Total vegetation cover soil protection Region:LGA Whitsunday_(R) QLD

Date: March 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 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

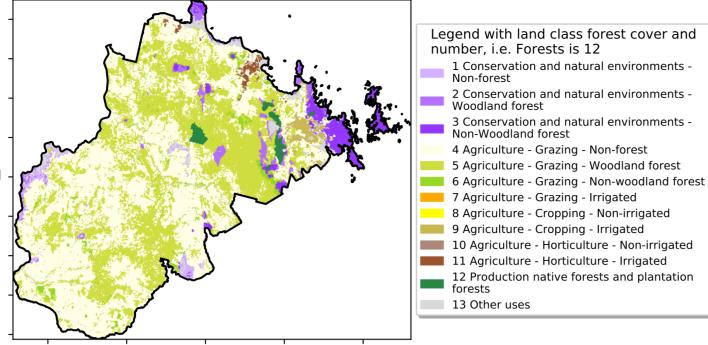


Vegetation Cover Mar 2022

Land use and forest cover

Proportion of each land class in area





12%200%

52% 70%

32%50%

0.30%

· 20

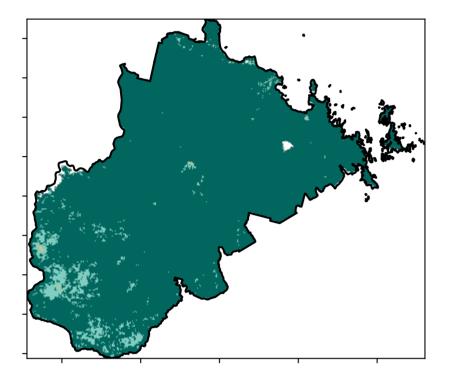
10

0

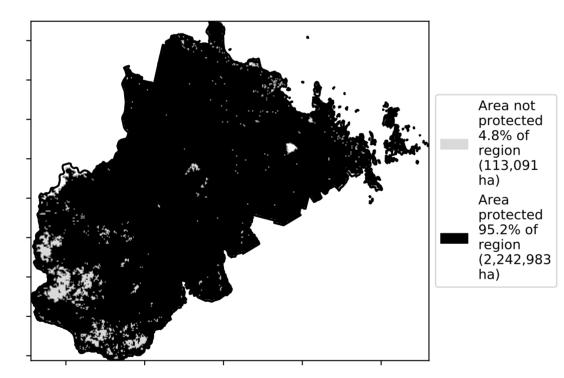
-10

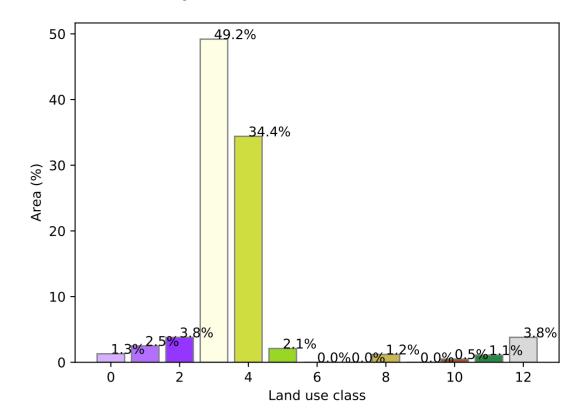
-20

Total Vegetation Cover [%]

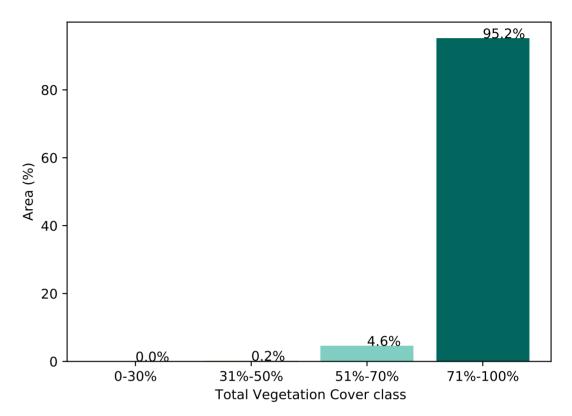


% Area protected from water erosion (>70%)

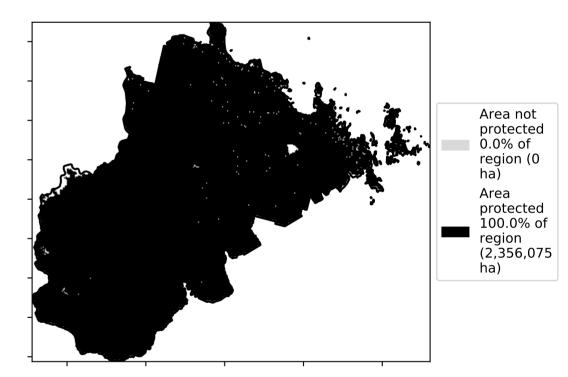




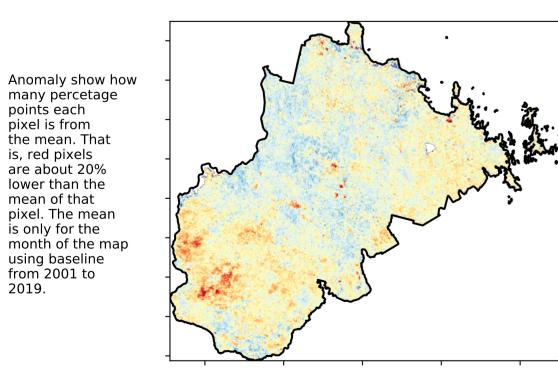
Proportion of vegetation cover class in area



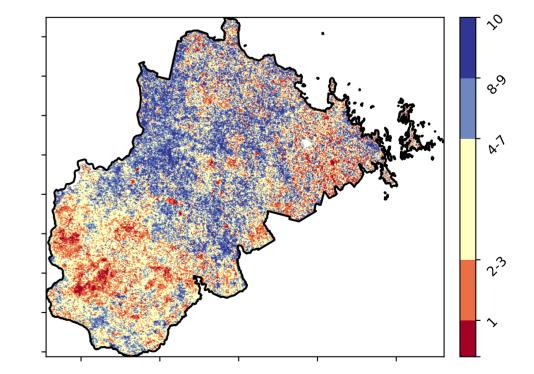
% Area protected from wind erosion (>50%)



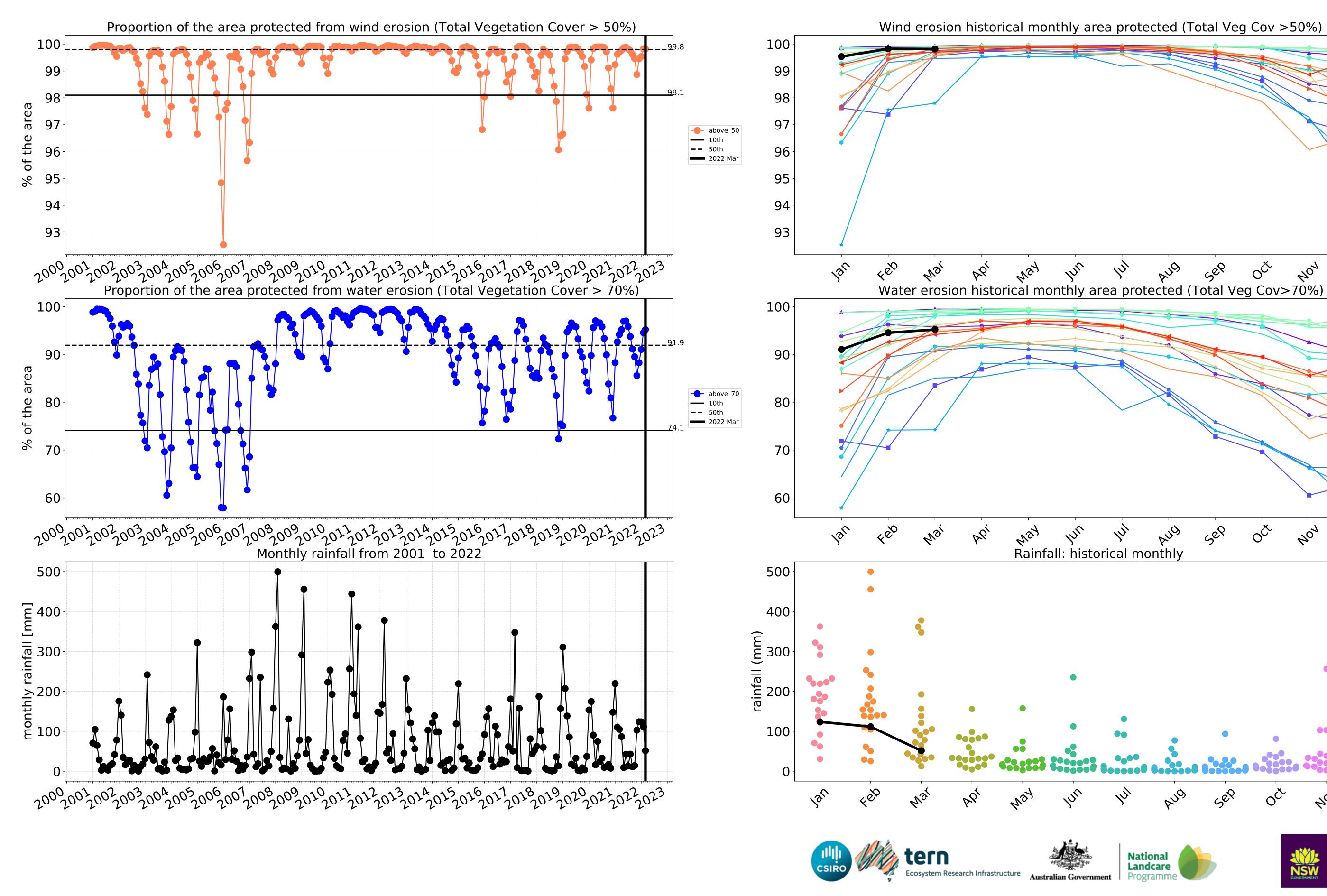
Total Vegetation Cover Anomaly [%]

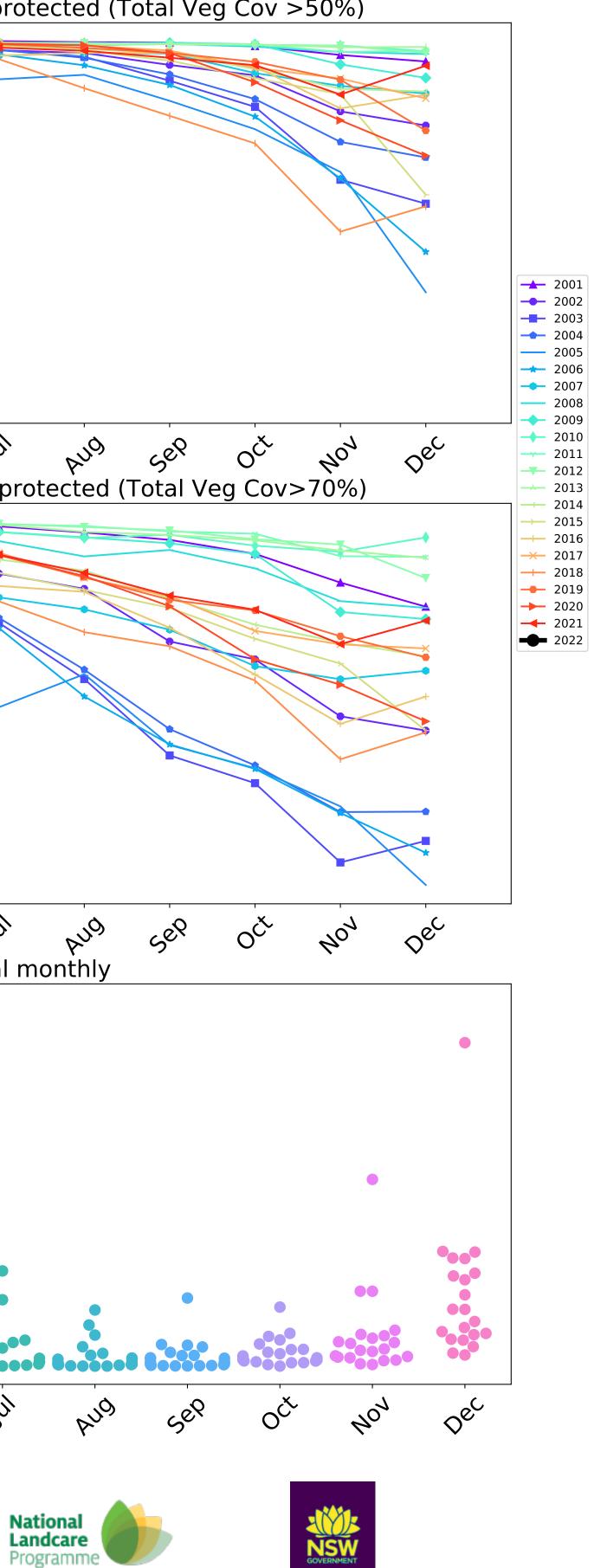


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.









Conservation and natural environments

forest

forest

woodland forest

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

the mean. That

is, red pixels are about 20% lower than the

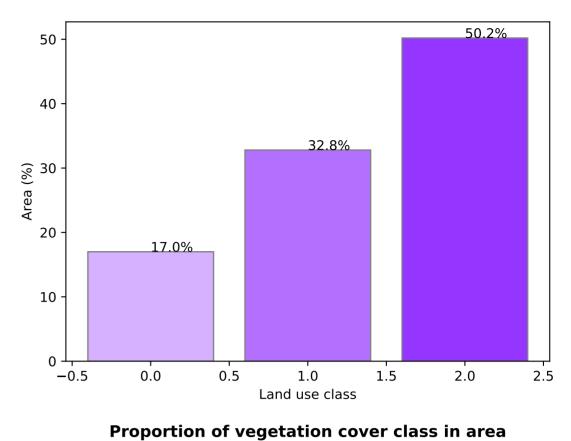
mean of that

pixel. The mean

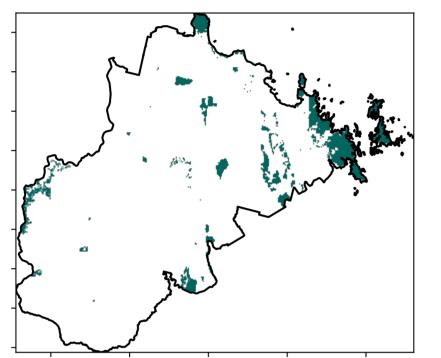
using baseline from 2001 to 2019.

Land use and forest cover

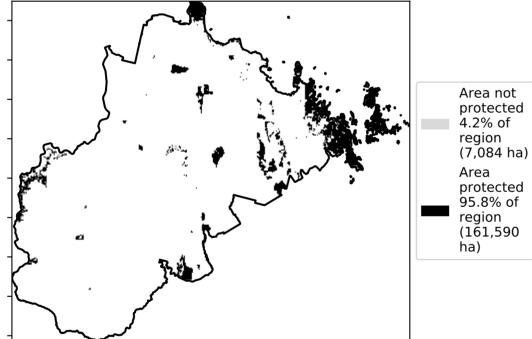
Proportion of each land class in area

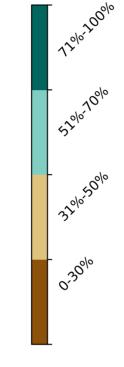


Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

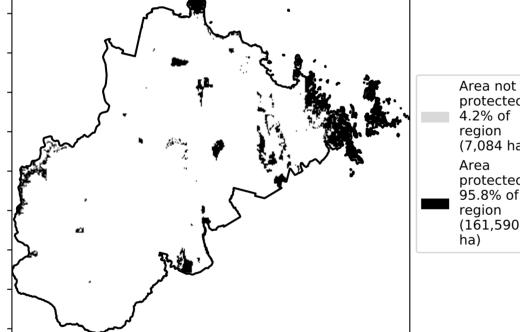




1 Conservation and natural environments - Non-

3 Conservation and natural environments - Non-

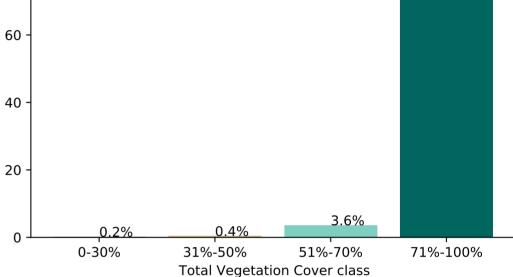
2 Conservation and natural environments - Woodland



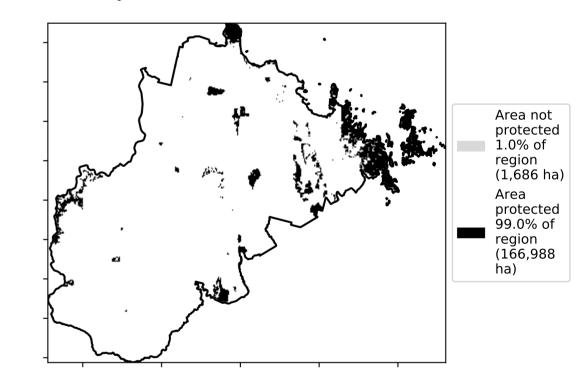
60 Area (%)

100

80

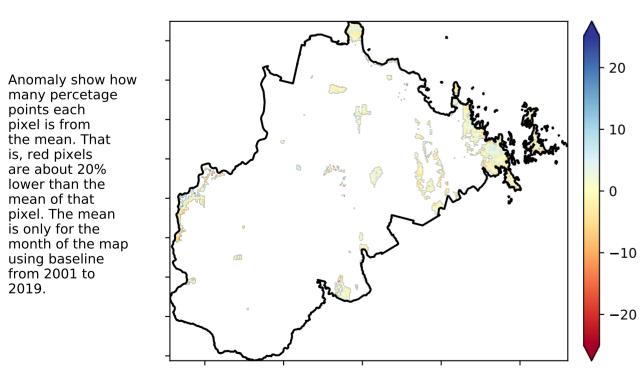


% Area protected from wind erosion (>50%)

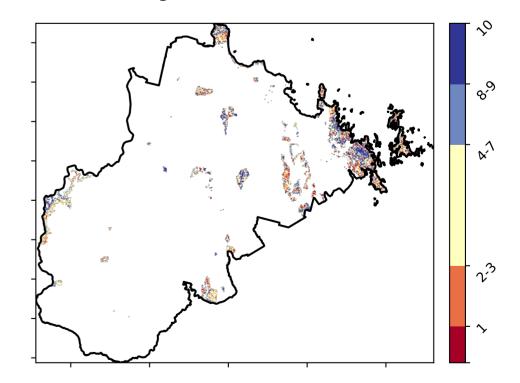


95.8%

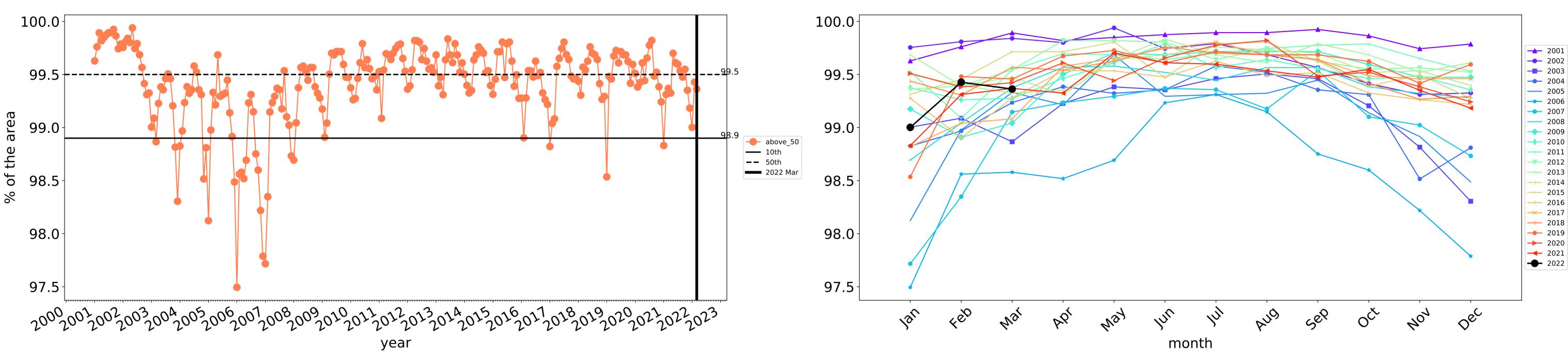
Total Vegetation Cover Anomaly [%]



