

## Appendix A

### Data from historical observed streamflow data files, taken from Reese and Krzysztofowicz (1989)

Table A-1. Boise river near Twin Springs, Idaho  
X1~May, X2~April, X3~June, and X4~July.

Correlation	Empirical	Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
(X1,X2)	-0.10	-0.27	-0.10	-0.27	-0.27
(X1,X3)	-0.54	-0.51	-0.59	-0.38	-0.55
(X1,X4)	-0.62	-0.37	-0.44	-0.58	-0.33
(X2,X3)	-0.69	-0.61	-0.65	-0.71	-0.56
(X2,X4)	-0.51	-0.44	-0.48	-0.33	-0.56
(X3,X4)	0.55	0.32	0.38	0.41	0.41
Euclidean distance		0.16	0.11	0.13	0.16

Correlation	Empirical	Calc. T	Signif.	p	Critical T
(Y1,Y2)	0.18	1.03	ns	0.05	2.021
(Y1,Y3)	0.41	2.60	s, at p=.05	0.01	2.704
(Y2,Y3)	0.25	1.47	ns	0.001	3.551

Month	Means for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
May	0.36	0.0%	0.0%	0.0%	0.0%
April	0.19	0.5%	0.0%	0.5%	0.5%
June	0.32	0.3%	0.5%	0.0%	0.0%
July	0.12	-1.4%	-1.2%	-0.8%	-0.8%

Month	Variances for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
May	0.003	0.0%	0.0%	0.0%	0.0%
April	0.003	7.4%	-2.9%	7.4%	7.4%
June	0.003	20.6%	37.5%	1.7%	2.3%
July	0.001	-38.2%	-33.5%	-24.2%	-24.2%

Table A-2. Weiser river near Weiser, Idaho  
 X1~May, X2~April, X3~June, and X4~July.

Correlation	Empirical	Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
(X1,X2)	-0.47	-0.33	-0.46	-0.33	-0.33
(X1,X3)	-0.06	-0.27	-0.11	-0.23	-0.25
(X1,X4)	-0.21	-0.21	-0.08	-0.28	-0.22
(X2,X3)	-0.82	-0.79	-0.80	-0.81	-0.80
(X2,X4)	-0.45	-0.61	-0.61	-0.57	-0.50
(X3,X4)	0.40	0.56	0.53	0.56	0.43
Euclidean distance		0.14	0.10	0.12	0.10

Correlation	Empirical	Calc. T	Signif.	p	Critical T
(Y1,Y2)	-0.18	1.07	ns	0.05	2.021
(Y1,Y3)	0.14	0.84	ns	0.01	2.704
(Y2,Y3)	-0.23	1.36	ns	0.001	3.551

Month	Means for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
May	0.37	0.0%	0.0%	0.0%	0.0%
April	0.35	-0.3%	0.0%	-0.3%	-0.3%
June	0.22	0.1%	-0.3%	0.0%	0.5%
July	0.06	1.6%	1.2%	1.8%	0.0%

Month	Variances for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
May	0.002	0.0%	0.0%	0.0%	0.0%
April	0.008	-11.5%	-2.9%	-11.5%	-11.5%
June	0.004	-1.8%	-11.1%	-3.5%	11.2%
July	0.001	6.8%	0.1%	13.1%	-11.5%

Table A-3. Little Truckee River above Boca Reservoir, California  
X1~May, X2~April, X3~June, and X4~July.

