Total vegetation cover soil protection
Region:LGA Alexandrina_(DC) SA   Date: October 2022

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

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

The total vegetation cover indicates where soil is likely to be protected from wind and or water hillslope erosion. Total vegetation cover for this month is shown on a map and chart classified into 4 classes.
      • 71-100% High cover - protected from wind and usually water erosion (high rainfall, steep slopes, and erodible soils may need greater than 80, 90, 95 and up to 100% cover)
      • 51-70% Moderate cover - protected from wind erosion
      • 31-50% Low cover - not protected
      • 0-30% Very Low cover - not protected
Erosion protection: Wind erosion 50% total vegetation cover

The vegetation cover threshold required to prevent soil erosion is usually 50% to reduce wind erosion, 70% or 80% to reduce water (hillslope) erosion depending on the steepness and rainfall. Areas protected from erosion for the month:
      • Map: water erosion protection (>70% cover) percentage area and hectares.
      • Map: wind erosion protection (>50% cover) percentage area and hectares.
Comparison with previous years:

      • Map: anomaly comparing this month to the average cover from the same month in previous years.
      • Map: deciles rank of month against the same month in previous years.
Anomalies and deciles until September 2019 are calculated comparing to the same months 2001 to 2019. Extra monthly data will be used to calculate anomalies and deciles post September 2019 as they become available.
Time series monthly from January 2001 to current:

Erosion protection
      • Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month (orange lines). Horizontal lines are 10th (cover target) and 50th percentiles.
      • Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month (blue line). Horizontal lines are 10th (cover target) and 50th percentiles.
Rainfall
      • Millimetres rainfall each month (black line).
Each time series is also stacked by year. The black line shows the current year of data.
Water erosion protection for higher rainfall and steeper slopes:

Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion. The thresholds reported are:
      • the percentage area with pixels greater than 80% total cover.
      • the percentage area with pixels greater than 90% total cover.
      • the percentage area with pixels greater than 95% total cover.

Acknowledgment of data:

1. http://www.agriculture.gov.au/abares/aclump/land-use/alum-classification

2. http://www.agriculture.gov.au/abares/forestsaustralia/sofr/sofr-2018

3. https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/establishment-mgmt/production-management2/groundcover

4. MODIS Fractional cover algorithm:

   https://doi.org/10.4225/08/5848a3f19a7b3
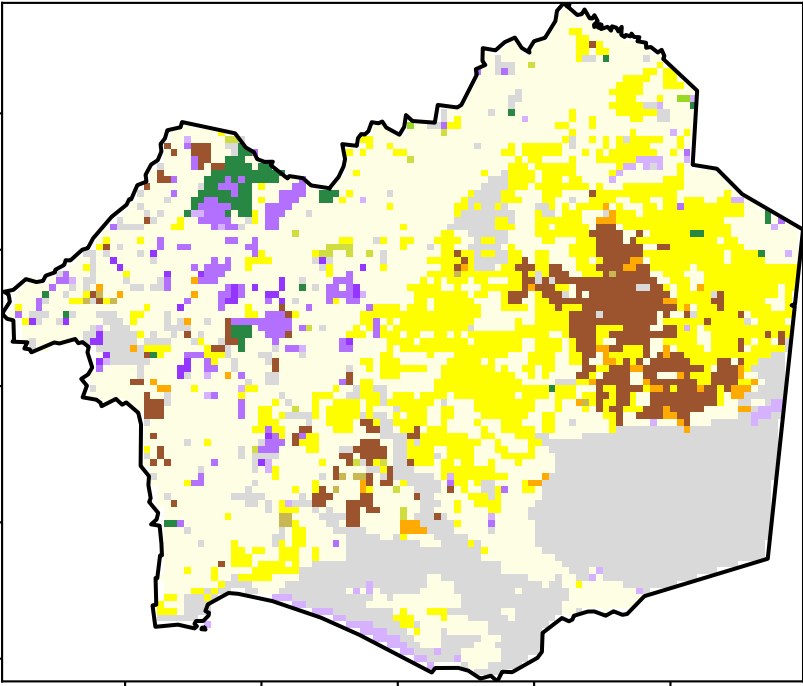
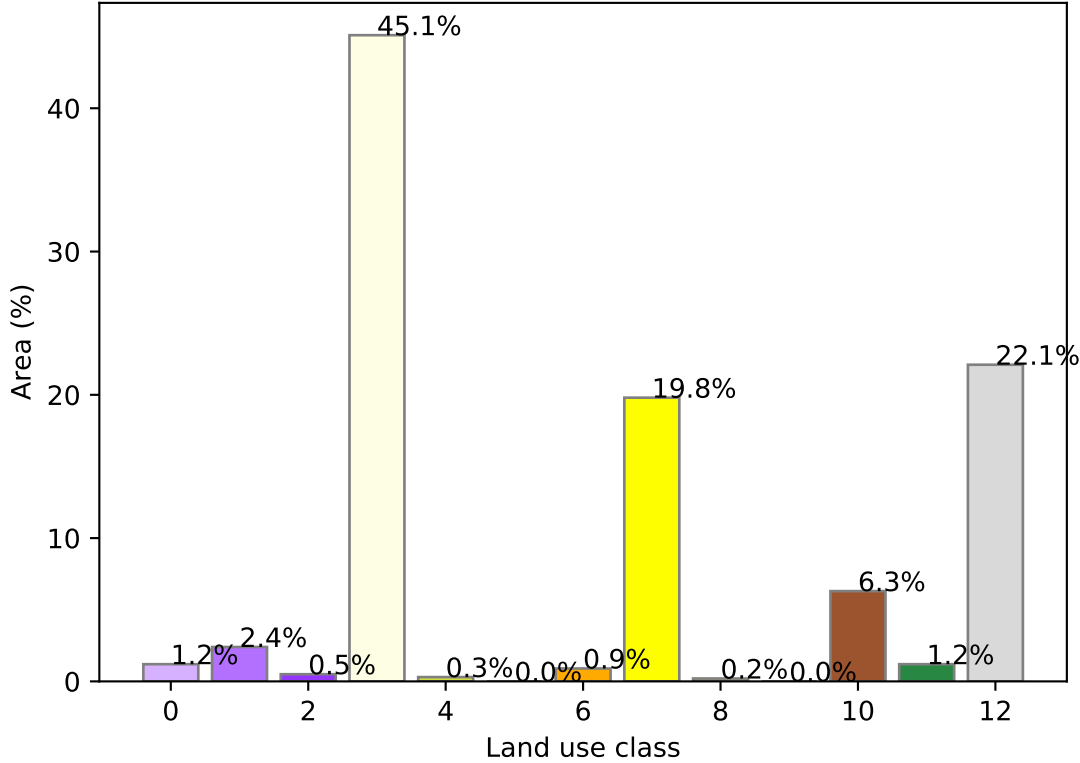# Vegetation Cover Oct 2022

Land use and forest cover

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

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
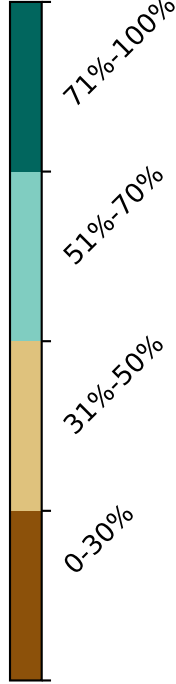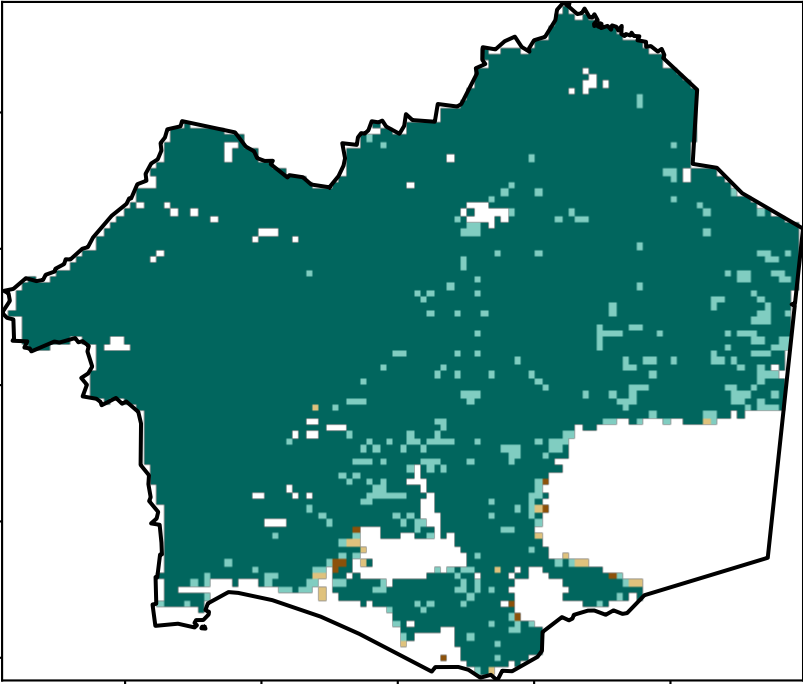
Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area
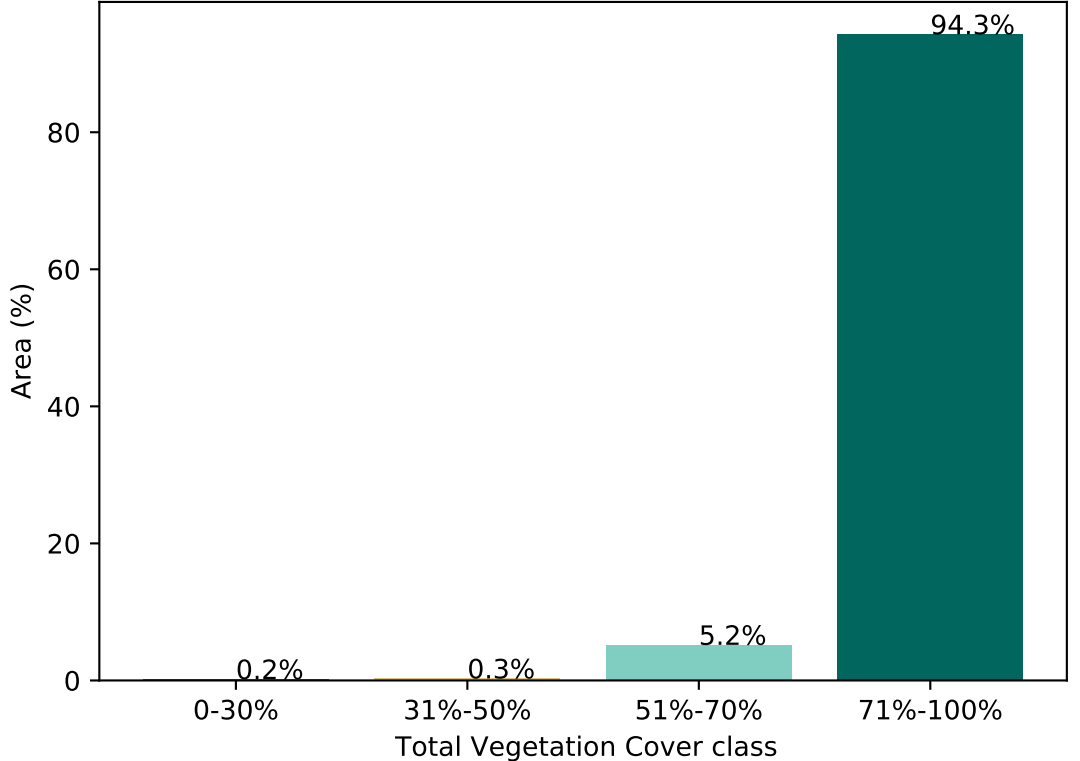
% Area protected from water erosion (>70%)

Area not protected 5.7% of region (8,832 ha)

Area protected 94.3% of region (146,117 ha)

% Area protected from wind erosion (>50%)
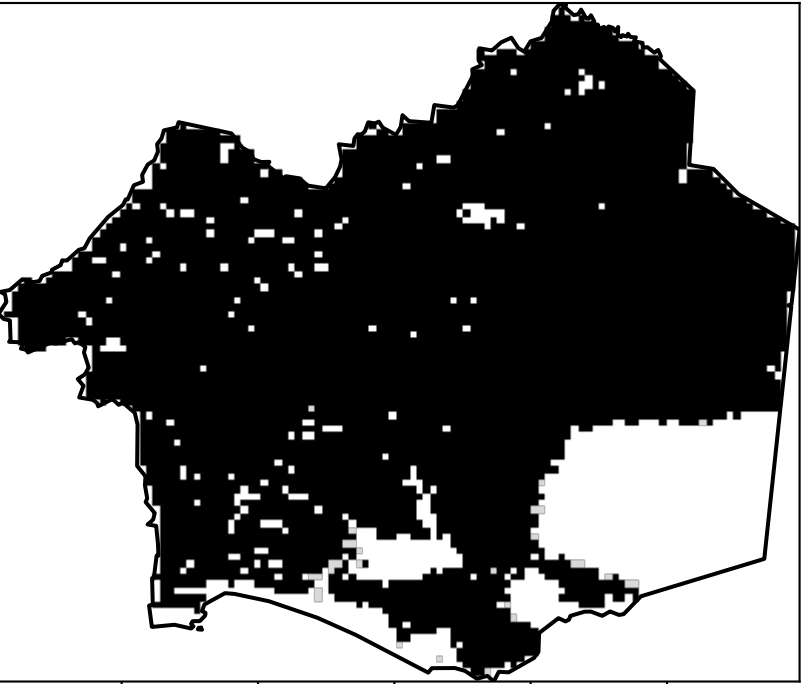
Area not protected 0.0% of region (0 ha)

Area protected 100.0% of region (154,950 ha)

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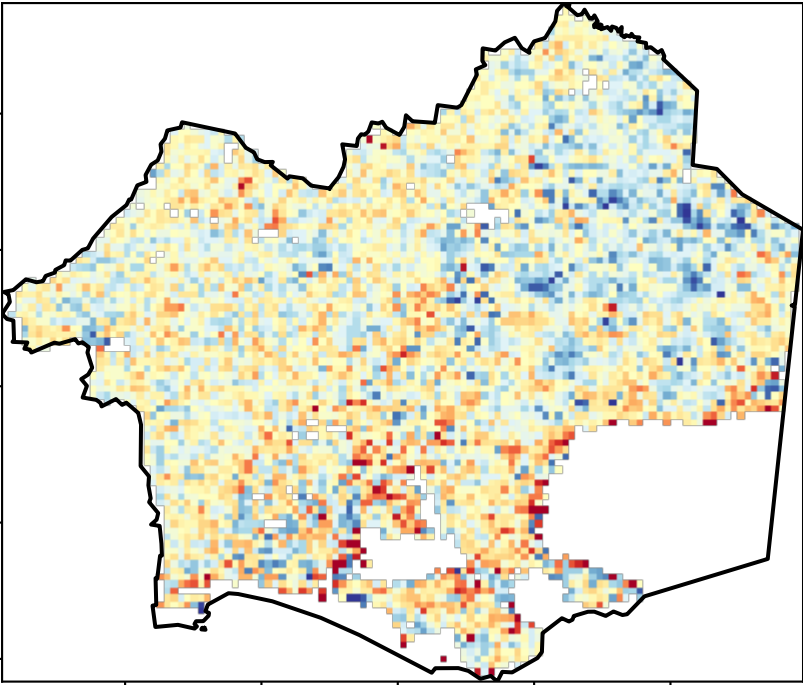
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

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

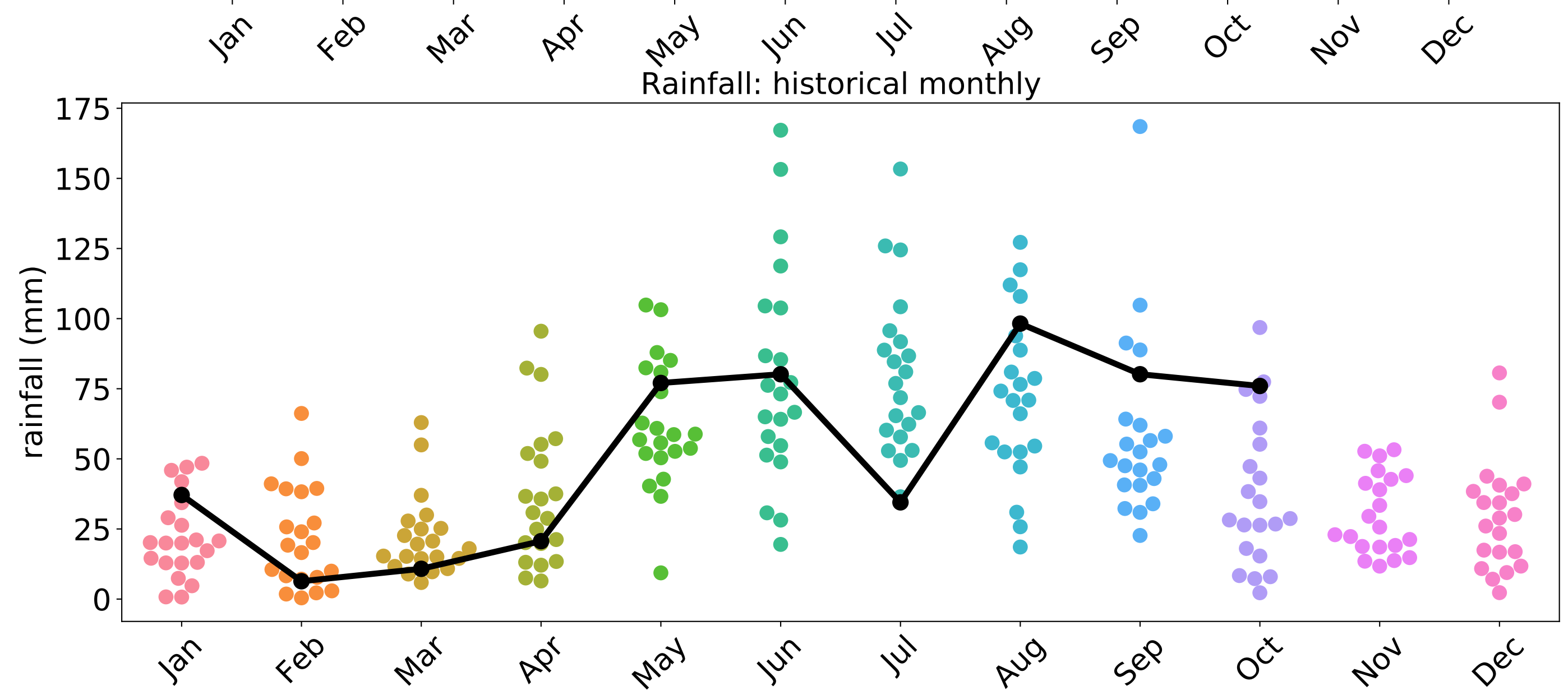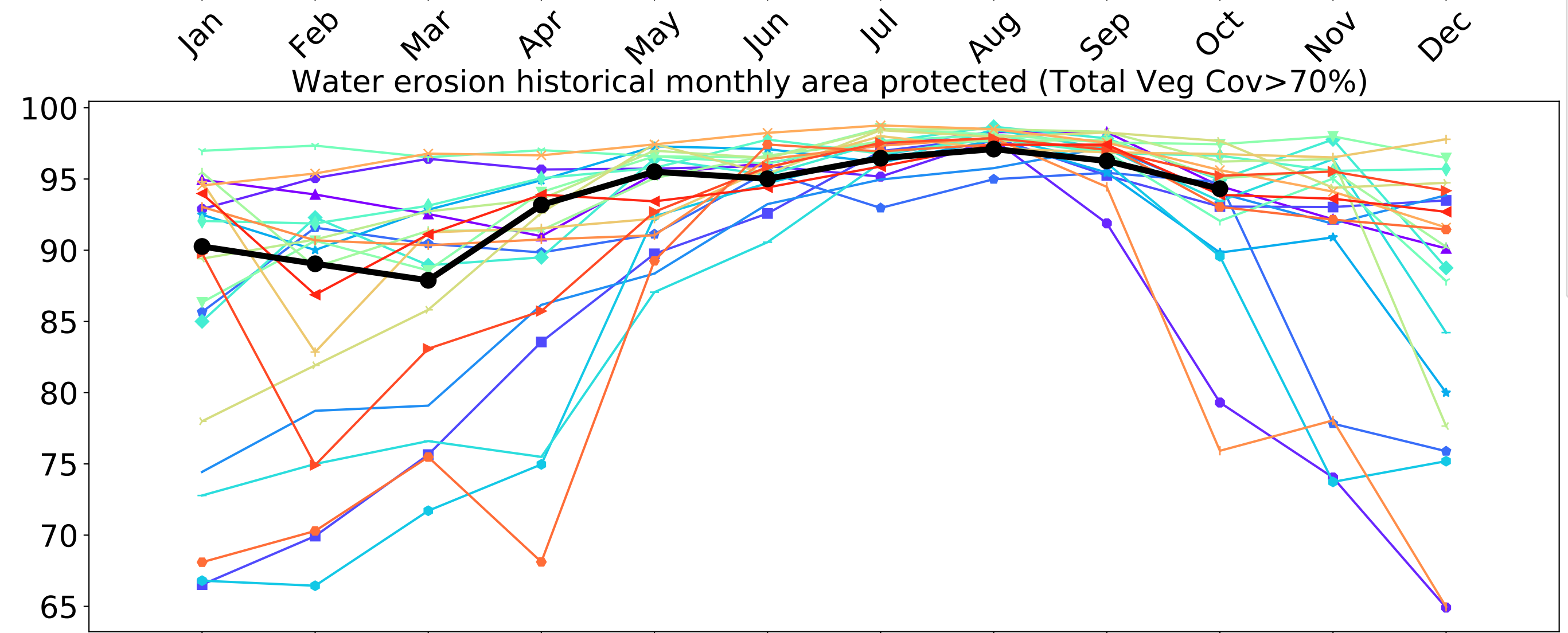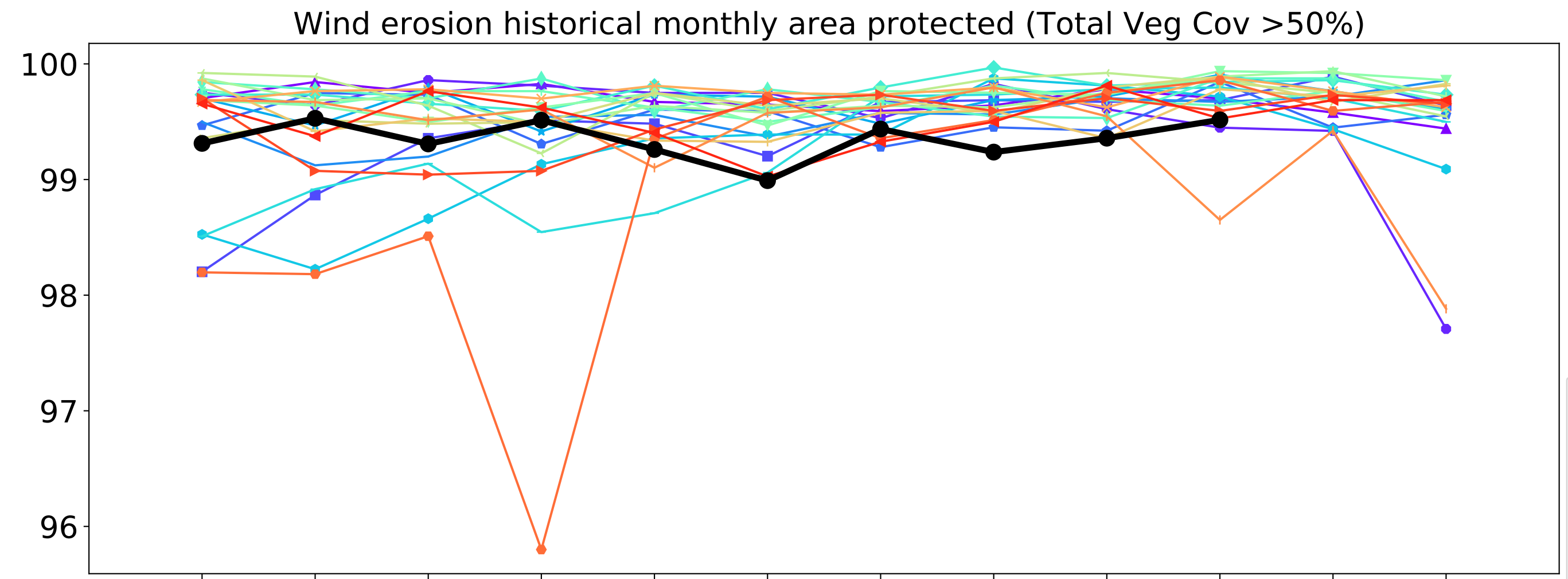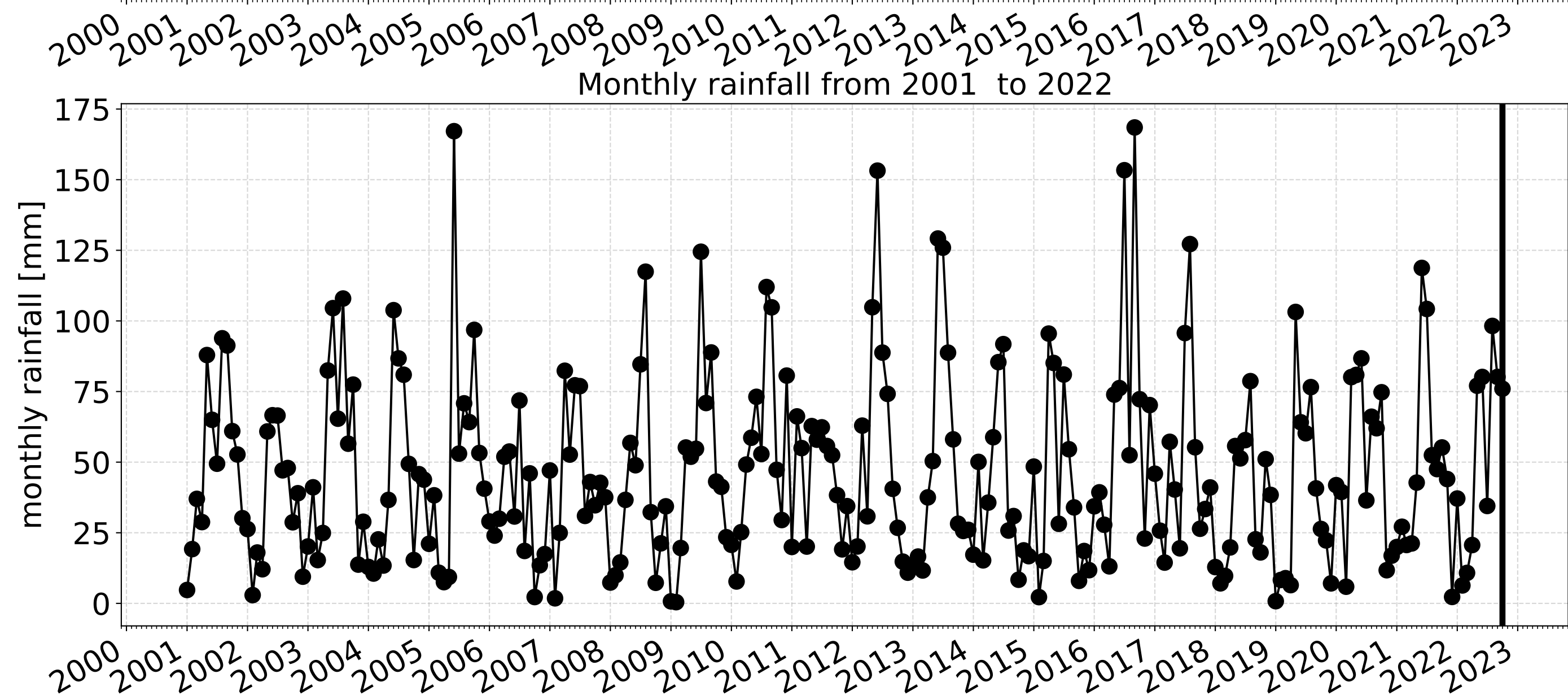Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

