[LGA Mareeba_(S) (QLD)] - 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.
[Mareeba_(S)]
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.
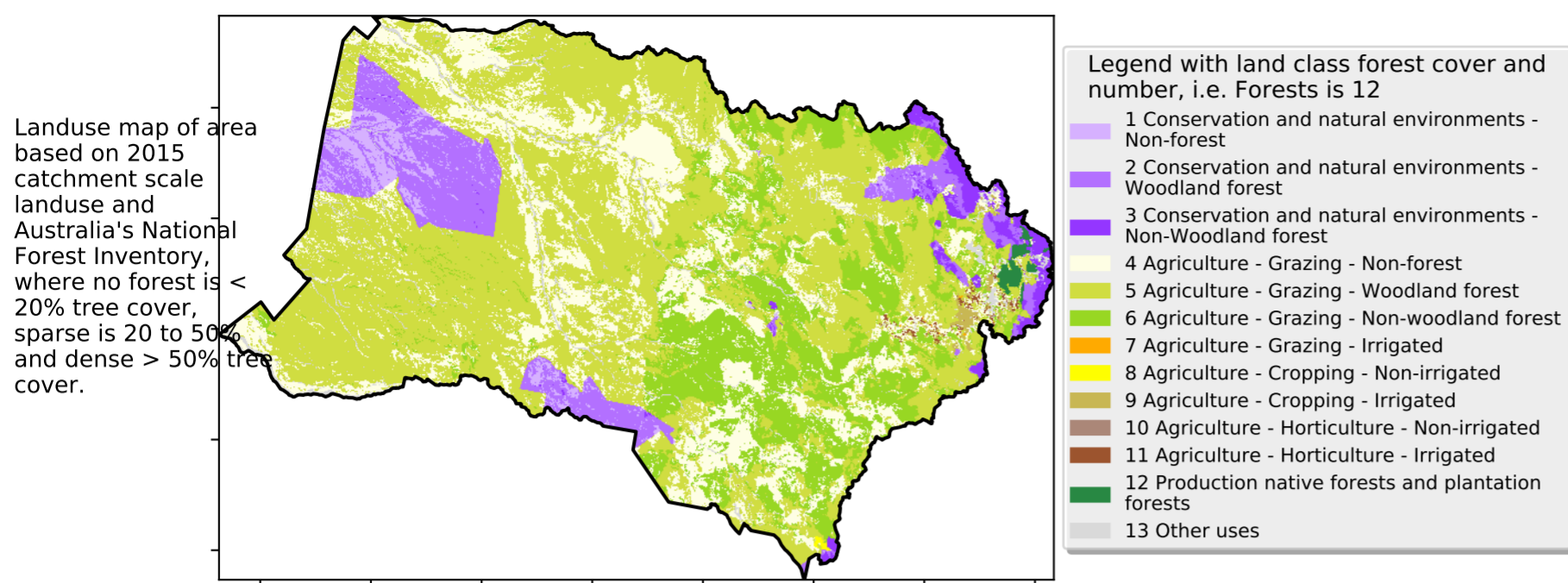
Acknowledgment of data:

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
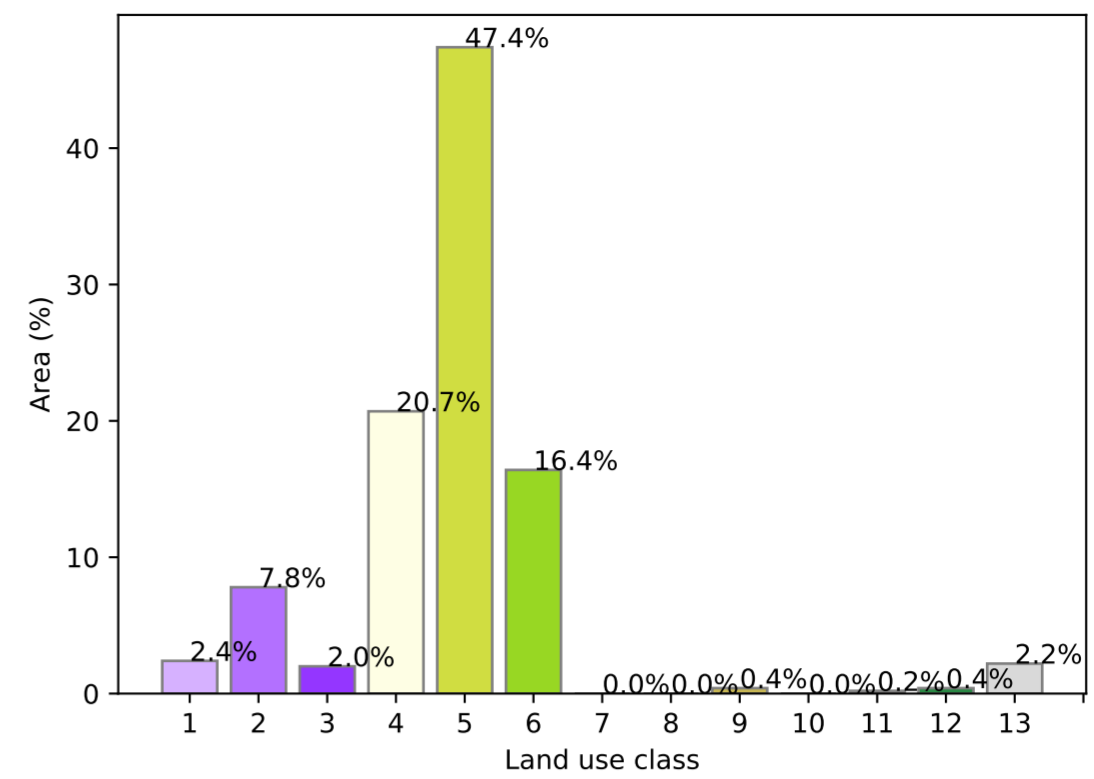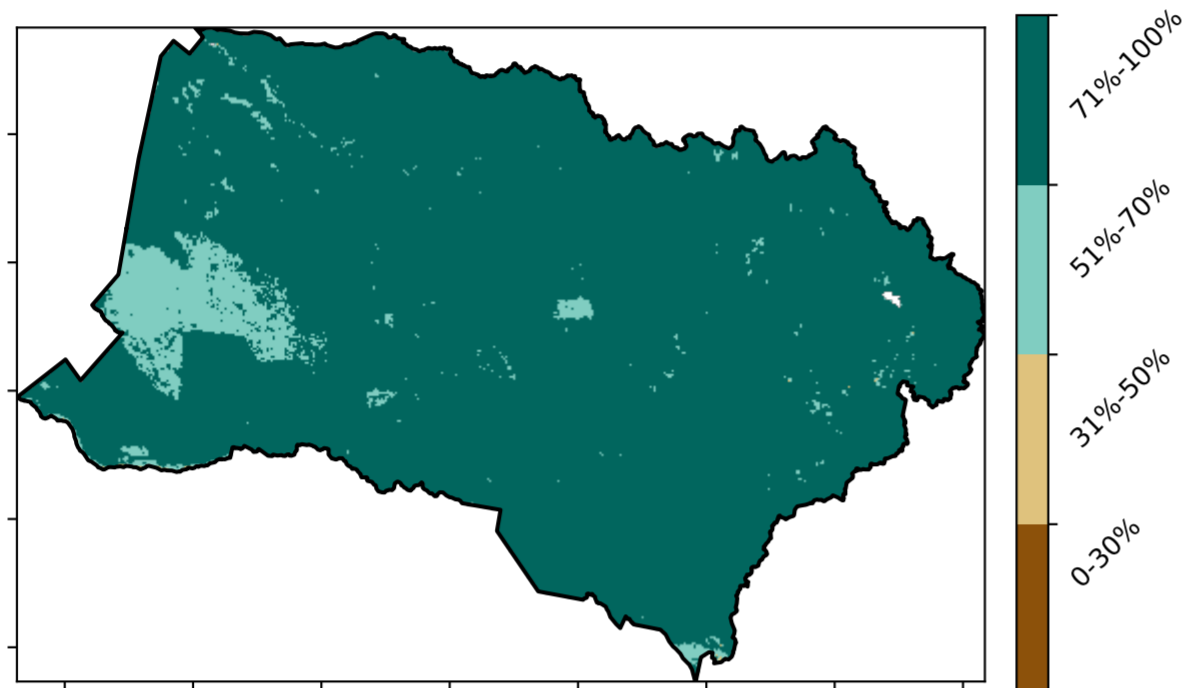
4. MODIS Fractional cover algorithm:

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

Vegetation Cover Sep 2019
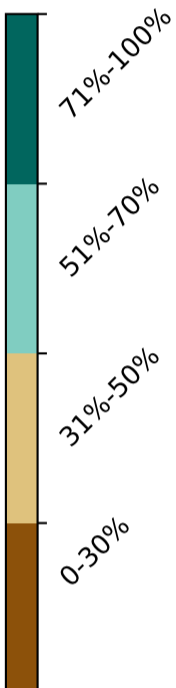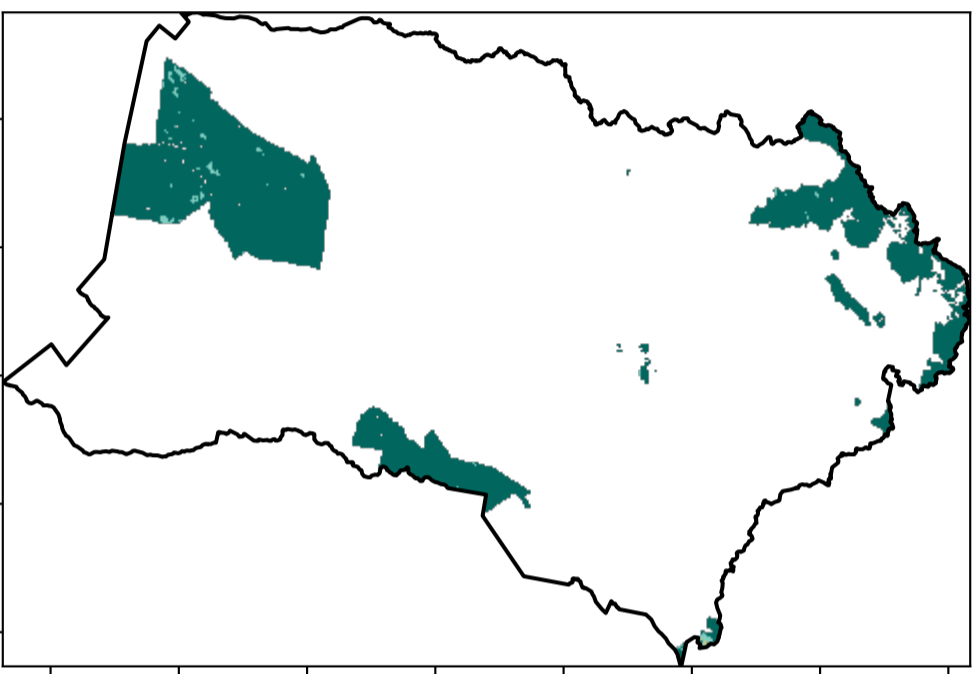
Land use and forest cover

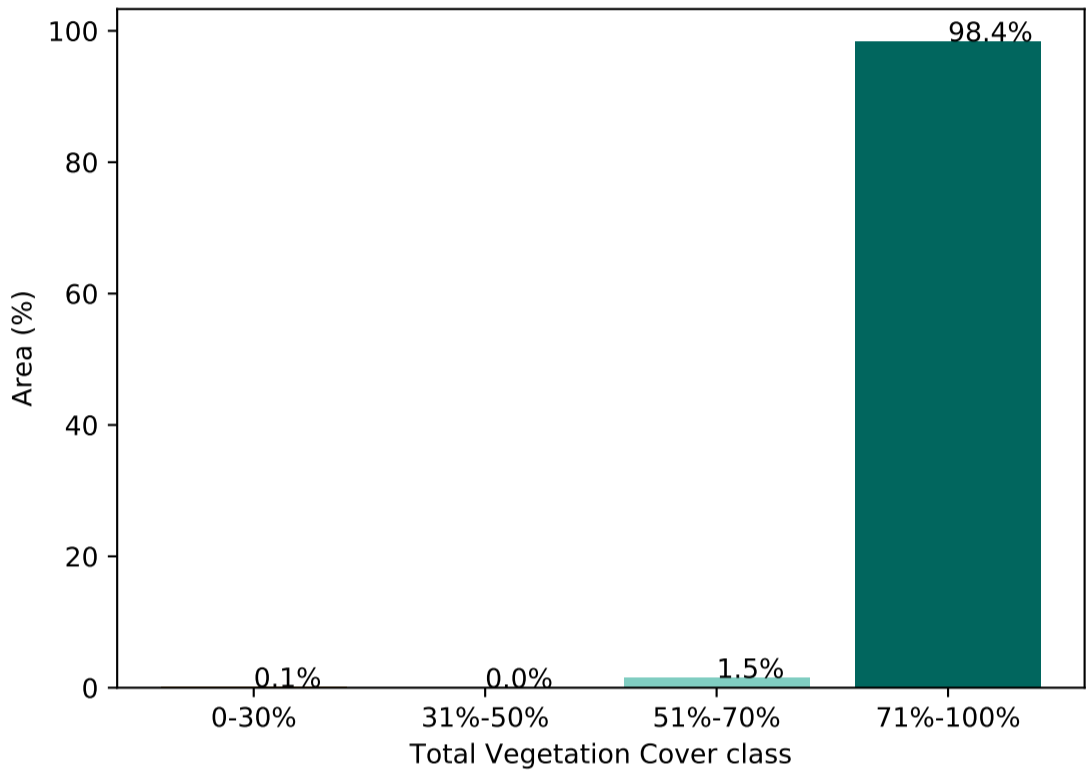Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.

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
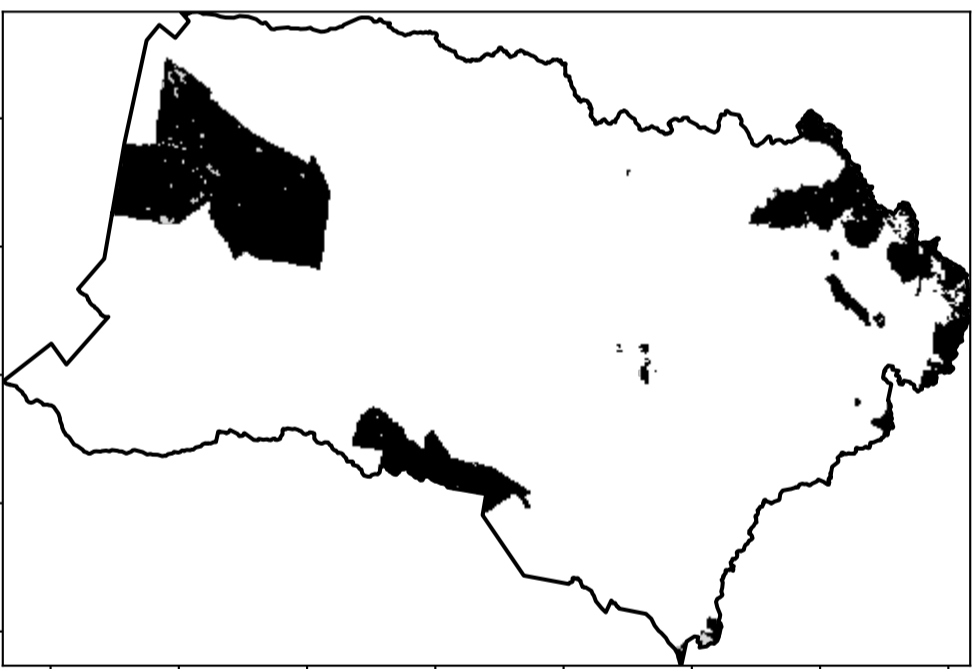- 3 Conservation and natural environments - Non-Woodland forest
- 4 Agriculture - Grazing - Non-forest
- 5 Agriculture - Grazing - Woodland forest
- 6 Agriculture - Grazing - Non-woodland forest
- 7 Agriculture - Grazing - Irrigated
- 8 Agriculture - Cropping - Non-irrigated
- 9 Agriculture - Cropping - 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
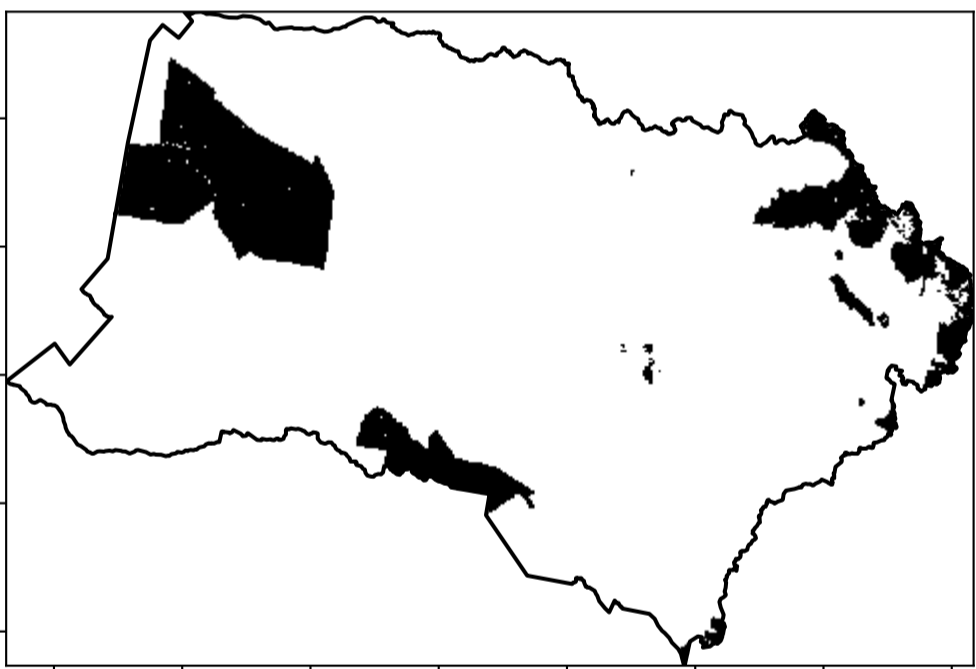

% Area protected from water erosion (>70%)

Area not protected 5.8% of region (310,179 ha)
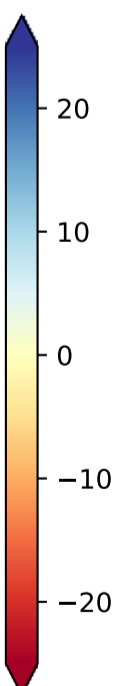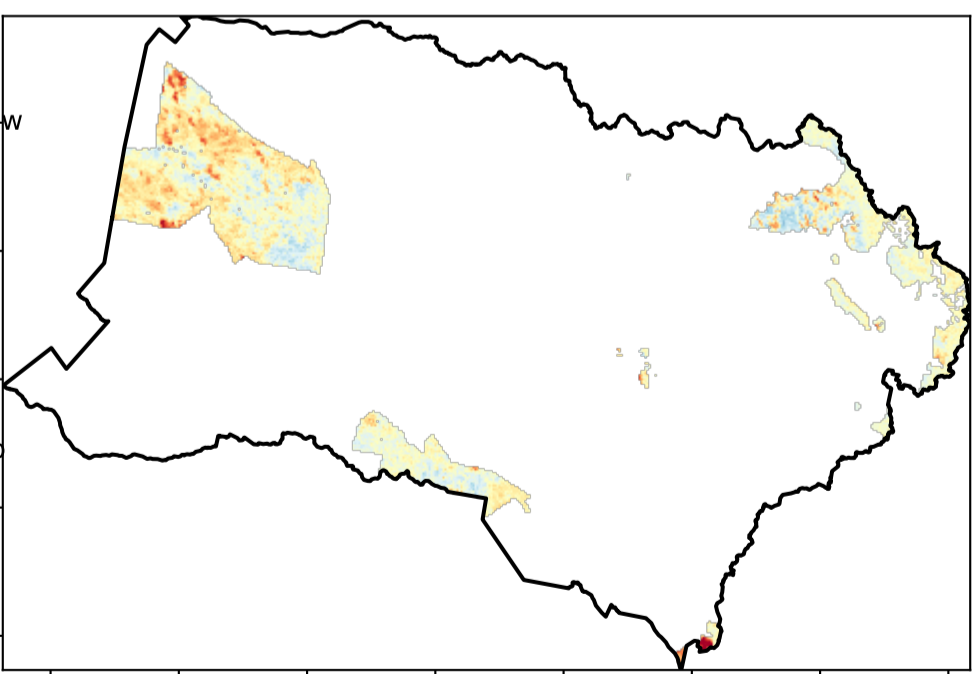
Area protected 94.2% of region (5,037,745 ha)

% Area protected from wind erosion (>50%)

Area not protected 0.0% of region (0 ha)
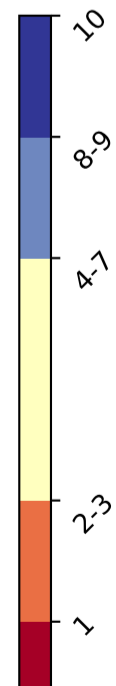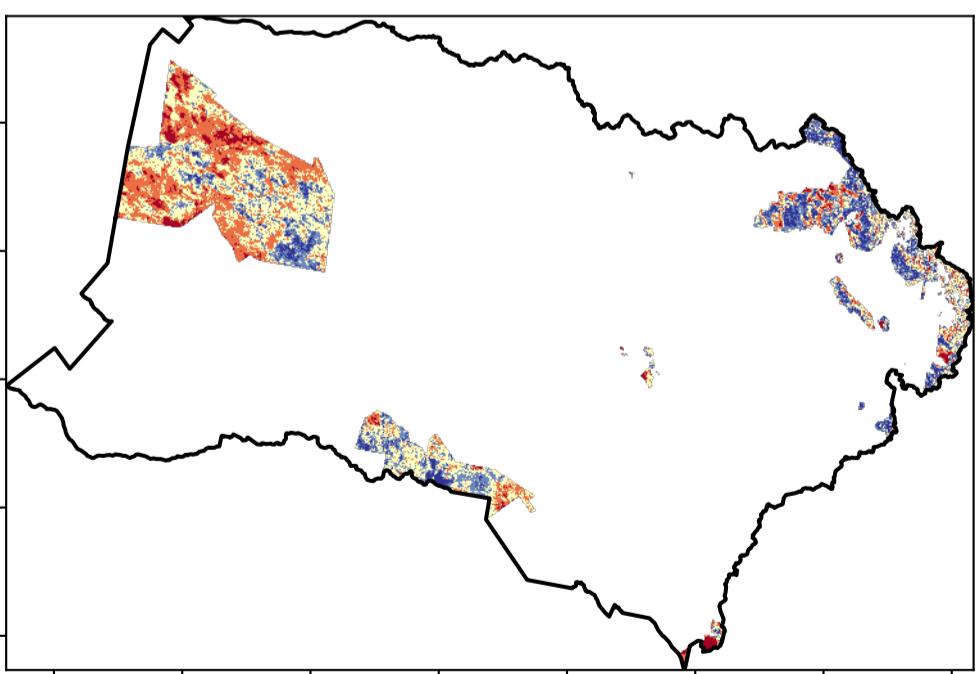
Area protected 100.0% of region (5,347,925 ha)

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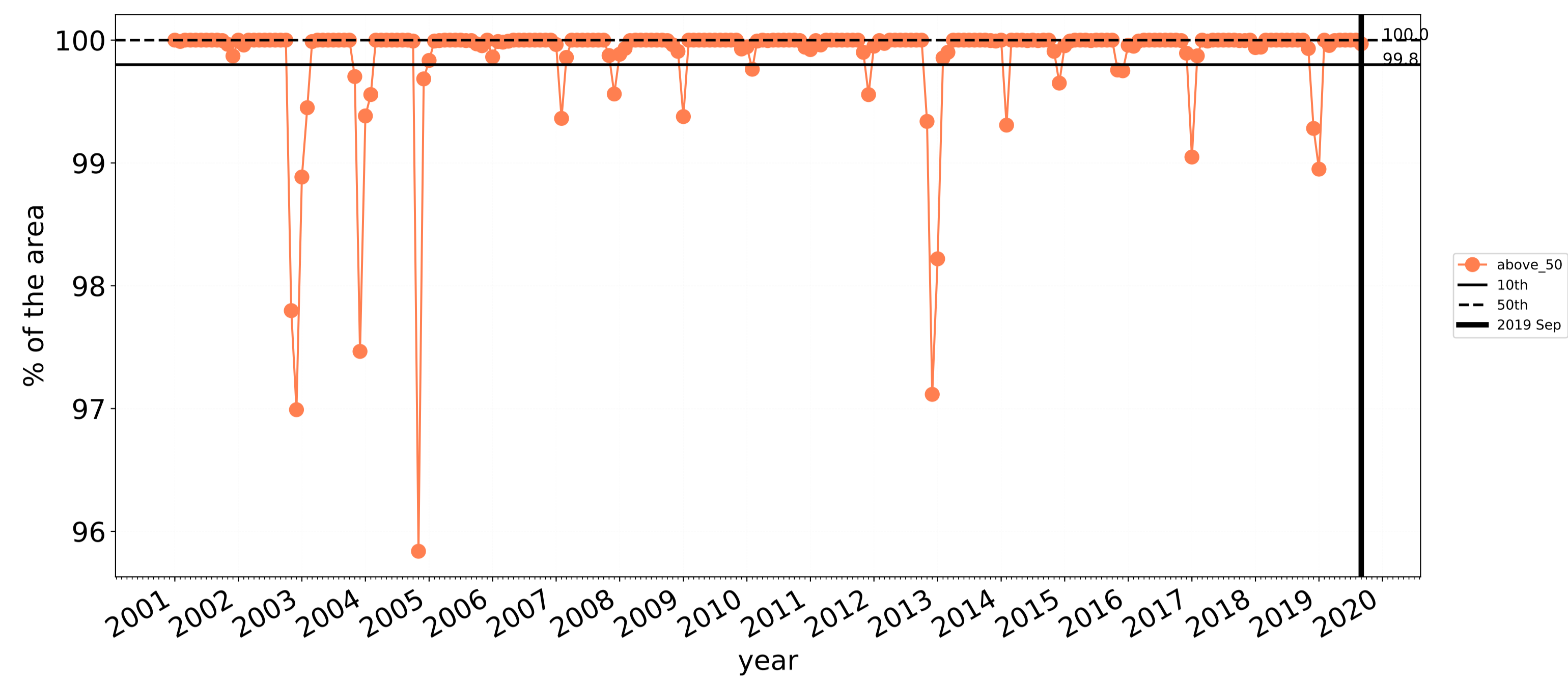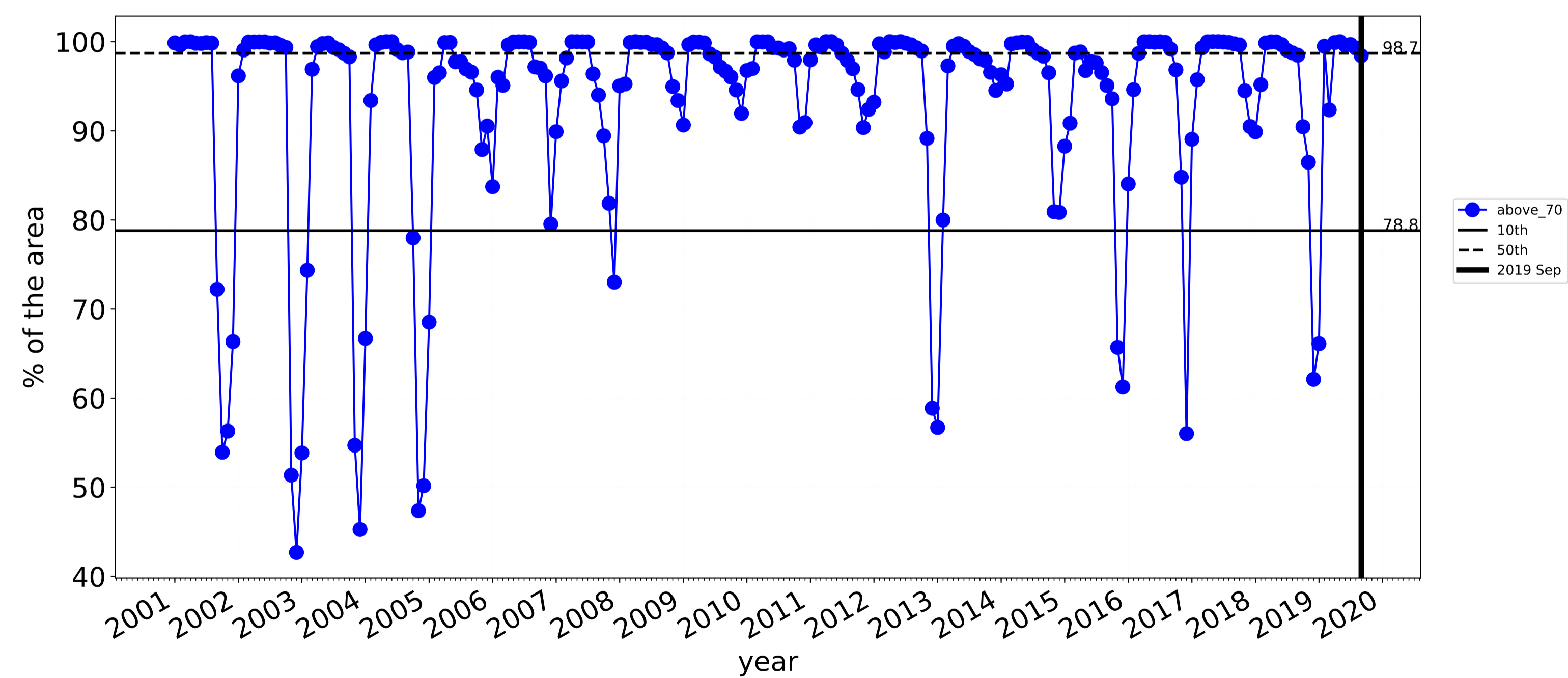
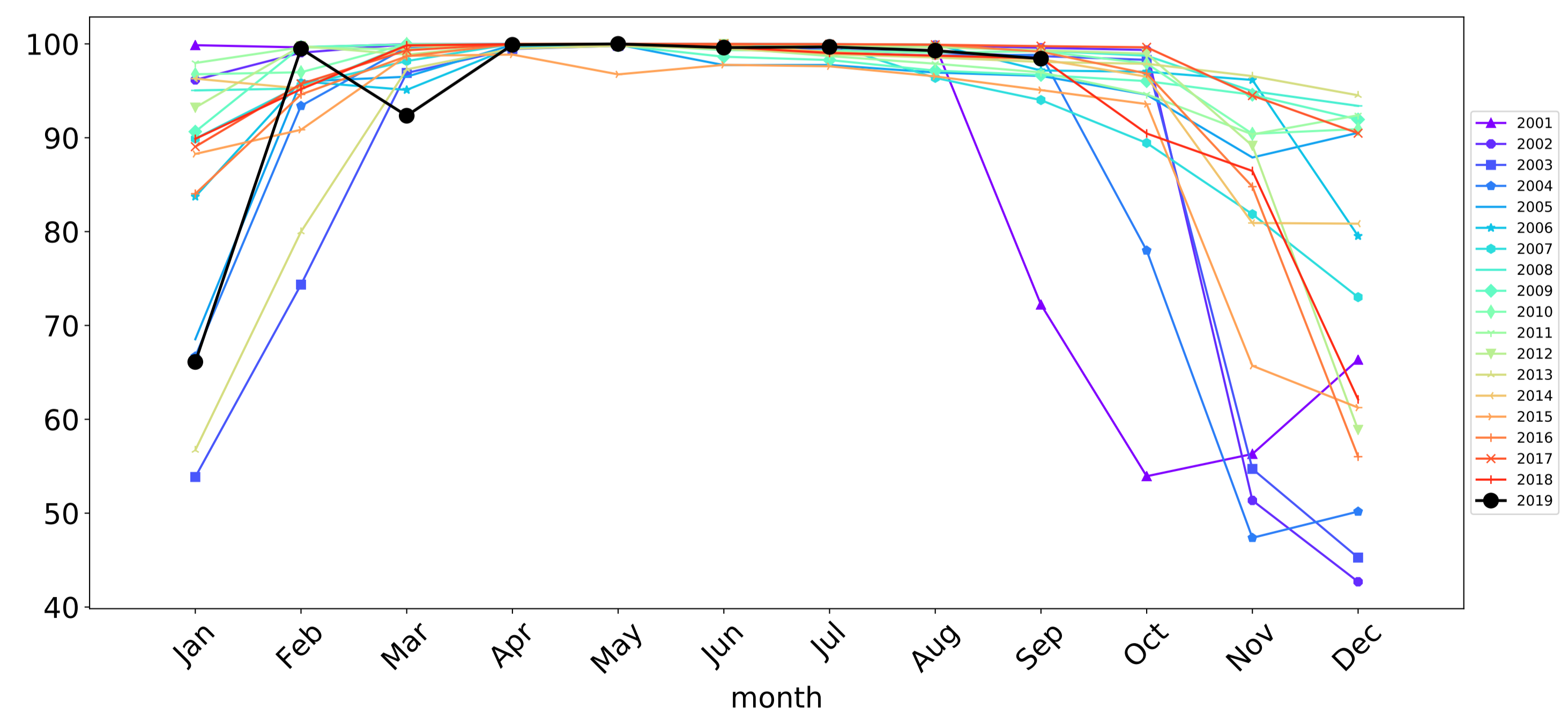Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

