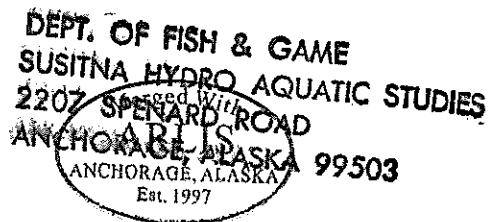


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ASSESSMENT OF THE EFFECTS OF THE PROPOSED
SUSITNA HYDROELECTRIC PROJECT ON INSTREAM
TEMPERATURE AND FISHERY RESOURCES IN THE WATANA
TO TALKEETNA REACH

DRAFT REPORT

APPENDICES A-H

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APPENDIX A

Simulated weekly water temperatures at selected
middle Susitna River locations for Watana-only,
Watana/Devil Canyon and Watana filling scenarios.

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Appendix A. Weekly temperatures (C) at selected
locations for all simulations

<u>Scenario</u>	<u>Pages</u>
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Watana filling, winter 1982-1983	A59-A61

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, summer 1971

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Watana	184.4	Natural	1.0	2.8	4.4	4.6	4.2	9.6	7.8	10.4	11.3	10.3	12.6
		1996	2.5	2.4	2.4	2.4	2.4	2.4	2.9	3.6	5.3	6.2	7.0
		2001	2.5	2.5	2.5	2.5	2.4	2.4	2.9	3.6	5.3	6.2	7.1
LRX 68	150.2	Natural	0.6	2.7	4.3	4.5	4.3	9.4	7.8	10.4	11.3	10.5	13.0
		1996	2.4	2.8	3.1	3.1	3.0	4.5	4.6	6.2	7.6	7.9	9.4
		2001	2.4	2.8	3.1	3.1	3.0	4.5	4.6	6.2	7.6	7.9	9.5
LRX 33	130.1	Natural	0.9	2.9	4.5	4.6	4.4	9.2	7.7	10.3	11.2	10.5	12.9
		1996	2.3	3.0	3.4	3.5	3.3	5.1	4.9	6.7	7.8	8.0	9.7
		2001	2.4	3.0	3.4	3.5	3.3	5.1	4.9	6.7	7.8	8.1	9.7
LRX 3	98.6	Natural	1.3	3.7	5.3	5.4	4.8	9.7	8.0	10.8	11.7	11.0	13.6
		1996	2.4	3.5	4.2	4.4	3.9	6.7	5.7	8.3	9.5	9.3	11.7
		2001	2.4	3.5	4.2	4.4	3.9	6.7	5.7	8.3	9.5	9.3	11.7
Sunshine	33.8	Natural	2.0	3.7	4.9	5.2	4.8	9.0	7.7	9.9	10.6	9.7	11.5
		1996	2.4	3.6	4.5	4.8	4.5	8.0	7.0	8.9	9.6	8.8	10.4
		2001	2.4	3.6	4.5	4.8	4.5	8.0	7.0	8.9	9.6	8.8	10.4

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, summer 1971

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Watana	184.4	Natural	9.0	8.2	10.7	10.6	10.7	9.3	8.6	6.3	5.9	4.8	2.8
		1996	7.5	7.5	7.7	7.9	8.1	8.2	8.4	8.2	7.9	7.4	6.8
		2001	7.4	7.5	7.8	8.0	8.1	8.1	8.5	8.2	7.9	7.4	6.9
LRX 68	150.2	Natural	9.5	8.7	11.1	10.9	10.9	9.7	9.0	6.7	6.3	5.2	3.1
		1996	8.6	8.5	9.2	8.9	8.7	8.8	8.8	8.4	8.0	7.3	6.5
		2001	8.5	8.5	9.2	9.0	8.7	8.7	8.9	8.4	8.0	7.3	6.5
LRX 33	130.1	Natural	9.5	8.8	11.1	10.8	10.9	9.7	9.0	6.9	6.4	5.4	3.3
		1996	8.3	8.4	9.3	8.9	8.9	8.9	8.9	8.3	7.9	7.2	6.2
		2001	8.3	8.4	9.3	9.0	8.9	8.9	9.0	8.3	7.9	7.2	6.2
LRX 3	98.6	Natural	9.9	9.2	11.7	11.3	11.3	10.2	9.5	7.1	6.8	5.8	3.5
		1996	9.3	9.2	10.5	9.8	9.5	9.5	9.4	8.5	8.1	7.3	6.0
		2001	9.3	9.2	10.6	9.8	9.5	9.4	9.4	8.5	8.1	7.3	6.0
Sunshine	83.8	Natural	8.8	8.1	10.2	10.4	10.2	9.2	8.5	6.6	6.3	5.4	3.6
		1996	8.2	7.7	9.2	9.7	9.4	8.9	8.5	7.2	6.8	6.1	4.8
		2001	8.2	7.7	9.2	9.7	9.4	8.8	8.5	7.2	6.8	6.1	4.8

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, summer 1974

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Watana	184.4	Natural	5.1	5.7	6.3	9.9	9.9	8.3	9.6	9.6	10.5	10.4	10.0
		1996	1.6	1.6	1.7	2.0	3.2	3.8	4.3	5.7	7.1	7.7	6.4
		2001	1.4	1.4	1.6	2.0	3.3	3.8	4.4	5.7	7.0	7.7	6.5
LRX 68	150.2	Natural	5.2	5.6	6.1	9.4	9.6	8.3	9.7	9.8	10.9	10.8	10.3
		1996	2.7	2.6	2.6	3.3	4.6	5.2	6.5	7.4	8.9	9.2	8.2
		2001	2.6	2.5	2.6	3.2	4.7	5.3	6.6	7.4	8.8	9.2	8.3
LRX 33	130.1	Natural	5.6	5.7	6.1	9.1	9.4	8.3	9.7	9.8	10.9	10.8	10.3
		1996	3.4	3.2	3.2	3.9	5.2	5.7	7.1	7.8	9.2	9.4	8.5
		2001	3.3	3.1	3.1	3.9	5.2	5.7	7.2	7.8	9.2	9.4	8.5
LRX 3	98.6	Natural	6.6	6.3	6.6	9.7	10.0	8.9	10.5	10.6	11.8	11.6	10.9
		1996	4.6	4.4	4.5	5.6	7.1	7.2	9.1	9.5	11.1	11.0	9.8
		2001	4.5	4.3	4.4	5.6	7.1	7.2	9.1	9.5	11.1	11.0	9.8
Sunshine	83.8	Natural	5.7	5.8	6.2	8.9	9.2	8.0	9.2	9.1	10.1	9.7	9.4
		1996	5.0	5.0	5.5	7.6	8.3	7.3	8.4	8.4	9.3	9.1	8.7
		2001	4.9	5.0	5.5	7.6	8.3	7.3	8.4	8.4	9.3	9.1	8.7

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, summer 1974

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Watana	184.4	Natural	10.3	9.9	10.1	10.0	9.9	7.2	8.9	8.2	6.3	5.3	3.6
		1996	7.2	8.0	8.8	9.5	10.0	8.6	8.3	10.0	8.7	7.8	7.7
		2001	7.4	8.0	8.7	9.3	10.0	8.8	8.6	9.9	9.1	8.2	7.8
LRX 68	150.2	Natural	10.8	10.4	10.6	10.5	10.3	7.7	9.3	8.5	6.8	5.7	3.9
		1996	9.1	9.5	9.9	10.1	10.4	8.8	8.8	9.8	8.8	7.6	6.3
		2001	9.2	9.5	9.8	10.0	10.5	9.0	9.1	9.8	9.1	7.9	6.4
LRX 33	130.1	Natural	10.8	10.5	10.7	10.6	10.4	7.9	9.4	8.6	7.0	5.8	4.1
		1996	9.3	9.5	10.0	10.2	10.4	8.8	8.9	9.6	8.7	7.4	5.8
		2001	9.3	9.5	9.9	10.1	10.4	9.0	9.1	9.6	9.0	7.7	5.8
LRX 3	98.6	Natural	11.5	11.1	11.5	11.3	11.1	8.5	10.0	9.1	7.6	6.3	4.3
		1996	10.6	10.8	11.1	11.1	11.2	9.2	9.6	10.1	9.0	7.6	5.7
		2001	10.7	10.8	11.1	11.0	11.2	9.4	9.8	10.0	9.3	7.8	5.8
Sunshine	83.8	Natural	9.8	9.5	9.8	9.7	9.5	7.4	8.8	8.1	6.8	5.8	4.4
		1996	9.1	8.9	9.3	9.4	9.4	7.6	8.6	8.2	7.5	6.3	4.7
		2001	9.1	8.9	9.3	9.3	9.4	7.6	8.6	8.2	7.6	6.3	4.7

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, summer 1974

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Watana	184.4	Natural	4.8	7.6	8.6	8.2	9.2	8.9	11.6	12.2	8.5	8.4	9.2
		1996	3.0	3.2	4.1	5.4	6.9	7.4	8.3	10.2	7.8	6.7	7.1
		2001	3.0	3.2	4.2	5.3	7.0	8.1	8.6	11.1	8.1	7.3	6.9
LRX 68	150.2	Natural	5.0	7.6	8.3	8.1	9.3	8.9	11.6	12.4	9.0	8.9	9.5
		1996	3.6	3.9	4.4	5.7	7.1	7.1	8.9	10.6	8.5	8.0	8.3
		2001	3.6	3.9	4.5	5.7	7.2	7.4	9.0	11.1	8.7	8.4	8.2
LRX 33	130.1	Natural	5.1	7.5	8.2	8.1	9.4	8.8	11.5	12.3	9.1	9.0	9.4
		1996	3.9	4.4	4.8	6.0	7.2	6.9	8.9	10.3	8.5	8.3	8.2
		2001	3.9	4.4	4.8	6.0	7.3	7.1	9.0	10.7	8.6	8.5	8.2
LRX 3	98.6	Natural	5.7	8.0	8.8	8.9	10.1	9.3	12.1	13.1	9.8	9.7	9.9
		1996	4.7	5.9	6.4	7.6	9.2	8.1	10.6	12.1	9.8	9.5	9.1
		2001	4.7	5.9	6.4	7.6	9.2	8.3	10.7	12.3	9.9	9.6	9.1
Sunshine	83.8	Natural	5.2	7.5	8.3	8.2	9.4	8.0	10.0	10.7	9.0	9.1	9.1
		1996	4.8	6.4	7.1	7.5	8.5	7.2	8.9	9.6	8.6	8.7	8.5
		2001	4.8	6.4	7.1	7.5	8.5	7.2	8.9	9.6	8.6	8.8	8.5

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, summer 1981

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Watana	184.4	Natural	4.8	7.6	8.6	8.2	9.2	8.9	11.6	12.2	8.5	8.4	9.2
		1996	3.0	3.2	4.1	5.4	6.9	7.4	8.3	10.2	7.8	6.7	7.1
		2001	3.0	3.2	4.2	5.3	7.0	8.1	8.6	11.1	8.1	7.3	6.9
LRX 68	150.2	Natural	5.0	7.6	8.3	8.1	9.3	8.9	11.6	12.4	9.0	8.9	9.5
		1996	3.6	3.9	4.4	5.7	7.1	7.1	8.9	10.6	8.5	8.0	8.3
		2001	3.6	3.9	4.5	5.7	7.2	7.4	9.0	11.1	8.7	8.4	8.2
LRX 33	130.1	Natural	5.1	7.5	8.2	8.1	9.4	8.8	11.5	12.3	9.1	9.0	9.4
		1996	3.9	4.4	4.8	6.0	7.2	6.9	8.9	10.3	8.5	8.3	8.2
		2001	3.9	4.4	4.8	6.0	7.3	7.1	9.0	10.7	8.6	8.5	8.2
LRX 3	98.6	Natural	5.7	8.0	8.8	8.9	10.1	9.3	12.1	13.1	9.8	9.7	9.9
		1996	4.7	5.9	6.4	7.6	9.2	8.1	10.6	12.1	9.8	9.5	9.1
		2001	4.7	5.9	6.4	7.6	9.2	8.3	10.7	12.3	9.9	9.6	9.1
Sunshine	83.8	Natural	5.2	7.5	8.3	8.2	9.4	8.0	10.0	10.7	9.0	9.1	9.1
		1996	4.8	6.4	7.1	7.5	8.5	7.2	8.9	9.6	8.6	8.7	8.5
		2001	4.8	6.4	7.1	7.5	8.5	7.2	8.9	9.6	8.6	8.8	8.5

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, summer 1981

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Watana	184.4	Natural	9.5	9.8	9.4	9.4	6.8	7.5	9.9	7.2	7.0	6.2	1.6
		1996	10.2	11.2	10.0	8.3	7.6	7.2	8.2	8.8	8.0	8.6	7.1
		2001	10.2	11.0	10.5	8.3	7.5	7.0	8.3	8.7	7.9	8.5	7.0
LRX 68	150.2	Natural	9.9	10.2	9.9	9.9	7.5	8.0	10.1	7.7	7.2	6.4	2.0
		1996	10.2	11.1	10.3	8.9	8.1	7.7	8.7	9.1	8.0	8.4	6.5
		2001	10.2	11.0	10.5	8.9	8.0	7.6	8.8	9.0	7.9	8.3	6.4
LRX 33	130.1	Natural	9.9	10.3	10.0	10.0	7.6	8.1	10.1	7.9	7.3	6.5	2.2
		1996	9.8	10.7	10.1	9.1	8.1	7.9	8.9	9.1	8.0	8.2	6.1
		2001	9.8	10.7	10.3	9.1	8.0	7.8	9.0	9.0	7.9	8.1	6.0
LRX 3	98.6	Natural	10.4	10.9	10.6	10.5	8.0	8.6	10.7	8.4	7.6	6.8	2.2
		1996	10.6	11.5	10.9	9.7	8.5	8.4	9.5	9.5	8.2	8.3	5.7
		2001	10.6	11.4	11.0	9.7	8.4	8.3	9.6	9.4	8.1	8.2	5.5
Sunshine	83.8	Natural	9.5	9.9	9.8	9.6	7.7	8.3	9.4	7.8	7.1	6.1	2.3
		1996	9.1	9.5	9.6	9.3	7.9	8.2	9.0	8.2	7.3	6.8	4.0
		2001	9.1	9.5	9.6	9.3	7.8	8.2	9.0	8.2	7.3	6.8	3.9

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, summer 1982

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Watana	184.4	Natural	5.5	4.9	7.2	7.1	8.8	9.2	8.0	9.6	11.9	10.2	10.6
		1996	3.0	3.1	3.2	3.5	4.0	5.7	6.6	5.8	7.8	11.3	10.0
		2001	3.2	3.2	3.4	3.6	4.0	5.7	6.5	5.7	6.0	10.9	10.0
LRX 68	150.2	Natural	5.4	4.7	6.8	6.8	8.6	9.0	8.1	9.7	11.9	10.5	11.0
		1996	3.7	3.3	3.6	3.7	4.7	5.7	6.5	7.1	8.9	10.9	10.5
		2001	3.8	3.4	3.7	3.7	4.7	5.7	6.4	7.1	8.2	10.7	10.5
LRX 33	130.1	Natural	5.5	4.7	6.7	6.6	8.4	8.9	8.0	9.6	11.8	10.6	11.1
		1996	4.1	3.5	3.9	4.0	5.0	5.8	6.4	7.3	9.0	10.5	10.2
		2001	4.3	3.6	4.0	4.0	5.0	5.8	6.3	7.3	8.5	10.3	10.2
LRX 3	98.6	Natural	6.6	5.3	7.3	7.2	9.0	9.3	8.5	10.2	12.5	11.4	11.7
		1996	5.2	4.4	5.2	5.2	6.6	7.1	7.4	8.7	10.8	11.7	11.5
		2001	5.3	4.4	5.3	5.3	6.6	7.1	7.4	8.7	10.4	11.6	11.4
Sunshine	83.8	Natural	6.1	5.2	7.0	6.9	8.4	8.6	7.6	9.0	11.0	9.8	10.1
		1996	5.4	4.7	5.9	5.9	7.3	7.7	6.9	7.9	9.9	9.3	9.2
		2001	5.5	4.7	5.9	6.0	7.3	7.7	6.9	7.9	9.8	9.2	9.2

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, summer 1982

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Watana	184.4	Natural	10.6	9.7	10.5	10.5	10.5	10.5	9.0	7.6	6.1	6.4	4.1
		1996	8.8	8.7	8.7	8.9	9.1	9.6	8.5	9.1	9.2	8.1	8.0
		2001	8.6	8.6	8.7	8.7	9.0	9.7	8.4	9.0	9.1	8.5	8.1
LRX 68	150.2	Natural	11.1	10.1	10.9	11.1	11.0	10.9	9.4	7.9	6.5	6.6	4.3
		1996	10.1	9.4	9.7	9.8	9.8	10.2	9.0	9.0	8.8	7.8	7.5
		2001	10.0	9.3	9.6	9.7	9.7	10.3	8.9	9.0	8.7	7.9	7.6
LRX 33	130.1	Natural	11.2	10.0	11.0	11.2	11.0	11.0	9.5	8.0	6.7	6.6	4.4
		1996	10.2	9.3	9.8	10.1	10.0	10.4	9.1	8.9	8.5	7.5	7.2
		2001	10.1	9.2	9.7	10.0	9.9	10.5	9.0	8.9	8.5	7.6	7.2
LRX 3	98.6	Natural	12.0	10.6	11.7	12.0	11.6	11.8	10.1	8.4	7.1	6.8	4.6
		1996	11.6	10.1	10.9	11.2	10.8	11.3	9.8	9.2	8.7	7.7	7.1
		2001	11.5	10.1	10.8	11.1	10.8	11.4	9.8	9.2	8.7	7.7	7.1
Sunshine	83.8	Natural	10.5	9.3	10.2	10.1	9.7	9.9	8.5	7.6	6.6	5.8	4.5
		1996	9.7	8.8	9.7	9.7	9.3	9.7	8.3	7.8	7.0	6.0	5.5
		2001	9.7	8.9	9.7	9.6	9.3	9.7	8.3	7.8	7.0	5.9	5.5

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1971-1972

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Watana	184.4	Natural	6.3	5.9	4.8	2.8	1.2	0	0	0	0	0	0	0
		1996	8.2	7.9	7.4	6.9	5.6	5.0	4.6	3.7	2.6	1.0	1.0	1.1
		2001	8.2	7.9	7.4	6.9	5.5	5.0	4.6	3.6	2.5	1.1	1.0	1.1
LRX 68	150.2	Natural	6.8	6.3	5.3	3.1	1.5	0.3	0	0	0	0	0	0
		1996	8.4	8.0	7.3	6.5	5.1	4.5	3.7	2.3	1.3	0.1	0.4	0.3
		2001	8.4	8.0	7.3	6.5	5.1	4.5	3.6	2.2	1.2	0.1	0.5	0.3
LRX 33	130.1	Natural	6.9	6.4	5.4	3.3	1.7	0.5	0	0	0	0	0	0
		1996	8.3	7.9	7.2	6.2	4.8	4.2	3.2	1.5	0.4	0	0	0
		2001	8.3	7.9	7.2	6.2	4.8	4.2	3.2	1.4	0.3	0	0	0
LRX 3	98.6	Natural	7.2	6.8	5.8	3.5	1.8	0.6	0	0	0	0	0	0
		1996	8.5	8.1	7.3	6.0	4.5	3.8	2.5	0	0	0	0	0
		2001	8.5	8.1	7.3	6.0	4.5	3.8	2.4	0	0	0	0	0
Sunshine	83.8	Natural	6.7	6.3	5.4	3.6	2.4	1.8	0.5	0	0	0	0	0
		1996	7.2	6.8	6.1	4.9	3.7	3.1	1.6	0	0	0	0	0
		2001	7.2	6.8	6.1	4.8	3.7	3.1	1.6	0	0	0	0	0

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1971-1972

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Watana	184.4	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	2.1	2.1	2.1	2.1	1.6	1.8	0.5	0.5	0.5	1.2	2.1
		2001	1.7	1.7	1.1	0.8	0.8	0.7	0.7	0.6	0.6	1.2	2.1
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0.9	1.0	0.9	0.9	1.0	0.9	0	0	0	0.4	0.4
		2001	0.5	0.6	0	0	0.3	0	0	0	0	0.5	0.3
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0	0.2	0	0	0.6	0.2	0	0	0	0	0
		2001	0	0	0	0	0	0	0	0	0	0	0
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0	0	0	0	0	0	0	0	0	0	0
		2001	0	0	0	0	0	0	0	0	0	0	0
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0	0	0	0	0	0	0	0	0	0	0
		2001	0	0	0	0	0	0	0	0	0	0	0

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1971-1972

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Watana	184.4	Natural	0	0	0	0	0	0	0	0	0	0.4	2.8
		1996	2.1	2.1	2.1	2.1	2.0	1.9	1.0	0.3	0.8	2.1	2.1
		2001	2.0	2.0	1.8	1.8	1.7	1.8	0.8	0.3	1.1	2.2	2.2
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	0	0	1.9
		1996	0.3	0.6	0.6	0.1	0.9	1.5	0.7	0	0.4	1.5	2.2
		2001	0.1	0.5	0.3	0	0.6	1.4	0.5	0	0.6	1.6	2.2
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0.1	2.2
		1996	0	0	0	0	0.2	1.3	0.5	0	0.2	1.4	2.4
		2001	0	0	0	0	0	1.2	0.3	0	0.4	1.4	2.4
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0.1	3.0
		1996	0	0	0	0	0	0.7	0.1	0	0	1.2	2.9
		2001	0	0	0	0	0	0.6	0	0	0	1.2	2.9
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0.1	0.9	3.3
		1996	0	0	0	0	0	0.4	0	0	0	1.3	3.1
		2001	0	0	0	0	0	0.3	0	0	0	1.3	3.1

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1974-1975

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Watana	184.4	Natural	8.1	6.4	5.3	3.4	0	0	0	0	0.6	0	0	0
		1996	10.0	8.7	7.8	7.8	6.7	5.9	5.2	4.7	4.2	3.2	2.1	1.8
		2001	9.9	9.1	8.2	8.0	6.8	6.0	5.3	4.7	4.3	3.2	2.0	2.2
LRX 68	150.2	Natural	8.5	6.9	5.8	3.8	0	0.1	0	0	0.1	0	0	0
		1996	9.8	8.8	7.7	6.3	4.5	4.3	3.8	3.6	3.1	1.4	0	0
		2001	9.8	9.1	7.9	6.4	4.6	4.4	3.8	3.6	3.1	1.4	0	0
LRX 33	130.1	Natural	8.6	7.1	5.9	3.9	0.1	0.2	0	0.1	0	0	0	0
		1996	9.6	8.8	7.5	5.7	3.6	3.7	3.1	3.1	2.6	0.5	0	0
		2001	9.6	9.0	7.7	5.8	3.7	3.7	3.1	3.1	2.6	0.5	0	0
LRX 3	98.6	Natural	9.1	7.7	6.4	4.2	0	0.1	0	0	0	0	0	0
		1996	10.1	9.1	7.7	5.6	2.5	2.9	2.2	2.4	1.8	0	0	0
		2001	10.0	9.3	7.9	5.7	2.5	2.9	2.2	2.4	1.8	0	0	0
Sunshine	83.8	Natural	8.1	6.8	5.9	4.3	0.9	1.3	0.7	1.1	0.9	0	0	0
		1996	8.2	7.6	6.3	4.6	1.7	2.2	1.5	2.0	1.5	0	0	0
		2001	8.2	7.7	6.4	4.6	1.7	2.2	1.5	2.0	1.5	0	0	0

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1974-1975

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Watana	184.4	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.2
		2001	2.0	2.0	2.2	1.8	1.9	1.8	1.7	1.6	1.5	1.5	1.4
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0.5	0.2	0.4	0.5	0.2	0	0	0.4	0.6	0	0
		2001	0.7	0.5	0.8	0.7	0.6	0	0	0.7	0.9	0	0
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0	0	0	0	0	0	0	0	0.1	0	0
		2001	0	0	0	0	0	0	0	0.1	0.4	0	0
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0	0	0	0	0	0	0	0	0	0	0
		2001	0	0	0	0	0	0	0	0	0	0	0
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0	0	0	0	0	0	0	0	0	0	0
		2001	0	0	0	0	0	0	0	0	0	0	0

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1974-1975

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Watana	184.4	Natural	0	0	0	0	0	0	0	0	1.6	2.8	4.0
		1996	2.3	2.3	2.3	2.3	2.2	2.1	1.3	0.6	0.6	0.6	0.6
		2001	2.4	2.4	2.4	2.4	2.4	2.4	2.2	1.7	1.5	1.4	1.6
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	1.0	2.0	3.6
		1996	0.1	1.0	1.4	1.2	1.4	1.4	1.1	0.4	0.9	1.0	1.4
		2001	0.2	1.1	1.5	1.3	1.6	1.6	1.9	1.4	1.7	1.7	2.2
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	1.2	2.3	3.9
		1996	0	0.2	0.9	0.6	1.0	0.9	1.0	0.3	1.1	1.4	2.0
		2001	0	0.3	0.9	0.6	1.1	1.1	1.7	1.2	1.8	1.9	2.7
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	1.8	3.1	4.9
		1996	0	0	0	0	0.1	0	0.7	0.1	1.5	2.1	3.0
		2001	0	0	0	0	0.2	0	1.2	0.8	2.0	2.5	3.6
Sunshine	83.8	Natural	0	0	0	0	0	0	0.4	0.5	2.3	3.3	4.5
		1996	0	0	0	0	0	0	0.6	0.2	1.8	2.6	3.5
		2001	0	0	0	0	0	0	1.0	0.8	2.2	2.9	3.9

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1976-1977

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Watana	184.4	Natural	5.9	5.5	4.8	3.9	1.2	0	1.2	0	0	0	0	0
		1996	10.0	9.4	8.7	8.0	6.9	6.1	5.1	4.6	3.6	2.8	1.8	1.0
		2001	DID NOT RUN											
LRX 68	150.2	Natural	6.4	6.0	5.3	4.2	1.5	0	1.2	0	0	0	0	0
		1996	9.9	9.4	8.4	7.1	5.7	4.5	4.1	2.5	1.4	1.6	0.8	0
		2001												
LRX 33	130.1	Natural	6.6	6.2	5.5	4.4	1.7	0.1	1.3	0	0	0	0	0
		1996	9.7	9.2	8.1	6.7	5.2	3.8	3.7	1.5	0.3	1.0	0.2	0
		2001												
LRX 3	98.6	Natural	7.2	6.8	6.1	4.7	2.0	0	1.2	0	0	0	0	0
		1996	9.7	9.3	8.1	6.6	4.8	2.9	3.2	0	0	0.1	0	0
		2001												
Sunshine	83.8	Natural	6.3	6.0	5.5	4.7	2.8	1.0	2.0	0	0	0.2	0	0
		1996	7.5	7.4	6.3	5.2	3.7	1.9	2.7	0	0	0.1	0	0
		2001												

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1976-1977

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Watana	184.4	Natural	0.5	0	0	0	0	0.6	0	0	1.4	1.3	0
		1996	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6
		2001											
LRX 68	150.2	Natural	0.2	0	0	0	0	0	0	0	0.8	0.9	0
		1996	0.5	0	0.2	0.2	0	0.4	0	0.1	0.5	0.5	0.4
		2001											
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0.3	0.5	0
		1996	0.3	0	0	0	0	0.2	0	0	0.3	0.4	0.2
		2001											
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0	0	0	0	0	0	0	0	0	0.2	0
		2001											
Sunshine	83.8	Natural	0.5	0	0	0	0	0	0	0	0.4	0.4	0.2
		1996	0.3	0	0	0	0	0	0	0	0.1	0.2	0
		2001											

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1976-1977

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Watana	184.4	Natural	0	0	0	0	0	0	0	1.2	0	2.3	4.9
		1996	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7
		2001											
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0.6	0	1.6	4.6
		1996	0	0.3	0	0	0	0.1	0.3	0.9	0.5	1.0	1.7
		2001											
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0.8	0	1.9	5.0
		1996	0	0.2	0	0	0	0	0.1	1.0	0.5	1.3	2.4
		2001											
LRX 3	98.6	Natural	0	0	0	0	0	0	0	1.3	0	2.6	6.1
		1996	0	0	0	0	0	0	0	1.3	0.5	1.8	3.6
		2001											
Sunshine	85.8	Natural	0	0.3	0	0	0	0	0	2.0	0.8	2.9	5.4
		1996	0	0	0	0	0	0	0	1.6	0.7	2.3	4.2
		2001											

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1981-1982

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Watana	184.4	Natural	7.2	7.0	6.2	1.6	0.3	0.3	1.2	0.5	0	0	0	0
		1996	8.8	8.0	8.6	7.1	6.5	5.5	5.1	4.5	3.9	3.3	2.9	2.4
		2001	8.7	7.9	8.5	7.1	6.5	5.4	5.0	4.5	4.0	3.2	3.2	3.2
LRX 68	150.2	Natural	7.7	7.2	6.4	2.0	0.7	0.6	1.3	0.5	0	0	0	0
		1996	9.1	8.0	8.4	6.5	5.6	5.0	4.4	3.8	2.7	2.3	1.8	1.6
		2001	9.0	8.0	8.3	6.5	5.6	5.0	4.4	3.8	2.8	2.2	2.0	2.2
LRX 33	130.1	Natural	7.9	7.3	6.5	2.2	1.0	0.9	1.4	0.5	0	0	0	0
		1996	9.1	8.0	8.2	6.1	5.2	4.7	4.1	3.4	2.0	1.7	1.0	0.8
		2001	9.0	7.9	8.1	6.1	5.1	4.7	4.0	3.4	2.0	1.6	1.3	1.4
LRX 3	98.6	Natural	8.4	7.6	6.8	2.2	1.0	1.0	1.4	0.5	0	0	0	0
		1996	9.5	8.2	8.3	5.7	4.7	4.5	3.8	3.1	0.8	0.7	0	0
		2001	9.4	8.1	8.2	5.6	4.6	4.4	3.7	3.1	0.9	0.6	0	0
Sunshine	83.8	Natural	7.8	7.1	6.1	2.3	1.7	1.8	1.9	1.1	0	0	0	0
		1996	8.2	7.3	6.8	4.0	3.5	3.6	3.2	2.5	0.1	0.1	0	0
		2001	8.2	7.0	6.7	4.8	3.2	3.4	2.7	2.4	0.5	0	0	0

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1981-1982

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Watana	184.4	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	2.7	2.7	2.7	2.6	2.6	0.8	0.7	2.5	2.8	2.8	2.8
		2001	3.2	3.2	3.2	3.0	2.6	2.5	3.1	3.2	3.2	3.2	3.2
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	2.1	1.6	1.8	2.0	1.3	0	0	0.8	0.8	1.7	2.3
		2001	2.5	2.0	2.2	2.4	1.3	0.9	1.3	1.4	1.1	2.0	2.6
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	1.7	0.7	1.1	1.5	0.3	0	0	0	0	1.1	1.9
		2001	2.0	1.1	1.4	1.9	0.3	0	0.1	0	0	1.3	2.1
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0.8	0	0	0.5	0	0	0	0	0	0.1	1.0
		2001	1.1	0	0	0.8	0	0	0	0	0	0.3	1.3
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0.3	0	0	0	0	0	0	0	0	0	0.5
		2001	0.5	0	0	0.2	0	0	0	0	0	0	0.7

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1981-1982

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Watana	184.4	Natural	0	0	0	0	0	0.9	0	0	1.2	4.6	5.8
		1996	2.8	2.8	2.6	2.7	1.9	1.7	2.8	2.8	2.8	2.8	2.9
		2001	3.2	2.8	2.9	1.7	1.4	3.2	3.2	3.2	3.2	3.2	3.2
LRX 68	150.2	Natural	0	0	0	0	0	0.3	0	0	0.1	4.1	5.5
		1996	0.7	0.4	1.1	1.9	1.0	1.8	2.1	2.3	2.6	3.4	3.8
		2001	1.0	0.4	1.3	1.1	0.6	3.1	2.4	2.5	2.9	3.7	4.0
LRX 33	150.1	Natural	0	0	0	0	0	0.5	0	0	0.5	4.6	5.8
		1996	0	0	0.2	1.5	0.5	1.8	1.7	1.9	2.5	3.9	4.4
		2001	0	0	0.4	0.7	0.2	3.0	1.9	2.2	2.8	4.1	4.6
LRX 3	58.6	Natural	0	0	0	0	0	0.8	0	0	1.1	6.0	7.4
		1996	0	0	0	0.6	0	1.8	1.1	1.4	2.5	4.9	5.7
		2001	0	0	0	0	0	2.8	1.3	1.6	2.7	5.0	5.9
Sunshine	83.8	Natural	0	0	0	0	0	1.4	0.1	0.4	1.8	5.5	6.7
		1996	0	0	0	0.3	0	1.9	0.8	1.2	2.5	5.0	5.9
		2001	0	0	0	0	0	2.5	1.0	1.4	2.7	4.9	5.8

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1982-1983

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Watana	184.4	Natural	7.6	6.1	6.4	4.1	2.0	0	0	0	0	0	0	0
		1996	9.1	9.2	8.1	8.0	7.4	6.5	5.5	4.6	3.8	2.8	2.0	2.4
		2001	9.0	9.1	8.5	8.2	7.6	6.7	5.7	4.6	3.9	2.9	2.2	2.5
LRX 68	150.2	Natural	7.9	6.5	6.6	4.3	2.2	0.2	0	0	0	0	0	0
		1996	9.0	8.8	7.8	7.5	6.5	5.5	4.2	2.2	2.2	1.5	0.9	1.5
		2001	9.0	8.8	7.9	7.7	6.7	5.7	4.3	2.3	2.3	1.6	1.0	1.6
LRX 33	130.1	Natural	8.0	6.7	6.6	4.4	2.3	0.3	0	0	0	0	0	0
		1996	8.9	8.5	7.5	7.2	6.0	5.0	3.4	1.1	1.3	0.7	0.2	0.9
		2001	8.8	8.4	7.5	7.3	6.2	5.1	3.6	1.2	1.4	0.8	0.3	0.9
LRX 3	98.6	Natural	8.4	7.1	6.8	4.6	2.3	0.1	0	0	0	0	0	0
		1996	9.2	8.7	7.7	7.1	5.7	4.3	2.5	0	0	0	0	0
		2001	9.2	8.7	7.7	7.2	5.8	4.4	2.6	0	0	0	0	0
Sunshine	83.8	Natural	7.6	6.6	5.8	4.5	2.6	0.8	0	0	0	0	0	0
		1996	7.8	7.0	6.0	5.5	4.1	2.9	1.3	0	0	0	0	0
		2001	8.0	7.0	6.1	5.5	3.6	3.1	1.6	0	0	0	0	0

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1982-1983

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Watana	184.4	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	2.0	1.6	1.3	1.2	2.3	2.5	2.5	2.5	2.5	2.5	2.3
		2001	2.6	1.6	1.5	2.4	2.8	2.8	2.8	2.8	2.7	2.6	2.0
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	1.3	0.6	0.6	0.1	1.8	1.4	0.3	1.6	1.4	1.8	1.5
		2001	1.8	0.6	0.8	1.1	2.2	1.6	0.5	1.8	1.6	1.9	1.3
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0.6	0	0.1	0	1.4	0.7	0	1.0	0.5	1.2	0.9
		2001	1.1	0	0.3	0.2	1.8	0.9	0	1.2	0.6	1.3	0.7
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0	0	0	0	0.7	0	0	0	0	0.2	0
		2001	0	0	0	0	1.0	0	0	0	0	0.3	0
Sunshine	33.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		1996	0	0	0	0	0.3	0	0	0	0	0	0
		2001	0	0	0	0	0.5	0	0	0	0	0	0

Appendix A. Weekly temperatures (c) at selected locations for
Watana - only configuration, winter 1982-1983

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Watana	184.4	Natural	0	0	0	0	1.2	0	1.3	2.2	0.9	2.9	6.4
		1996	2.0	1.1	1.3	2.4	2.5	2.5	2.5	2.5	2.6	2.8	3.1
		2001	1.1	1.2	2.8	2.8	2.8	2.8	2.8	2.6	2.7	2.9	3.1
LRX 68	150.2	Natural	0	0	0	0	0.3	0	0.4	1.5	0.2	2.5	6.3
		1996	0.5	0.4	0.7	1.4	2.3	2.4	2.5	2.7	2.5	3.0	3.9
		2001	0	0.5	2.0	1.7	2.5	2.6	2.7	2.8	2.6	3.0	4.0
LRX 33	130.1	Natural	0	0	0	0	0.3	0	0.6	1.8	0.4	2.7	6.5
		1996	0	0	0.3	0.9	2.2	2.2	2.5	2.8	2.5	3.1	4.5
		2001	0	0	1.5	1.2	2.4	2.4	2.7	2.9	2.5	3.2	4.6
LRX 3	98.6	Natural	0	0	0	0	0.2	0	1.0	2.4	0.7	3.4	7.8
		1996	0	0	0	0	2.0	1.9	2.5	3.0	2.4	3.5	5.8
		2001	0	0	0.5	0.2	2.1	2.1	2.6	3.1	2.5	3.6	5.8
Sunshine	83.8	Natural	0	0	0	0	1.0	0.6	1.7	2.8	1.5	3.6	6.7
		1996	0	0	0	0	1.8	1.7	2.4	3.1	2.4	3.6	6.0
		2001	0	0	0	0	1.7	1.7	2.4	2.9	2.5	3.6	5.6

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Summer 1971

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Devil Canyon	150.2	Natural	0.6	2.7	4.3	4.5	4.3	9.4	7.8	10.4	11.3	10.5	13.0
		2002	2.2	2.2	2.2	2.3	2.5	3.2	3.9	4.3	6.3	6.5	7.4
		2020	2.0	2.2	2.3	2.1	2.4	3.0	3.7	4.5	6.5	6.6	7.5
LRX 33	130.1	Natural	0.9	2.9	4.5	4.6	4.4	9.2	7.7	10.3	11.2	10.5	12.9
		2002	2.2	2.5	2.8	2.9	3.0	4.2	4.4	5.4	7.0	7.1	8.3
		2020	2.1	2.5	2.8	2.8	2.9	4.2	4.4	5.6	7.2	7.2	8.5
LRX 3	98.6	Natural	1.3	3.7	5.3	5.4	4.8	9.7	8.0	10.8	11.7	11.0	13.6
		2002	2.2	3.1	3.7	4.0	3.7	6.0	5.4	7.3	9.0	8.6	10.6
		2020	2.1	3.1	3.7	3.9	3.6	6.2	5.4	7.6	9.3	8.9	10.9
Sunshine	83.8	Natural	2.0	3.7	4.9	5.2	4.8	9.0	7.7	9.9	10.6	9.7	11.5
		2002	2.3	3.4	4.3	4.7	4.5	7.8	7.0	8.8	9.5	8.7	10.3
		2020	2.3	3.4	4.3	4.6	4.5	7.9	7.0	8.8	9.6	8.8	10.3

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Summer 1971

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Devil Canyon	150.2	Natural	9.5	8.7	11.1	10.9	10.9	9.7	9.0	6.7	6.3	5.2	3.1
		2002	8.0	8.0	8.1	6.4	6.3	8.3	8.4	8.4	8.2	7.7	7.3
		2020	8.1	8.1	7.0	6.4	8.3	6.9	8.5	8.4	8.2	7.8	7.3
LRX 33	130.1	Natural	9.5	8.8	11.1	10.8	10.9	9.7	9.0	6.9	6.4	5.4	3.3
		2002	8.0	8.1	8.5	7.0	6.8	8.5	8.6	8.4	8.1	7.6	7.0
		2020	8.0	8.1	7.6	7.0	8.5	7.2	8.6	8.3	8.1	7.6	7.0
LRX 3	98.6	Natural	9.9	9.2	11.7	11.3	11.3	10.2	9.5	7.1	6.8	5.8	3.5
		2002	8.9	8.9	9.9	8.4	7.9	9.1	9.1	8.5	8.3	7.7	6.7
		2020	9.1	9.0	9.1	8.3	9.6	8.0	9.1	8.5	8.3	7.7	6.7
Sunshine	83.8	Natural	8.8	8.1	10.2	10.4	10.2	9.2	8.5	6.6	6.3	5.4	3.6
		2002	8.1	7.6	9.1	9.4	8.8	8.7	8.3	7.2	6.9	6.2	5.9
		2020	8.1	7.6	9.0	9.4	9.2	8.2	8.4	7.2	6.9	6.2	5.2

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Summer 1974

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Devil Canyon	150.2	Natural	5.2	5.6	6.1	9.4	9.6	8.3	9.7	9.8	10.9	10.8	10.3
		2002	1.8	1.5	1.9	2.3	3.4	3.9	4.8	6.0	7.2	8.1	7.3
		2020	1.8	1.8	1.9	2.2	3.3	3.8	4.7	5.8	7.2	8.0	7.4
LRX 33	130.1	Natural	5.6	5.7	6.1	9.1	9.4	8.3	9.7	9.8	10.9	10.8	10.3
		2002	2.6	2.4	2.8	3.5	4.6	4.9	6.0	6.9	8.2	8.7	7.8
		2020	2.7	2.7	2.8	3.6	4.6	4.9	6.1	6.8	8.2	8.7	7.9
LRX 3	98.6	Natural	6.6	6.3	6.6	9.7	10.0	8.9	10.5	10.6	11.8	11.6	10.9
		2002	4.1	3.8	4.1	5.4	6.7	6.5	8.2	8.7	10.3	10.5	9.4
		2020	4.1	4.0	4.3	5.7	6.9	6.7	8.4	8.8	10.5	10.6	9.6
Sunshine	83.8	Natural	5.7	5.8	6.2	8.9	9.2	8.0	9.2	9.1	10.1	9.7	9.4
		2002	4.7	4.8	5.4	7.6	8.2	7.2	8.2	8.3	9.1	9.0	8.6
		2020	4.7	4.9	5.5	7.7	8.3	7.3	8.2	8.2	9.1	9.0	8.6

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Summer 1974

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Devil Canyon	150.2	Natural	10.8	10.4	10.6	10.5	10.3	7.7	9.3	8.5	6.8	5.7	3.9
		2002	8.1	8.8	9.6	8.2	9.0	9.1	9.0	9.4	9.3	9.3	8.8
		2020	8.3	8.9	9.7	9.9	10.2	10.2	9.5	10.0	9.6	9.2	8.4
LRX 33	130.1	Natural	10.8	10.5	10.7	10.6	10.4	7.9	9.4	8.6	7.0	5.8	4.1
		2002	8.7	9.1	9.9	8.6	9.3	9.0	9.1	9.4	9.2	9.0	8.0
		2020	8.7	9.2	9.9	10.1	10.3	10.0	9.5	9.9	9.5	8.9	7.5
LRX 3	98.6	Natural	11.5	11.1	11.5	11.3	11.1	8.5	10.0	9.1	7.6	6.3	4.3
		2002	10.3	10.5	11.1	9.8	10.2	9.5	9.8	9.9	9.5	8.9	7.5
		2020	10.5	10.7	11.2	11.0	11.1	10.2	10.2	10.3	9.7	8.8	7.1
Sunshine	83.8	Natural	9.8	9.5	9.8	9.7	9.5	7.4	8.8	8.1	6.8	5.8	4.4
		2002	9.0	8.8	9.2	9.0	9.1	7.6	8.6	8.1	7.7	6.7	5.3
		2020	9.0	8.8	9.3	9.3	9.3	7.9	8.7	8.3	7.8	6.6	5.0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Summer 1981

