Flow Processes and Sedimentation Associated with Erosion and Filling of Sinuous Channels

The Beacon Channel is a sinuous submarine channel that crops out on multiple cliff faces revealing two bends (Fig. DR1). The channel is divided into two units that record the sequential evolution of the channel. Unit 1 records channel erosion and lateral migration (Fig. DR1A). Point bars are located on the inner margins of channel bends. Levees are located adjacent to the channel. Unit 2 records channel filling (Fig. DR1B). Strata in the unit are flat lying. Figures presented here are enlarged from that in Pyles et al.

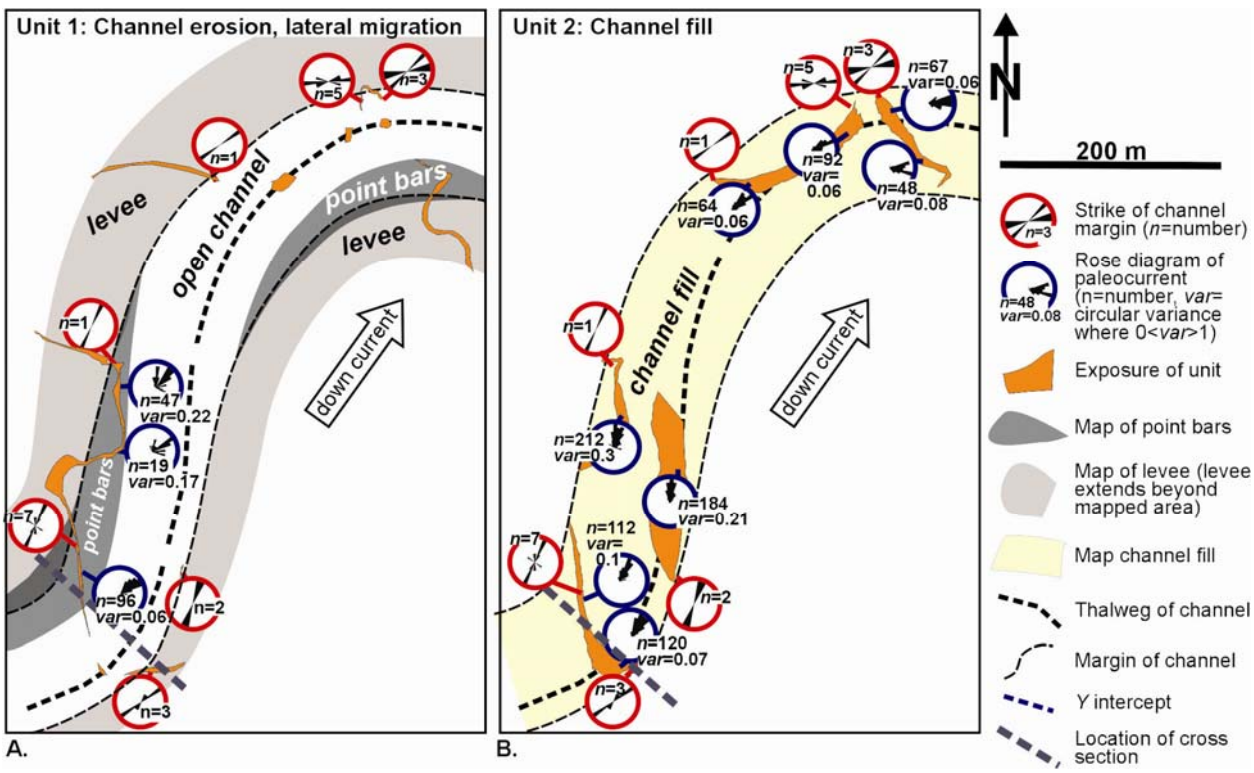
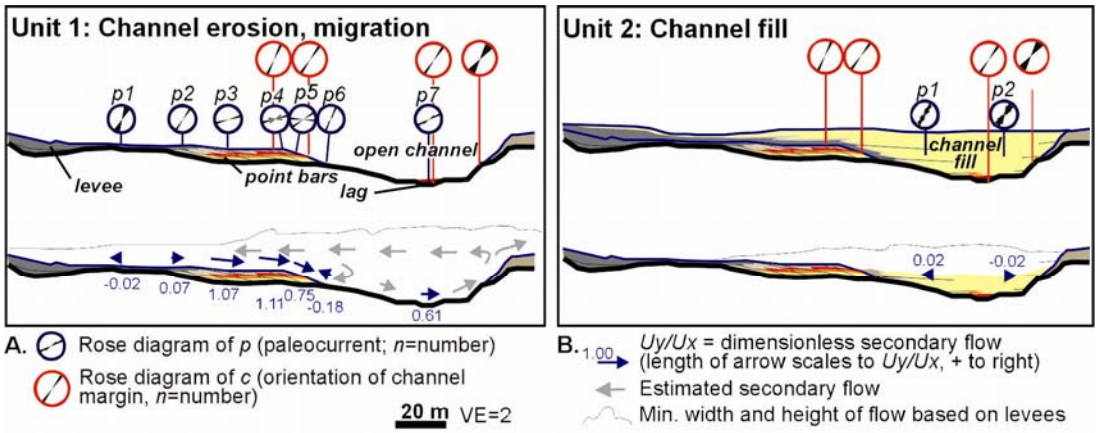


Figure DR1. Maps showing the spatial distribution of stratigraphic and geomorphic features and paleocurrent measurement in Unit 1 (A) and Unit 2 (B) of the Beacon Channel. Maps modified after Pyles et al. (2010).

Data used to evaluate secondary flow are shown in Figure DR2. Secondary flow is analyzed at the apex of a left bend, where *Ux* is interpreted to be locally aligned with the channel margins.



A. Rose diagram of *p* (paleocurrent; *n*=number)
Rose diagram of *c* (orientation of channel margin, *n*=number)
20 m VE=2

B. 1.00 *Uy/Ux* = dimensionless secondary flow (length of arrow scales to *Uy/Ux*, + to right)
Estimated secondary flow
Min. width and height of flow based on levees

	location	*n*	*p* (deg)	nearest *c* (deg)	*p-c* (deg)	*Uy/Ux*
Unit 1	p1	3	25	26	-1	-0.02
	p2	1	30	26	4	0.07
	p3	1	73	26	47	1.07
	p4	4	74	26	48	1.11
	p5	2	70	33	37	0.75
	p6	4	24	34	-10	-0.18
	p7	3	62	35	31	0.61
Unit 2	p1	19	34	33	1	0.02
	p2	19	34	35	-1	-0.02
standard error ($\sigma/n^{0.5}$)	N/A	N/A	(+/-) 5	(+/-) 3	(+/-) 8	(+/-) 0.14

C.

Figure DR2. Cross sections of Unit 1 (A) and Unit (2) showing data used to evaluate secondary flow (top) and results (bottom). The locations of the cross section are shown in Figure DR1. C) Table of data used in the analyses. Values reported for *p* and *c* are vector means. Standard error for measurements and calculations are shown.

References

Pyles, D.R., Jennette, D.C., Tomasso, M., Beaubouef, R.T., and Rossen, C., 2010, Concepts learned from a 3D outcrop of a sinuous slope channel complex: Beacon Channel Complex, Brushy Canyon Formation, West Texas, USA: Journal of Sedimentary Research, v. 80, p. 67-96.