

## LGA Brewarrina\_(A) (NSW) - Vegetation cover soil protection report Aug 2019

This report provides information about vegetation covering the soil surface for a region during a single month with comparison to previous years. Vegetation cover indicates where soil is likely to be protected from wind and or water (hillslope) erosion. Results are shown for the whole region (polygon) and also separated by land use and tree cover. Different land uses are likely to have different cover patterns and targets. Reporting is most reliable with less than 20% tree cover.

Brewarrina\_(A)

- Context
  - o Map: Land use and forest cover
  - o Chart: Land use and forest cover area
- Total vegetation cover for this month
  - o Map: vegetation cover classified into 4 classes
  - o Chart: vegetation cover area classified into 4 classes
- Areas protected from erosion for the month
  - o Map: wind erosion protection (>50% cover)
  - o Map: water erosion protection (>70% cover)
- 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
  - o Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month in the archive (orange lines)
  - o Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month of the archive (blue lines).
  - o Rainfall: millimetres rainfall each month (black lines)
- Time series stacked by year
  - o Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month in the archive (orange lines)  
in case of 5th percentile is less than 80
  - o Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month of the archive (blue lines).  
in case of 5th percentile is less than 80
- 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 cover
  - o the percentage area with pixels greater than 90% total cover
  - o the percentage area with pixels greater than 95% total cover

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

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 pixels. Pixels with greater than or equal to 50% vegetation cover are generally considered to be protected from or have reduced soil loss by wind erosion, and pixels with greater than or equal to 70% vegetation cover are generally considered to also be protected from or have reduced soil loss from water (hillslope) erosion. Report used baseline from 2001 to 2019 for each month to generate anomalies and deciles. And it used threshold of 1% to create land use forest cover reports. Higher cover thresholds may be required for erosion protection in some regions. This report will be less applicable in areas with sparse forest (20-50% tree cover) or dense forest (> 50% tree cover). Therefore land use classes are divided by tree cover: 1) No forest is when there is less than 20% tree cover 2) Sparse forest, is when there is less than 20 to 50 % tree cover 3) Dense forest is greater than 50% tree cover

### Acknowledgment of data:

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



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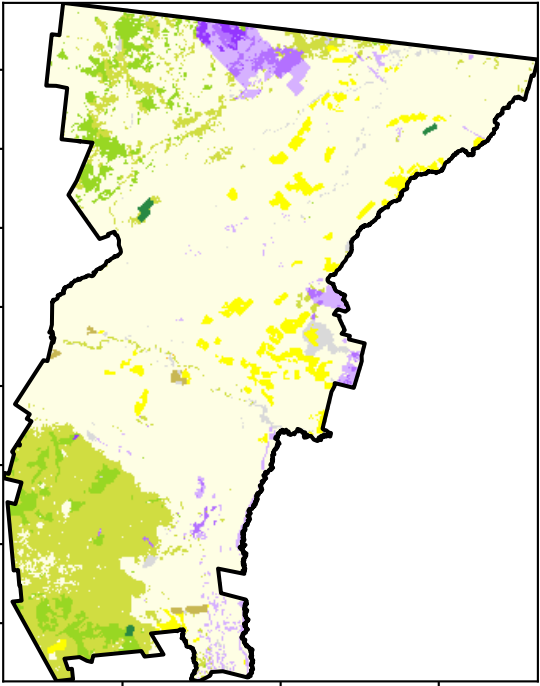


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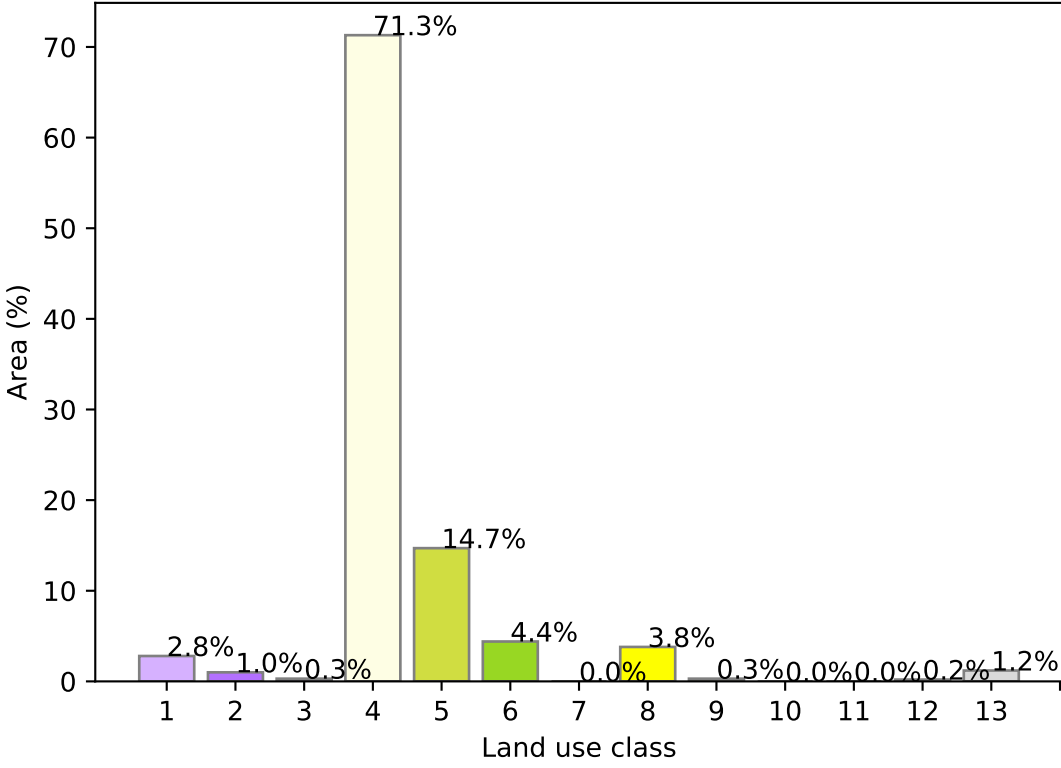
# Vegetation Cover Aug 2019

Land use and forest cover

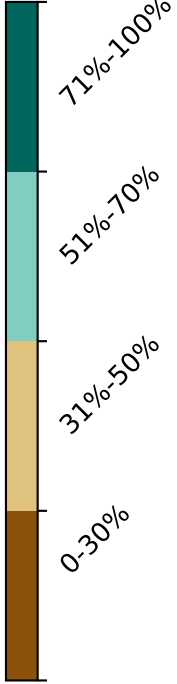
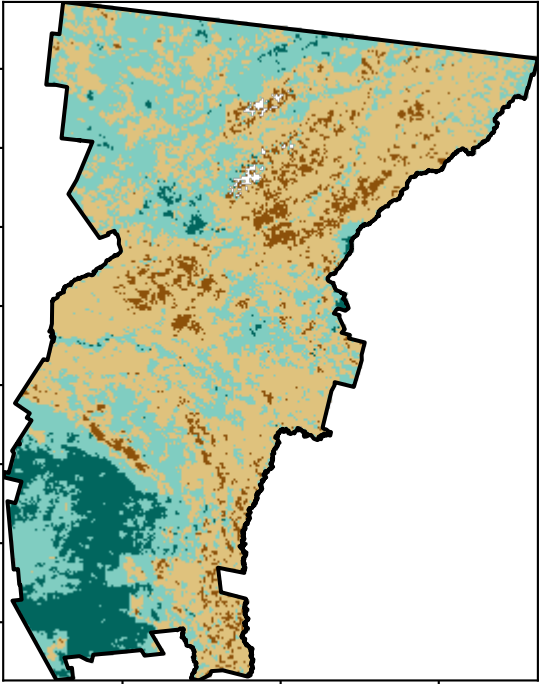
Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.



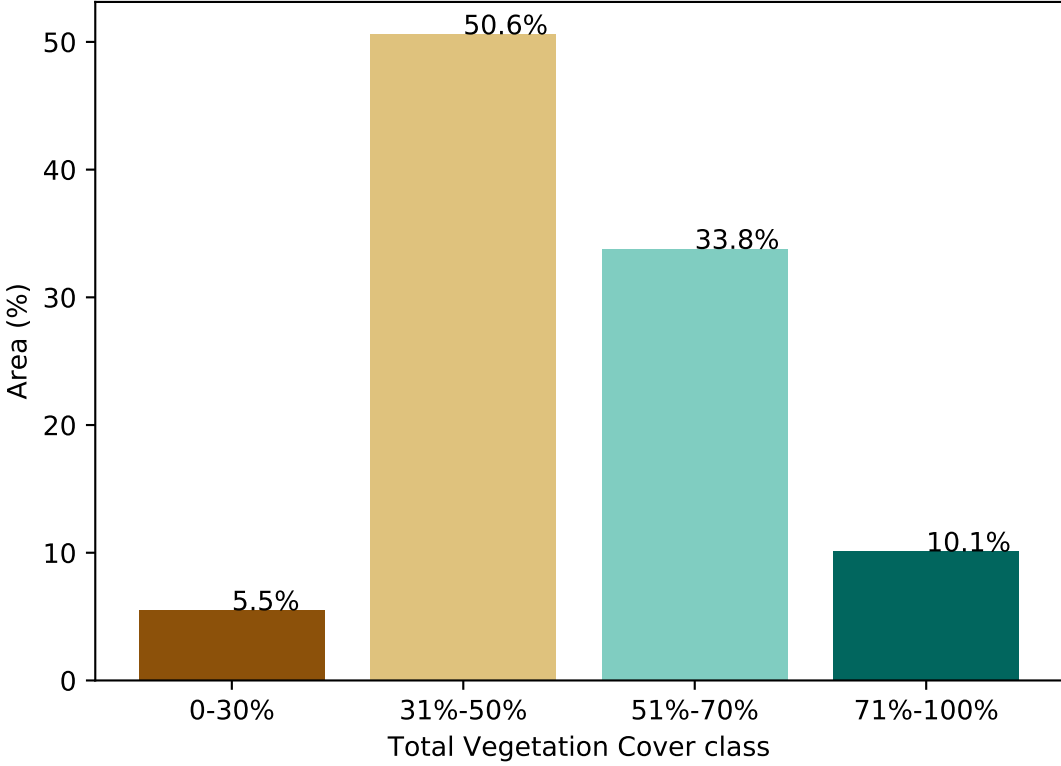
Proportion of each land class in area



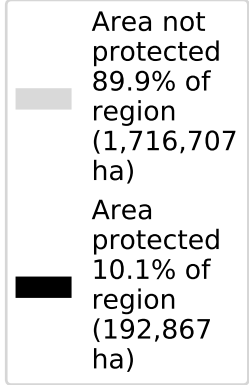
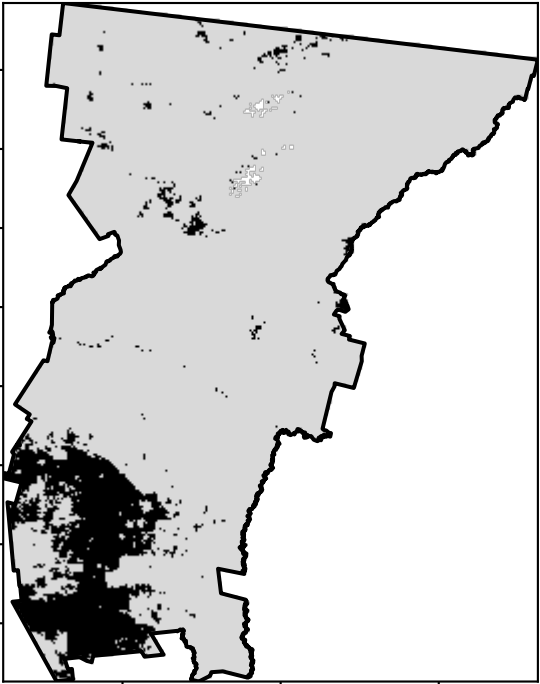
Total Vegetation Cover [%]



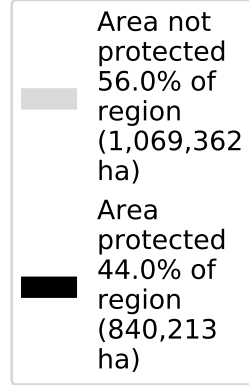
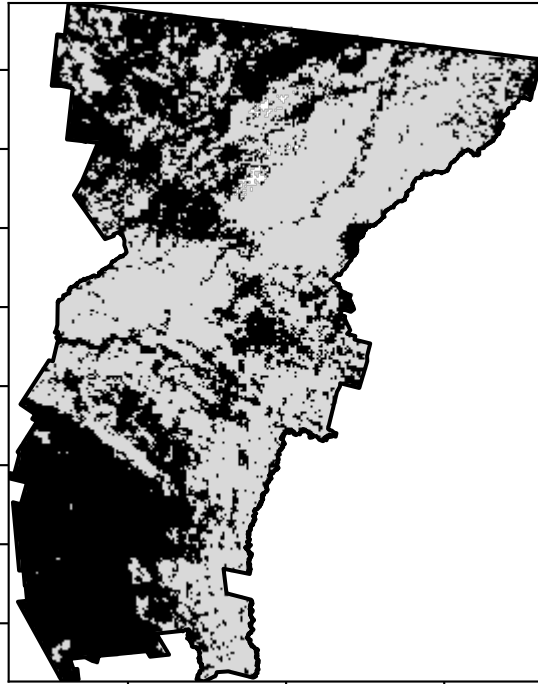
Proportion of vegetation cover class in area



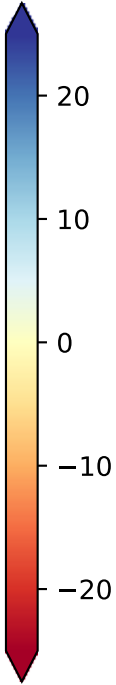
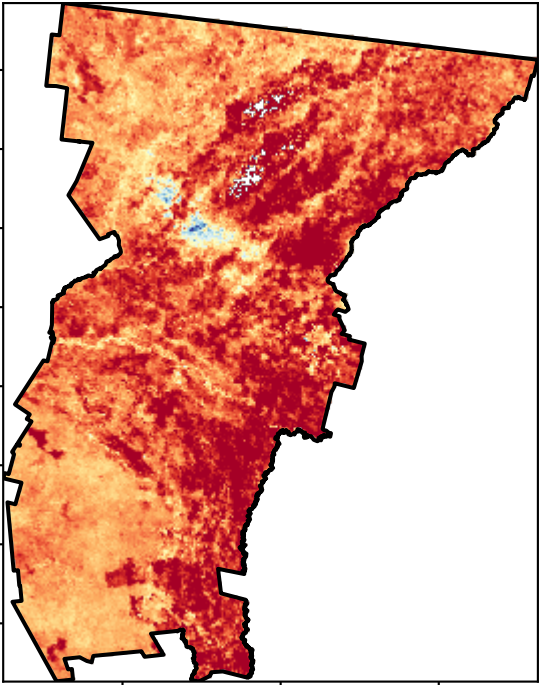
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)



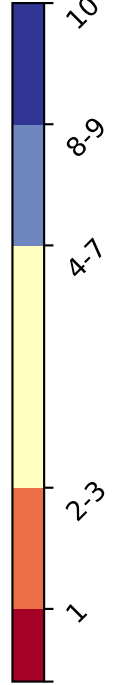
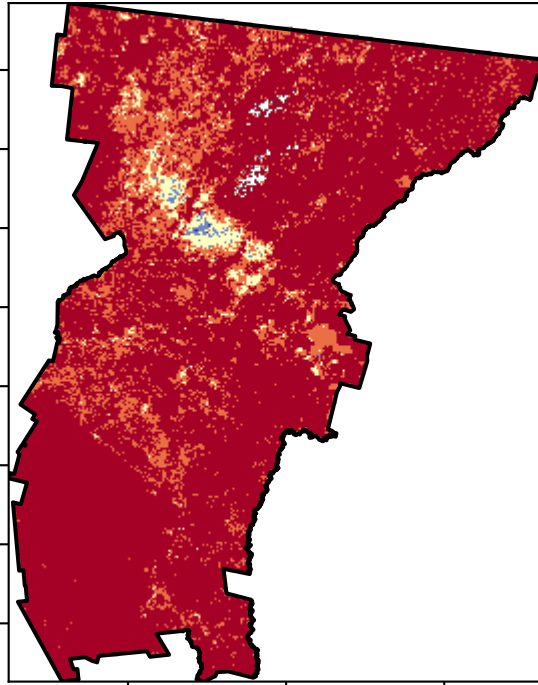
Total Vegetation Cover Anomaly [%]



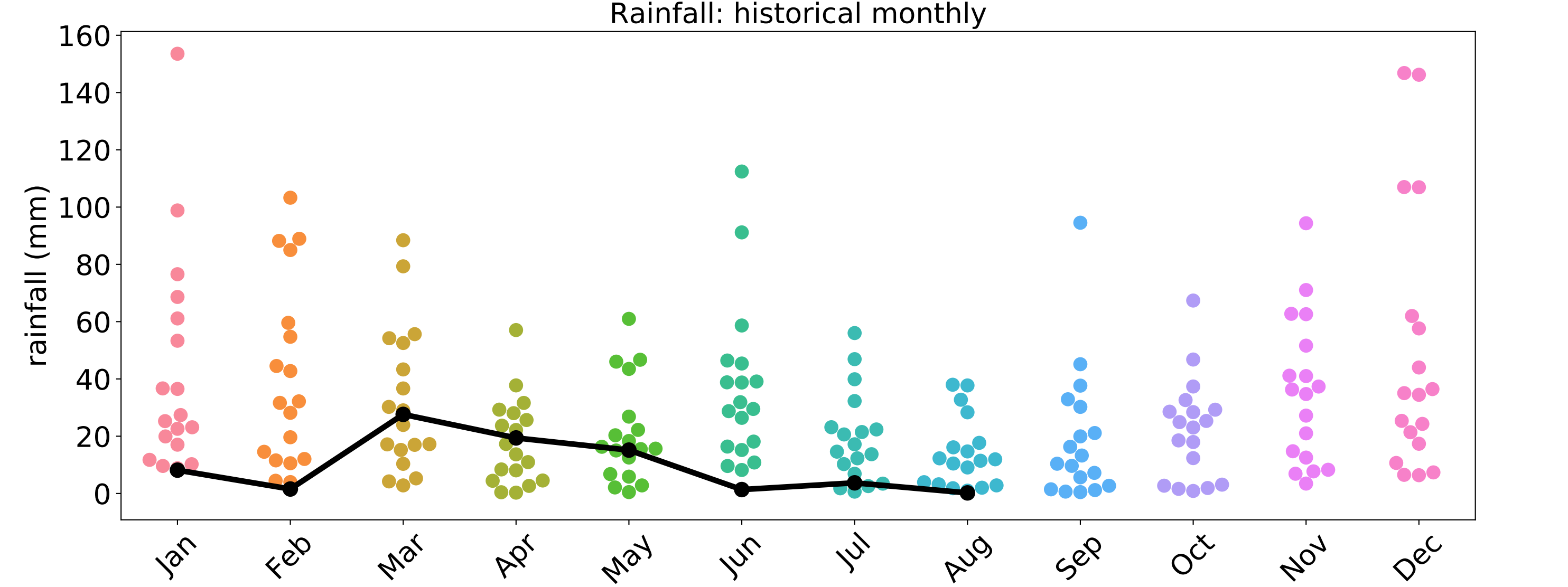
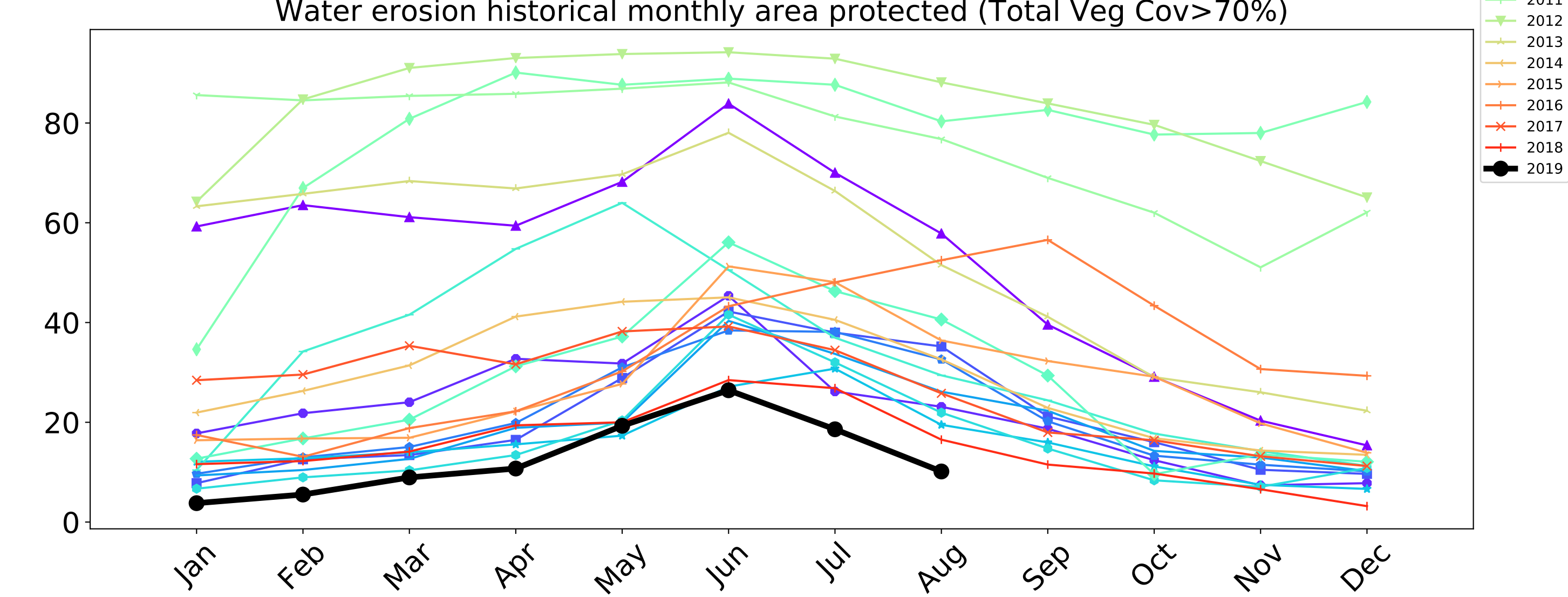
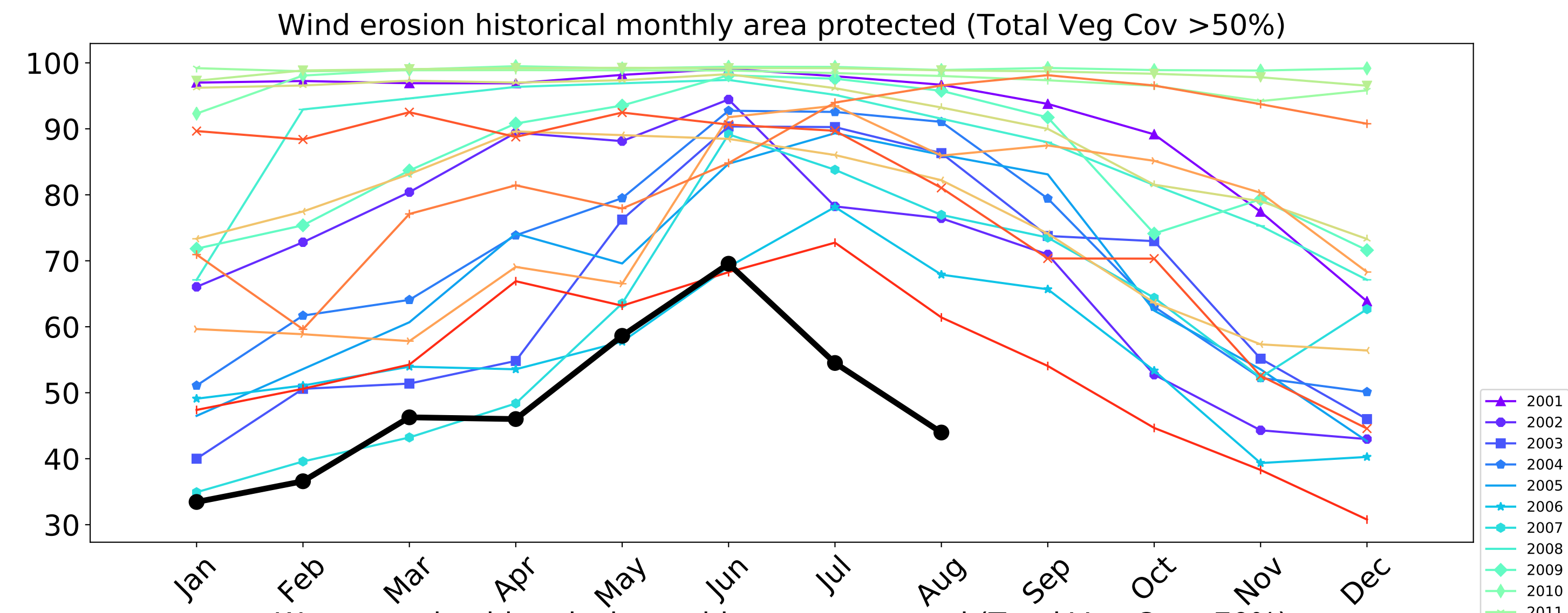
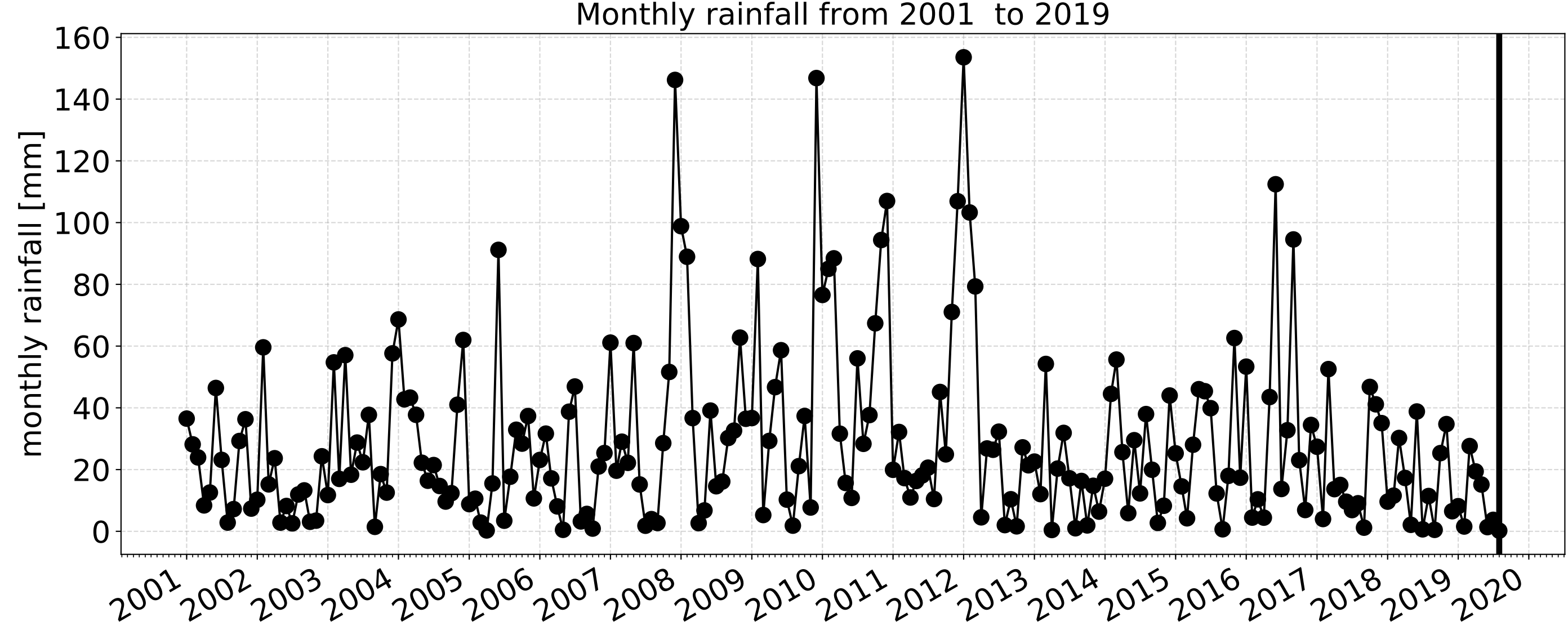
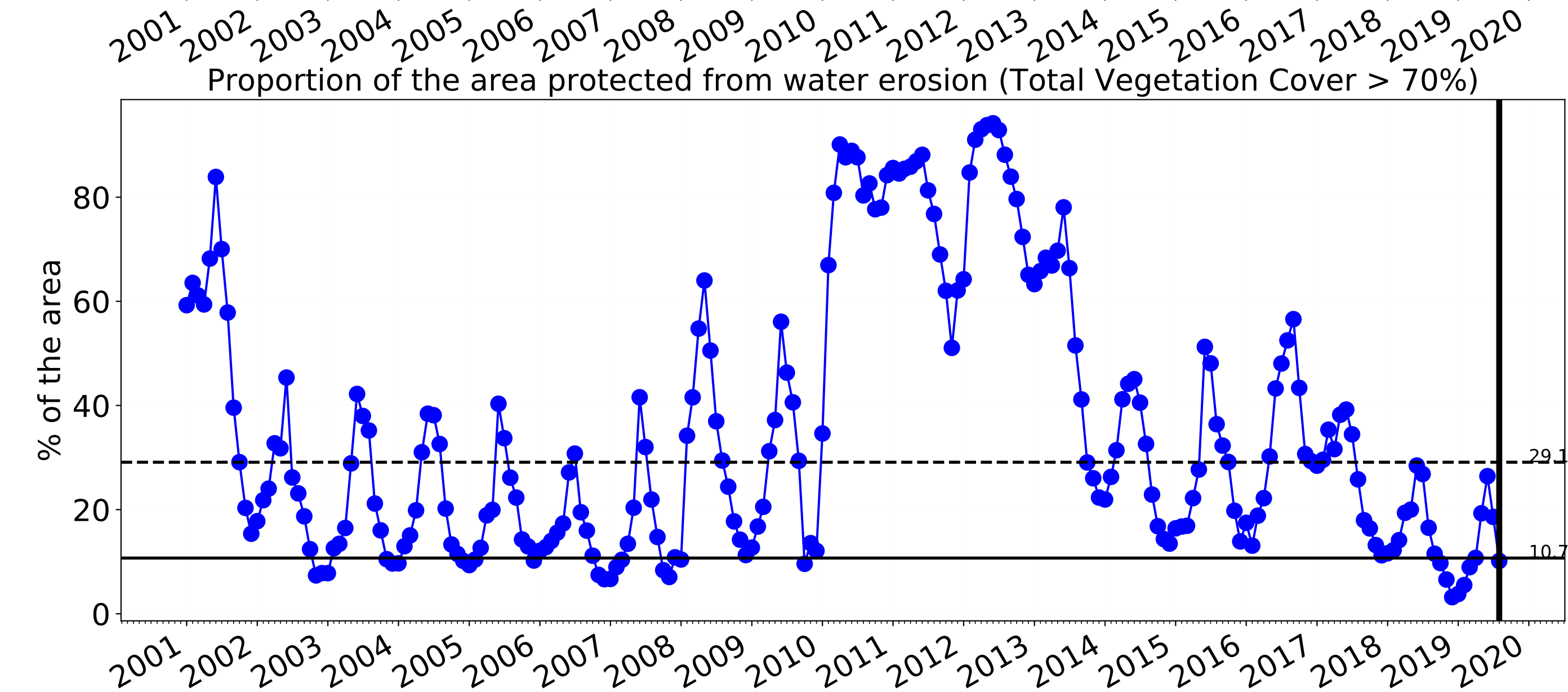
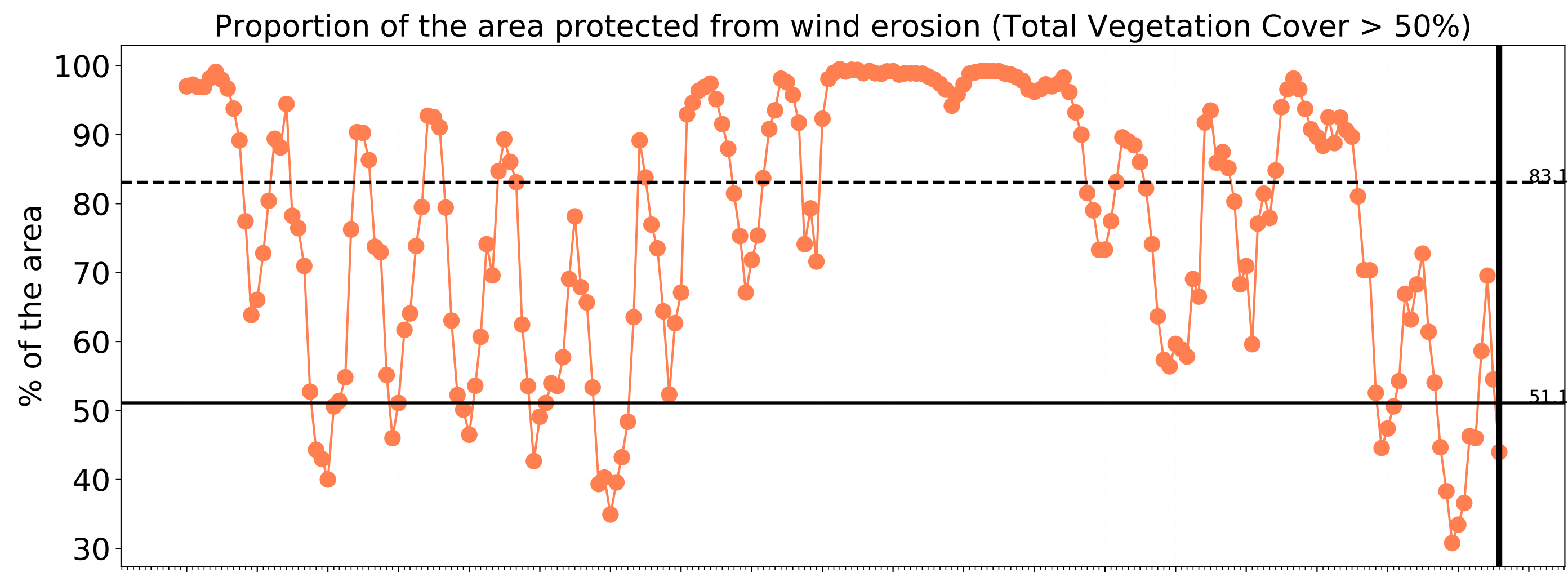
Anomaly show how many percentage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

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

Total Vegetation Cover Decile [%]



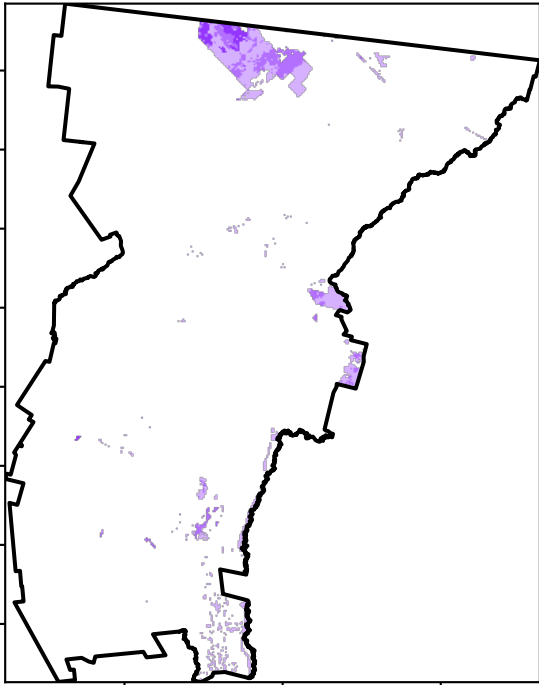




# Conservation and natural environments

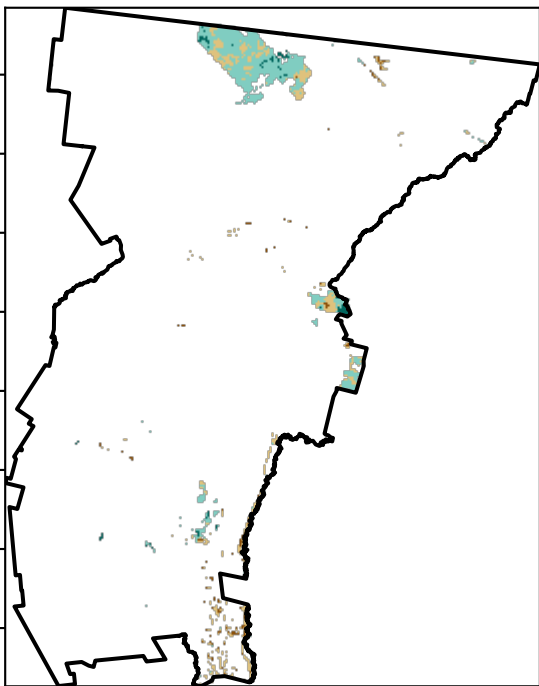
Land use and forest cover

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.