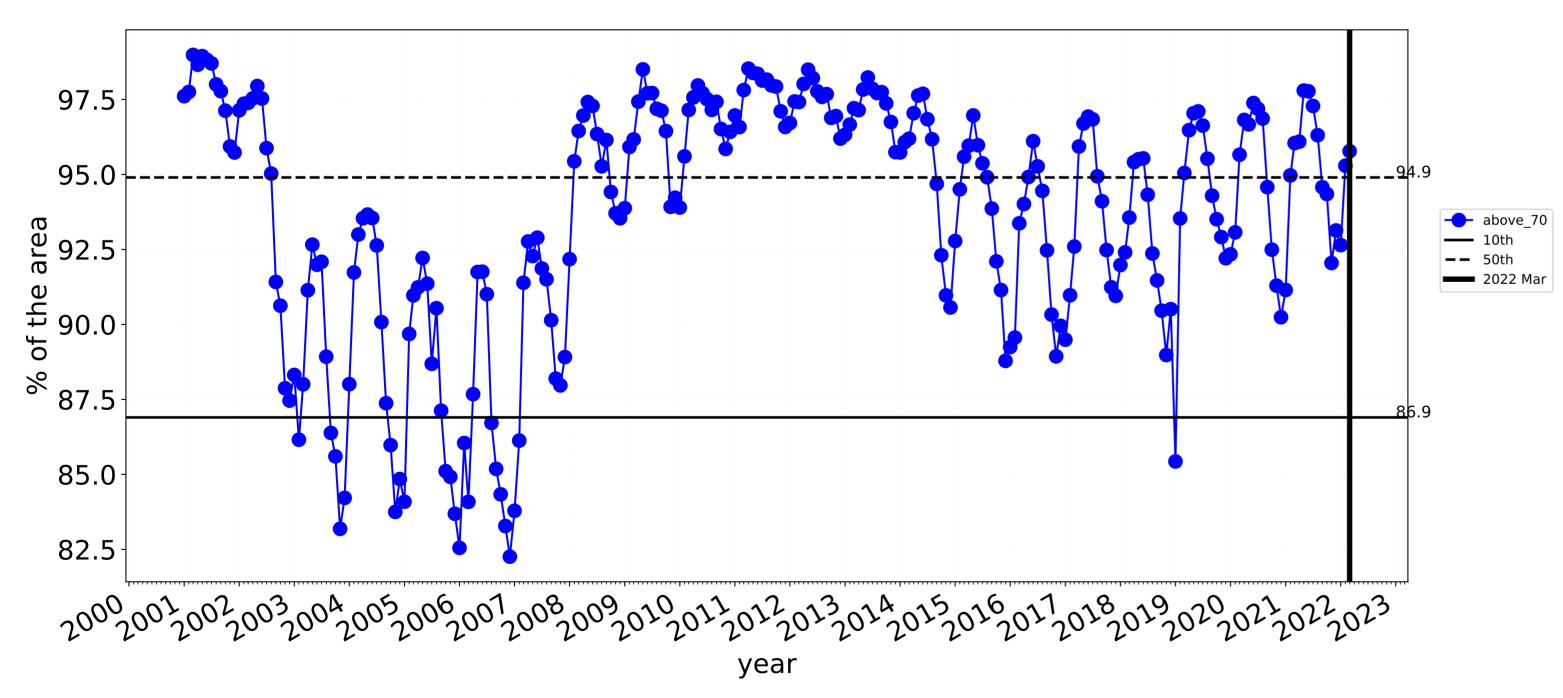
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

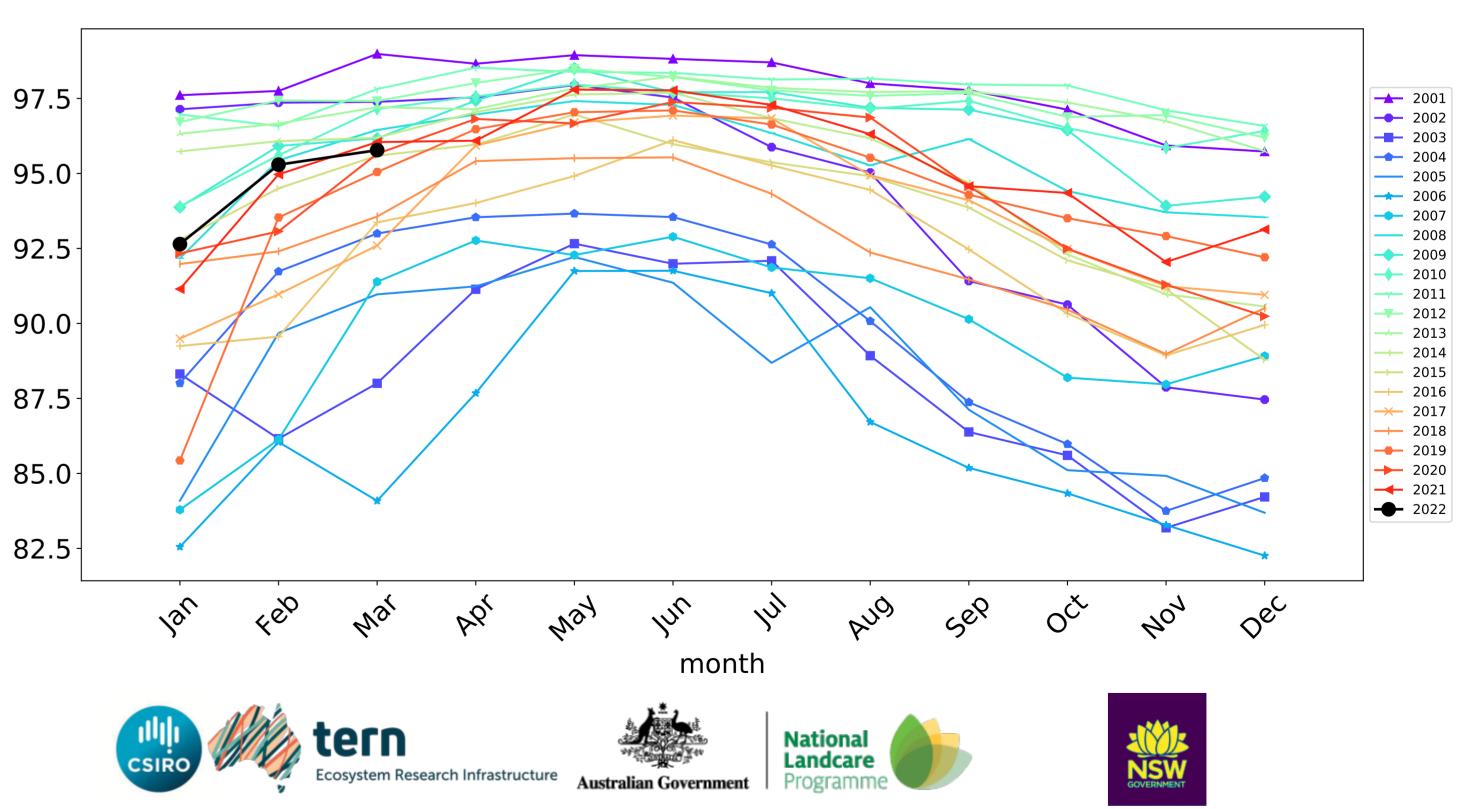






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)





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

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

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 - Nonforest

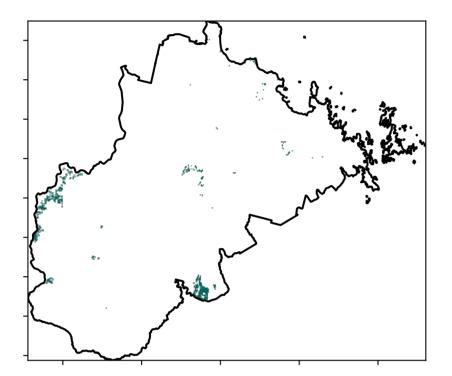
12%-200%

520070010

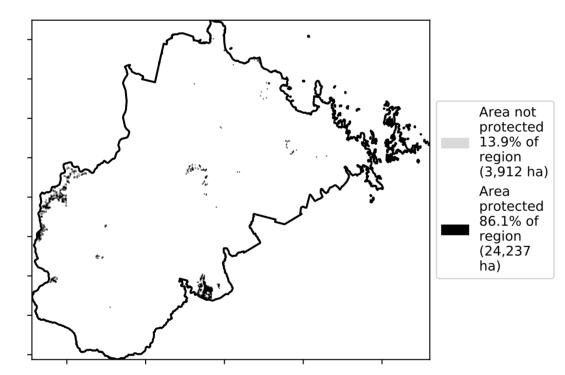
320050010

0.30%

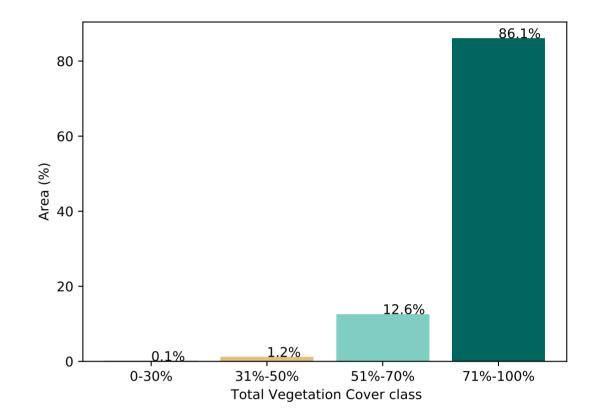
Total Vegetation Cover [%]



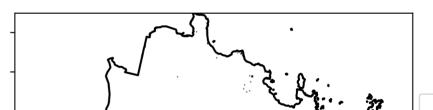
% Area protected from water erosion (>70%)



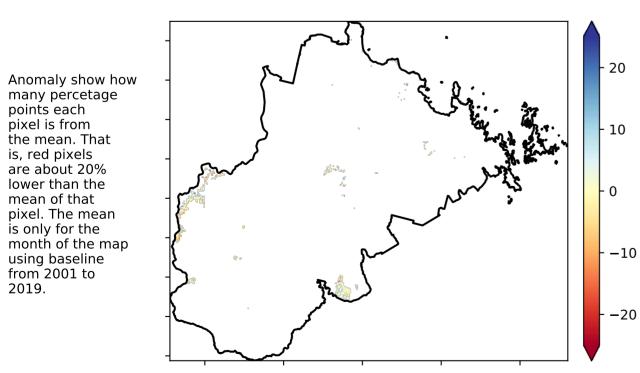
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



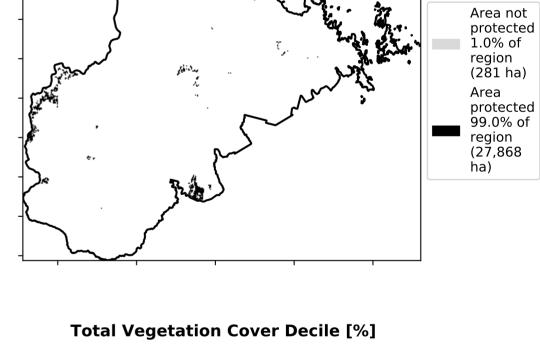
the mean. That

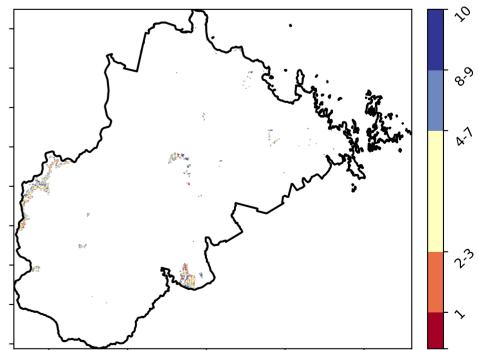
is, red pixels are about 20% lower than the

mean of that

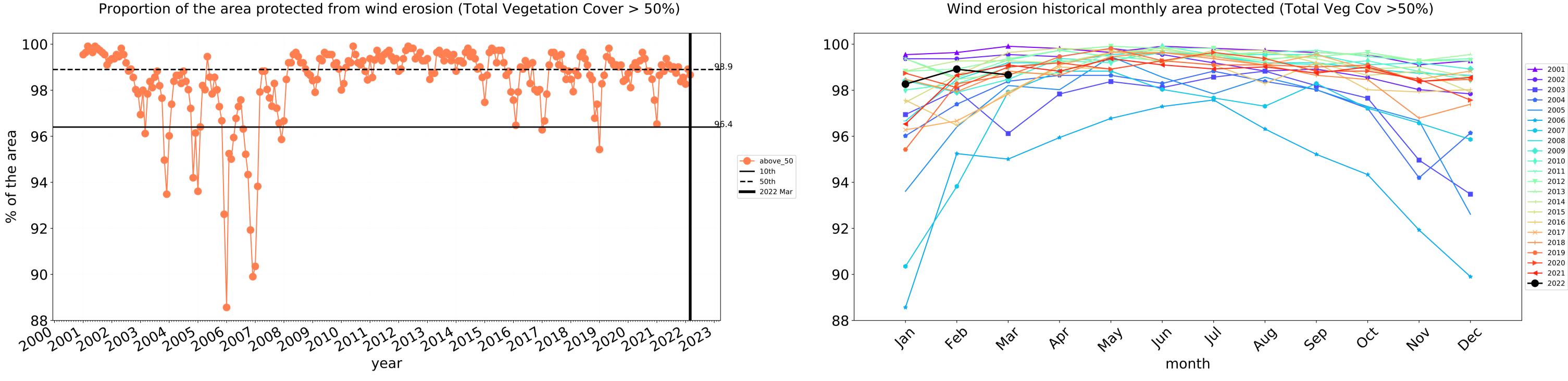
using baseline from 2001 to 2019.

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 man using baseline the map using baseline from 2001 to 2019.









100-

90

80-

70-

60

50

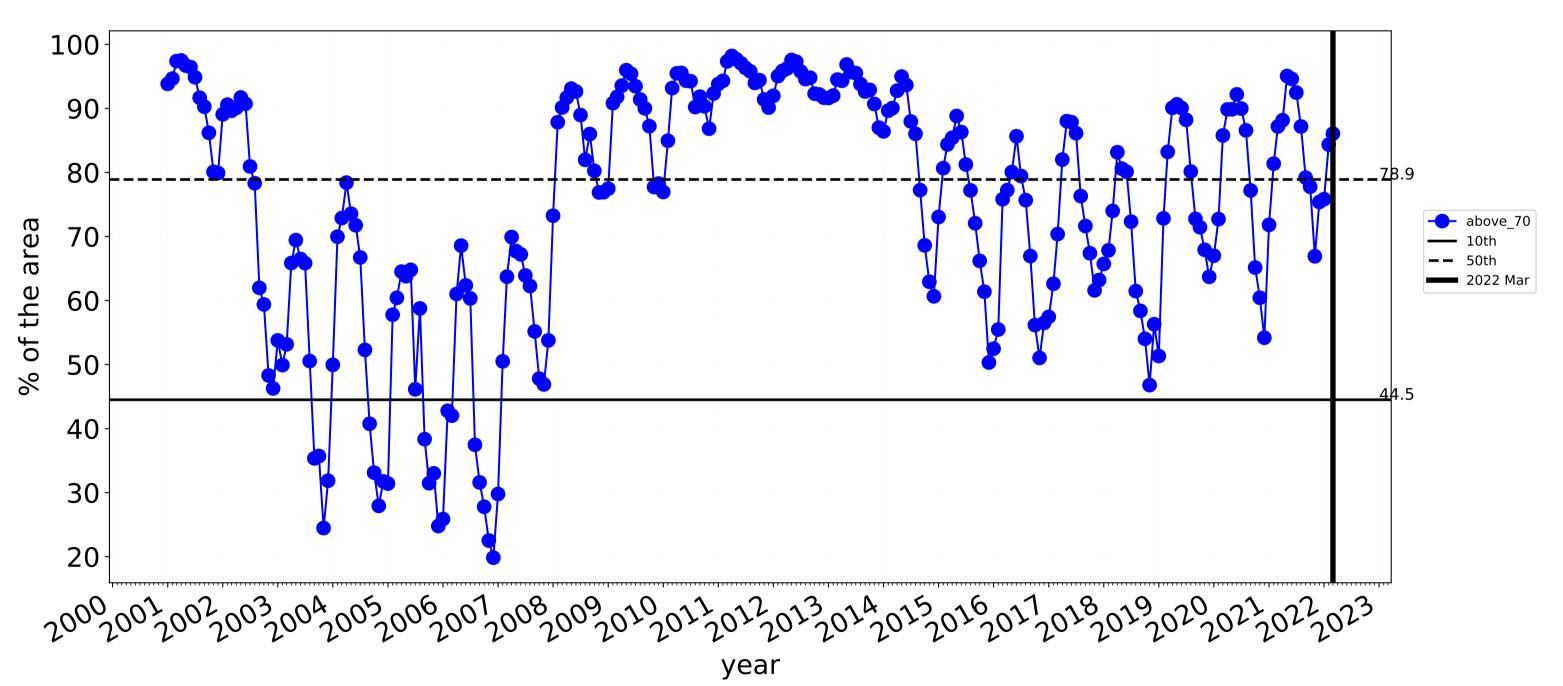
40

30-

20-

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

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

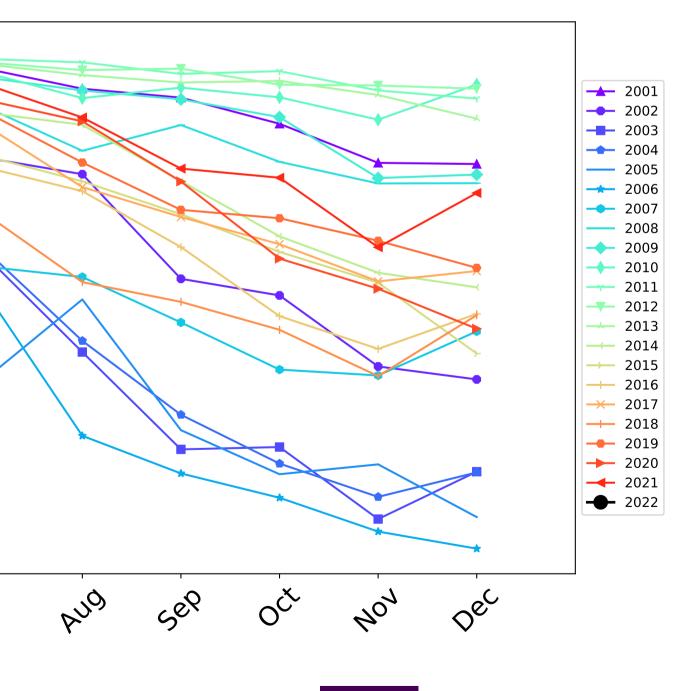


4eb lar way In war PQ1 1/2/ month

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3

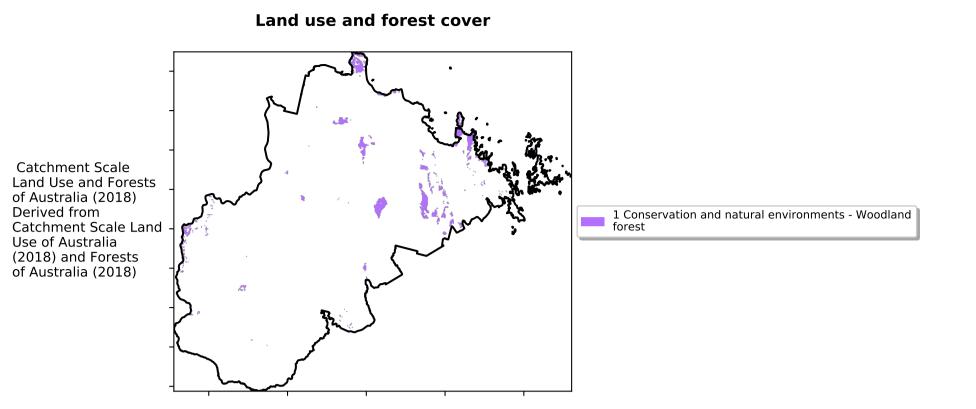
Water erosion historical monthly area protected (Total Veg Cov>70%)



