# Total vegetation cover soil protection Region:LGA Hinchinbrook\_(S) QLD

# **Date: January 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:

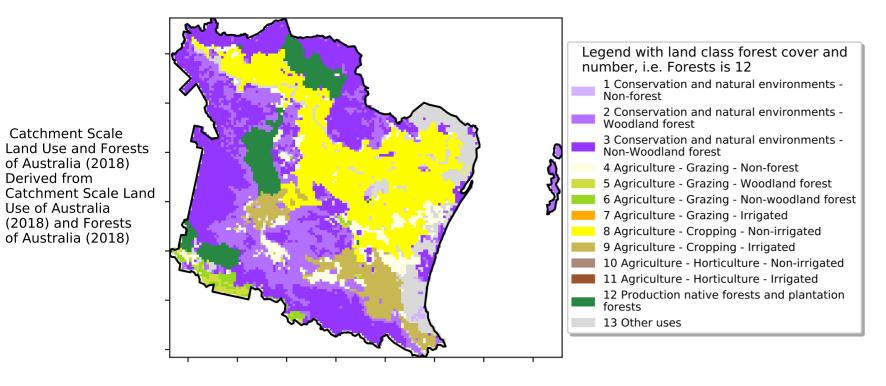
https://doi.org/10.4225/08/5848a3f19a7b3



# **Vegetation Cover Jan 2022**

#### Land use and forest cover

Proportion of each land class in area



12º10-200°1

52% TON

32%50%

0.30%

· 20

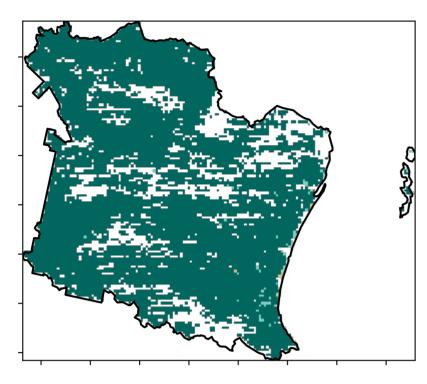
· 10

0

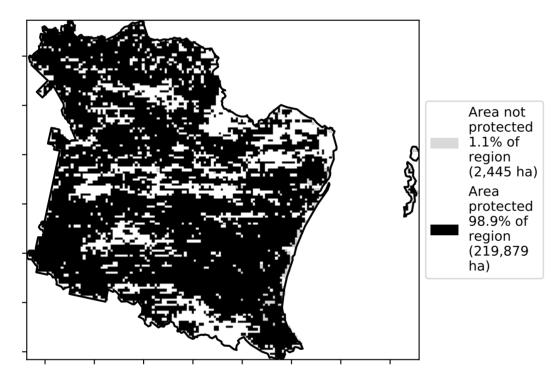
-10

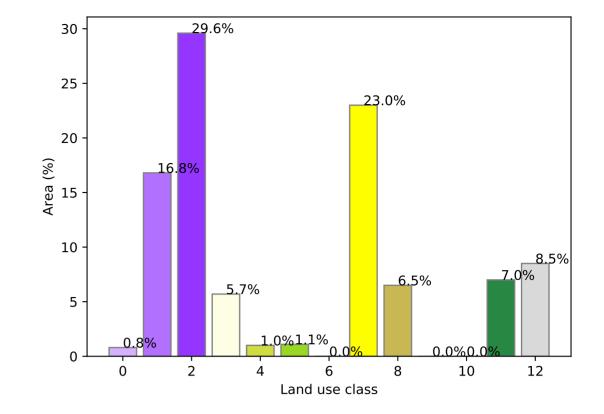
-20

**Total Vegetation Cover [%]** 

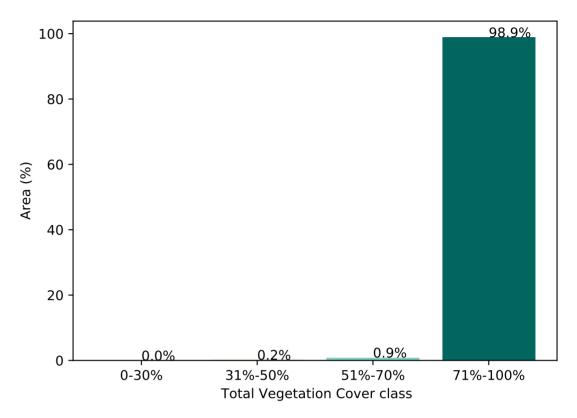


% Area protected from water erosion (>70%)

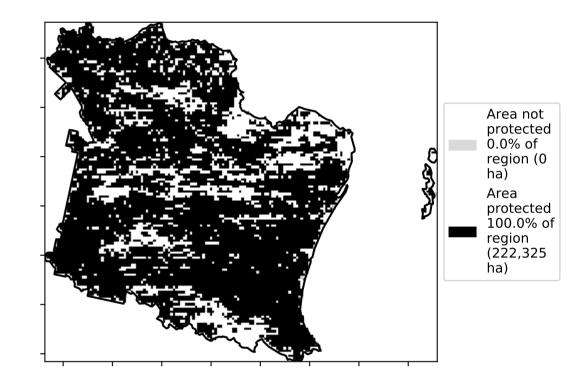




#### Proportion of vegetation cover class in area

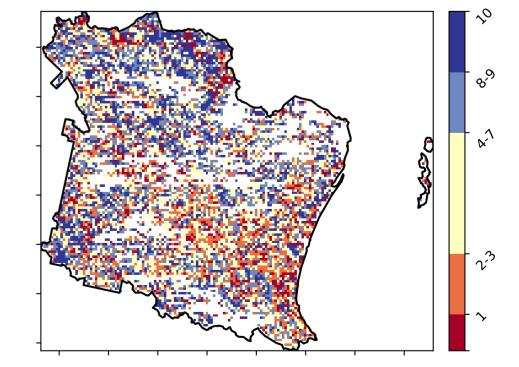


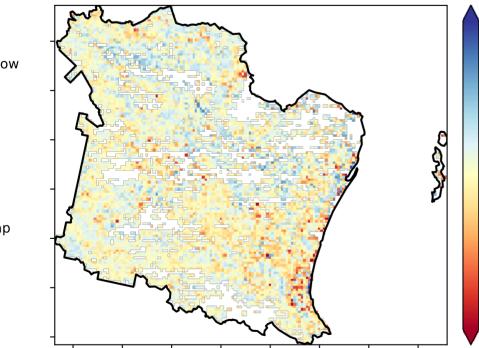
### % Area protected from wind erosion (>50%)



**Total Vegetation Cover Anomaly [%]** 

**Total Vegetation Cover Decile [%]** 





Deciles show where the 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.



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.

Catchment Scale

of Australia (2018)

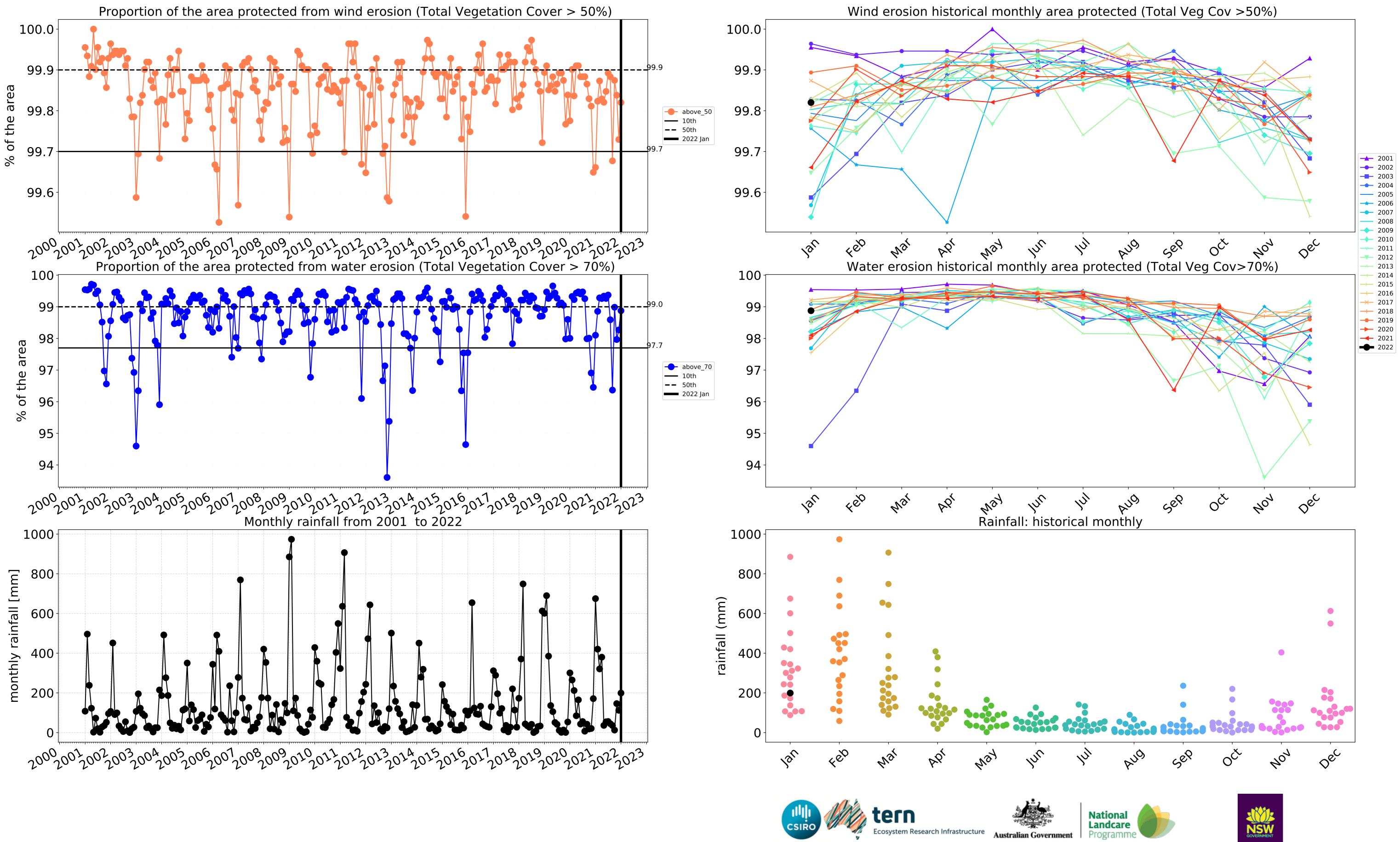
Derived from

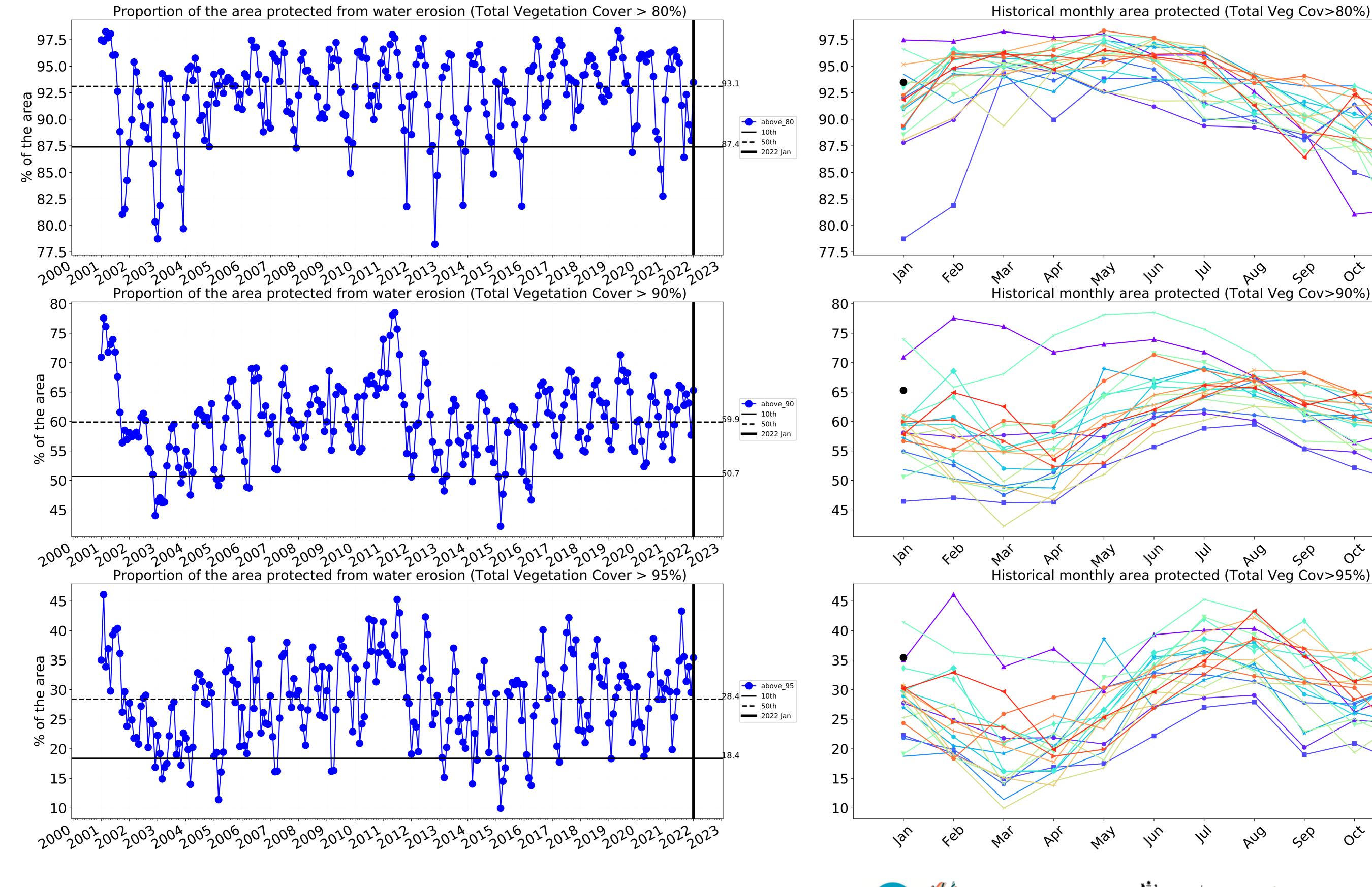
Use of Australia

of Australia (2018)

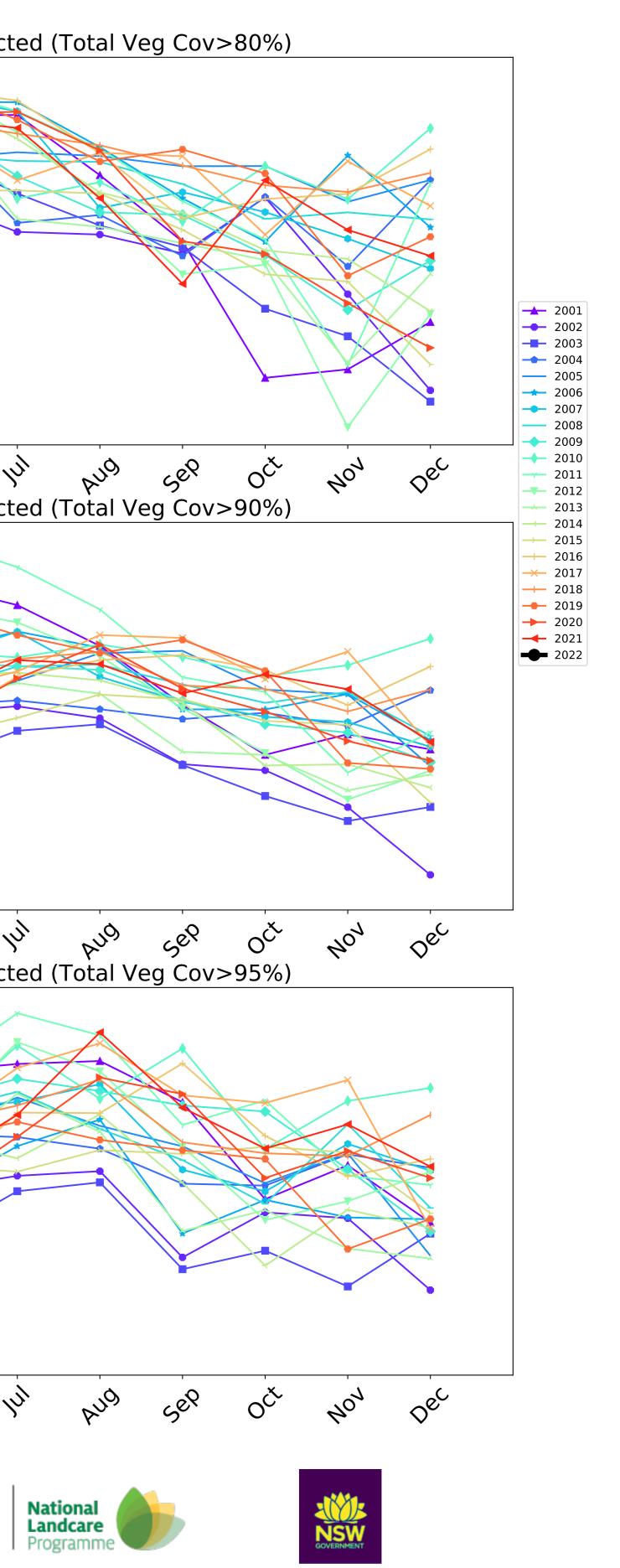












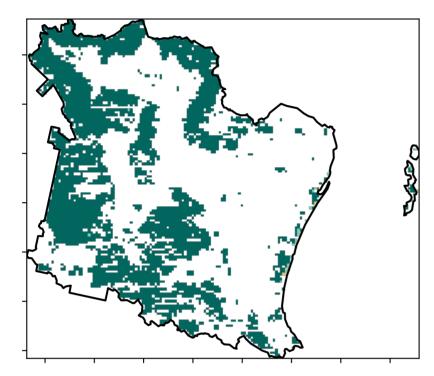
### **Conservation and natural environments**

forest

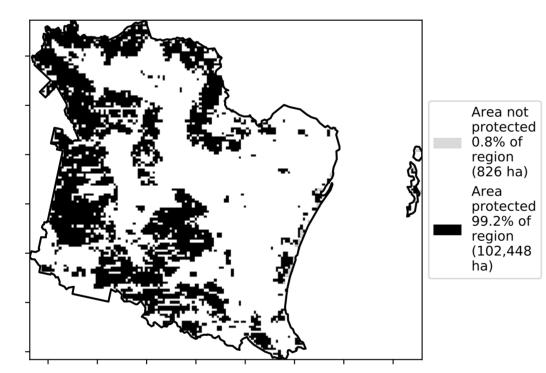
woodland forest

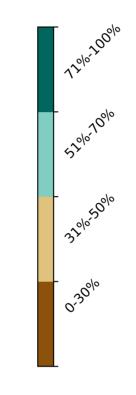
Land use and forest cover

**Total Vegetation Cover [%]** 



% Area protected from water erosion (>70%)



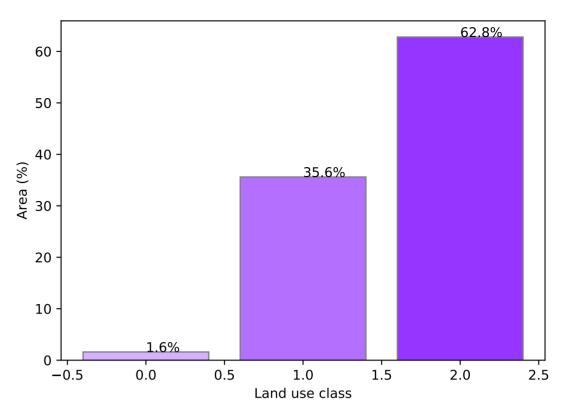


1 Conservation and natural environments - Non-forest

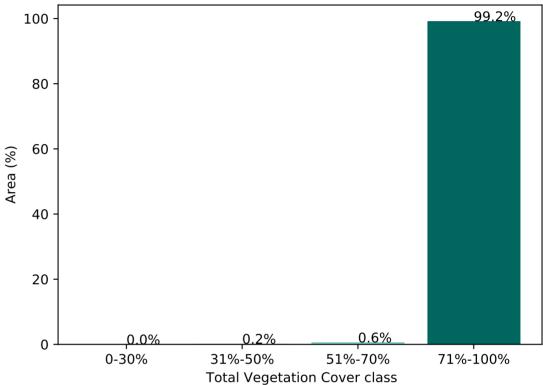
3 Conservation and natural environments - Non-

2 Conservation and natural environments - Woodland

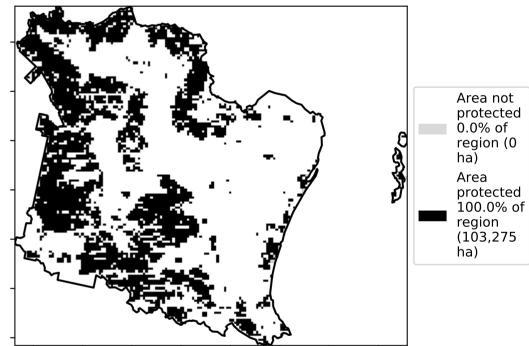
Proportion of each land class in area



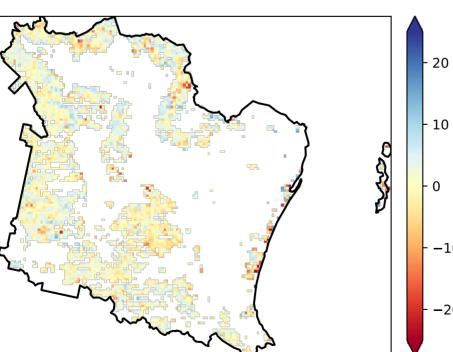
### Proportion of vegetation cover class in area



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

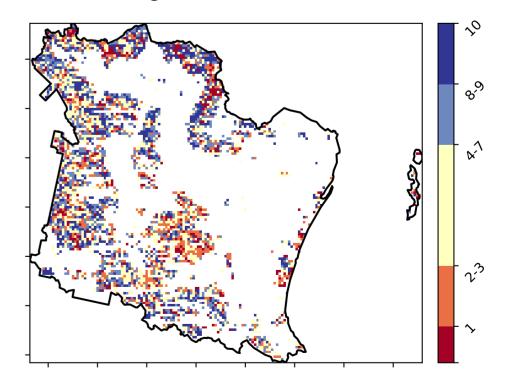


**Total Vegetation Cover Anomaly [%]** 



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 [%]** 







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 from 2001 to 2019.