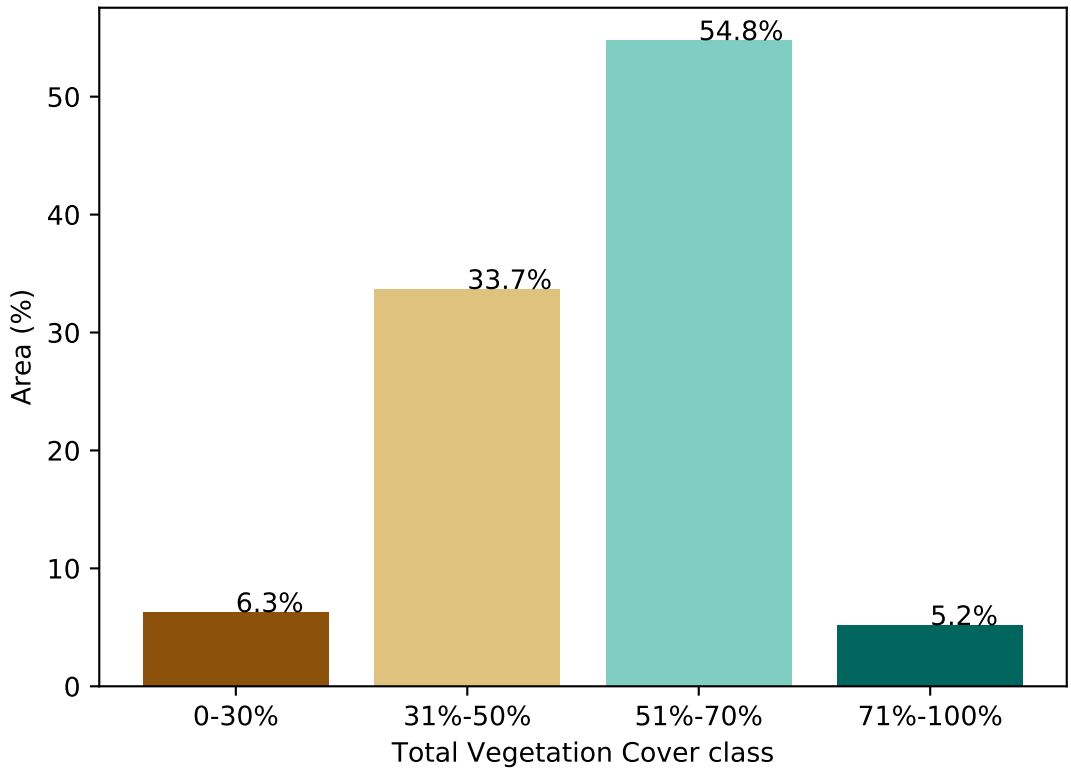


Conservation and natural environments - Non-forest  
Conservation and natural environments - Woodland forest  
Conservation and natural environments - Non-woodland forest

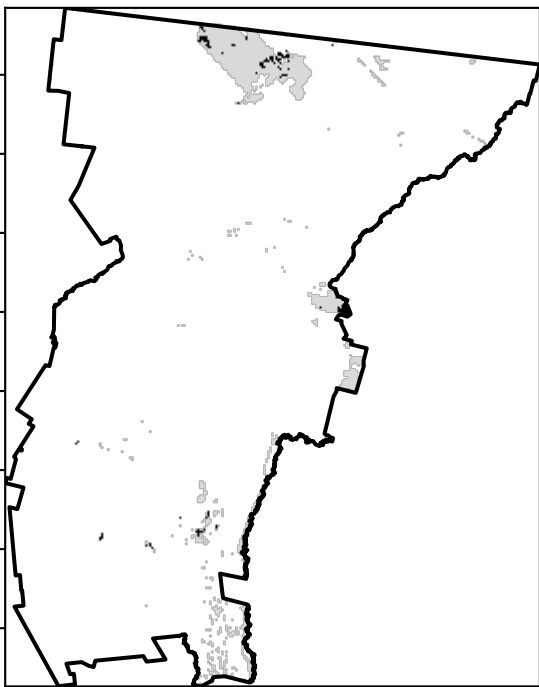
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

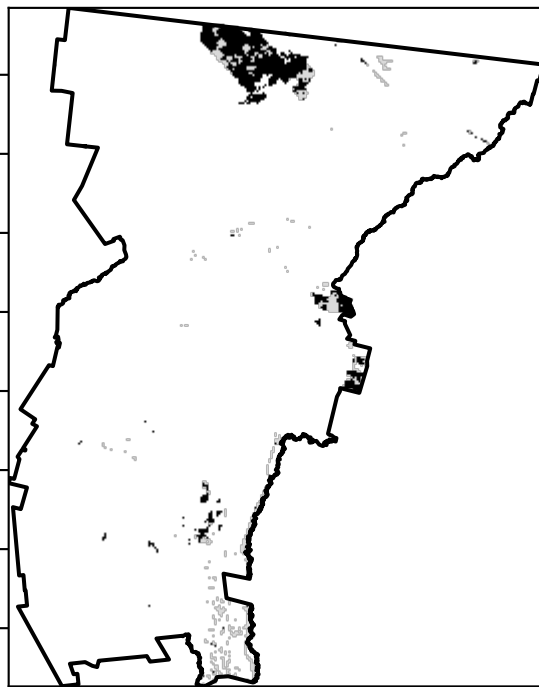


% Area protected from water erosion (>70%)



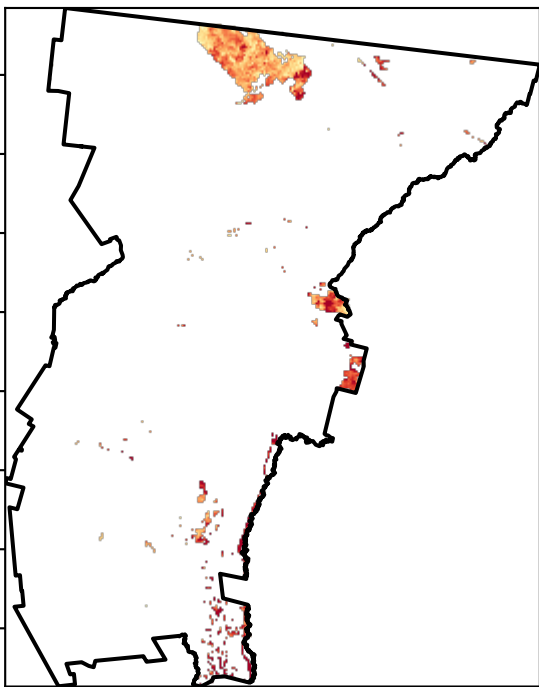
Area not protected  
94.8% of region  
(75,223 ha)  
Area protected  
5.2% of region  
(4,126 ha)

% Area protected from wind erosion (>50%)



Area not protected  
40.0% of region  
(31,740 ha)  
Area protected  
60.0% of region  
(47,610 ha)

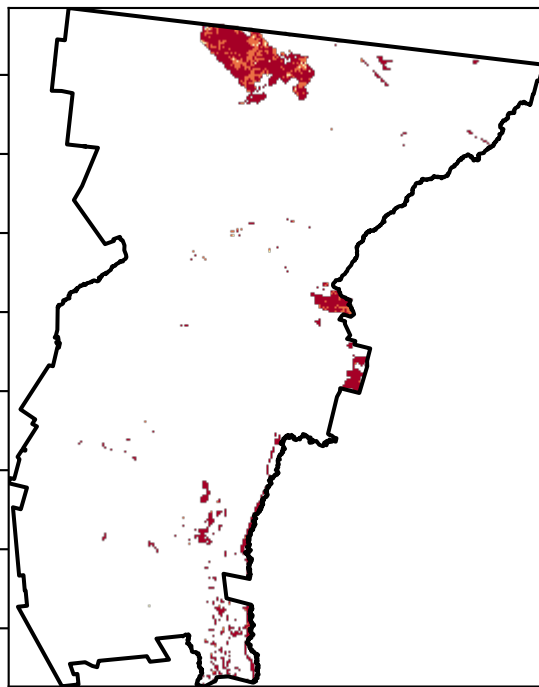
Total Vegetation Cover Anomaly [%]



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

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Total Vegetation Cover Decile [%]



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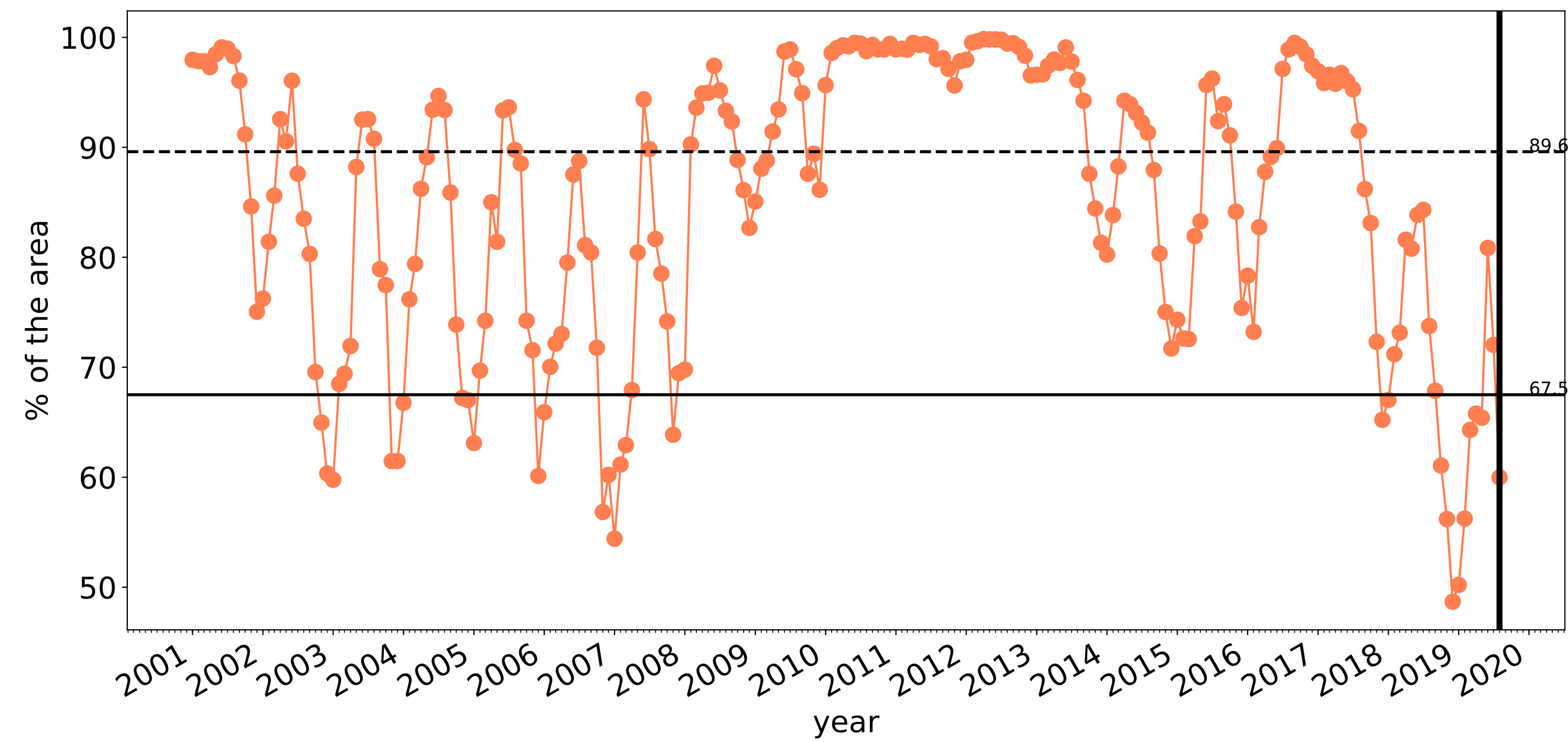


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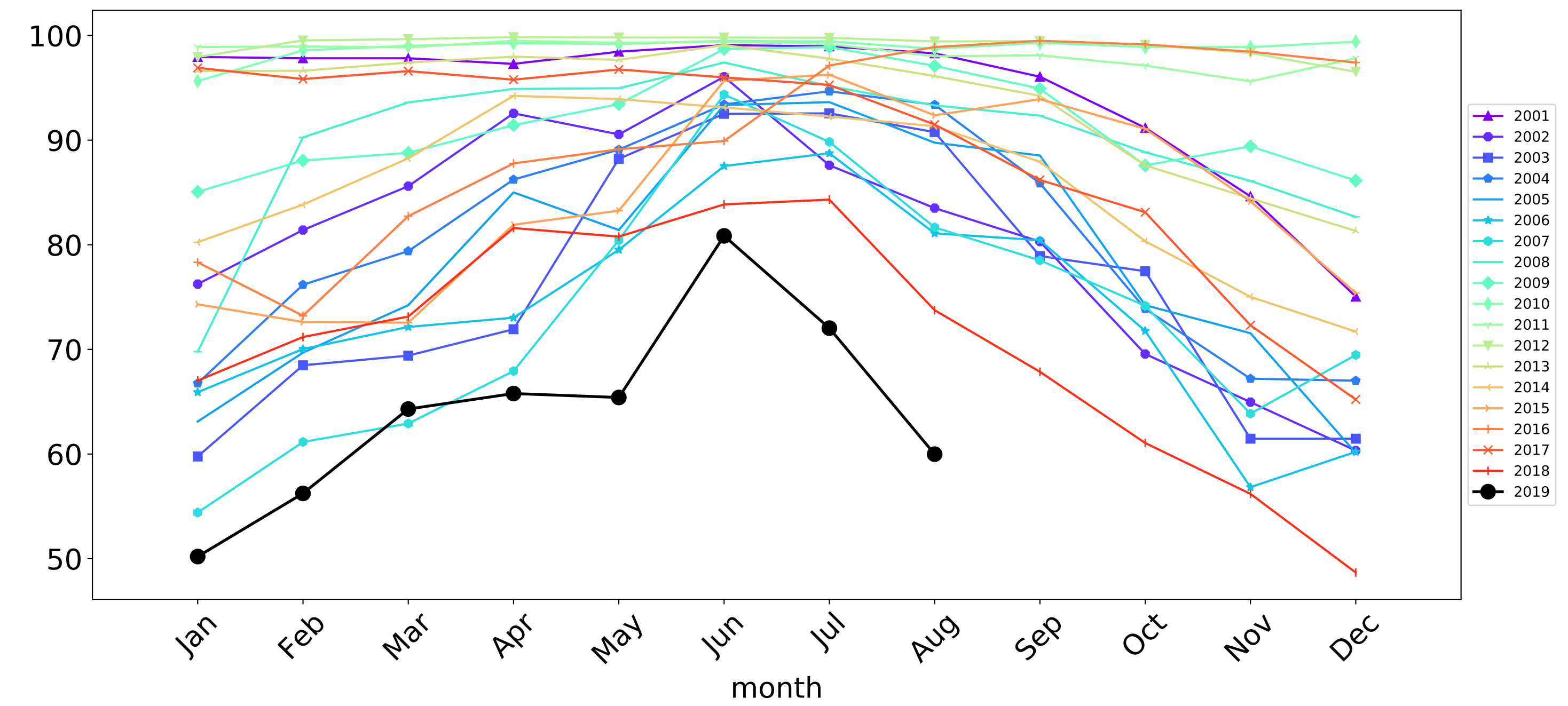


# Conservation and natural environments timeseries

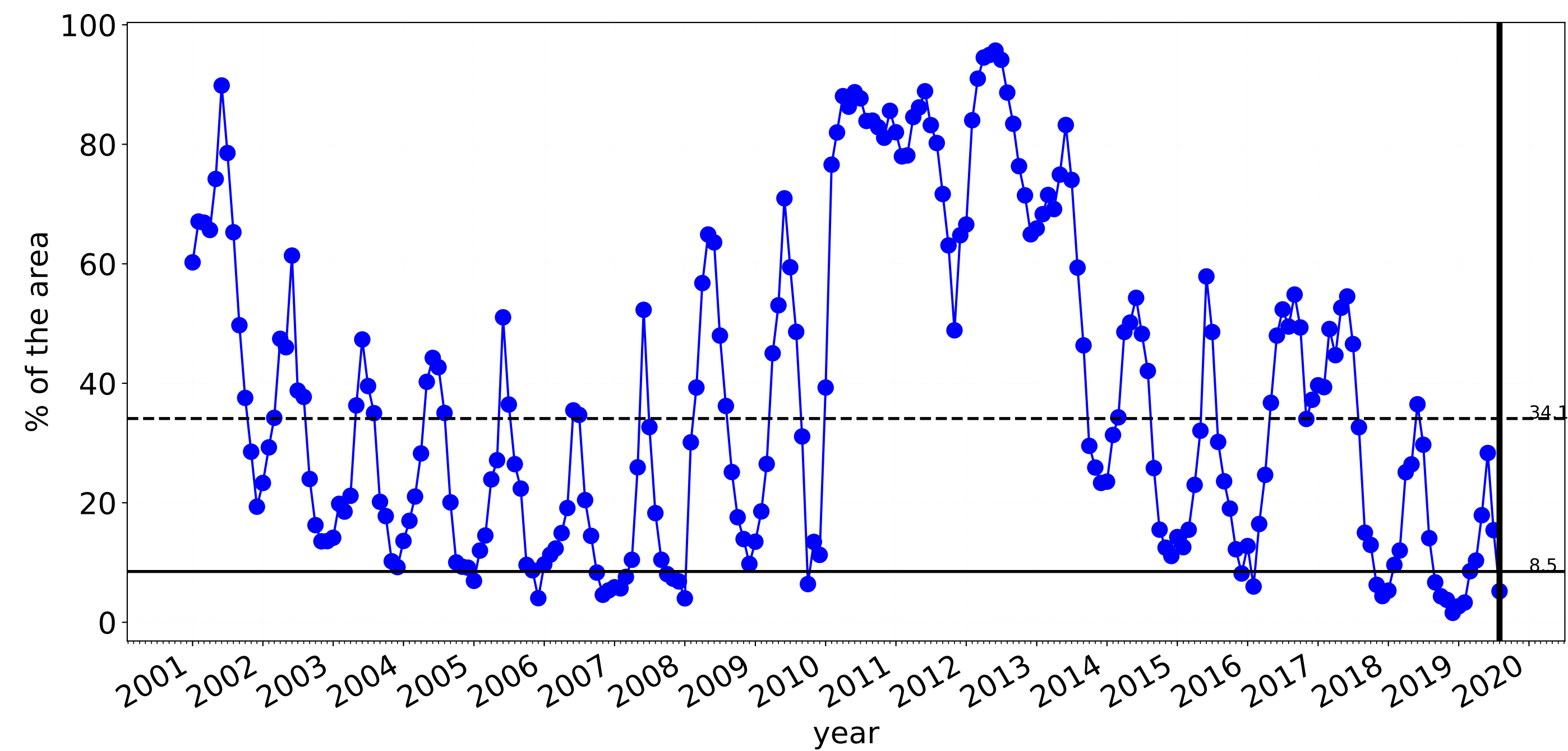
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



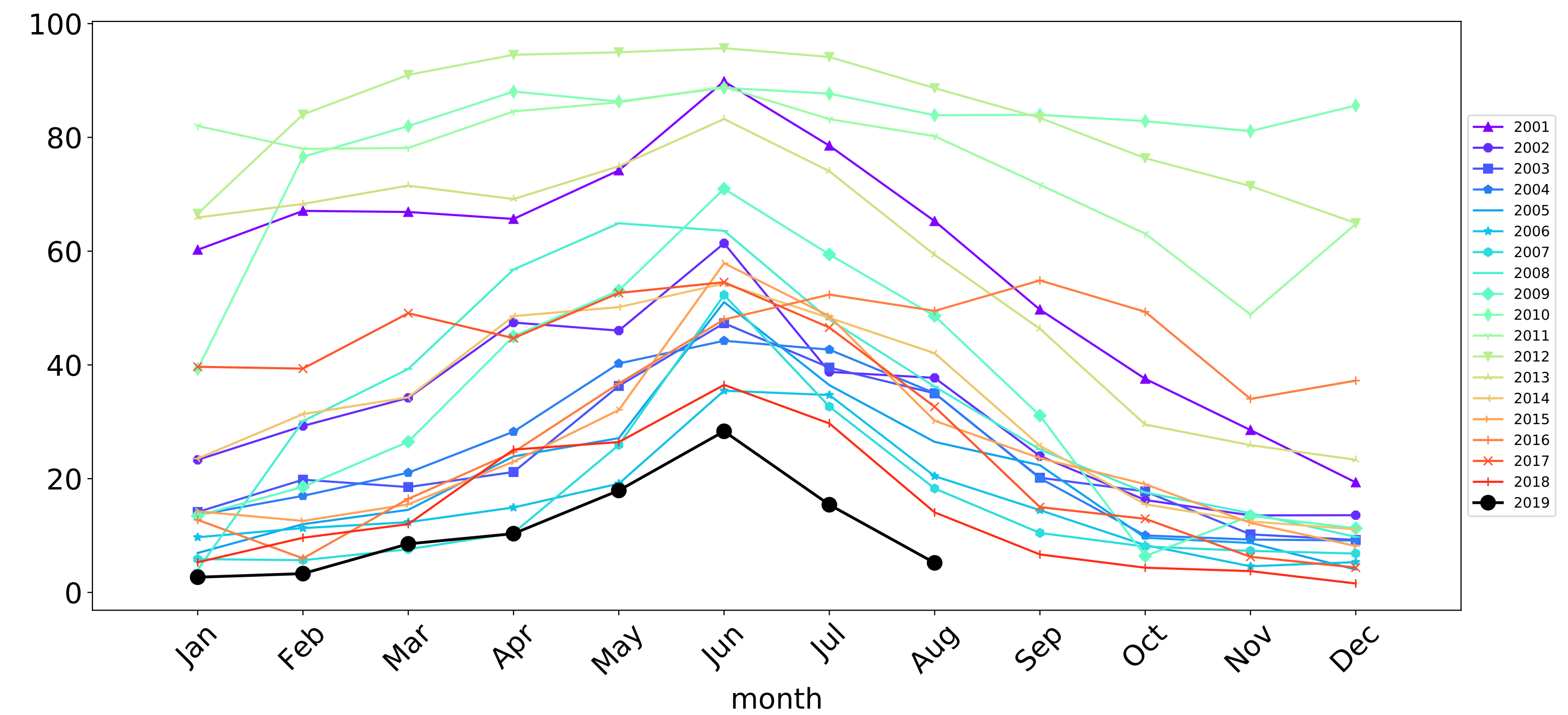
Wind erosion historical monthly area protected (Total Veg Cov > 50%)



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



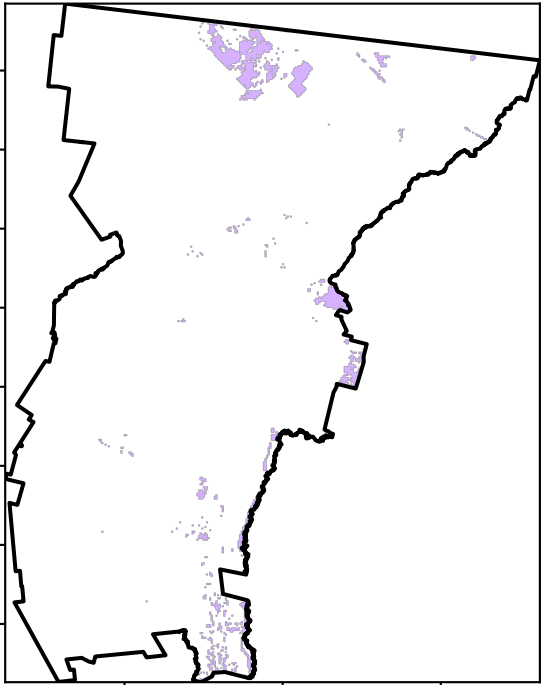
Water erosion historical monthly area protected (Total Veg Cov > 70%)



Conservation and natural environments non forest

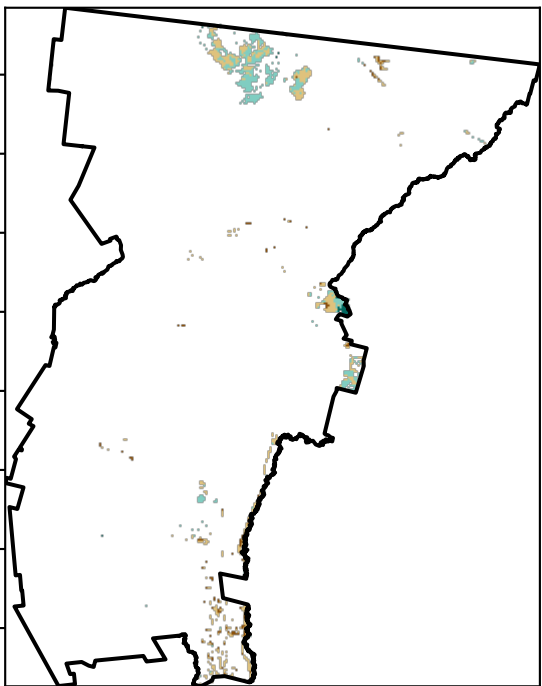
Land use and forest cover

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.

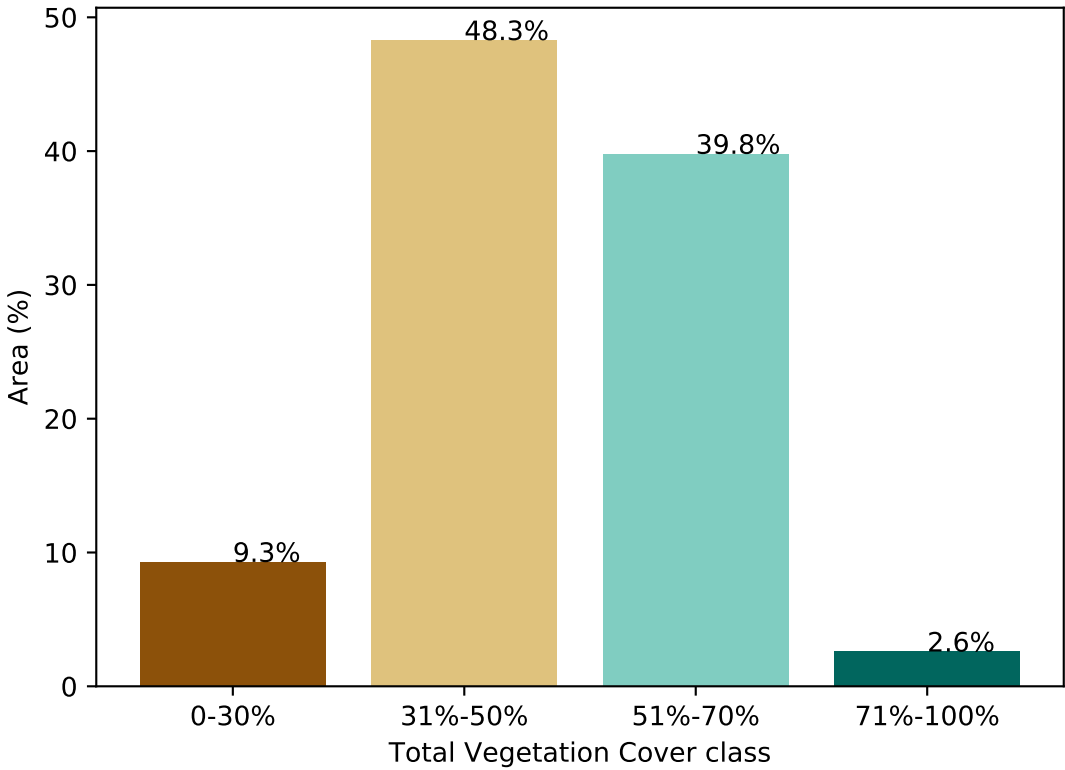


Conservation and natural environments - Non-forest

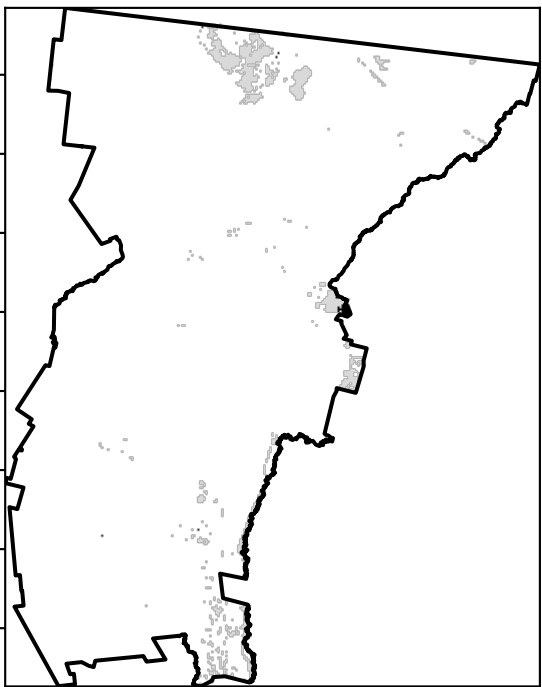
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

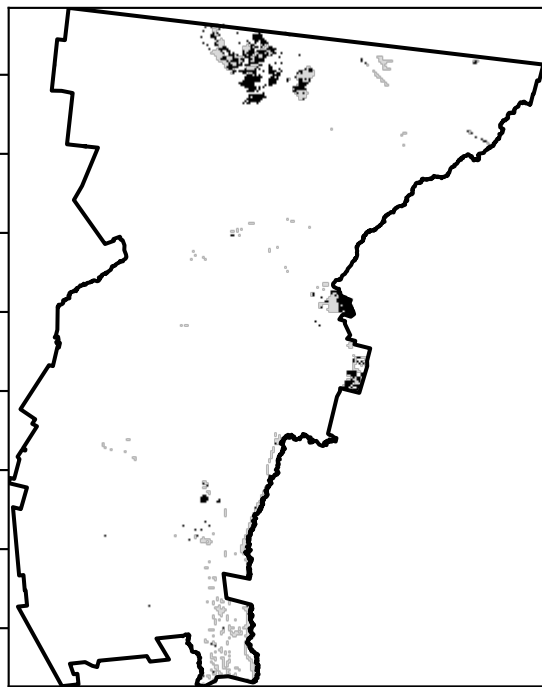


% Area protected from water erosion (>70%)



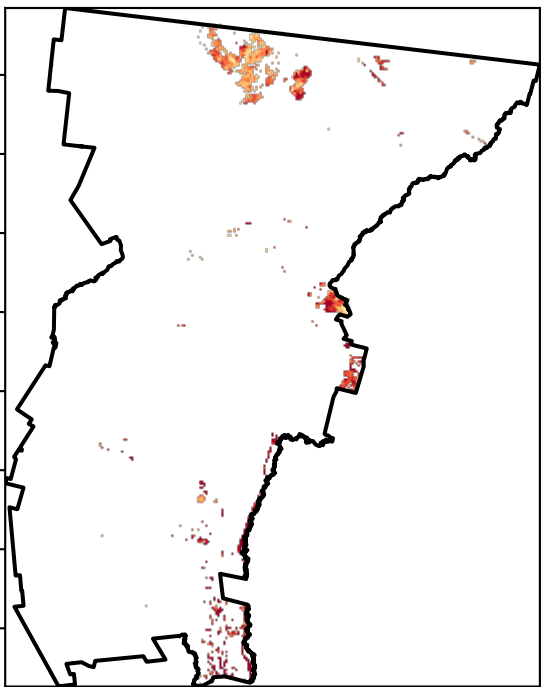
Area not protected 97.4% of region (52,571 ha)  
Area protected 2.6% of region (1,403 ha)