Correlation	Empirical	Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
(X1,X2)	-0.23	-0.44	-0.23	-0.44	-0.44
(X1,X3)	-0.42	-0.42	-0.52	-0.25	-0.46
(X1,X4)	-0.56	-0.25	-0.33	-0.46	-0.24
(X2,X3)	-0.60	-0.51	-0.56	-0.60	-0.44
(X2,X4)	-0.41	-0.31	-0.35	-0.19	-0.46
(X3,X4)	0.28	0.02	0.09	0.03	0.16
Euclidean distance		0.19	0.13	0.18	0.18

Correlation	Empirical	Calc. T	Signif.	p	Critical T
(Y1,Y2)	0.29	1.54	ns	0.05	2.467
(Y1,Y3)	0.23	1.21	ns	0.01	2.763
(Y2,Y3)	0.20	1.04	ns	0.001	3.674

Month	Means for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
May	0.41	0.0%	0.0%	0.0%	0.0%
April	0.27	3.0%	0.0%	3.0%	3.0%
June	0.23	1.3%	3.9%	0.0%	-0.7%
July	0.09	-11.8%	-9.5%	-8.6%	-6.9%

Month	Variances for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
May	0.02	0.0%	0.0%	0.0%	0.0%
April	0.02	7.7%	-3.6%	7.7%	7.7%
June	0.01	28.2%	57.3%	11.8%	0.1%
July	0.01	-45.1%	-37.4%	-27.6%	-35.1%

Table A-4. Gila River at Calva, Arizona  
X1~February, X2~March, X3~April, and X4~May.

Correlation	Empirical	Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
(X1,X2)	-0.84	-0.81	-0.82	-0.81	-0.81
(X1,X3)	-0.60	-0.73	-0.55	-0.73	-0.72
(X1,X4)	-0.43	-0.62	-0.45	-0.51	-0.62
(X2,X3)	0.14	0.21	0.09	0.25	0.20
(X2,X4)*	-0.002	0.18	0.07	0.10	0.19
(X3,X4)	0.44	0.49	0.42	0.42	0.46
Euclidean distance		0.13	0.04	0.09	0.13

Correlation	Empirical	Calc. T	Signif.	p	Critical T
(Y1,Y2)	-0.24	1.17	ns	0.05	2.021
(Y1,Y3)	-0.18	0.87	ns	0.01	2.704
(Y2,Y3)	0.20	0.99	ns	0.001	3.551
Cor(X2,X4)	-0.002	0.01	ns		

Month	Means for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
February	0.40	0.0%	0.0%	0.0%	0.0%
March	0.31	-1.7%	0.0%	-1.7%	-1.7%
April	0.19	2.5%	0.7%	3.4%	1.8%
May	0.09	0.5%	-1.3%	-1.2%	2.0%

Month	Variances for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
February	0.036	0.0%	0.0%	0.0%	0.0%
March	0.023	-34.7%	-4.0%	-34.7%	-34.7%
April	0.005	39.0%	8.7%	56.2%	41.6%
May	0.003	-2.6%	-19.4%	-12.8%	0.2%

\* Note sign reversal.

Table A-5. Salmon River at Salmon, Idaho  
X1~April, X2~May, X3~June, and X4~July.

Correlations	Empirical	Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
(X1,X2)	0.35	0.31	0.34	0.31	0.31
(X1,X3)	-0.60	-0.59	-0.62	-0.58	-0.56
(X1,X4)	-0.57	-0.45	-0.47	-0.46	-0.53
(X2,X3)	-0.76	-0.81	-0.79	-0.81	-0.77
(X2,X4)	-0.72	-0.61	-0.64	-0.60	-0.73
(X3,X4)	0.33	0.24	0.24	0.24	0.33
Euclidean distance		0.08	0.07	0.08	0.03

Correlations	Empirical	Calc. T	Signif.	p	Critical T
(Y1,Y2)	0.11	0.65	ns	0.05	2.021
(Y1,Y3)	0.02	0.12	ns	0.01	2.704
(Y2,Y3)	0.35	2.13	s, at p=.05	0.001	3.551

Month	Means for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
April	0.11	-0.6%	0.0%	-0.6%	-0.6%
May	0.28	0.3%	0.0%	0.3%	0.3%
June	0.41	0.4%	0.4%	0.4%	0.0%
July	0.20	-0.8%	-0.8%	-0.8%	0.0%

Month	Variances for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
April	0.002	-14.0%	0.0%	-14.0%	-14.0%
May	0.005	6.8%	0.0%	6.8%	6.8%
June	0.003	38.2%	38.2%	38.2%	-2.9%
July	0.003	-31.8%	-31.8%	-31.8%	-2.9%

Table A-6. Falls River near Squirrel, Idaho  
 X1~April, X2~May, X3~June, and X4~July.