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

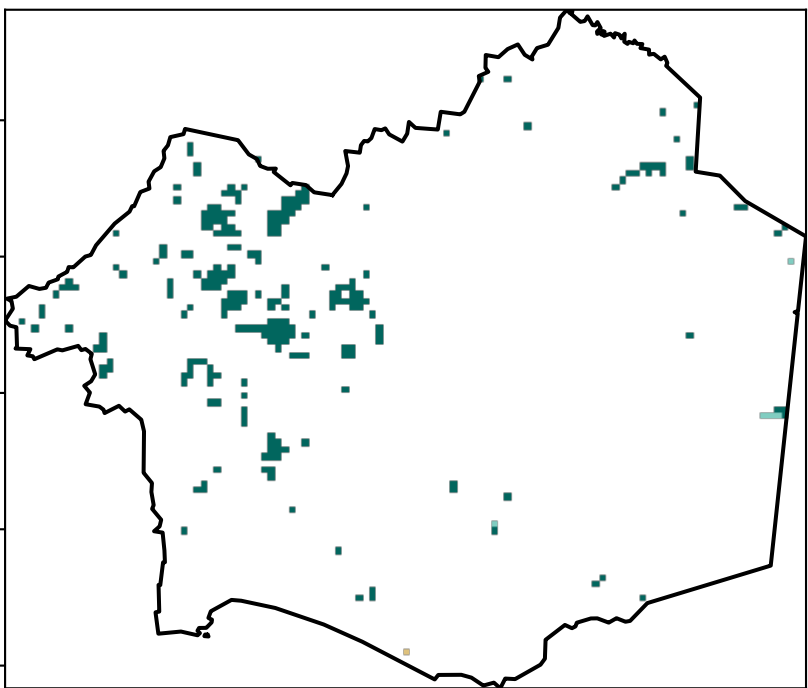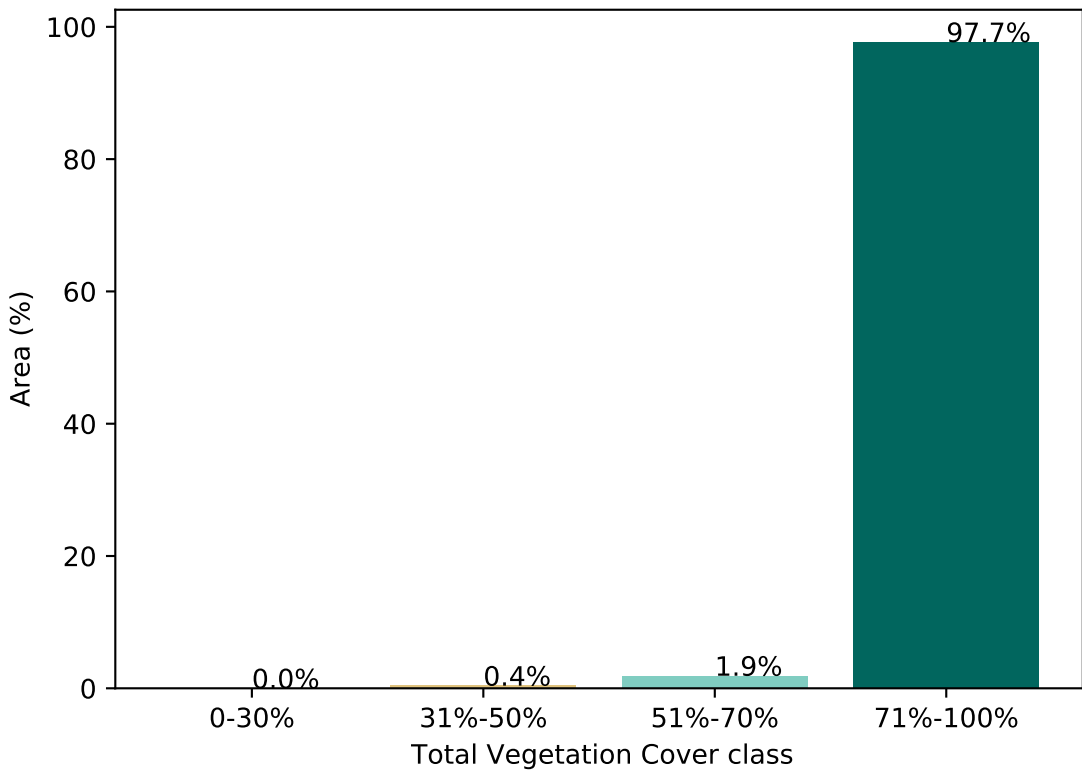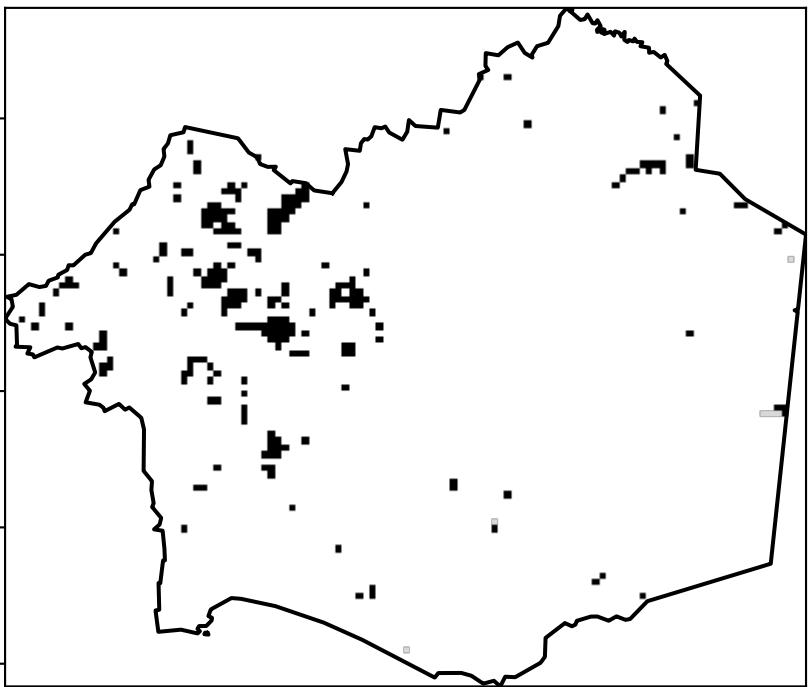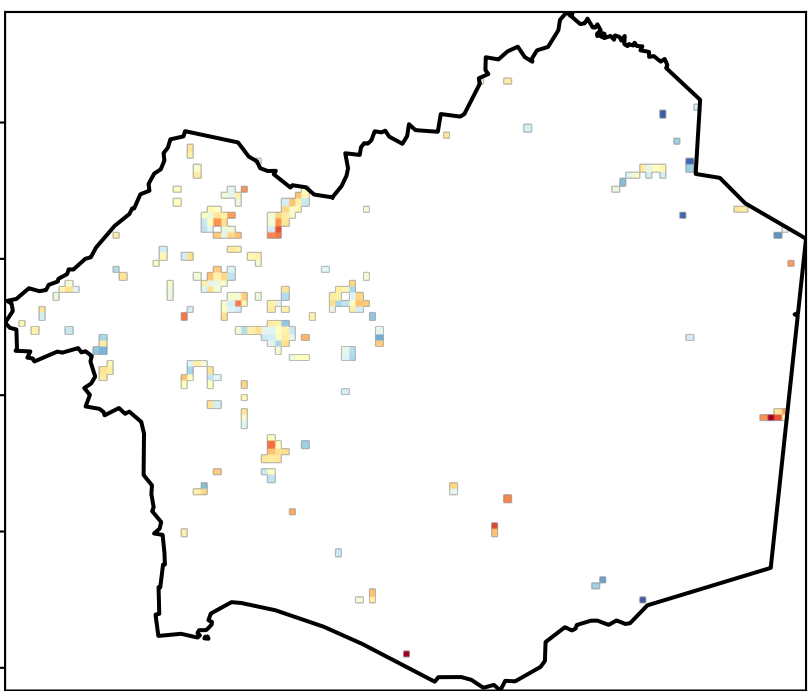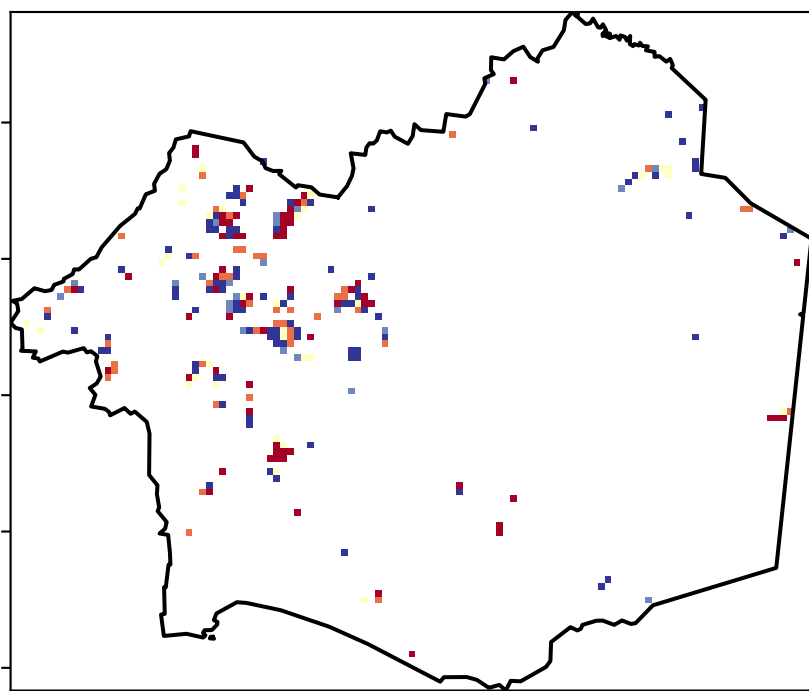Water erosion historical monthly area protected (Total Veg Cov>70%)

Monthly rainfall from 2001 to 2022

Rainfall: historical monthly

3
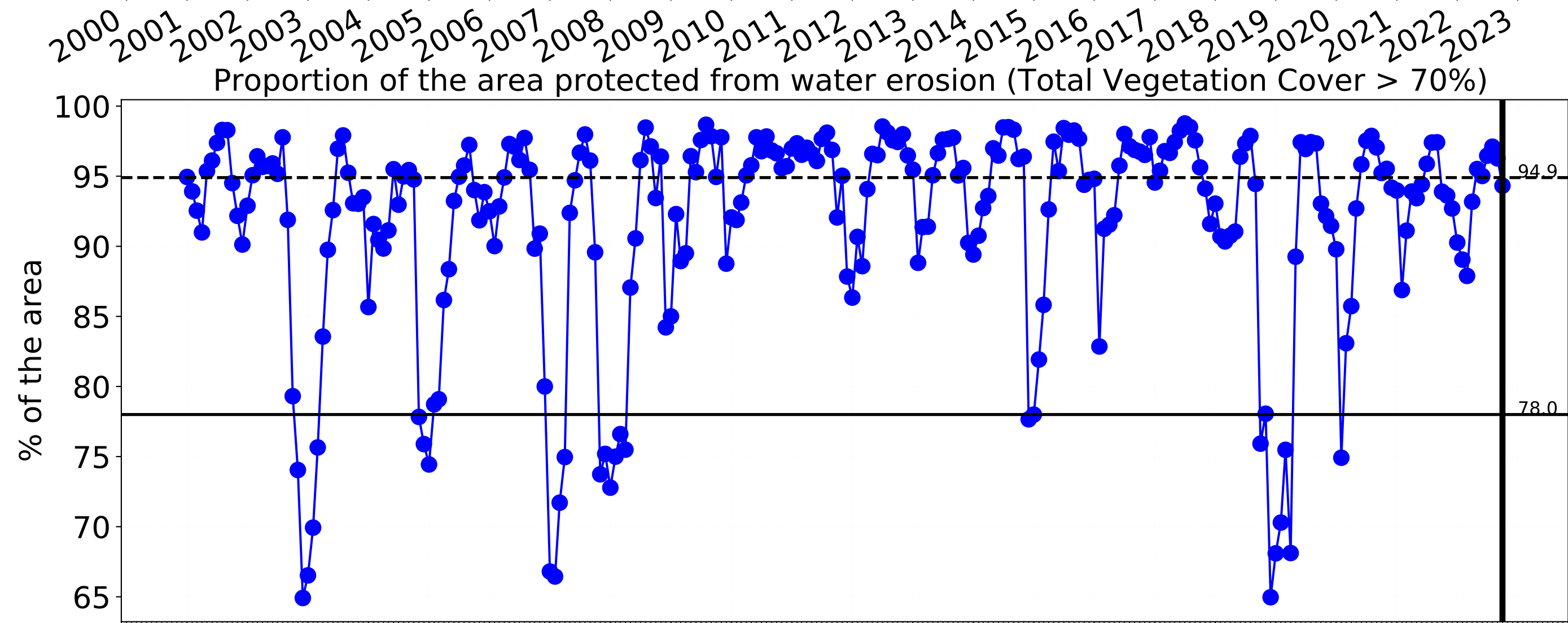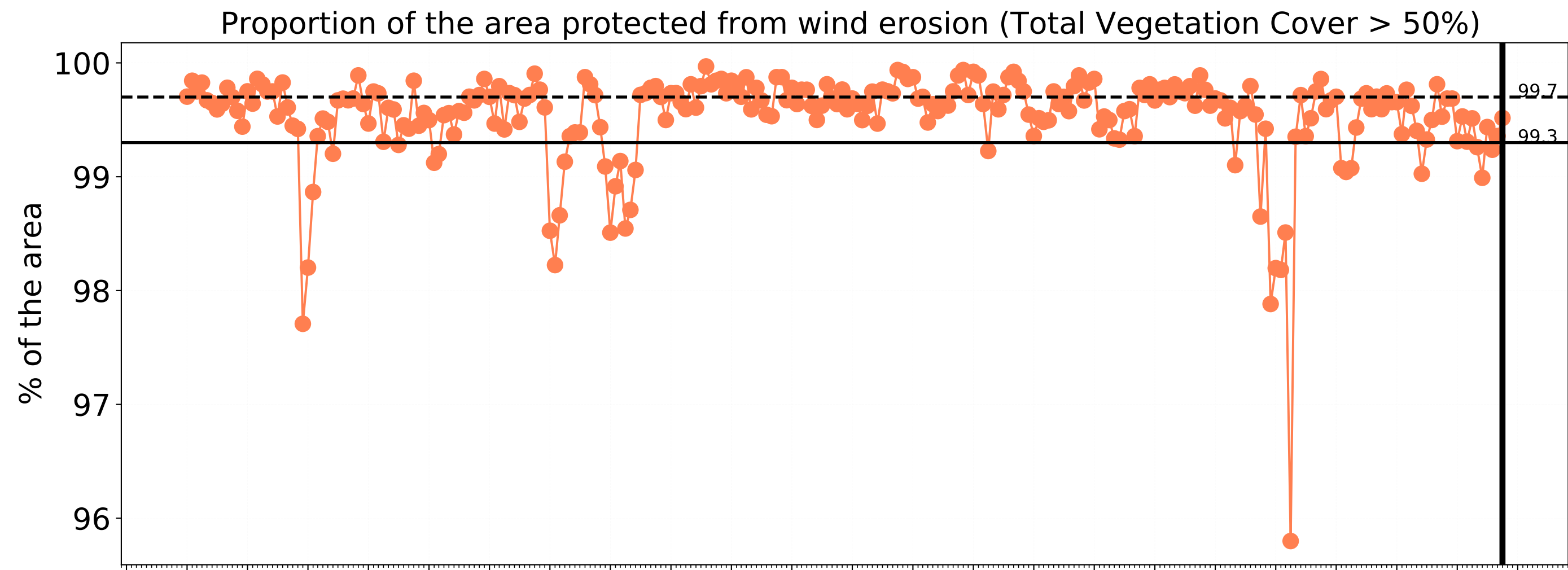
Conservation and natural environments

Land use and forest cover

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

1 Conservation and natural environments - Non-forest

2 Conservation and natural environments - Woodland forest

3 Conservation and natural environments - Non-woodland forest

Proportion of each land class in area

29.5%
59.1%
11.4%

Area (%)

Land use class

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

0.0%
0.4%
1.9%
97.7%

Area (%)

Total Vegetation Cover class

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

% Area protected from water erosion (>70%)

Area not protected 2.3% of region (148 ha)

Area protected 97.7% of region (6,301 ha)

% Area protected from wind erosion (>50%)

Area not protected 0.0% of region (0 ha)

Area protected 100.0% of region (6,450 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
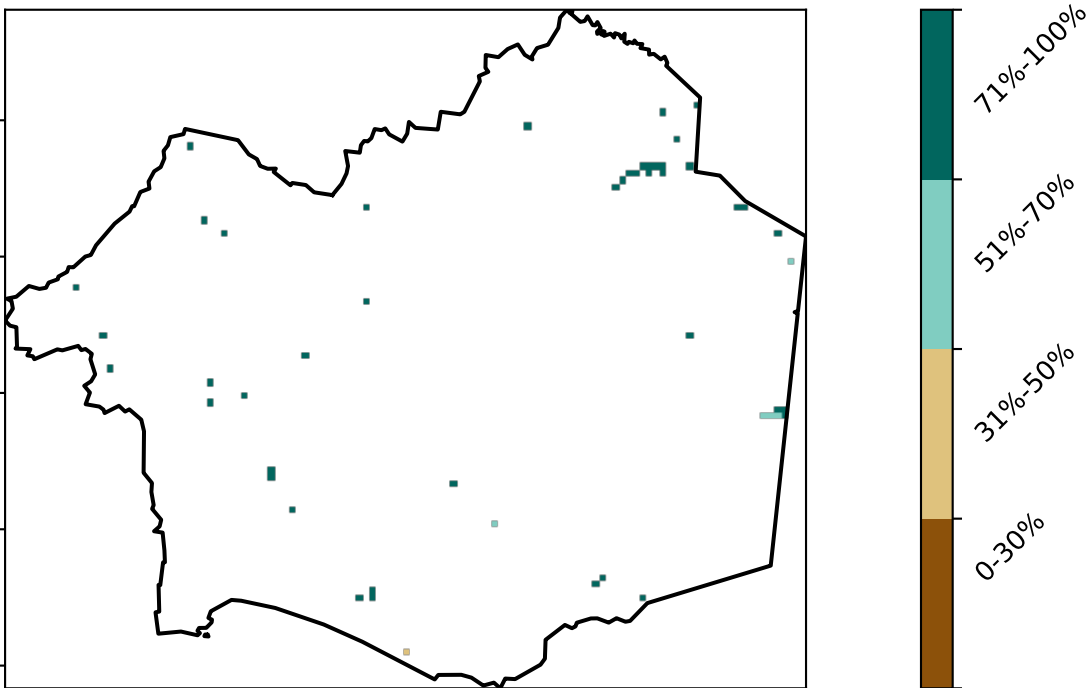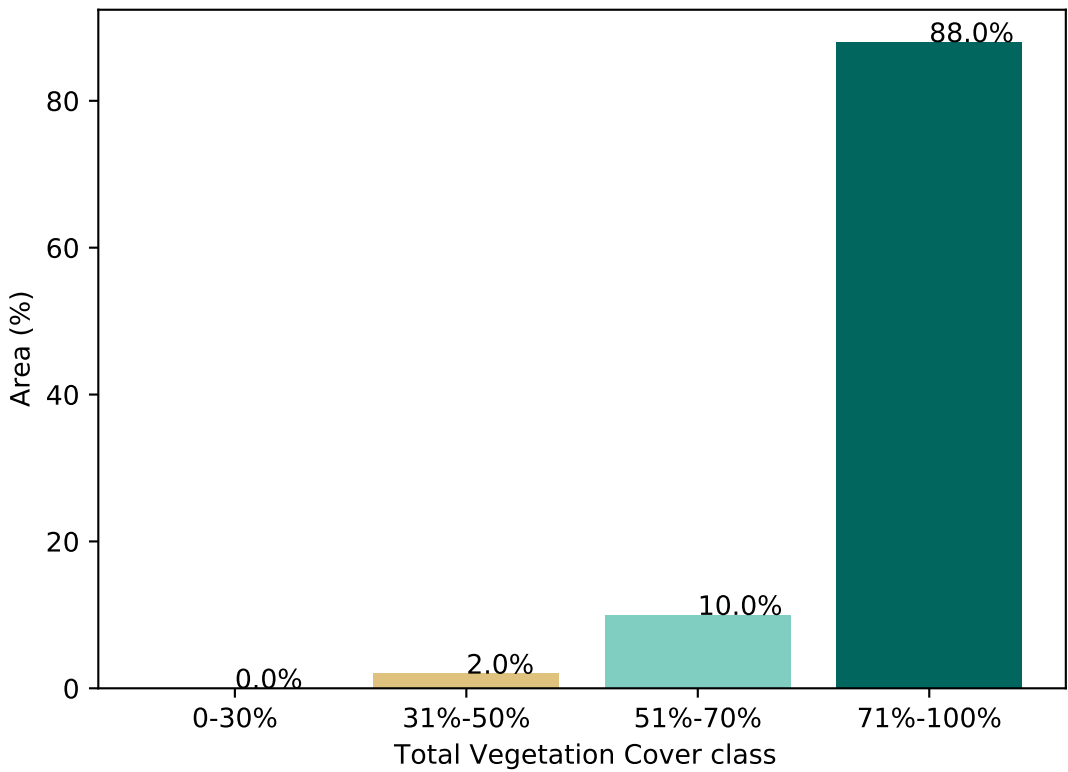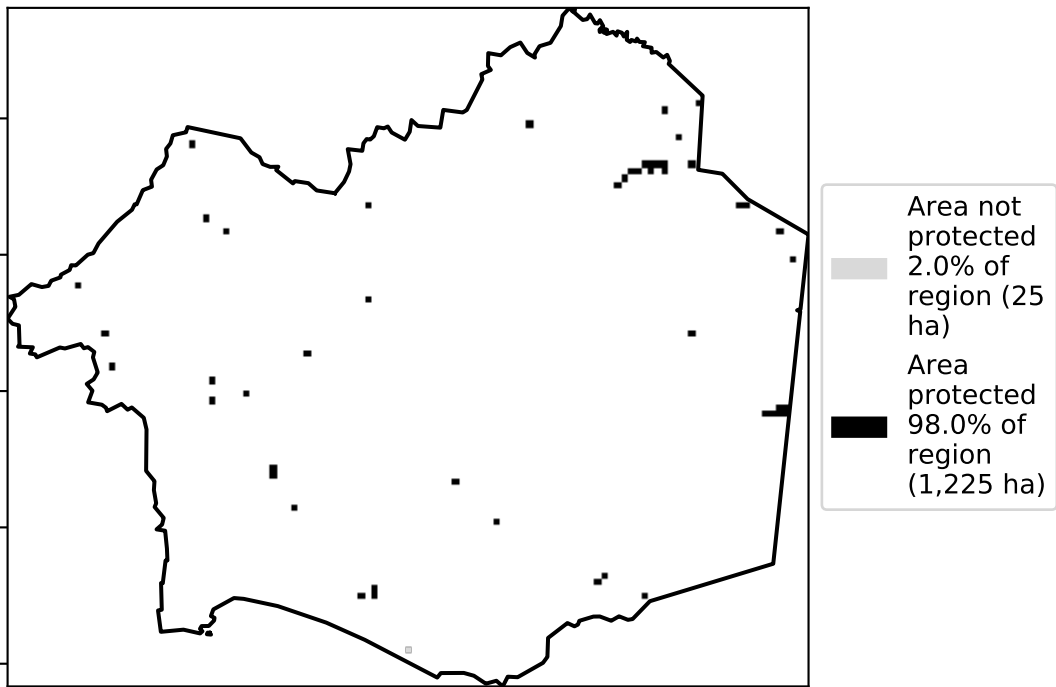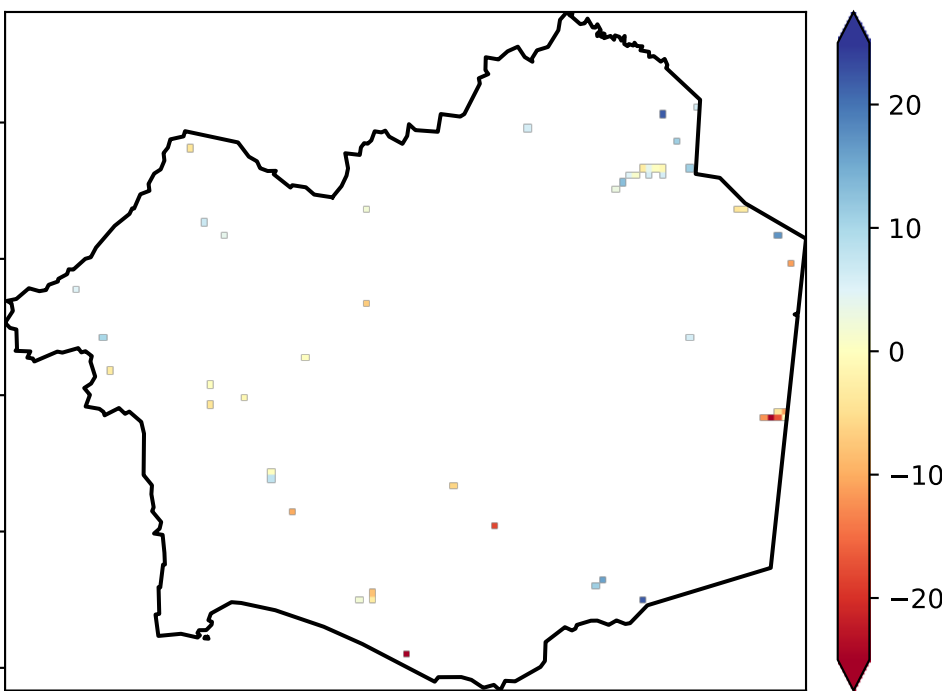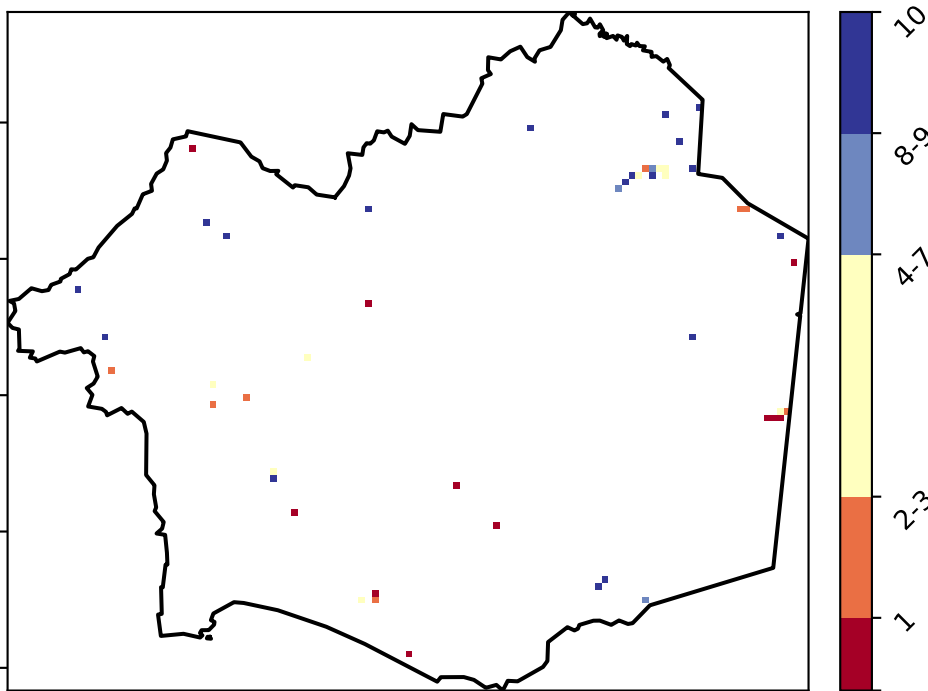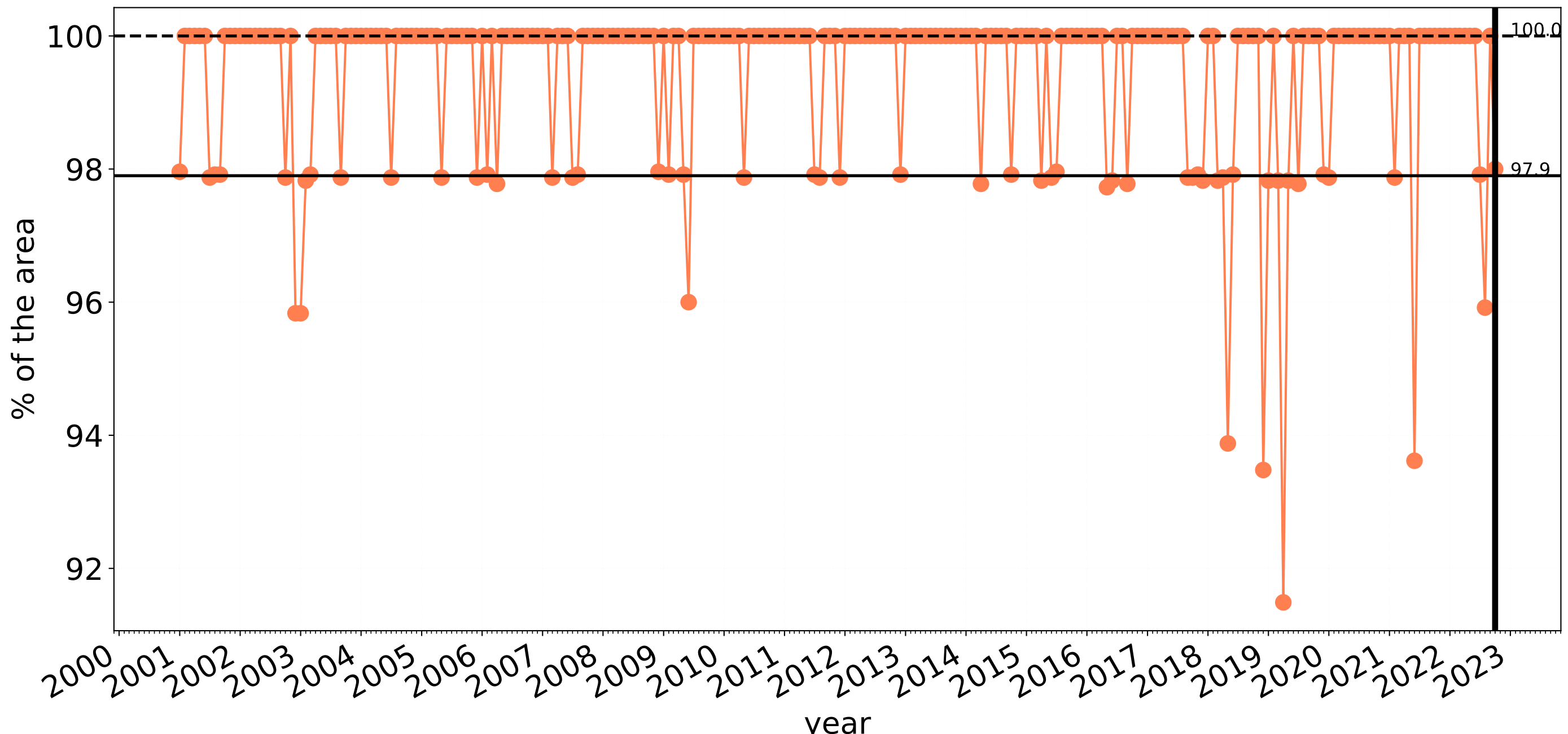4-7
2-3
1

CSIRO

tern Ecosystem Research Infrastructure

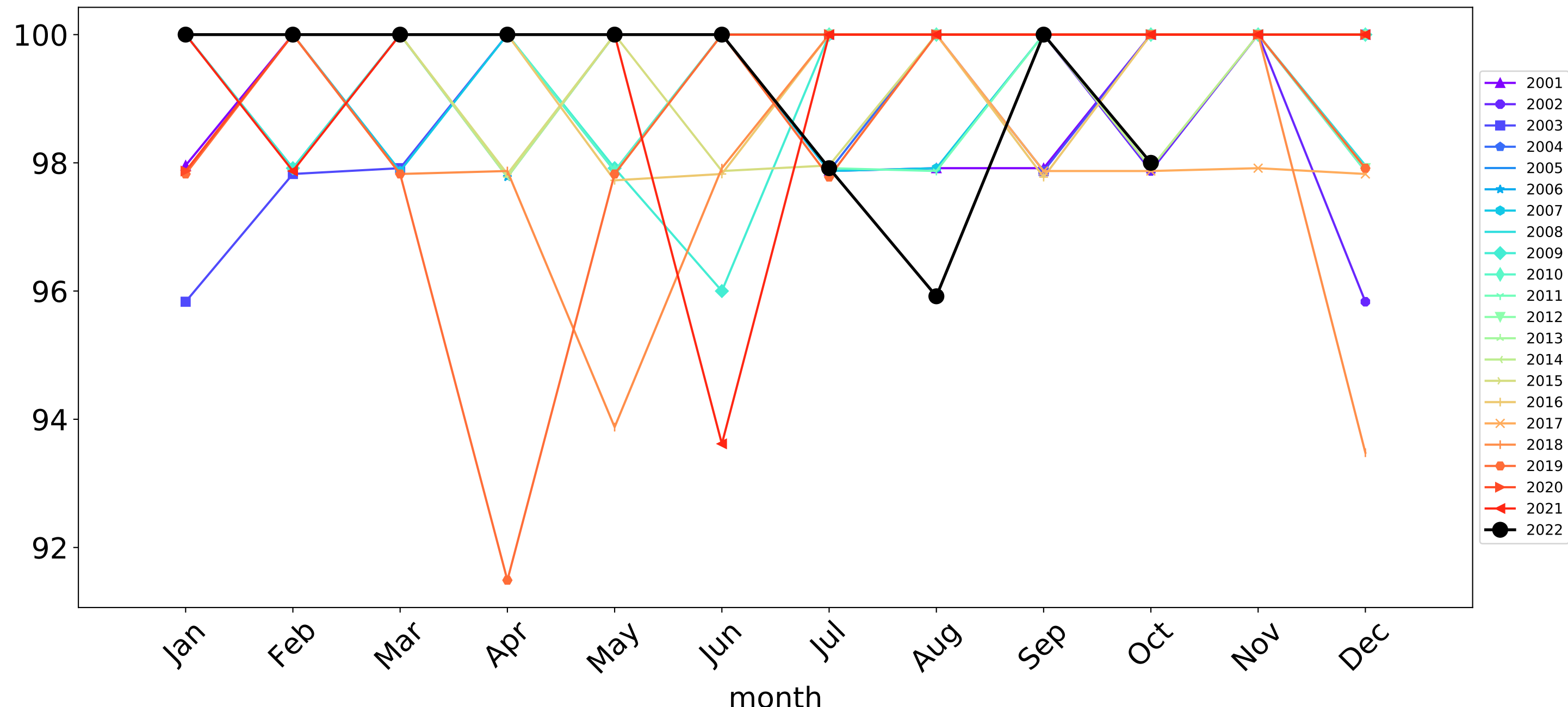Australian Government

National Landcare Programme

NSW GOVERNMENT

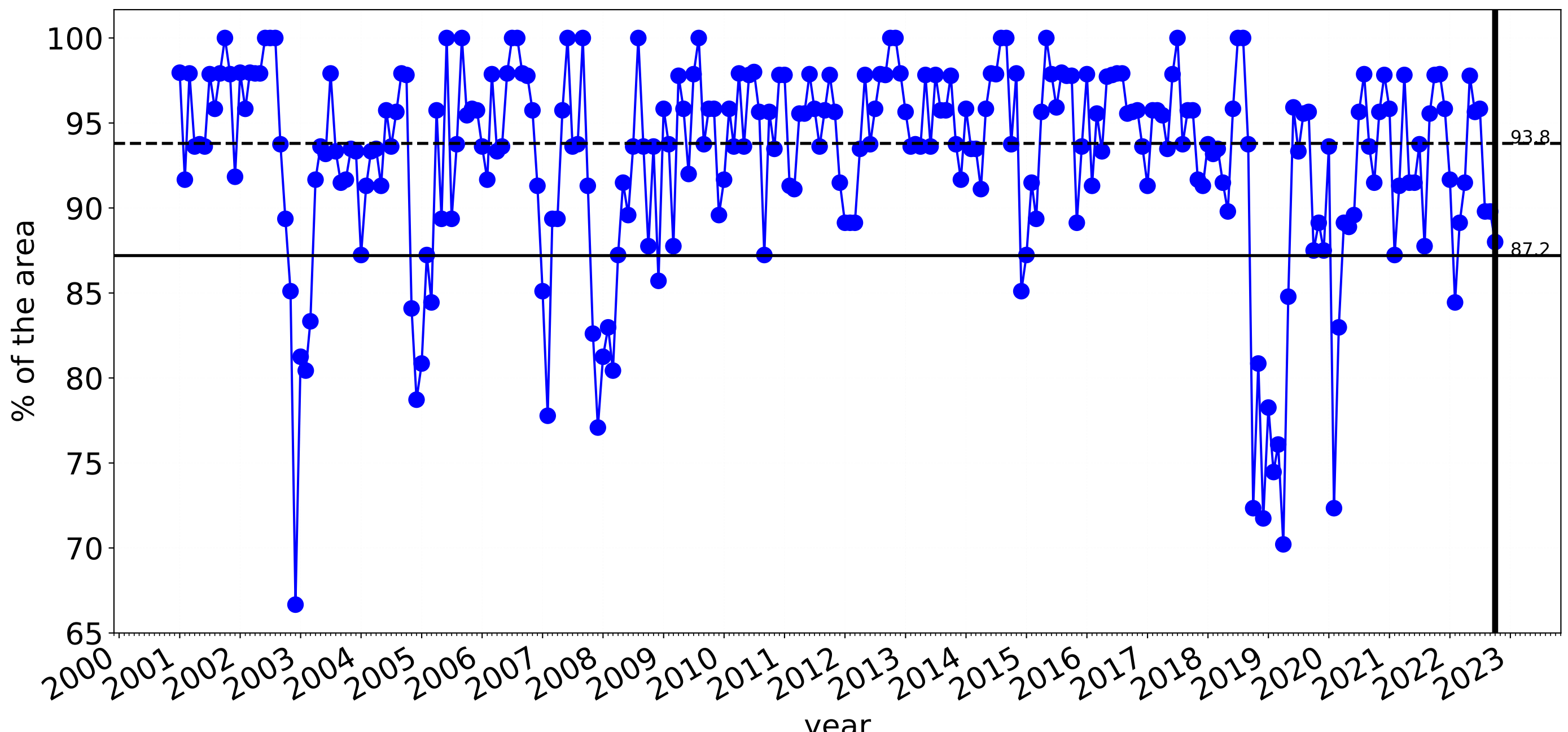# Conservation and natural environments timeseries