% Area protected from wind erosion (>50%)



Area not protected 58.0% of region (31,305 ha)  
Area protected 42.0% of region (22,669 ha)

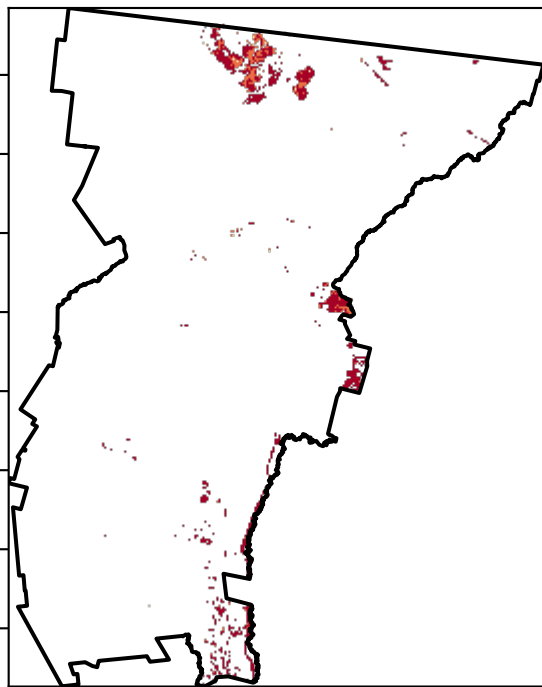
Total Vegetation Cover Anomaly [%]



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

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

Total Vegetation Cover Decile [%]



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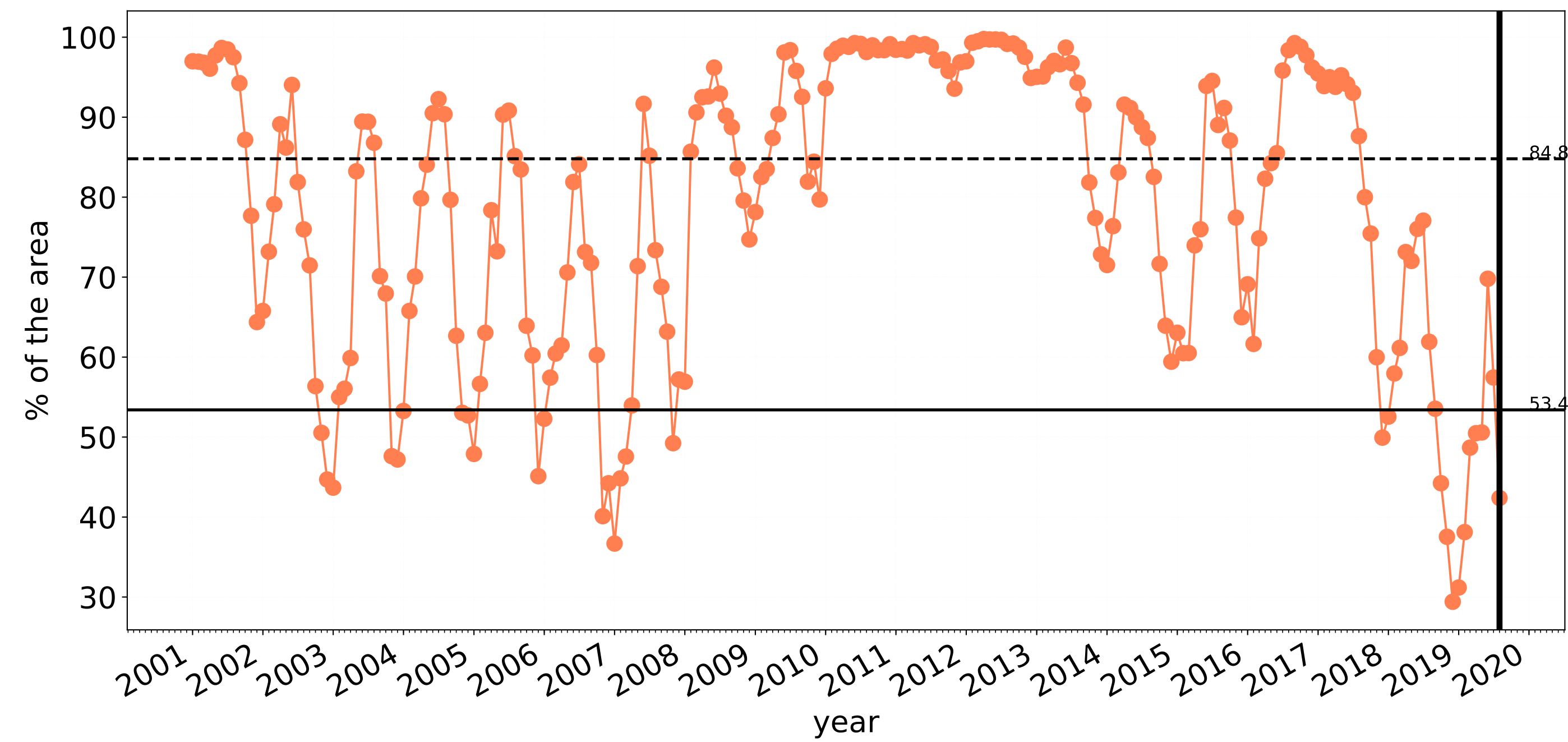


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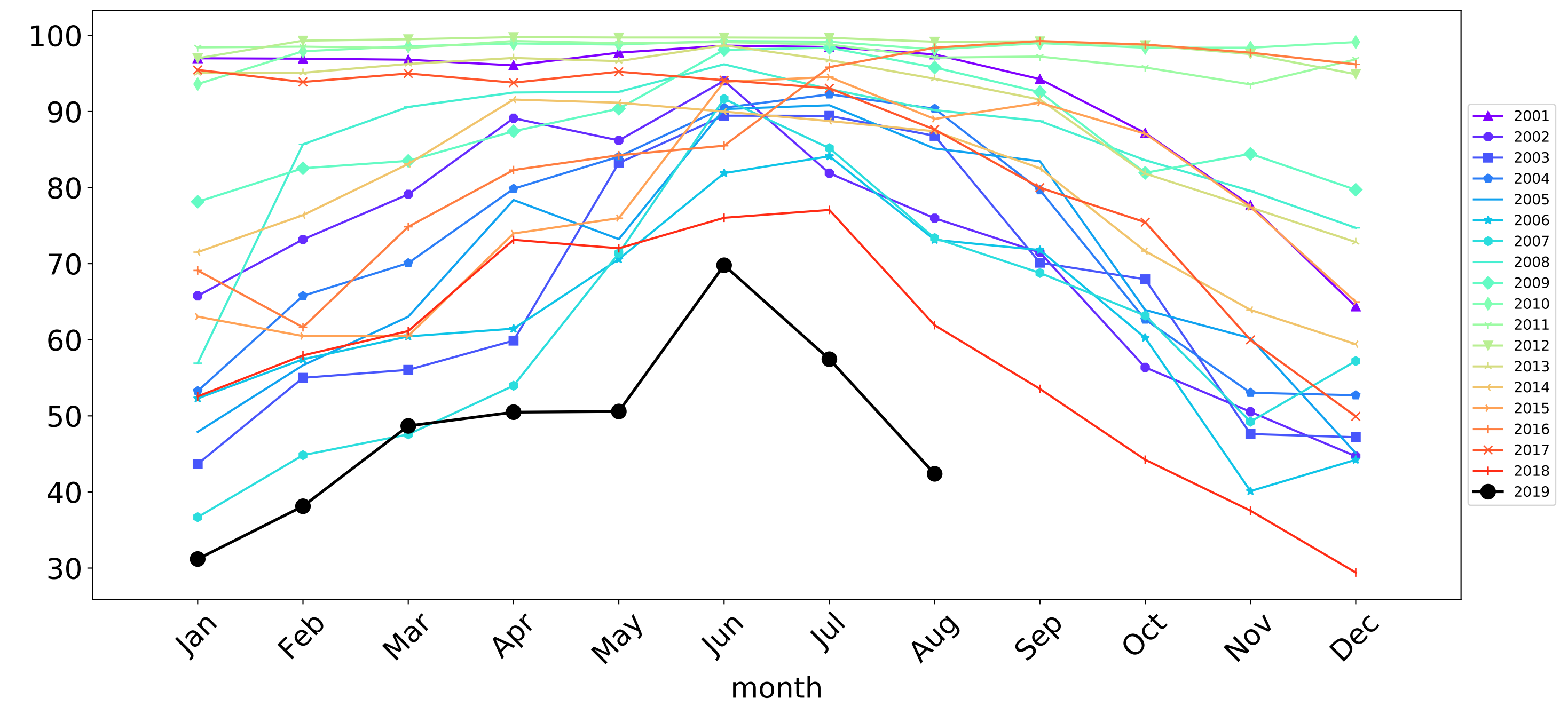


# Conservation and natural environments non forest timeseries

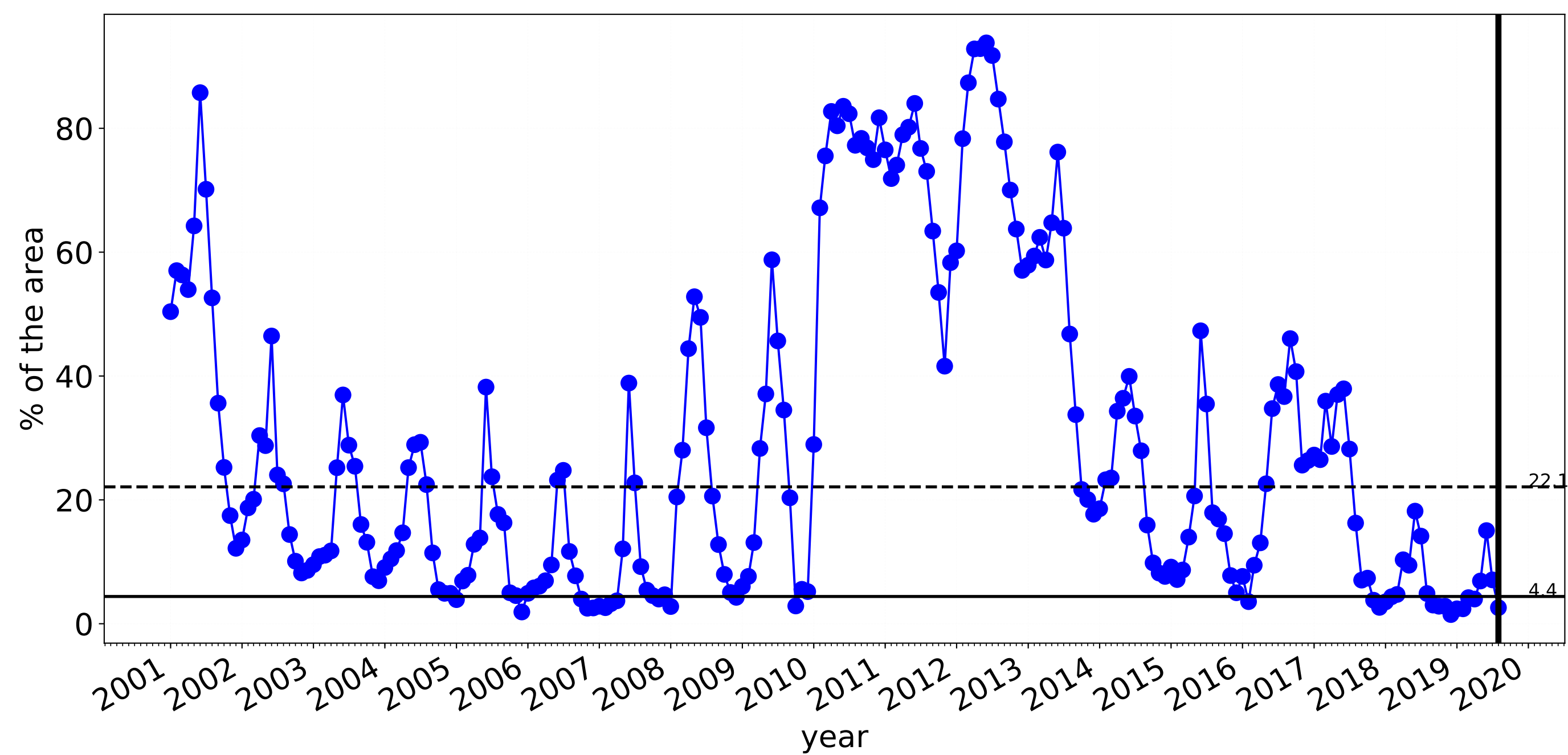
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



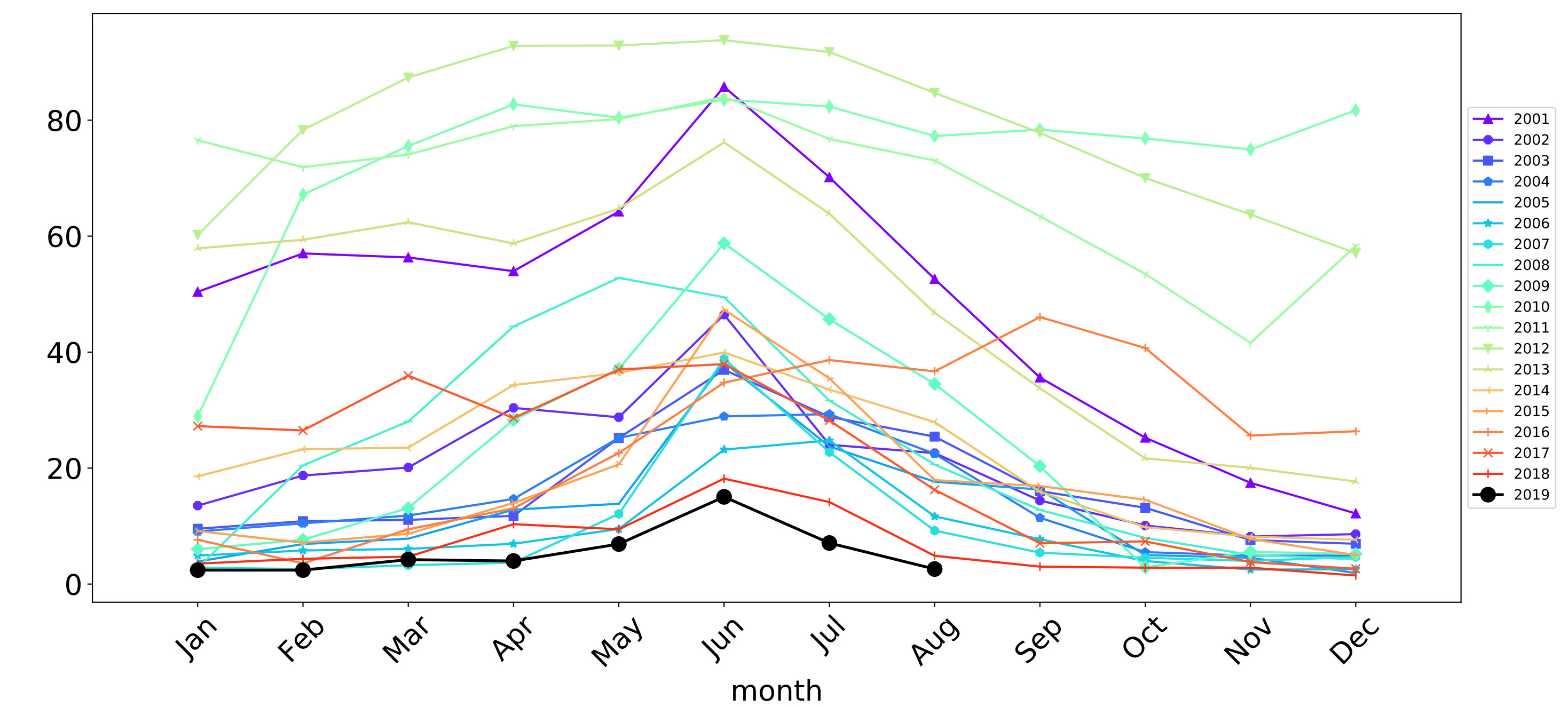
Wind erosion historical monthly area protected (Total Veg Cov >50%)



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



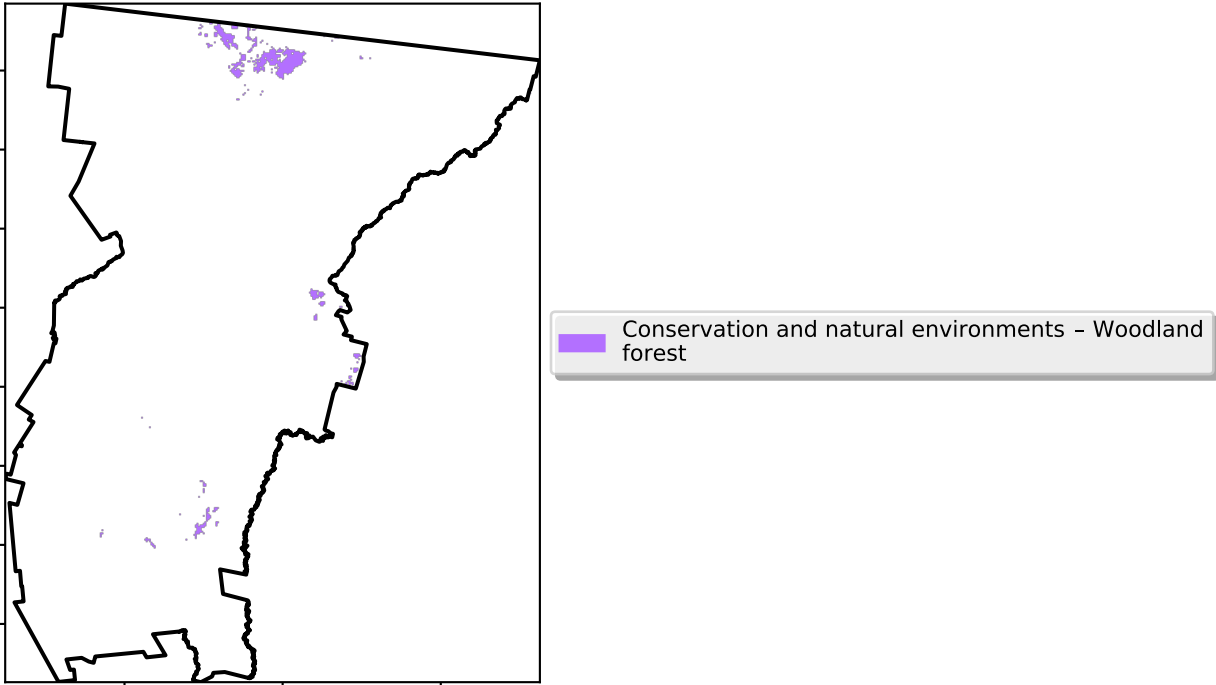
Water erosion historical monthly area protected (Total Veg Cov>70%)



Conservation and natural environments Woodland forest

Land use and forest cover

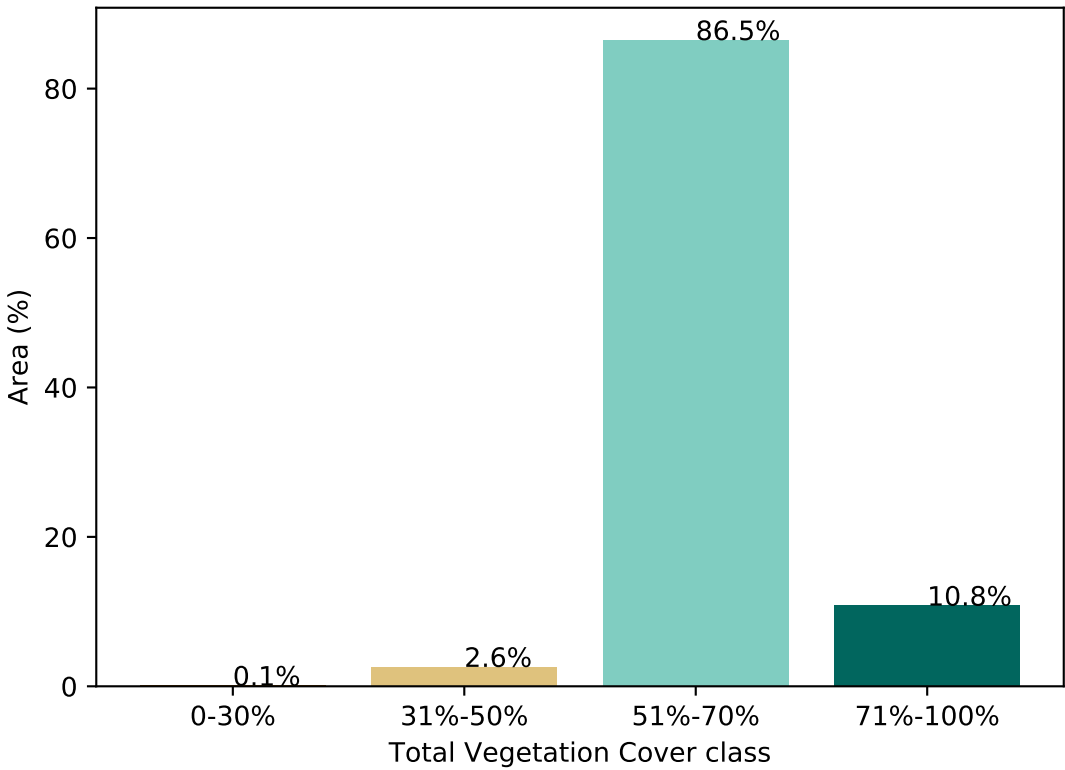
Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.



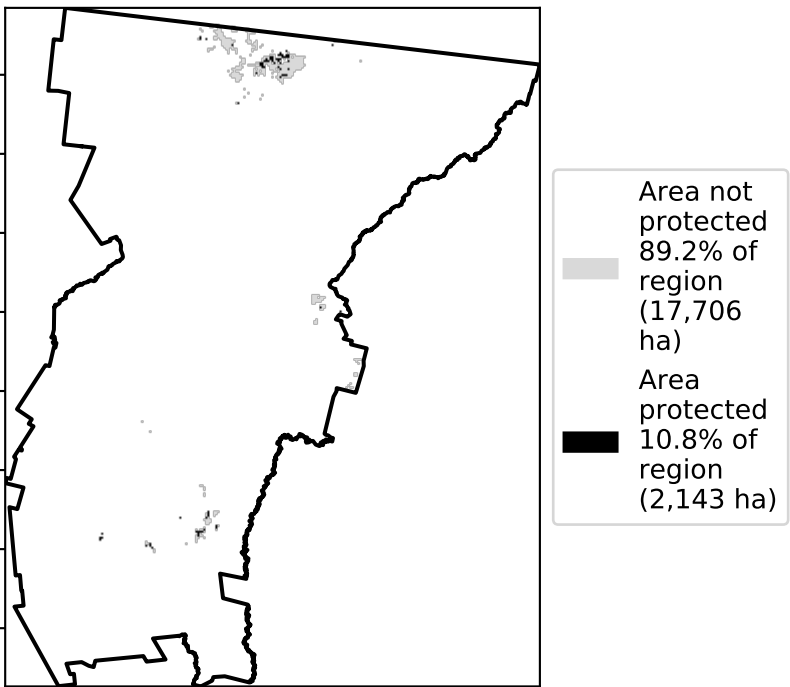
Total Vegetation Cover [%]



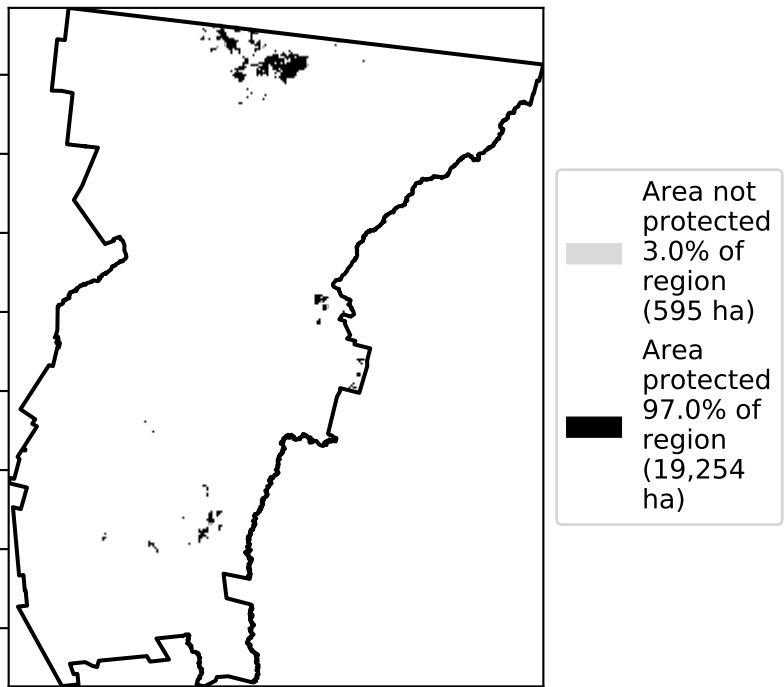
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

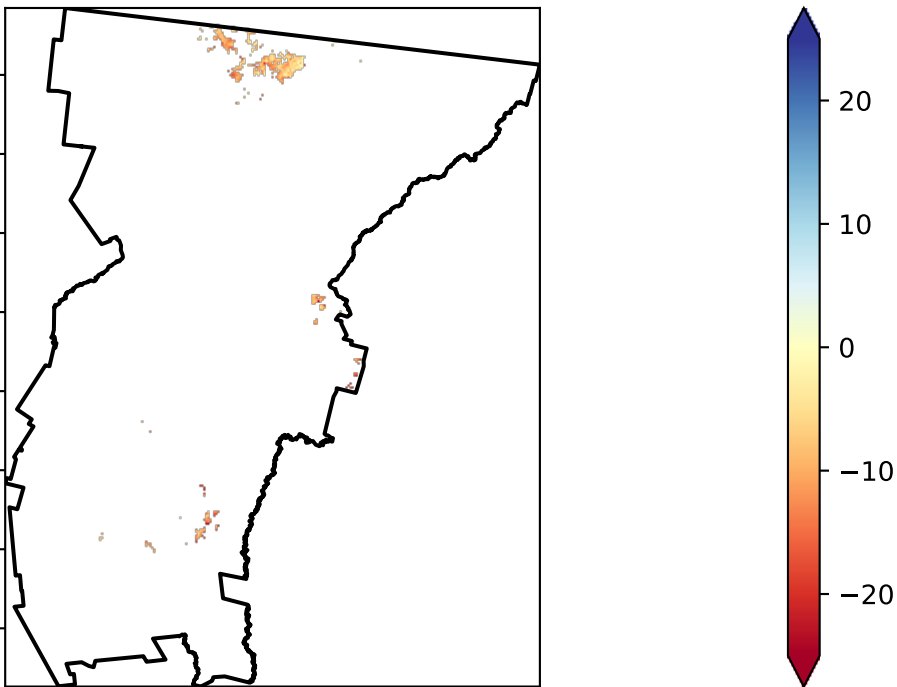


% Area protected from wind erosion (>50%)



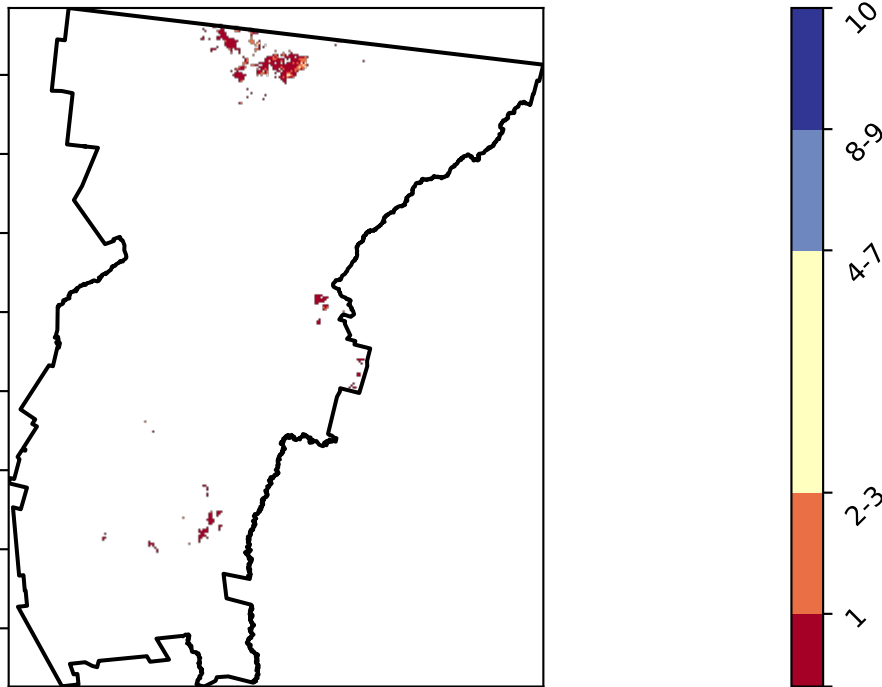
Total Vegetation Cover Anomaly [%]

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



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

Total Vegetation Cover Decile [%]



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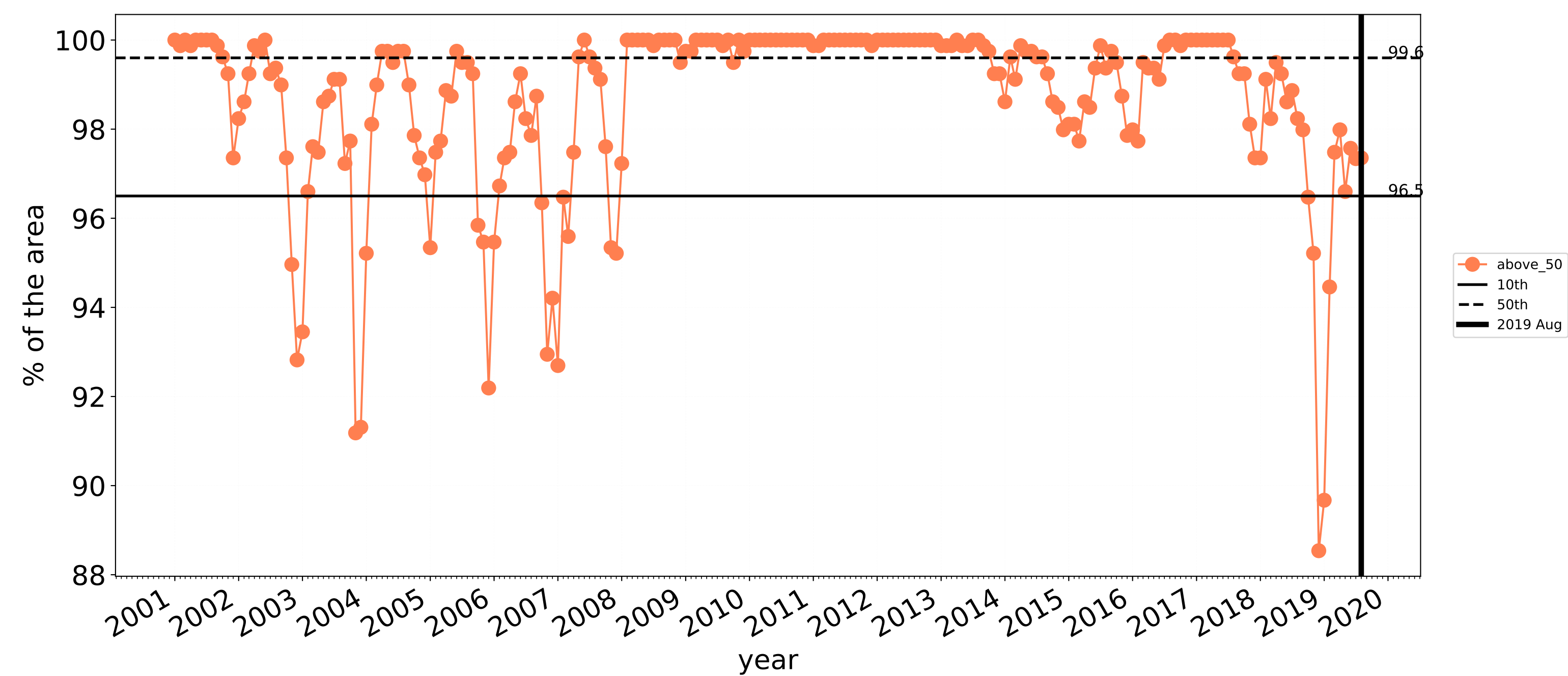