Correlations	Empirical	Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
(X1,X2)	0.49	0.37	0.48	0.37	0.37
(X1,X3)	-0.63	-0.59	-0.69	-0.51	-0.55
(X1,X4)	-0.61	-0.41	-0.48	-0.53	-0.49
(X2,X3)	-0.79	-0.83	-0.81	-0.87	-0.79
(X2,X4)	-0.66	-0.58	-0.60	-0.52	-0.69
(X3,X4)	0.24	0.18	0.18	0.18	0.24
Euclidean distance		0.11	0.07	0.10	0.08

Correlations	Empirical	Calc. T	Signif.	p	Critical T
(Y1,Y2)	0.37	2.32	s, at p=.05	0.05	2.021
(Y1,Y3)	0.22	1.31	ns	0.01	2.704
(Y2,Y3)	0.27	1.62	ns	0.001	3.551

Month	Means for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
April	0.11	-1.5%	0.0%	-1.5%	-1.5%
May	0.34	0.5%	0.0%	0.5%	0.5%
June	0.39	0.4%	0.4%	0.4%	0.0%
July	0.16	-0.8%	-0.8%	-0.8%	0.0%

Month	Variances for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
April	0.001	-33.8%	0.0%	-33.8%	-33.8%
May	0.004	26.3%	0.0%	26.3%	26.3%
June	0.004	27.5%	27.5%	27.5%	-2.9%
July	0.002	-32.4%	-32.4%	-32.4%	-2.9%

Table A-7. Humboldt River at Palisade, Nevada  
X1~April, X2~May, X3~June, and X4~July.

Correlation	Empirical	Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
(X1,X2)	0.27	0.18	0.26	0.18	0.18
(X1,X3)	-0.84	-0.71	-0.86	-0.66	-0.70
(X1,X4)	-0.72	-0.49	-0.60	-0.63	-0.55
(X2,X3)	-0.65	-0.76	-0.61	-0.81	-0.75
(X2,X4)	-0.40	-0.53	-0.47	-0.41	-0.59
(X3,X4)	0.50	0.43	0.43	0.43	0.50
Euclidean distance		0.14	0.07	0.11	0.13

Correlation	Empirical	Calc. T	Signif.	p	Critical T
(Y1,Y2)	0.61	3.88	s, at p=.001	0.05	2.048
(Y1,Y3)	0.33	1.76	ns	0.01	2.763
(Y2,Y3)	0.20	1.06	ns	0.001	3.674

Month	Means for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
April	0.26	-4.3%	0.0%	-4.3%	-4.3%
May	0.28	3.9%	0.0%	3.9%	3.9%
June	0.37	0.6%	0.6%	0.6%	0.0%
July	0.10	-2.4%	-2.4%	-2.4%	0.0%

Month	Variances for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
April	0.016	-41.4%	0.0%	-41.4%	-41.4%
May	0.005	141.4%	0.0%	141.4%	141.4%
June	0.015	11.4%	11.4%	11.4%	-3.6%
July	0.003	-29.7%	-29.7%	-29.7%	-3.6%

Table A-8. Sevier River at Hatch, Utah  
X1~April, X2~May, X3~June, and X4~July.

