[LGA Gwydir_(A) (NSW)] - total vegetation cover soil protection report [Sep 2019]

This report provides information about vegetation covering the soil surface for a region during a single month with comparison to previous years. The total vegetation cover indicates where soil is likely to be protected from wind (>=50% total vegetation cover) and water/hillslope (>=70% total vegetation cover) erosion. Results are shown for the whole region (polygon) and also separated by land use and forest cover class. This is because different land use / forest cover classes are likely to have different cover patterns and targets.
[Gwydir_(A)]
The six maps and two graphs provide a report for the month with:
• Land use and forest cover information for the area:
    o Map: Land use and forest cover
    o Chart: Land use and forest cover area
• Total vegetation cover for this month:
    o Map: total vegetation cover classified into 4 classes
    o Chart: total vegetation cover percentage area classified into 4 classes
• Areas protected from erosion for the month:
    o Map: water erosion protection (>70% cover) percentage area and hectares
    o Map: wind erosion protection (>50% cover) percentage area and hectares
• Comparison with previous years:
    o Map: anomaly – compare this month to the average cover from the same month in previous years
    o Map: deciles – rank this month against the same month in previous years
• Time series from January 2001 to current:
    o Wind erosion protection time series: percentage of the area of the region with greater than 50% cover
      for each month since January 2001 (orange line): Horizontal lines are 10th (cover target) and 50th percentiles.
      Vertical line is month of report.
    o Water erosion protection time series: percentage of the area of the region with greater than 70% cover
      for each month since January 2001 (blue line): Horizontal lines are 10th (cover target) and 50th percentiles.
      Vertical line is month of report.
    o Rainfall: millimetres rainfall each month (black line). Vertical line is month of report.
• Time series for each month stacked by year
    o Same data as time series from January 2001 to current month, grouped by month. Black line is current year of data.
• Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion.
  The thresholds reported are:
    o the percentage area with pixels greater than 80% total clover
    o the percentage area with pixels greater than 90% total clover
    o the percentage area with pixels greater than 95% total clover
The following pages repeat the above sequence for each land use and forest cover class. For example
• All agricultural lands, that is grazing, cropping plus Horticulture (depending on what land use is present)
• Grazing lands by forest classes if present
• Cropping lands
• Irrigation lands
• Protected areas by forest classes if present
The following pages repeat the above sequence for each land use and forest cover class if 1% or more of area makes up a land use and forest cover class. Four land uses are reported: Conservation and natural environments, Agriculture, production native forests and plantation forests, and other. Agriculture is further divided into grazing, crops and horticulture are then divided into non-irrigated and irrigated. Land use is further divided by forest class if present: non-forest, woodland forest and non-woodland forest.
Explanatory notes:
This report has been generated using MODIS fractional vegetation cover information available in Rangelands and Pasture Productivity (RAPP) map tool. The report is based on an analysis of 500 metre pixel data on monthly time steps. Report uses baseline from January 2001 to September 2019 for each month to generate anomalies and deciles. Post September 2019 all similar months are used to calculate anomalies and deciles.
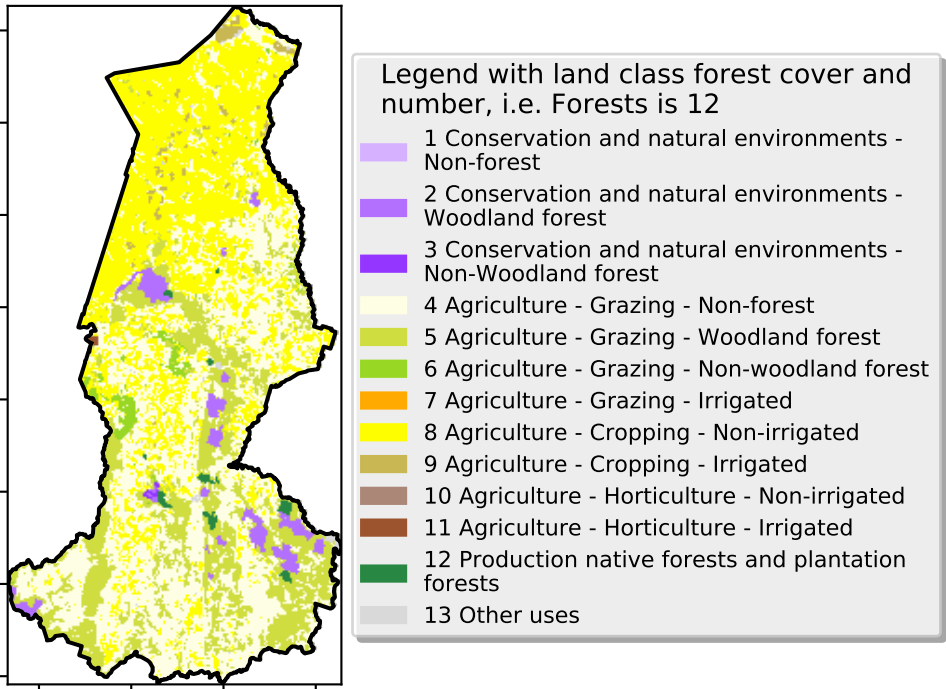
Acknowledgment of data:

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
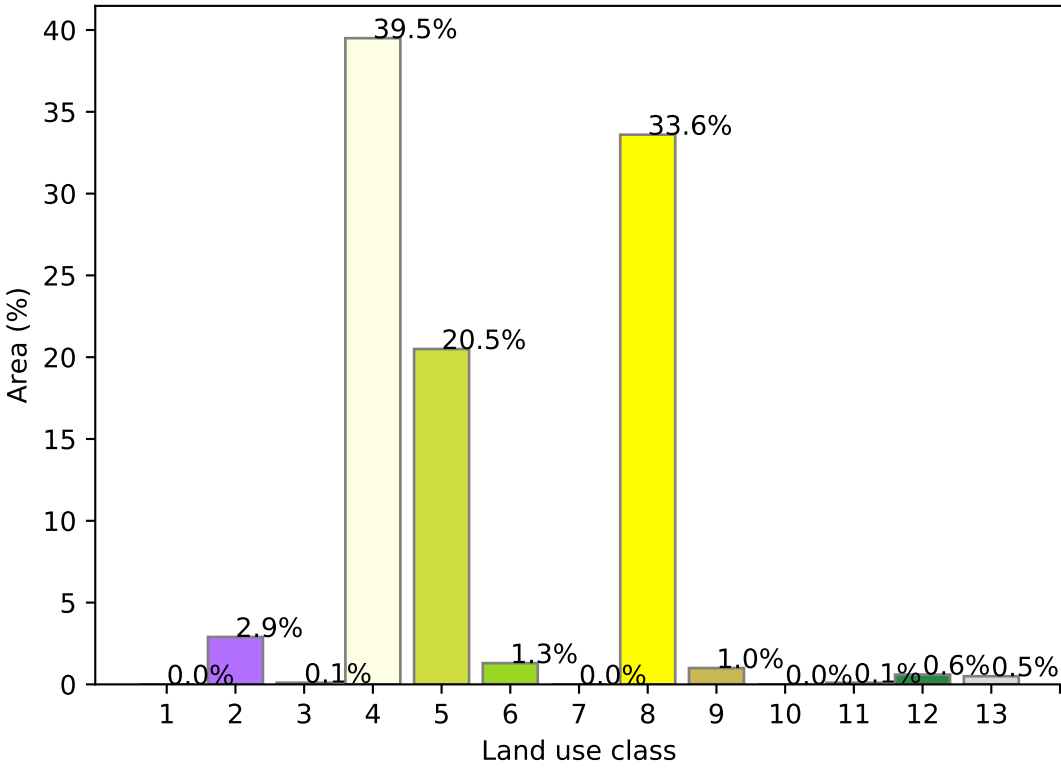
4. MODIS Fractional cover algorithm:

    https://doi.org/10.4225/08/5848a3f19a7b3

Vegetation Cover Sep 2019

Land use and forest cover
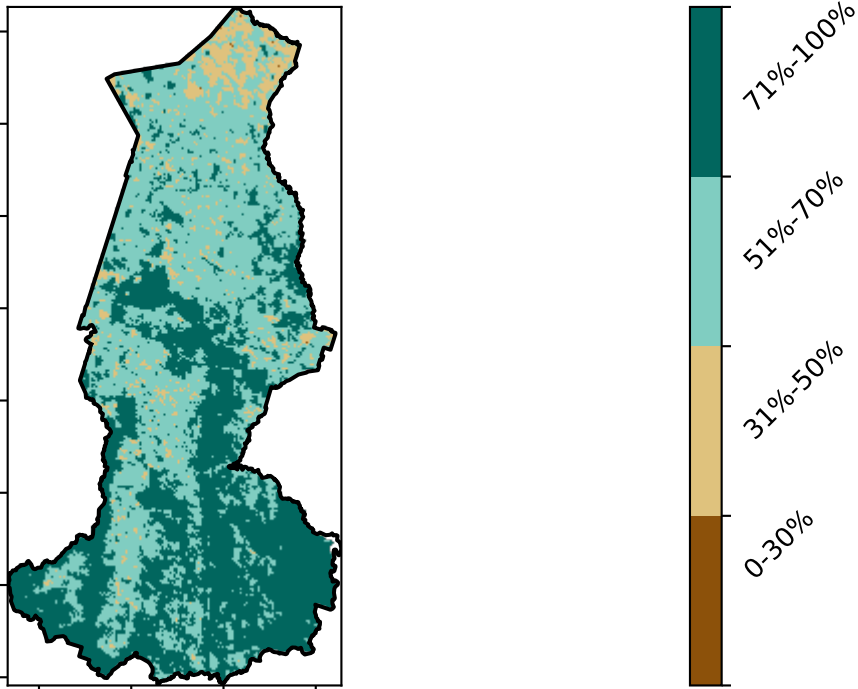
Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.
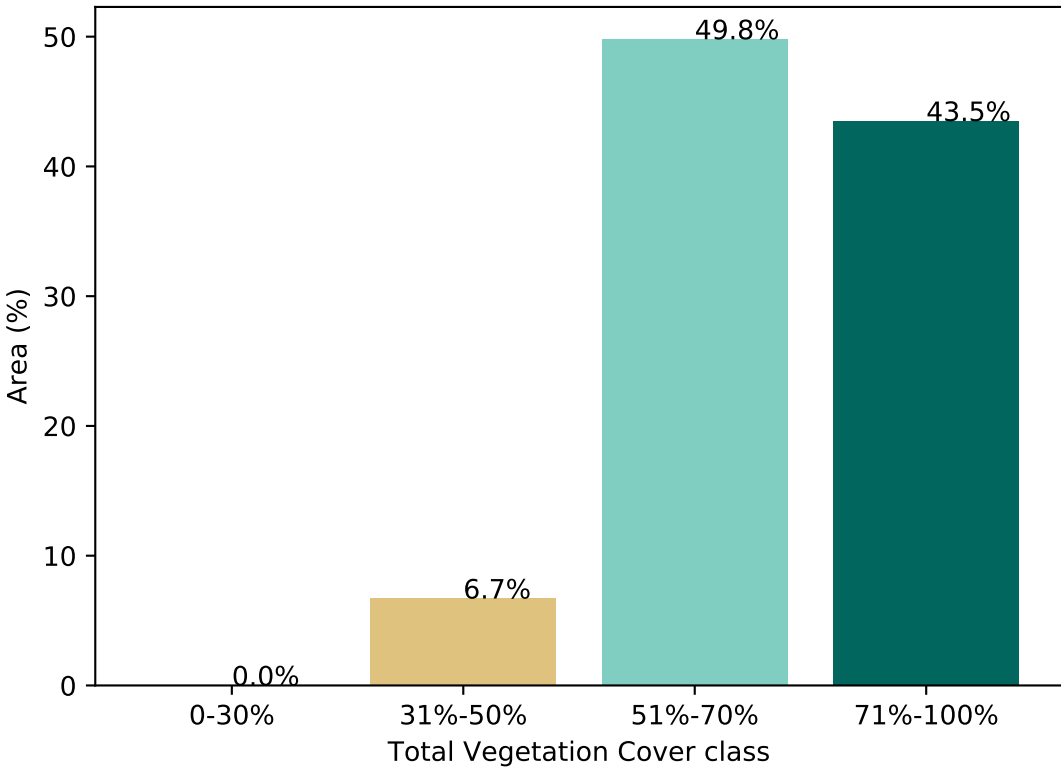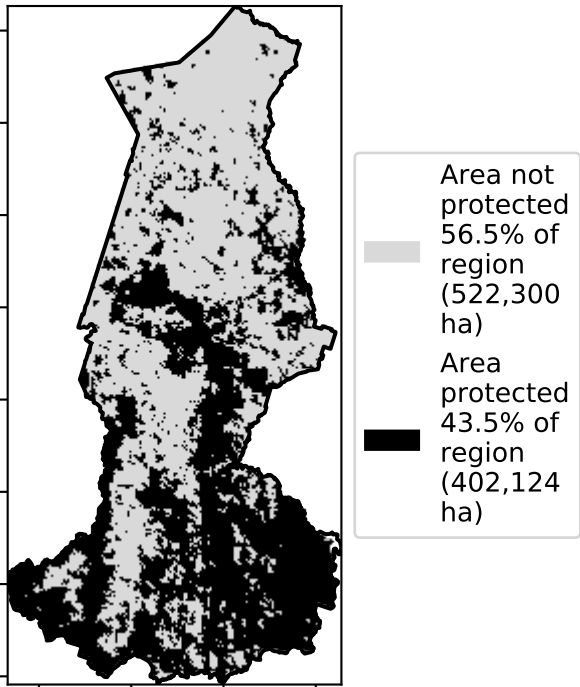

Legend with land class forest cover and number, i.e. Forests is 12

1 Conservation and natural environments - Non-forest
2 Conservation and natural environments - Woodland forest
3 Conservation and natural environments - Non-Woodland forest
4 Agriculture - Grazing - Non-forest
5 Agriculture - Grazing - Woodland forest
6 Agriculture - Grazing - Non-woodland forest
7 Agriculture - Grazing - Irrigated
8 Agriculture - Cropping - Non-irrigated
9 Agriculture - Cropping - Irrigated
10 Agriculture - Horticulture - Non-irrigated
11 Agriculture - Horticulture - Irrigated
12 Production native forests and plantation forests
13 Other uses

Proportion of each land class in area

Total Vegetation Cover [%]

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area not protected 56.5% of region (522,300 ha)

Area protected 43.5% of region (402,124 ha)

% Area protected from wind erosion (>50%)

Area not protected 7.0% of region (64,709 ha)

Area protected 93.0% of region (859,715 ha)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.
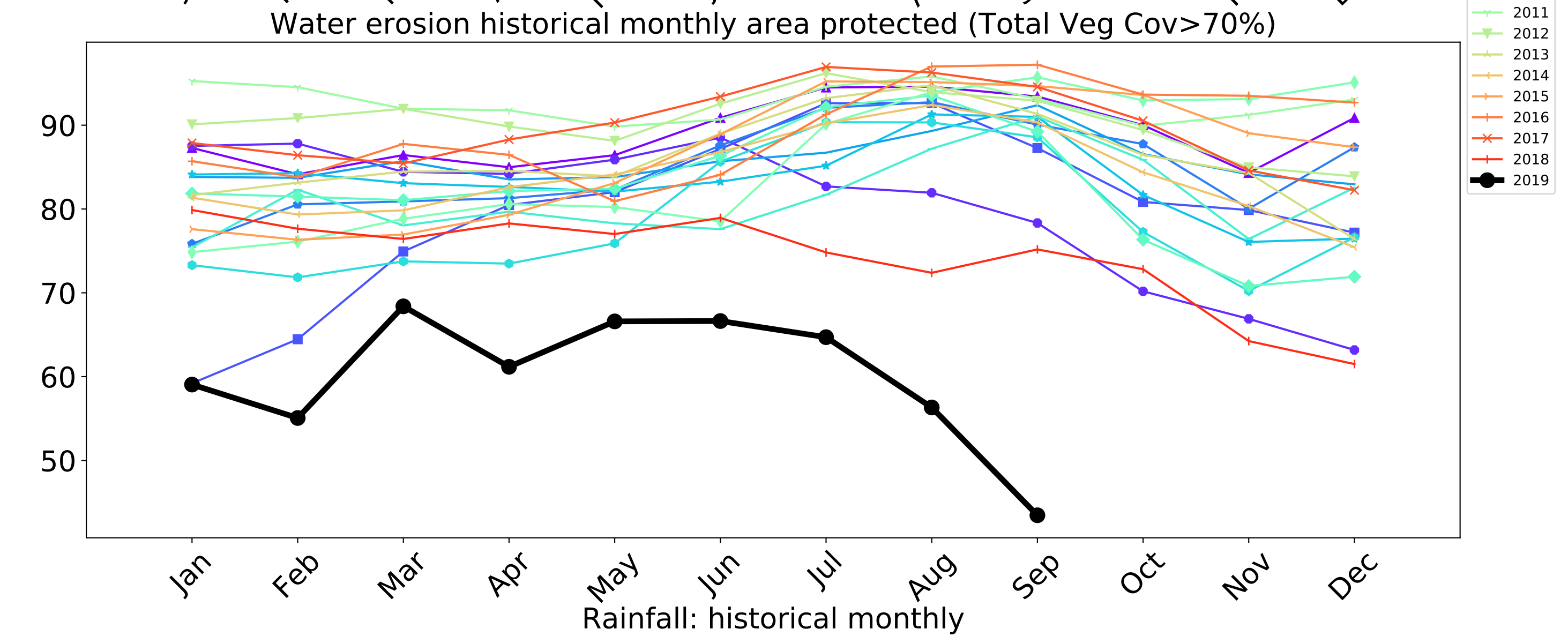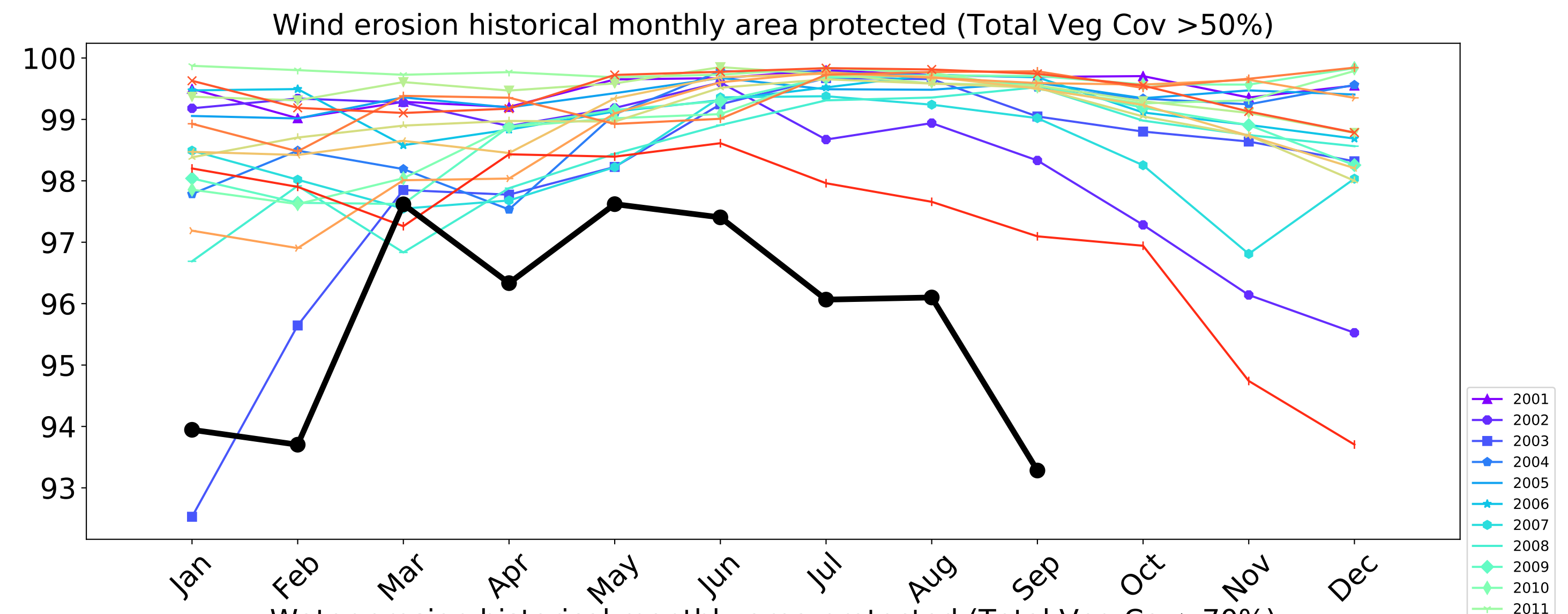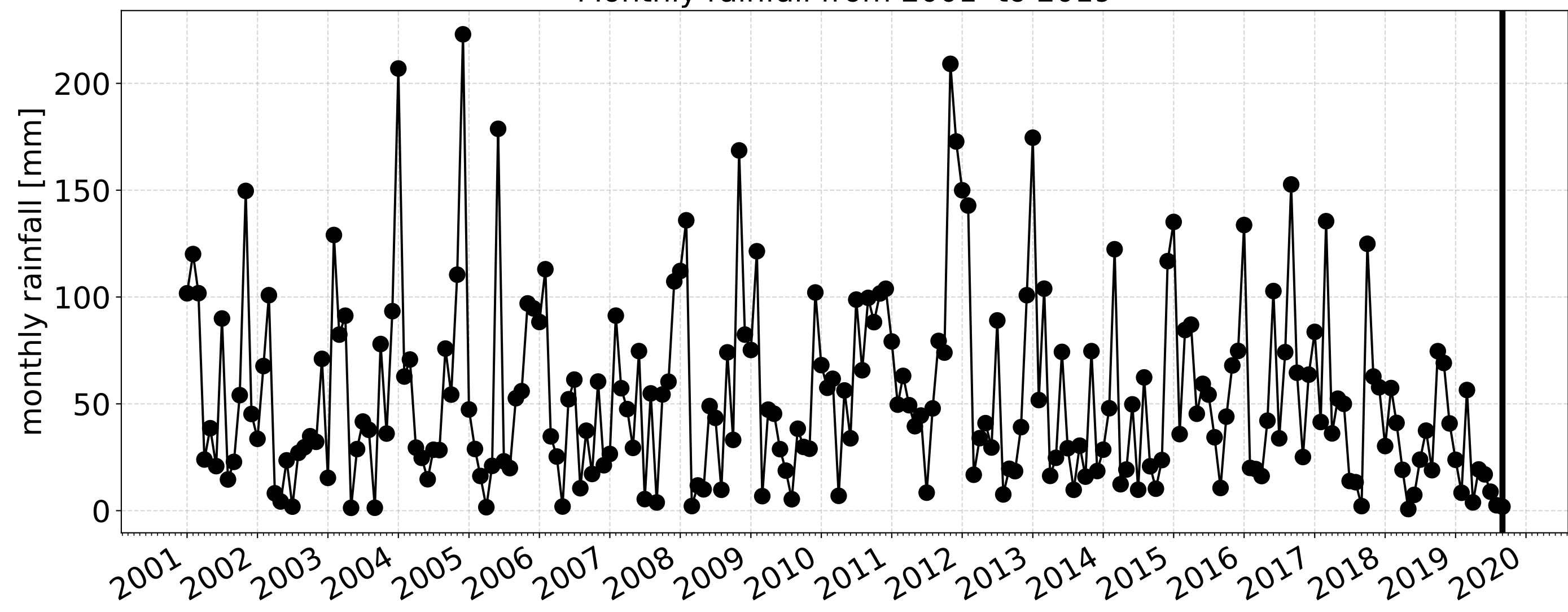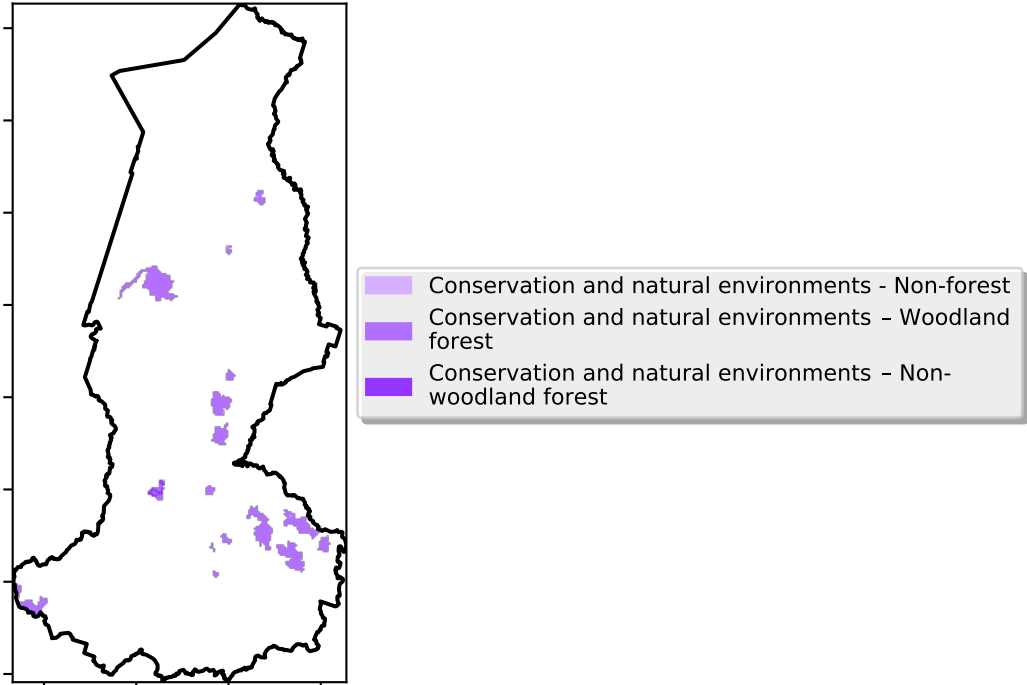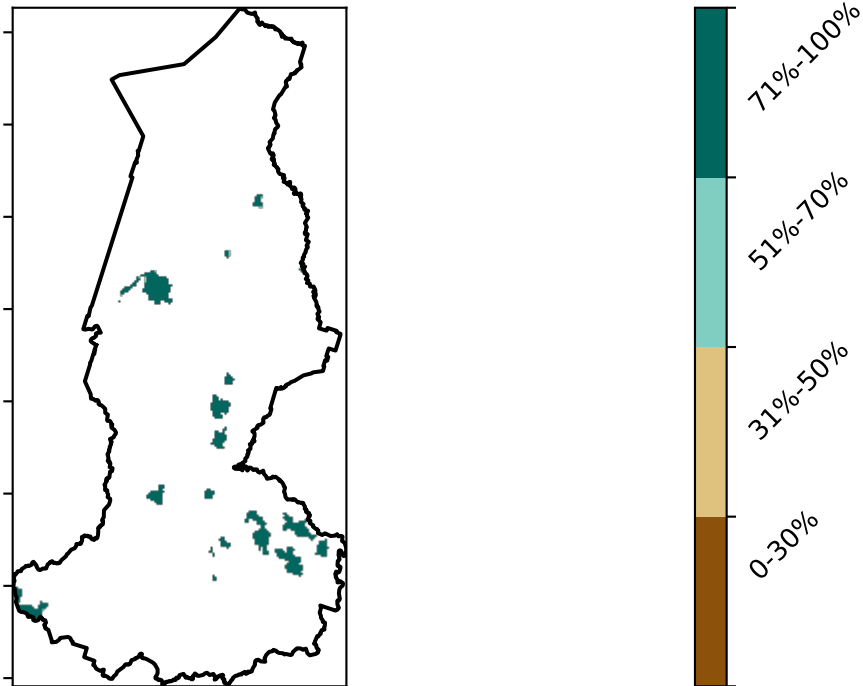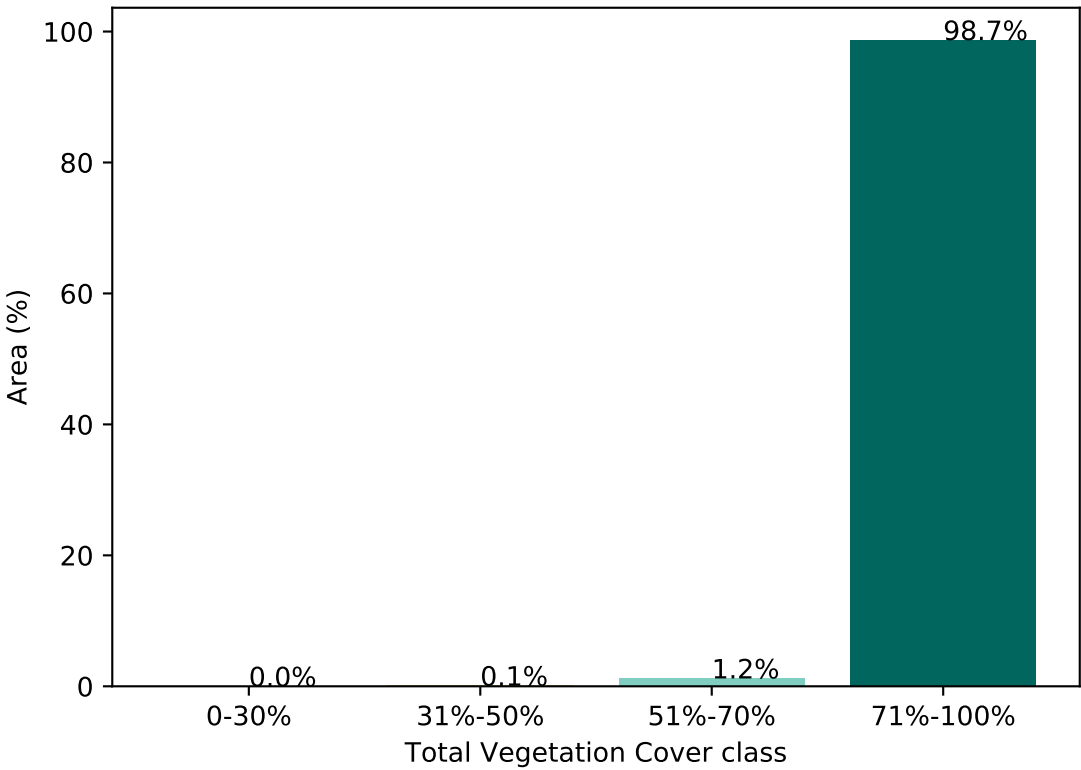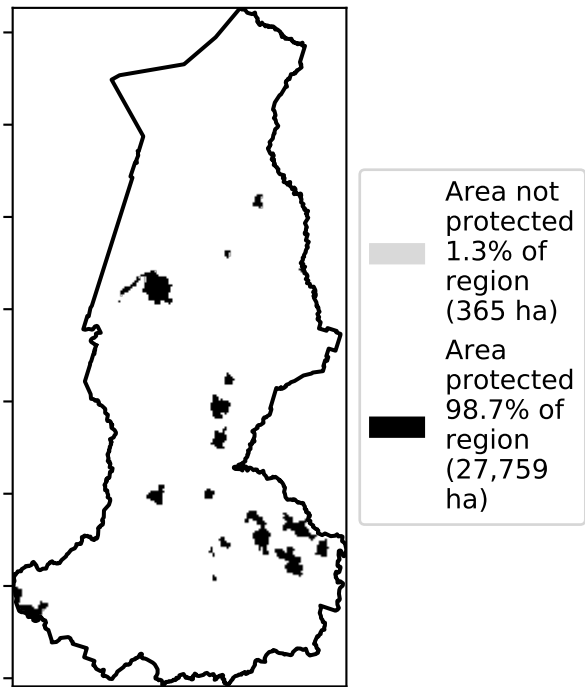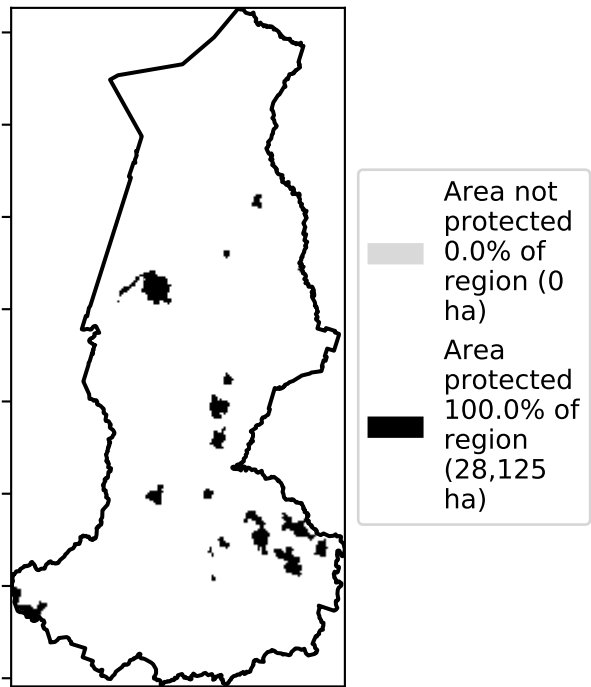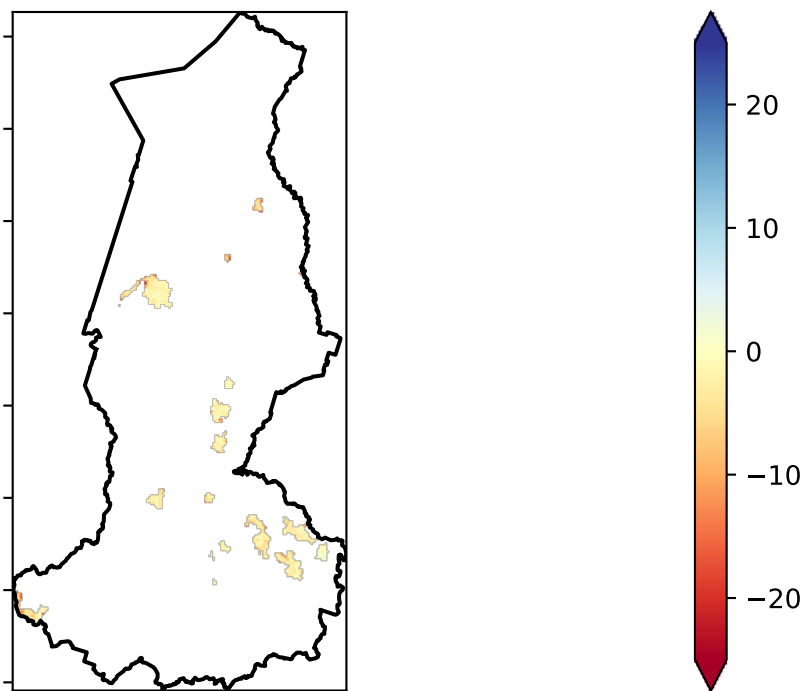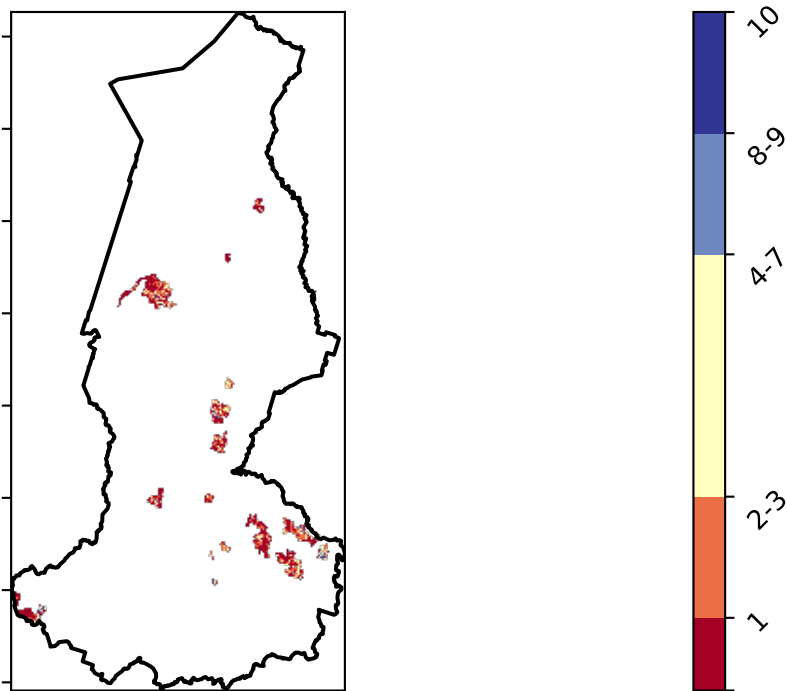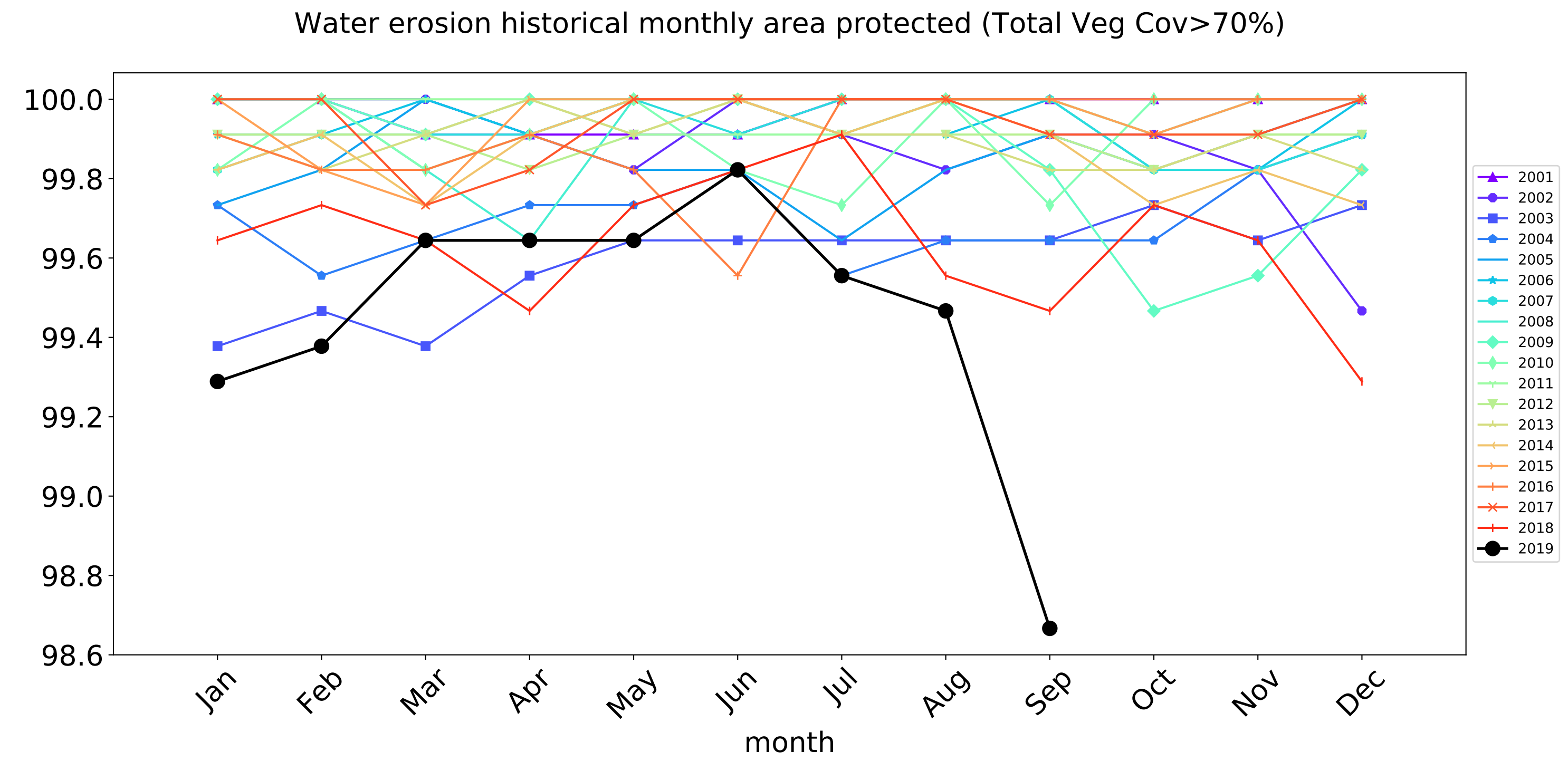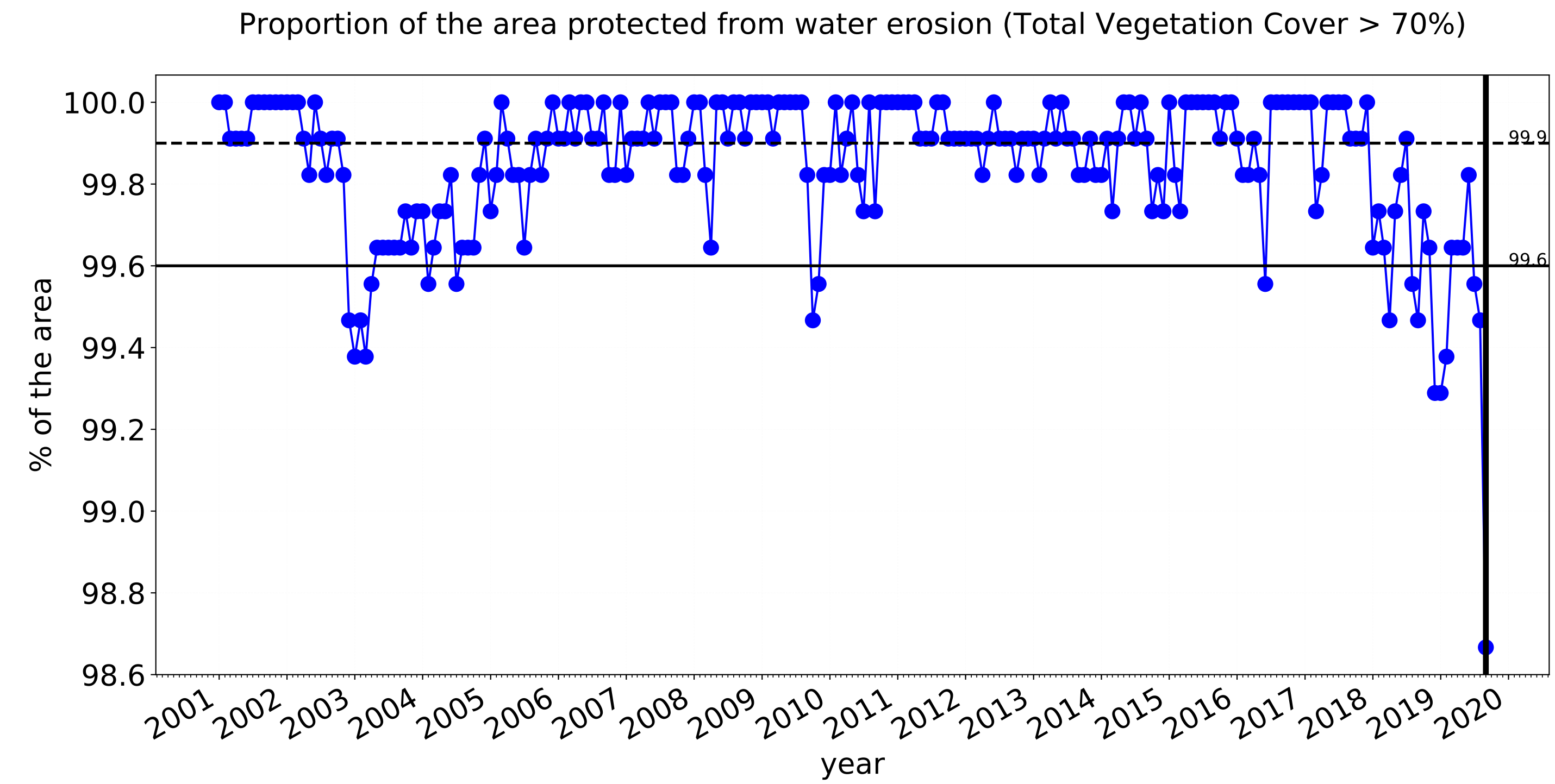
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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%)