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Devil Canyon	150.2	Natural	5.0	7.6	8.3	8.1	9.3	8.9	11.6	12.4	9.0	8.9	9.5
		2002	2.5	3.2	3.9	4.5	4.9	6.1	7.3	7.9	7.3	7.0	6.1
		2020	2.6	3.2	4.0	4.5	5.1	6.1	7.3	8.8	7.7	7.2	6.4
LRX 33	130.1	Natural	5.1	7.5	8.2	8.1	9.4	8.8	11.5	12.3	9.1	9.0	9.4
		2002	3.0	4.0	4.7	5.4	6.0	6.5	8.0	8.7	7.8	7.6	6.7
		2020	3.1	4.1	4.9	5.5	6.2	6.5	8.1	9.4	8.1	7.8	6.9
LRX 3	98.6	Natural	5.7	8.0	8.8	8.9	10.1	9.3	12.1	13.1	9.8	9.7	9.9
		2002	4.0	5.6	6.4	7.1	8.1	7.7	9.9	10.8	9.3	9.0	8.0
		2020	4.0	5.8	6.7	7.3	8.5	7.8	10.0	11.3	9.7	9.3	8.3
Sunshine	83.8	Natural	5.2	7.5	8.3	8.2	9.4	8.0	10.0	10.7	9.0	9.1	9.1
		2002	4.5	6.3	7.1	7.3	8.3	7.2	8.8	9.4	8.5	8.6	8.3
		2020	4.5	6.4	7.2	7.3	8.4	7.2	8.8	9.5	8.5	8.6	8.3

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Summer 1981

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Devil Canyon	150.2	Natural	9.9	10.2	9.9	9.9	7.5	8.0	10.1	7.7	7.2	6.4	2.0
		2002	4.5	5.5	7.1	7.4	7.5	7.3	7.6	8.0	8.2	8.3	8.2
		2020	8.6	10.7	11.2	6.1	5.1	6.9	8.0	8.4	8.4	8.6	8.4
LRX 33	130.1	Natural	9.9	10.3	10.0	10.0	7.6	8.1	10.1	7.9	7.3	6.5	2.2
		2002	5.1	6.0	7.6	7.8	7.6	7.5	7.9	8.2	8.2	8.2	7.6
		2020	8.5	10.4	10.8	6.6	5.5	7.2	8.3	8.5	8.4	8.5	7.8
LRX 3	98.6	Natural	10.4	10.9	10.6	10.5	8.0	8.6	10.7	8.4	7.6	6.8	2.2
		2002	6.1	7.0	8.4	8.5	8.0	8.1	8.6	8.6	8.4	8.3	6.9
		2020	9.9	11.4	11.6	7.6	6.0	7.7	9.0	9.0	8.5	8.5	7.1
Sunshine	83.8	Natural	9.5	9.9	9.8	9.6	7.7	8.3	9.4	7.8	7.1	6.1	2.3
		2002	7.8	8.3	8.9	8.8	7.6	8.0	8.6	8.1	7.4	6.8	4.5
		2020	8.8	9.3	9.5	8.5	6.9	7.9	8.8	8.0	7.5	6.9	4.6

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Summer 1982

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Devil Canyon	150.2	Natural	5.4	4.7	6.8	6.8	8.6	9.0	8.1	9.7	11.9	10.5	11.0
		2002	3.7	3.8	4.1	4.3	4.5	4.7	5.3	6.2	6.9	7.9	10.2
		2020	3.6	3.8	4.0	4.4	4.6	4.7	5.0	5.8	6.8	7.3	7.8
LRX 33	130.1	Natural	5.5	4.7	6.7	6.6	8.4	8.9	8.0	9.6	11.8	10.6	11.1
		2002	4.2	4.2	4.6	4.8	5.2	5.3	5.7	6.8	7.8	8.5	10.2
		2020	4.2	4.1	4.6	4.9	5.3	5.3	5.6	6.6	7.8	8.2	8.4
LRX 3	98.6	Natural	6.6	5.3	7.3	7.2	9.0	9.3	8.5	10.2	12.5	11.4	11.7
		2002	5.3	4.9	5.8	6.0	6.7	6.7	6.9	8.5	9.9	10.2	11.5
		2020	5.3	4.9	5.9	6.1	7.0	6.8	6.9	8.4	10.1	10.2	10.3
Sunshine	83.8	Natural	6.1	5.2	7.0	6.9	8.4	8.6	7.6	9.0	11.0	9.8	10.1
		2002	5.5	4.9	6.1	6.2	7.3	7.7	6.8	7.8	9.7	8.9	9.1
		2020	5.5	4.9	6.1	6.2	7.4	7.7	6.7	7.7	9.7	8.9	8.9

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Summer 1982

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Devil Canyon	150.2	Natural	11.1	10.1	10.9	11.1	11.0	10.9	9.4	7.9	6.5	6.6	4.3
		2002	6.0	5.1	5.5	6.7	7.9	8.5	8.5	8.6	8.6	8.4	8.4
		2020	8.9	8.7	7.6	7.8	10.2	7.3	7.4	9.1	9.0	8.1	7.2
LRX 33	130.1	Natural	11.2	10.0	11.0	11.2	11.0	11.0	9.5	8.0	6.7	6.6	4.4
		2002	6.9	5.6	6.2	7.4	8.3	9.0	8.7	8.6	8.5	8.3	8.0
		2020	9.4	8.6	8.2	8.4	10.3	7.8	7.8	9.0	8.8	7.6	6.9
LRX 3	98.6	Natural	12.0	10.6	11.7	12.0	11.6	11.8	10.1	8.4	7.1	6.8	4.6
		2002	8.5	6.7	7.4	8.7	9.3	10.0	9.4	8.9	8.7	8.4	7.7
		2020	11.3	10.1	10.0	9.8	11.1	9.1	8.7	9.3	8.9	7.7	6.7
Sunshine	83.8	Natural	10.5	9.3	10.2	10.1	9.7	9.9	8.5	7.6	6.6	5.8	4.5
		2002	9.1	8.0	8.8	9.0	8.9	9.3	8.2	7.8	7.2	6.3	5.6
		2020	9.5	8.6	9.3	9.3	9.4	9.0	7.9	7.8	7.0	5.7	5.1

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1971-1972

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Devil Canyon	150.2	Natural	6.8	6.3	5.3	3.1	1.5	0.3	0	0	0	0	0	0
		2002	8.4	8.2	7.7	7.3	6.4	5.4	4.7	3.1	2.0	1.1	1.3	1.3
		2020	8.4	8.2	7.8	7.3	6.4	5.4	4.7	3.1	2.1	1.1	1.4	1.4
LRX 33	130.1	Natural	6.9	6.4	5.4	3.3	1.7	0.5	0	0	0	0	0	0
		2002	8.4	8.1	7.6	7.0	5.9	4.9	4.0	2.0	0.9	0.3	0.6	0.3
		2020	8.3	8.1	7.6	7.0	6.0	5.1	4.2	2.4	1.4	0.6	0.9	0.7
LRX 3	98.6	Natural	7.2	6.8	5.8	3.5	1.8	0.6	0	0	0	0	0	0
		2002	8.5	8.2	7.6	6.8	5.6	4.5	3.3	0.9	0	0	0	0
		2020	8.5	8.3	7.7	6.7	5.6	4.6	3.5	1.1	0	0	0	0
Sunshine	83.8	Natural	6.7	6.3	5.4	3.6	2.4	1.8	0.5	0	0	0	0	0
		2002	7.2	6.9	6.2	5.2	3.9	3.1	1.8	0	0	0	0	0
		2020	7.2	6.9	6.2	5.2	4.2	3.4	2.2	0.2	0	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1971-1972

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Devil Canyon	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9
		2020	1.3	1.3	1.2	1.2	1.1	1.1	0.9	1.3	1.3	1.6	1.8
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0	0.2	0	0	0.5	0.2	0	0	0	0.4	0
		2020	0.4	0.5	0.4	0.4	0.7	0.5	0	0	0	1.1	0.7
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0	0	0	0	0	0	0	0	0	0	0
		2020	0	0	0	0	0	0	0	0	0	0.2	0
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0	0	0	0	0	0	0	0	0	0	0
		2020	0	0	0	0	0	0	0	0	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1971-1972

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Devil Canyon	150.2	Natural	0	0	0	0	0	0	0	0	0	0	1.9
		2002	0.9	0.9	0.9	0.8	0.8	0.7	0.8	1.2	1.3	0.7	0.8
		2020	1.7	1.2	0.7	0.6	0.6	1.8	1.9	1.9	2.0	1.9	1.9
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0.1	2.2
		2002	0	0	0	0	0	0.4	0.5	0.7	0.9	0.7	1.1
		2020	0.8	0.4	0	0	0	1.5	1.6	1.5	1.7	1.7	2.2
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0.1	3.0
		2002	0	0	0	0	0	0	0	0	0.4	0.7	1.8
		2020	0	0	0	0	0	0.8	1.1	0.9	1.2	1.5	2.7
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0.9	3.3
		2002	0	0	0	0	0	0	0	0	0.3	0.9	2.3
		2020	0	0	0	0	0	0.5	0.8	0.5	0.9	1.6	3.0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1974-1975

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Devil Canyon	150.2	Natural	8.5	6.9	5.8	3.8	0	0.1	0	0	0.1	0	0	0
		2002	9.4	9.3	9.3	8.7	7.3	6.3	5.1	4.1	3.3	2.2	1.2	1.2
		2020	10.0	9.6	9.2	8.4	6.8	5.9	4.7	3.7	3.0	2.0	1.3	1.3
LRX 33	130.1	Natural	8.6	7.1	5.9	3.9	0.1	0.2	0	0.1	0	0	0	0
		2002	9.4	9.2	9.0	8.0	6.1	5.6	4.5	3.7	2.9	1.4	0.2	0.1
		2020	9.9	9.5	8.9	7.5	5.4	5.0	4.0	3.2	2.4	1.0	0	0
LRX 3	93.6	Natural	9.1	7.7	6.4	4.2	0	0.1	0	0	0	0	0	0
		2002	9.9	9.5	8.9	7.4	4.5	4.5	3.4	3.0	2.2	0	0	0
		2020	10.3	9.7	8.9	7.0	3.7	3.8	2.8	2.5	1.7	0	0	0
Sunshine	83.8	Natural	8.1	6.8	5.9	4.3	0.9	1.3	0.7	1.1	0.9	0	0	0
		2002	8.1	7.7	6.7	5.2	2.5	2.9	2.2	2.4	1.8	0	0	0
		2020	8.3	7.8	6.7	4.9	2.1	2.5	1.8	2.0	1.4	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1974-1975

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Devil Canyon	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	1.2	1.2	1.3	1.3	1.3	1.2	1.2	1.3	1.3	1.2	1.3
		2020	1.4	1.1	0.9	0.9	0.8	0.8	1.0	1.3	1.6	1.7	2.0
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0.7	0.6	0.3	0.3	0.1	0	0	0.5	0.7	0	0
		2020	0.6	0.3	0	0.1	0	0	0	0.7	1.1	0.1	1.1
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0	0	0	0	0	0	0	0	0	0	0
		2020	0	0	0	0	0	0	0	0	0.2	0	0
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0	0	0	0	0	0	0	0	0	0	0
		2020	0	0	0	0	0	0	0	0	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1974-1975

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Devil Canyon	150.2	Natural	0	0	0	0	0	0	0	0	1.0	2.0	3.6
		2002	1.3	1.3	1.5	1.8	1.9	2.1	2.2	2.2	2.3	2.3	2.3
		2020	2.1	1.8	1.9	0.9	0.5	2.0	2.2	2.3	2.3	2.4	2.5
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	1.2	2.3	3.9
		2002	0	0.3	0.8	0.9	1.2	1.2	1.8	1.8	2.4	2.5	2.7
		2020	0.9	1.0	1.3	0.3	0.1	1.3	1.9	2.0	2.4	2.6	2.9
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	1.8	3.1	4.9
		2002	0	0	0	0	0.2	0	1.2	1.2	2.5	3.0	3.5
		2020	0	0	0.2	0	0	0.1	1.4	1.6	2.6	3.0	3.8
Sunshine	83.8	Natural	0	0	0	0	0	0	0.4	0.5	2.3	3.3	4.5
		2002	0	0	0	0	0	0	1.0	1.0	2.6	3.2	3.9
		2020	0	0	0	0	0	0	1.2	1.4	2.6	3.1	4.0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1976-1977

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Devil Canyon	150.2	Natural	6.4	6.0	5.3	4.2	1.5	0	1.2	0	0	0	0	0
		2002	9.8	9.4	9.0	8.3	7.5	6.4	5.5	4.5	2.5	1.4	0.5	0.5
		2020	10.0	9.2	8.6	7.9	7.1	6.1	5.2	4.3	2.4	1.2	0.3	0.3
LRX 33	130.1	Natural	6.6	6.2	5.5	4.4	1.7	0.1	1.3	0	0	0	0	0
		2002	9.7	9.3	8.7	7.7	7.0	5.7	5.0	3.4	1.5	1.0	0.1	0
		2020	9.8	9.1	8.4	7.4	6.4	5.2	4.7	3.0	1.2	0.7	0	0
LRX 3	98.6	Natural	7.2	6.8	6.1	4.7	2.0	0	1.2	0	0	0	0	0
		2002	9.7	9.4	8.6	7.5	6.4	4.7	4.3	1.7	0	0.3	0	0
		2020	9.8	9.2	8.3	7.2	5.7	3.9	4.0	1.1	0	0	0	0
Sunshine	83.8	Natural	6.3	6.0	5.5	4.7	2.8	1.0	2.0	0	0	0.2	0	0
		2002	7.5	7.4	6.5	5.4	4.5	2.8	3.2	0.4	0	0.2	0	0
		2020	7.6	7.3	6.4	5.4	4.0	2.3	3.0	0.1	0	0.1	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1976-1977

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Devil Canyon	150.2	Natural	0.2	0	0	0	0	0	0	0	0.8	0.9	0
		2002	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8
		2020	0.4	0.5	0.6	0.6	0.5	0.4	0.5	0.6	0.6	0.6	0.6
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0.3	0.5	0
		2002	0.5	0	0.2	0.2	0	0.5	0.2	0.3	0.7	0.7	0.6
		2020	0.3	0	0.1	0.1	0	0.2	0	0.2	0.3	0.6	0.5
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0.1	0	0	0	0	0	0	0	0.2	0.4	0.1
		2020	0.1	0	0	0	0	0	0	0	0	0.4	0.2
Sunshine	83.8	Natural	0.5	0	0	0	0	0	0	0	0.4	0.4	0.2
		2002	0.3	0	0	0	0	0	0	0	0.3	0.4	0.1
		2020	0.3	0	0	0	0	0	0	0	0.1	0.4	0.2

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1976-1977

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Devil Canyon	150.2	Natural	0	0	0	0	0	0	0	0.6	0	1.6	4.6
		2002	0.9	0.8	0.7	0.4	0.6	0.8	0.9	0.9	0.9	0.9	1.0
		2020	0.6	0.6	0.6	0.4	0.2	0.6	0.6	0.6	0.6	0.6	0.6
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0.8	0	1.9	5.0
		2002	0.3	0.6	0.2	0	0	0.3	0.5	1.1	0.8	1.2	1.7
		2020	0.2	0.4	0.2	0	0	0.1	0.4	0.8	0.6	1.0	1.4
LRX 3	98.6	Natural	0	0	0	0	0	0	0	1.3	0	2.6	6.1
		2002	0	0.2	0	0	0	0	0	1.4	0.7	1.8	2.9
		2020	0	0.1	0	0	0	0	0	1.1	0.6	1.6	2.8
Sunshine	83.8	Natural	0	0.3	0	0	0	0	0	2.0	0.8	2.9	5.4
		2002	0	0.2	0	0	0	0	0	1.7	0.9	2.2	3.7
		2020	0	0.1	0	0	0	0	0	1.4	0.7	2.1	3.7

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1981-1982

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Devil Canyon	150.2	Natural	7.7	7.2	6.4	2.0	0.7	0.6	1.3	0.5	0	0	0	0
		2002	8.0	8.2	8.3	8.2	7.6	7.2	6.8	6.3	5.6	4.9	3.8	1.8
		2020	8.4	8.4	8.6	8.4	7.6	7.2	6.8	6.3	5.5	4.6	3.1	1.8
LRX 33	130.1	Natural	7.9	7.3	6.5	2.2	1.0	0.9	1.4	0.5	0	0	0	0
		2002	8.2	8.2	8.2	7.6	6.8	6.5	6.1	5.4	4.4	3.8	2.6	0.6
		2020	8.5	8.4	8.5	7.8	7.0	6.8	6.3	5.7	4.6	3.9	2.3	1.0
LRX 3	98.6	Natural	8.4	7.6	6.8	2.2	1.0	1.0	1.4	0.5	0	0	0	0
		2002	8.6	8.4	8.3	6.9	5.8	5.8	5.2	4.5	2.5	2.2	0.6	0
		2020	9.0	8.5	8.5	7.1	6.2	6.2	5.7	5.0	3.2	2.8	0.9	0
Sunshine	83.8	Natural	7.8	7.1	6.1	2.3	1.7	1.8	1.9	1.1	0	0	0	0
		2002	8.1	7.4	6.8	4.5	3.9	4.0	3.7	3.0	0.9	1.0	0	0
		2020	8.0	7.5	6.9	4.6	4.3	4.6	4.2	3.5	1.7	1.5	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1981-1982

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Devil Canyon	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	1.8	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.8	2.8
		2020	2.0	2.7	2.7	2.7	2.4	0.8	2.6	2.7	2.6	2.8	2.8
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	1.2	1.2	1.5	1.8	1.2	0.9	1.1	0.9	0.7	2.0	2.2
		2020	1.6	1.9	2.0	2.2	1.4	0	1.5	1.5	0.2	2.2	2.4
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0.1	0	0	0.5	0	0	0	0	0	0.7	1.0
		2020	0.8	0.1	0.7	1.2	0	0	0	0	0	1.2	1.6
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0	0	0	0	0	0	0	0	0	0.2	0.5
		2020	0.3	0	0	0.6	0	0	0	0	0	0.6	1.1

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1981-1982

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Devil Canyon	150.2	Natural	0	0	0	0	0	0.3	0	0	0.1	4.1	5.5
		2002	2.8	2.8	2.7	2.8	2.7	2.6	2.5	2.9	3.1	3.3	3.5
		2020	2.7	2.7	1.7	2.2	2.8	2.9	2.9	2.9	3.1	3.3	3.4
LRX 33	130.1	Natural	0	0	0	0	0	0.5	0	0	0.5	4.6	5.8
		2002	1.1	1.0	1.5	2.1	1.9	2.5	1.9	2.3	3.0	3.8	4.0
		2020	1.6	1.2	0.7	1.7	2.1	2.8	2.4	2.6	3.1	3.8	4.2
LRX 3	93.6	Natural	0	0	0	0	0	0.8	0	0	1.1	6.0	7.4
		2002	0	0	0	1.0	0.6	2.3	1.1	1.5	2.9	4.8	5.5
		2020	0	0	0	0.8	1.0	2.6	1.7	2.0	3.0	4.9	5.7
Sunshine	83.8	Natural	0	0	0	0	0	1.4	0.1	0.4	1.8	5.5	6.7
		2002	0	0	0	0.5	0.2	2.3	0.8	1.2	2.8	5.0	5.8
		2020	0	0	0	0.4	0.5	2.5	1.4	1.7	2.9	5.0	5.9

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1982-1983

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Devil Canyon	150.2	Natural	7.9	6.5	6.6	4.3	2.2	0.2	0	0	0	0	0	0
		2002	8.6	8.6	8.4	8.4	8.3	8.0	7.3	6.3	5.3	4.4	3.9	0.9
		2020	9.1	9.0	8.1	7.2	7.7	7.0	6.1	4.6	2.9	1.1	0.6	1.1
LRX 33	130.1	Natural	8.0	6.7	6.6	4.4	2.3	0.3	0	0	0	0	0	0
		2002	8.6	8.5	8.3	8.0	7.6	6.9	5.9	4.3	3.8	3.2	1.8	0
		2020	9.0	8.7	7.6	6.9	7.2	6.3	5.3	3.4	2.1	0.6	0	0.5
LRX 3	98.6	Natural	8.4	7.1	6.8	4.6	2.3	0.1	0	0	0	0	0	0
		2002	8.9	8.7	8.4	7.7	6.9	5.6	4.1	1.5	1.5	1.2	0	0
		2020	9.3	8.9	7.7	6.7	6.6	5.4	4.0	1.4	0.7	0	0	0
Sunshine	83.8	Natural	7.6	6.6	5.8	4.5	2.6	0.8	0	0	0	0	0	0
		2002	7.9	7.2	6.5	5.6	3.8	3.4	2.2	0.8	0.8	0.1	0	0
		2020	8.0	7.0	5.8	5.1	3.7	3.5	2.4	0.7	0.3	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1982-1983

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Devil Canyon	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	1.0	1.4	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
		2020	1.3	1.4	1.4	1.4	1.4	1.3	1.6	2.0	3.5	1.9	1.9
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0	0.4	1.0	0.6	1.4	0.8	0	1.1	0.7	1.2	1.1
		2020	0.7	0.7	0.9	0.5	1.1	0.6	0.3	1.5	1.9	1.5	1.4
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0	0	0	0	0.5	0	0	0	0	0	0
		2020	0	0	0	0	0.5	0	0	0.4	0	0.7	0.4
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		2002	0	0	0	0	0.1	0	0	0	0	0	0
		2020	0	0	0	0	0.1	0	0	0	0	0.2	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana/Devil Canyon configuration, Winter 1982-1983

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Devil Canyon	150.2	Natural	0	0	0	0	0.3	0	0.4	1.5	0.2	2.5	6.3
		2002	1.9	1.8	1.4	1.4	1.6	1.9	2.2	2.4	2.6	2.8	3.1
		2020	2.2	2.6	1.4	1.4	1.6	1.9	2.1	2.3	2.5	2.6	2.9
LRX 33	130.1	Natural	0	0	0	0	0.3	0	0.6	1.8	0.4	2.7	6.5
		2002	0.8	1.1	0.7	0.7	1.5	1.7	2.2	2.6	2.6	3.0	3.8
		2020	1.4	2.1	0.9	0.9	1.6	1.8	2.2	2.5	2.5	2.9	3.7
LRX 3	98.6	Natural	0	0	0	0	0.2	0	1.0	2.4	0.7	3.4	7.8
		2002	0	0	0	0	1.3	1.3	2.1	2.8	2.4	3.4	5.1
		2020	0	1.1	0	0	1.5	1.4	2.2	2.7	2.5	3.3	5.1
Sunshine	83.8	Natural	0	0	0	0	1.0	0.6	1.7	2.8	1.5	3.6	6.7
		2002	0	0	0	0	1.1	0.9	2.0	2.7	2.5	3.5	5.2
		2020	0	0.5	0	0	1.2	1.1	2.1	2.7	2.5	3.5	5.2

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, summer 1971

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Watana	184.4	Natural	1.0	2.8	4.4	4.6	4.2	9.6	7.8	10.4	11.3	10.3	12.6
		1992 Filling	1.8	1.8	1.8	1.8	1.8	2.1	3.3	3.4	4.1	4.1	4.1
LRX 68	150.2	Natural	0.6	2.7	4.3	4.5	4.3	9.4	7.8	10.4	11.3	10.5	13.0
		1992 Filling	1.5	2.2	2.5	2.7	2.6	4.7	5.1	6.6	8.4	7.4	8.1
LRX 33	130.1	Natural	0.9	2.9	4.5	4.6	4.4	9.2	7.7	10.3	11.2	10.5	12.9
		1992 Filling	1.5	2.5	3.0	3.1	3.0	5.2	5.1	6.9	8.1	7.7	8.8
LRX 3	98.6	Natural	1.3	3.7	5.3	5.4	4.8	9.7	8.0	10.8	11.7	11.0	13.6
		1992 Filling	1.7	3.1	3.9	4.2	3.7	6.9	6.0	8.6	9.9	9.2	11.1
Sunshine	83.8	Natural	2.0	3.7	4.9	5.2	4.8	9.0	7.7	9.9	10.6	9.7	11.5
		1992 Filling	2.1	3.4	4.4	4.8	4.5	8.0	7.1	9.0	9.6	8.8	10.3

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, summer 1971

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Watana	184.4	Natural	9.0	8.2	10.7	10.6	10.7	9.3	8.6	6.3	5.9	4.8	2.8
		1992 Filling	4.2	4.2	4.2	4.2	4.2	5.6	9.0	8.7	8.4	7.9	7.4
LRX 68	150.2	Natural	9.5	8.7	11.1	10.9	10.9	9.7	9.0	6.7	6.3	5.2	3.1
		1992 Filling	6.7	6.3	6.0	7.1	6.3	6.8	9.3	8.5	8.3	7.4	6.1
LRX 33	130.1	Natural	9.5	8.8	11.1	10.8	10.9	9.7	9.0	6.9	6.4	5.4	3.3
		1992 Filling	7.1	6.9	6.8	7.6	7.0	7.3	9.2	8.2	8.1	7.1	5.6
LRX 3	98.6	Natural	9.9	9.2	11.7	11.3	11.3	10.2	9.5	7.1	6.8	5.8	3.5
		1992 Filling	8.3	7.9	8.1	8.8	8.1	8.2	9.7	8.3	8.2	7.2	5.2
Sunshine	83.8	Natural	8.8	8.1	10.2	10.4	10.2	9.2	8.5	6.6	6.3	5.4	3.6
		1992 Filling	8.0	7.5	8.8	9.5	8.9	8.2	8.4	6.8	6.7	5.9	4.3

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, Summer 1981

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Watana	184.4	Natural	4.8	7.6	8.6	8.2	9.2	8.9	11.6	12.2	8.5	8.4	9.2
		1992 Filling	3.3	3.4	3.8	3.7	4.0	4.1	4.1	4.1	4.1	4.1	4.1
LRX 68	150.2	Natural	5.0	7.6	8.3	8.1	9.3	8.9	11.6	12.4	9.0	8.9	9.5
		1992 Filling	3.8	4.0	4.2	4.8	5.7	5.4	6.5	7.0	7.0	6.9	7.4
LRX 33	130.1	Natural	5.1	7.5	8.2	8.1	9.4	8.8	11.5	12.3	9.1	9.0	9.4
		1992 Filling	4.2	4.5	4.6	5.3	6.3	5.8	7.3	7.9	7.5	7.5	7.7
LRX 3	98.6	Natural	5.7	8.0	8.8	8.9	10.1	9.3	12.1	13.1	9.8	9.7	9.8
		1992 Filling	5.0	6.0	6.4	7.1	8.4	7.2	9.3	10.1	9.1	9.0	8.6
Sunshine	83.8	Natural	5.2	7.5	8.3	8.2	9.4	8.0	10.0	10.7	9.0	9.1	9.1
		1992 Filling	4.9	6.4	7.1	7.3	8.4	7.1	8.7	9.3	8.5	8.6	8.4

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, summer 1981

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Watana	184.4	Natural	9.5	9.8	9.4	9.4	6.8	7.5	9.9	7.2	7.0	6.2	1.6
		1992 Filling	4.1	4.1	4.1	8.2	10.9	10.4	10.4	10.6	10.0	9.1	8.3
LRX 68	150.2	Natural	9.9	10.2	9.9	9.9	7.5	8.0	10.1	7.7	7.2	6.4	2.0
		1992 Filling	6.2	6.7	6.3	8.9	10.6	10.3	10.5	10.4	9.5	8.4	6.2
LRX 33	130.1	Natural	9.9	10.3	10.0	10.0	7.6	8.1	10.1	7.9	7.3	6.5	2.2
		1992 Filling	6.9	7.4	7.0	9.1	10.1	10.1	10.4	10.2	9.2	8.0	5.5
LRX 3	98.6	Natural	10.4	10.9	10.6	10.5	8.0	8.6	10.7	8.4	7.6	6.8	2.2
		1992 Filling	7.9	8.7	8.1	9.8	10.3	10.4	11.0	10.5	9.3	8.1	4.8
Sunshine	83.8	Natural	9.5	9.9	9.8	9.6	7.7	8.3	9.4	7.8	7.1	6.1	2.3
		1992 Filling	8.5	8.9	8.8	9.2	8.4	9.0	9.4	8.5	7.8	6.5	3.2

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, summer 1982

Location	River Mile	Demand	Water Weeks										
			31	32	33	34	35	36	37	38	39	40	41
Watana	184.4	Natural	5.5	4.9	7.2	7.1	8.8	9.2	8.0	9.6	11.9	10.2	10.6
		1993 Filling	2.3	2.4	2.7	3.1	3.6	4.1	4.7	5.3	5.7	5.6	6.9
LRX 68	150.2	Natural	5.4	4.7	6.8	6.8	8.6	9.0	8.1	9.7	11.9	10.5	11.0
		1993 Filling	3.3	2.8	3.3	3.4	4.5	5.0	5.5	6.4	7.0	7.0	8.1
LRX 33	130.1	Natural	5.5	4.7	6.7	6.6	8.4	8.9	8.0	9.6	11.8	10.6	11.1
		1993 Filling	3.9	3.2	3.7	3.8	4.9	5.3	5.7	6.8	7.6	7.6	8.5
LRX 3	98.6	Natural	6.6	5.3	7.3	7.2	9.0	9.3	8.5	10.2	12.5	11.4	11.7
		1993 Filling	5.4	4.1	5.1	5.2	6.5	6.5	6.6	8.0	9.0	8.8	9.6
Sunshine	83.8	Natural	6.1	5.2	7.0	6.9	8.4	8.6	7.6	9.0	11.0	9.8	10.1
		1993 Filling	5.5	4.6	5.9	6.0	7.3	7.6	6.7	7.8	9.6	8.8	9.1

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, summer 1982

Location	River Mile	Demand	Water Weeks										
			42	43	44	45	46	47	48	49	50	51	52
Watana	184.4	Natural	10.6	9.7	10.5	10.5	10.5	10.5	9.0	7.6	6.1	6.4	4.1
		1993 Filling	8.7	8.6	8.8	8.9	8.5	8.9	9.0	9.4	9.6	8.7	7.7
LRX 68	150.2	Natural	11.1	10.1	10.9	11.1	11.0	10.9	9.4	7.9	6.5	6.6	4.3
		1993 Filling	9.6	9.3	9.6	9.8	9.2	9.6	9.4	9.2	9.0	6.4	5.4
LRX 33	130.1	Natural	11.2	10.0	11.0	11.2	11.0	11.0	9.5	8.0	6.7	6.6	4.4
		1993 Filling	9.9	9.3	9.7	10.1	9.5	9.9	9.5	9.0	8.7	6.1	5.0
LRX 3	98.6	Natural	12.0	10.6	11.7	12.0	11.6	11.8	10.1	8.4	7.1	6.8	4.6
		1993 Filling	10.9	10.0	10.7	11.1	10.3	10.7	10.1	9.3	8.9	6.5	5.0
Sunshine	83.8	Natural	10.5	9.3	10.2	10.1	9.7	9.9	8.5	7.6	6.6	5.8	4.5
		1993 Filling	9.9	8.9	9.8	9.7	9.3	9.7	8.4	7.9	7.0	5.4	4.5

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, winter 1971-1972

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Watana	184.4	Natural	6.3	5.9	4.8	2.8	1.2	0	0	0	0	0	0	0
		1992-93 Filling	8.7	8.4	7.9	7.4	6.2	5.6	5.1	4.3	3.1	1.6	1.4	1.3
LRX 68	150.2	Natural	6.8	6.3	5.3	3.1	1.5	0.3	0	0	0	0	0	0
		1992-93 Filling	8.5	8.3	7.4	6.1	2.5	1.7	0.3	0	0	0	0	0
LRX 33	130.1	Natural	6.9	6.4	5.4	3.3	1.7	0.5	0	0	0	0	0	0
		1992-93 Filling	8.2	8.1	7.1	5.6	2.4	1.5	0	0	0	0	0	0
LRX 3	98.6	Natural	7.2	6.8	5.8	3.5	1.8	0.6	0	0	0	0	0	0
		1992-93 Filling	8.3	8.2	7.2	5.3	2.2	1.1	0	0	0	0	0	0
Sunshine	83.8	Natural	6.7	6.3	5.4	3.6	2.4	1.8	0.5	0	0	0	0	0
		1992-93 Filling	6.8	6.7	5.9	4.3	2.7	2.3	0.8	0	0	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, winter 1971-1972

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Watana	184.4	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	1.2	1.2	1.1	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.7
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0	0
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0	0
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0	0
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, winter 1971-1972

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Watana	184.4	Natural	0	0	0	0	0	0	0	0	0	0.4	2.8
		1992-93 Filling	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	0	0	1.9
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0	0.8
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0.1	2.2
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0.1	1.4
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0.1	3.0
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0.1	2.6
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0.1	0.9	3.3
		1992-93 Filling	0	0	0	0	0	0	0	0	0.1	0.9	3.1

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, winter 1981-1982

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Watana	184.4	Natural	7.2	7.0	6.2	1.6	0.3	0.3	1.2	0.5	0	0	0	0
		1992-93 Filling	10.6	10.0	9.1	8.3	6.9	6.1	5.6	5.0	4.5	3.9	3.3	2.2
LRX 68	150.2	Natural	7.7	7.2	6.4	2.0	0.7	0.6	1.3	0.5	0	0	0	0
		1992-93 Filling	10.4	9.5	8.4	6.4	1.4	1.6	0	0	0.2	0.8	0	0
LRX 33	130.1	Natural	7.9	7.3	6.5	2.2	1.0	0.9	1.4	0.5	0	0	0	0
		1992-93 Filling	10.2	9.2	8.0	5.6	1.6	1.6	0.4	0.1	0	0	0	0
LRX 3	98.6	Natural	8.4	7.6	6.8	2.2	1.0	1.0	1.4	0.5	0	0	0	0
		1992-93 Filling	10.5	9.3	8.1	4.9	1.3	1.5	0.5	0	0	0	0	0
Sunshine	83.8	Natural	7.8	7.1	6.1	2.3	1.7	1.8	1.9	1.1	0	0	0	0
		1992-93 Filling	8.5	7.8	6.5	3.3	2.1	2.3	1.9	1.3	0	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, winter 1981-1982

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Watana	184.4	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	1.6	1.5	1.5	1.7	1.8	1.8	1.8	1.8	1.5	1.3	1.4
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0	0
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0	0
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0	0
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		1992-93 Filling	0	0	0	0	0	0	0	0	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, winter 1981-1982

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Watana	184.4	Natural	0	0	0	0	0	0.9	0	0	1.2	4.6	5.8
		1992-93 Filling	1.4	1.4	1.4	1.4	1.6	1.6	1.6	1.7	1.8	2.0	2.1
LRX 68	150.2	Natural	0	0	0	0	0	0.3	0	0	0.1	4.1	5.5
		1992-93 Filling	0	0	0	0	0	0.4	0	0	0.3	3.2	3.9
LRX 33	130.1	Natural	0	0	0	0	0	0.5	0	0	0.5	4.6	5.8
		1992-93 Filling	0	0	0	0	0	0.5	0	0	0.6	4.0	4.7
LRX 3	98.6	Natural	0	0	0	0	0	0.8	0	0	1.1	6.0	7.4
		1992-93 Filling	0	0	0	0	0	0.8	0	0	1.2	5.7	6.7
Sunshine	83.8	Natural	0	0	0	0	0	1.4	0.1	0.4	1.8	5.5	6.7
		1992-93 Filling	0	0	0	0	0	1.4	0.1	0.4	1.9	5.3	6.4

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, winter 1982-1983

Location	River Mile	Demand	Water Weeks											
			49	50	51	52	1	2	3	4	5	6	7	8
Watana	184.4	Natural	7.6	6.1	6.4	4.1	2.0	0	0	0	0	0	0	0
		1991-92 Filling	9.3	8.8	7.9	6.4	5.0	4.9	4.9	4.8	3.8	3.7	3.7	3.7
LRX 68	150.2	Natural	7.9	6.5	6.6	4.3	2.2	0.2	0	0	0	0	0	0
		1991-92 Filling	9.3	8.5	6.2	4.9	2.2	0.9	0	0	0	0	0	0
LRX 33	130.1	Natural	8.0	6.7	6.6	4.4	2.3	0.3	0	0	0	0	0	0
		1991-92 Filling	9.1	8.2	5.9	4.6	2.4	0.8	0	0	0	0	0	0
LRX 3	98.6	Natural	8.4	7.1	6.8	4.6	2.3	0.1	0	0	0	0	0	0
		1991-92 Filling	9.4	8.5	6.3	4.7	2.2	0.2	0	0	0	0	0	0
Sunshine	83.8	Natural	7.6	6.6	5.8	4.5	2.6	0.8	0	0	0	0	0	0
		1991-92 Filling	8.1	6.9	5.6	4.4	1.8	1.5	0.6	0.3	0.2	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, winter 1982-1983

Location	River Mile	Demand	Water Weeks										
			9	10	11	12	13	14	15	16	17	18	19
Watana	184.4	Natural	0	0	0	0	0	0	0	0	0	0	0
		1991-92 Filling	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
LRX 68	150.2	Natural	0	0	0	0	0	0	0	0	0	0	0
		1991-92 Filling	0	0	0	0	0.3	0	0	0	0	0	0
LRX 33	130.1	Natural	0	0	0	0	0	0	0	0	0	0	0
		1991-92 Filling	0	0	0	0	0	0	0	0	0	0	0
LRX 3	98.6	Natural	0	0	0	0	0	0	0	0	0	0	0
		1991-92 Filling	0	0	0	0	0	0	0	0	0	0	0
Sunshine	83.8	Natural	0	0	0	0	0	0	0	0	0	0	0
		1991-92 Filling	0	0	0	0	0	0	0	0	0	0	0

Appendix A. Weekly temperatures (C) at selected locations for
Watana filling, winter 1982-1983

Location	River Mile	Demand	Water Weeks										
			20	21	22	23	24	25	26	27	28	29	30
Watana	184.4	Natural	0	0	0	0	1.2	0	1.3	2.2	0.9	2.9	6.4
		1991-92 Filling	3.7	3.6	3.5	3.5	3.5	3.5	3.5	3.4	3.1	3.0	2.9
LRX 68	150.2	Natural	0	0	0	0	0.3	0	0.4	1.5	0.2	2.5	6.3
		1991-92 Filling	0	0	0	0	0.9	0.7	1.2	2.1	1.3	2.6	4.1
LRX 33	130.1	Natural	0	0	0	0	0.3	0	0.6	1.8	0.4	2.7	6.5
		1991-92 Filling	0	0	0	0	0.5	0.2	1.0	2.3	1.2	2.8	4.9
LRX 3	93.6	Natural	0	0	0	0	0.2	0	1.0	2.4	0.7	3.4	7.8
		1991-92 Filling	0	0	0	0	0.3	0	1.3	2.8	1.2	3.5	6.6
Sunshine	83.8	Natural	0	0	0	0	1.0	0.6	1.7	2.8	1.5	3.6	6.7
		1991-92 Filling	0	0	0	0	0.2	0	1.3	2.2	2.0	3.6	5.7

APPENDIX B

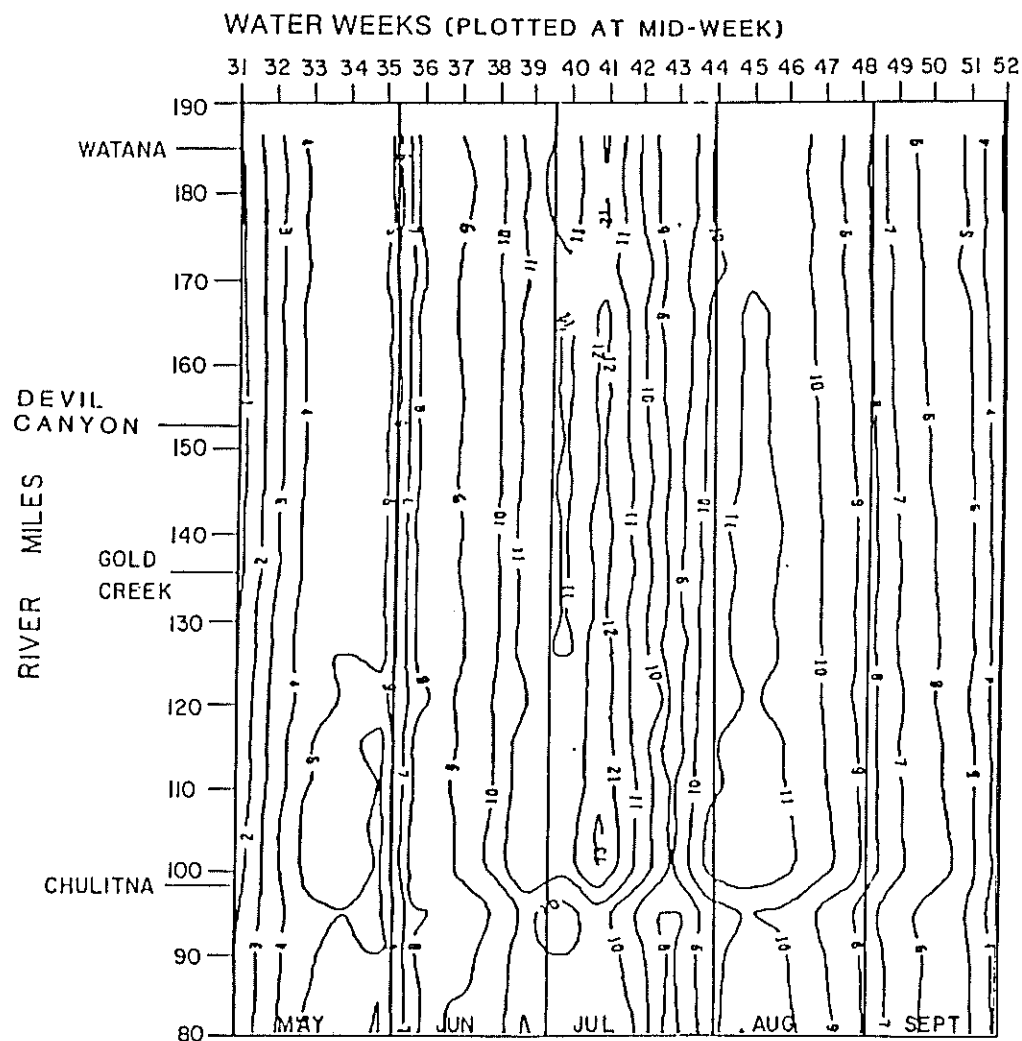
Isotherm plots of temperature simulation results for the middle Susitna River for Watana only, Watana/Devil Canyon and Watana filling scenarios. Ice front locations calculated by Harza-Ebasco's ICECAL model are included on the plots.

