

# Total vegetation cover soil protection

## Region:NRM Hunter NSW

Date: March 2009

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>





# Vegetation Cover Mar 2009

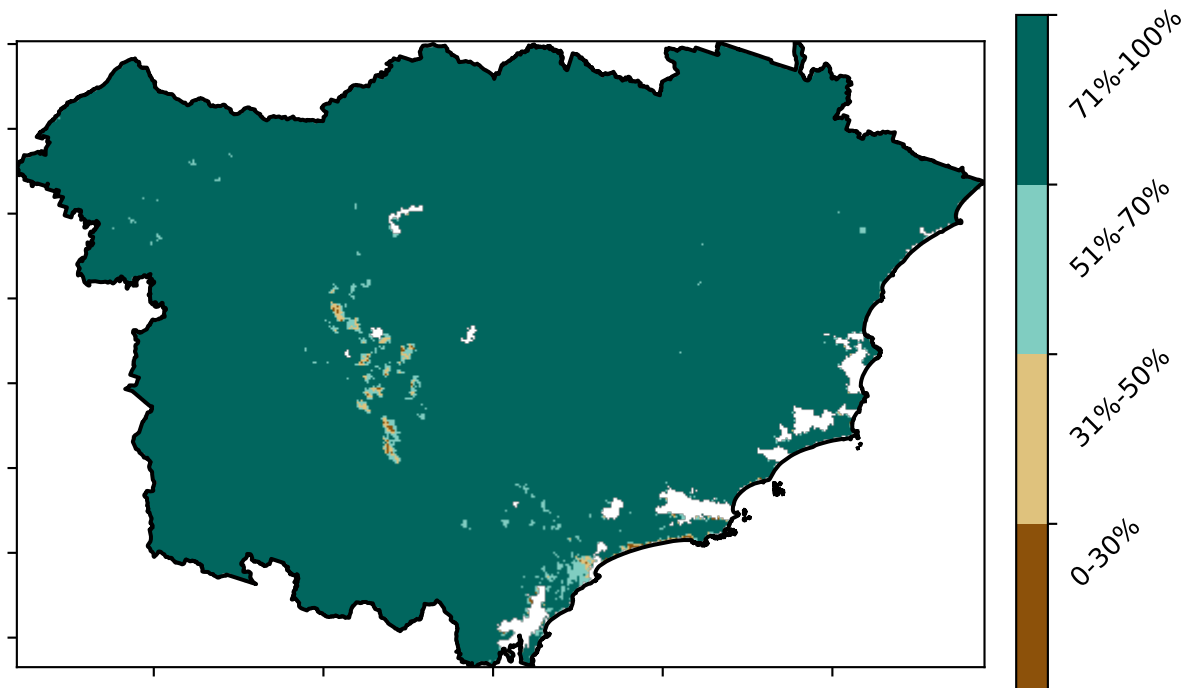
Land use and forest cover



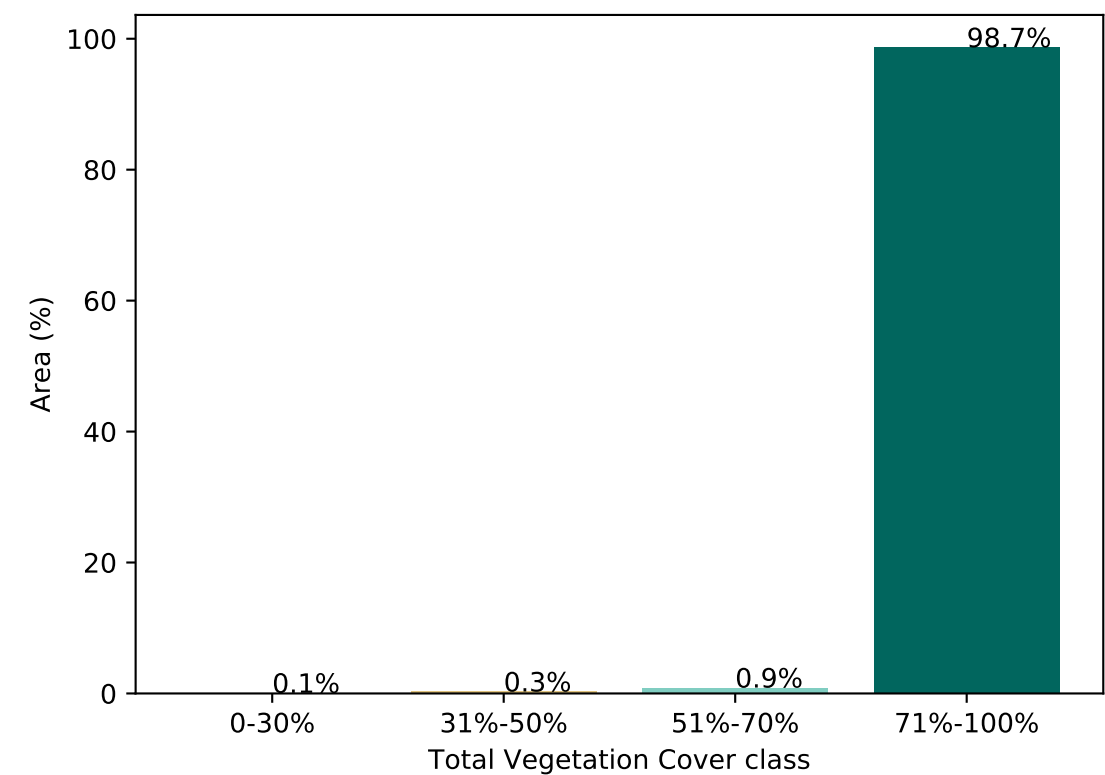
Proportion of each land class in area



Total Vegetation Cover [%]



Proportion of vegetation cover class in area



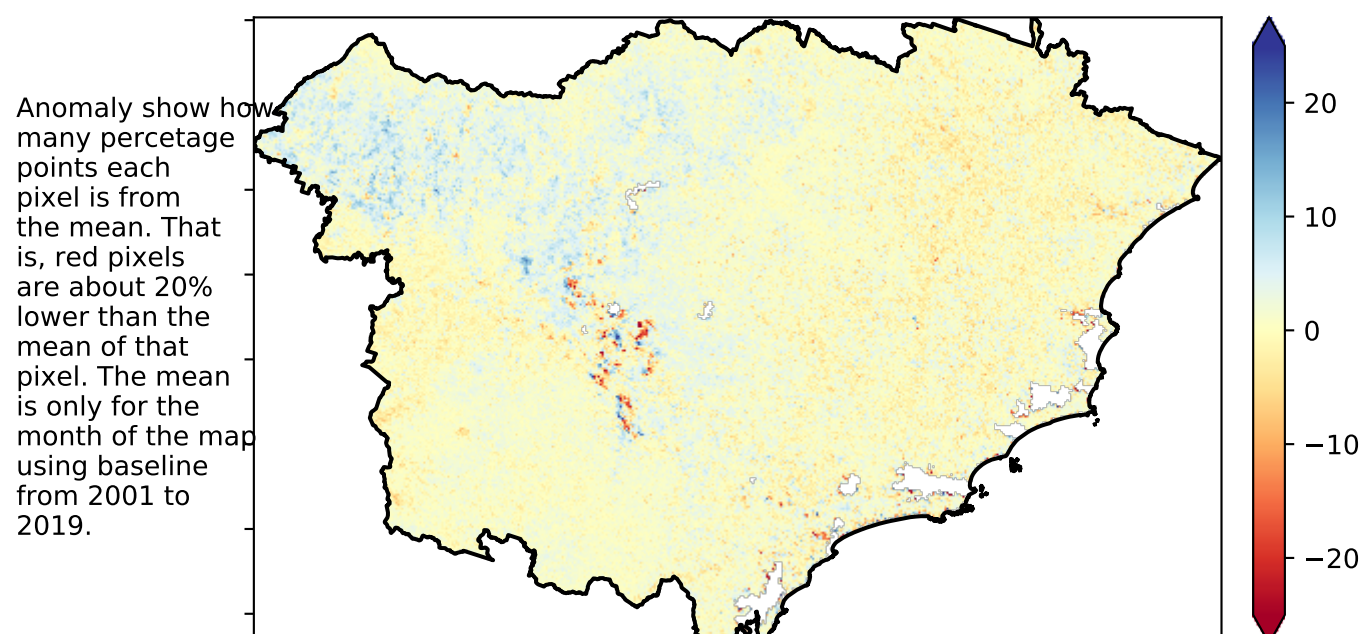
% Area protected from water erosion (>70%)



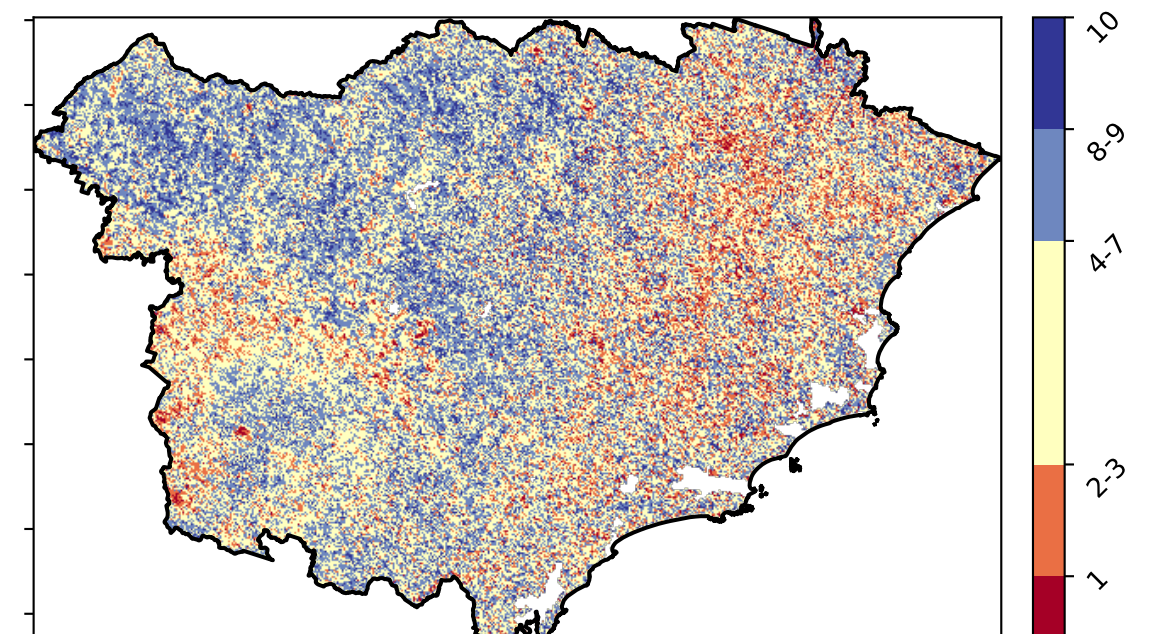
% Area protected from wind erosion (>50%)



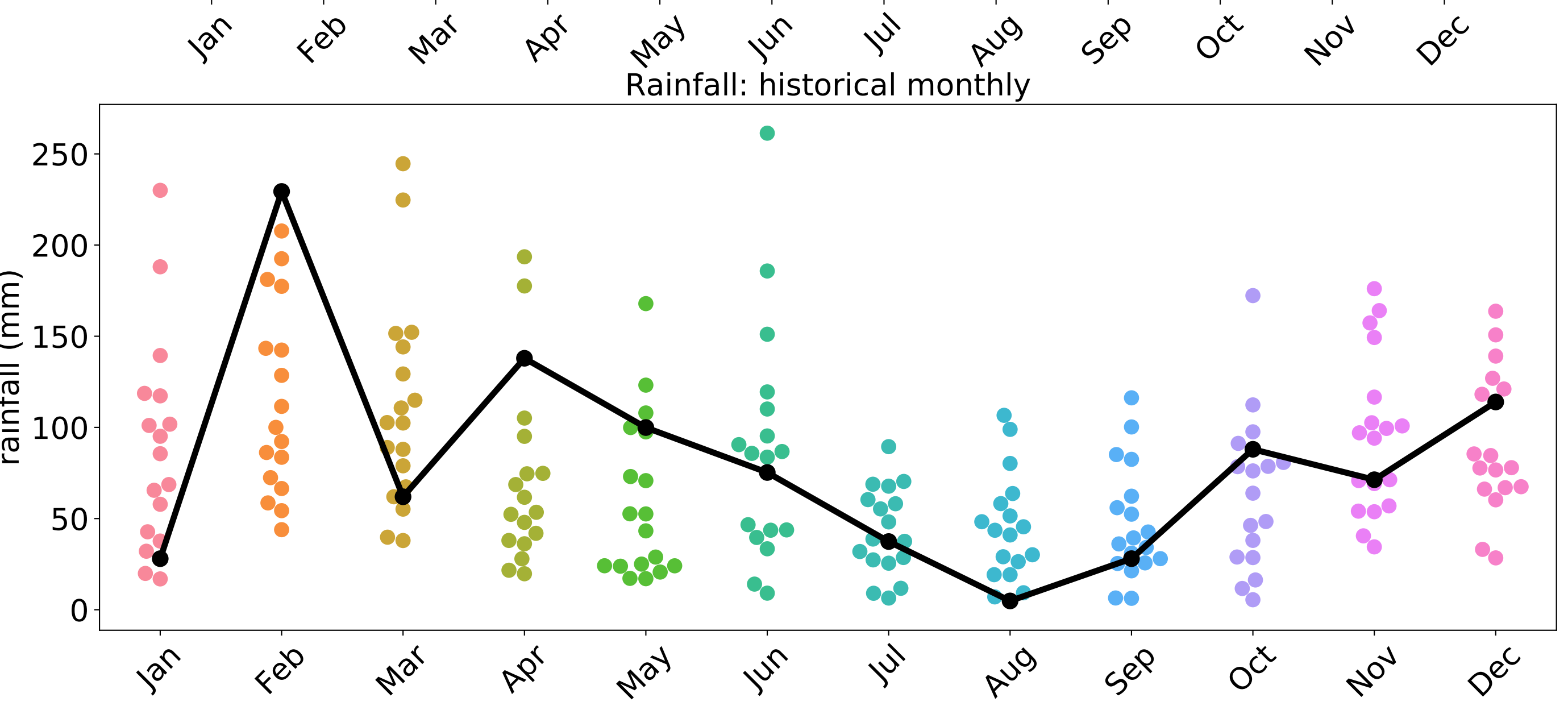
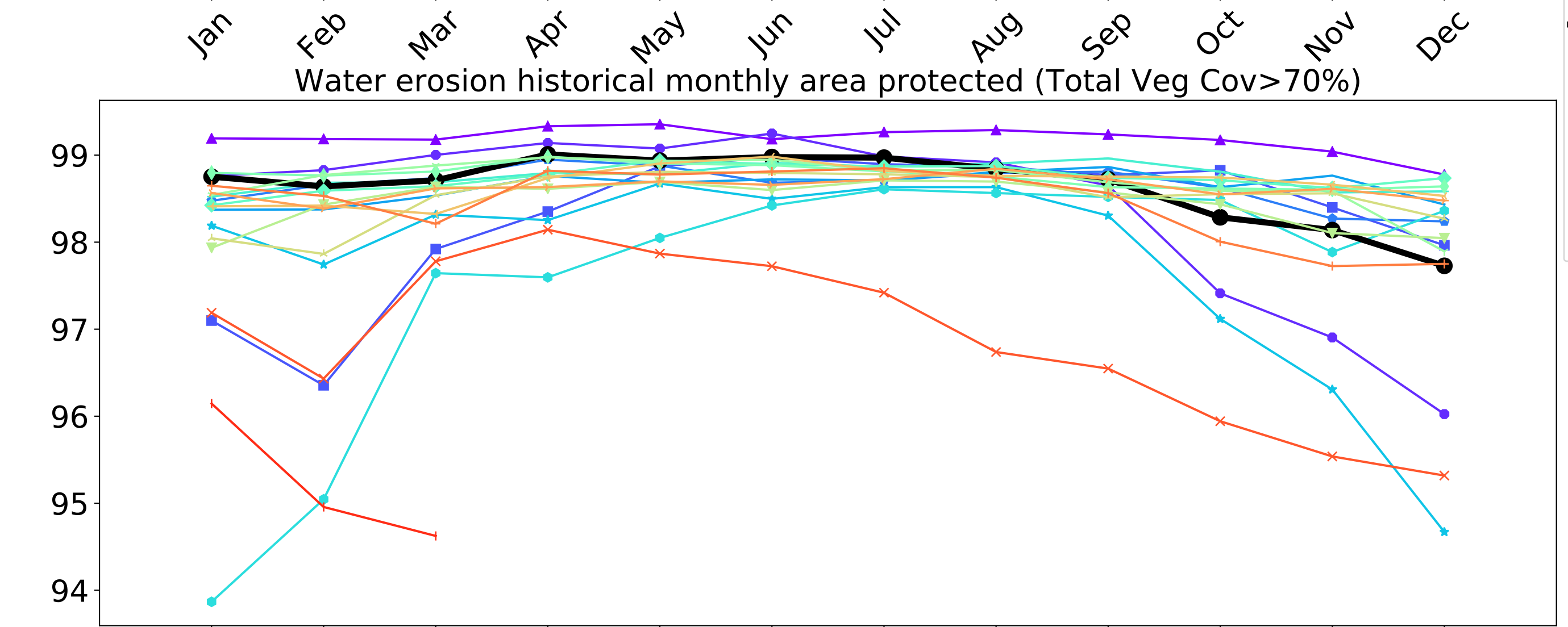
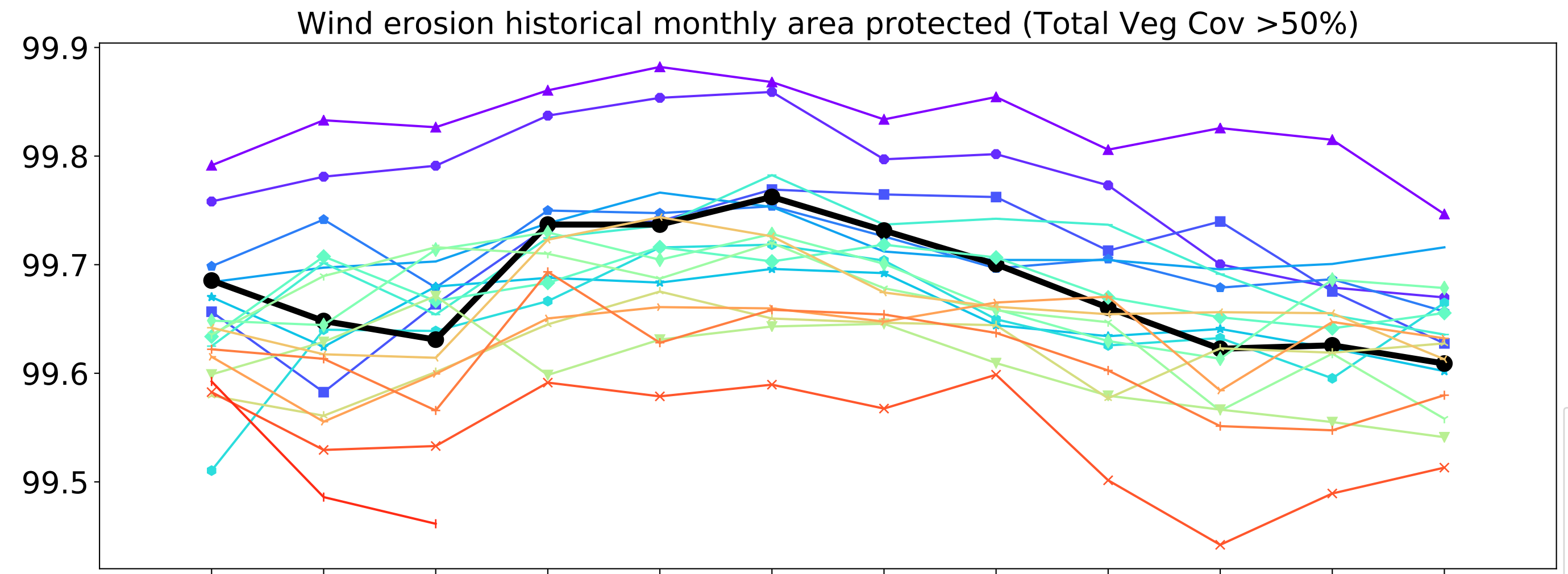
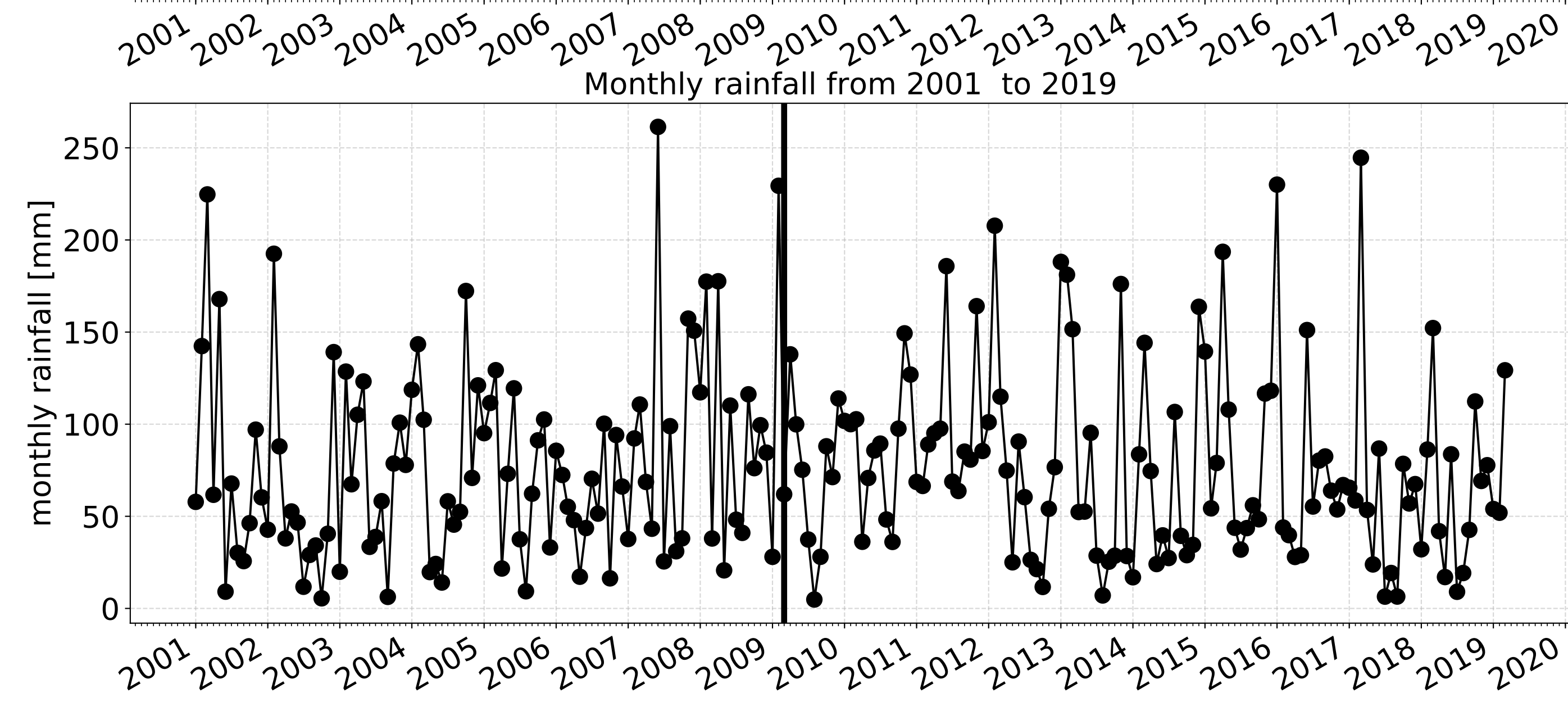
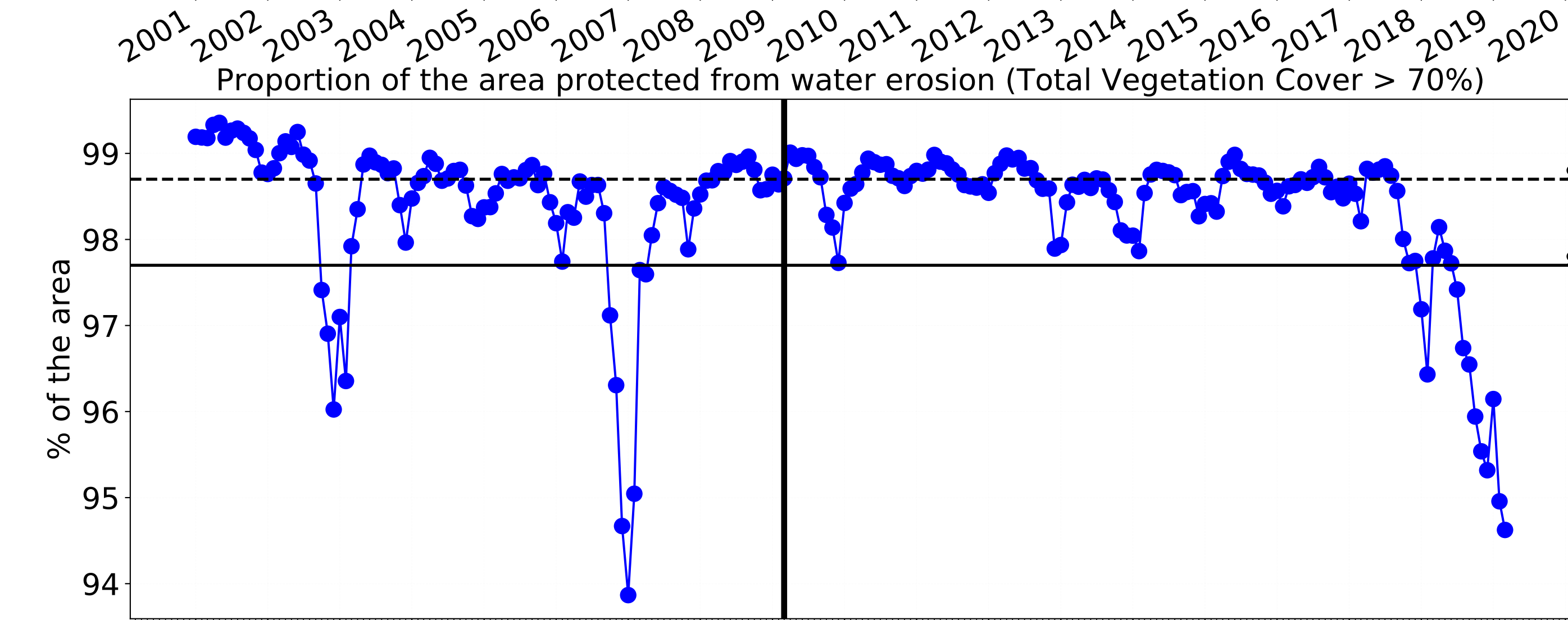
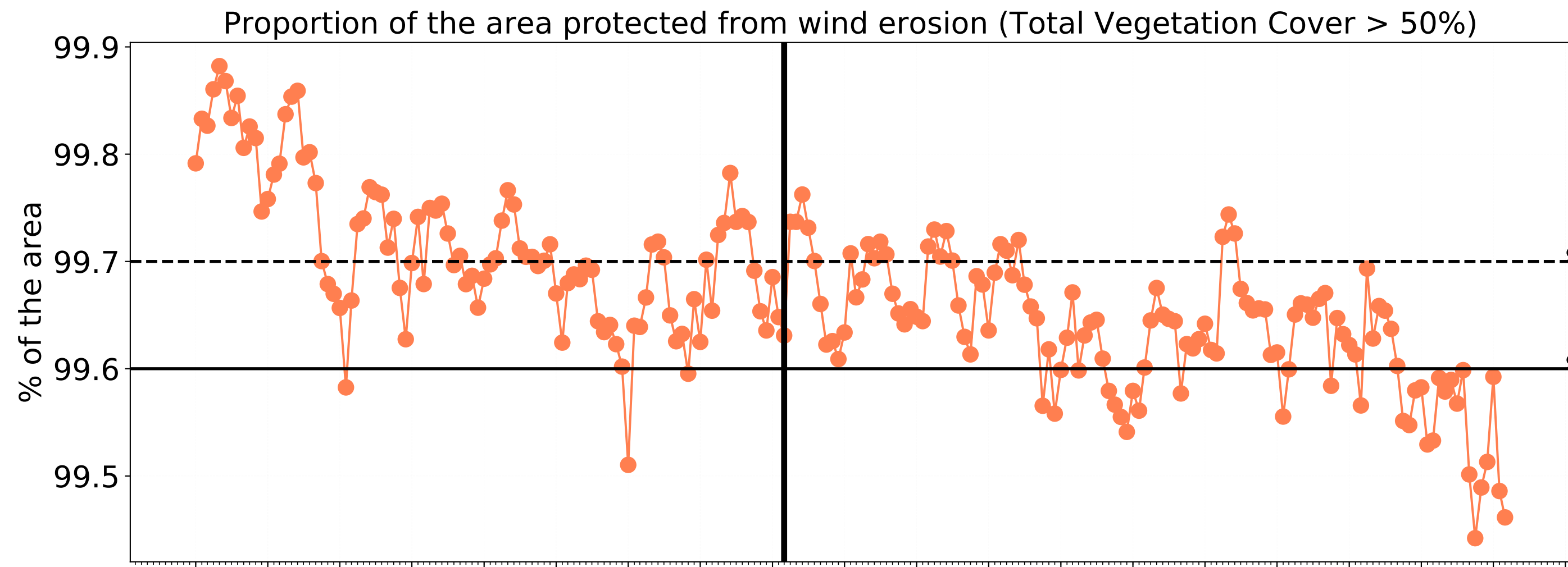
Total Vegetation Cover Anomaly [%]



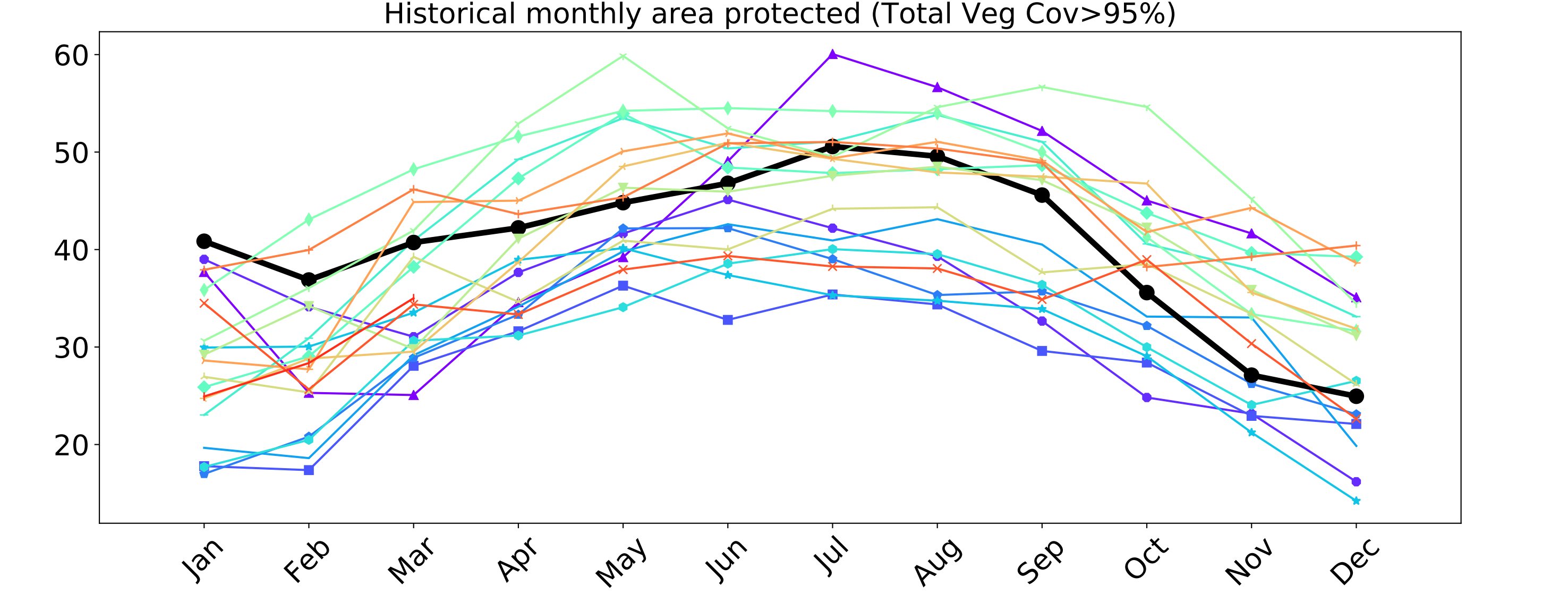
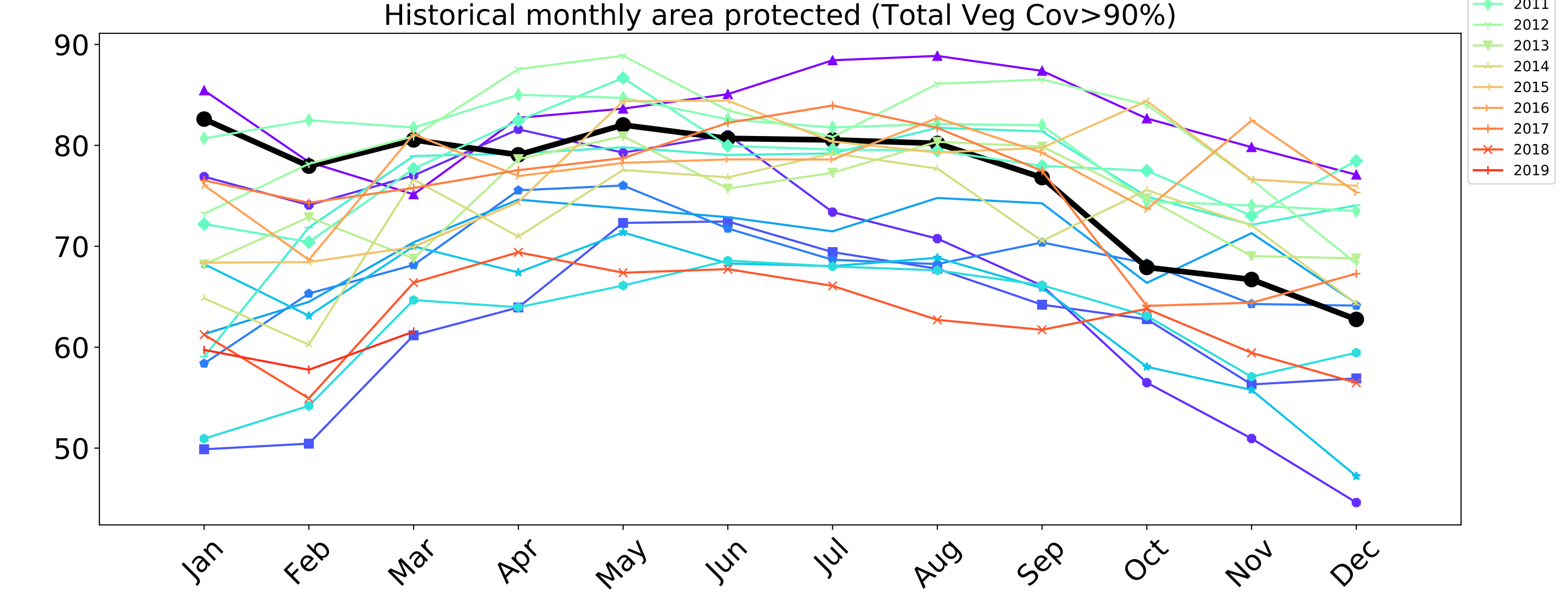
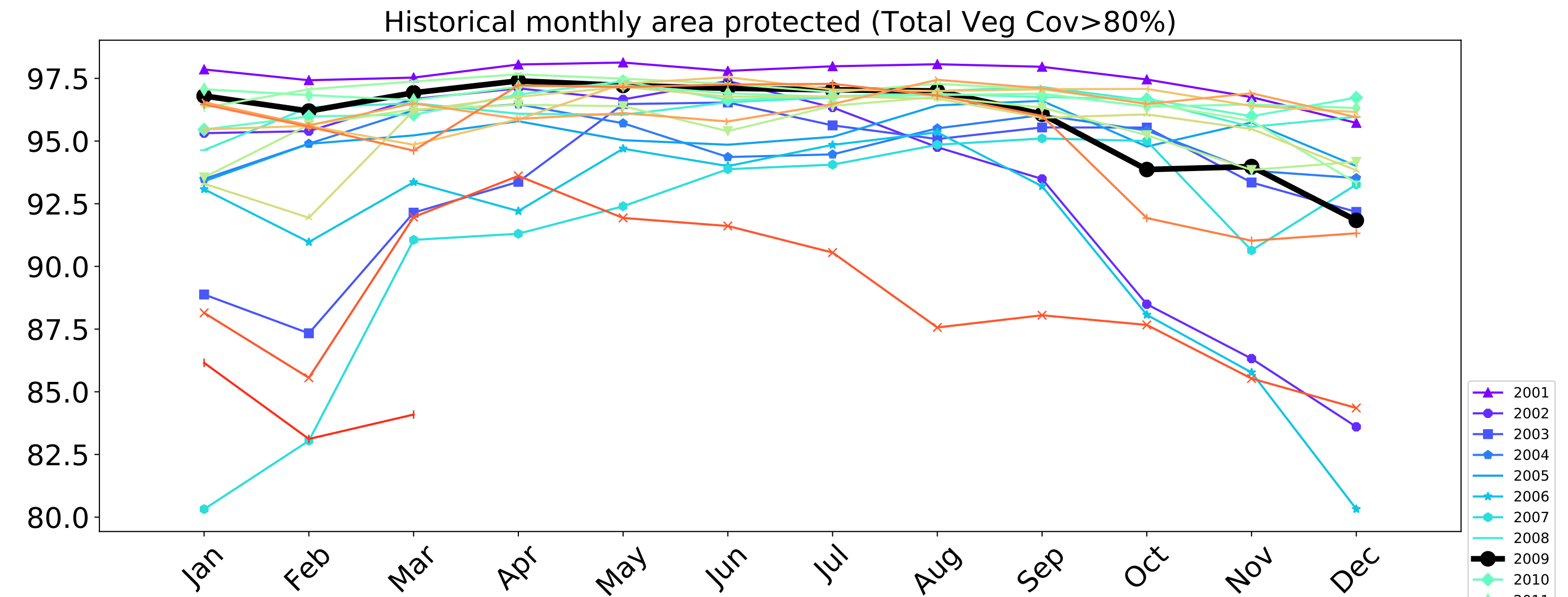
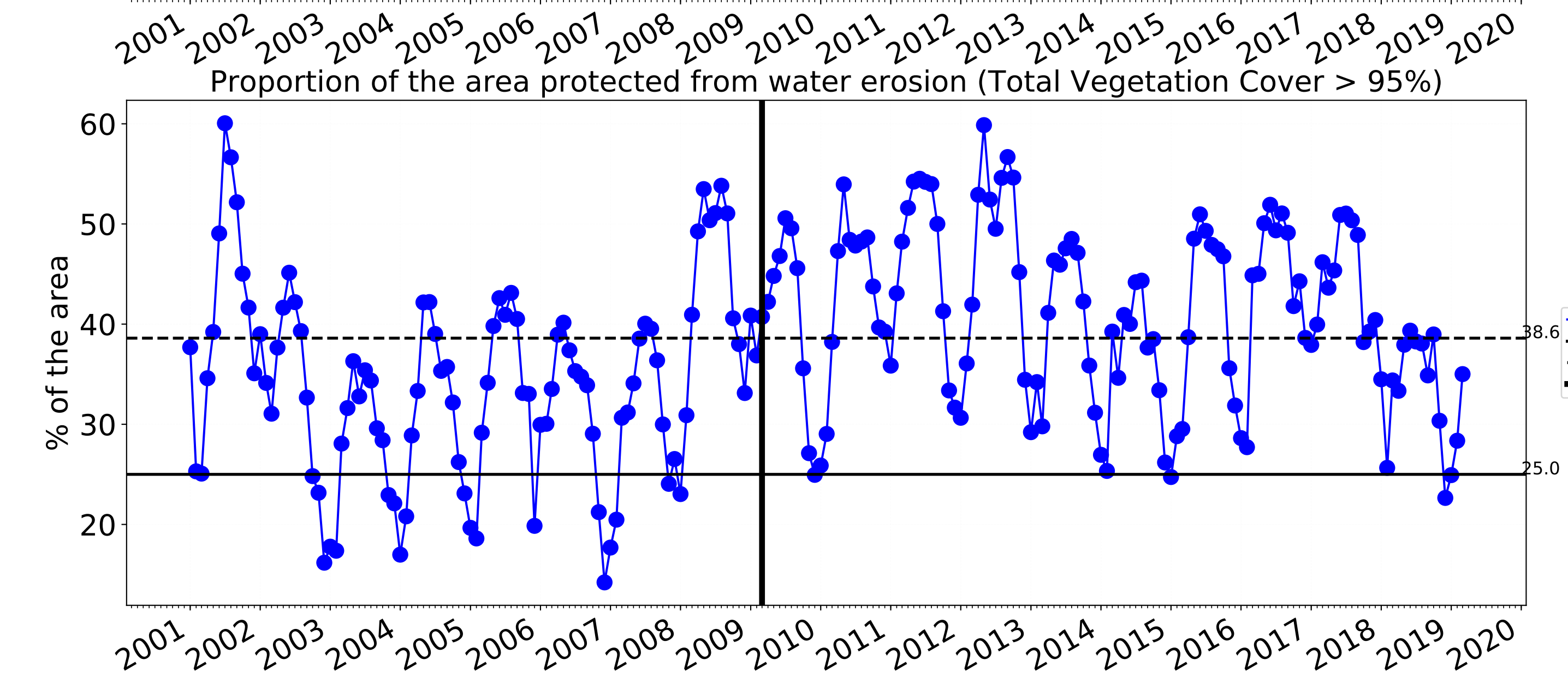
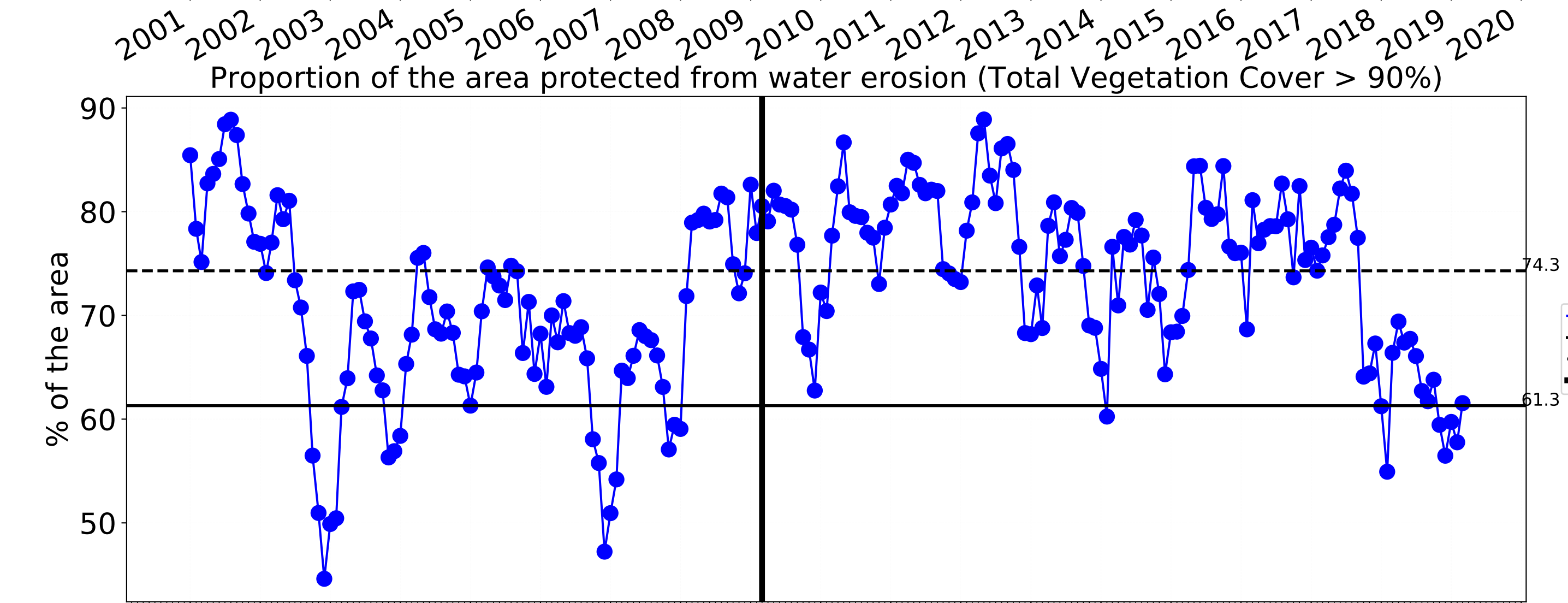
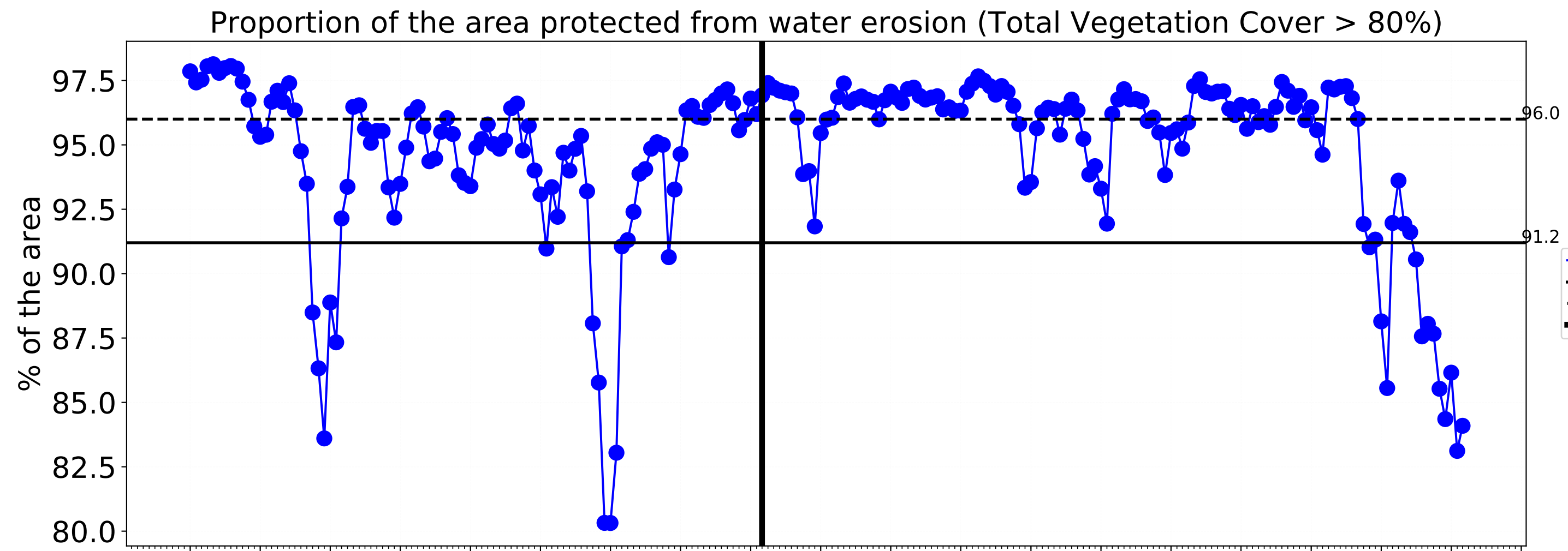
Total Vegetation Cover Decile [%]







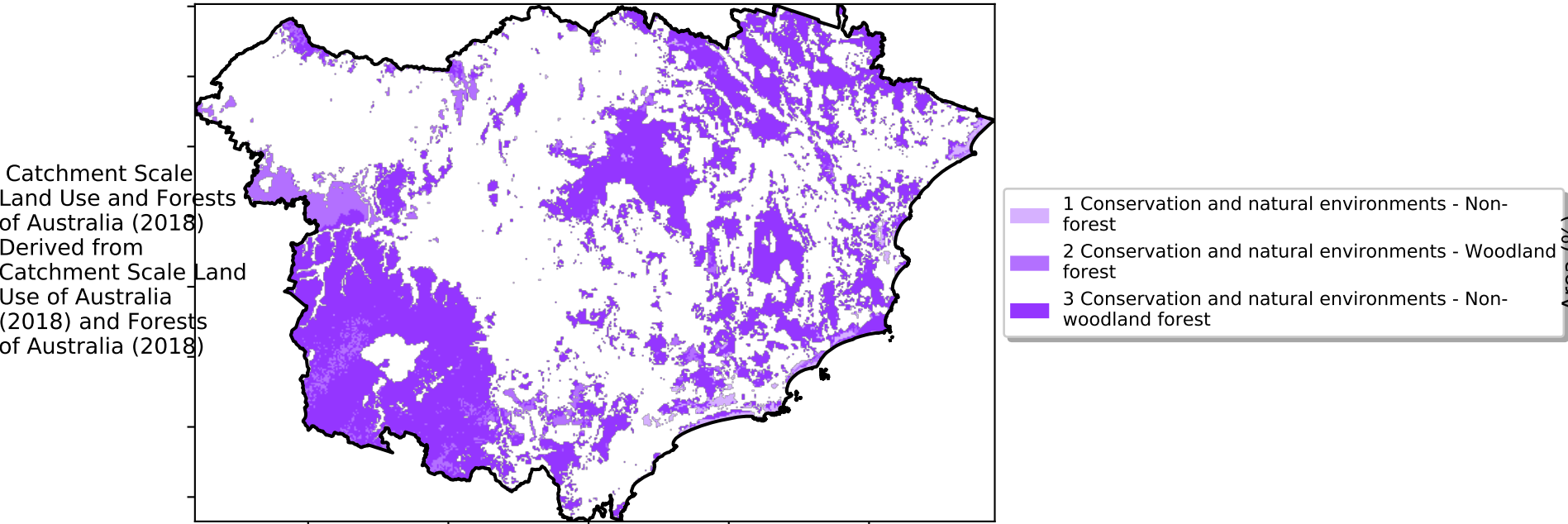




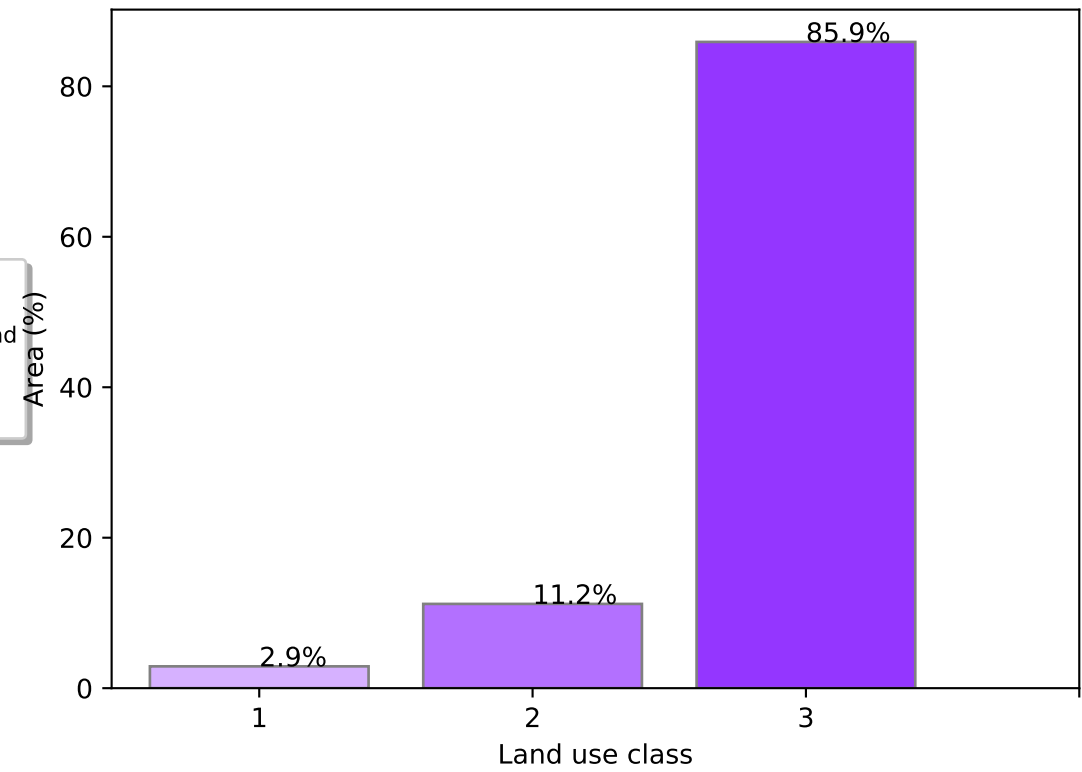


Conservation and natural environments

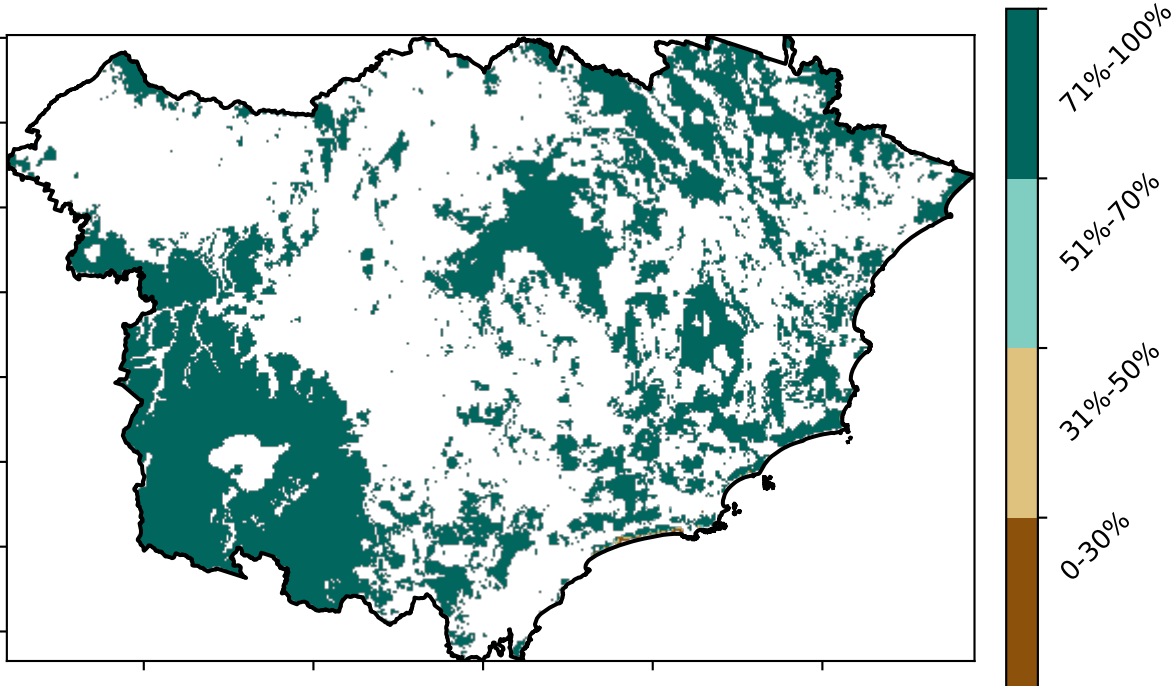
Land use and forest cover



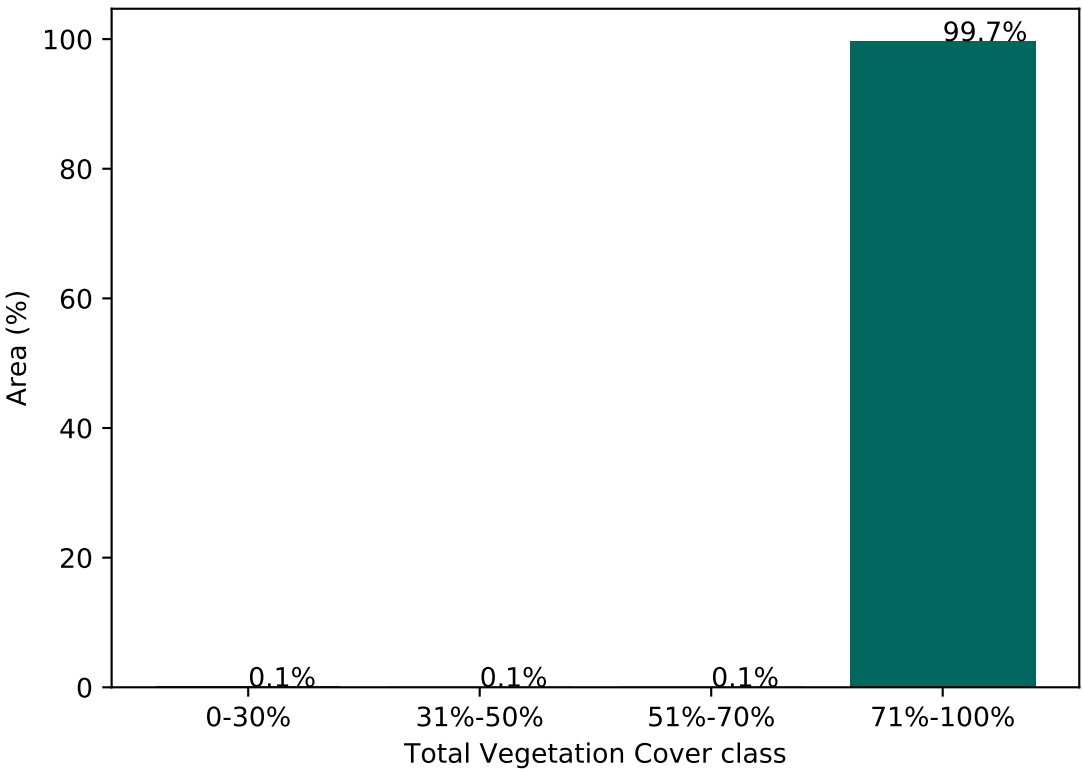
Proportion of each land class in area



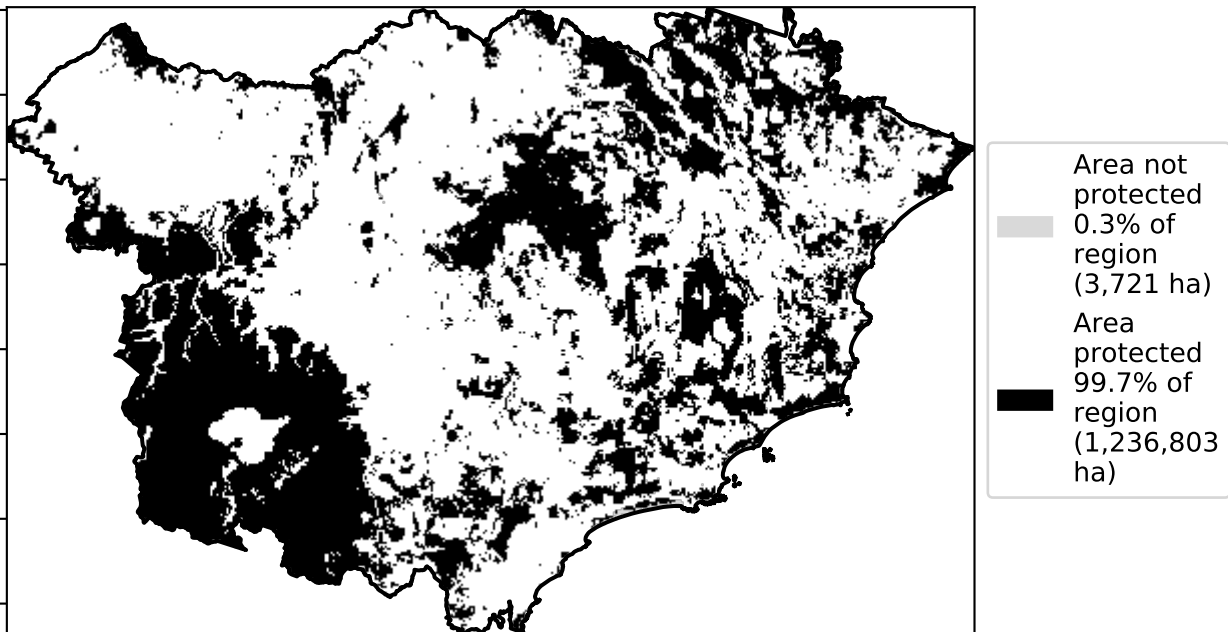
Total Vegetation Cover [%]



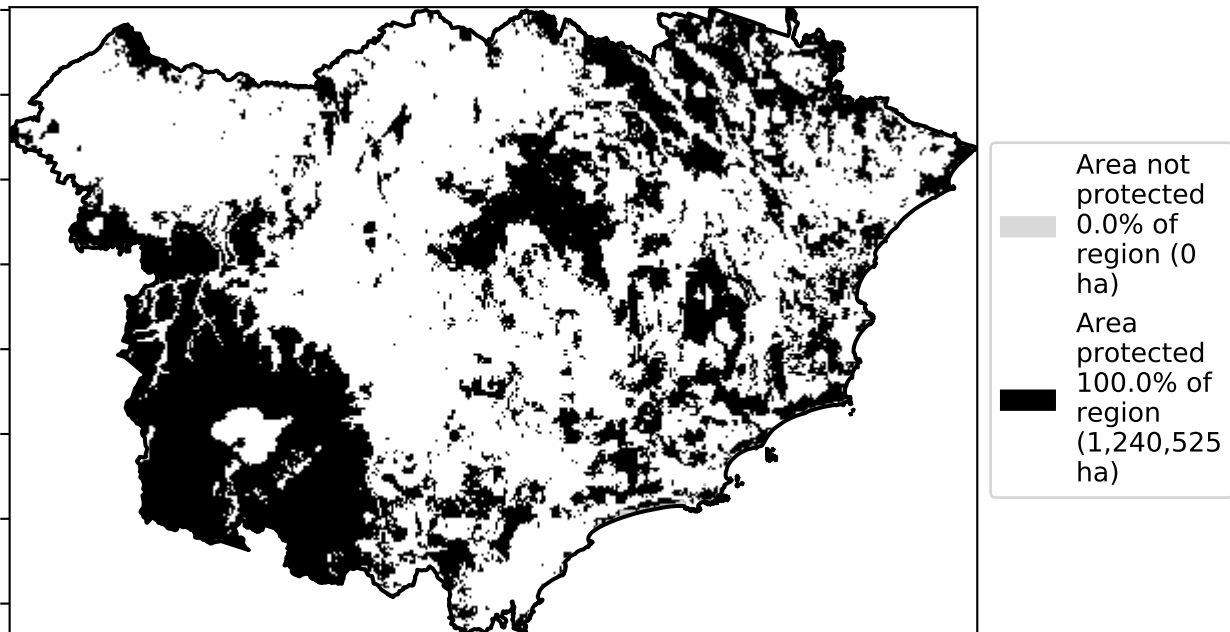
Proportion of vegetation cover class in area



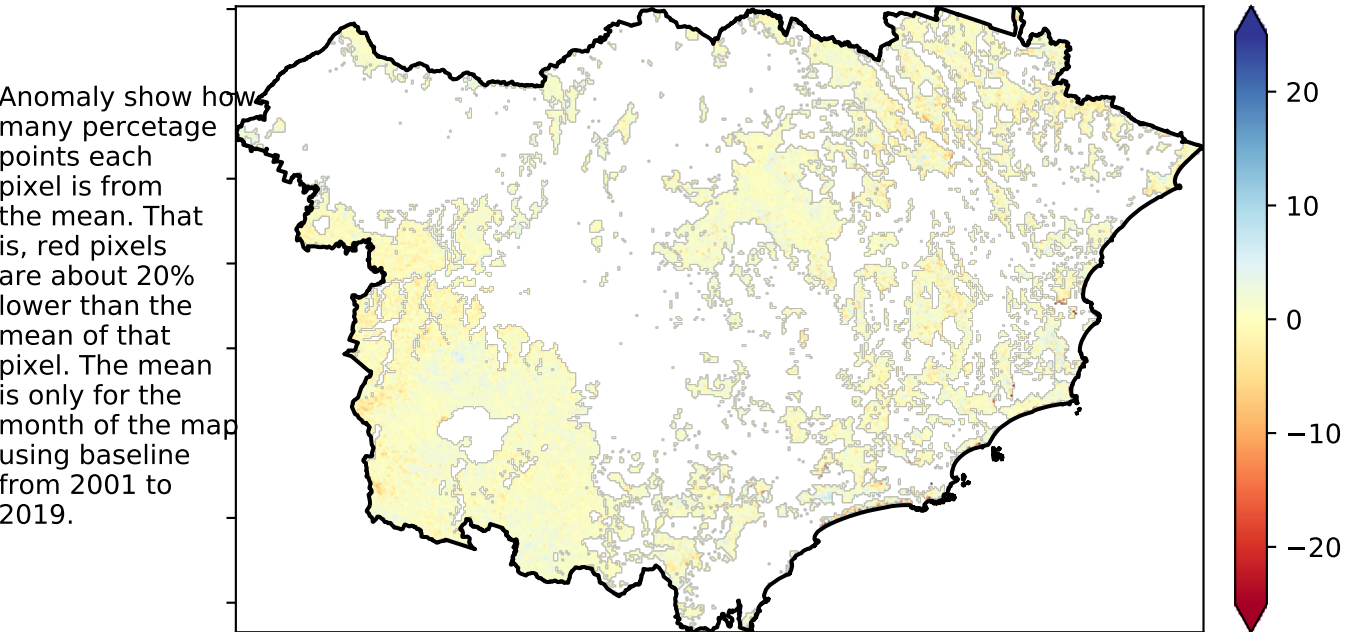
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

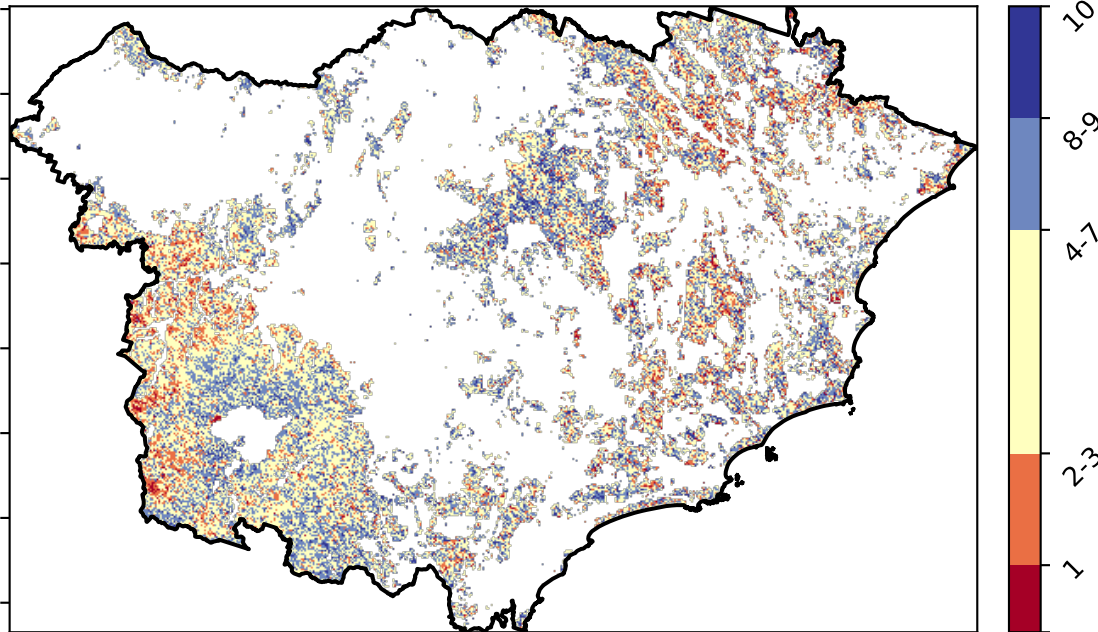


Total Vegetation Cover Anomaly [%]