Catchment Scale Land Use and Forests of Australia (2018)

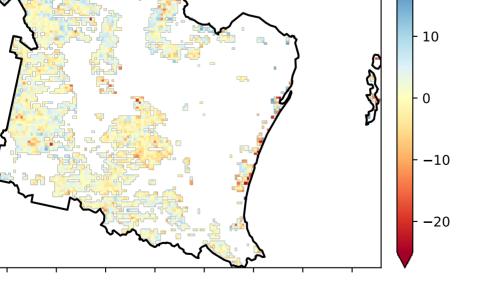
Catchment Scale Land

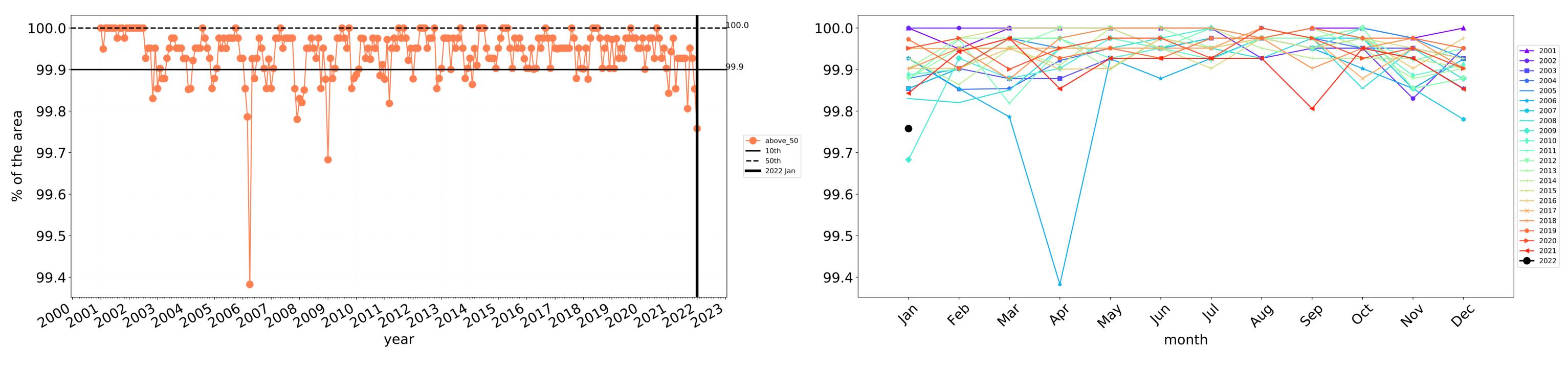
Derived from

Use of Australia

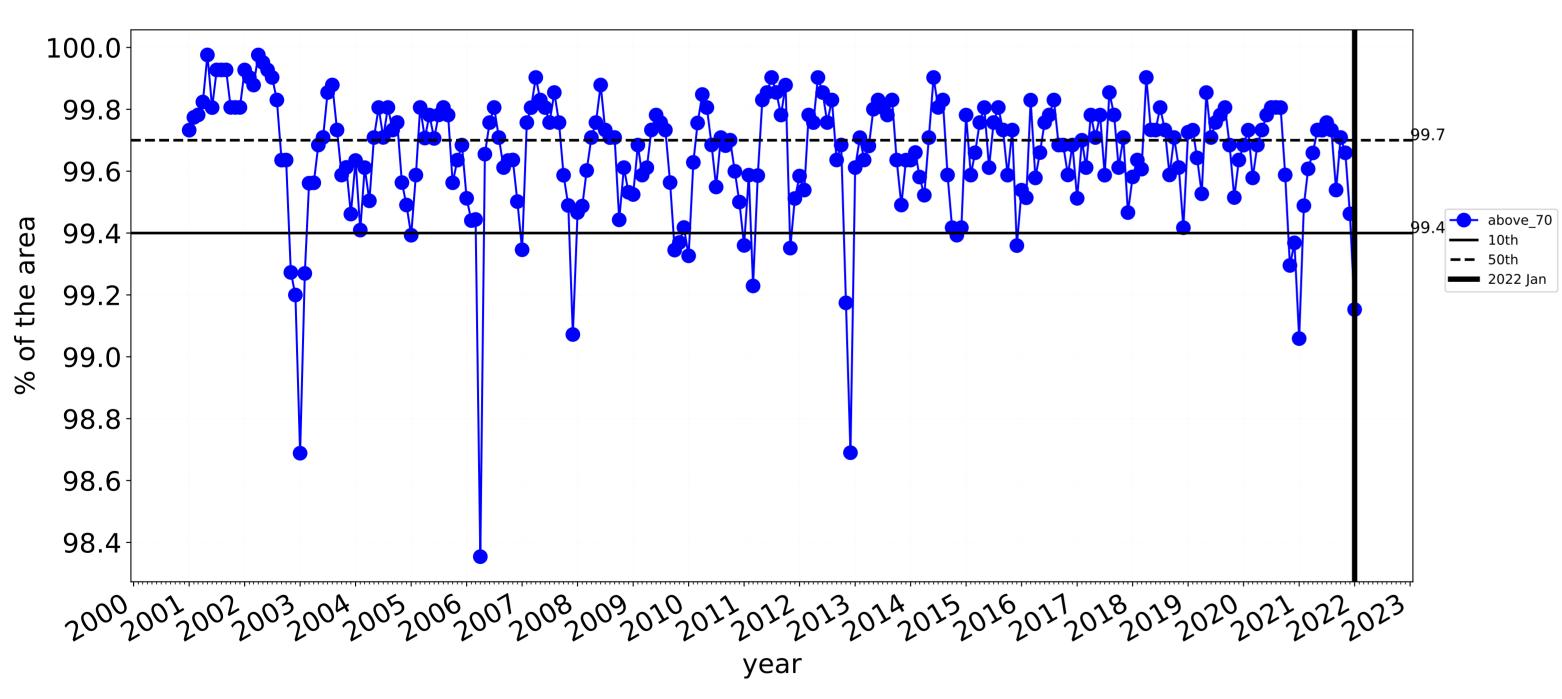
(2018) and Forests

of Australia (2018)





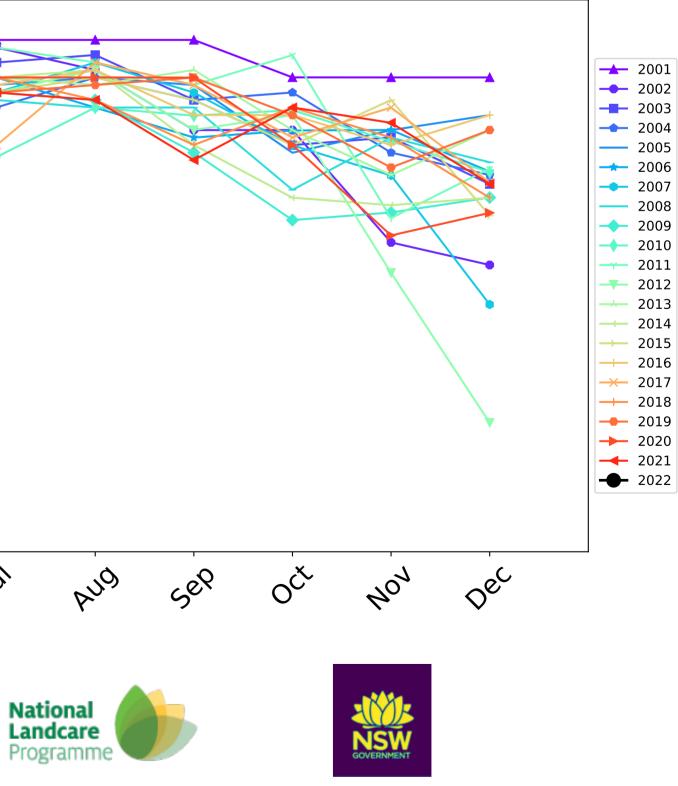
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

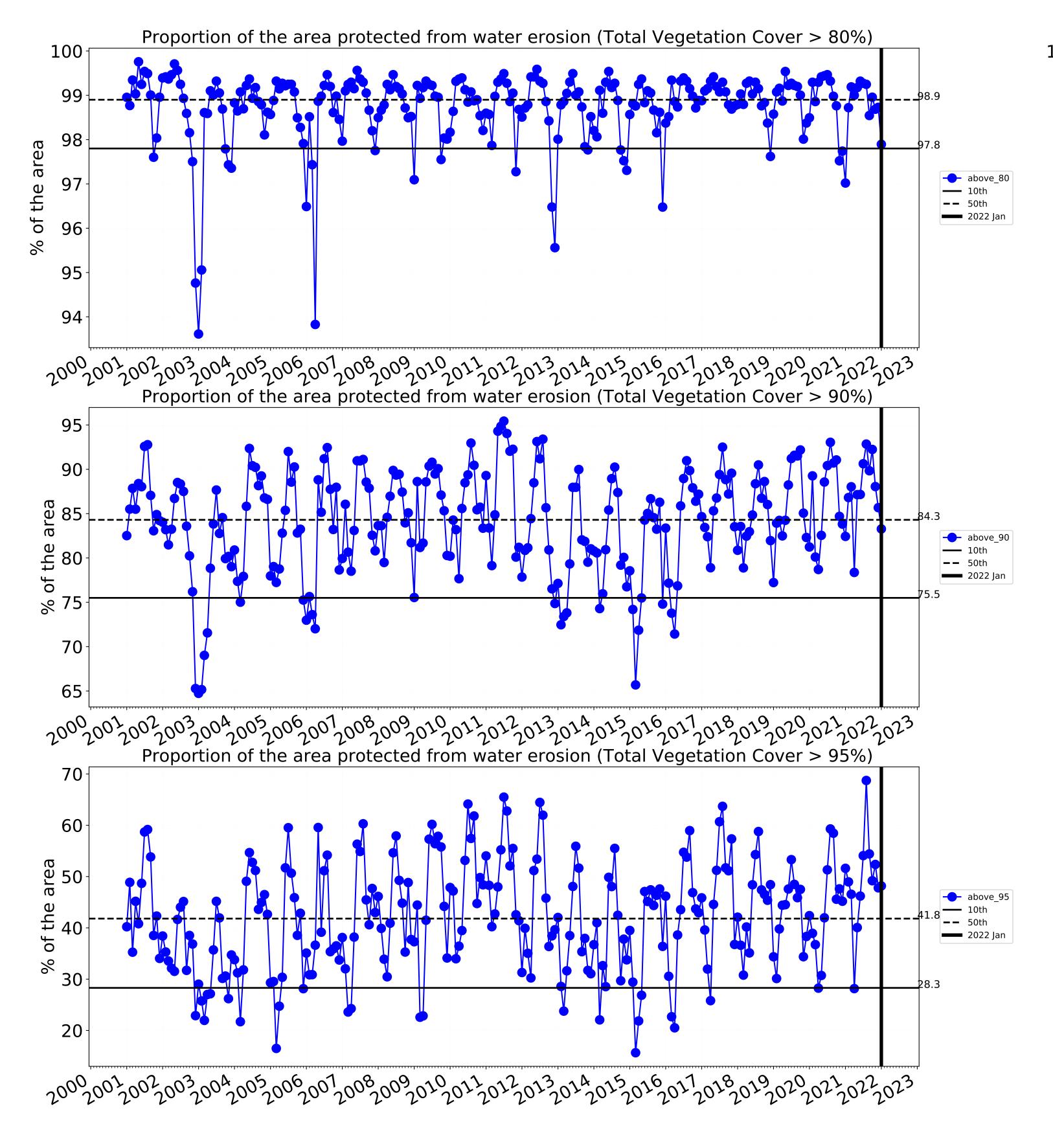


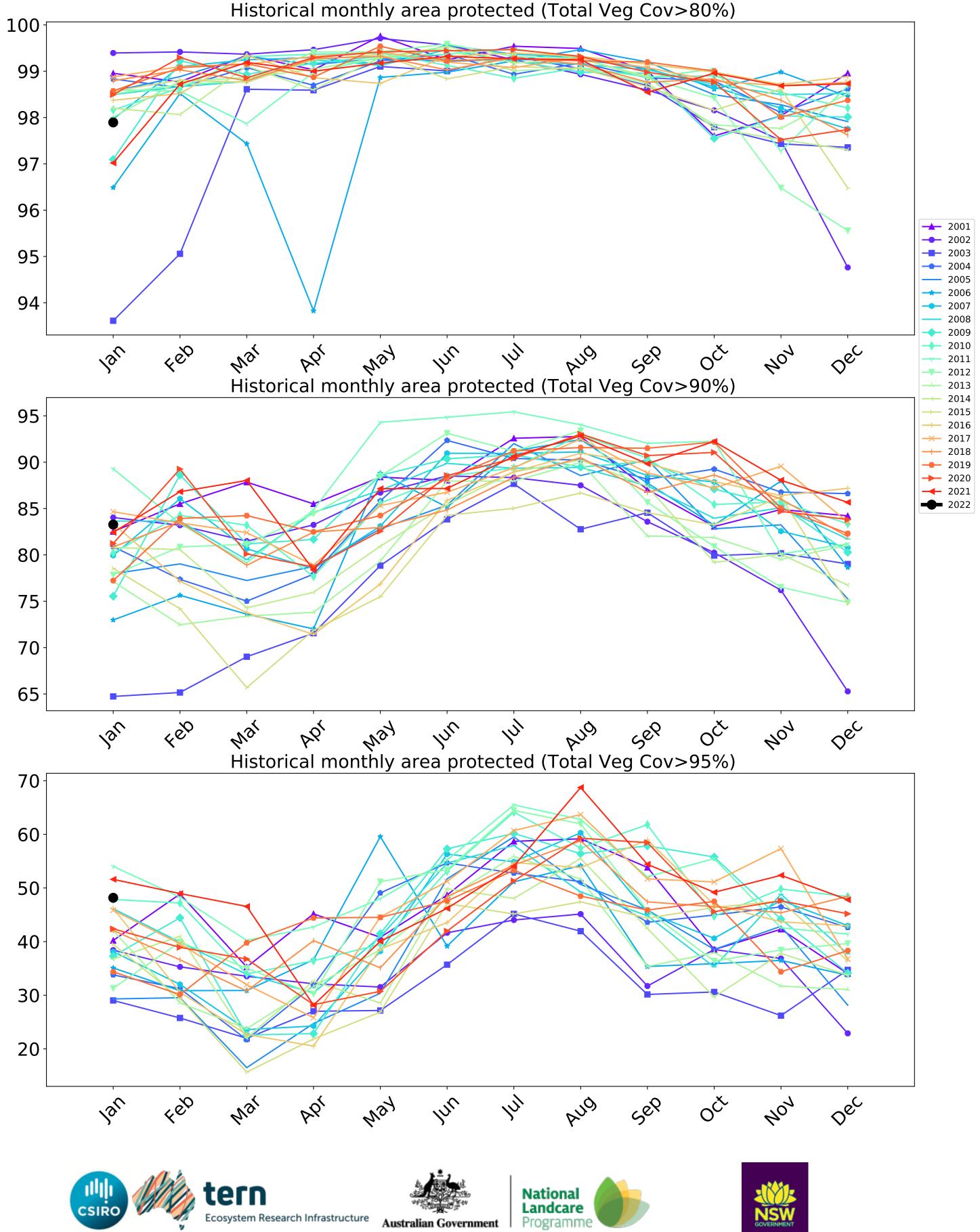
Wind erosion historical monthly area protected (Total Veg Cov >50%)

100.0 99.8-99.6-99.4<sup>-</sup> 99.2 99.0-98.8 98.6 98.4 4er Jan In May P.Q 1's Mai month tern Ecosystem Research Infrastructure Australian Government

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









### **Conservation and natural environments Woodland forest**

Land Use and Forests of Australia (2018) Ş 1 Conservation and natural environments - Woodland forest Catchment Scale Land (2018) and Forests of Australia (2018)

12%-1000

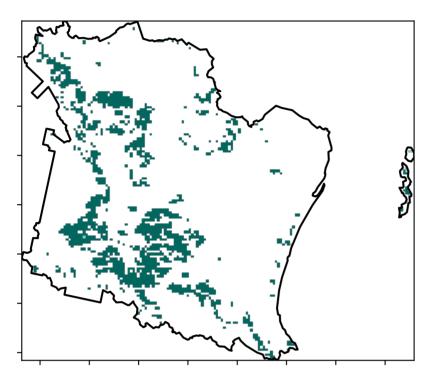
52°1070°1

3290500

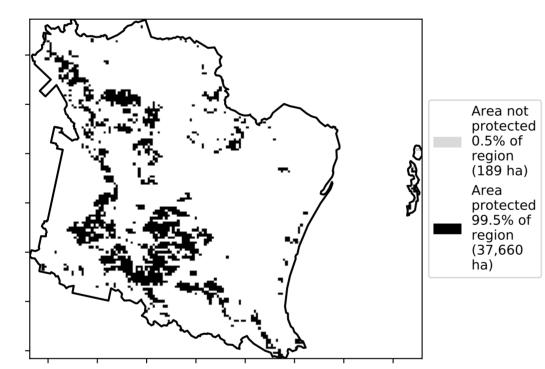
0.30%

Land use and forest cover

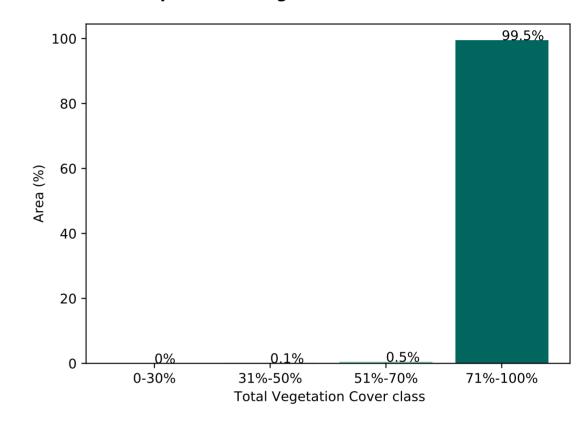
**Total Vegetation Cover [%]** 



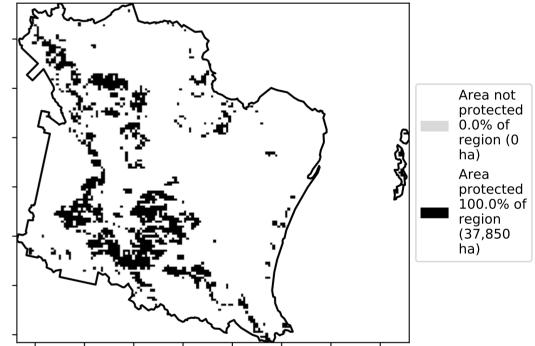
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

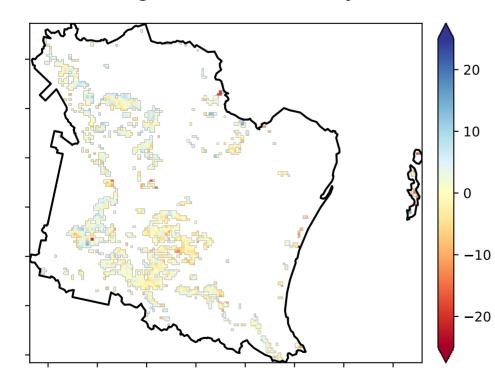


% Area protected from wind erosion (>50%)



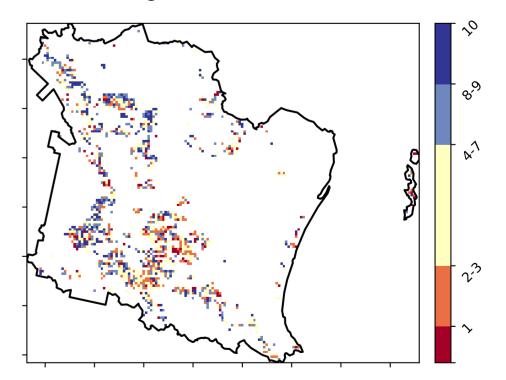


Total Vegetation Cover Anomaly [%]



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 [%]** 





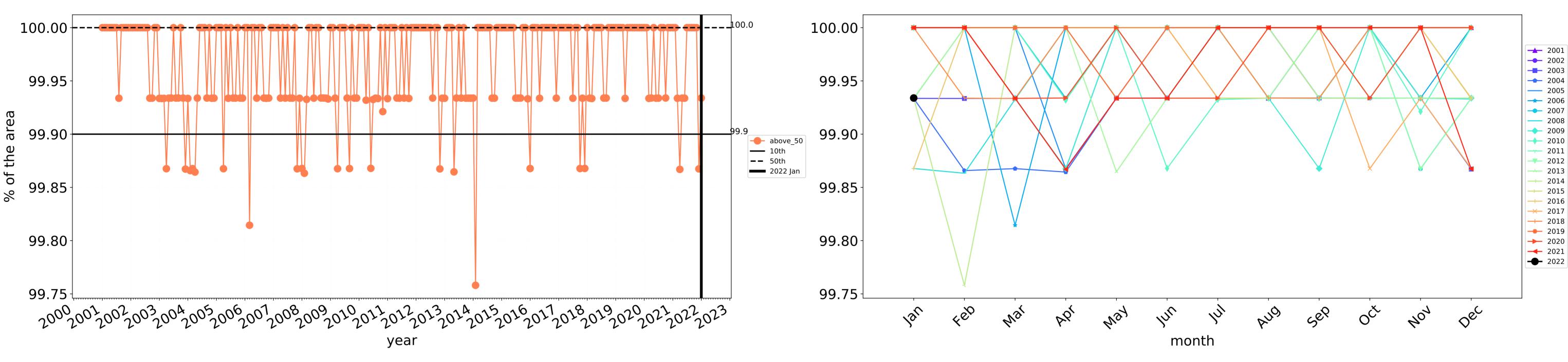
Anomaly show how many percetage points each pixel is from the mean That the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.

Catchment Scale

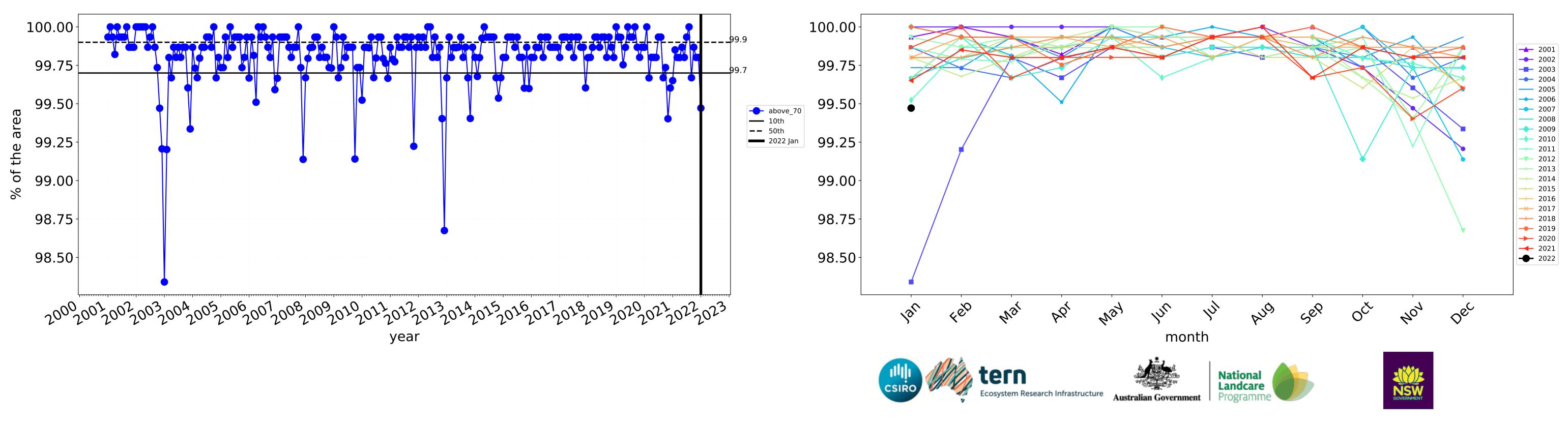
Derived from

Use of Australia



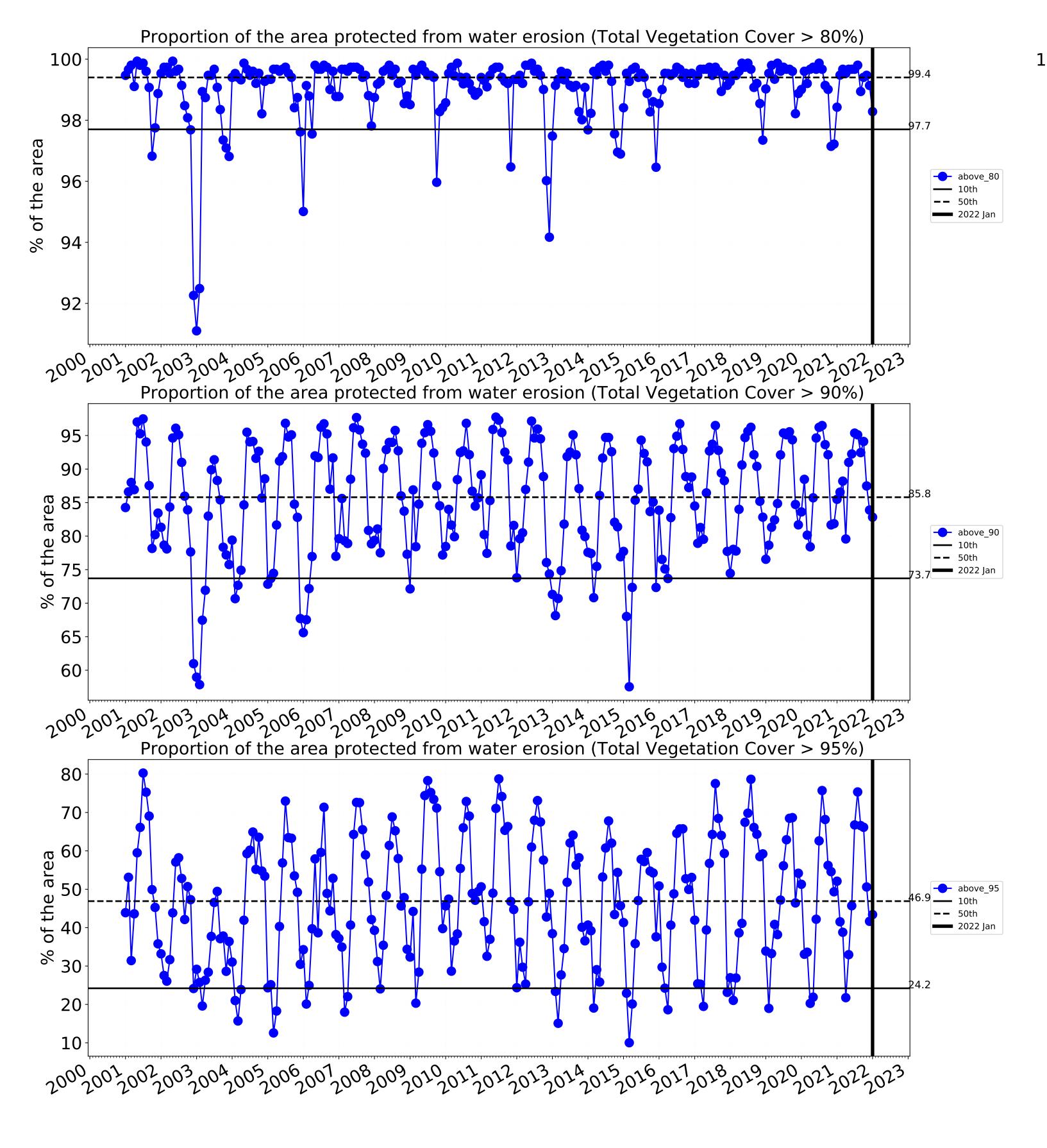


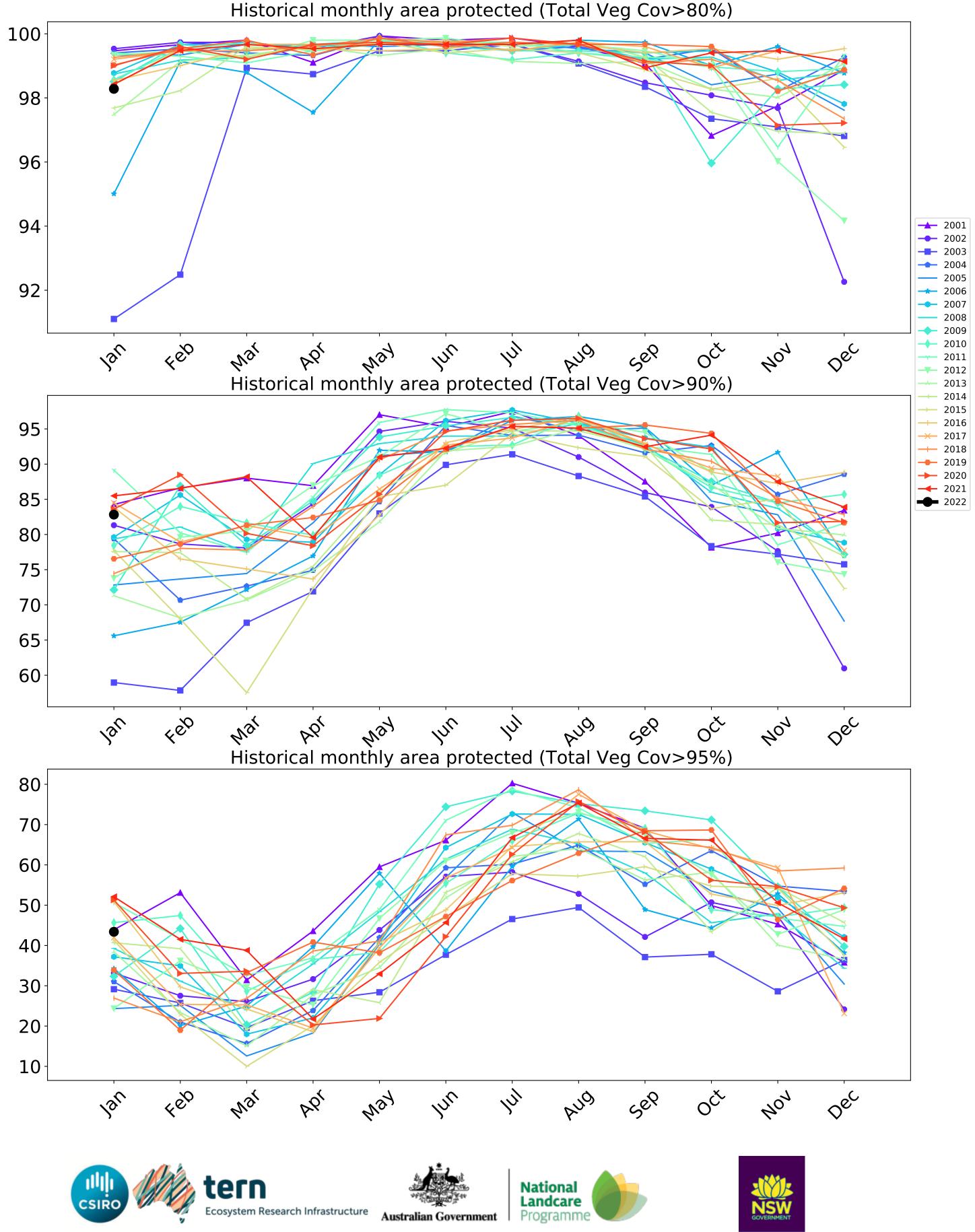
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

