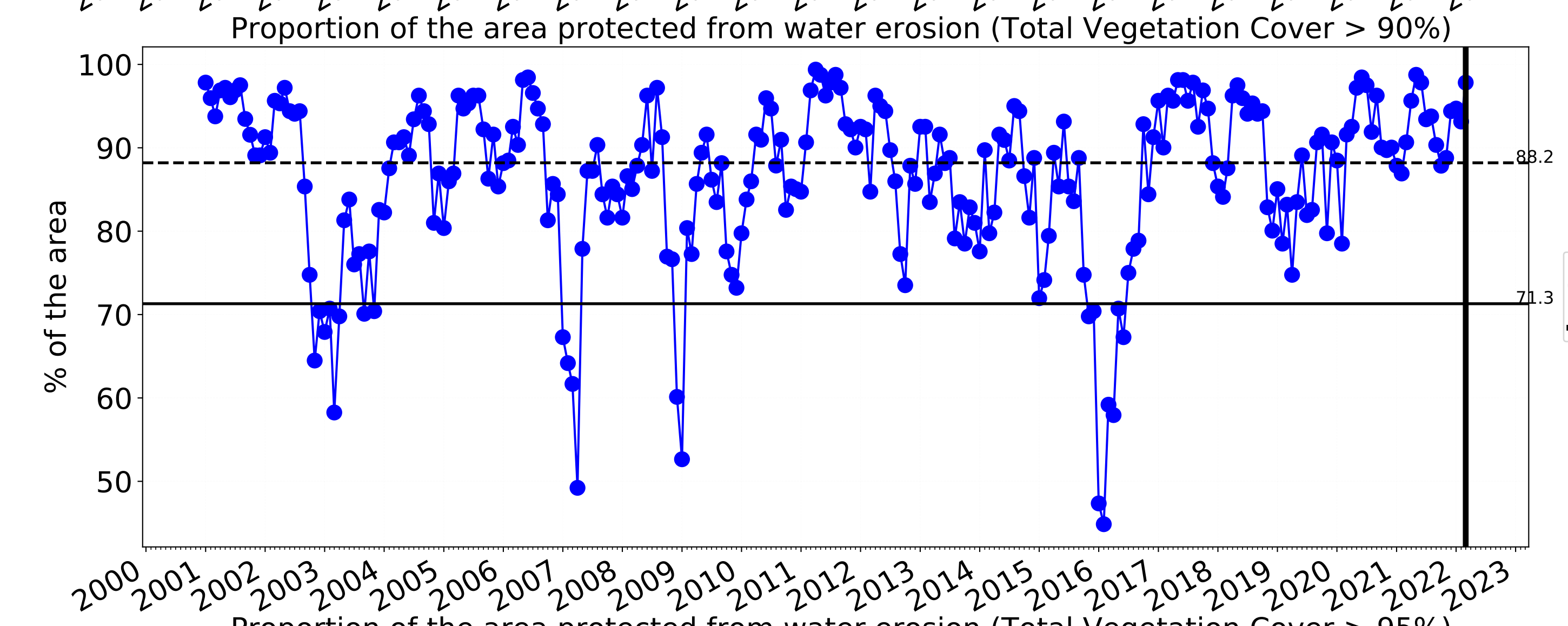
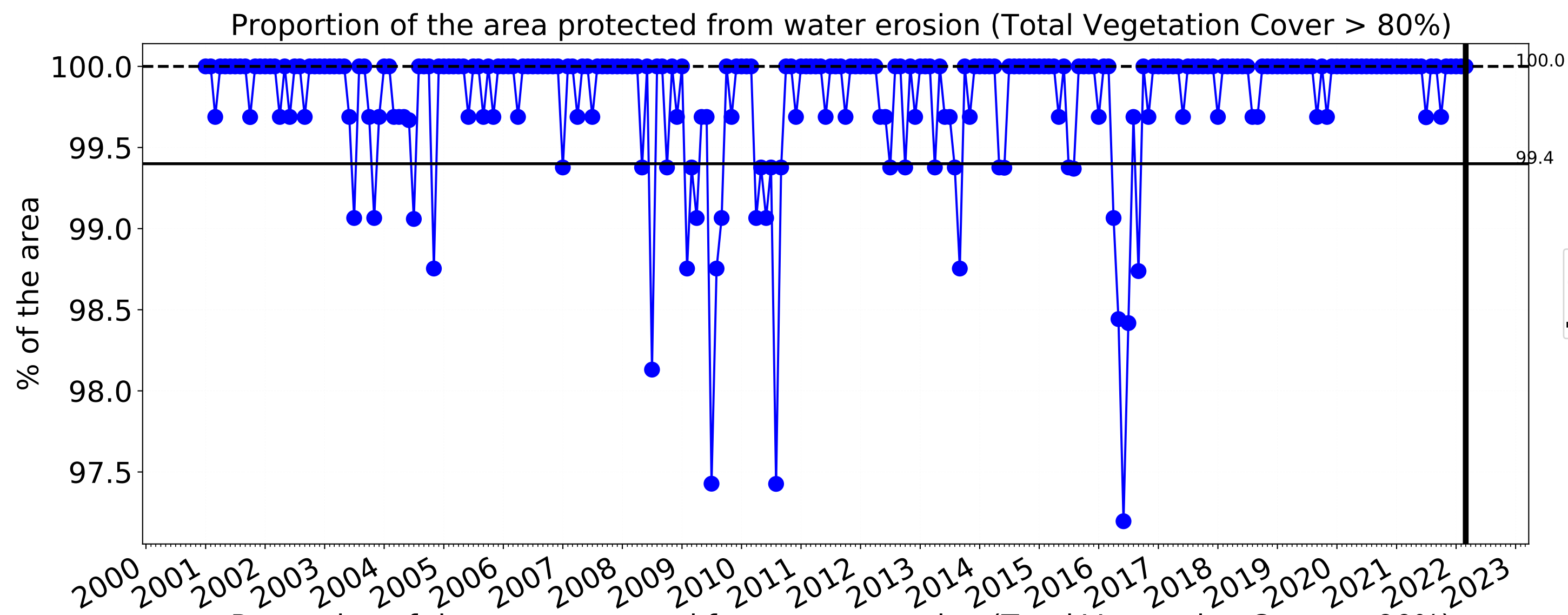
Conservation and natural environments Forest (non woodland)



Conservation and natural environments Forest (non woodland) timeseries



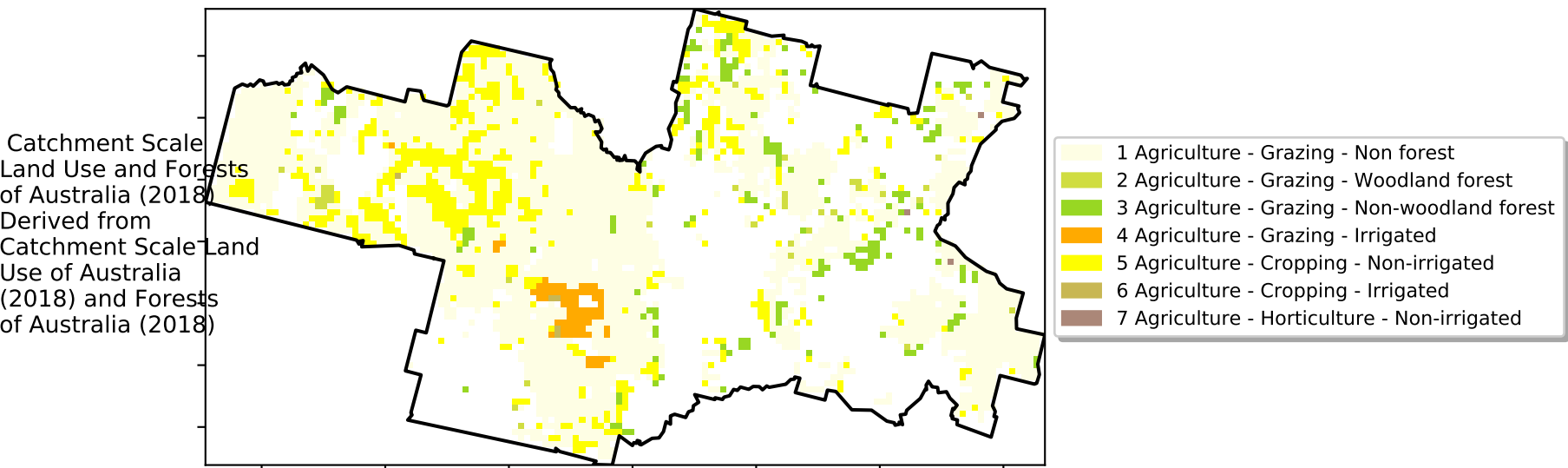




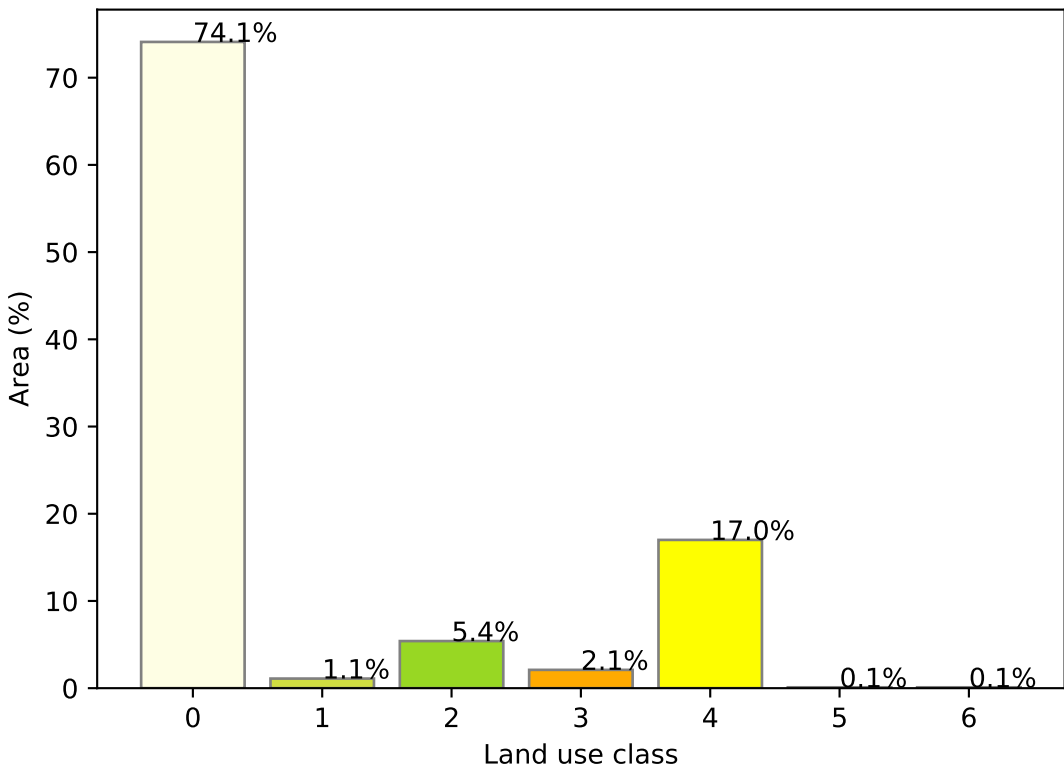


# Agriculture

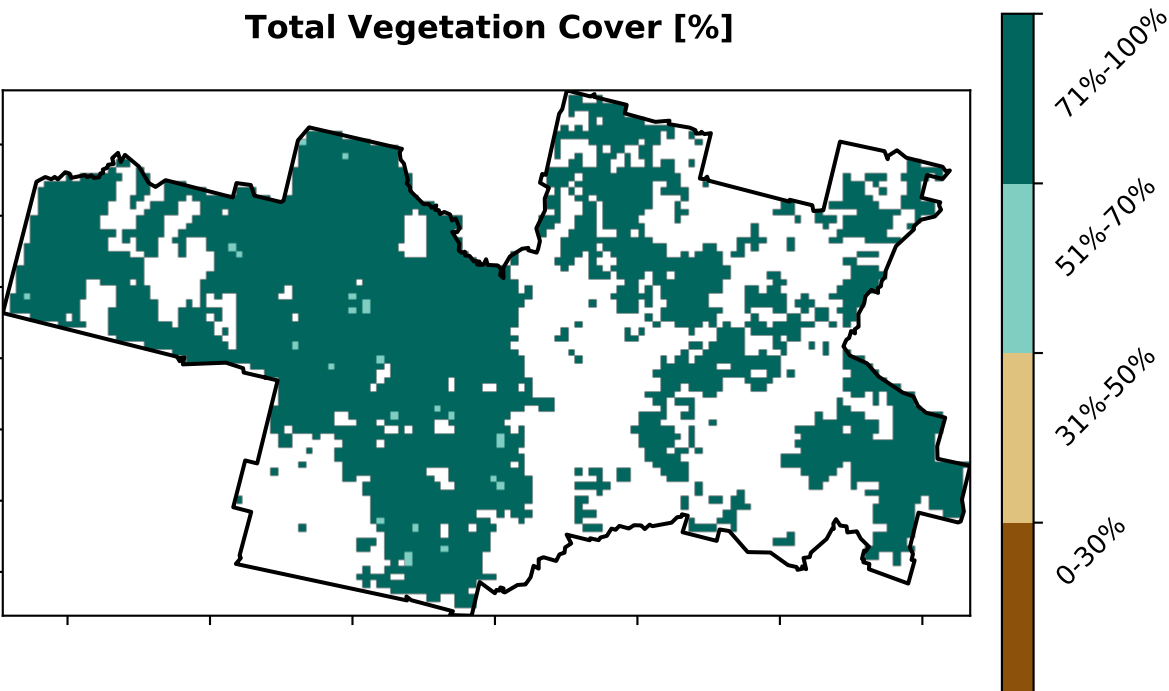
Land use and forest cover



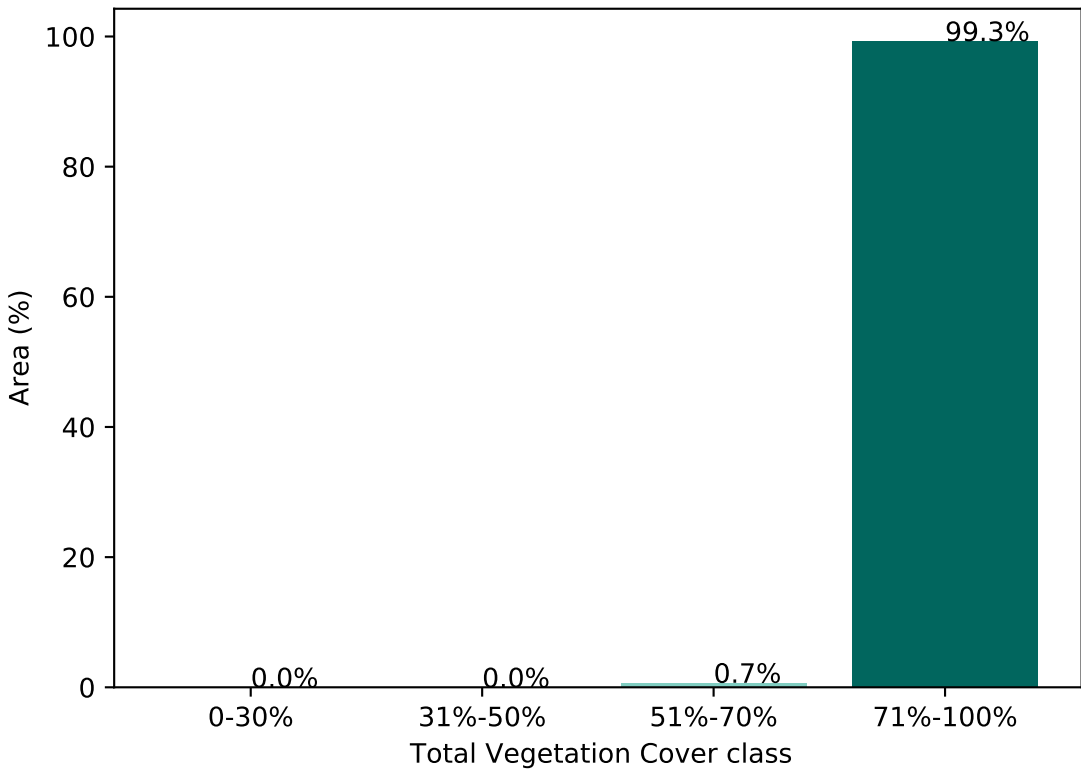
Proportion of each land class in area



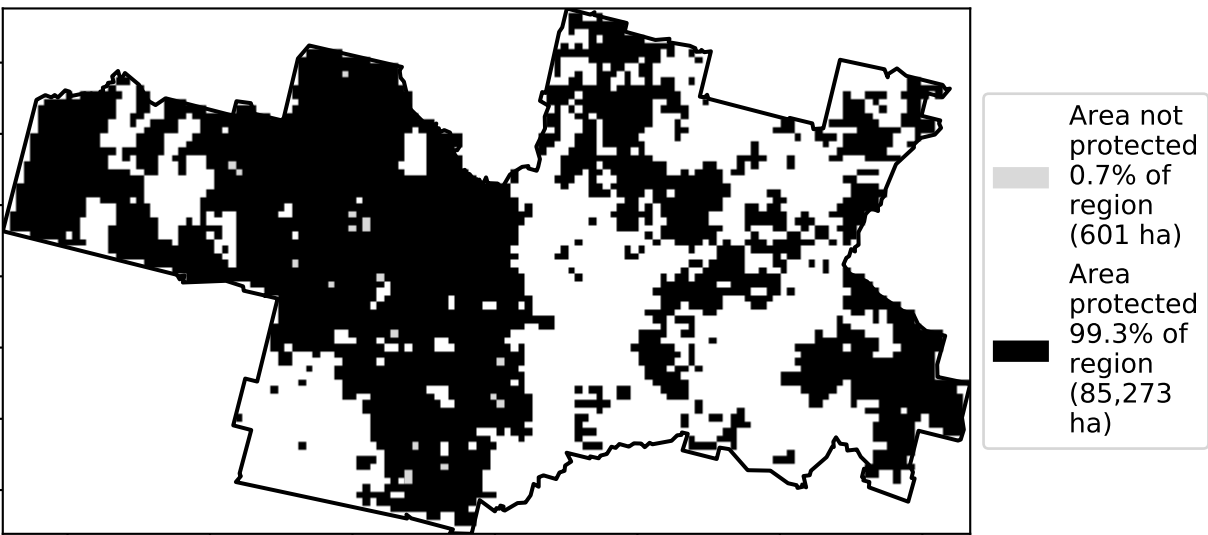
Total Vegetation Cover [%]



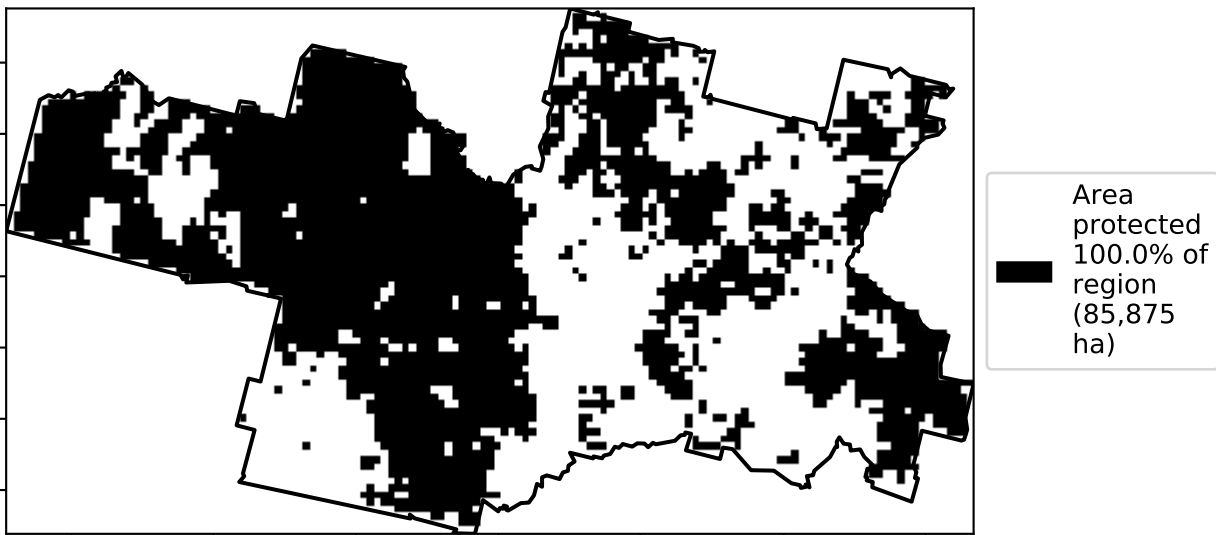
Proportion of vegetation cover class in area



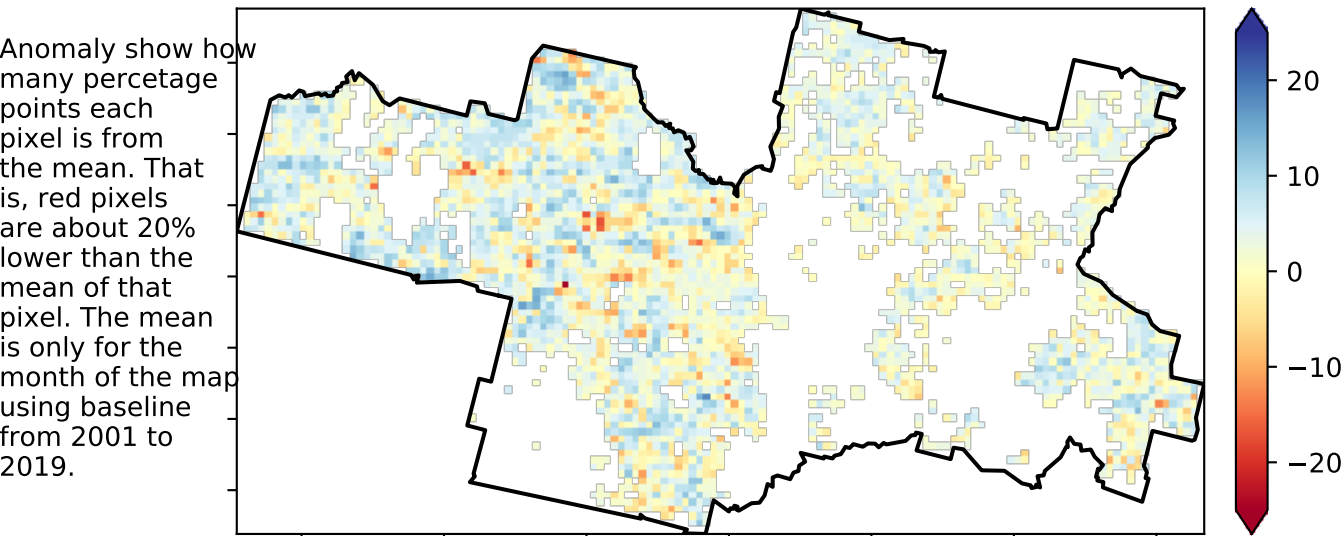
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

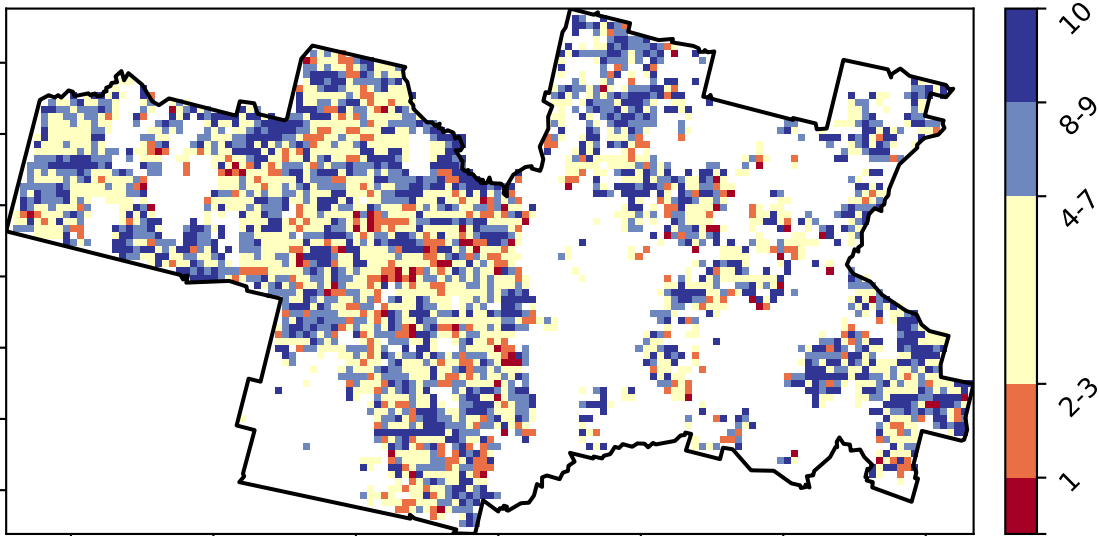


Total Vegetation Cover Anomaly [%]



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.



Ecosystem Research Infrastructure

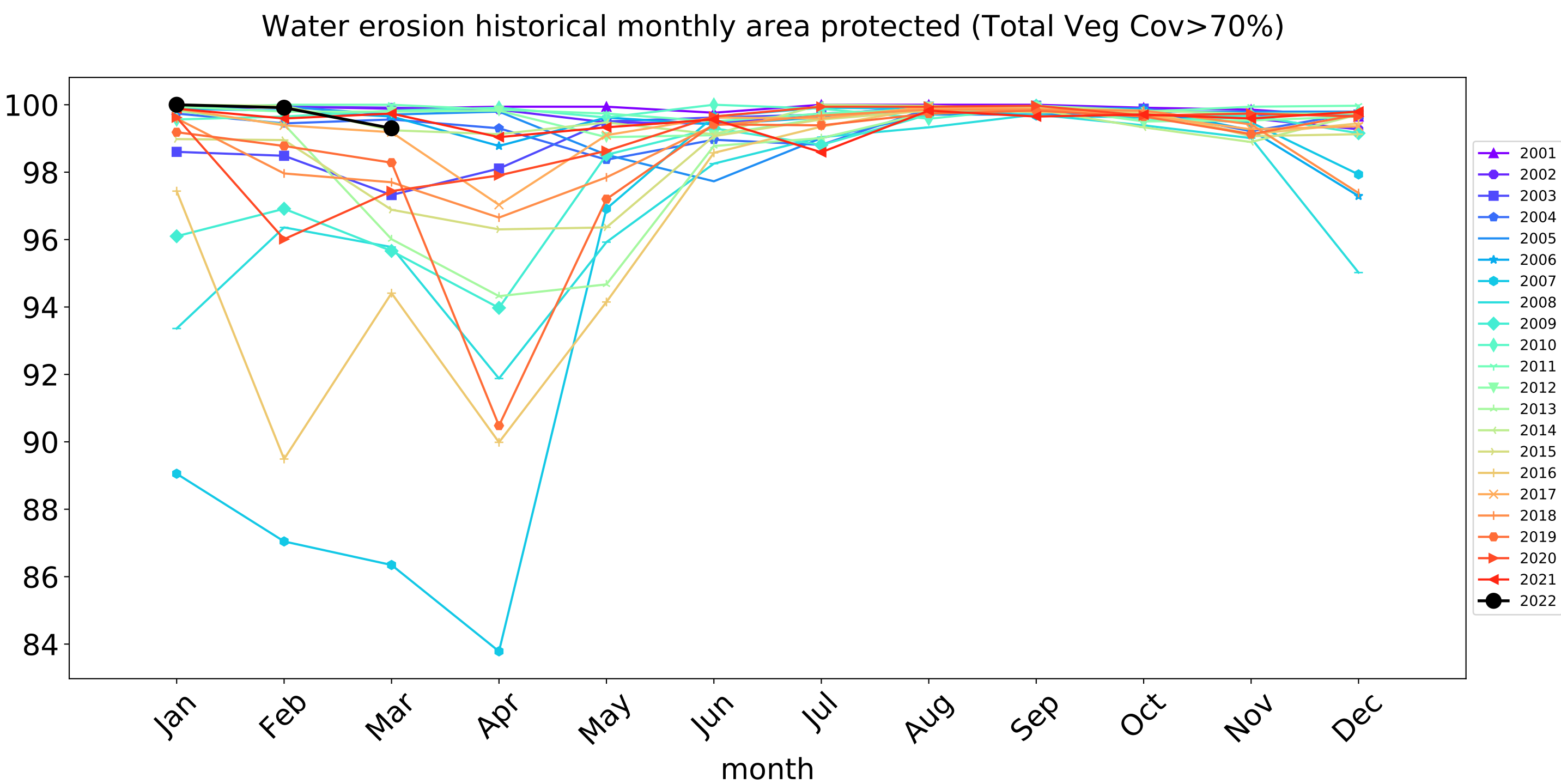
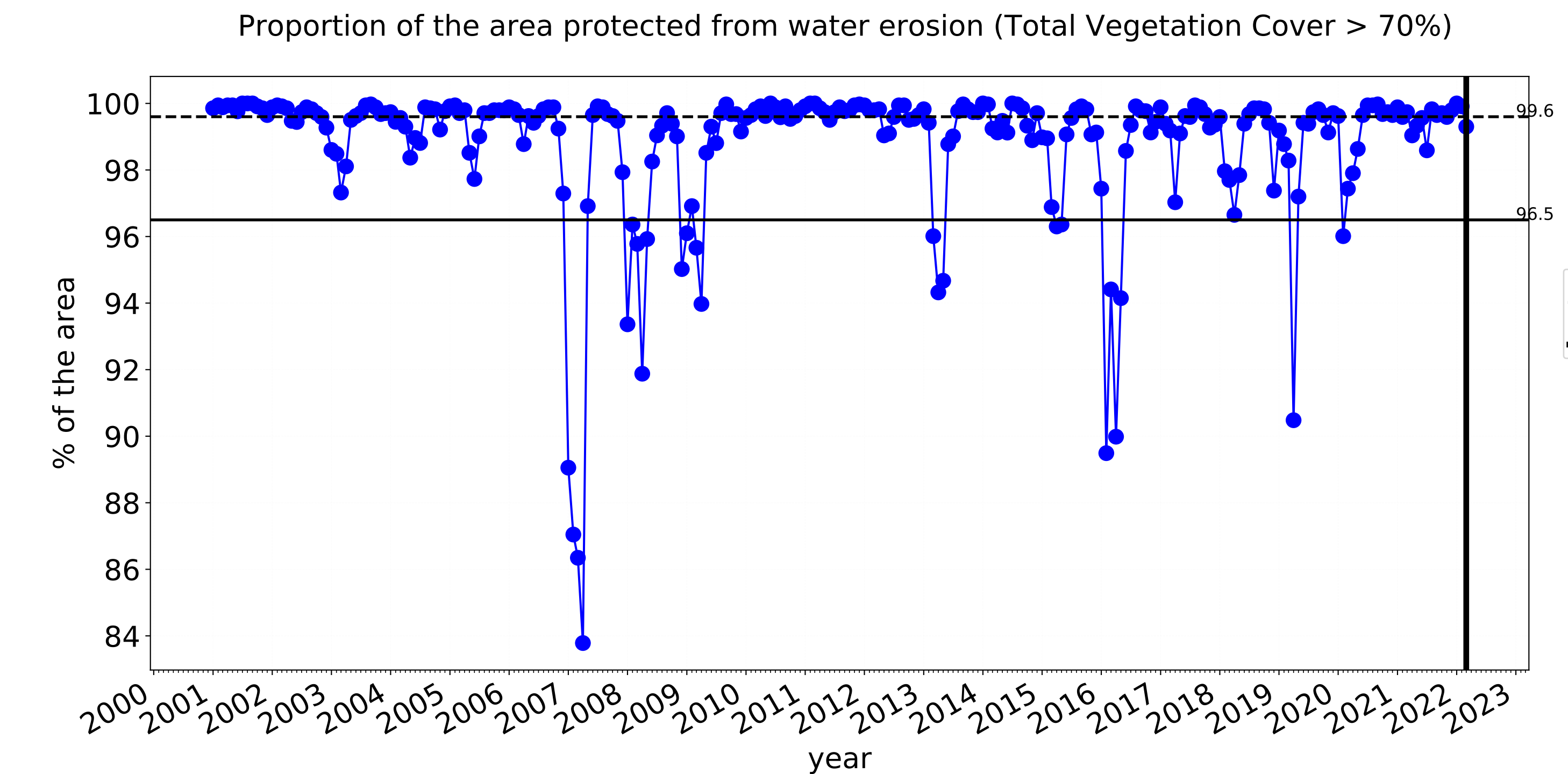
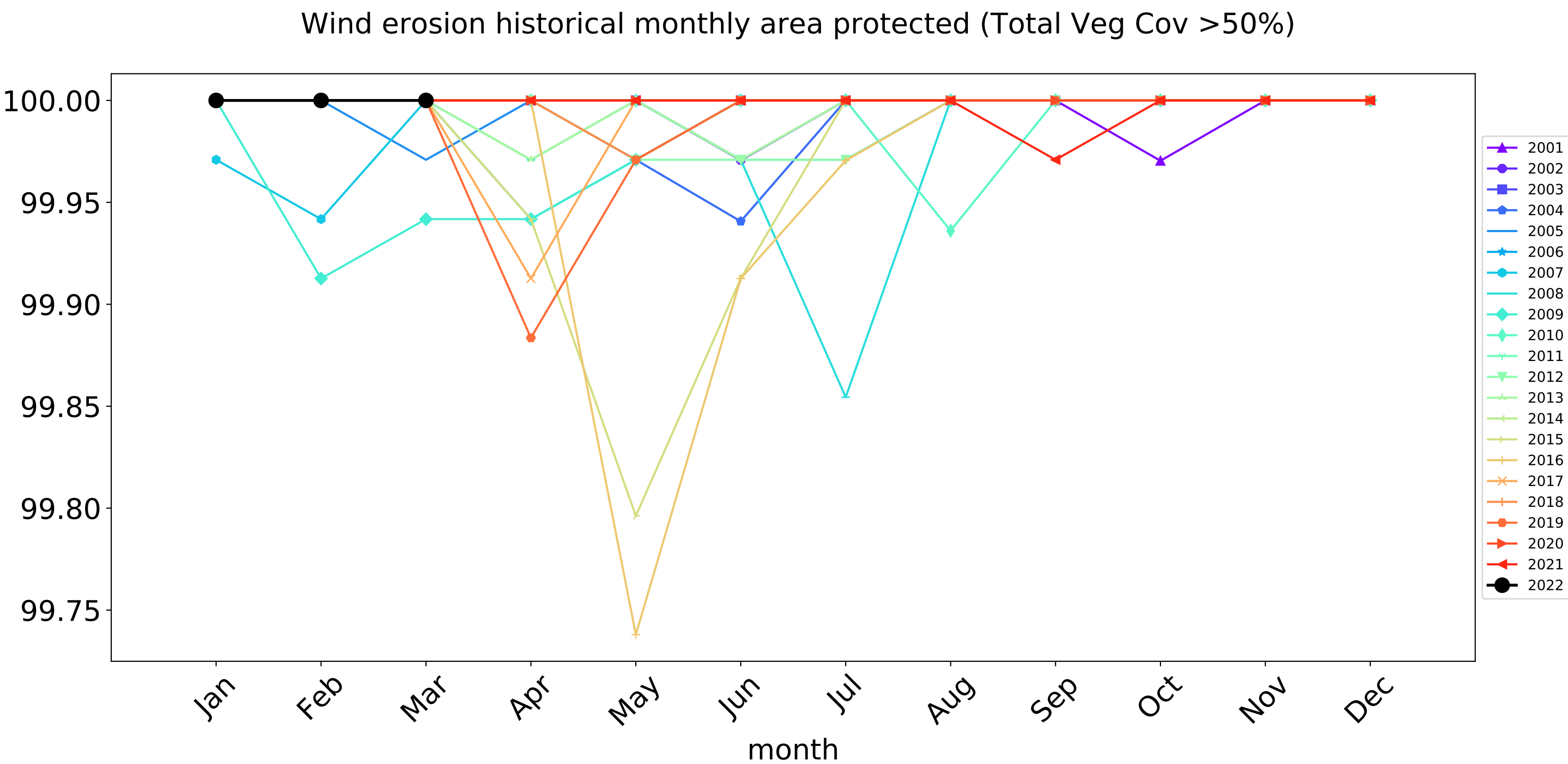
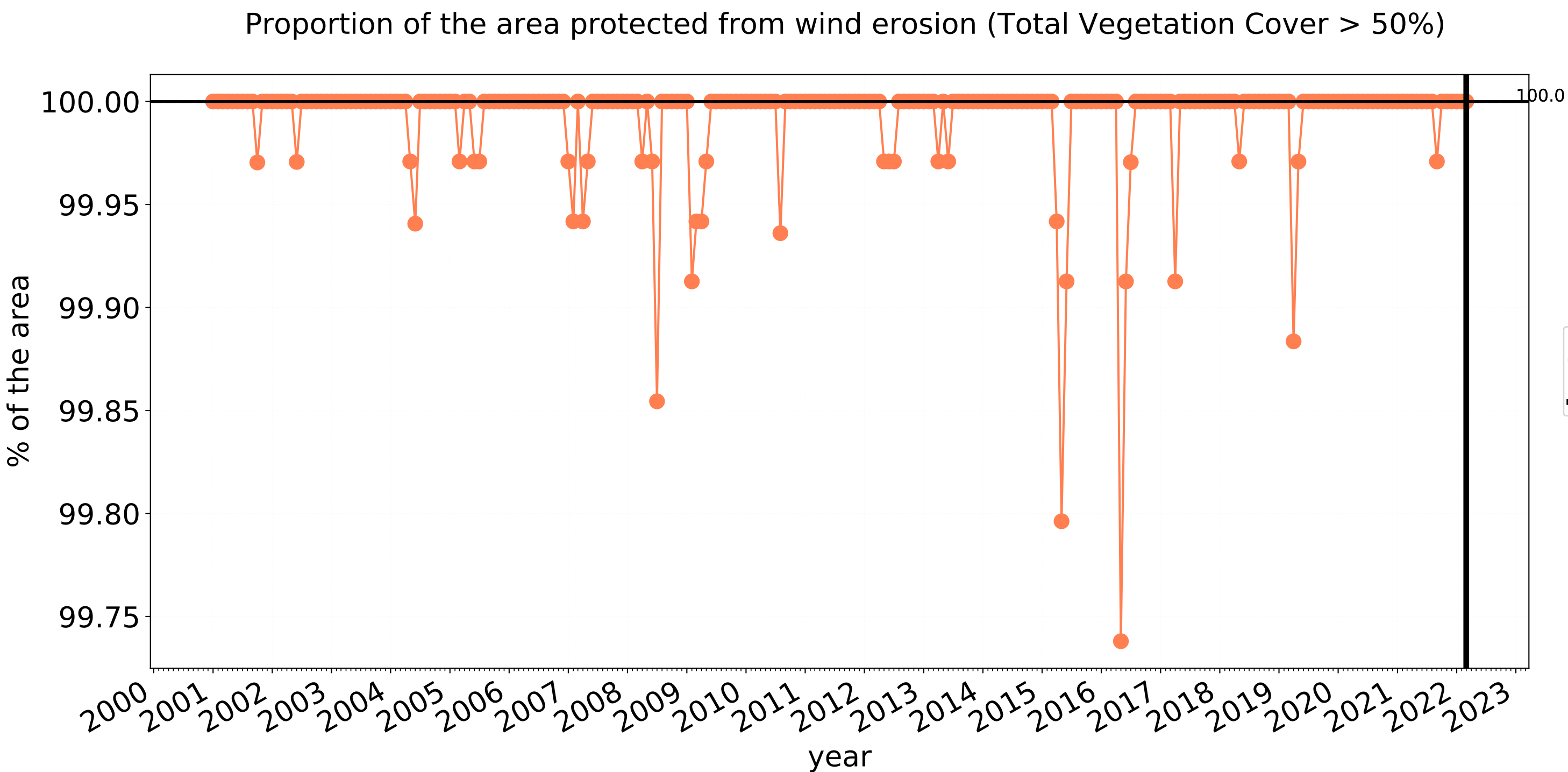