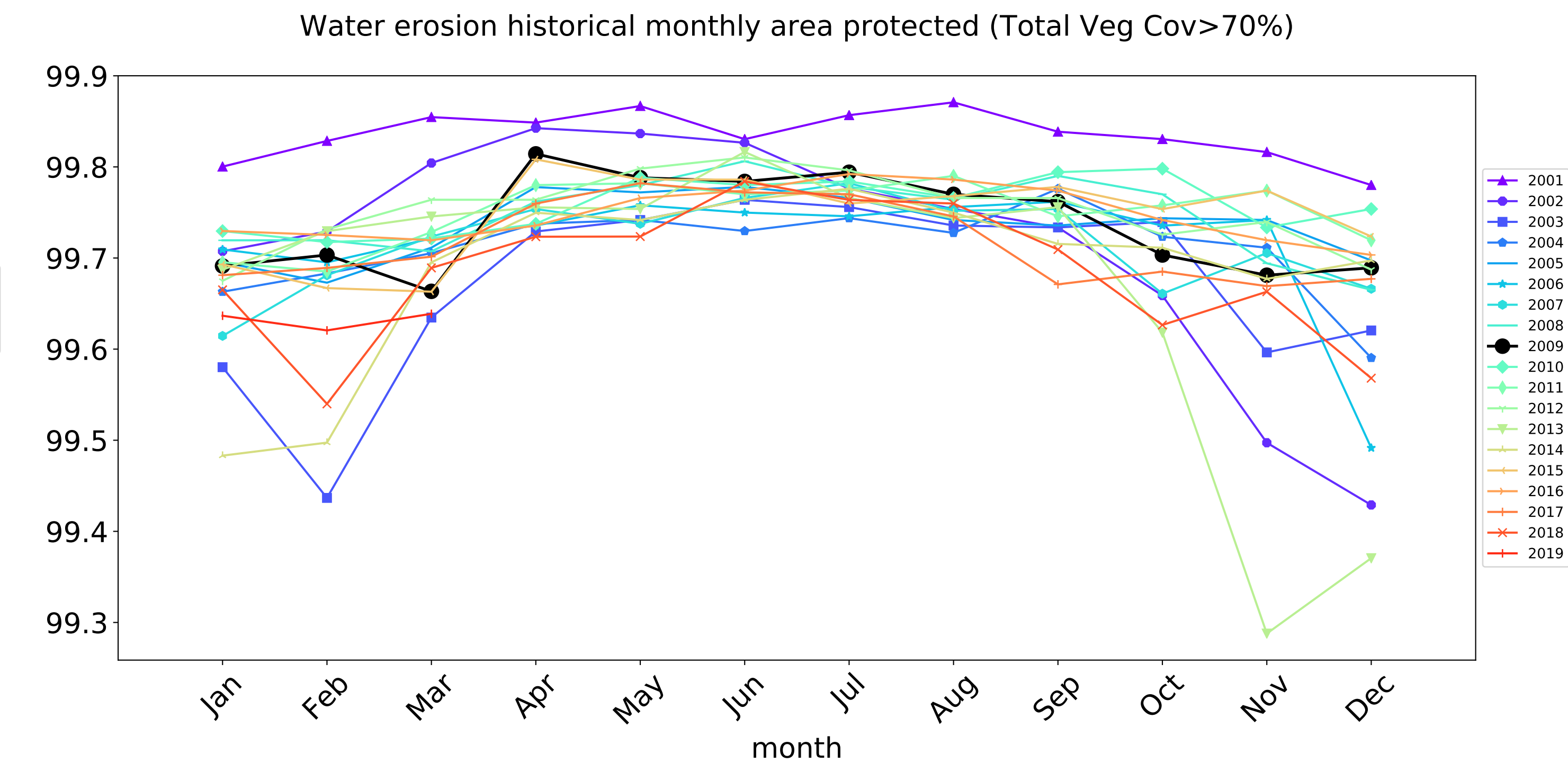
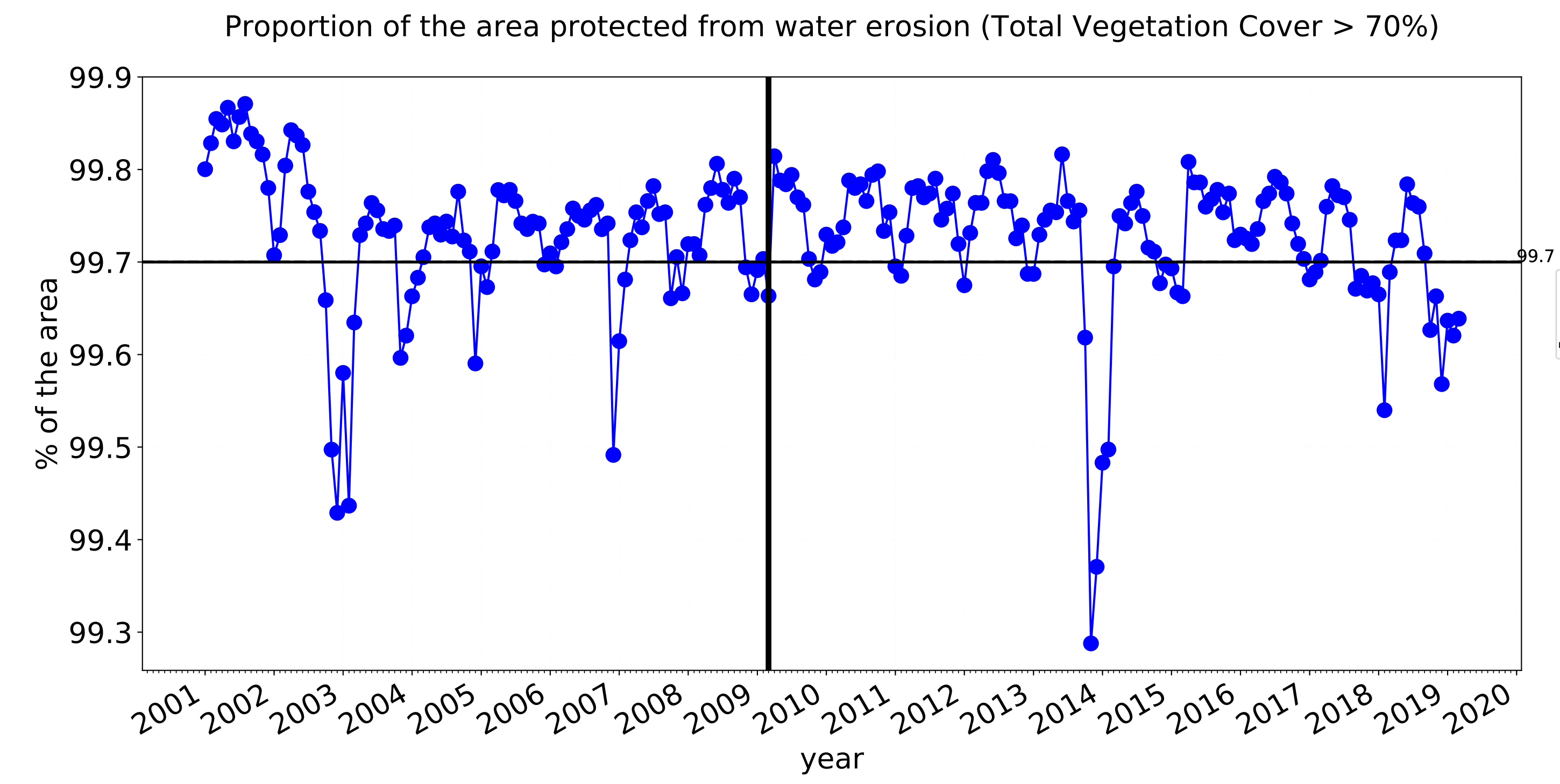
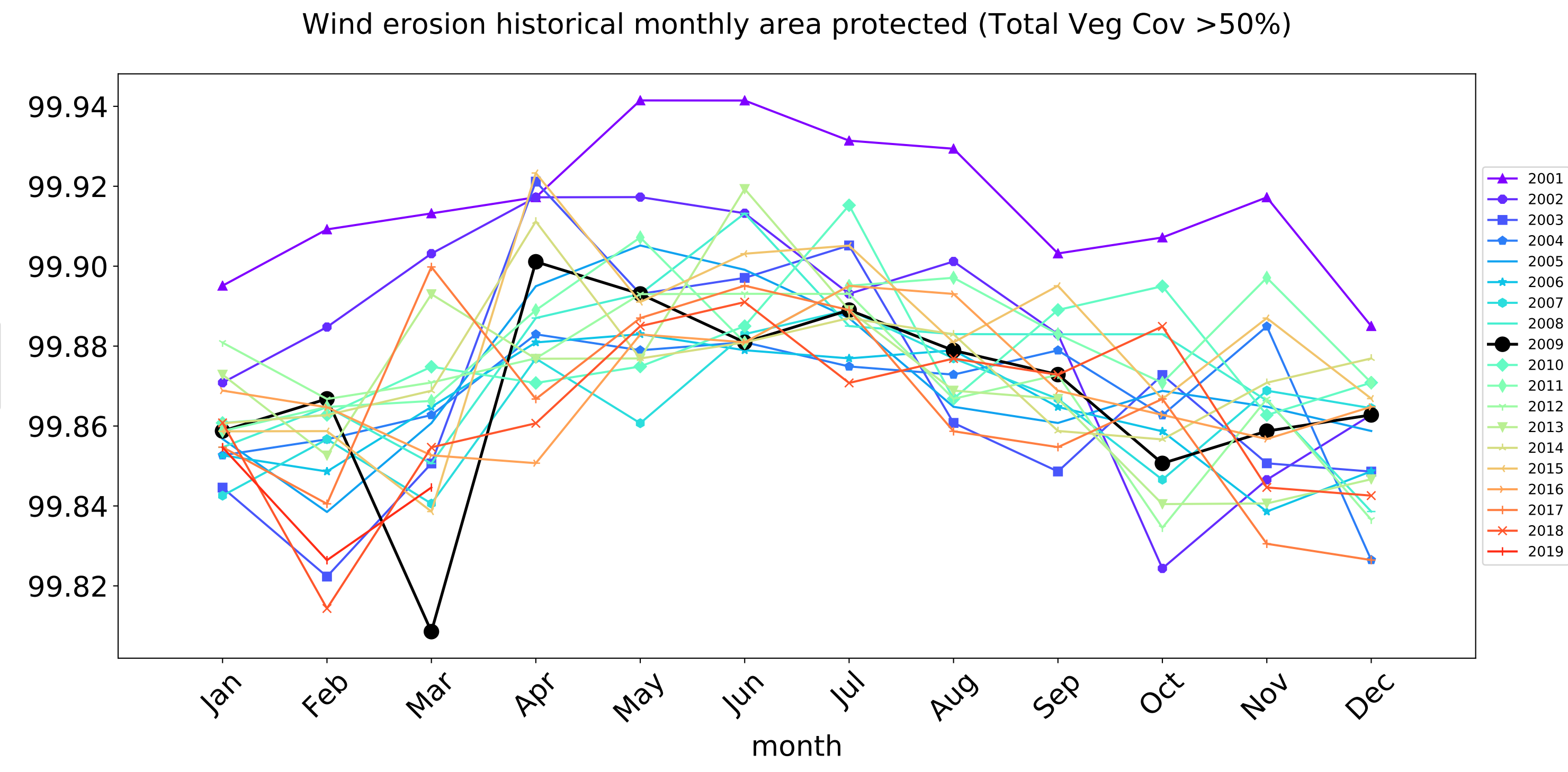
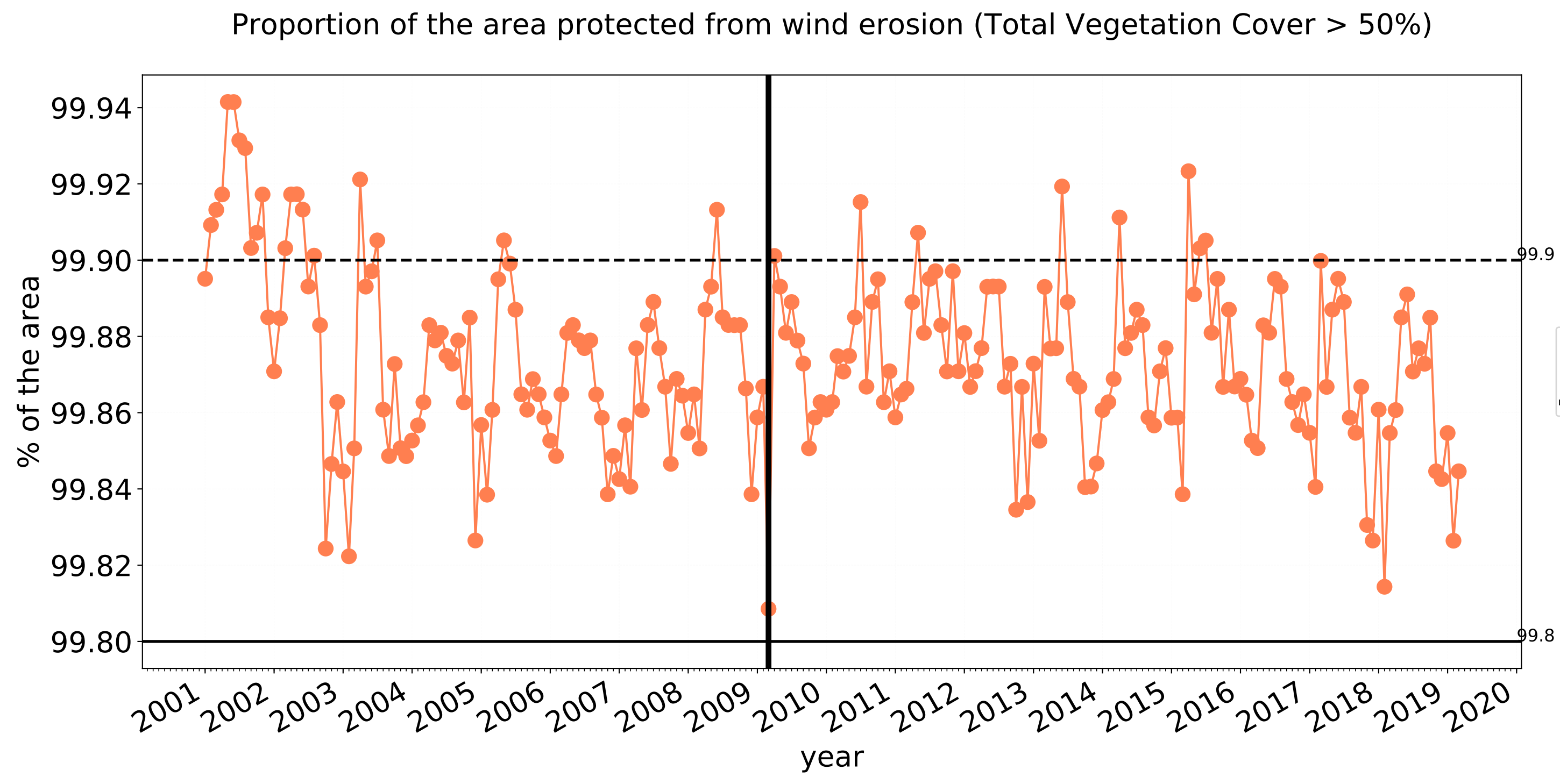
Total Vegetation Cover Decile [%]

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.

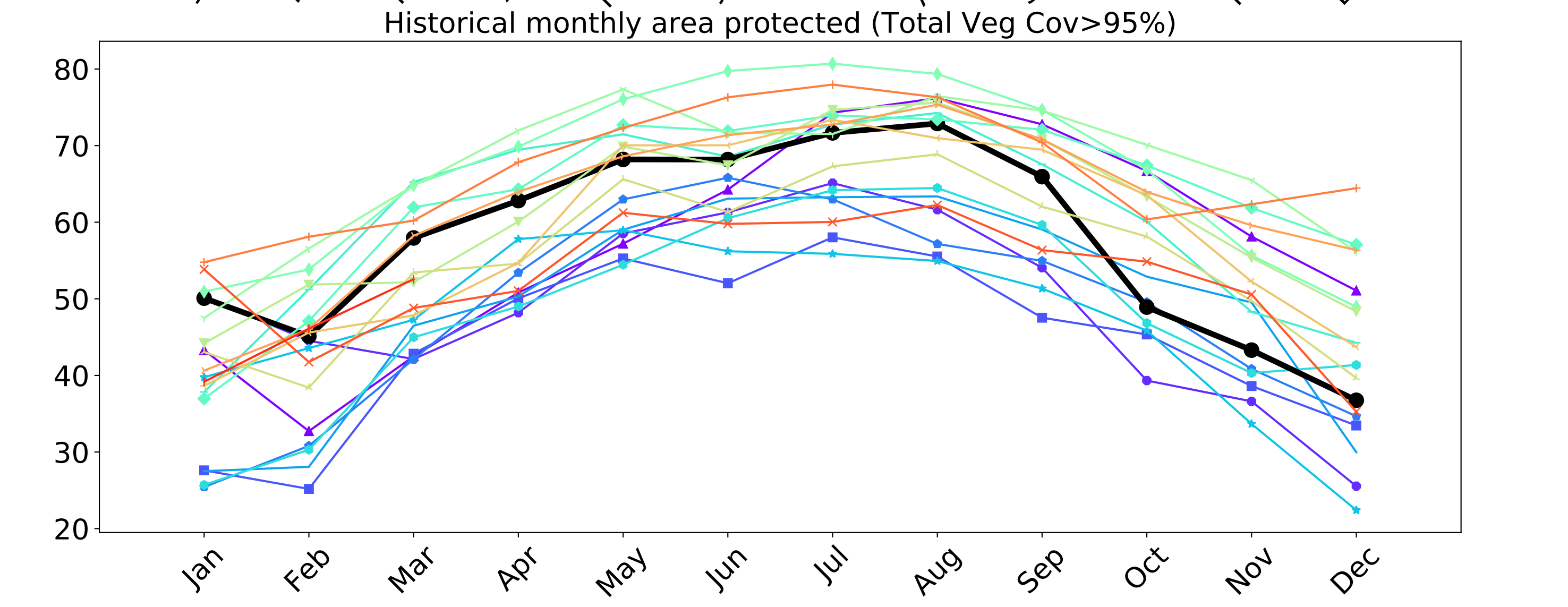
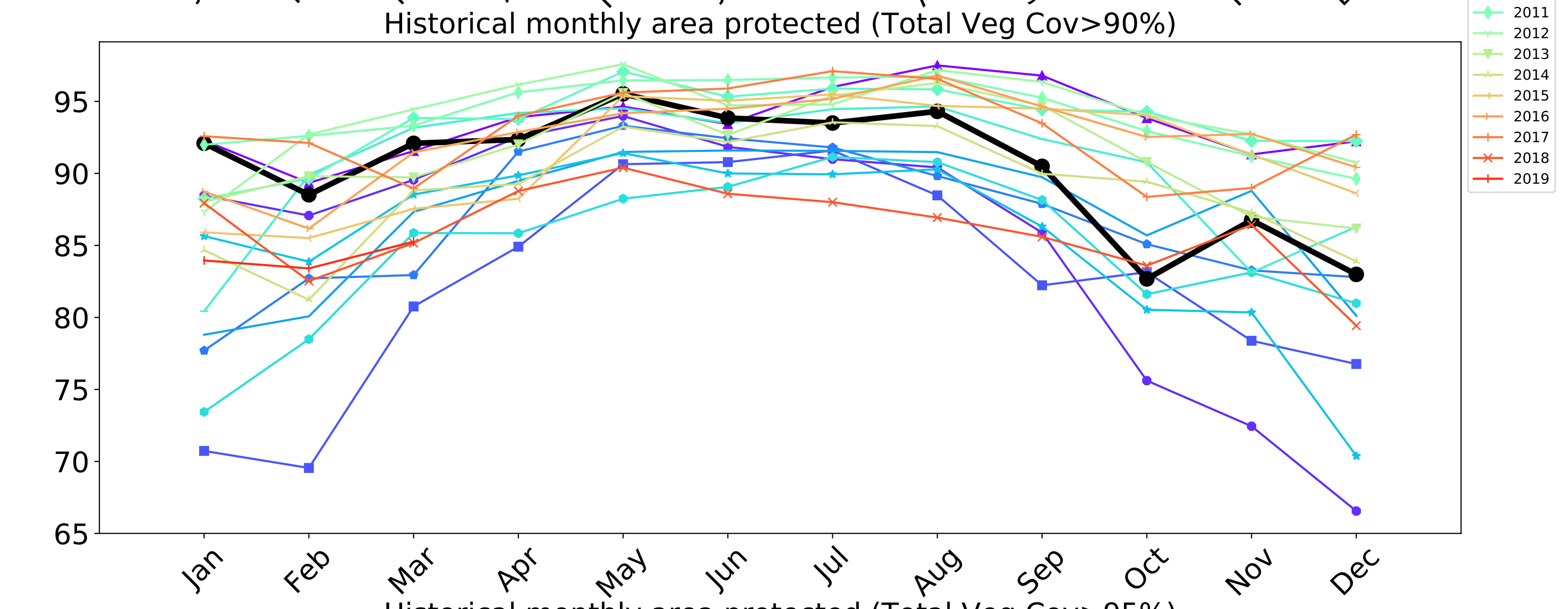
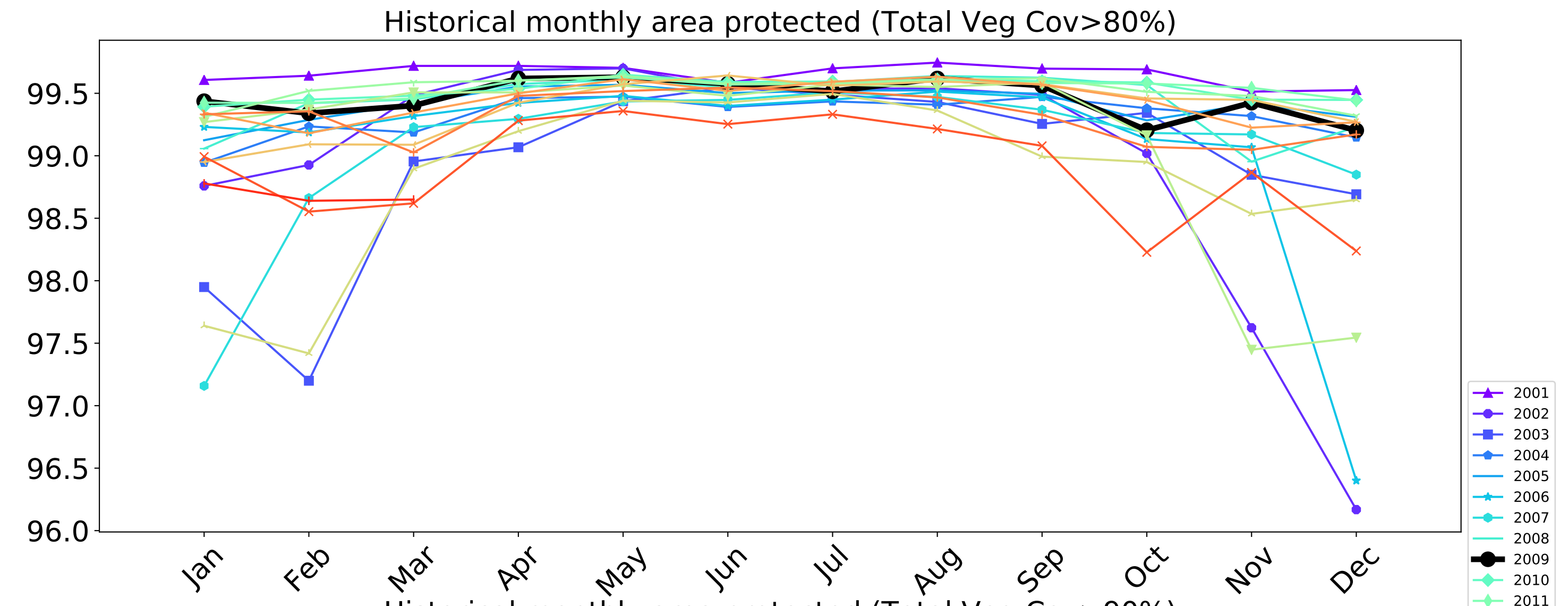
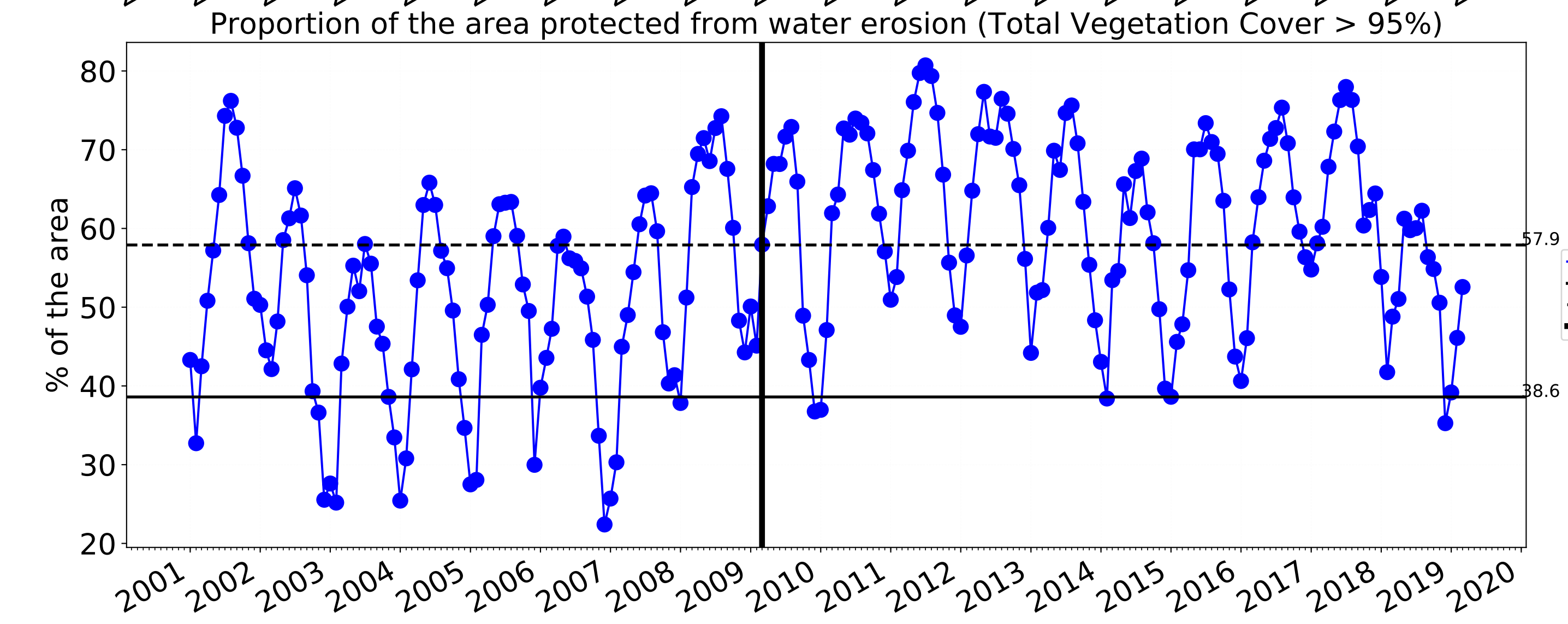
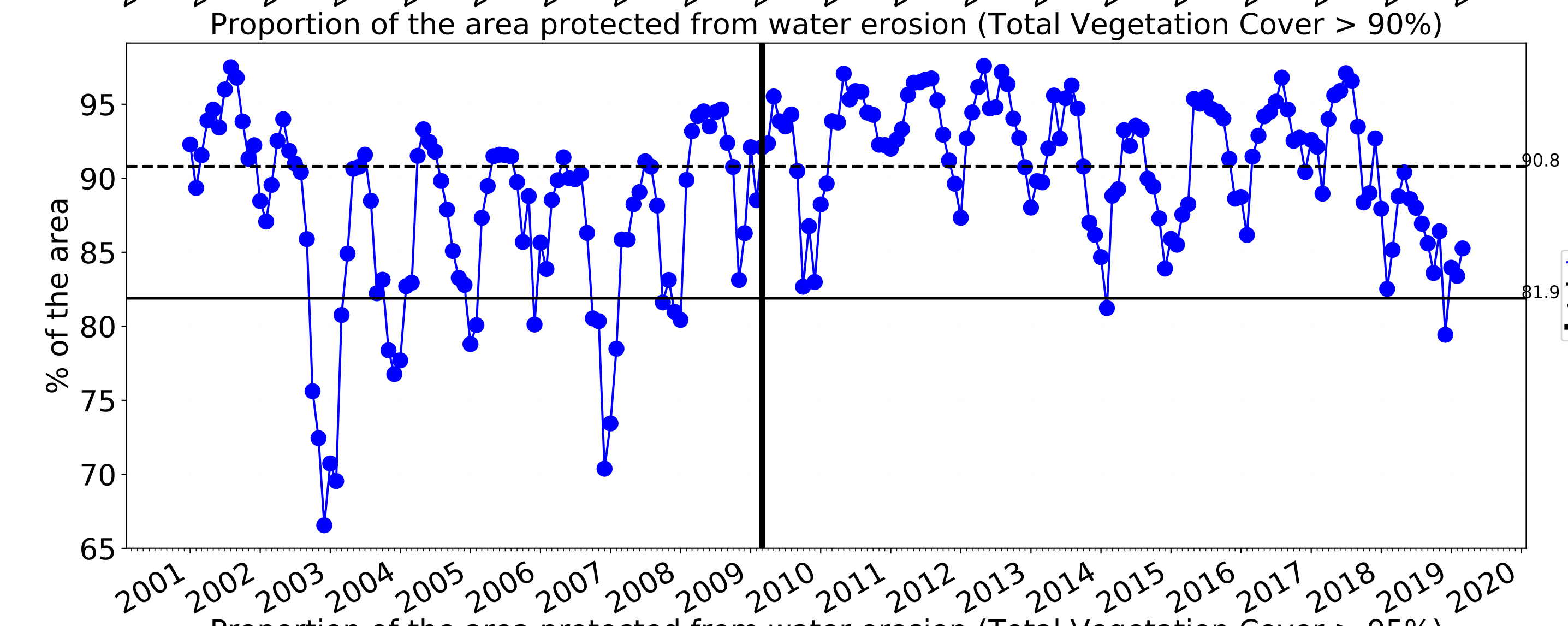
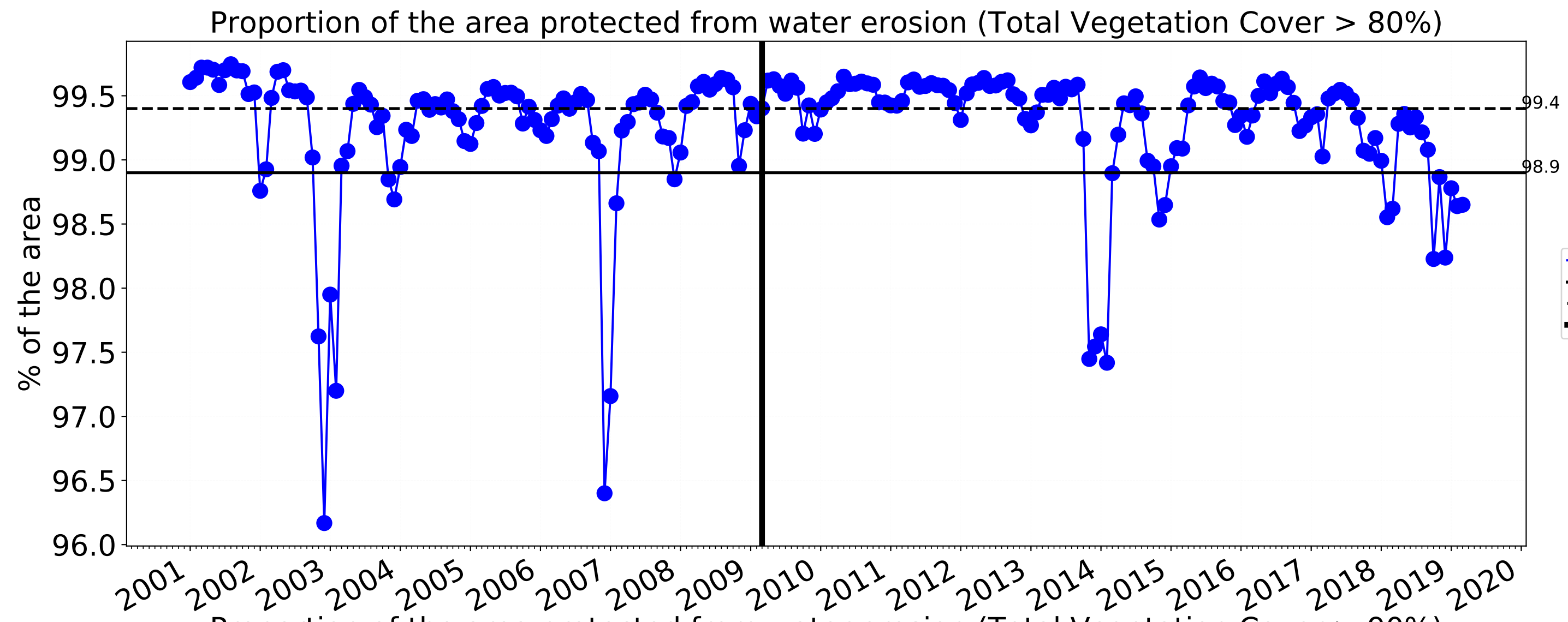




Conservation and natural environments timeseries









Conservation and natural environments non forest

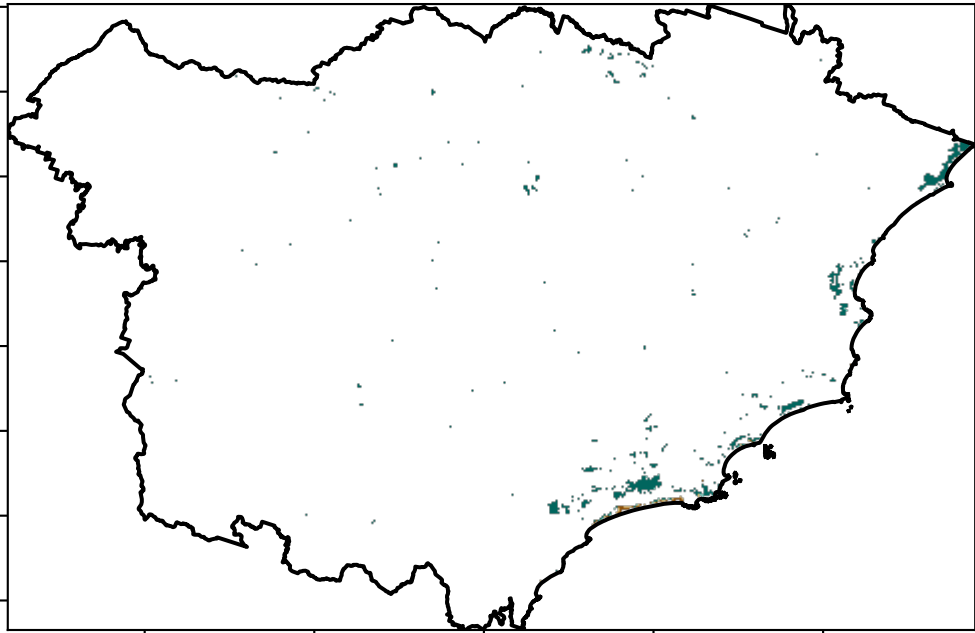
Land use and forest cover

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

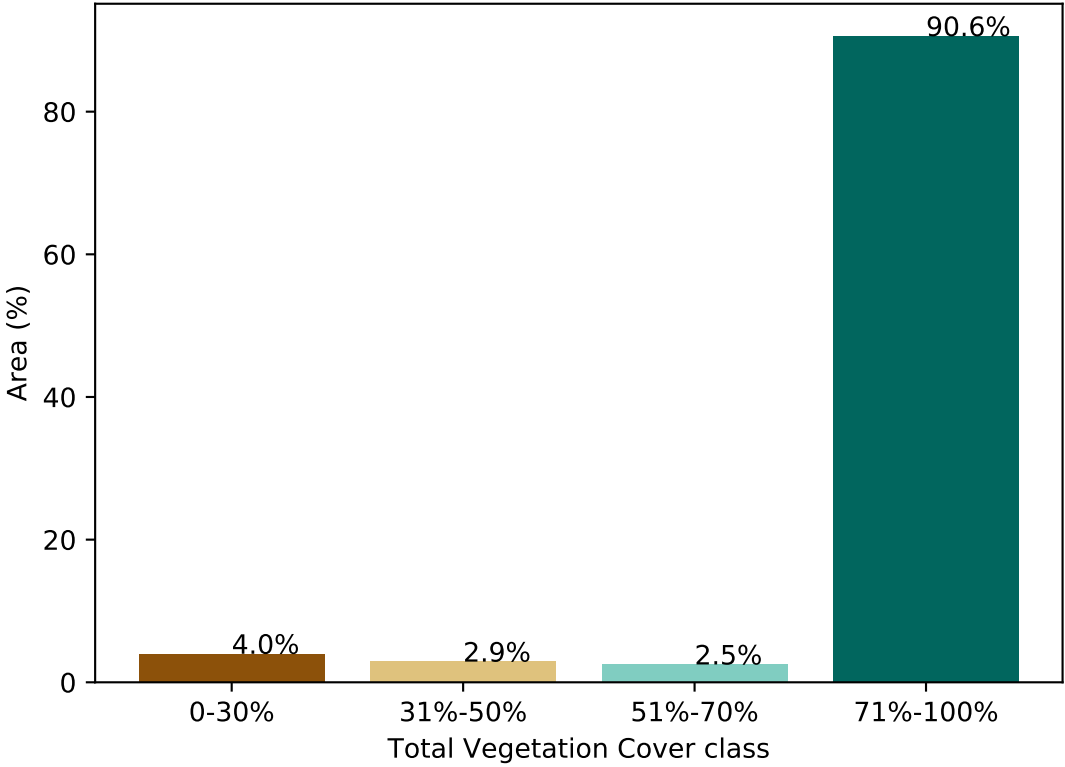


1 Conservation and natural environments - Non-forest

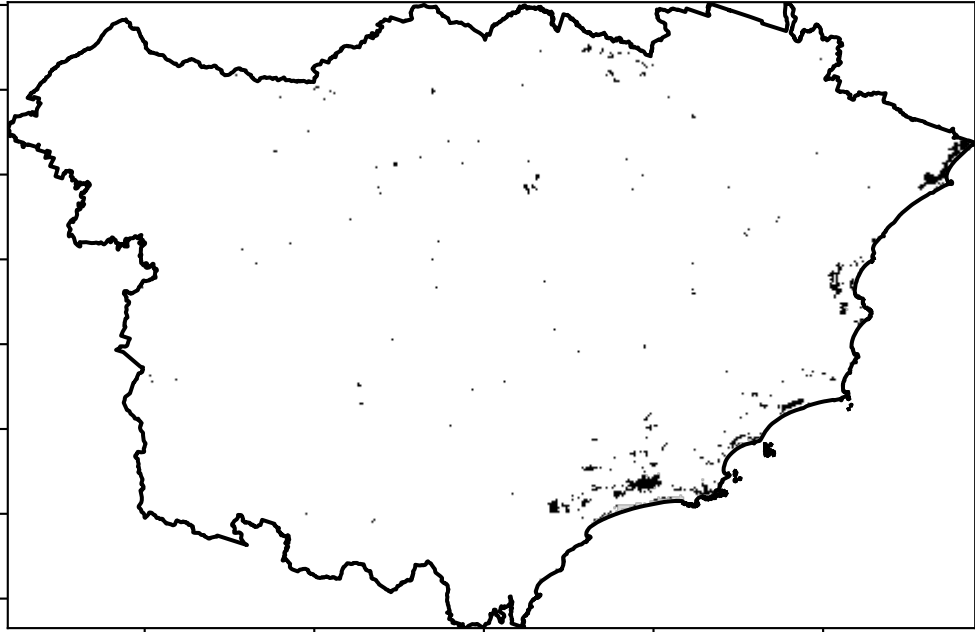
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

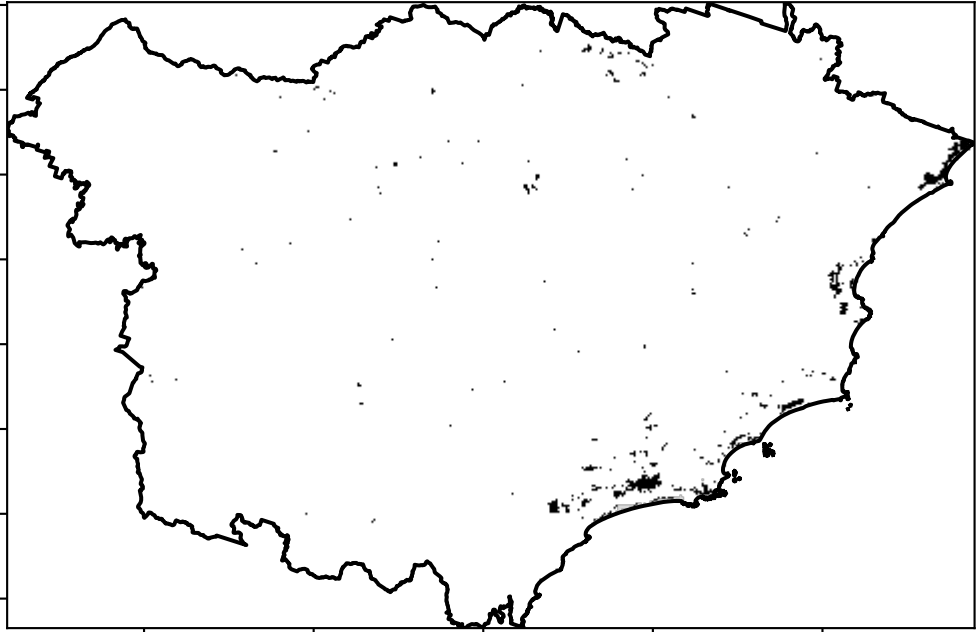


% Area protected from water erosion (>70%)



Area not protected  
9.4% of region  
(2,801 ha)  
Area protected  
90.6% of region  
(26,998 ha)

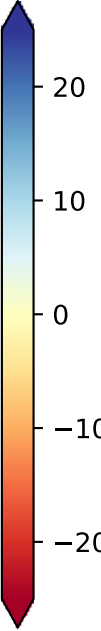
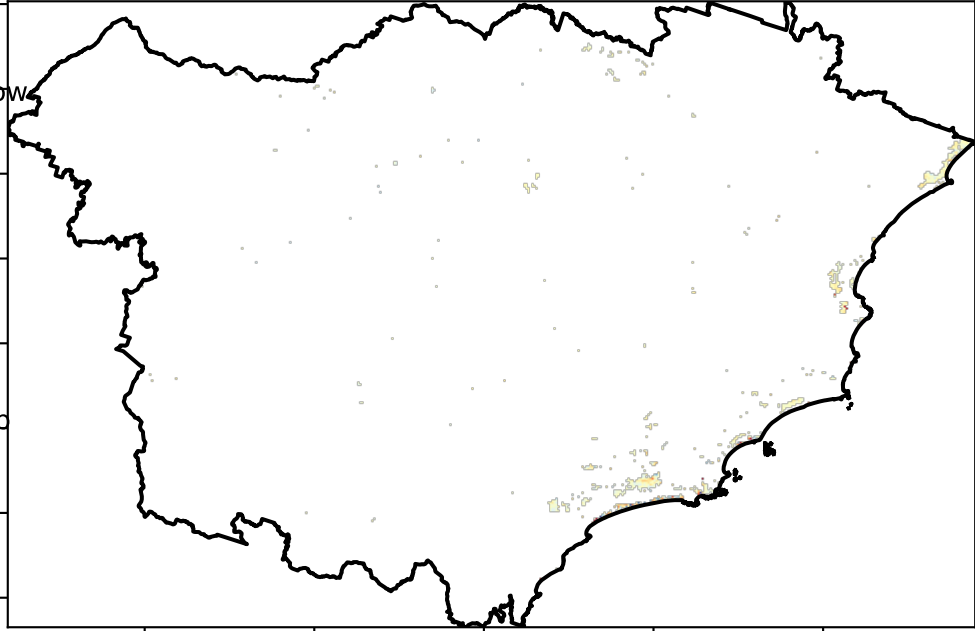
% Area protected from wind erosion (>50%)



Area not protected  
7.0% of region  
(2,086 ha)  
Area protected  
93.0% of region  
(27,714 ha)

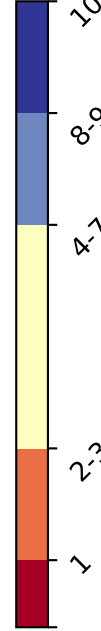
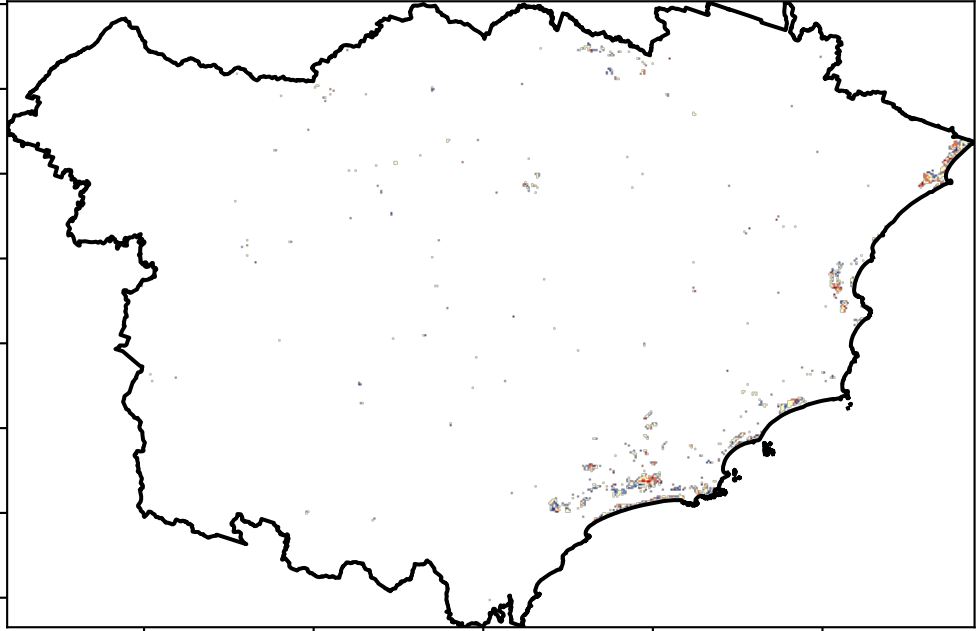
Total Vegetation Cover Anomaly [%]

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.



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.



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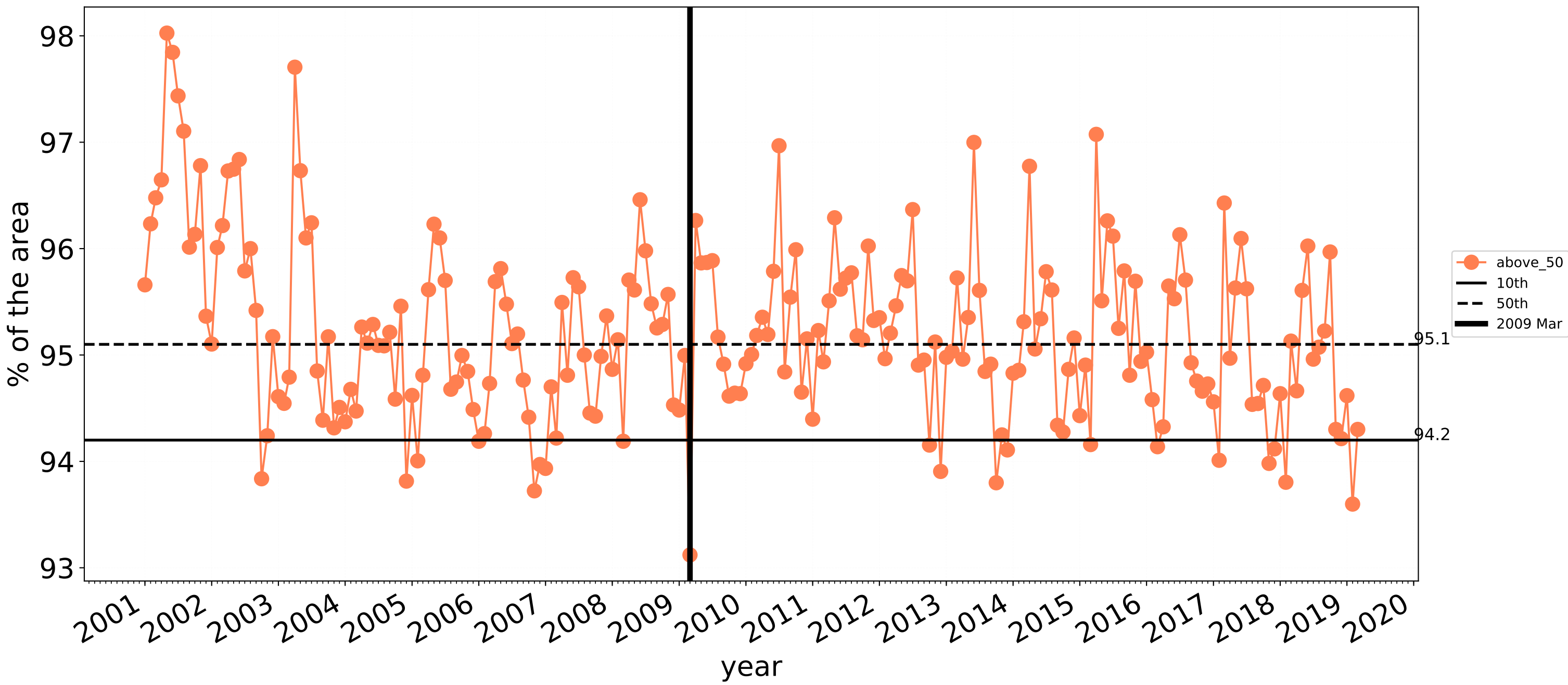


Planning,  
Industry &  
Environment

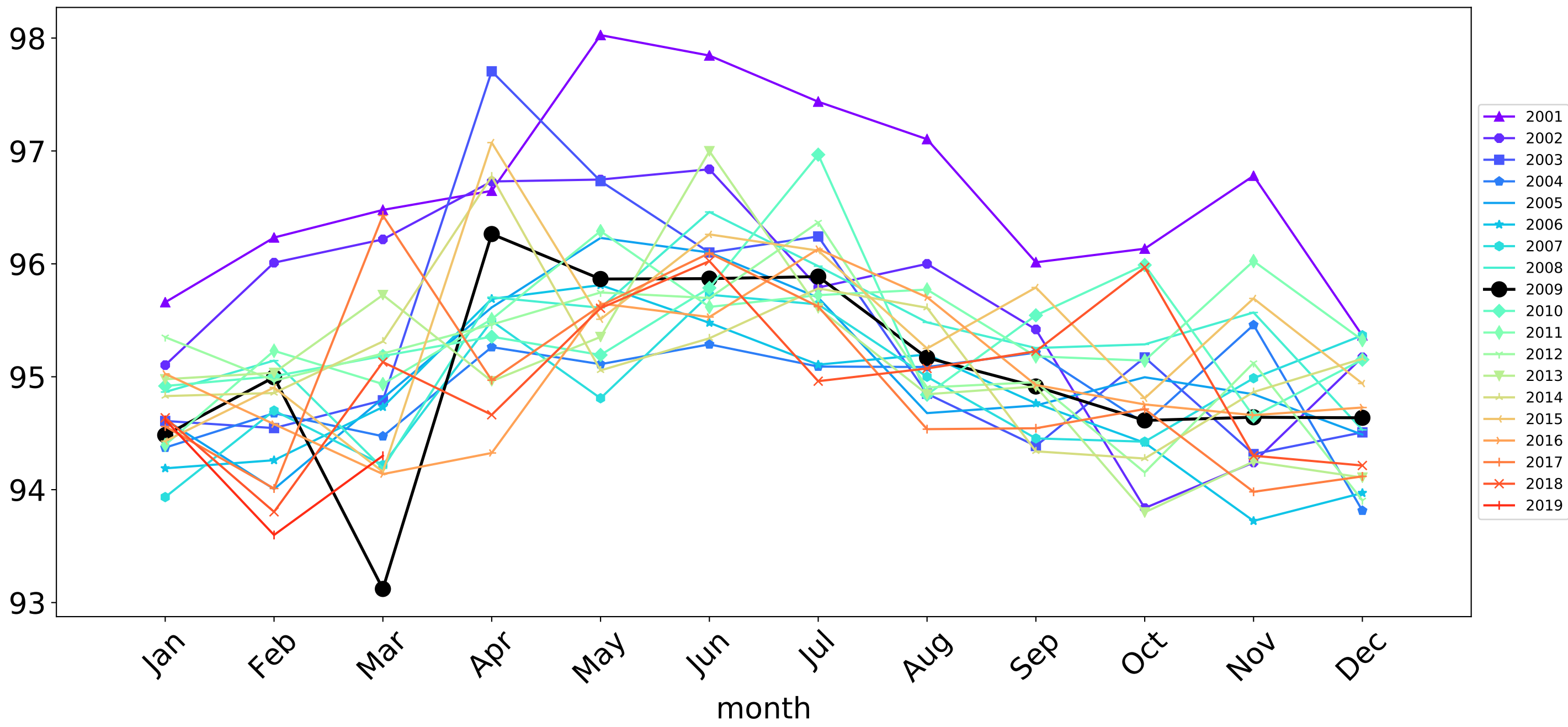


Conservation and natural environments non forest timeseries

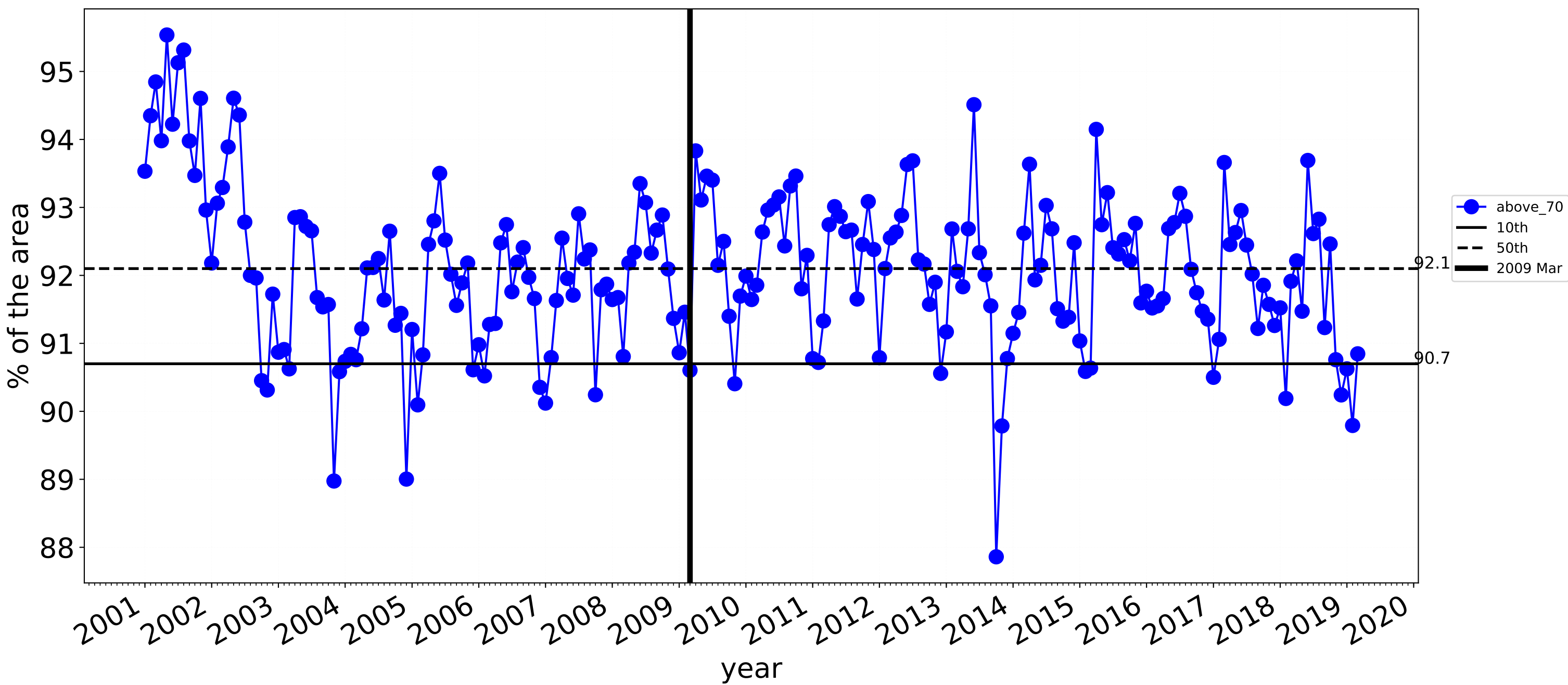
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



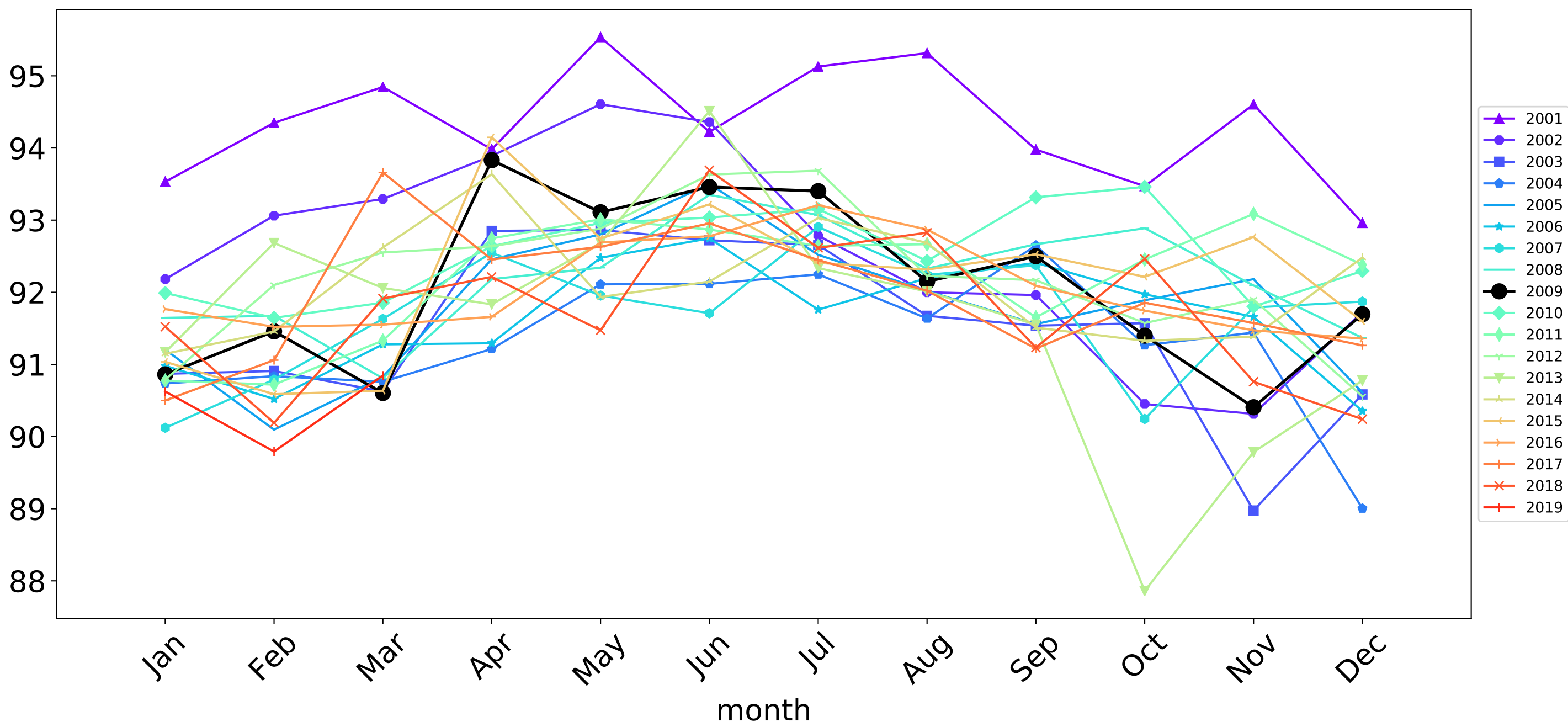
Wind erosion historical monthly area protected (Total Veg Cov >50%)



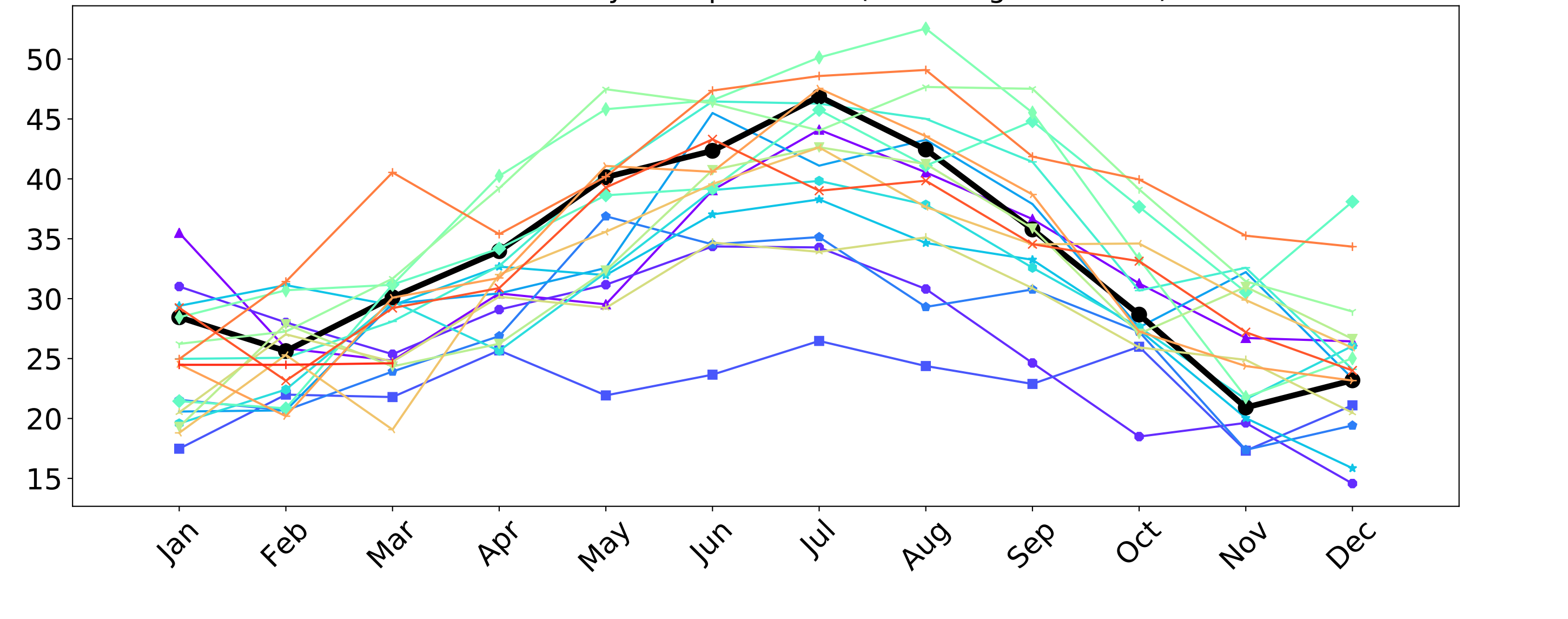
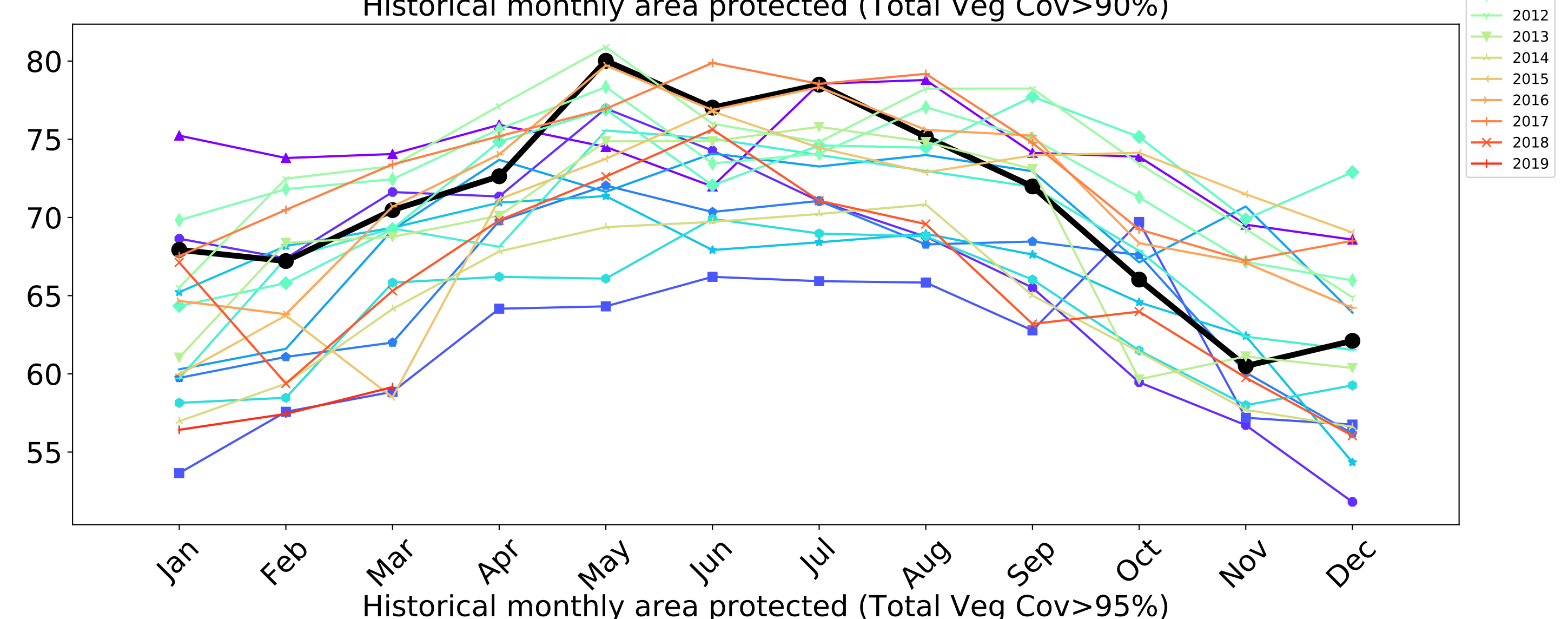
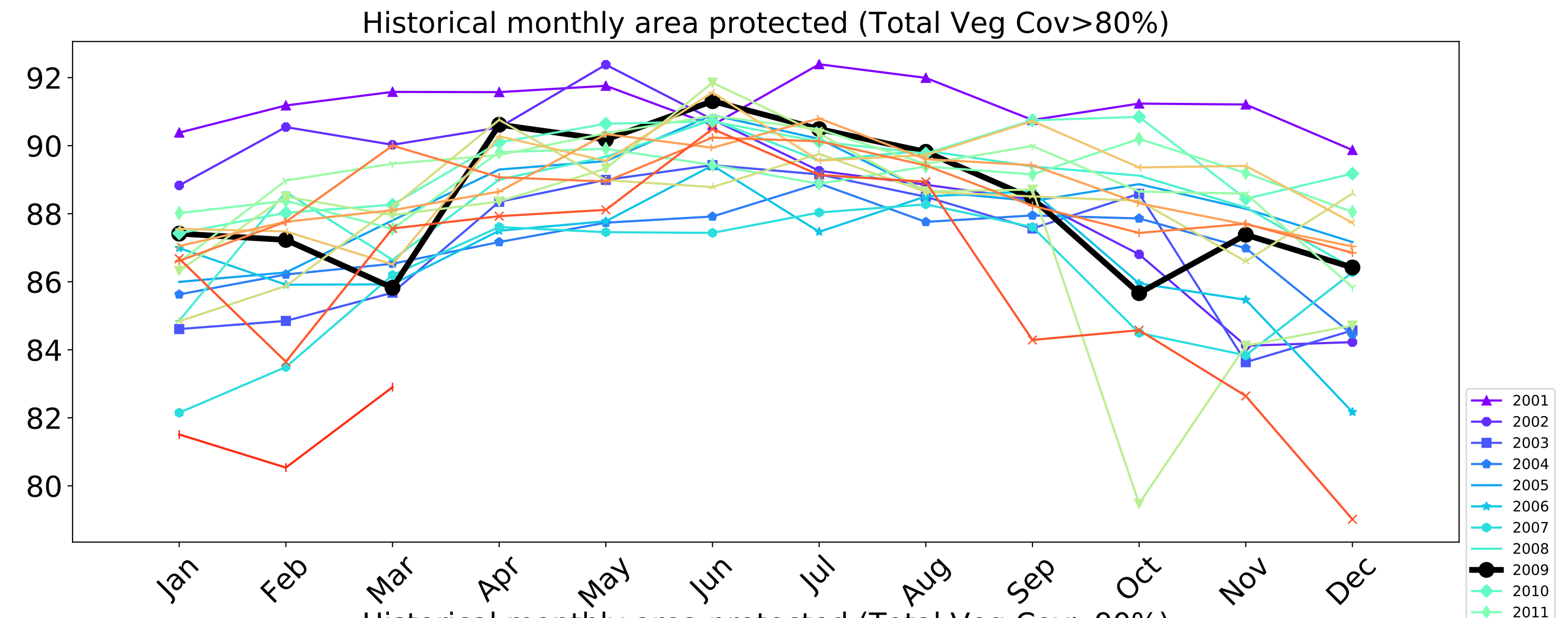
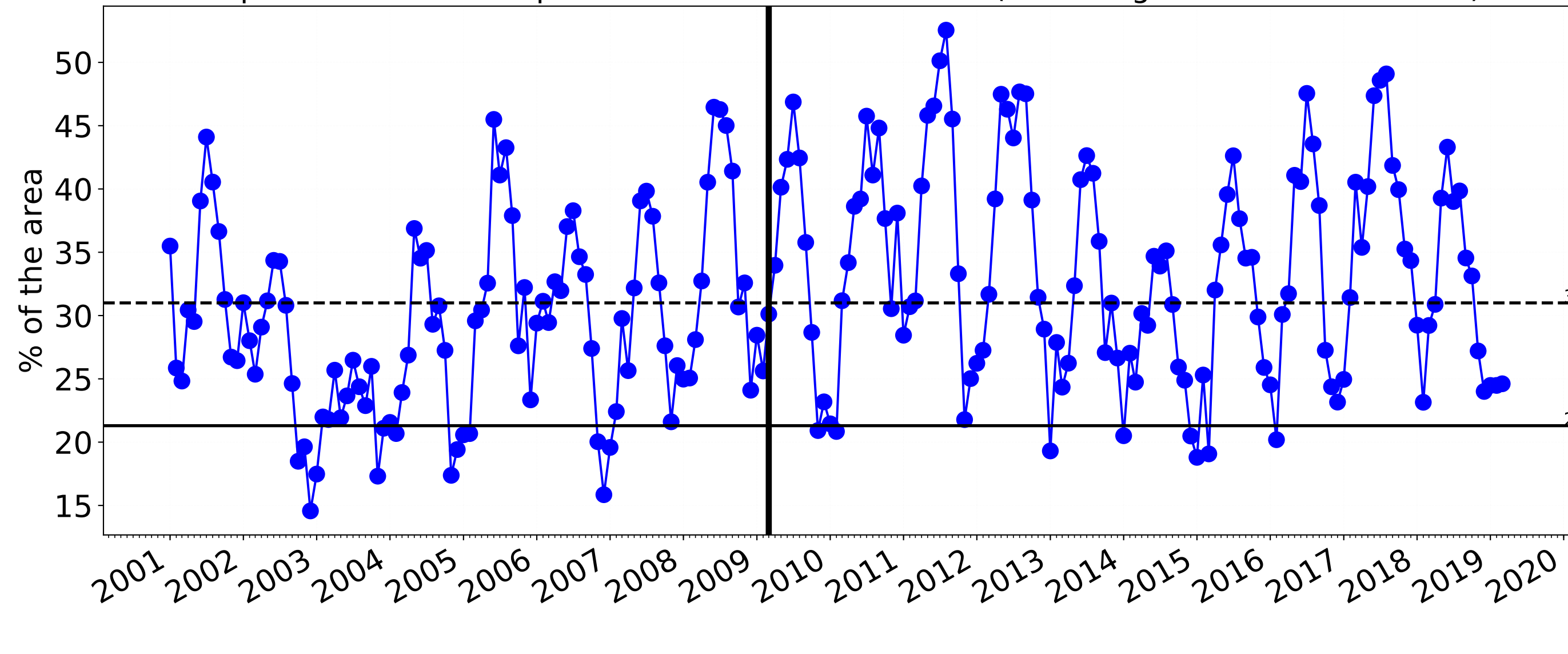
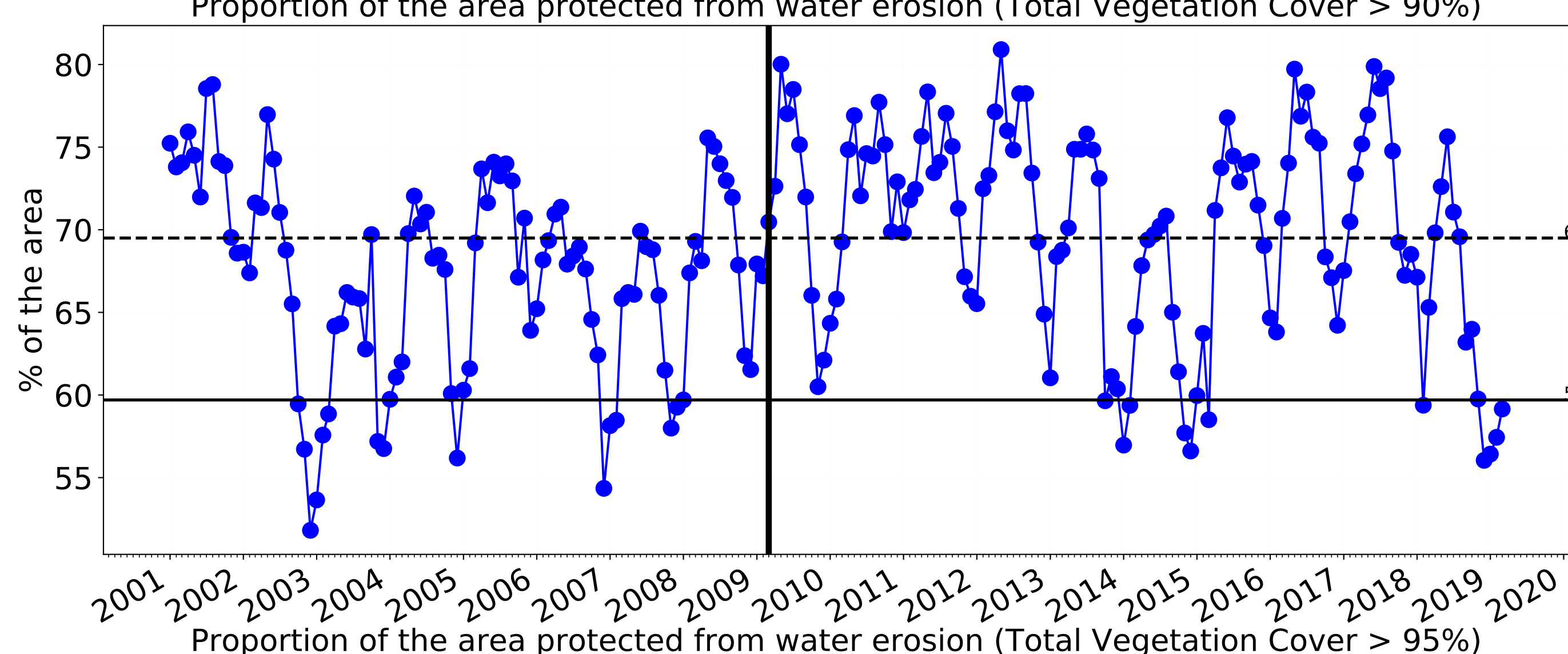
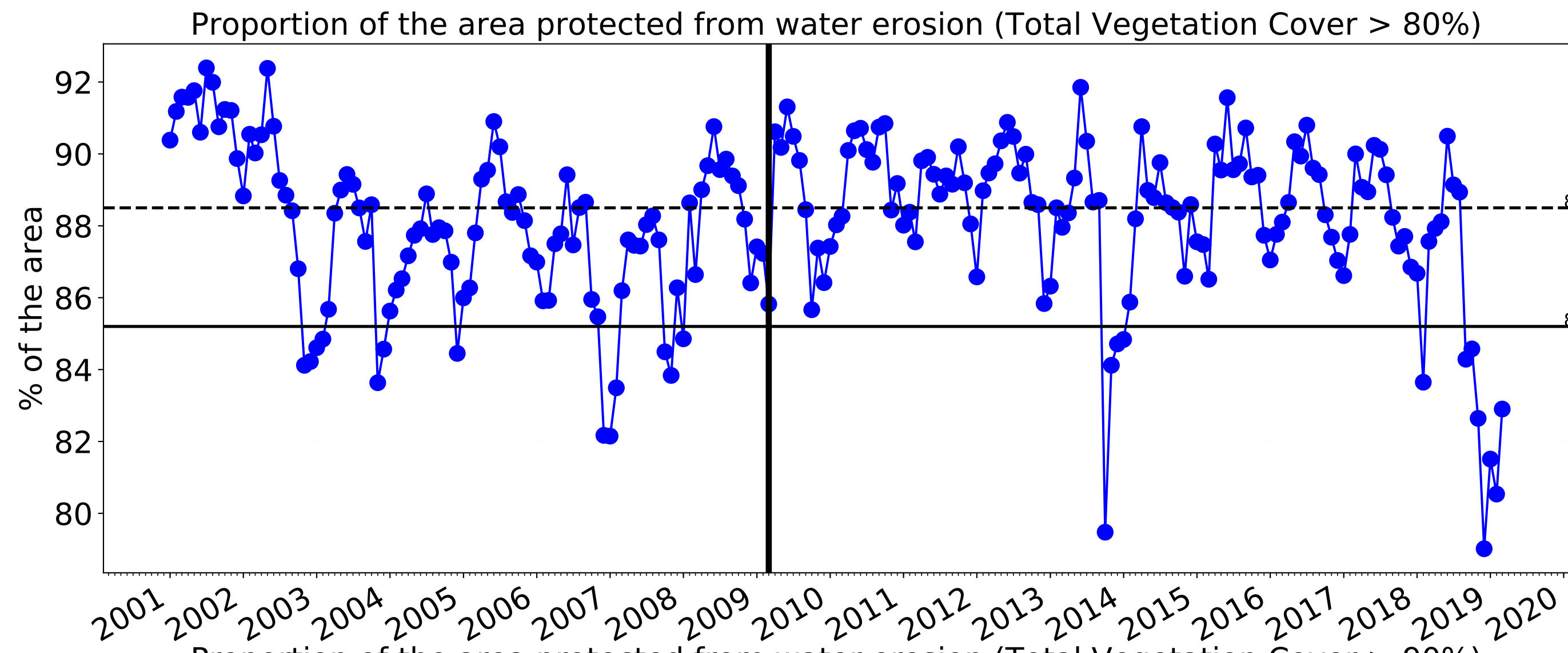
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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