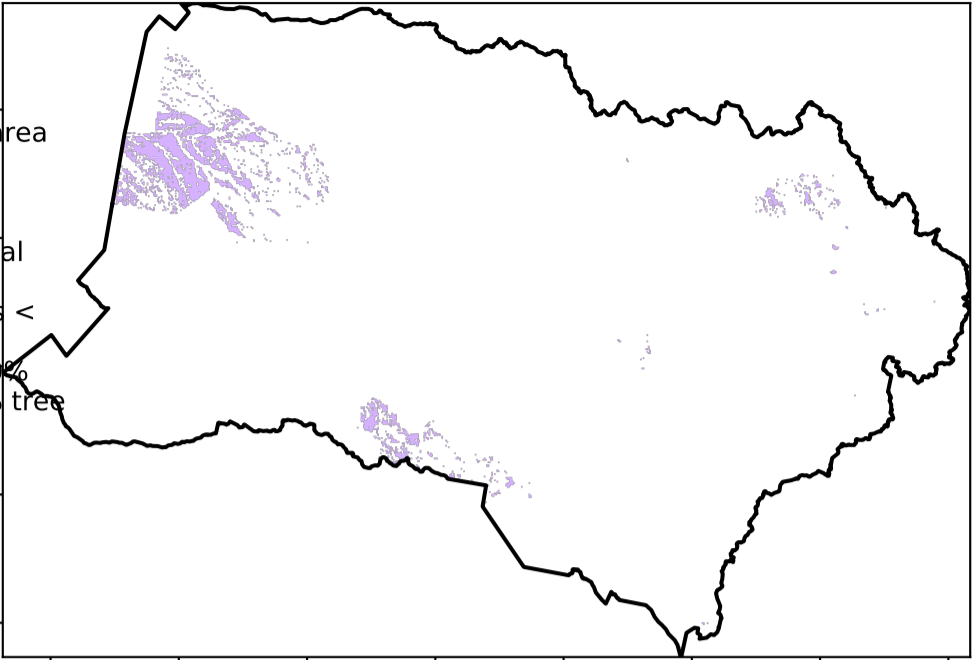Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

Water erosion historical monthly area protected (Total Veg Cov>70%)
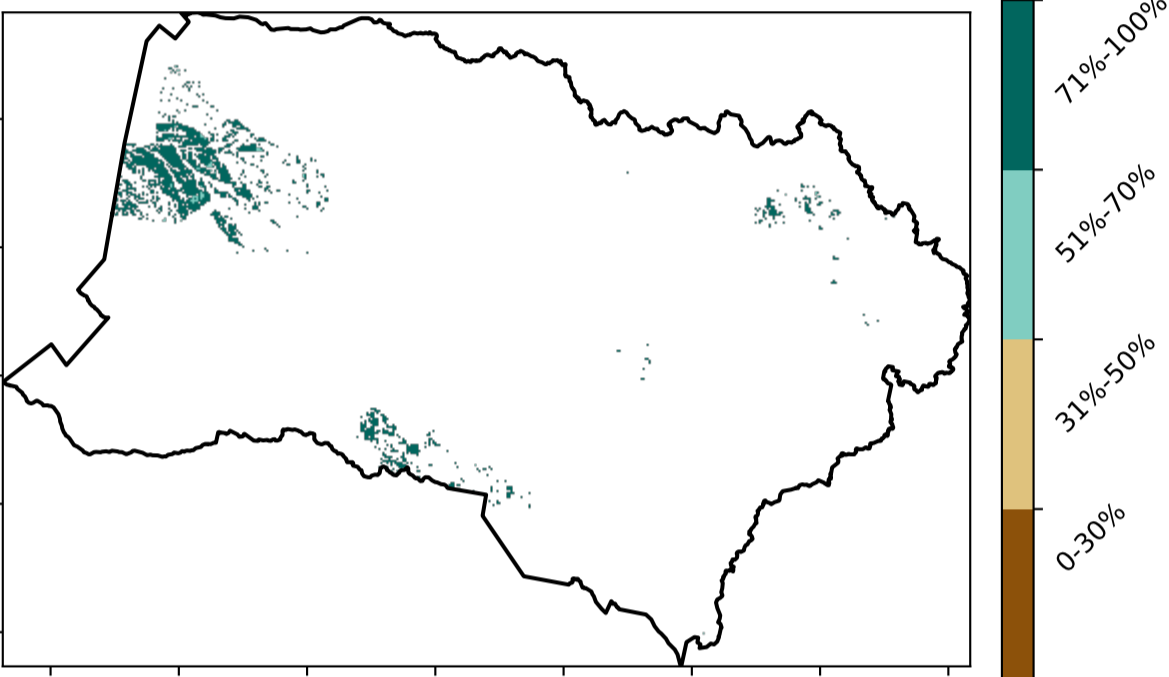
Monthly rainfall from 2001 to 2019

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

0-30%: 0.1%
31%-50%: 0.0%
51%-70%: 1.5%
71%-100%: 98.4%

% Area protected from water erosion (>70%)

Area not protected 1.6% of region (10,514 ha)

Area protected 98.4% of region (646,660 ha)

% Area protected from wind erosion (>50%)

Area not protected 0.0% of region (0 ha)

Area protected 100.0% of region (657,175 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

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 non forest
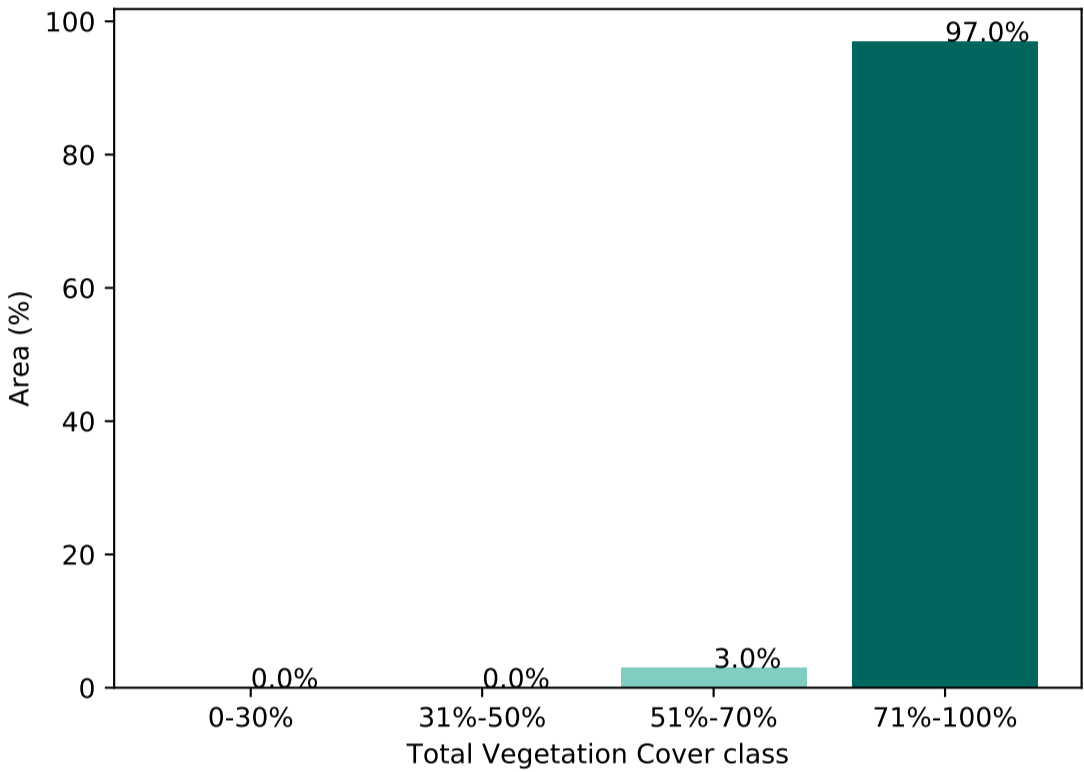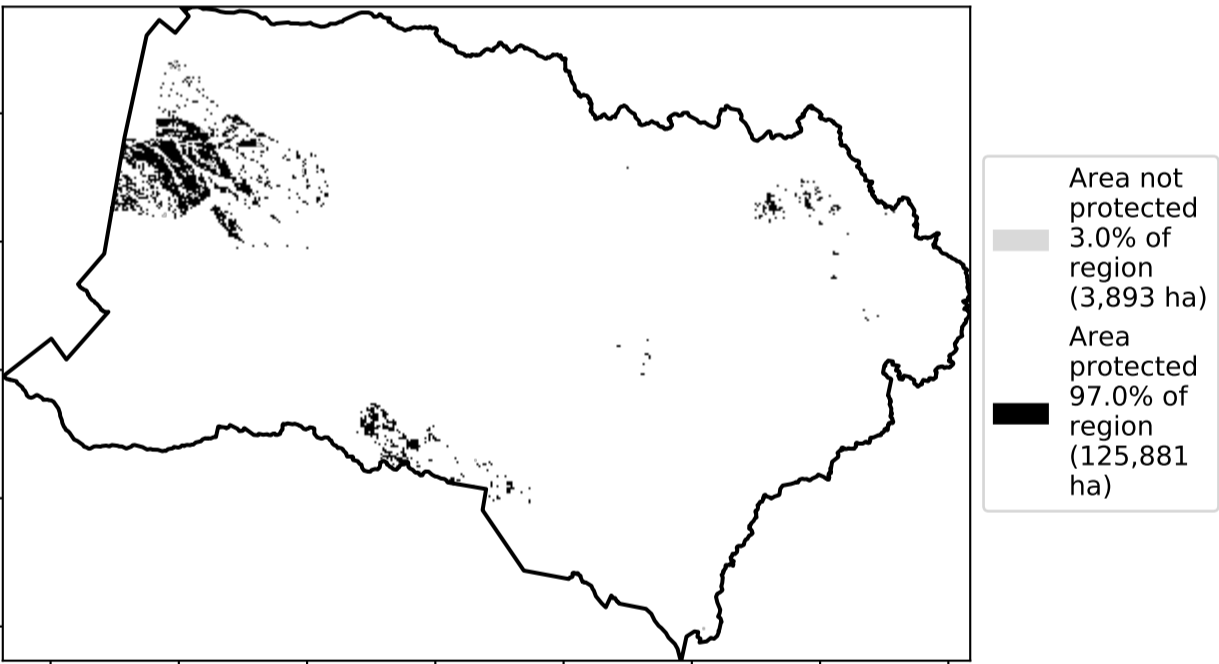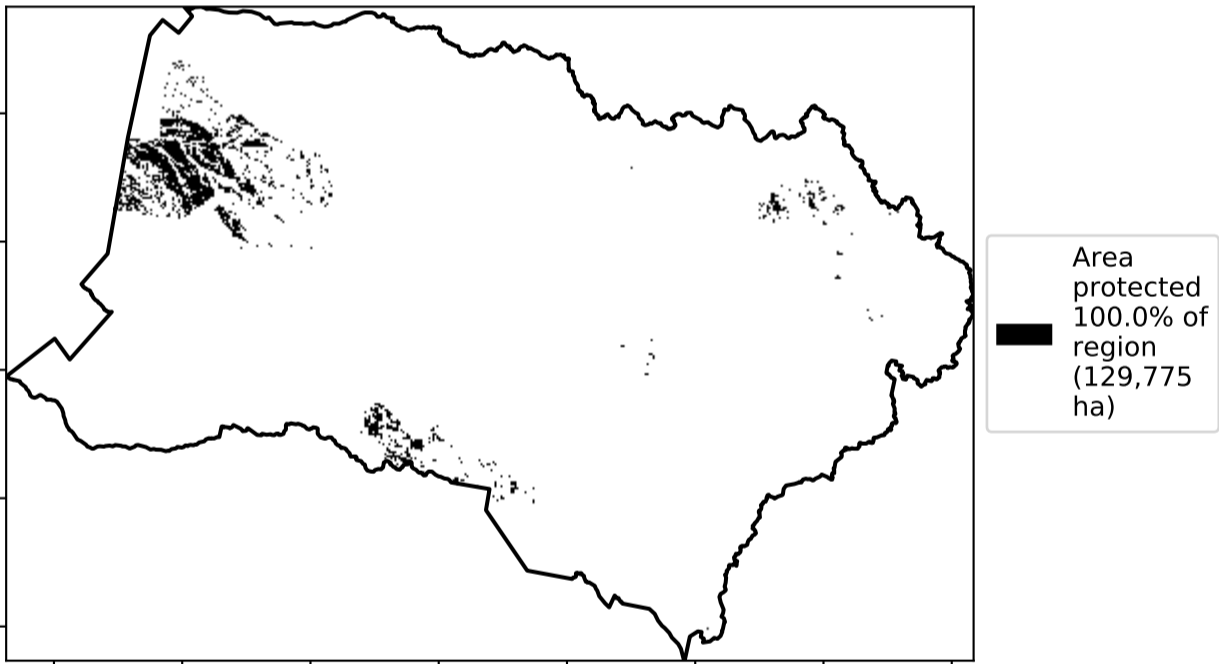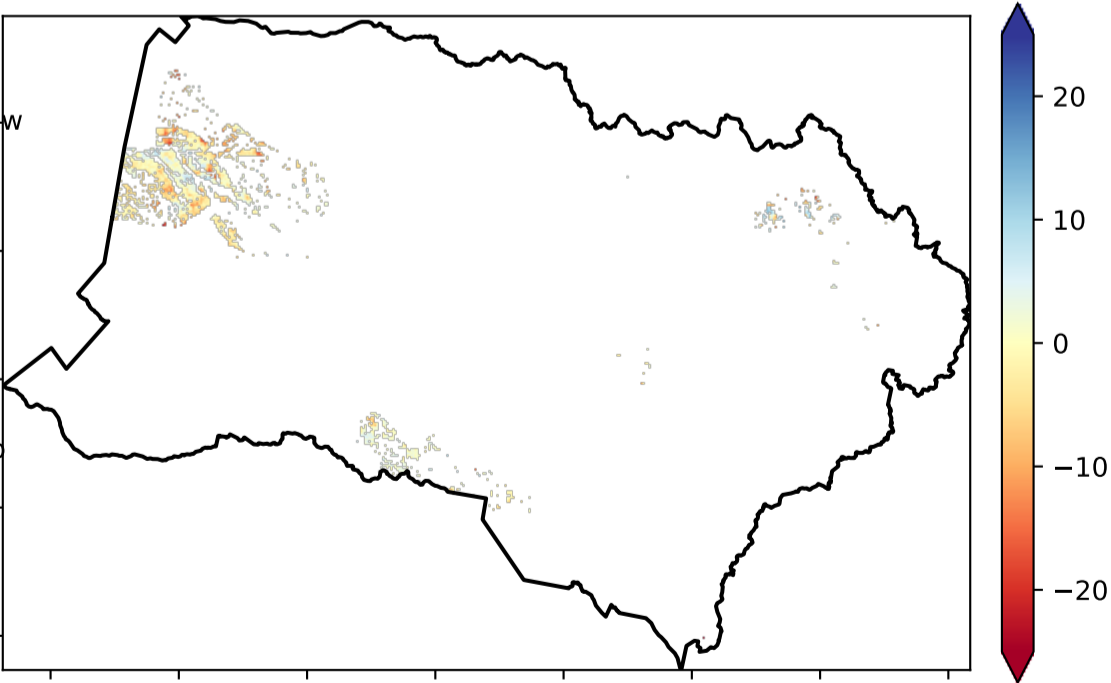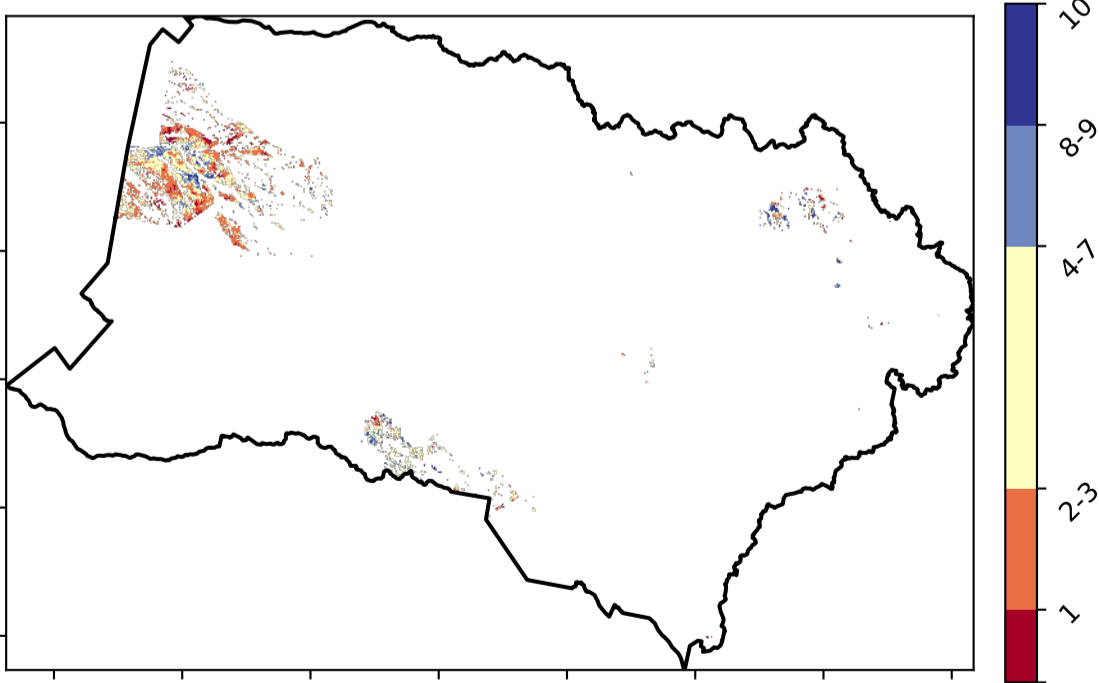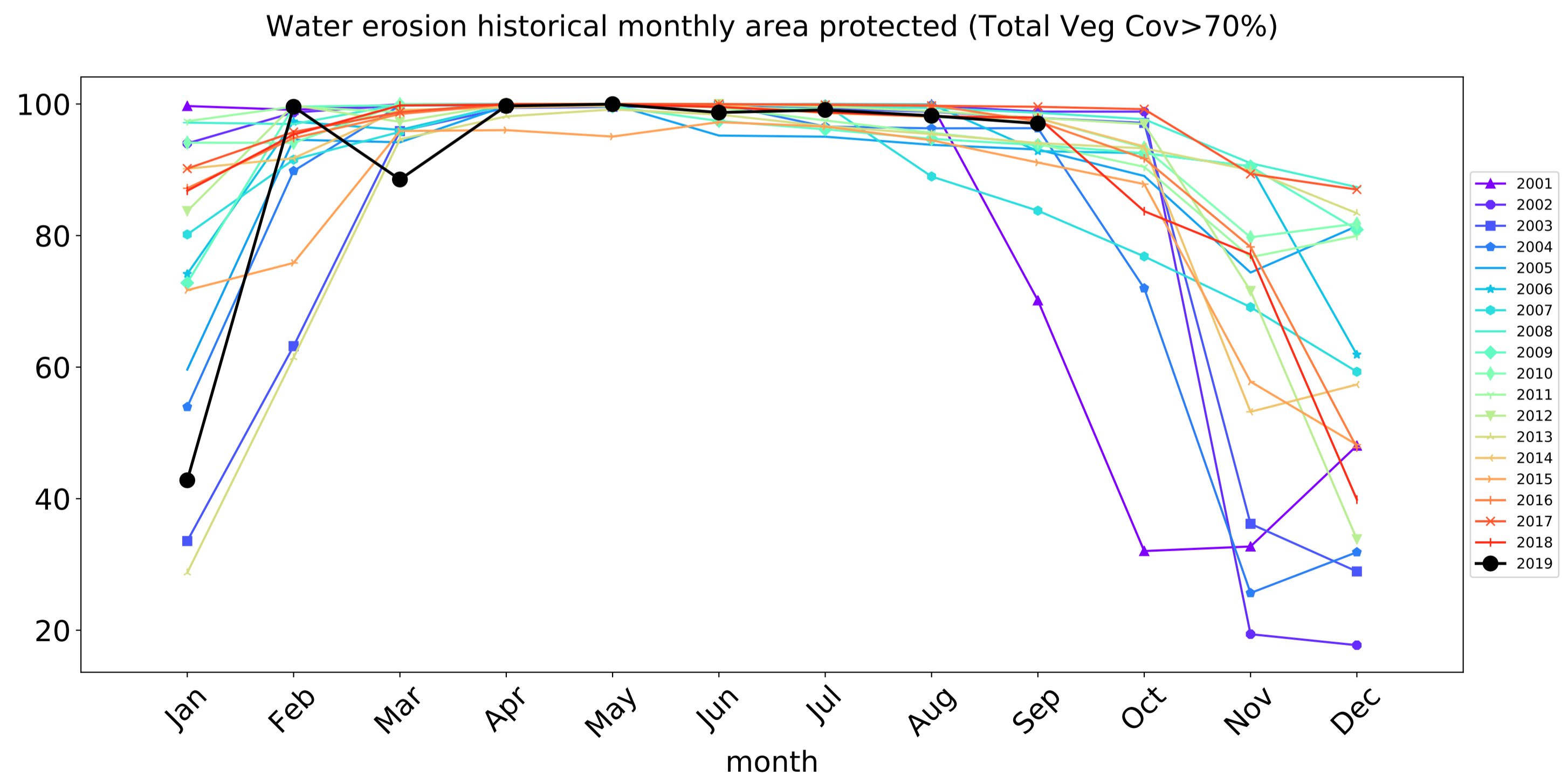
Land use and forest cover

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.

Conservation and natural environments - Non-forest

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

Area (%)

0.0%   0.0%   3.0%   97.0%

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

Total Vegetation Cover class

% Area protected from water erosion (>70%)

Area not protected
3.0% of region
(3,893 ha)

Area protected
97.0% of region
(125,881 ha)

% Area protected from wind erosion (>50%)

Area protected
100.0% of region
(129,775 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