Appendix B. Isotherm plots for all simulations

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Summer 1971, Watana only, 1996 demand	B2
Summer 1971, Watana only, 2001 demand	B3
Summer 1971, Watana/Devil Canyon, 2002 demand	B4
Summer 1971, Watana/Devil Canyon, 2020 demand	B5
Summer 1974, Natural conditions	B6
Summer 1974, Watana only, 1996 demand	B7
Summer 1974, Watana only, 2001 demand	B8
Summer 1974, Watana/Devil Canyon, 2002 demand	B9
Summer 1974, Watana/Devil Canyon, 2020 demand	B10
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Summer 1981, Watana filling, 1992 demand	B12
Summer 1981, Watana only, 1996 demand	B13
Summer 1981, Watana only, 2001 demand	B14
Summer 1981, Watana/Devil Canyon, 2002 demand	B15
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Summer 1982, Watana filling, 1993 demand	B18
Summer 1982, Watana only, 1996 demand	B19
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MIDDLE SUSITNA RIVER - ISOTHERMS



TIME

NATURAL CONDITIONS

SUMMER 1971 CLIMATE DATA

NOTES :

1. TEMPERATURES IN °C.

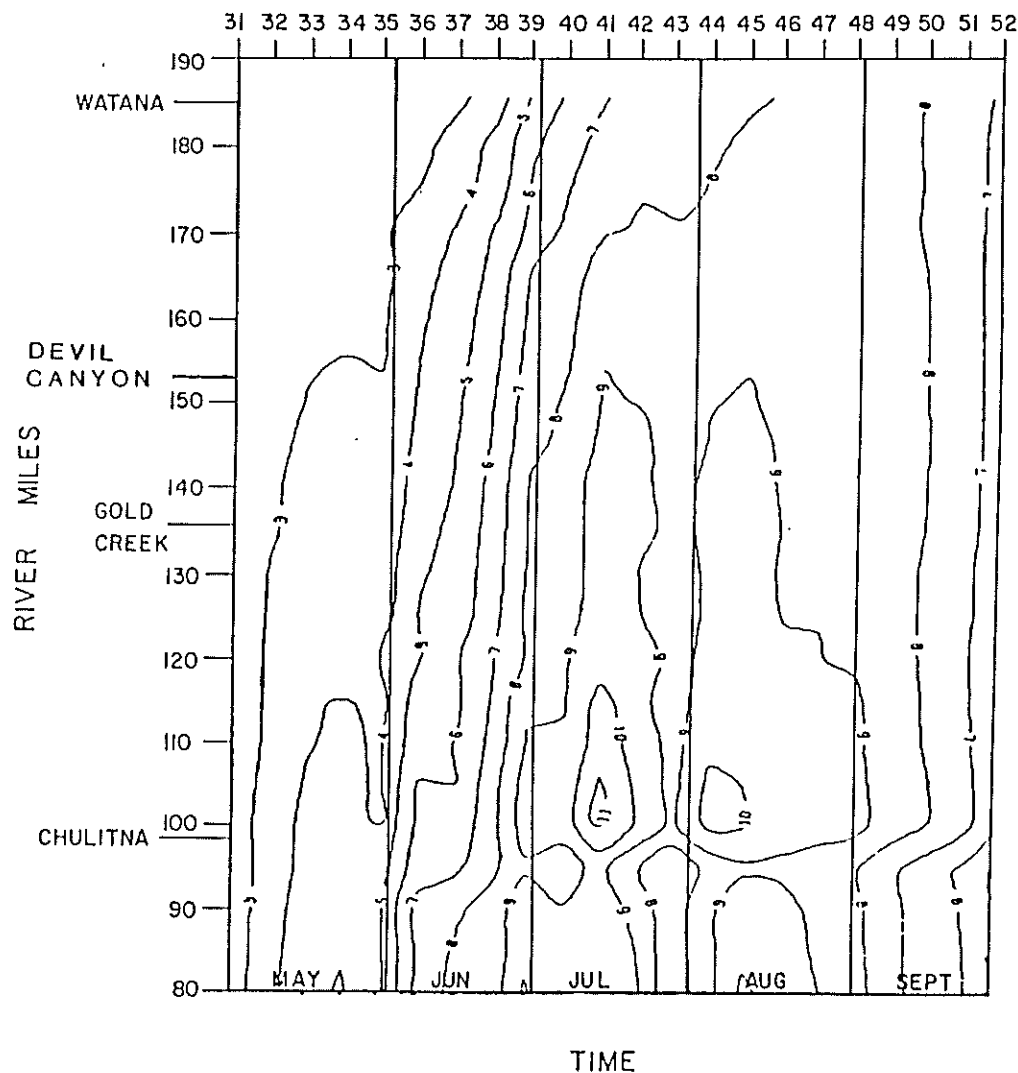
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)



NOTES :

1. TEMPERATURES IN °C.

WATANA ONLY, 1996 ENERGY DEMAND

SUMMER 1971 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

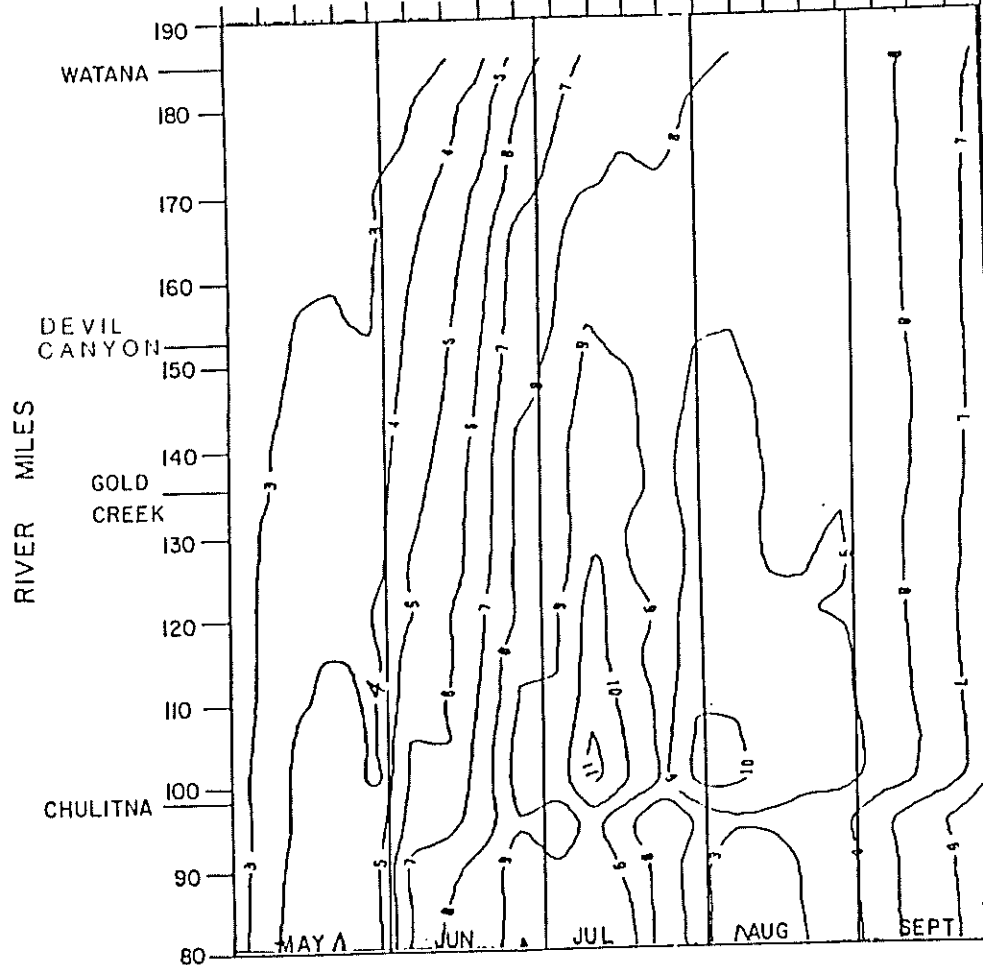
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



TIME

WATANA ONLY, 2001 ENERGY DEMAND

SUMMER 1971 CLIMATE DATA

NOTES :

1. TEMPERATURES IN °C.

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

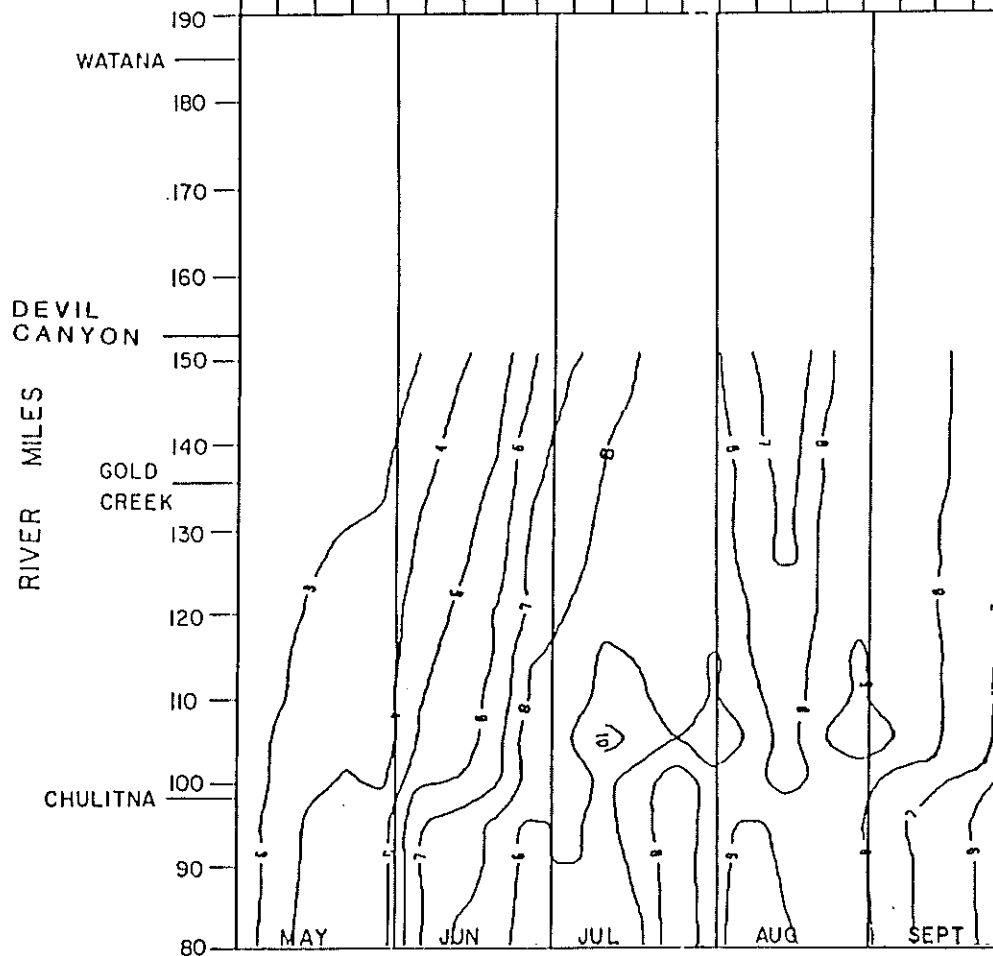
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

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TIME

WATANA/DEVIL CANYON, 2002 ENERGY DEMAND

SUMMER 1971 CLIMATE DATA

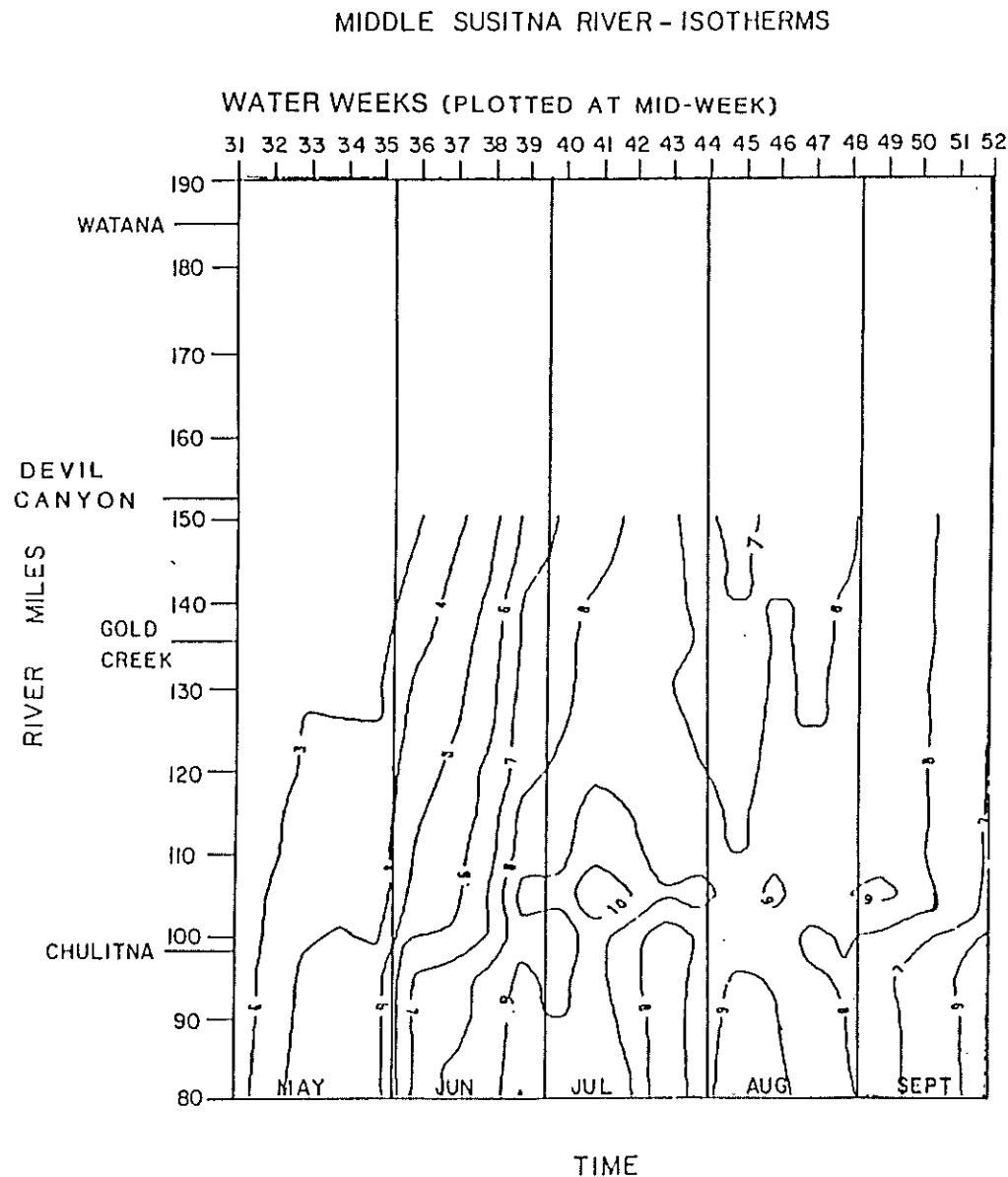
NOTES :

1. TEMPERATURES IN. °C.

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NOTES :

1. TEMPERATURES IN °C.

WATANA/DEVIL CANYON, 2020 ENERGY DEMAND

SUMMER 1971 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

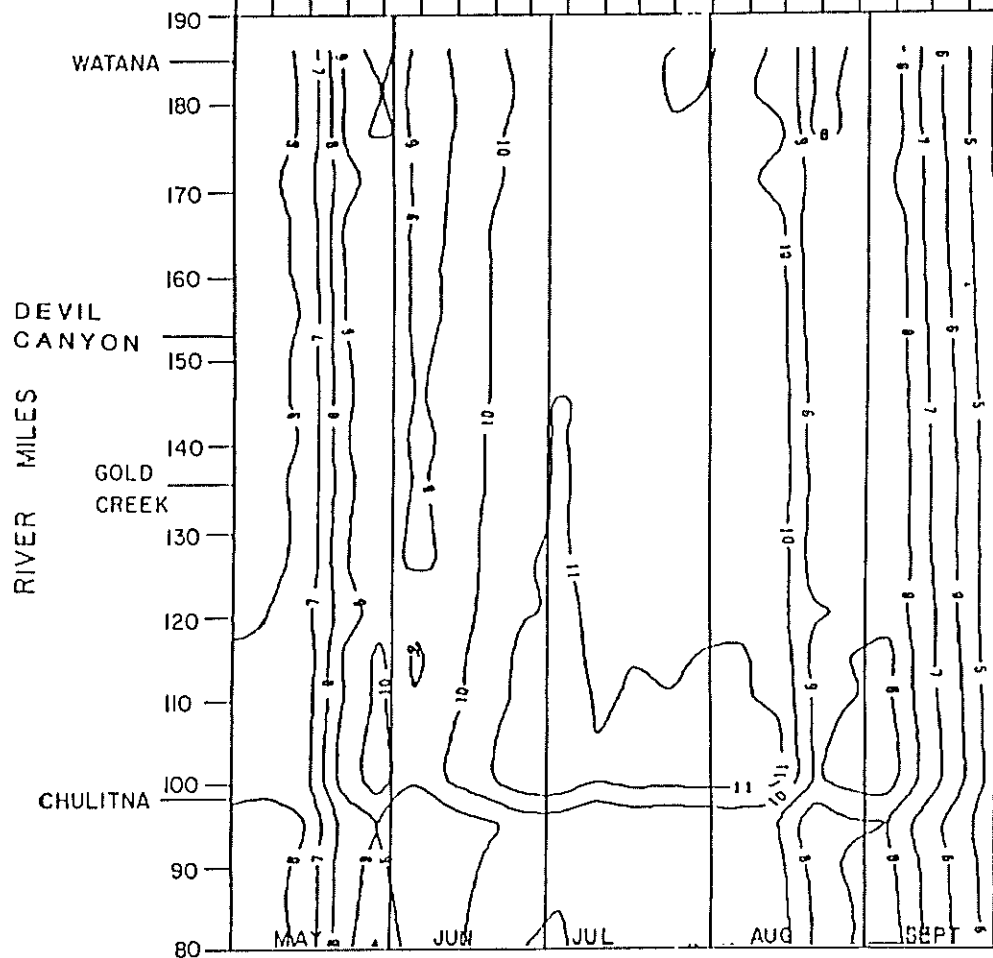
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

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TIME

NATURAL CONDITIONS

SUMMER 1974 CLIMATE DATA

NOTES :

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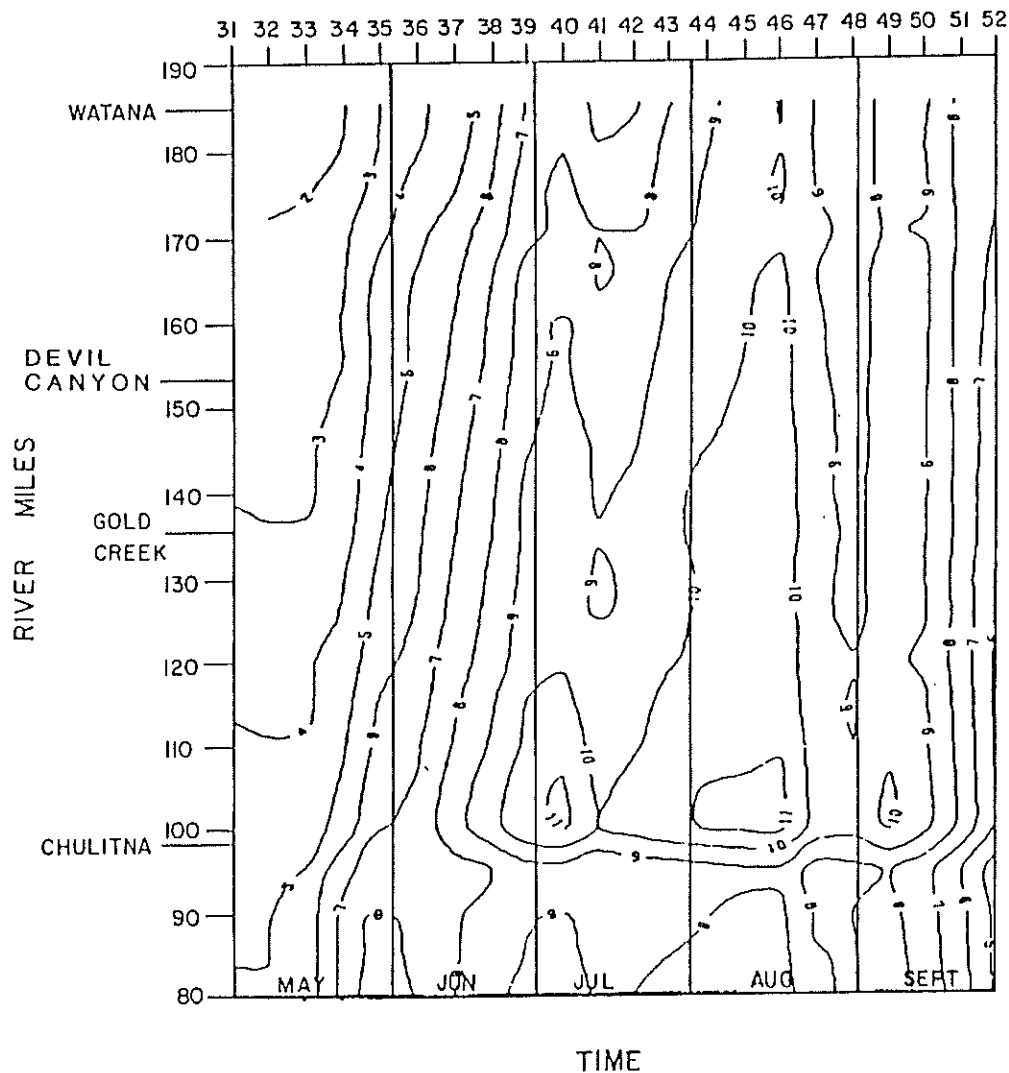
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)



NOTES :

1. TEMPERATURES IN °C.

WATANA ONLY, 1996 ENERGY DEMAND

SUMMER 1974 CLIMATE DATA

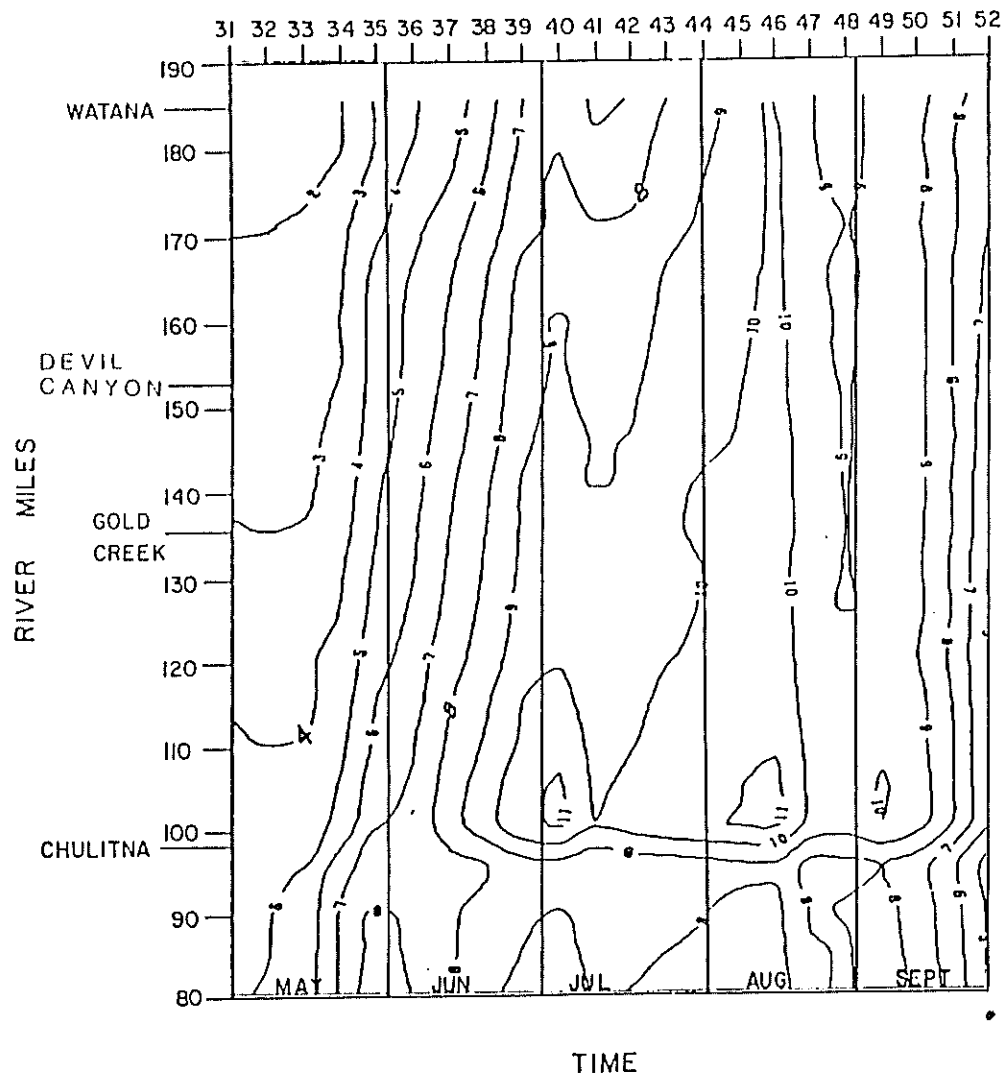
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)



NOTES :

1. TEMPERATURES, IN °C.

WATANA ONLY, 2001 ENERGY DEMAND

SUMMER 1974 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

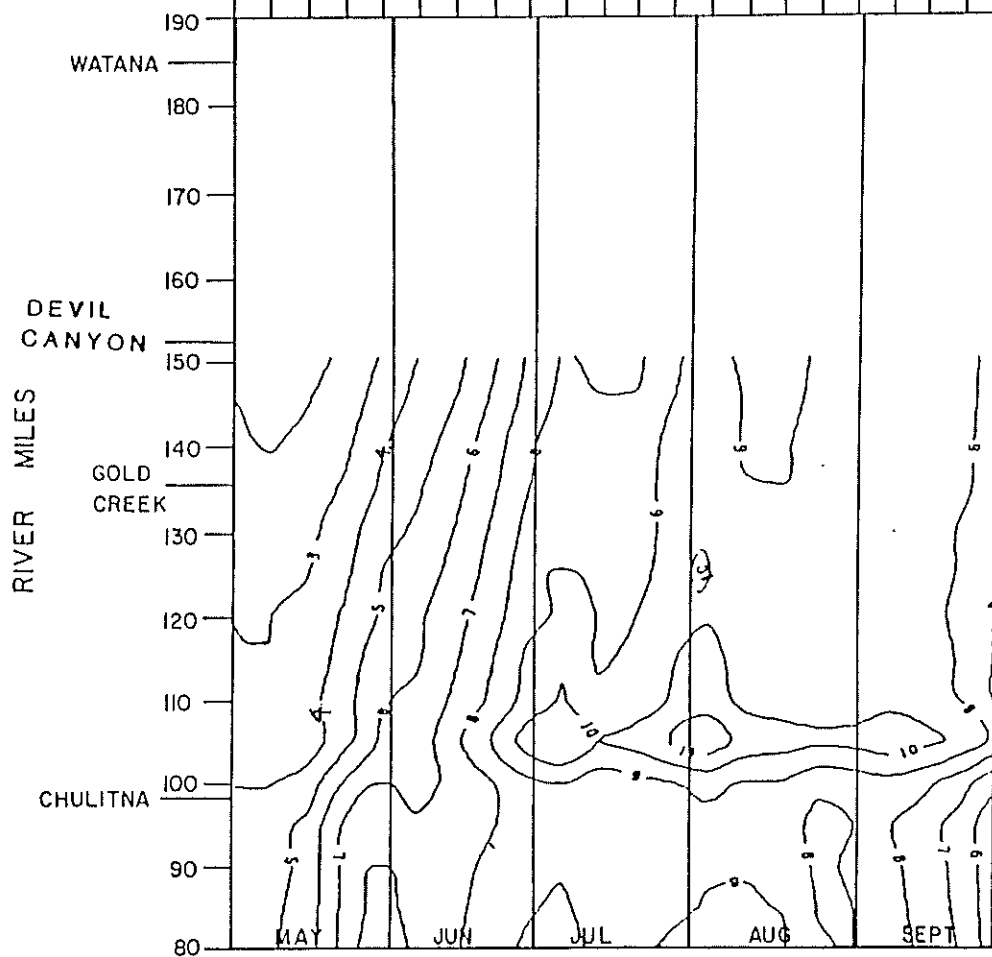
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



TIME

WATANA/DEVIL CANYON, 2002 ENERGY DEMAND

SUMMER 1974 CLIMATE DATA

NOTES :

1. TEMPERATURES IN °C.

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

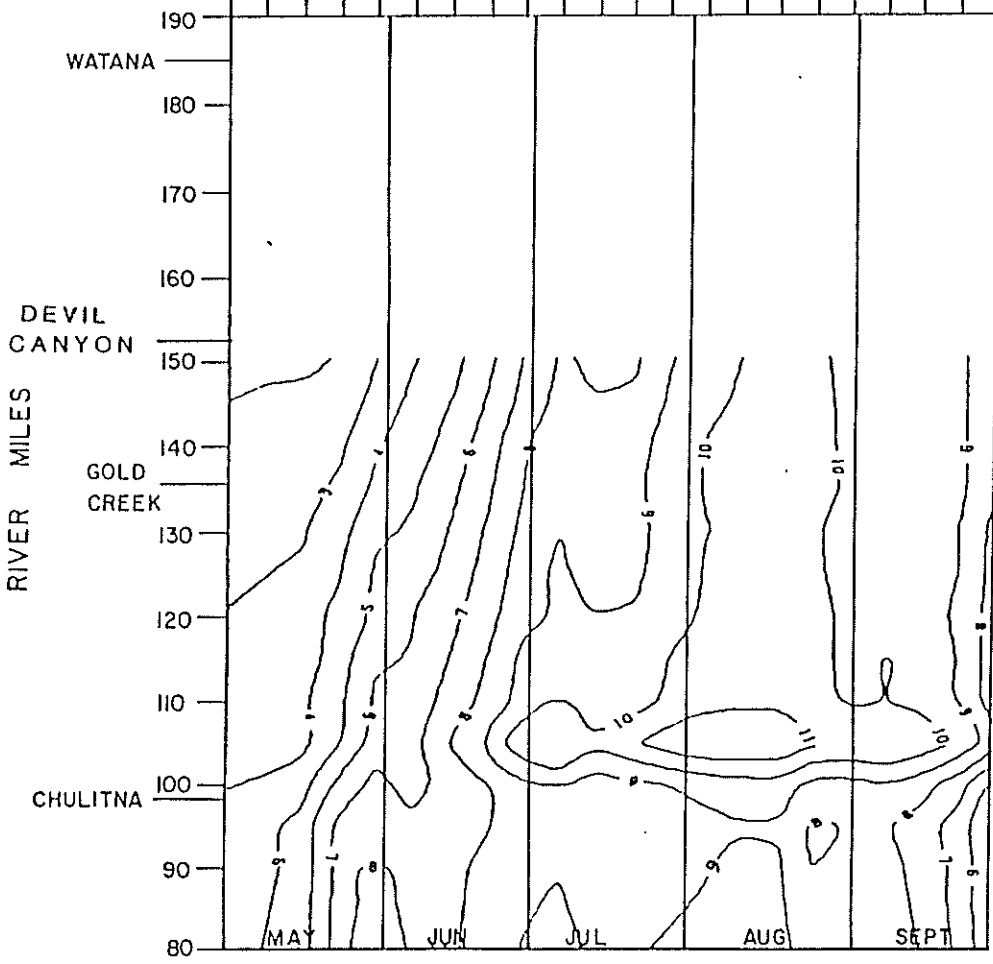
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



NOTES :

1. TEMPERATURES IN °C.

WATANA/DEVIL CANYON, 2020 ENERGY DEMAND

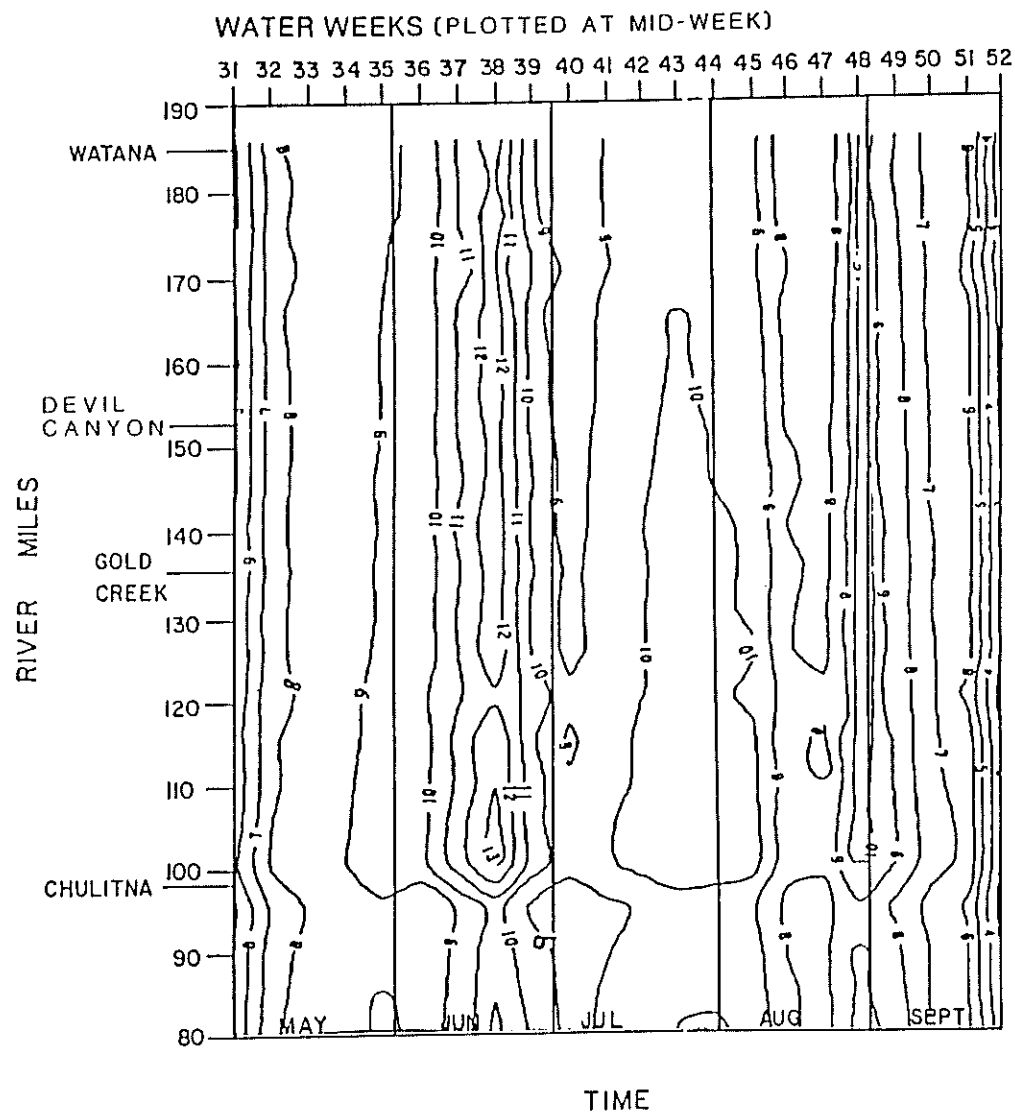
SUMMER 1974 CLIMATE DATA

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NOTES :

1. TEMPERATURES IN °C.

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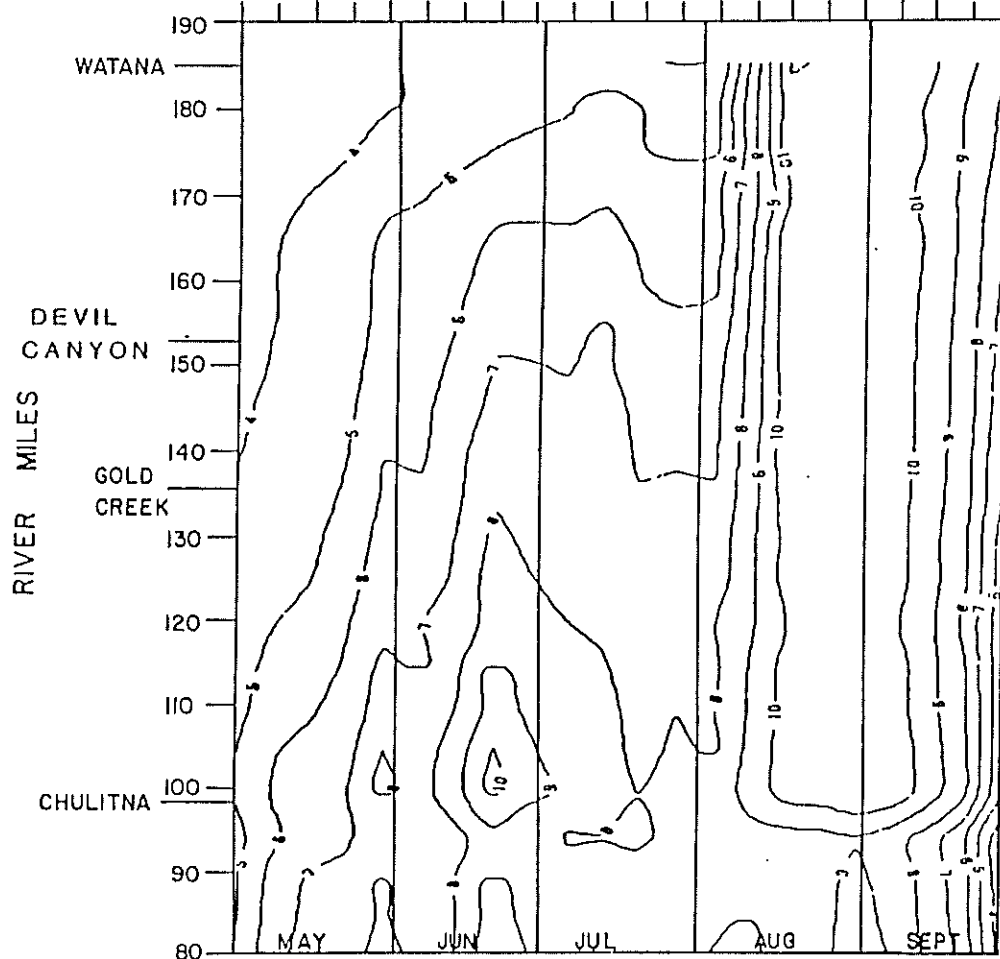
HARZA-EBASCO
SUSITNA JOINT VENTURE

NATURAL CONDITIONS
SUMMER 1981 CLIMATE DATA

MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



NOTES :

1. TEMPERATURES IN °C.

TIME

WATANA FILLING, 1992
2nd SUMMER
SUMMER 1981 CLIMATE DATA

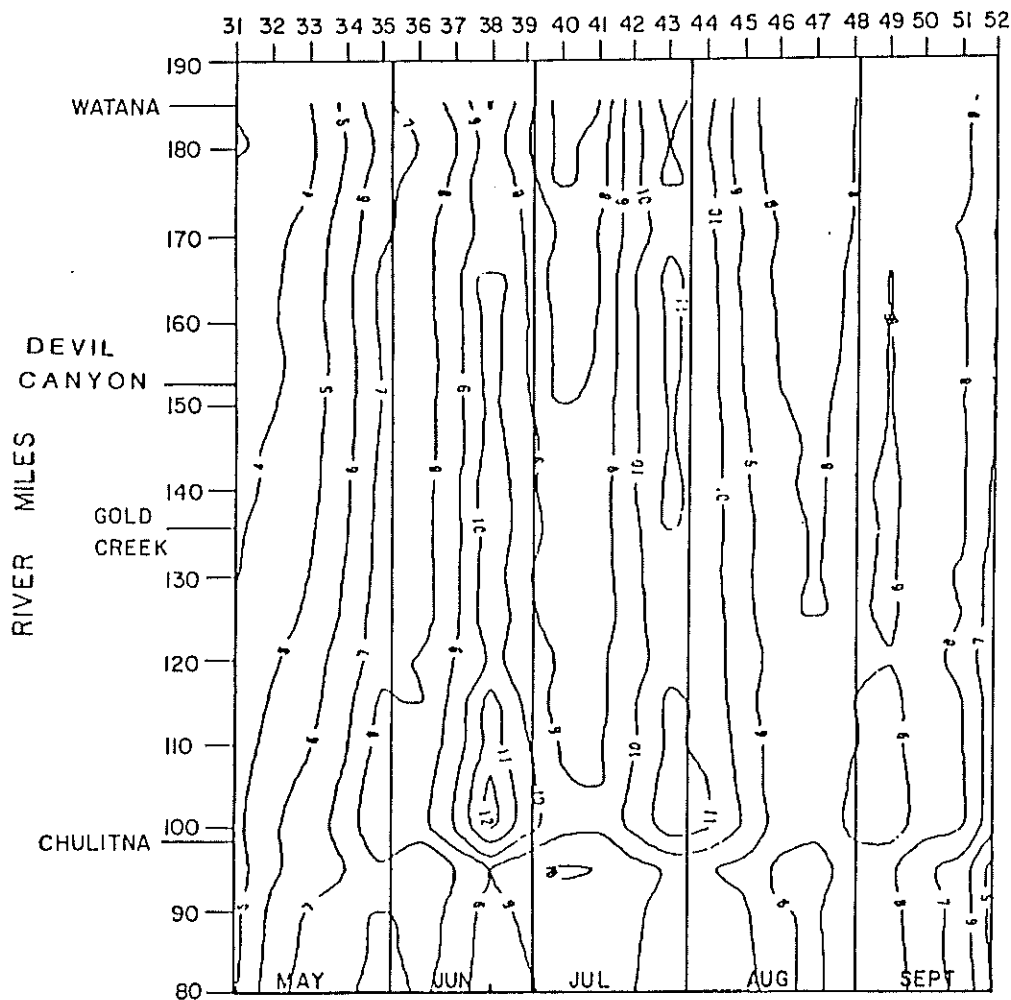
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)



TIME

WATANA ONLY, 1996 ENERGY DEMAND

SUMMER 1981 CLIMATE DATA

NOTES :

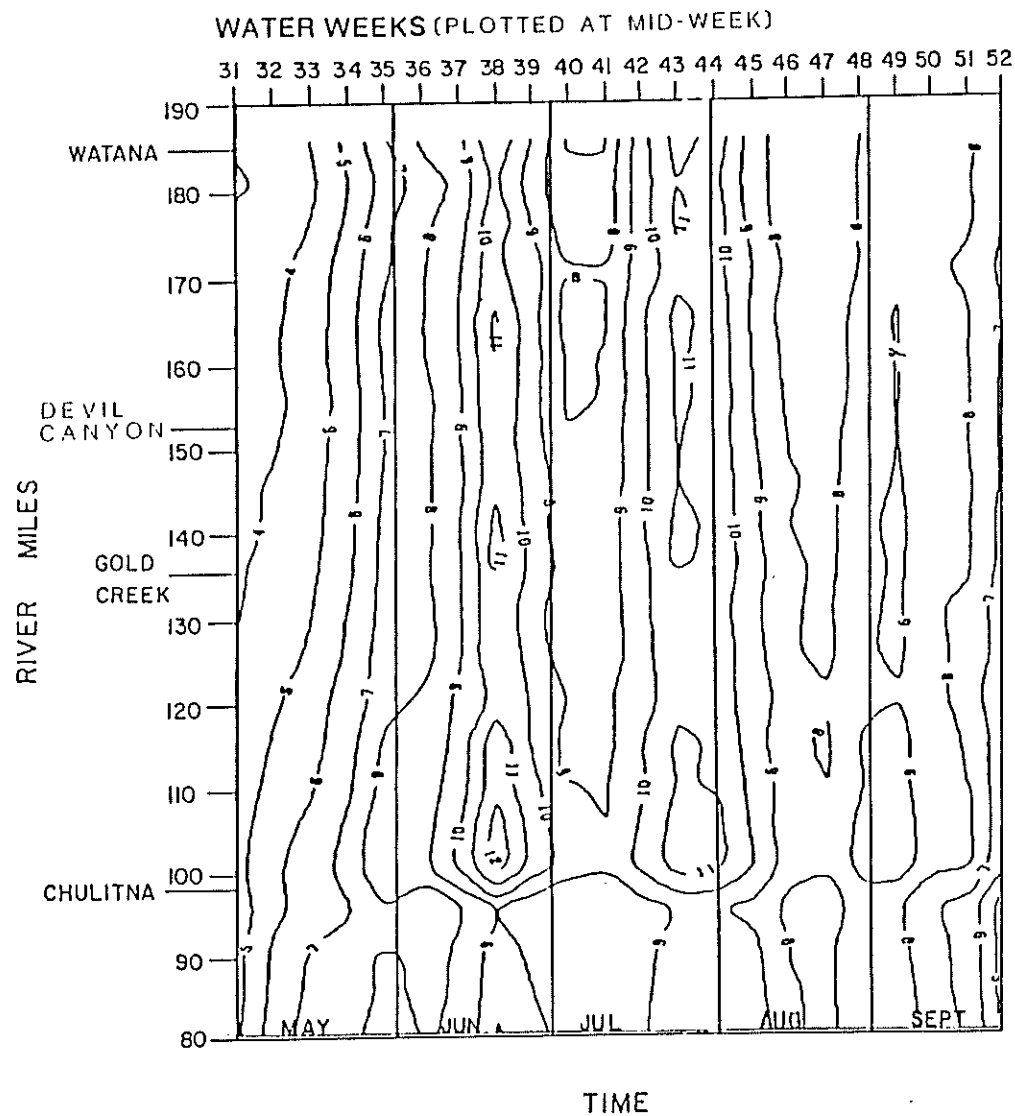
1. TEMPERATURES, IN °C.

