

Total vegetation cover soil protection

Region:NRM Murray NSW

Date: March 2023

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

Land use forest cover:

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

Total vegetation Cover:

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

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

Erosion protection: Wind erosion 50% total vegetation cover

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

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

Comparison with previous years:

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

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

Time series monthly from January 2001 to current:

Erosion protection

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

Rainfall

- Millimetres rainfall each month (black line).

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

Water erosion protection for higher rainfall and steeper slopes:

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

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

Acknowledgment of data:

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



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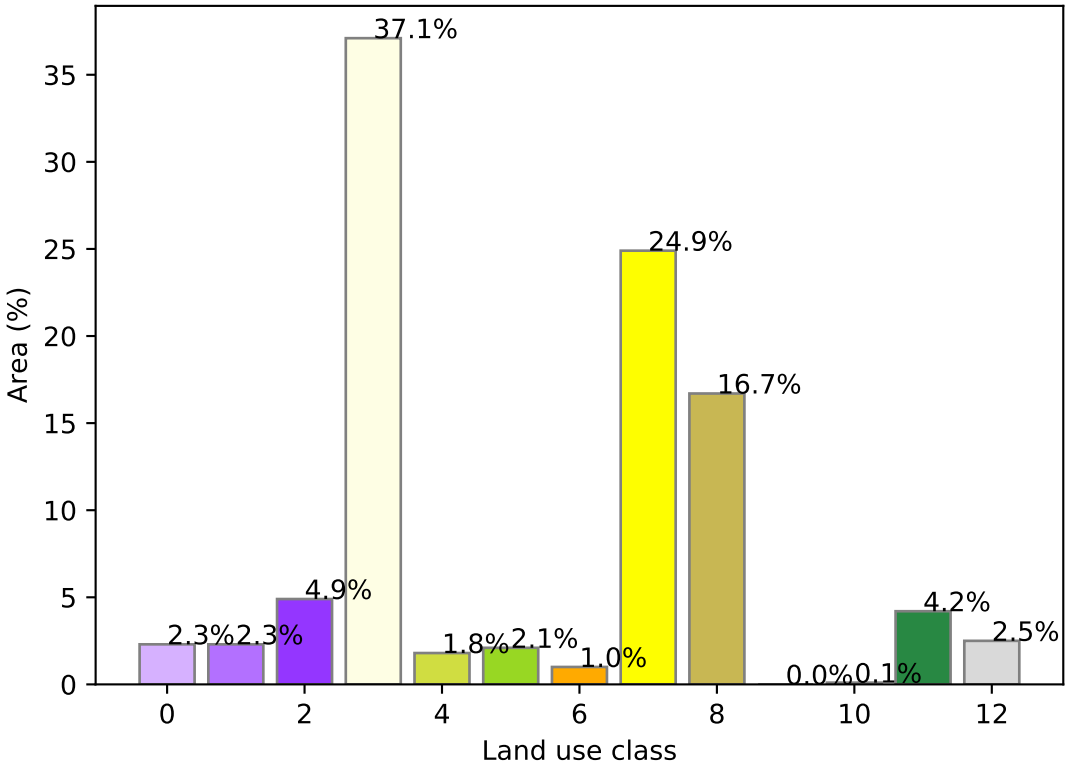


Vegetation Cover Mar 2023

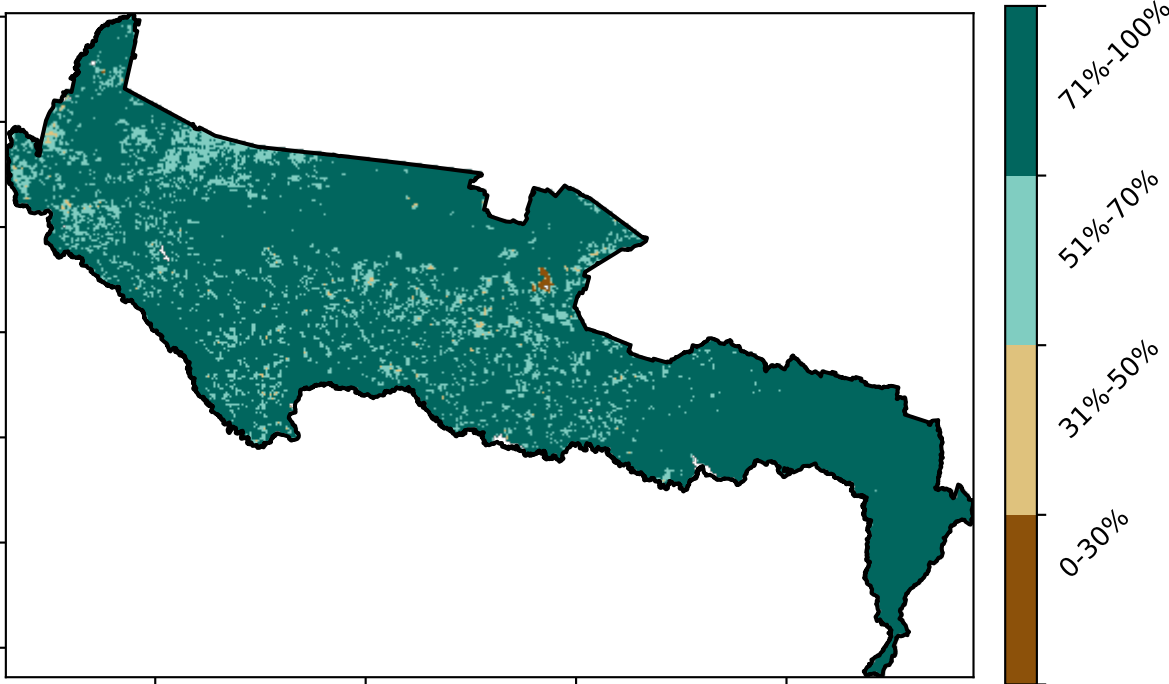
Land use and forest cover



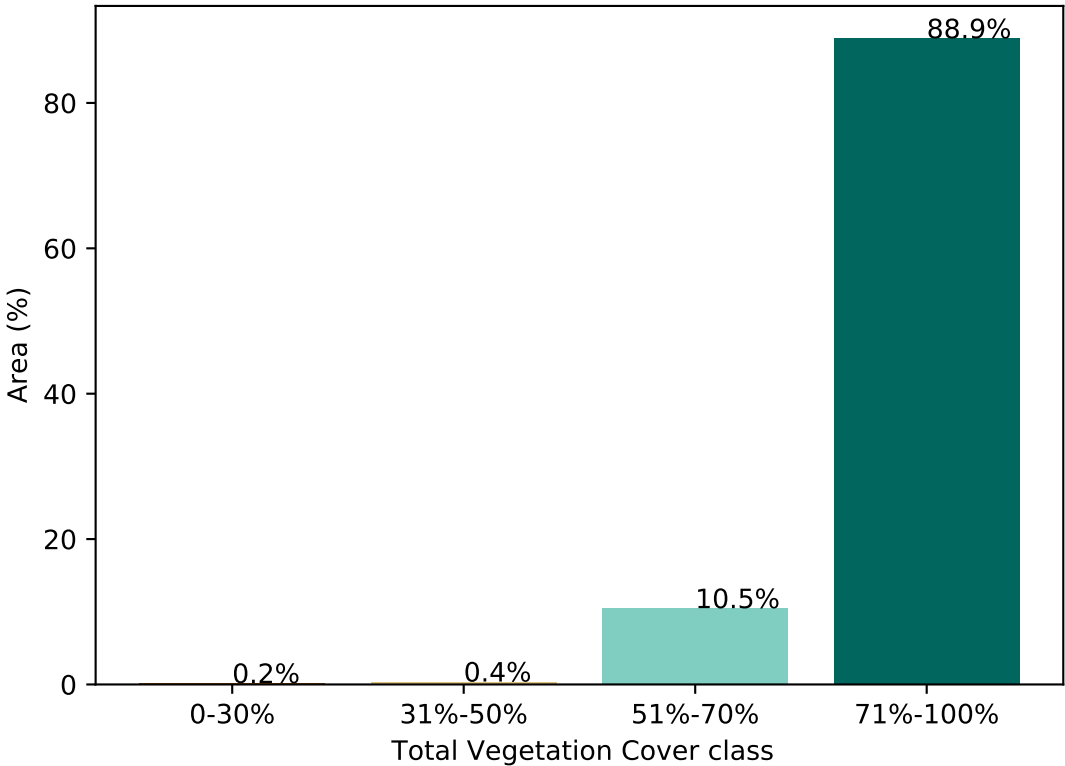
Proportion of each land class in area



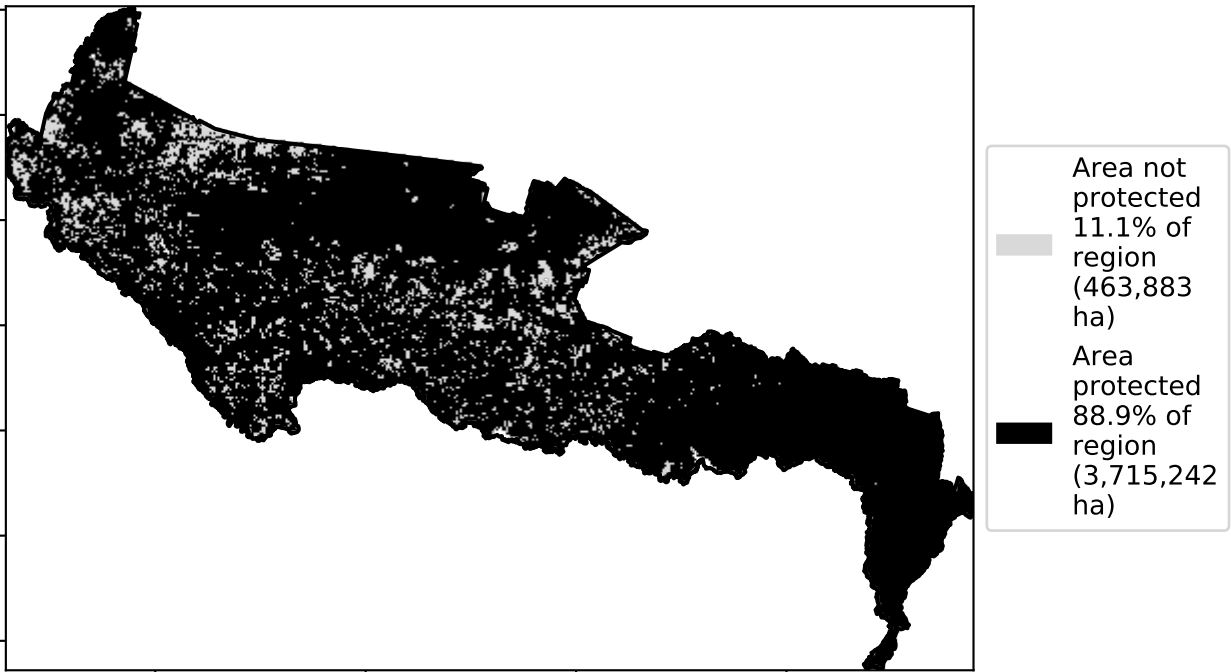
Total Vegetation Cover [%]



Proportion of vegetation cover class in area



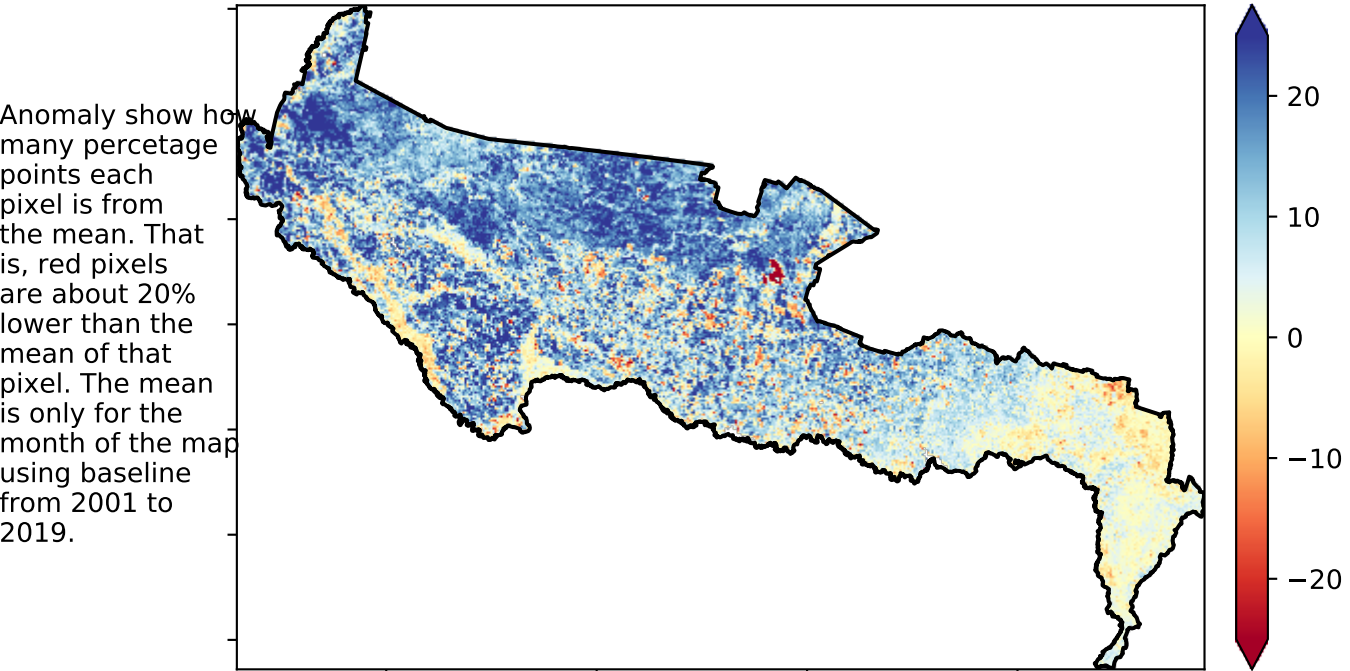
% Area protected from water erosion (>70%)



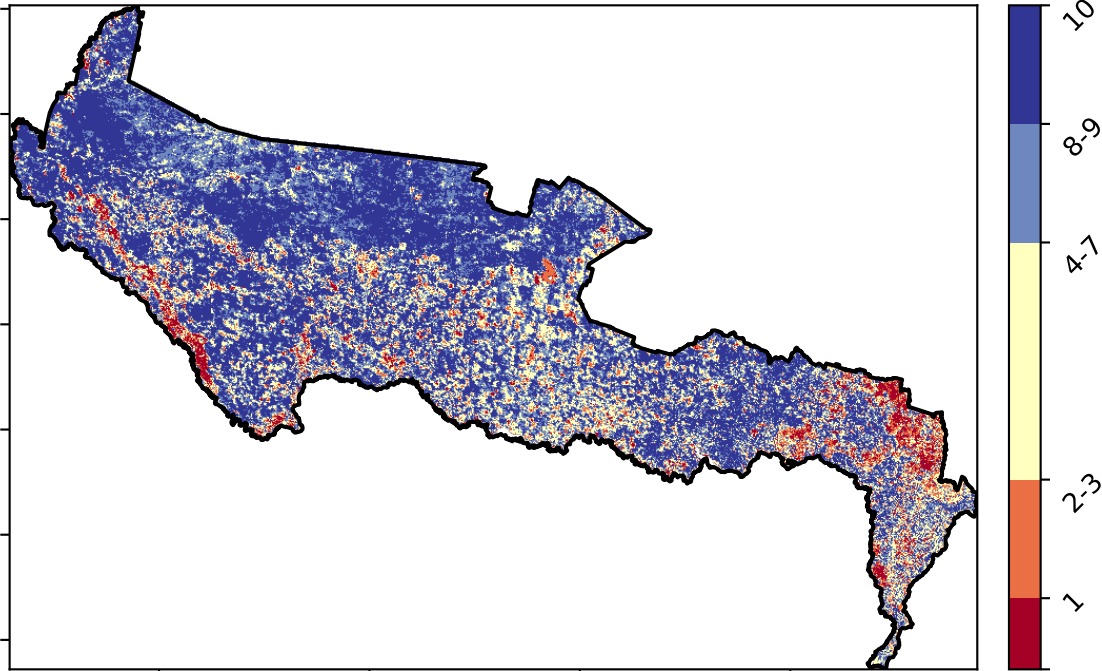
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



Total Vegetation Cover Decile [%]



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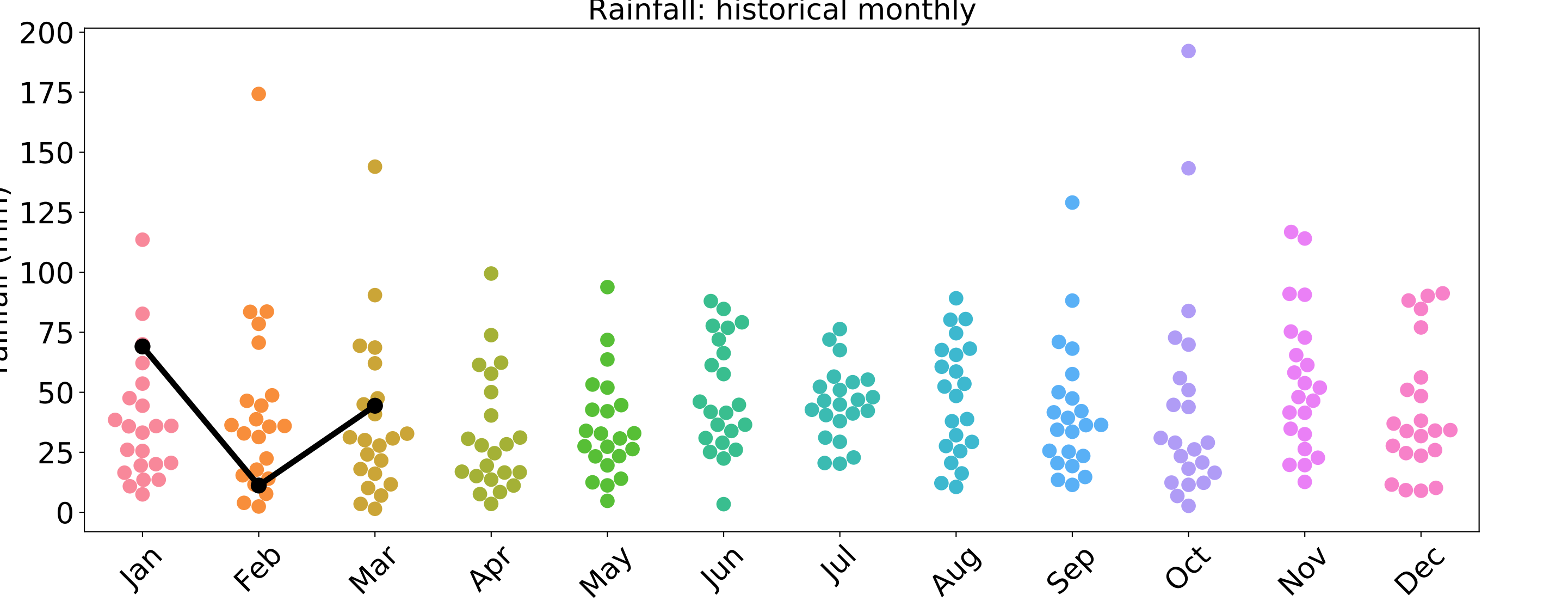
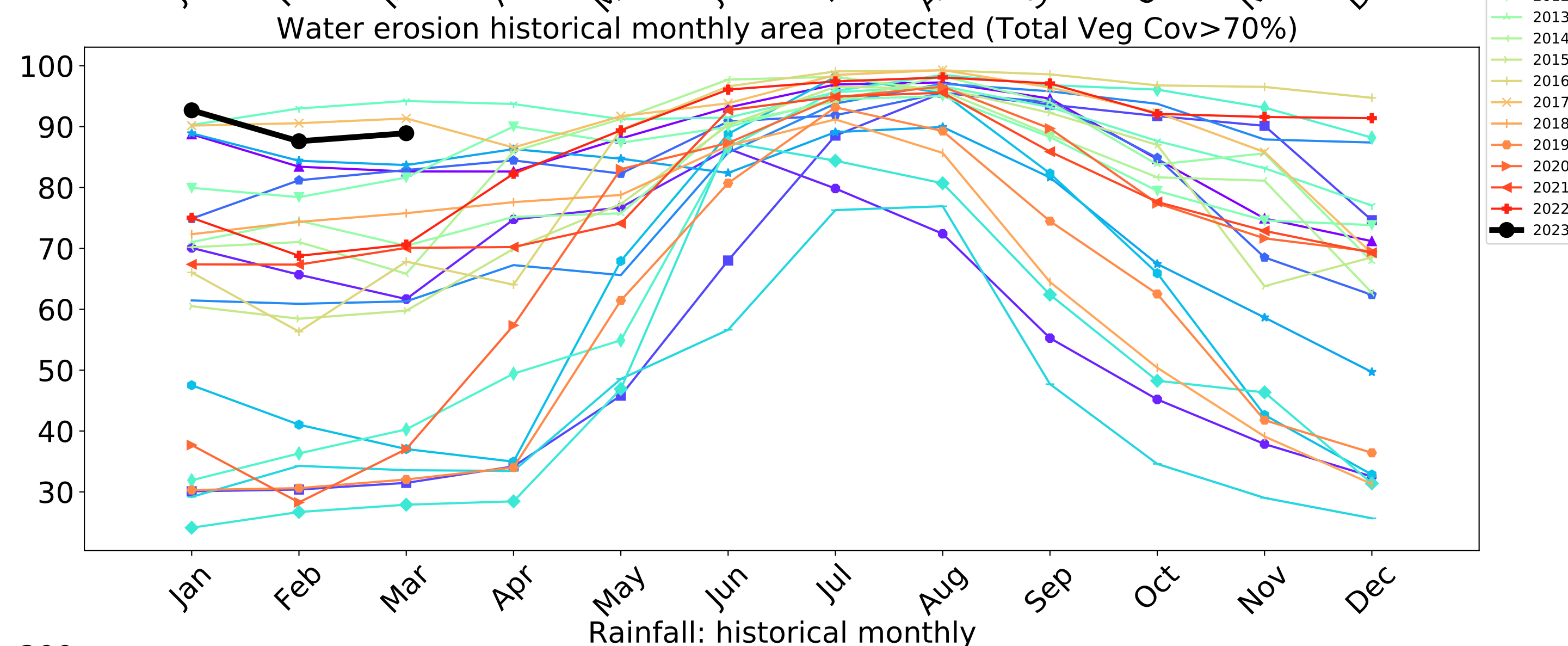
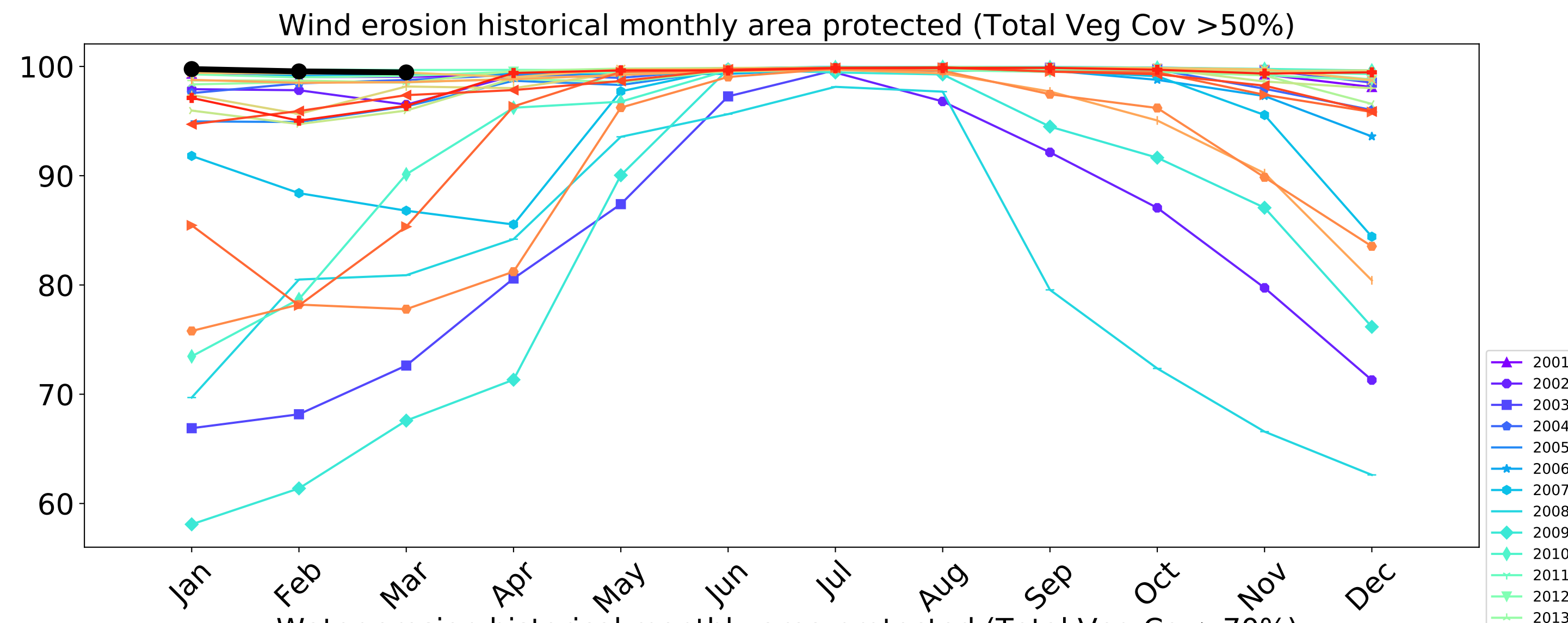
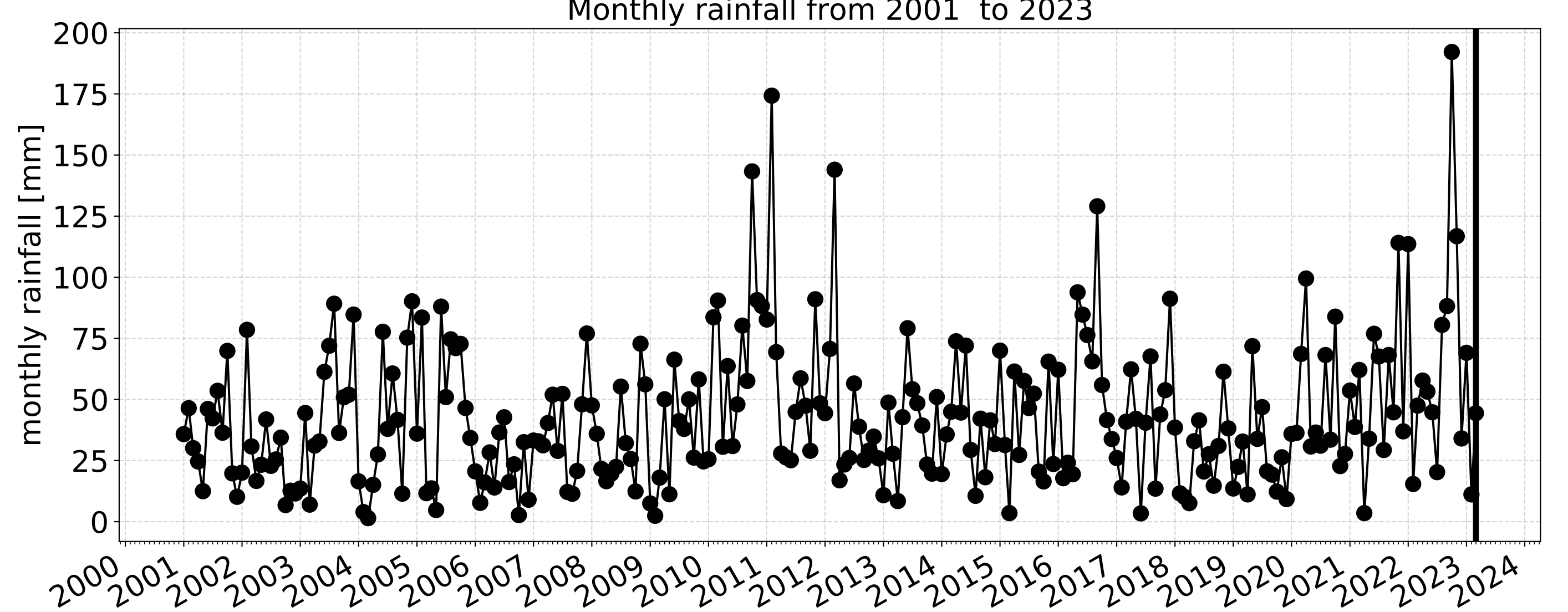
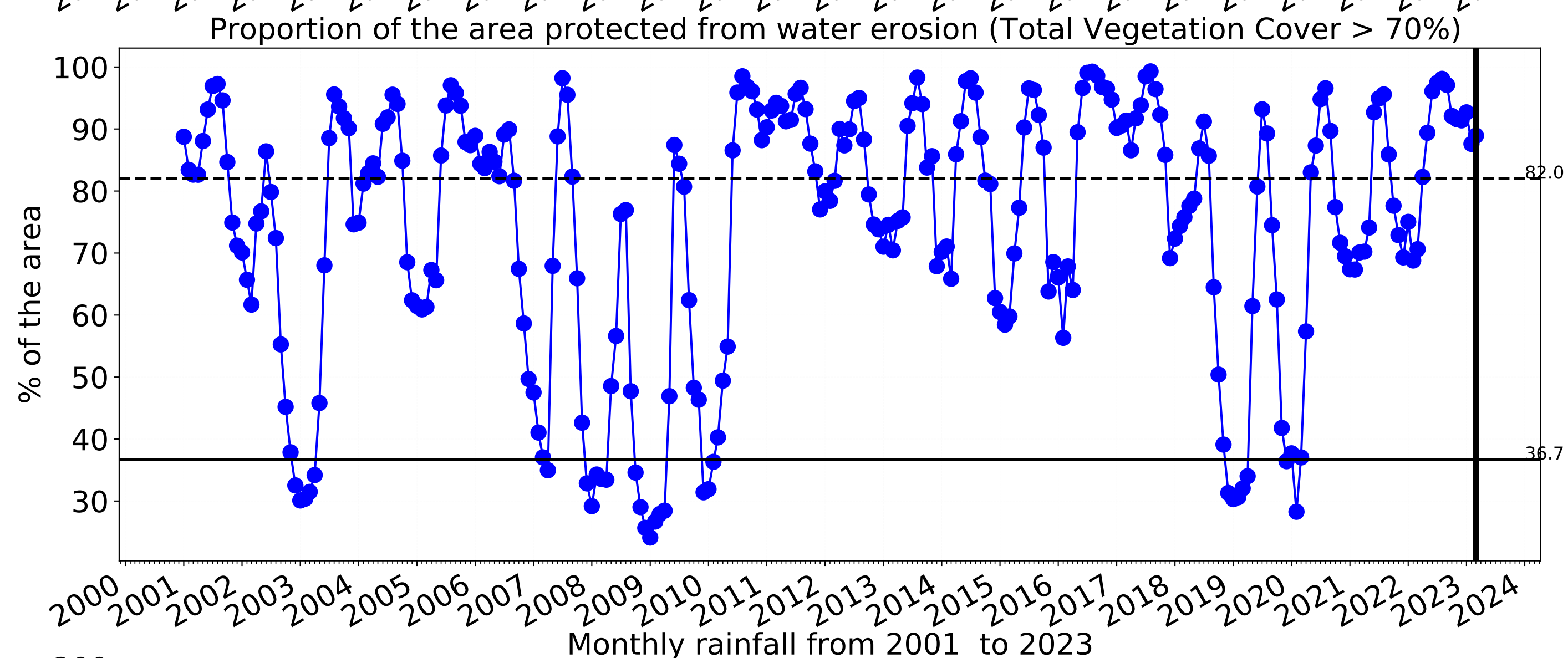
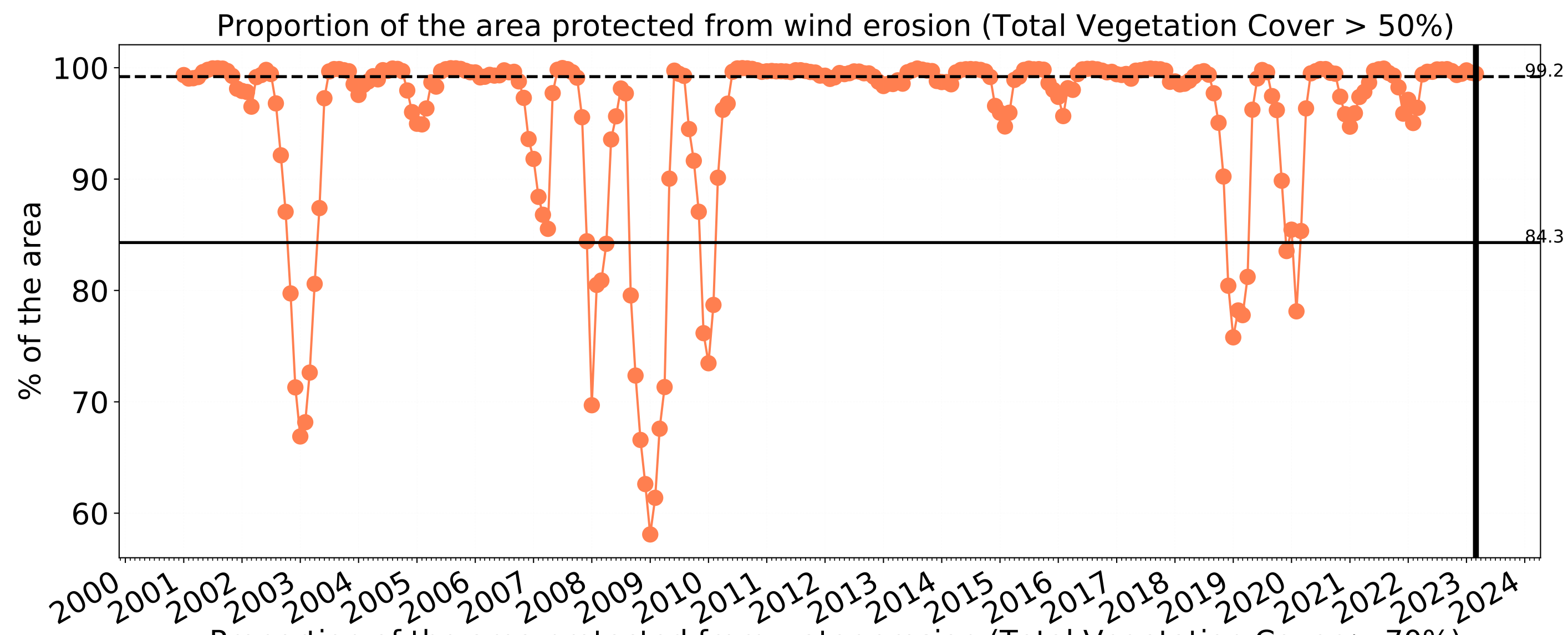
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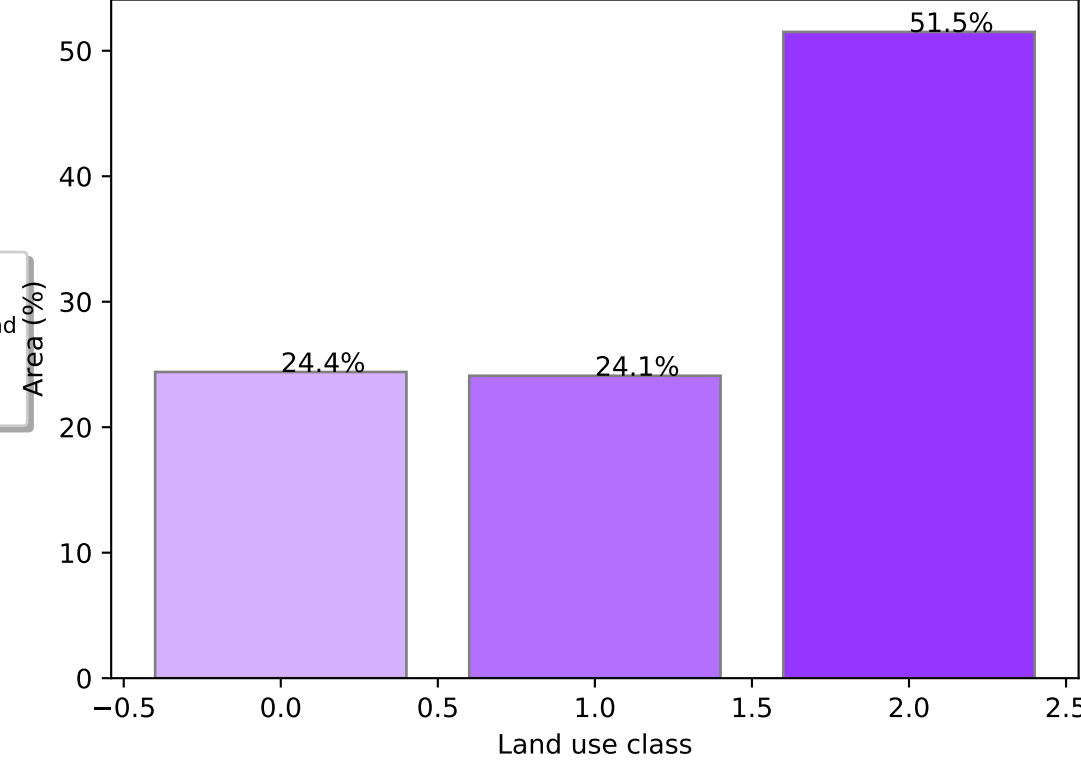


Conservation and natural environments

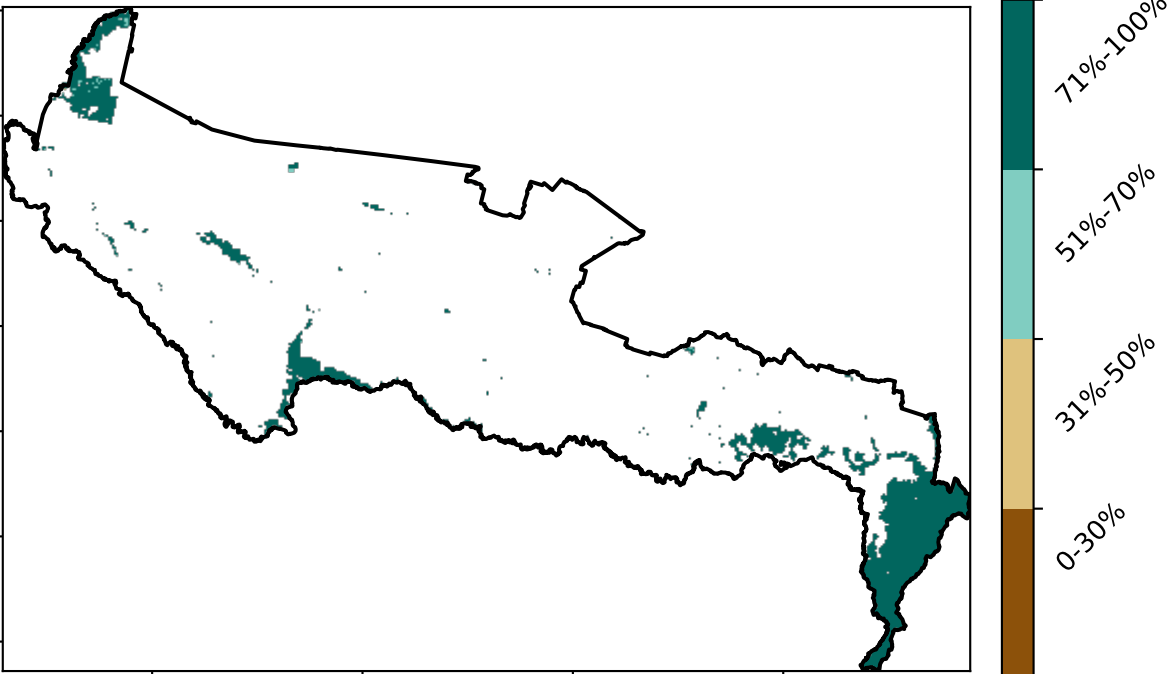
Land use and forest cover



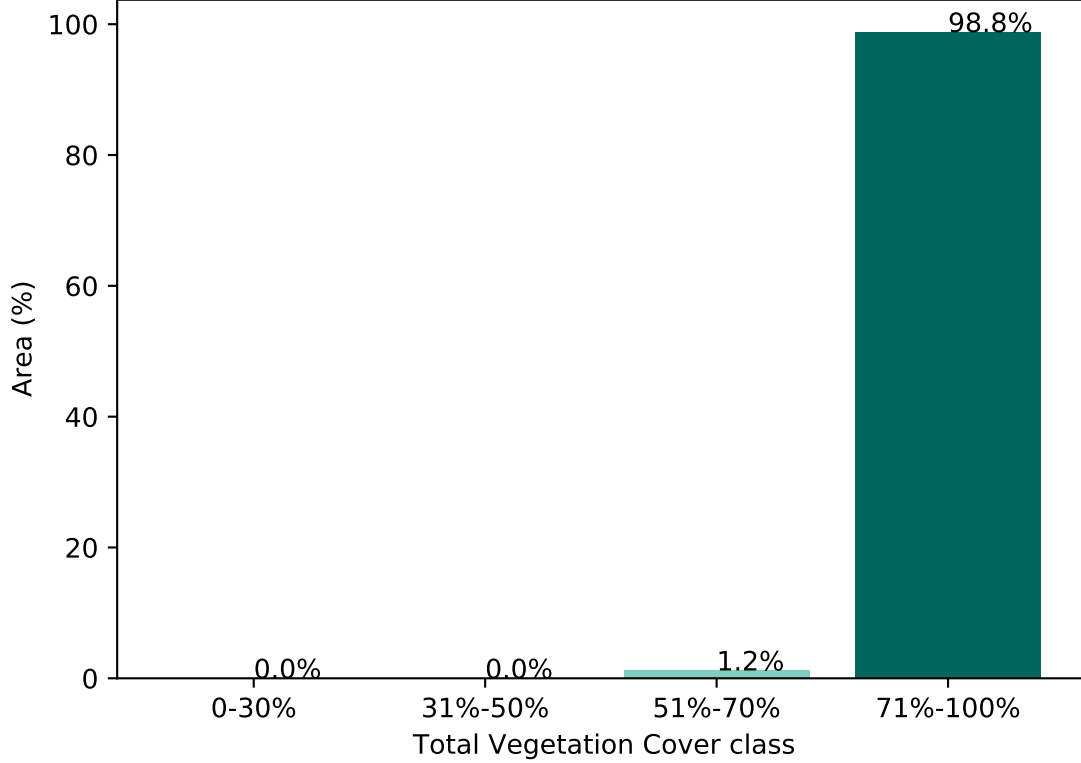
Proportion of each land class in area



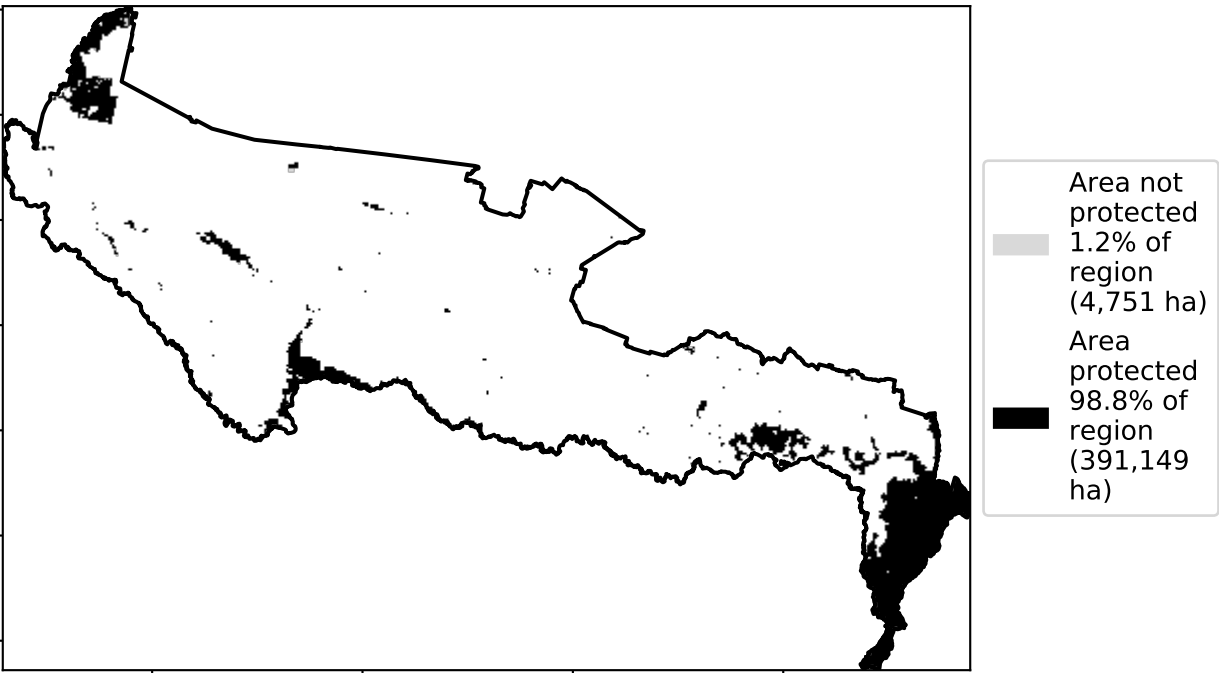
Total Vegetation Cover [%]



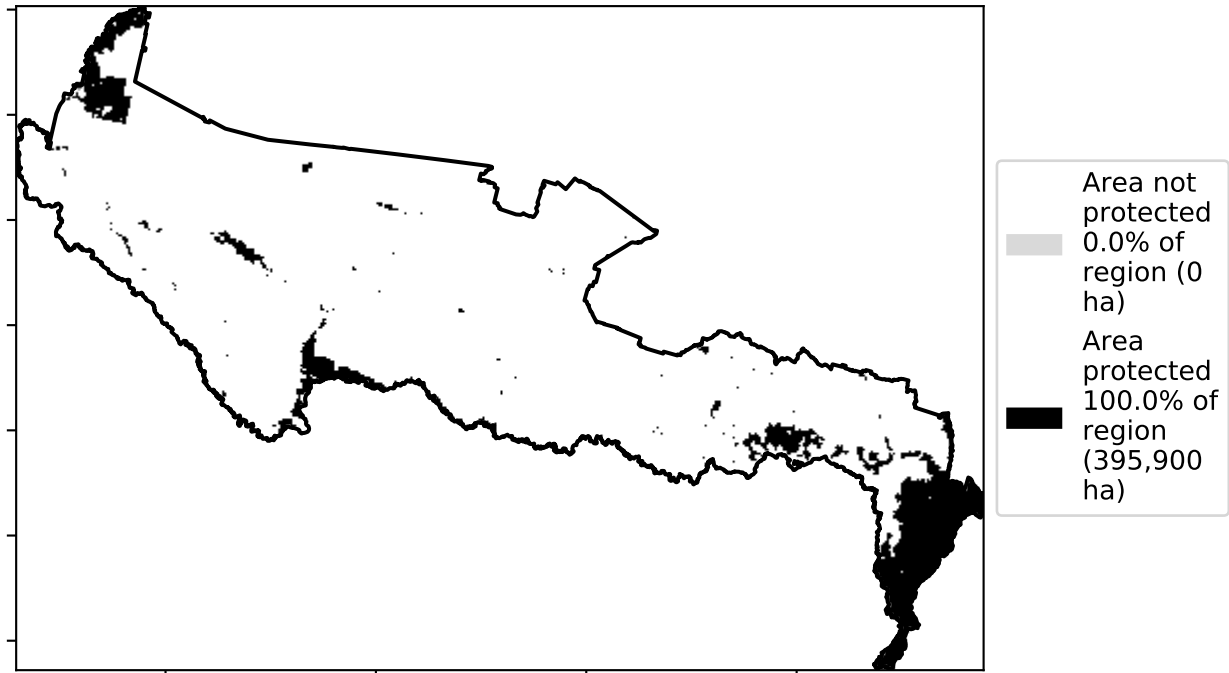
Proportion of vegetation cover class in area



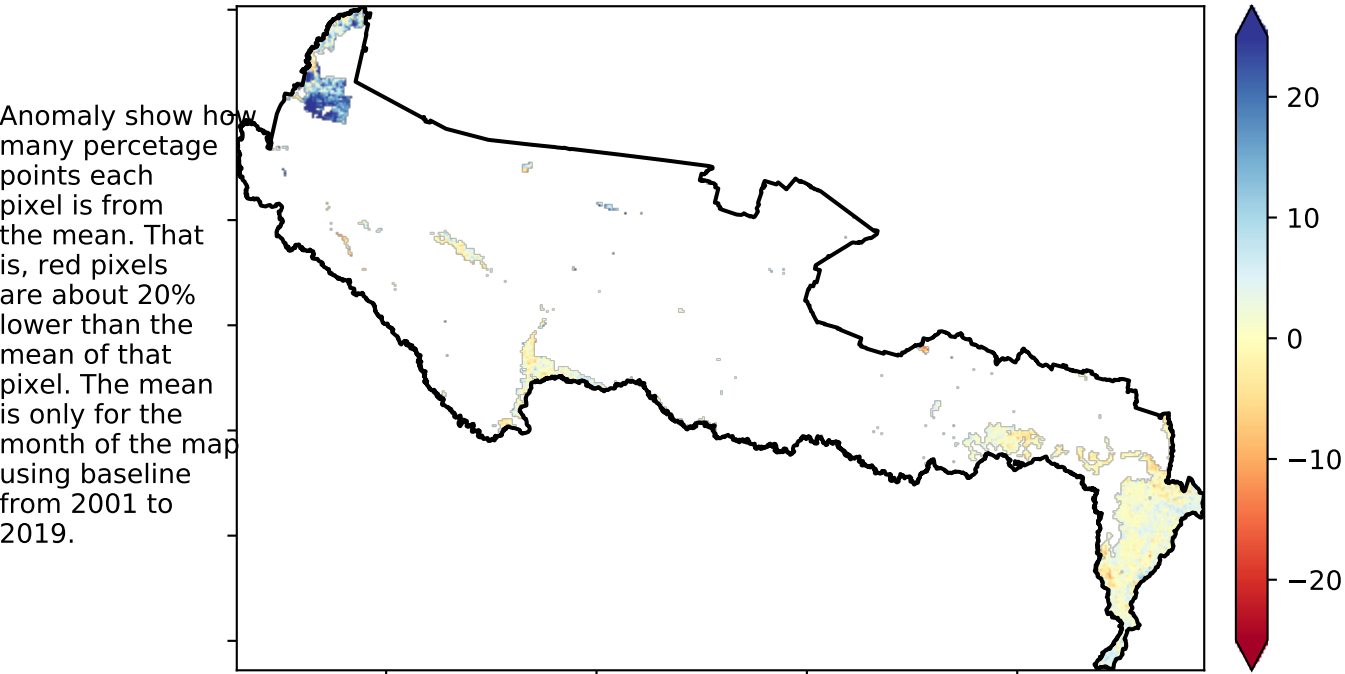
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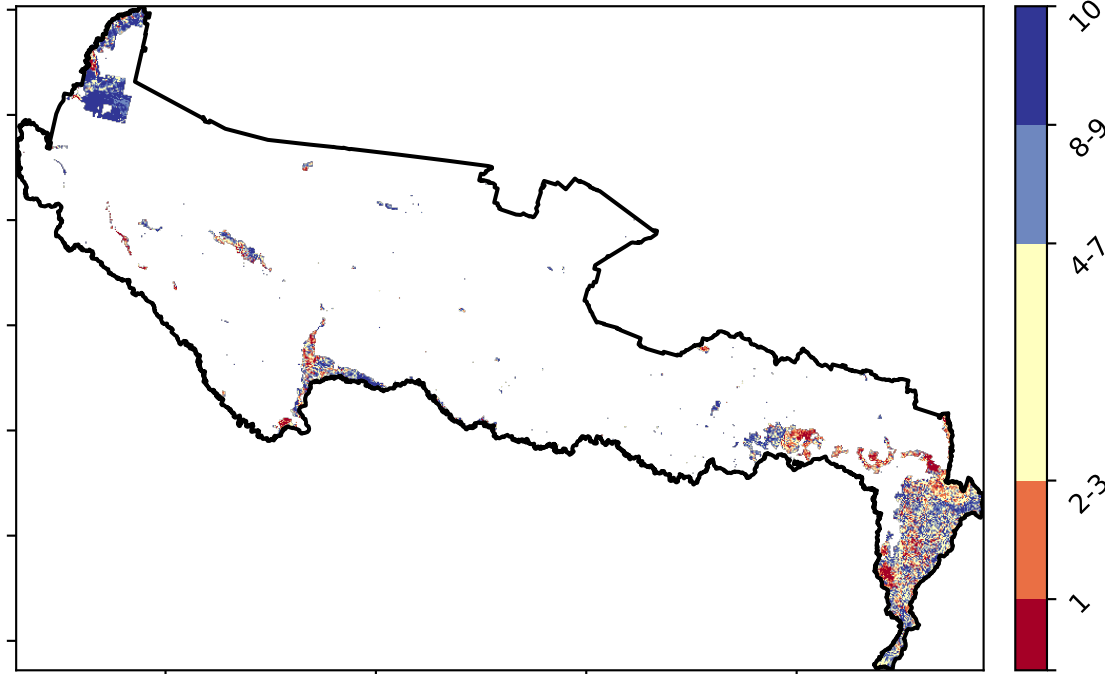