National Landcare Programme





Agriculture timeseries



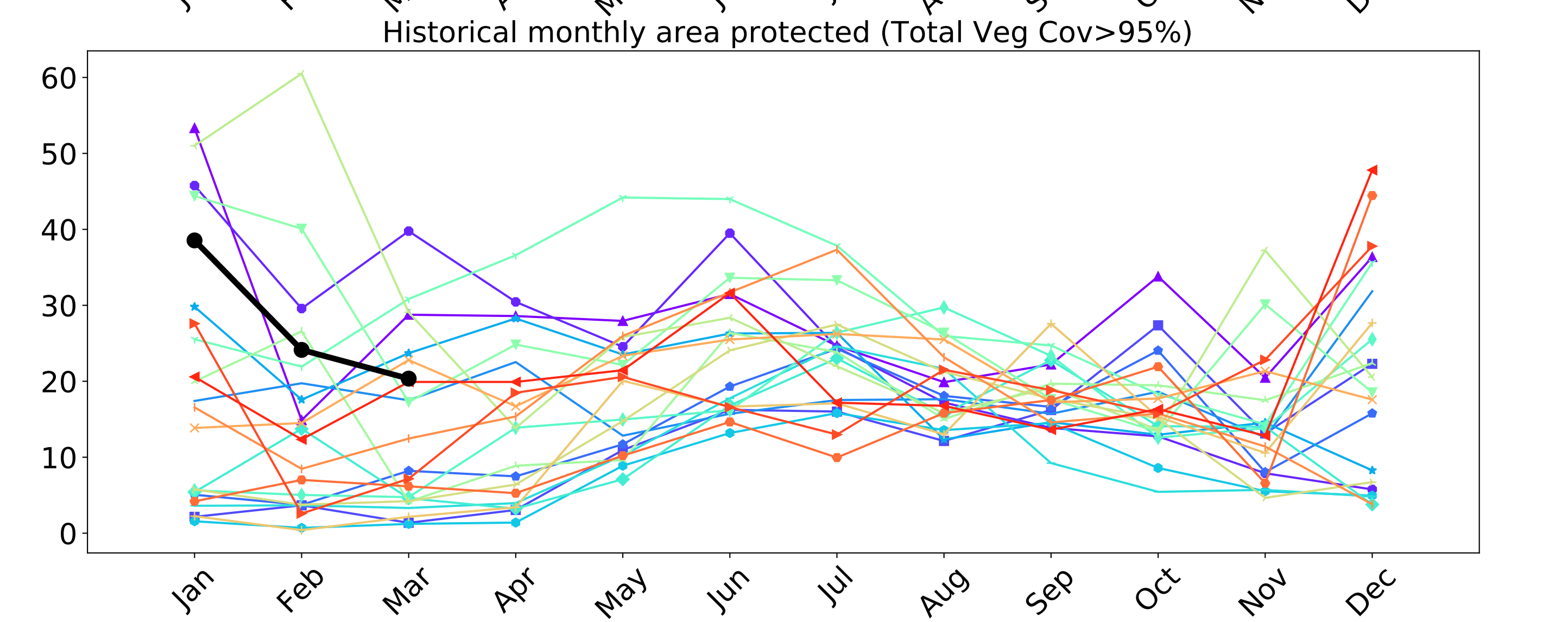
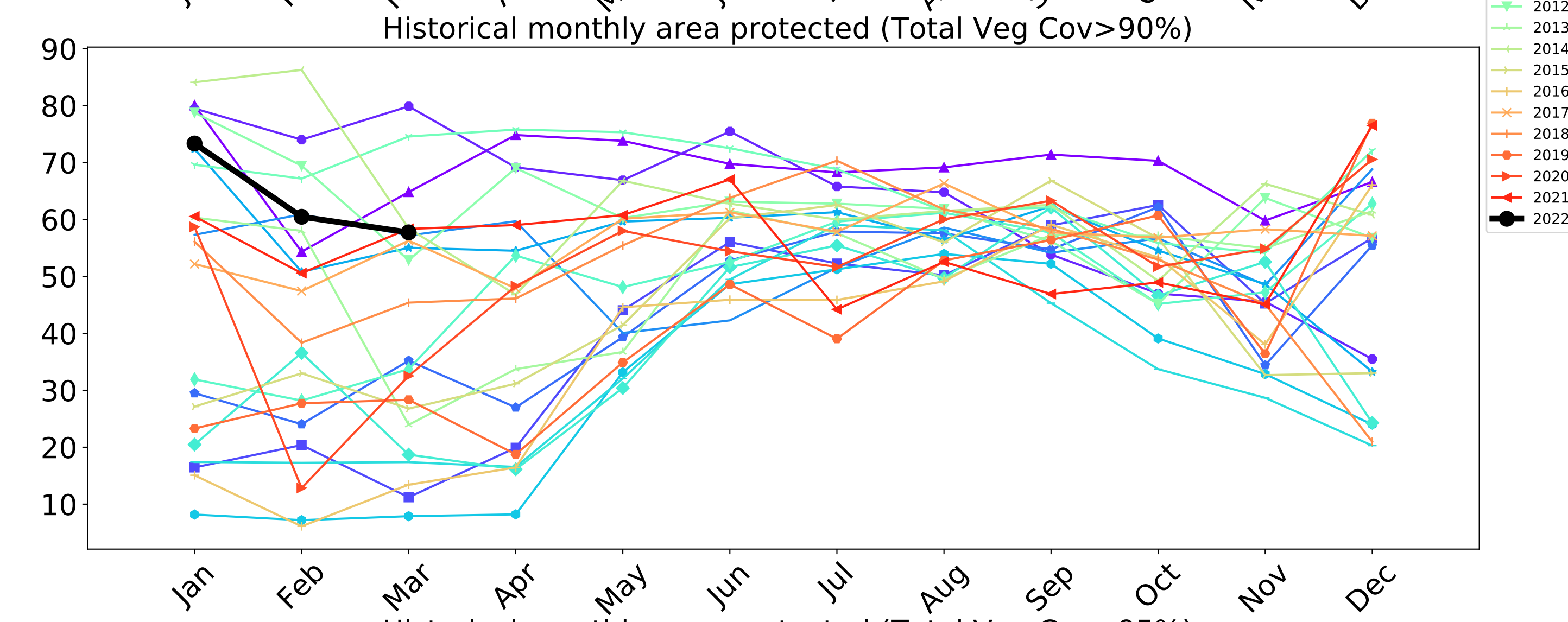
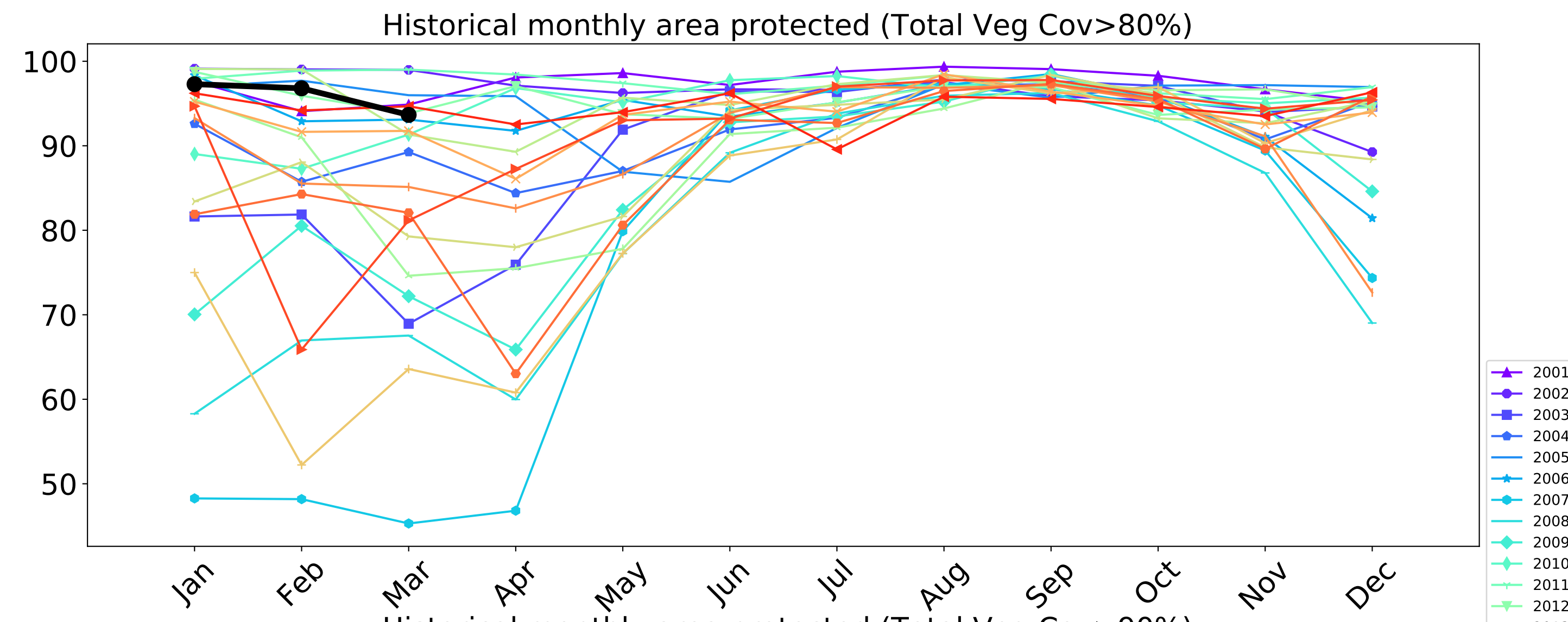
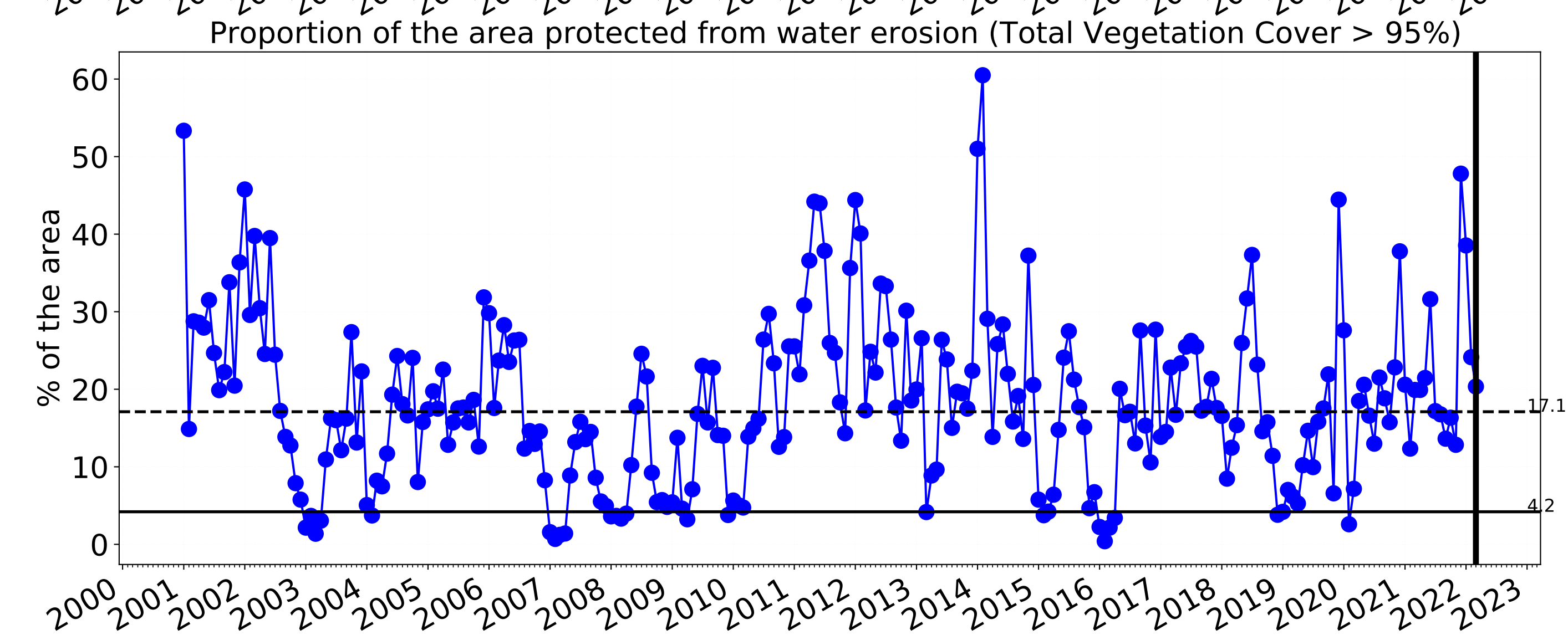
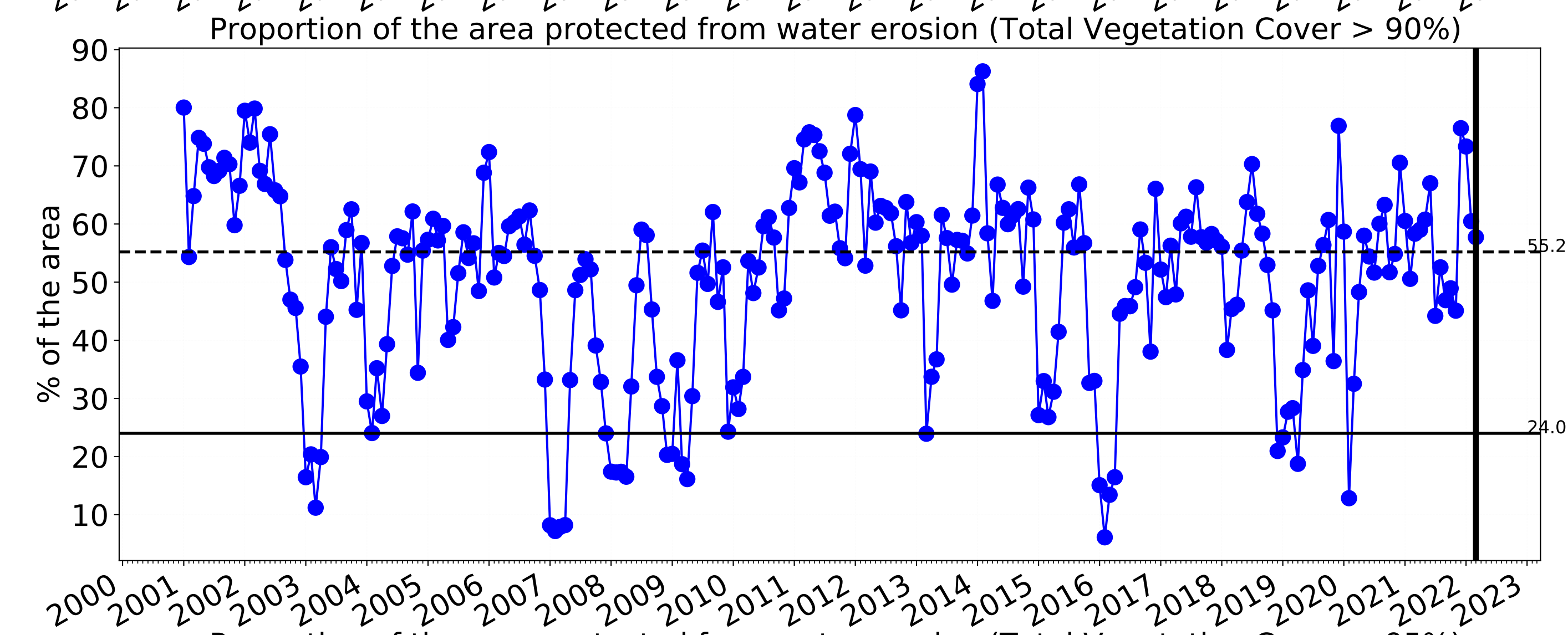
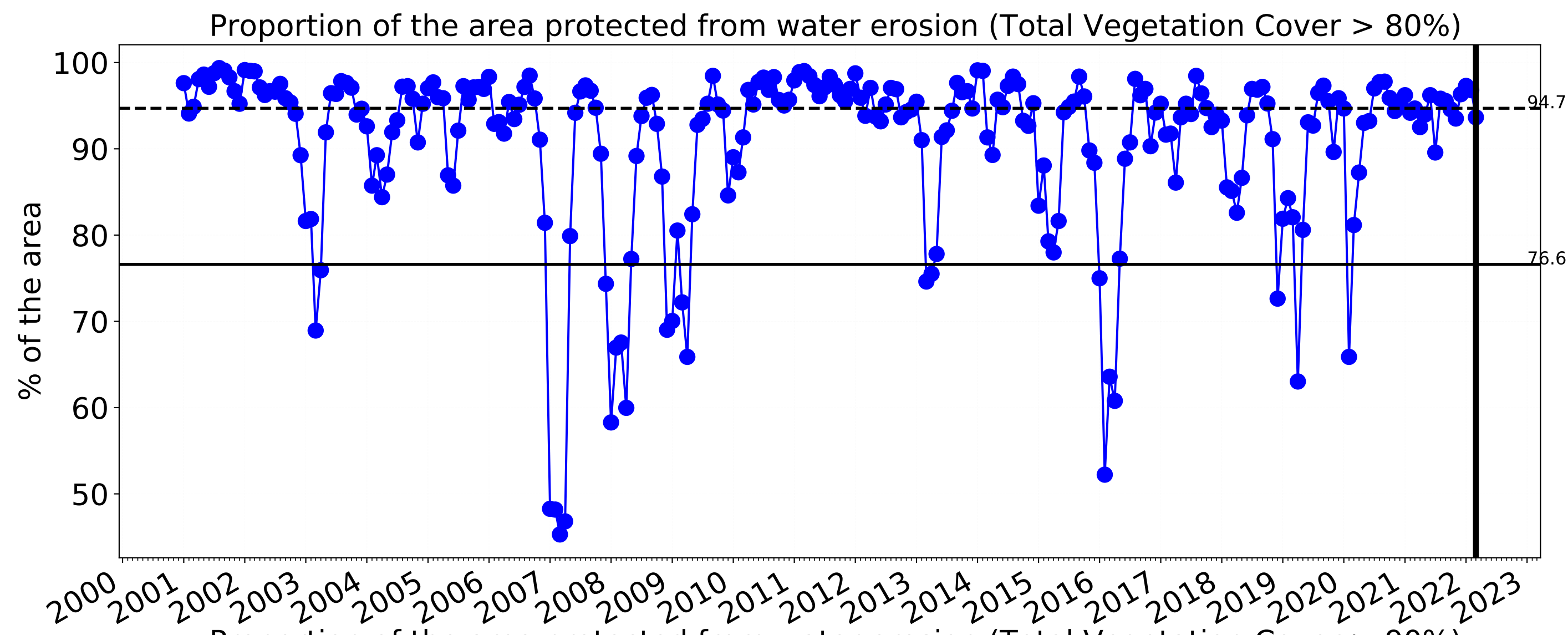
tern  
Ecosystem Research Infrastructure



National  
Landcare  
Programme









Grazing

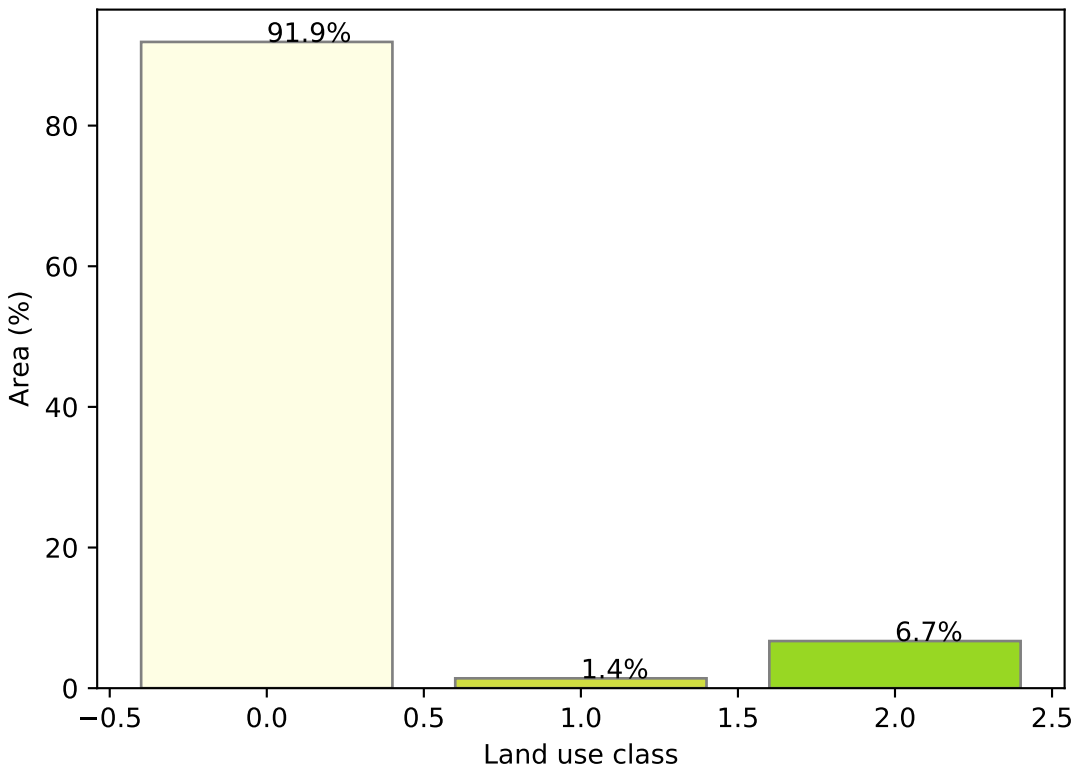
Land use and forest cover

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

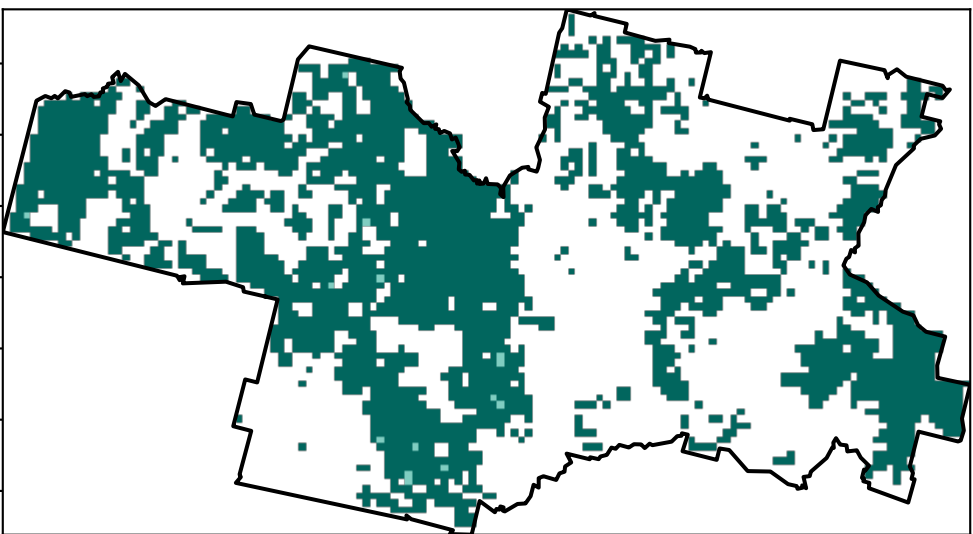


- 1 Agriculture - Grazing - Non forest
- 2 Agriculture - Grazing - Woodland forest
- 3 Agriculture - Grazing - Non-woodland forest

Proportion of each land class in area

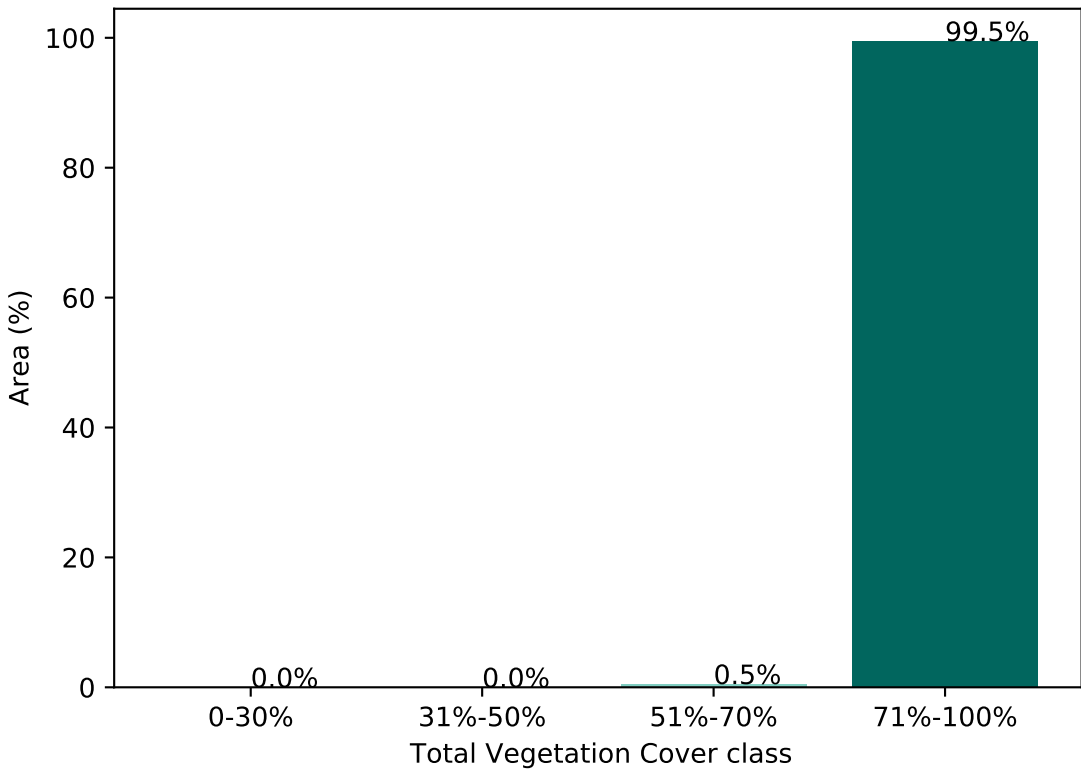


Total Vegetation Cover [%]

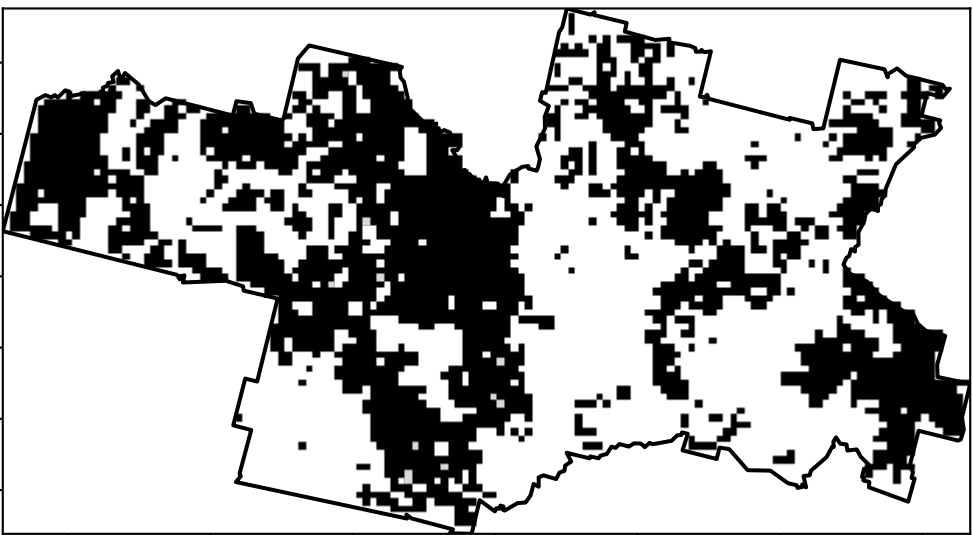


- 71%-100%
- 51%-70%
- 31%-50%
- 0-30%

Proportion of vegetation cover class in area

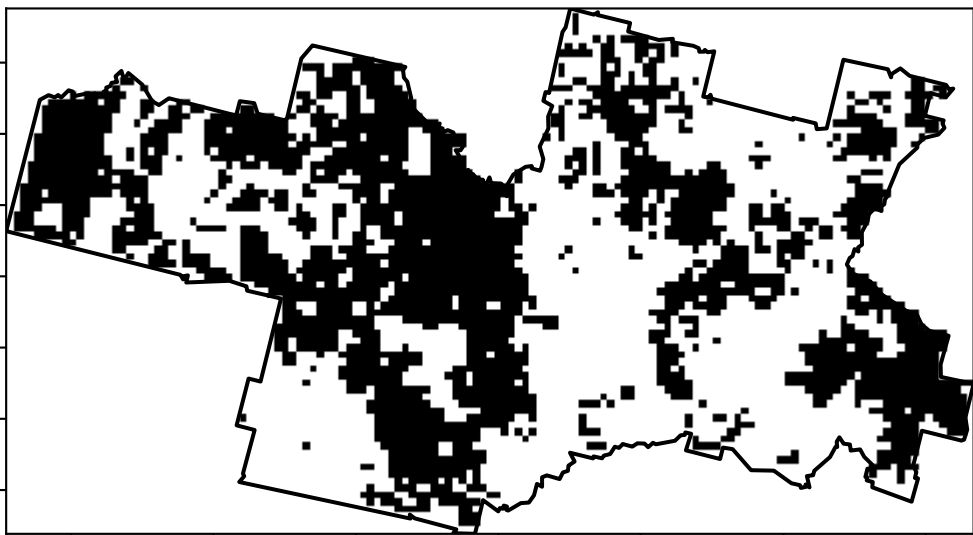


% Area protected from water erosion (>70%)



- Area not protected  
0.5% of region  
(346 ha)
- Area protected  
99.5% of region  
(68,903 ha)

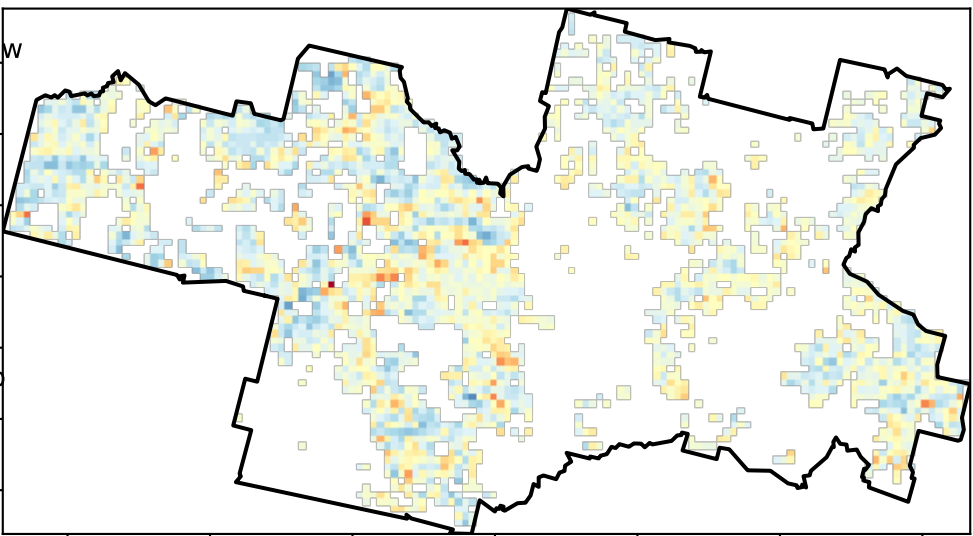
% Area protected from wind erosion (>50%)



- Area protected  
100.0% of region  
(69,250 ha)

Total Vegetation Cover Anomaly [%]

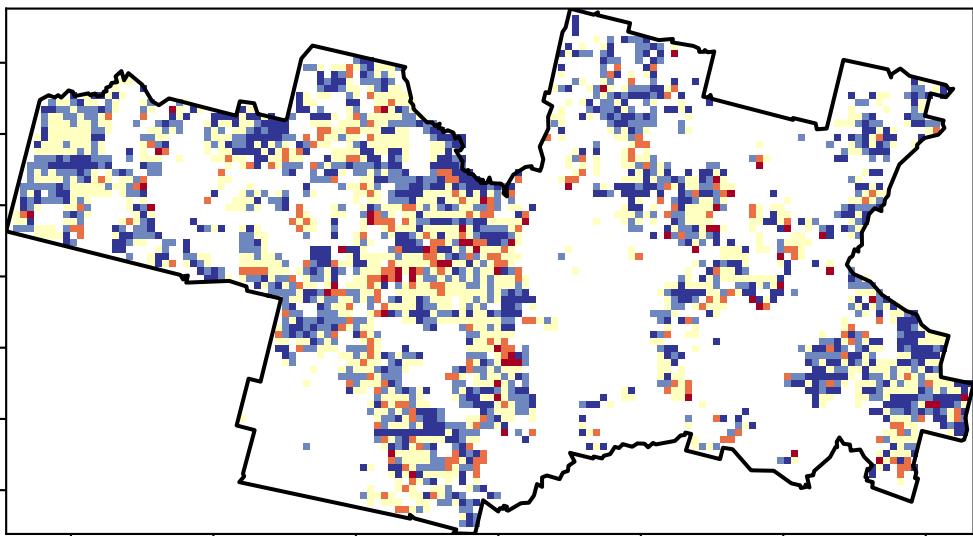
Anomaly show how many percentage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



- 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
- 9
- 8
- 7
- 6
- 5
- 4
- 3
- 2
- 1



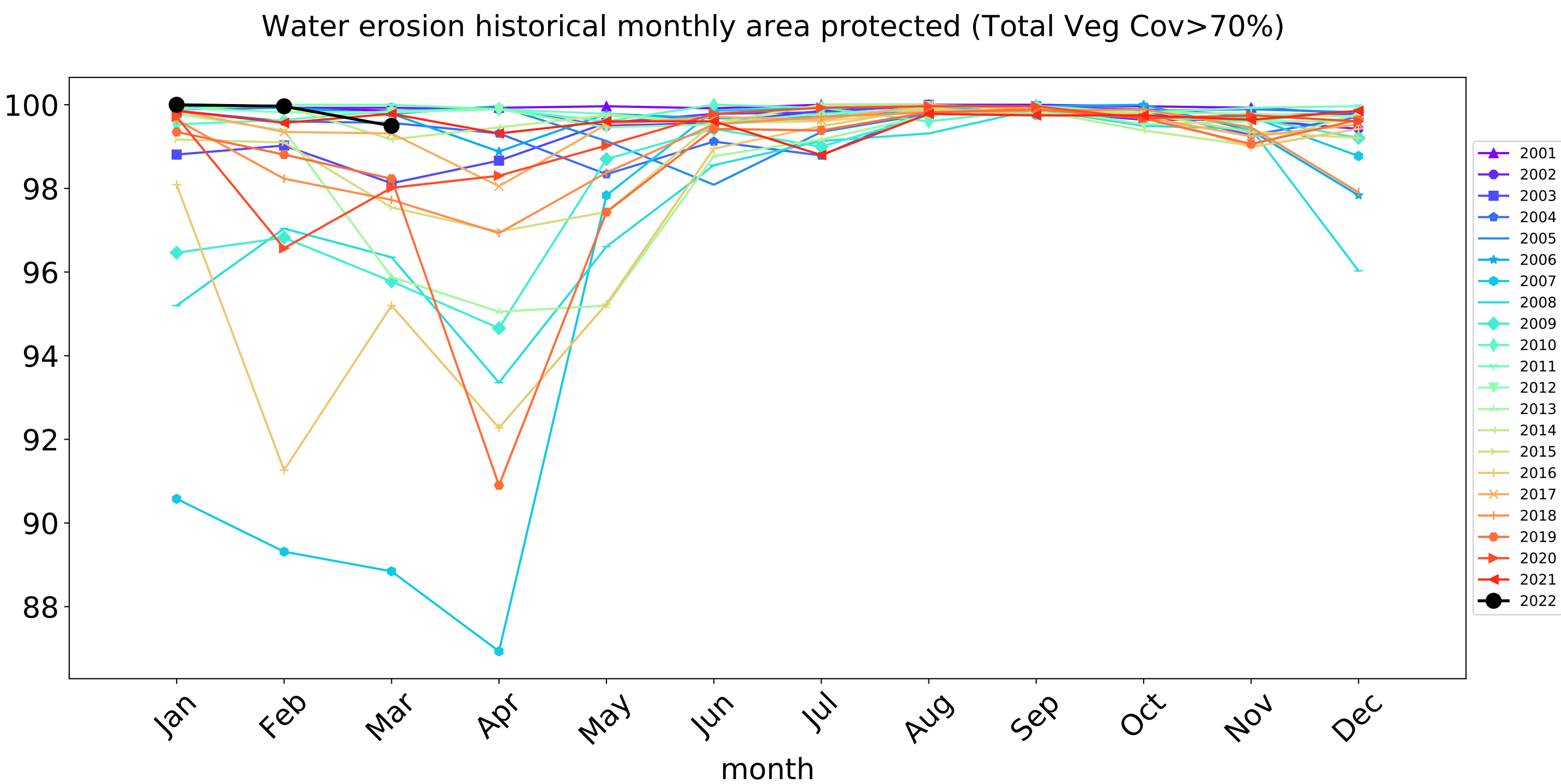
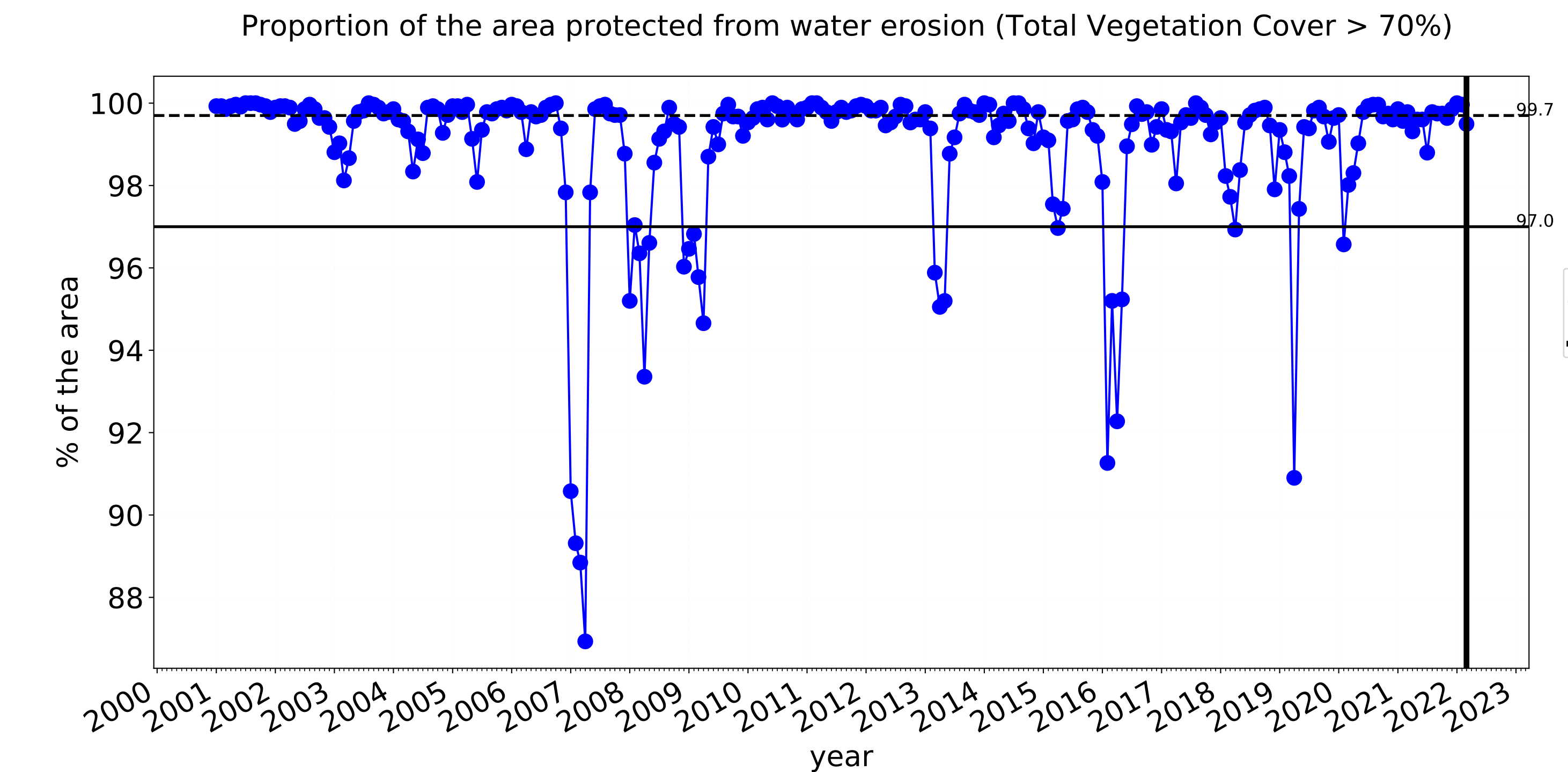
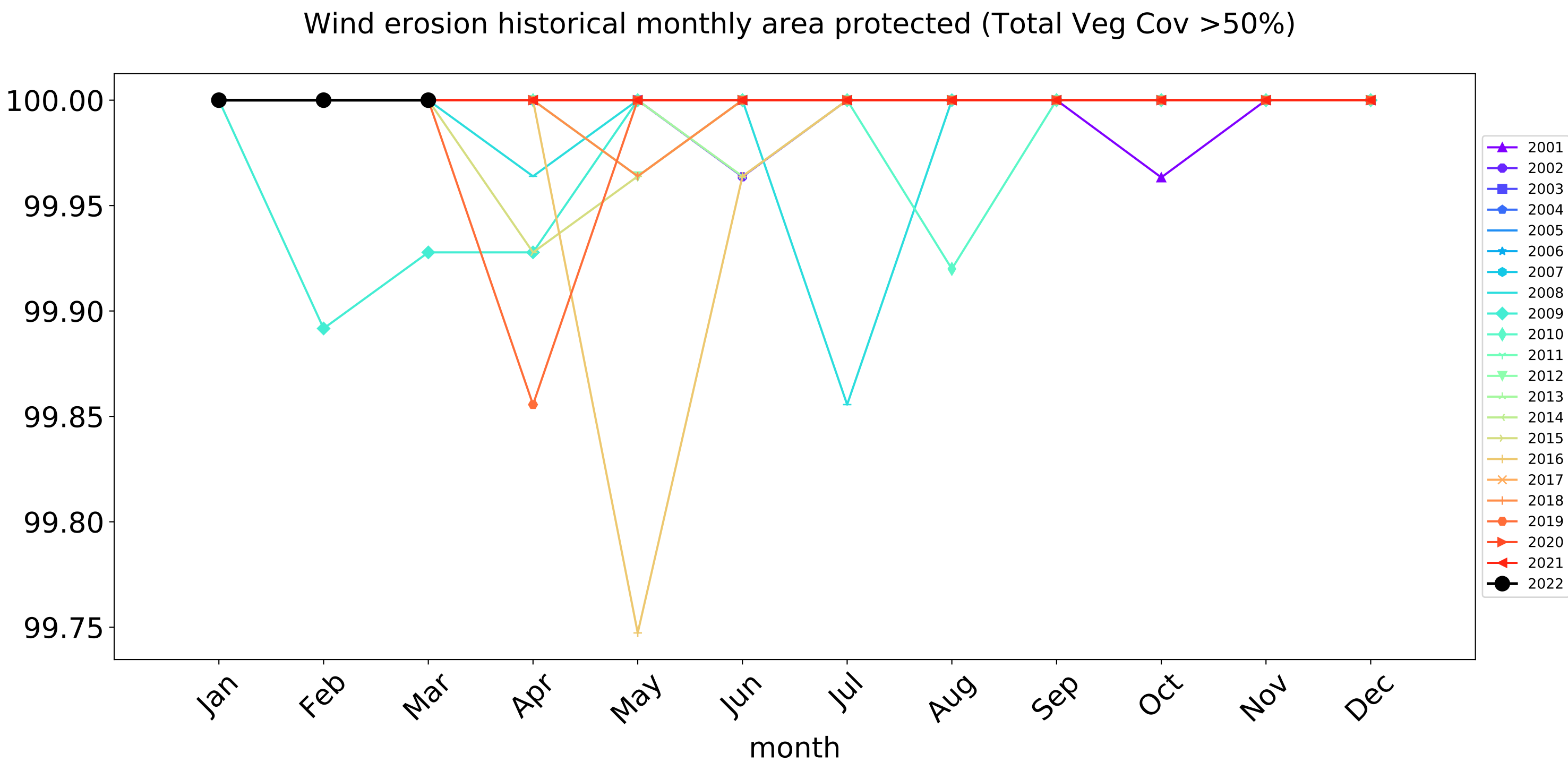
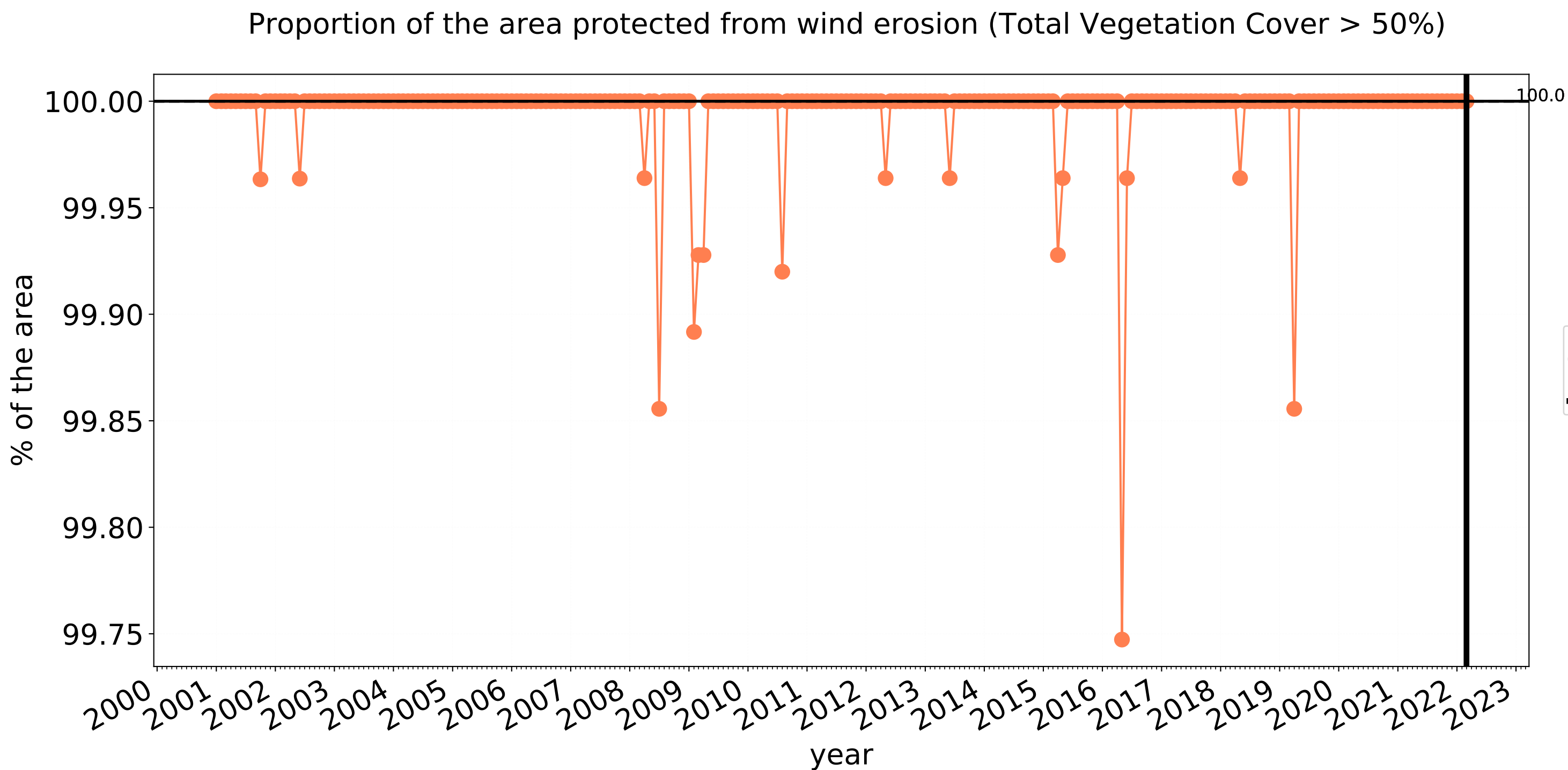
Ecosystem Research Infrastructure