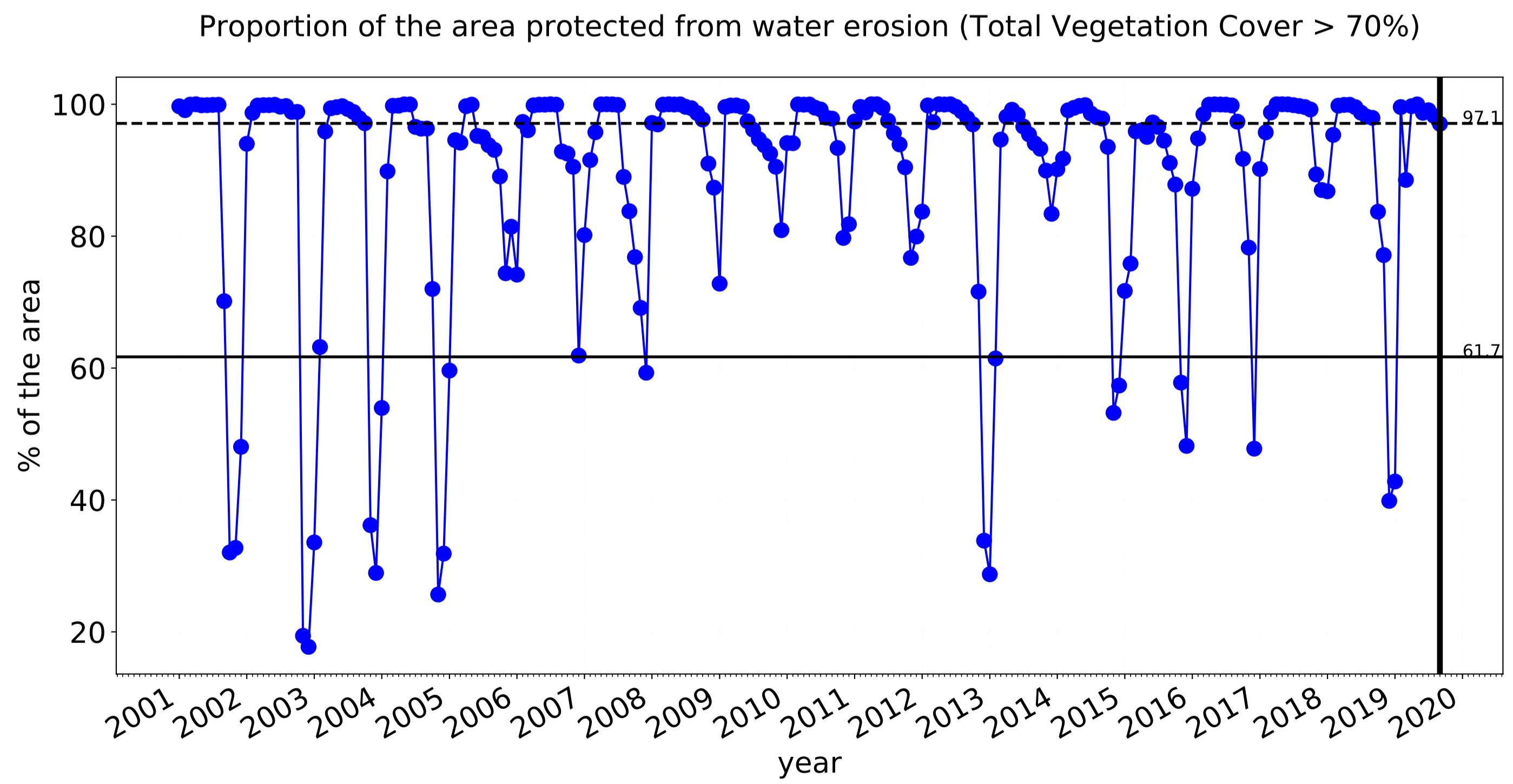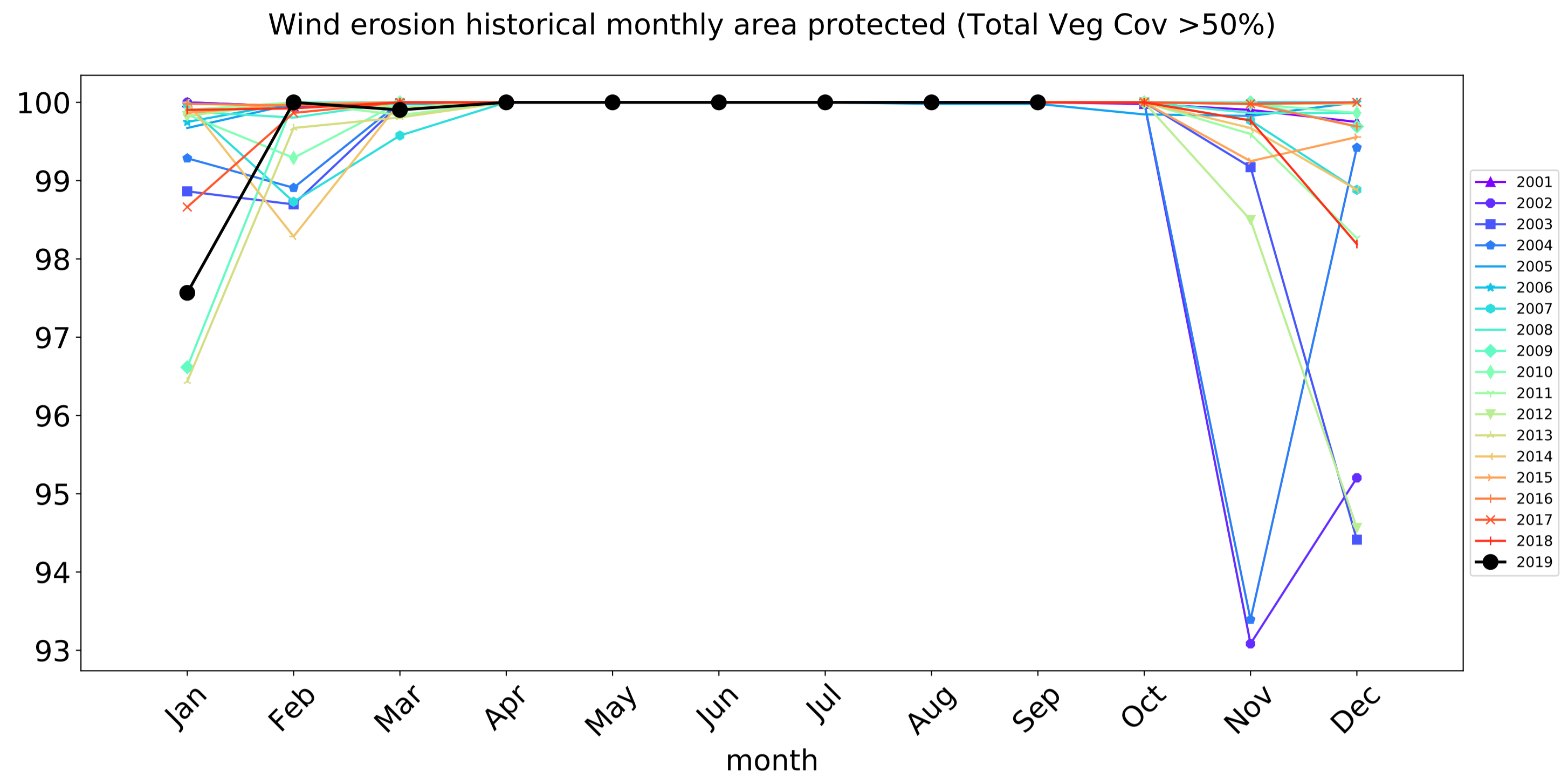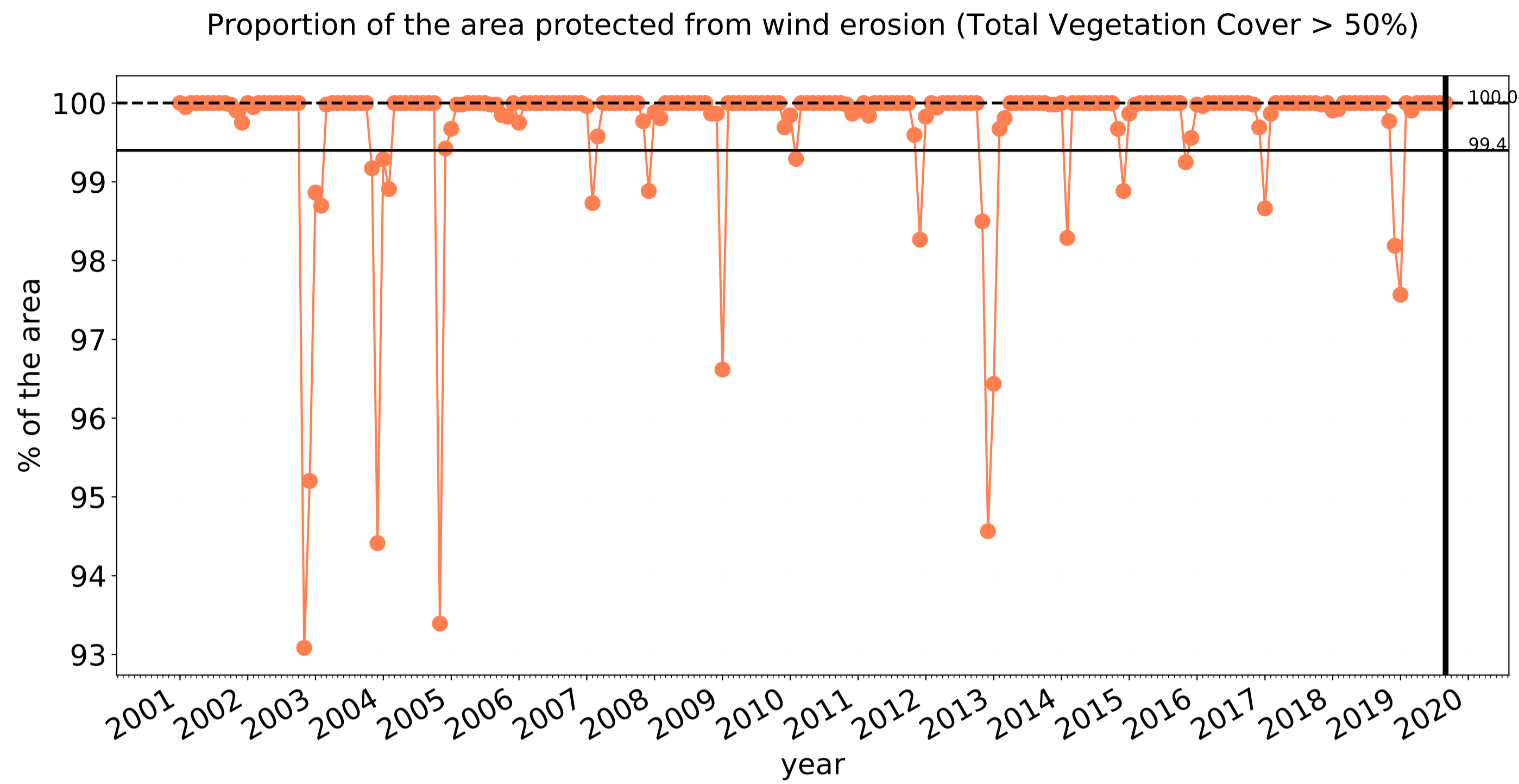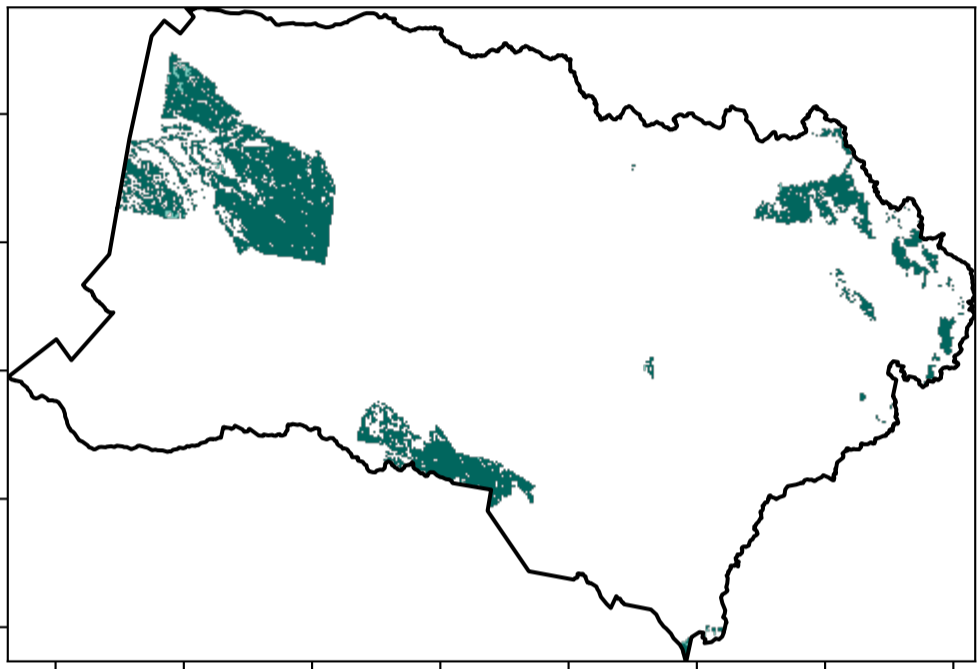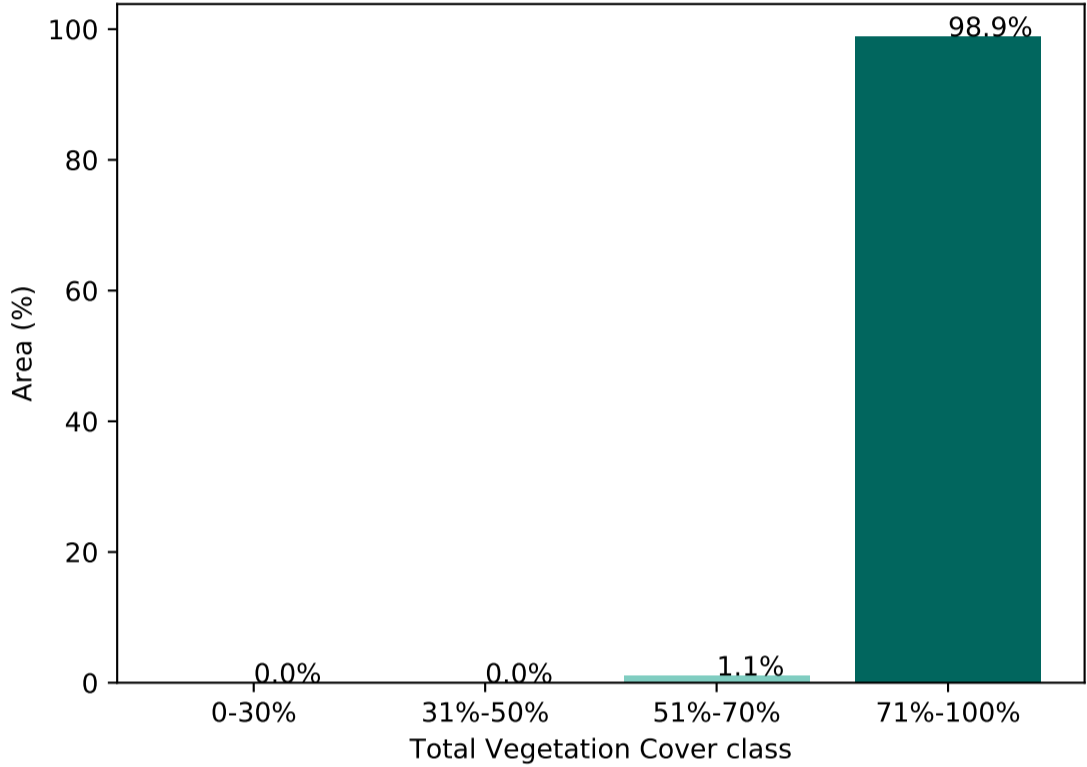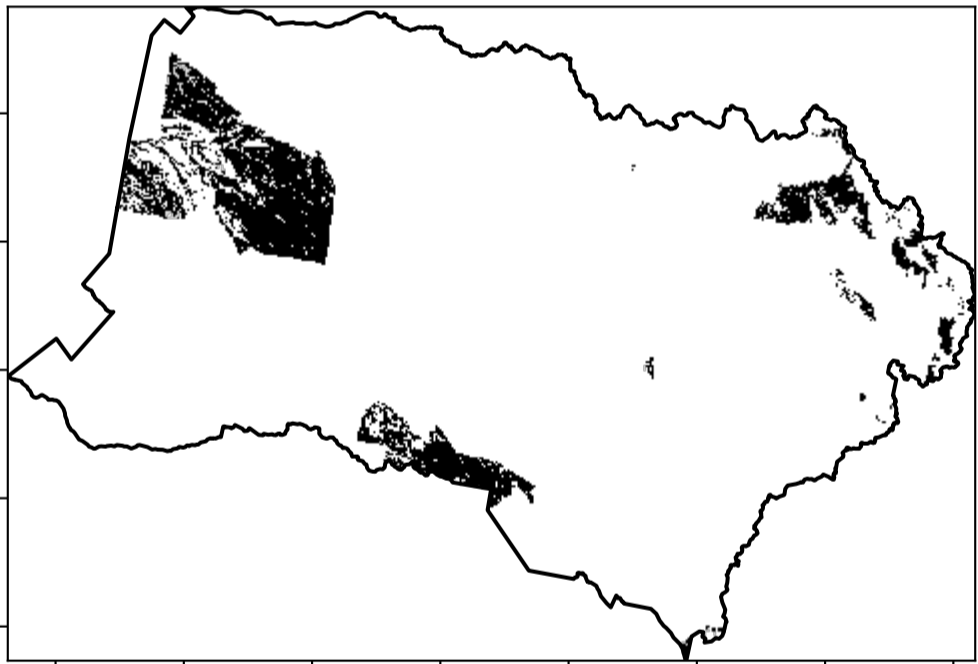# Conservation and natural environments non forest timeseries

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

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

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

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

Conservation and natural environments Woodland forest

Land use and forest cover

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

98.9%

0.0%   0.0%   1.1%

Total Vegetation Cover class

Area (%)

% Area protected from water erosion (>70%)

Area not protected 1.1% of region (4,617 ha)

Area protected 98.9% of region (415,132 ha)

% Area protected from wind erosion (>50%)
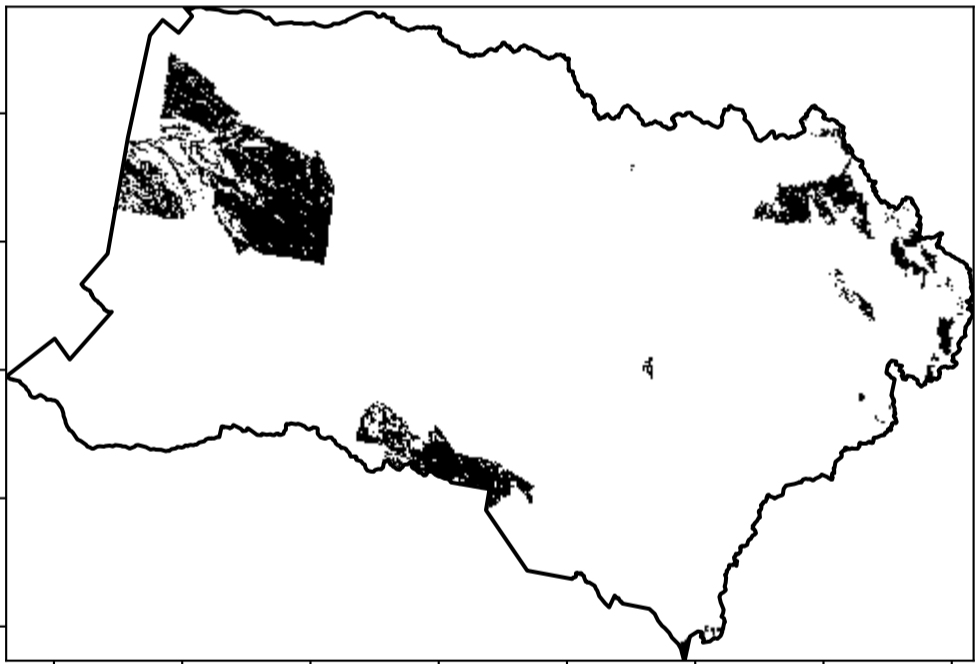
Area protected 100.0% of region (419,750 ha)

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.
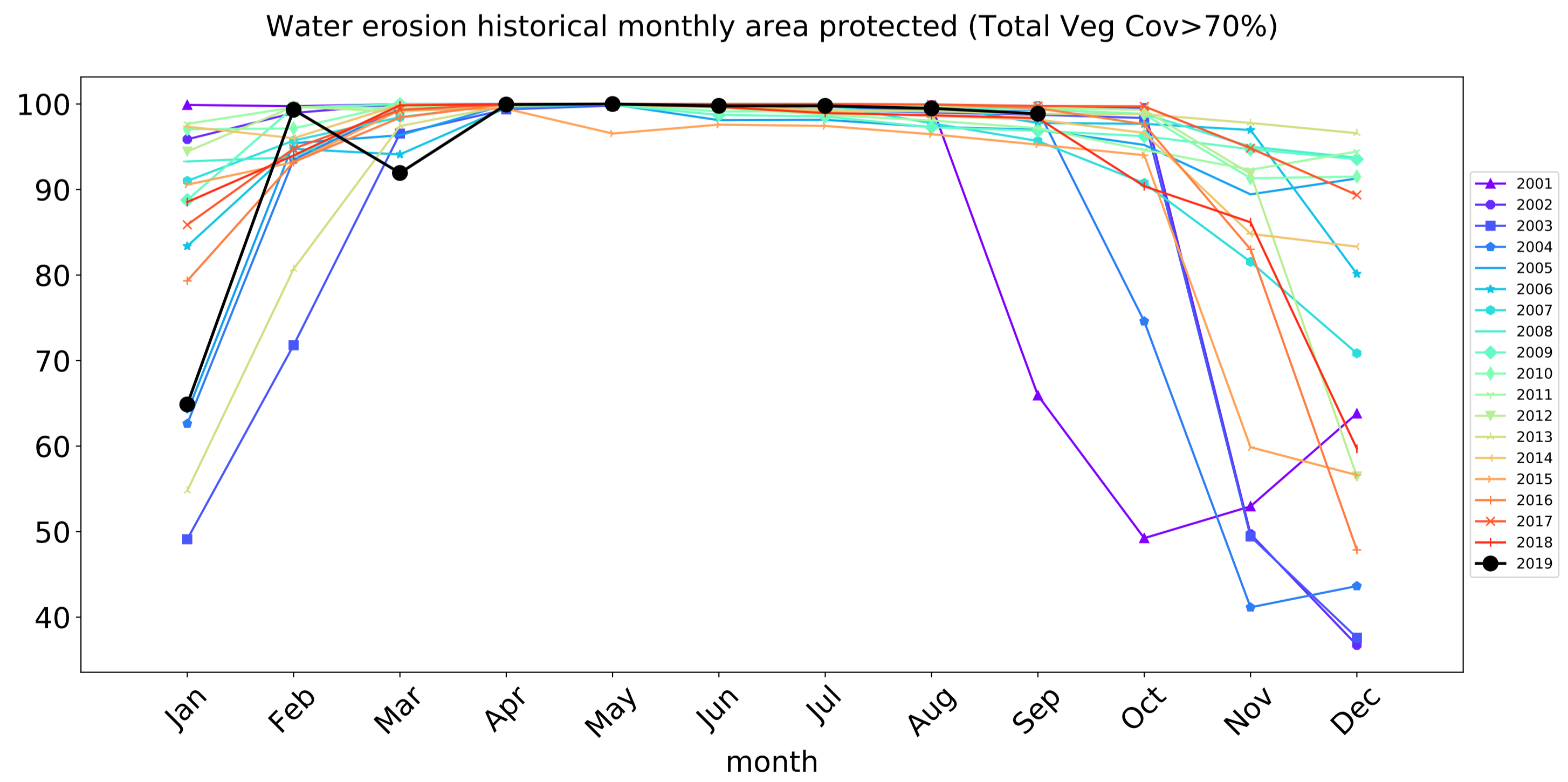
10

8-9

4-7

2-3

1
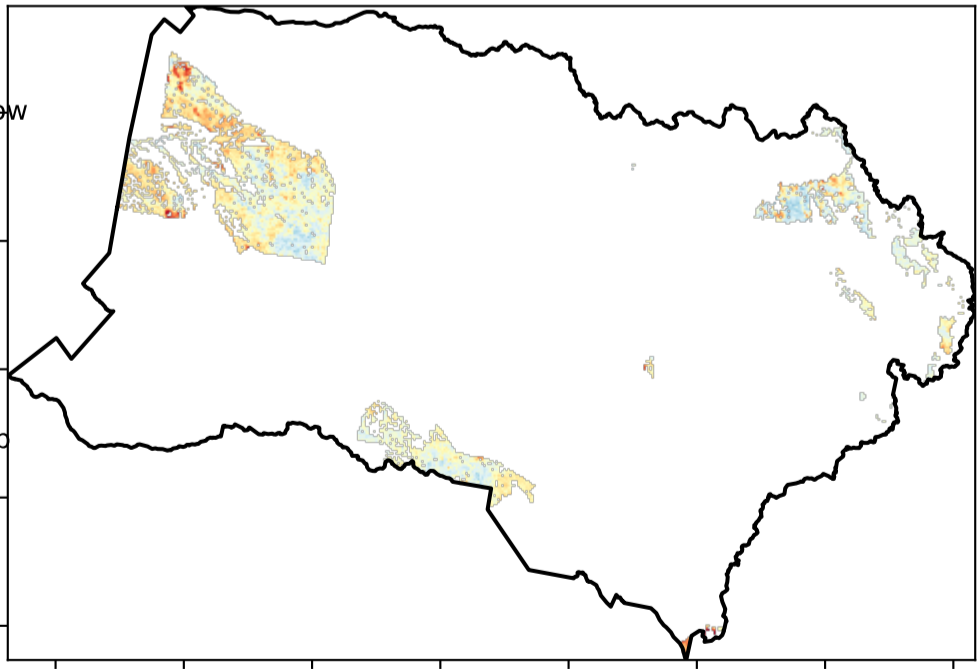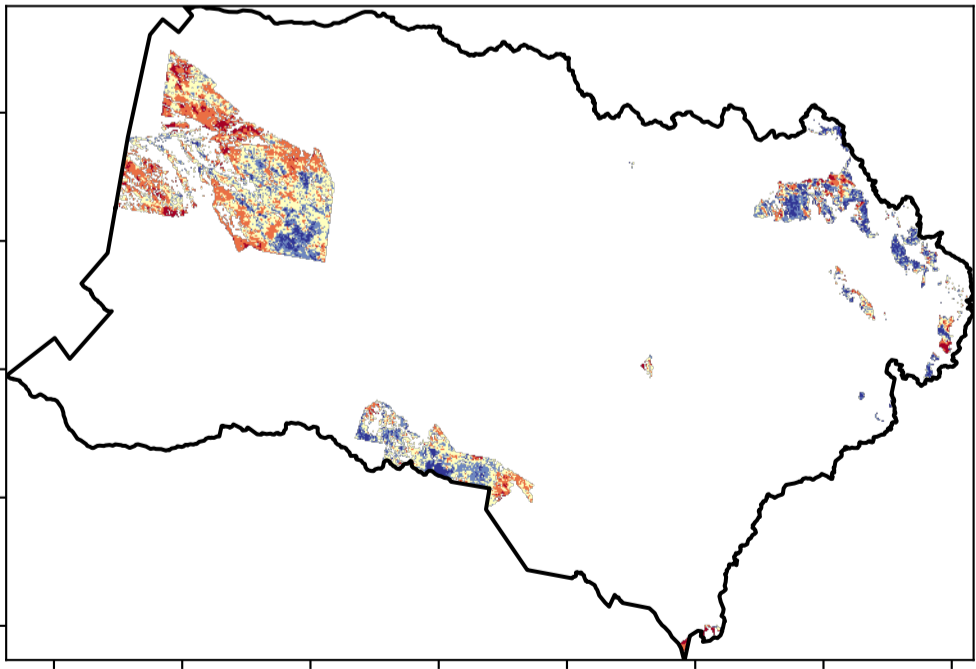
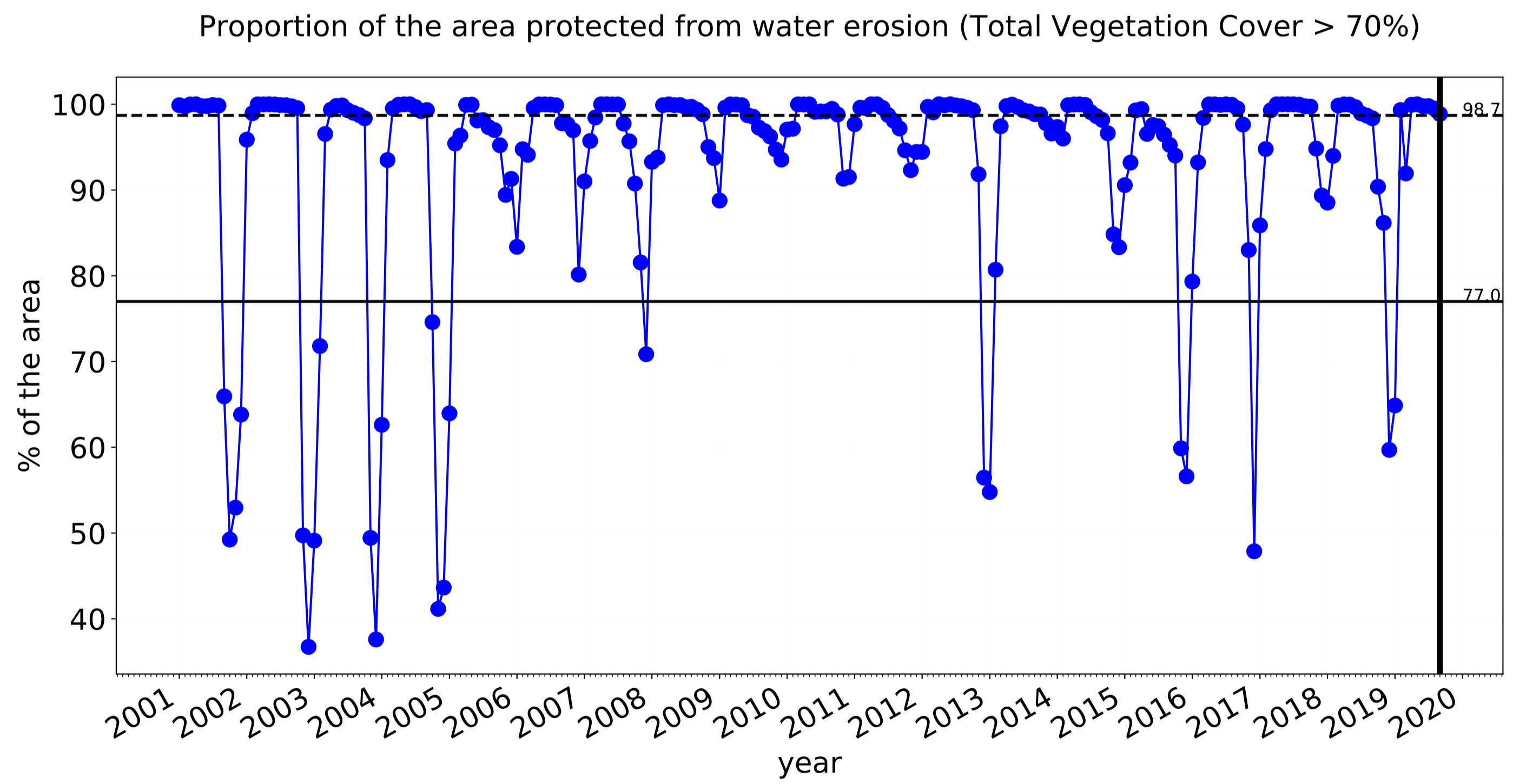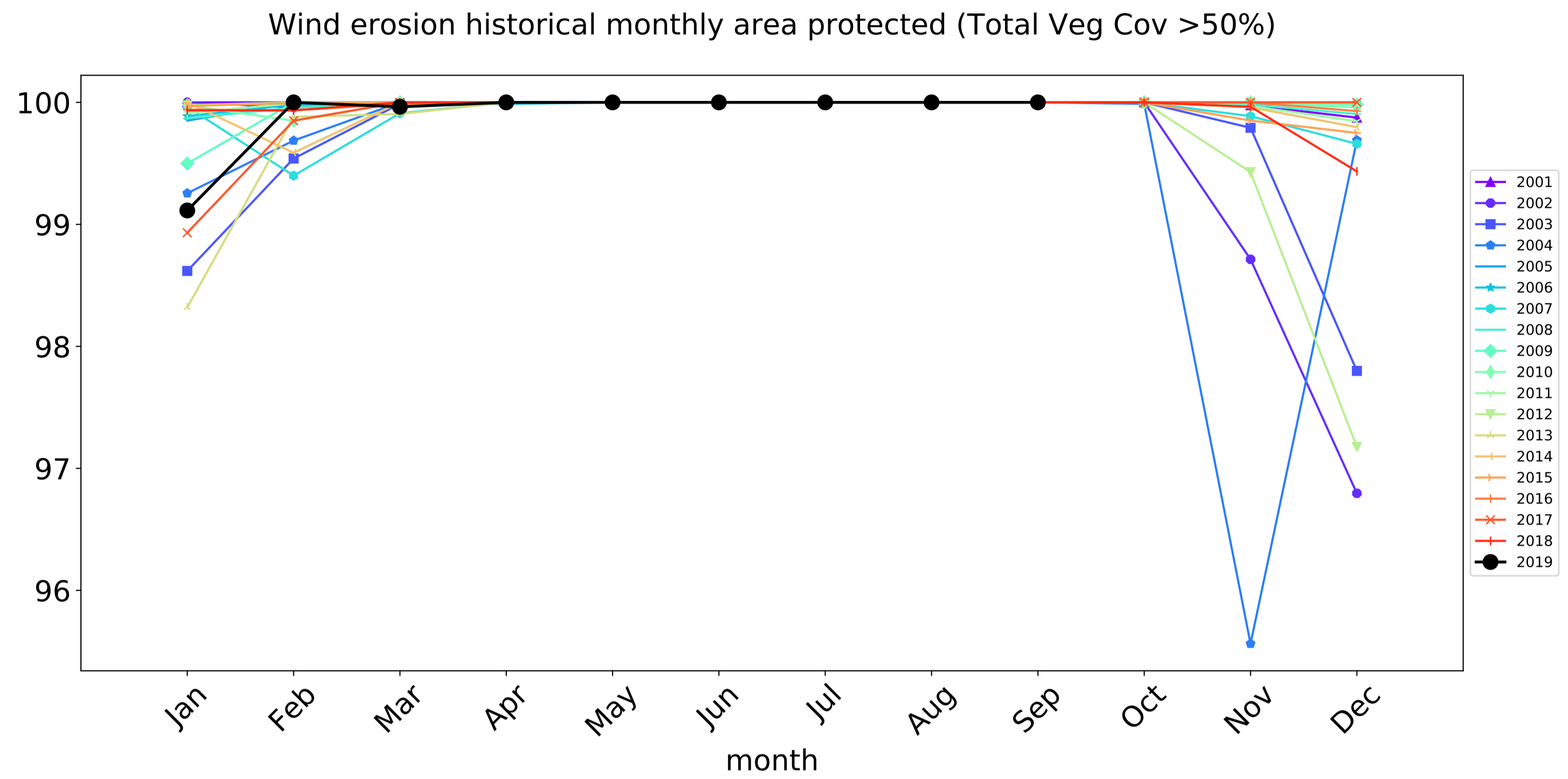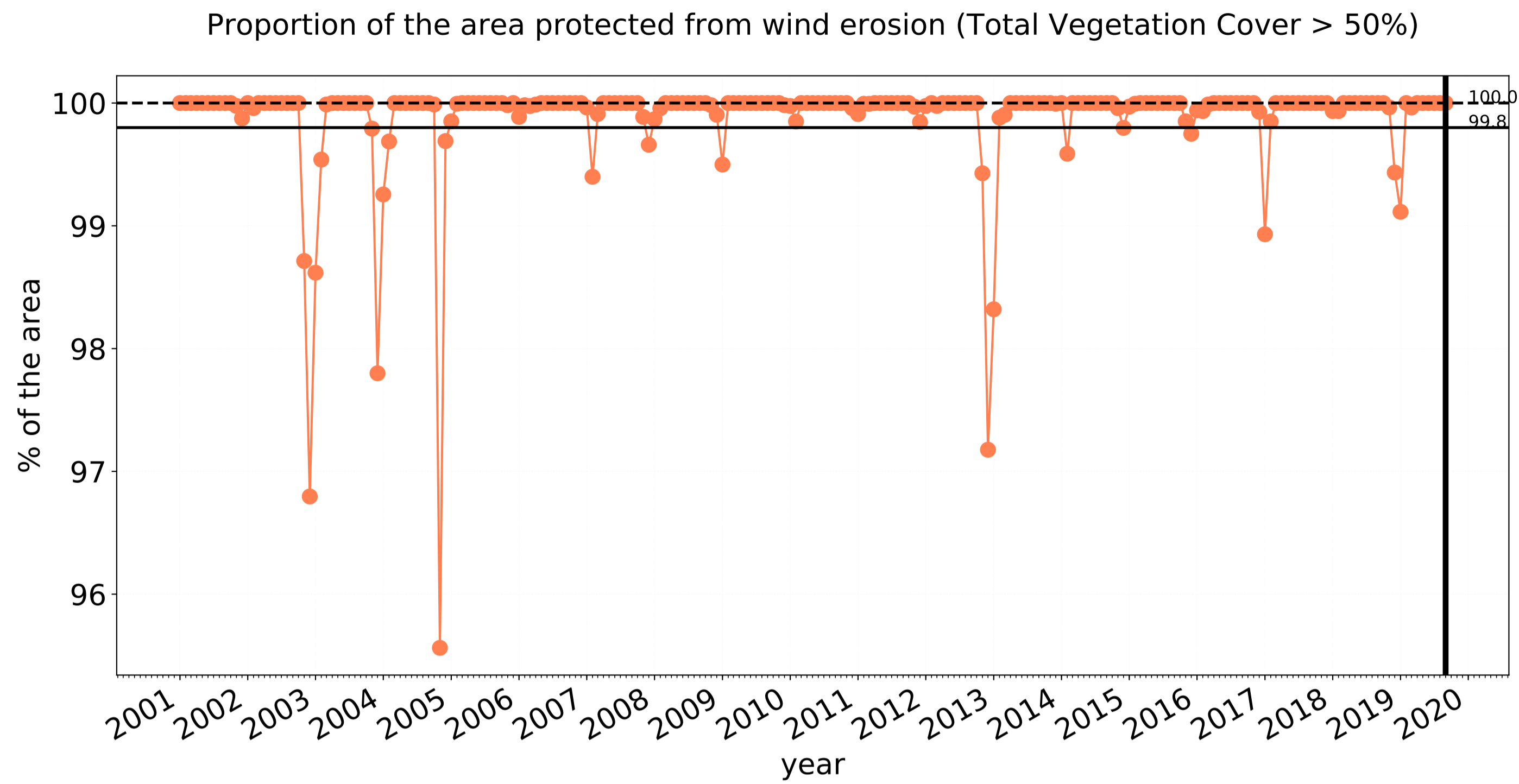CSIRO   TERN   Australian Government   National Landcare Programme   NSW GOVERNMENT | Planning, Industry & Environment