ALASKA POWER AUTHORITY
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MIDDLE SUSITNA RIVER - ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.

WATANA ONLY, 2001 ENERGY DEMAND
SUMMER 1981 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

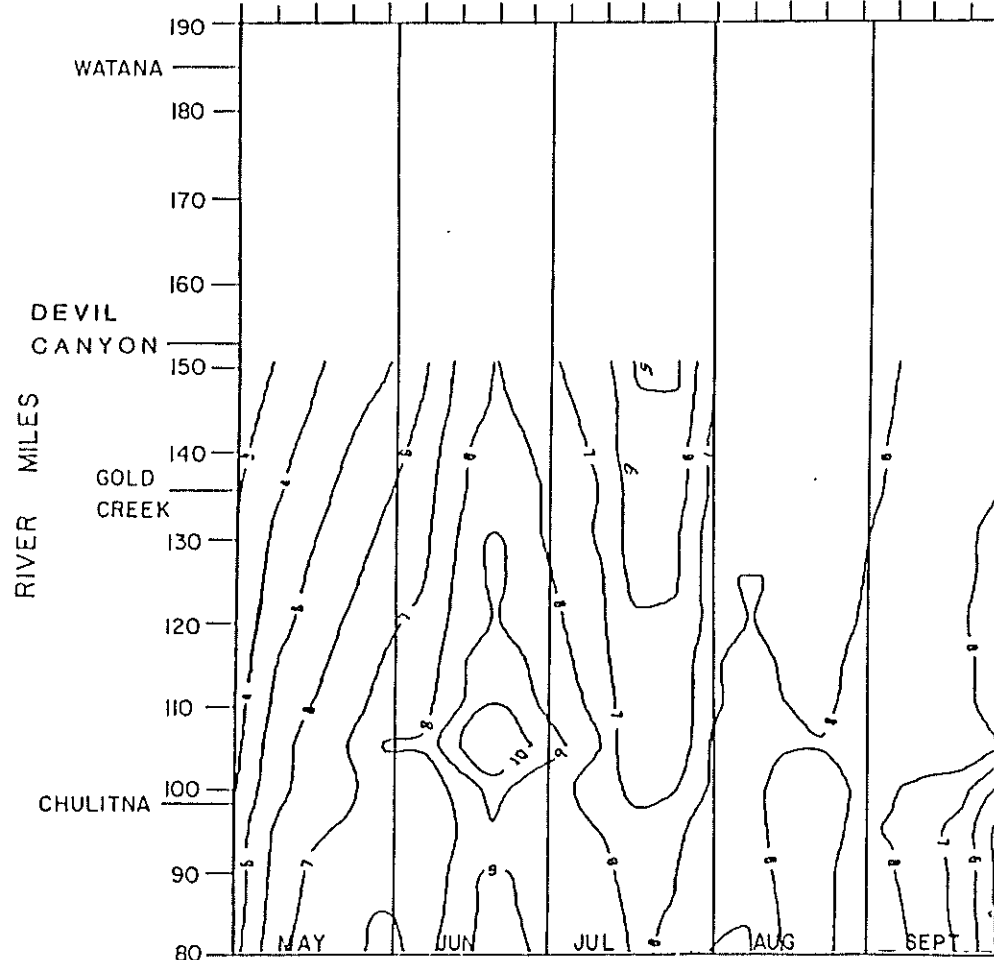
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



TIME

WATANA/DEVIL CANYON, 2002 ENERGY DEMAND

SUMMER 1981 CLIMATE DATA

NOTES :

1. TEMPERATURES IN °C.

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

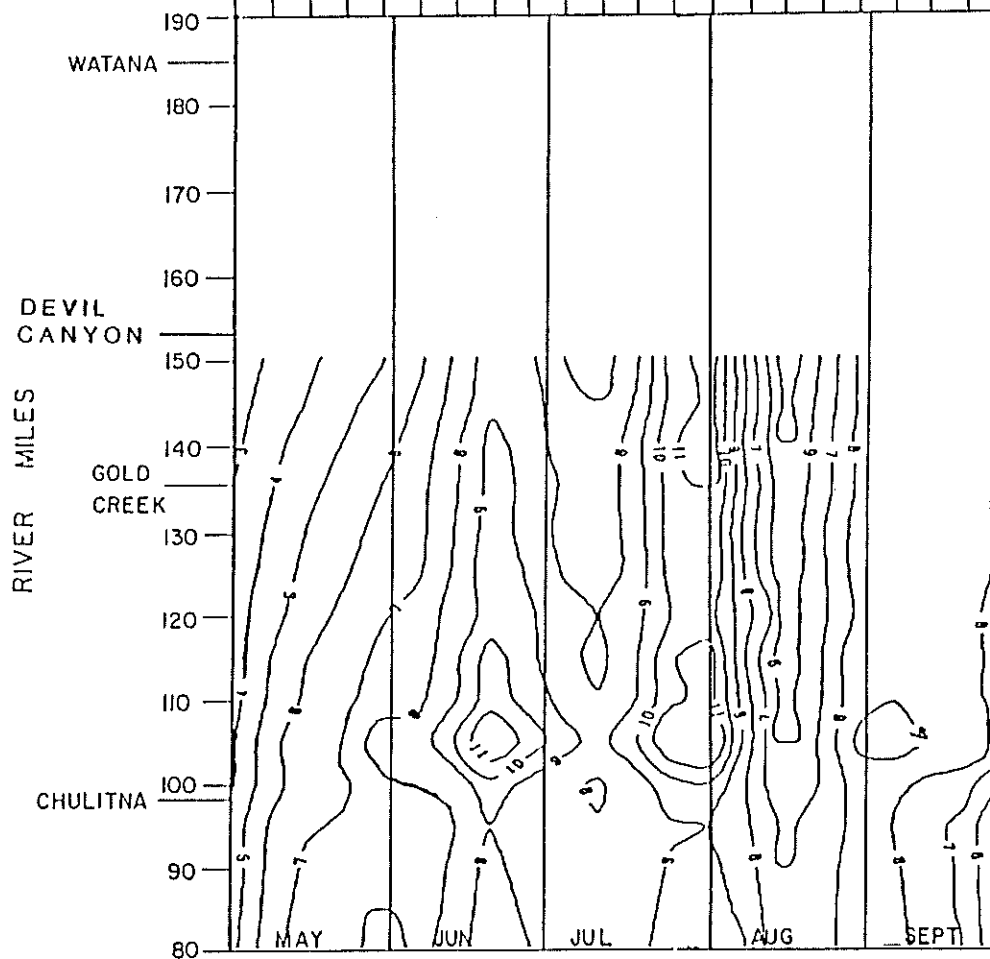
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



TIME

WATANA/DEVIL CANYON, 2020 ENERGY DEMAND

SUMMER 1981 CLIMATE DATA

NOTES :

1. TEMPERATURES IN °C.

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

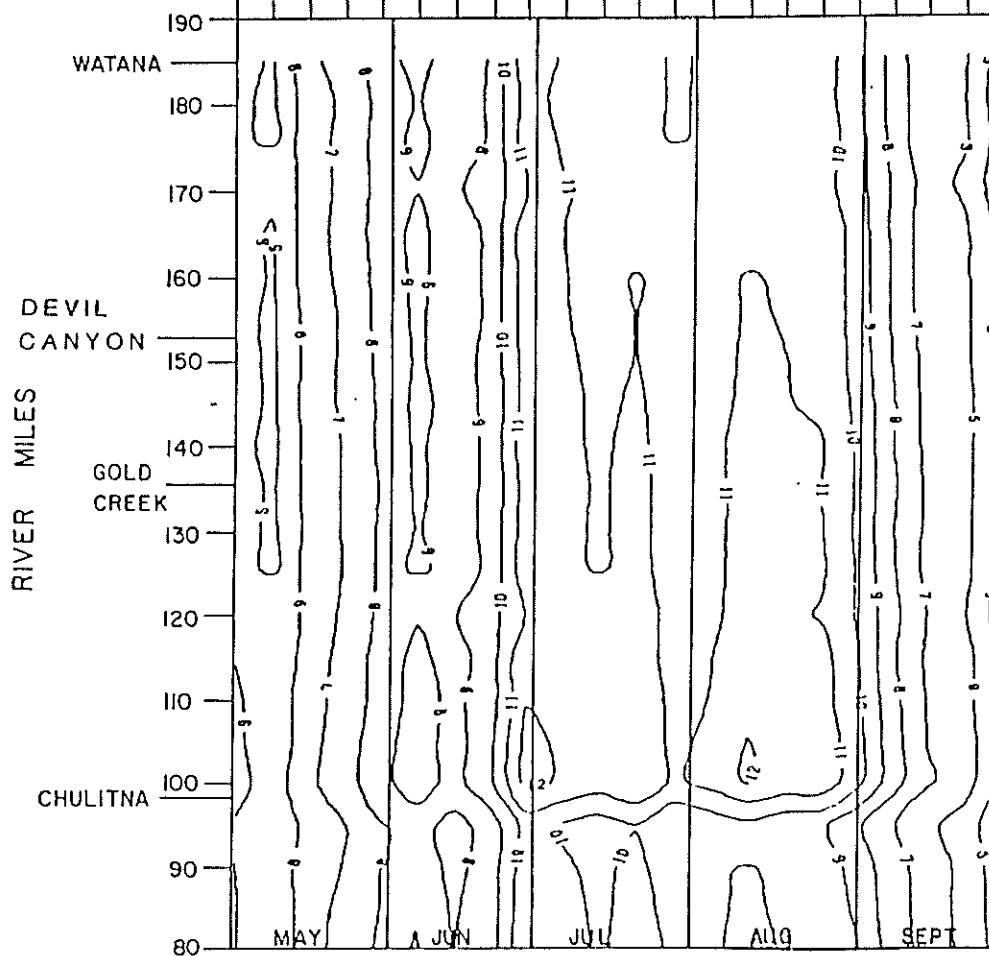
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



TIME

NATURAL CONDITIONS

SUMMER 1982 CLIMATE DATA

NOTES :

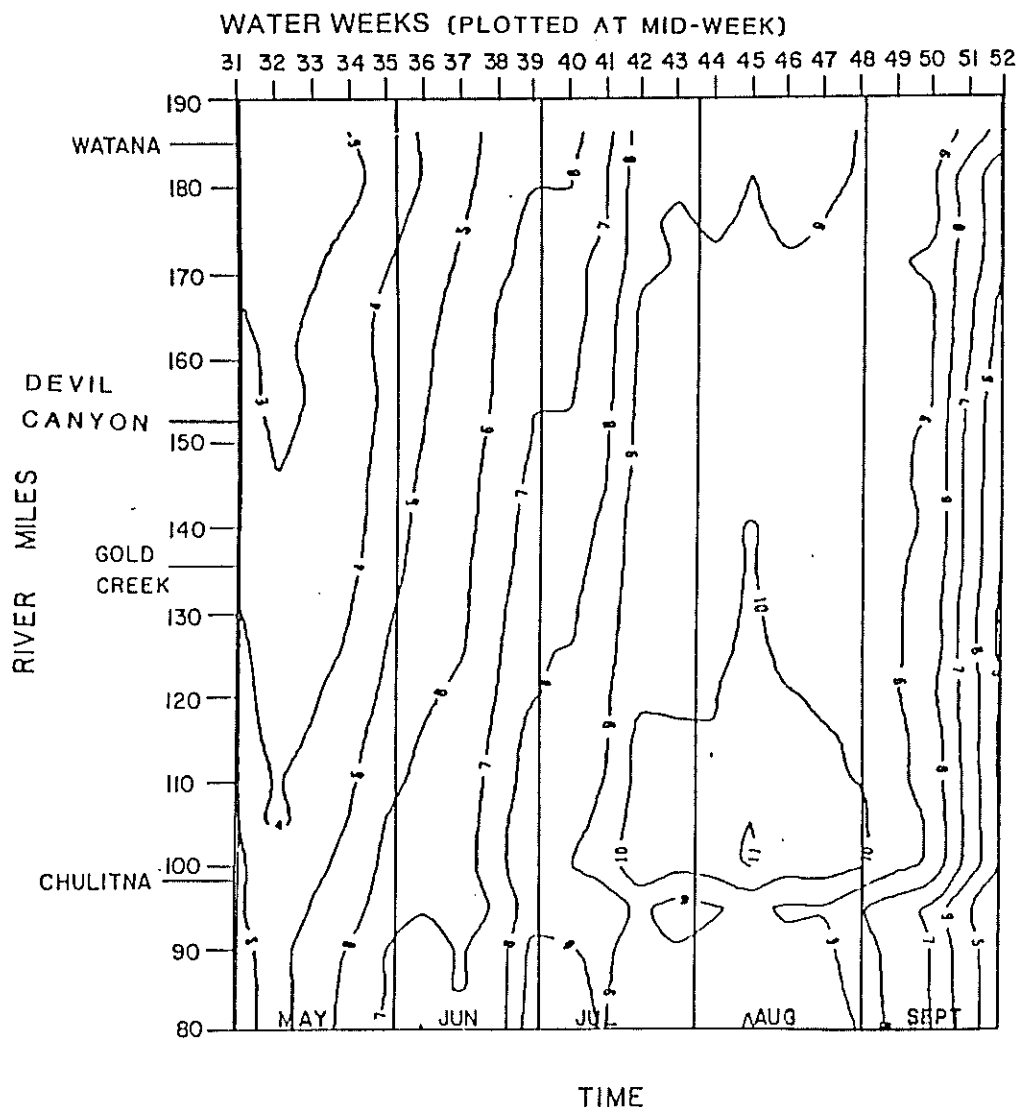
1. TEMPERATURES IN °C.

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

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INFORMATION AND DATA
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.

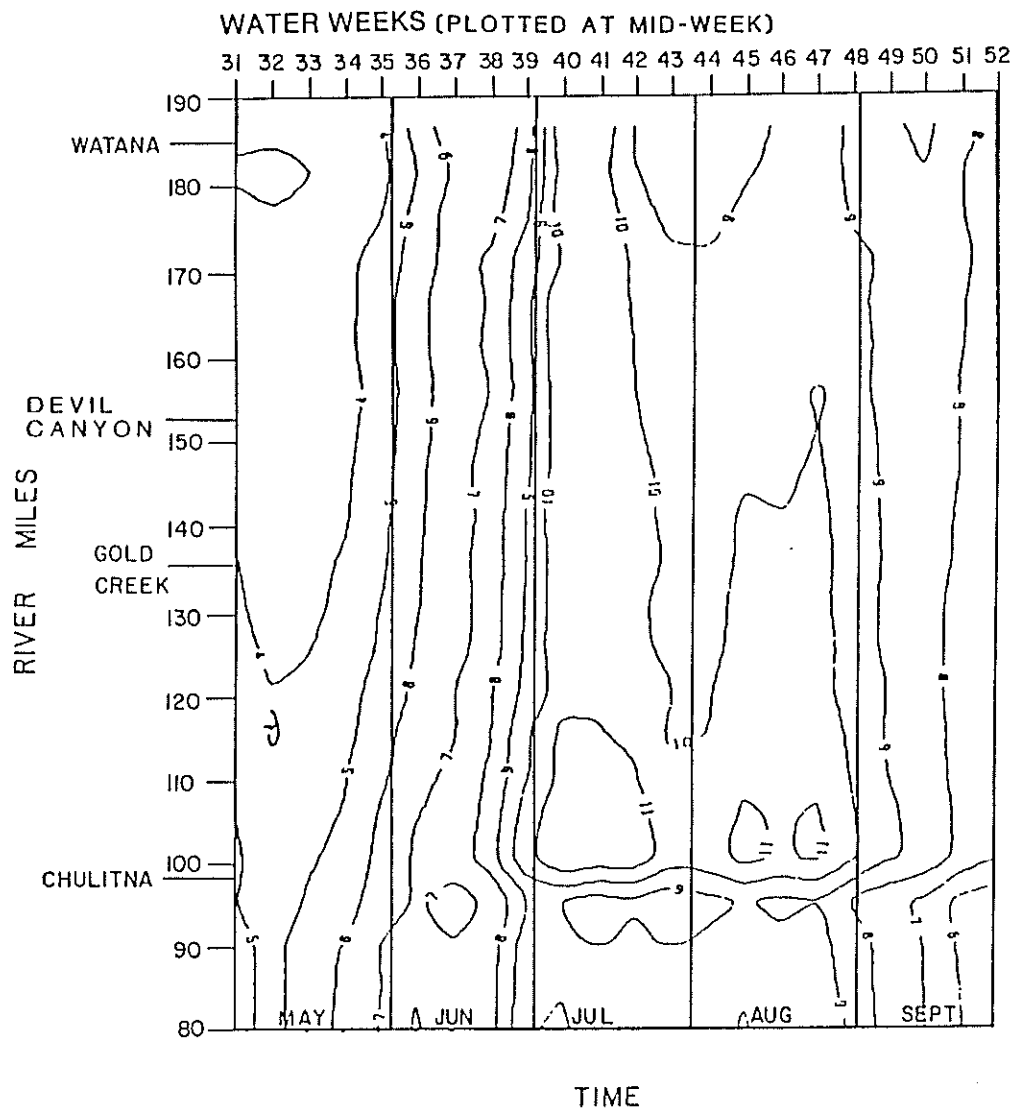
WATANA FILLING, 1993
3rd SUMMER
SUMMER 1982 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS



NOTES :

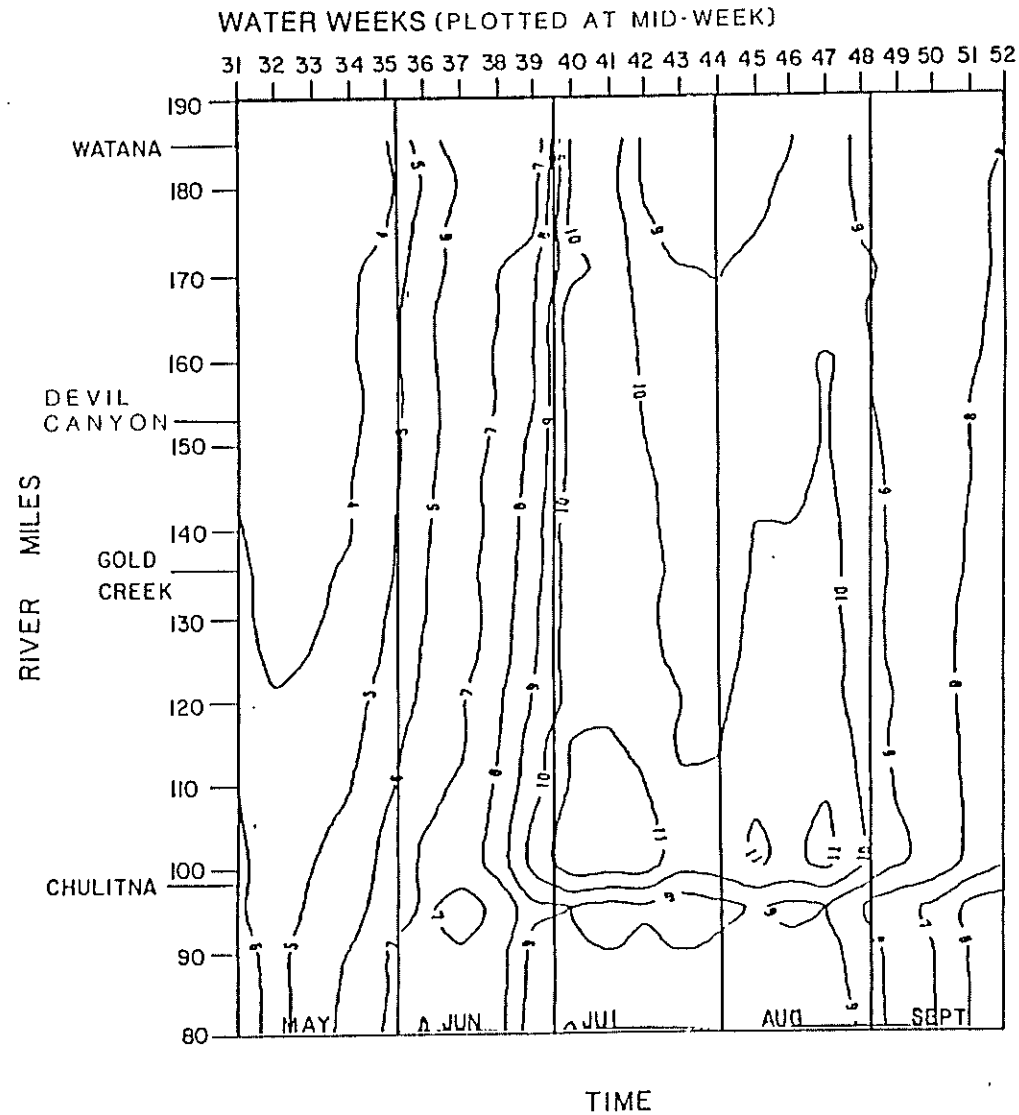
1. TEMPERATURES IN °C.

WATANA ONLY, 1996 ENERGY DEMAND

SUMMER 1982 CLIMATE DATA

ALASKA POWER AUTHORITY
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.

WATANA ONLY, 2001 ENERGY DEMAND

SUMMER 1982 CLIMATE DATA

ALASKA POWER AUTHORITY
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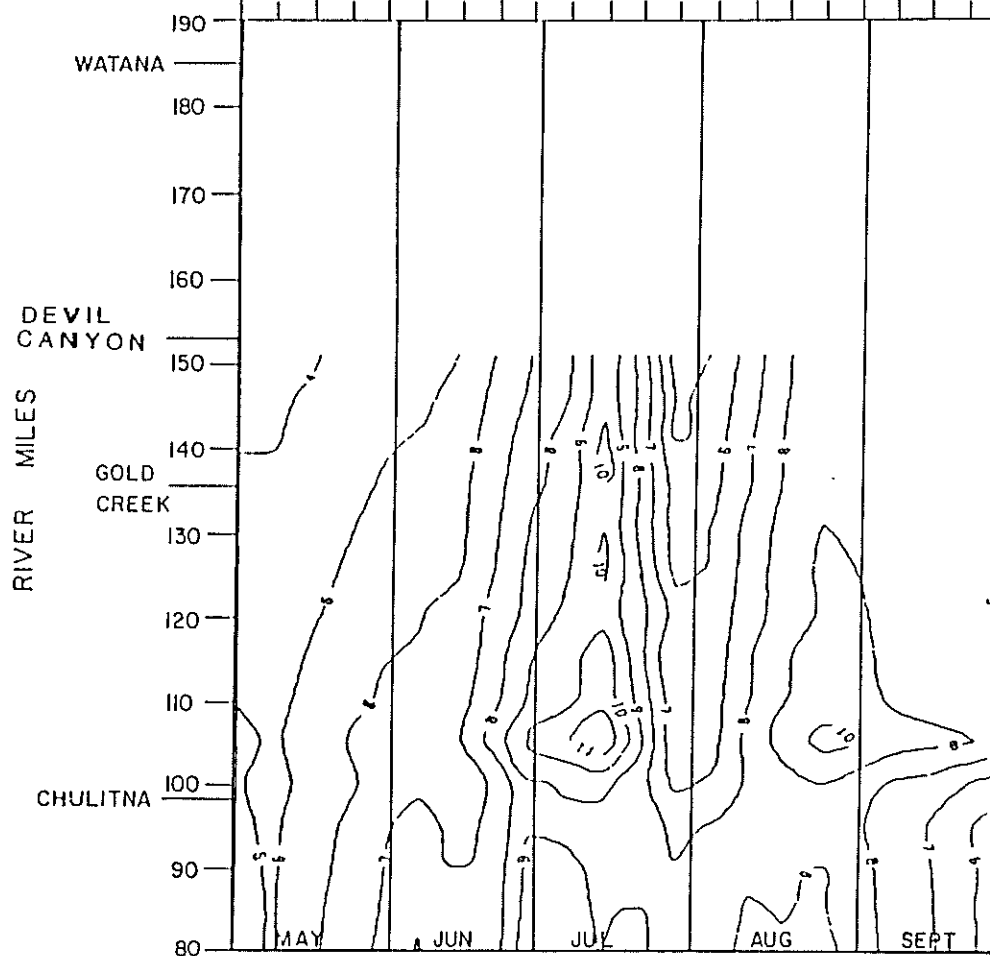
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INFORMATION AND DATA
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



TIME

WATANA/DEVIL CANYON, 2002 ENERGY DEMAND

SUMMER 1982 CLIMATE DATA

NOTES :

1. TEMPERATURES IN °C.

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

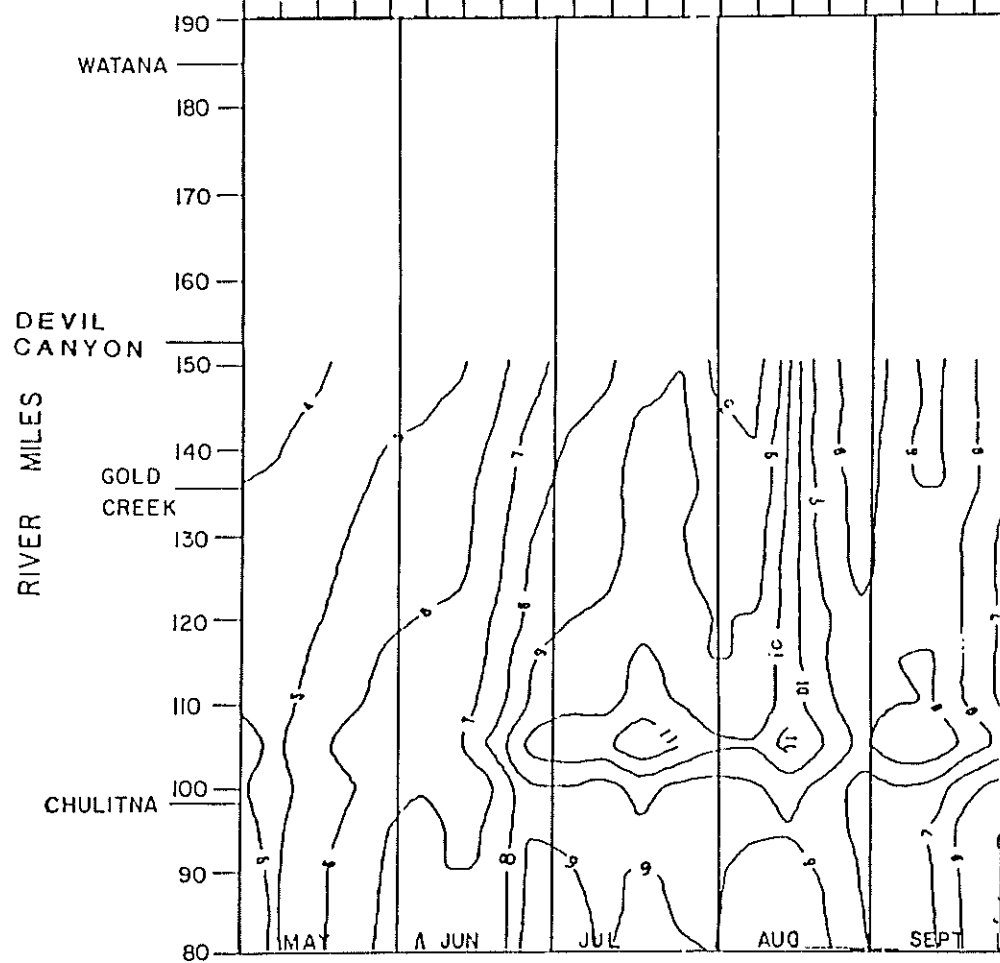
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



NOTES :

1. TEMPERATURES IN °C

TIME

WATANA/DEVIL CANYON, 2020 ENERGY DEMAND

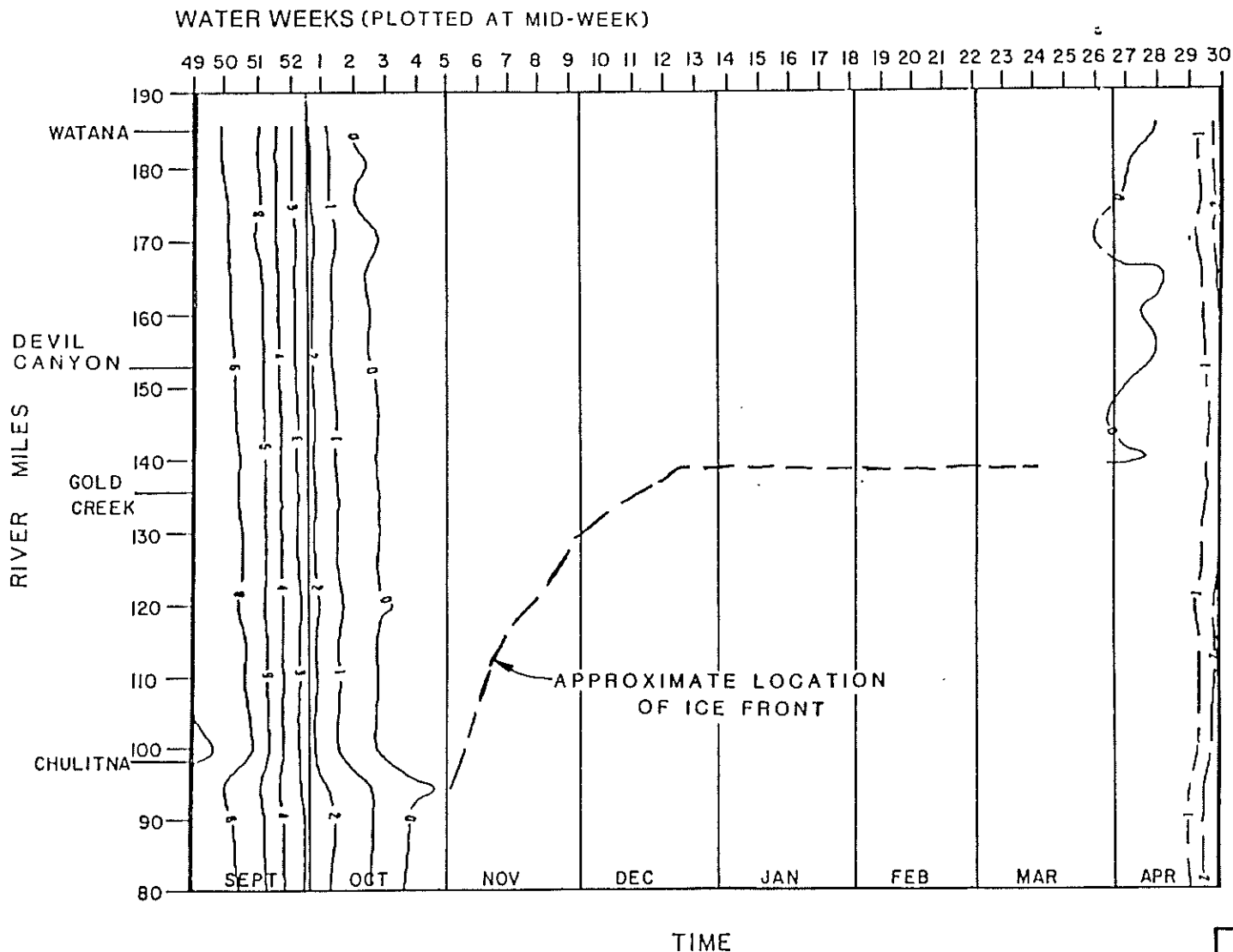
SUMMER 1982 CLIMATE DATA

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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS. SIMULATED TEMPERATURES FOR MARCH AND APRIL SHOULD NOT BE USED.
3. ICE FRONT PROGRESSION UPSTREAM OF RIVER MILE 139 NOT MODELED FOR NATURAL CONDITIONS

NATURAL CONDITIONS

WINTER 1971-1972 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

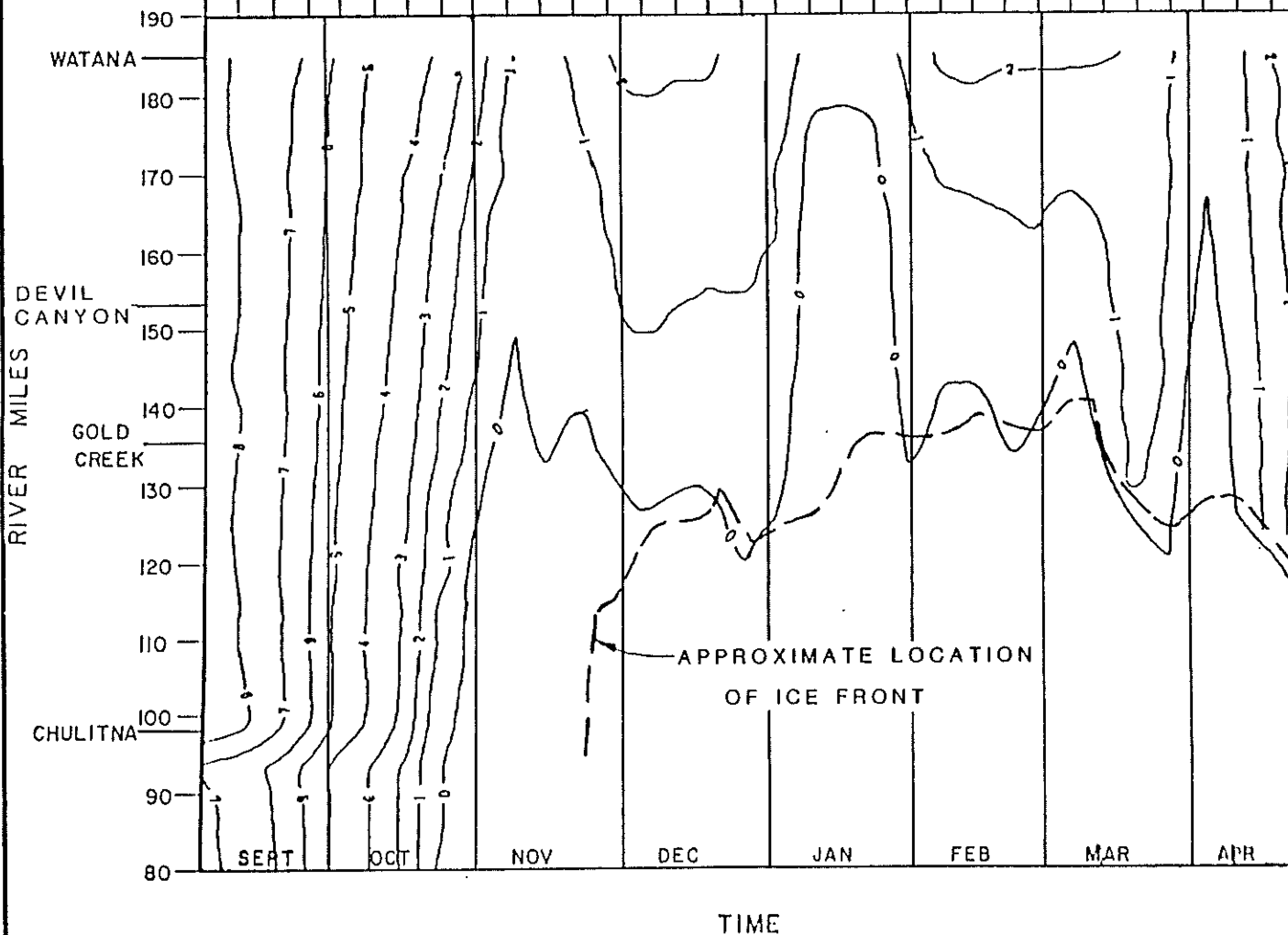
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

WATANA ONLY, 1996 ENERGY DEMAND

WINTER 1971-1972 CLIMATE DATA

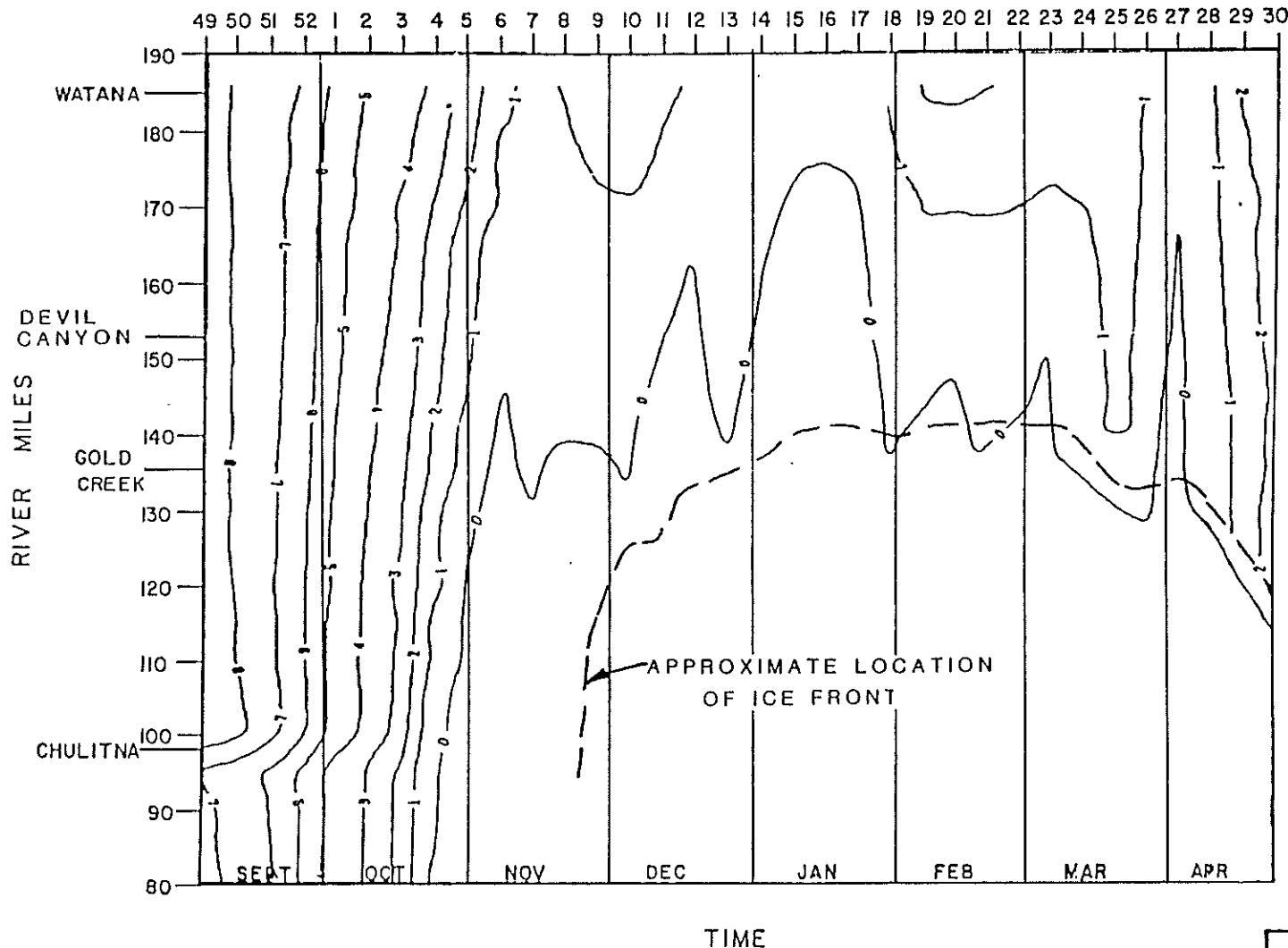
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MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

TIME
WATANA ONLY, 2001 ENERGY DEMAND
WINTER 1971-1972 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
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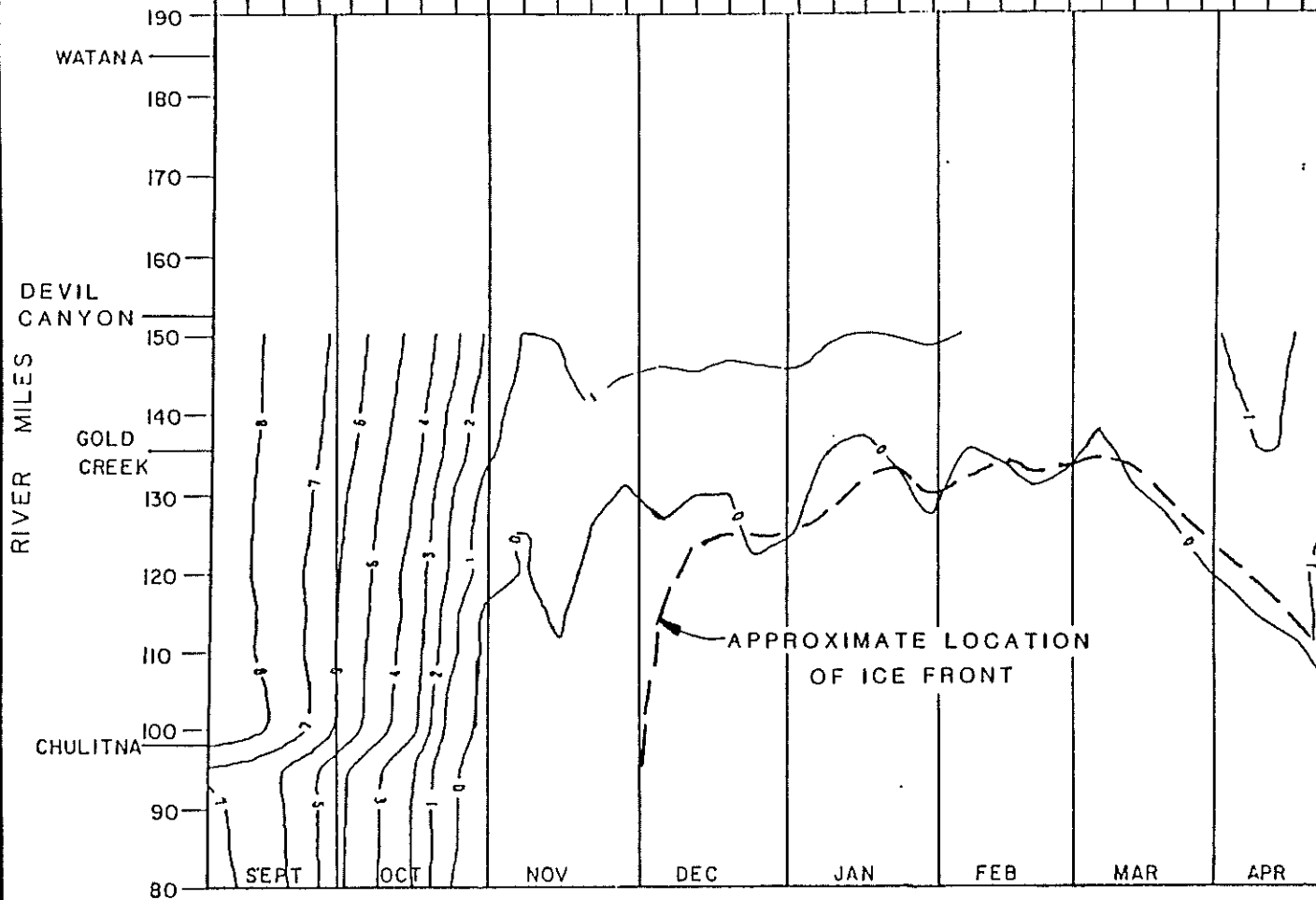
MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.



