

*Eucalyptus camaldulensis* (river red gum)  
**Biogeochemistry: An Innovative Tool for Mineral  
Exploration in the Curnamona Province and  
Adjacent Regions**

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# *E. camaldulensis* (leaves) Biogeochemistry Pine Creek Broken Hill W/NSW - (Ca)

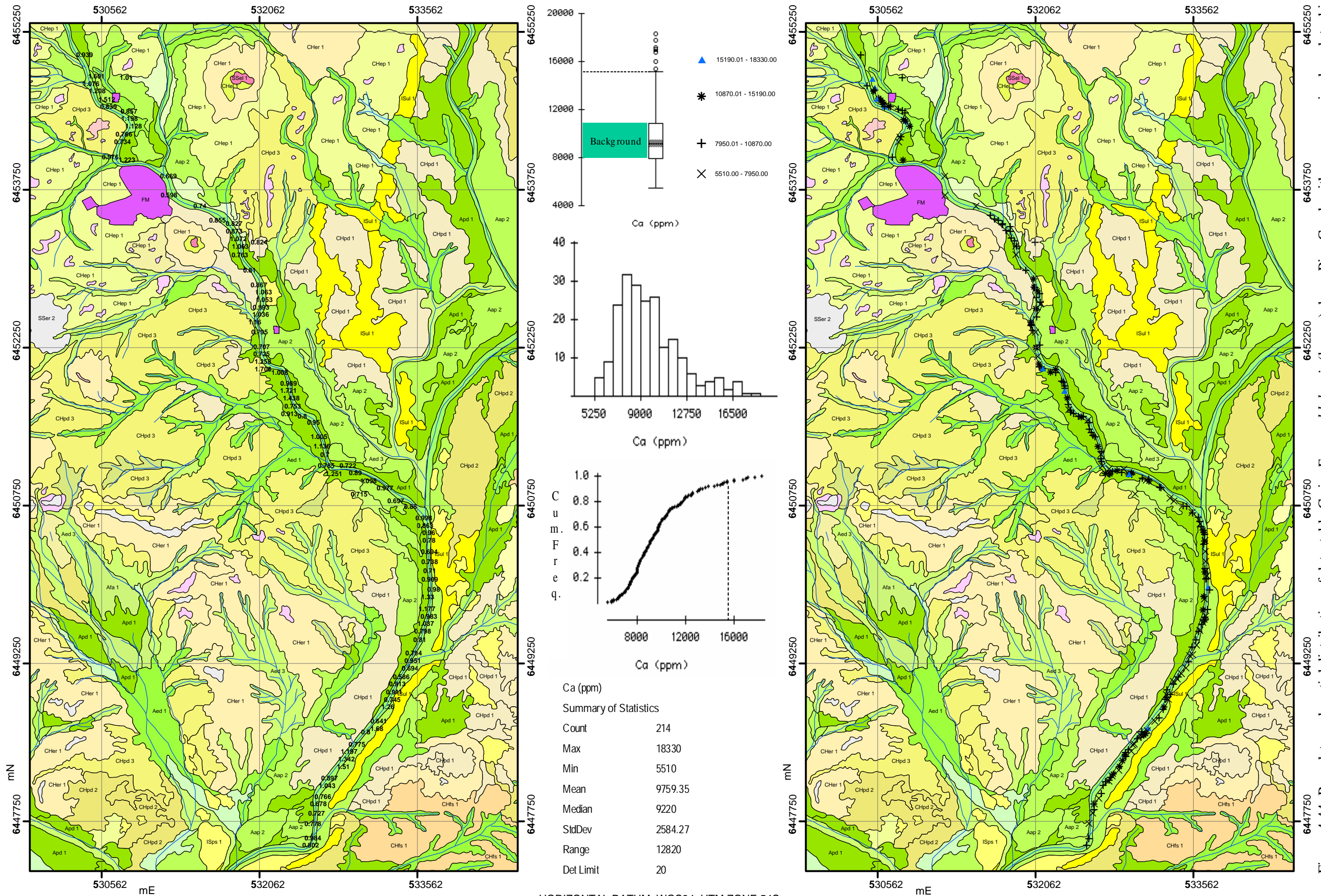


Figure 4.44: Raw data and spatial distribution of detectable Ca in *E. camaldulensis* (leaves) down Pine Creek with accompanying boxplots, histogram, cumulative frequency plot and summary statistics.