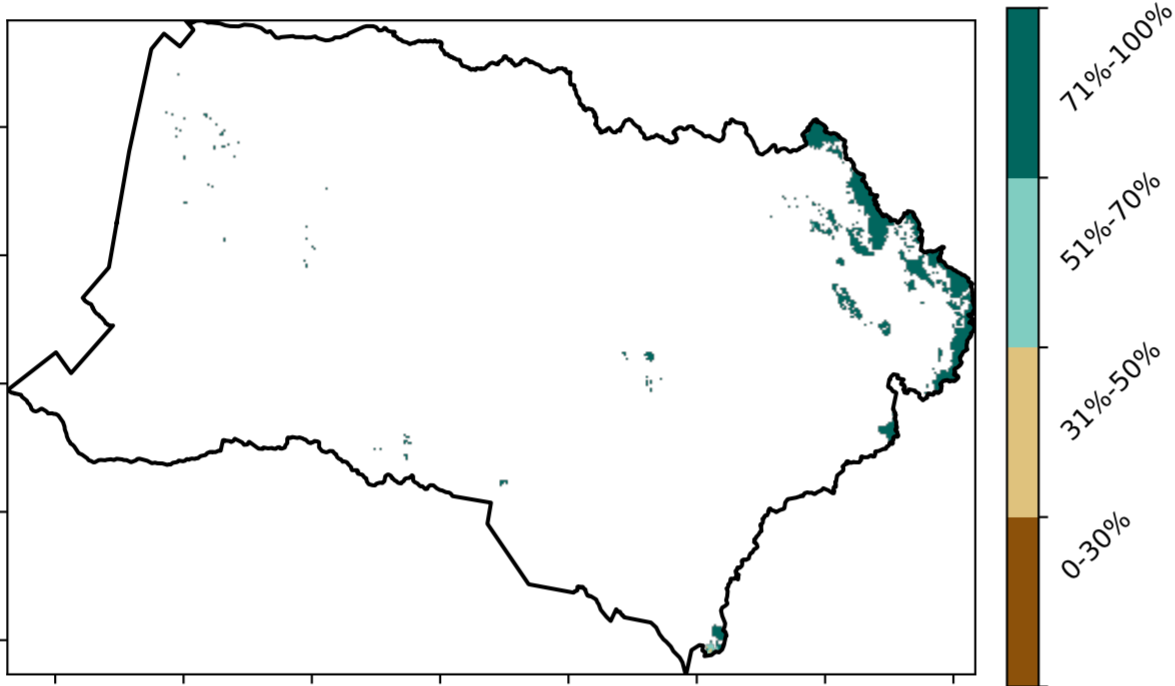# Conservation and natural environments Woodland forest timeseries
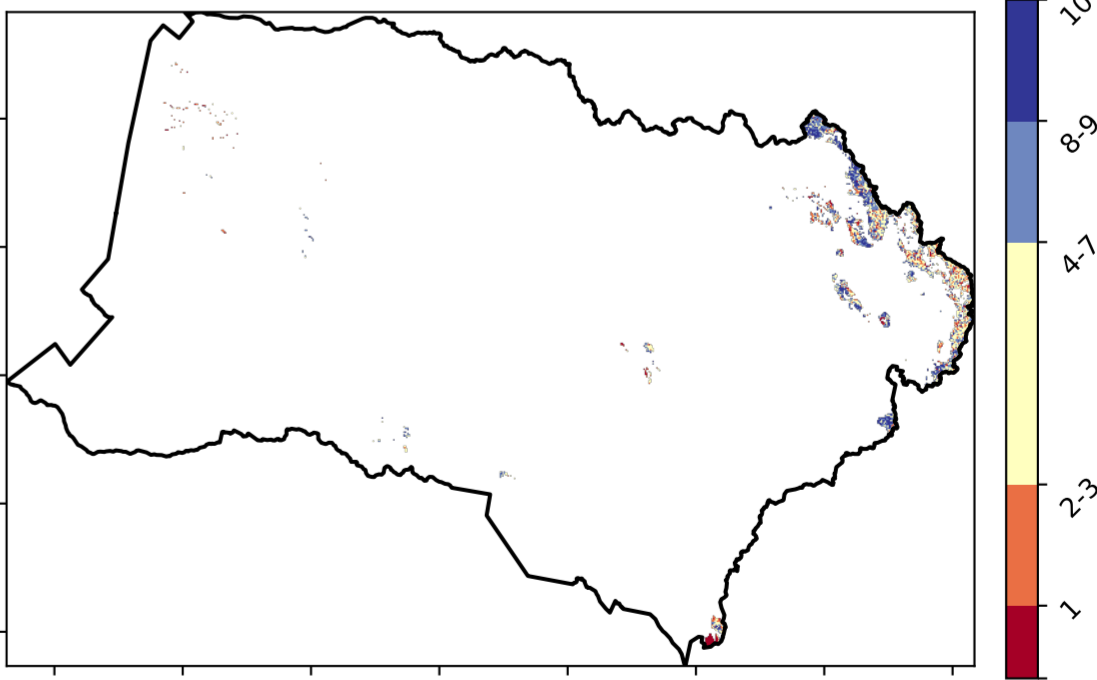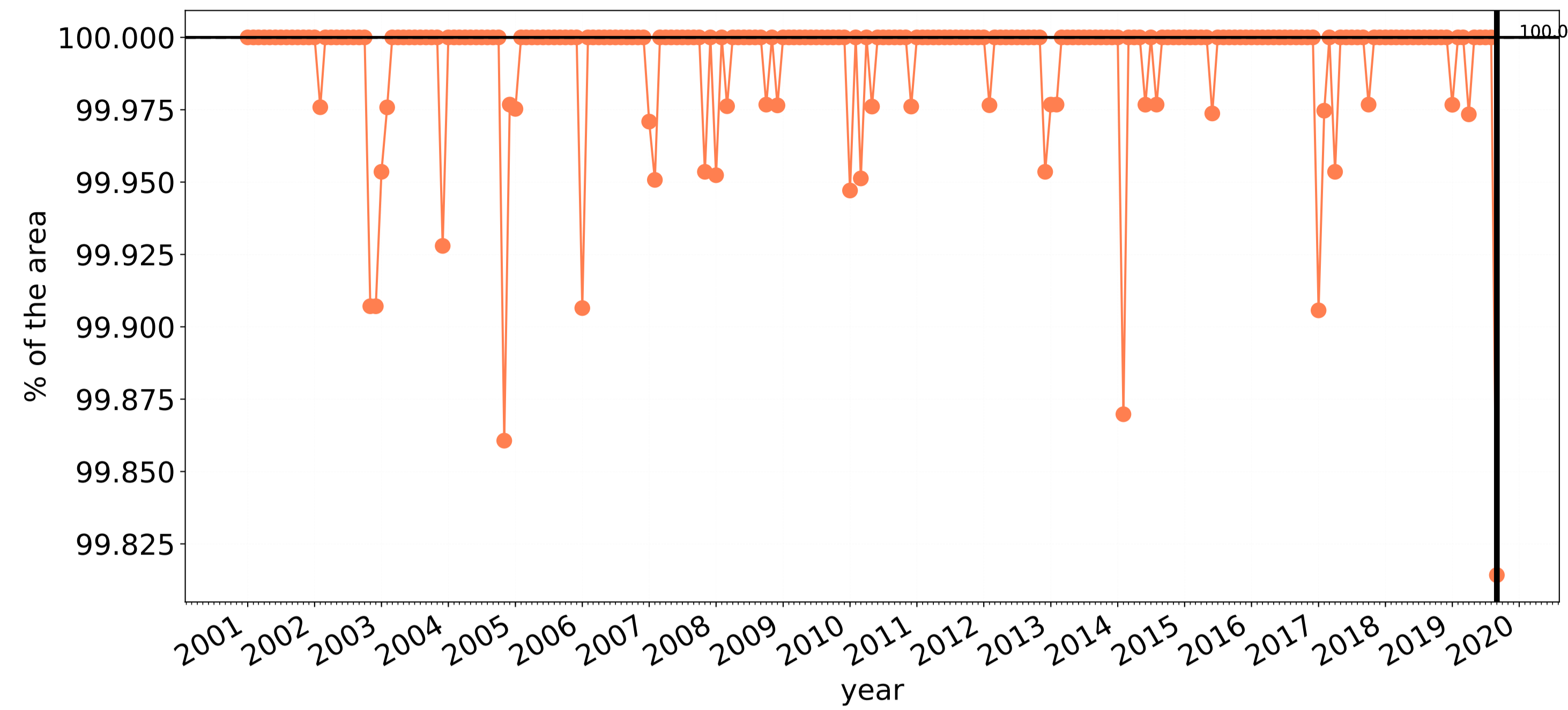

Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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%)

Conservation and natural environments 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.

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

Area (%) vs Total Vegetation Cover class

0-30%: 0.0%
31%-50%: 0.2%
51%-70%: 1.4%
71%-100%: 98.4%

% Area protected from water erosion (>70%)

Area not protected 1.6% of region (1,722 ha)

Area protected 98.4% of region (105,927 ha)

% Area protected from wind erosion (>50%)

Area not protected 0.0% of region (0 ha)

Area protected 100.0% of region (107,650 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.
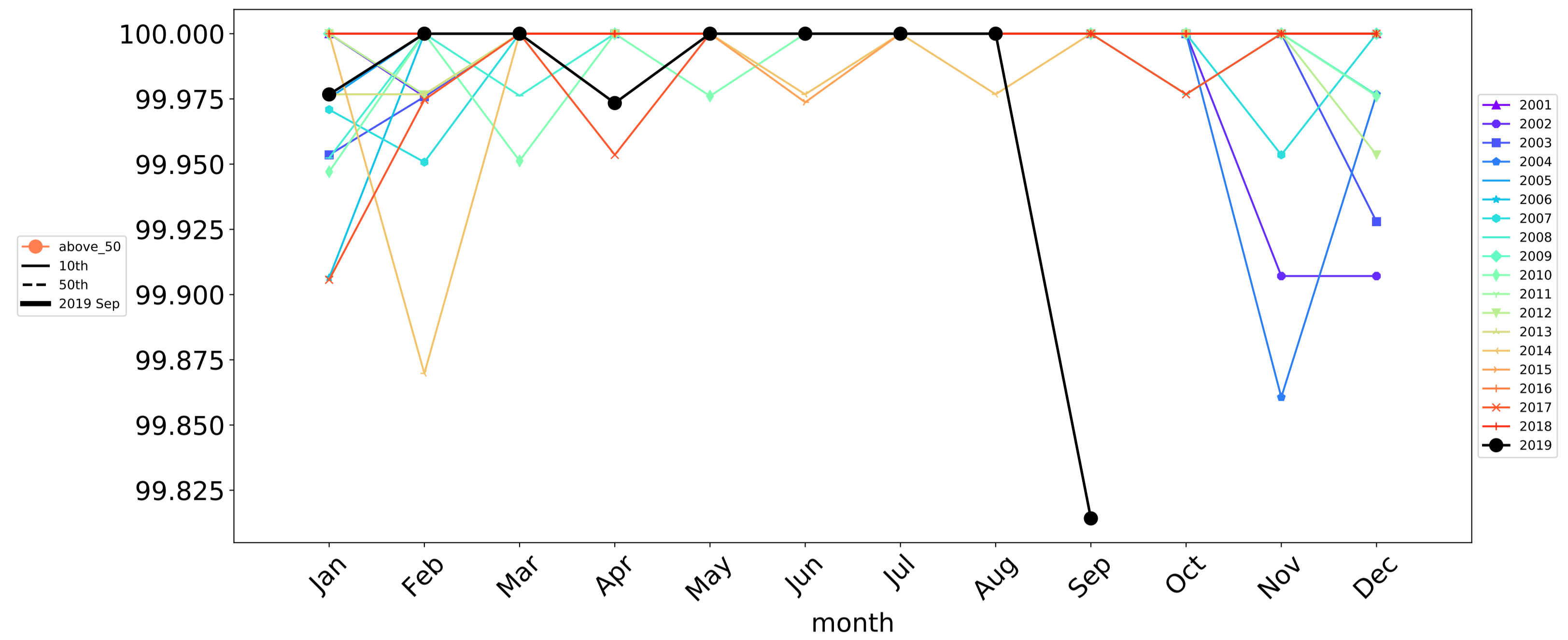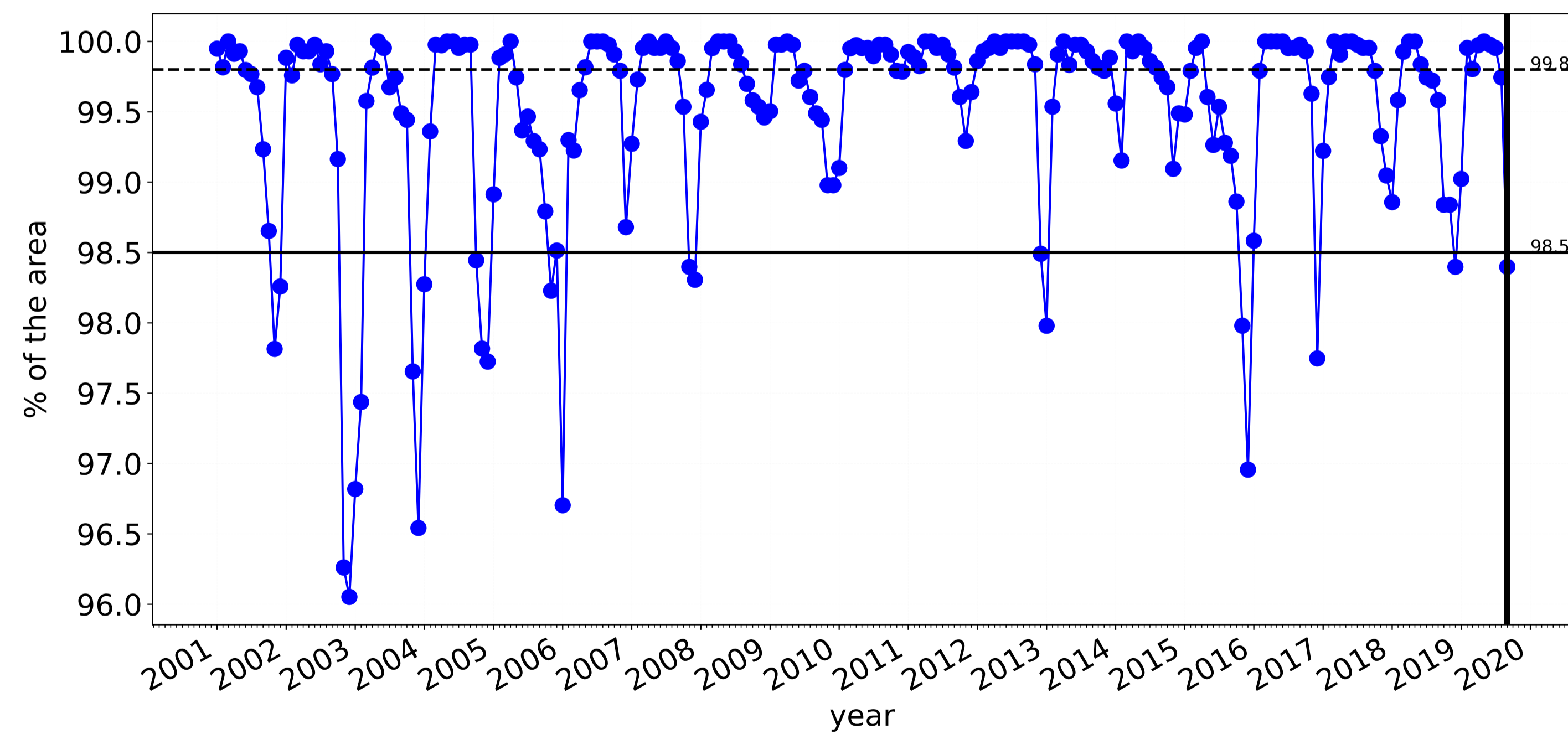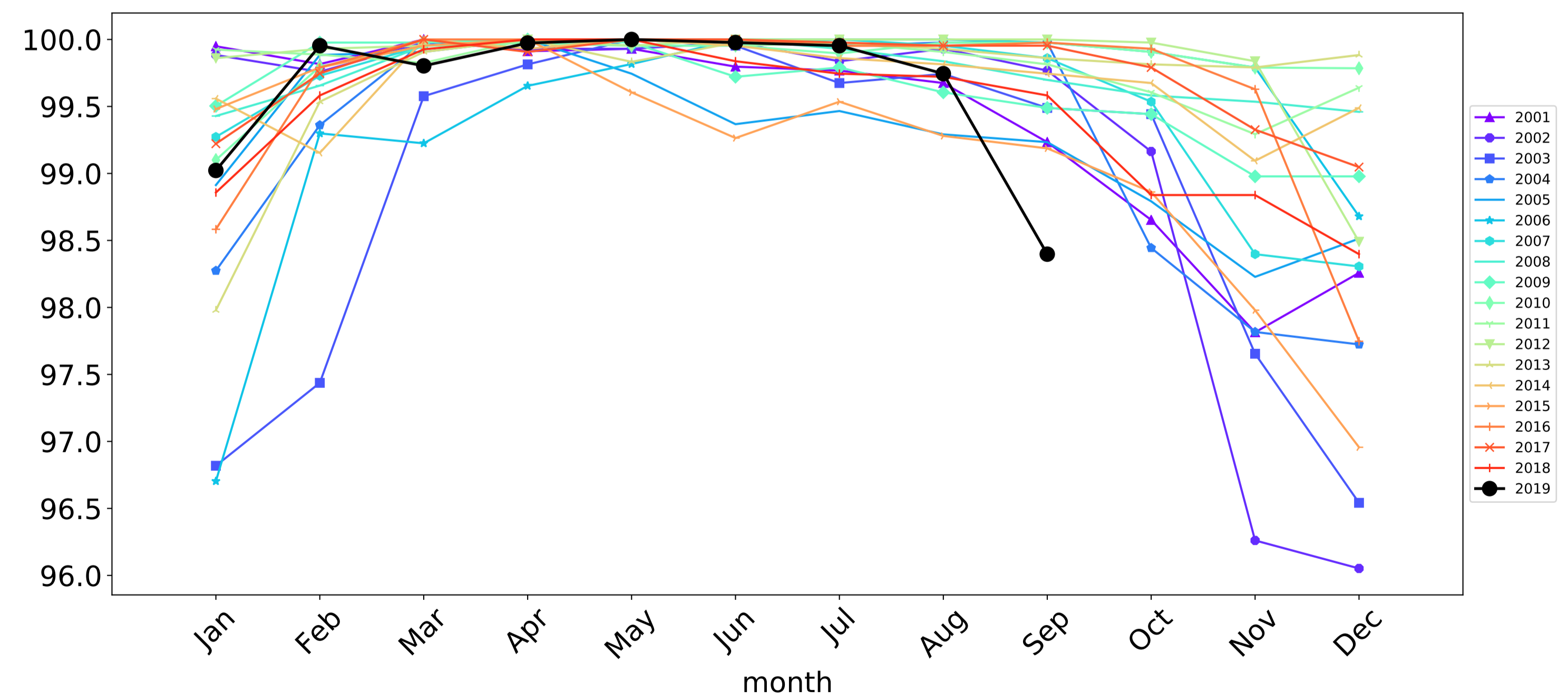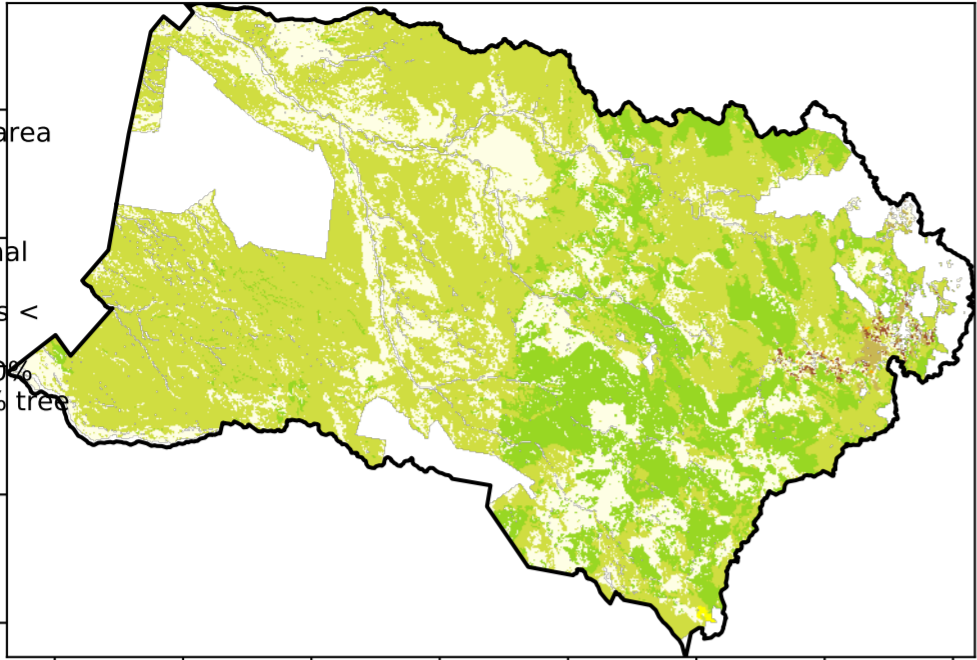
10
8-9
4-7
2-3
1

Conservation and natural environments Forest (non woodland) timeseries

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.

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 - Irrigated

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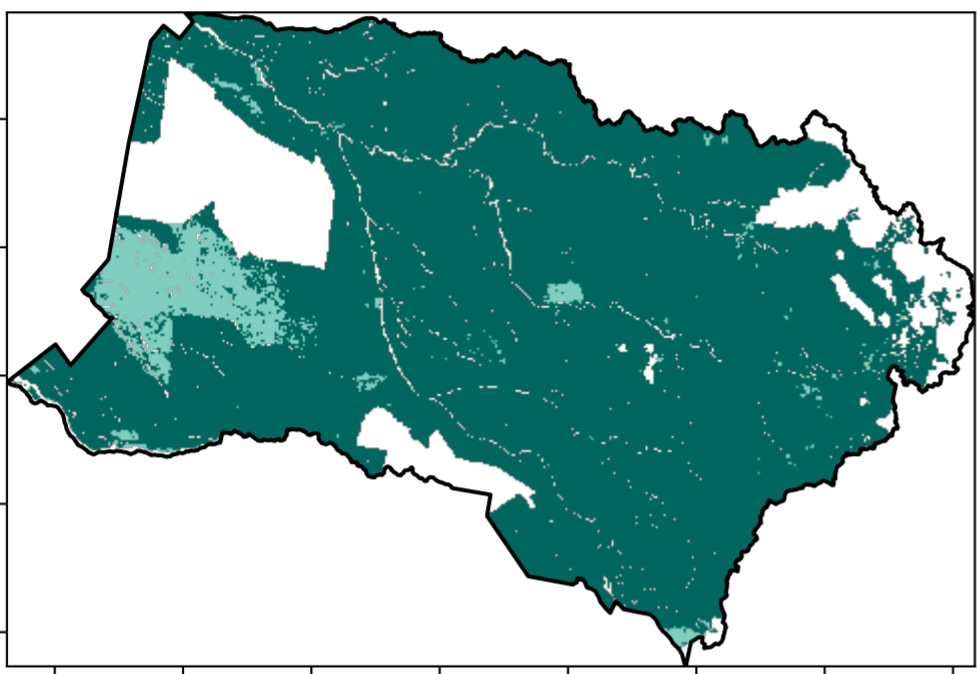
71%-100%
51%-70%
31%-50%
0-30%

Proportion of vegetation cover class in area

93.8%

6.2%

0.0%   0.0%

Area (%)

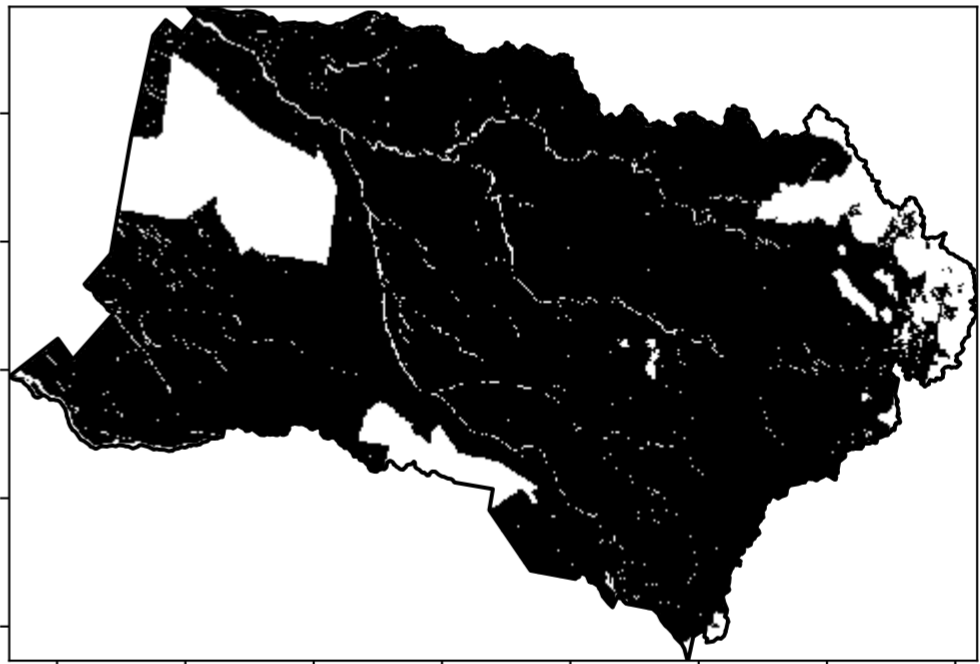Total Vegetation Cover class

0-30%   31%-50%   51%-70%   71%-100%
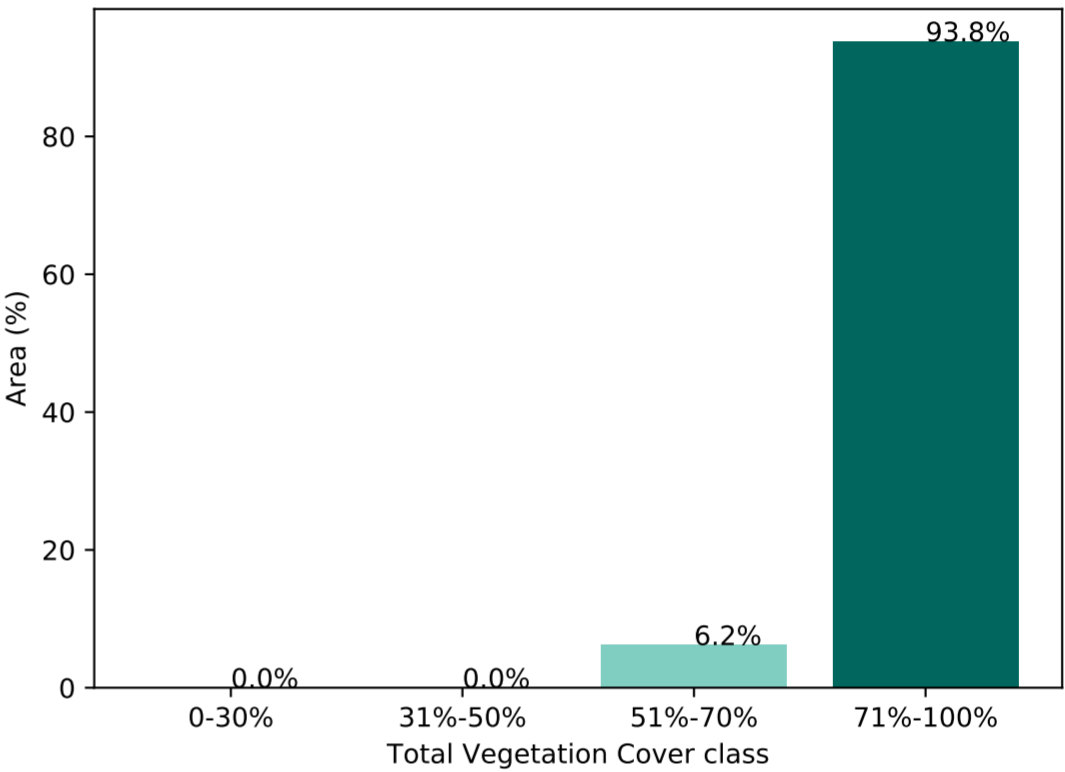
% Area protected from water erosion (>70%)
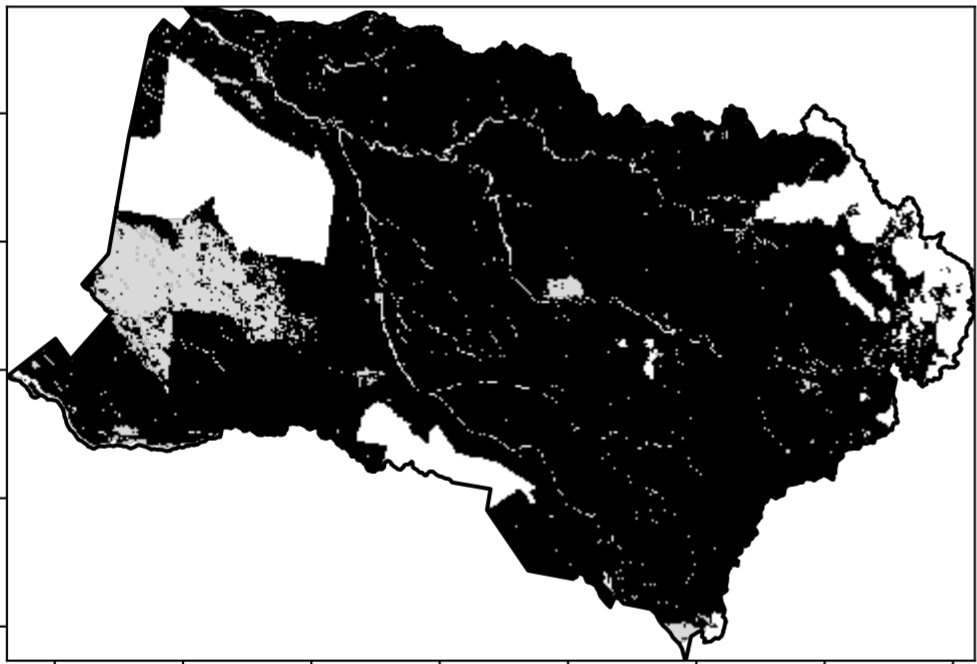
Area not protected 6.2% of region (282,307 ha)
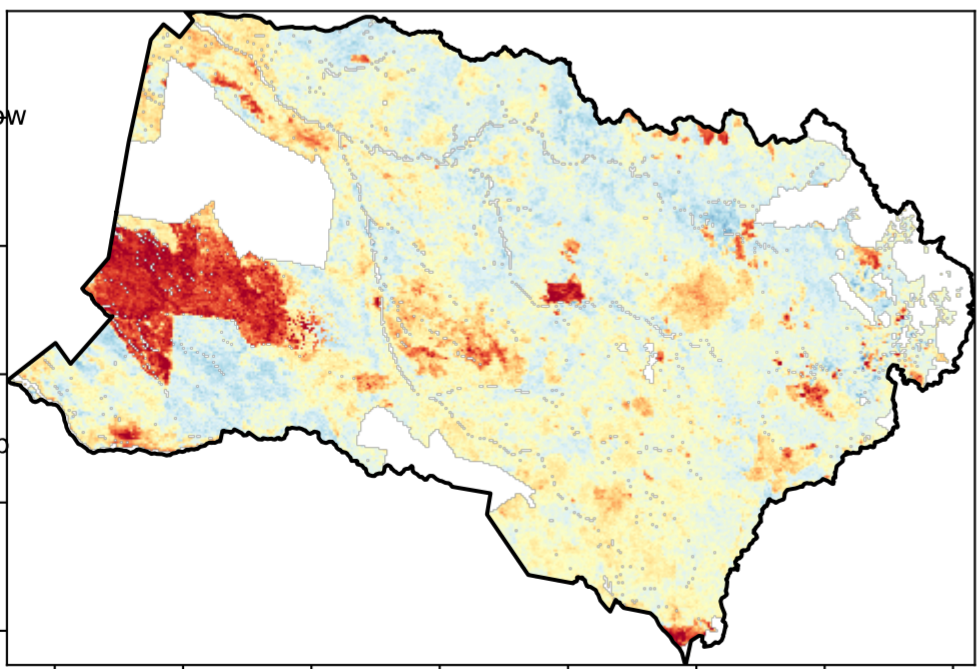
Area protected 93.8% of region (4,271,042 ha)

