# Total vegetation cover soil protection Region:LGA Indigo\_(S) VIC

# Date: April 2021

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:

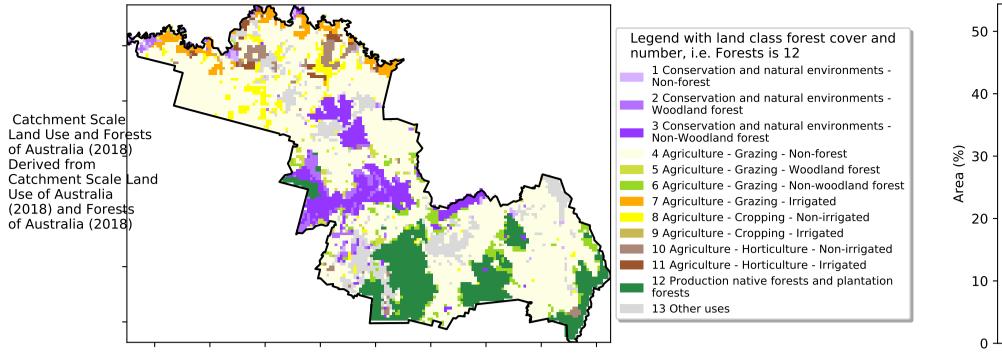
https://doi.org/10.4225/08/5848a3f19a7b3



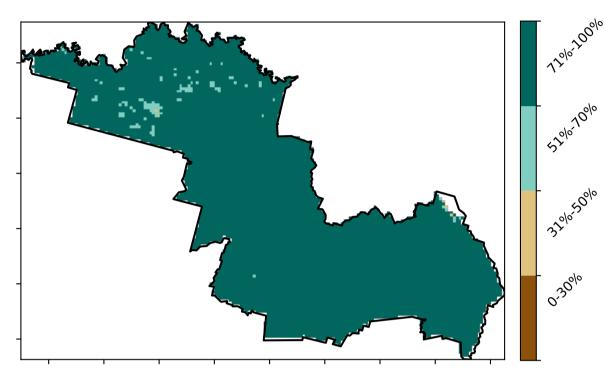
# **Vegetation Cover Apr 2021**

#### Land use and forest cover

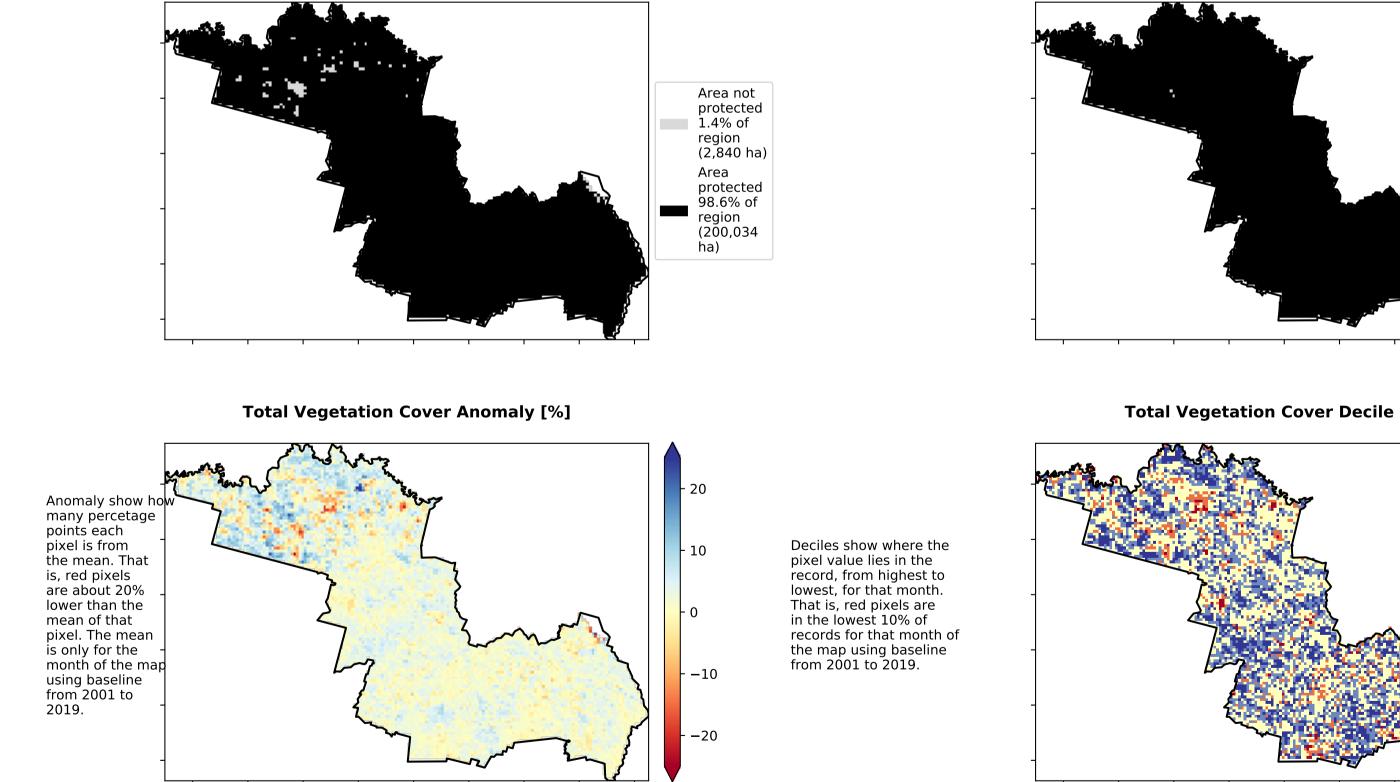
#### Proportion of each land class in area

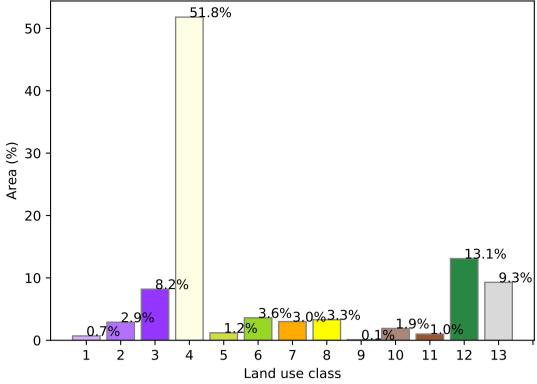


**Total Vegetation Cover [%]** 

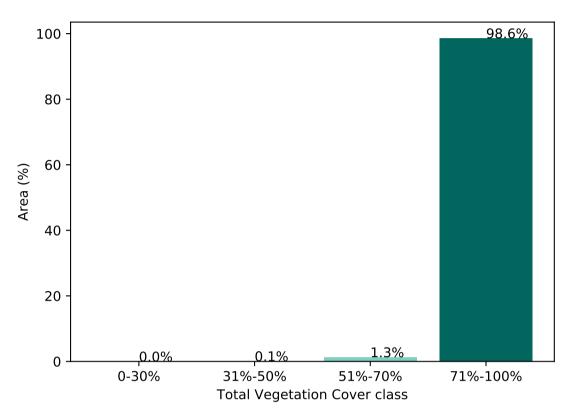


% Area protected from water erosion (>70%)

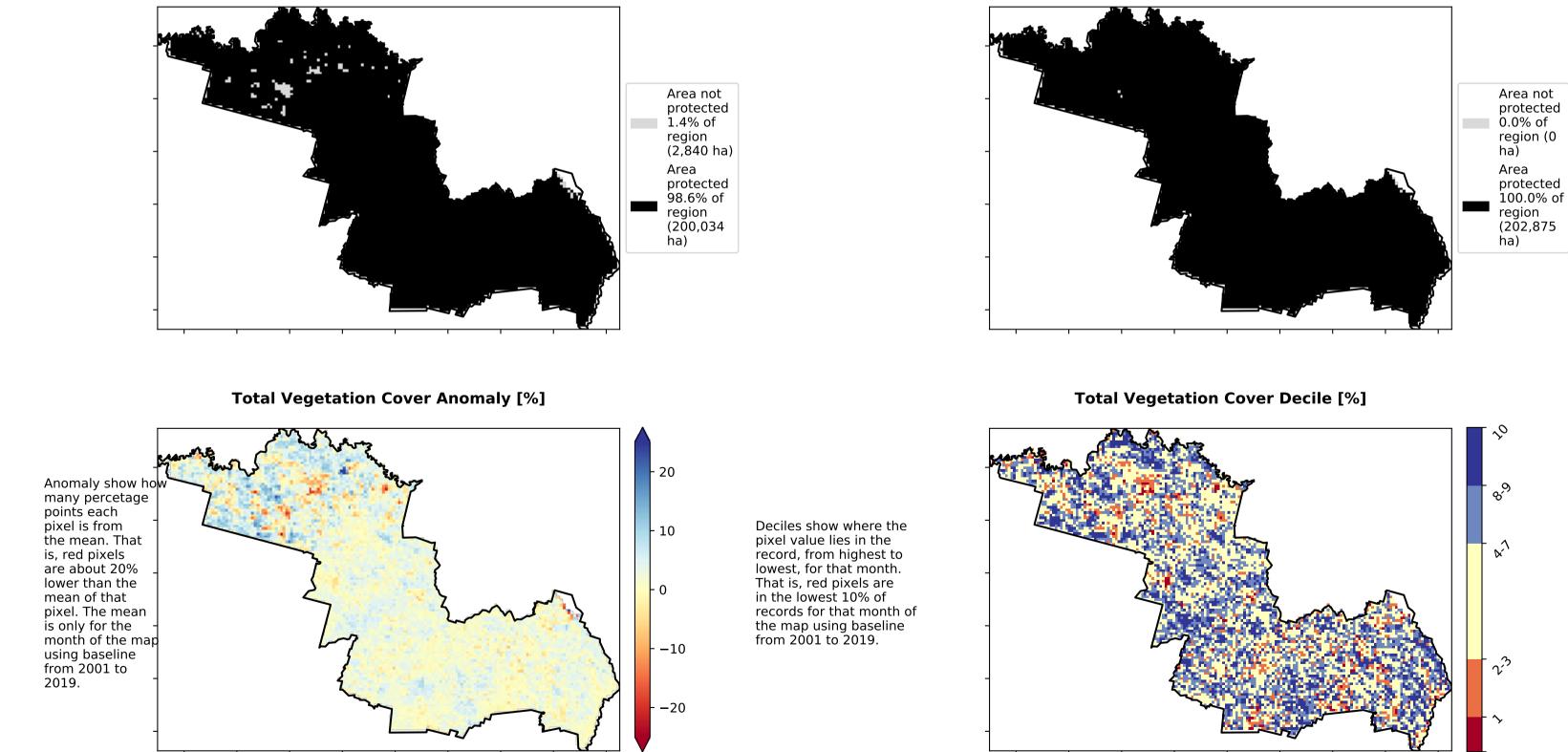




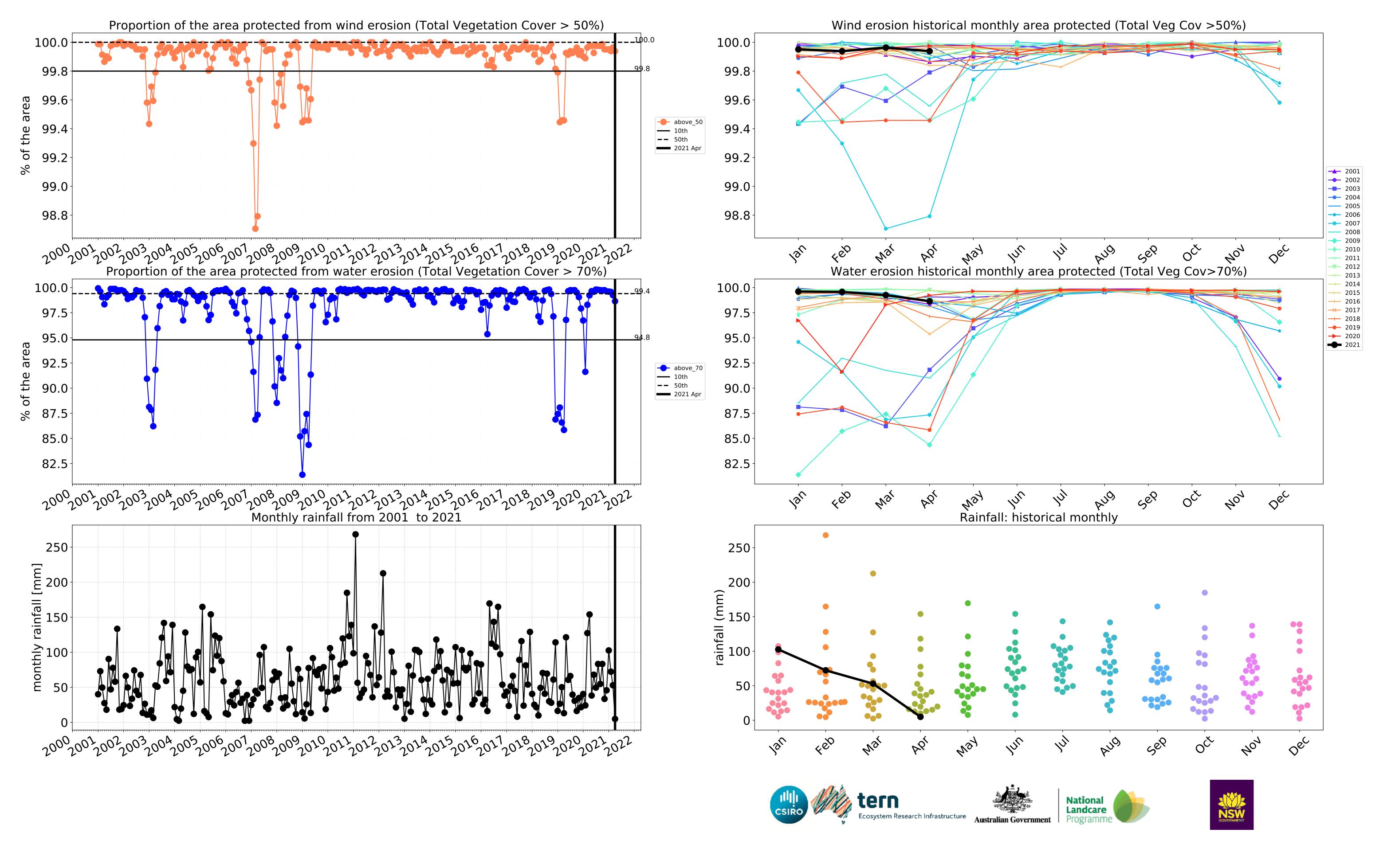
#### Proportion of vegetation cover class in area

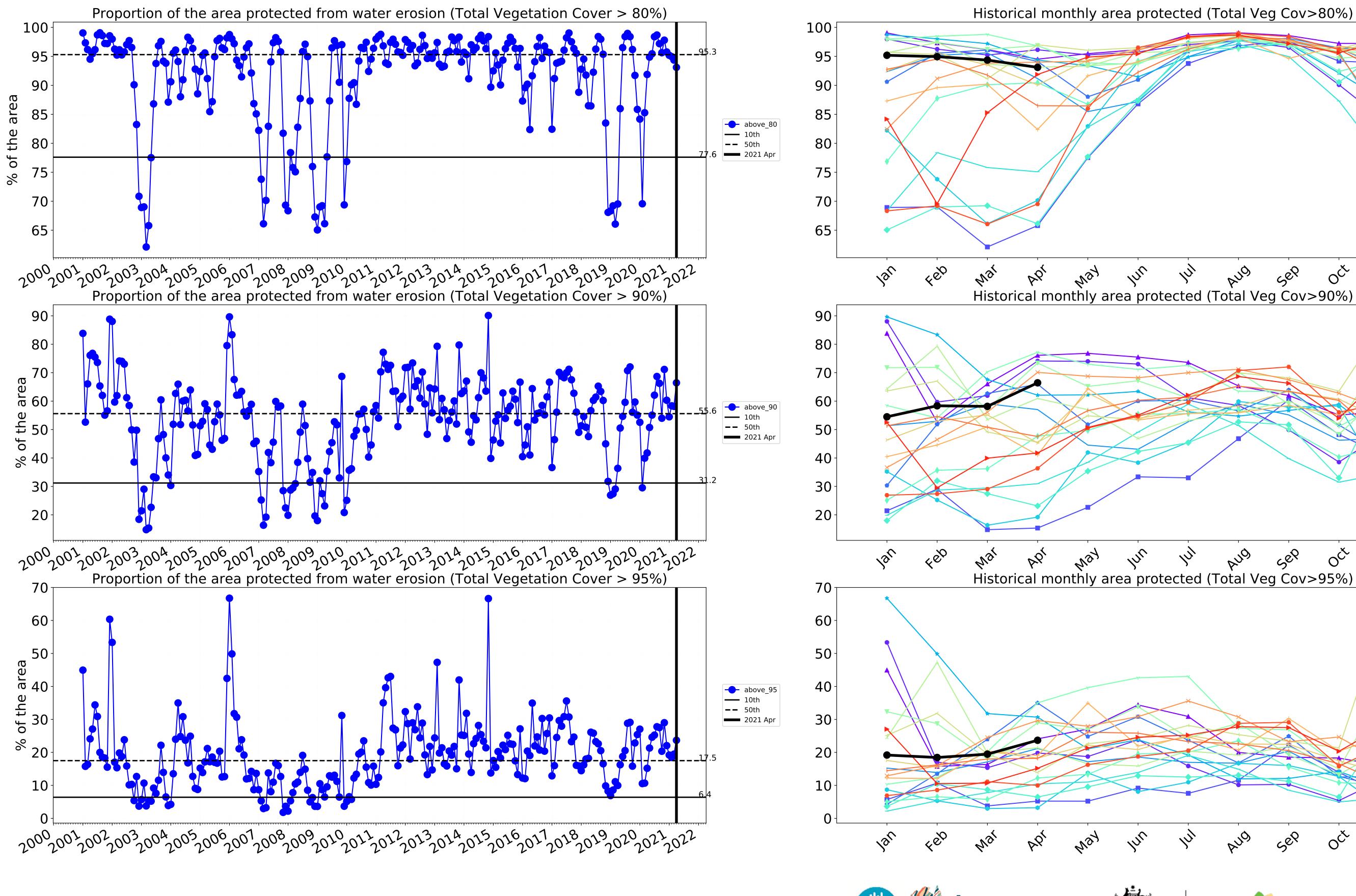


#### % Area protected from wind erosion (>50%)

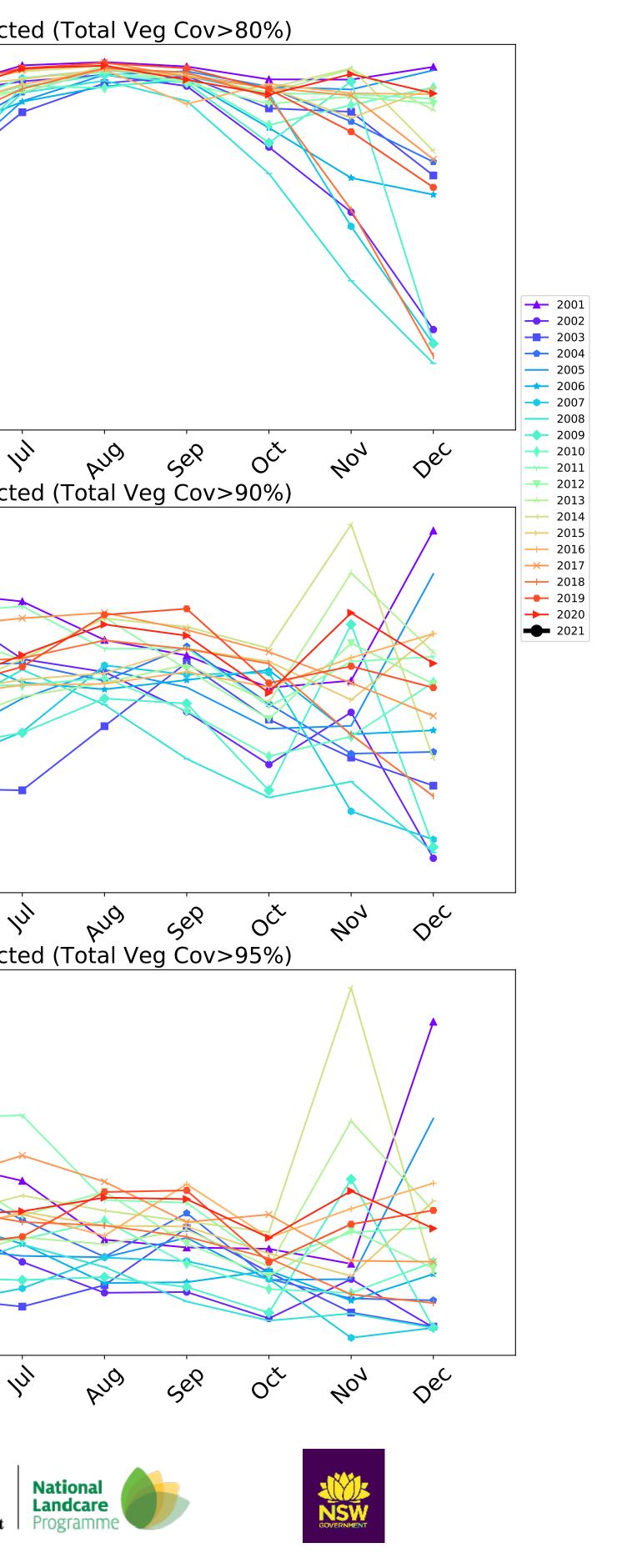








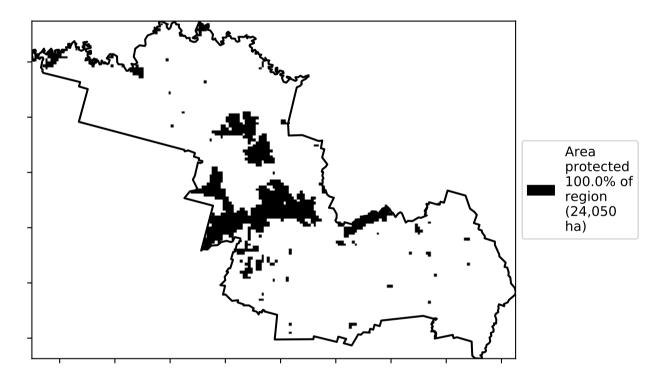
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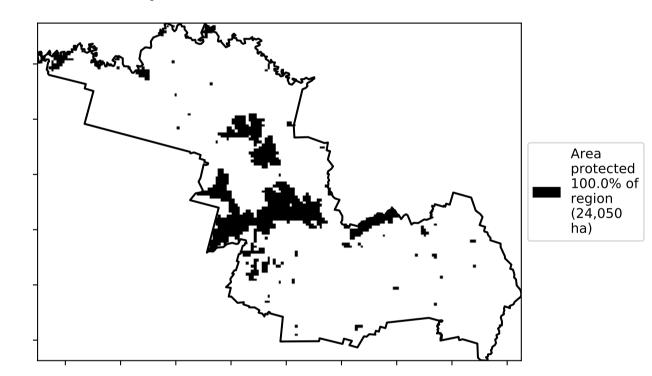
### **Conservation and natural environments**

Land use and forest cover Proportion of each land class in area 69.3% 70 60 · 50 Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments – Woodland forest 40 Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 3 Conservation and natural environments - Non-woodland forest 30 24.5% 20 10 6.1% 0 2 3 1 Land use class Proportion of vegetation cover class in area **Total Vegetation Cover [%]** 12/010001 100.0% 100 80 52°10'10°1 Area (%) 60 · 32005001 40 1 0.30% 20 · 0.0% 0.0% 0.0% 0 51%-70% 0-30% 31%-50% 71%-100% Total Vegetation Cover class

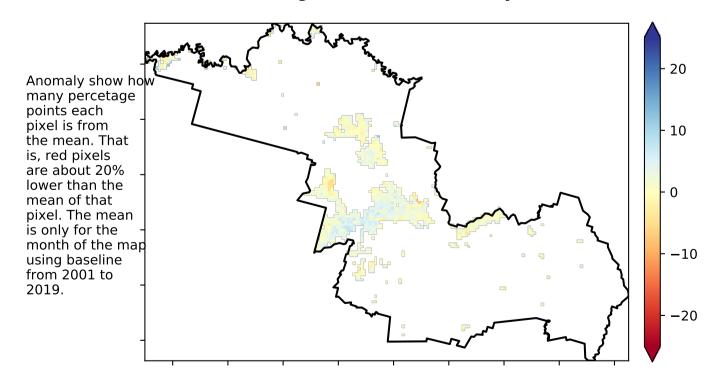
% Area protected from water erosion (>70%)



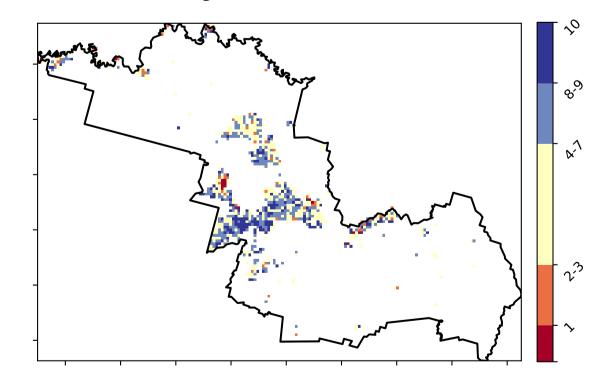
% Area protected from wind erosion (>50%)



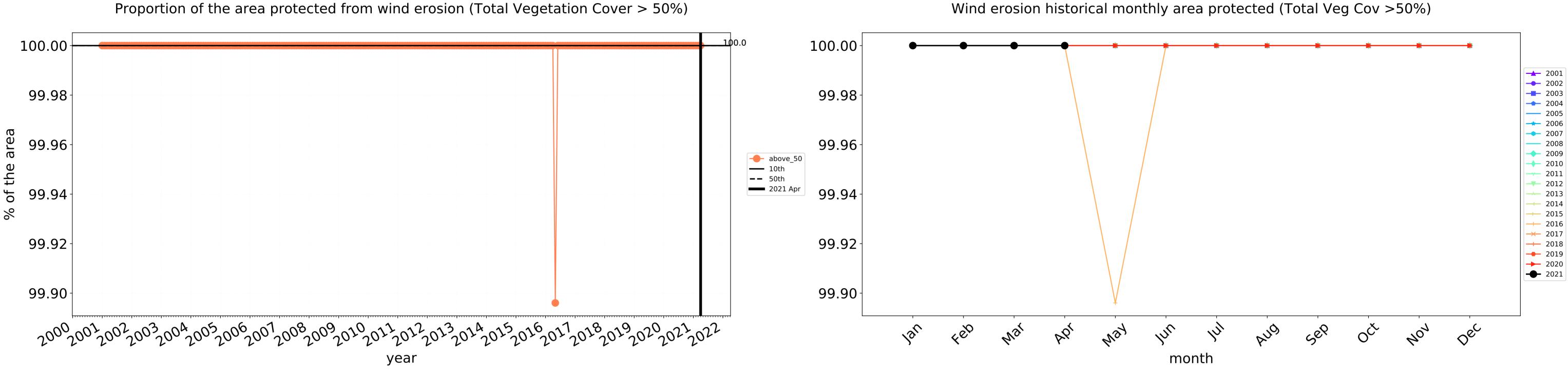
**Total Vegetation Cover Anomaly [%]** 

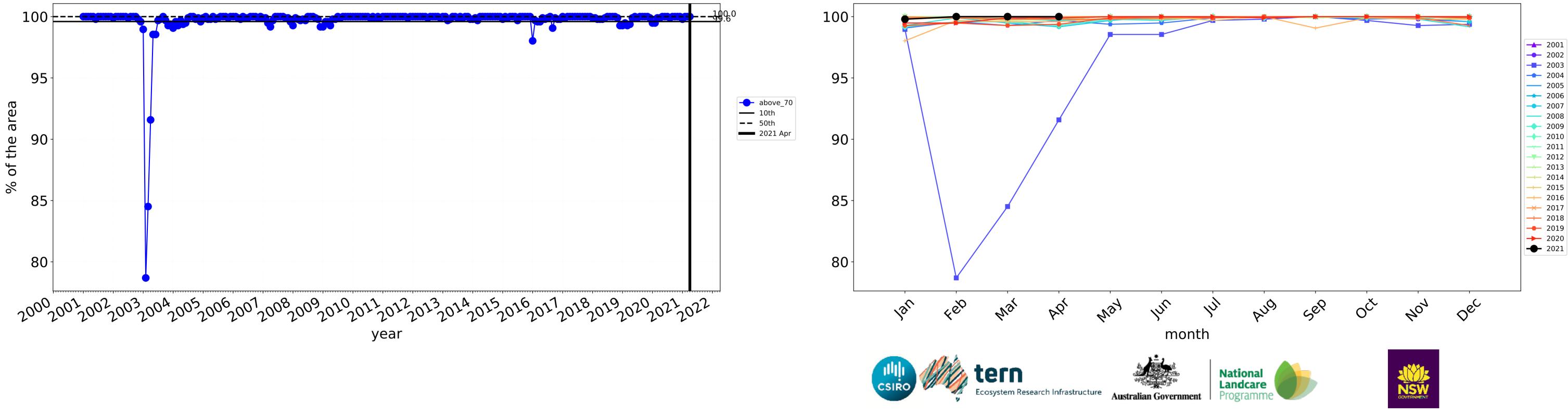


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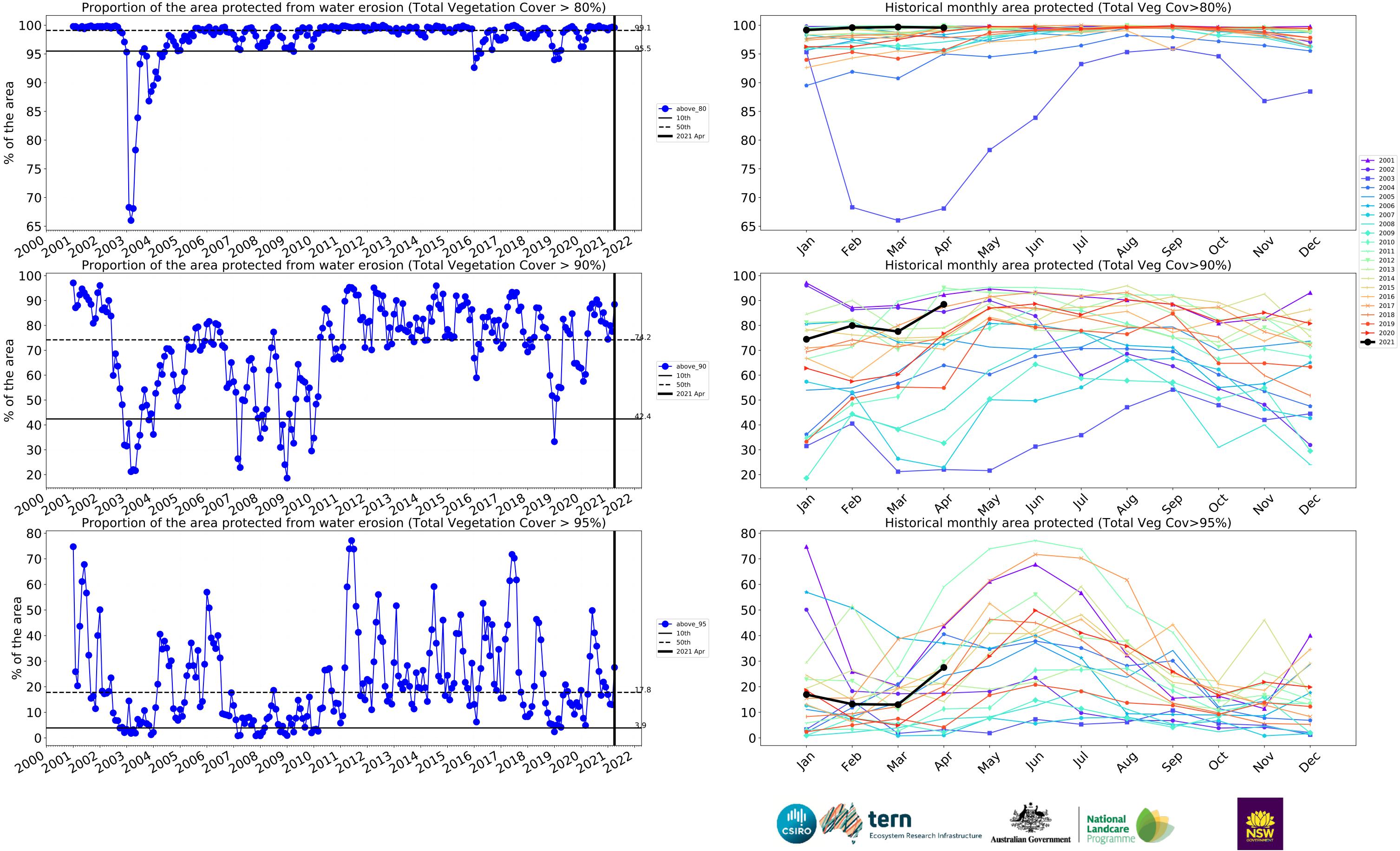