Conservation and natural environments Woodland forest

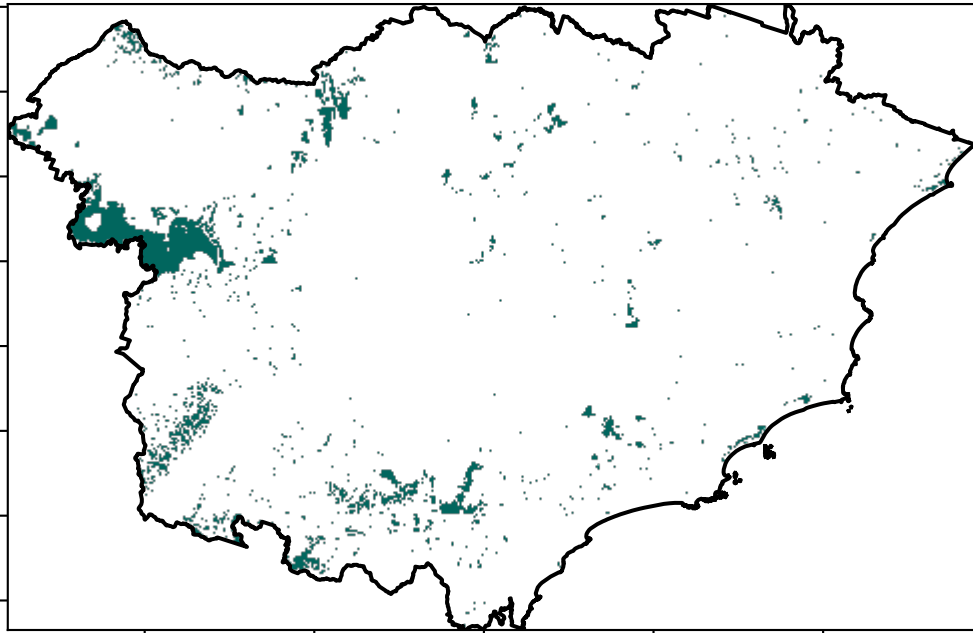
Land use and forest cover

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



1 Conservation and natural environments - Woodland forest

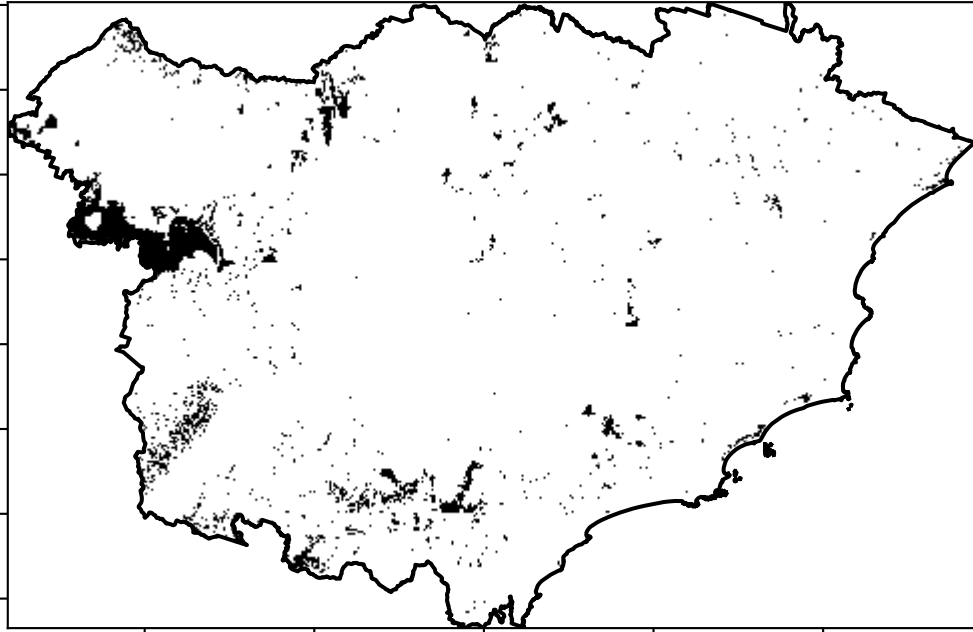
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

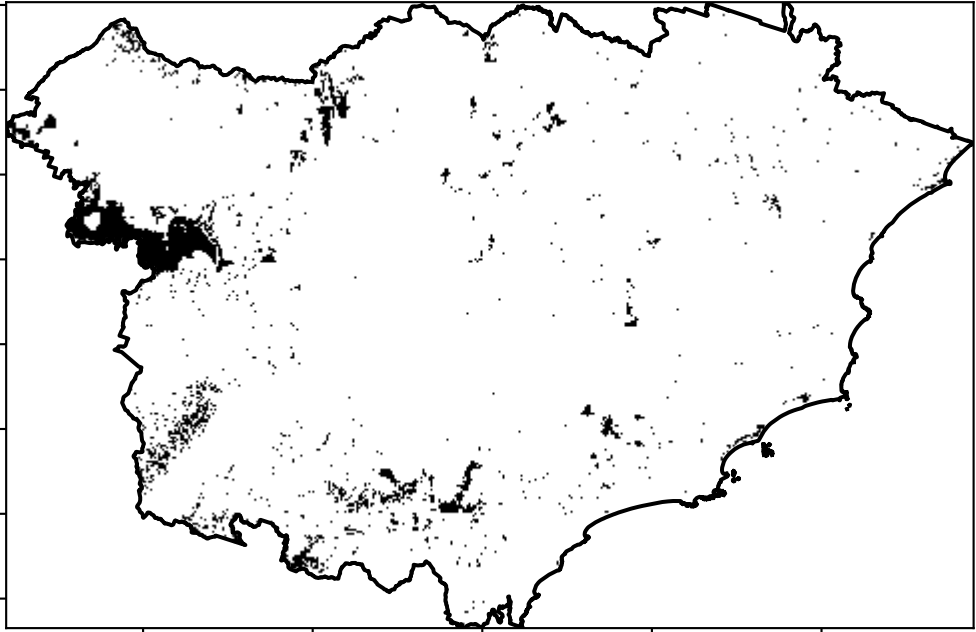


% Area protected from water erosion (>70%)



Area not protected  
0.1% of region  
(138 ha)  
Area protected  
99.9% of region  
(138,811 ha)

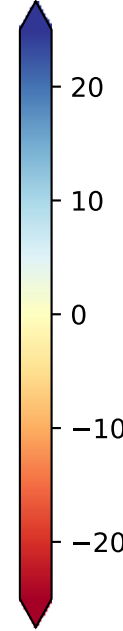
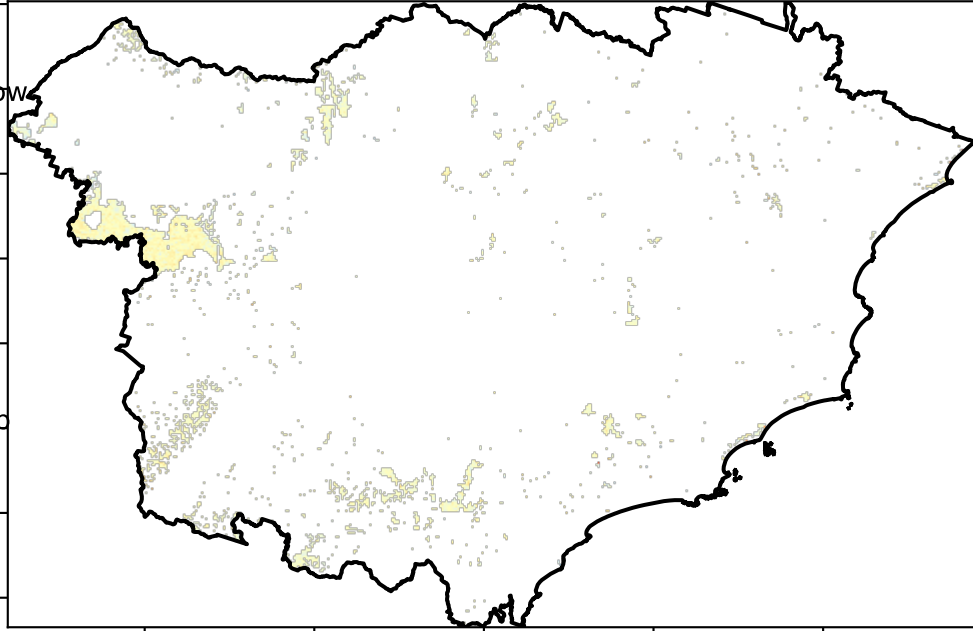
% Area protected from wind erosion (>50%)



Area not protected  
0.0% of region (0 ha)  
Area protected  
100.0% of region  
(138,950 ha)

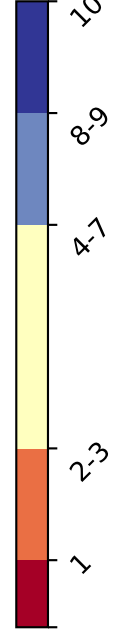
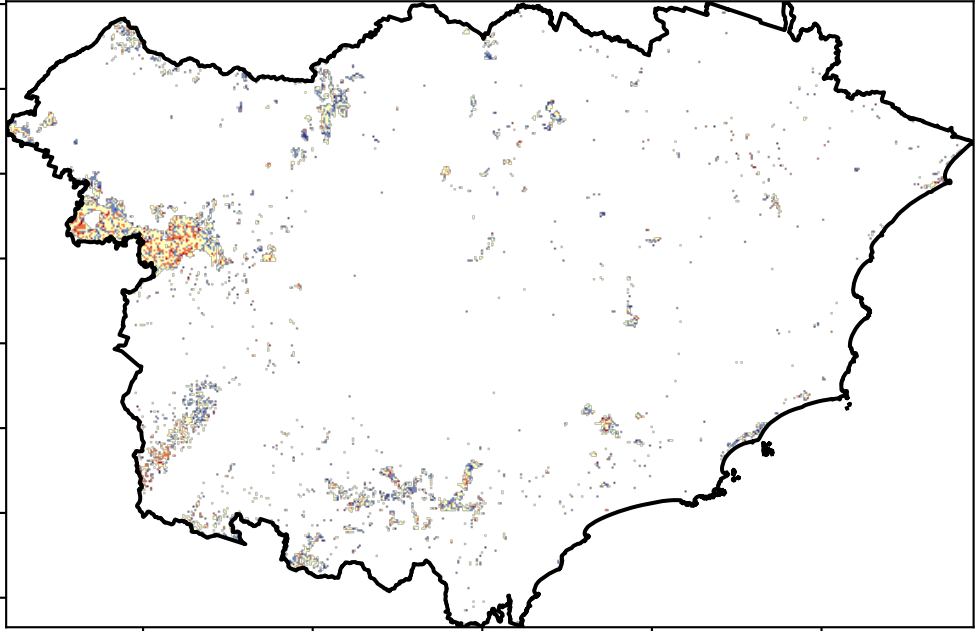
Total Vegetation Cover Anomaly [%]

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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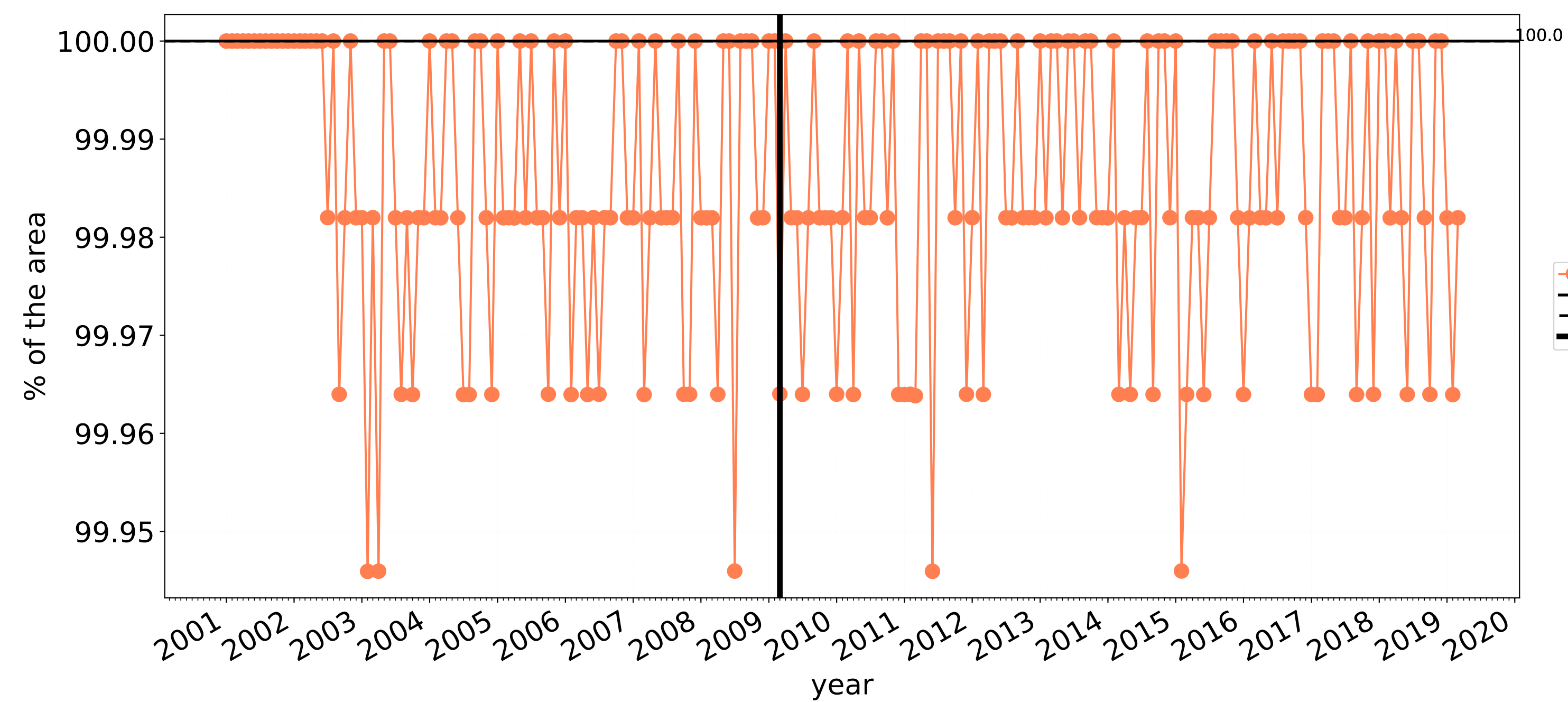


Planning,  
Industry &  
Environment

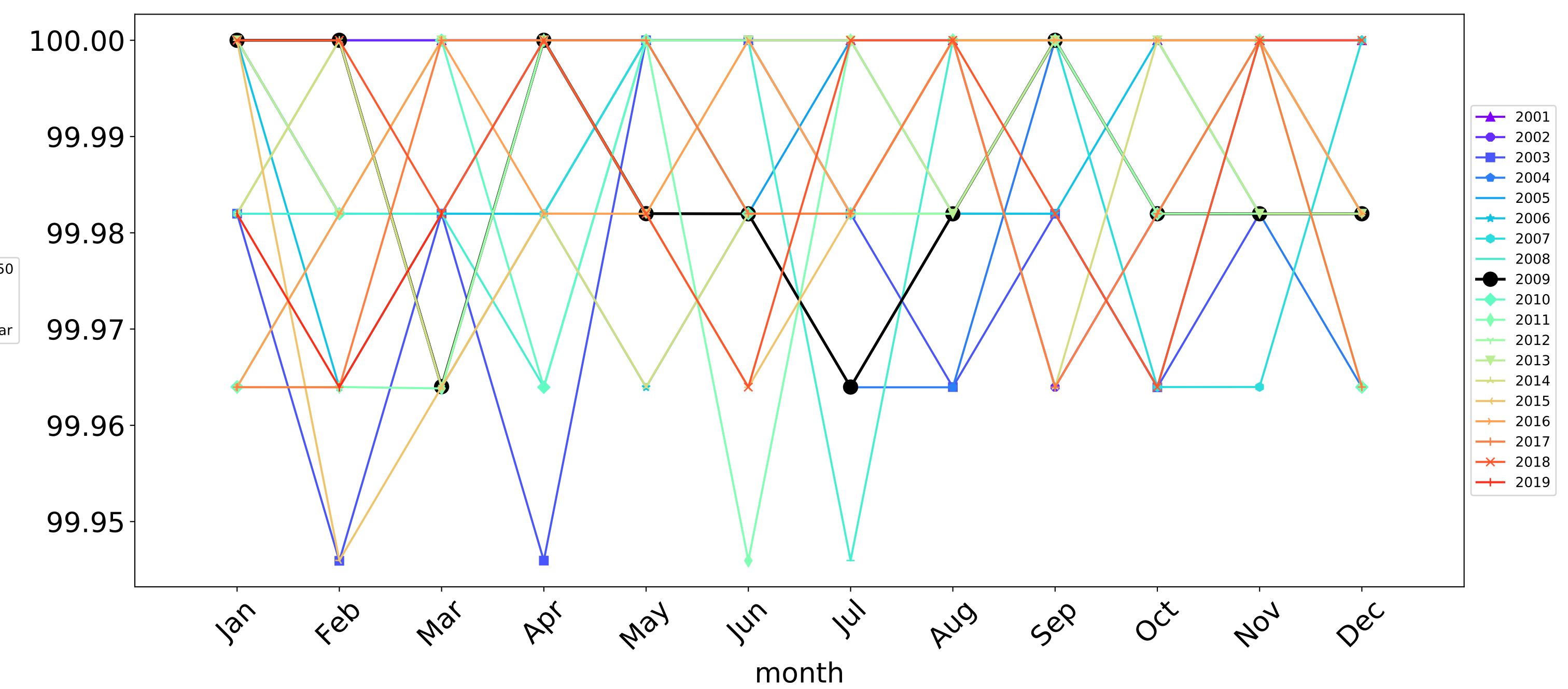


# Conservation and natural environments Woodland forest timeseries

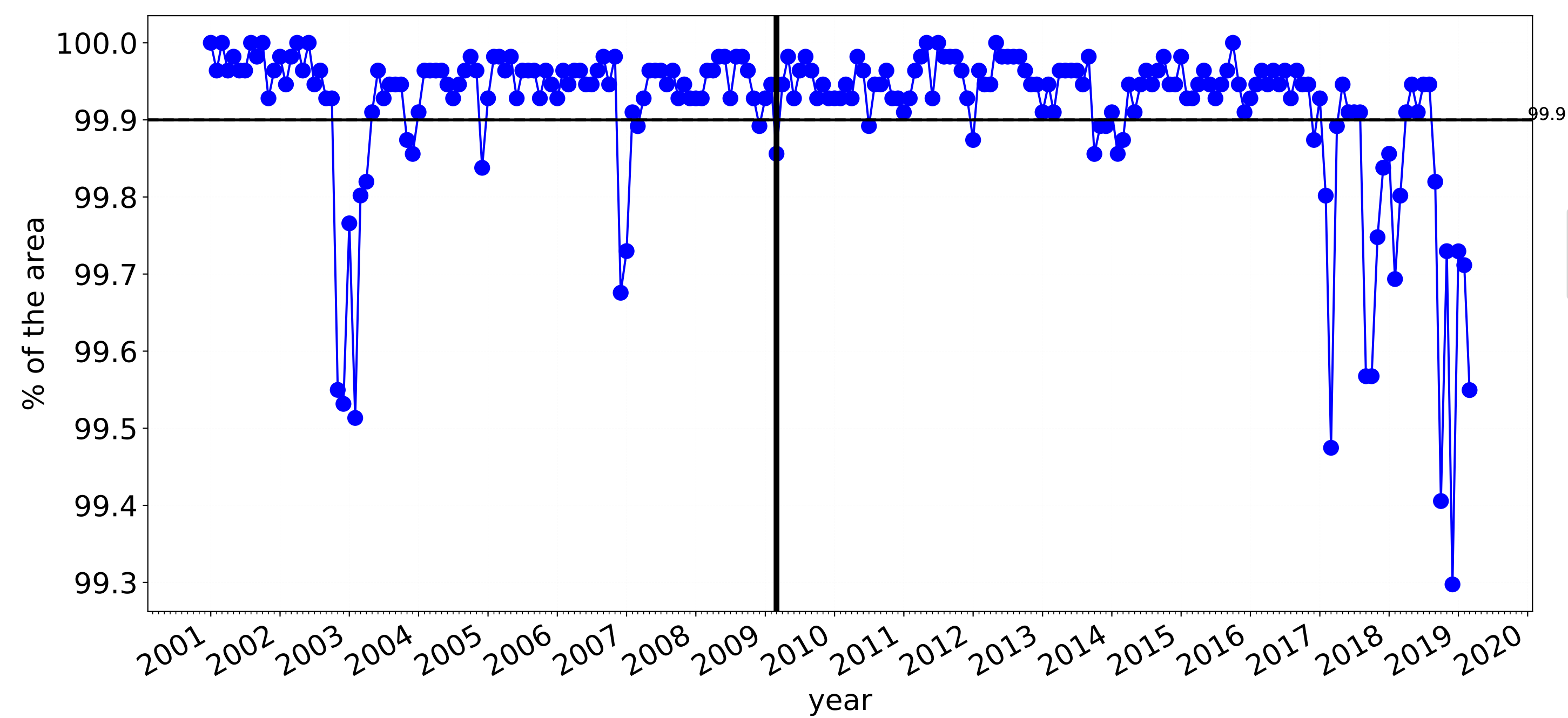
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



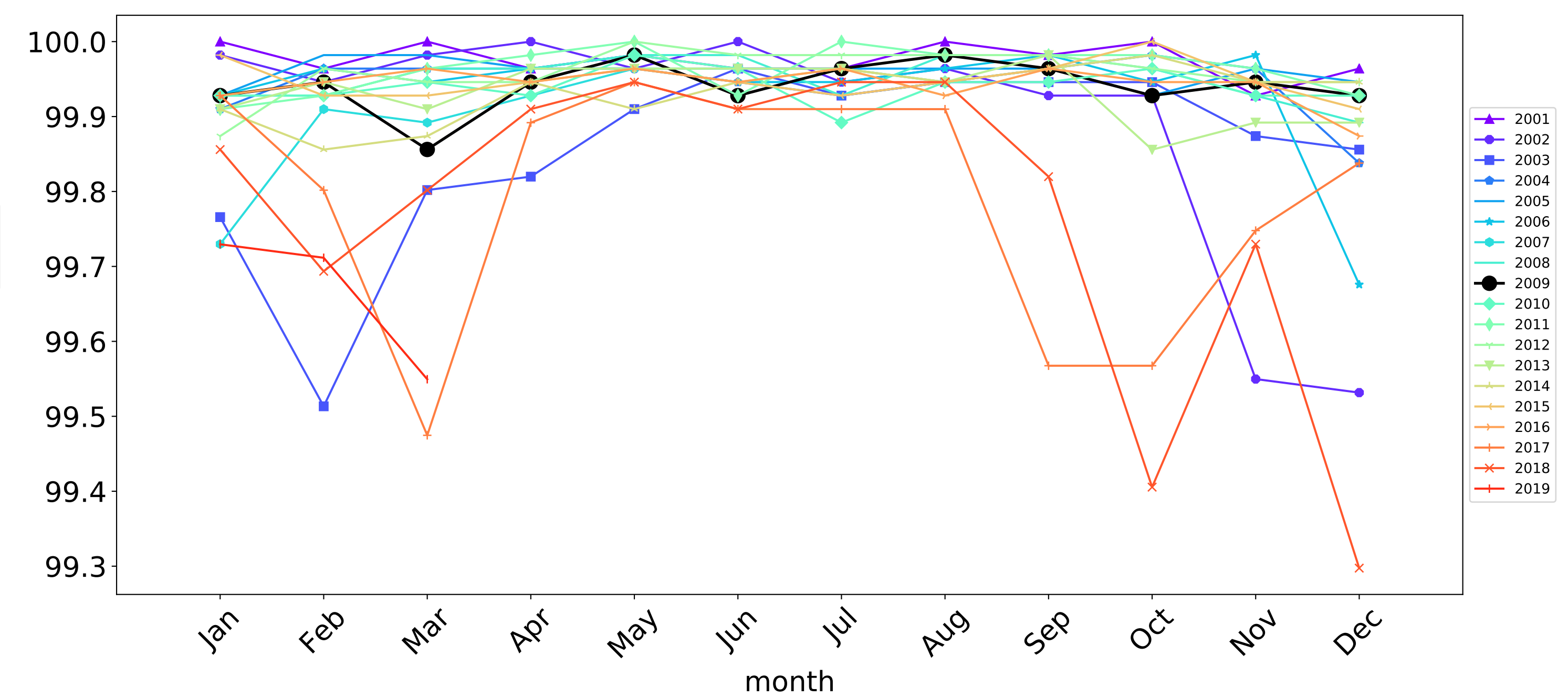
Wind erosion historical monthly area protected (Total Veg Cov >50%)



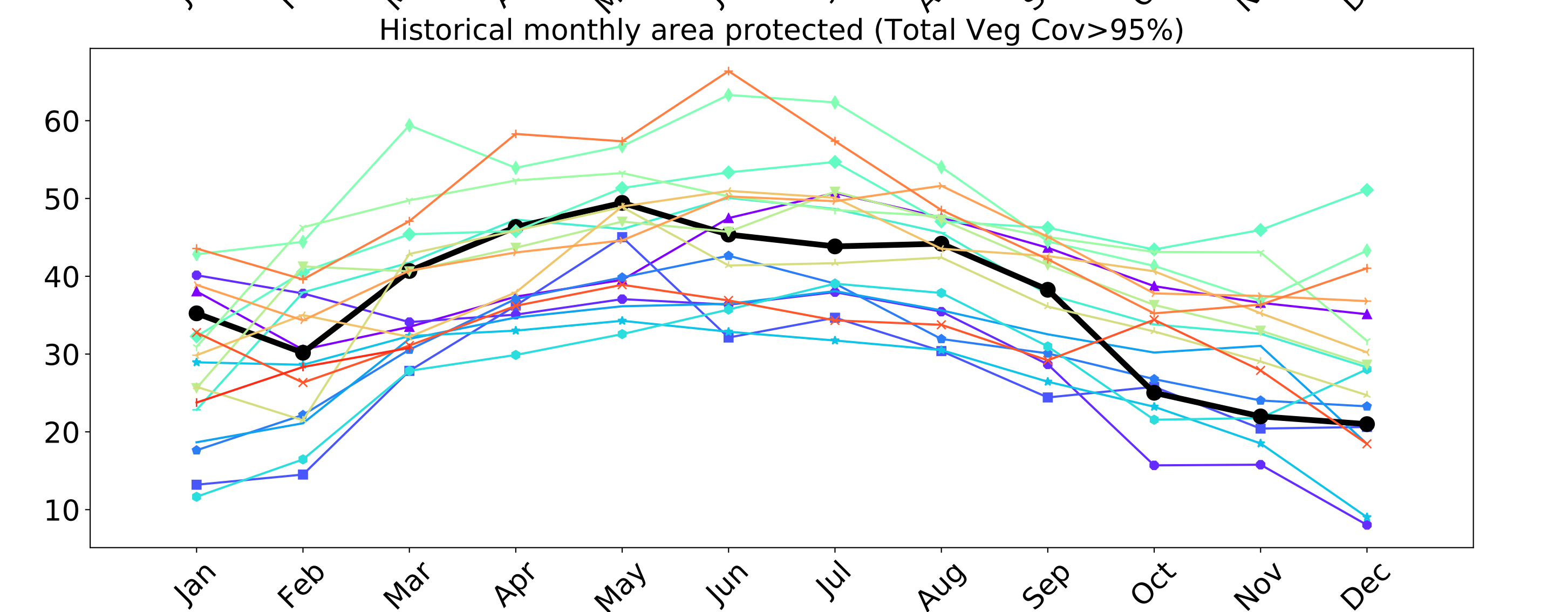
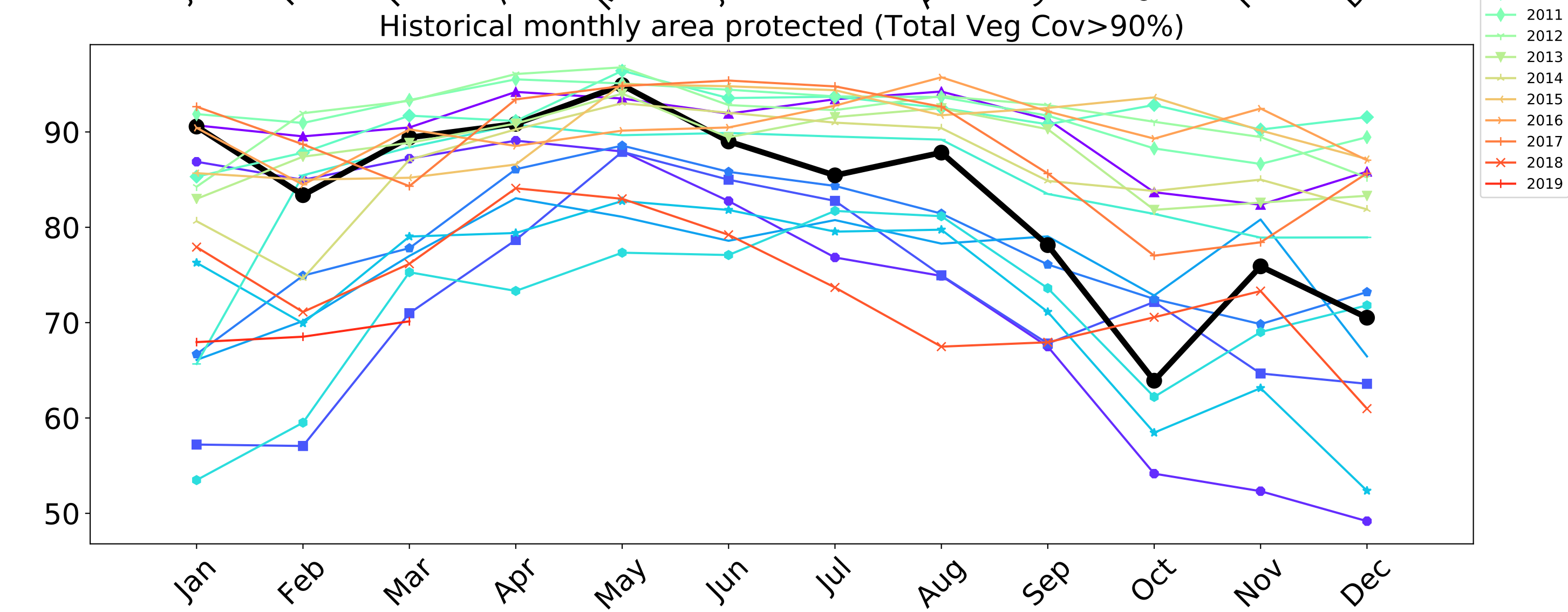
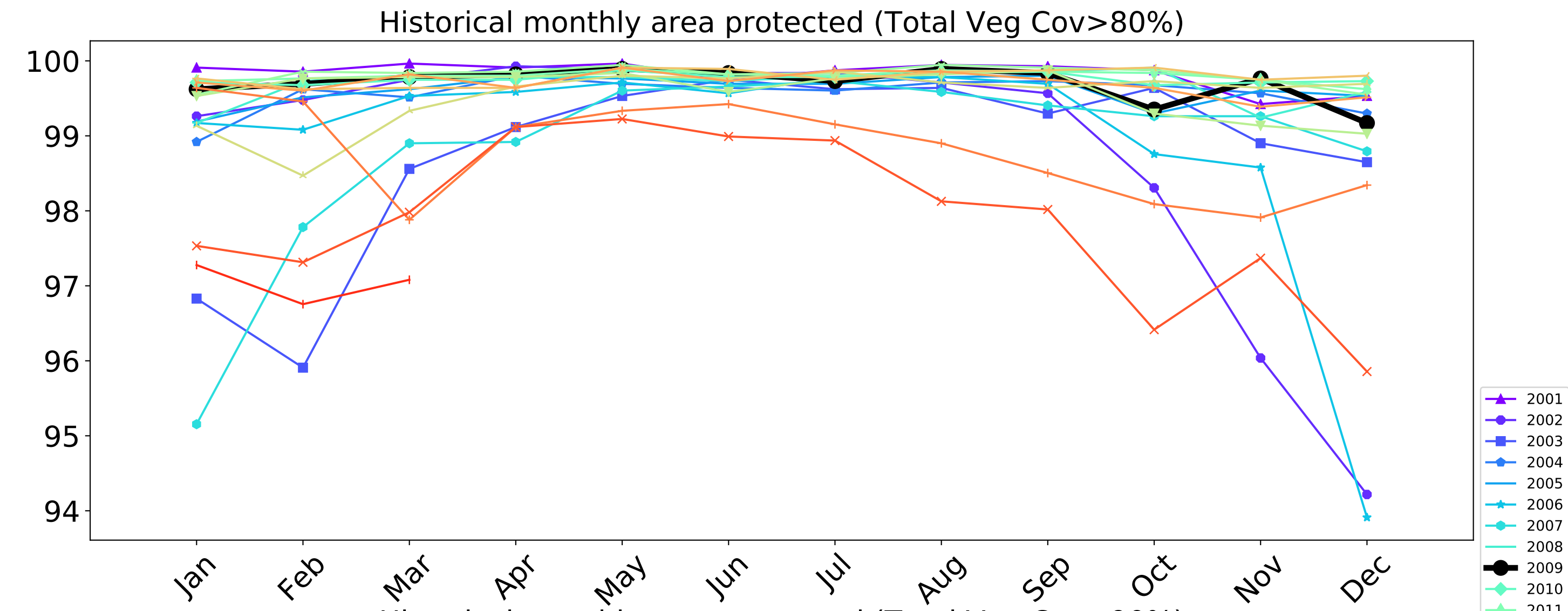
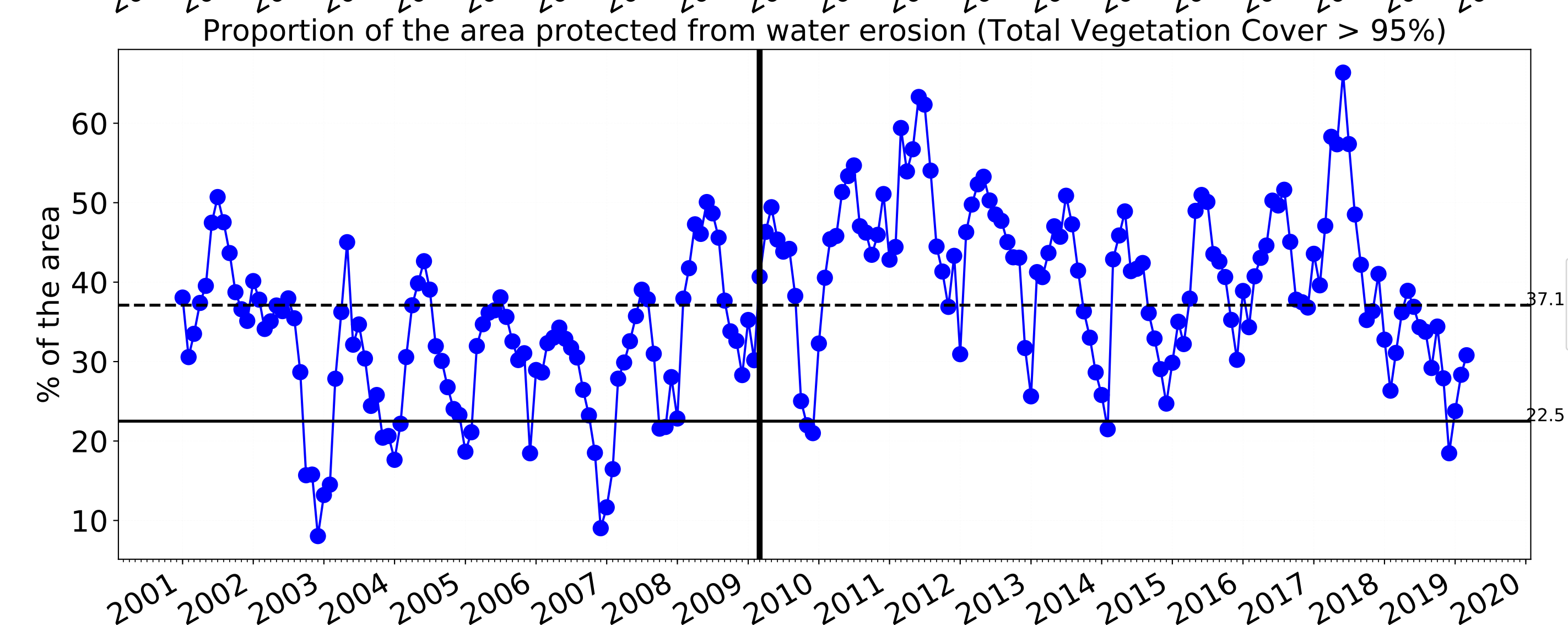
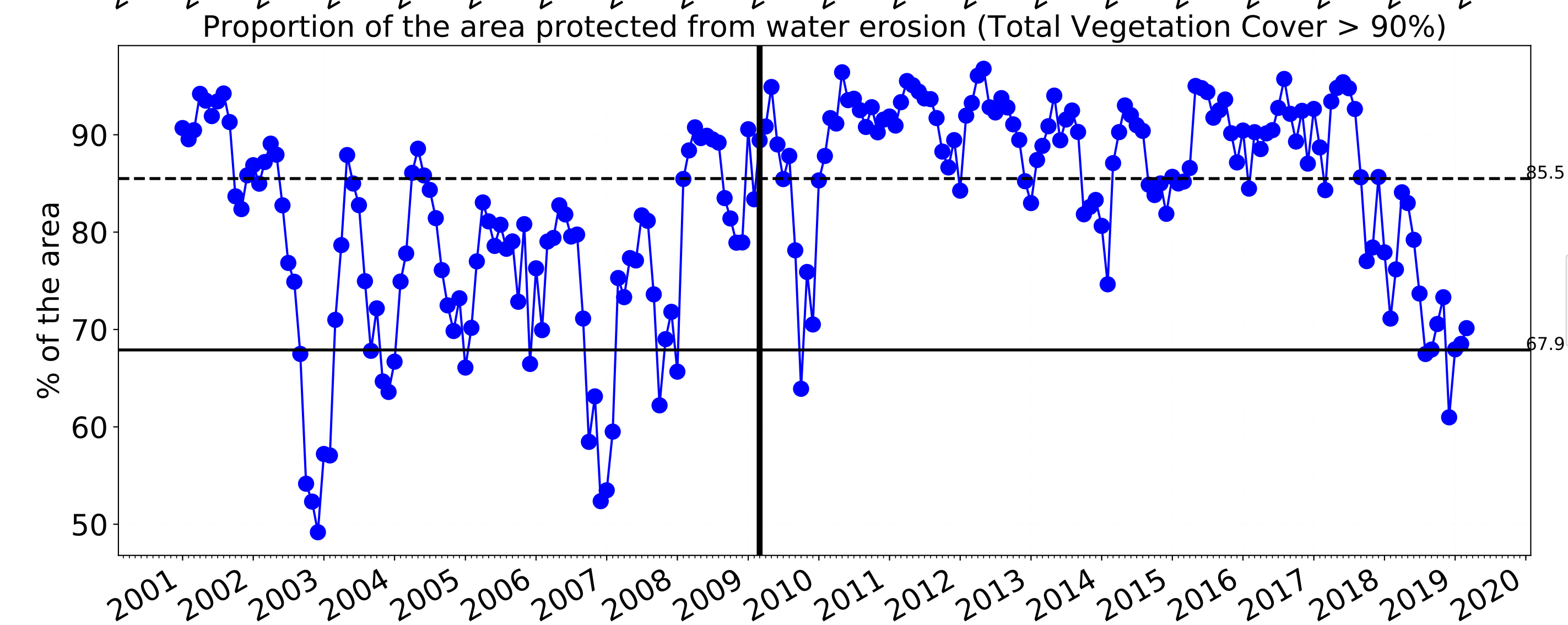
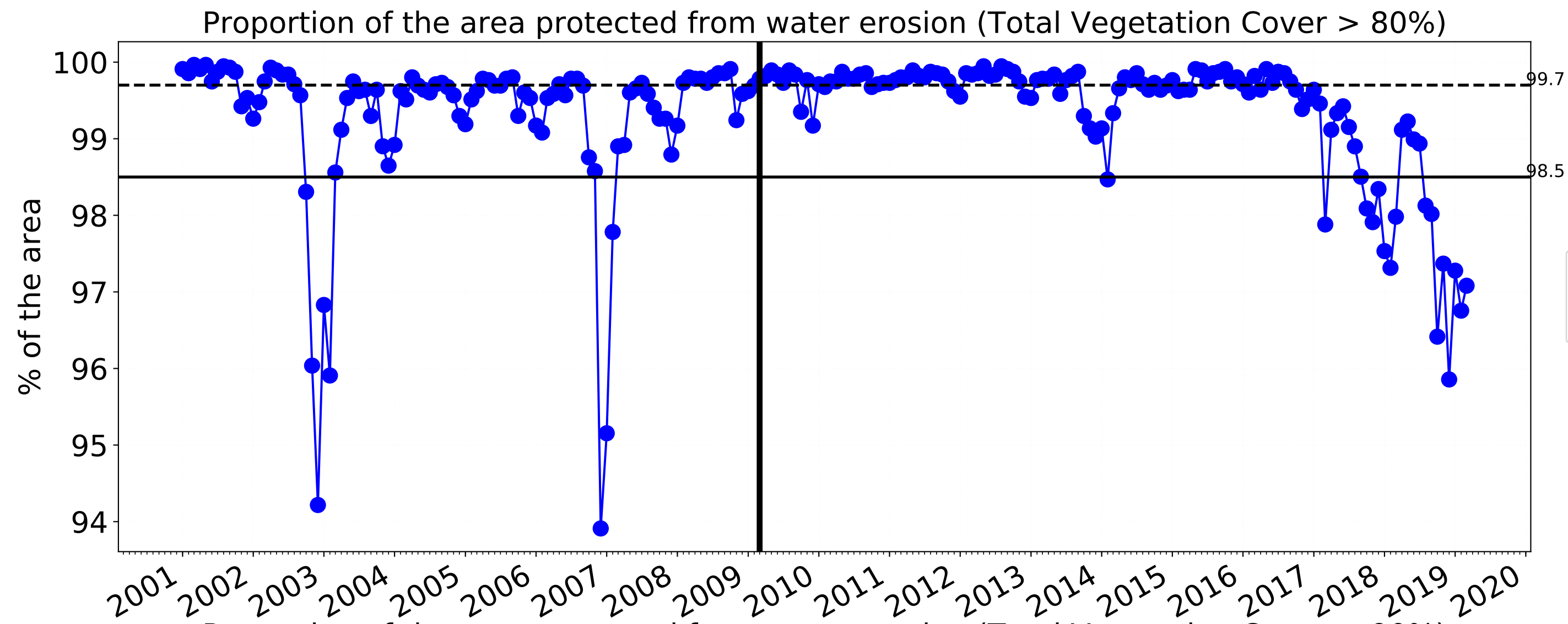
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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







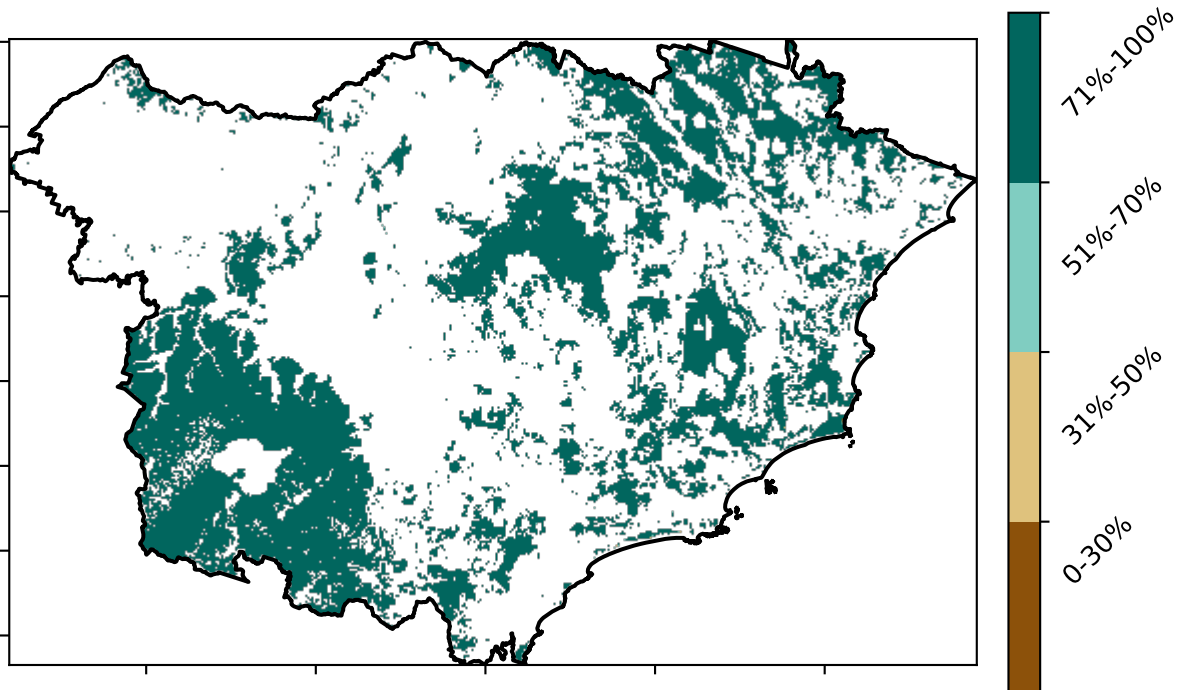


Conservation and natural environments Forest (non woodland)

Land use and forest cover



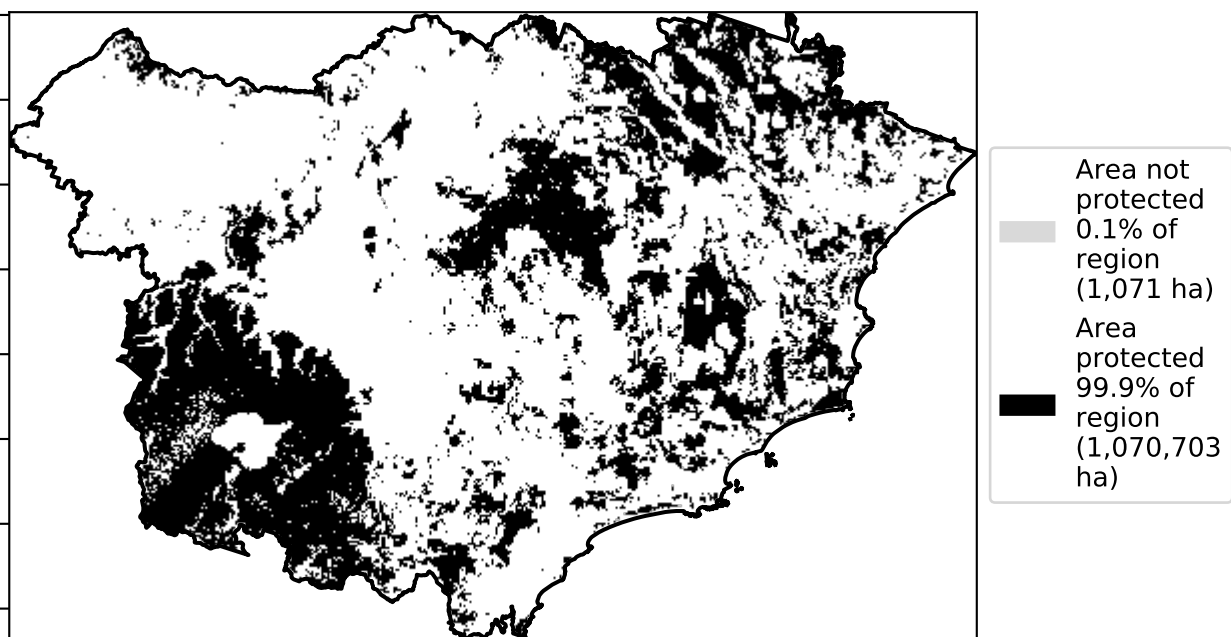
Total Vegetation Cover [%]



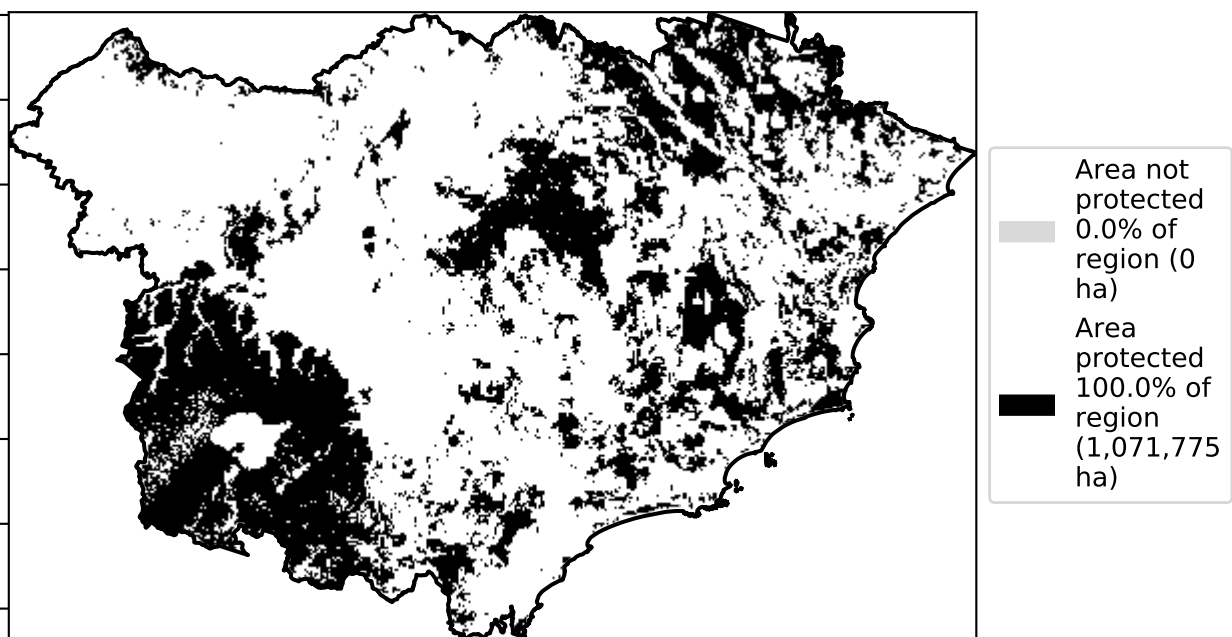
Proportion of vegetation cover class in area



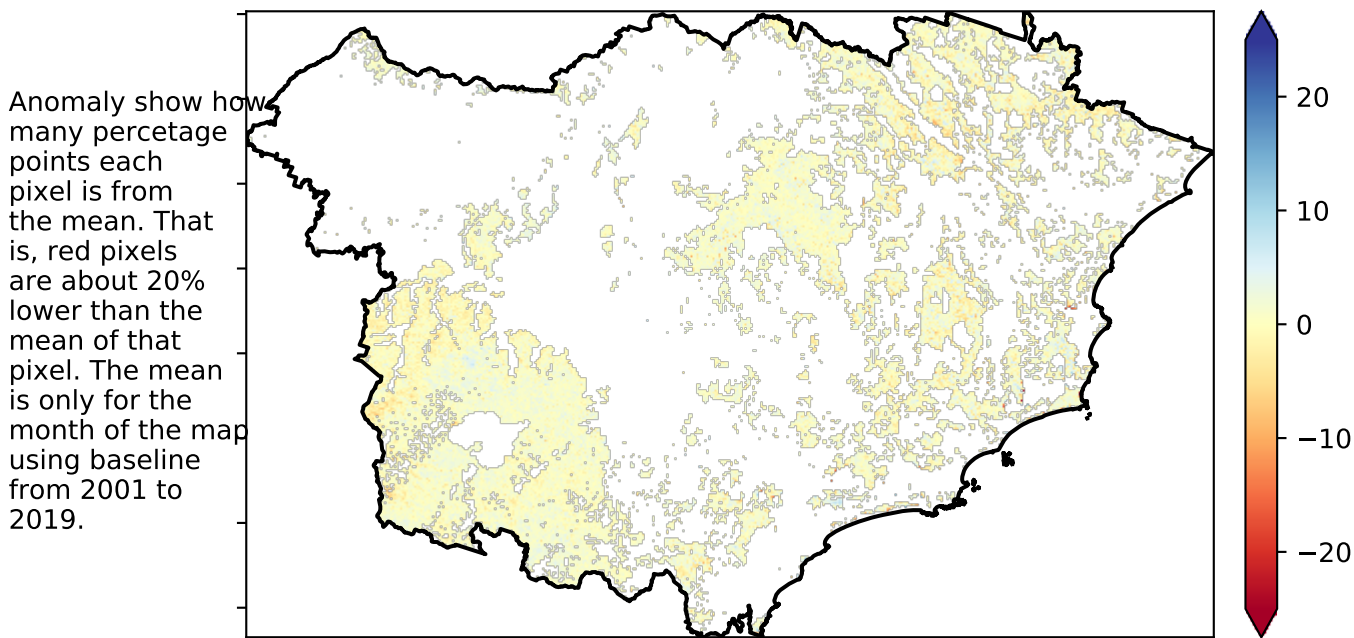
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

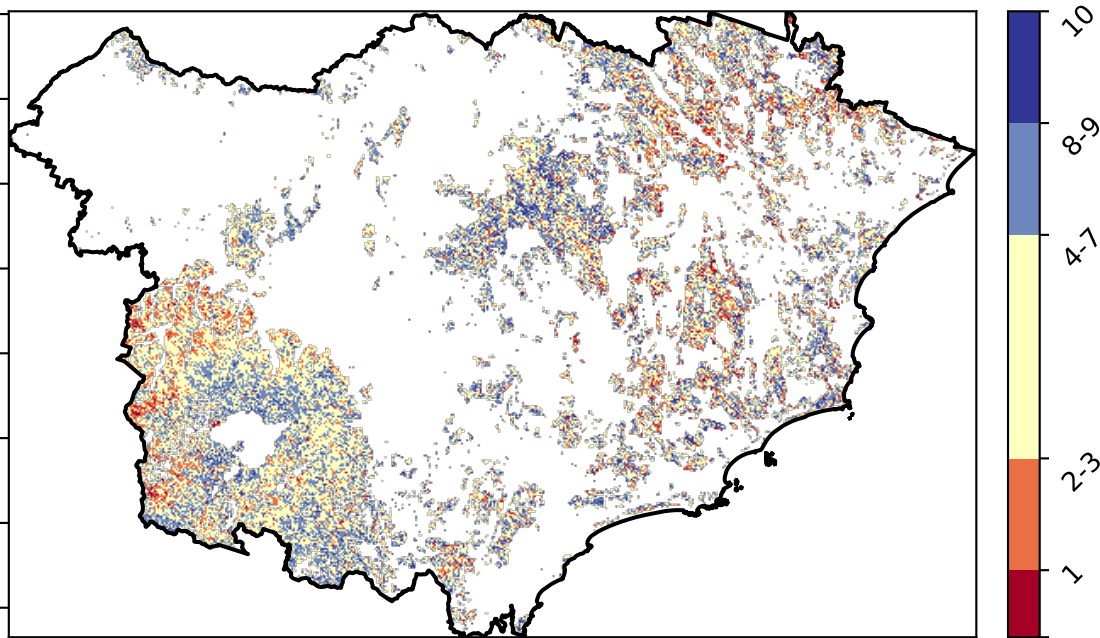


Total Vegetation Cover Anomaly [%]



Total Vegetation Cover Decile [%]

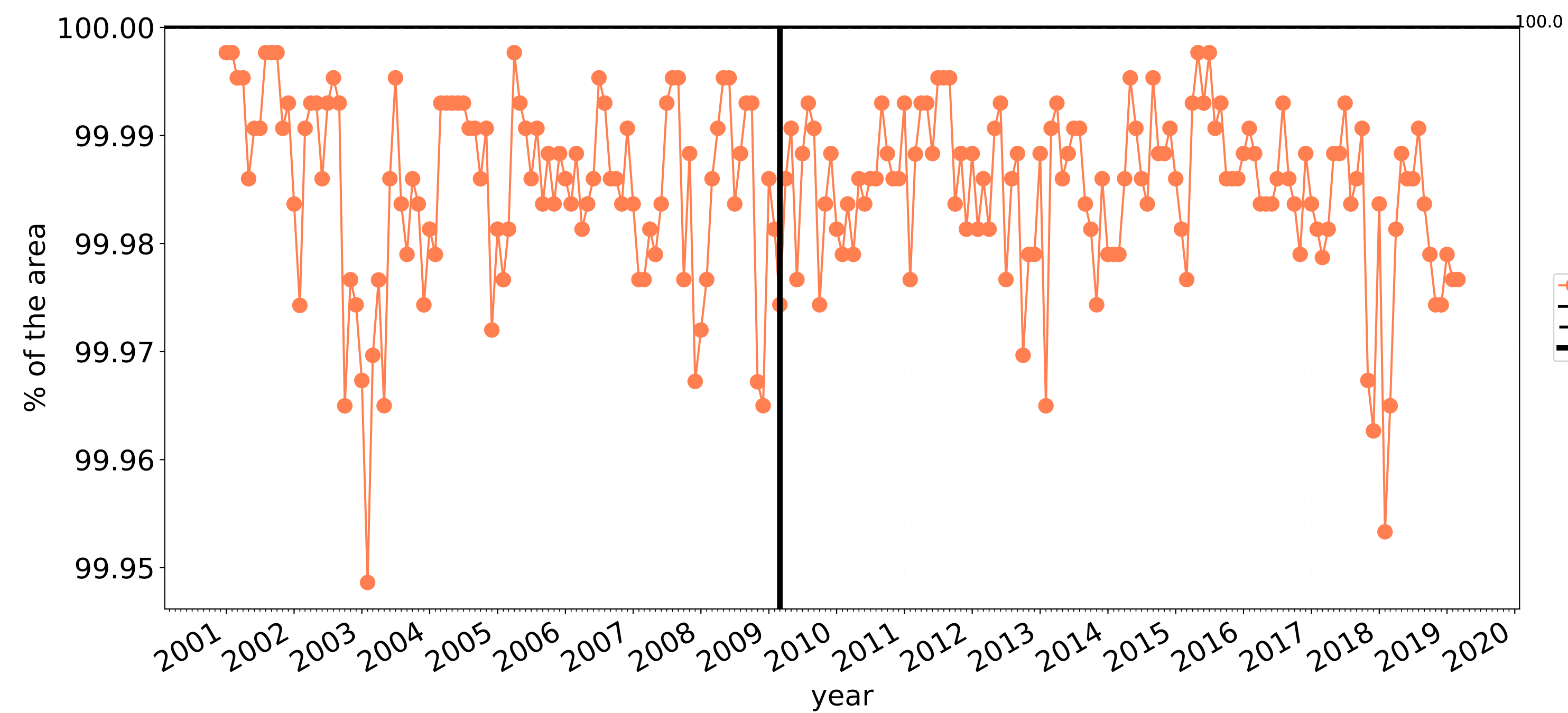
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