Monthly rainfall from 2001 to 2019

Rainfall: historical monthly
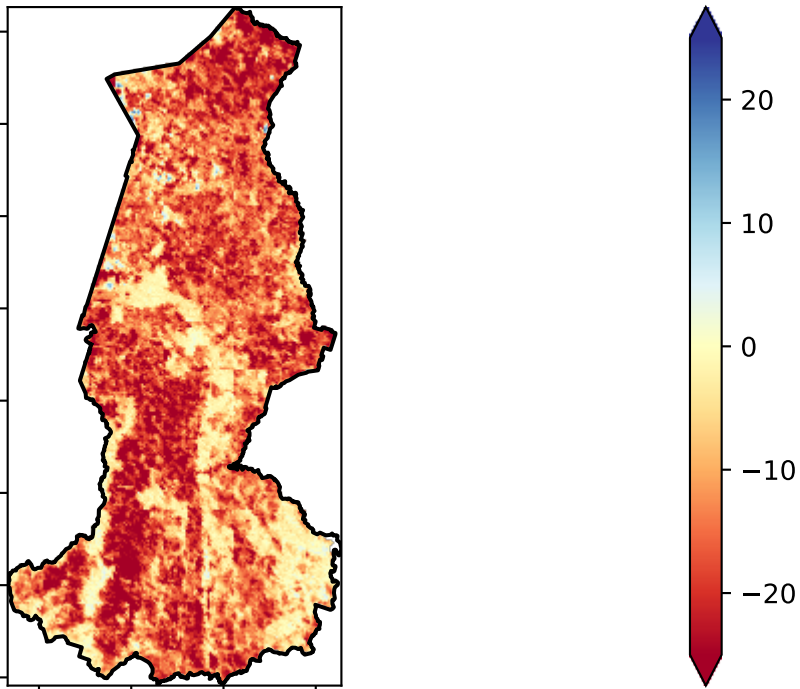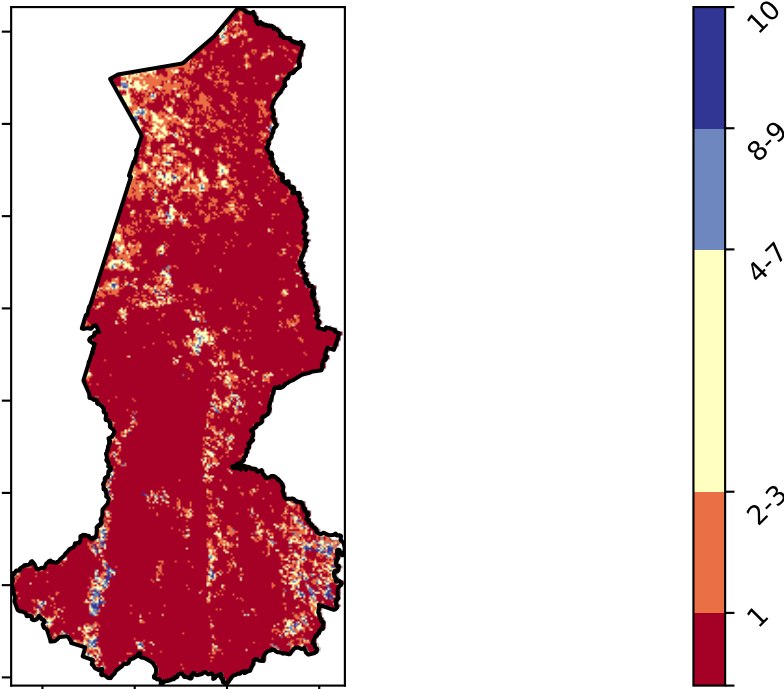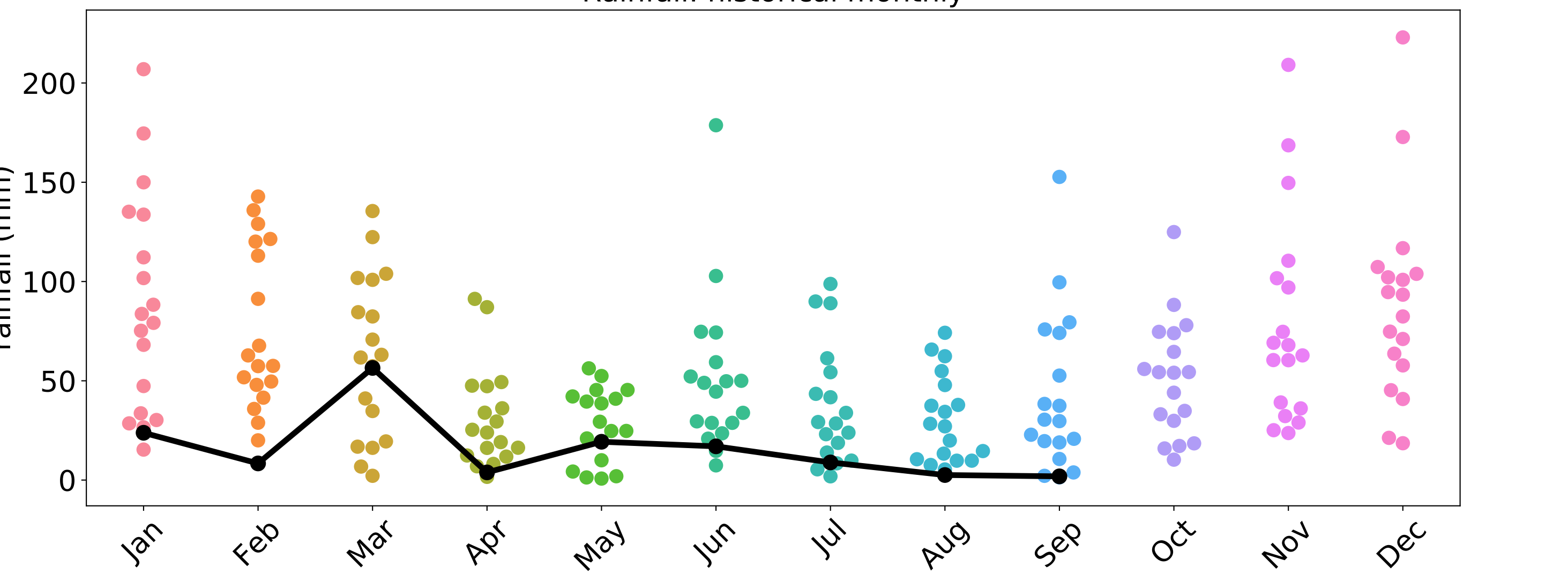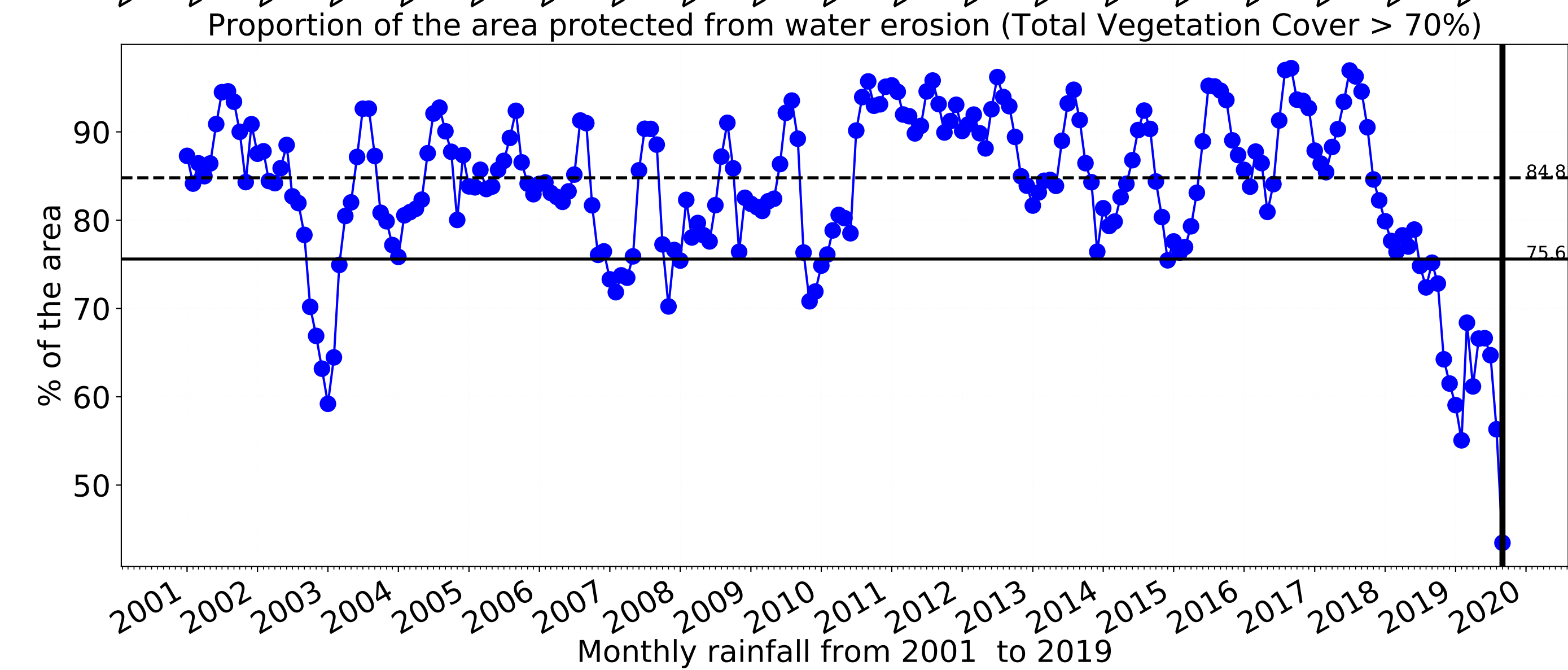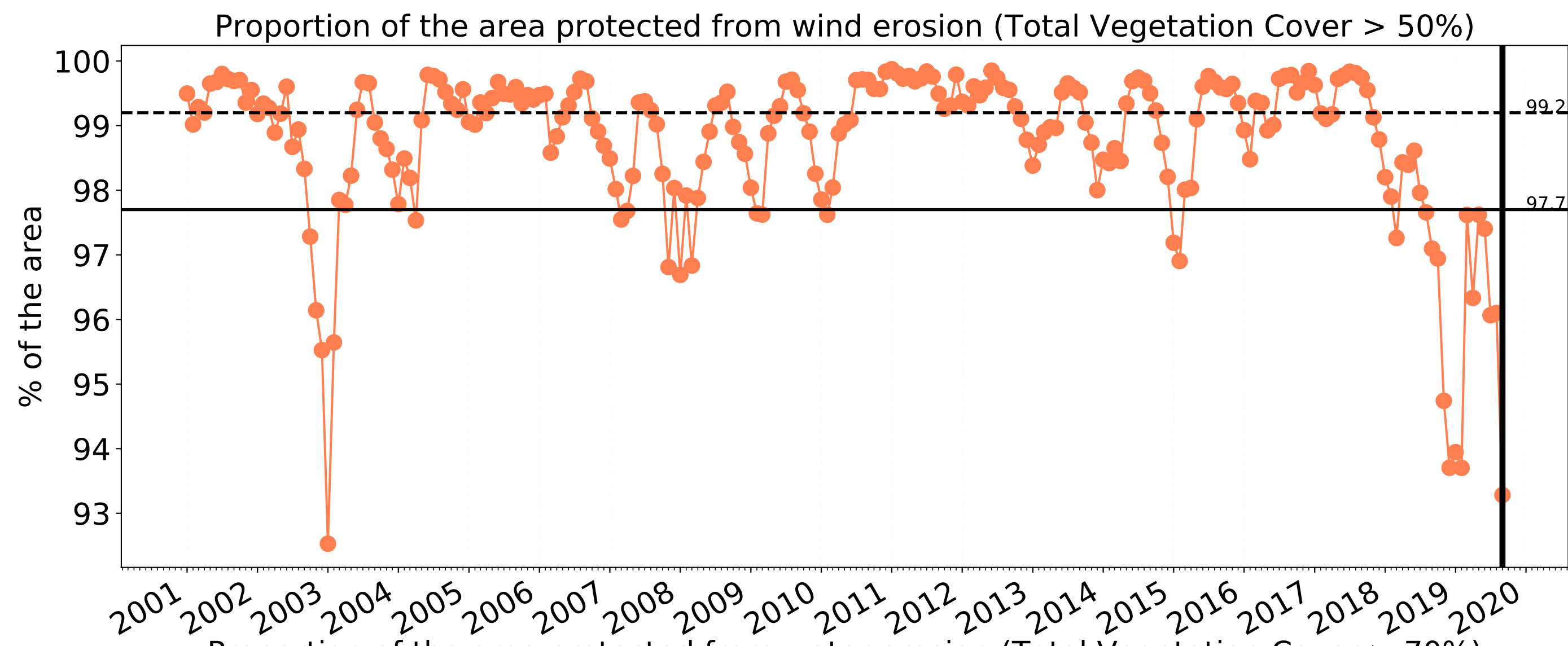
Conservation and natural environments

Land use and forest cover

Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.

Conservation and natural environments - Non-forest
Conservation and natural environments – Woodland forest
Conservation and natural environments – Non-woodland forest

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

0.0%   0.1%   1.2%   98.7%

Area (%)

Total Vegetation Cover class

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

% Area protected from water erosion (>70%)

Area not protected 1.3% of region (365 ha)

Area protected 98.7% of region (27,759 ha)

% Area protected from wind erosion (>50%)

Area not protected 0.0% of region (0 ha)

Area protected 100.0% of region (28,125 ha)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.