TIME

WATANA/DEVIL CANYON, 2002 ENERGY DEMAND

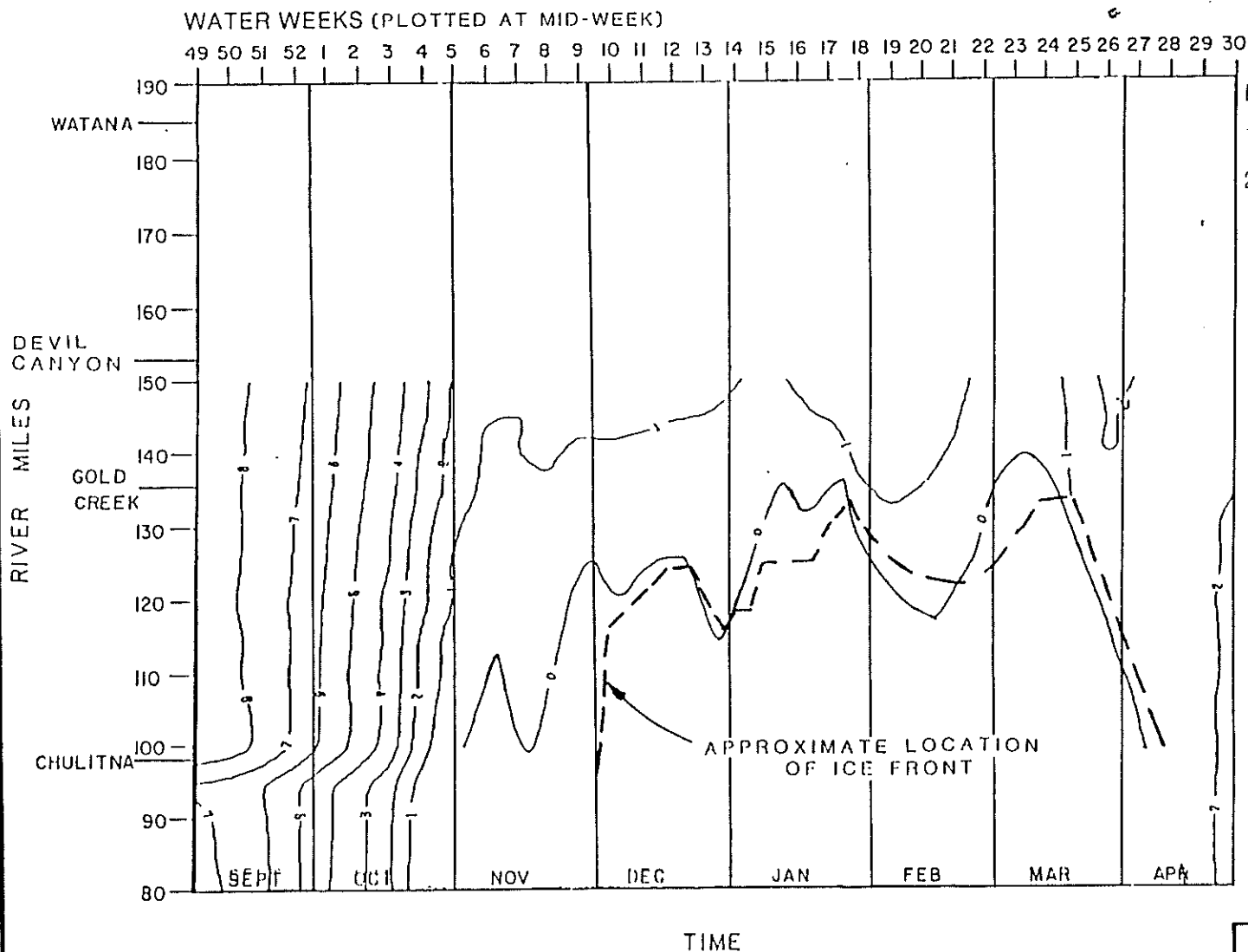
WINTER 1971-1972 CLIMATE DATA

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MIDDLE SUSITNA RIVER-ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

WATANA/DEVIL CANYON, 2020 ENERGY DEMAND

WINTER 1971-1972 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

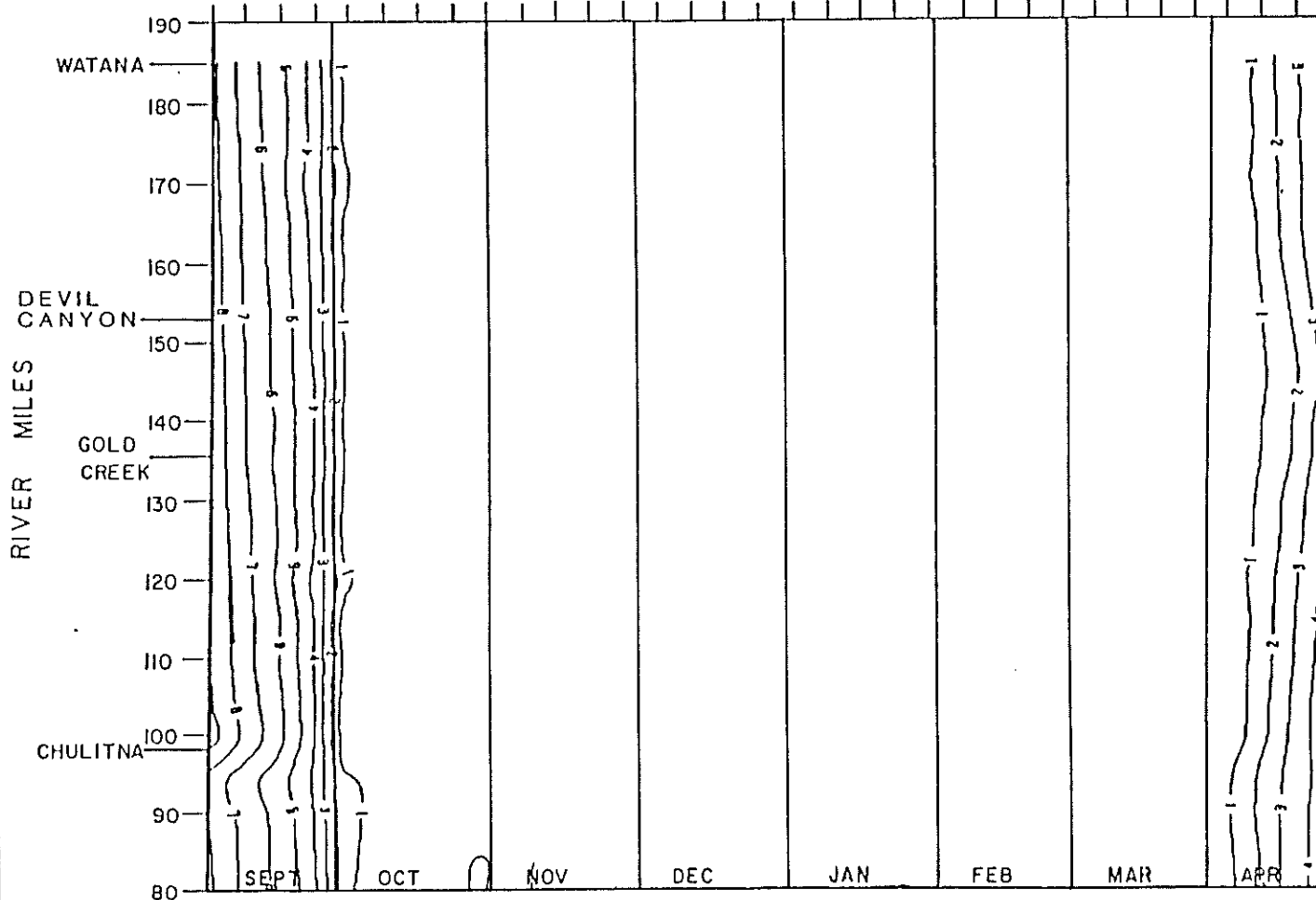
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. ICE SIMULATION NOT MADE FOR THIS CASE. TEMPERATURES FROM NOVEMBER THROUGH APRIL SHOULD NOT BE USED. NOTE SIMILARITY TO NATURAL CONDITIONS FOR 1971-1972 WINTER,

TIME

NATURAL CONDITIONS

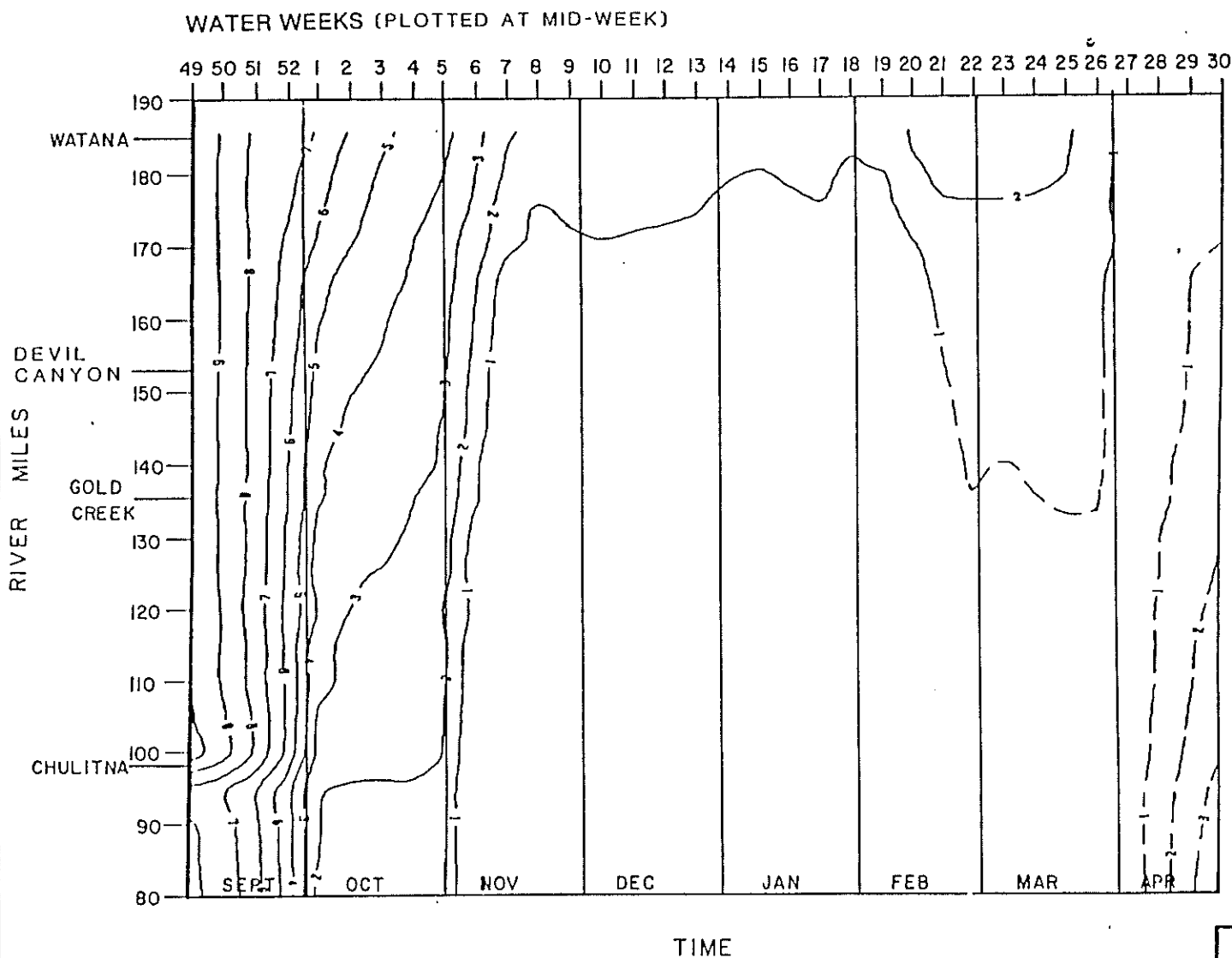
WINTER 1974-1975 CLIMATE DATA

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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. ICE SIMULATION NOT MADE FOR THIS CASE. TEMPERATURES FROM NOVEMBER THROUGH APRIL SHOULD NOT BE USED. NOTE SIMILARITY OF THIS CASE TO WINTER OF 1971-1972 FOR 1996 ENERGY DEMAND.

WATANA ONLY, 1996 ENERGY DEMAND

WINTER 1974-1975 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

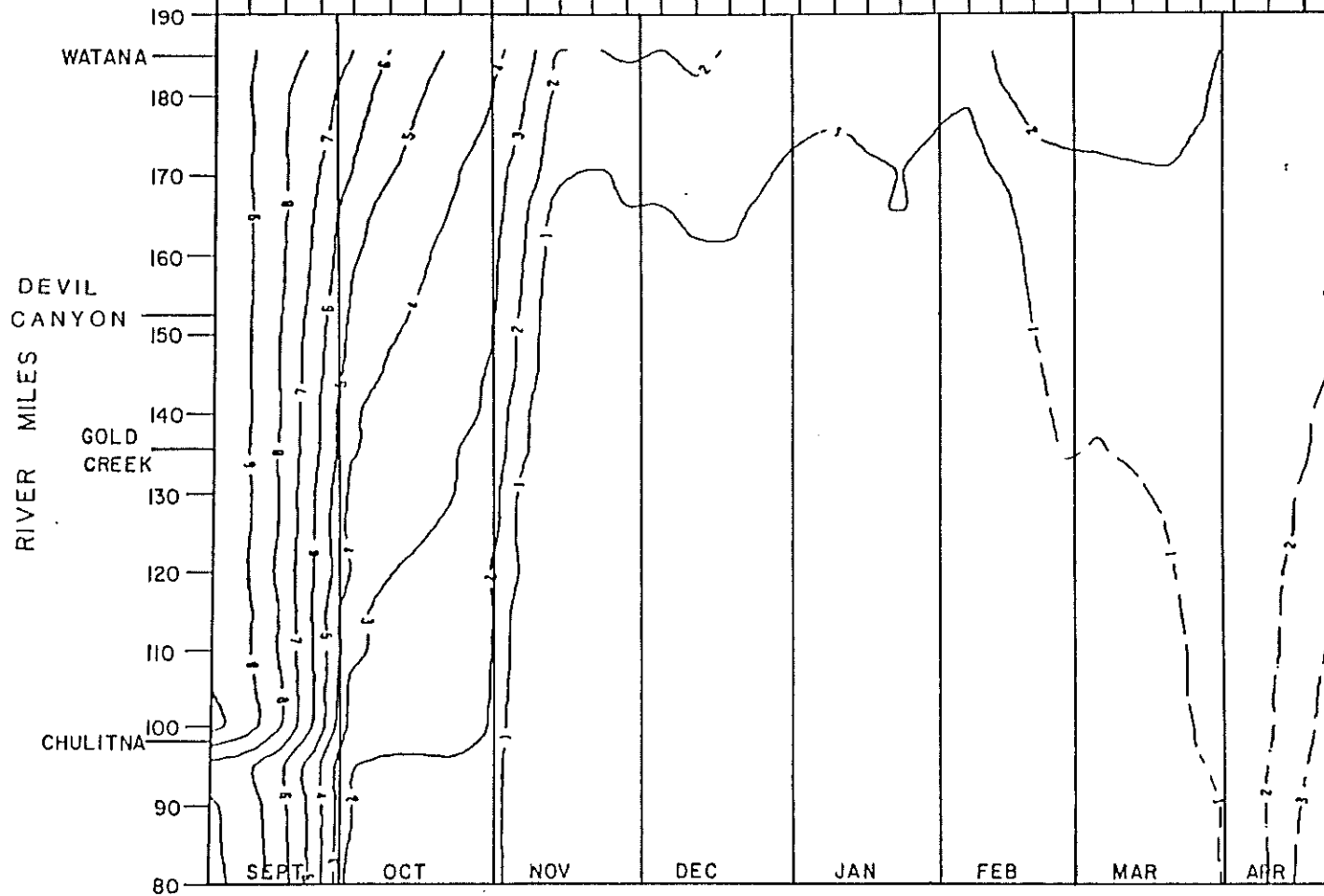
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MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. ICE SIMULATION NOT MADE FOR THIS CASE. TEMPERATURES FROM NOVEMBER THROUGH APRIL SHOULD NOT BE USED. NOTE SIMILARITY OF THIS CASE TO WINTER OF 1971-1972 FOR 1996 ENERGY DEMAND.

TIME

WATANA ONLY, 2001 ENERGY DEMAND

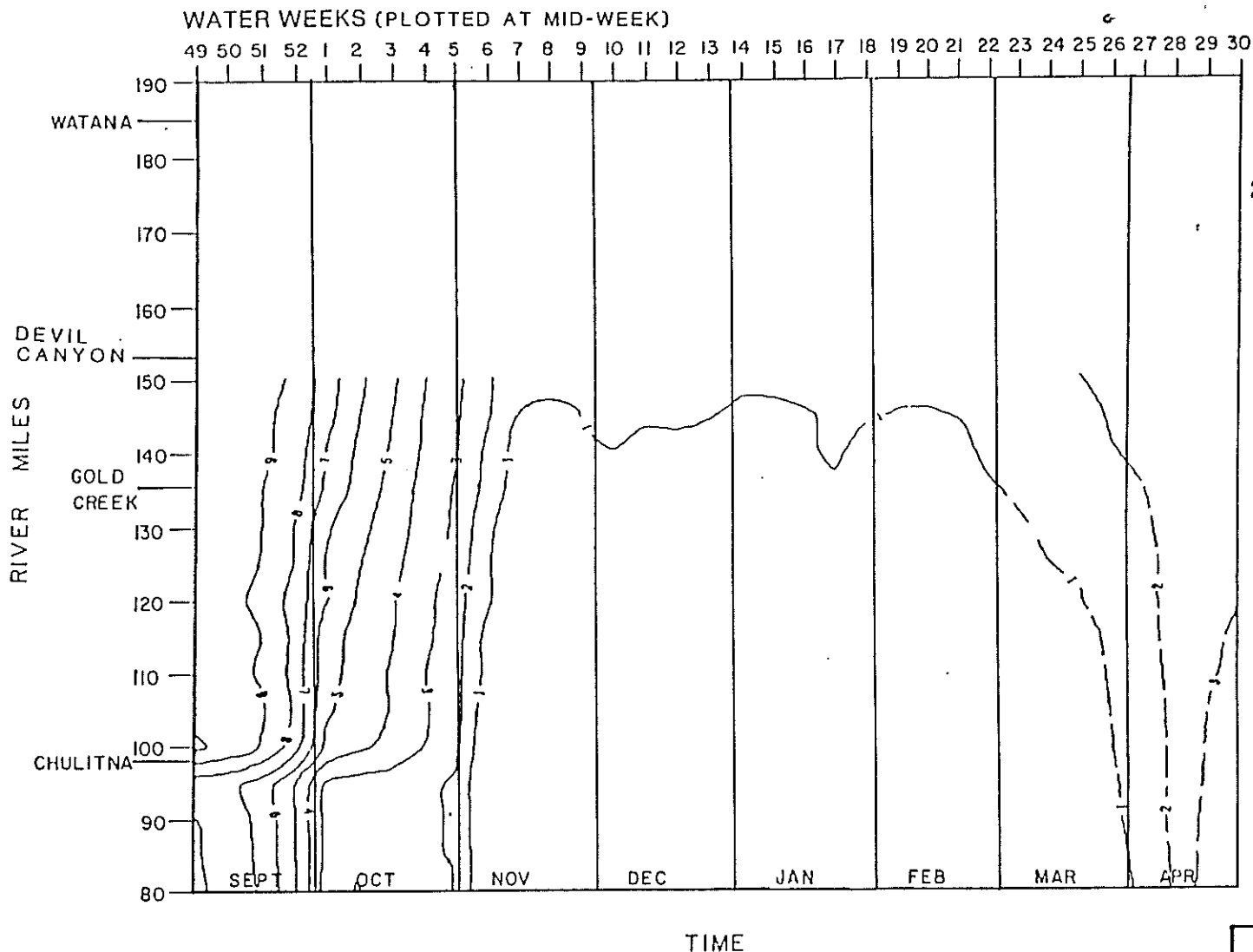
WINTER 1974-1975 CLIMATE DATA

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MIDDLE SUSITNA RIVER-ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. ICE SIMULATION NOT MADE FOR THIS CASE. TEMPERATURES FOR NOVEMBER THROUGH MARCH SHOULD NOT BE USED.

WATANA/DEVIL CANYON, 2002 ENERGY DEMAND

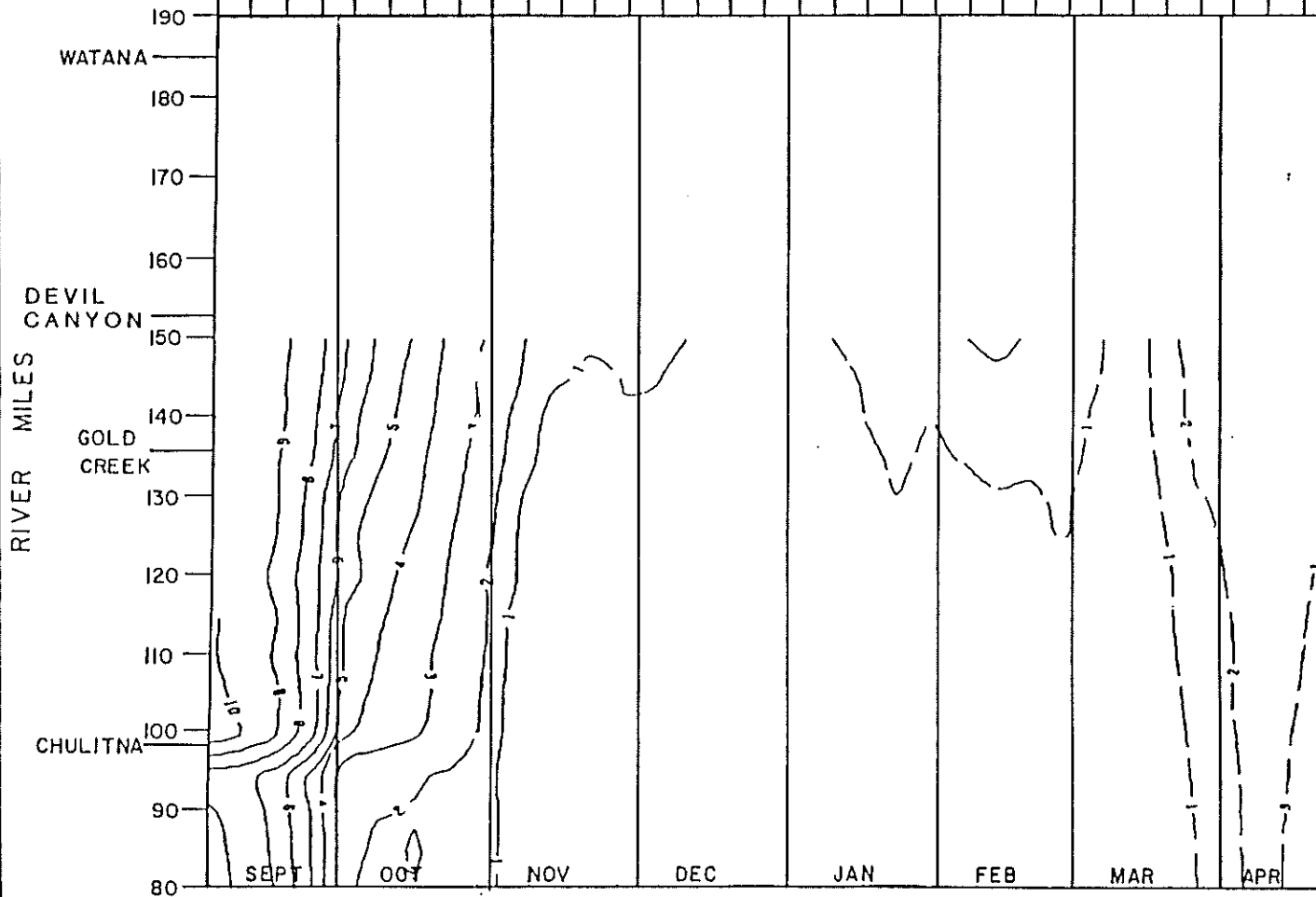
WINTER 1974-1975 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECTARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTERHARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. WINTER ICE SIMULATION NOT MADE FOR THIS CASE. TEMPERATURES FROM NOVEMBER THROUGH APRIL SHOULD NOT BE USED.

TIME

WATANA/DEVIL CANYON, 2020 ENERGY DEMAND

WINTER 1974-1975 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

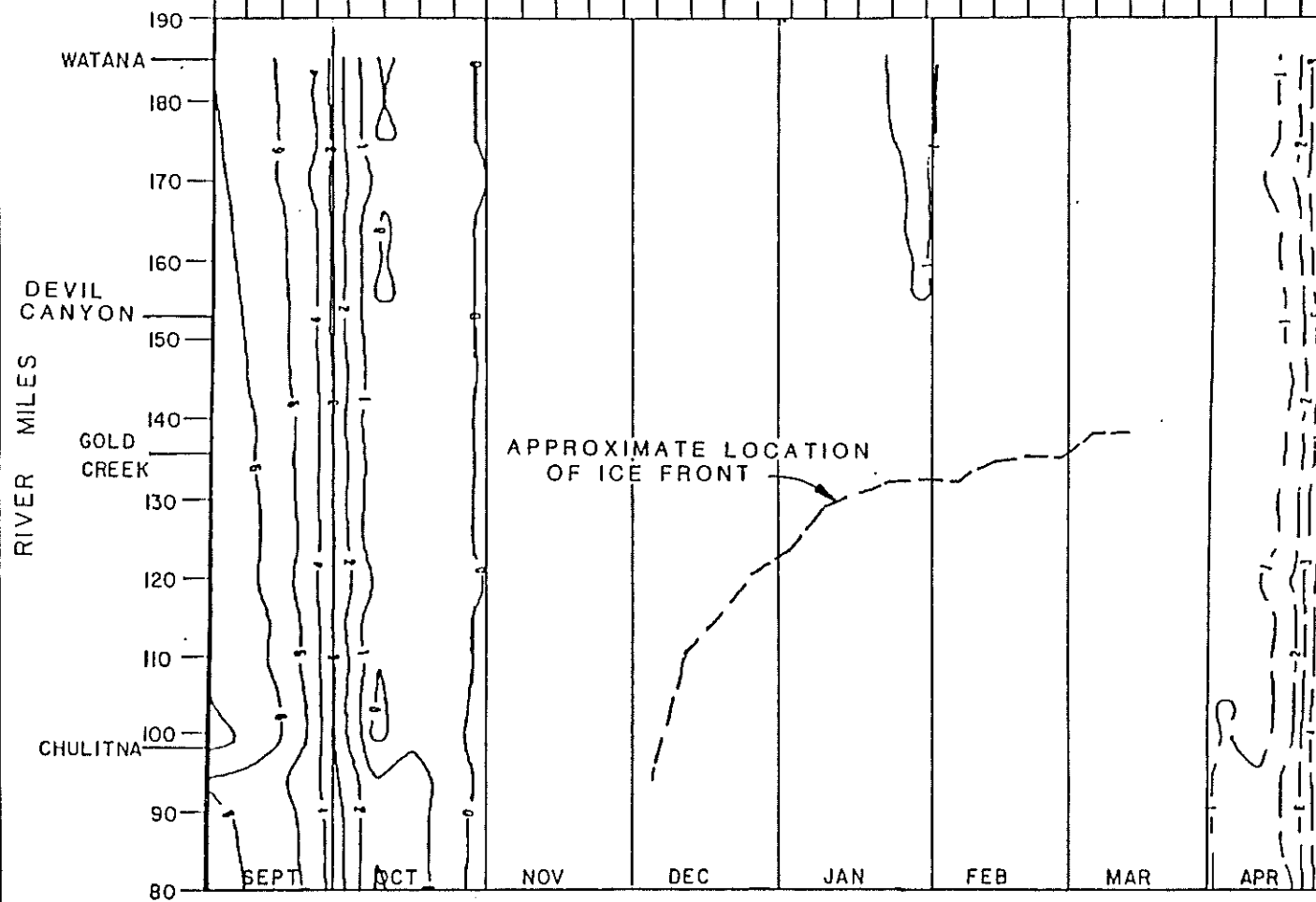
ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.
3. ICE FRONT PROGRESSION UPSTREAM OF RIVER MILE 139 NOT MODELED FOR NATURAL CONDITIONS

TIME

NATURAL CONDITIONS

WINTER 1976-1977 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

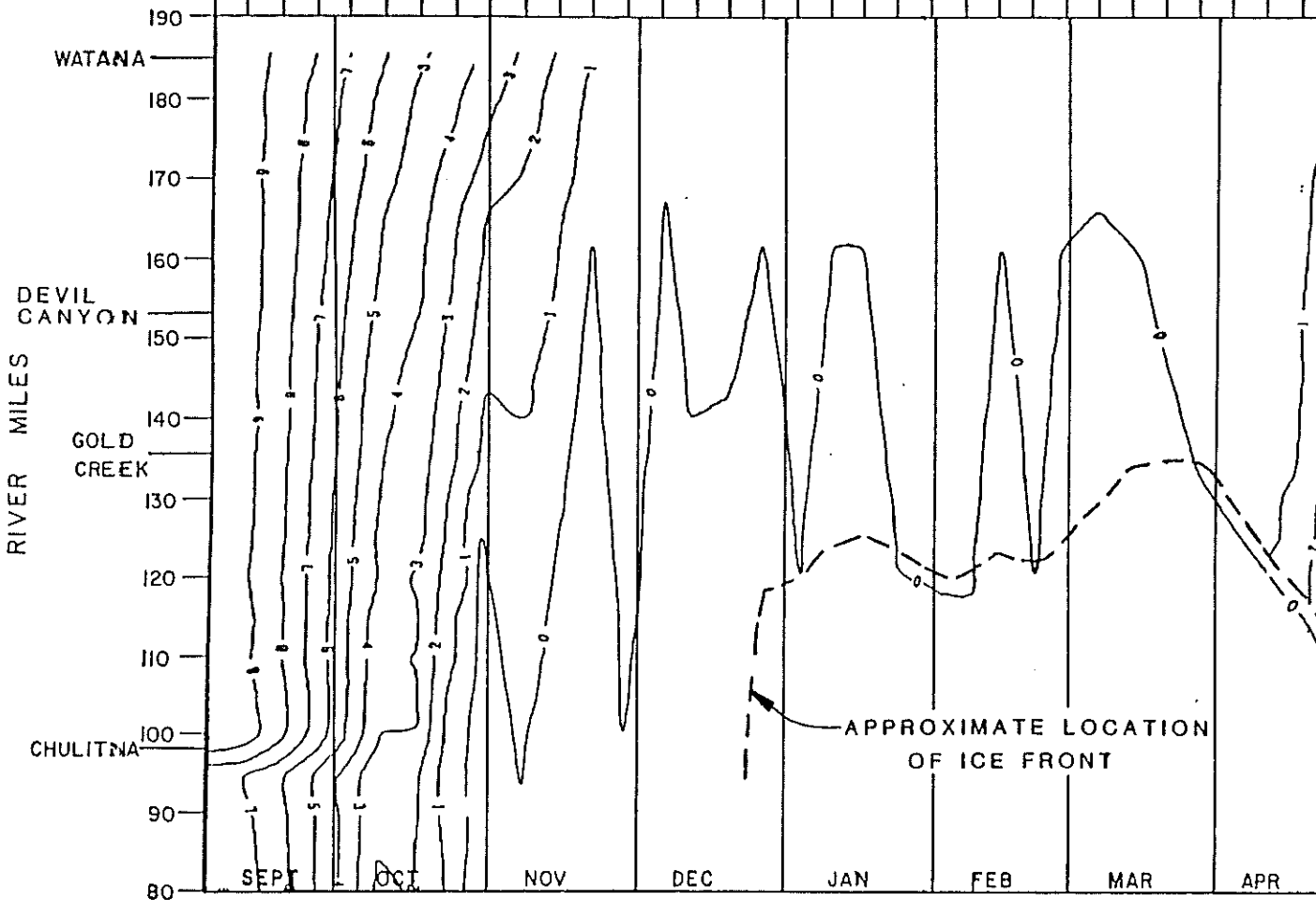
ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

TIME

WATANA ONLY, 1996 ENERGY DEMAND

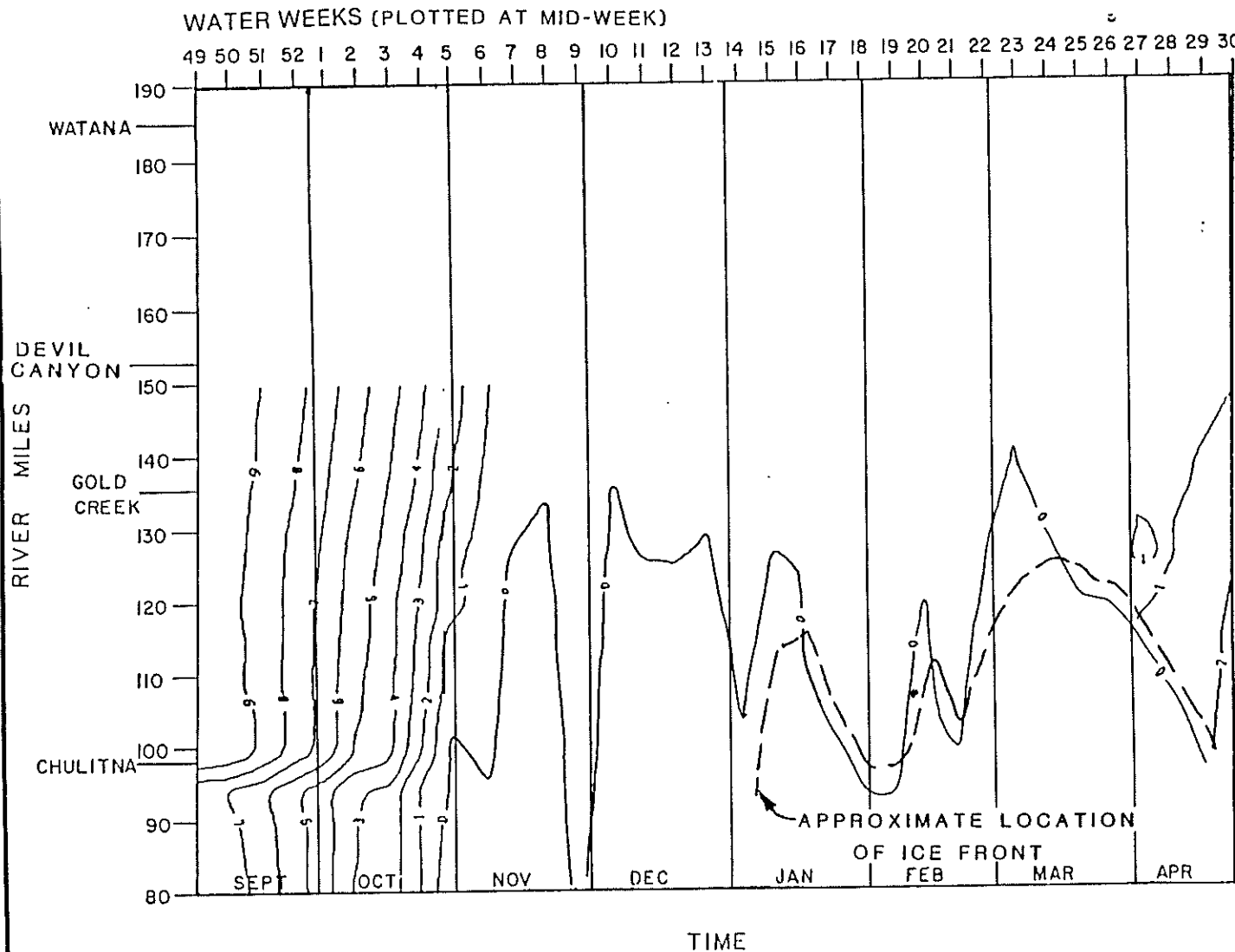
WINTER 1976-1977 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

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SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

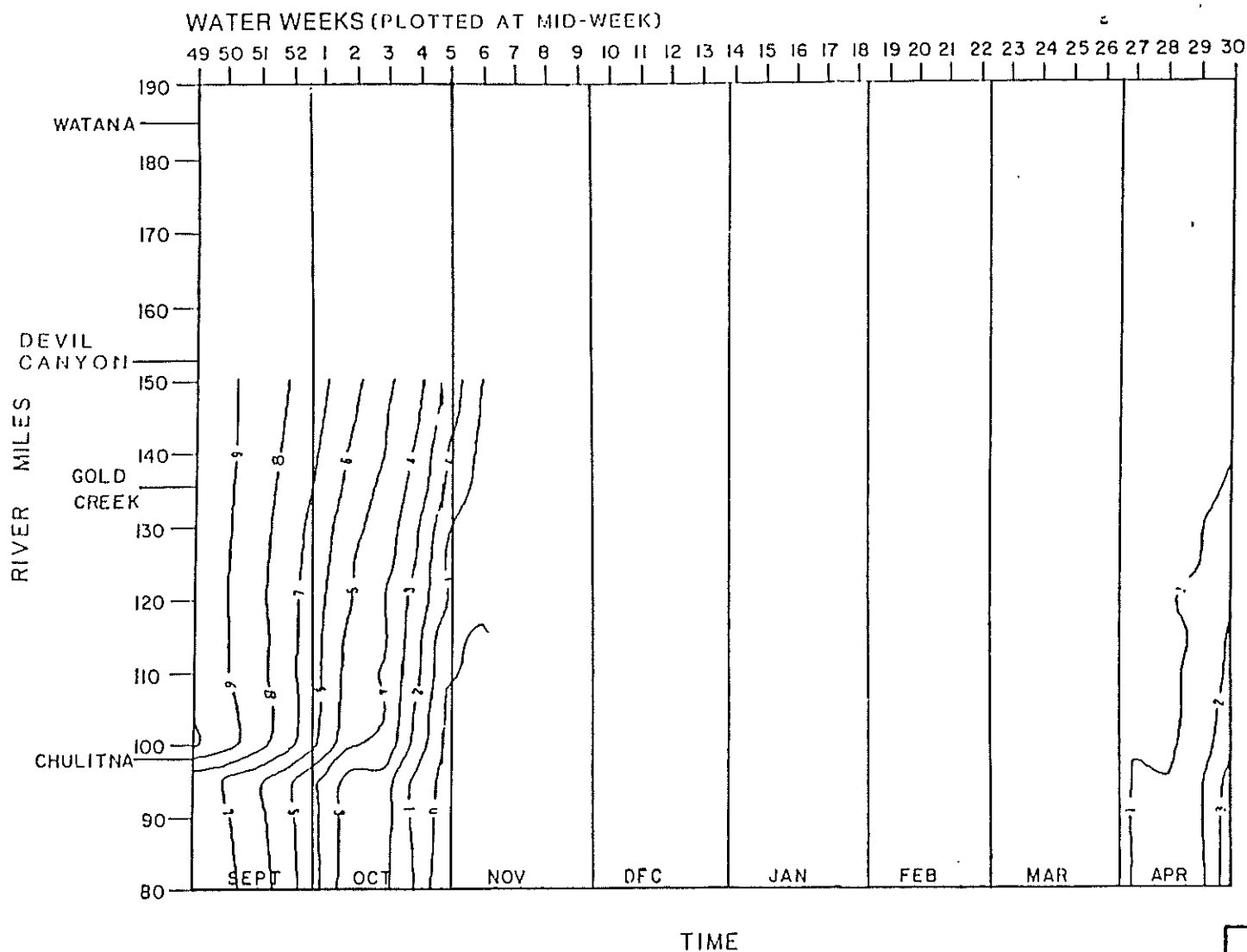
WATANA/DEVIL CANYON, 2002 ENERGY DEMAND
WINTER 1976-1977 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS



NOTES :

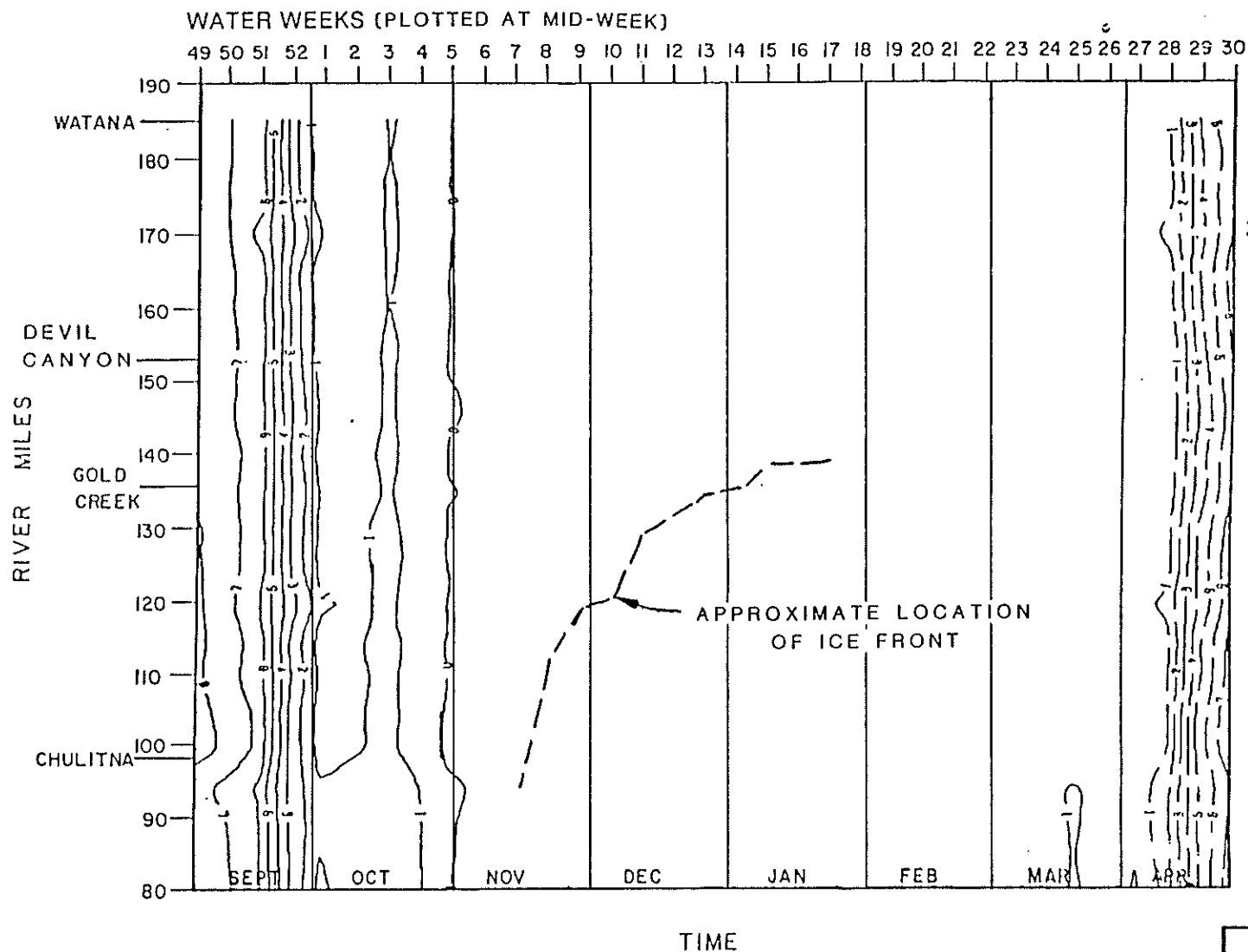
1. TEMPERATURES IN °C:
2. ICE SIMULATION NOT MADE FOR THIS CASE. TEMPERATURES FROM NOVEMBER THROUGH APRIL SHOULD NOT BE USED.