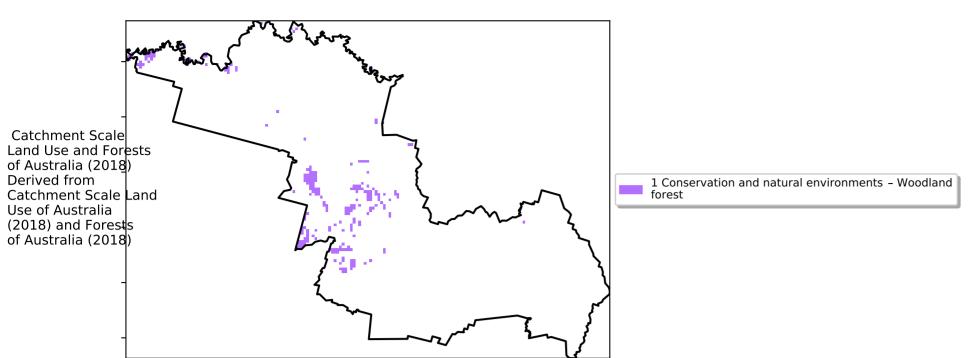




Water erosion historical monthly area protected (Total Veg Cov>70%)

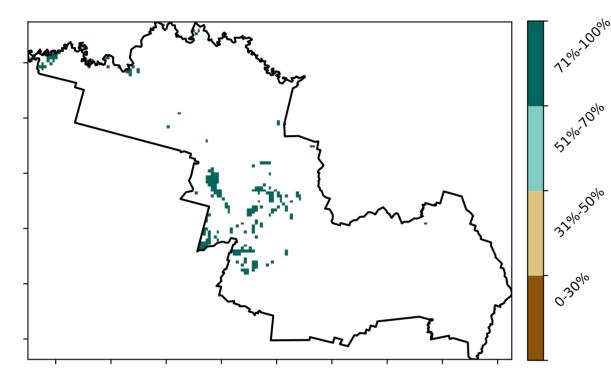


### **Conservation and natural environments Woodland forest**

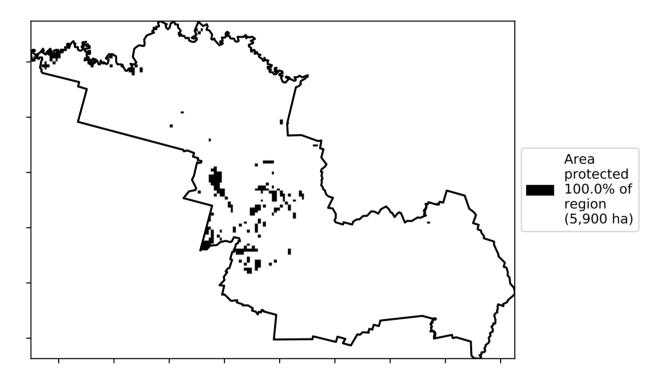


Land use and forest cover

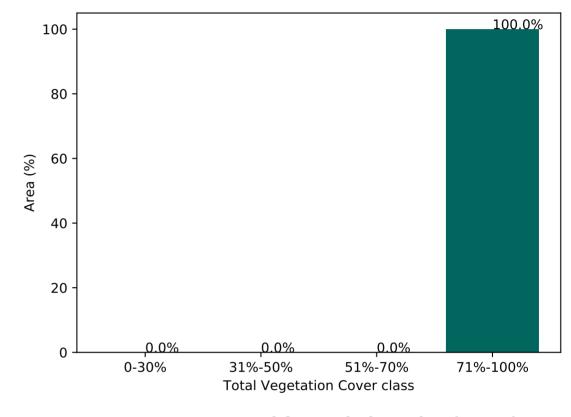
Total Vegetation Cover [%]



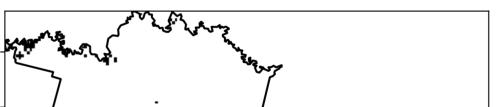
% Area protected from water erosion (>70%)



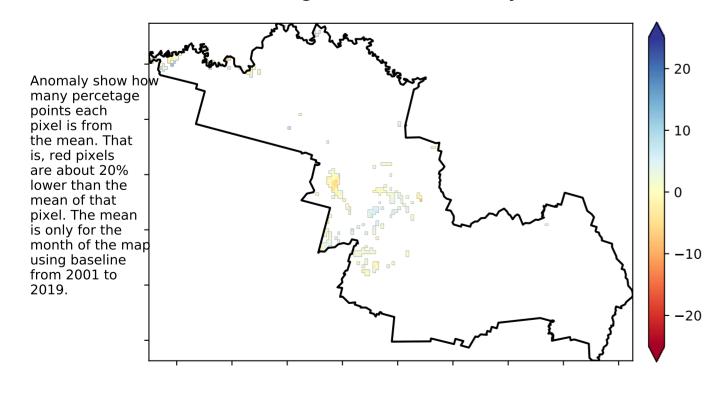
Proportion of vegetation cover class in area



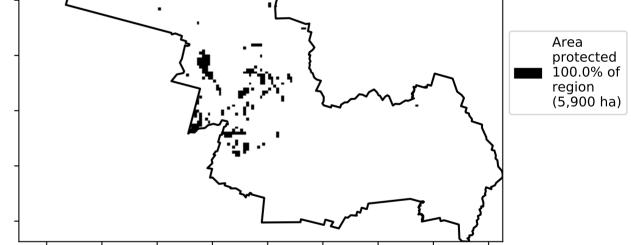
% Area protected from wind erosion (>50%)

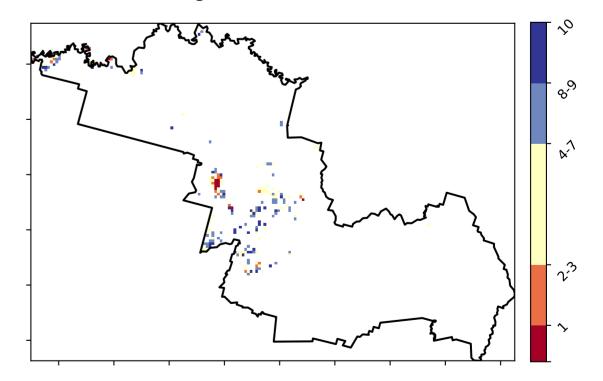


**Total Vegetation Cover Anomaly [%]** 



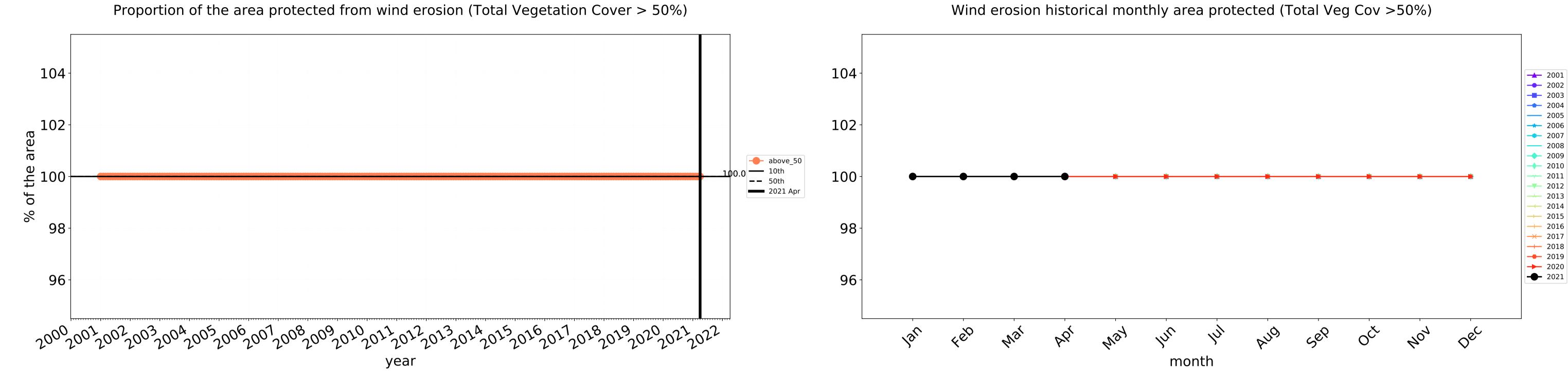
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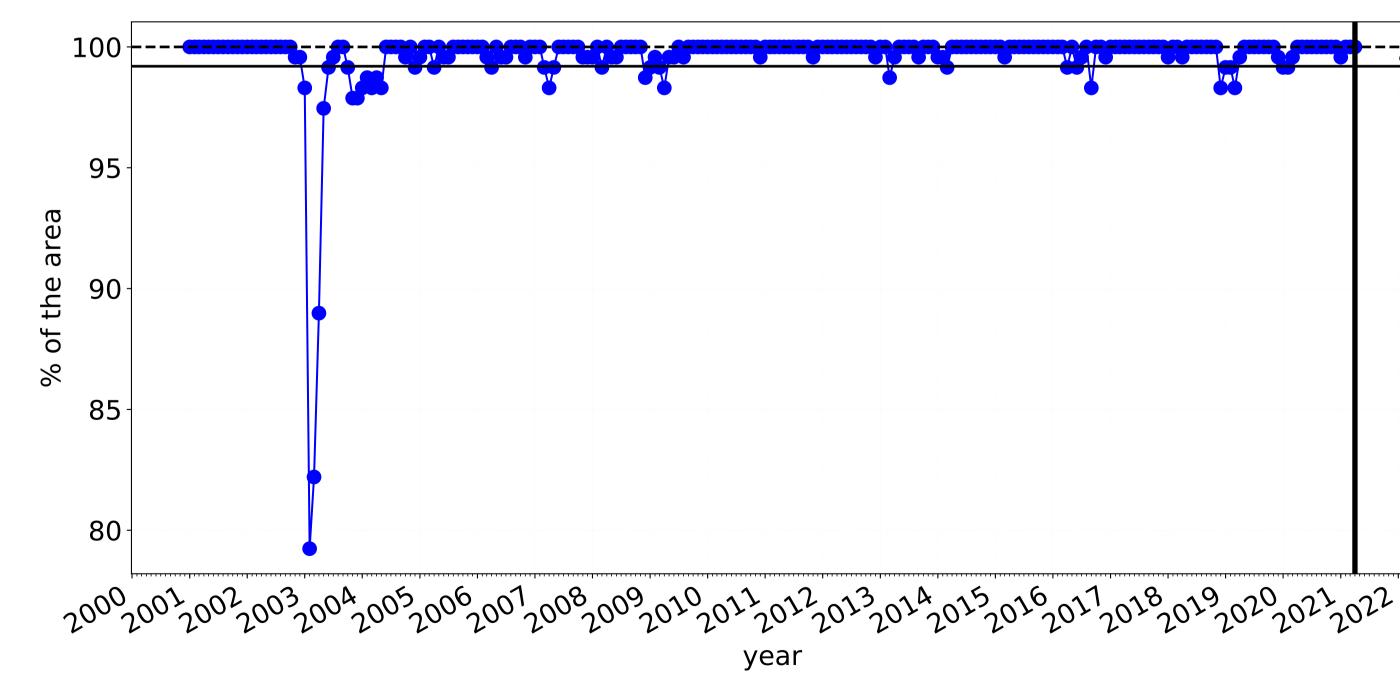






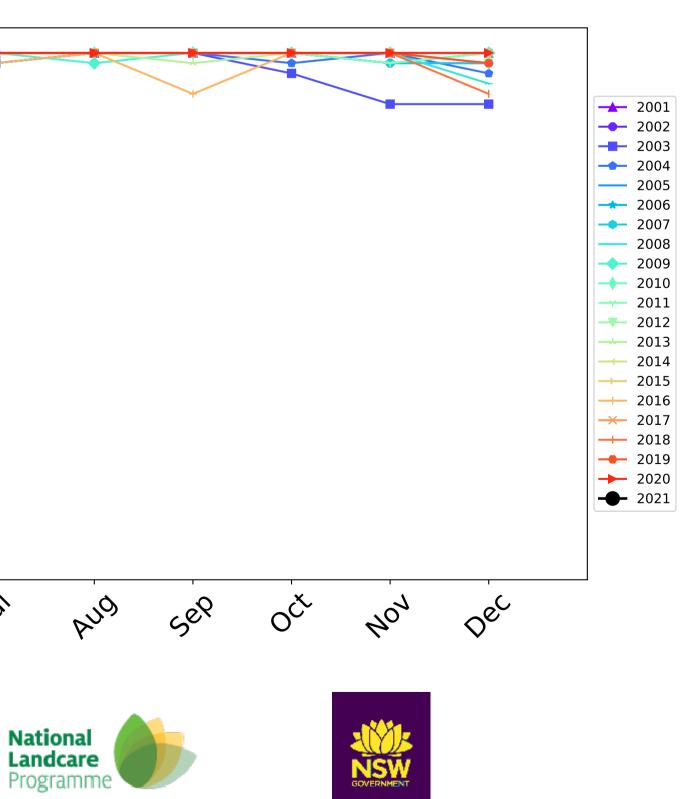


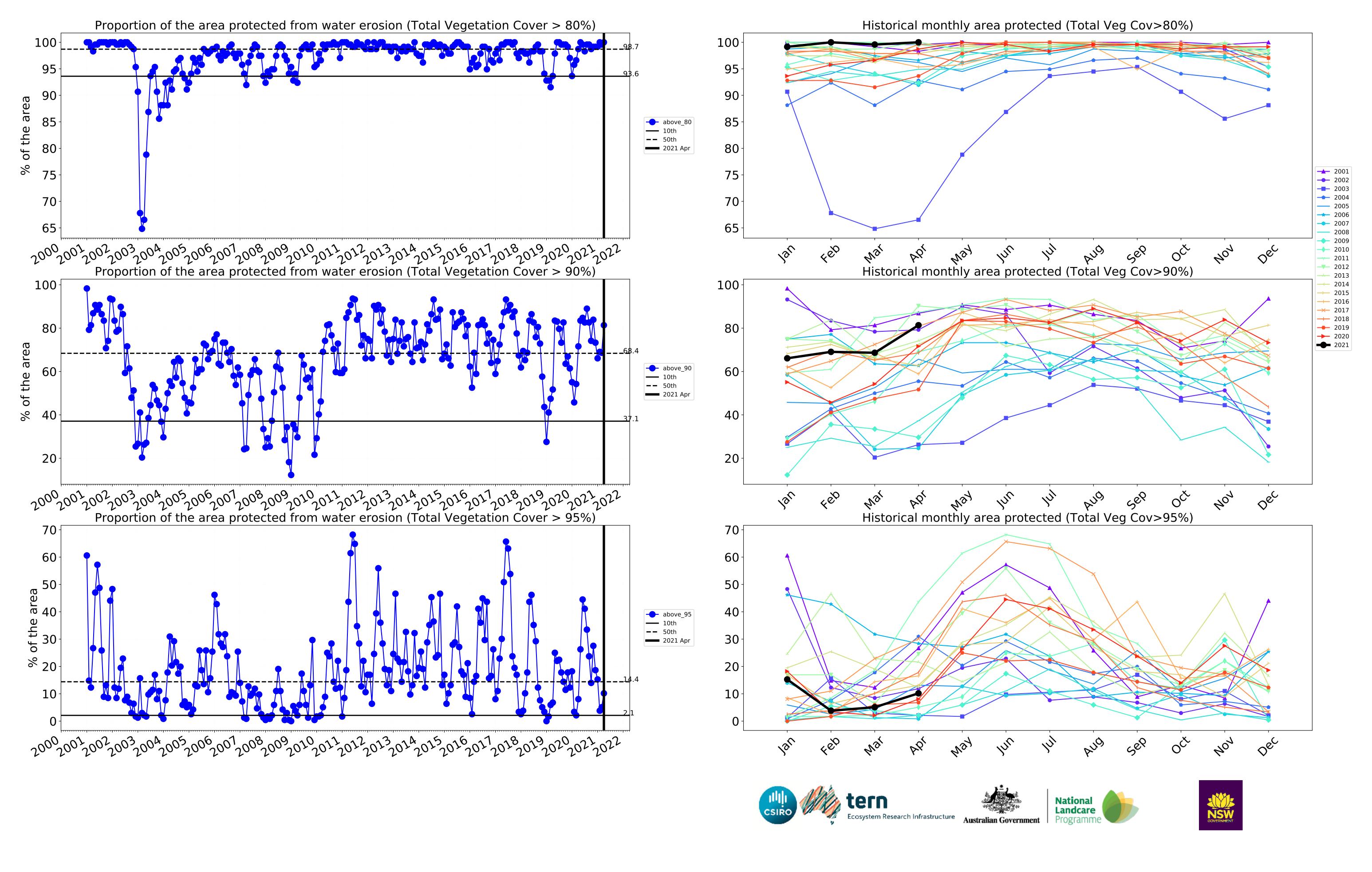




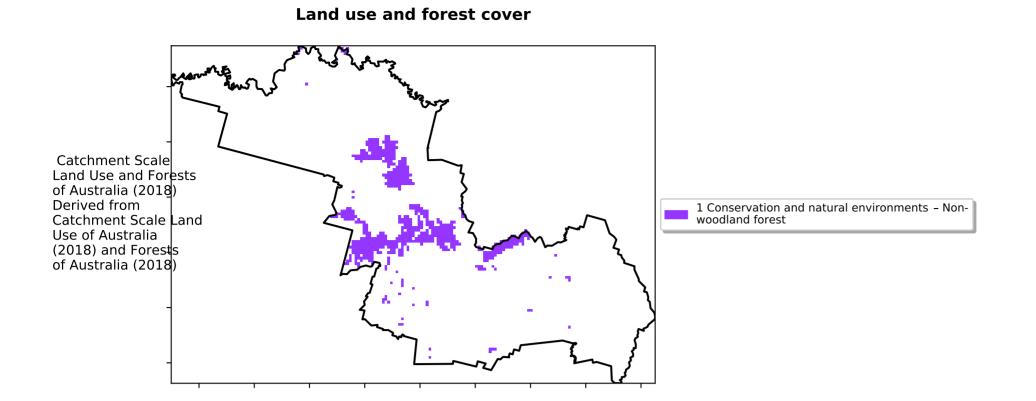
\_\_\_100.0 \_\_\_99.2 100 **9**5 ---- above\_70 **——** 10th **——** 50th **——** 2021 Apr 90 85 80 feb 1ar way In War PQ In In month tern Ecosystem Research Infrastructure Australian Government

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

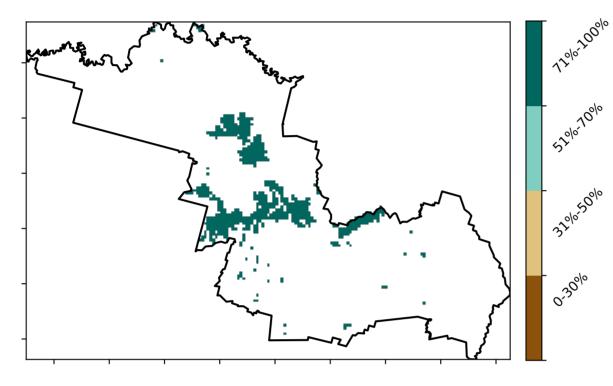




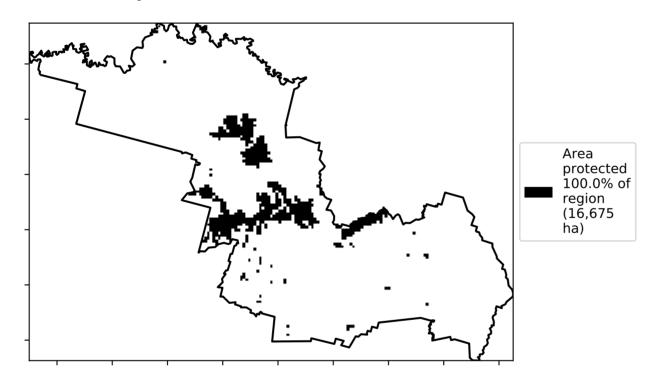
# **Conservation and natural environments Forest (non woodland)**



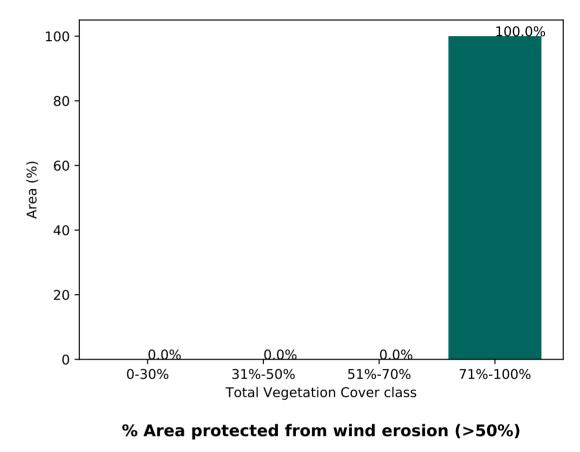
Total Vegetation Cover [%]

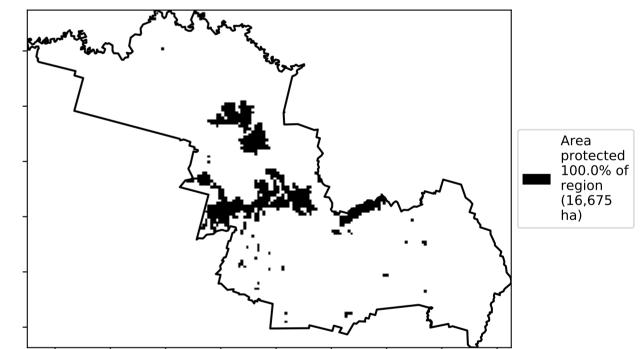


% Area protected from water erosion (>70%)

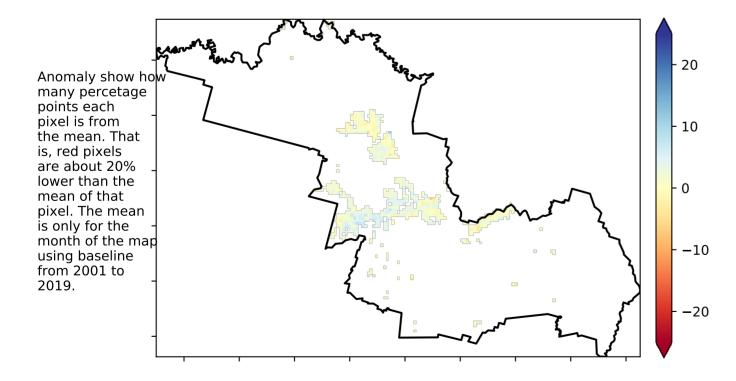


Proportion of vegetation cover class in area

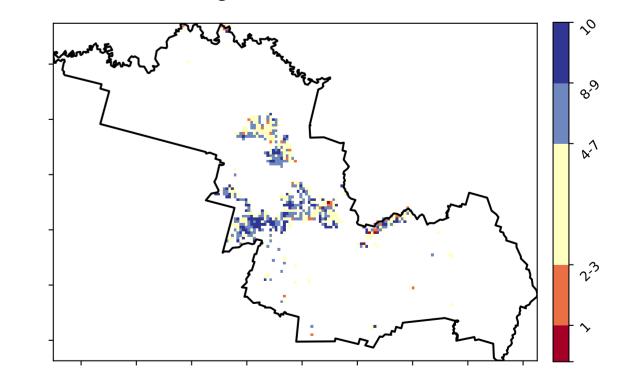




**Total Vegetation Cover Anomaly [%]** 



**Total Vegetation Cover Decile [%]** 

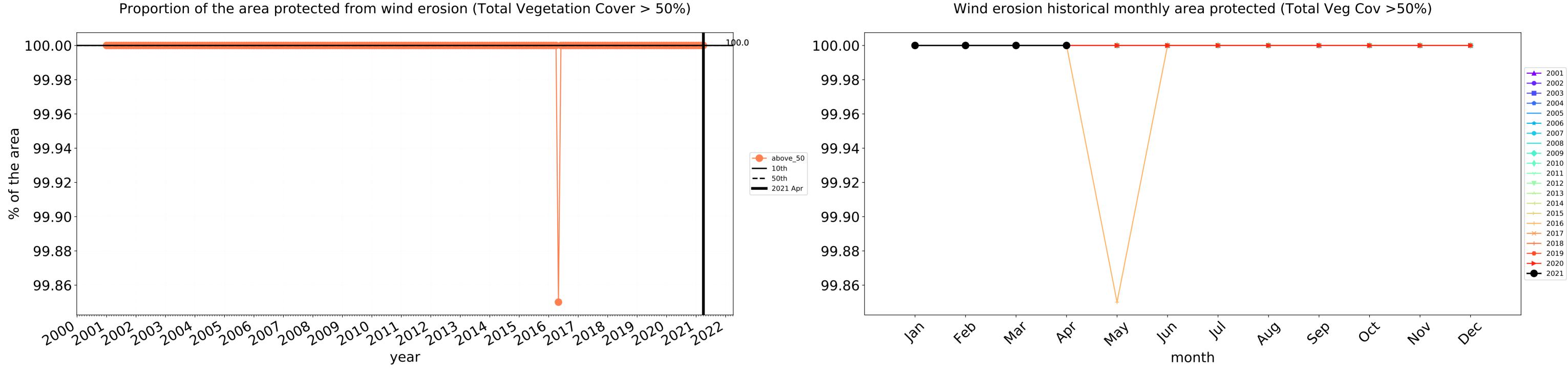




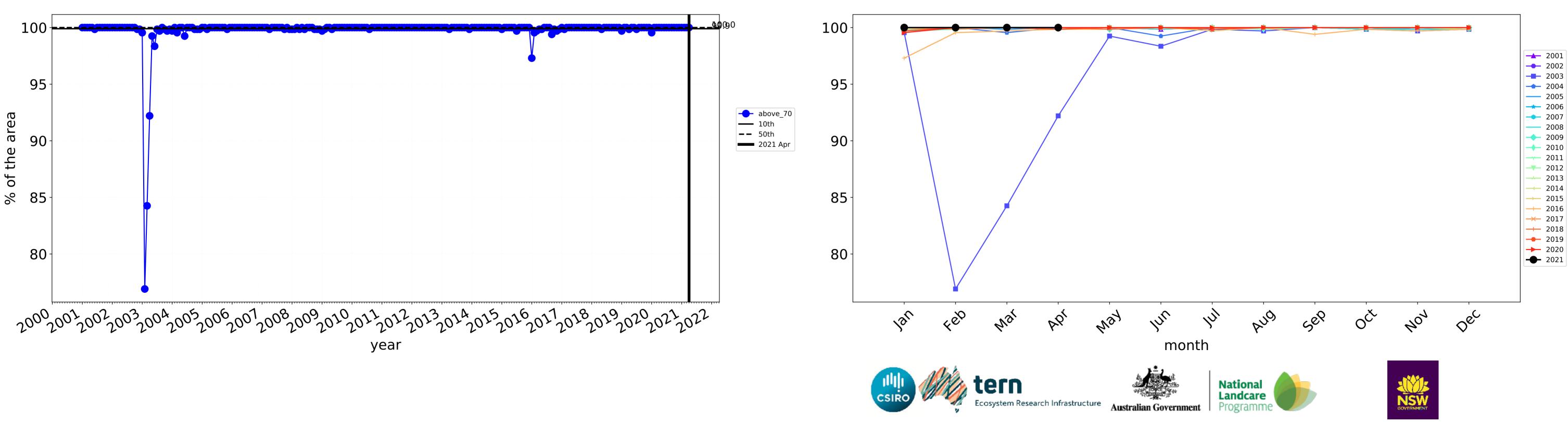
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the map using baseline from 2001 to 2019.