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





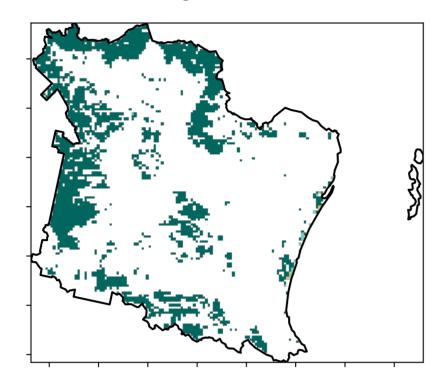


## **Conservation and natural environments Forest (non woodland)**

Land use and forest cover

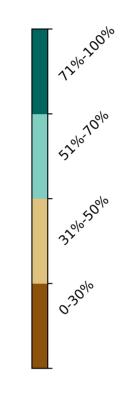
Catchment Scale Land Use and Forests of Australia (2018) Ş 1 Conservation and natural environments - Non-Catchment Scale Land woodland forest ٢ Use of Australia (2018) and Forests of Australia (2018)

**Total Vegetation Cover [%]** 



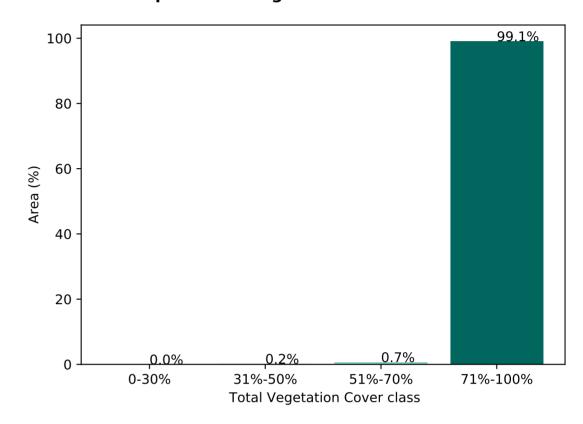
% Area protected from water erosion (>70%)



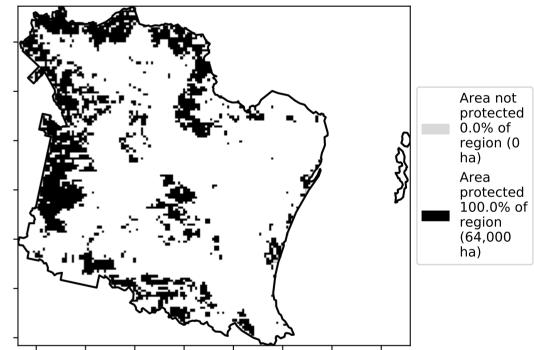




Proportion of vegetation cover class in area



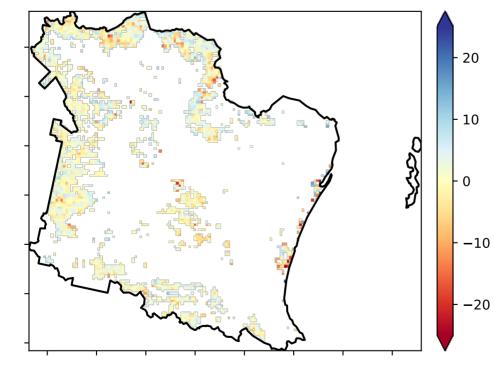
#### % Area protected from wind erosion (>50%)



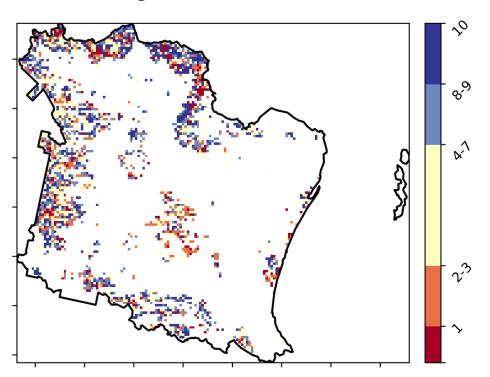
Total Vegetation Cover Anomaly [%]

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.

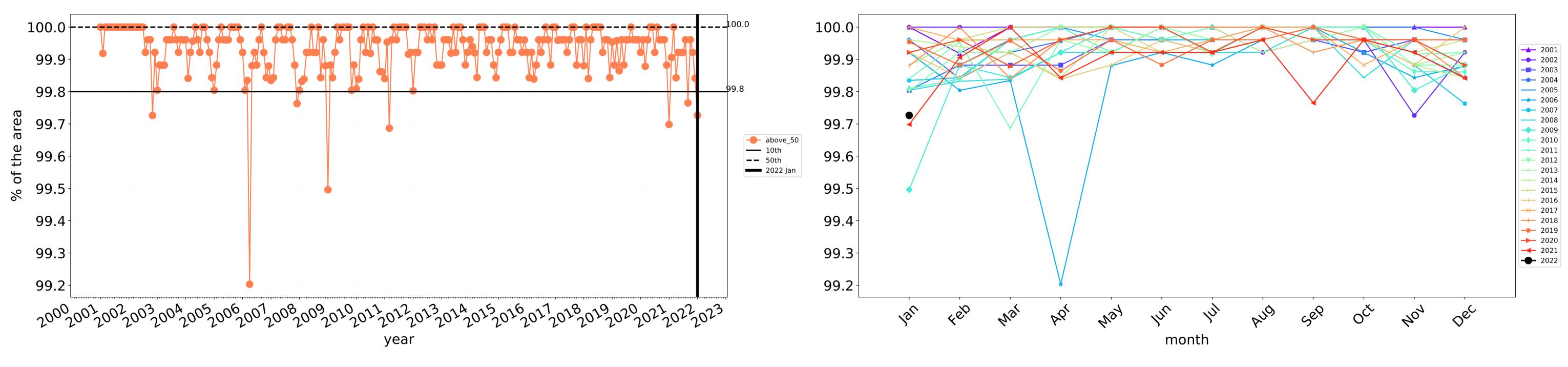
Derived from



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.

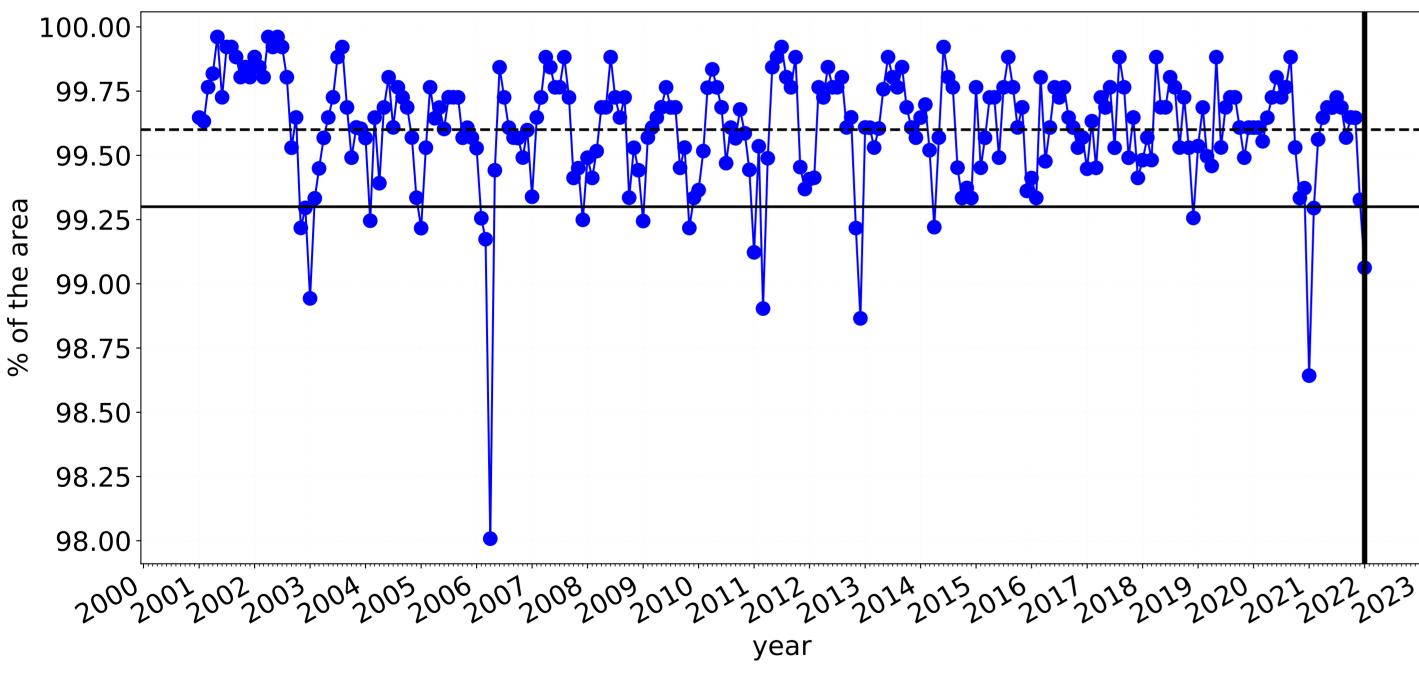






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

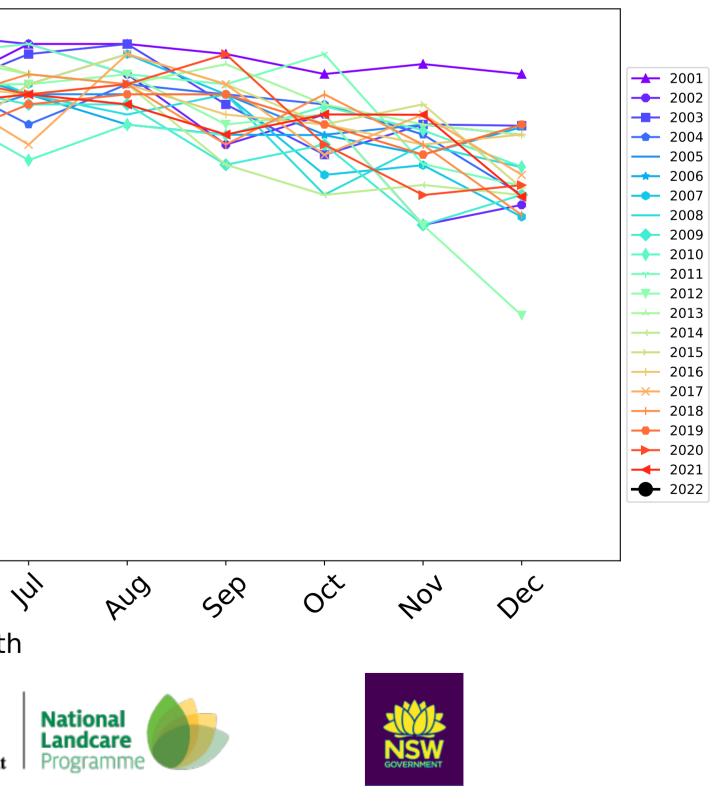
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

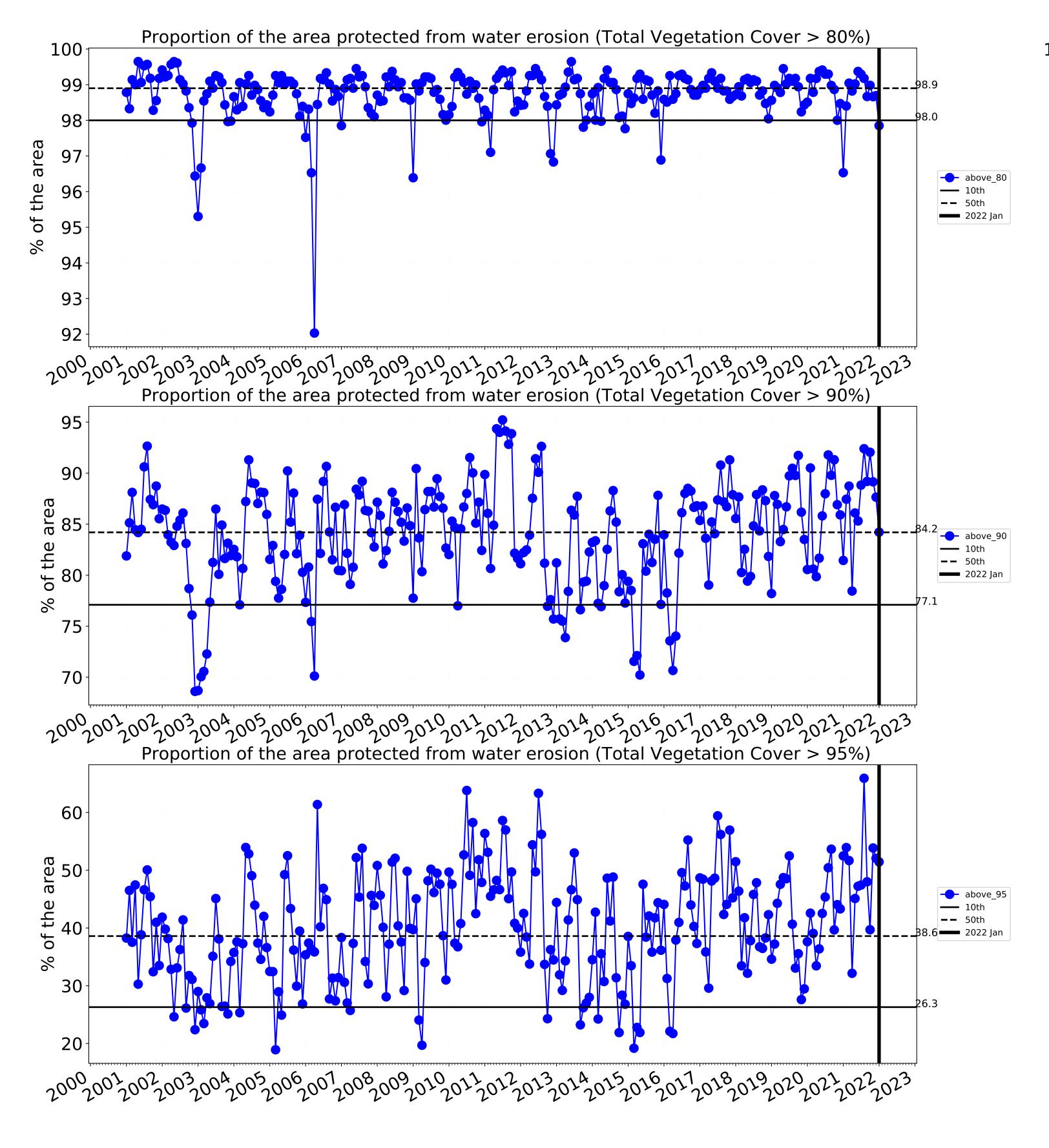


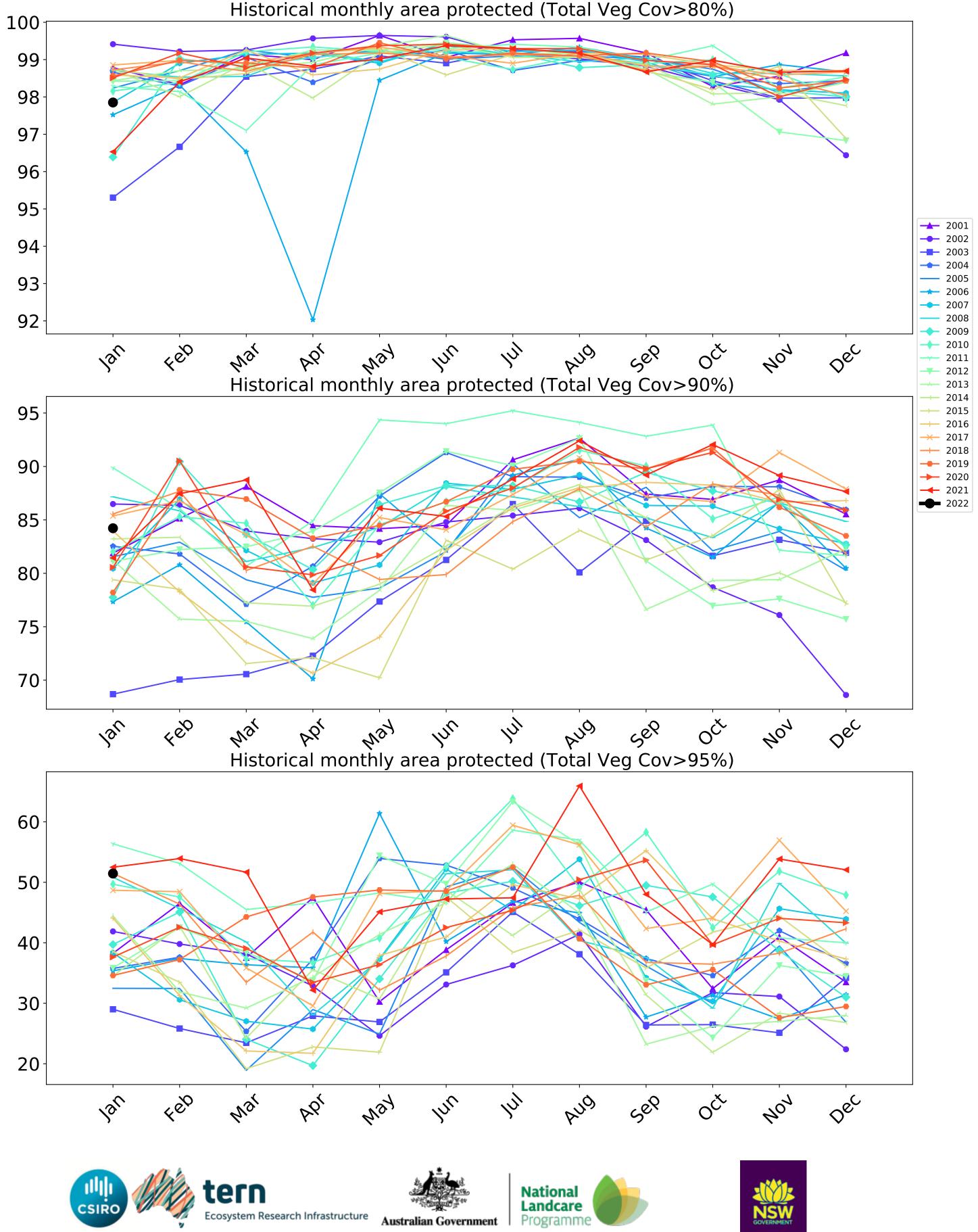
Wind erosion historical monthly area protected (Total Veg Cov >50%)

100.00 99.75 99.50 **3** – **–** above\_70 99.25 **—** 10th **——** 50th **——** 2022 Jan 99.00 98.75 98.50 98.25 98.00 feb Jan PQ May hul War month tern Ecosystem Research Infrastructure Australian Government

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





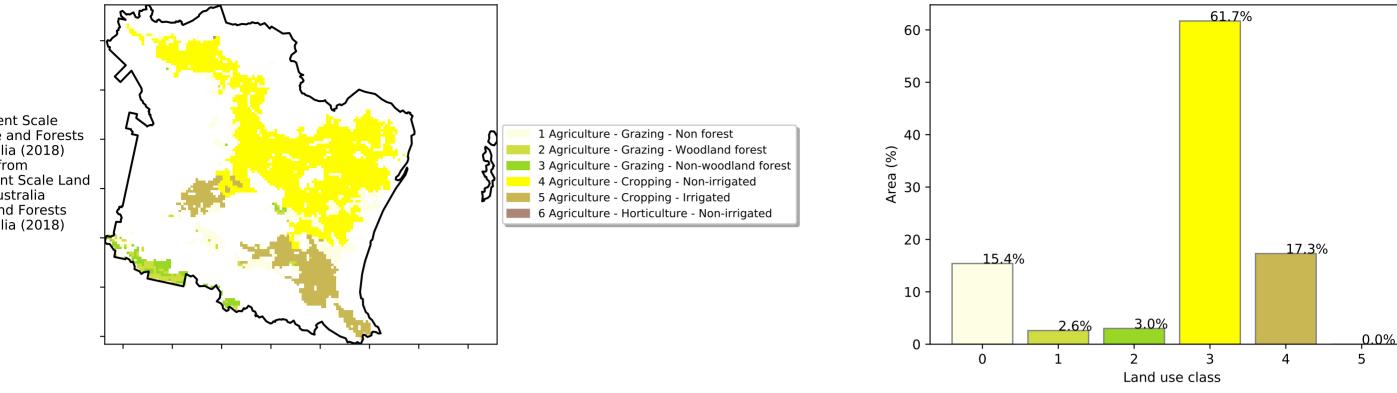




### Agriculture

Land use and forest cover

Proportion of each land class in area



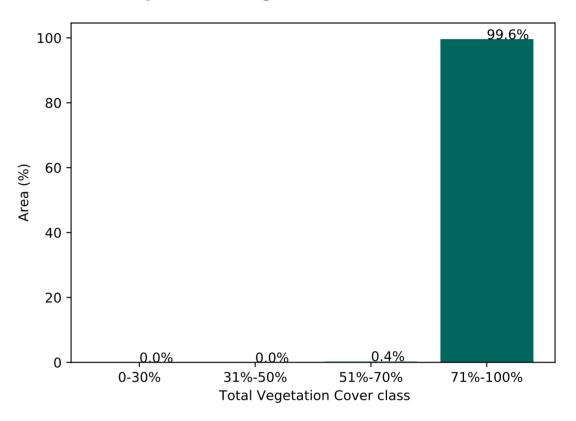
12%100

52°1070°1

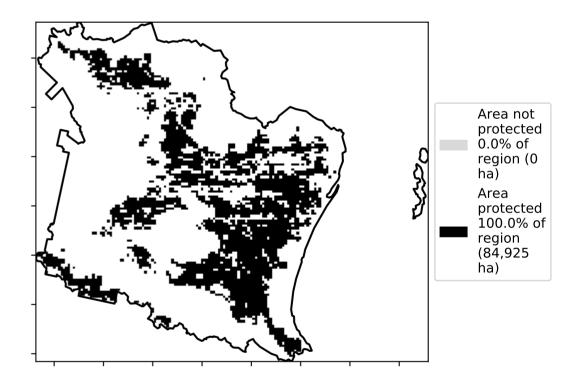
3290500

0.30%

Proportion of vegetation cover class in area



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



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

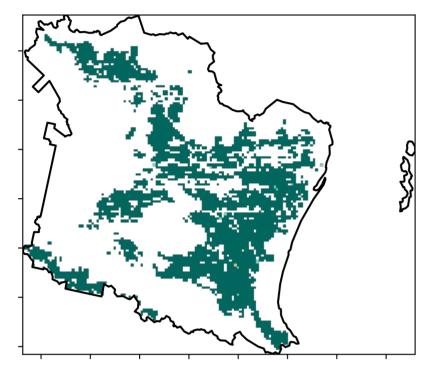
mean of that

pixel. The mean

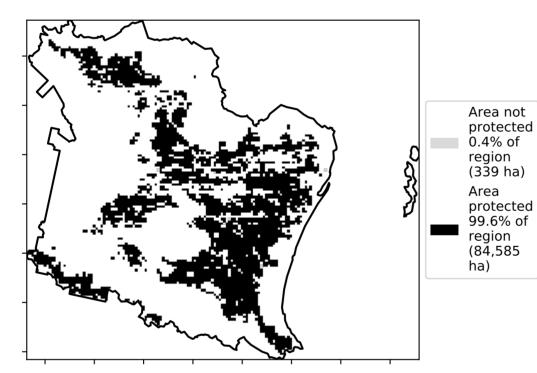
from 2001 to 2019.

is only for the month of the map

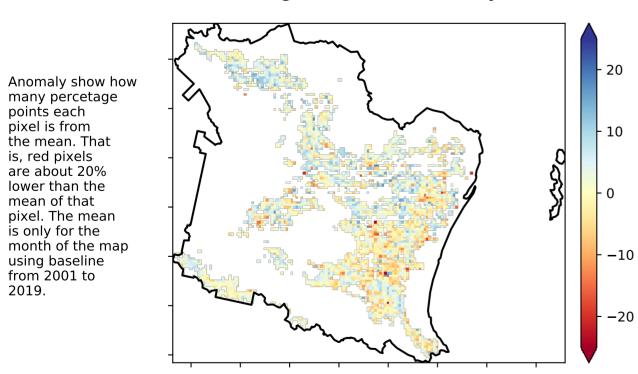




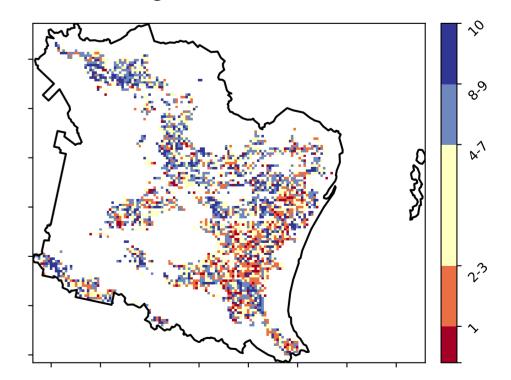
% Area protected from water erosion (>70%)