Total Vegetation Cover Anomaly [%]



Total Vegetation Cover Decile [%]

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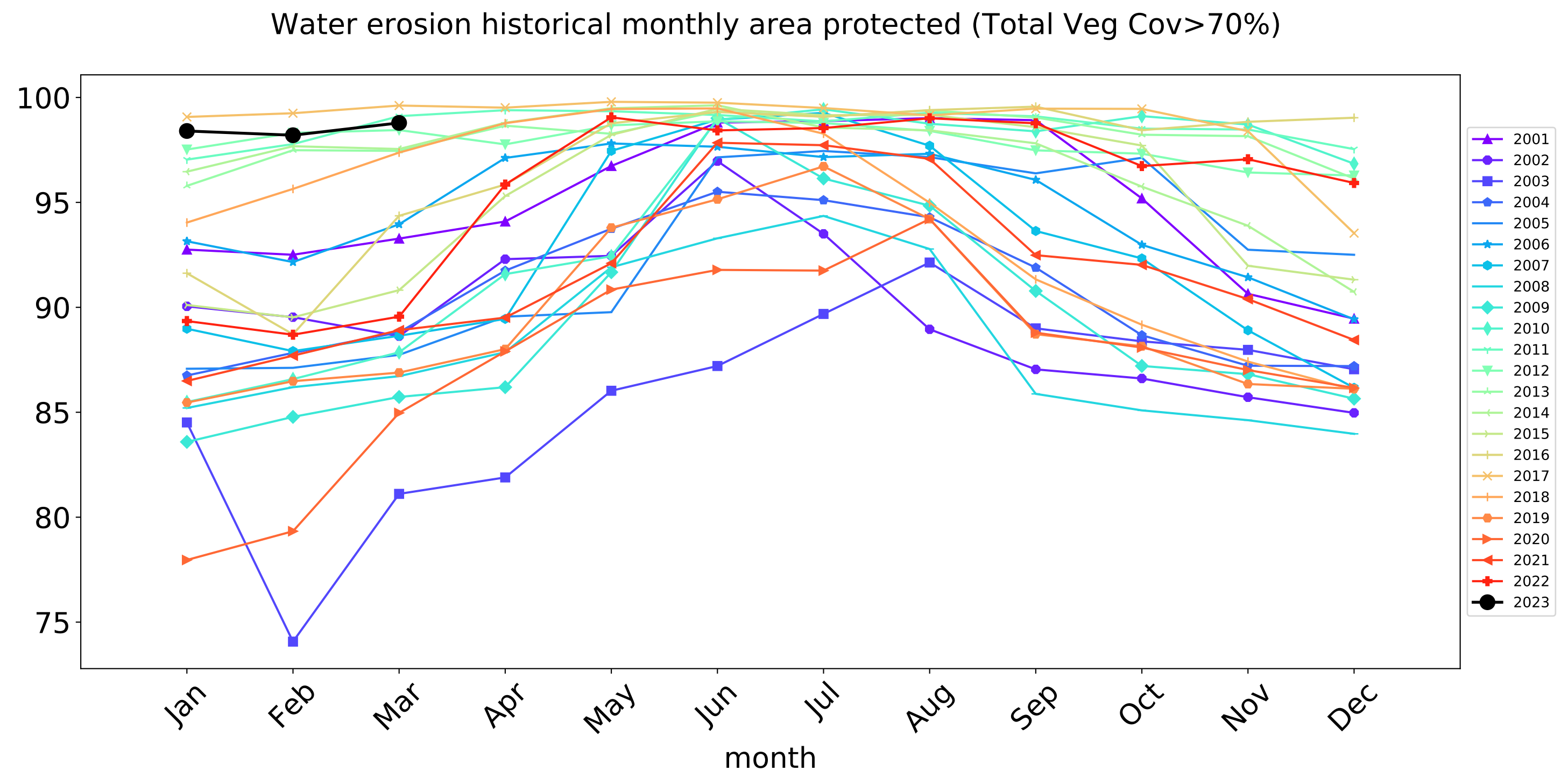
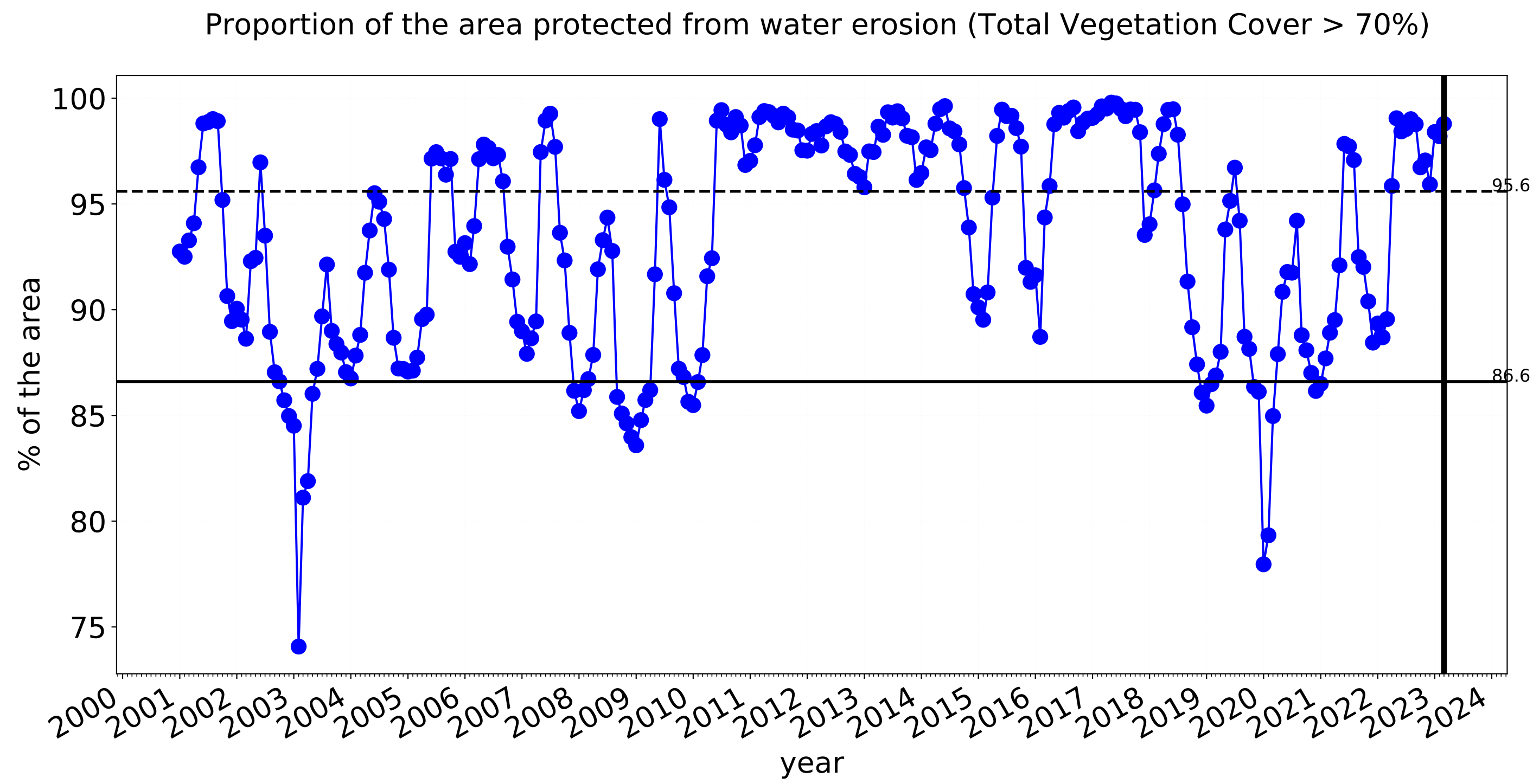
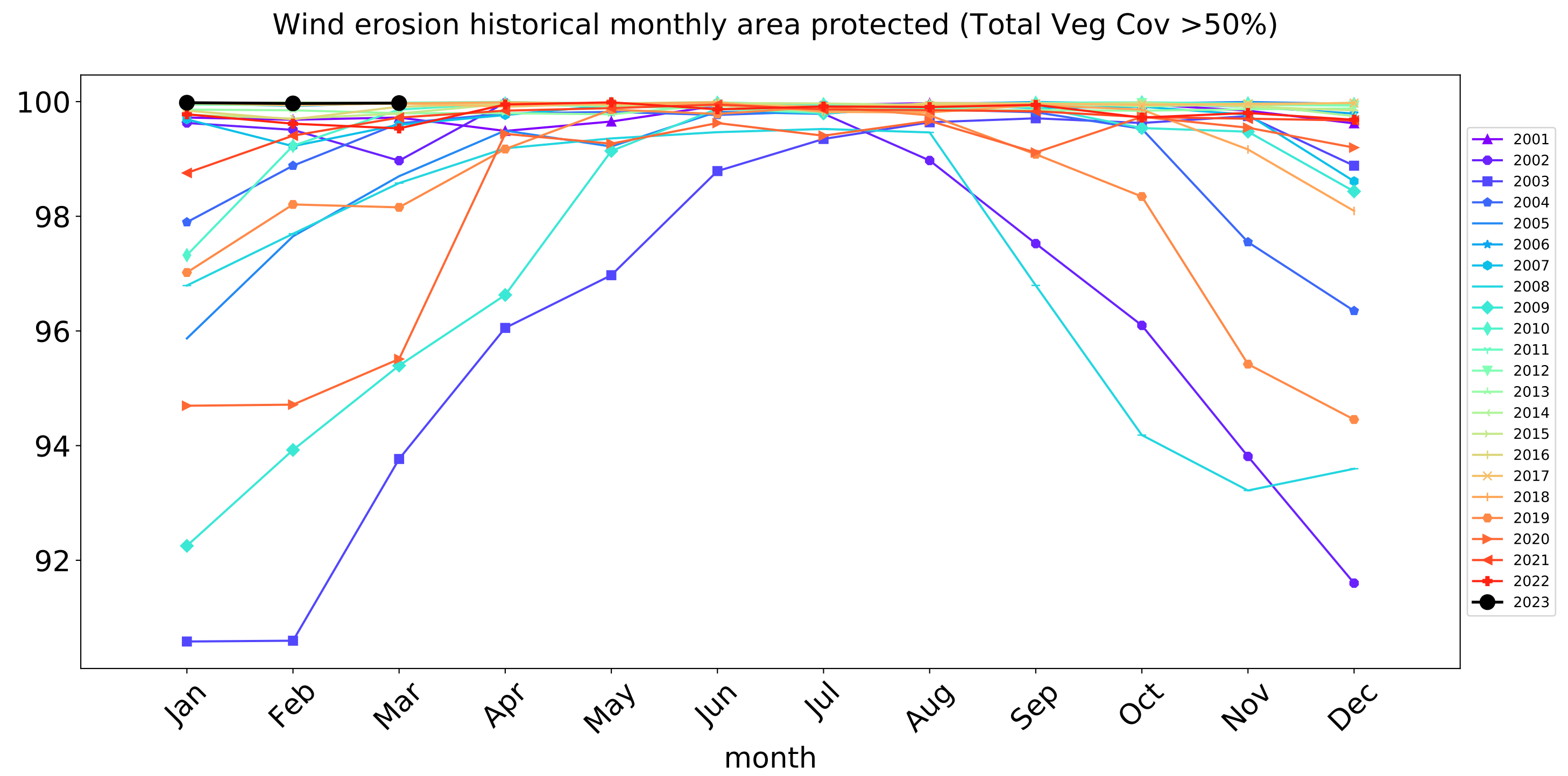
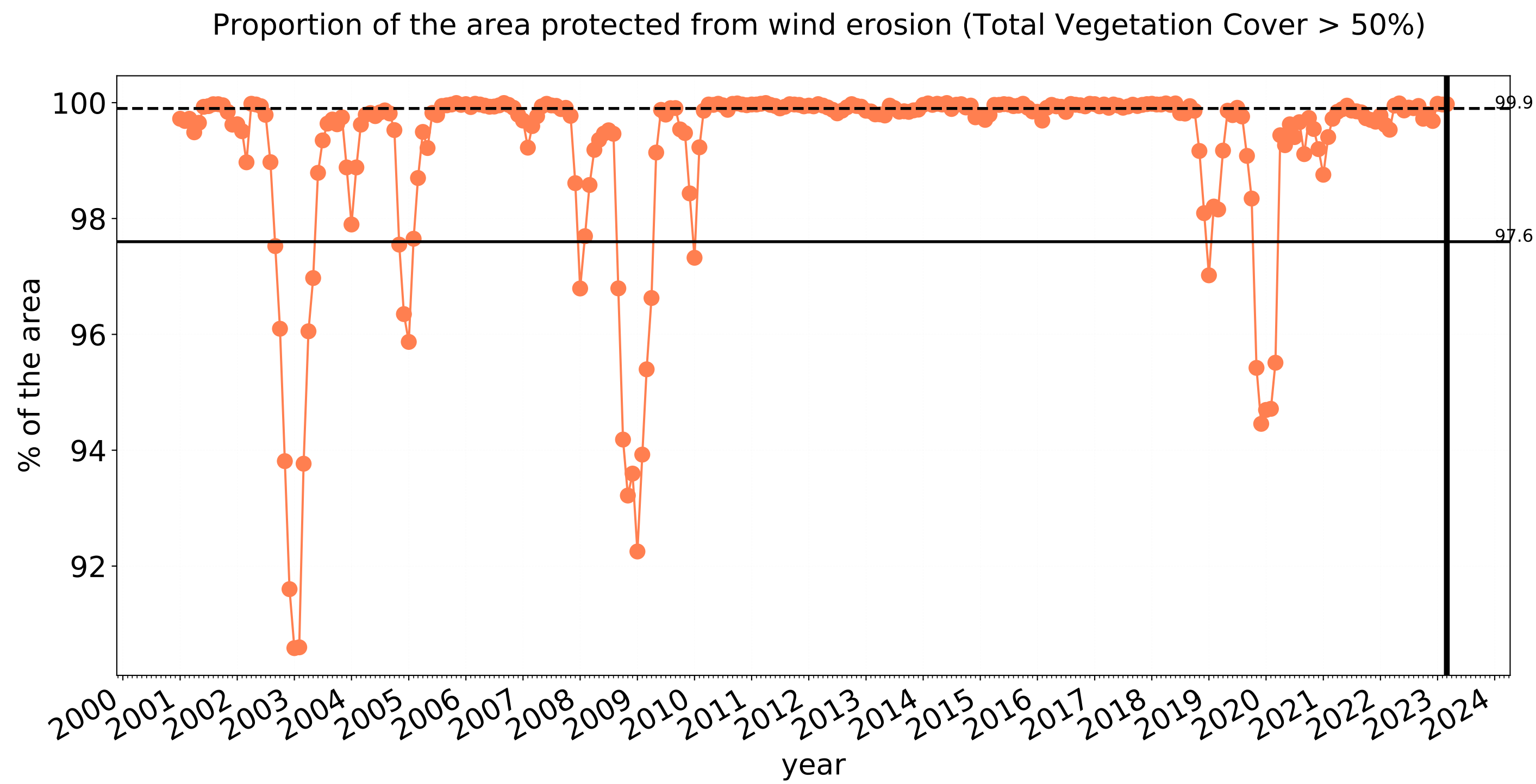


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Conservation and natural environments timeseries

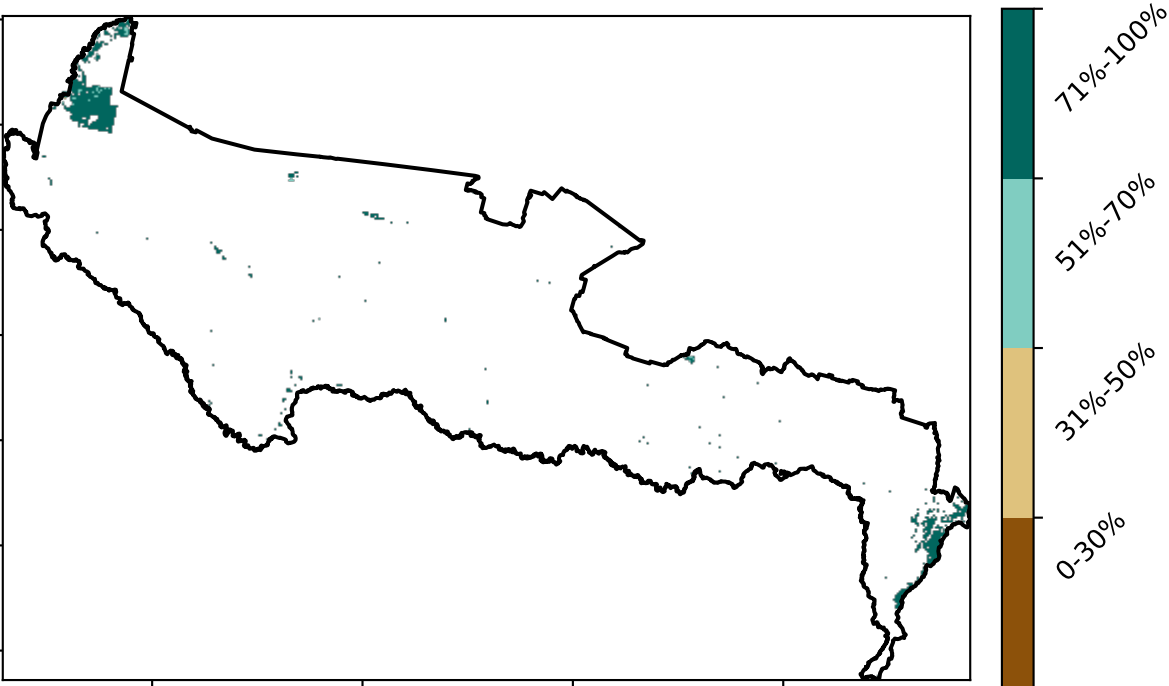


Conservation and natural environments non forest

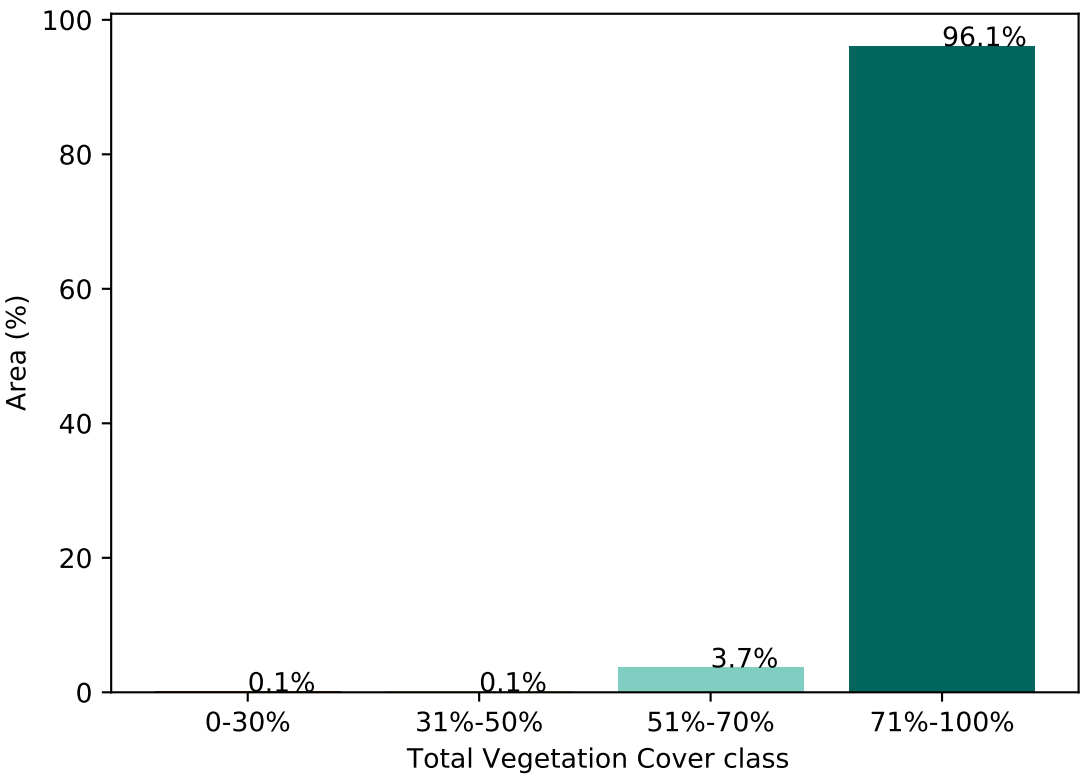
Land use and forest cover



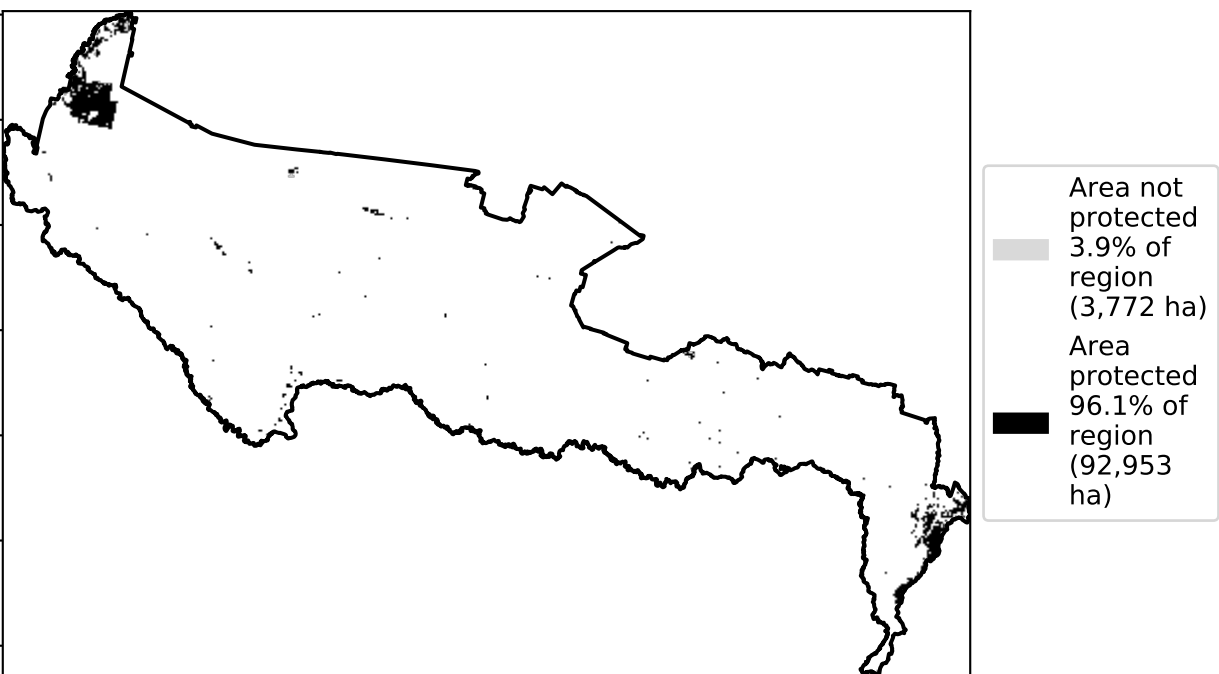
Total Vegetation Cover [%]



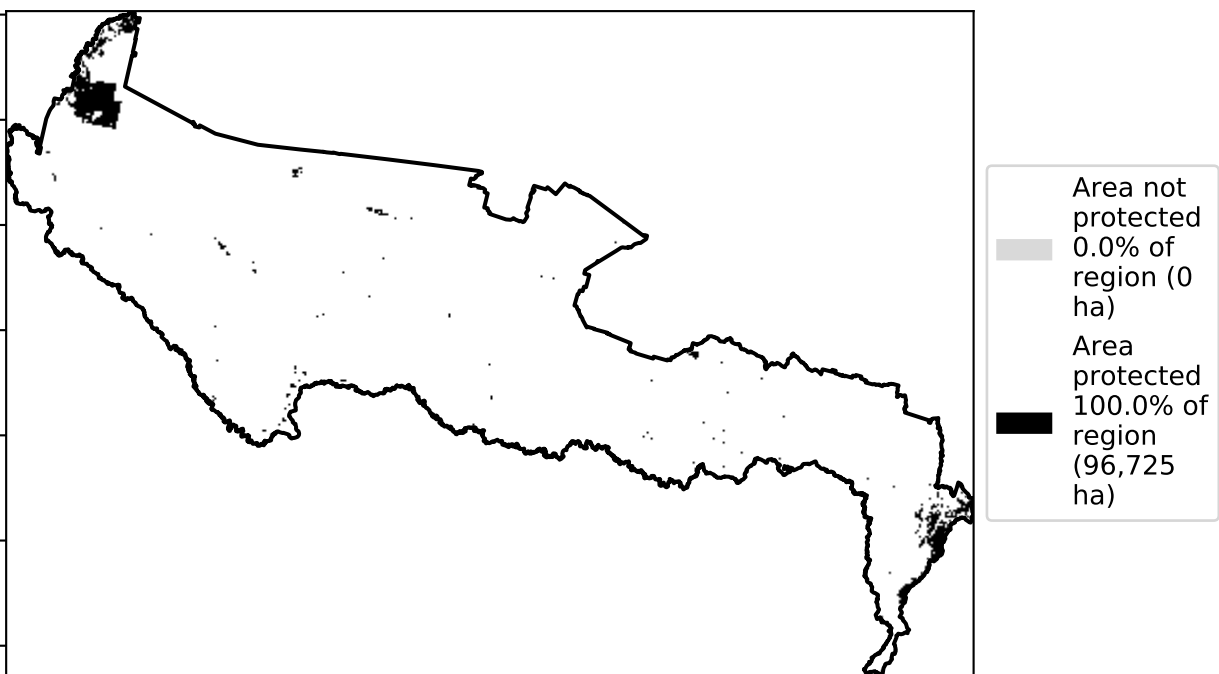
Proportion of vegetation cover class in area



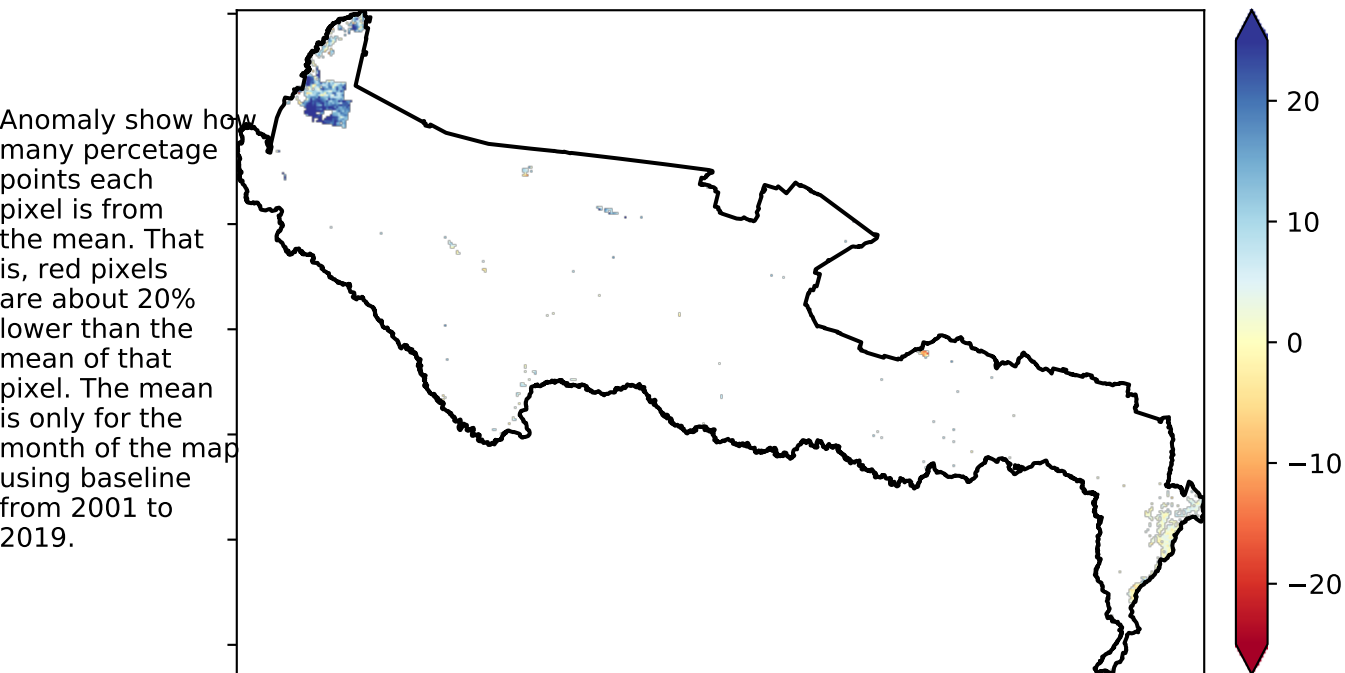
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

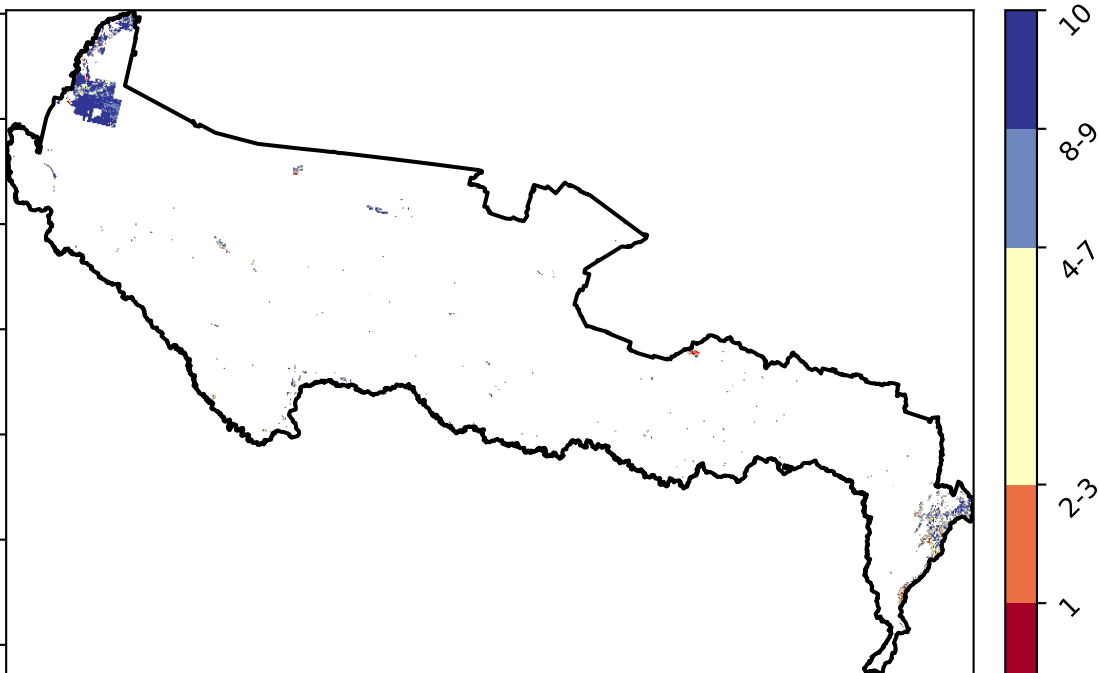


Total Vegetation Cover Anomaly [%]

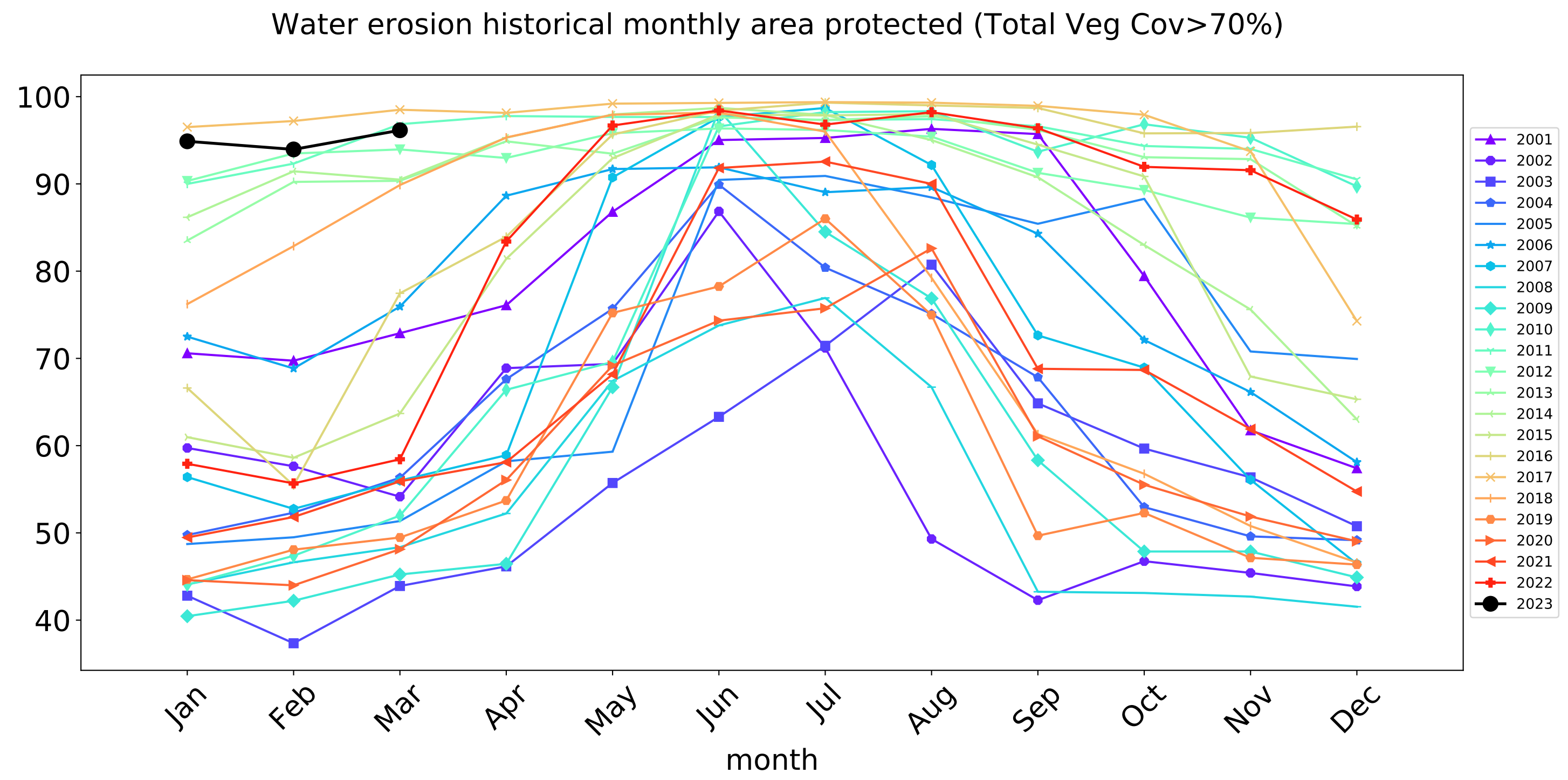
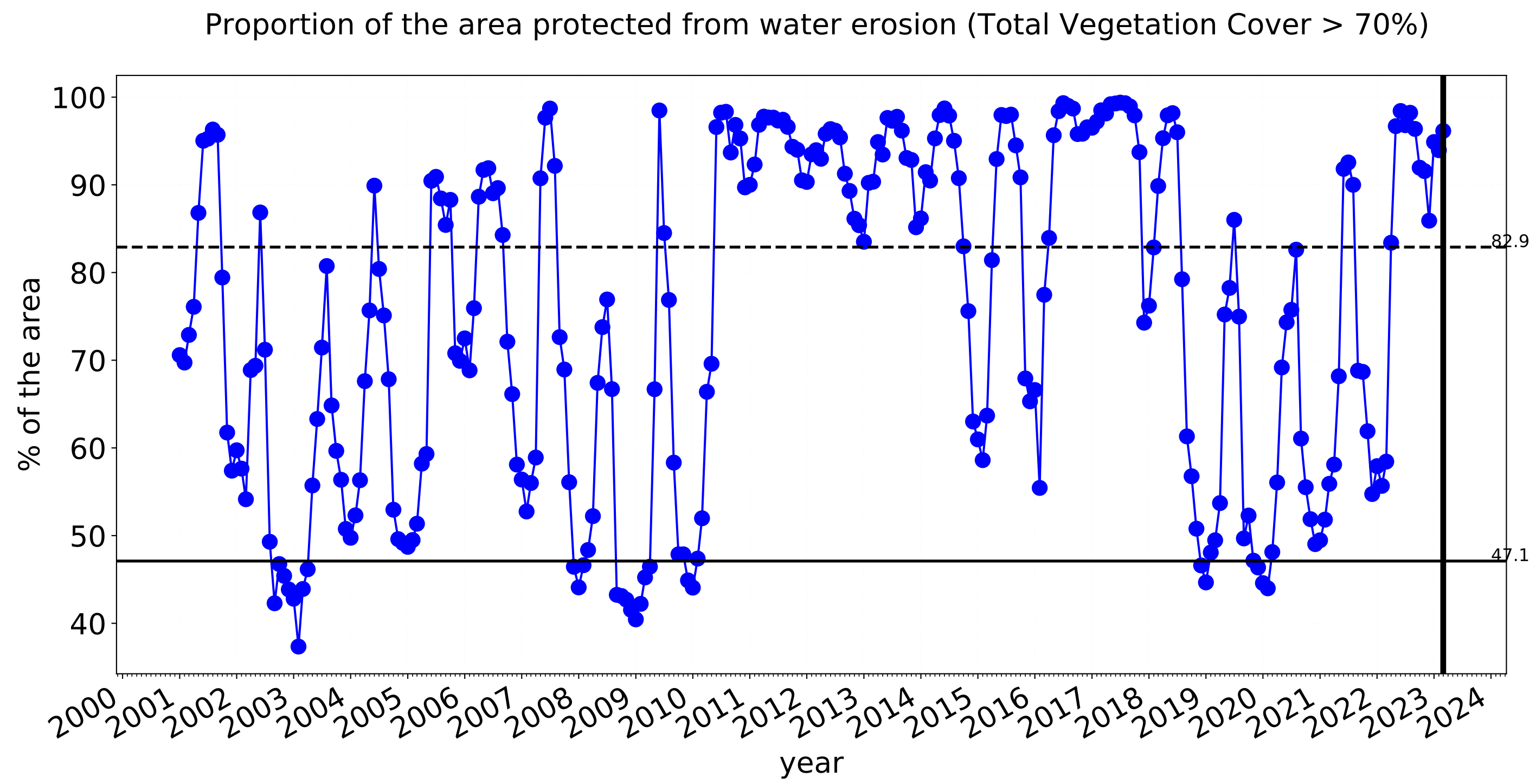
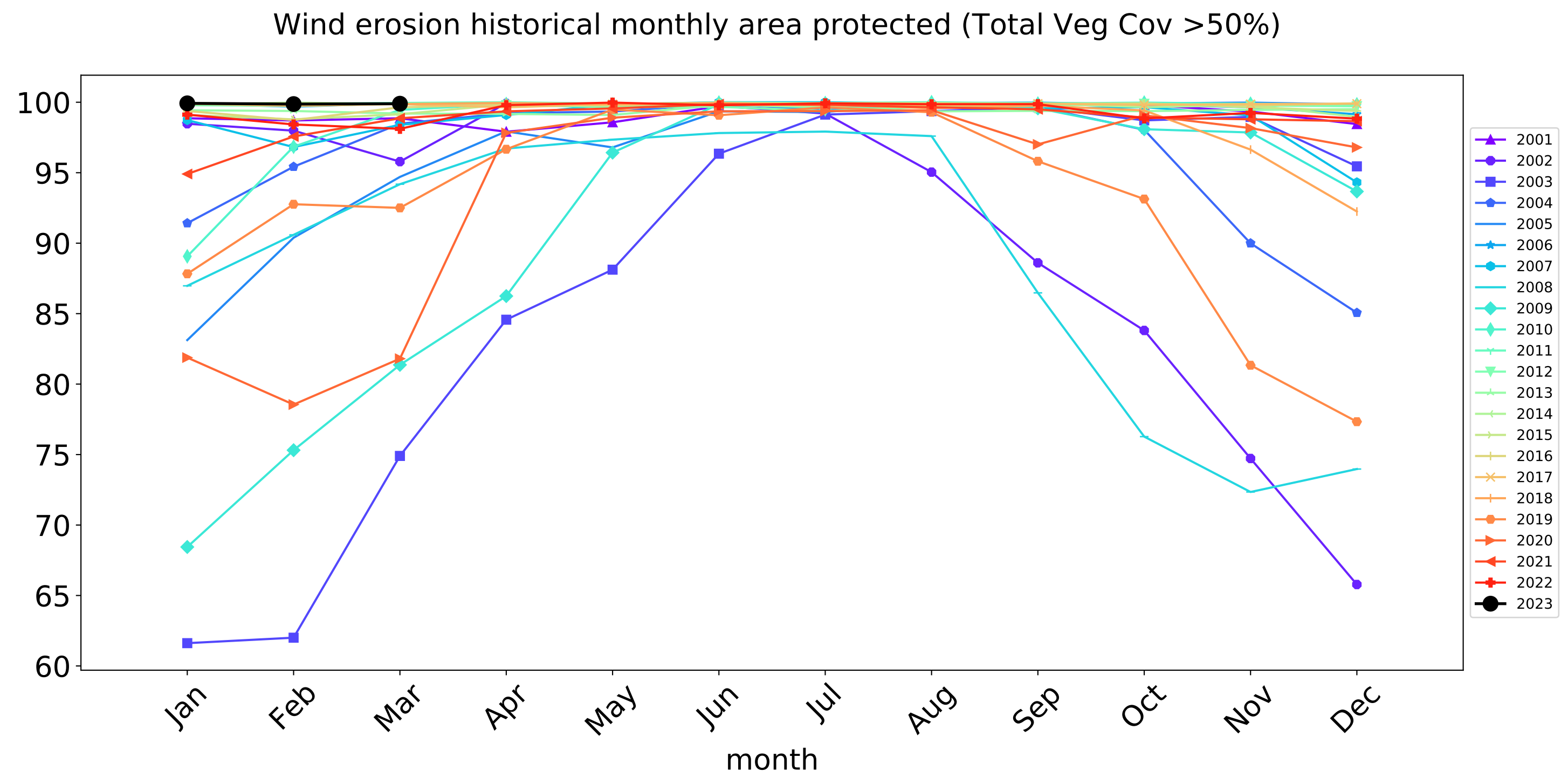
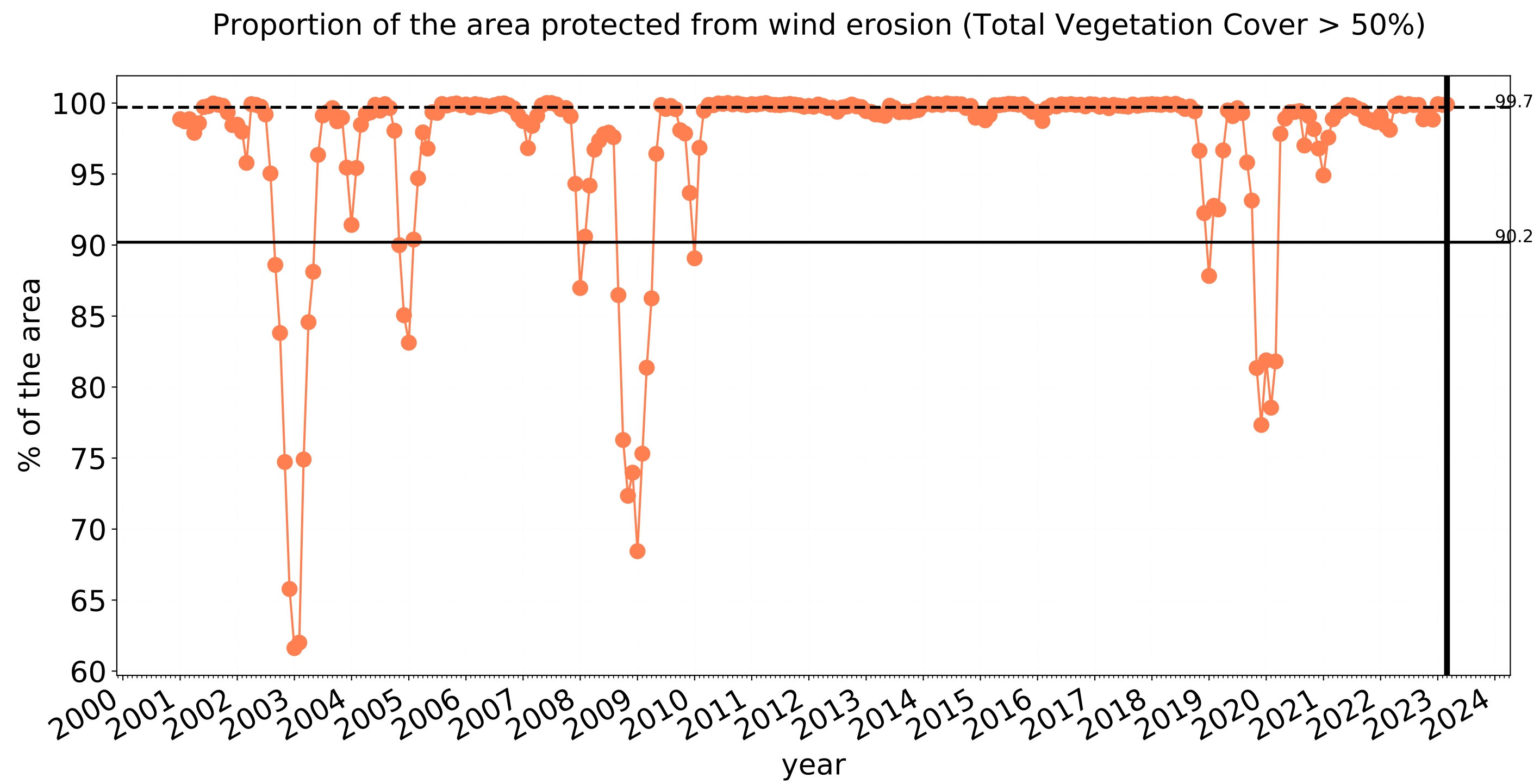


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Total Vegetation Cover Decile [%]



Conservation and natural environments non forest timeseries

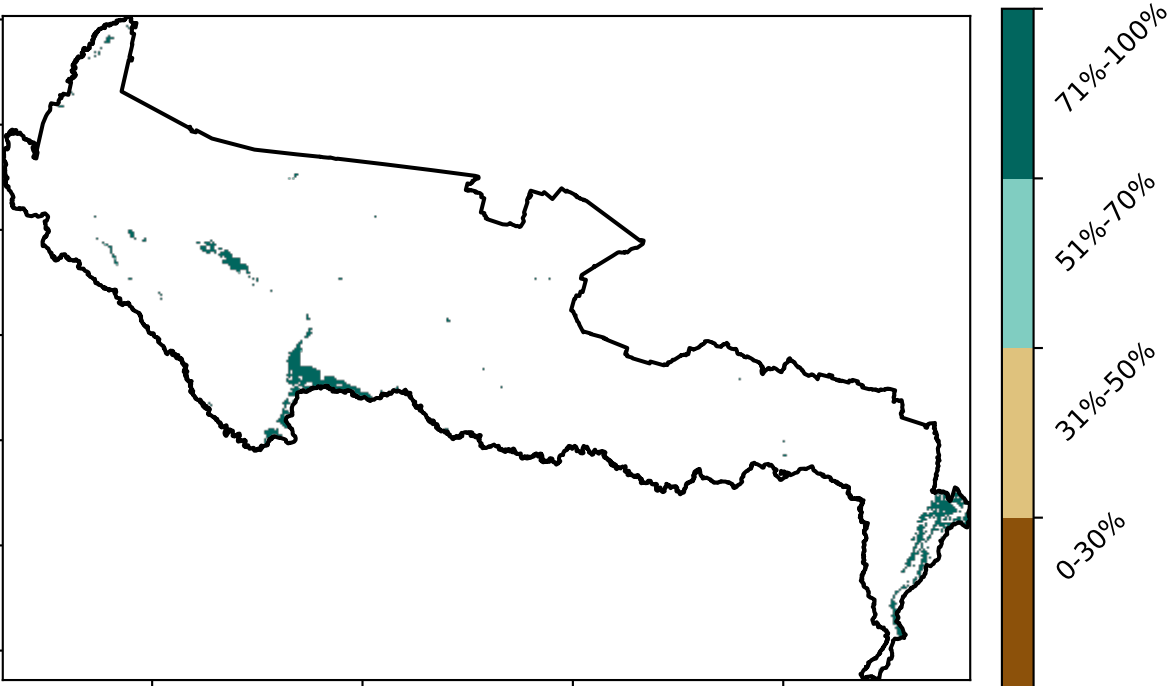


Conservation and natural environments Woodland forest

Land use and forest cover



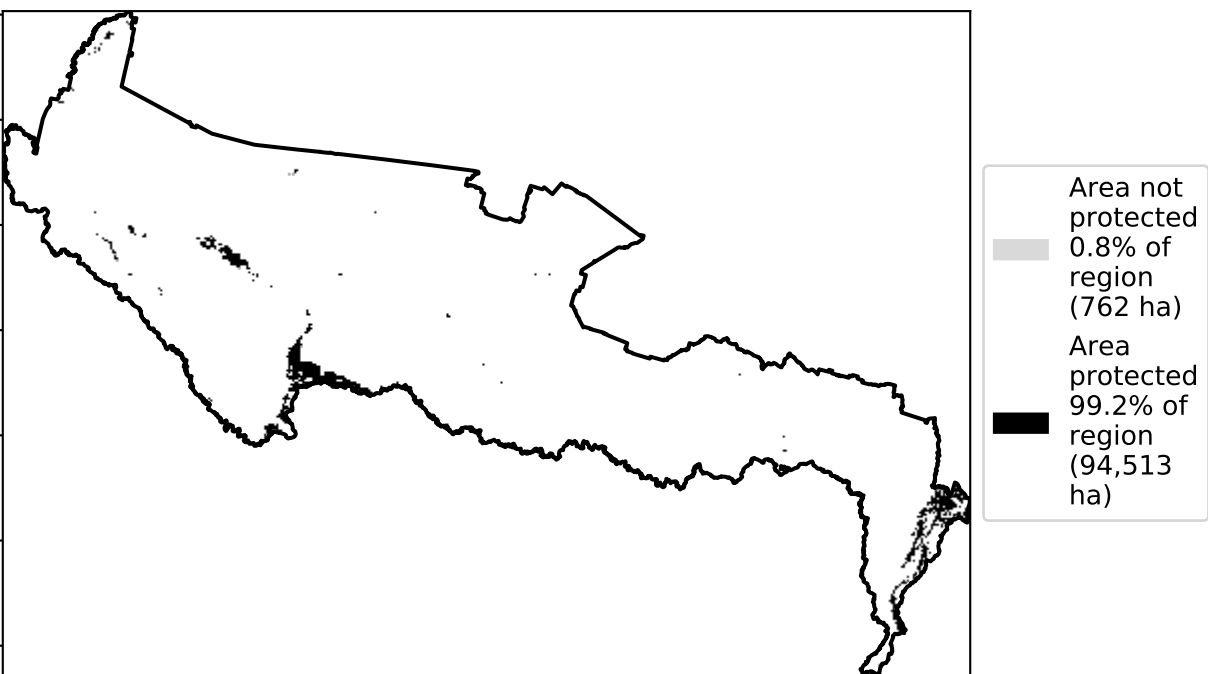
Total Vegetation Cover [%]