National Landcare Programme



Grazing timeseries



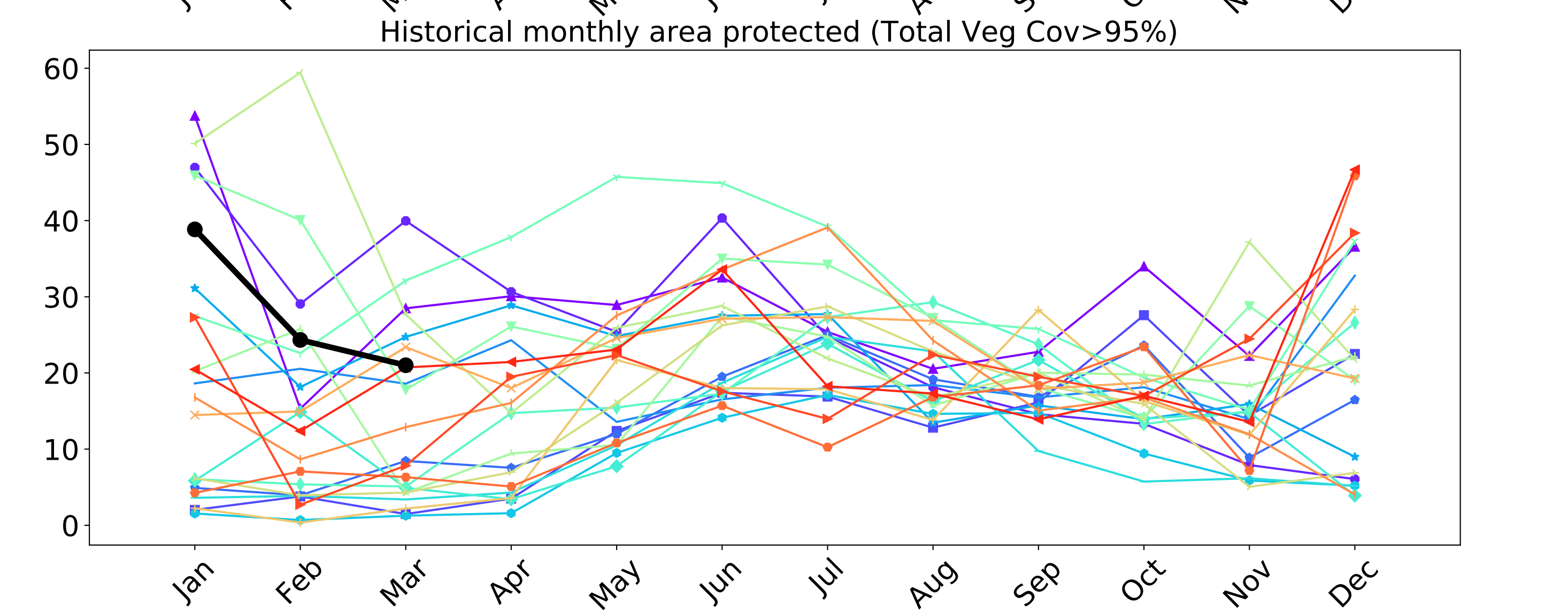
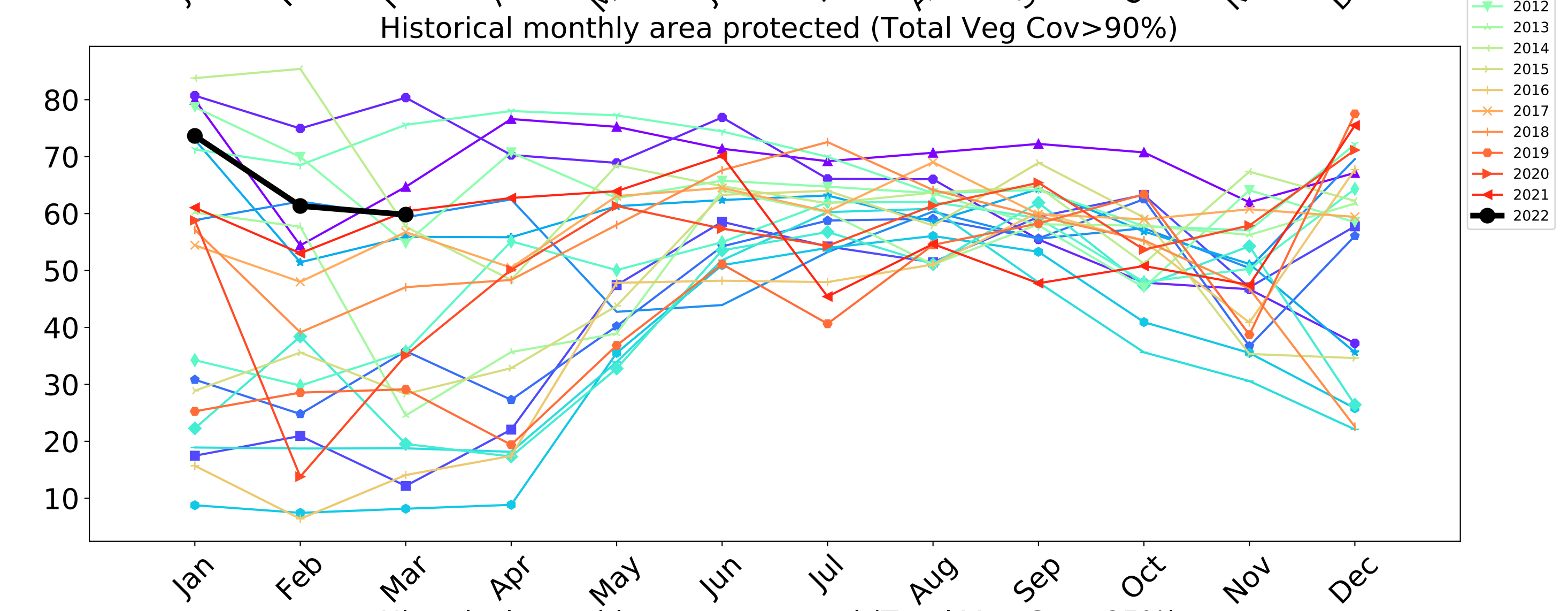
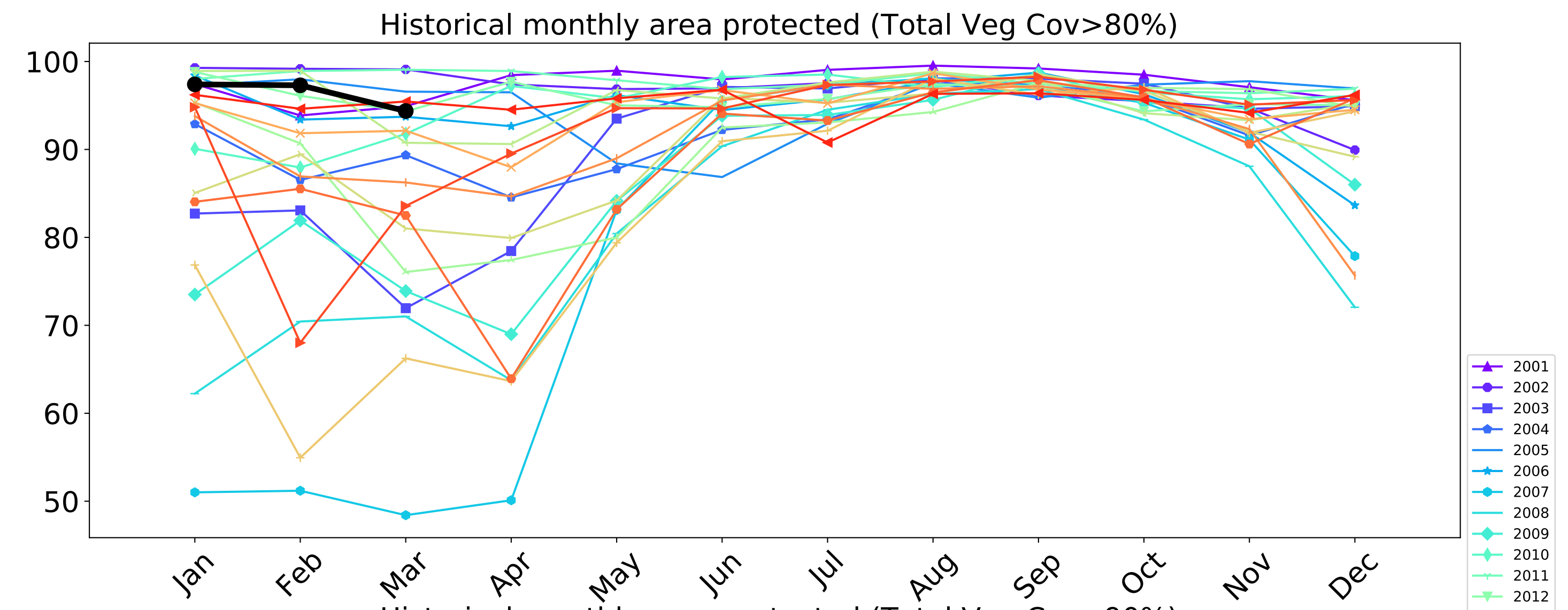
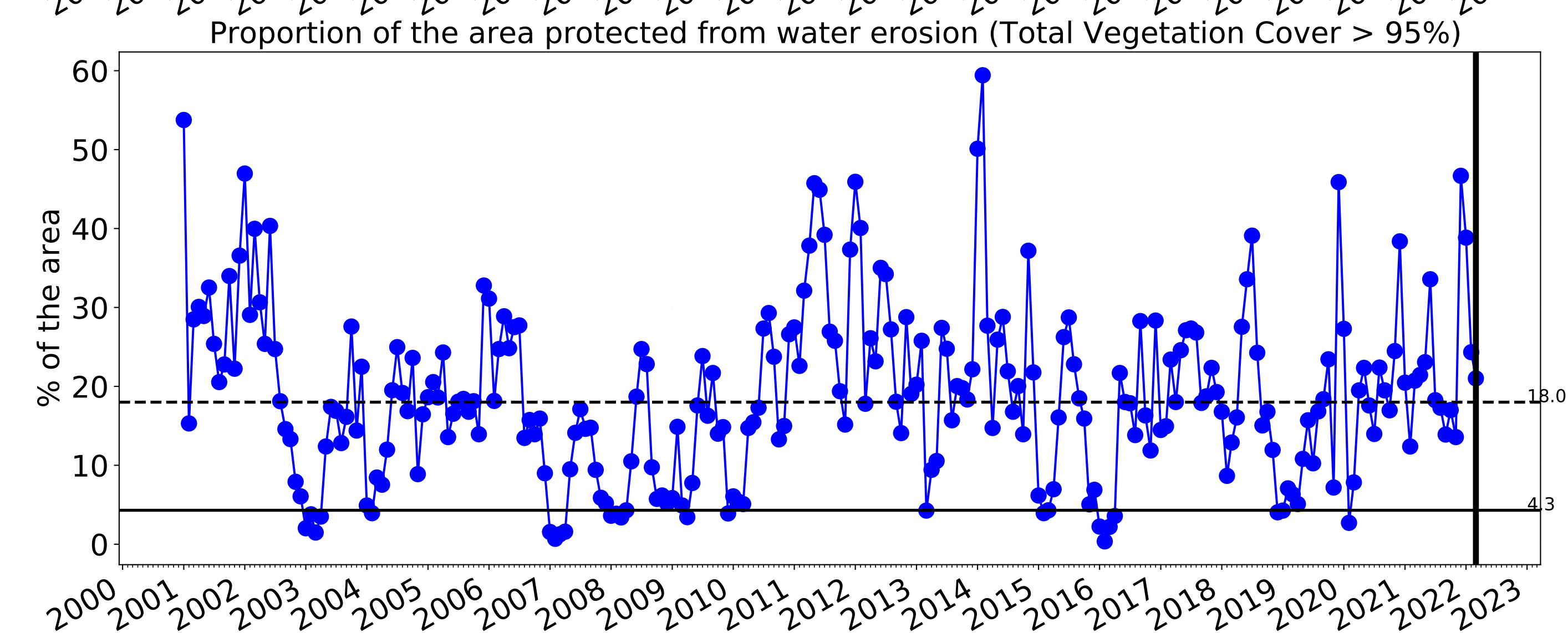
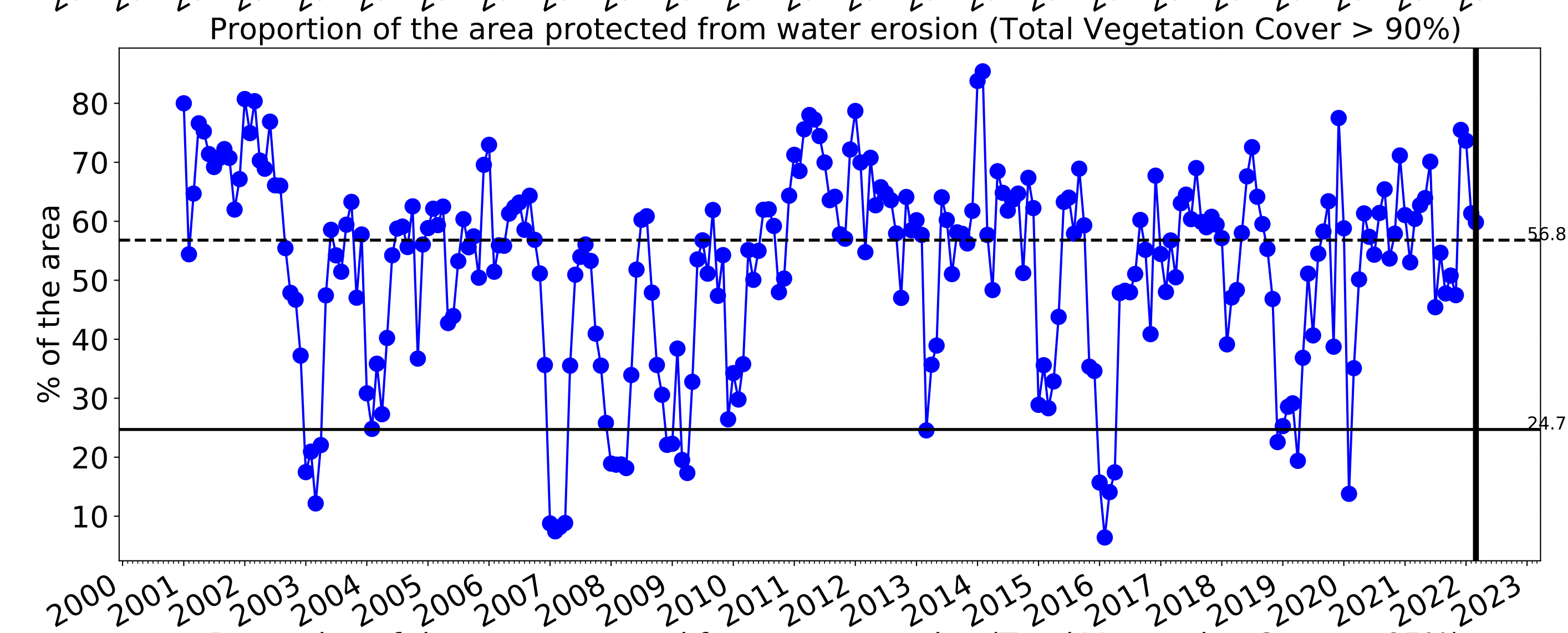
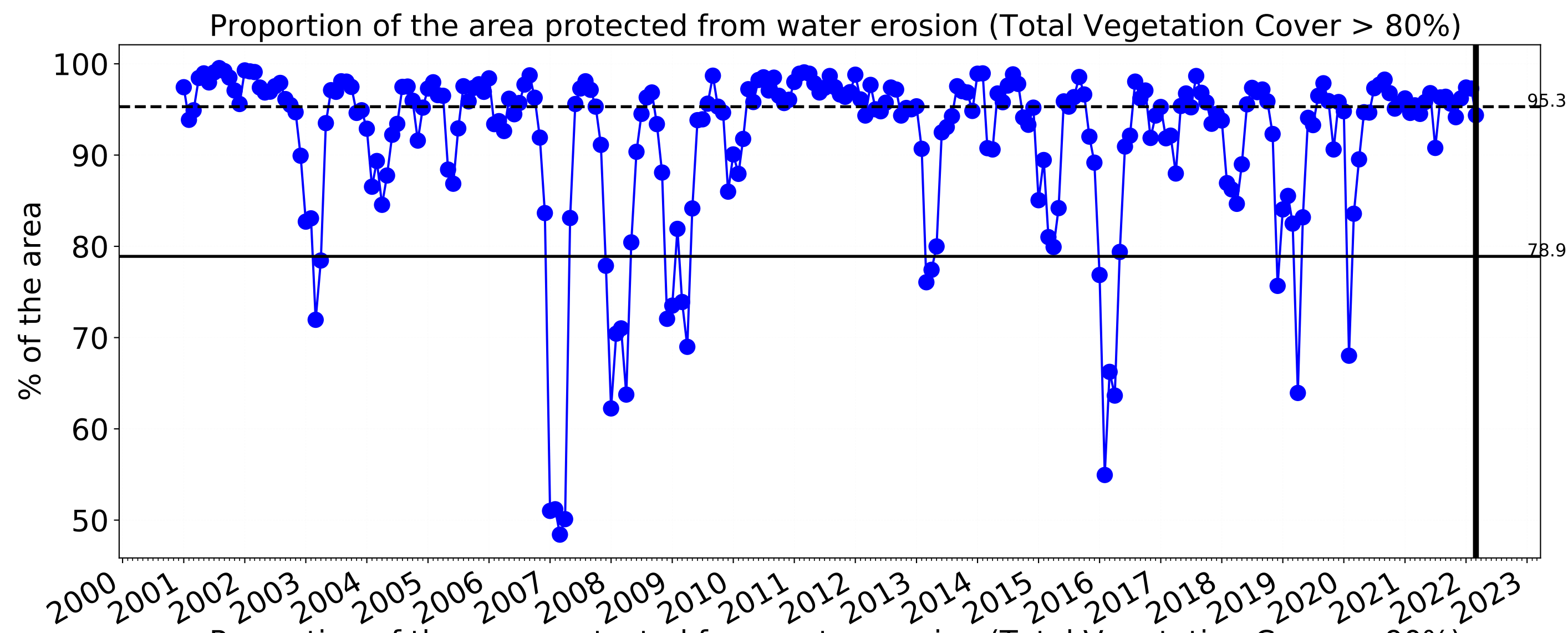
tern  
Ecosystem Research Infrastructure



National  
Landcare  
Programme





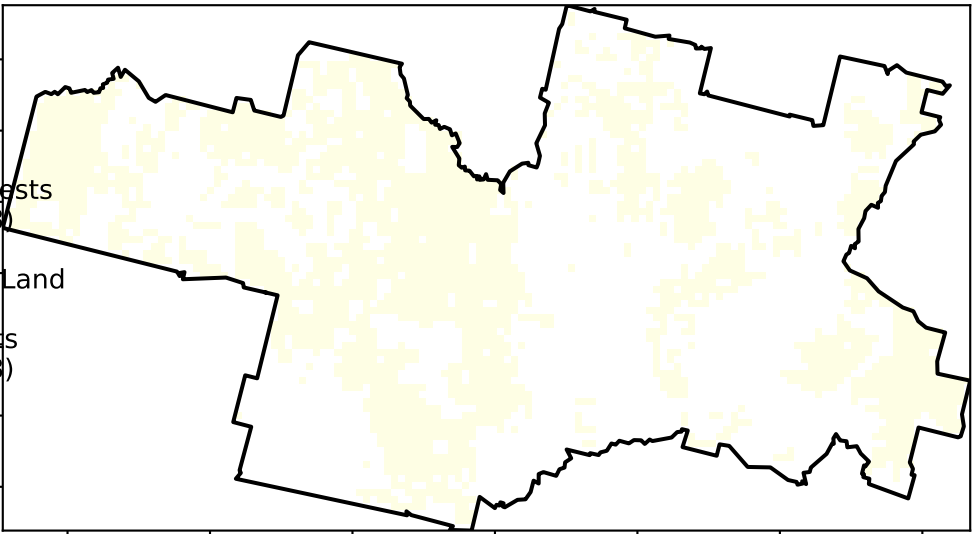




Grazing non forest

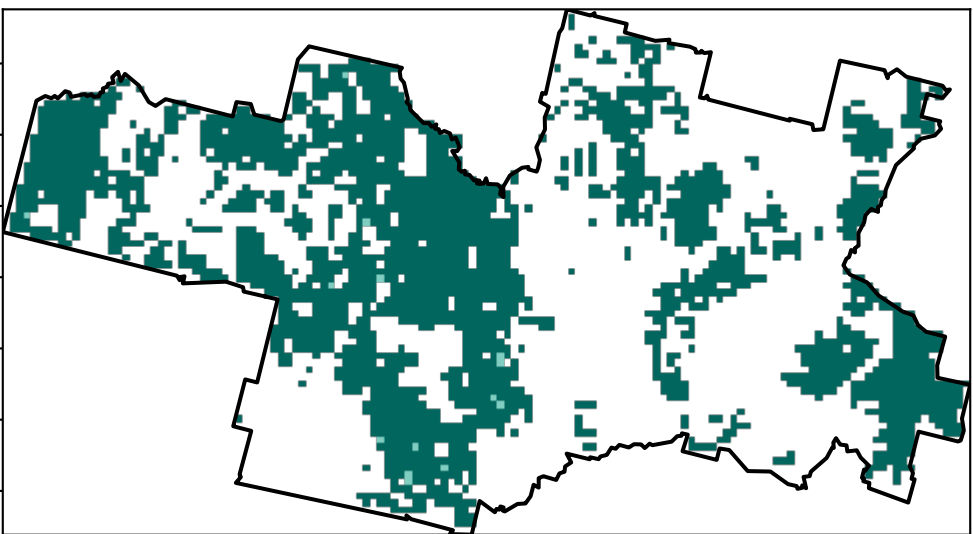
Land use and forest cover

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

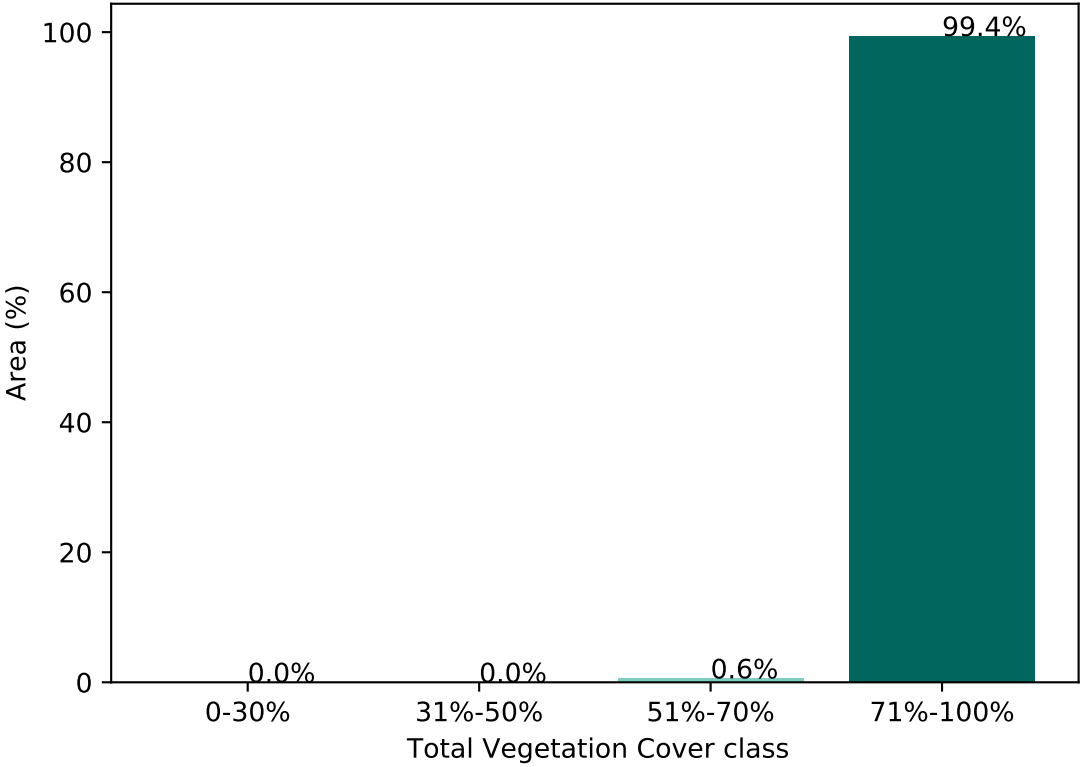


1 Agriculture - Grazing - Non forest

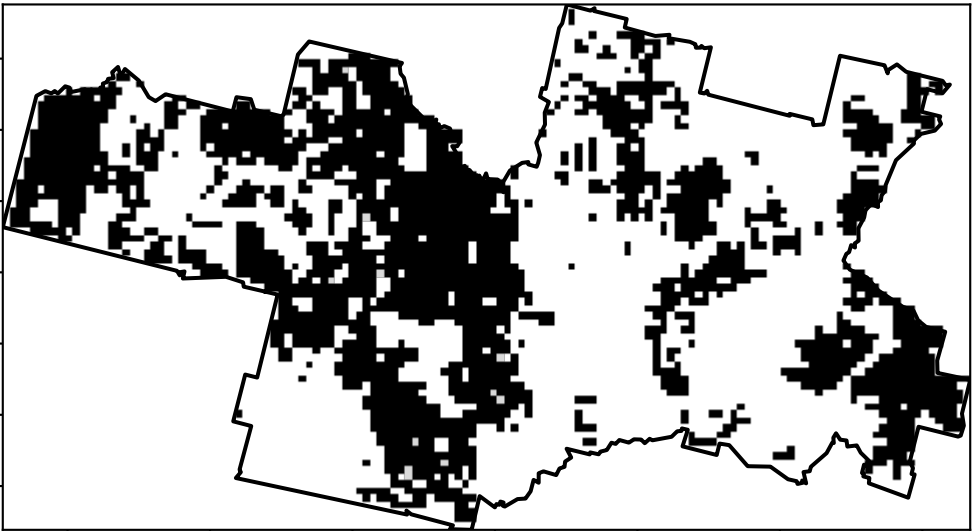
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

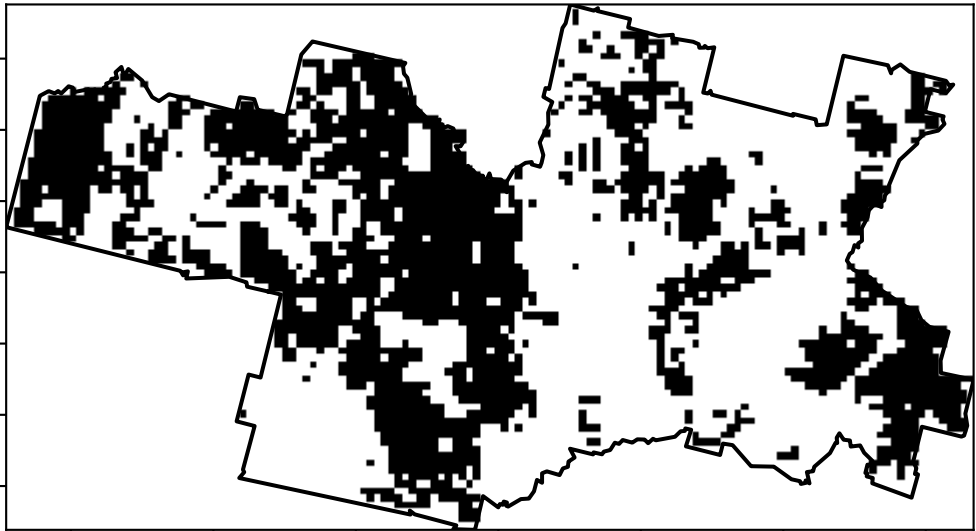


% Area protected from water erosion (>70%)



Area not protected  
0.6% of region  
(381 ha)  
Area protected  
99.4% of region  
(63,243 ha)

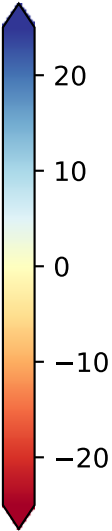
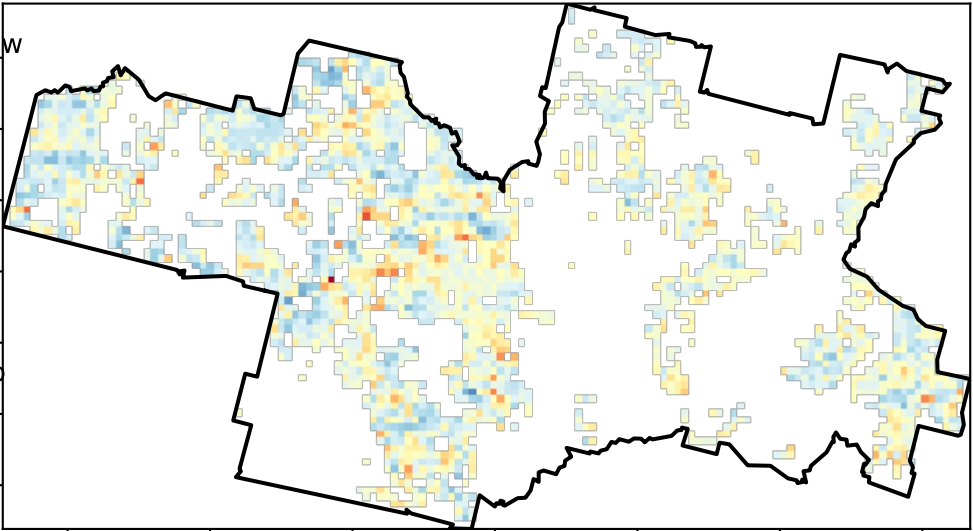
% Area protected from wind erosion (>50%)



Area protected  
100.0% of region  
(63,625 ha)

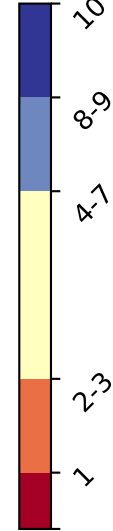
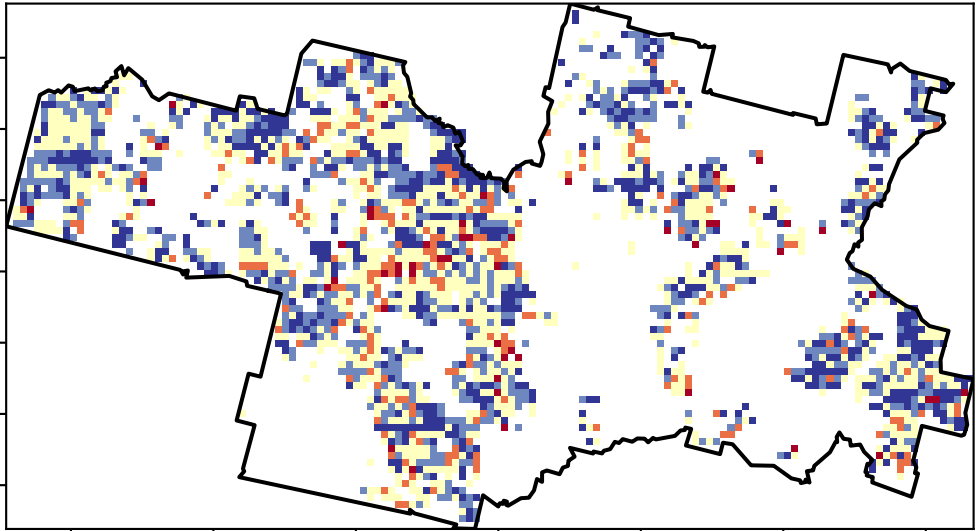
Total Vegetation Cover Anomaly [%]

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 [%]



Ecosystem Research Infrastructure

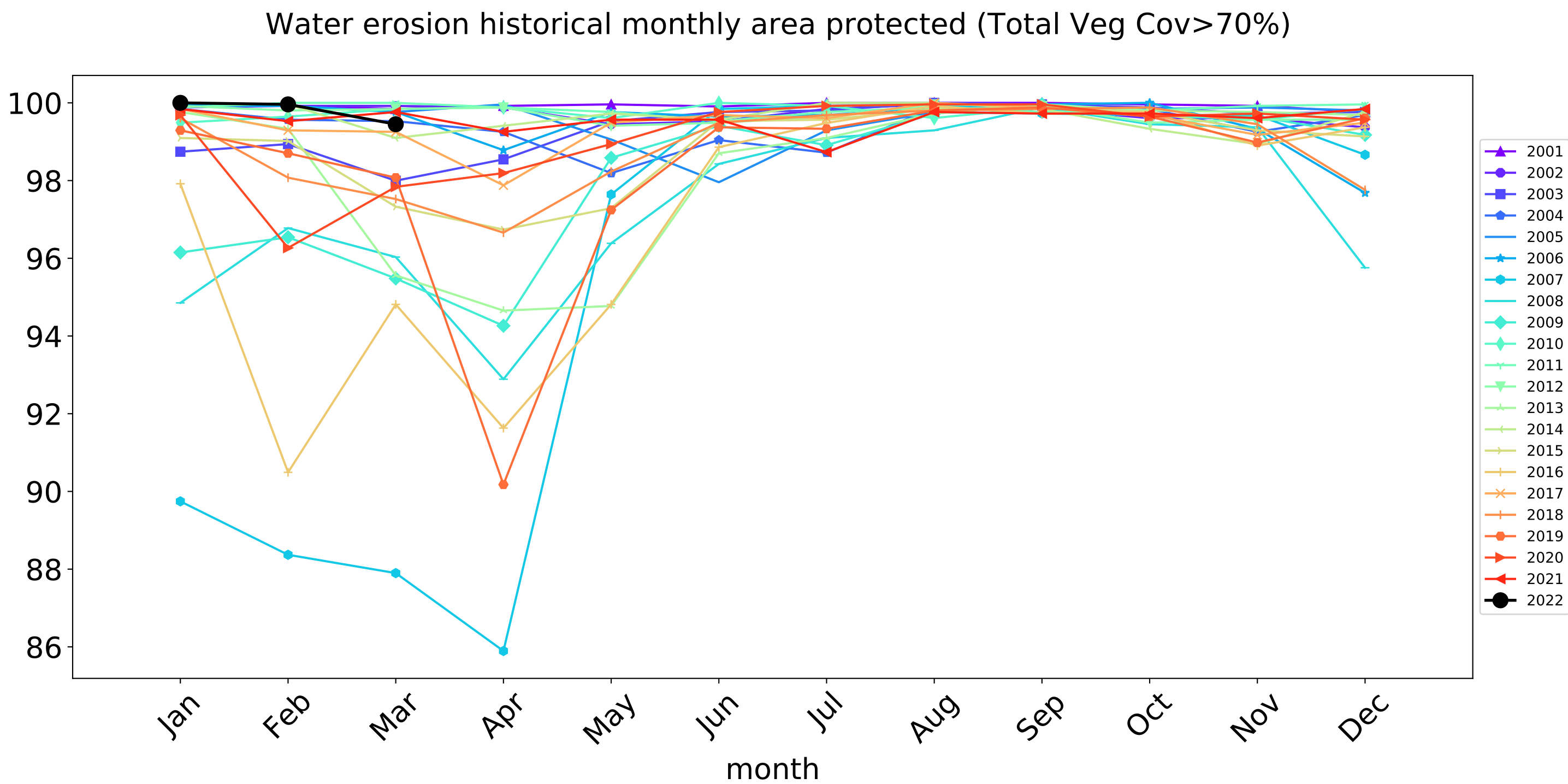
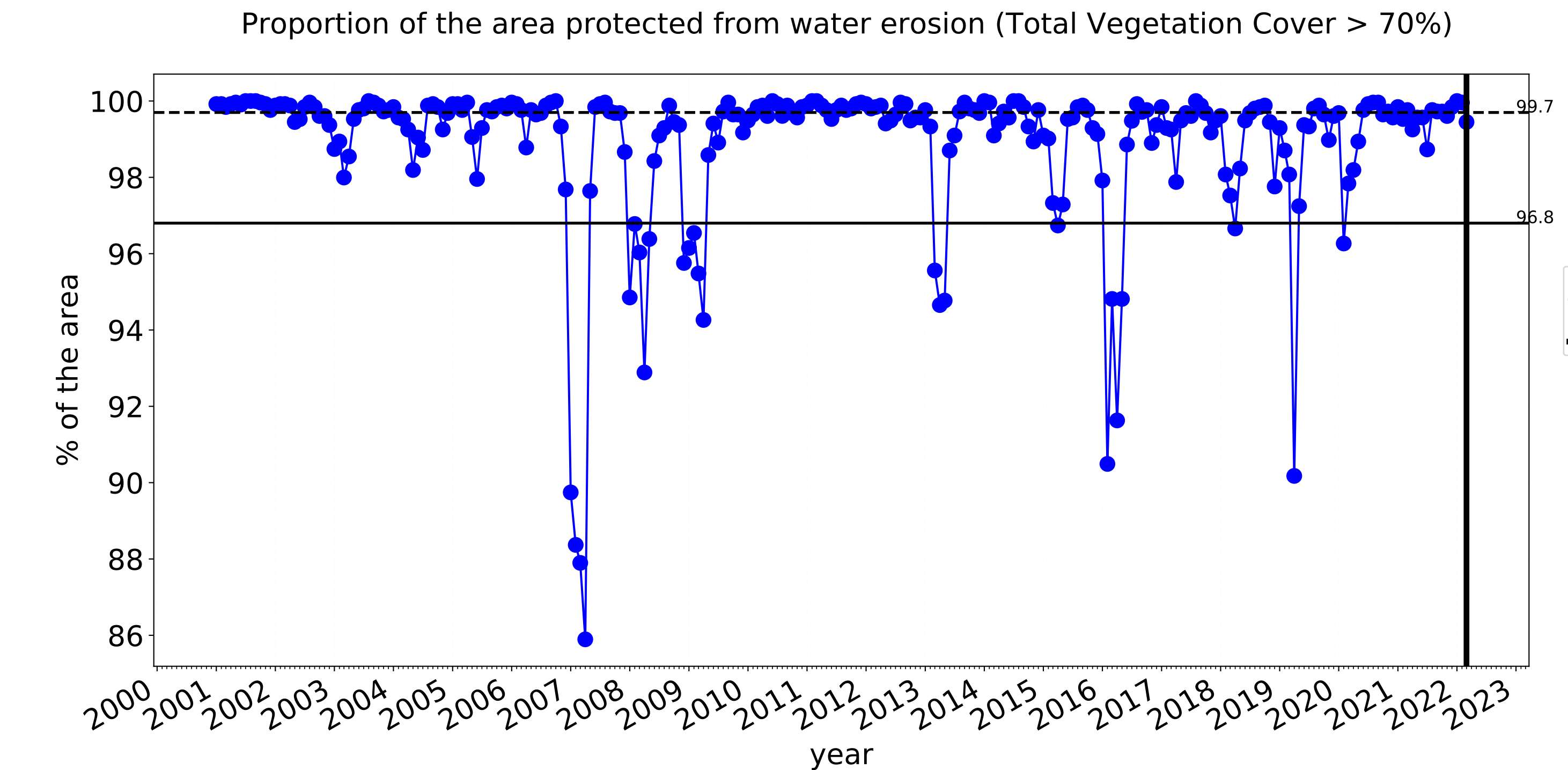
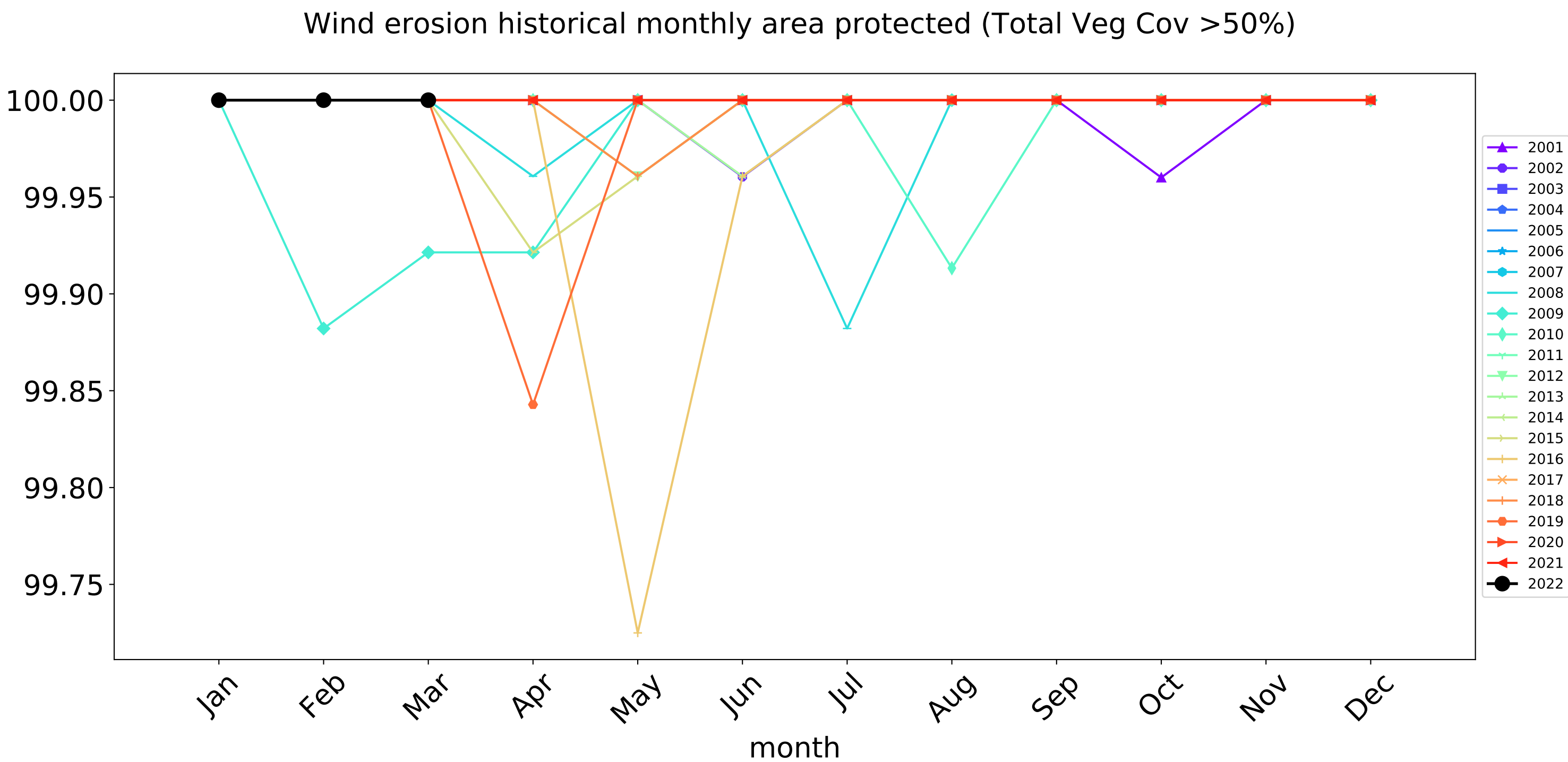
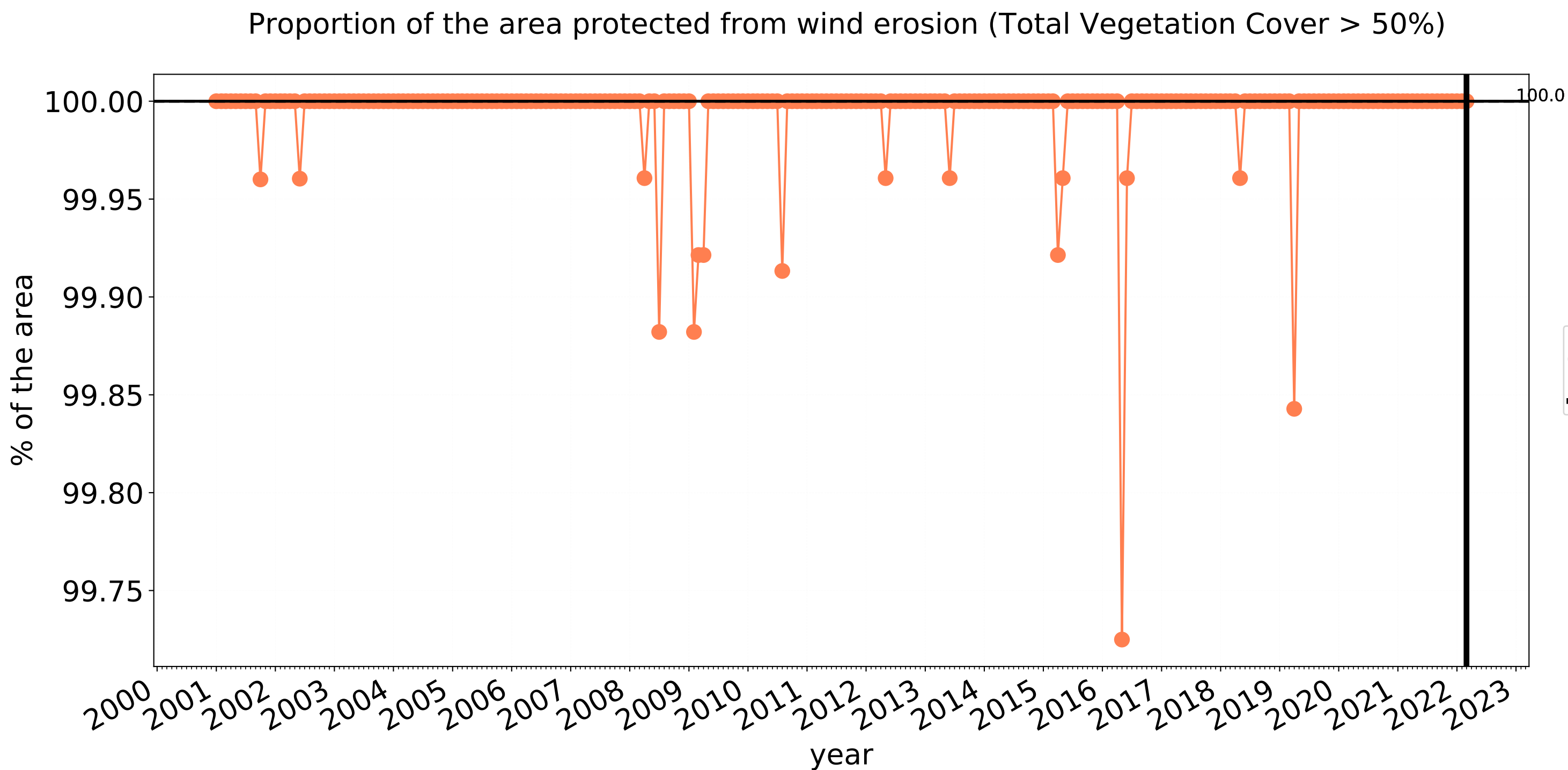