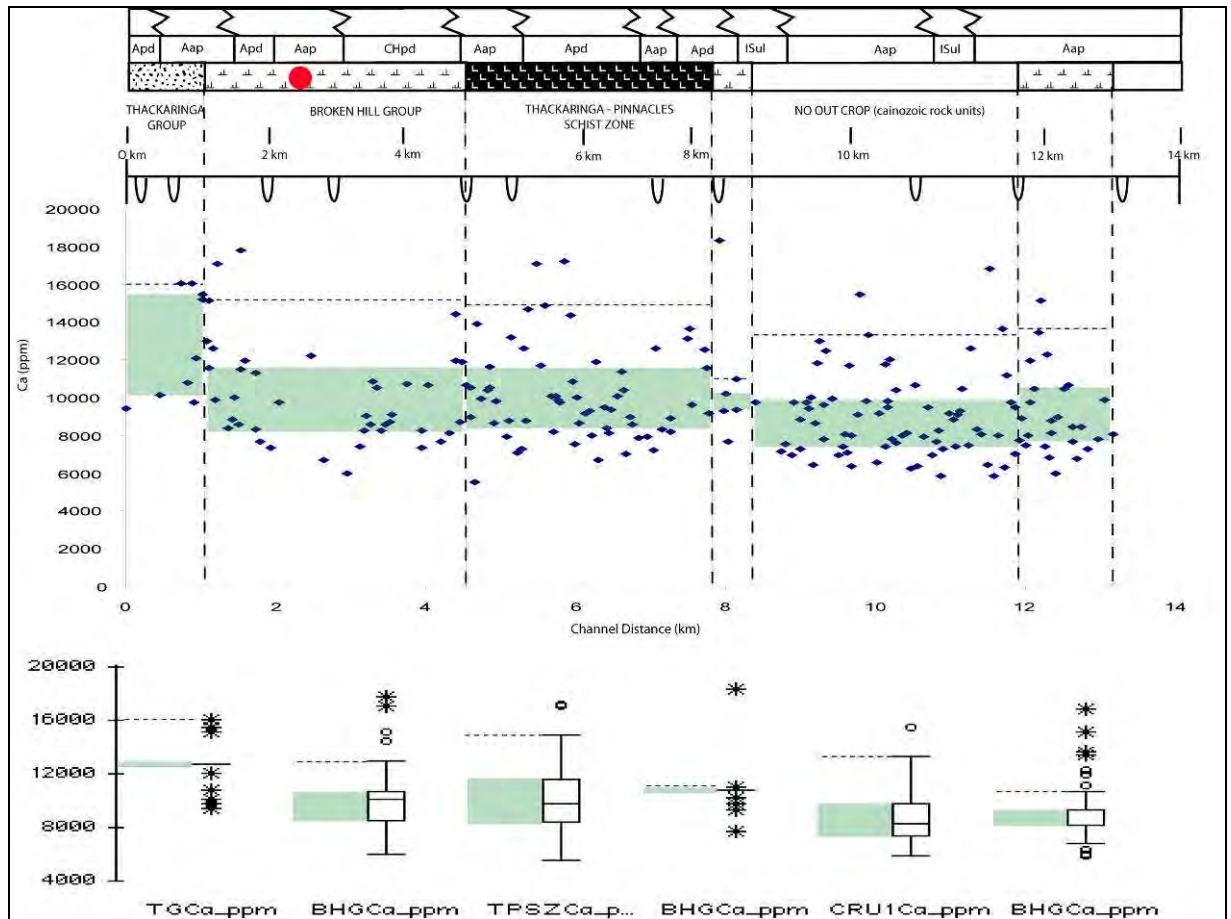


Figure 4.45: Ca concentrations within *E. camaldulensis*, flanking different land-form settings along Pine Creek. Thackaringa Group (TG), Broken Hill Group North (BHGN), Thackaringa-Pinnacles Schist Zone (TP/SZ), Broken Hill Group Central (BHGC), Cainozoic rock units (CRU) and Broken Hill Group South (BHGS). Green region denotes values below the mean, red dot the approximate location of the Barrier Pinnacles Mine and the dashed line indicates the 90<sup>th</sup> percentile.