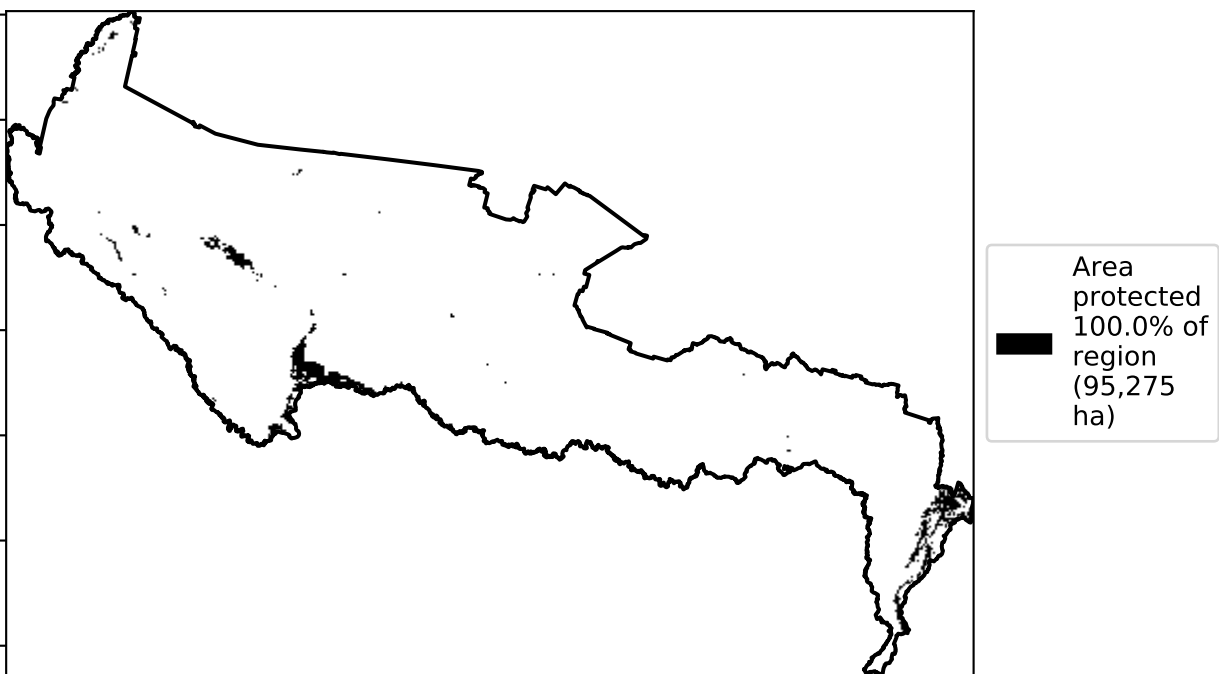
Proportion of vegetation cover class in area



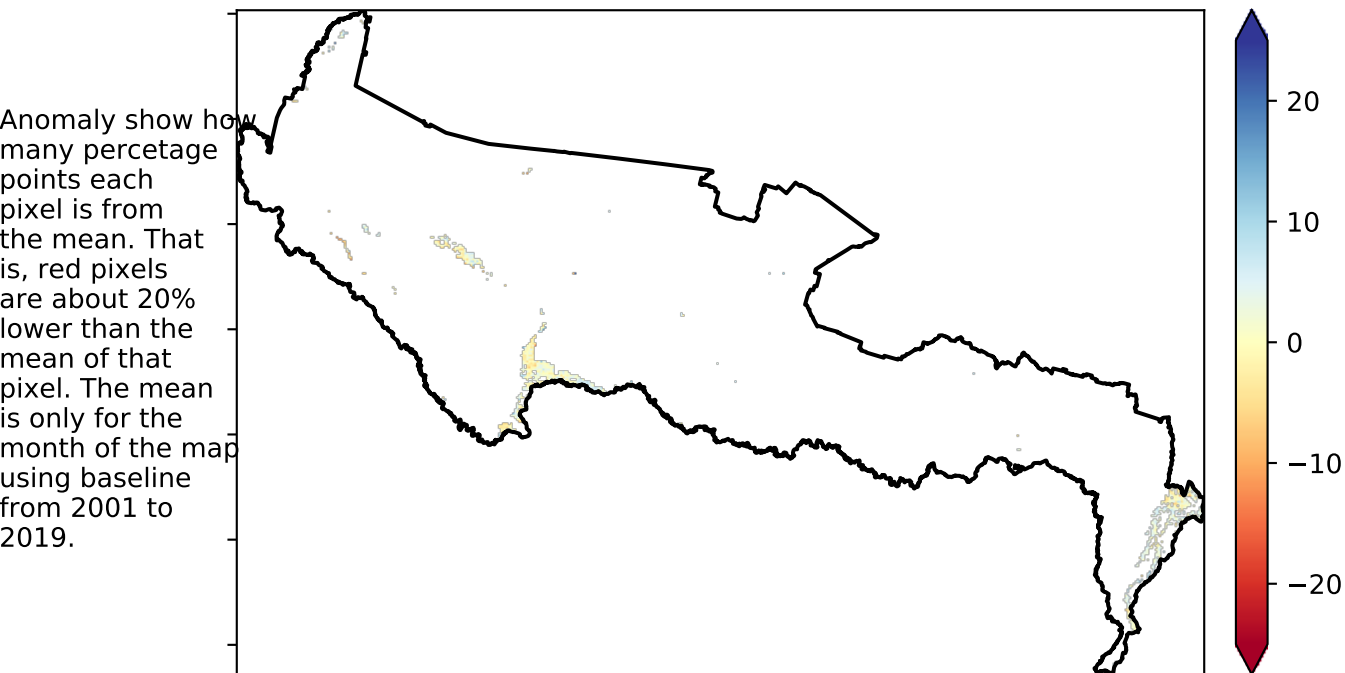
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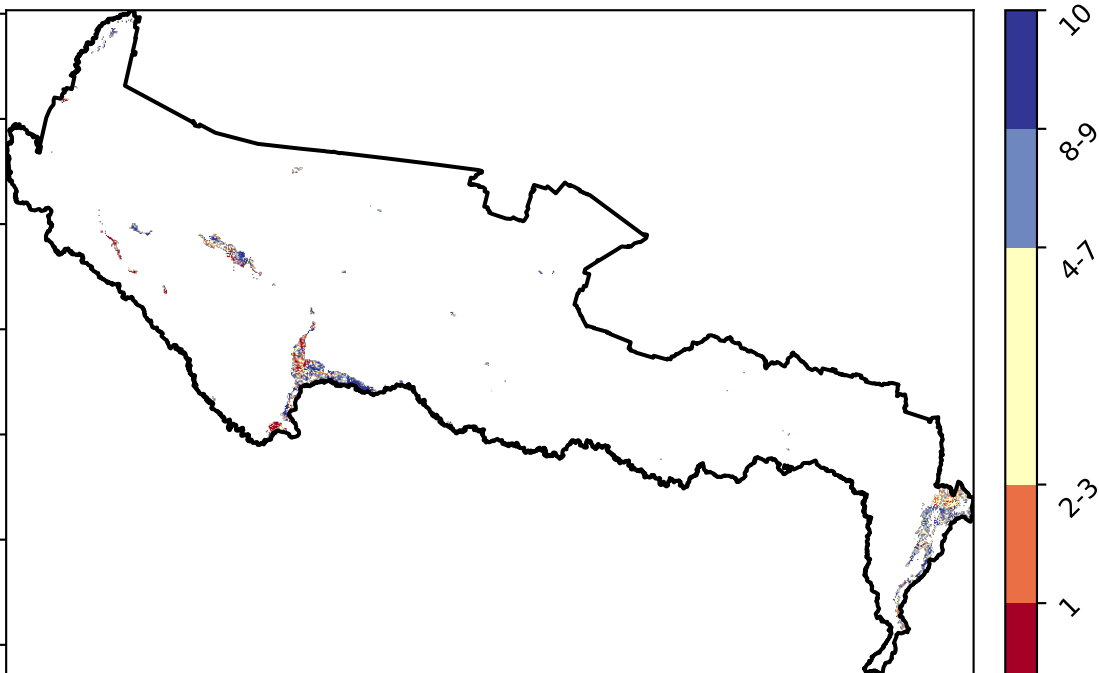


Total Vegetation Cover Anomaly [%]

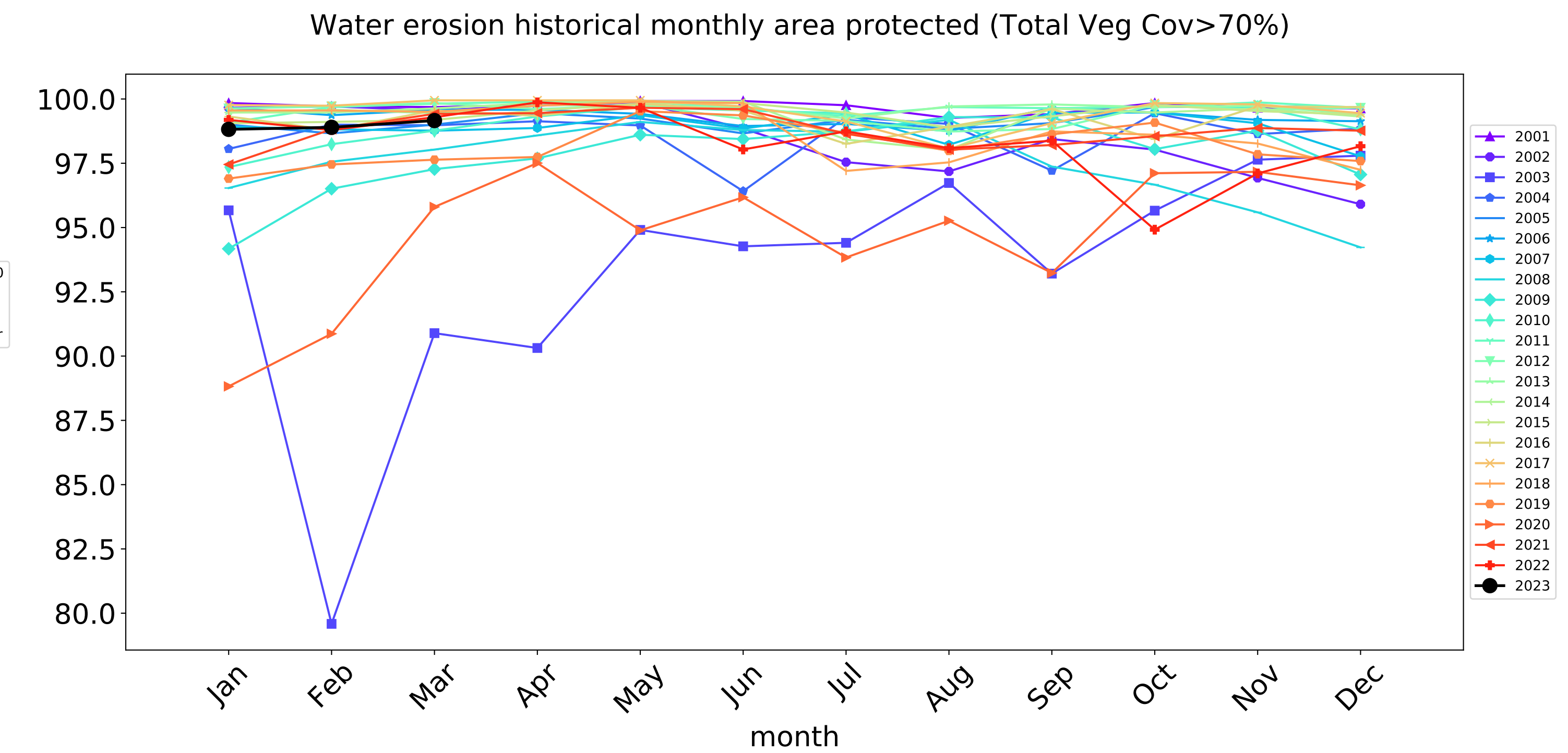
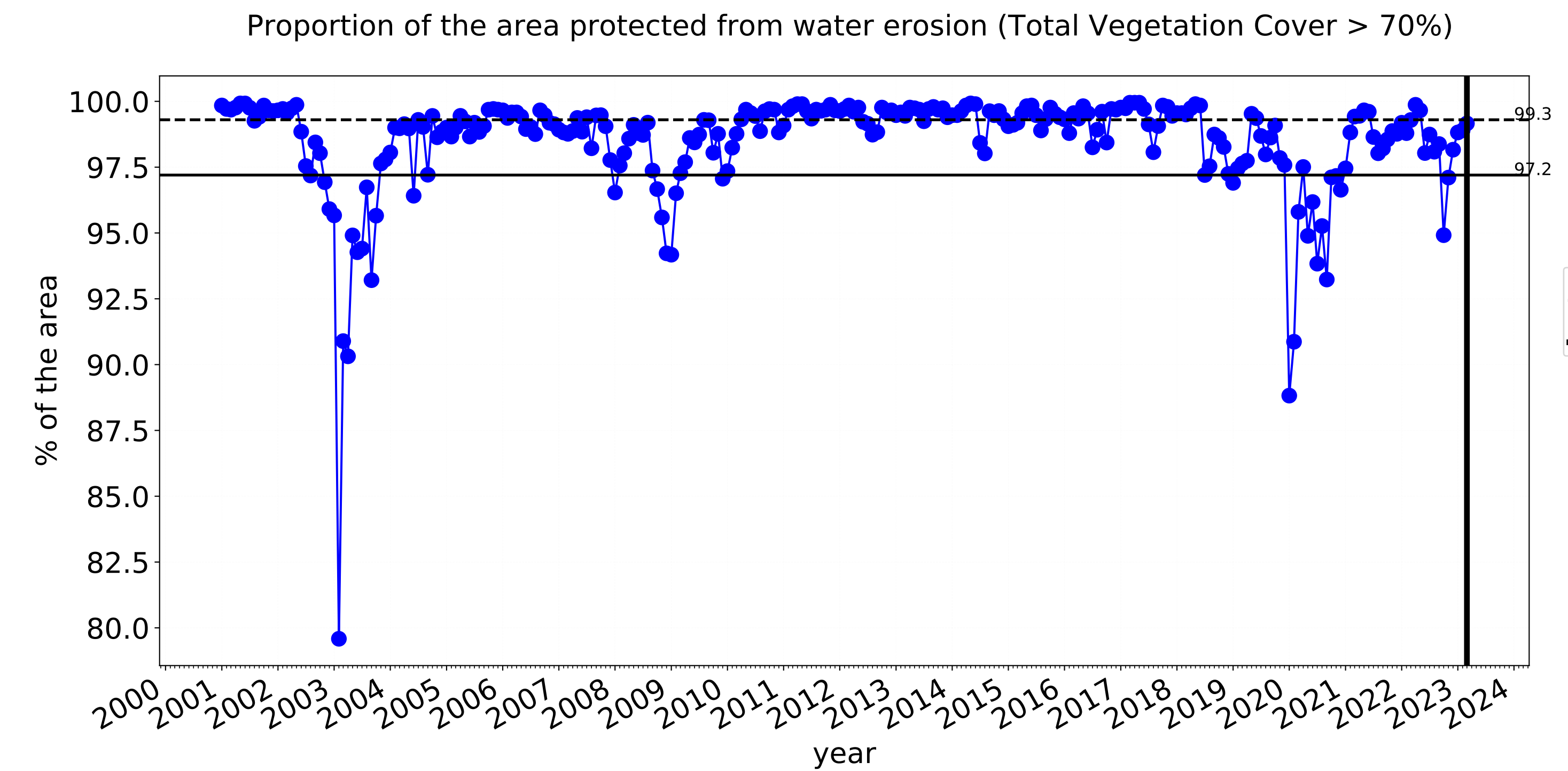
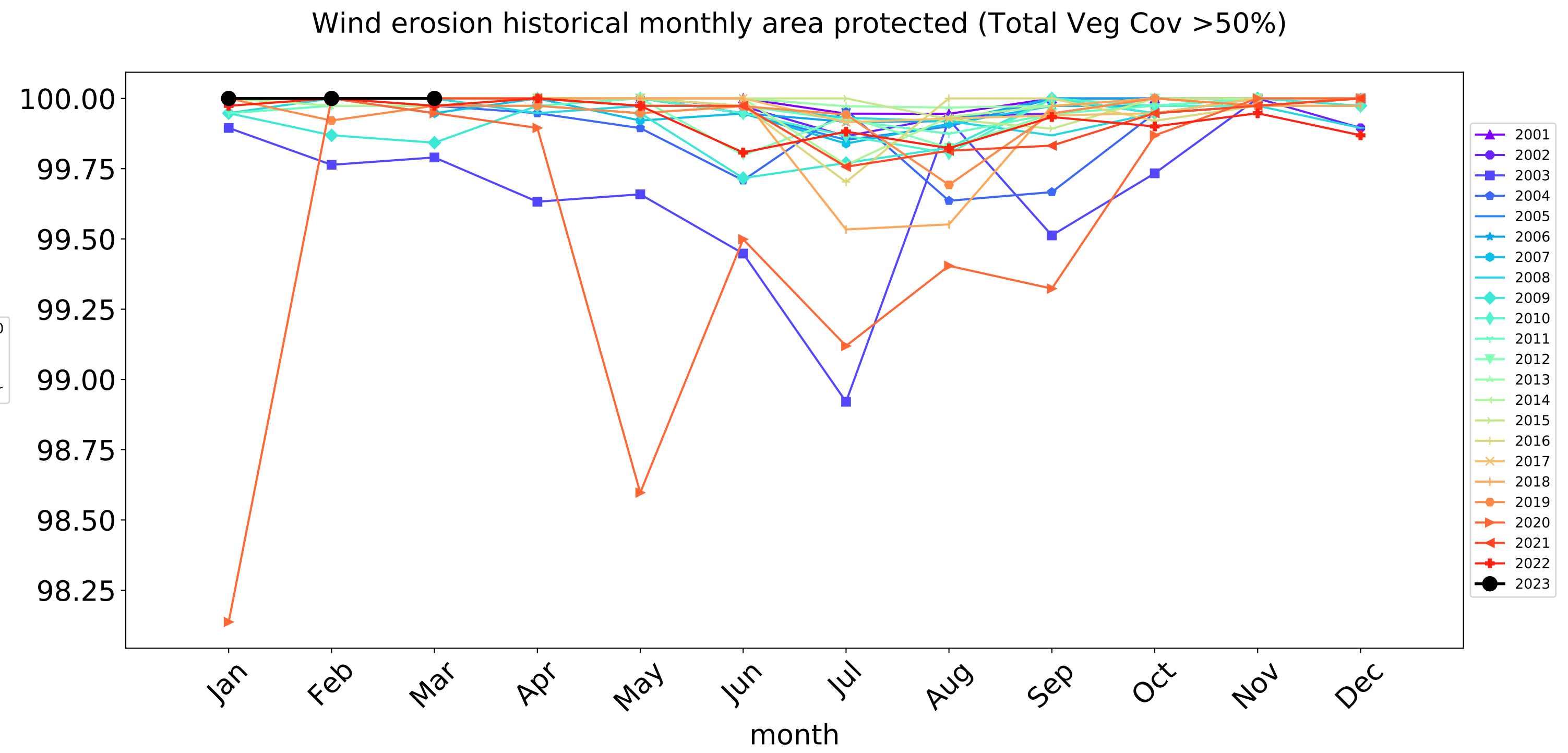
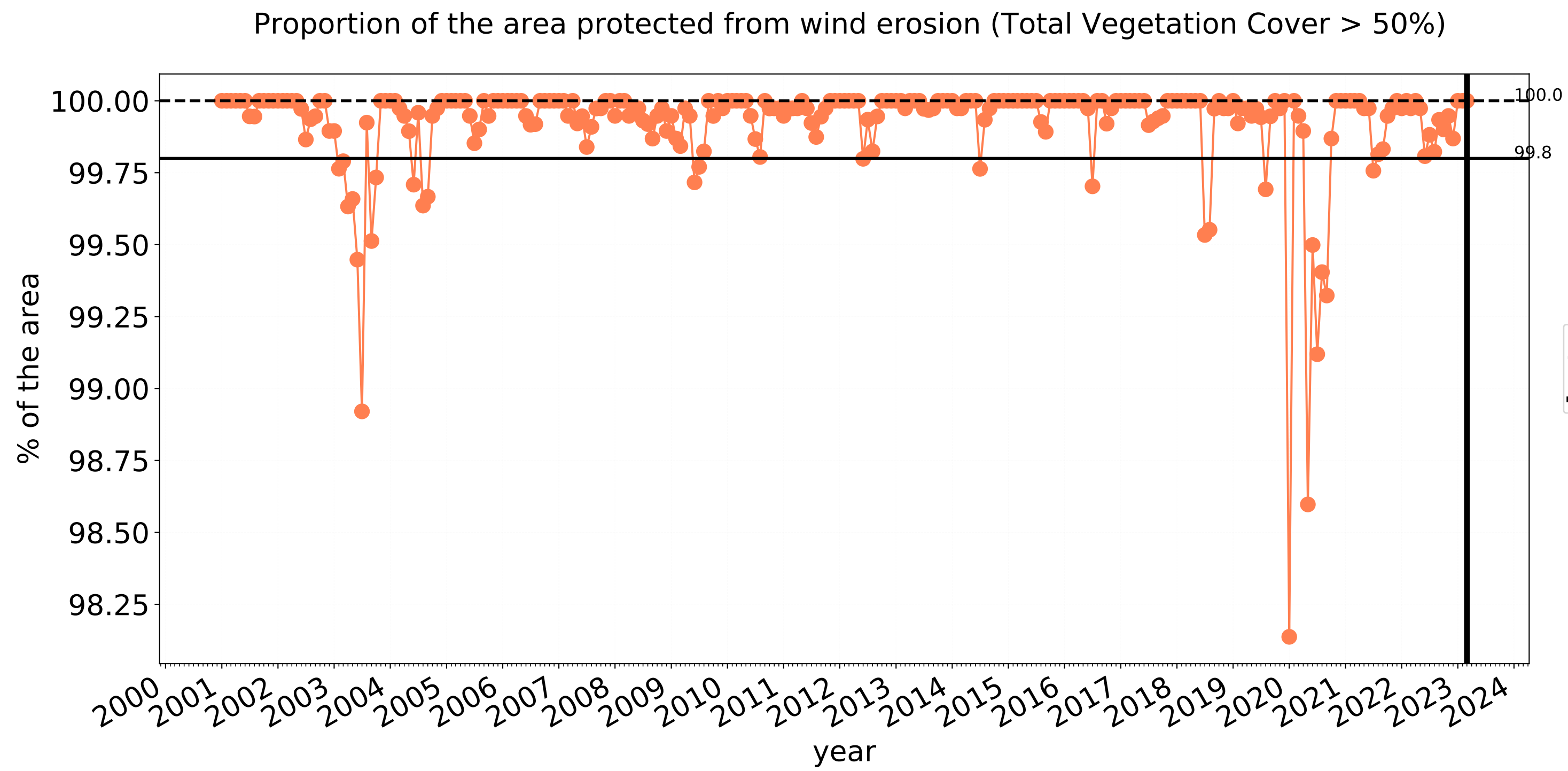


Total Vegetation Cover Decile [%]

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Conservation and natural environments Woodland forest timeseries



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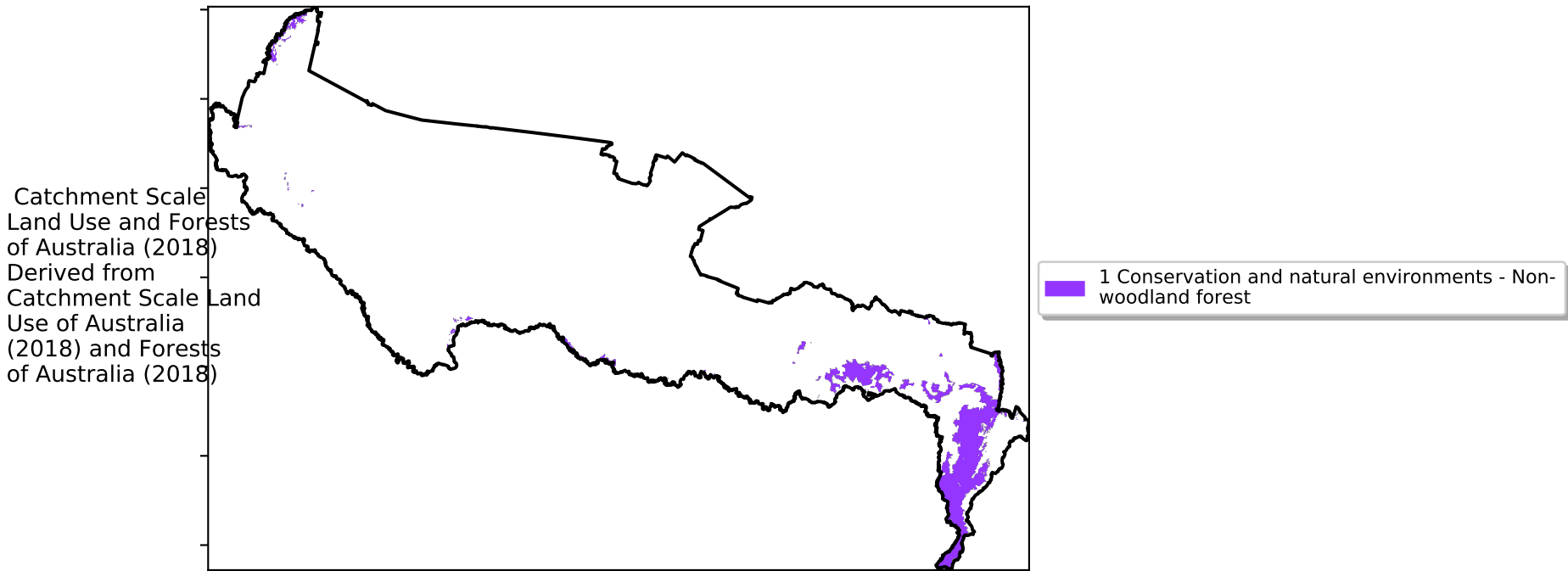


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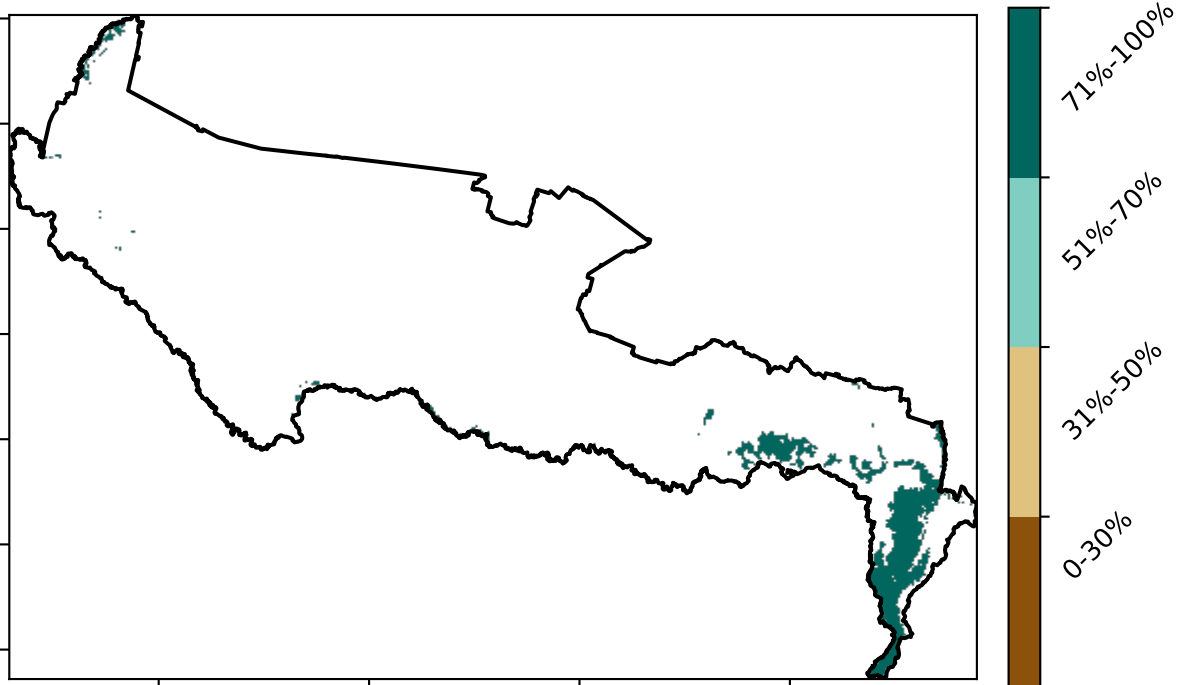


Conservation and natural environments Forest (non woodland)

Land use and forest cover



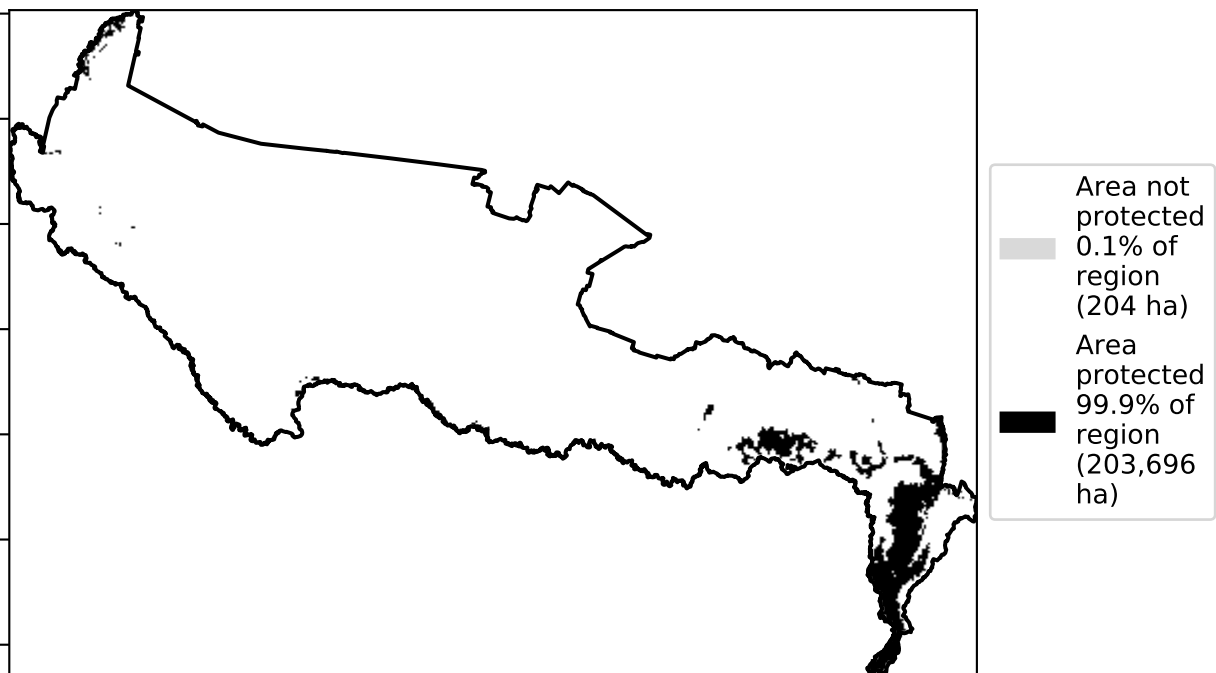
Total Vegetation Cover [%]



Proportion of vegetation cover class in area



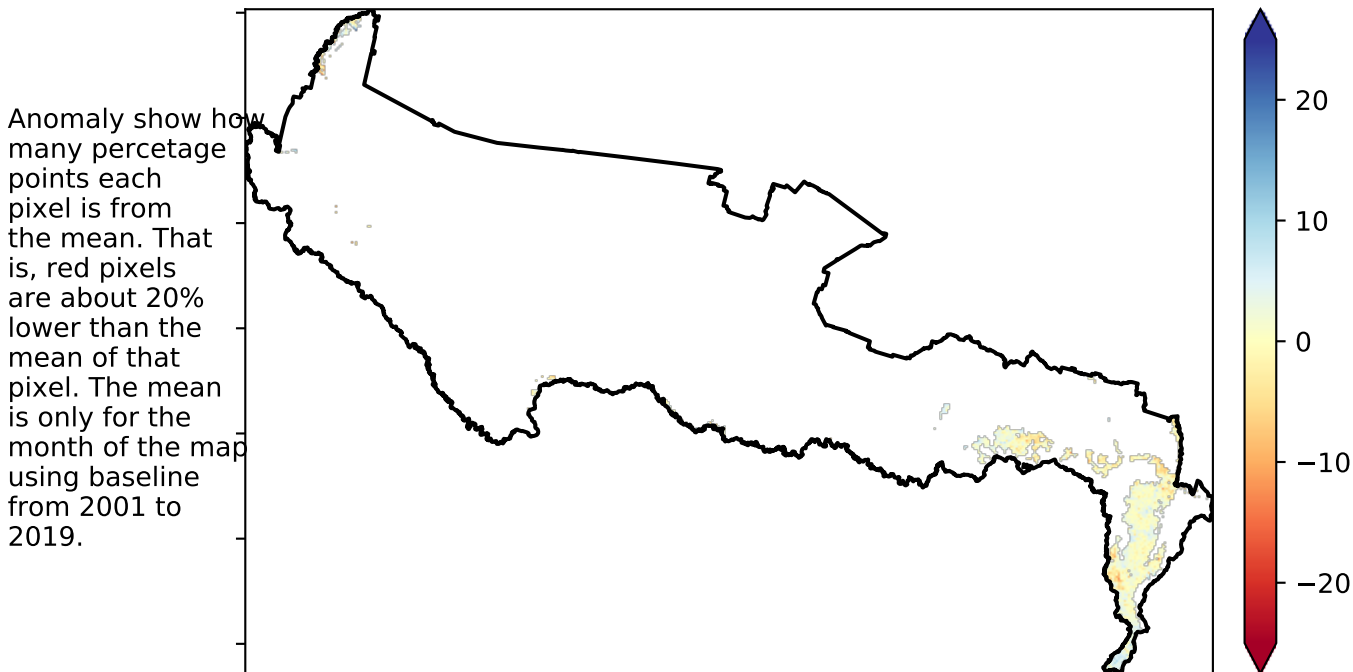
% Area protected from water erosion (>70%)



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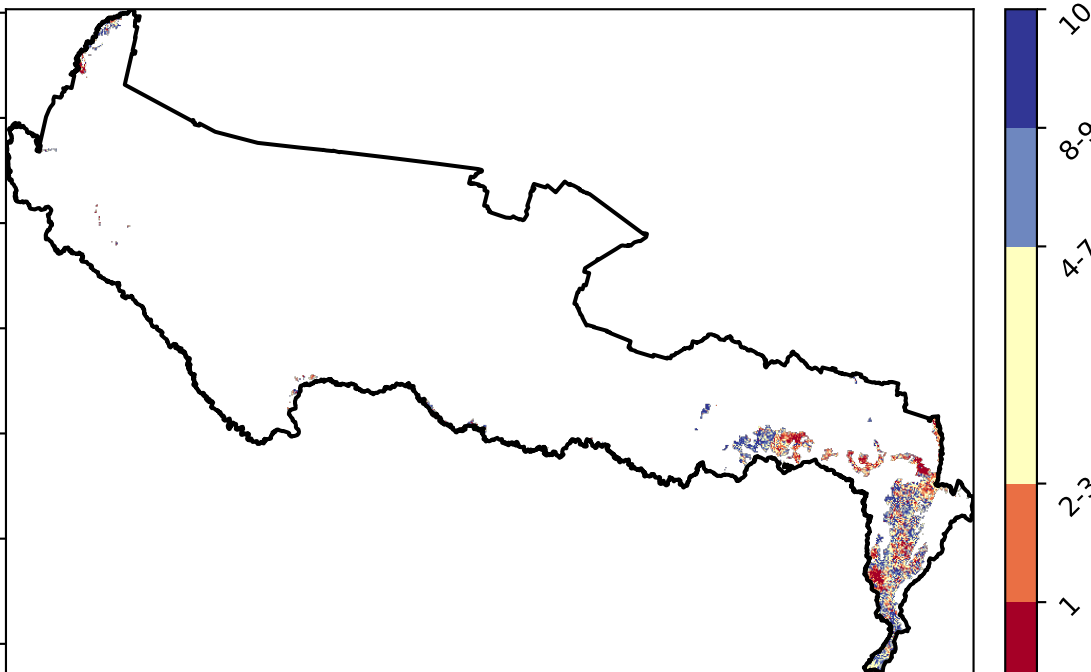


Total Vegetation Cover Anomaly [%]

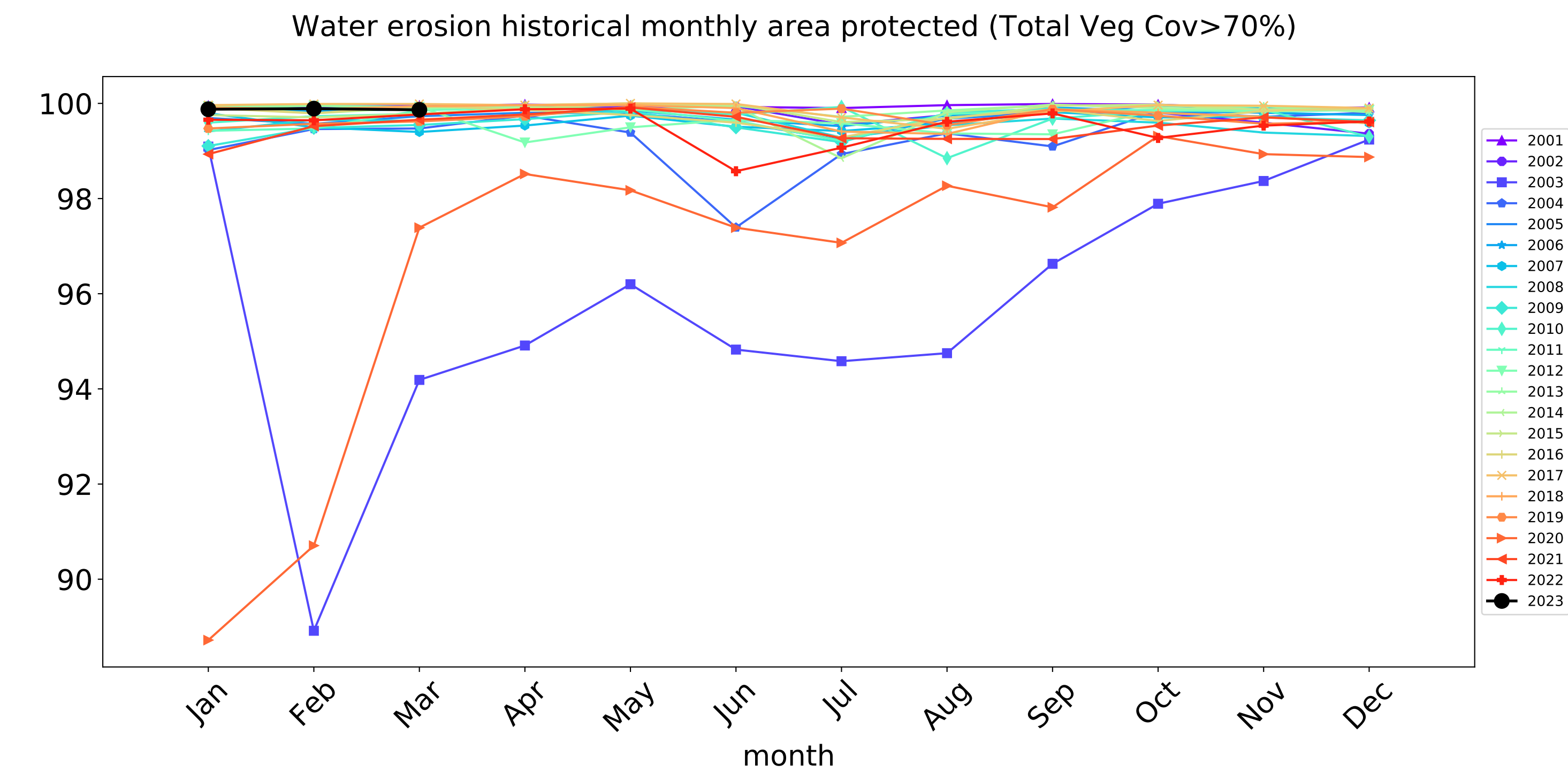
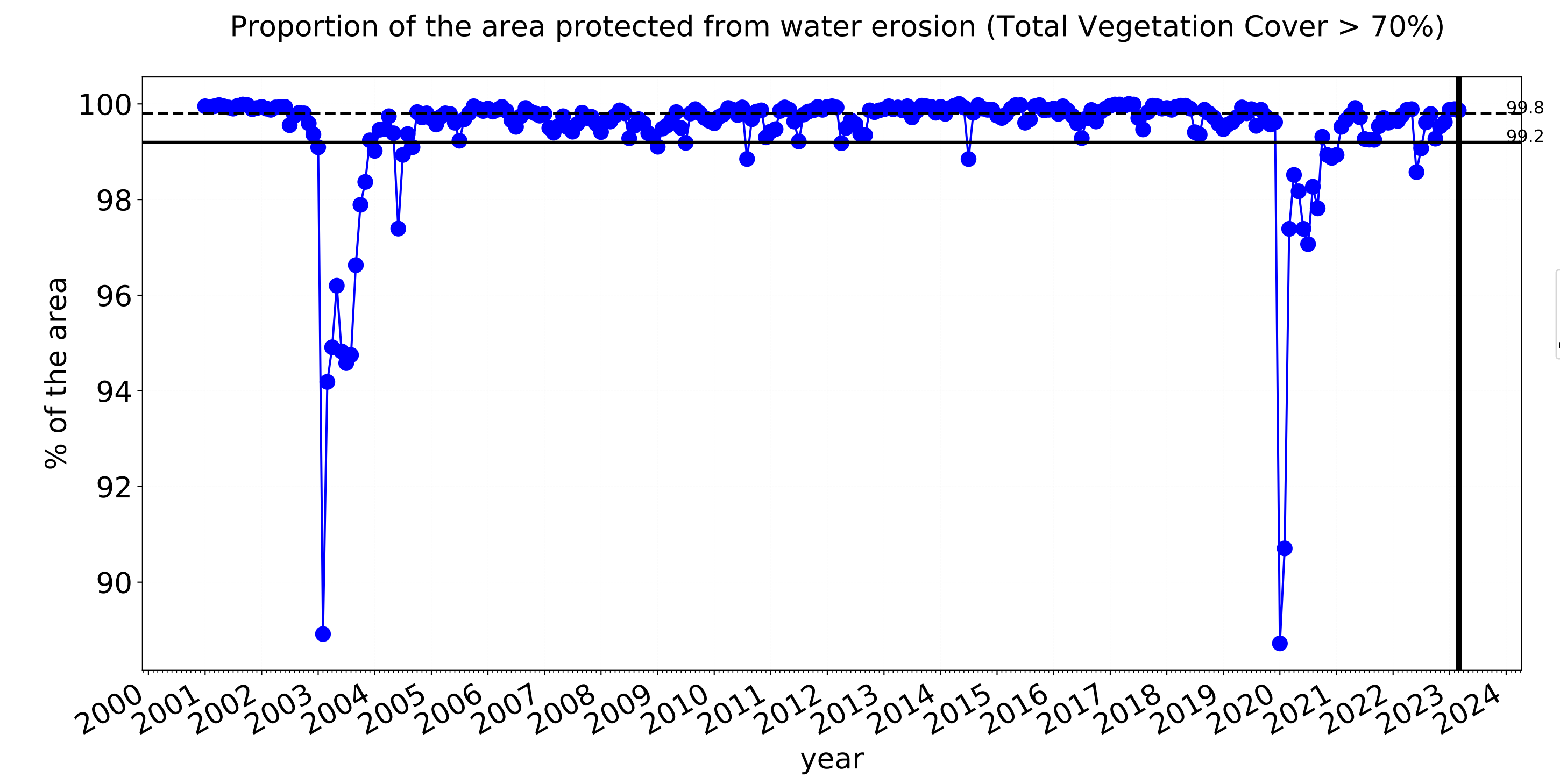
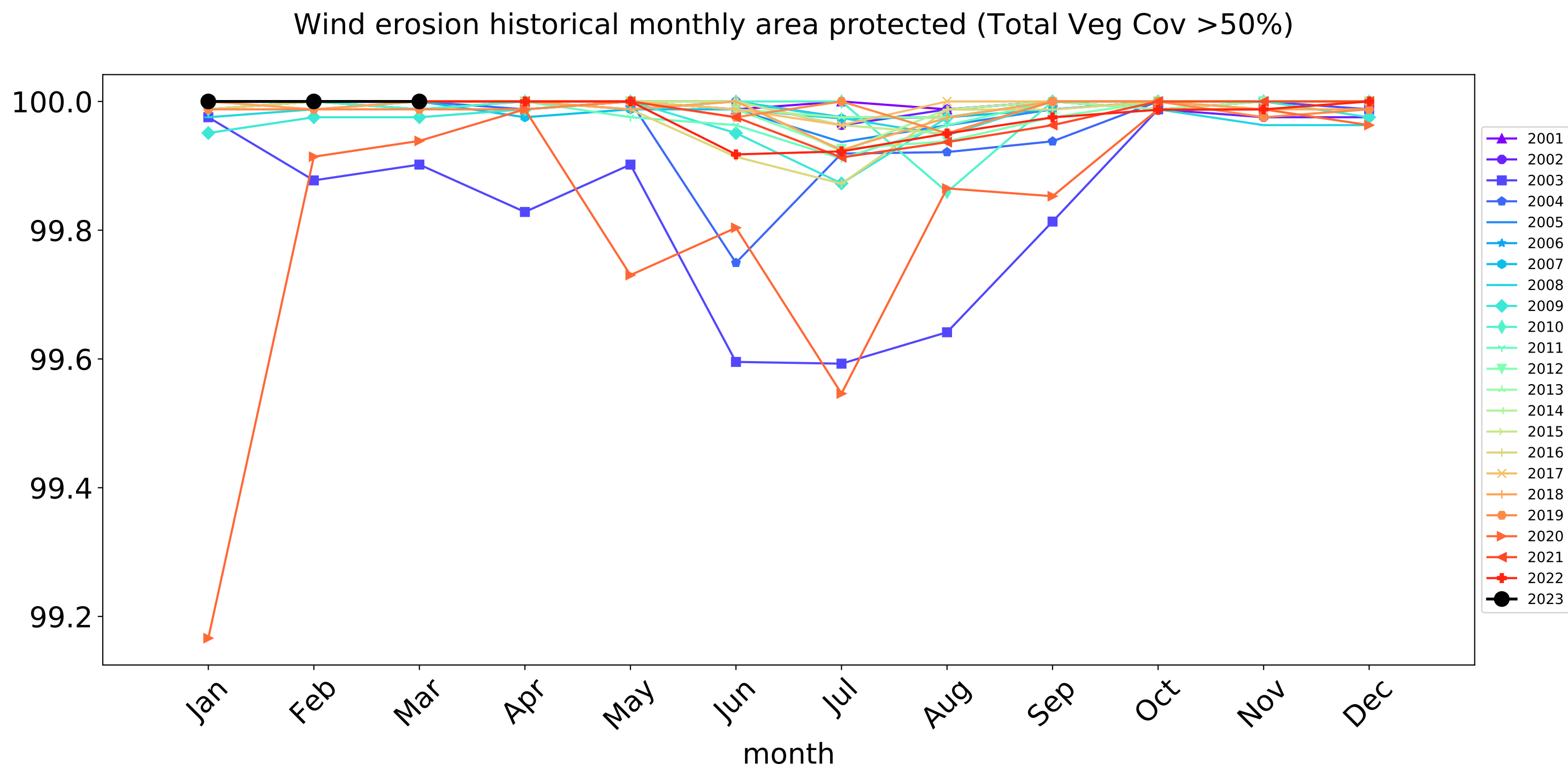
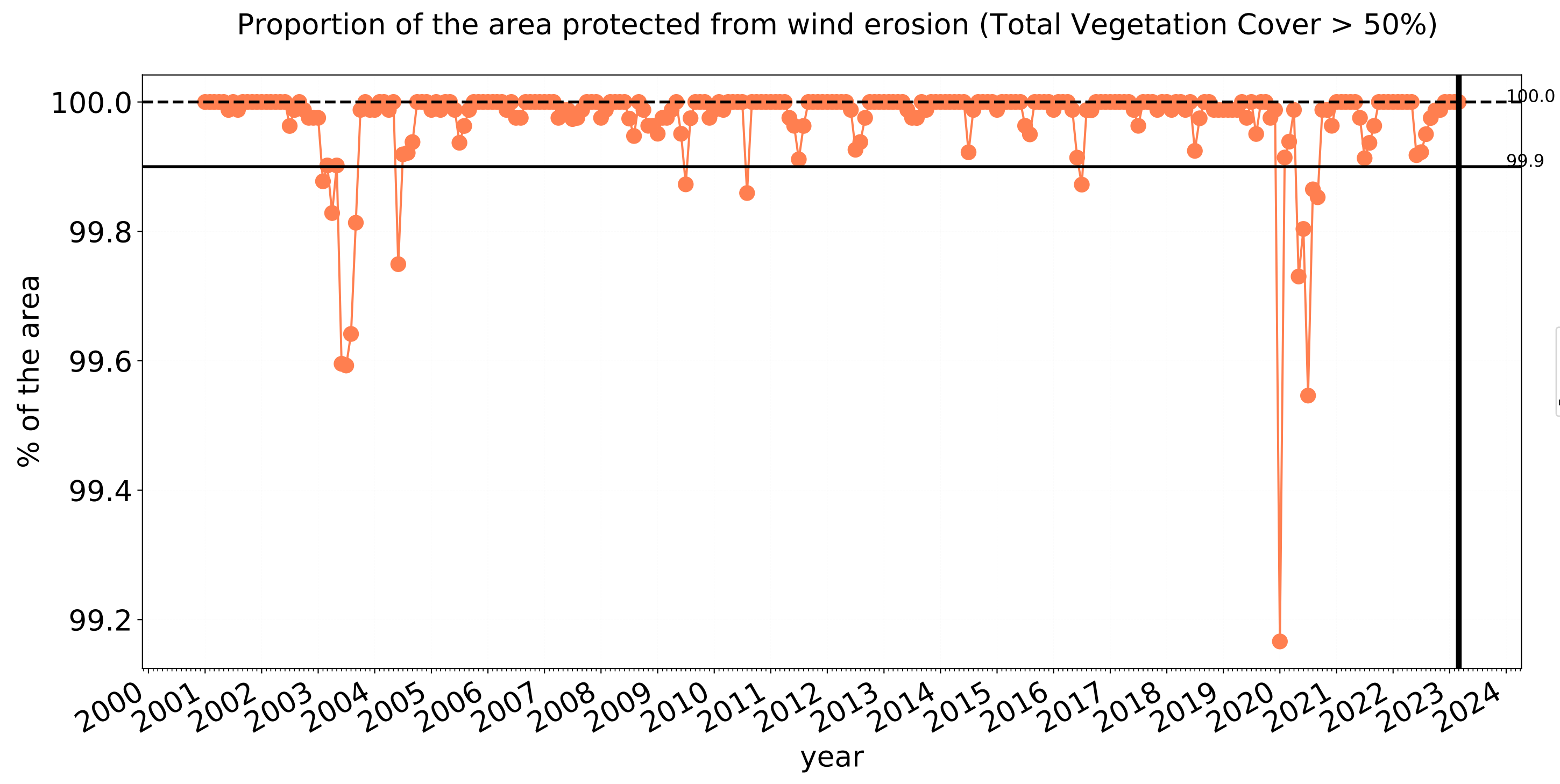