National Landcare Programme





Grazing non forest timeseries



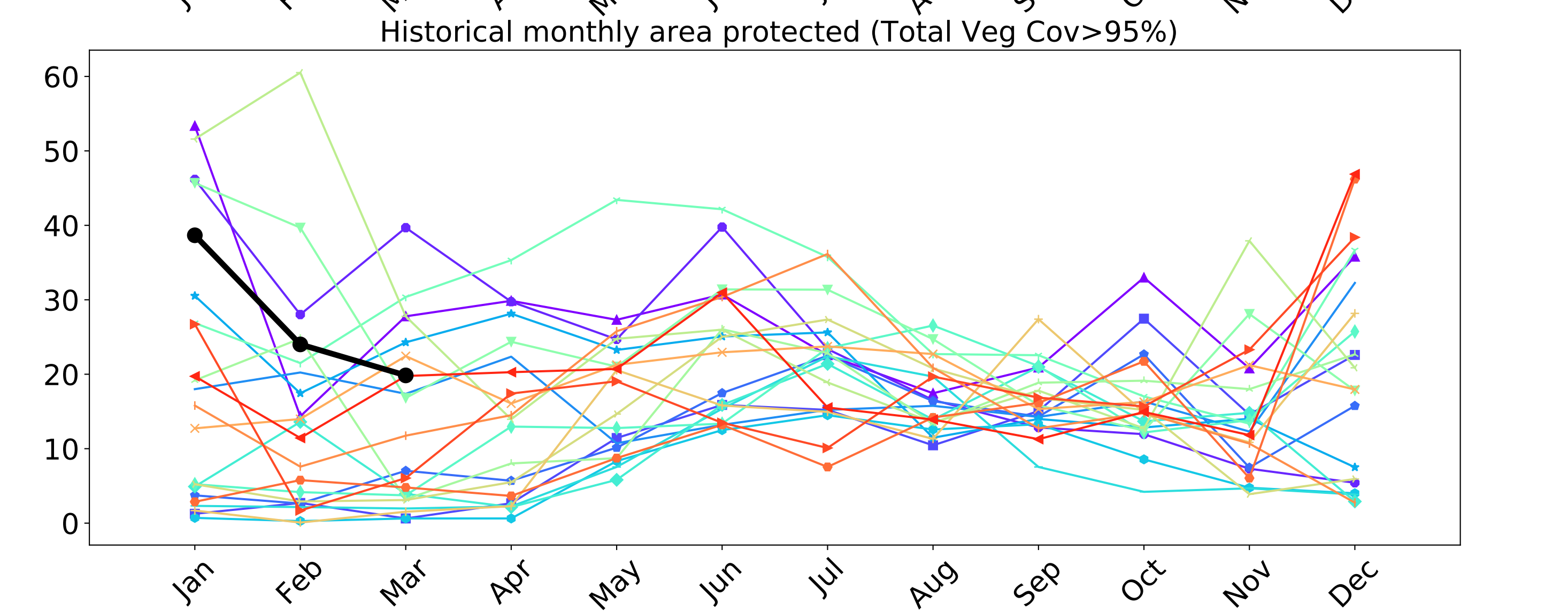
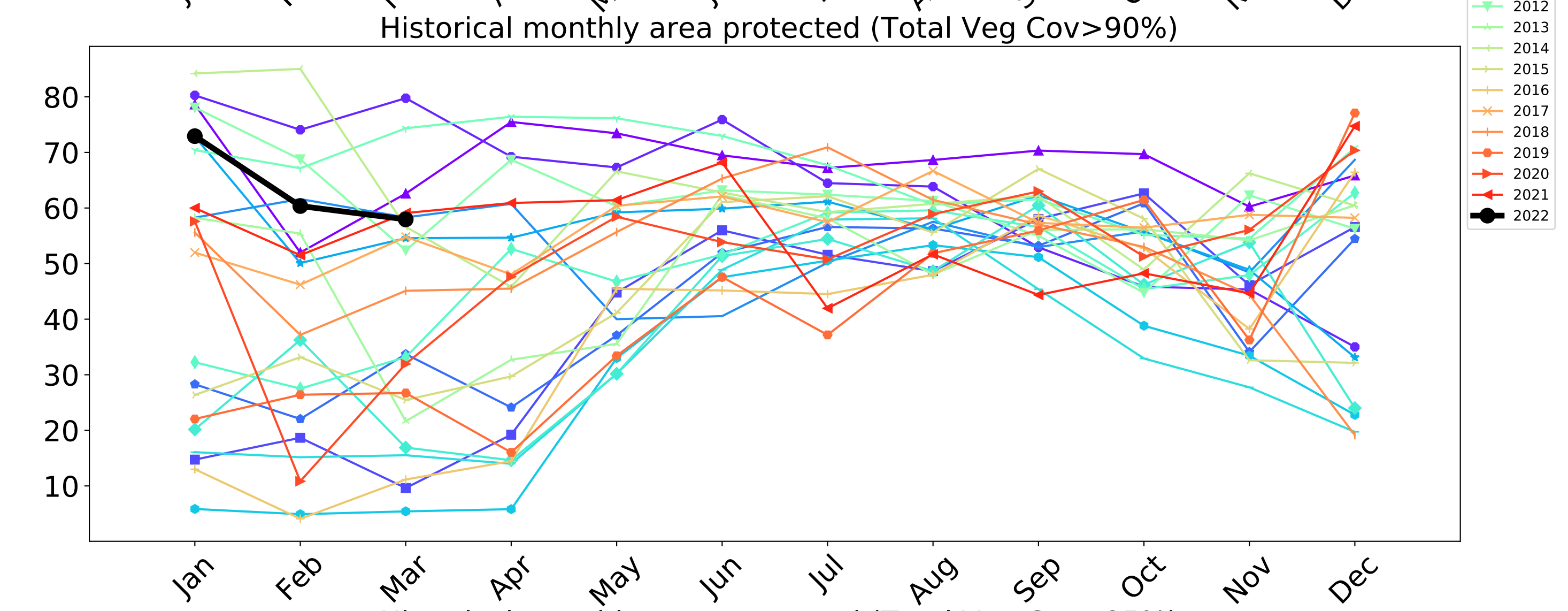
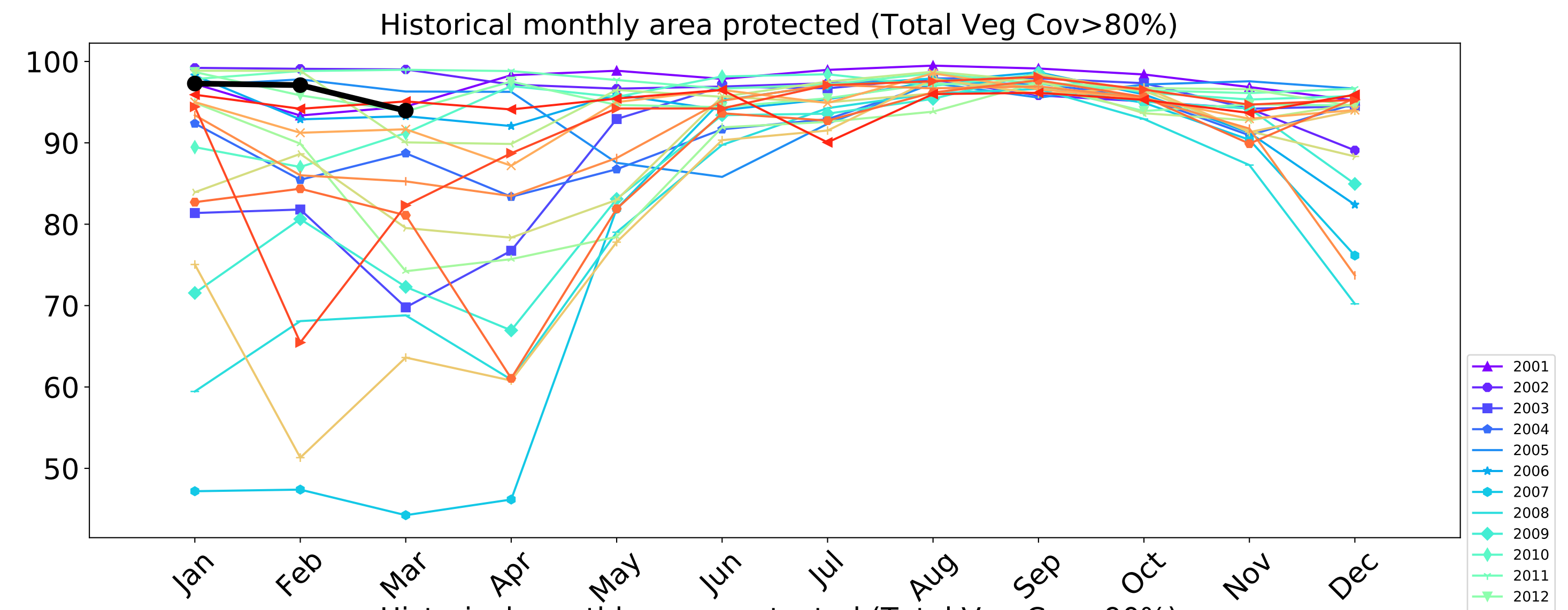
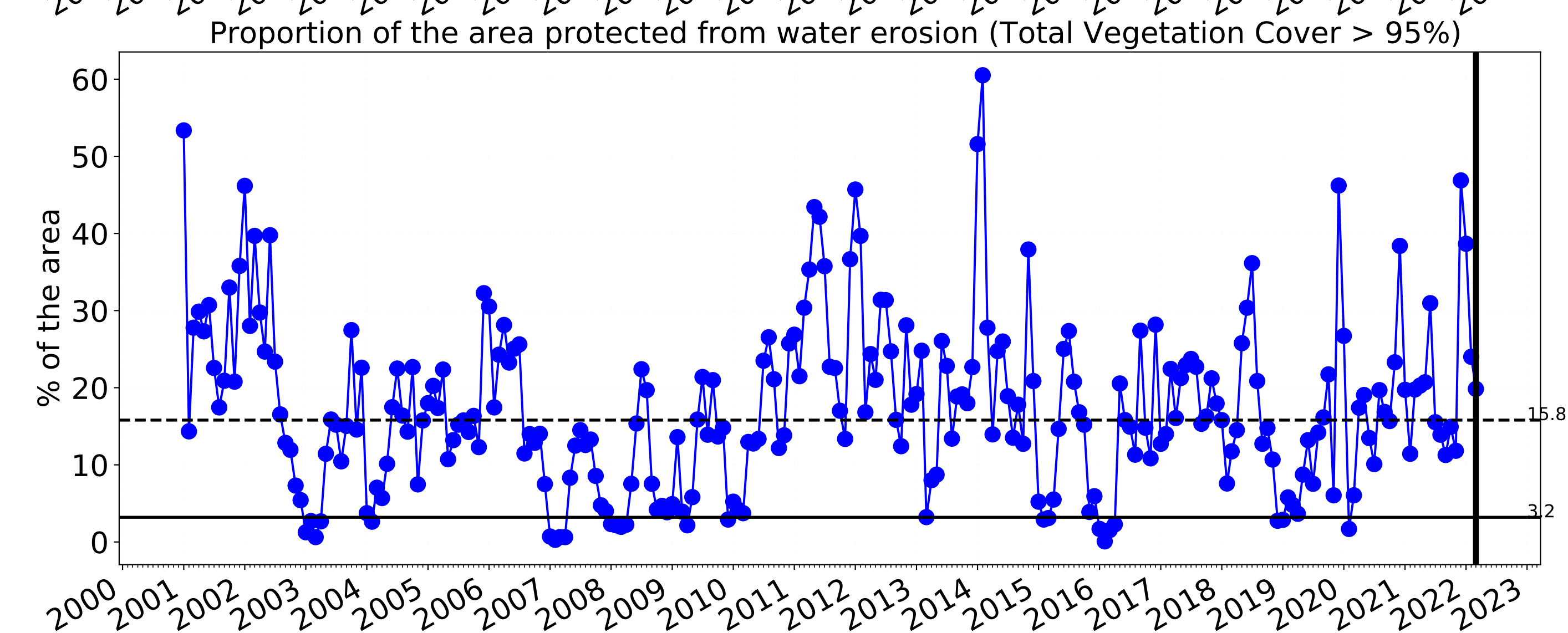
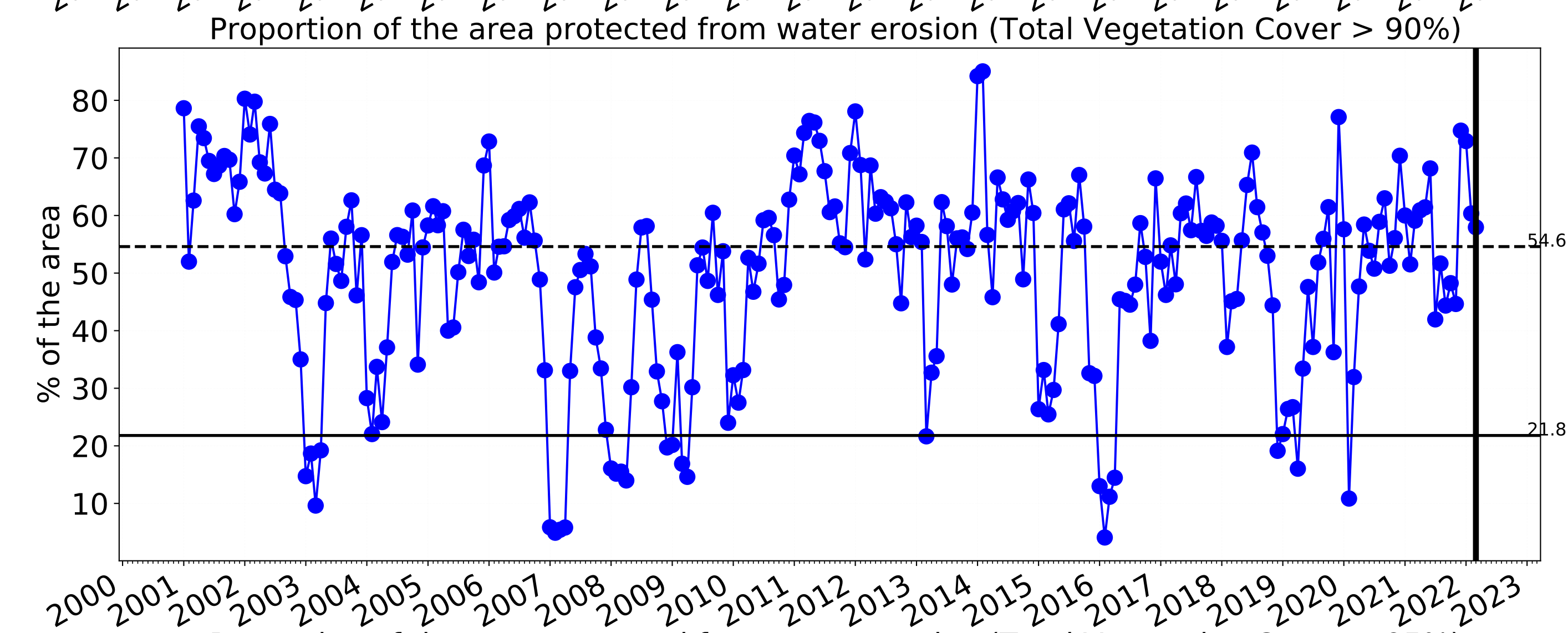
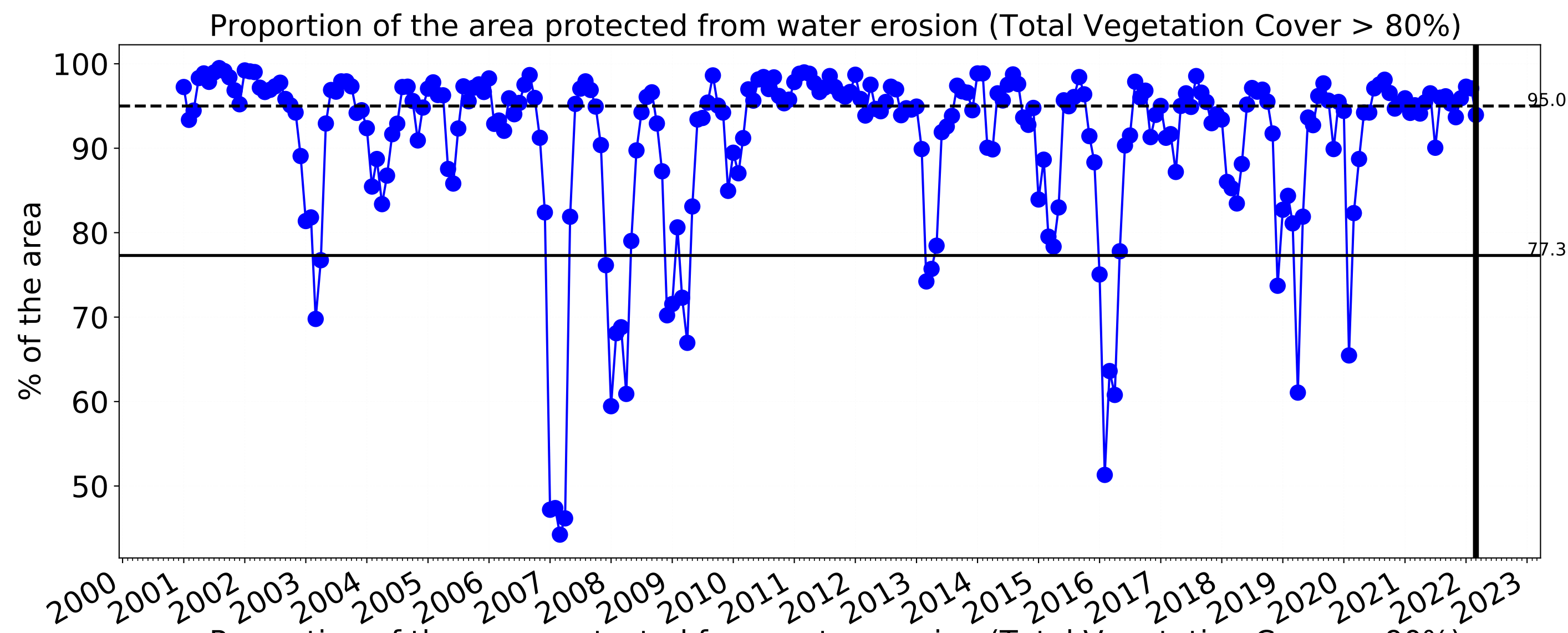
tern  
Ecosystem Research Infrastructure



National  
Landcare  
Programme



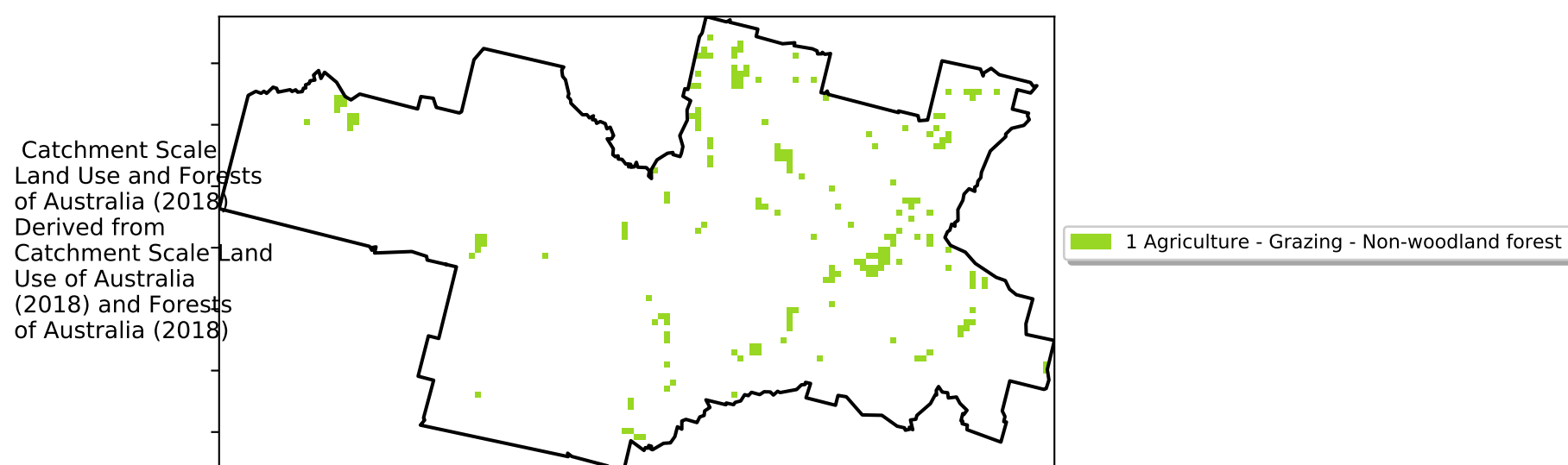




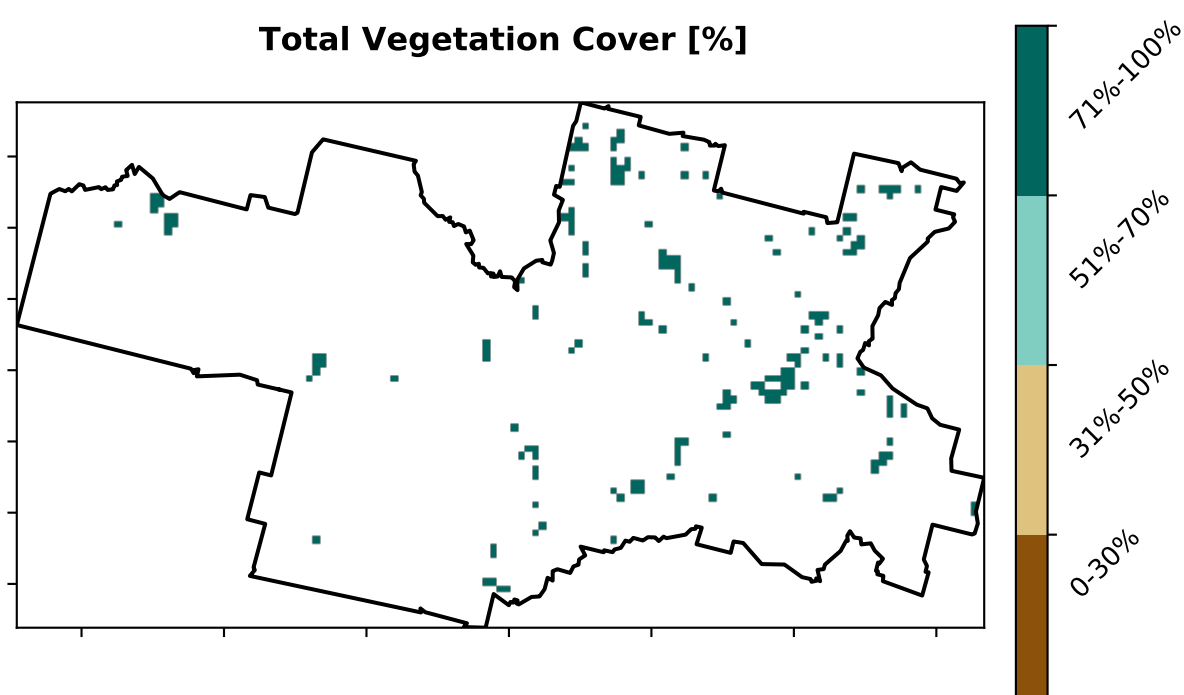


# Grazing - Forest (non woodland)

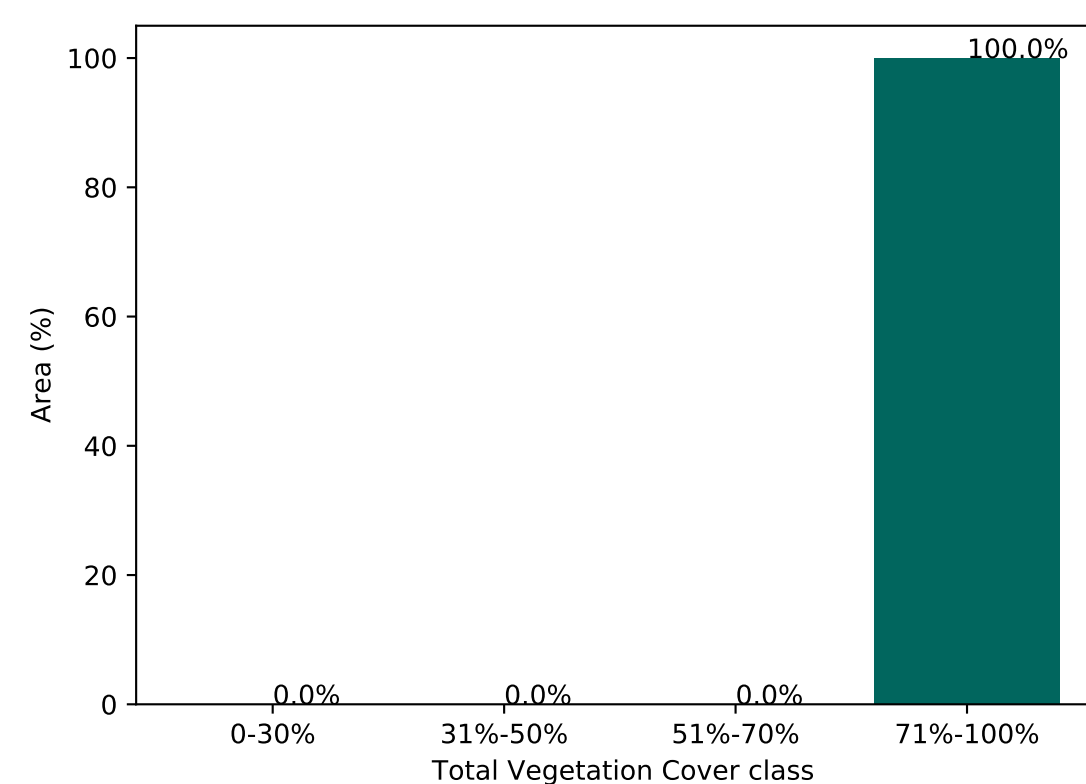
Land use and forest cover



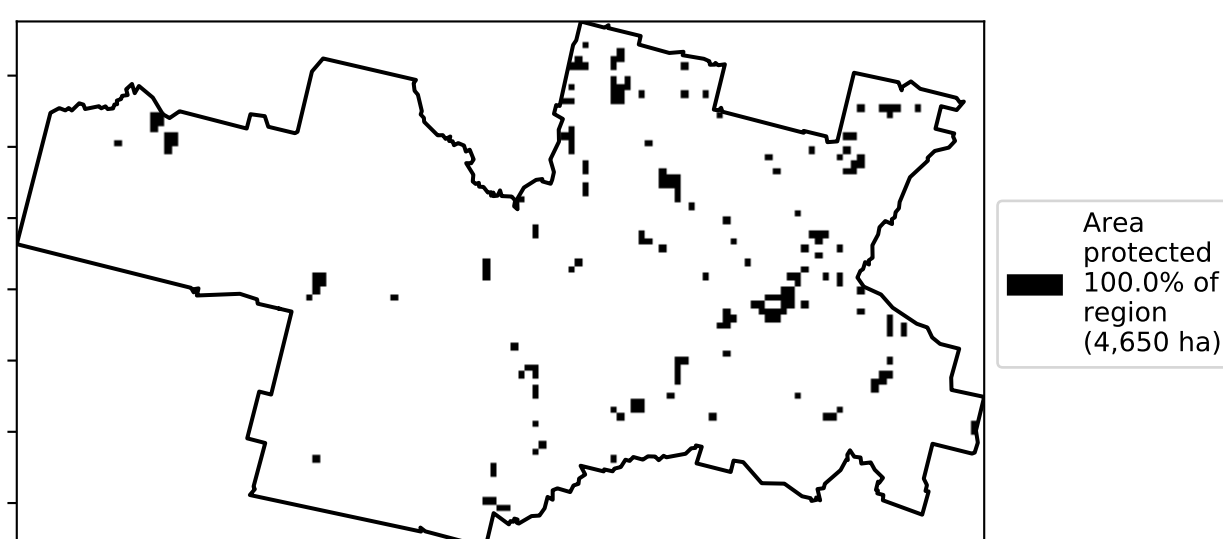
Total Vegetation Cover [%]



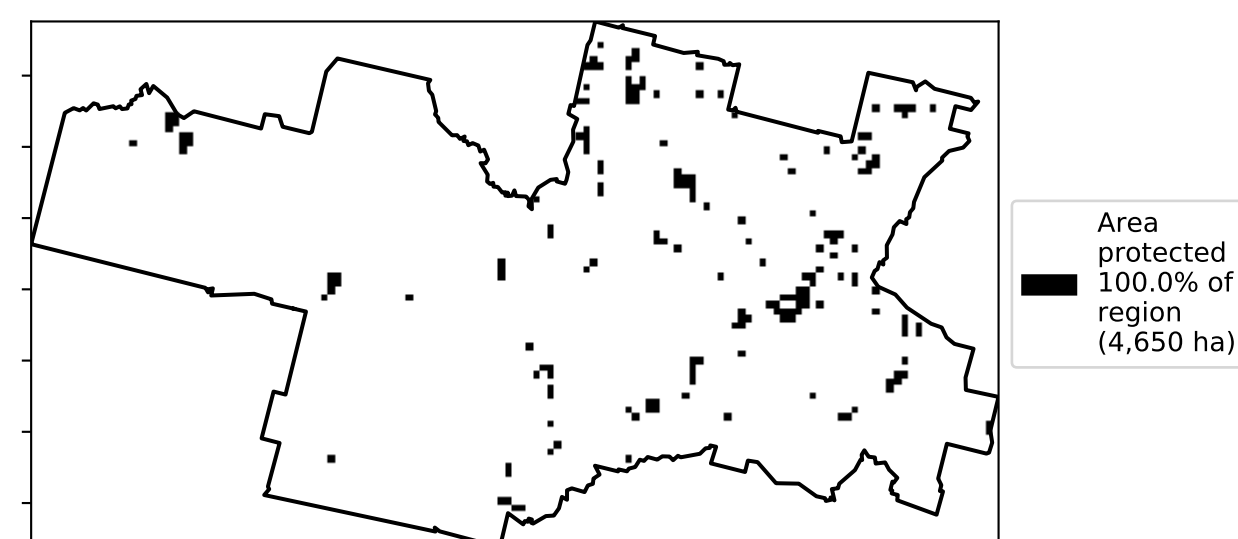
Proportion of vegetation cover class in area



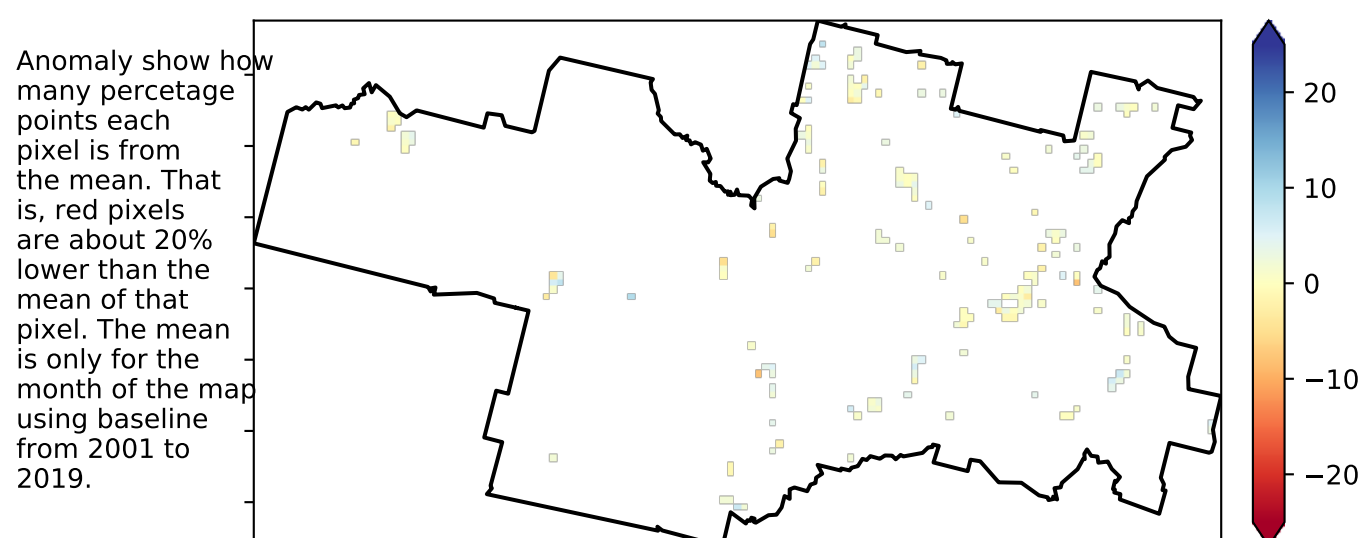
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

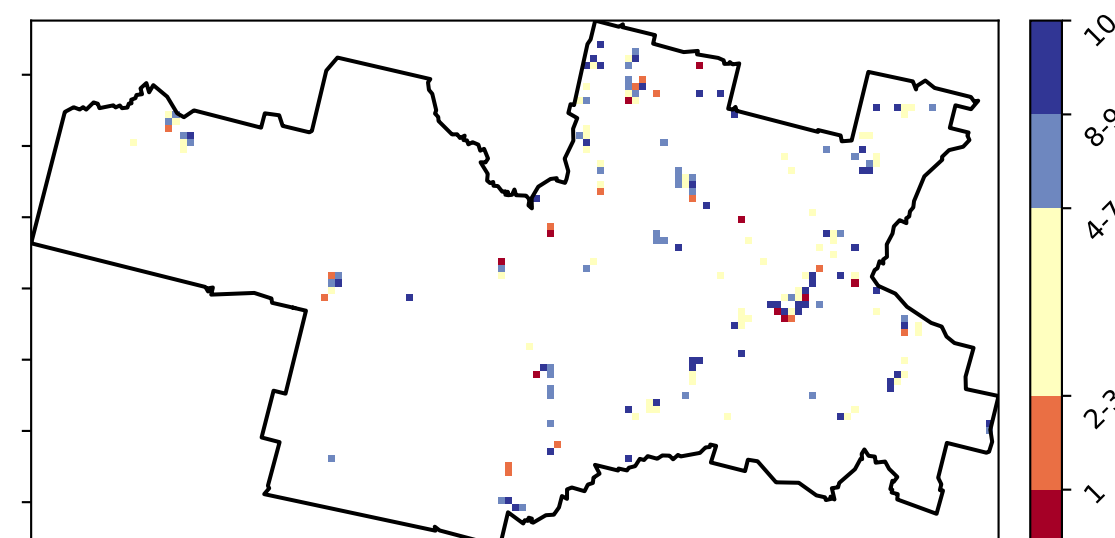


Total Vegetation Cover Anomaly [%]