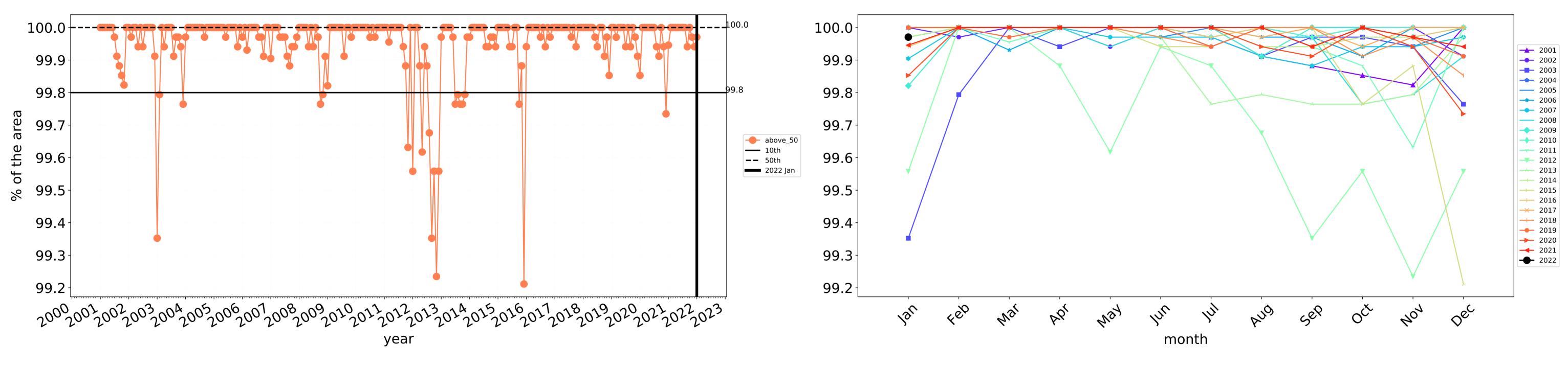
**Total Vegetation Cover Anomaly [%]** 



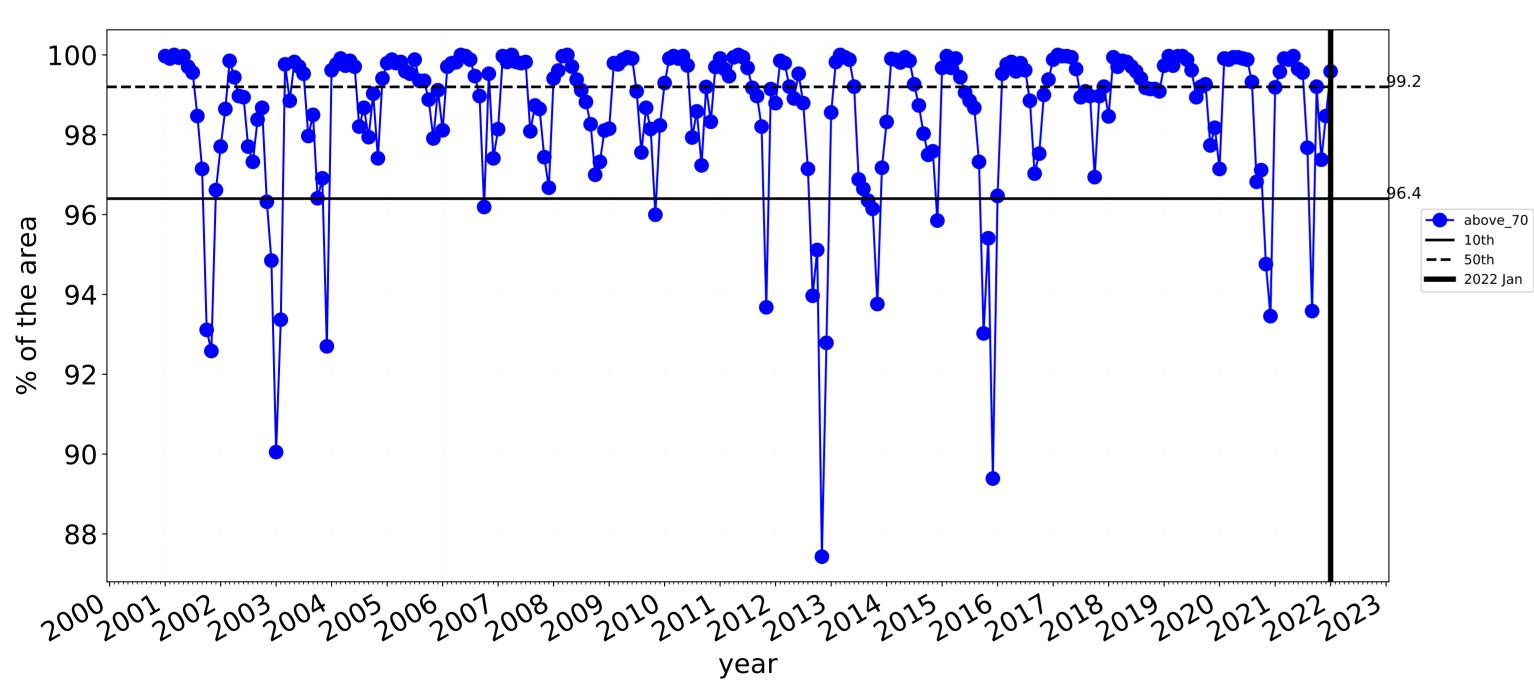
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



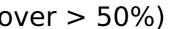




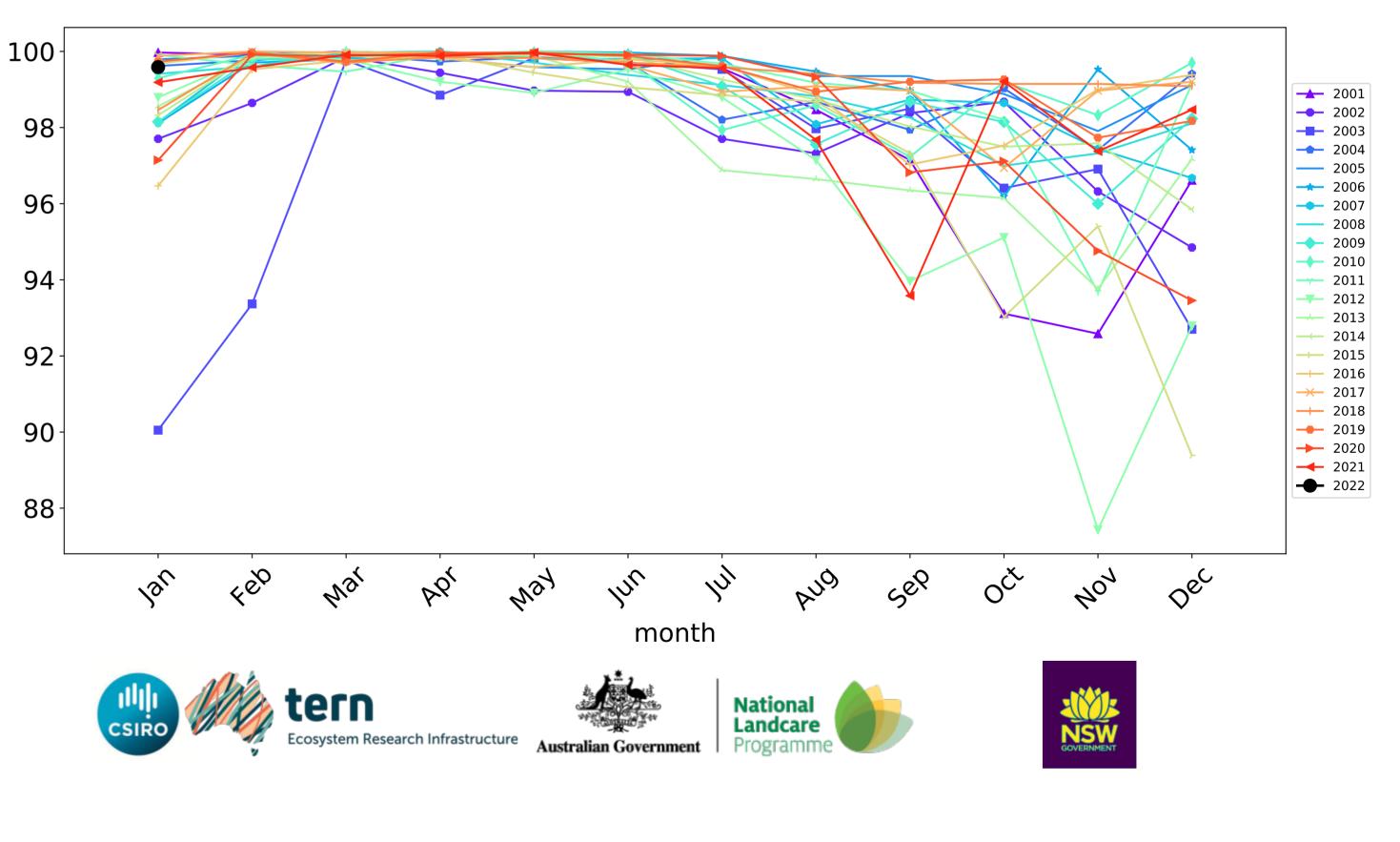
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



# Agriculture timeseries

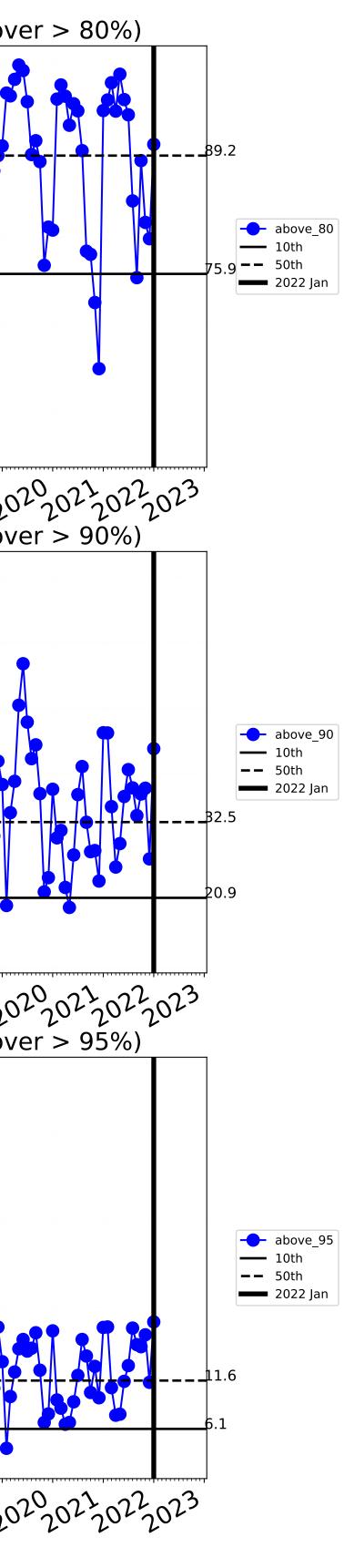


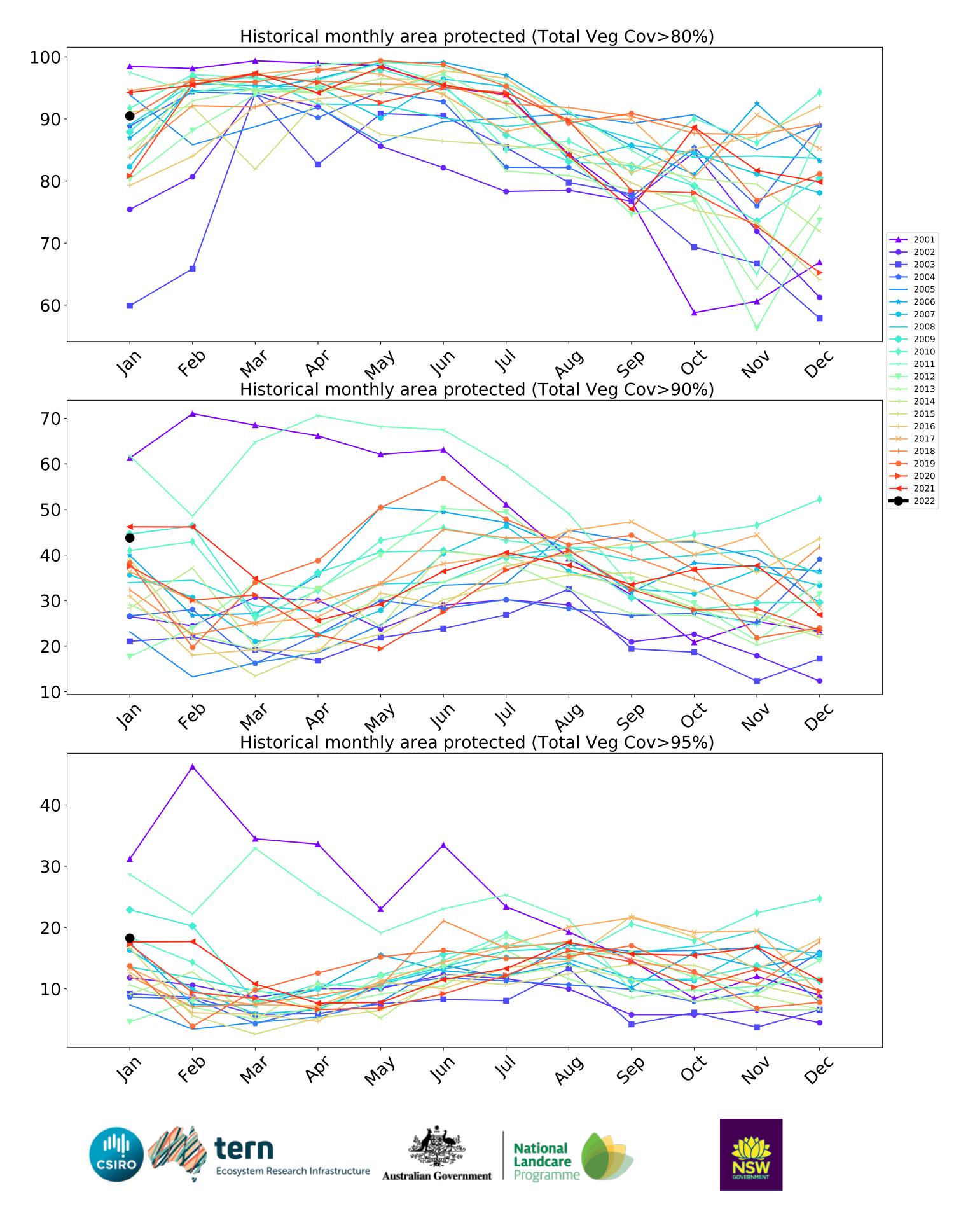
Wind erosion historical monthly area protected (Total Veg Cov >50%)



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

Proportion of the area protected from water erosion (Total Vegetation Cover > 80%) 100 90 area 80 of the % 70 60 70 60 area 20 of the % 30 20 10 Proportion of the area protected from water erosion (Total Vegetation Cover > 95%) 40 % of the area 0 0 10 





### Grazing

12%200%

52°1070°10

32%50%

0.30%

- 20

· 10

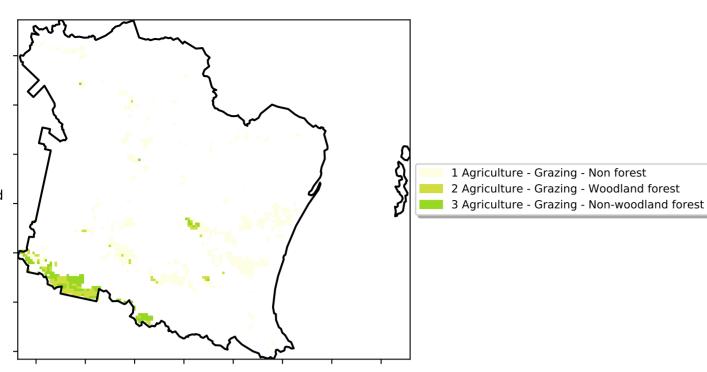
0

-10

-20

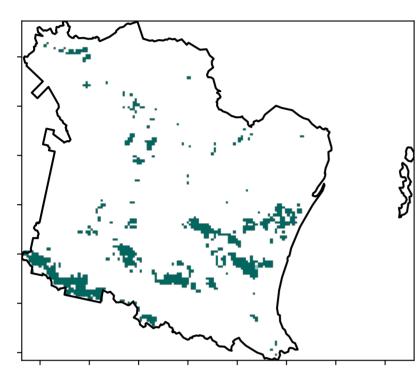
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Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

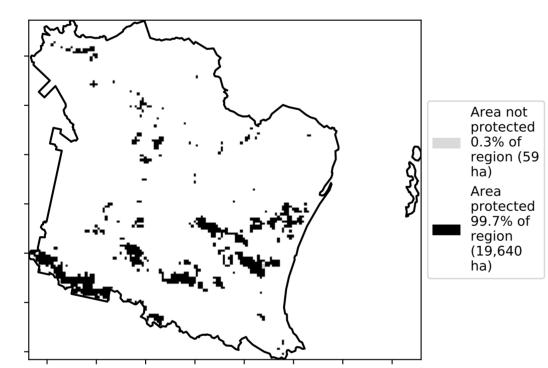


Land use and forest cover

Total Vegetation Cover [%]



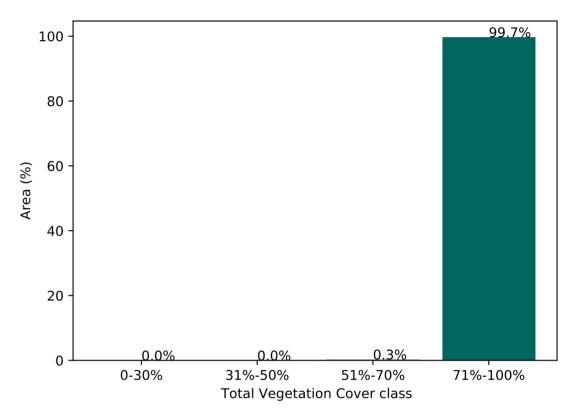
% Area protected from water erosion (>70%)



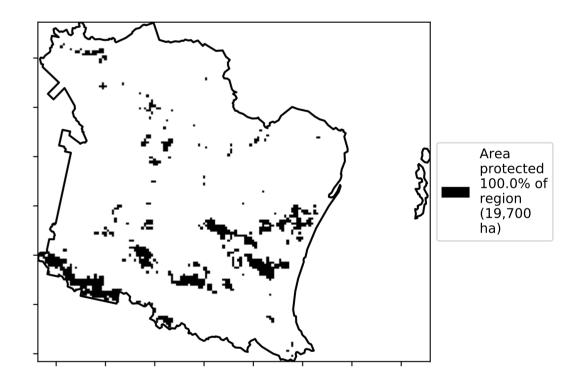
73.4% 70 60 50 Area (%) 30 20 14.4% 12.2% 10 0 0.5 1.0 1.5 2.0 2.5 -0.5 0.0 Land use class

#### Proportion of each land class in area

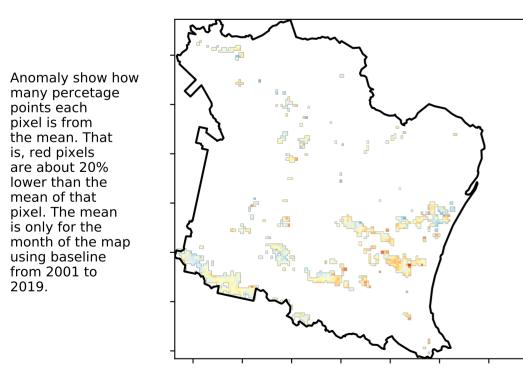
Proportion of vegetation cover class in area



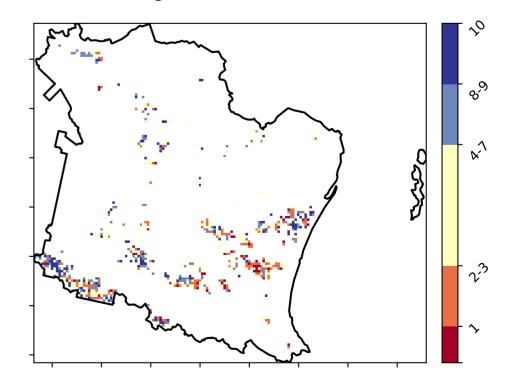
### % Area protected from wind erosion (>50%)



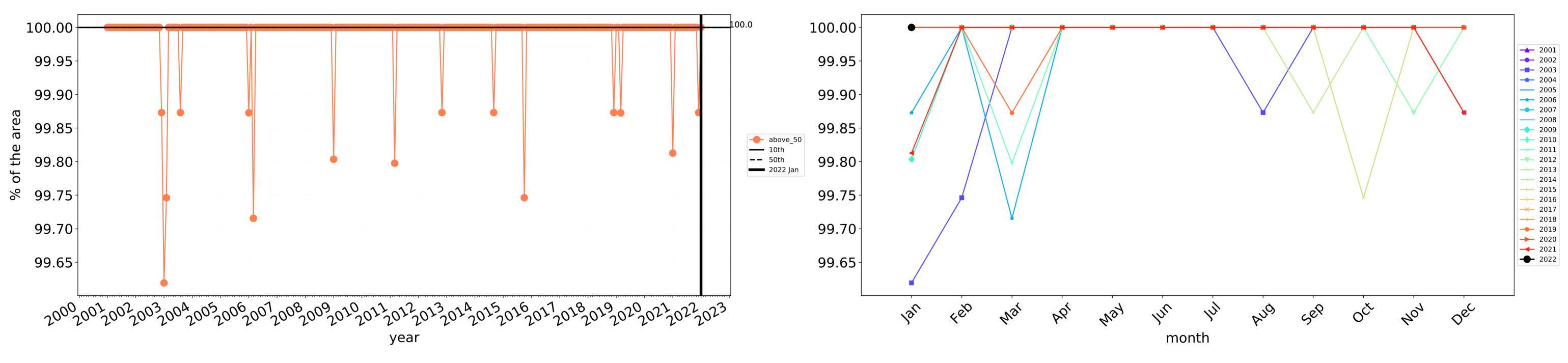
Total Vegetation Cover Anomaly [%]



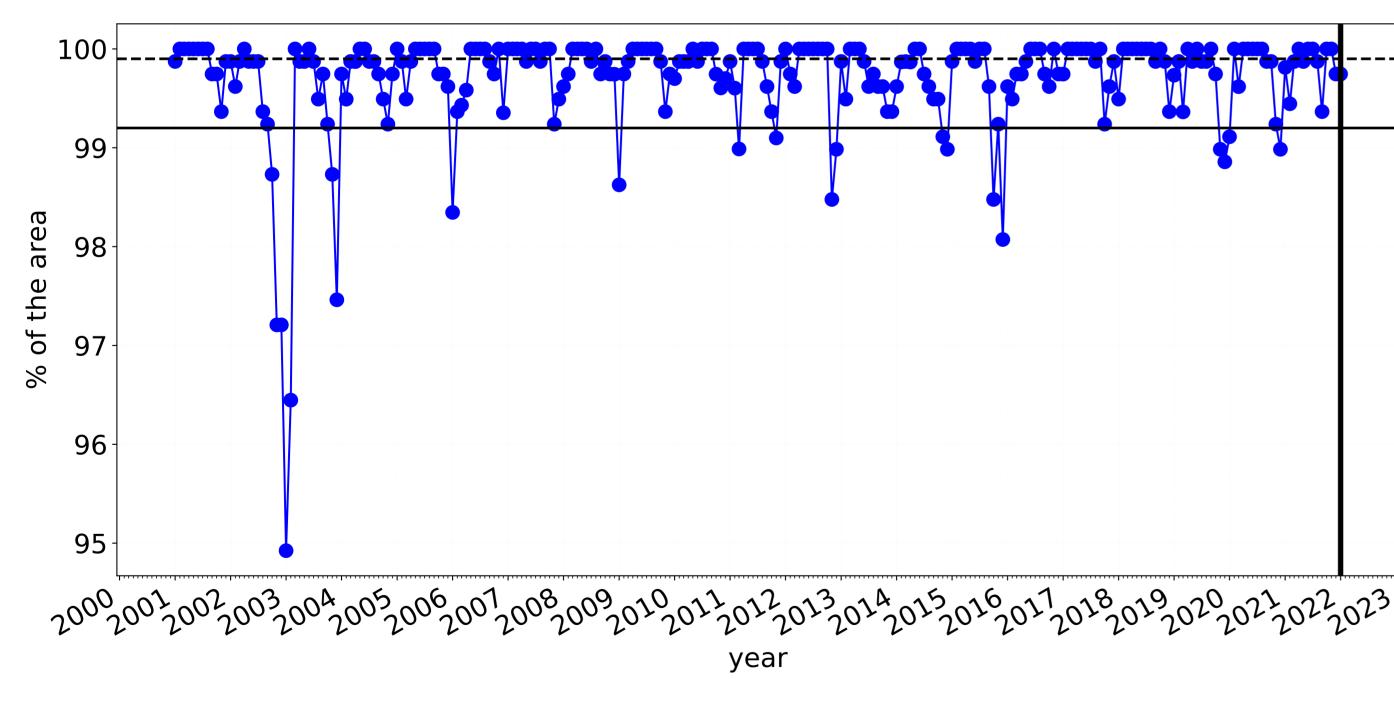
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.