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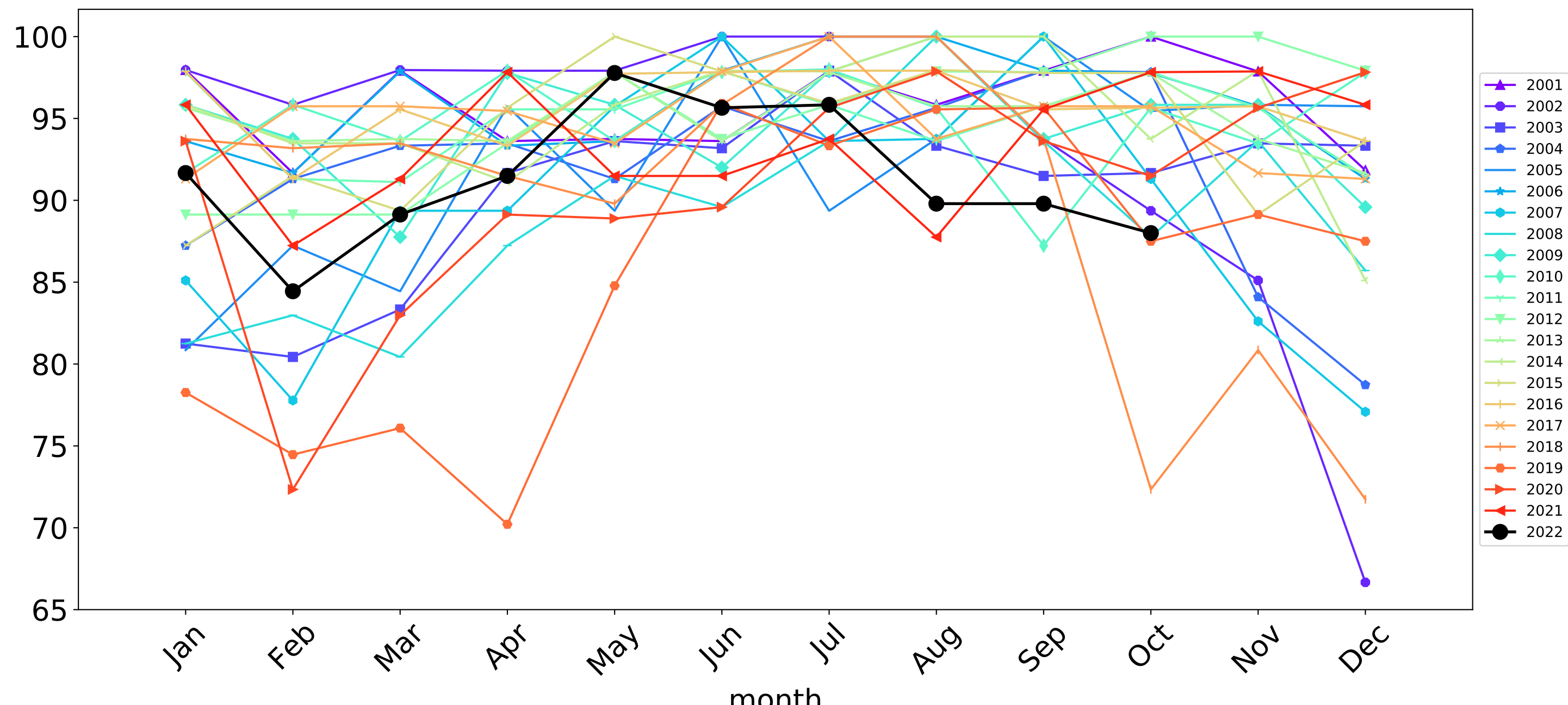

Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

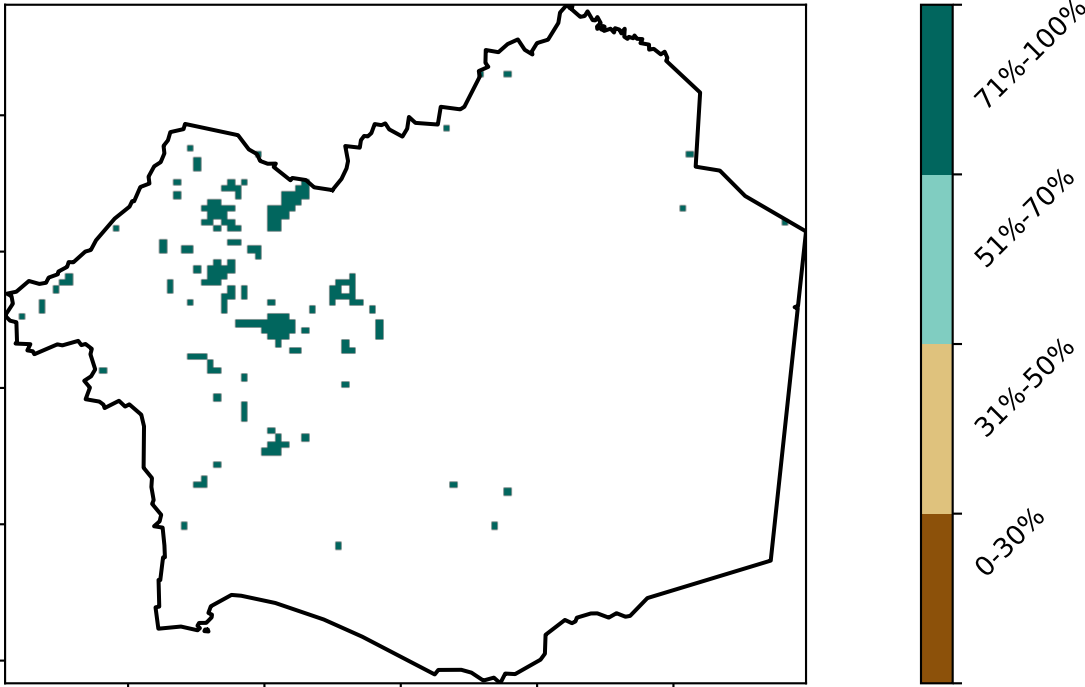### Water erosion historical monthly area protected (Total Veg Cov>70%)

Conservation and natural environments non forest

Land use and forest cover
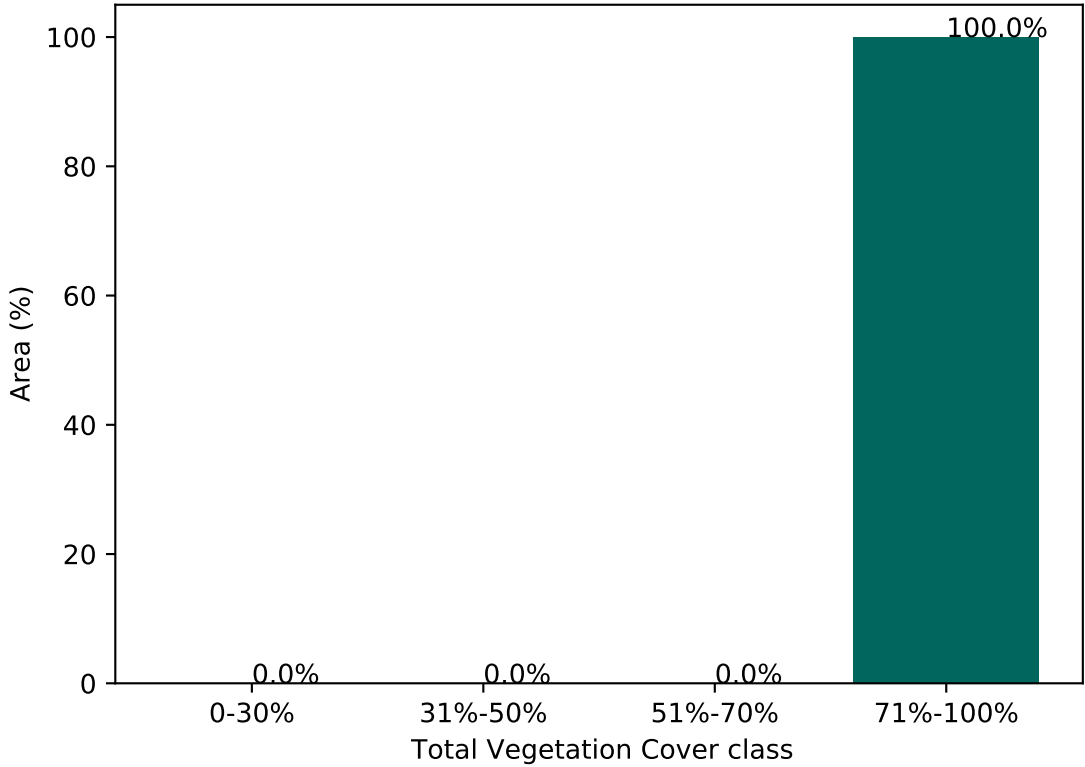
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)
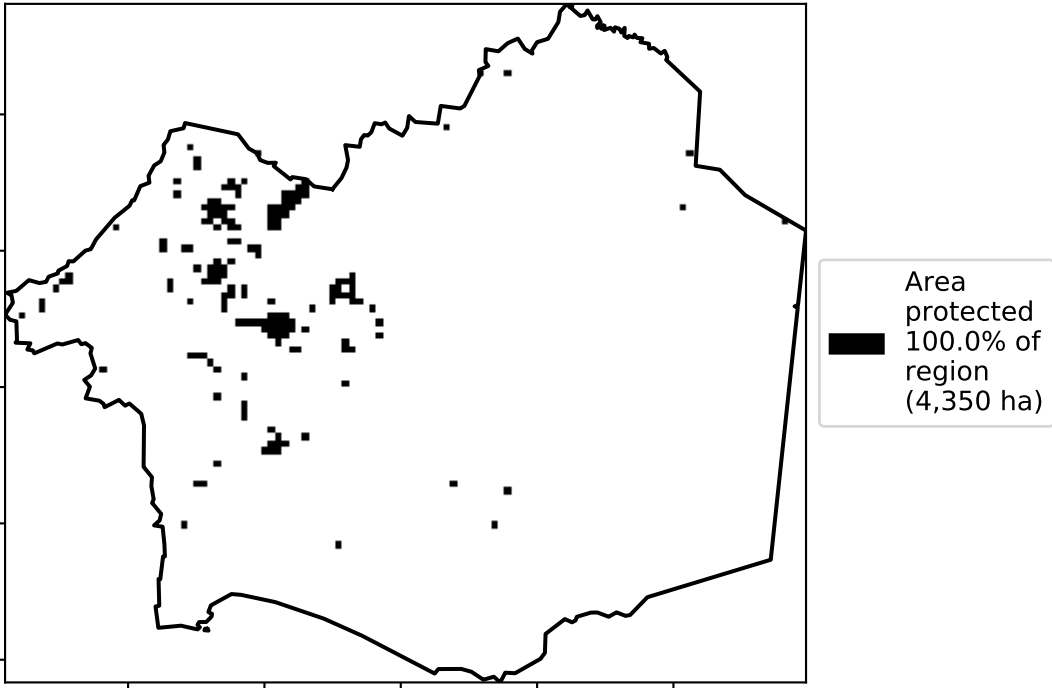
1 Conservation and natural environments - Non-forest

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area not protected 12.0% of region (150 ha)

Area protected 88.0% of region (1,100 ha)

% Area protected from wind erosion (>50%)

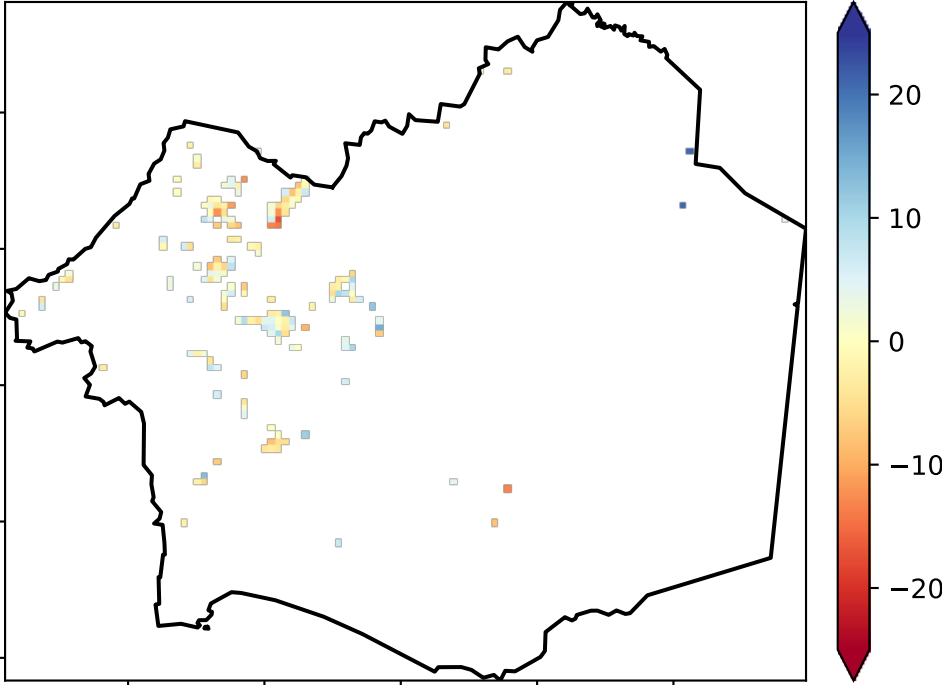Area not protected 2.0% of region (25 ha)
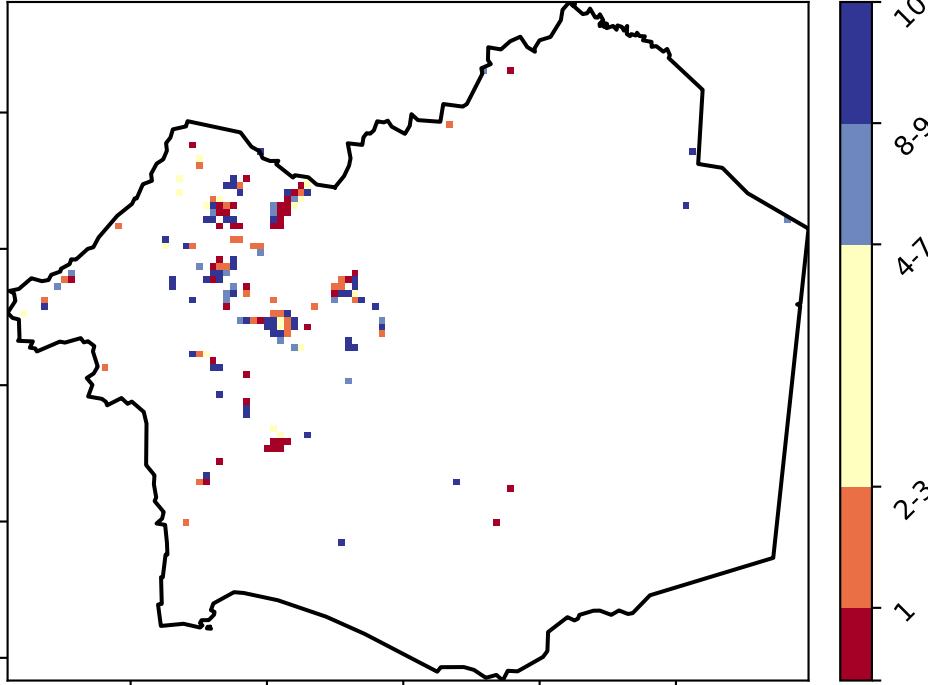
Area protected 98.0% of region (1,225 ha)

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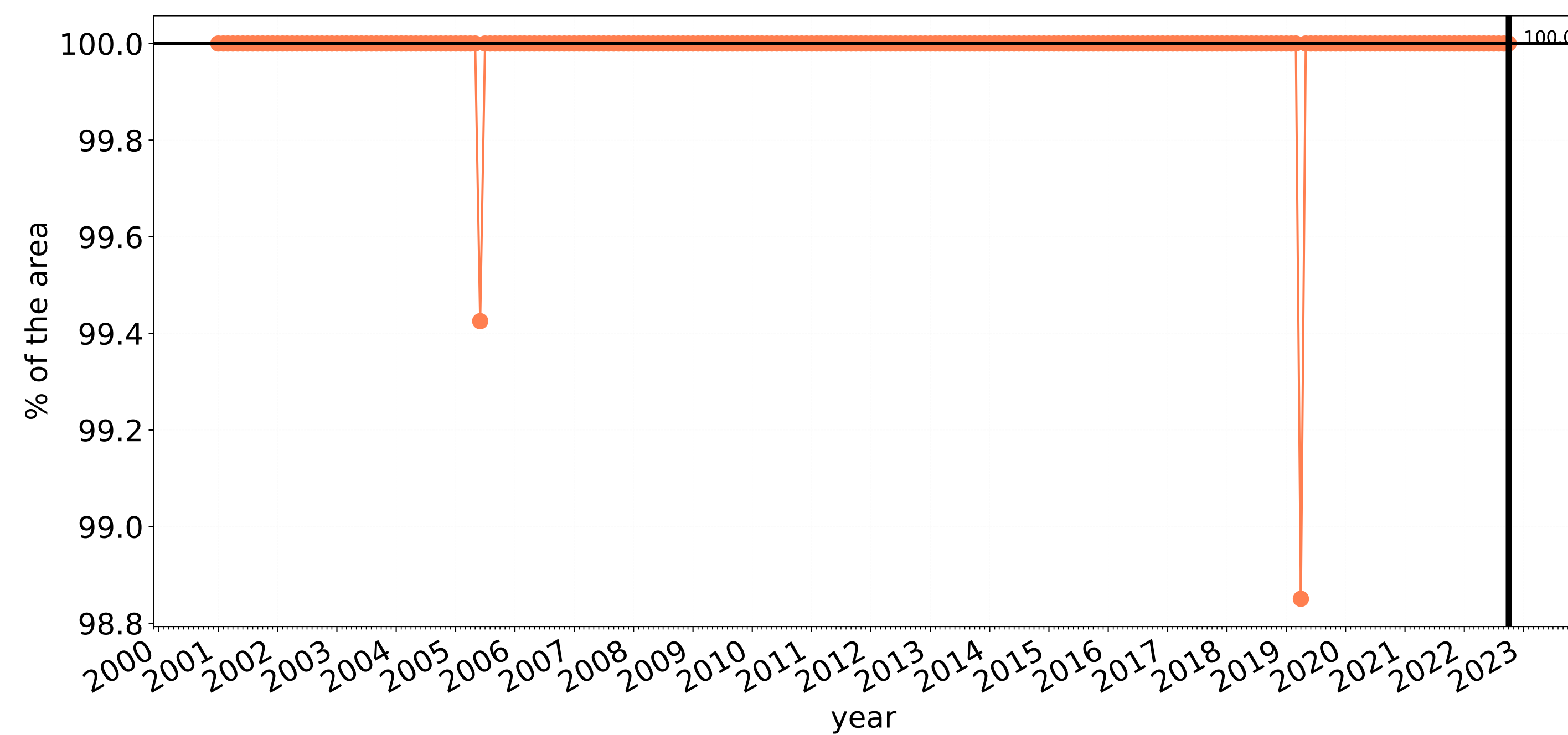
10
8-9
4-7
2-3
1

CSIRO

tern Ecosystem Research Infrastructure

Australian Government | National Landcare Programme

NSW GOVERNMENT

# Conservation and natural environments non forest timeseries

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

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

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

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

# Conservation and natural environments Woodland forest

Land use and forest cover

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

1 Conservation and natural environments - Woodland
forest

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area
protected
100.0% of
region
(4,350 ha)
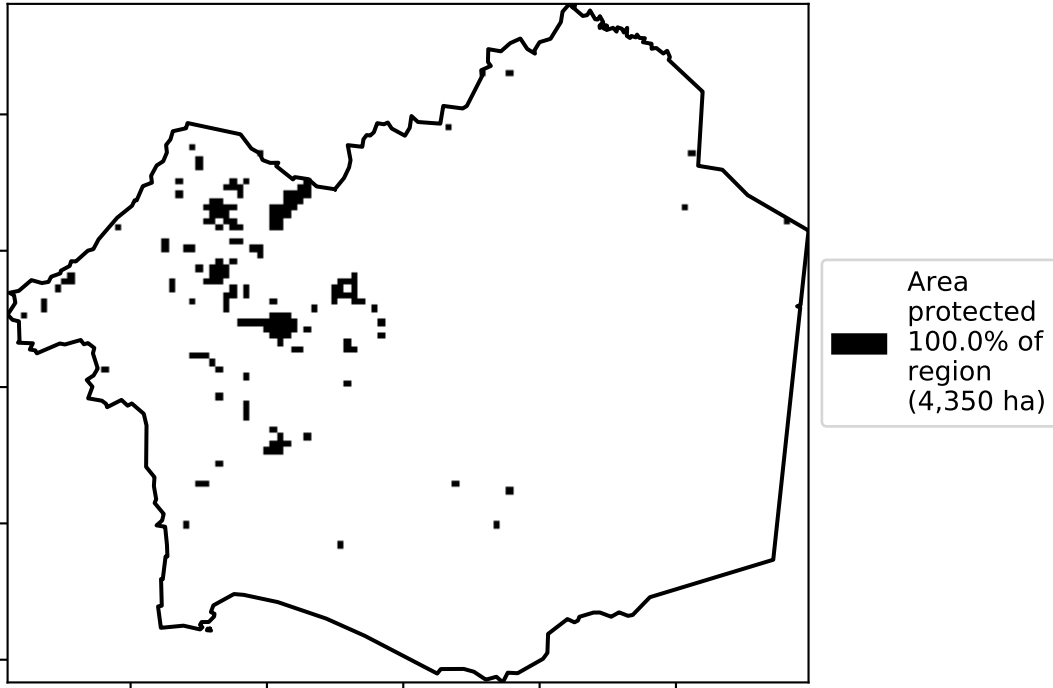
% Area protected from wind erosion (>50%)

Area
protected
100.0% of
region
(4,350 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

Conservation and natural environments Woodland forest timeseries

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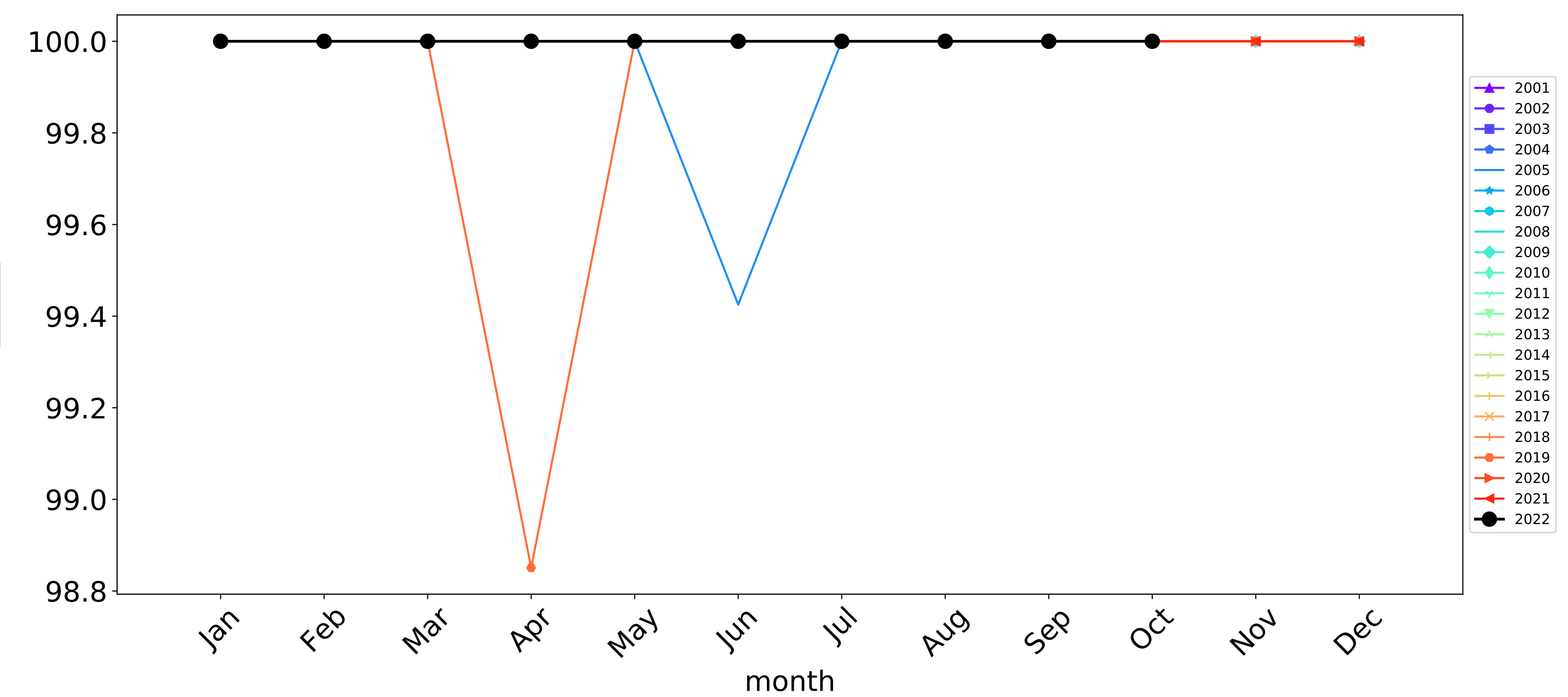
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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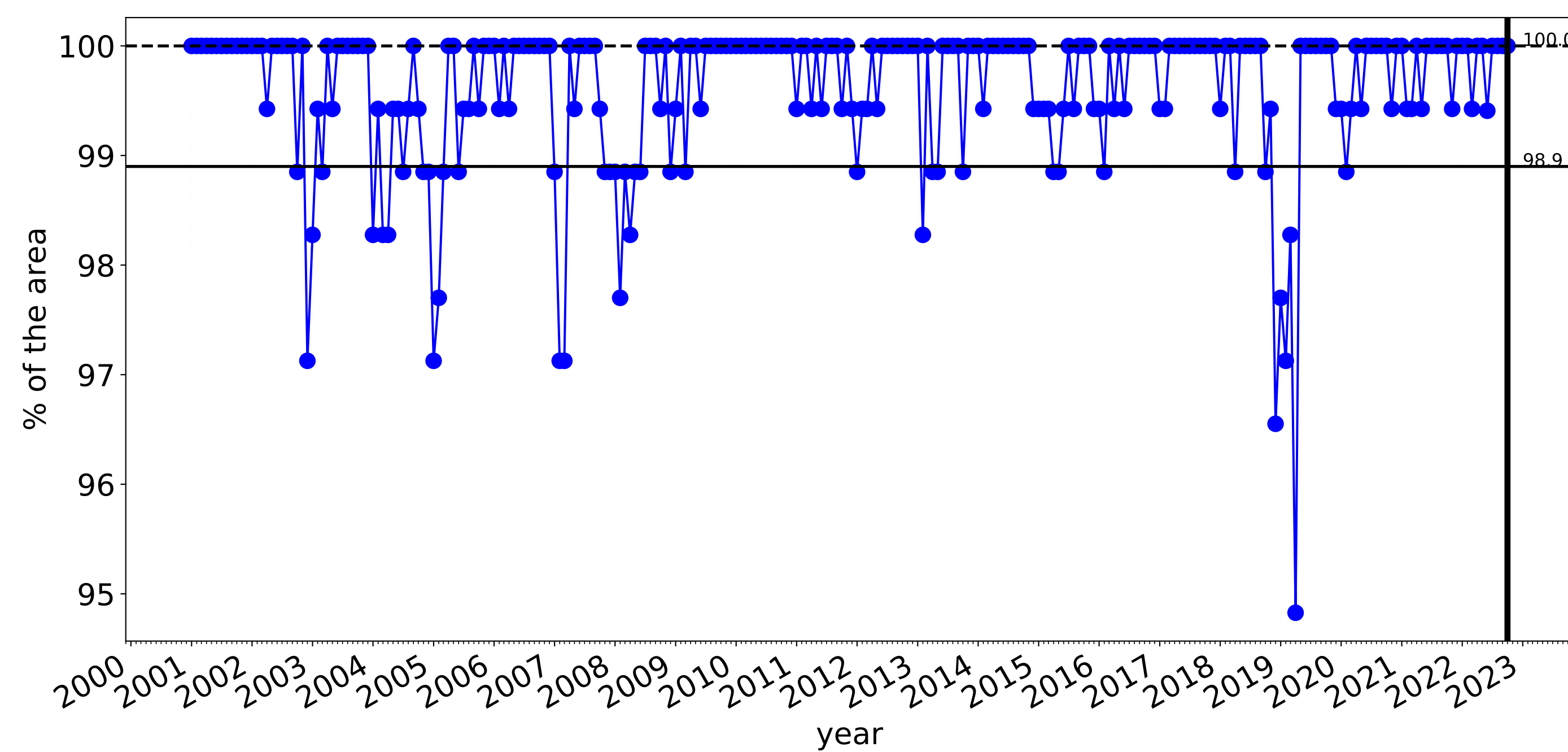
Water erosion historical monthly area protected (Total Veg Cov>70%)
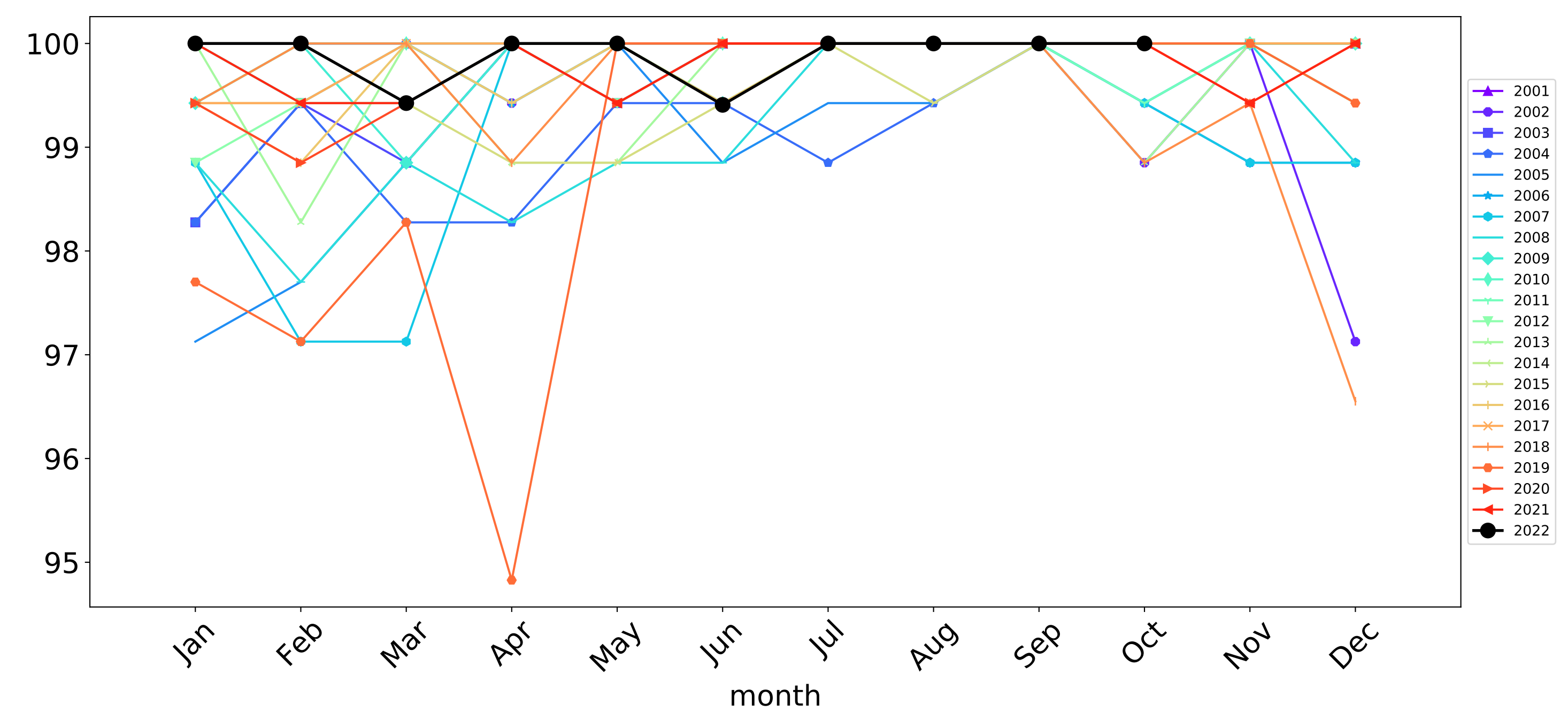
Agriculture