10
8-9
4-7
2-3
1

CSIRO   TERN   Australian Government   National Landcare Programme   NSW GOVERNMENT   Planning, Industry & Environment
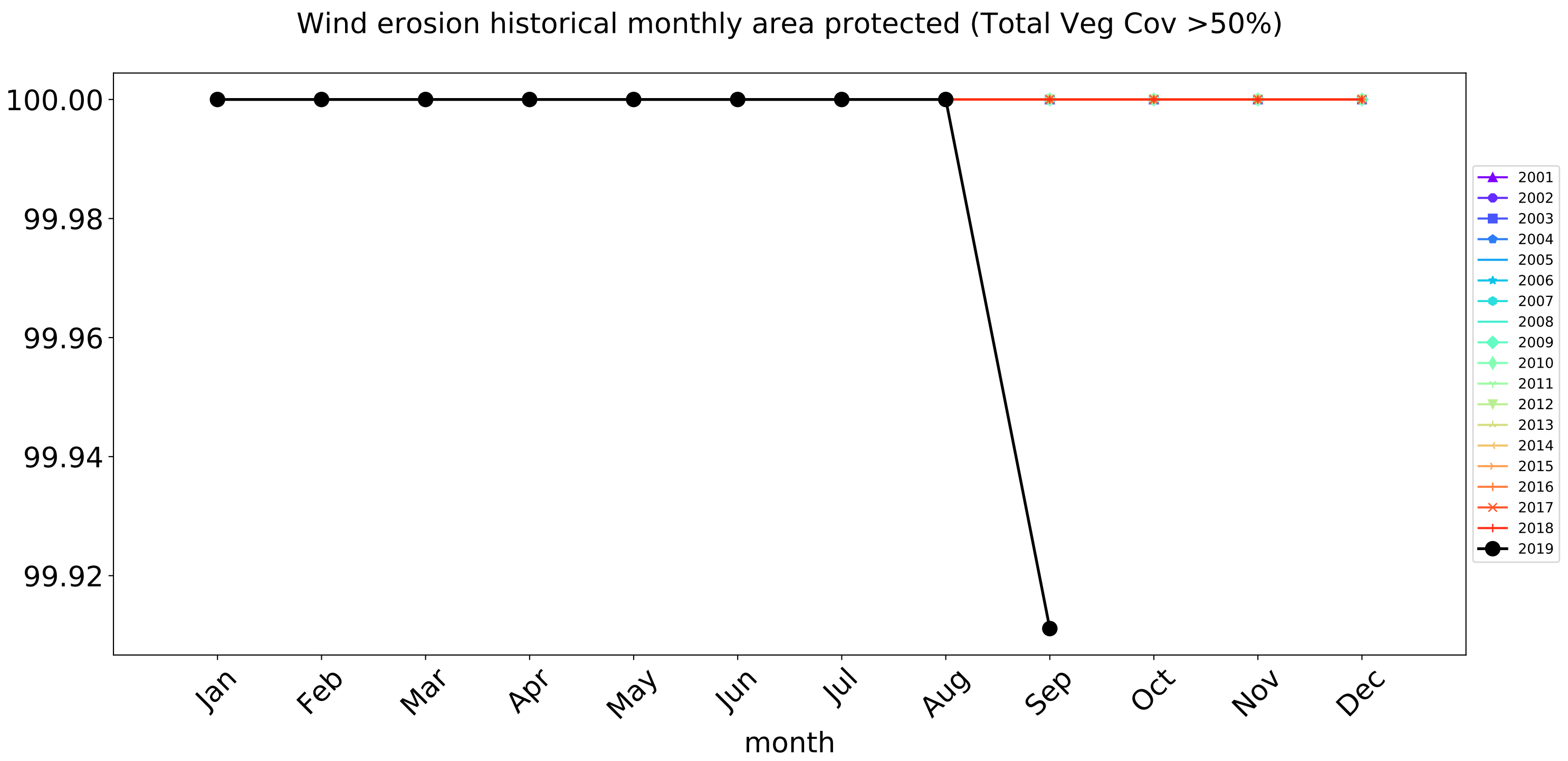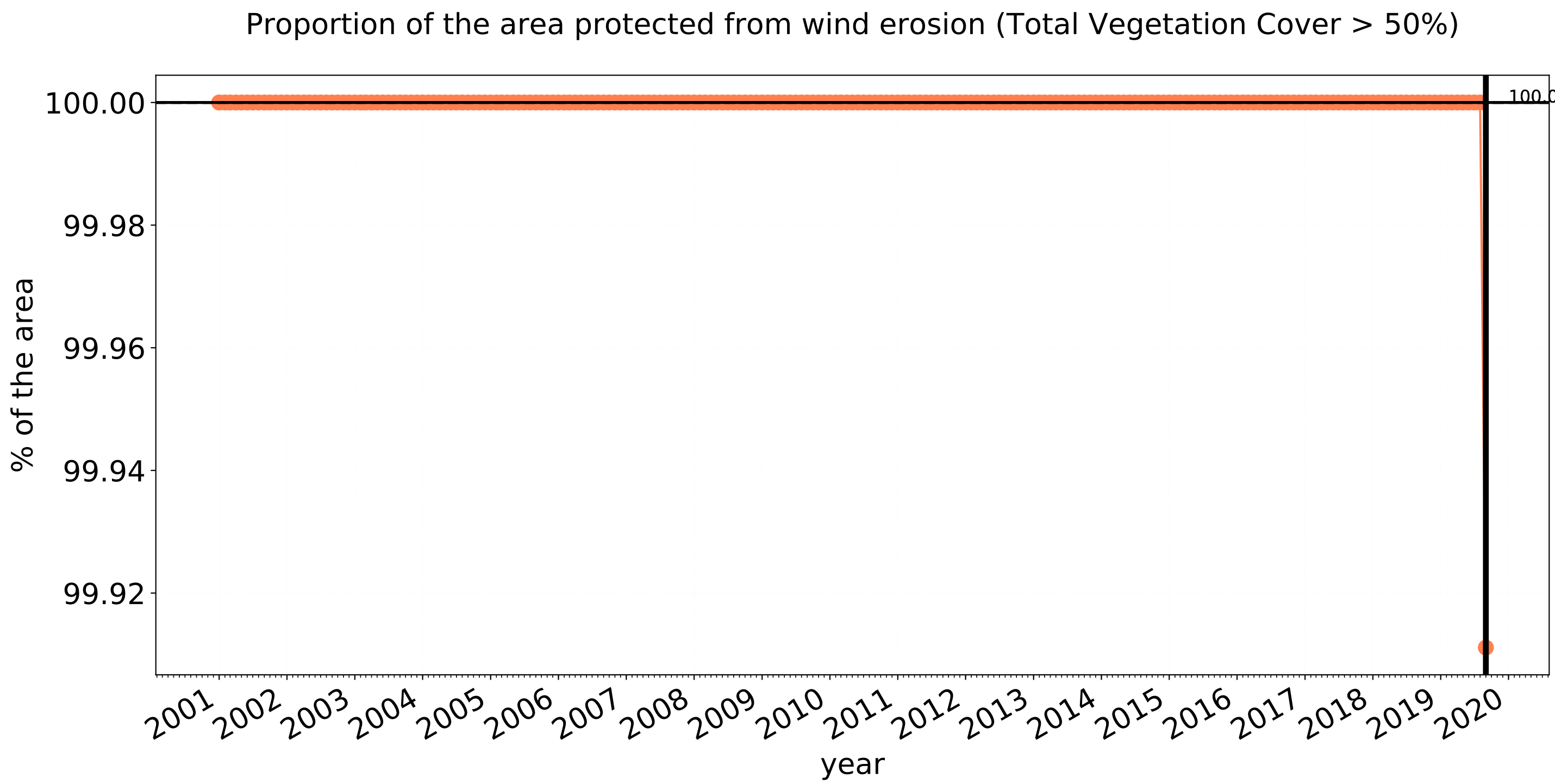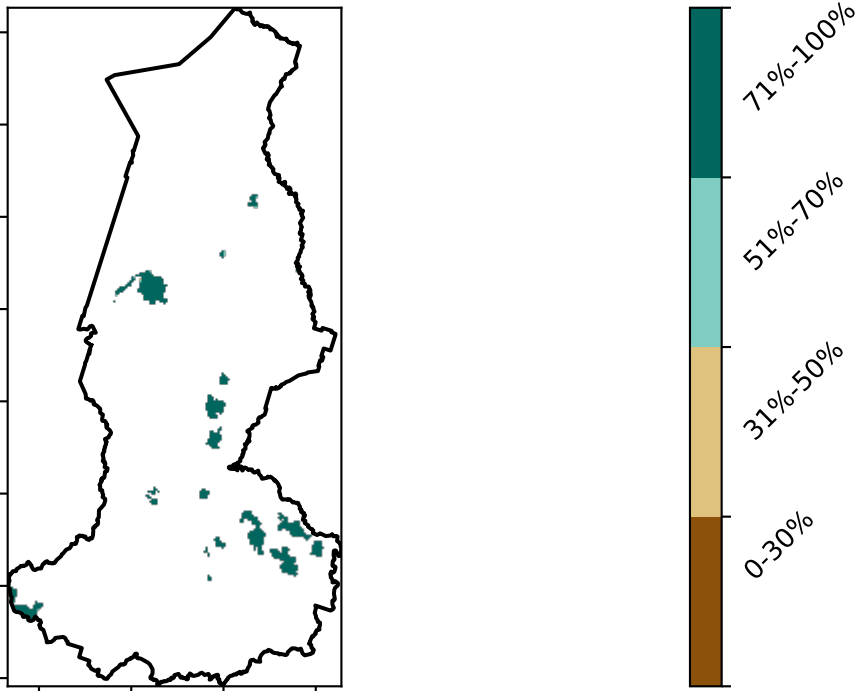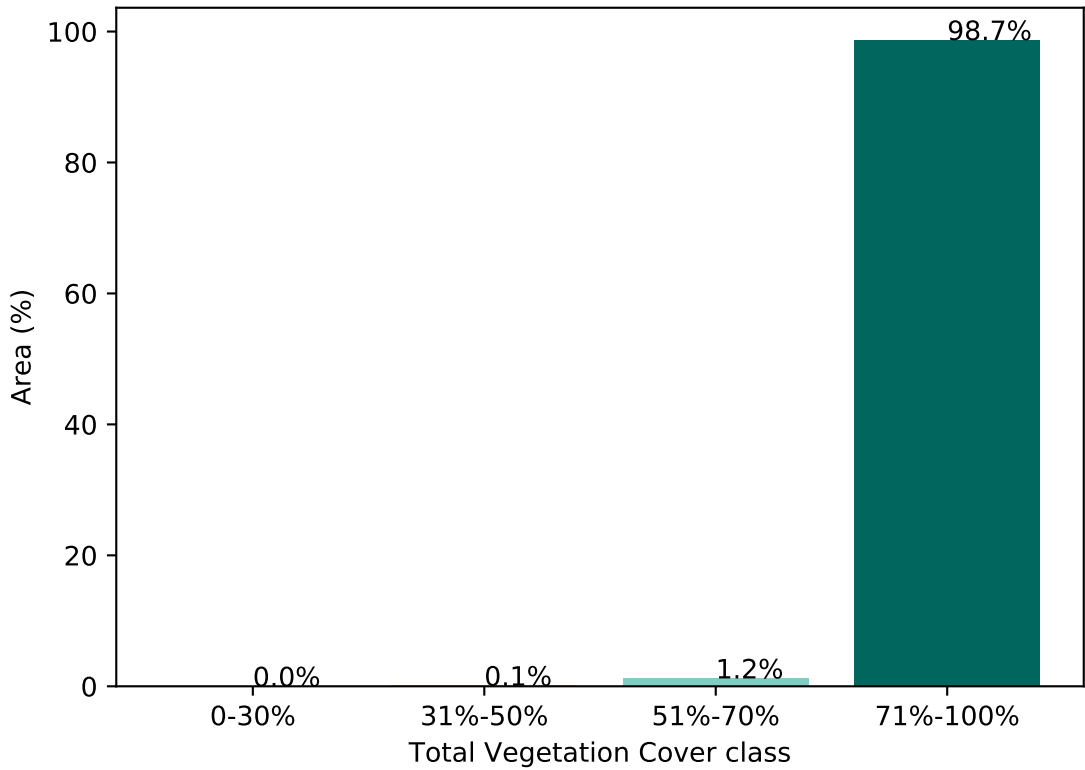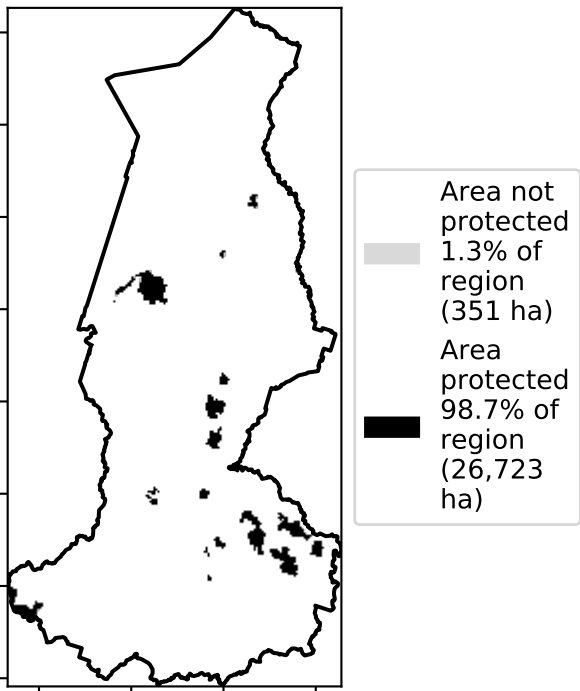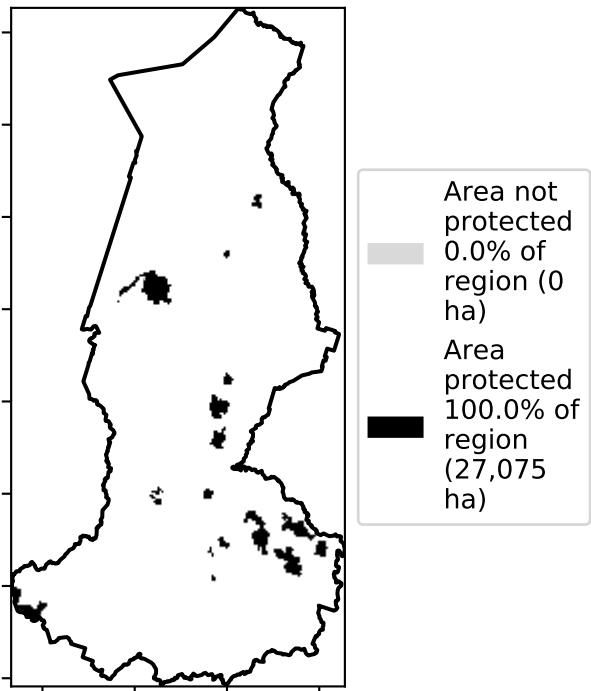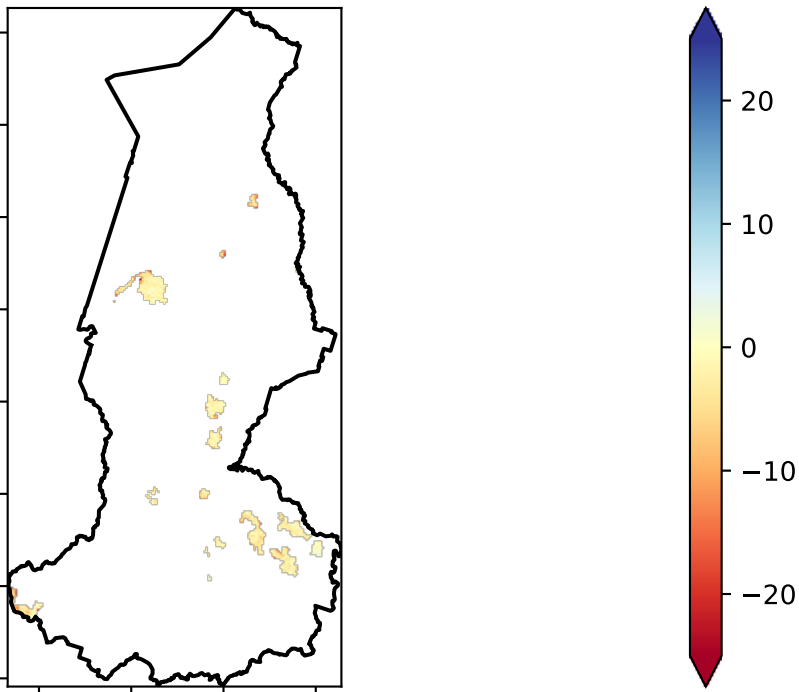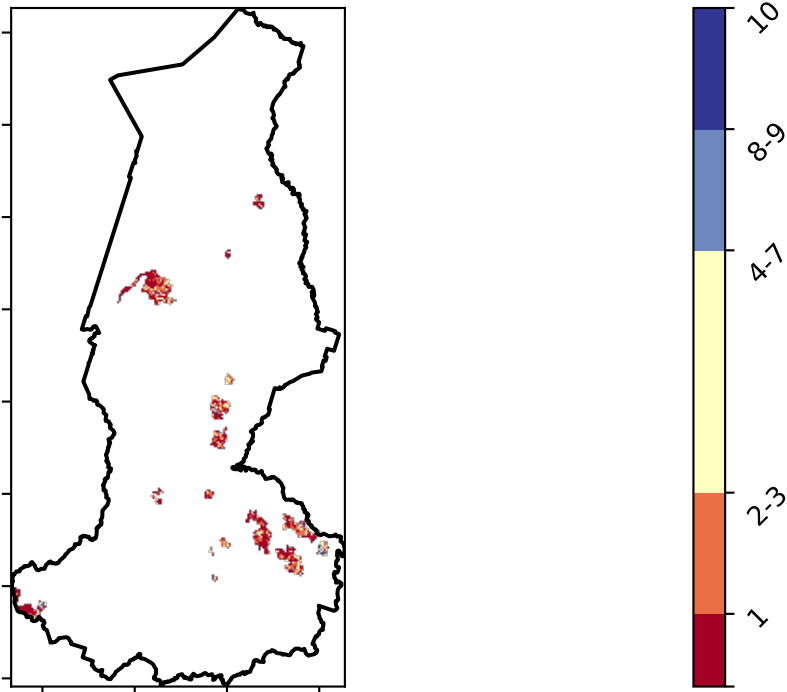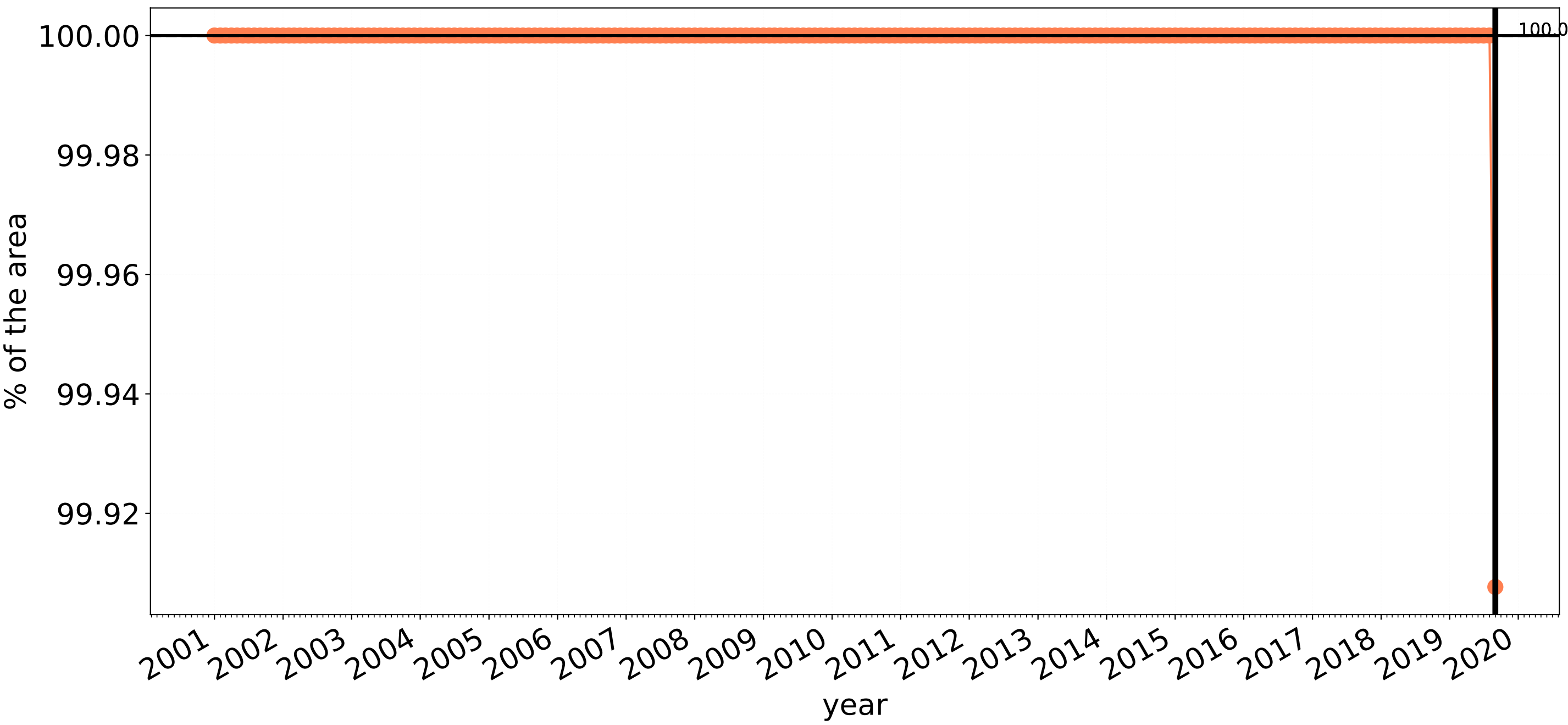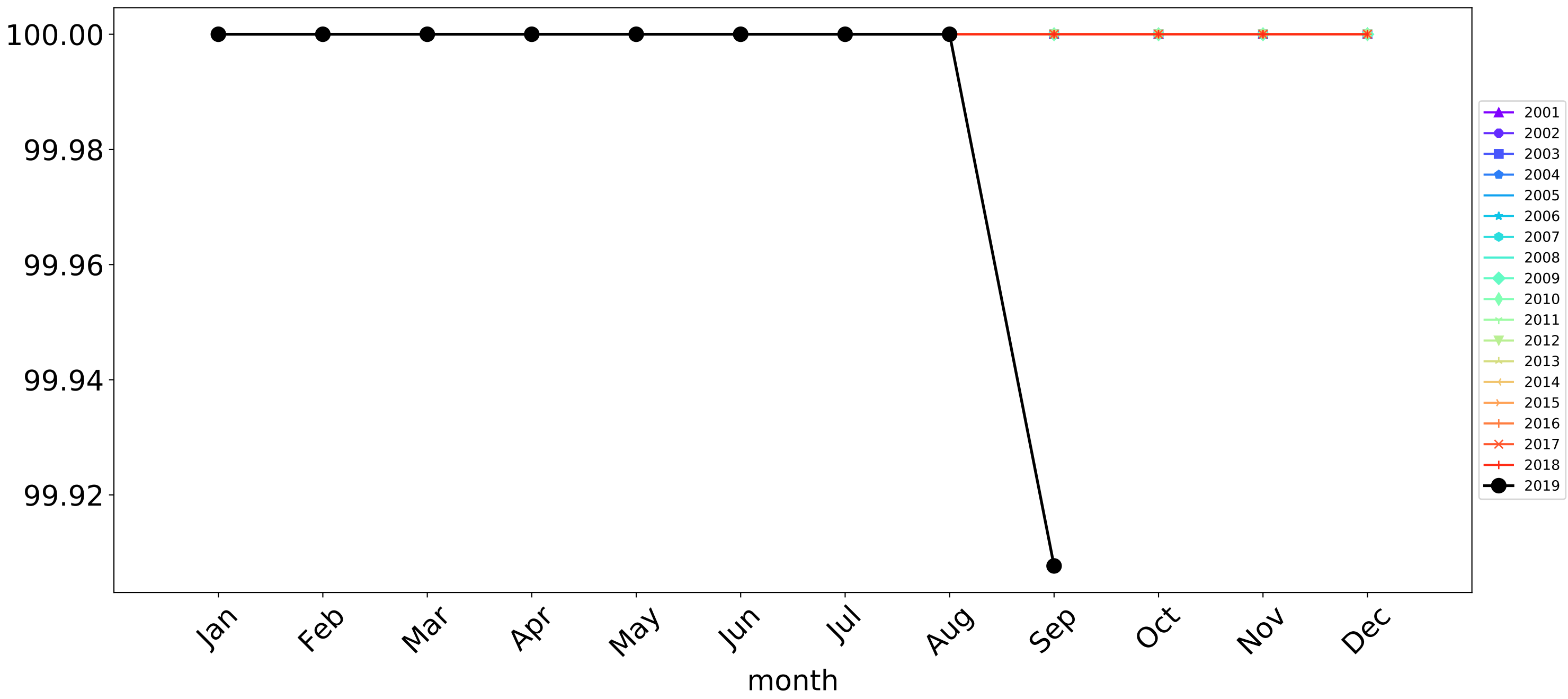
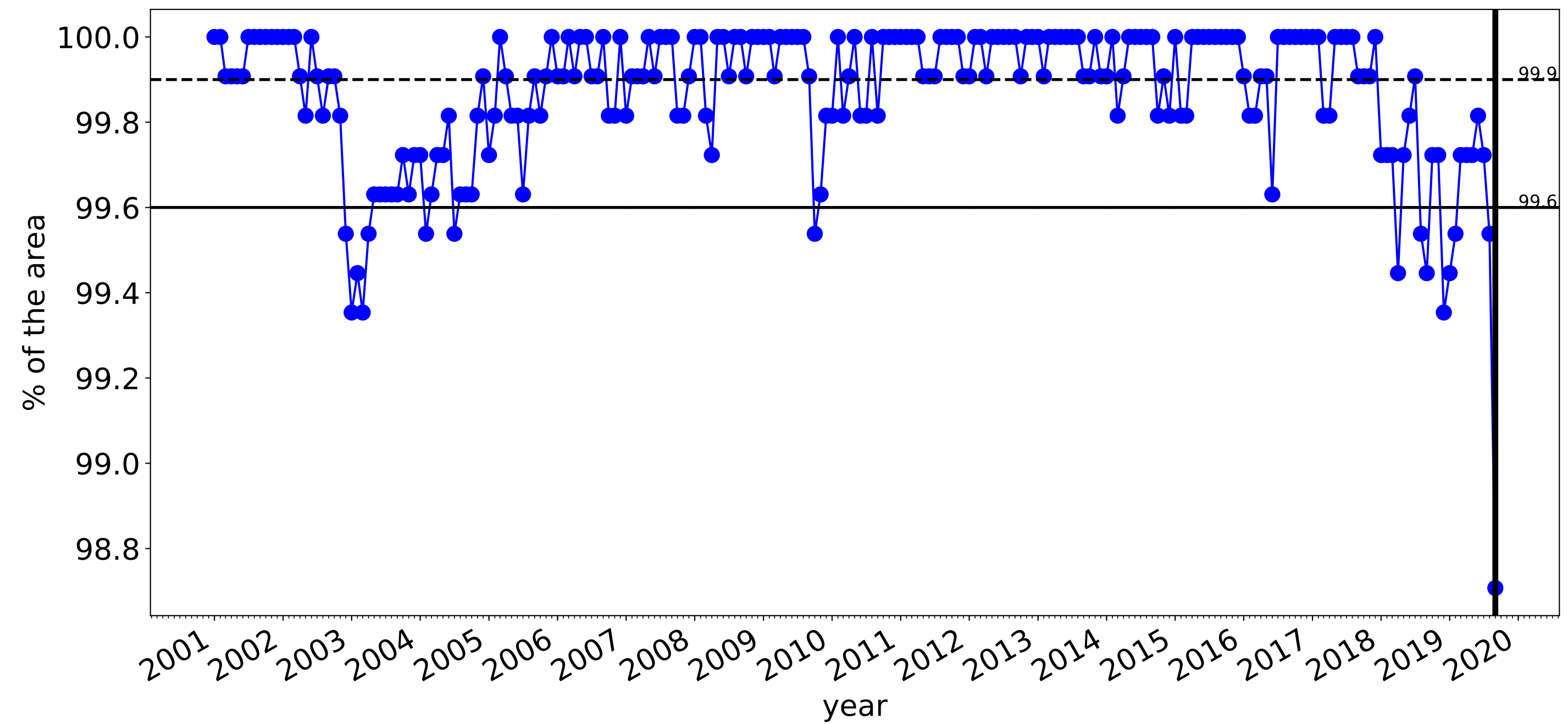# Conservation and natural environments timeseries

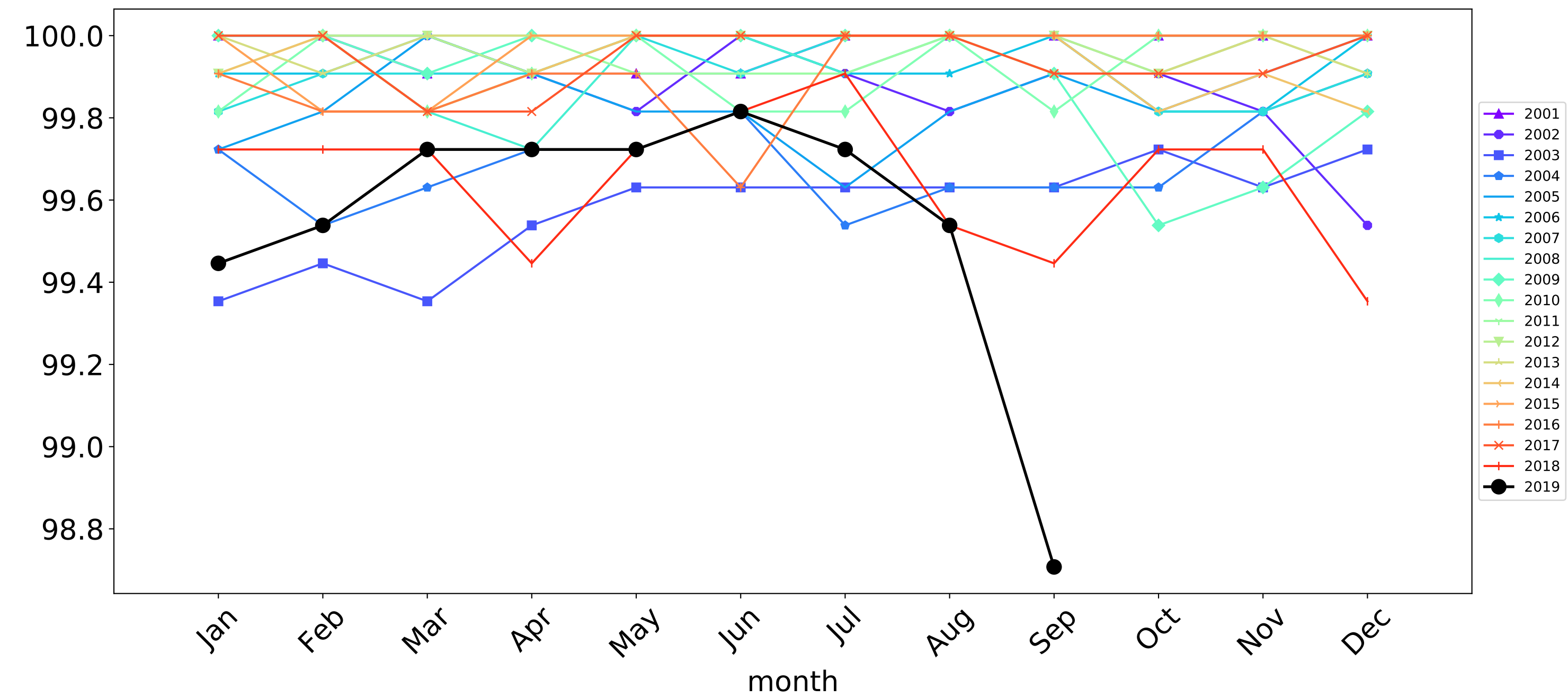### Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

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

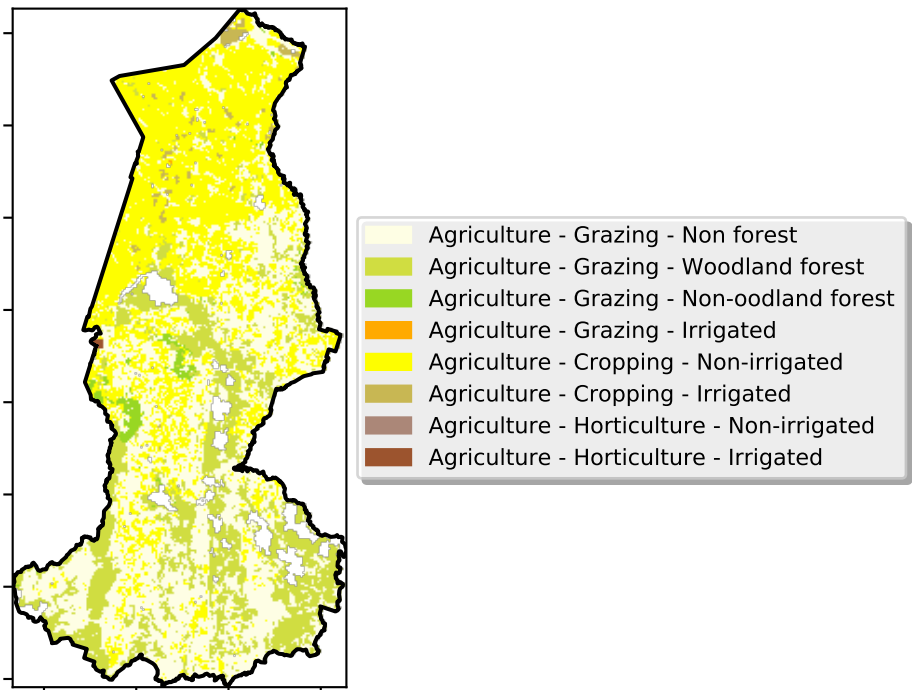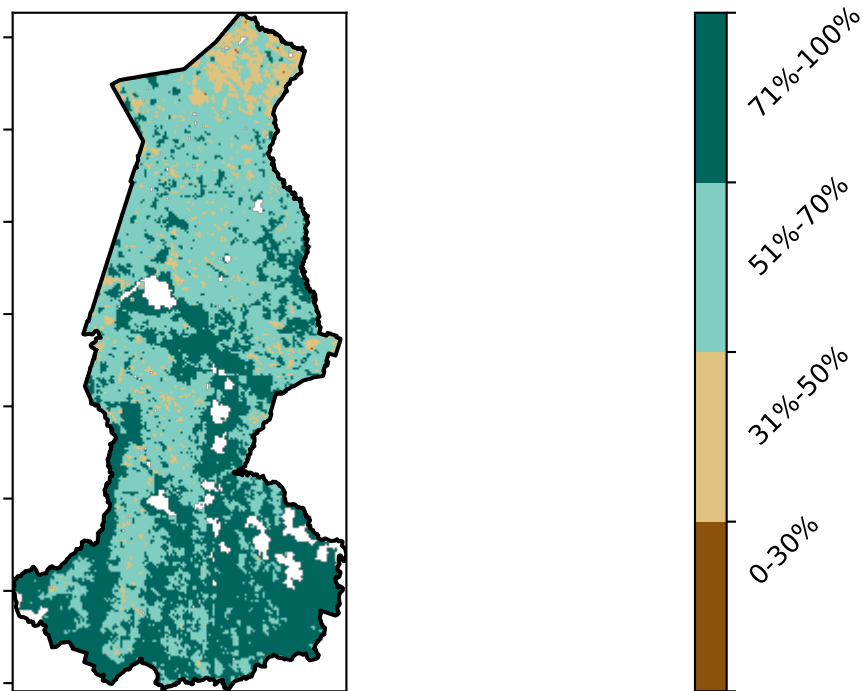### Water erosion historical monthly area protected (Total Veg Cov>70%)

Conservation and natural environments Woodland forest

Land use and forest cover
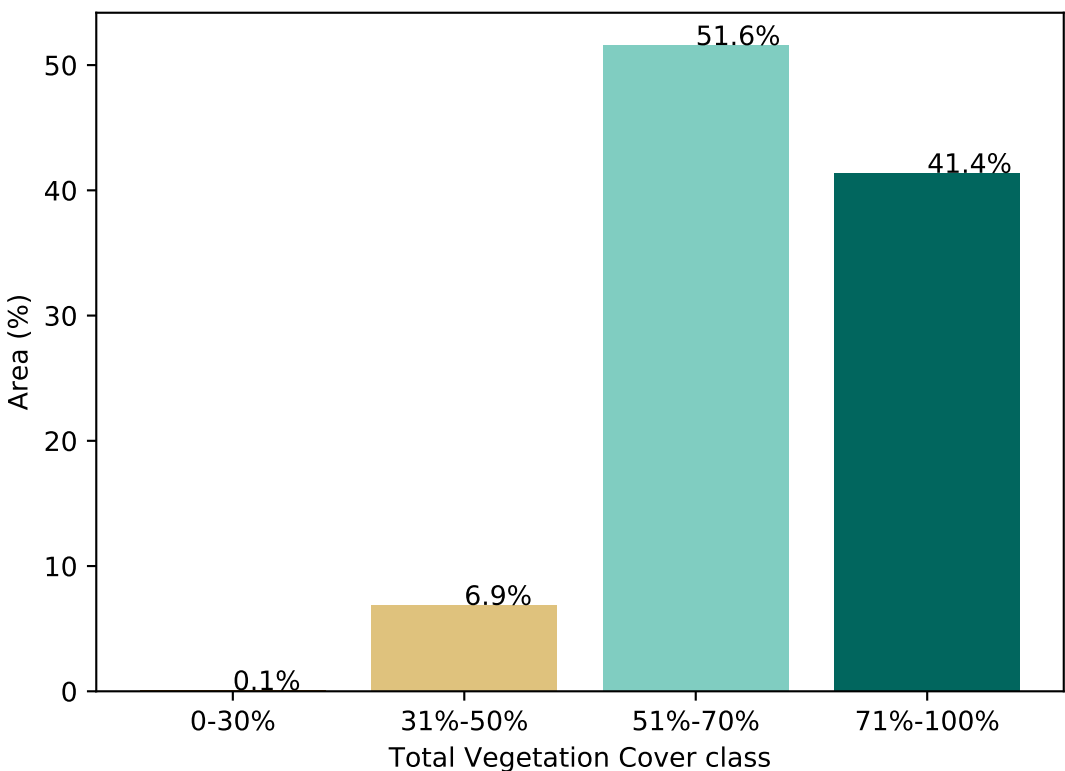
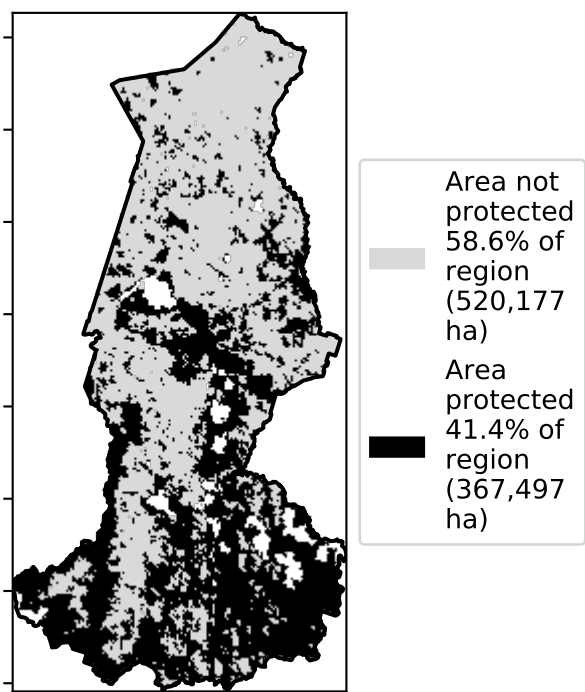Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.
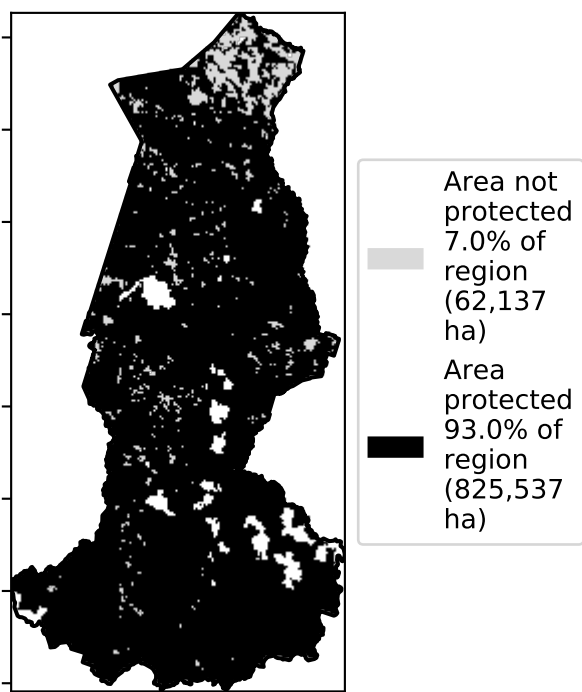
Conservation and natural environments – Woodland forest

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

Area (%)

0.0%   0.1%   1.2%   98.7%

0-30%   31%-50%   51%-70%   71%-100%
Total Vegetation Cover class

% Area protected from water erosion (>70%)

Area not protected 1.3% of region (351 ha)

Area protected 98.7% of region (26,723 ha)

% Area protected from wind erosion (>50%)

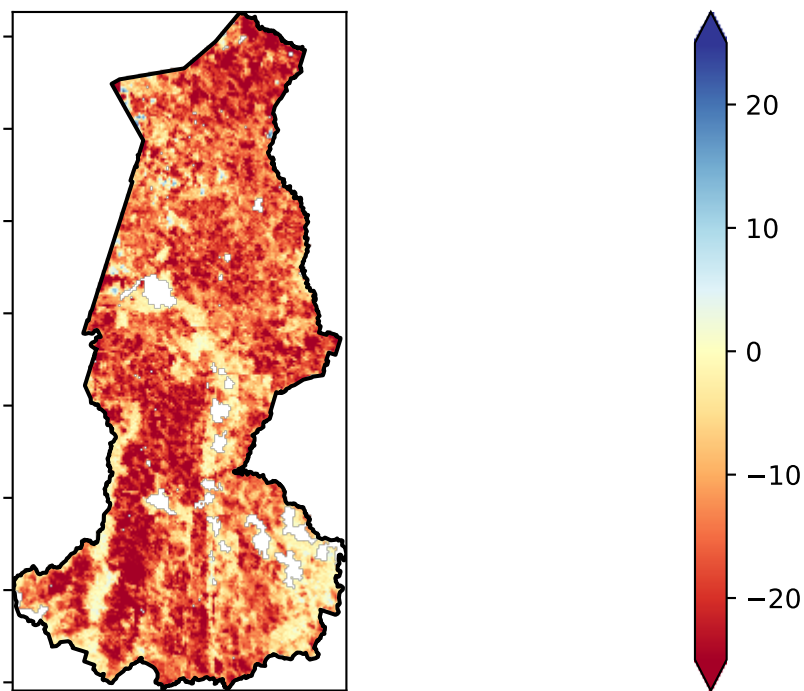Area not protected 0.0% of region (0 ha)

Area protected 100.0% of region (27,075 ha)

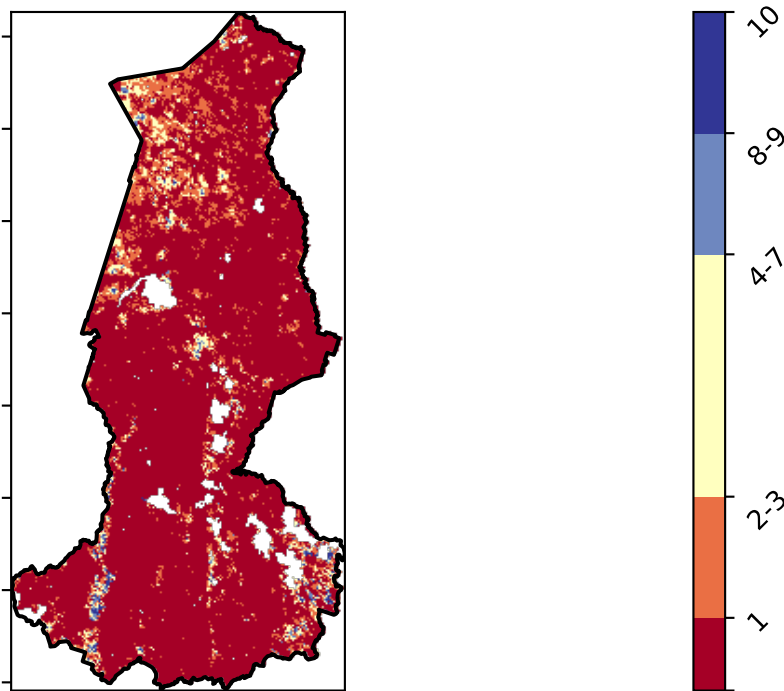### Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.