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



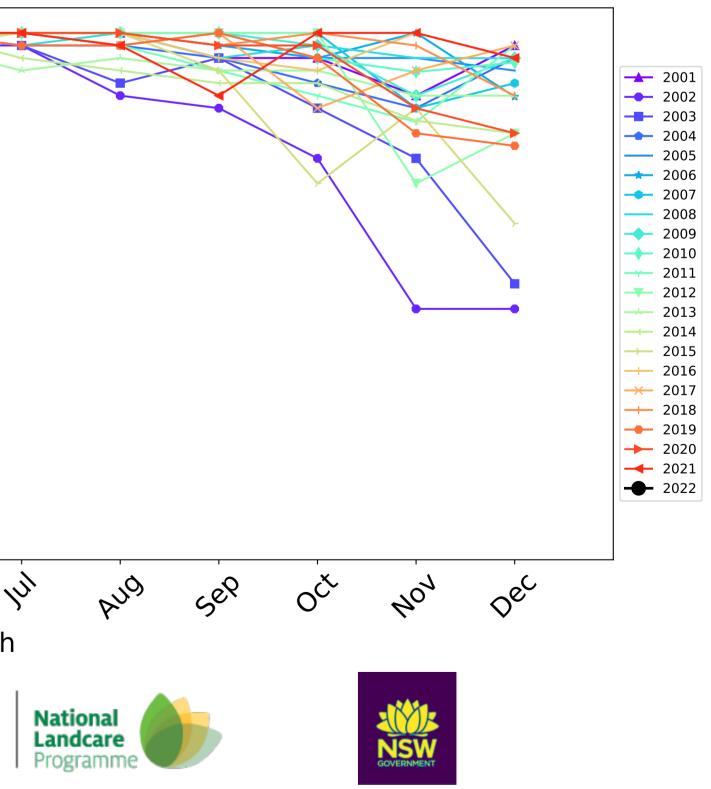
# Grazing timeseries

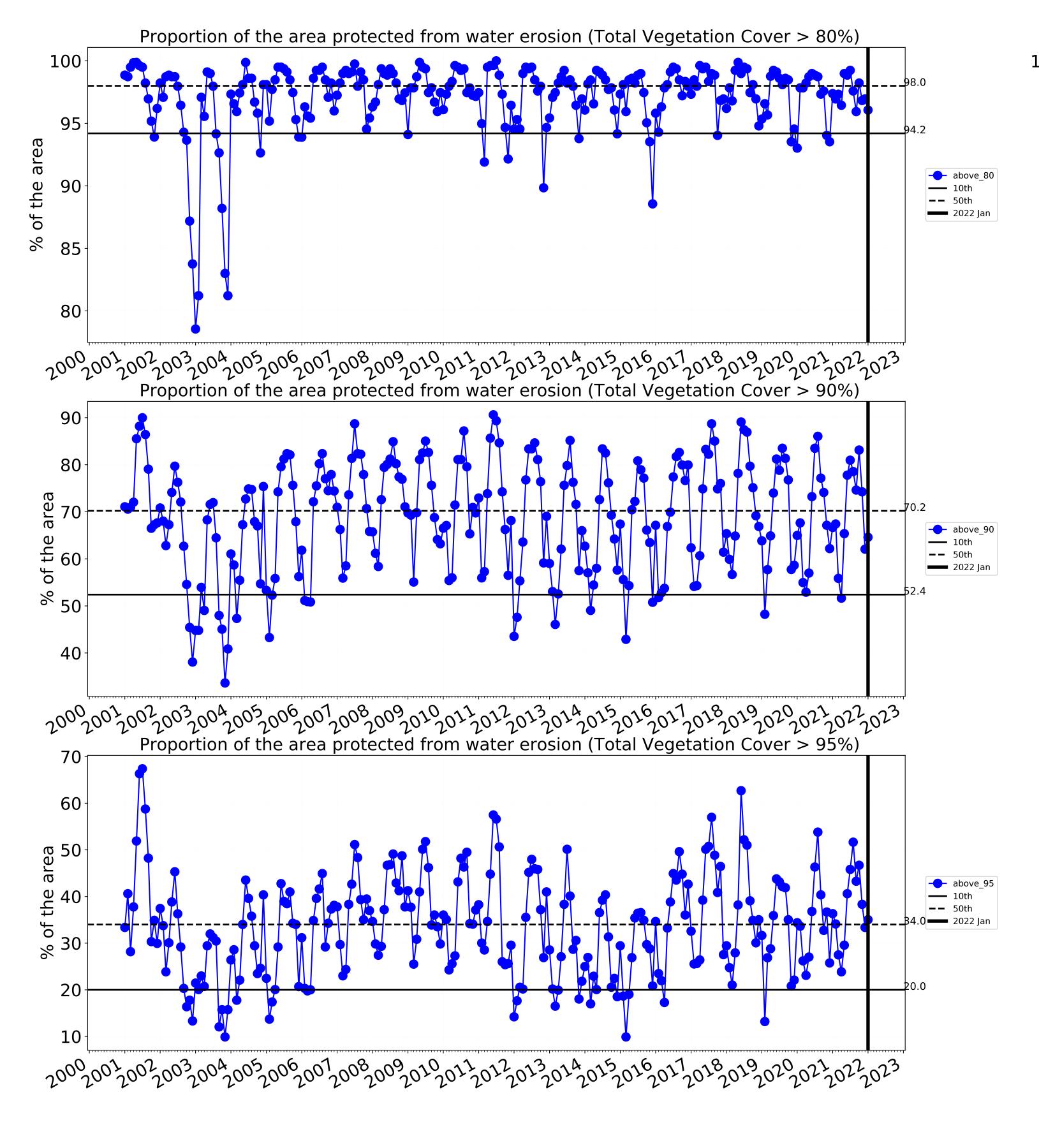


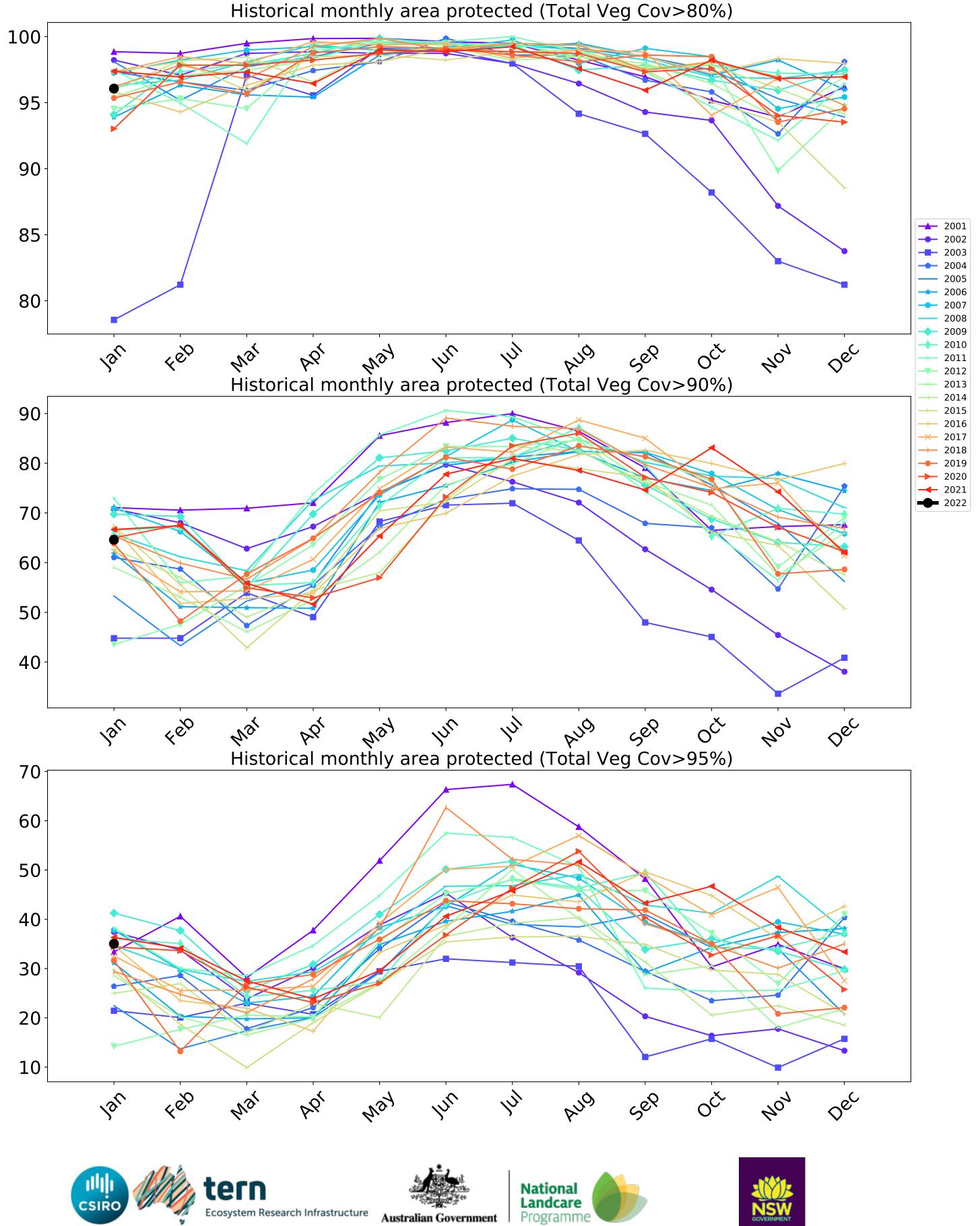
Wind erosion historical monthly area protected (Total Veg Cov >50%)

100 99 ---- above\_70 **—** 10th 98 **--** 50th **——** 2022 Jan 97 96 95 4eb Par In way War PQ' month tern Ecosystem Research Infrastructure Australian Government

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







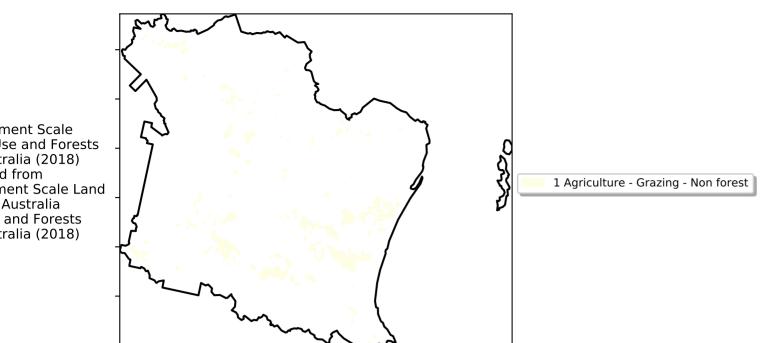
## **Grazing non forest**

12%200%

52°1070°10

32%50%

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)

the mean. That

are about 20% lower than the

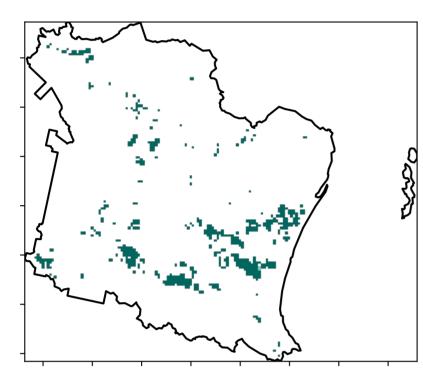
is, red pixels

mean of that pixel. The mean

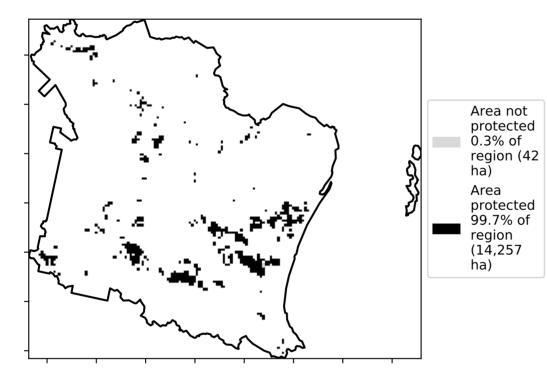
using baseline from 2001 to 2019.

**Total Vegetation Cover [%]** 

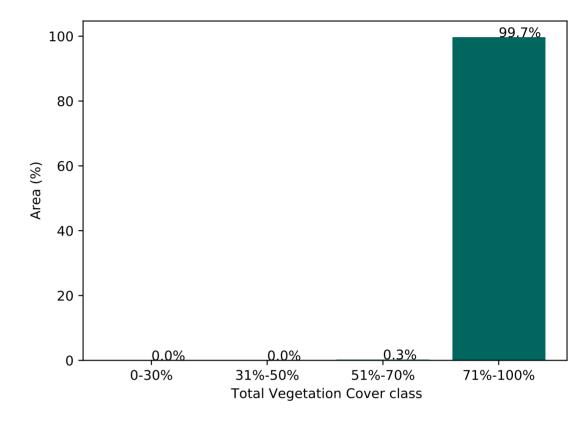
Land use and forest cover



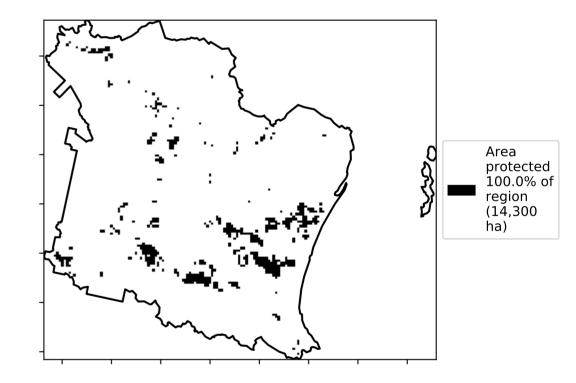
% Area protected from water erosion (>70%)



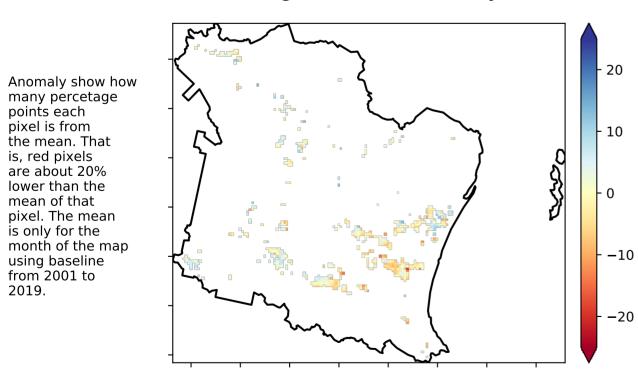
Proportion of vegetation cover class in area



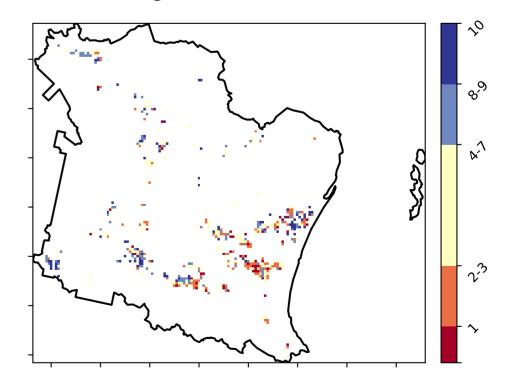
% Area protected from wind erosion (>50%)



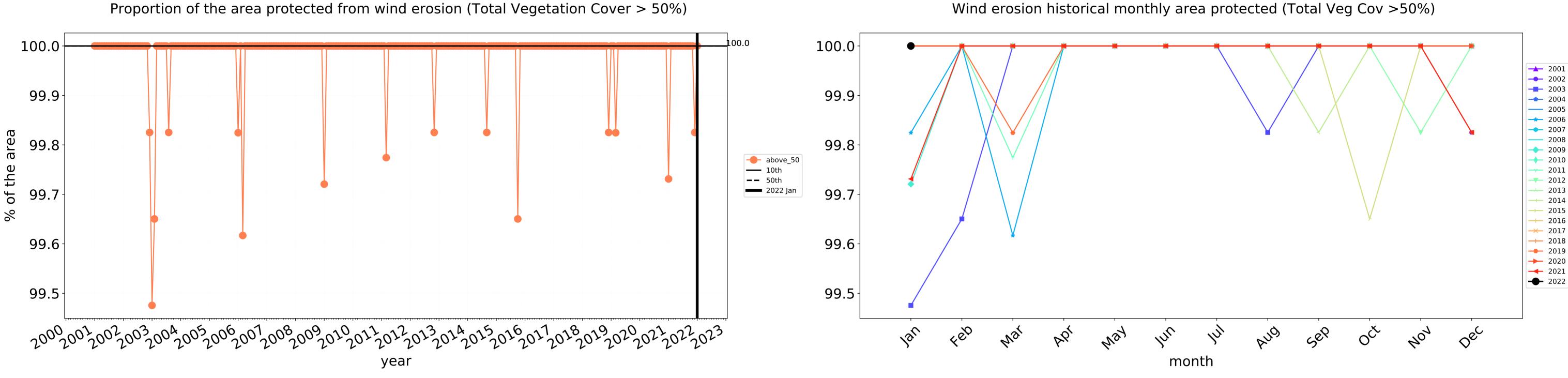
Total Vegetation Cover Anomaly [%]

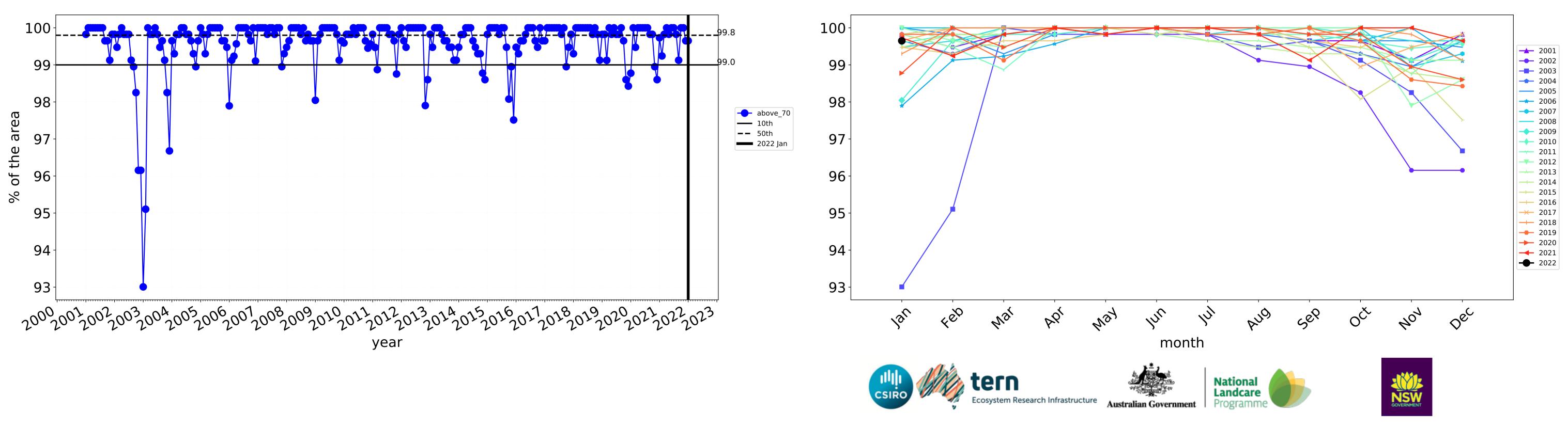


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





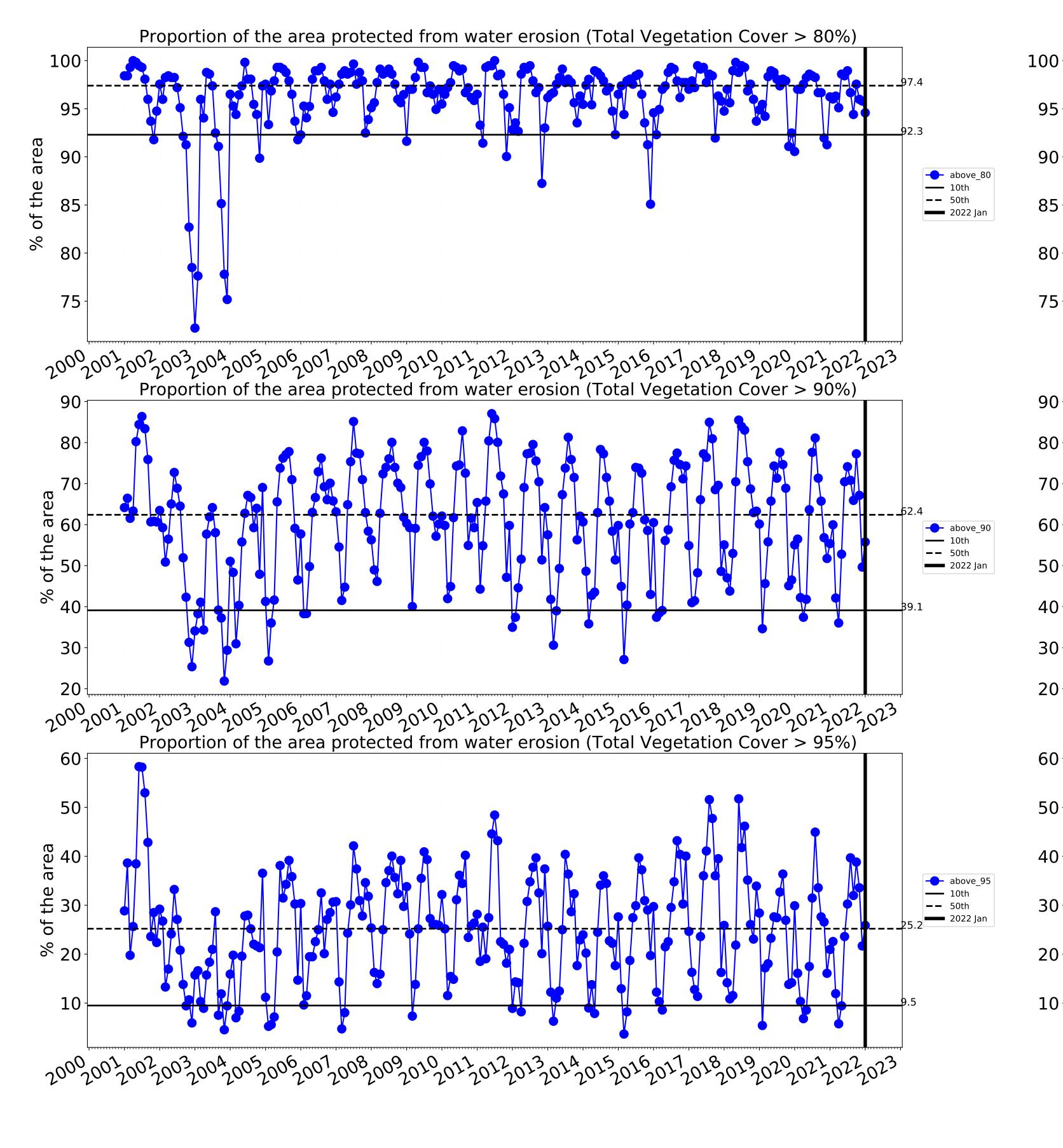


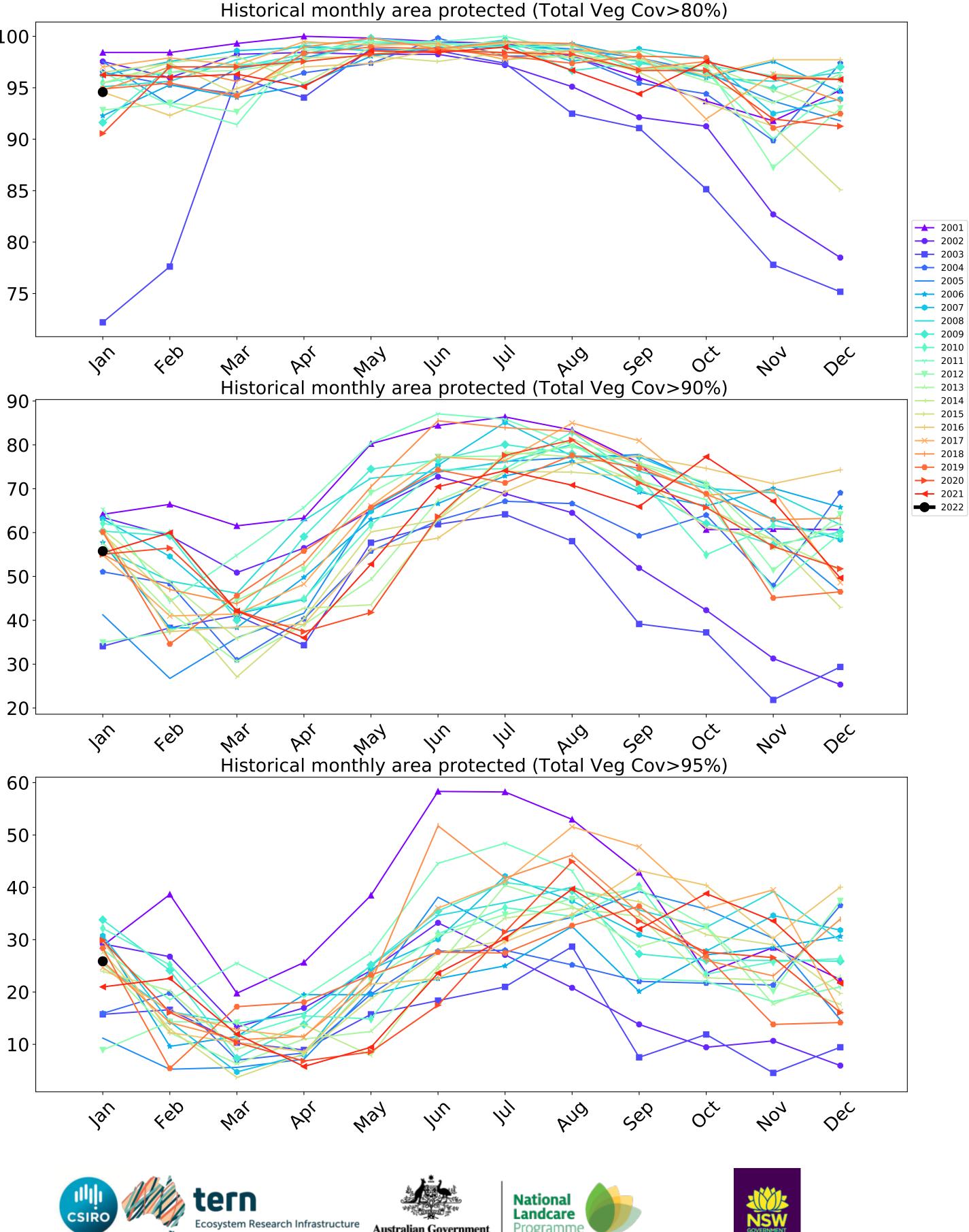


# Grazing non forest timeseries



2**3** 





Programm



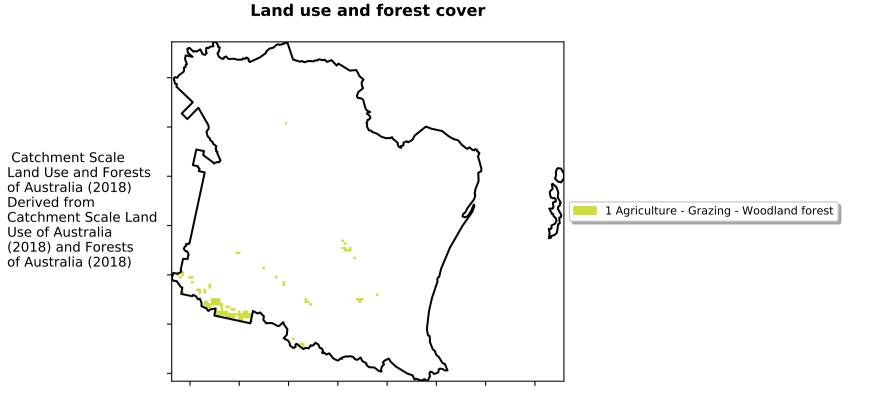
# **Grazing Woodland forest**

1200-2000

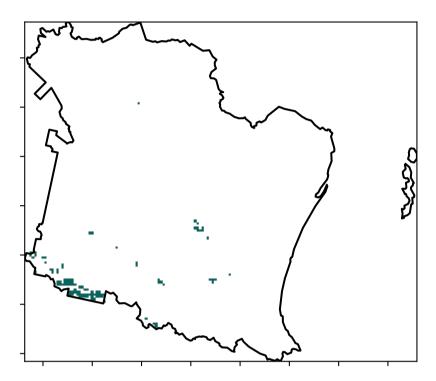
52°10-70°10

320050010

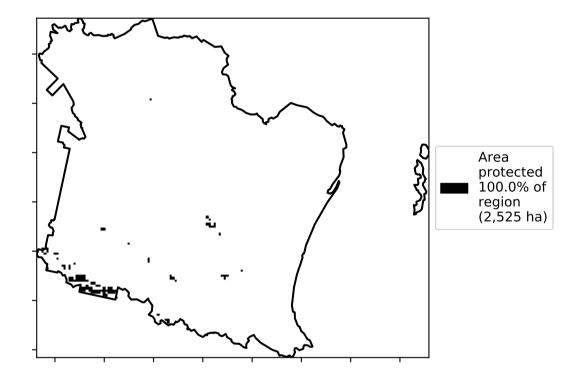
· 0.30%



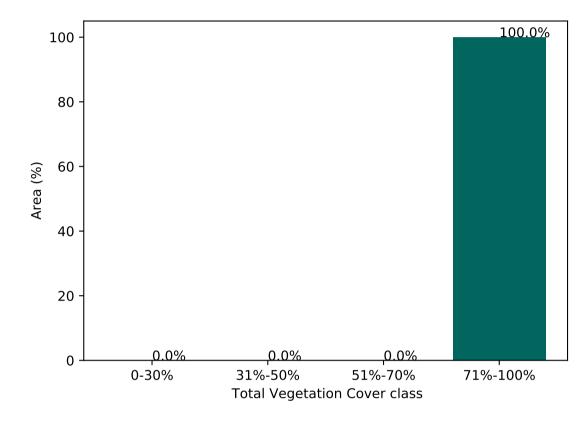
**Total Vegetation Cover [%]** 



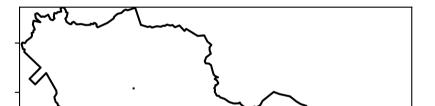
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