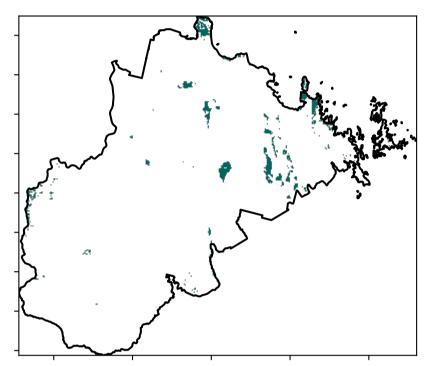




Conservation and natural environments Woodland forest

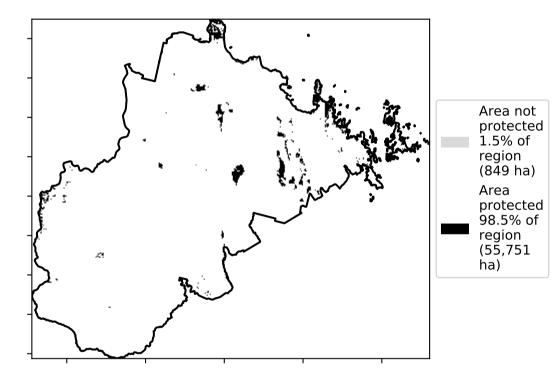


Total Vegetation Cover [%]

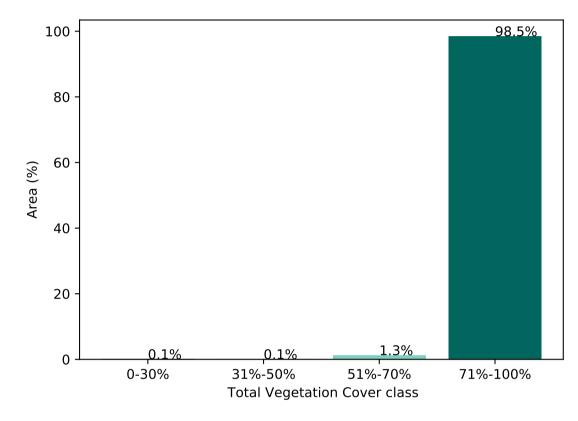


1200-100, 5200-1000 3200-5000 0-3000

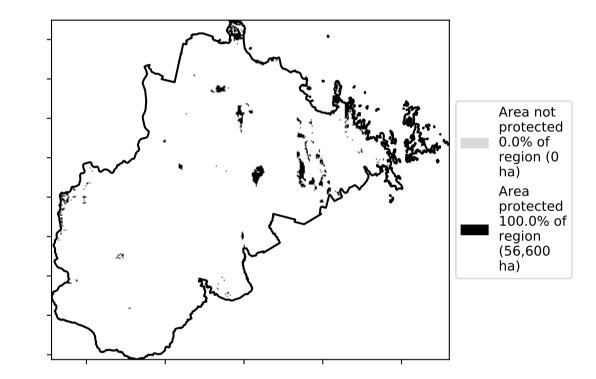
% Area protected from water erosion (>70%)



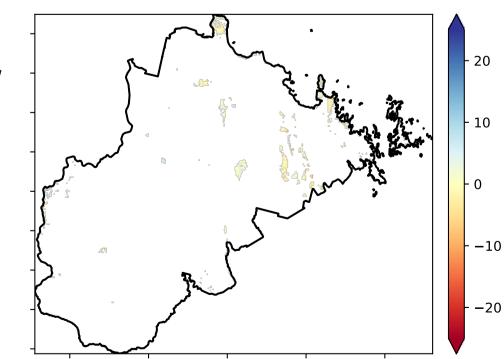
Proportion of vegetation cover class in area



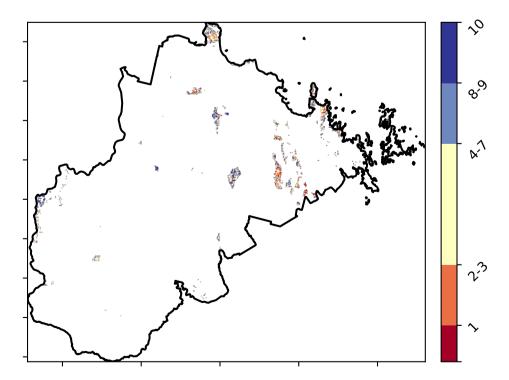
% Area protected from wind erosion (>50%)



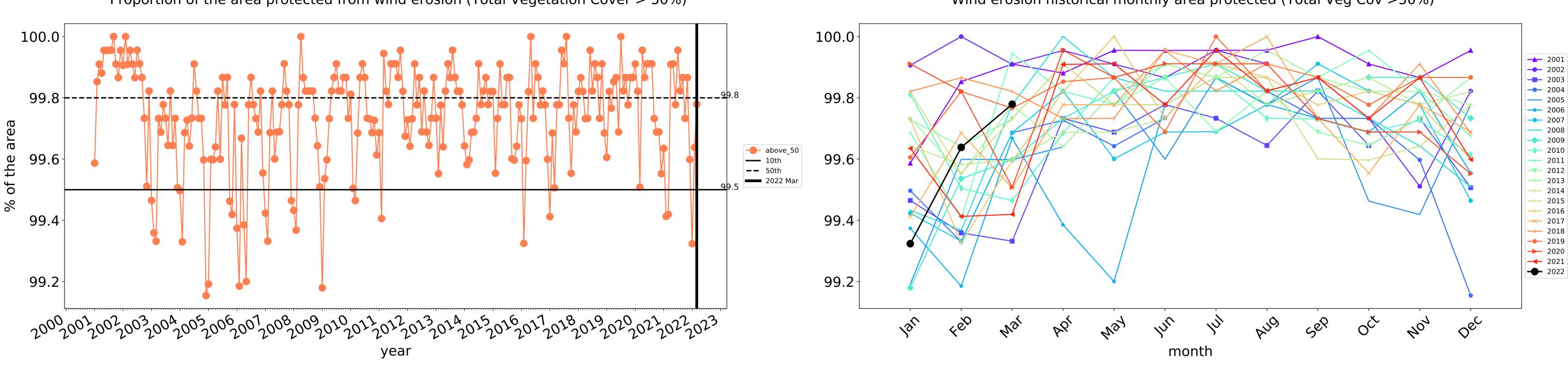
Total Vegetation Cover Anomaly [%]



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 [%]**

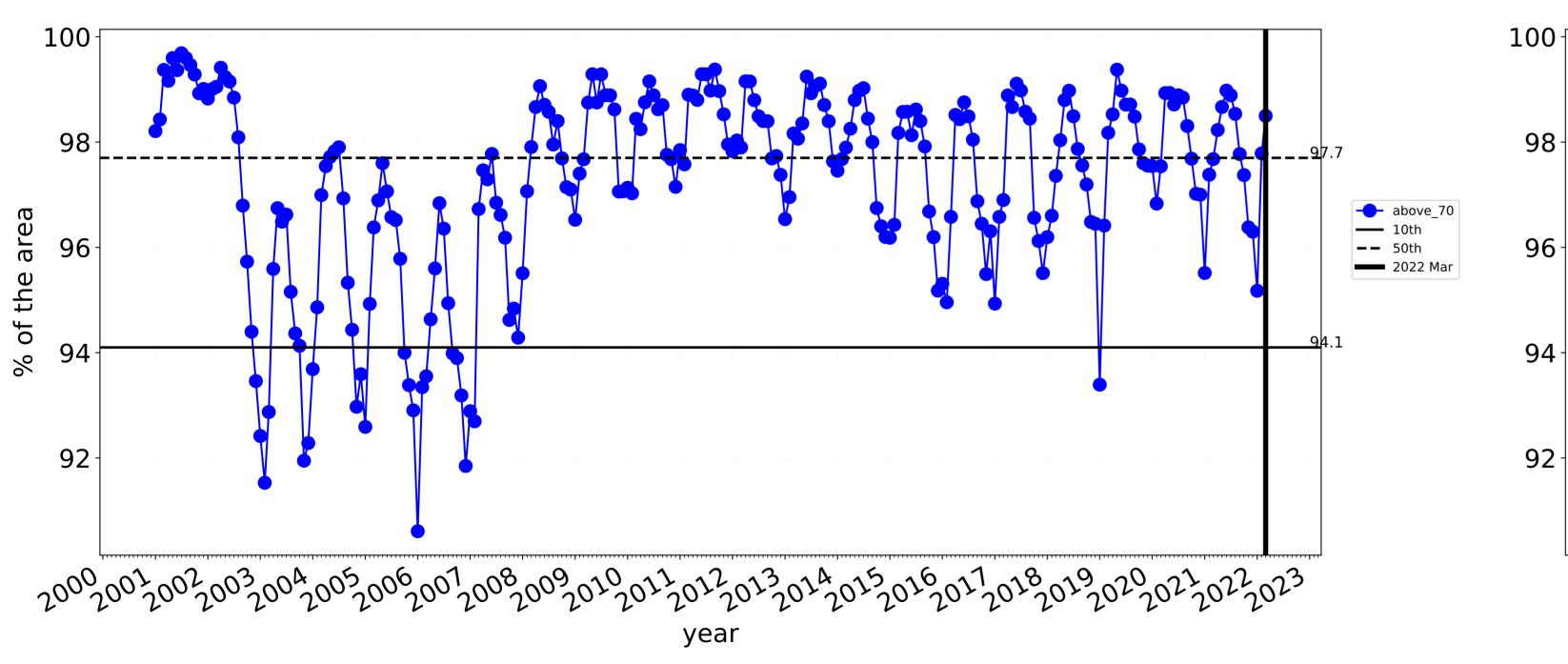






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

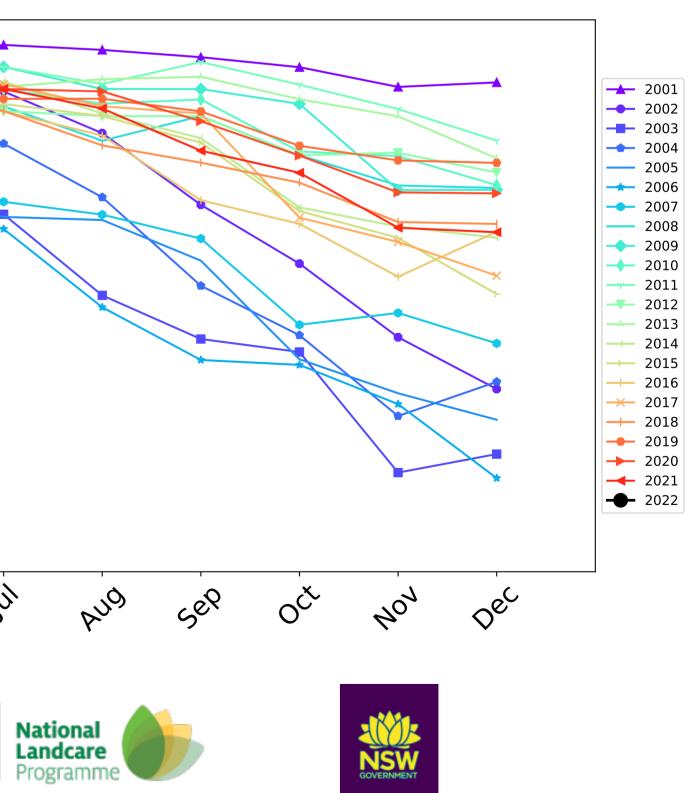
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



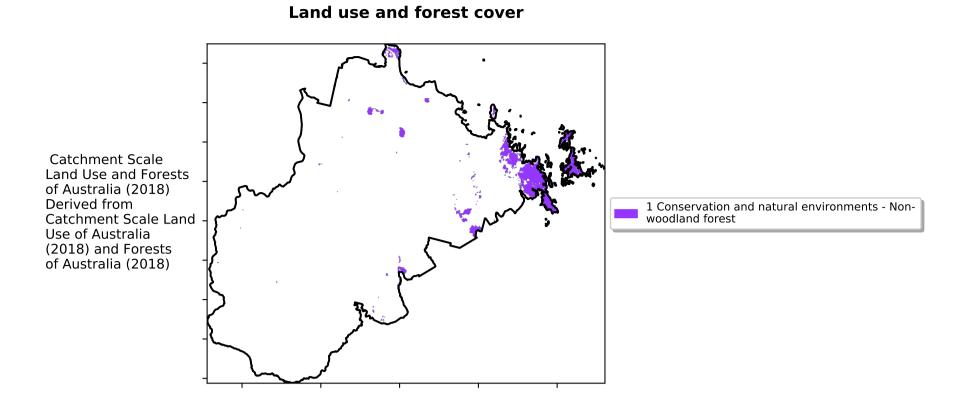
Wind erosion historical monthly area protected (Total Veg Cov >50%)

Jan 4e0 May In 1st PQ Mai month tern Ecosystem Research Infrastructure Australian Government

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



Conservation and natural environments Forest (non woodland)



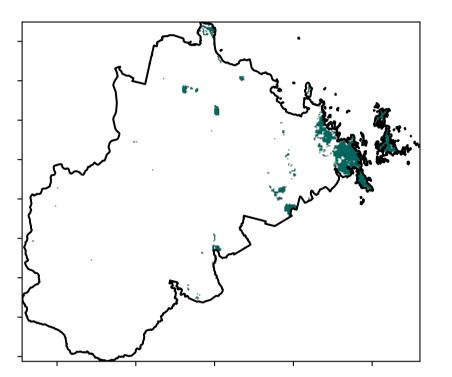
12%200%

1 52°10'70°10

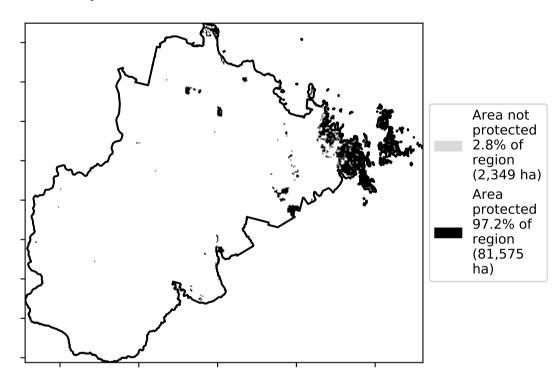
· 320/0500/0

· 0.30%

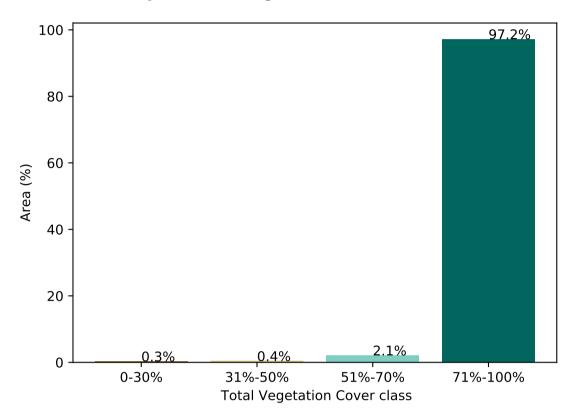
Total Vegetation Cover [%]



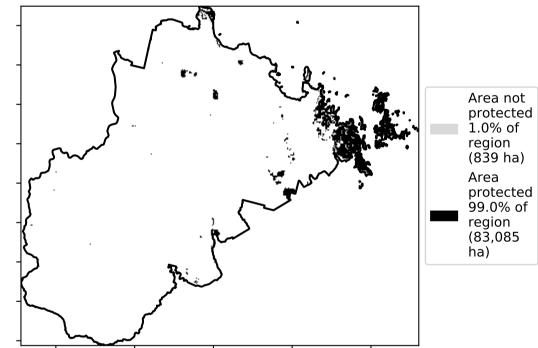
% Area protected from water erosion (>70%)





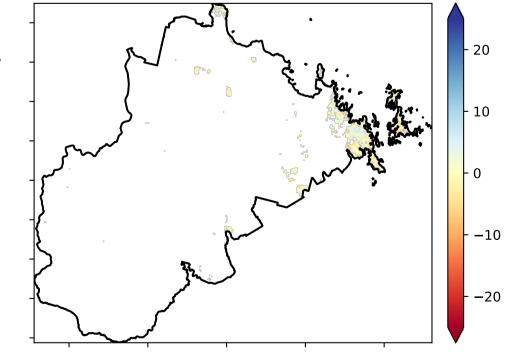


% Area protected from wind erosion (>50%)

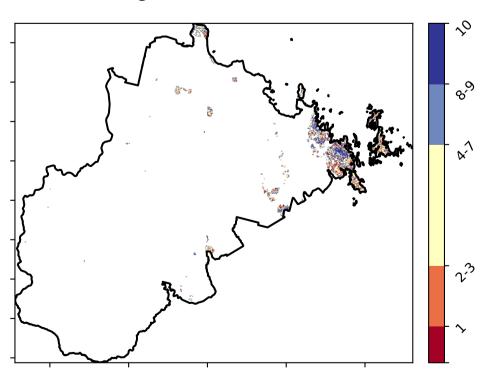


Total Vegetation Cover Anomaly [%]

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.

