Total vegetation cover soil protection **Region:NRM Hunter NSW**

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:

Date: April 2013

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

The total vegetation cover indicates where soil is likely to be protected from wind and or water hillslope erosion. Total vegetation cover for this month is shown on a map and chart classified into 4 classes.

- 71-100% High cover protected from wind and usually water erosion (high rainfall, steep slopes, and erodible soils may need greater than 80, 90, 95 and up to 100% cover)
 - 51-70% Moderate cover protected from wind erosion
 - 31-50% Low cover not protected
 - 0-30% Very Low cover not protected

Erosion protection: Wind erosion 50% total vegetation cover

The vegetation cover threshold required to prevent soil erosion is usually 50% to reduce wind erosion, 70% or 80% to reduce water (hillslope) erosion depending on the steepness and rainfall. Areas protected from erosion for the month:

- Map: water erosion protection (>70% cover) percentage area and hectares.
- Map: wind erosion protection (>50% cover) percentage area and hectares.

Comparison with previous years:

- Map: anomaly comparing this month to the average cover from the same month in previous years.
- Map: deciles rank of month against the same month in previous years.

Anomalies and deciles until September 2019 are calculated comparing to the same months 2001 to 2019. Extra monthly data will be used to calculate anomalies and deciles post September 2019 as they become available. Time series monthly from January 2001 to current:

Erosion protection

- Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month (orange lines). Horizontal lines are 10th (cover target) and 50th percentiles.
- Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month (blue line). Horizontal lines are 10th (cover target) and 50th percentiles.

Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data.

Water erosion protection for higher rainfall and steeper slopes:

Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion. The thresholds reported are:

- the percentage area with pixels greater than 80% total cover.
- the percentage area with pixels greater than 90% total cover.
- the percentage area with pixels greater than 95% total cover.

Acknowledgment of data:

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

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











Vegetation Cover Apr 2013

10 Agriculture - Horticulture - Non-irrigated

12 Production native forests and plantation

11 Agriculture - Horticulture - Irrigated

13 Other uses

Land use and forest cover Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments -2 Conservation and natural environments -Catchment Scale Land Use and Forests 3 Conservation and natural environments -Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest Catchment Scale Land 6 Agriculture - Grazing - Non-woodland forest 7 Agriculture - Grazing - Irrigated (2018) and Forests of Australia (2018) 8 Agriculture - Cropping - Non-irrigated 9 Agriculture - Cropping - Irrigated

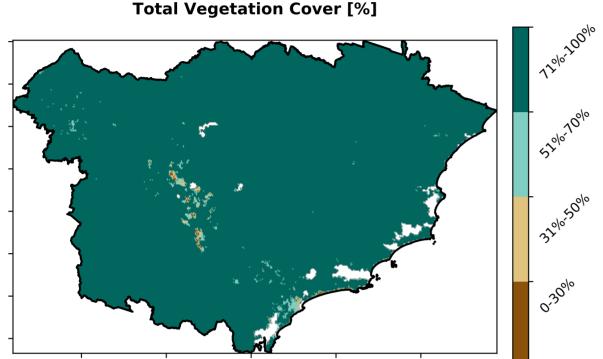
36.9% 35 30 -25 20 15 10

Proportion of each land class in area

of Australia (2018)

Derived from

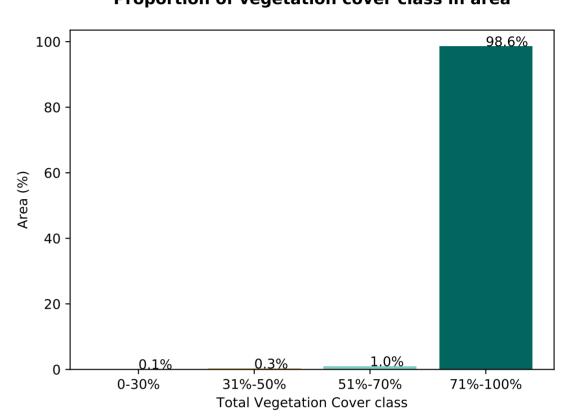
Use of Australia

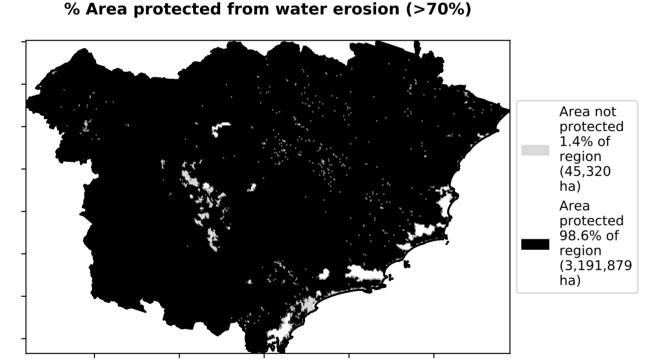


Proportion of vegetation cover class in area

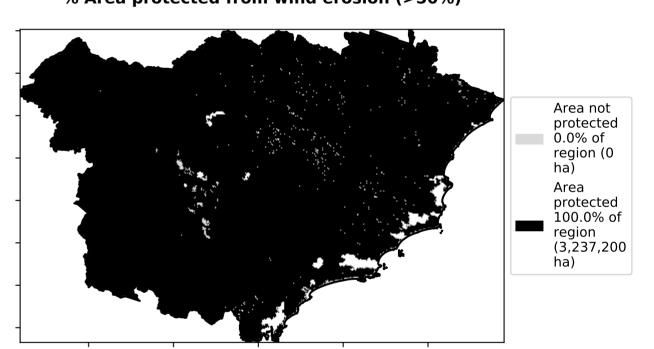
Land use class

10 11 12 13

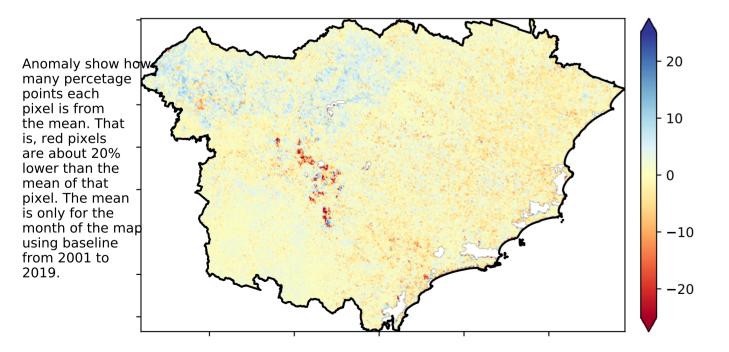




% Area protected from wind erosion (>50%)

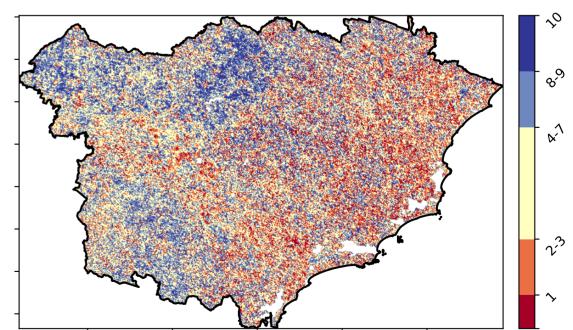


Total Vegetation Cover Anomaly [%]



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 [%]





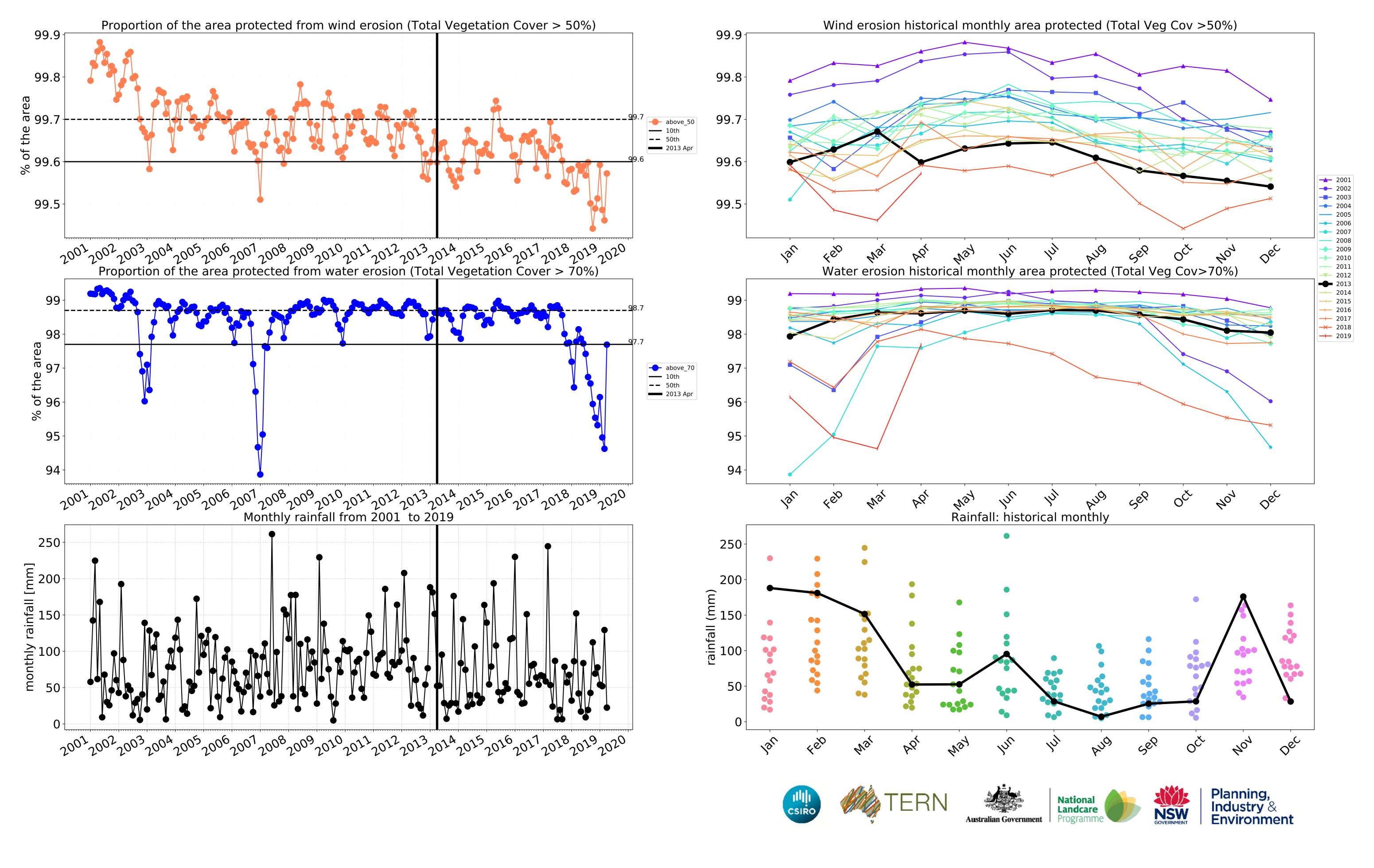


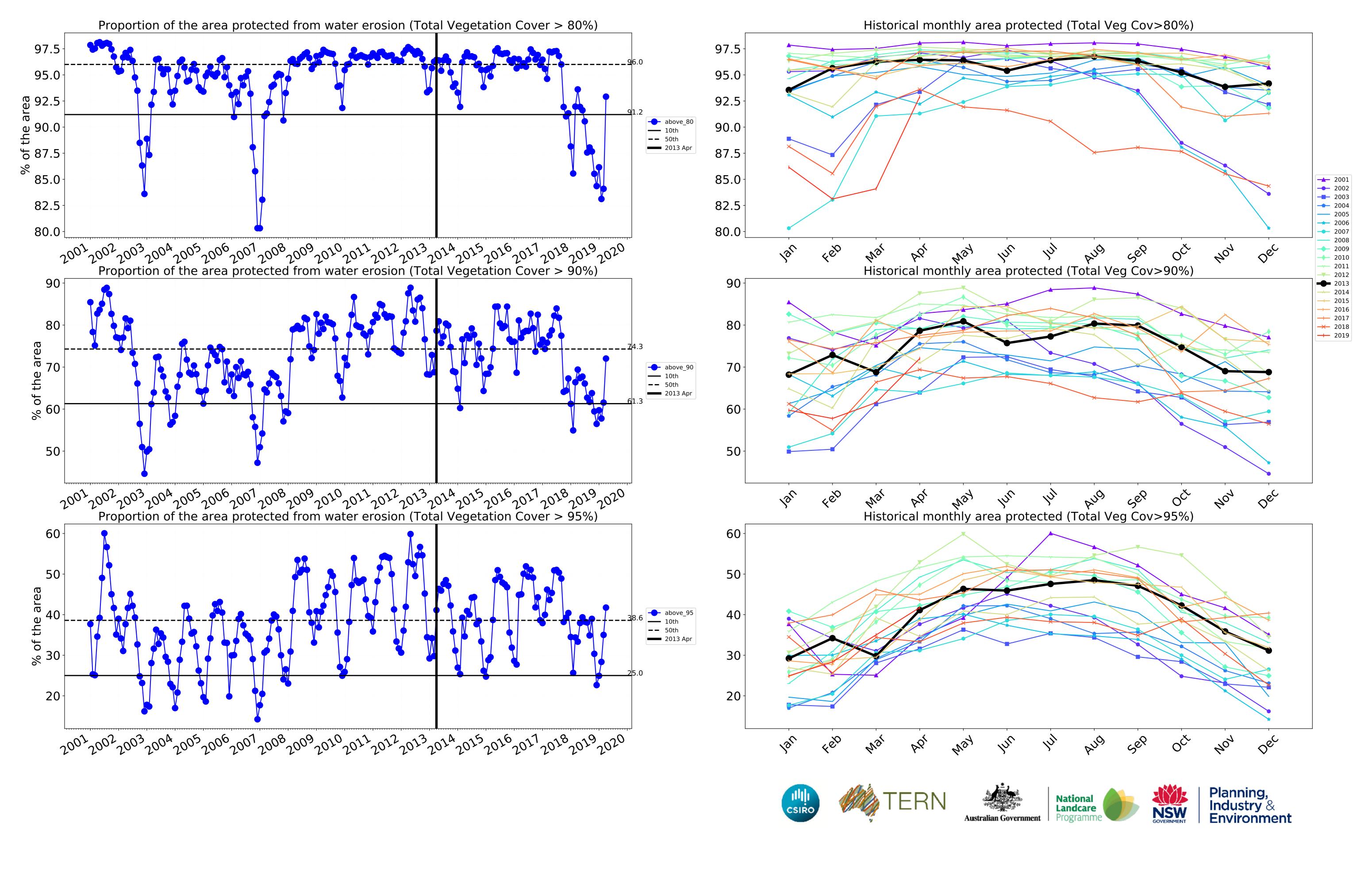






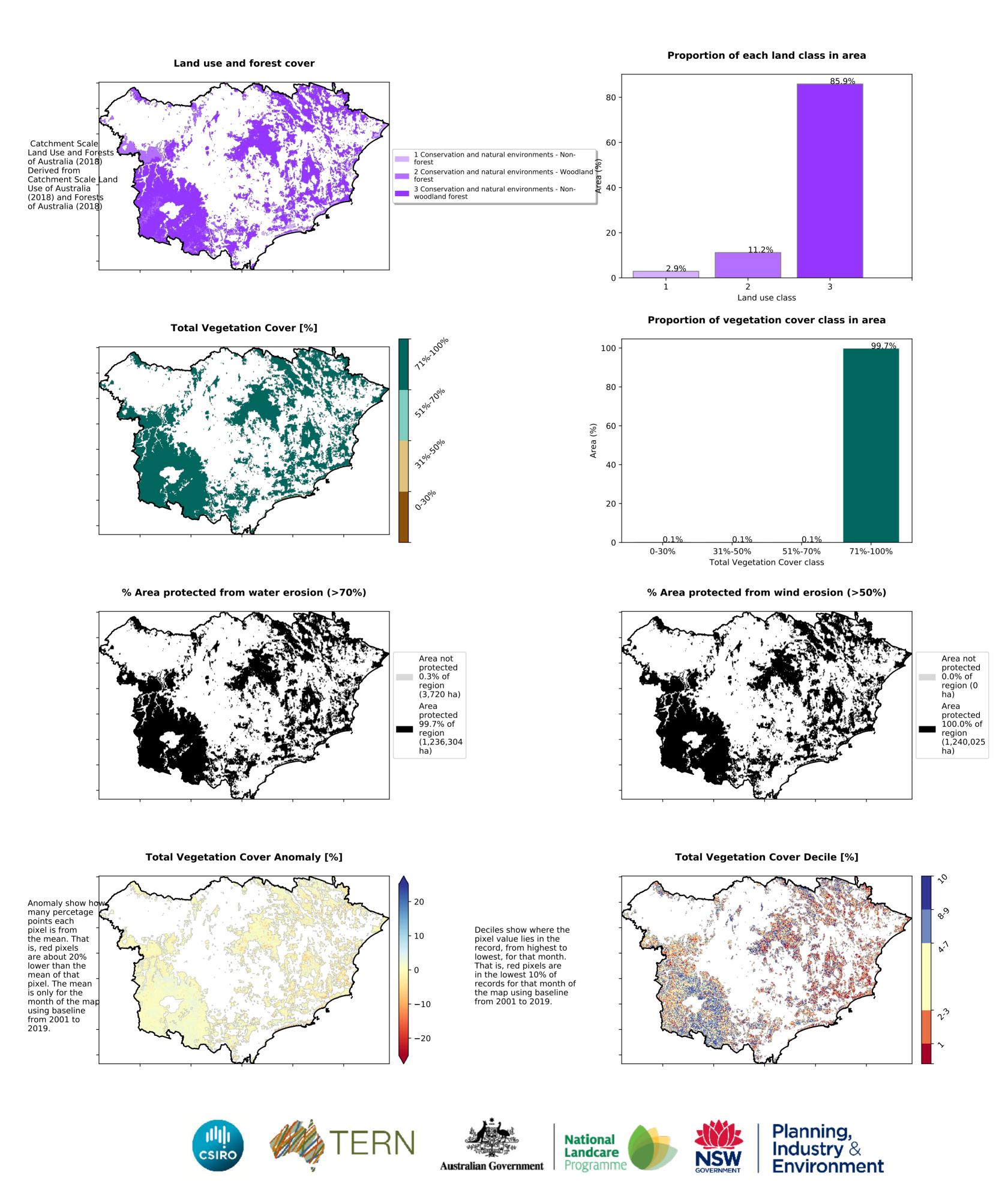




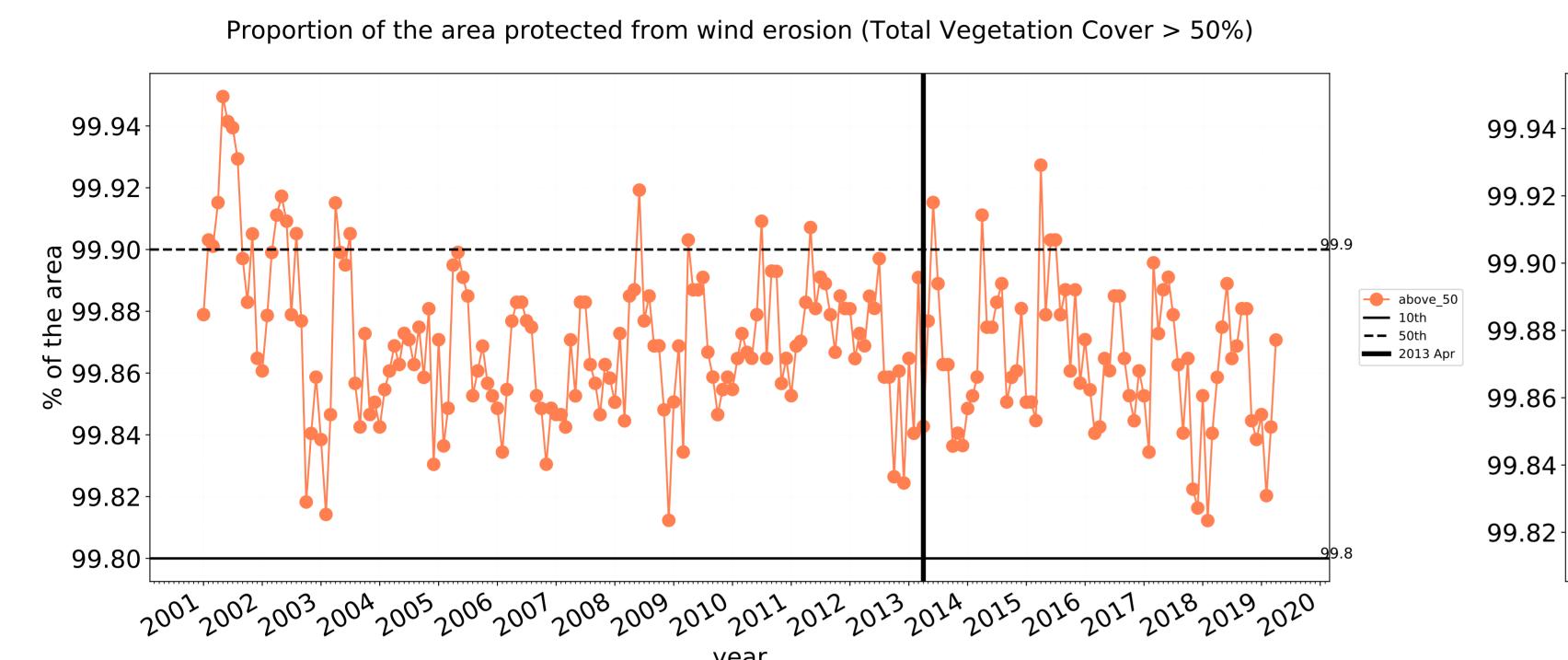


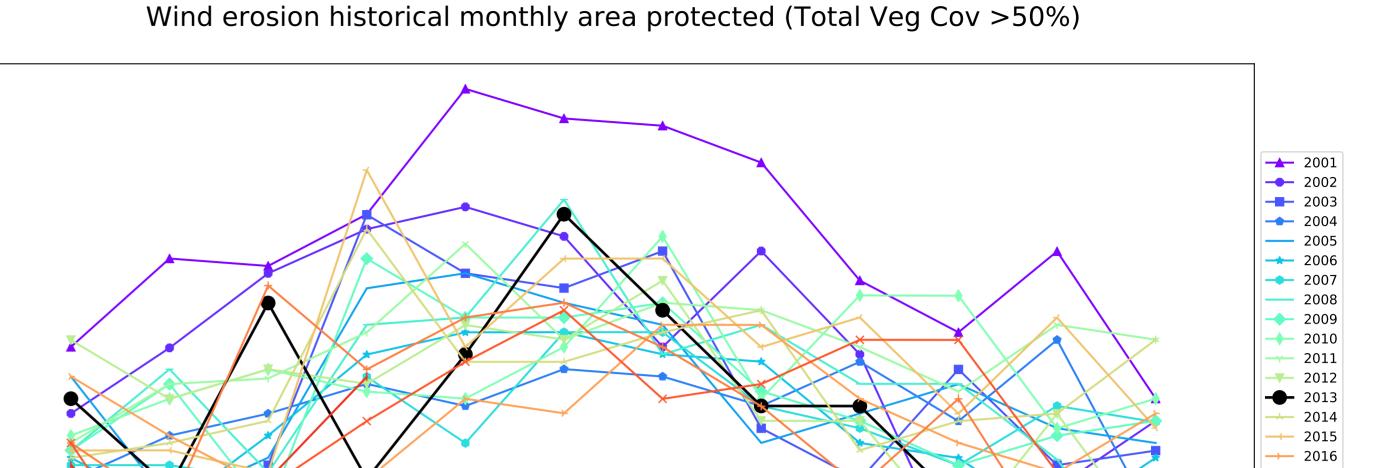
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Conservation and natural environments