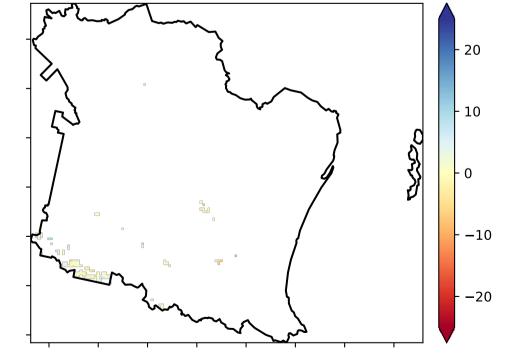


% Area protected from wind erosion (>50%)

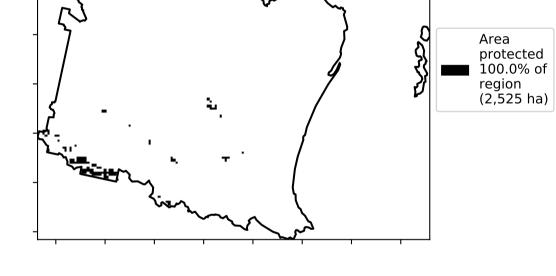


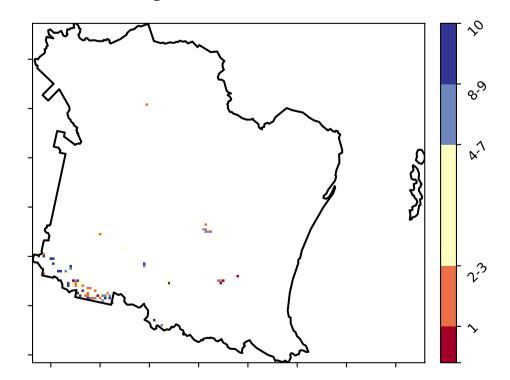
**Total Vegetation Cover Anomaly [%]** 

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.



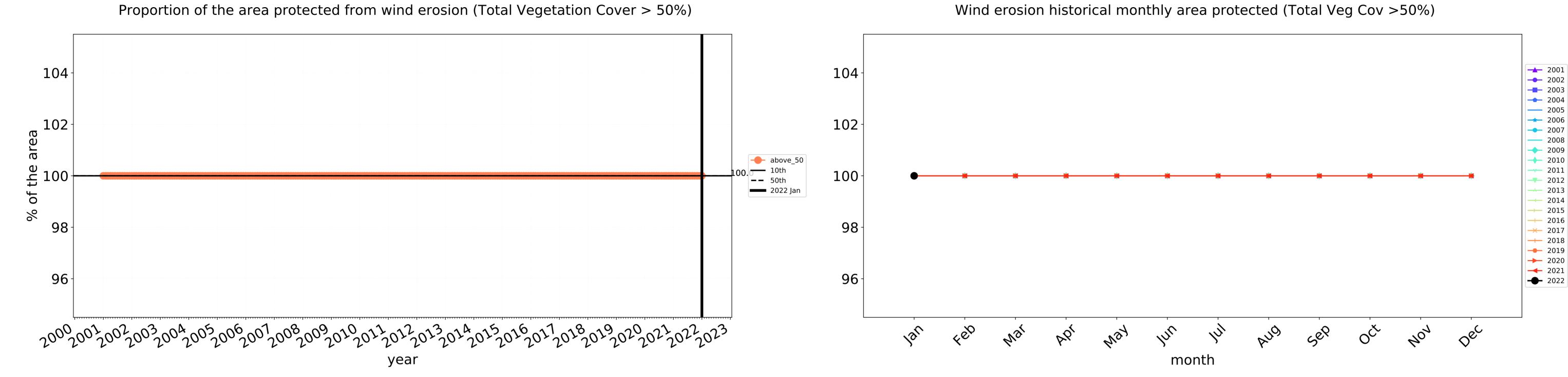
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



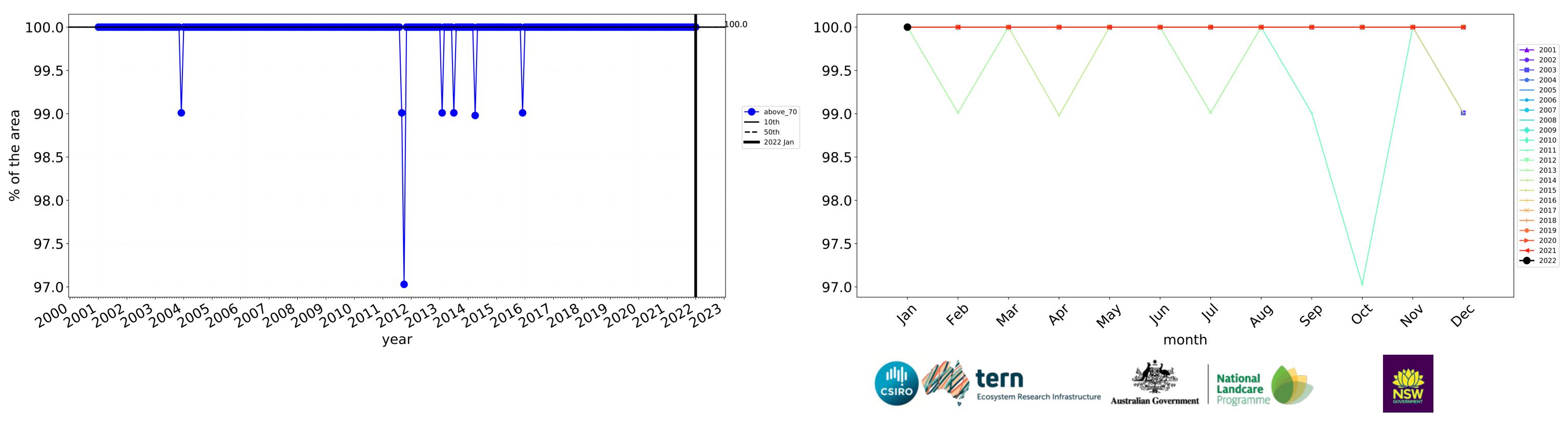




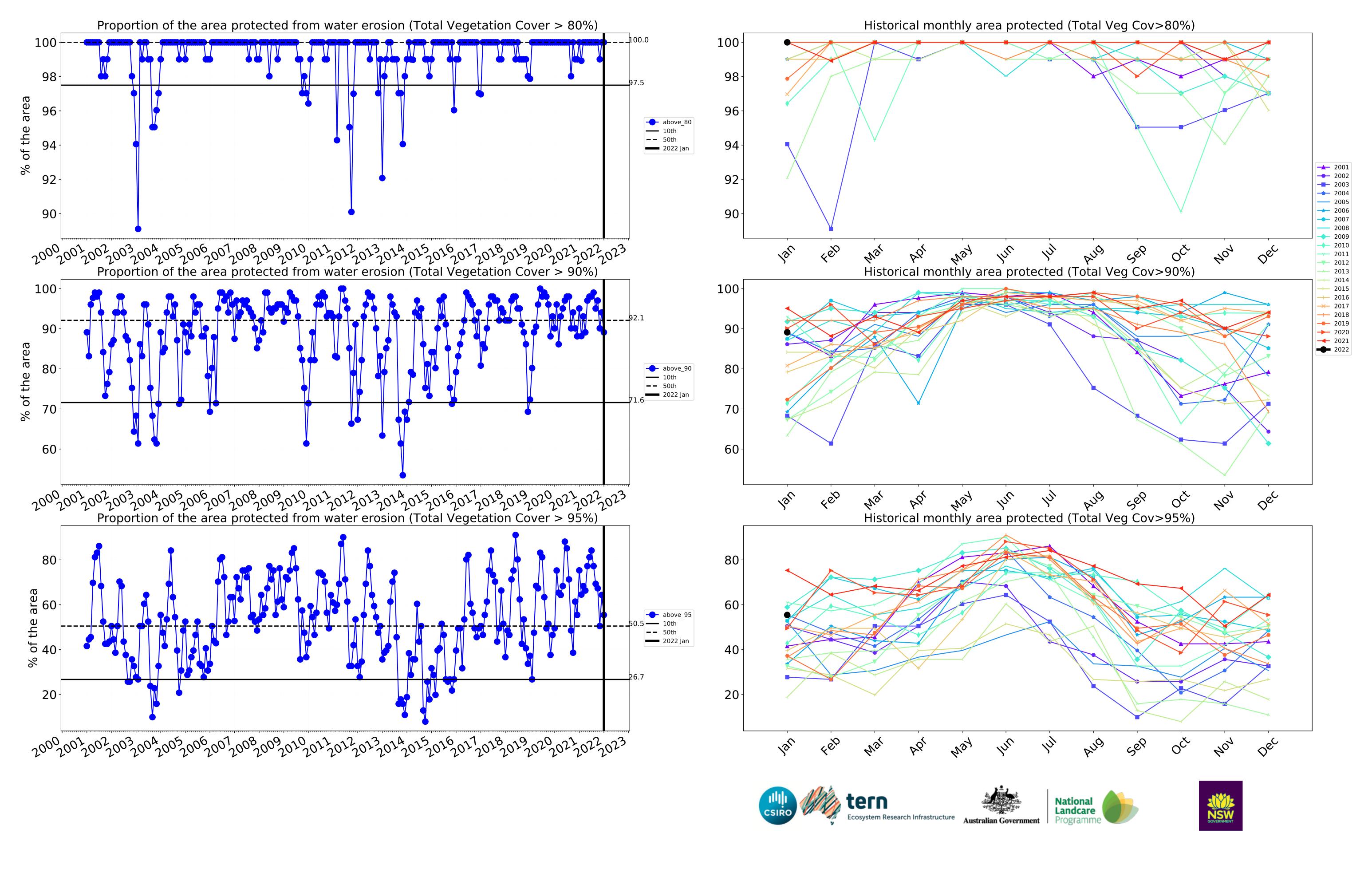
# **Grazing Woodland forest timeseries**



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



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



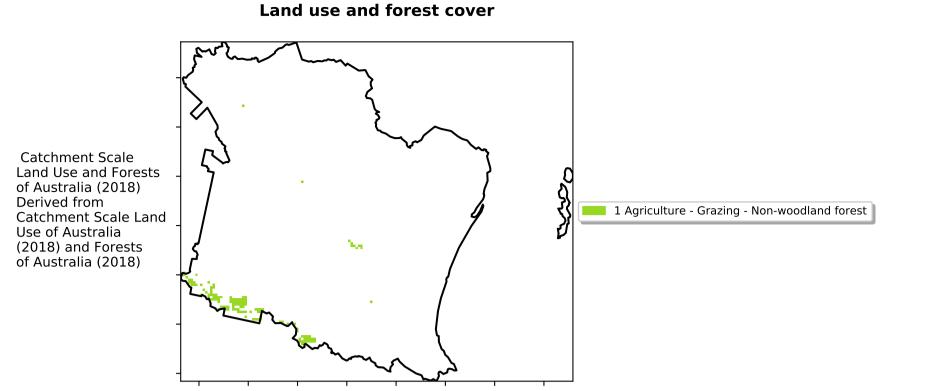
# Grazing - Forest (non woodland)

1200-2000

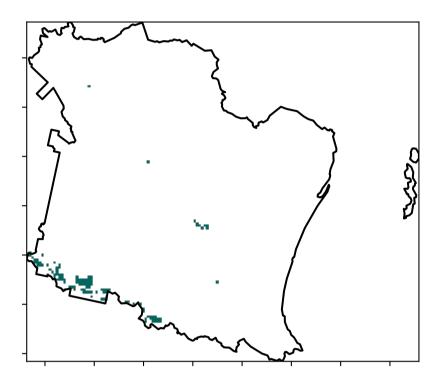
52°10010010

320050010

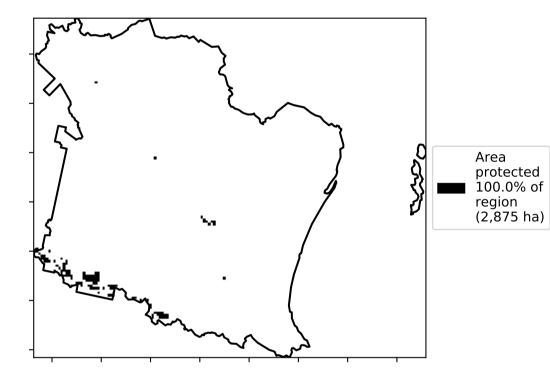
· 0.30%



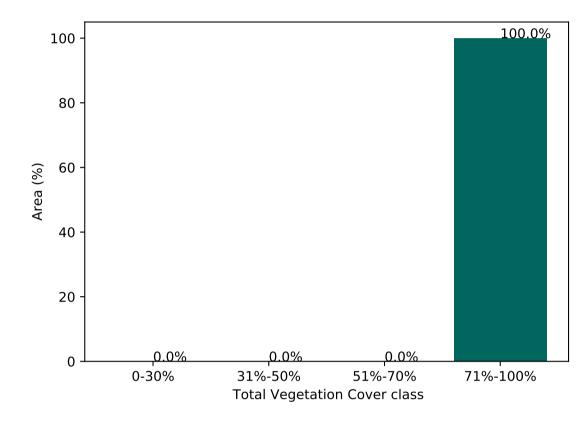
**Total Vegetation Cover [%]** 



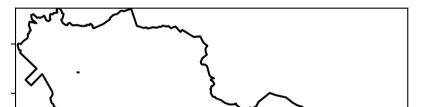
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

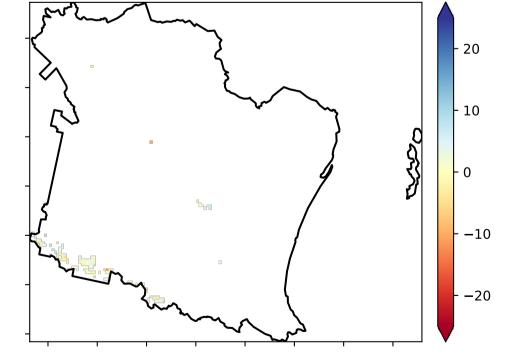


% Area protected from wind erosion (>50%)

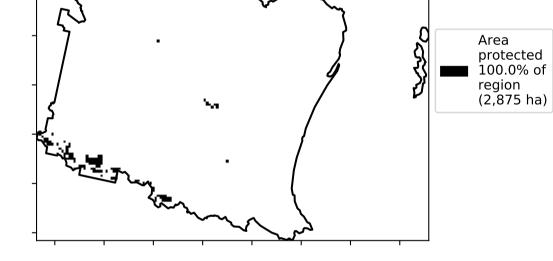


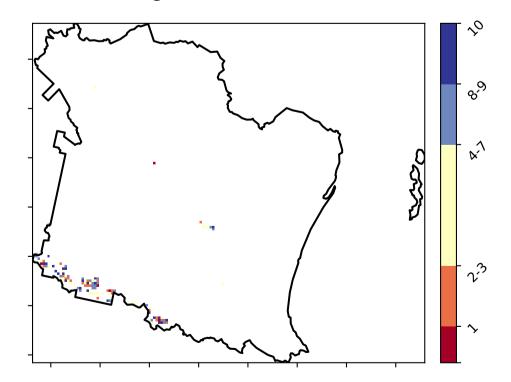
**Total Vegetation Cover Anomaly [%]** 

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.

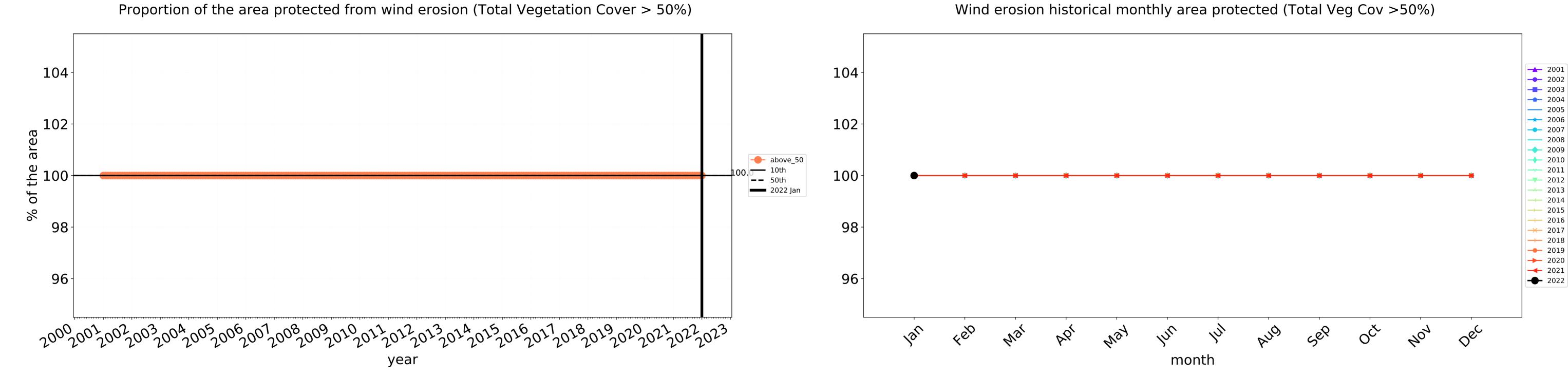


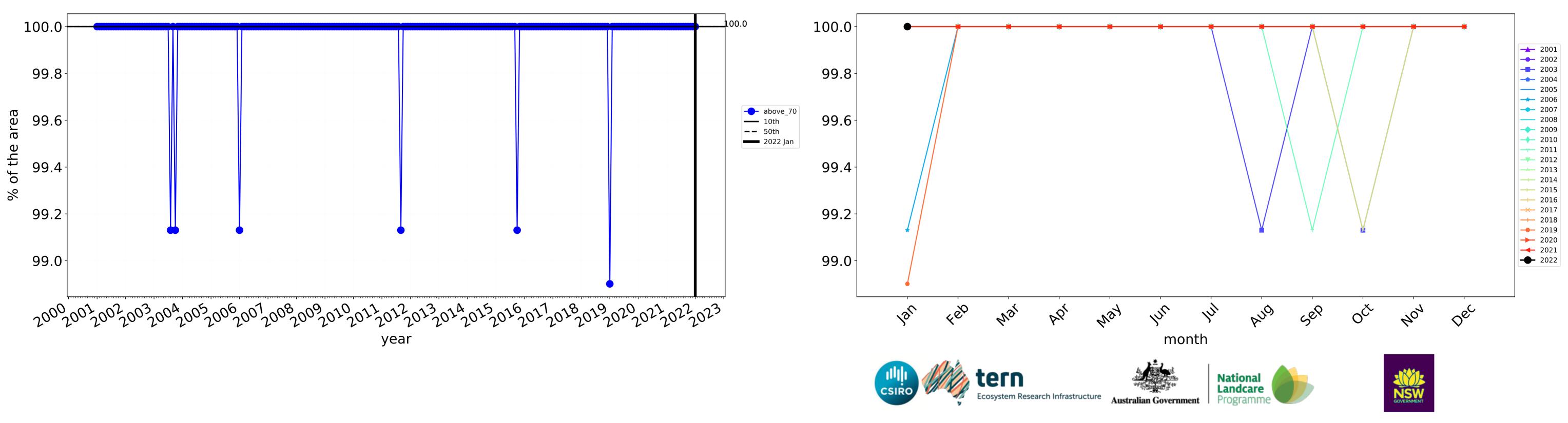
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





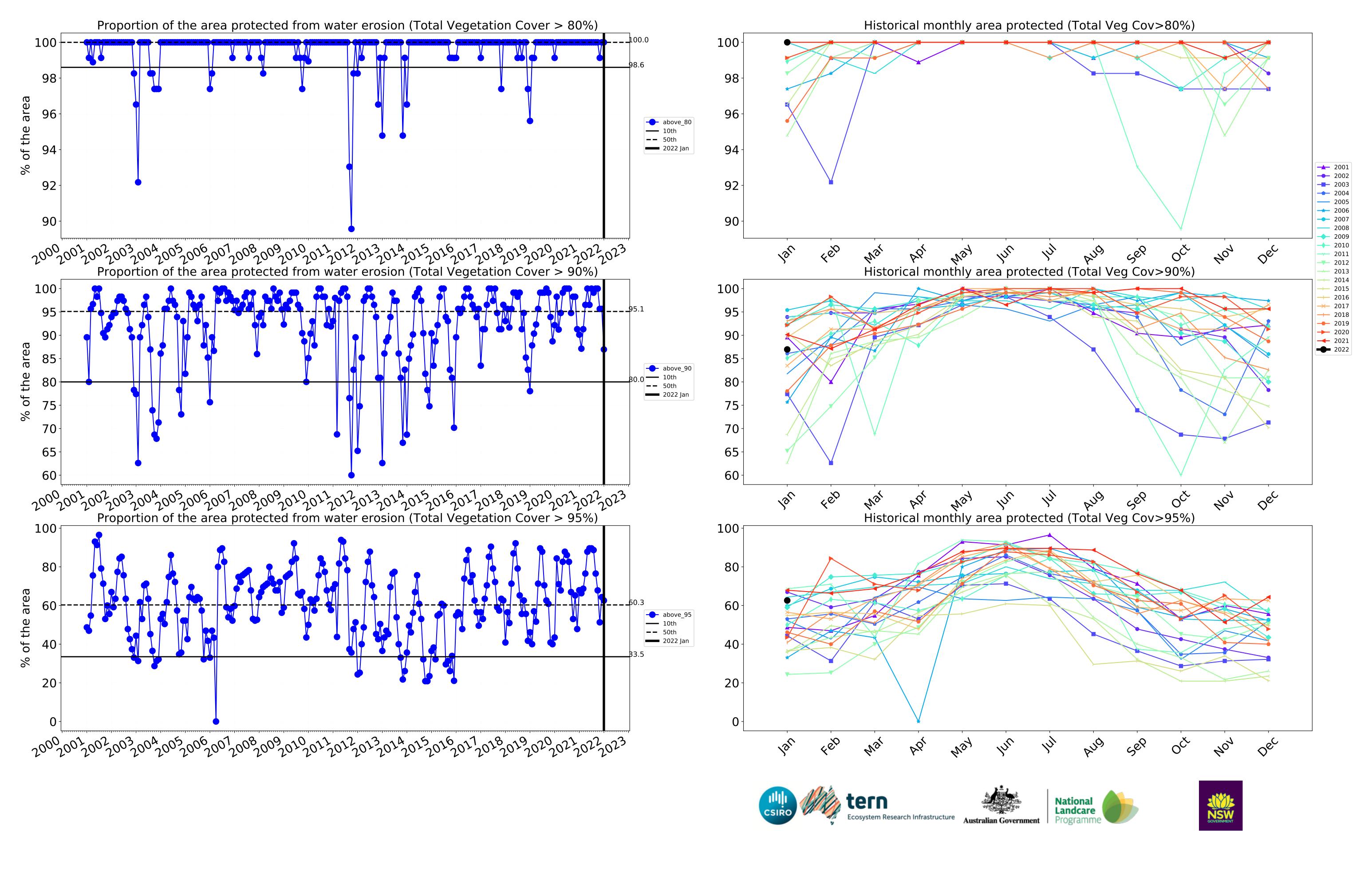






# Grazing - Forest (non woodland) timeseries

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



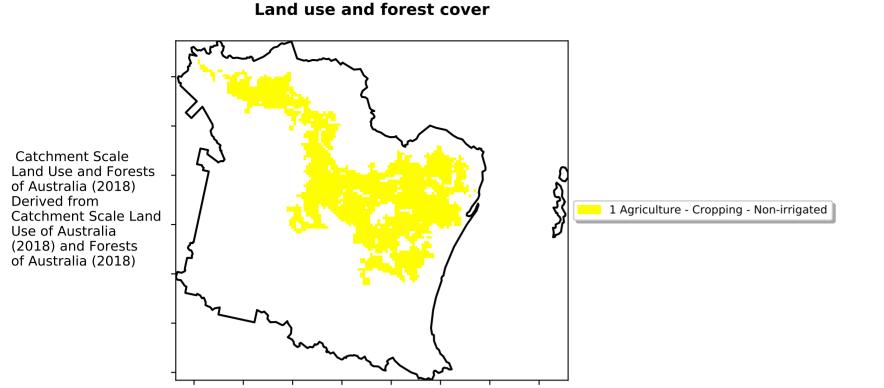
## Cropping

12%200%

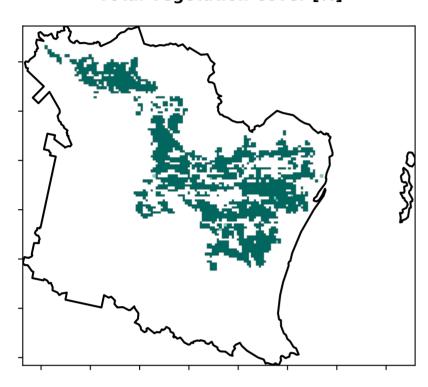
52%TO%

32%50%

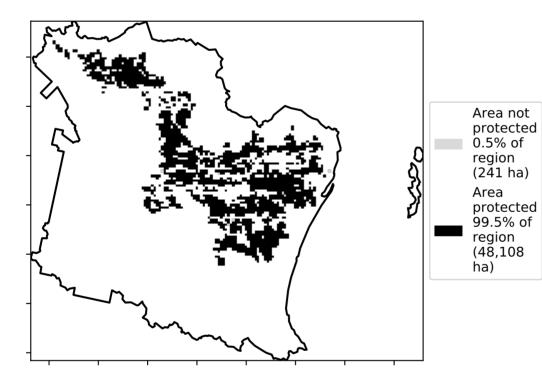
0.30%



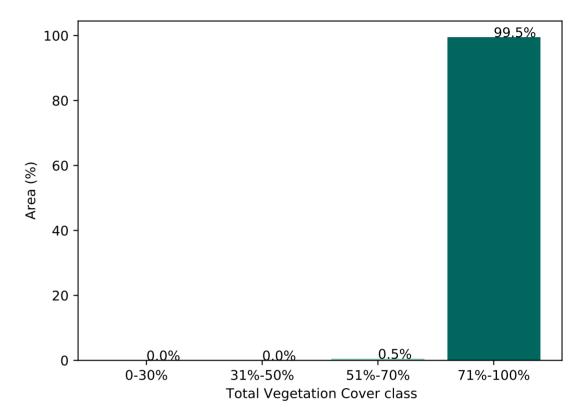
Total Vegetation Cover [%]