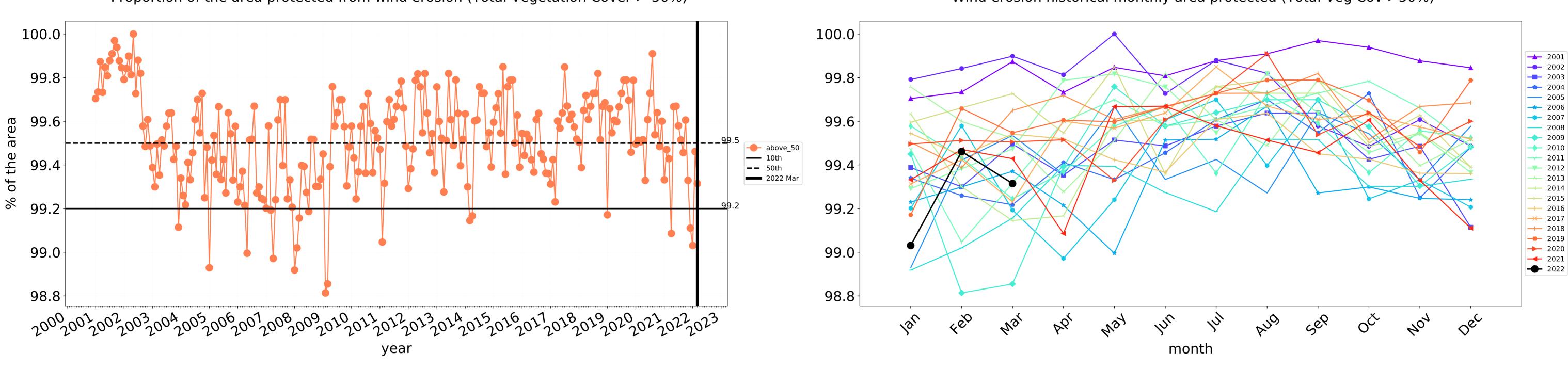


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.



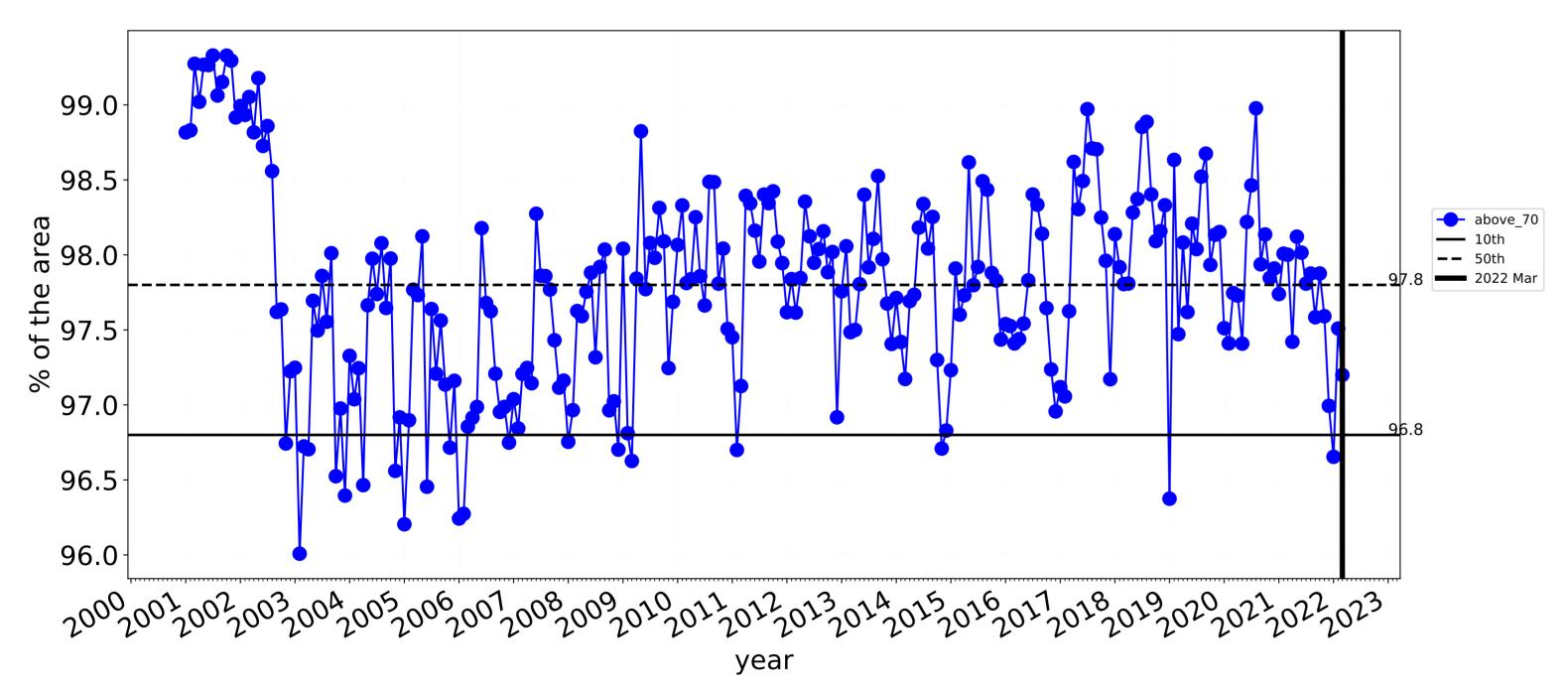


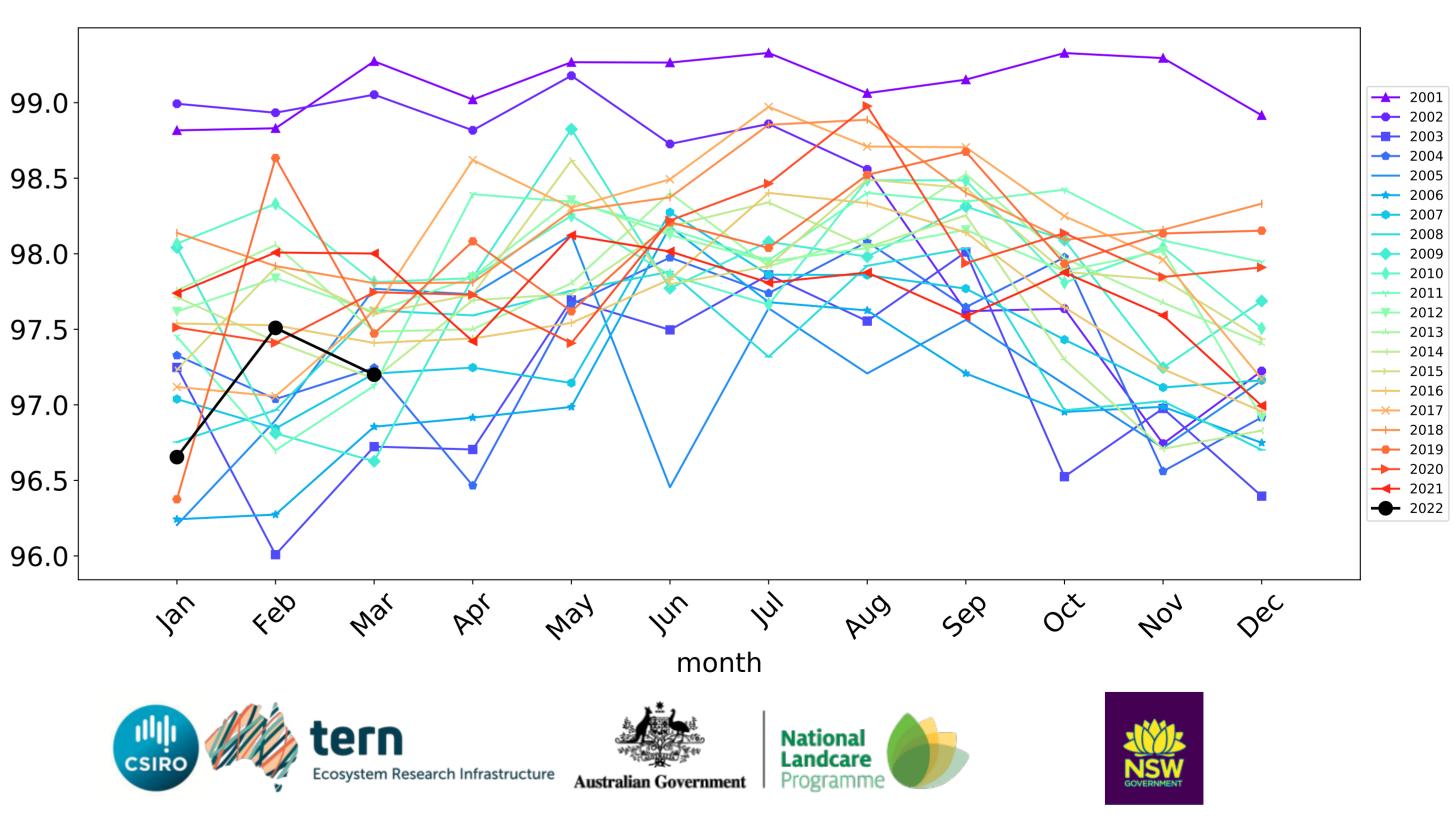
Conservation and natural environments Forest (non woodland) timeseries



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

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





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

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

Agriculture

Land use and forest cover



<u>56.</u>2%

<u>39.</u>3%

50

40

Area (%) 00.

20 -

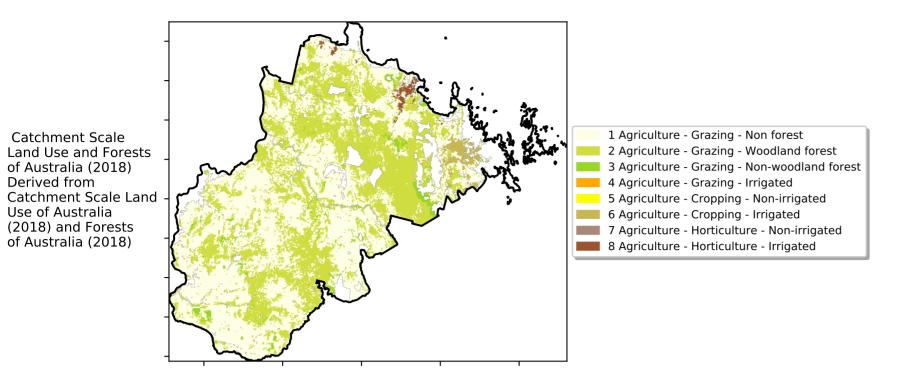
10

0

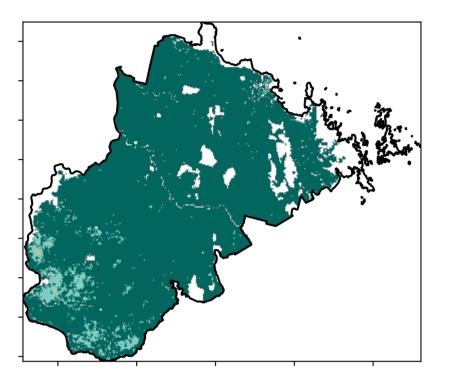
0

1

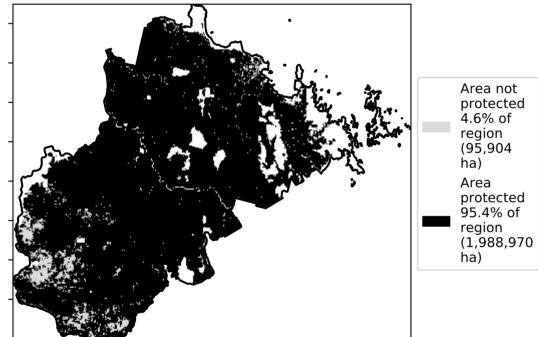
2

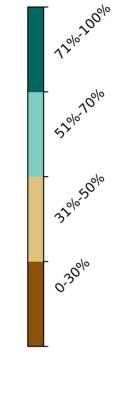


Total Vegetation Cover [%]



% Area protected from water erosion (>70%)





· 20

· 10

0

-10

-20

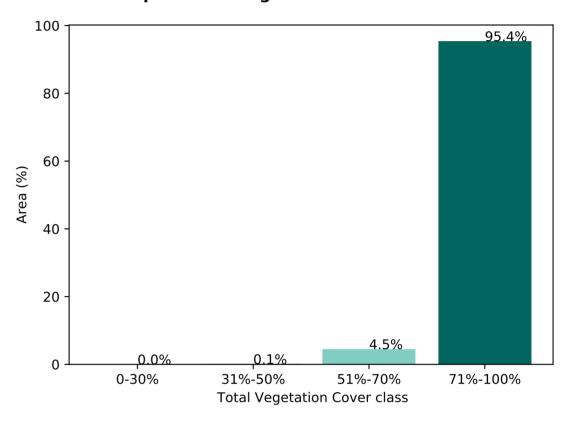




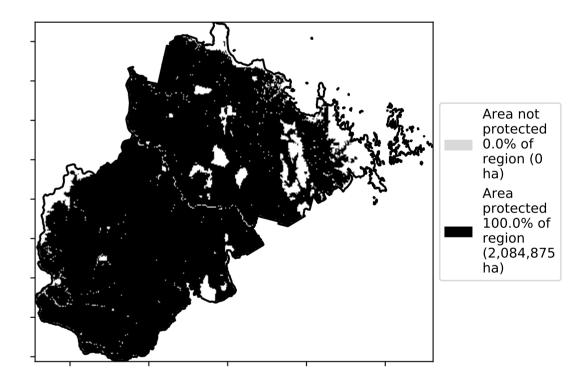
Land use class

3

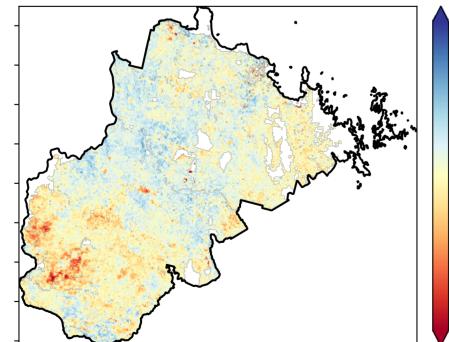
<u>0.6</u>%



% Area protected from wind erosion (>50%)

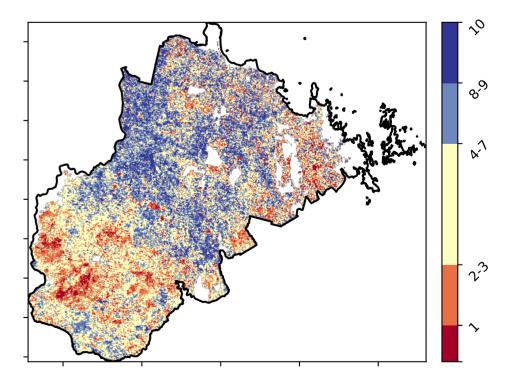


Total Vegetation Cover Anomaly [%]

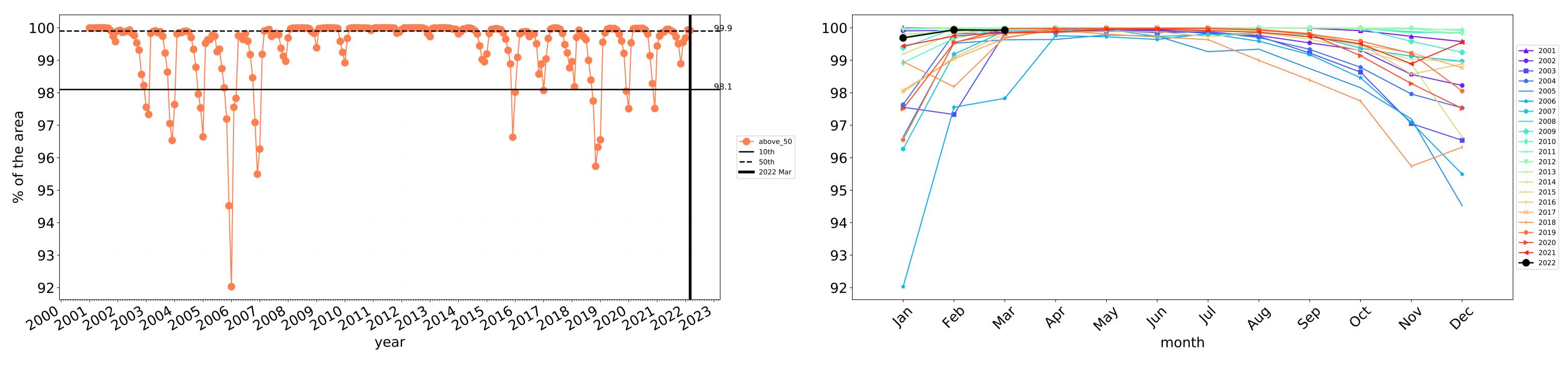


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

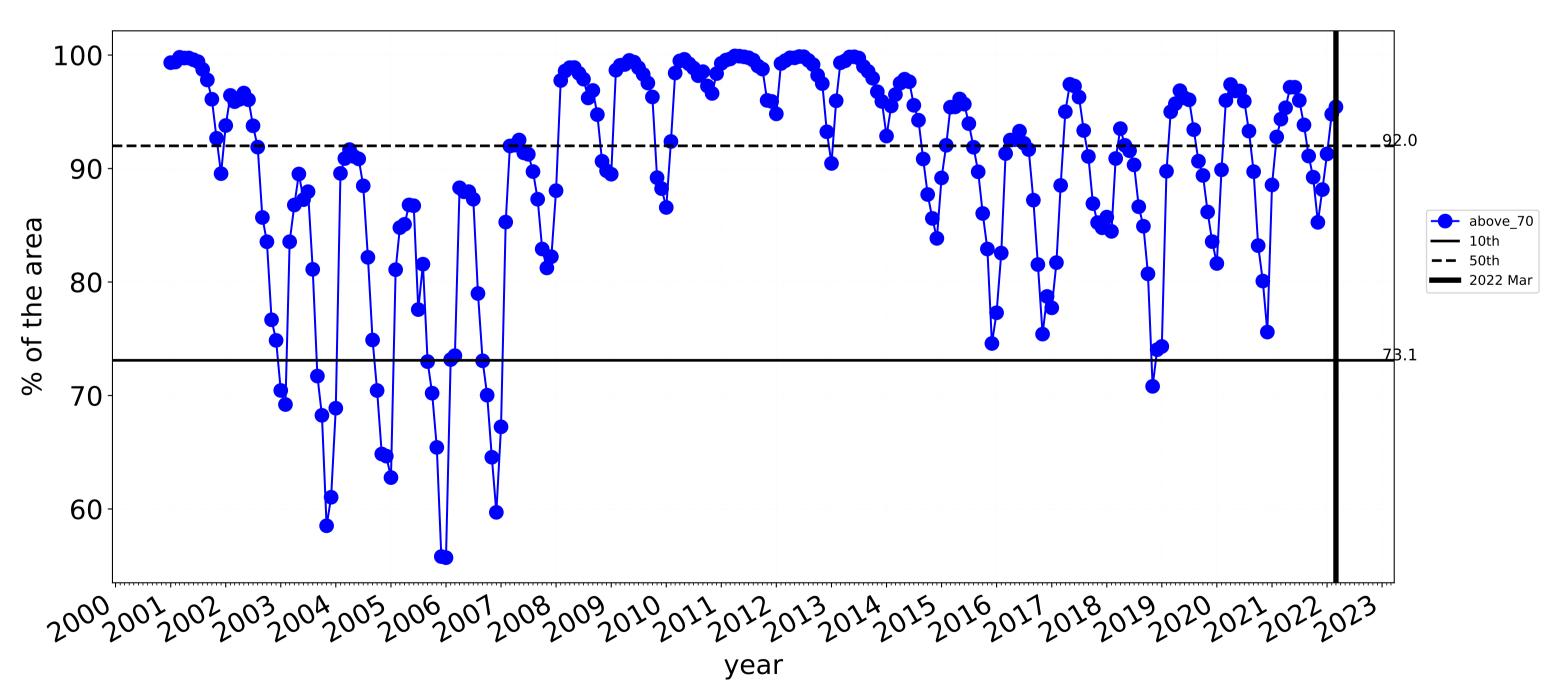
Total Vegetation Cover Decile [%]