% Area protected from wind erosion (>50%)

Area not protected 0.0% of region (0 ha)

Area protected 100.0% of region (4,553,350 ha)
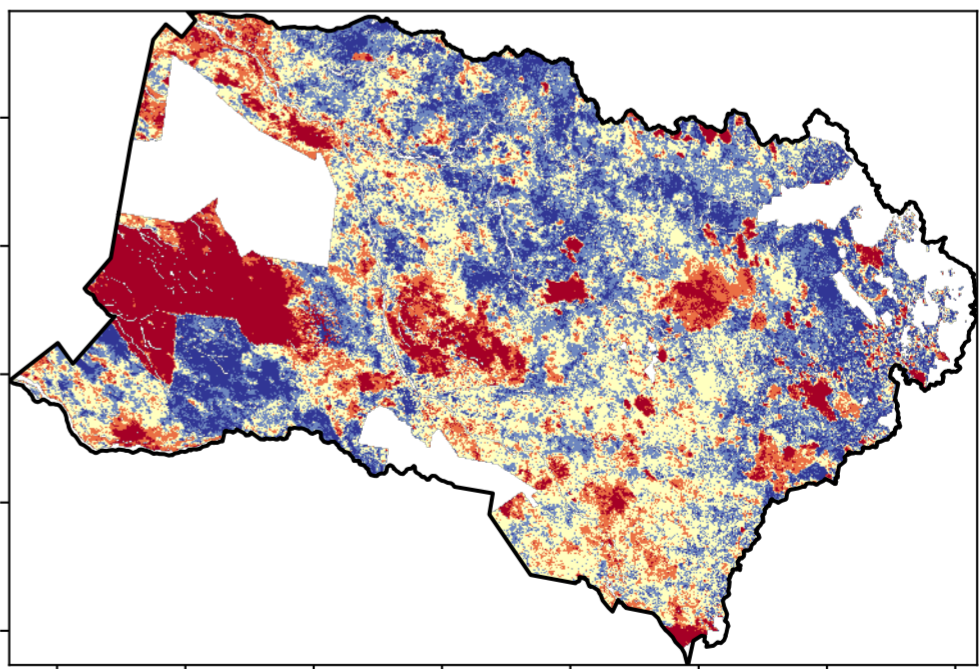
Total Vegetation Cover Anomaly [%]

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.
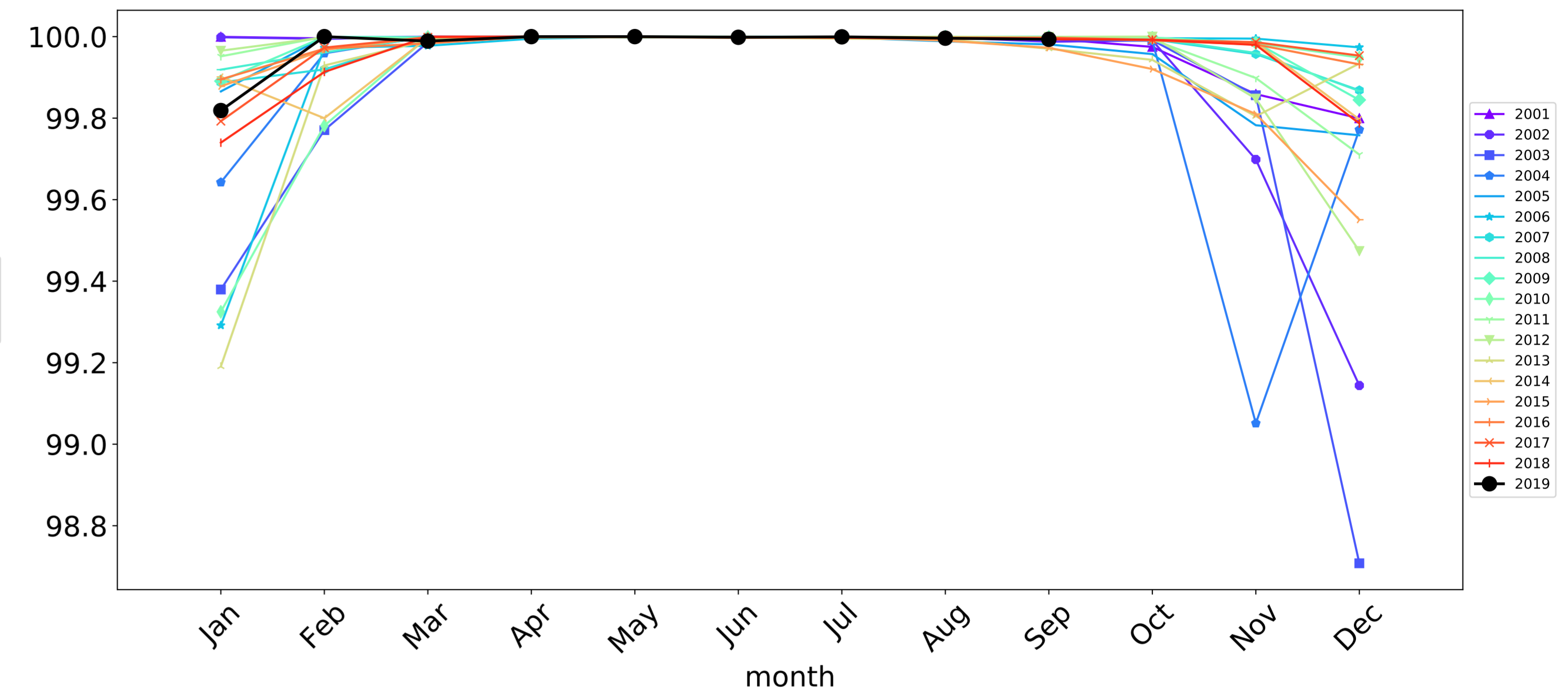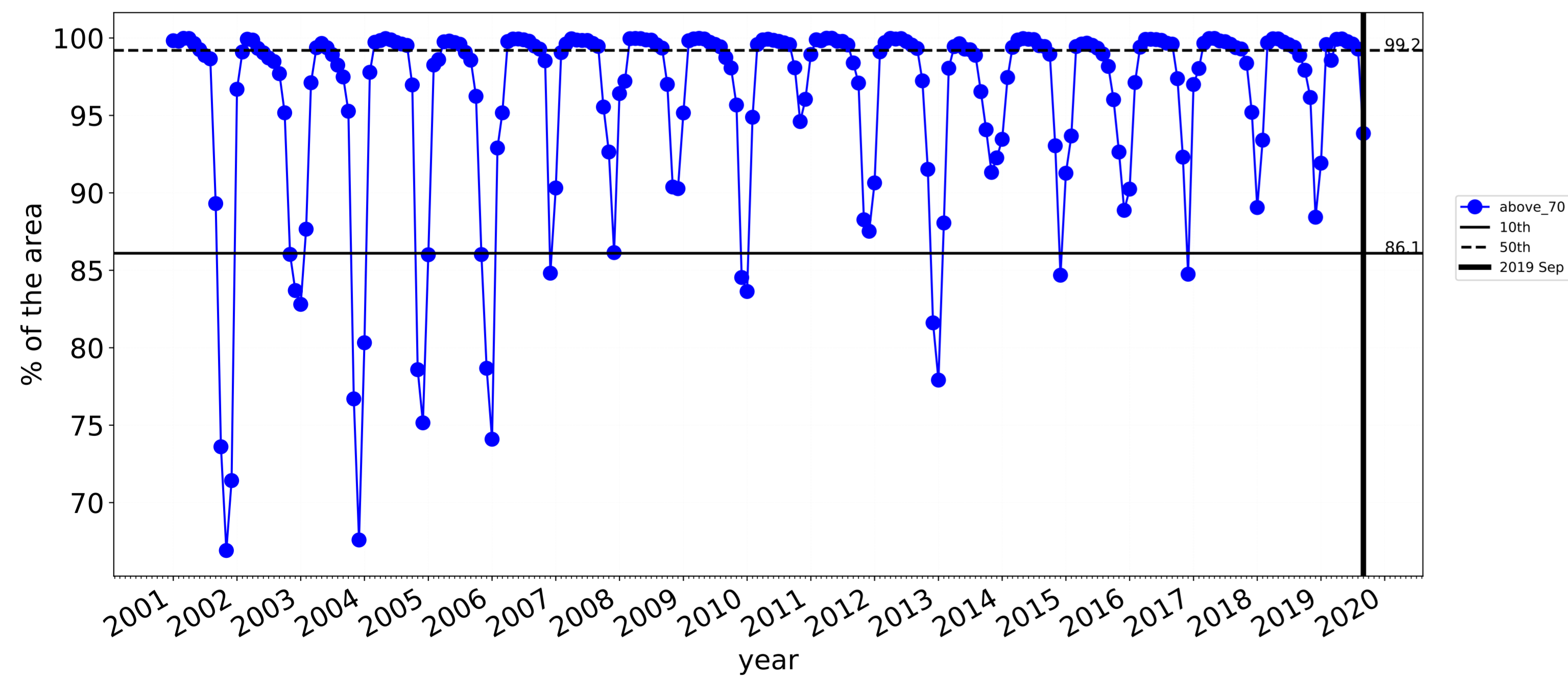
10
8-9
4-7
2-3
1

Agriculture timeseries

Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)
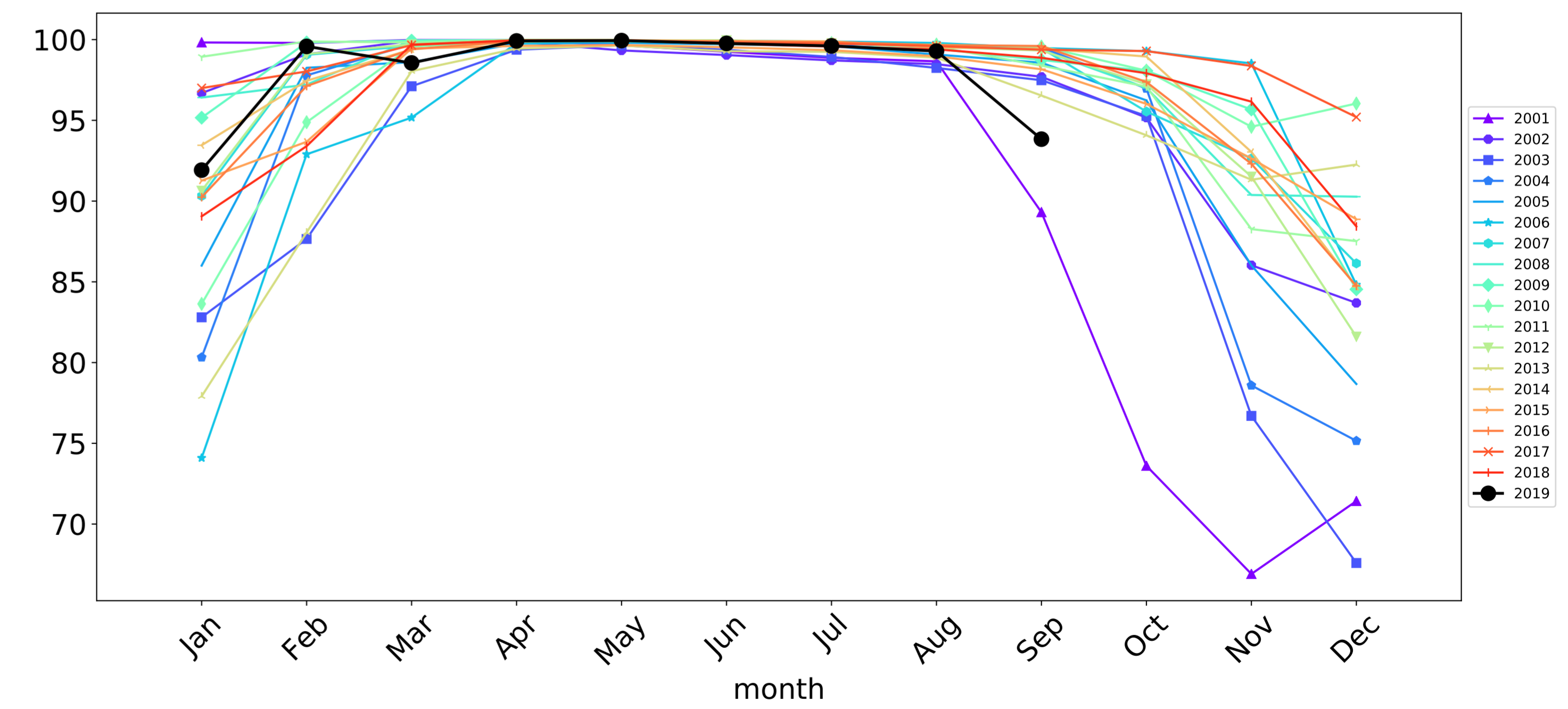
Wind erosion historical monthly area protected (Total Veg Cov >50%)

Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)
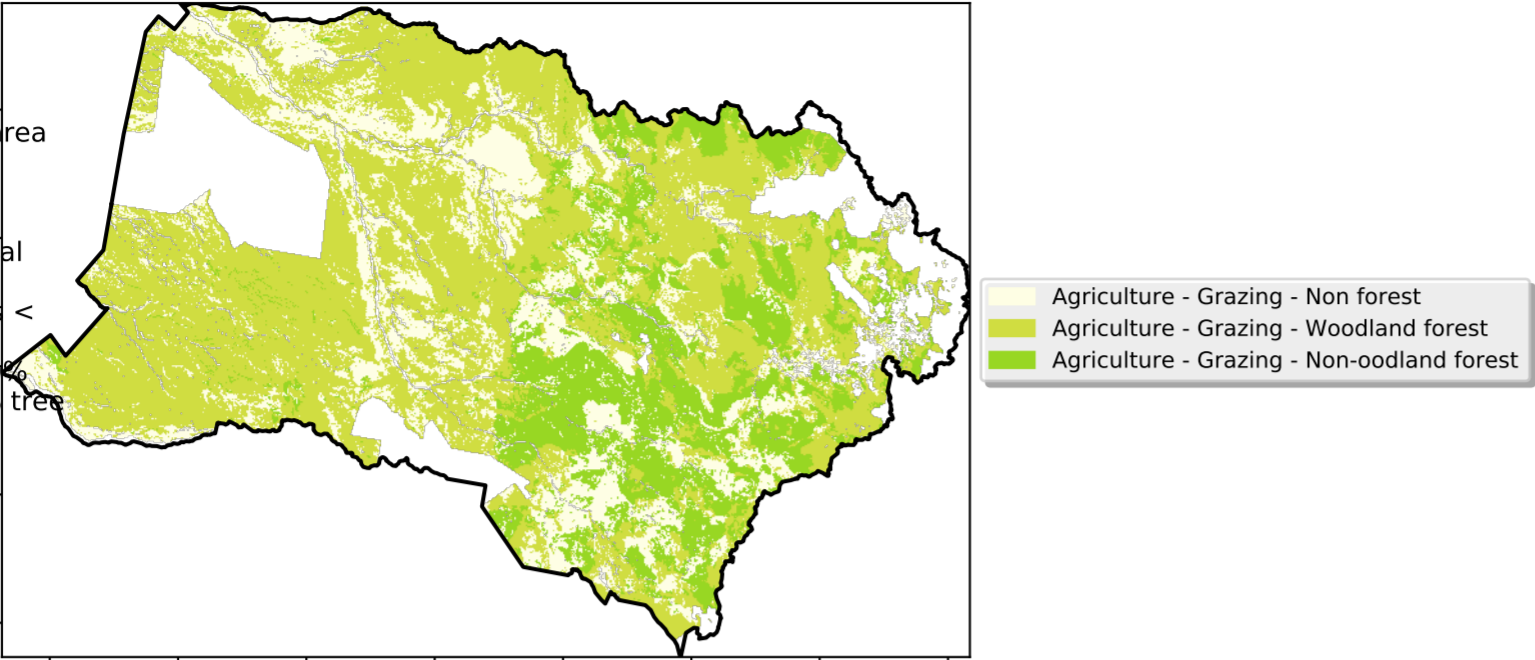
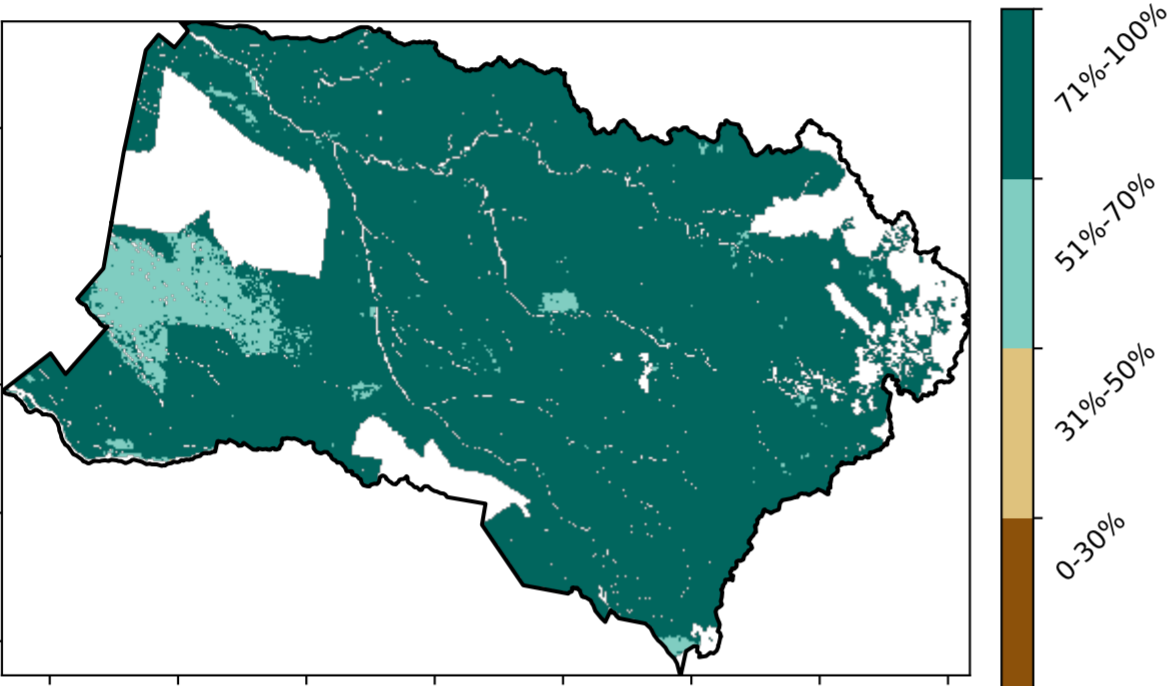Water erosion historical monthly area protected (Total Veg Cov>70%)
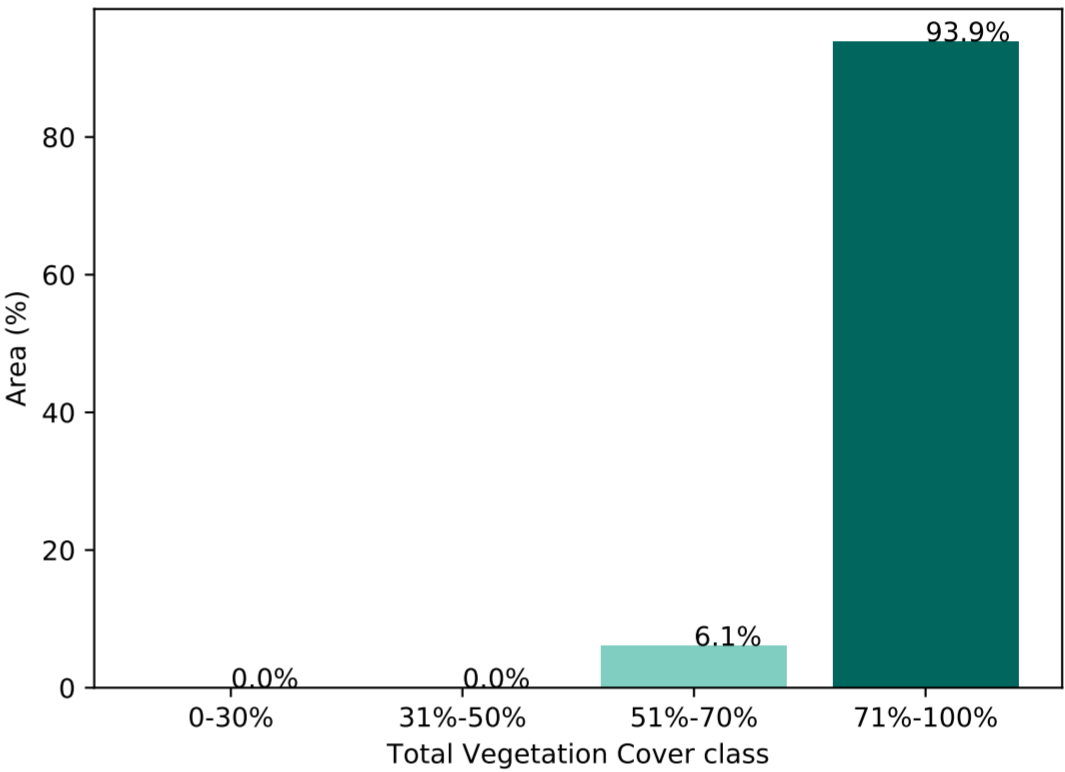
Grazing

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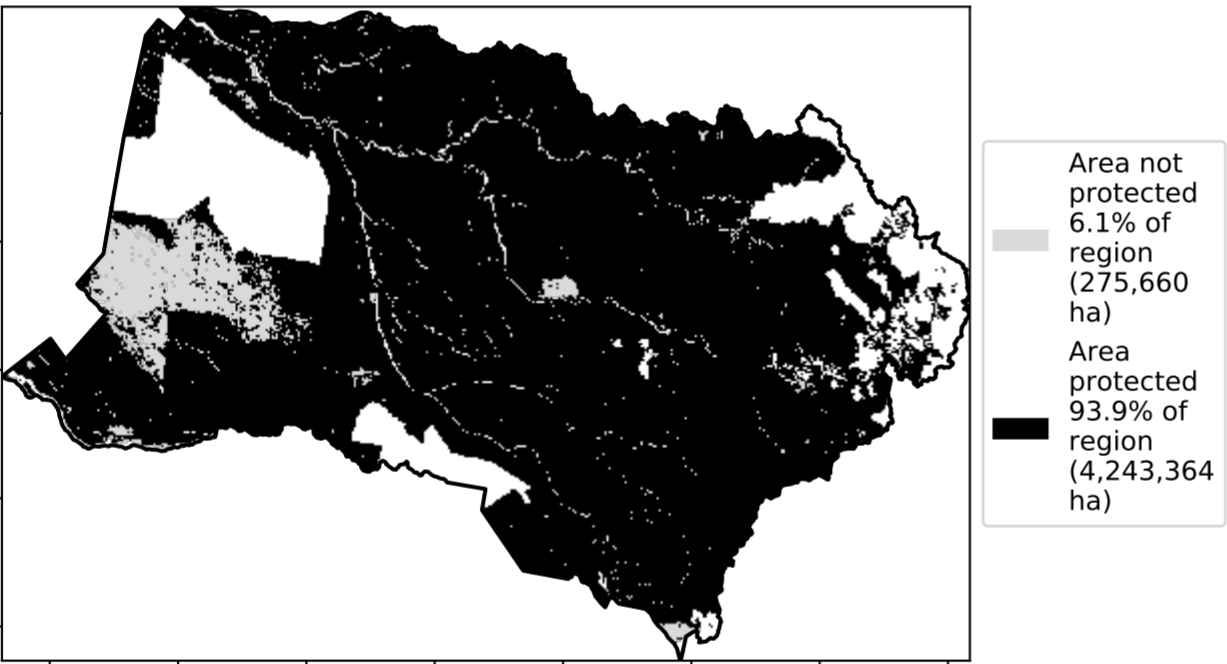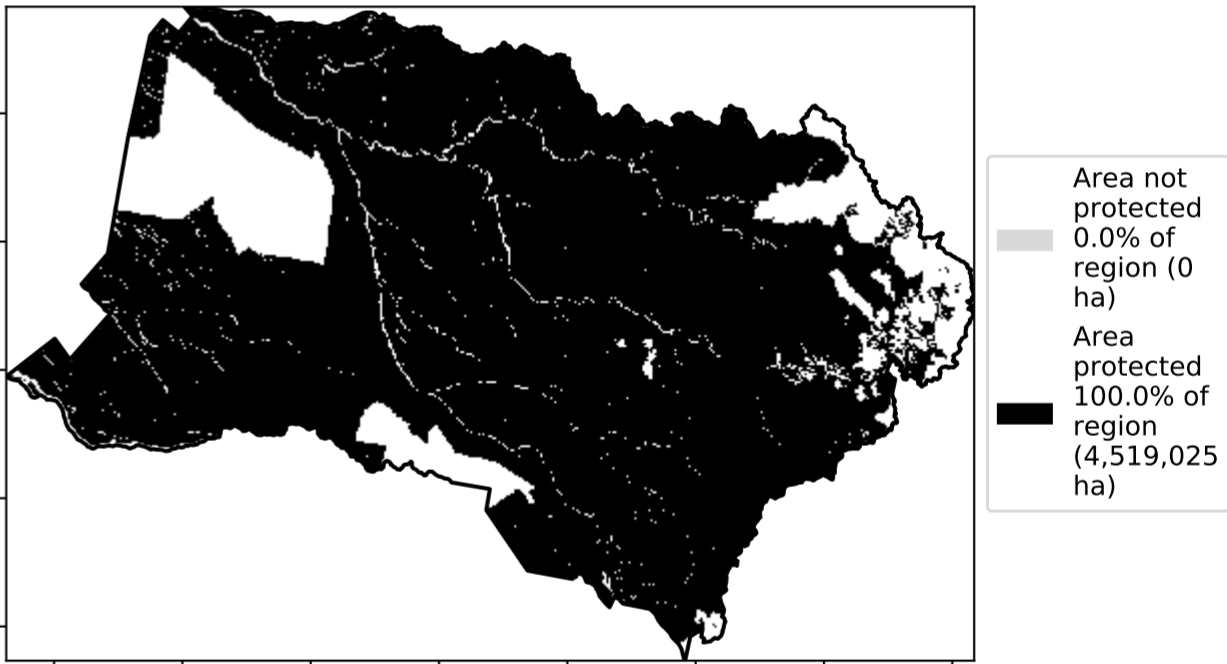
- Agriculture - Grazing - Non forest
- Agriculture - Grazing - Woodland forest
- Agriculture - Grazing - Non-oodland forest

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

0-30%: 0.0%
31%-50%: 0.0%
51%-70%: 6.1%
71%-100%: 93.9%

Area (%) vs Total Vegetation Cover class

% Area protected from water erosion (>70%)

Area not protected 6.1% of region (275,660 ha)

Area protected 93.9% of region (4,243,364 ha)

% Area protected from wind erosion (>50%)
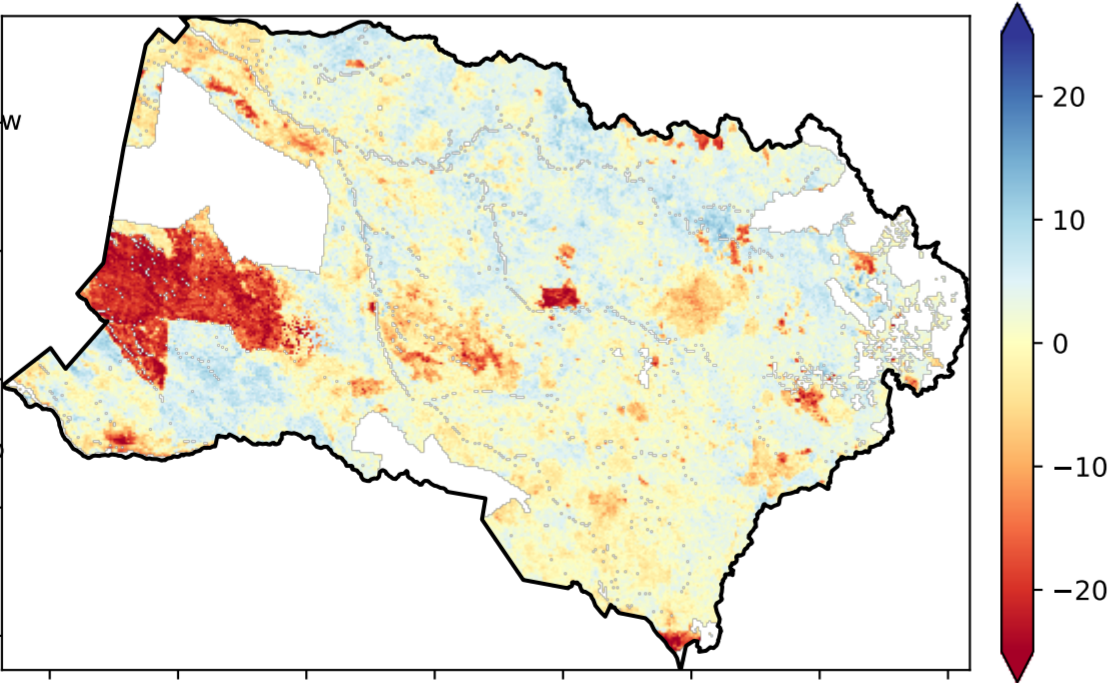
Area not protected 0.0% of region (0 ha)
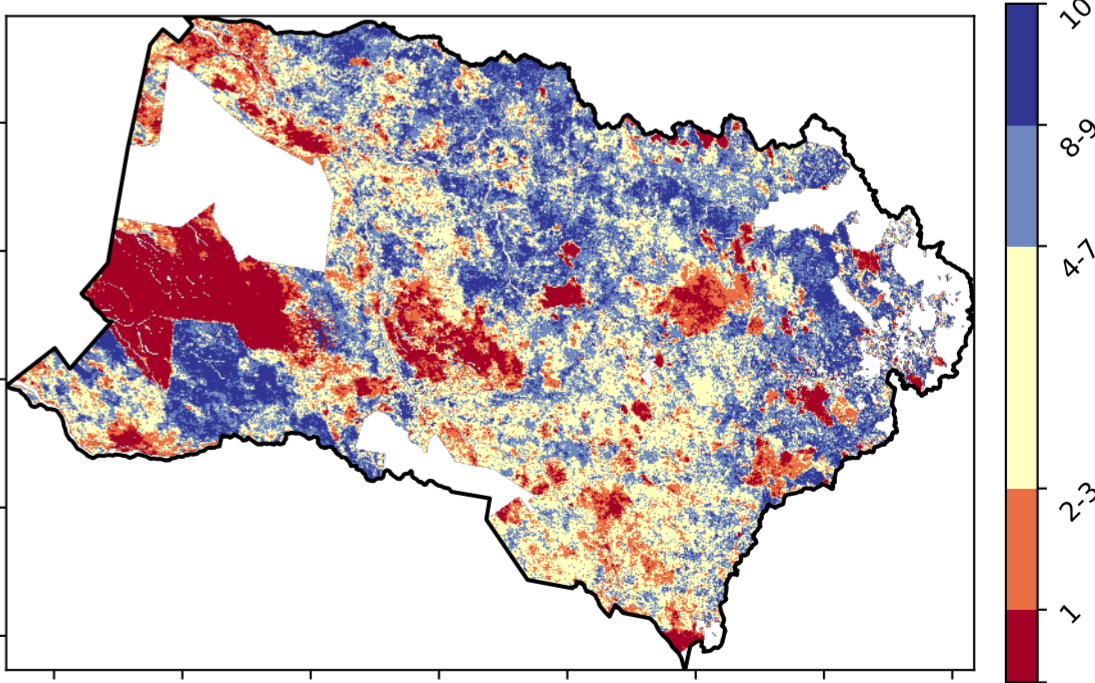
Area protected 100.0% of region (4,519,025 ha)