Land use and forest cover

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

1 Agriculture - Grazing - Non forest
2 Agriculture - Grazing - Woodland forest
3 Agriculture - Grazing - Non-woodland forest
4 Agriculture - Grazing - Irrigated
5 Agriculture - Cropping - Non-irrigated
6 Agriculture - Cropping - Irrigated
7 Agriculture - Horticulture - Irrigated
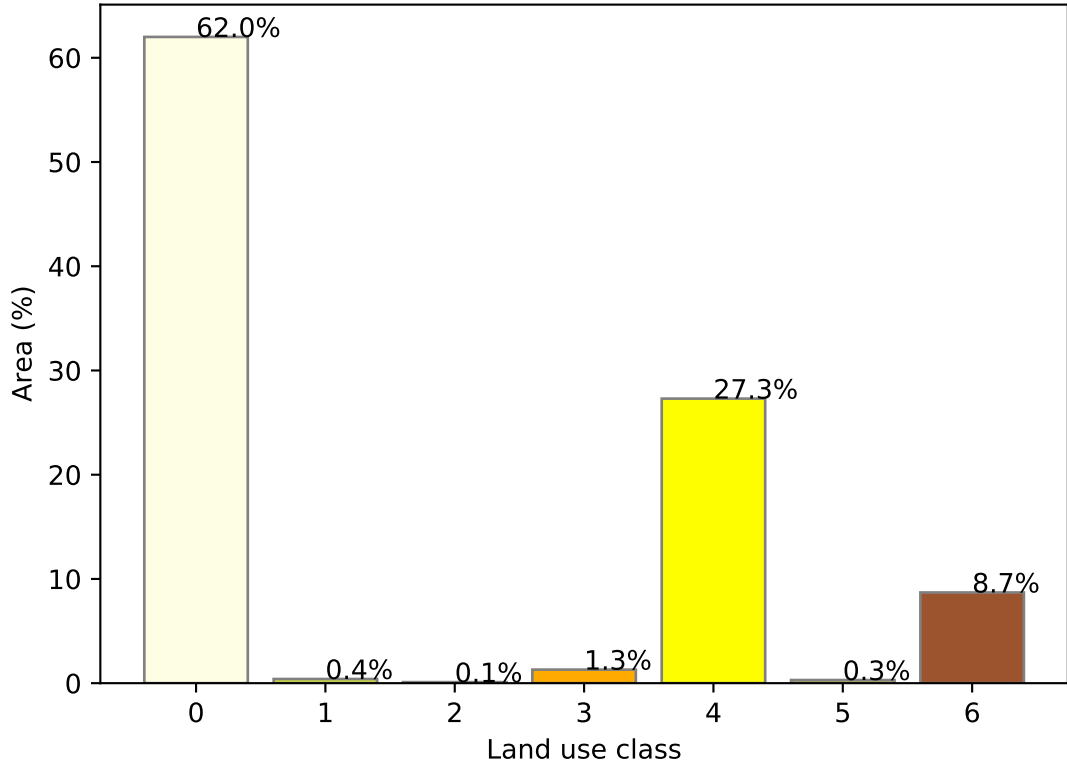
Proportion of each land class in area

Total Vegetation Cover [%]

71%-100%
51%-70%
31%-50%
0-30%
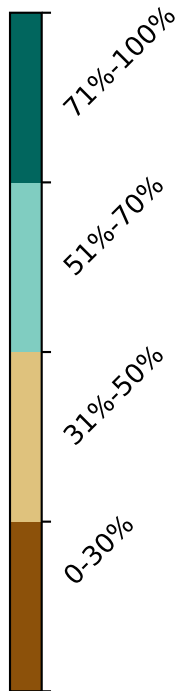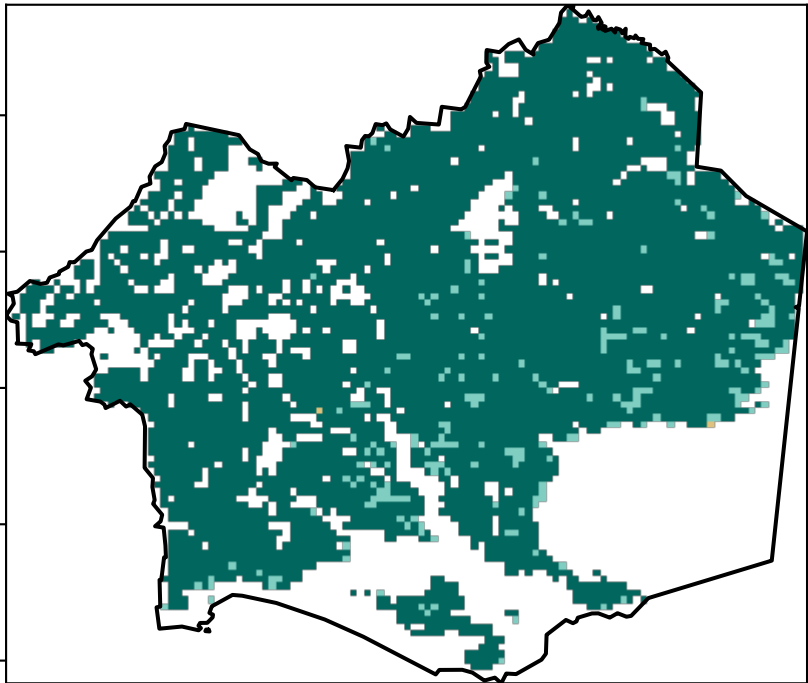
Proportion of vegetation cover class in area
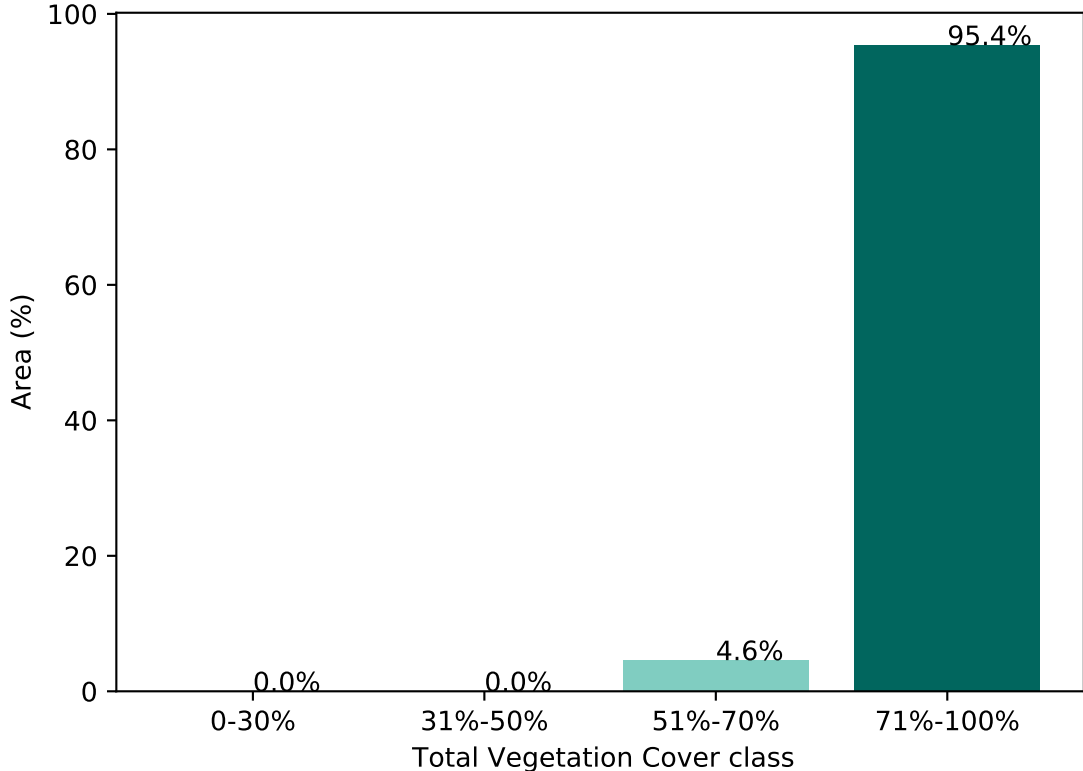
% Area protected from water erosion (>70%)
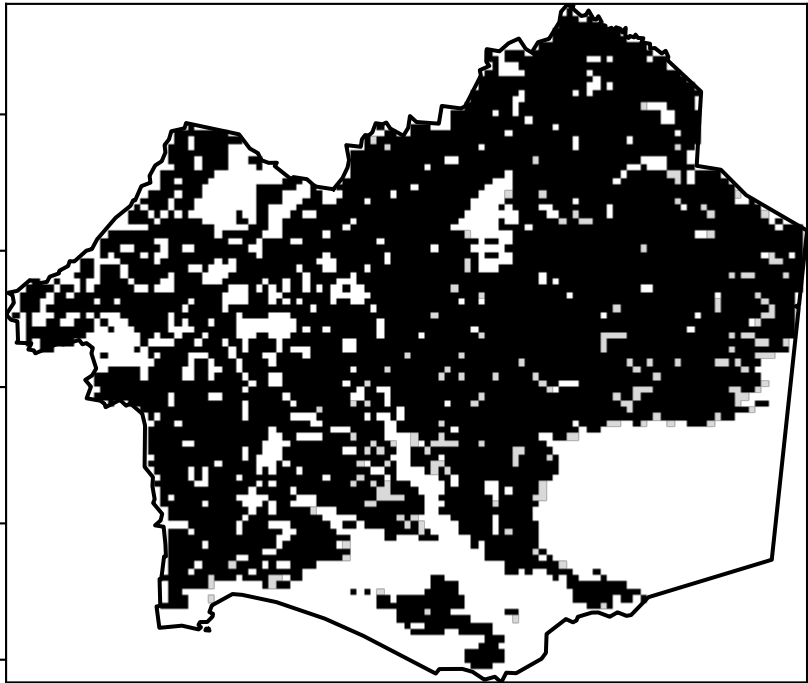
Area not protected 4.6% of region (5,983 ha)
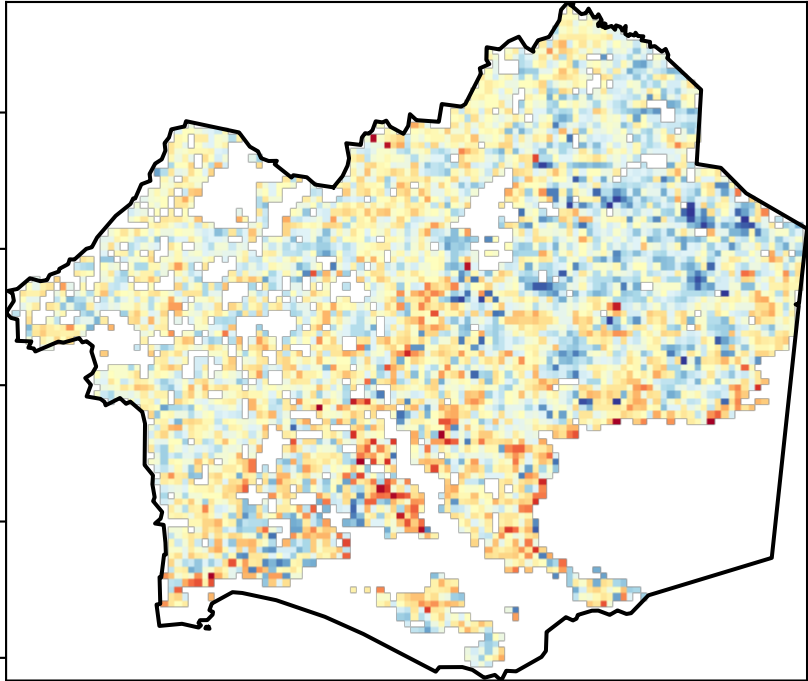
Area protected 95.4% of region (124,091 ha)

% Area protected from wind erosion (>50%)
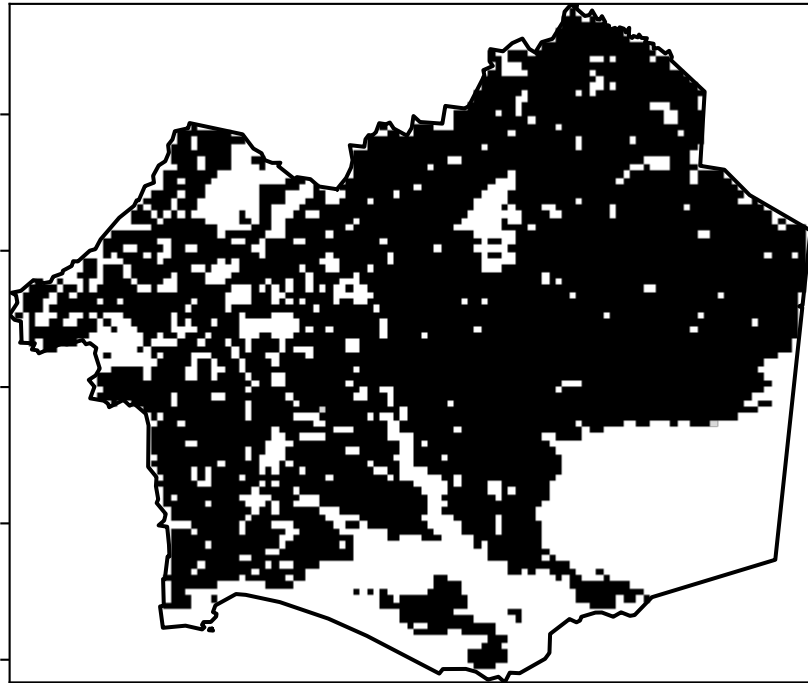
Area not protected 0.0% of region (0 ha)

Area protected 100.0% of region (130,075 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
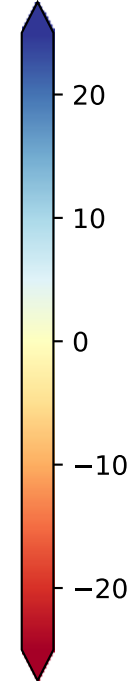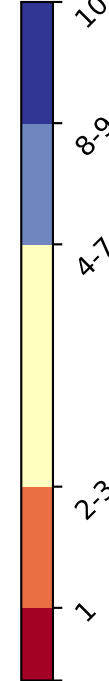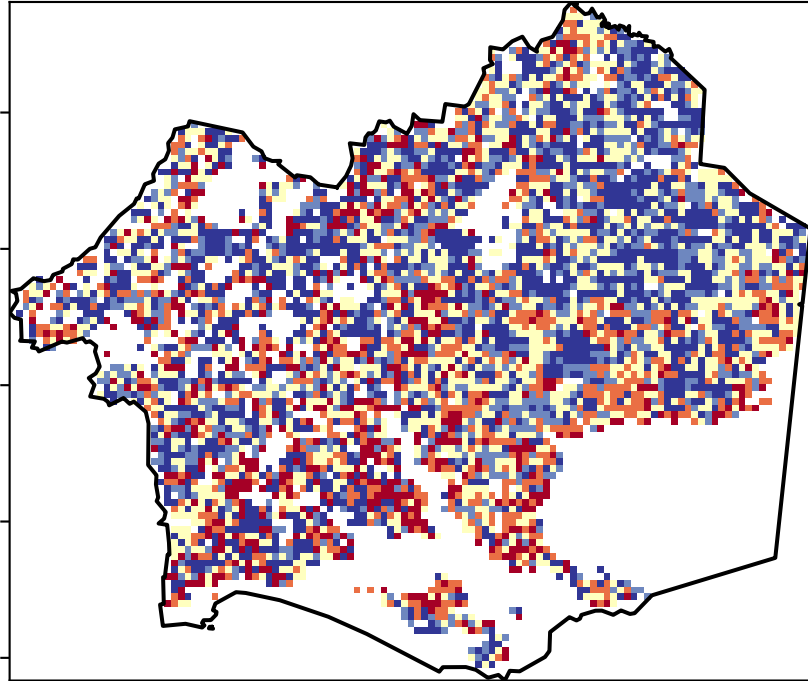
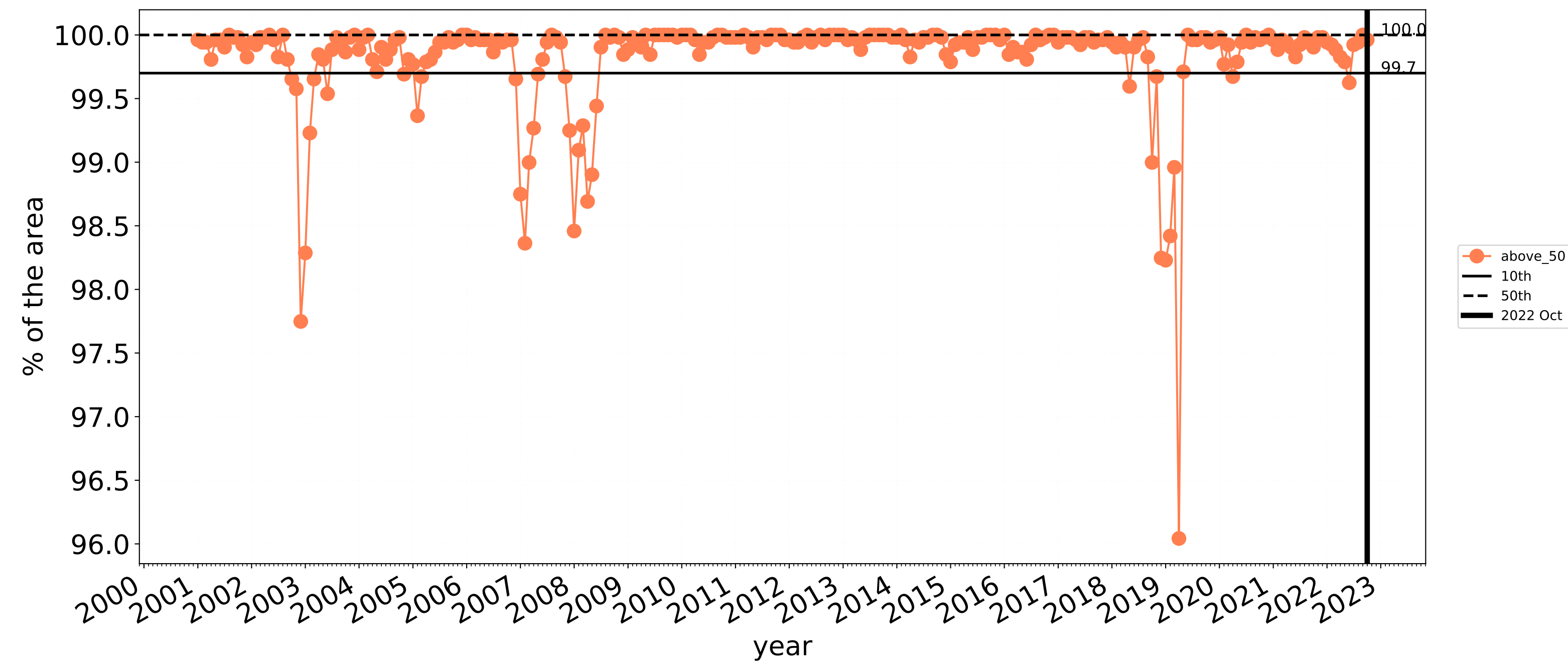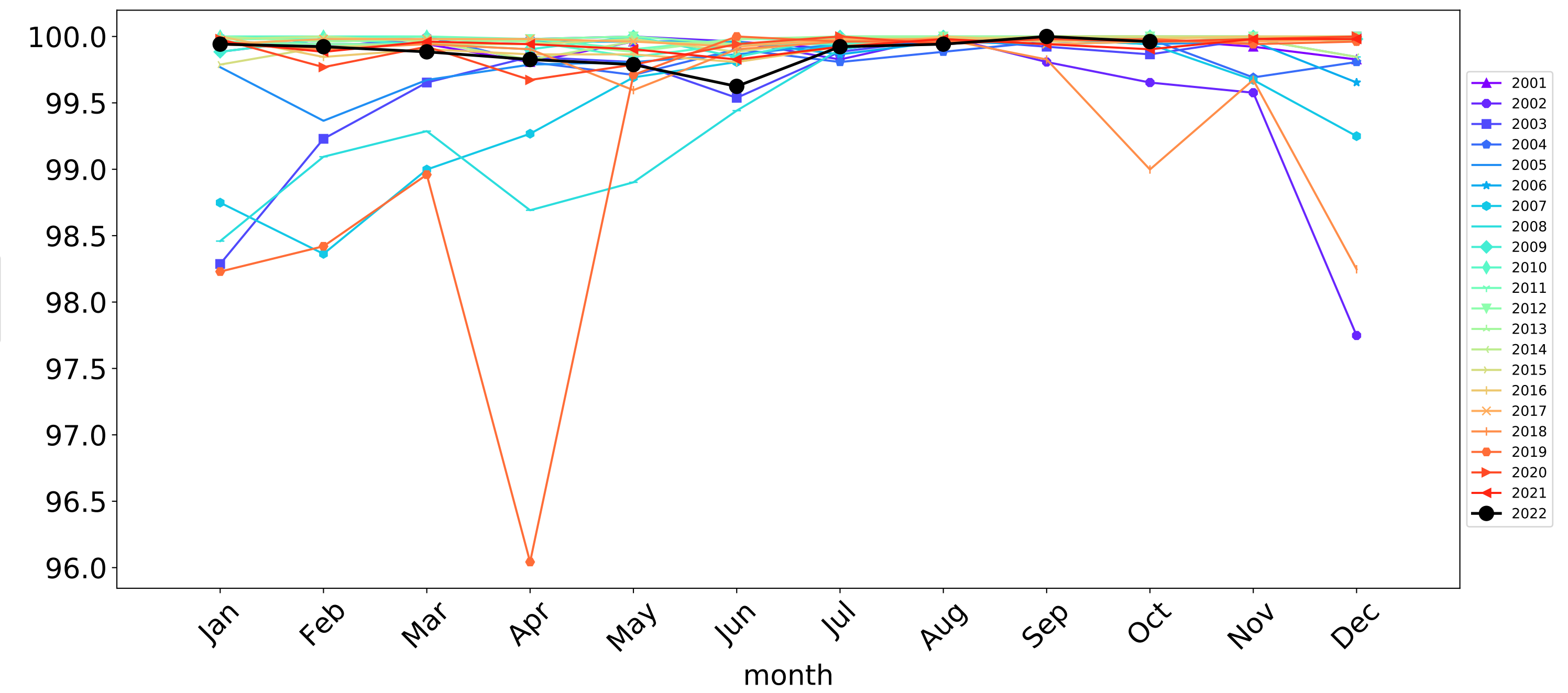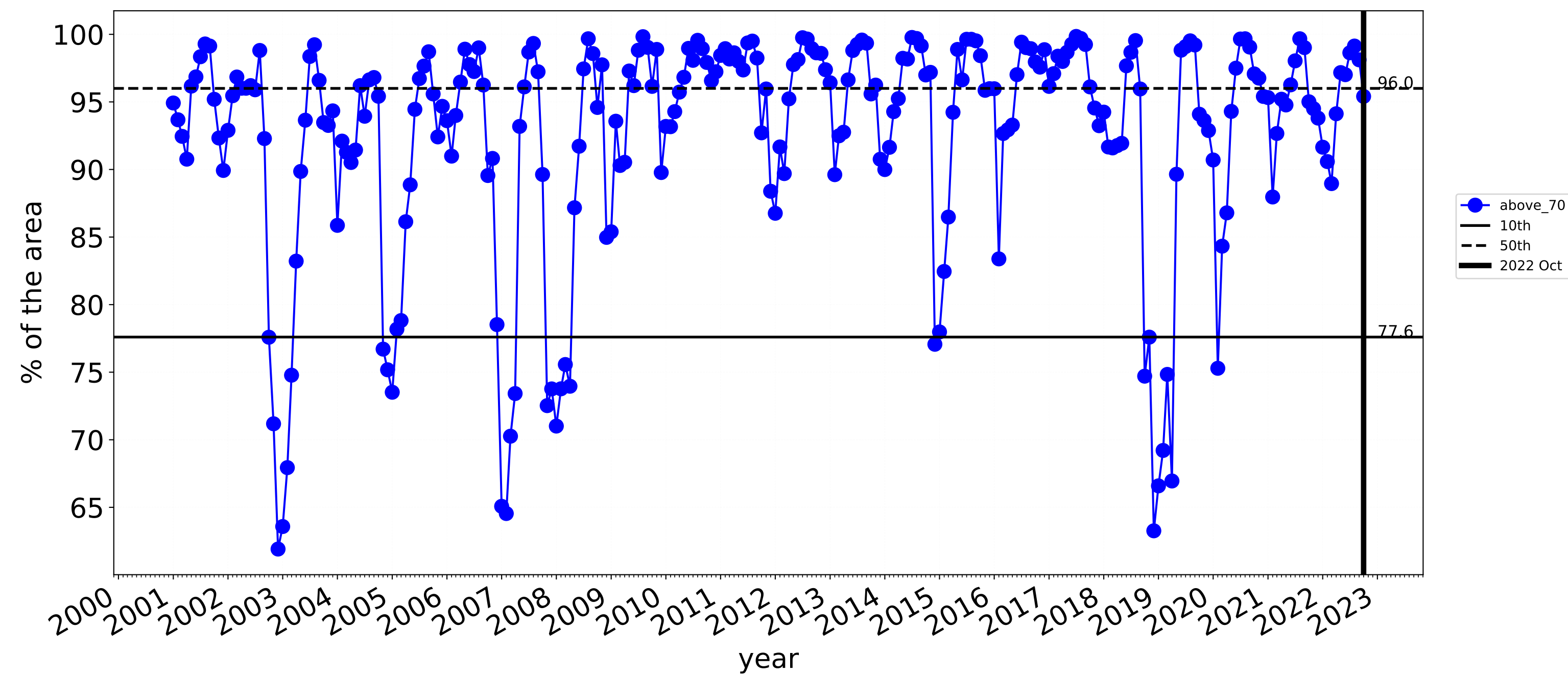**Agriculture timeseries**

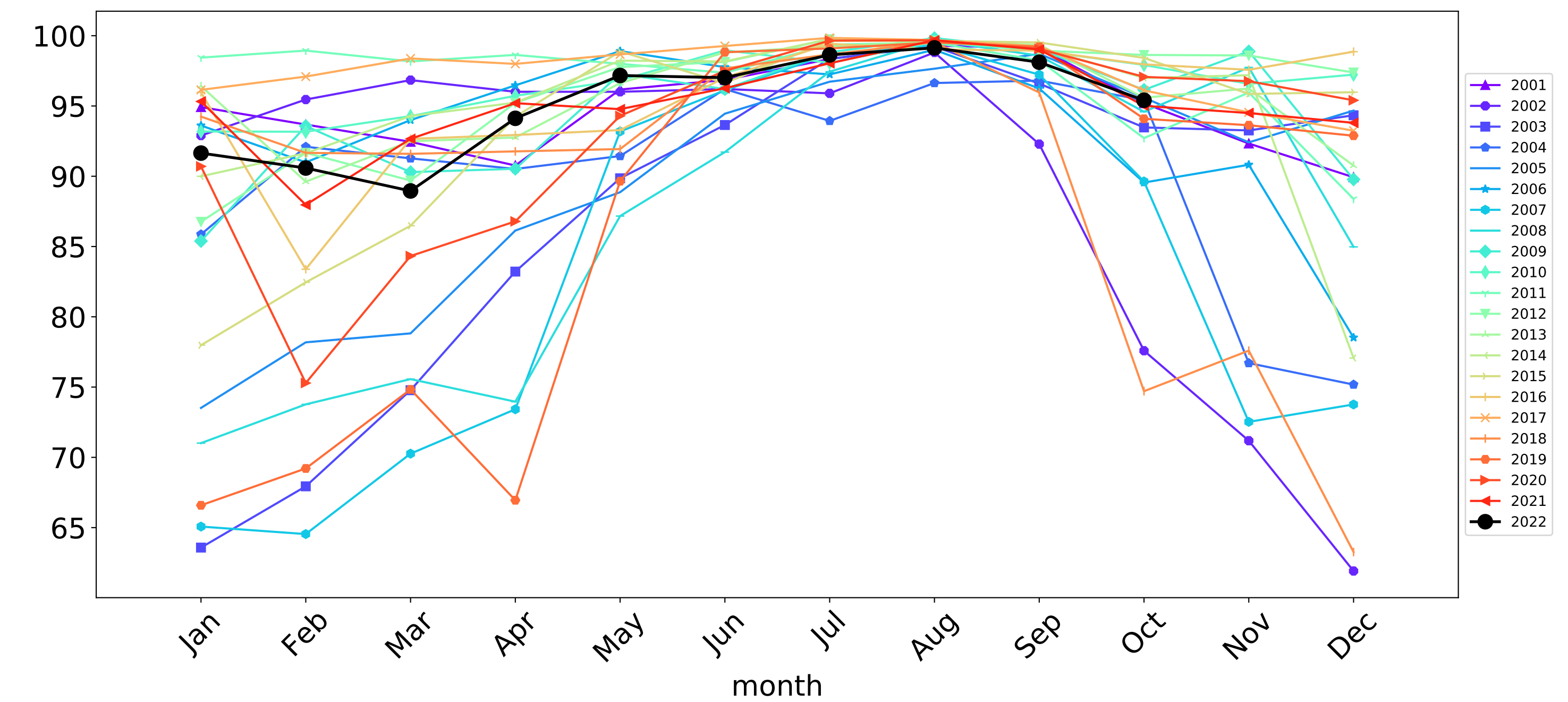Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

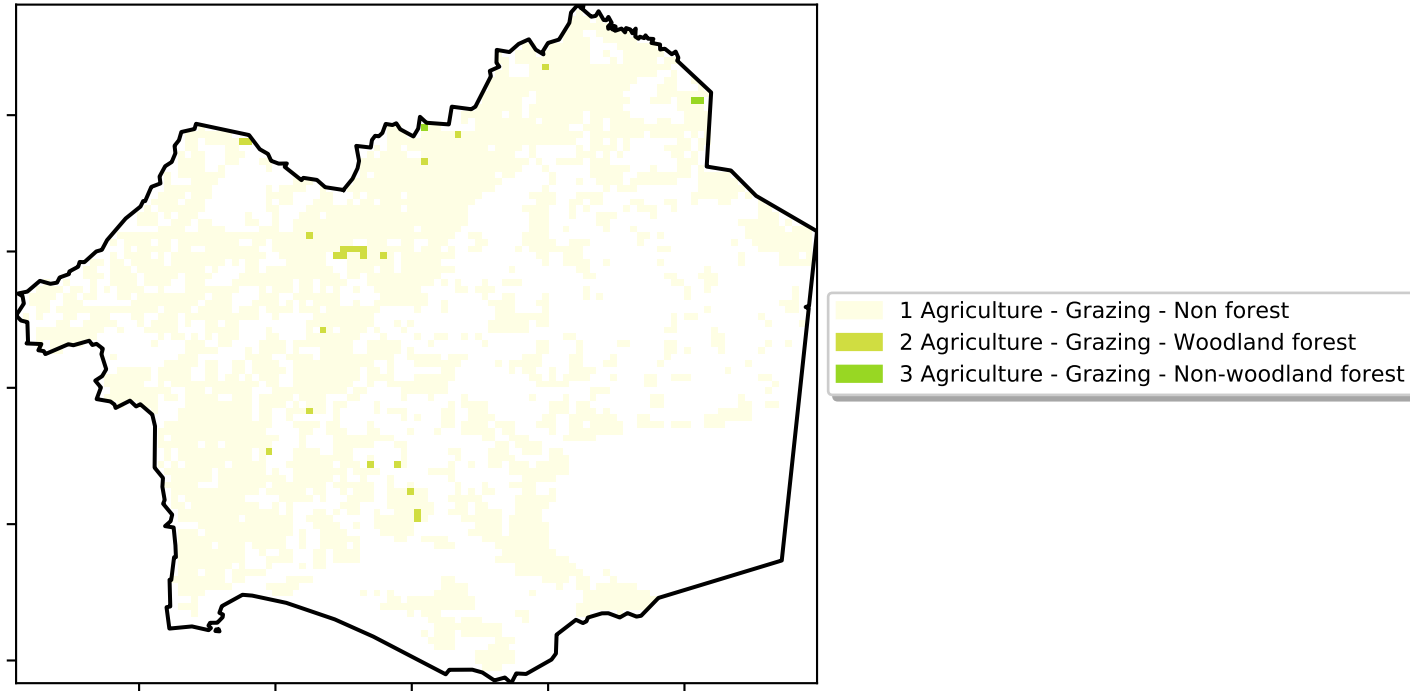Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