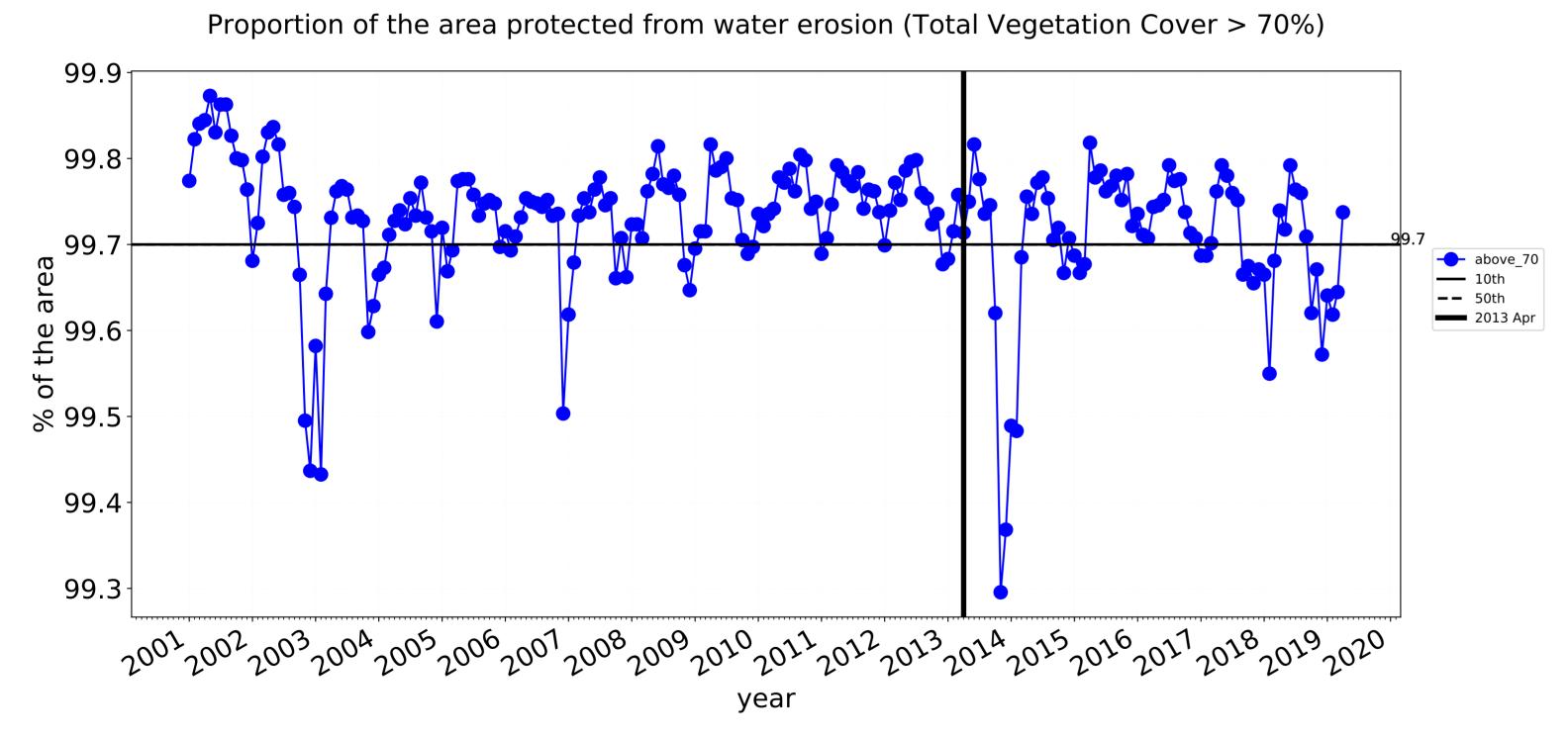
Conservation and natural environments timeseries

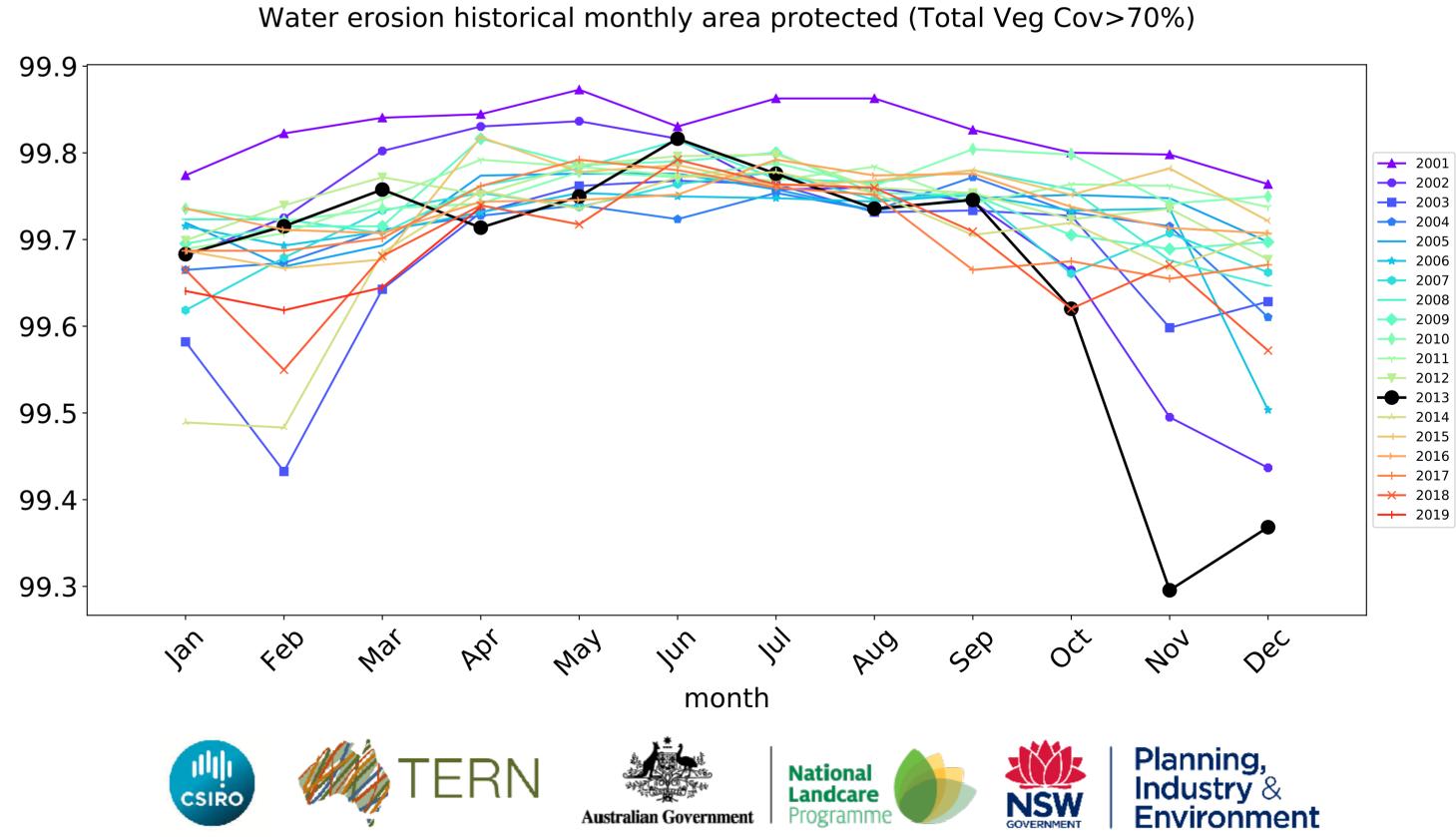




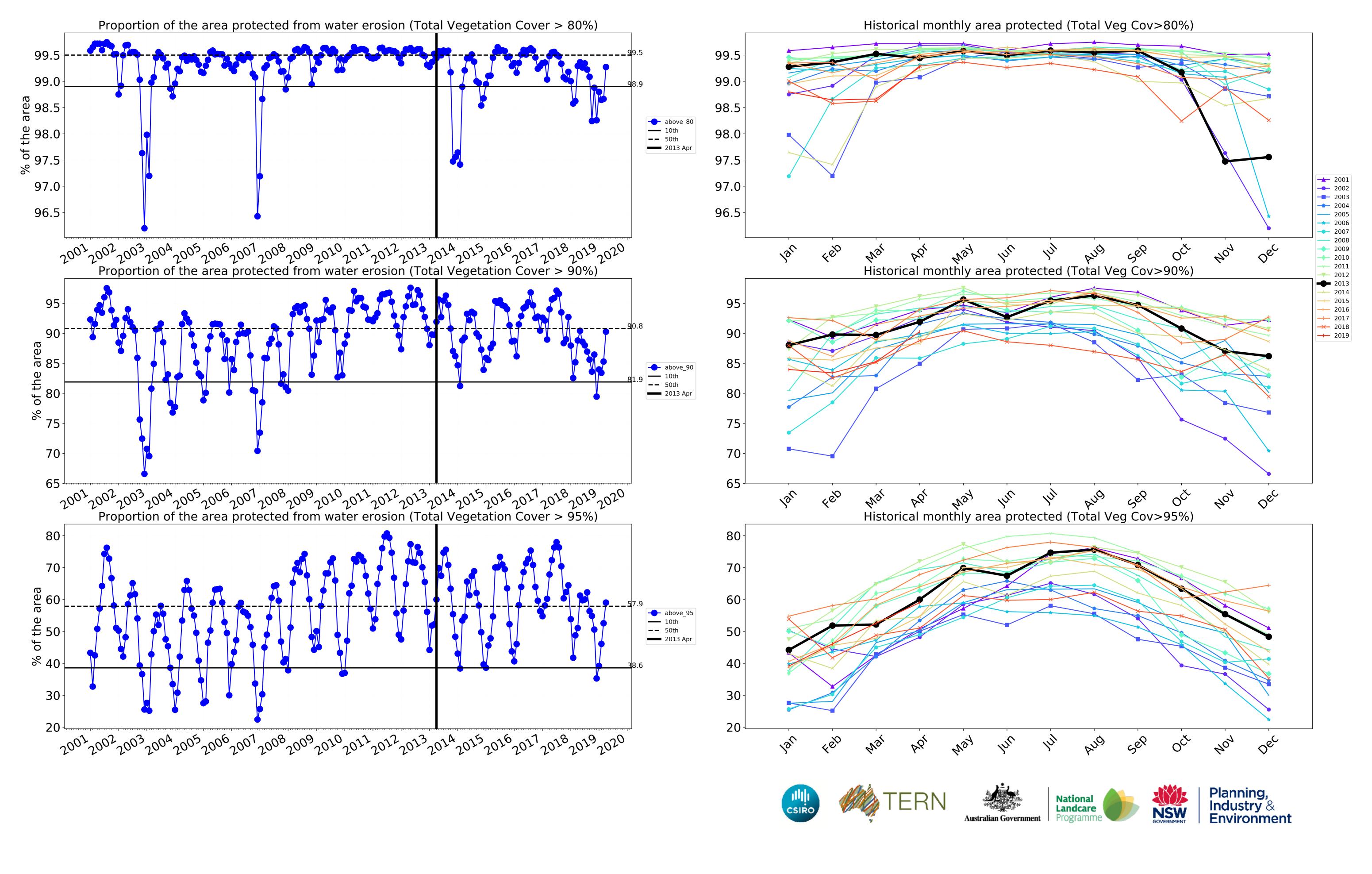
---- 2017

→ 2018
→ 2019

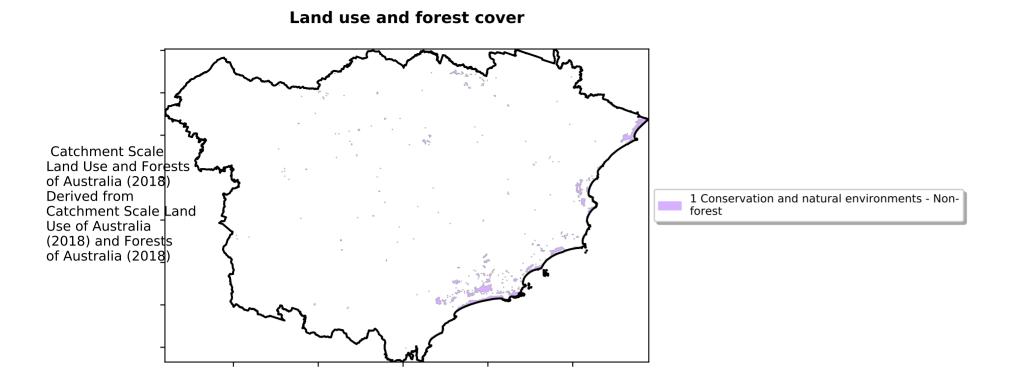




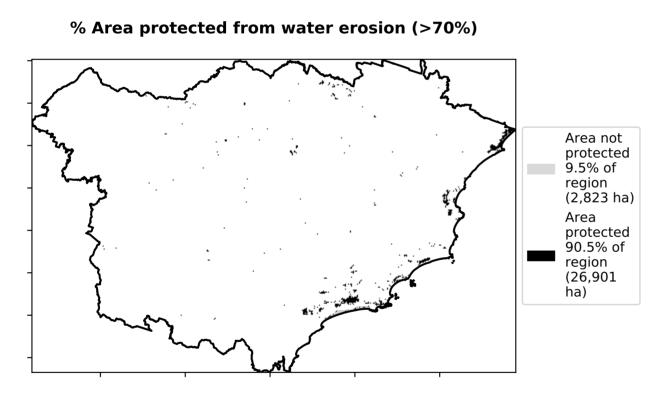
month

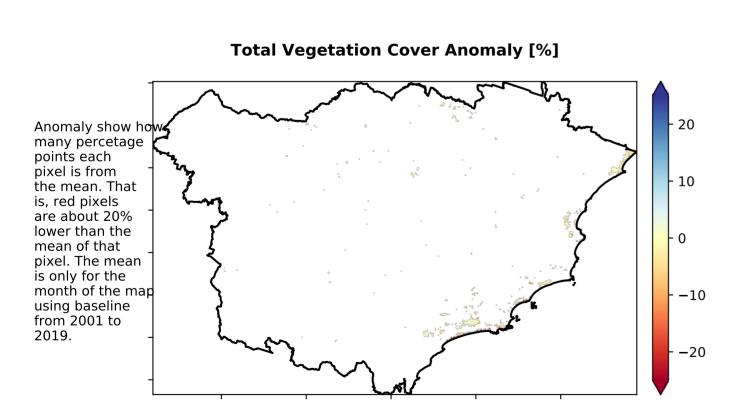


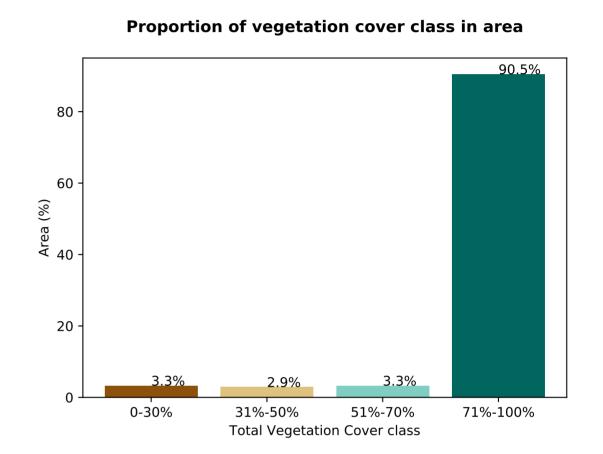
Conservation and natural environments non forest

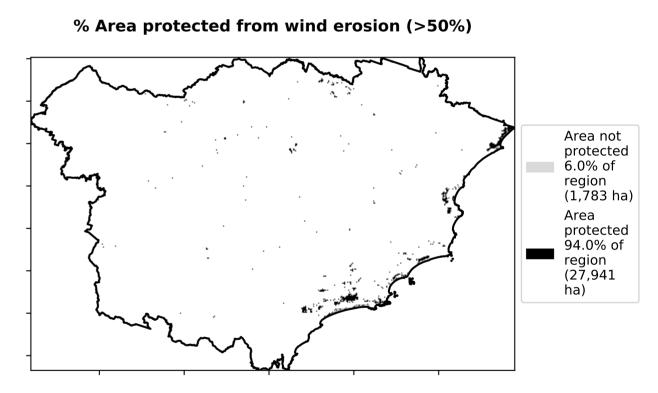


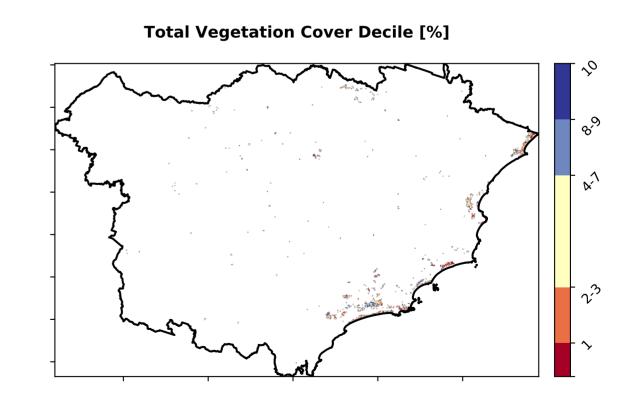
Total Vegetation Cover [%] Talestage Tales

