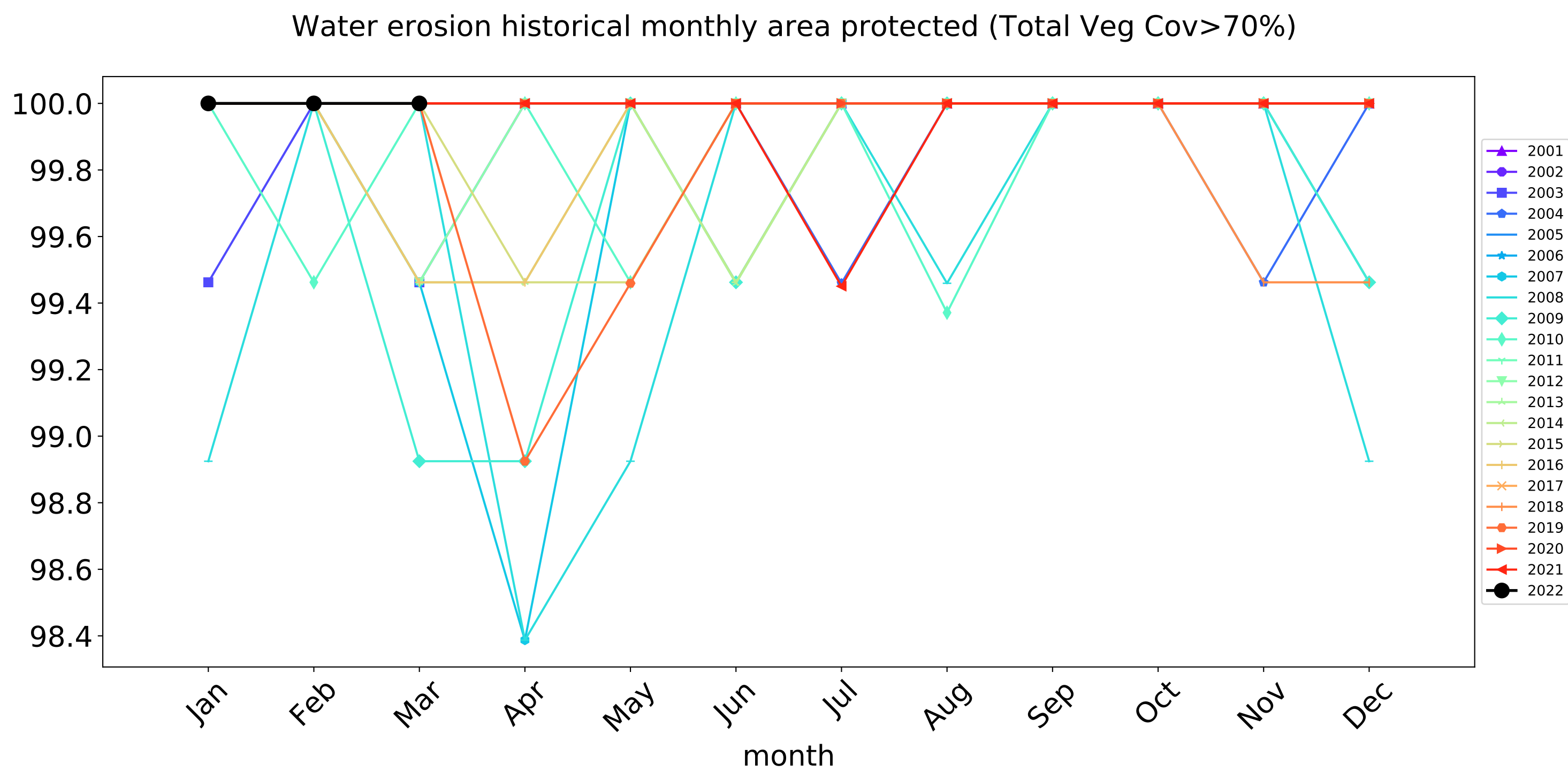
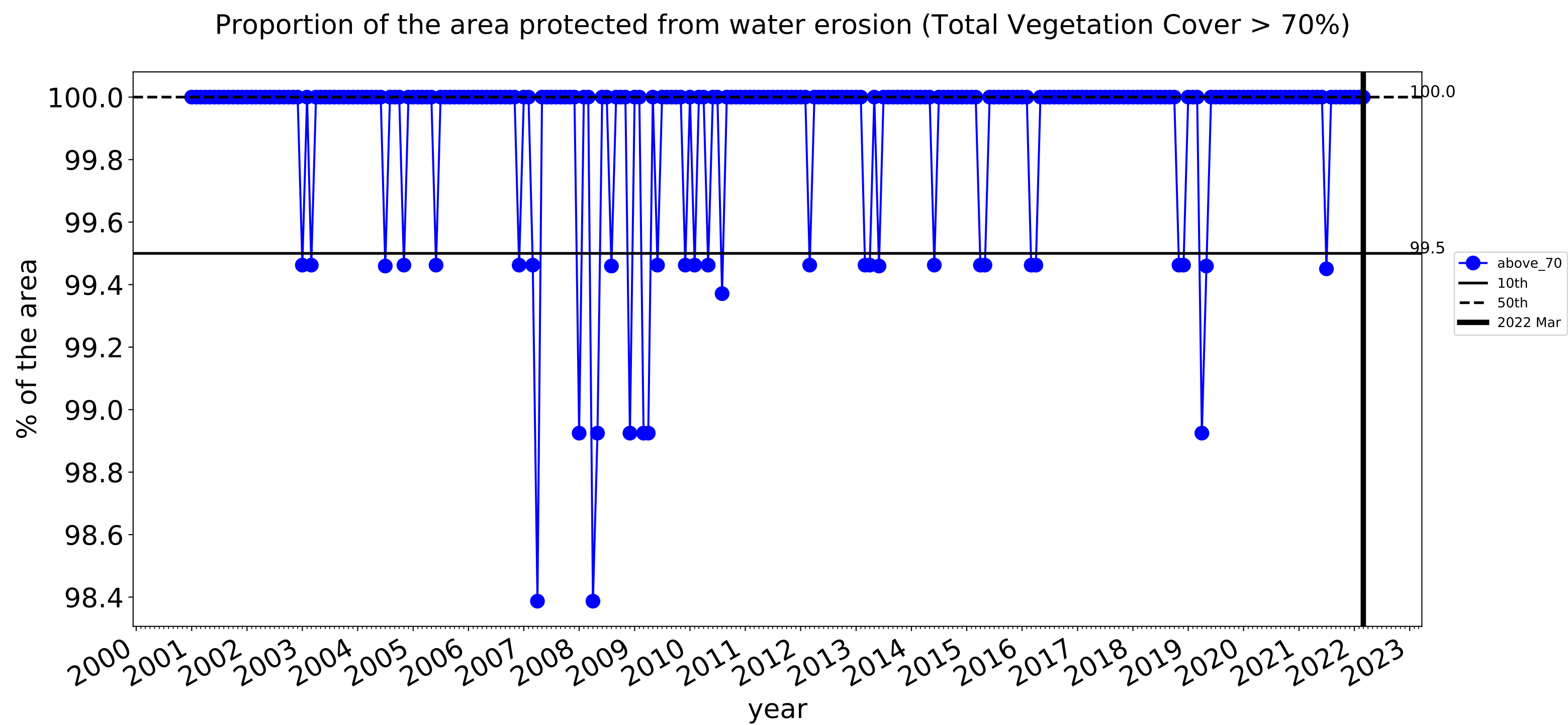
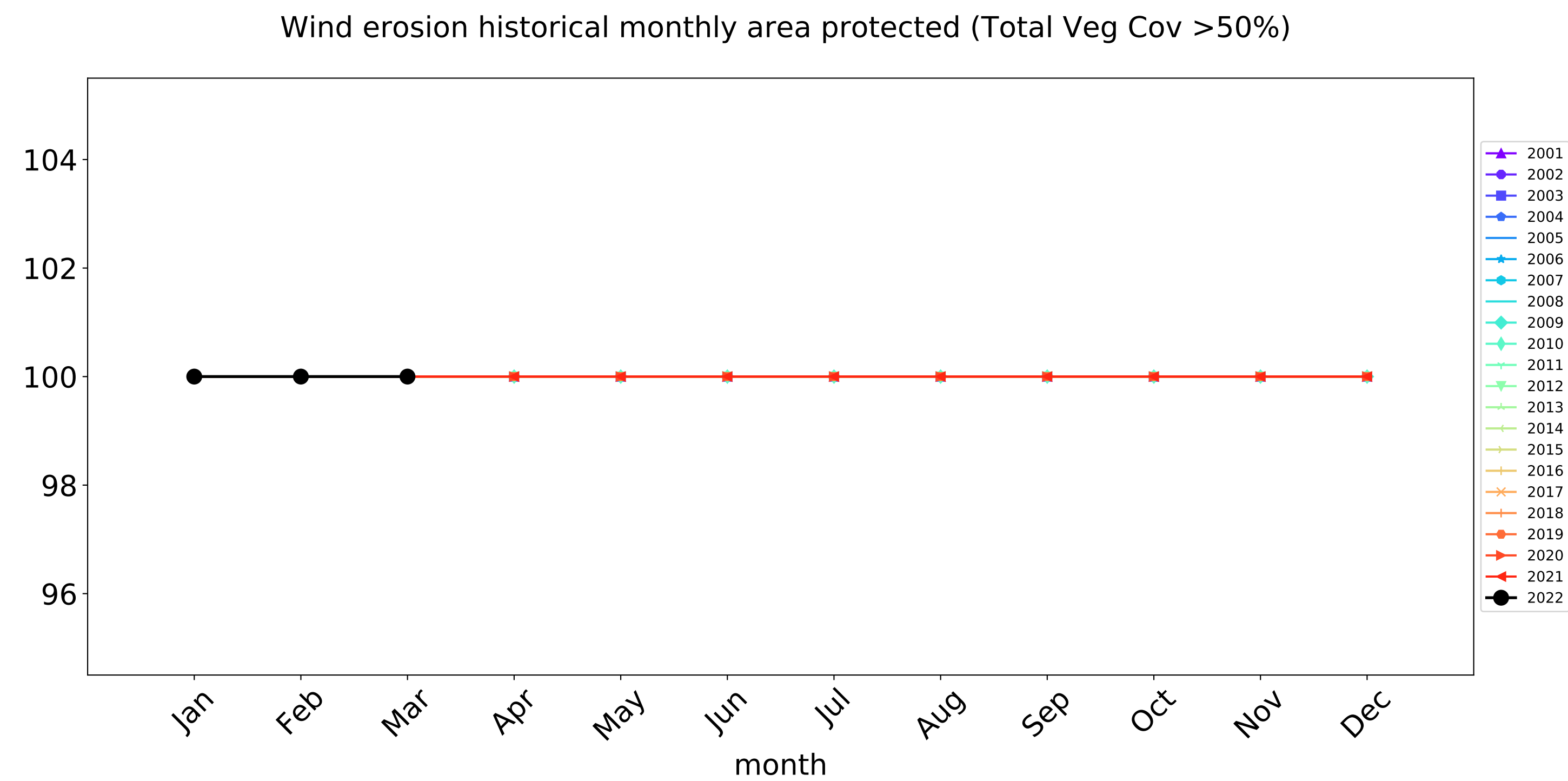
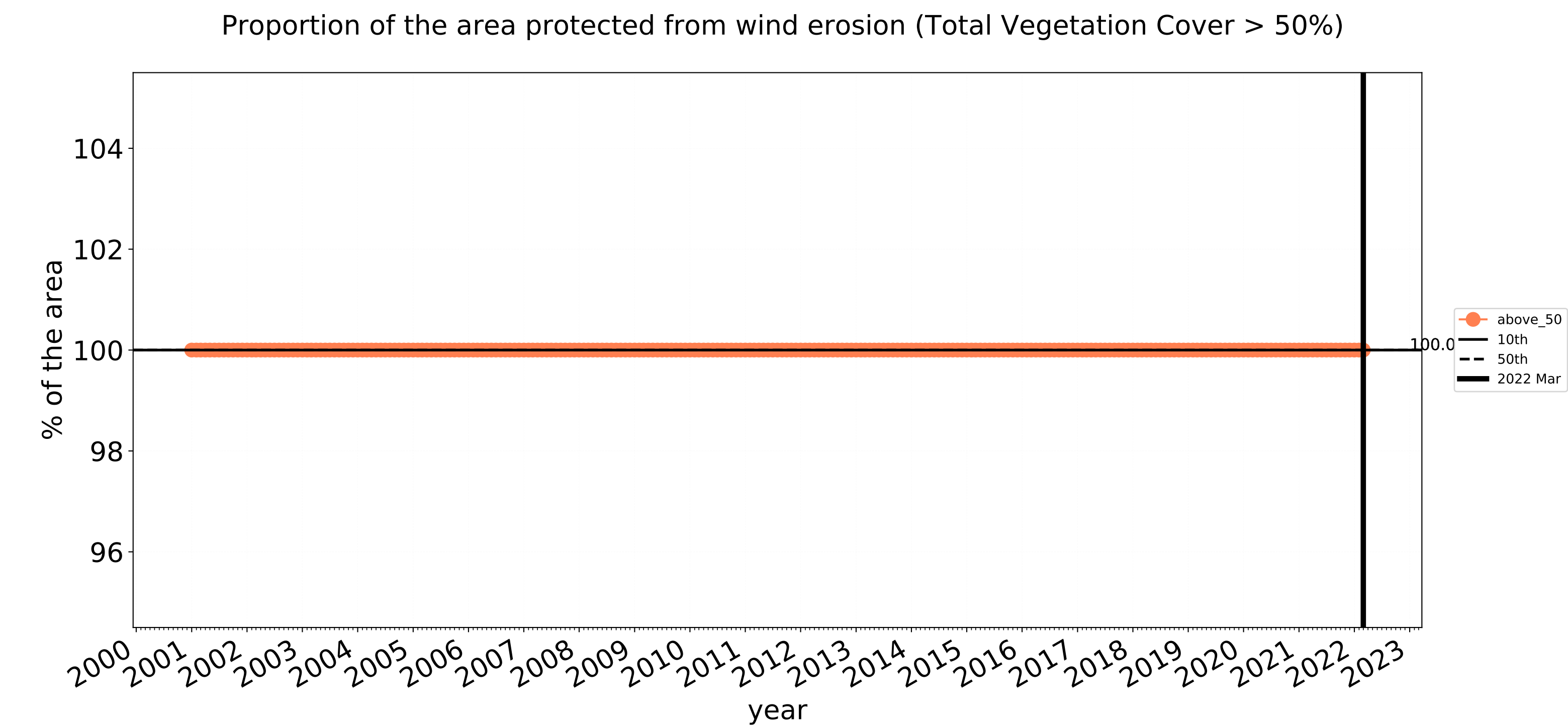


Total Vegetation Cover Decile [%]

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.



Grazing - Forest (non woodland) timeseries



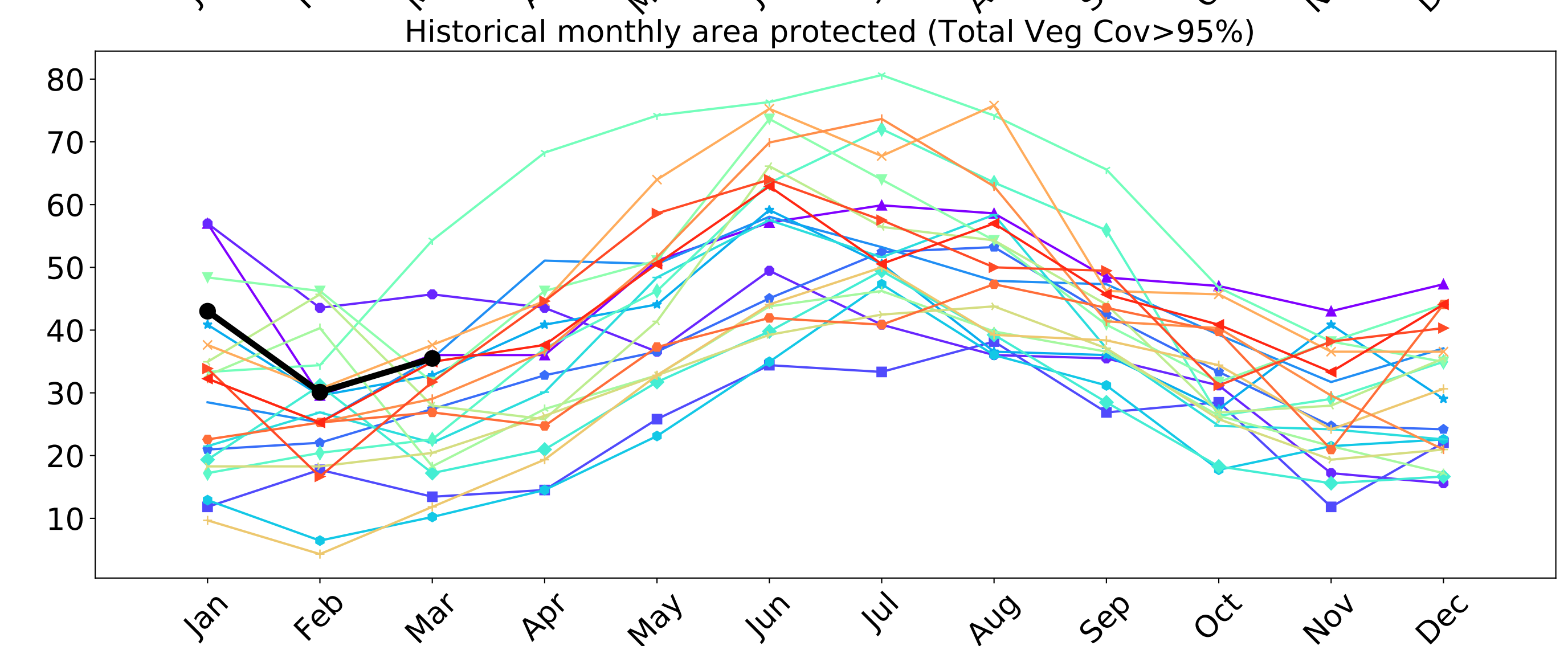
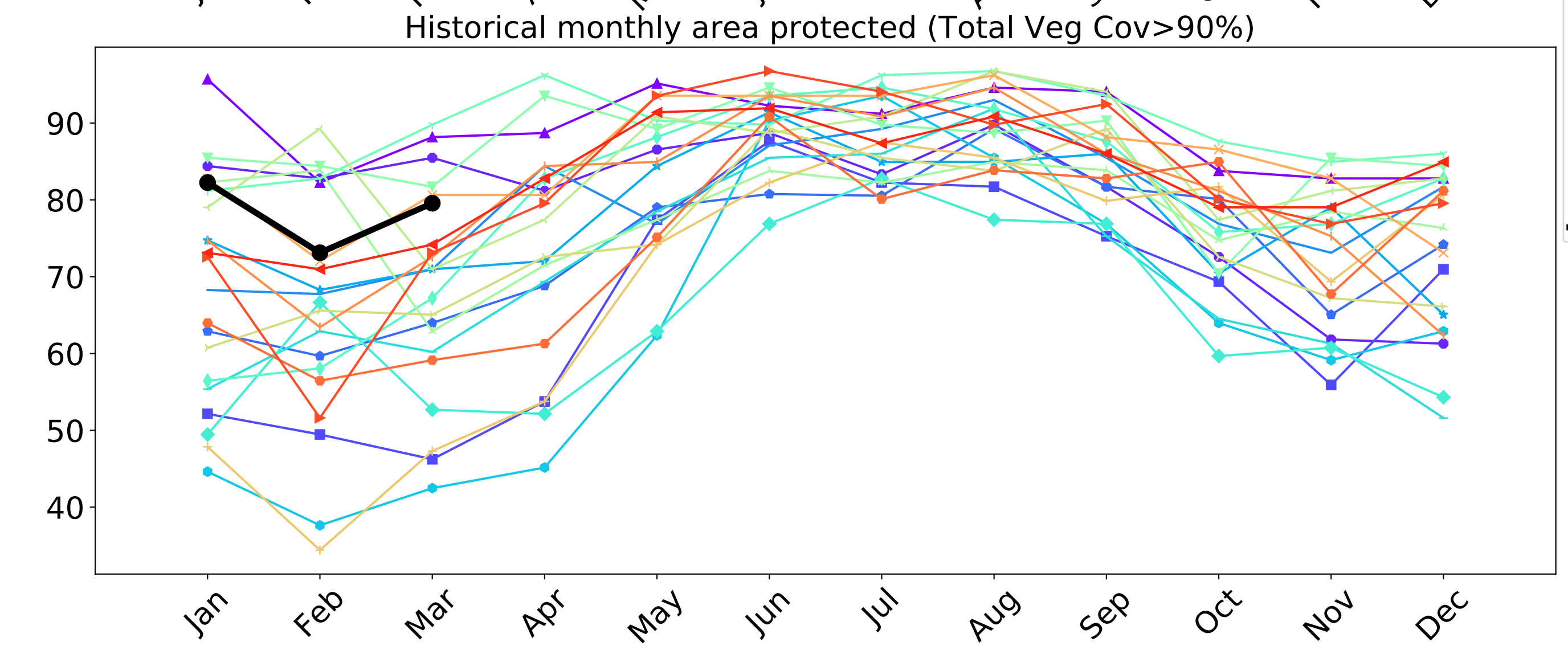
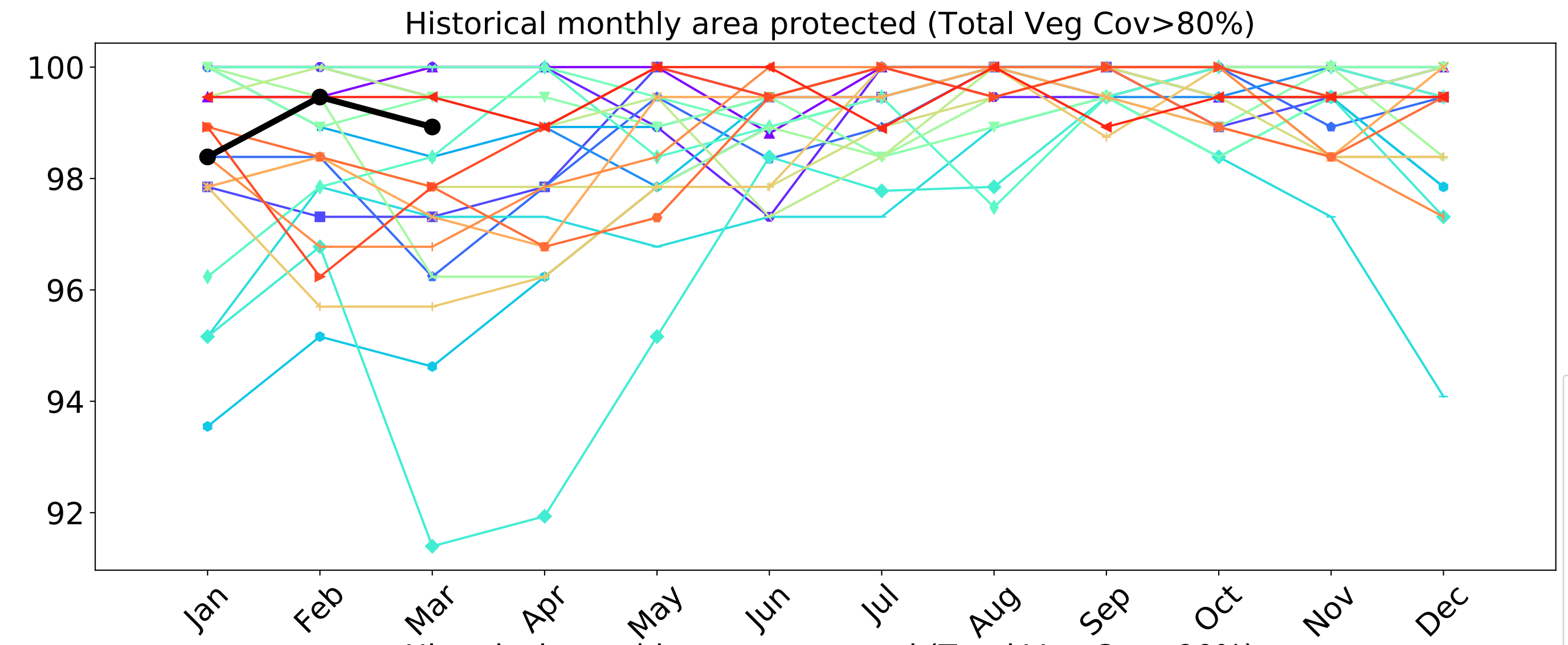
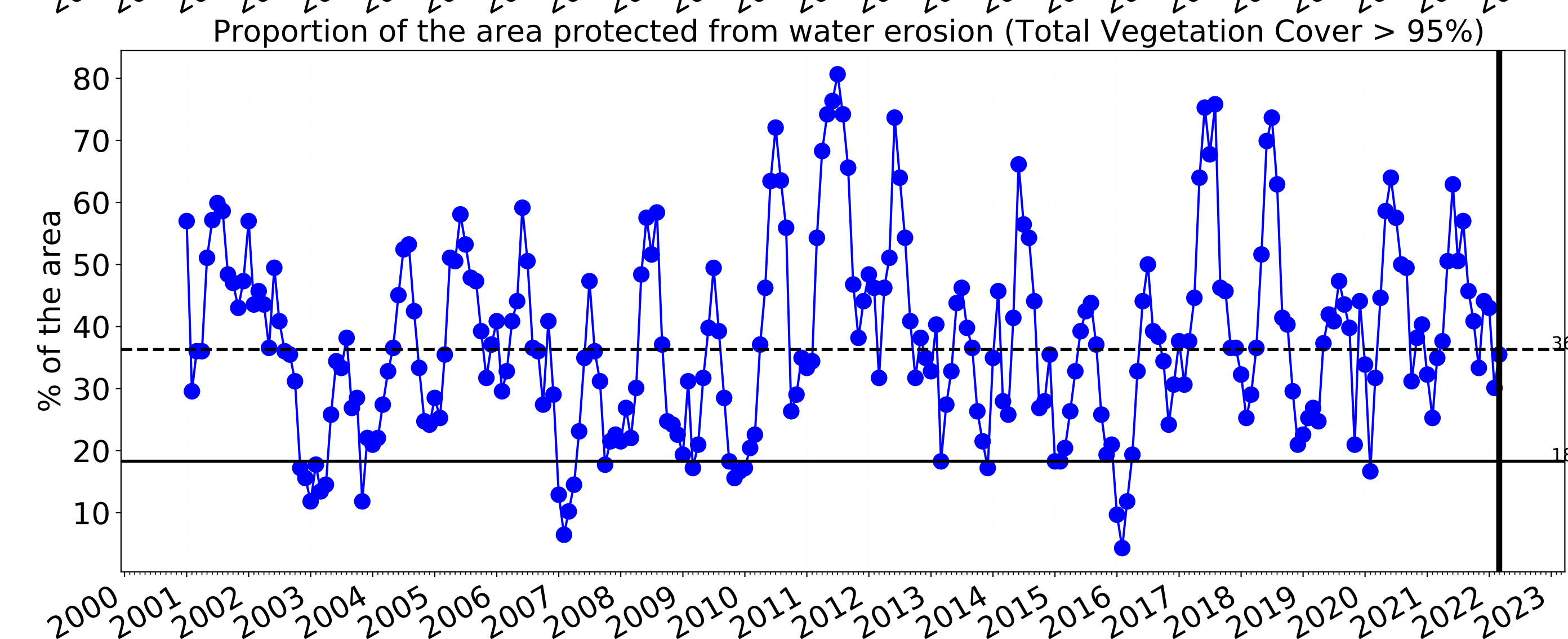
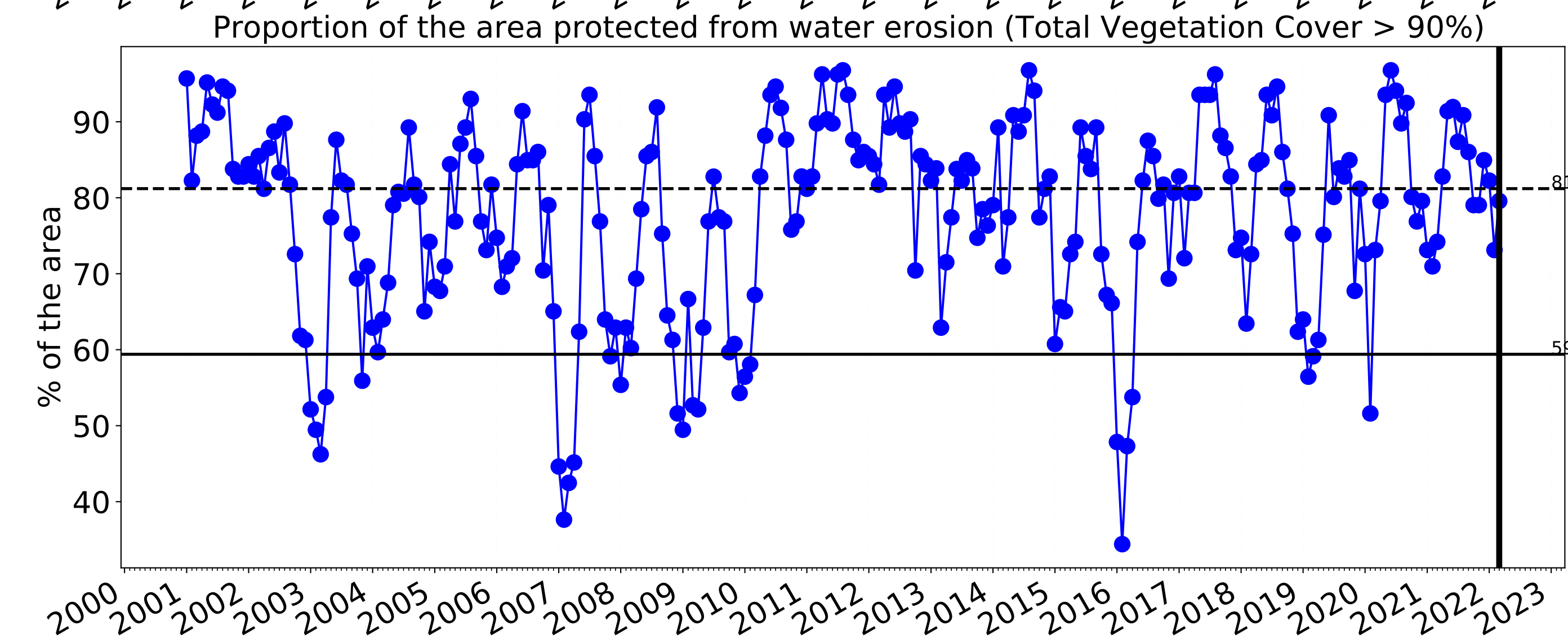
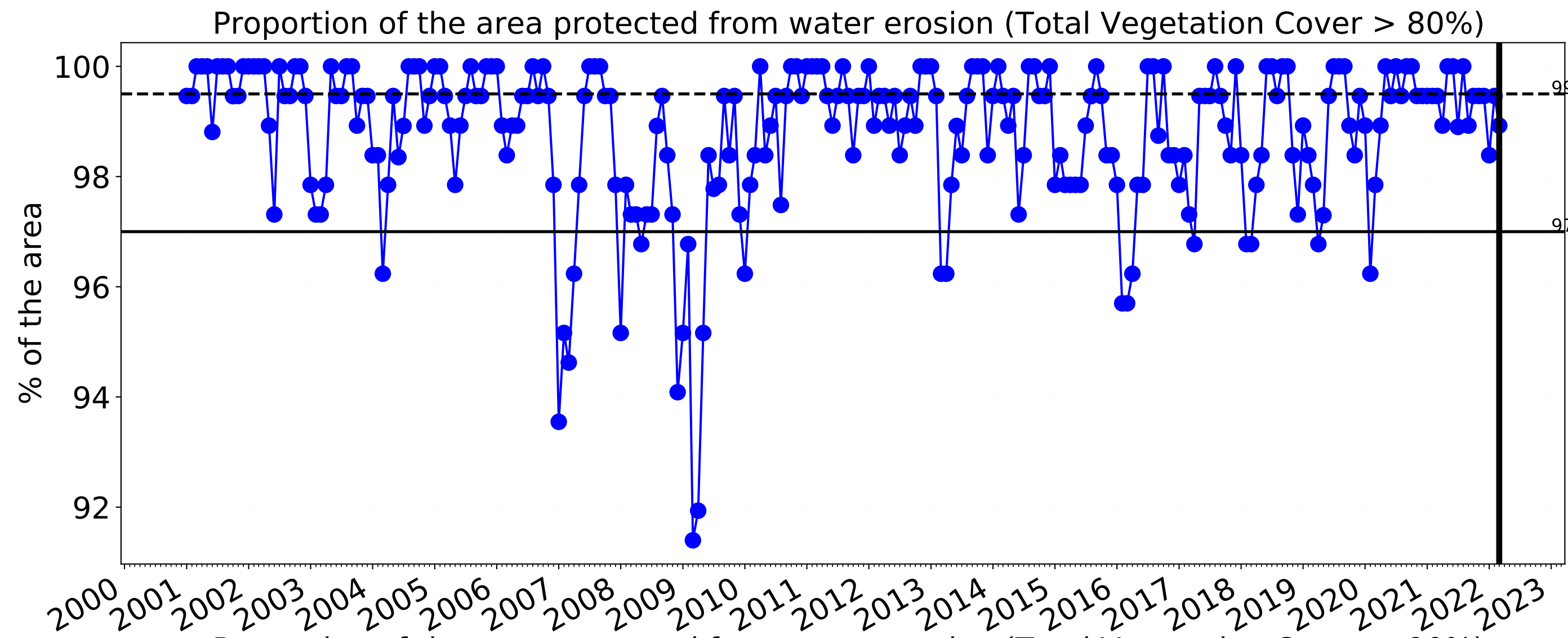
tern  
Ecosystem Research Infrastructure



National  
Landcare  
Programme



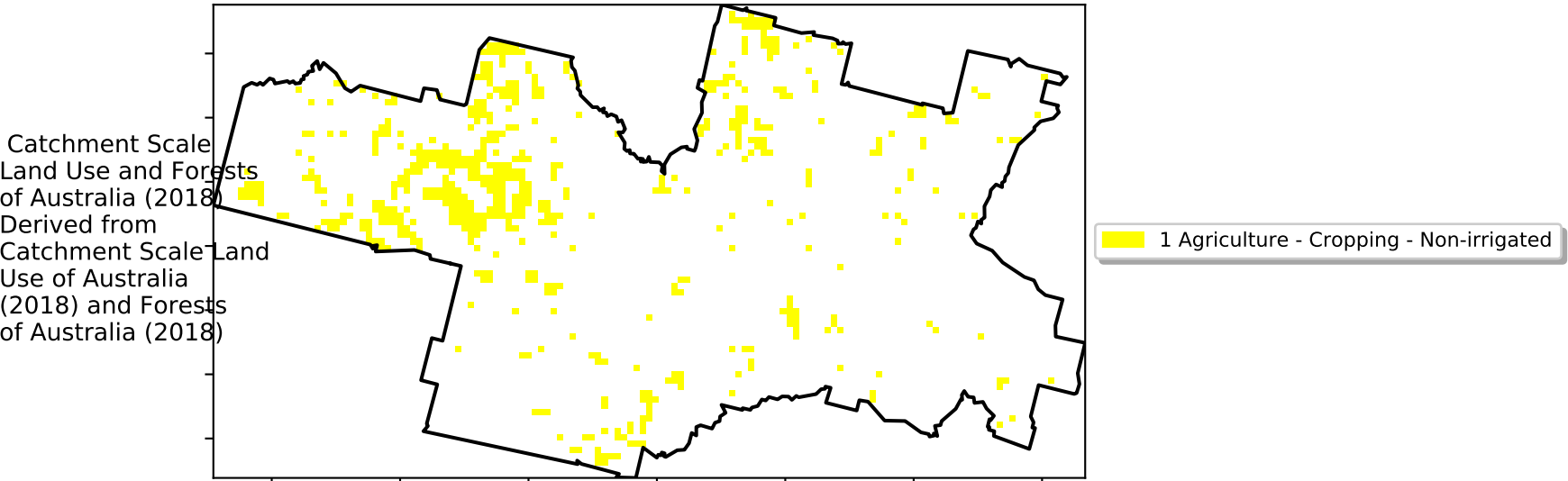




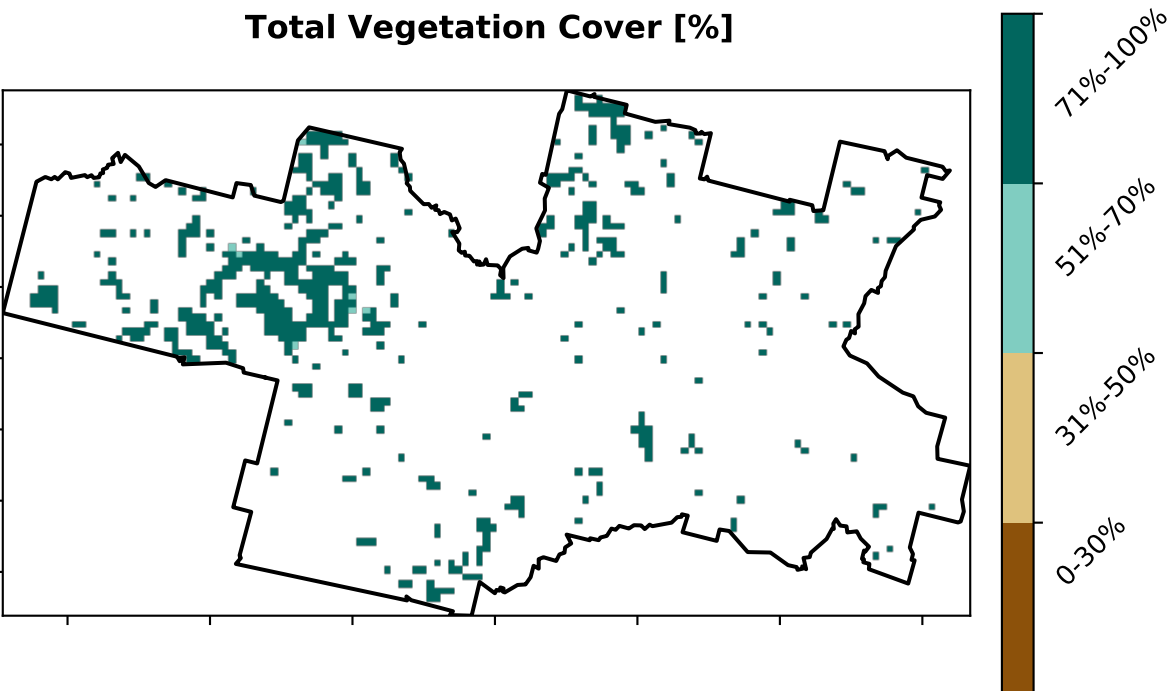


Cropping

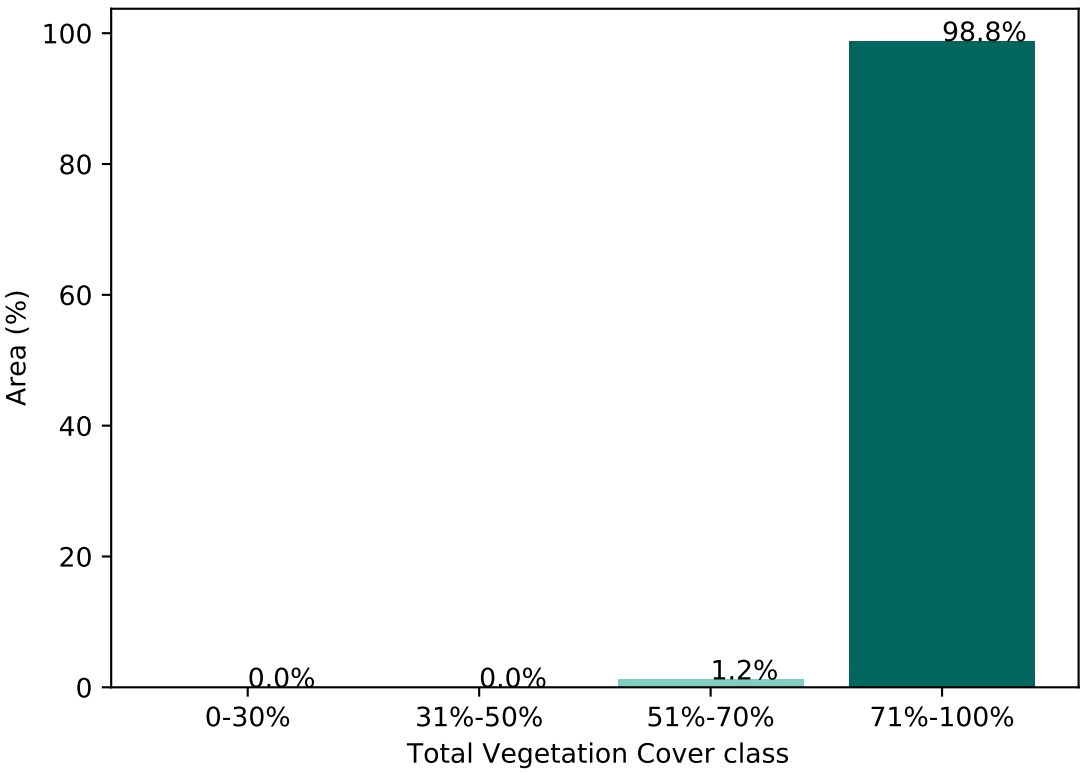
Land use and forest cover



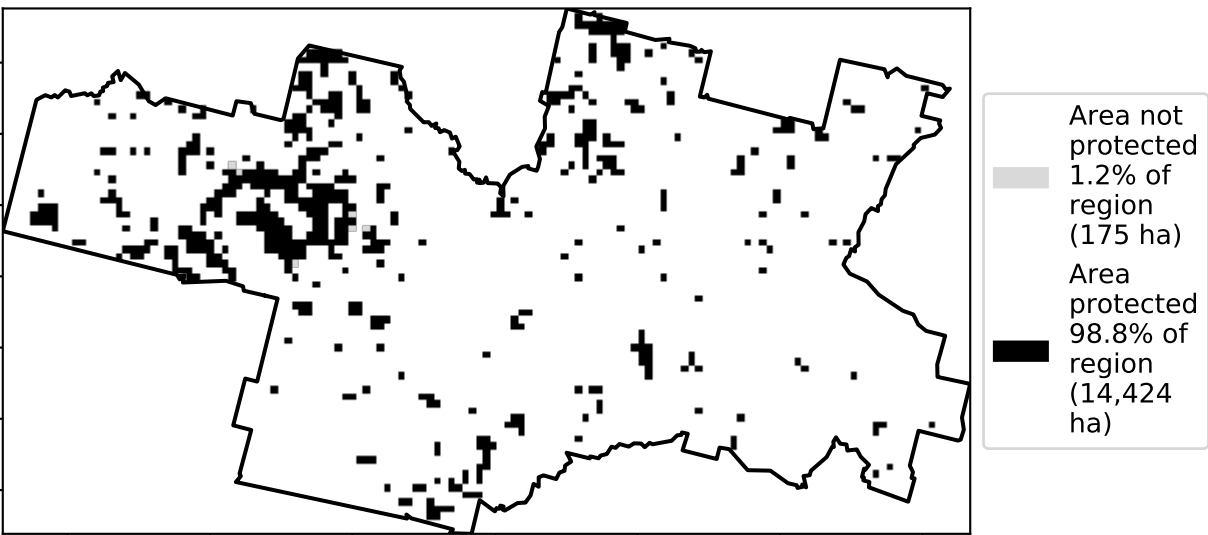
Total Vegetation Cover [%]



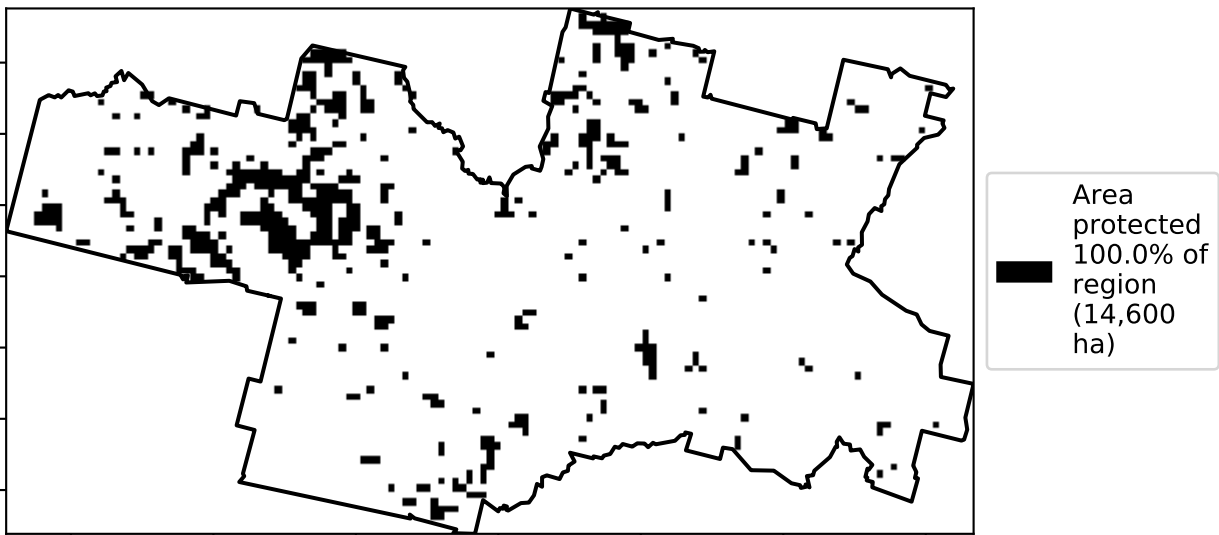
Proportion of vegetation cover class in area



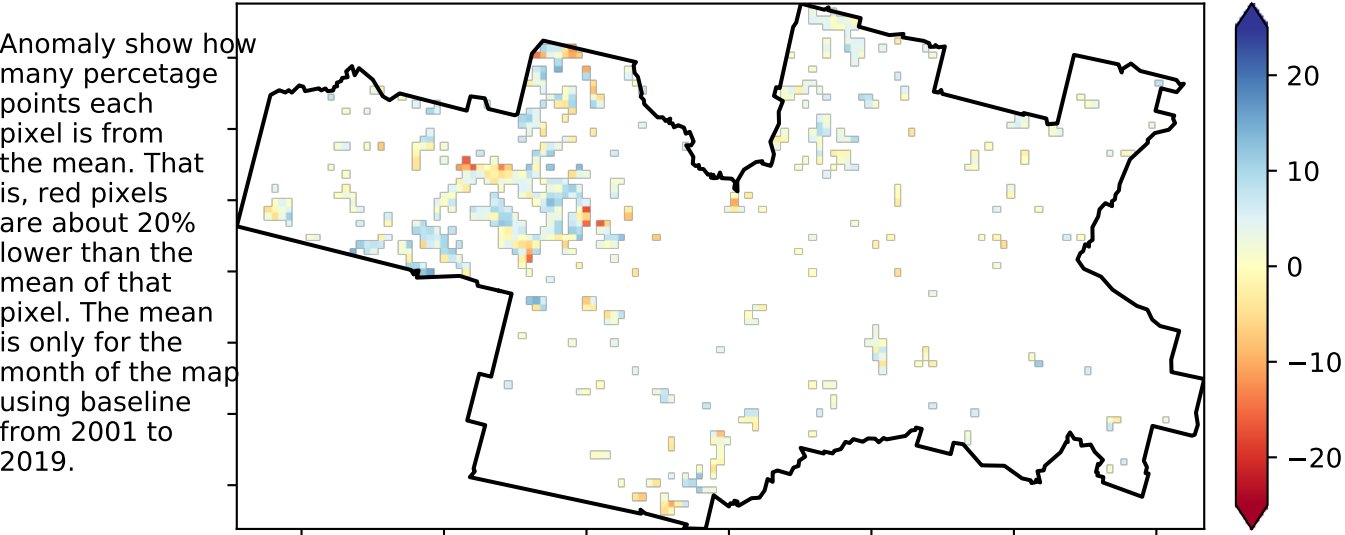
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

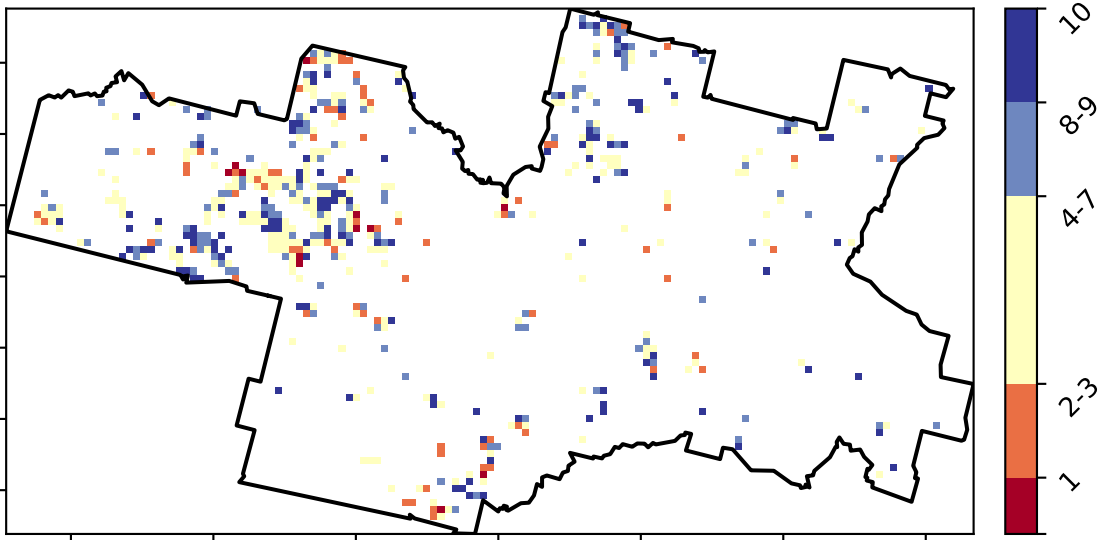


Total Vegetation Cover Anomaly [%]