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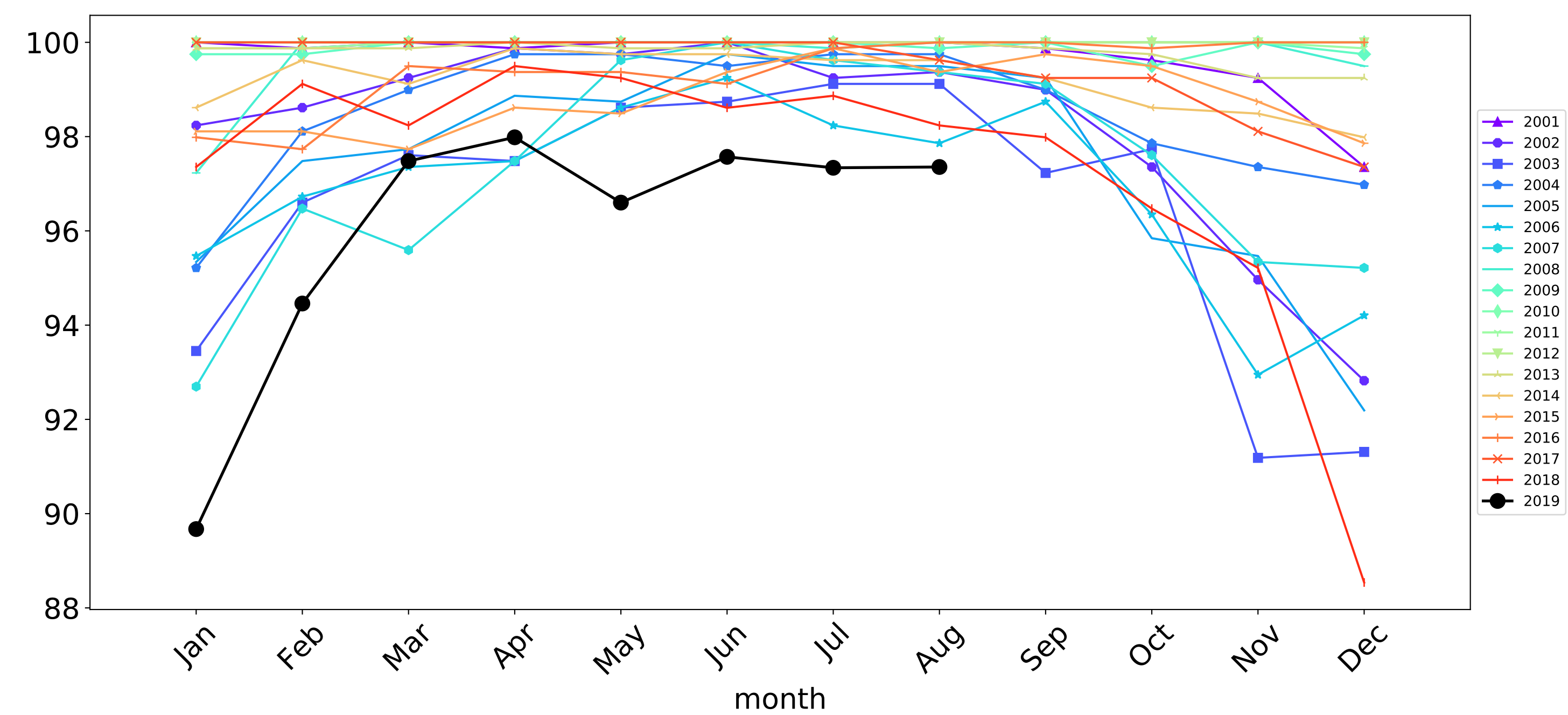


# Conservation and natural environments Woodland forest timeseries

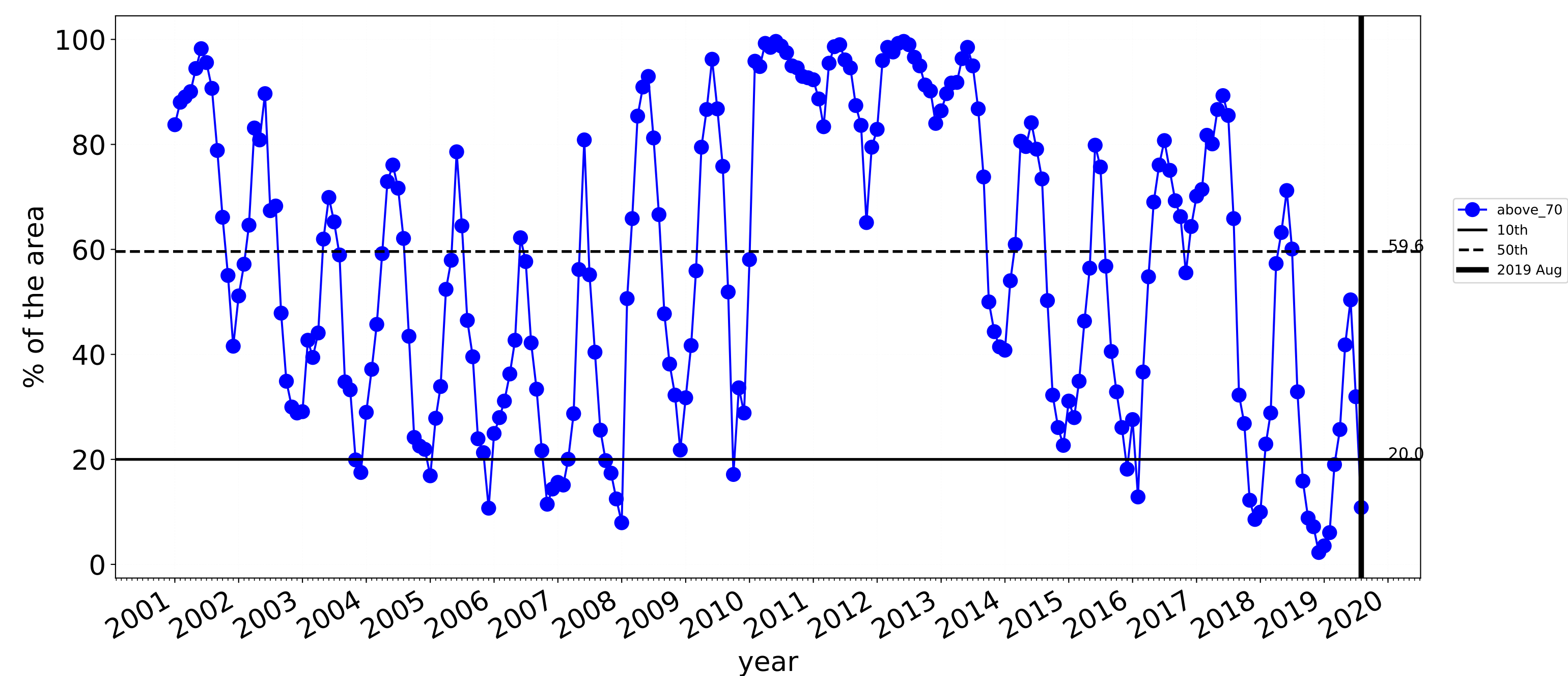
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



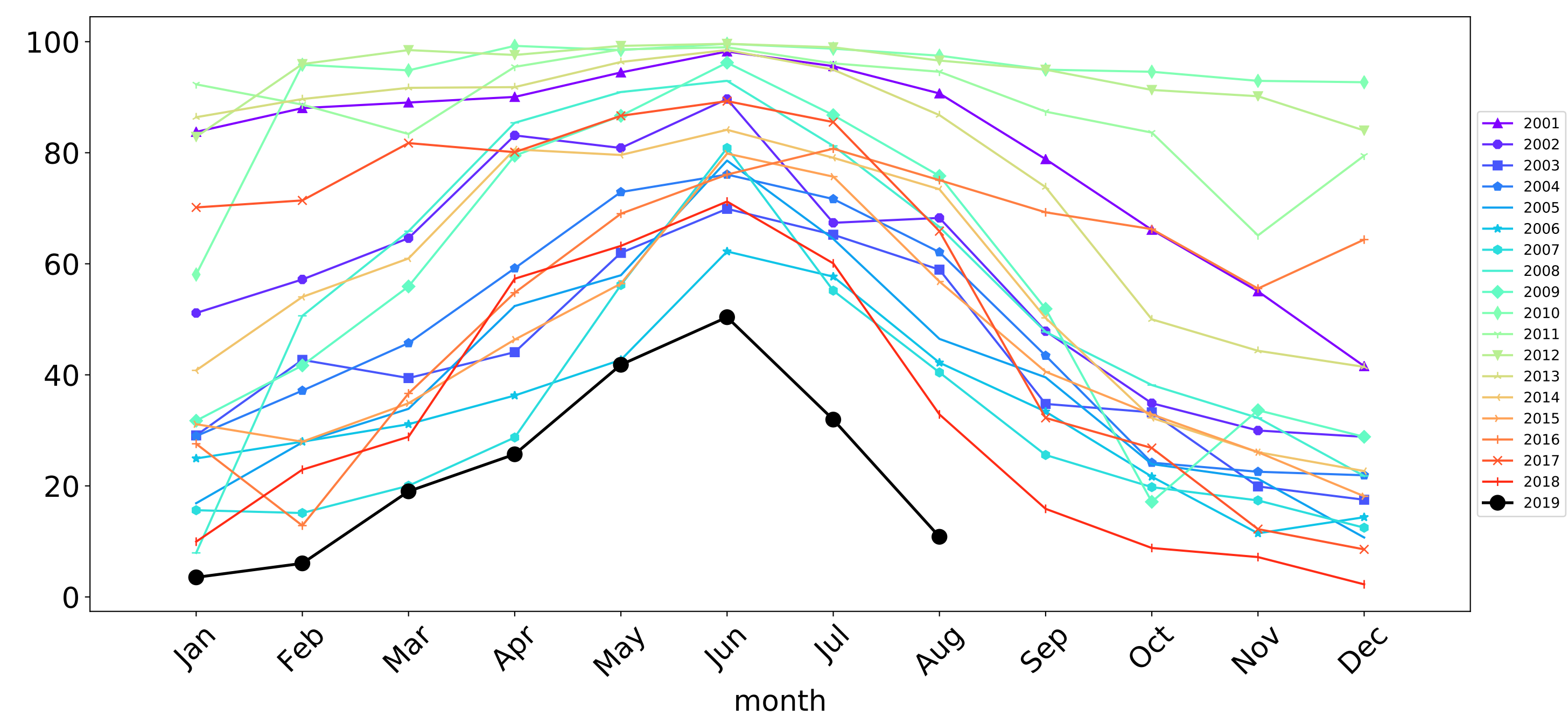
Wind erosion historical monthly area protected (Total Veg Cov >50%)



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



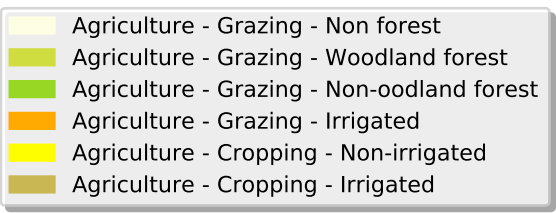
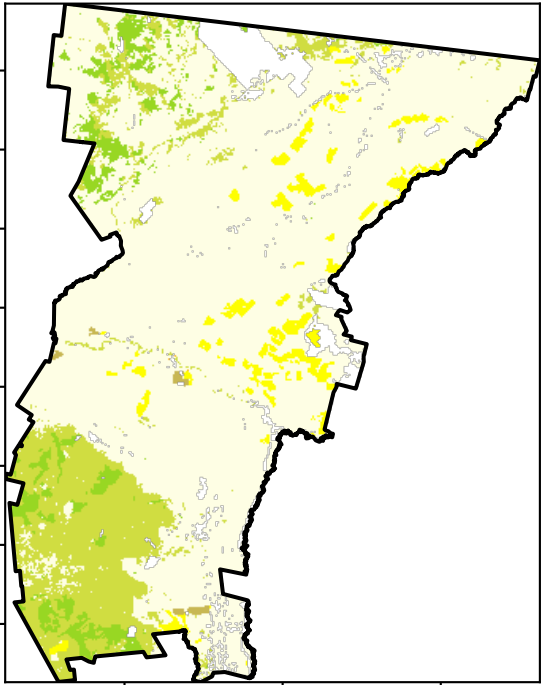
Water erosion historical monthly area protected (Total Veg Cov>70%)



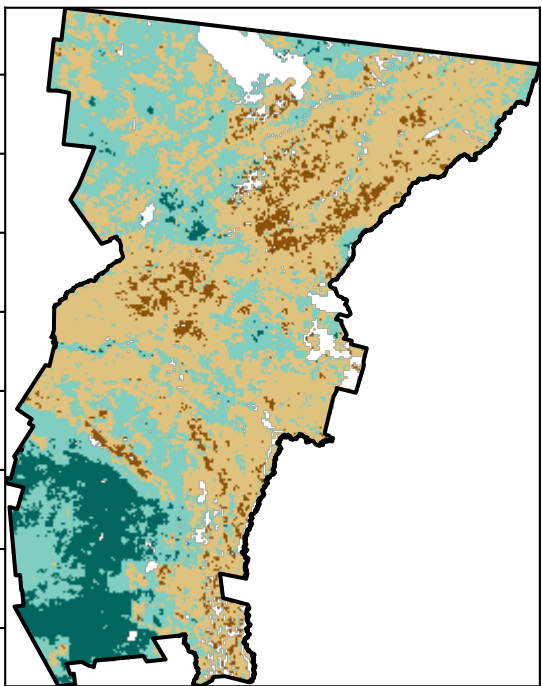
Agriculture

Land use and forest cover

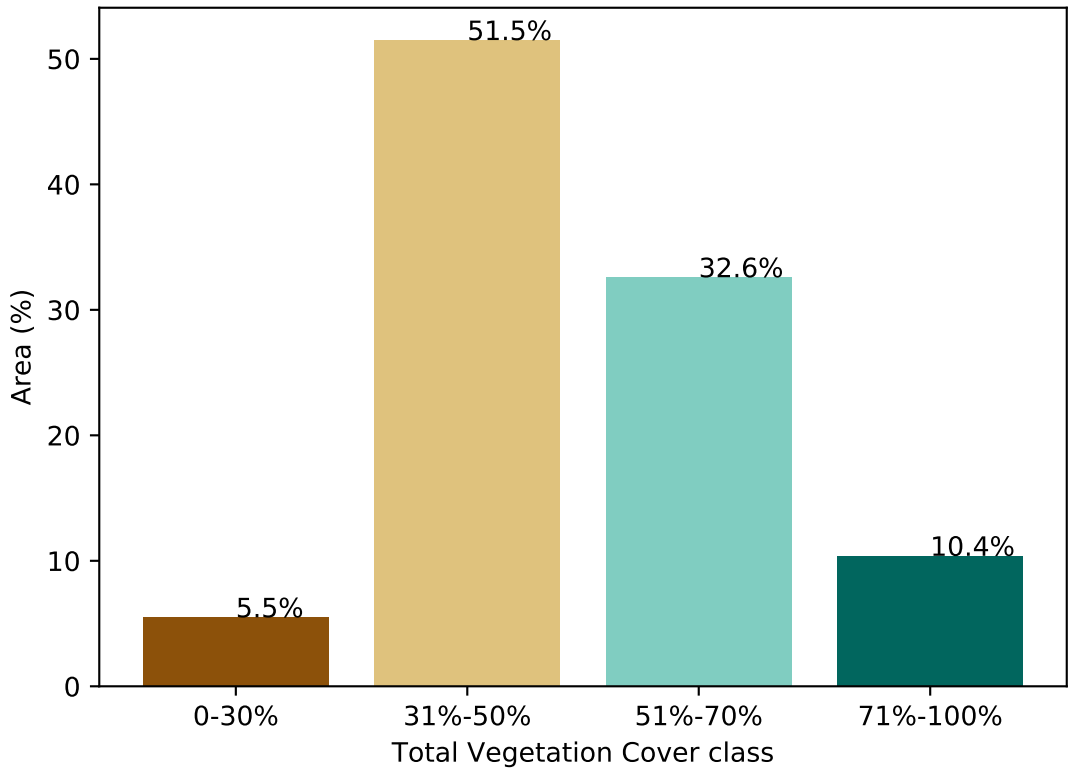
Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.



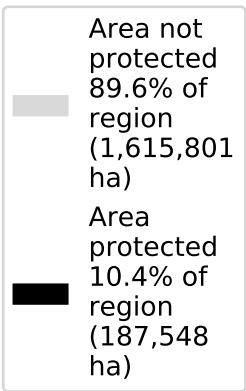
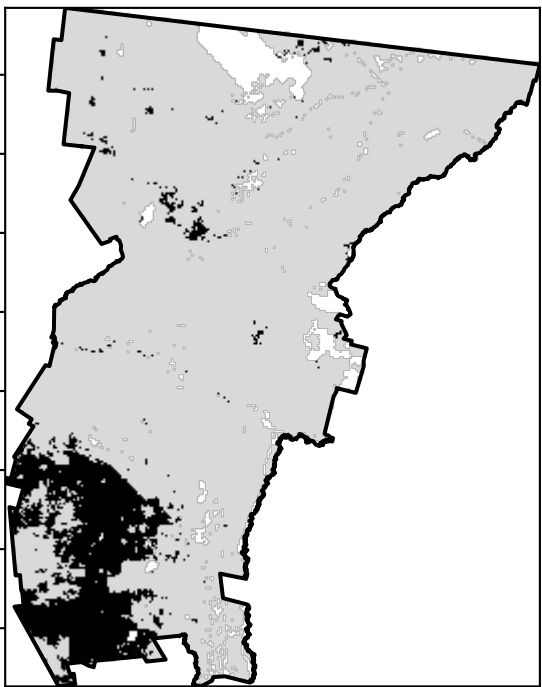
Total Vegetation Cover [%]



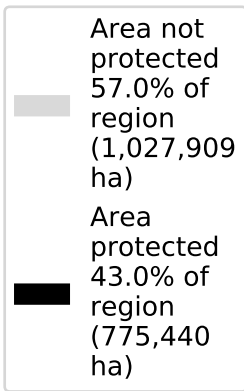
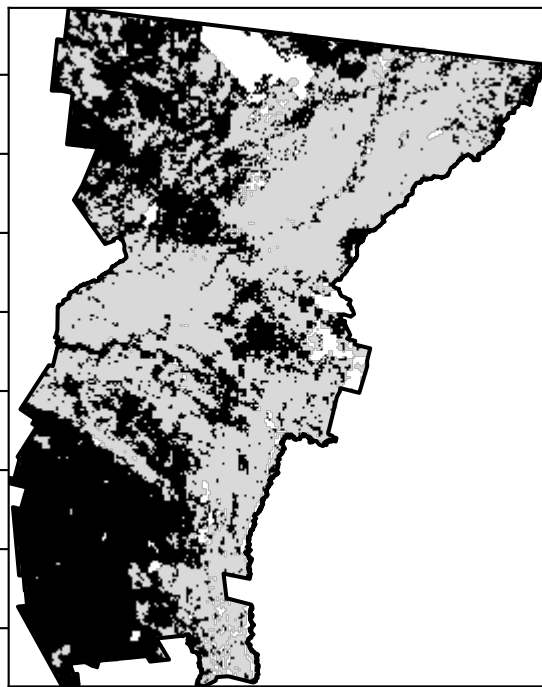
Proportion of vegetation cover class in area



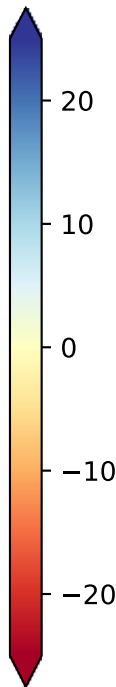
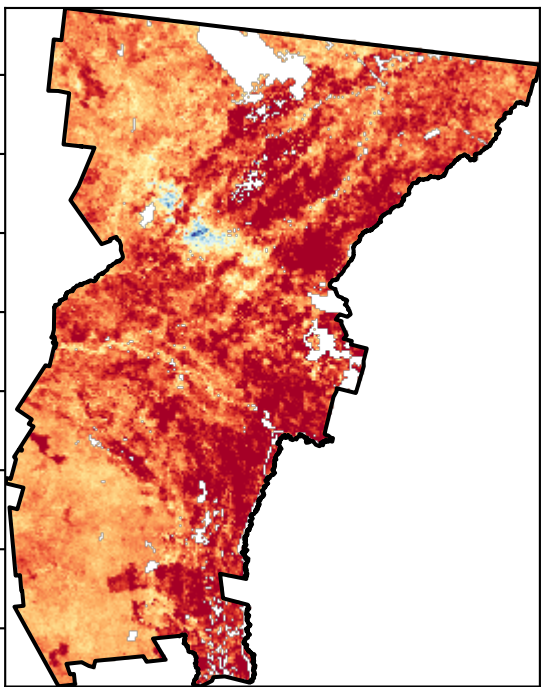
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)



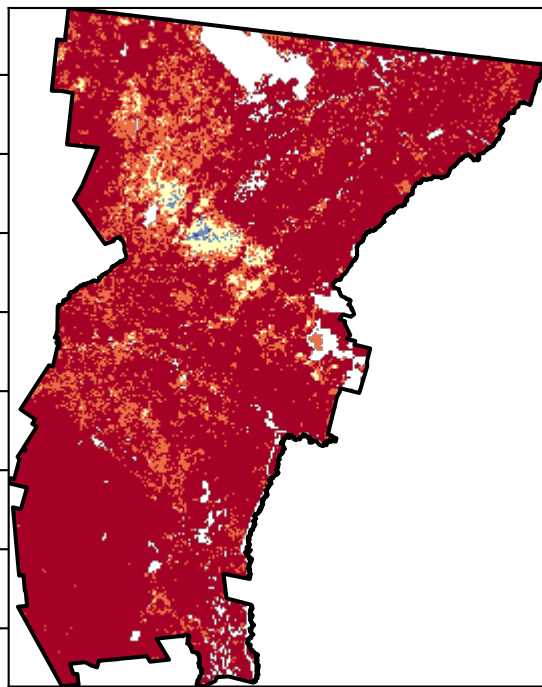
Total Vegetation Cover Anomaly [%]



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Total Vegetation Cover Decile [%]



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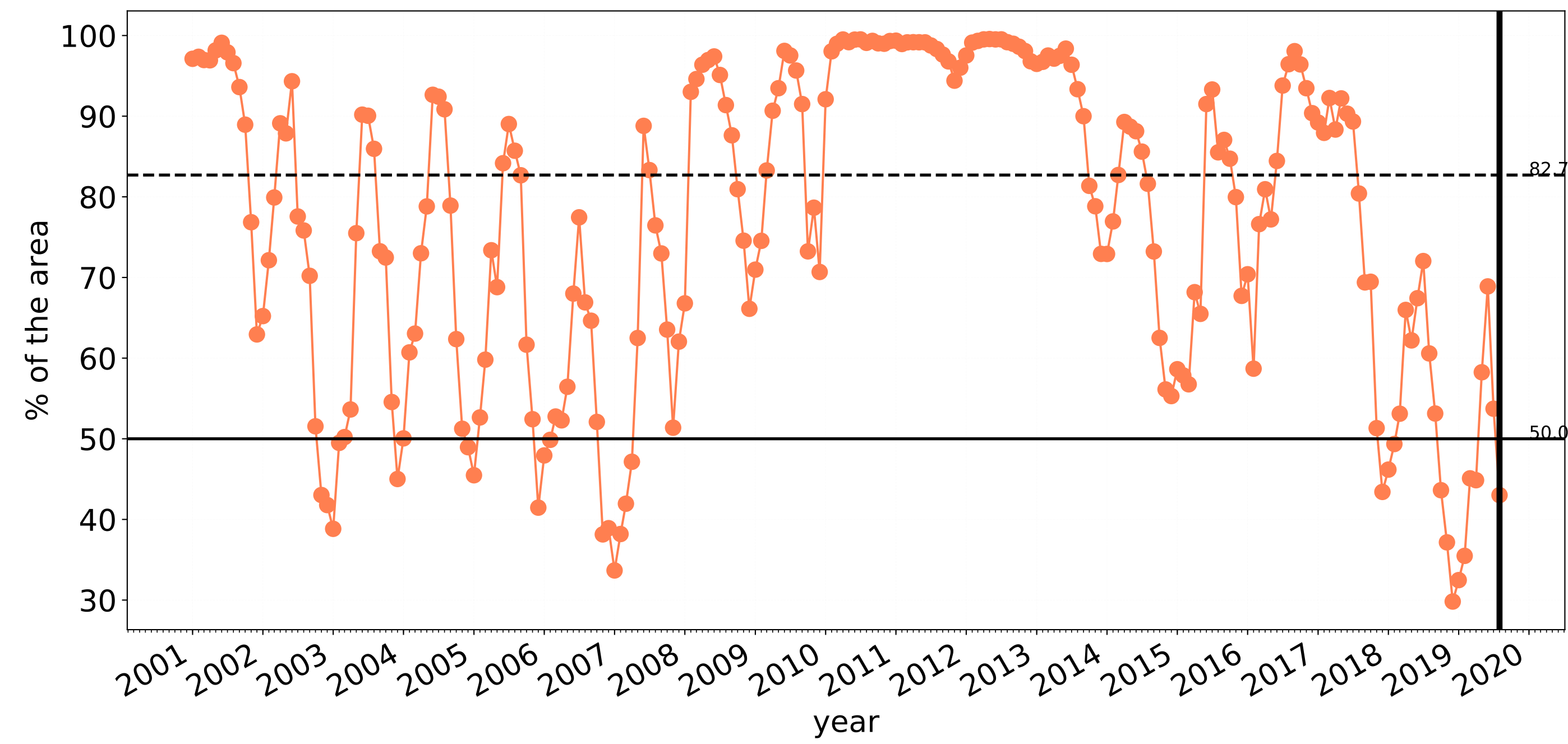


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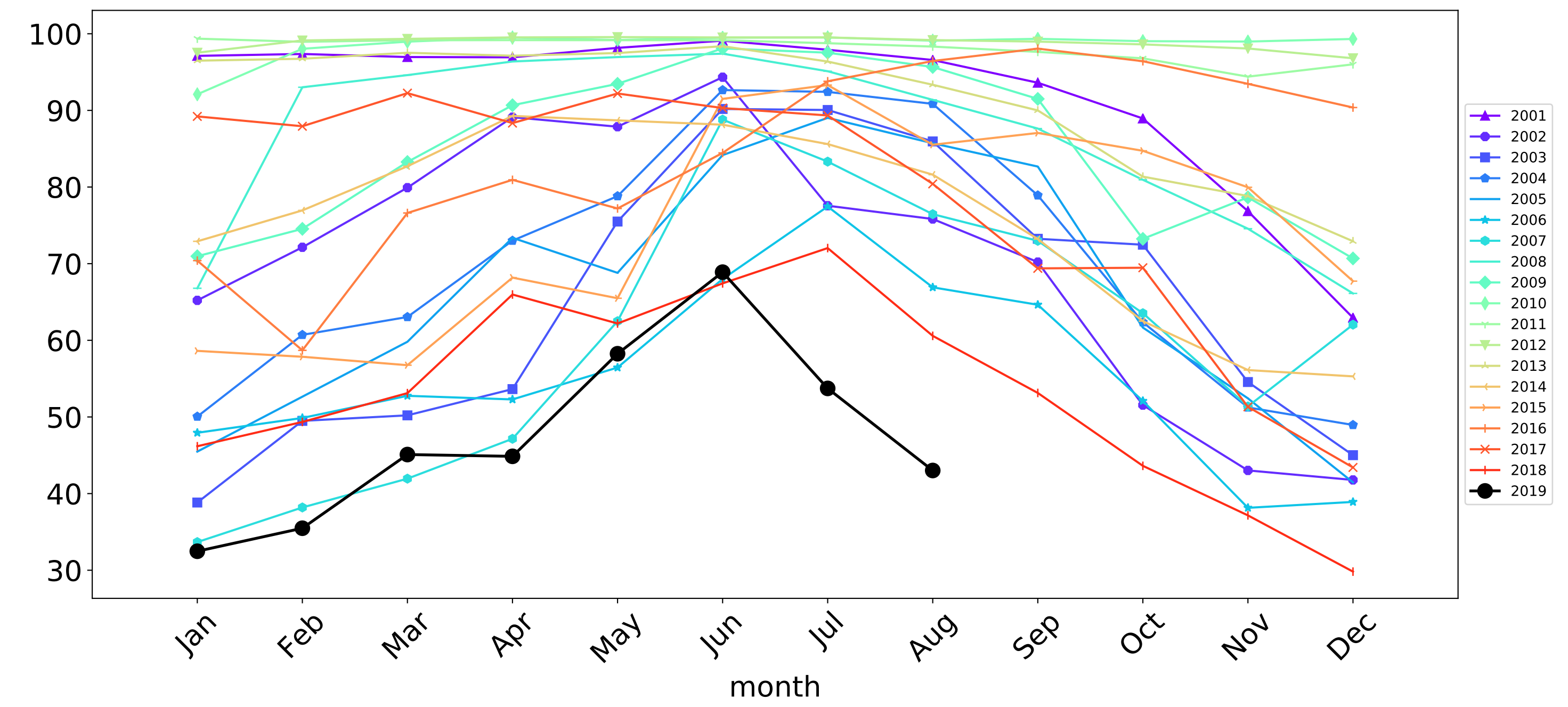


# Agriculture timeseries

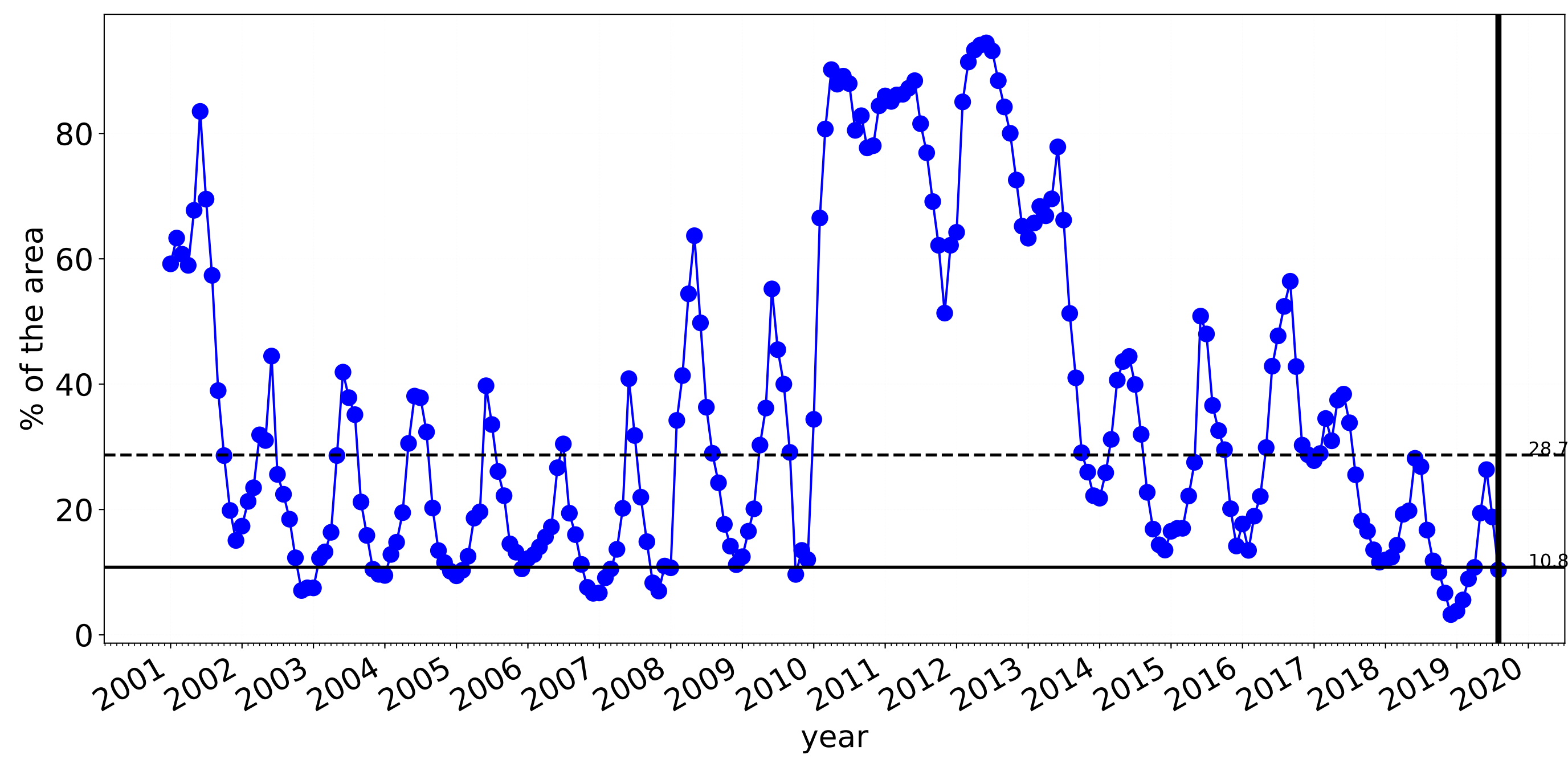
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



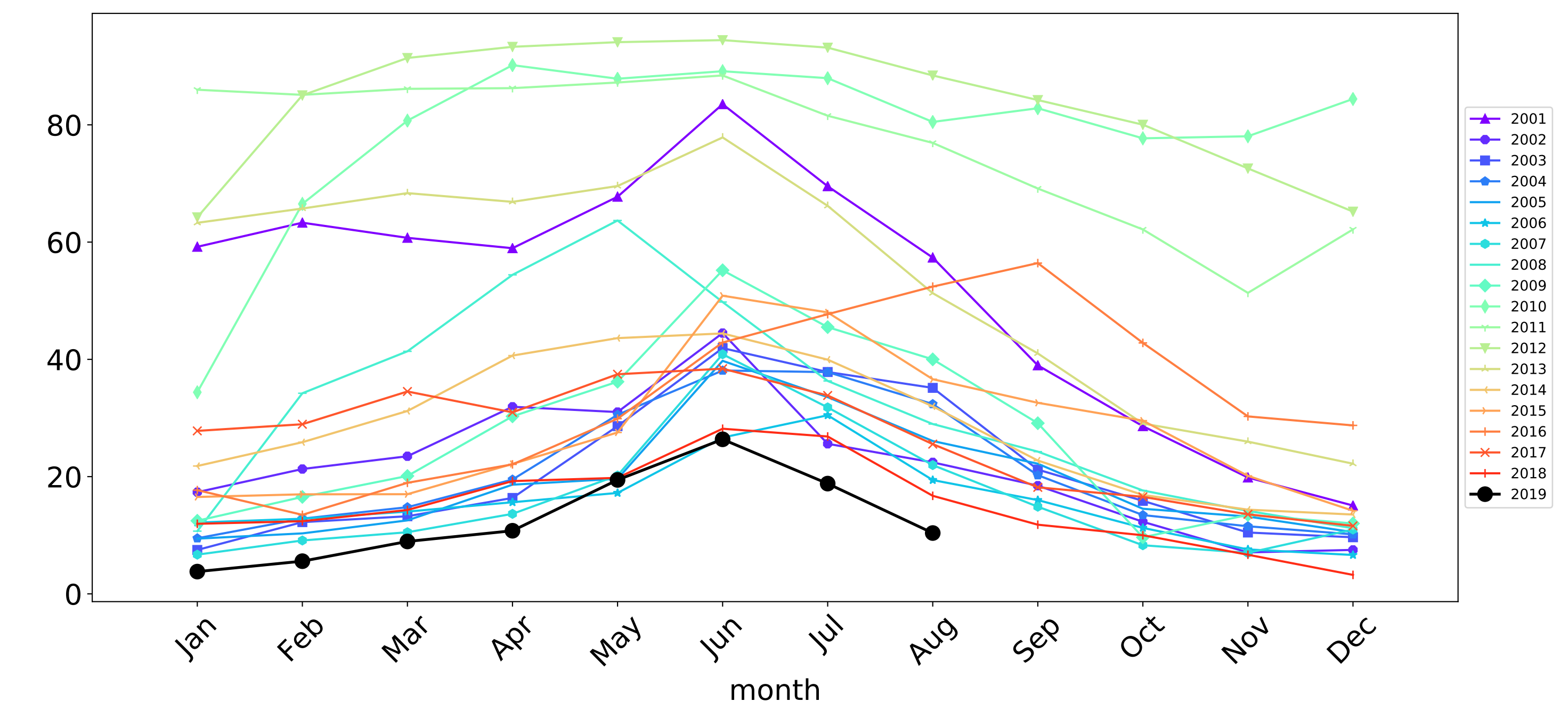
Wind erosion historical monthly area protected (Total Veg Cov > 50%)



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



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

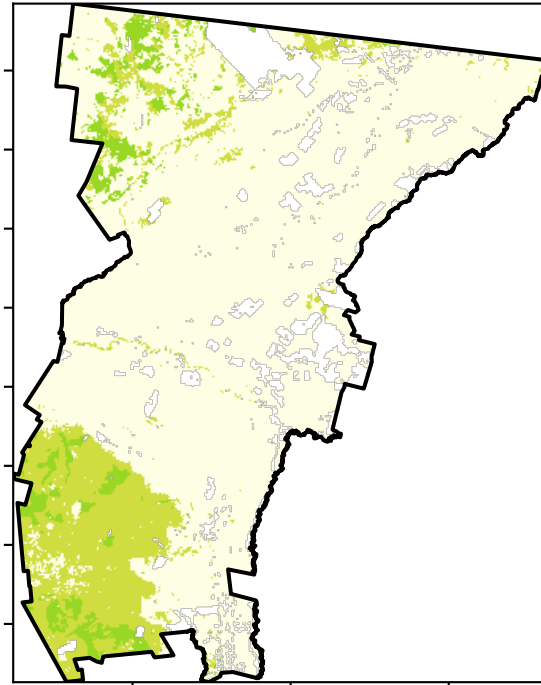




# Grazing

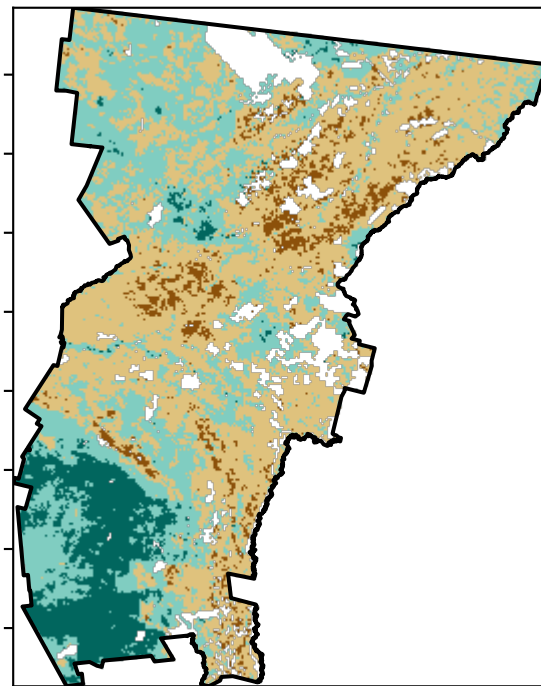
Land use and forest cover

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.