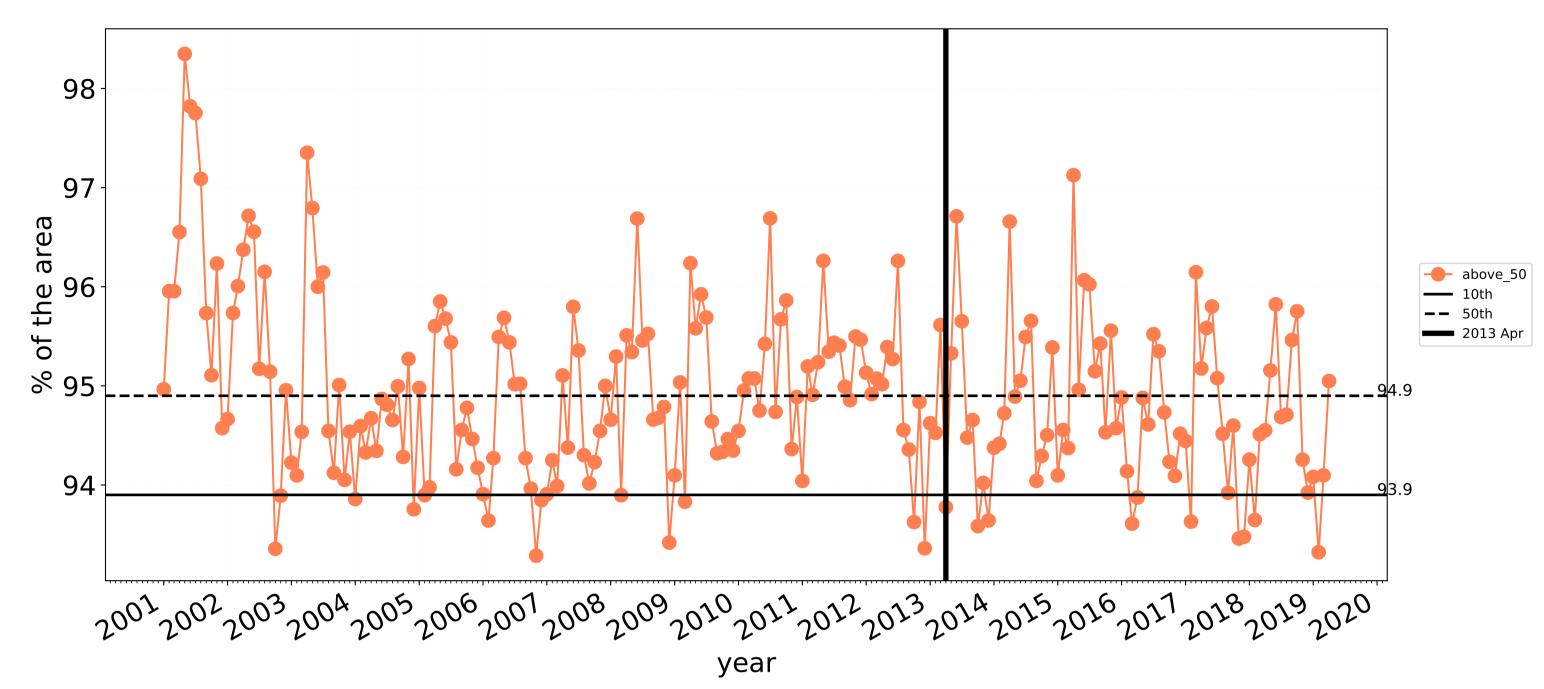




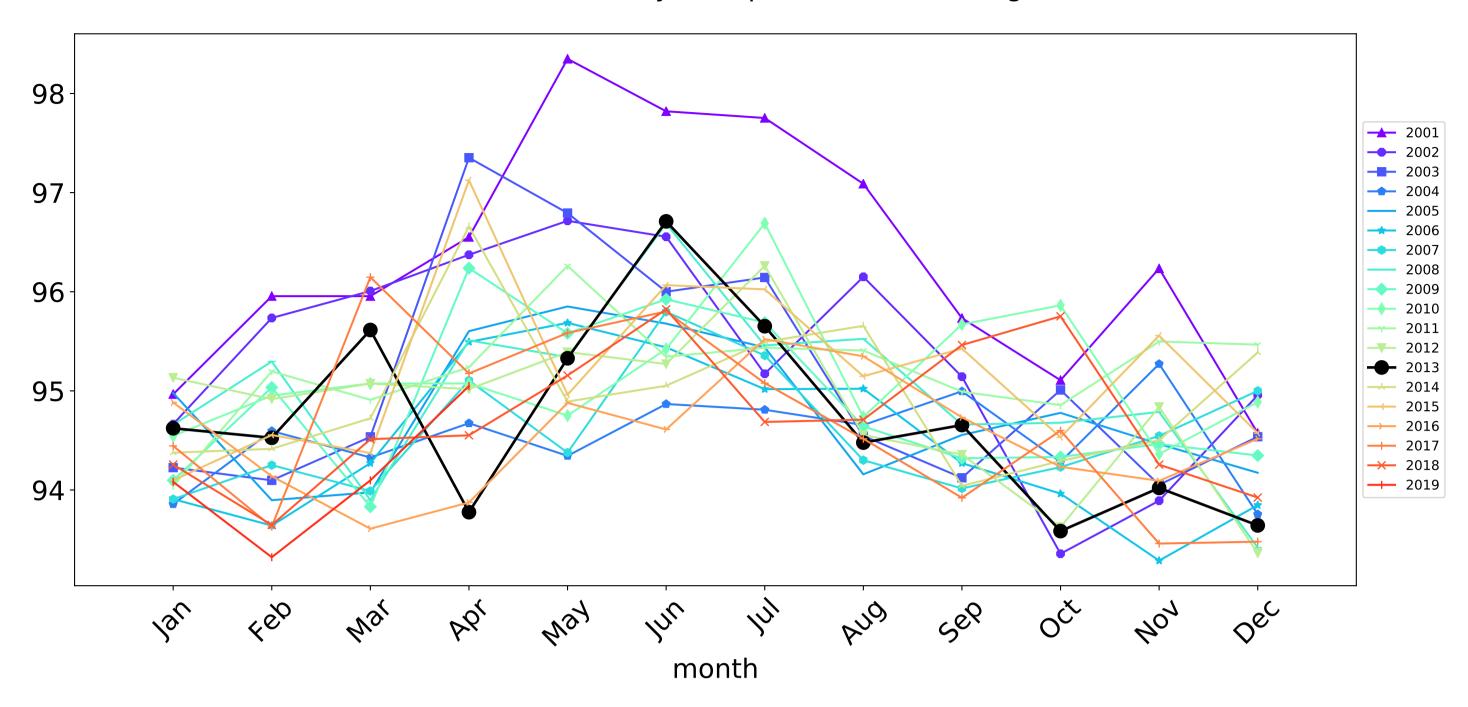


Conservation and natural environments non forest timeseries

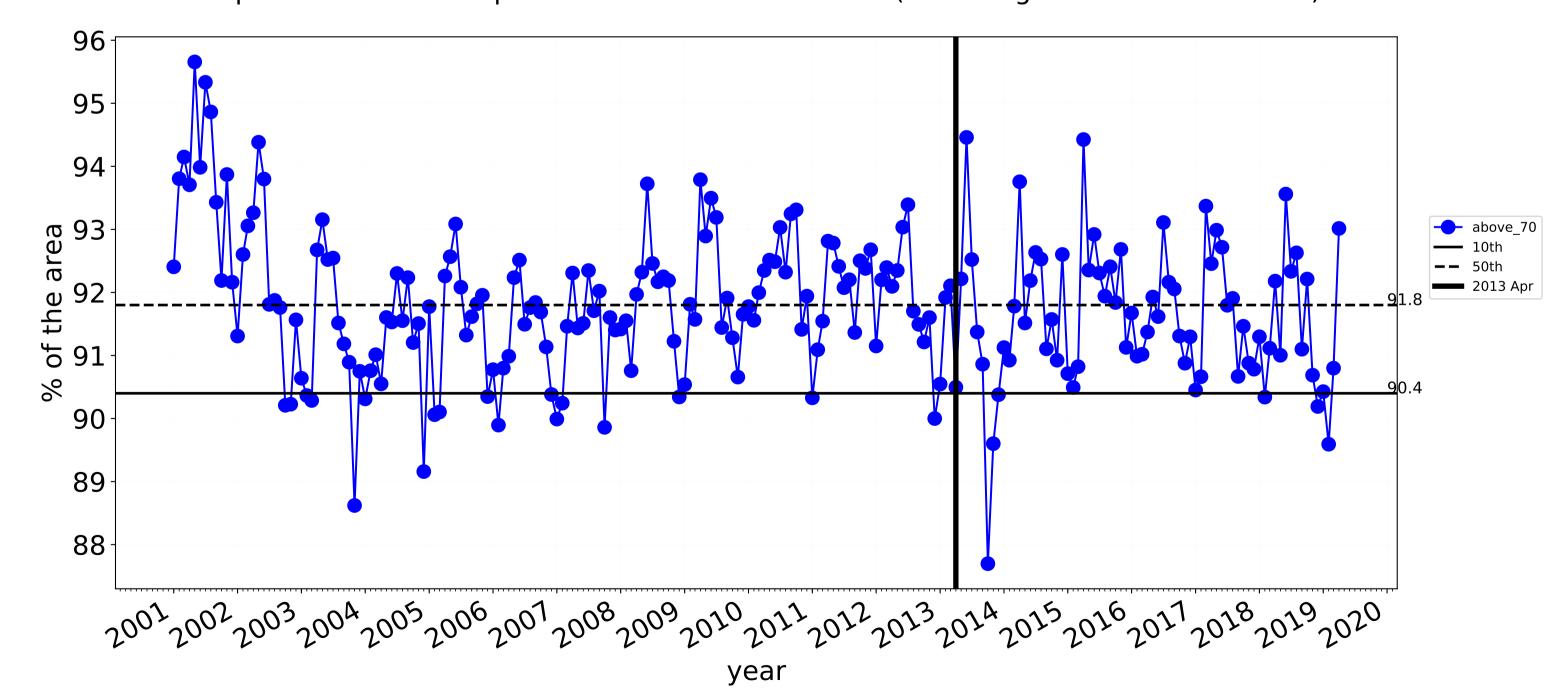




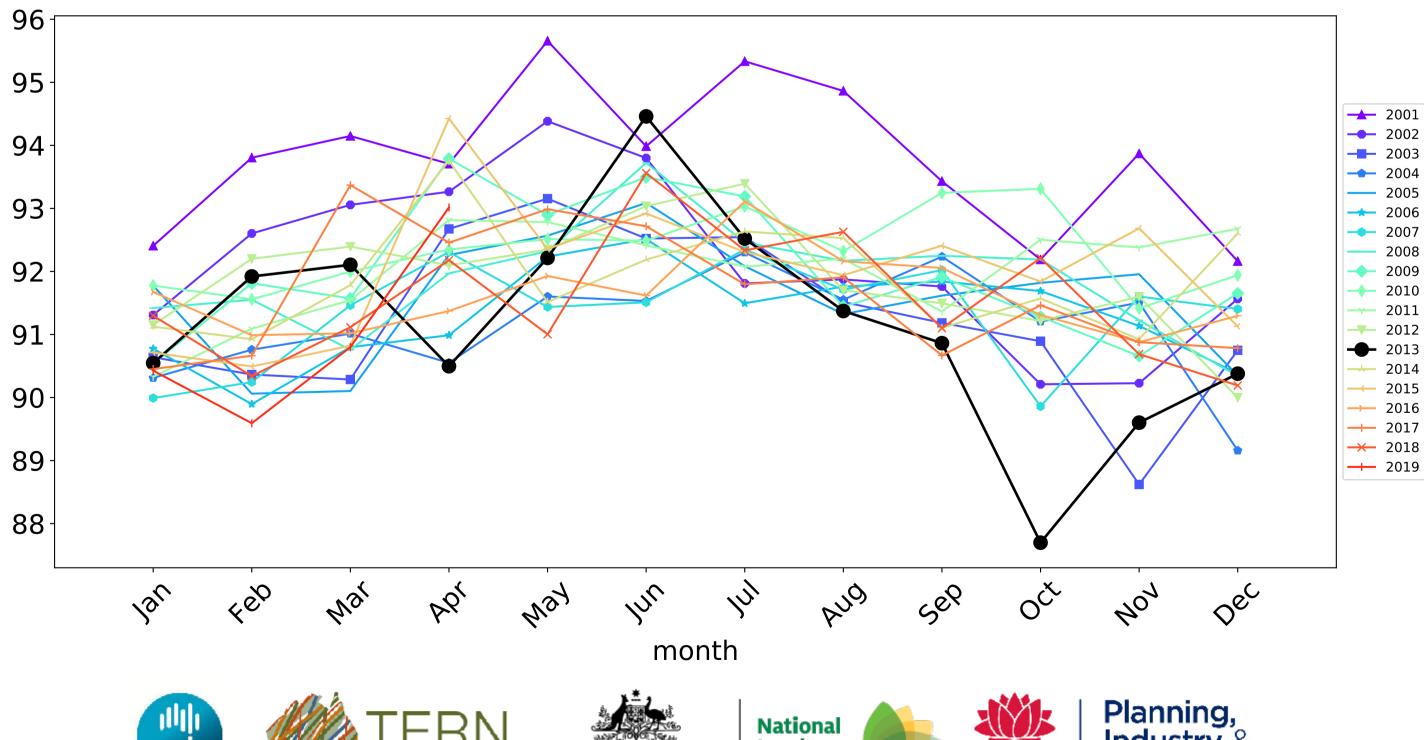
Wind erosion historical monthly area protected (Total Veg Cov >50%)



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



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





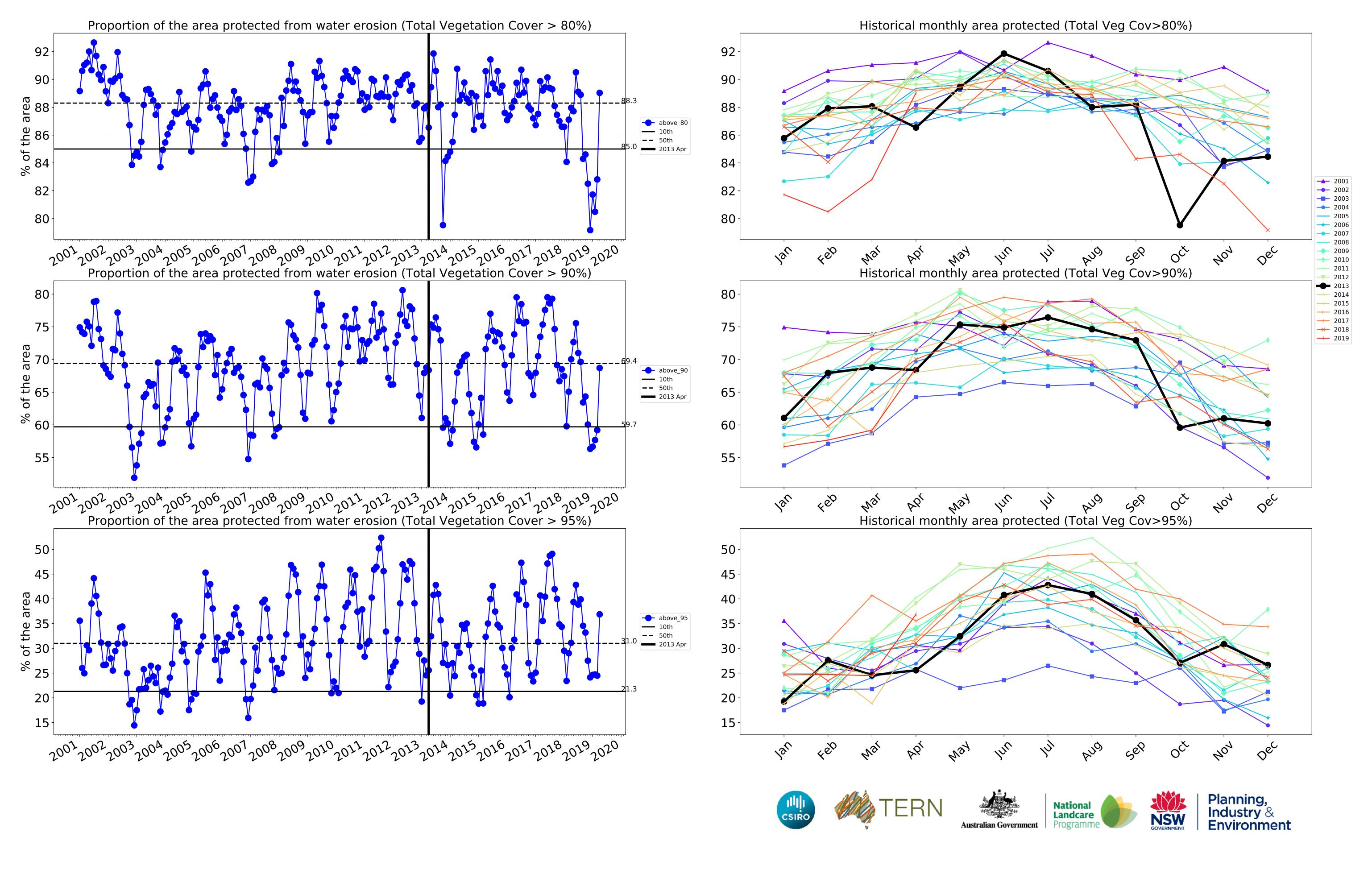




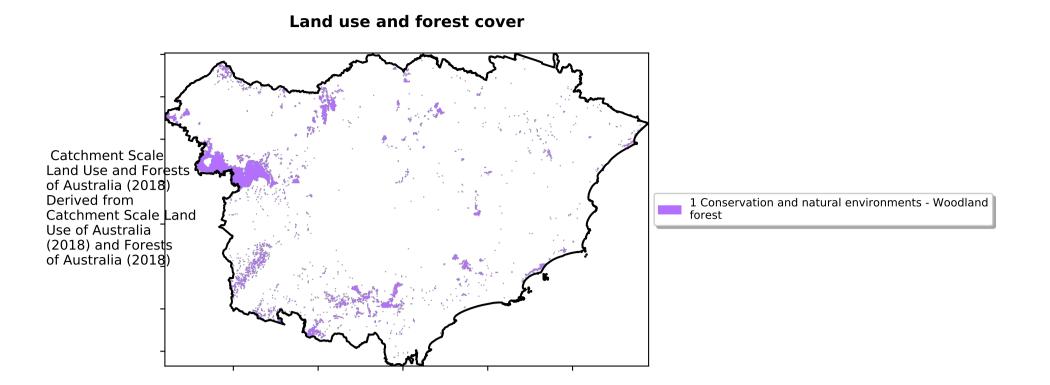




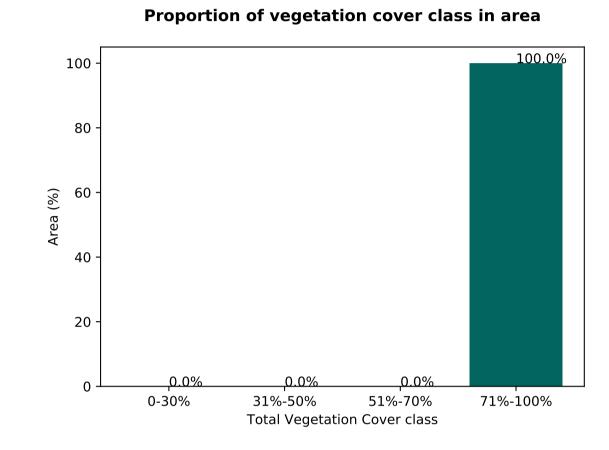


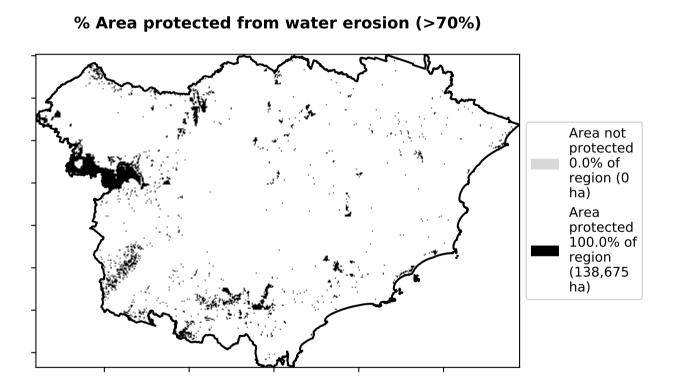


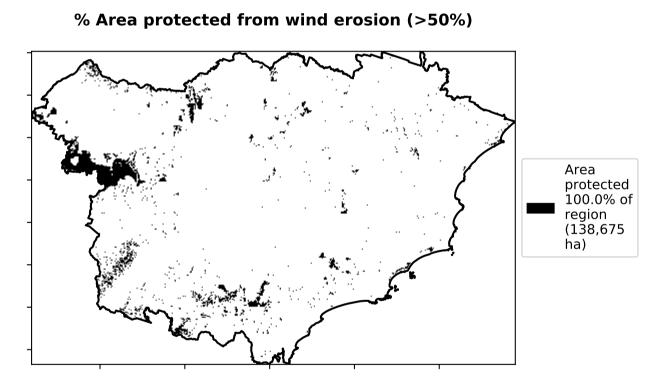
Conservation and natural environments Woodland forest

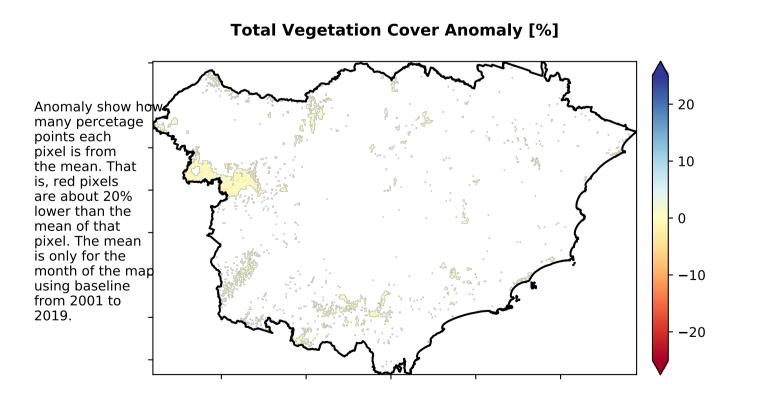


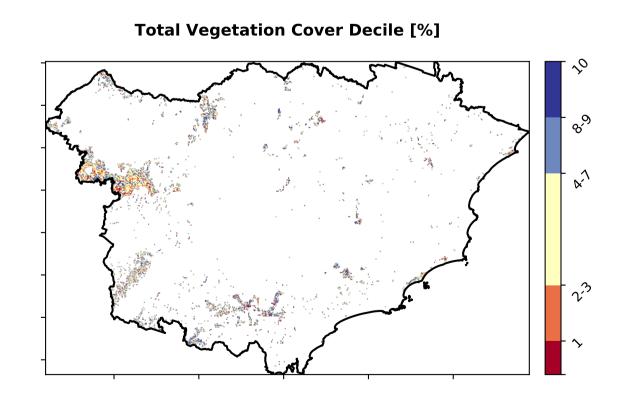
Total Vegetation Cover [%]