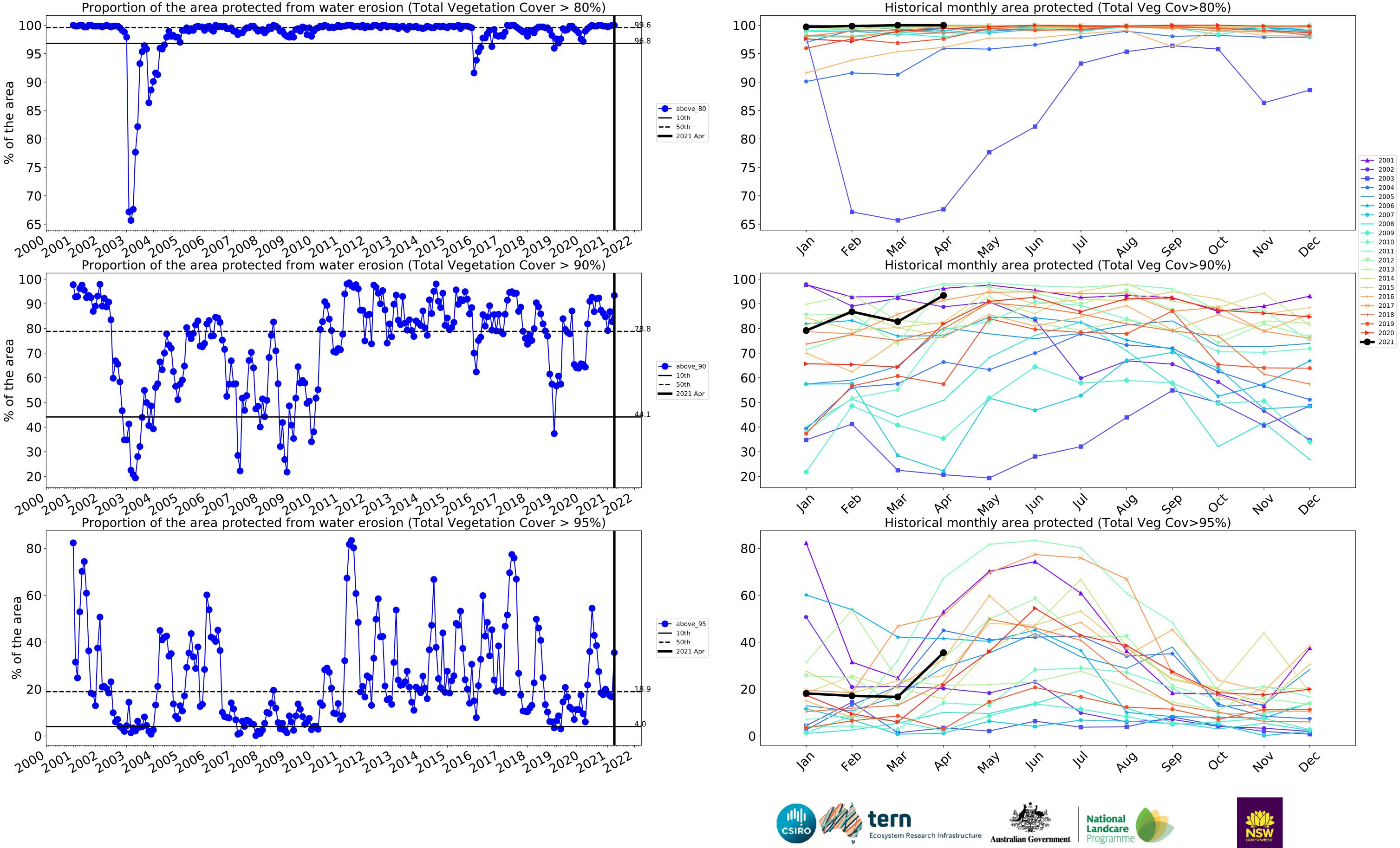
# Conservation and natural environments Forest (non woodland) timeseries



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



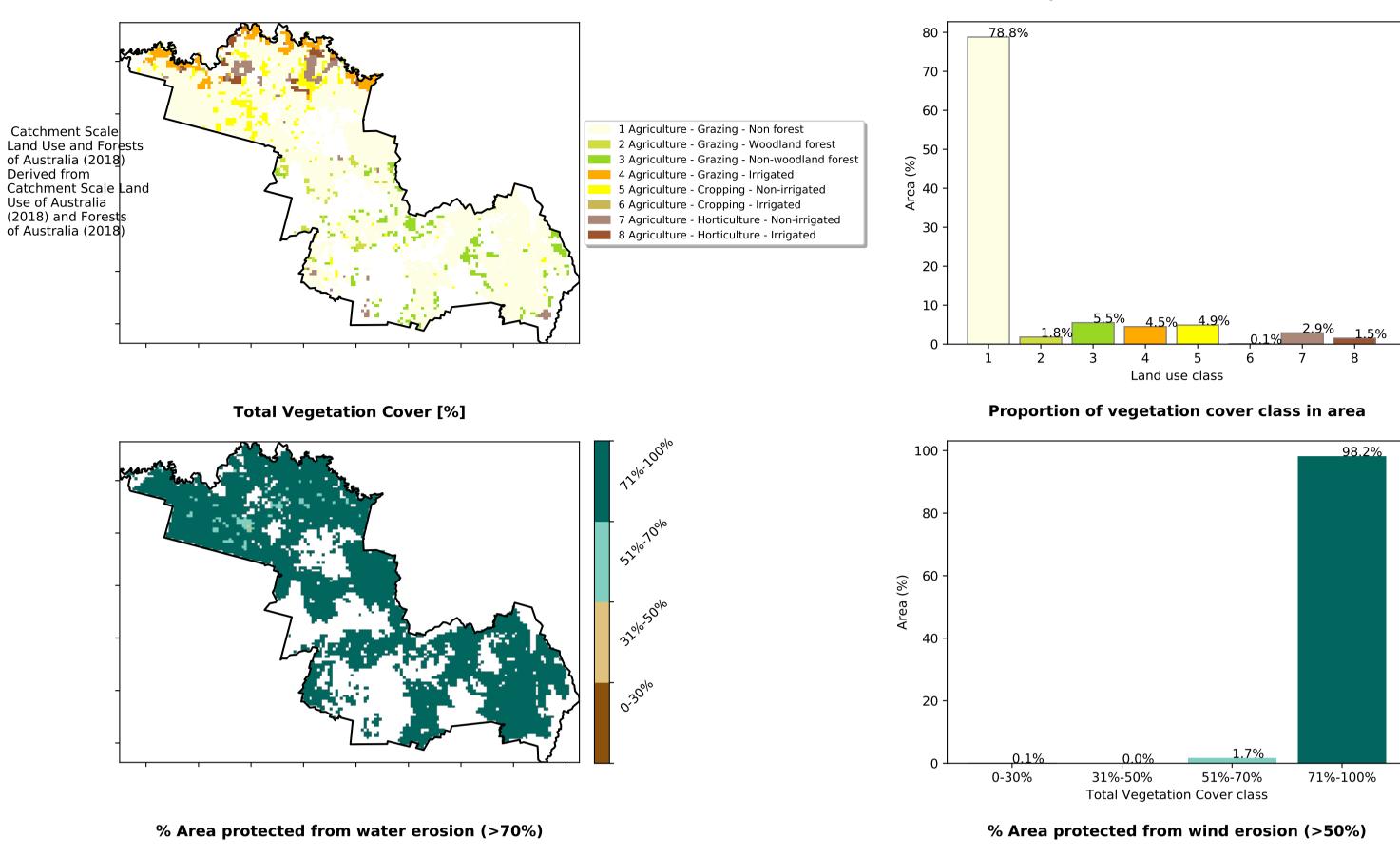
Water erosion historical monthly area protected (Total Veg Cov>70%)

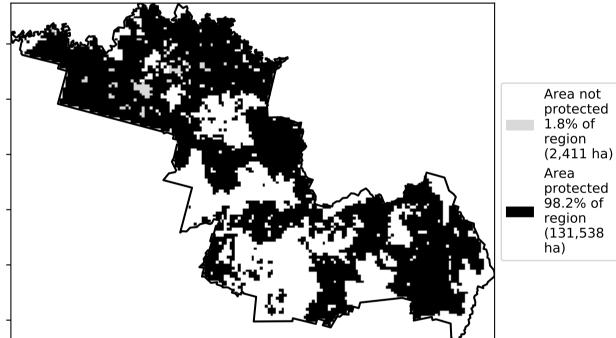


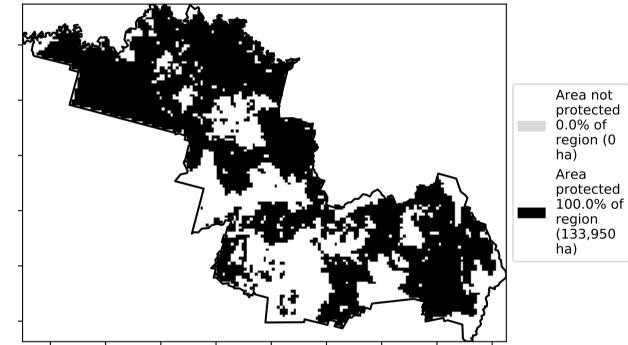
### **Agriculture**

Land use and forest cover

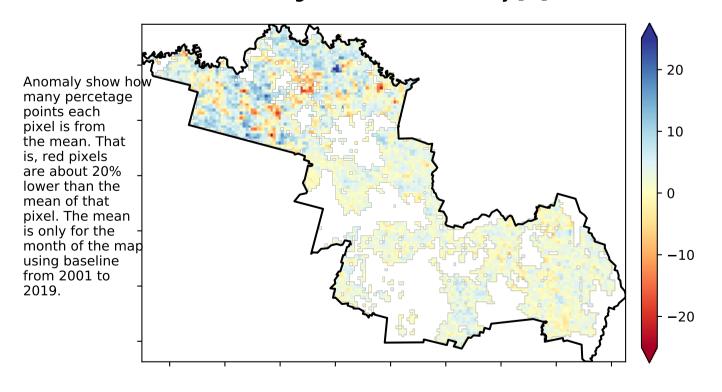
#### Proportion of each land class in area



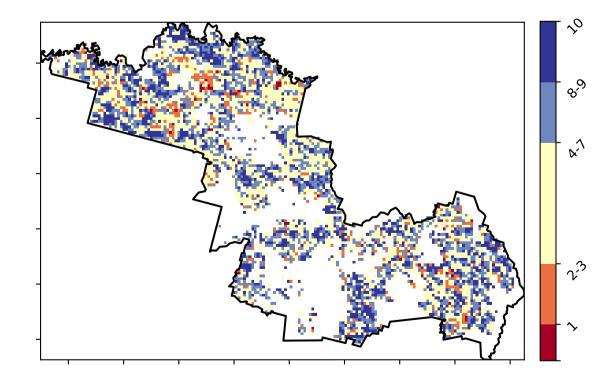




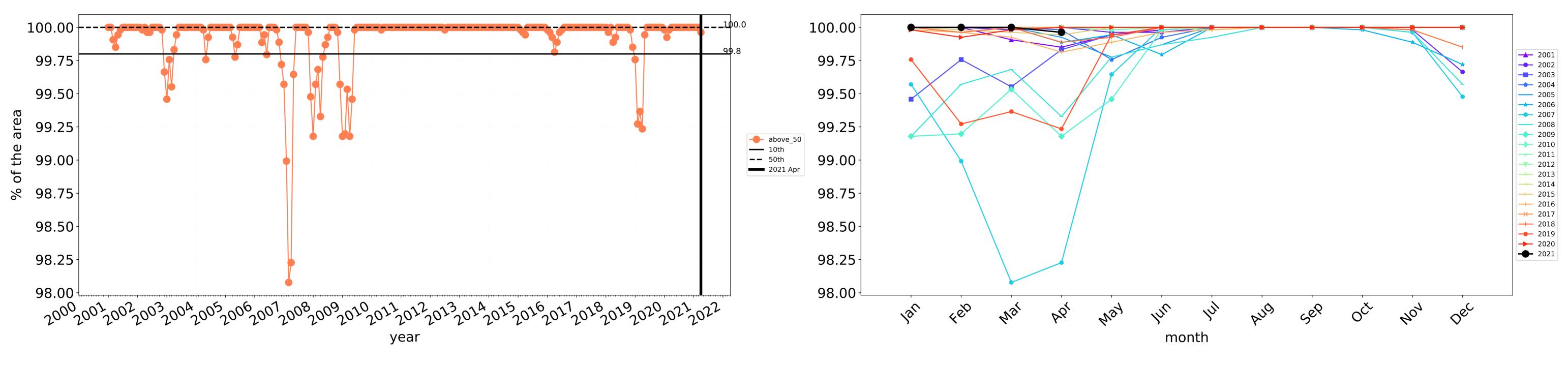
**Total Vegetation Cover Anomaly [%]** 



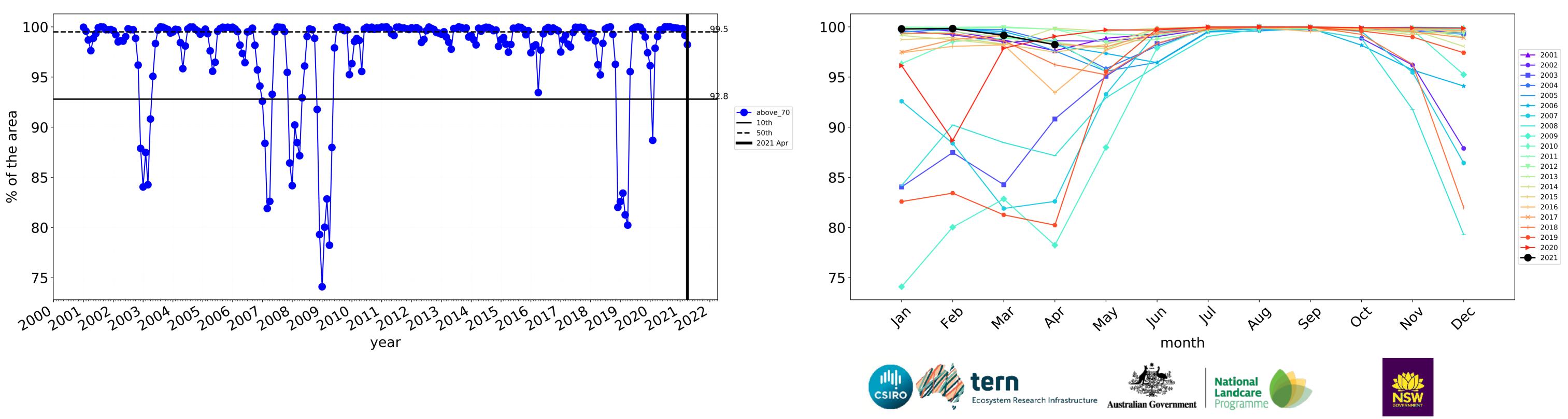
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





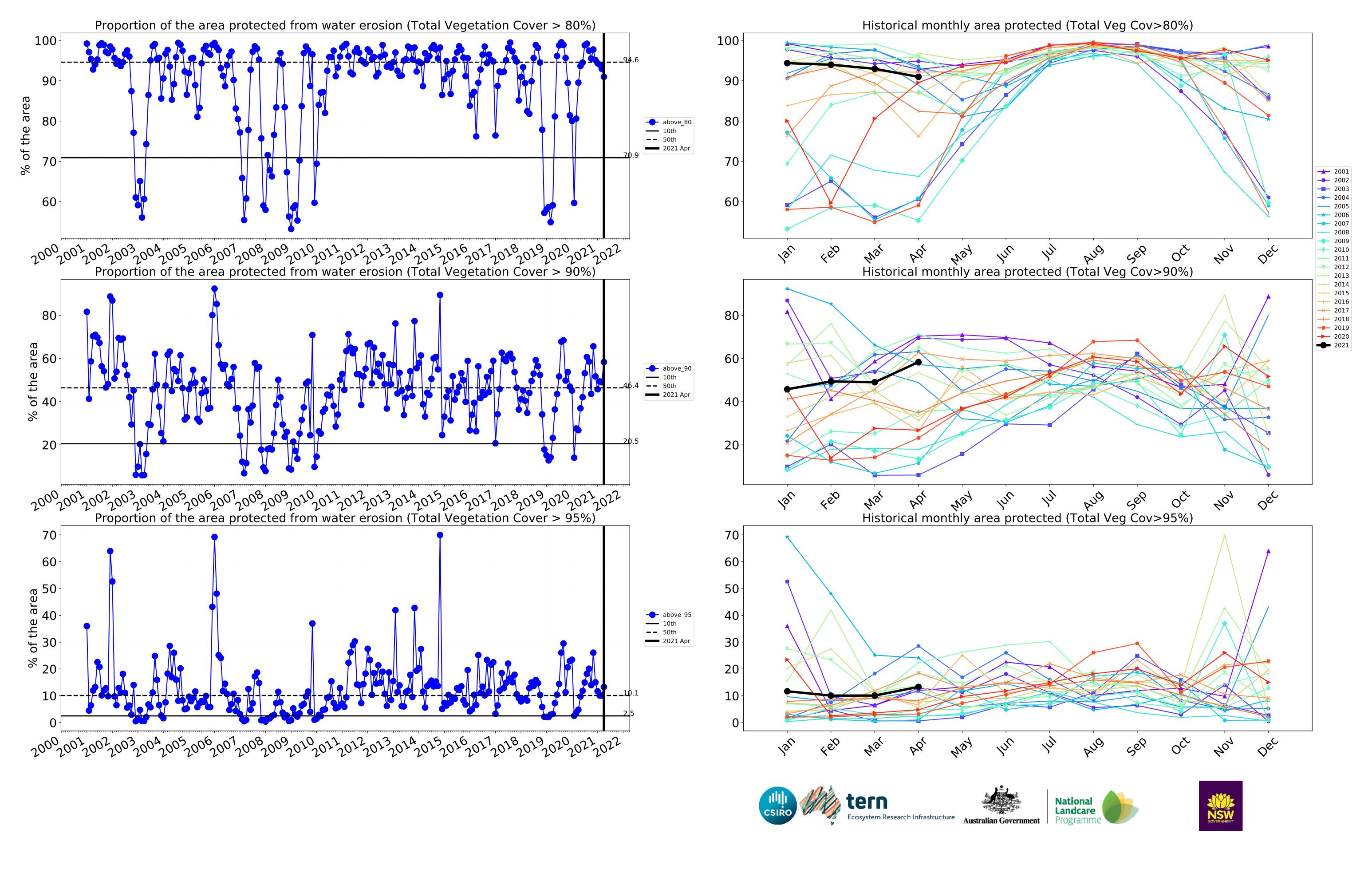


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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

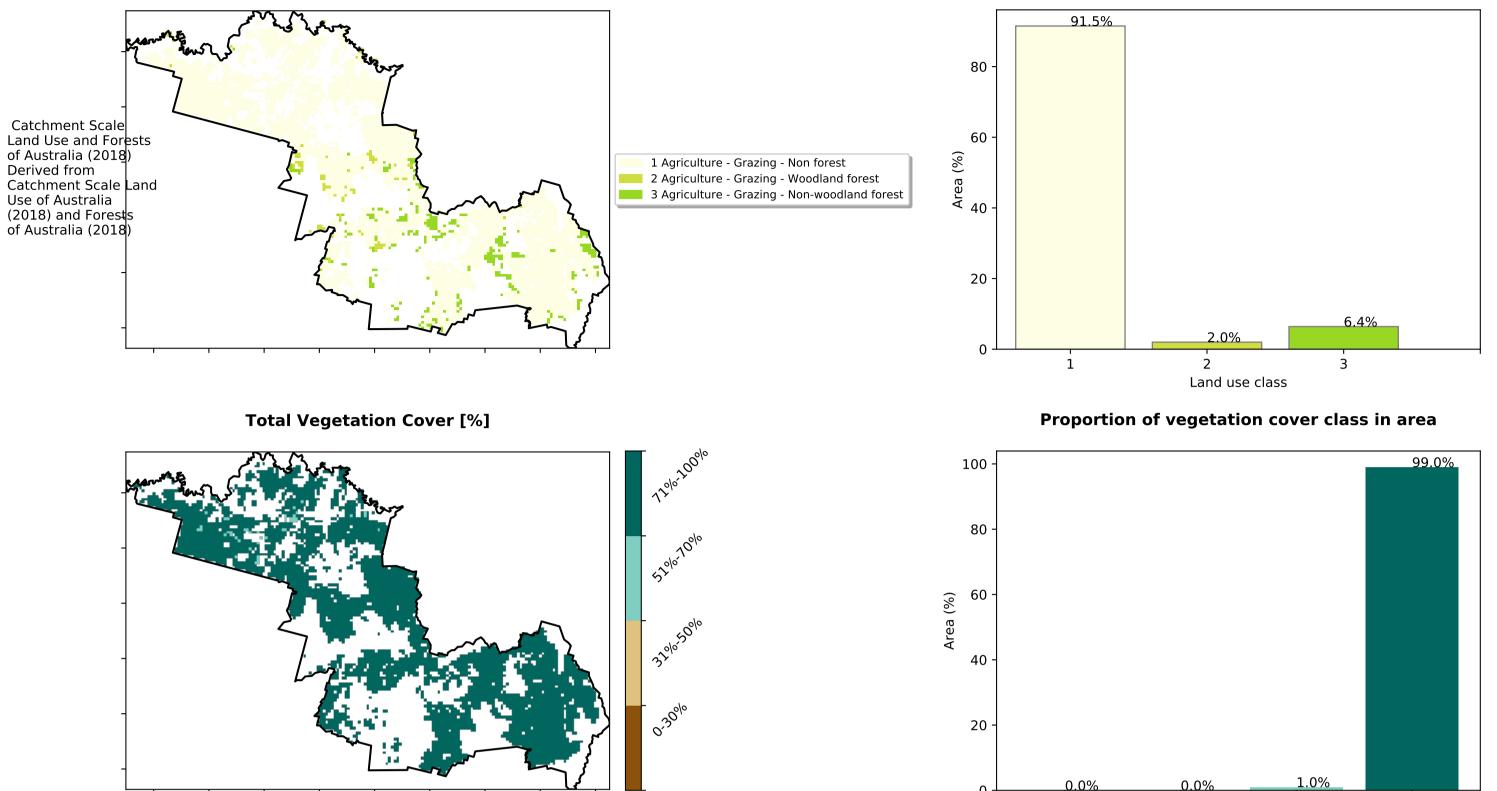
Water erosion historical monthly area protected (Total Veg Cov>70%)



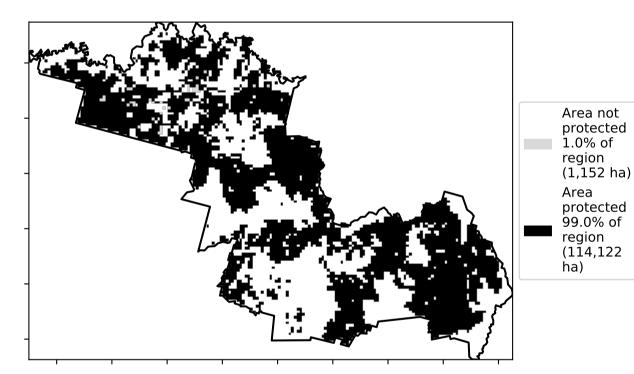
# Grazing

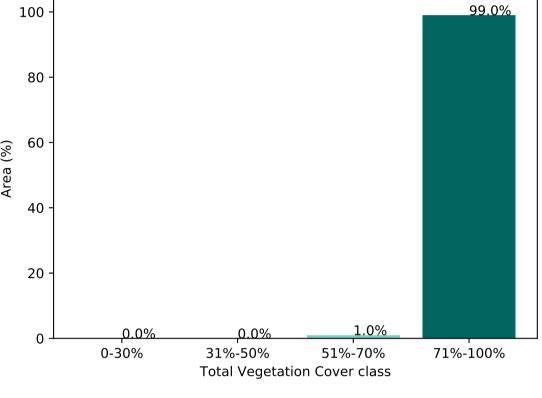
Land use and forest cover

#### Proportion of each land class in area

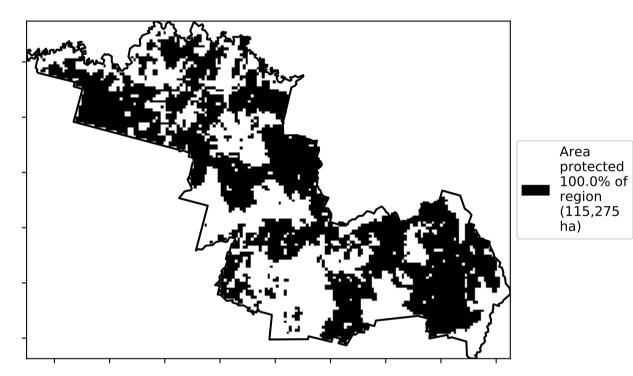


% Area protected from water erosion (>70%)

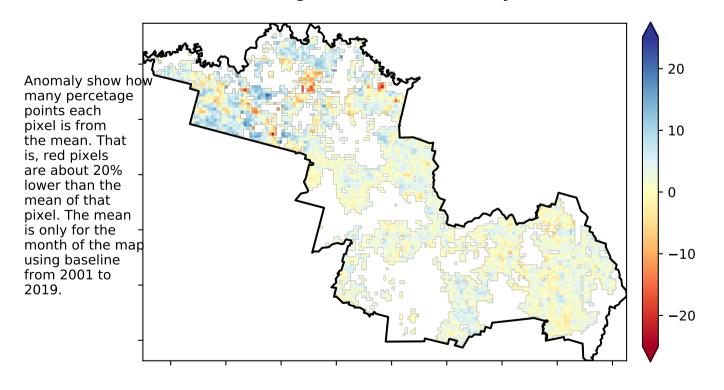




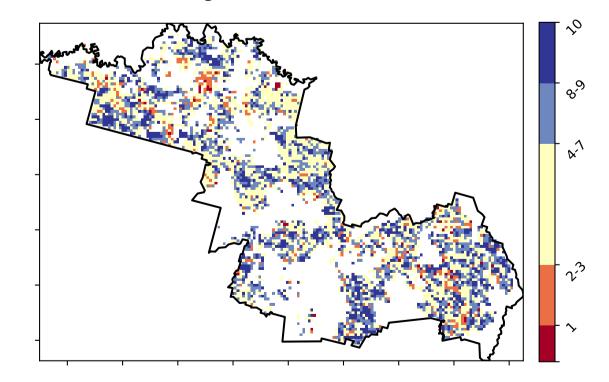
### % Area protected from wind erosion (>50%)



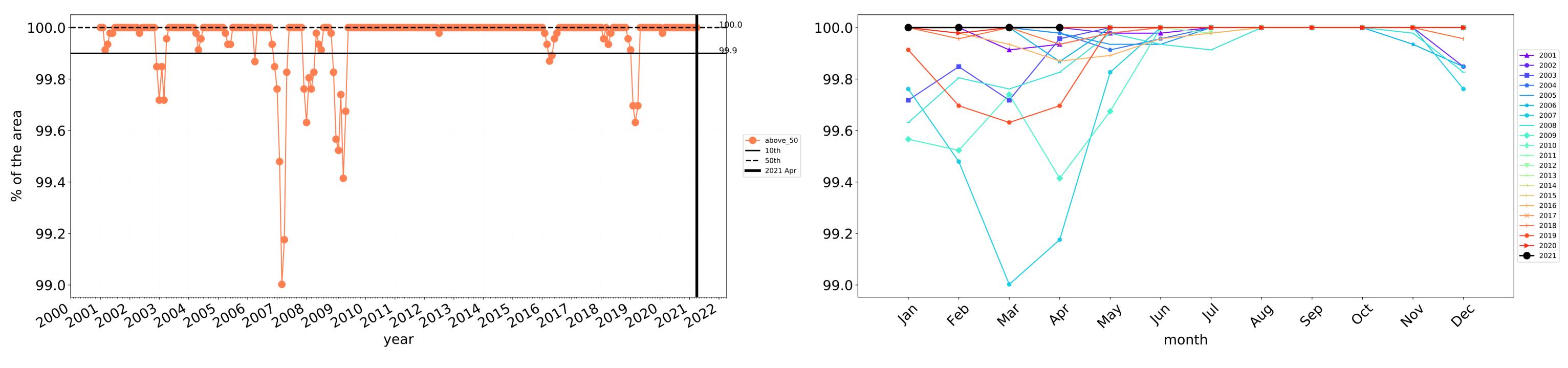
**Total Vegetation Cover Anomaly [%]** 



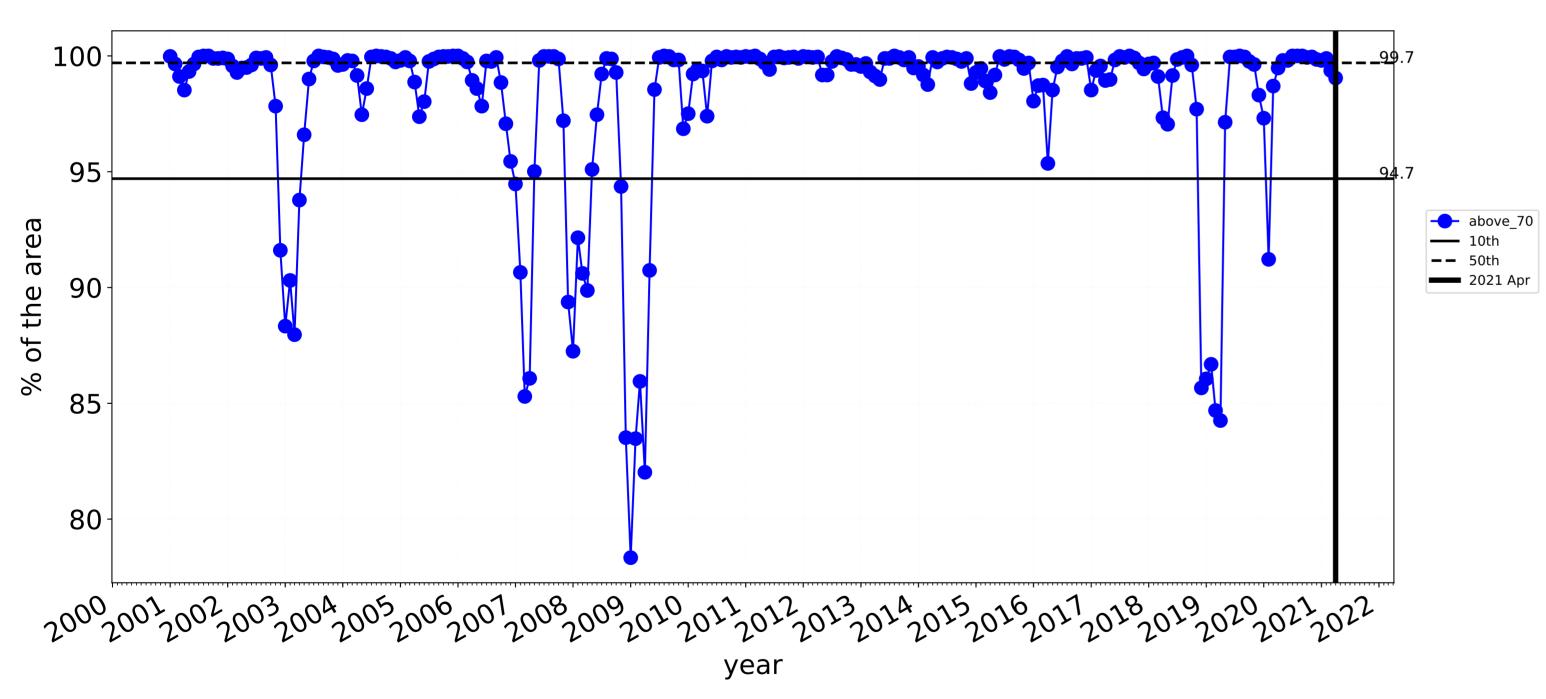
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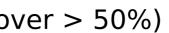