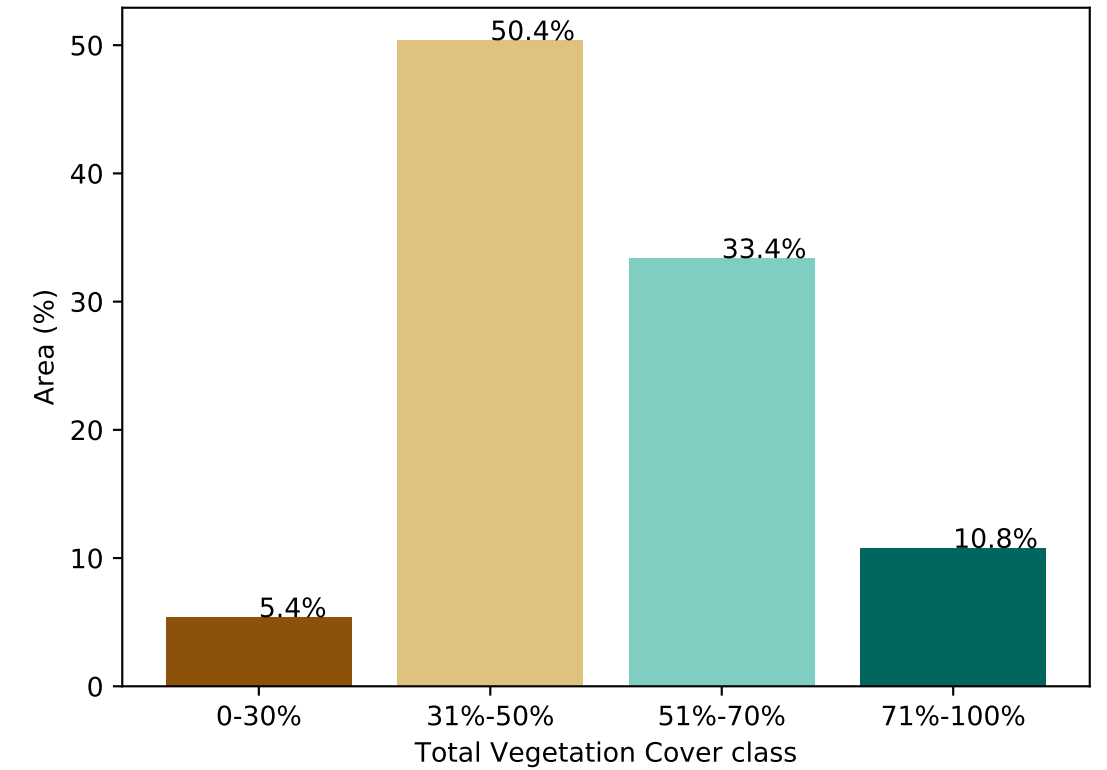
Agriculture - Grazing - Non forest  
Agriculture - Grazing - Woodland forest  
Agriculture - Grazing - Non-oodland forest

Total Vegetation Cover [%]

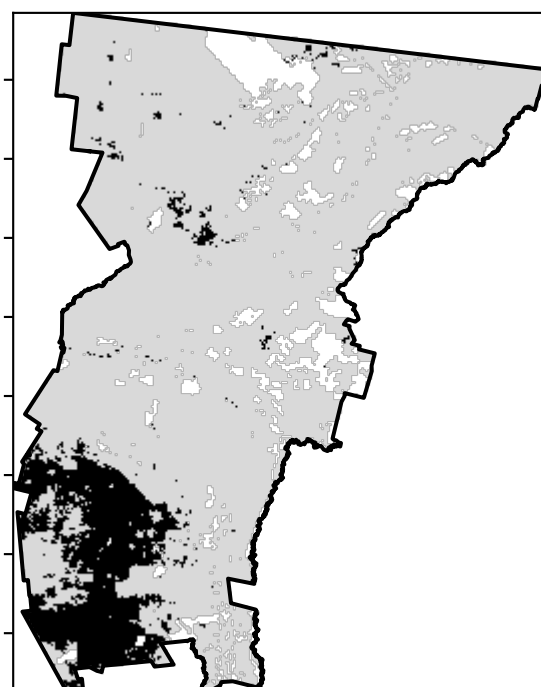


71%-100%  
51%-70%  
31%-50%  
0-30%

Proportion of vegetation cover class in area

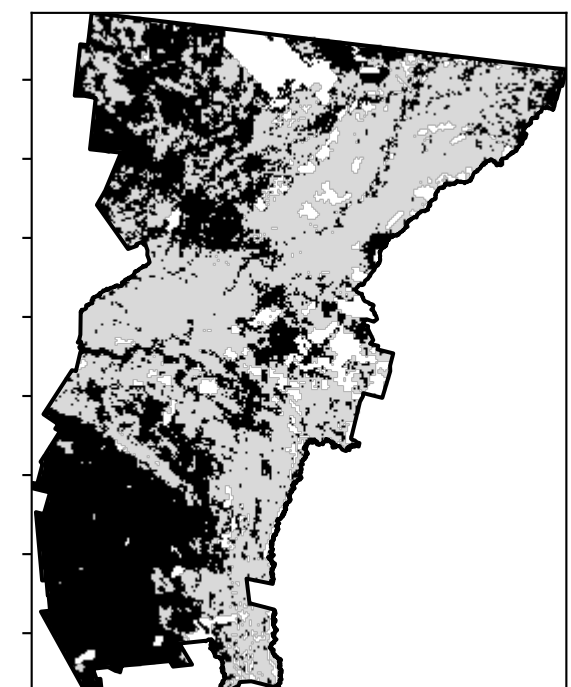


% Area protected from water erosion (>70%)



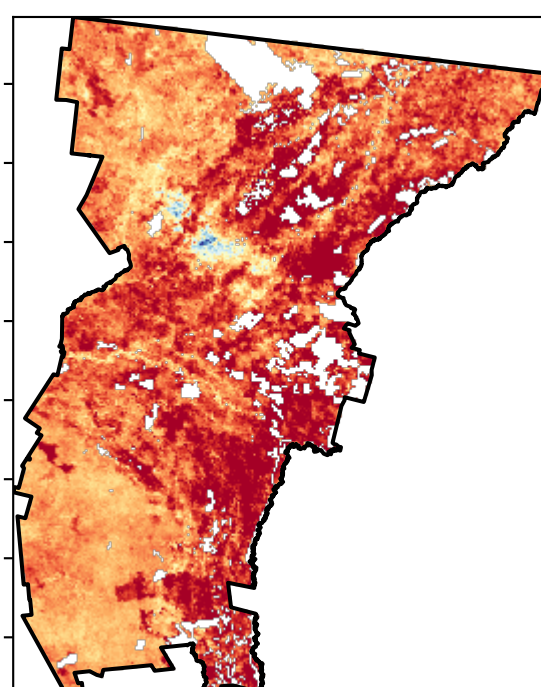
Area not protected  
89.2% of region  
(1,540,261 ha)  
Area protected  
10.8% of region  
(186,489 ha)

% Area protected from wind erosion (>50%)



Area not protected  
56.0% of region  
(966,980 ha)  
Area protected  
44.0% of region  
(759,770 ha)

Total Vegetation Cover Anomaly [%]

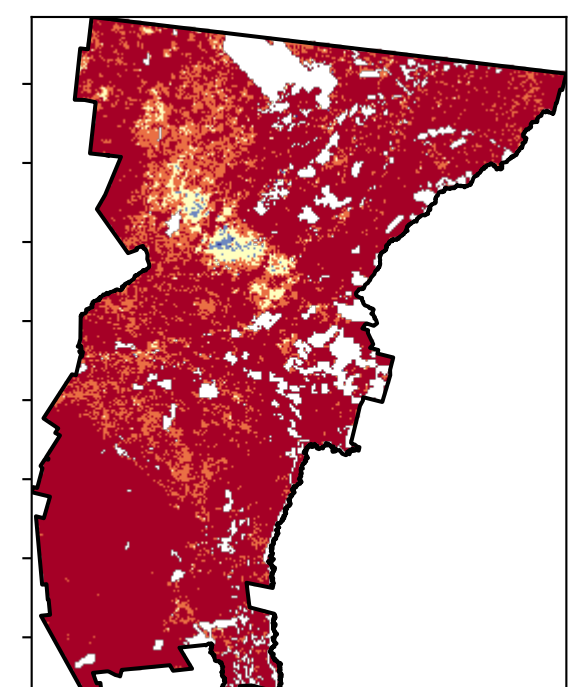


20  
10  
0  
-10  
-20

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

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

Total Vegetation Cover Decile [%]



10  
8-9  
4-7  
2-3  
1



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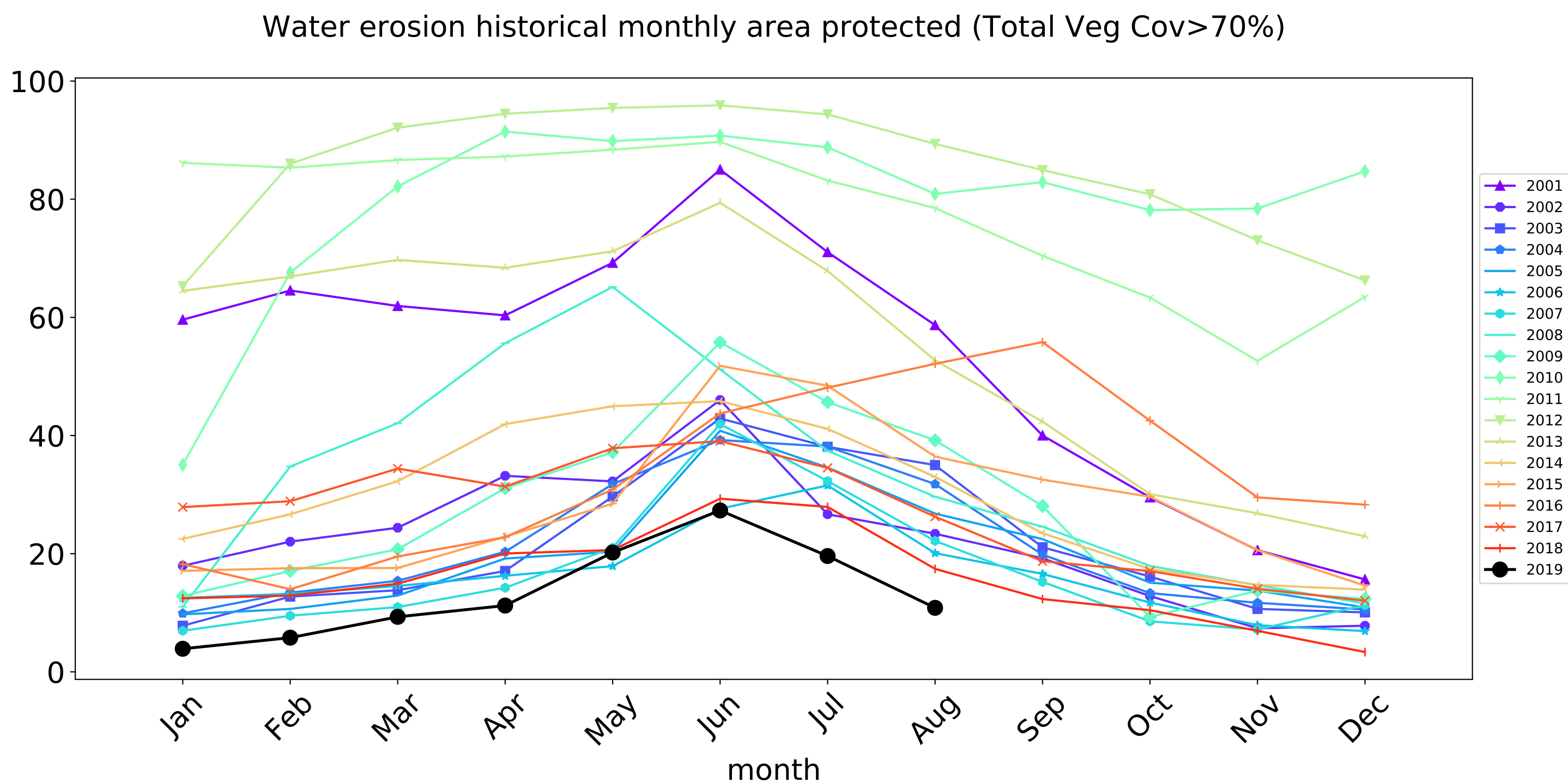
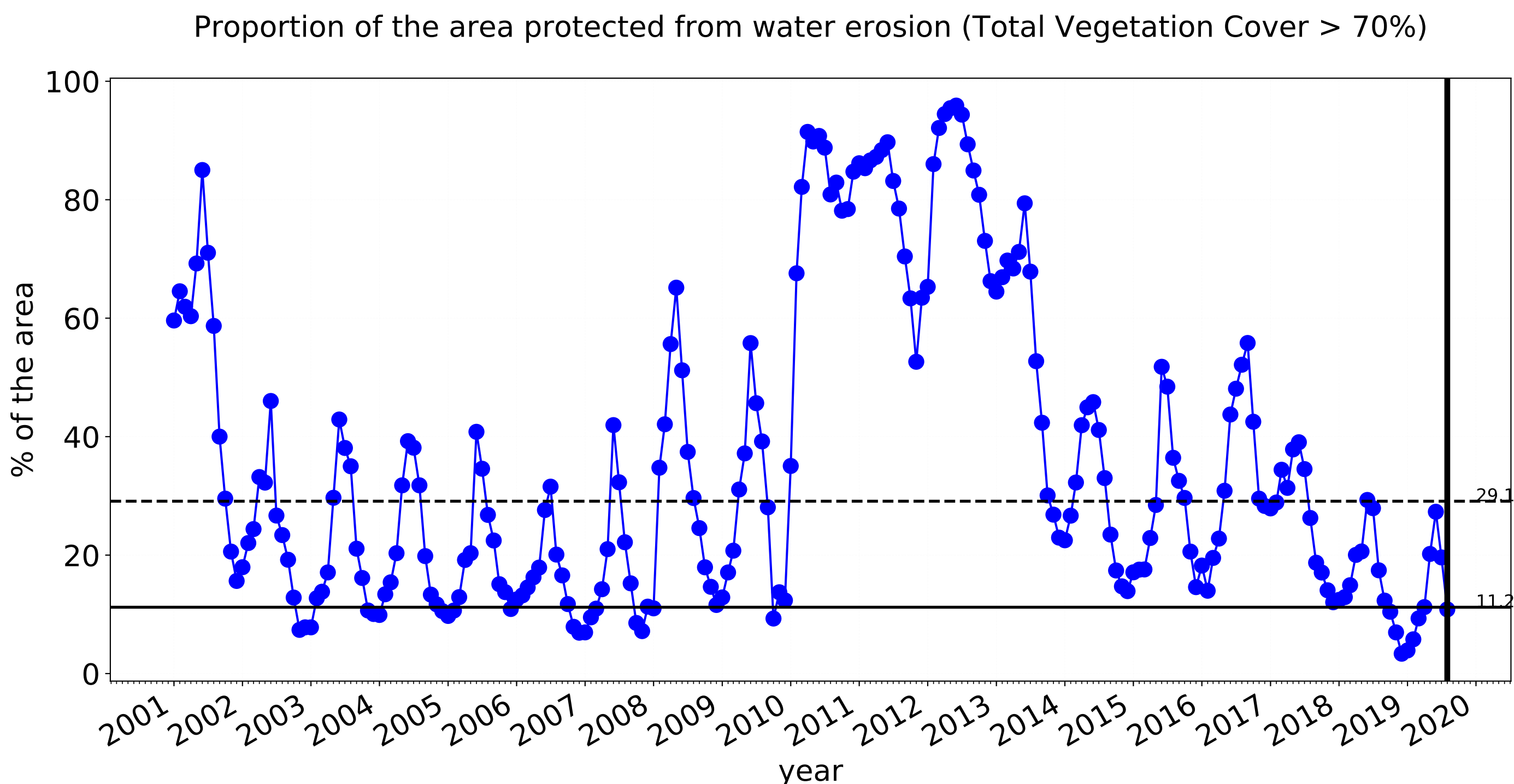
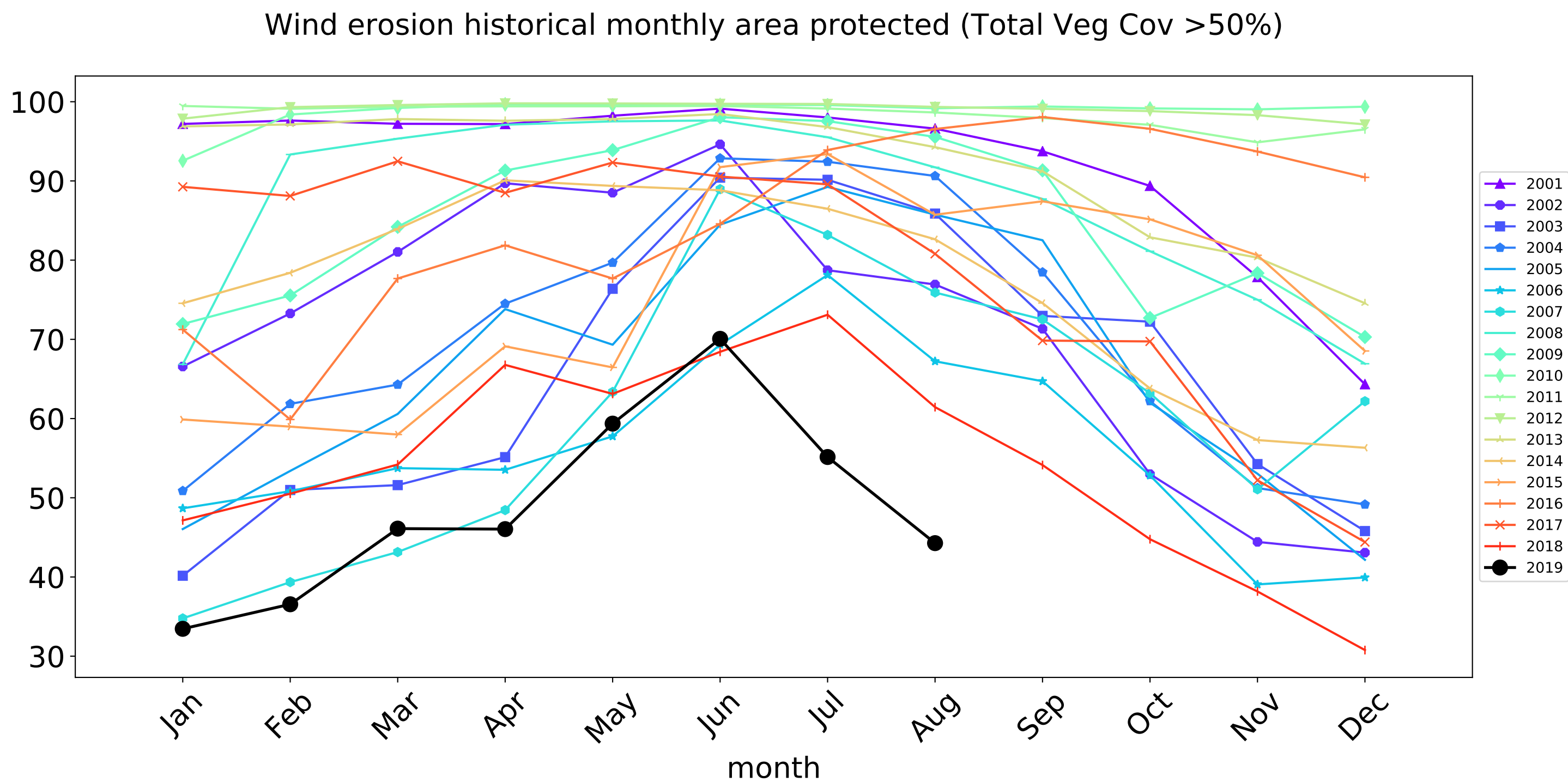
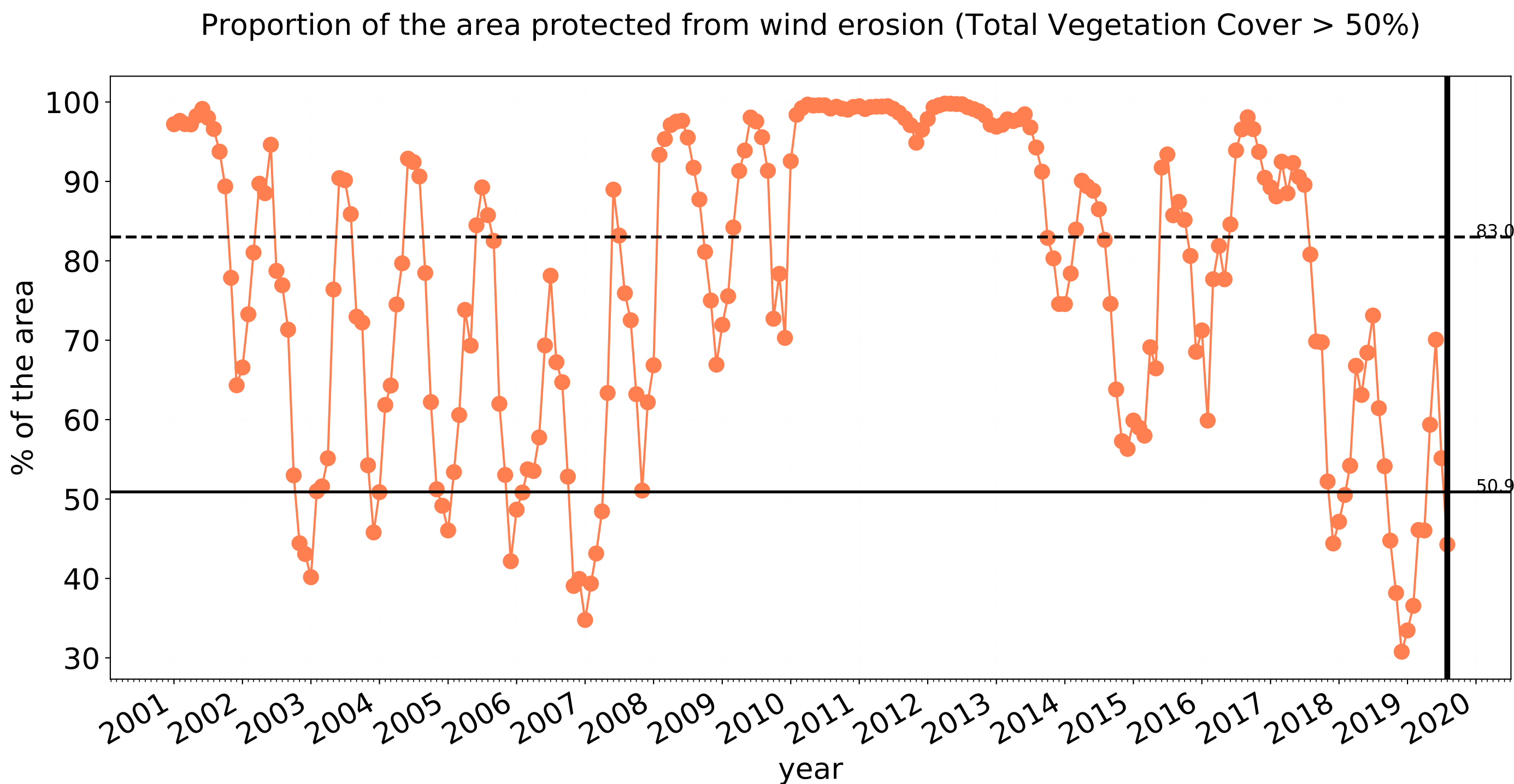
National  
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Programme



Planning,  
Industry &  
Environment



Grazing timeseries

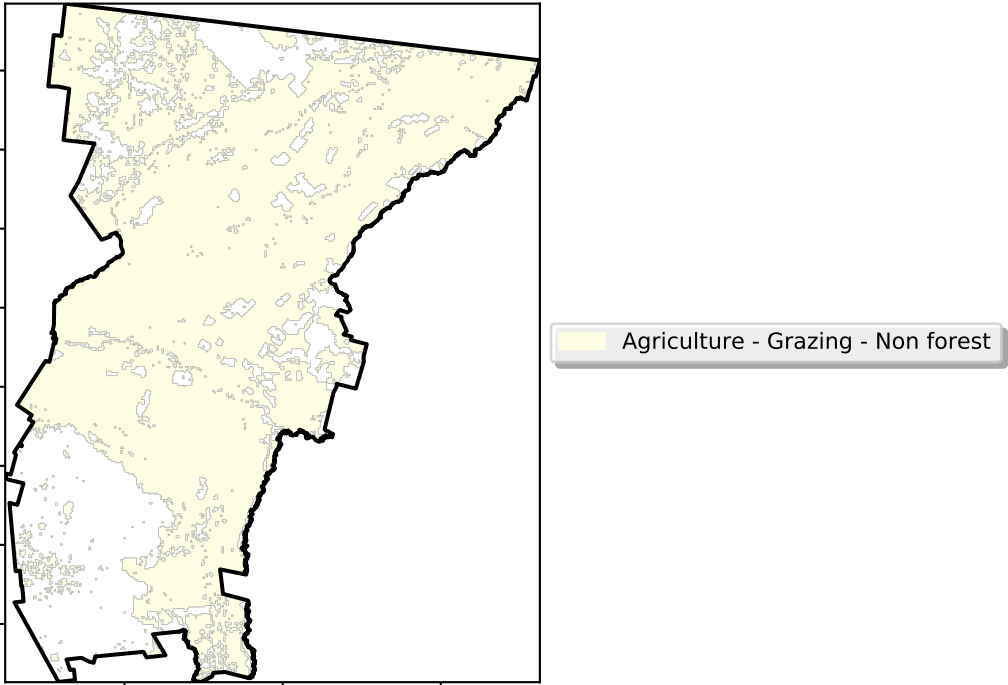




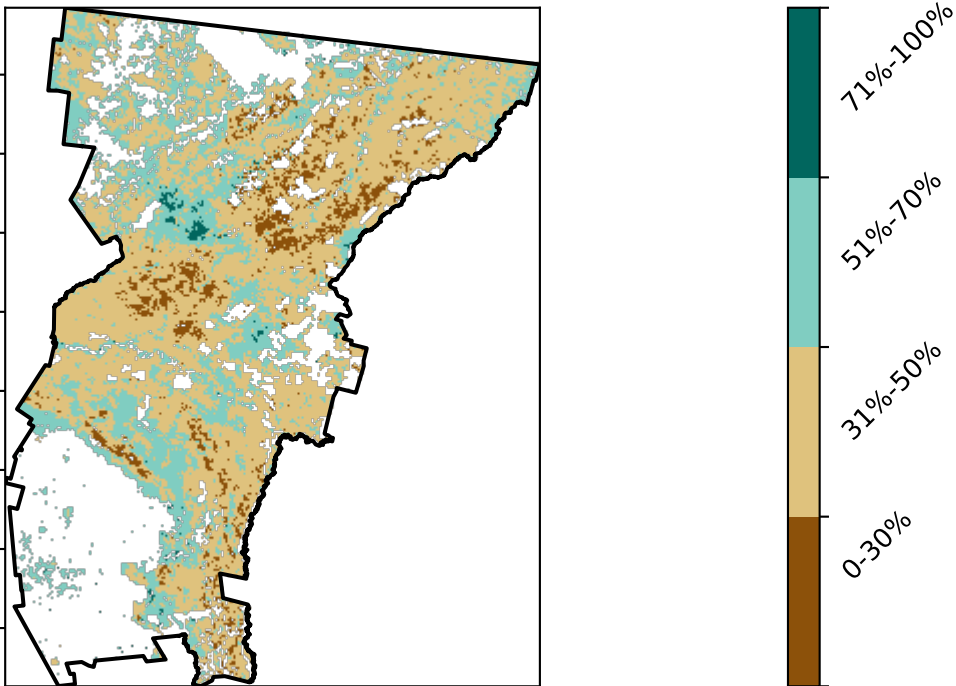
Grazing non forest

Land use and forest cover

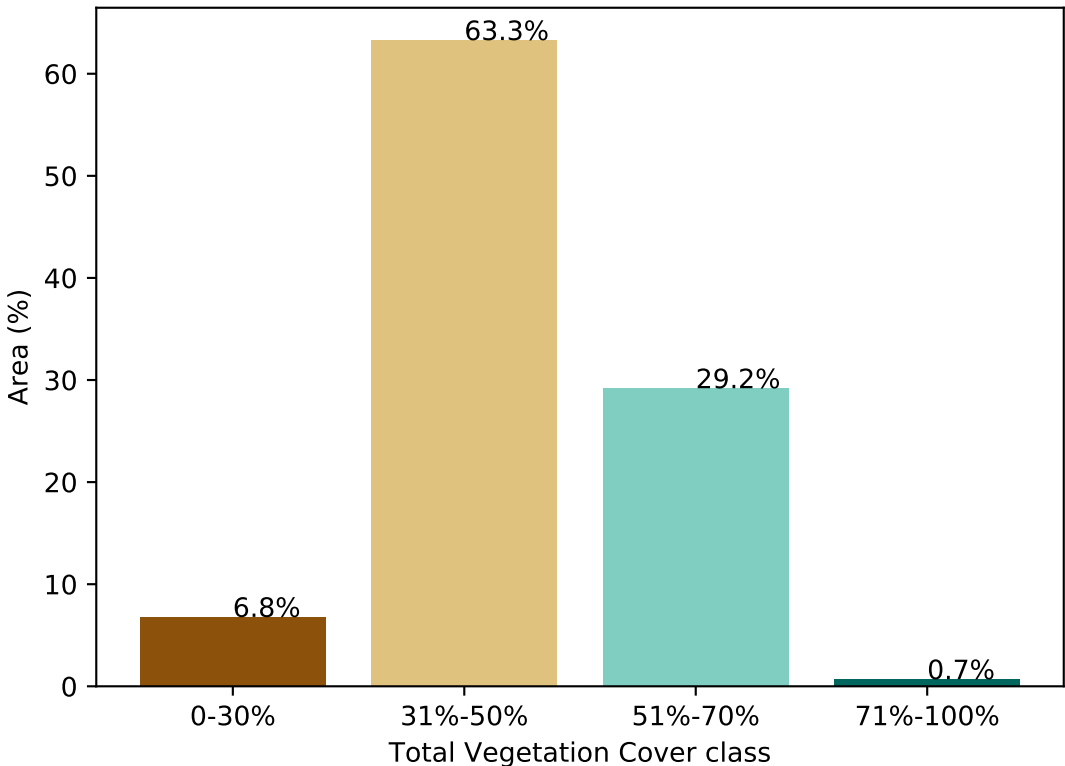
Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.