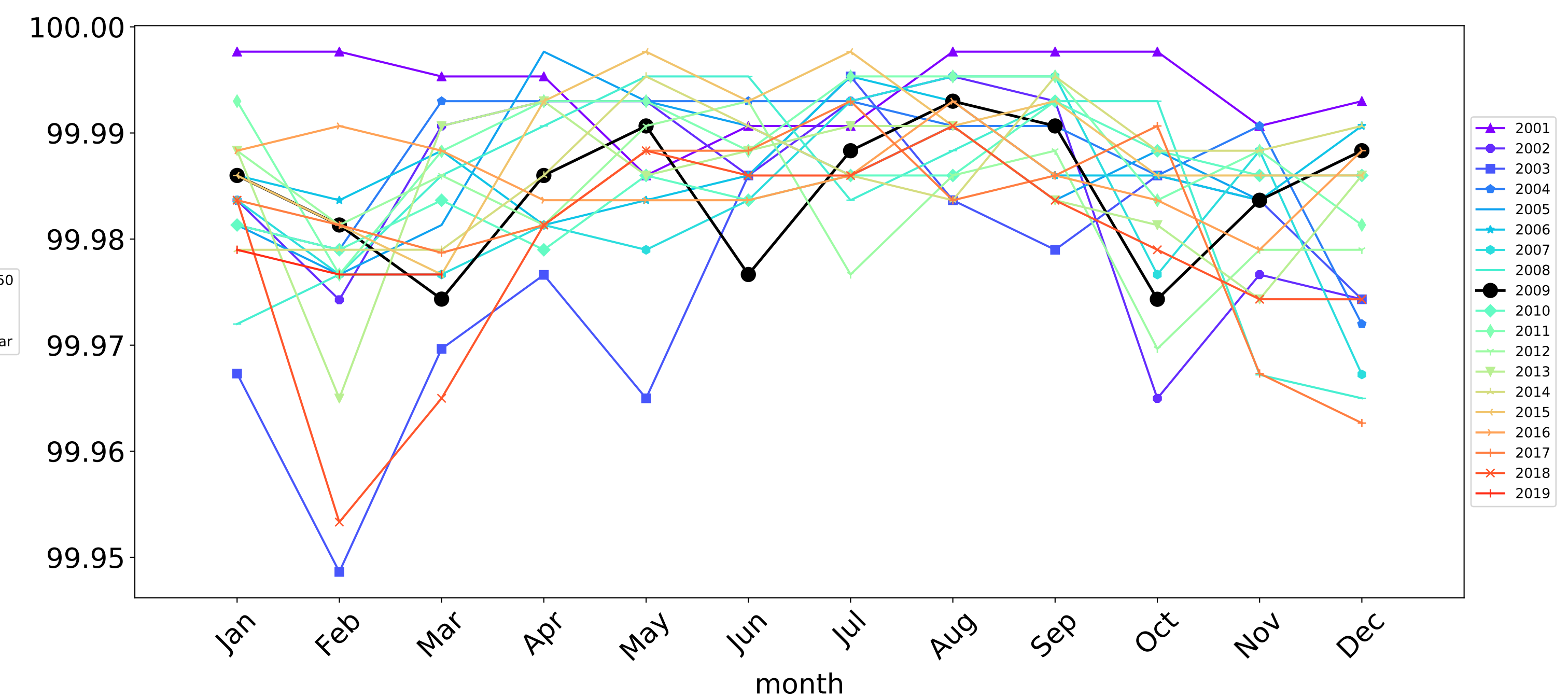


# Conservation and natural environments Forest (non woodland) timeseries

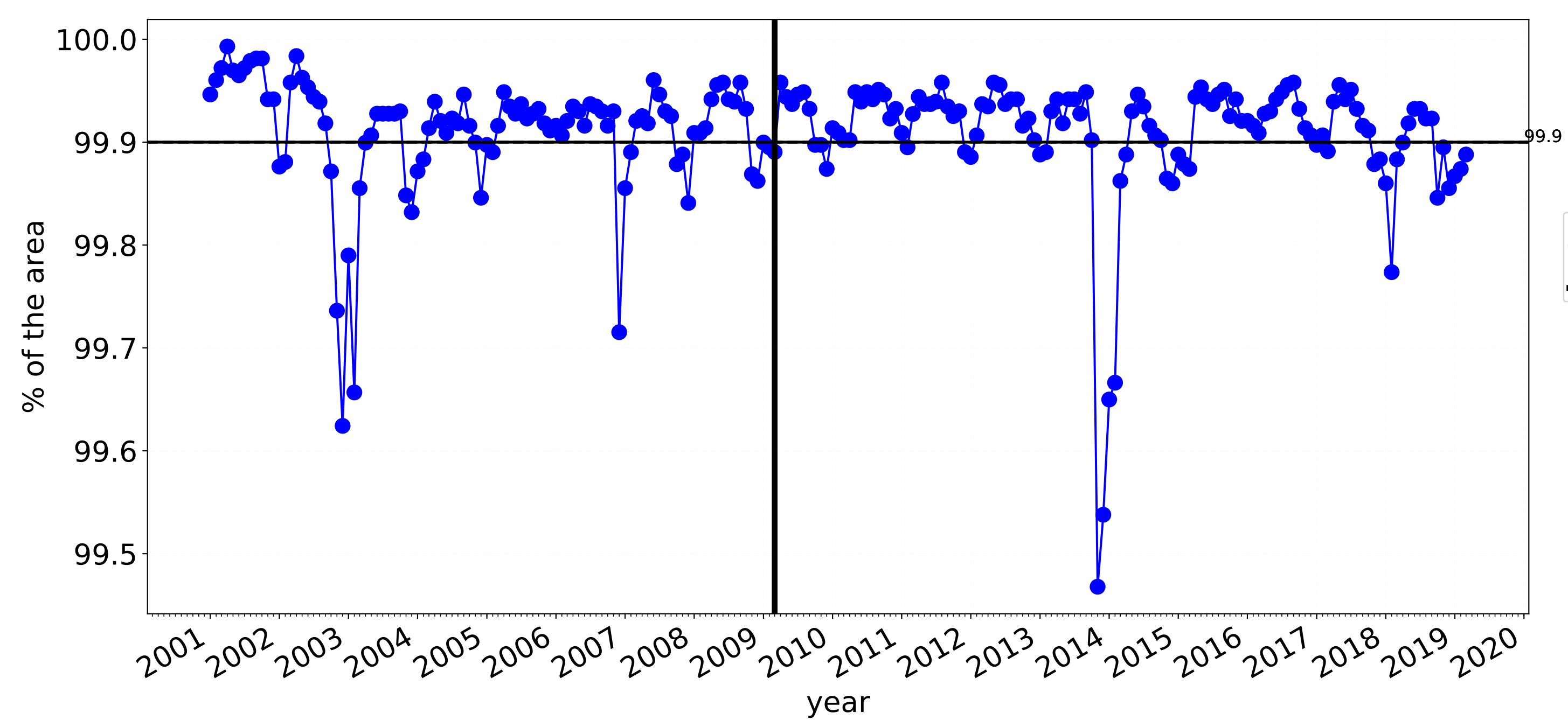
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



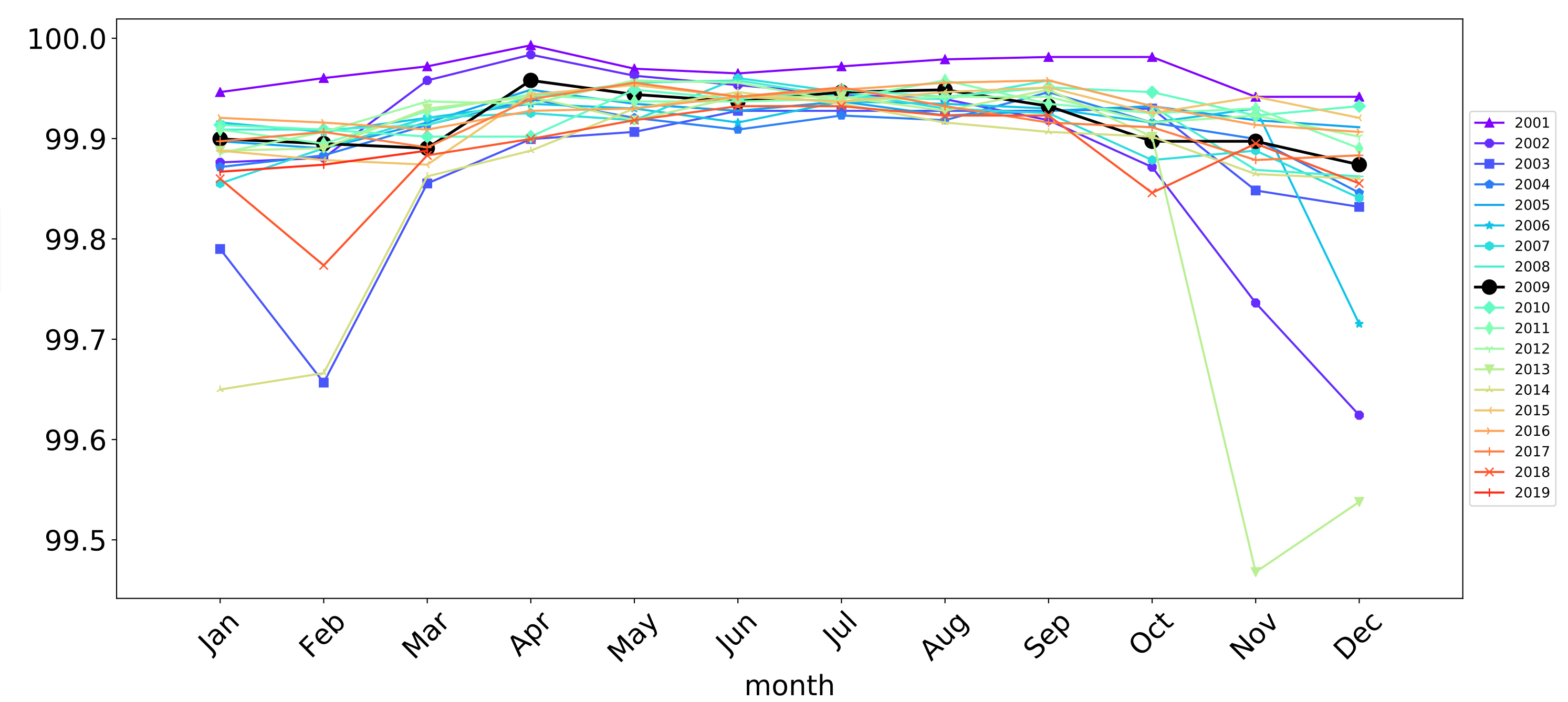
Wind erosion historical monthly area protected (Total Veg Cov >50%)



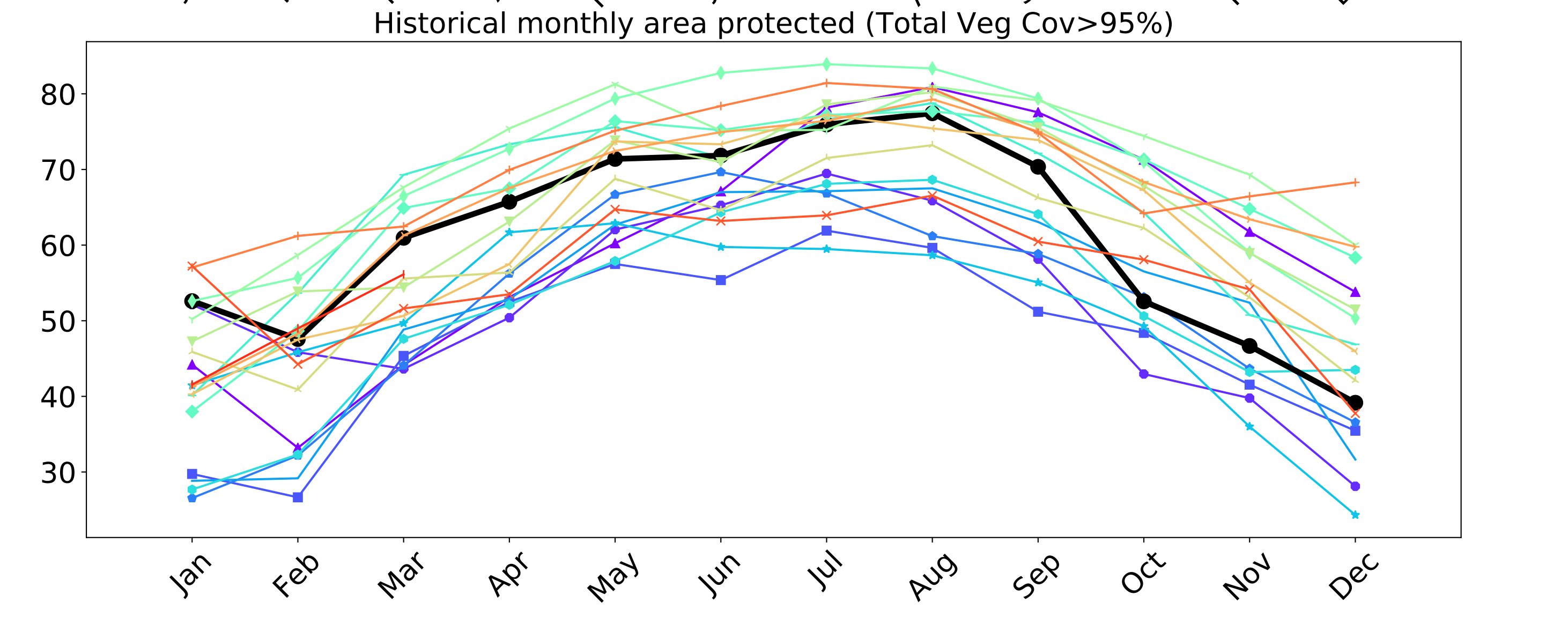
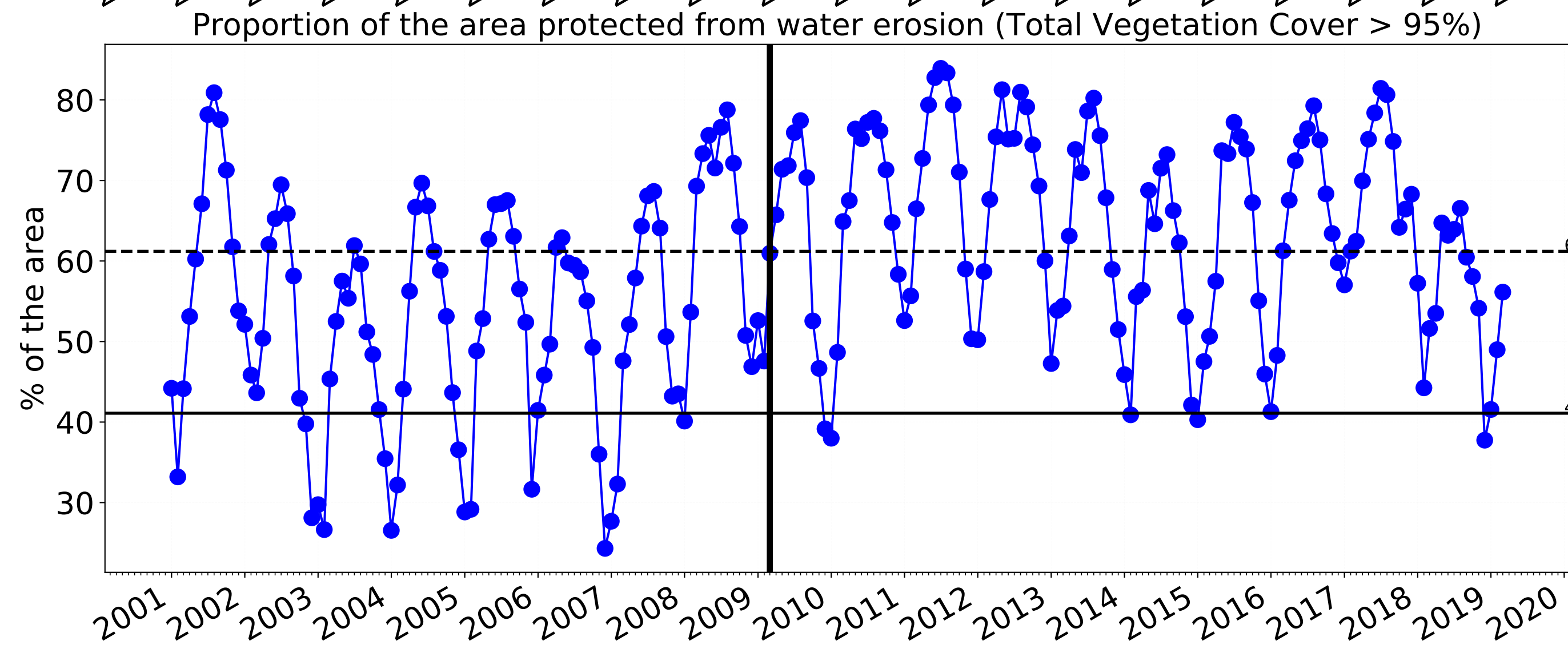
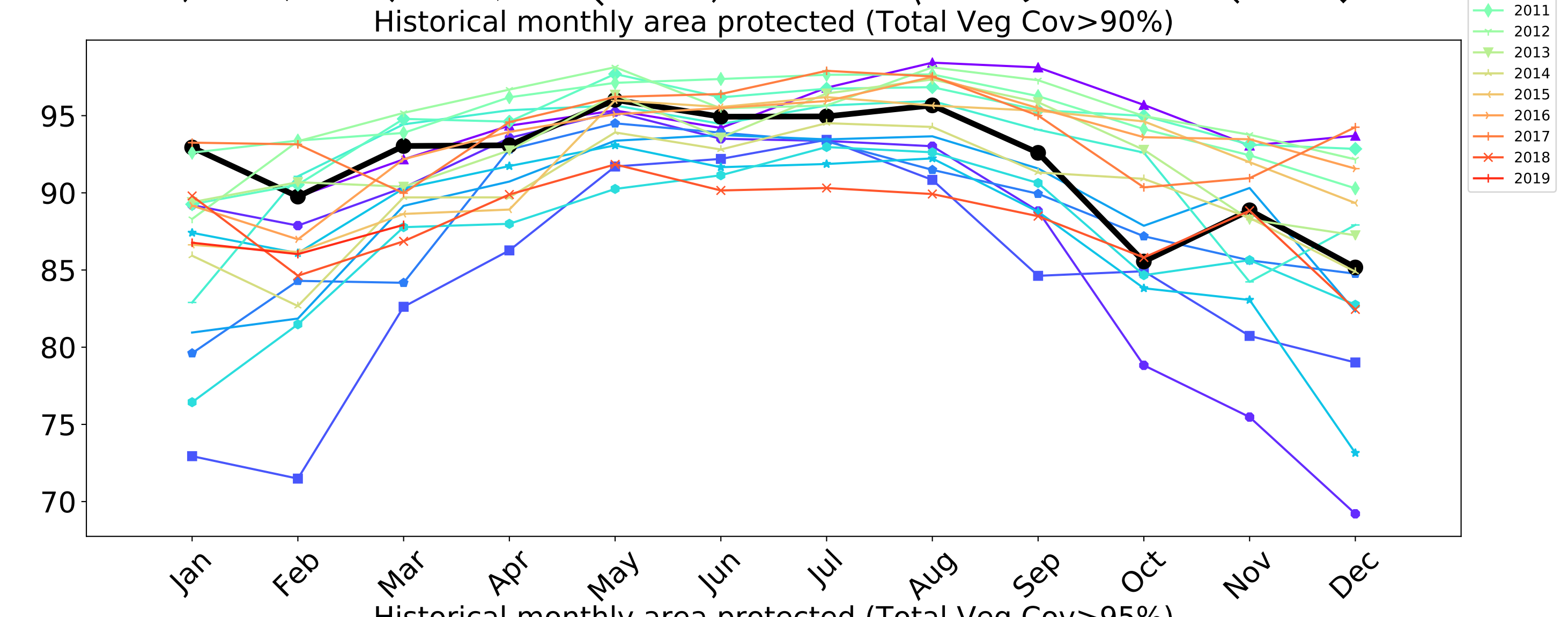
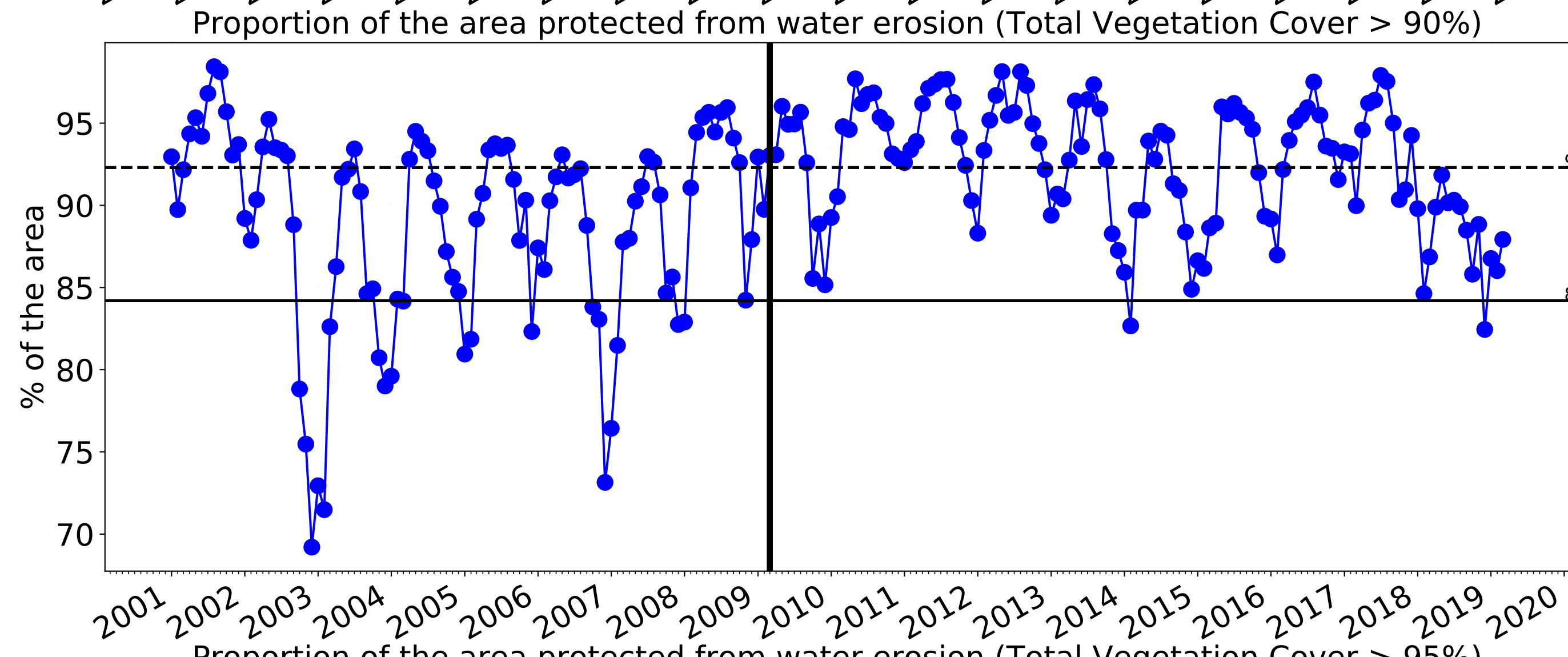
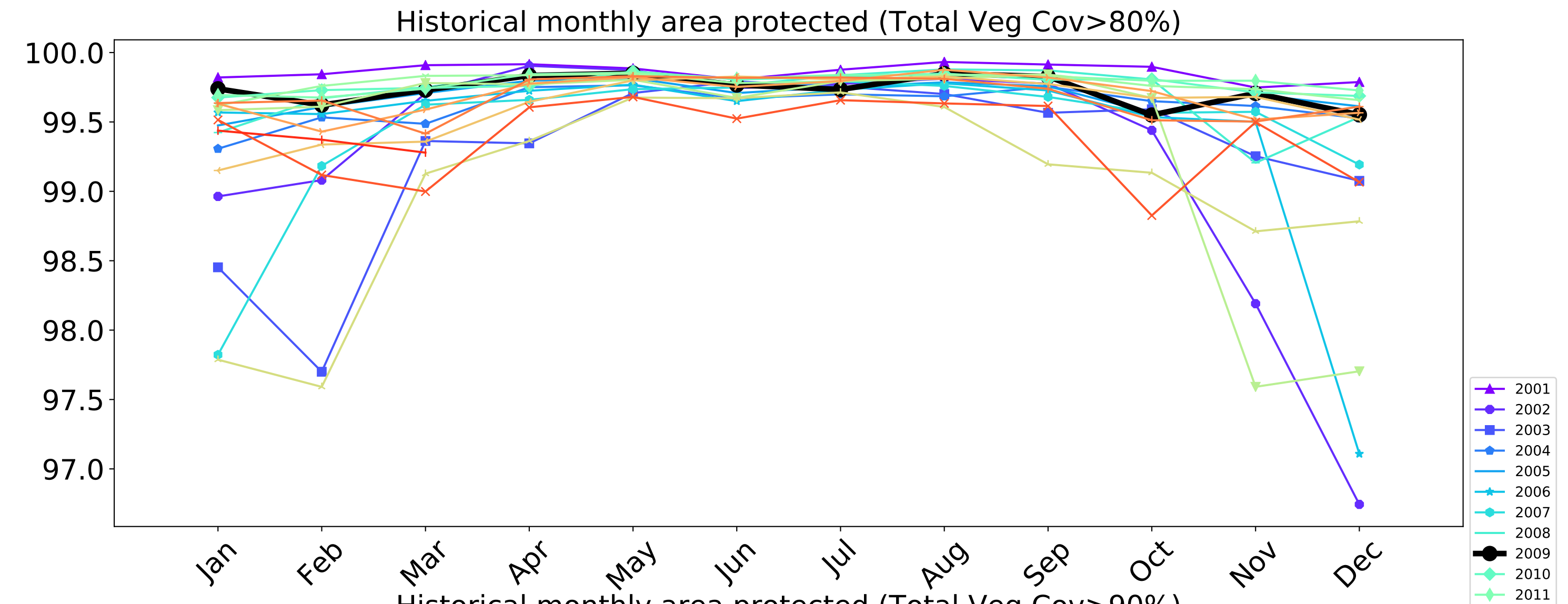
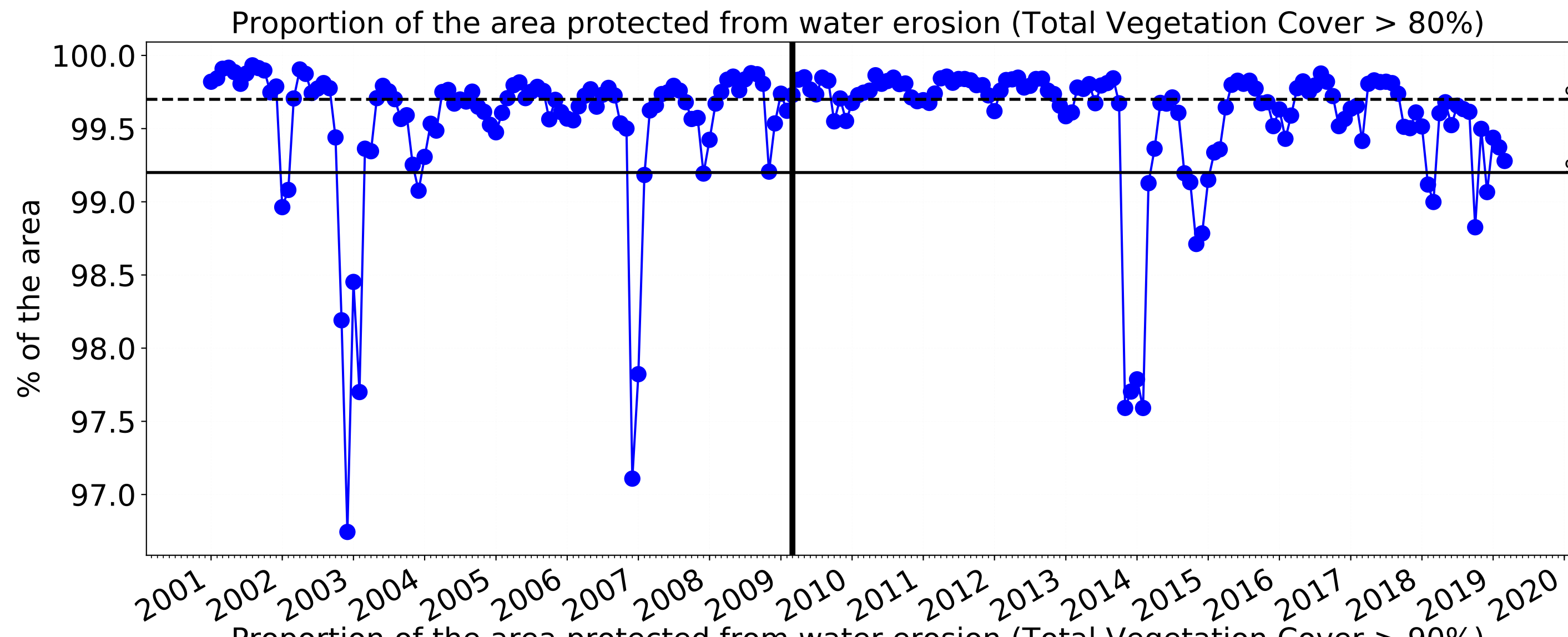
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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



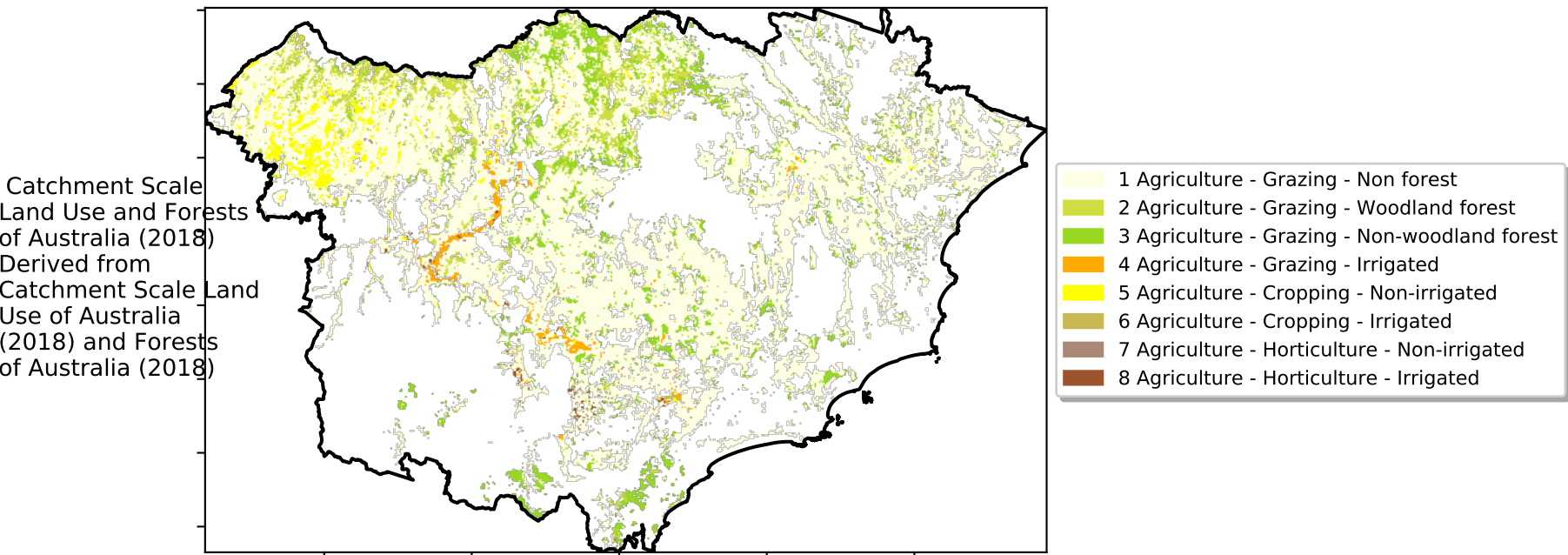




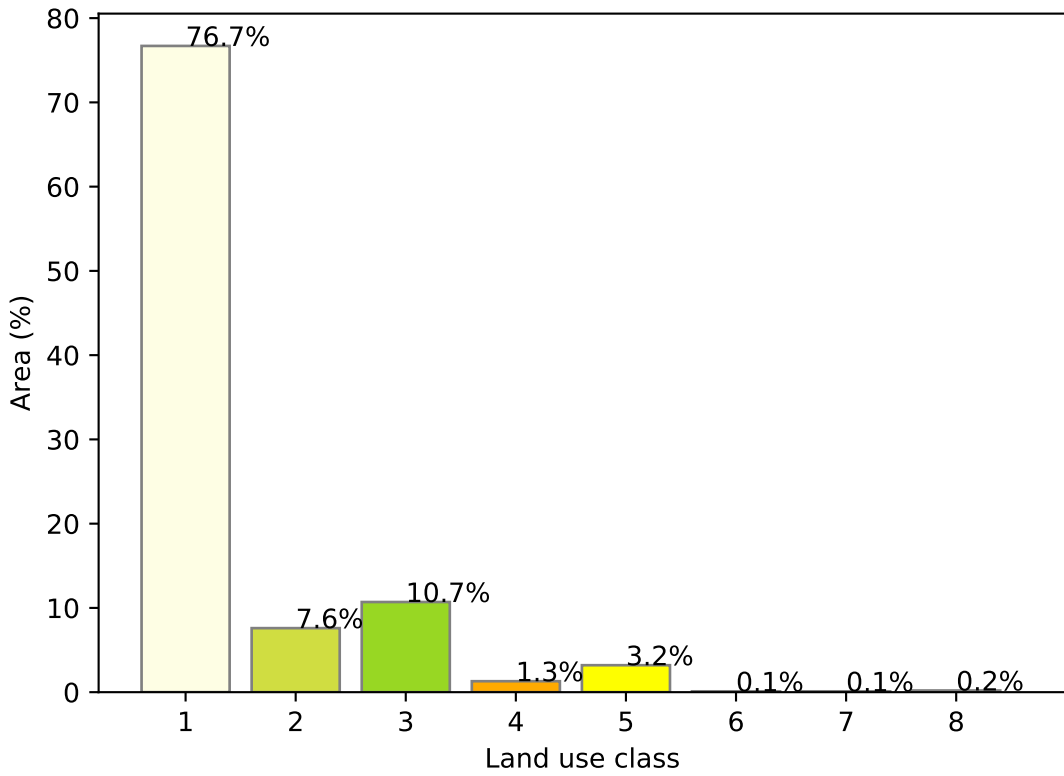


Agriculture

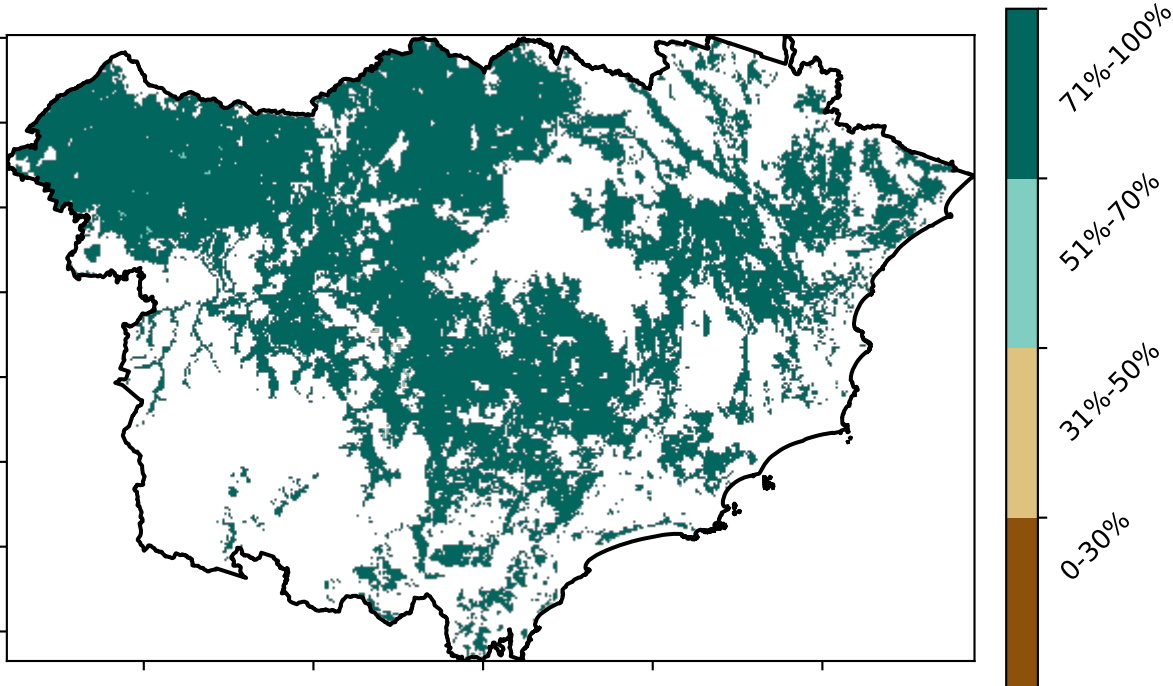
Land use and forest cover



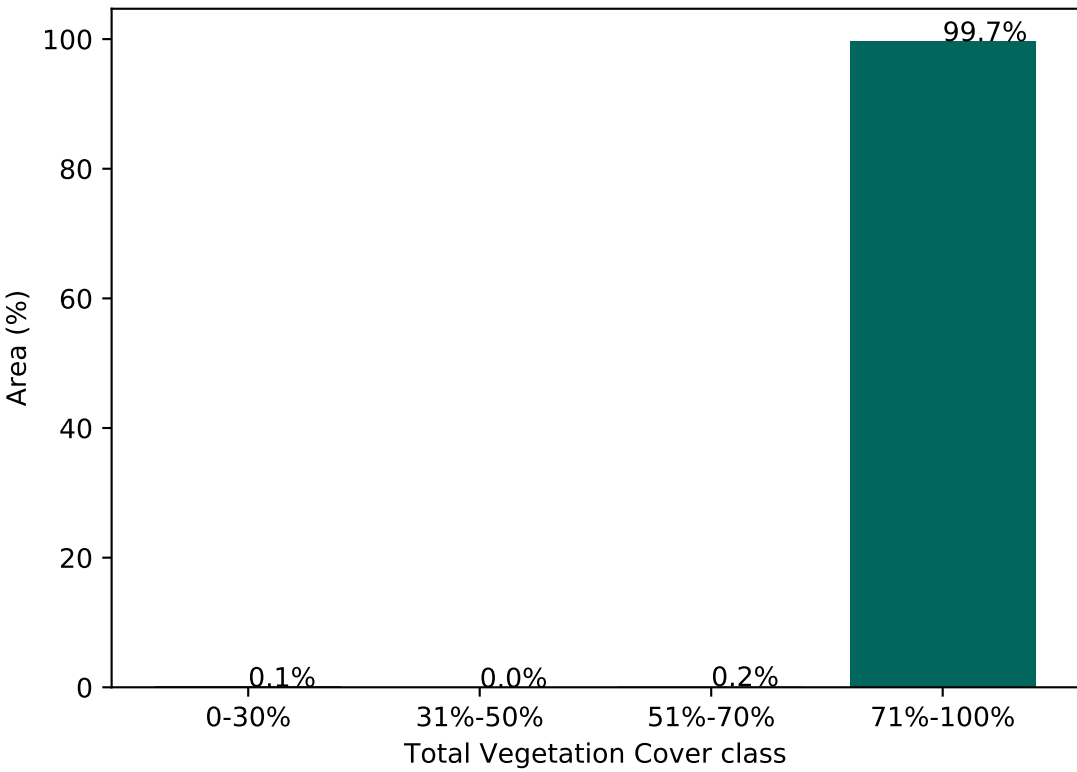
Proportion of each land class in area



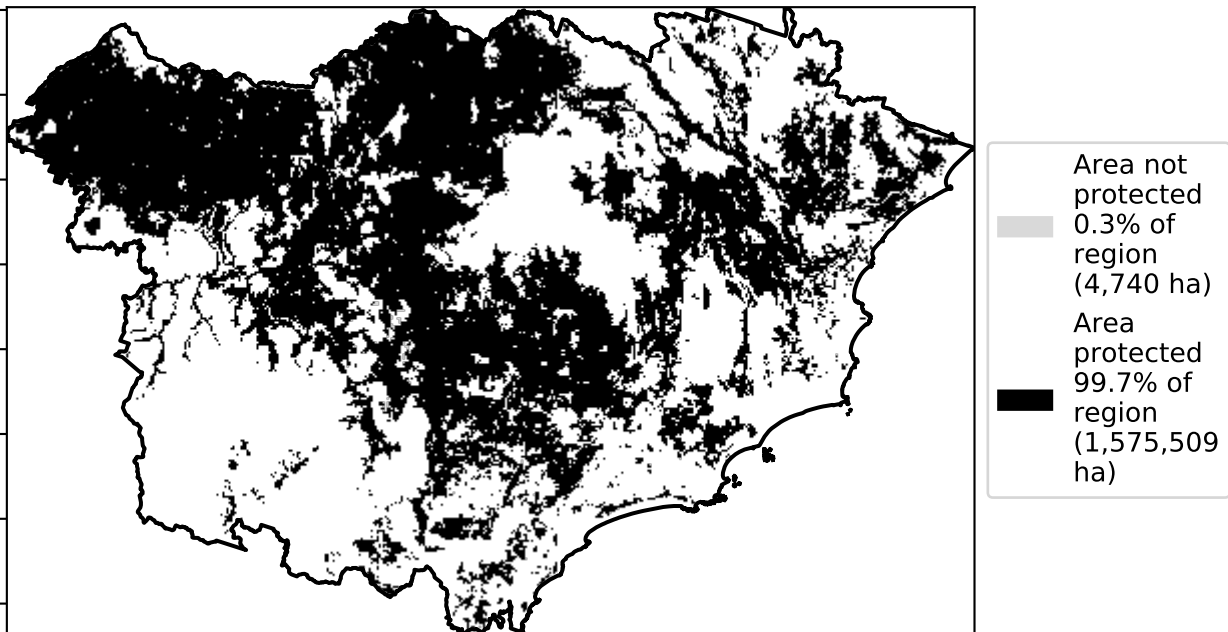
Total Vegetation Cover [%]



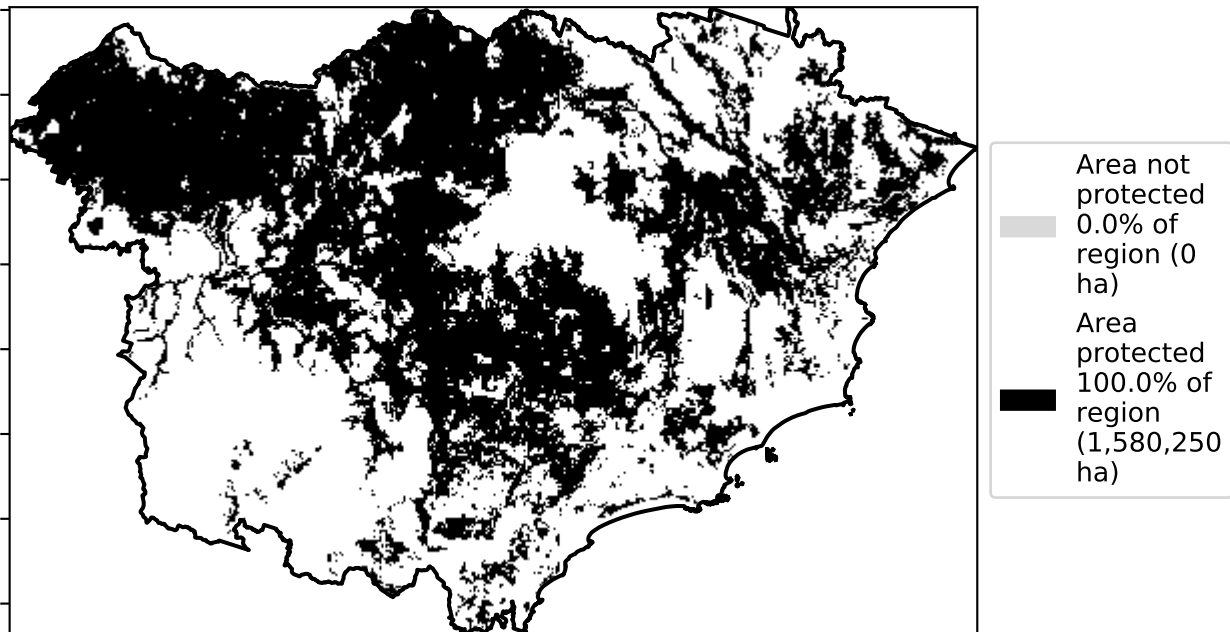
Proportion of vegetation cover class in area



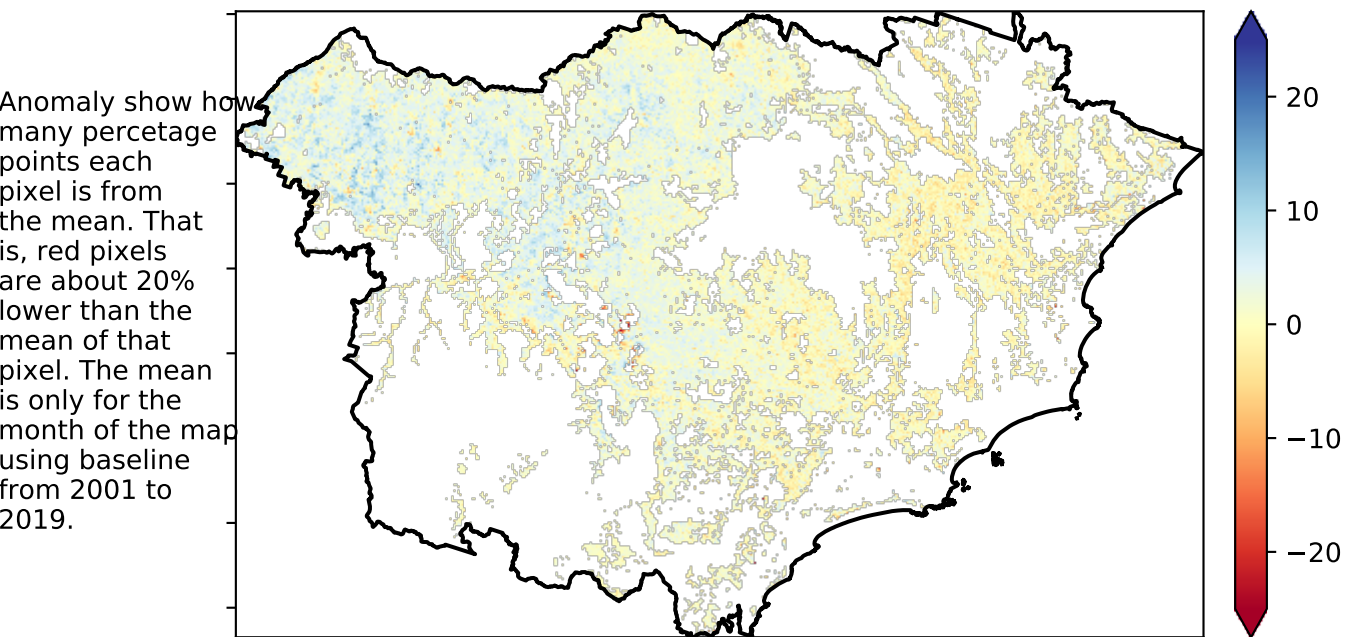
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

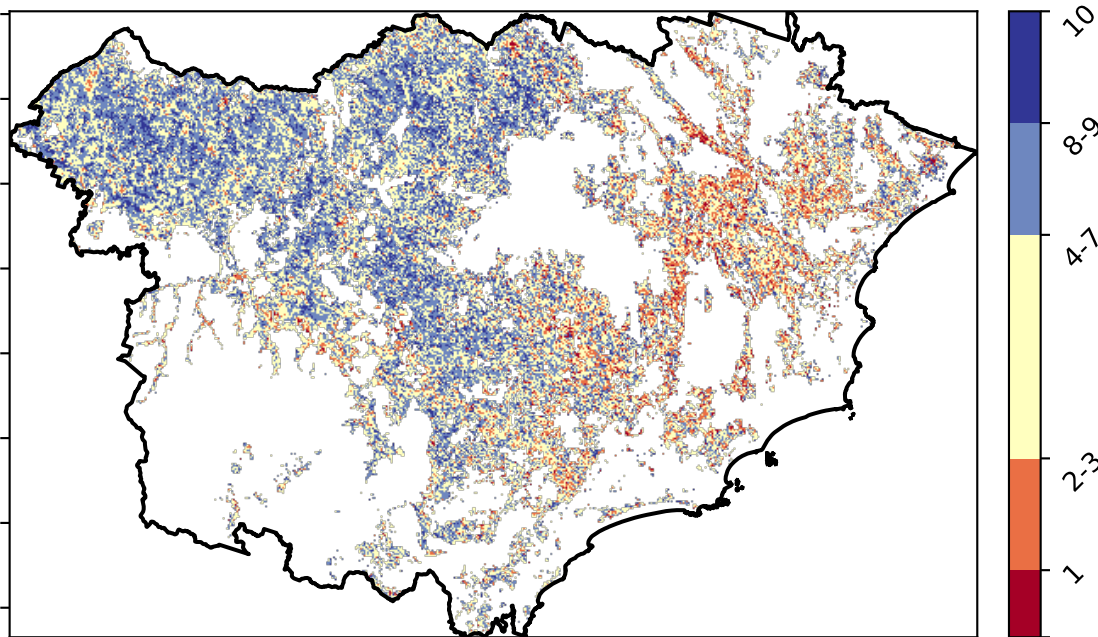


Total Vegetation Cover Anomaly [%]



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.



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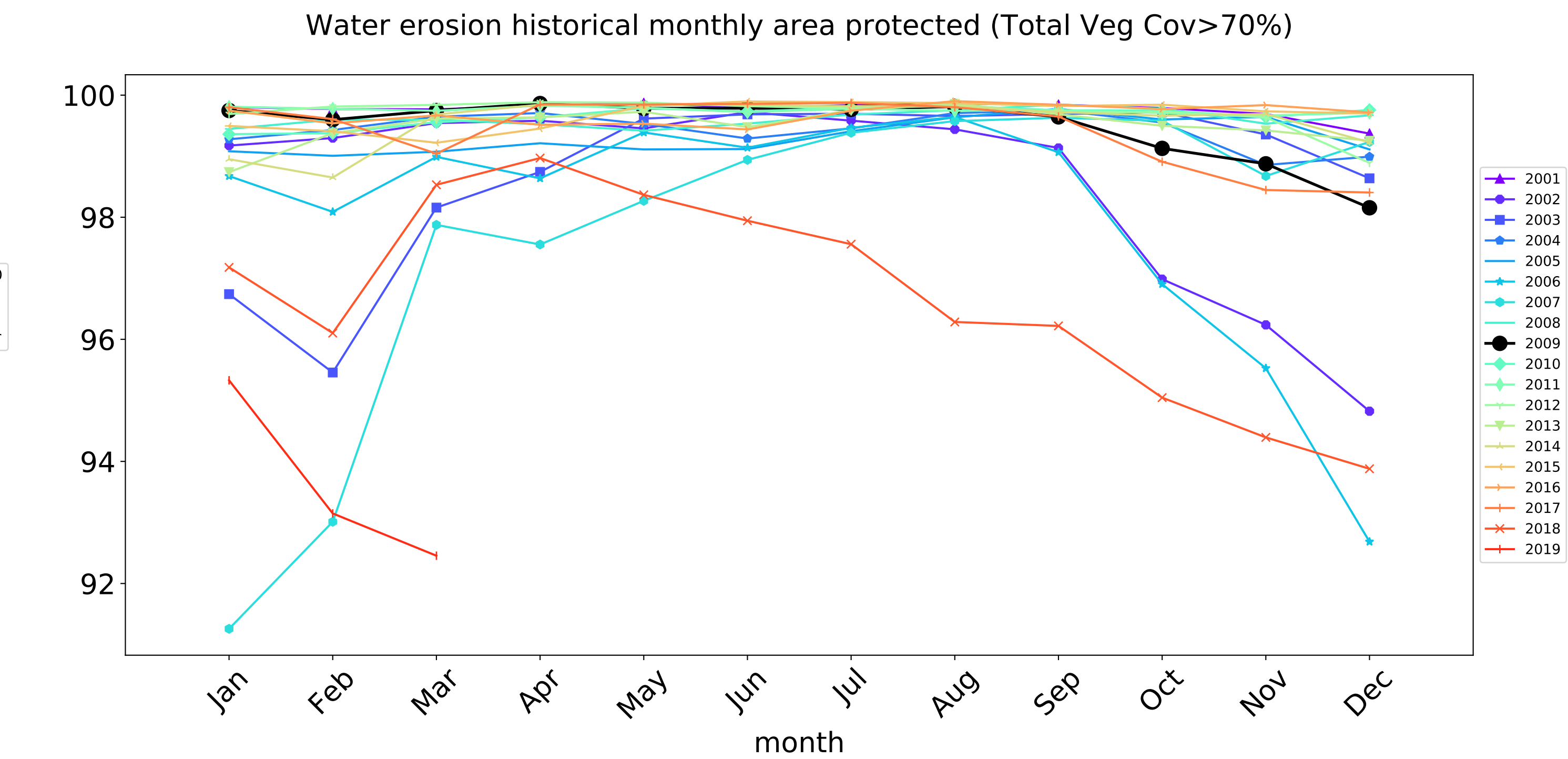
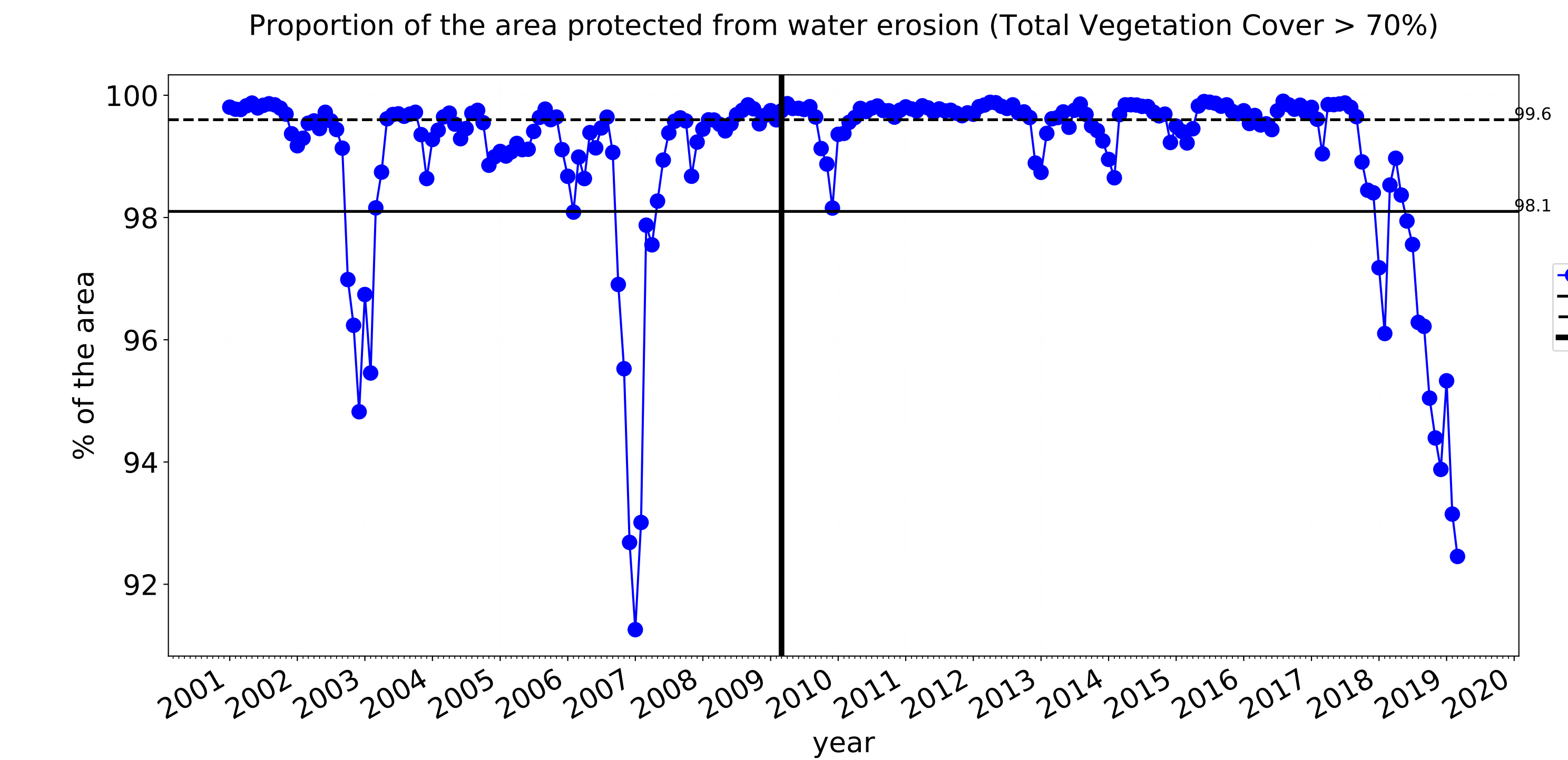
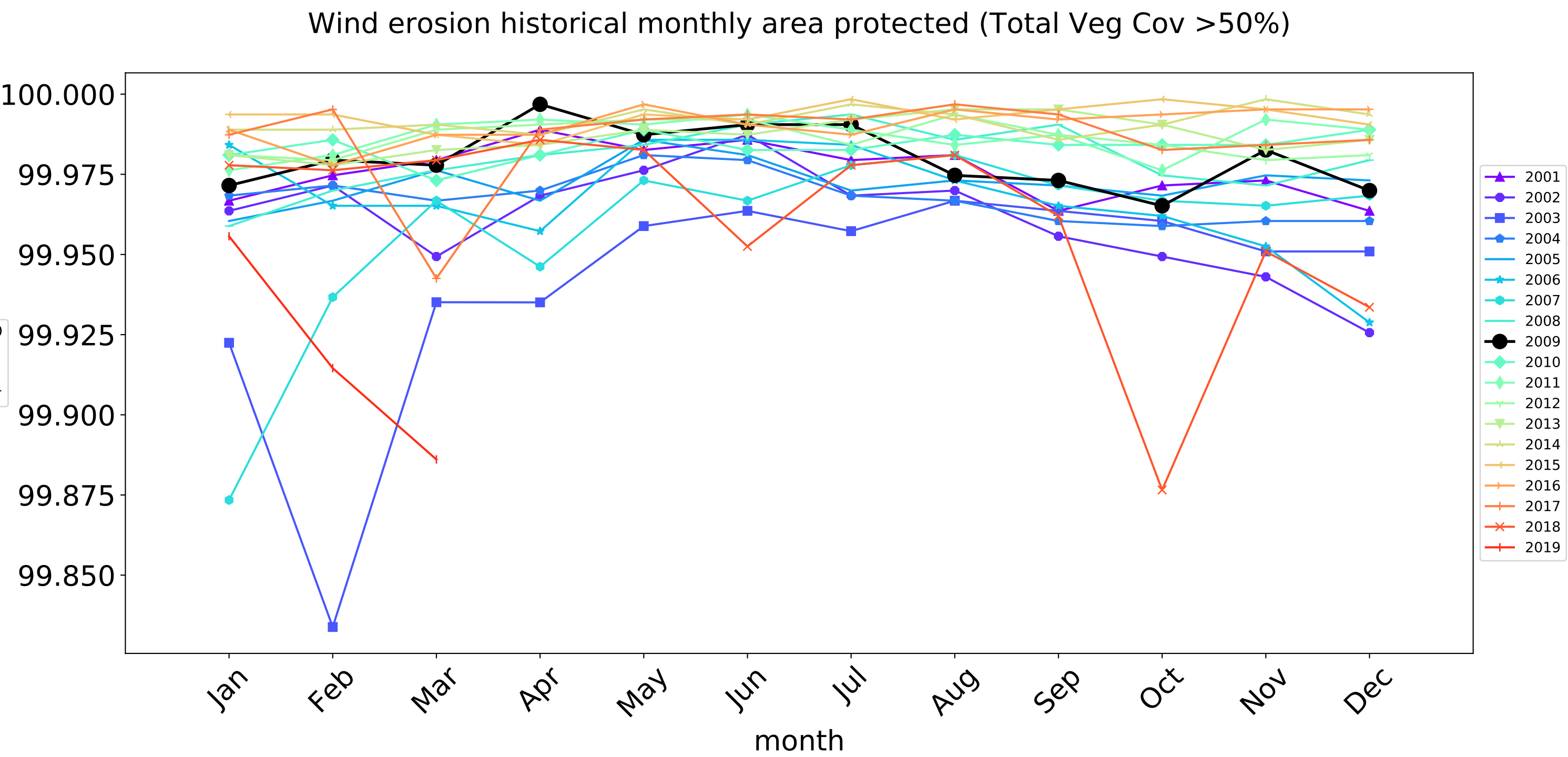
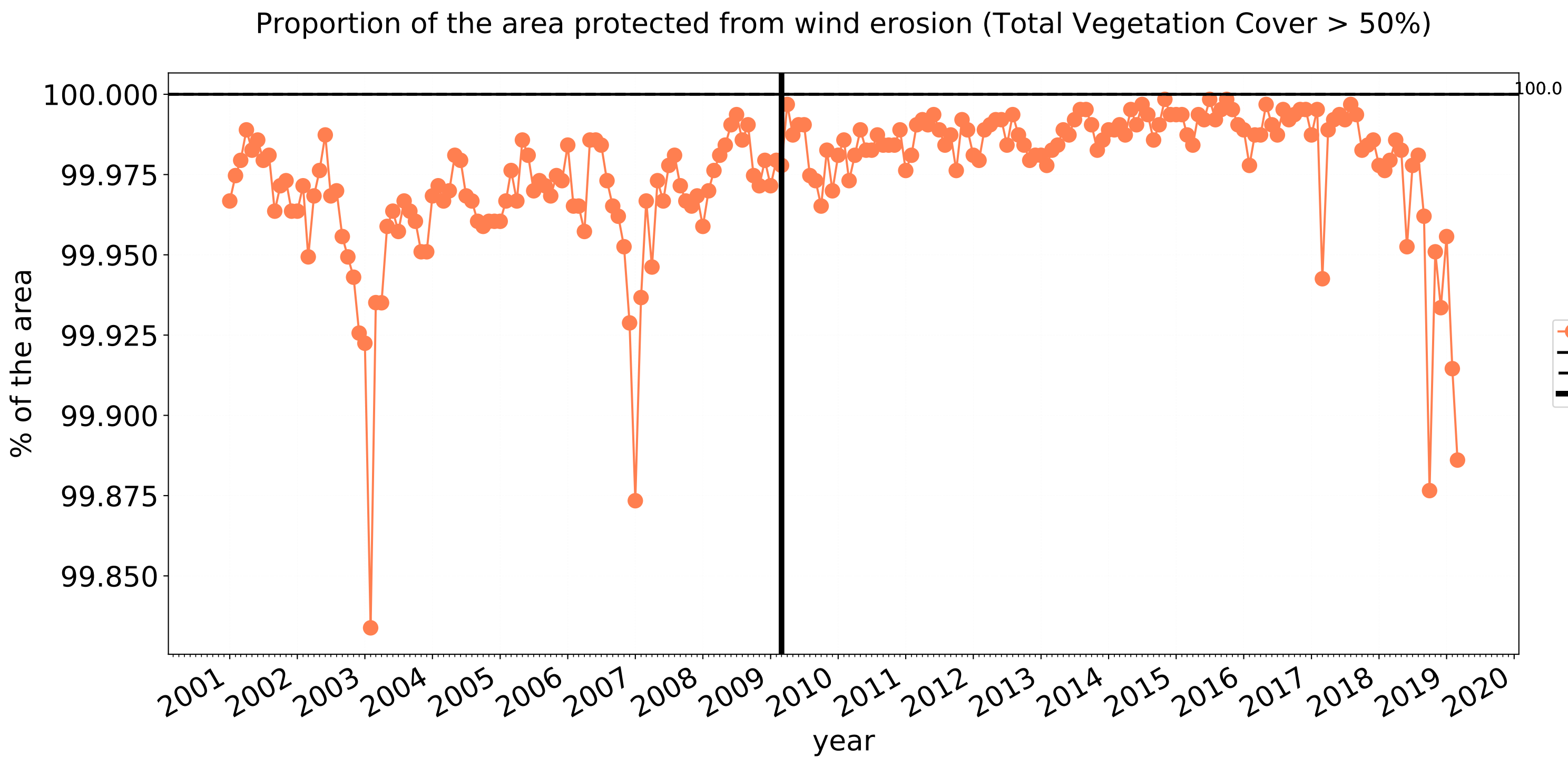
National  
Landcare  
Programme