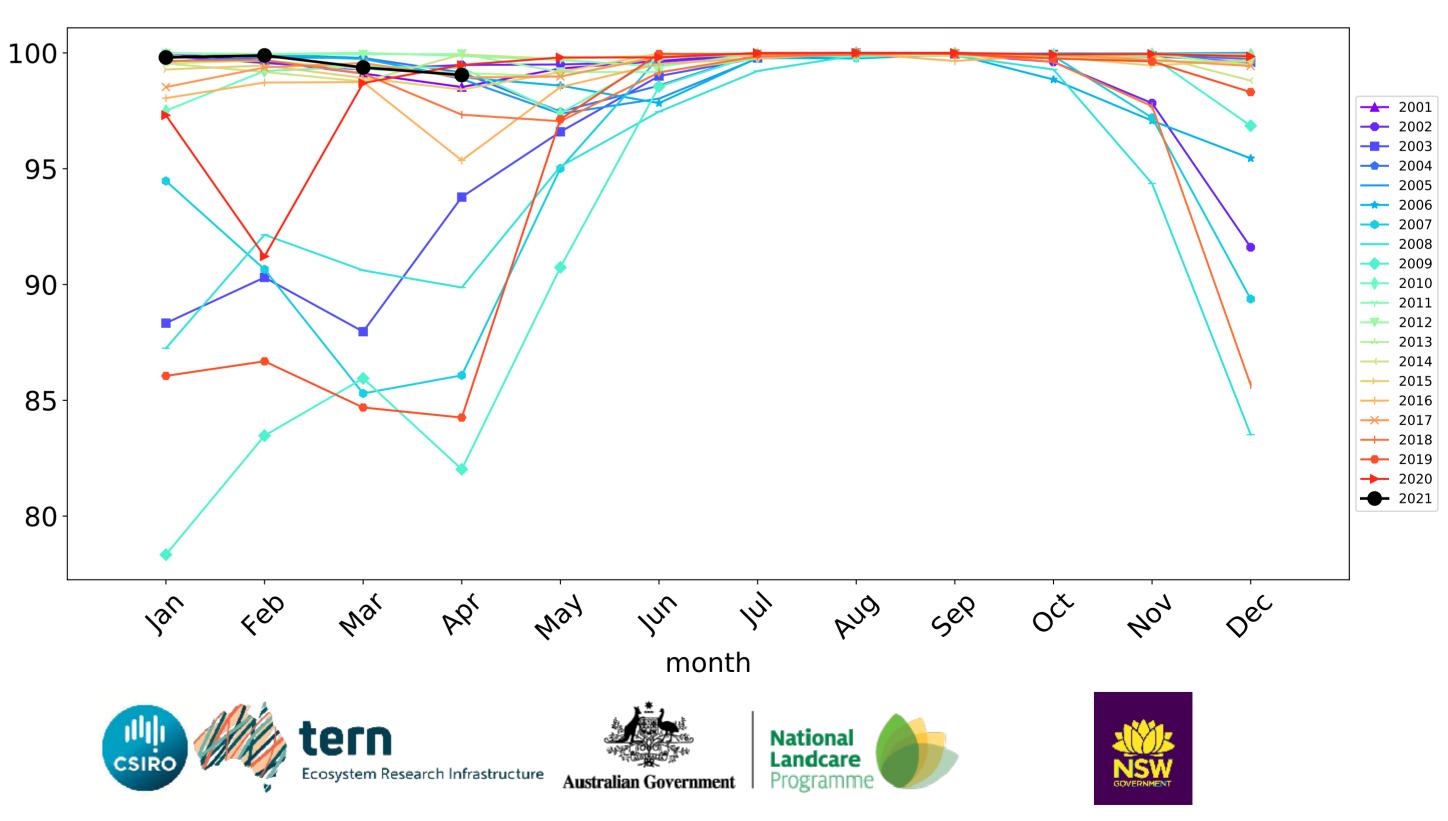
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

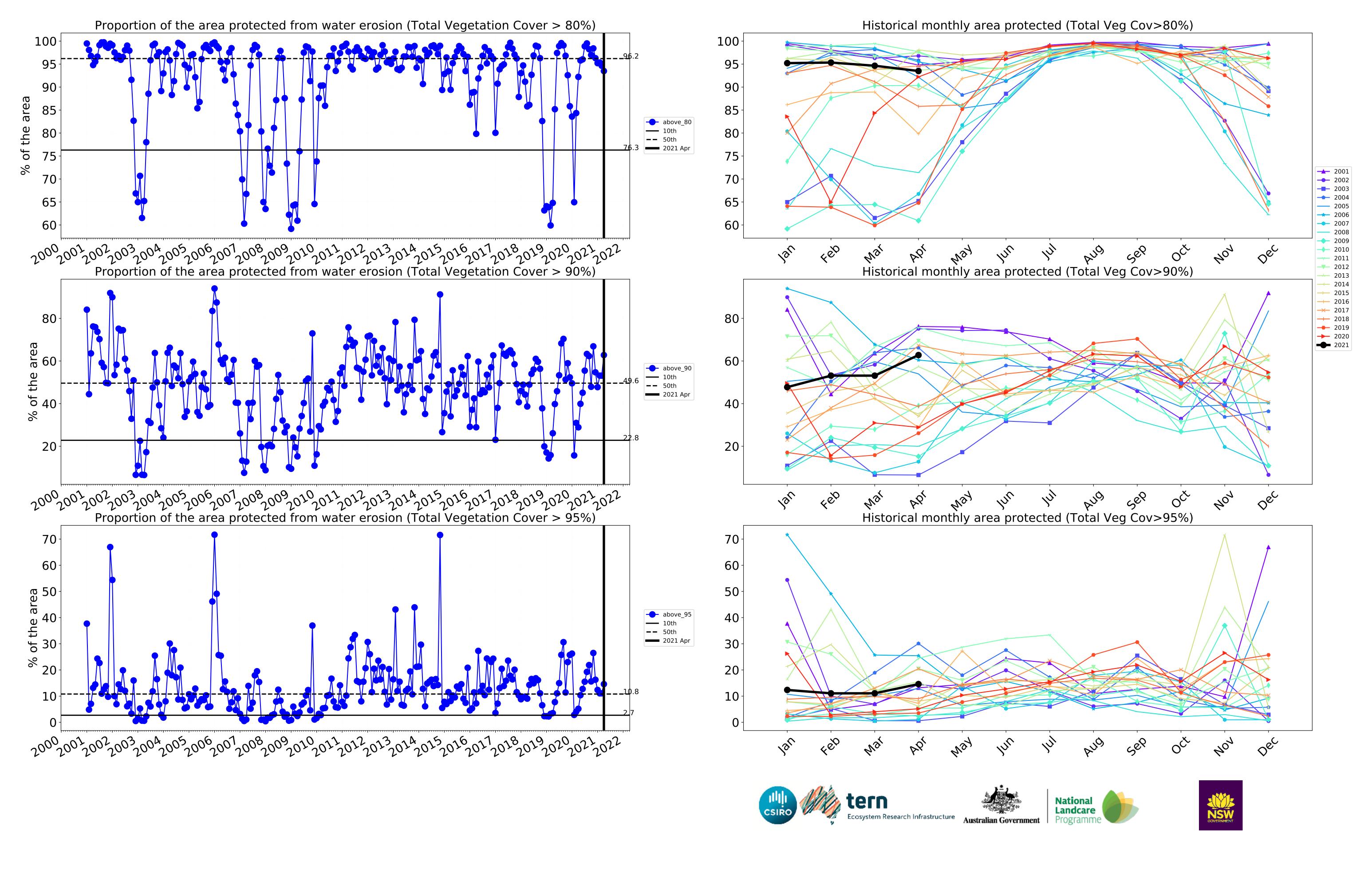




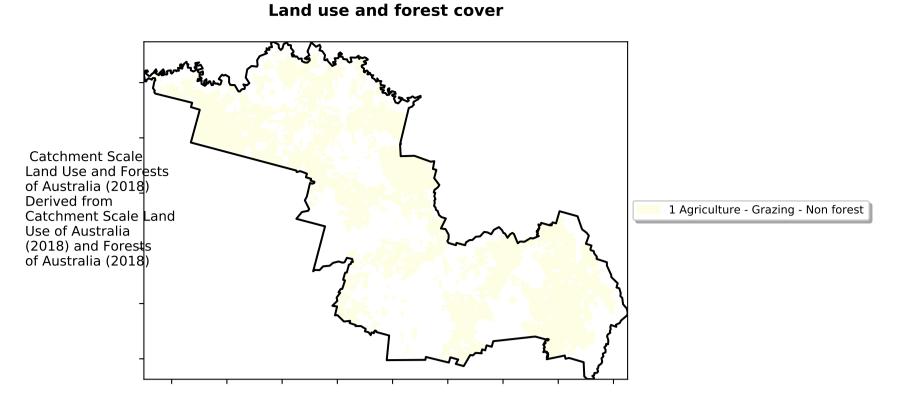
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

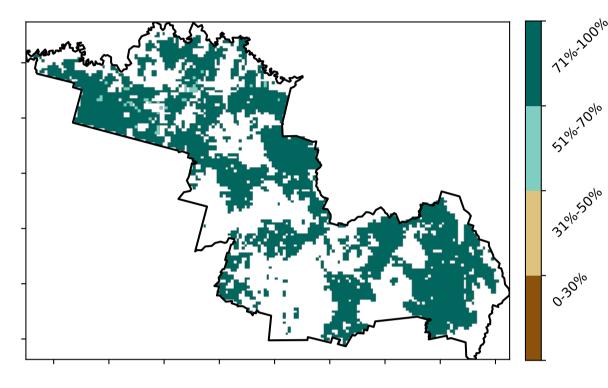




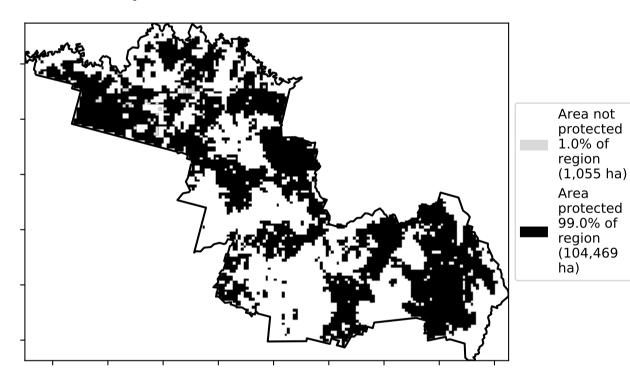
# **Grazing non forest**



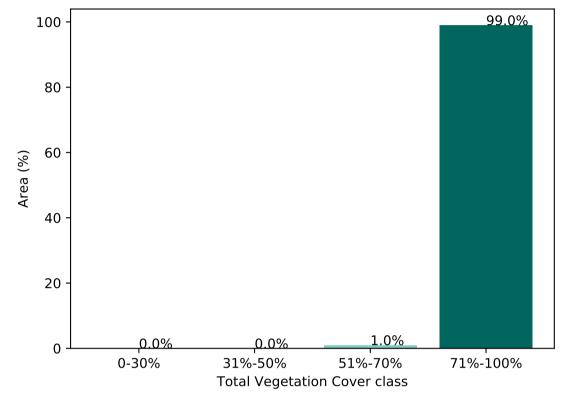
Total Vegetation Cover [%]



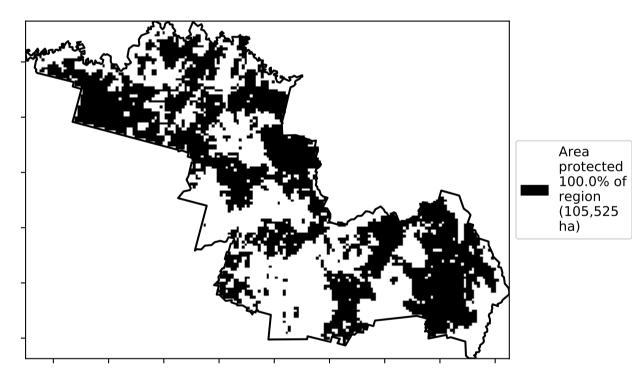
% Area protected from water erosion (>70%)



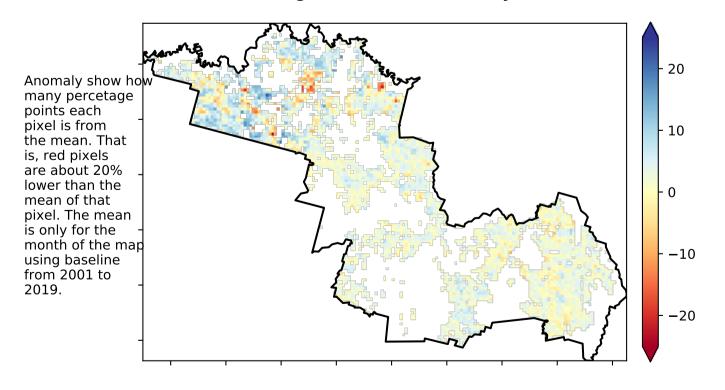
Proportion of vegetation cover class in area



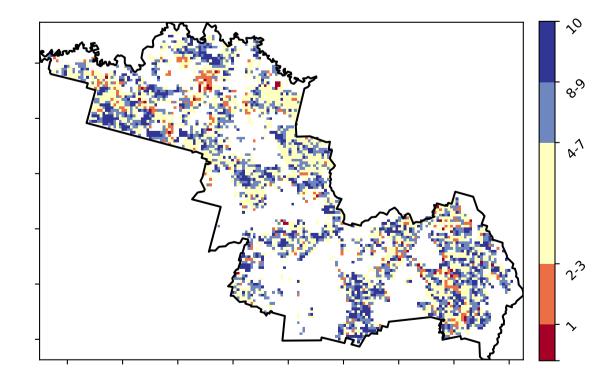
### % Area protected from wind erosion (>50%)



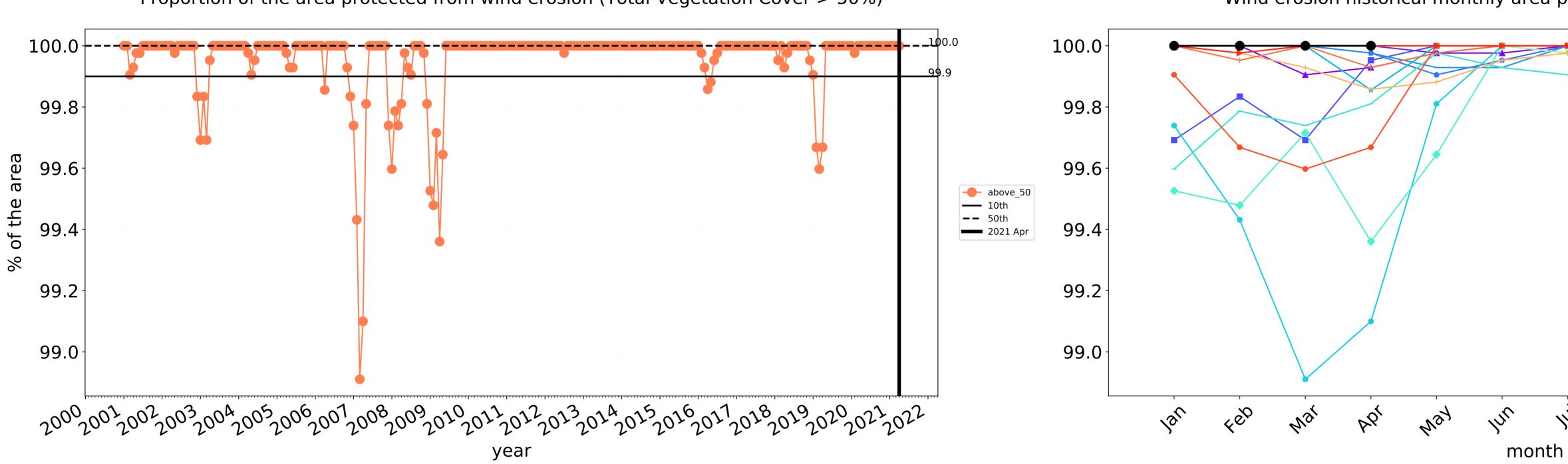
Total Vegetation Cover Anomaly [%]



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.

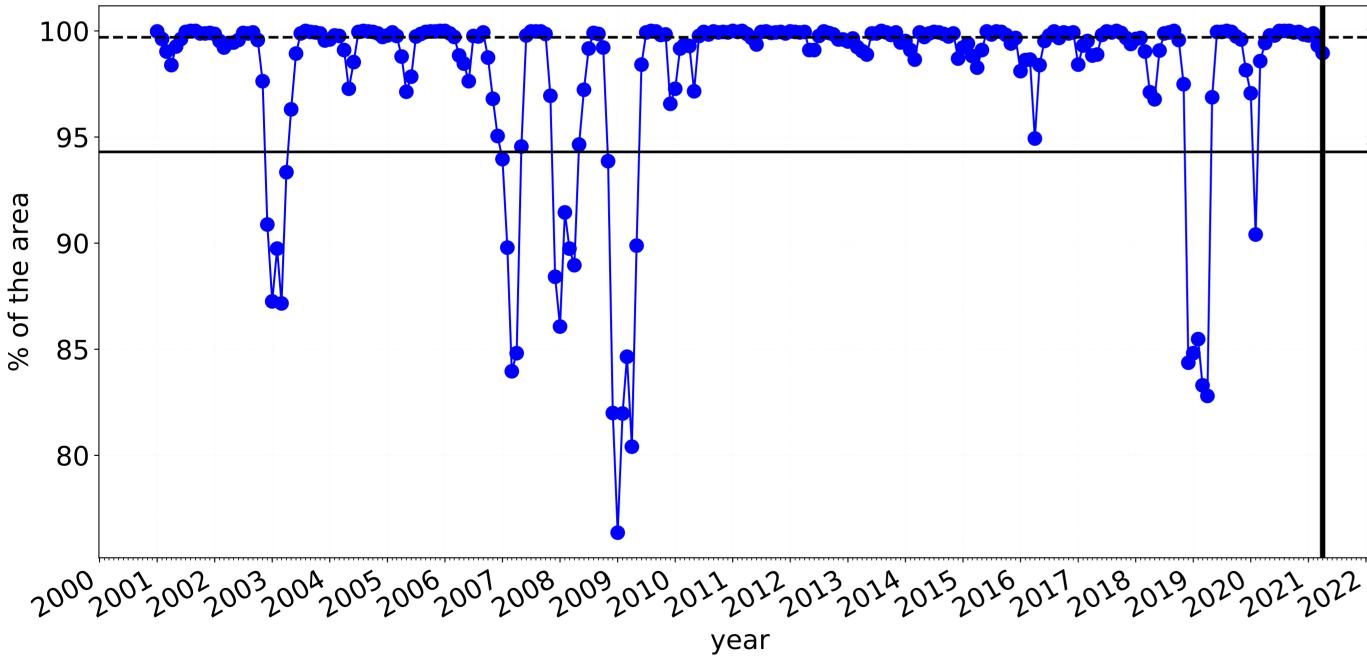




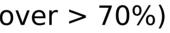


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

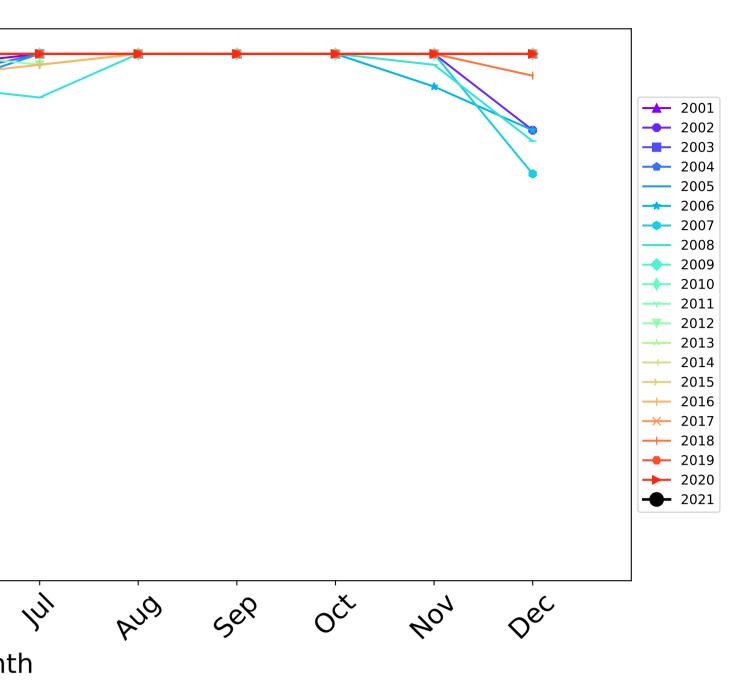
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



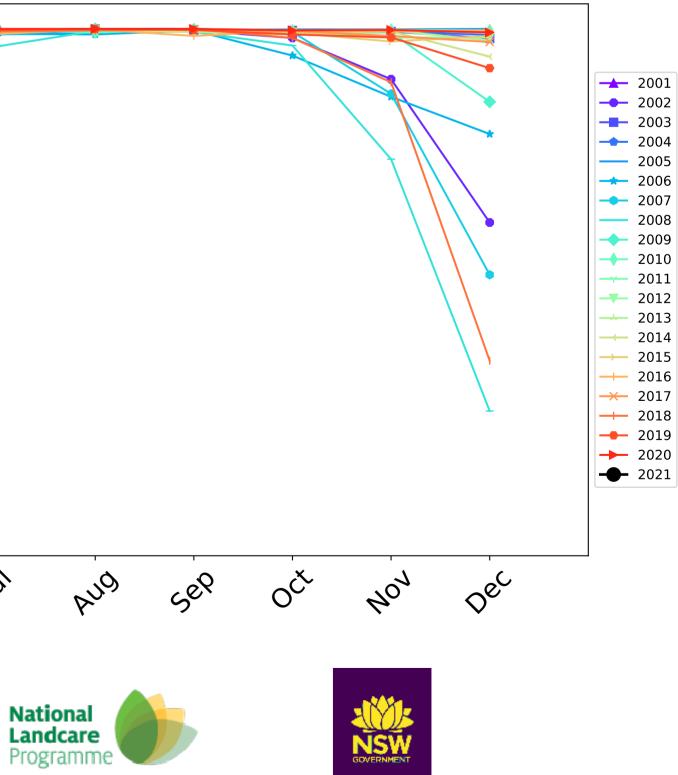
Wind erosion historical monthly area protected (Total Veg Cov >50%)

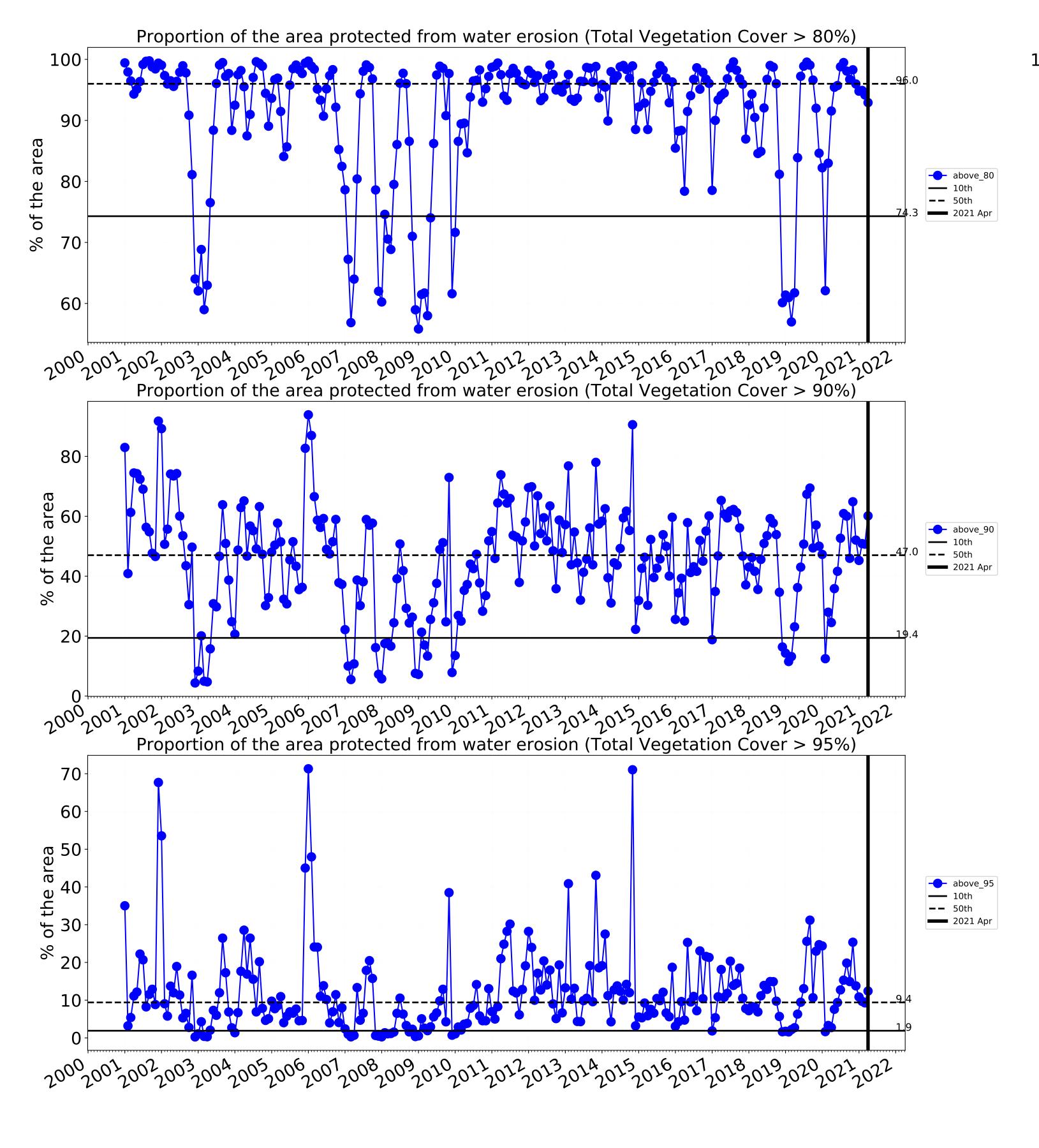


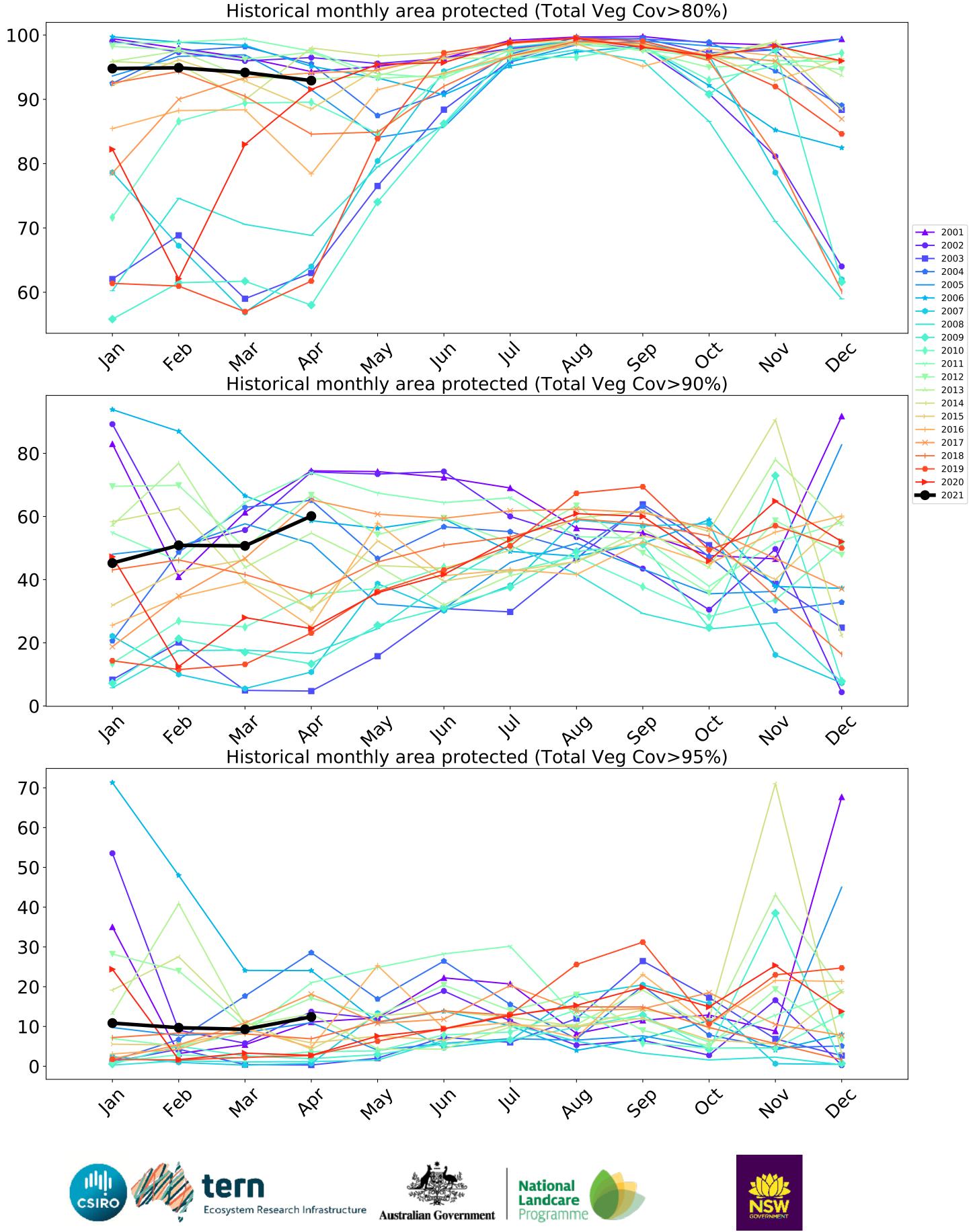
100 95 ---- above\_70 **—** 10th **——** 50th 90 **—** 2021 Apr 85 80 Jan 4eb way Inu 1/2/ War P.Q month **UNU** tern Ecosystem Research Infrastructure Australian Government