Correlations	Empirical	Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
(X1,X2)*	0.14	-0.04	0.14	-0.04	-0.04
(X1,X3)	-0.82	-0.47	-0.65	-0.72	-0.51
(X1,X4)*	0.003	-0.40	-0.55	-0.02	-0.28
(X2,X3)	-0.65	-0.75	-0.70	-0.59	-0.80
(X2,X4)	-0.76	-0.63	-0.61	-0.88	-0.44
(X3,X4)	0.29	0.41	0.41	0.41	0.29
Euclidean distance		0.24	0.25	0.11	0.24

Correlations	Empirical	Calc. T	Signif.	p	Critical T
(Y1,Y2)	0.35	2.79	s, at p=.01	0.05	2.000
(Y1,Y3)	-0.75	8.46	s, at p=.001	0.01	2.660
(Y2,Y3)	-0.61	5.84	s, at p=.001	0.001	3.460

Cor(X1,X2)	0.019	1.052	ns
Cor(X1,X4)	0.000	0.019	ns

Month	Means for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
April	0.17	-2.1%	0.0%	-2.1%	-2.1%
May	0.40	0.9%	0.0%	0.9%	0.9%
June	0.28	-1.6%	-1.6%	-1.6%	0.0%
July	0.15	3.1%	3.1%	3.1%	0.0%

Month	Variances for X				
	Empirical	% Error			
		Ind. ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
April	0.004	-23.7%	0.0%	-23.7%	-23.7%
May	0.005	48.3%	0.0%	48.3%	48.3%
June	0.009	-36.3%	-36.3%	-36.3%	-1.7%
July	0.001	188.7%	188.7%	188.7%	-1.7%



Table A-9. Verde River above Horseshoe Dam, Arizona  
 X1~April, X2~March, X3~February, X4~May and X5~January.

Correlations	Empirical	Ind. ratios	Y1 dep. Y4
(X1,X2)	-0.25	-0.34	-0.34
(X1,X3)	-0.44	-0.30	-0.30
(X1,X4)*	0.002	-0.241	-0.003
(X1,X5)	-0.31	-0.31	-0.41
(X2,X3)	-0.42	-0.44	-0.44
(X2,X4)	-0.50	-0.36	-0.47
(X2,X5)	-0.48	-0.46	-0.41
(X3,X4)	-0.08	-0.05	-0.13
(X3,X5)	-0.04	-0.06	-0.02
(X4,X5)	0.43	0.39	0.40
Euclidean distance		0.11	0.07

Correlations	Empirical	Calc. T	Signif.
(Y1,Y2)	0.1	0.67	ns
(Y1,Y3)	-0.23	1.61	ns
(Y1,Y4)	0.38	2.74	s, at p=.01
(Y2,Y3)	0.1	0.67	ns
(Y2,Y4)	0.16	1.09	ns
(Y3,Y4)	0.17	1.14	ns

p	Critical T
0.05	2.000
0.01	2.660
0.001	3.460

Cor(X1,X4)	0.002	0.014306	ns
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Month	Means for X		
	Empirical	% Error	
		Ind. ratios	Y1 dep. Y4
April	0.21	0.0%	0.0%
March	0.32	0.6%	0.6%
February	0.21	-0.7%	-0.7%
May	0.08	5.0%	2.7%
January	0.19	-2.3%	-1.3%

Month	Variances for X		
	Empirical	% Error	
		Ind. ratios	Y1 dep. Y4
April	0.014	0.0%	0.0%
March	0.022	-4.1%	-4.1%
February	0.015	-25.2%	-25.2%
May	0.002	36.2%	8.5%
January	0.009	-11.4%	-3.1%

Table A-10. Salt River near Roosevelt, Arizona  
 X1~January, X2~February, X3~March, X4~April and X5~May.

Correlation	Empirical	Ind. ratios	Y2 dep. Y4
(X1,X2)	-0.10	-0.16	-0.16
(X1,X3)	-0.25	-0.28	-0.28
(X1,X4)	-0.38	-0.35	-0.33
(X1,X5)	-0.29	-0.29	-0.30
(X2,X3)	-0.33	-0.32	-0.32
(X2,X4)	-0.46	-0.41	-0.48
(X2,X5)	-0.23	-0.34	-0.20
(X3,X4)	-0.34	-0.34	-0.29
(X3,X5)	-0.34	-0.28	-0.36
(X4,X5)	0.36	0.40	0.37
Euclidean distance		0.05	0.03