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.



tern

Ecosystem Research Infrastructure



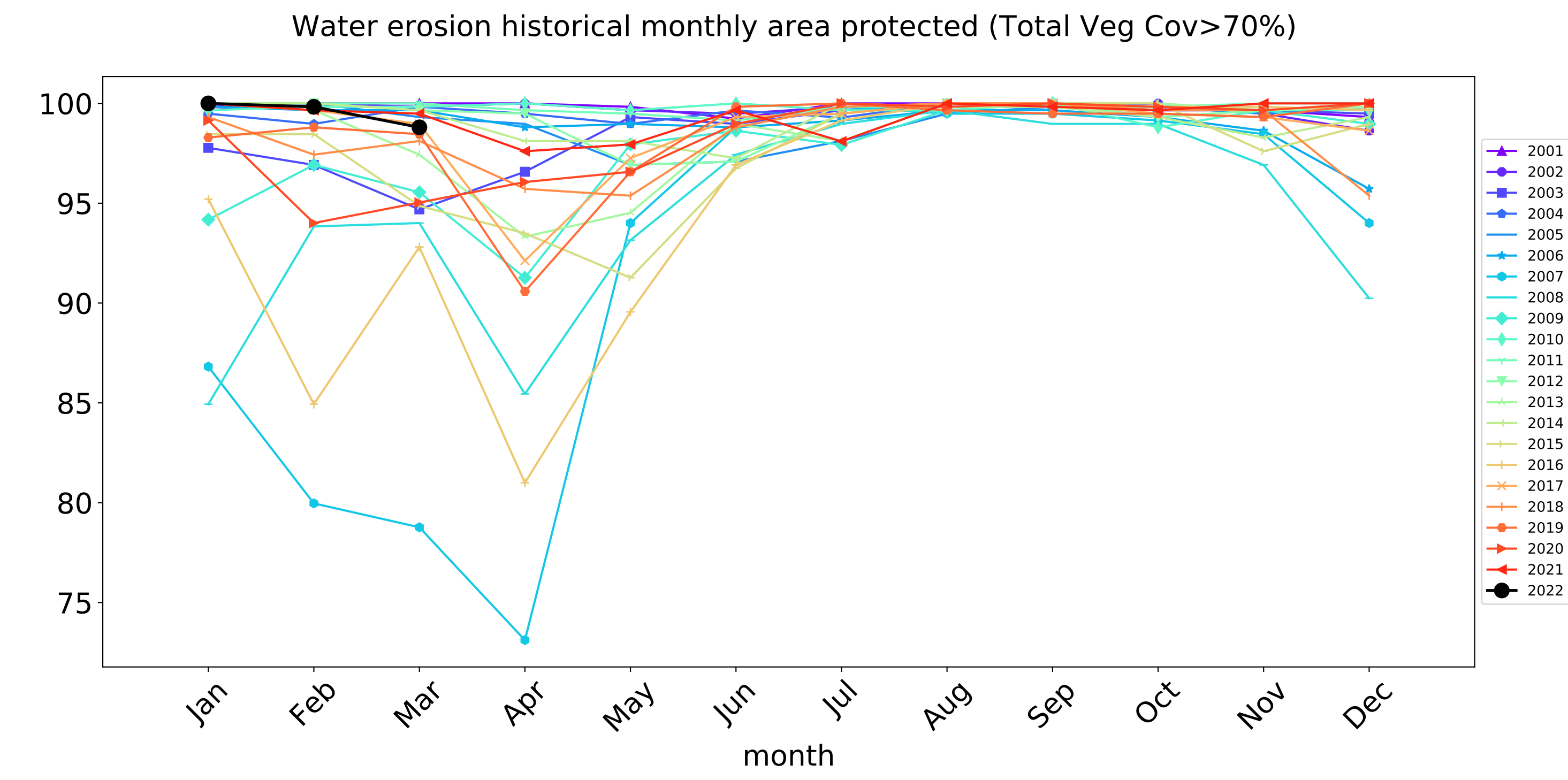
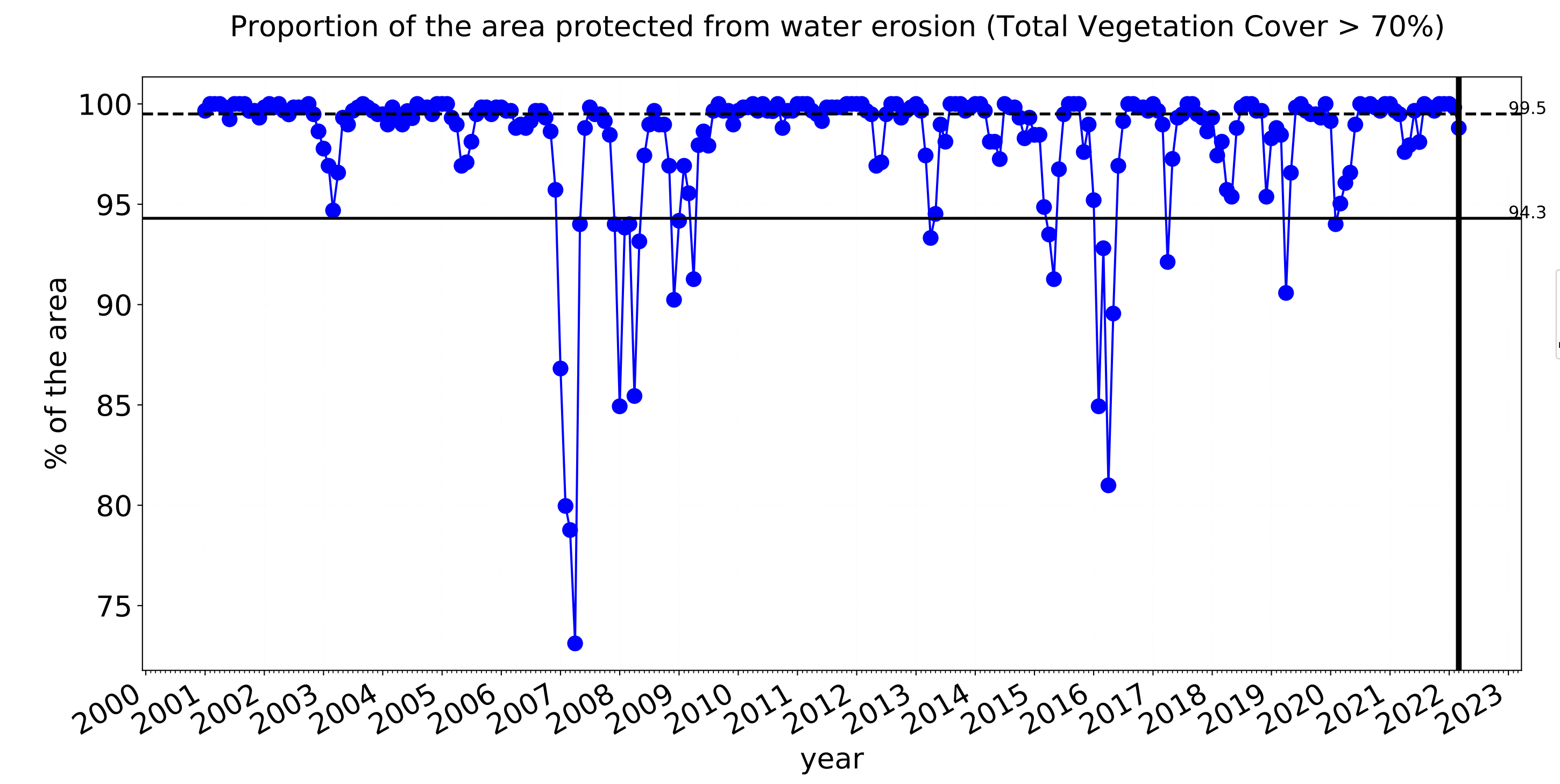
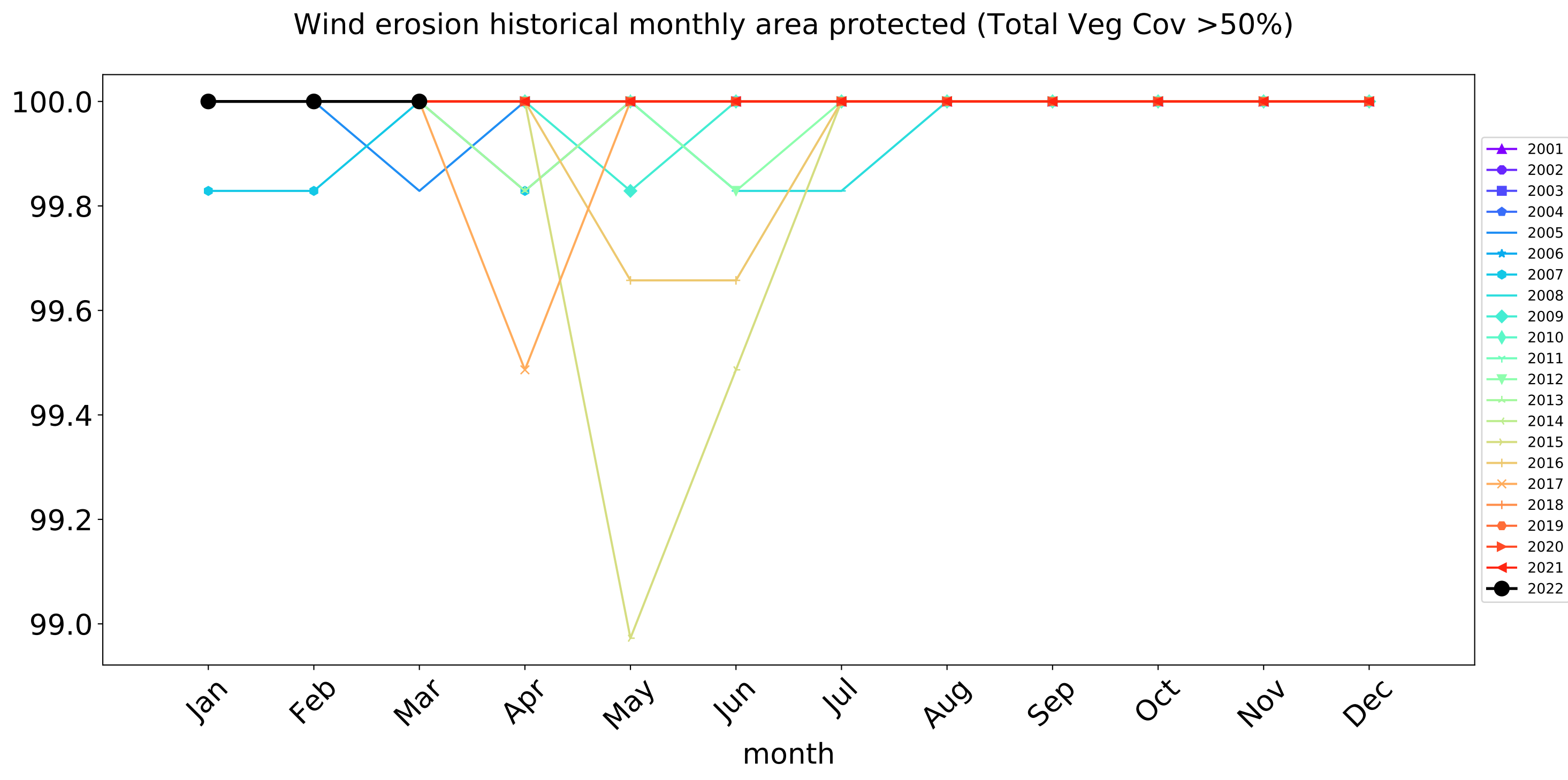
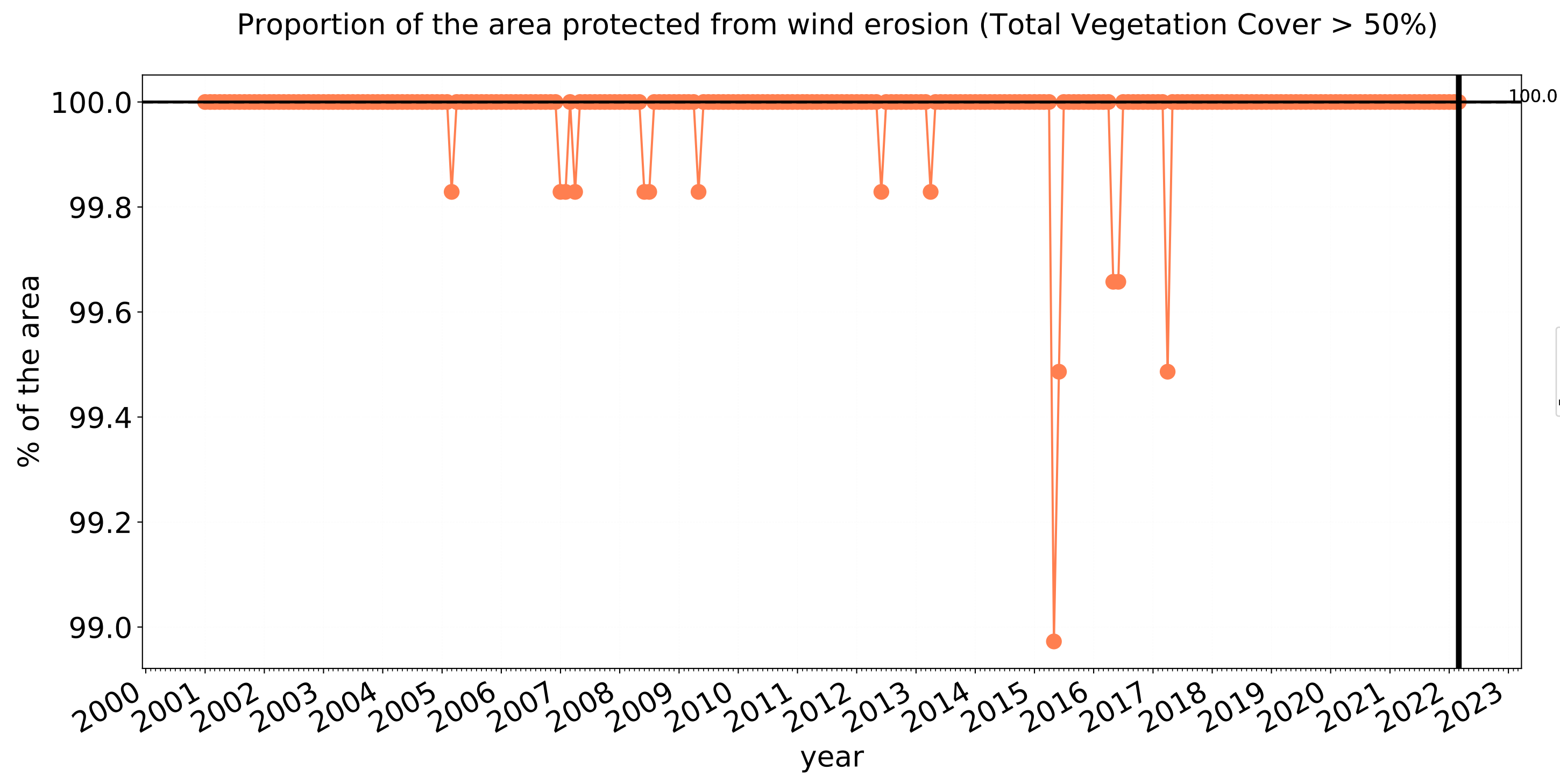
Australian Government

National  
Landcare  
Programme

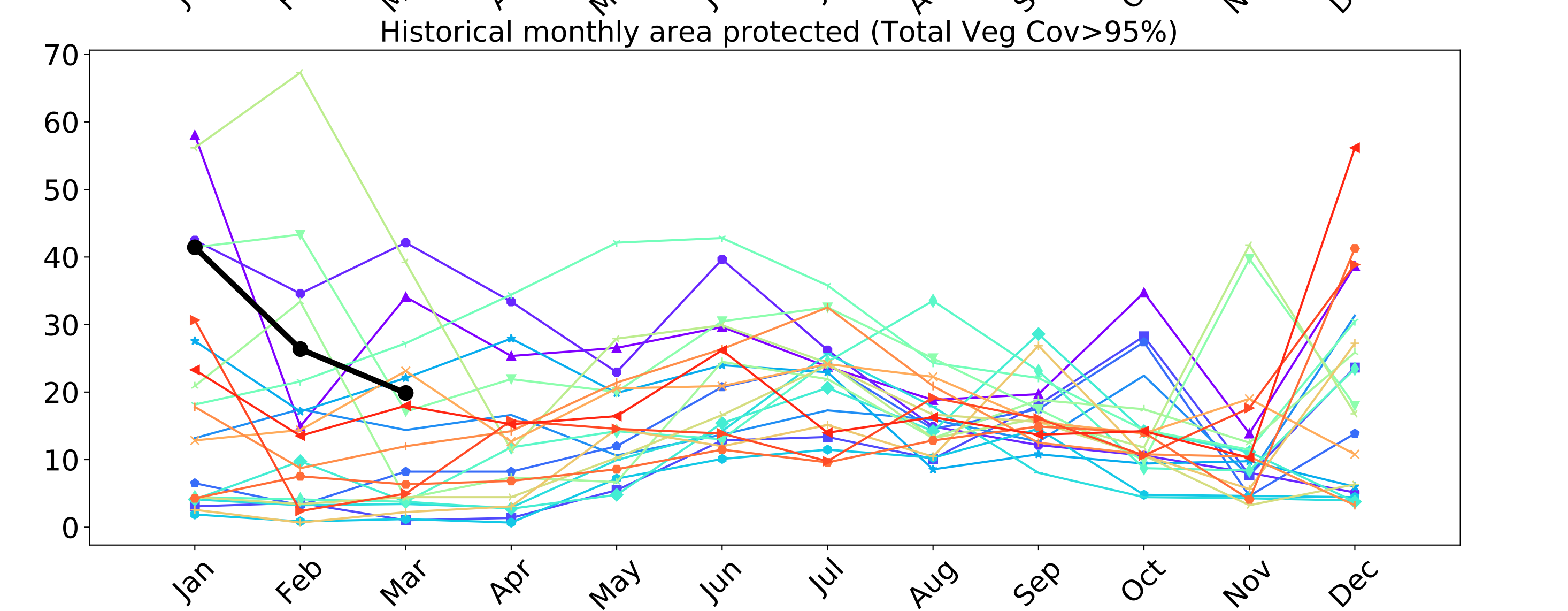
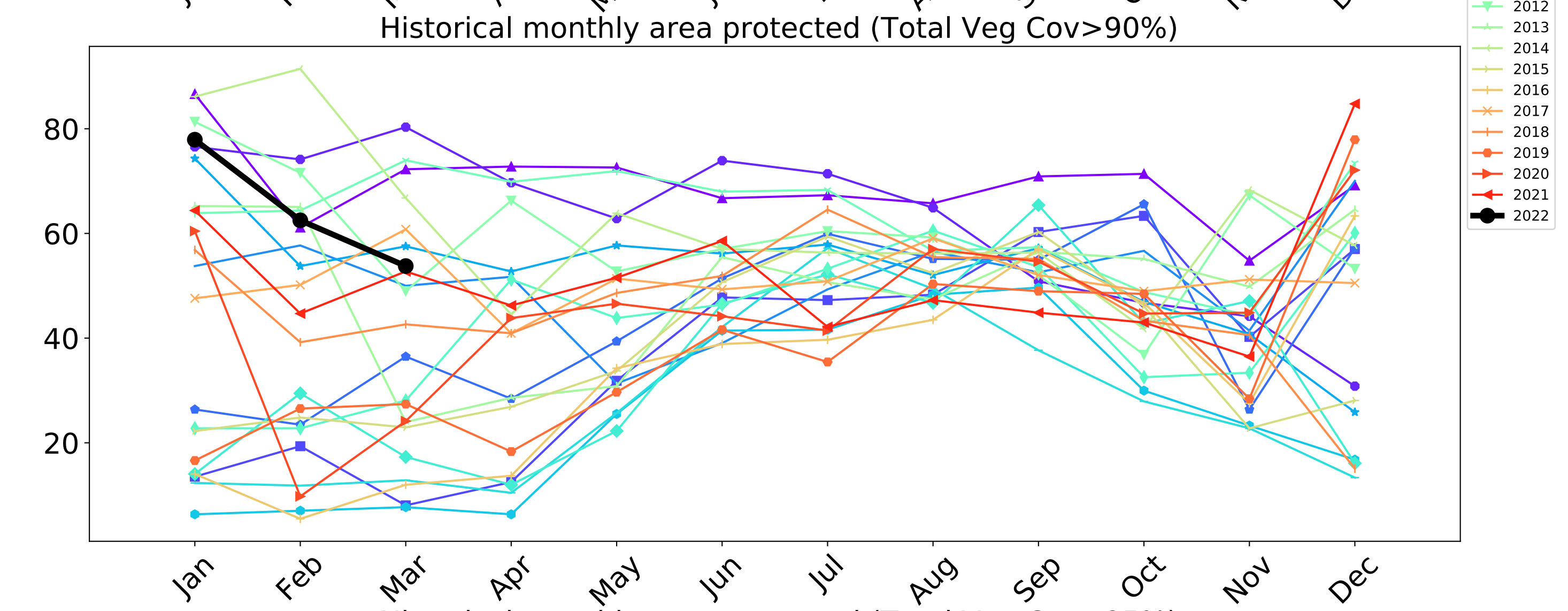
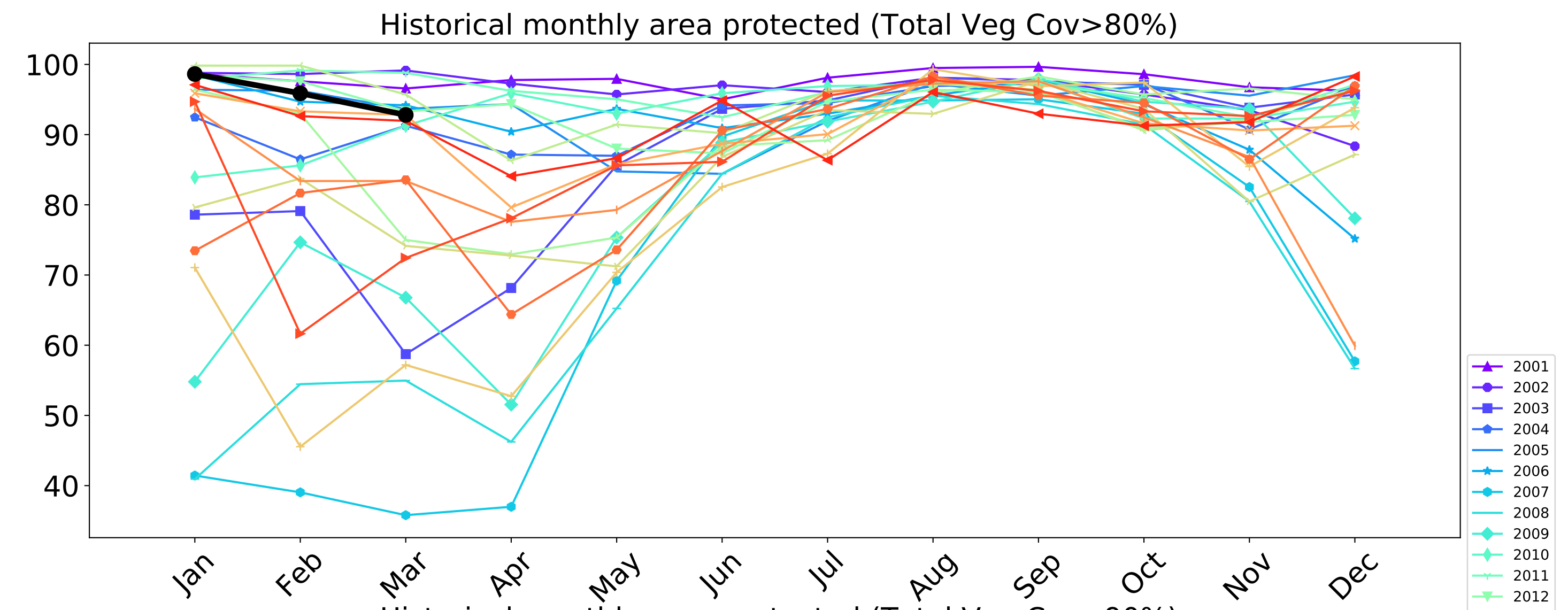
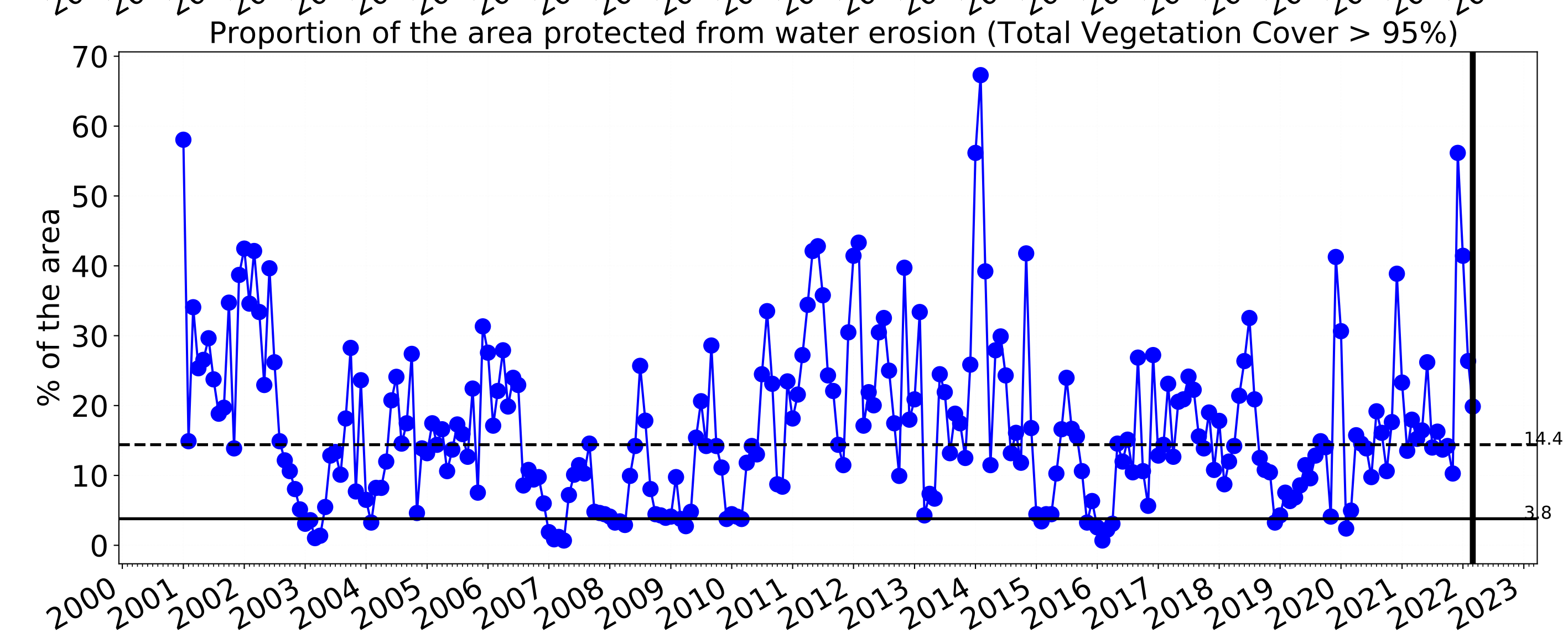
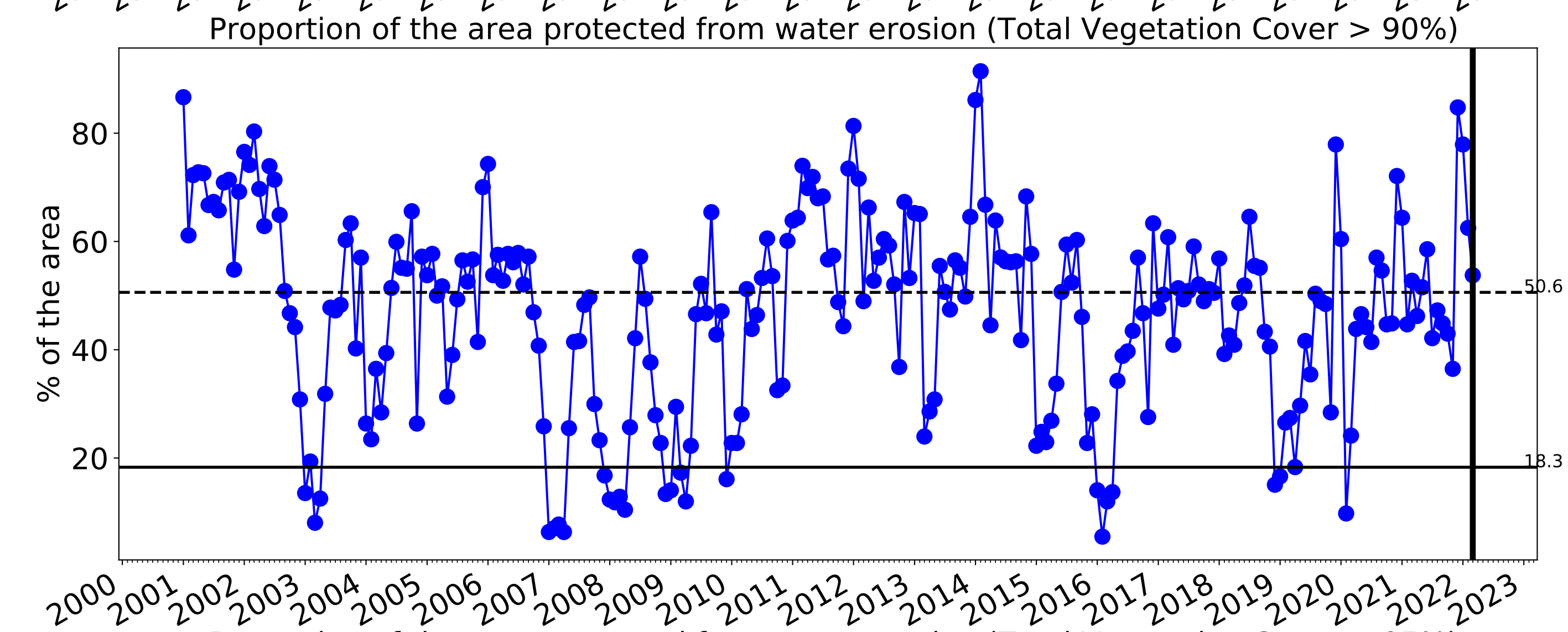
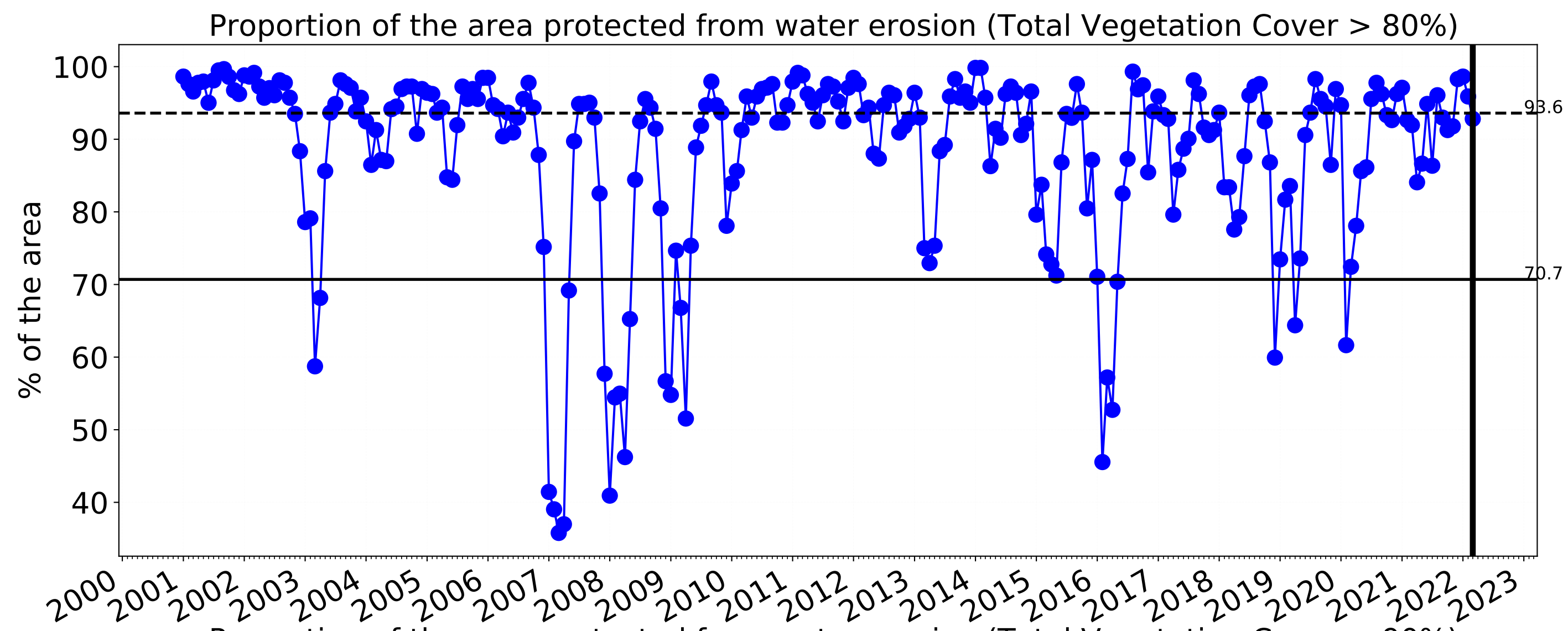




Cropping timeseries





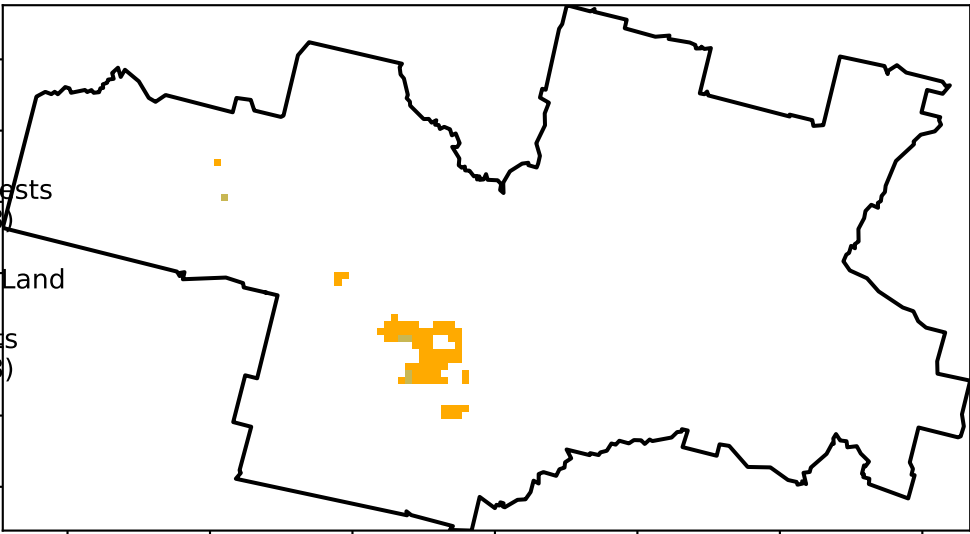




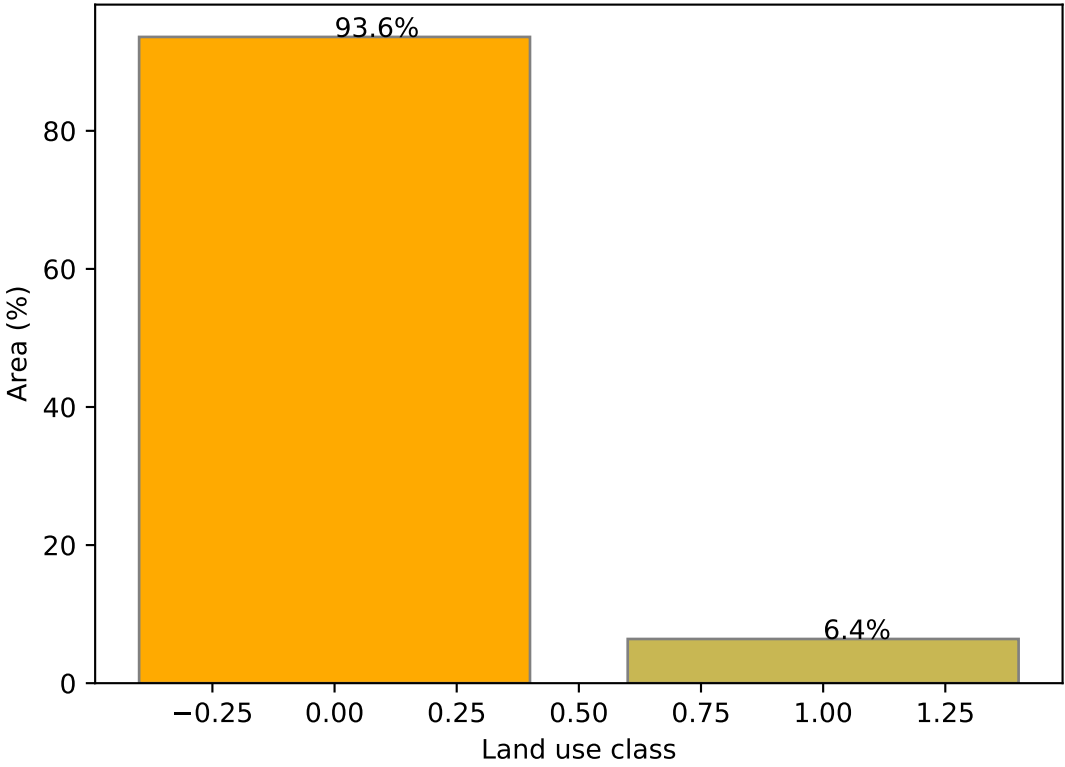
Irrigation

Land use and forest cover

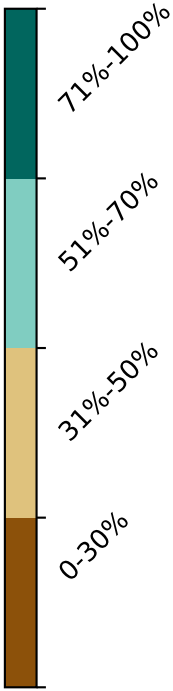
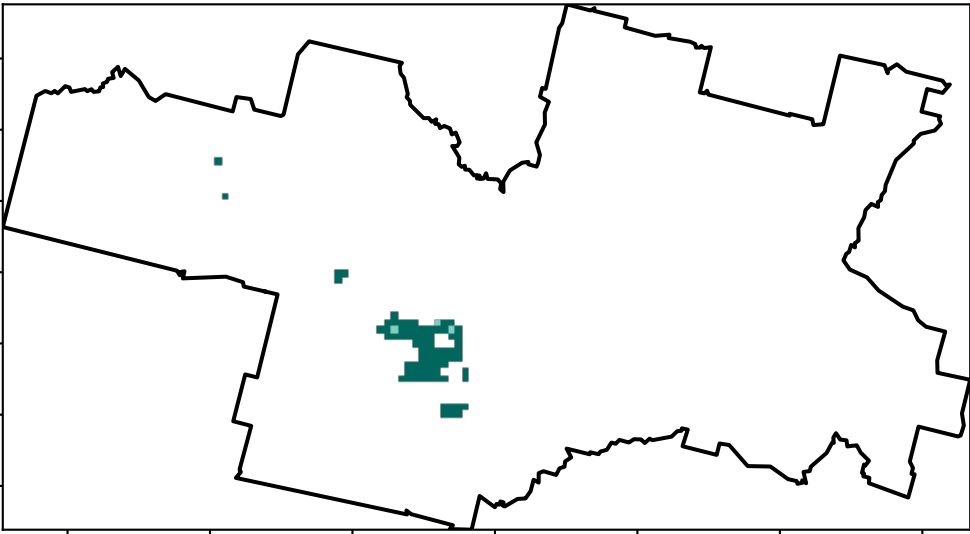
Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)



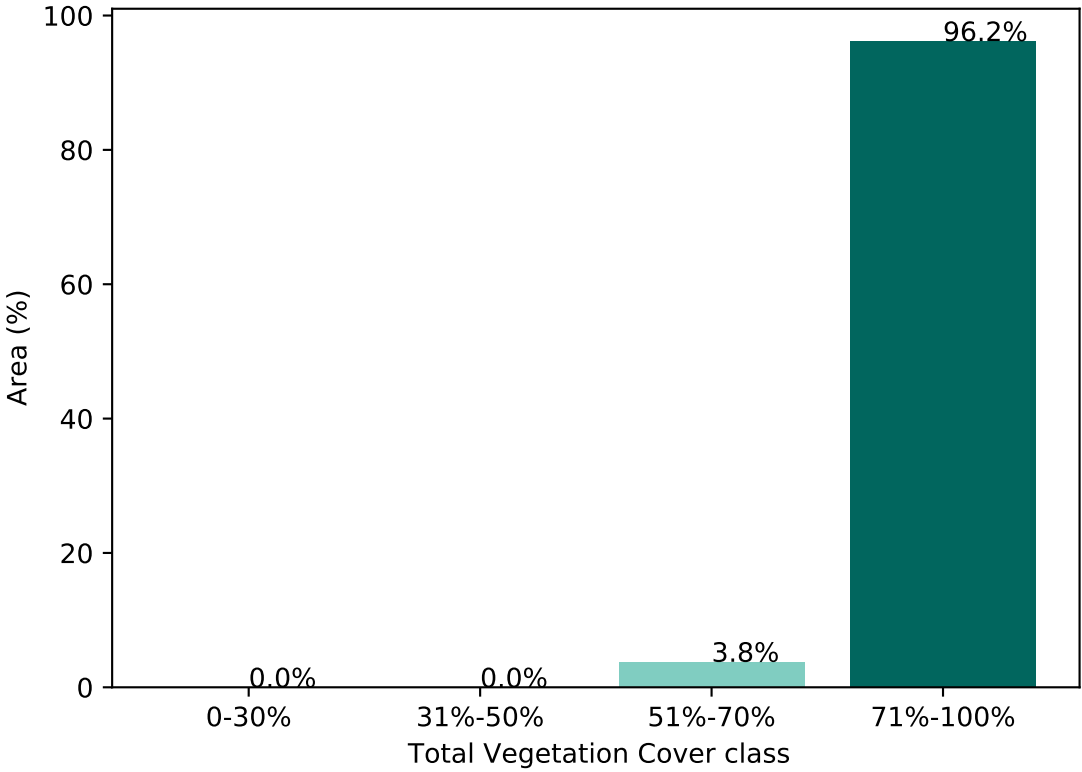
Proportion of each land class in area



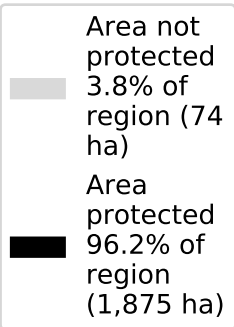
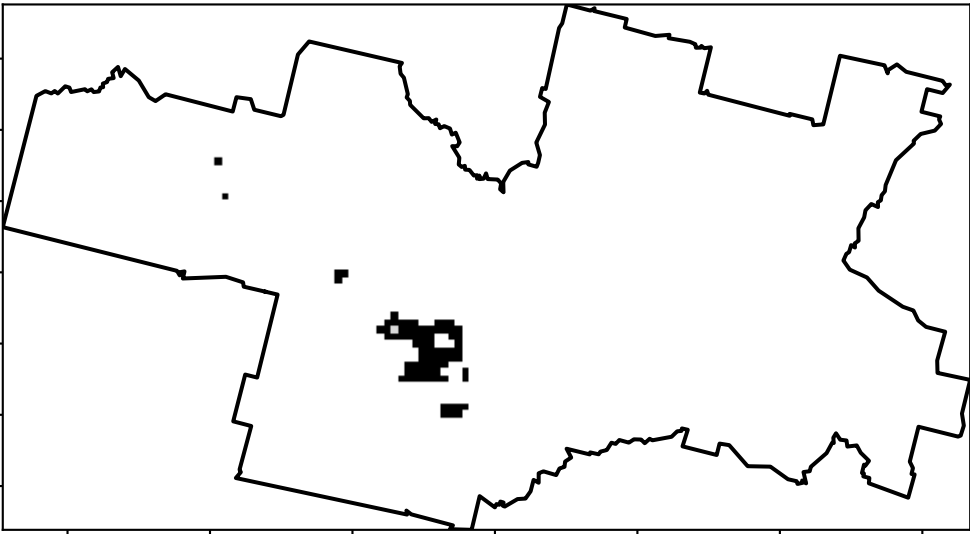
Total Vegetation Cover [%]