Total Vegetation Cover Decile [%]

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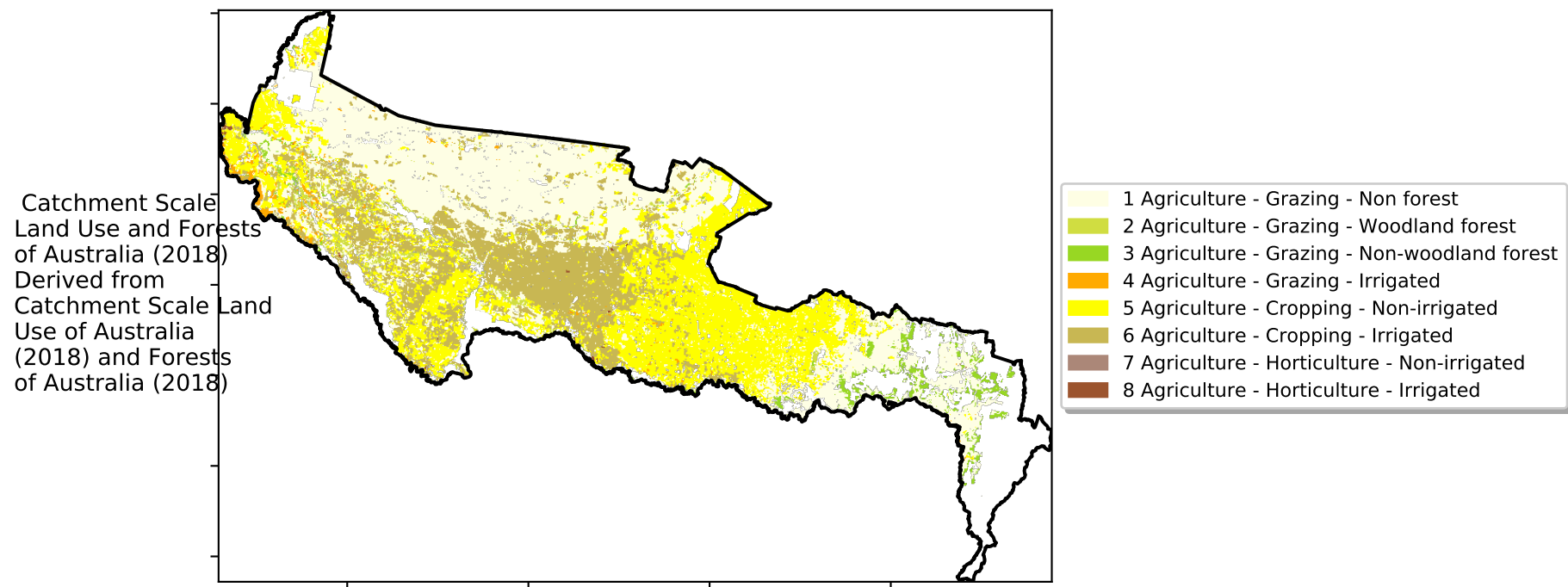


Conservation and natural environments Forest (non woodland) timeseries

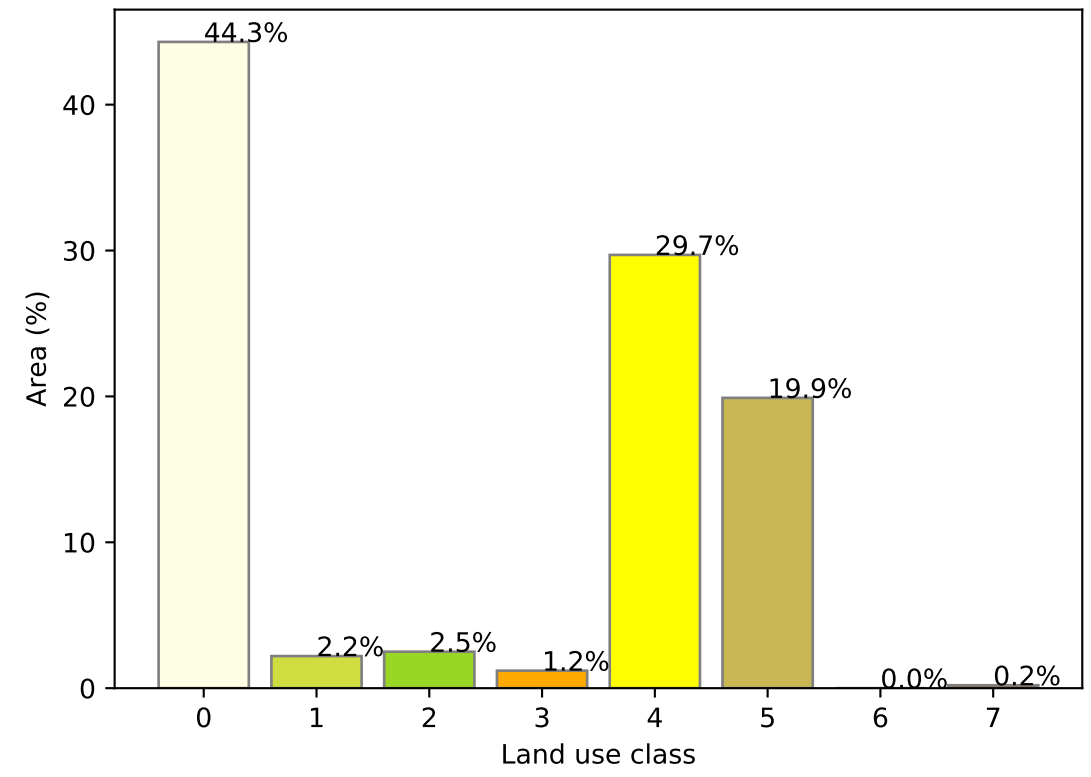


Agriculture

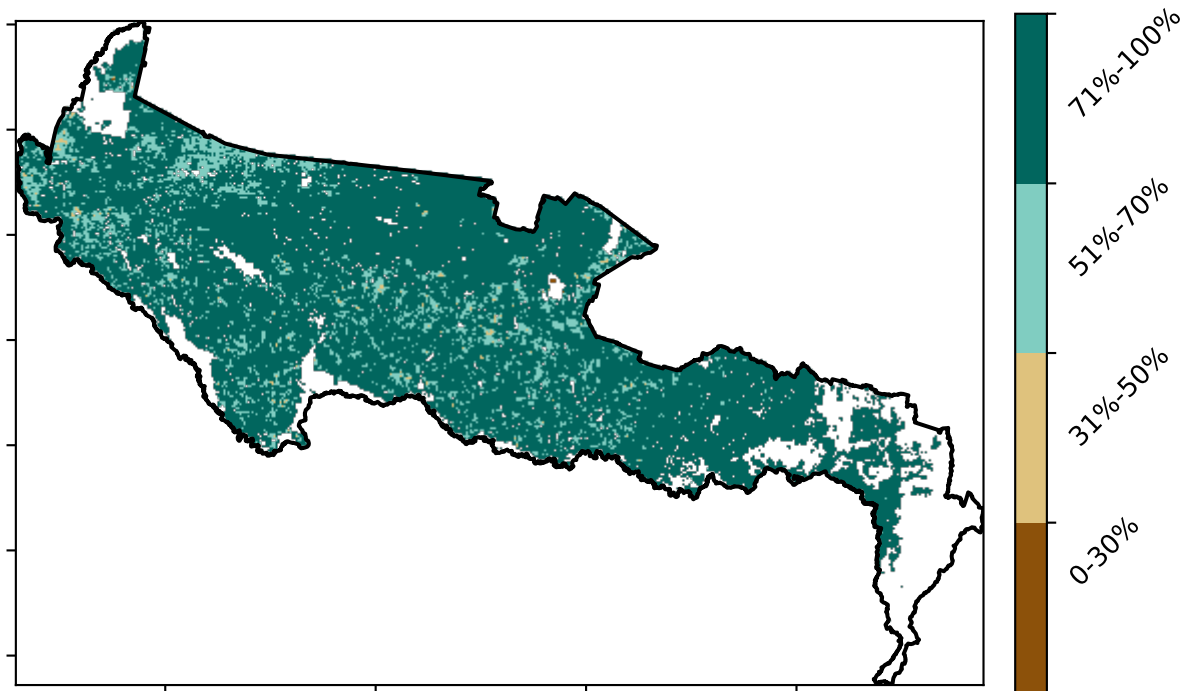
Land use and forest cover



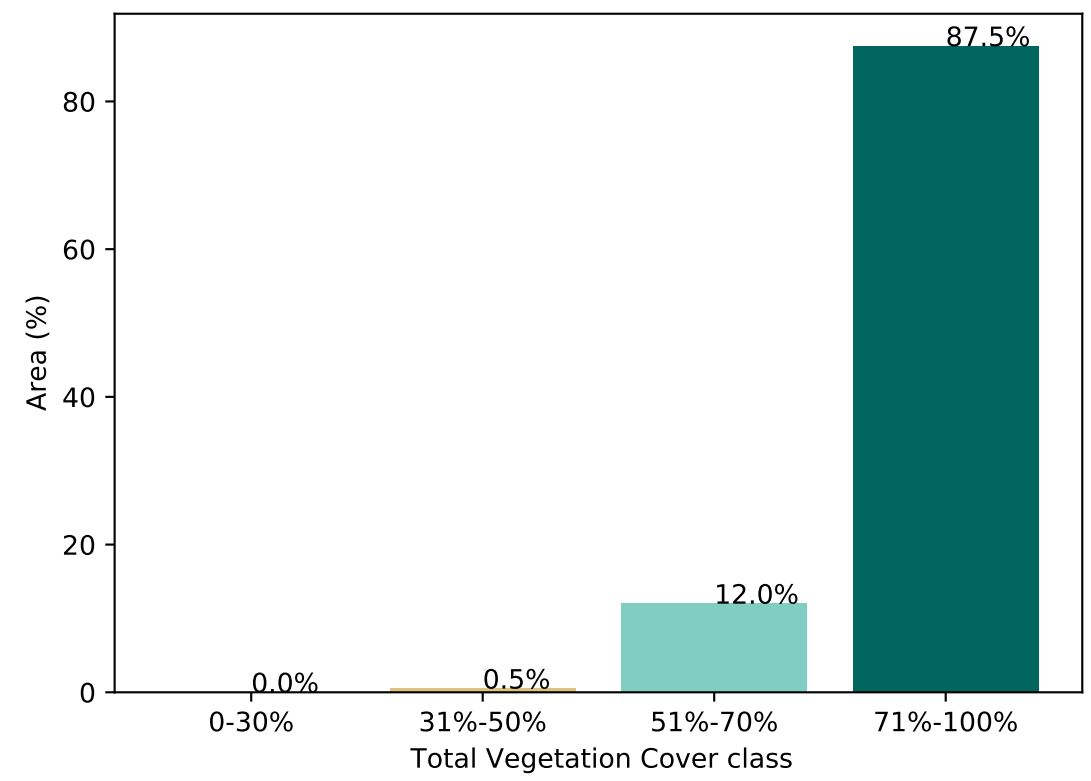
Proportion of each land class in area



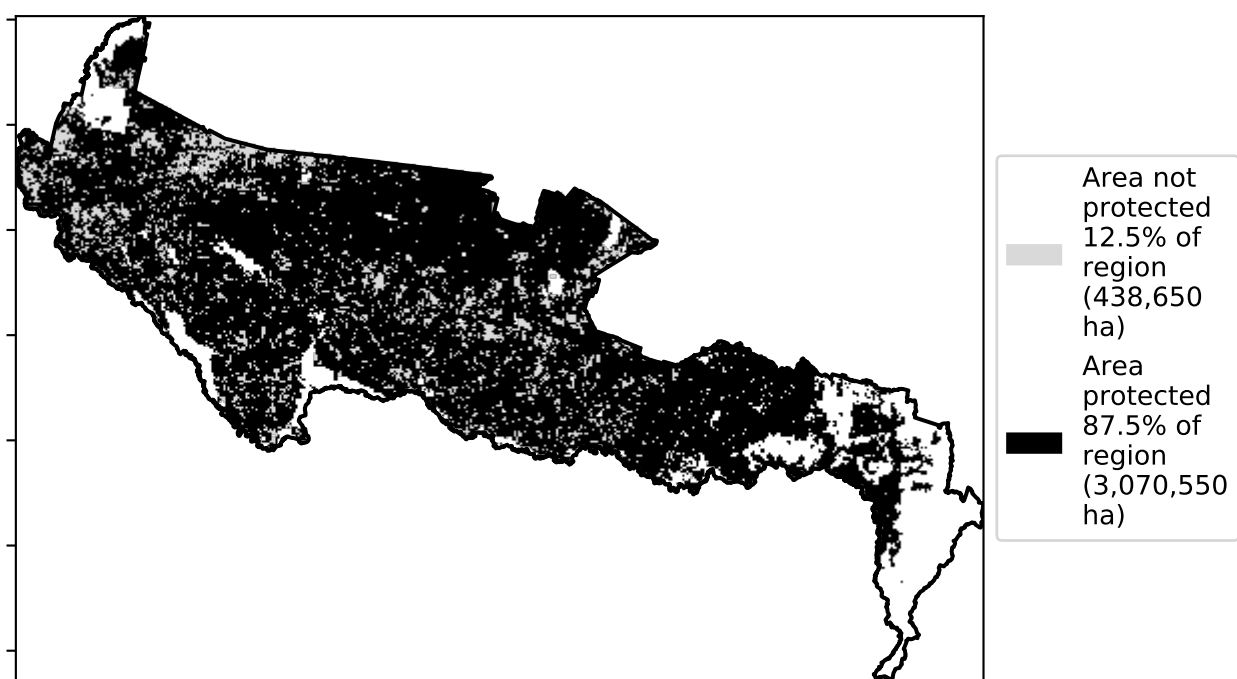
Total Vegetation Cover [%]



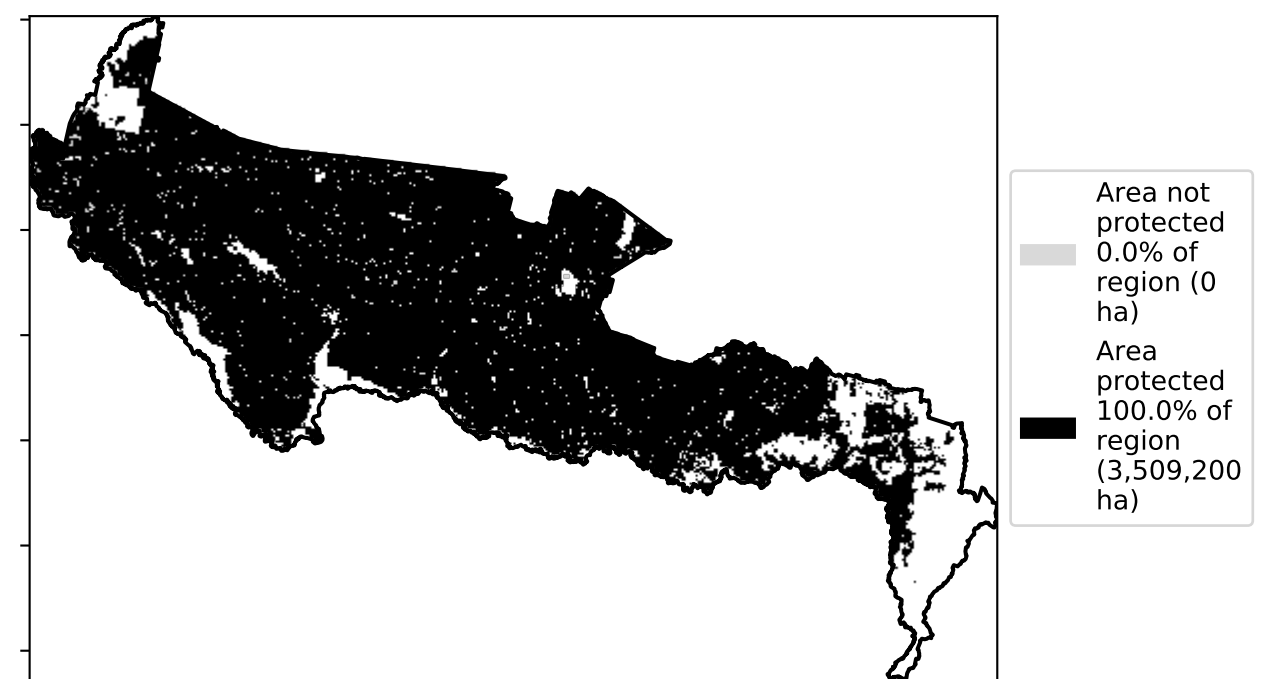
Proportion of vegetation cover class in area



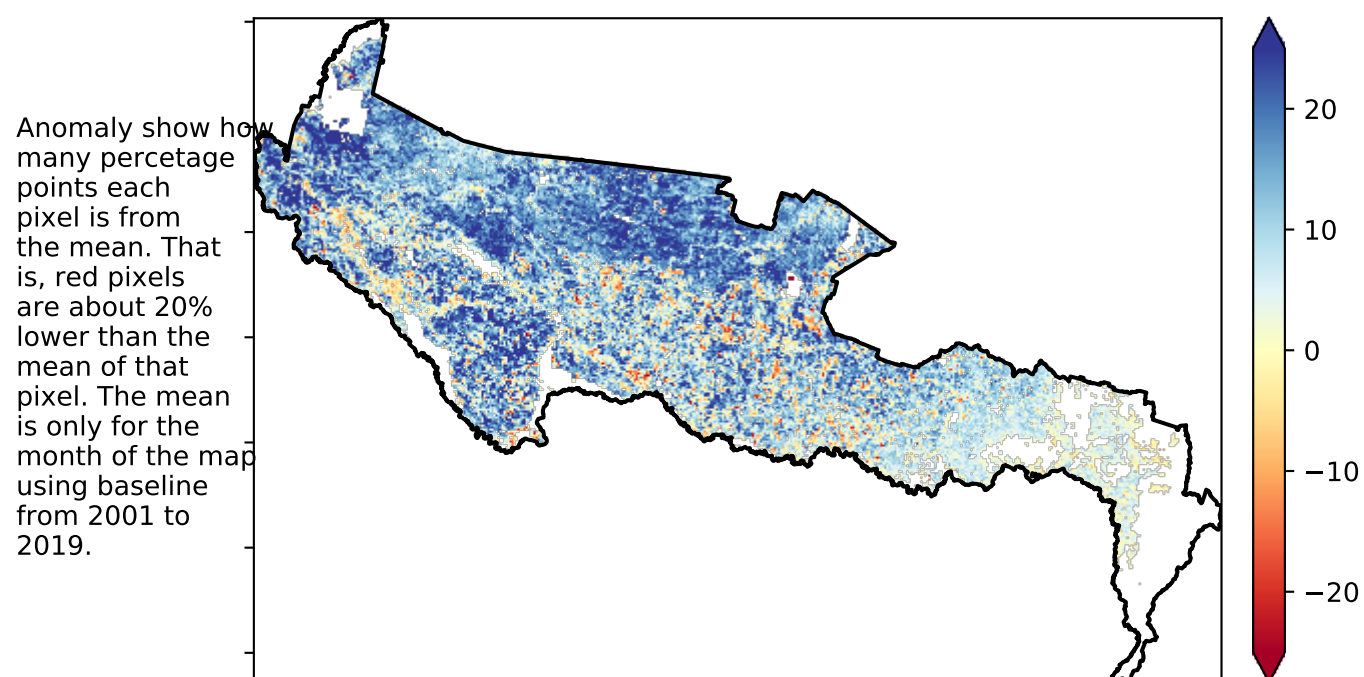
% Area protected from water erosion (>70%)



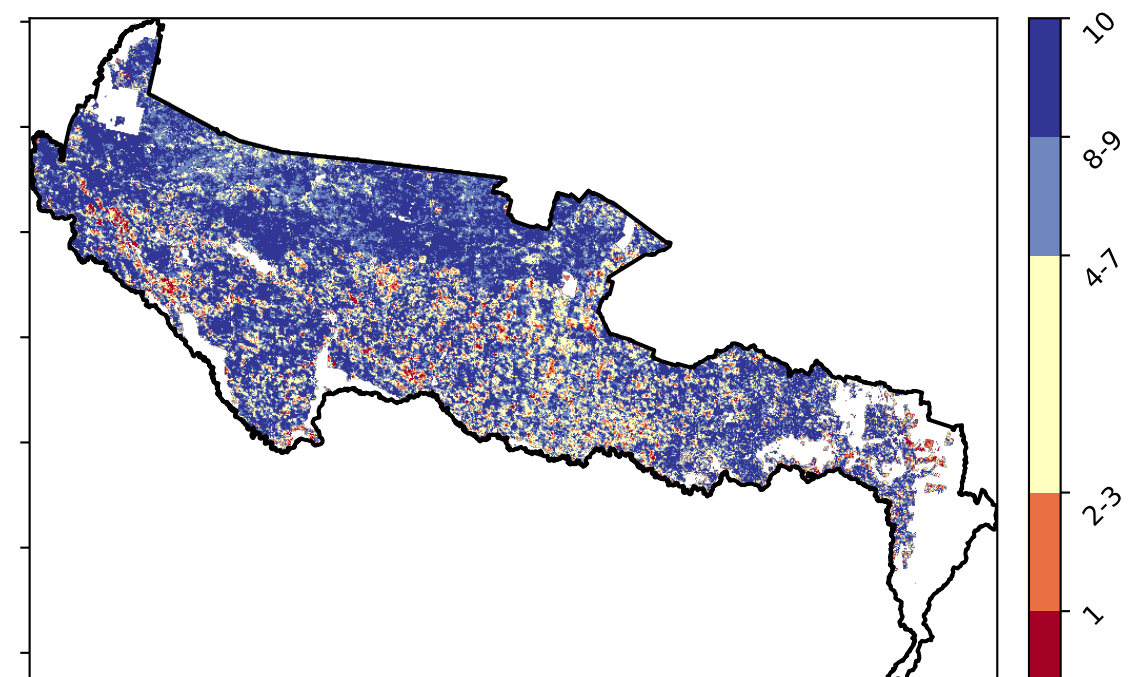
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



Total Vegetation Cover Decile [%]



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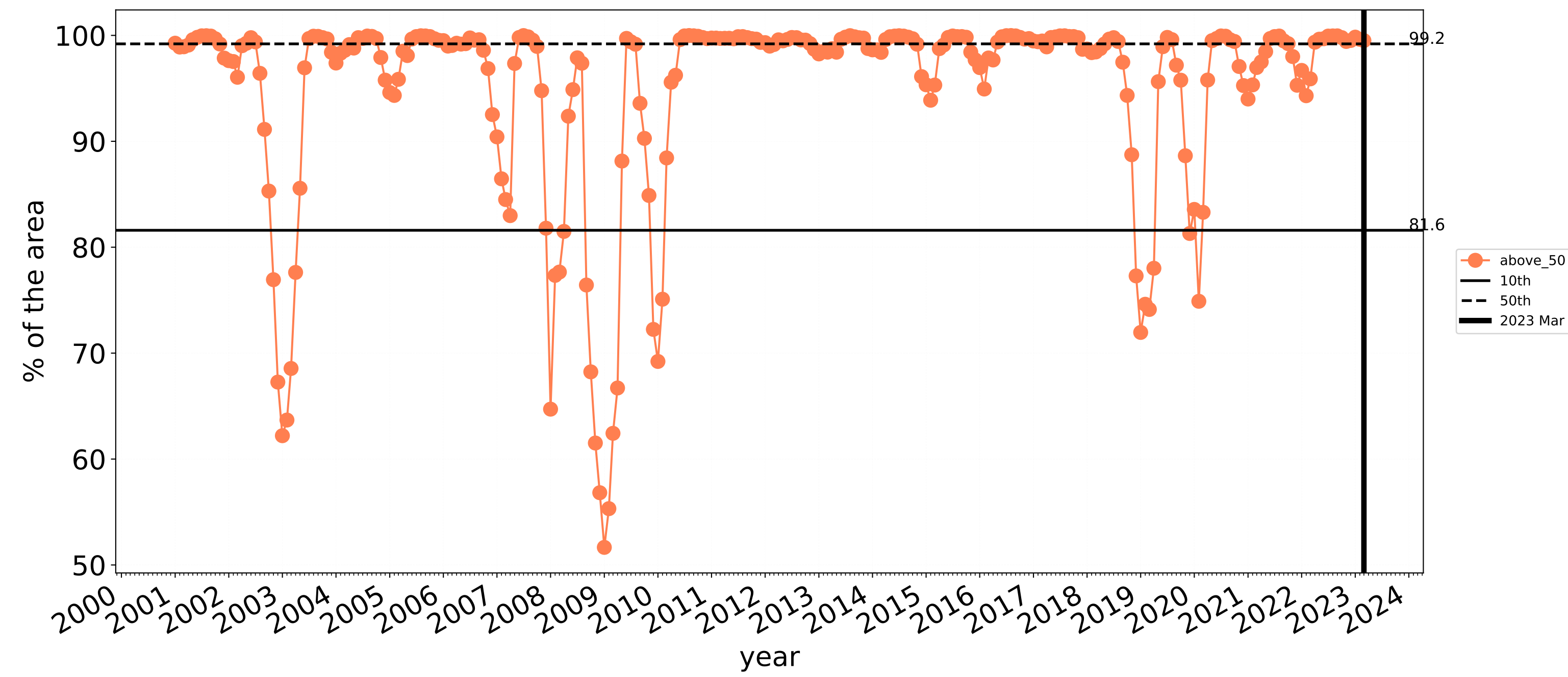
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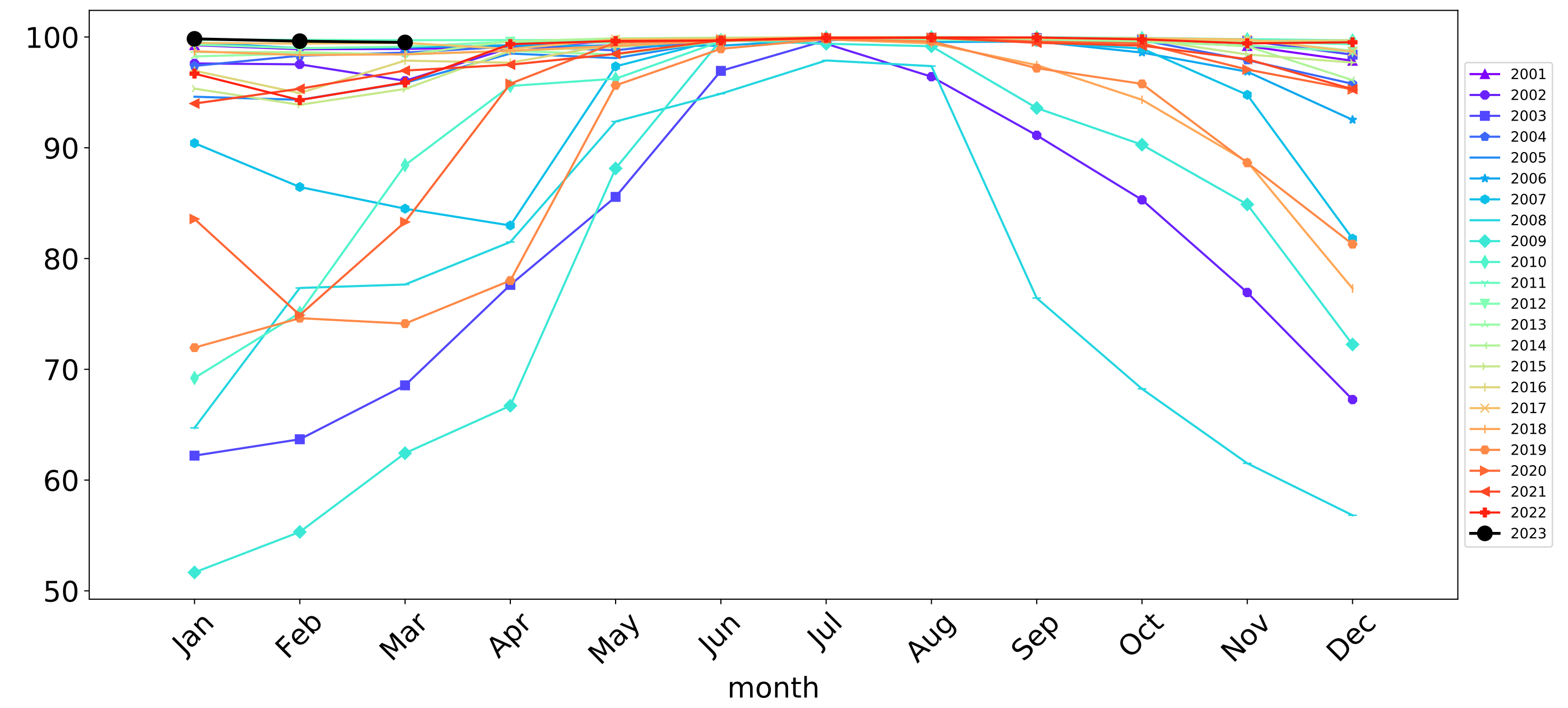


Agriculture timeseries

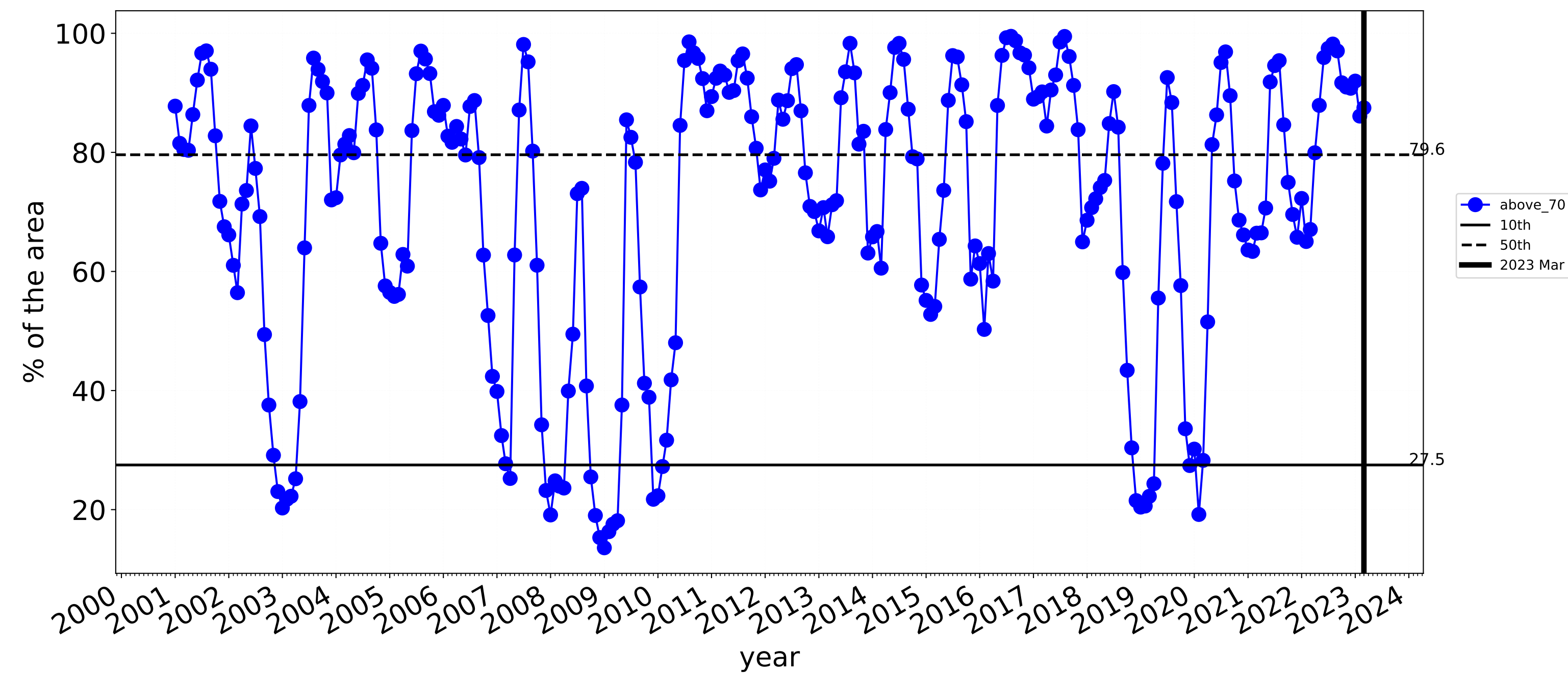
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



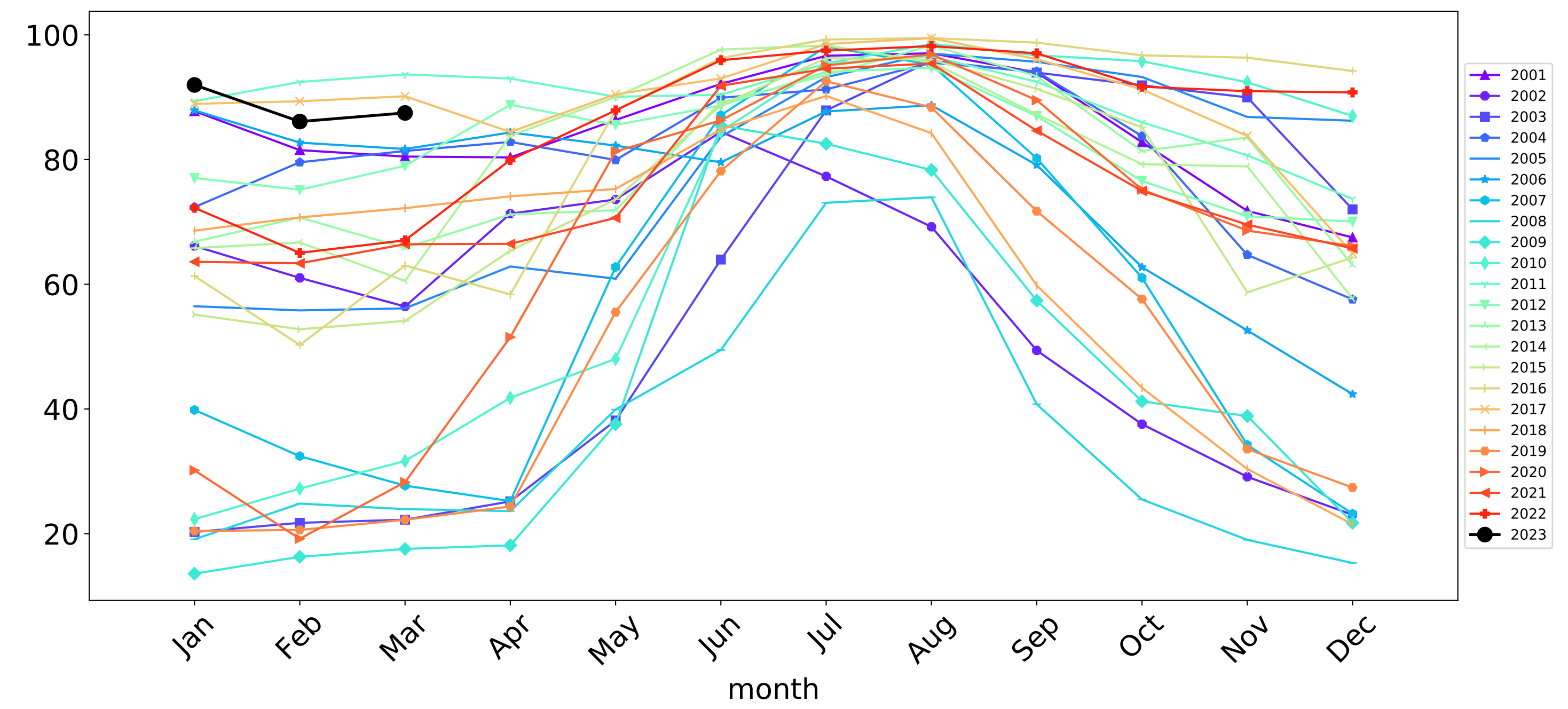
Wind erosion historical monthly area protected (Total Veg Cov >50%)



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

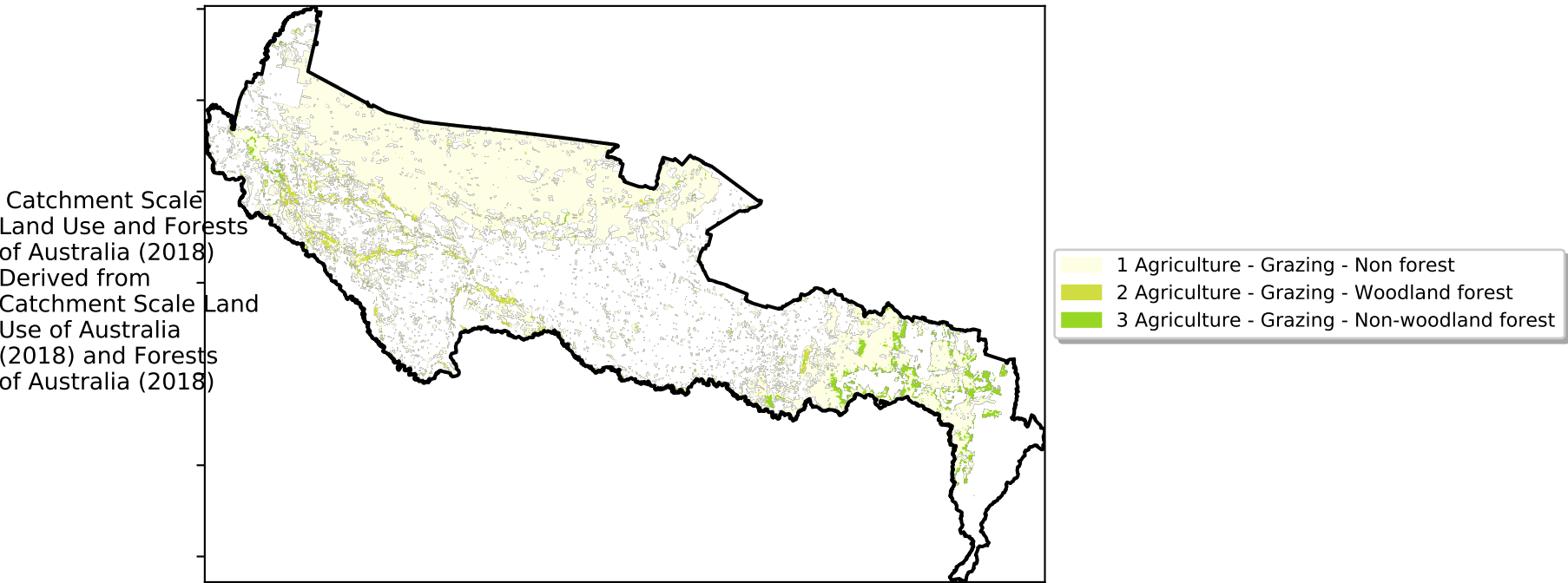


Water erosion historical monthly area protected (Total Veg Cov>70%)

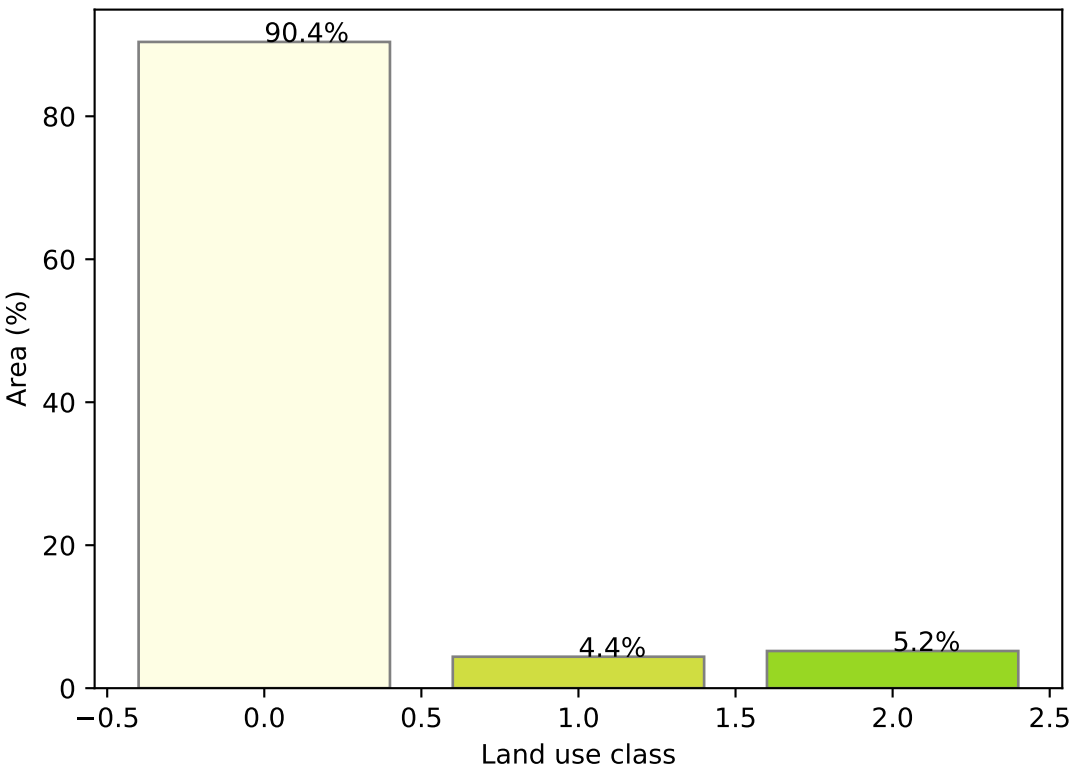


Grazing

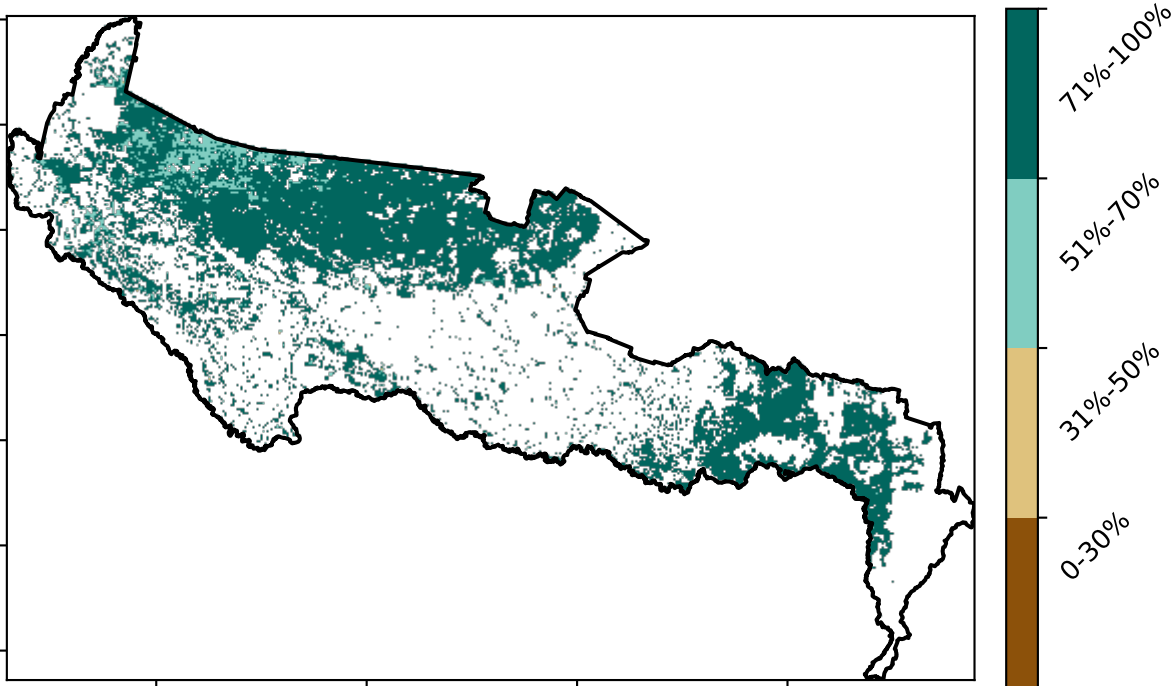
Land use and forest cover



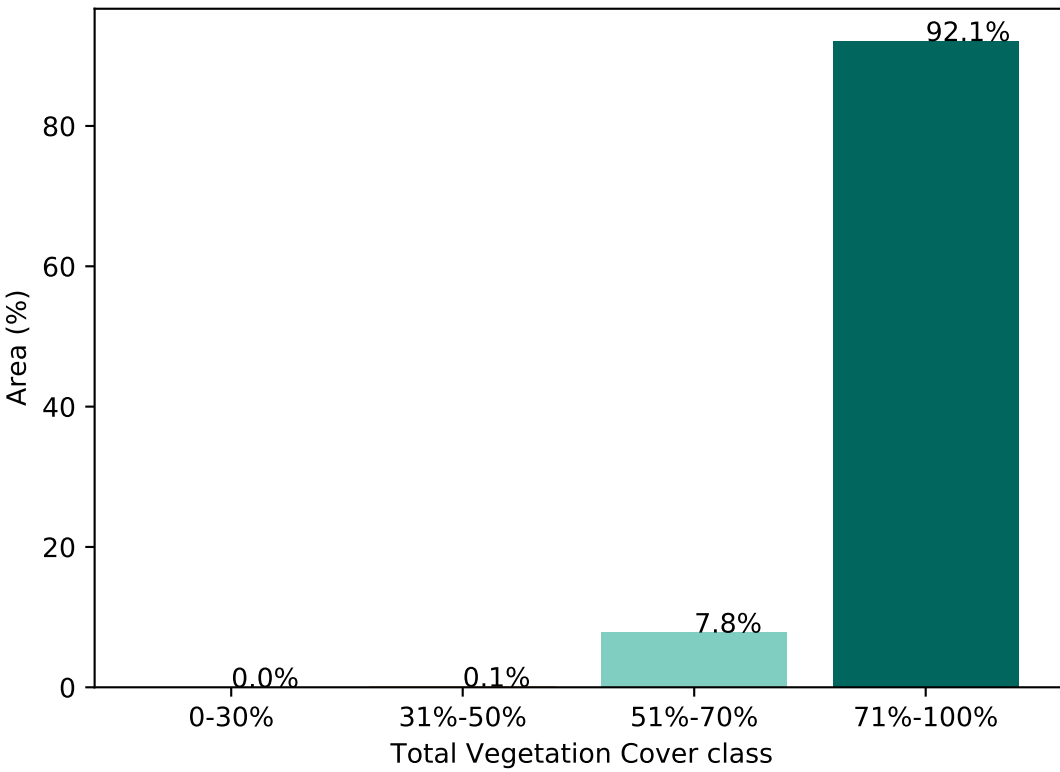
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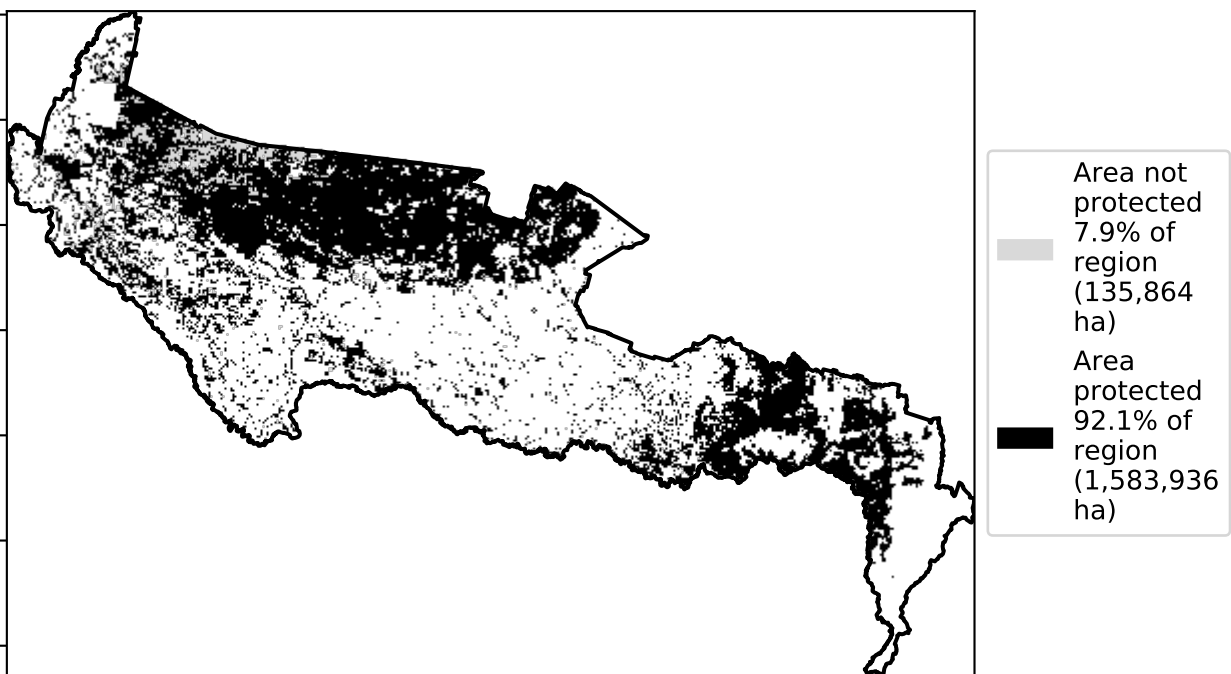
Total Vegetation Cover [%]