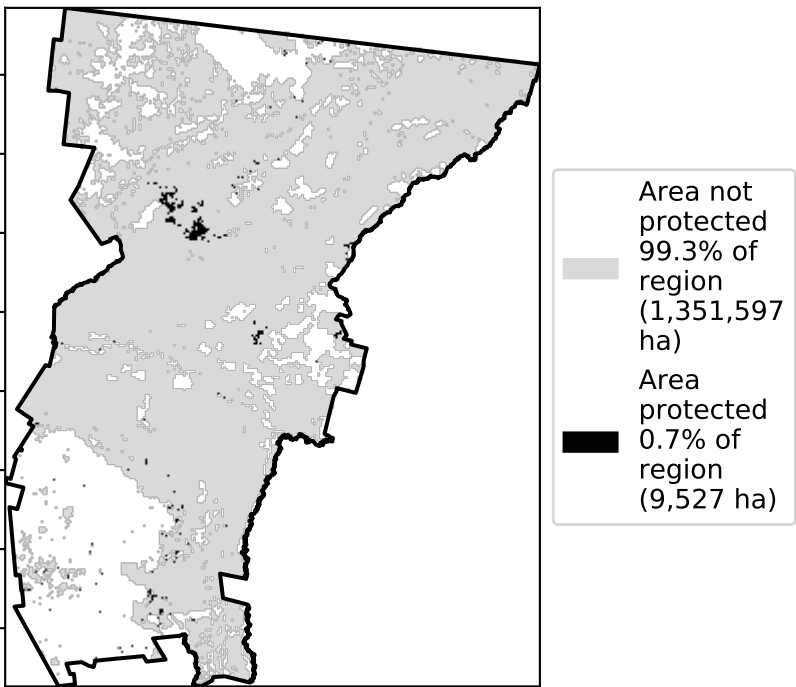
Total Vegetation Cover [%]



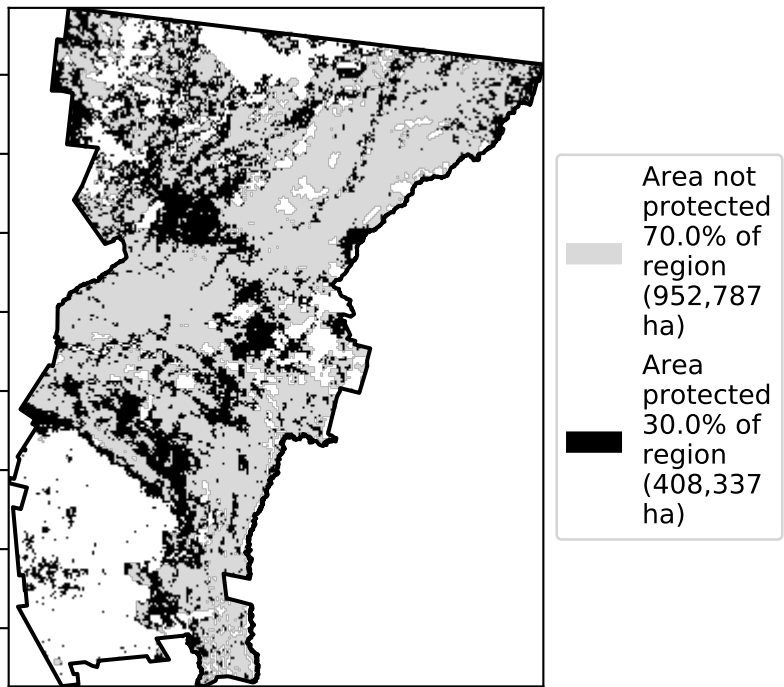
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

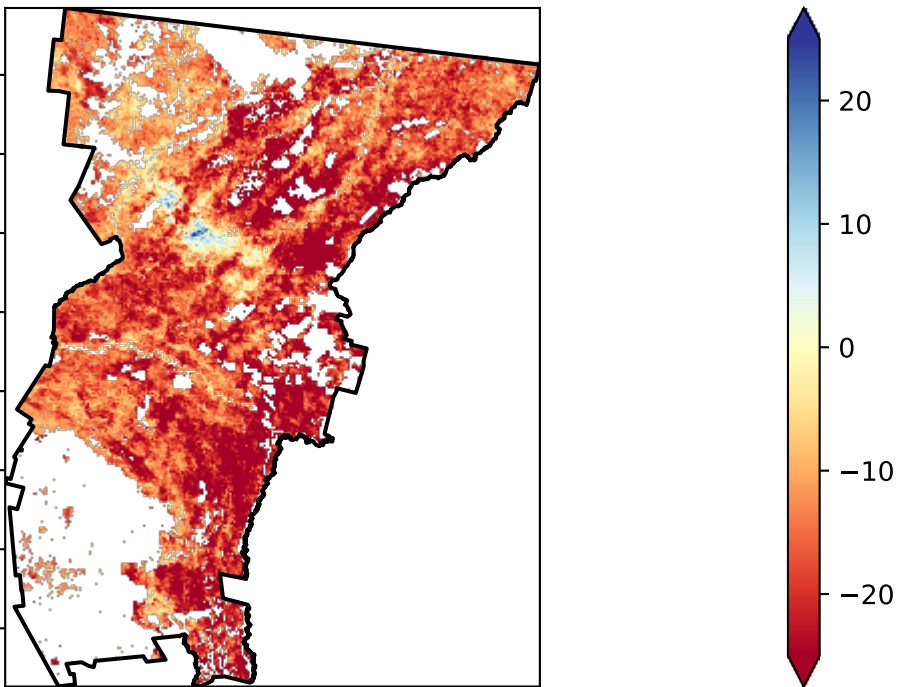


% Area protected from wind erosion (>50%)



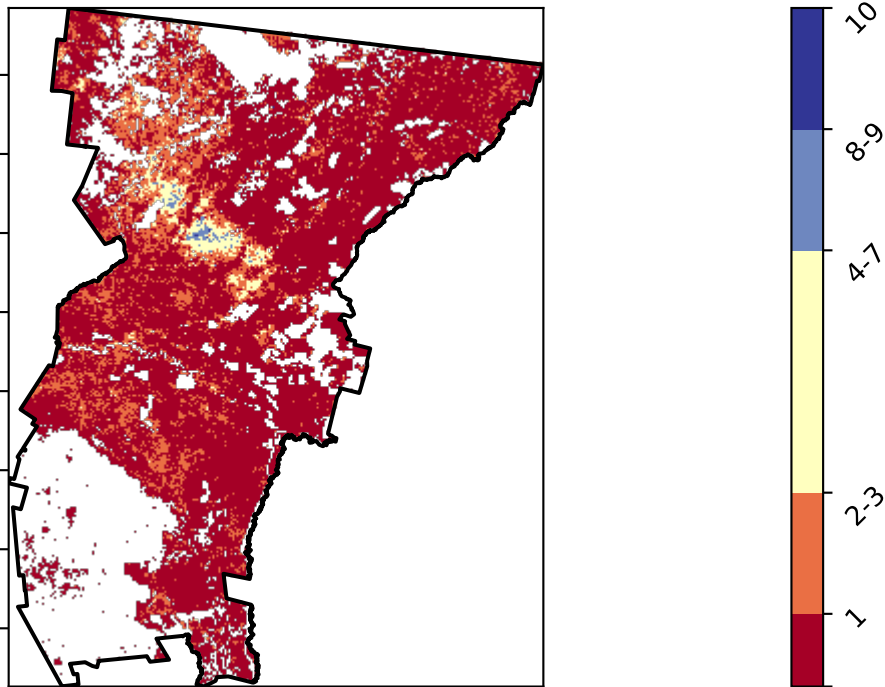
Total Vegetation Cover Anomaly [%]

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



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

Total Vegetation Cover Decile [%]



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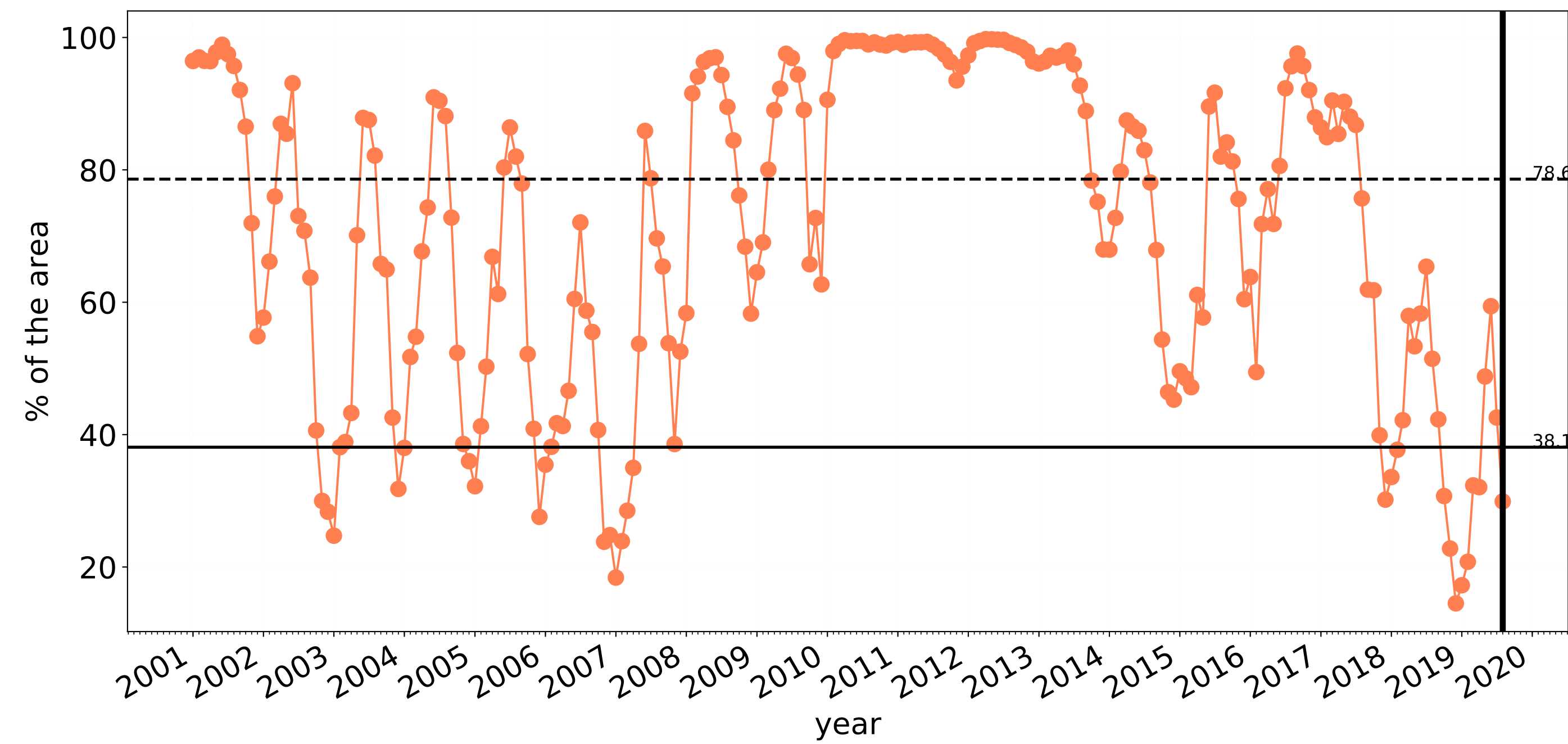


Planning, Industry & Environment

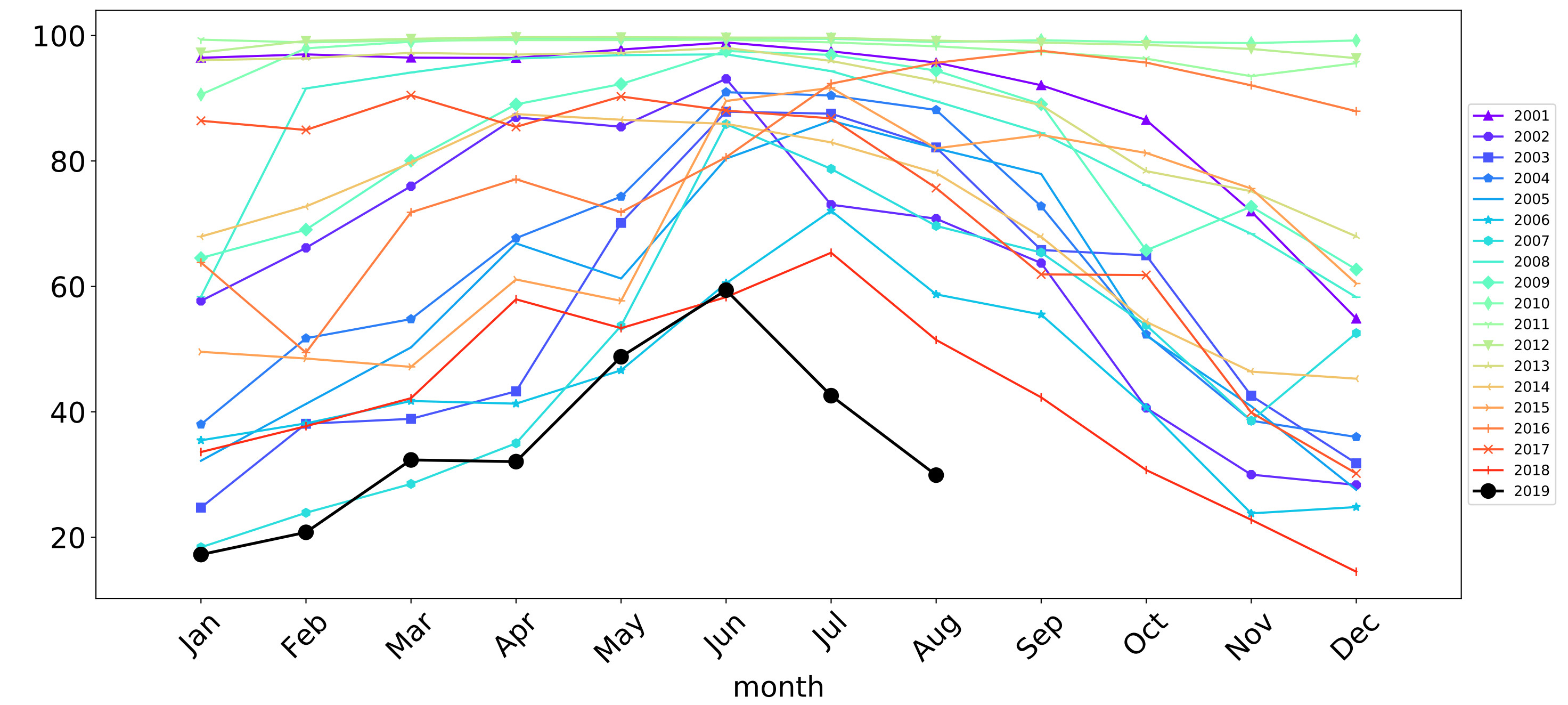


# Grazing non forest timeseries

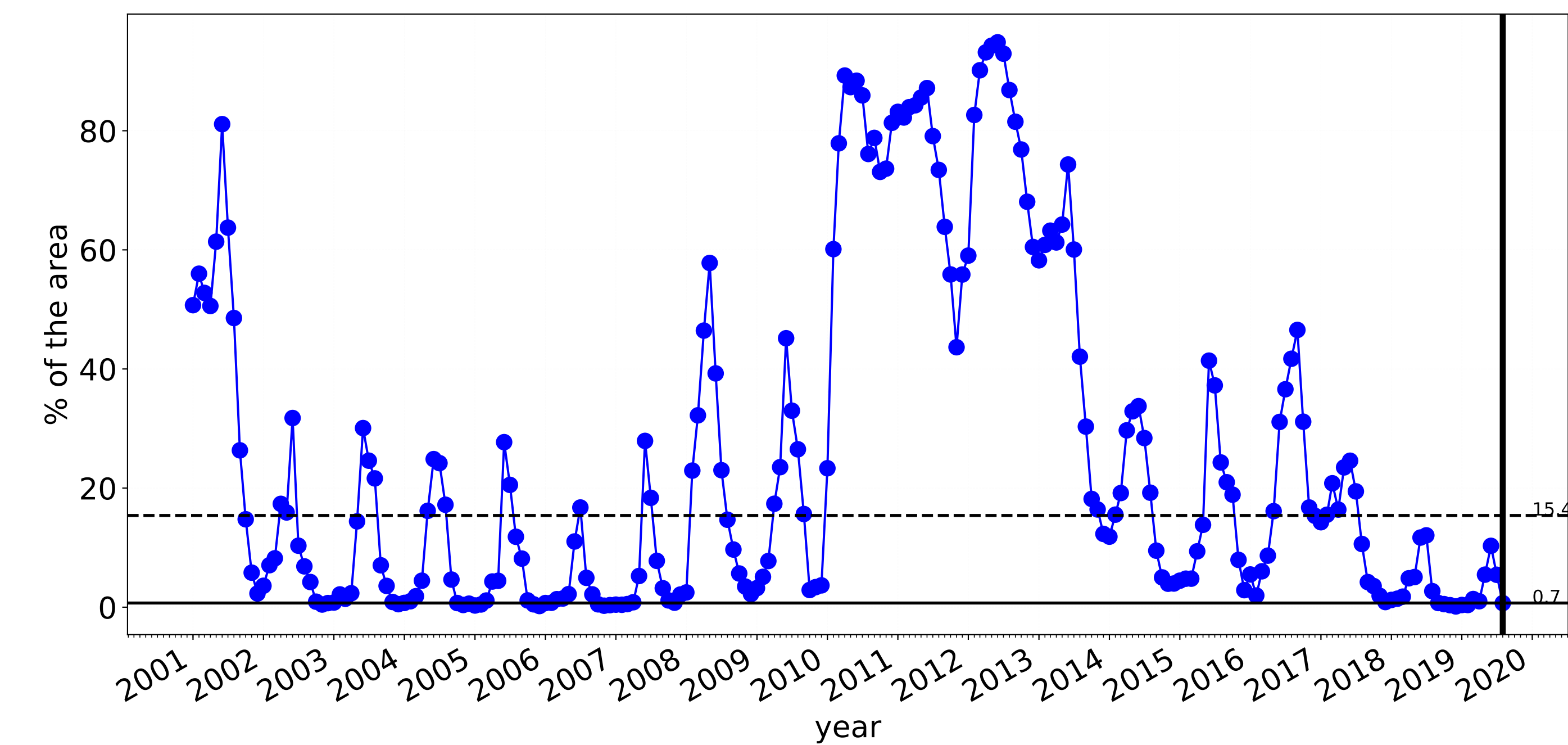
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



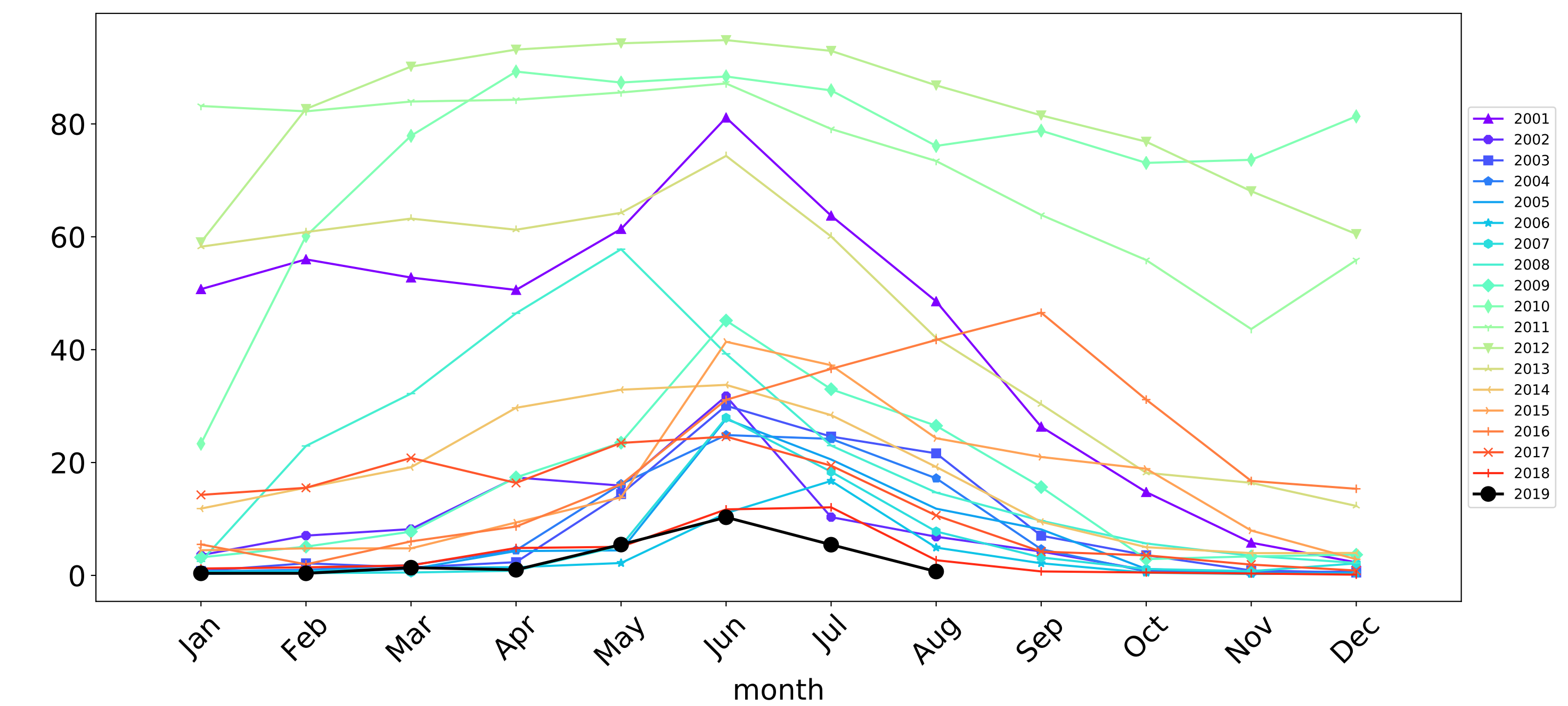
Wind erosion historical monthly area protected (Total Veg Cov > 50%)



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



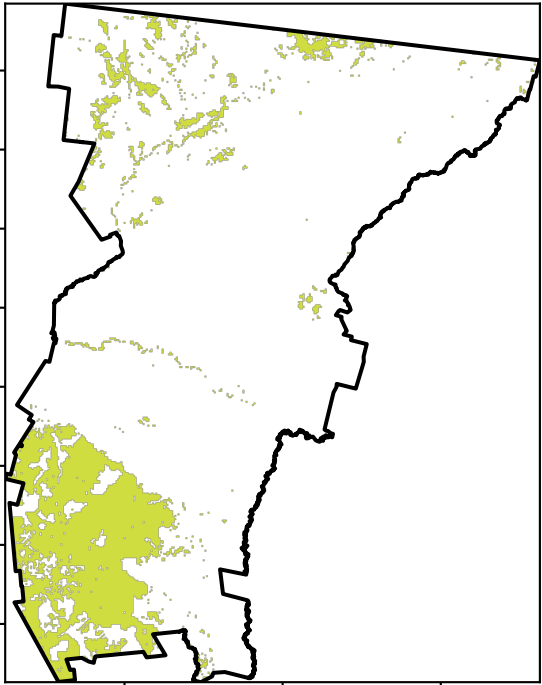
Water erosion historical monthly area protected (Total Veg Cov > 70%)



Grazing Woodland forest

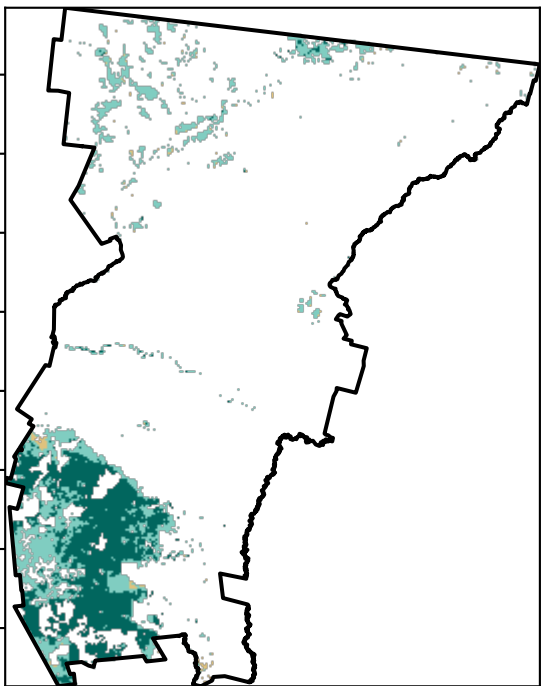
Land use and forest cover

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.

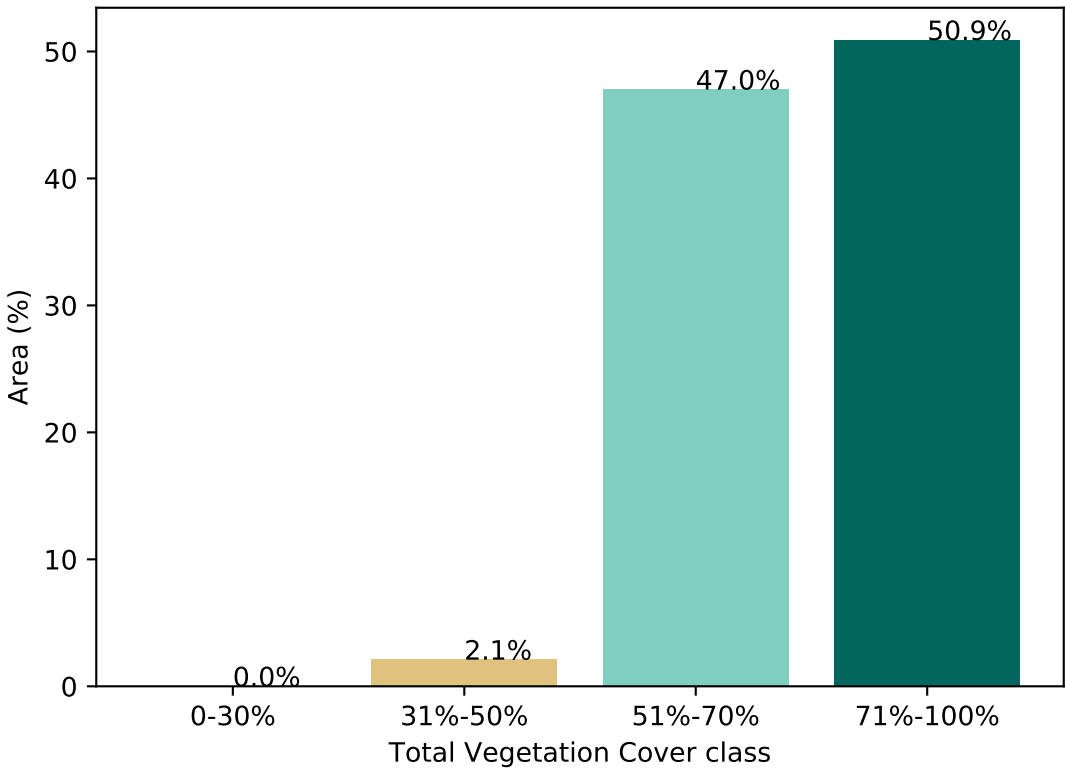


Agriculture - Grazing - Woodland forest

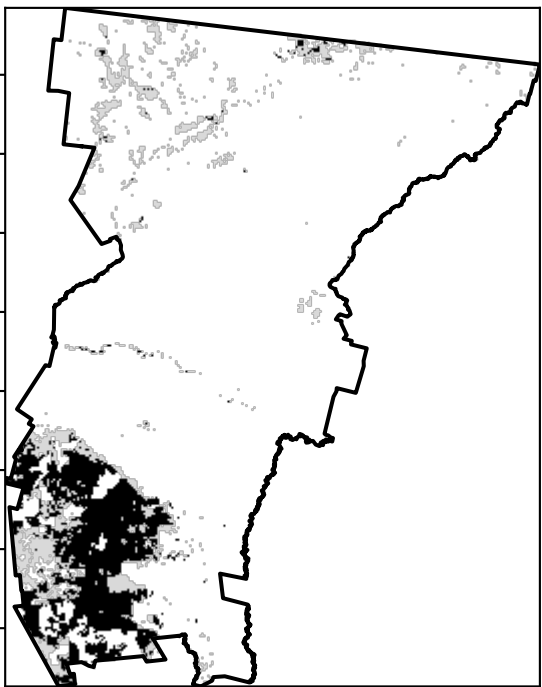
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

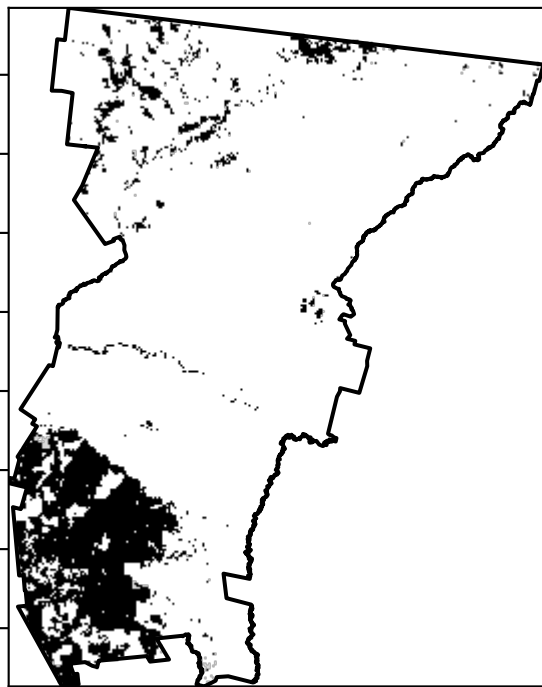


% Area protected from water erosion (>70%)



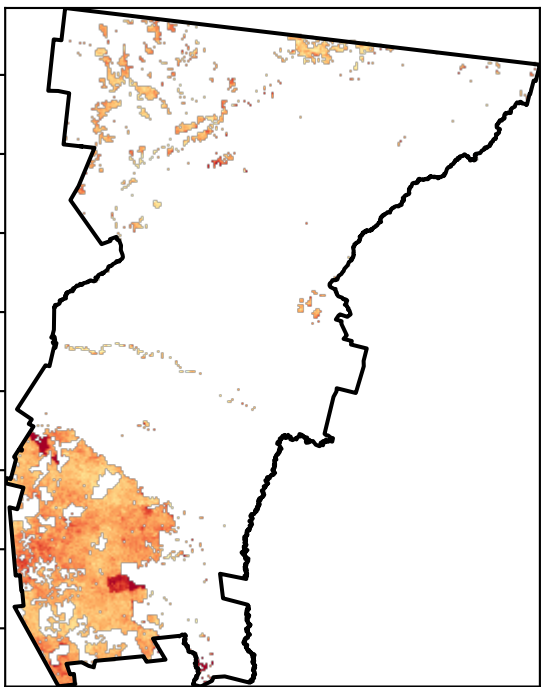
Area not protected  
49.1% of region  
(137,885 ha)  
Area protected  
50.9% of region  
(142,939 ha)

% Area protected from wind erosion (>50%)



Area not protected  
2.0% of region  
(5,616 ha)  
Area protected  
98.0% of region  
(275,208 ha)

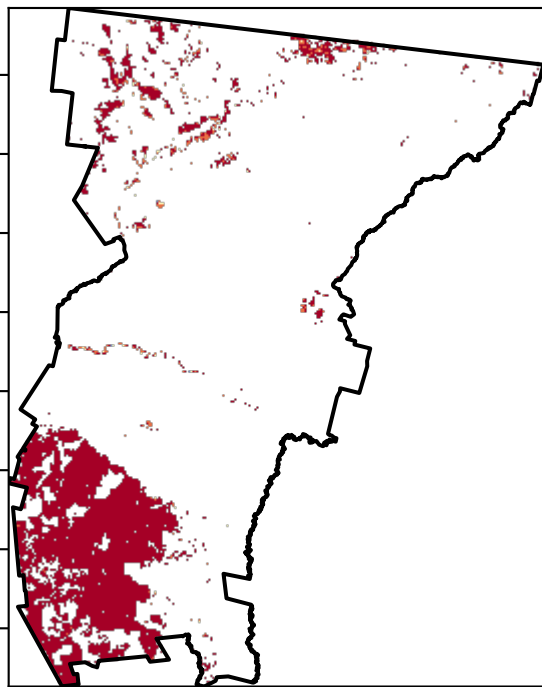
Total Vegetation Cover Anomaly [%]



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

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

Total Vegetation Cover Decile [%]