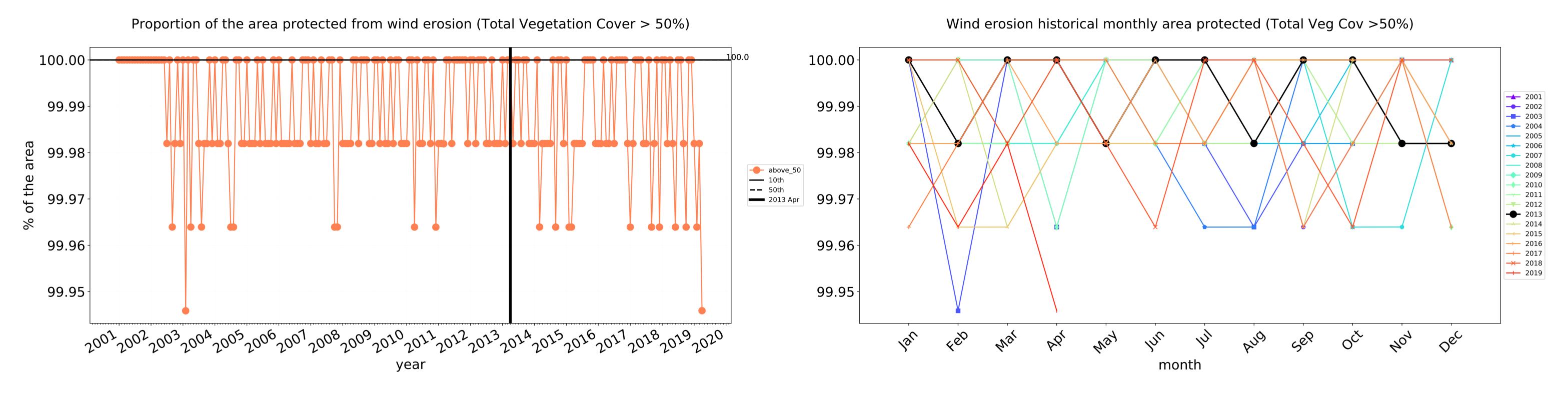


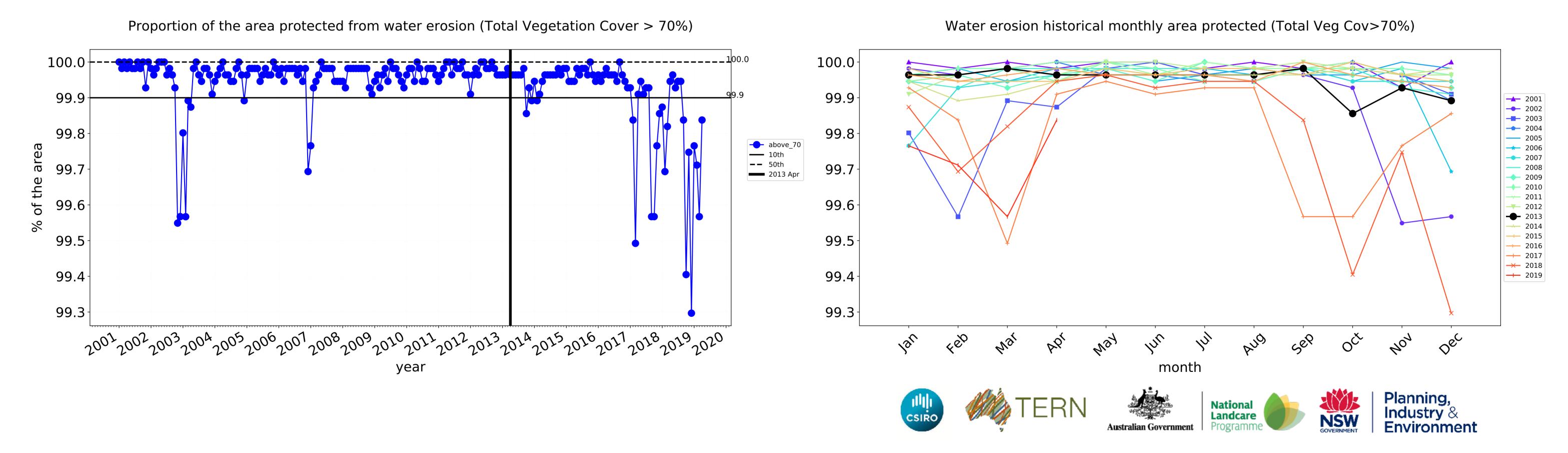


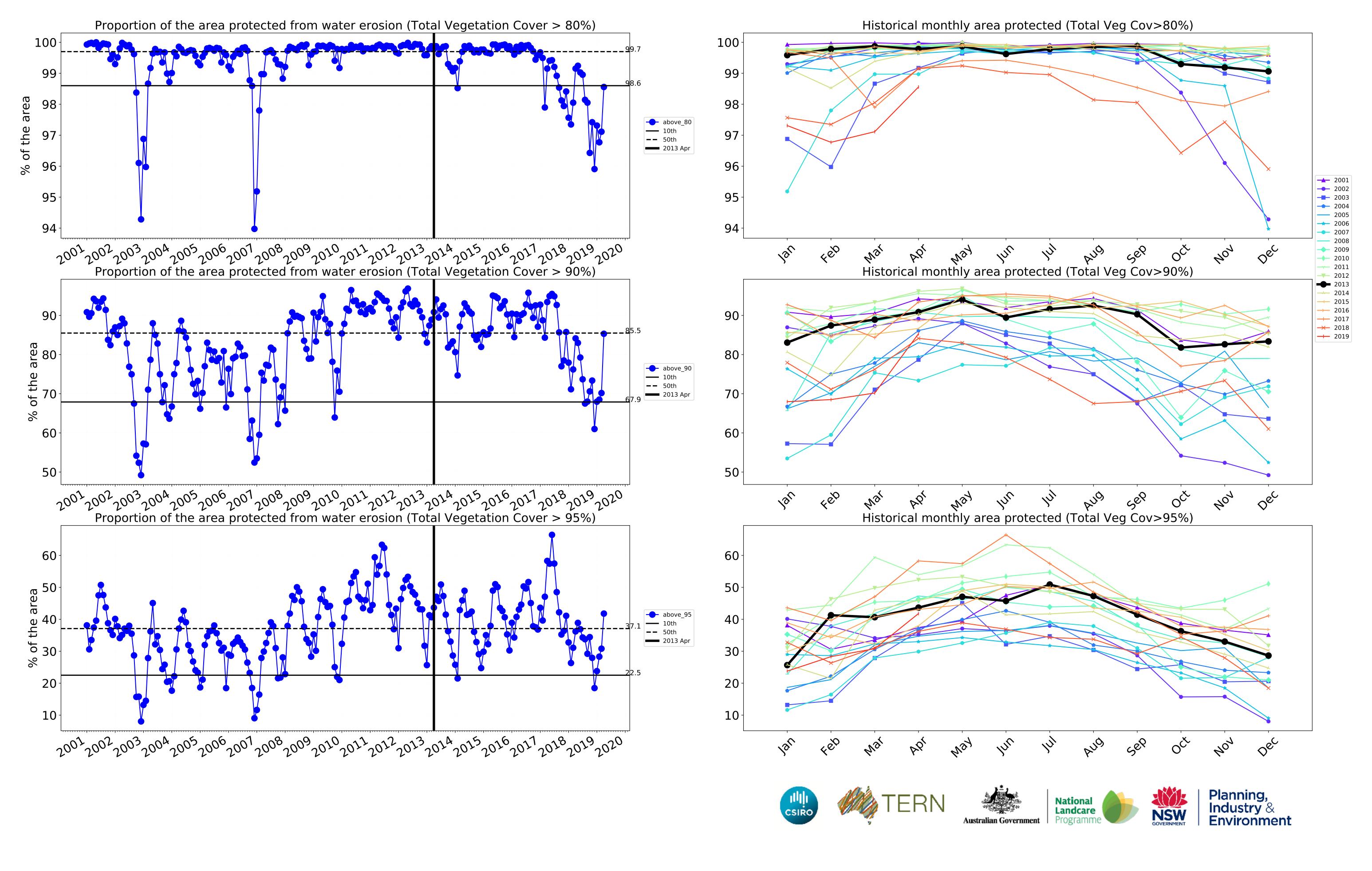




Conservation and natural environments Woodland forest timeseries

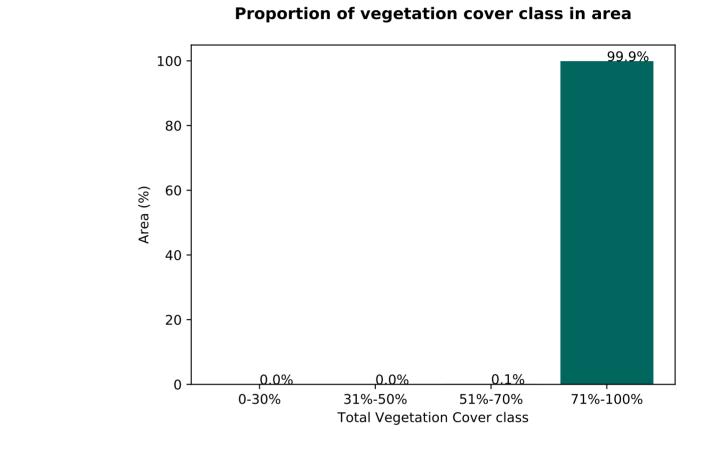


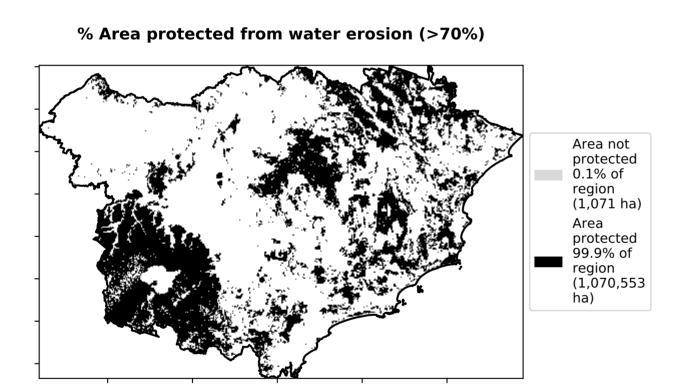


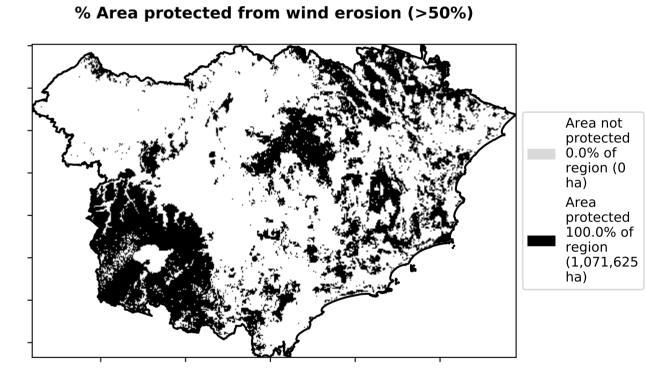


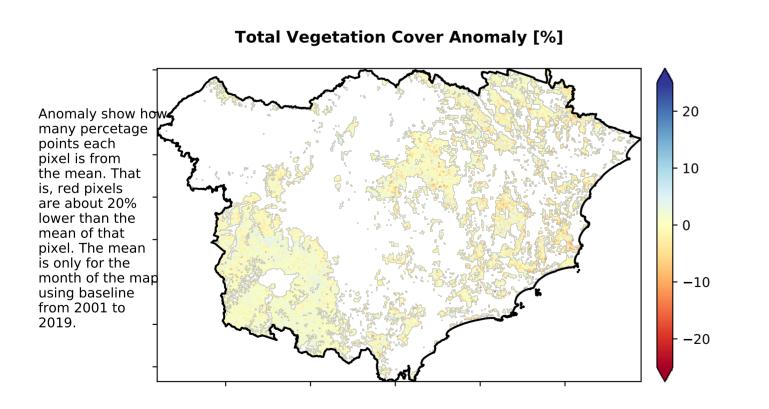
Conservation and natural environments Forest (non woodland)

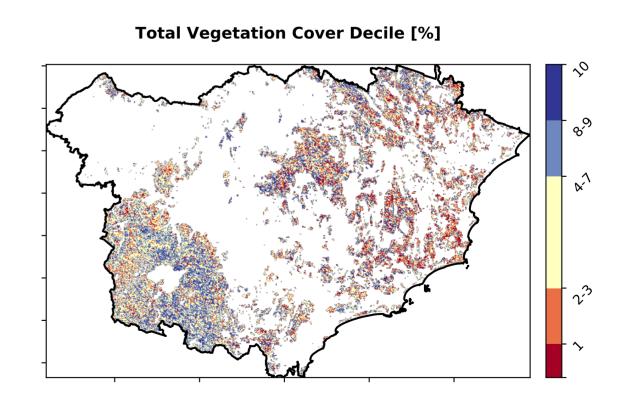
Total Vegetation Cover [%] Total Vegetation Cover [%] Total Vegetation Cover [%]















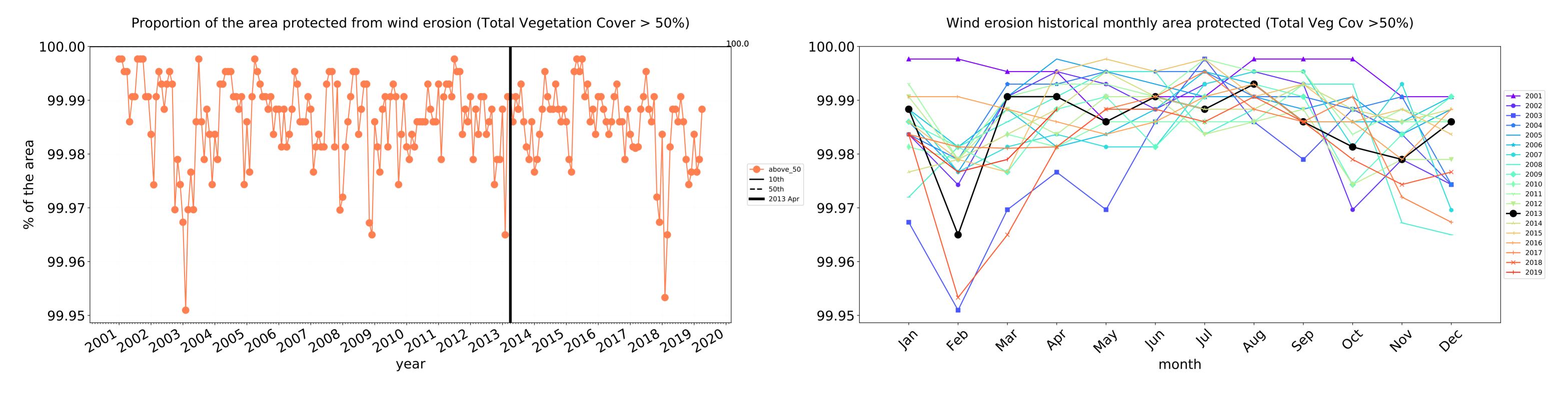


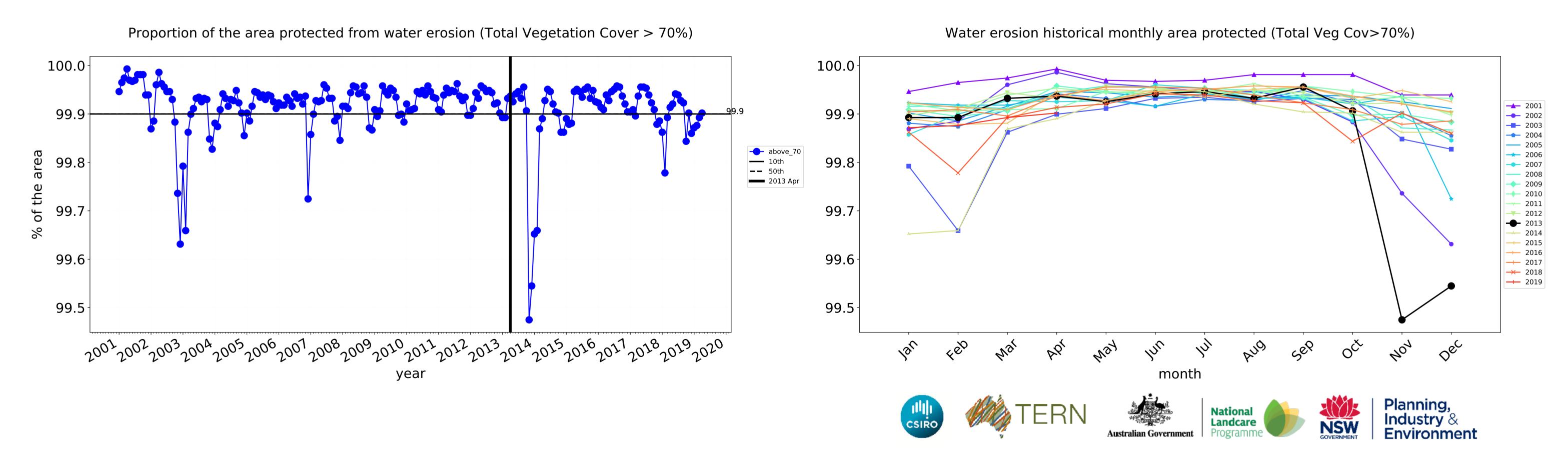


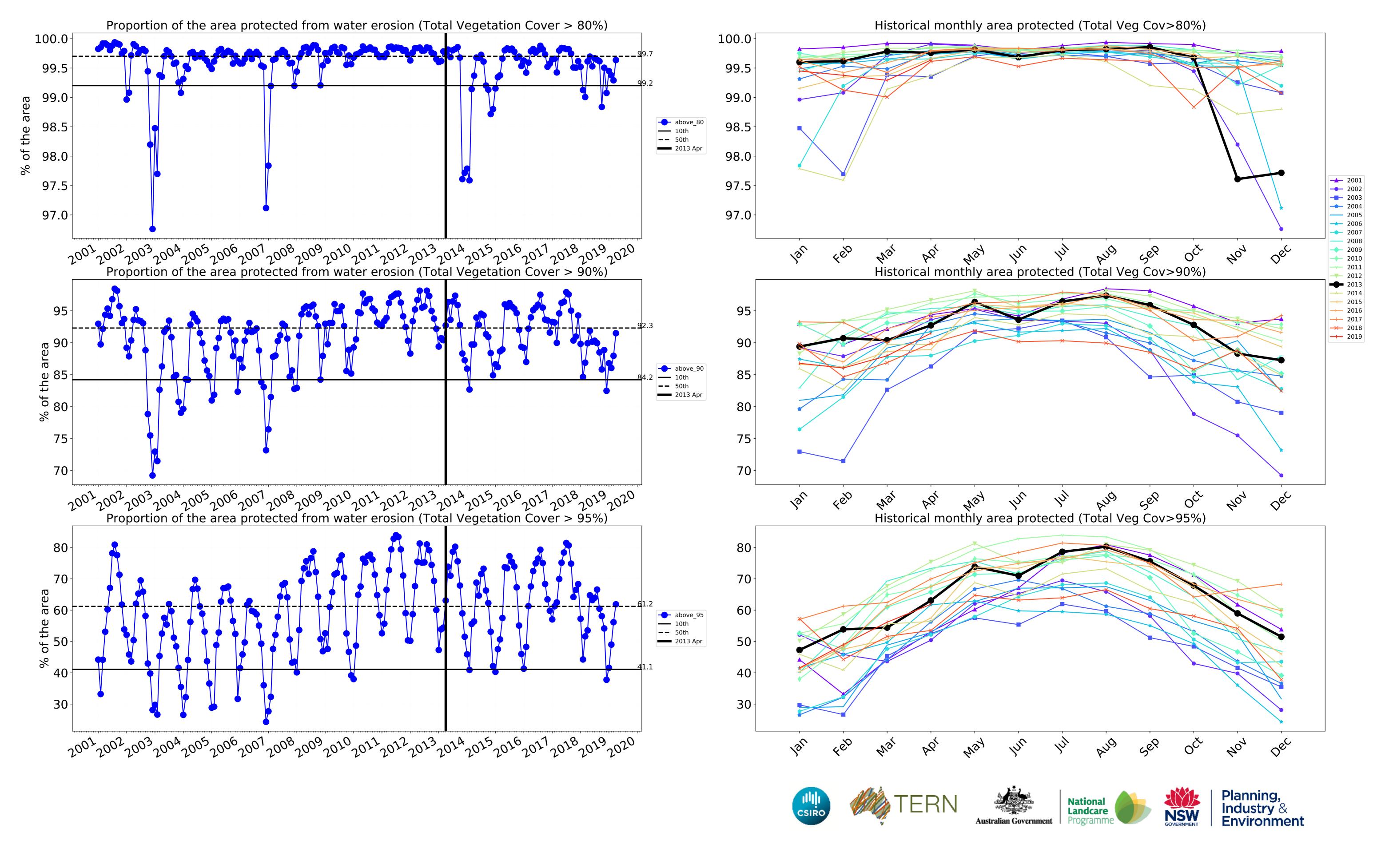




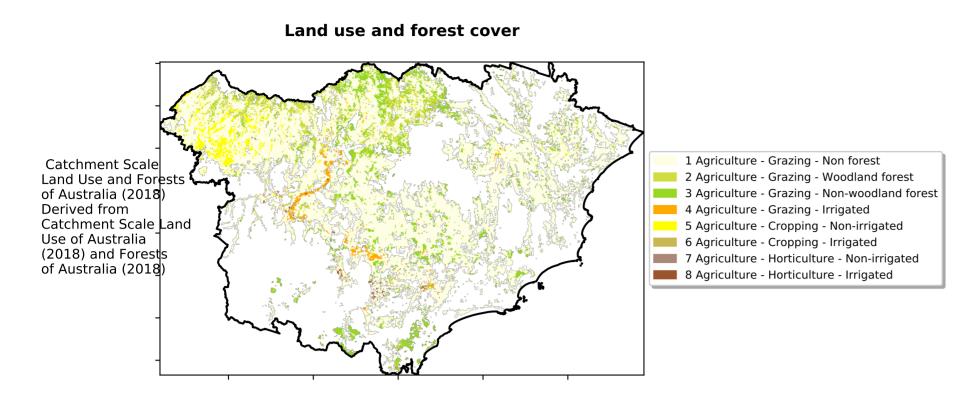
Conservation and natural environments Forest (non woodland) timeseries





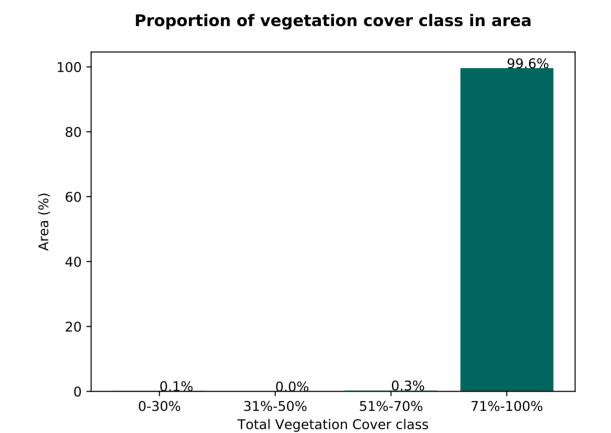


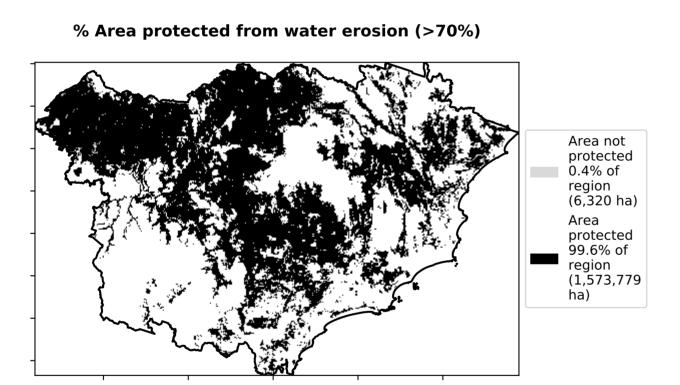
Agriculture

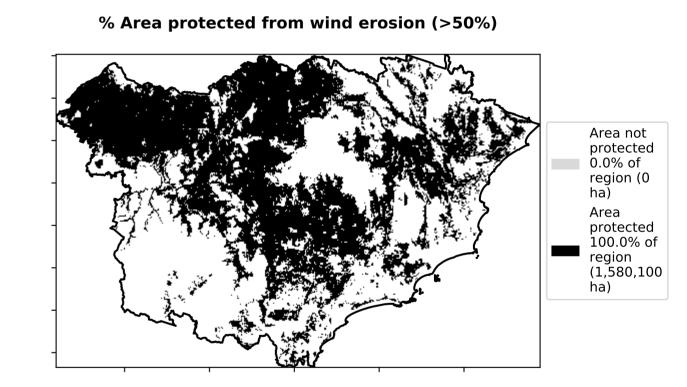


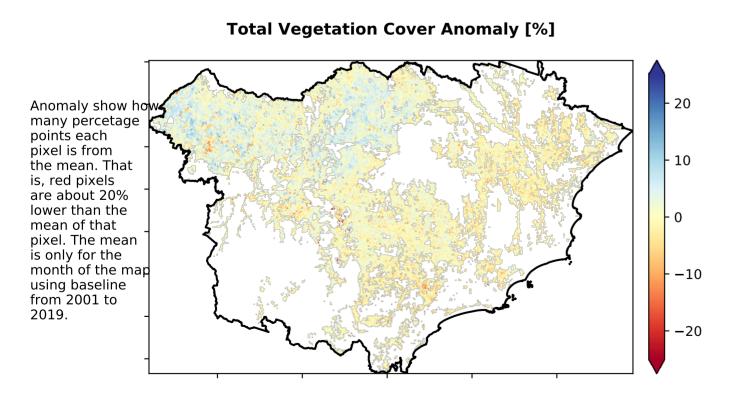


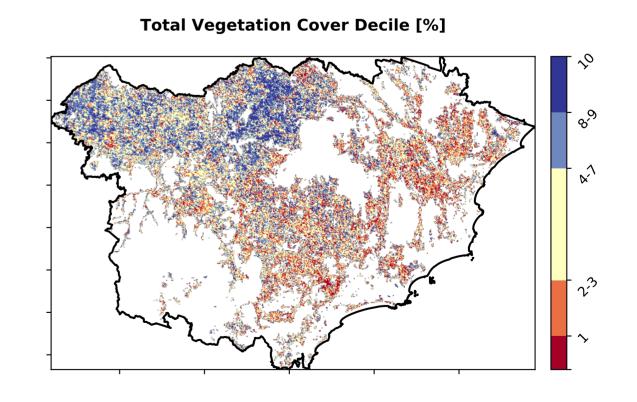
Total Vegetation Cover [%] Tiple Ludolo Ti