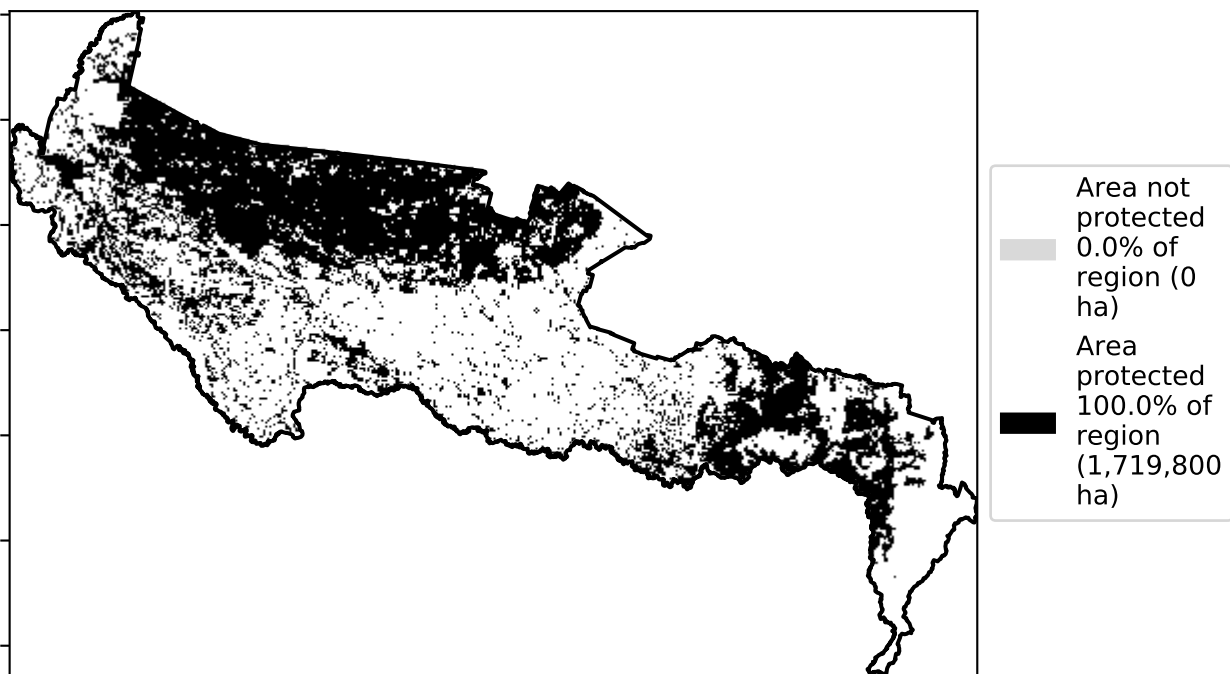
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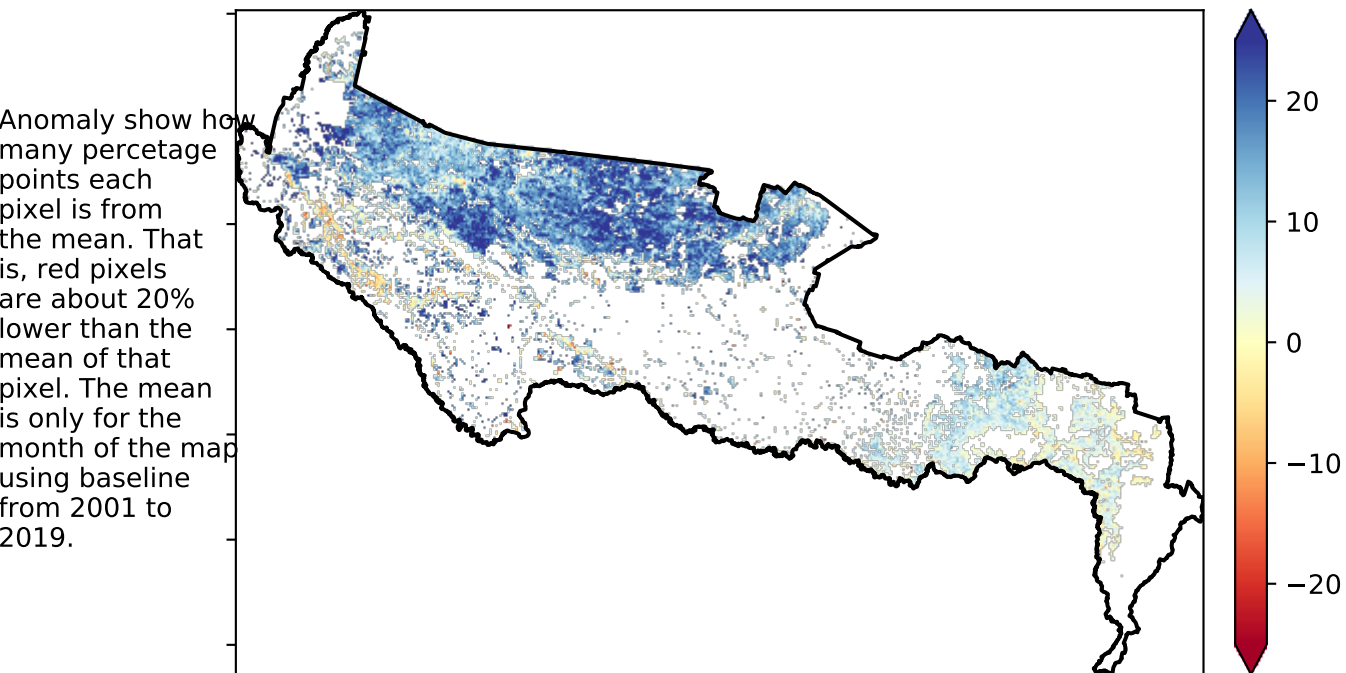
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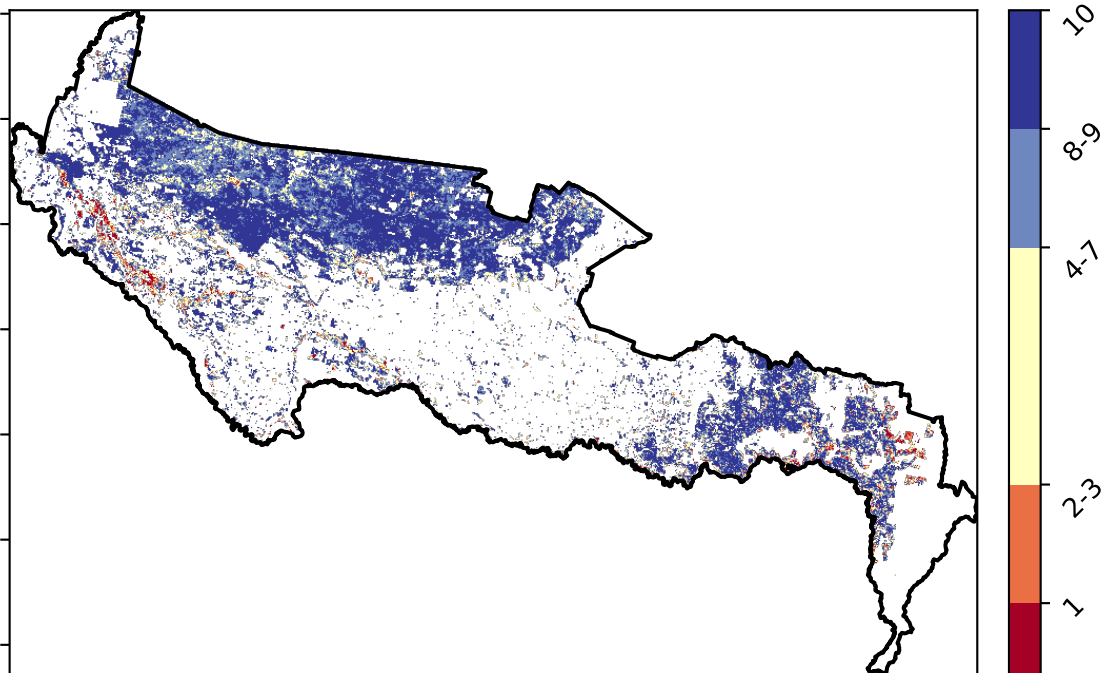


Total Vegetation Cover Anomaly [%]



Total Vegetation Cover Decile [%]

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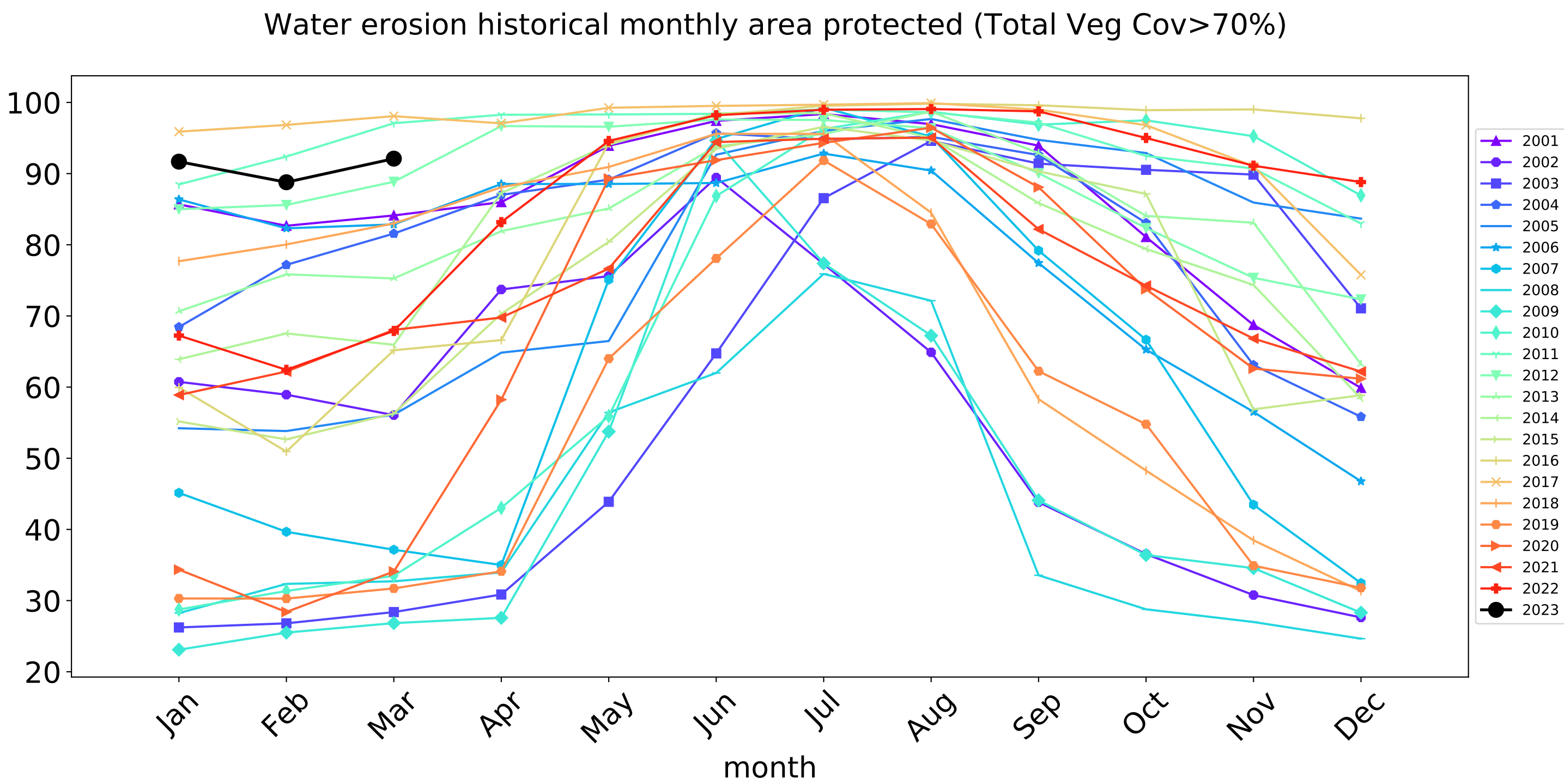
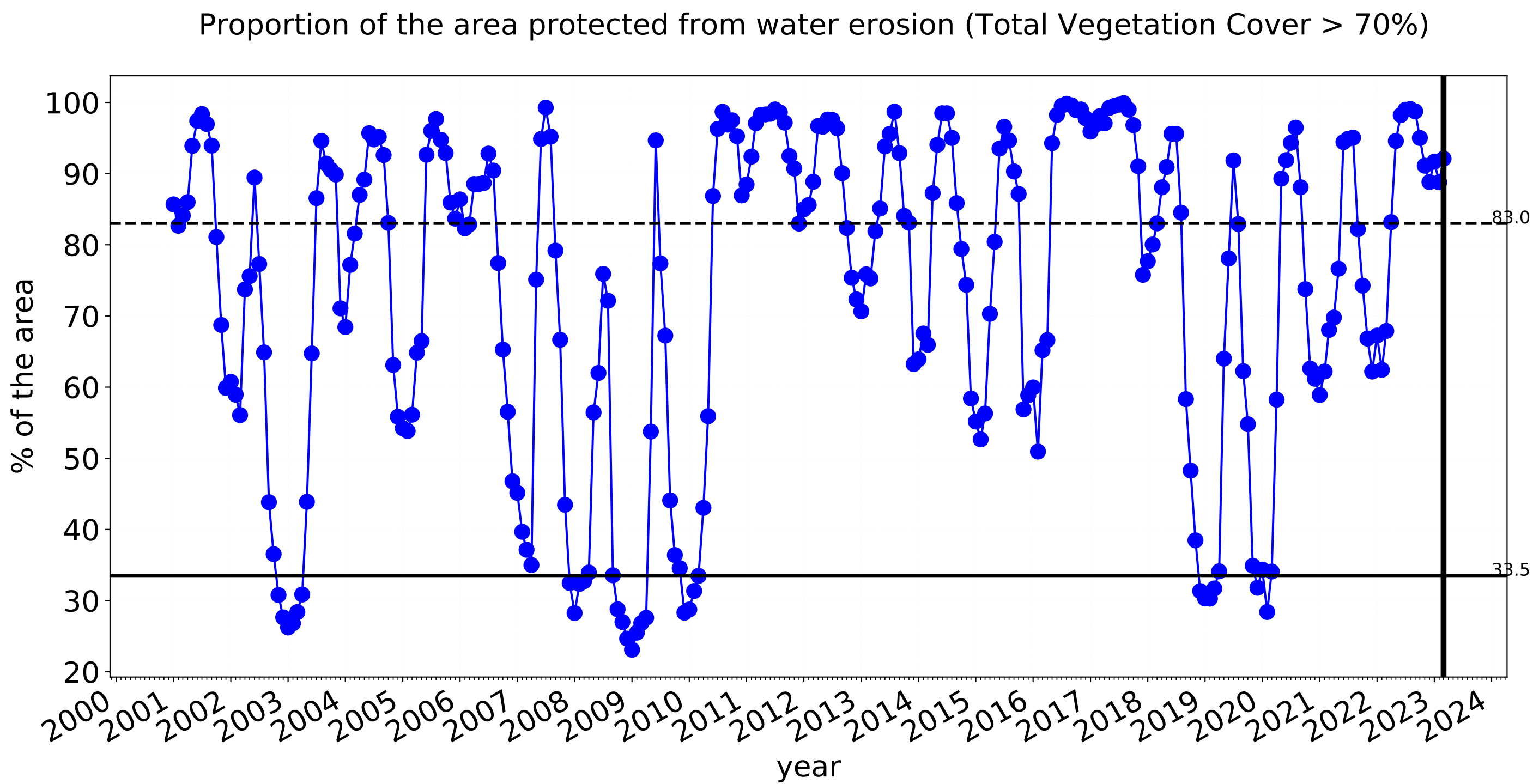
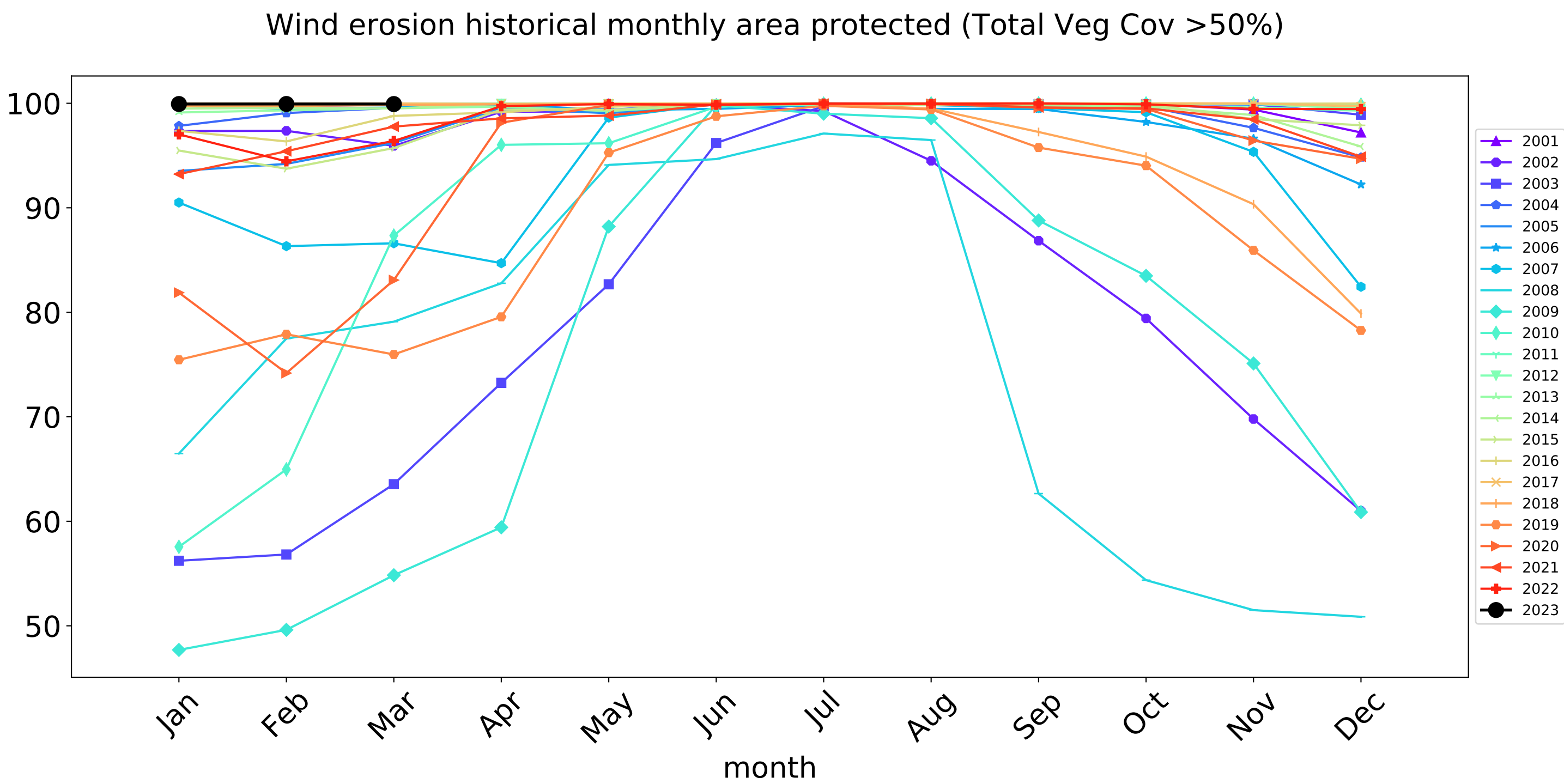
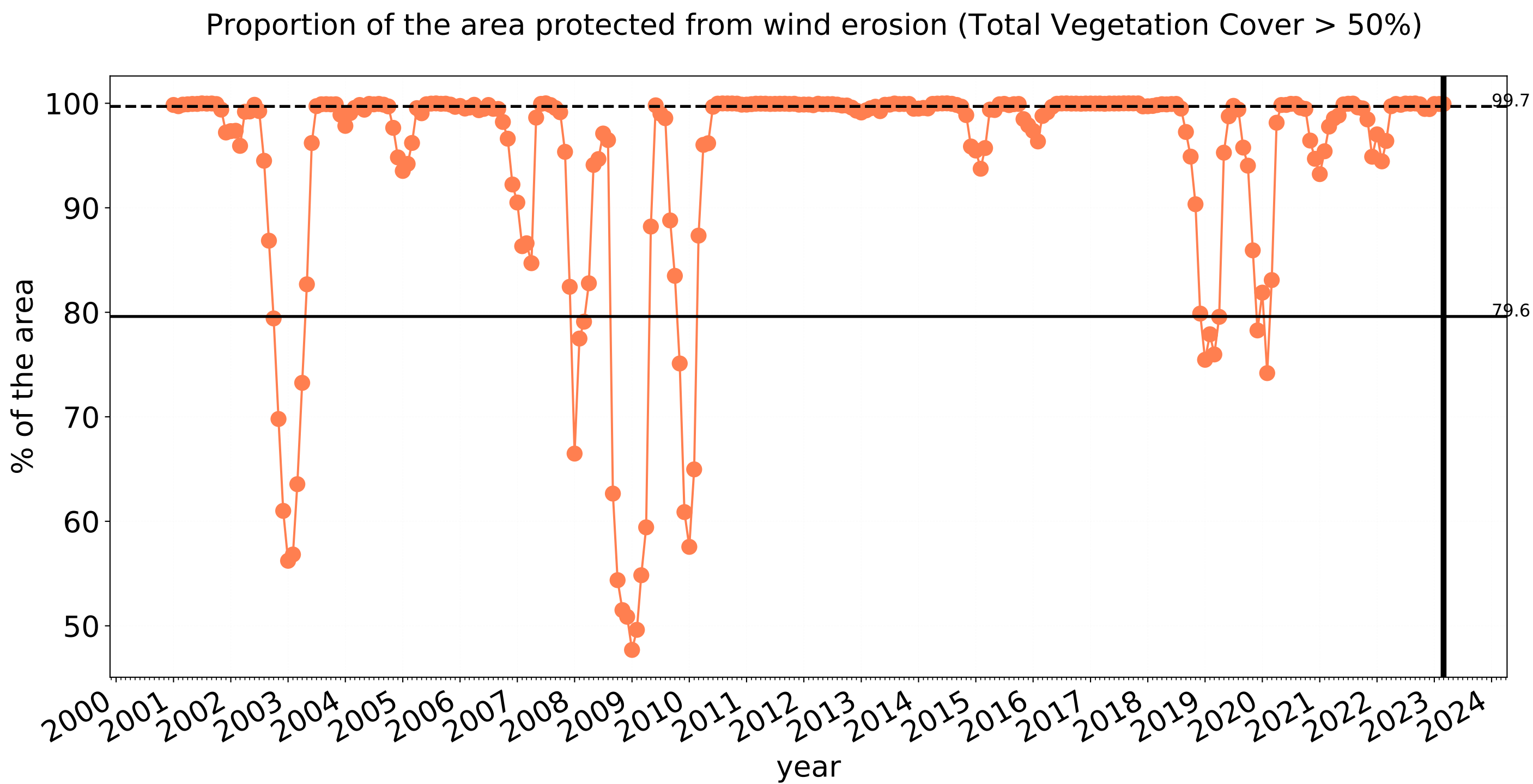


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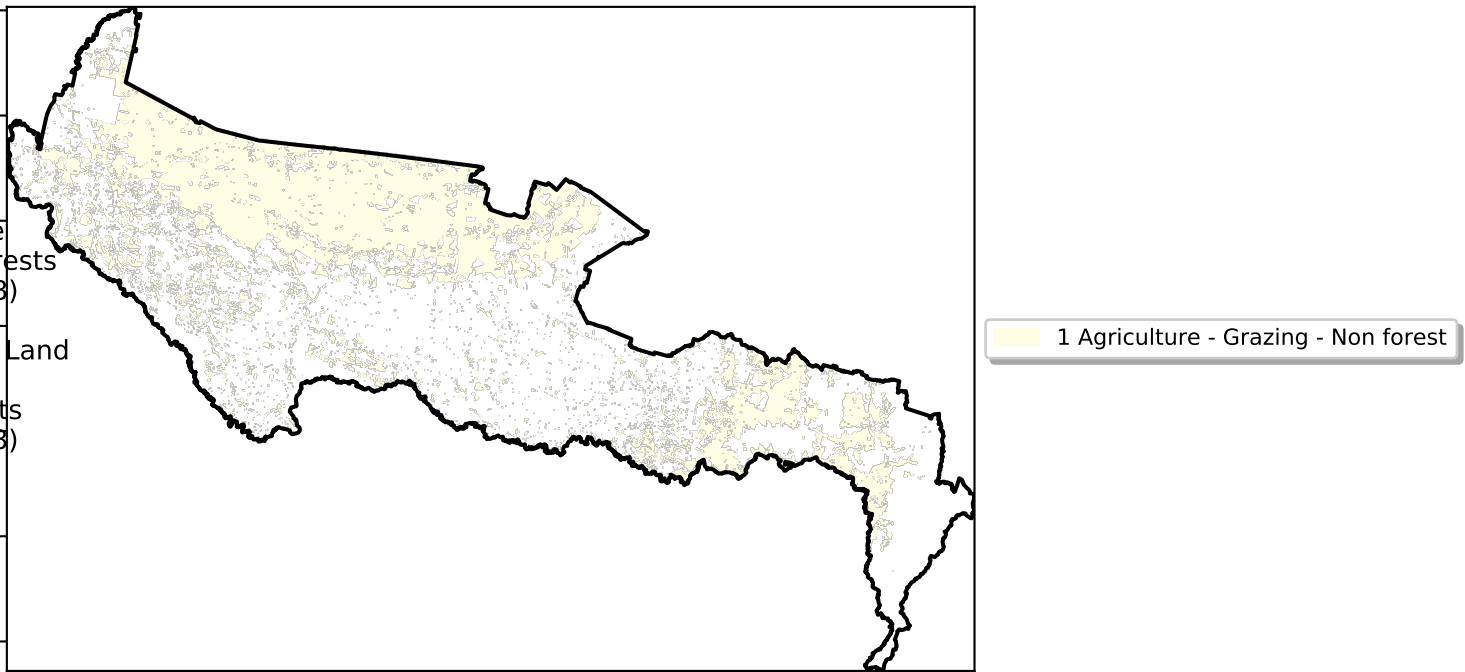
Grazing timeseries



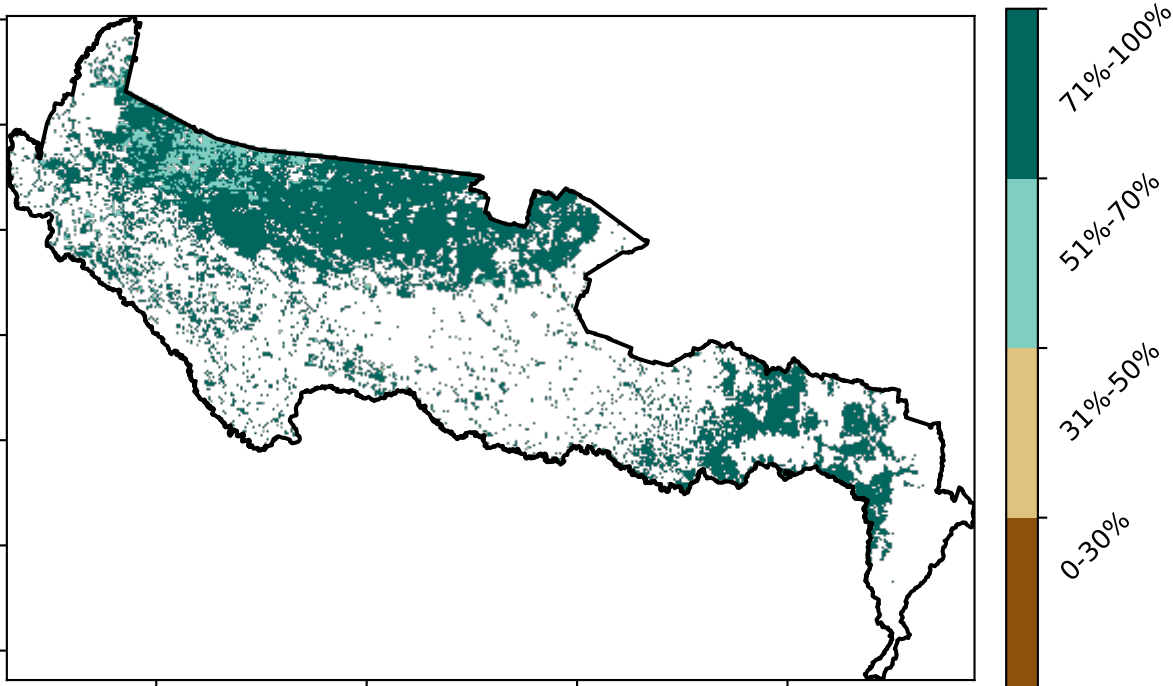
Grazing non forest

Land use and forest cover

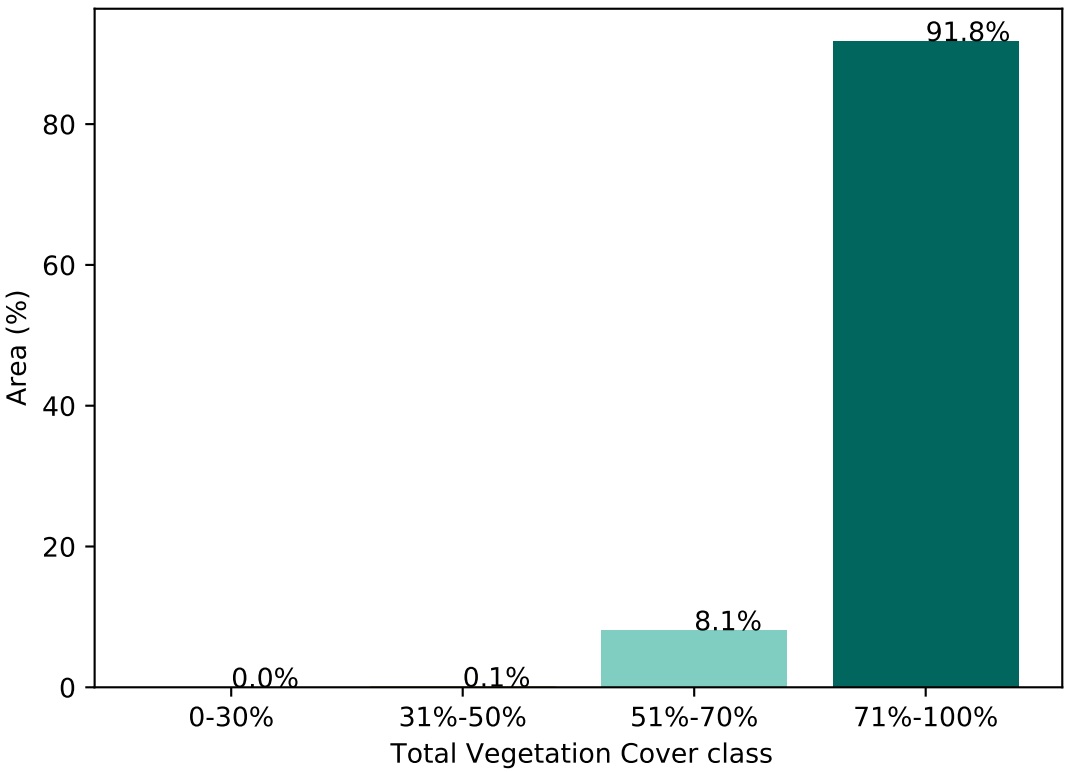
Catchment Scale
Land Use and Forests
of Australia (2018)
Derived from
Catchment Scale Land
Use of Australia
(2018) and Forests
of Australia (2018)



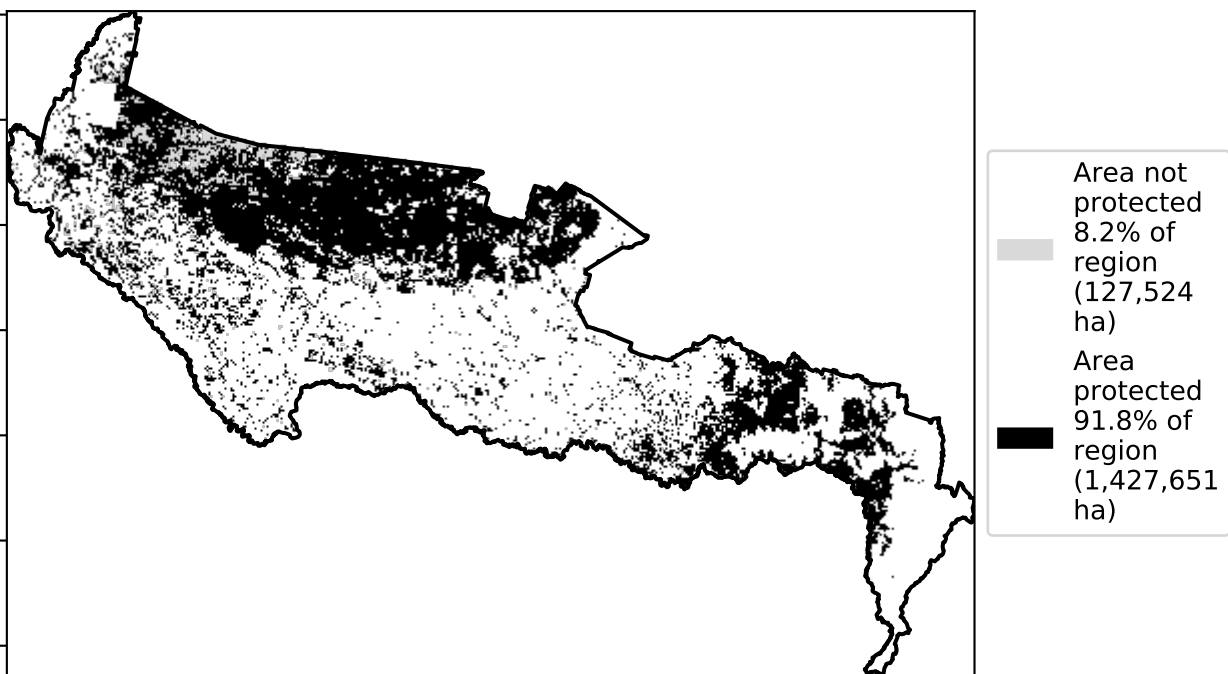
Total Vegetation Cover [%]



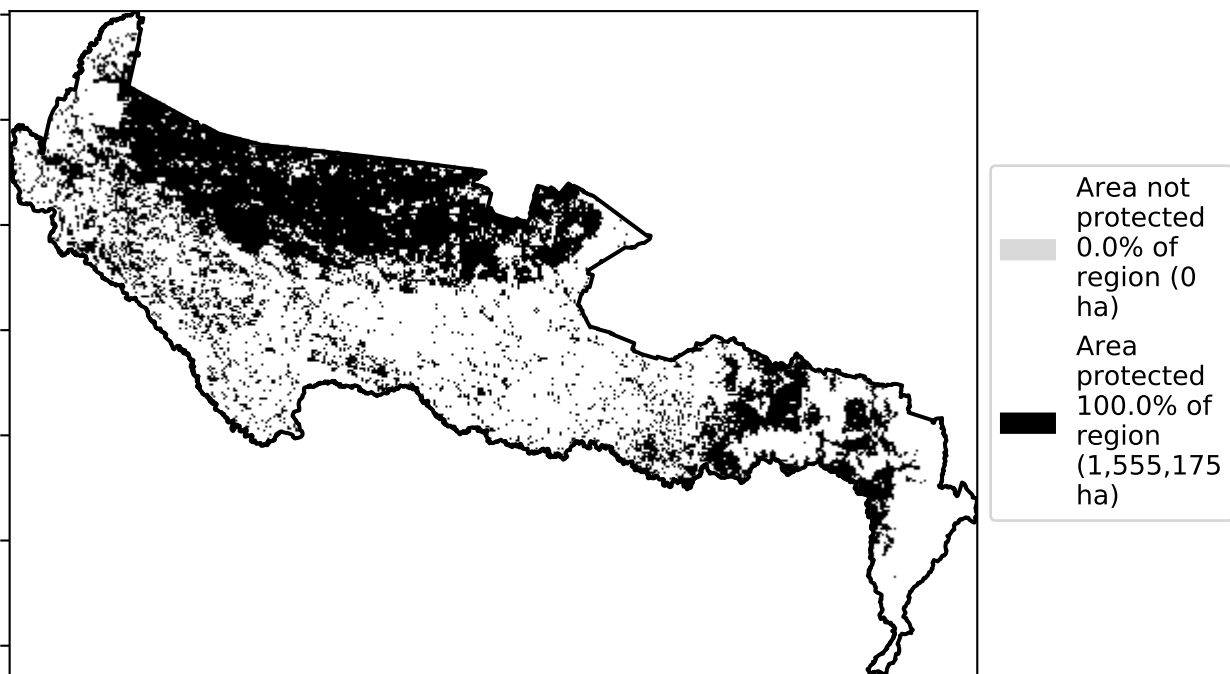
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

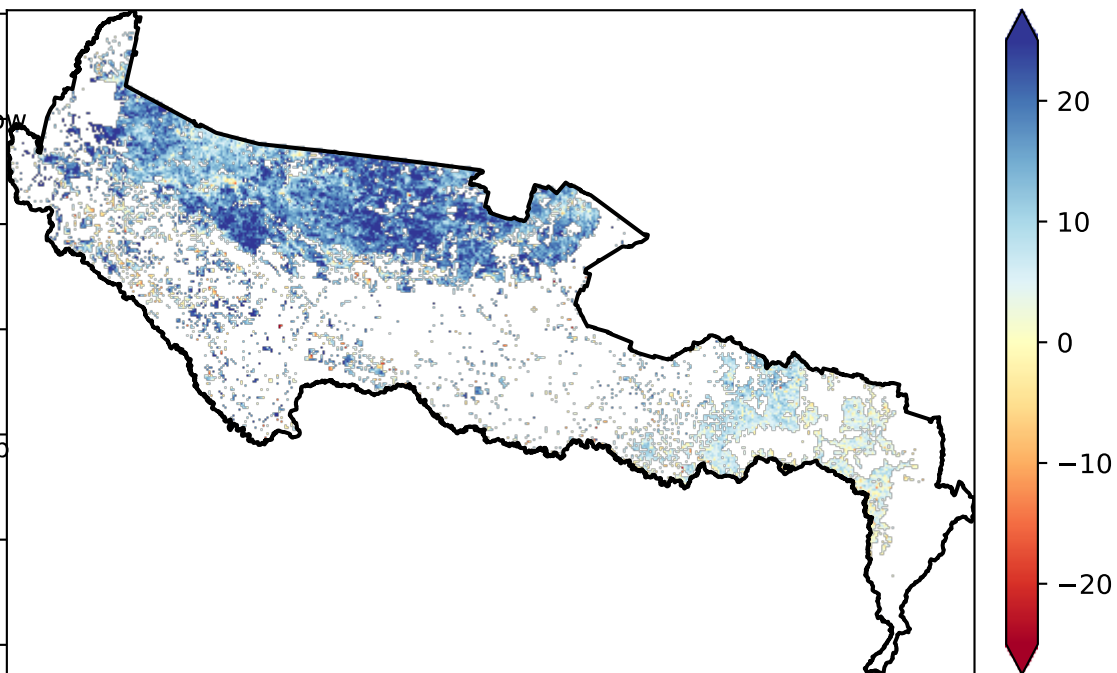


% Area protected from wind erosion (>50%)



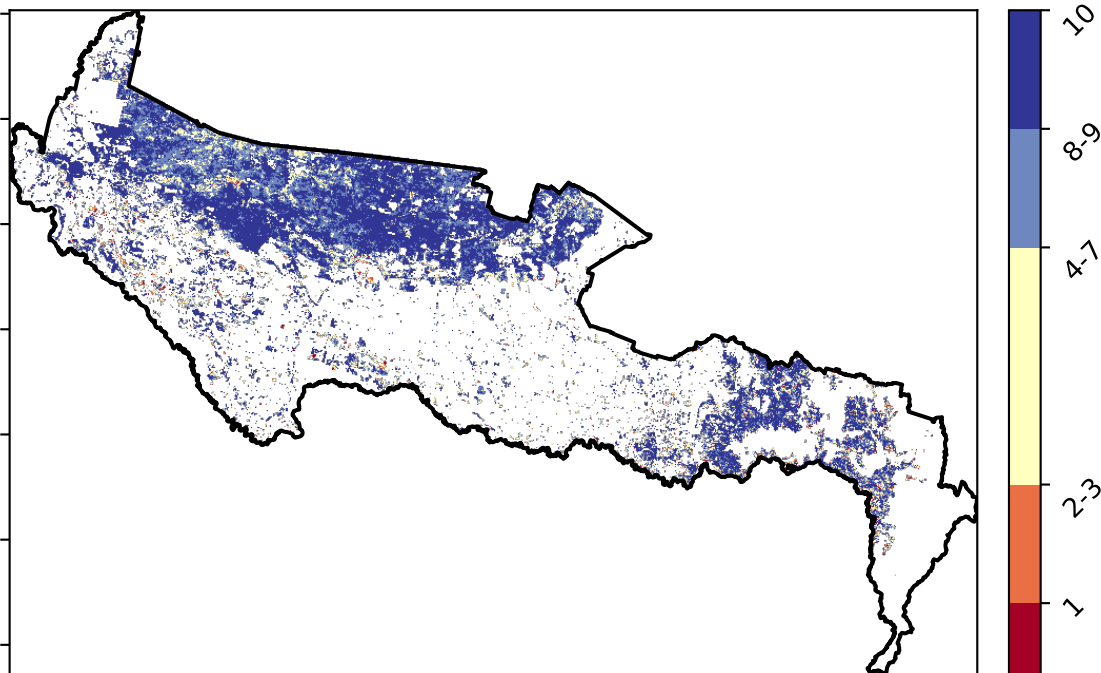
Total Vegetation Cover Anomaly [%]

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



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

Total Vegetation Cover Decile [%]



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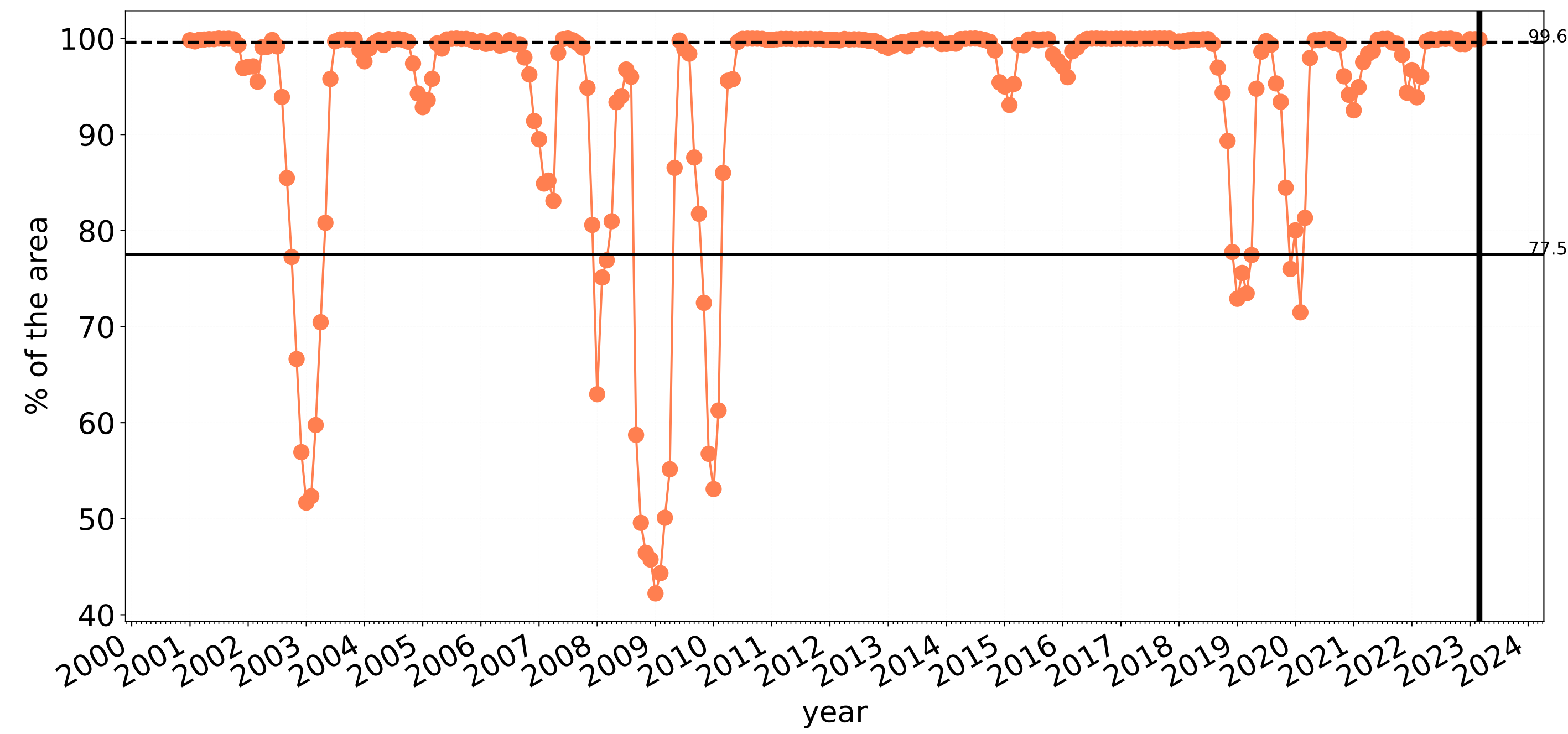
Australian Government

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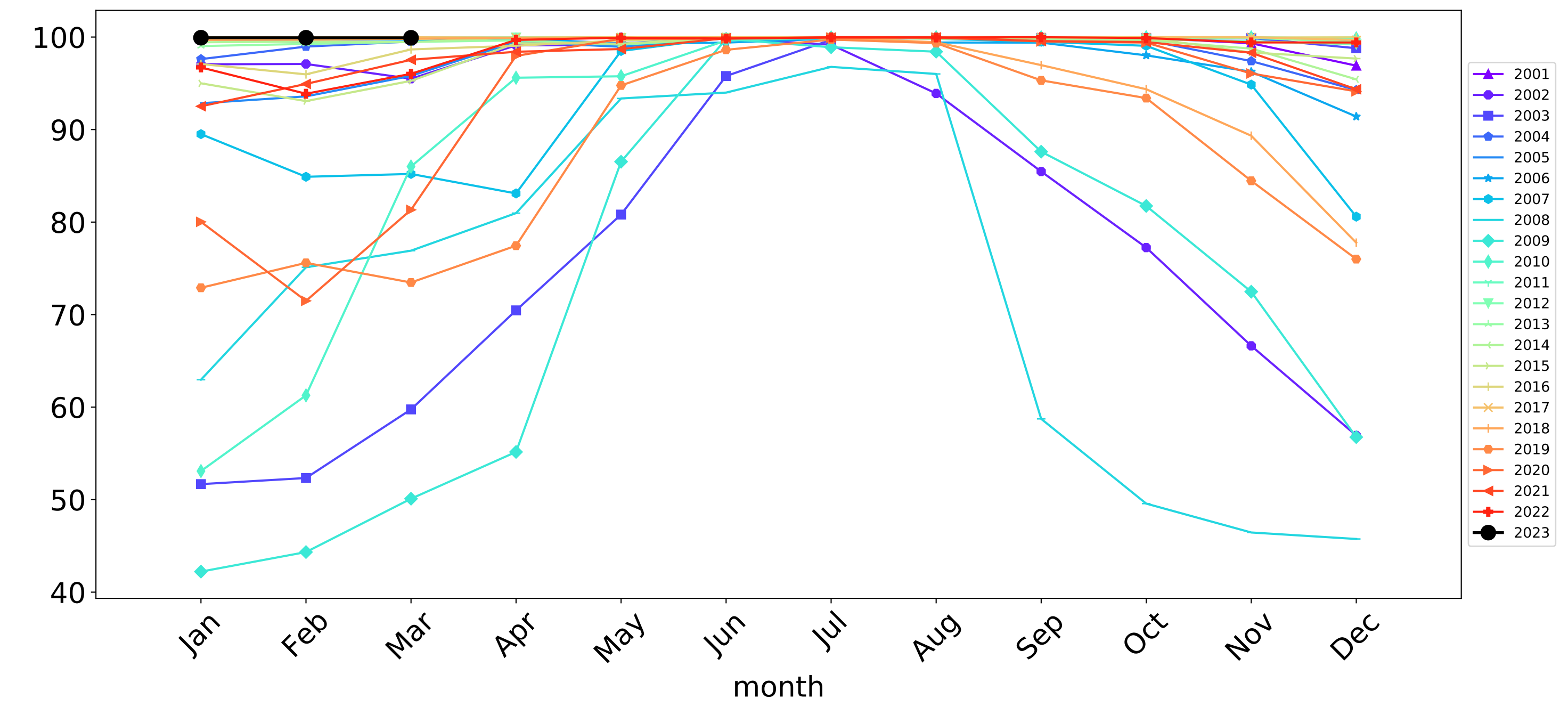


Grazing non forest timeseries

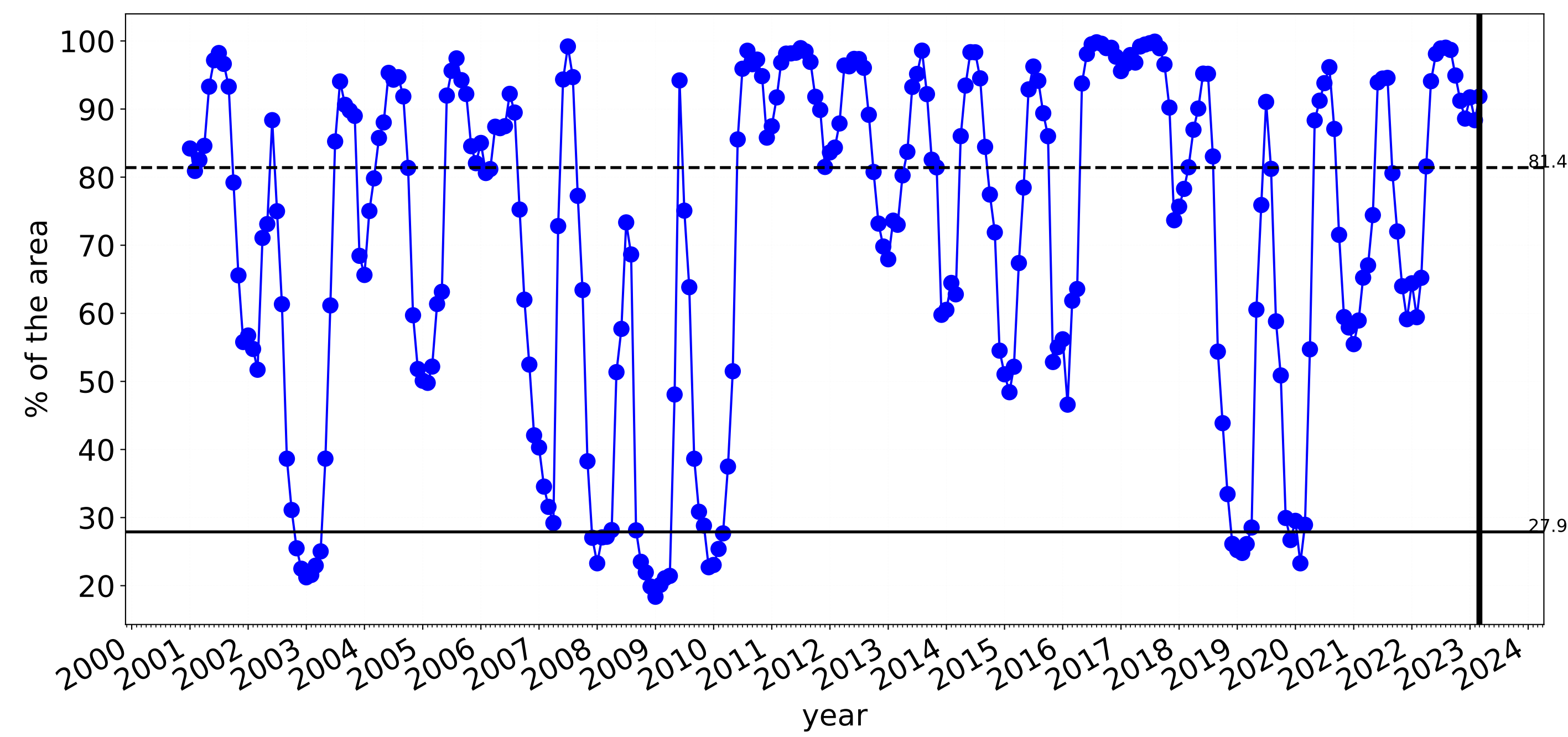
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