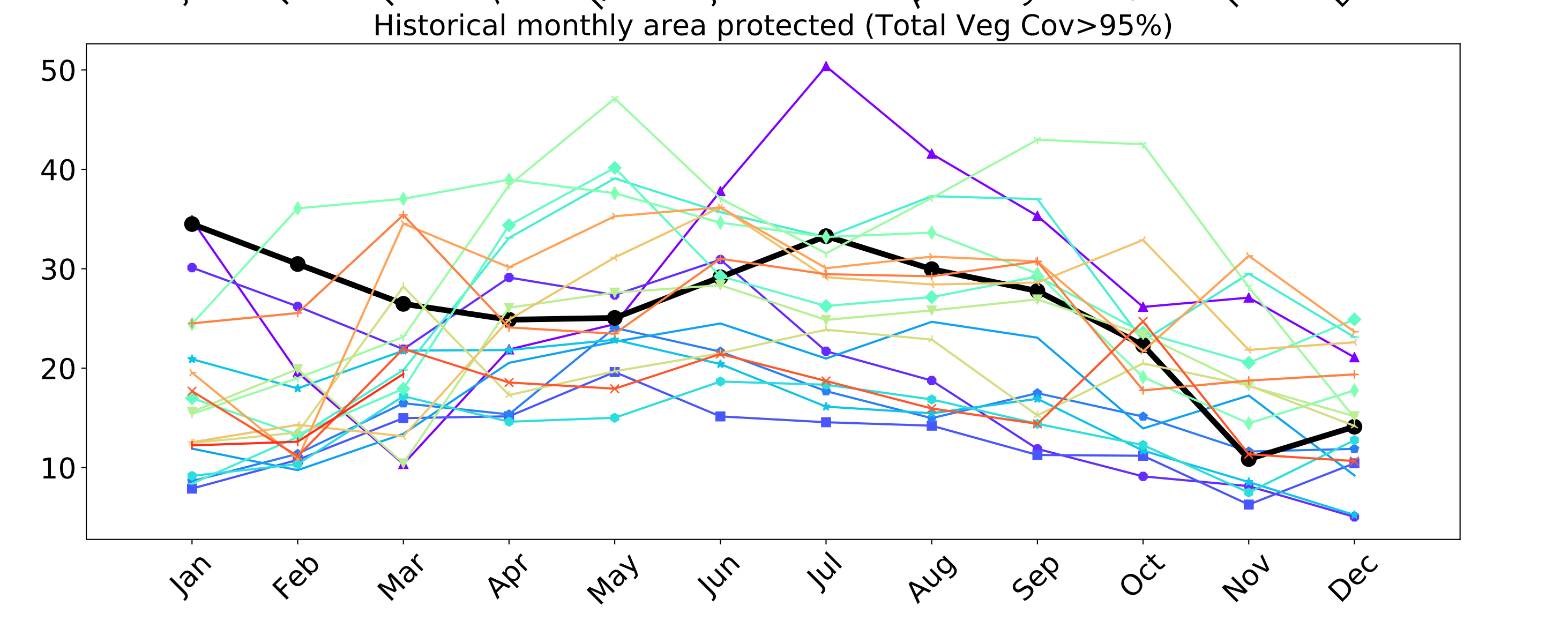
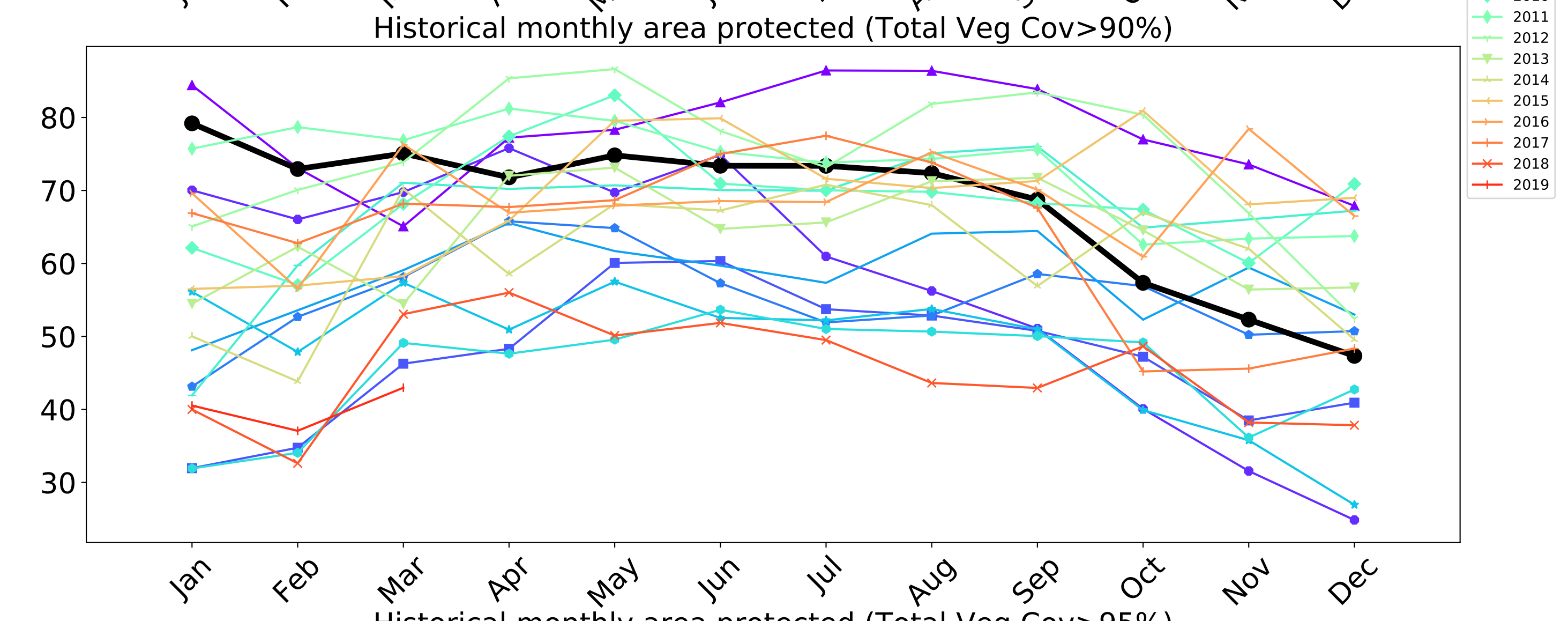
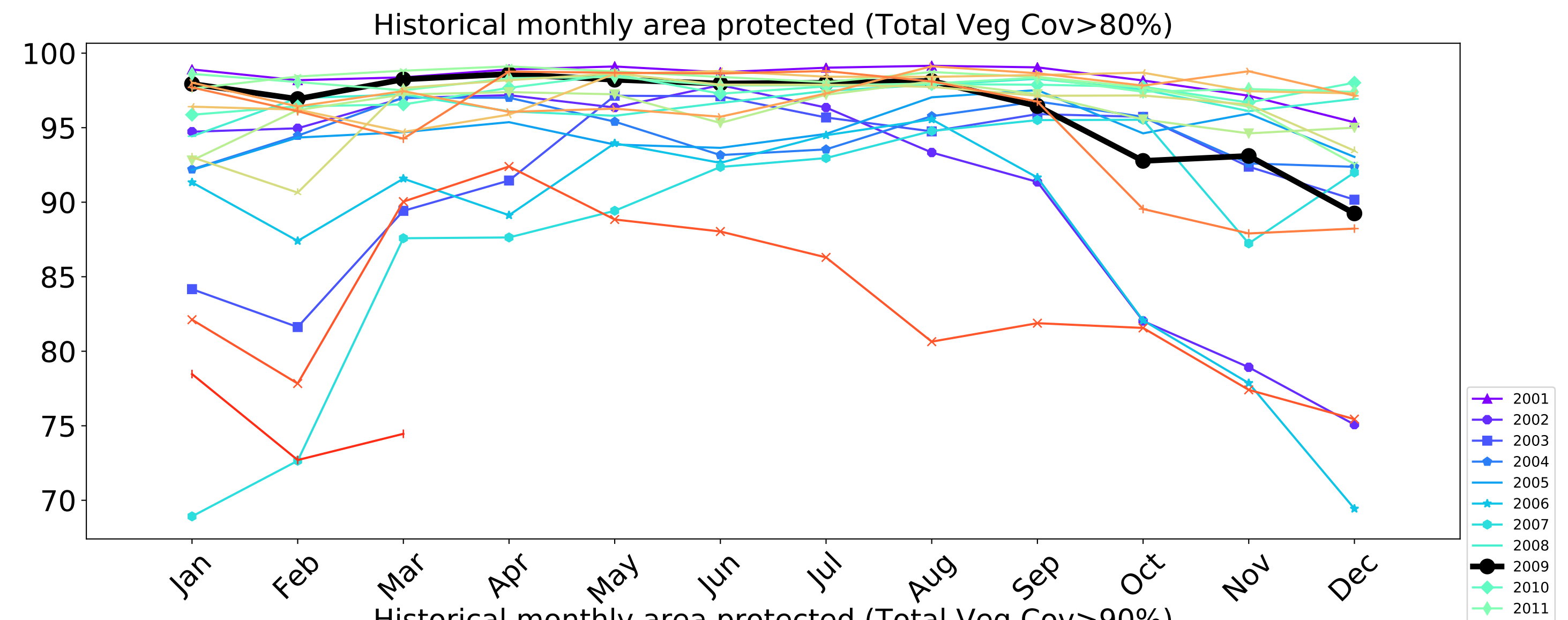
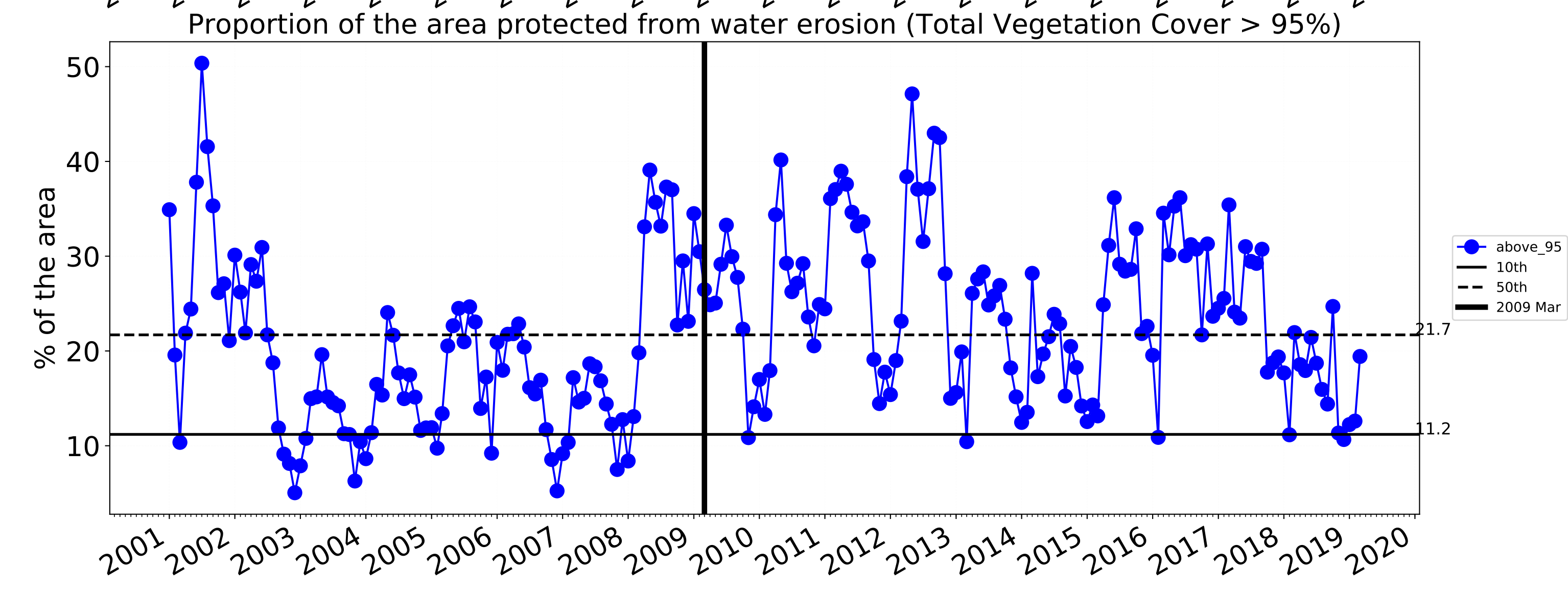
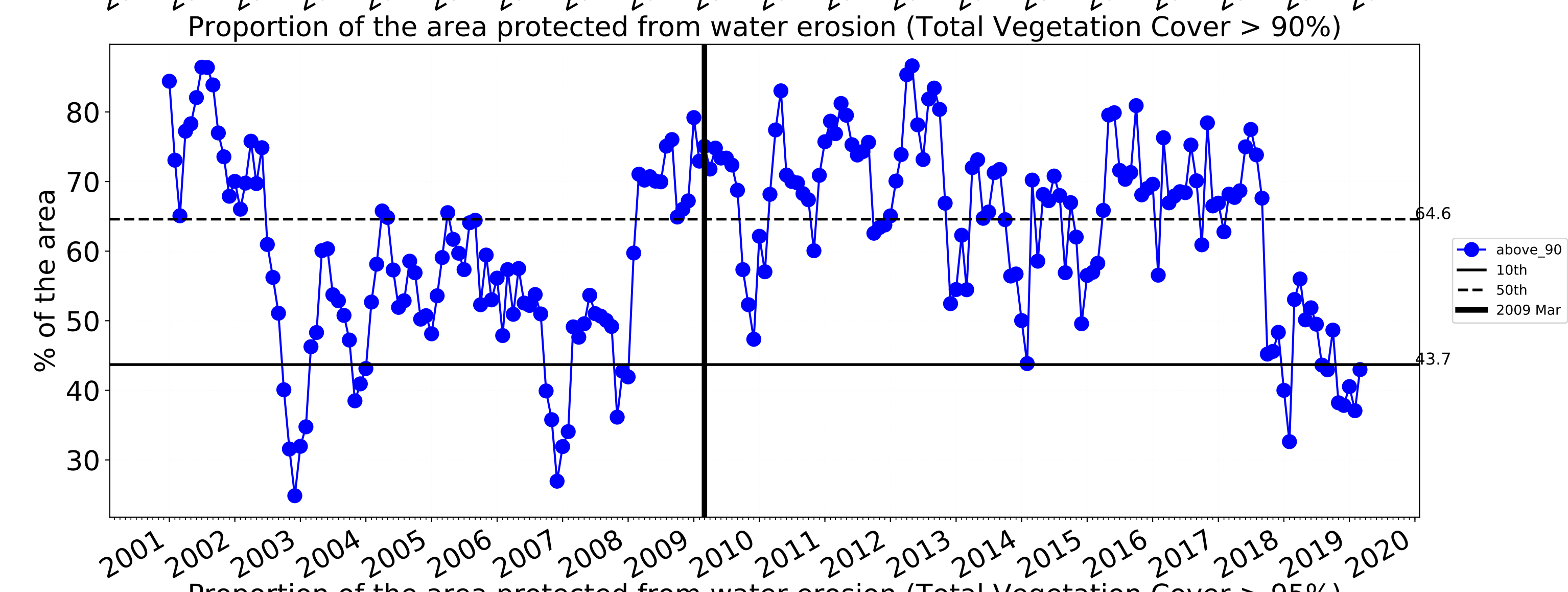
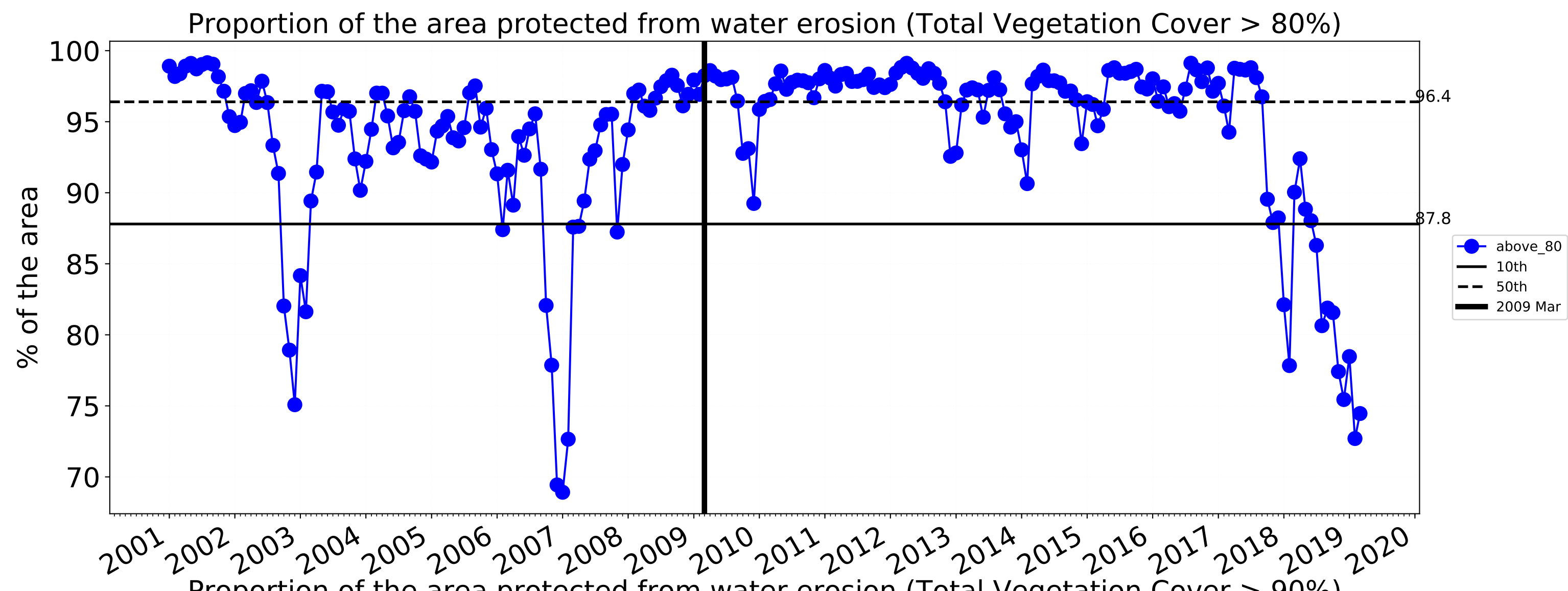
Planning,  
Industry &  
Environment



Agriculture timeseries









Grazing

Land use and forest cover

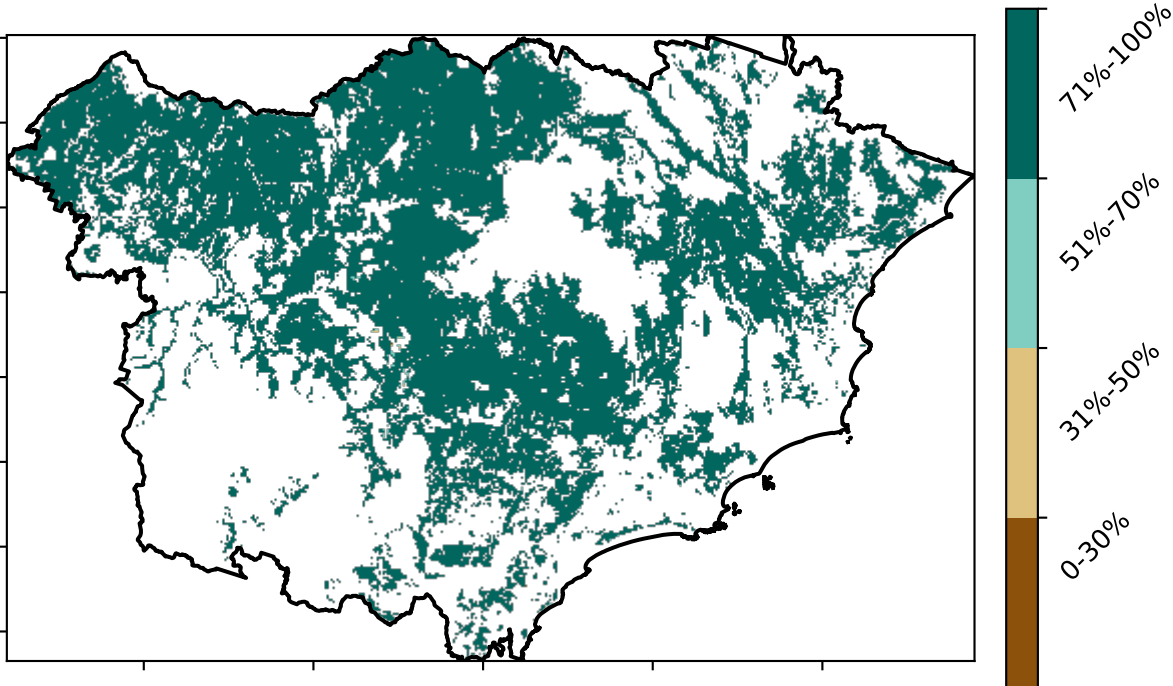
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



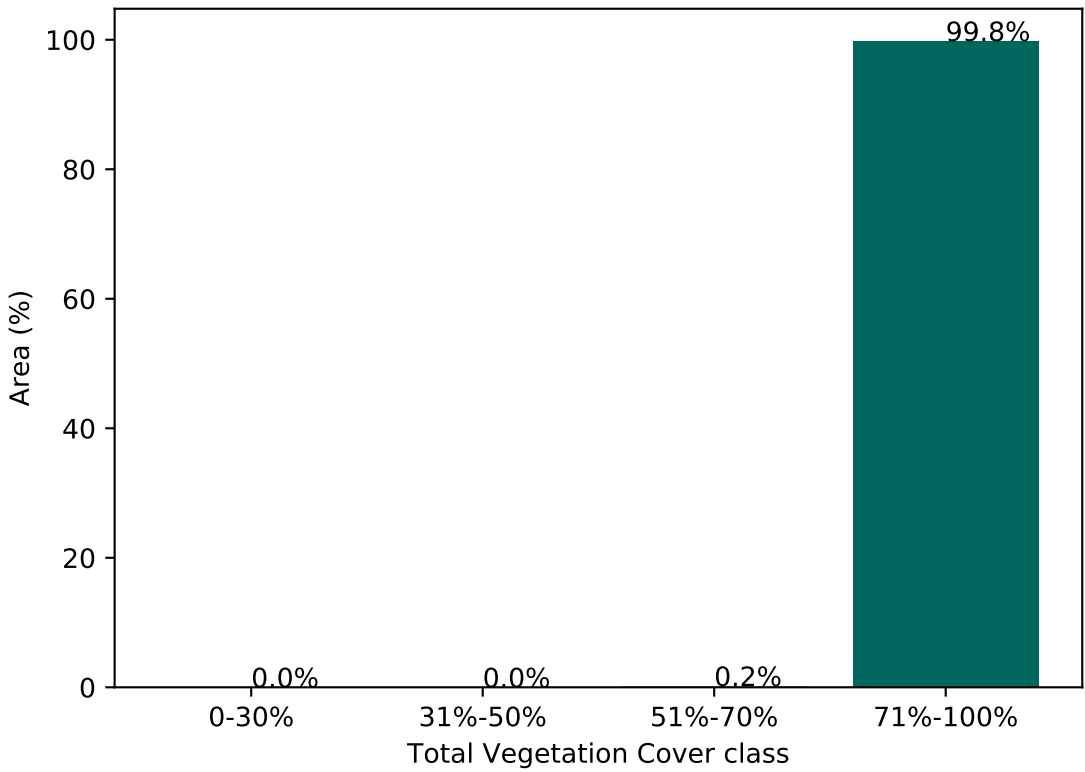
Proportion of each land class in area



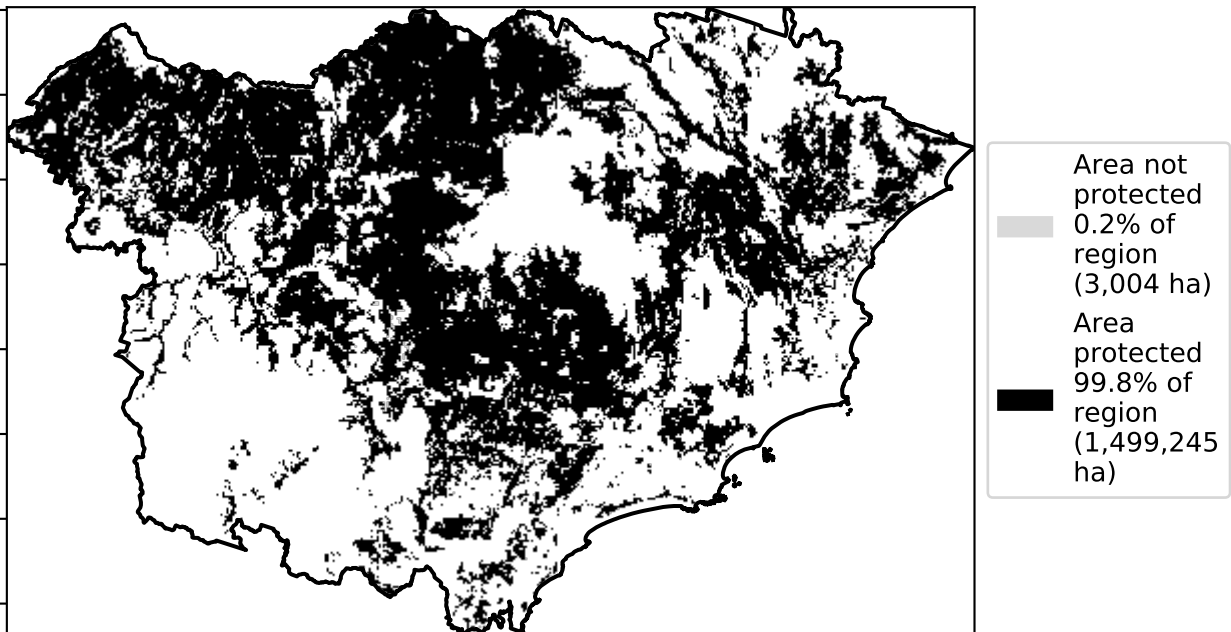
Total Vegetation Cover [%]



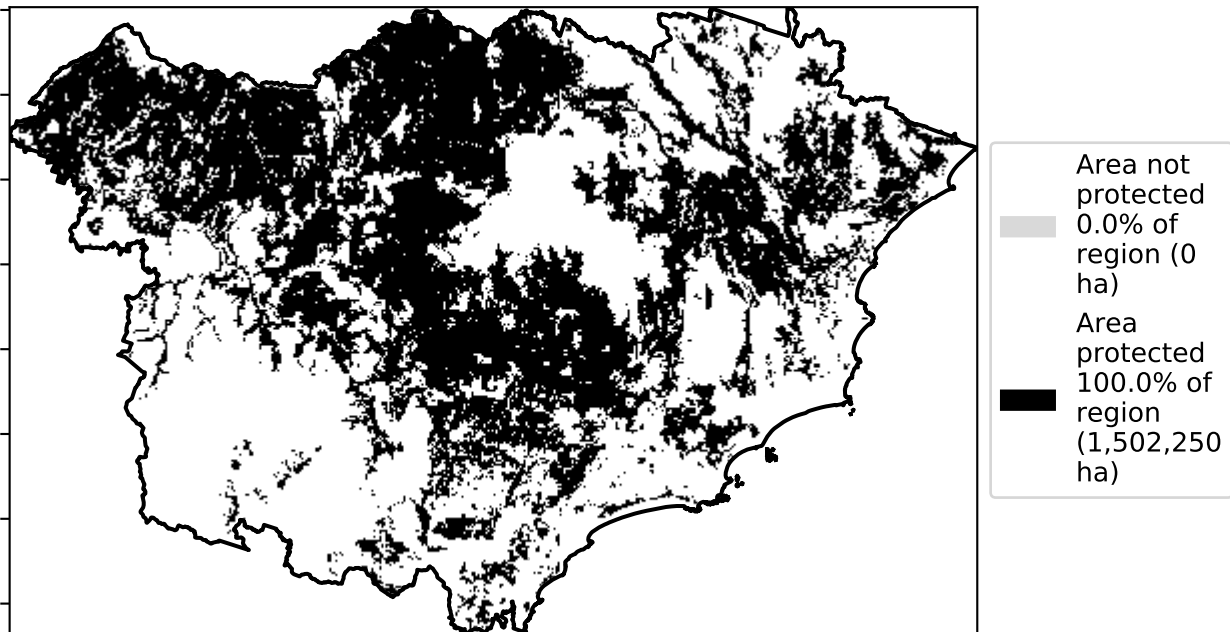
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

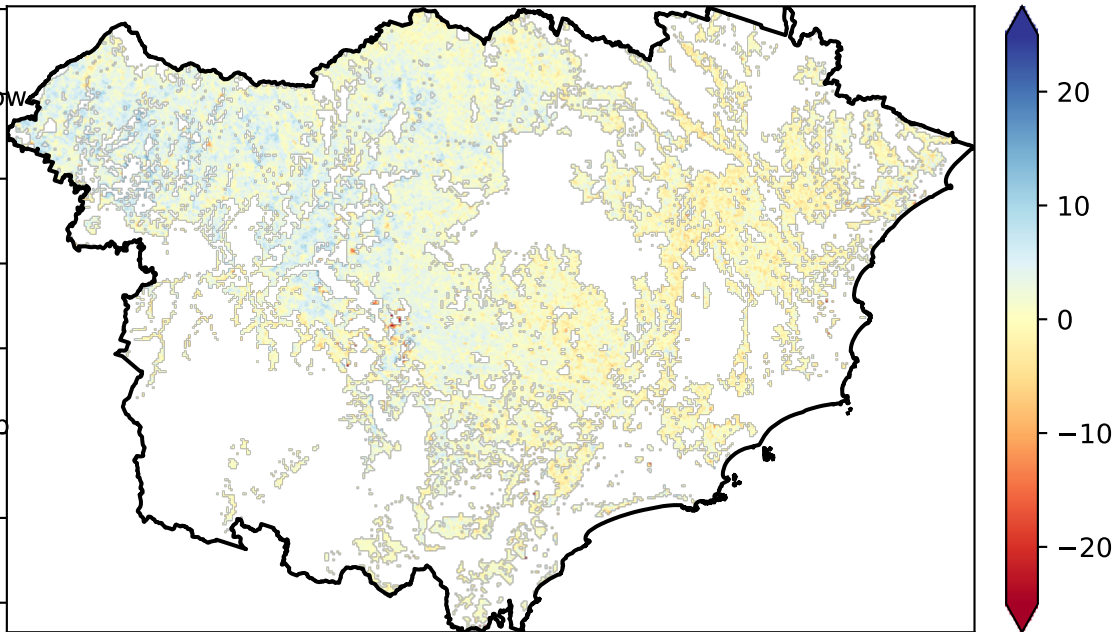


% Area protected from wind erosion (>50%)



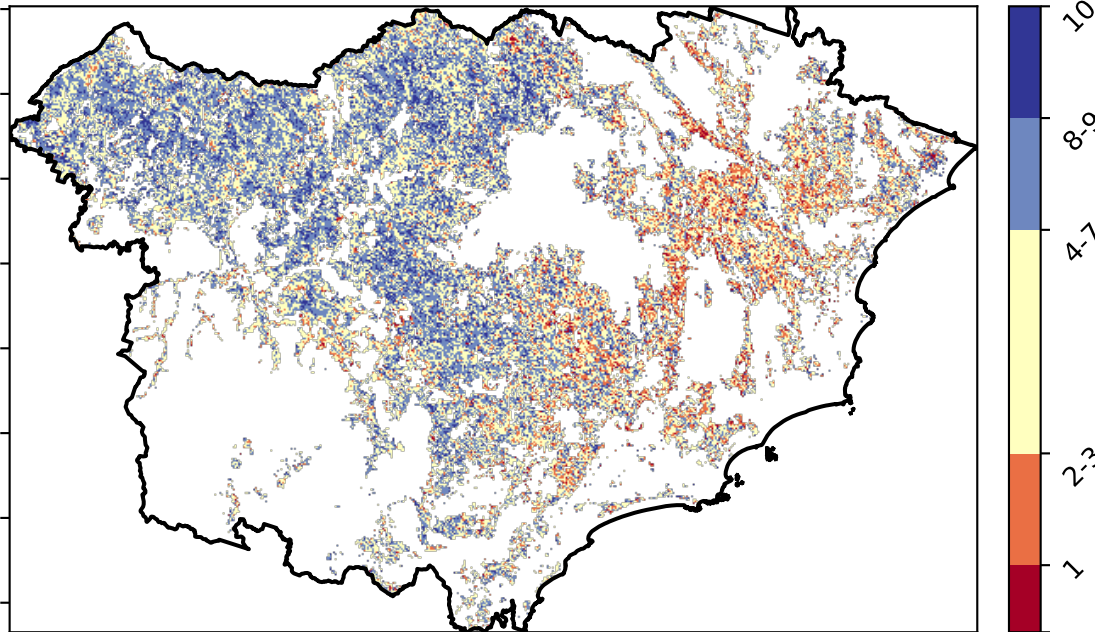
Total Vegetation Cover Anomaly [%]

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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National Landcare Programme

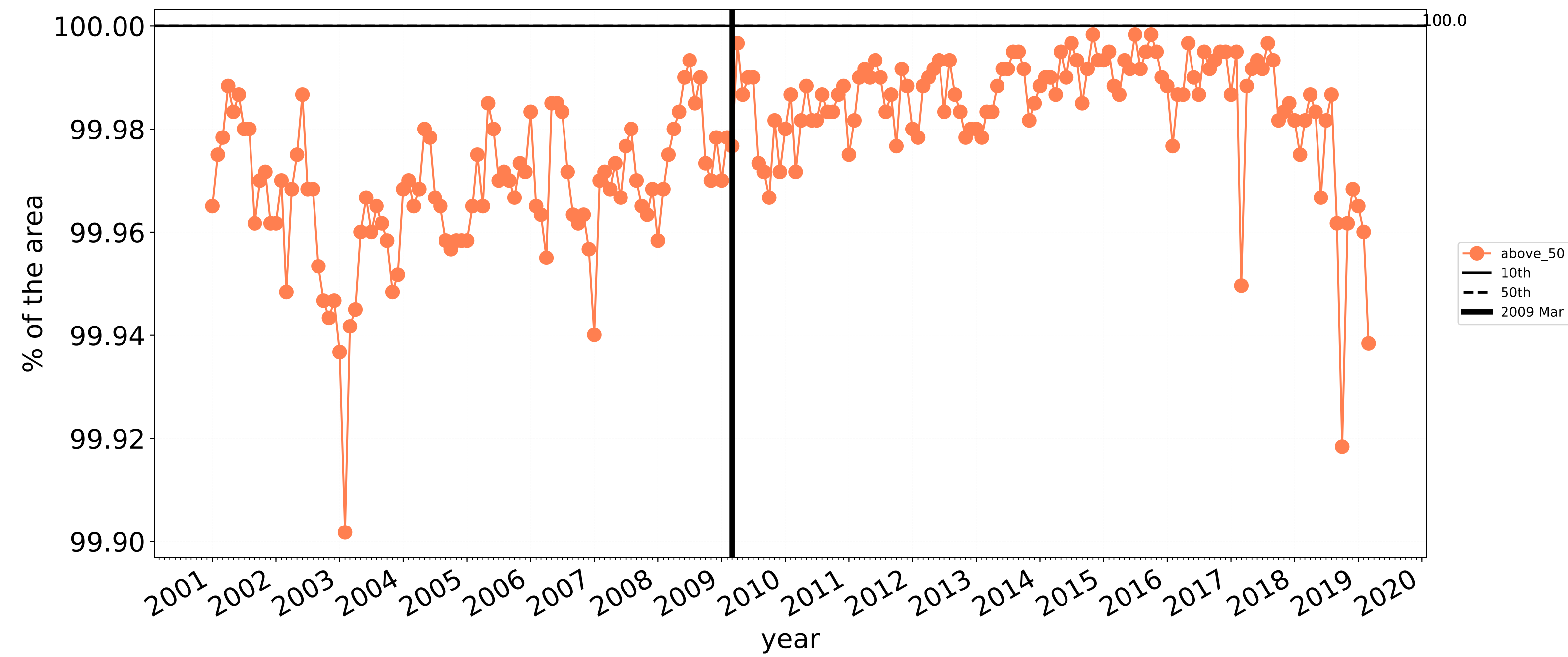


Planning, Industry & Environment

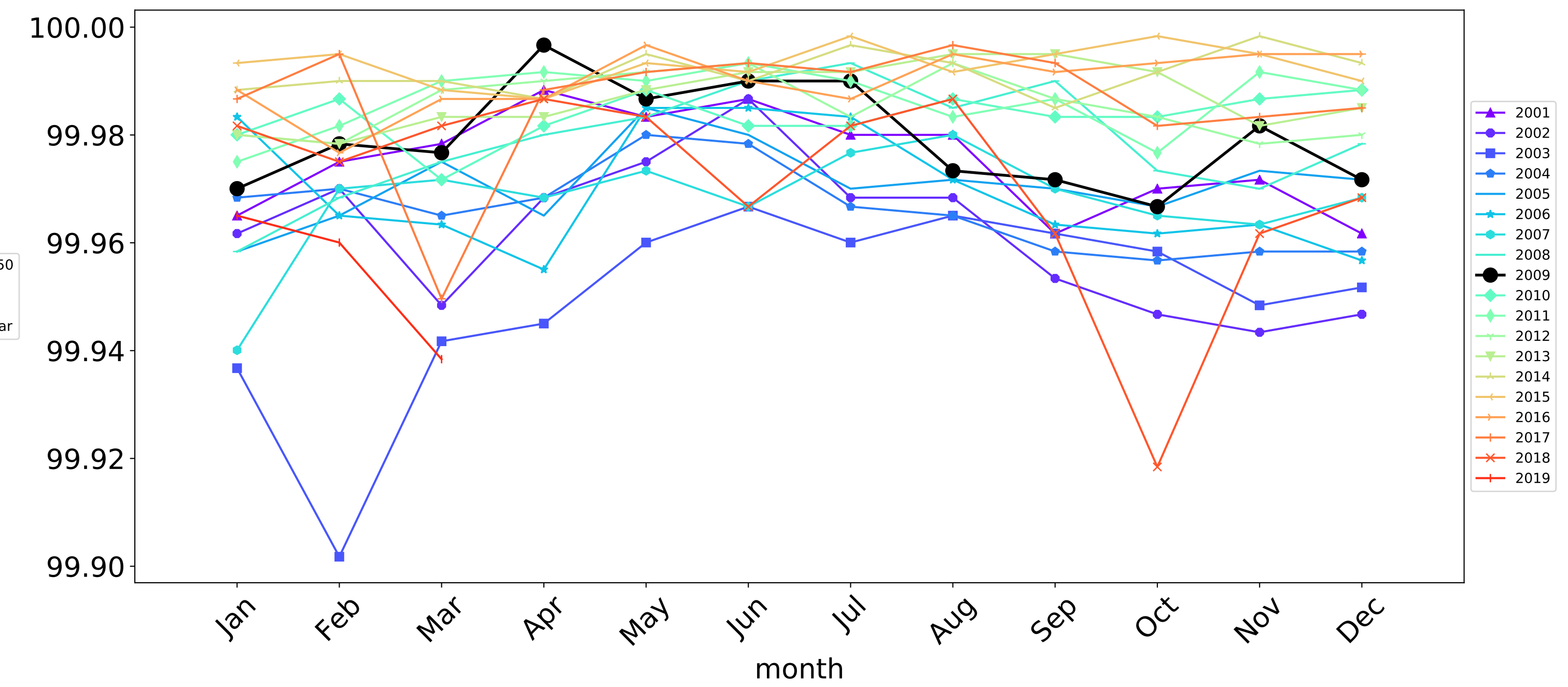


# Grazing timeseries

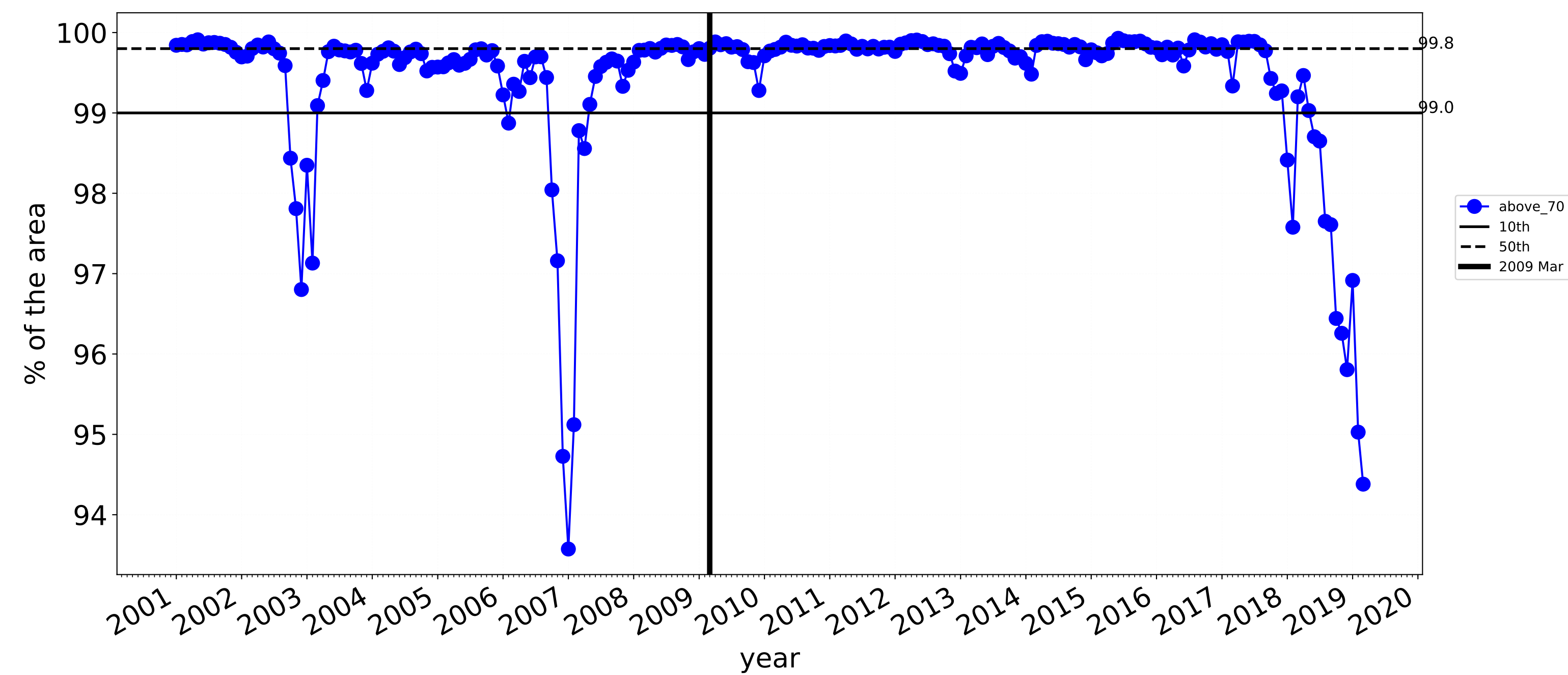
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



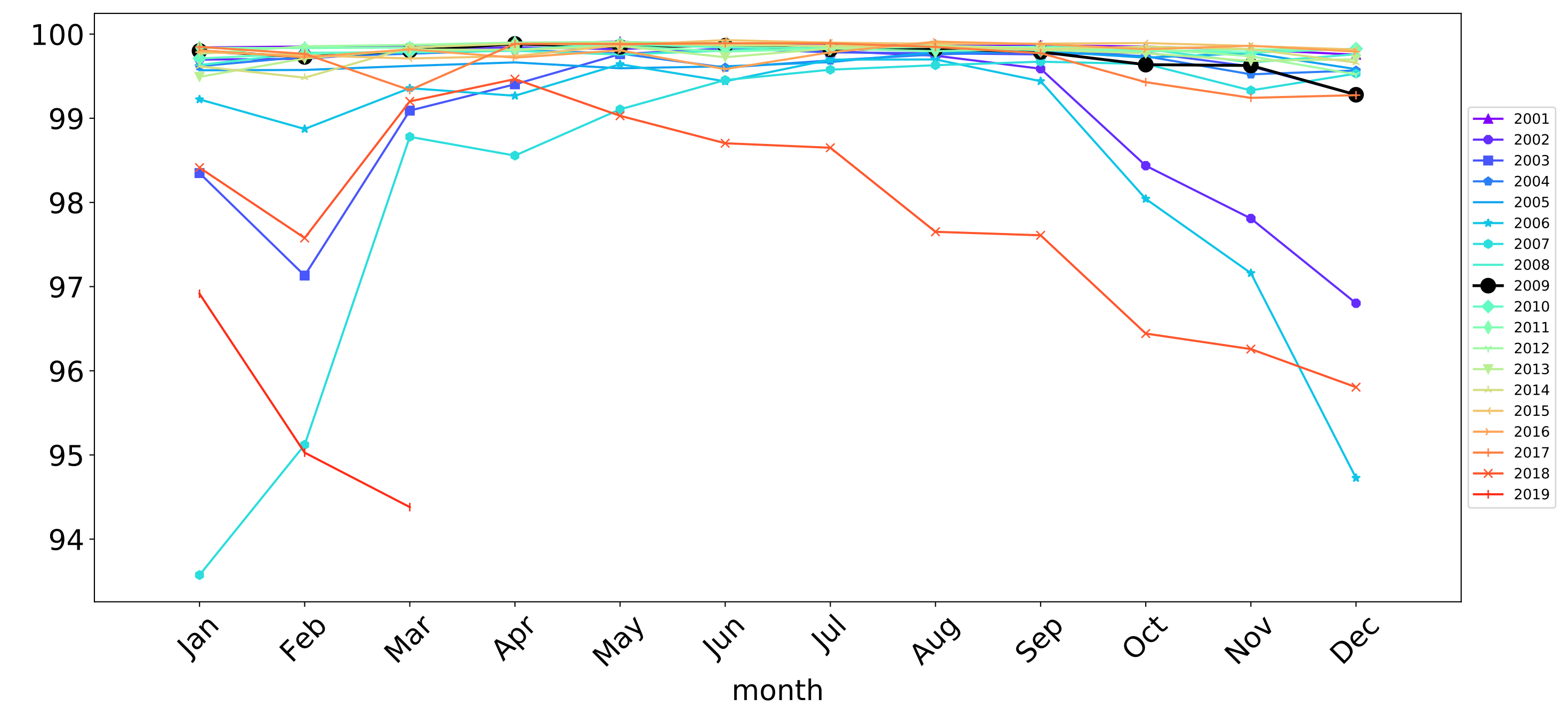
Wind erosion historical monthly area protected (Total Veg Cov >50%)



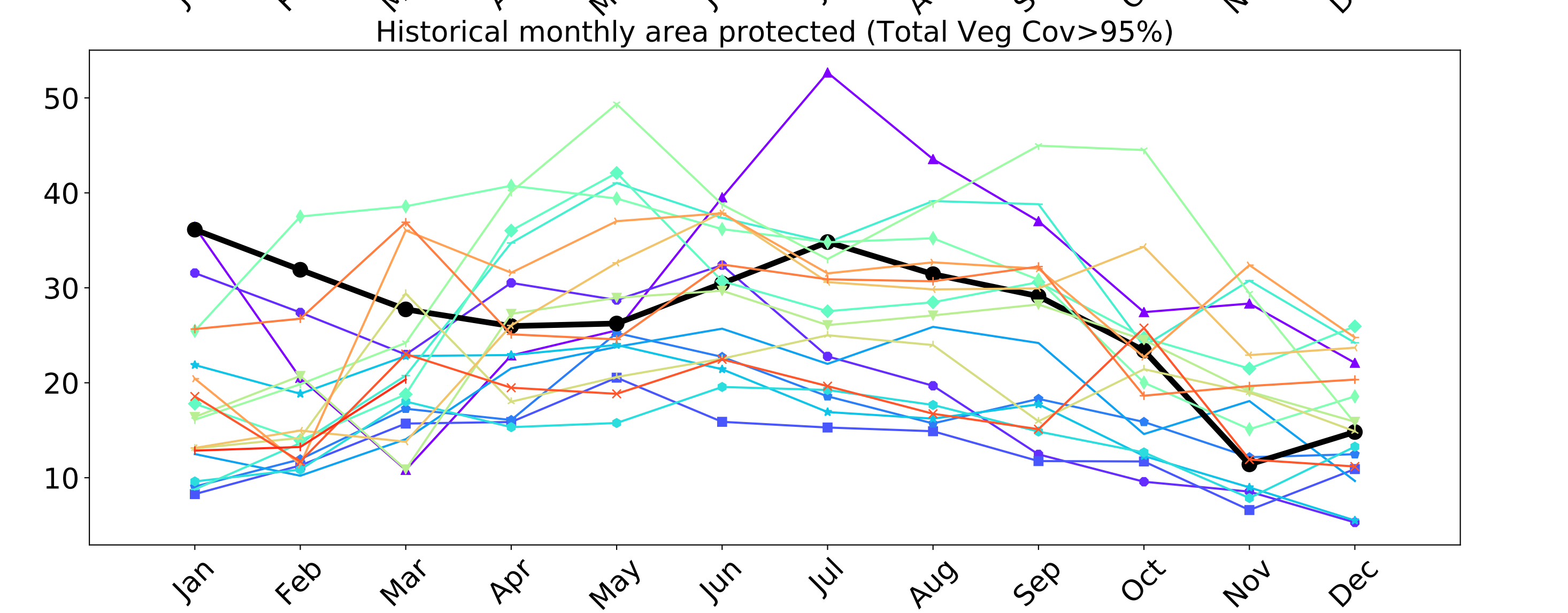
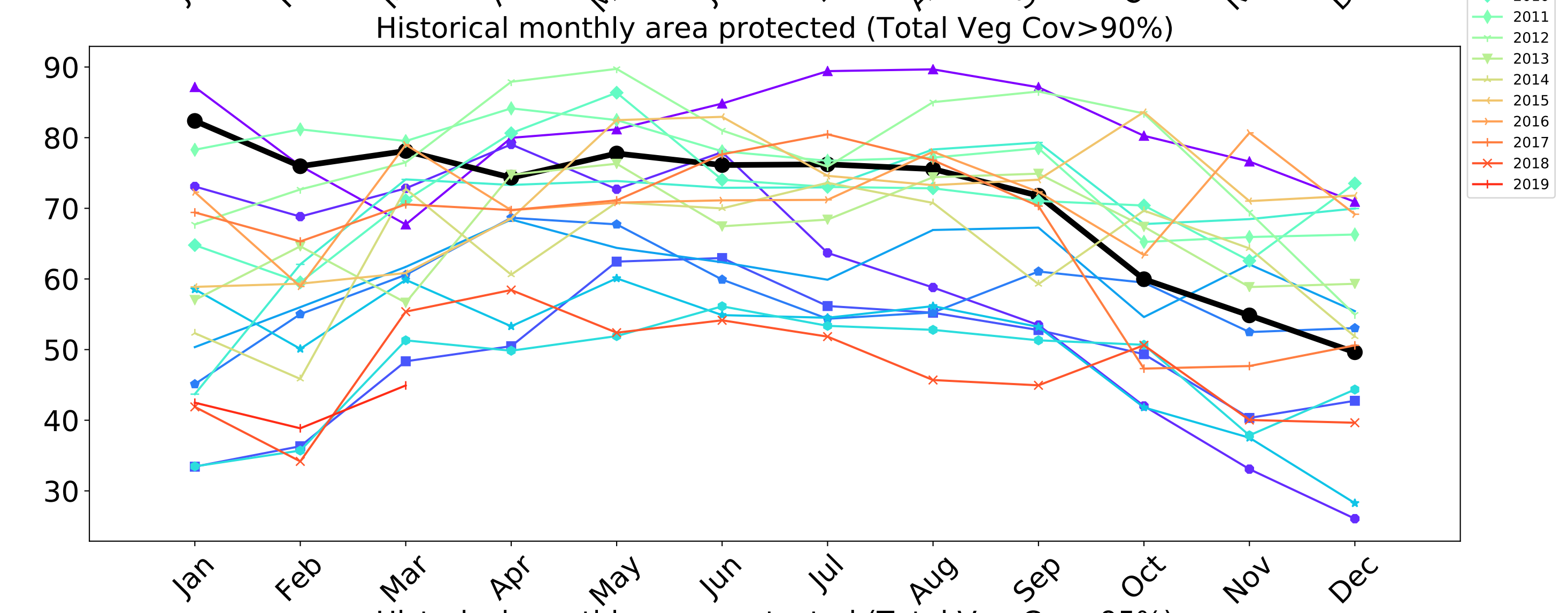
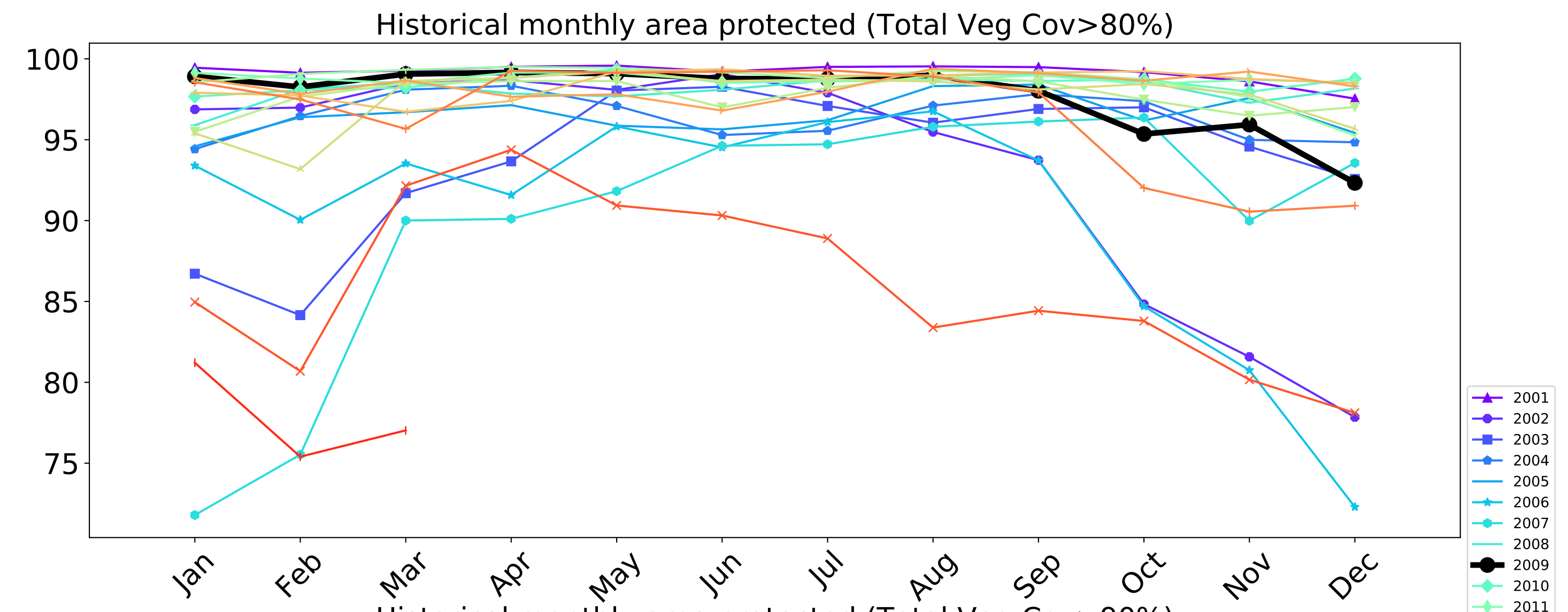
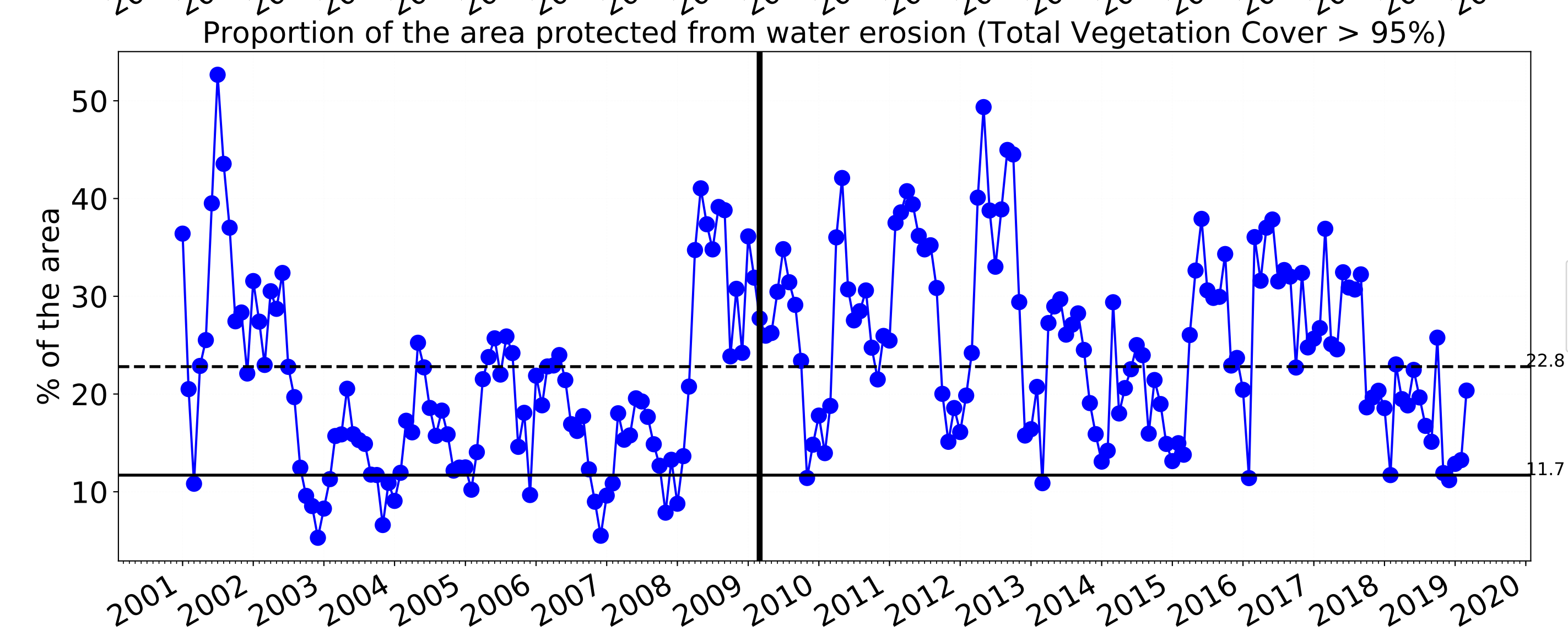
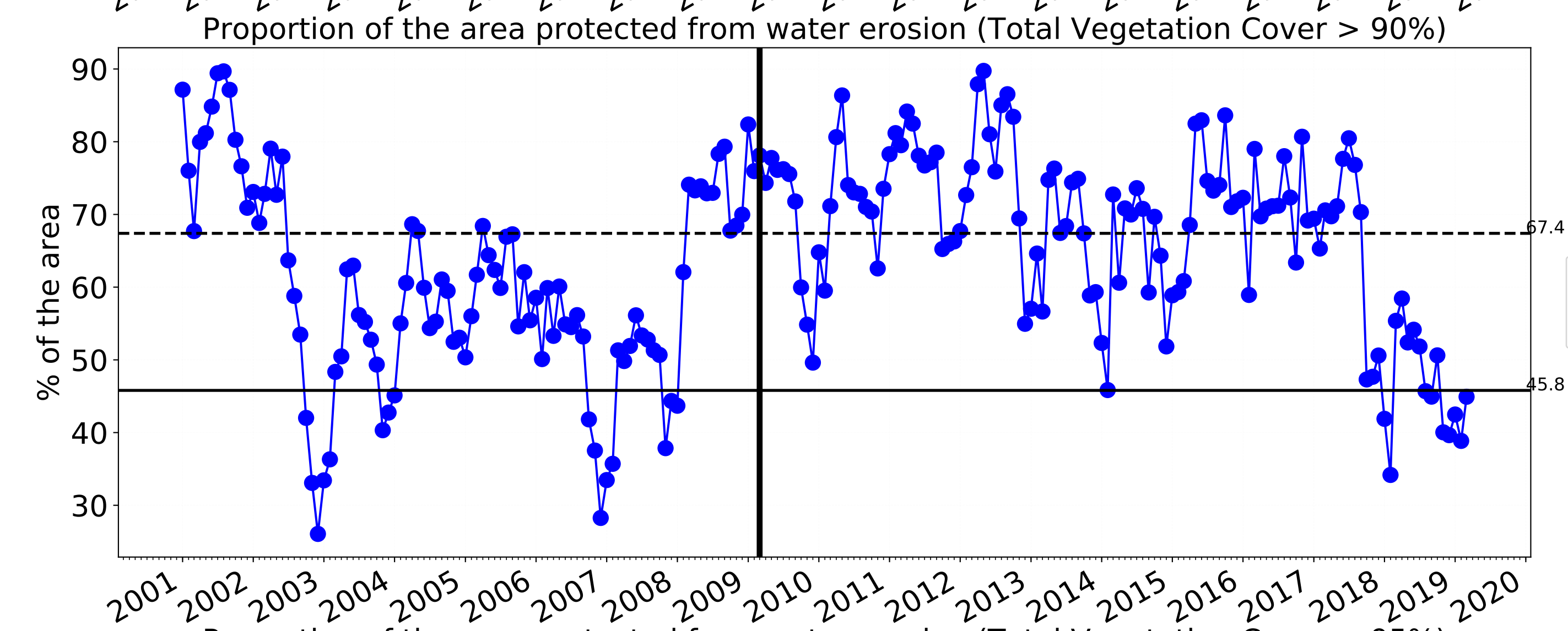
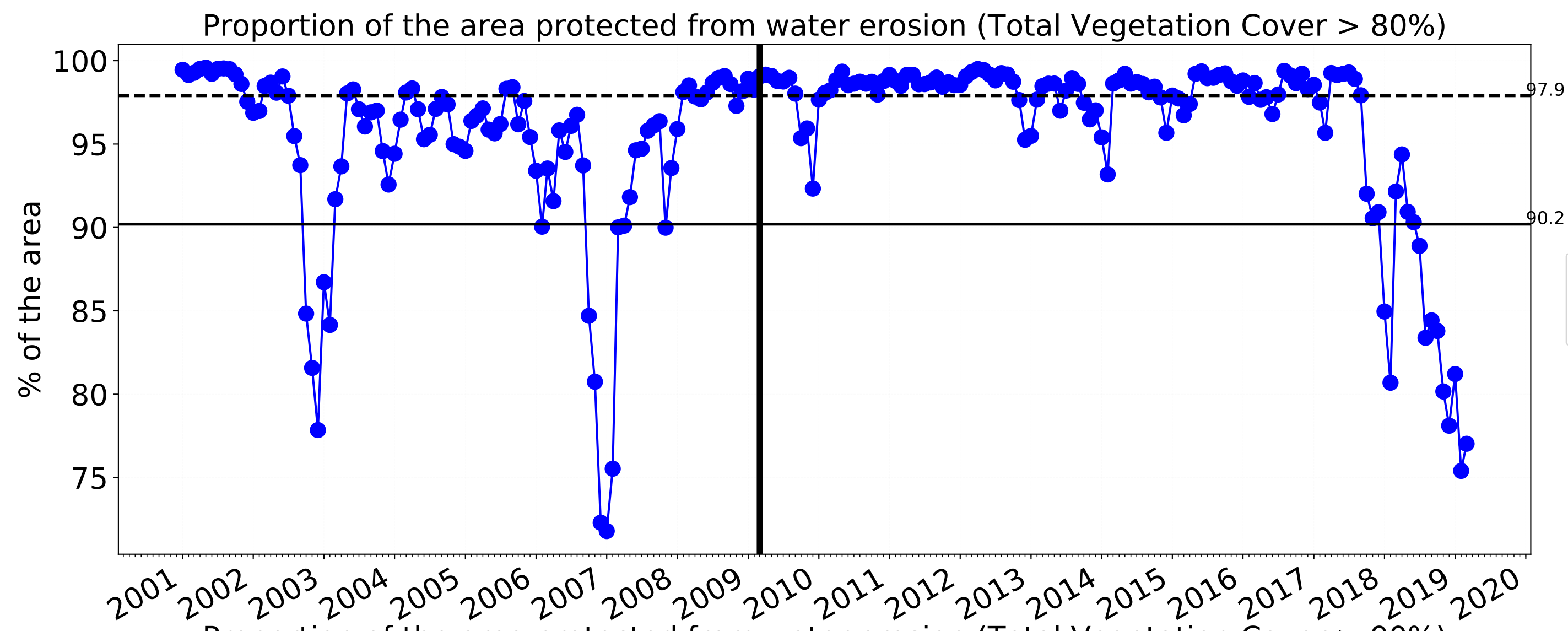
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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









Grazing non forest

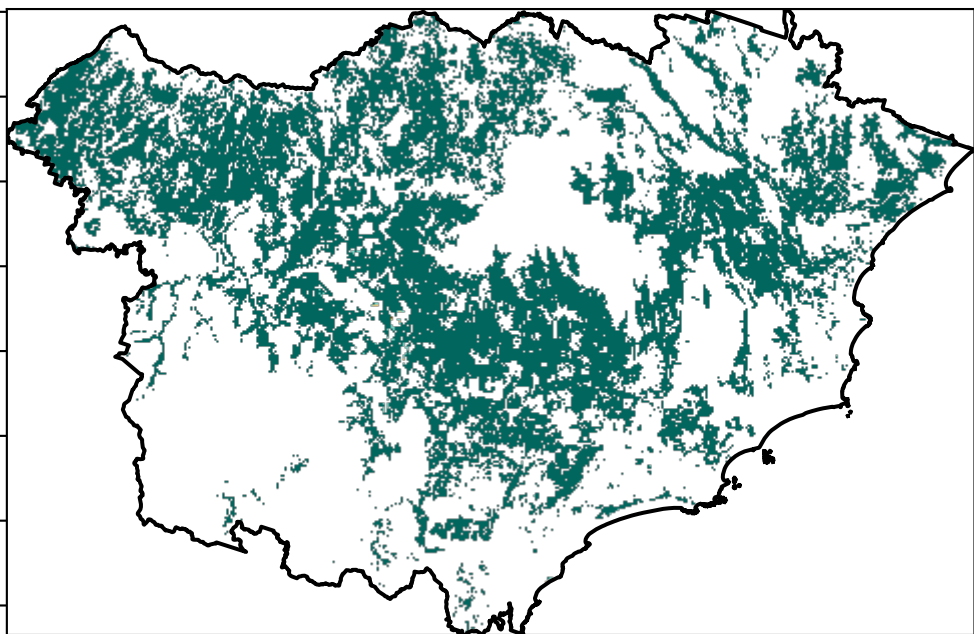
Land use and forest cover

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

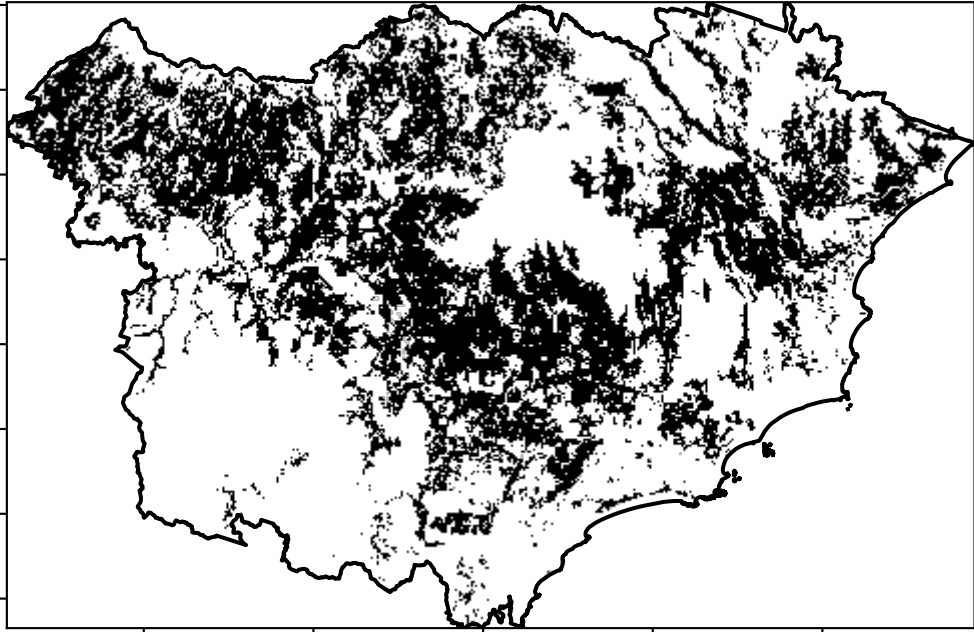
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

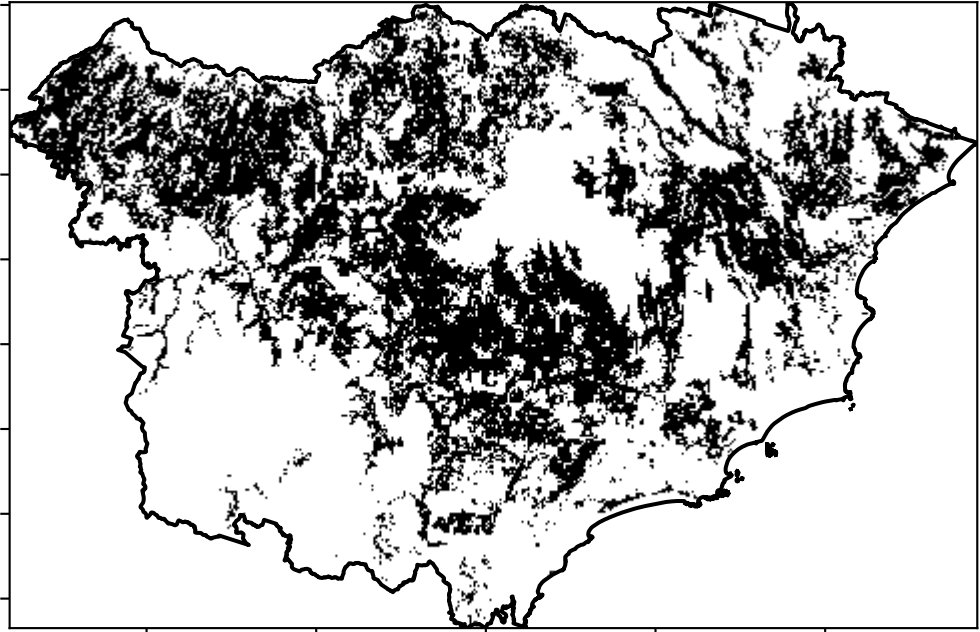


% Area protected from water erosion (>70%)



Area not protected  
0.2% of region  
(2,425 ha)  
Area protected  
99.8% of region  
(1,210,174 ha)

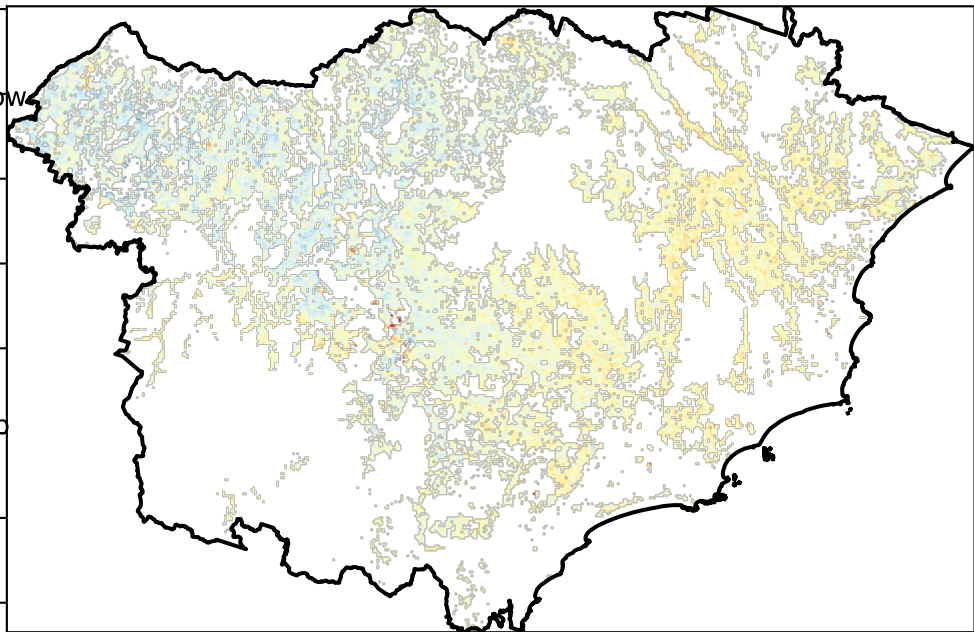
% Area protected from wind erosion (>50%)



Area not protected  
0.0% of region (0 ha)  
Area protected  
100.0% of region  
(1,212,600 ha)

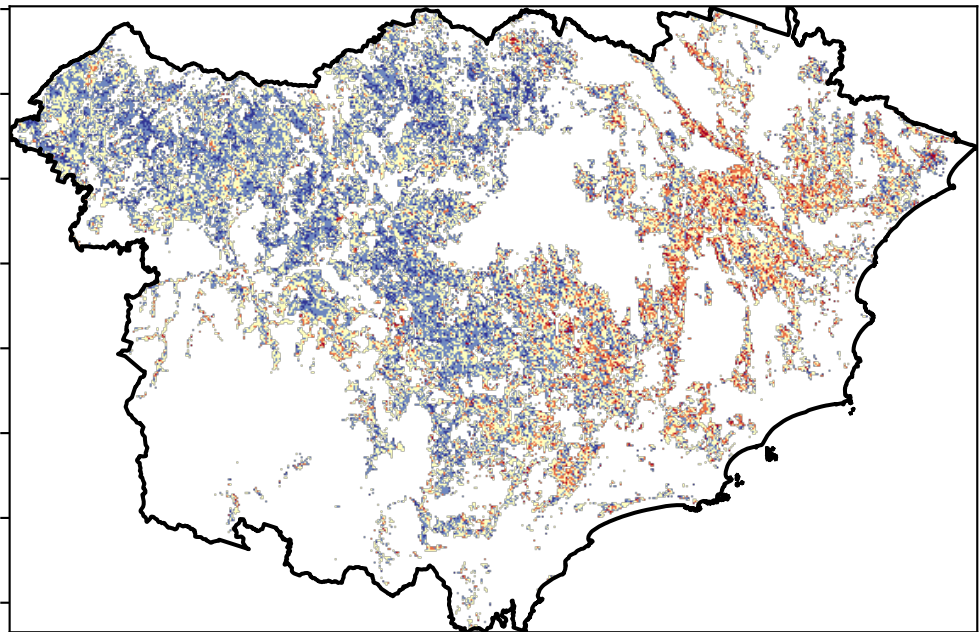
Total Vegetation Cover Anomaly [%]