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

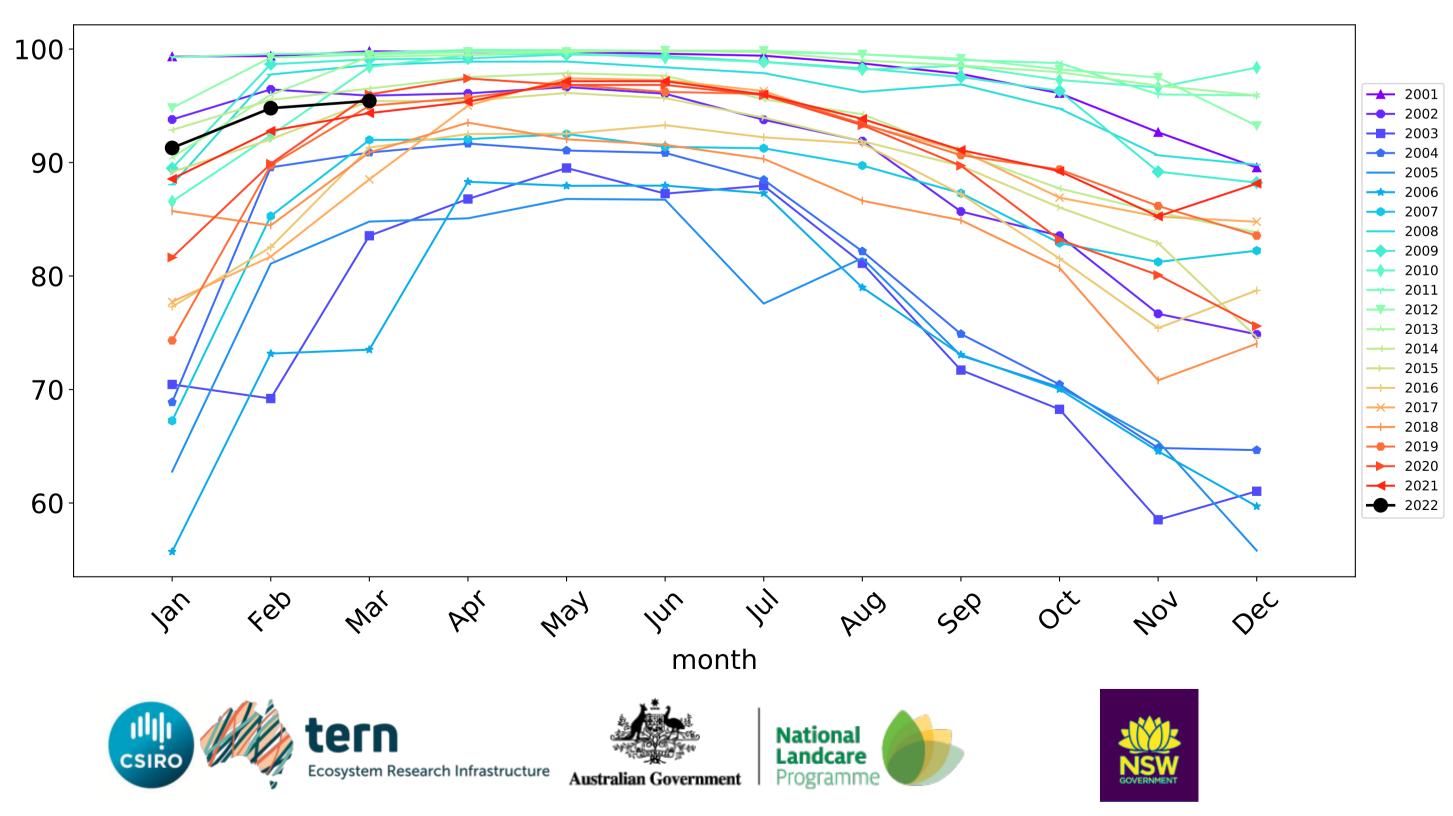


Agriculture timeseries



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

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

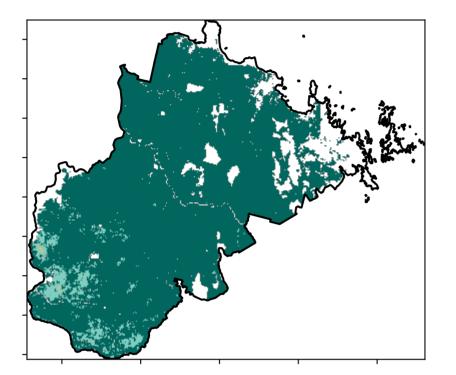


Grazing

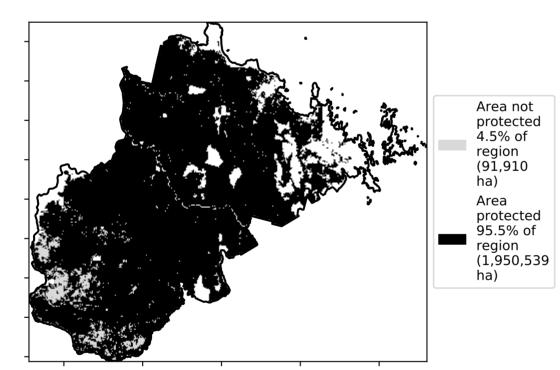
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land 1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest Use of Australia (2018) and Forests of Australia (2018)

Land use and forest cover

Total Vegetation Cover [%]



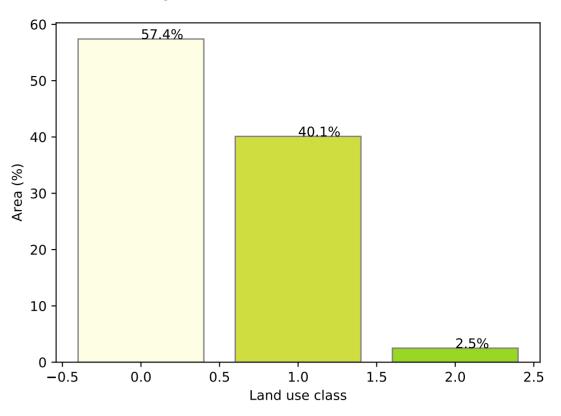
% Area protected from water erosion (>70%)



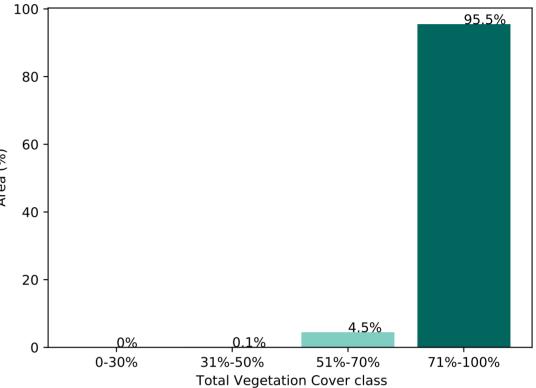
12%-200% · 52°10-70°10 3201050010 0.30%



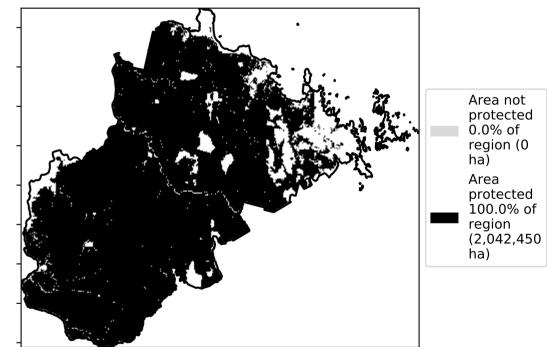
Proportion of each land class in area



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)





Total Vegetation Cover Anomaly [%]

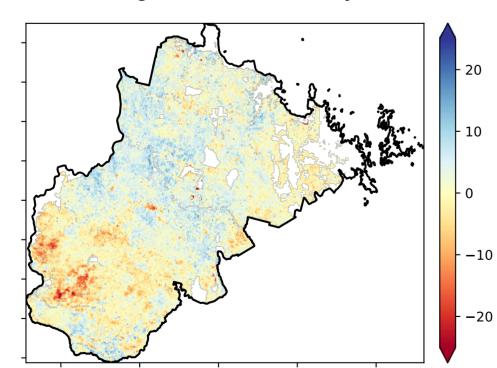
Anomaly show how many percetage points each pixel is from the mean. That

is, red pixels are about 20% lower than the

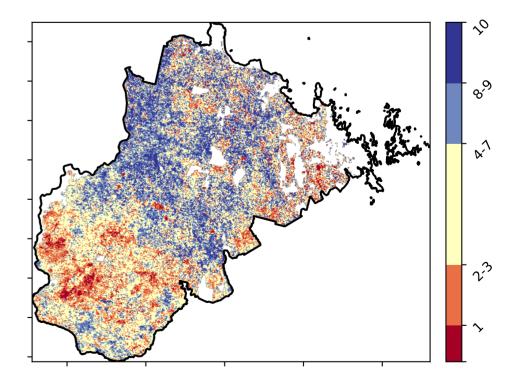
mean of that pixel. The mean

using baseline from 2001 to 2019.

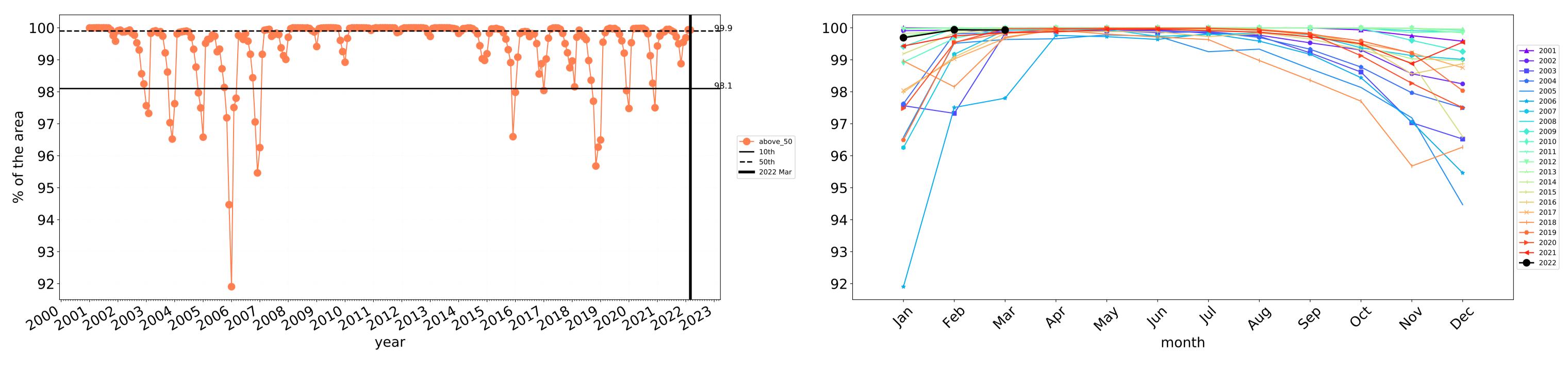
is only for the month of the map



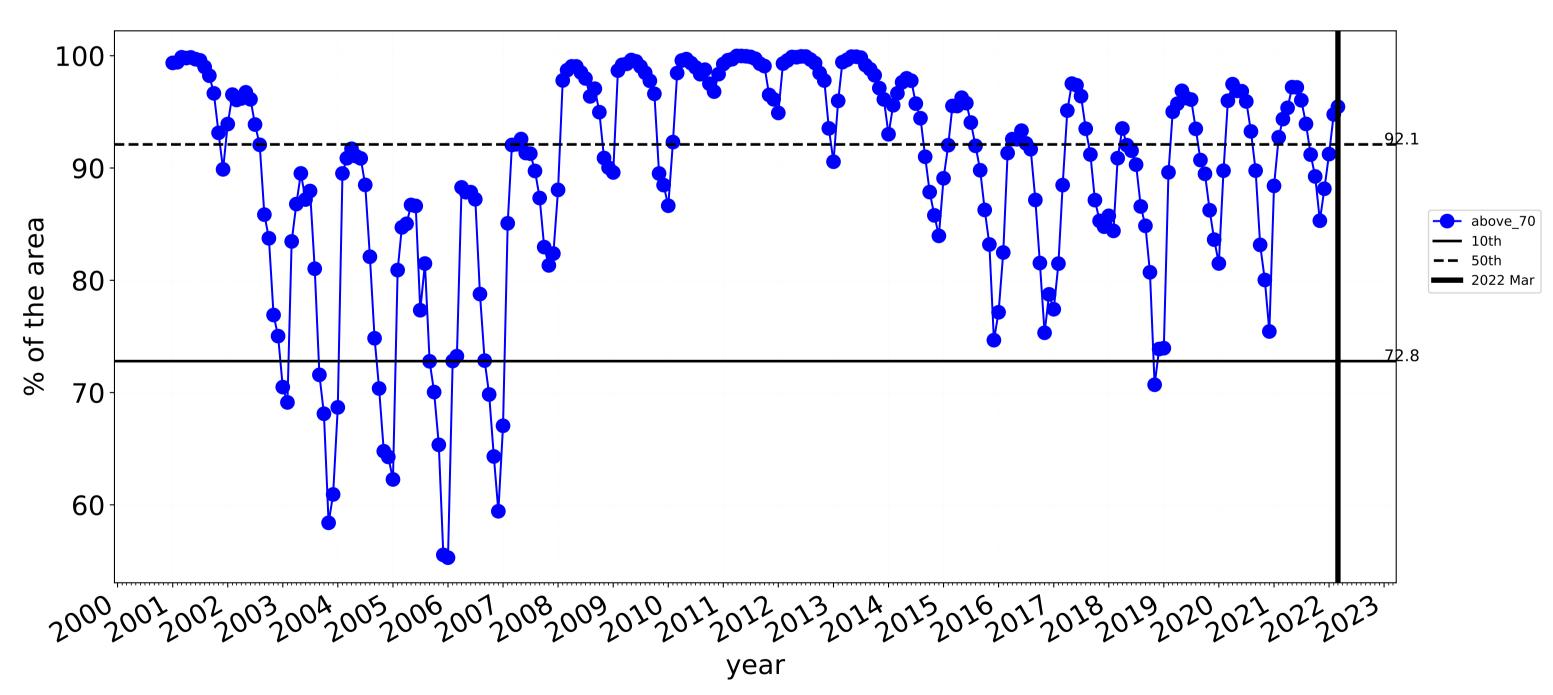
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.







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



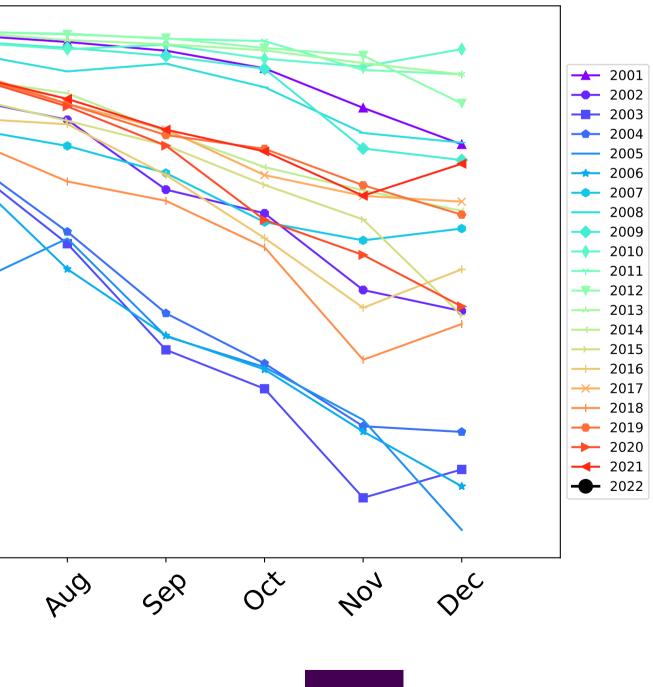
Grazing timeseries



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

100-90 80-70-60 4e0 way In Mar 1y Jan PQ month Ecosystem Research Infrastructure Australian Government

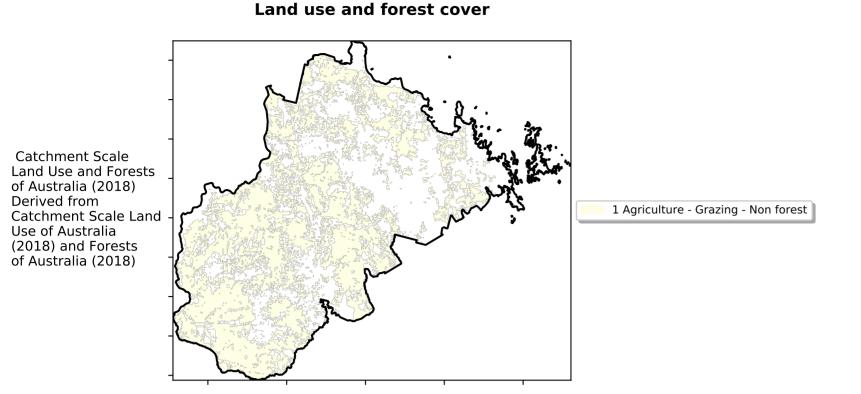
Water erosion historical monthly area protected (Total Veg Cov>70%)



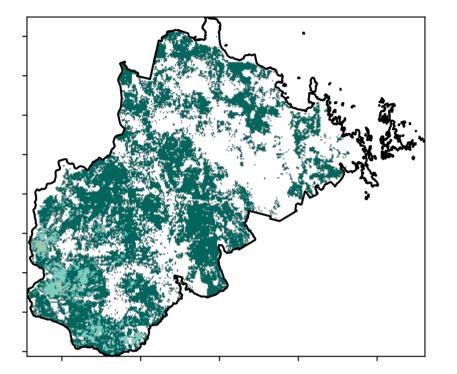




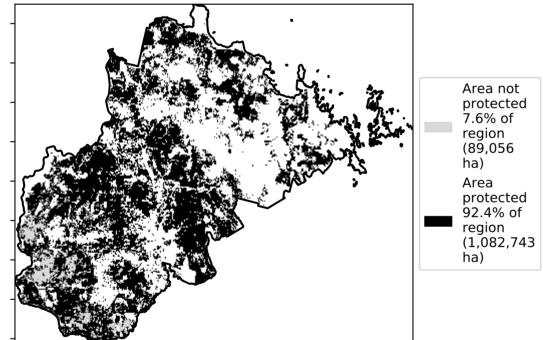
Grazing non forest

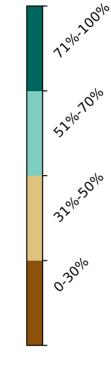


Total Vegetation Cover [%]



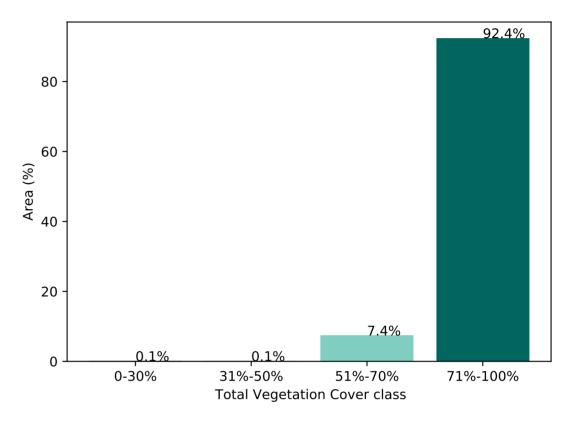
% Area protected from water erosion (>70%)