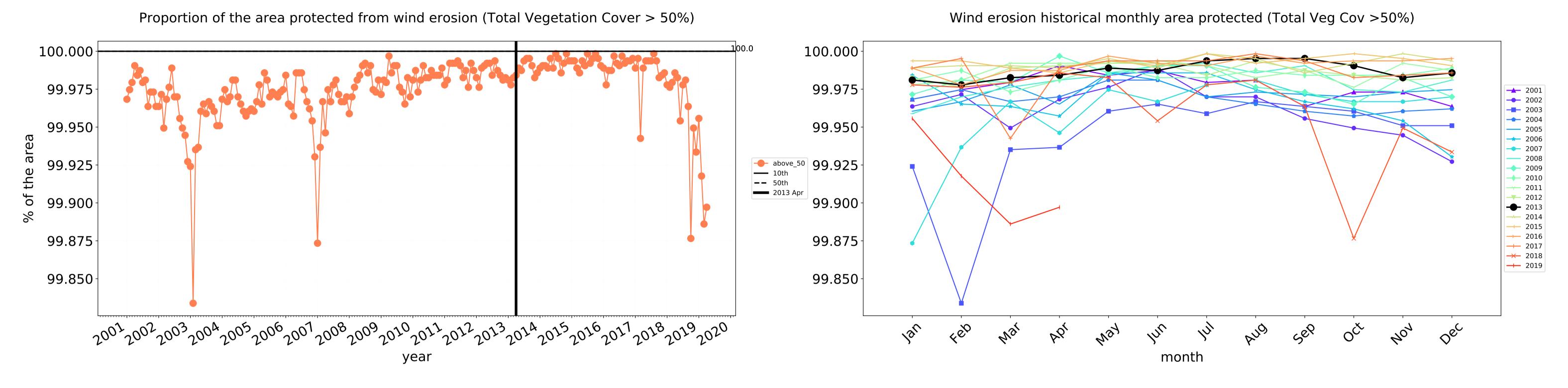


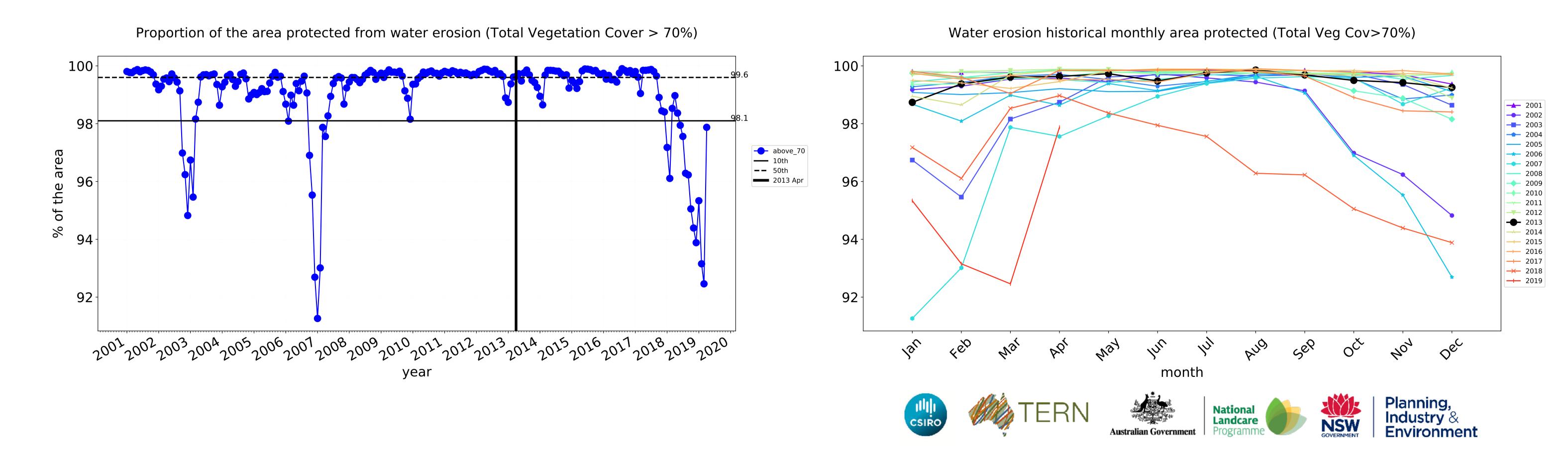


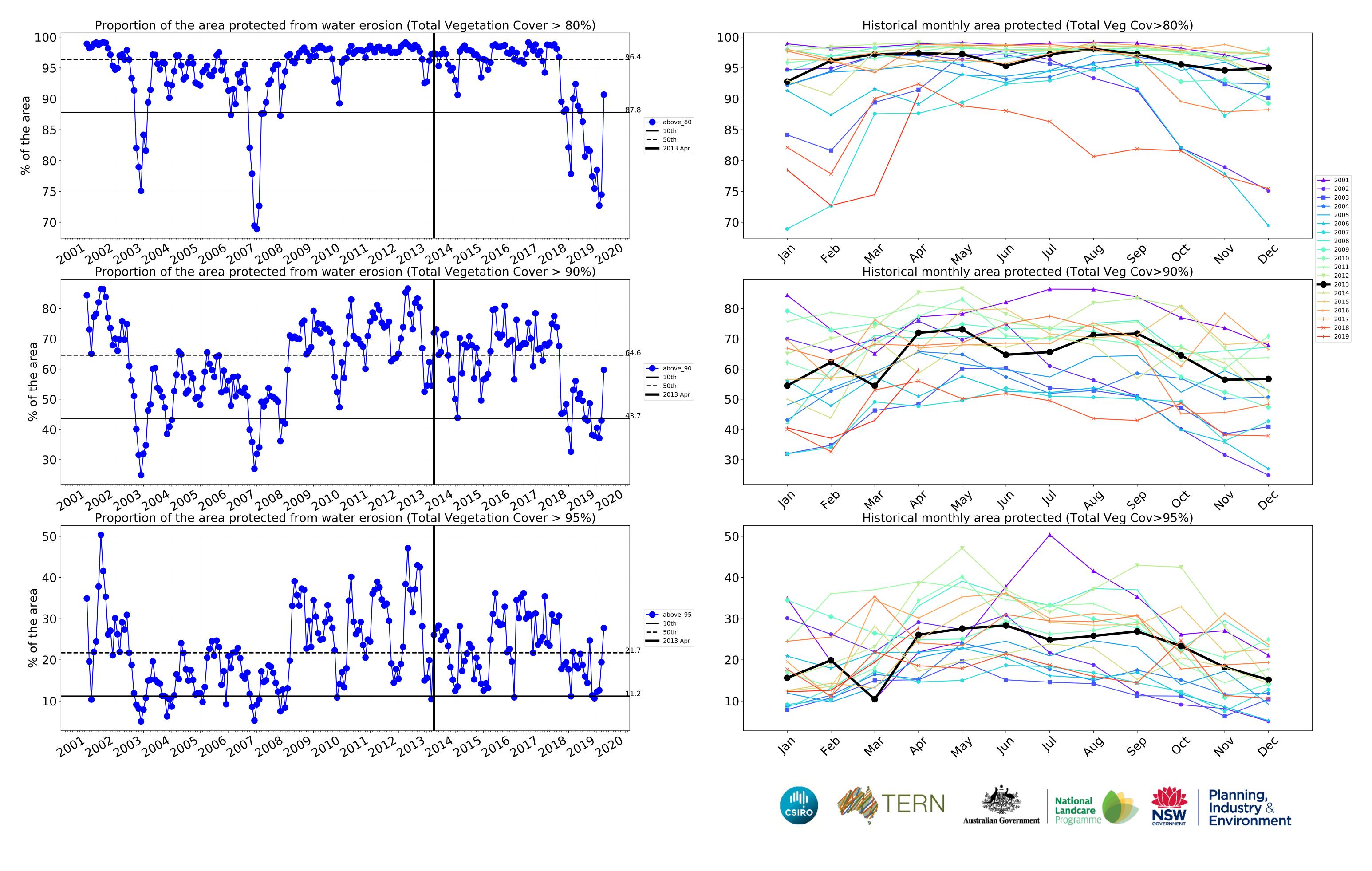




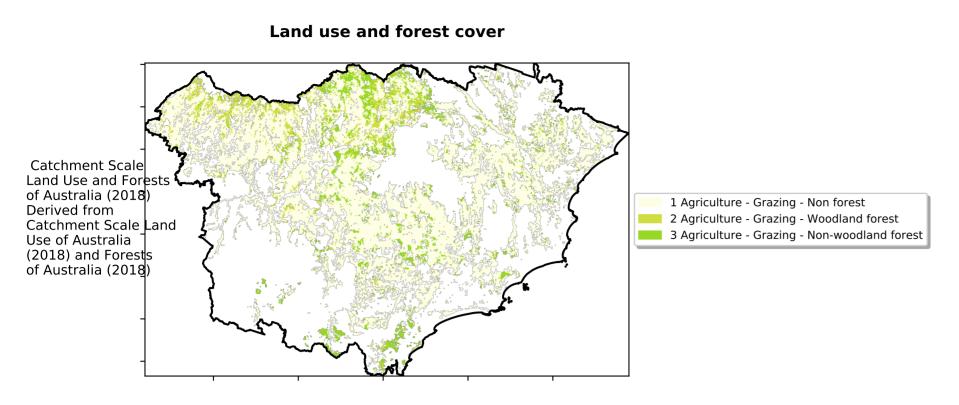
Agriculture timeseries



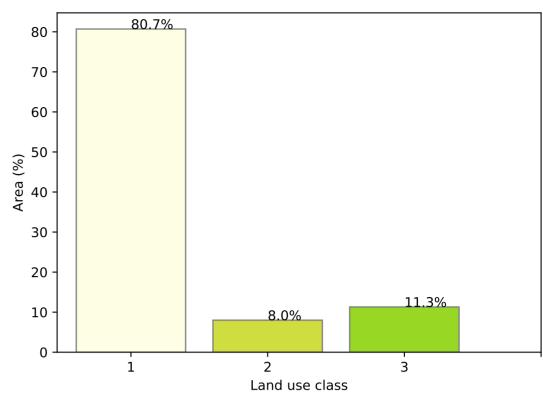




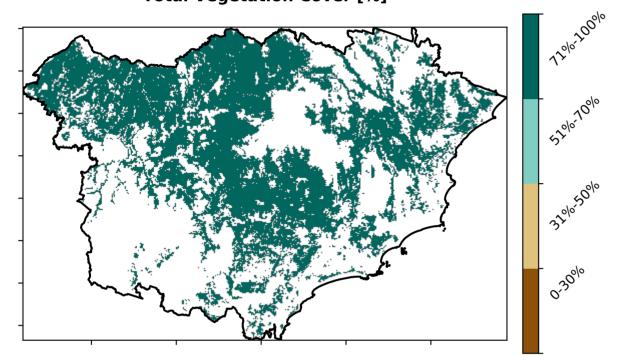
Grazing



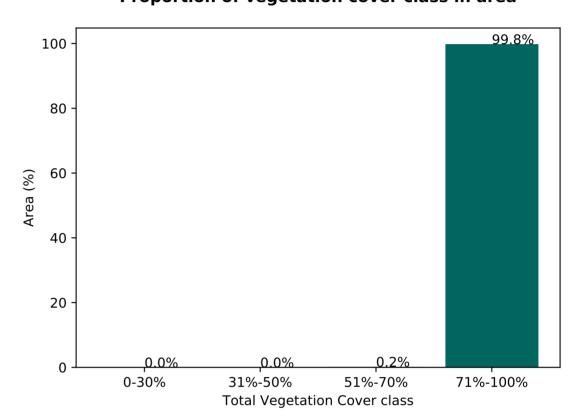
Proportion of each land class in area



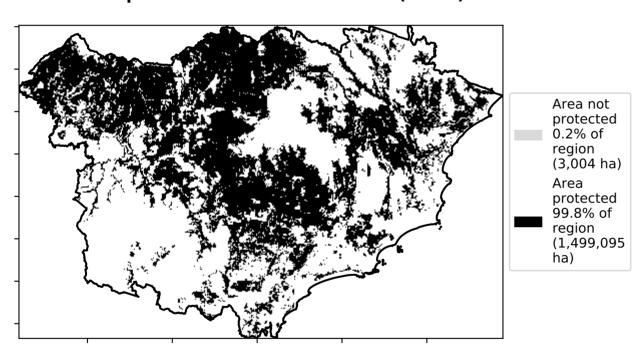
Total Vegetation Cover [%]



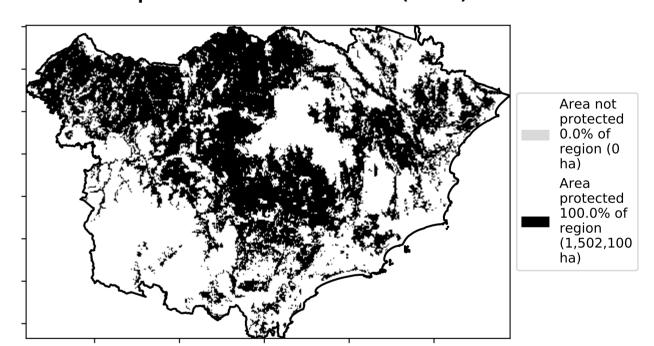
Proportion of vegetation cover class in area



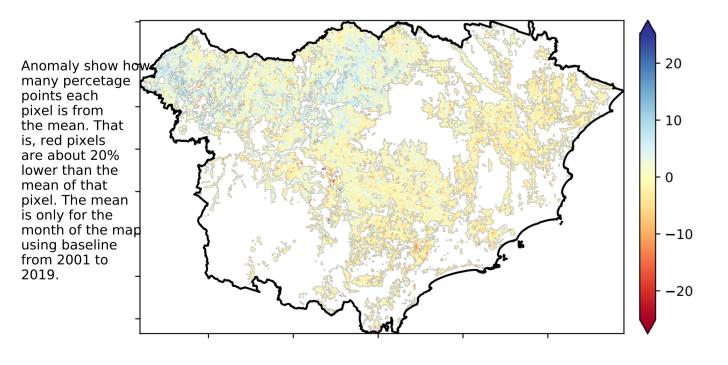
% Area protected from water erosion (>70%)

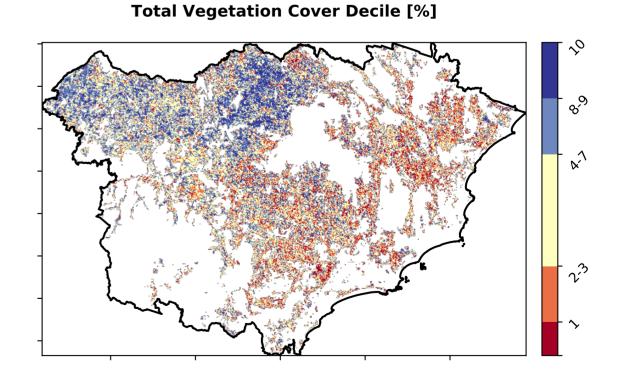


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]