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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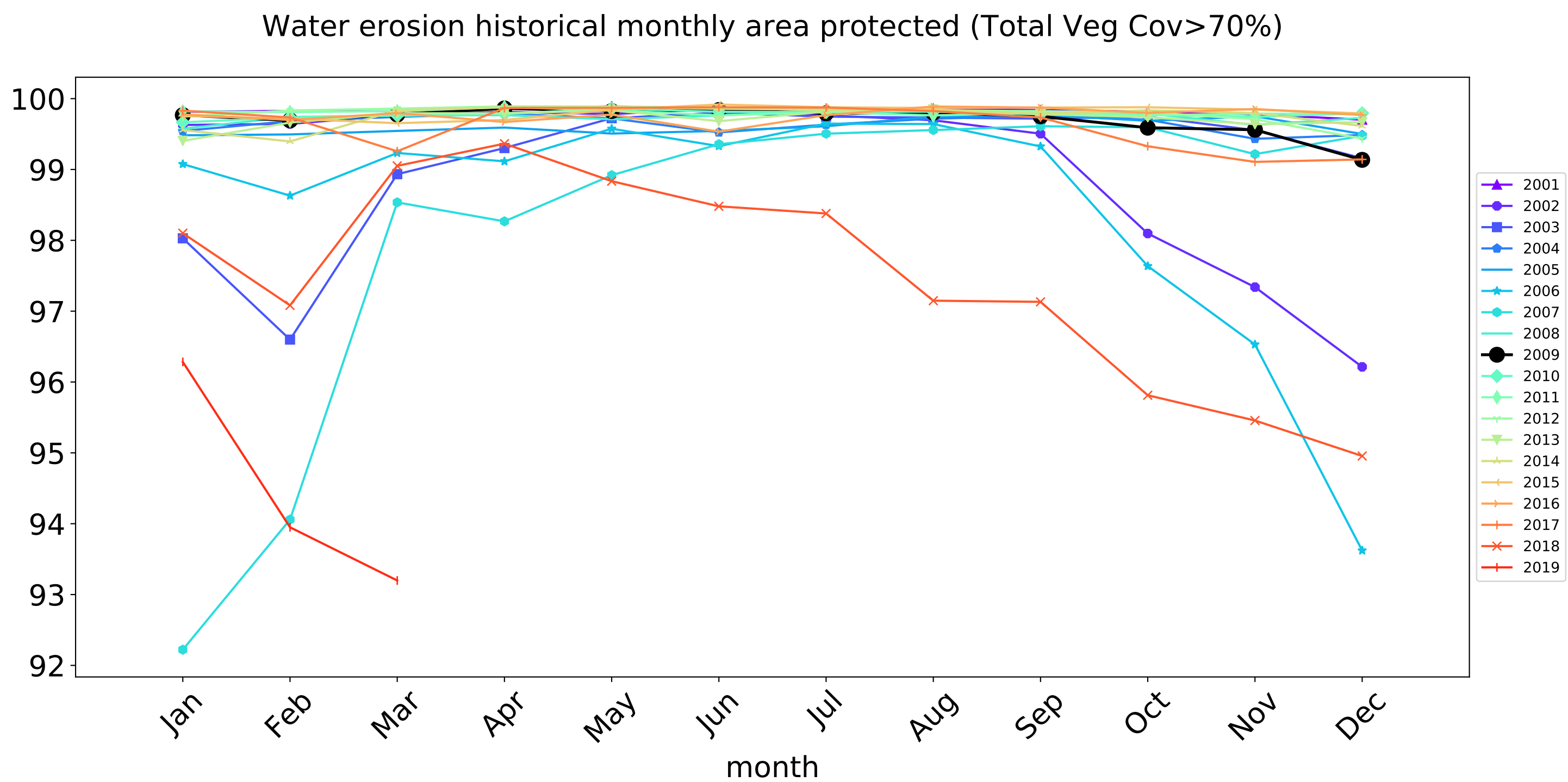
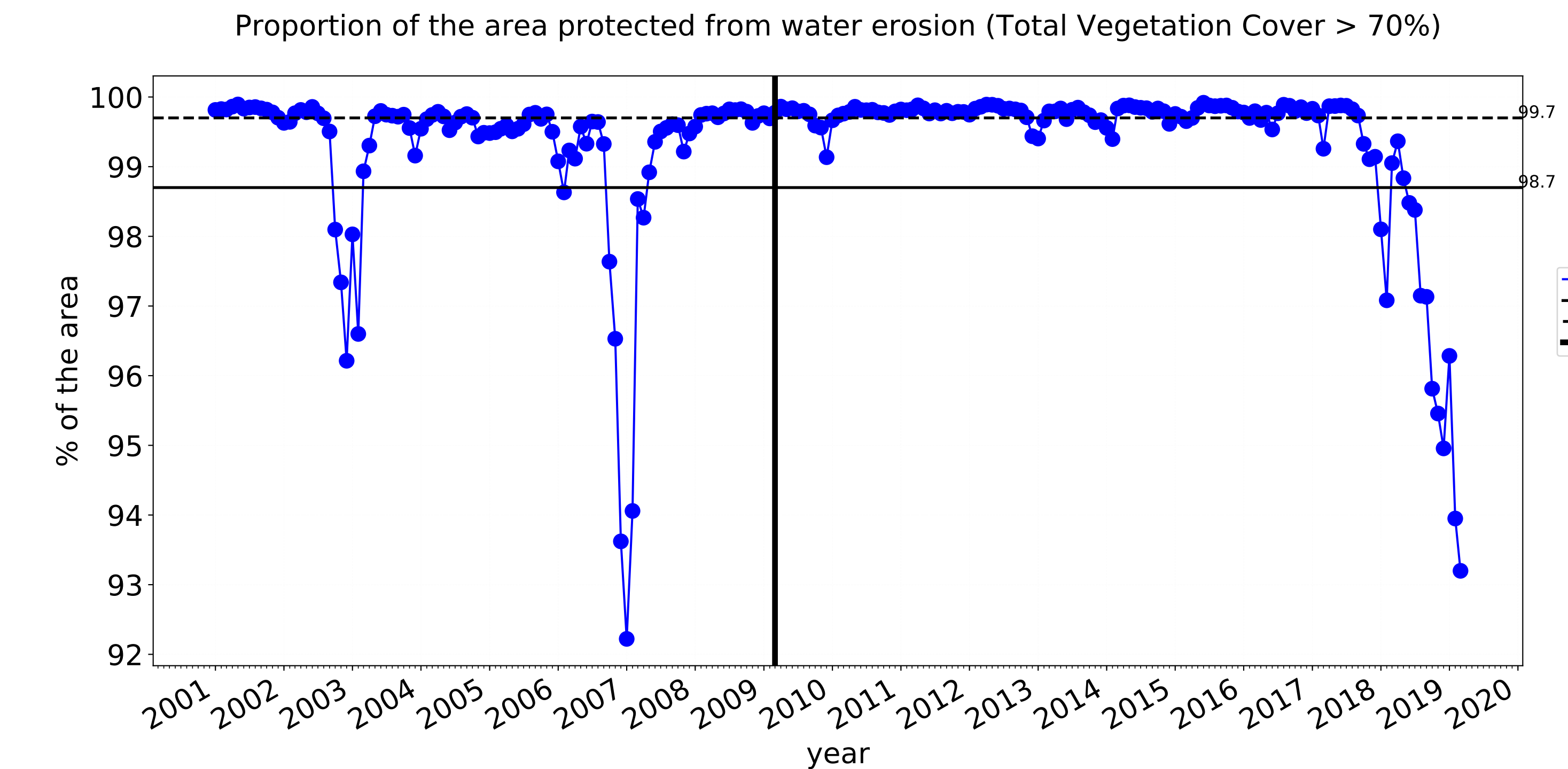
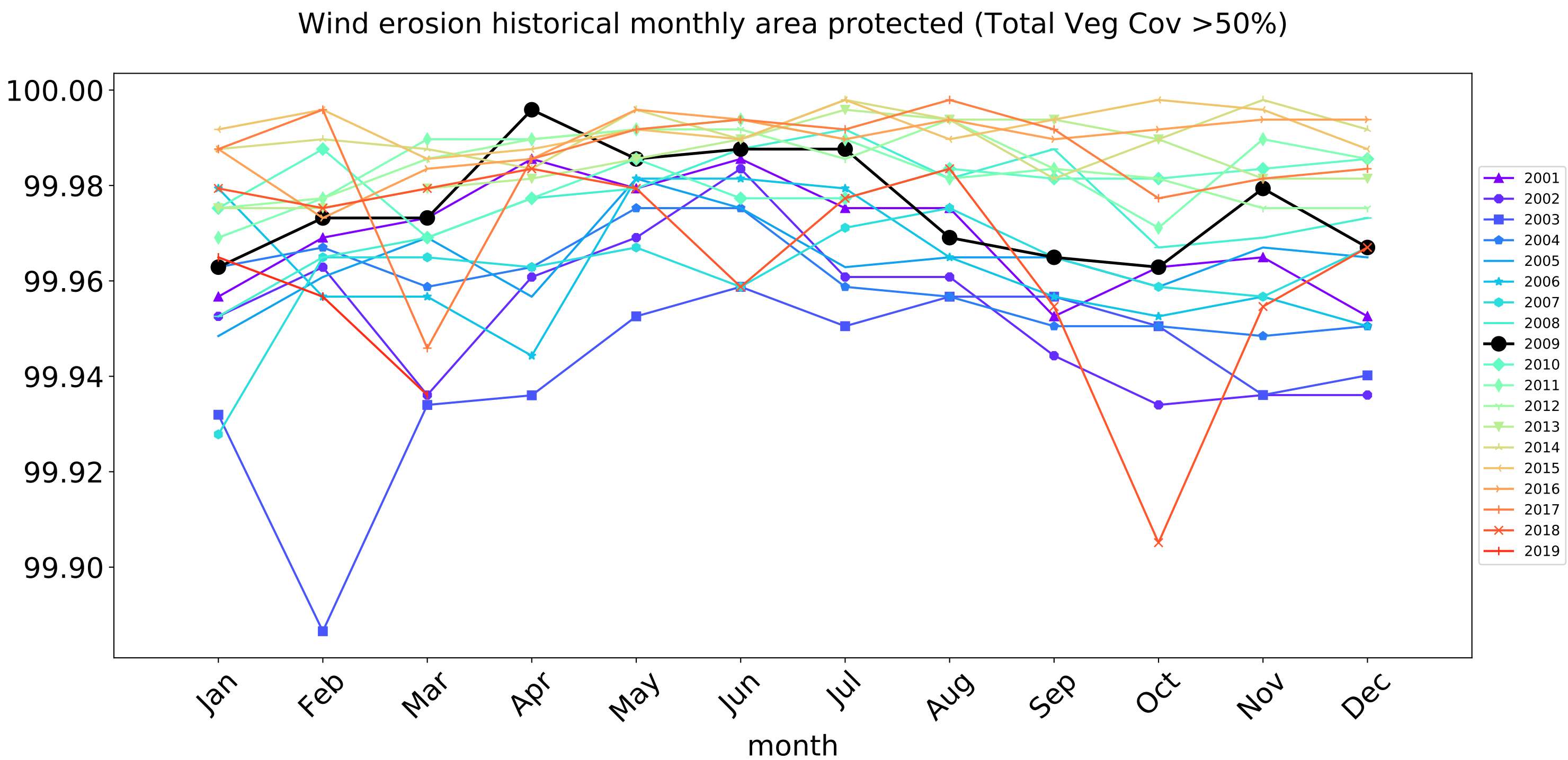
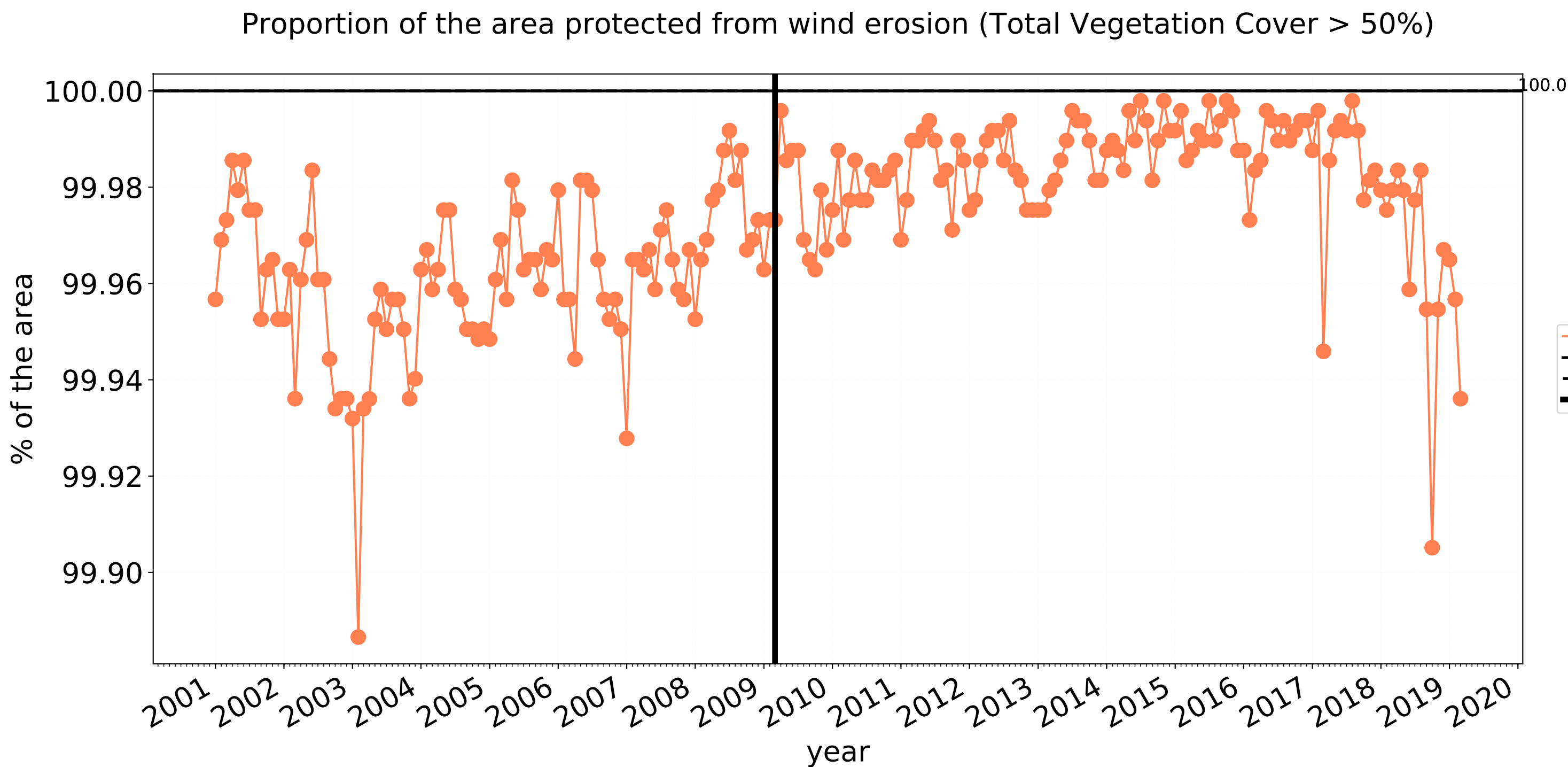
National  
Landcare  
Programme



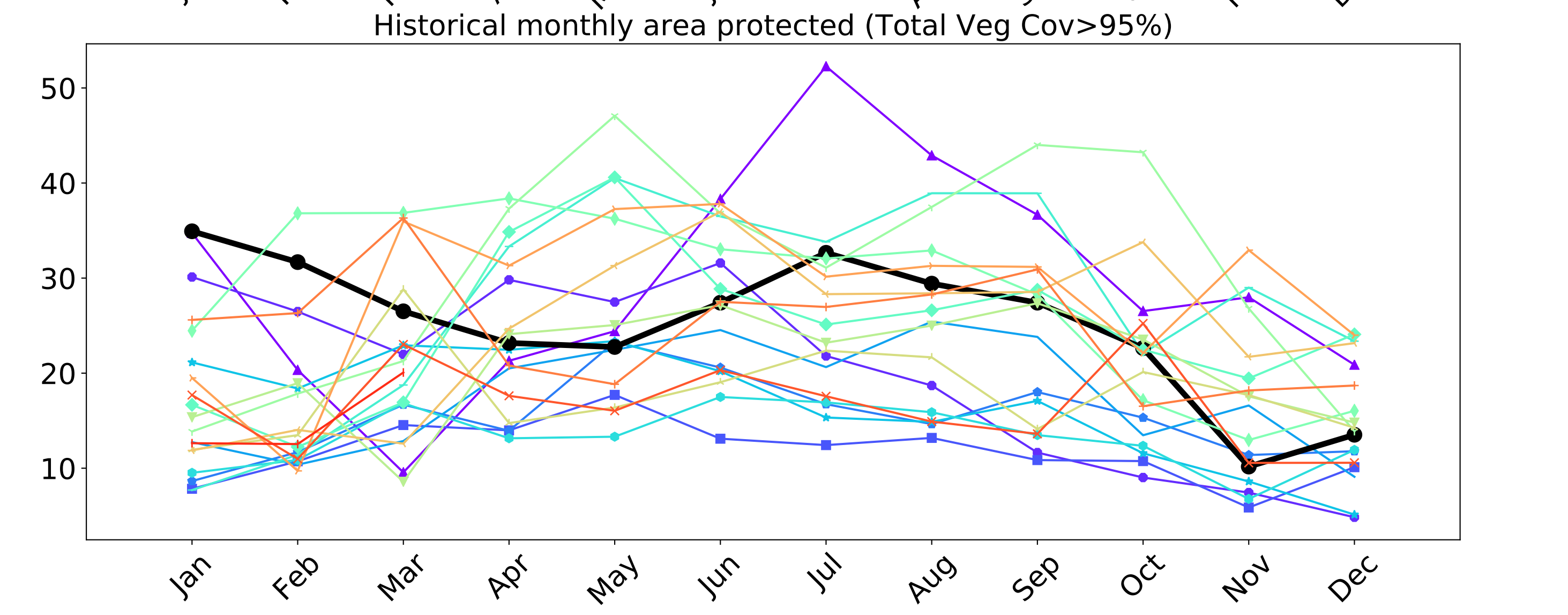
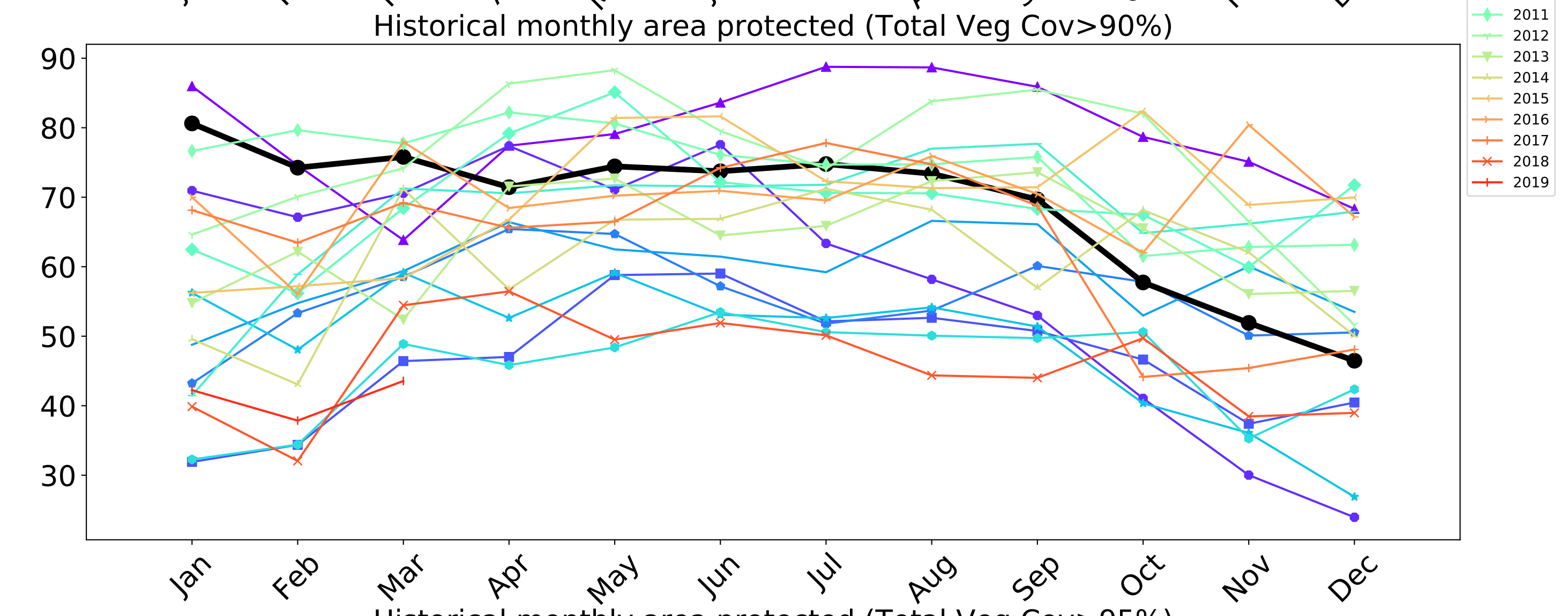
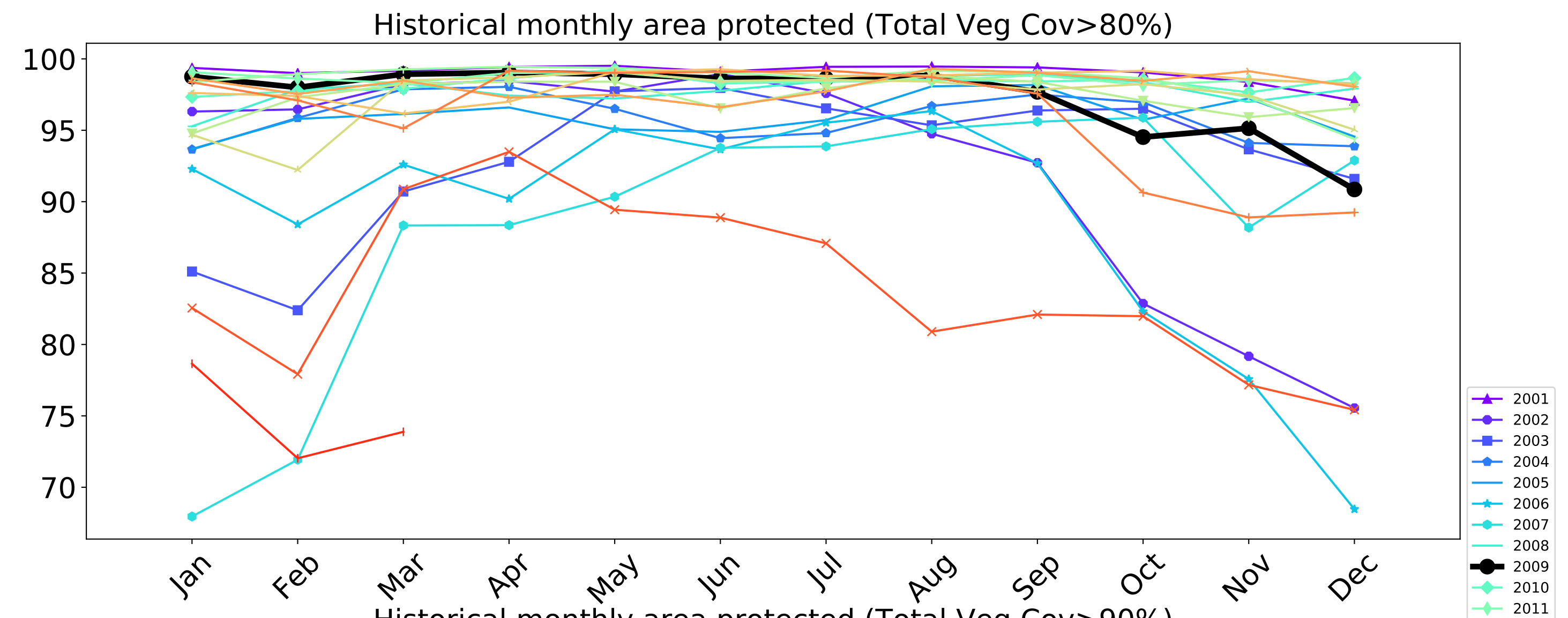
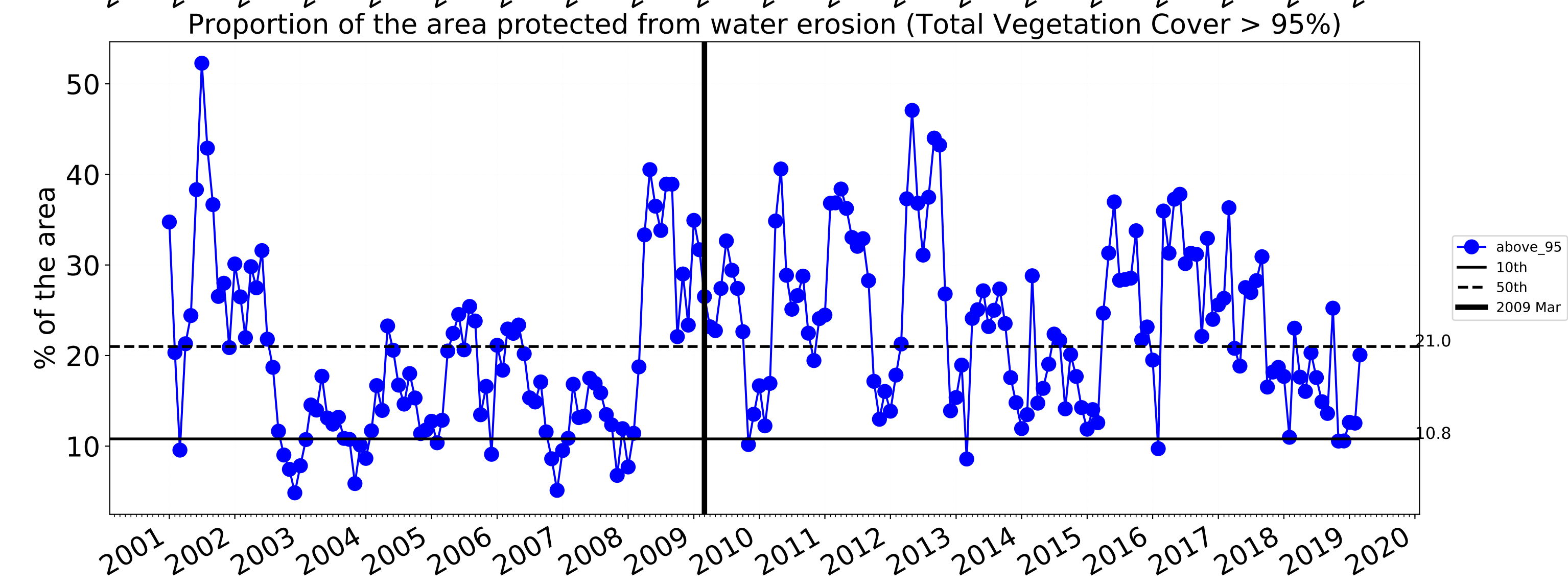
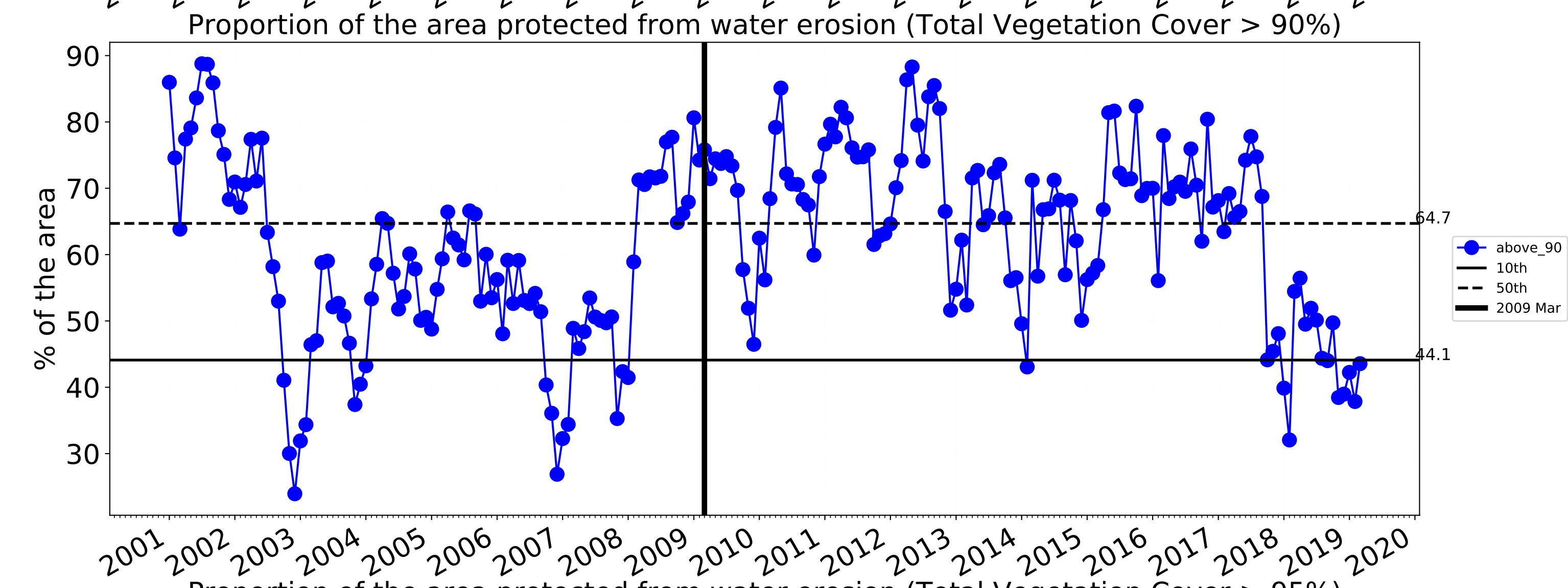
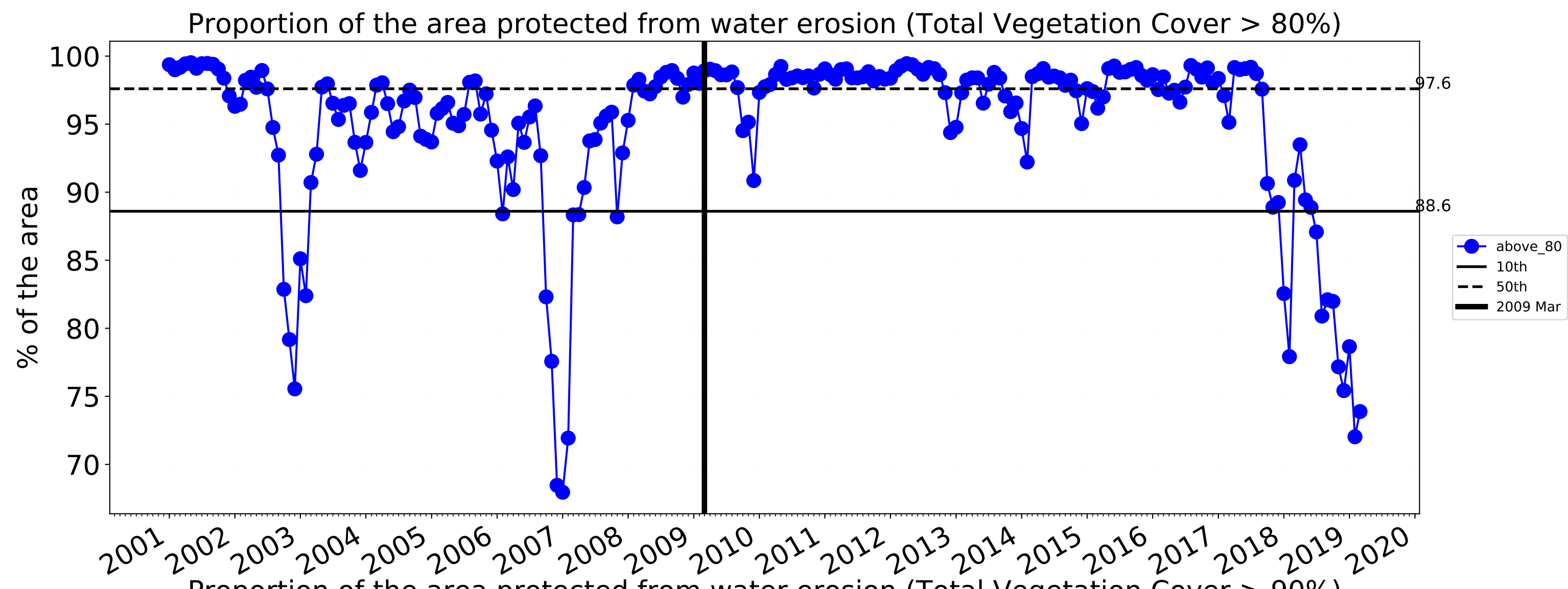
Planning,  
Industry &  
Environment



Grazing non forest timeseries









# Grazing Woodland forest

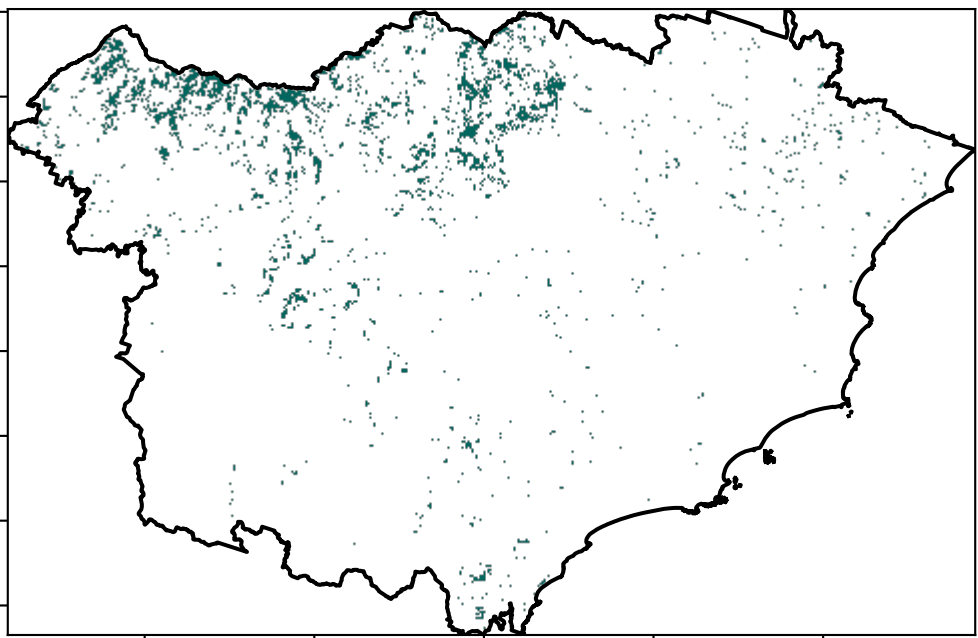
Land use and forest cover

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

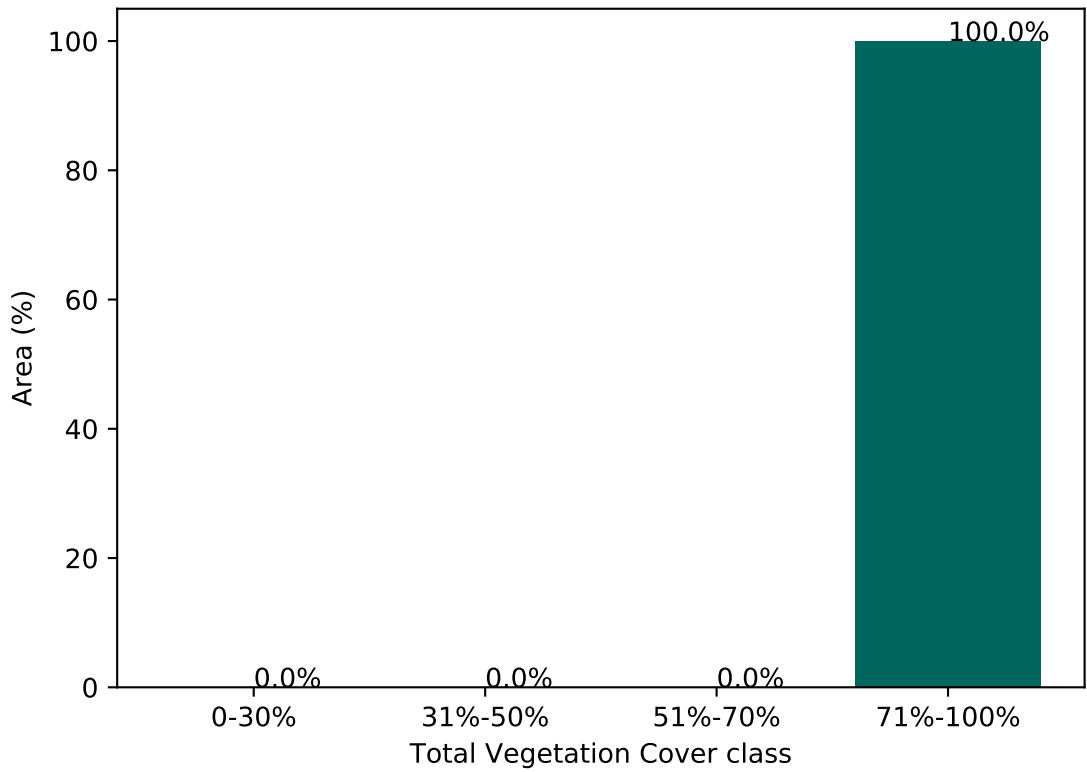


1 Agriculture - Grazing - Woodland forest

Total Vegetation Cover [%]



Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)



Area  
protected  
100.0% of  
region  
(120,575  
ha)

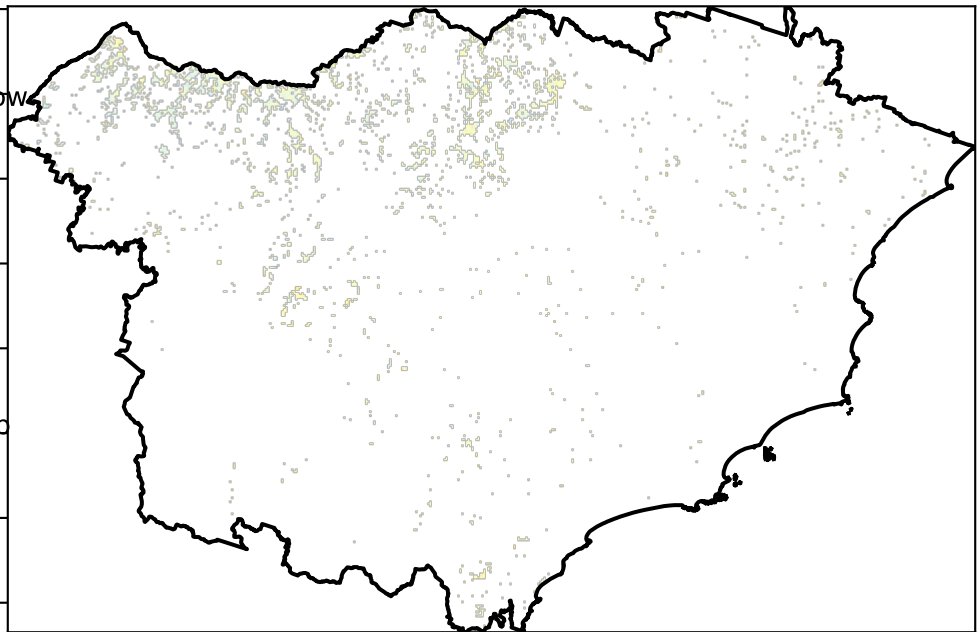
% Area protected from wind erosion (>50%)



Area  
protected  
100.0% of  
region  
(120,575  
ha)

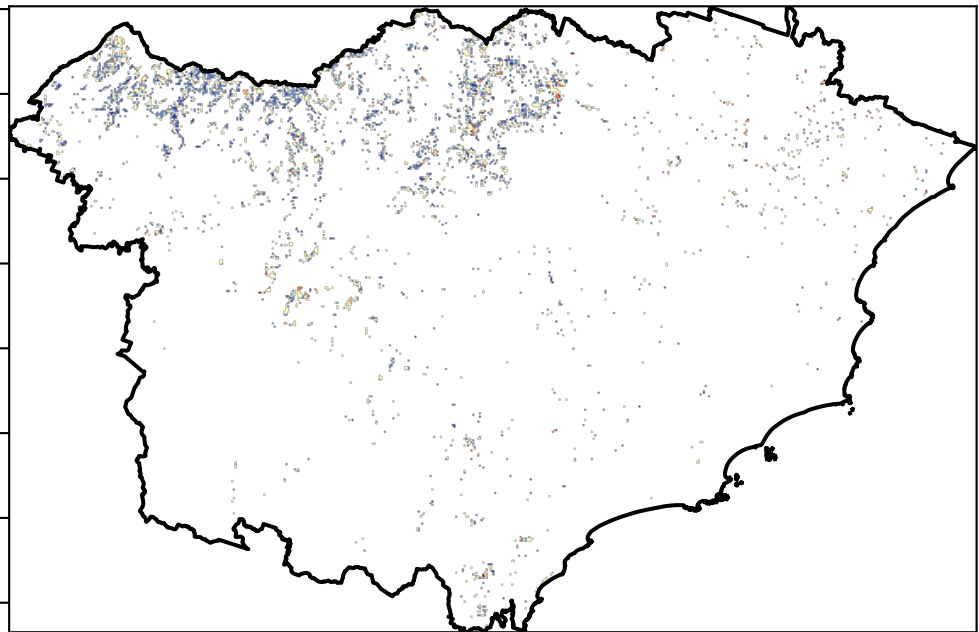
Total Vegetation Cover Anomaly [%]

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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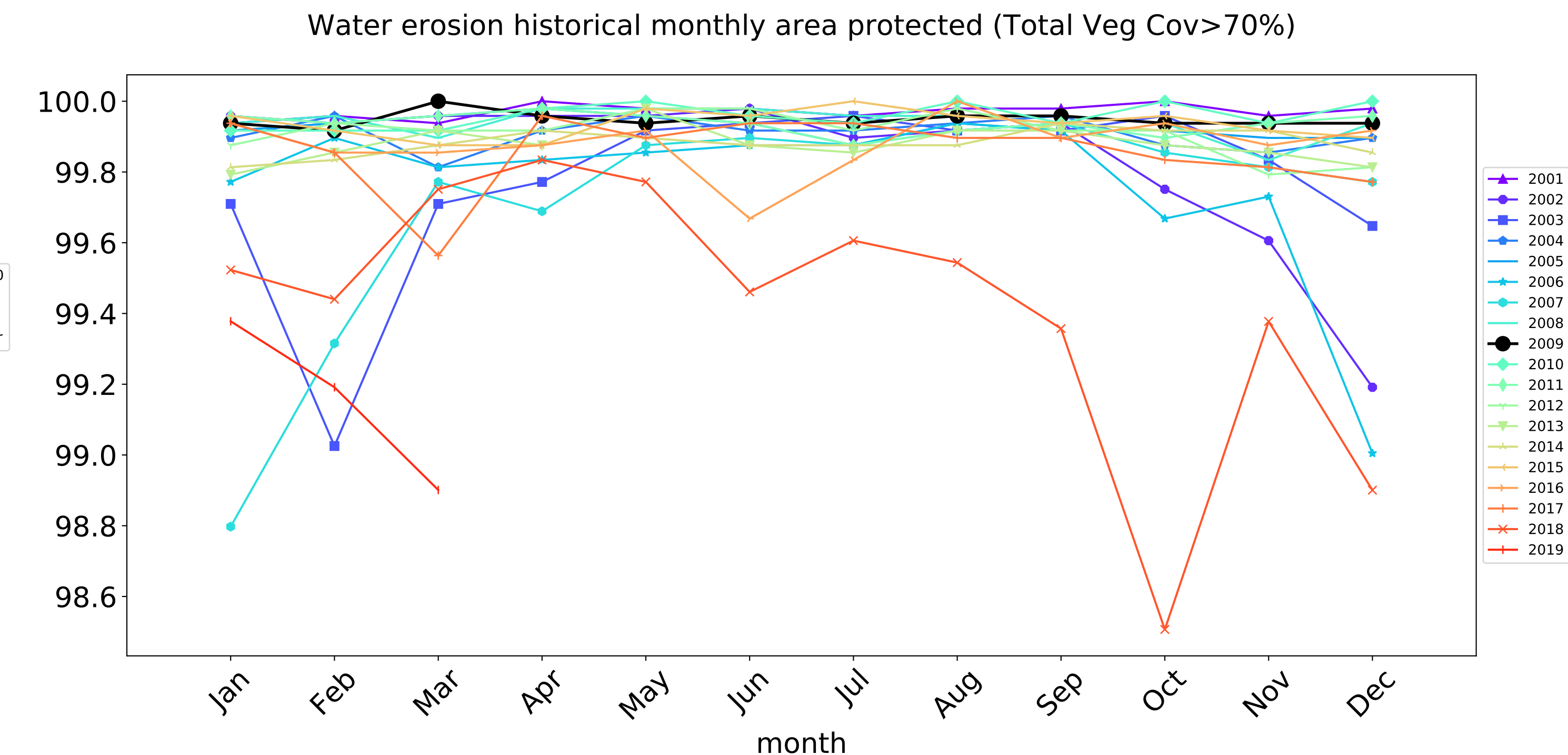
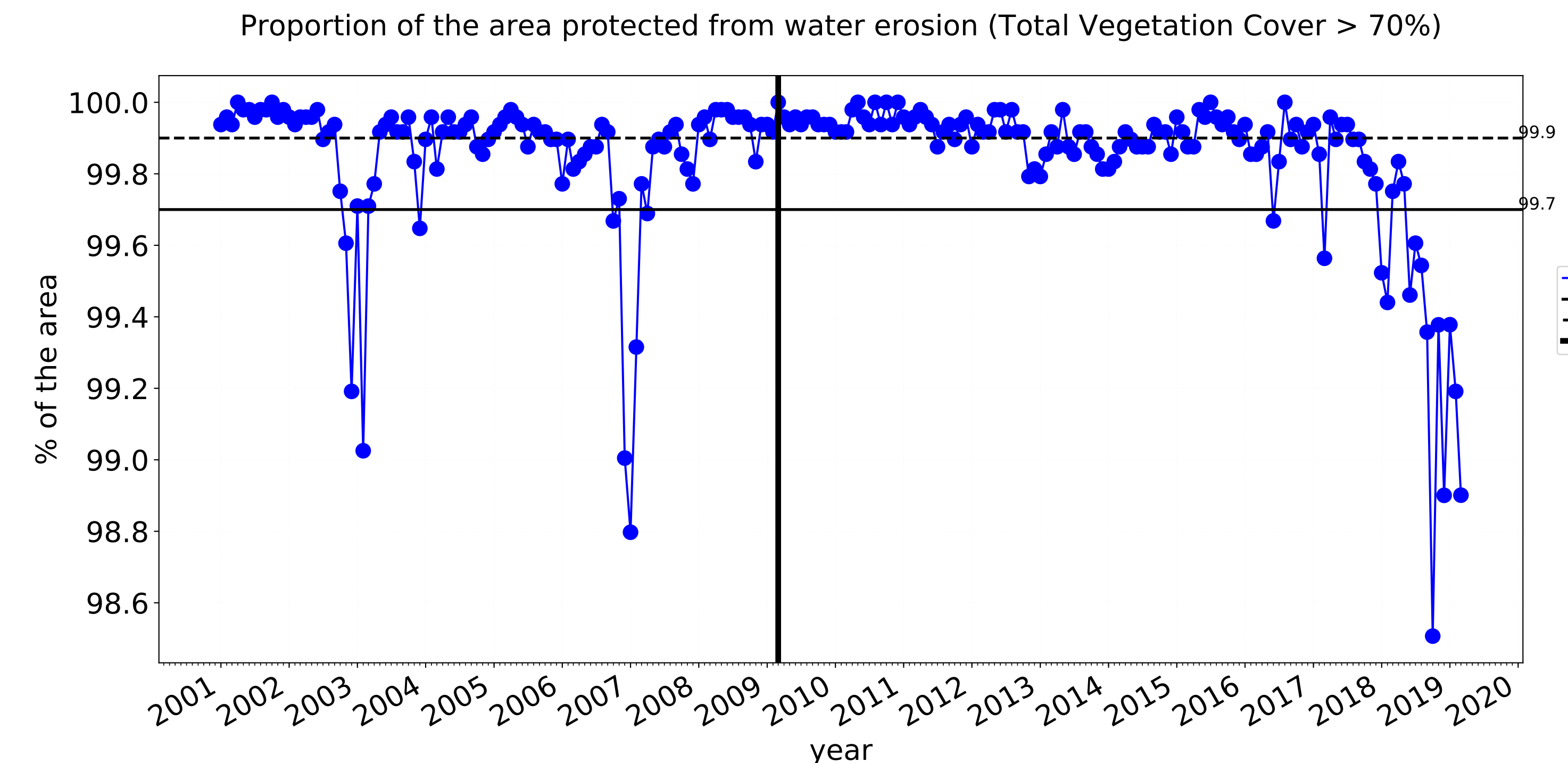
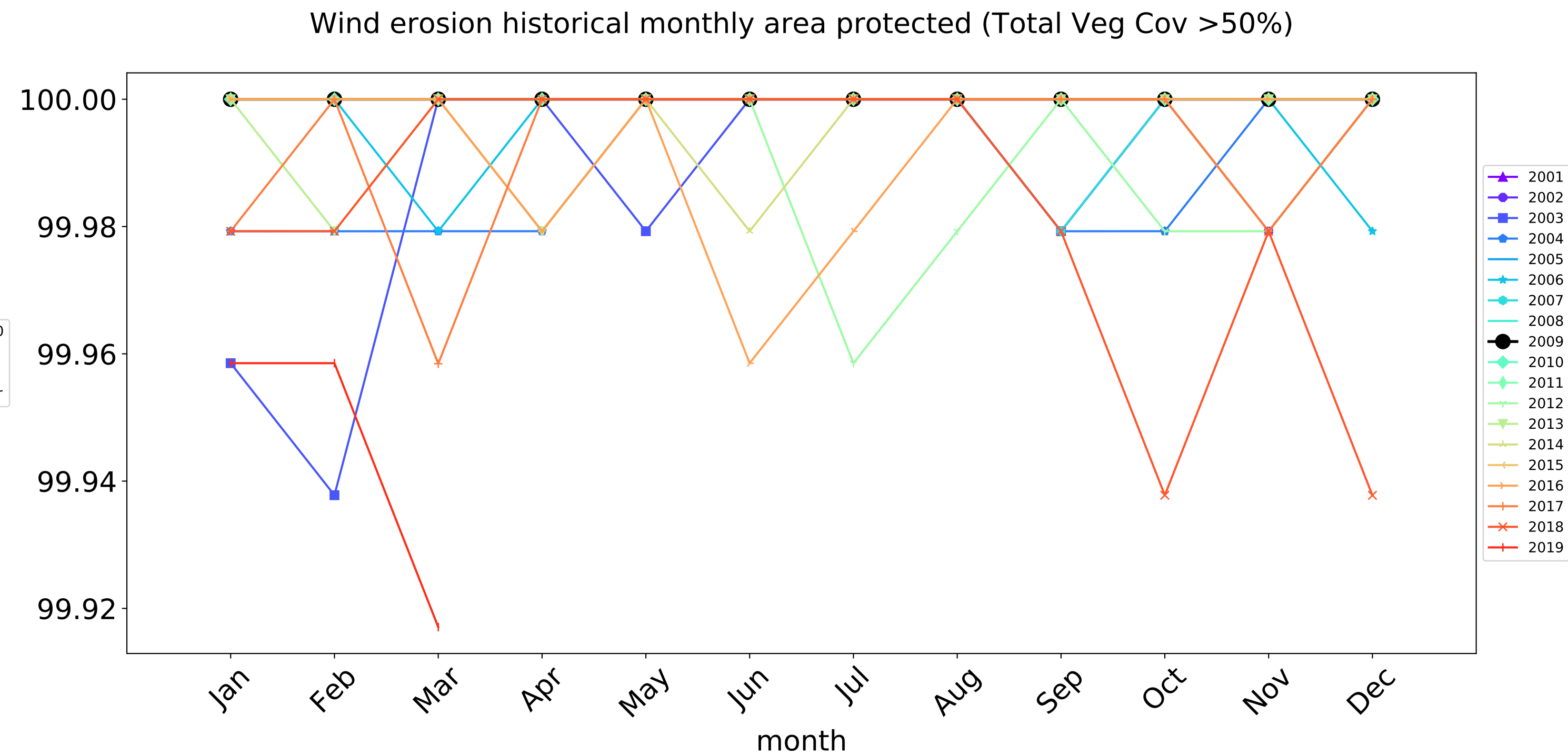
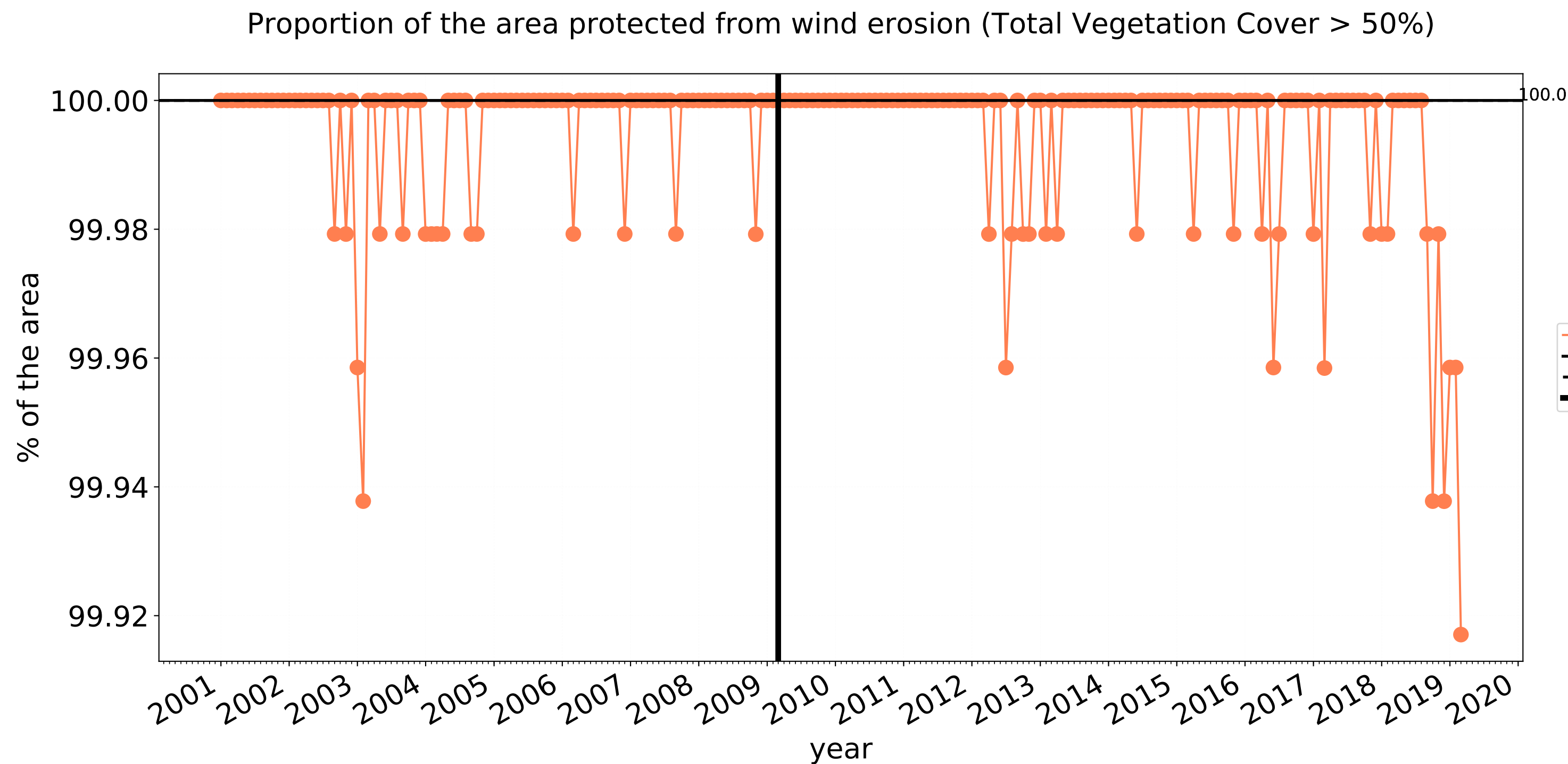
National  
Landcare  
Programme



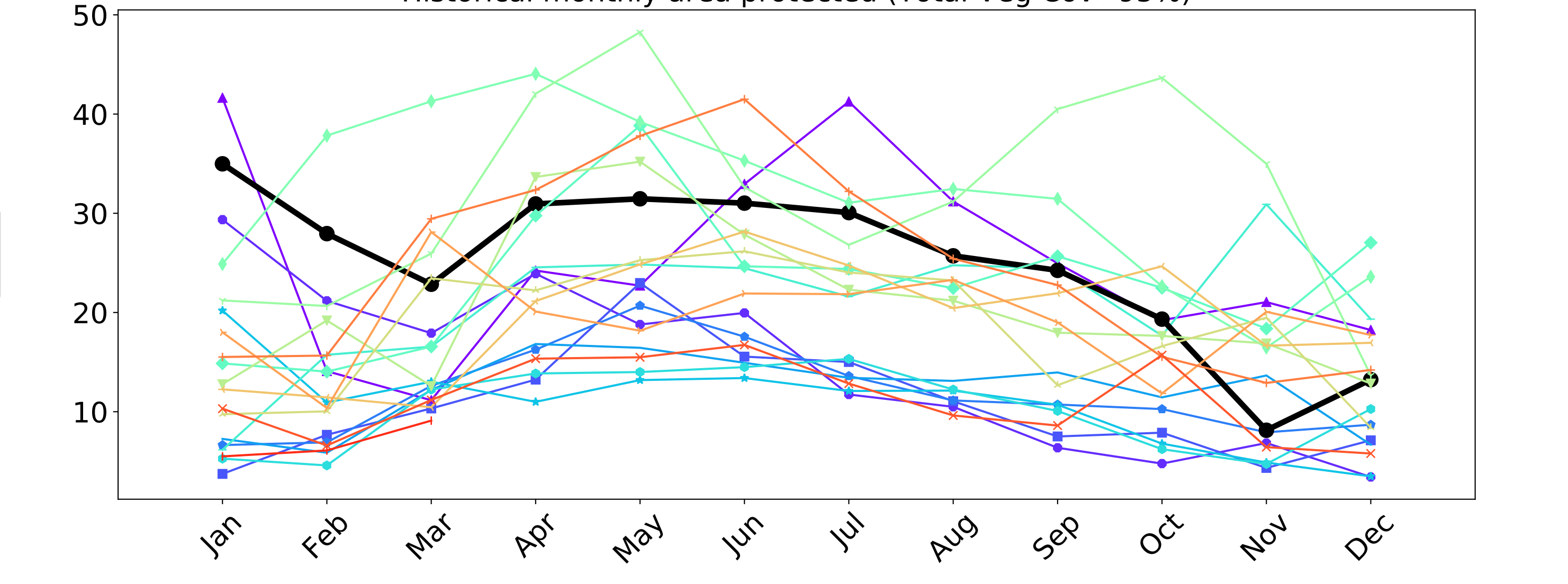
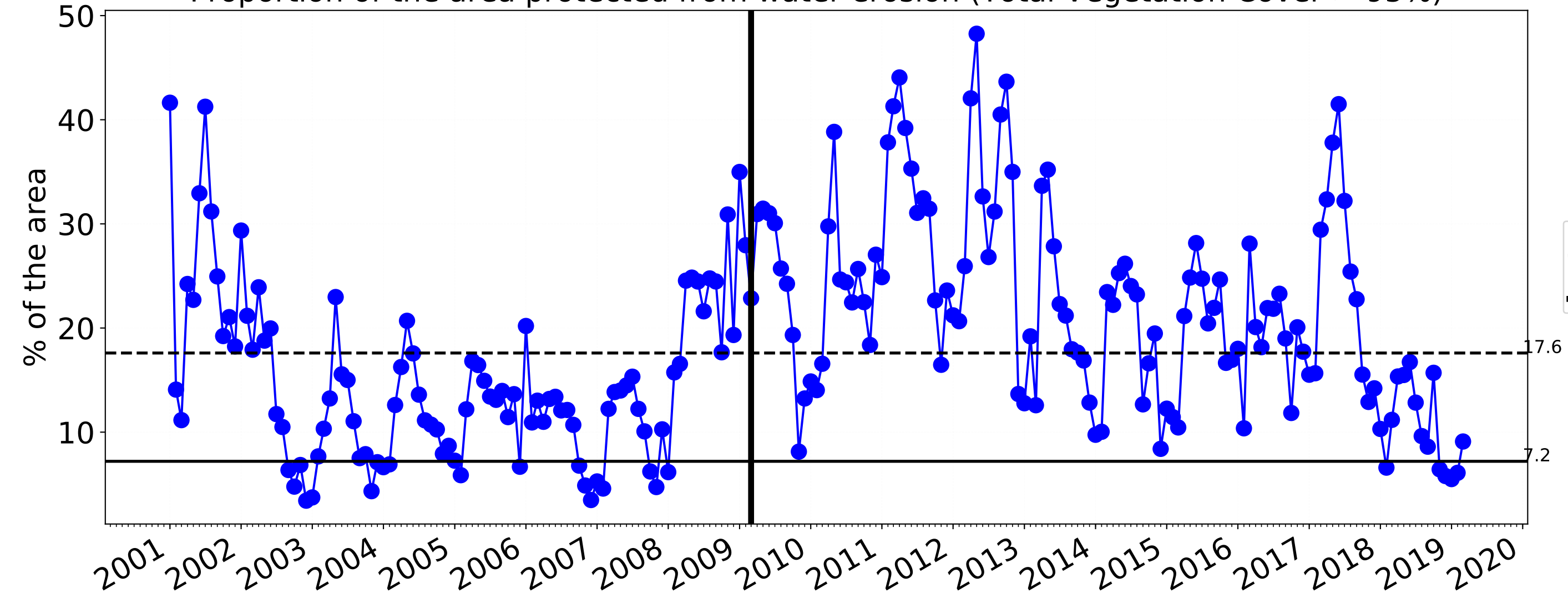
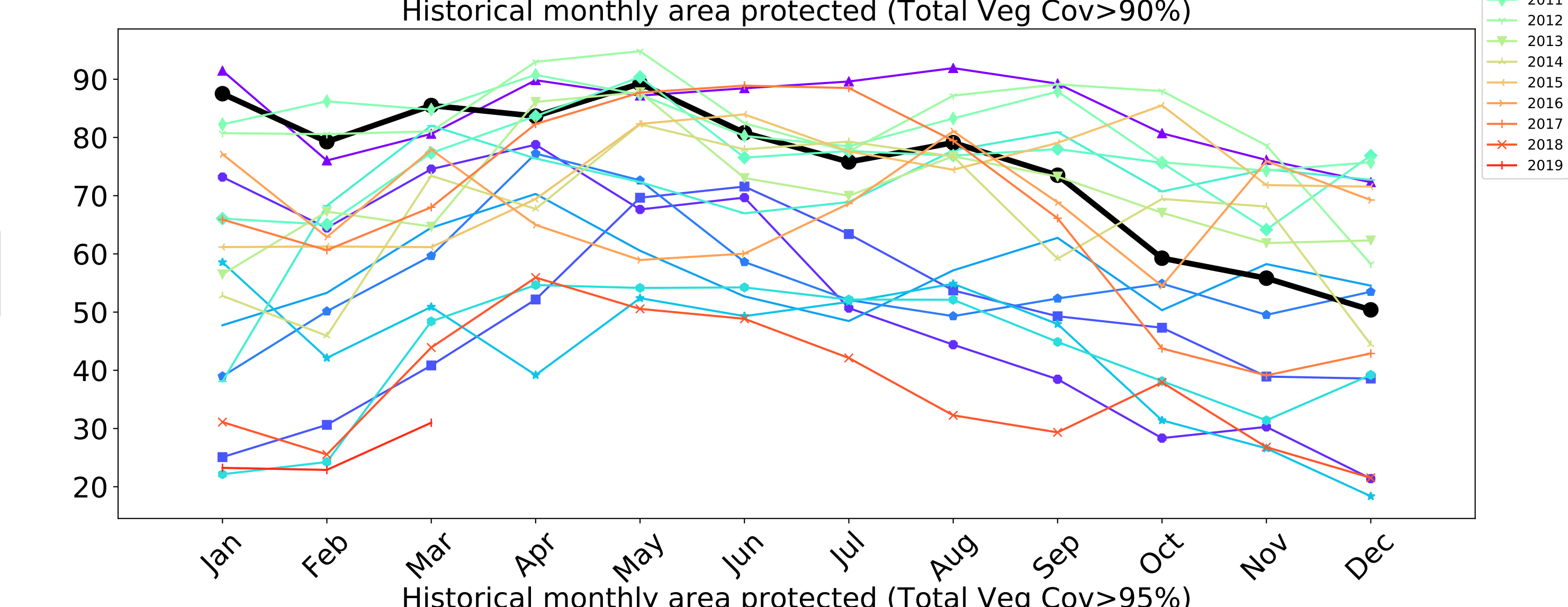
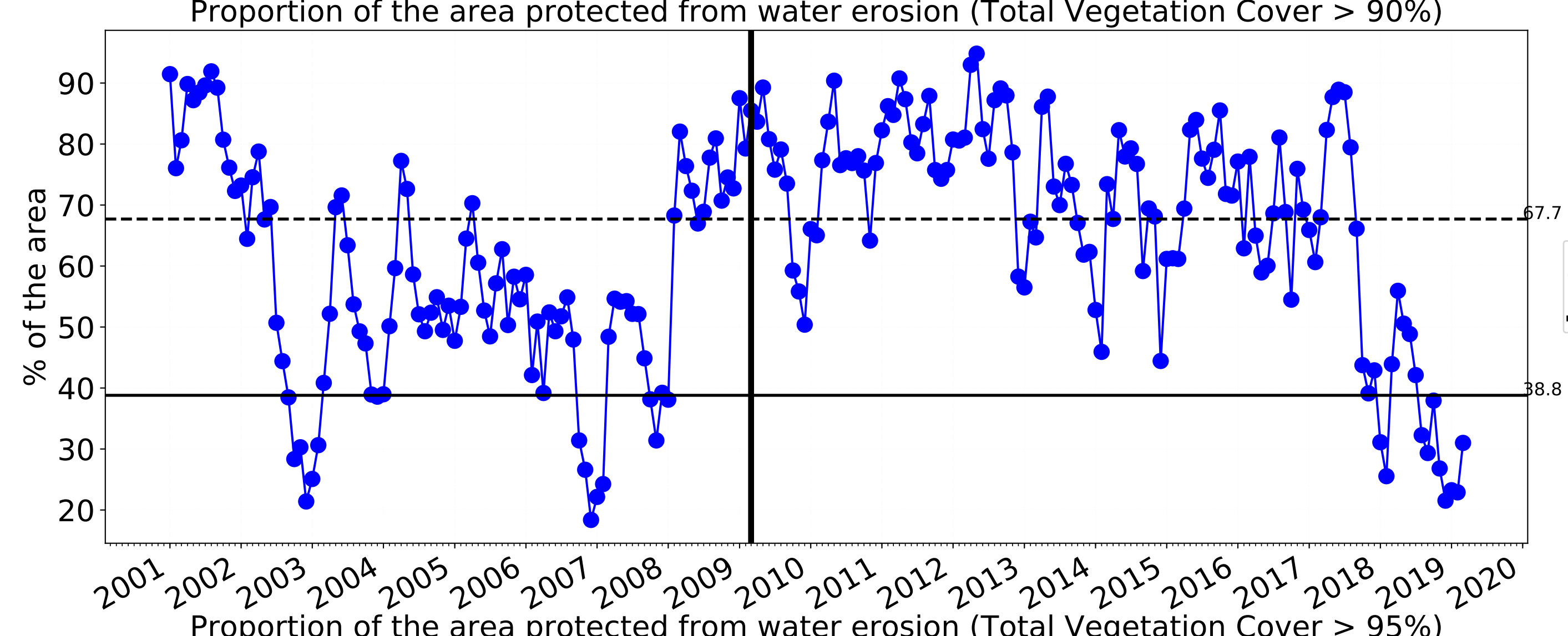
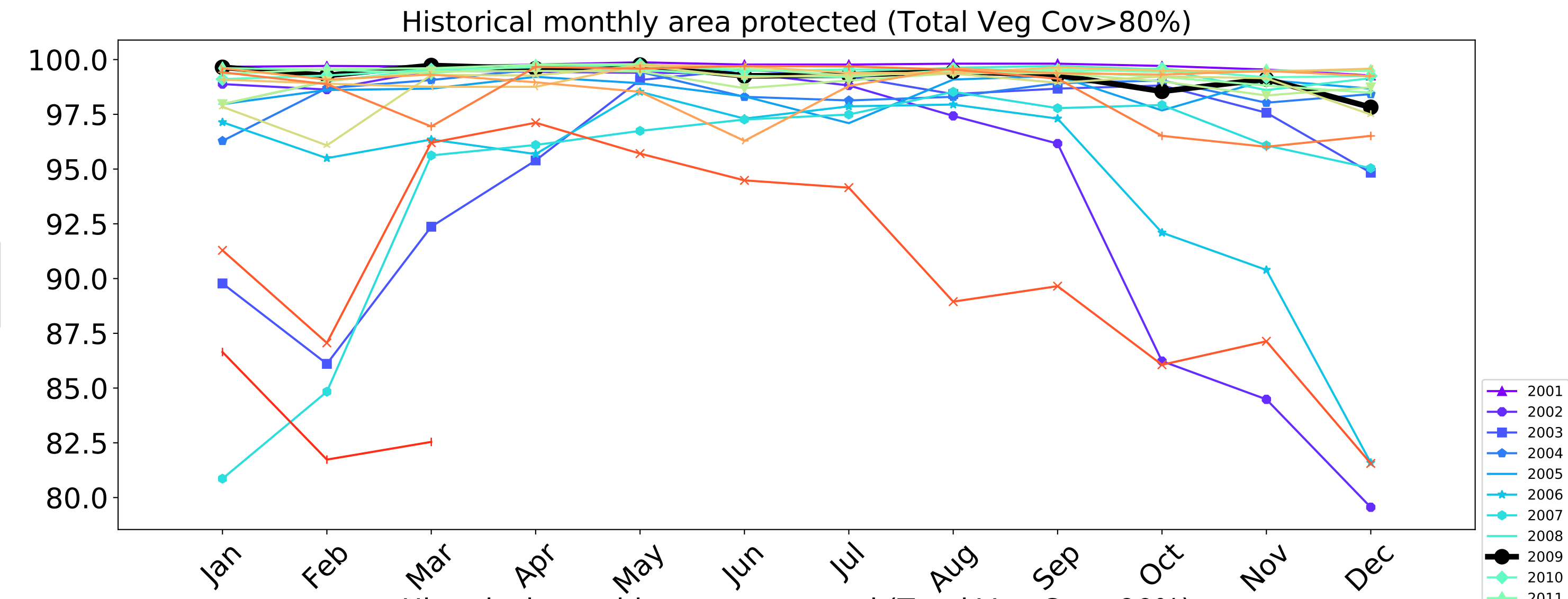
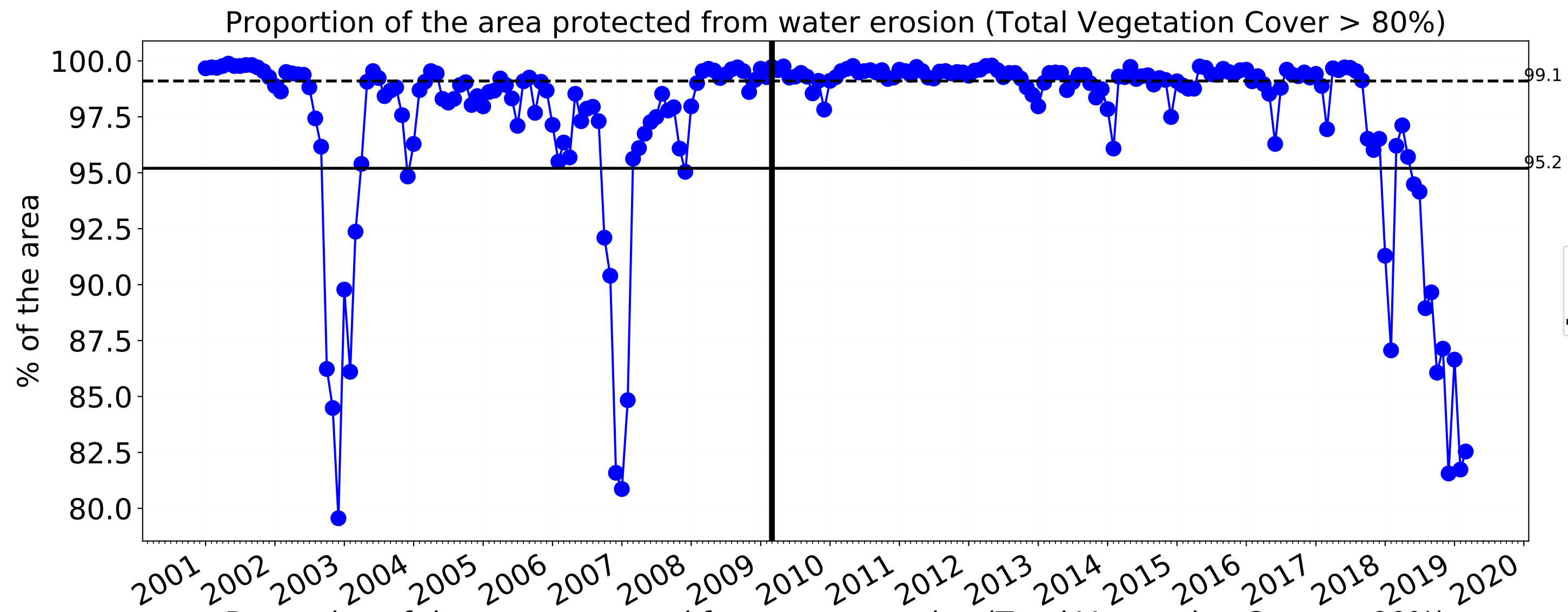
Planning,  
Industry &  
Environment