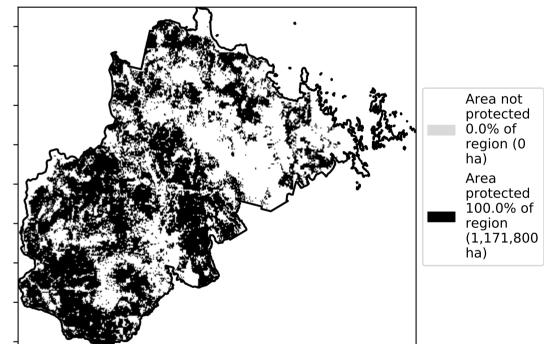




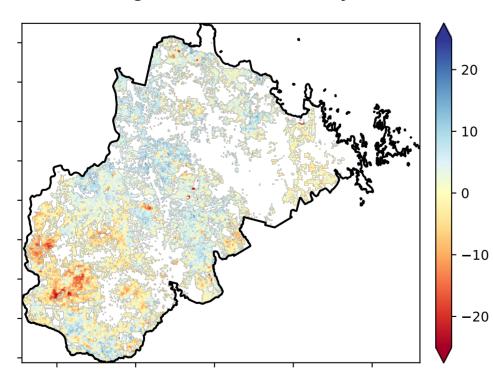
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

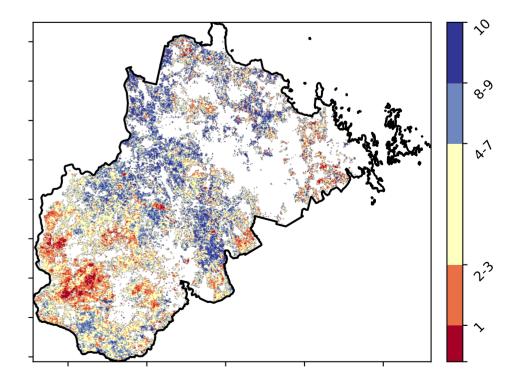


Total Vegetation Cover Anomaly [%]

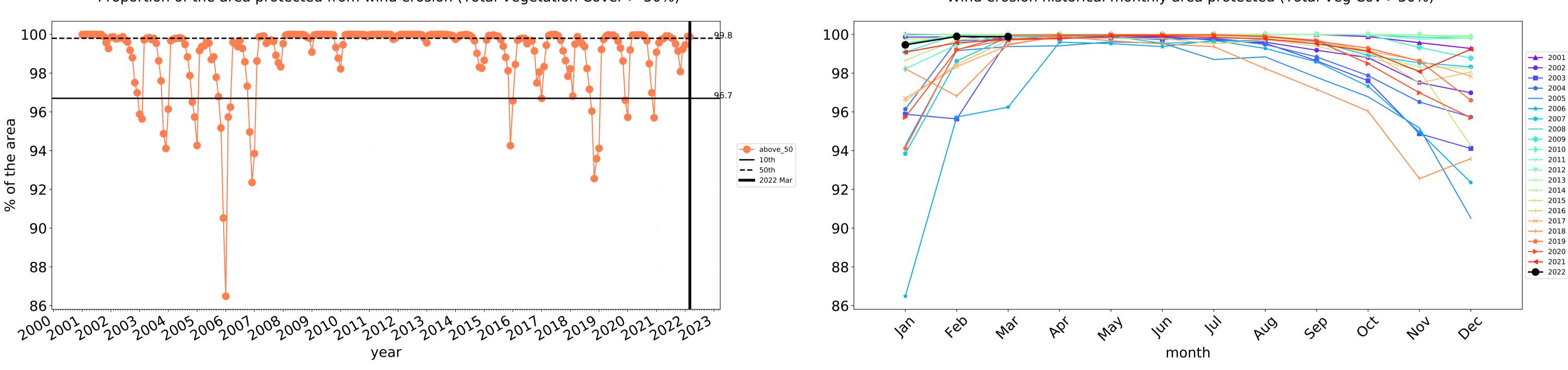


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

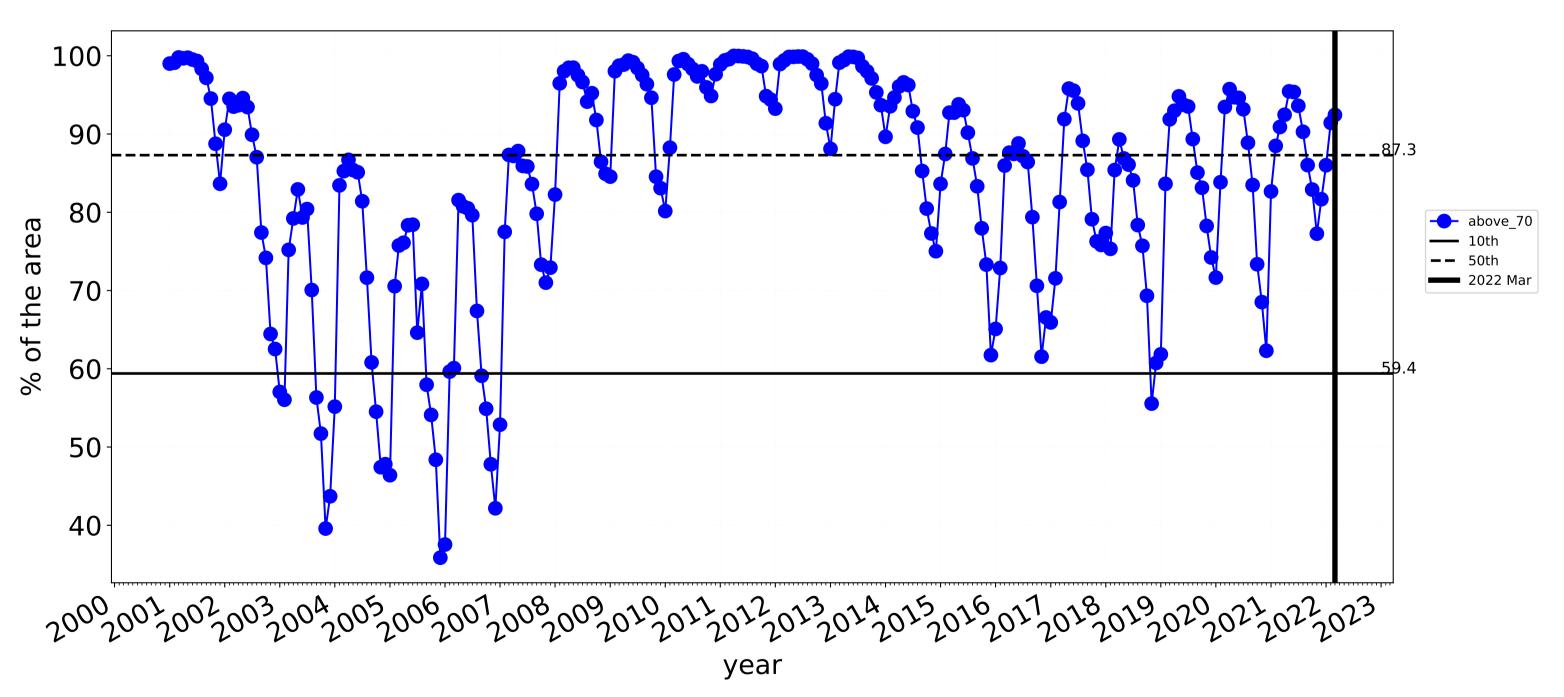
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.



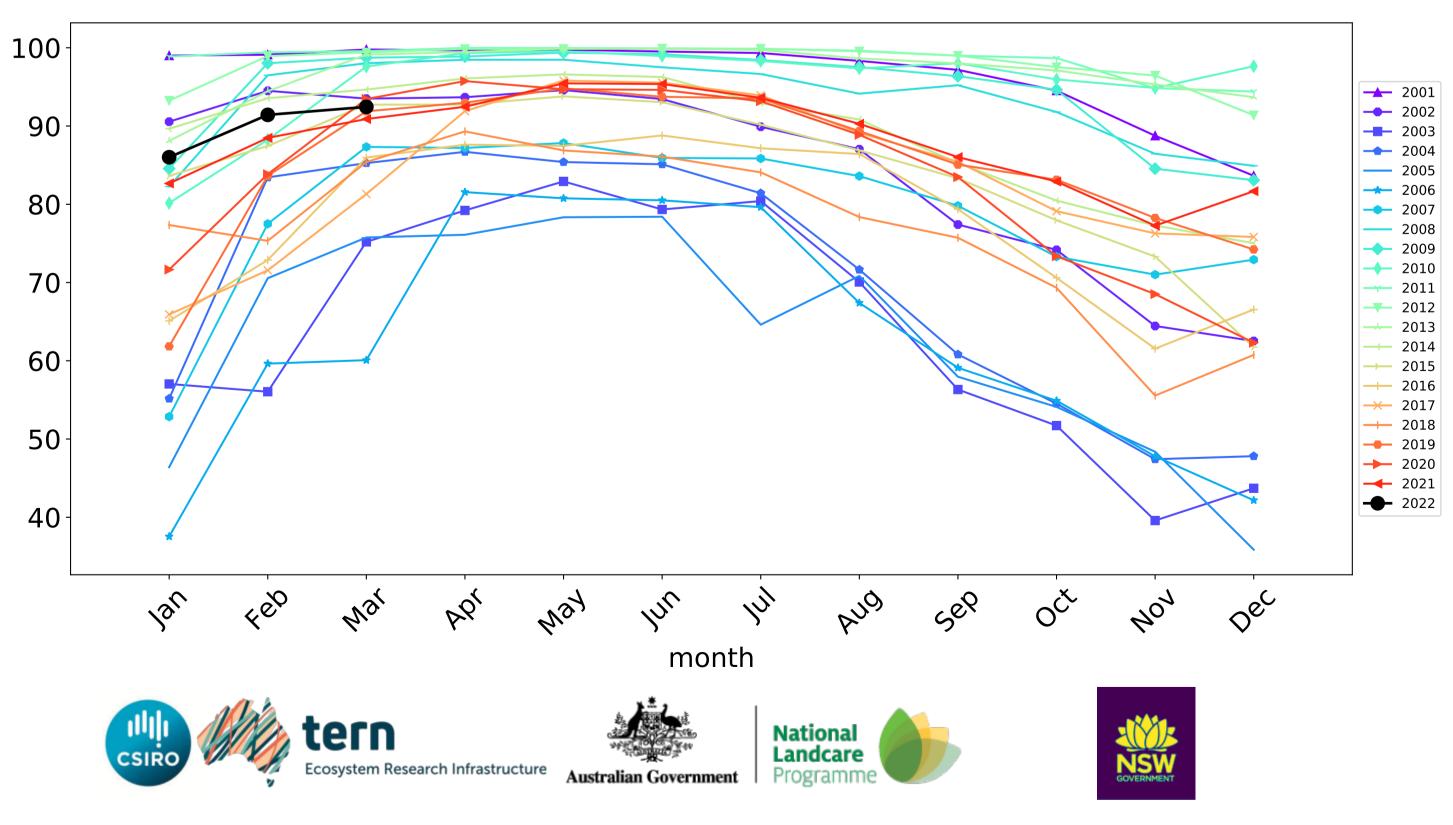




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



Grazing non forest timeseries



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

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

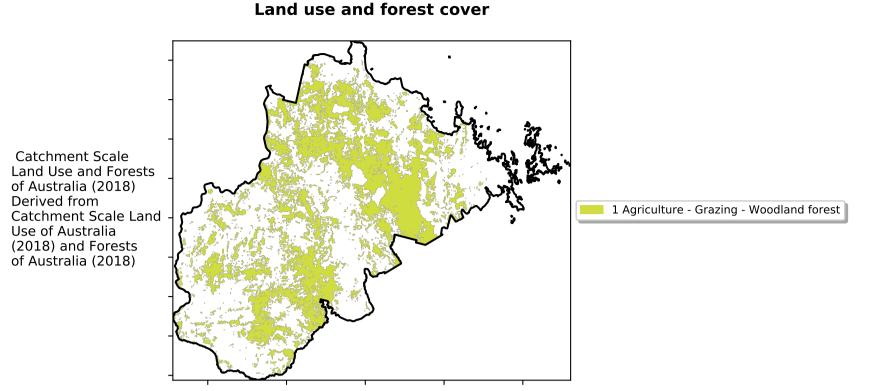
Grazing Woodland forest

· 12%-200°

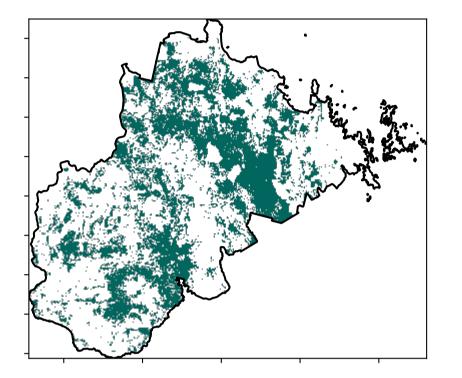
52°10'TOOL

320050010

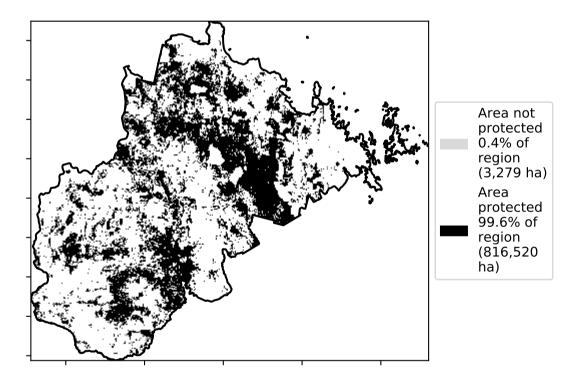
0.30%



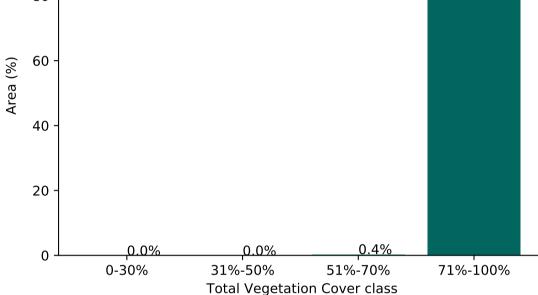
Total Vegetation Cover [%]



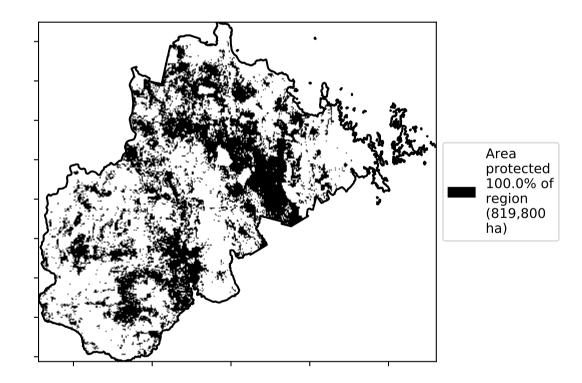
% Area protected from water erosion (>70%)



100 80



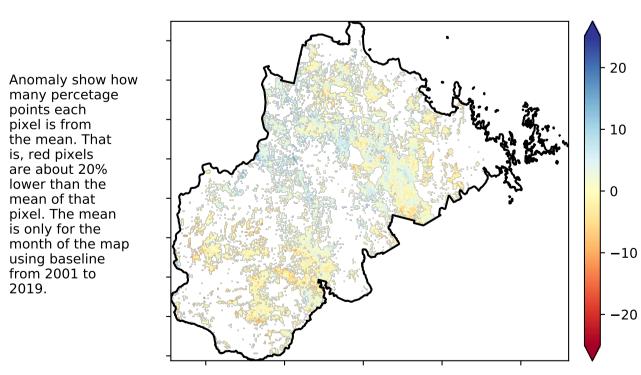
% Area protected from wind erosion (>50%)



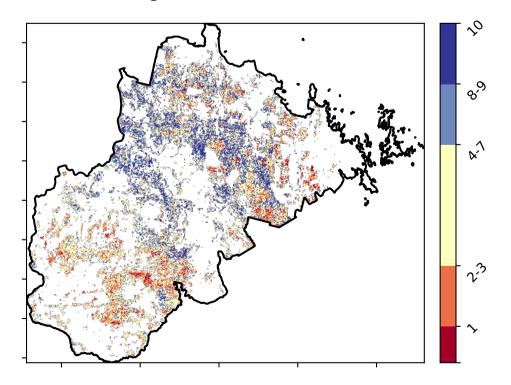
Proportion of vegetation cover class in area

99.6%

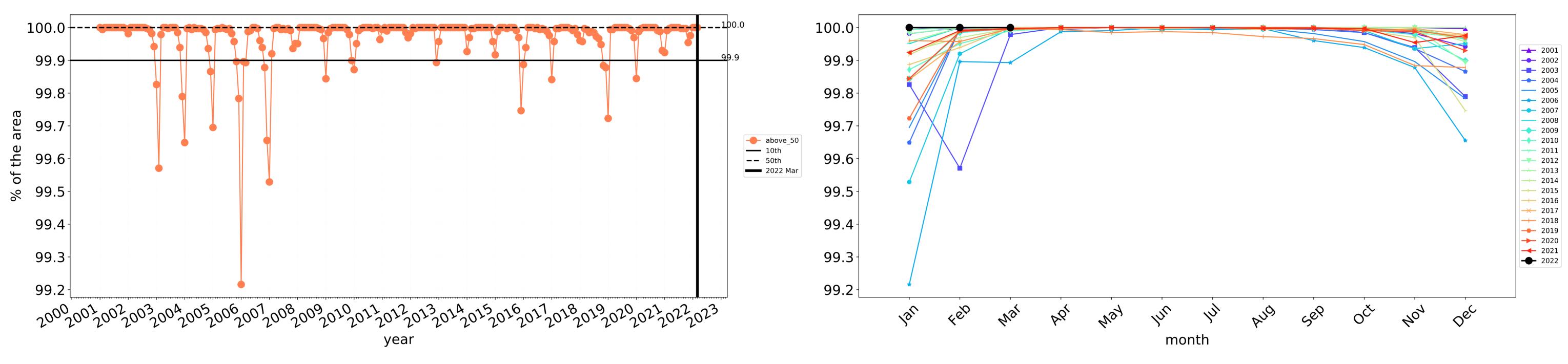
Total Vegetation Cover Anomaly [%]



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 the map using baseline from 2001 to 2019.