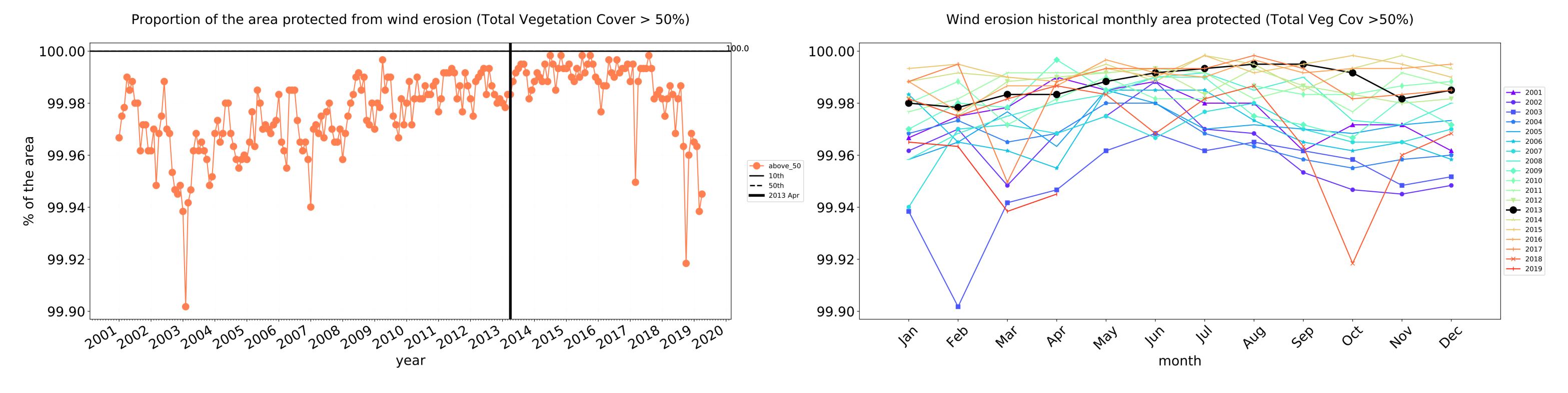


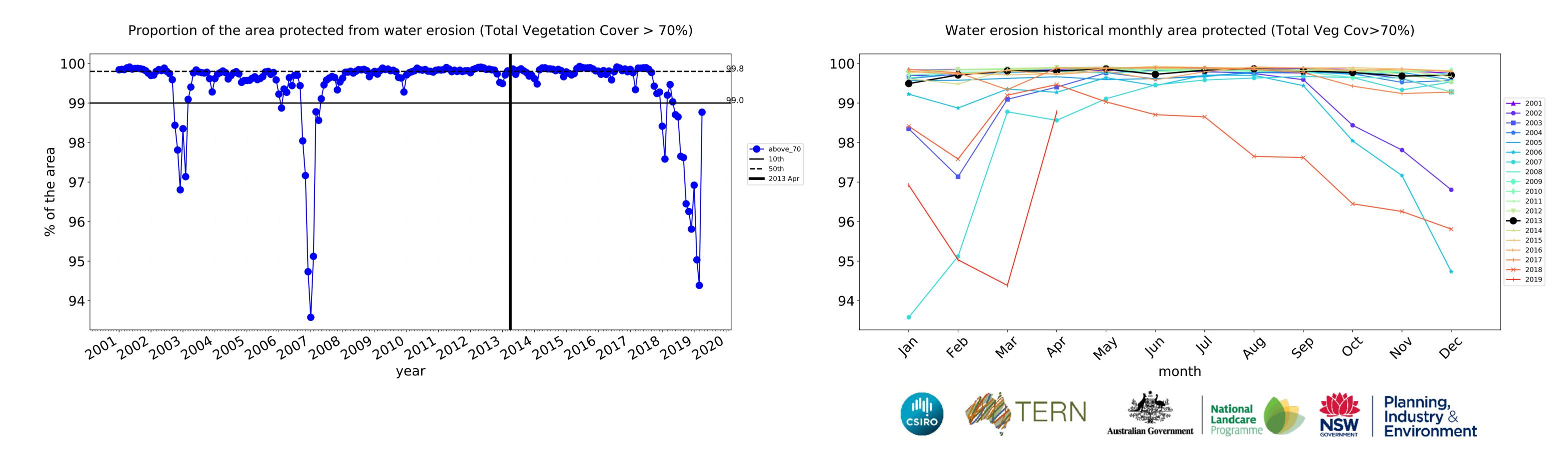


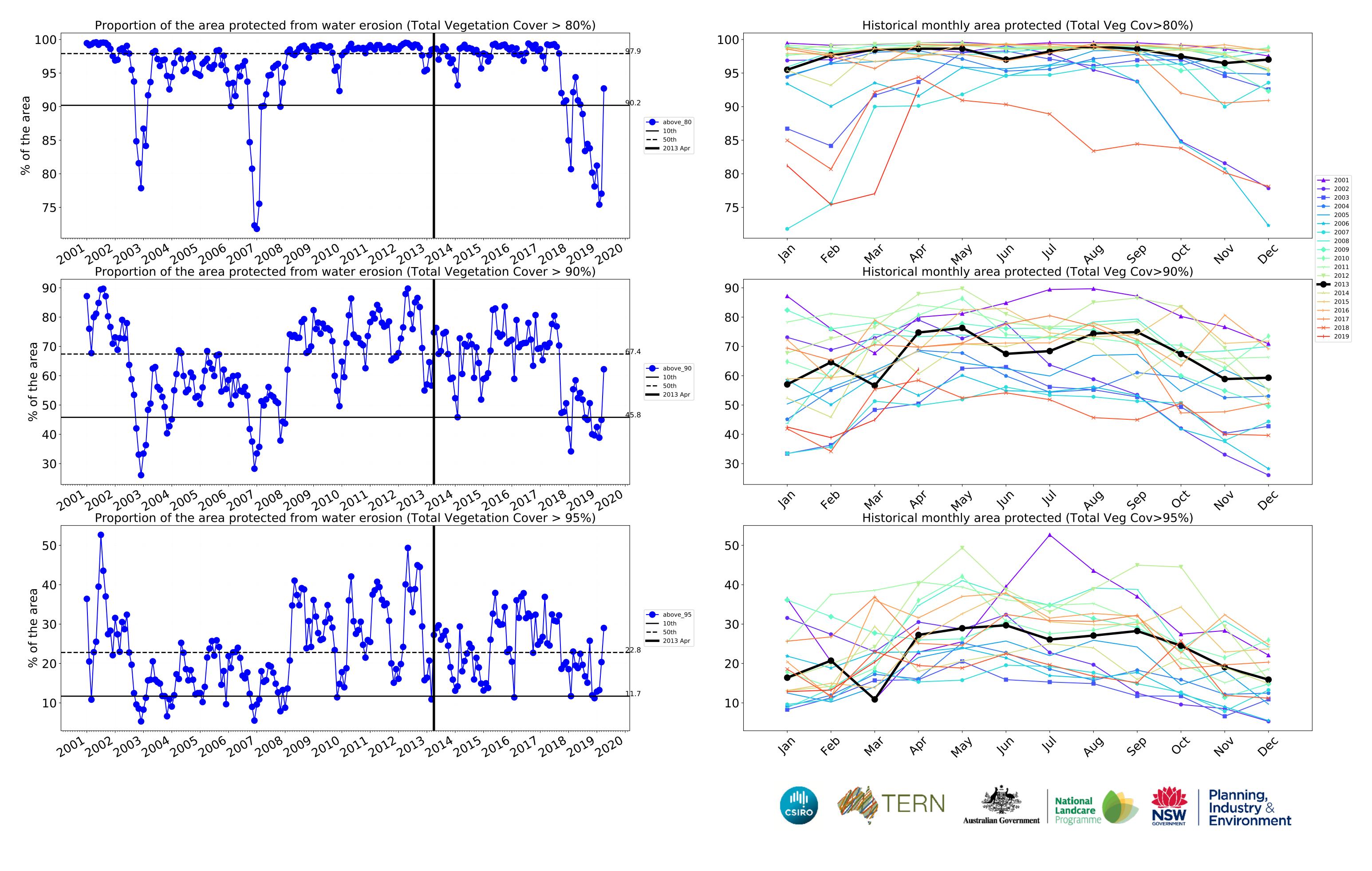




Grazing timeseries

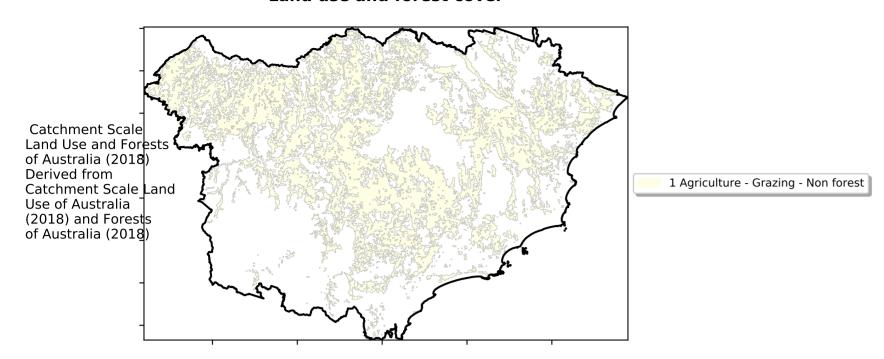




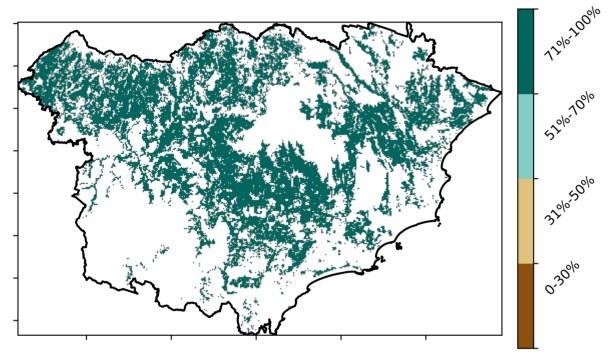


Grazing non forest

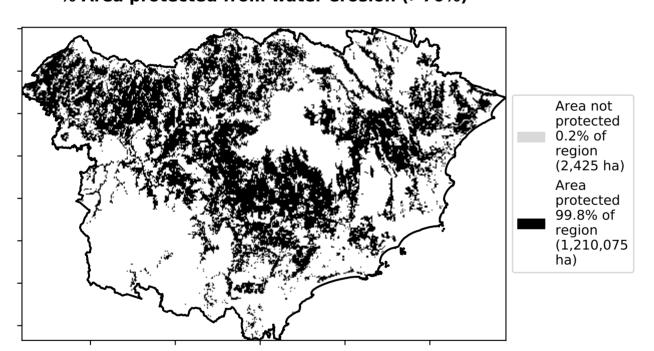
Land use and forest cover



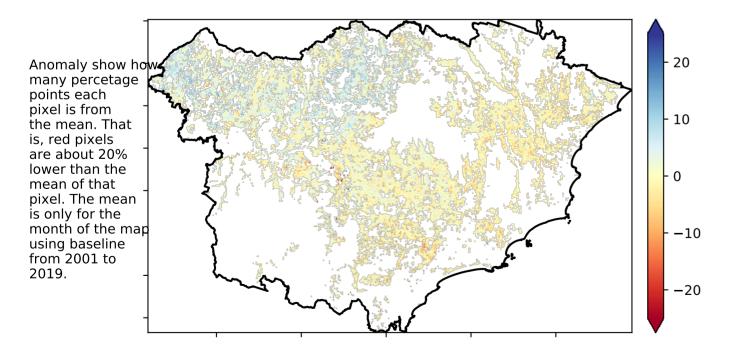
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

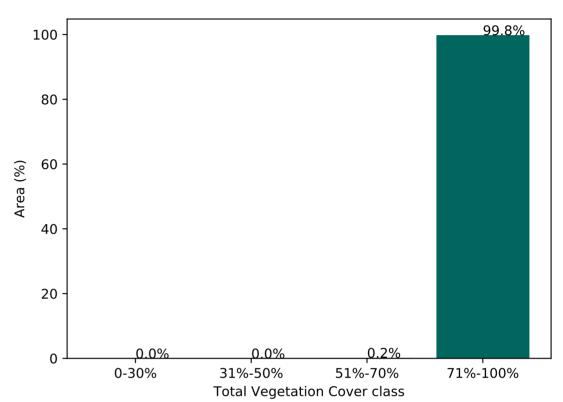


Total Vegetation Cover Anomaly [%]

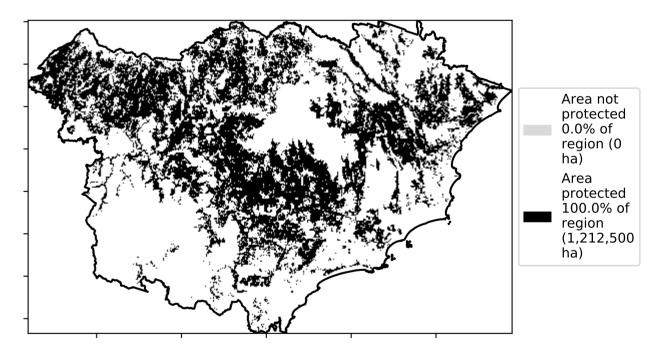


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

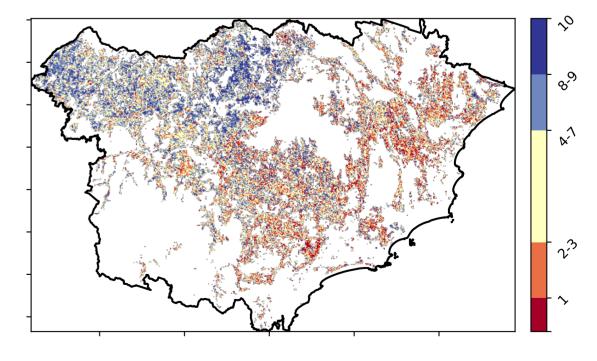
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







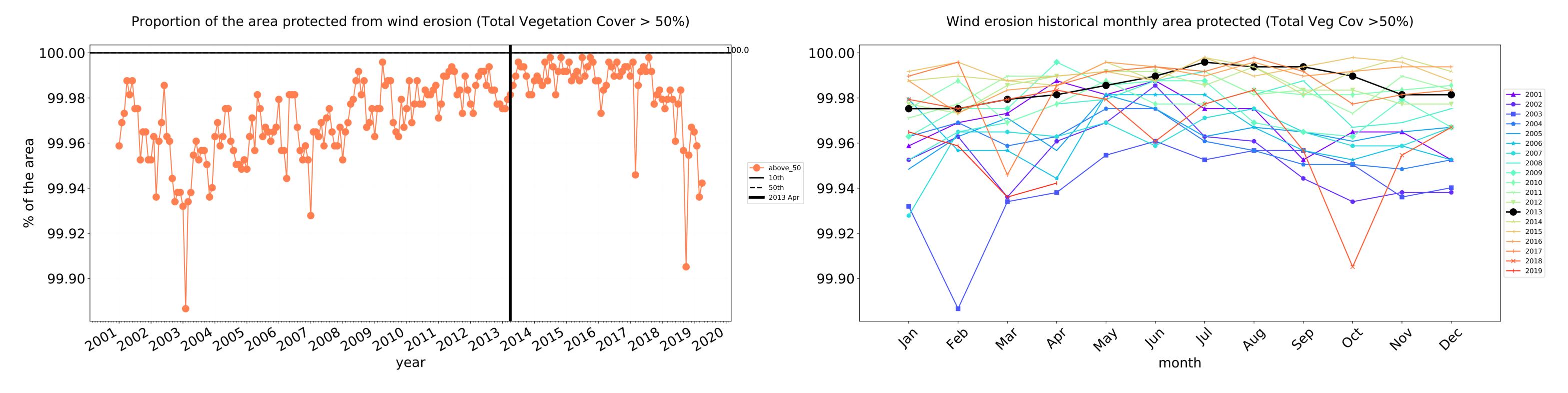


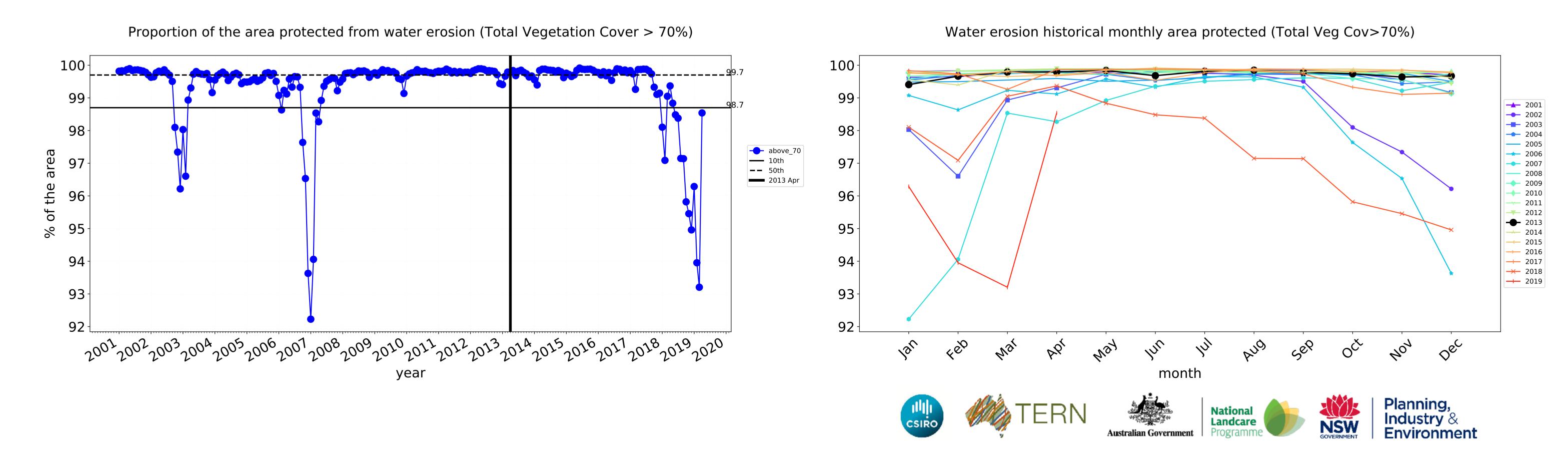


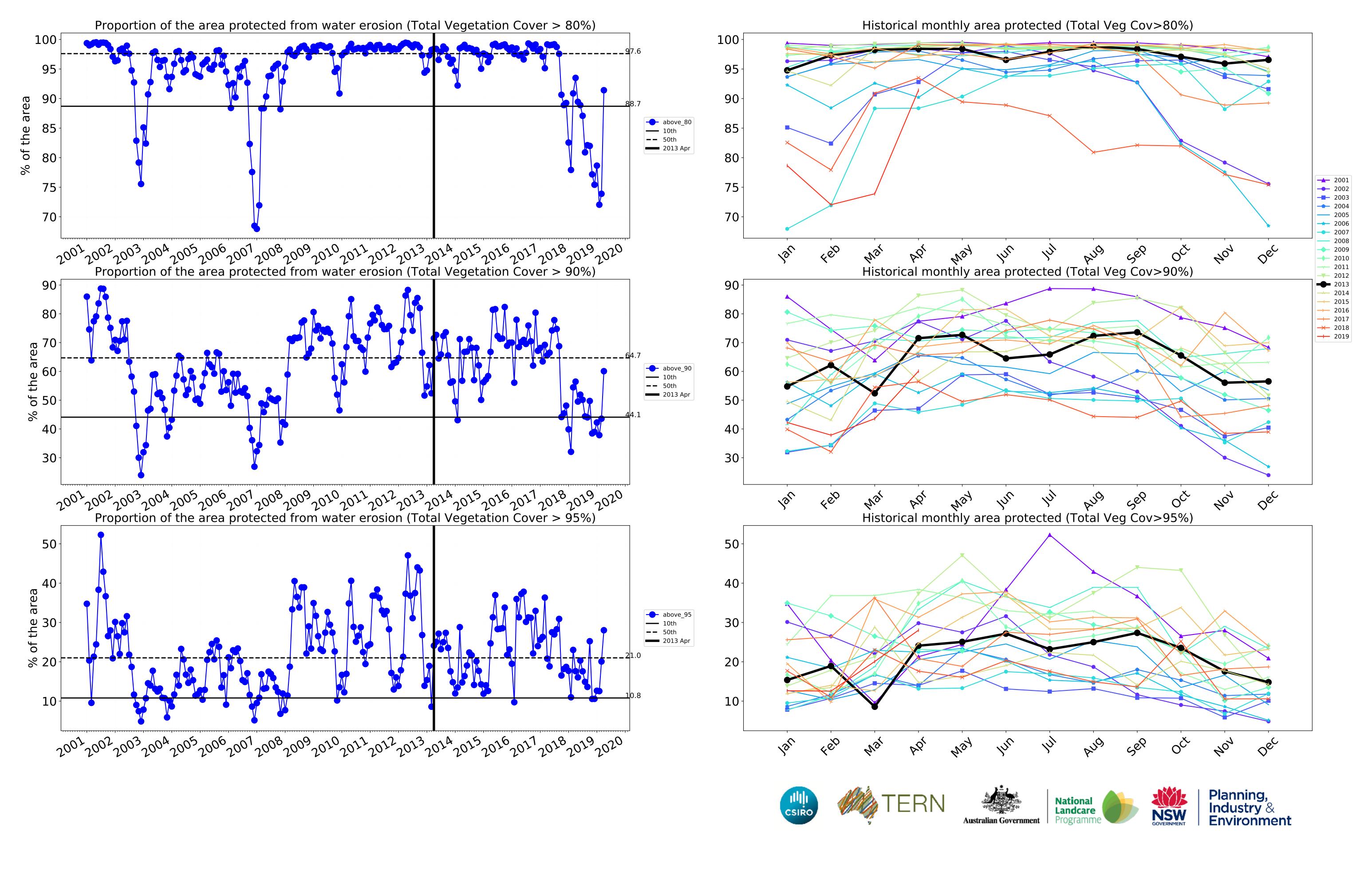




Grazing non forest timeseries





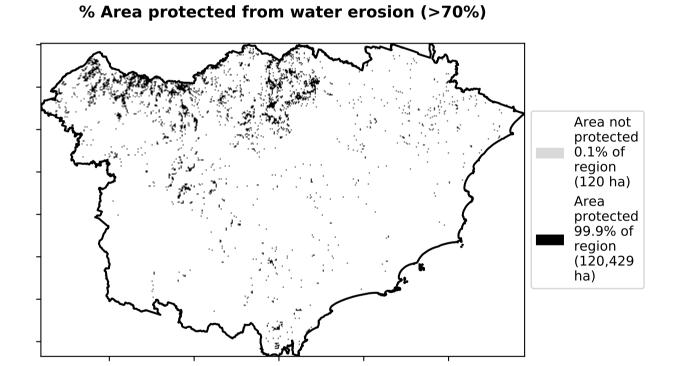


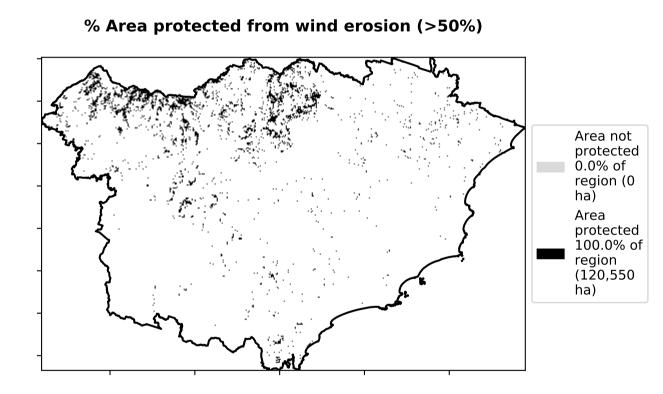
Grazing Woodland forest

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

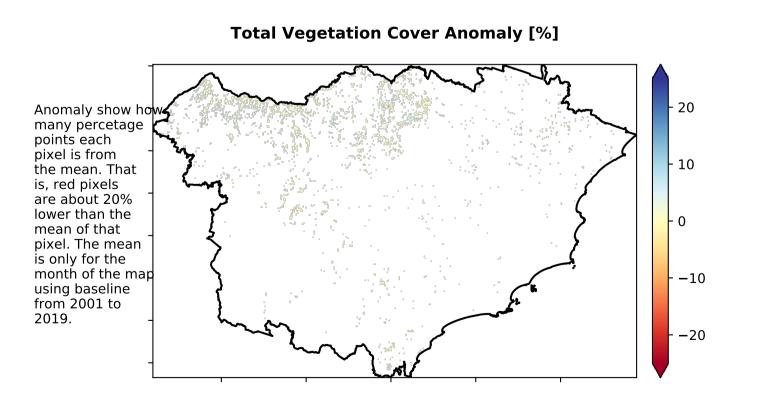
Total Vegetation Cover [%]

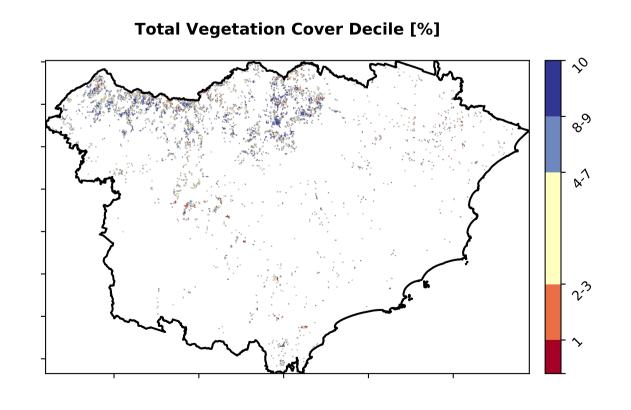
99.9% 100 80 Area (%) 40 20 -0.1% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**