10
8-9
4-7
2-3
1

CSIRO TERN Australian Government National Landcare Programme NSW GOVERNMENT Planning, Industry & Environment
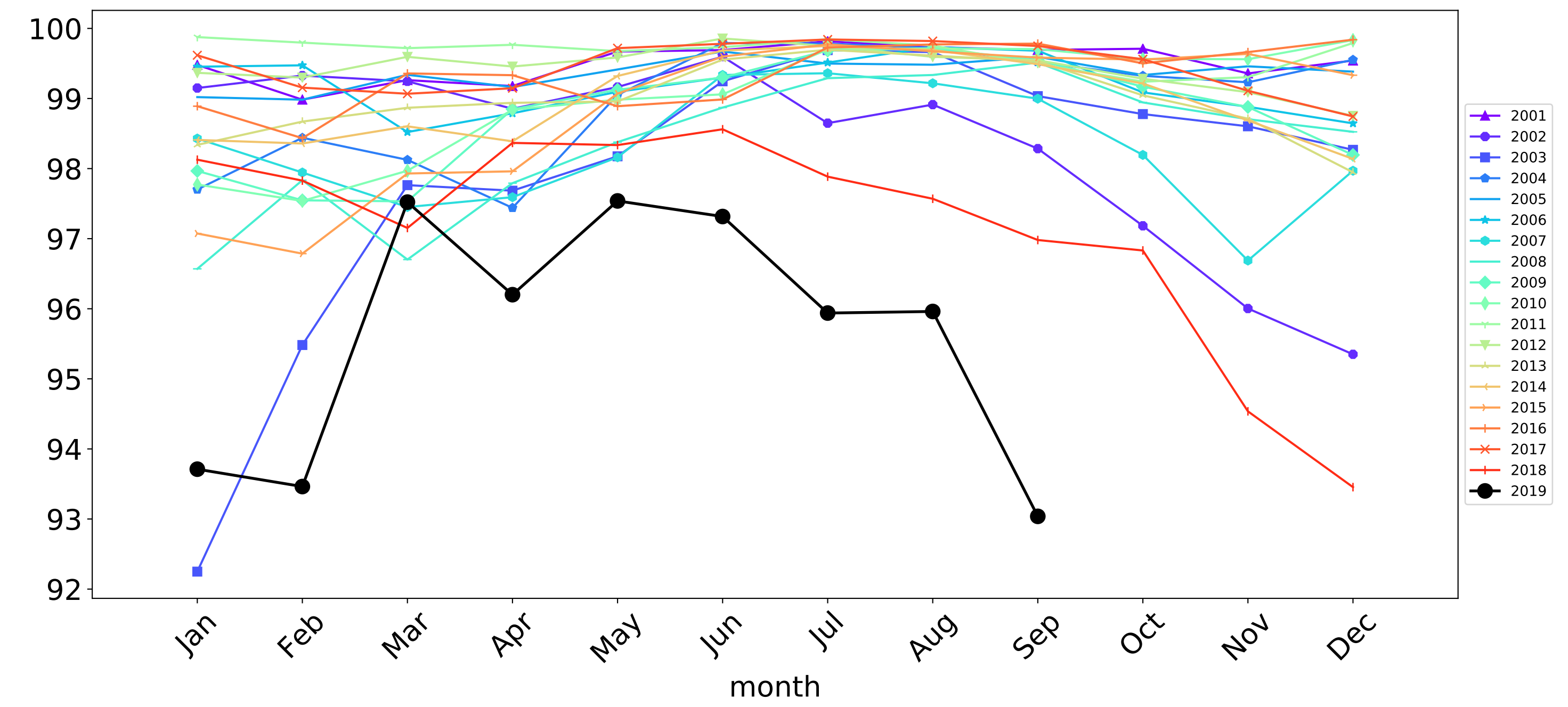
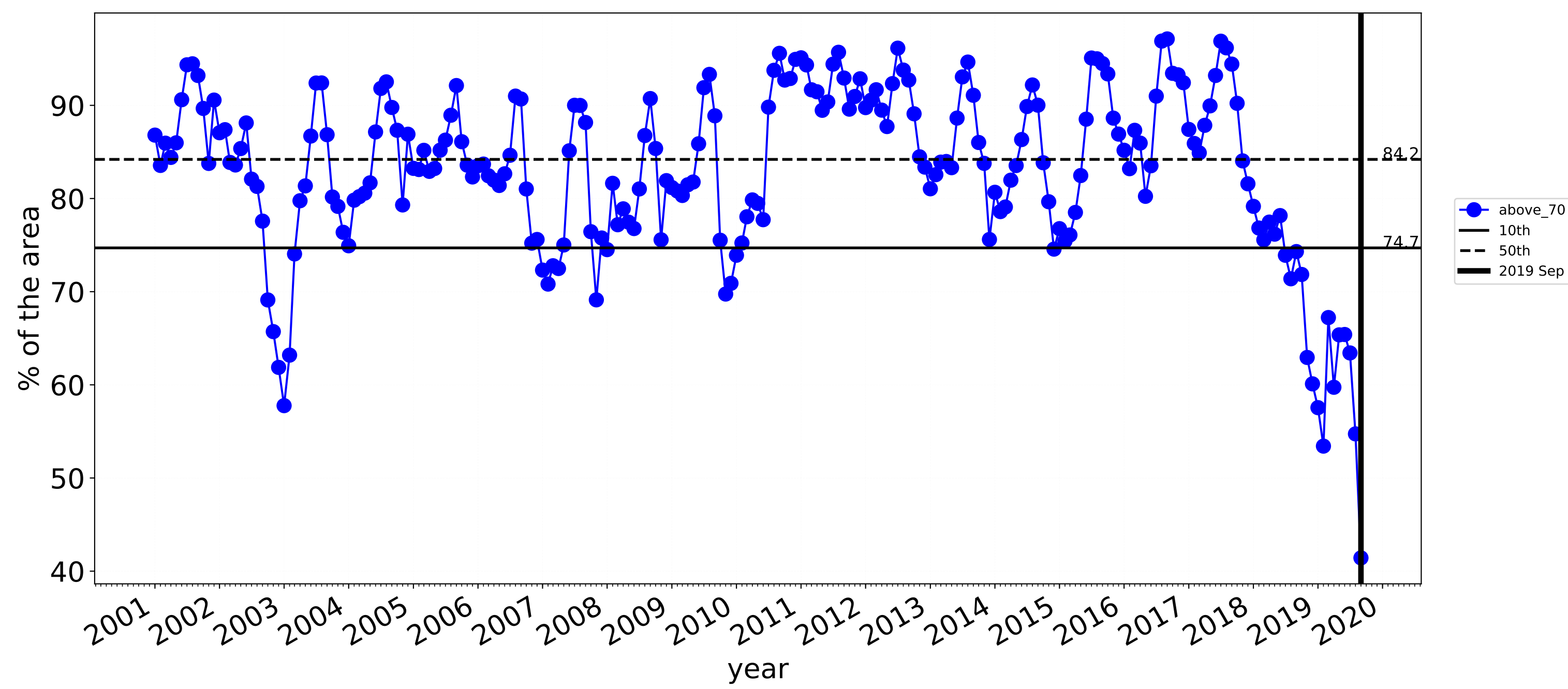# Conservation and natural environments Woodland forest timeseries

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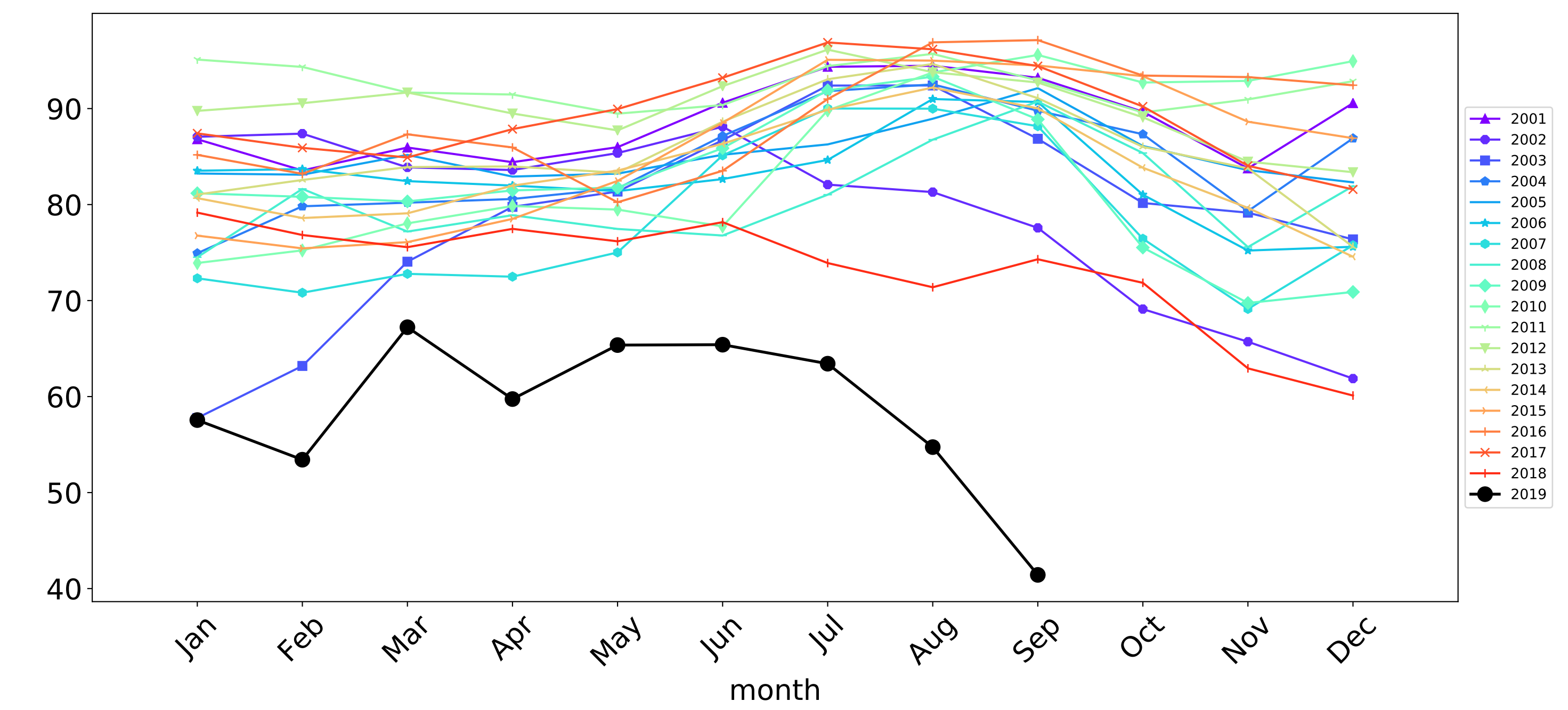

Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

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

Agriculture

Land use and forest cover

Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.

Legend:
- Agriculture - Grazing - Non forest
- Agriculture - Grazing - Woodland forest
- Agriculture - Grazing - Non-oodland forest
- Agriculture - Grazing - Irrigated
- Agriculture - Cropping - Non-irrigated
- Agriculture - Cropping - Irrigated
- Agriculture - Horticulture - Non-irrigated
- Agriculture - Horticulture - Irrigated

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

Bar chart showing Area (%) vs Total Vegetation Cover class:
- 0-30%: 0.1%
- 31%-50%: 6.9%
- 51%-70%: 51.6%
- 71%-100%: 41.4%

% Area protected from water erosion (>70%)

Area not protected 58.6% of region (520,177 ha)

Area protected 41.4% of region (367,497 ha)

% Area protected from wind erosion (>50%)

Area not protected 7.0% of region (62,137 ha)

Area protected 93.0% of region (825,537 ha)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.

Legend:
- 10
- 8-9
- 4-7
- 2-3
- 1

Agriculture timeseries

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

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

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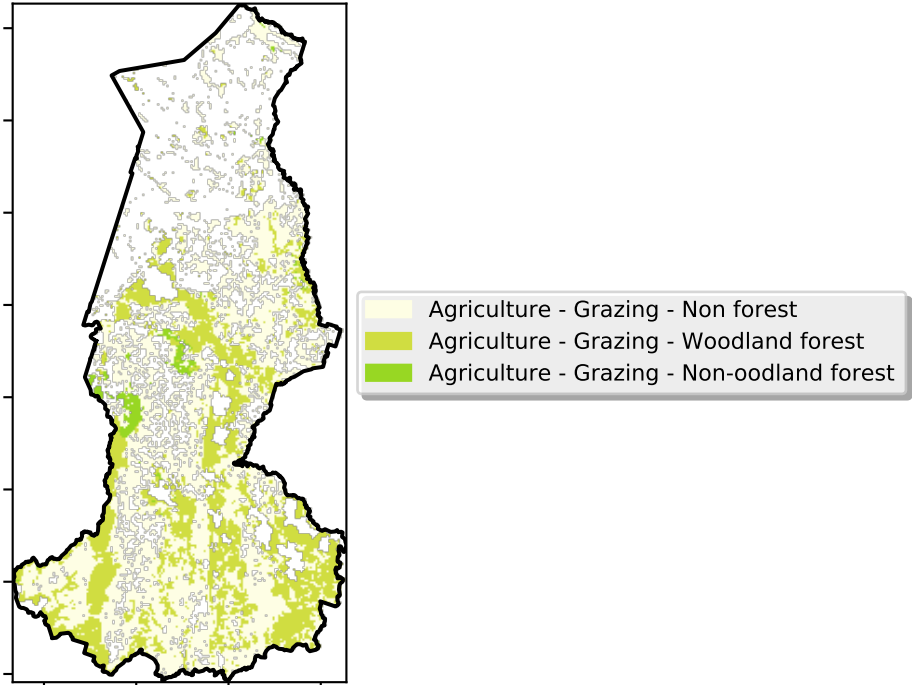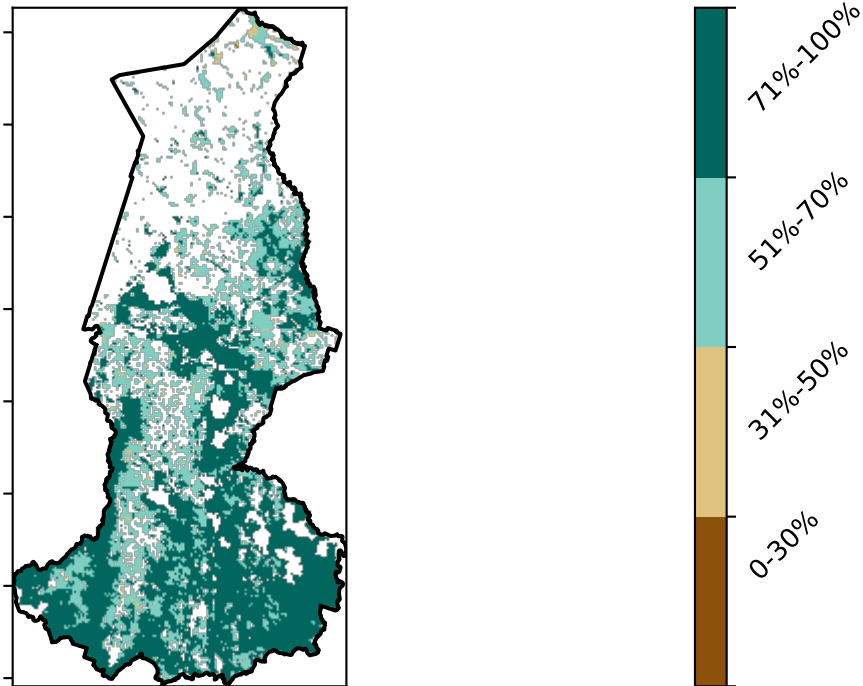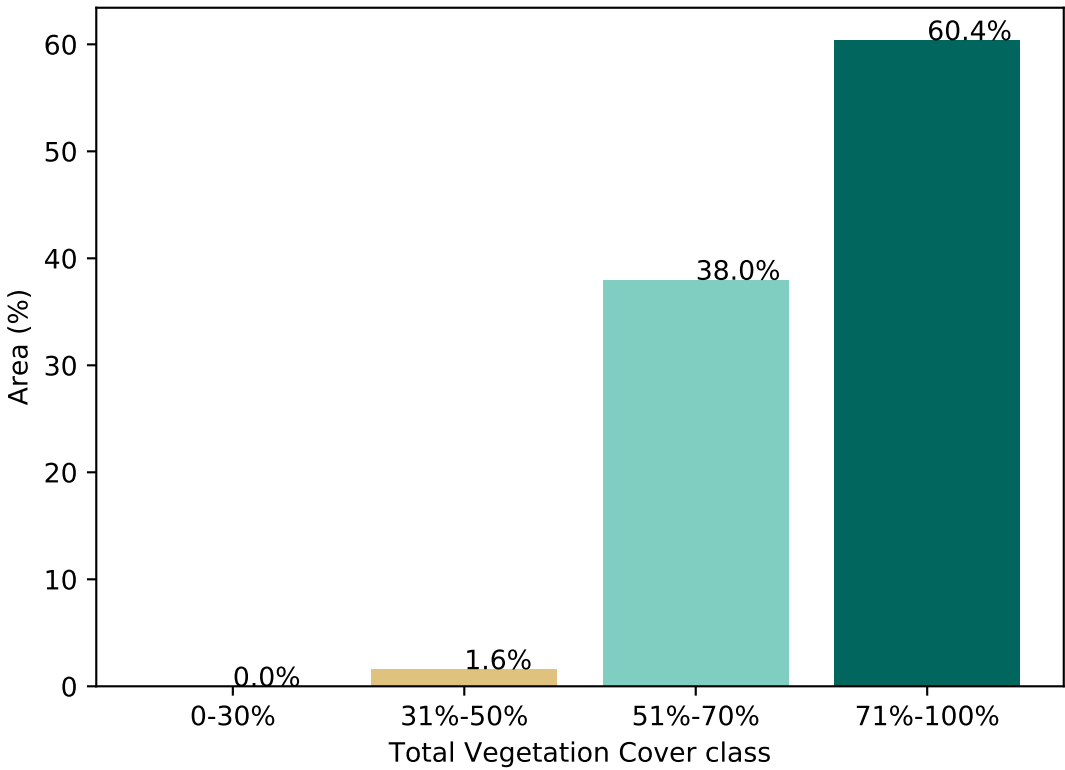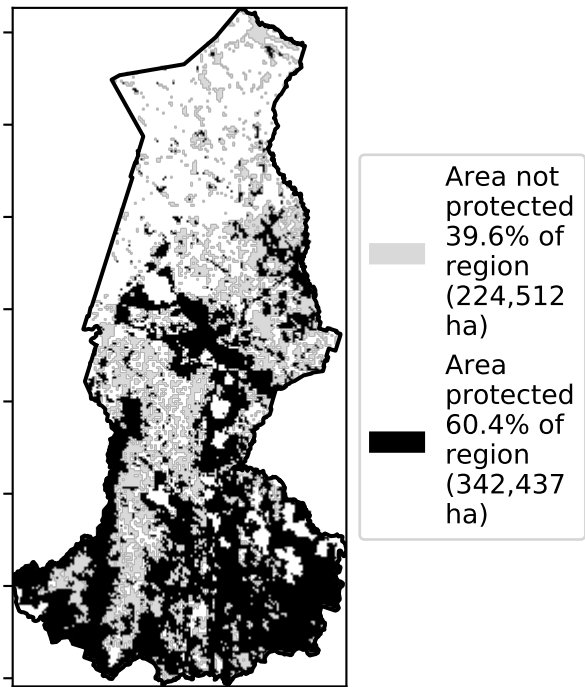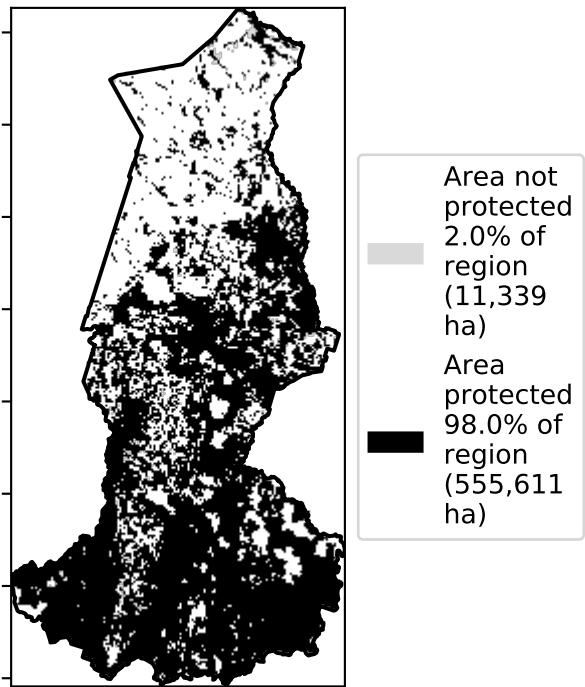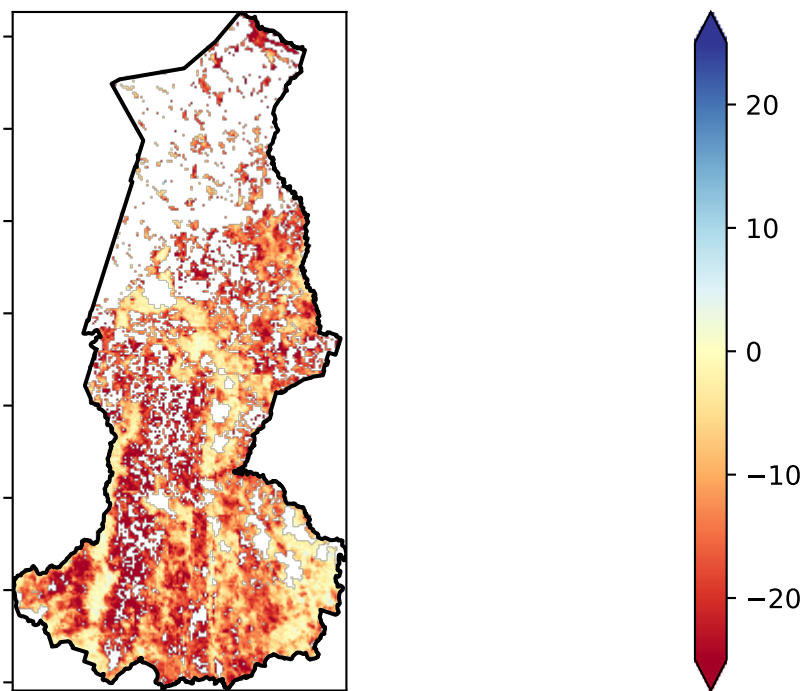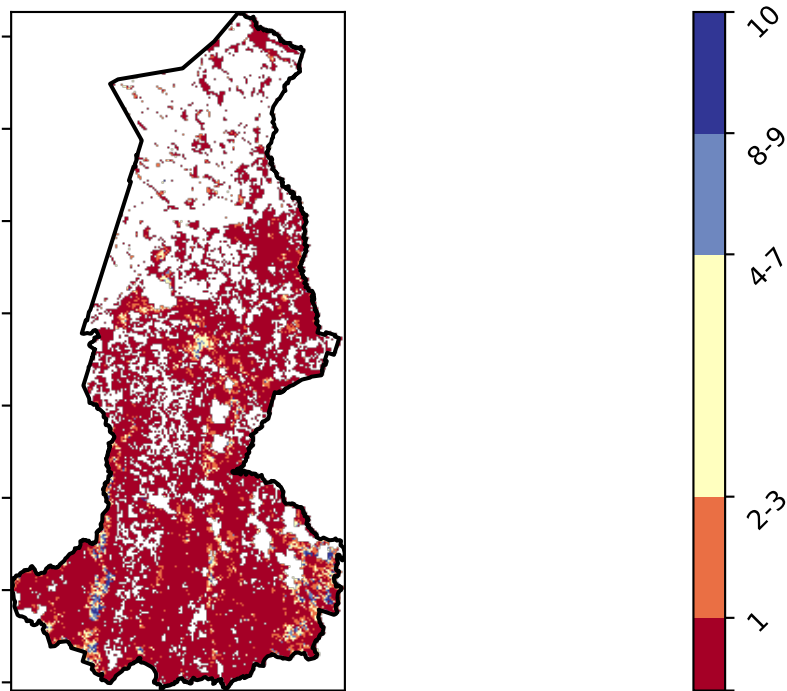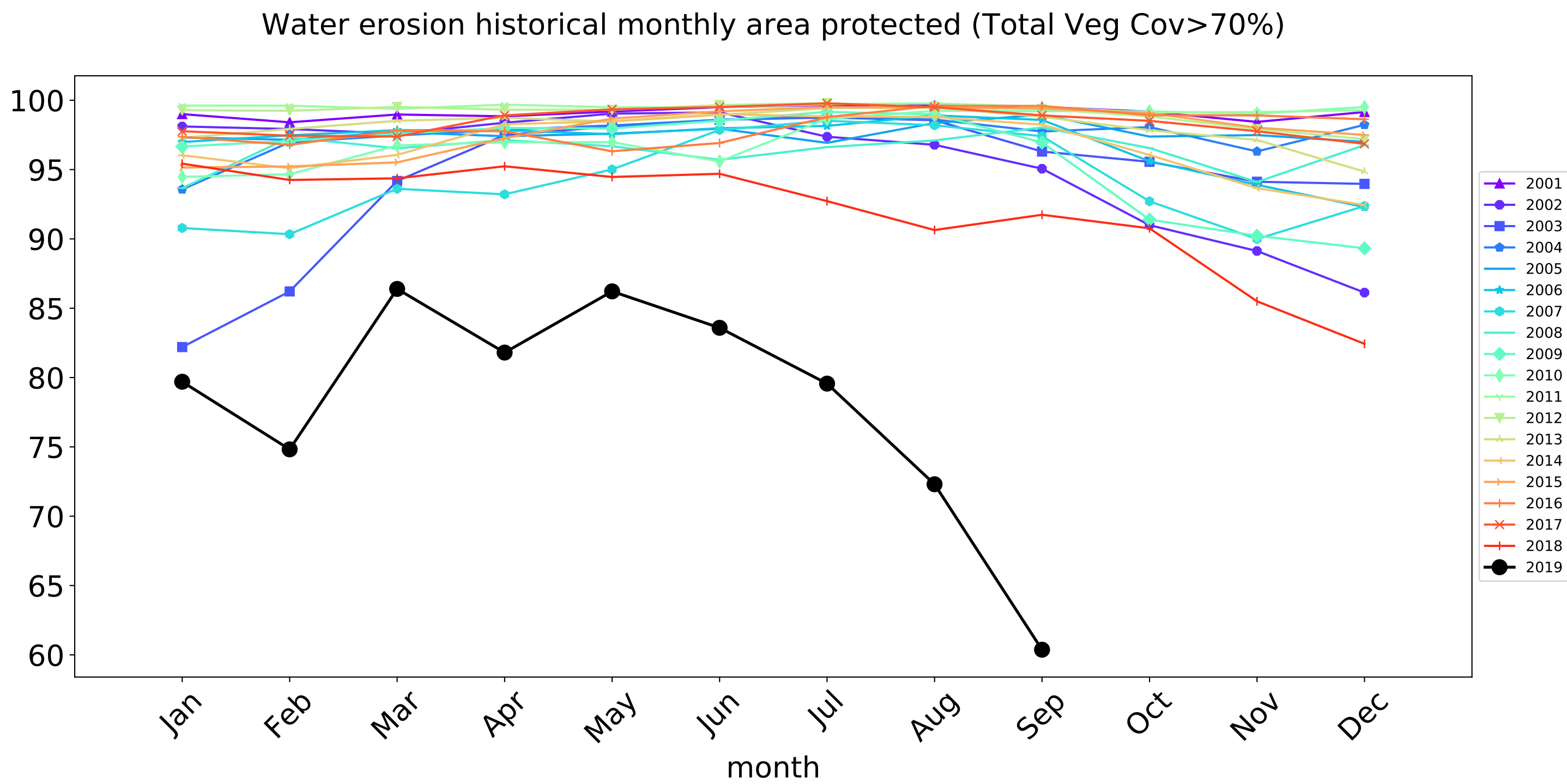

Water erosion historical monthly area protected (Total Veg Cov>70%)

Grazing

Land use and forest cover

Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.

Agriculture - Grazing - Non forest
Agriculture - Grazing - Woodland forest
Agriculture - Grazing - Non-oodland forest

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area not protected
39.6% of region (224,512 ha)

Area protected
60.4% of region (342,437 ha)

% Area protected from wind erosion (>50%)

Area not protected
2.0% of region (11,339 ha)