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.
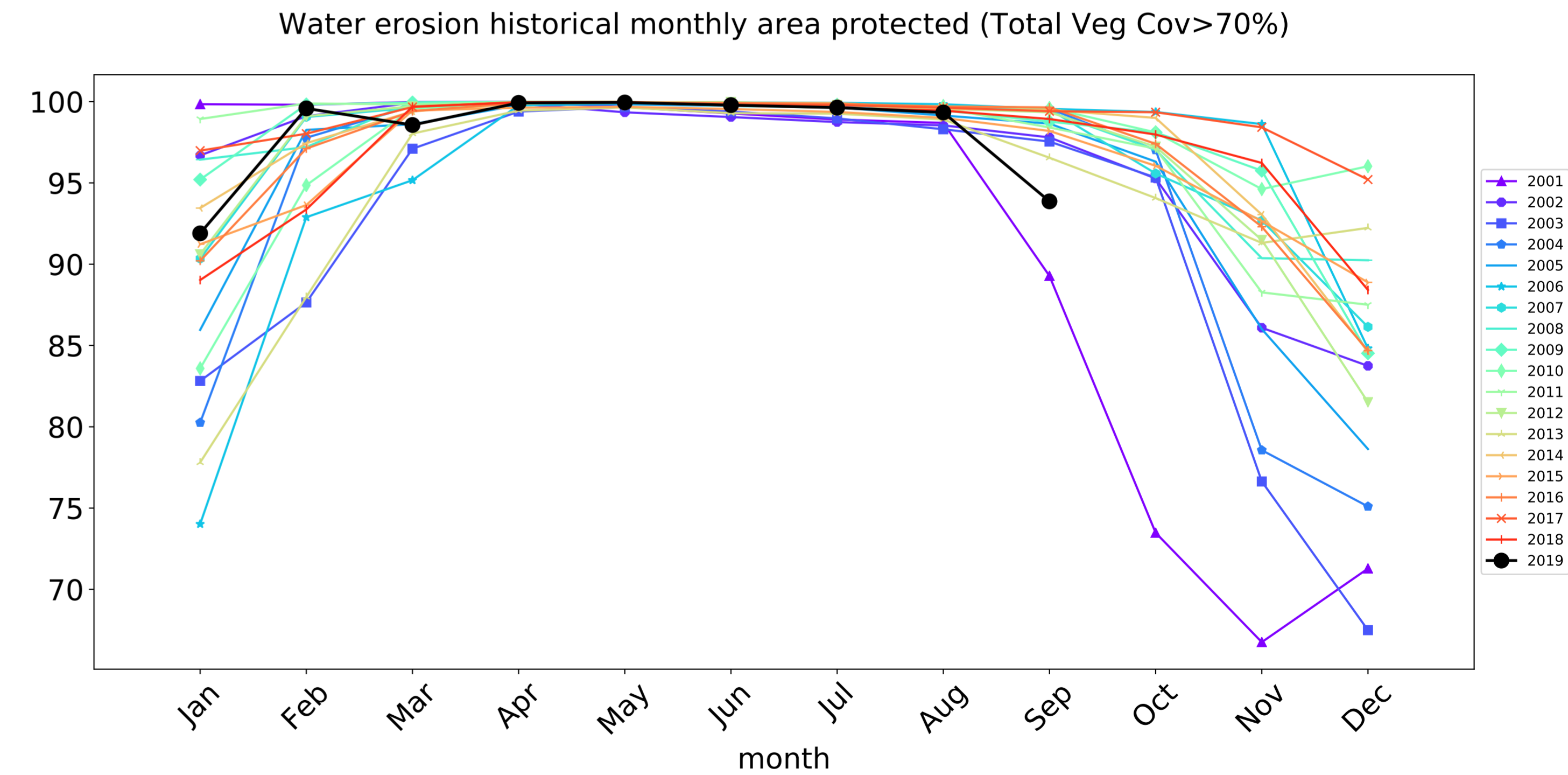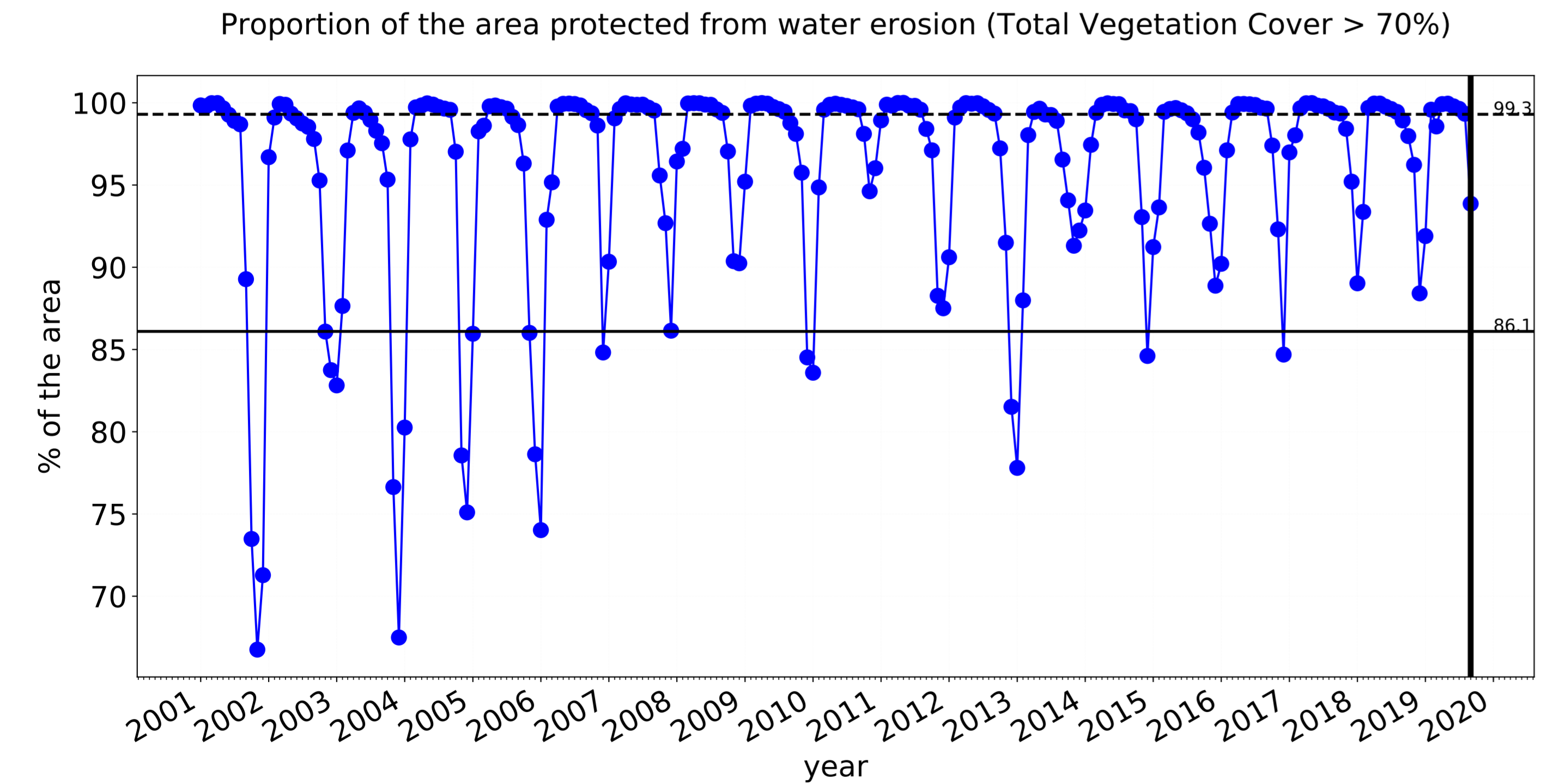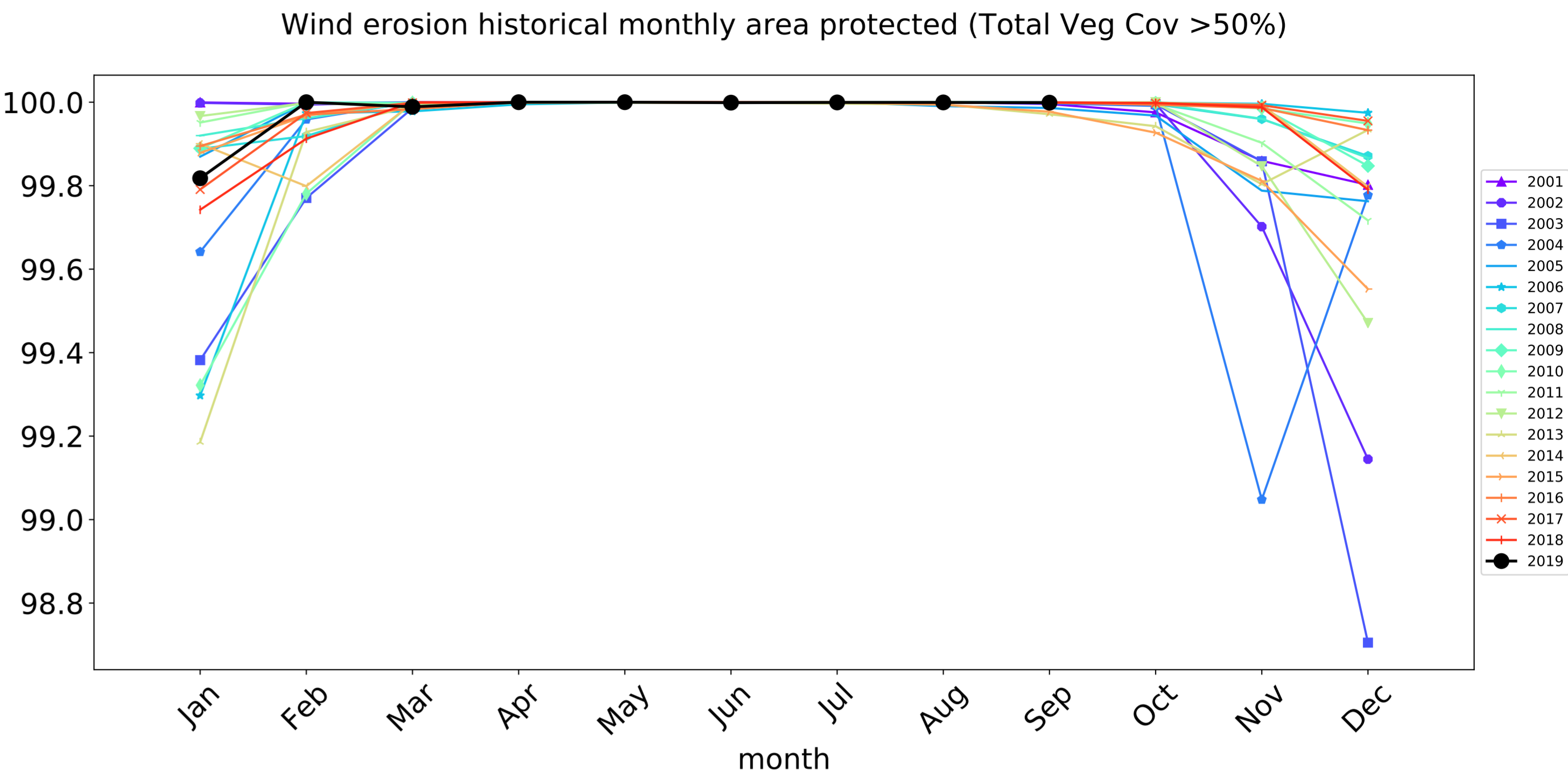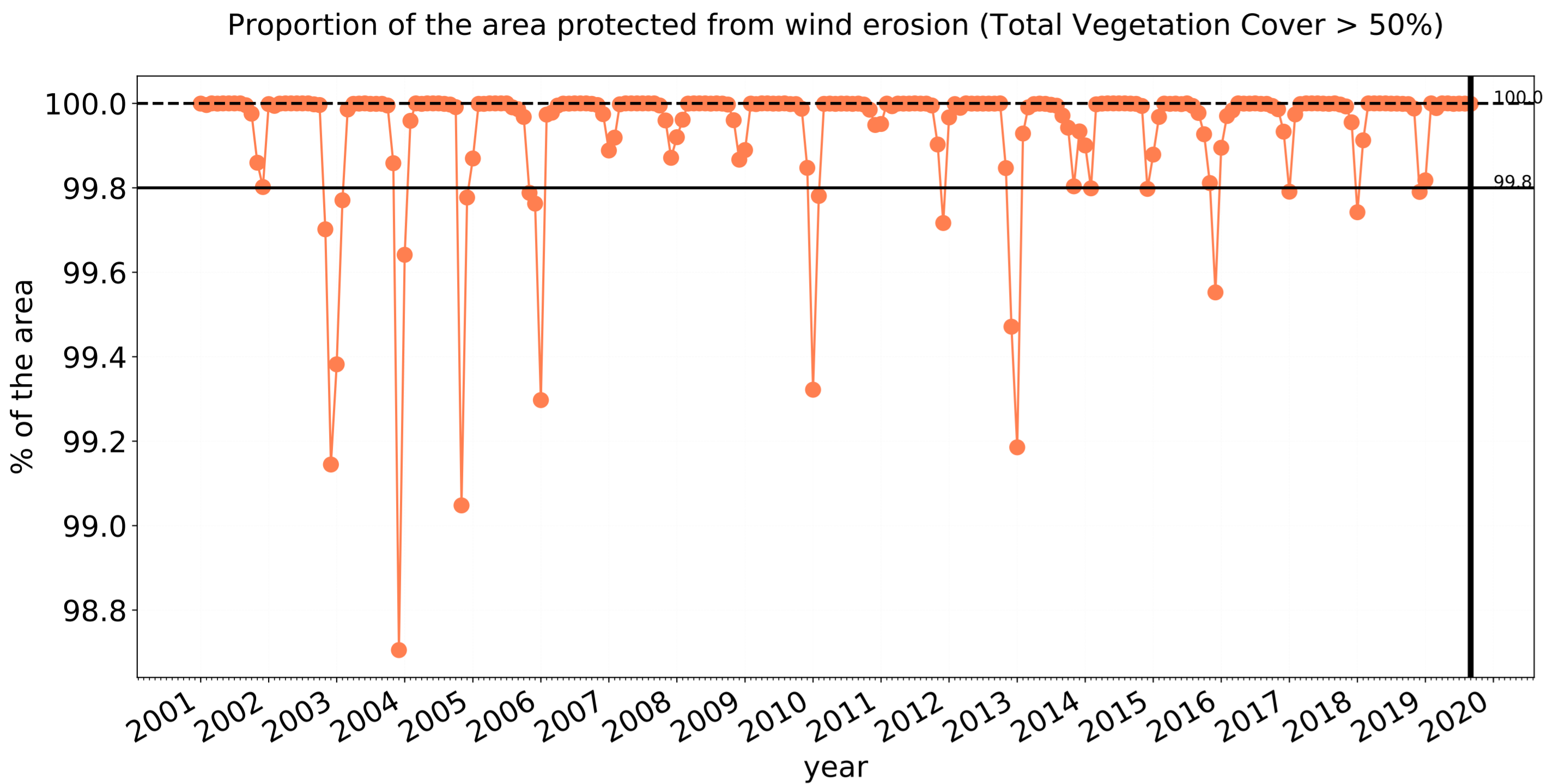
- 10
- 8-9
- 4-7
- 2-3
- 1

Grazing 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%)
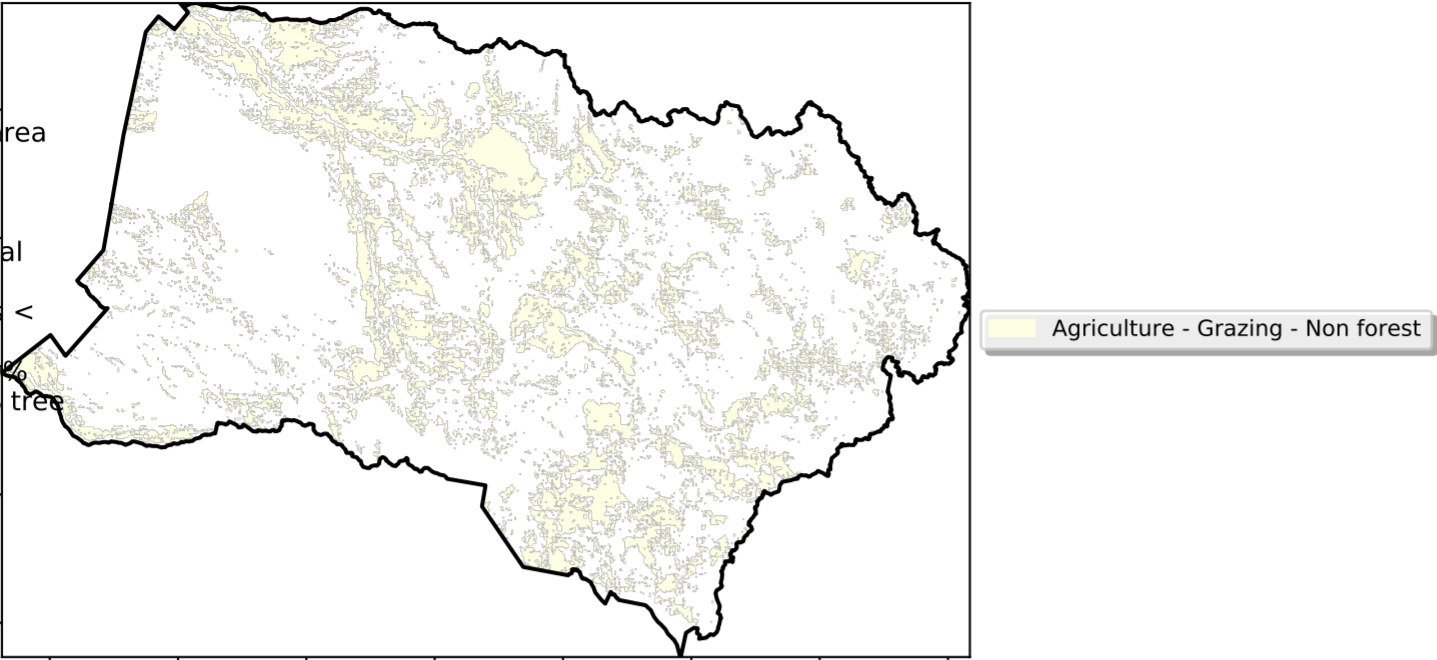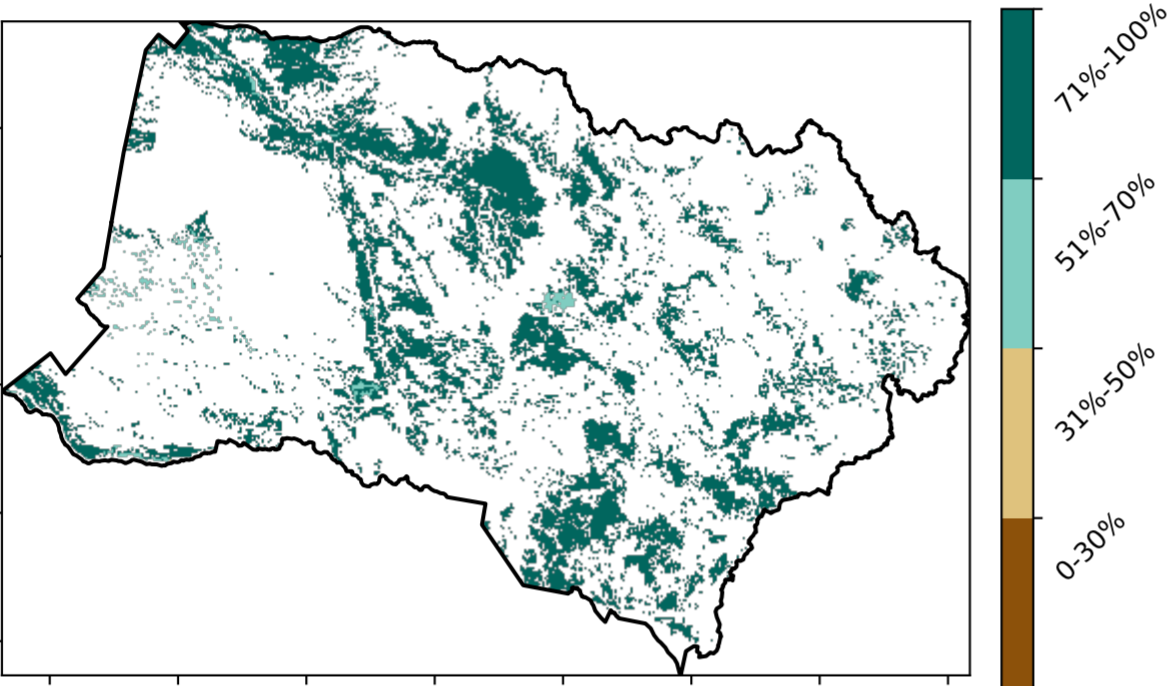
Grazing non forest

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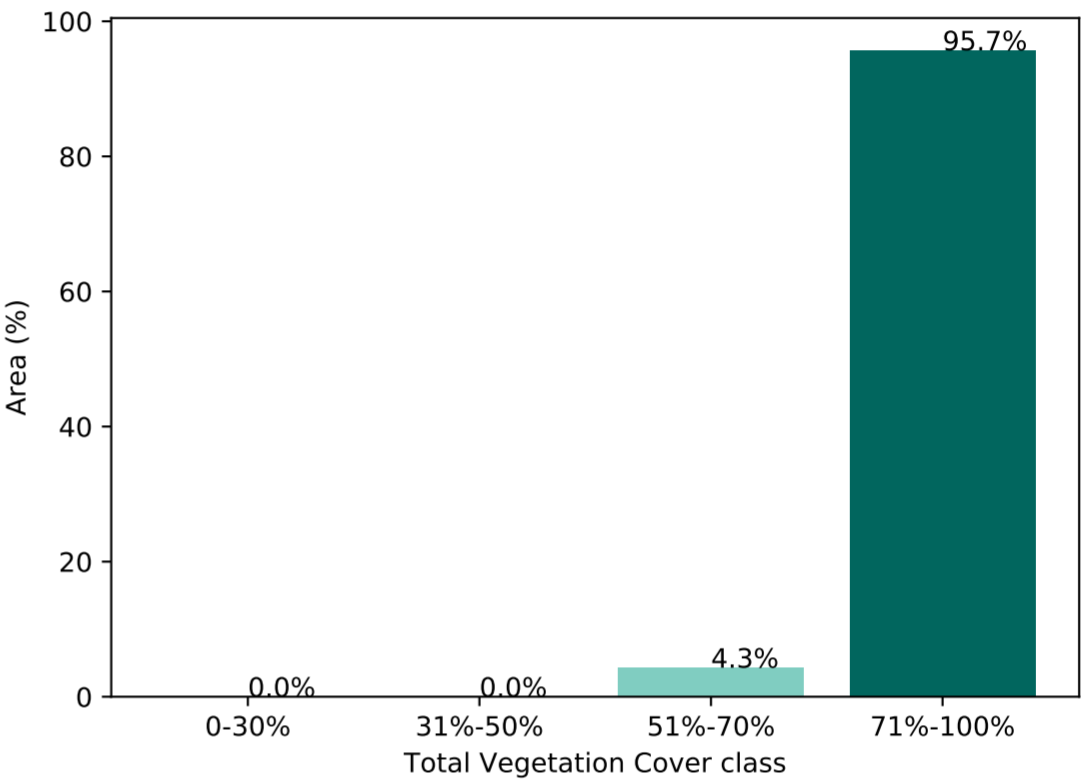
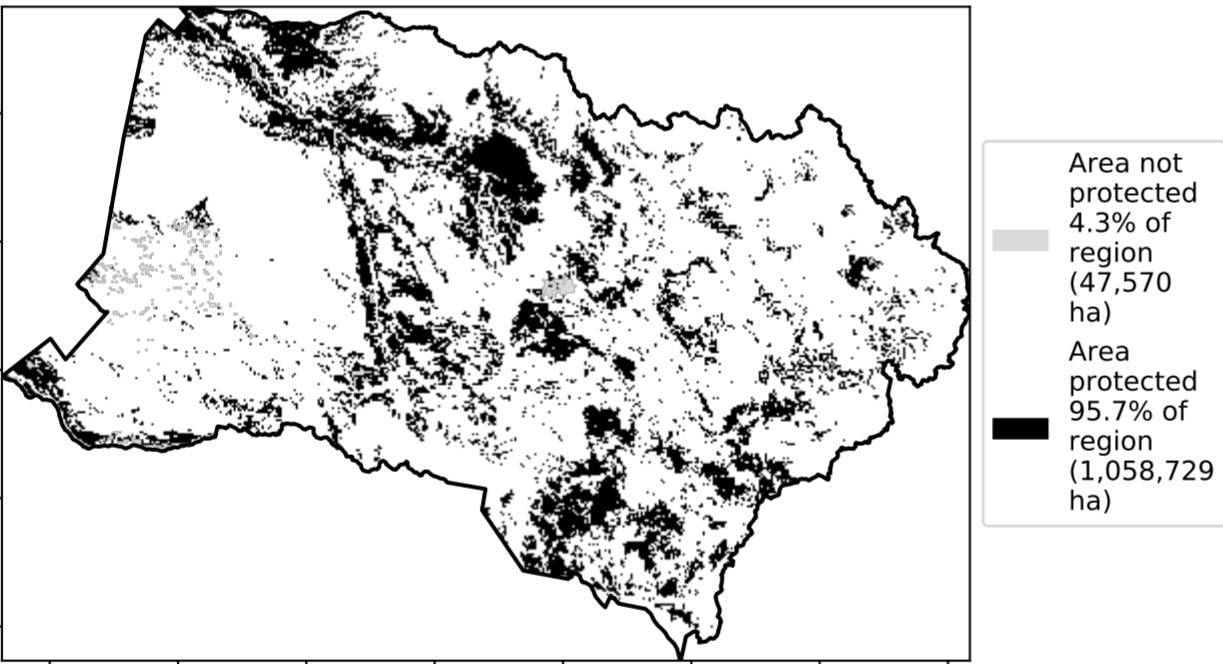Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.
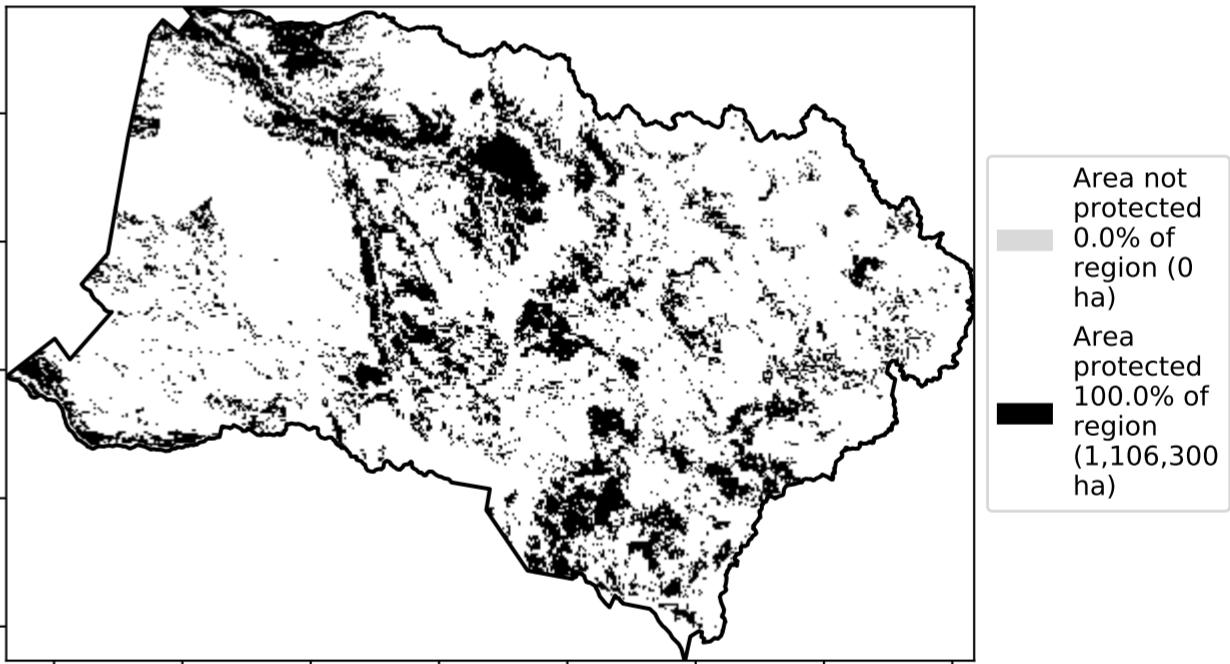
Agriculture - Grazing - Non forest

Total Vegetation Cover [%]

71%-100%

51%-70%

31%-50%

0-30%

Proportion of vegetation cover class in area

Area (%)

0.0% 0.0% 4.3% 95.7%

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

% Area protected from water erosion (>70%)

Area not protected 4.3% of region (47,570 ha)

Area protected 95.7% of region (1,058,729 ha)