Proportion of vegetation cover class in area









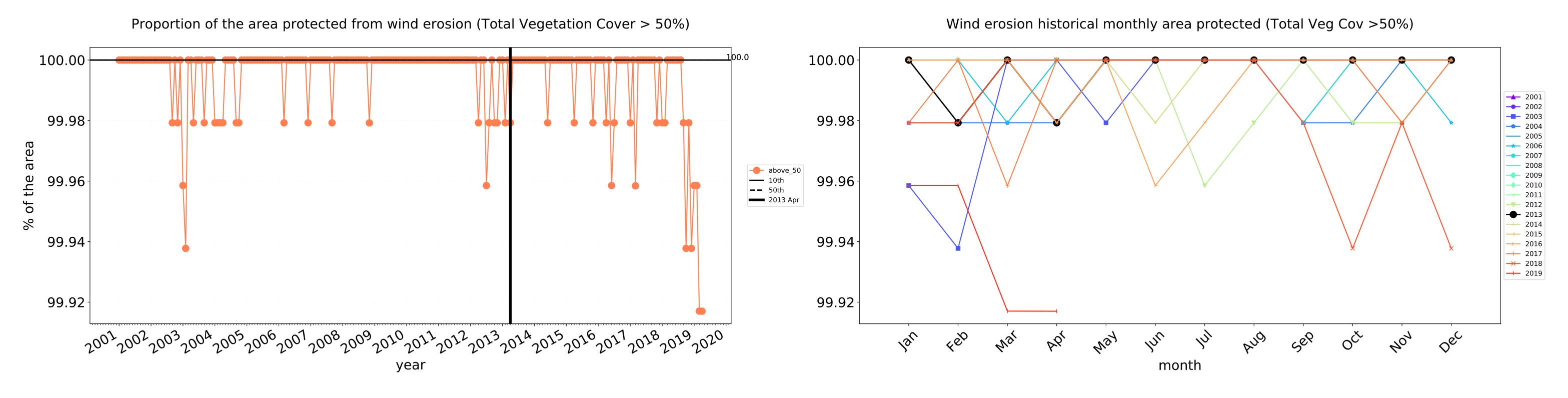


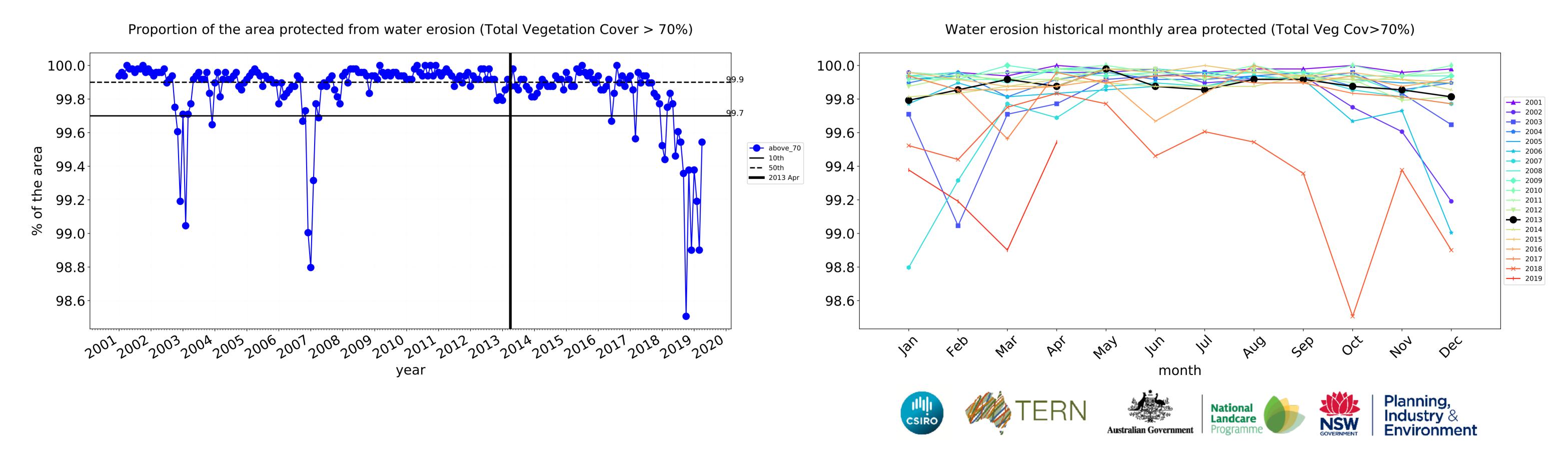


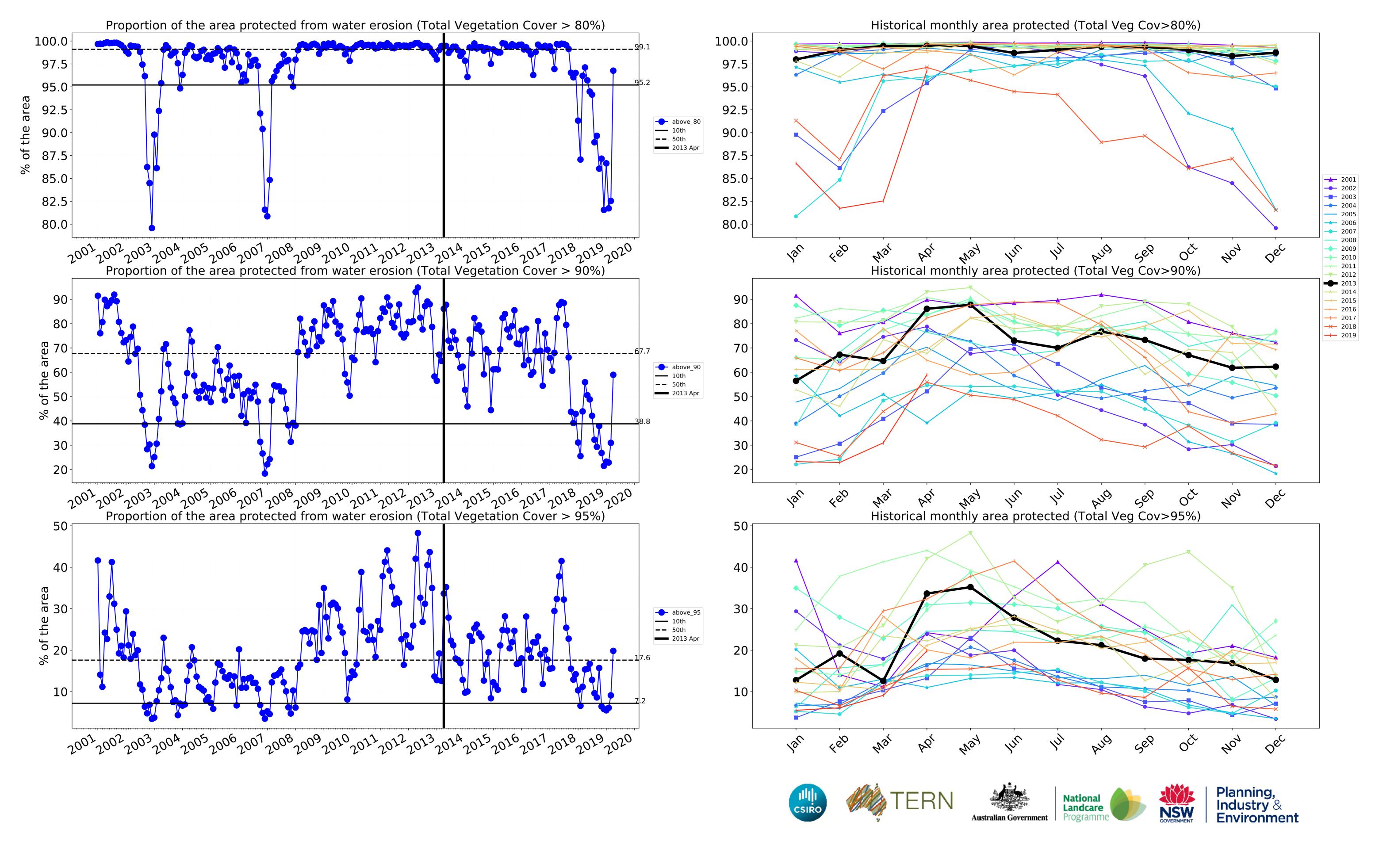




Grazing Woodland forest timeseries





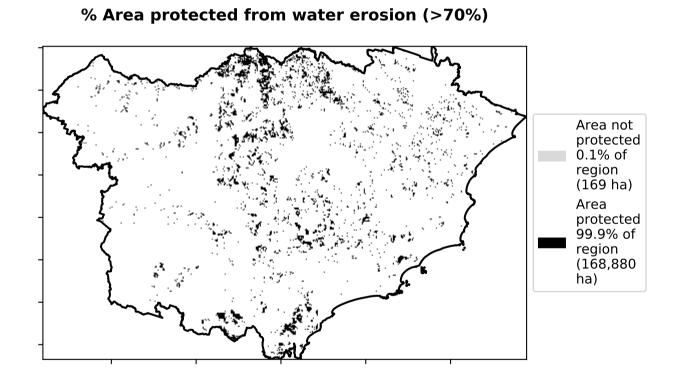


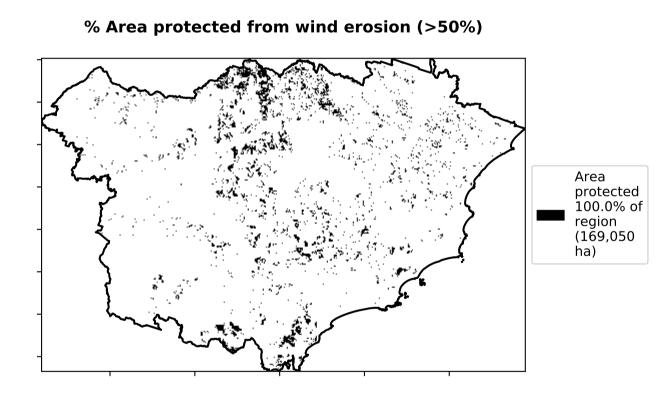
Grazing - Forest (non woodland)

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

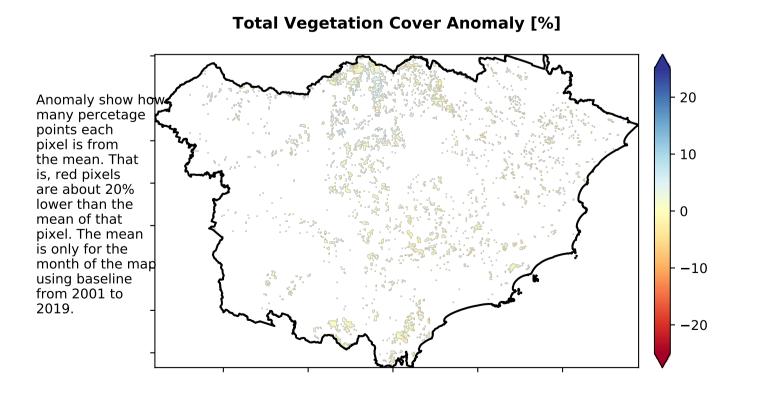
Total Vegetation Cover [%]

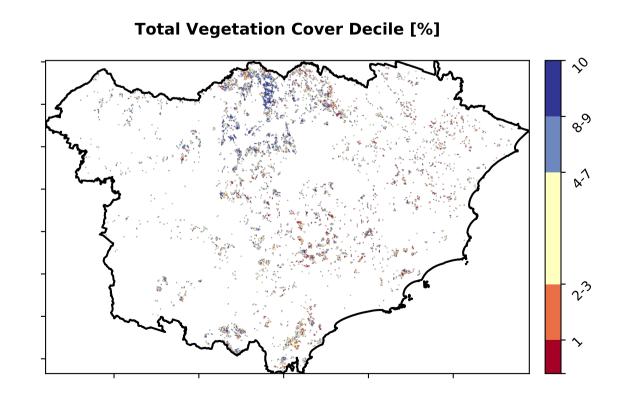
99.9% 100 Area (%) 60 40 20 -0.1% 31%-50% 51%-70% 0-30% 71%-100% **Total Vegetation Cover class**





Proportion of vegetation cover class in area







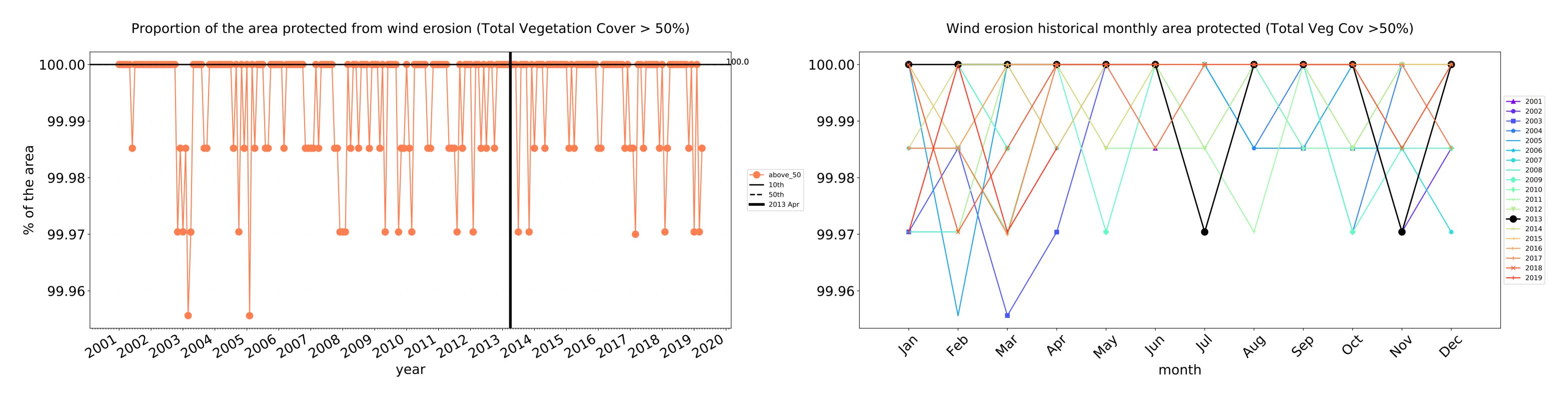


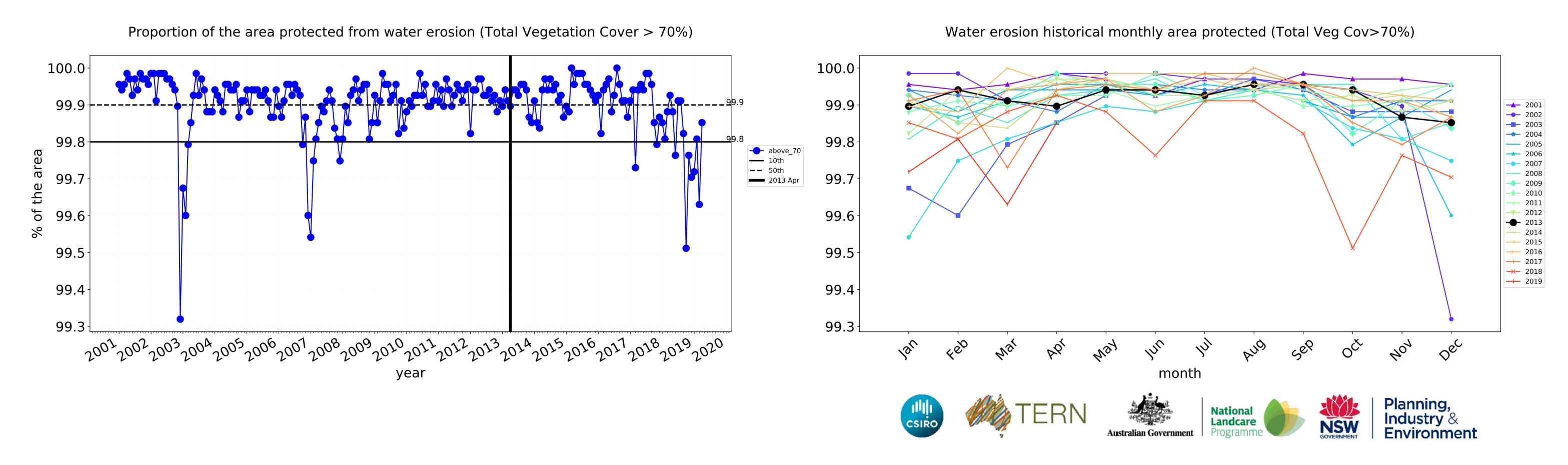


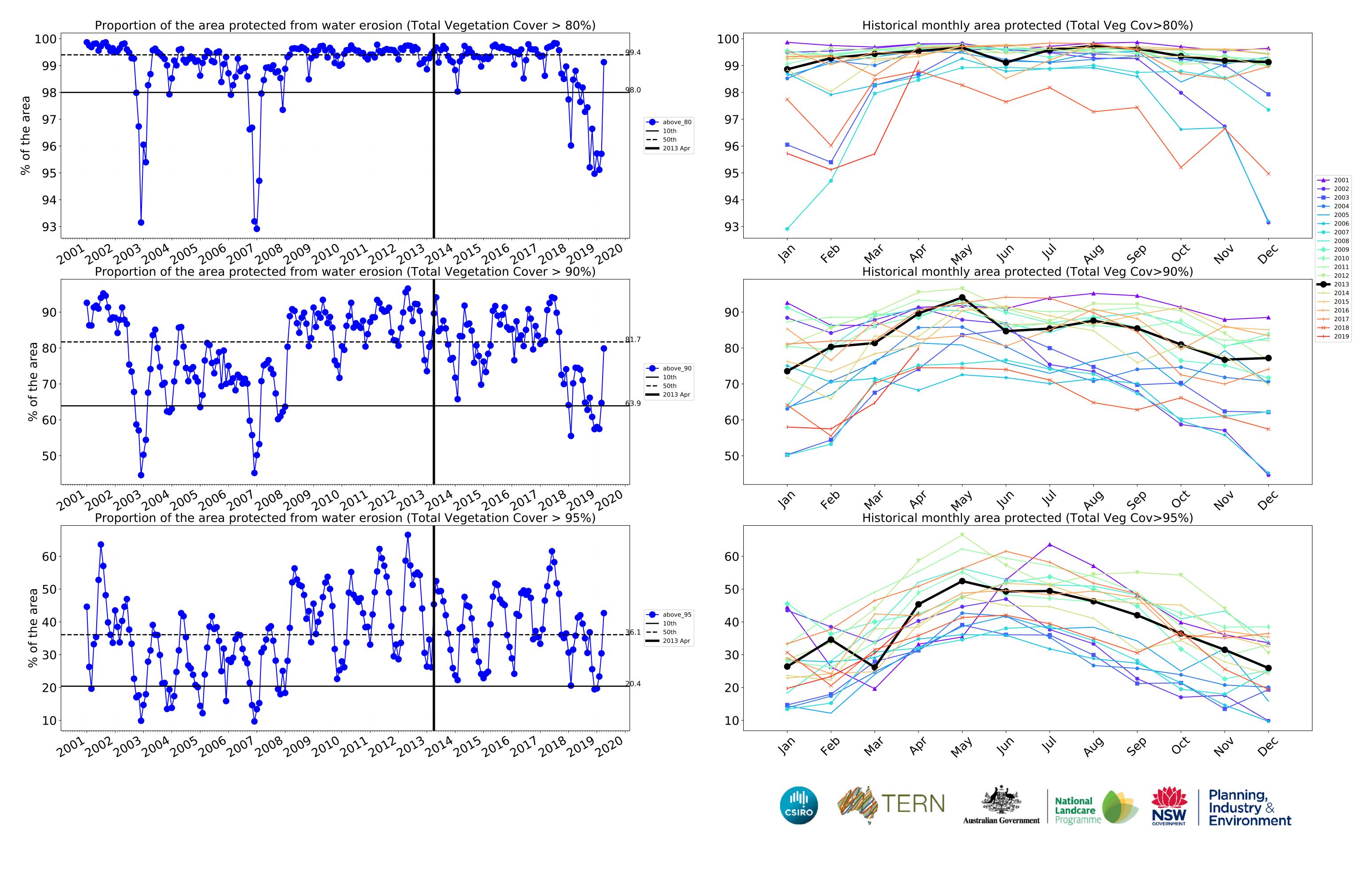






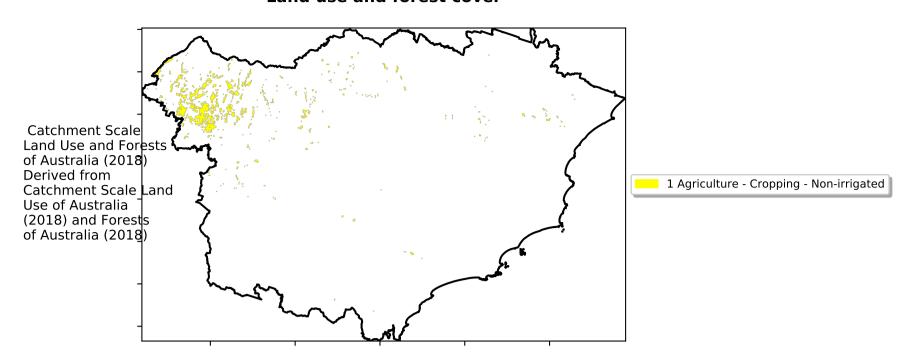




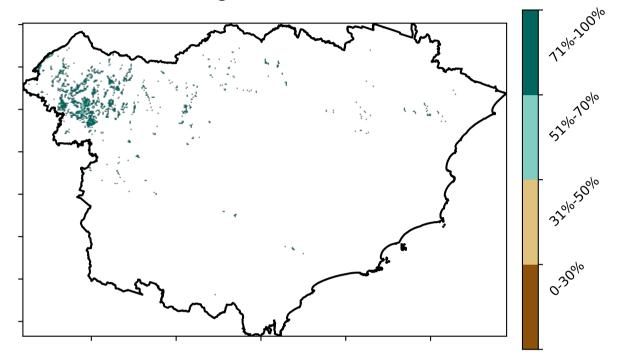


Cropping

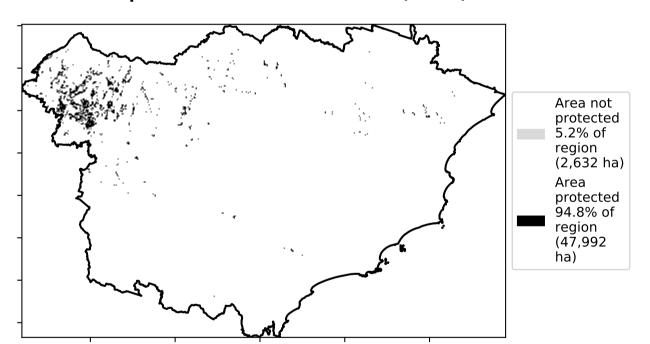
Land use and forest cover



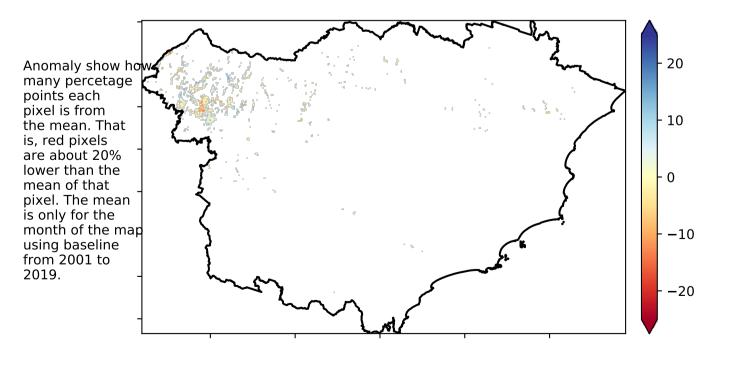
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

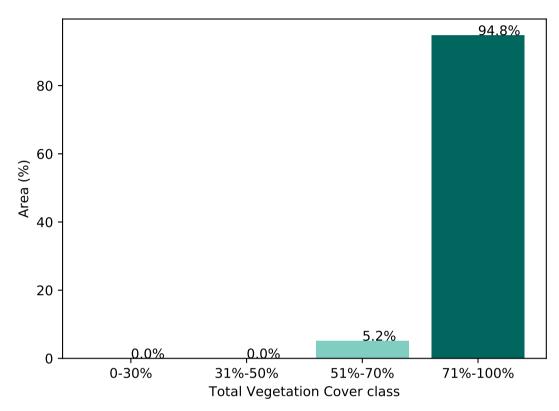


Total Vegetation Cover Anomaly [%]

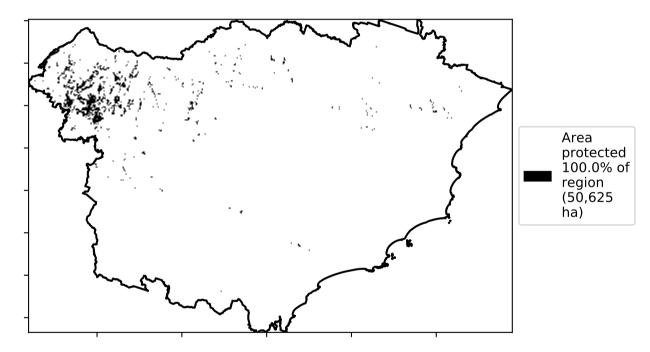


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

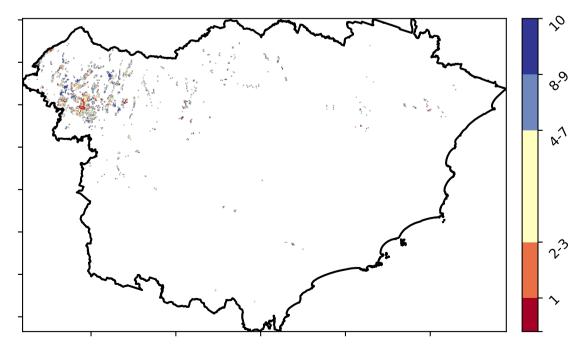
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