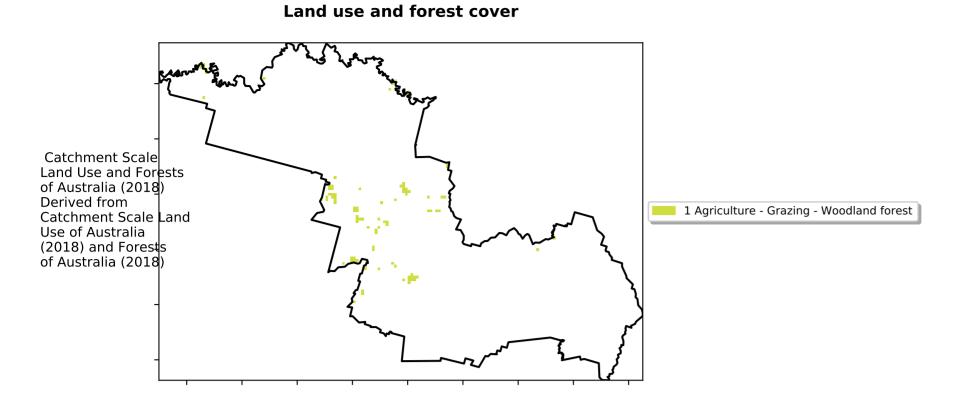
Water erosion historical monthly area protected (Total Veg Cov>70%)



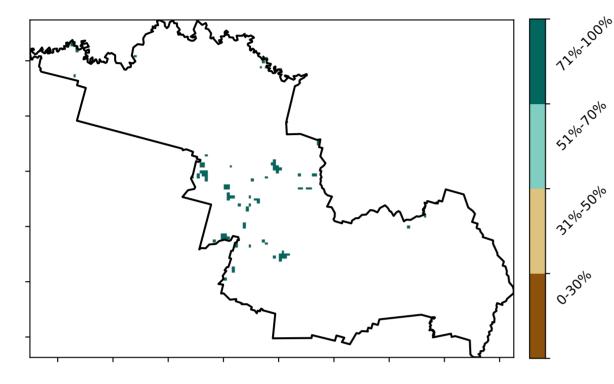




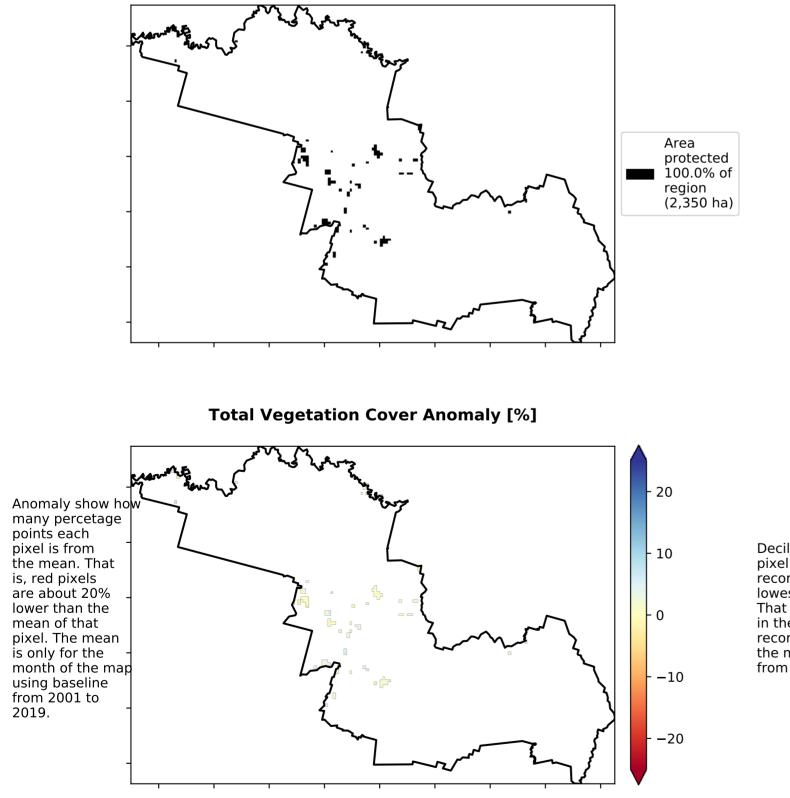
# **Grazing Woodland forest**



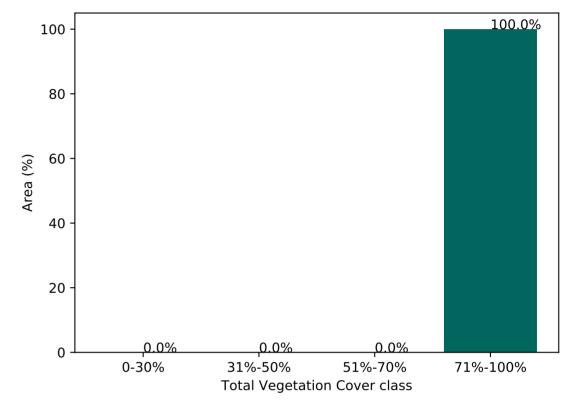
**Total Vegetation Cover [%]** 



% Area protected from water erosion (>70%)



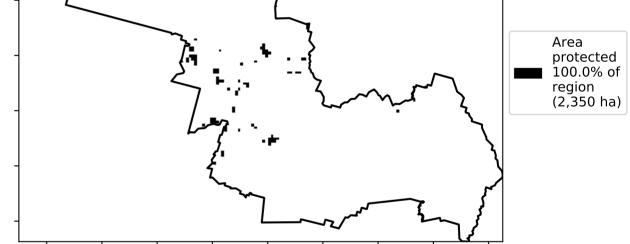
Proportion of vegetation cover class in area

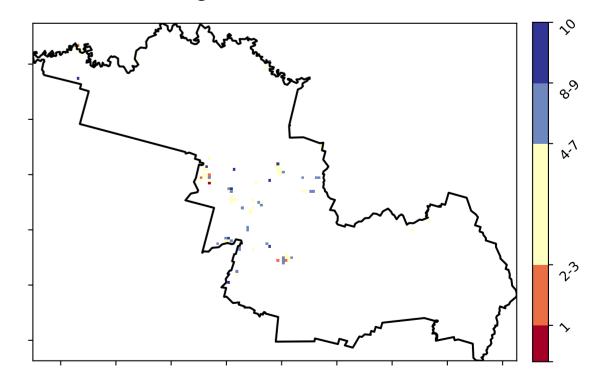


% Area protected from wind erosion (>50%)

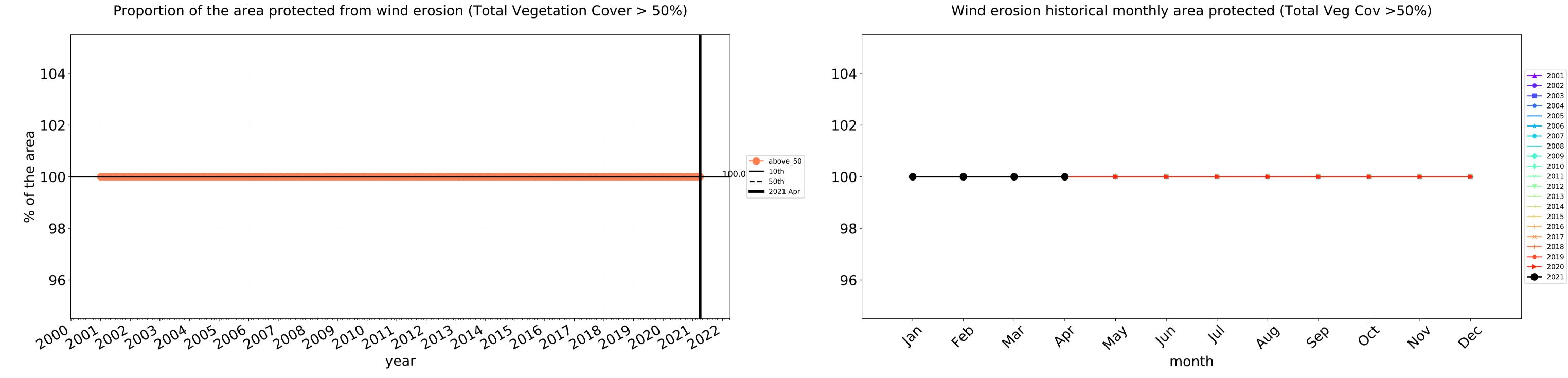


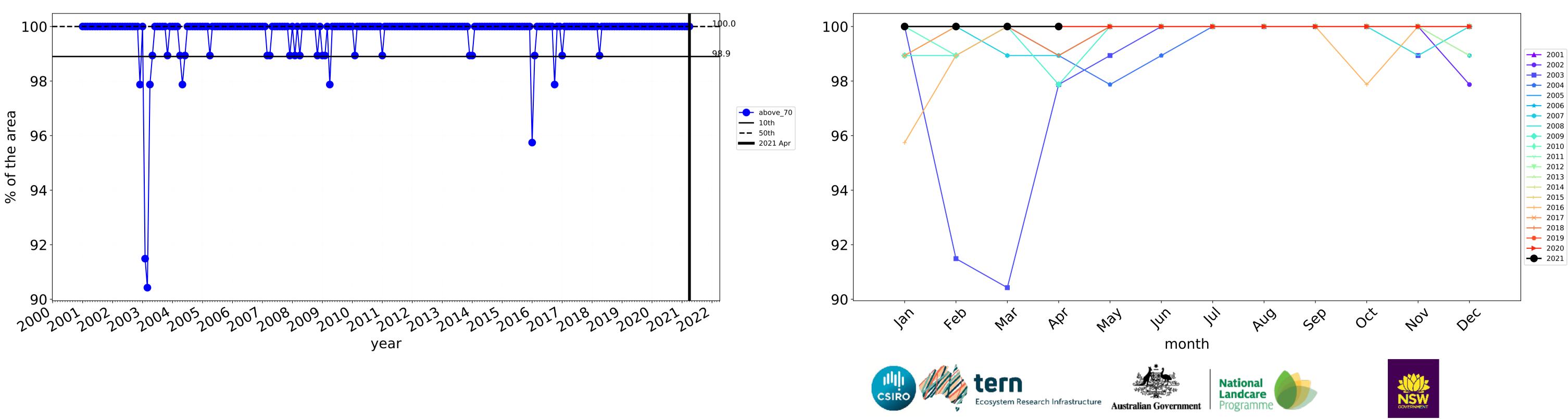
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





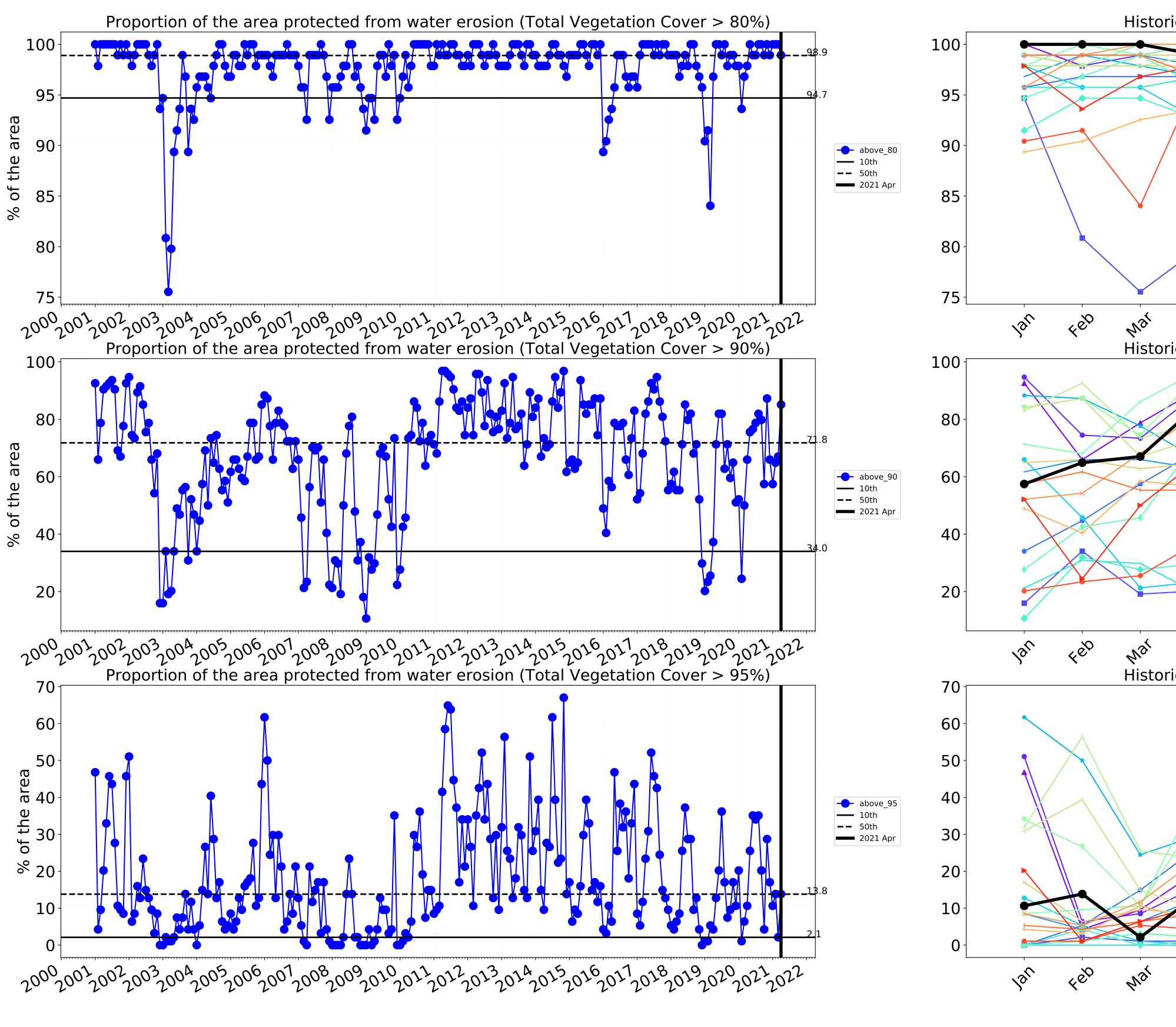






# **Grazing Woodland forest timeseries**

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



Historical monthly area protected (Total Veg Cov>80%)

JU/

 $\sqrt{\gamma}$ 

Nat

291

way

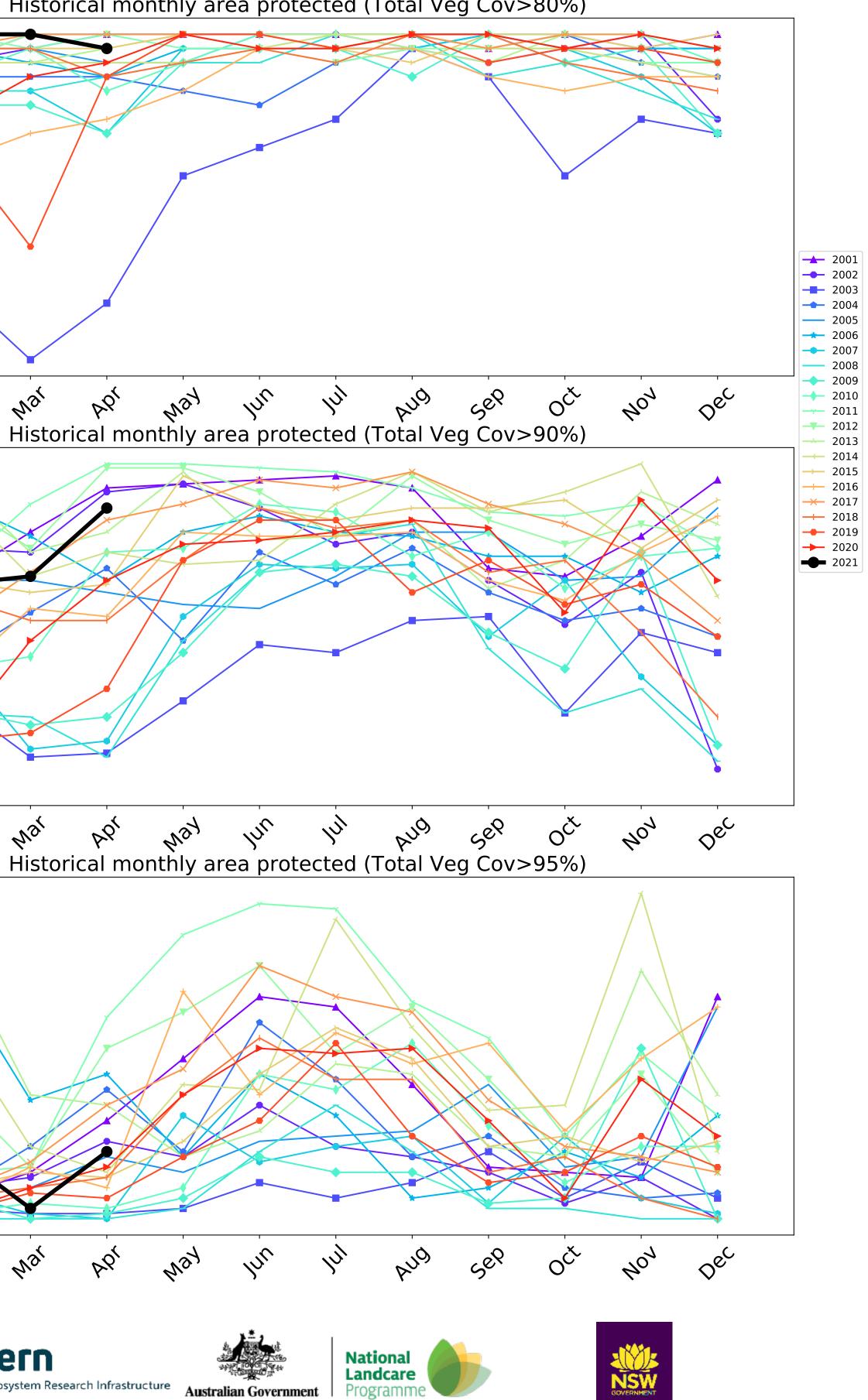
P.Q.

Ecosystem Research Infrastructure

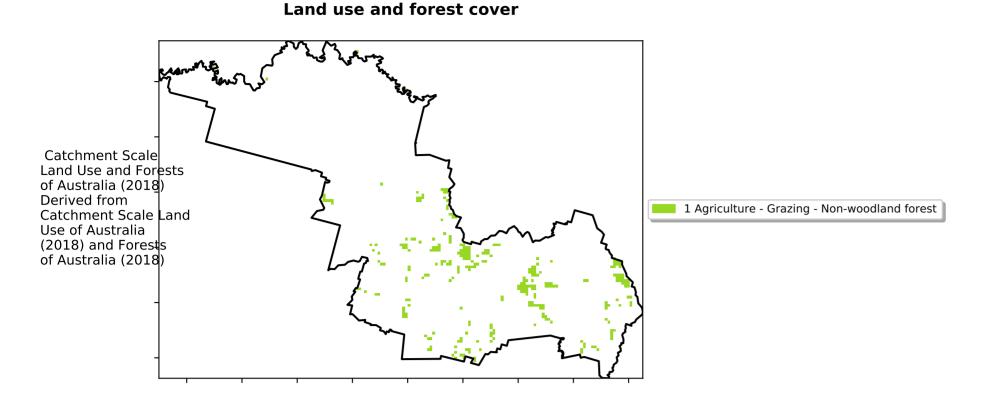
JUL

Australian Government

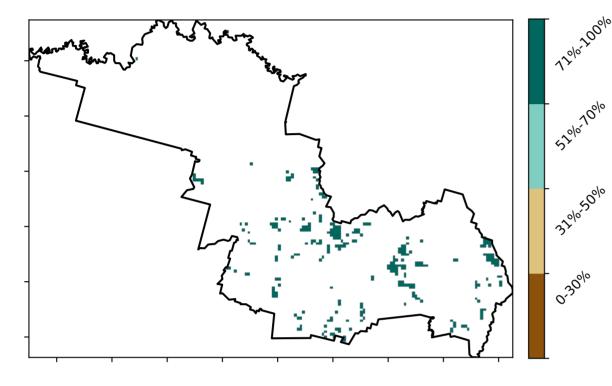
1/2/



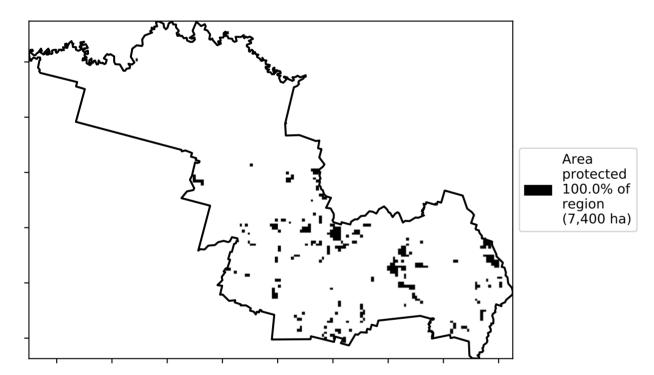
# Grazing - Forest (non woodland)



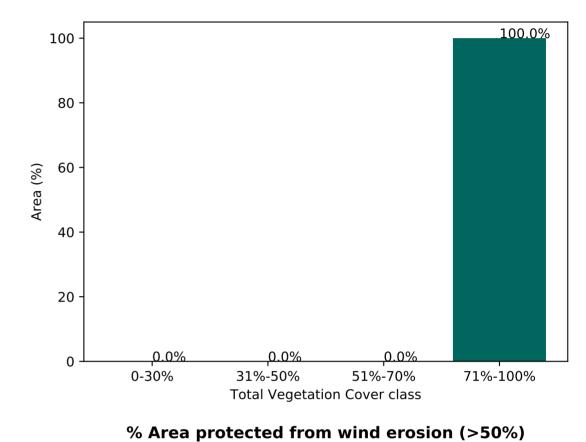
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

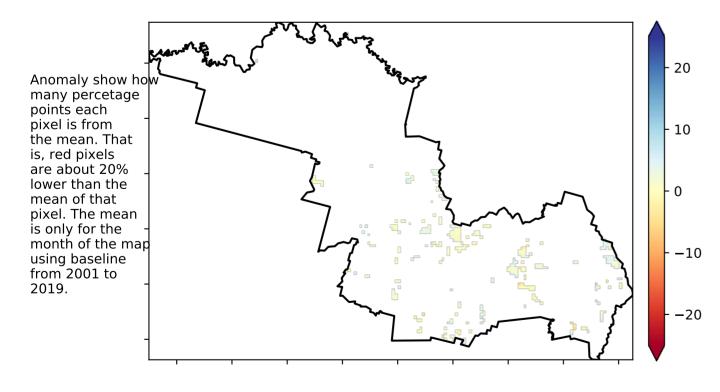


Proportion of vegetation cover class in area

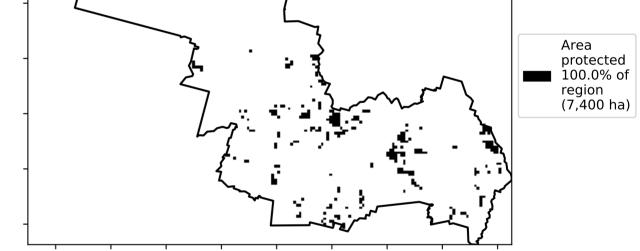


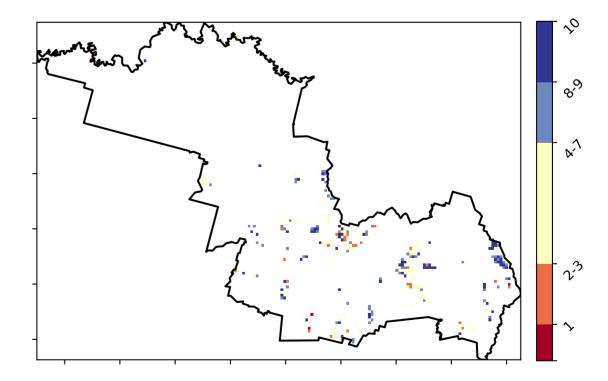


Total Vegetation Cover Anomaly [%]