Area protected
98.0% of region (555,611 ha)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.
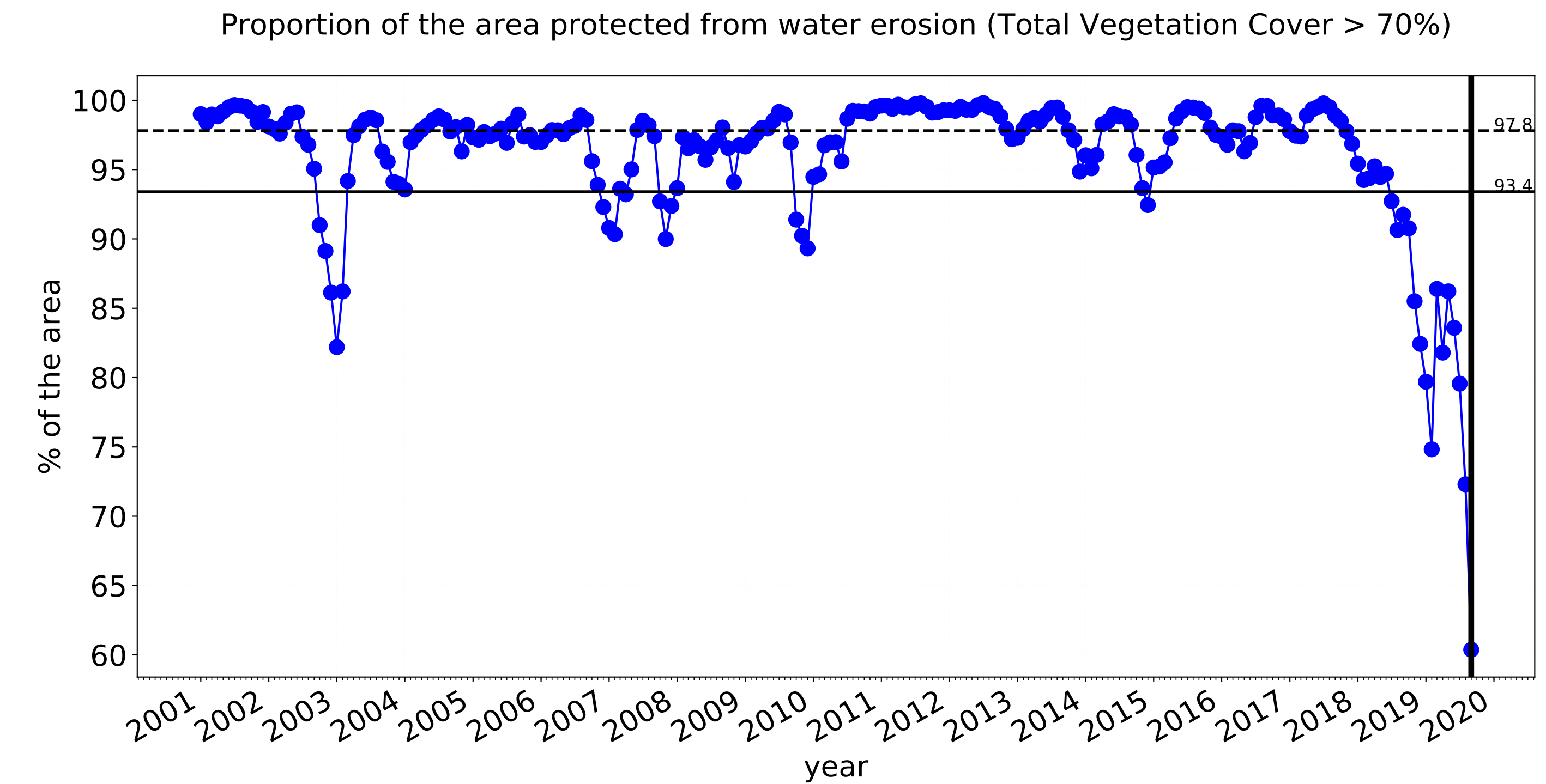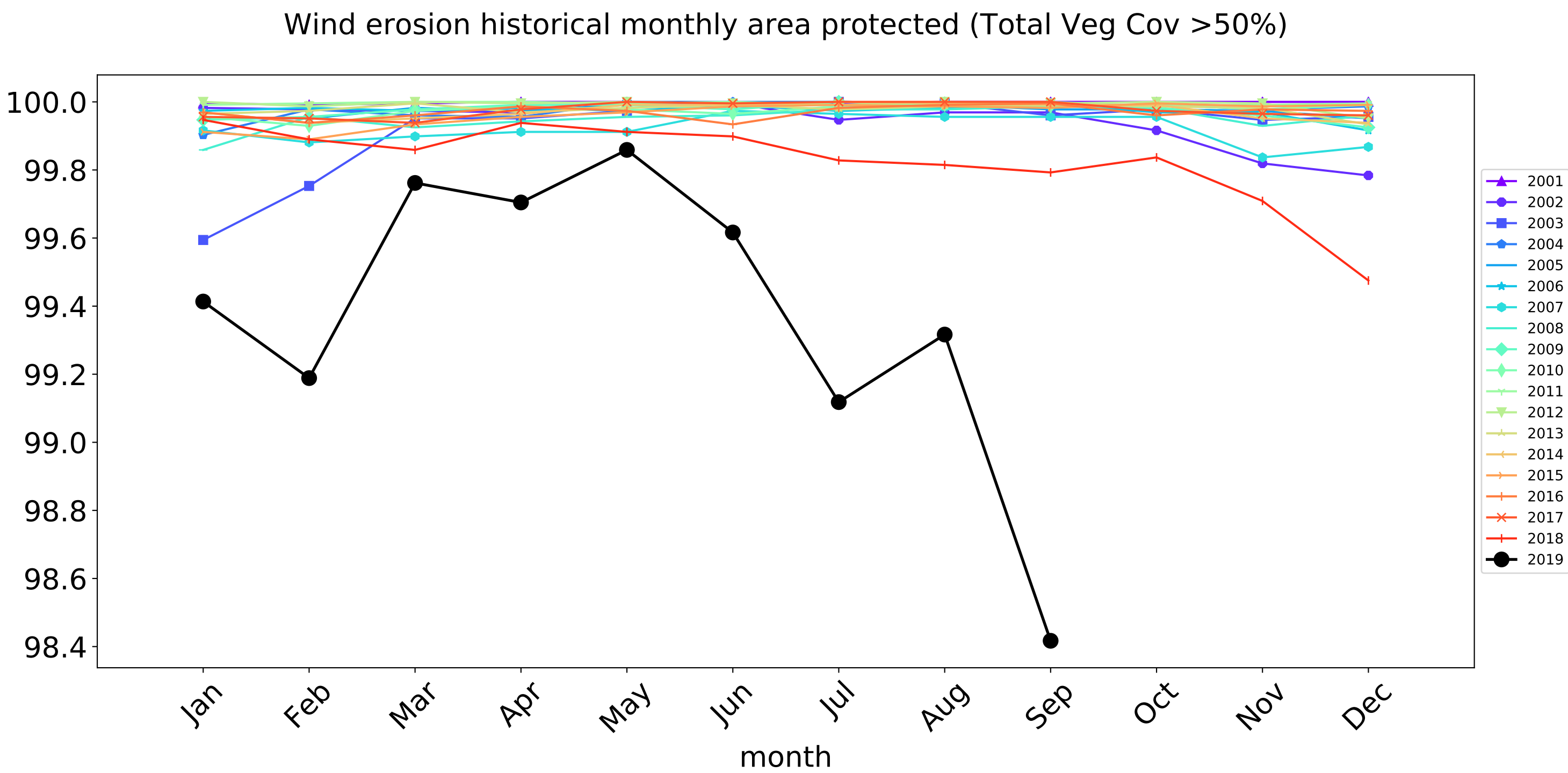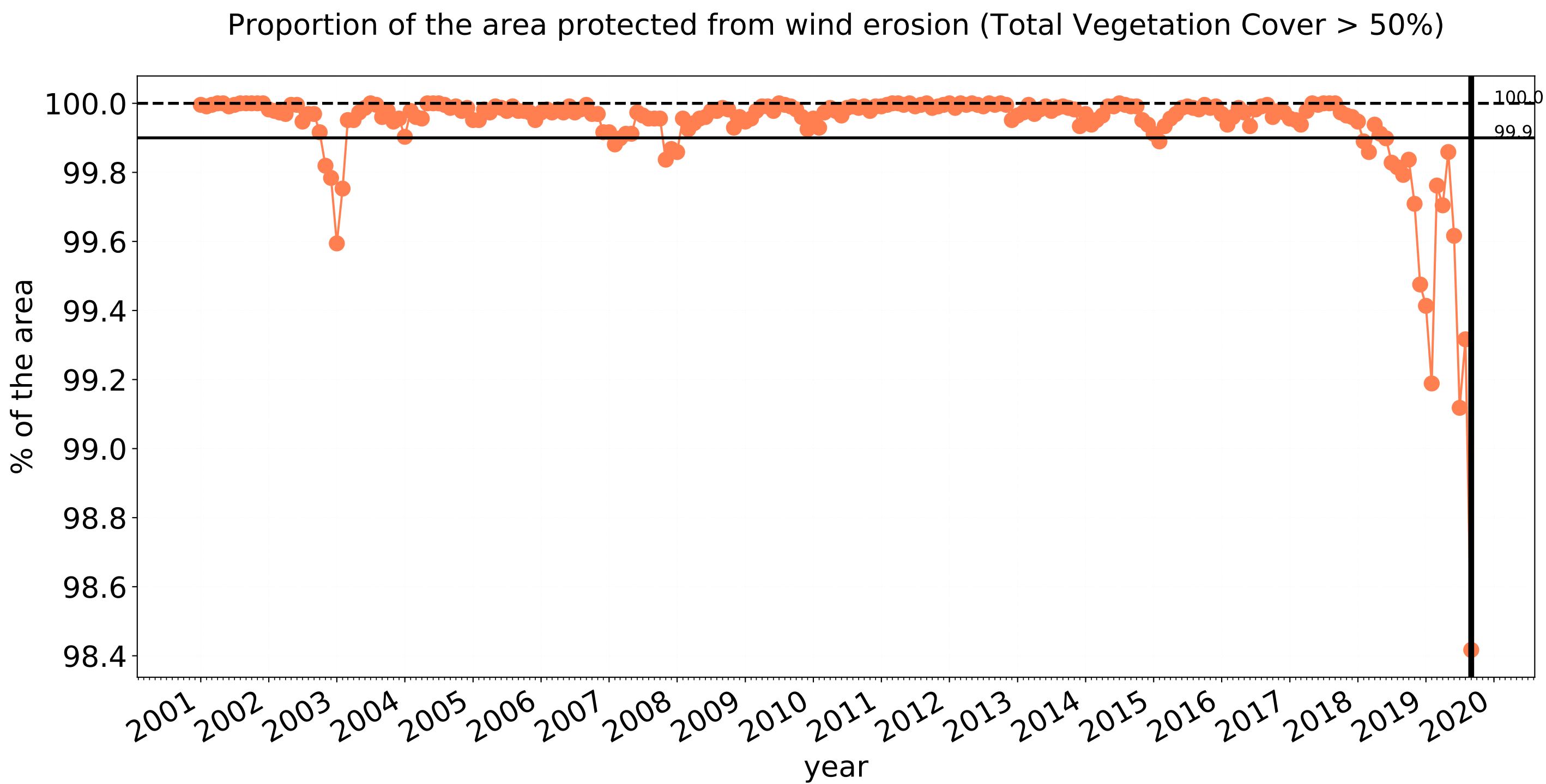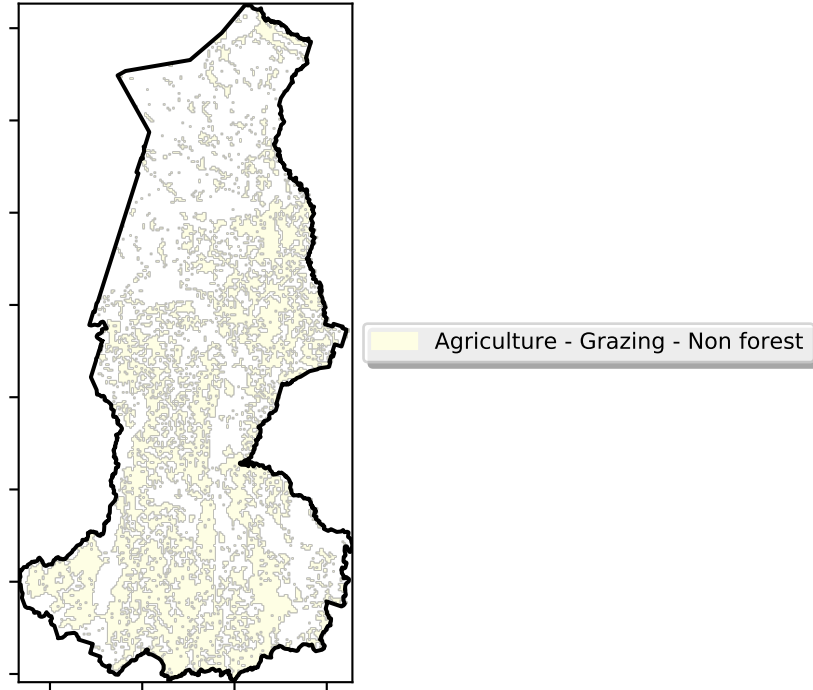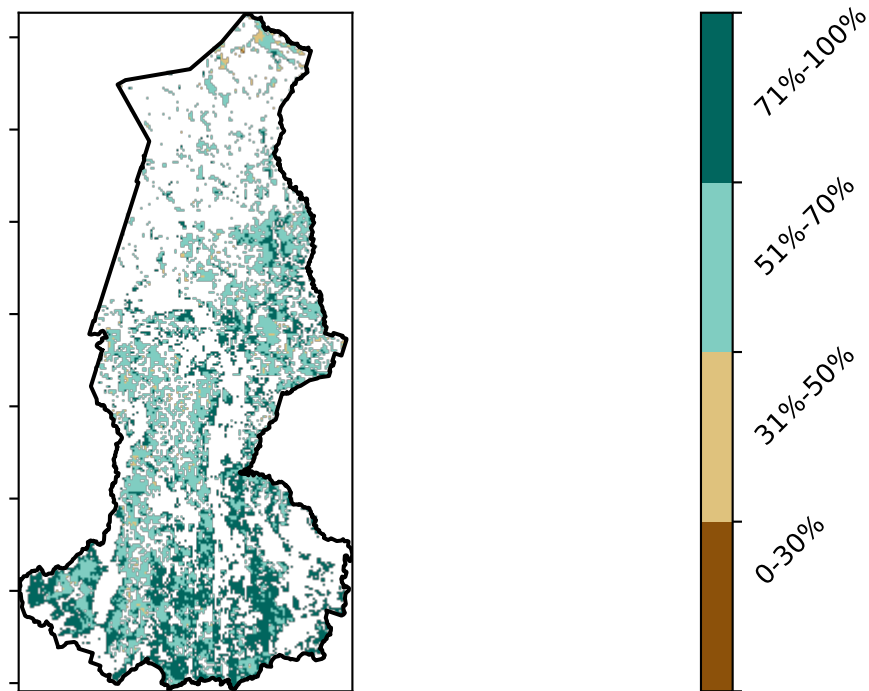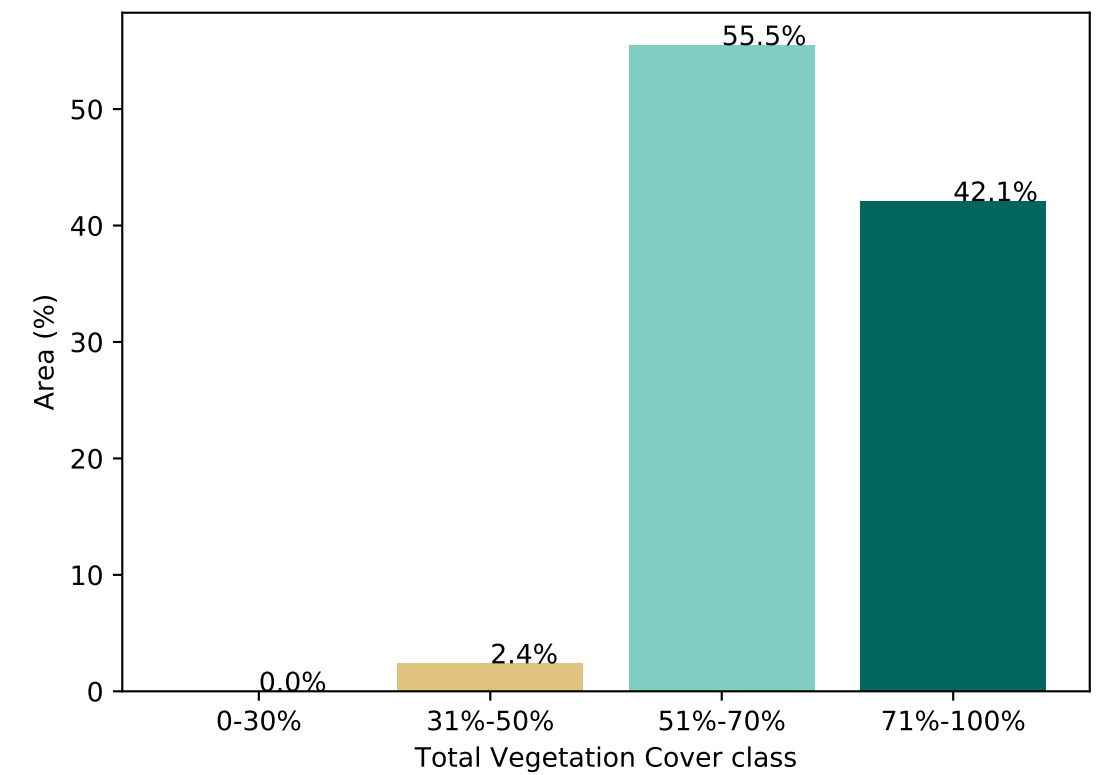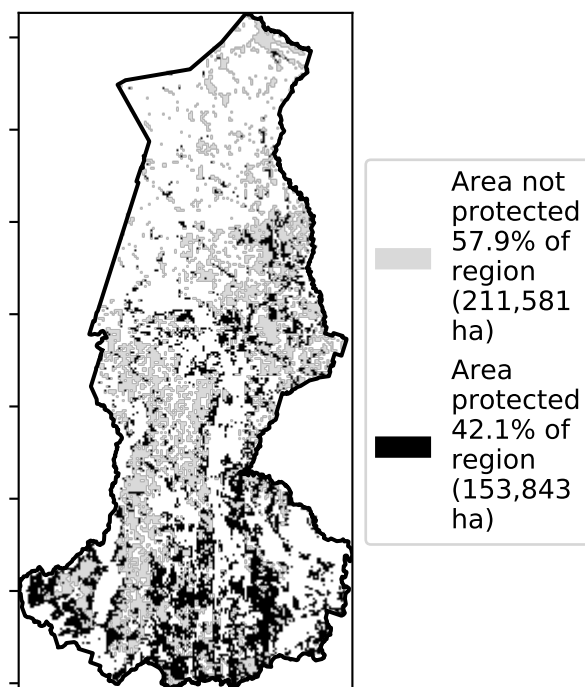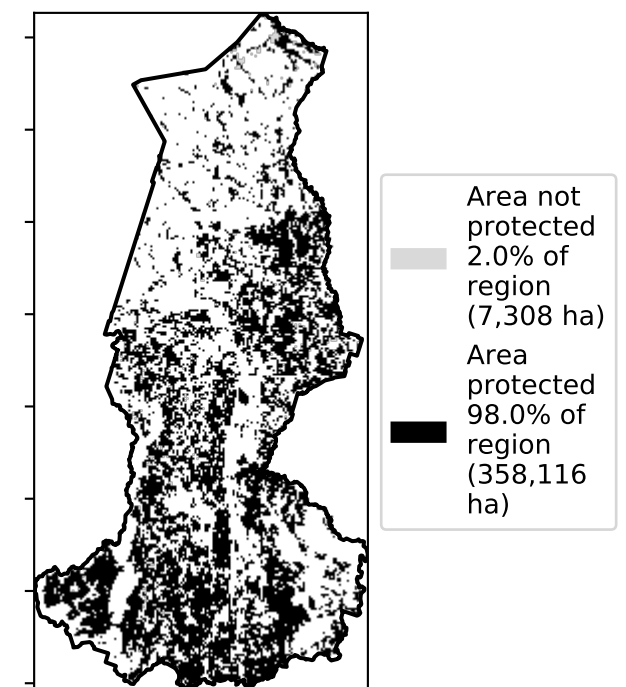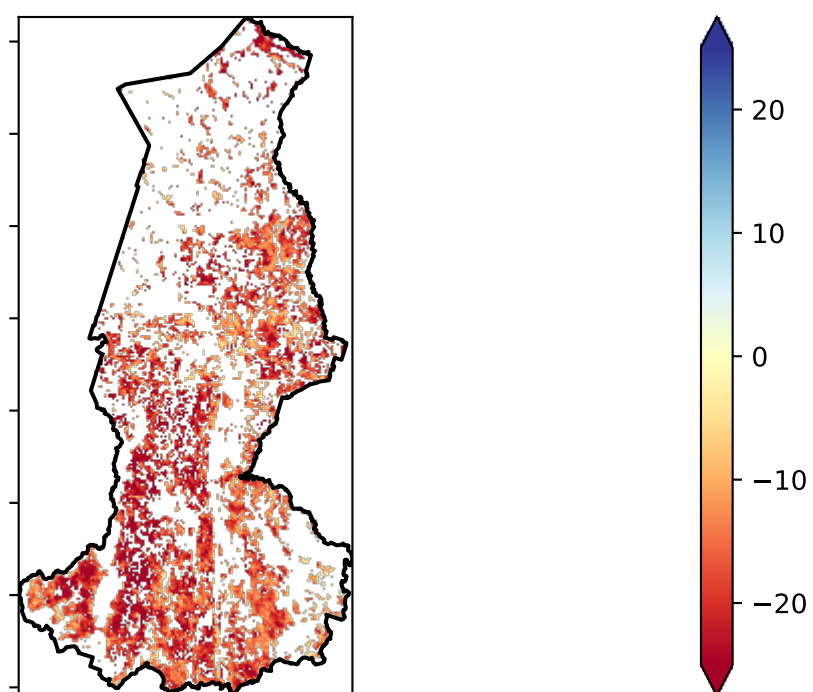
Grazing timeseries

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

Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.

Agriculture - Grazing - Non forest

Total Vegetation Cover [%]

71%-100%

51%-70%

31%-50%

0-30%

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area not protected
57.9% of region
(211,581 ha)

Area protected
42.1% of region
(153,843 ha)

% Area protected from wind erosion (>50%)

Area not protected
2.0% of region
(7,308 ha)

Area protected
98.0% of region
(358,116 ha)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.
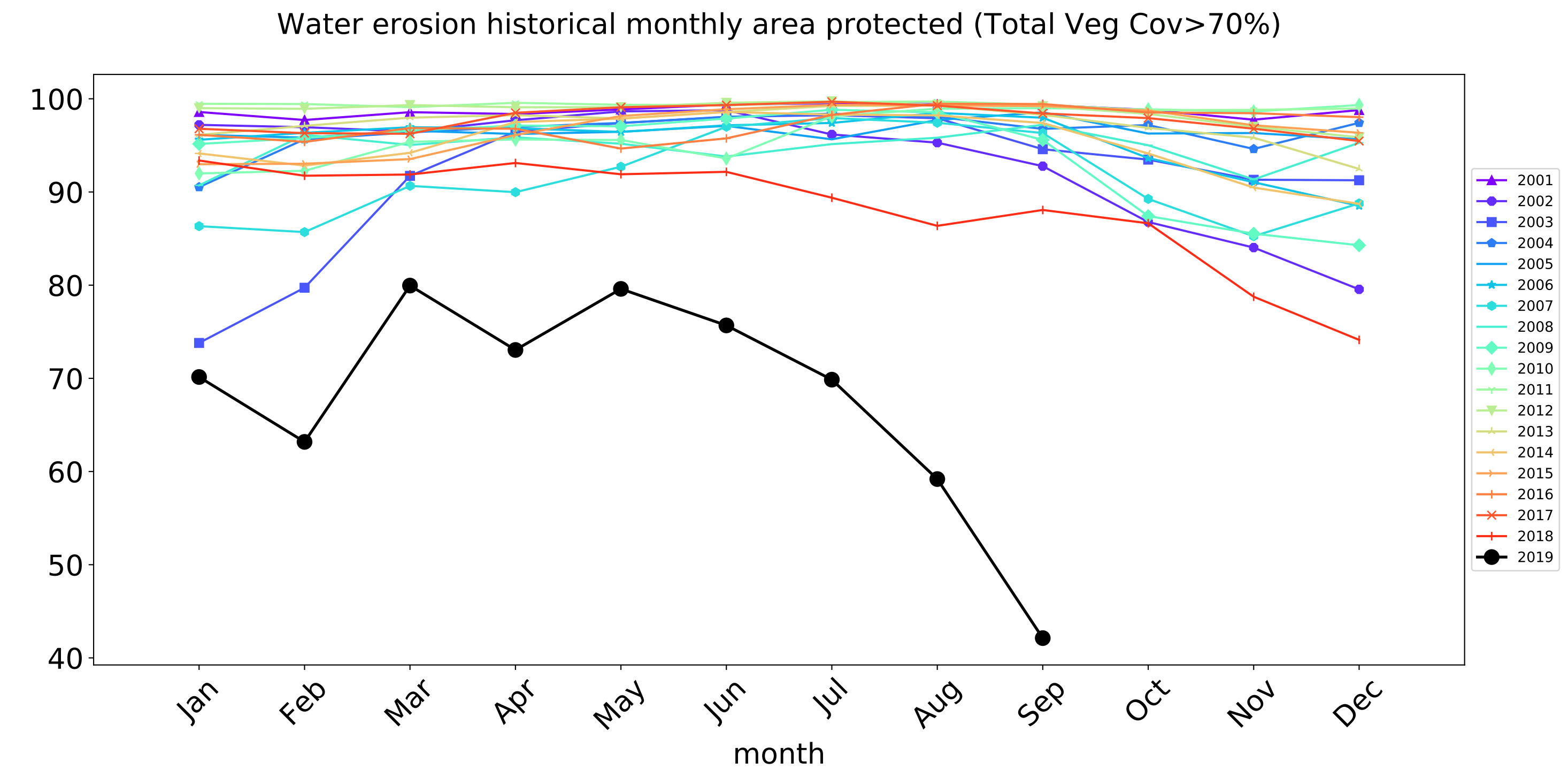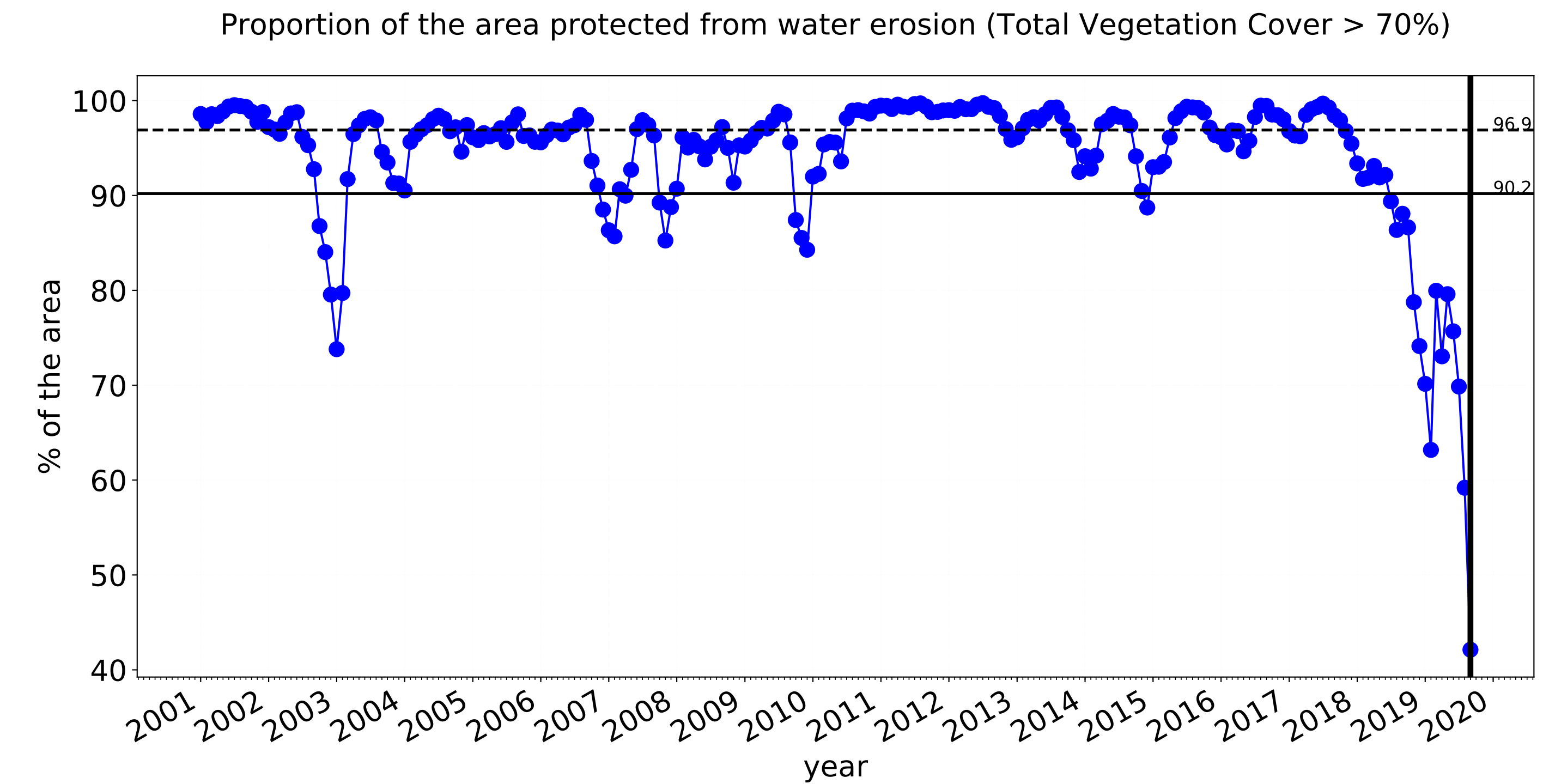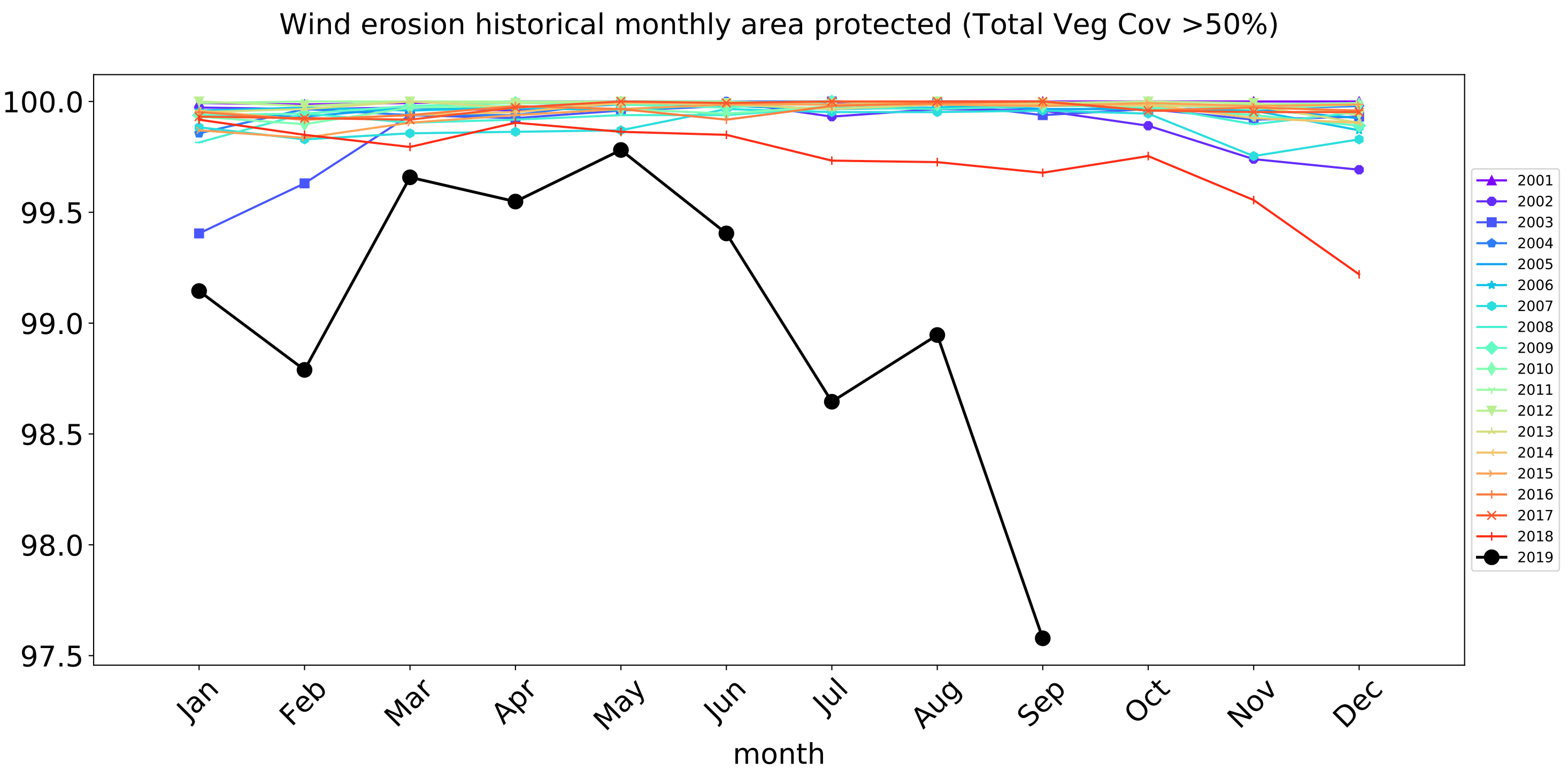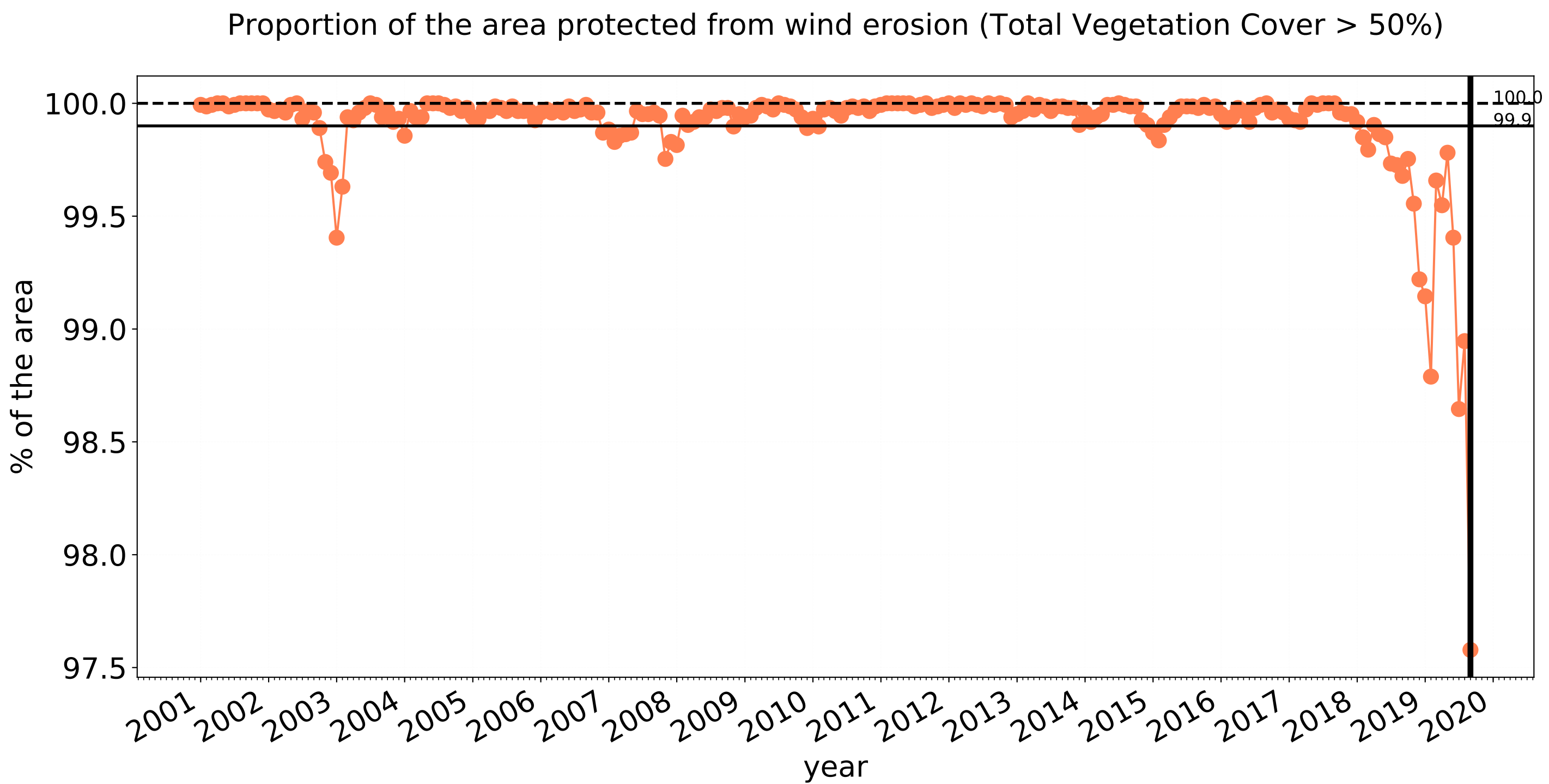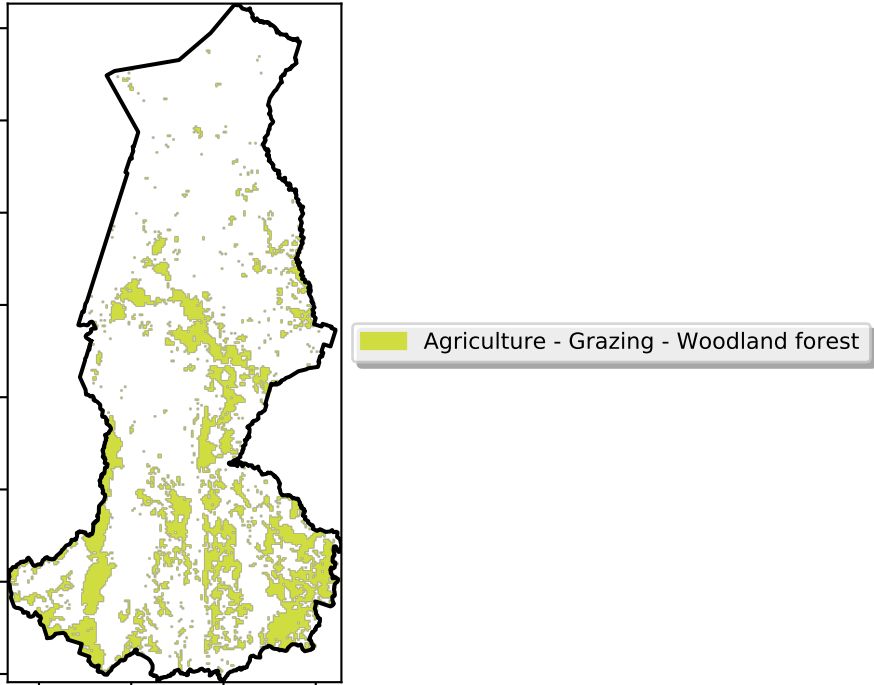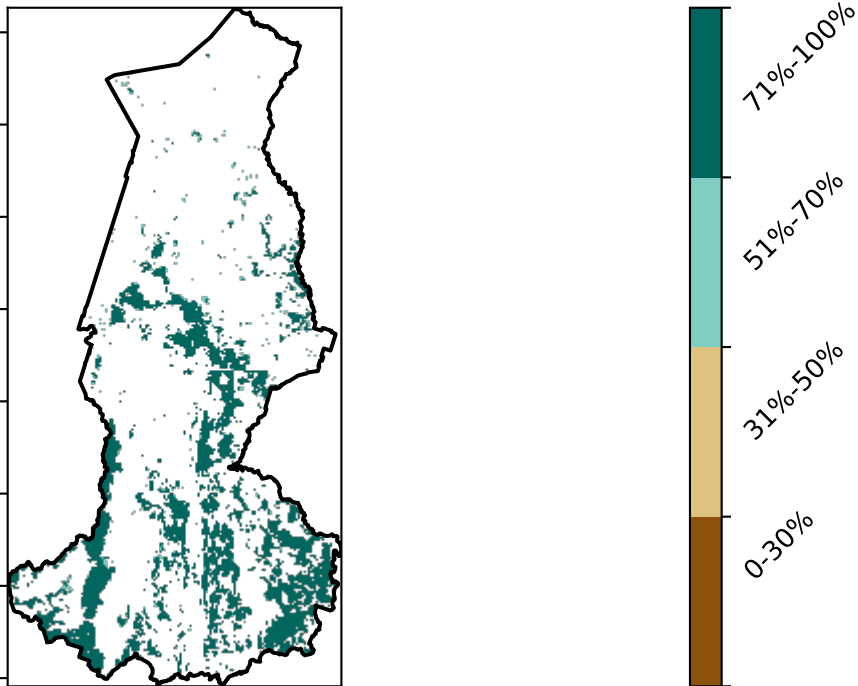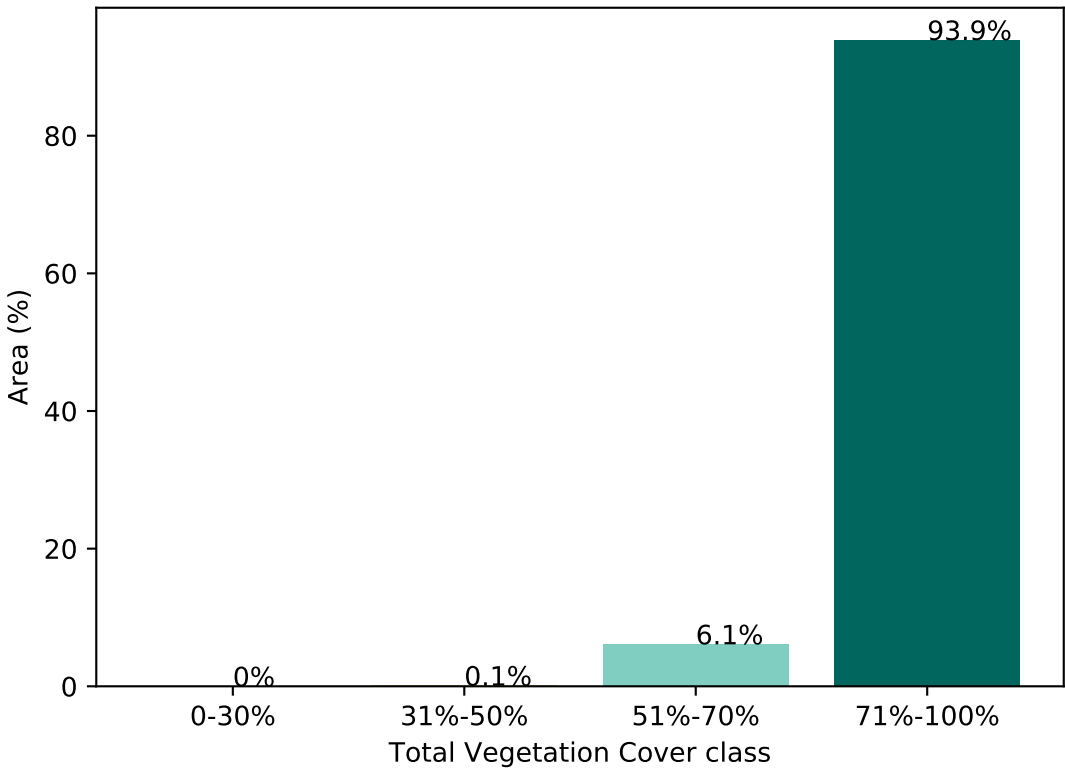
Grazing non forest timeseries