Correlation	Empirical	Calc. T	Signif.
(Y1,Y2)	0.06	0.48	ns
(Y1,Y3)	0.10	0.88	ns
(Y1,Y4)	-0.09	0.74	ns
(Y2,Y3)	0.03	0.24	ns
(Y2,Y4)	-0.27	2.36	s, at p=.05
(Y3,Y4)	-0.03	0.29	ns

p	Critical T
0.05	2.000
0.01	2.660
0.001	3.460

Month	Means for X		
	Empirical	% Error	
		Ind. ratios	Y2 dep. Y4
January	0.12	0.0%	0.0%
February	0.16	0.3%	0.3%
March	0.28	0.3%	0.3%
April	0.29	-0.9%	-0.5%
May	0.15	0.9%	0.1%

Month	Variances for X		
	Empirical	% Error	
		Ind. ratios	Y2 dep. Y4
January	0.007	0.0%	0.0%
February	0.010	-5.5%	-5.5%
March	0.011	-11.2%	-11.2%
April	0.009	-27.6%	-20.5%
May	0.002	15.3%	0.1%

Table A-11. Little Colorado River above Lyman Lake, Arizona  
X1~May, X2~June, X3~April, X4~February and X5~March.

Correlation	Empirical	Ind. ratios	Y1 dep. Y3
(X1,X2)	0.29	0.35	0.35
(X1,X3)	-0.09	-0.34	-0.21
(X1,X4)	-0.38	-0.22	-0.31
(X1,X5)	-0.52	-0.25	-0.36
(X2,X3)	-0.40	-0.25	-0.46
(X2,X4)*	0.02	-0.17	0.01
(X2,X5)*	-0.07	-0.19	0.01
(X3,X4)	-0.74	-0.62	-0.62
(X3,X5)	-0.62	-0.71	-0.71
(X4,X5)	0.52	0.45	0.45
Euclidean distance		0.16	0.09

Correlation	Empirical	Calc. T	Signif.
(Y1,Y2)	0.12	0.79	ns
(Y1,Y3)	0.44	3.26	s, at p=.001
(Y1,Y4)	-0.09	0.59	ns
(Y2,Y3)	0.14	0.96	ns
(Y2,Y4)	-0.12	0.84	ns
(Y3,Y4)	-0.34	2.43	s, at p=.05

p	Critical T
0.05	2.021
0.01	2.704
0.001	3.551

(X2,X4)*	0.02	0.14	ns
(X2,X5)*	-0.07	0.45	ns

Month	Means for X		
	Empirical	% Error	
		Ind. ratios	Y1 dep. Y3
May	0.16	-1.7%	-1.7%
June	0.06	4.4%	4.4%
April	0.43	1.2%	1.2%
February	0.15	-8.4%	-8.4%
March	0.21	3.6%	3.6%

Month	Variances for X		
	Empirical	% Error	
		Ind. ratios	Y1 dep. Y3
May	0.013	-11.8%	-11.8%
June	0.003	12.1%	12.1%
April	0.042	8.7%	8.7%
February	0.017	-39.6%	-39.6%
March	0.015	36.8%	36.8%

Table A-12. Yellowstone River at Billings, Montana  
 X1~April, X2~May, X3~June, X4~September, X5~July and X6~August.

Correlation	Empirical	Ind. ratios	Y4 dep. Y5
(X1,X2)	0.53	0.55	0.55
(X1,X3)	-0.45	-0.47	-0.47
(X1,X4)*	0.04	-0.21	-0.21
(X1,X5)	-0.51	-0.37	-0.35
(X1,X6)	-0.03	-0.27	-0.32
(X2,X3)	-0.40	-0.60	-0.60
(X2,X4)	-0.10	-0.26	-0.26
(X2,X5)	-0.68	-0.47	-0.44
(X2,X6)	-0.44	-0.35	-0.40
(X3,X4)	-0.12	-0.13	-0.13
(X3,X5)	-0.18	-0.24	-0.22
(X3,X6)	-0.38	-0.18	-0.20
(X4,X5)*	-0.22	0.07	-0.13
(X4,X6)	0.30	0.05	0.50
(X5,X6)	0.39	0.30	0.25
Euclidean distance		0.18	0.16