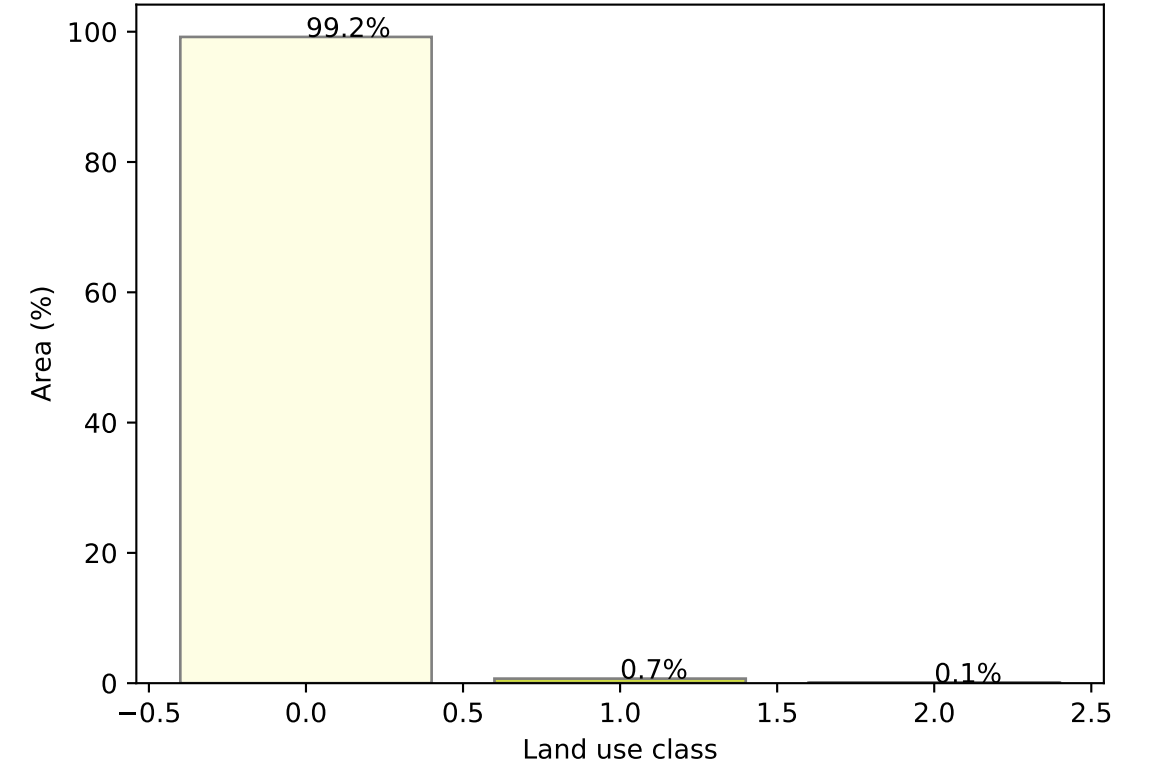Water erosion historical monthly area protected (Total Veg Cov>70%)
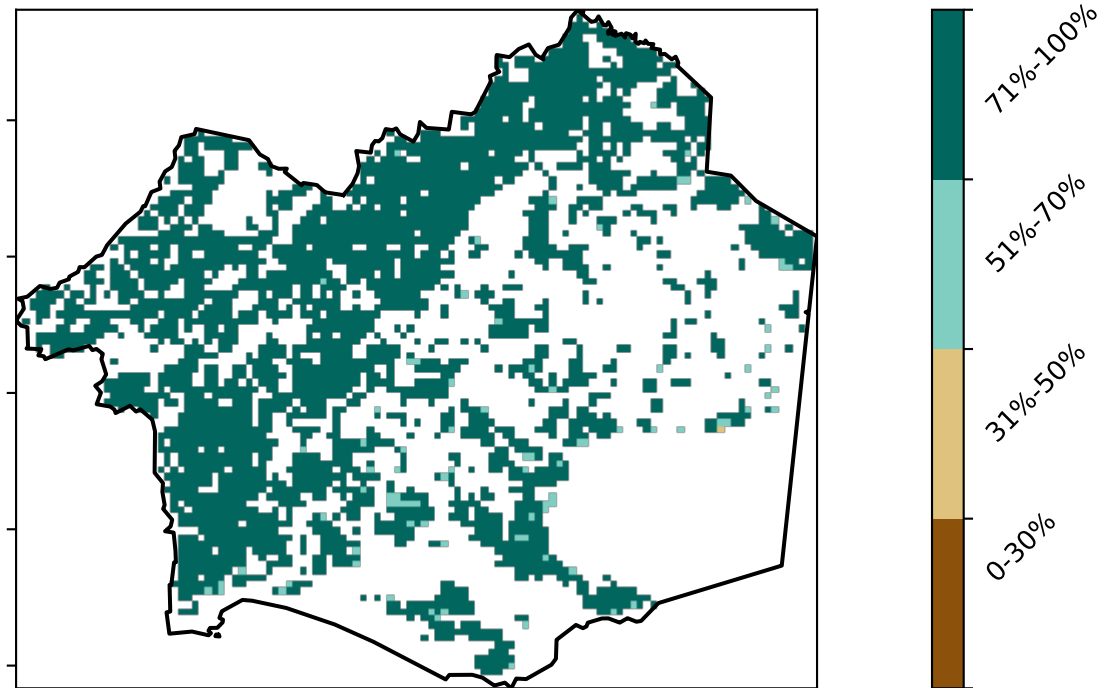
Grazing

Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)
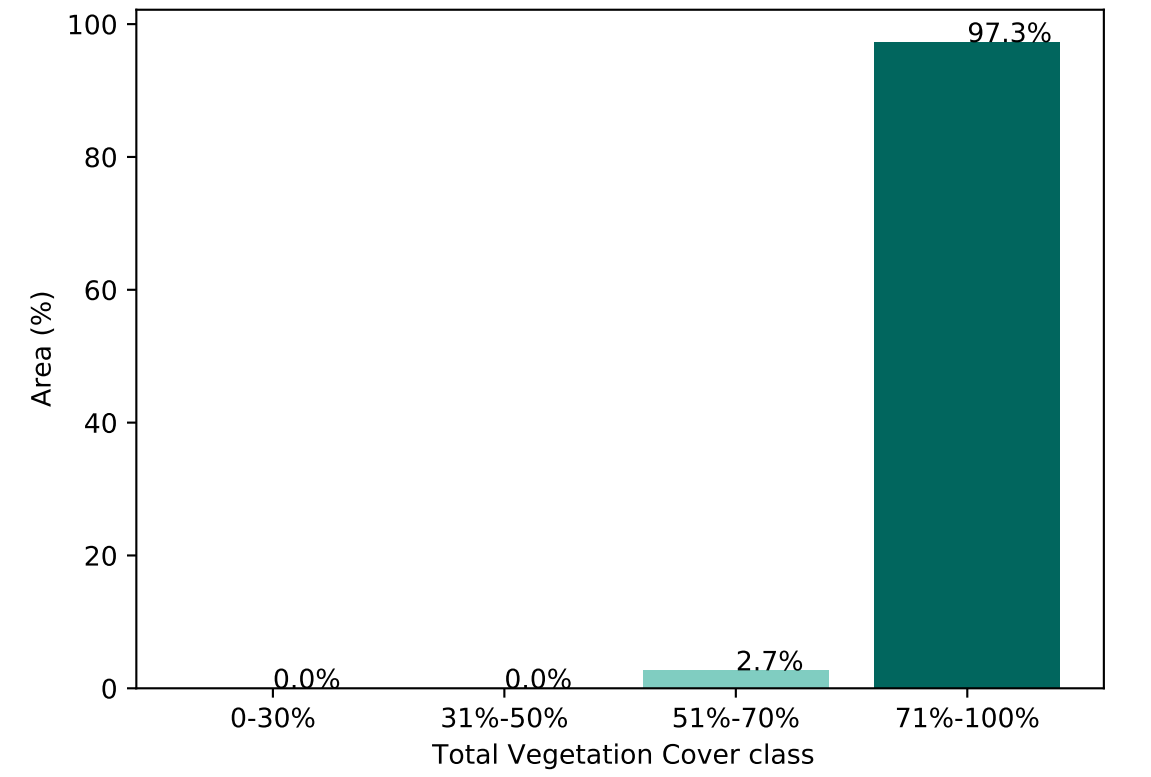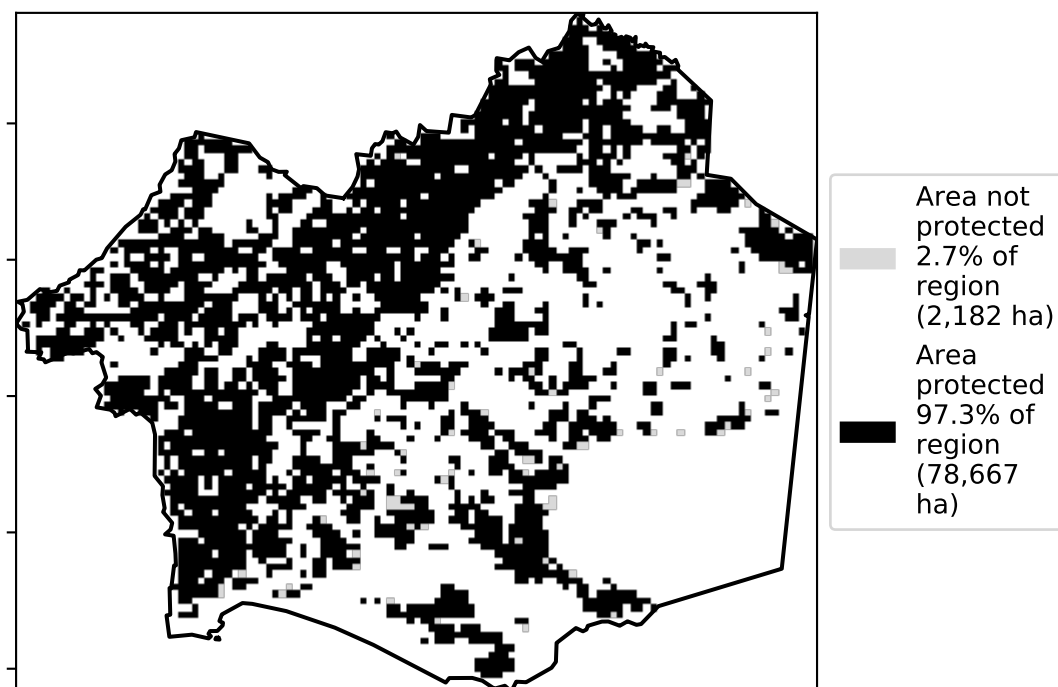
1 Agriculture - Grazing - Non forest
2 Agriculture - Grazing - Woodland forest
3 Agriculture - Grazing - Non-woodland forest

Proportion of each land class in area

99.2%

0.7%

0.1%

Area (%)

Land use class

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

97.3%

0.0%   0.0%   2.7%

Area (%)

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

Total Vegetation Cover class

% Area protected from water erosion (>70%)

Area not protected 2.7% of region (2,182 ha)

Area protected 97.3% of region (78,667 ha)

% Area protected from wind erosion (>50%)
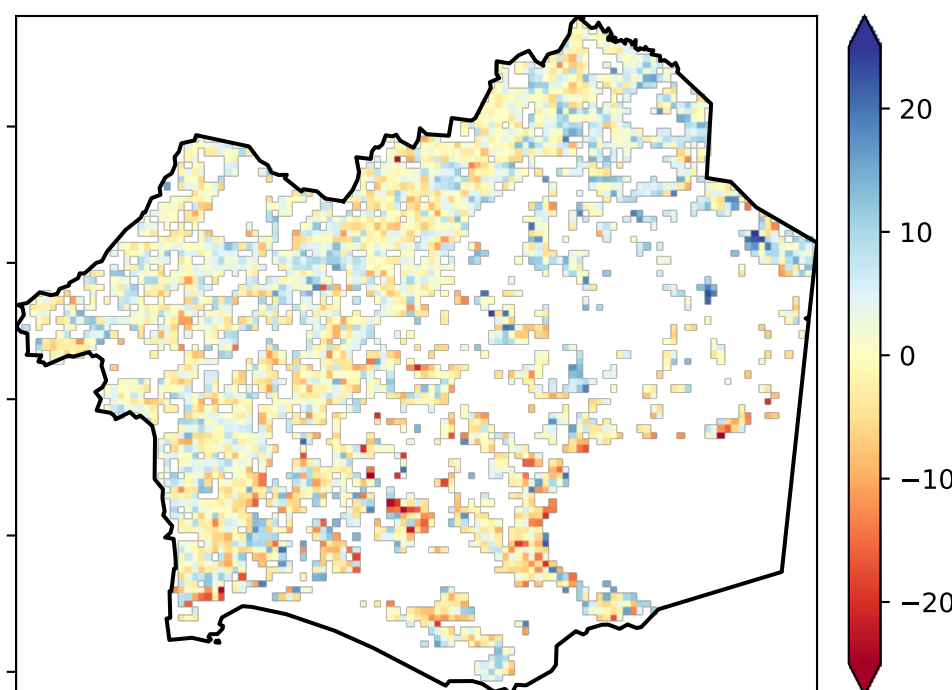
Area not protected 0.0% of region (0 ha)
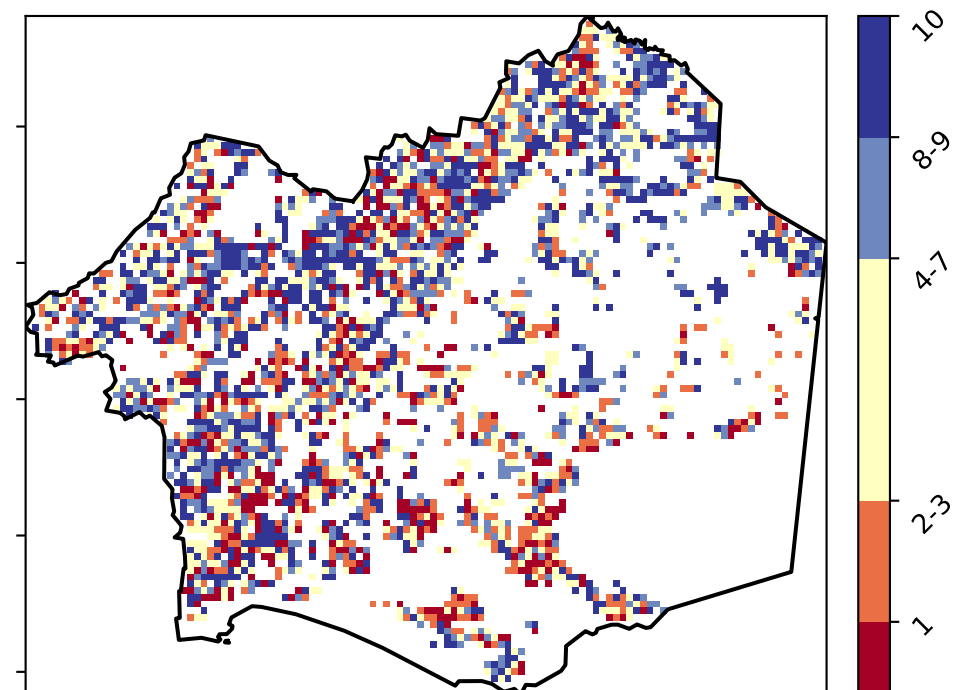
Area protected 100.0% of region (80,850 ha)

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.
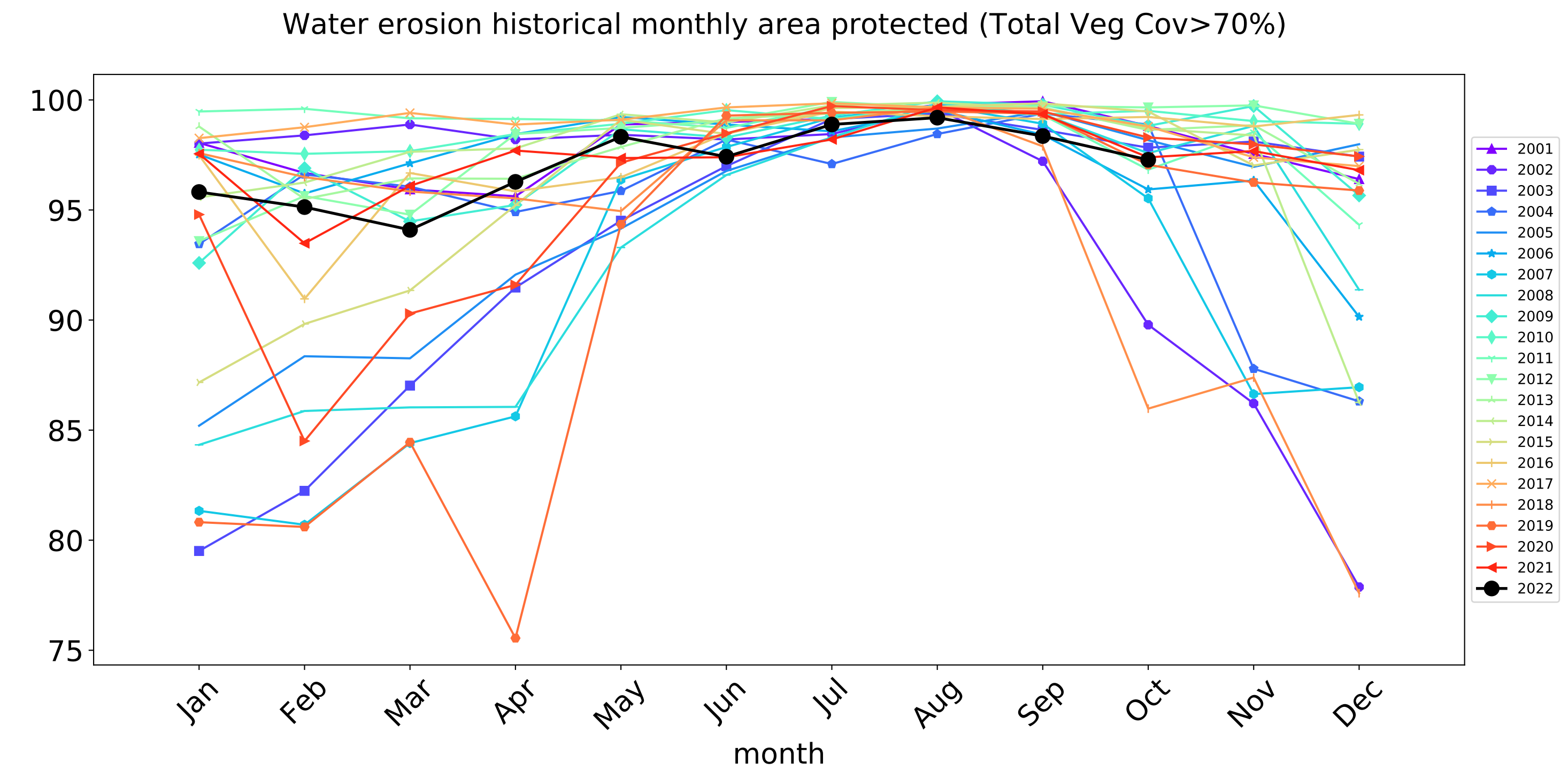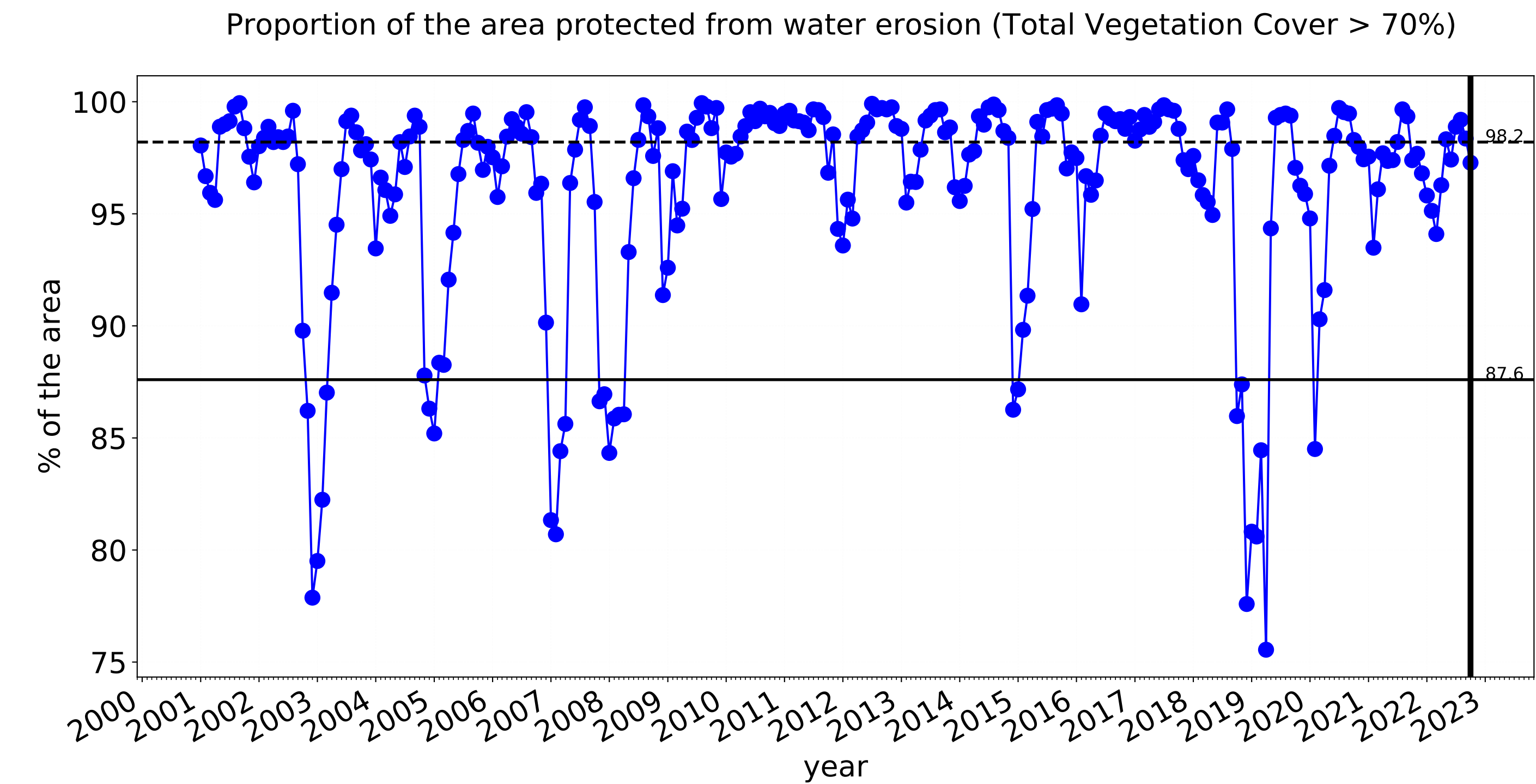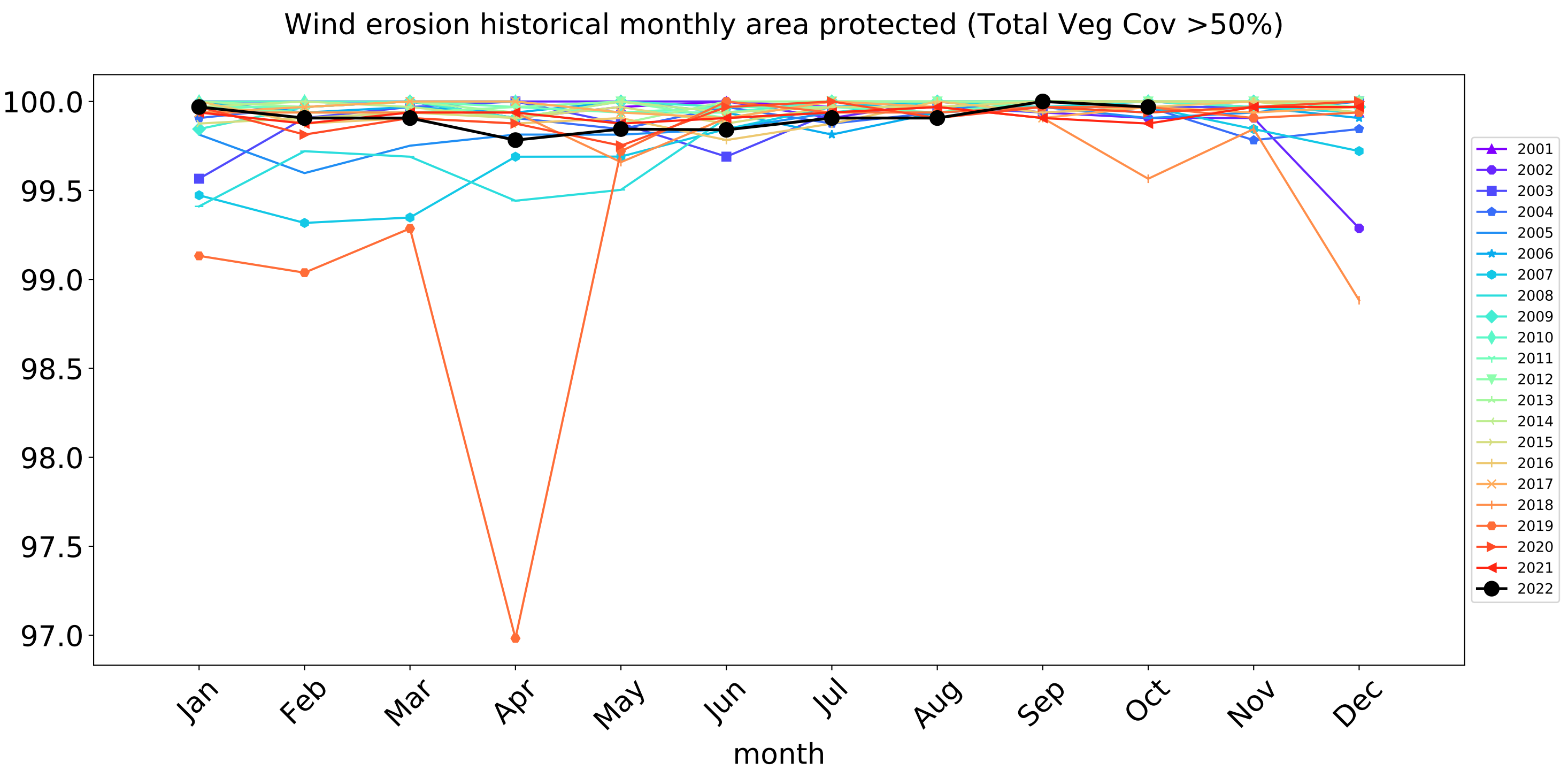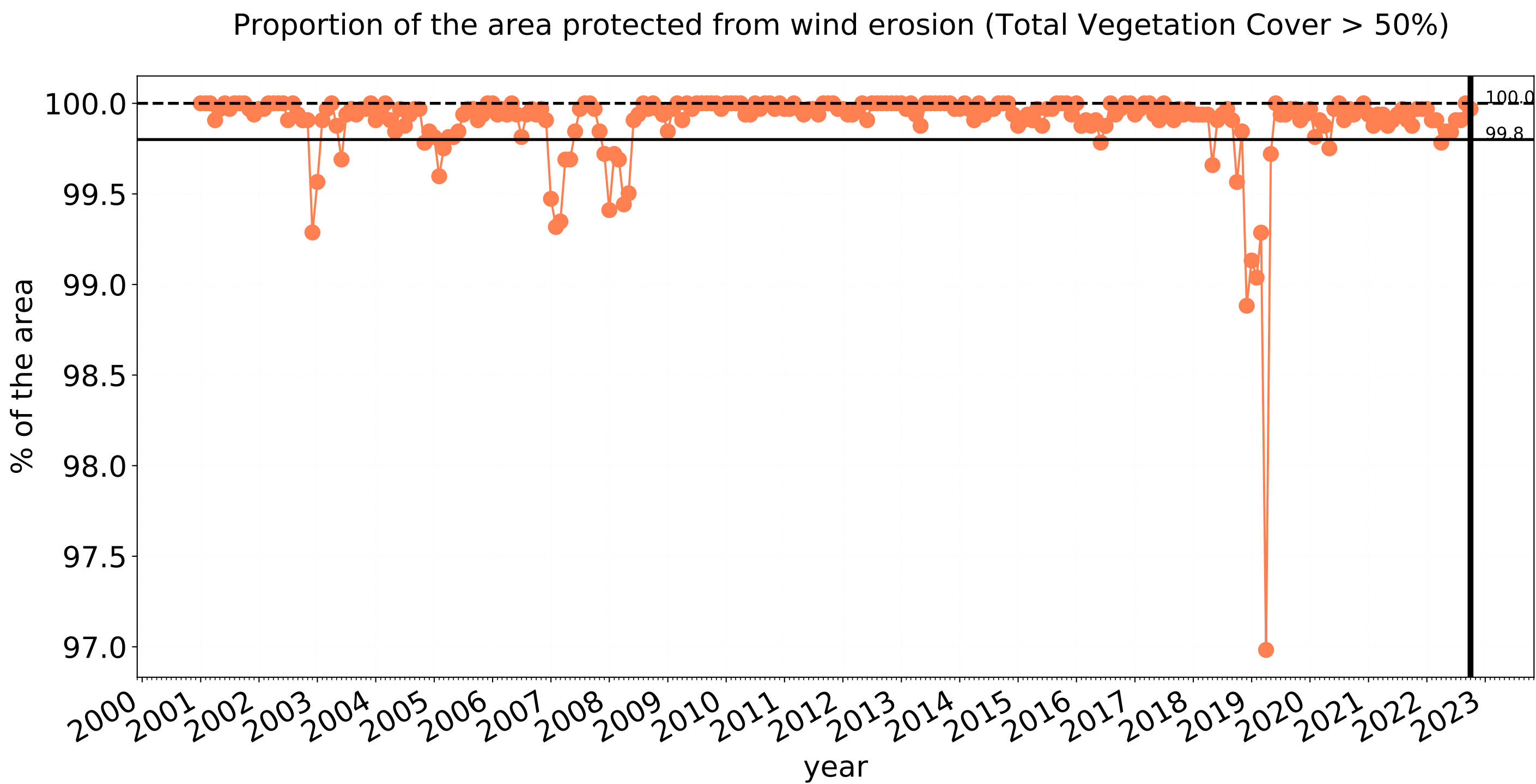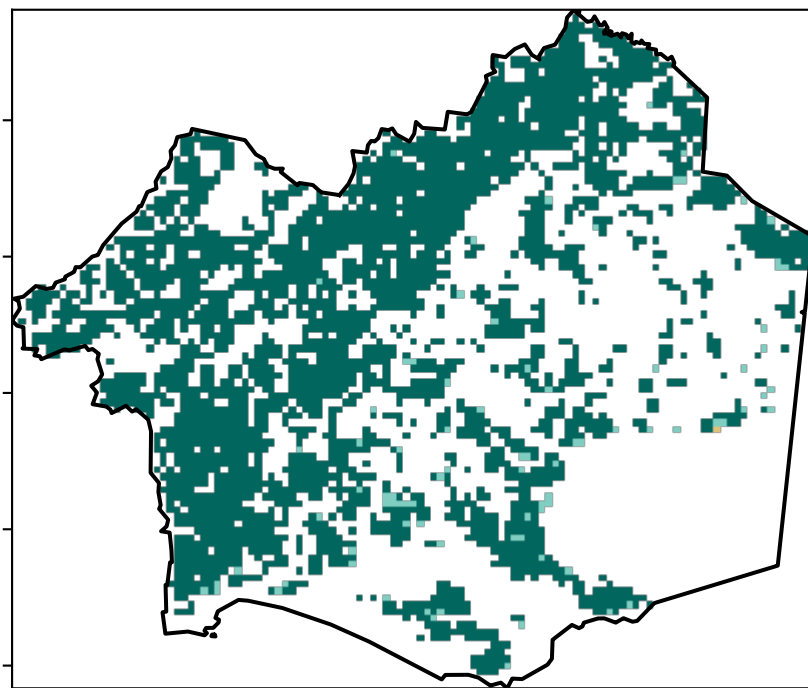
Total Vegetation Cover Decile [%]

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
Ecosystem Research Infrastructure