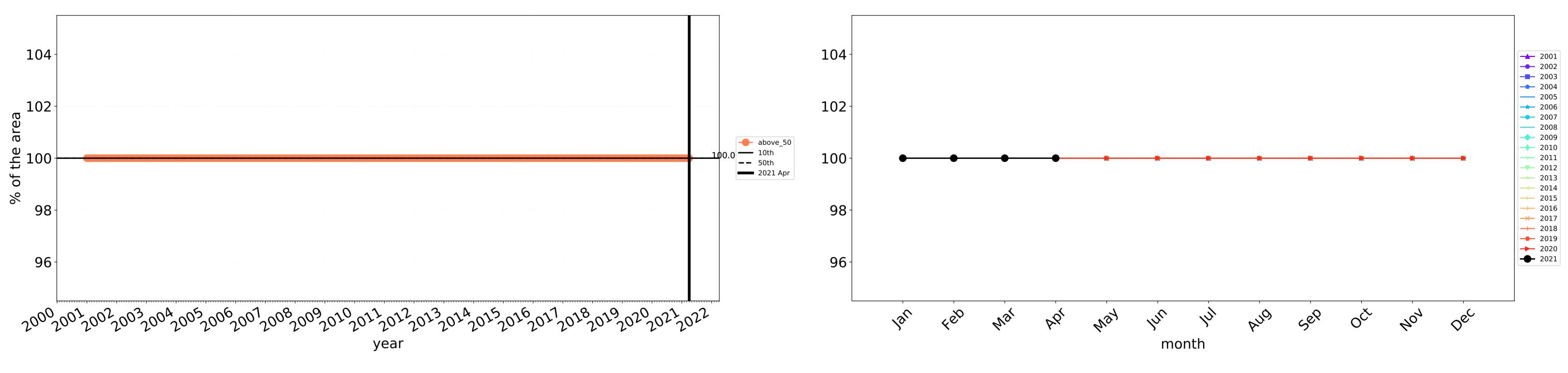


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

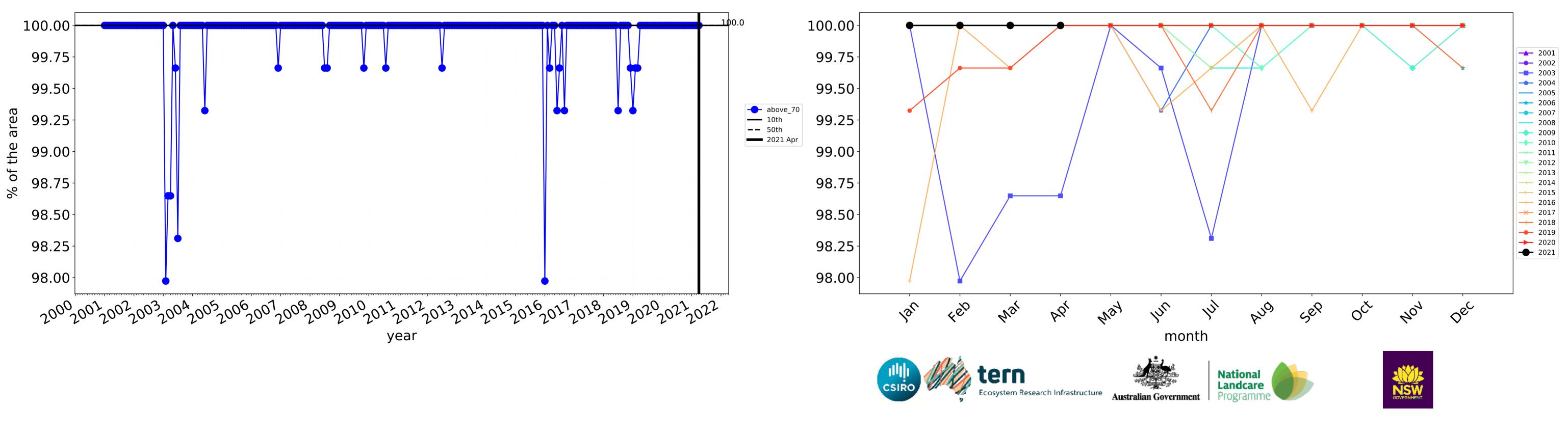




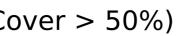




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

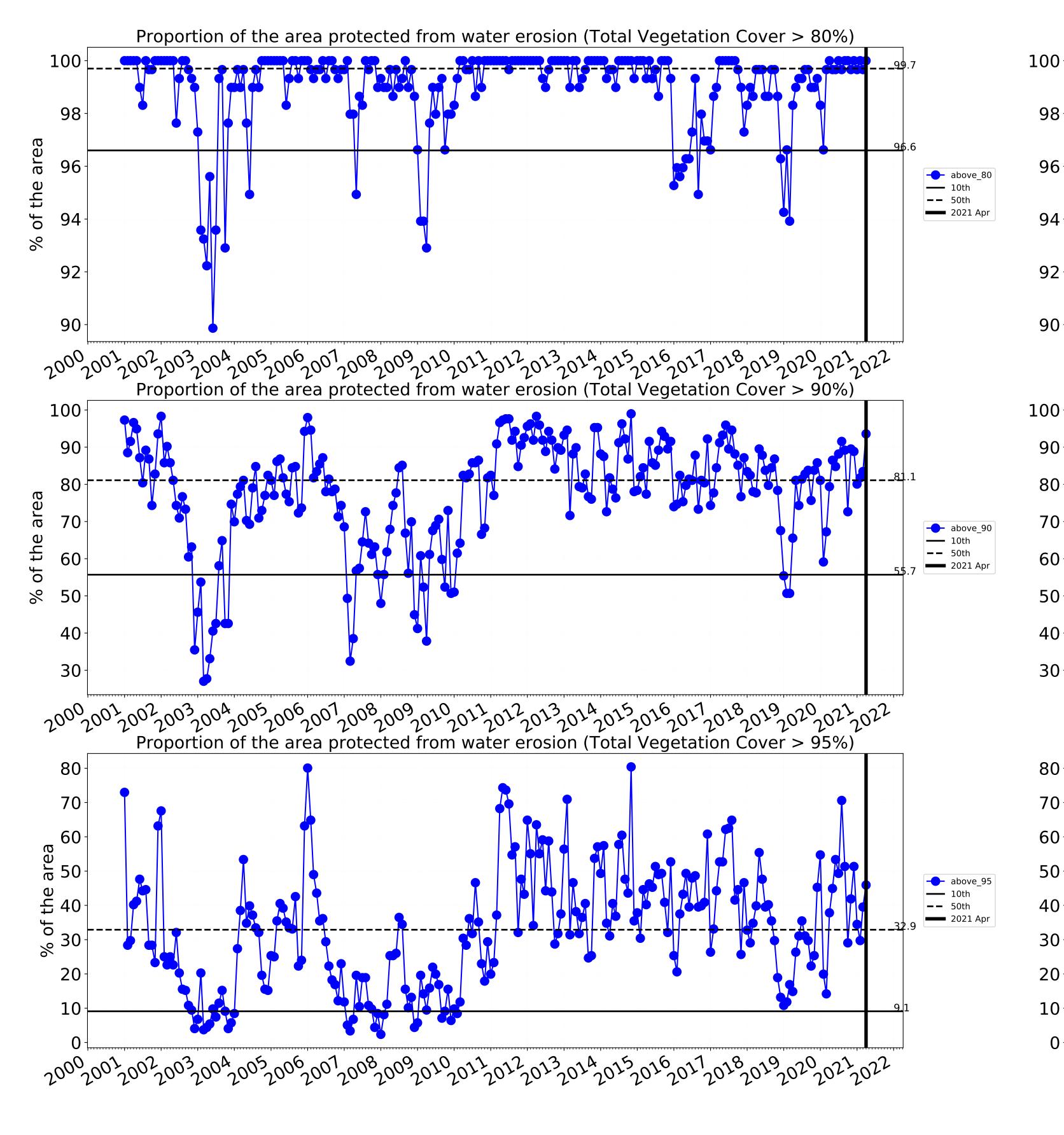


# Grazing - Forest (non woodland) timeseries

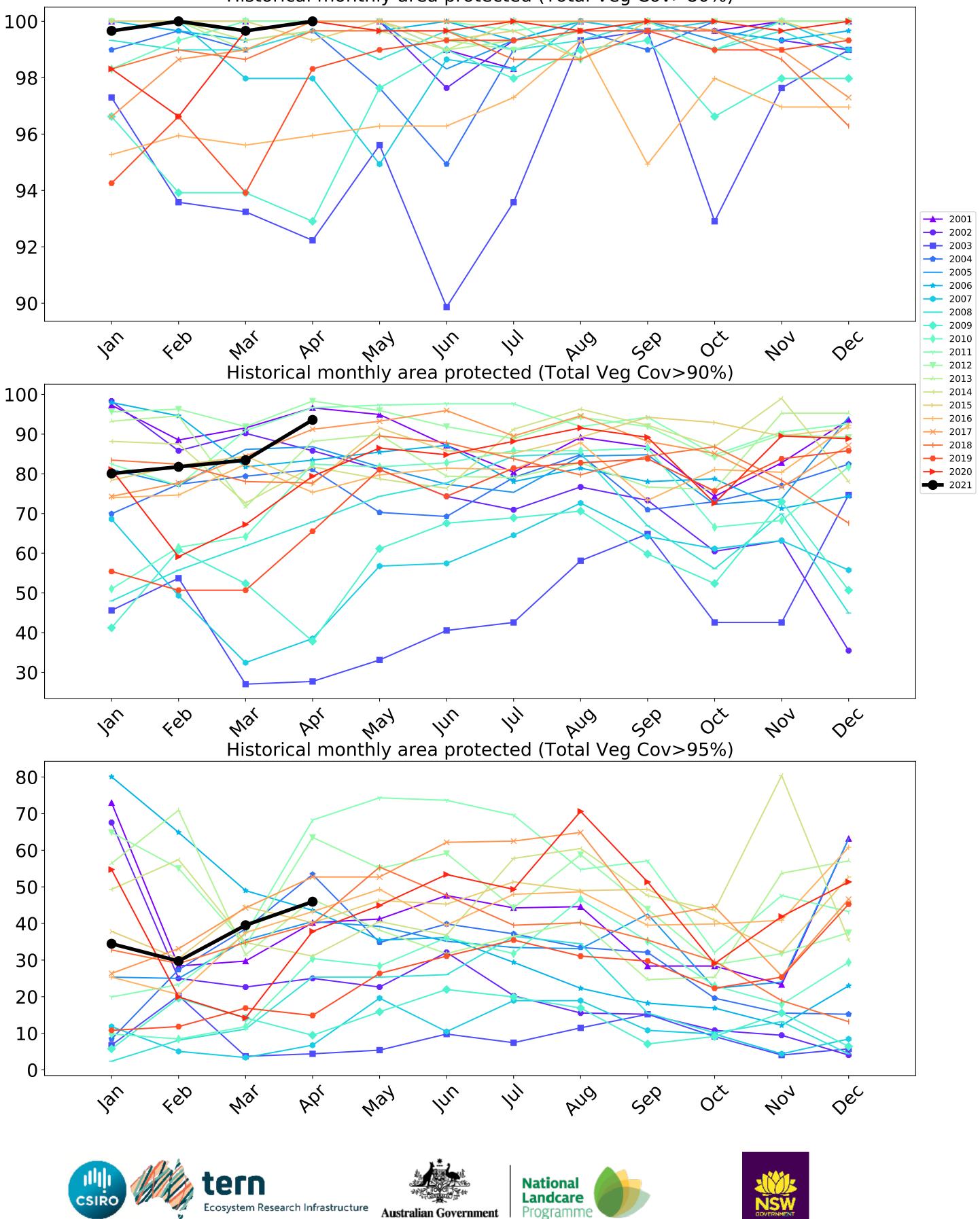


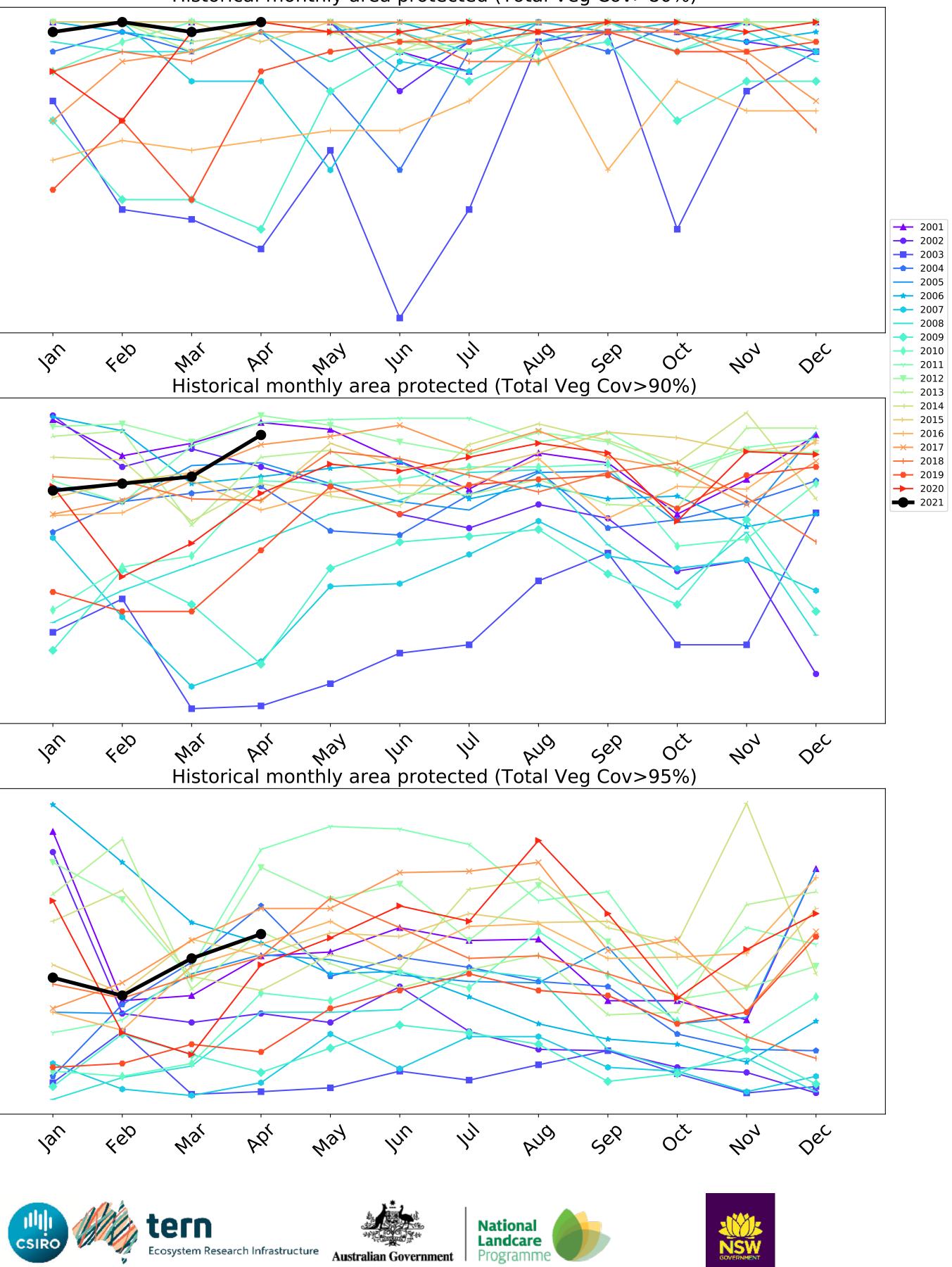
Water erosion historical monthly area protected (Total Veg Cov>70%)

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

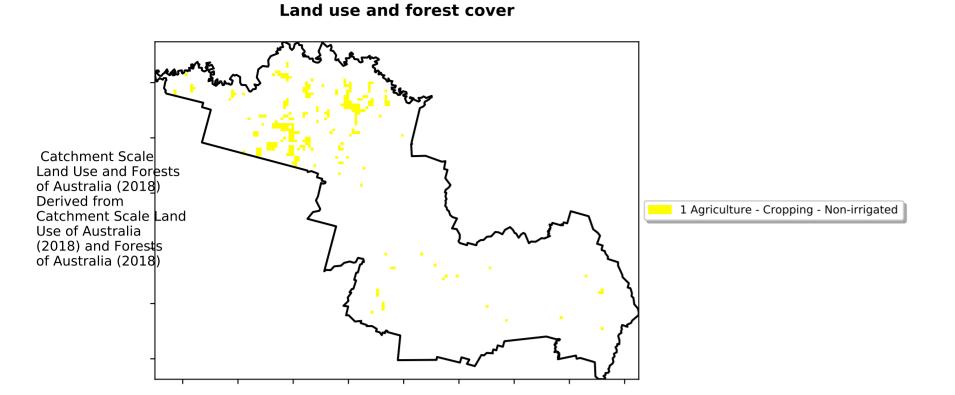


Historical monthly area protected (Total Veg Cov>80%)

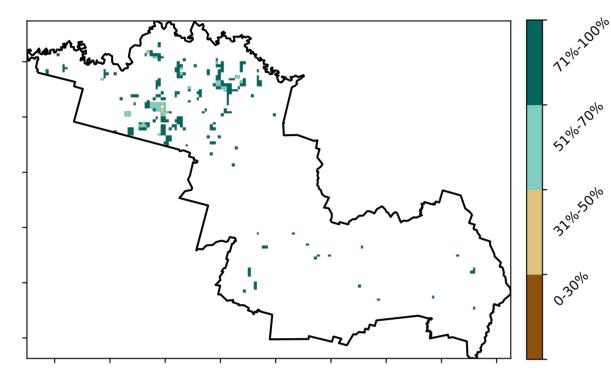




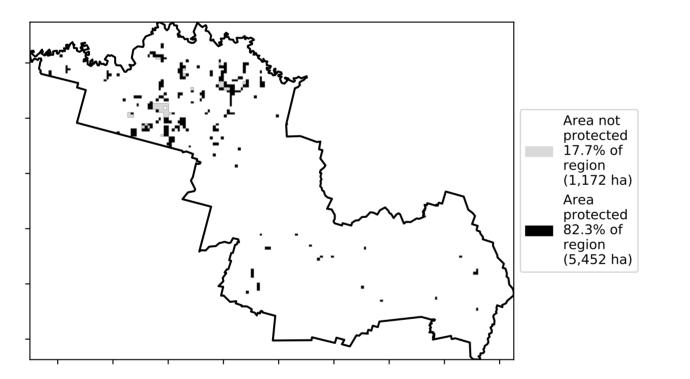
# Cropping



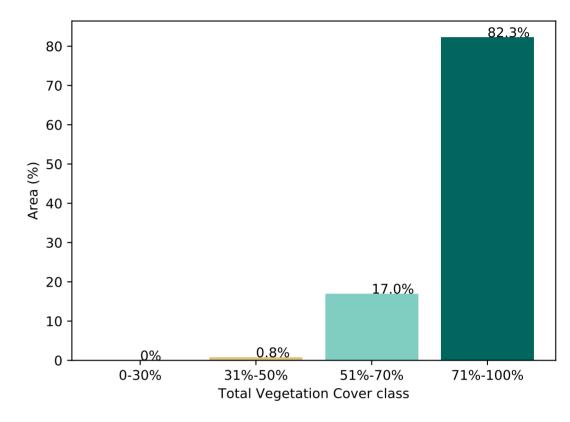
Total Vegetation Cover [%]



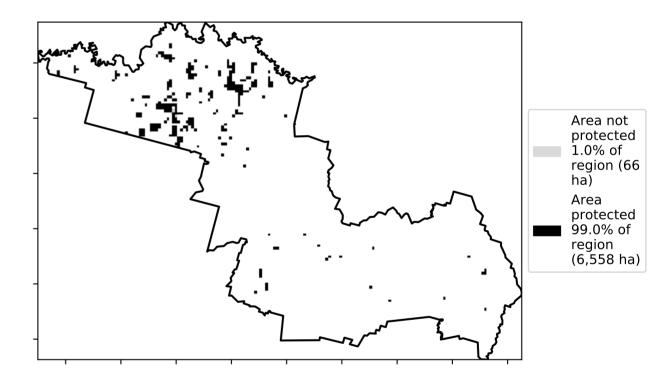
% Area protected from water erosion (>70%)



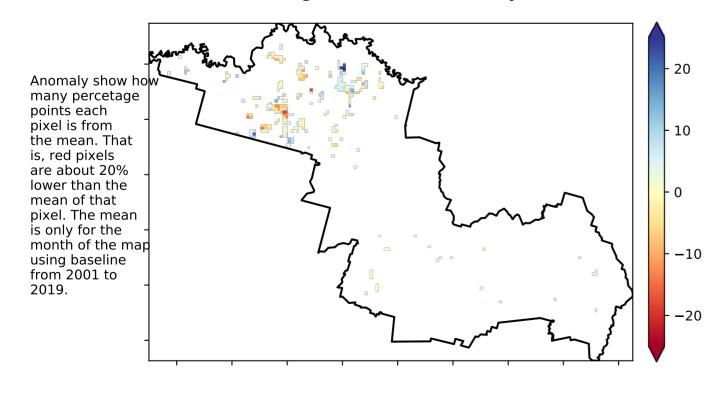
Proportion of vegetation cover class in area



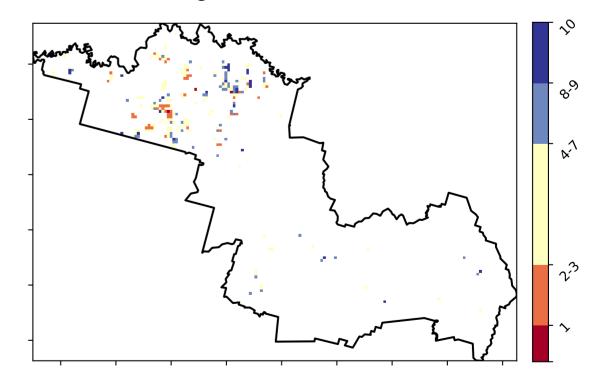
% Area protected from wind erosion (>50%)



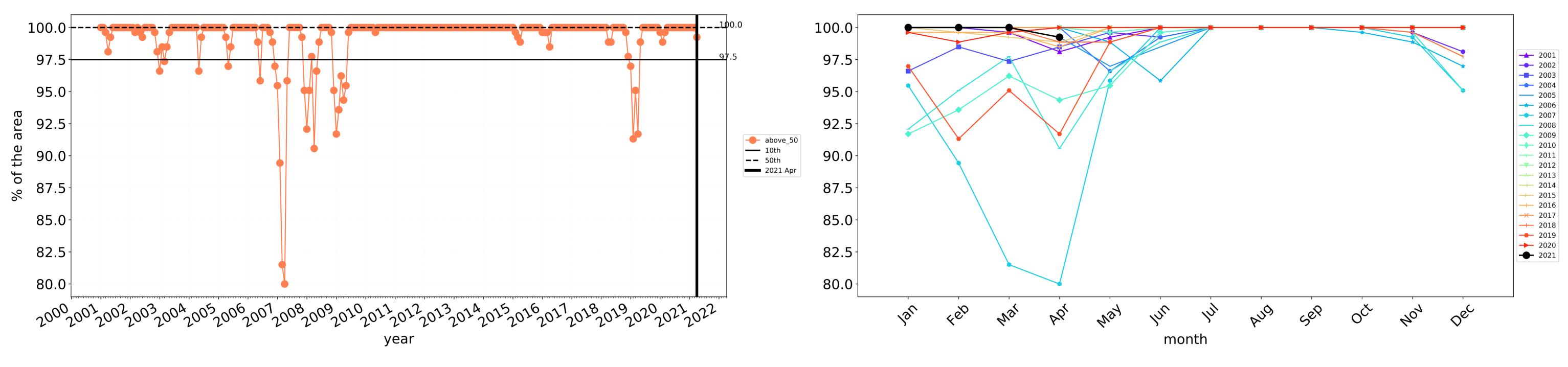
Total Vegetation Cover Anomaly [%]



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.

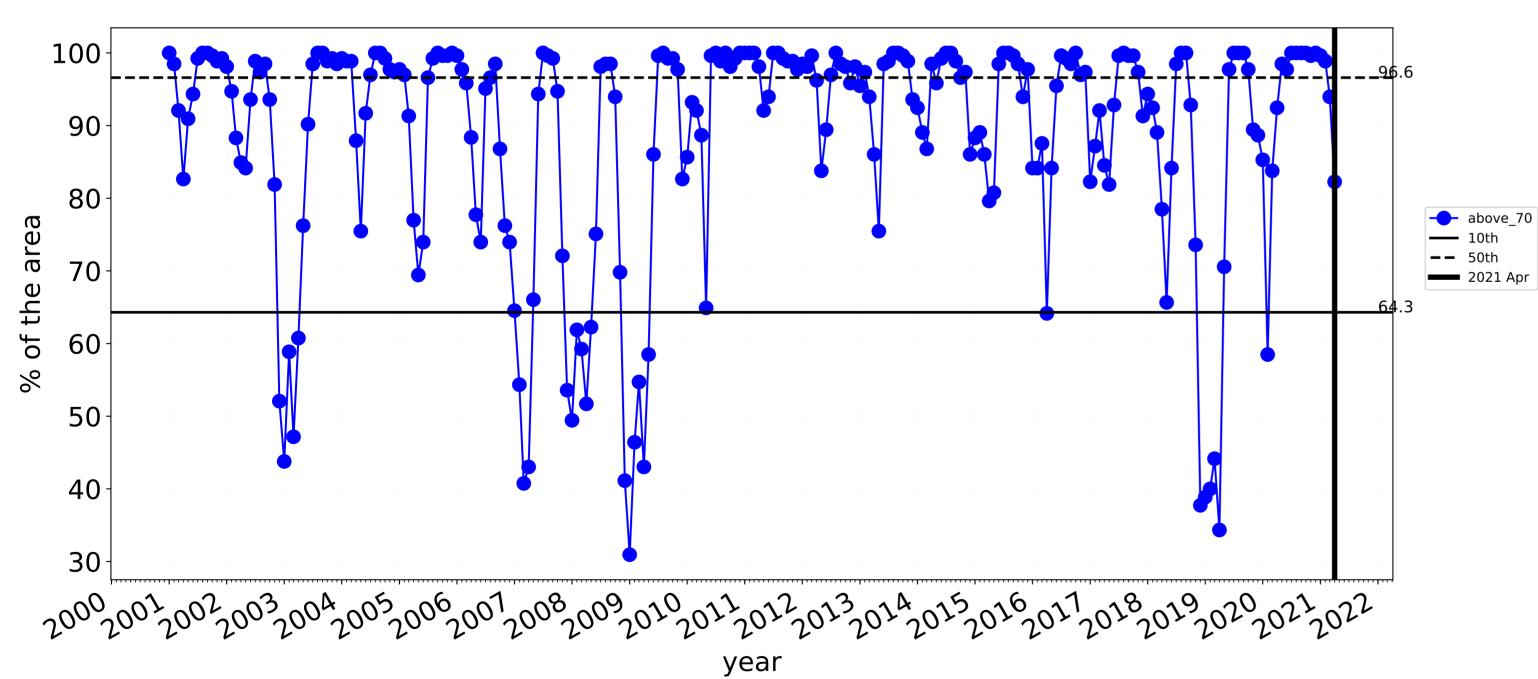


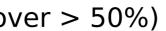




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

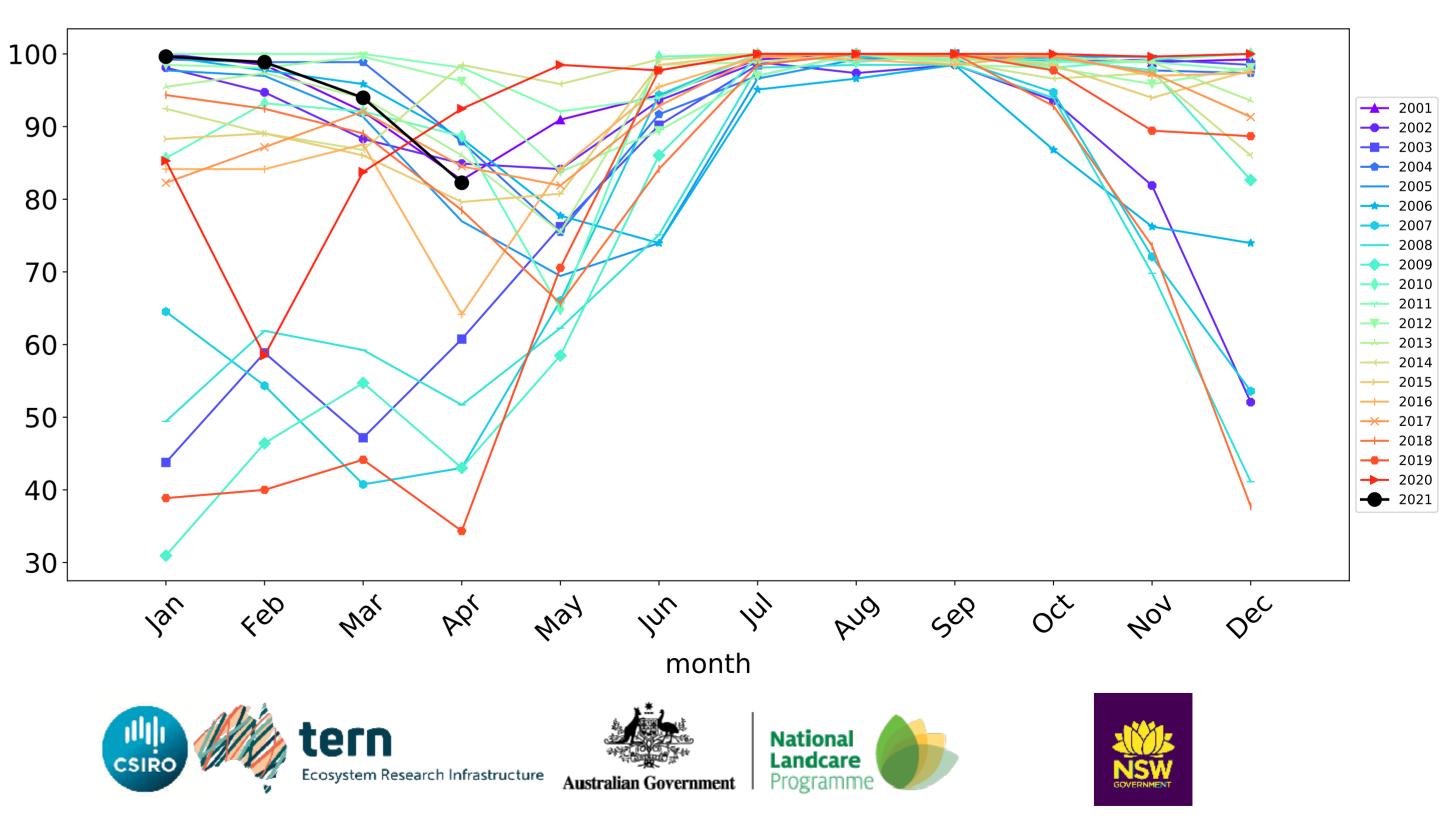


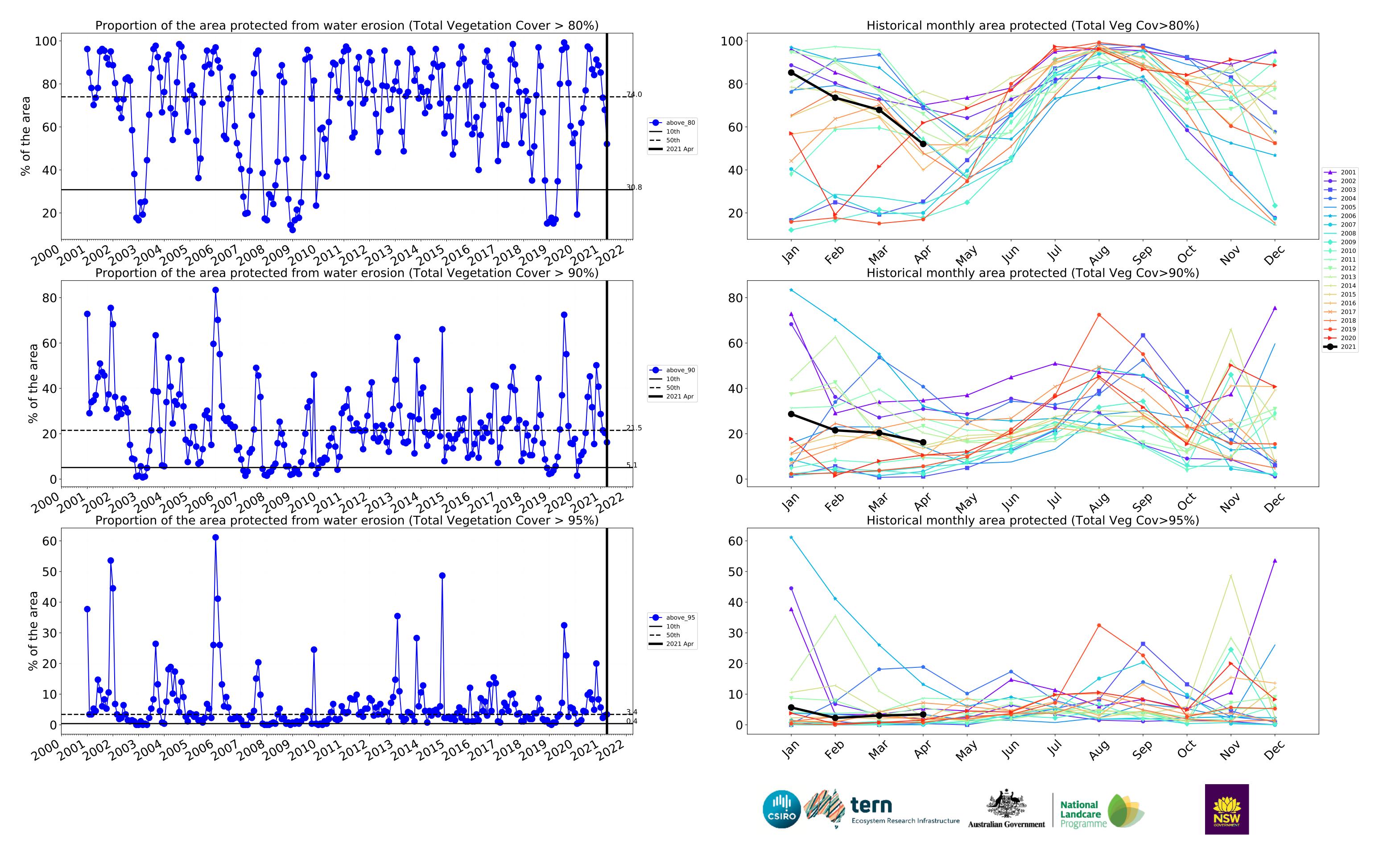




Wind erosion historical monthly area protected (Total Veg Cov >50%)

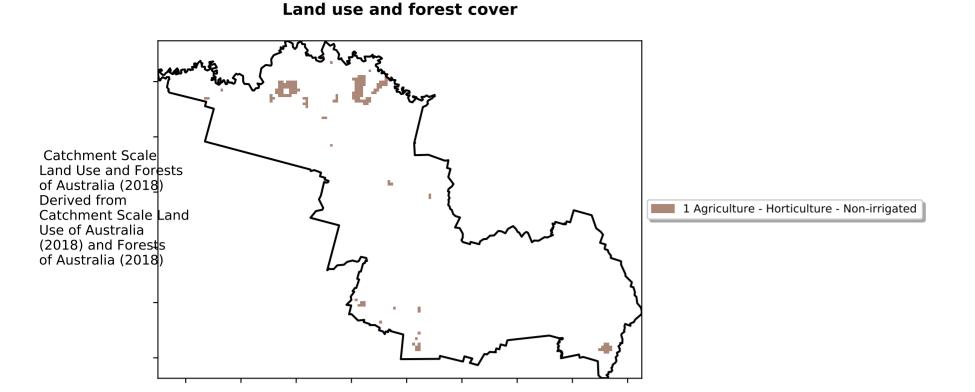
Water erosion historical monthly area protected (Total Veg Cov>70%)