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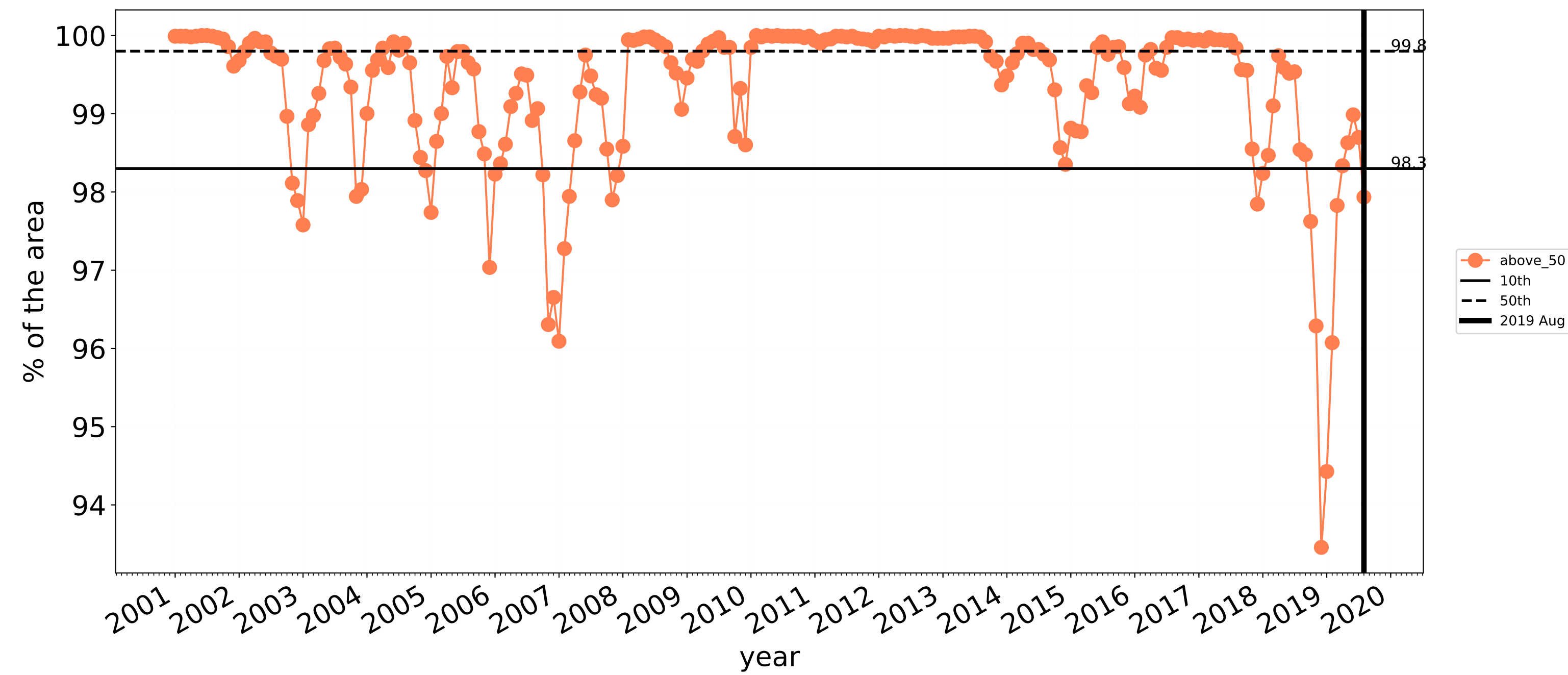


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Environment

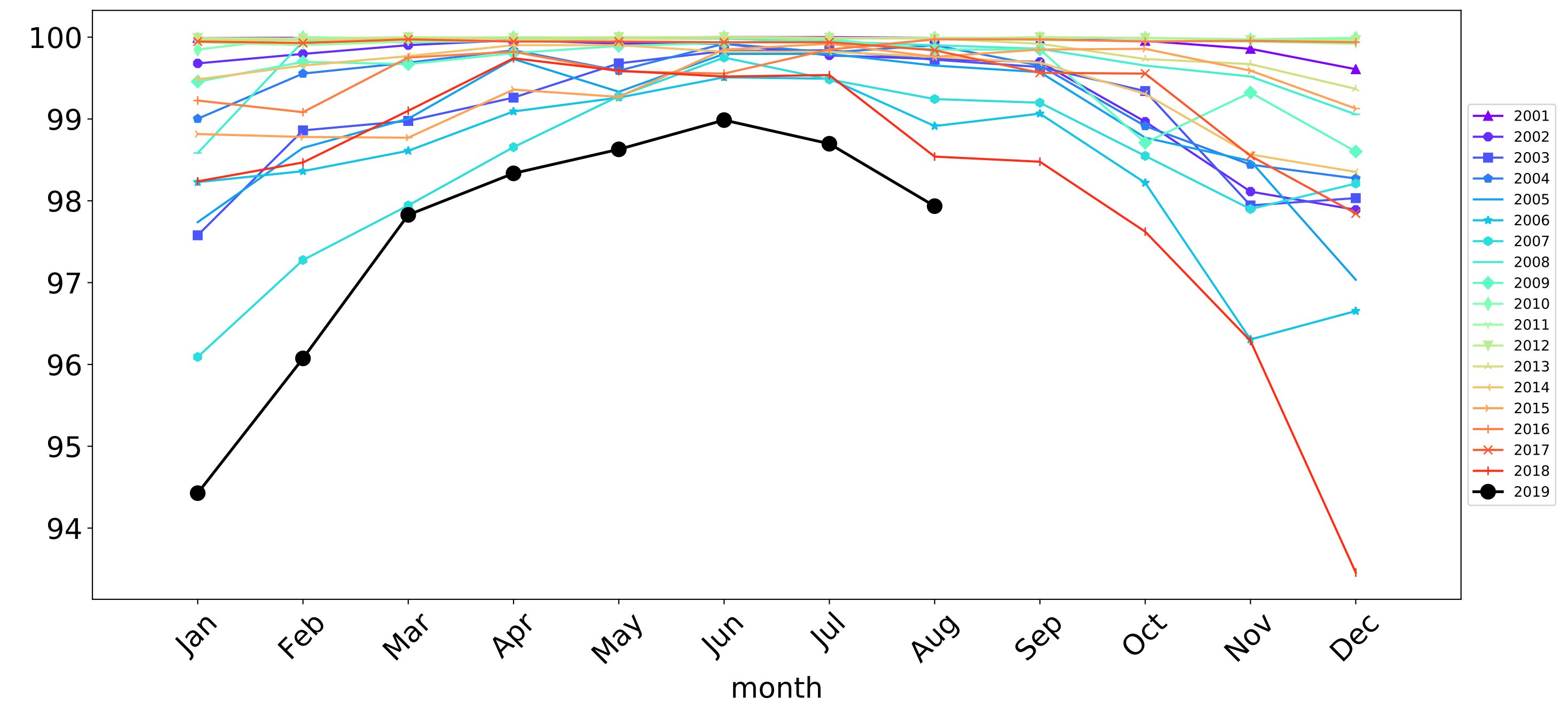


# Grazing Woodland forest timeseries

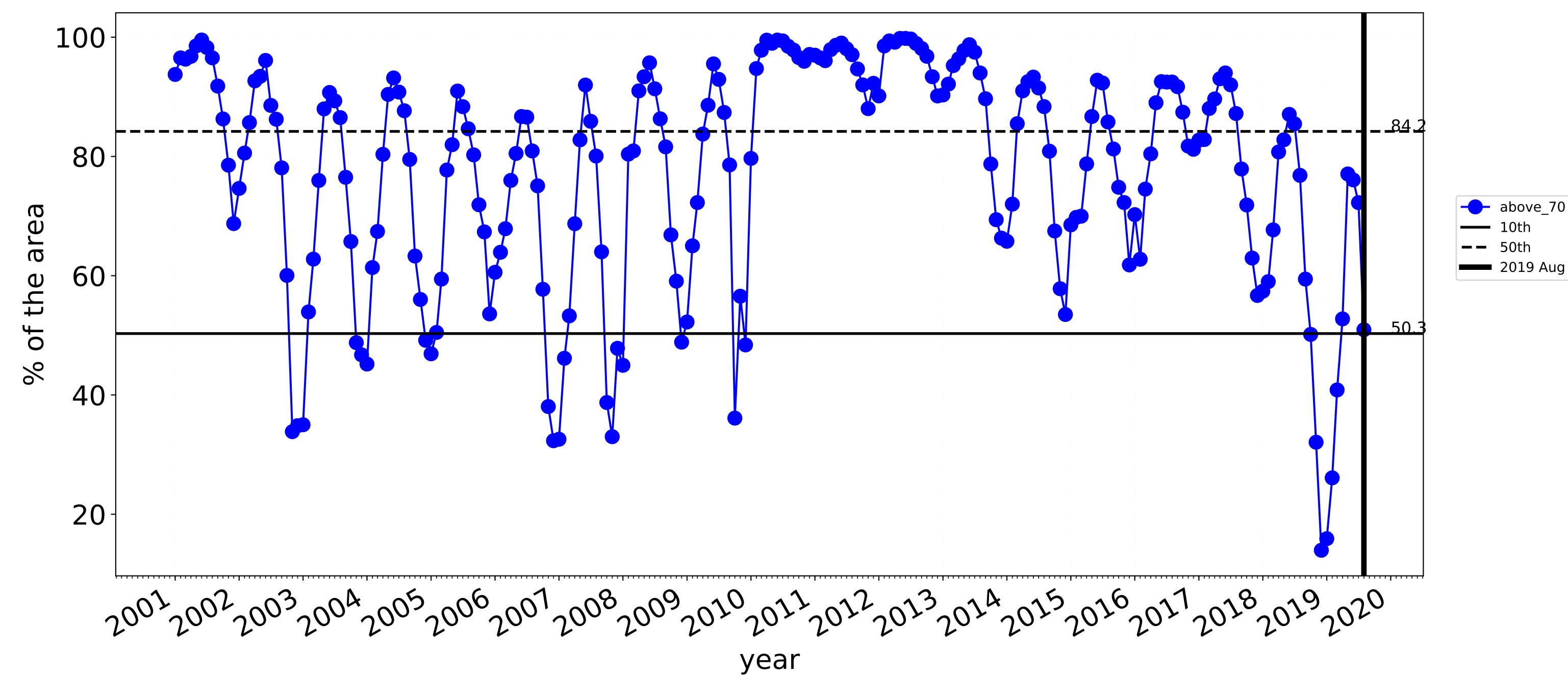
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



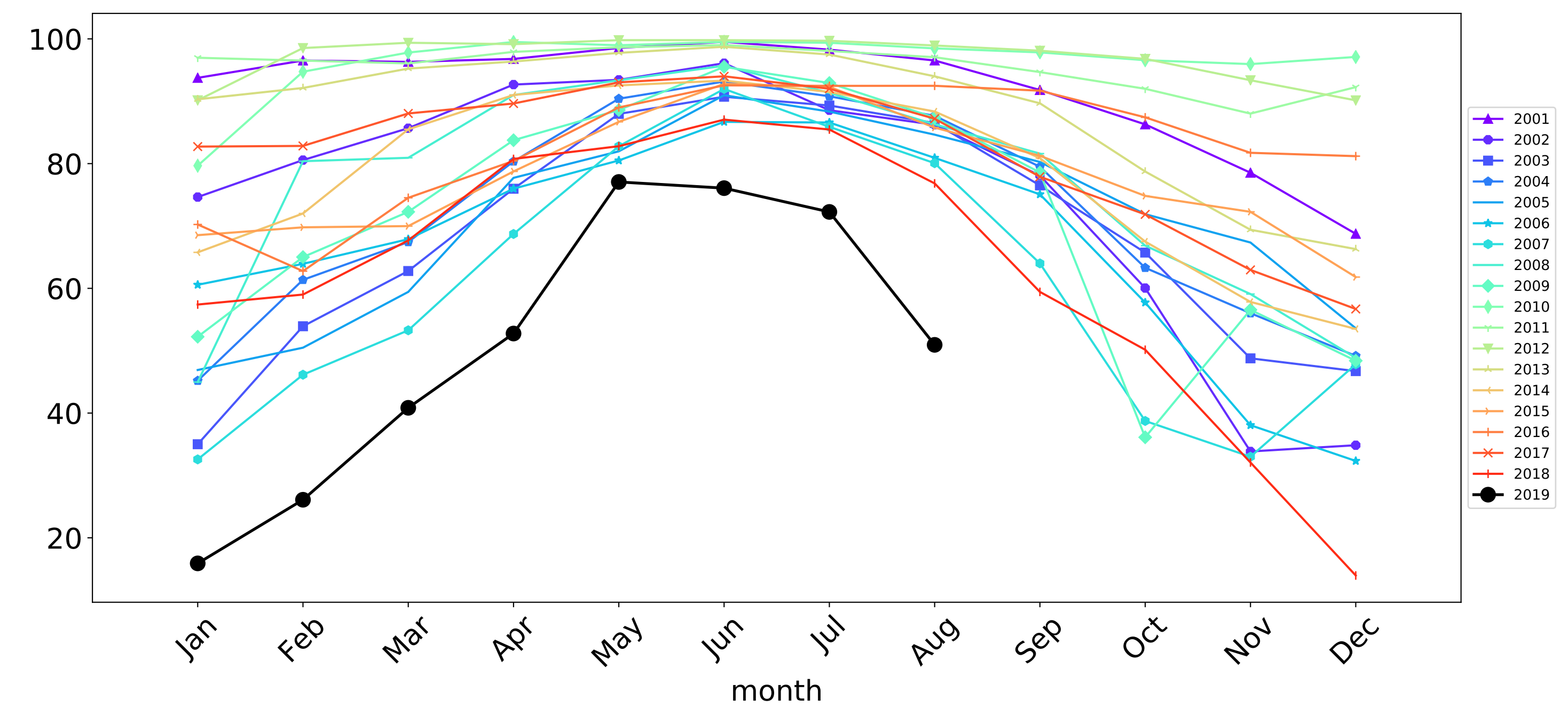
Wind erosion historical monthly area protected (Total Veg Cov > 50%)



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



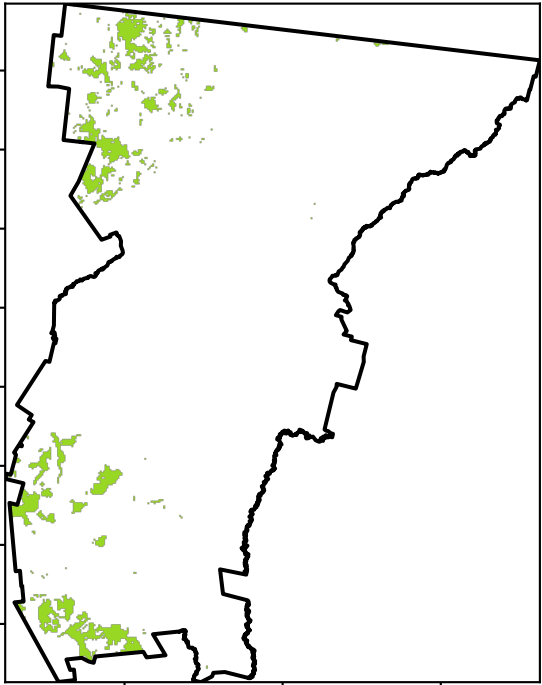
Water erosion historical monthly area protected (Total Veg Cov > 70%)



Grazing - Forest (non woodland)

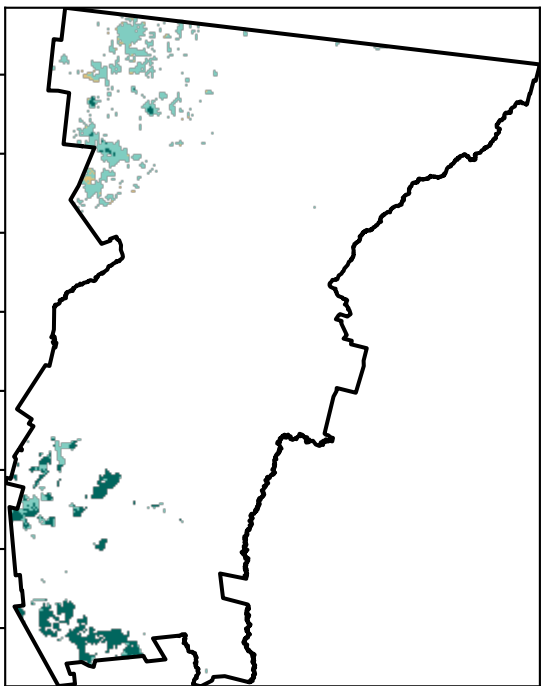
Land use and forest cover

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.

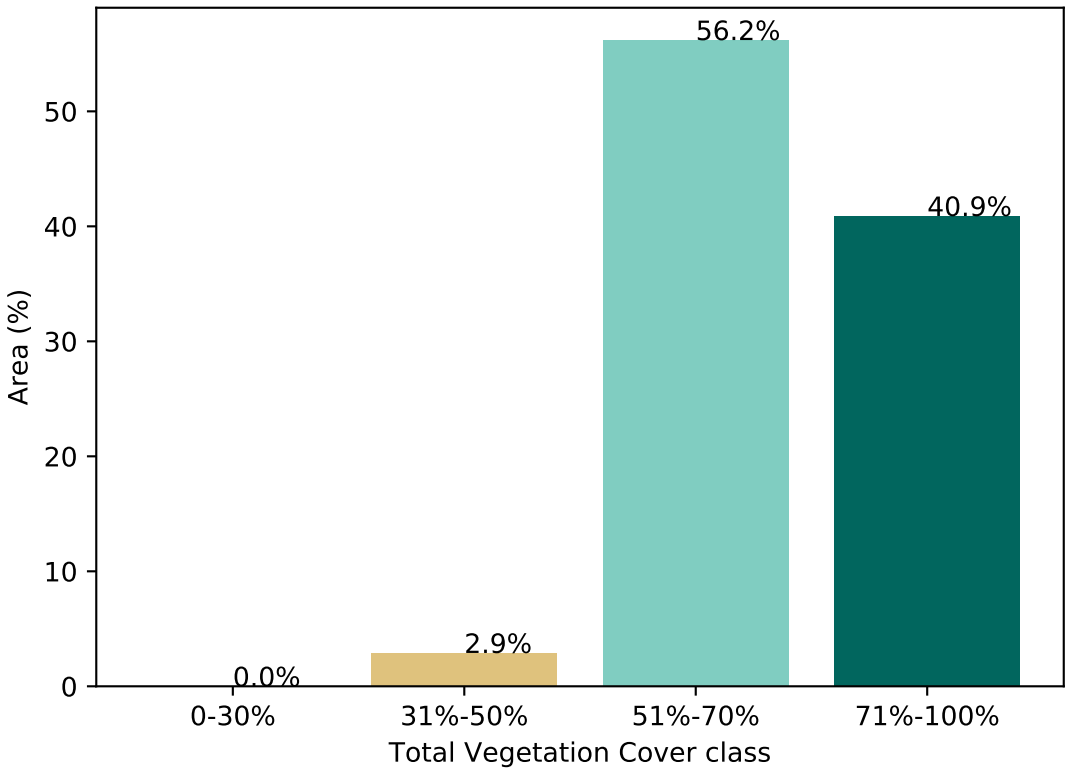


Agriculture - Grazing - Non-oodland forest

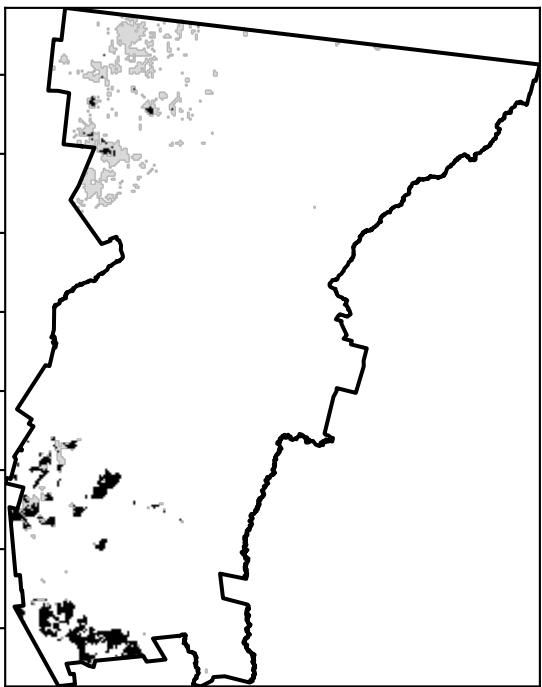
Total Vegetation Cover [%]



Proportion of vegetation cover class in area

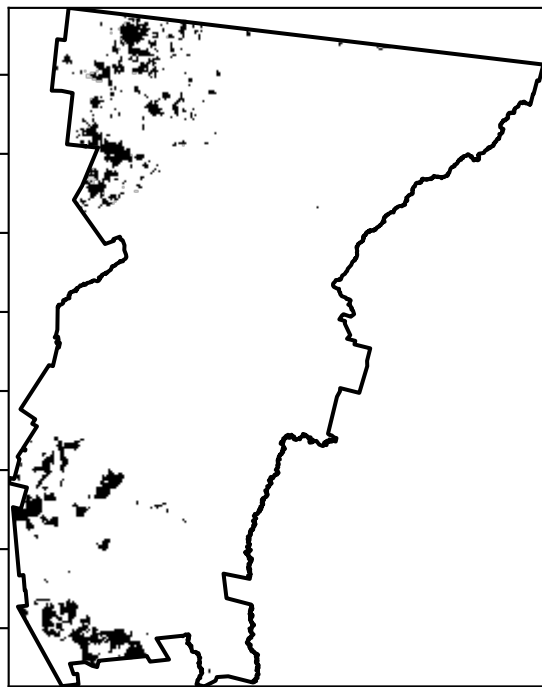


% Area protected from water erosion (>70%)



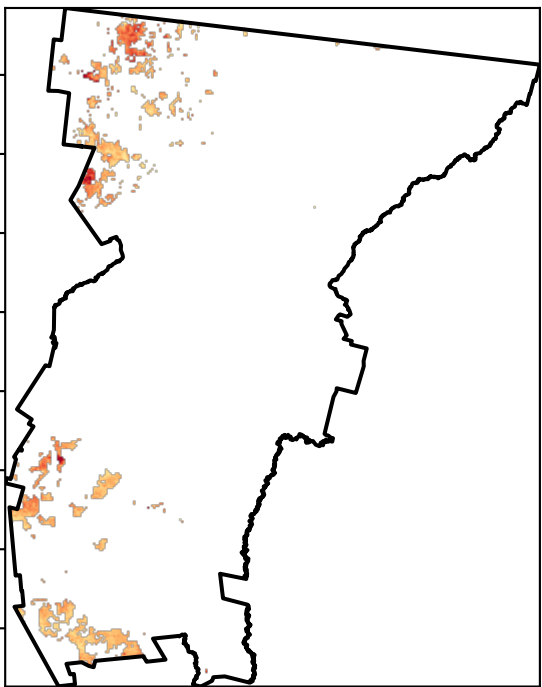
Area not protected  
59.1% of region  
(50,116 ha)  
Area protected  
40.9% of region  
(34,683 ha)

% Area protected from wind erosion (>50%)



Area not protected  
3.0% of region  
(2,544 ha)  
Area protected  
97.0% of region  
(82,256 ha)

Total Vegetation Cover Anomaly [%]

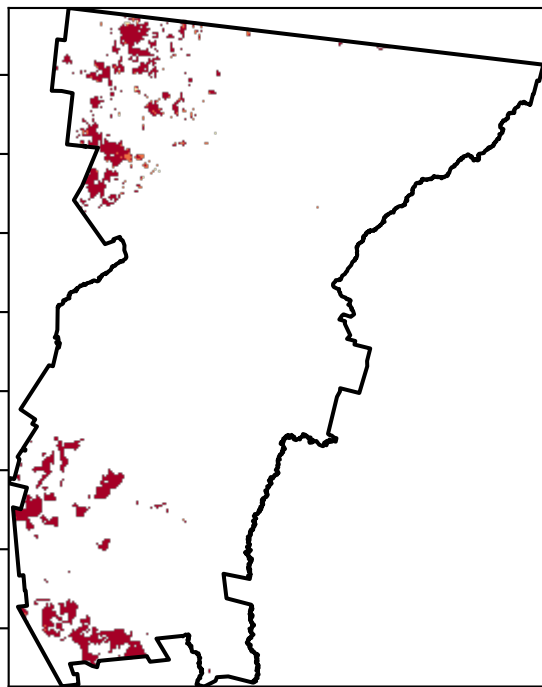


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Total Vegetation Cover Decile [%]



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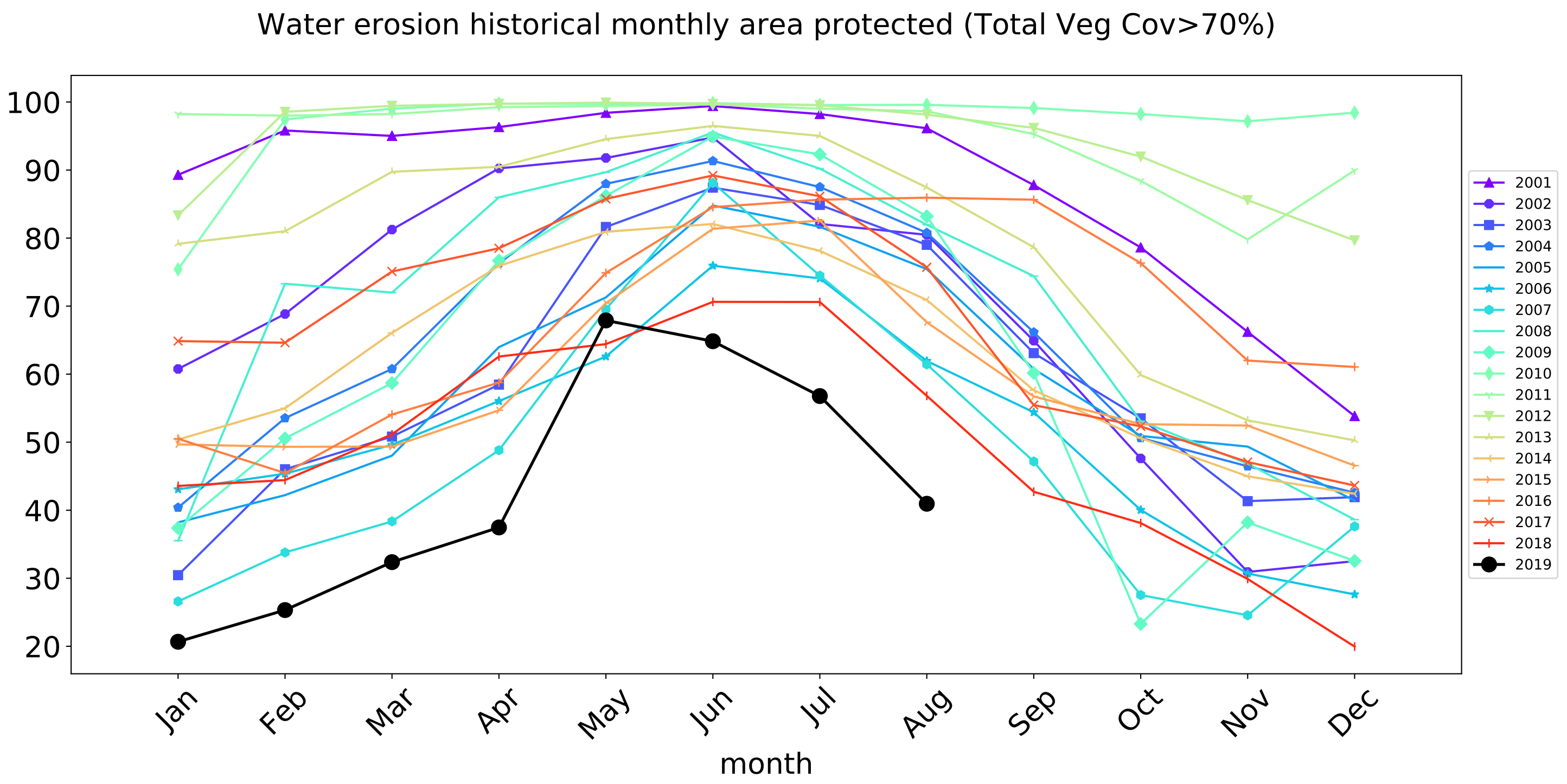
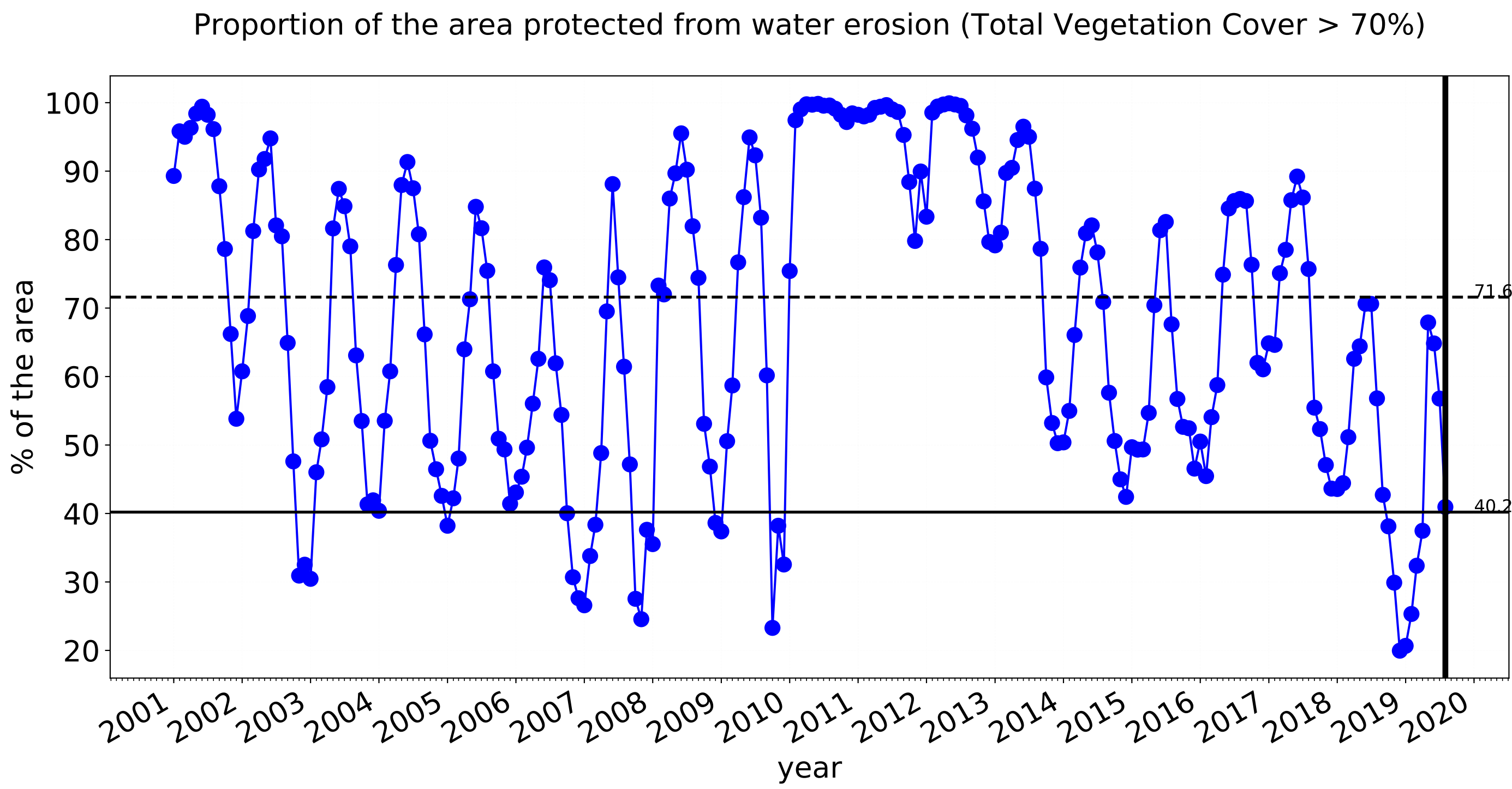
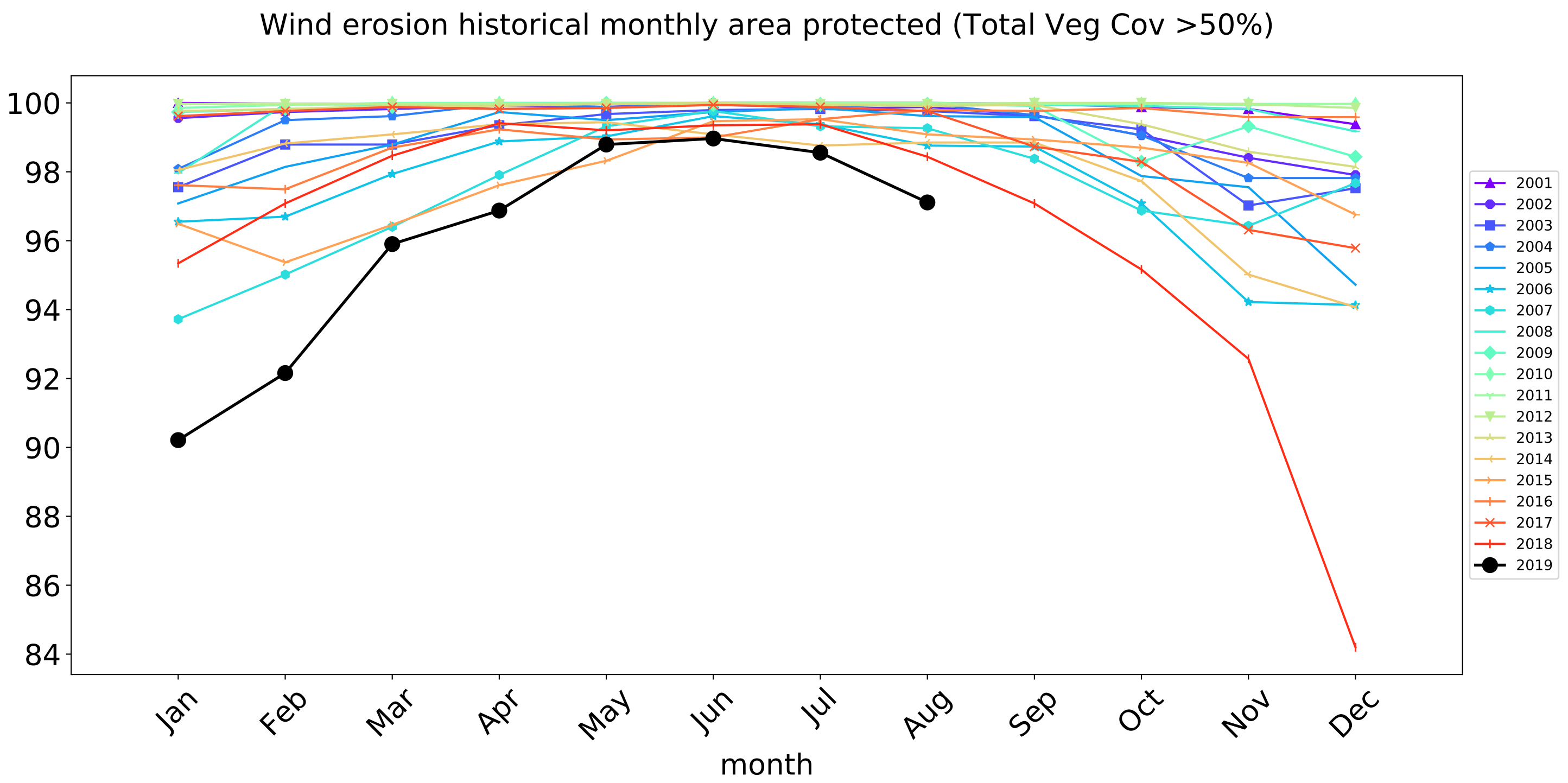
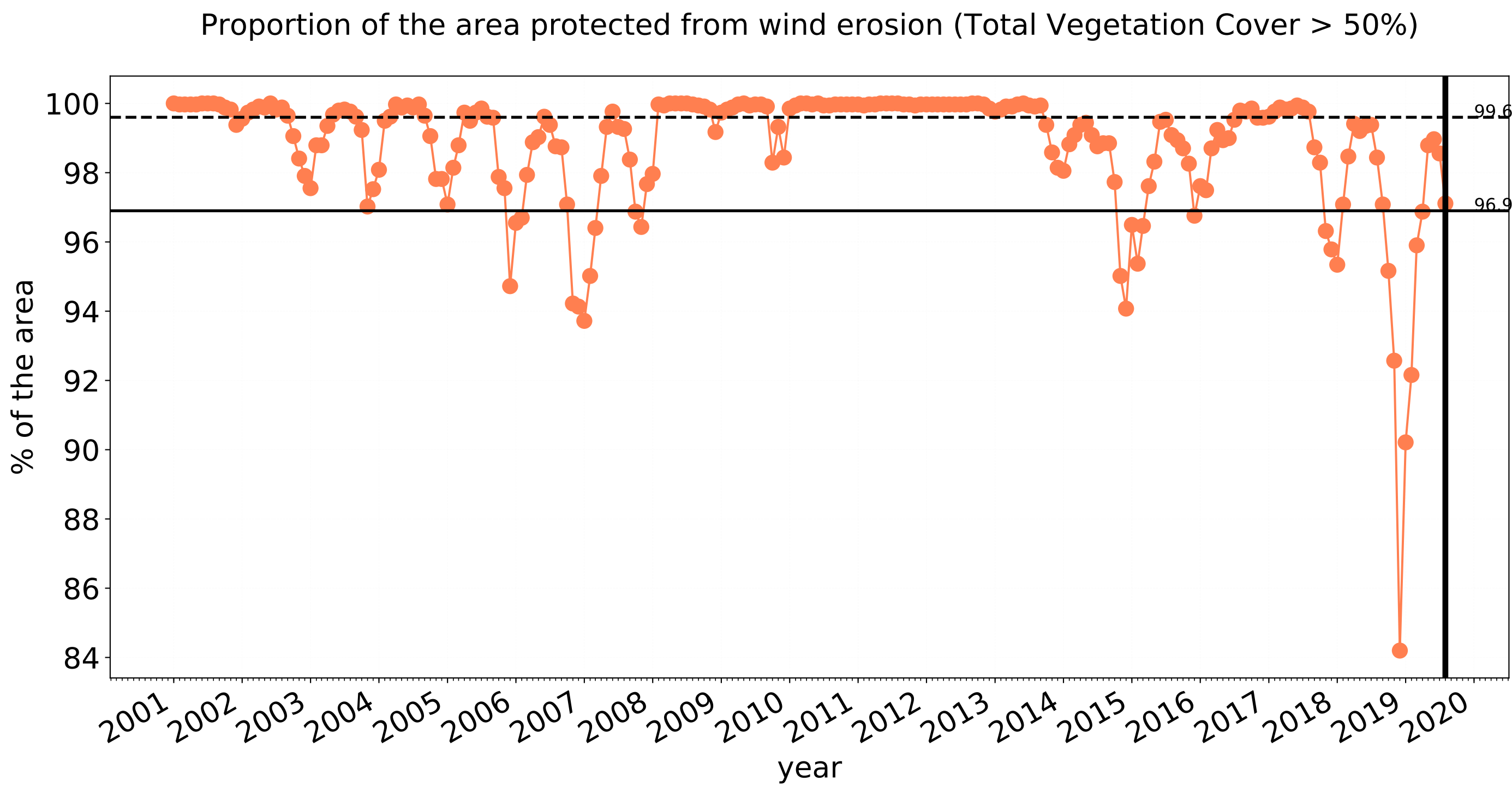
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Industry &  
Environment