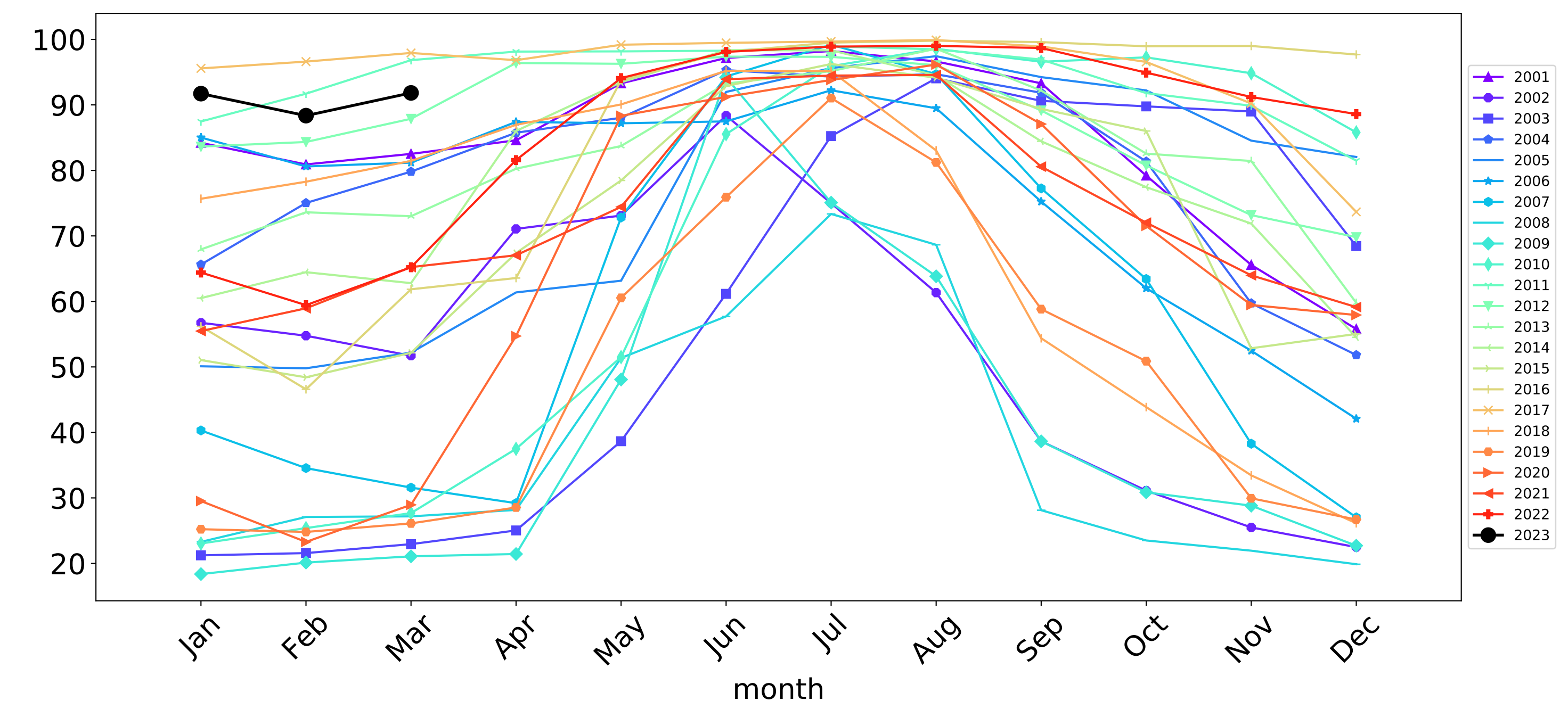
Wind erosion historical monthly area protected (Total Veg Cov >50%)



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



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



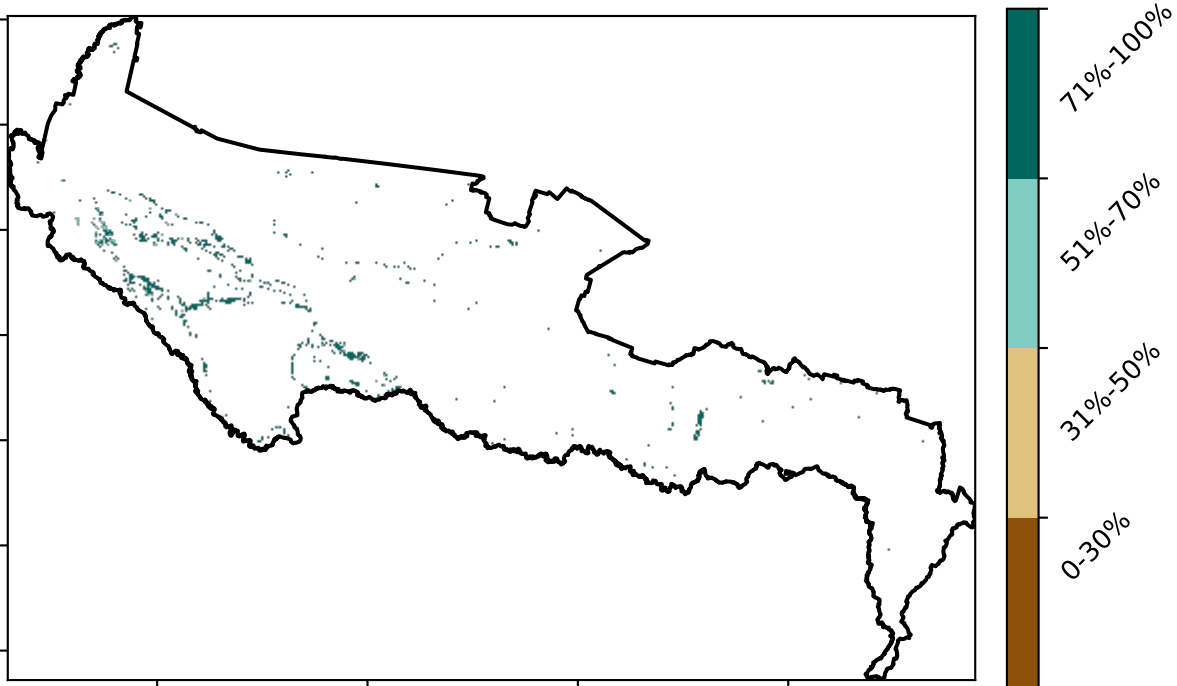
Grazing Woodland forest

Land use and forest cover

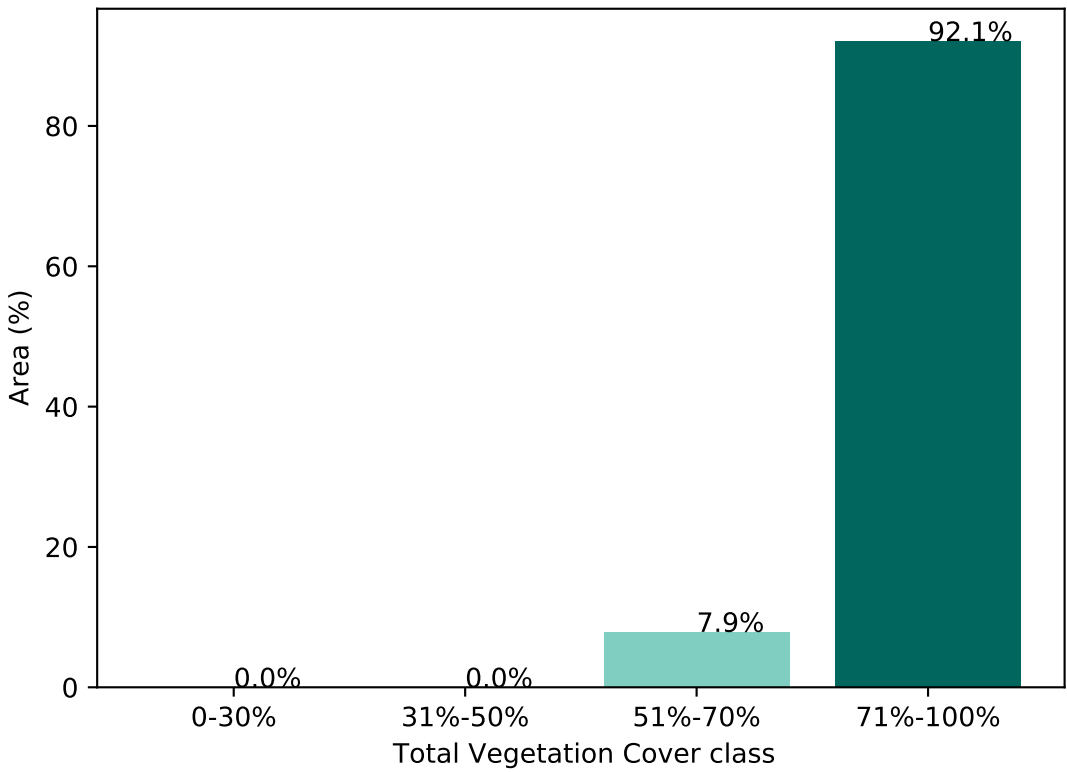
Catchment Scale
Land Use and Forests
of Australia (2018)
Derived from
Catchment Scale Land
Use of Australia
(2018) and Forests
of Australia (2018)



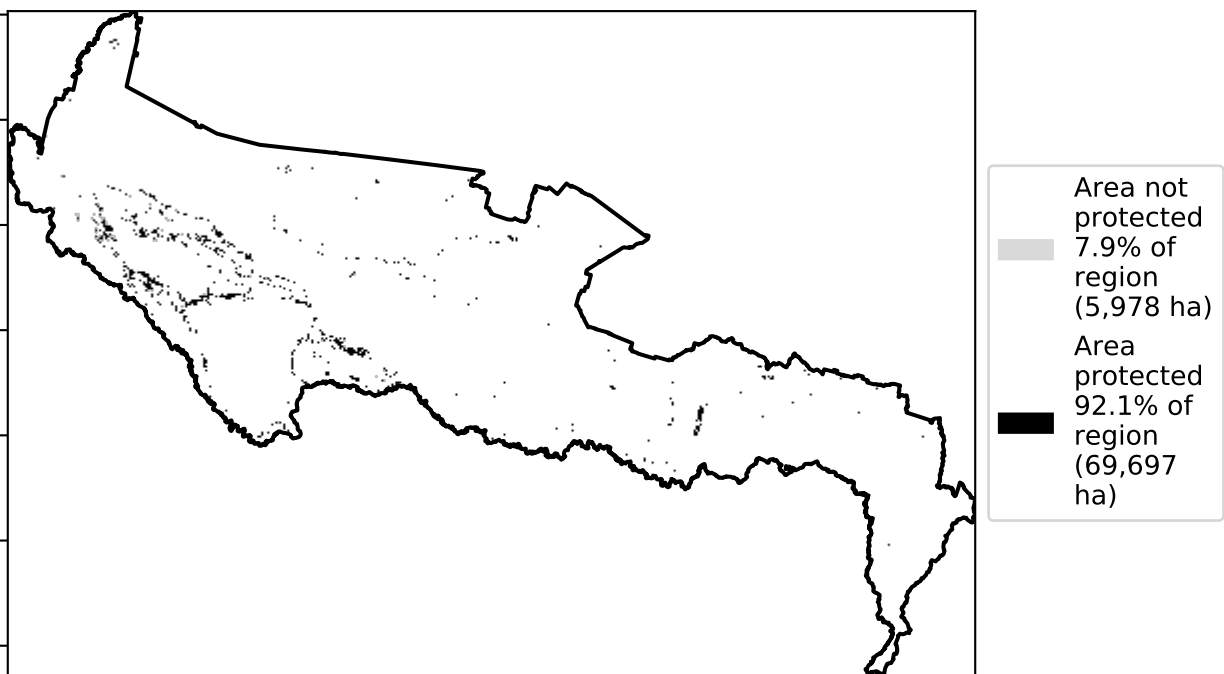
Total Vegetation Cover [%]



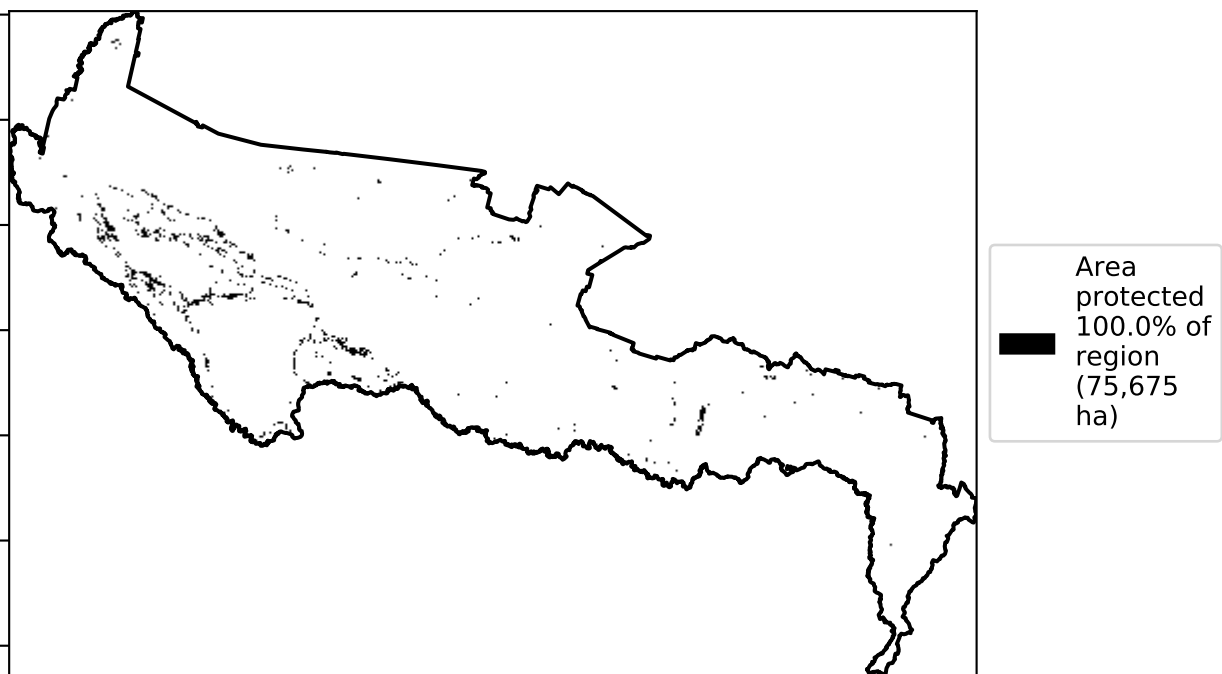
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

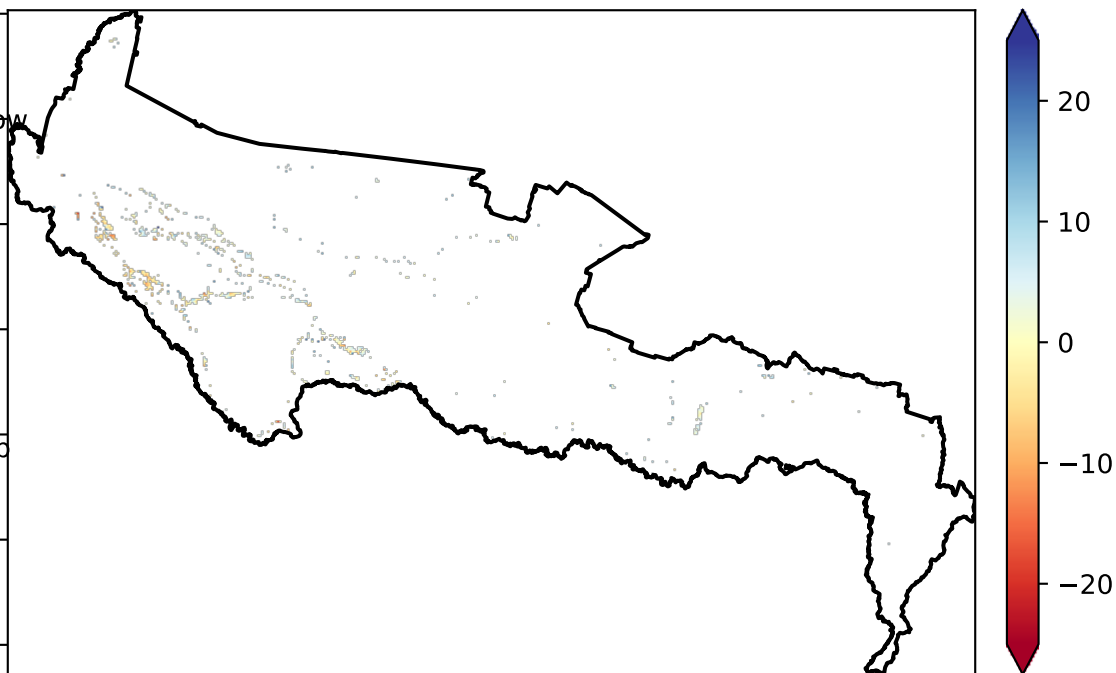


% Area protected from wind erosion (>50%)



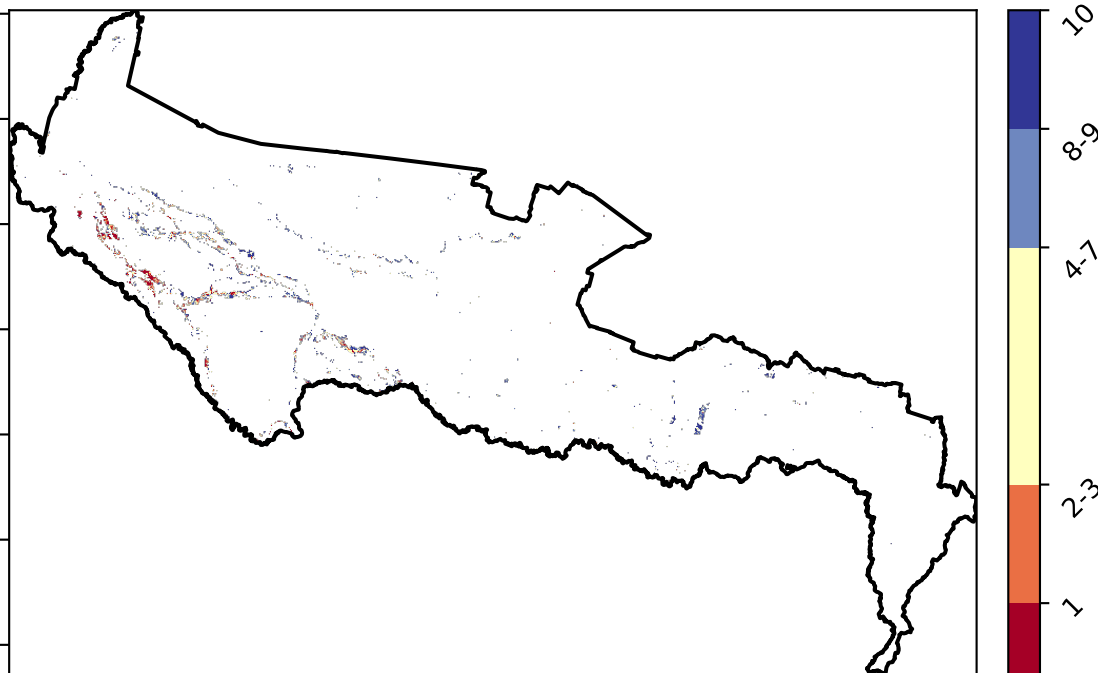
Total Vegetation Cover Anomaly [%]

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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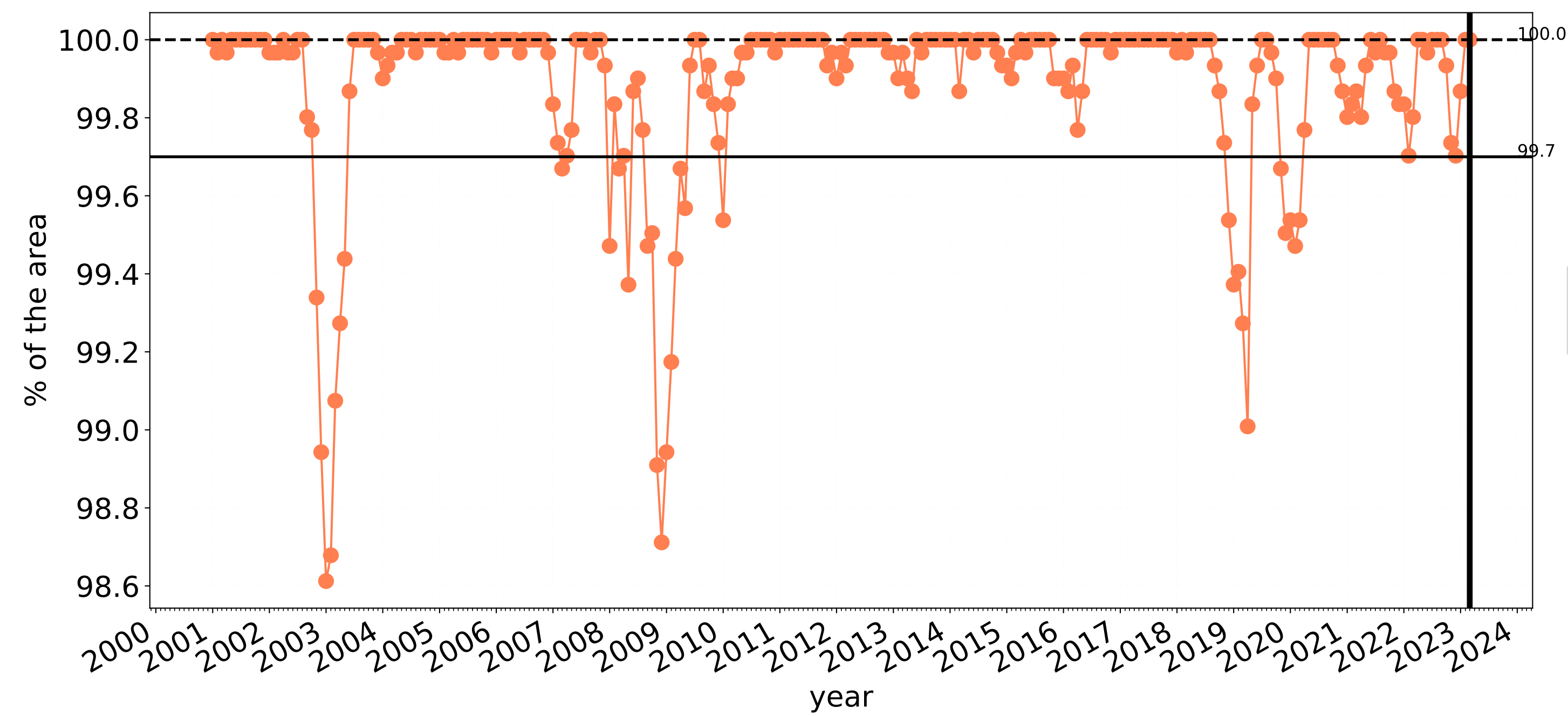
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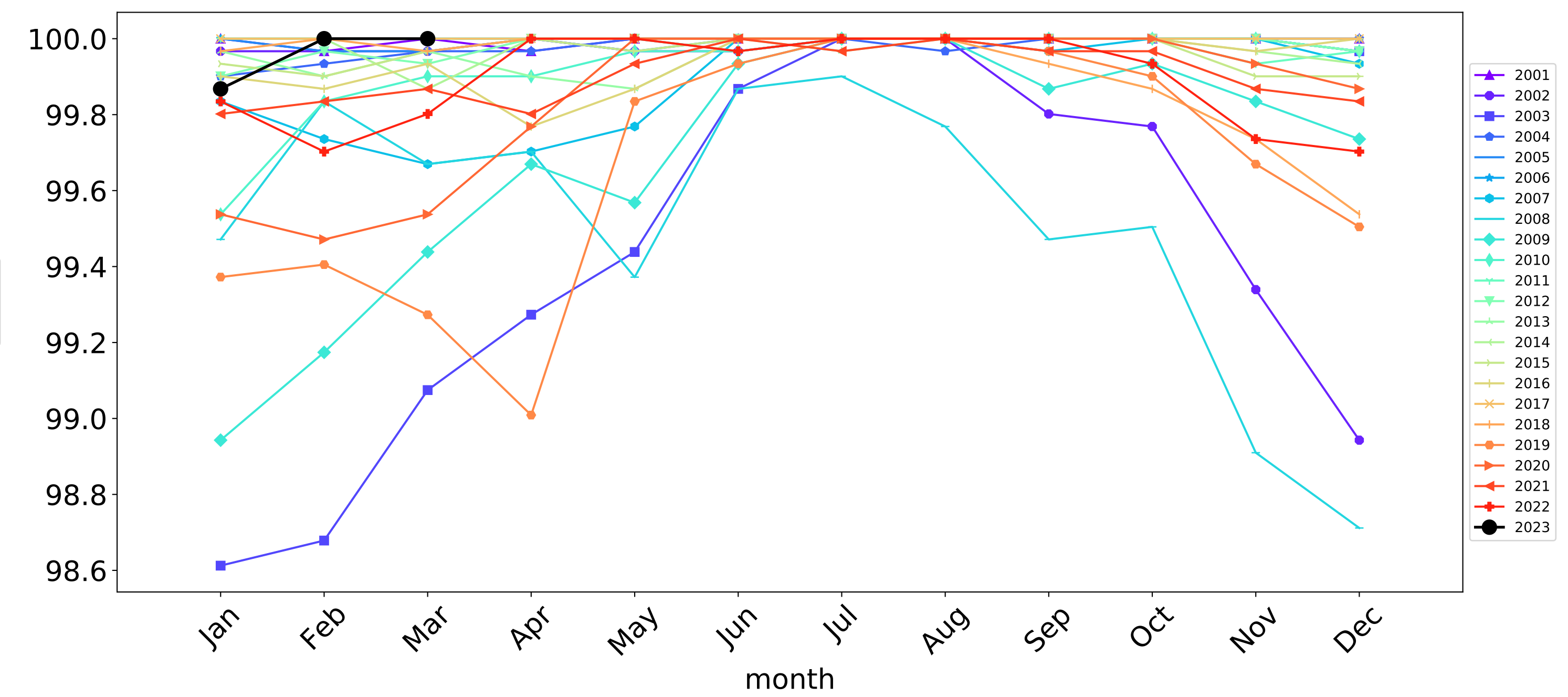


Grazing Woodland forest timeseries

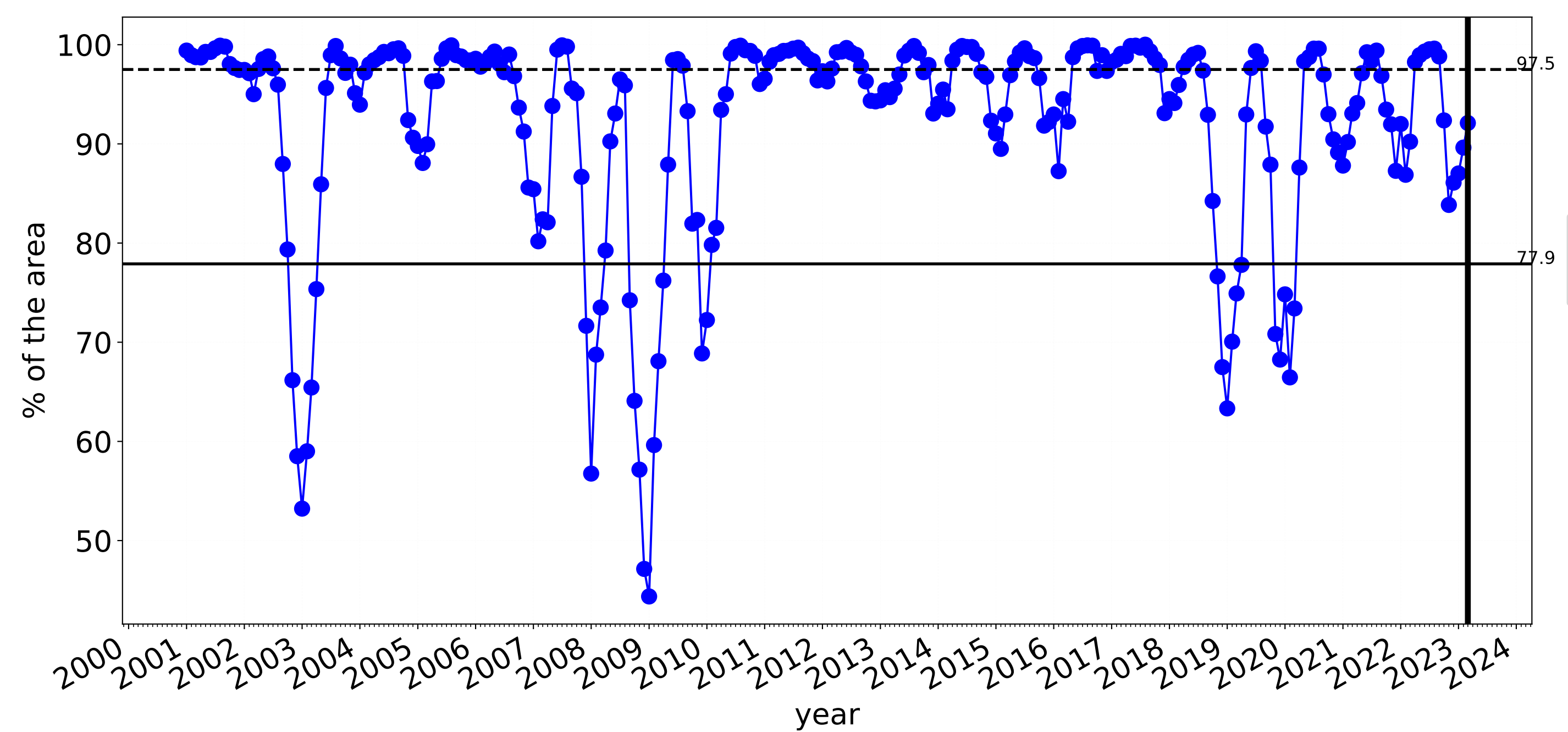
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



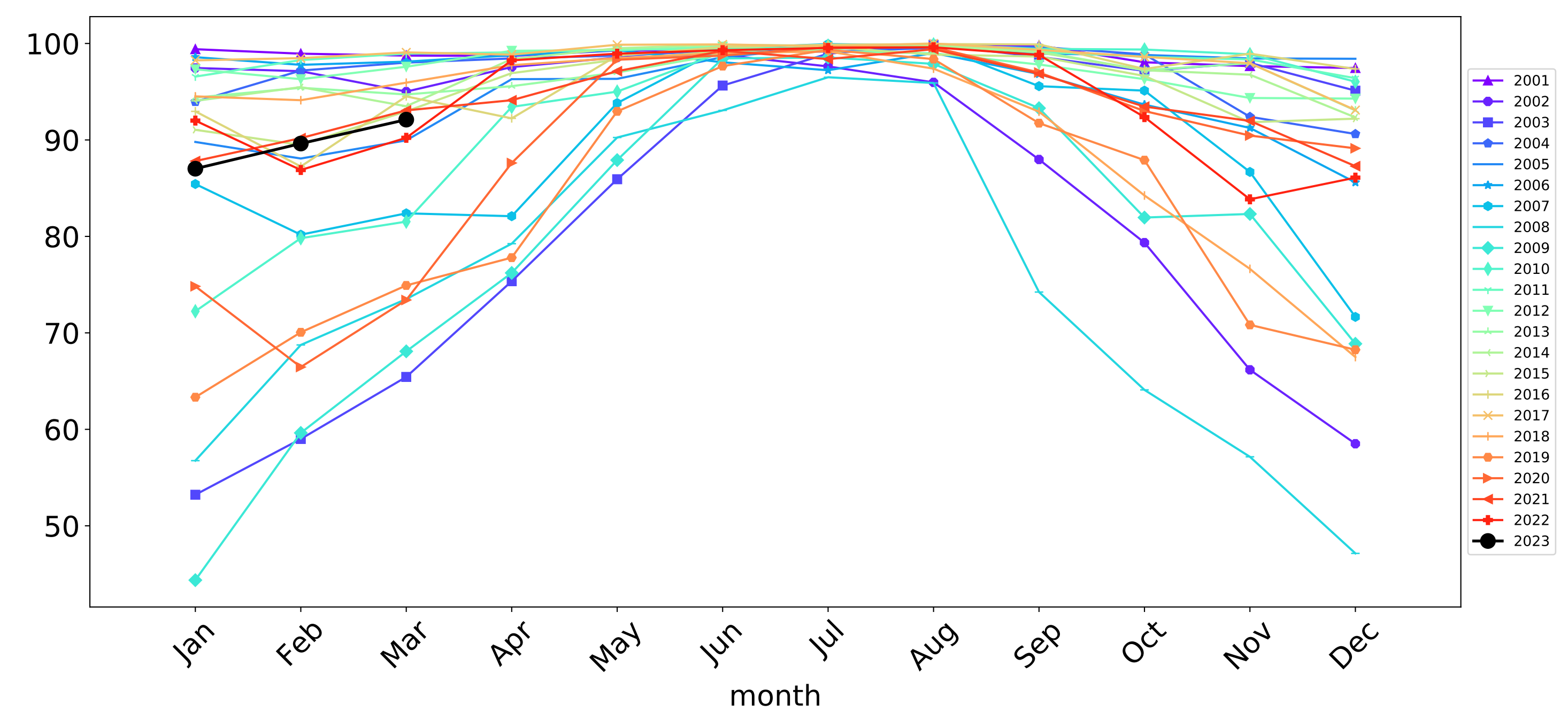
Wind erosion historical monthly area protected (Total Veg Cov >50%)



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



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



Grazing - Forest (non woodland)

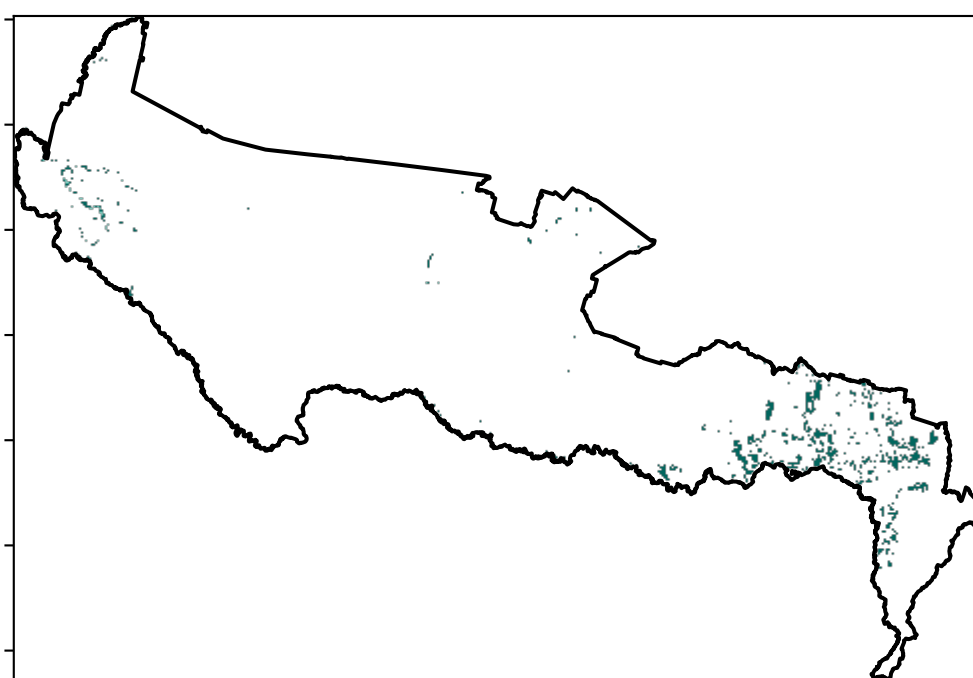
Land use and forest cover

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

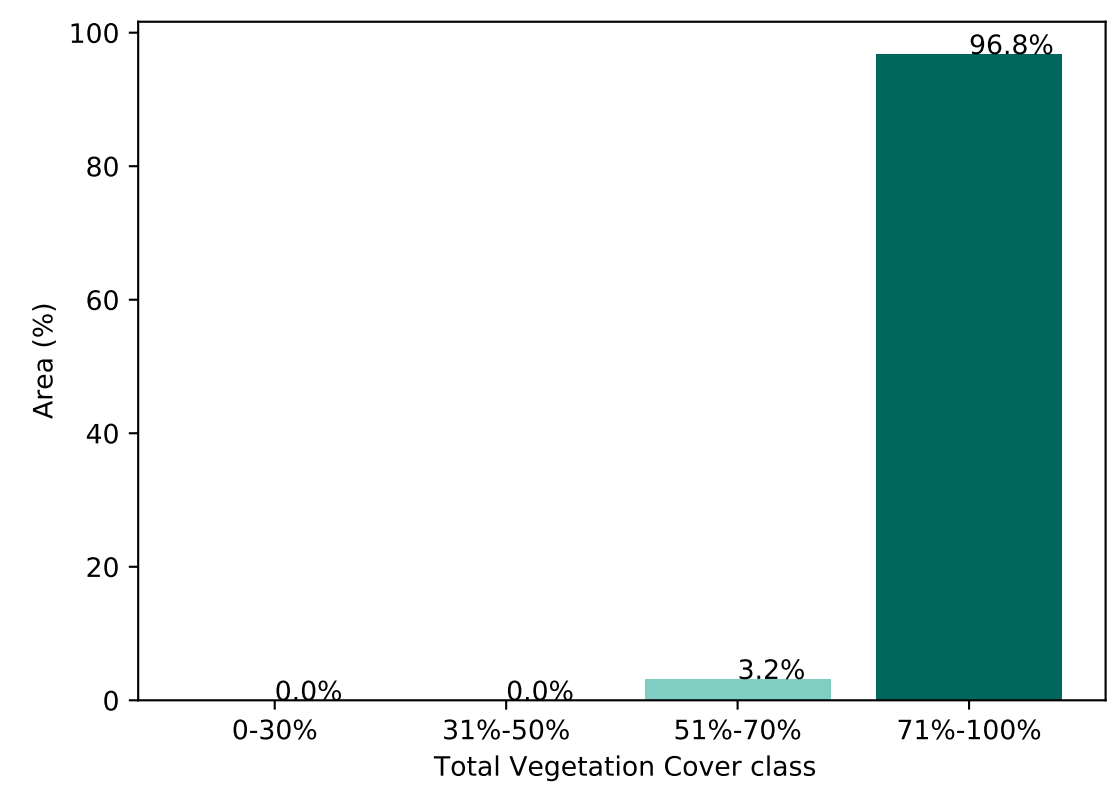


1 Agriculture - Grazing - Non-woodland forest

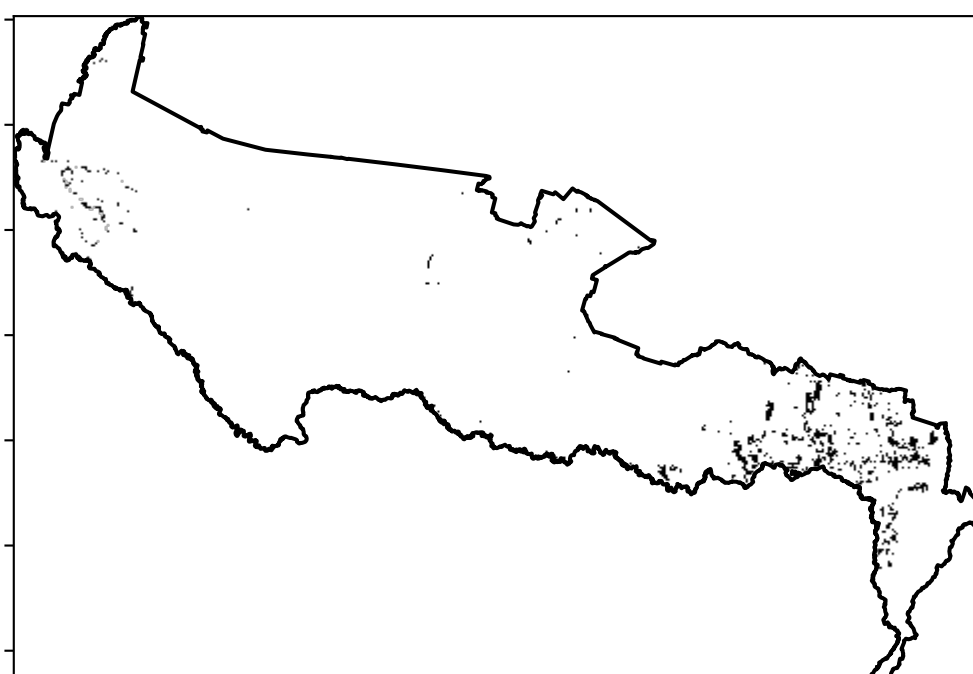
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

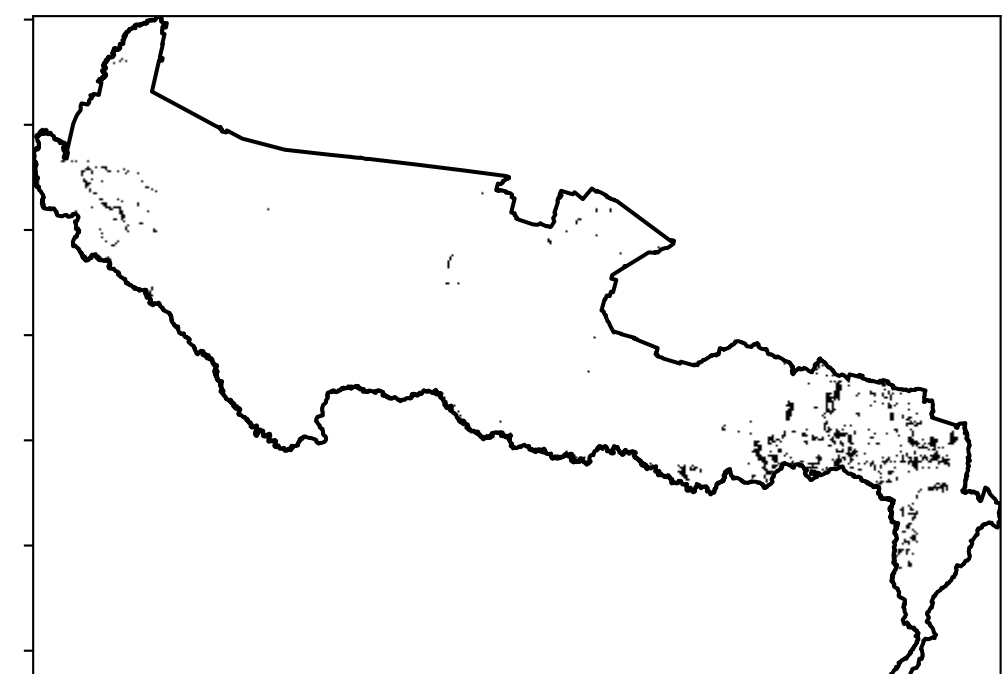


% Area protected from water erosion (>70%)



Area not protected
3.2% of region
(2,846 ha)
Area protected
96.8% of region
(86,104 ha)

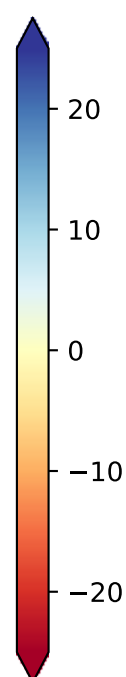
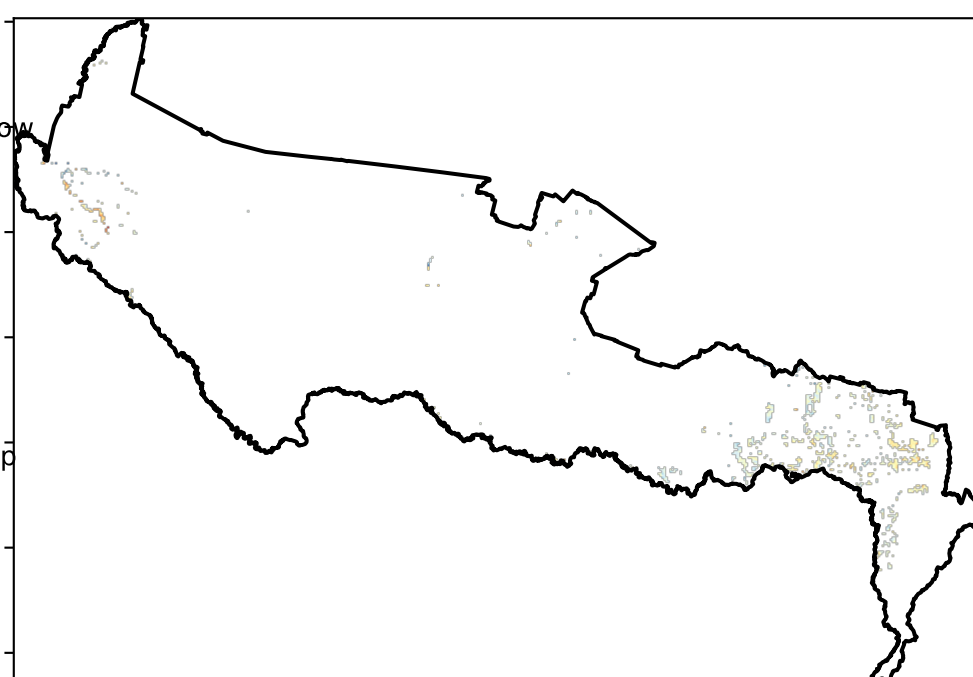
% Area protected from wind erosion (>50%)



Area protected
100.0% of region
(88,950 ha)

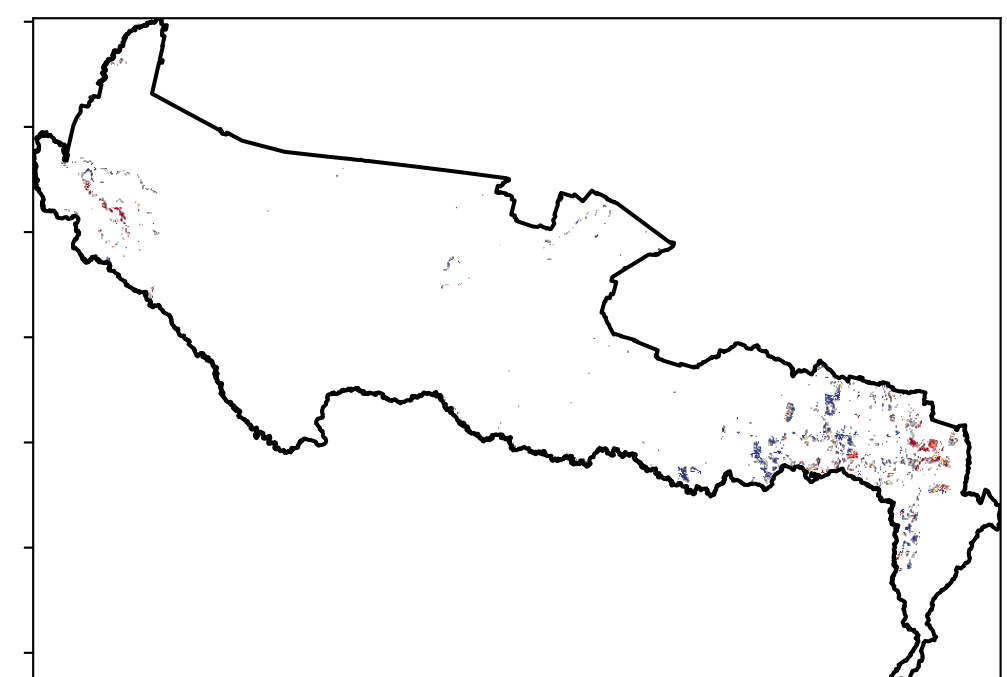
Total Vegetation Cover Anomaly [%]

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 [%]