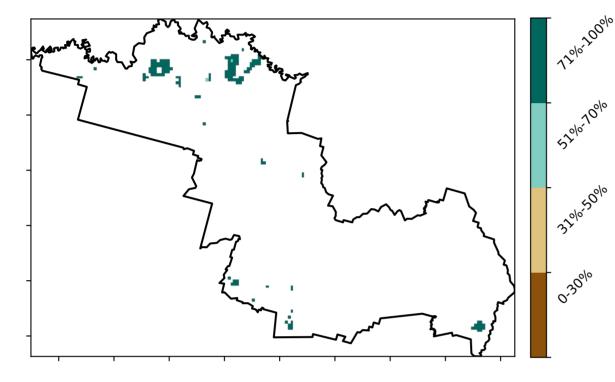


**4** 

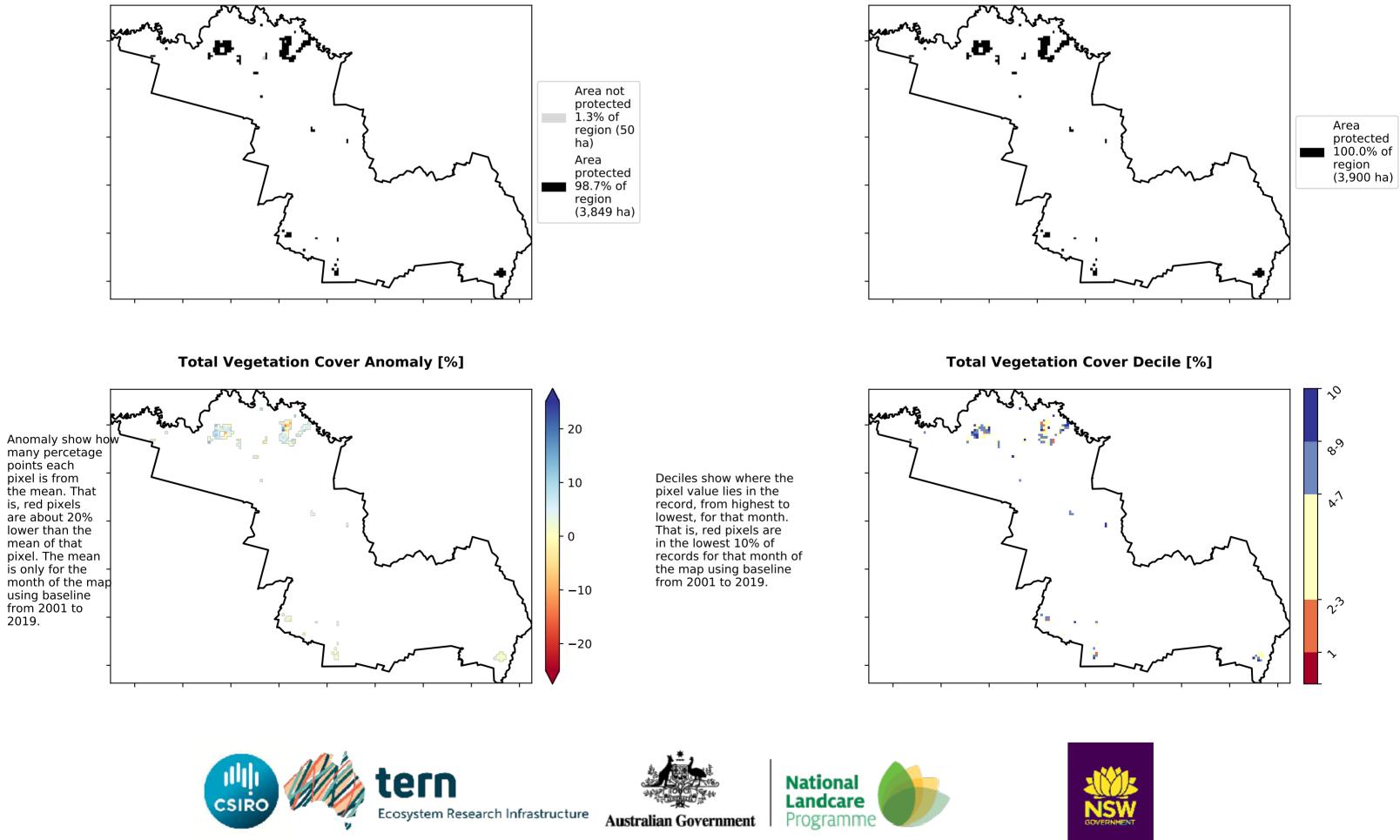
### Horticulture



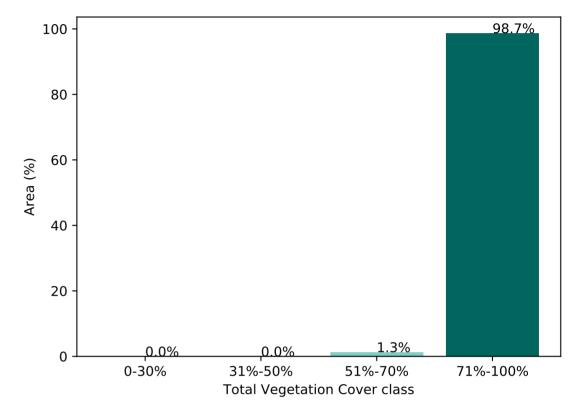
**Total Vegetation Cover [%]** 



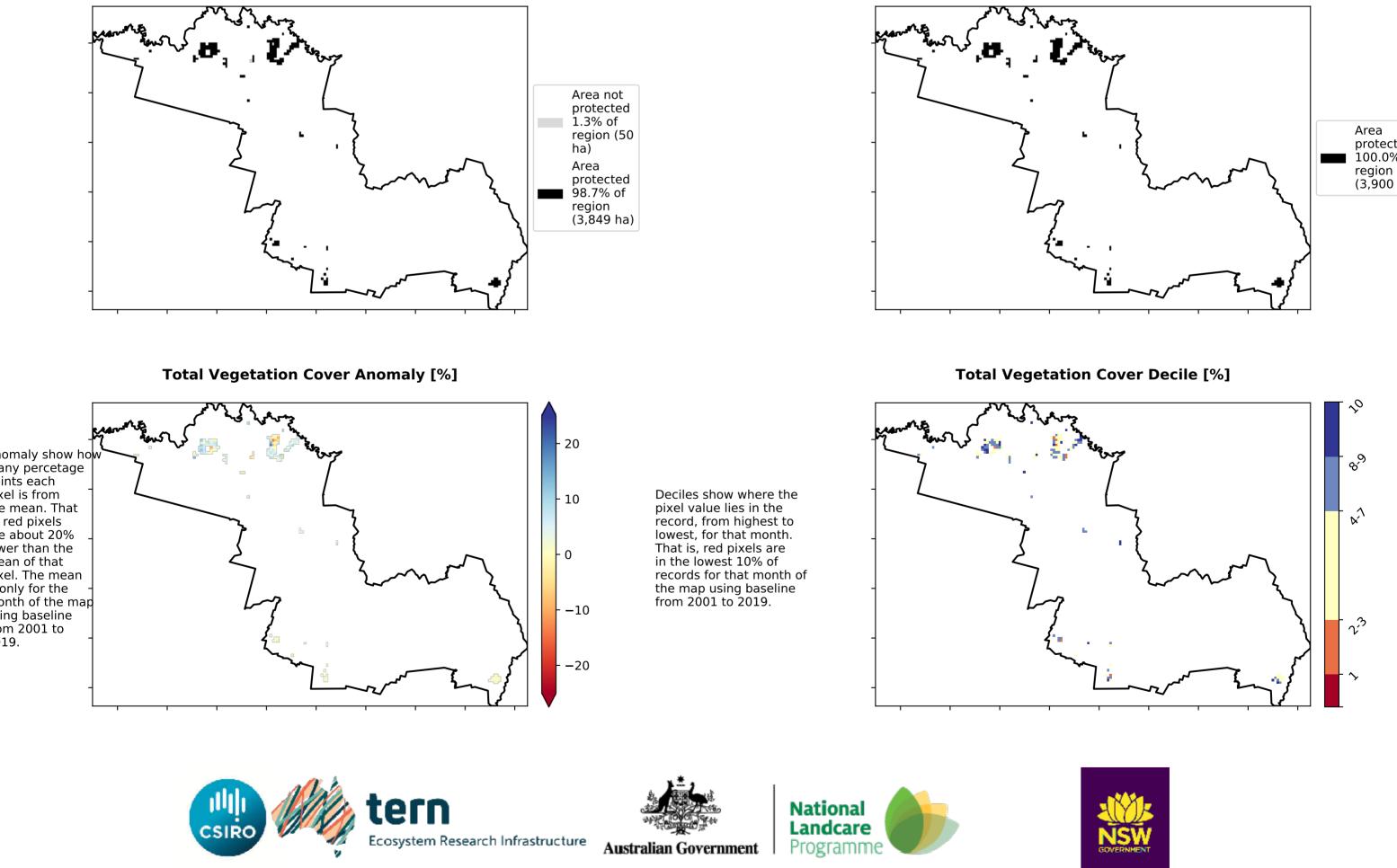
% Area protected from water erosion (>70%)

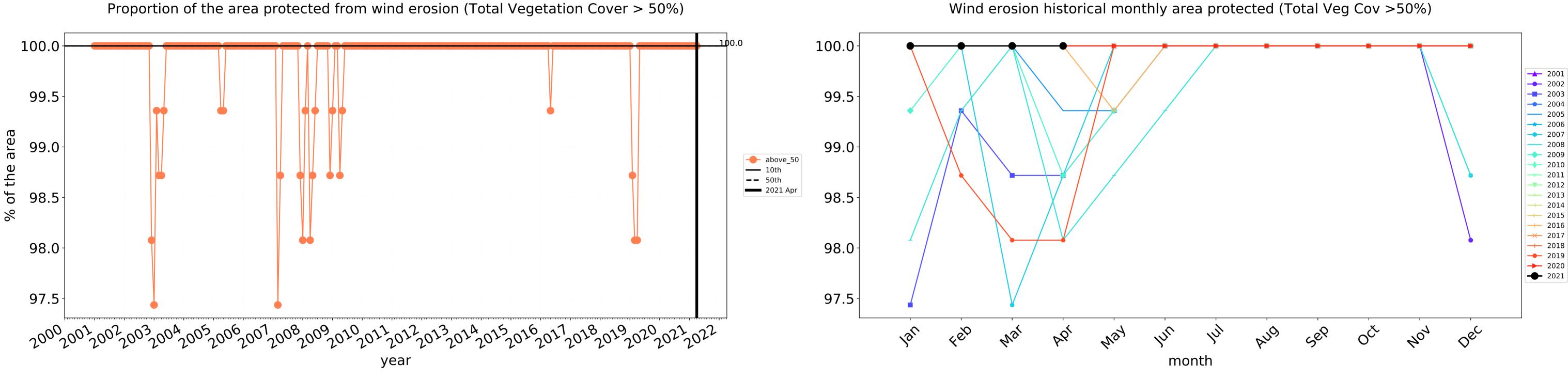


Proportion of vegetation cover class in area

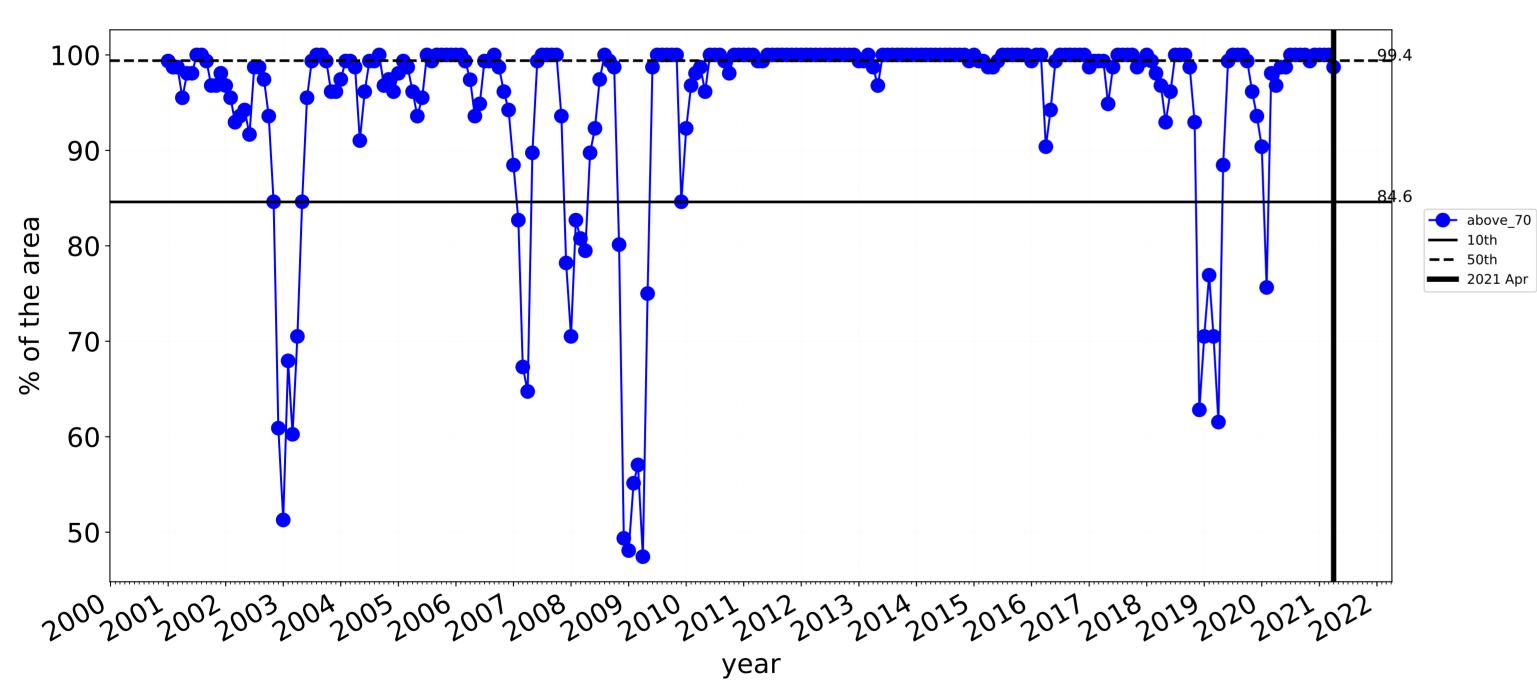


% Area protected from wind erosion (>50%)



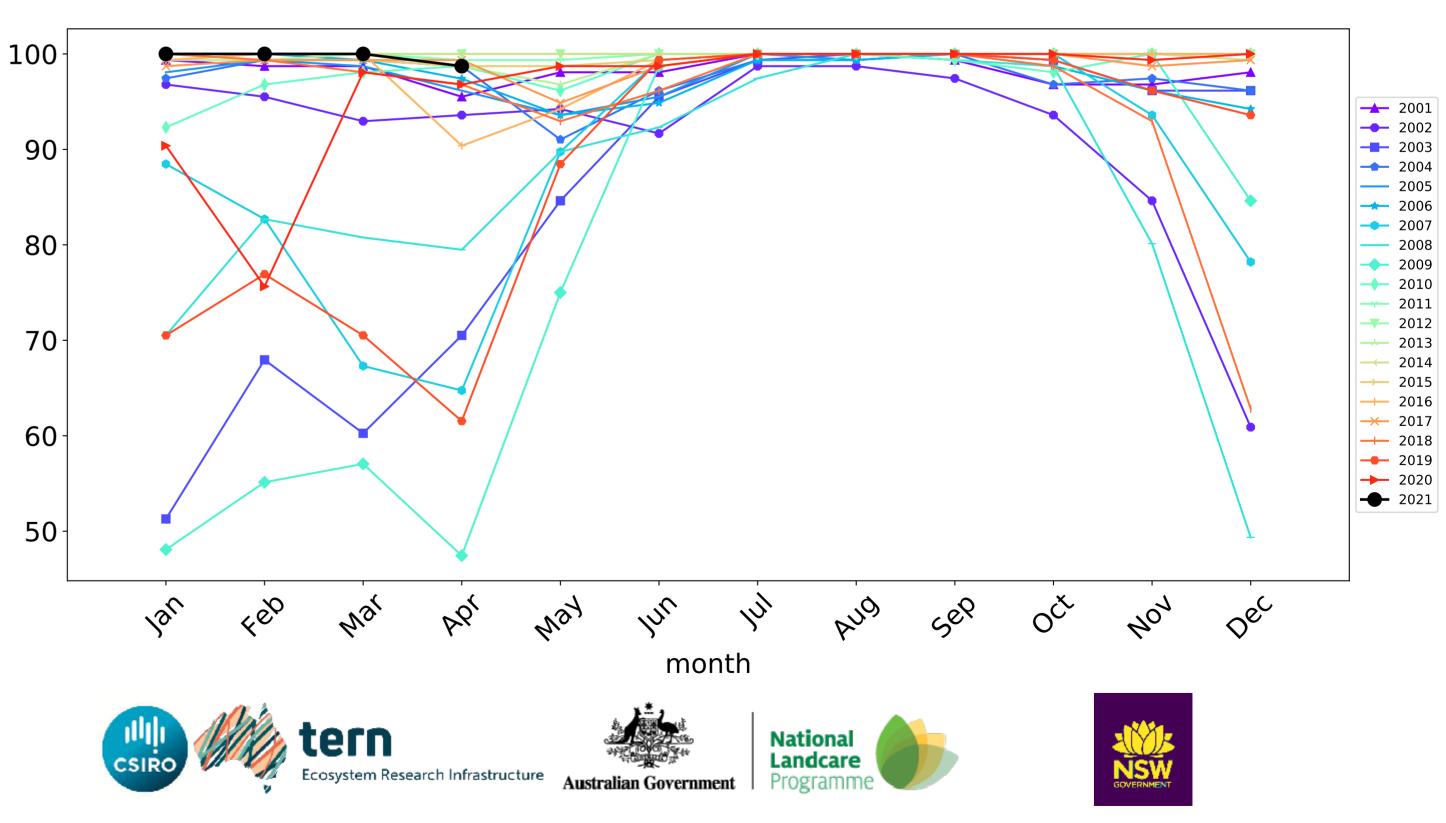


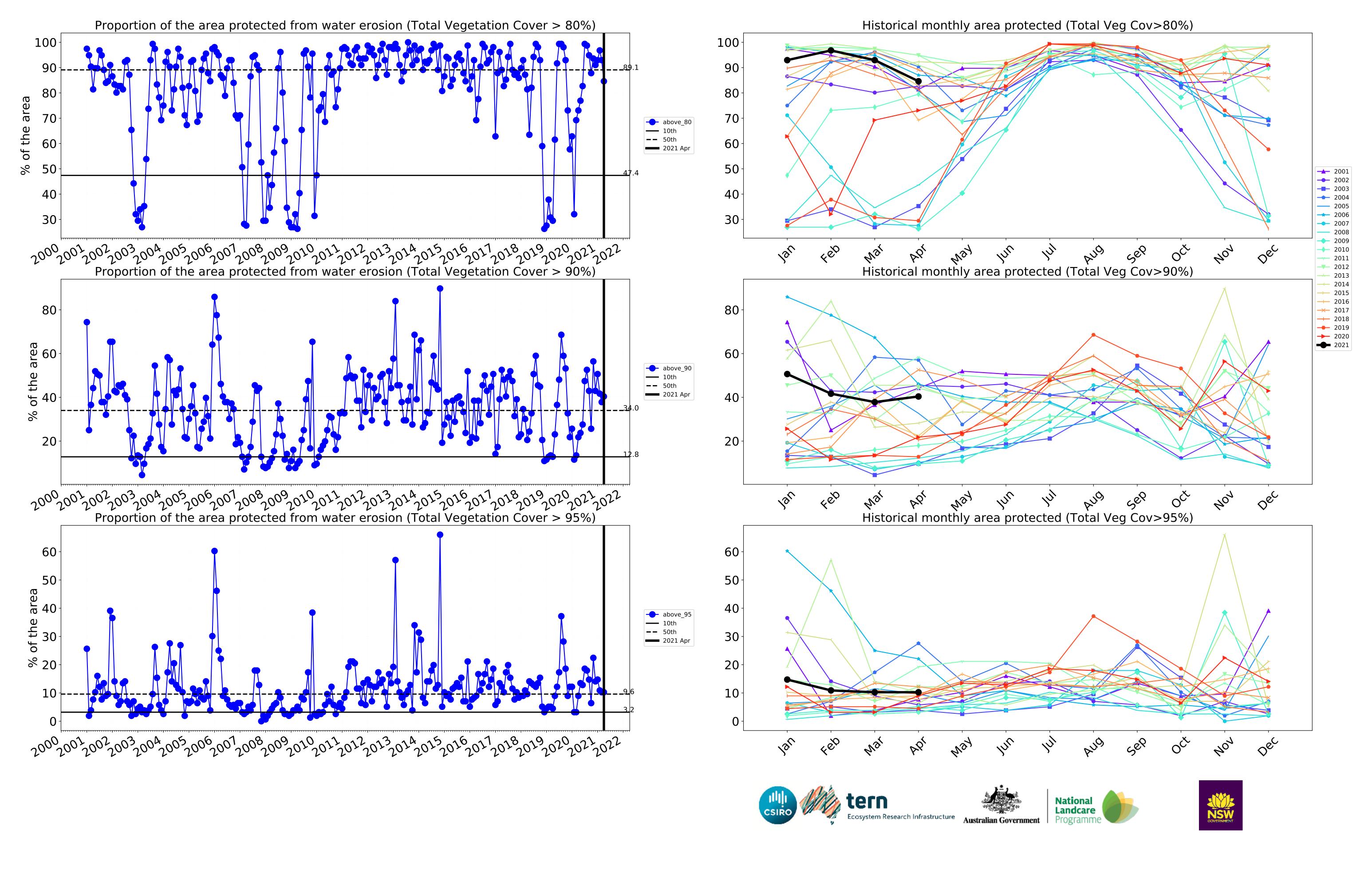
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



# Horticulture timeseries

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



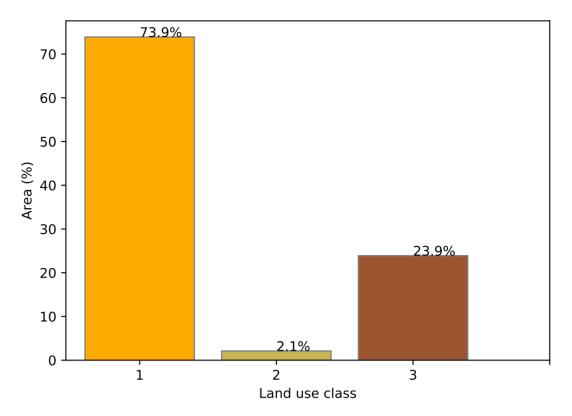


# Irrigation

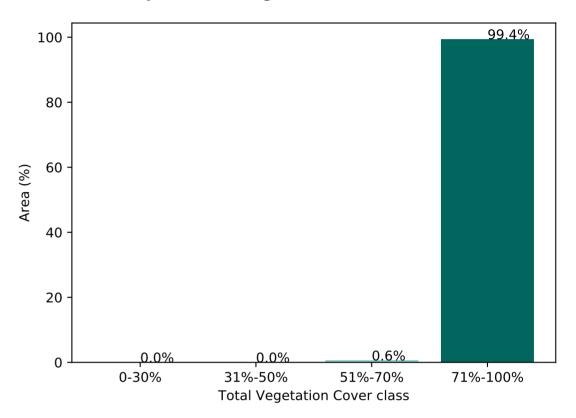
Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Irrigated 2 Agriculture - Cropping - Irrigated Catchment Scale Land 3 Agriculture - Horticulture - Irrigated Use of Australia (2018) and Forests of Australia (2018) **Total Vegetation Cover [%]** 200 120/0 52% 70%

Land use and forest cover

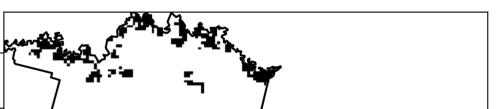
Proportion of each land class in area

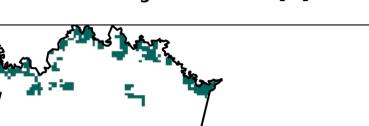


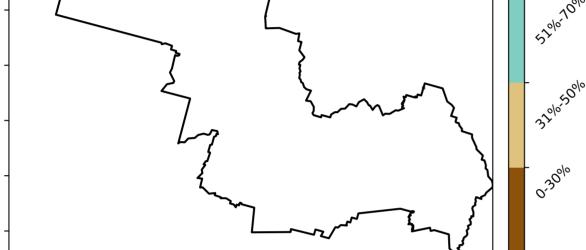
Proportion of vegetation cover class in area



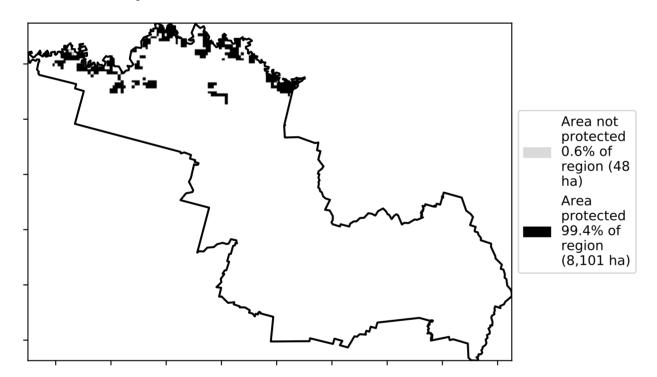
% Area protected from wind erosion (>50%)



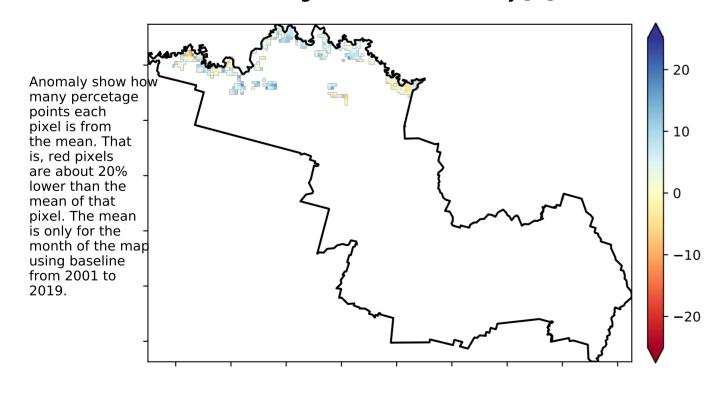




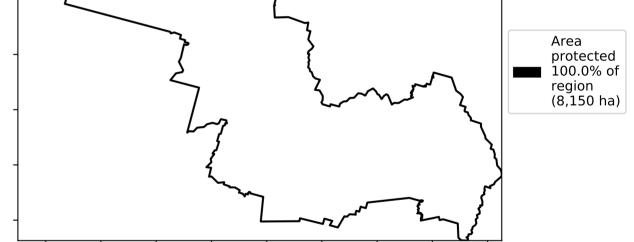
% Area protected from water erosion (>70%)