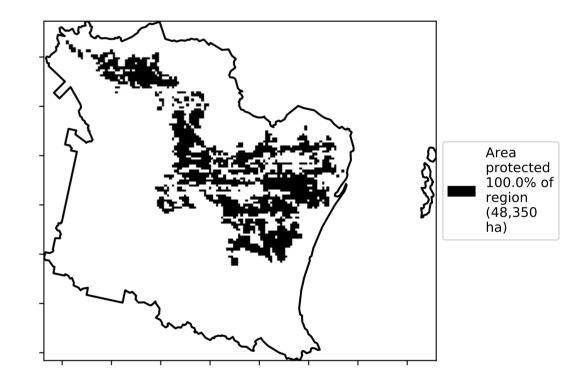
% Area protected from water erosion (>70%)



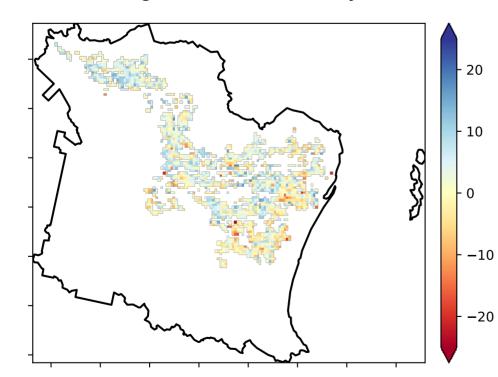




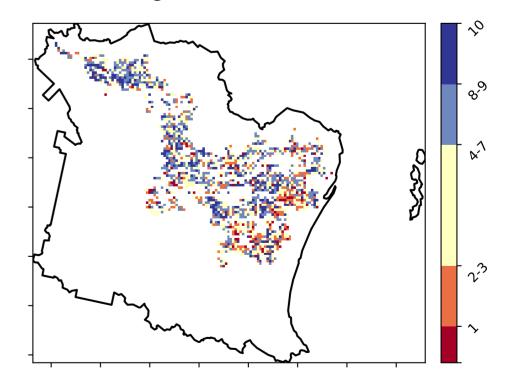
### % Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



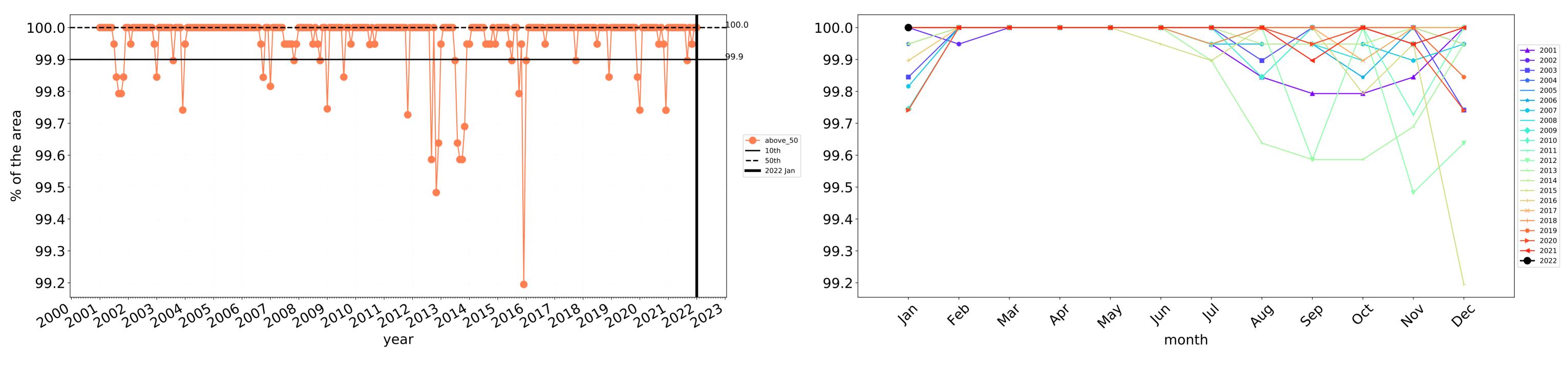
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. Total Vegetation Cover Decile [%]



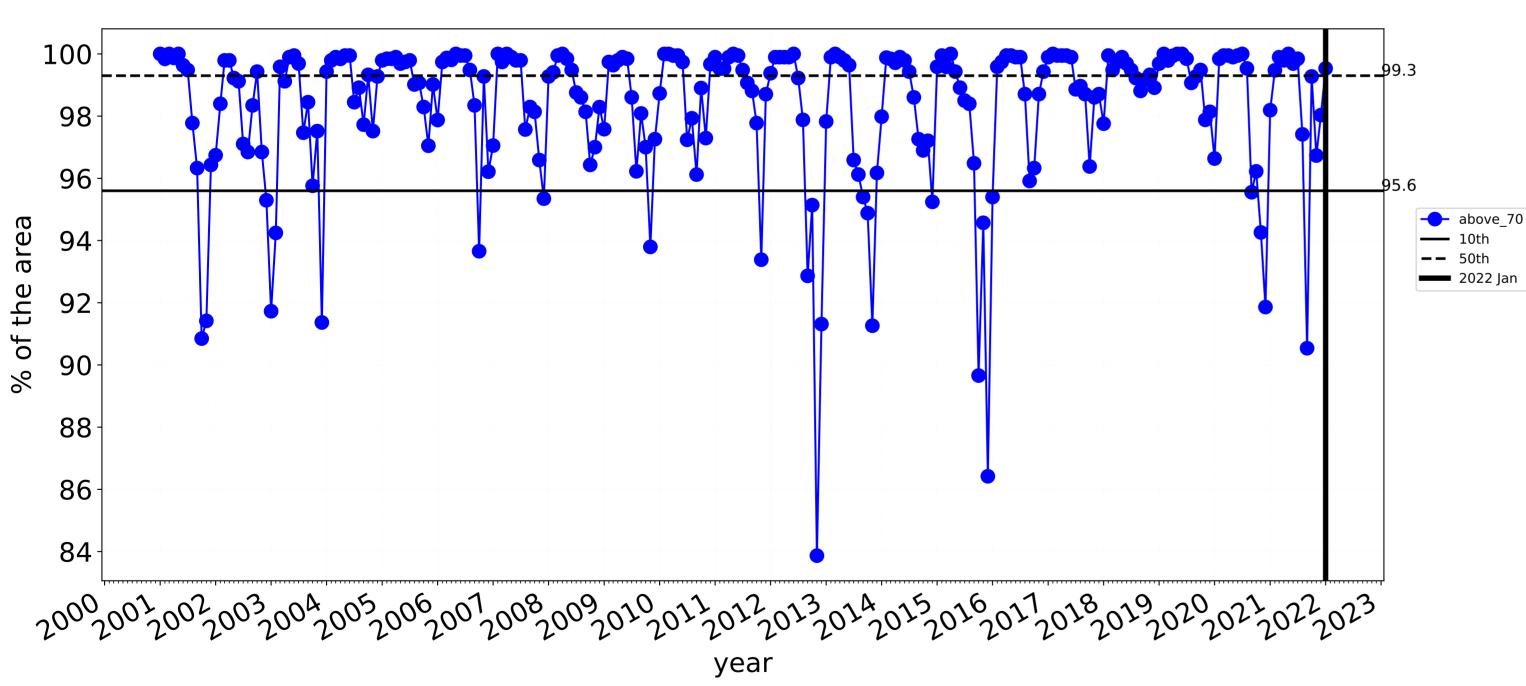


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

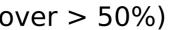




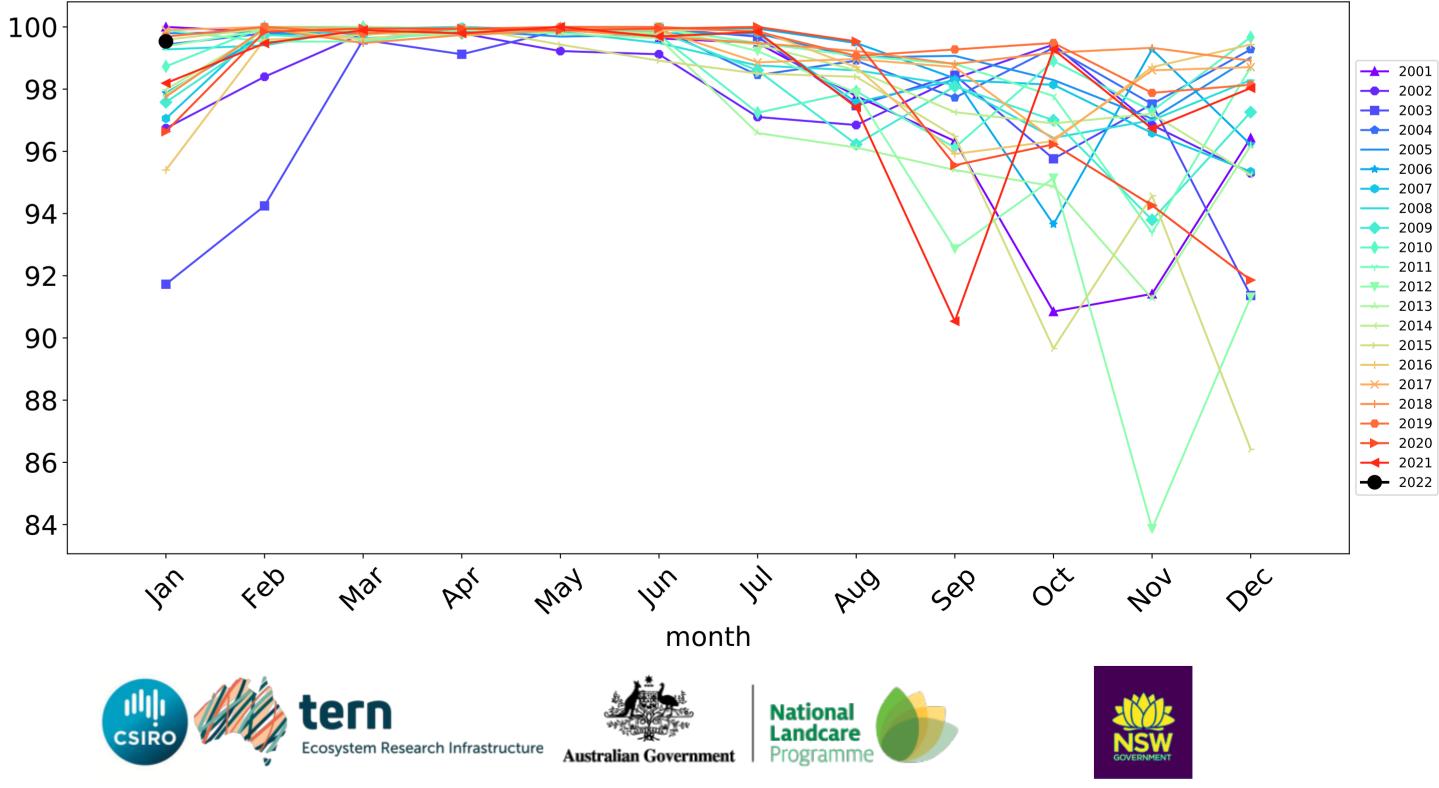
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



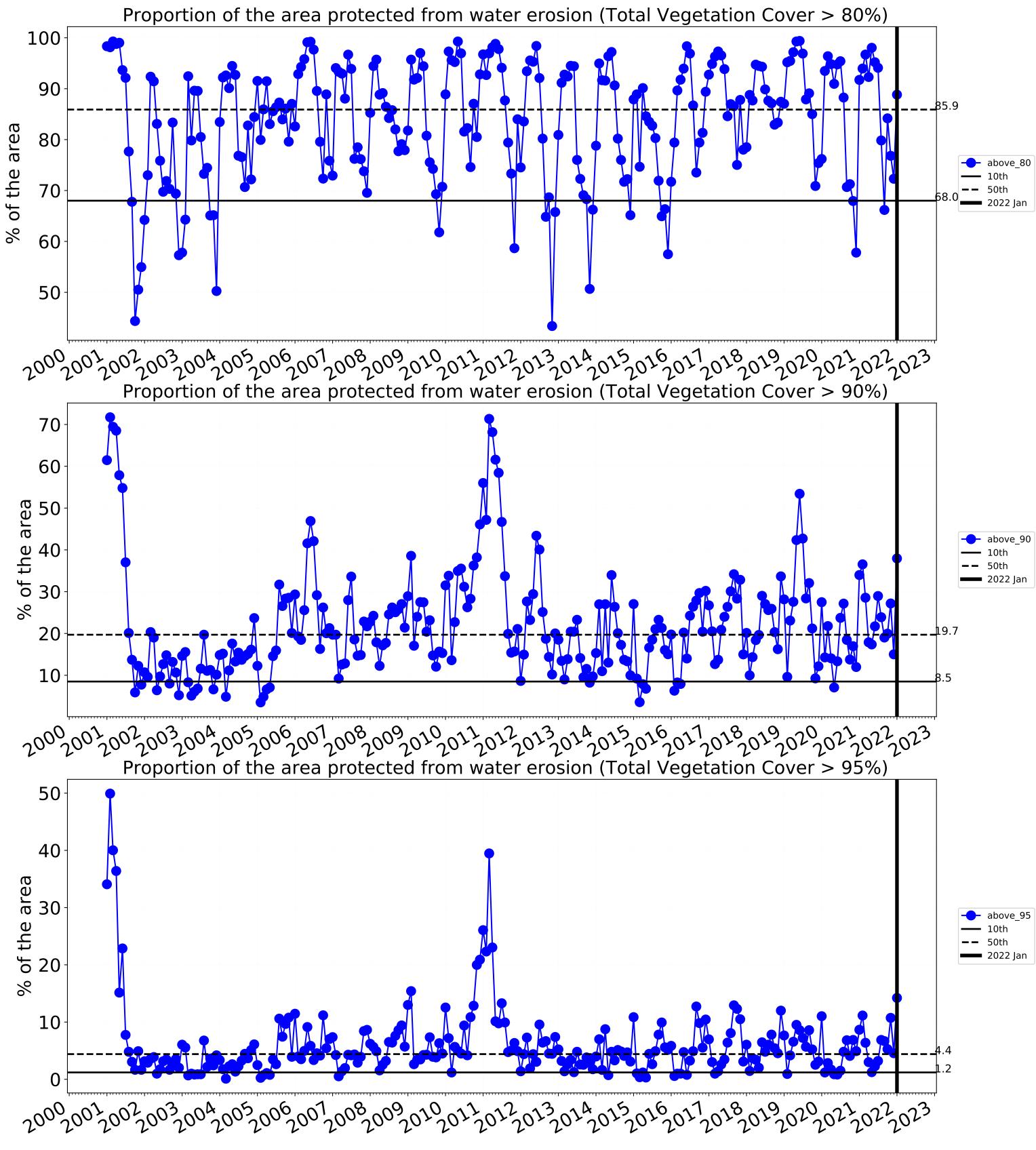
# **Cropping timeseries**

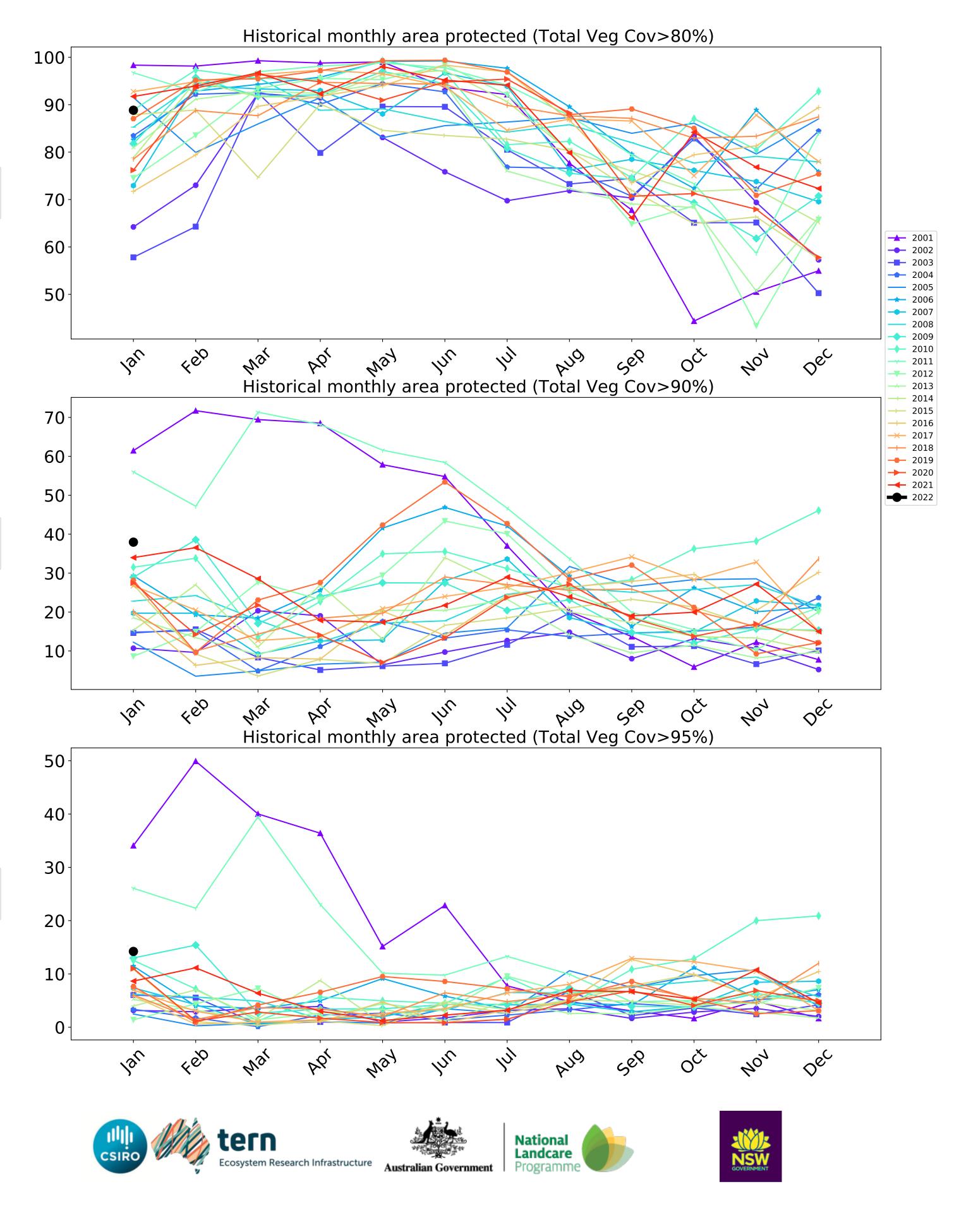


Wind erosion historical monthly area protected (Total Veg Cov >50%)



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

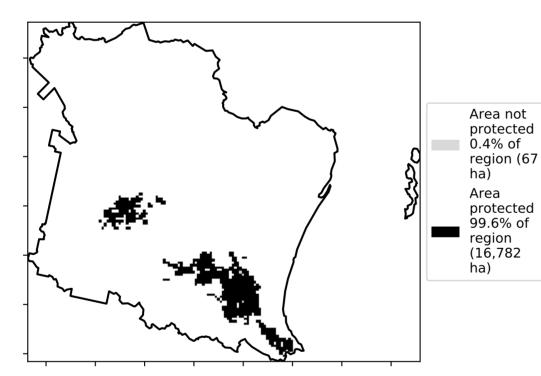


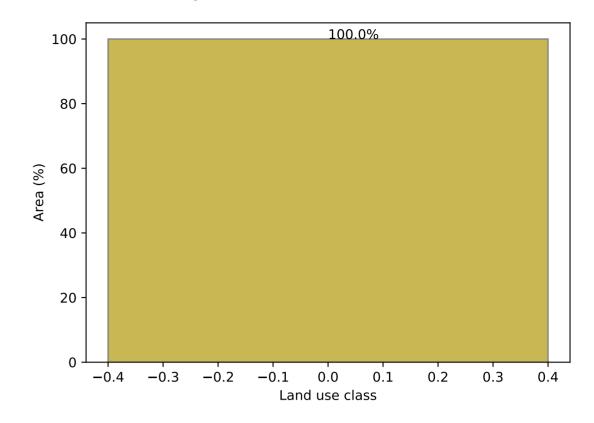


# Irrigation

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) 2 1 Agriculture - Cropping - Irrigated **Total Vegetation Cover [%]** 12%200% 2 52°1070°10 0 32005001 0.30%

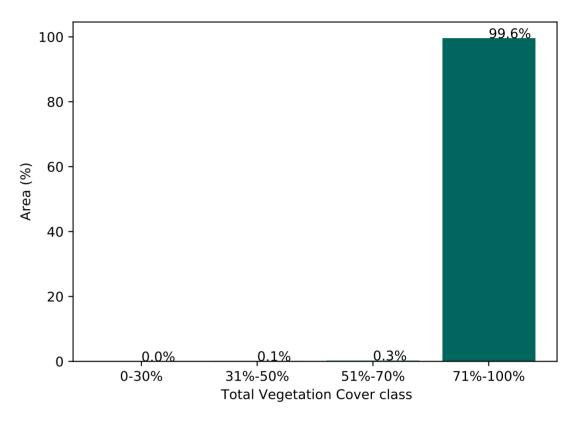
% Area protected from water erosion (>70%)



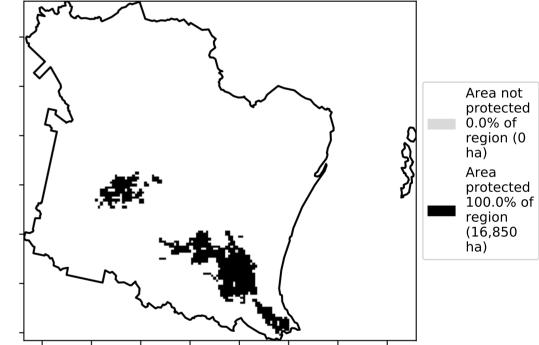


Proportion of each land class in area

Proportion of vegetation cover class in area



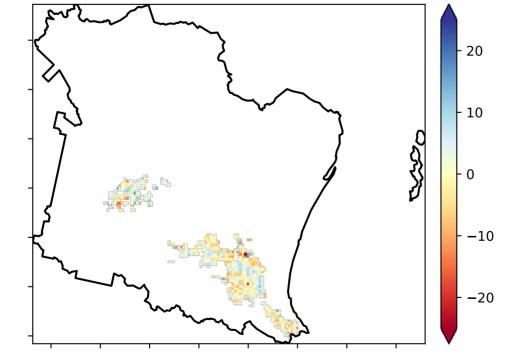
% Area protected from wind erosion (>50%)



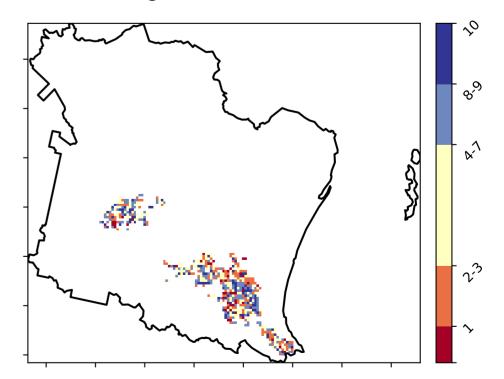


Total Vegetation Cover Anomaly [%]