Element (ppm) [detection limit] Analytical Method	Parameters	Total data set (C) n=214	Setting					
			Thackaringa Group TG (Apd, Aap) n=9	Broken Hill Group BHGN (Aap, Apd & CHpd) n=42	Thackaringa- Pinnacles Schist Zone TP/SZ (Aap, Apd) n=60	Broken Hill Group BHGC (Apd & ISul) n=7	No outcrop (CRU) (ISul, Aap) n=61	Broken Hill Group BHGS (Aap) n=35
Ca [14] XRF	Concentration range (Mean)	5510-18330 (9759)	9390-16020 (12748)	5980-17780 (10117)	5510-17210 (10127)	7660-18330 (10797)	5860-15450 (8873)	5830-16800 (9268)
	25 <sup>th</sup> - 75 <sup>th</sup> percentile	7950-10870	10013-15430	8270-11540	8350-11590	9360-10210	7410-9807	7660-10445
	95% confidence level	0.03	2210	824	644	3213	518	887
	>90 <sup>th</sup> percentile (outliers), # of samples	15450-18330 (10)	No outliers	14410-17780 (4)	17060-17210 (2)	No outliers	15450 (1)	11150-16800 (7)
	<i>E. camaldulensis</i> position with the greatest concentration.	predominately occurs in the upstream part of the Pine Creek catchment.	evenly distributed. Flanked by regolith-landform units Aap <sub>2</sub> and CHpd <sub>3</sub> .	northern and southern margin, at the interface between TG & TP/SZ. Flanked by regolith- landform units Aap <sub>2</sub> , CHpd <sub>1</sub> , CHpd <sub>3</sub> and ISps <sub>1</sub> .	central and southern region, down stream of NW intersecting Aed units. Flanked by regolith- landform unit Apd <sub>1</sub> .	evenly distributed flanked by regolith- landform unit Apd <sub>1</sub> .	central region, flanked by regolith- landform units Aap <sub>2</sub> and Apd <sub>1</sub> .	northern and central region. Down stream of intersecting NW Aed units. Flanked by regolith- landform units Aap <sub>2</sub> and CHpd <sub>1</sub> .

Table 4.42: Variations of Ca concentrations within *E. camaldulensis* (river red gums), flanking different land-form settings along Pine Creek. Initial values concentration range (mean), 25<sup>th</sup> - 75<sup>th</sup> percentile concentration range, 95 % confidence; level, >90<sup>th</sup> percentile (outliers), C= composite sample.