Australian Government

National Landcare Programme

NSW GOVERNMENT

Grazing timeseries

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

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

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

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

Grazing non forest

Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)
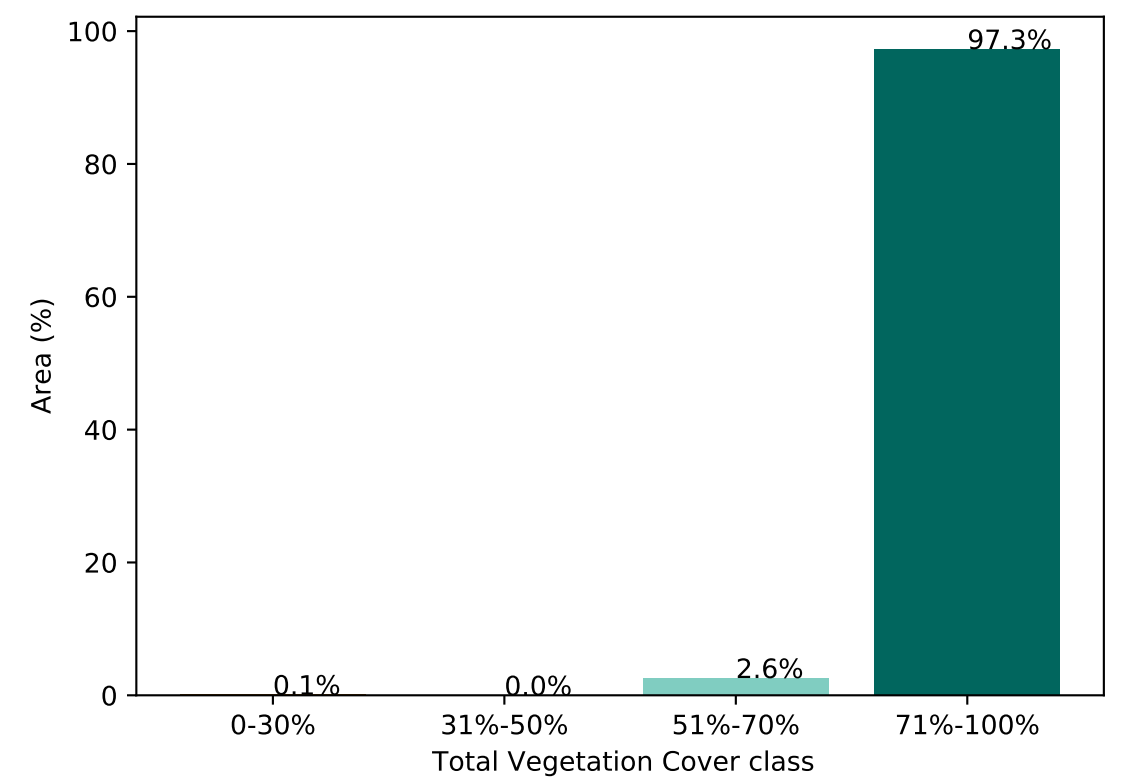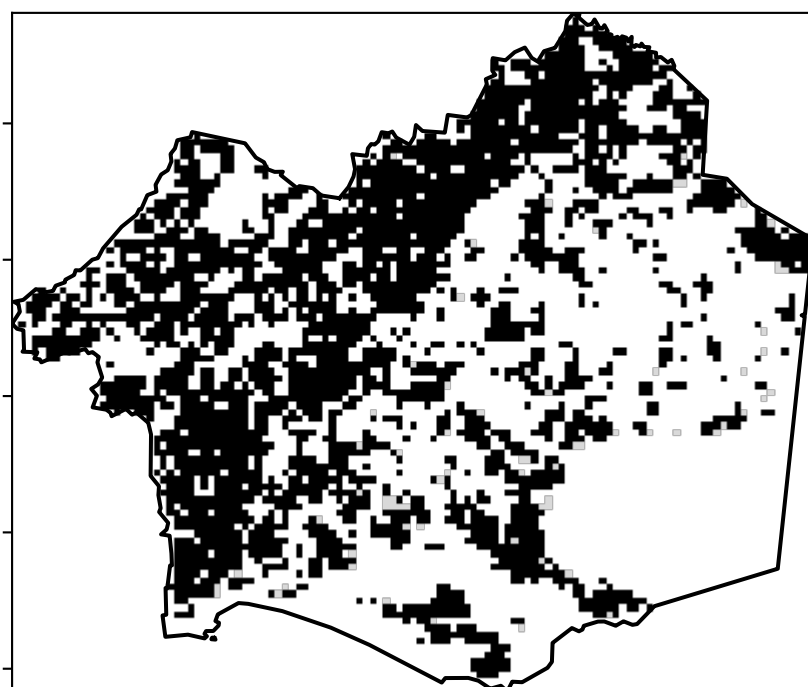
1 Agriculture - Grazing - Non forest

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

0.1%   0.0%   2.6%   97.3%

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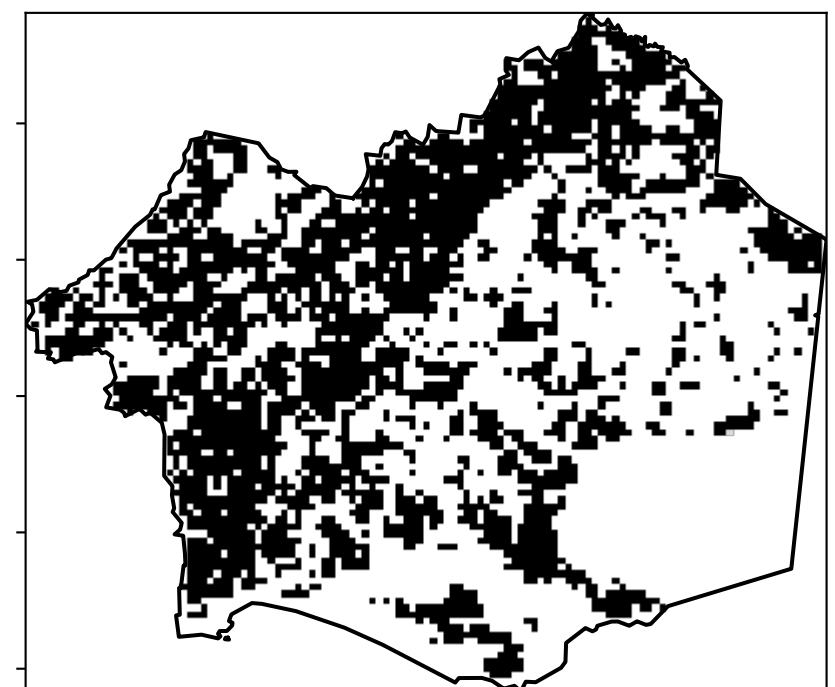
Total Vegetation Cover class

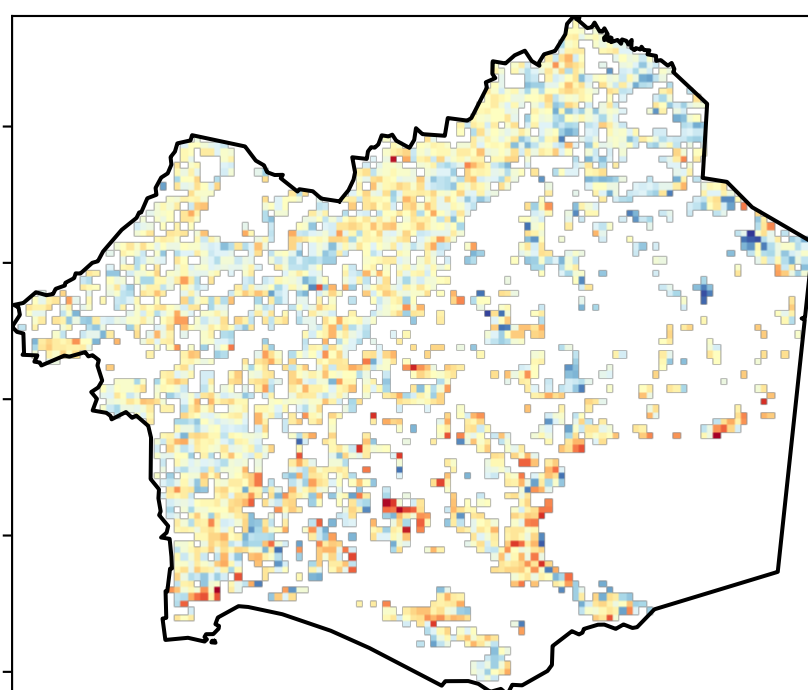## % Area protected from water erosion (>70%)

Area not protected 2.7% of region (2,166 ha)

Area protected 97.3% of region (78,058 ha)

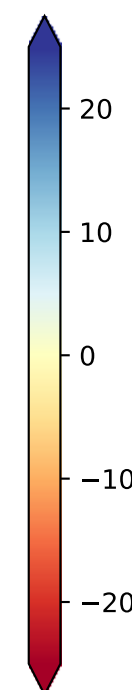## % Area protected from wind erosion (>50%)

Area not protected 0.0% of region (0 ha)

Area protected 100.0% of region (80,225 ha)
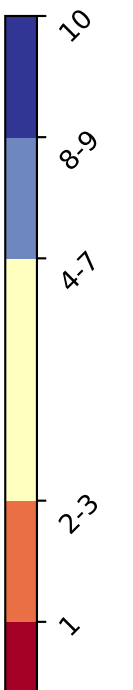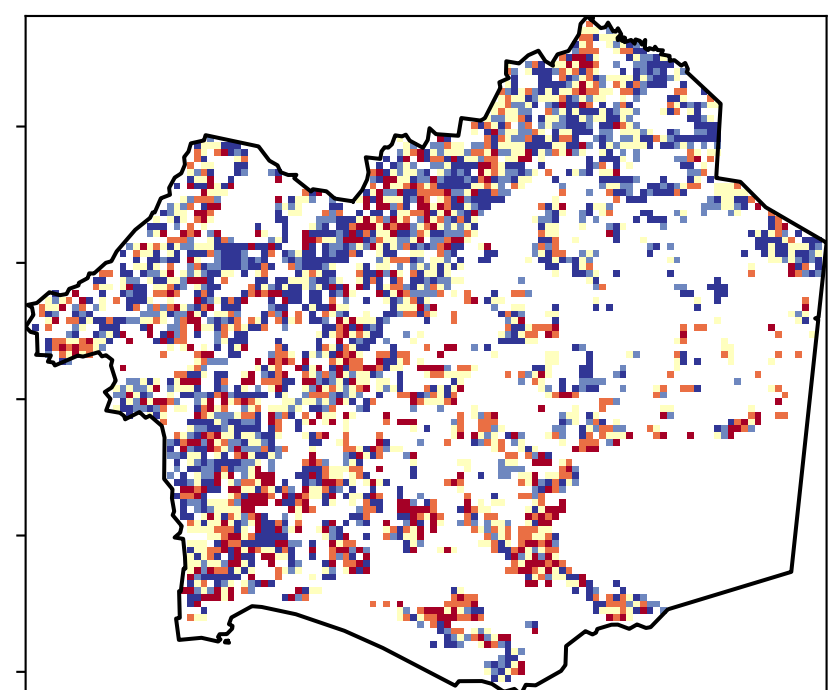
Total Vegetation Cover Anomaly [%]

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 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%)

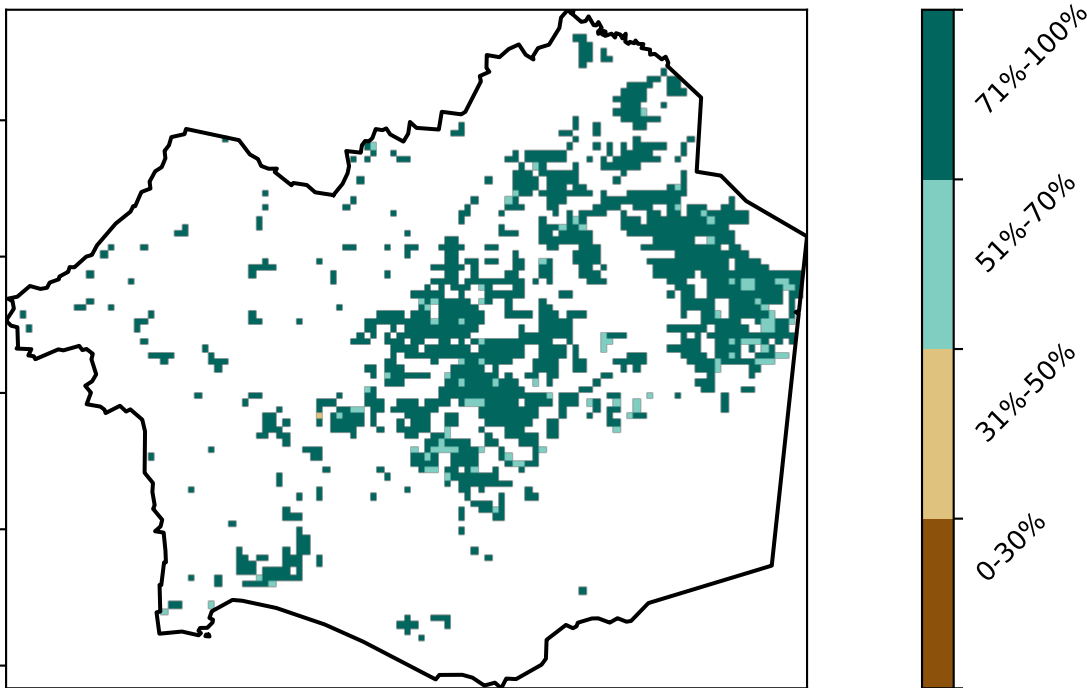### Water erosion historical monthly area protected (Total Veg Cov>70%)
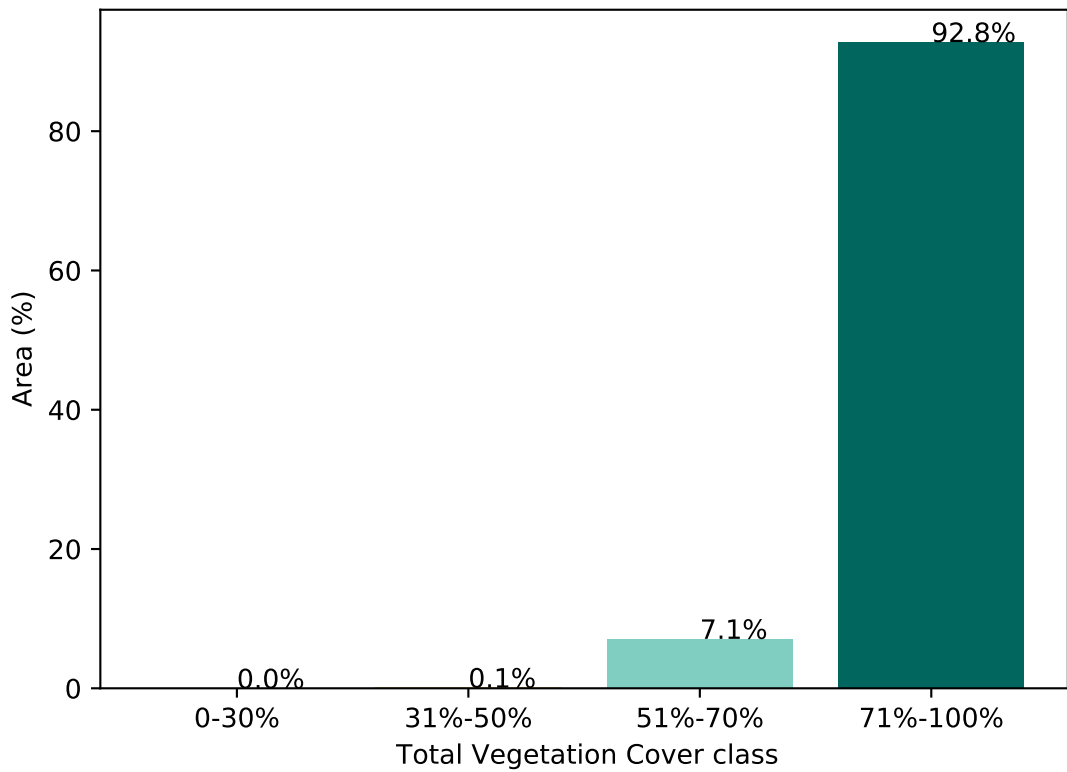
Cropping

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)
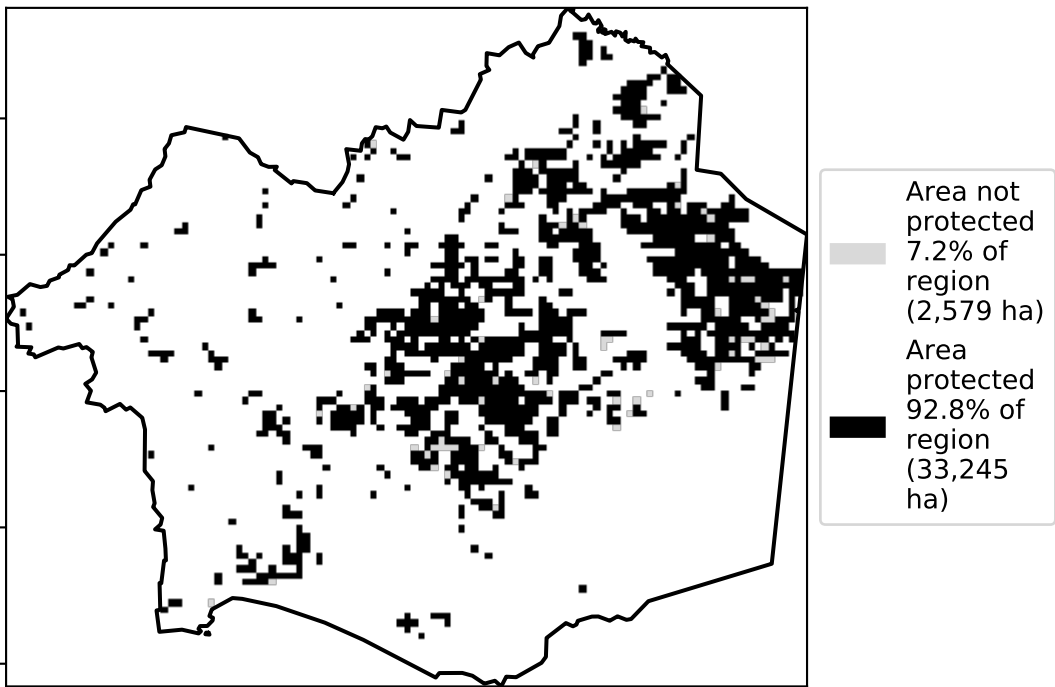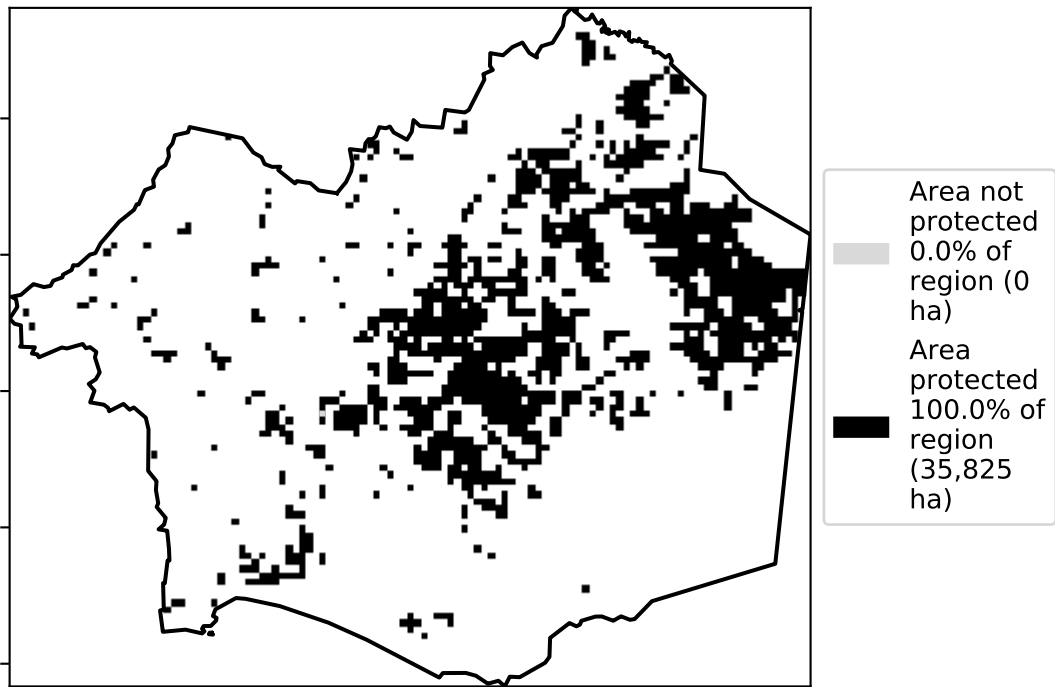

1 Agriculture - Cropping - Non-irrigated

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area not protected 7.2% of region (2,579 ha)

Area protected 92.8% of region (33,245 ha)

% Area protected from wind erosion (>50%)
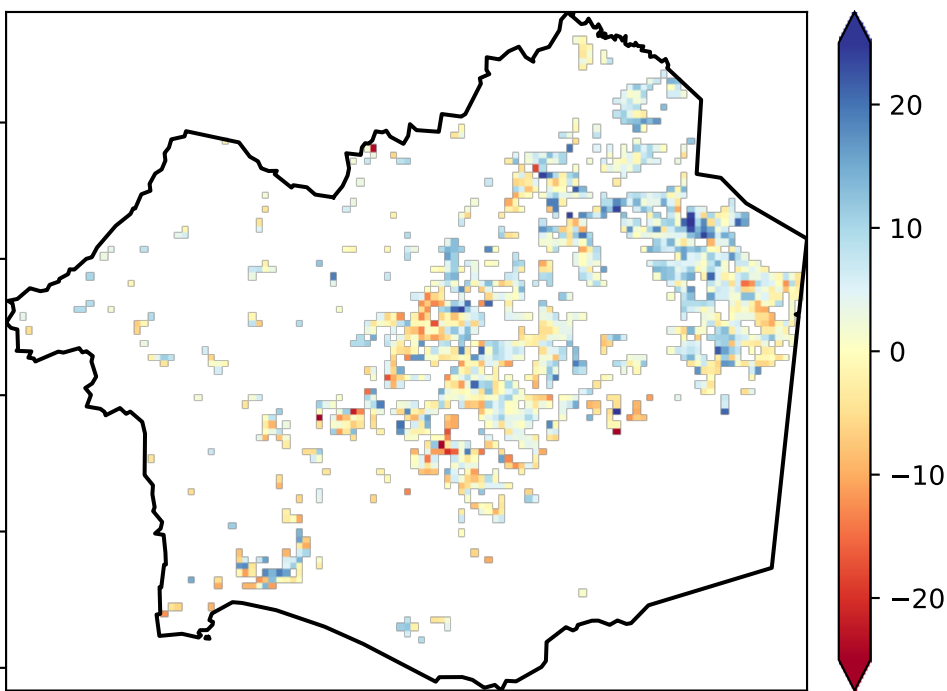

Area not protected 0.0% of region (0 ha)
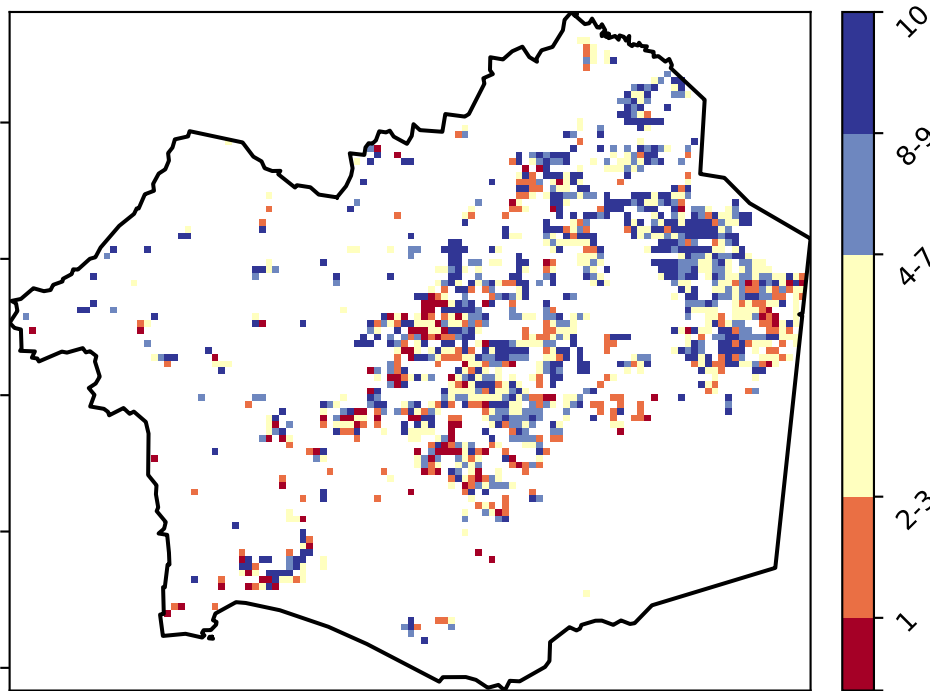
Area protected 100.0% of region (35,825 ha)

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.
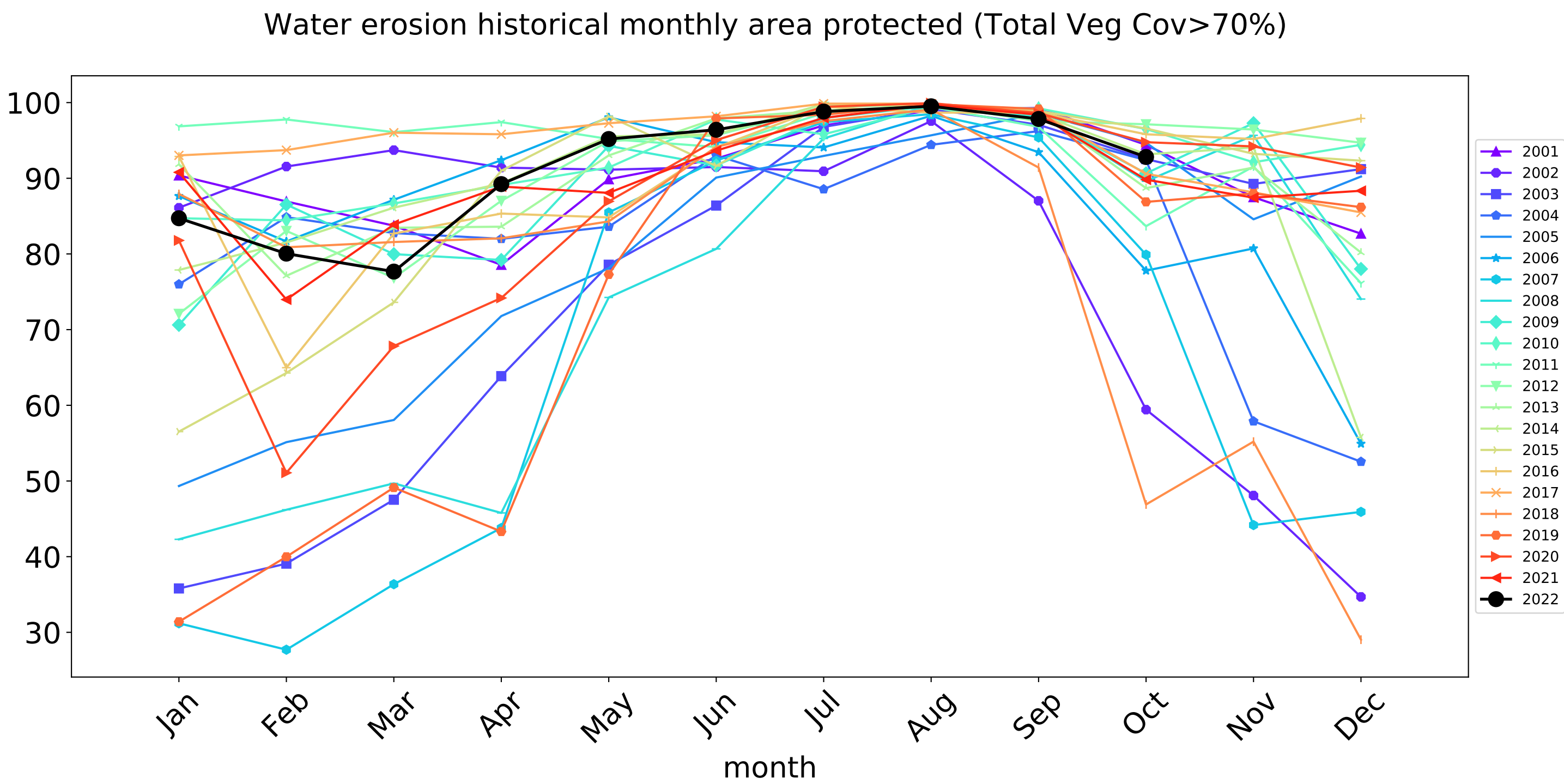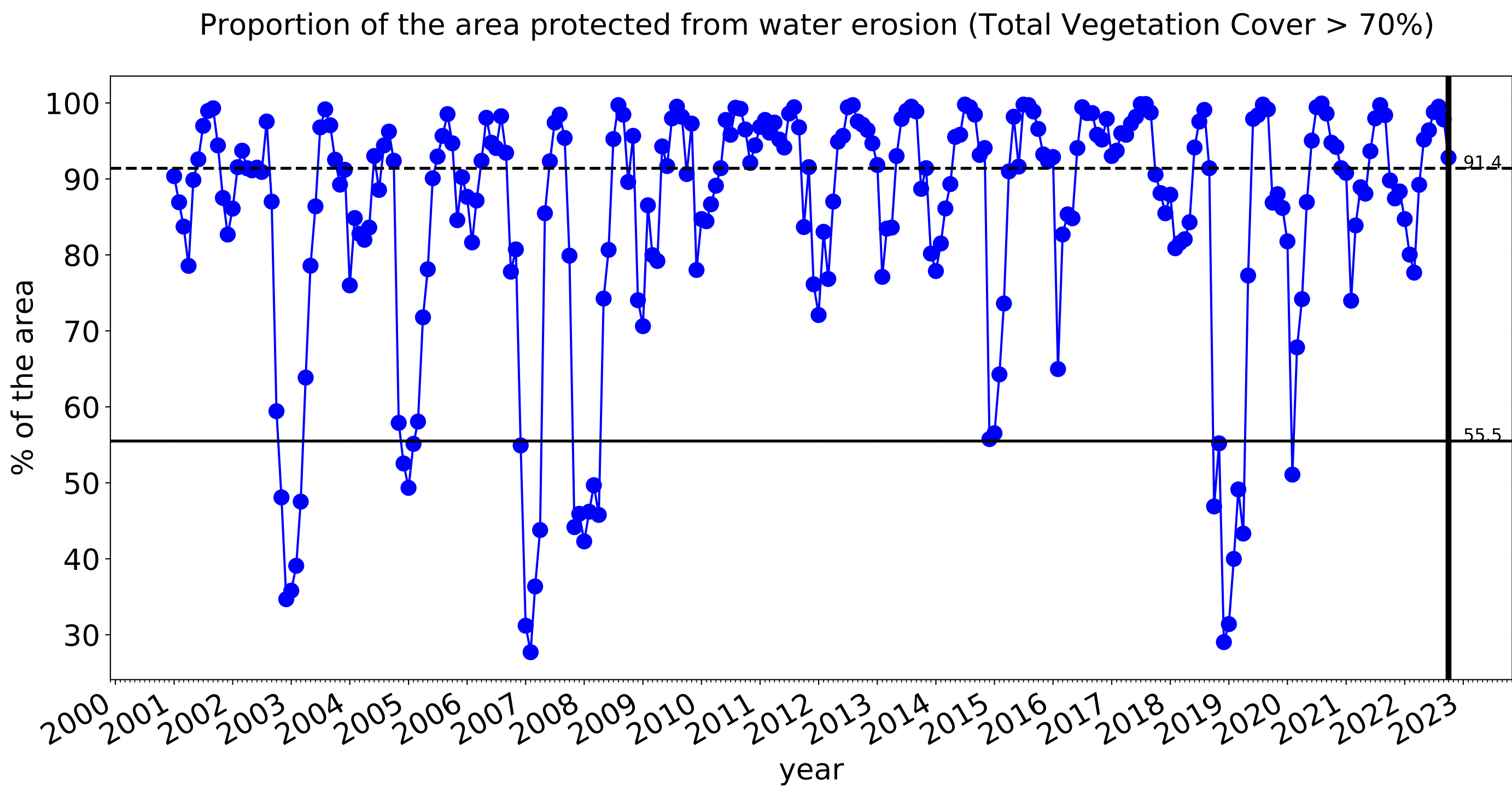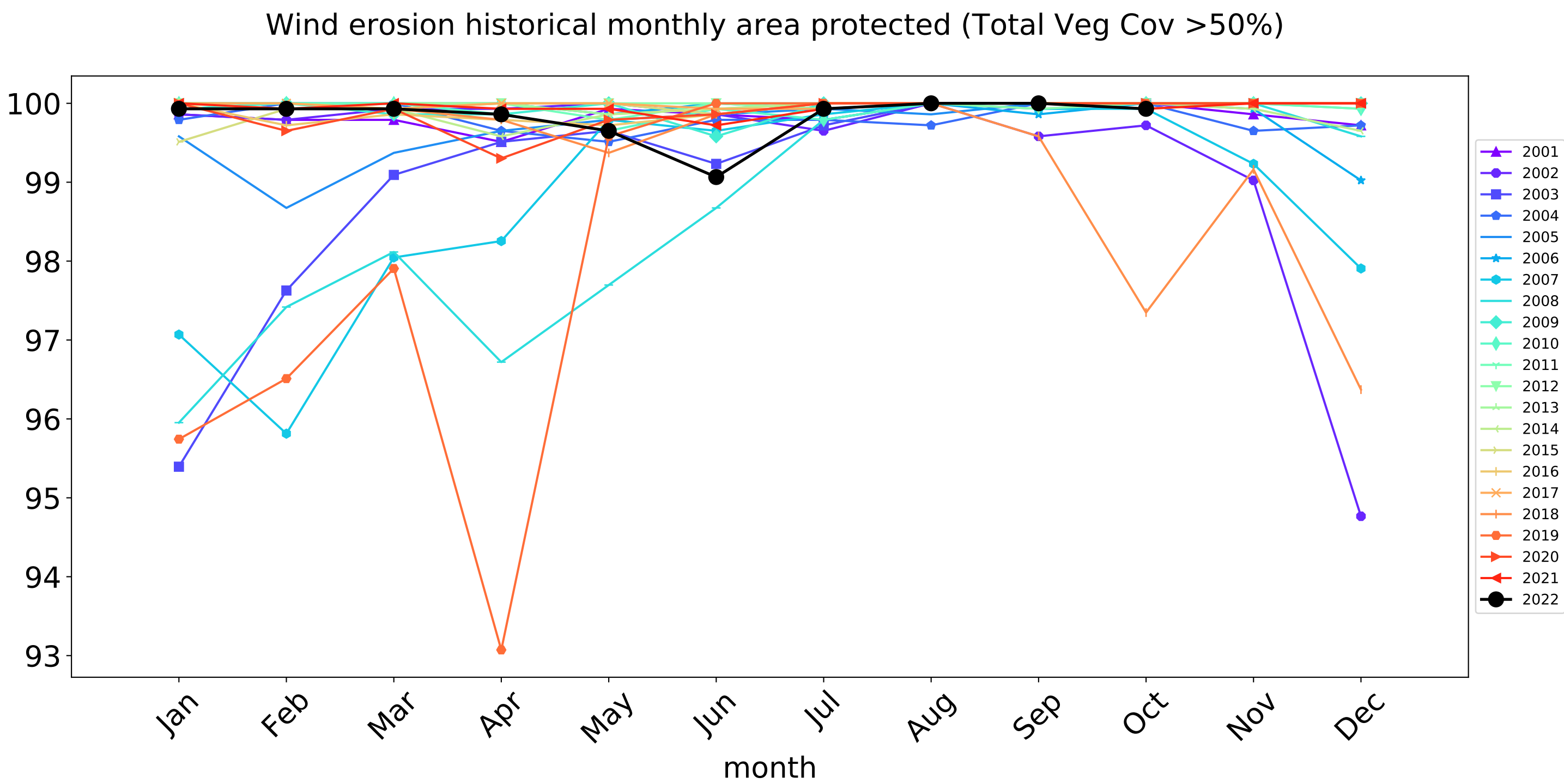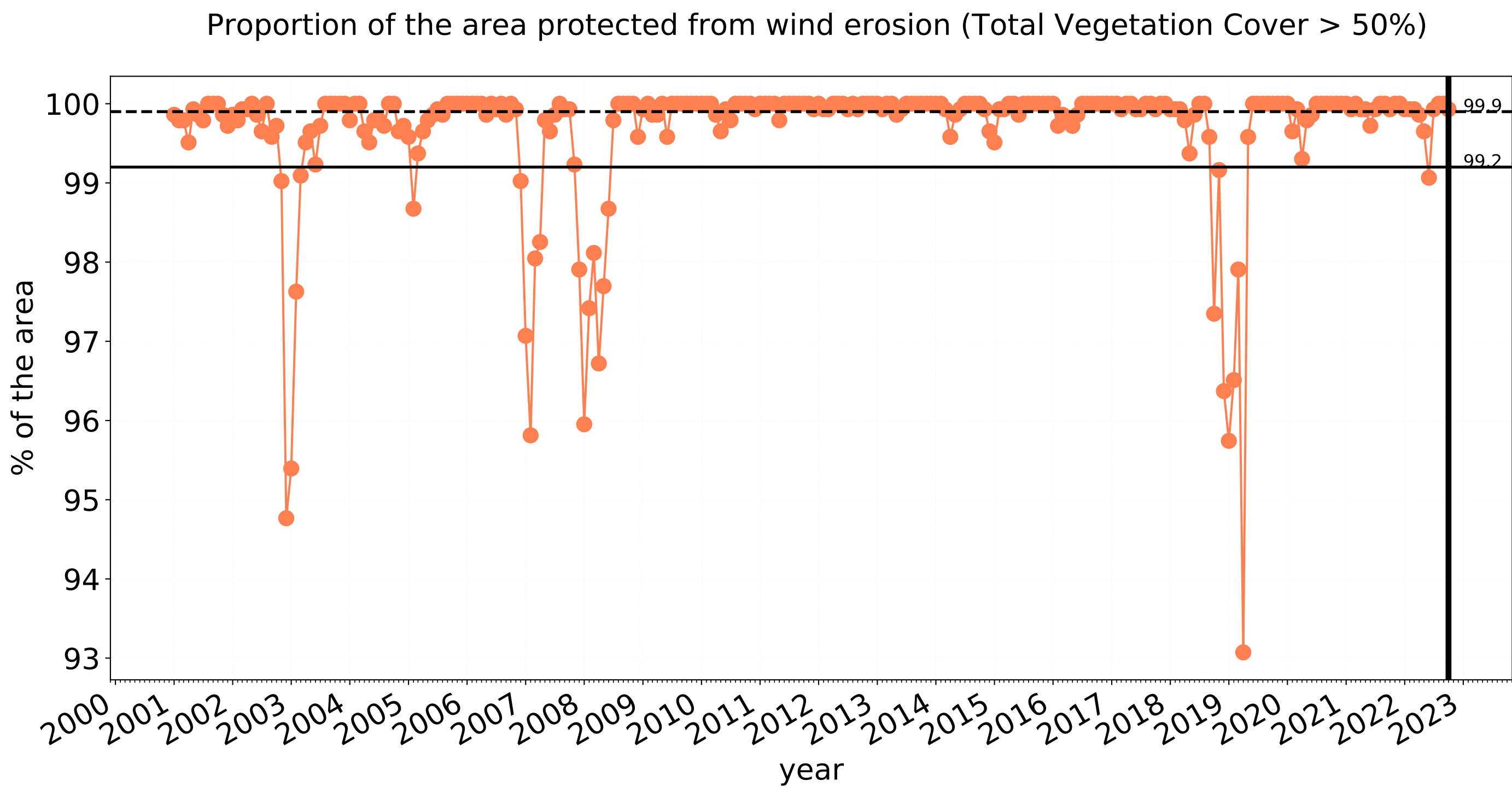