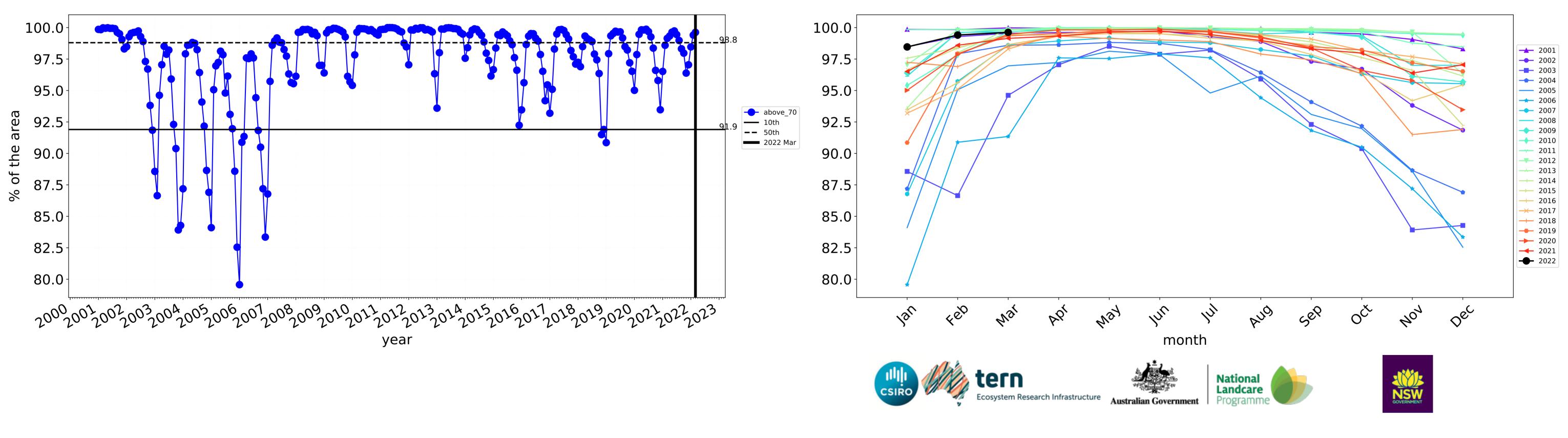






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)





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

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

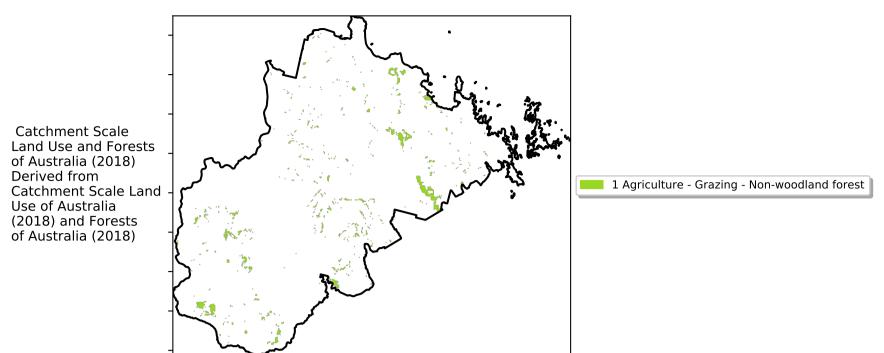
Grazing - Forest (non woodland)

· 12% 100%

52°10010

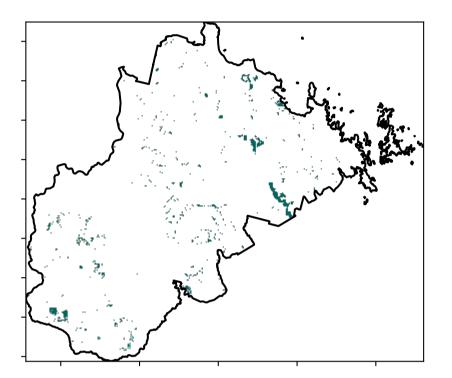
3201050010

0.30%

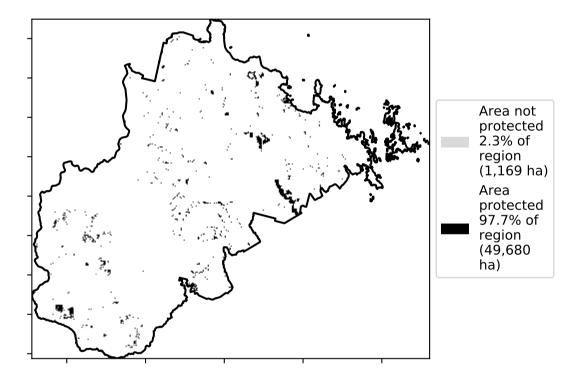


Land use and forest cover

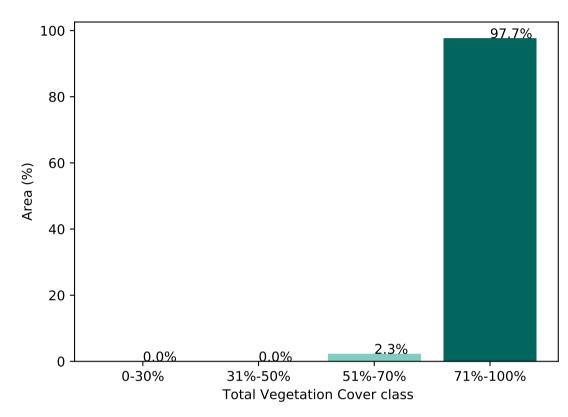
Total Vegetation Cover [%]



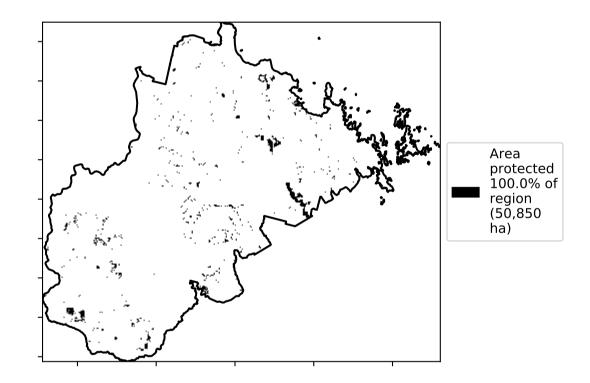
% Area protected from water erosion (>70%)



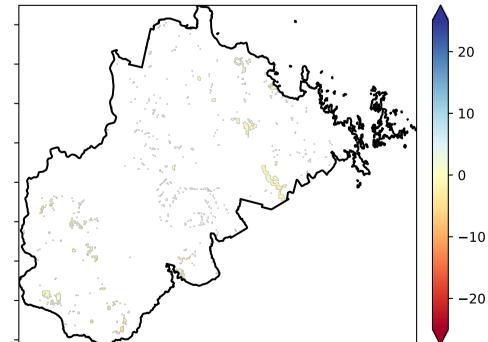




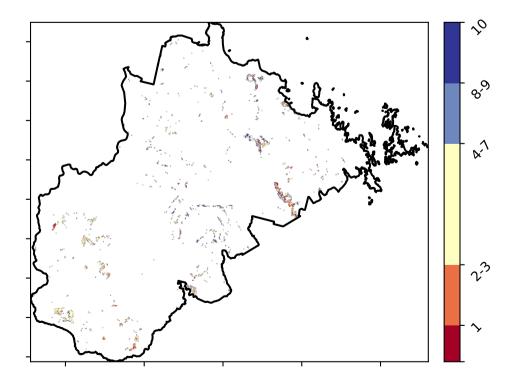
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

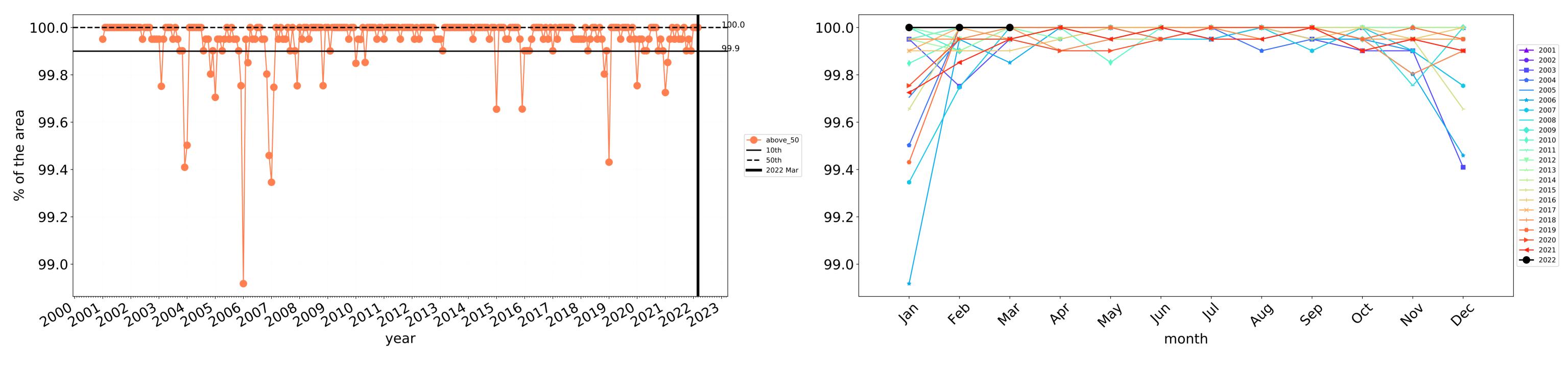


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]**

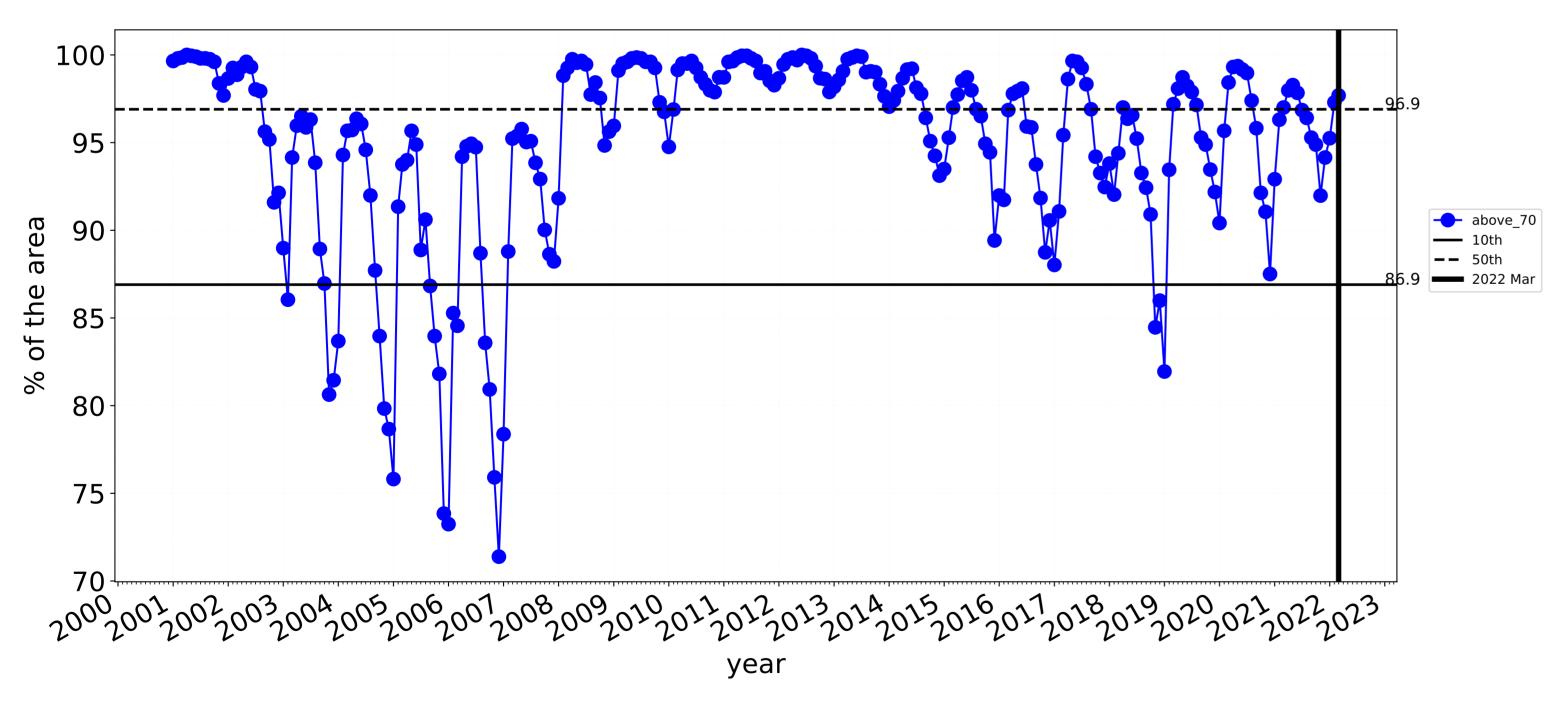








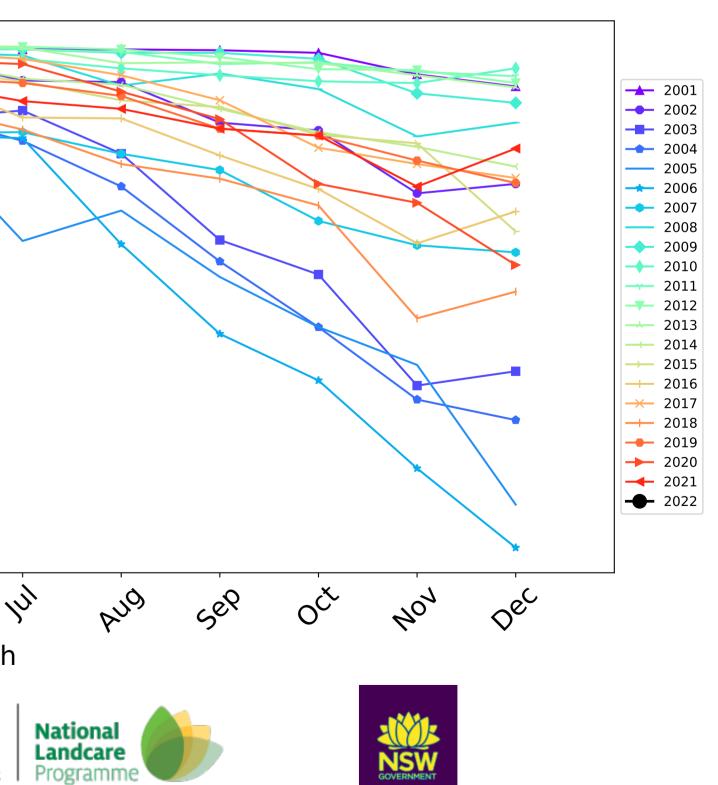
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

100 95 90-85 80 75 70 4eb lar way In Þ6, Mai month tern Ecosystem Research Infrastructure Australian Government

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



Irrigation

12%200%

52°10010

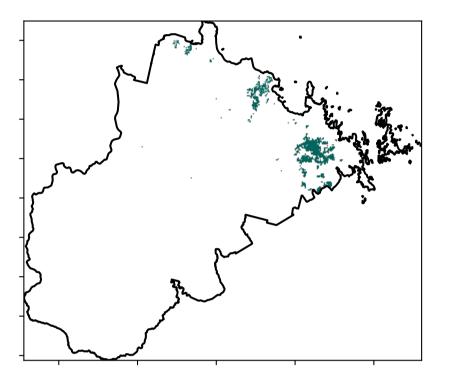
320050010

0.30%

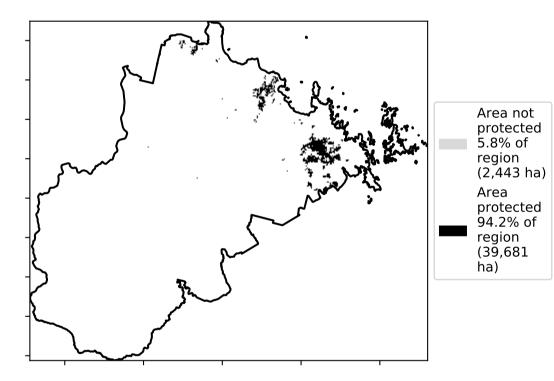
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 1 Agriculture - Grazing - Irrigated 2 Agriculture - Cropping - Irrigated 3 Agriculture - Horticulture - Irrigated

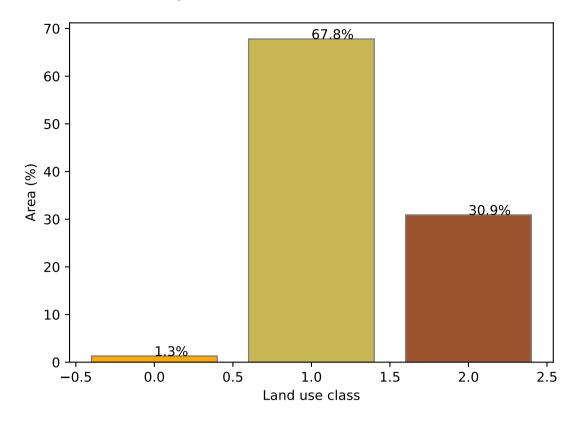
Total Vegetation Cover [%]

Land use and forest cover



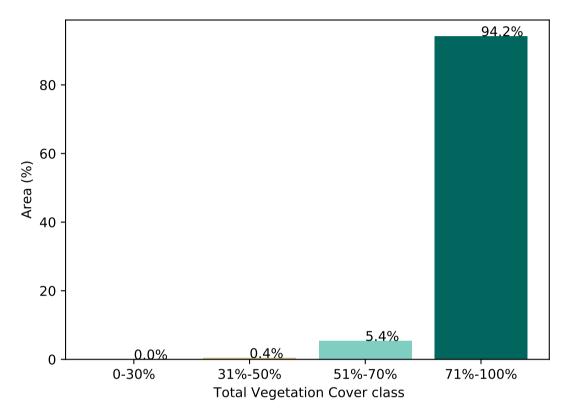
% Area protected from water erosion (>70%)



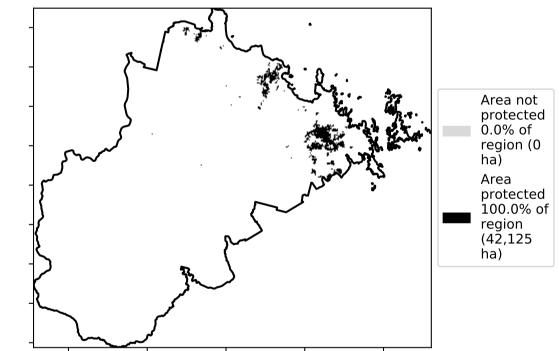


Proportion of each land class in area

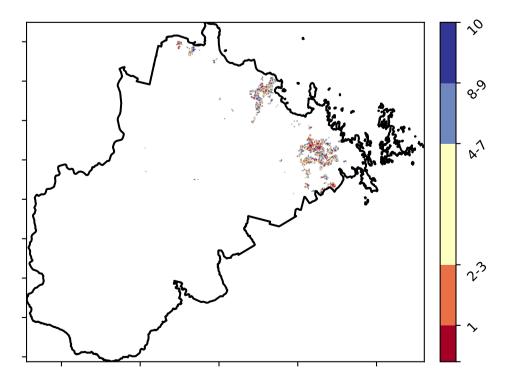
Proportion of vegetation cover class in area



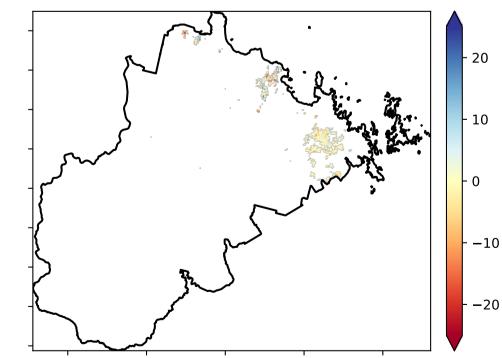
% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]