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%)

13

Grazing Woodland forest

Land use and forest cover

Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.
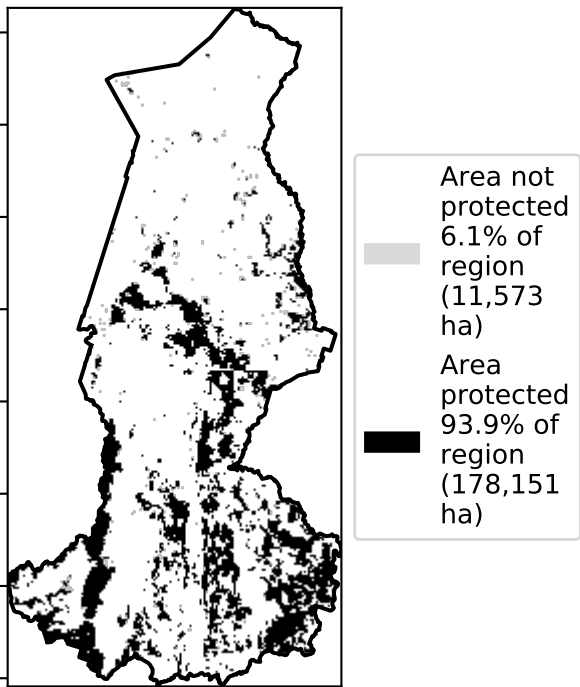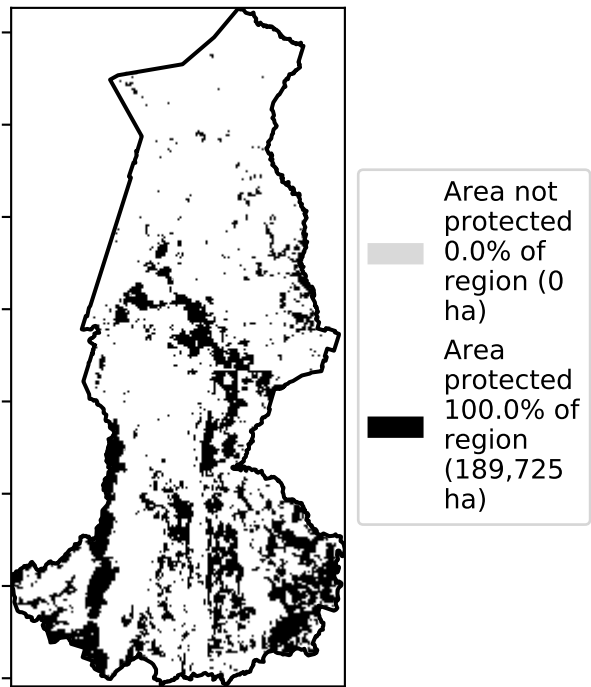

Agriculture - Grazing - Woodland forest

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area not protected 6.1% of region (11,573 ha)

Area protected 93.9% of region (178,151 ha)

% Area protected from wind erosion (>50%)

Area not protected 0.0% of region (0 ha)
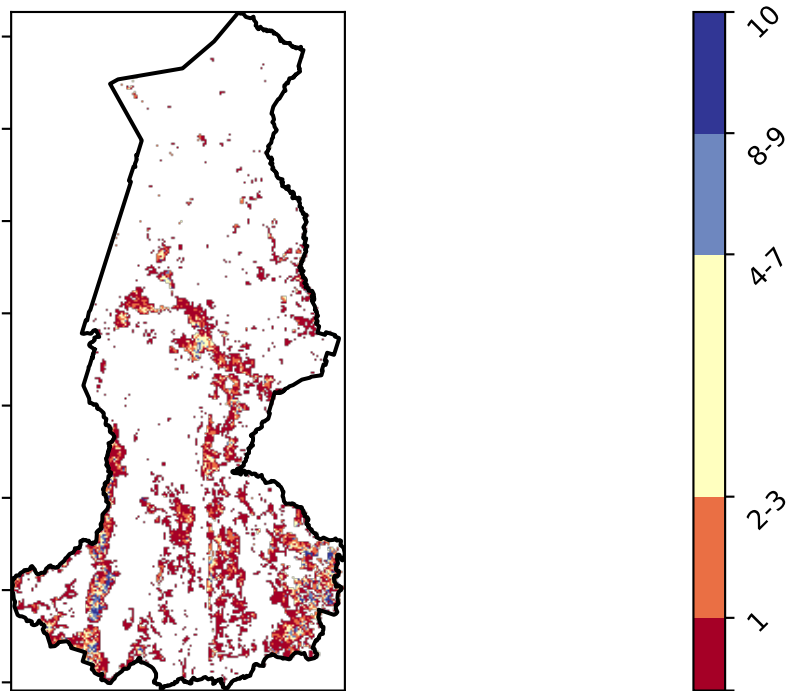
Area protected 100.0% of region (189,725 ha)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.
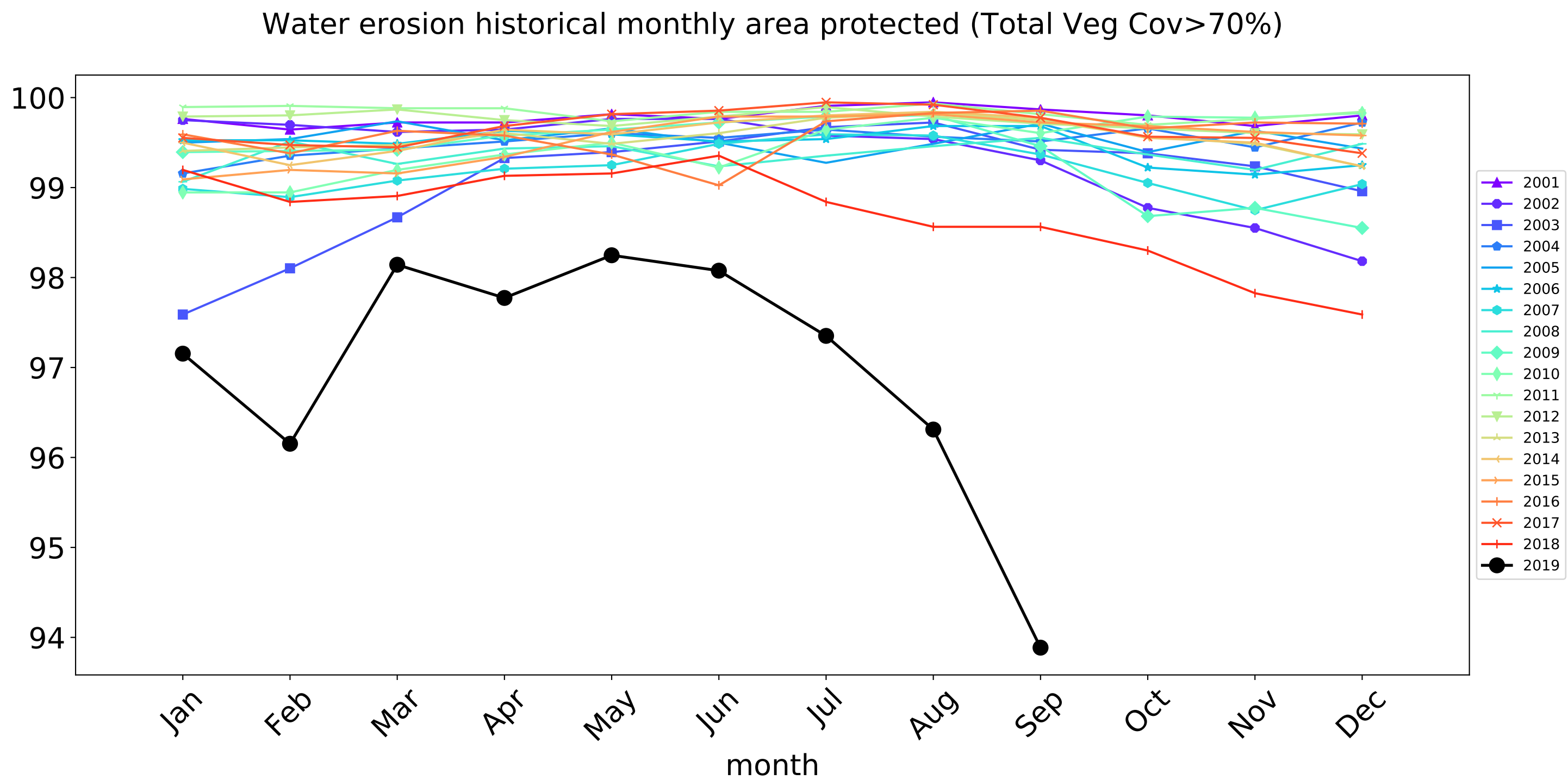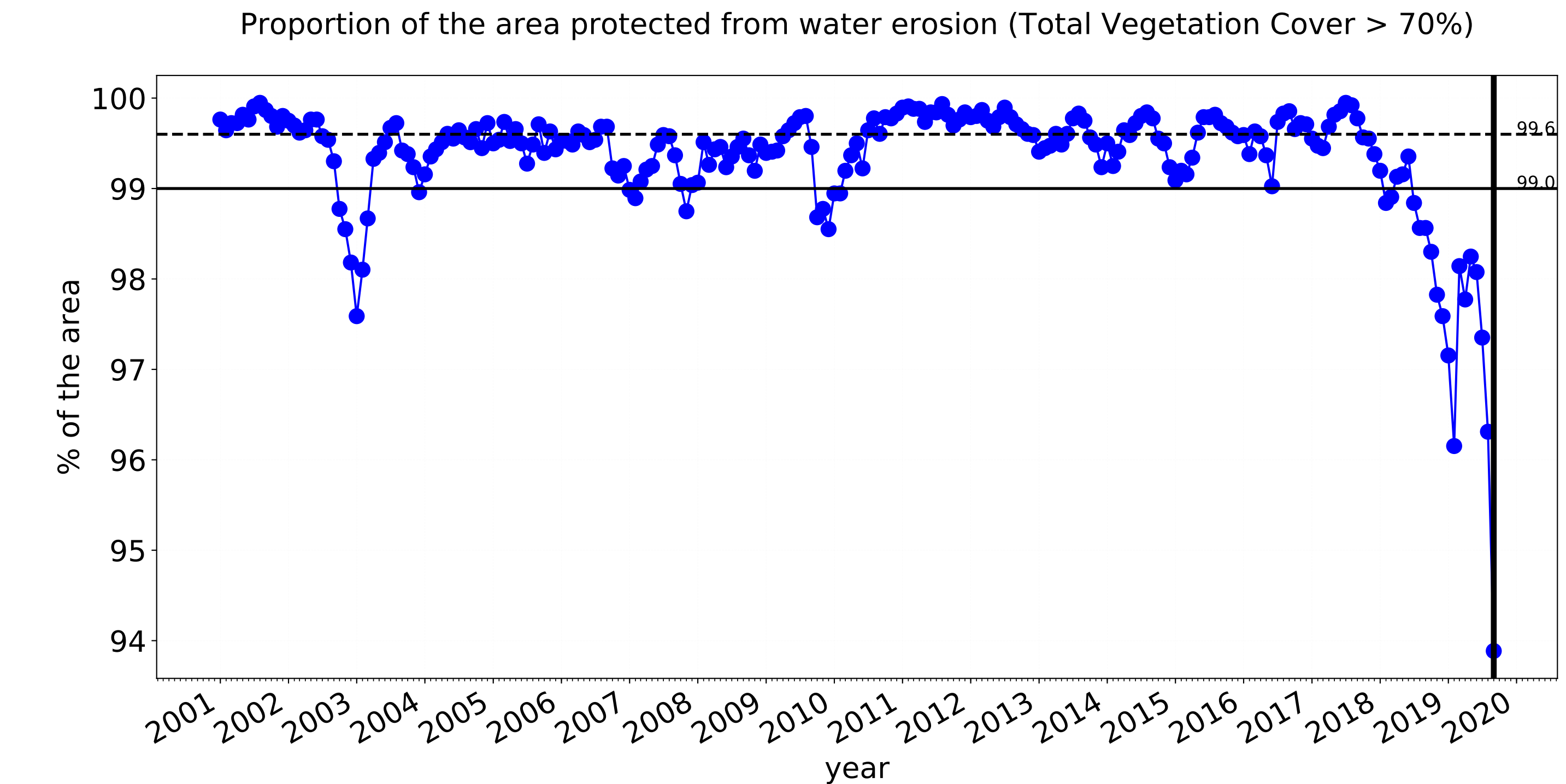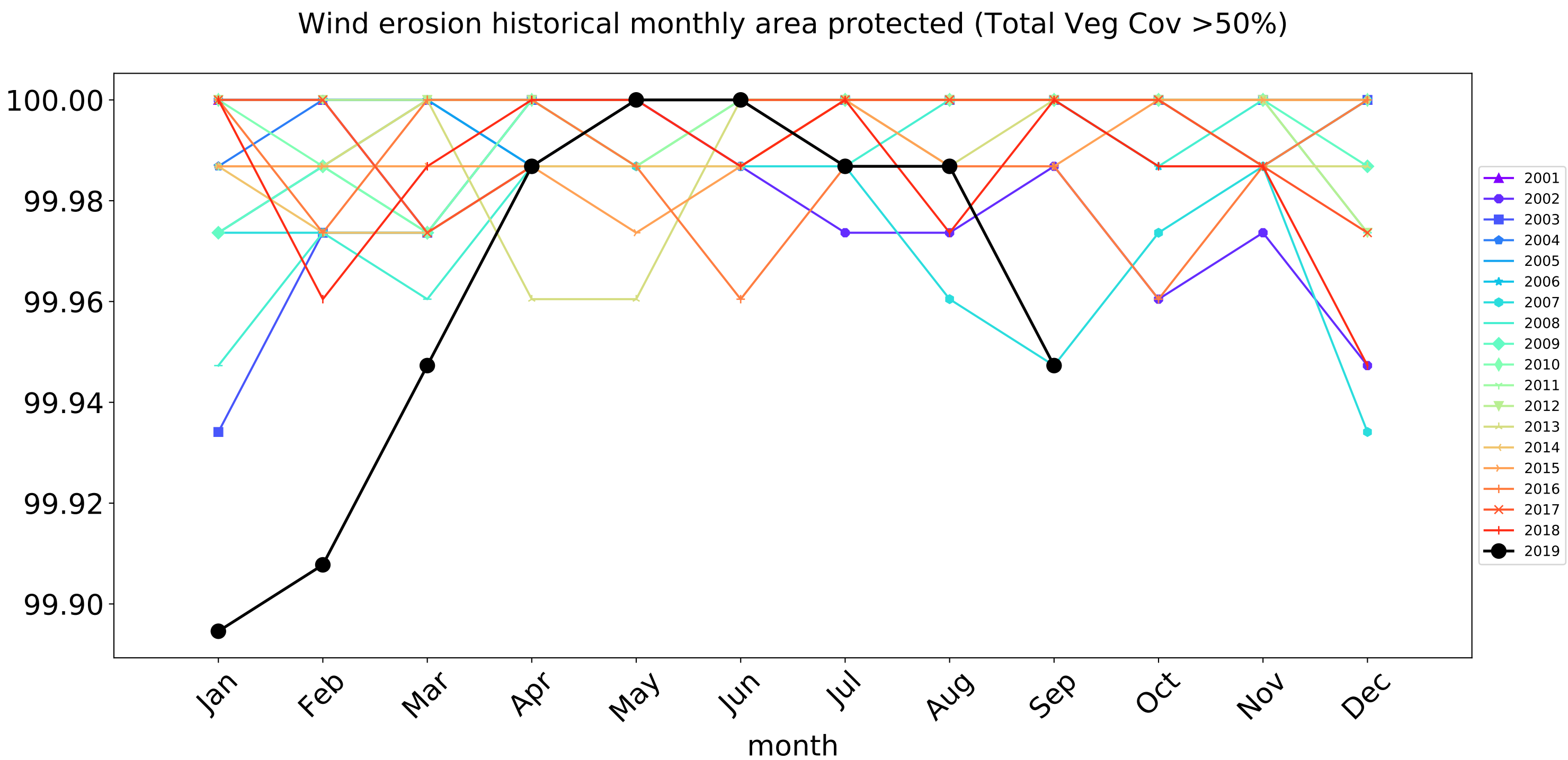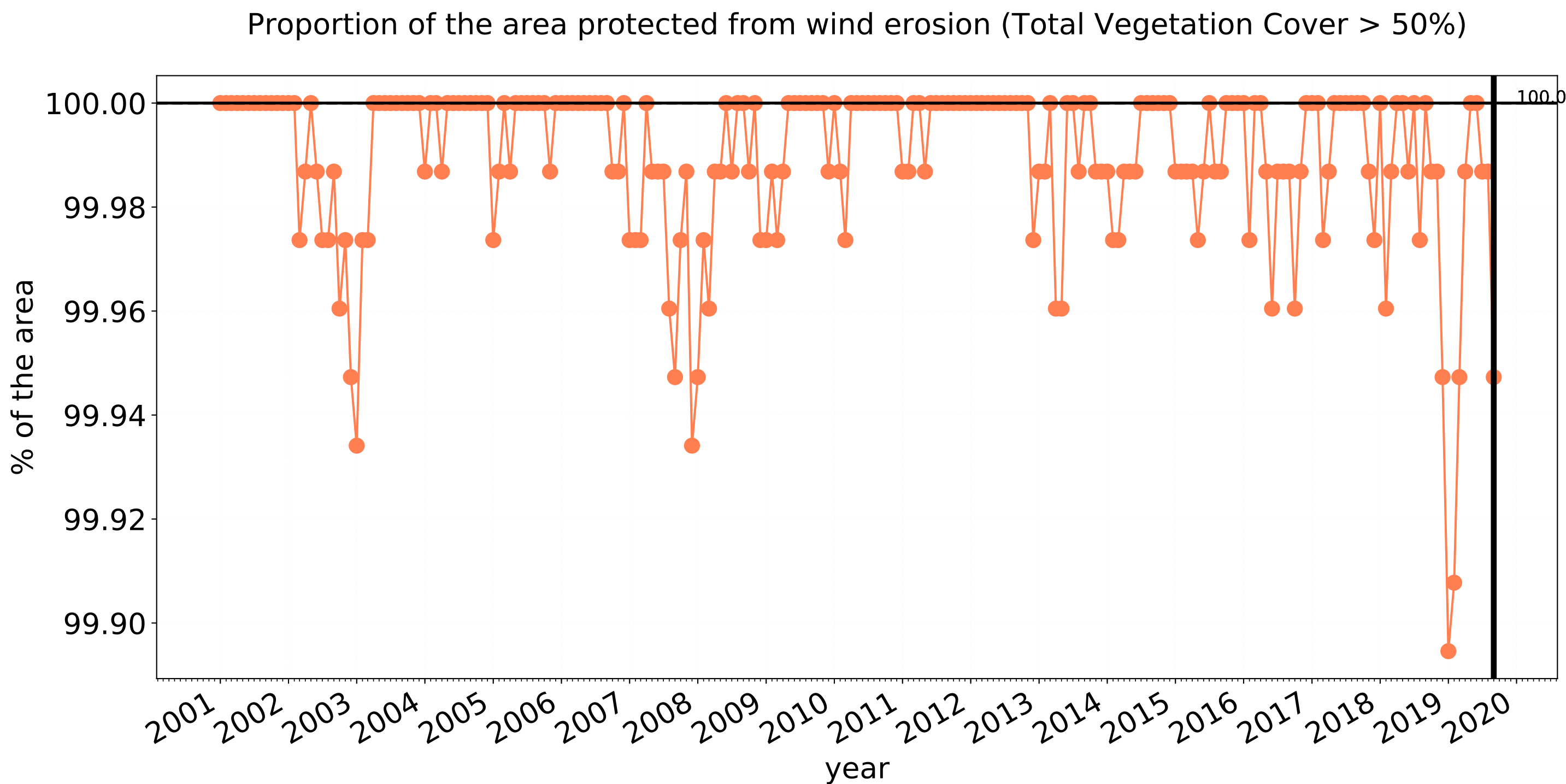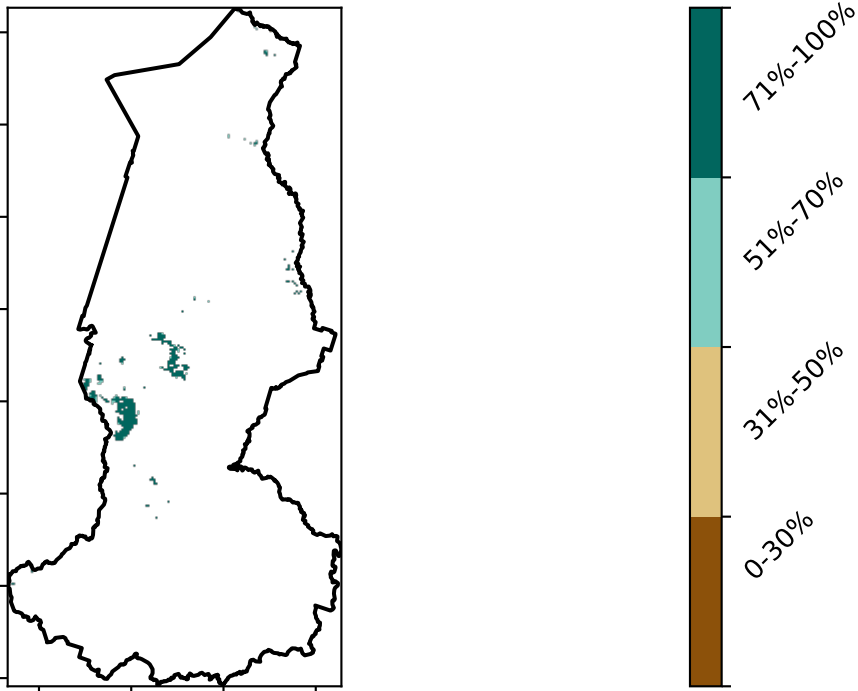
Grazing Woodland forest timeseries

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)

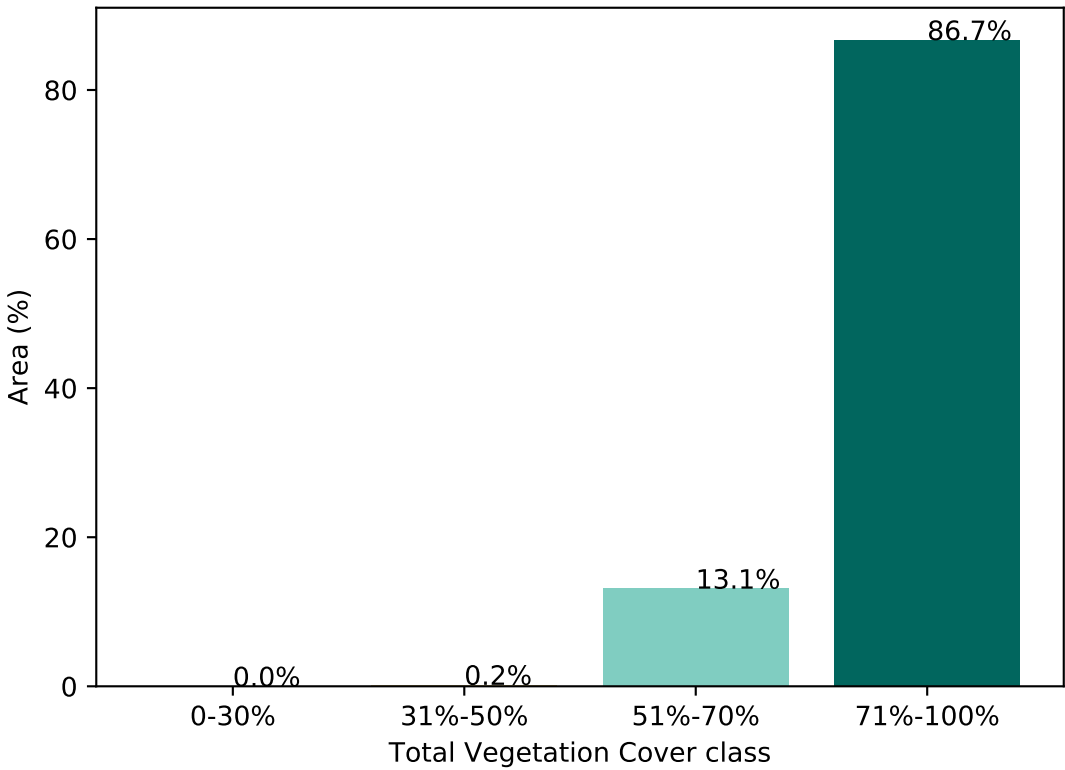## Land use and forest cover

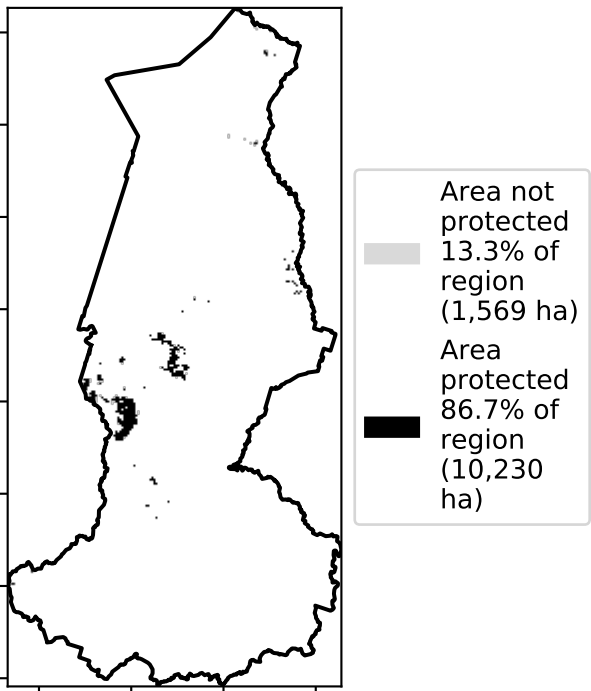Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.
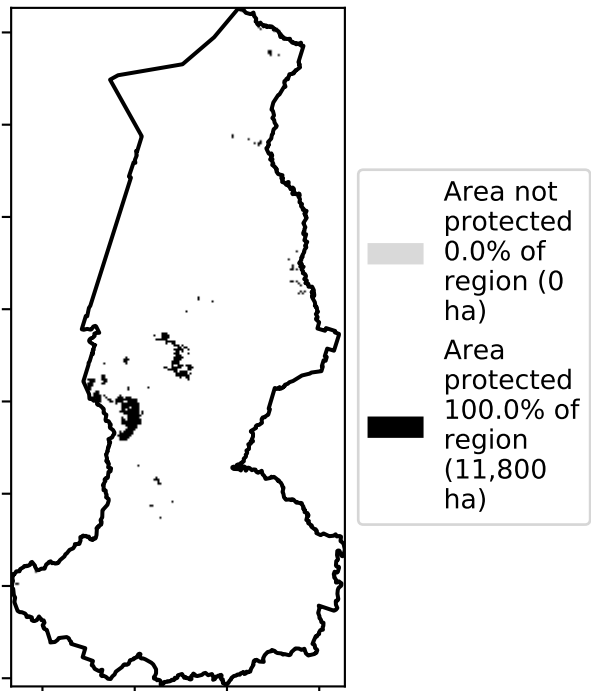
Agriculture - Grazing - Non-oodland forest

Total Vegetation Cover [%]

71%-100%

51%-70%

31%-50%

0-30%

Proportion of vegetation cover class in area

86.7%

13.1%

0.0%   0.2%

Area (%)

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

Total Vegetation Cover class

% Area protected from water erosion (>70%)

Area not protected 13.3% of region (1,569 ha)

Area protected 86.7% of region (10,230 ha)

% Area protected from wind erosion (>50%)

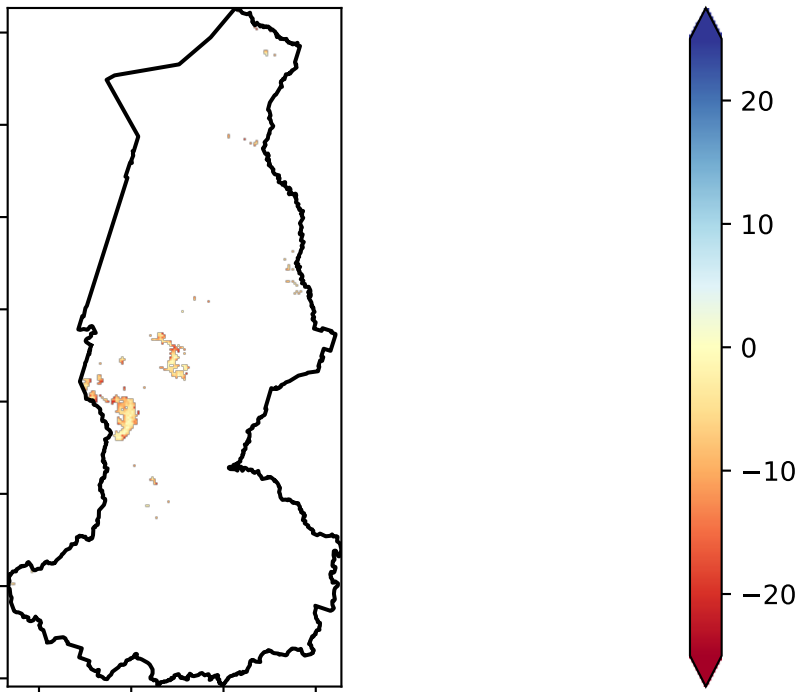Area not protected 0.0% of region (0 ha)
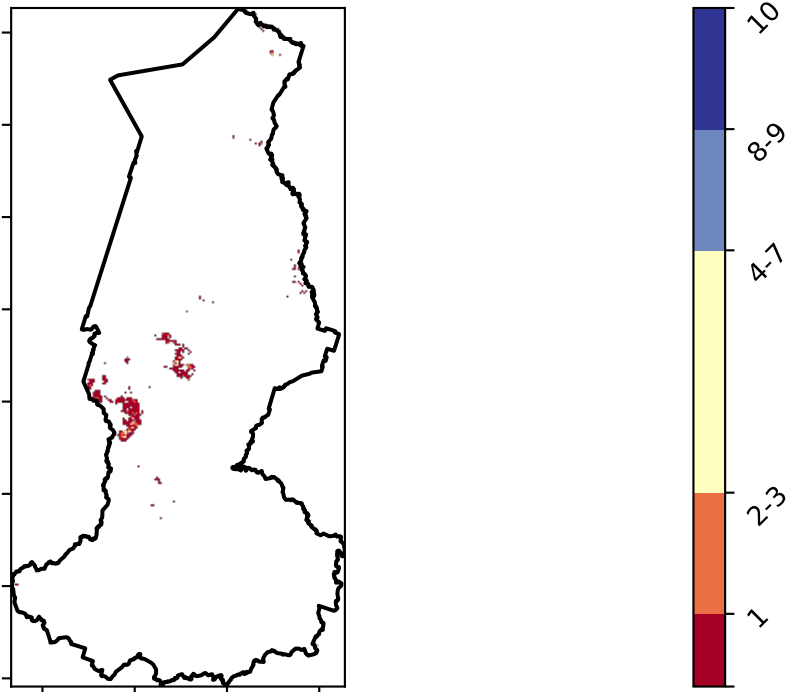
Area protected 100.0% of region (11,800 ha)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.