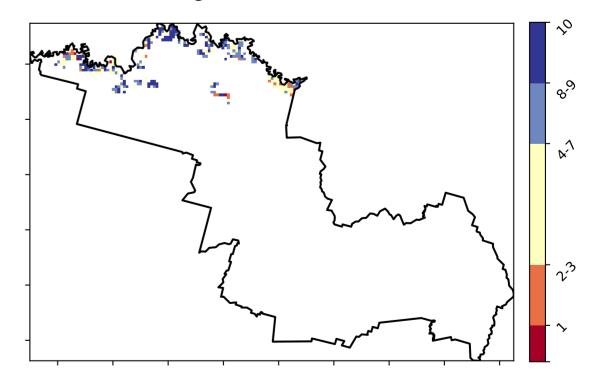


**Total Vegetation Cover Anomaly [%]** 

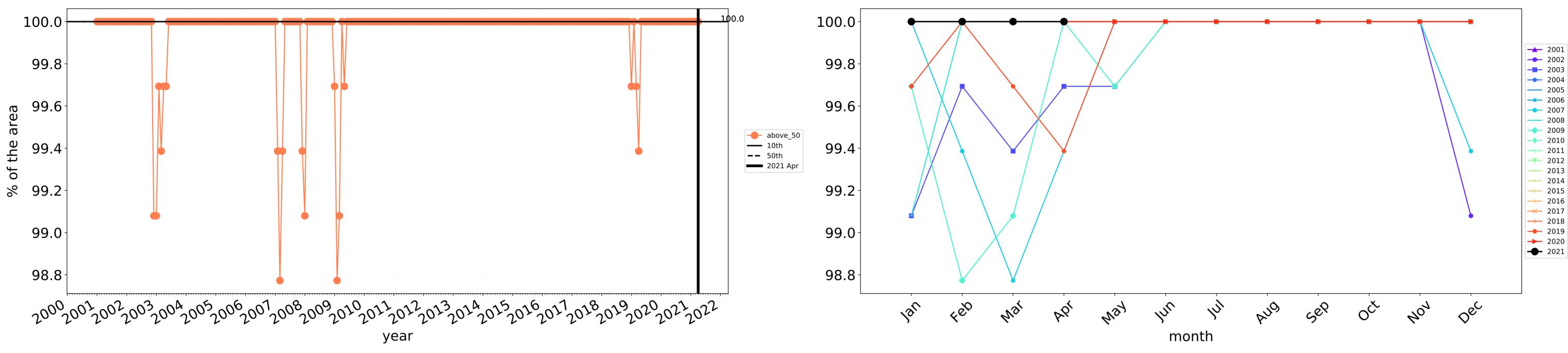


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

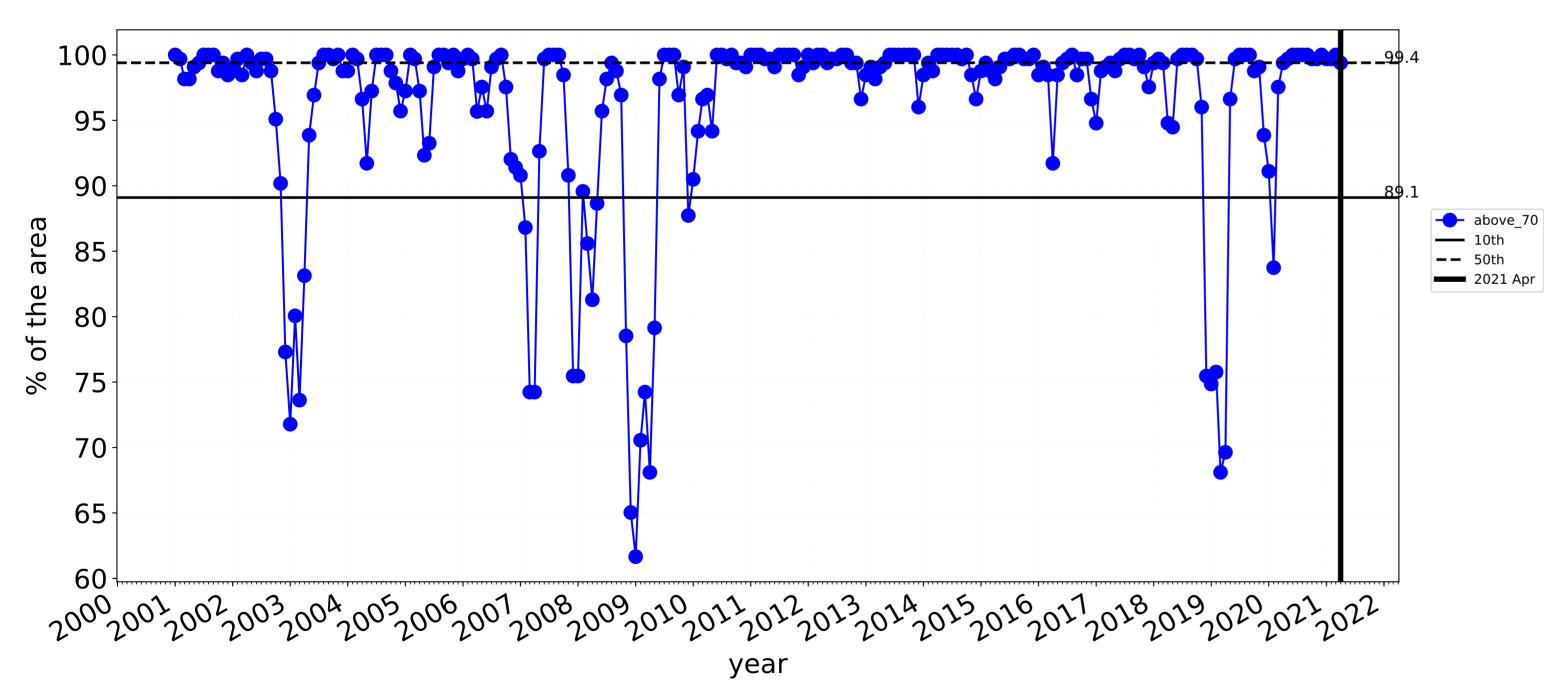




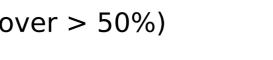




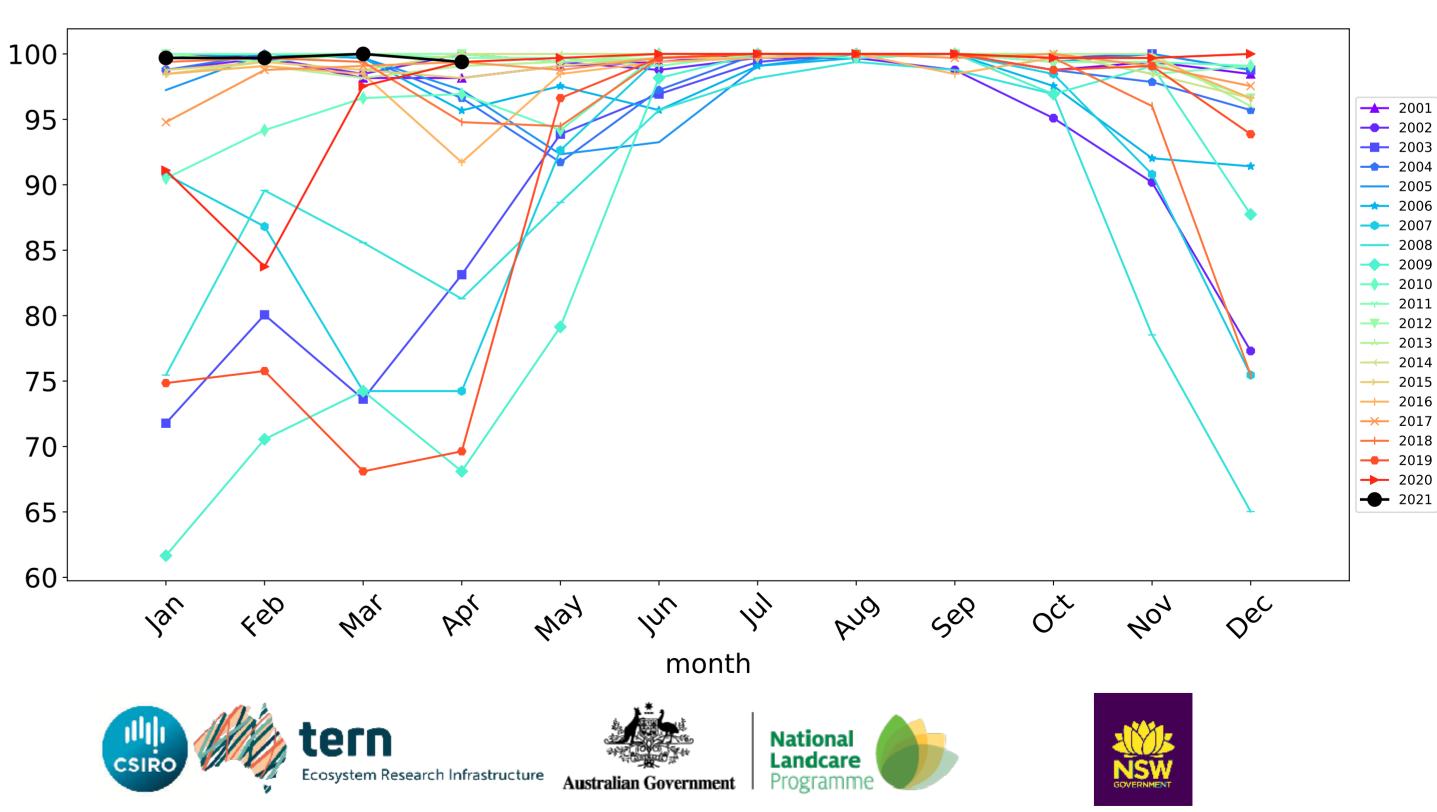
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



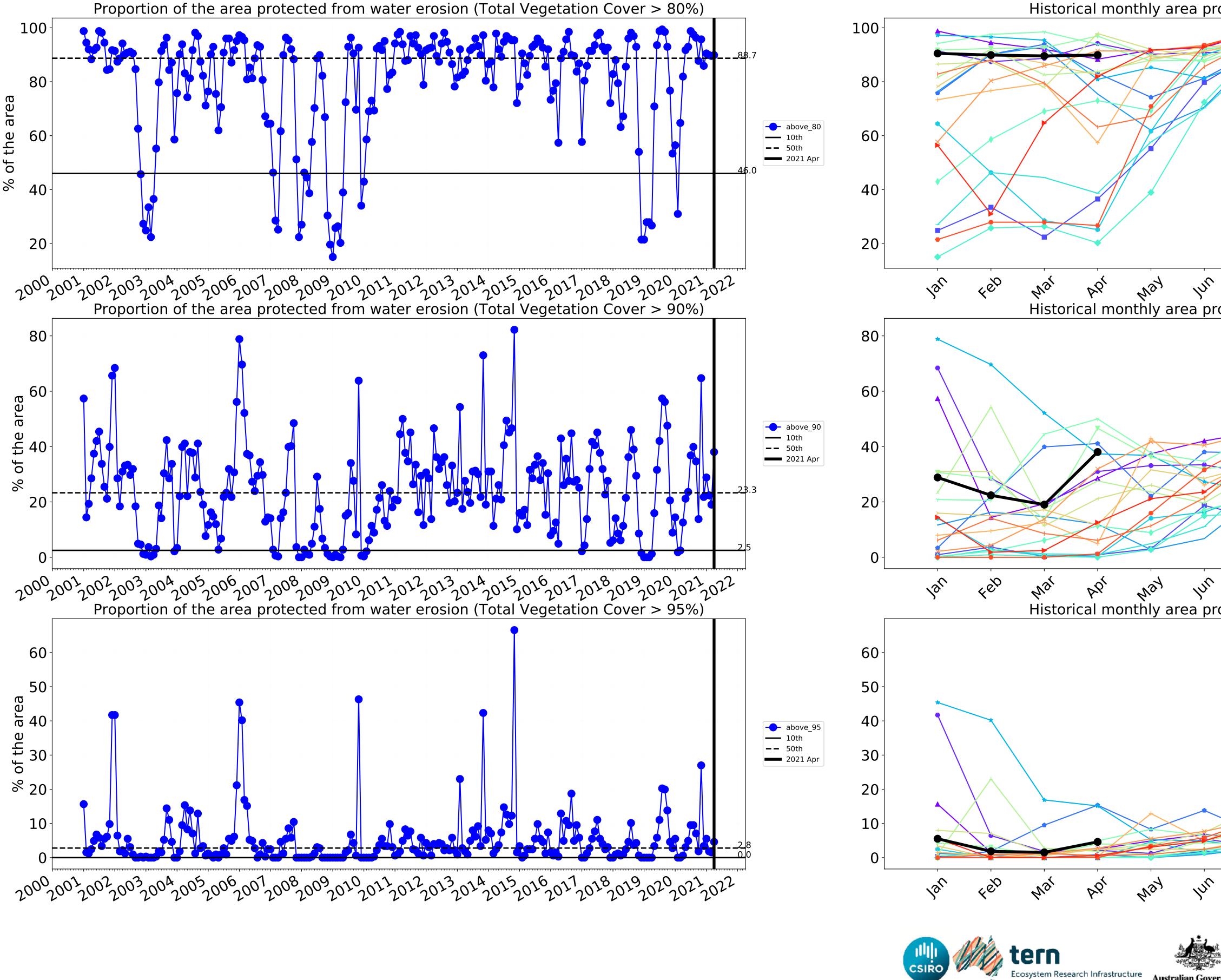
# Irrigation timeseries



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

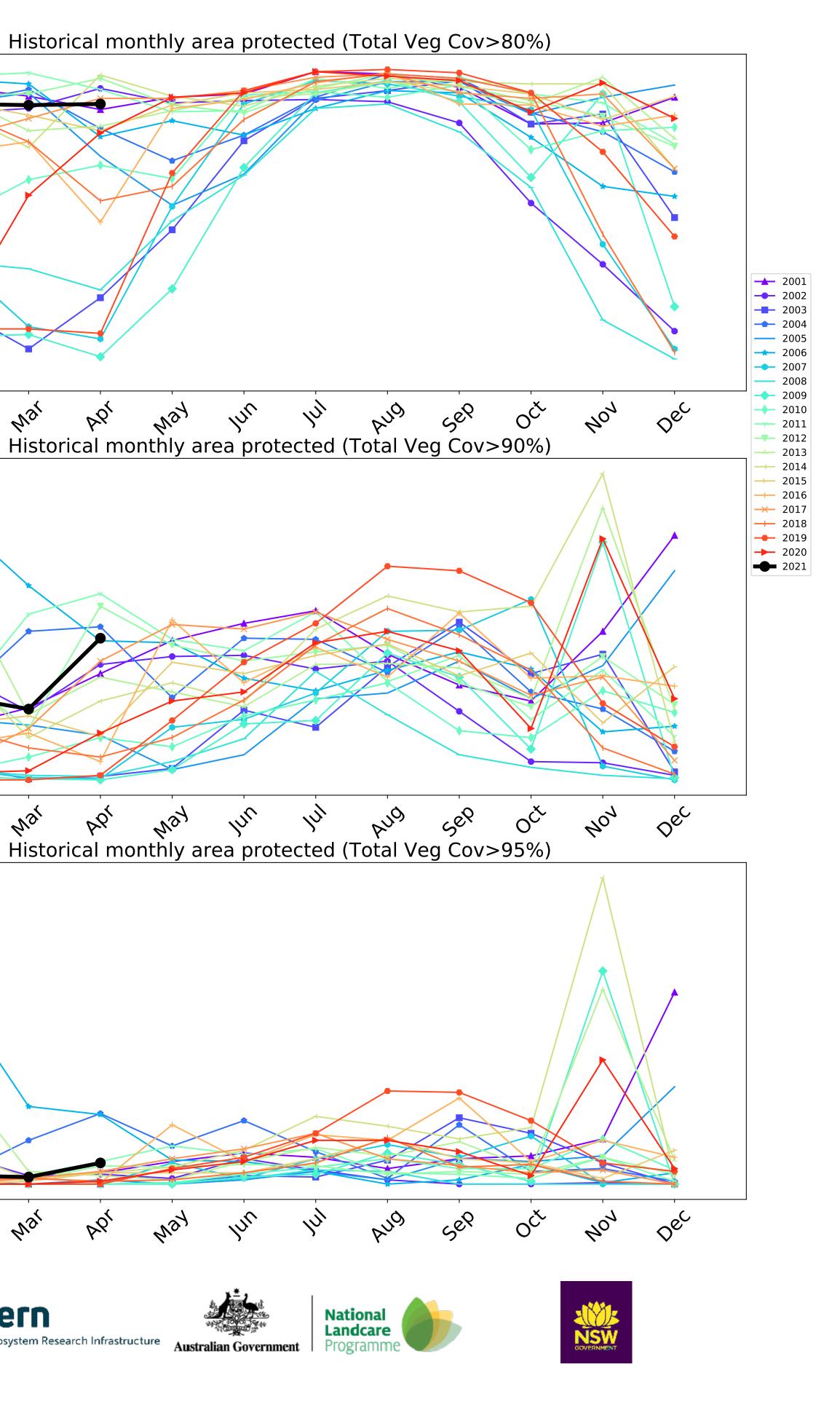


Water erosion historical monthly area protected (Total Veg Cov>70%)

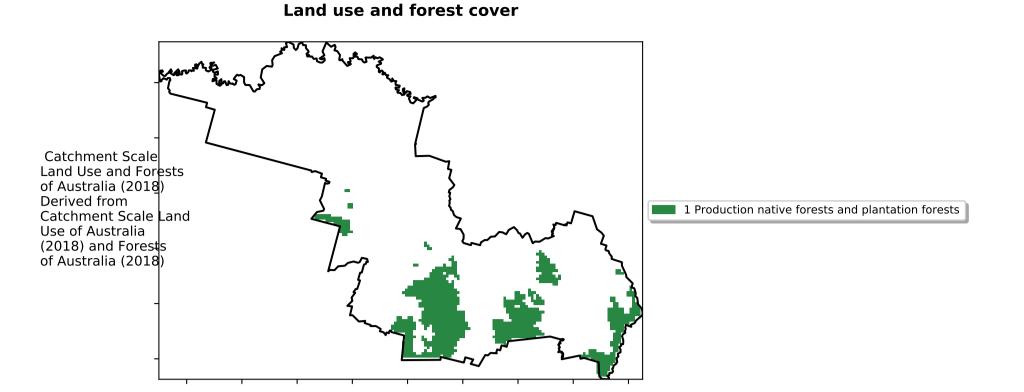


3**4** 

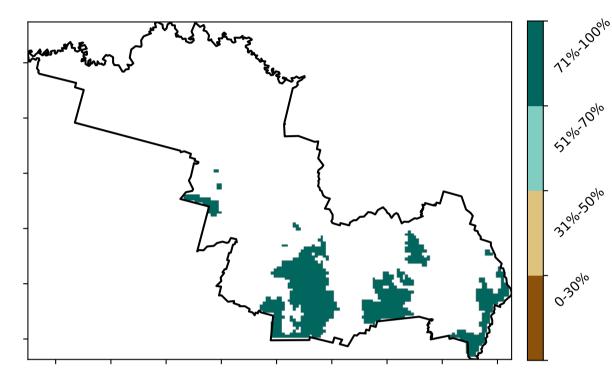
Australian Government



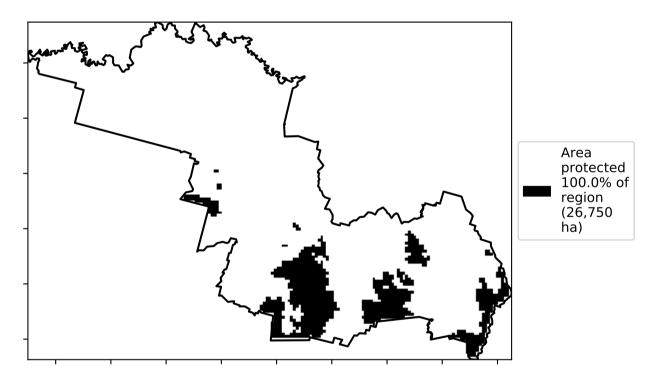
# **Production native forests and plantation forests**



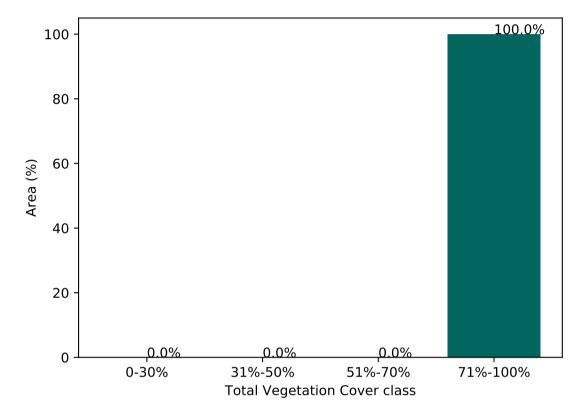
**Total Vegetation Cover [%]** 



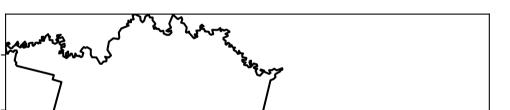
% Area protected from water erosion (>70%)



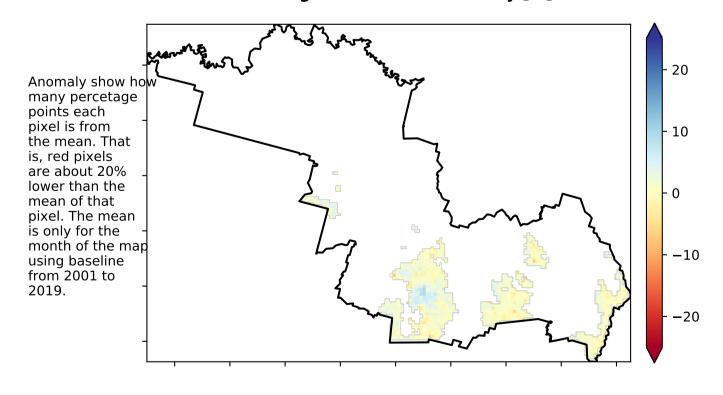
Proportion of vegetation cover class in area



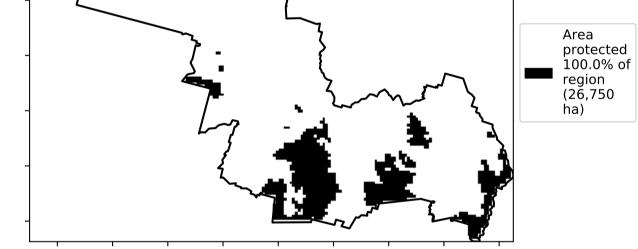
### % Area protected from wind erosion (>50%)

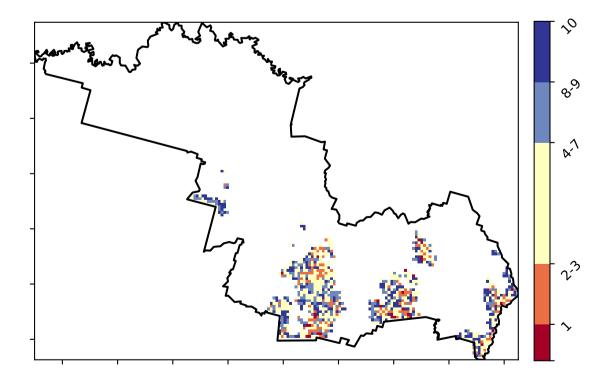


Total Vegetation Cover Anomaly [%]

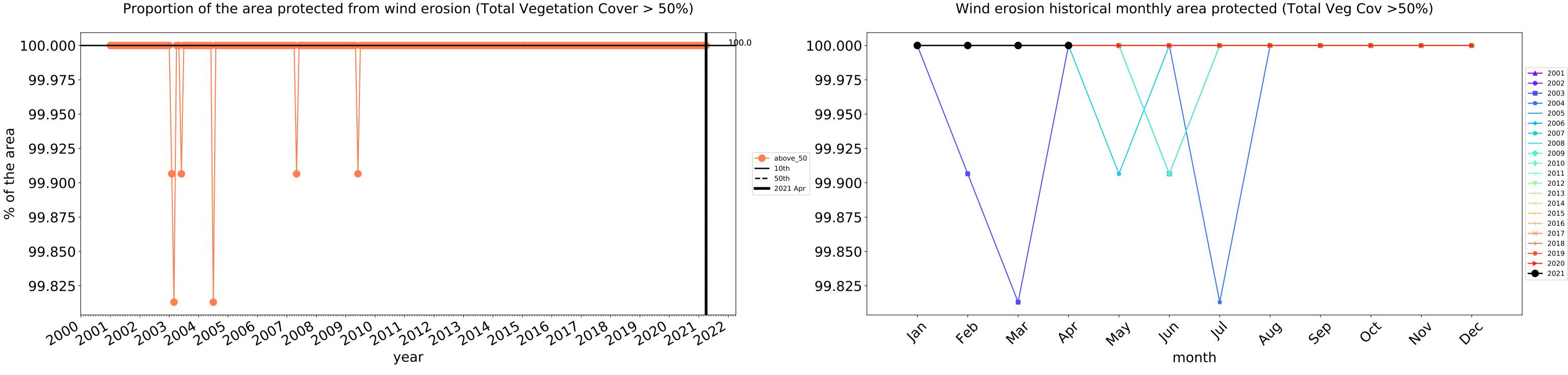


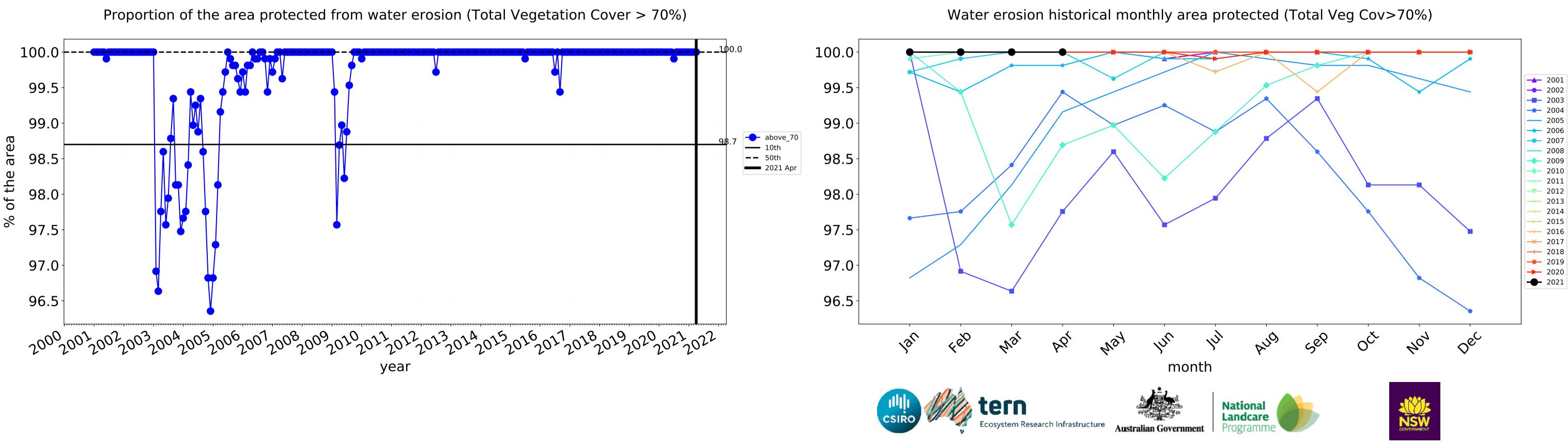
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



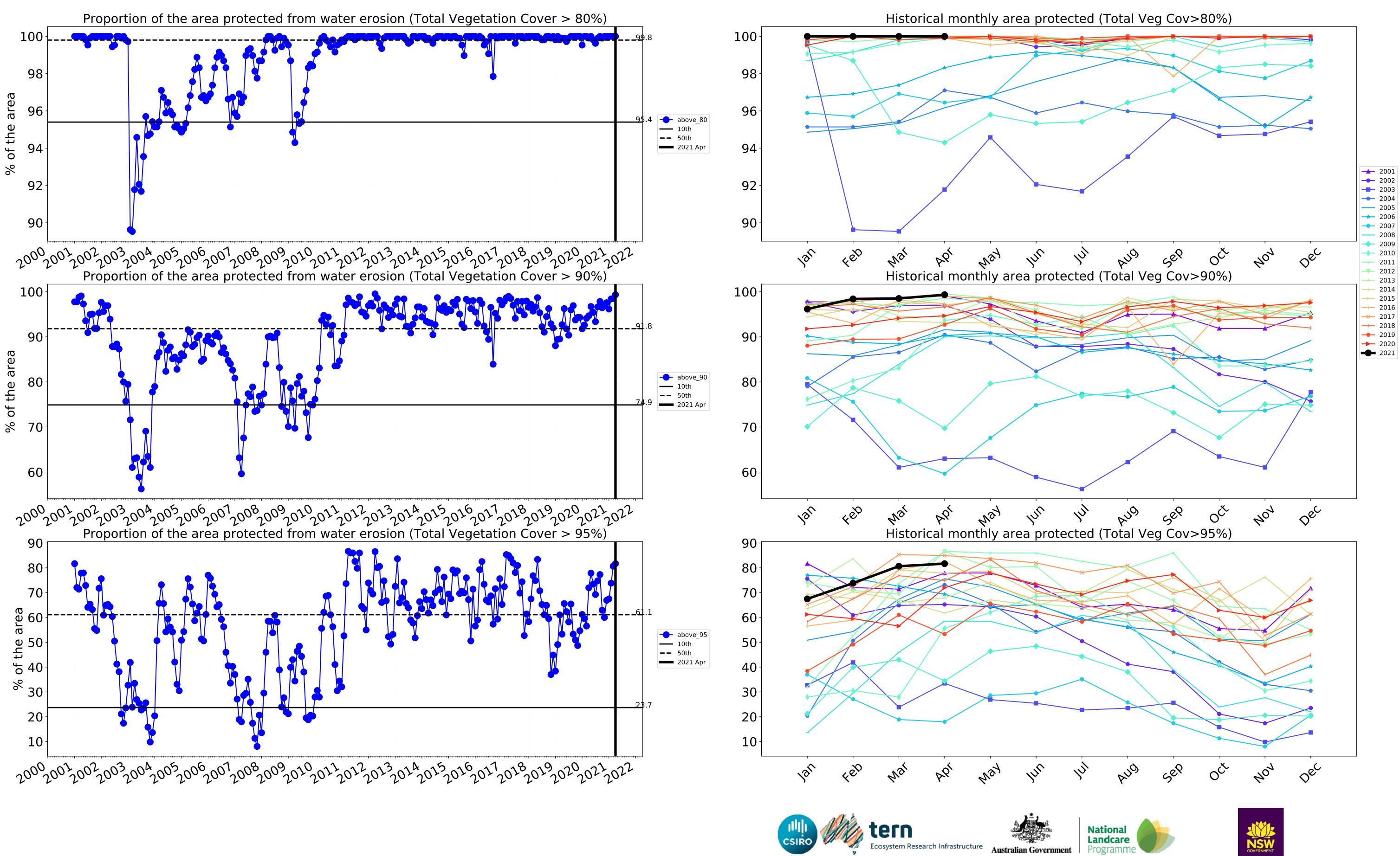








3**9** 





# Indigo\_(S) (202,875 ha and no data 1,001 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	202,875	100.0% 202,875	99.9% 202,750	98.6% 200,125	93.1% 188,875	66.4% 134,800	23.7% 48,025
Conservation and natural environments	24,050	100.0% 24,050	100.0% 24,050	100.0% 24,050	99.6% 23,950	88.5% 21,275	27.5% 6,625
Conservation and natural environments Woodland forest	5,900	100.0% 5,900	100.0% 5,900	100.0% 5,900	100.0% 5,900	81.4% 4,800	10.2% 600
Conservation and natural environments Forest (non woodland)	16,675	100.0% 16,675	100.0% 16,675	100.0% 16,675	100.0% 16,675	93.4% 15,575	35.5% 5,925
Agriculture	133,950	100.0% 133,950	100.0% 133,900	98.2% 131,575	91.0% 121,850	58.3% 78,125	13.3% 17,825
Grazing	115,275	100.0% 115,275	100.0% 115,275	99.0% 114,175	93.5% 107,775	62.8% 72,375	14.6% 16,825
Grazing non forest	105,525	100.0% 105,525	100.0% 105,525	99.0% 104,425	92.9% 98,050	60.1% 63,450	12.4% 13,100
Grazing Woodland forest	2,350	100.0% 2,350	100.0% 2,350	100.0% 2,350	98.9% 2,325	85.1% 2,000	13.8% 325
Grazing - Forest (non woodland)	7,400	100.0% 7,400	100.0% 7,400	100.0% 7,400	100.0% 7,400	93.6% 6,925	45.9% 3,400
Cropping	6,625	100.0% 6,625	99.2% 6,575	82.3% 5,450	52.1% 3,450	16.2% 1,075	3.4% 225
Horticulture	3,900	100.0% 3,900	100.0% 3,900	98.7% 3,850	84.6% 3,300	40.4% 1,575	10.3% 400
Irrigation	8,150	100.0% 8,150	100.0% 8,150	99.4% 8,100	89.9% 7,325	38.0% 3,100	4.6% 375
Production native forests and plantation forests	26,750	100.0% 26,750	100.0% 26,750	100.0% 26,750	100.0% 26,750	99.3% 26,575	81.7% 21,850