Total Vegetation Cover Decile [%]

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

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%)
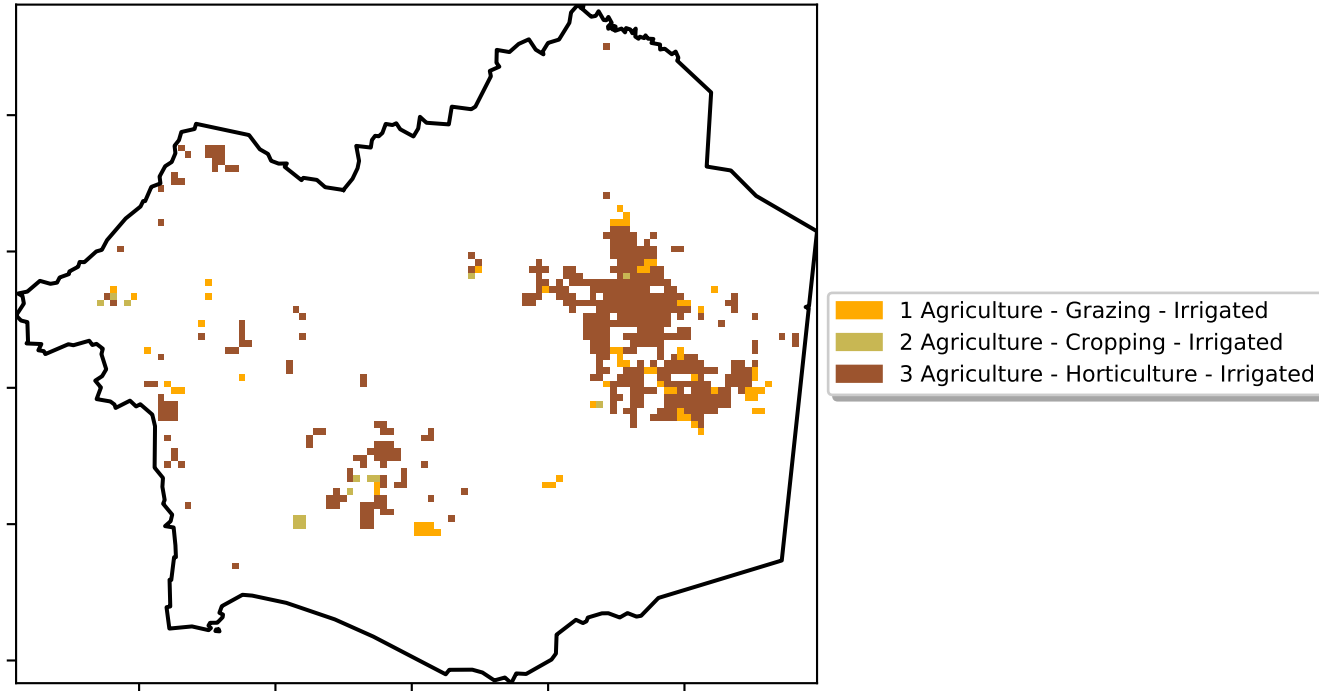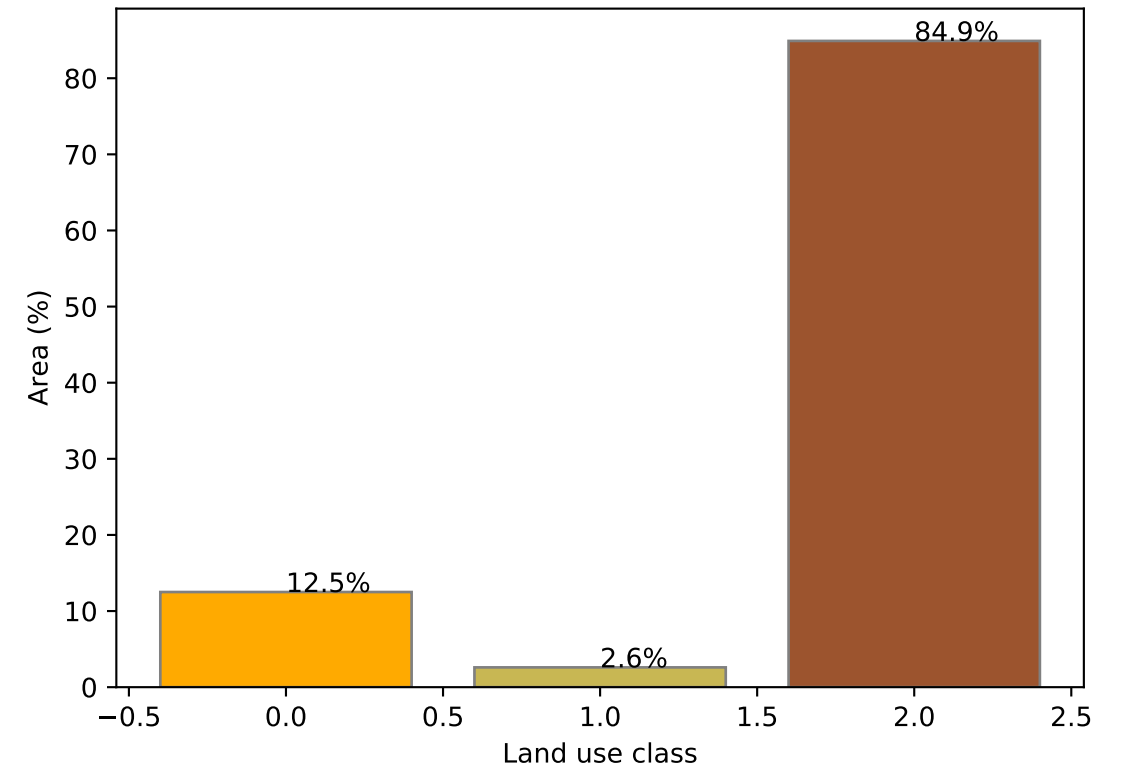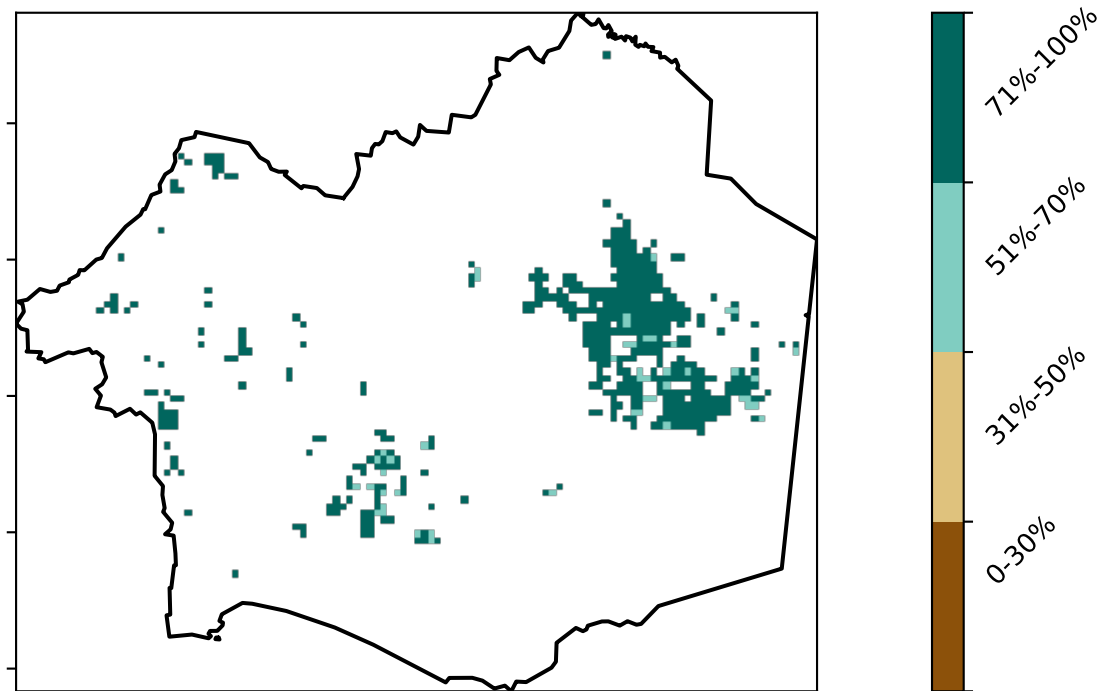
Irrigation

Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)
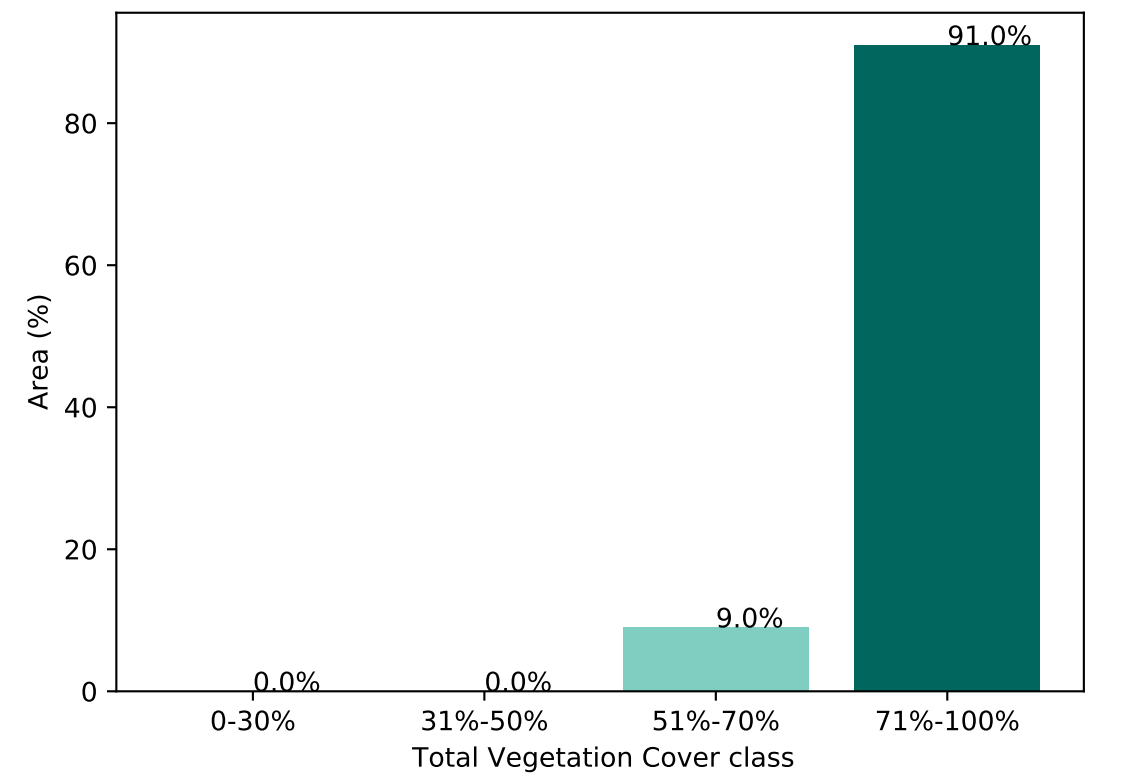
Legend:
- 1 Agriculture - Grazing - Irrigated
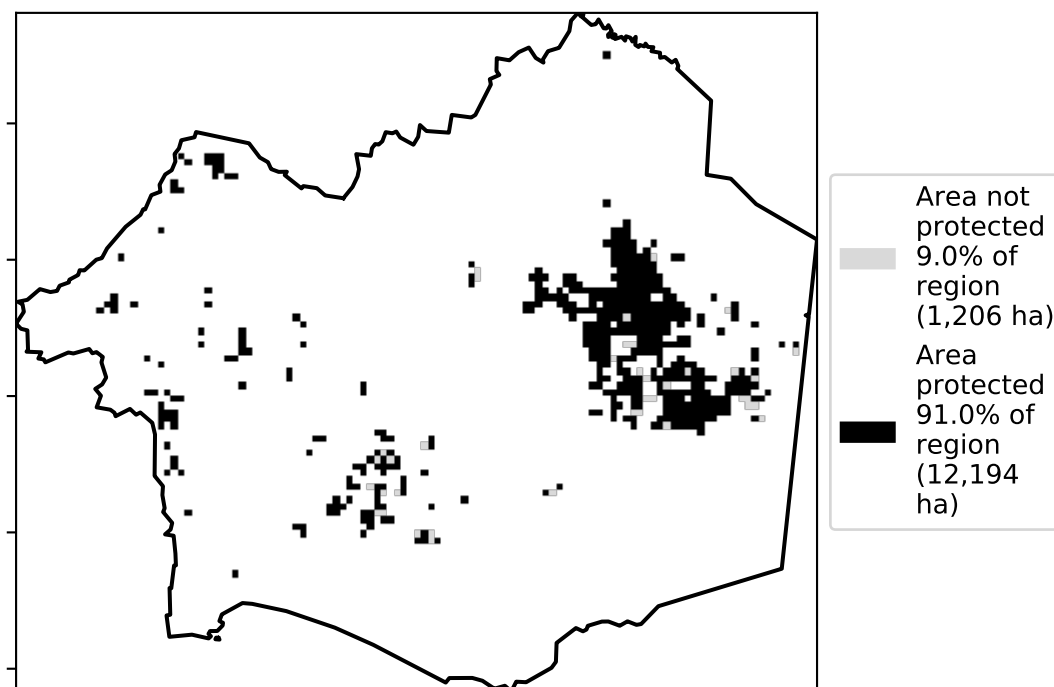- 2 Agriculture - Cropping - Irrigated
- 3 Agriculture - Horticulture - Irrigated

Proportion of each land class in area

Total Vegetation Cover [%]

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

Proportion of vegetation cover class in area

% Area protected from water erosion (>70%)

Area not protected 9.0% of region (1,206 ha)

Area protected 91.0% of region (12,194 ha)
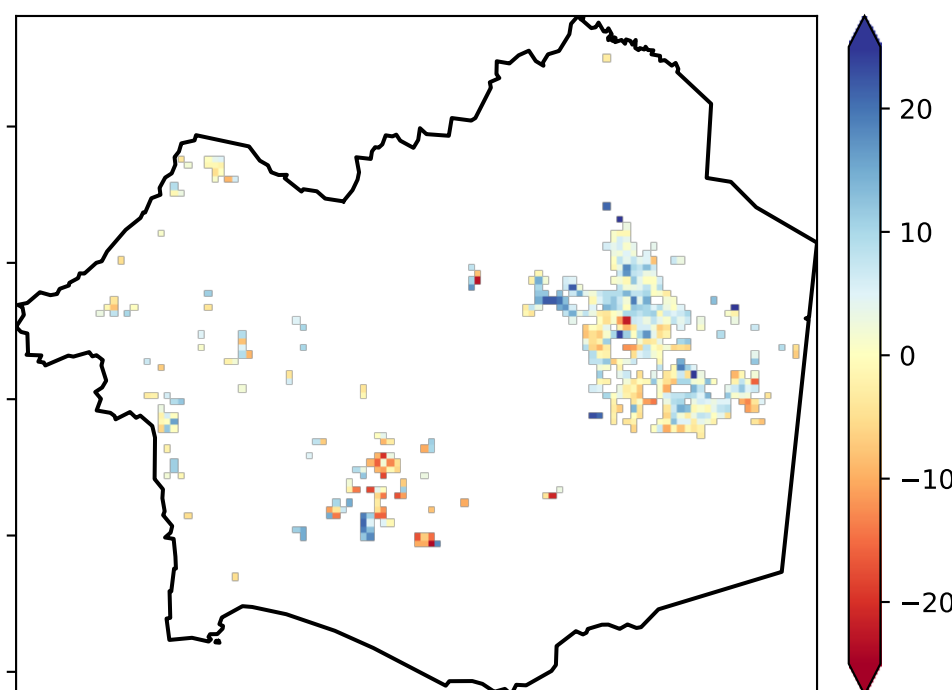
% Area protected from wind erosion (>50%)
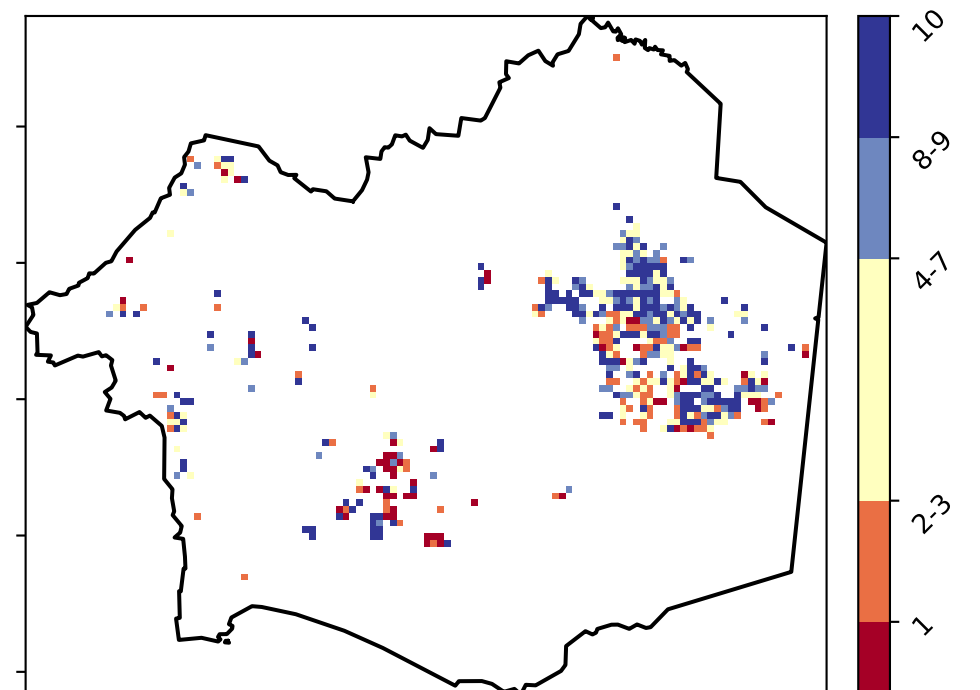

Area protected 100.0% of region (13,400 ha)

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.
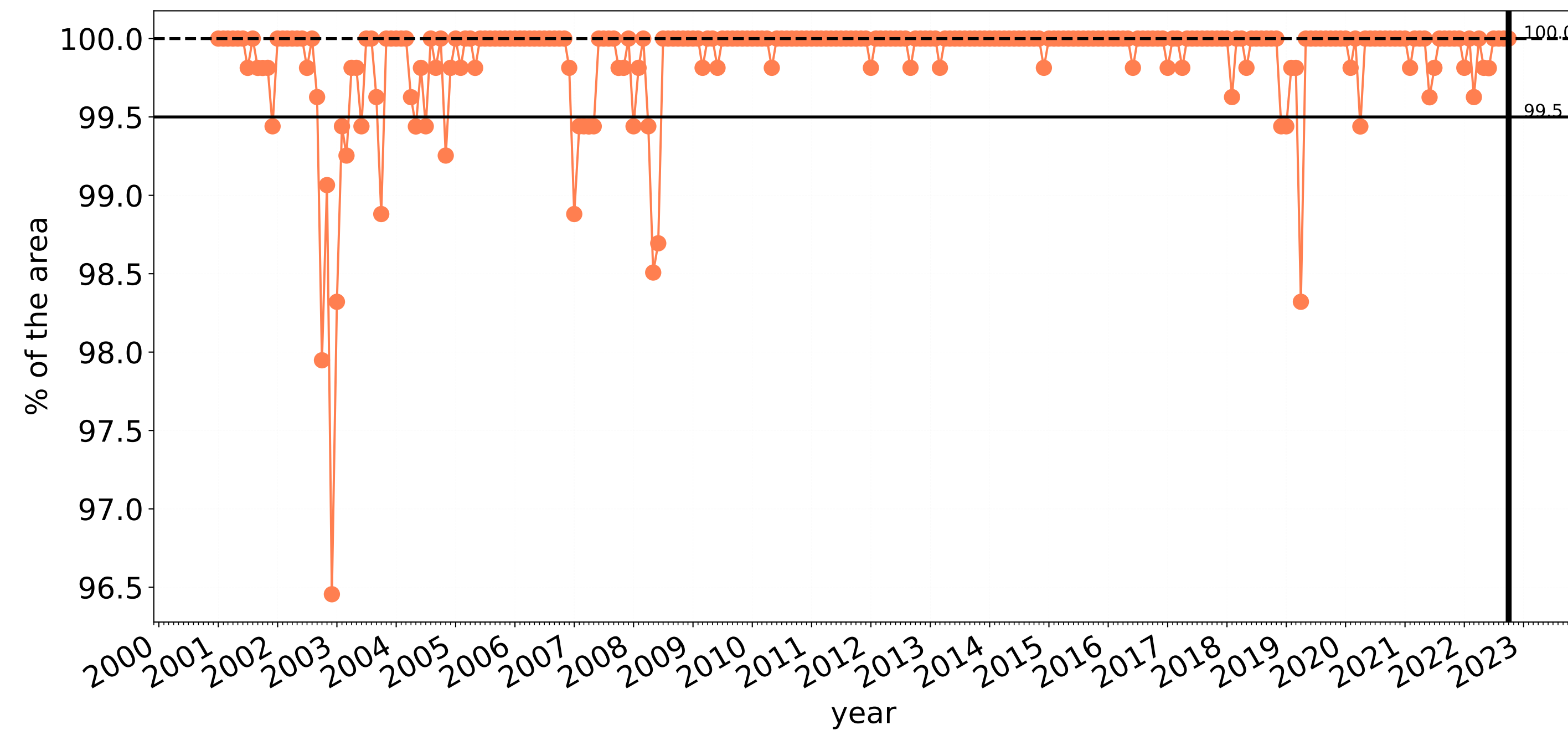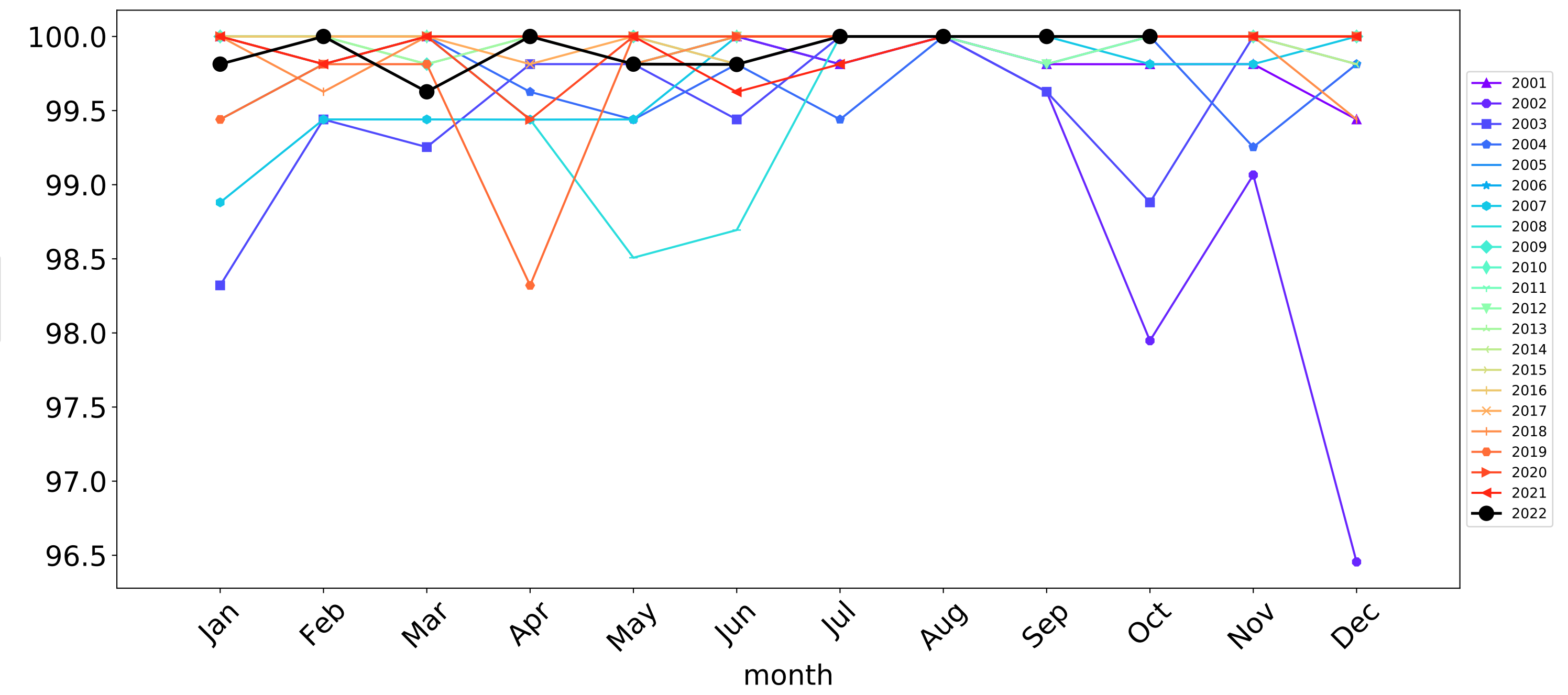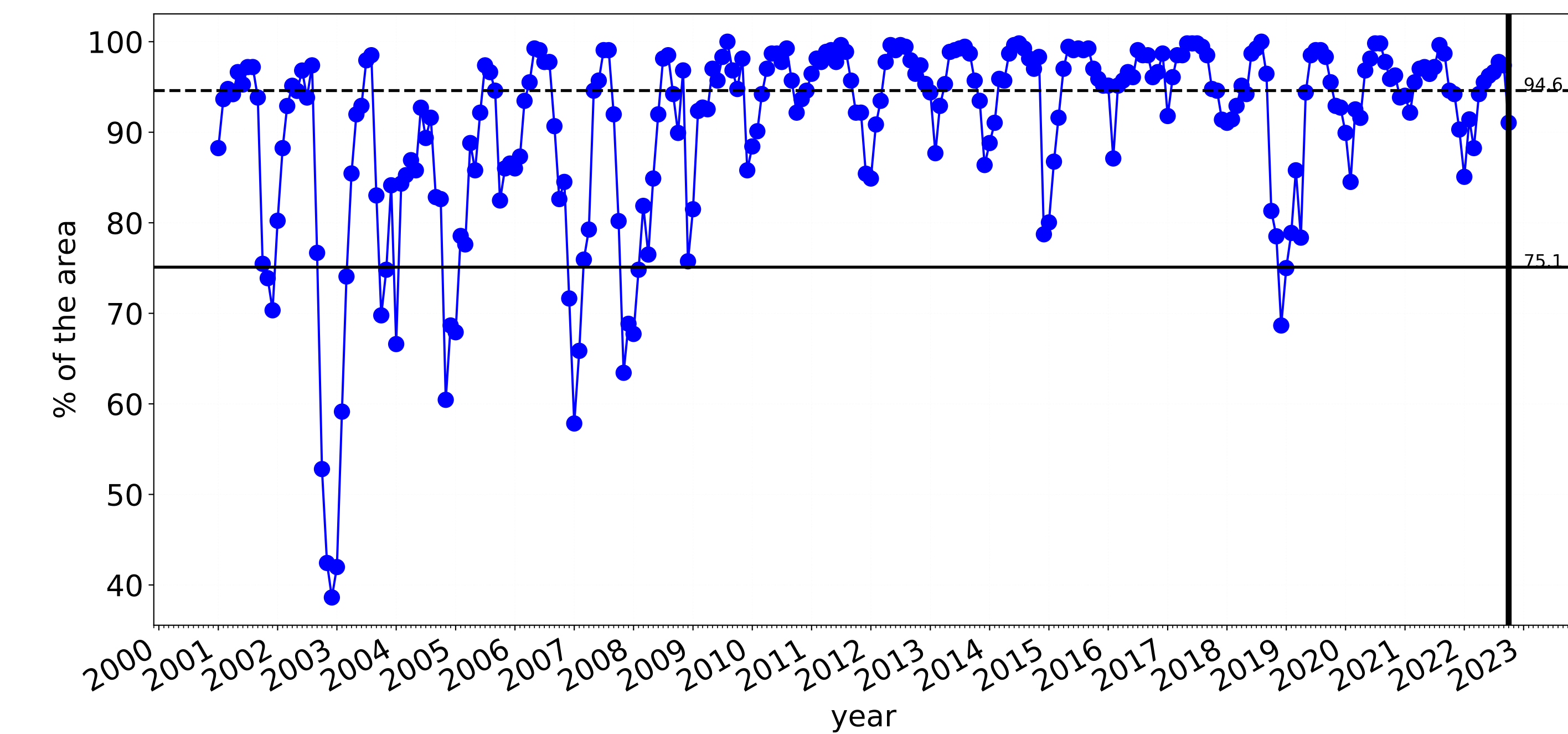
Irrigation timeseries