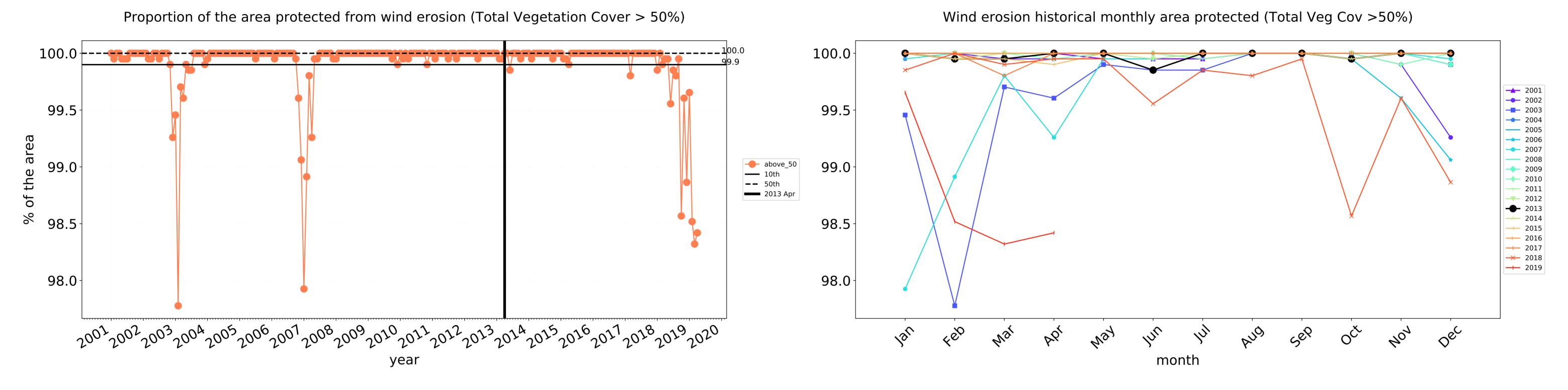


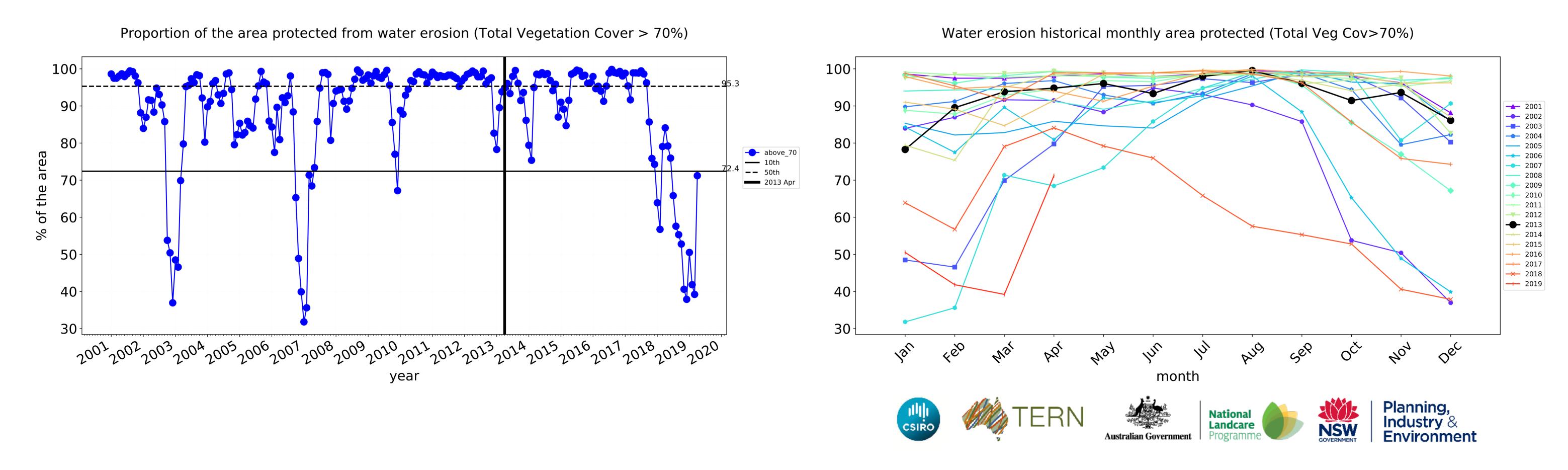


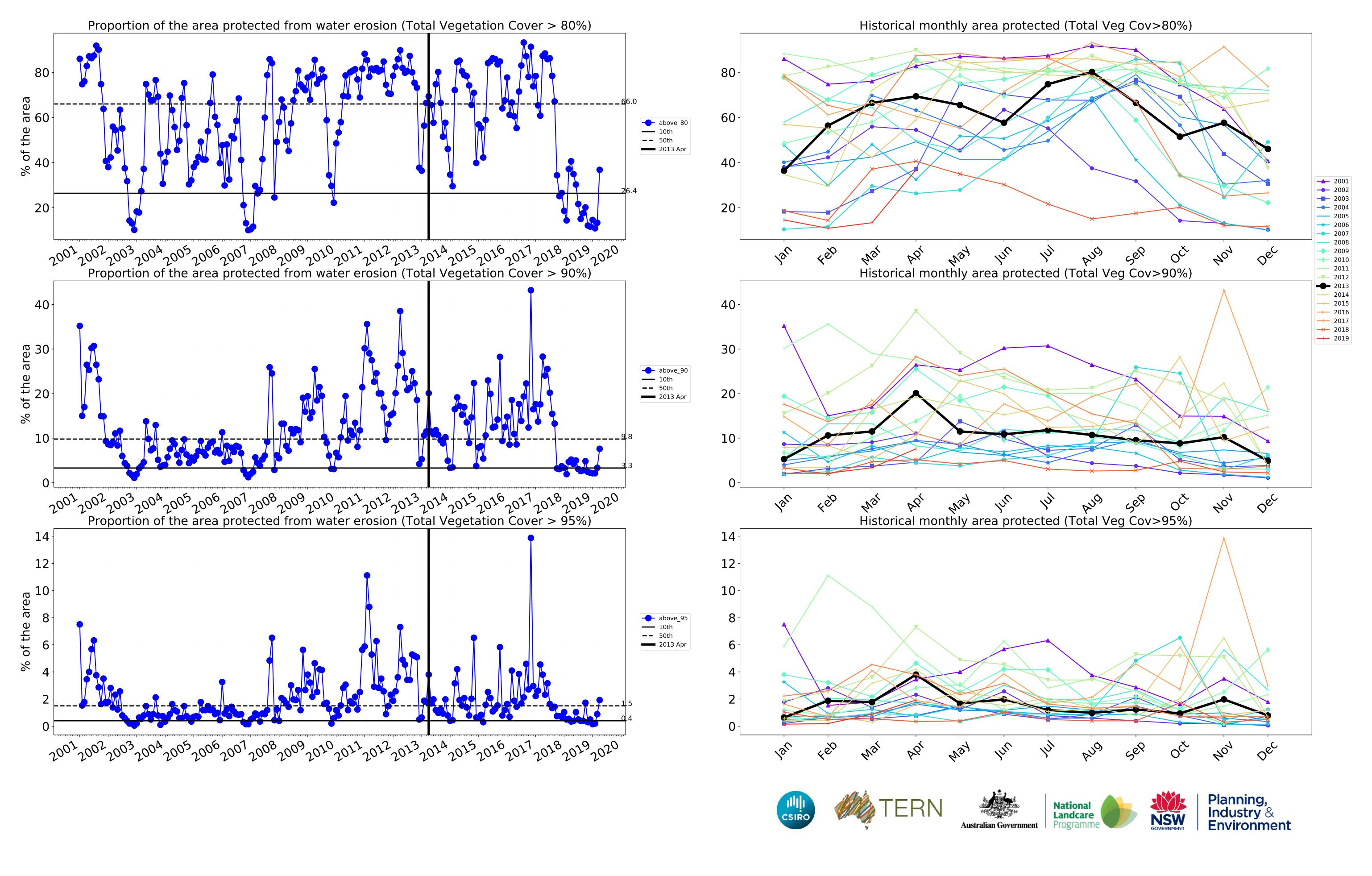




Cropping timeseries





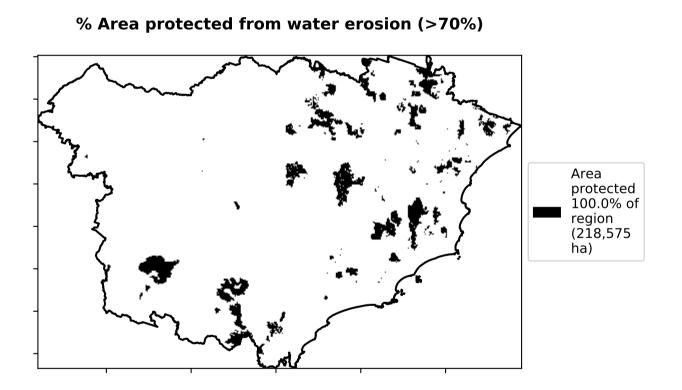


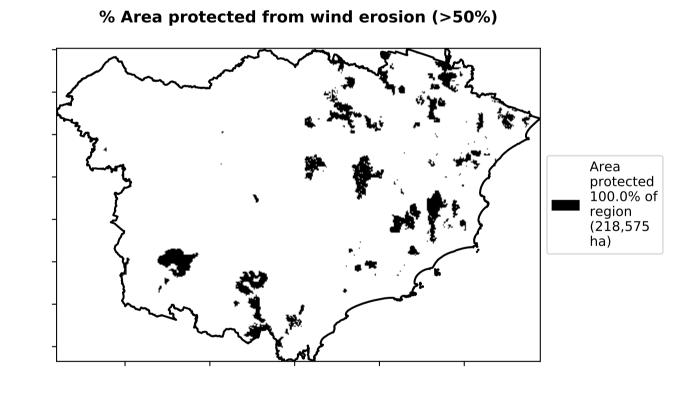
Production native forests and plantation forests

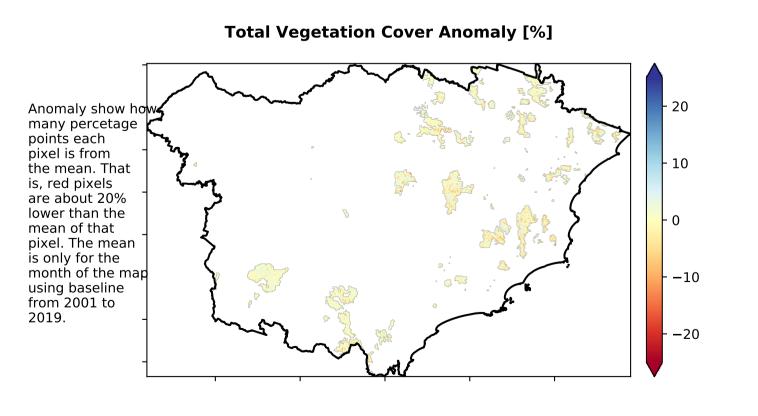
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) Of Australia (2018) I Production native forests and plantation forests of Australia (2018)

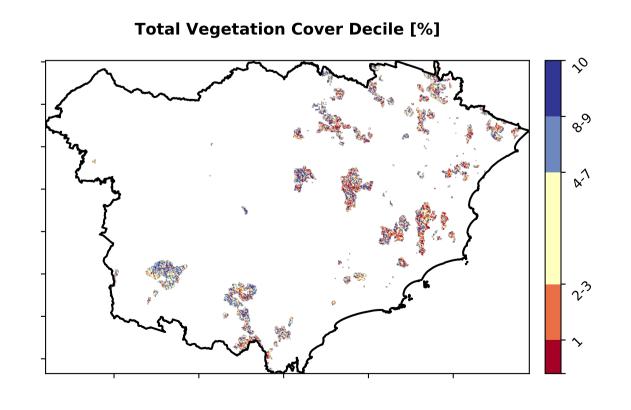
Total Vegetation Cover [%]

Proportion of vegetation cover class in area 100 - 100.0% 80 - 20 - 20 - 20 - 0.0% 0-30% 31%-50% 51%-70% 71%-100% Total Vegetation Cover class













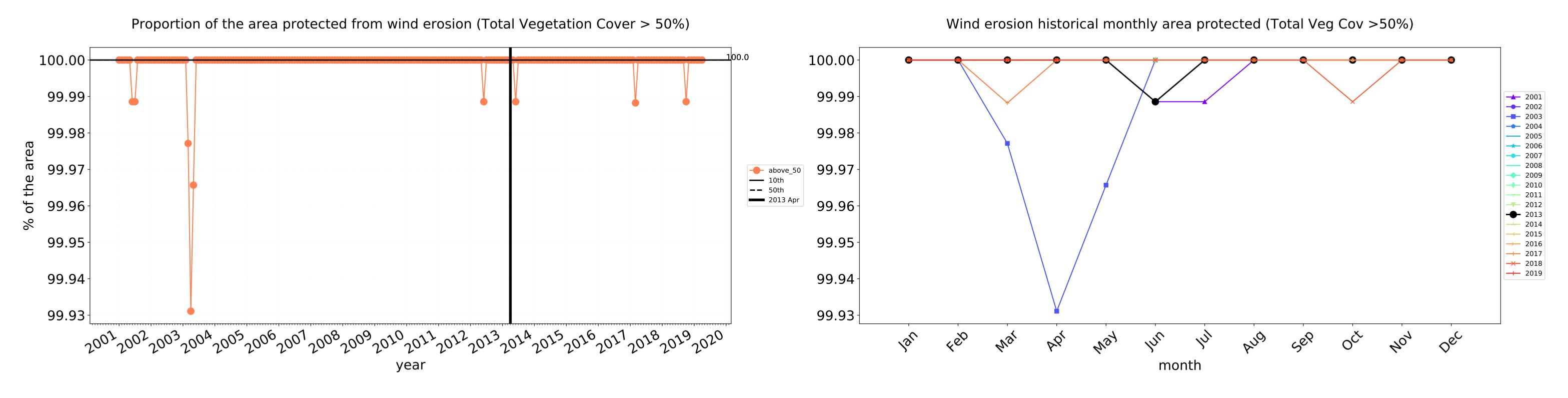


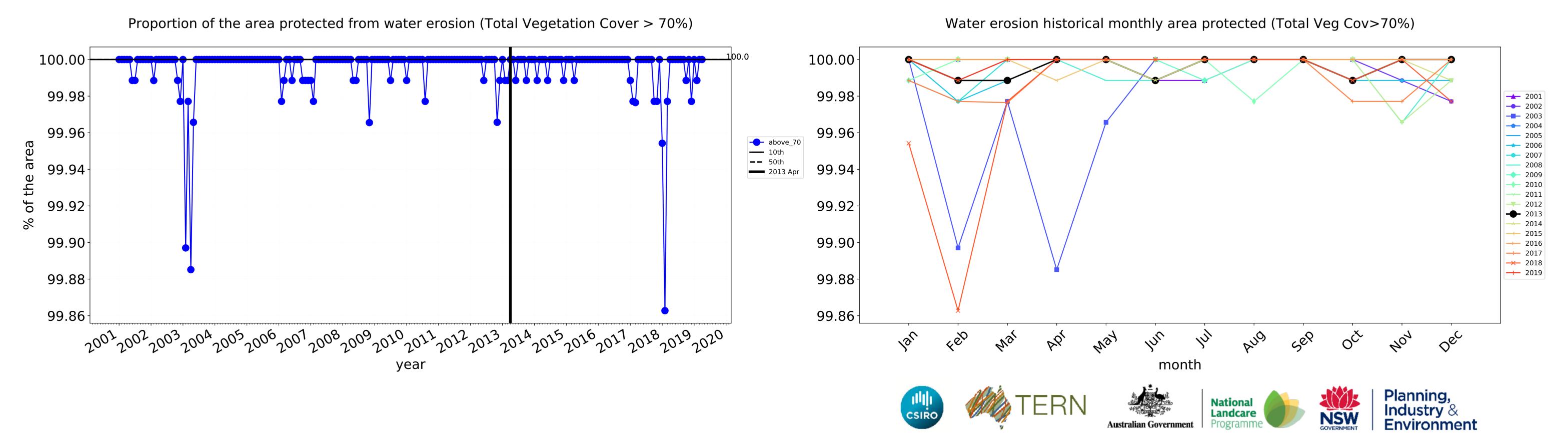


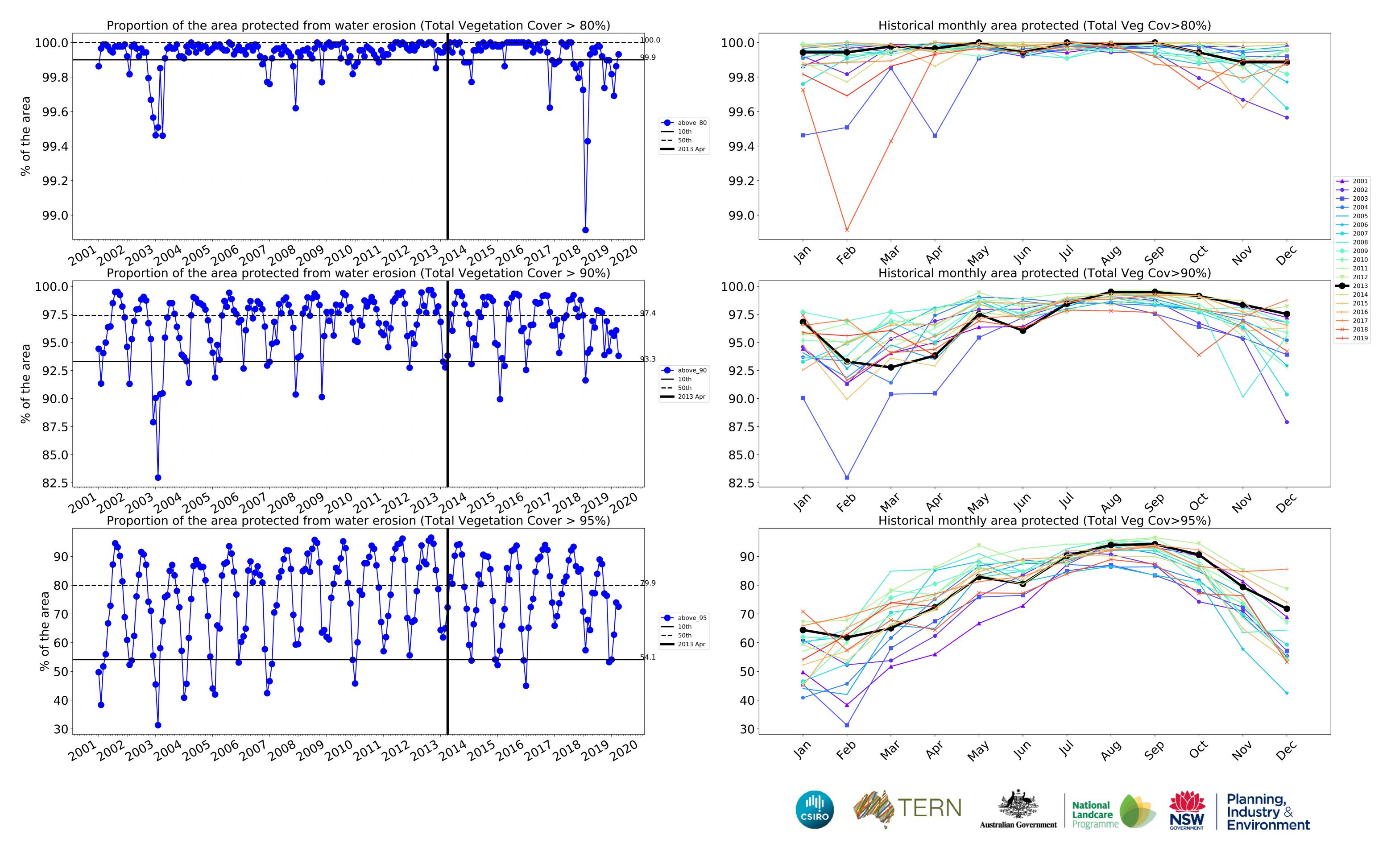




Production native forests and plantation forests timeseries







Hunter (3,237,200 ha and no data 63,225 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	3,237,200	99.9% 3,233,100	99.6% 3,224,200	98.6% 3,192,300	96.4% 3,122,100	78.6% 2,545,730	41.1% 1,331,264
Conservation and natural environments	1,240,025	99.9% 1,239,050	99.8% 1,238,075	99.7% 1,236,475	99.4% 1,233,125	91.9% 1,139,825	60.0% 744,100
Conservation and natural environments non forest	29,725	96.7% 28,750	93.8% 27,875	90.5% 26,900	86.5% 25,725	68.4% 20,325	25.6% 7,600
Conservation and natural environments Woodland forest	138,675	100.0% 138,675	100.0% 138,675	100.0% 138,625	99.8% 138,375	90.9% 126,000	43.7% 60,550
Conservation and natural environments Forest (non woodland)	1,071,625	100.0% 1,071,625	100.0% 1,071,525	99.9% 1,070,950	99.8% 1,069,025	92.7% 993,500	63.1% 675,950
Agriculture	1,580,100	100.0% 1,580,075	100.0% 1,579,850	99.6% 1,574,350	97.4% 1,538,775	72.0% 1,137,550	26.1% 412,050
Grazing	1,502,100	100.0% 1,502,075	100.0% 1,501,850	99.8% 1,499,275	98.6% 1,481,375	74.7% 1,122,700	27.3% 409,450
Grazing non forest	1,212,500	100.0% 1,212,475	100.0% 1,212,275	99.8% 1,210,000	98.4% 1,193,175	71.5% 867,400	24.1% 292,200
Grazing Woodland forest	120,550	100.0% 120,550	100.0% 120,525	99.9% 120,400	99.5% 119,925	86.1% 103,800	33.7% 40,575
Grazing - Forest (non woodland)	169,050	100.0% 169,050	100.0% 169,050	99.9% 168,875	99.5% 168,275	89.6% 151,500	45.4% 76,675
Cropping	50,625	100.0% 50,625	100.0% 50,625	94.8% 48,000	69.4% 35,125	20.1% 10,175	3.8% 1,925
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,575	100.0% 218,500	93.8% 205,100	72.3% 157,950