WATANA/DEVIL CANYON, 2020 ENERGY DEMAND

WINTER 1976-1977 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECTARCTIC ENVIRONMENTAL
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CENTERHARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.
3. ICE FRONT PROGRESSION UPSTREAM OF RIVER MILE 139 NOT MODELED FOR NATURAL CONDITIONS

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

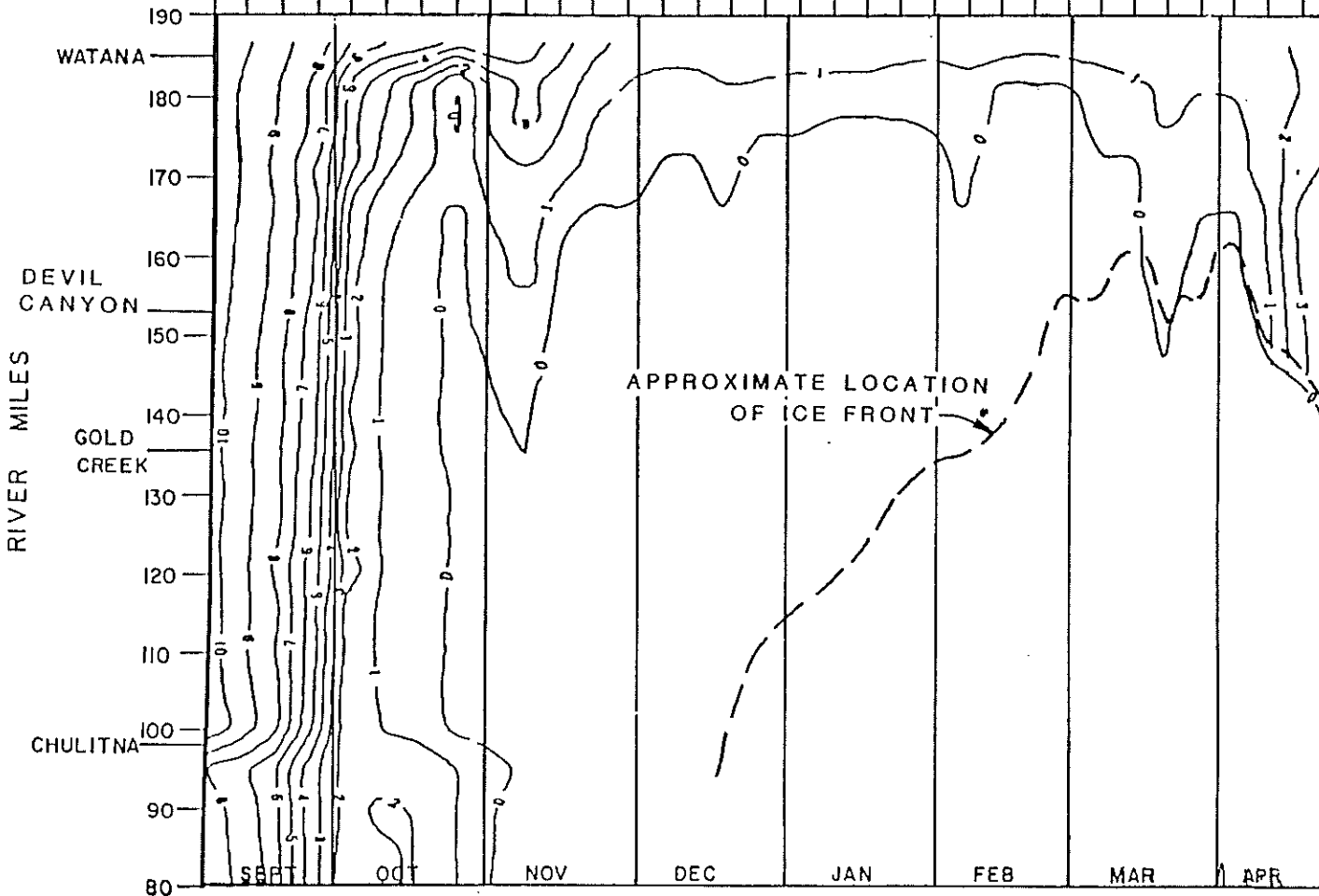
HARZA-EBASCO
SUSITNA JOINT VENTURE

NATURAL CONDITIONS
WINTER 1981-1982 CLIMATE DATA

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.
3. ICE FRONT PROGRESSION UPSTREAM OF RIVER MILE.140 NOT CONSIDERED ACCURATE FOR FILLING CASE

TIME

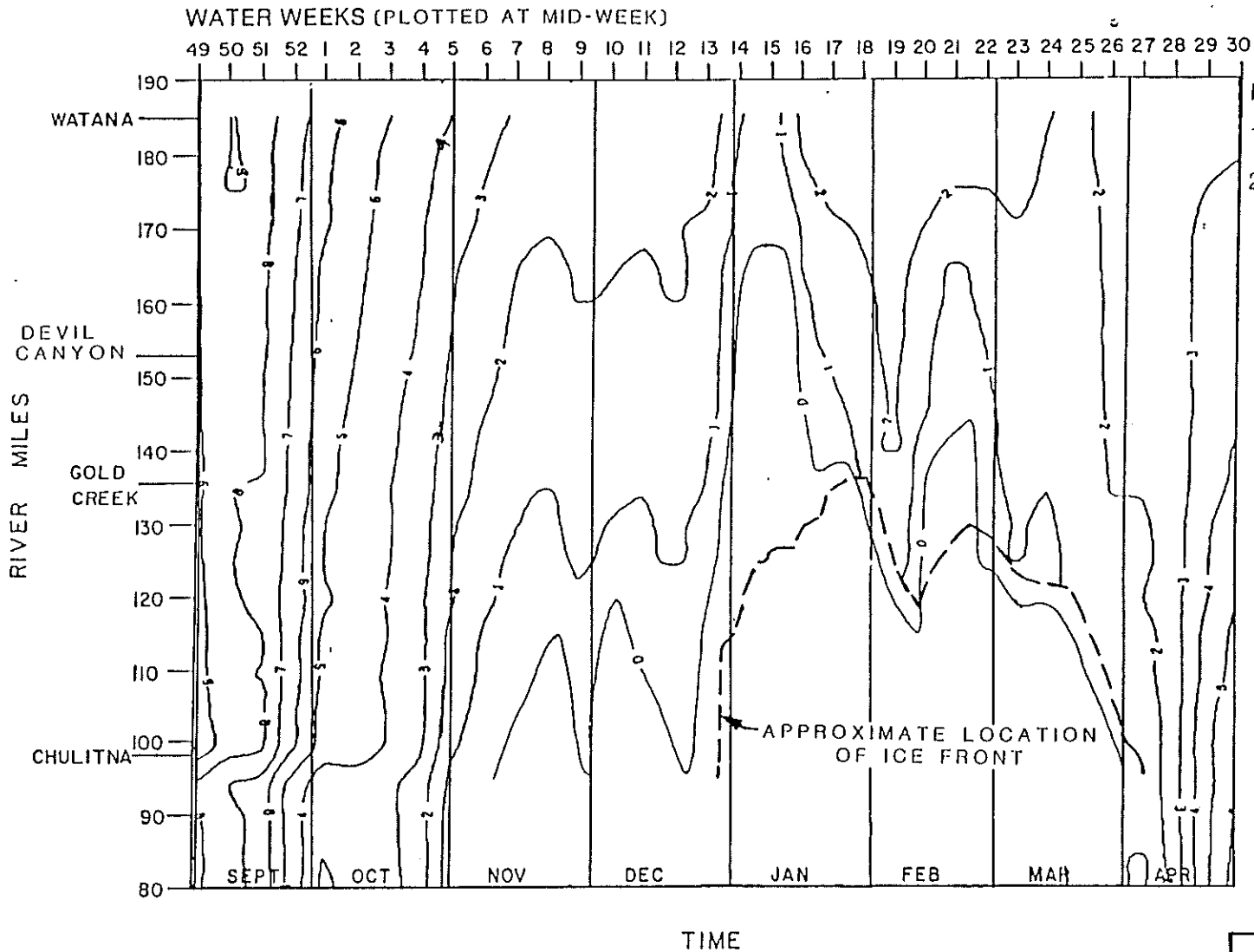
WATANA FILLING,1992-1993
2nd WINTER
WINTER 1981-1982 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

APPROXIMATE LOCATION
OF ICE FRONT

WATANA ONLY, 1996 ENERGY DEMAND

WINTER 1981-1982 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

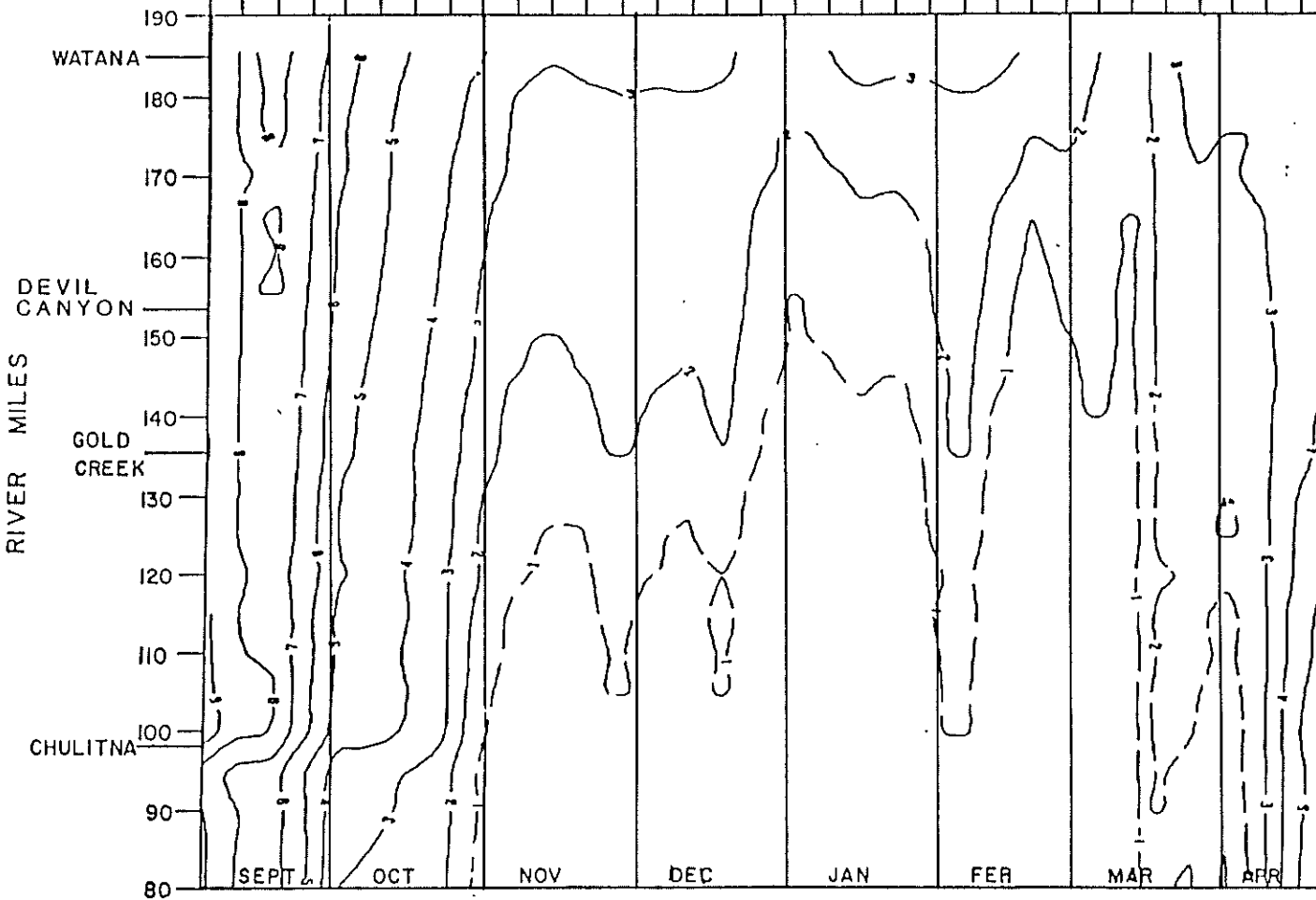
ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. ICE SIMULATION NOT MADE FOR THIS CASE. TEMPERATURES FOR NOVEMBER THROUGH MARCH SHOULD NOT BE USED.

TIME

WATANA ONLY, 2001 ENERGY DEMAND

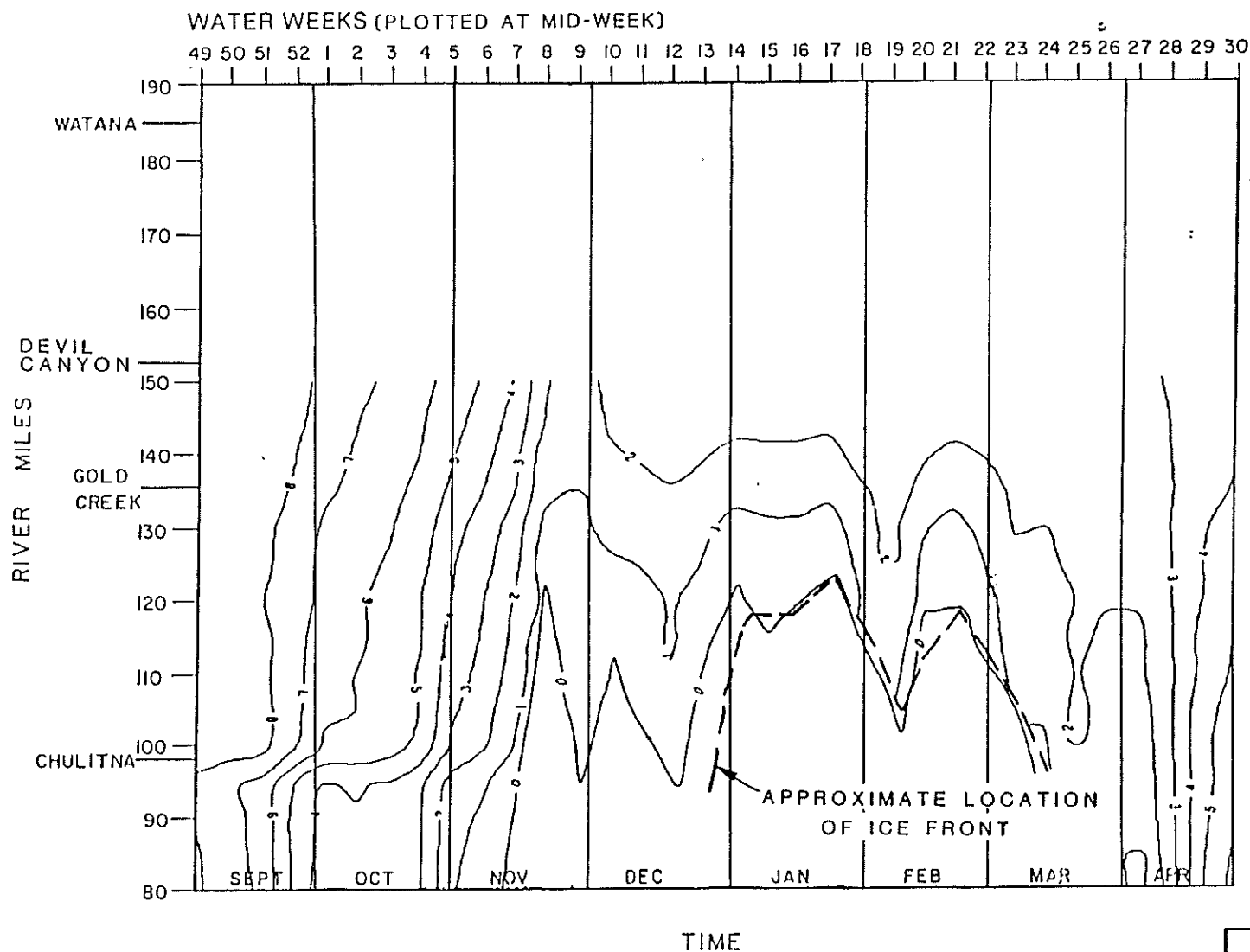
WINTER 1981-1982 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

WATANA/DEVIL CANYON, 2002 ENERGY DEMAND

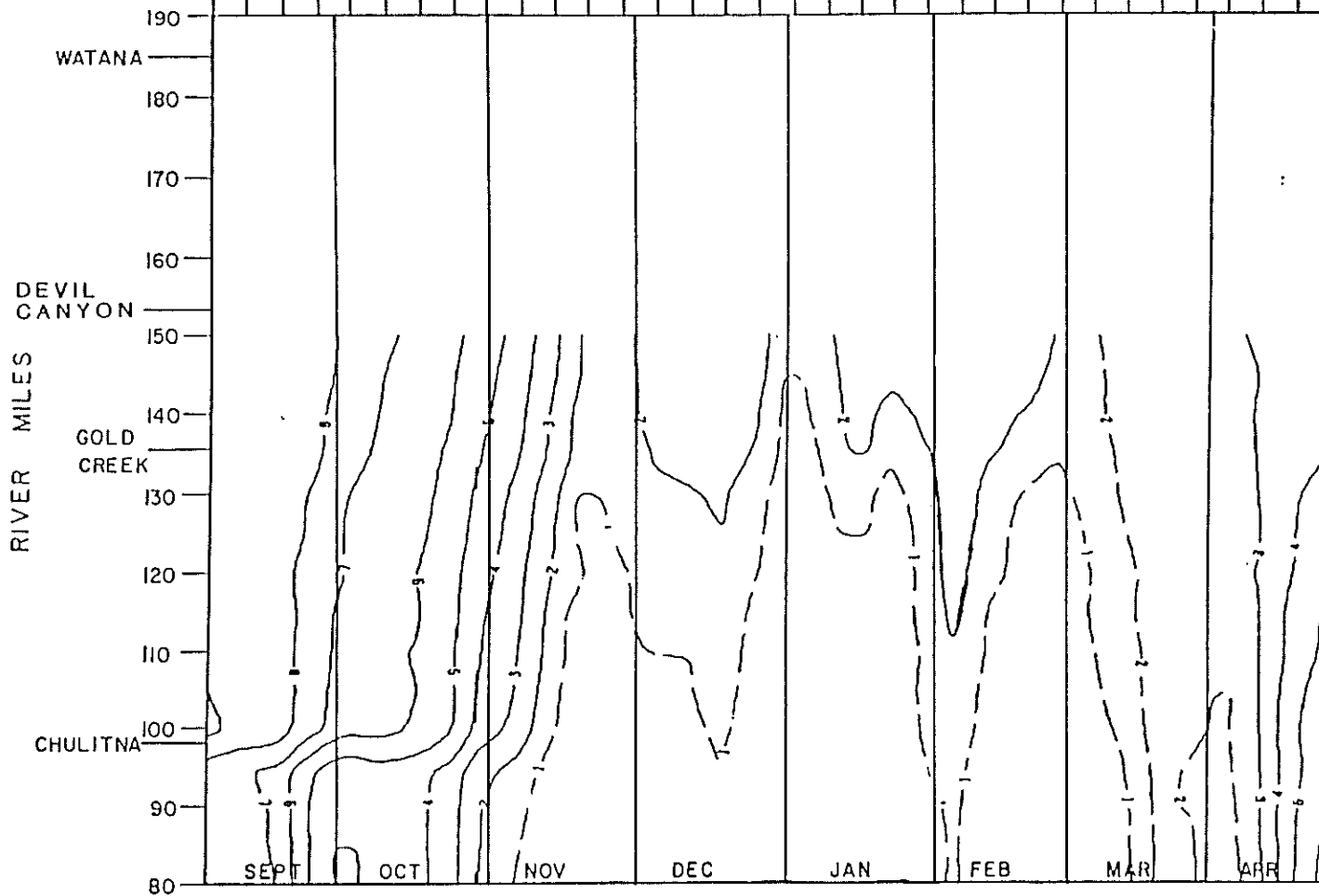
WINTER 1981-1982 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECTARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTERHARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. ICE SIMULATION NOT MADE FOR THIS CASE. TEMPERATURES FOR NOVEMBER THROUGH MARCH SHOULD NOT BE USED.
NOTE SIMILARITY TO WATANA/DEVIL CANYON, 2002 WINTER 1981-1982.

TIME

WATANA/DEVIL CANYON, 2020 ENERGY DEMAND

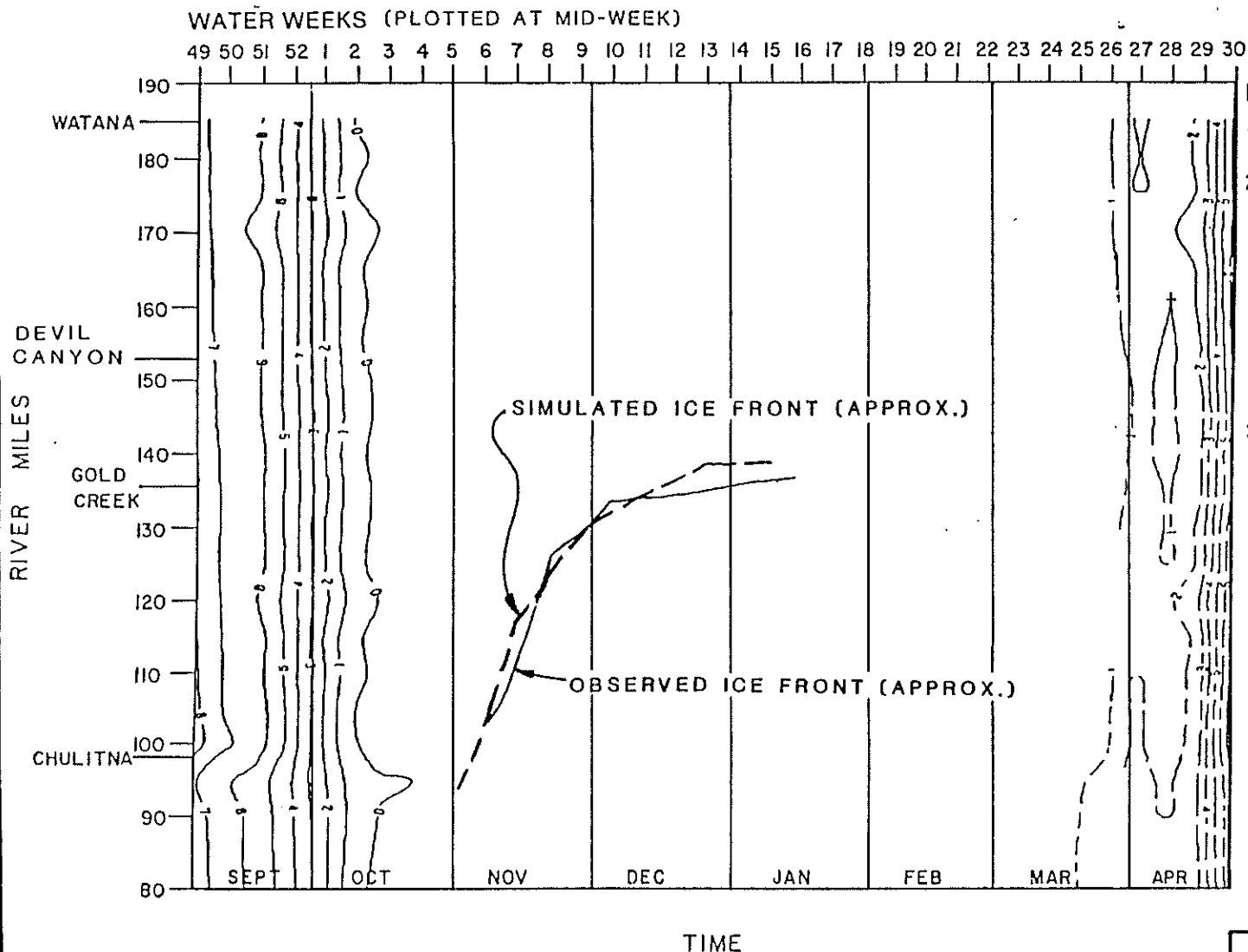
WINTER 1981-1982 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS. SIMULATED TEMPERATURES FOR MARCH AND APRIL SHOULD NOT BE USED.
3. ICE FRONT PROGRESSION UPSTREAM OF RIVER MILE 139 NOT MODELED FOR NATURAL CONDITIONS

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

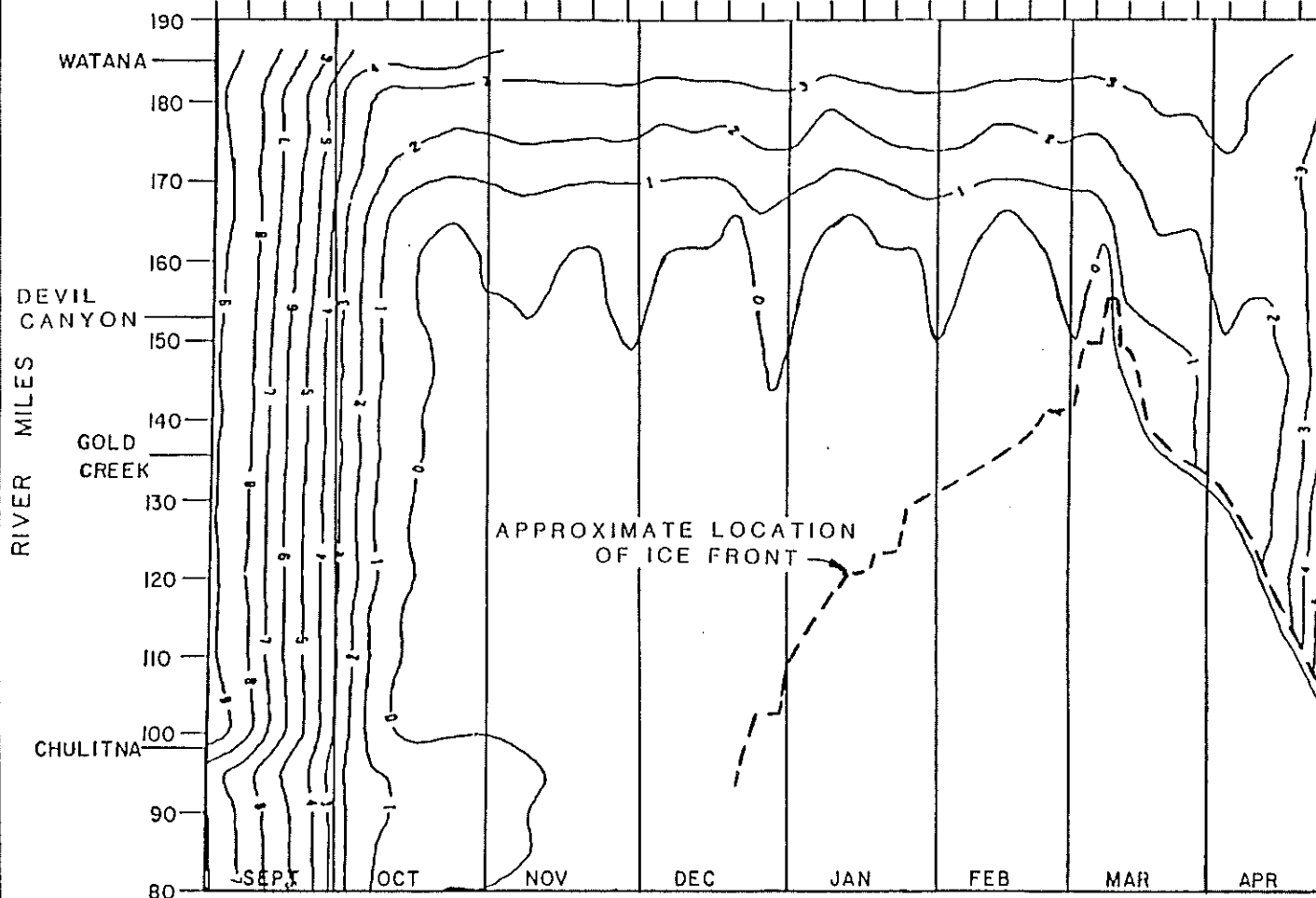
ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER - ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.
3. ICE FRONT PROGRESSION UPSTREAM OF RIVER MILE 140 NOT CONSIDERED ACCURATE FOR FILLING CASE

TIME

WATANA FILLING, 1991-1992
1st WINTER
WINTER 1982-1983 CLIMATE DATA

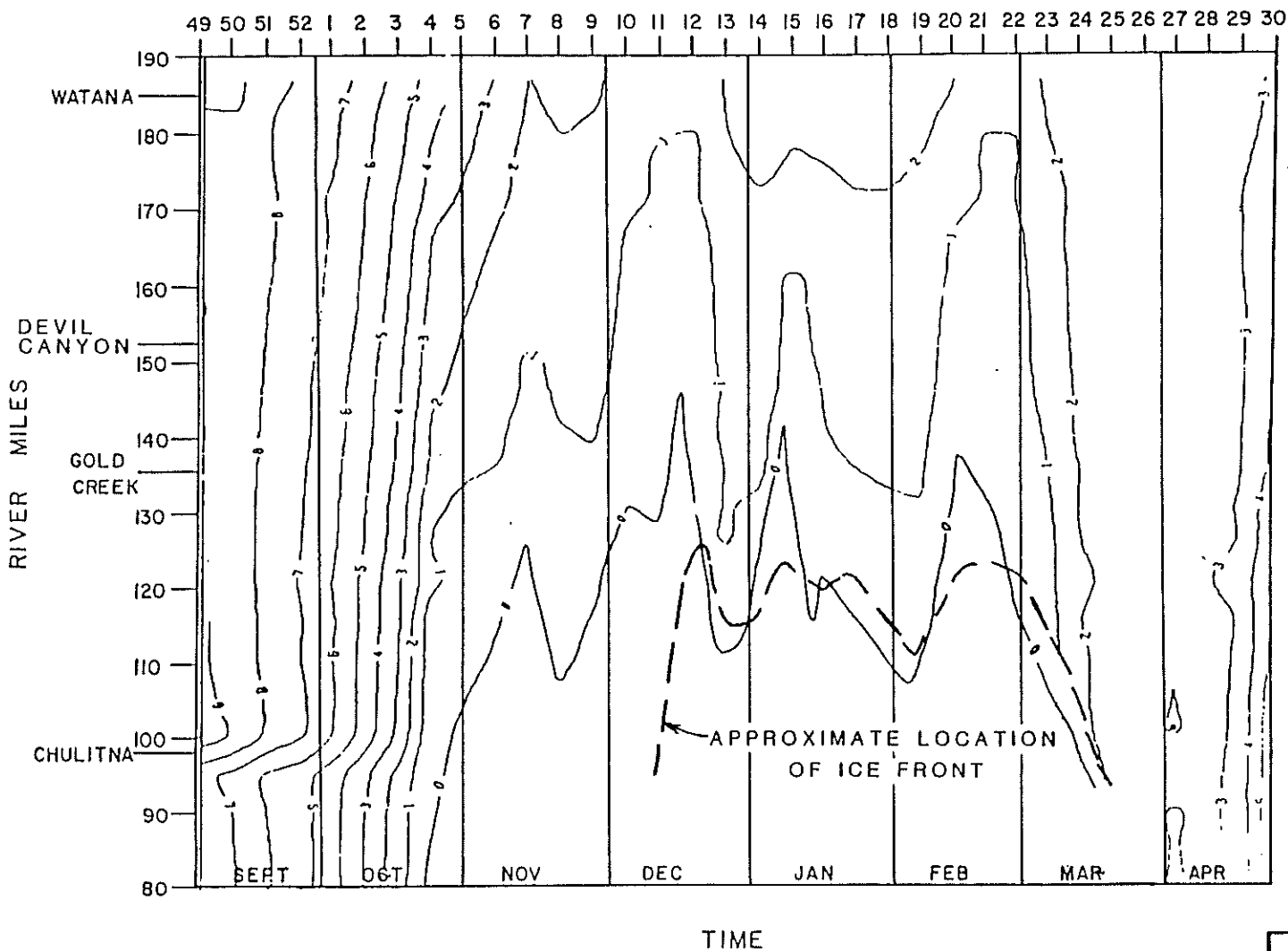
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

WATANA ONLY, 1996 ENERGY DEMAND

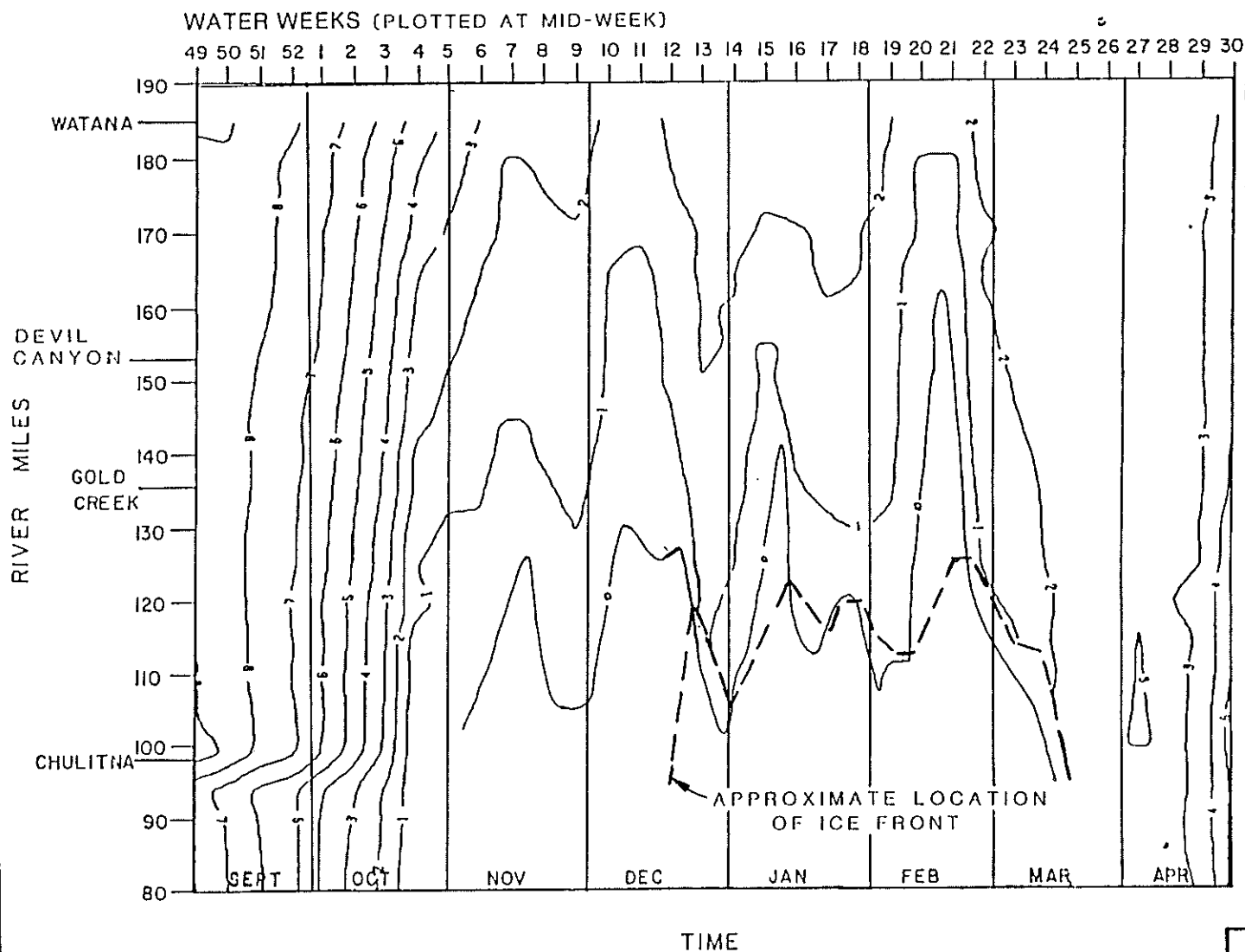
WINTER 1982-1983 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

WATANA ONLY, 2001 ENERGY DEMAND

WINTER 1982-1983 CLIMATE DATA

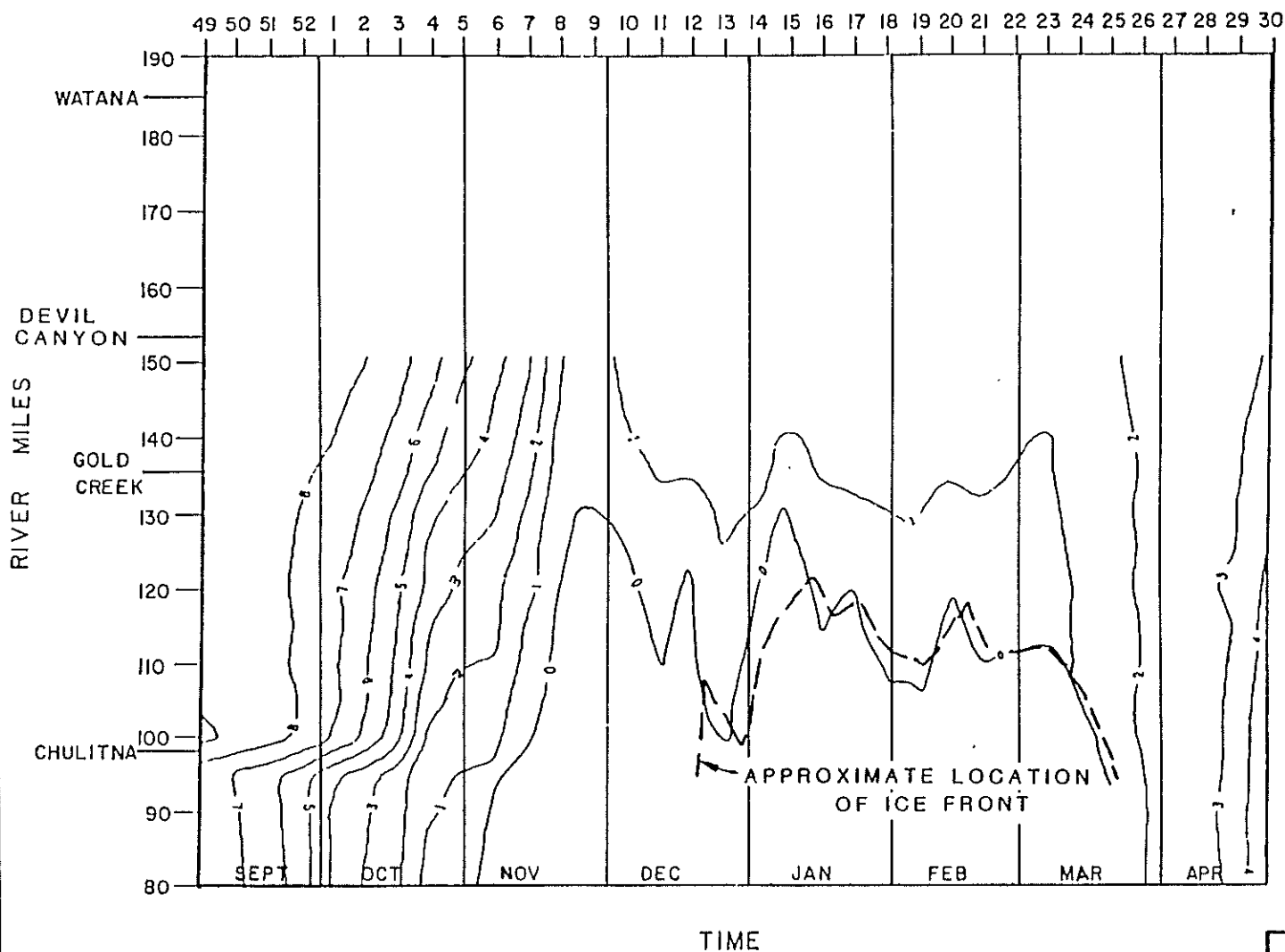
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

WATANA/DEVIL CANYON, 2002 ENERGY DEMAND

WINTER 1982-1983 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

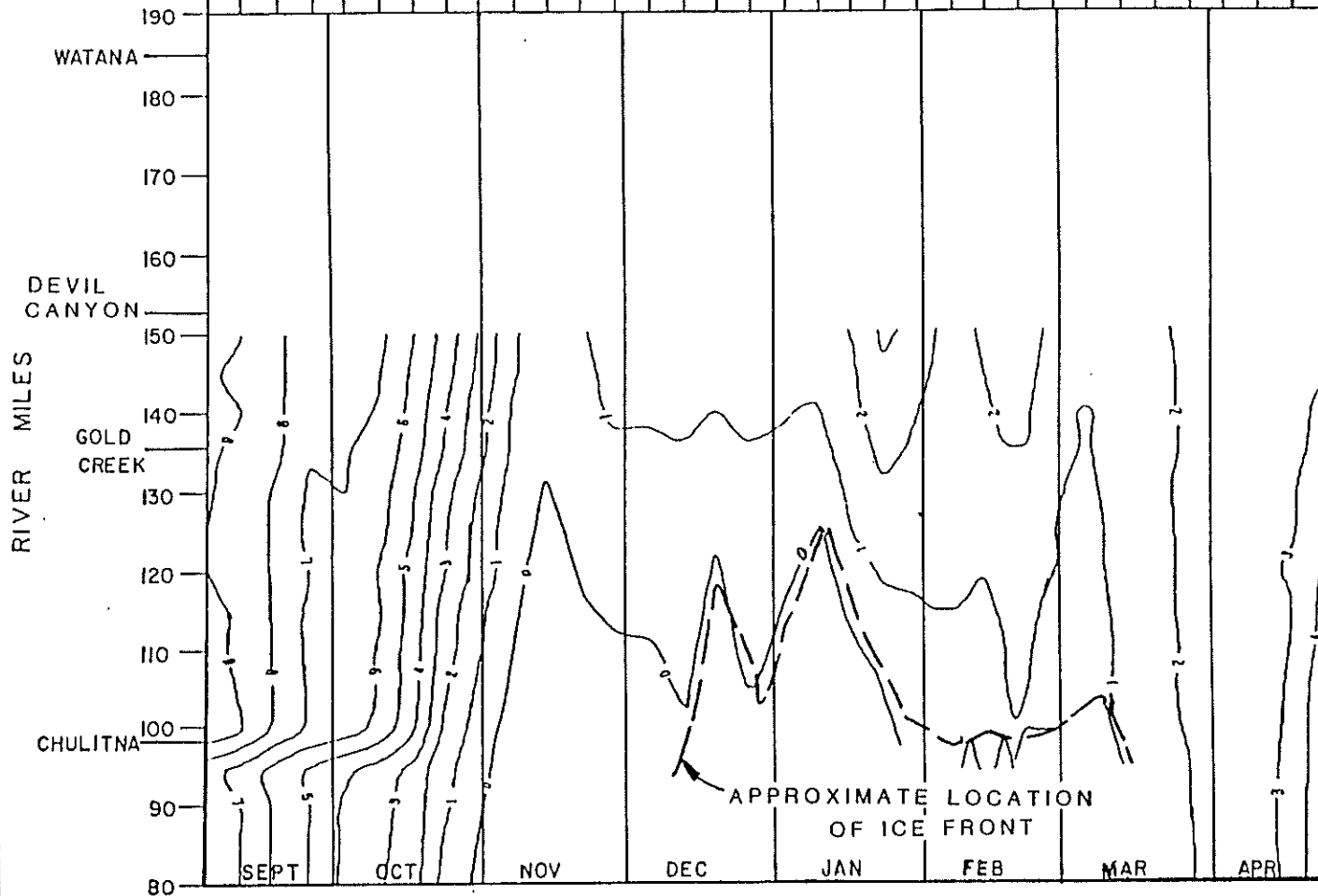
ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

MIDDLE SUSITNA RIVER-ISOTHERMS

WATER WEEKS (PLOTTED AT MID-WEEK)

49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



NOTES :

1. TEMPERATURES IN °C.
2. APPROXIMATE LOCATION OF ICE FRONT FROM RIVER ICE SIMULATION PLOTS.

TIME

WATANA/DEVIL CANYON, 2020 ENERGY DEMAND

WINTER 1982-1983 CLIMATE DATA

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

ARCTIC ENVIRONMENTAL
INFORMATION AND DATA
CENTER

HARZA-EBASCO
SUSITNA JOINT VENTURE

APPENDIX C

Susitna, Chulitna and Talkeetna
stream width functions.