Correlation	Empirical	Calc. T	Signif.
(Y1,Y2)	-0.15	1.16	ns
(Y1,Y3)	-0.22	1.66	ns
(Y1,Y4)	-0.03	0.20	ns
(Y1,Y5)	-0.26	1.99	ns
(Y2,Y3)	0.29	2.27	s, at p=.05
(Y2,Y4)	0.36	2.82	s, at p=.01
(Y2,Y5)	-0.40	3.26	s, at p=.01
(Y3,Y4)	0.31	2.46	s, at p=.05
(Y3,Y5)	-0.15	1.13	ns
(Y4,Y5)	-0.61	5.75	s, at p=.001

p	Critical T
0.05	2.000
0.01	2.660
0.001	3.460

(X1,X4)*	0.04	0.28	ns
(X4,X5)*	-0.22	1.71	ns

Month	Means for X		
	Estimated +(-)%		
	Empirical	Ind. ratios	Y4 dep. Y5
April	0.06	1.0%	1.0%
May	0.20	-0.3%	-0.3%
June	0.38	0.4%	0.4%
September	0.06	2.2%	2.2%
July	0.21	-1.8%	-1.5%
August	0.08	1.2%	0.3%

Month	Variances for X		
	Estimated +(-)%		
	Empirical	Ind. ratios	Y4 dep. Y5
April	0.001	10.8%	10.8%
May	0.003	-6.8%	-6.8%
June	0.003	33.8%	33.8%
September	0.000	55.5%	55.5%
July	0.003	-48.6%	-40.1%
August	0.000	50.2%	9.8%

Table A-13. Payette River near Horseshoe Bend, Idaho  
 X1~April, X2~May, X3~June, X4~July, X5~August and X6~September.

Correlation	Empirical	Ind. ratios	Y2 dep. Y4
(X1,X2)	0.28	0.18	0.18
(X1,X3)	-0.64	-0.51	-0.47
(X1,X4)	-0.57	-0.37	-0.49
(X1,X5)	-0.13	-0.18	-0.18
(X1,X6)*	0.05	-0.18	-0.18
(X2,X3)	-0.42	-0.67	-0.62
(X2,X4)	-0.63	-0.48	-0.65
(X2,X5)	-0.40	-0.24	-0.24
(X2,X6)	-0.33	-0.24	-0.24
(X3,X4)	0.57	0.43	0.58
(X3,X5)	-0.43	-0.29	-0.37
(X3,X6)	-0.53	-0.29	-0.37
(X4,X5)	-0.04	-0.21	-0.10
(X4,X6)	-0.20	-0.21	-0.10
(X5,X6)	0.86	0.82	0.82
Euclidean distance		0.16	0.12

Correlation	Empirical	Calc. T	Signif.
(Y1,Y2)	0.25	1.45	ns
(Y1,Y3)	-0.30	1.77	ns
(Y1,Y4)	-0.08	0.47	ns
(Y1,Y5)	-0.15	0.86	ns
(Y2,Y3)	0.03	0.18	ns
(Y2,Y4)	0.47	2.93	s, at p=.01
(Y2,Y5)	-0.32	1.89	ns
(Y3,Y4)	0.26	1.48	ns
(Y3,Y5)	0.11	0.61	ns
(Y4,Y5)	-0.30	1.74	ns

p	Critical T
0.05	2.021
0.01	2.704
0.001	3.551

(X1,X6)	0.05	0.3	ns
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Month	Means for X		
	% Error		
	Empirical	Ind. ratios	Y2 dep. Y4
April	0.17	-0.8%	-0.8%
May	0.33	0.4%	0.4%
June	0.32	0.3%	-0.2%
July	0.10	-0.8%	0.8%
August	0.05	-0.6%	-0.6%
September	0.04	0.0%	0.0%

Month	Variances for X		
	% Error		
	Empirical	Ind. ratios	Y2 dep. Y4
April	0.002	-16.9%	-16.9%
May	0.003	21.6%	21.6%
June	0.004	6.9%	-17.0%
July	0.001	-25.4%	7.4%
August	0.001	-42.4%	-42.4%
September	0.001	-4.0%	-4.0%

Table A-14. Rio Grande River near Del Norte, Colorado  
 X1~June, X2~July, X3~August, X4~September, X5~April and X6~May.