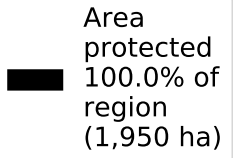
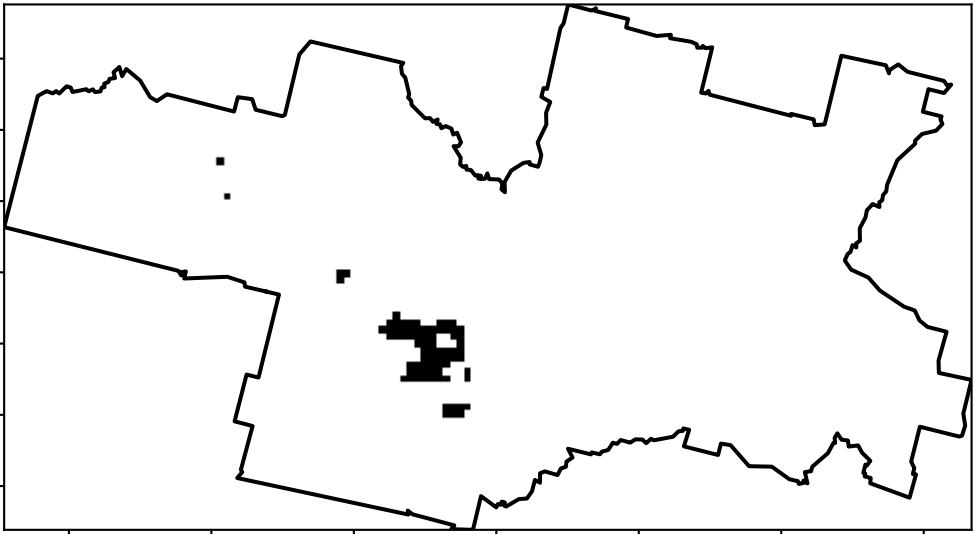
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

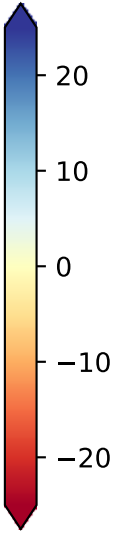
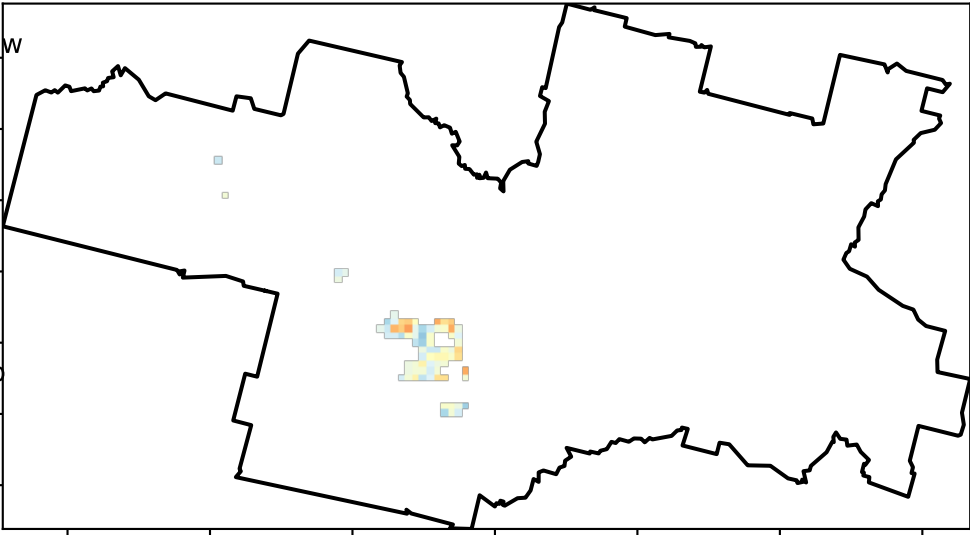


% Area protected from wind erosion (>50%)



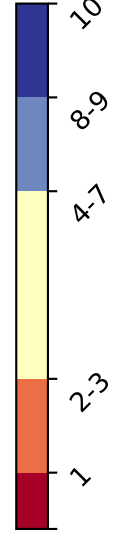
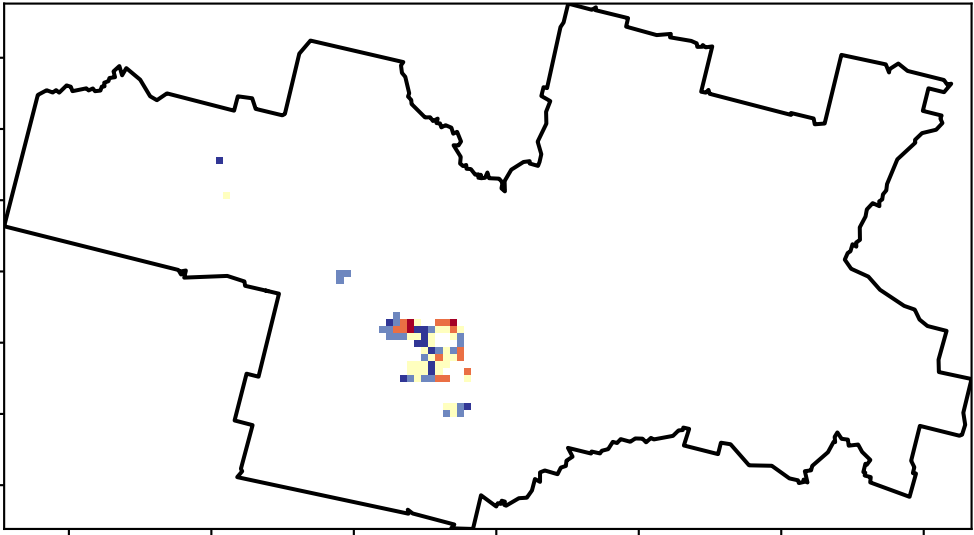
Total Vegetation Cover Anomaly [%]

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.



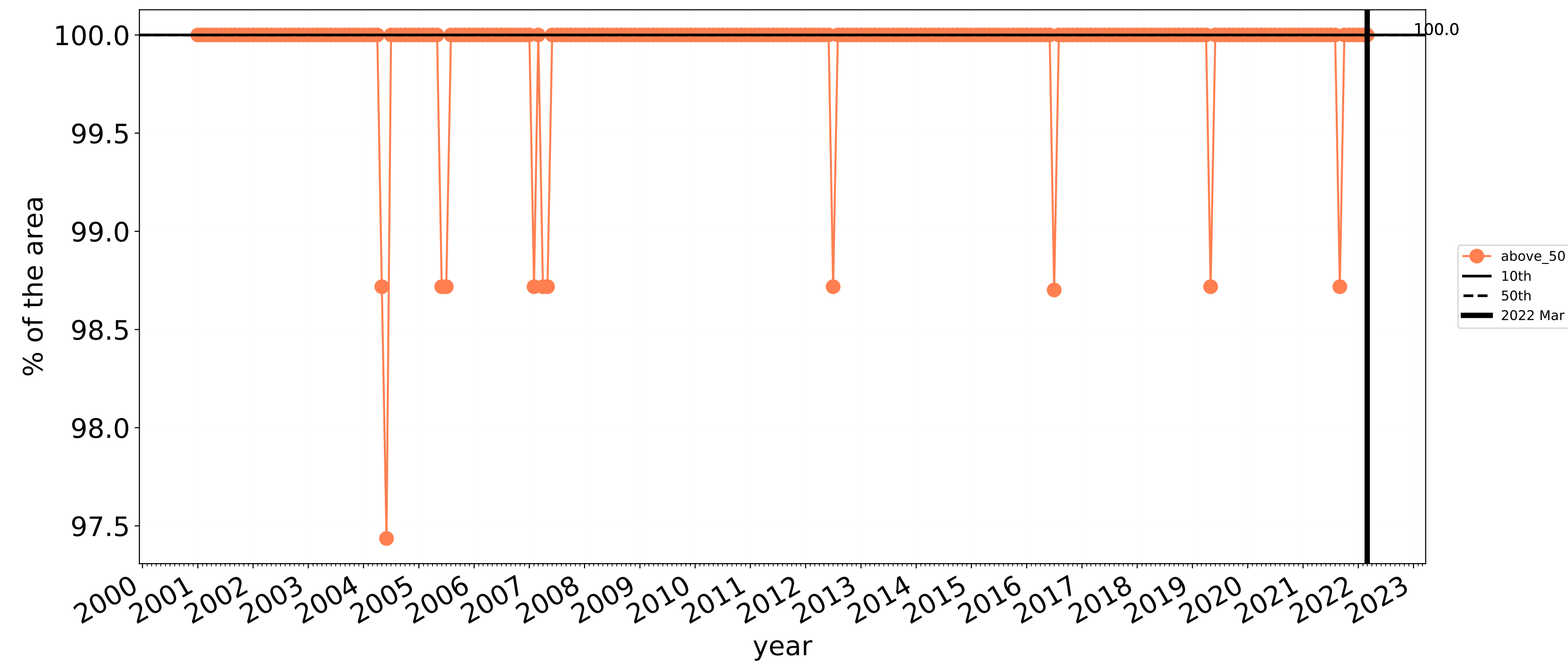
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]

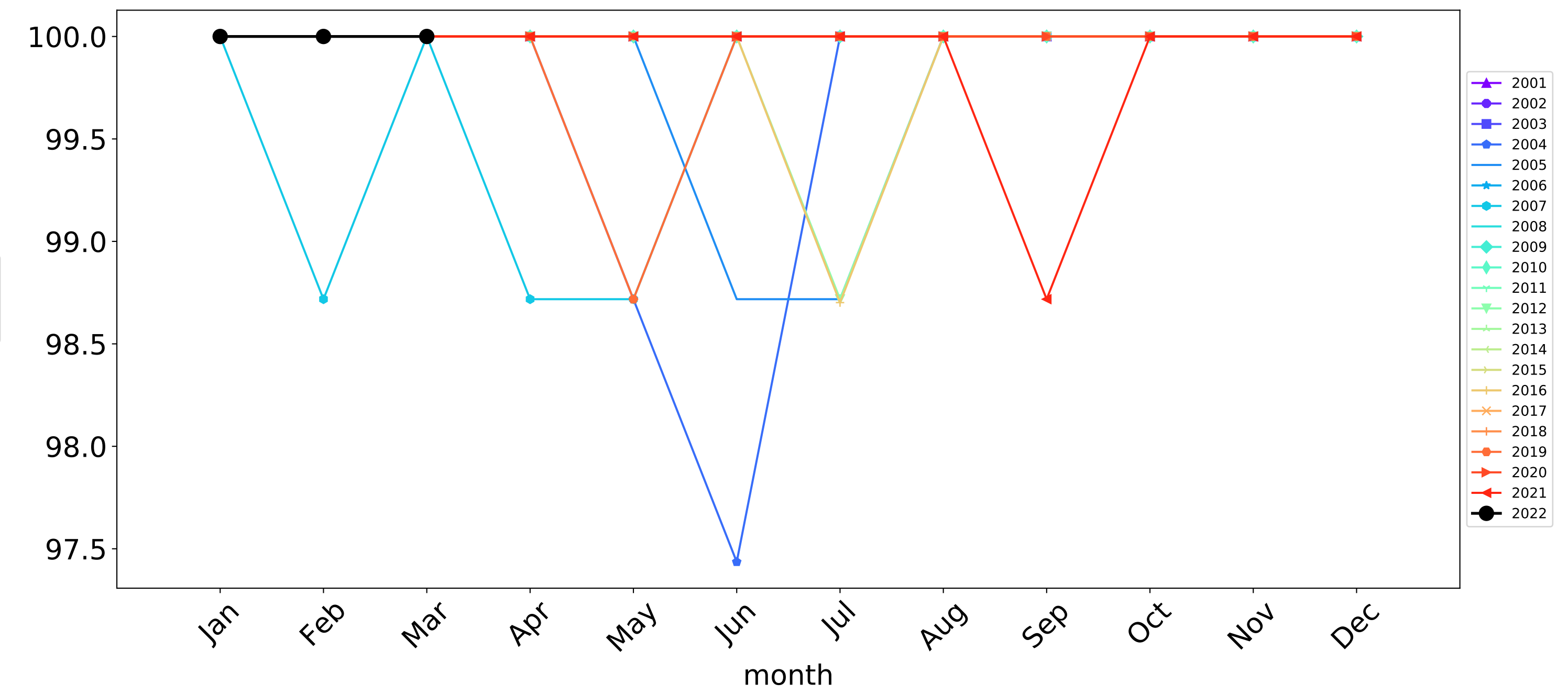


# Irrigation timeseries

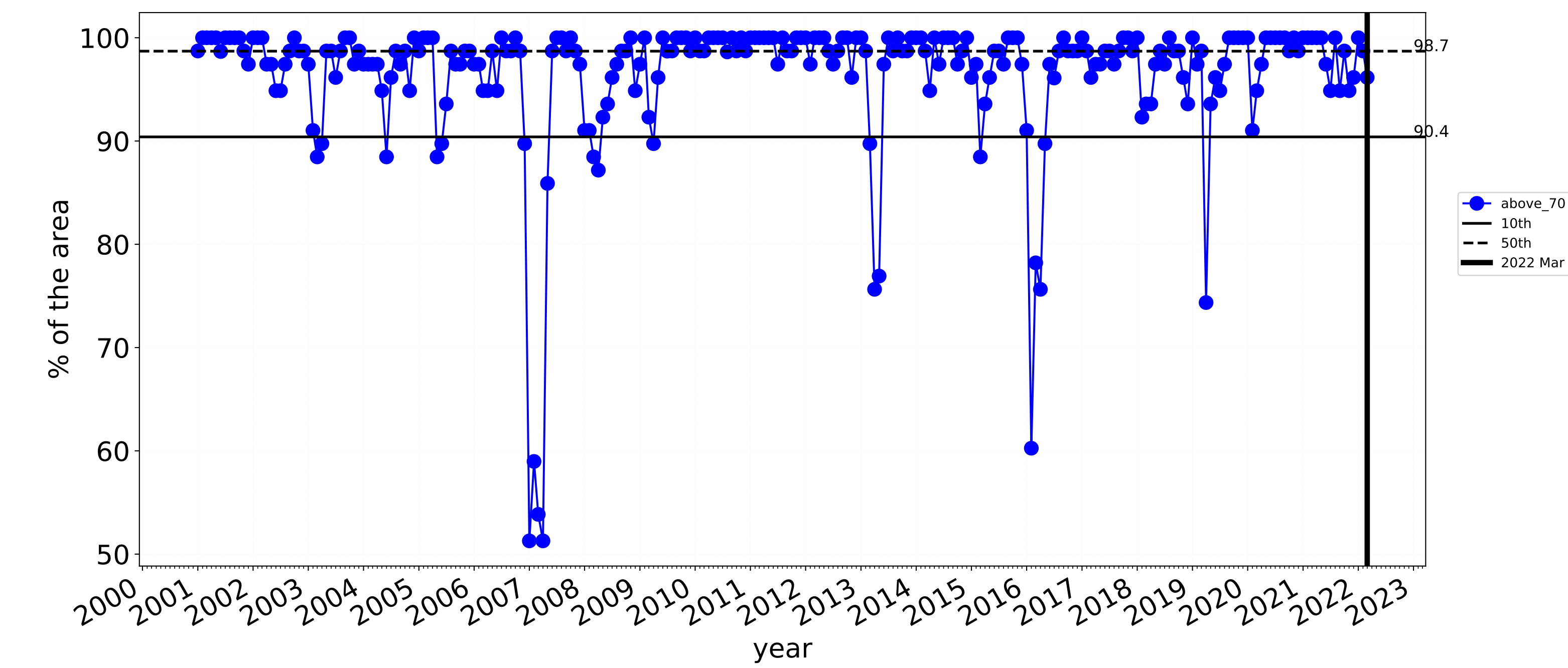
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



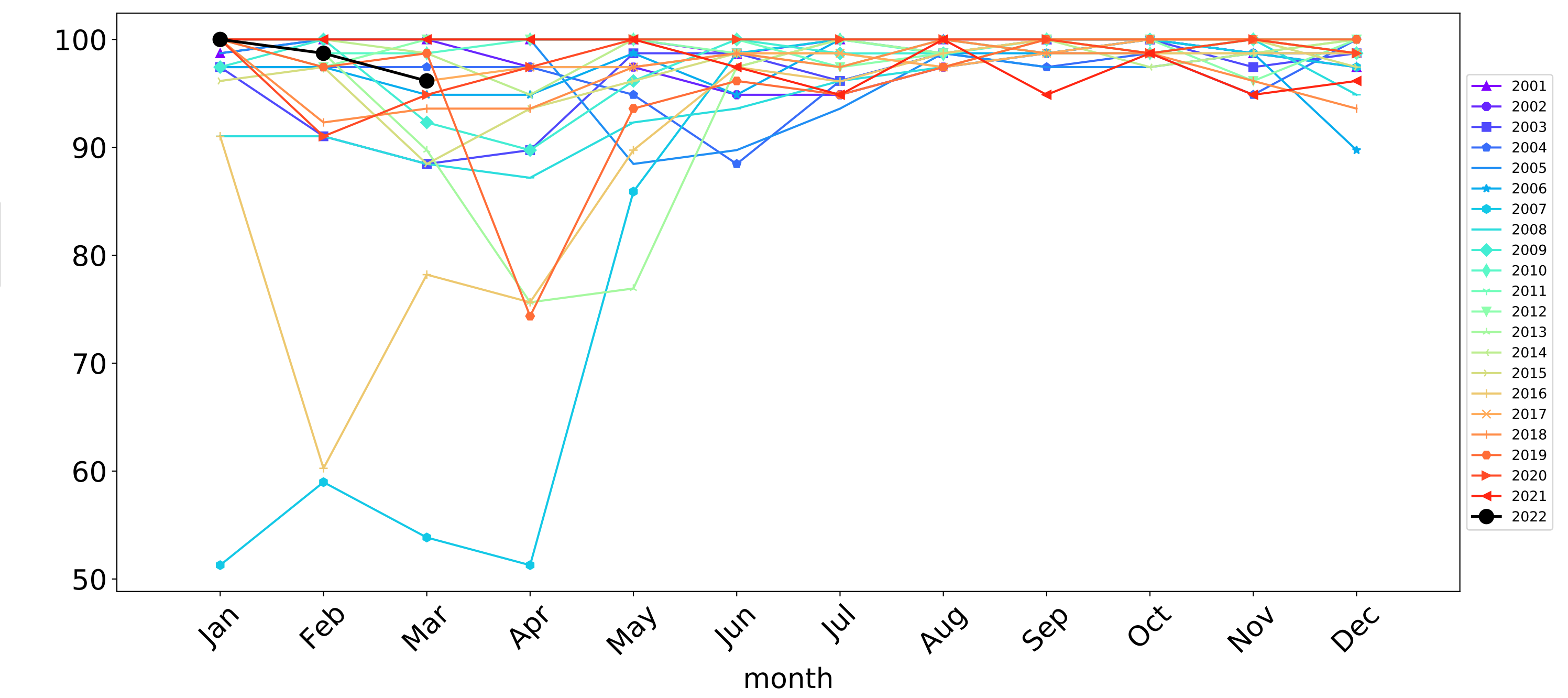
Wind erosion historical monthly area protected (Total Veg Cov >50%)



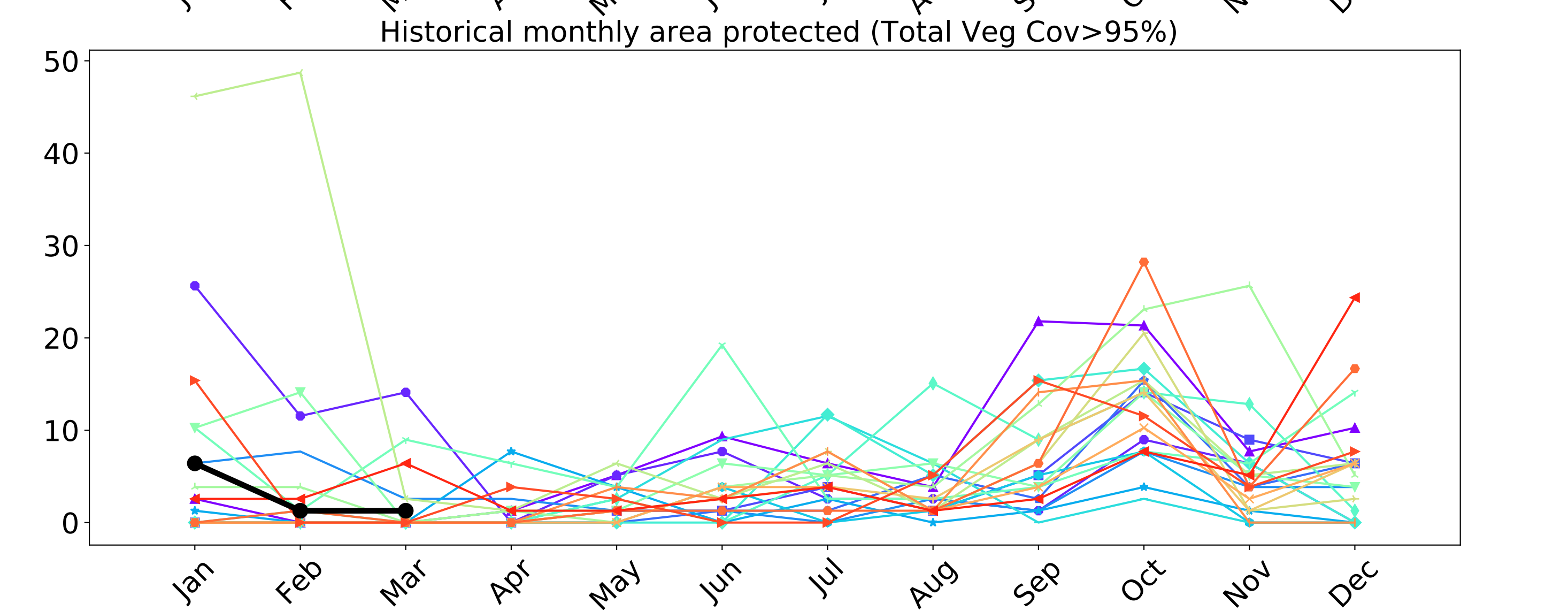
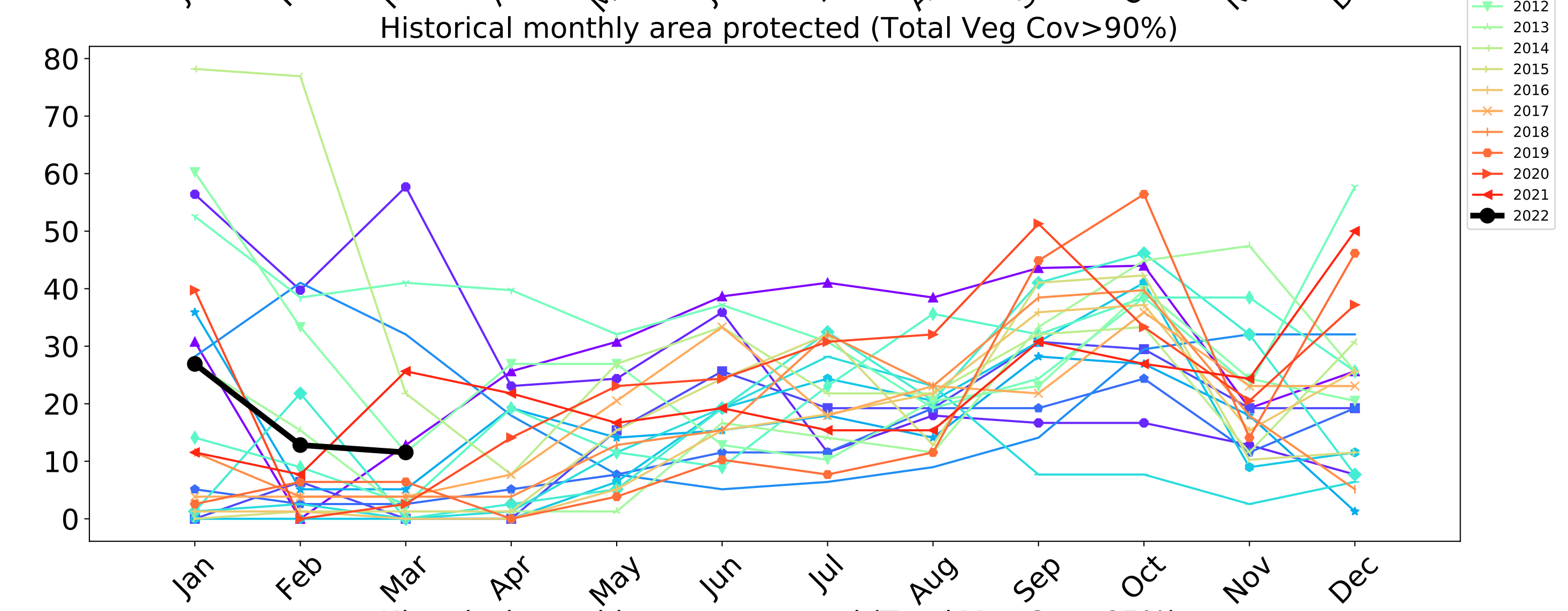
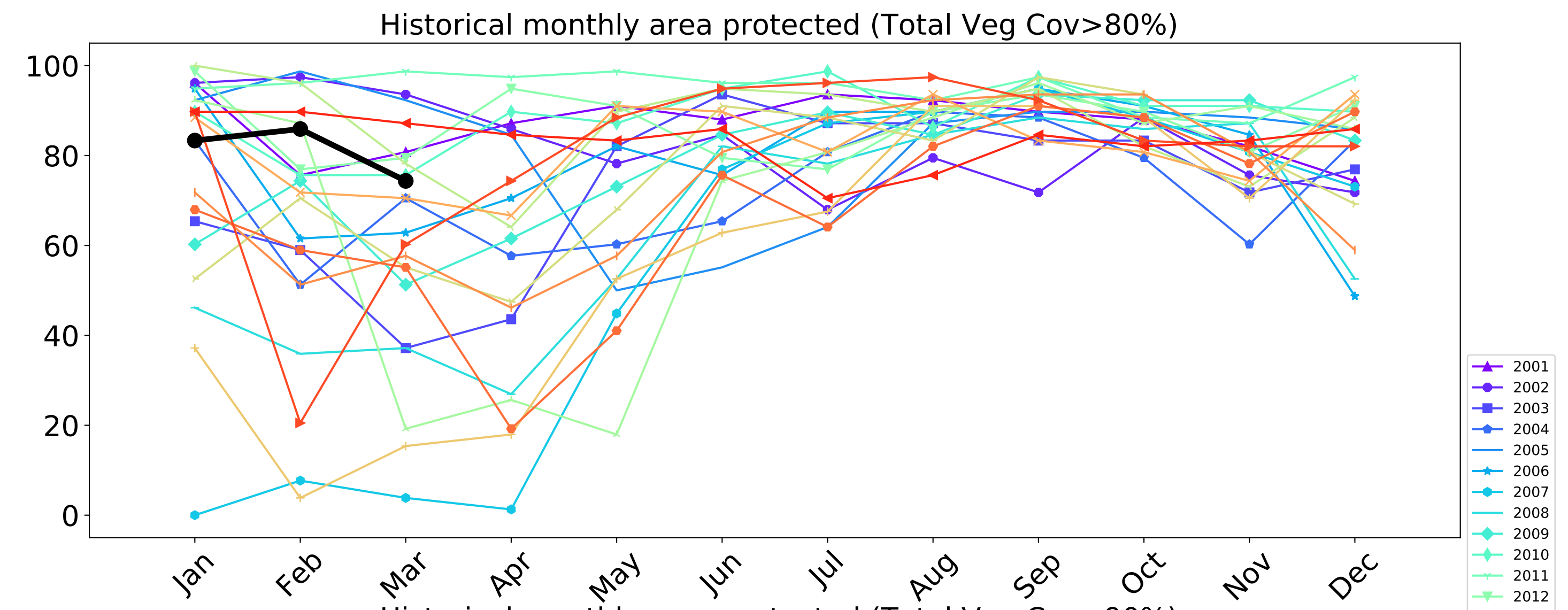
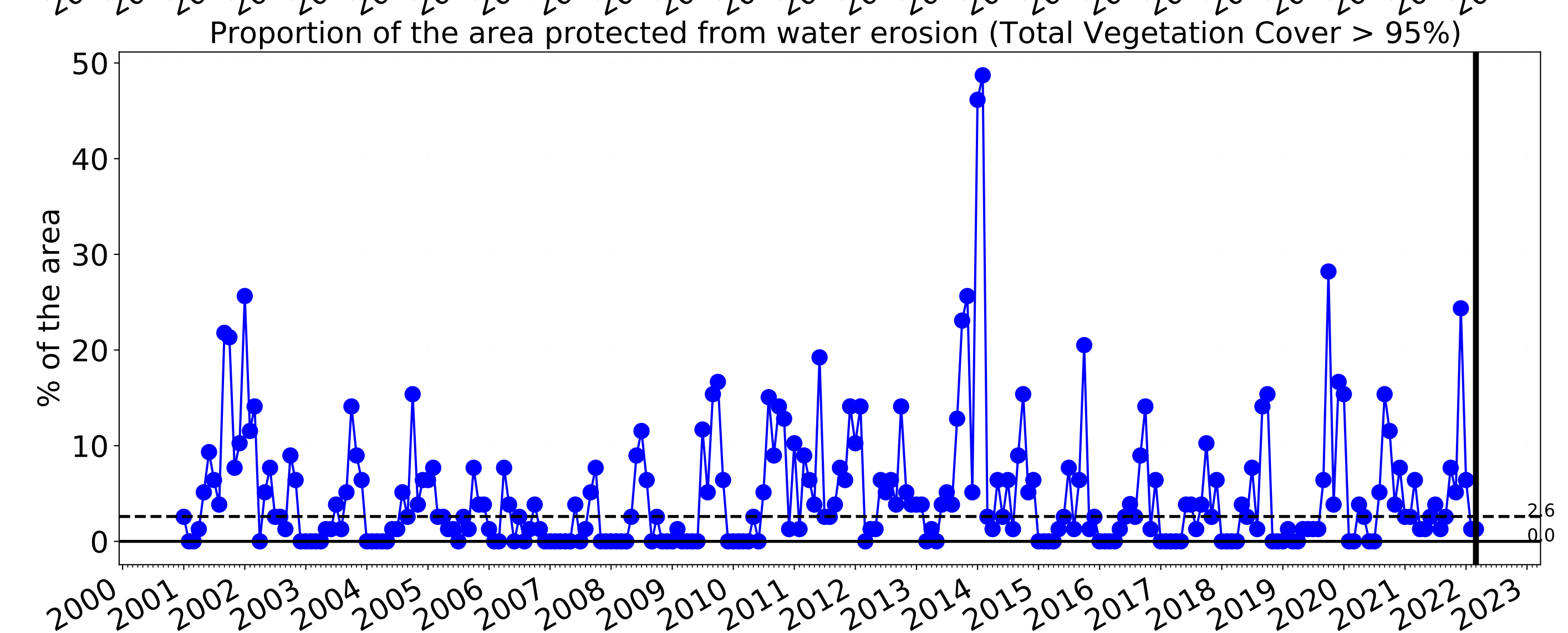
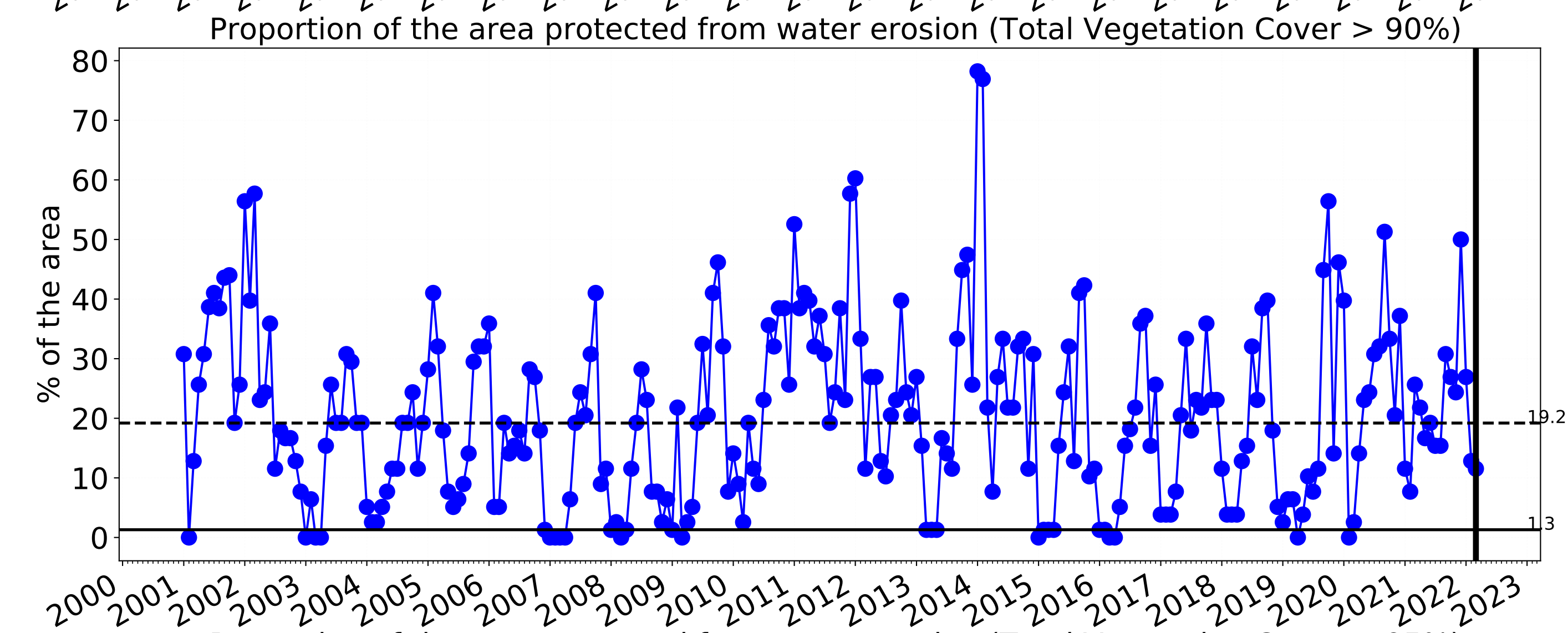
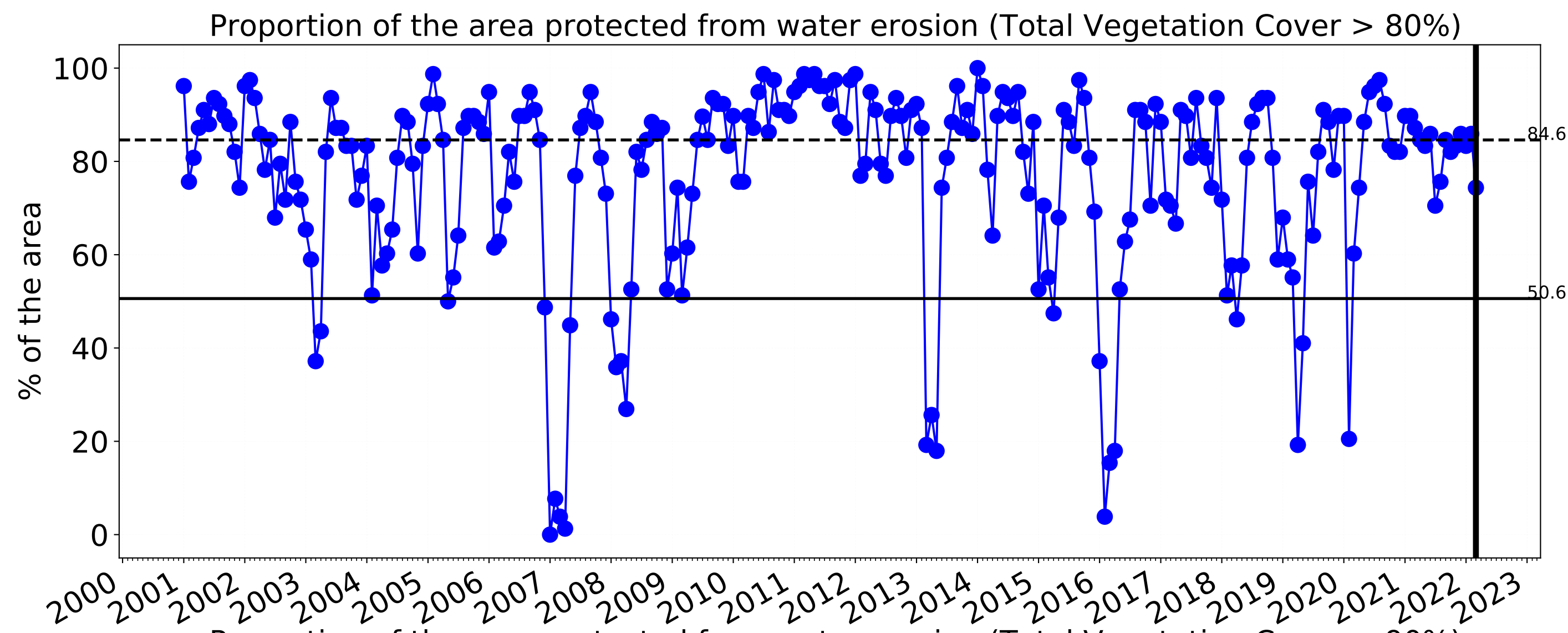
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

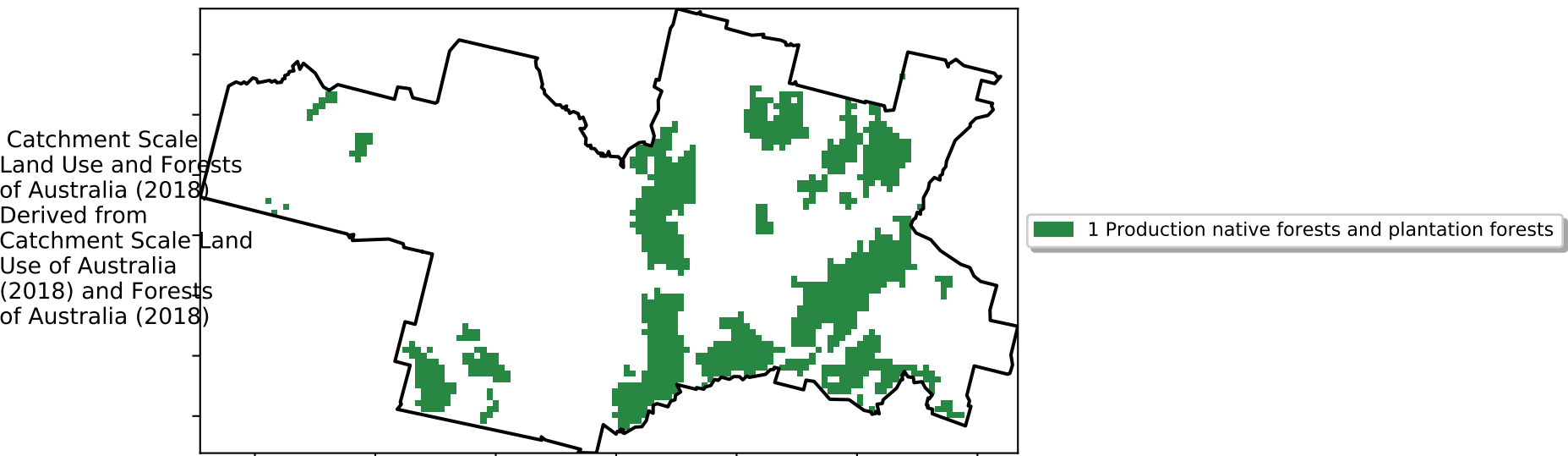




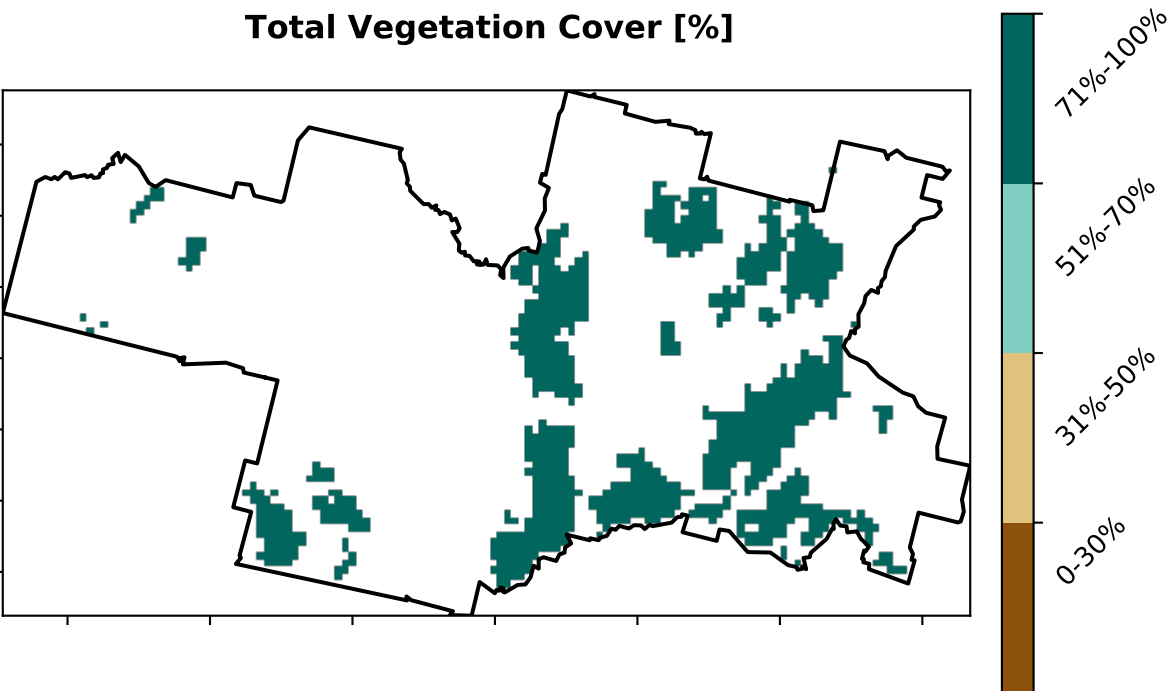


Production native forests and plantation forests

Land use and forest cover



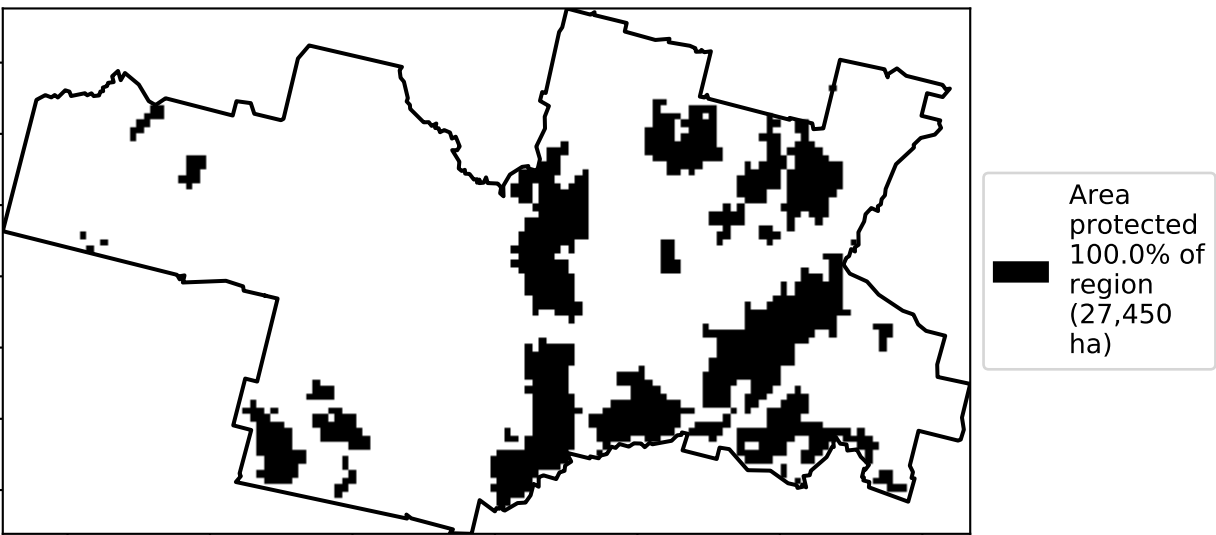
Total Vegetation Cover [%]