Grazing Woodland forest timeseries









# Grazing - Forest (non woodland)

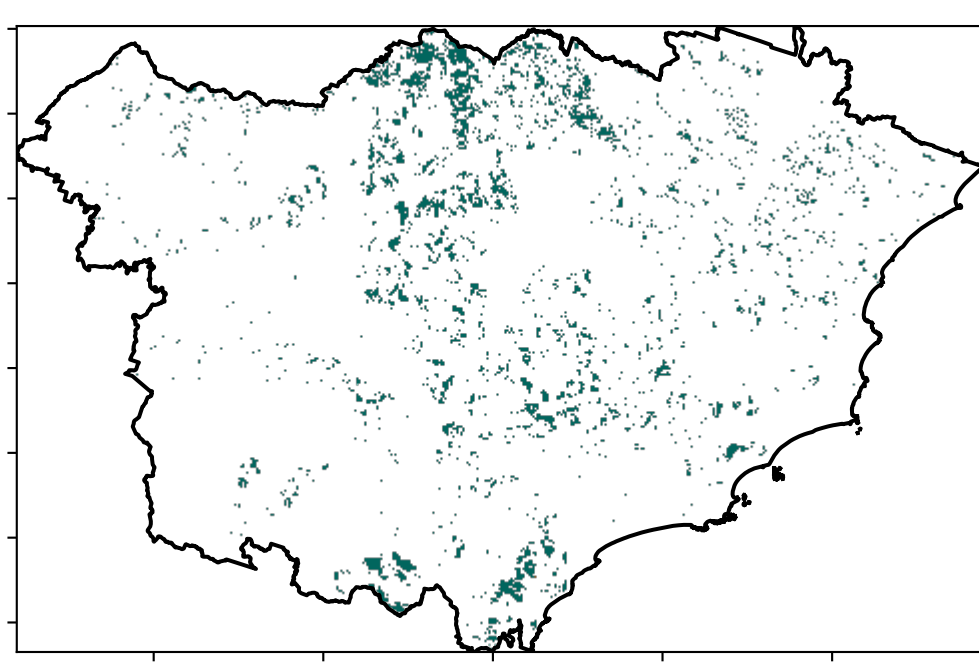
Land use and forest cover

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

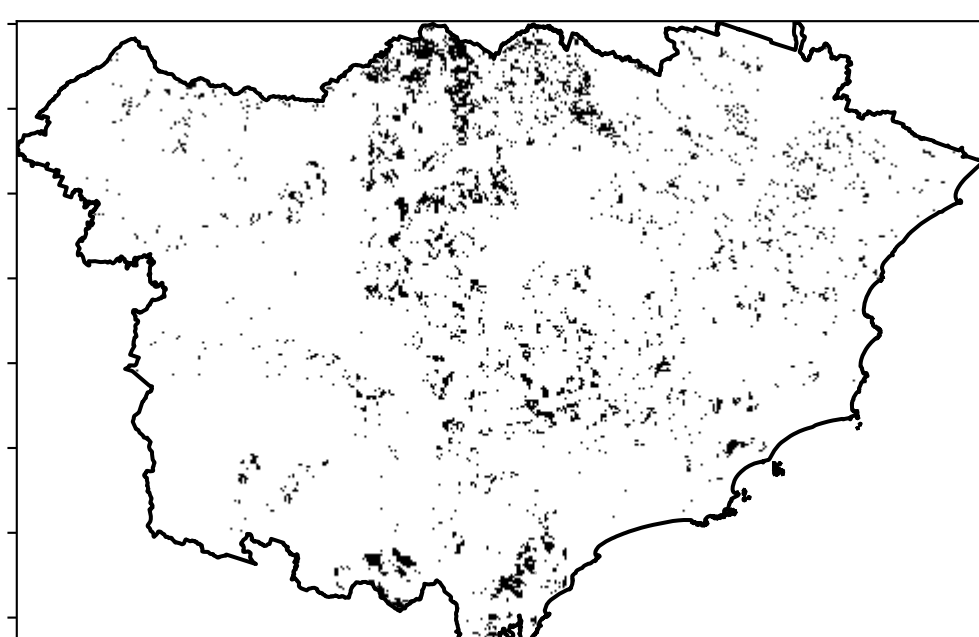
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

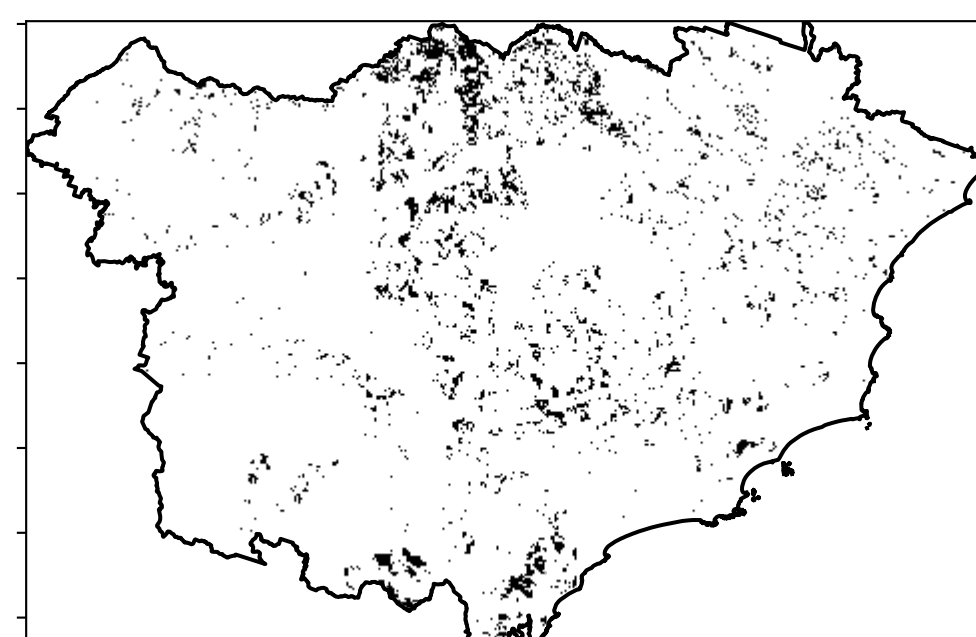


% Area protected from water erosion (>70%)



Area not protected  
0.1% of region  
(169 ha)  
Area protected  
99.9% of region  
(168,905 ha)

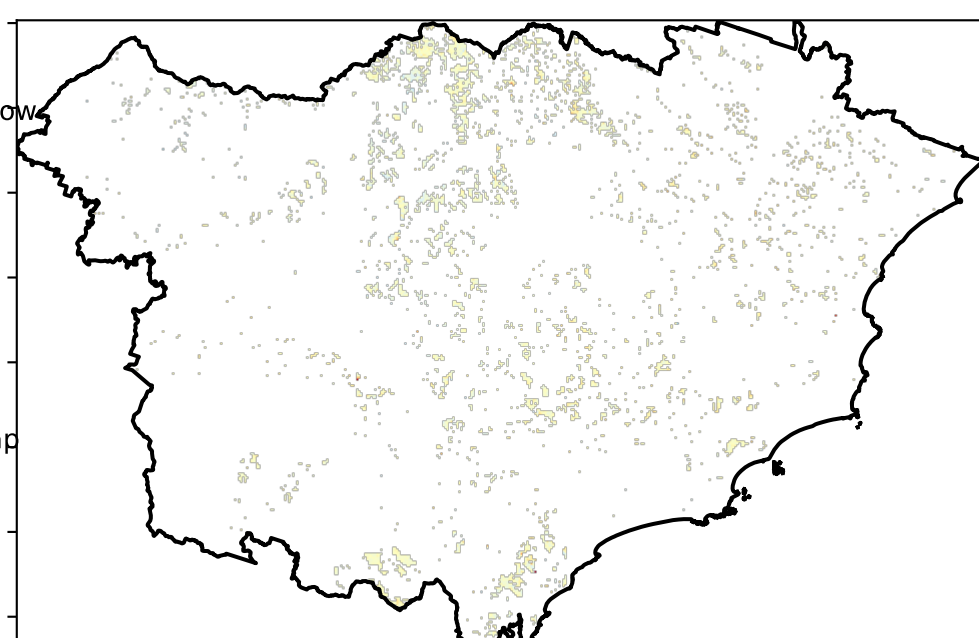
% Area protected from wind erosion (>50%)



Area not protected  
0.0% of region (0 ha)  
Area protected  
100.0% of region  
(169,075 ha)

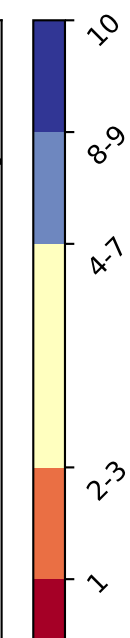
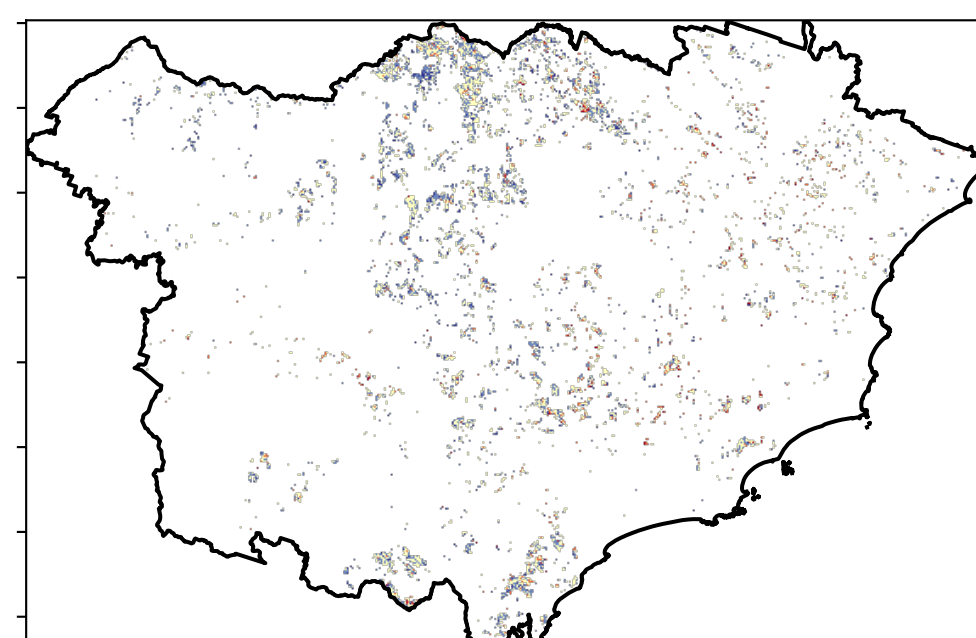
Total Vegetation Cover Anomaly [%]

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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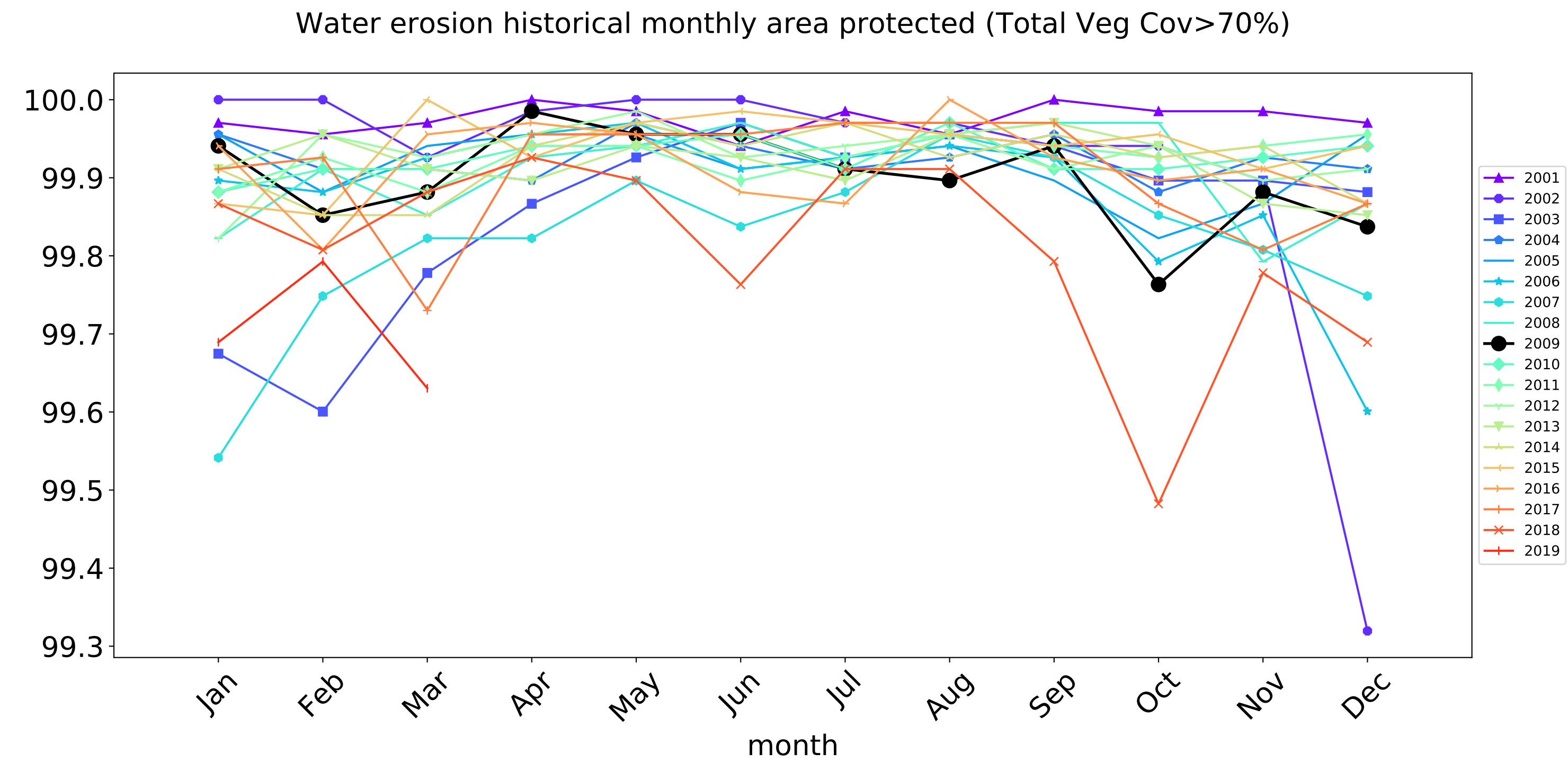
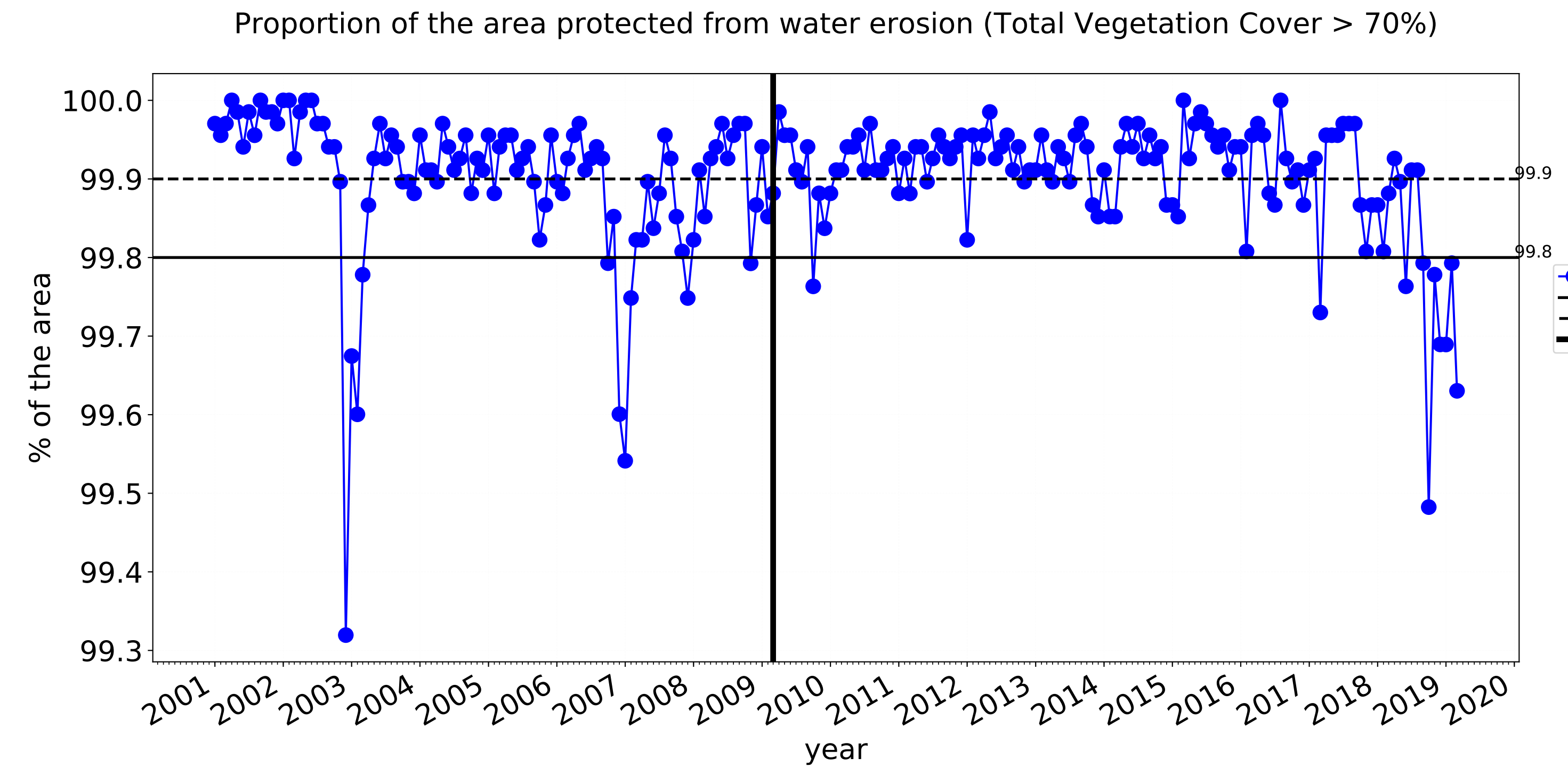
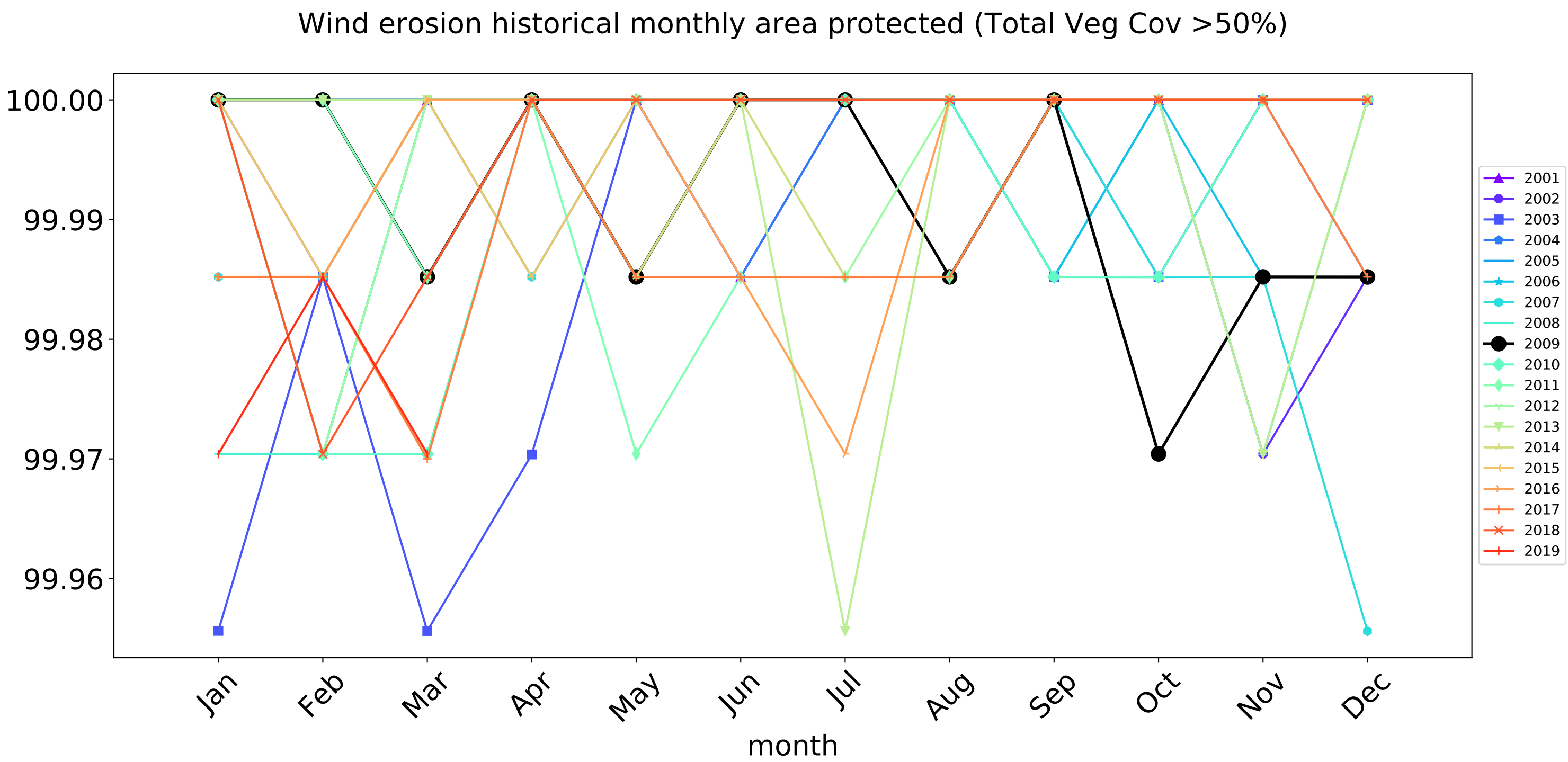
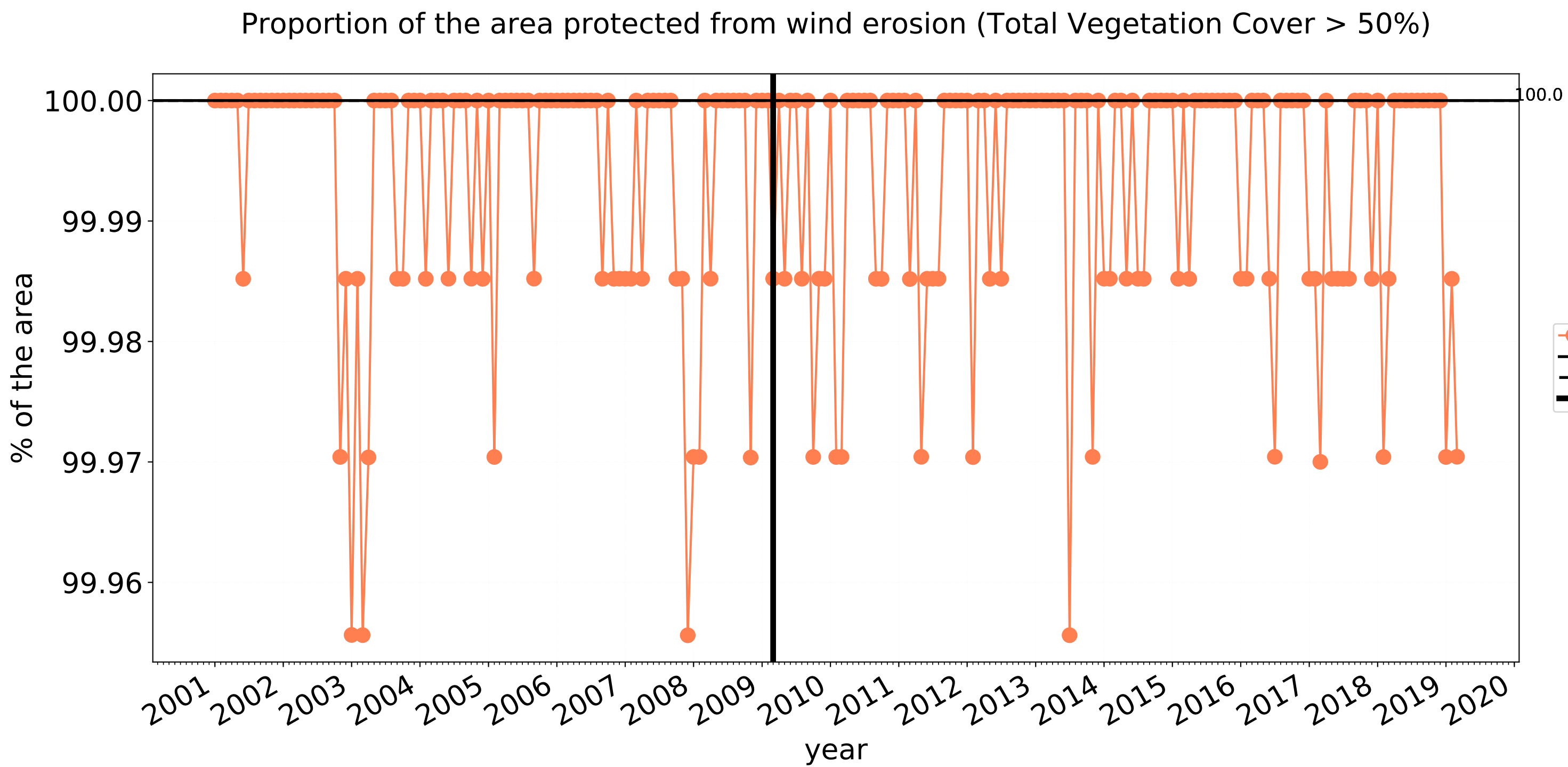
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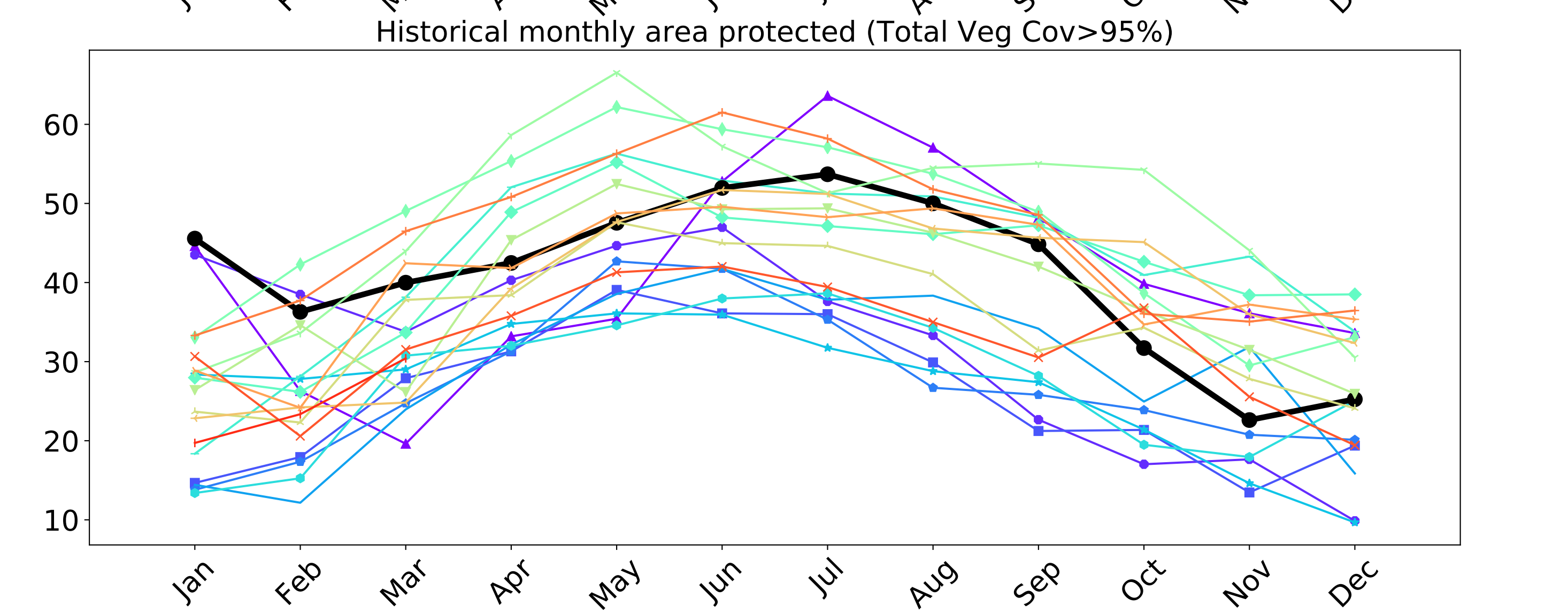
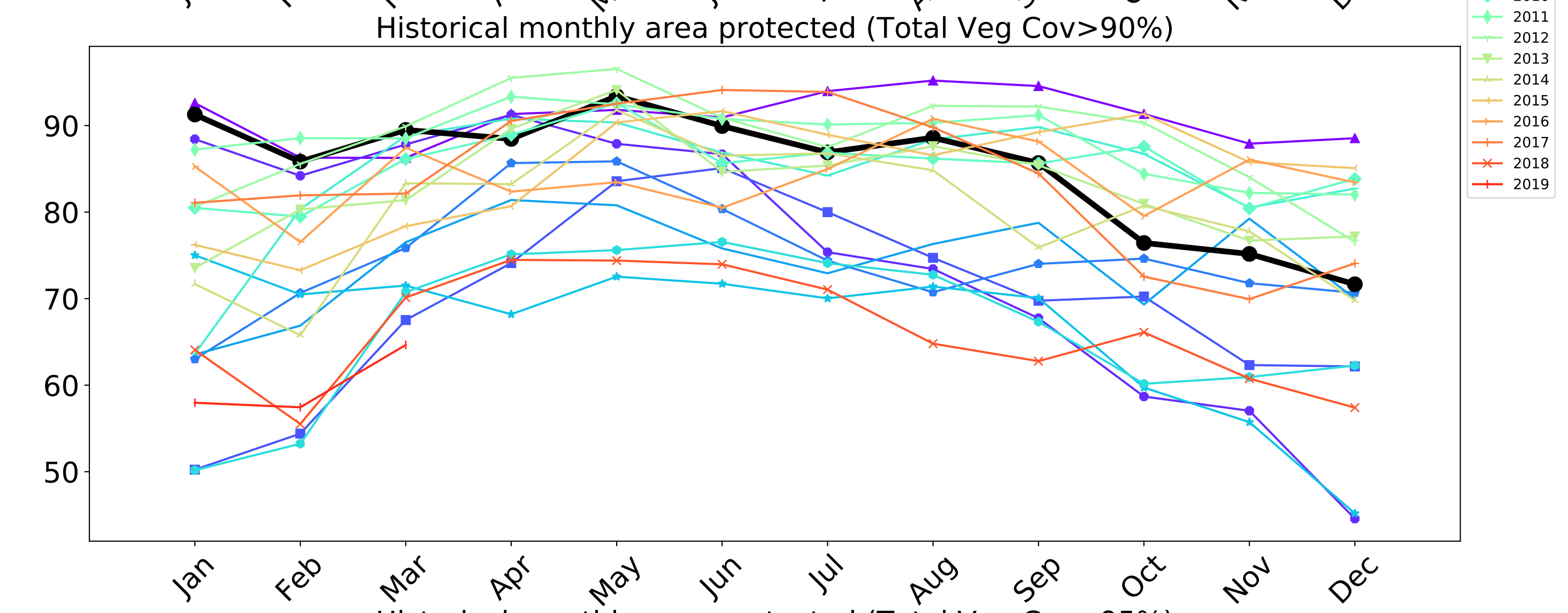
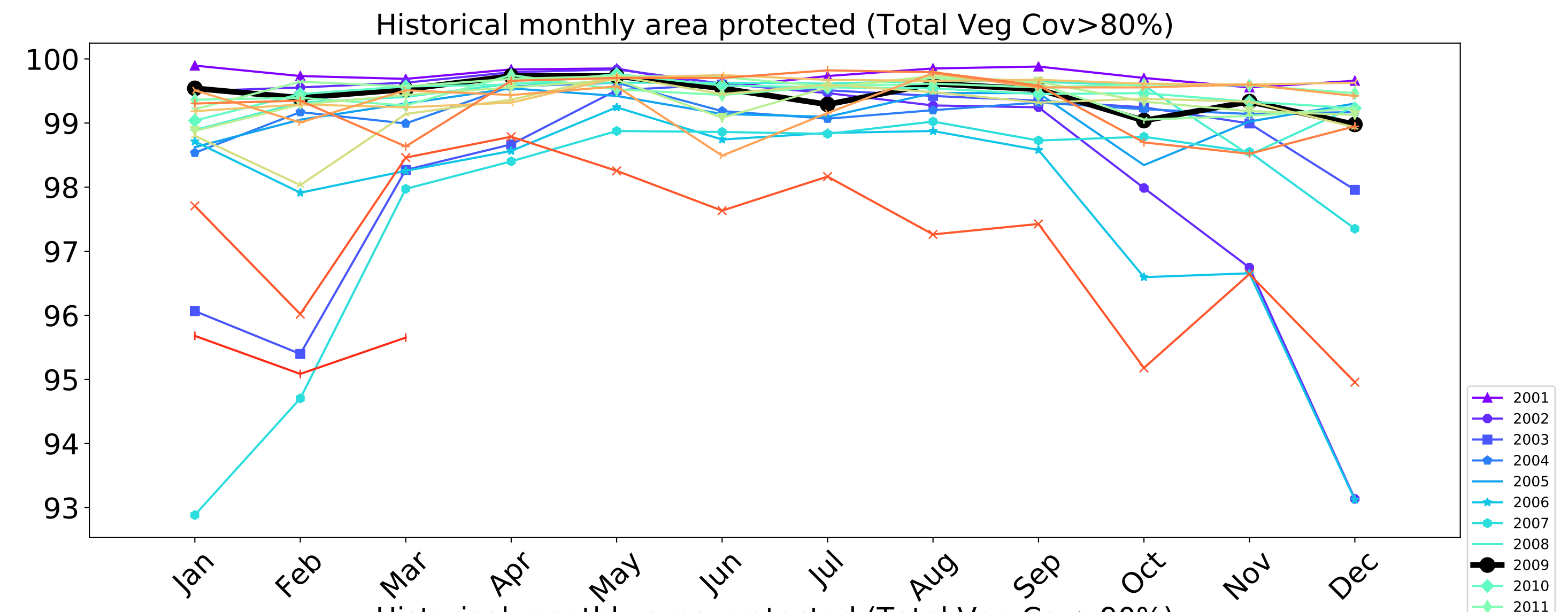
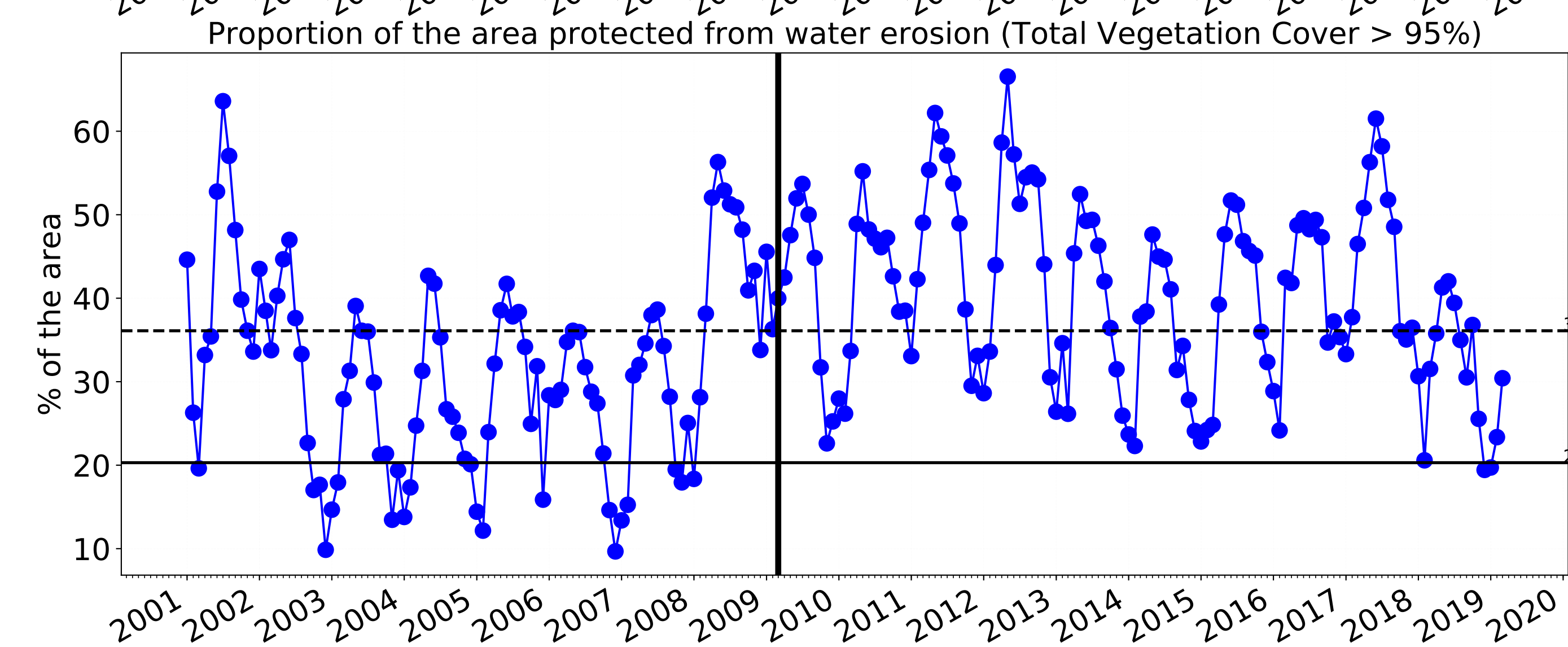
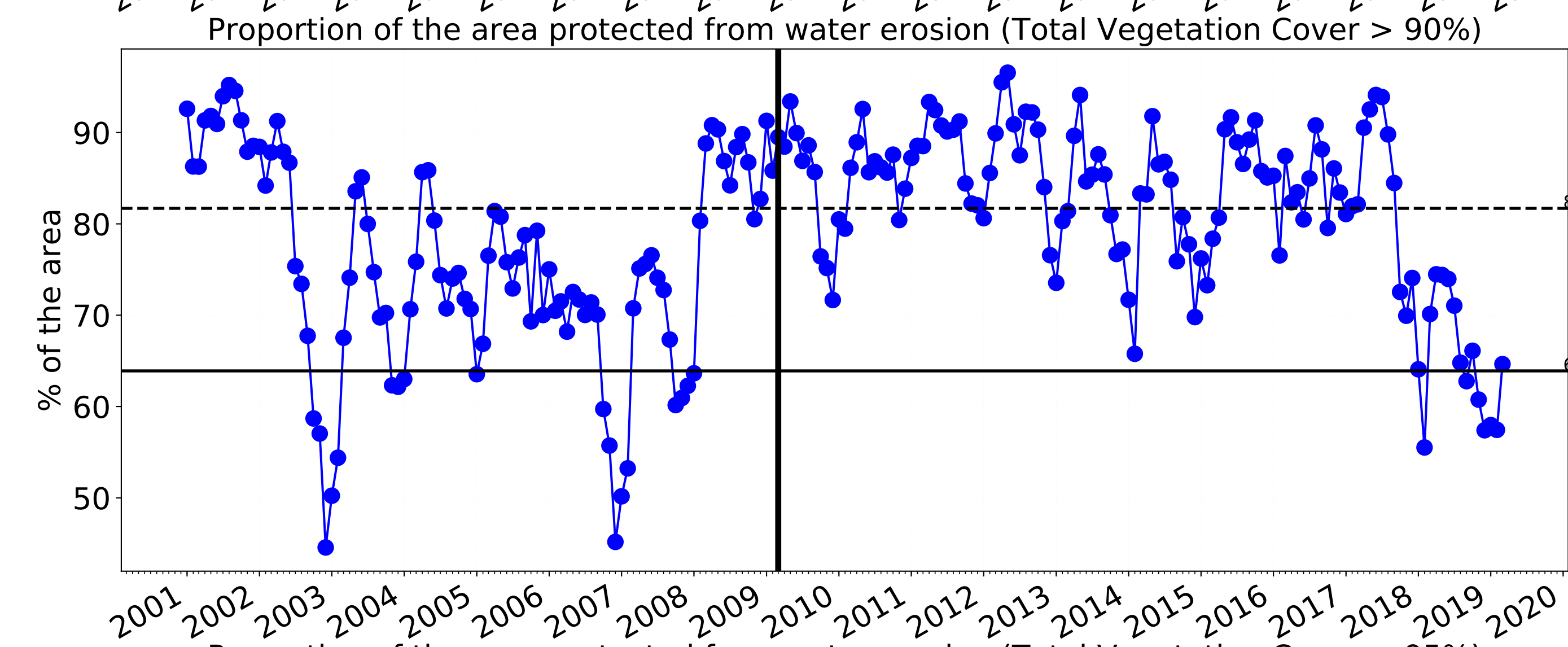
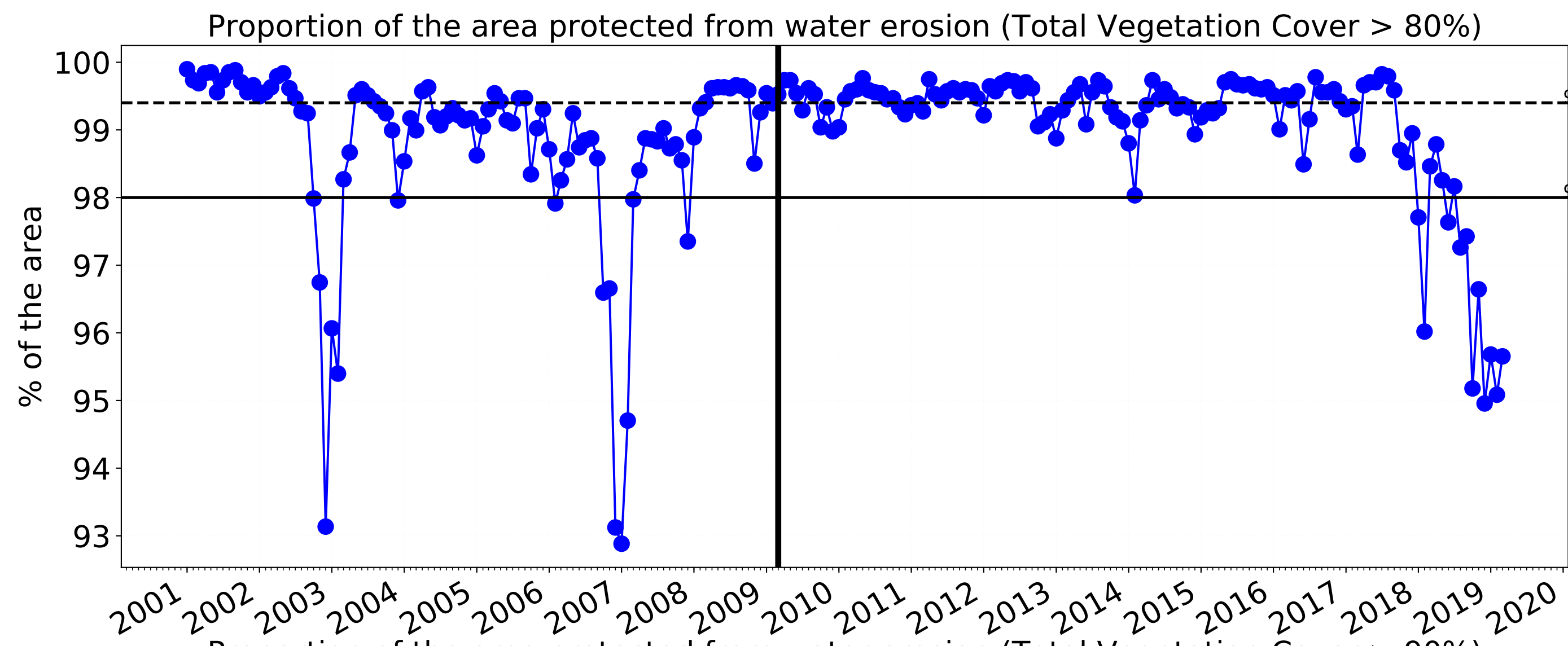
Planning,  
Industry &  
Environment



Grazing - Forest (non woodland) timeseries







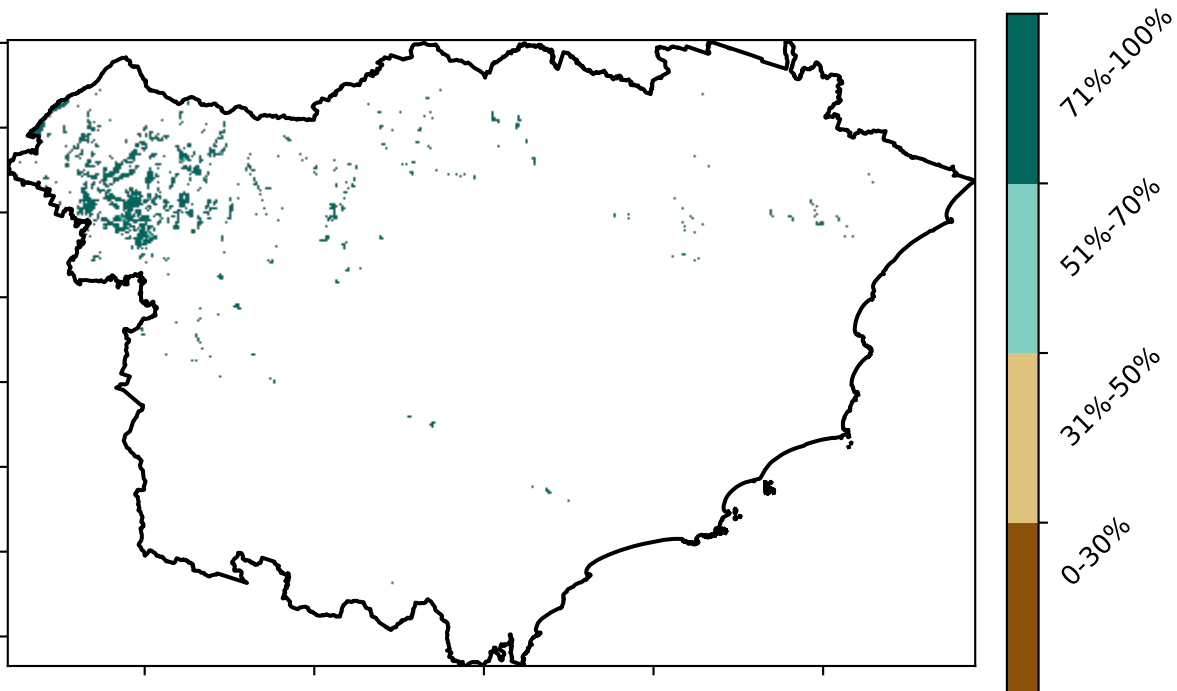


Cropping

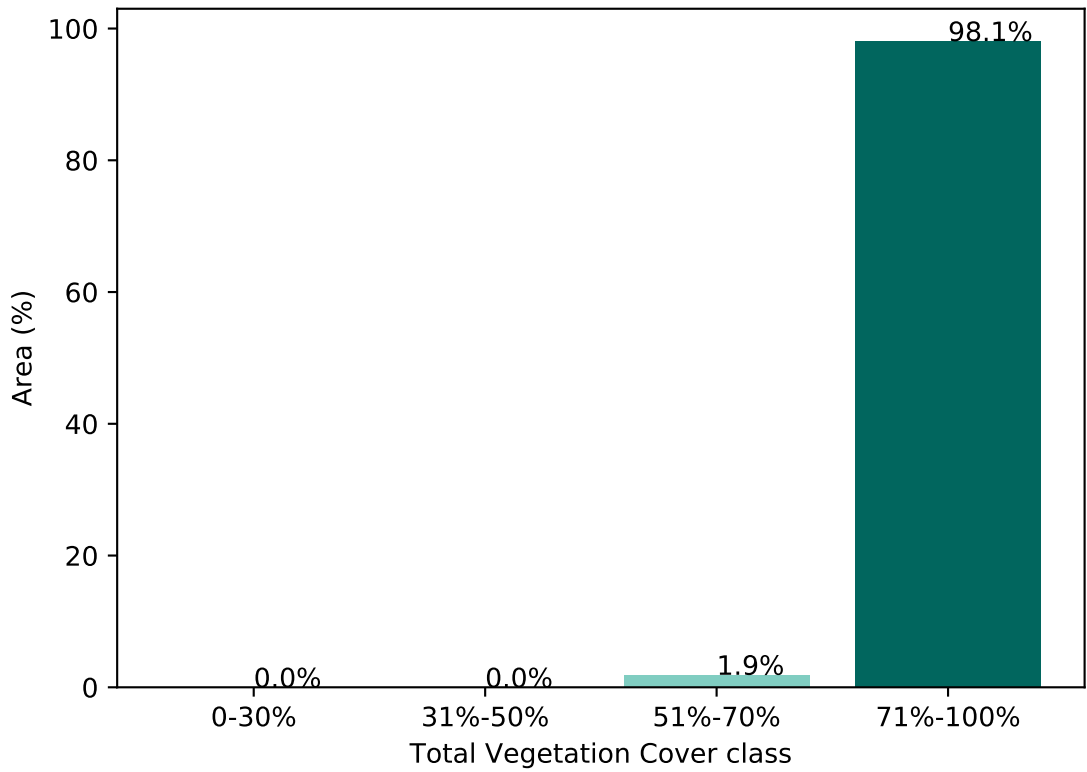
Land use and forest cover



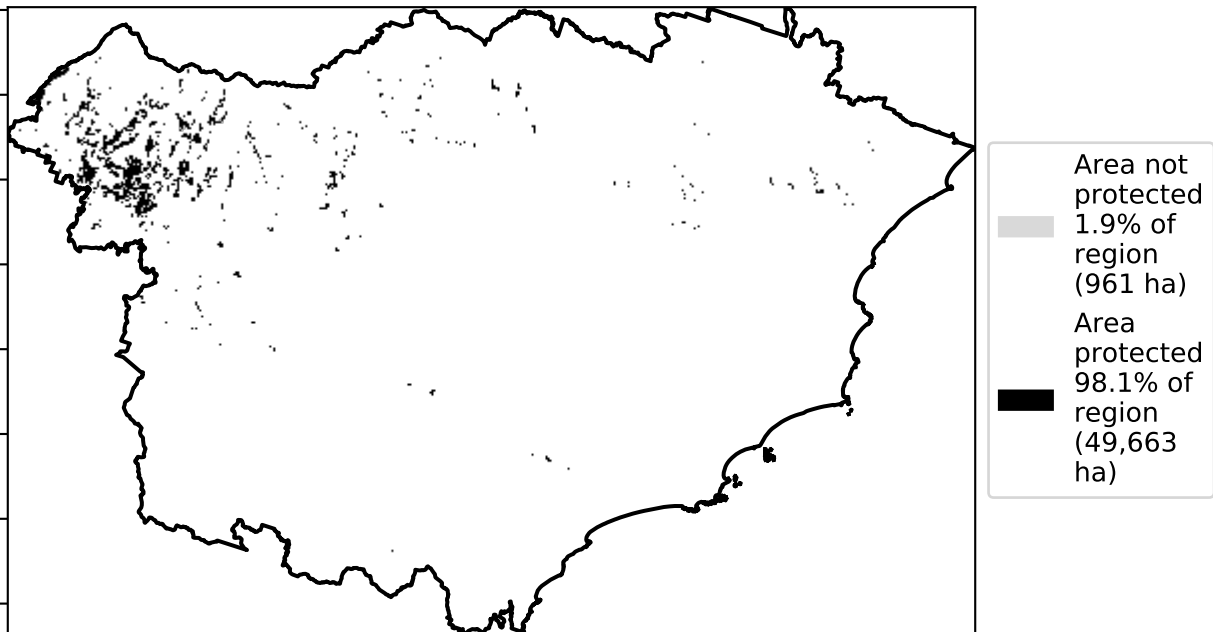
Total Vegetation Cover [%]



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.