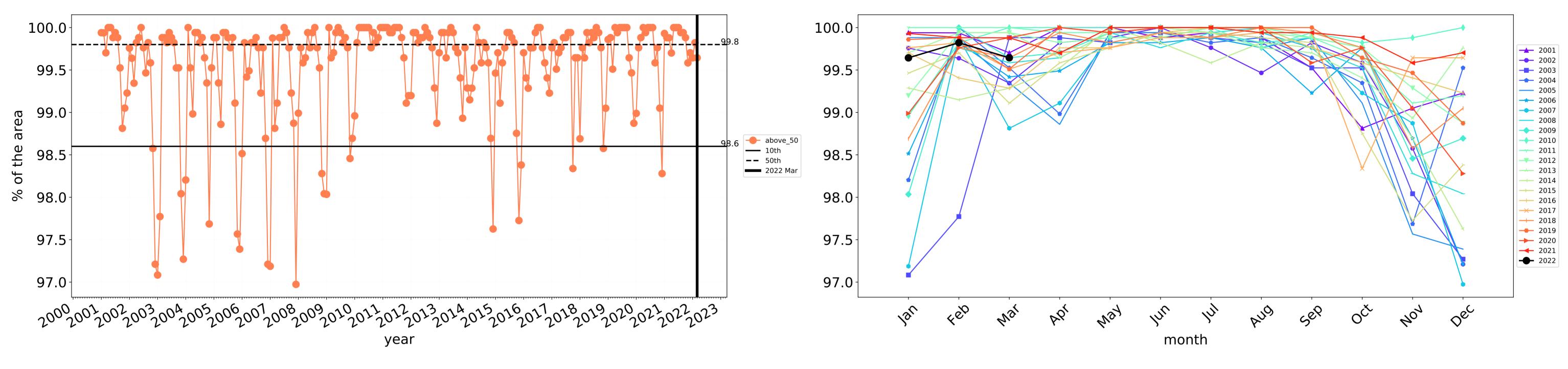


Total Vegetation Cover Anomaly [%]

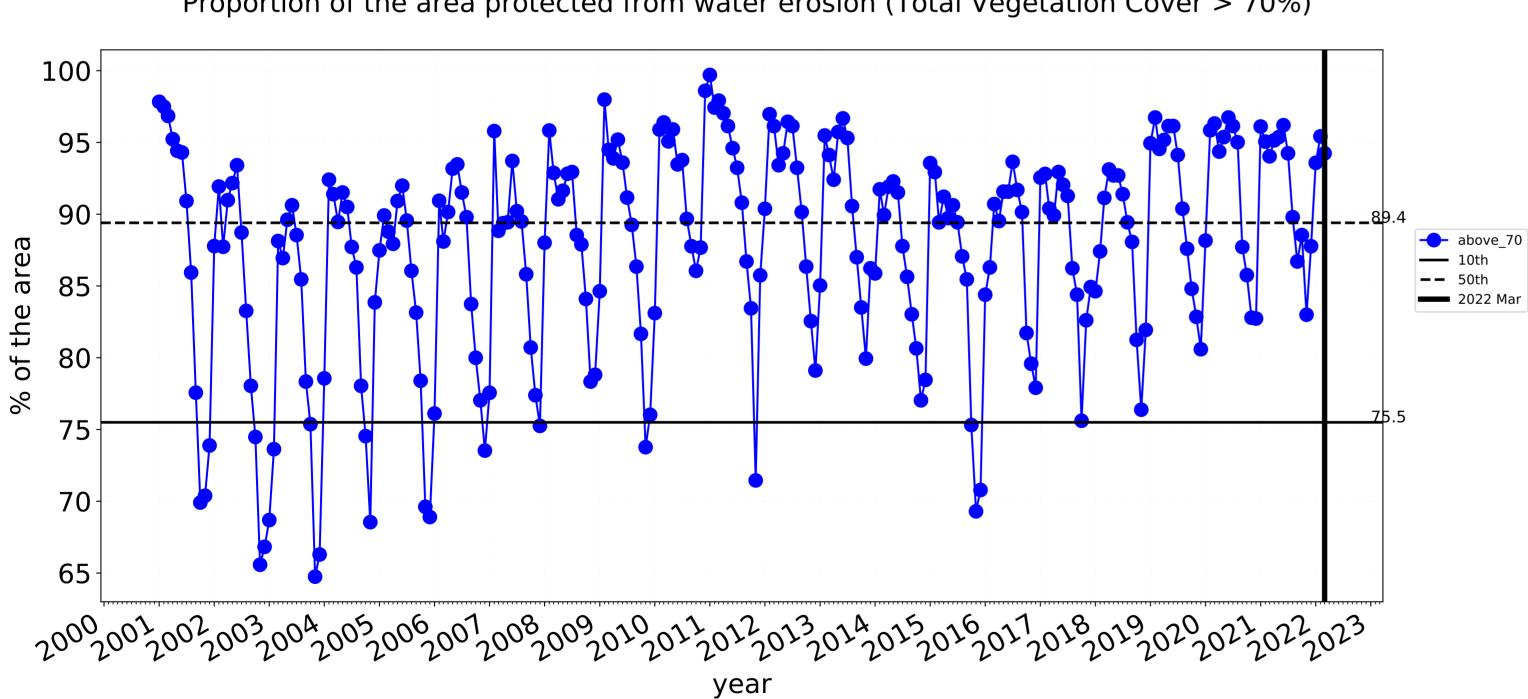


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





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



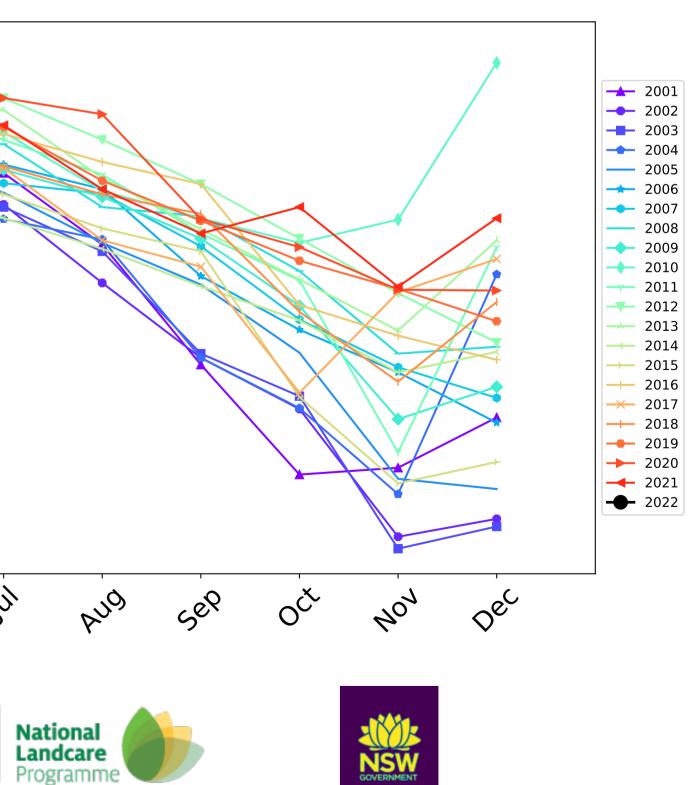
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

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

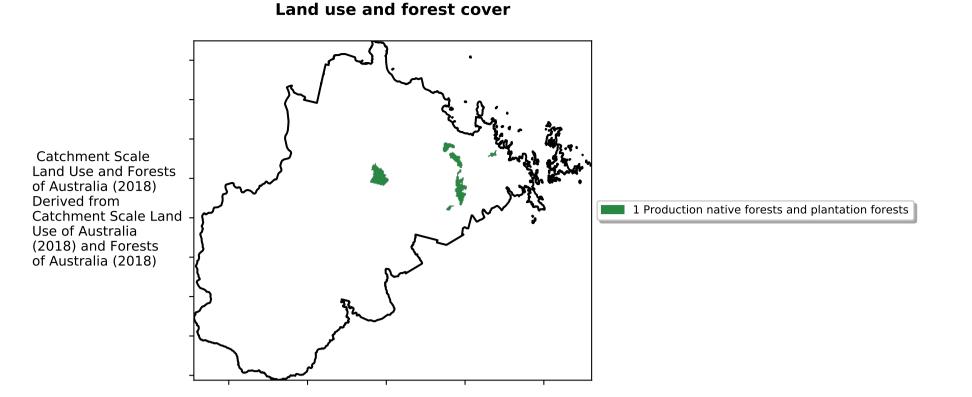
100-95 90 85 80 75 70 65 4eb Jan In way Mai 1¹1 Þb, month tern Ecosystem Research Infrastructure Australian Government

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

Programme



Production native forests and plantation forests



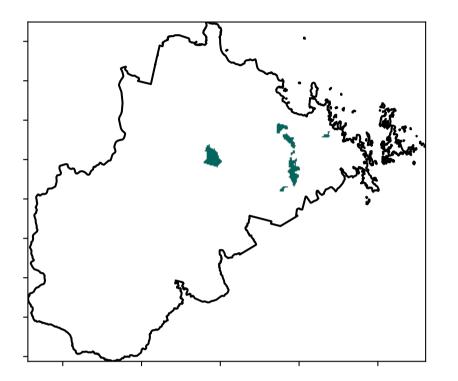
12%100%

52°1070°10

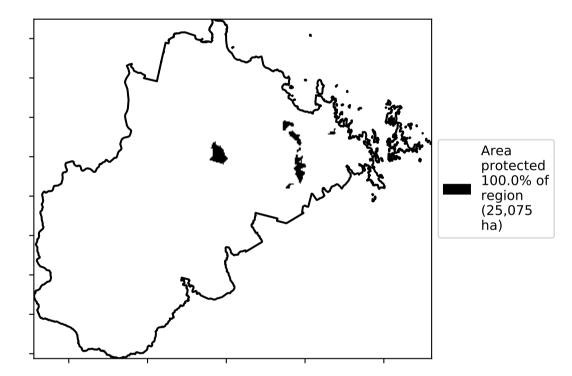
3201050010

0.30%

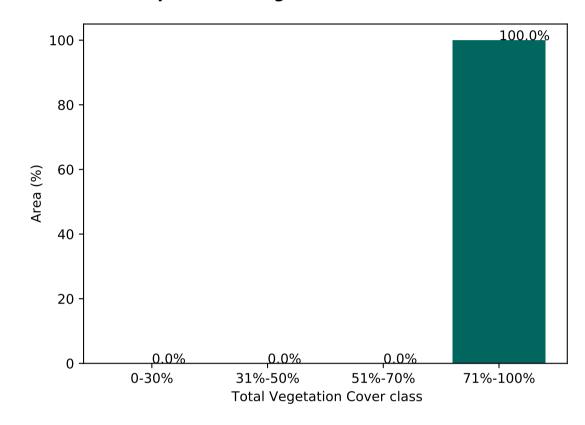
Total Vegetation Cover [%]



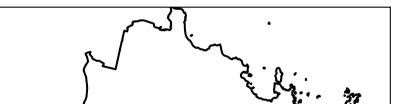
% Area protected from water erosion (>70%)



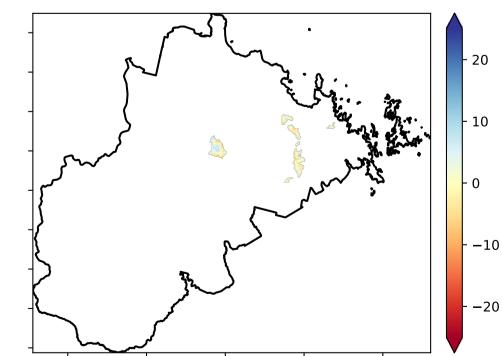
Proportion of vegetation cover class in area



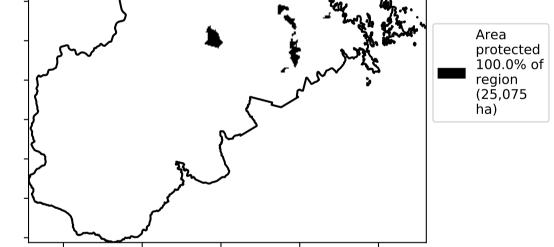
% Area protected from wind erosion (>50%)



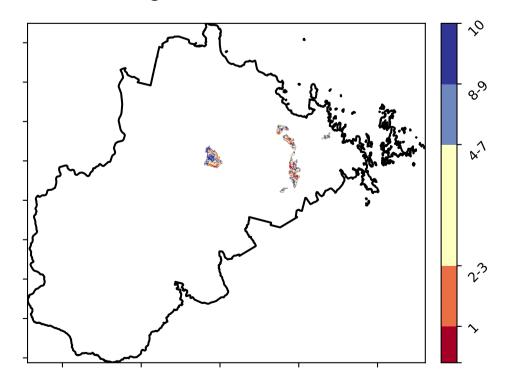
Total Vegetation Cover Anomaly [%]



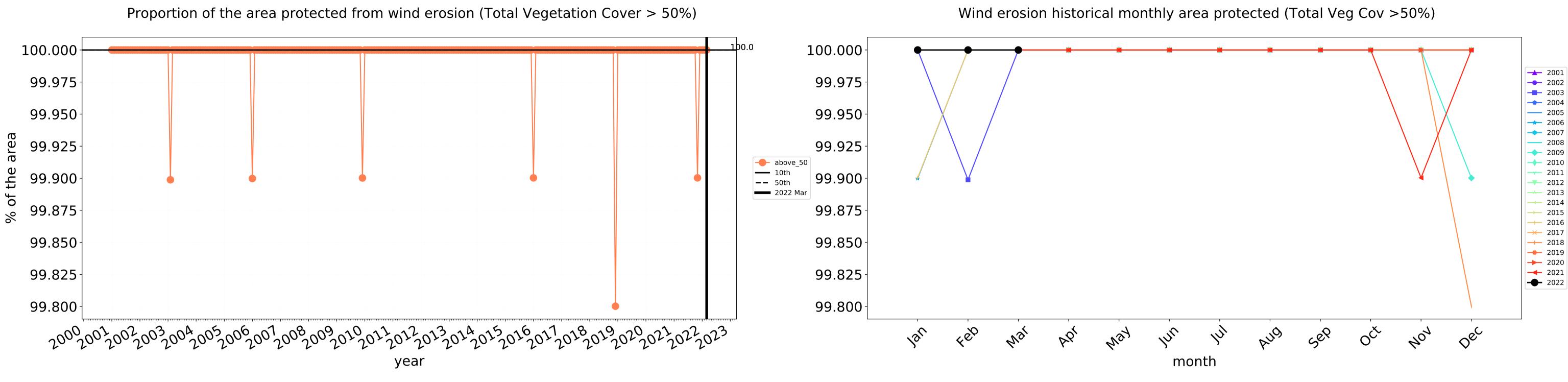
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

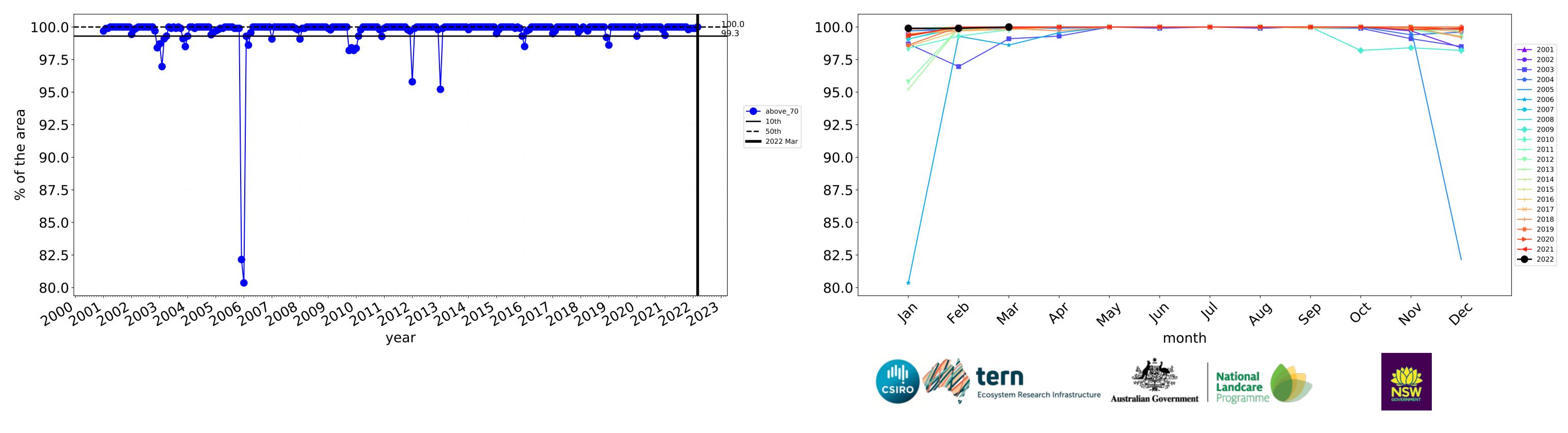


Total Vegetation Cover Decile [%]









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

Whitsunday_(R) (2,356,075 ha and no data 25,801 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 | 2,356,075 | 100.0% 2,355,575 | 99.8% 2,351,800 | 95.2% 2,242,900 | 82.2% 1,935,975 | 45.8% 1,079,100 | 16.0% 376,950 |
| Conservation and natural environments | 168,675 | 99.8% 168,325 | 99.4% 167,600 | 95.8% 161,550 | 86.5% 145,975 | 57.2% 96,450 | 25.2% 42,425 |
| Conservation and natural environments non forest | 28,150 | 99.8% 28,100 | 98.7% 27,775 | 86.1% 24,225 | 51.7% 14,550 | 9.8% 2,750 | 2.8% 800 |
| Conservation and natural environments Woodland forest Conservation and | 56,600 | 99.9% 56,550 | 99.8% 56,475 | 98.5% 55,750 | 92.8% 52,525 | 59.3% 33,575 | 18.4% 10,425 |
| natural environments Forest (non woodland) | 83,925 | 99.7% 83,675 | 99.3% 83,350 | 97.2% 81,575 | 94.0% 78,900 | 71.6% 60,125 | 37.2% 31,200 |
| Agriculture | 2,084,875 | 100.0% 2,084,875 | 99.9% 2,083,300 | 95.4% 1,989,625 | 82.3% 1,715,850 | 45.4% 946,250 | 15.4% 320,450 |
| Grazing | 2,042,450 | 100.0% 2,042,450 | 99.9% 2,041,025 | 95.5% 1,949,625 | 82.4% 1,682,525 | 46.0% 938,650 | 15.6% 318,925 |
| Grazing non forest | 1,171,800 | 100.0% 1,171,800 | 99.9% 1,170,375 | 92.4% 1,083,250 | 73.6% 861,950 | 36.2% 423,900 | 12.0% 140,125 |
| Grazing Woodland forest | 819,800 | 100.0% 819,800 | 100.0% 819,800 | 99.6% 816,700 | 94.6% 775,675 | 60.1% 492,400 | 21.1% 172,825 |
| Grazing - Forest (non woodland) | 50,850 | 100.0% 50,850 | 100.0% 50,850 | 97.7% 49,675 | 88.3% 44,900 | 44.0% 22,350 | 11.8% 5,975 |
| Irrigation | 42,125 | 100.0% 42,125 | 99.6% 41,975 | 94.2% 39,700 | 78.4% 33,025 | 17.8% 7,500 | 3.6% 1,500 |
| Production native forests and plantation forests | 25,075 | 100.0% 25,075 | 100.0% 25,075 | 100.0% 25,075 | 99.6% 24,975 | 75.4% 18,900 | 29.4% 7,375 |