Appendix C. Susitna, Chulitna, and Talkeetna Stream Width Functions.
 $\text{Width(meters)} = a * \text{Flow(cms)} ** b.$

Location	Susitna River Kilometer	a	b
Watana dam site	296.8		
URX 106	296.7	10.878	0.3533
URX 107	296.4	37.776	0.1946
URX 108	295.7	30.057	0.1564
URX 109	294.1	47.302	0.1319
URX 110	293.6	153.677	0.0233
URX 111	293.0	40.746	0.2744
URX 112	292.5	55.320	0.1485
URX 113	291.2	8.006	0.3613
URX 114	289.7	103.522	0.0398
URX 115	287.7	40.382	0.3155
URX 116	284.3	10.776	0.4136
URX 117	283.2	9.046	0.4196
URX 118	280.0	41.173	0.2231
URX 119	278.5	18.509	0.3574
URX 120	268.7	105.559	0.0523
URX 121	260.8	91.630	0.0851
Devil Canyon	259.5	52.917	0.1001
Chinook Confluence	248.8	85.000	0.0000
LRX 68	241.7	108.500	0.0000
LRX 67	241.0	71.643	0.0526
LRX 66	240.6	113.764	0.0109
LRX 65	240.5	25.268	0.2923

Appendix C. (Continued) Susitna, Chulitna, and Talkeetna Stream Width
Functions. Width(meters) = a * Flow(cms) ** b.

Location	Susitna River Kilometer	a	b
LRX 65	240.5		
LRX 64	240.3	2.820	0.5887
LRX 63	240.0	71.673	0.0473
LRX 62	239.6	60.074	0.0630
LRX 61	239.3	77.780	0.0334
LRX 60	237.4	61.343	0.0620
LRX 59	233.0	48.581	0.1288
LRX 58	230.4	34.000	0.2823
LRX 57	229.0	32.714	0.2840
LRX 56	228.7	117.343	0.0558
LRX 55	227.7	30.601	0.2743
LRX 54	226.6	11.214	0.4866
LRX 53	225.5	8.525	0.4994
LRX 52	224.4	87.139	0.0960
LRX 51	223.5	28.307	0.4333
LRX 50	222.8	148.259	0.0454
LRX 49	222.4	50.641	0.1717
LRX 48	221.1	24.954	0.3441
LRX 47	220.7	3.312	0.6789
LRX 46	220.4	1.167	0.7812
LRX 45	219.9	2.970	0.6400
LRX 44	219.5	40.703	0.1680
LRX 43	218.4	4.209	0.6132

Appendix C. (Continued) Susitna, Chulitna, and Talkeetna Stream Width Functions. Width(meters) = a * Flow(cms) ** b.

Location	Susitna River Kilometer	a	b
LRX 43	218.4	3.932	0.5704
LRX 42	217.8	269.900	0.0905
LRX 41	216.8	2.108	0.7594
LRX 40	216.1	149.464	0.0343
LRX 39	214.5	105.709	0.1548
LRX 38	213.8	12.497	0.4541
LRX 37	212.1	9.042	0.4902
LRX 36	211.1	6.768	0.5805
LRX 35	210.6	54.553	0.1148
LRX 34	209.9	9.088	0.4952
LRX 33	209.4	13.226	0.5510
LRX 32	208.6	3.600	0.6620
LRX 31	207.0	150.968	0.0615
LRX 30	205.1	13.680	0.5630
LRX 29	202.9	116.096	0.0651
LRX 28	200.2	34.025	0.3469
LRX 27	198.4	77.661	0.0932
LRX 26	197.2	77.661	0.0932
LRX 25	195.7	4.489	0.6720
LRX 24	194.1	63.219	0.1179
LRX 23	193.5	108.387	0.1260
LRX 22	192.0	46.912	0.2310
LRX 21	191.7		

Appendix C. (Continued) Susitna, Chulitna, and Talkeetna Stream Width
Functions. Width(meters) = a * Flow(cms) ** b.

Location	Susitna River Kilometer	a	b
LRX 21	191.7		
		5.235	0.5707
LRX 20	188.6		
		3.812	0.7019
LRX 19	187.4		
		76.728	0.1176
LRX 18	181.8		
		130.537	0.0508
LRX 17	181.3		
		94.245	0.1845
LRX 16	180.8		
		48.248	0.2905
LRX 15	179.9		
		78.550	0.1955
LRX 14	178.4		
		43.742	0.3086
LRX 13	177.6		
		12.288	0.4169
LRX 12	174.4		
		30.236	0.2505
LRX 11	171.6		
		175.296	0.0358
LRX 10	168.5		
		130.727	0.1112
LRX 9	166.1		
		6.313	0.3922
LRX 8	164.7		
		34.848	0.2973
LRX 7	163.3		
		72.890	0.2664
LRX 6	162.4		
		41.108	0.3476
LRX 5	161.5		
		60.970	0.3241
LRX 4	160.2		
		4.183	0.7030
LRX 3	158.6		
		0.080	1.3196
Chulitna confluence	158.1		
		1.006	0.9124
Talkeetna confluence	156.1		
		0.997	0.9485
Section 0.8	154.8		
		0.989	0.9501
Section 0.6	153.5		

Appendix C. (Continued) Susitna, Chulitna, and Talkeetna Stream Width
Functions. $\text{Width(meters)} = a * \text{Flow(cms)} ** b$.

Location	Susitna River Kilometer	a	b
Section 0.6	153.5		
Section 0.3	151.7	1.329	0.9610
Trapper confluence	146.7	1.031	0.9282
Section 0.04	144.6	1.134	0.9671
Section 0.03	141.9	1.057	0.9077
Section 0.02	139.7	0.981	0.9212
Section 0.01	136.6	0.977	0.8633
Parks Highway Bridge	134.8	0.944	0.8765
Chulitna River	-----	38.917	0.2086
Talkeetna River	-----	55.906	0.1761

note: miles = 0.62 * kilometers

feet = 0.305 * meters

$\text{width(feet)} = a' * \text{flow(cfs)} ** b$, $a' = 3.281 * a * (0.0283 ** b)$

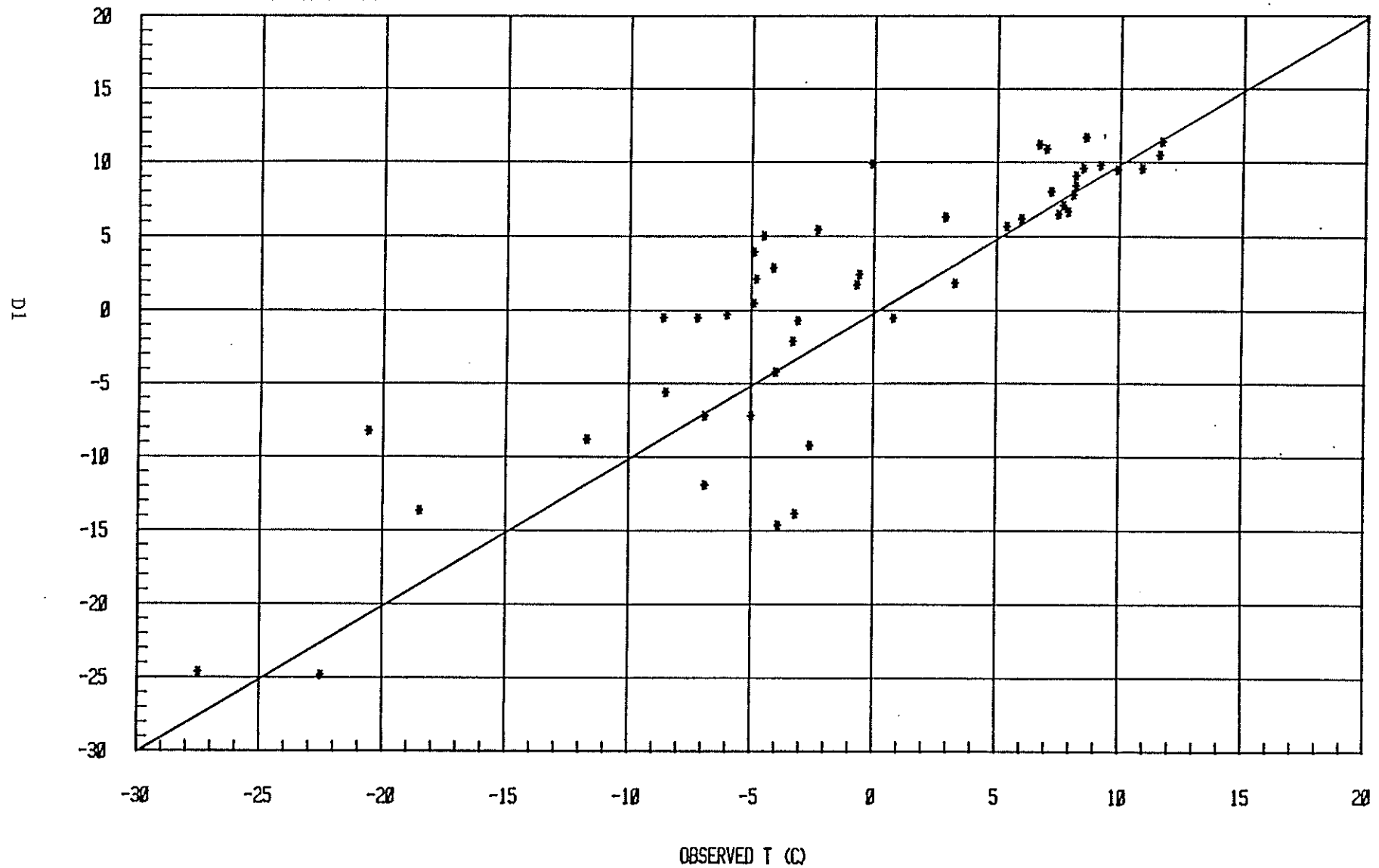
APPENDIX D

Observed versus predicted air temperatures
for water years 1981-1983.

WATANA WEEKLY AIR TEMPERATURES

WATER YEAR 1981 OBSERVED VS PREDICTED

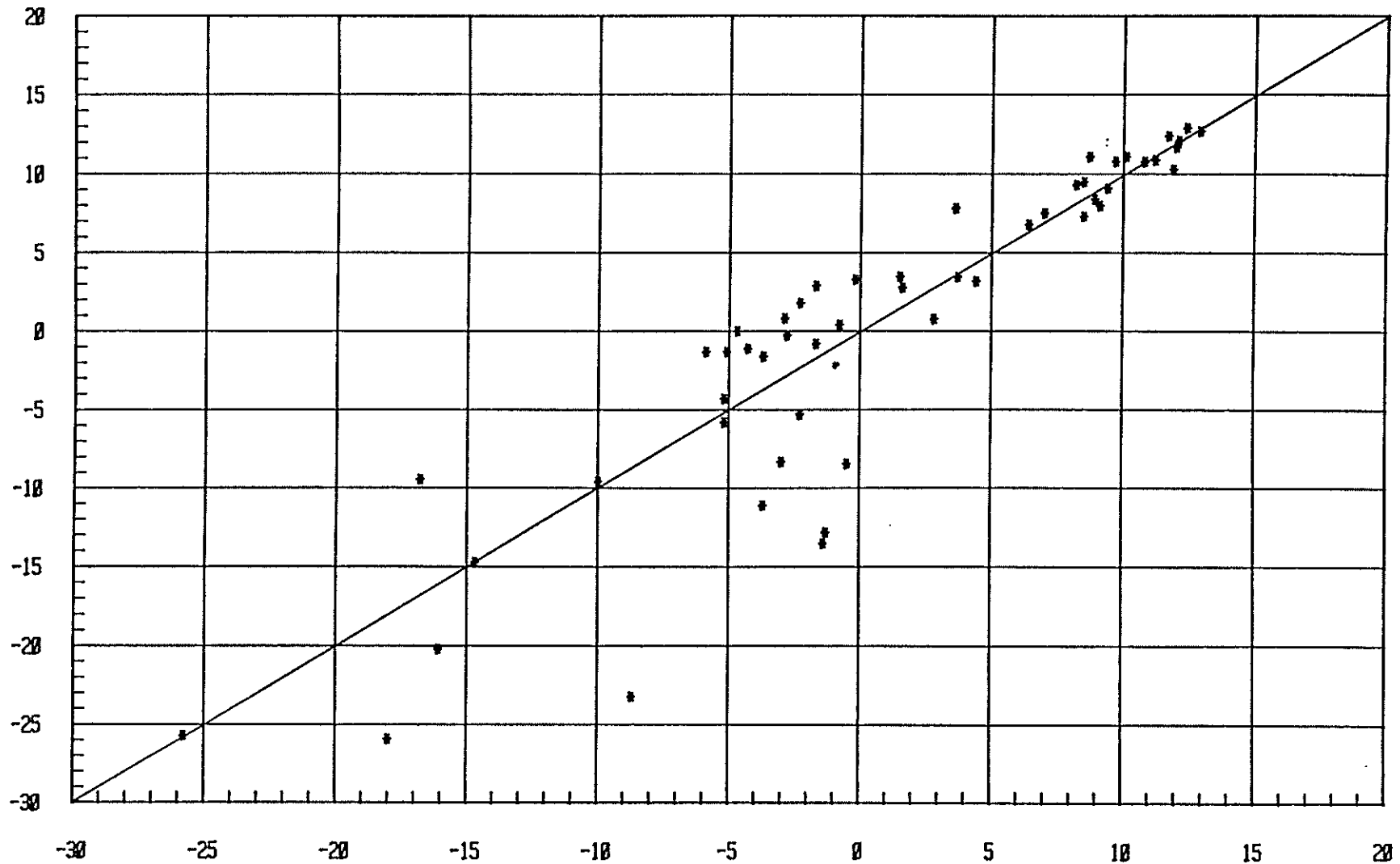
LAPSE RATE PREDICTIONS (C)



DEVIL CANYON WEEKLY AIR TEMPERATURES

WATER YEAR 1981 OBSERVED VS PREDICTED

LAPSE RATE PREDICTIONS (C)



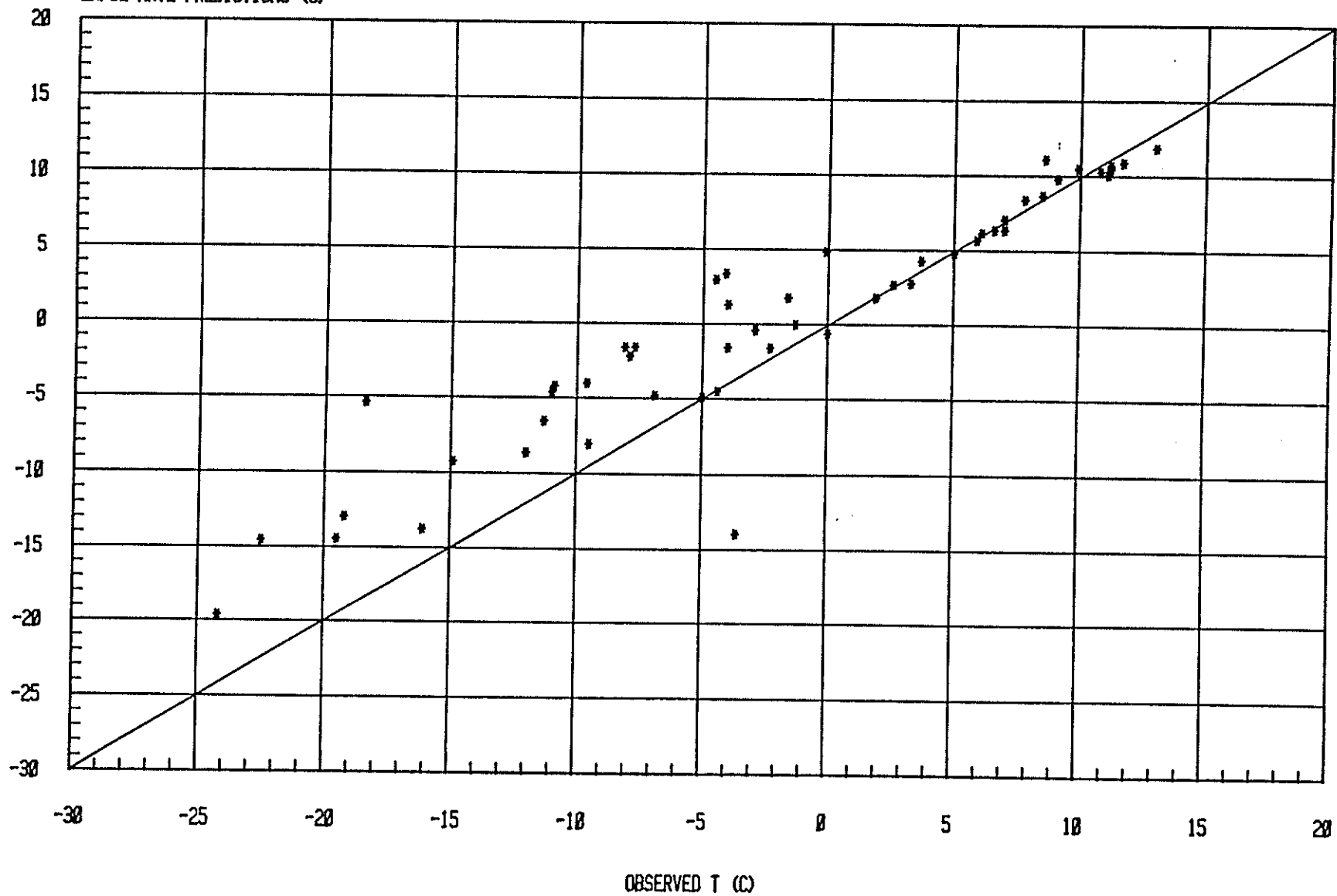
OBSERVED T (C)



WATANA WEEKLY AIR TEMPERATURES

WATER YEAR 1992 OBSERVED VS PREDICTED

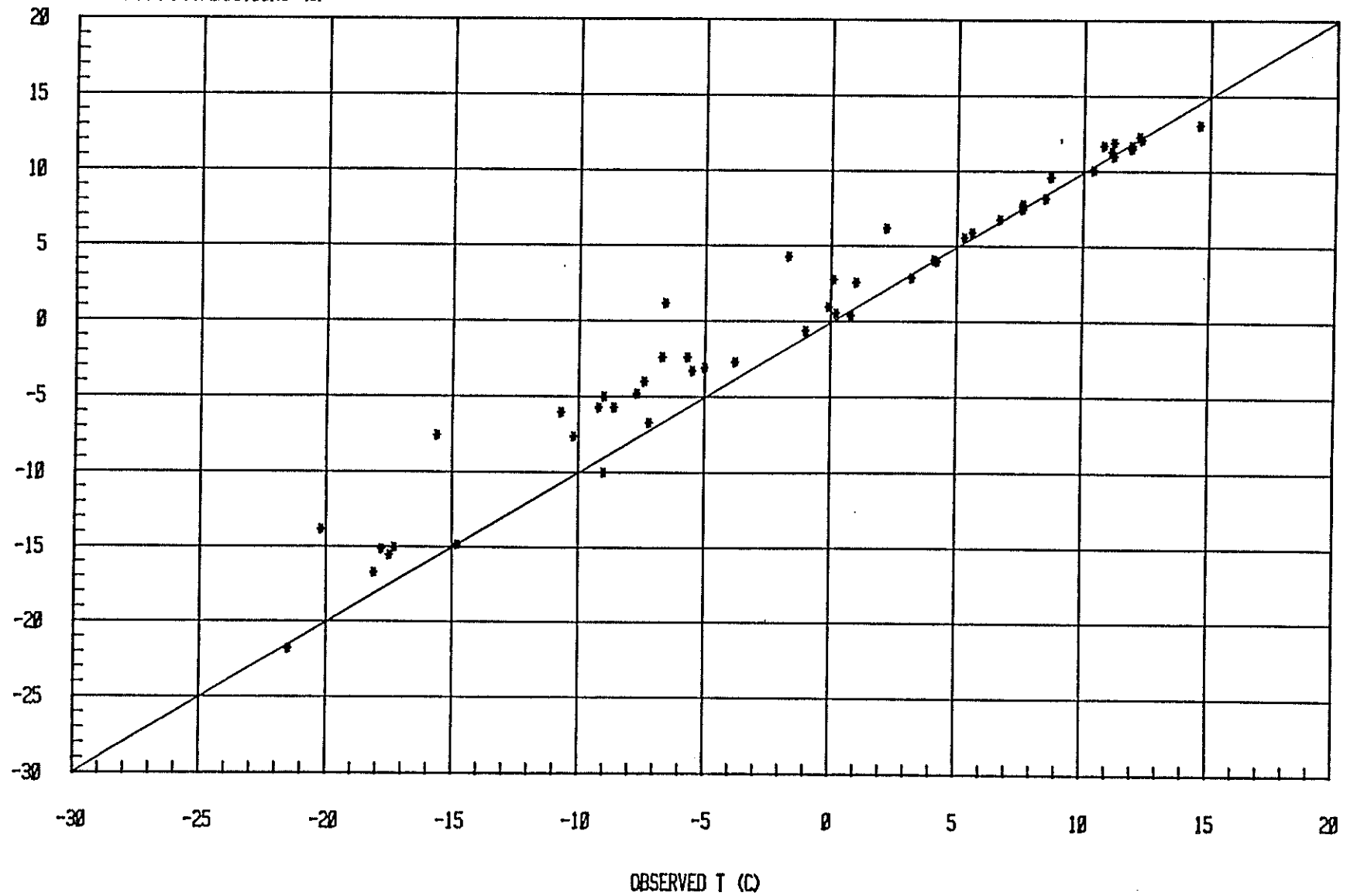
LAPSE RATE PREDICTIONS (C)



DEVIL CANYON WEEKLY AIR TEMPERATURES

WATER YEAR 1982 OBSERVED VS PREDICTED

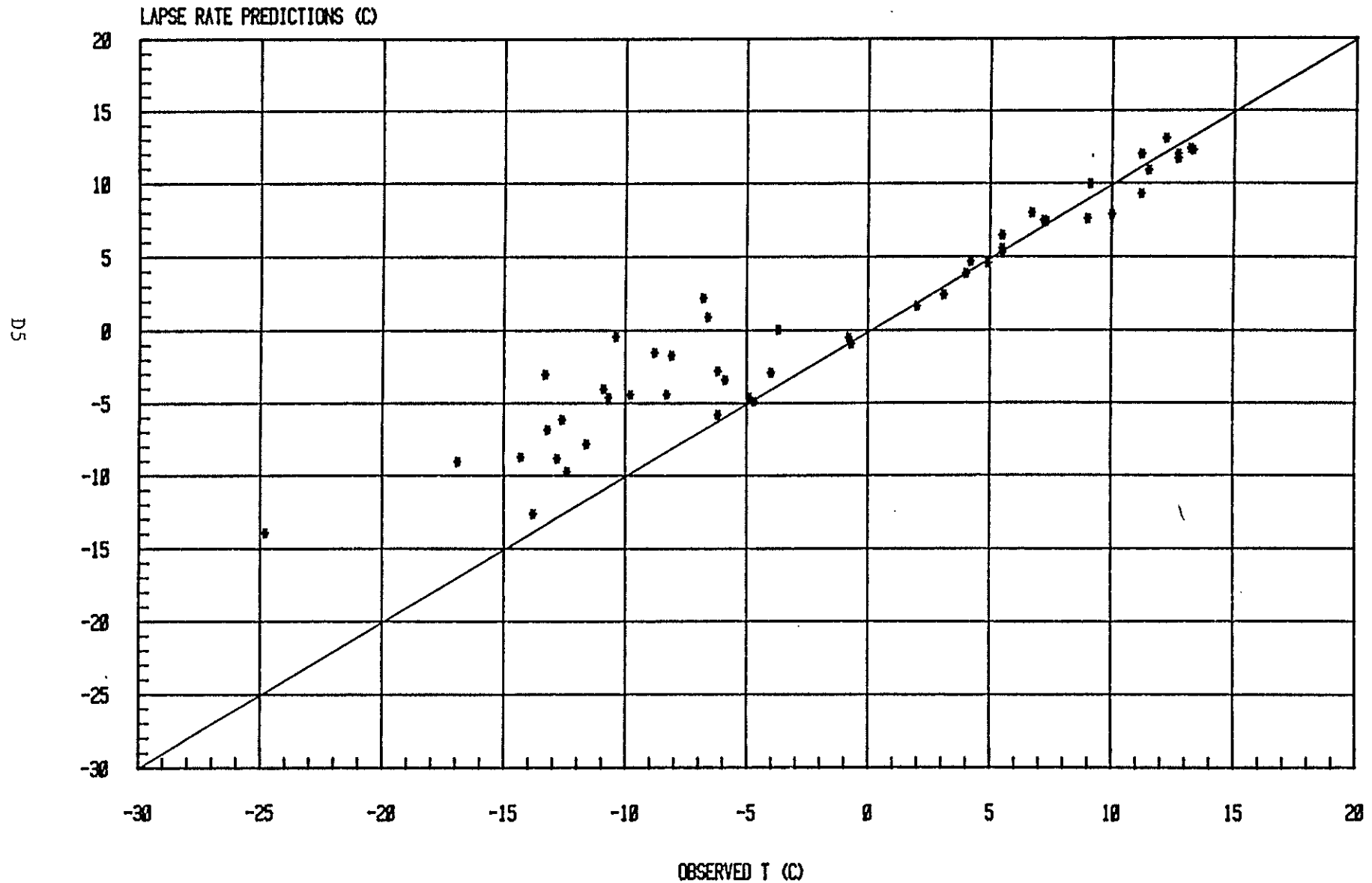
LAPSE RATE PREDICTIONS (C)



D4

WATANA WEEKLY AIR TEMPERATURES

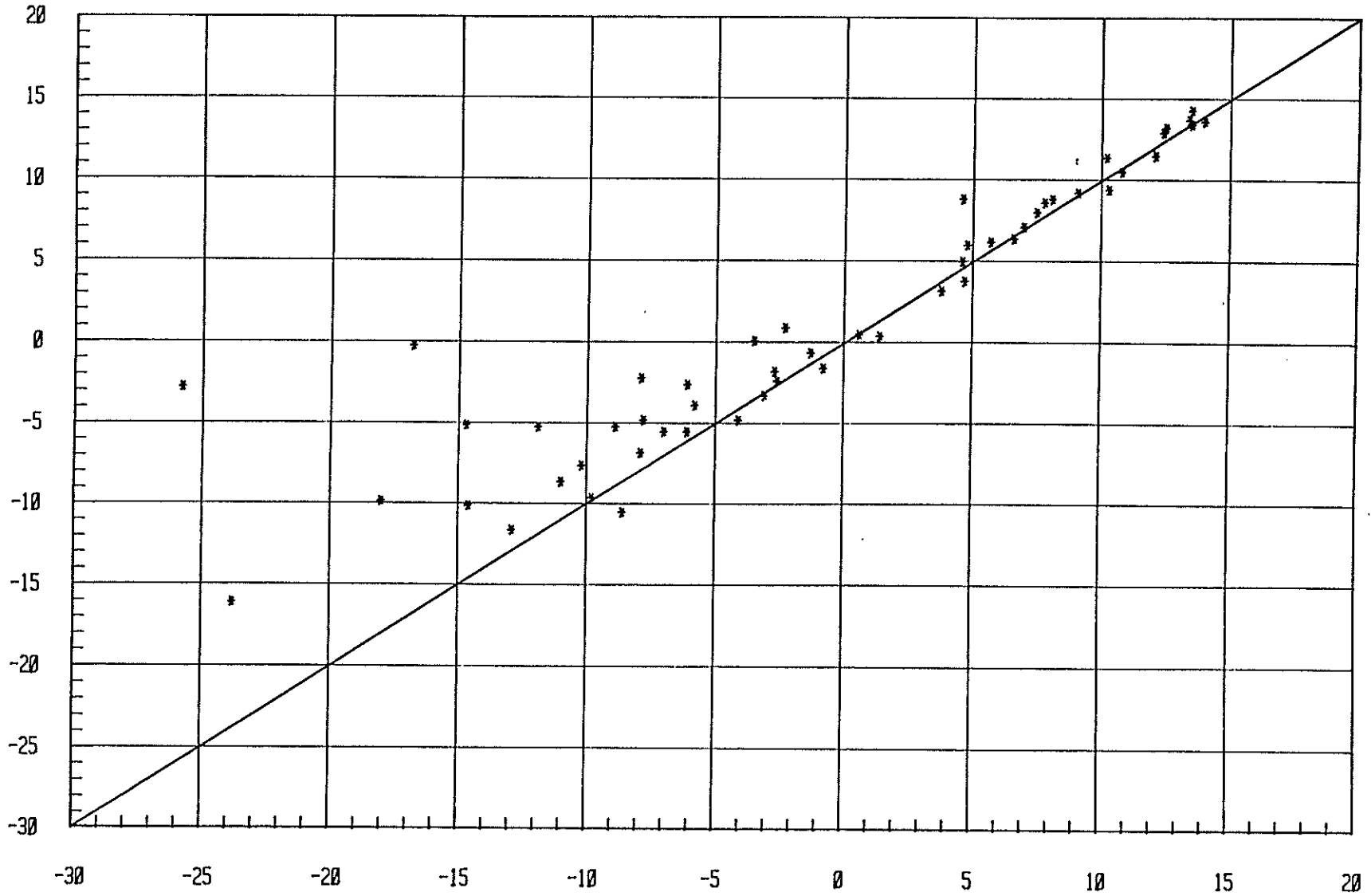
WATER YEAR 1983 OBSERVED VS PREDICTED



DEVIL CANYON WEEKLY AIR TEMPERATURES

WATER YEAR 1983 OBSERVED VS PREDICTED

LAPSE RATE PREDICTIONS (C)

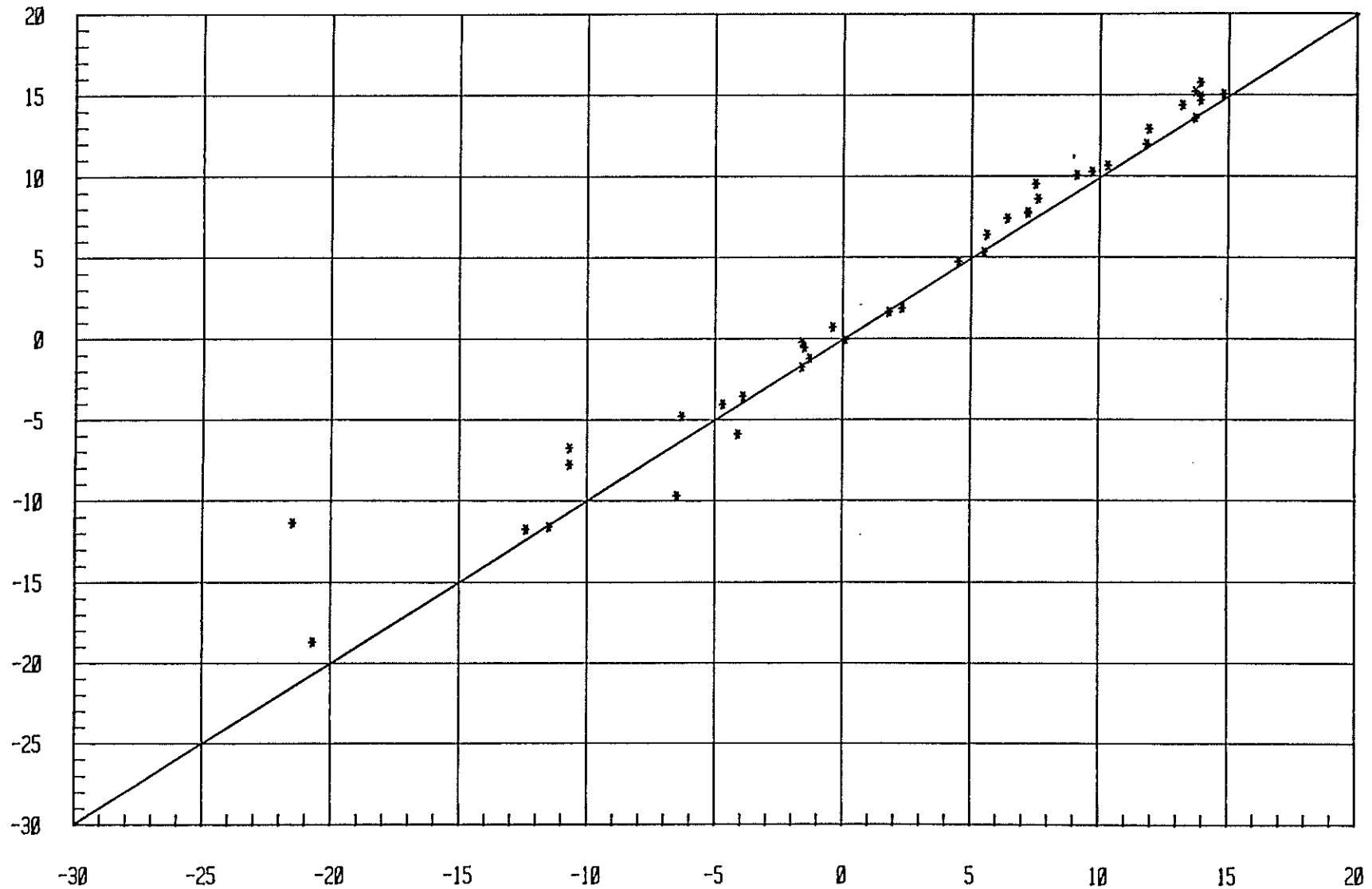


OBSERVED T (C)

SHERMAN WEEKLY AIR TEMPERATURES

WATER YEAR 1983 OBSERVED VS PREDICTED

LAPSE RATE PREDICTIONS (C)



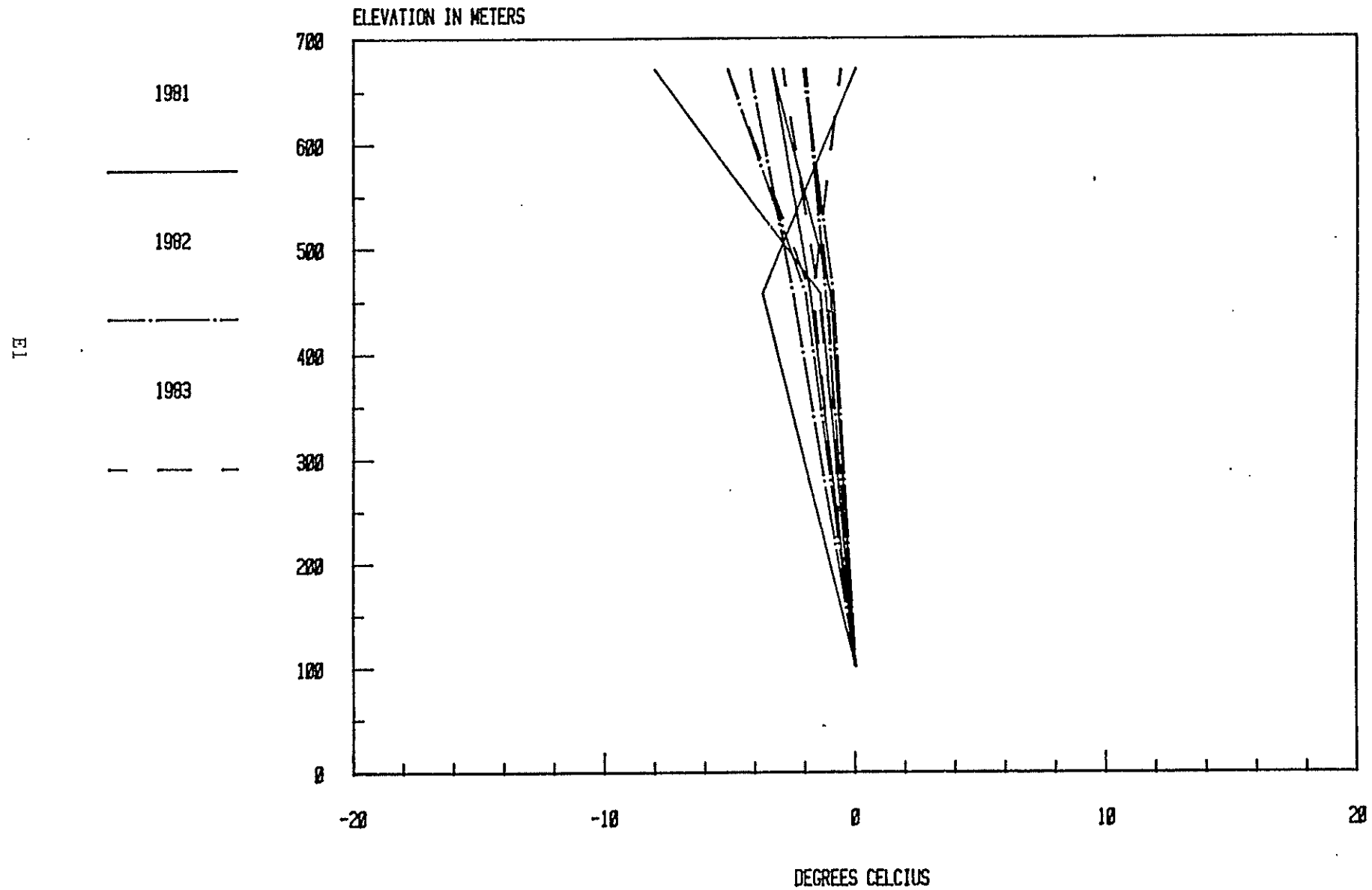
OBSERVED T (C)