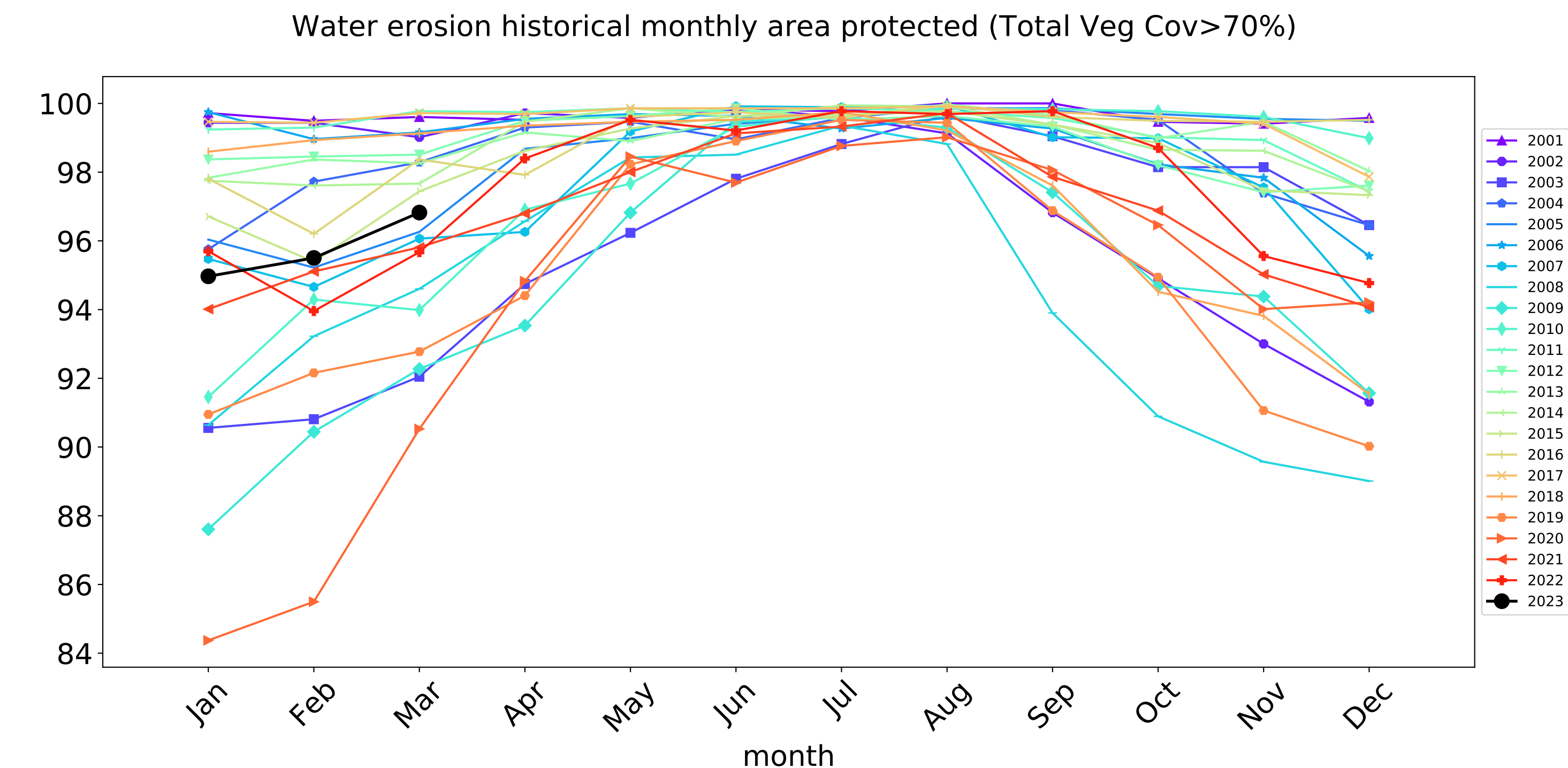
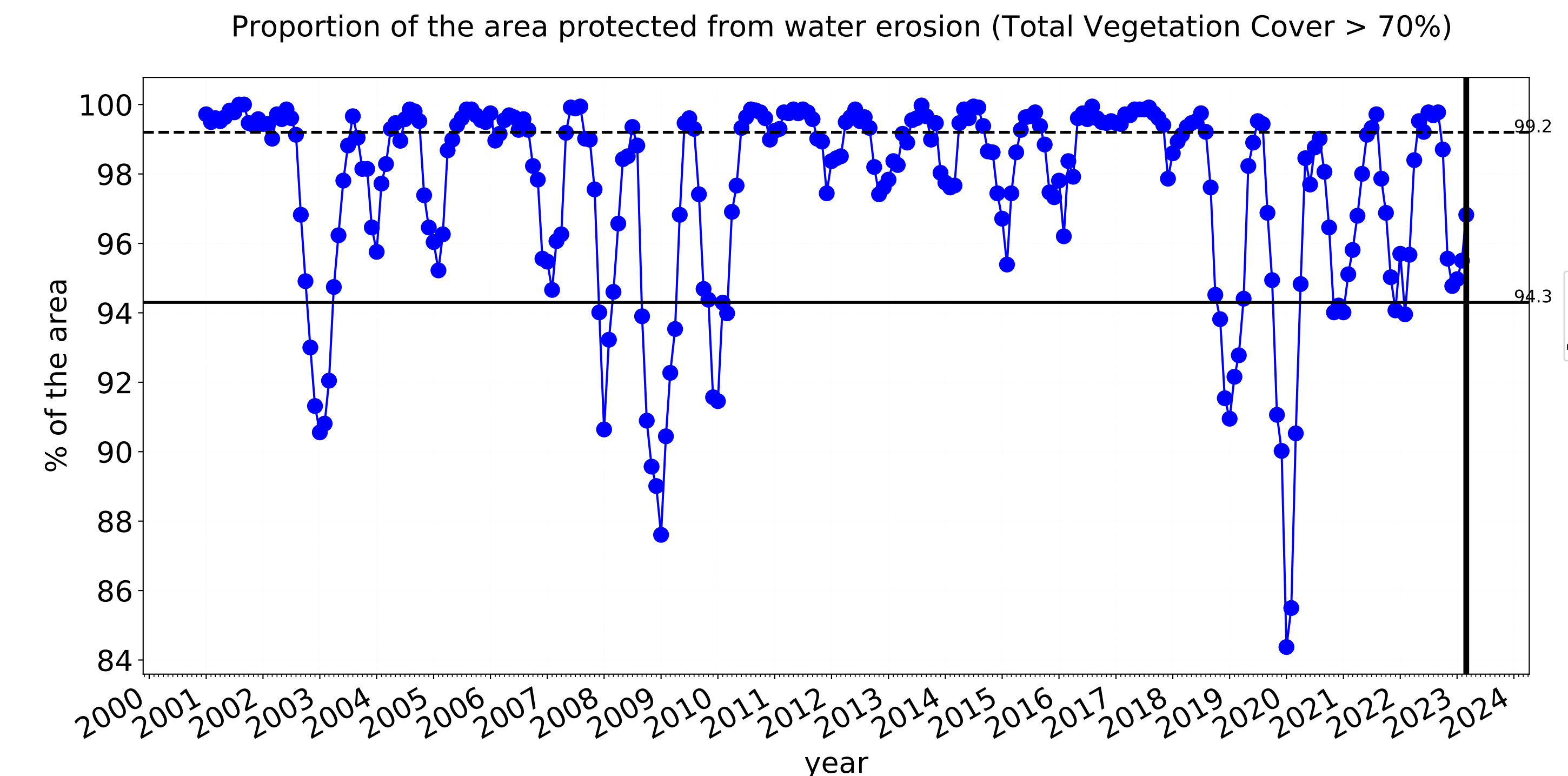
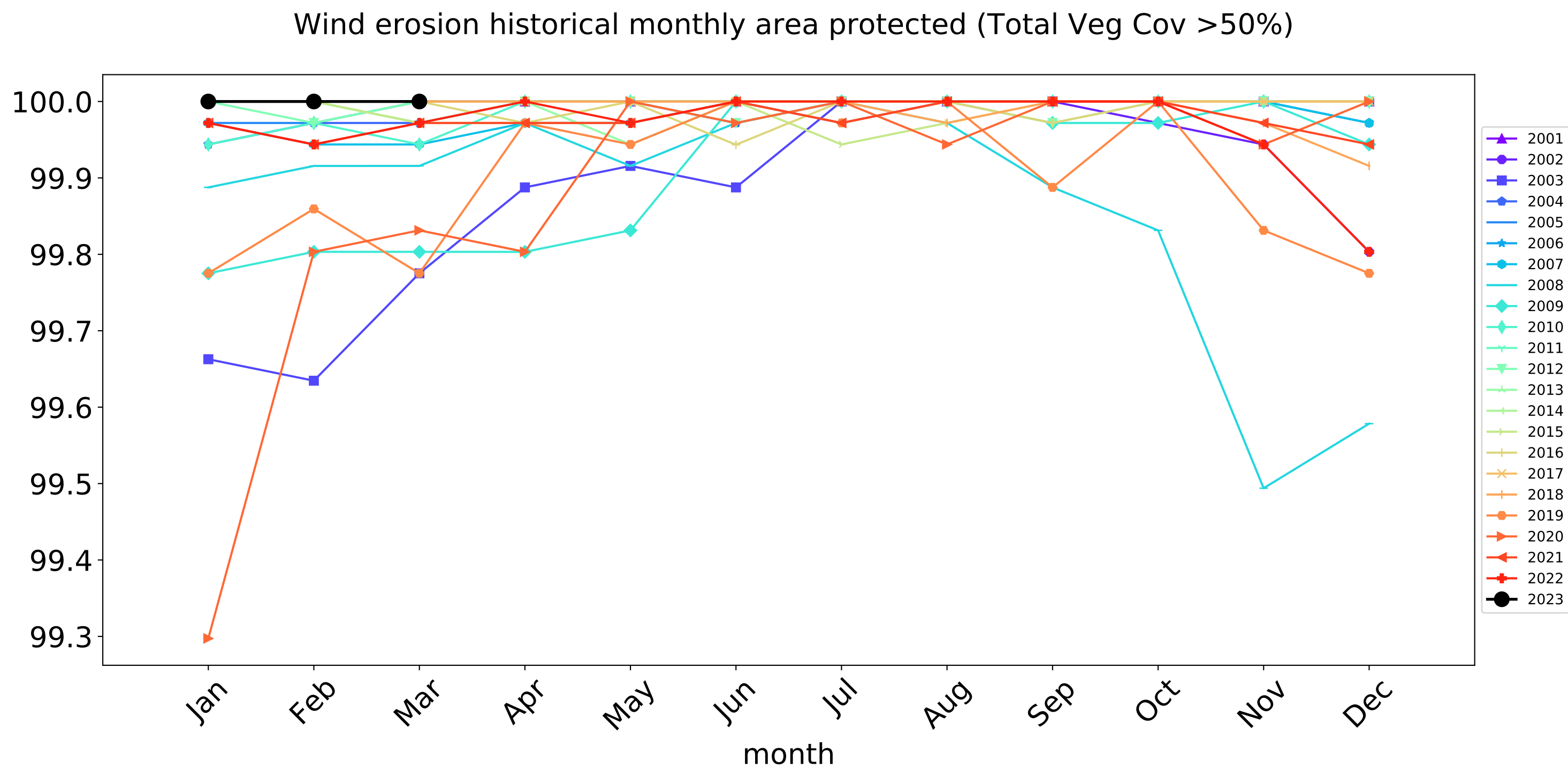
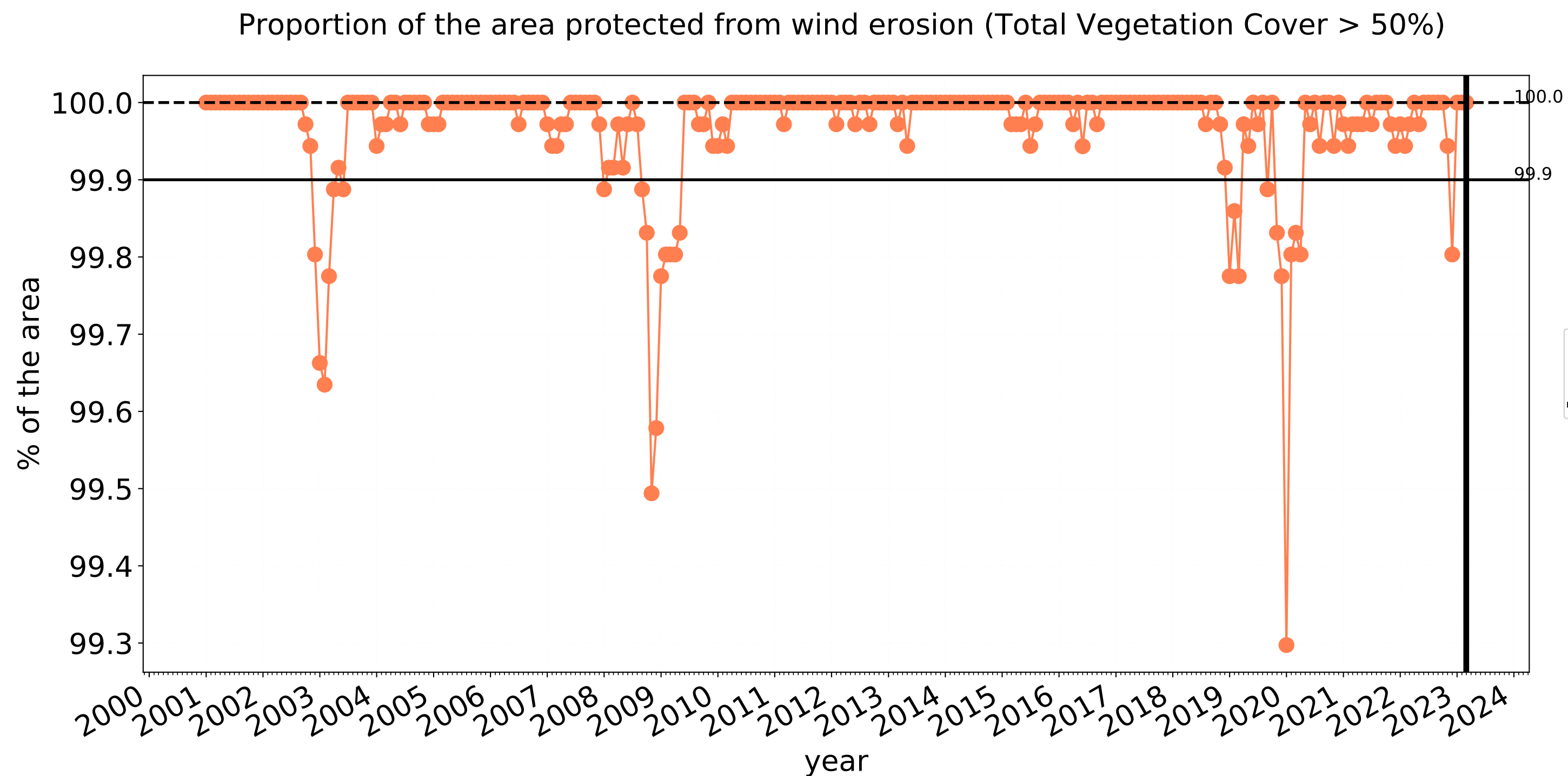
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Grazing - Forest (non woodland) timeseries



Cropping

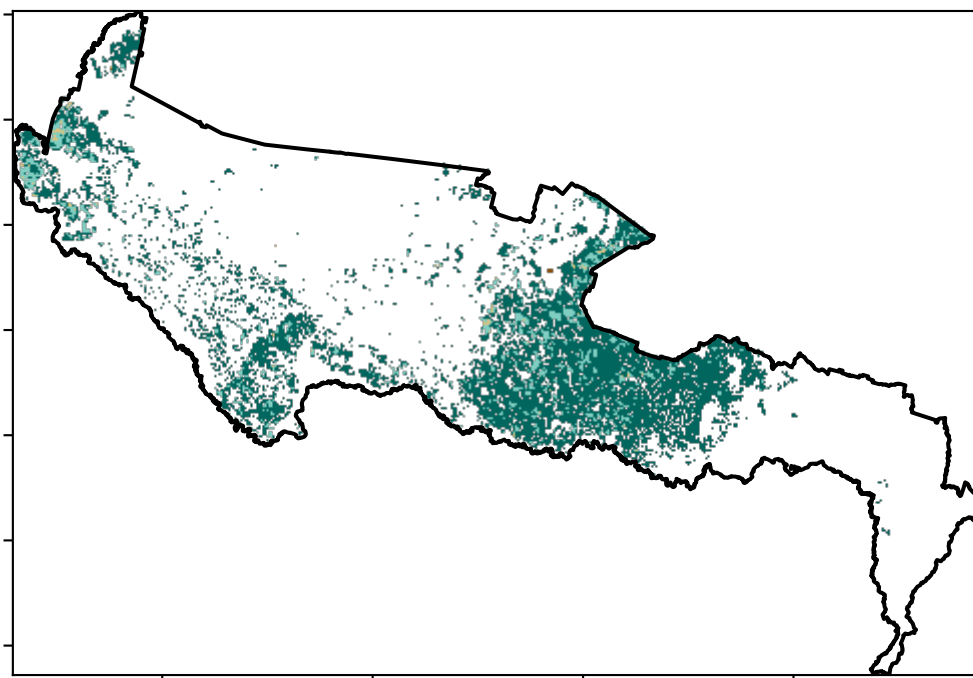
Land use and forest cover

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

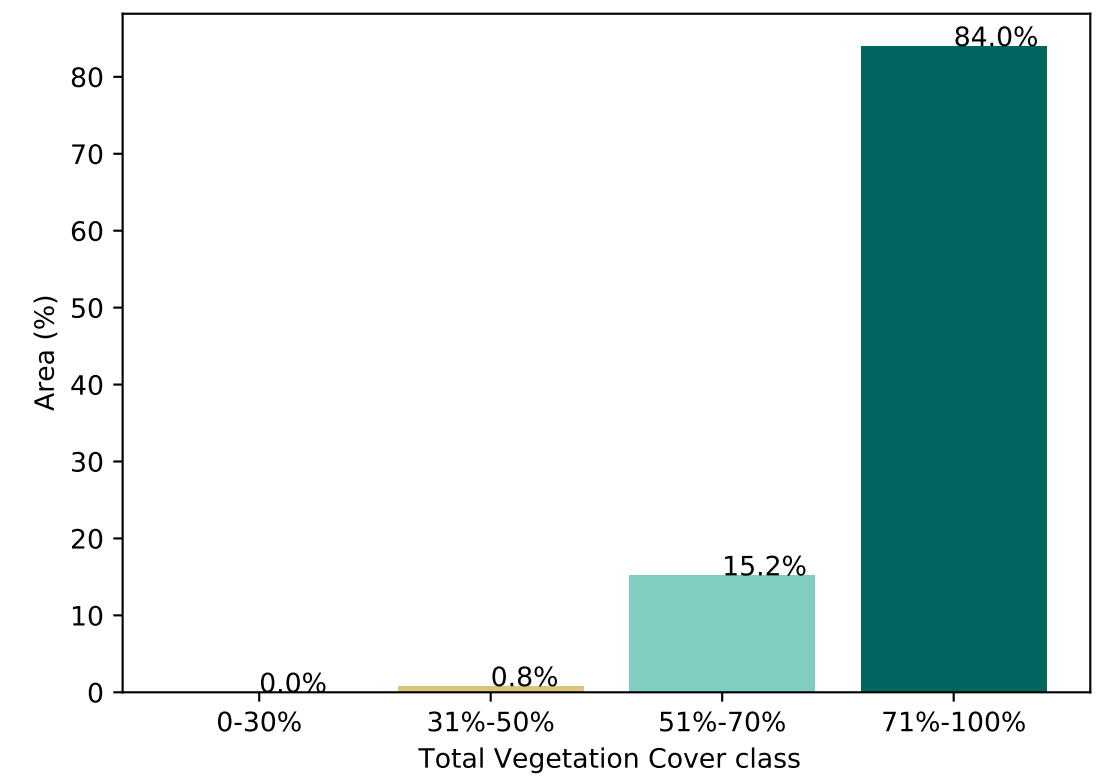


1 Agriculture - Cropping - Non-irrigated

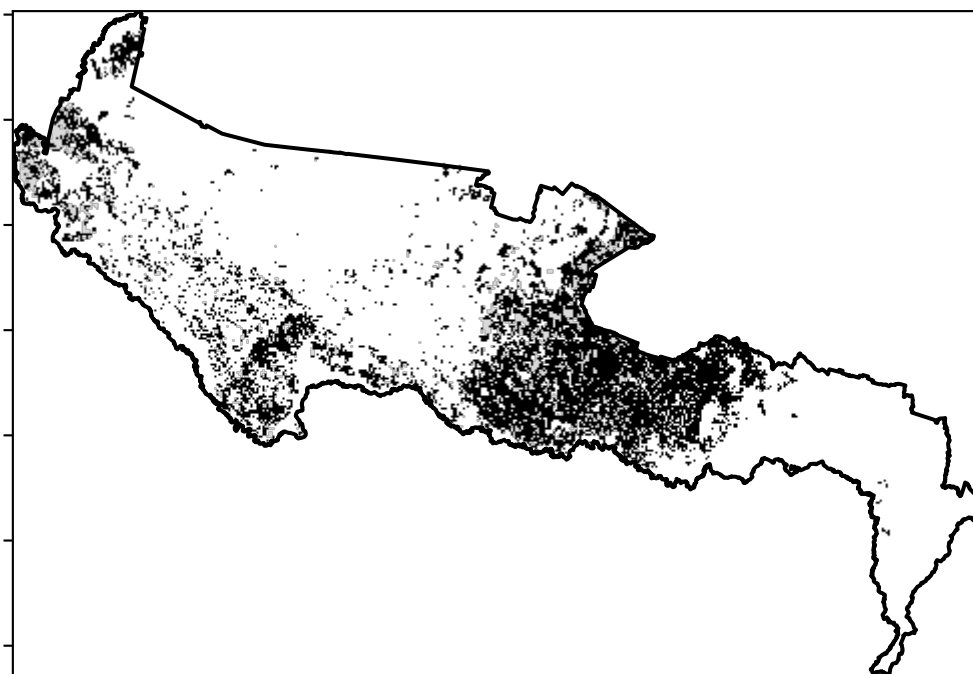
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

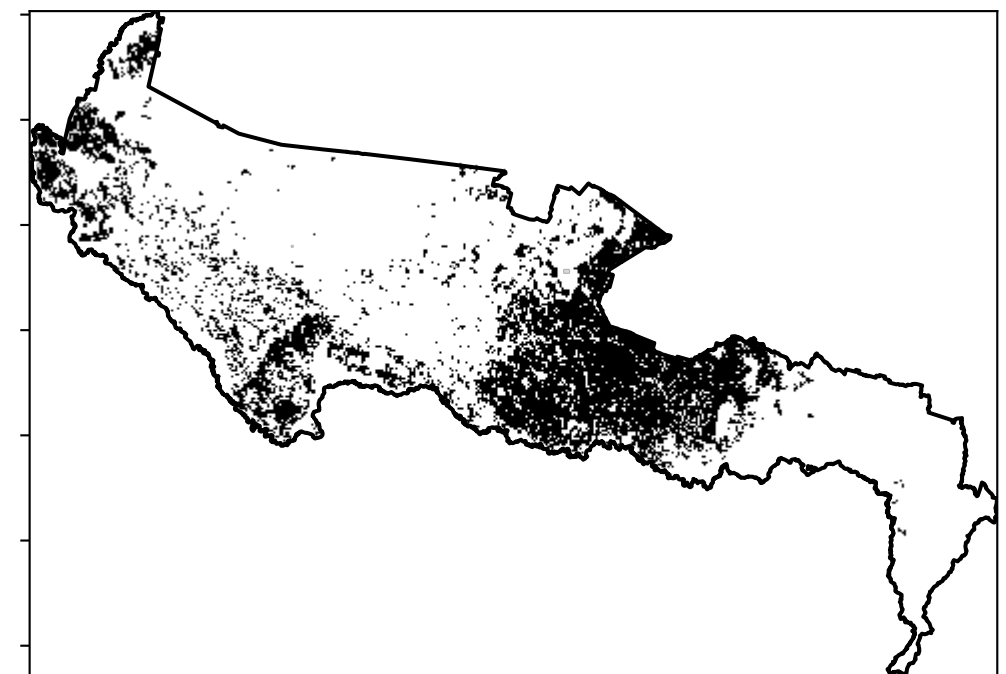


% Area protected from water erosion (>70%)



Area not protected
16.0% of region
(166,984 ha)
Area protected
84.0% of region
(876,666 ha)

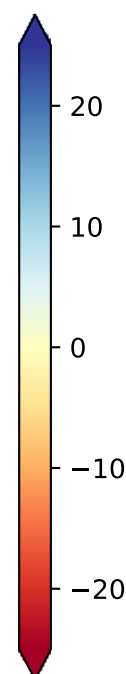
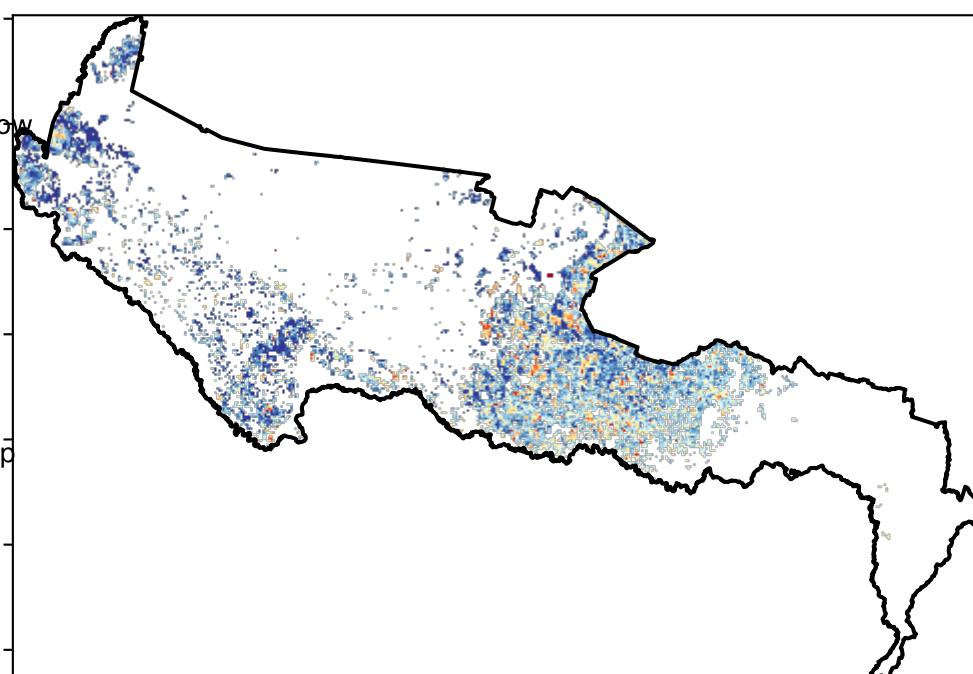
% Area protected from wind erosion (>50%)



Area not protected
1.0% of region
(10,436 ha)
Area protected
99.0% of region
(1,033,214 ha)

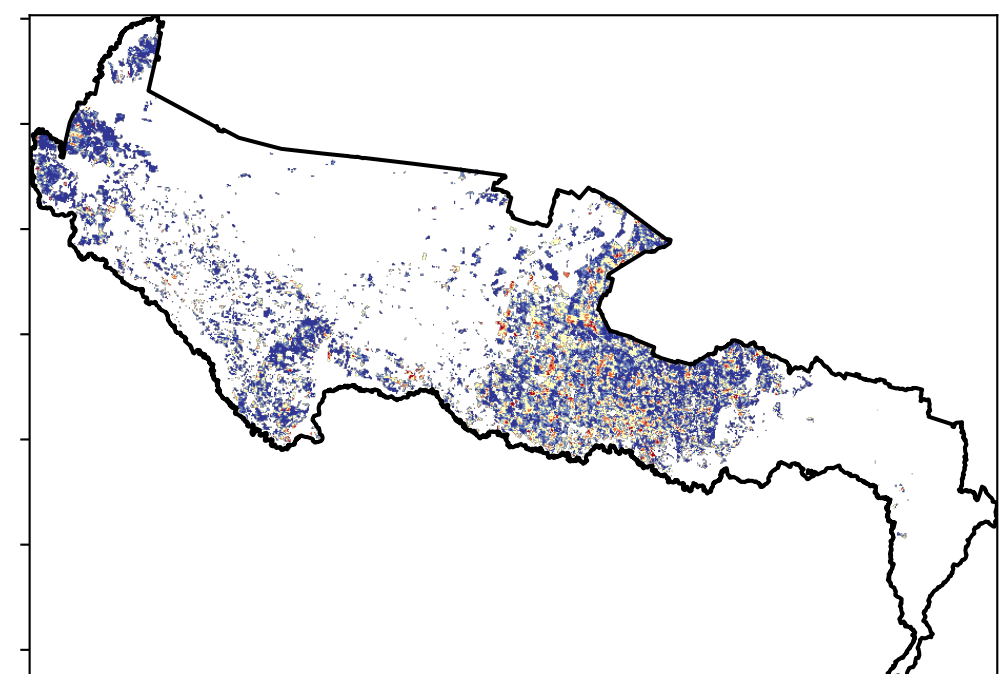
Total Vegetation Cover Anomaly [%]

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Total Vegetation Cover Decile [%]



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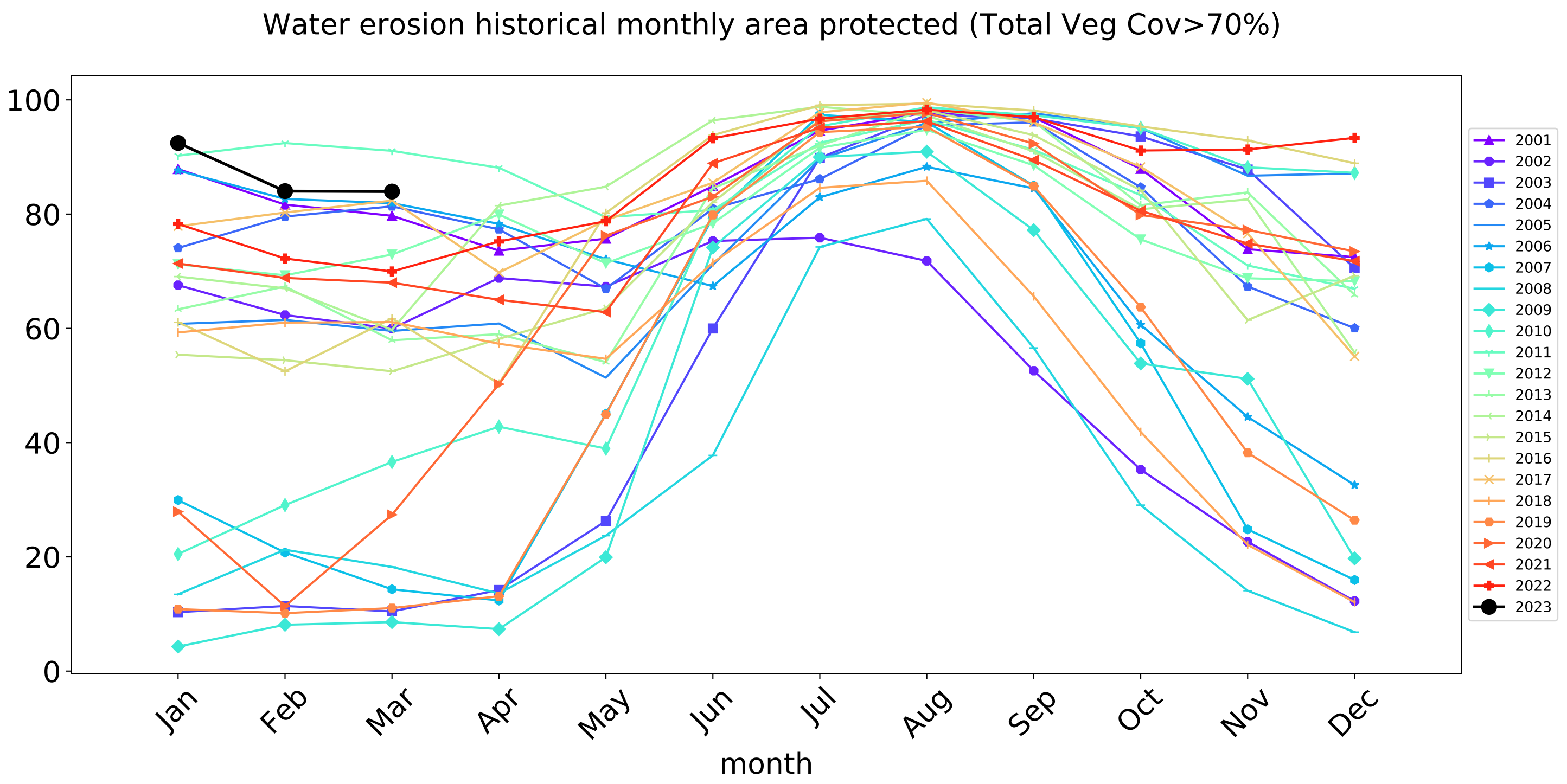
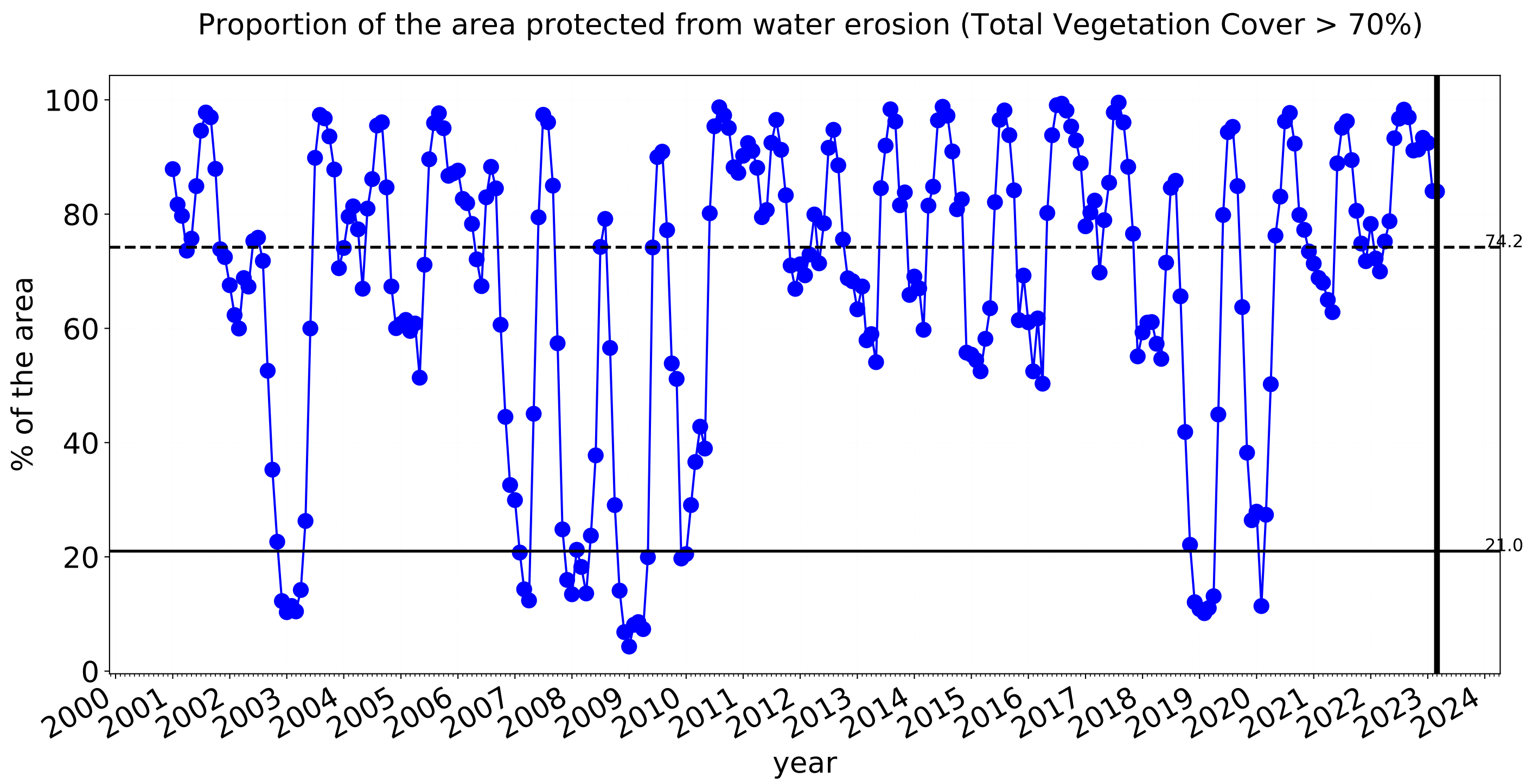
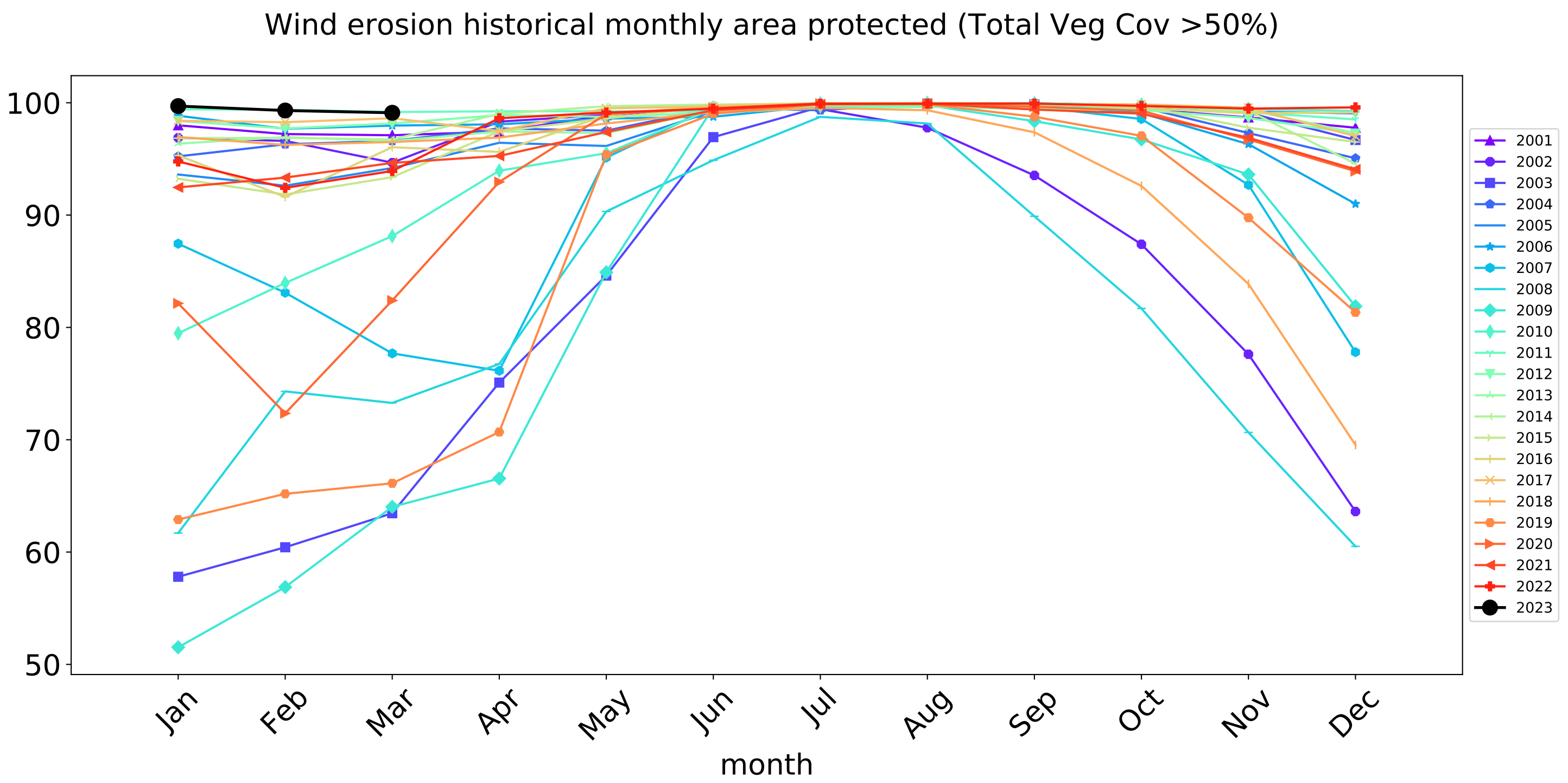
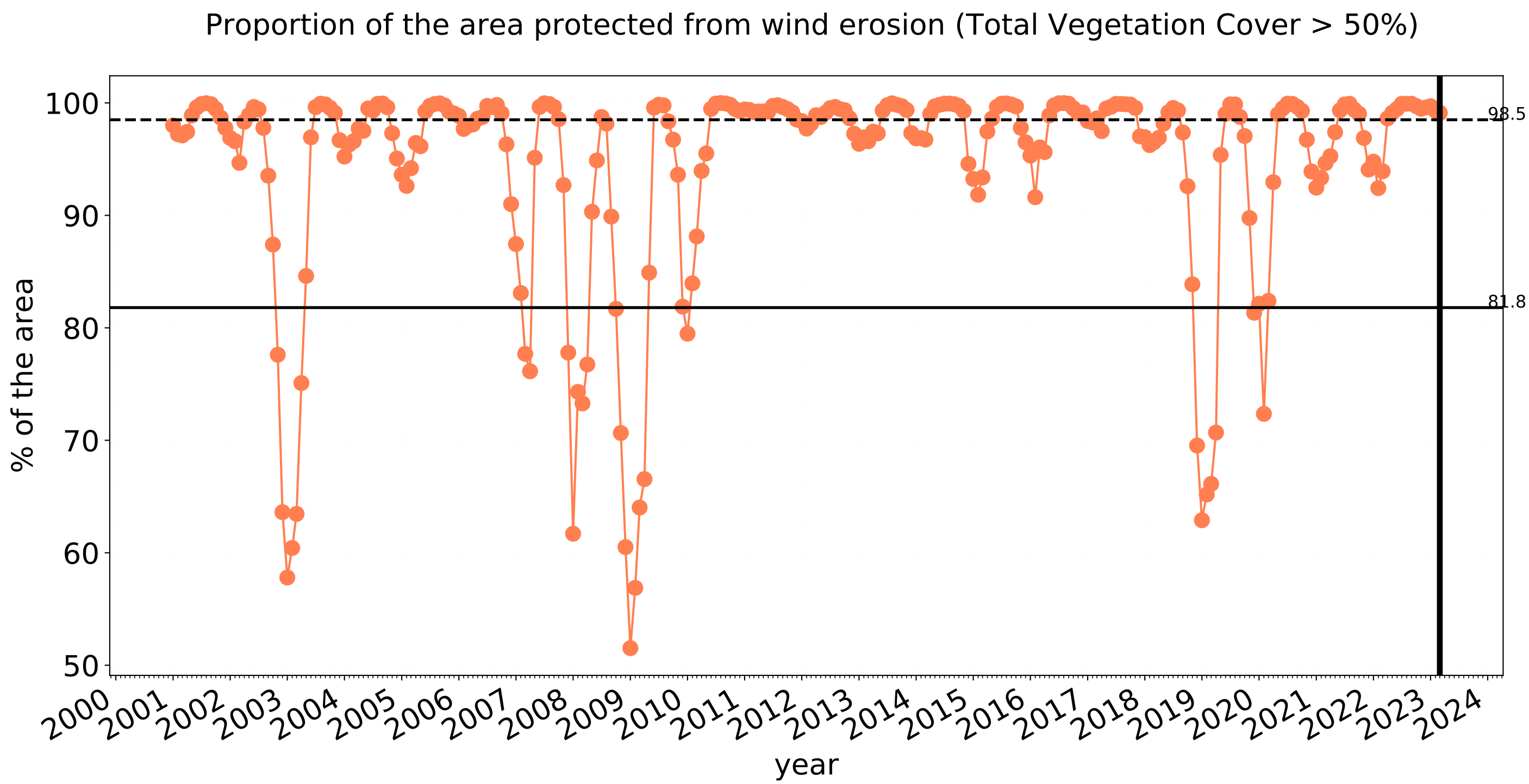


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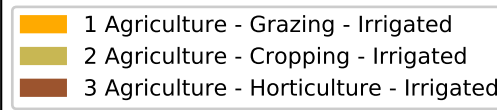
Cropping timeseries



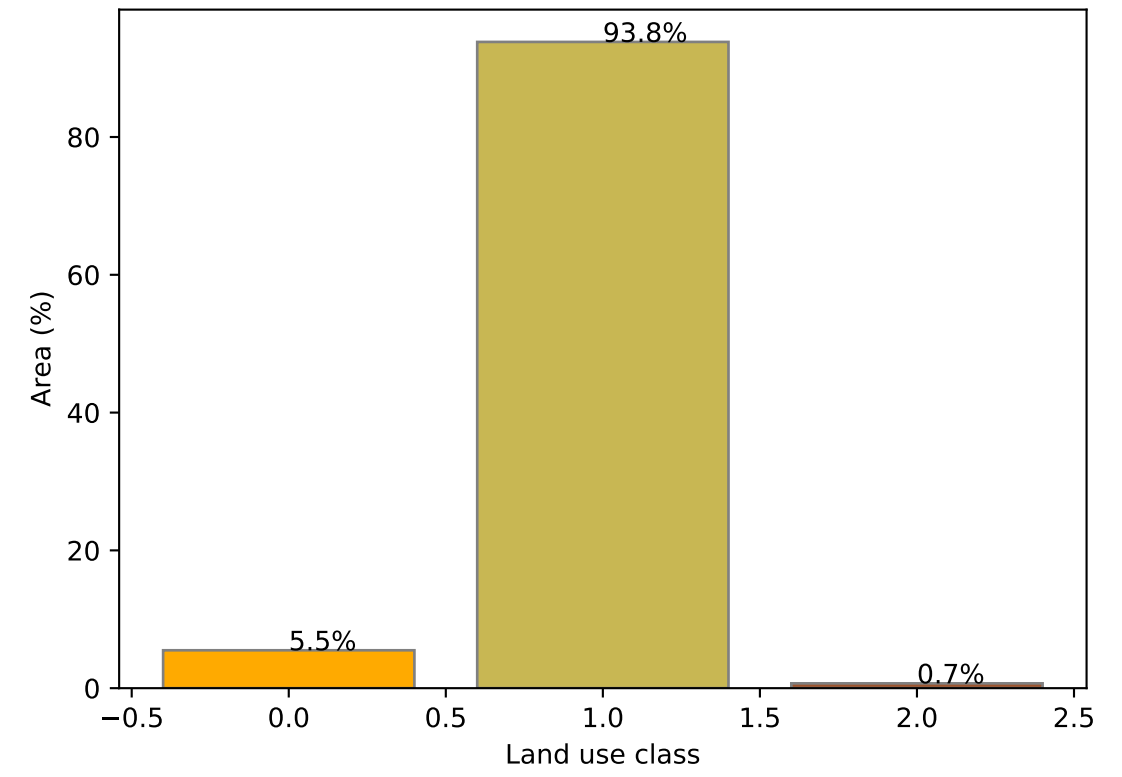
Irrigation

Land use and forest cover

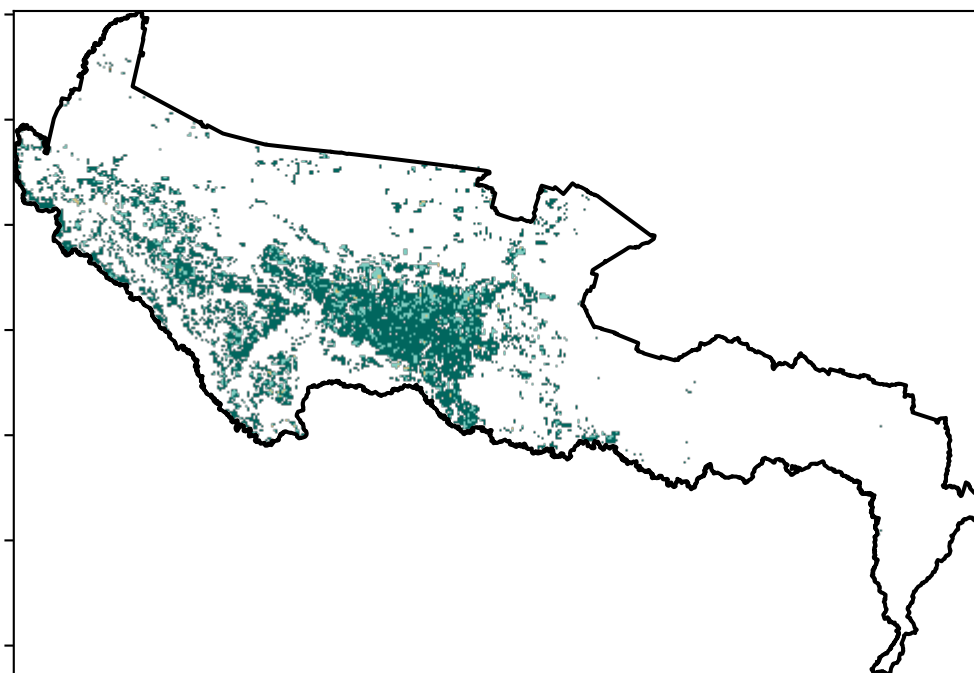
Catchment Scale
Land Use and Forests
of Australia (2018)
Derived from
Catchment Scale Land
Use of Australia
(2018) and Forests
of Australia (2018)



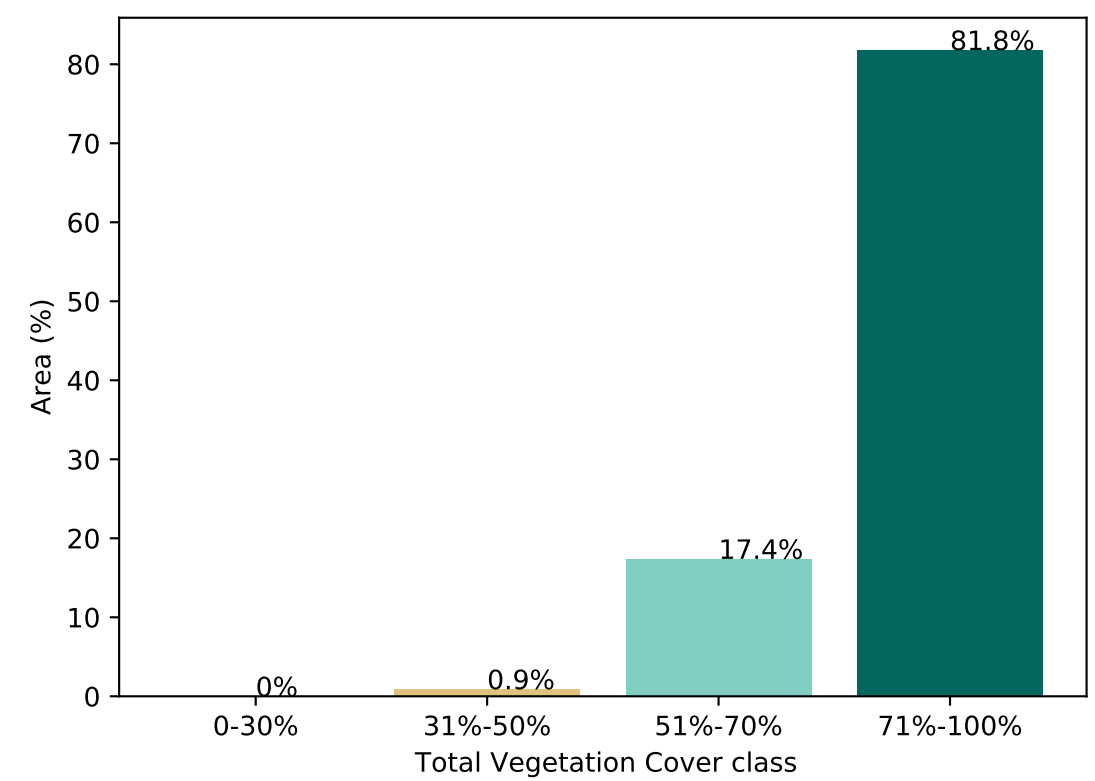
Proportion of each land class in area



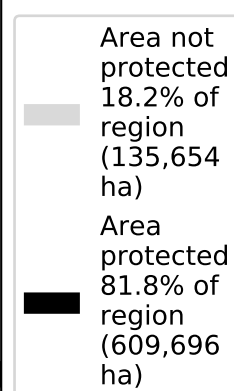
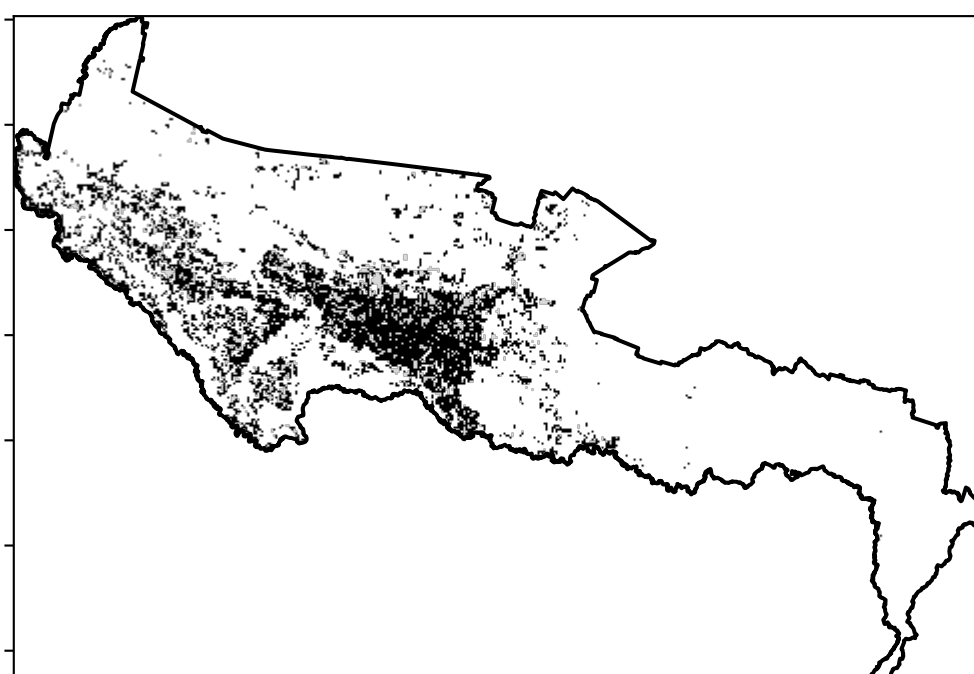
Total Vegetation Cover [%]



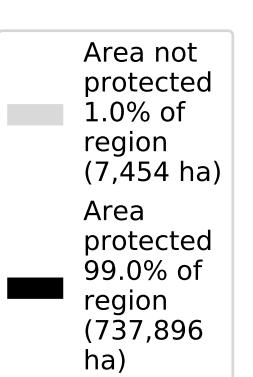
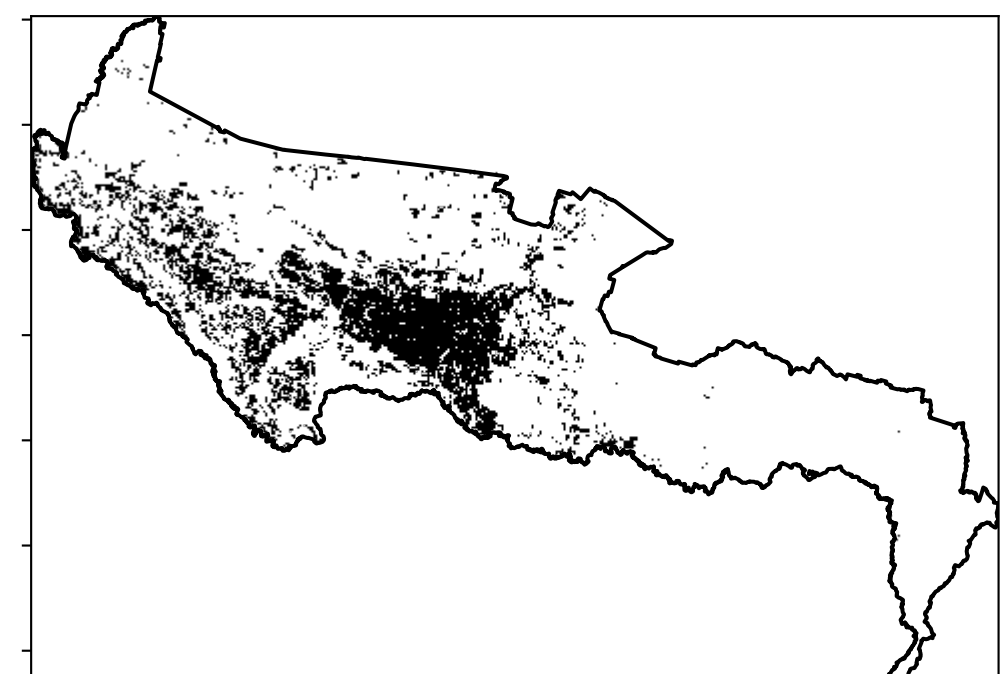
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