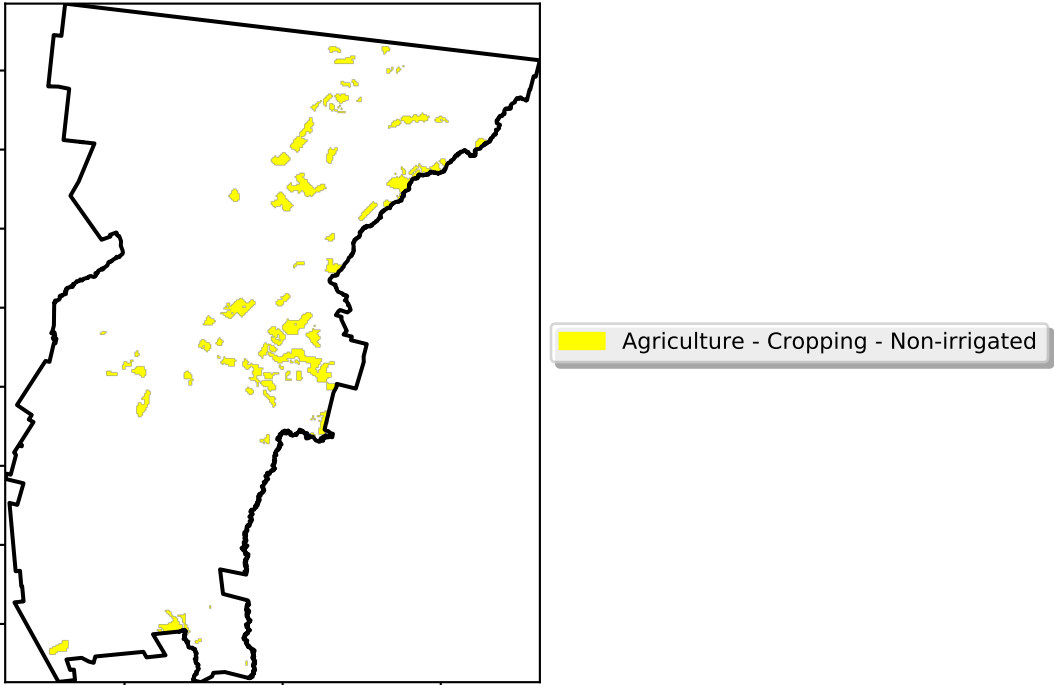
Grazing - Forest (non woodland) timeseries



Cropping

Land use and forest cover

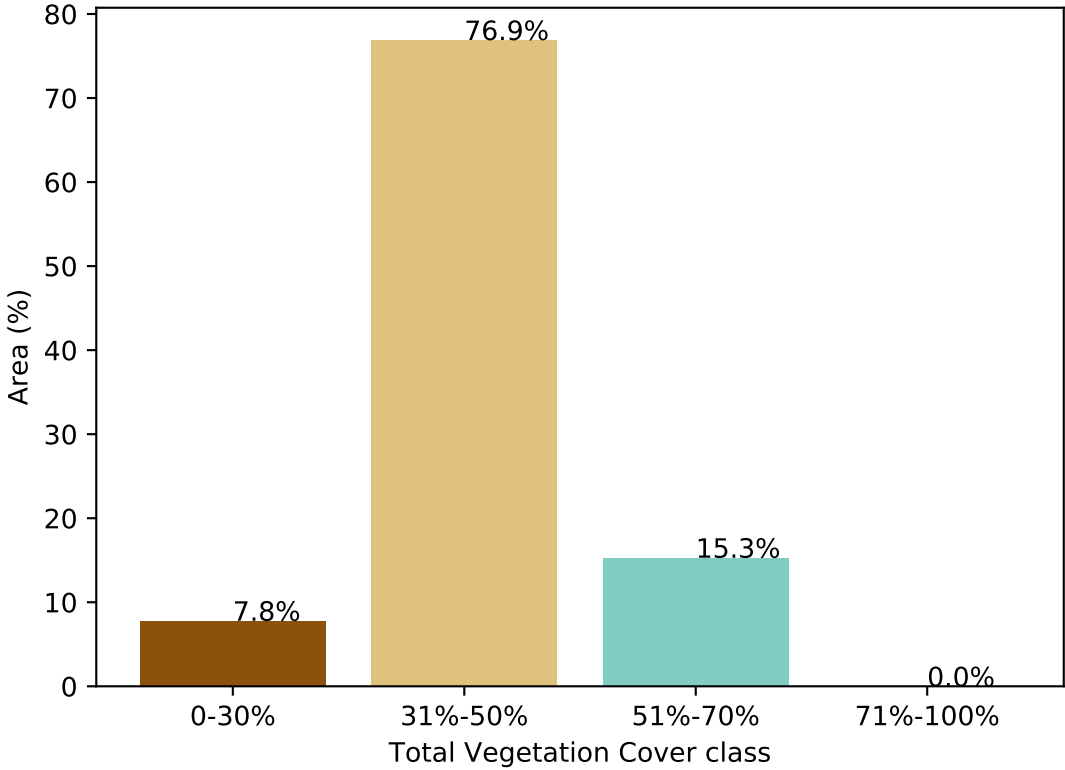
Landuse map of area based on 2015 catchment scale landuse and Australia's National Forest Inventory, where no forest is < 20% tree cover, sparse is 20 to 50% and dense > 50% tree cover.



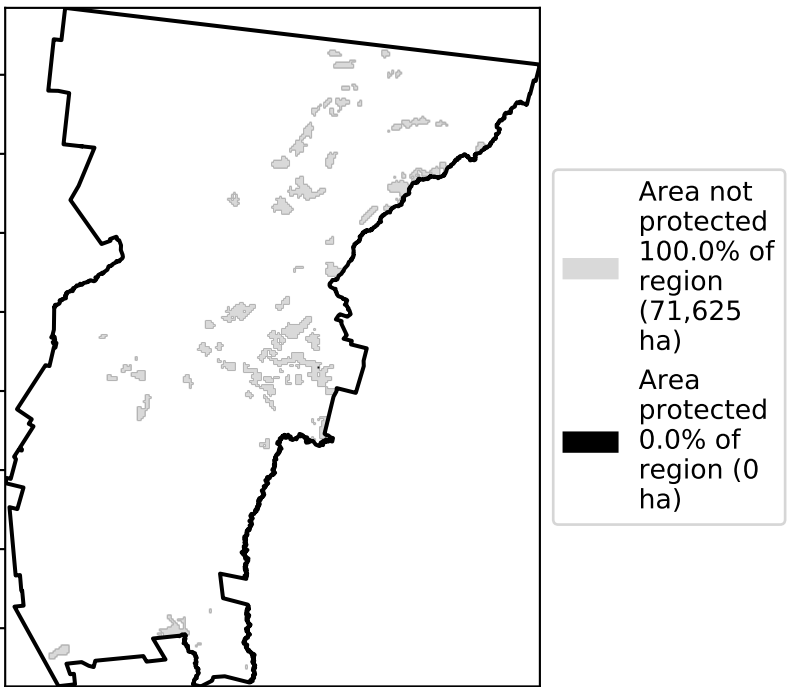
Total Vegetation Cover [%]



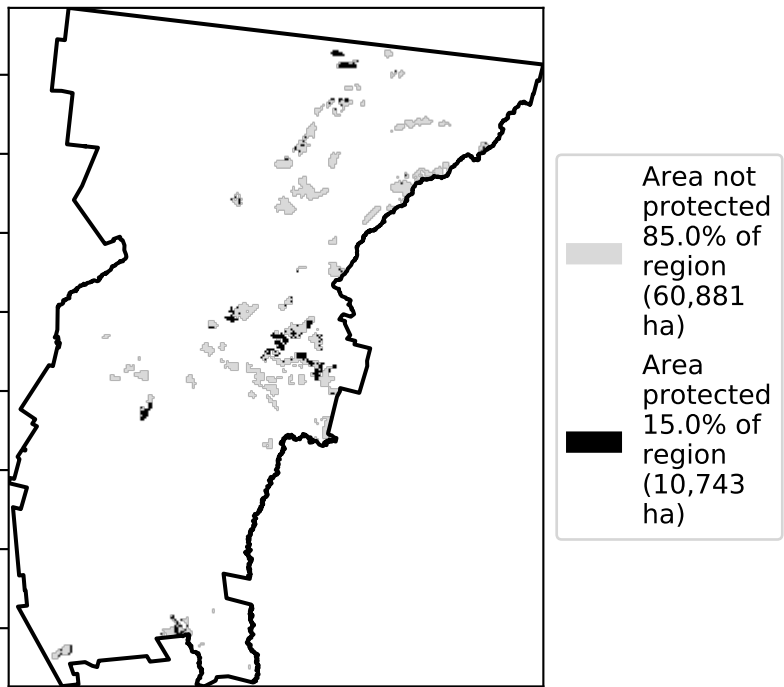
Proportion of vegetation cover class in area



% Area protected from water erosion (>70%)

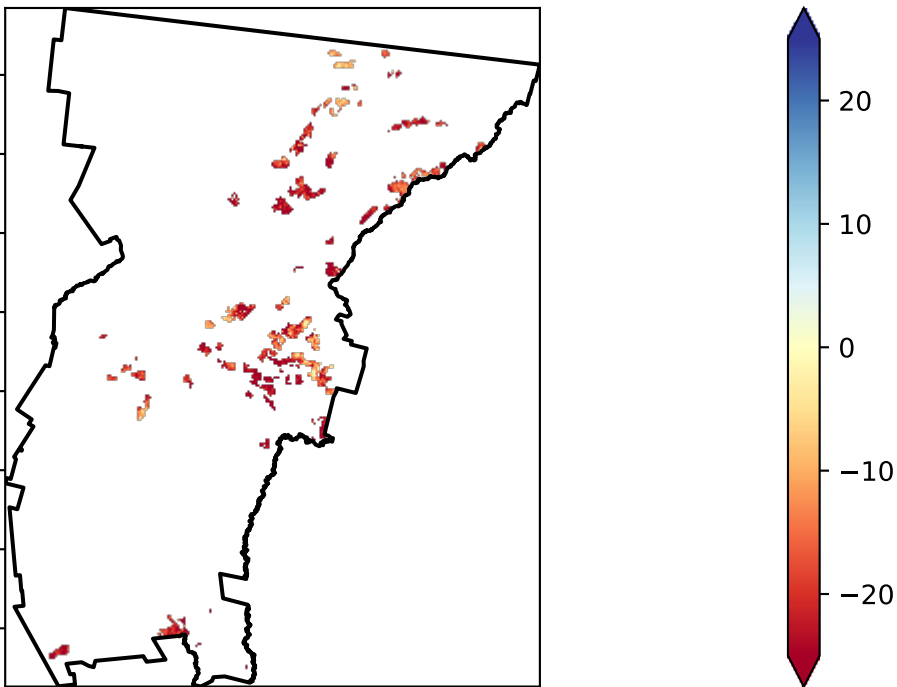


% Area protected from wind erosion (>50%)



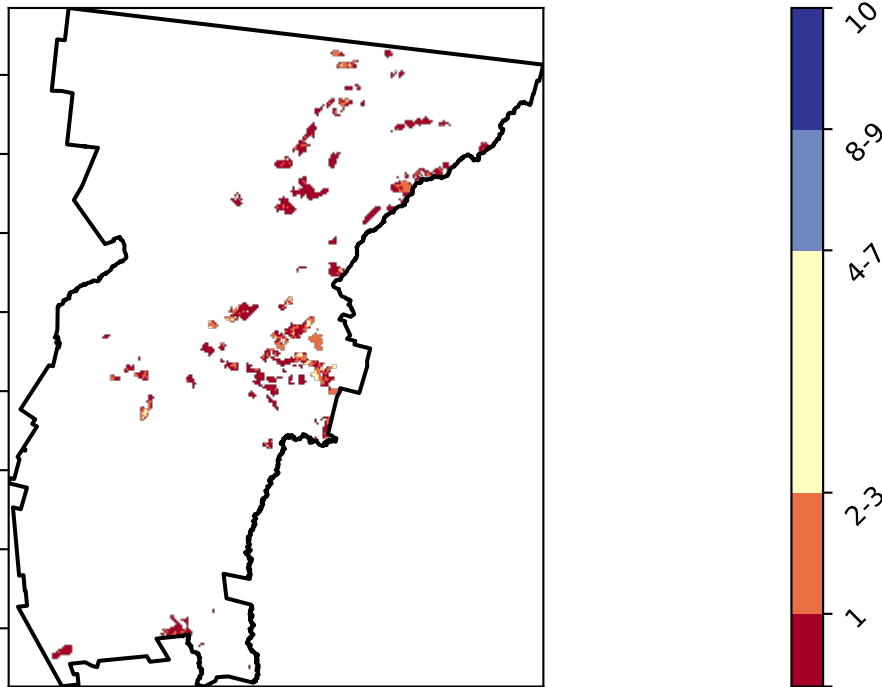
Total Vegetation Cover Anomaly [%]

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



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

Total Vegetation Cover Decile [%]



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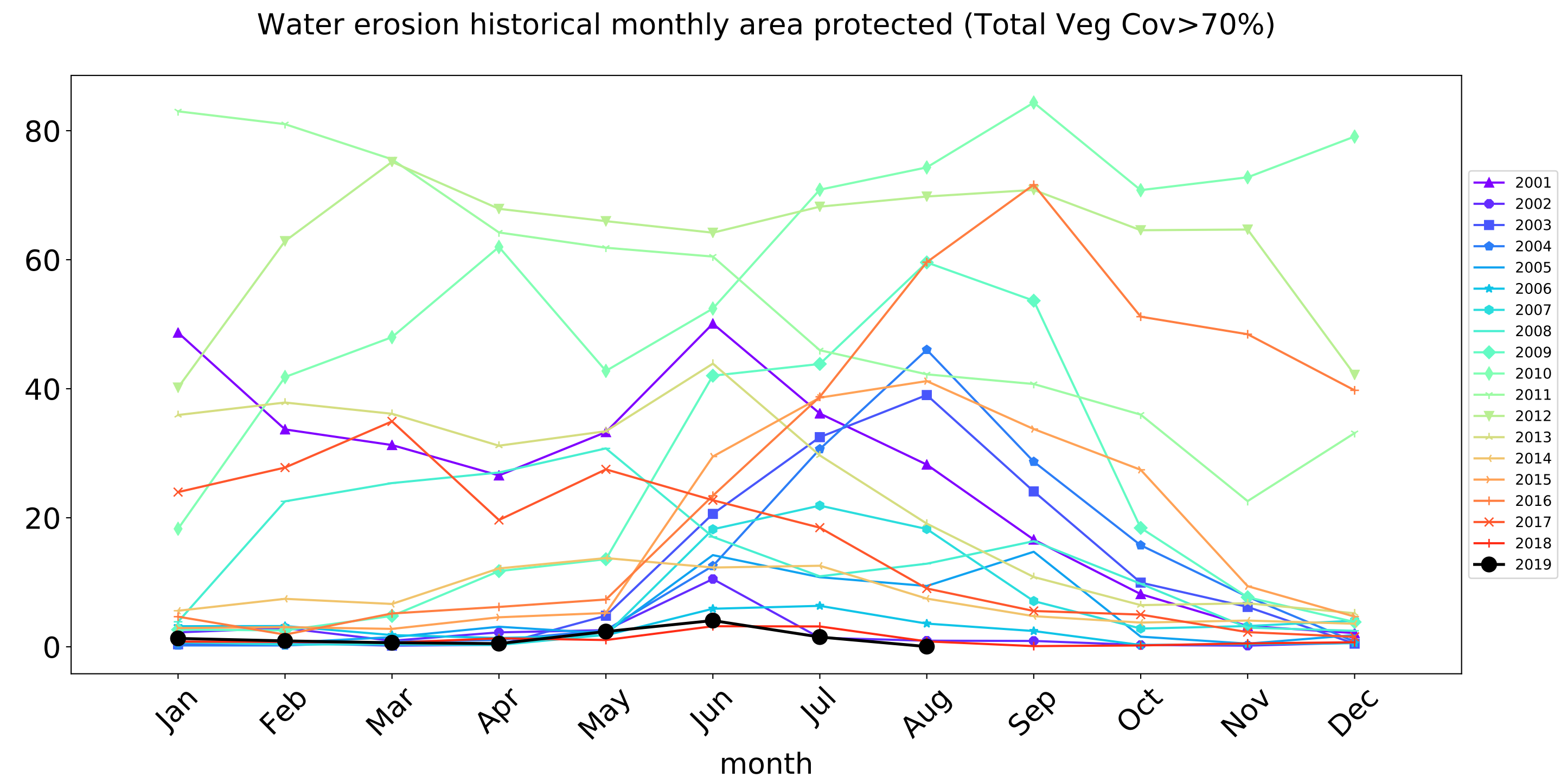
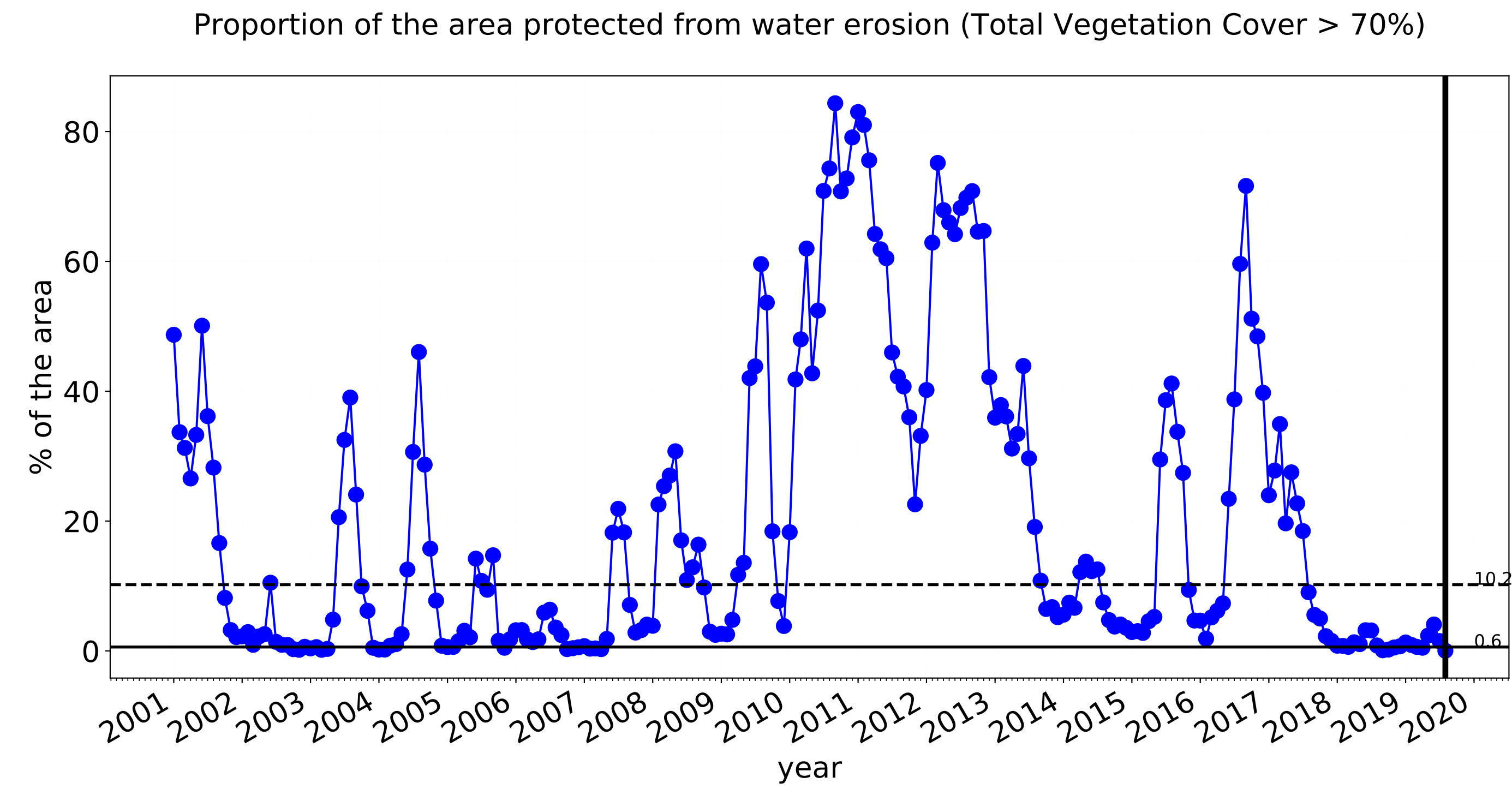
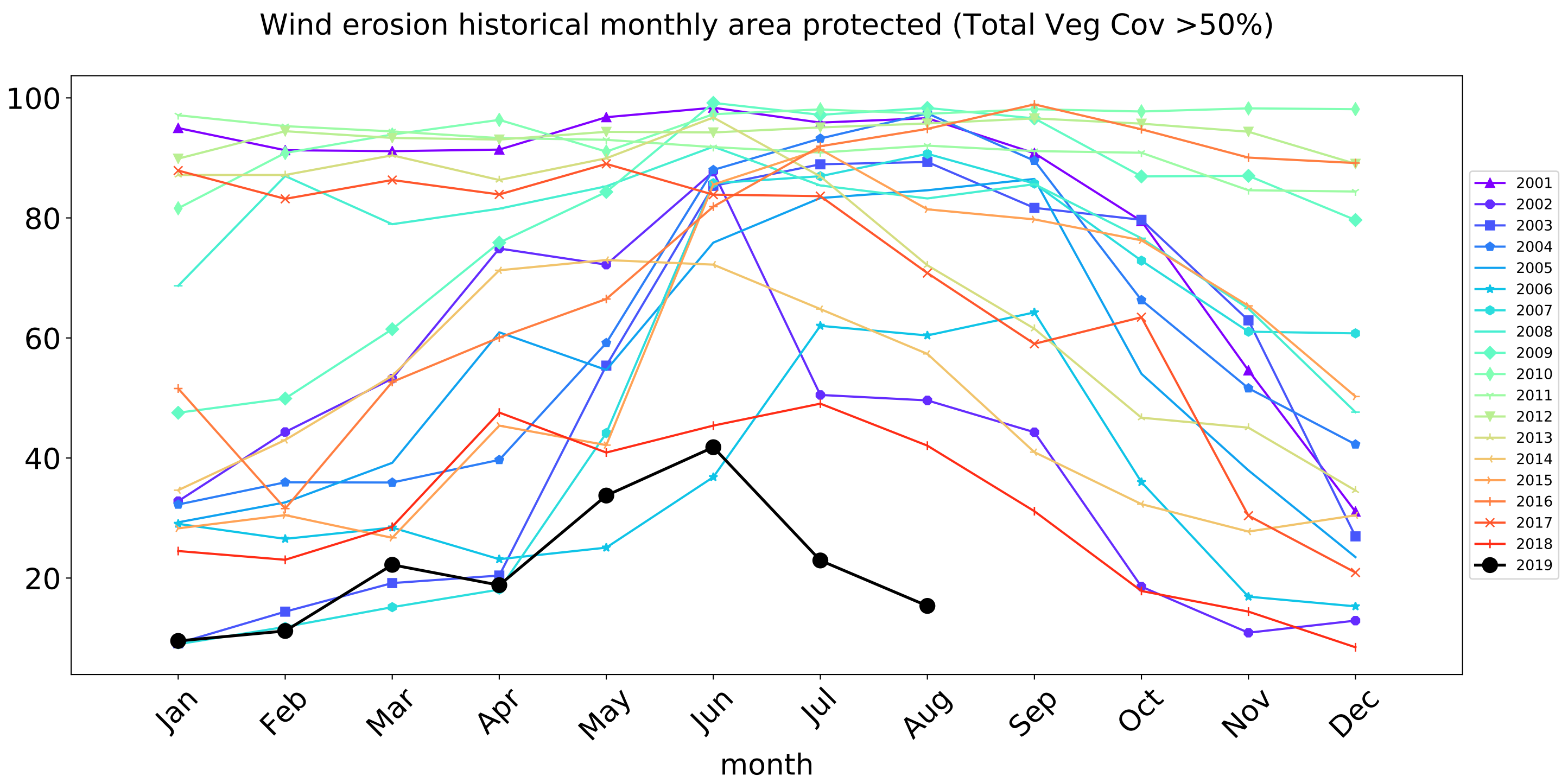
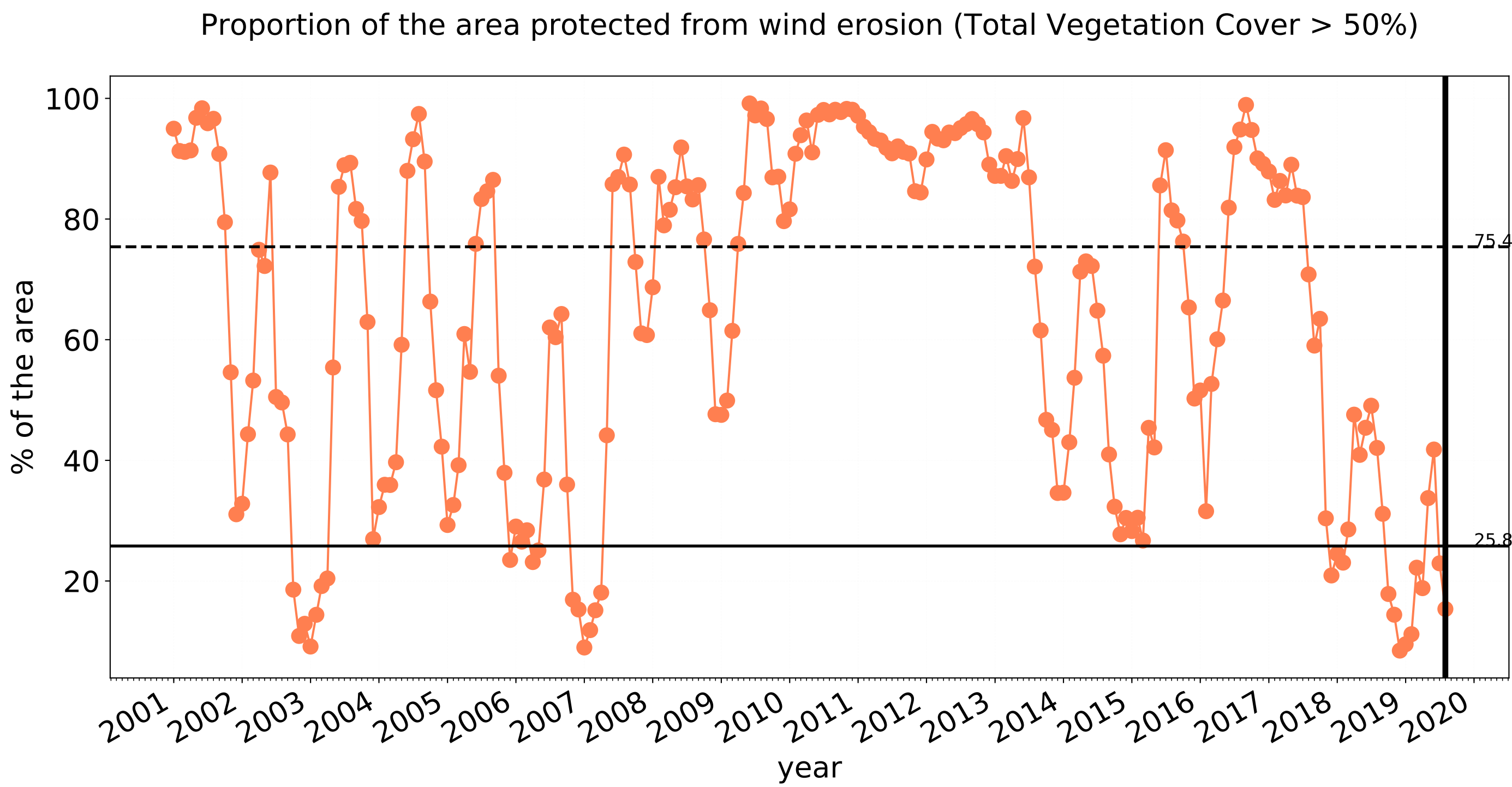
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Industry &  
Environment



Cropping timeseries



**Brewarrina\_(A) (1,909,575 ha and no data 4,640 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	1,909,575	94.5% 1,805,050	44.0% 839,650	10.1% 193,675	0.1% 1,850	0.0% 100	0.0% 50
Conservation and natural environments	78,292	93.7% 73,334	60.0% 46,965	5.2% 4,070	0.6% 468	0.0% 0	0.0% 0
Conservation and natural environments non forest	53,468	90.7% 48,490	42.4% 22,660	2.6% 1,386	0.9% 470	0.0% 0	0.0% 0
Conservation and natural environments Woodland forest	19,095	100.0% 19,095	97.4% 18,590	10.8% 2,068	0.0% 0	0.0% 0	0.0% 0
Agriculture	1,804,548	94.5% 1,705,857	43.0% 776,215	10.4% 187,274	0.1% 1,300	0.0% 100	0.0% 50
Grazing	1,726,255	94.6% 1,633,557	44.3% 764,256	10.8% 187,071	0.1% 1,299	0.0% 99	0.0% 49
Grazing non forest	1,361,526	93.2% 1,268,799	29.9% 407,220	0.7% 9,352	0.1% 1,275	0.0% 100	0.0% 50
Grazing Woodland forest	280,707	100.0% 280,682	97.9% 274,909	50.9% 142,990	0.0% 24	0.0% 0	0.0% 0
Grazing - Forest (non woodland)	84,021	100.0% 84,021	97.1% 81,593	40.9% 34,406	0.0% 0	0.0% 0	0.0% 0
Cropping	72,563	92.3% 66,941	15.4% 11,144	0.0% 25	0.0% 0	0.0% 0	0.0% 0



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