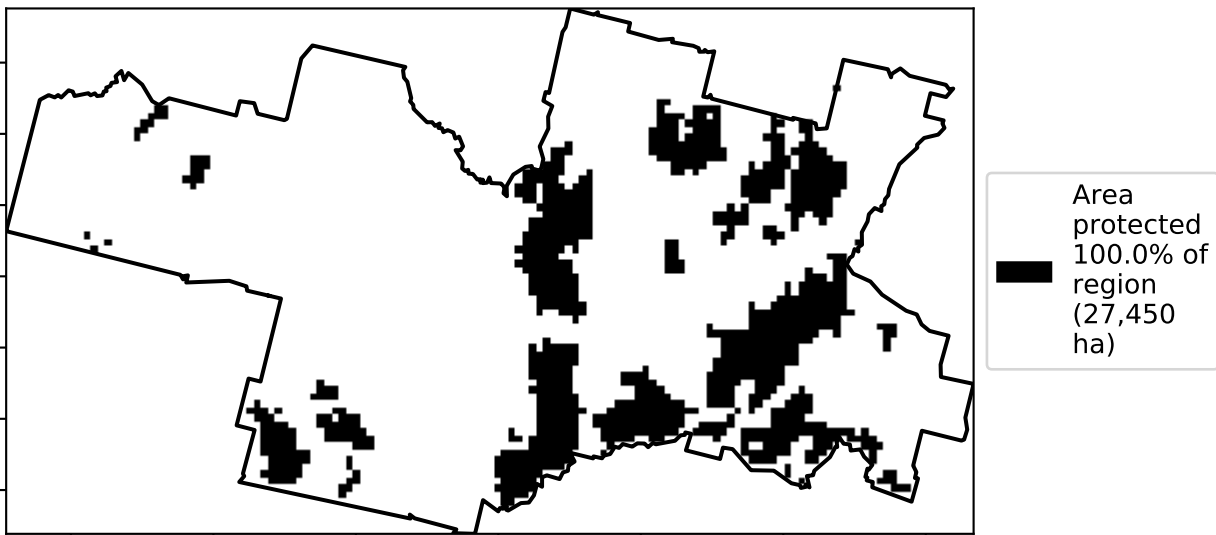
Proportion of vegetation cover class in area



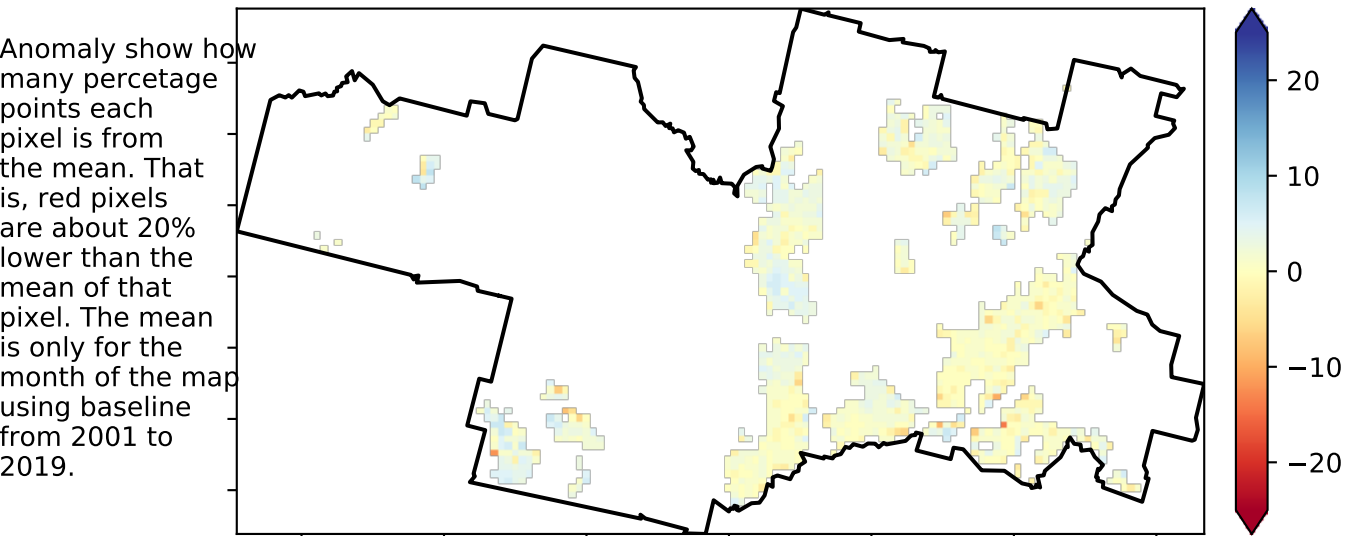
% Area protected from water erosion (>70%)



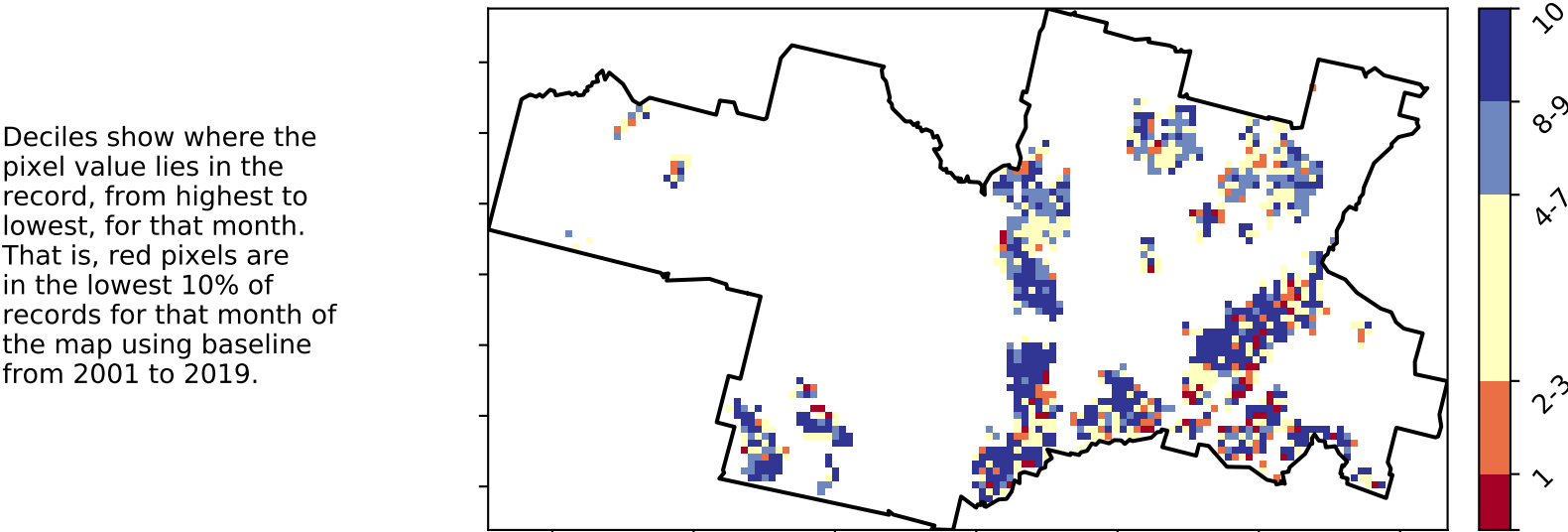
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

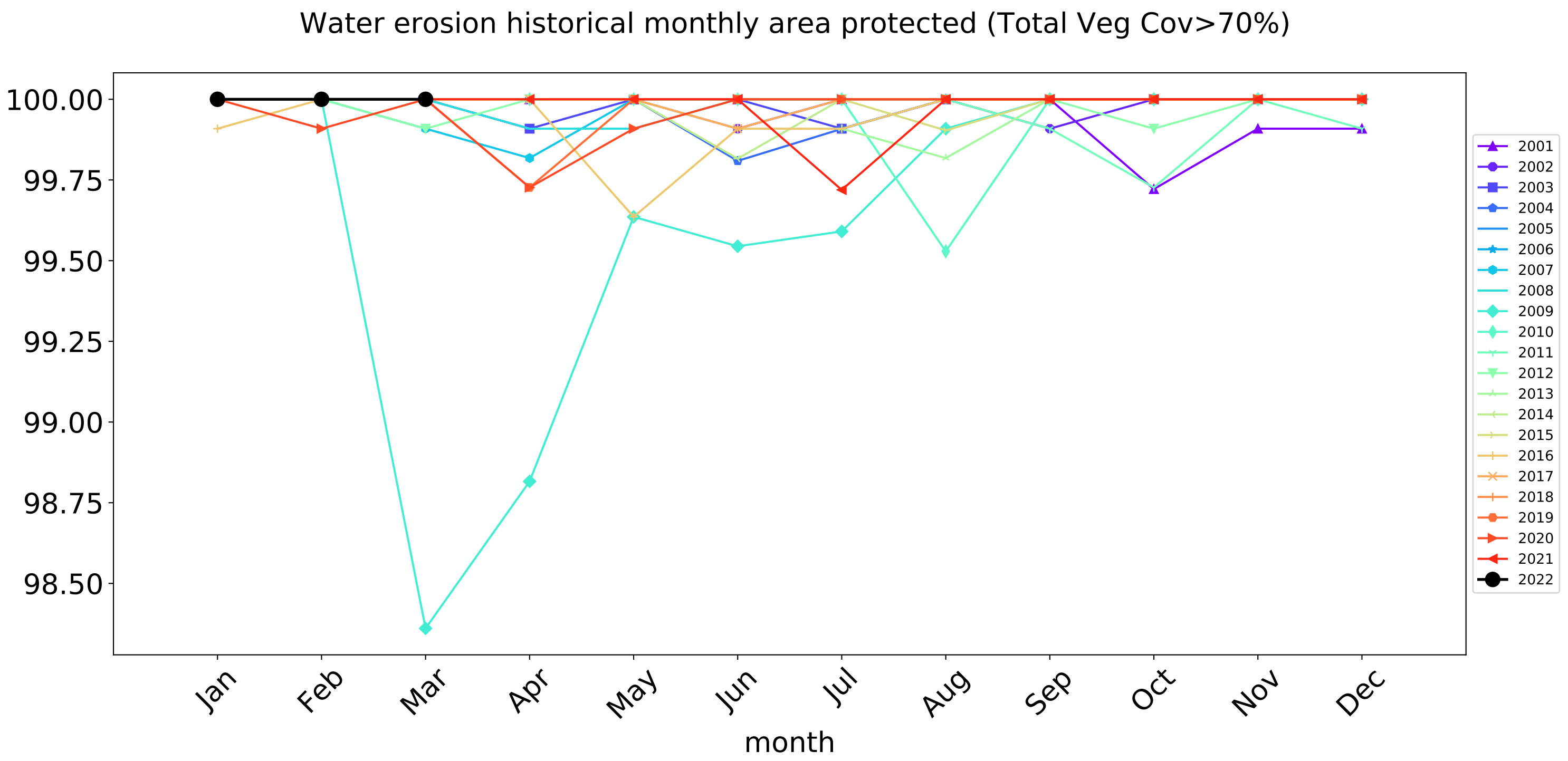
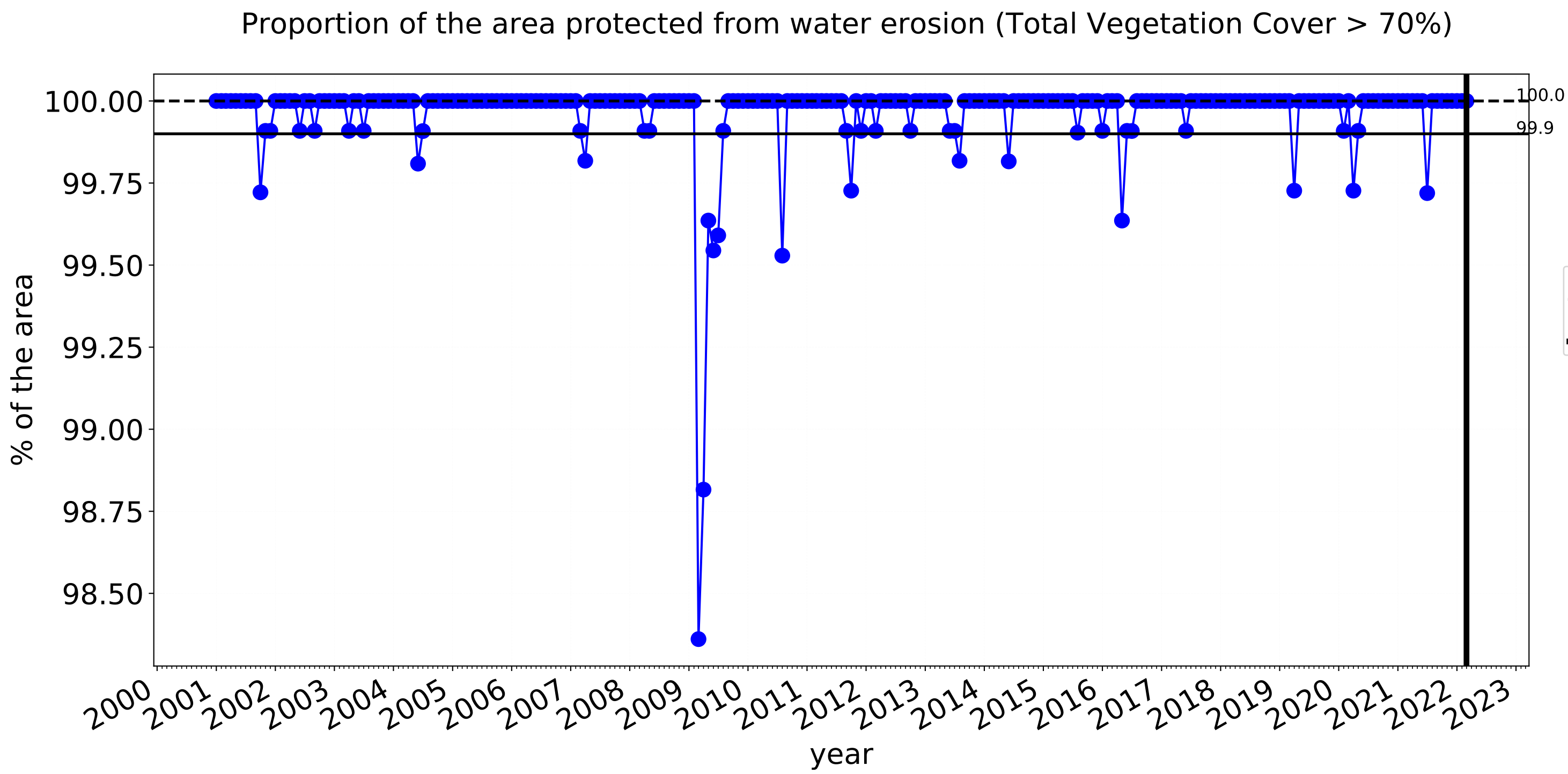
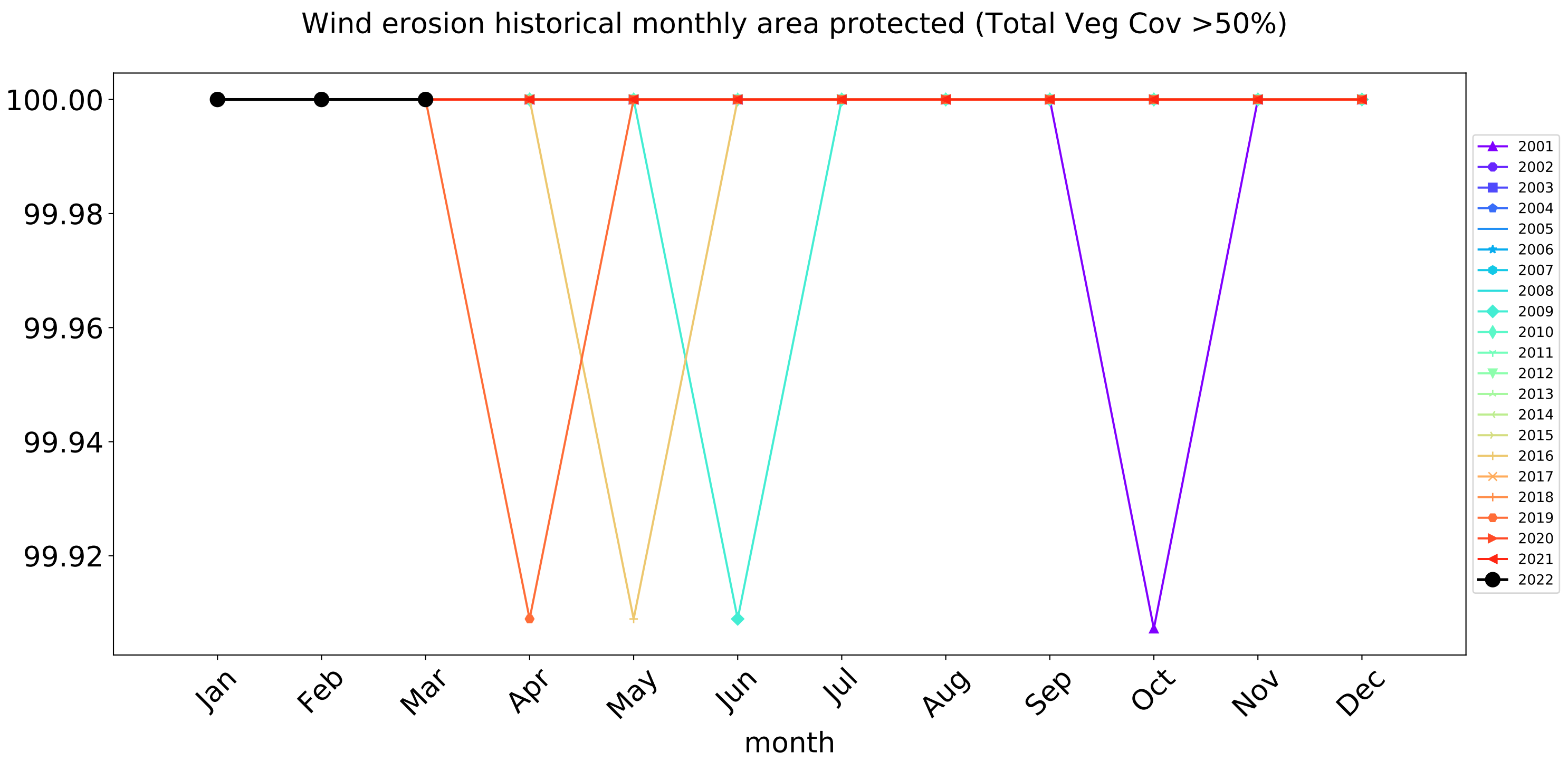
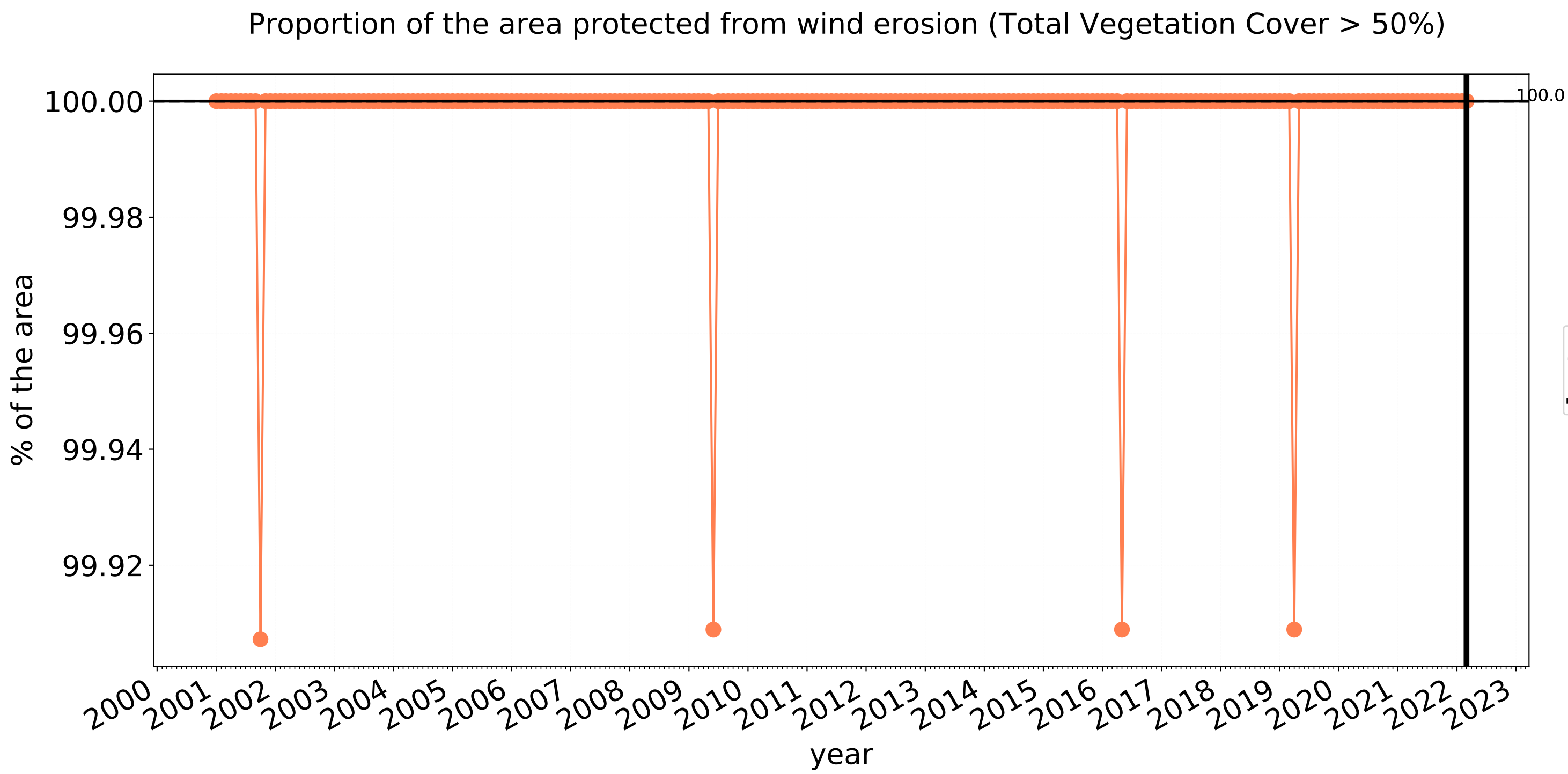


Total Vegetation Cover Decile [%]





Production native forests and plantation forests timeseries



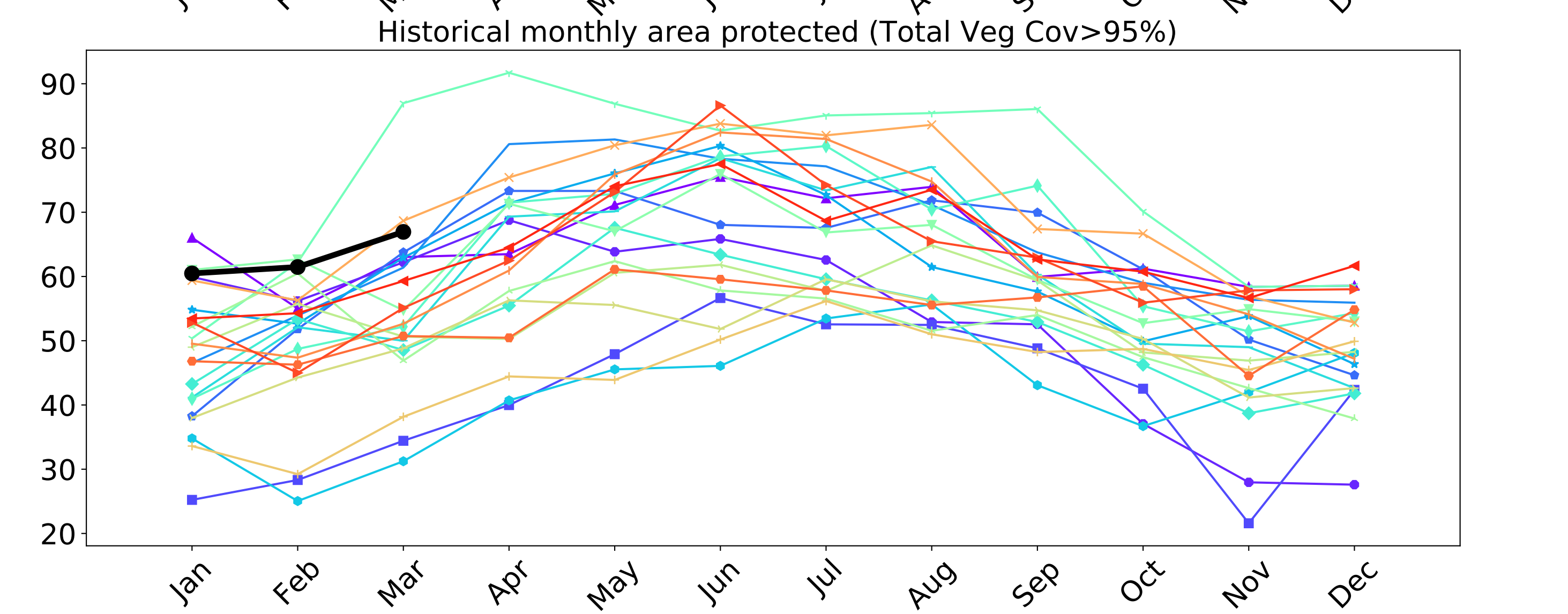
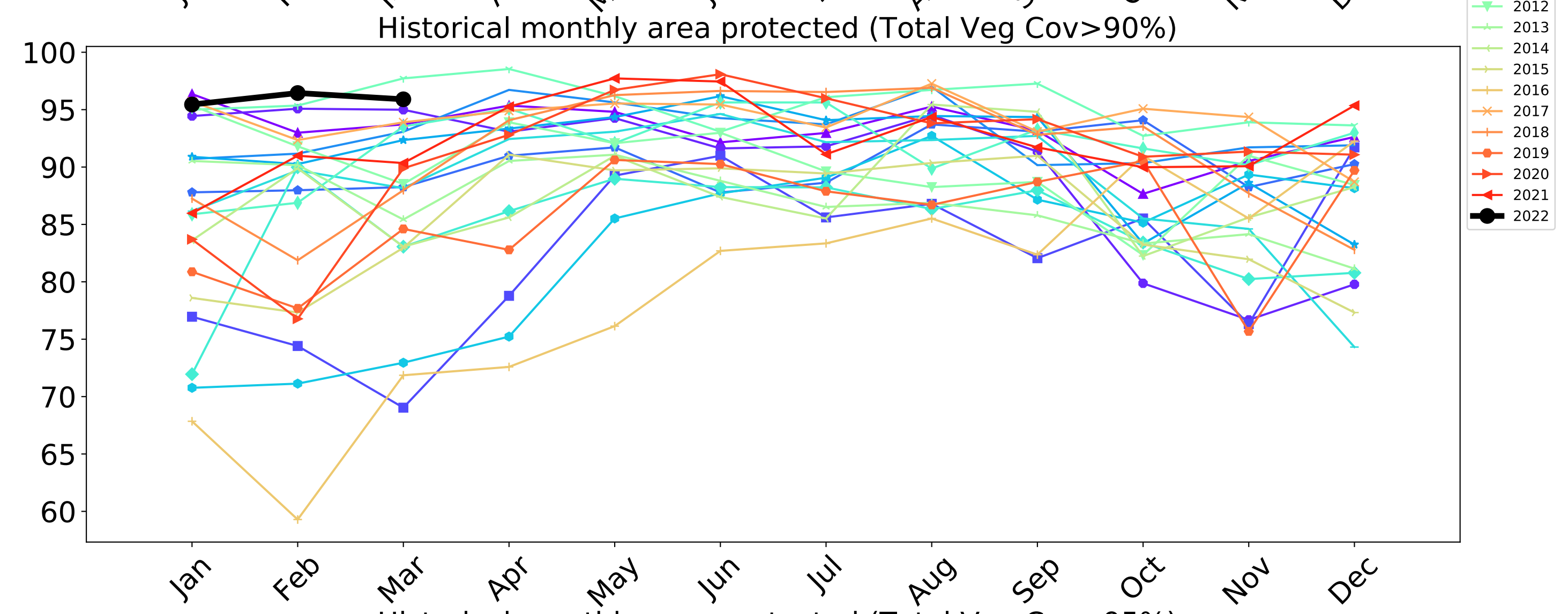
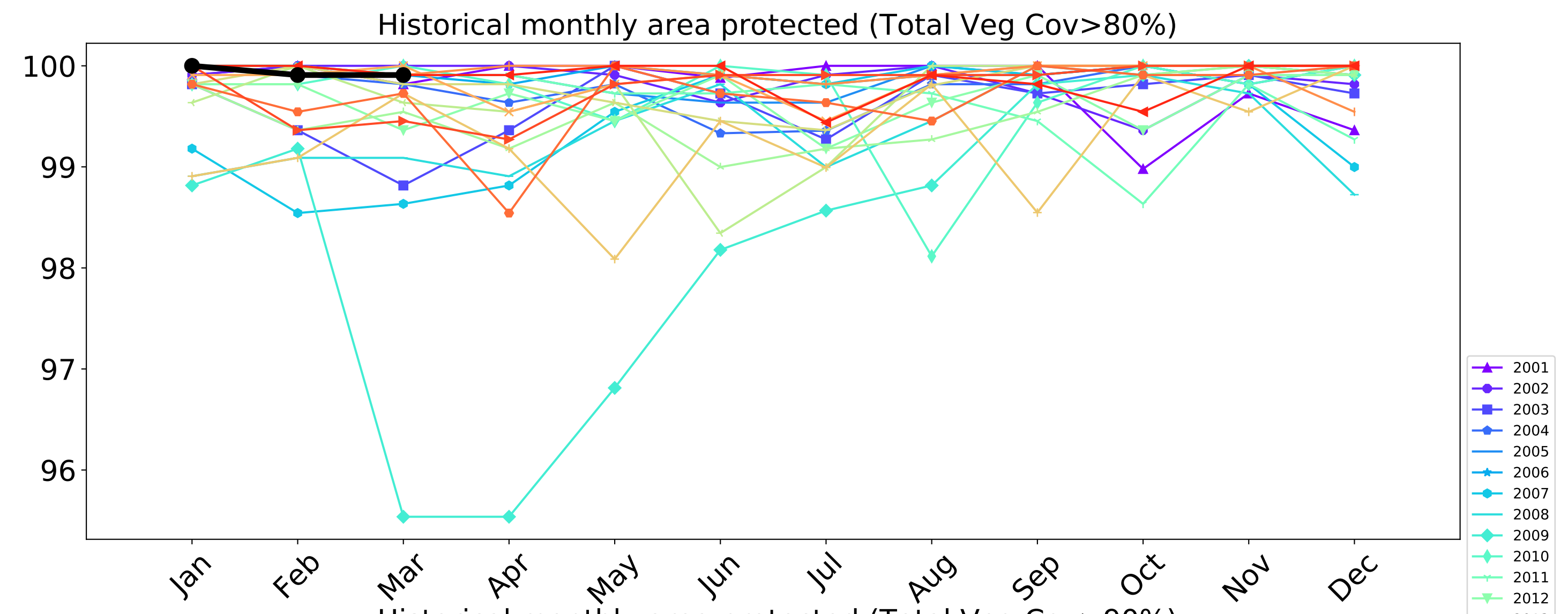
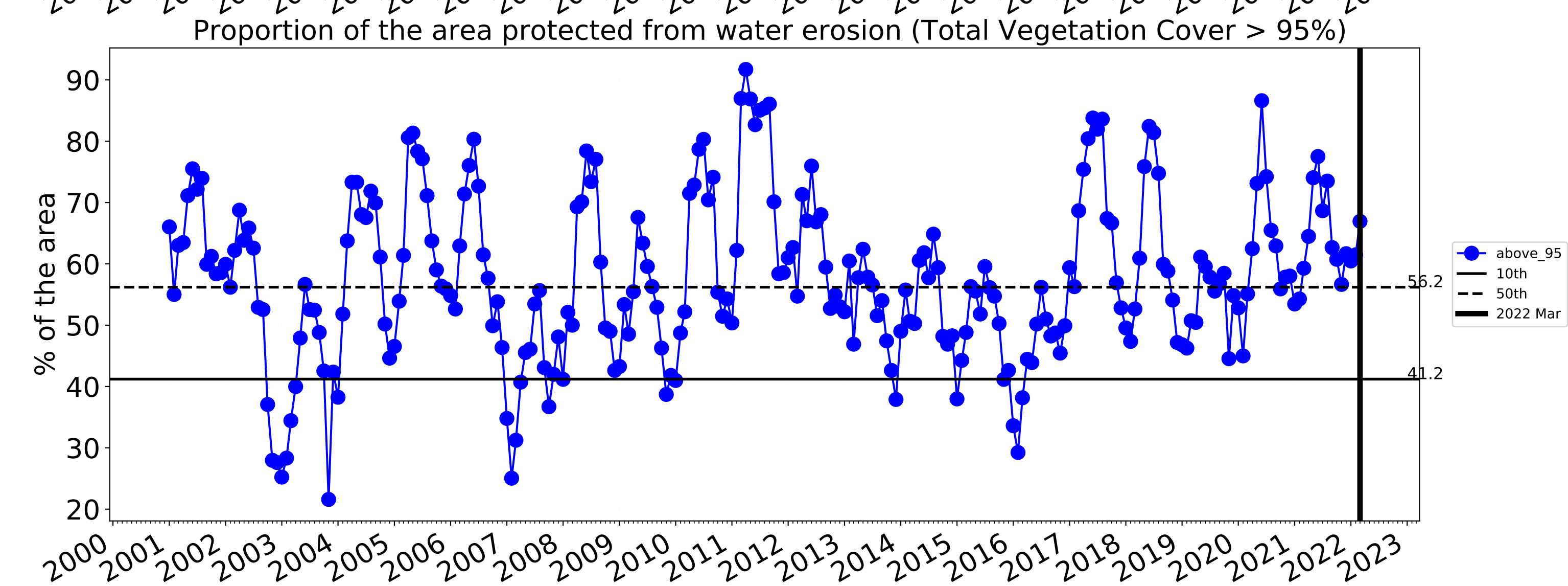
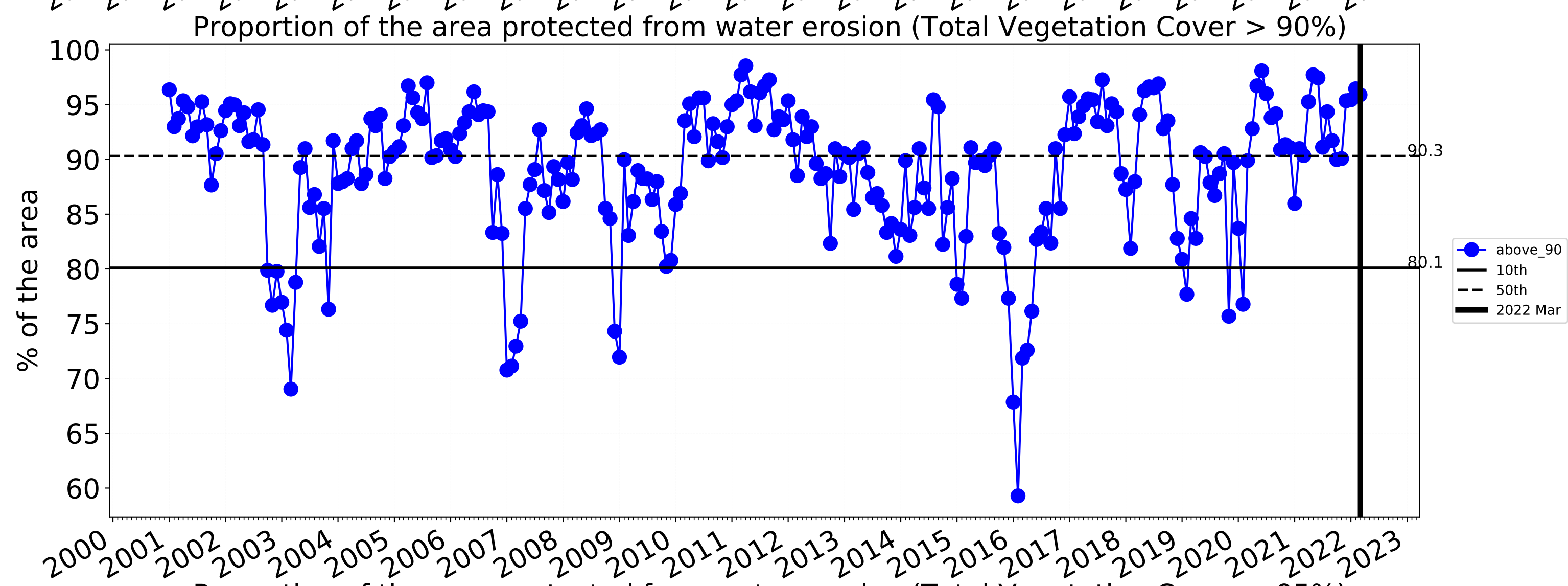
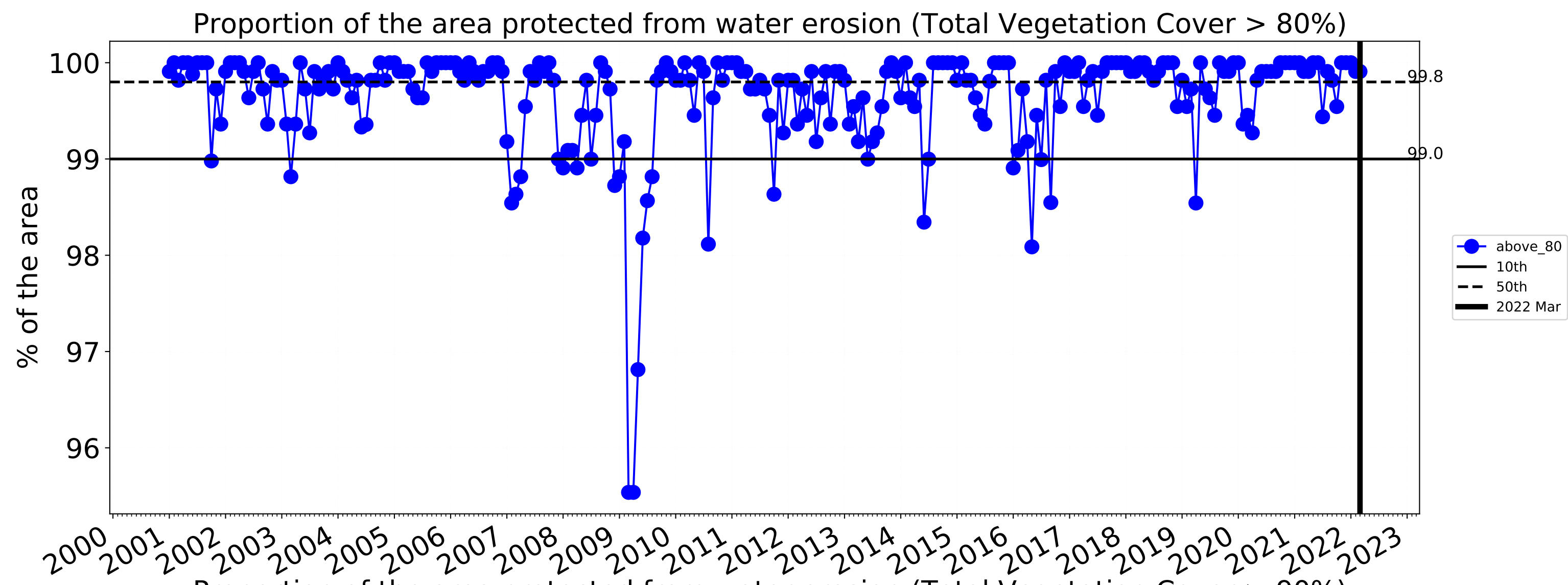
tern  
Ecosystem Research Infrastructure



National  
Landcare  
Programme









**Hepburn\_(S) (147,025 ha and no data 142 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   | 147,025  | 100.0%<br>147,025 | 100.0%<br>147,025 | 99.6%<br>146,375 | 95.7%<br>140,775 | 68.8%<br>101,175 | 31.0%<br>45,525 |
| Conservation and natural environments                       | 10,225   | 100.0%<br>10,225  | 100.0%<br>10,225  | 100.0%<br>10,225 | 99.0%<br>10,125  | 91.7%<br>9,375   | 38.9%<br>3,975  |
| Conservation and natural environments Woodland forest       | 1,425    | 100.0%<br>1,425   | 100.0%<br>1,425   | 100.0%<br>1,425  | 98.2%<br>1,400   | 75.4%<br>1,075   | 24.6%<br>350    |
| Conservation and natural environments Forest (non woodland) | 8,025    | 100.0%<br>8,025   | 100.0%<br>8,025   | 100.0%<br>8,025  | 100.0%<br>8,025  | 97.8%<br>7,850   | 42.4%<br>3,400  |
| Agriculture   | 85,875   | 100.0%<br>85,875  | 100.0%<br>85,875  | 99.3%<br>85,275  | 93.7%<br>80,425  | 57.7%<br>49,575  | 20.3%<br>17,475 |
| Grazing   | 69,250   | 100.0%<br>69,250  | 100.0%<br>69,250  | 99.5%<br>68,900  | 94.4%<br>65,350  | 59.8%<br>41,425  | 21.0%<br>14,550 |
| Grazing non forest  | 63,625   | 100.0%<br>63,625  | 100.0%<br>63,625  | 99.4%<br>63,275  | 93.9%<br>59,775  | 58.0%<br>36,875  | 19.8%<br>12,625 |
| Grazing - Forest (non woodland)                             | 4,650    | 100.0%<br>4,650   | 100.0%<br>4,650   | 100.0%<br>4,650  | 98.9%<br>4,600   | 79.6%<br>3,700   | 35.5%<br>1,650  |
| Cropping  | 14,600   | 100.0%<br>14,600  | 100.0%<br>14,600  | 98.8%<br>14,425  | 92.8%<br>13,550  | 53.8%<br>7,850   | 19.9%<br>2,900  |
| Irrigation  | 1,950    | 100.0%<br>1,950   | 100.0%<br>1,950   | 96.2%<br>1,875   | 74.4%<br>1,450   | 11.5%<br>225     | 1.3%<br>25      |
| Production native forests and plantation forests            | 27,450   | 100.0%<br>27,450  | 100.0%<br>27,450  | 100.0%<br>27,450 | 99.9%<br>27,425  | 95.9%<br>26,325  | 66.9%<br>18,375 |