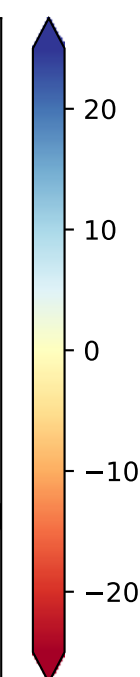
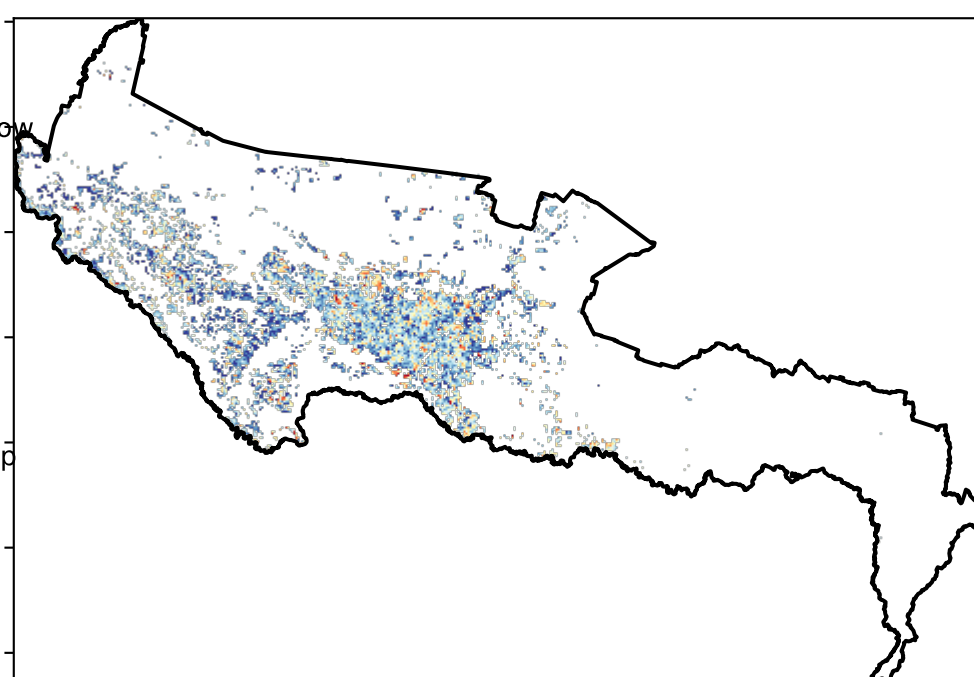


% Area protected from wind erosion (>50%)



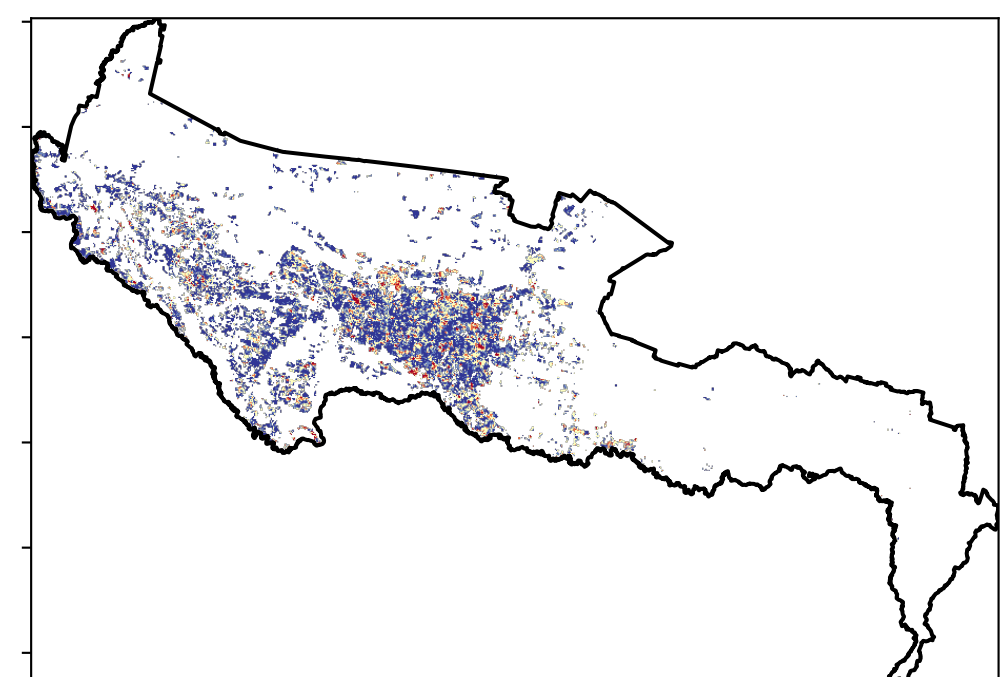
Total Vegetation Cover Anomaly [%]

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Total Vegetation Cover Decile [%]



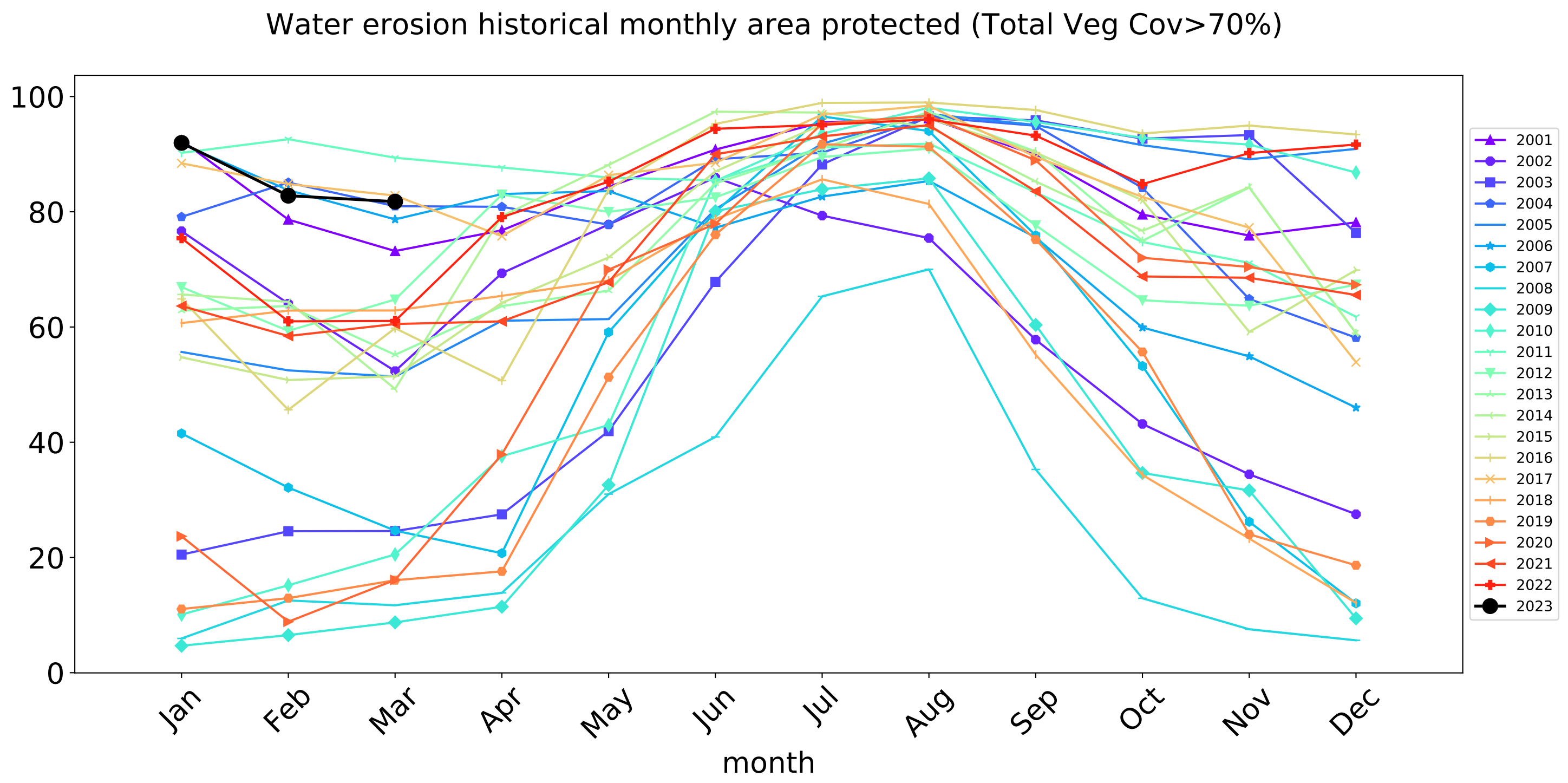
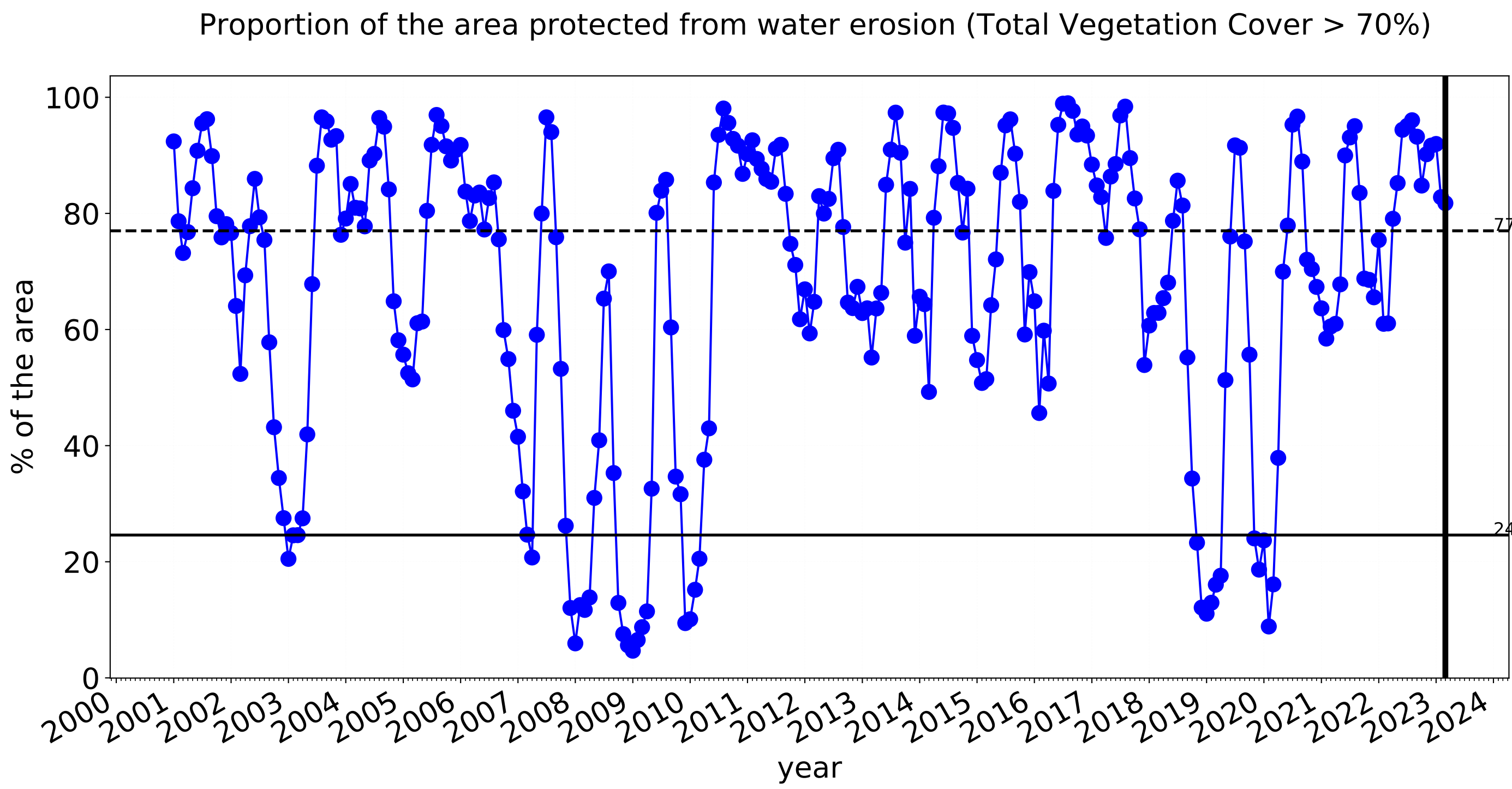
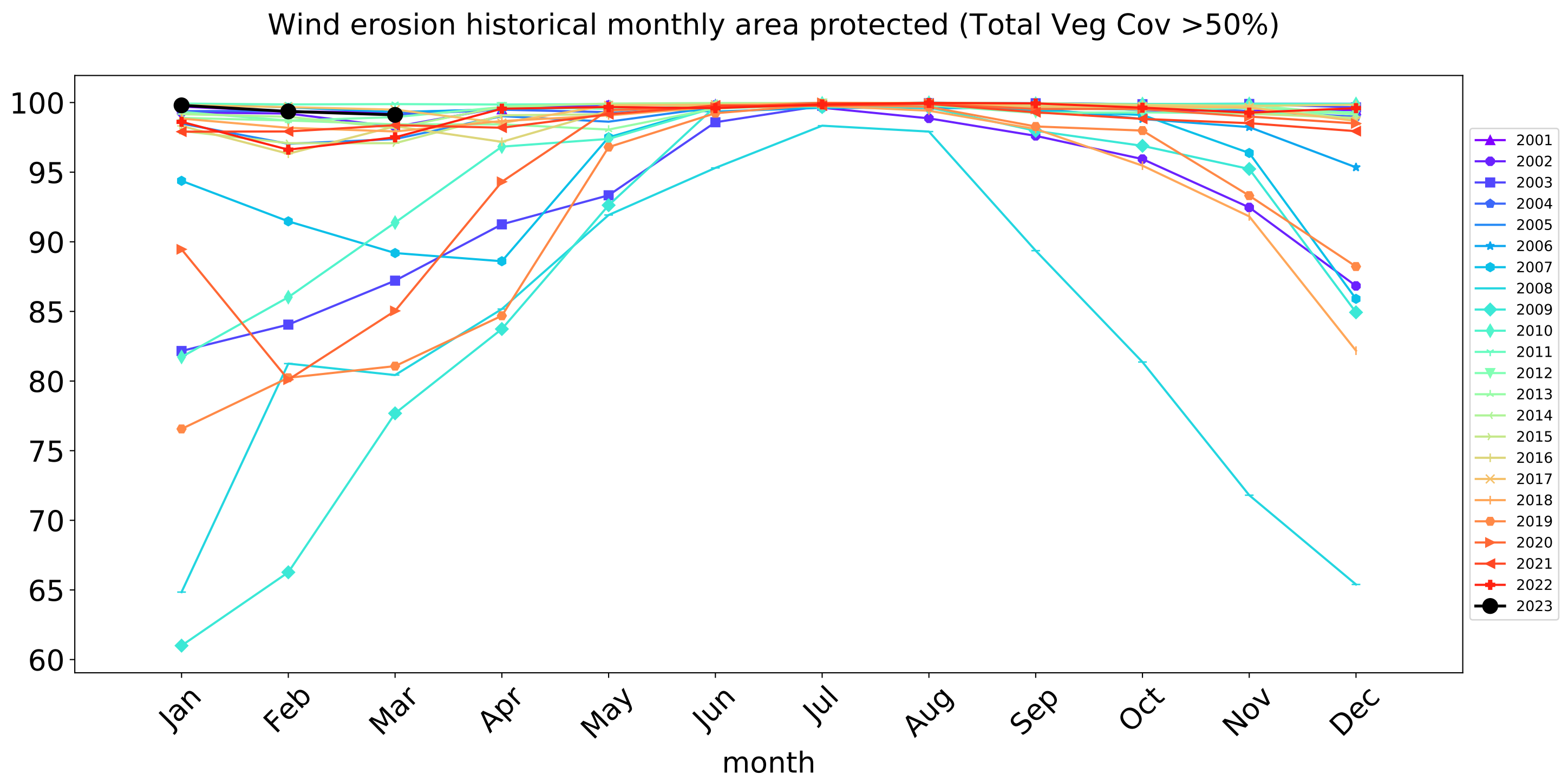
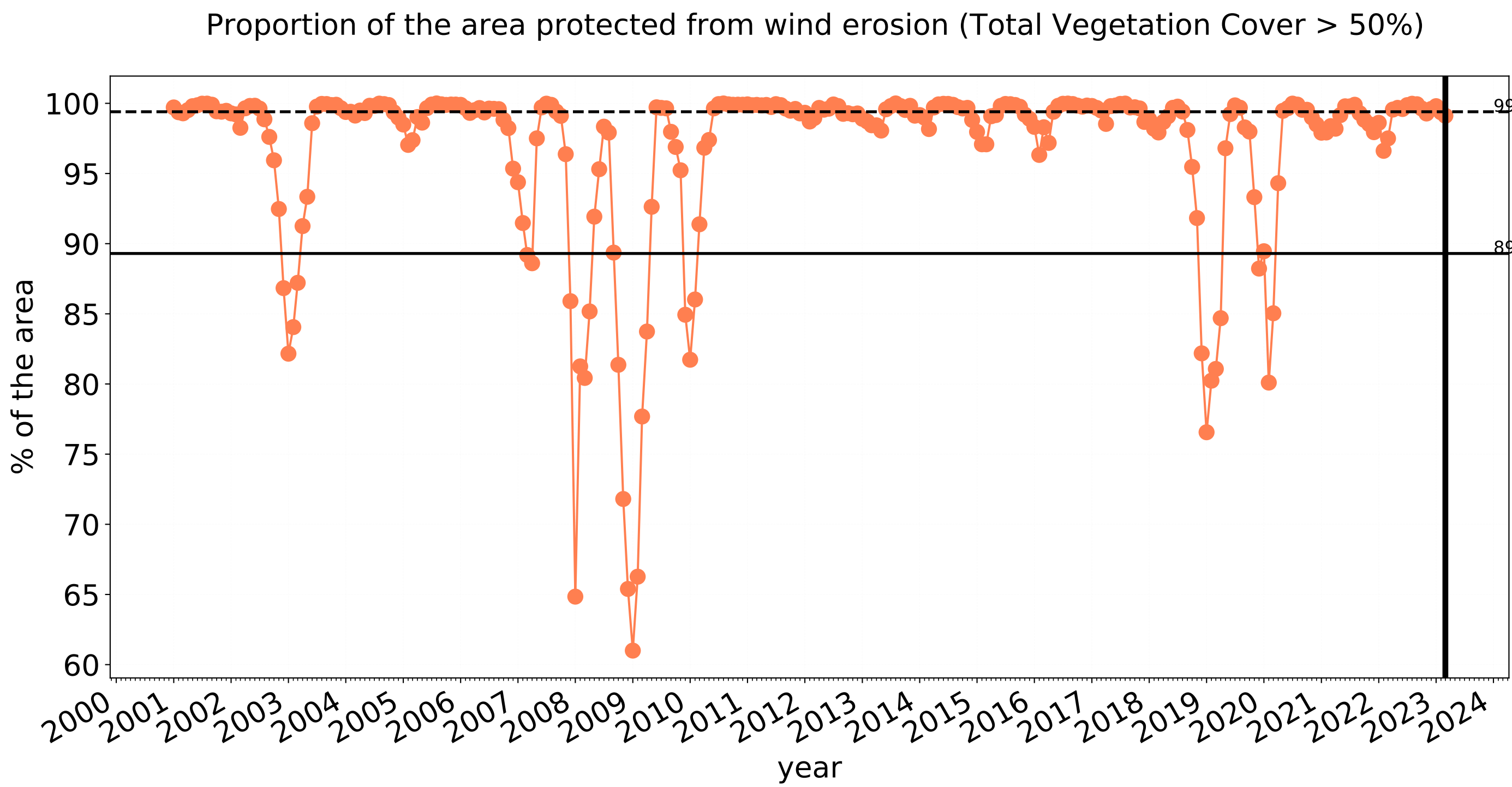
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Irrigation timeseries



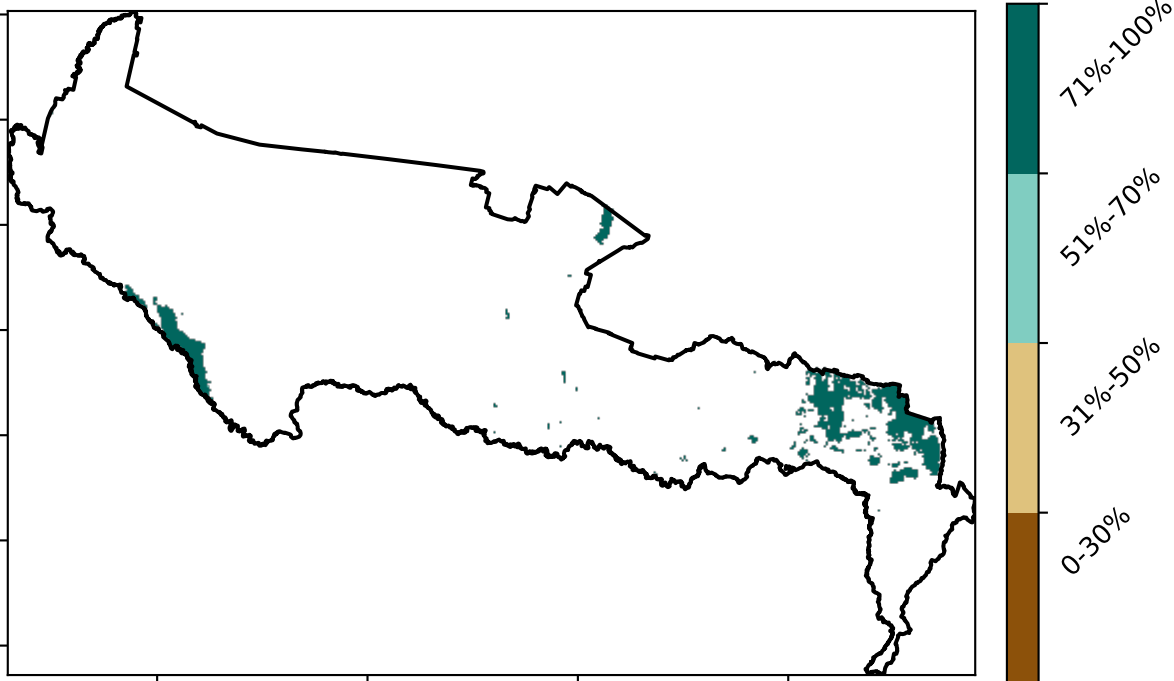
Production native forests and plantation forests

Land use and forest cover

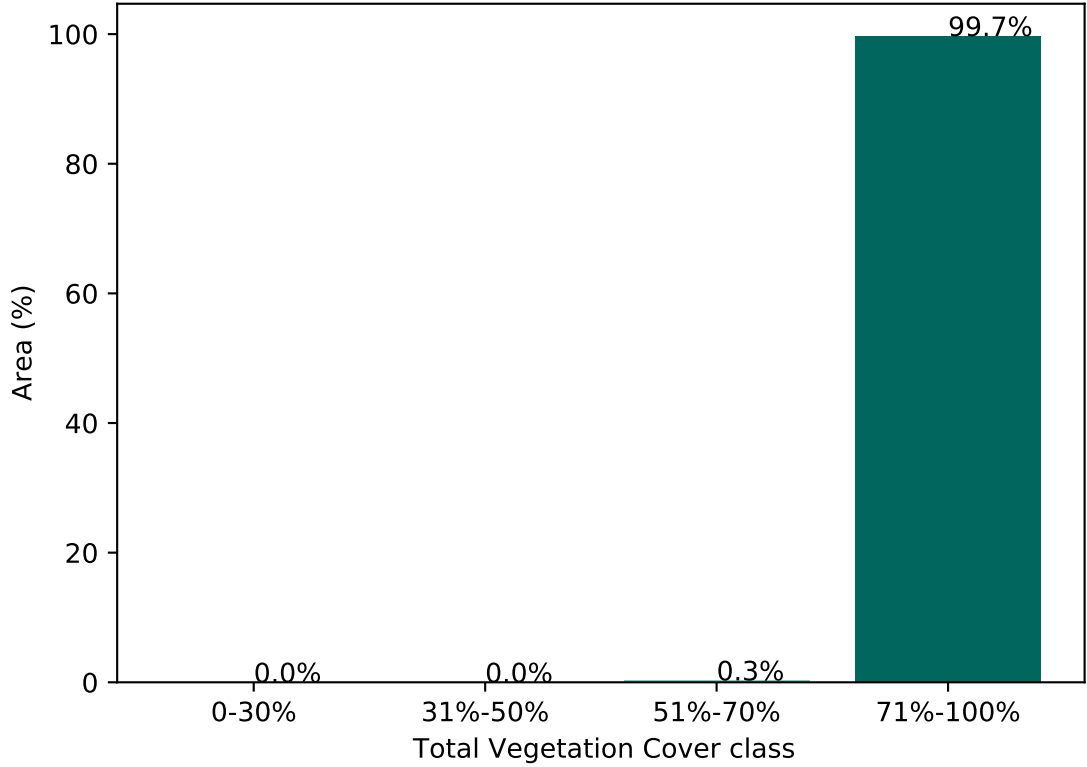
Catchment Scale
Land Use and Forests
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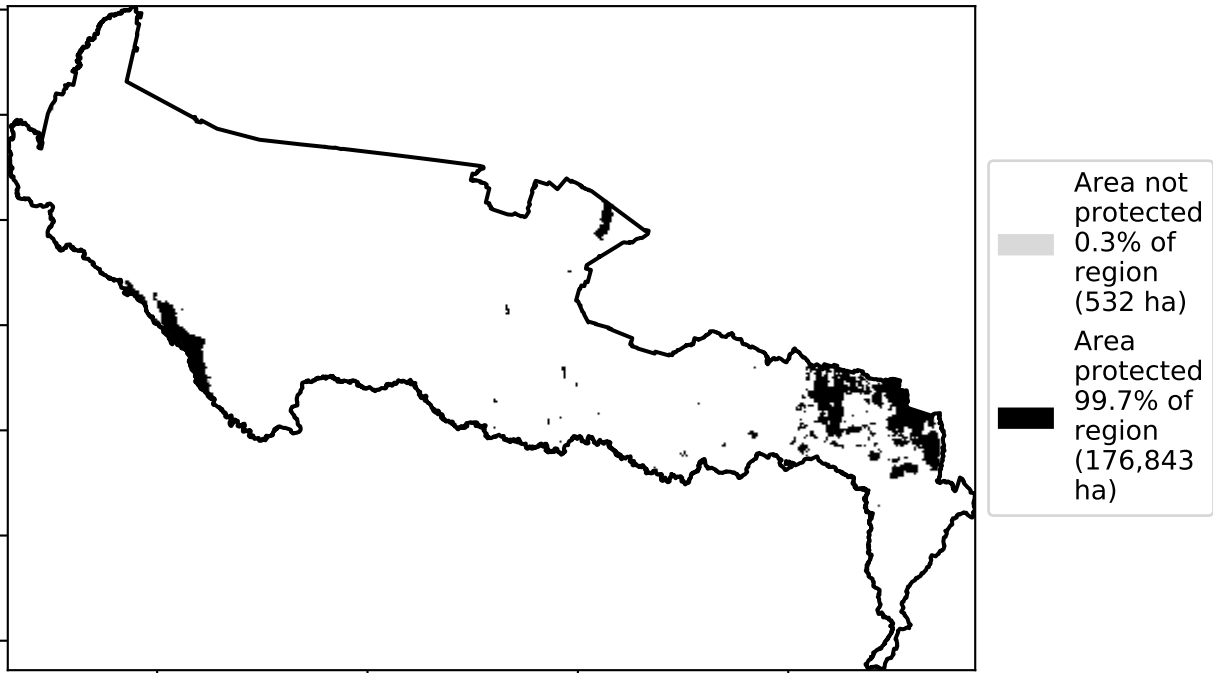
Total Vegetation Cover [%]



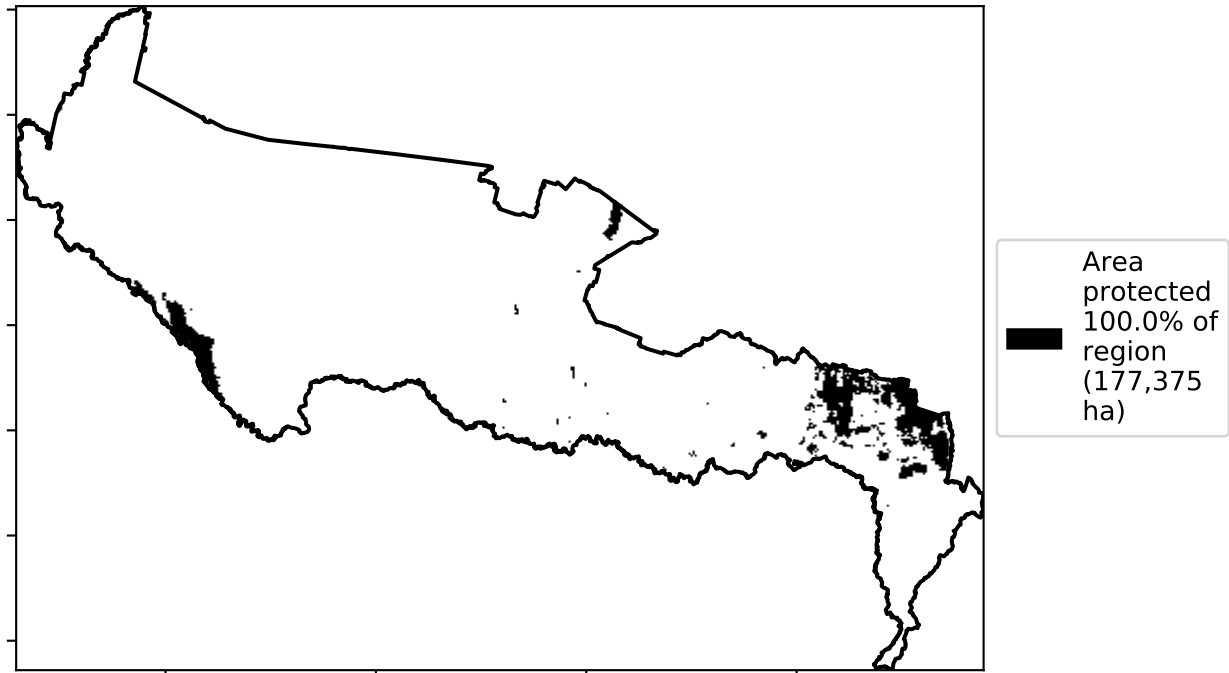
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

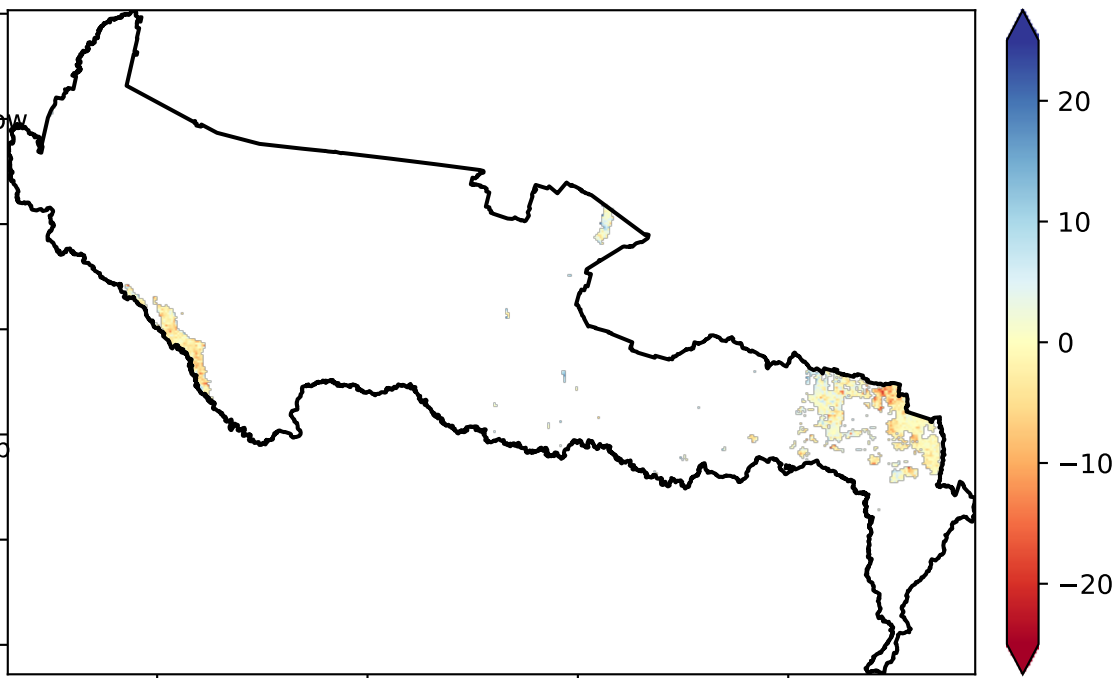


% Area protected from wind erosion (>50%)



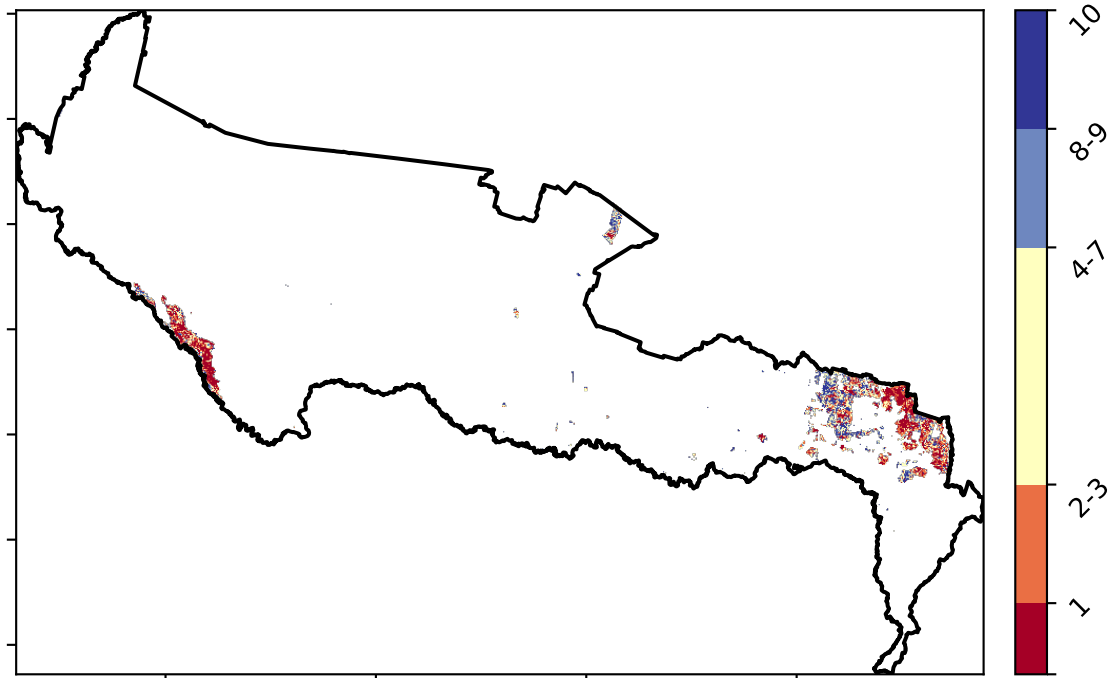
Total Vegetation Cover Anomaly [%]

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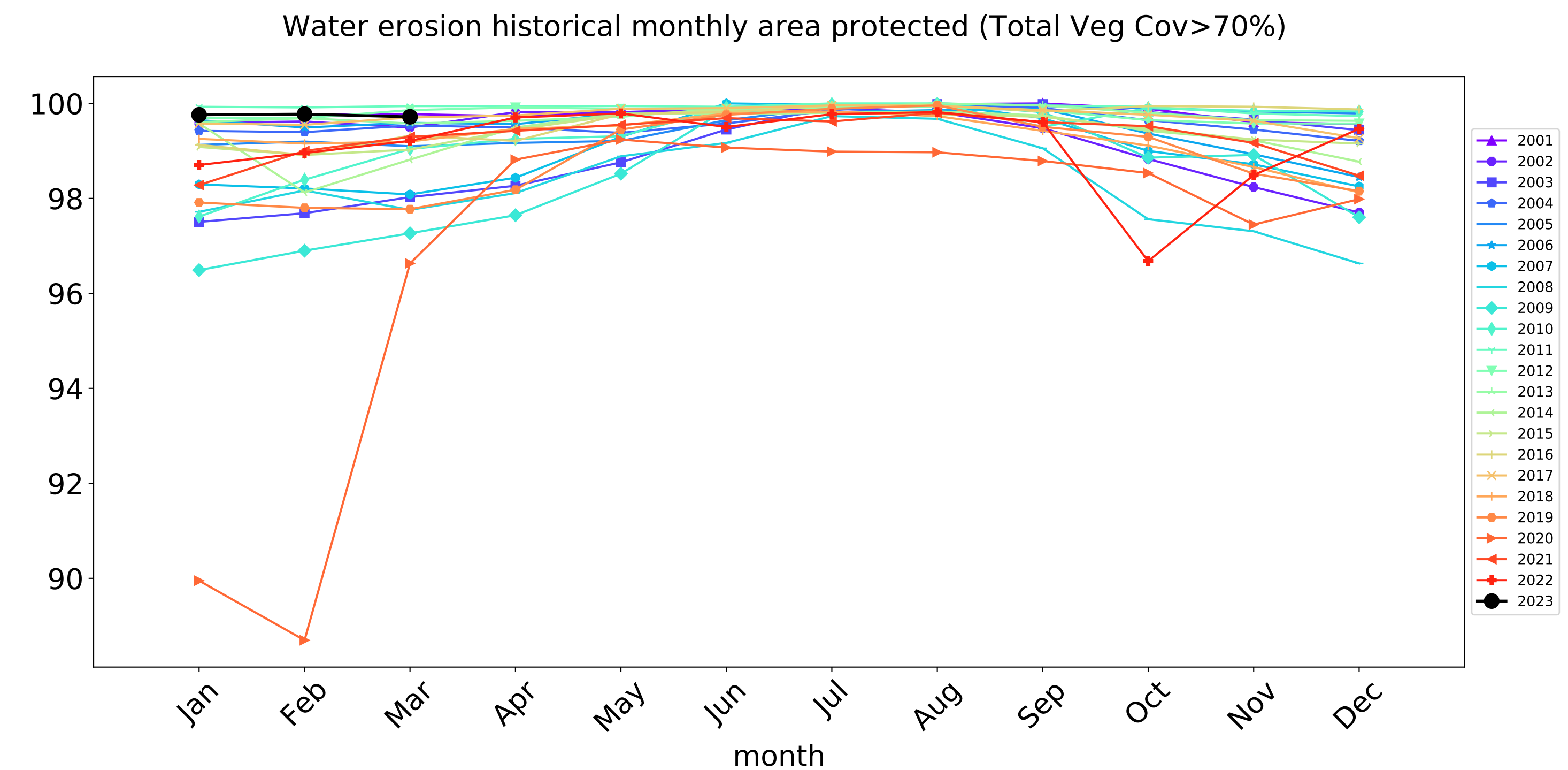
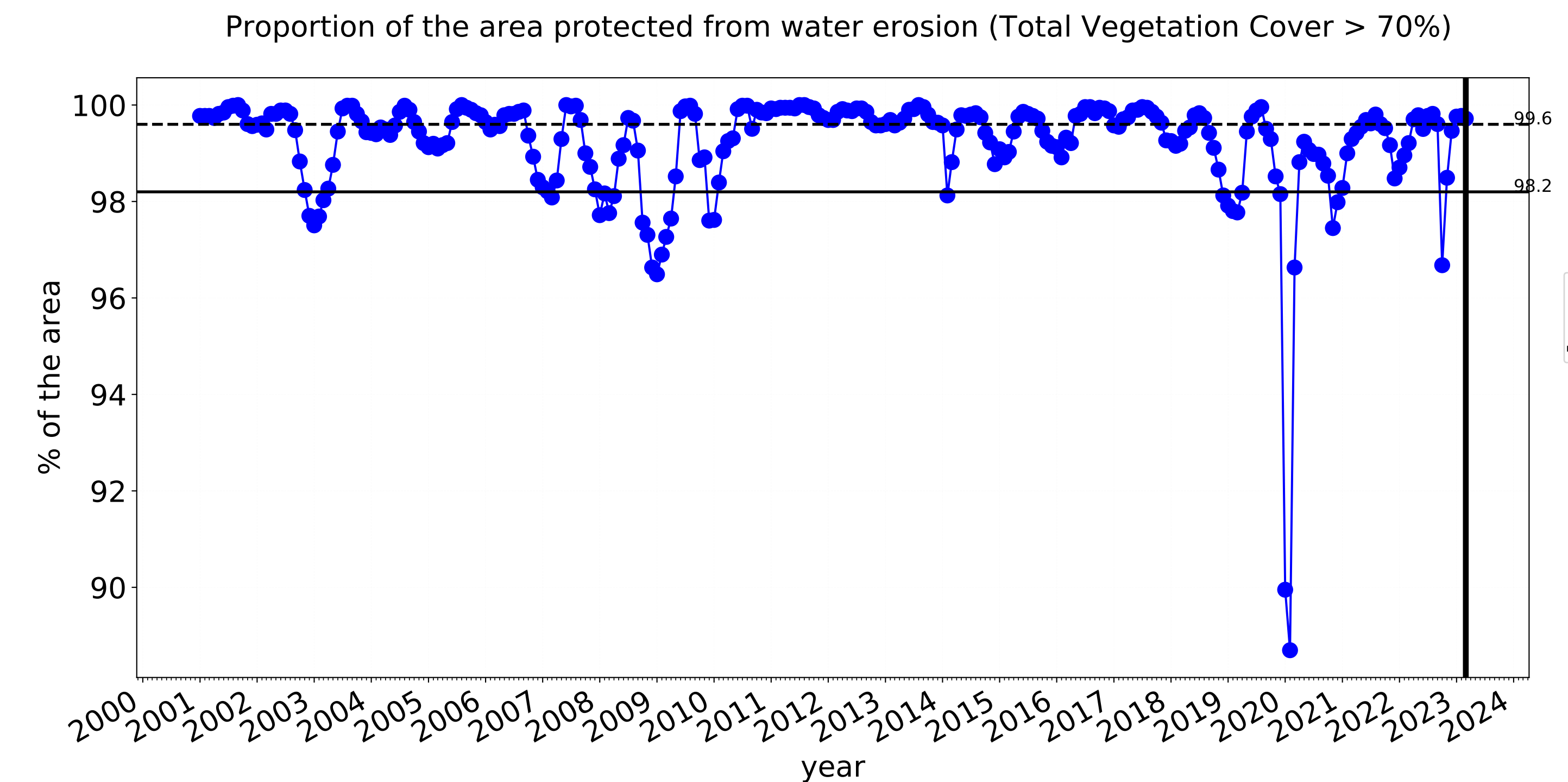
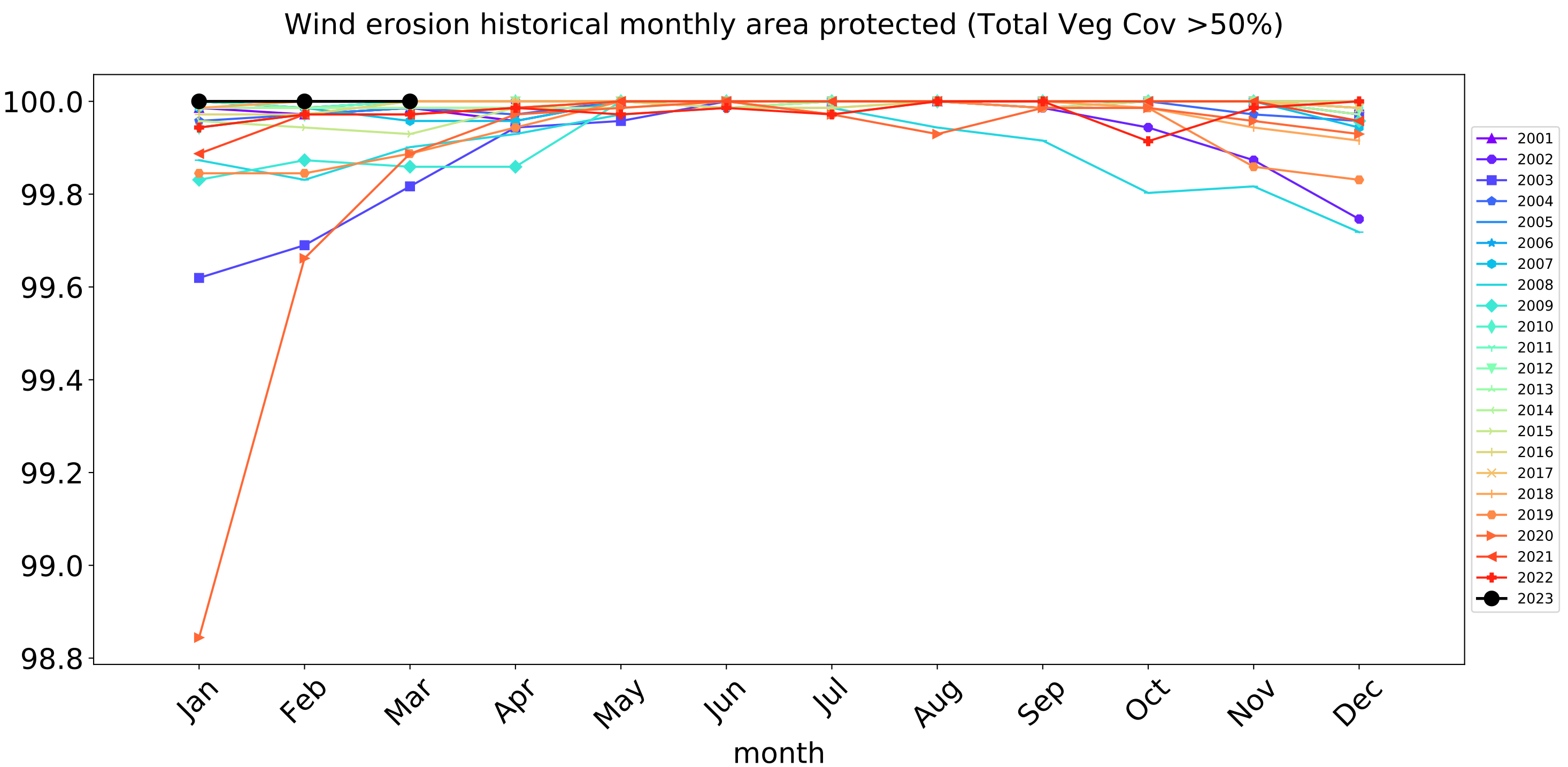
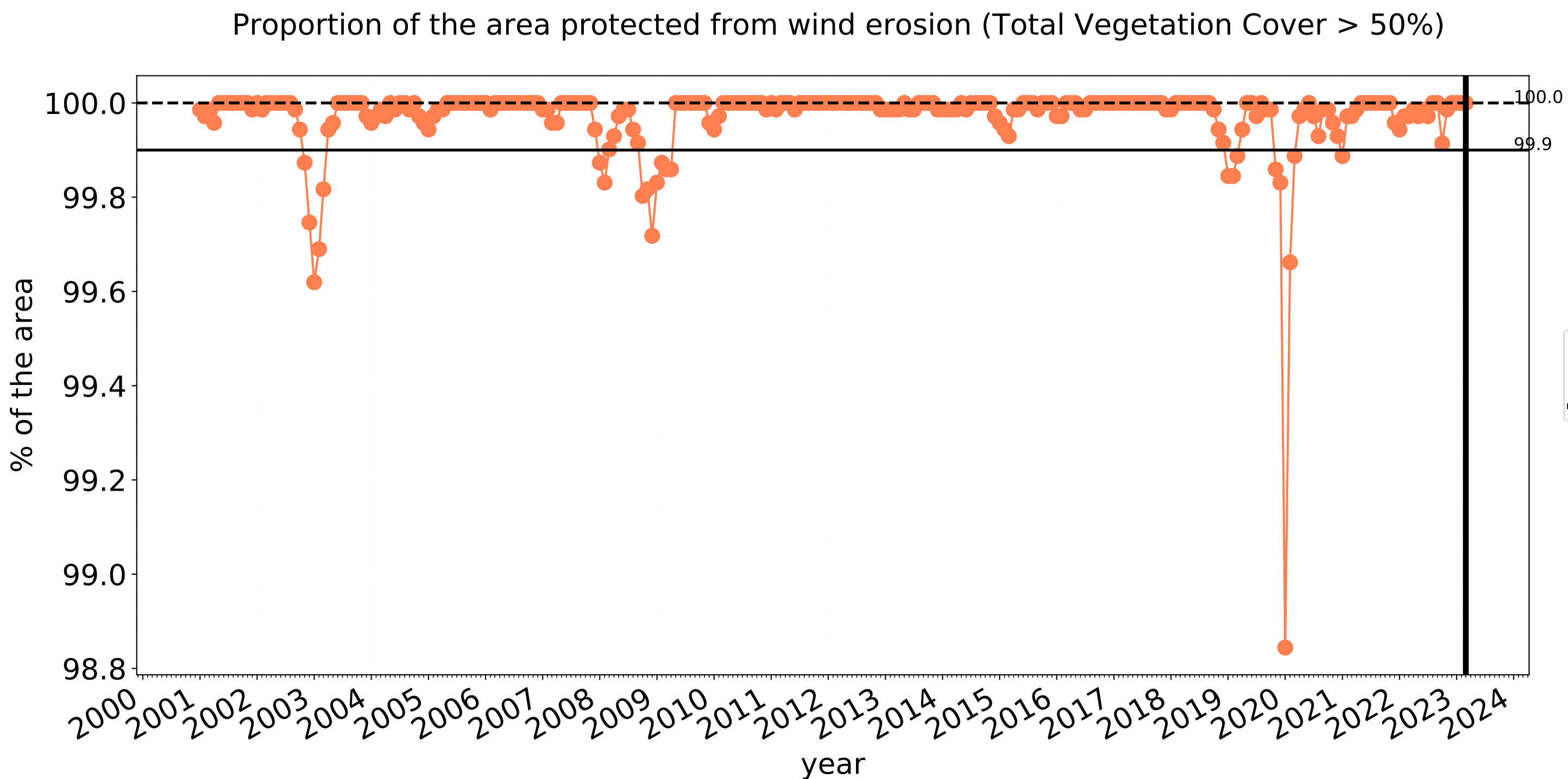


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



Production native forests and plantation forests timeseries



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Murray (4,179,125 ha and no data 10,558 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	4,179,125	99.9% 4,173,925	99.5% 4,156,275	88.9% 3,716,150	70.2% 2,932,850	36.8% 1,536,550	16.7% 696,825
Conservation and natural environments	395,900	100.0% 395,900	100.0% 395,800	98.8% 391,100	93.0% 368,100	70.9% 280,525	41.8% 165,475
Conservation and natural environments non forest	96,725	100.0% 96,725	99.9% 96,625	96.1% 93,000	79.6% 77,025	47.2% 45,700	23.4% 22,675
Conservation and natural environments Woodland forest	95,275	100.0% 95,275	100.0% 95,275	99.2% 94,475	94.2% 89,725	64.3% 61,225	29.8% 28,425
Conservation and natural environments Forest (non woodland)	203,900	100.0% 203,900	100.0% 203,900	99.9% 203,625	98.7% 201,350	85.1% 173,600	56.1% 114,375
Agriculture	3,509,200	100.0% 3,508,175	99.5% 3,492,075	87.5% 3,069,900	66.7% 2,339,700	32.2% 1,128,275	13.5% 475,400
Grazing	1,719,800	100.0% 1,719,700	99.9% 1,718,575	92.1% 1,583,950	74.6% 1,283,425	41.1% 707,475	18.5% 318,175
Grazing non forest	1,555,175	100.0% 1,555,075	99.9% 1,553,950	91.8% 1,428,125	74.5% 1,158,225	40.7% 632,700	18.2% 283,750
Grazing Woodland forest	75,675	100.0% 75,675	100.0% 75,675	92.1% 69,700	60.8% 45,975	17.0% 12,850	4.1% 3,125
Grazing - Forest (non woodland)	88,950	100.0% 88,950	100.0% 88,950	96.8% 86,125	89.1% 79,225	69.6% 61,925	35.2% 31,300
Cropping	1,043,650	99.9% 1,042,800	99.1% 1,034,350	84.0% 876,150	62.0% 646,925	26.7% 278,775	10.2% 106,575
Irrigation	745,350	100.0% 745,275	99.1% 738,750	81.8% 609,400	54.9% 409,125	19.0% 141,925	6.8% 50,650
Production native forests and plantation forests	177,375	100.0% 177,375	100.0% 177,375	99.7% 176,875	96.4% 170,950	60.4% 107,175	28.1% 49,850



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