Correlation	Empirical	Ind. ratios	Y2 dep. Y4
(X1,X2)	0.49	0.51	0.51
(X1,X3)	-0.26	-0.43	-0.31
(X1,X4)	-0.48	-0.40	-0.52
(X1,X5)	-0.48	-0.46	-0.46
(X1,X6)	-0.75	-0.76	-0.76
(X2,X3)	-0.08	-0.34	-0.25
(X2,X4)	-0.23	-0.32	-0.41
(X2,X5)	-0.45	-0.36	-0.36
(X2,X6)	-0.66	-0.60	-0.60
(X3,X4)	0.36	0.56	0.54
(X3,X5)	-0.11	-0.01	-0.08
(X3,X6)	-0.13	-0.01	-0.12
(X4,X5)*	-0.069	-0.005	0.068
(X4,X6)*	0.08	-0.01	0.11
(X5,X6)	0.28	0.19	0.19
Euclidean distance		0.12	0.10

Correlation	Empirical	Calc. T	Signif.
(Y1,Y2)	0.06	0.3	ns
(Y1,Y3)	-0.22	1.15	ns
(Y1,Y4)	-0.02	0.08	ns
(Y1,Y5)	0.03	0.13	ns
(Y2,Y3)	0.09	0.44	ns
(Y2,Y4)	0.38	2.04	ns
(Y2,Y5)	-0.13	0.66	ns
(Y3,Y4)	-0.14	0.69	ns
(Y3,Y5)	-0.18	0.91	ns
(Y4,Y5)	-0.08	0.4	ns

(X4,X5)*	-0.07	0.35	ns
(X4,X6)*	0.08	0.39	ns

p	Critical T
0.05	2.052
0.01	2.771
0.001	3.690

Month	Means for X		
	% Error		
	Empirical	Ind. ratios	Y2 dep. Y4
June	0.34	-0.1%	-0.1%
July	0.13	0.3%	0.3%
August	0.07	3.3%	1.9%
September	0.06	-2.6%	-0.9%
April	0.09	-1.8%	-1.8%
May	0.31	0.3%	0.3%



Month	Variances for X		
	% Error		
	Empirical	Ind. ratios	Y2 dep. Y4
June	0.007	-3.9%	-3.9%
July	0.002	-6.3%	-6.3%
August	0.001	52.6%	31.0%
September	0.001	-42.7%	-29.6%
April	0.002	-23.0%	-23.0%
May	0.006	0.9%	0.9%

Table A-15. Euclidean distance between the empirical correlations and the models correlations.

River Name	Euclidean distance			
	Ind. Ratios	Y1 dep. Y2	Y1 dep. Y3	Y2 dep. Y3
Boise	0.16	0.11	0.13	0.16
Weiser	0.14	0.10	0.12	0.10
Little Truckee	0.19	0.13	0.18	0.18
Gila	0.13	0.04	0.09	0.13
Salmon	0.08	0.07	0.08	0.03
Falls	0.11	0.07	0.10	0.08
Humboldt	0.14	0.07	0.11	0.13
Sevier	0.24	0.25	0.11	0.24

River Name	Euclidean distance		Correlated variables
	Ind. Ratios	Dep. Ratios	
Verde	0.11	0.07	Y1 dep. Y4
Salt	0.05	0.03	Y2 dep. Y4
Little Colorado	0.16	0.09	Y1 dep. Y3
Yellowstone	0.18	0.16	Y4 dep. Y5
Payette	0.16	0.12	Y2 dep. Y4
Rio Grande	0.12	0.10	Y2 dep. Y4