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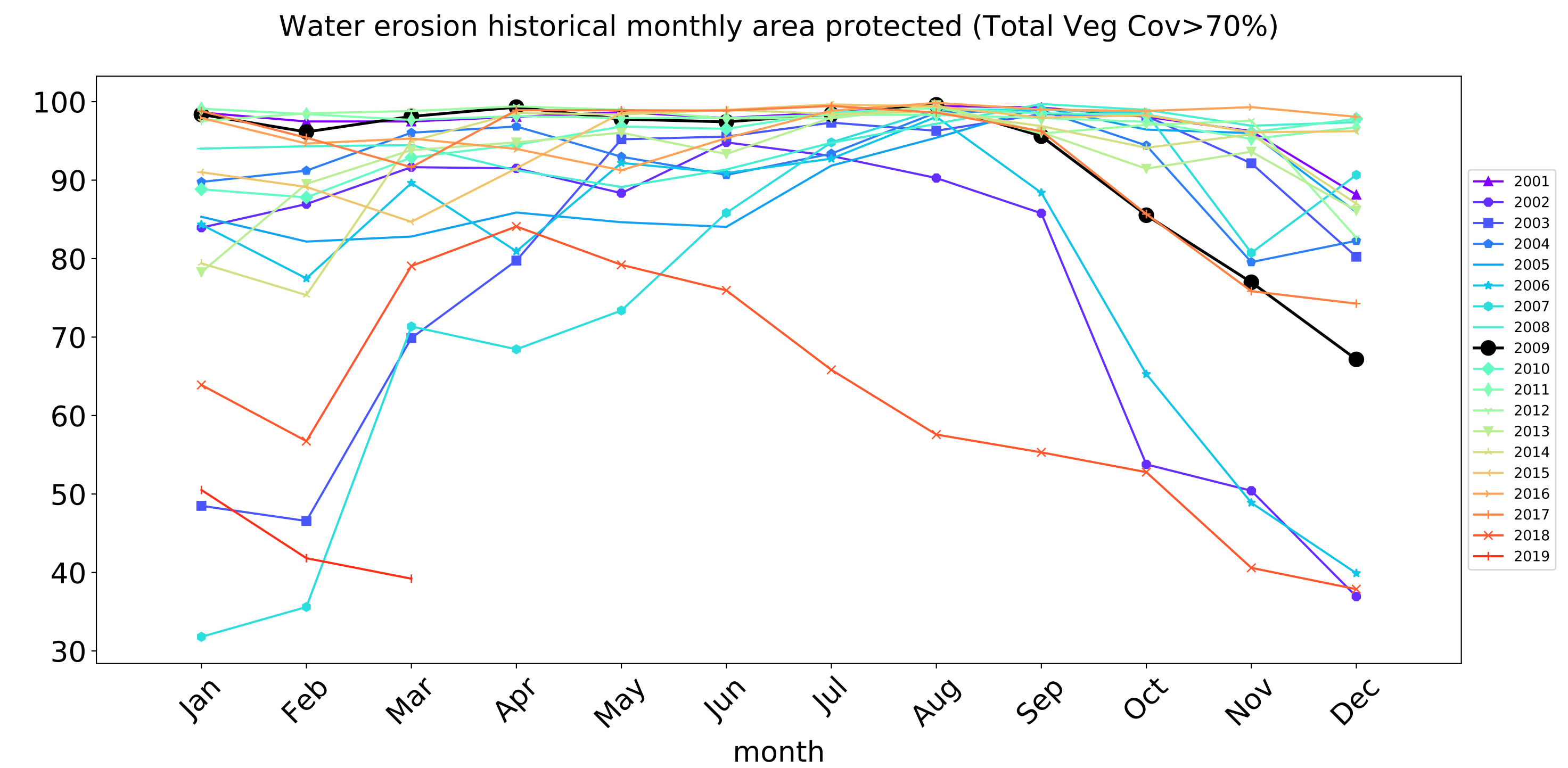
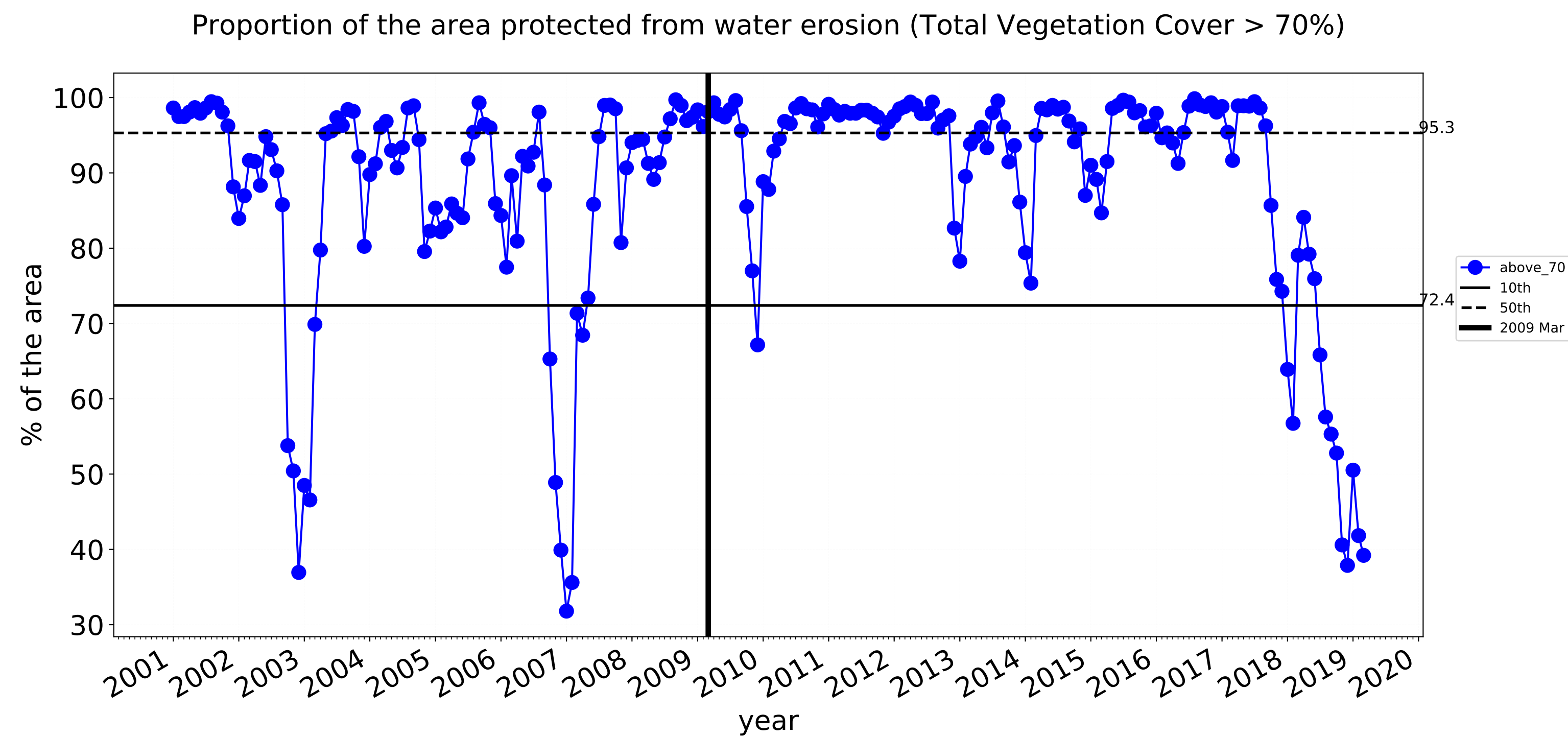
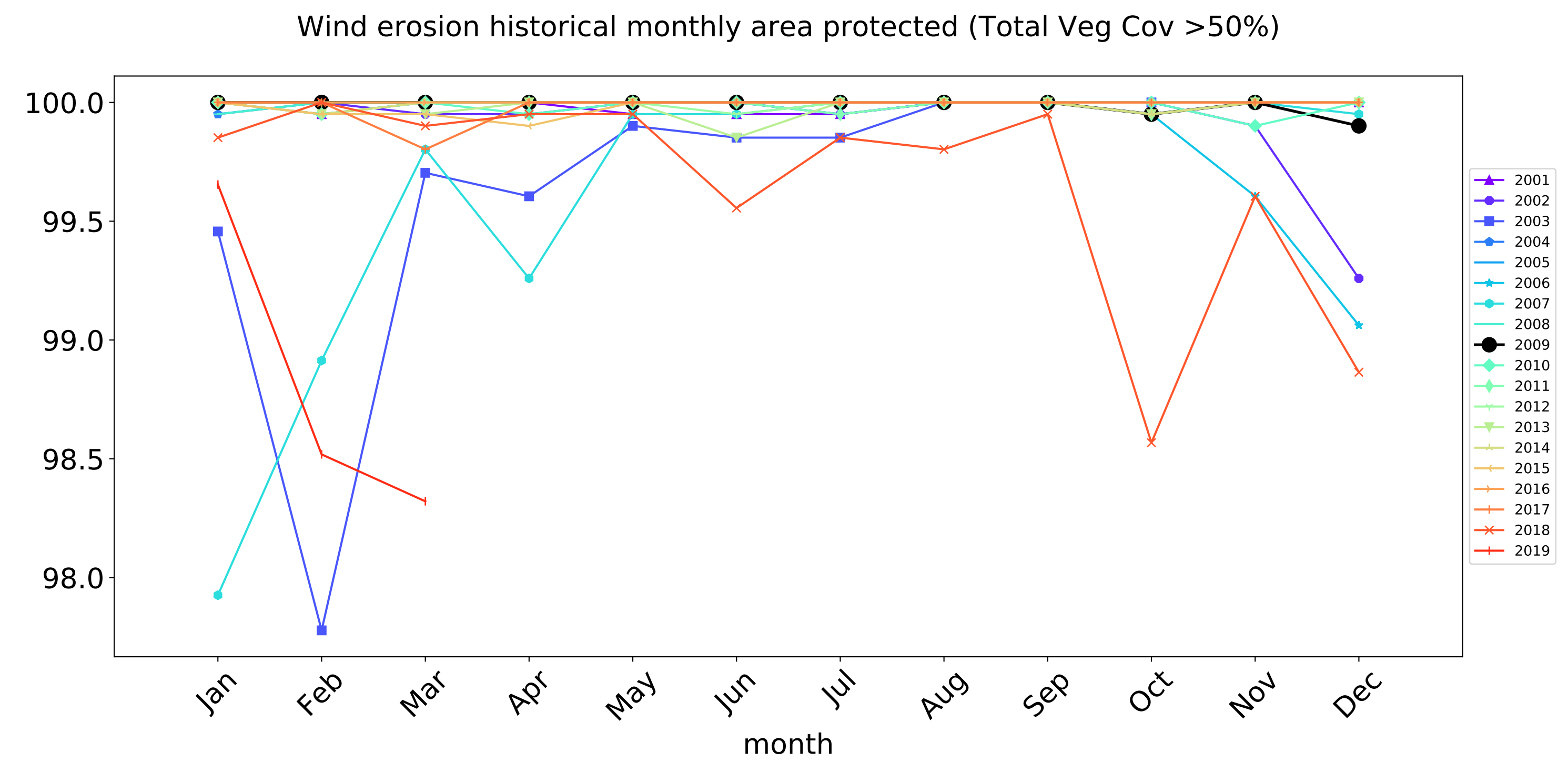
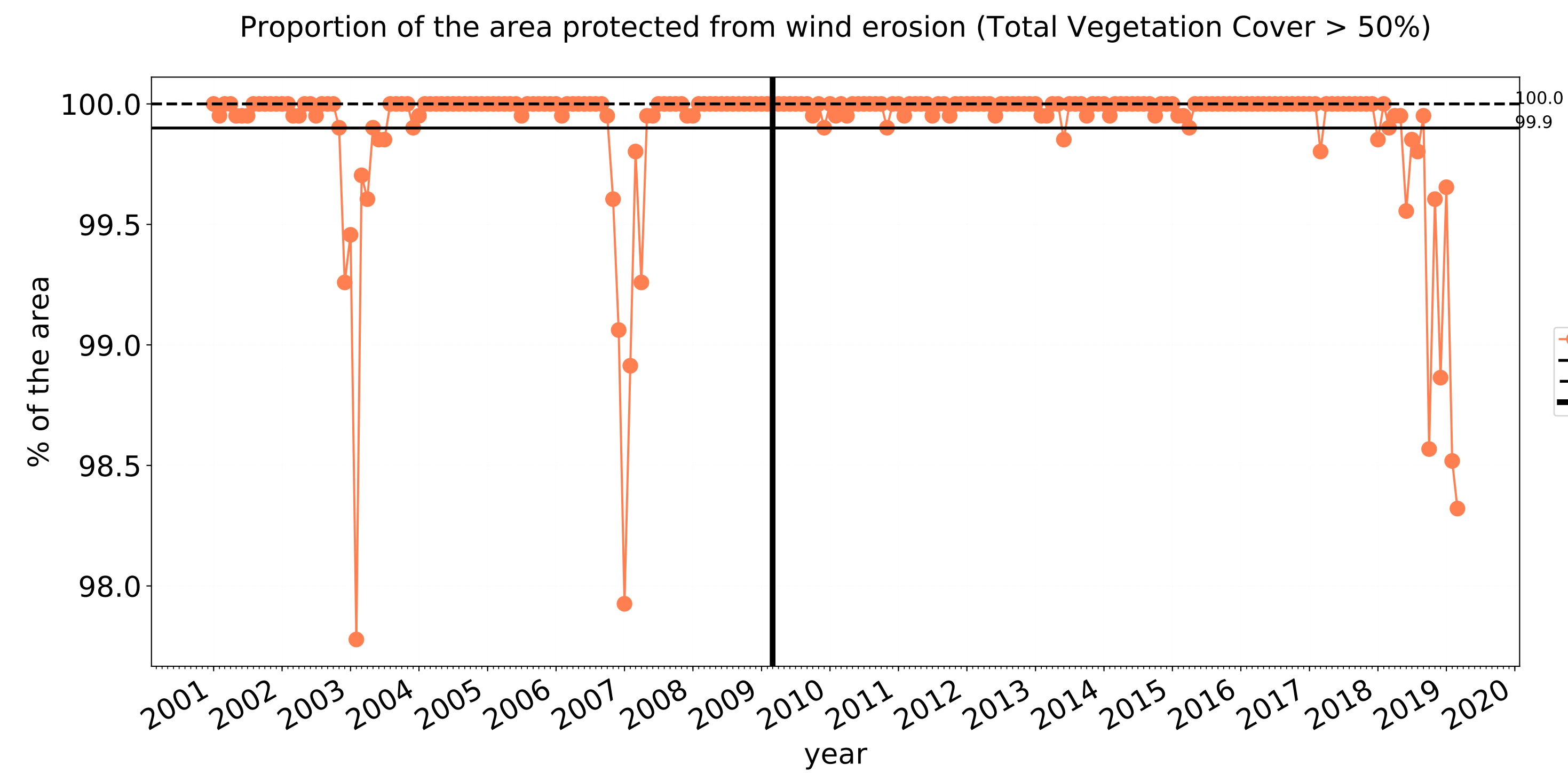
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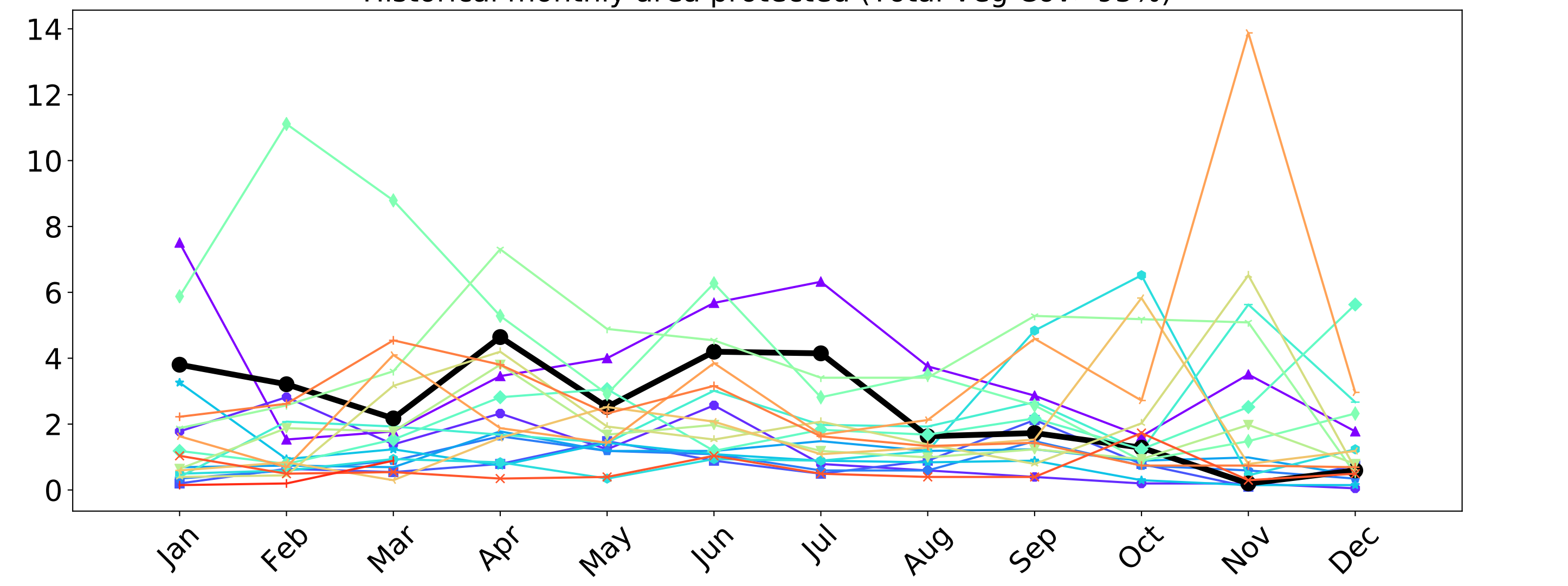
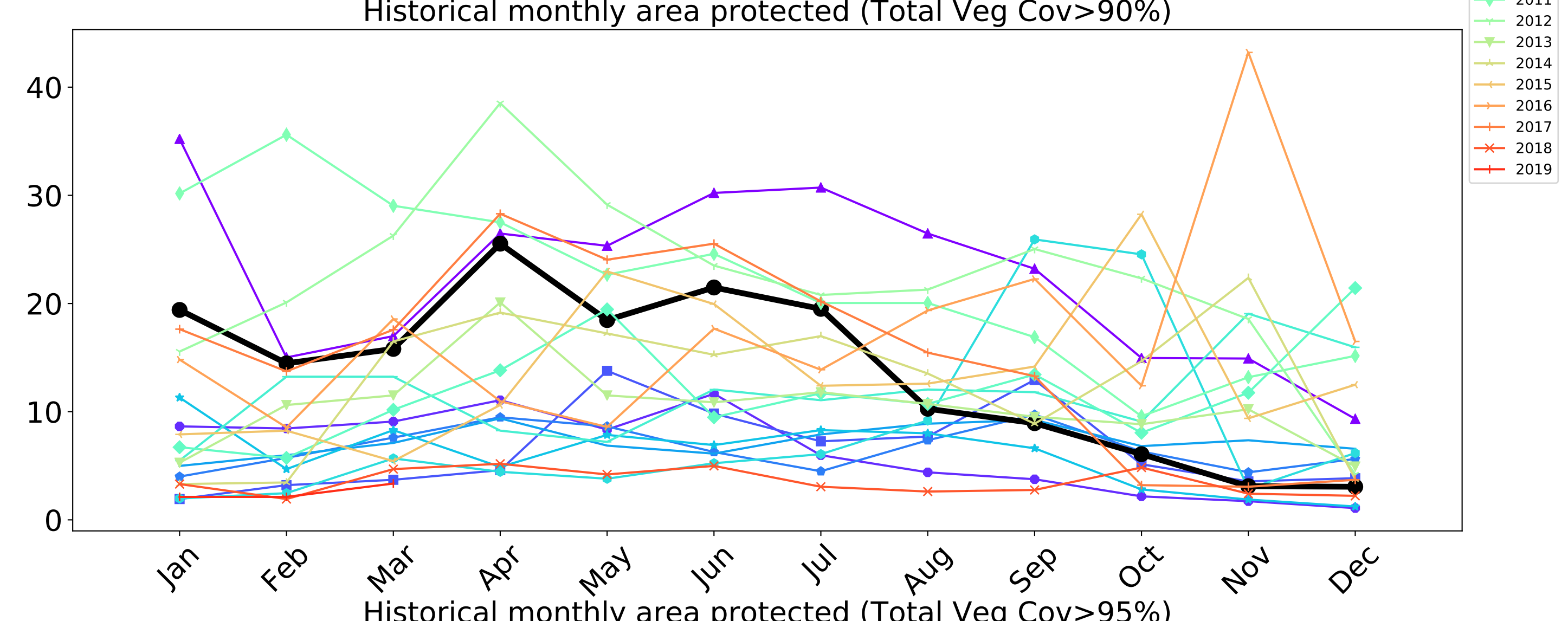
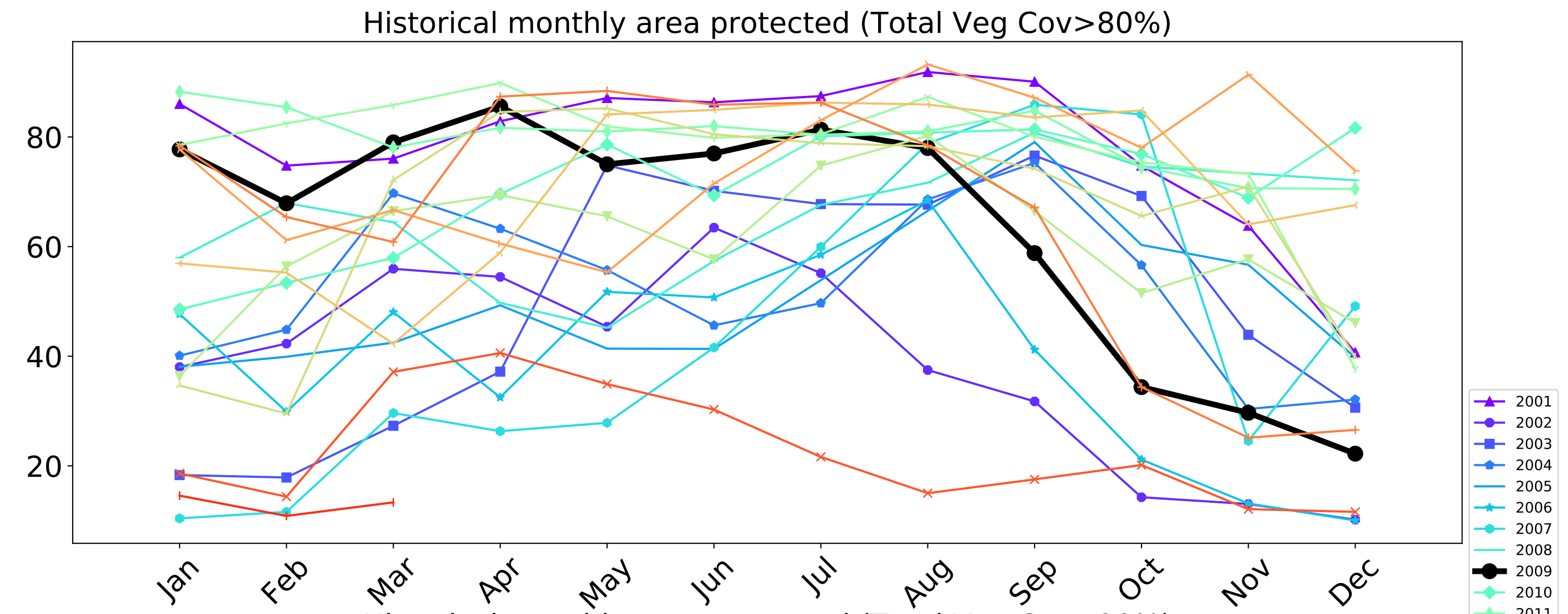
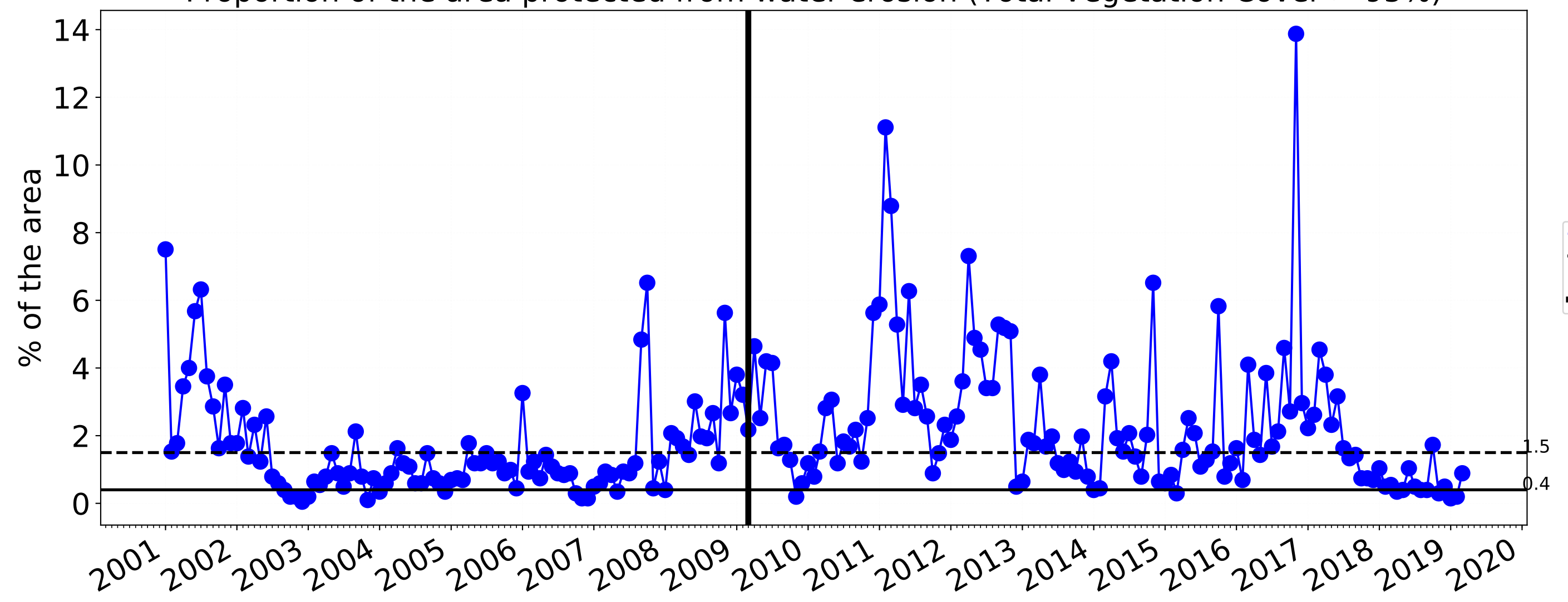
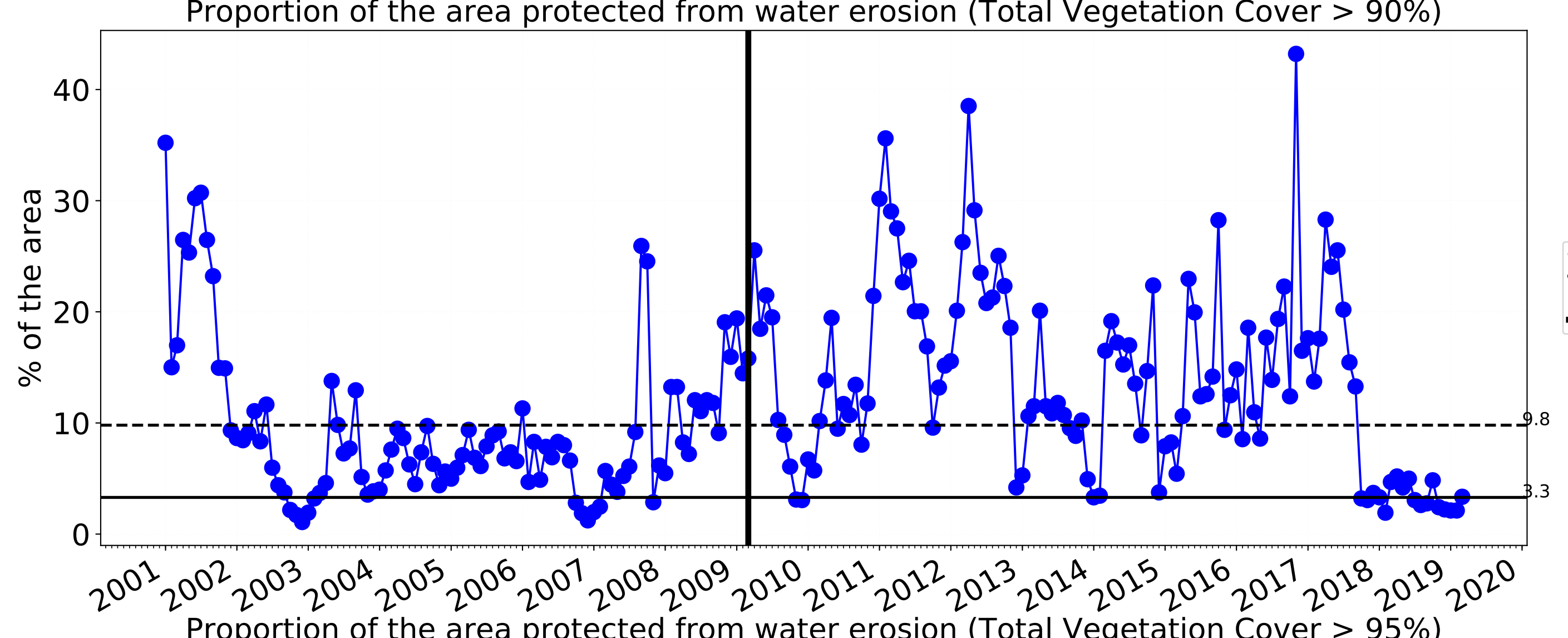
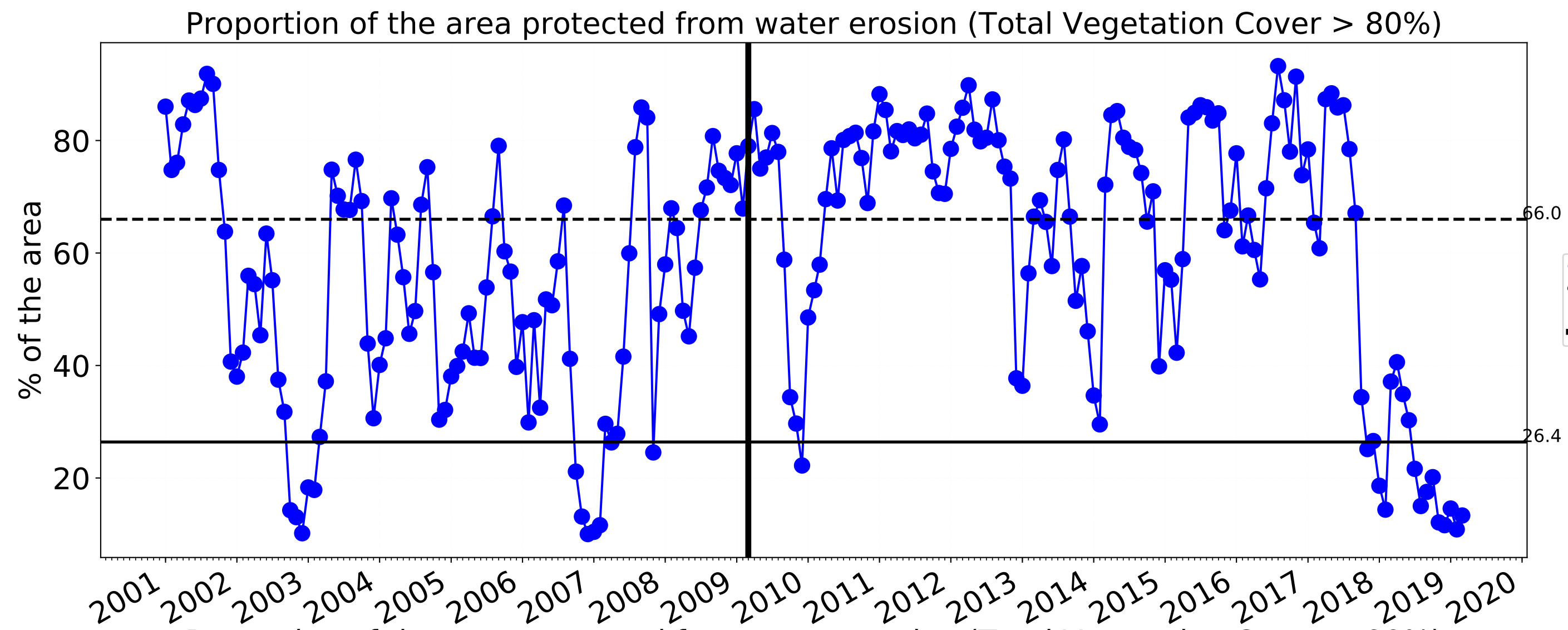
Planning,  
Industry &  
Environment



## Cropping timeseries









Production native forests and plantation forests

Land use and forest cover

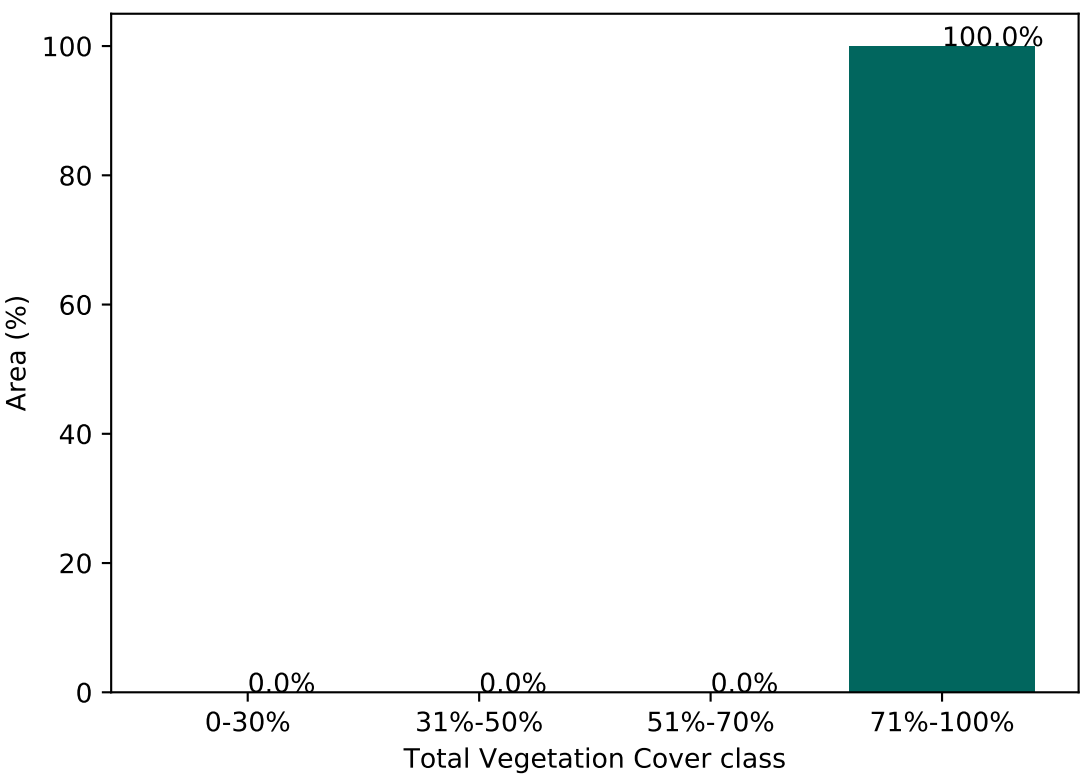
Catchment Scale  
Land Use and Forests  
of Australia (2018)  
Derived from  
Catchment Scale Land  
Use of Australia  
(2018) and Forests  
of Australia (2018)



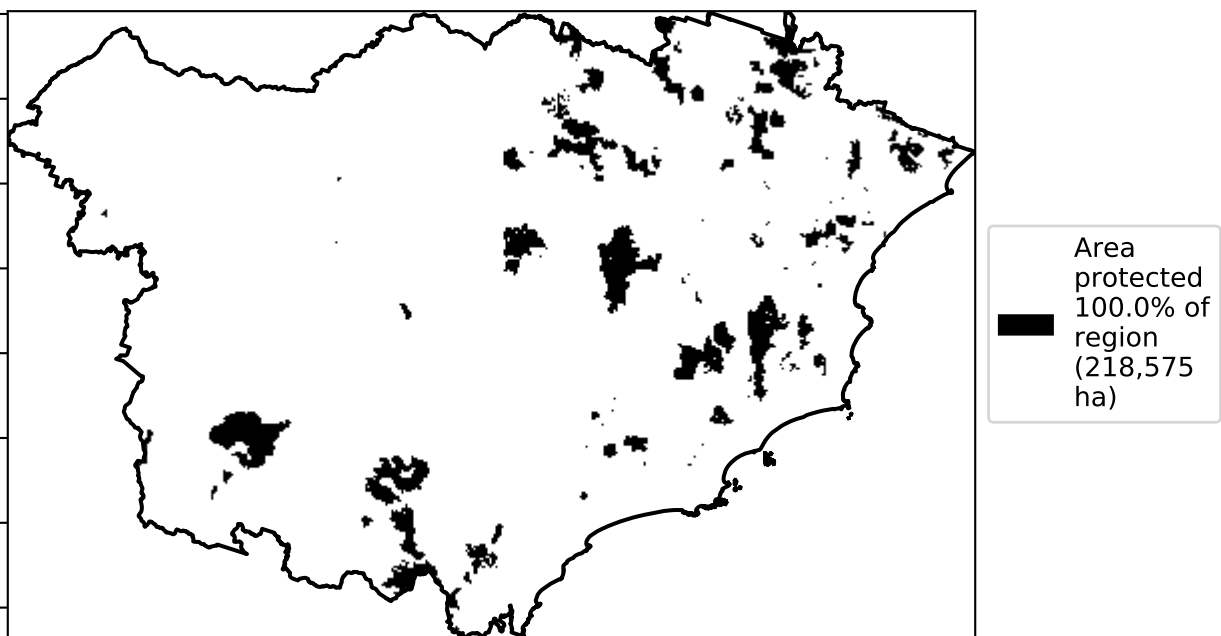
Total Vegetation Cover [%]



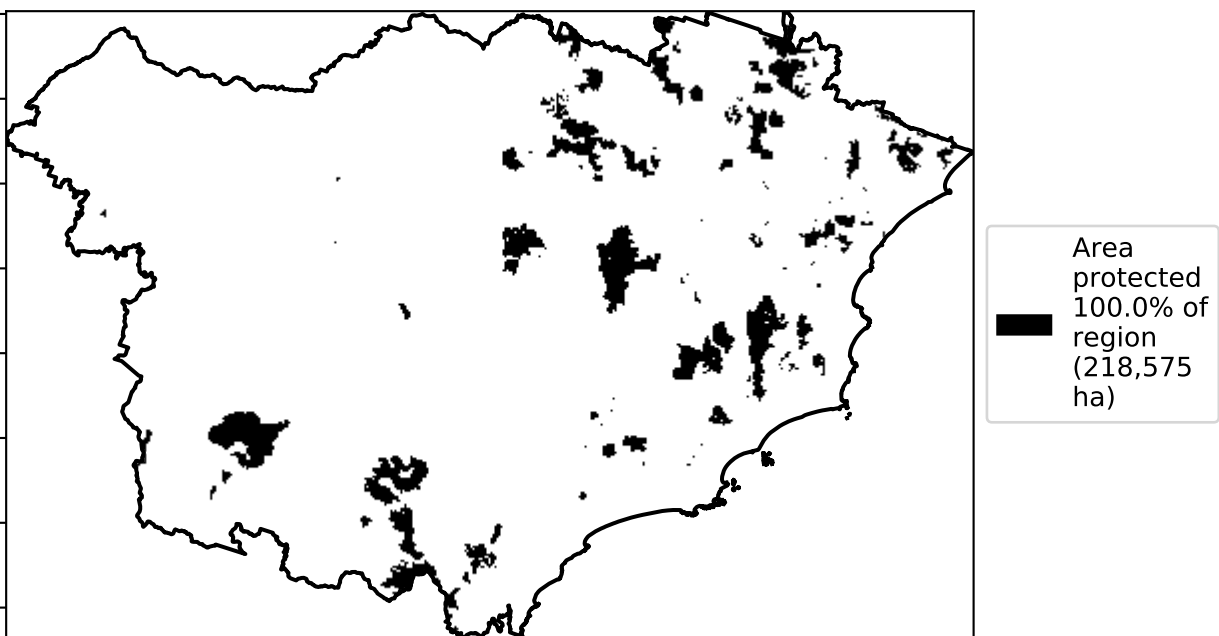
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

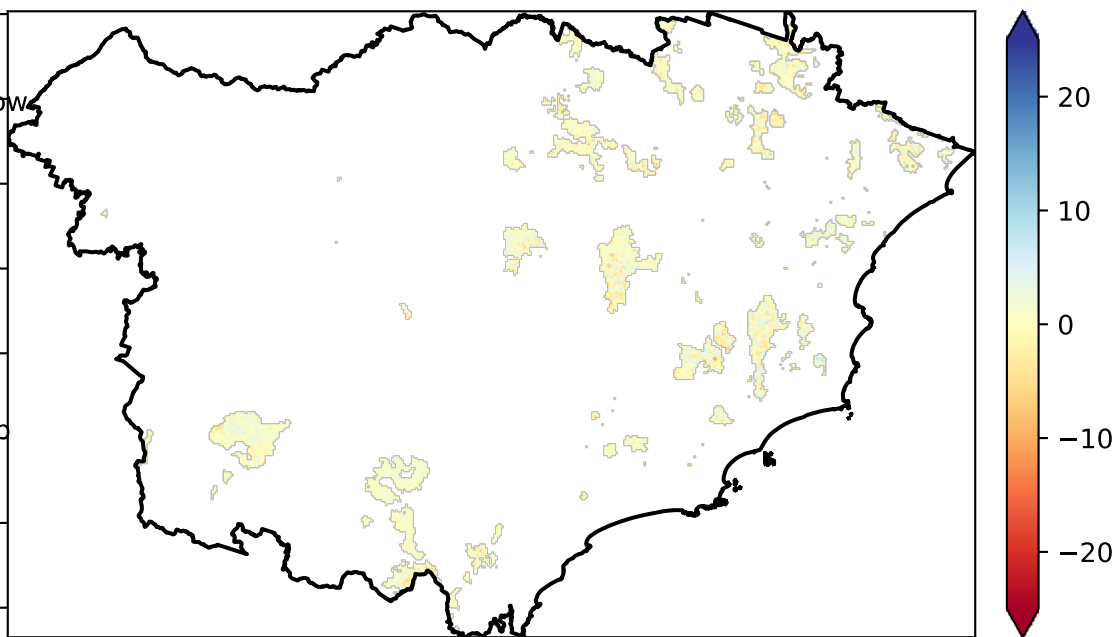


% Area protected from wind erosion (>50%)



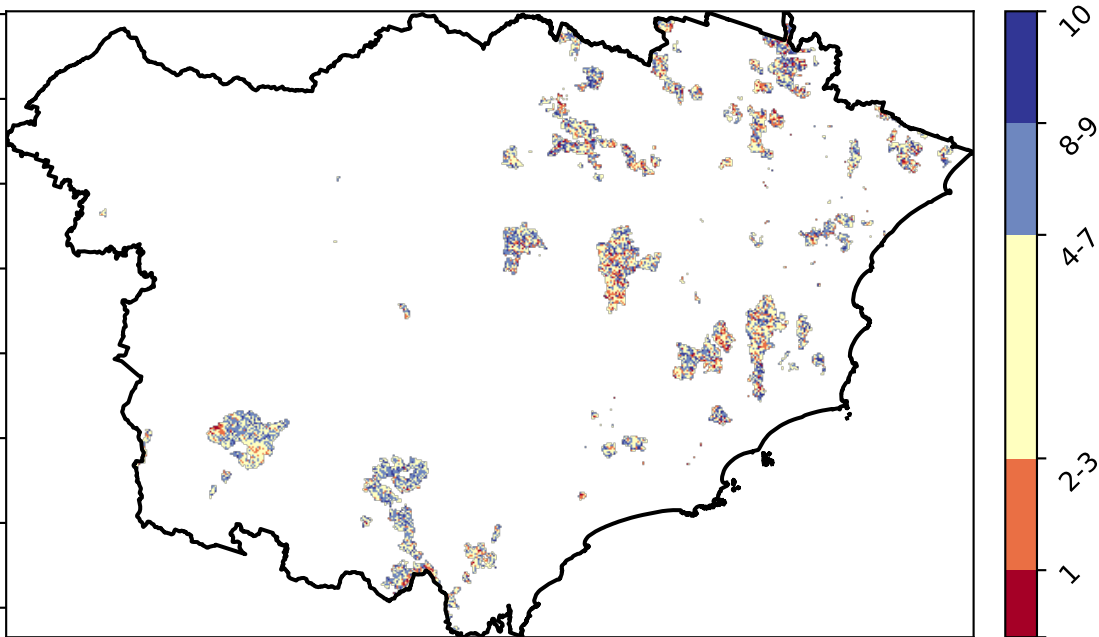
Total Vegetation Cover Anomaly [%]

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



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

Total Vegetation Cover Decile [%]



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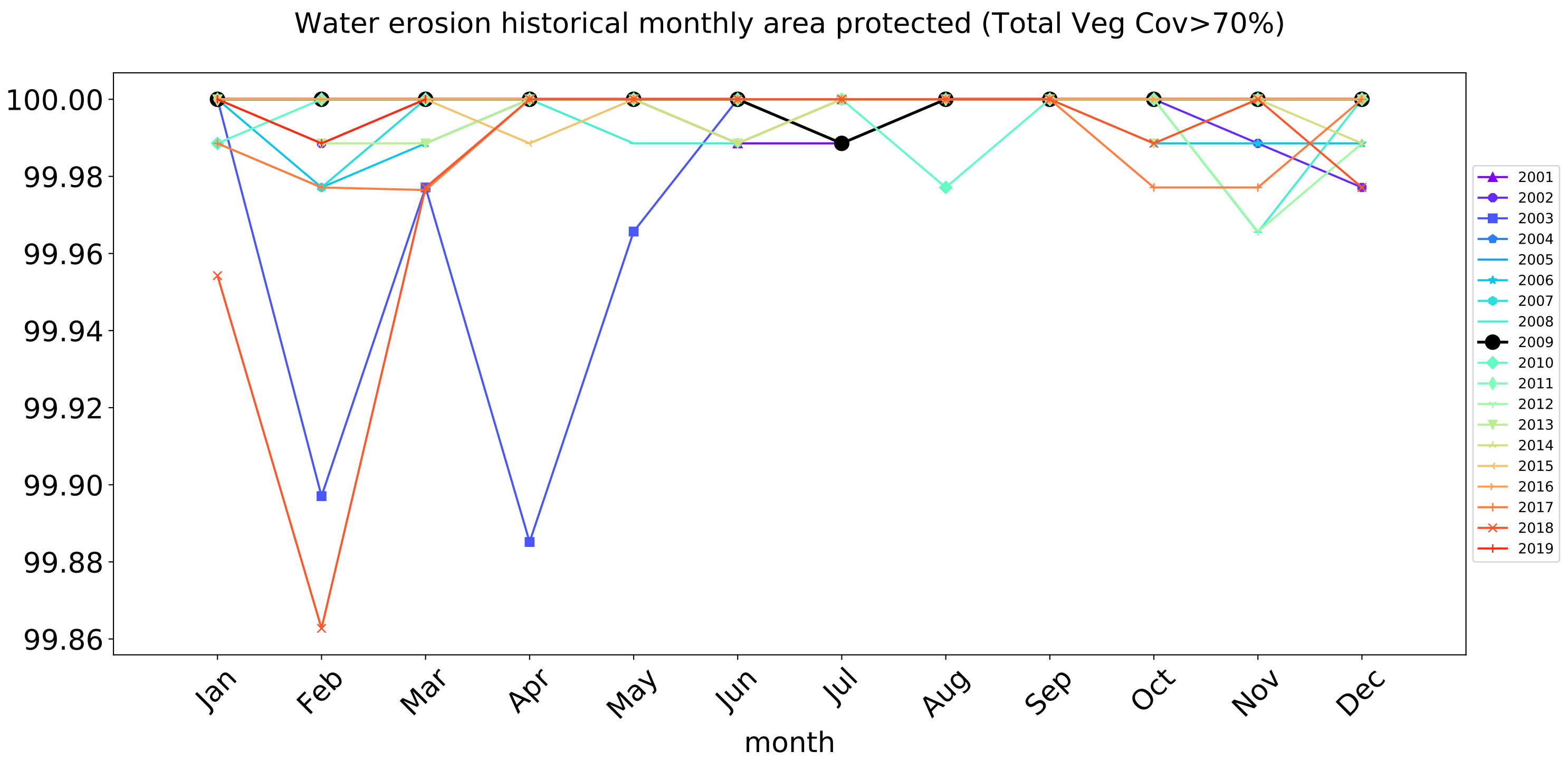
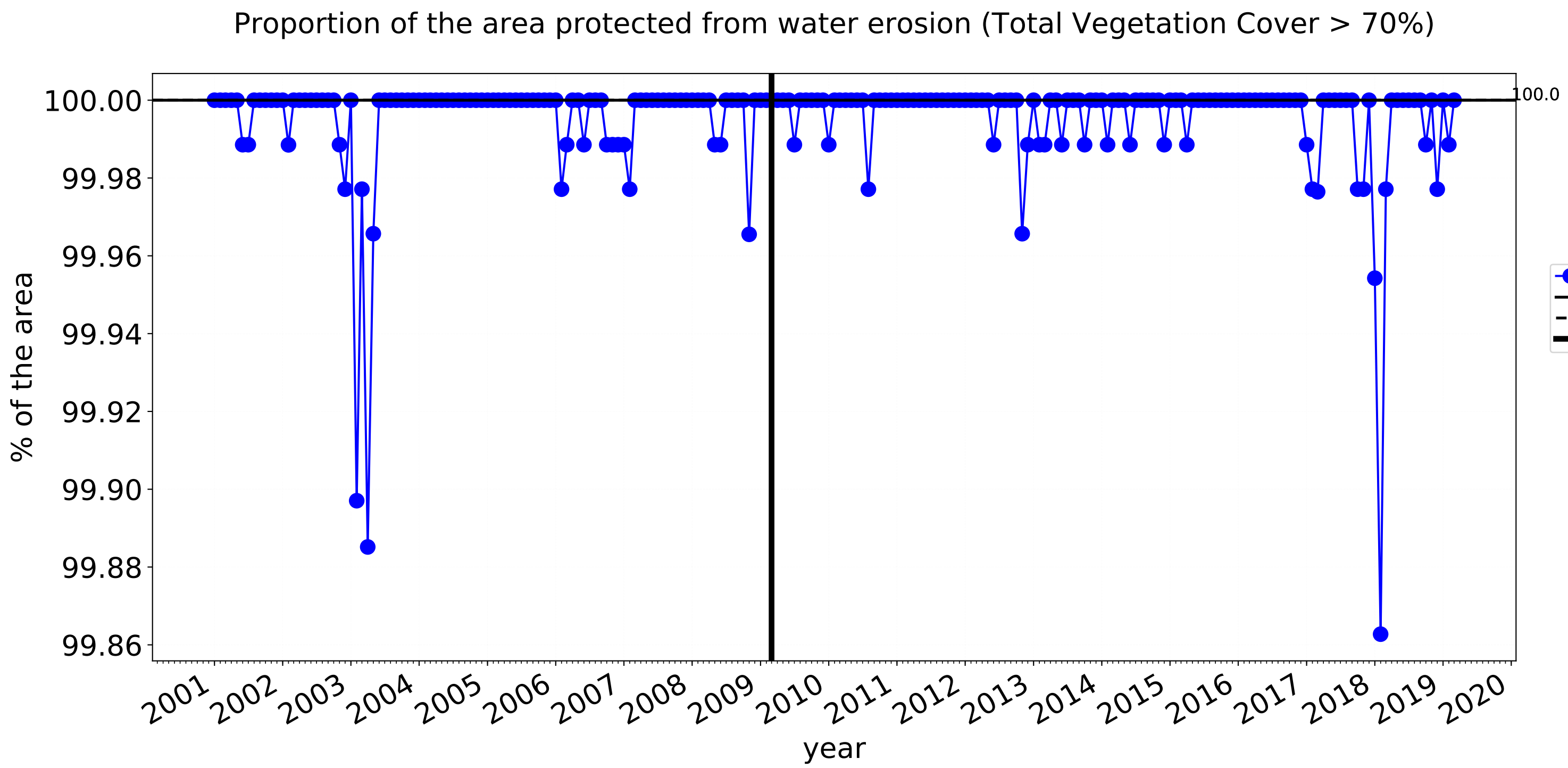
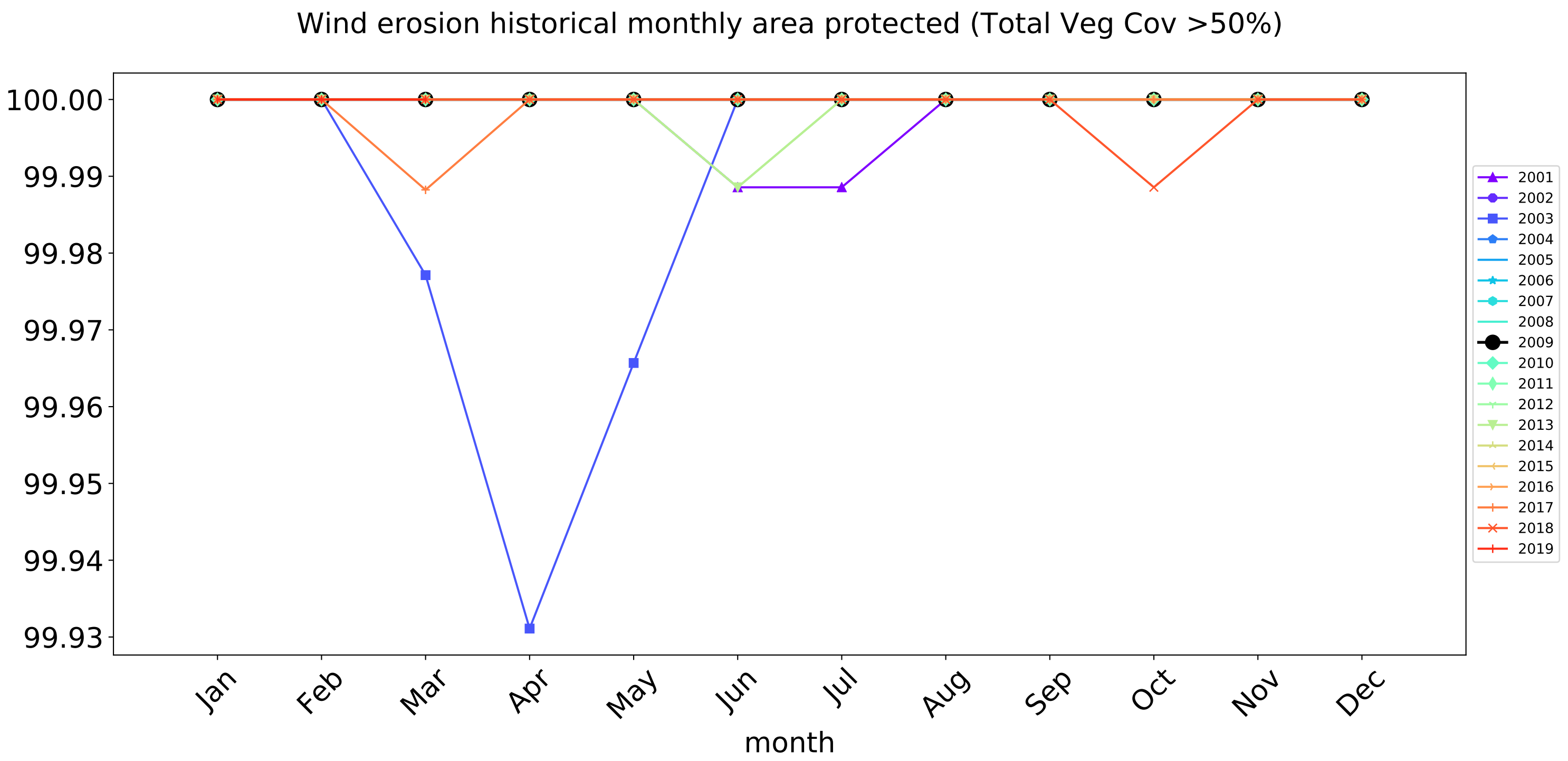
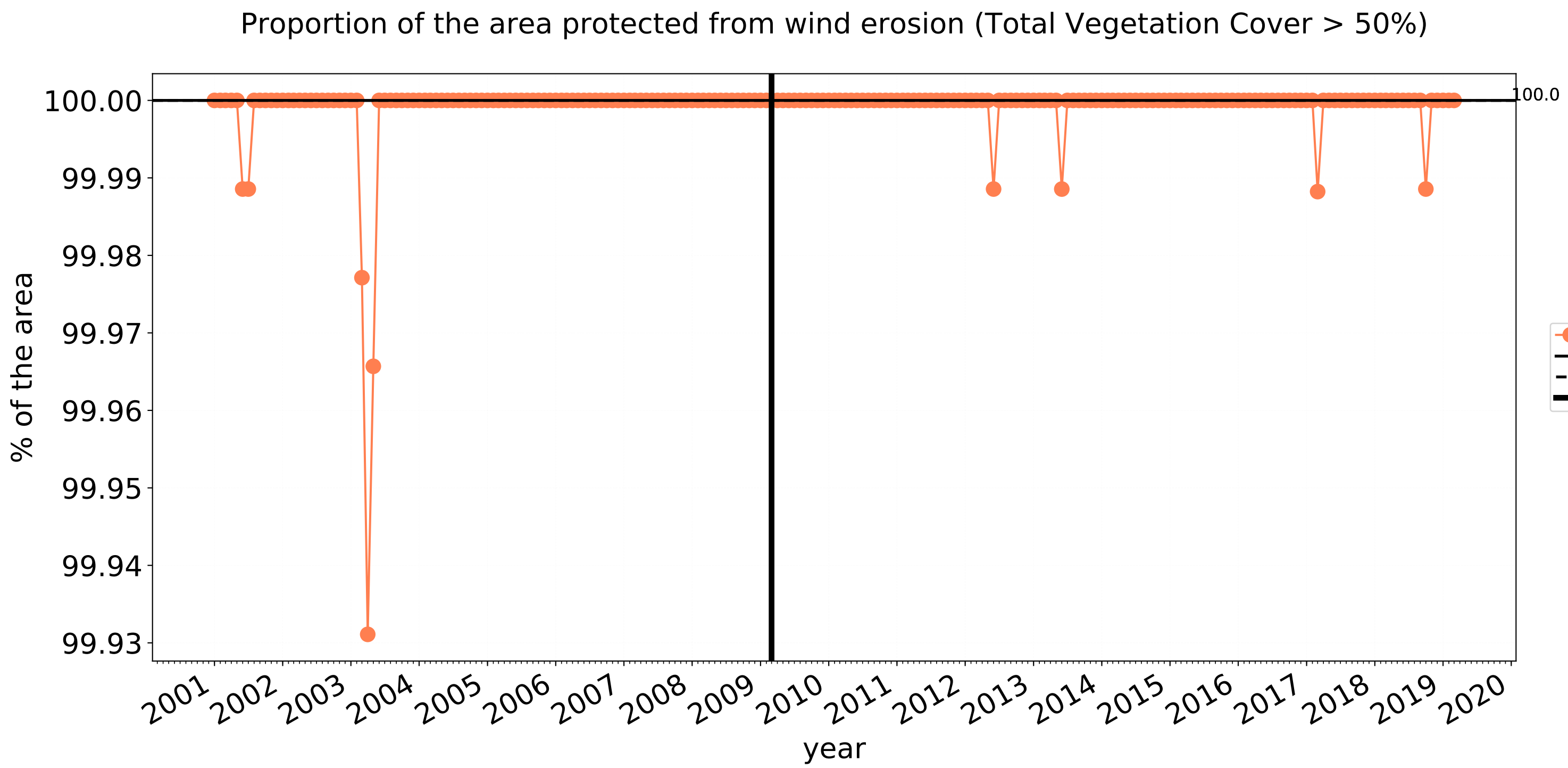
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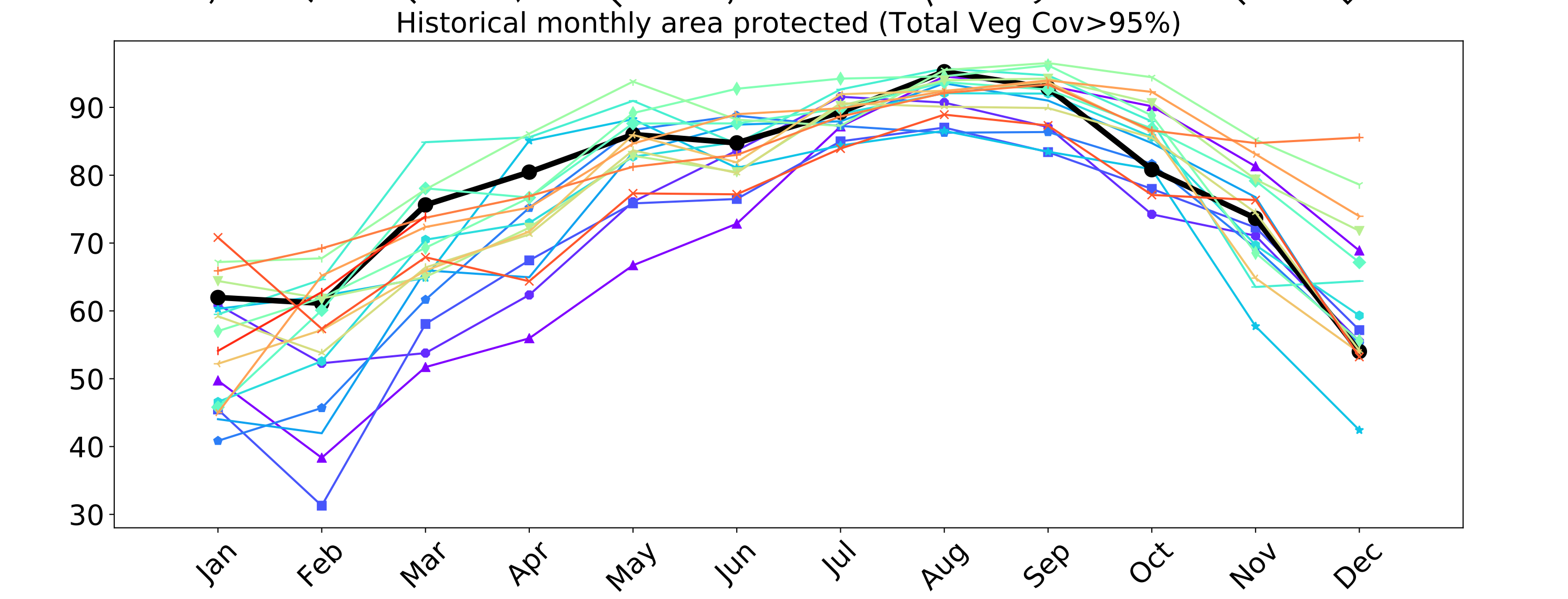
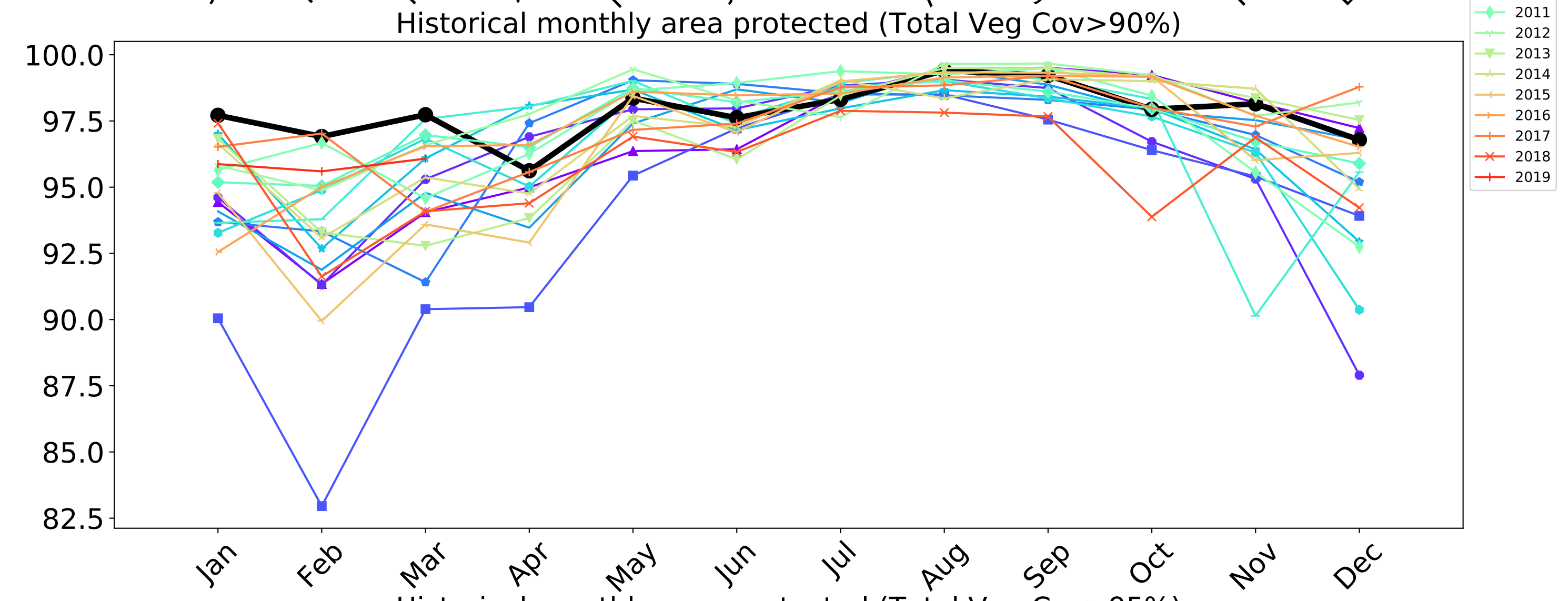
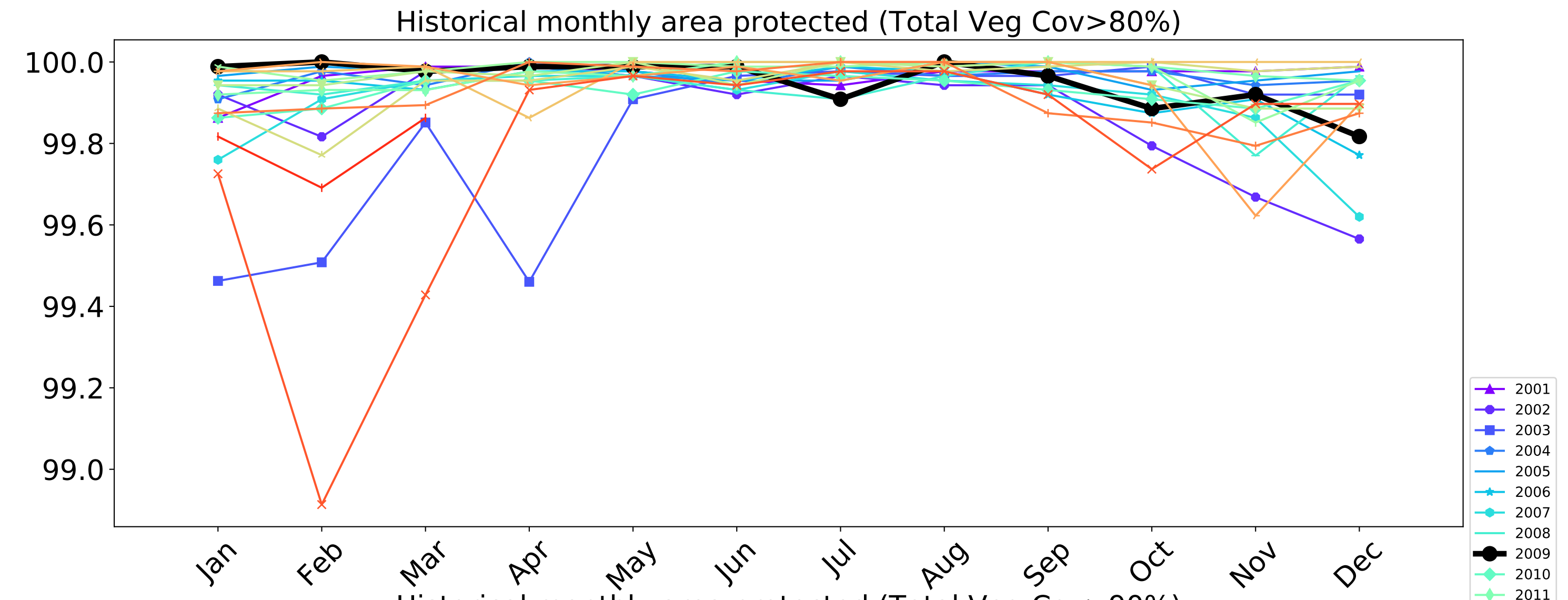
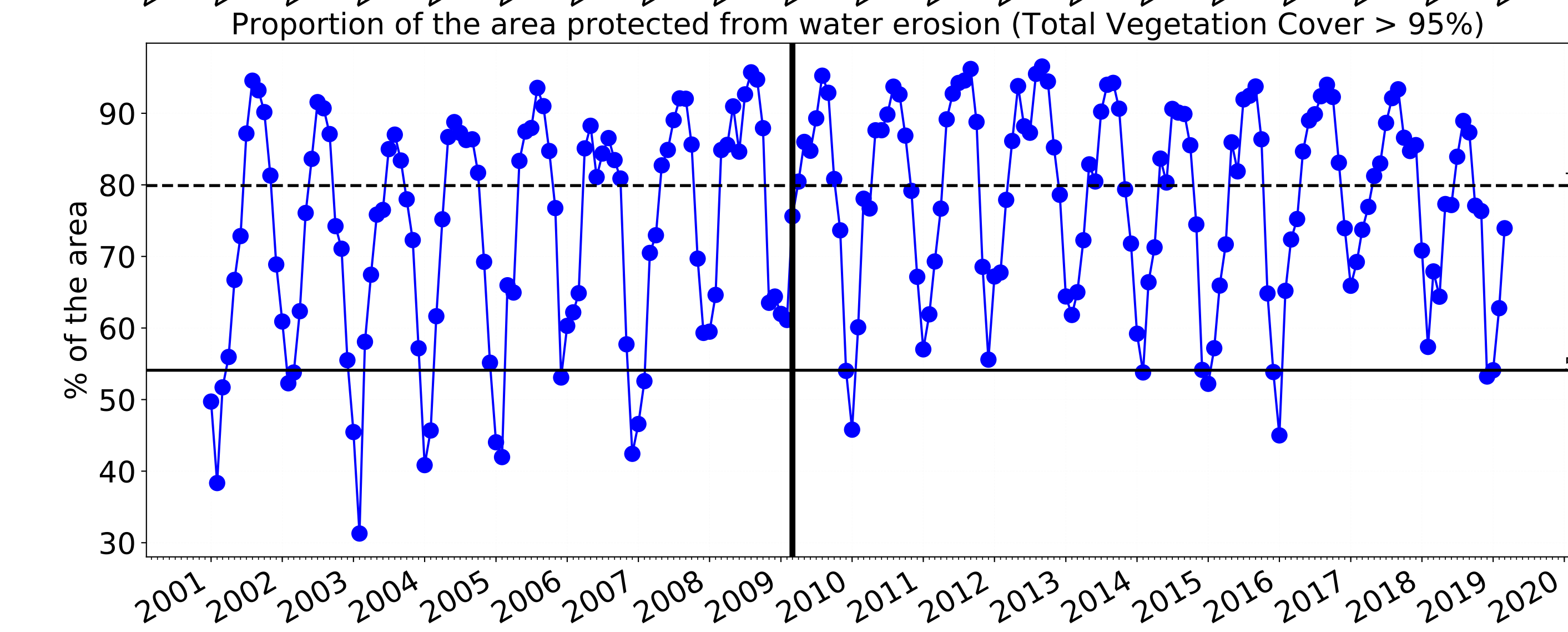
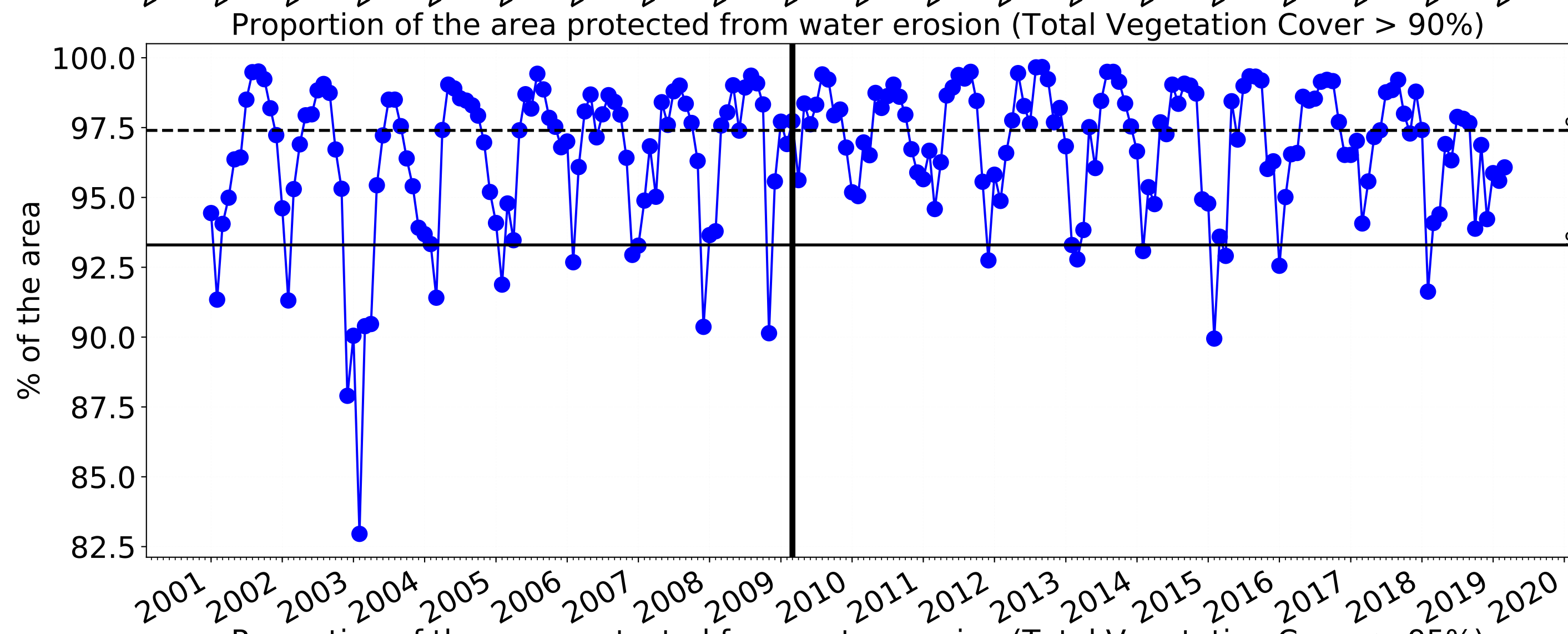
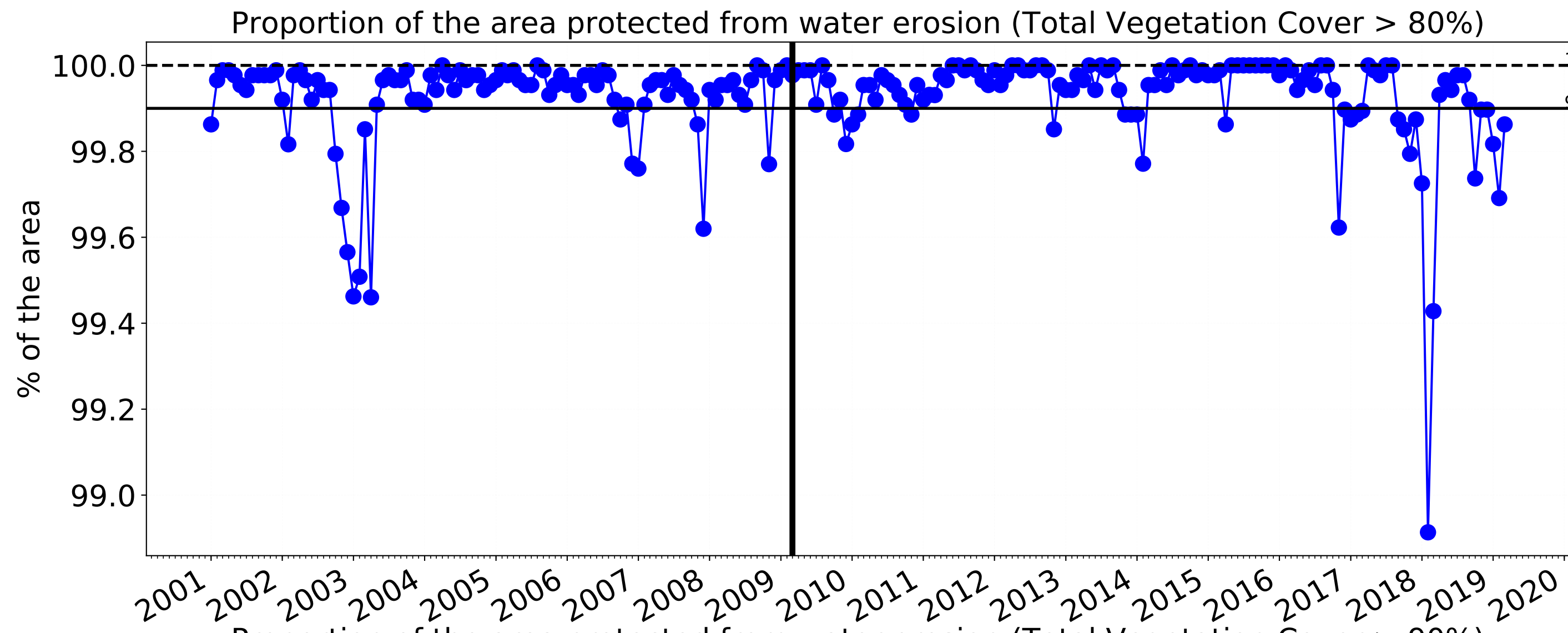
Planning,  
Industry &  
Environment



Production native forests and plantation forests timeseries









Hunter (3,240,000 ha and no data 60,425 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	3,240,000	99.9% 3,236,923	99.6% 3,228,043	98.7% 3,198,202	96.9% 3,140,370	80.5% 2,609,729	40.7% 1,319,472
Conservation and natural environments	1,240,525	99.9% 1,239,275	99.8% 1,238,150	99.7% 1,236,350	99.4% 1,233,100	92.1% 1,142,375	57.9% 718,850
Conservation and natural environments non forest	29,800	96.1% 28,625	93.1% 27,750	90.6% 27,000	85.8% 25,575	70.5% 21,000	30.1% 8,975
Conservation and natural environments Woodland forest	138,950	100.0% 138,925	100.0% 138,900	99.9% 138,750	99.8% 138,650	89.4% 124,250	40.7% 56,525
Conservation and natural environments Forest (non woodland)	1,071,775	100.0% 1,071,725	100.0% 1,071,500	99.9% 1,070,600	99.7% 1,068,875	93.0% 997,125	61.0% 653,350
Agriculture	1,580,250	100.0% 1,580,200	100.0% 1,579,900	99.7% 1,576,250	98.2% 1,552,475	75.1% 1,186,150	26.5% 418,250
Grazing	1,502,250	100.0% 1,502,200	100.0% 1,501,900	99.8% 1,499,325	99.1% 1,488,125	78.1% 1,173,525	27.7% 416,575
Grazing non forest	1,212,600	100.0% 1,212,575	100.0% 1,212,275	99.8% 1,209,875	98.9% 1,199,600	75.8% 919,125	26.5% 321,425
Grazing Woodland forest	120,575	100.0% 120,575	100.0% 120,575	100.0% 120,575	99.7% 120,250	85.5% 103,075	22.8% 27,550
Grazing - Forest (non woodland)	169,075	100.0% 169,050	100.0% 169,050	99.9% 168,875	99.5% 168,275	89.5% 151,325	40.0% 67,600
Cropping	50,625	100.0% 50,625	100.0% 50,625	98.1% 49,675	79.0% 40,000	15.8% 8,000	2.2% 1,100
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,575	100.0% 218,525	97.7% 213,625	75.6% 165,275



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