# *E. camaldulensis* (leaves) Biogeochemistry Pine Creek Broken Hill W/NSW - (AI)

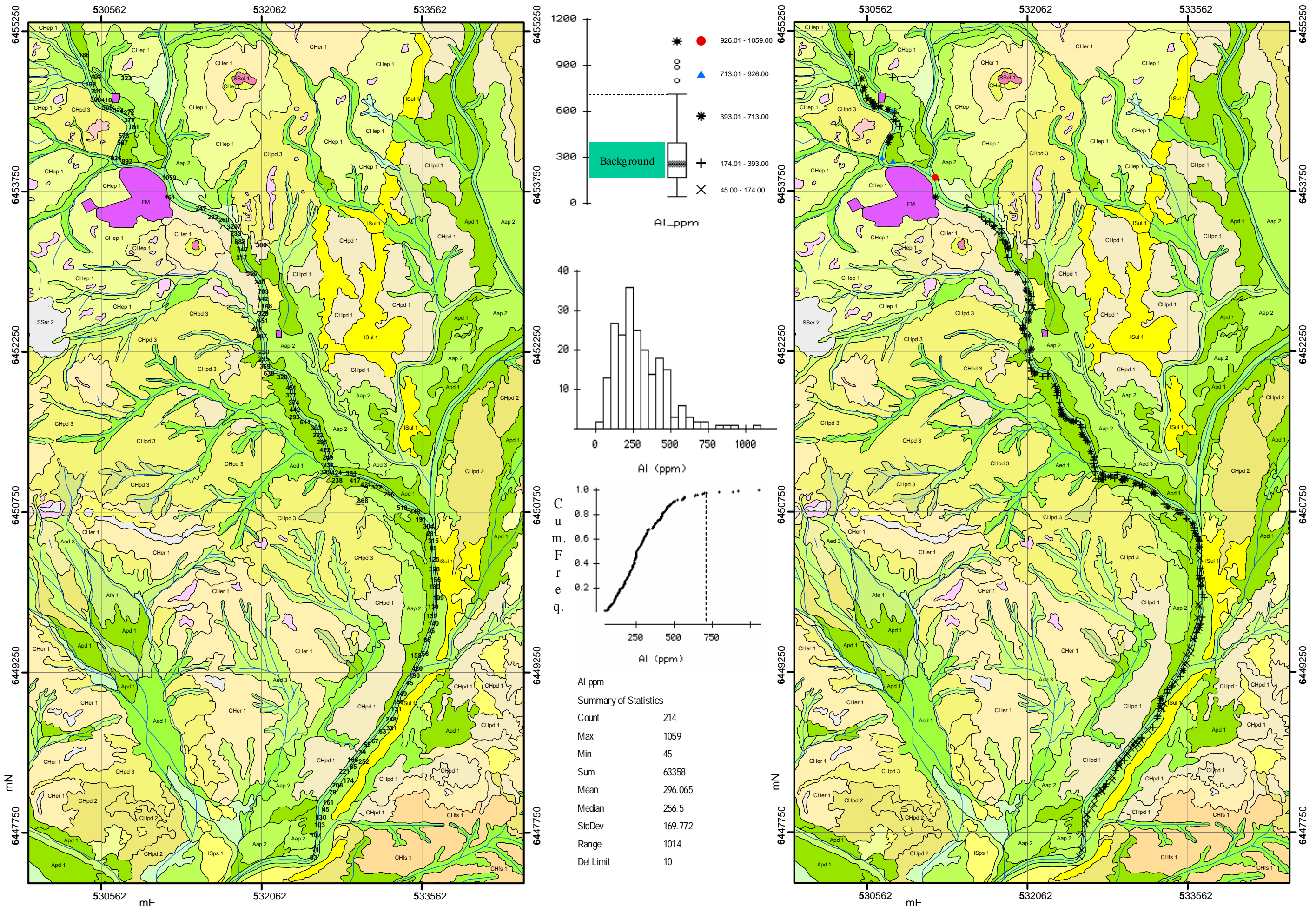


Figure 4.46: Raw data and spatial distribution of detectable Al in *E. camaldulensis* (leaves) down Pine Creek with accompanying boxplots, histogram, cumulative frequency plot and summary statistics.