% Area protected from wind erosion (>50%)

Area not protected 0.0% of region (0 ha)

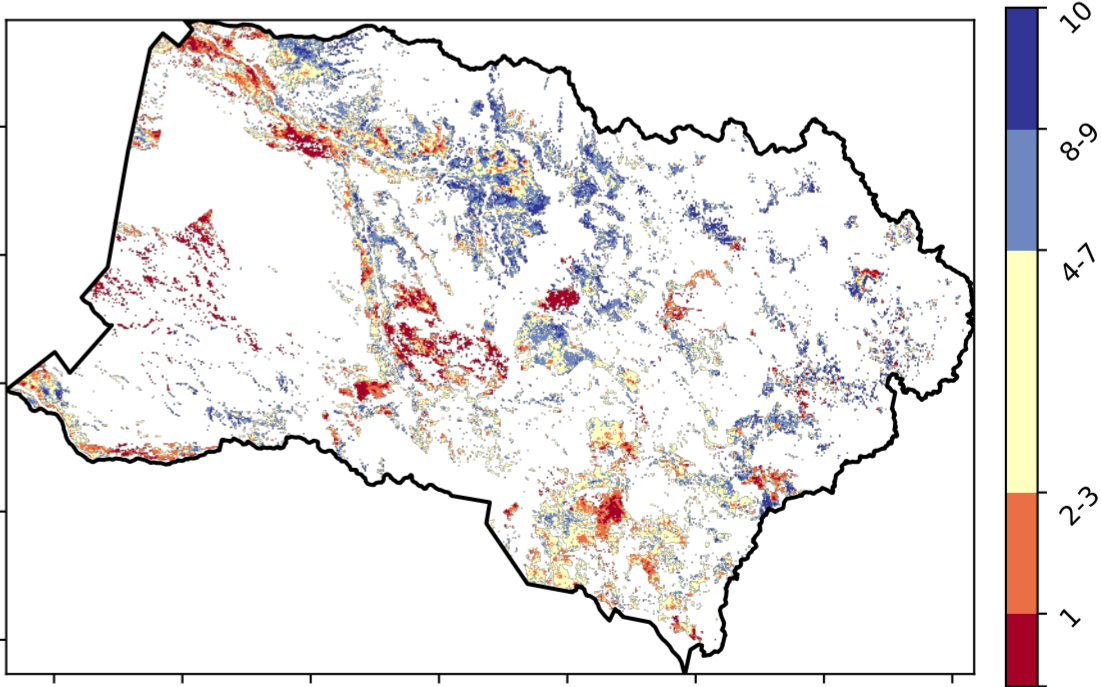Area protected 100.0% of region (1,106,300 ha)

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.
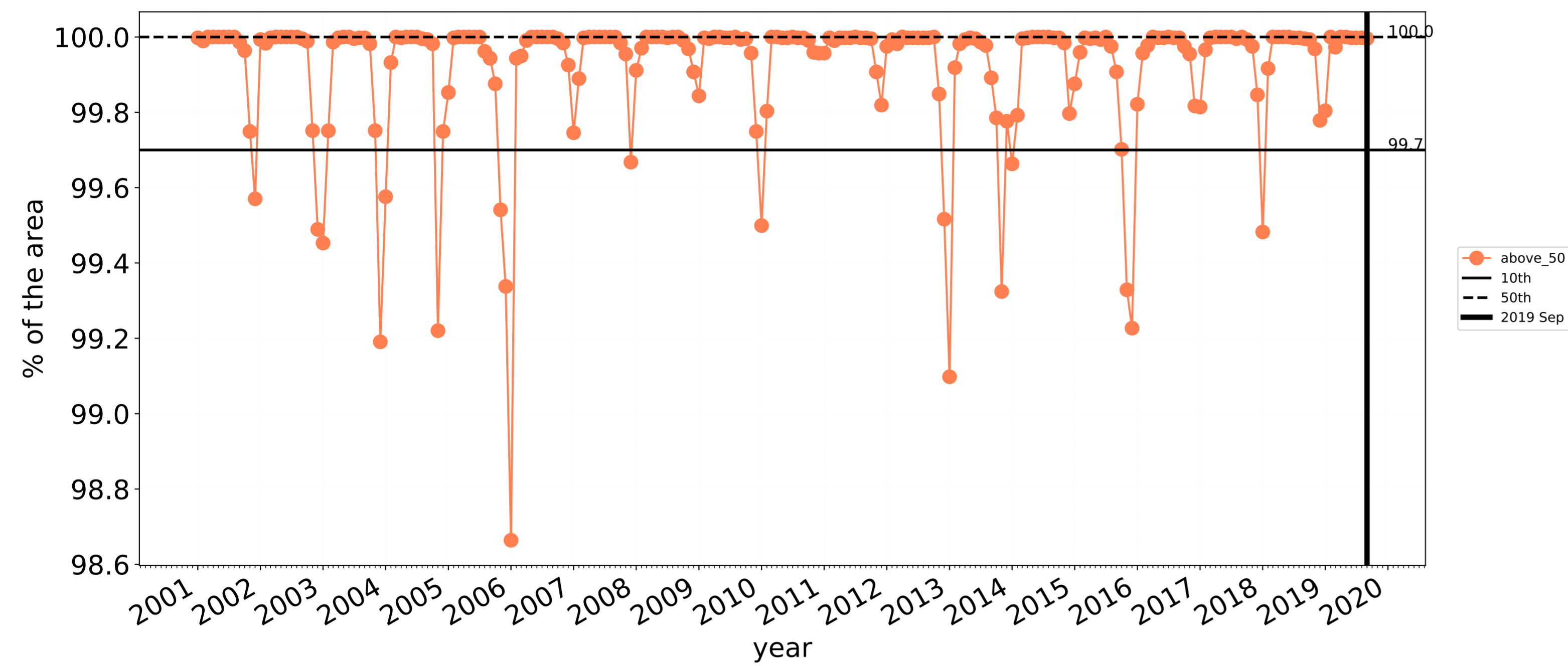
Total Vegetation Cover Decile [%]

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.
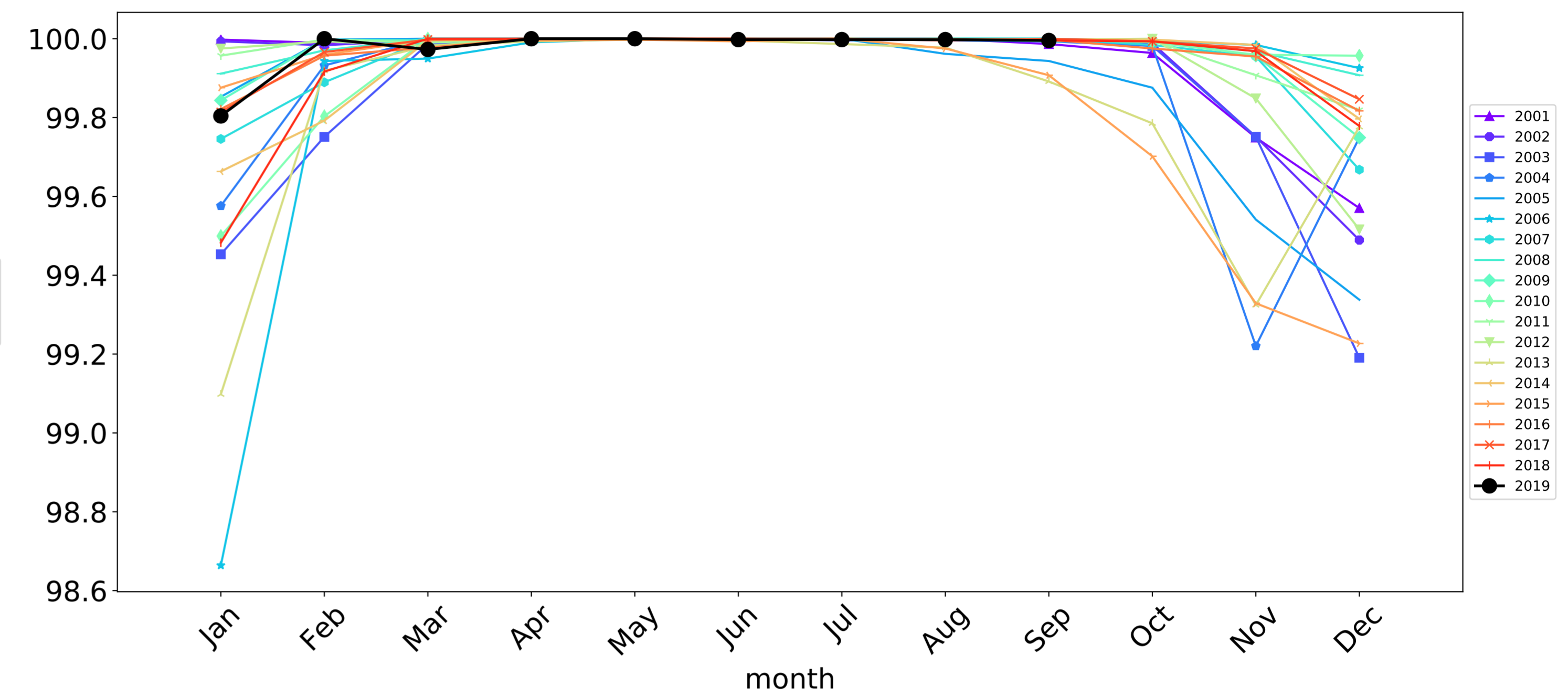
10

8-9

4-7

2-3
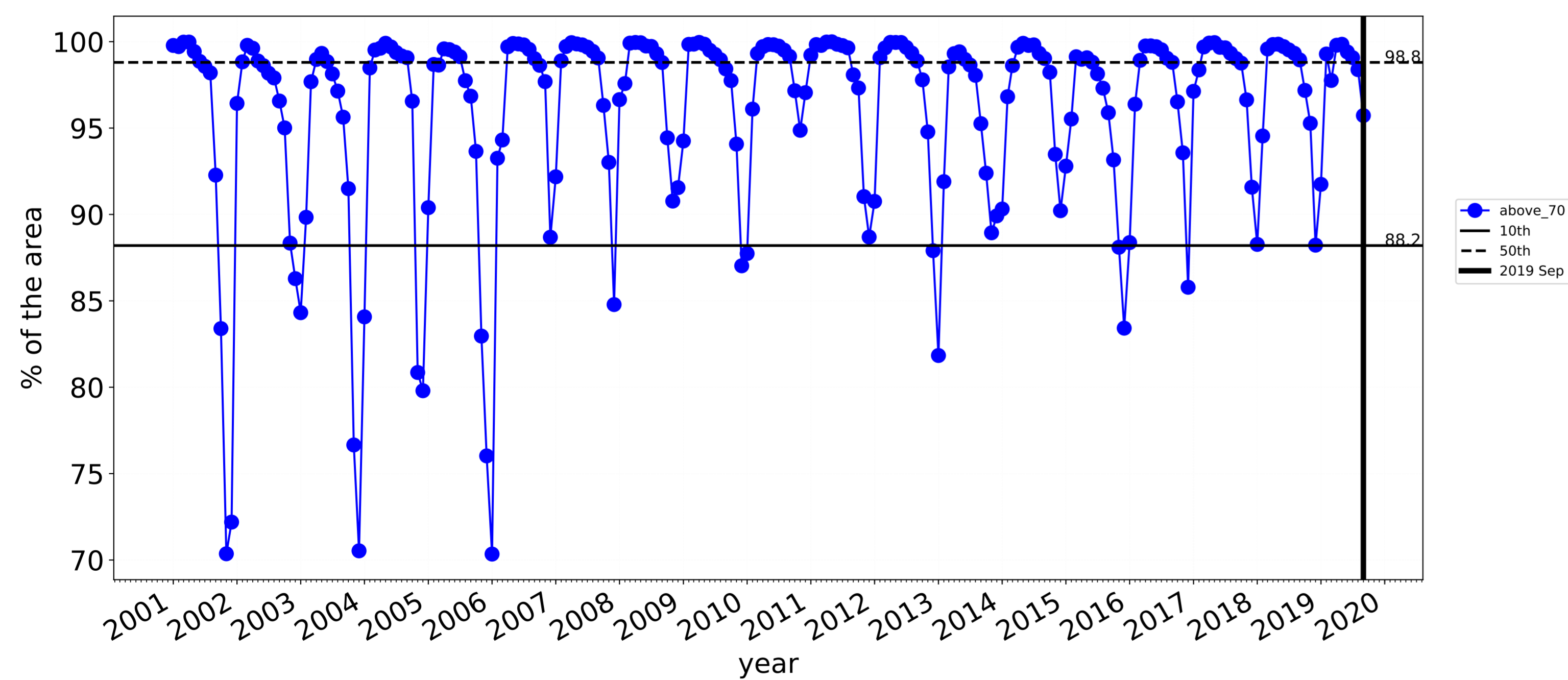
1

10

Grazing non forest timeseries

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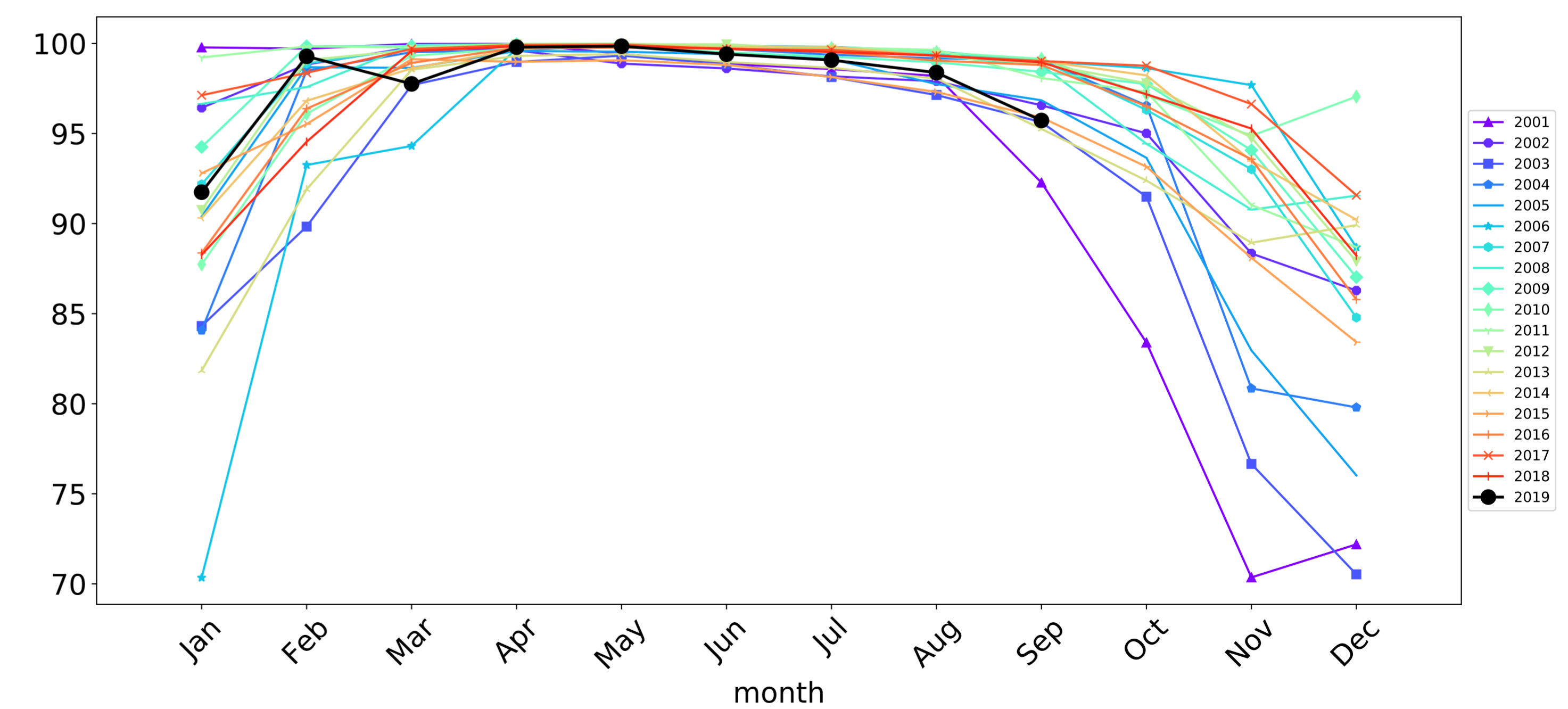

Wind erosion historical monthly area protected (Total Veg Cov >50%)

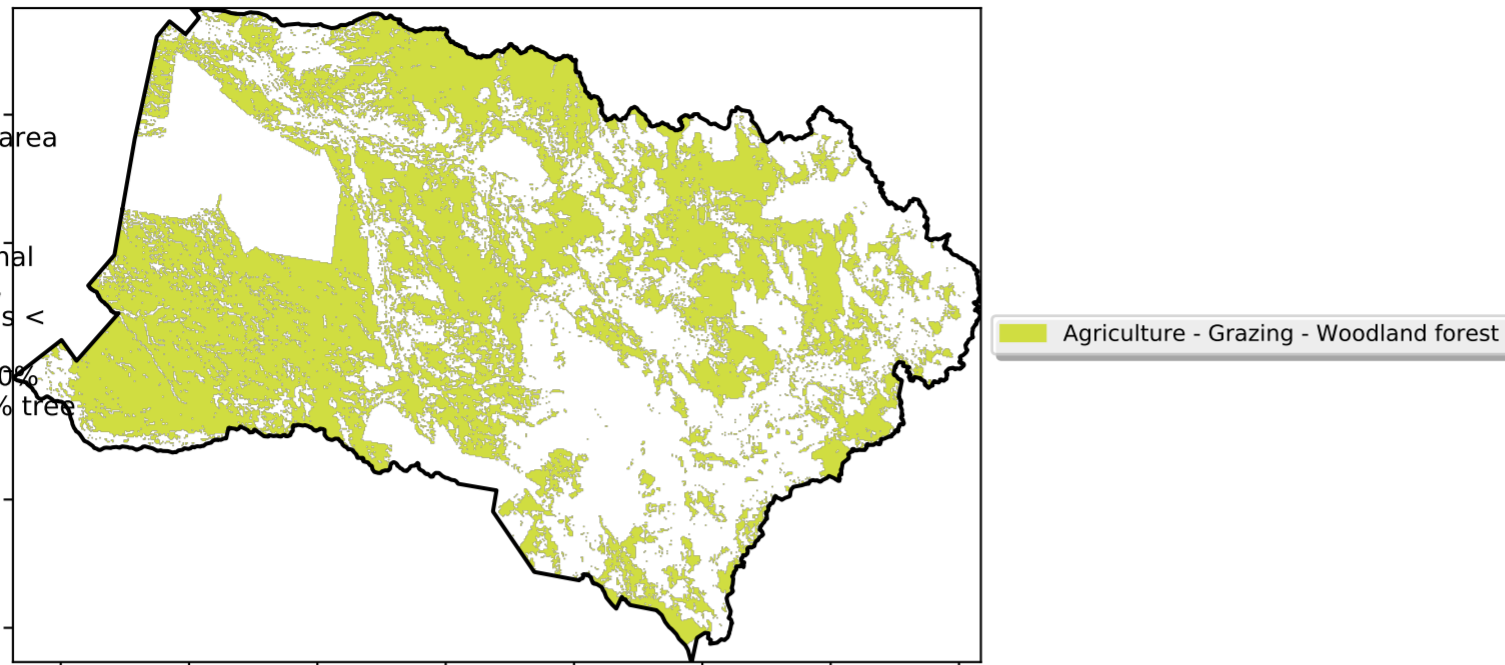## Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

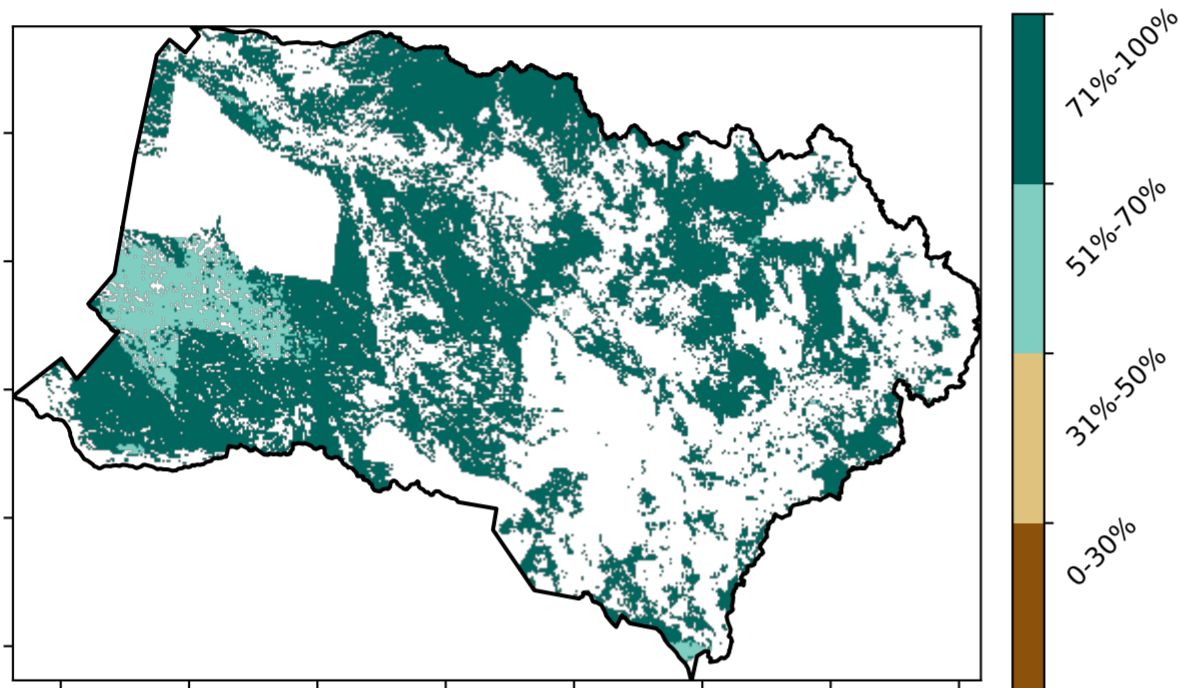## Water erosion historical monthly area protected (Total Veg Cov>70%)

Grazing Woodland forest

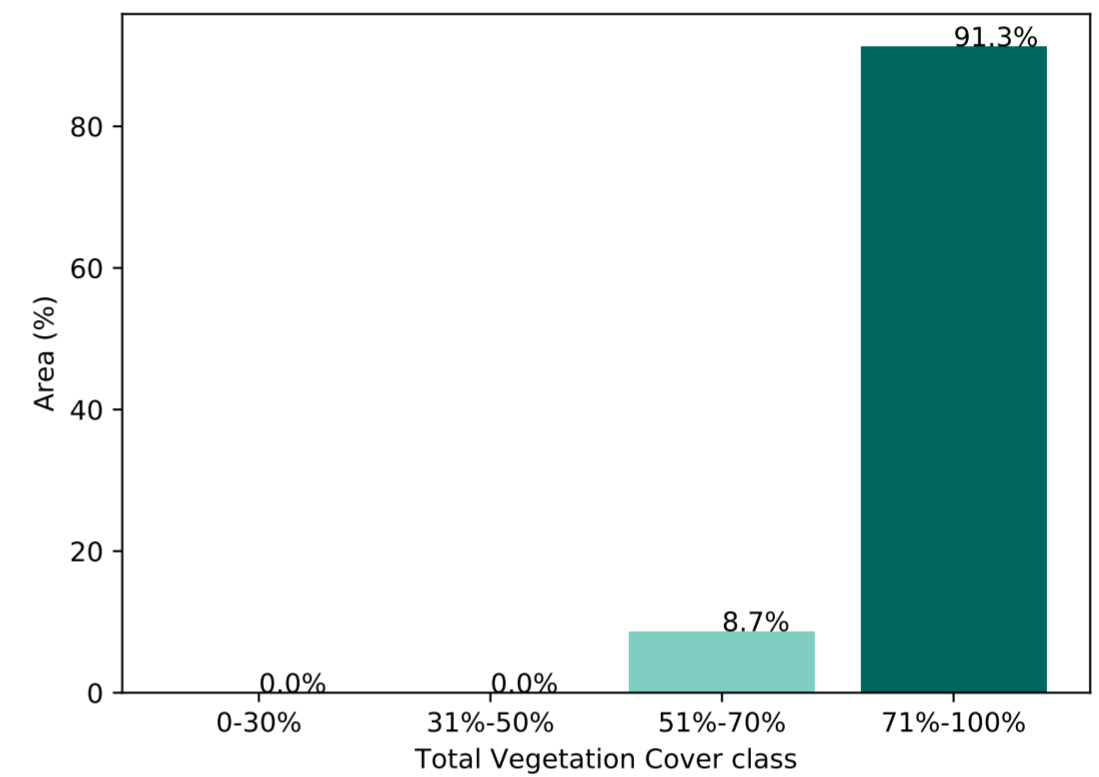## Land use and forest cover

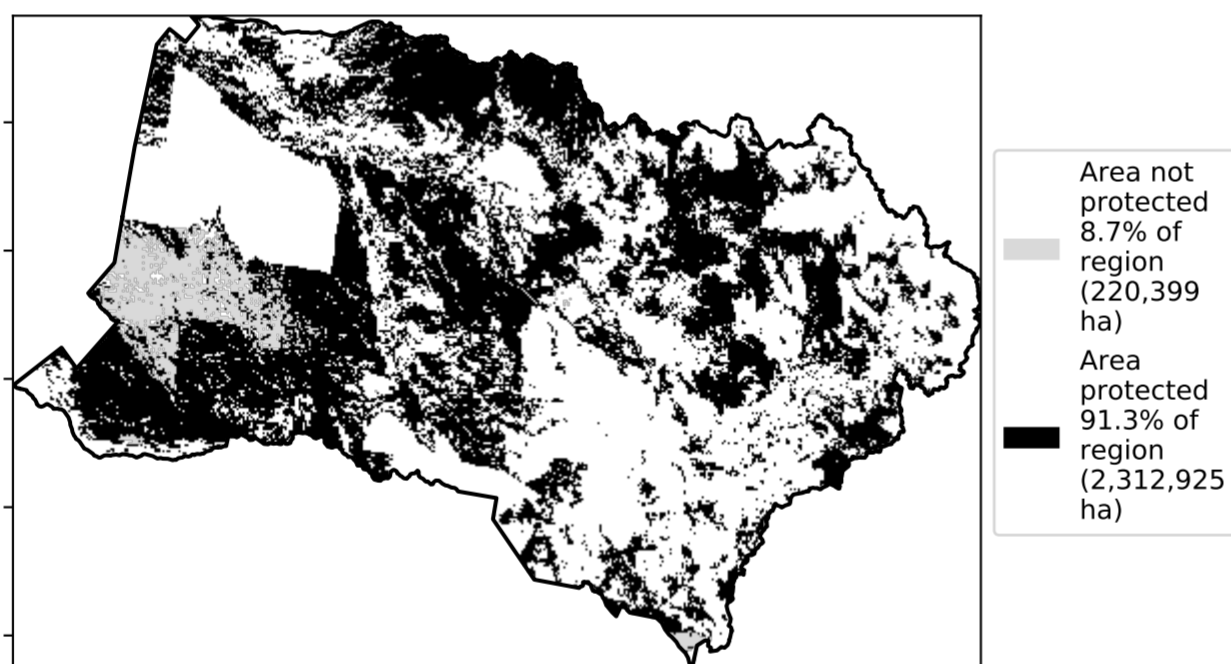Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.
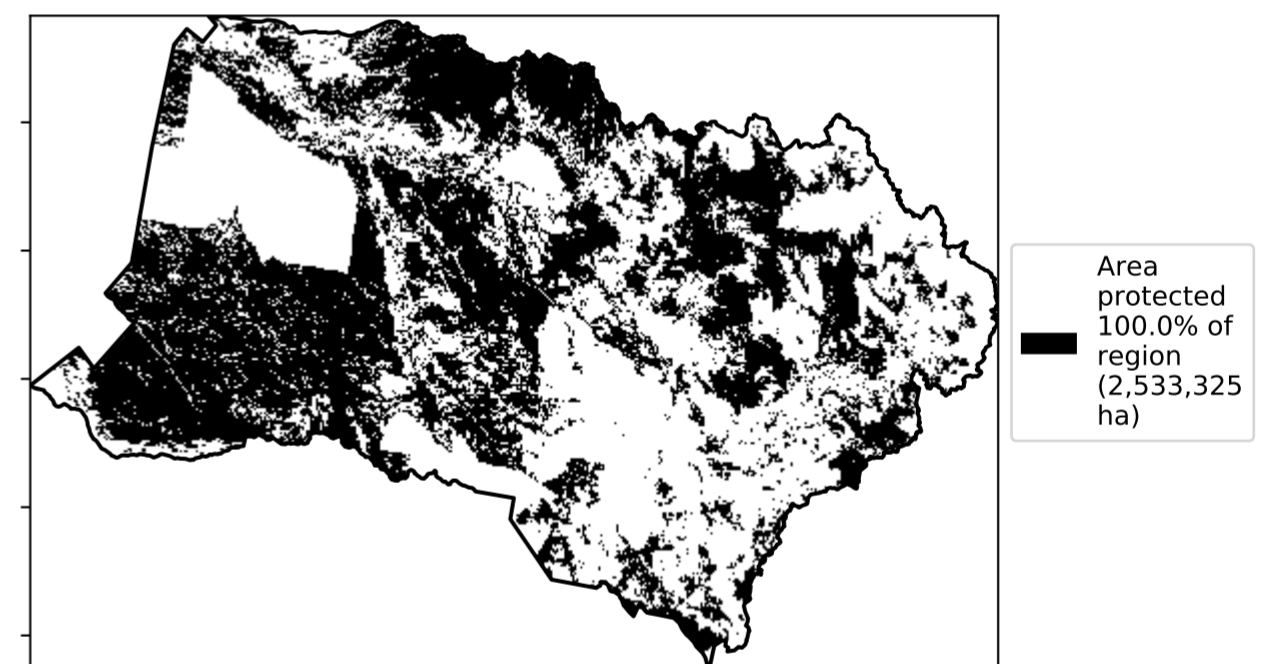
Agriculture - Grazing - Woodland forest

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 8.7% of region (220,399 ha)

Area protected 91.3% of region (2,312,925 ha)