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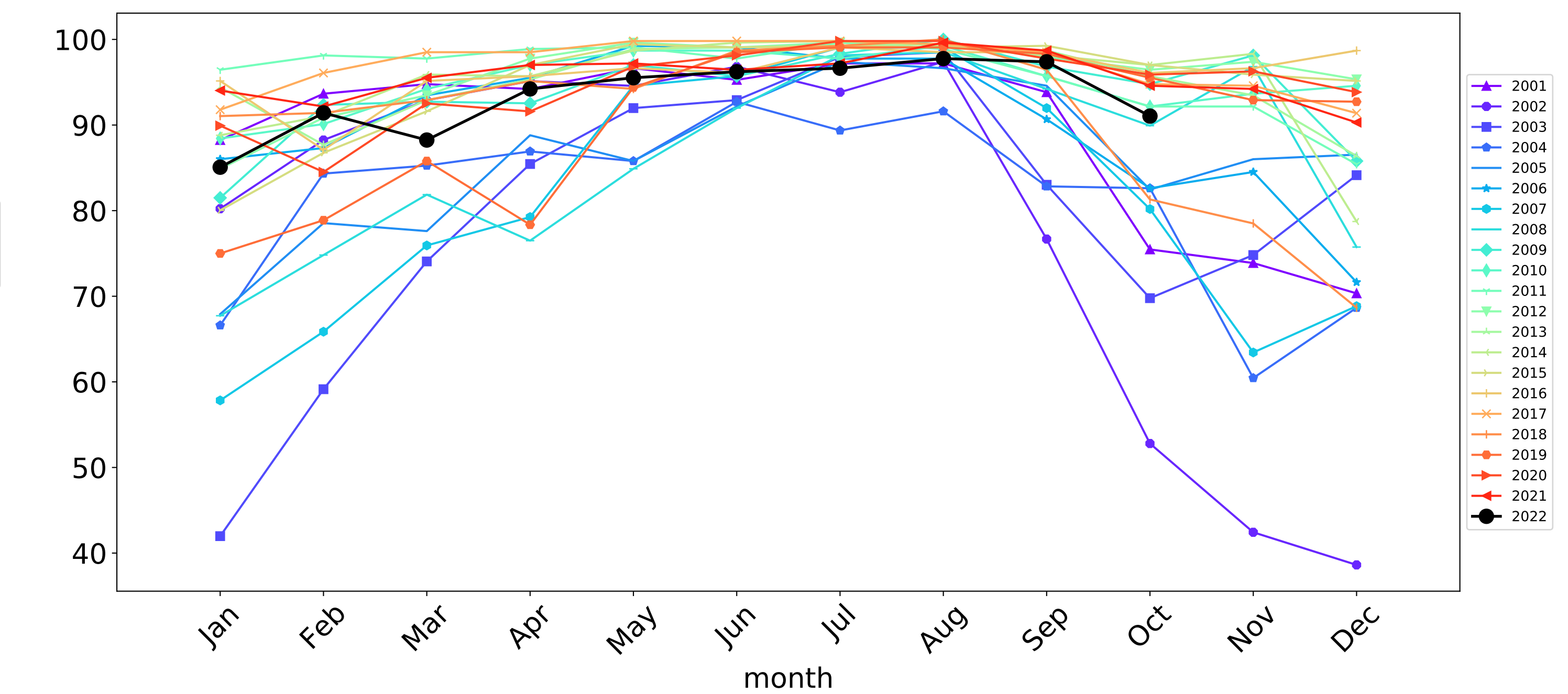

Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

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

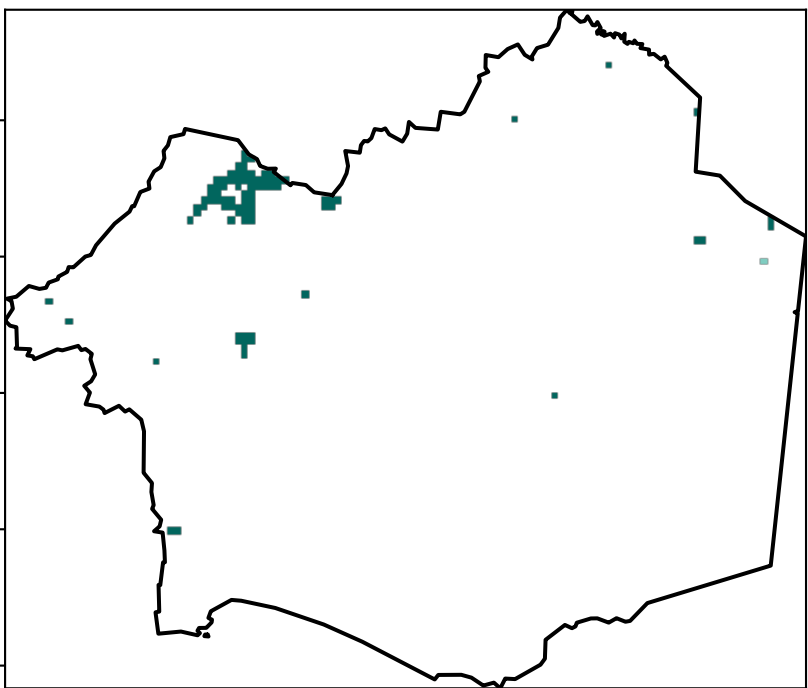# Production native forests and plantation forests

Land use and forest cover

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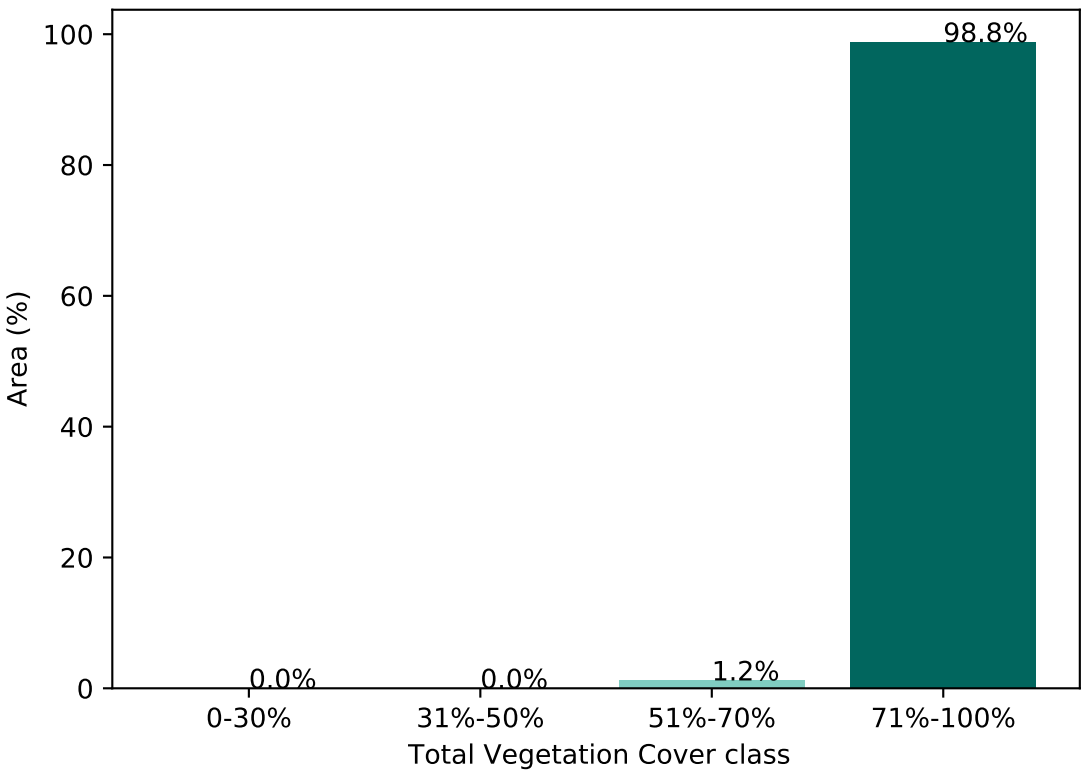Use of Australia
(2018) and Forests
of Australia (2018)

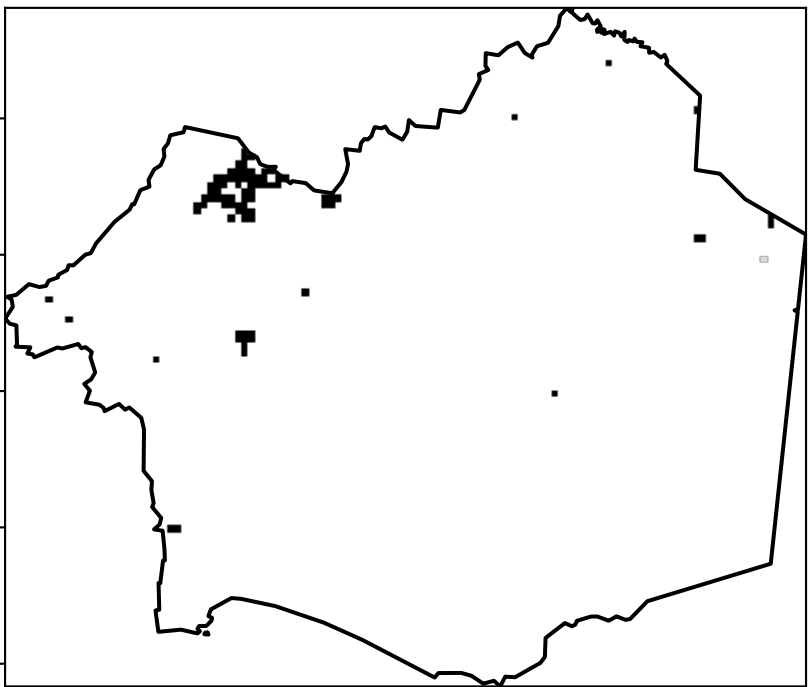■ 1 Production native forests and plantation forests

Total Vegetation Cover [%]

71%-100%

51%-70%

31%-50%

0-30%

Proportion of vegetation cover class in area

98.8%

0.0%   0.0%   1.2%

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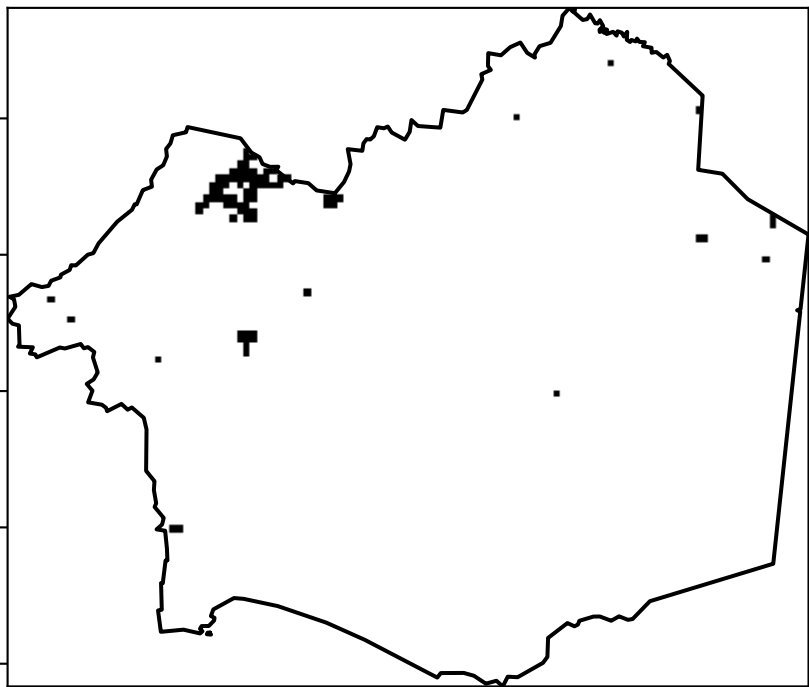
Total Vegetation Cover class

% Area protected from water erosion (>70%)

Area not
protected
1.2% of
region (25
ha)

Area
protected
98.8% of
region
(2,099 ha)

% Area protected from wind erosion (>50%)

Area
protected
100.0% of
region
(2,125 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.

20

10

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−10

−20

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

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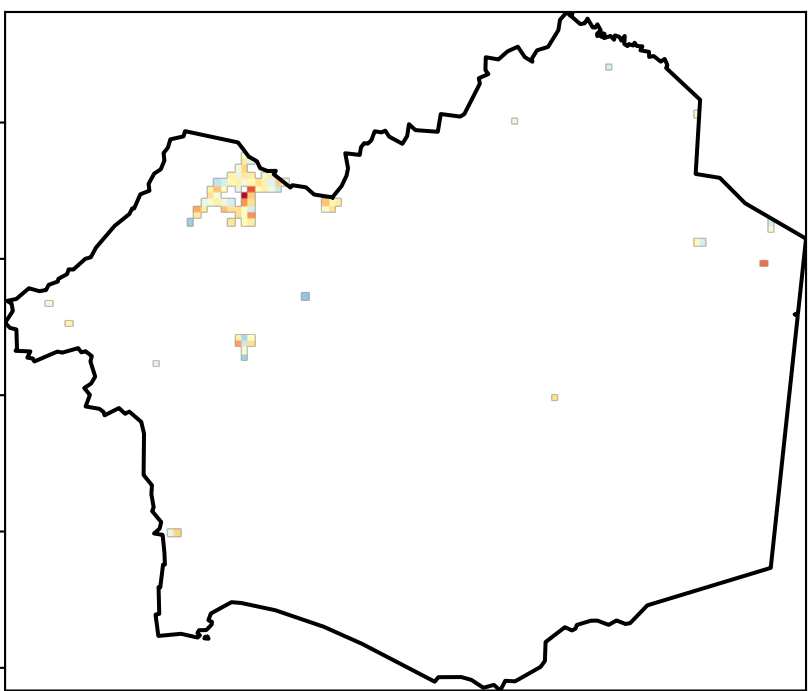
Production native forests and plantation forests timeseries

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

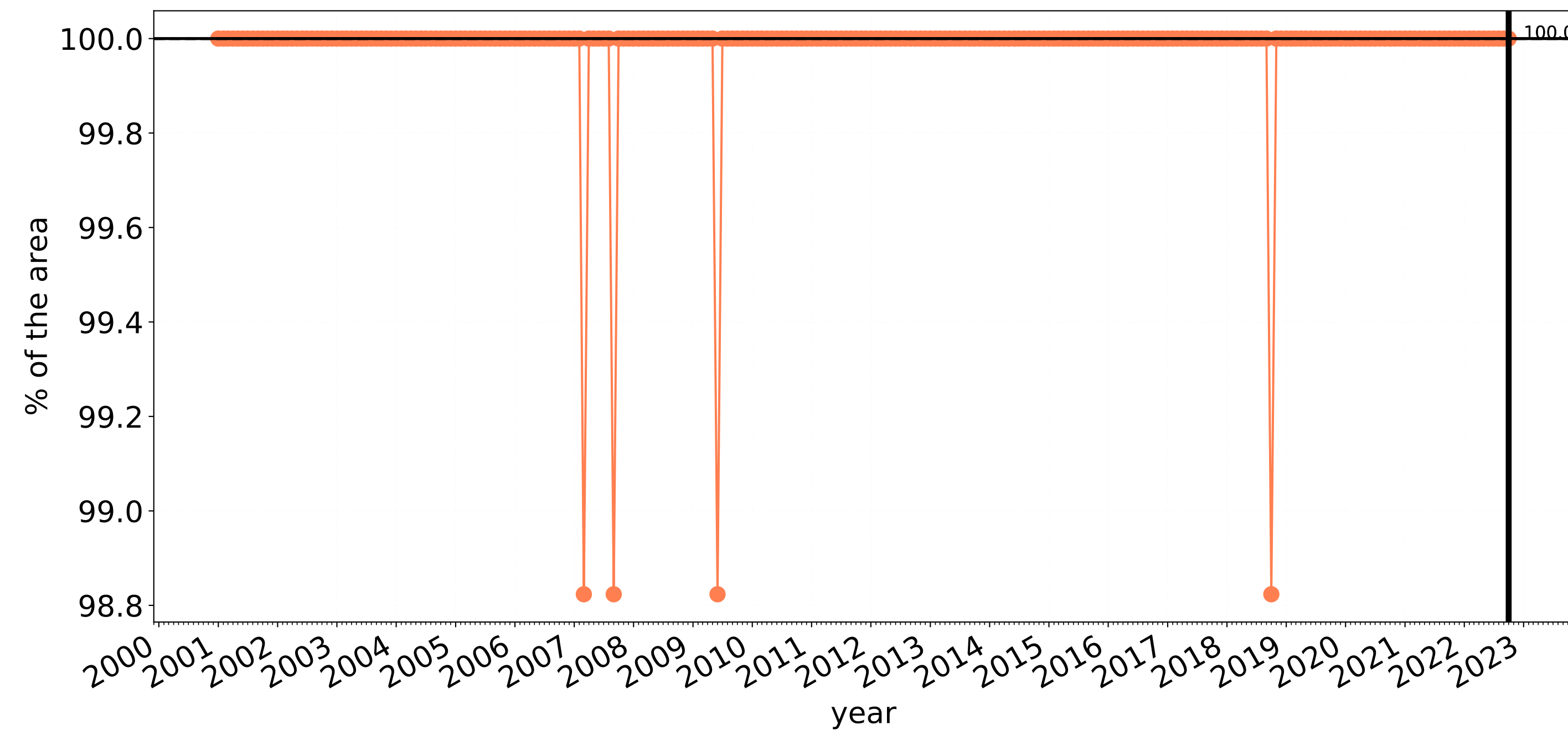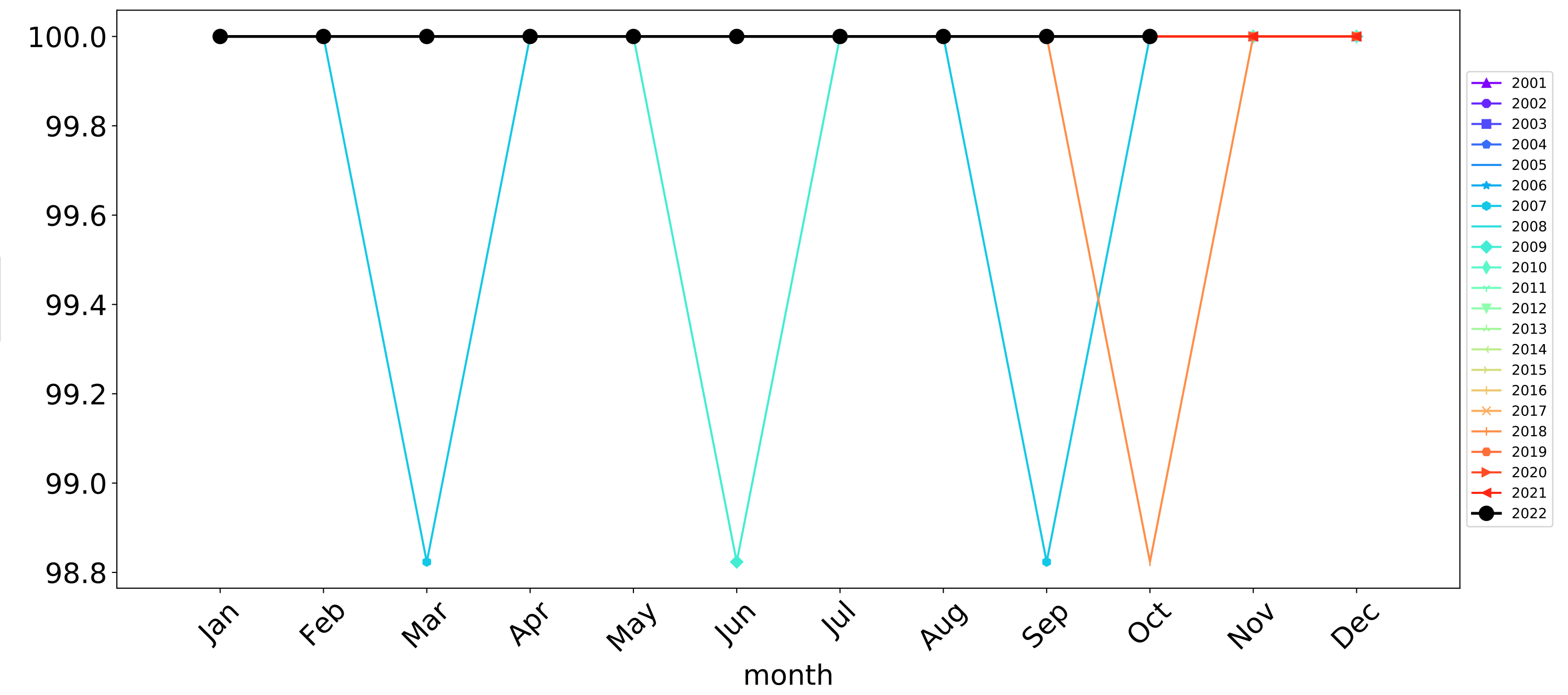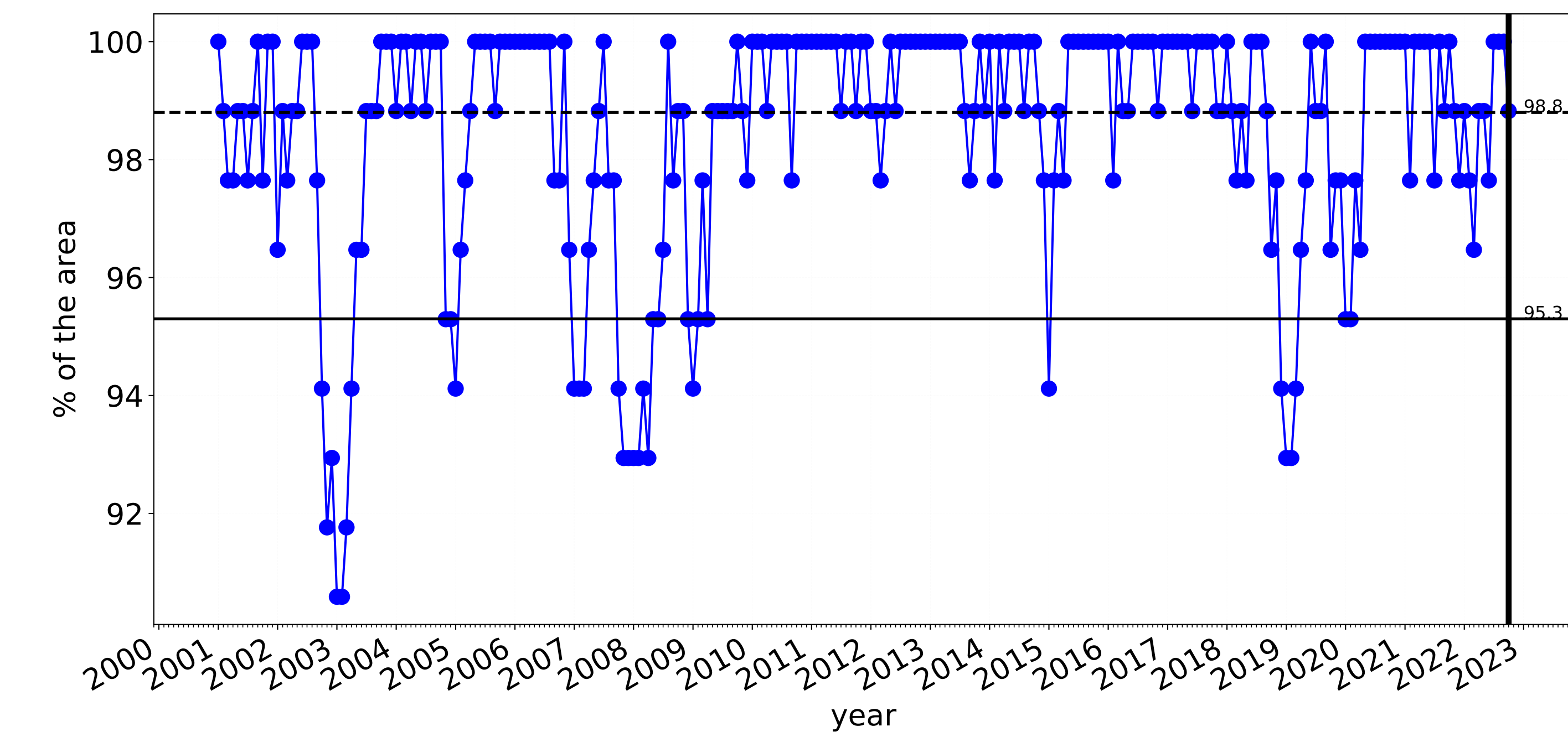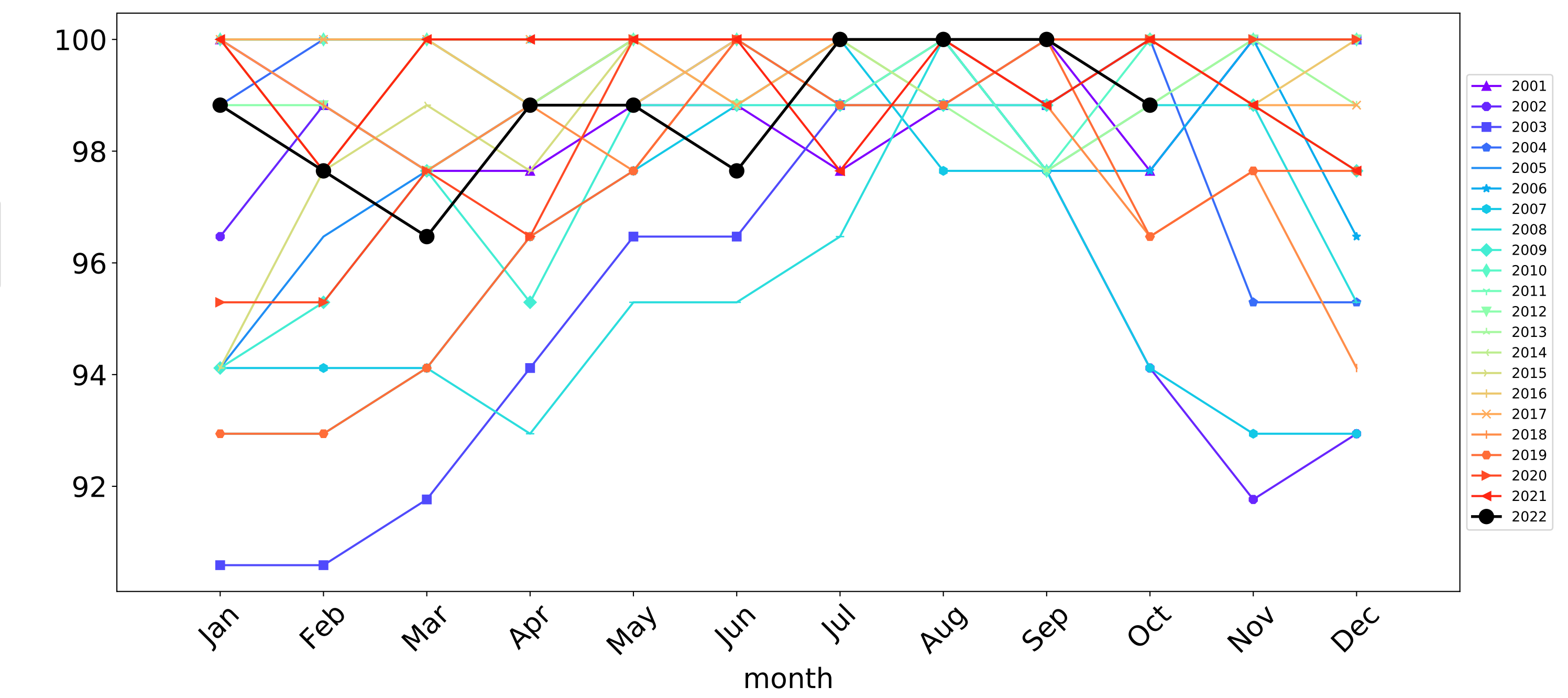Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

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

Alexandrina_(DC) (154,950 ha and no data 27,705 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	154,950	99.8% 154,700	99.5% 154,200	94.3% 146,150	72.7% 112,700	30.3% 46,925	13.9% 21,475
Conservation and natural environments	6,450	100.0% 6,450	99.6% 6,425	97.7% 6,300	90.7% 5,850	55.0% 3,550	29.8% 1,925
Conservation and natural environments non forest	1,250	100.0% 1,250	98.0% 1,225	88.0% 1,100	68.0% 850	34.0% 425	14.0% 175
Conservation and natural environments Woodland forest	4,350	100.0% 4,350	100.0% 4,350	100.0% 4,350	97.1% 4,225	59.8% 2,600	33.3% 1,450
Agriculture	130,075	100.0% 130,075	100.0% 130,025	95.4% 124,100	72.7% 94,500	28.8% 37,400	12.7% 16,550
Grazing	80,850	100.0% 80,850	100.0% 80,825	97.3% 78,650	82.9% 67,050	37.5% 30,350	16.1% 13,050
Grazing non forest	80,225	100.0% 80,225	100.0% 80,200	97.3% 78,075	83.0% 66,575	37.5% 30,050	16.0% 12,800
Cropping	35,825	100.0% 35,825	99.9% 35,800	92.8% 33,250	56.4% 20,200	14.1% 5,050	7.0% 2,525
Irrigation	13,400	100.0% 13,400	100.0% 13,400	91.0% 12,200	54.1% 7,250	14.9% 2,000	7.3% 975
Production native forests and plantation forests	2,125	100.0% 2,125	100.0% 2,125	98.8% 2,100	90.6% 1,925	51.8% 1,100	27.1% 575