10

8-9

4-7

2-3
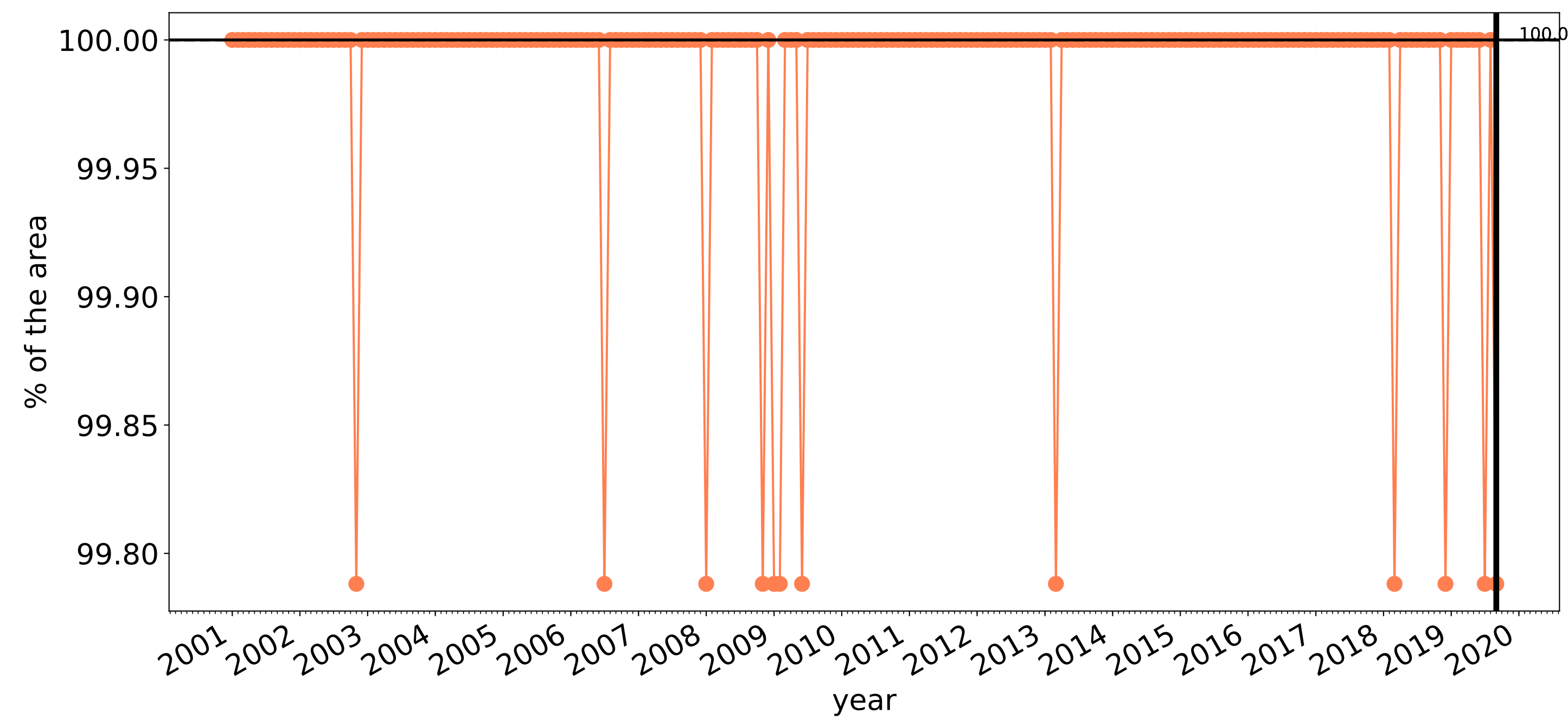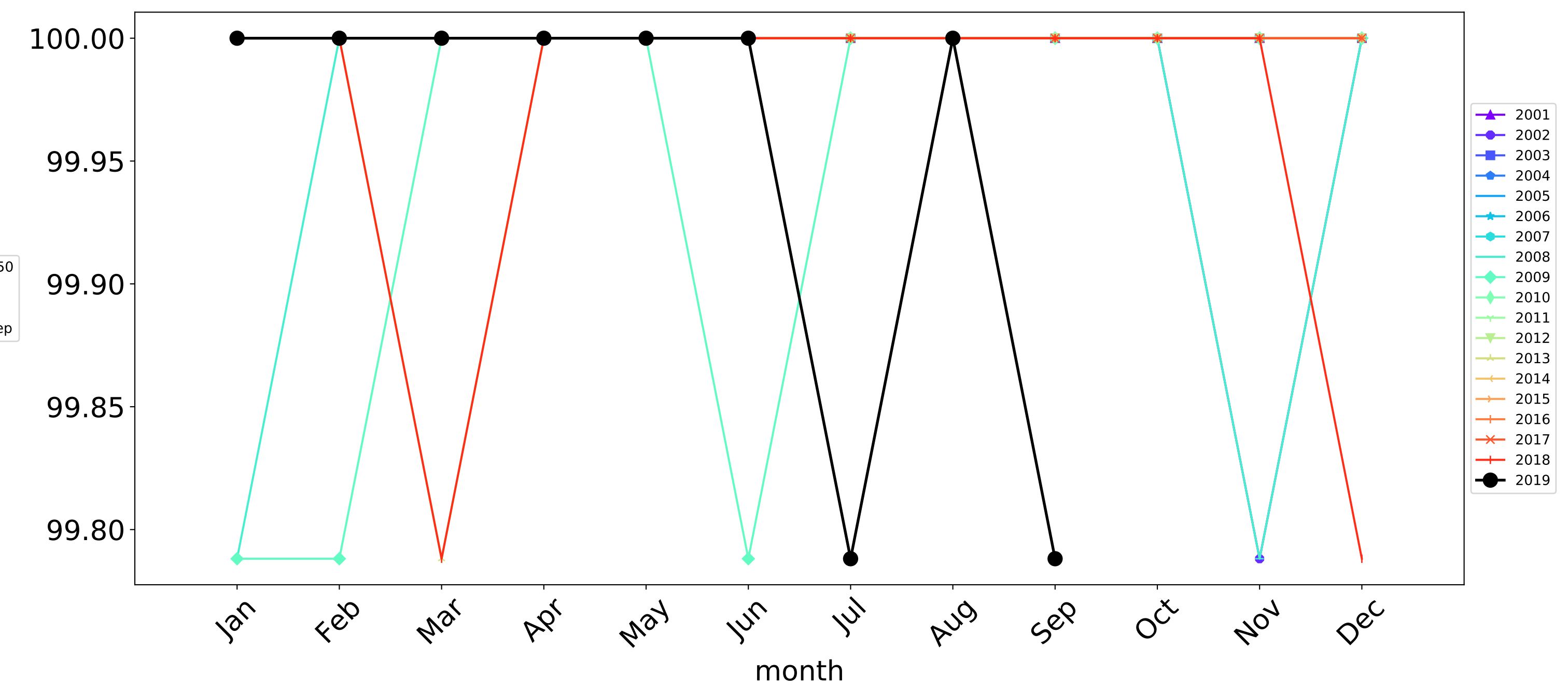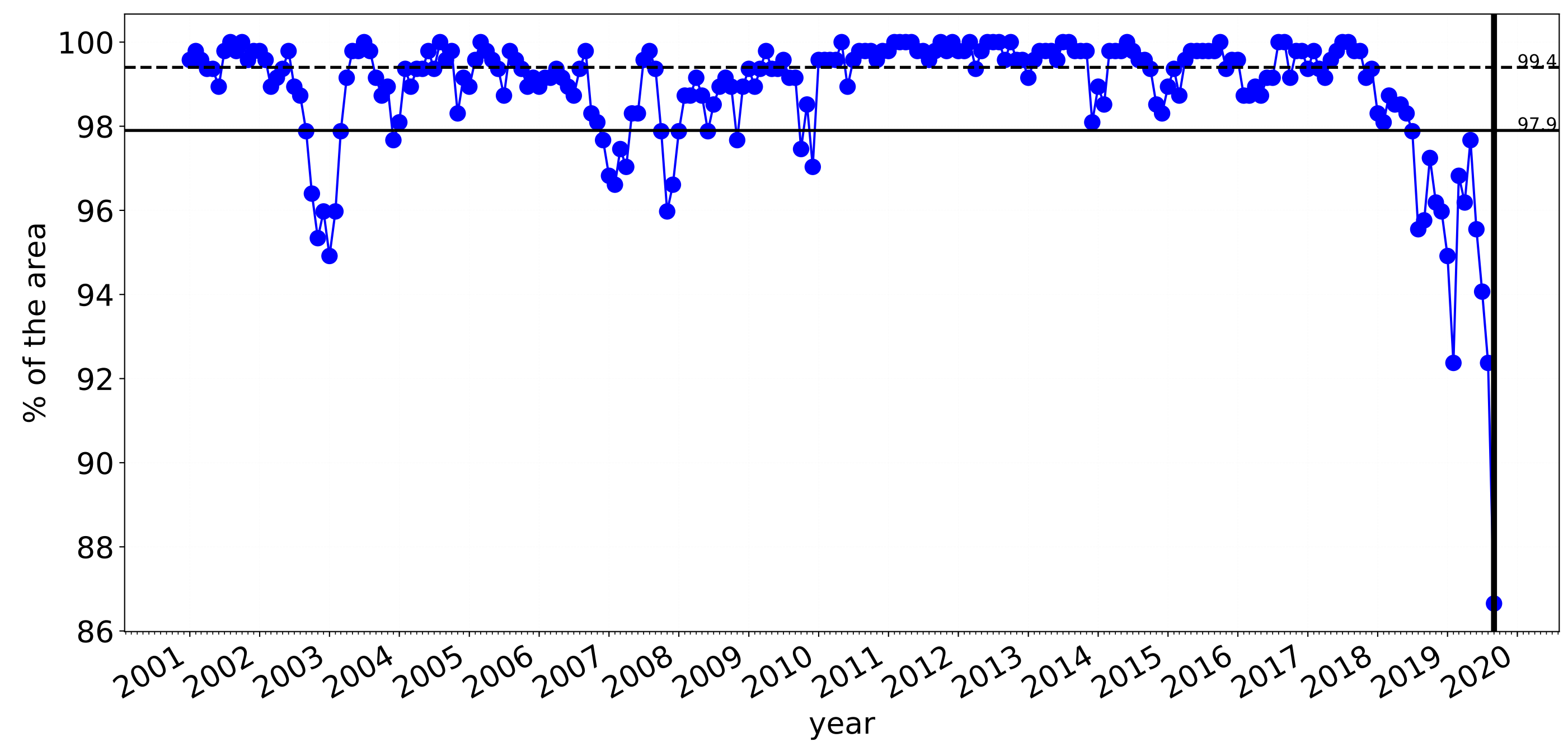
1

Grazing – Forest (non woodland) timeseries

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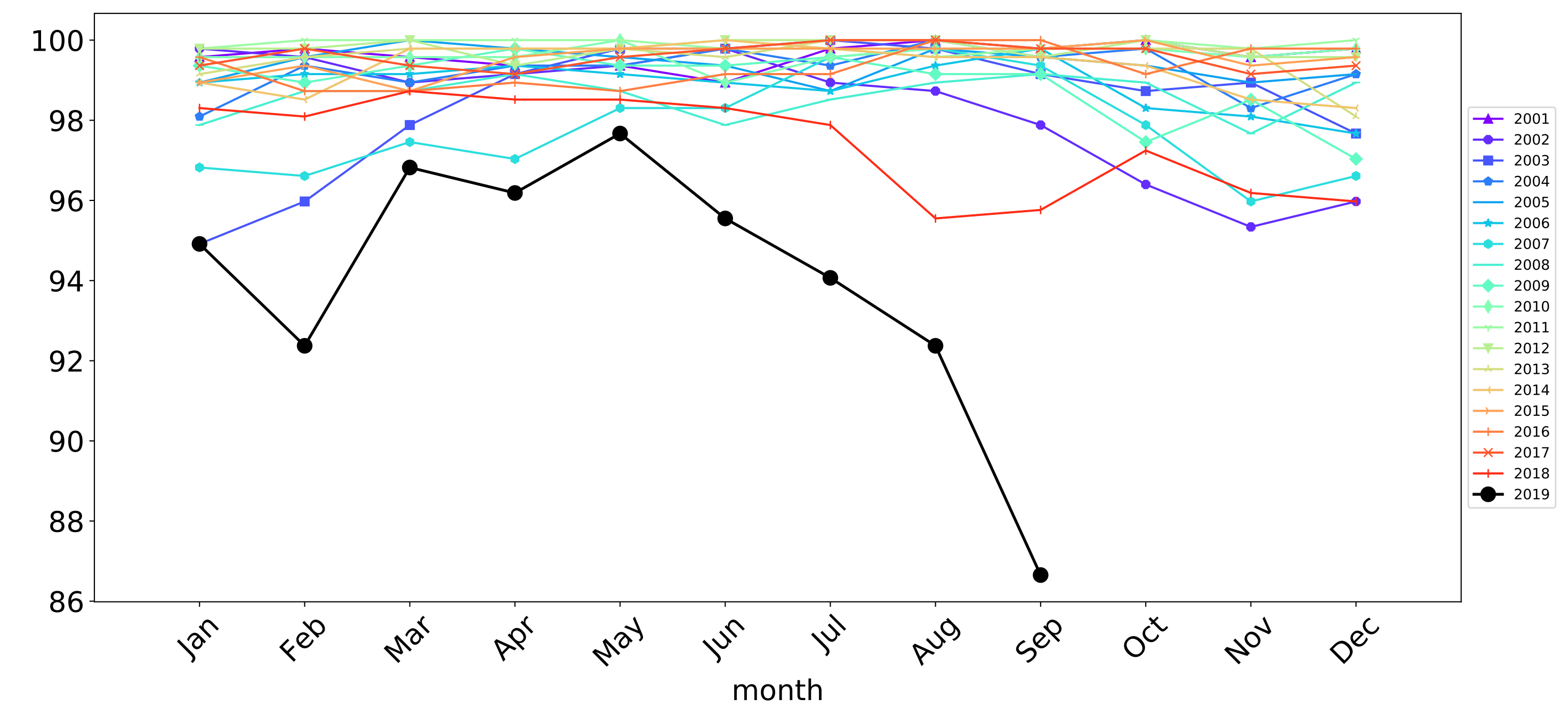

Wind erosion historical monthly area protected (Total Veg Cov >50%)

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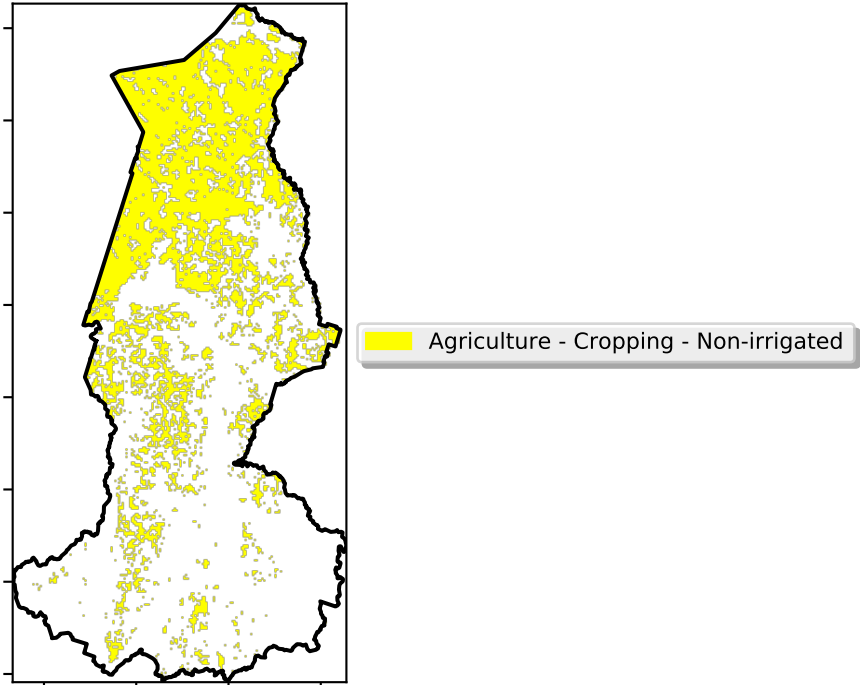

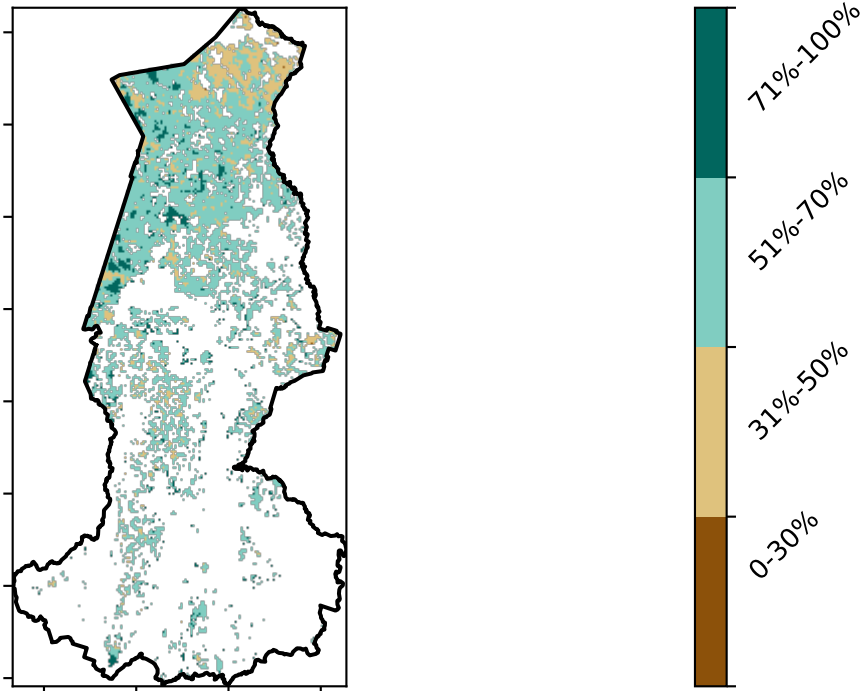### Water erosion historical monthly area protected (Total Veg Cov>70%)

Cropping

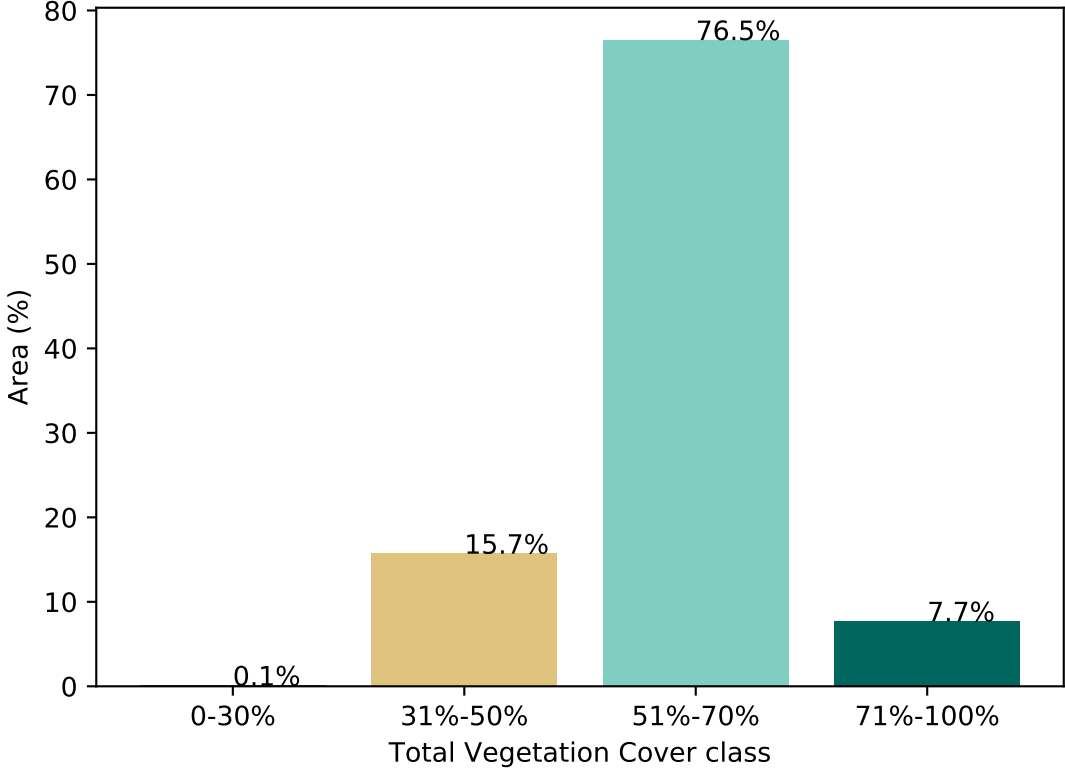## Land use and forest cover

Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.
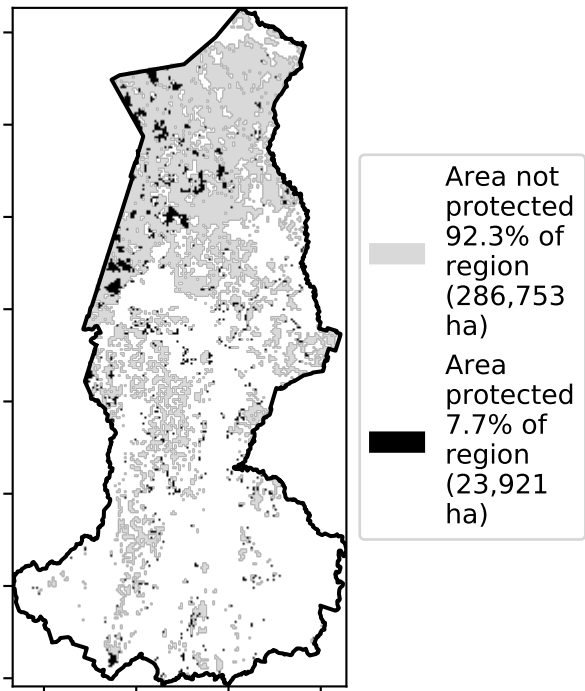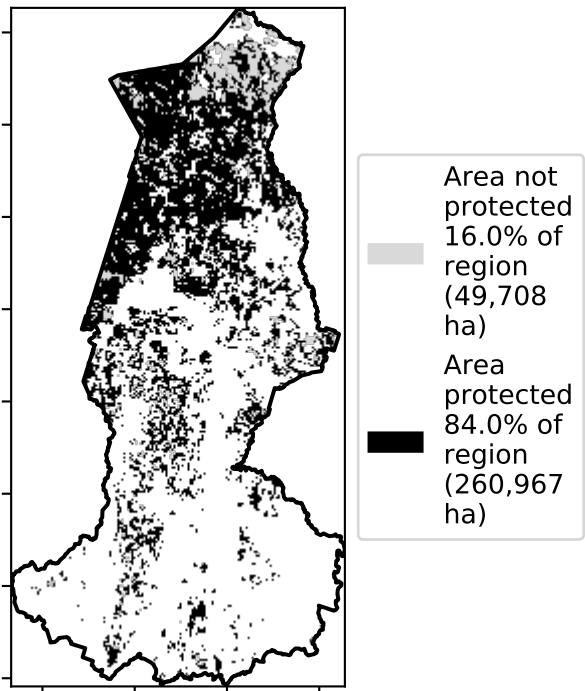
Agriculture - Cropping - Non-irrigated

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area not protected 92.3% of region (286,753 ha)

Area protected 7.7% of region (23,921 ha)

% Area protected from wind erosion (>50%)
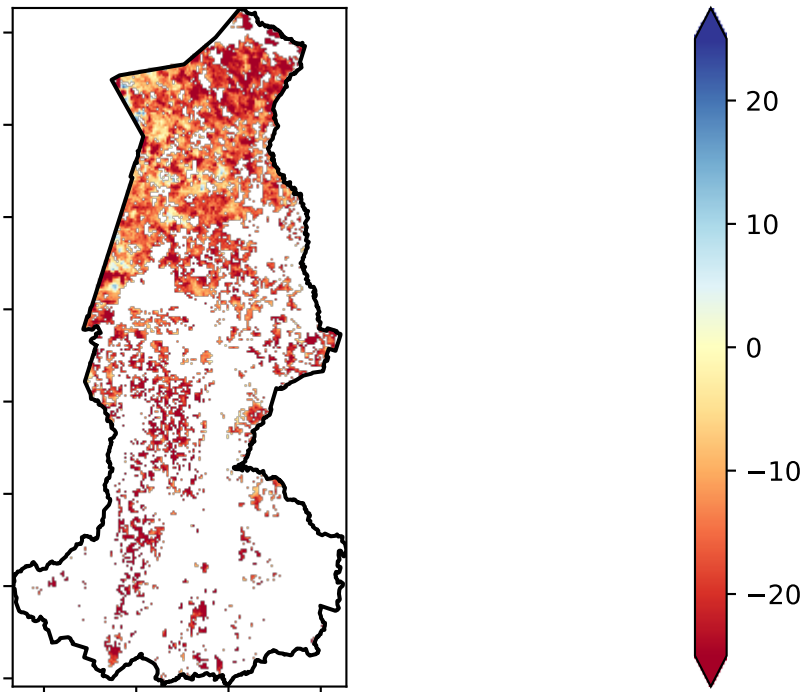
Area not protected 16.0% of region (49,708 ha)
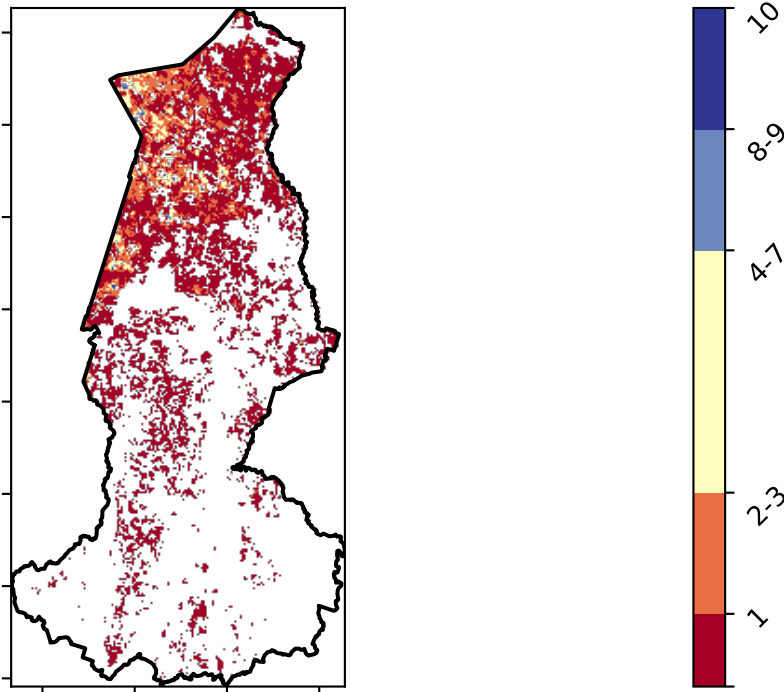
Area protected 84.0% of region (260,967 ha)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.
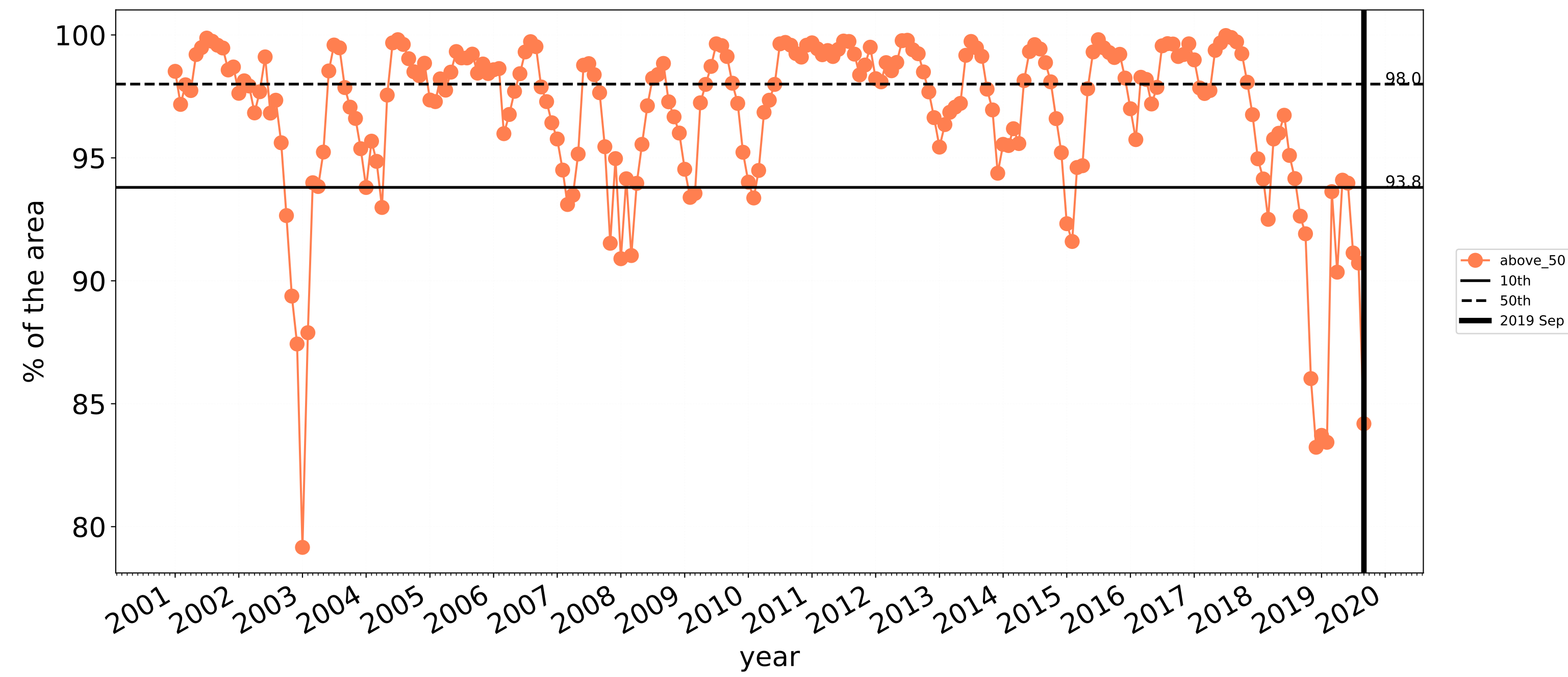
CSIRO TERN Australian Government National Landcare Programme NSW GOVERNMENT Planning, Industry & Environment
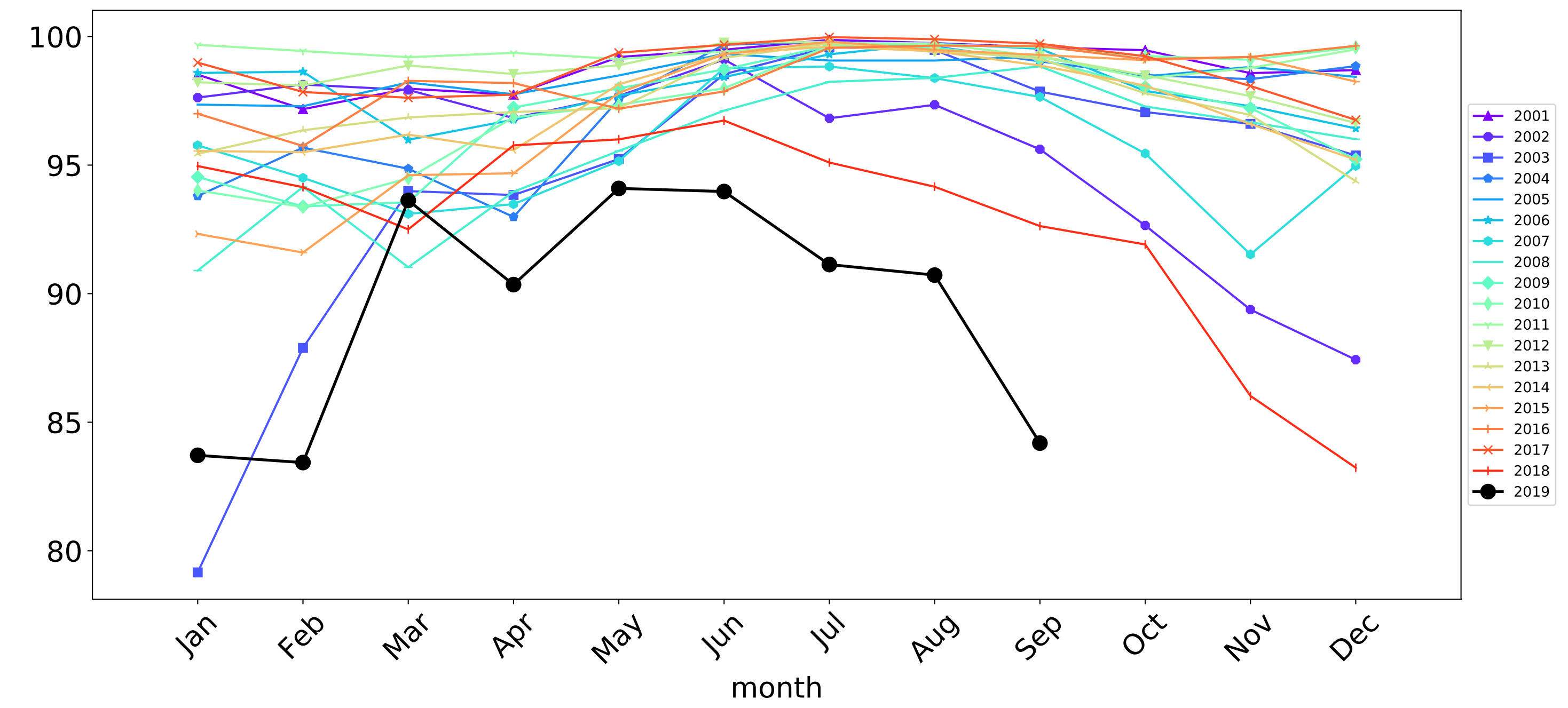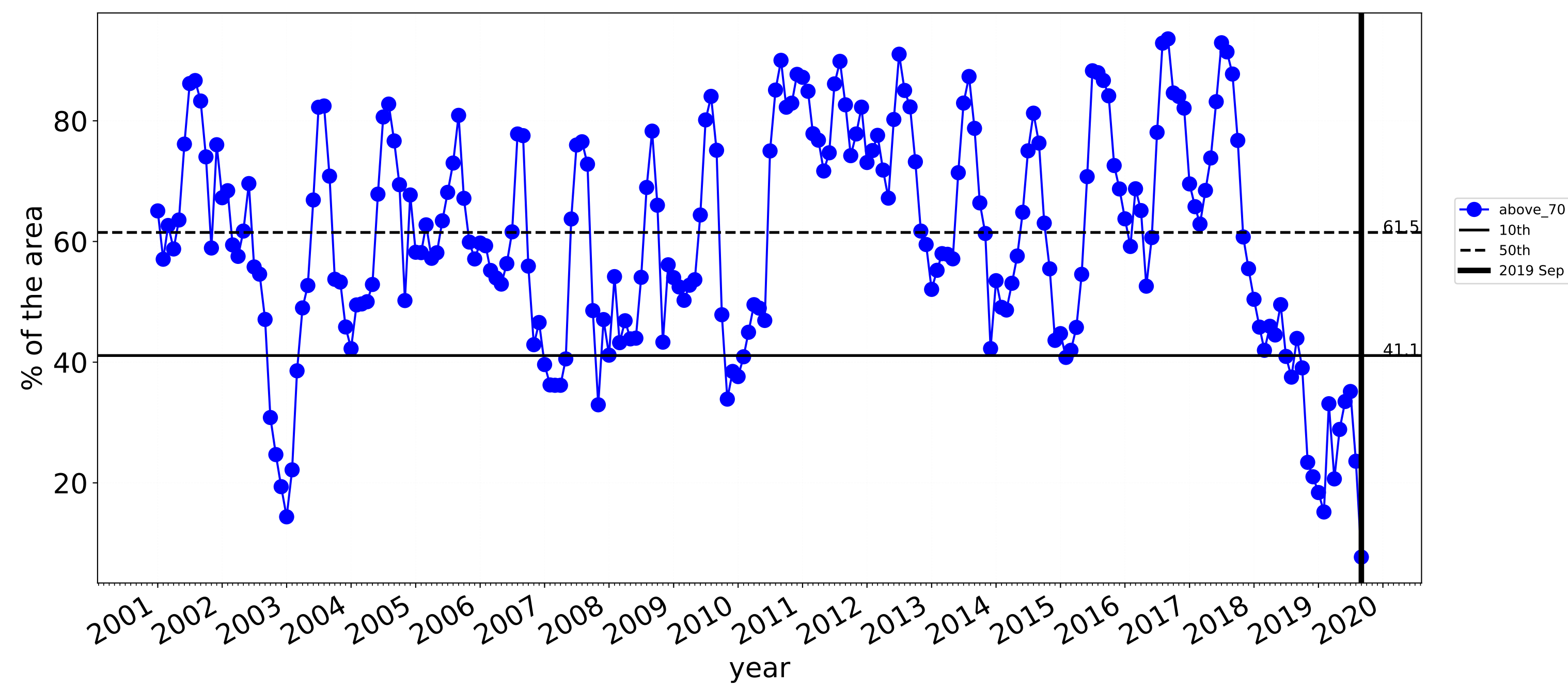
Cropping timeseries