% Area protected from wind erosion (>50%)
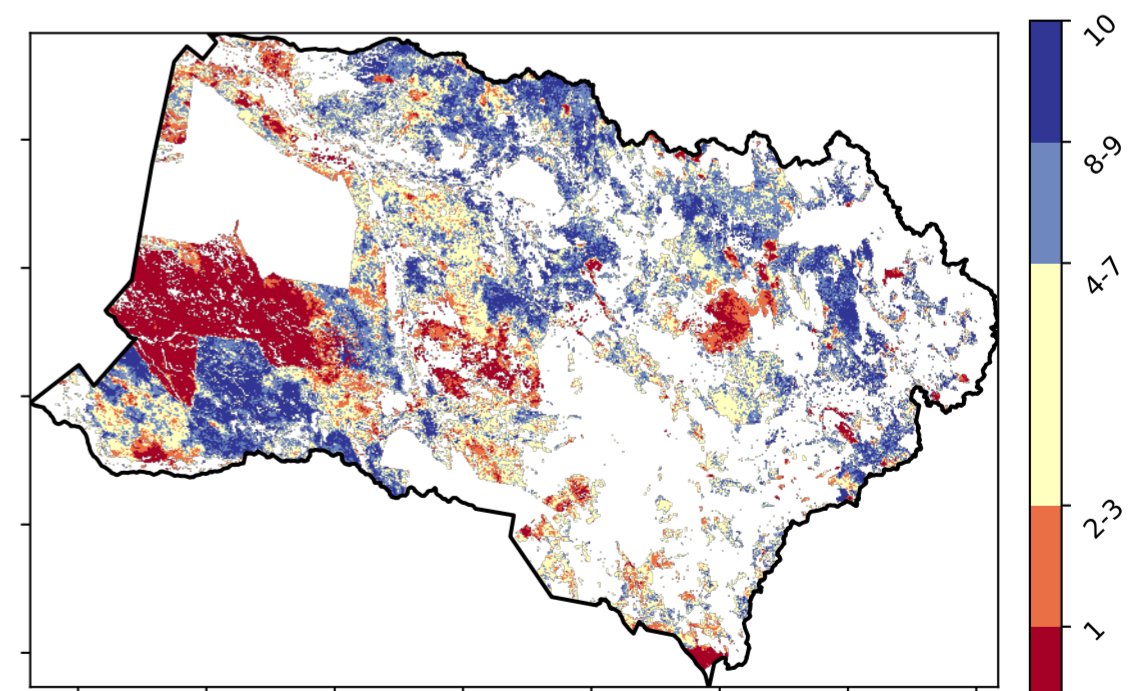
Area protected 100.0% of region (2,533,325 ha)

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.
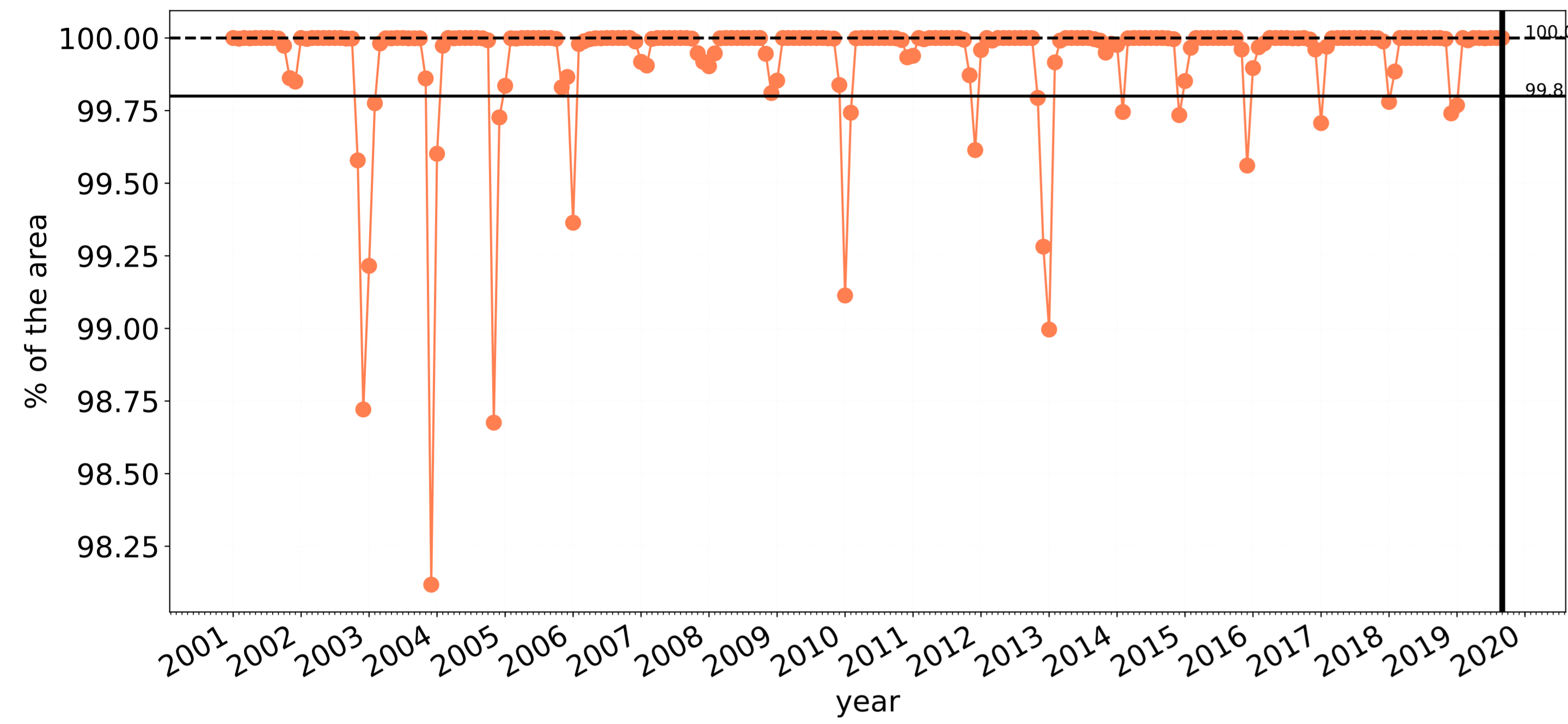
Total Vegetation Cover Decile [%]

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.
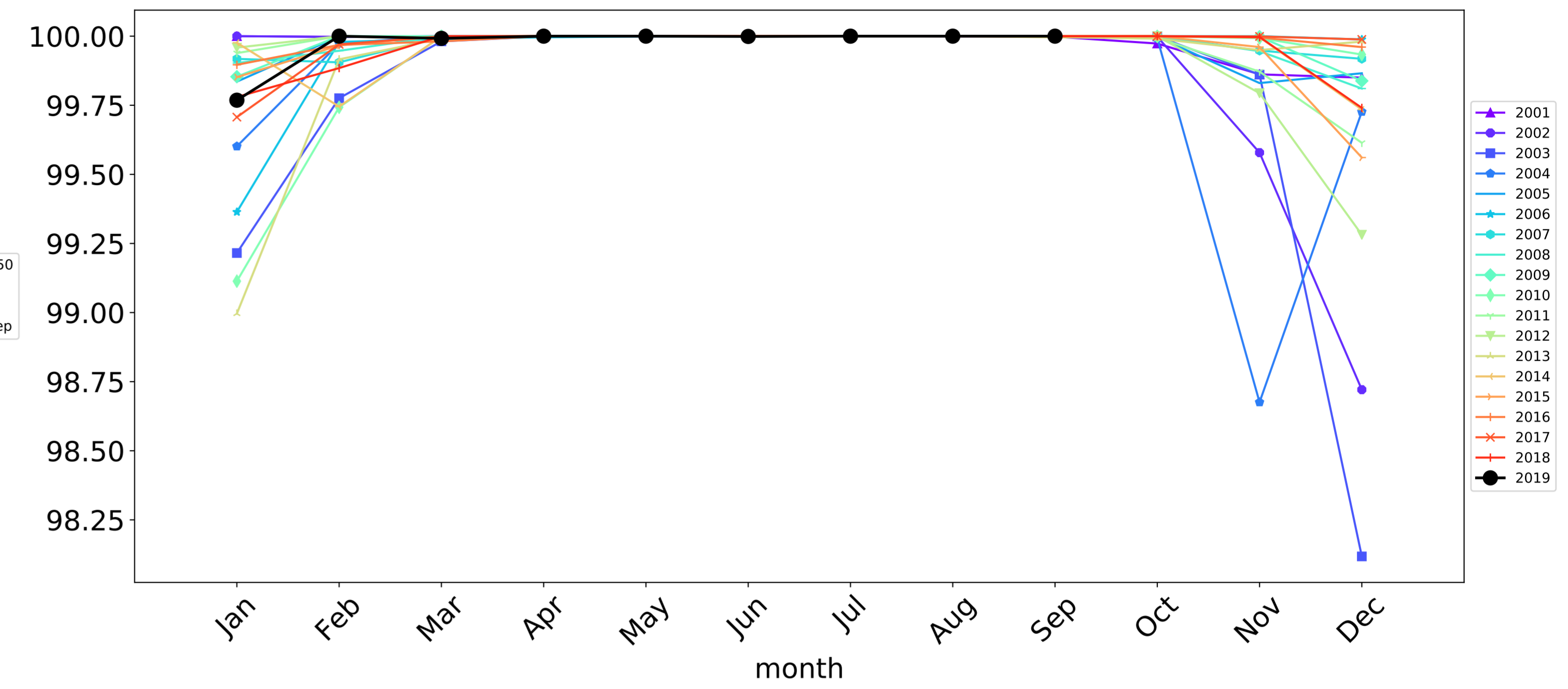
10
8-9
4-7
2-3
1

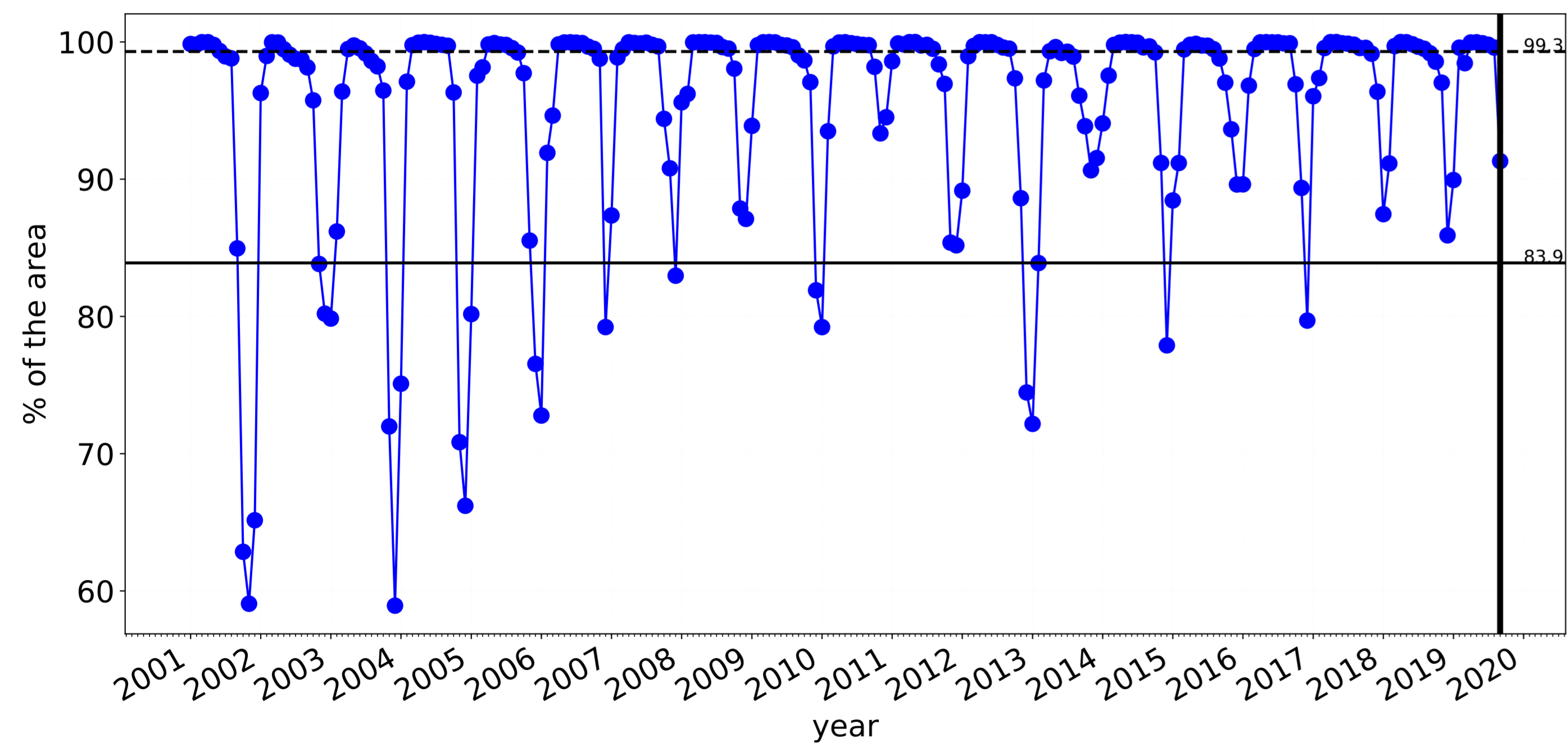# Grazing Woodland forest timeseries

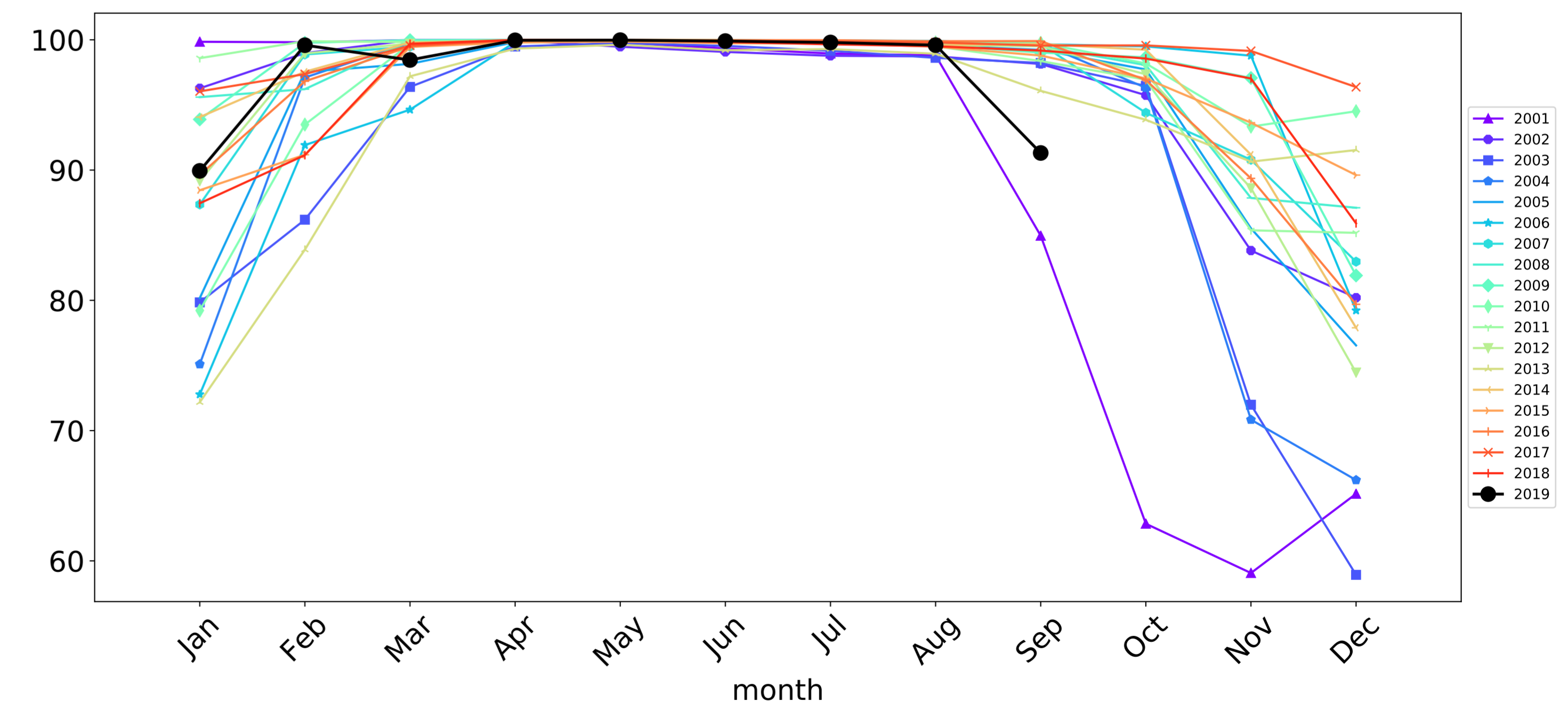Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

98.9%

0.0%   0.0%   1.1%

Area (%)

Total Vegetation Cover class

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

% Area protected from water erosion (>70%)

Area not protected 1.1% of region (9,673 ha)

Area protected 98.9% of region (869,726 ha)

% Area protected from wind erosion (>50%)

Area protected 100.0% of region (879,400 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%)
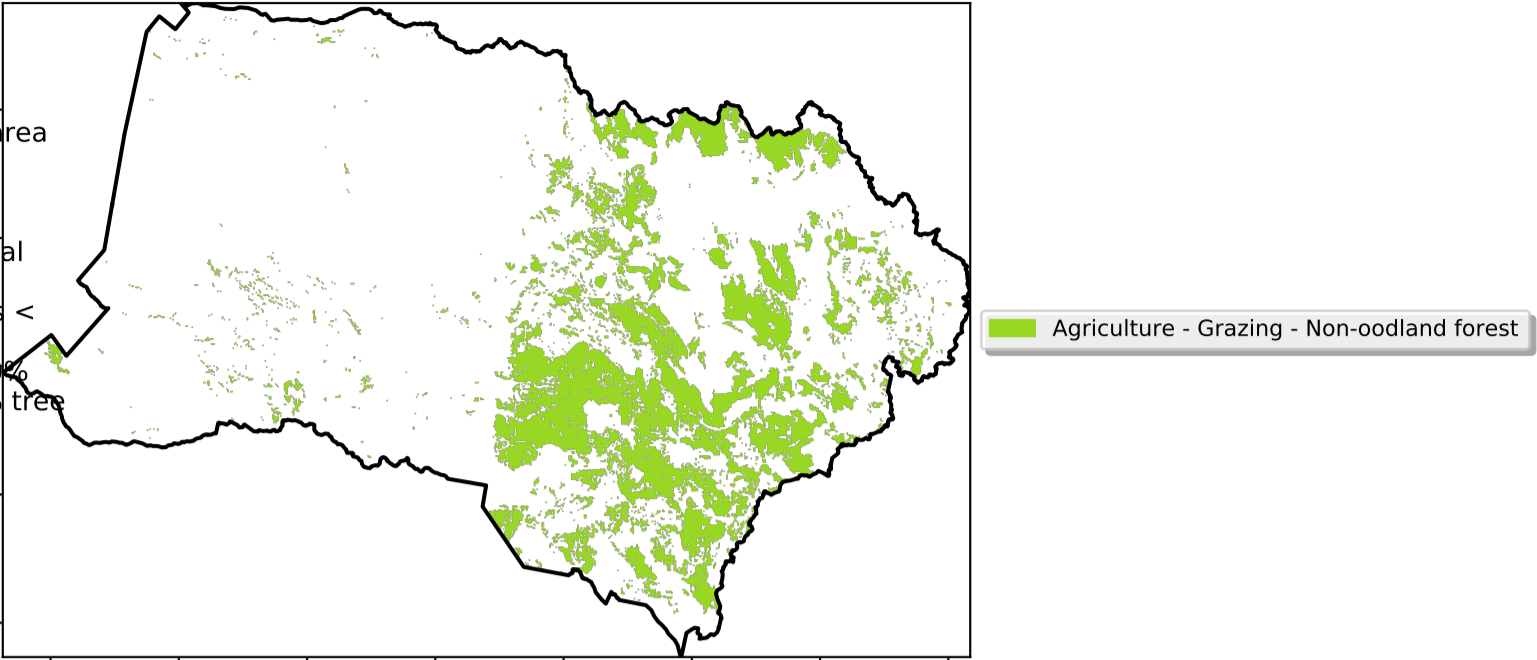
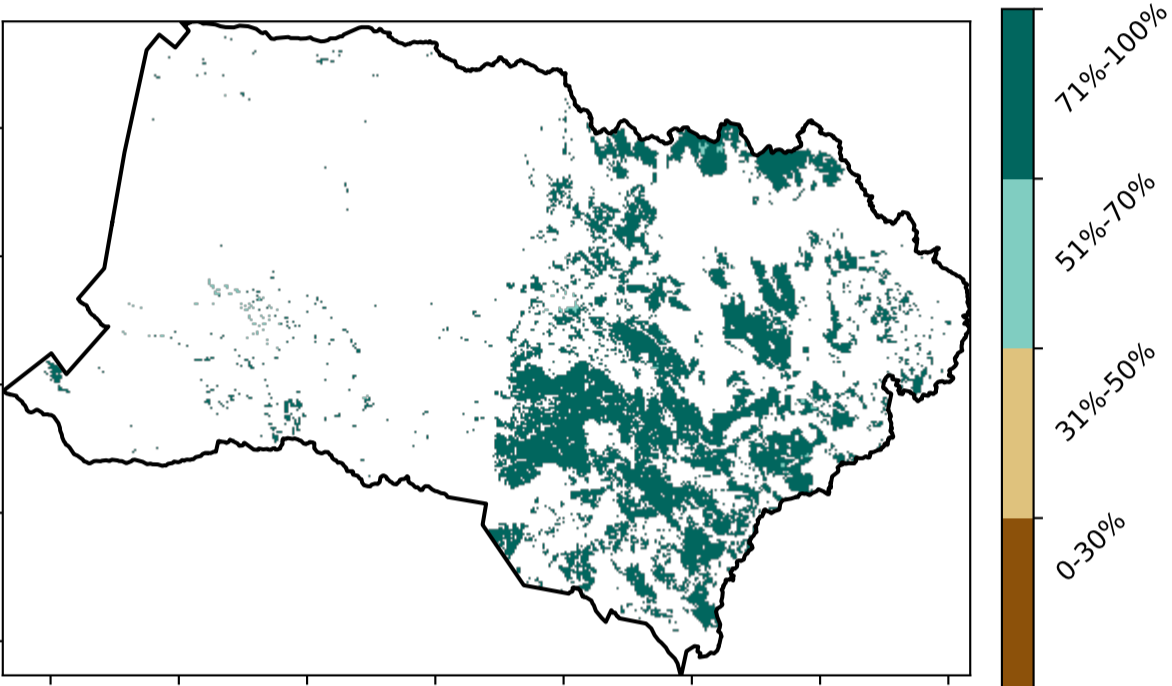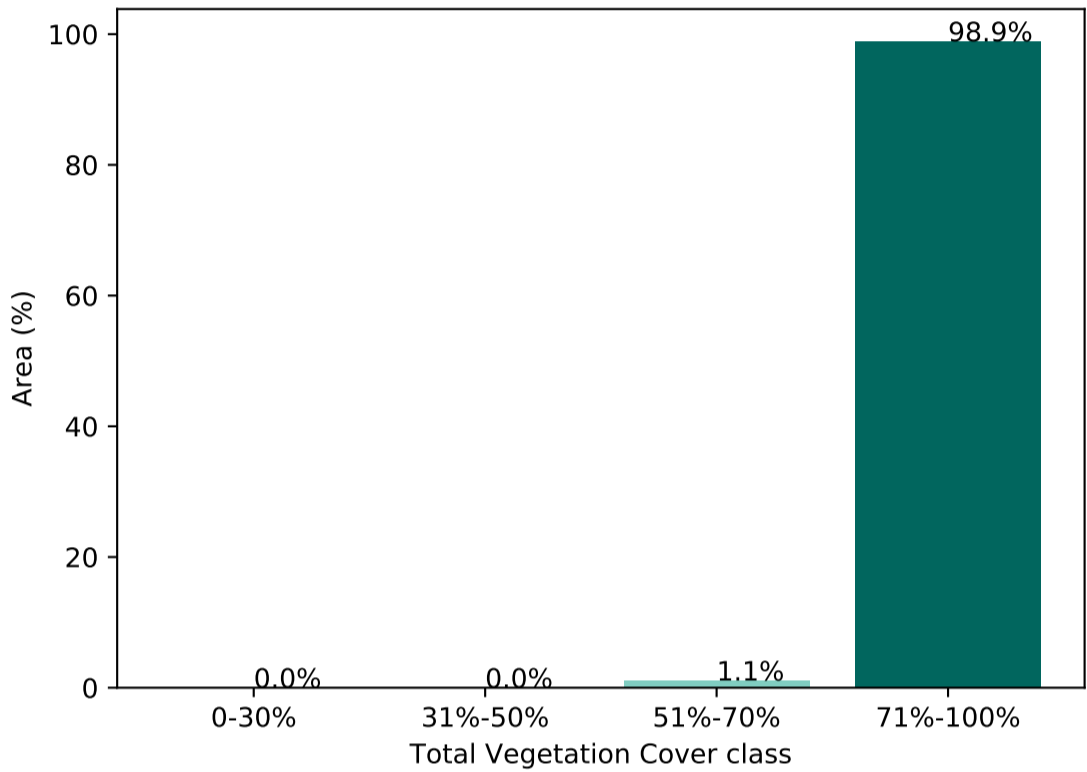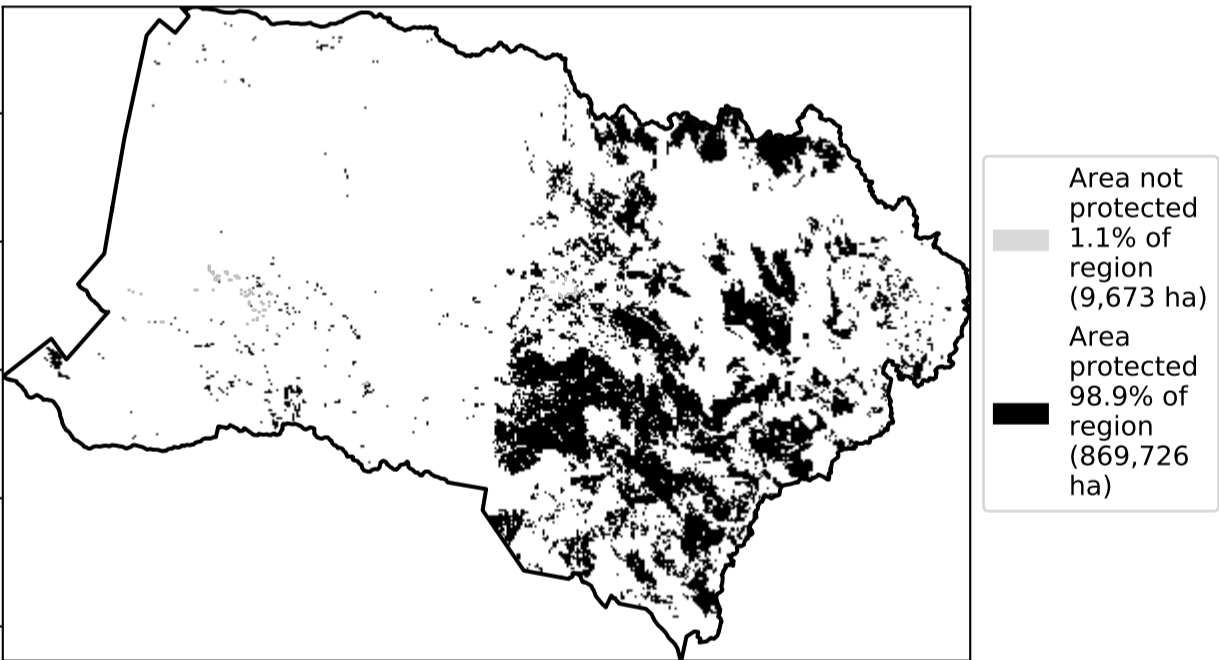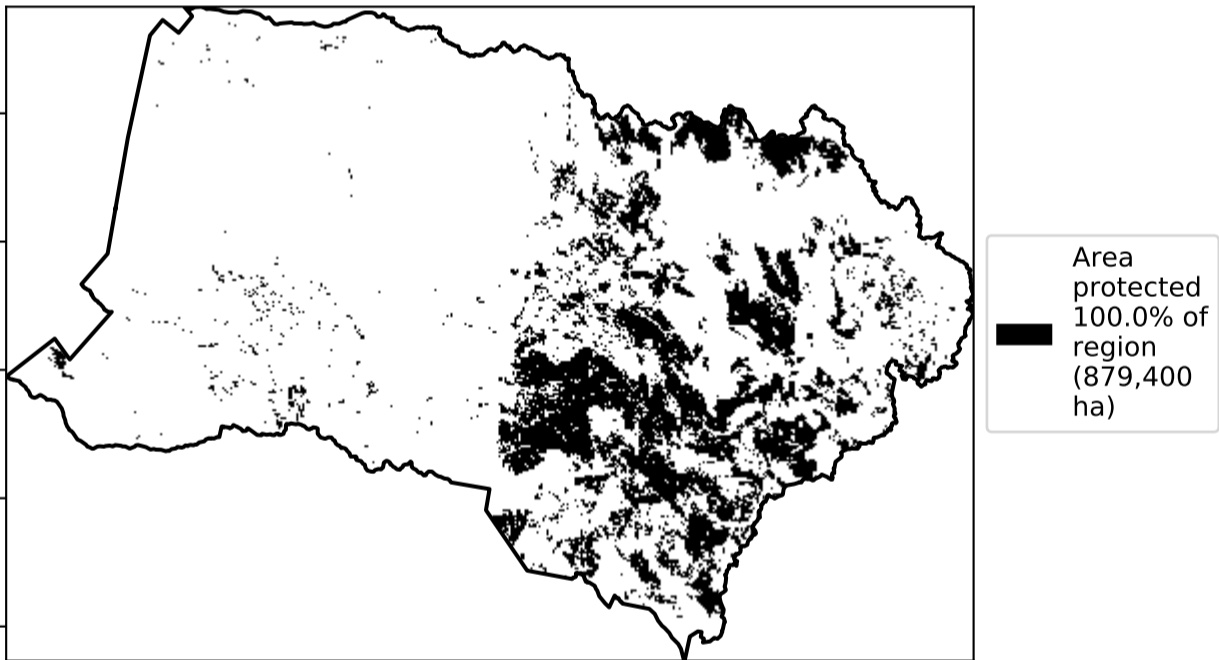Water erosion historical monthly area protected (Total Veg Cov>70%)

Mareeba_(S) (5,347,925 ha and no data 2,267 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	5,347,925	100.0% 5,347,900	100.0% 5,345,350	94.2% 5,037,125	86.5% 4,626,350	47.6% 2,546,700	14.4% 769,150
Conservation and natural environments	652,446	100.0% 652,446	100.0% 652,248	98.4% 642,171	84.4% 550,485	36.4% 237,627	13.4% 87,143
Conservation and natural environments non forest	128,350	100.0% 128,350	100.0% 128,350	97.0% 124,542	66.7% 85,649	6.4% 8,208	1.3% 1,656
Conservation and natural environments Woodland forest	417,138	100.0% 417,138	100.0% 417,138	98.9% 412,392	86.8% 362,107	34.7% 144,669	12.3% 51,229
Conservation and natural environments Forest (non woodland)	106,958	100.0% 106,958	99.8% 106,759	98.4% 105,244	96.1% 102,835	79.4% 84,925	32.1% 34,328
Agriculture	4,561,780	100.0% 4,561,780	100.0% 4,561,479	93.8% 4,280,560	87.3% 3,983,862	49.7% 2,266,989	14.6% 666,932
Grazing	4,518,996	100.0% 4,518,996	100.0% 4,518,946	93.9% 4,241,723	87.4% 3,951,700	49.9% 2,254,585	14.7% 663,770
Grazing non forest	1,107,020	100.0% 1,107,020	100.0% 1,106,970	95.7% 1,059,689	86.1% 952,670	38.7% 428,678	9.9% 109,070
Grazing Woodland forest	2,534,916	100.0% 2,534,916	100.0% 2,534,916	91.3% 2,314,678	85.6% 2,169,862	54.2% 1,373,312	18.6% 471,721
Grazing – Forest (non woodland)	877,059	100.0% 877,059	100.0% 877,059	98.9% 867,210	94.5% 828,963	51.6% 452,542	9.5% 83,128