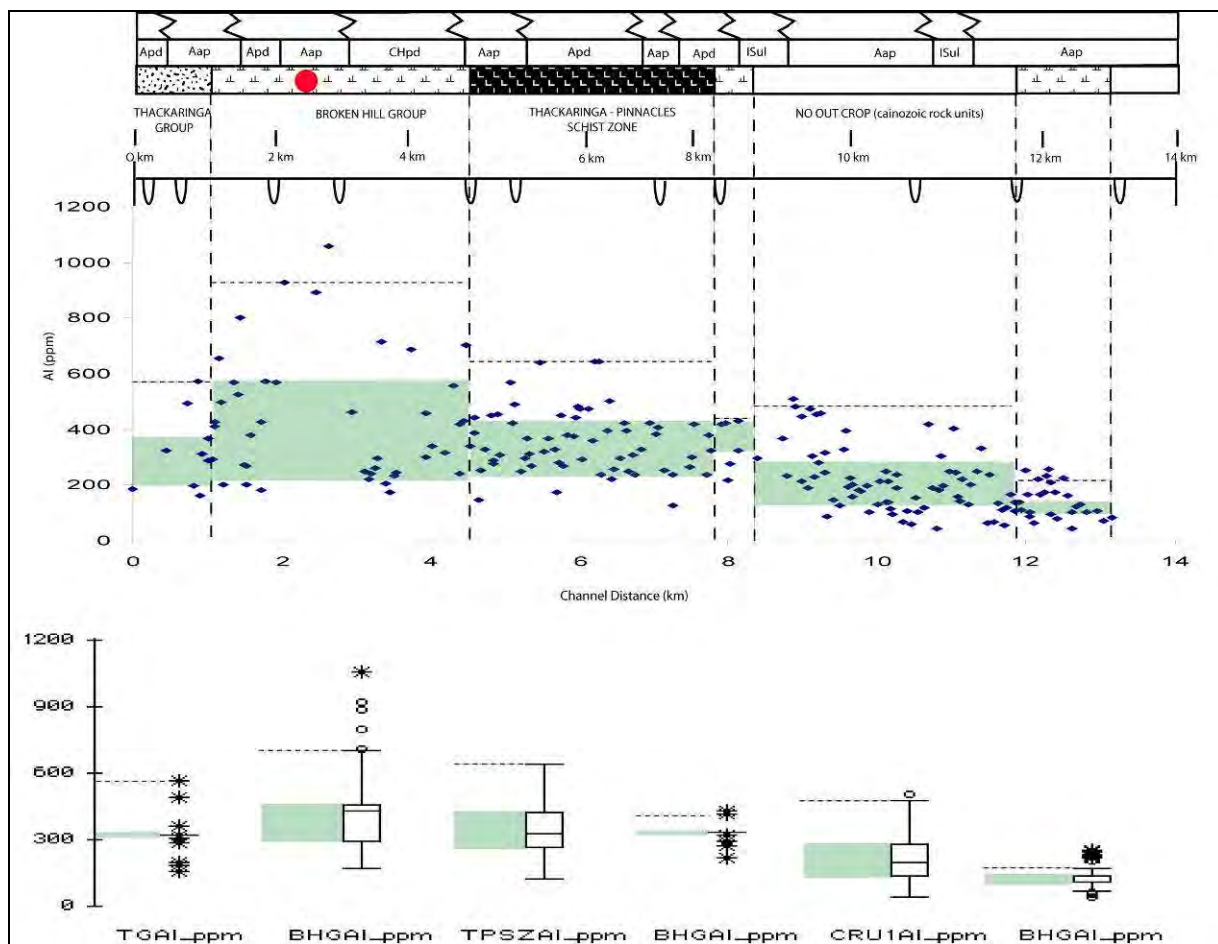


Figure 4.47: Al concentrations within *E. camaldulensis*, flanking different land-form settings along Pine Creek. Thackaringa Group (TG), Broken Hill Group North (BHG(N)), Thackaringa-Pinnacles Schist Zone (TP/SZ), Broken Hill Group Central (BHGC), Cainozoic rock units (CRU) and Broken Hill Group South (BHGS). Green region denotes 'values below the mean, red dot the approximate location of the Barrier Pinnacles Mine and the dashed line indicates the 90<sup>th</sup> percentile.

Element (ppm) [detection limit] Analytical Method	Parameters	Total data set (C) n=214	Setting					
			Thackaringa Group TG (Apd, Aap) n=9	Broken Hill Group BHG(N) (Aap, Apd & CHpd) n=42	Thackaringa- Pinnacles Schist Zone TP/SZ (Aap, Apd) n=60	Broken Hill Group BHG (C) (Apd & ISul) n=7	No outcrop (CRU) (ISul, Aap) n=61	Broken Hill Group BHG(S) (Aap) n=35
Al [5] XRF	Concentration range (Mean)	45-1059 (296)	163-571 (322)	173-1059 (433)	128-644 (355)	219-431 (340)	45-510 (225)	45-255 (137)
	25 <sup>th</sup> - 75 <sup>th</sup> percentile	174-393	198-366	247-567	269-424	287-420	140-281	98-170
	95% confidence level	23	106	69	29	77	30	20
	>90 <sup>th</sup> percentile (outliers), # of samples	713-1059 (4)	No outliers	713-1059 (5)	No outliers	No outliers	426 (1)	208-255 (8)
	<i>E. camaldulensis</i> position with the greatest concentration.	upstream region of the Pine Creek catchment, on the downstream side of tributary alluvial drainage depressions.	southern margin at the interface between TG and BHG (N). Down stream of an NW intersecting Aed unit.	down stream of intersecting NE & NW intersecting Ade units. Flanked by Aap <sub>1</sub> , Aap <sub>2</sub> and Apd <sub>1</sub> .	downstream of intersecting Aed units, in a depositional flood out regions. Flanked by regolith-landform units Apd <sub>1</sub> and Aap <sub>2</sub> .	northern margin, at the interface between TP/SZ and BHG (CL).	northern margin at the interface between BHG (CL) and region of extensive cover	evenly distributed flanked by regolith- landform units CHpd <sub>1</sub> and Aap <sub>2</sub> .

Table 4.43: Variations of Al concentrations within *E. camaldulensis* (river red gums), flanking different land-form settings along Pine Creek. Initial values concentration range (mean), 25<sup>th</sup> - 75<sup>th</sup> percentile concentration range, 95 % confidence; level, >90<sup>th</sup> percentile (outliers), C= composite sample.