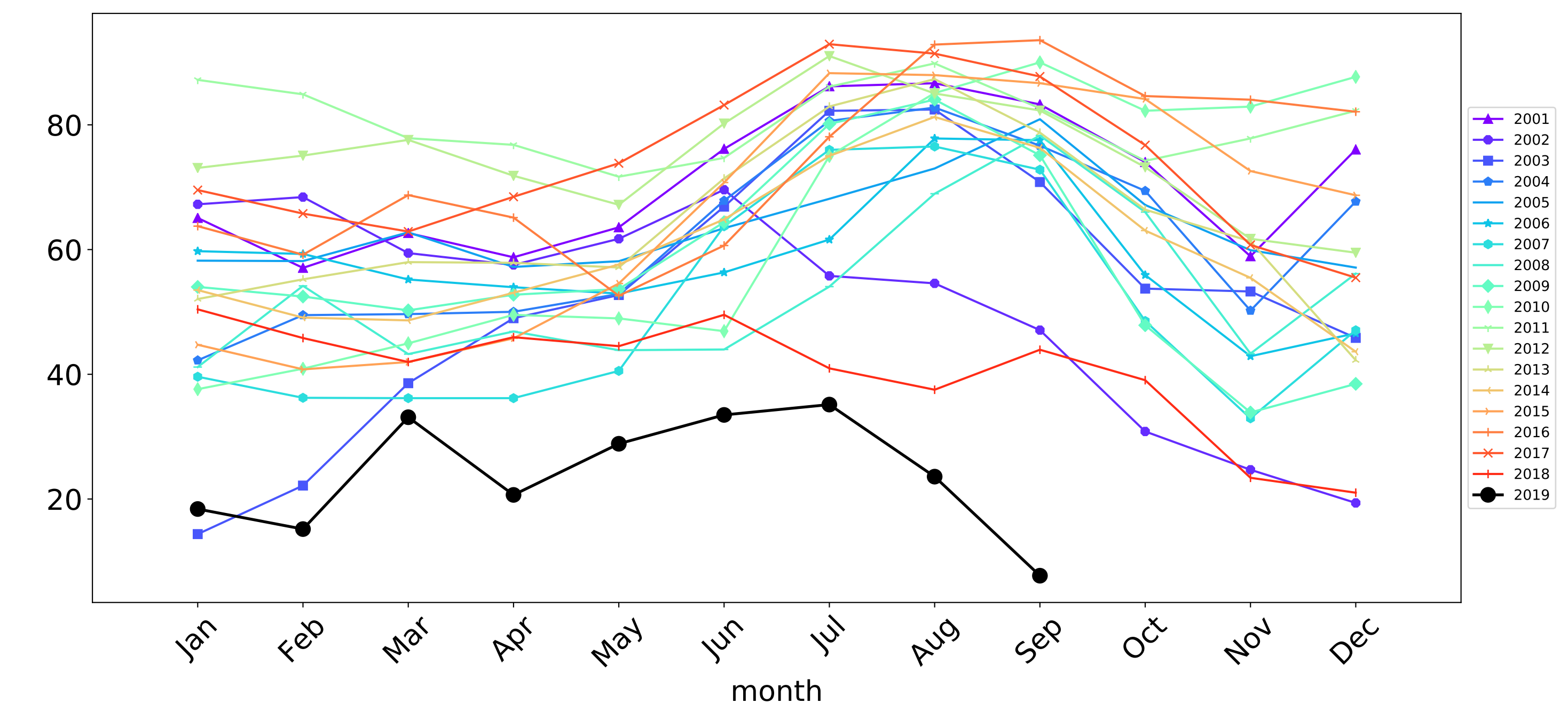Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

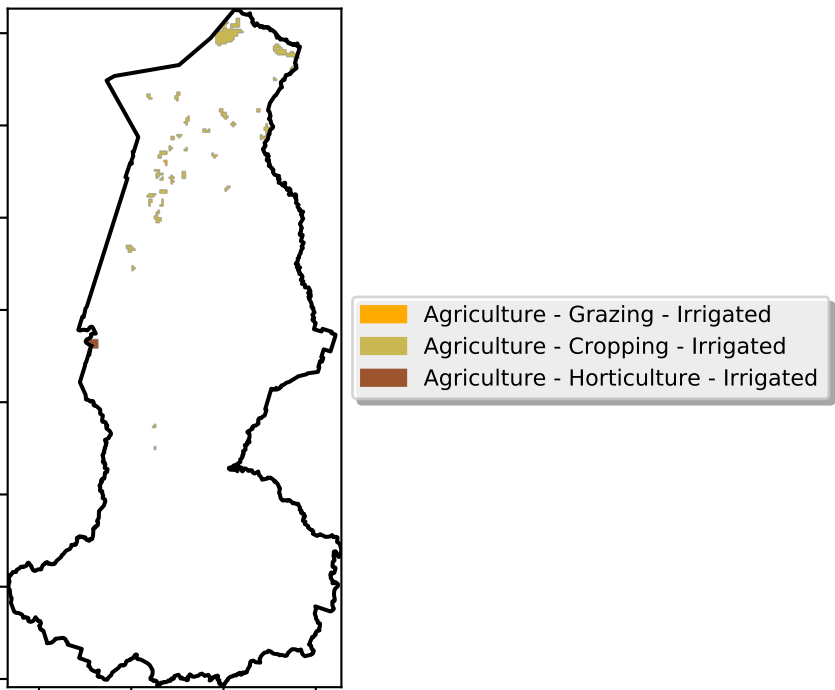Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

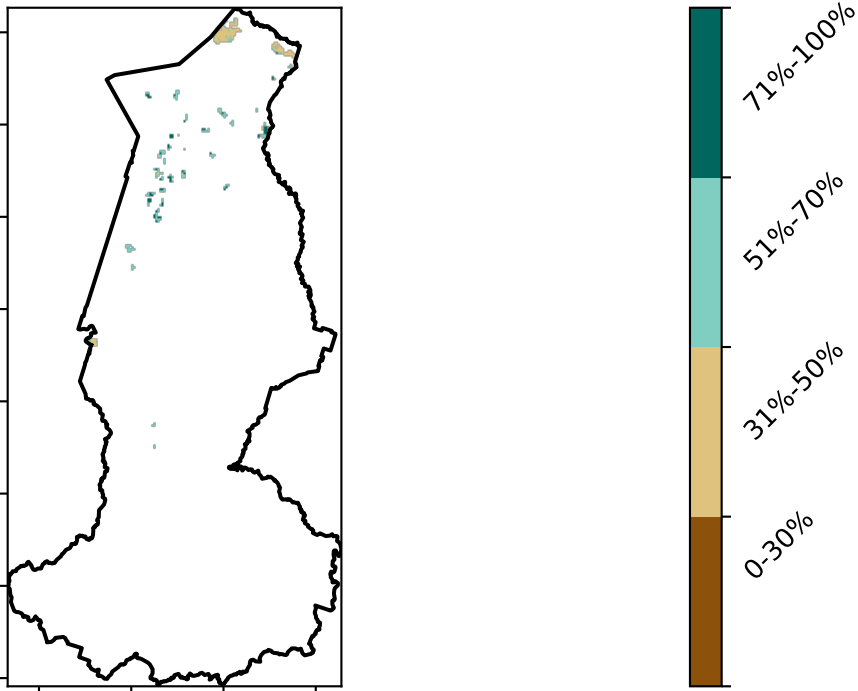Water erosion historical monthly area protected (Total Veg Cov>70%)
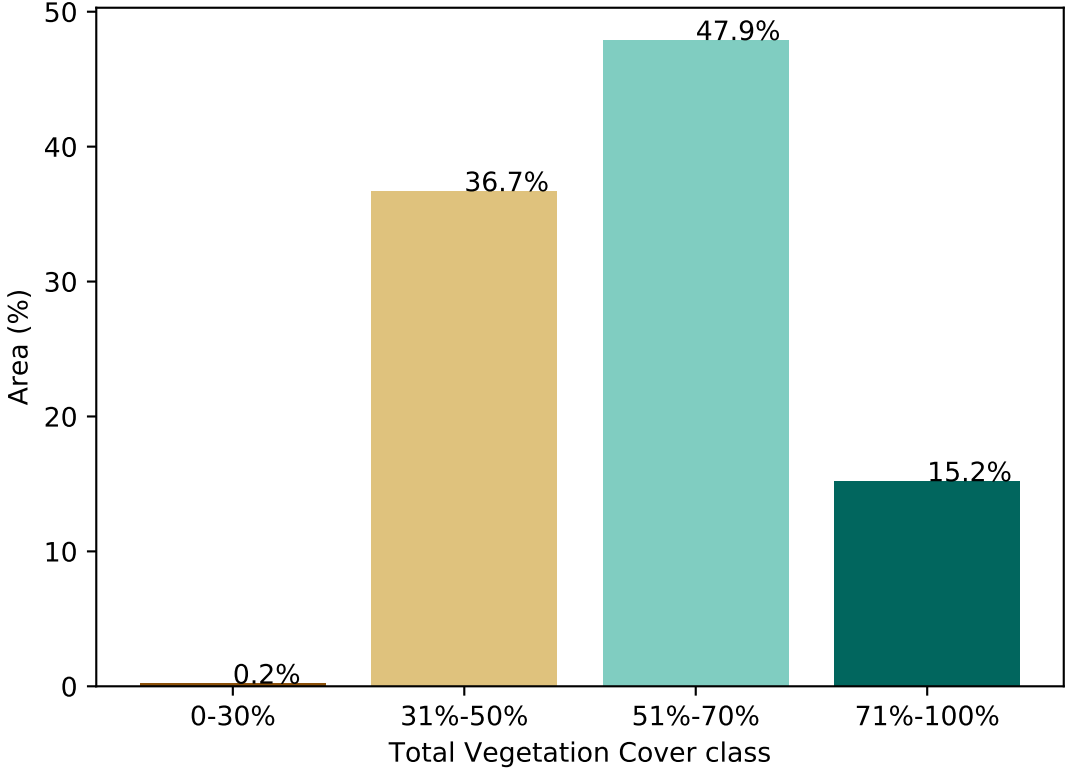
Irrigation

Land use and forest cover

Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.
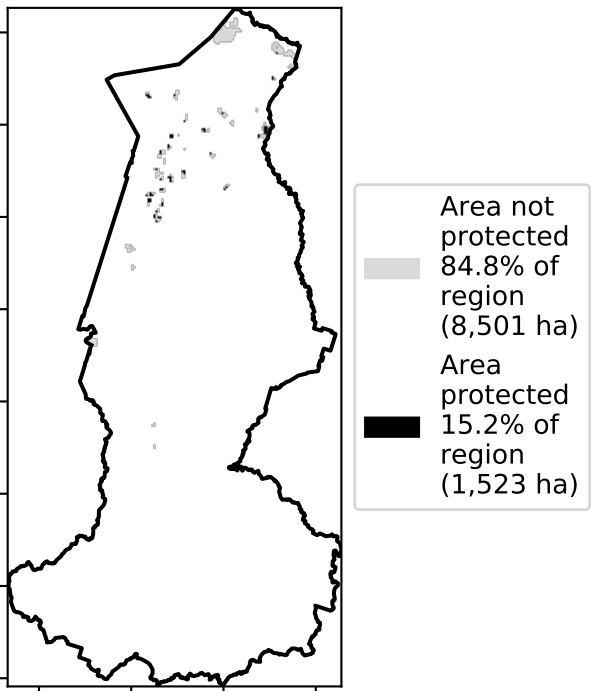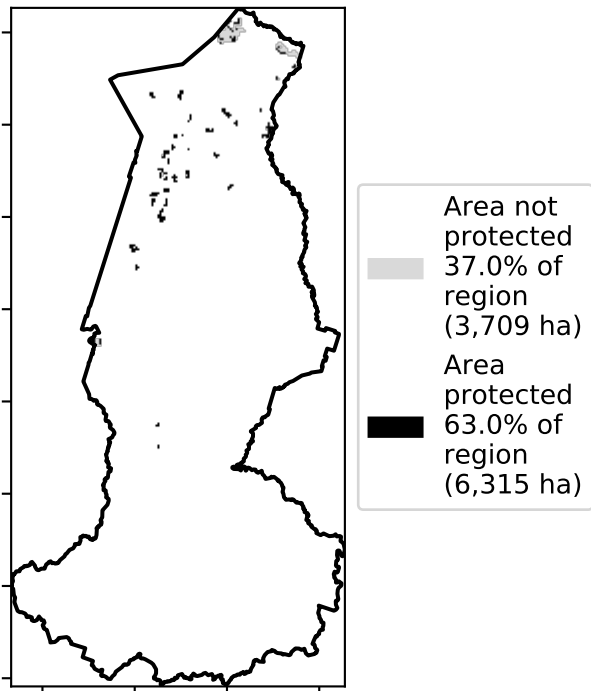

Agriculture - Grazing - Irrigated
Agriculture - Cropping - Irrigated
Agriculture - Horticulture - Irrigated

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area not protected 84.8% of region (8,501 ha)

Area protected 15.2% of region (1,523 ha)

% Area protected from wind erosion (>50%)

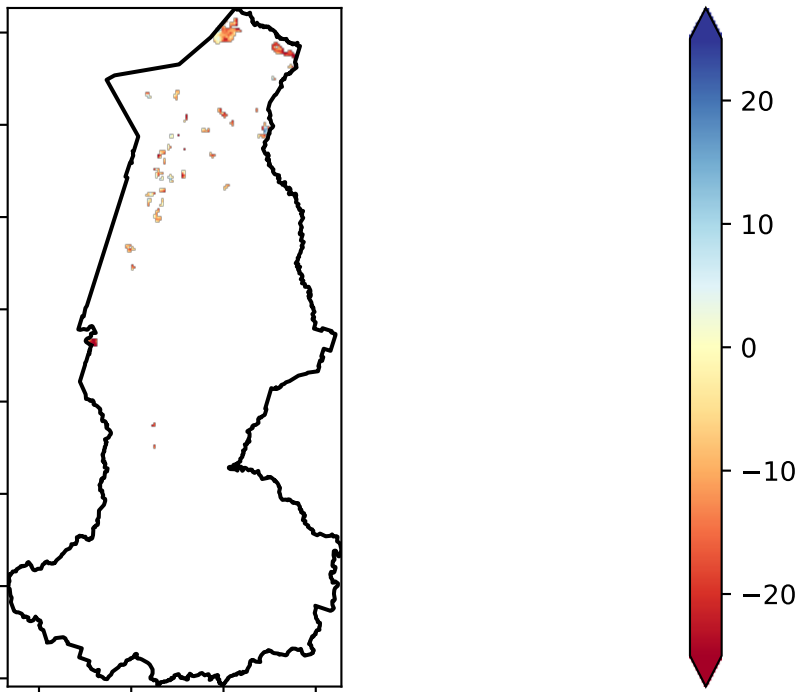Area not protected 37.0% of region (3,709 ha)
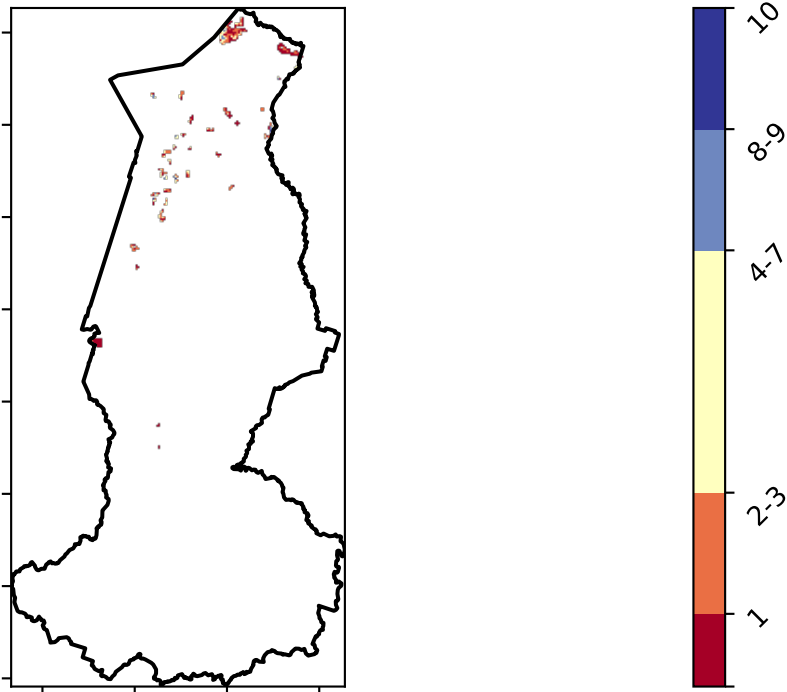
Area protected 63.0% of region (6,315 ha)

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage 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.
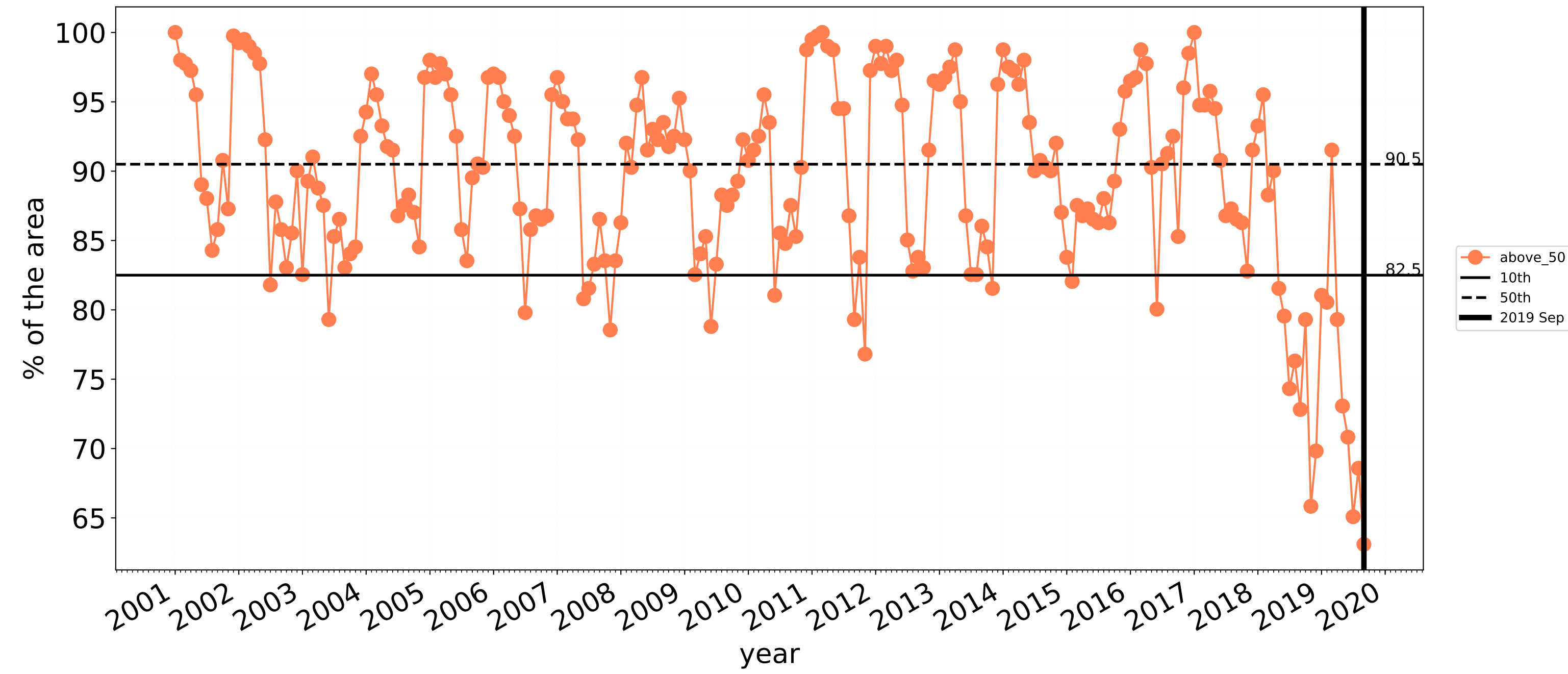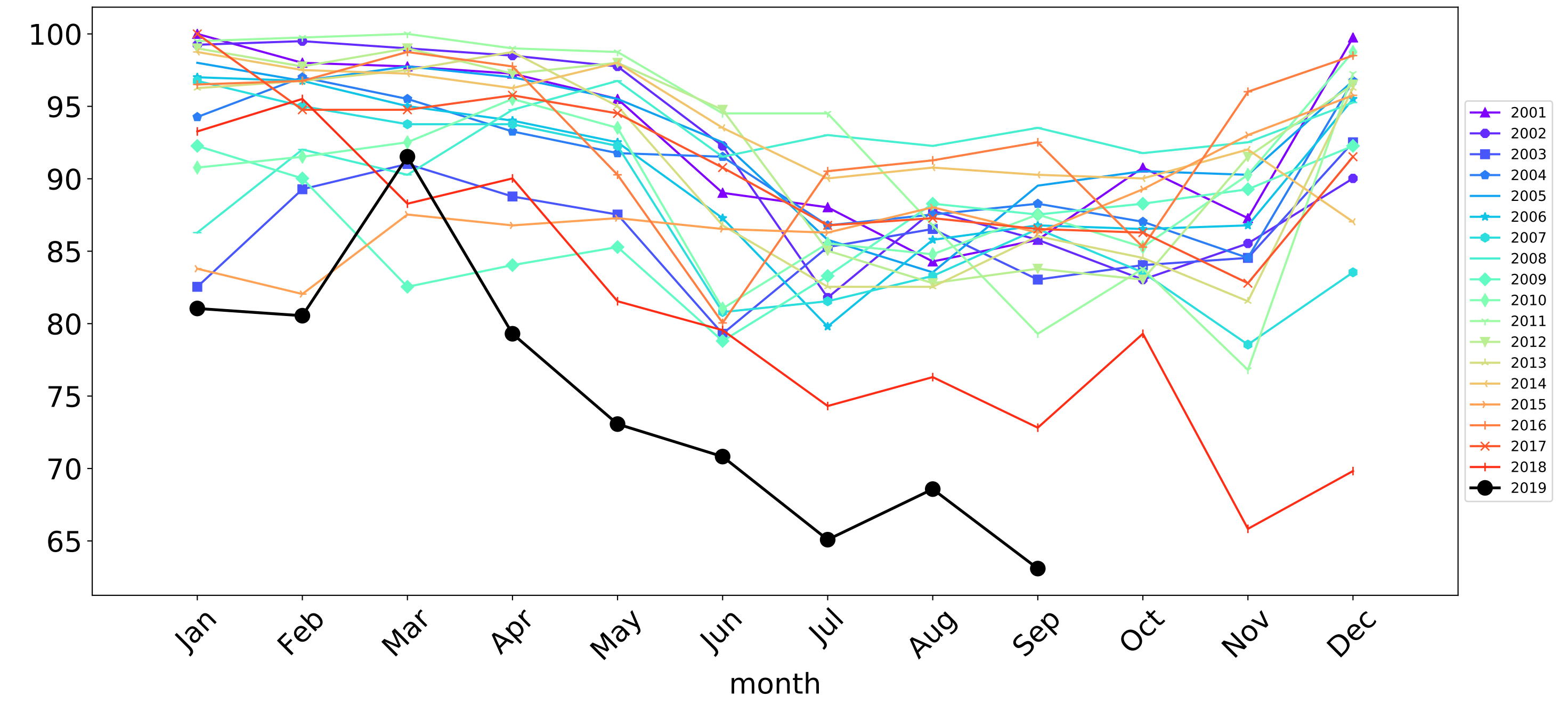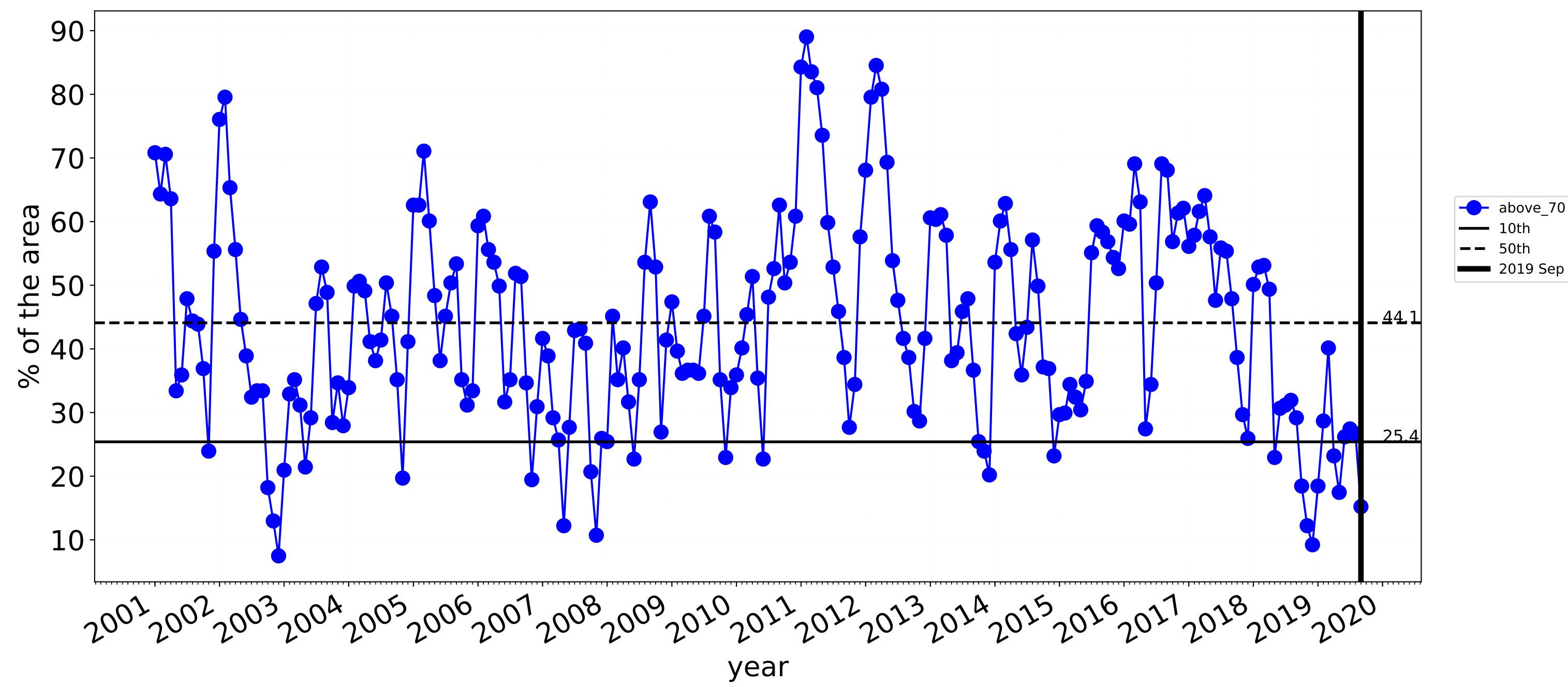
Irrigation timeseries

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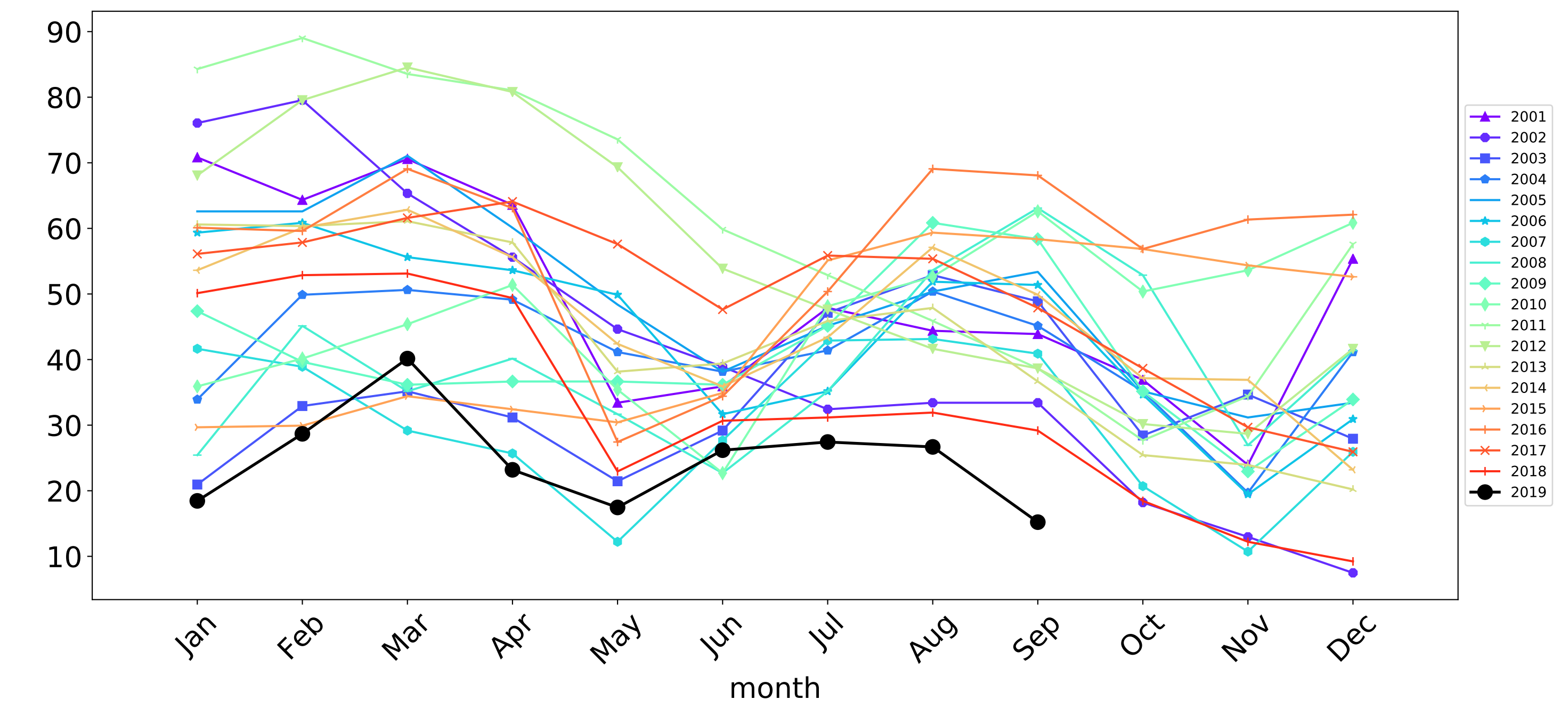

Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

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

Gwydir_(A) (924,425 ha and no data 1,495 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	924,425	100.0% 924,125	93.3% 862,325	43.5% 401,775	21.4% 198,075	3.5% 32,750	0.1% 750
Conservation and natural environments	27,732	100.0% 27,732	99.9% 27,708	98.7% 27,362	90.3% 25,045	20.3% 5,620	0.0% 0
Conservation and natural environments Woodland forest	26,808	100.0% 26,808	99.9% 26,783	98.7% 26,461	90.8% 24,332	20.9% 5,594	0.0% 0
Agriculture	888,372	100.0% 888,097	93.0% 826,523	41.4% 368,013	18.9% 167,481	3.0% 26,670	0.1% 750
Grazing	566,672	100.0% 566,622	98.4% 557,701	60.4% 342,107	29.1% 164,694	4.7% 26,487	0.1% 724
Grazing non forest	365,147	100.0% 365,097	97.6% 356,304	42.1% 153,808	7.5% 27,329	0.3% 1,124	0.0% 0
Grazing Woodland forest	189,507	100.0% 189,507	99.9% 189,407	93.9% 177,920	69.2% 131,099	13.3% 25,121	0.4% 724
Grazing – Forest (non woodland)	12,017	100.0% 12,017	99.8% 11,992	86.7% 10,413	52.3% 6,288	1.9% 229	0.0% 0
Cropping	310,606	99.9% 310,406	84.2% 261,492	7.7% 23,919	0.7% 2,324	0.0% 149	0.0% 24
Irrigation	10,168	99.8% 10,143	63.1% 6,415	15.2% 1,546	2.5% 253	0.0% 0	0.0% 0