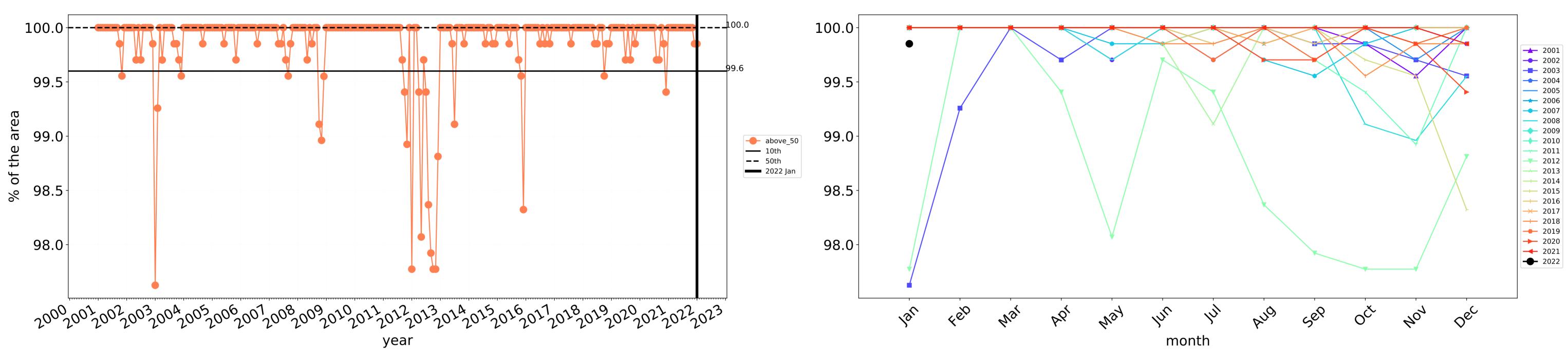
Anomaly show how many percetage points each pixel is from the mean That the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



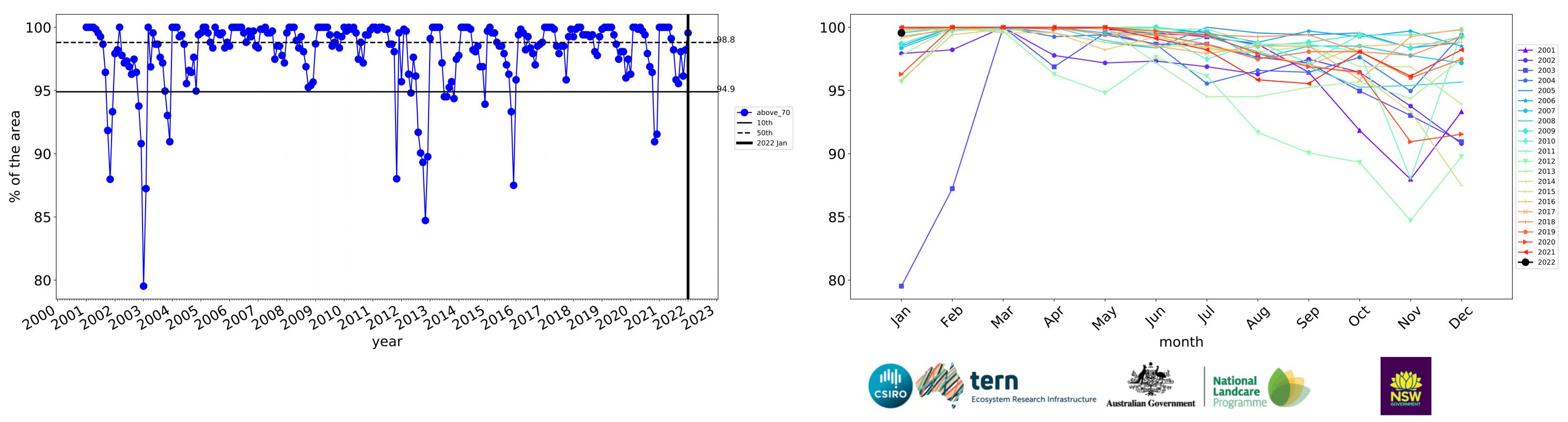
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

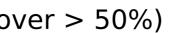






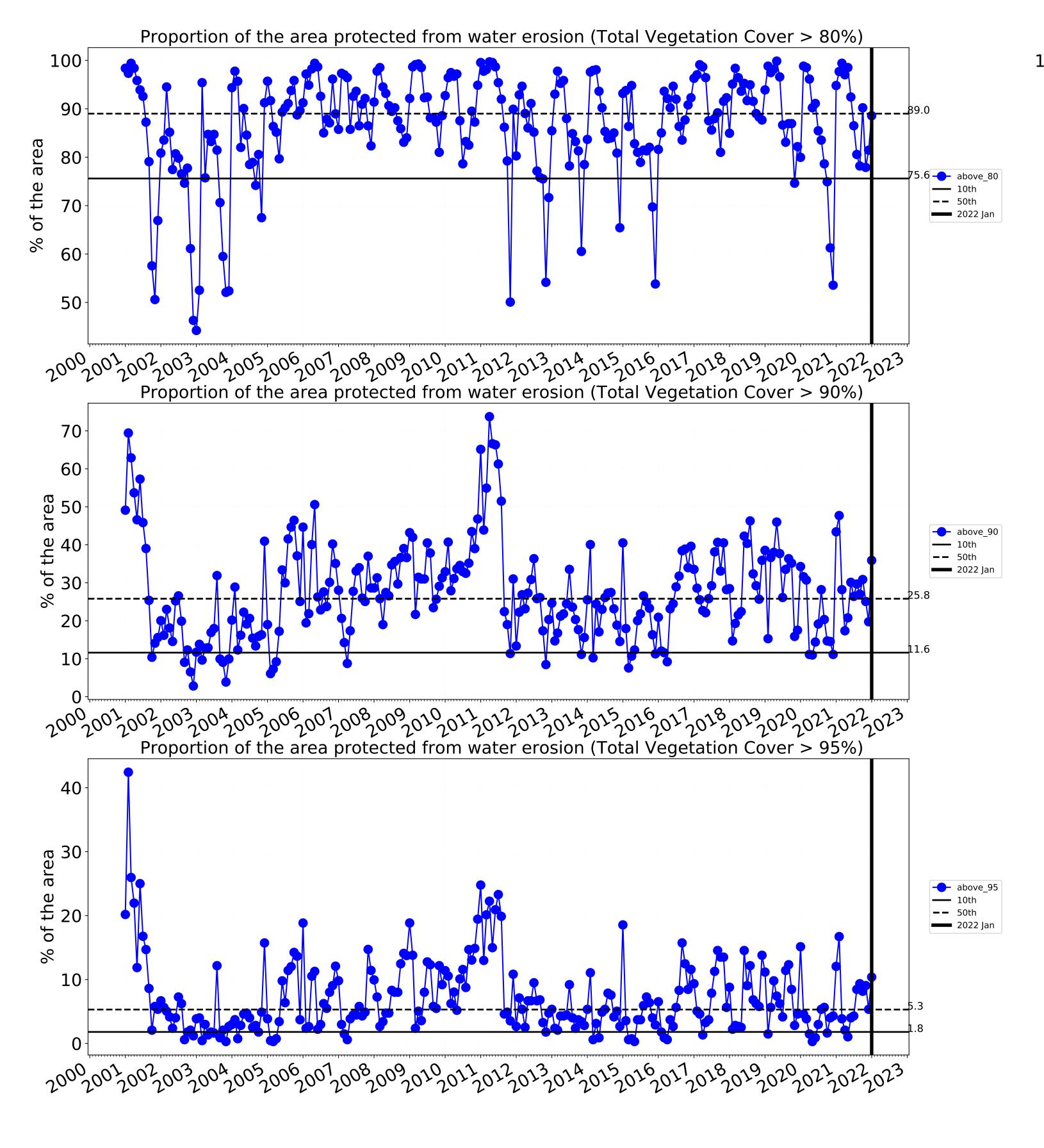
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

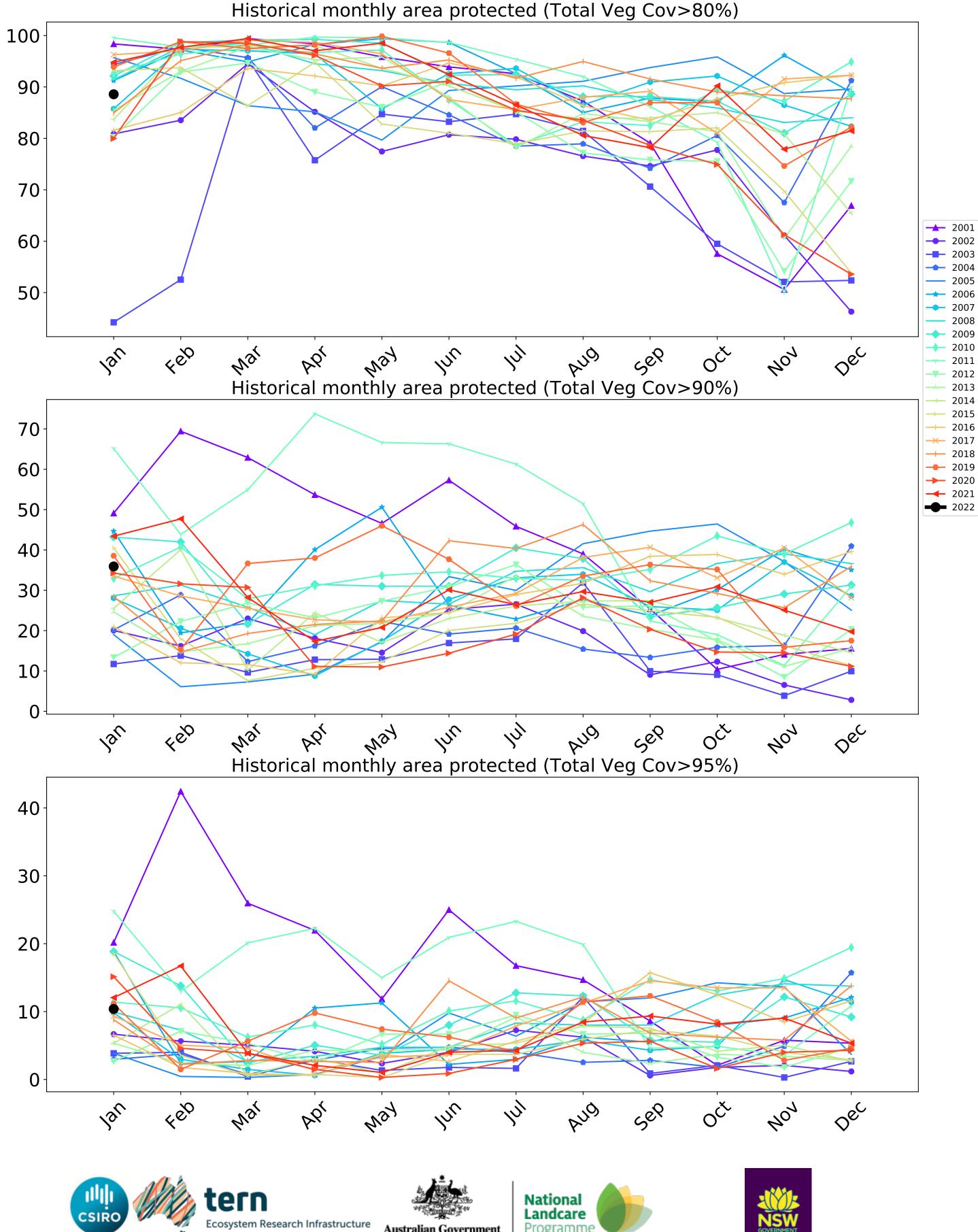




Wind erosion historical monthly area protected (Total Veg Cov >50%)

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





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# **Production native forests and plantation forests**

Catchment Scale Land Use and Forests of Australia (2018) £ Ś Derived from 1 Production native forests and plantation forests Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

12º10-100'

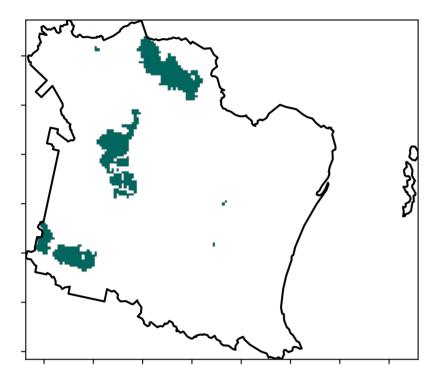
52°1070°1

32905001

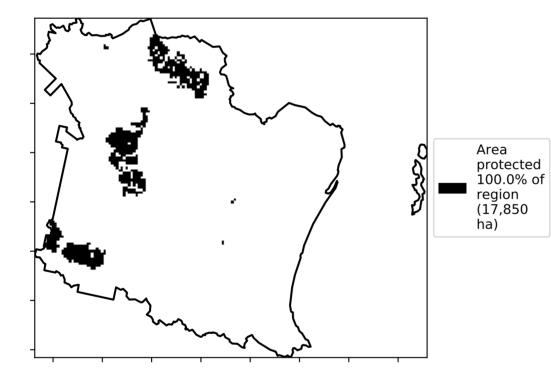
0.30%

**Total Vegetation Cover [%]** 

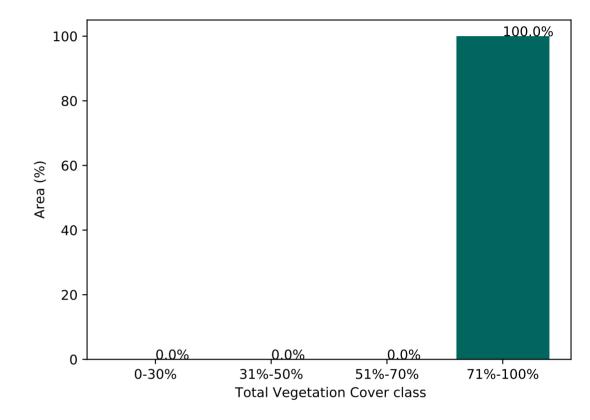
Land use and forest cover



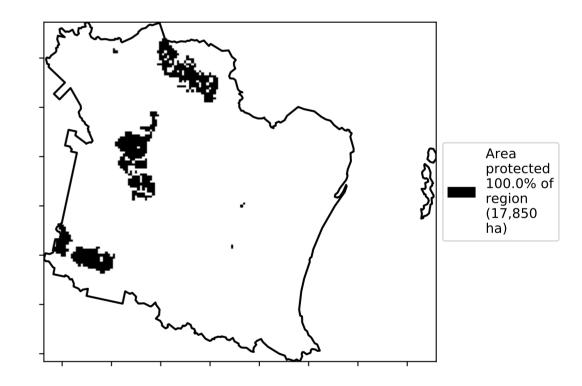
% Area protected from water erosion (>70%)



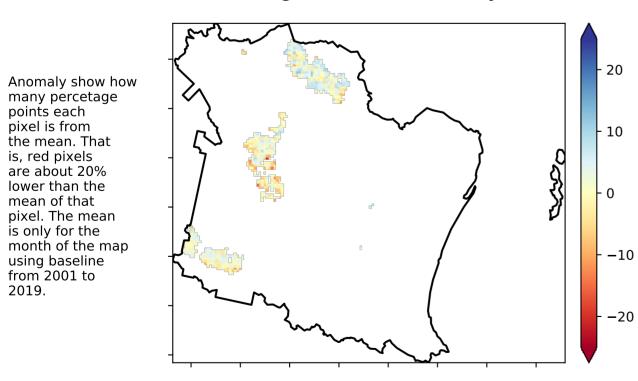
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



the mean. That

are about 20% lower than the

mean of that

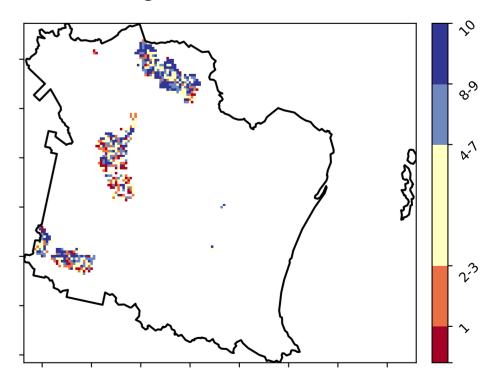
pixel. The mean

from 2001 to 2019.

is, red pixels

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.

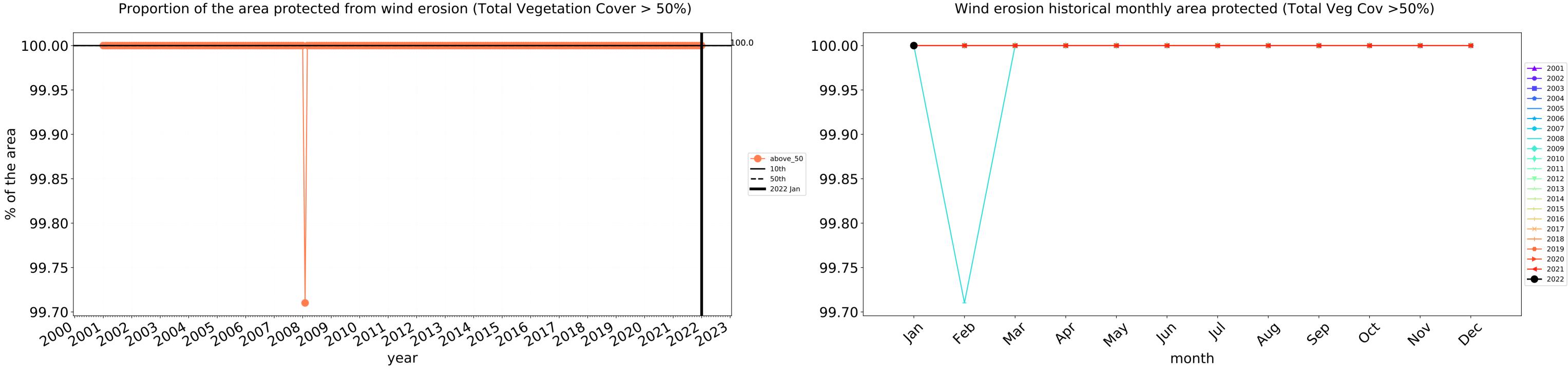
Total Vegetation Cover Decile [%]



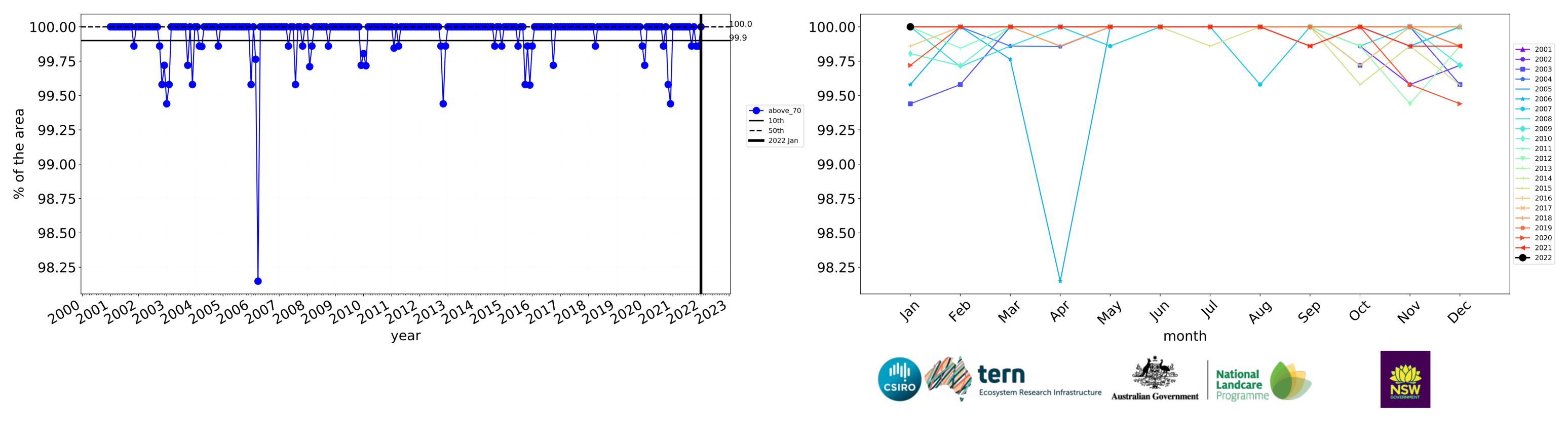


32

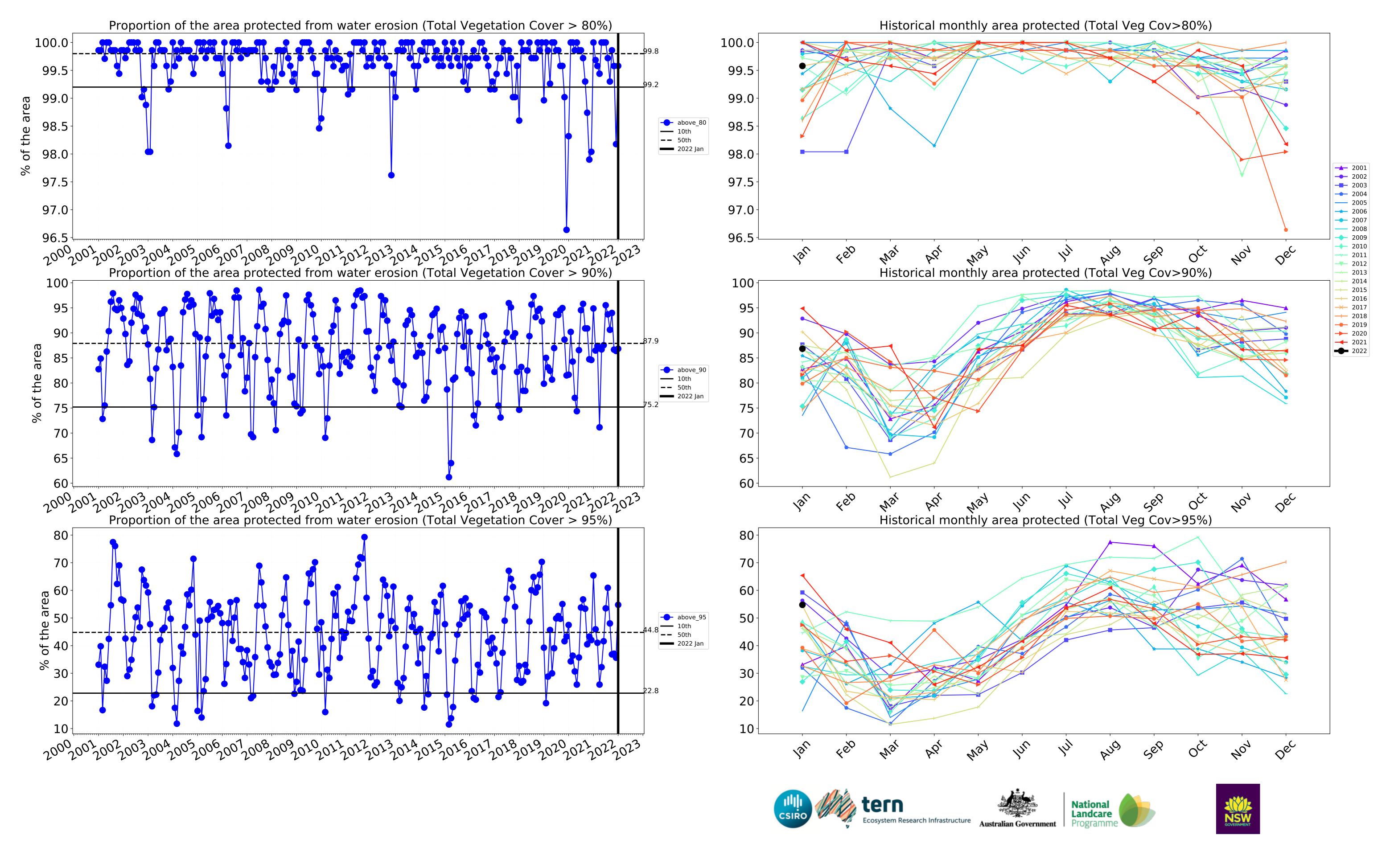
# Production native forests and plantation forests timeseries



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



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



# Hinchinbrook\_(S) (222,325 ha and no data 58,337 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	222,325	100.0% 222,275	99.8% 221,925	98.9% 219,825	93.5% 207,825	65.3% 145,150	35.4% 78,775
Conservation and natural environments	103,275	100.0% 103,250	99.8% 103,025	99.2% 102,400	97.9% 101,100	83.3% 86,000	48.2% 49,750
Conservation and natural environments Woodland forest	37,850	100.0% 37,850	99.9% 37,825	99.5% 37,650	98.3% 37,200	82.8% 31,350	43.4% 16,425
Conservation and natural environments Forest (non woodland)	64,000	100.0% 63,975	99.7% 63,825	99.1% 63,400	97.9% 62,625	84.2% 53,900	51.4% 32,925
Agriculture	84,925	100.0% 84,925	100.0% 84,900	99.6% 84,575	90.5% 76,825	43.7% 37,150	18.3% 15,525
Grazing	19,700	100.0% 19,700	100.0% 19,700	99.7% 19,650	96.1% 18,925	64.6% 12,725	35.0% 6,900
Grazing non forest	14,300	100.0% 14,300	100.0% 14,300	99.7% 14,250	94.6% 13,525	55.8% 7,975	25.9% 3,700
Grazing Woodland forest	2,525	100.0% 2,525	100.0% 2,525	100.0% 2,525	100.0% 2,525	89.1% 2,250	55.4% 1,400
Grazing - Forest (non woodland)	2,875	100.0% 2,875	100.0% 2,875	100.0% 2,875	100.0% 2,875	87.0% 2,500	62.6% 1,800
Cropping	48,350	100.0% 48,350	100.0% 48,350	99.5% 48,125	88.8% 42,950	38.0% 18,350	14.2% 6,875
Irrigation	16,850	100.0% 16,850	99.9% 16,825	99.6% 16,775	88.6% 14,925	35.9% 6,050	10.4% 1,750
Production native forests and plantation forests	17,850	100.0% 17,850	100.0% 17,850	100.0% 17,850	99.6% 17,775	86.8% 15,500	54.8% 9,775