APPENDIX E

Observed vertical air temperature profiles

VERTICAL TEMPERATURE PROFILES: OCTOBER

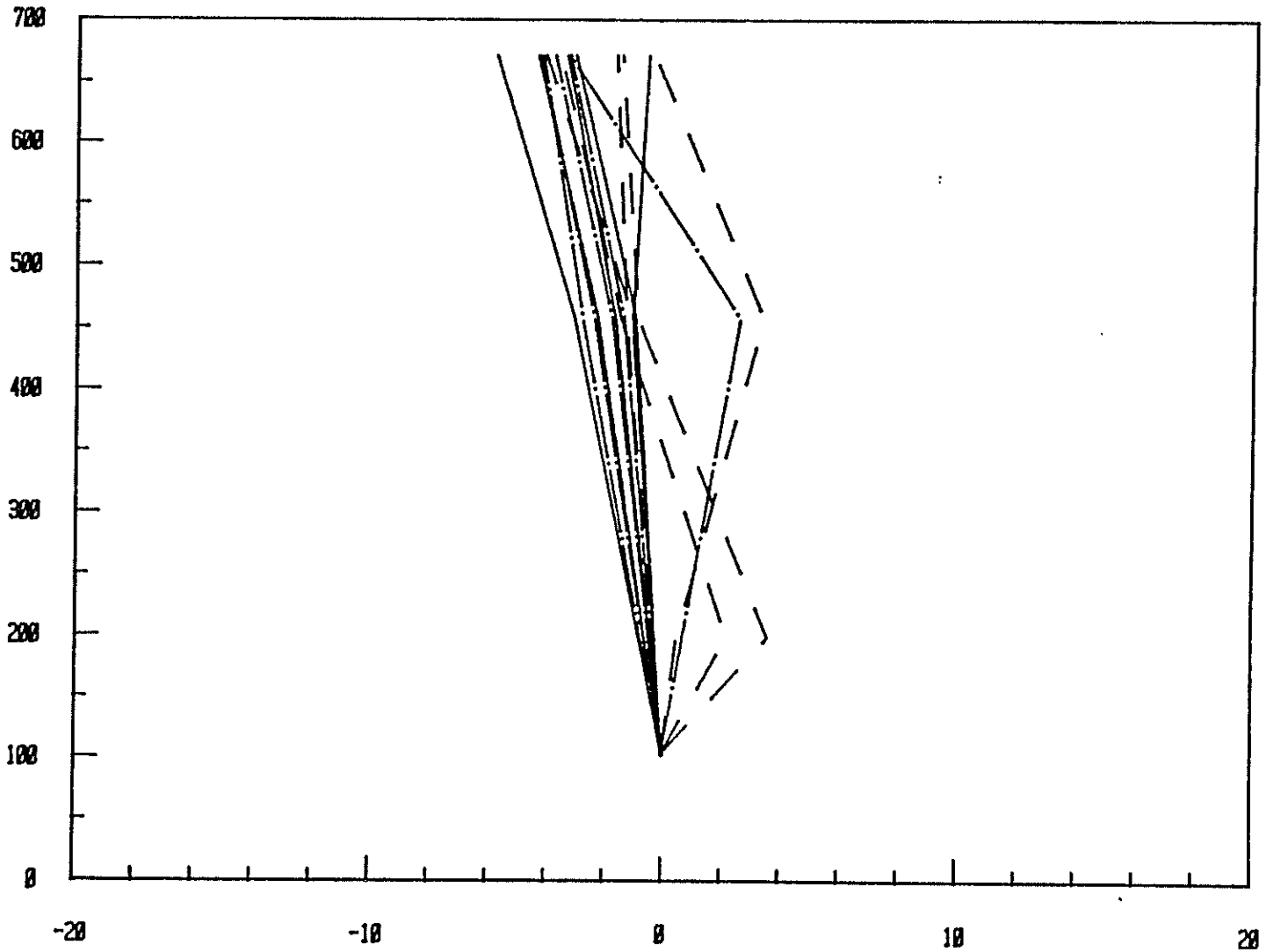
DEPARTURE FROM TALKEETNA



VERTICAL TEMPERATURE PROFILES: NOVEMBER

DEPARTURE FROM TALKEETNA

ELEVATION IN METERS



1981

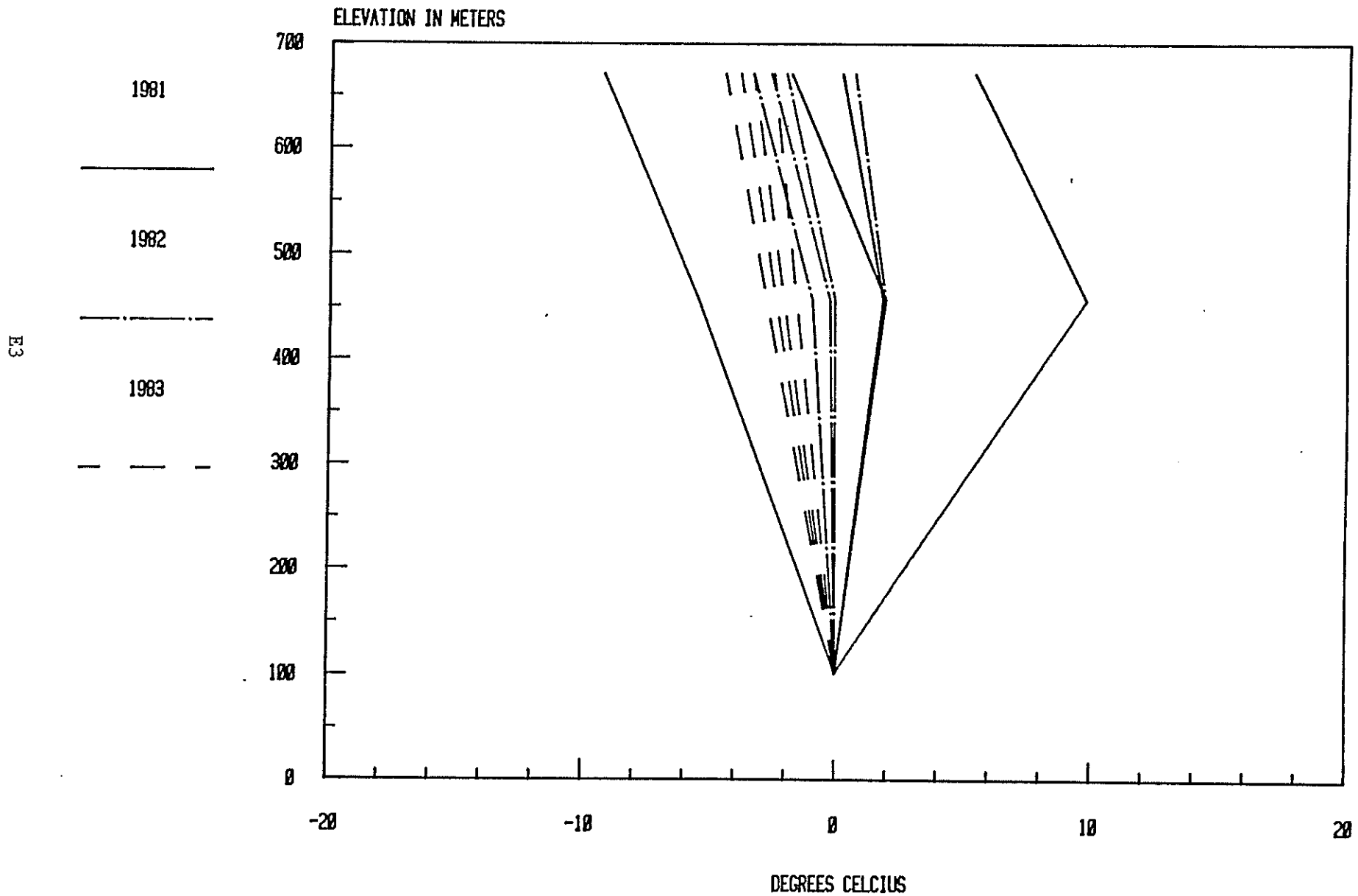
1982

1983

E2

VERTICAL TEMPERATURE PROFILES: DECEMBER

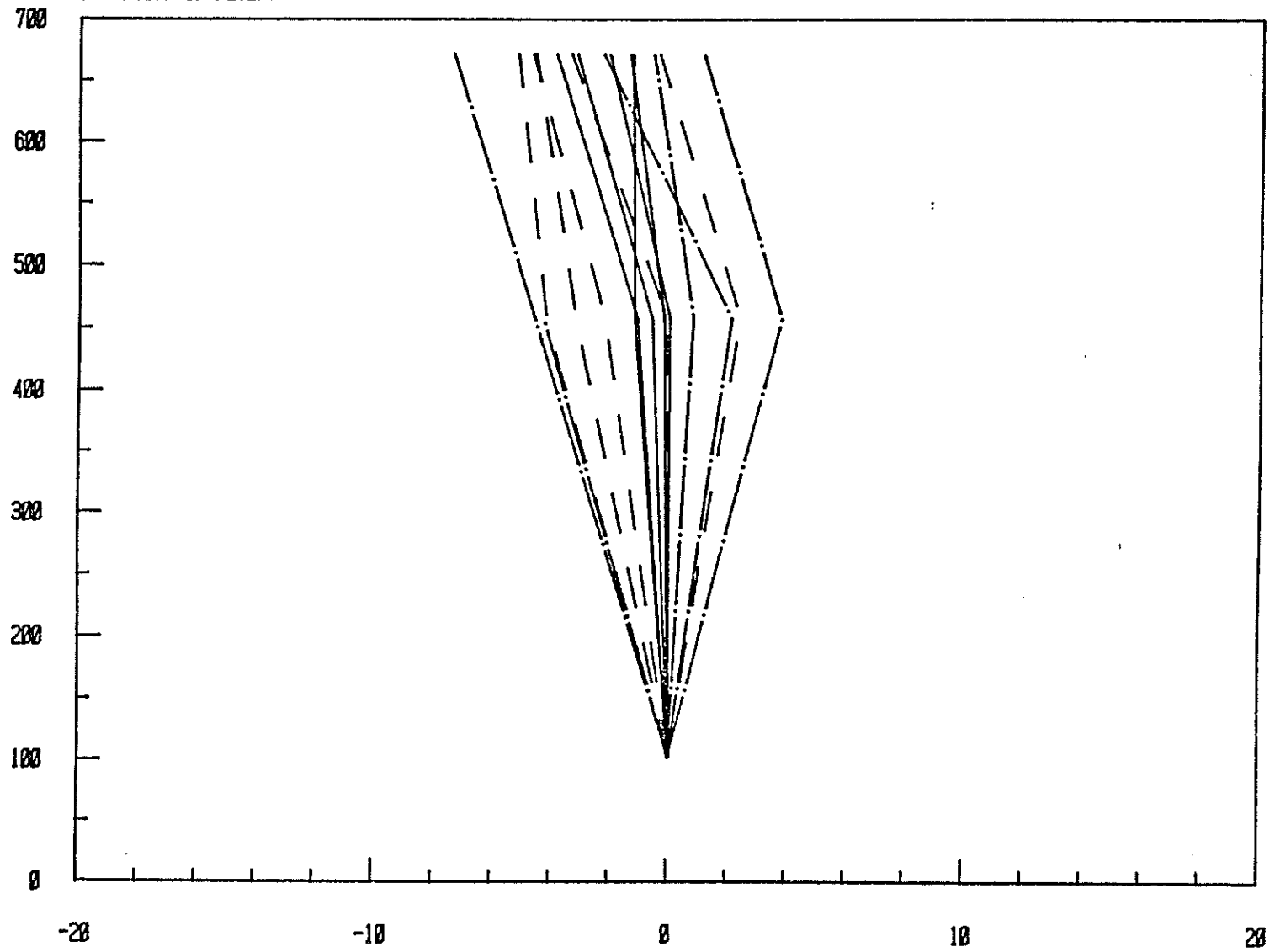
DEPARTURE FROM TALKEETNA



VERTICAL TEMPERATURE PROFILES: JANUARY

DEPARTURE FROM TALKEETNA

ELEVATION IN METERS



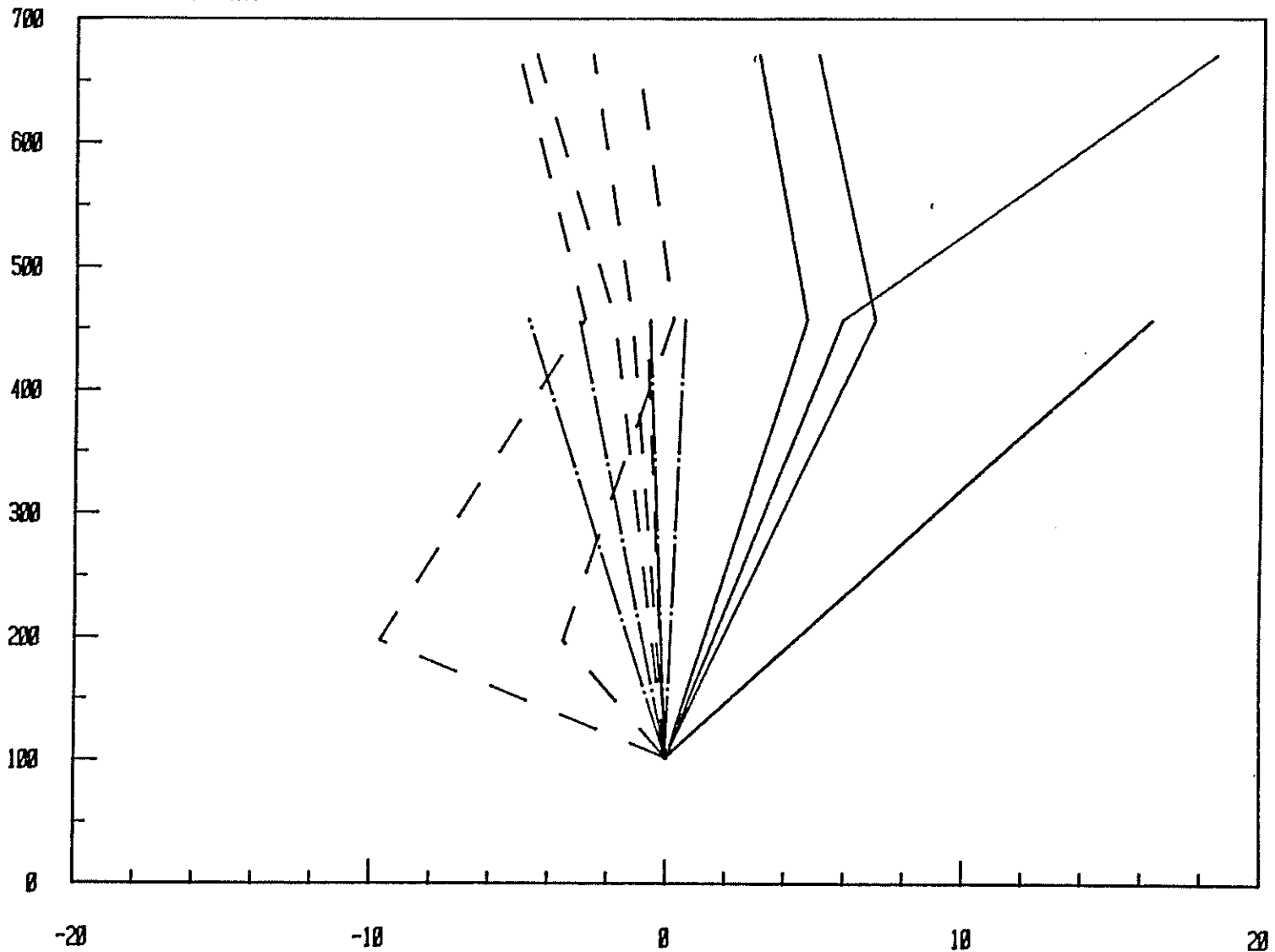
B4

DEGREES CELCIUS

VERTICAL TEMPERATURE PROFILES: FEBRUARY

DEPARTURE FROM TALKEETNA

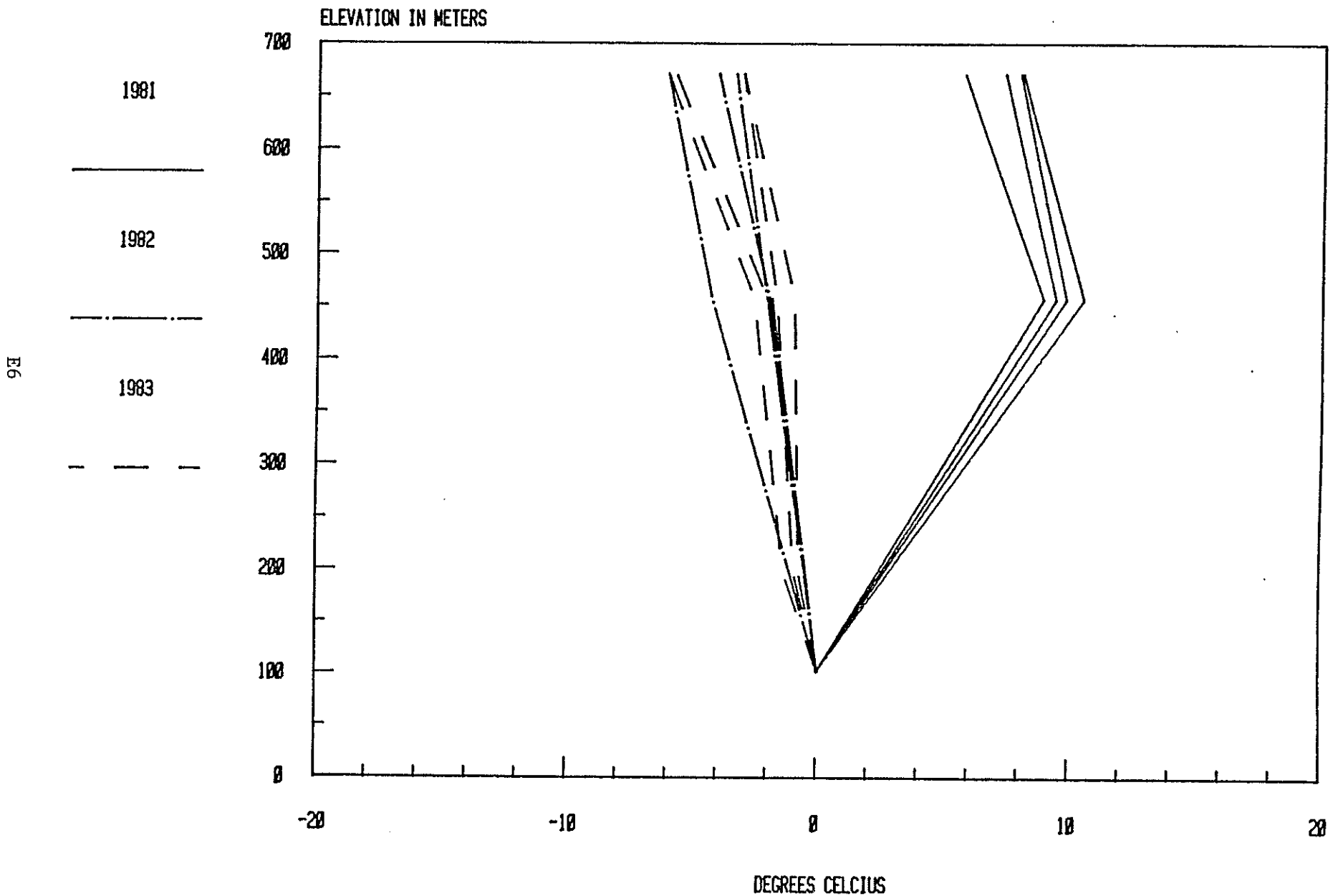
ELEVATION IN METERS



DEGREES CELCIUS

VERTICAL TEMPERATURE PROFILES: MARCH

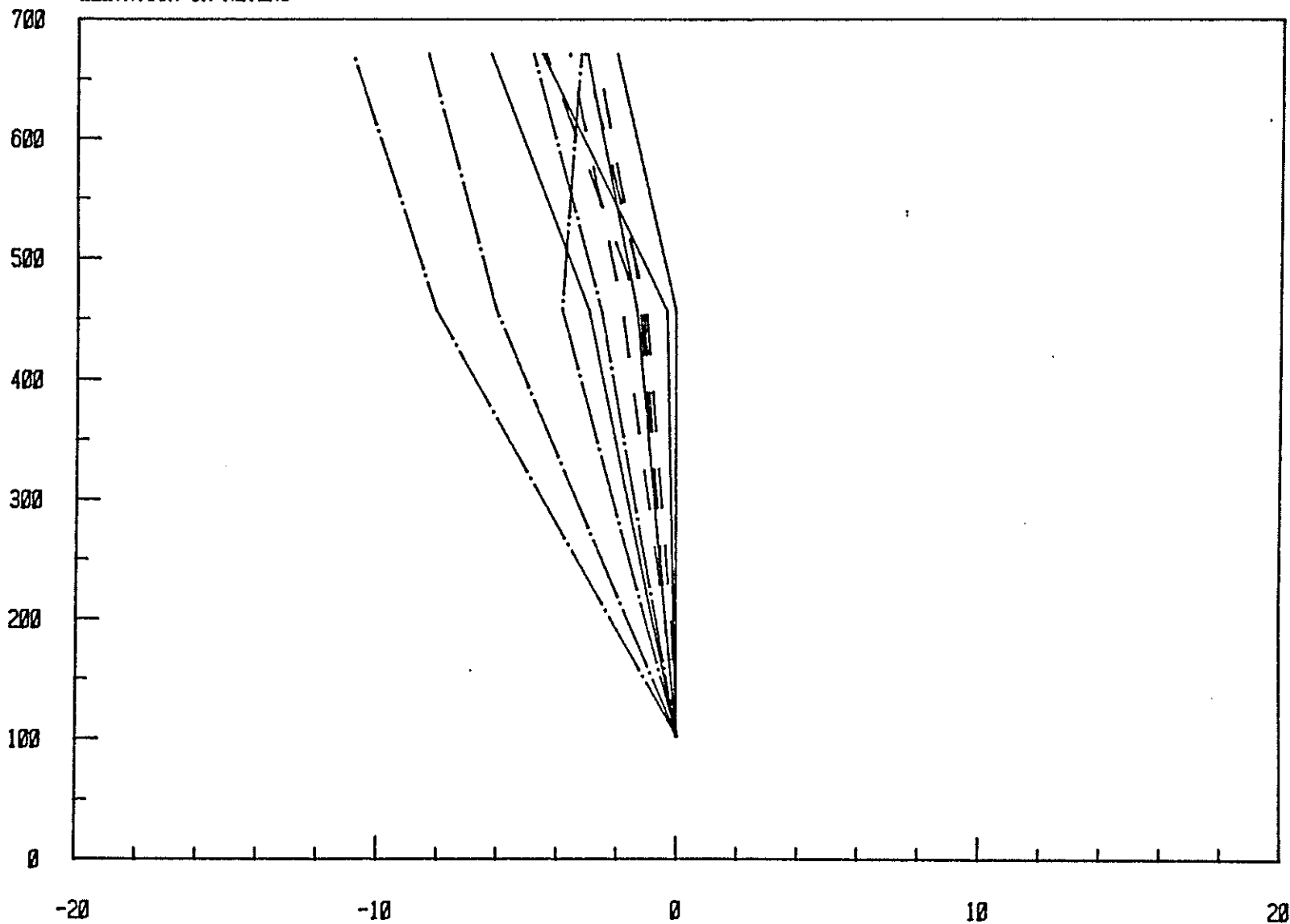
DEPARTURE FROM TALKEETNA



VERTICAL TEMPERATURE PROFILES: APRIL

DEPARTURE FROM TALKEETNA

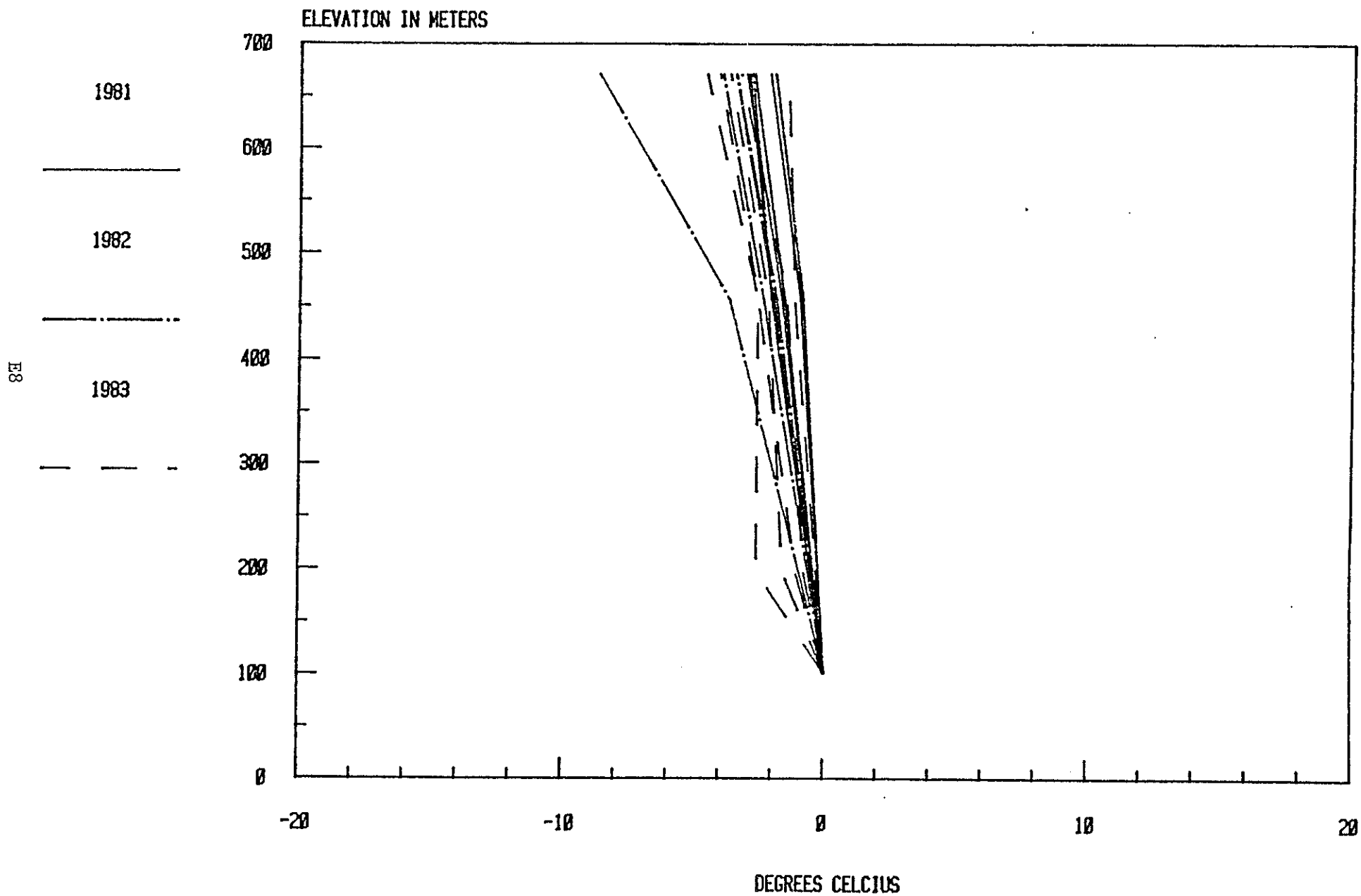
ELEVATION IN METERS



DEGREES CELCIUS

VERTICAL TEMPERATURE PROFILES: MAY

DEPARTURE FROM TALKEETNA



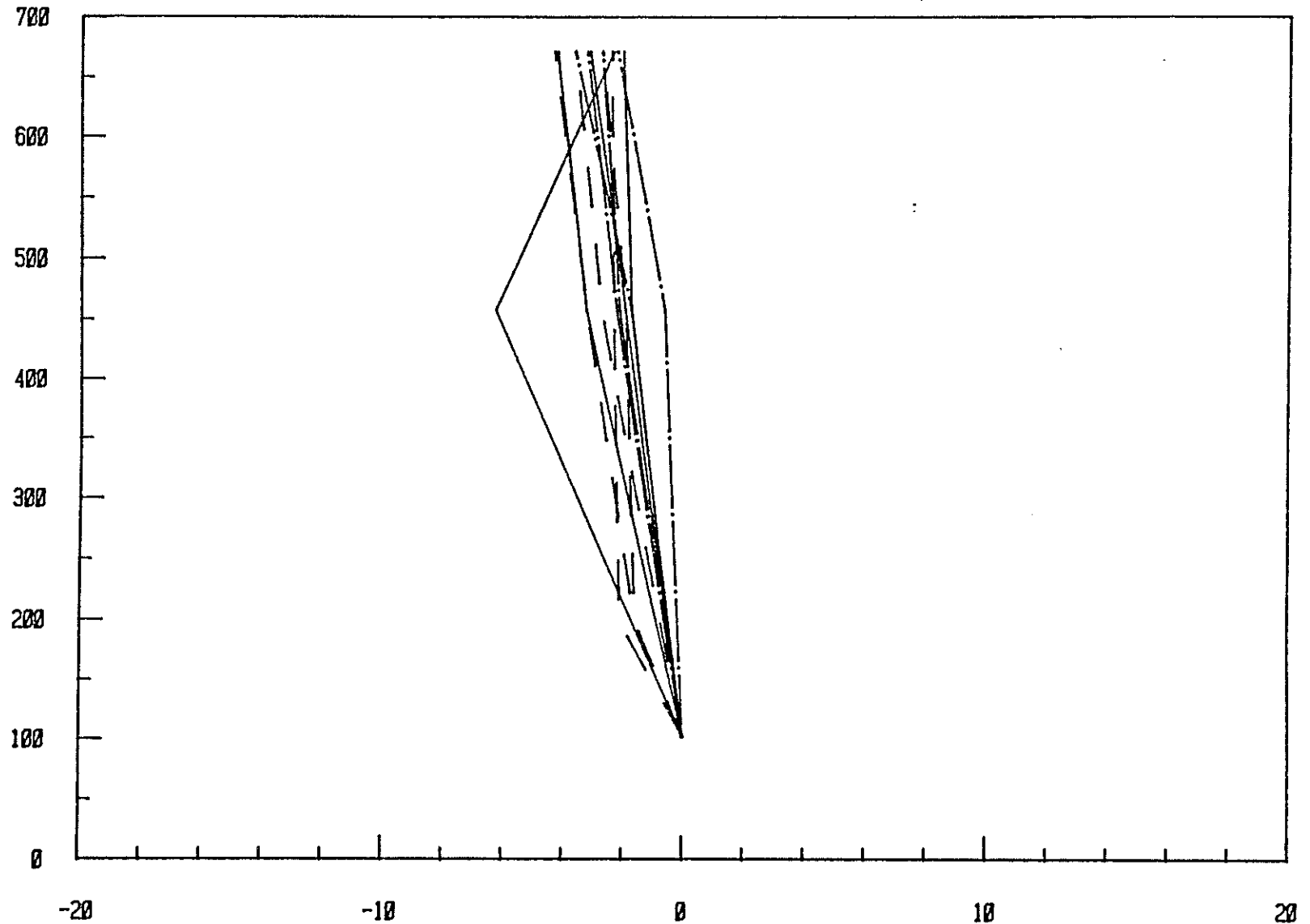
VERTICAL TEMPERATURE PROFILES: JUNE

DEPARTURE FROM TALKEETNA

ELEVATION IN METERS

1981
1982
1983

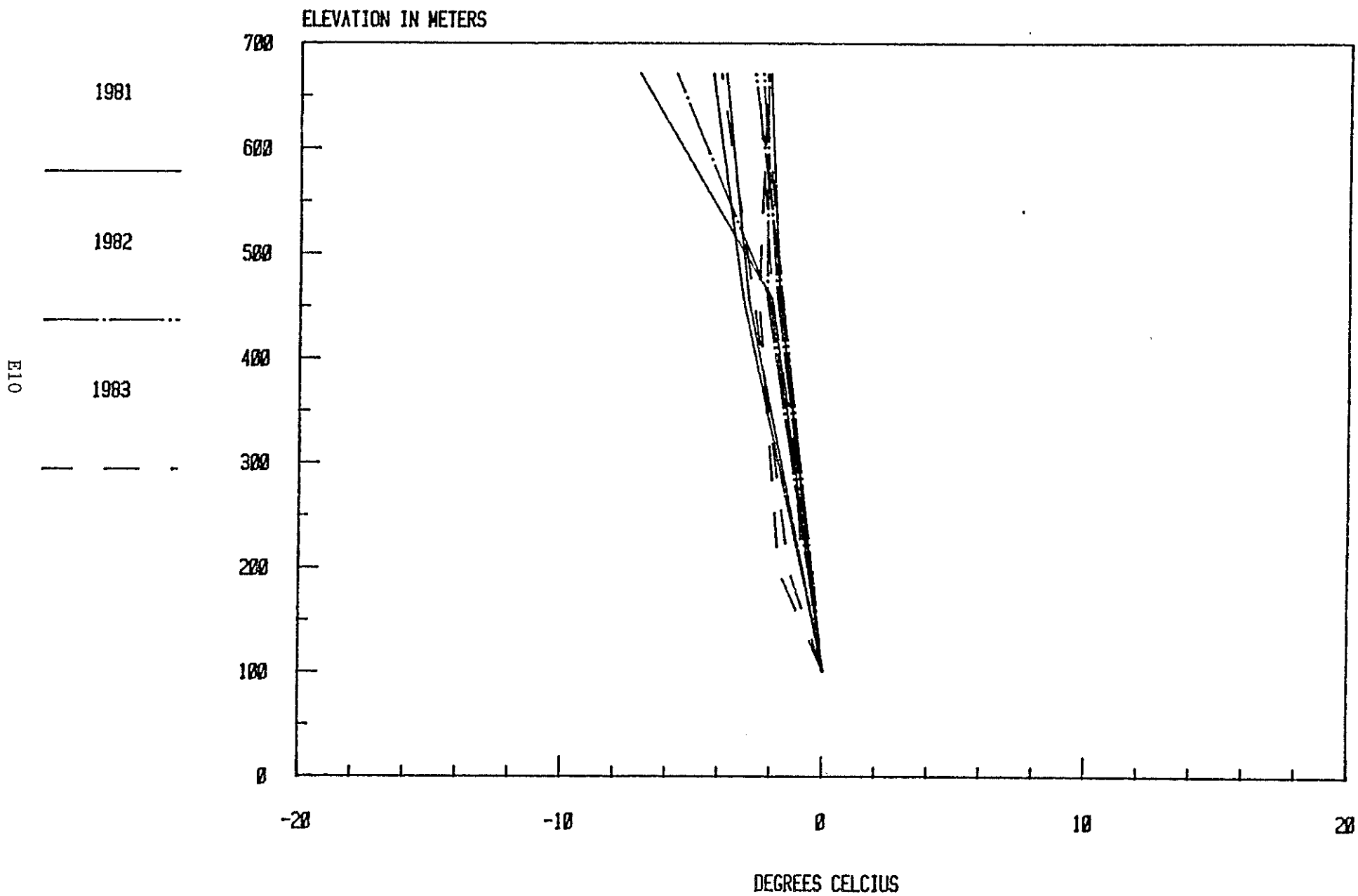
E9



DEGREES CELCIUS

VERTICAL TEMPERATURE PROFILES: JULY

DEPARTURE FROM TALKEETNA



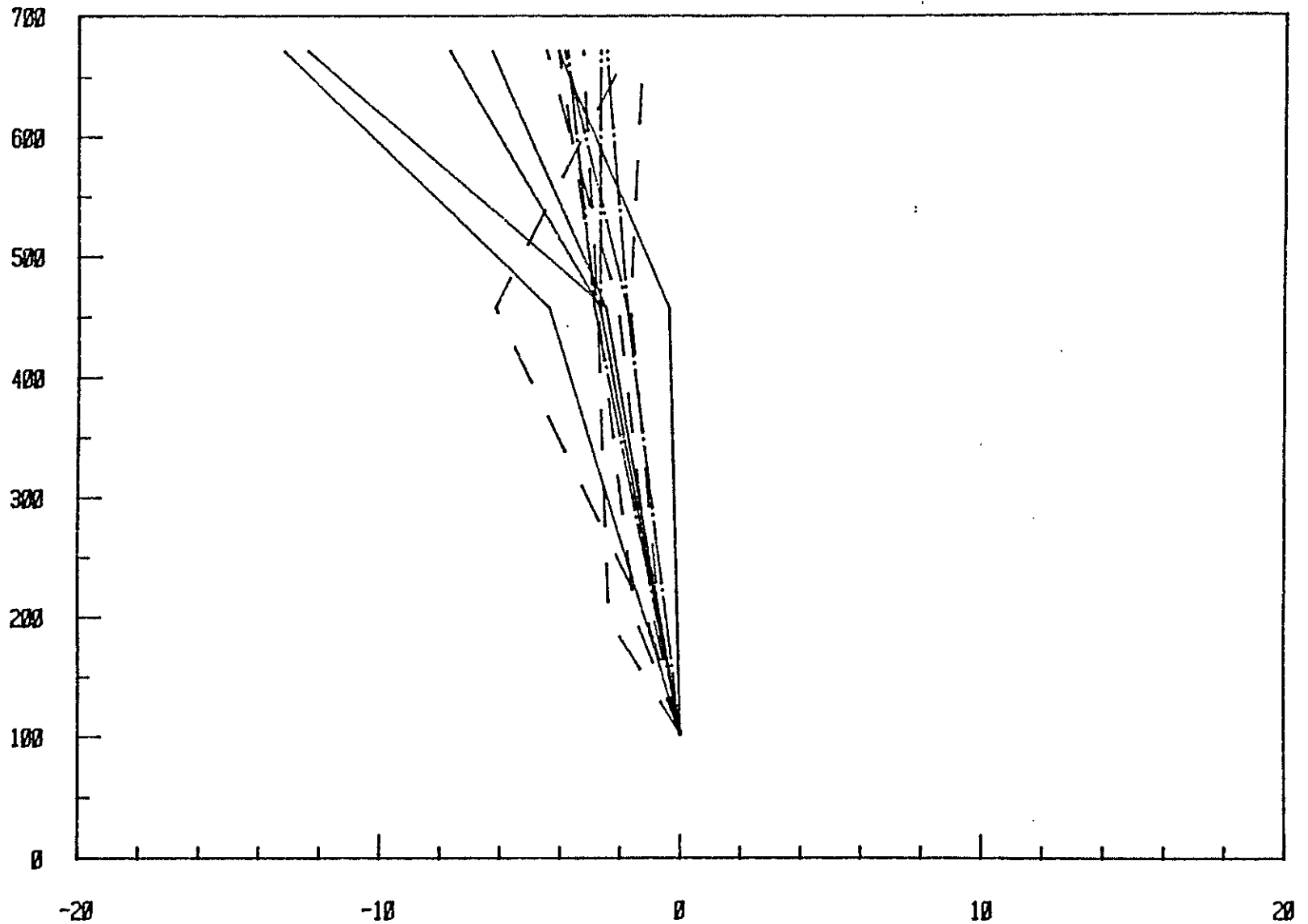
VERTICAL TEMPERATURE PROFILES: AUGUST

DEPARTURE FROM TALKEETNA

ELEVATION IN METERS

1981
1982
1983

ELL

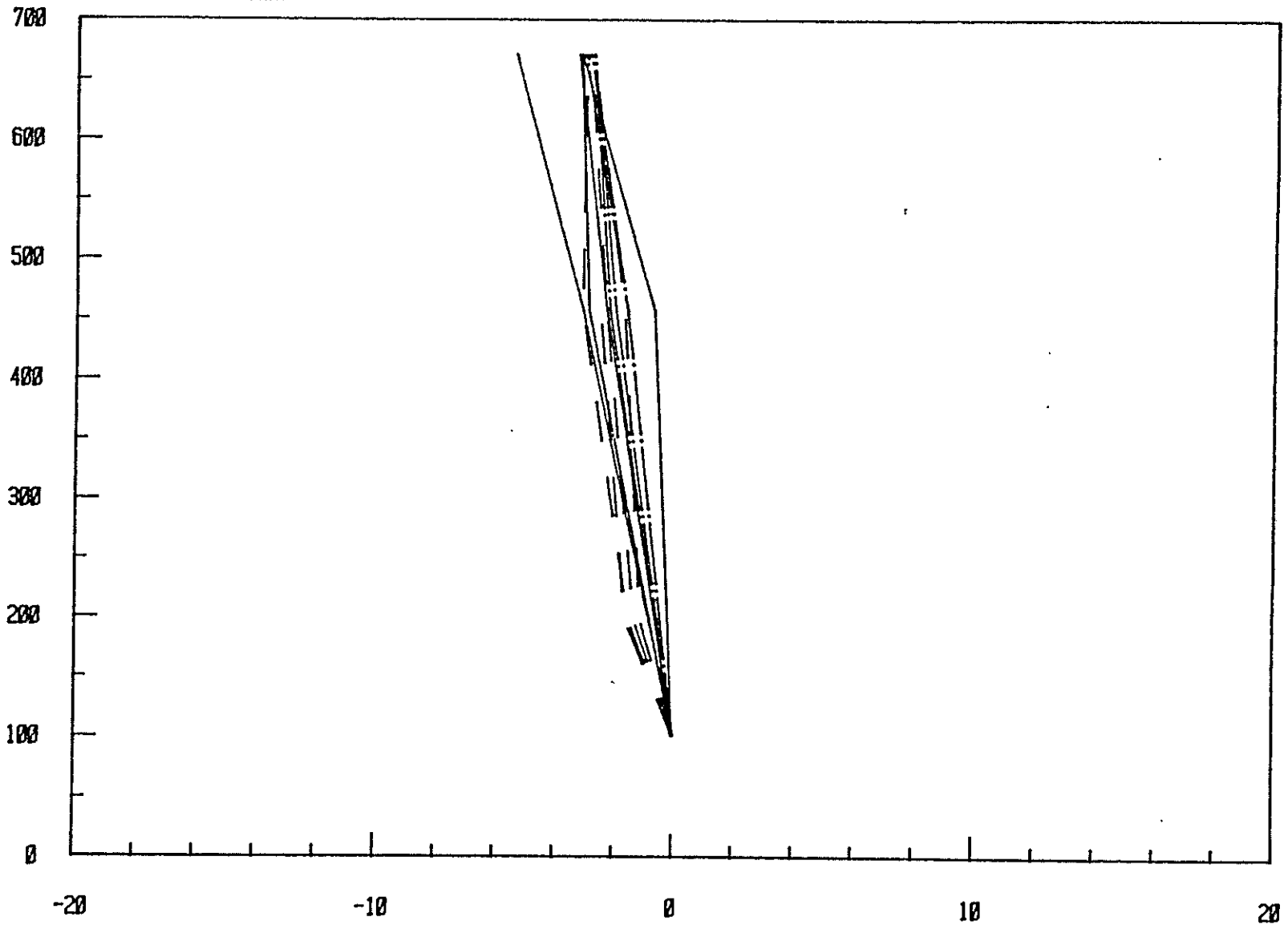


DEGREES CELCIUS

VERTICAL TEMPERATURE PROFILES: SEPTEMBER

DEPARTURE FROM TALKEETNA

ELEVATION IN METERS



DEGREES CELCIUS

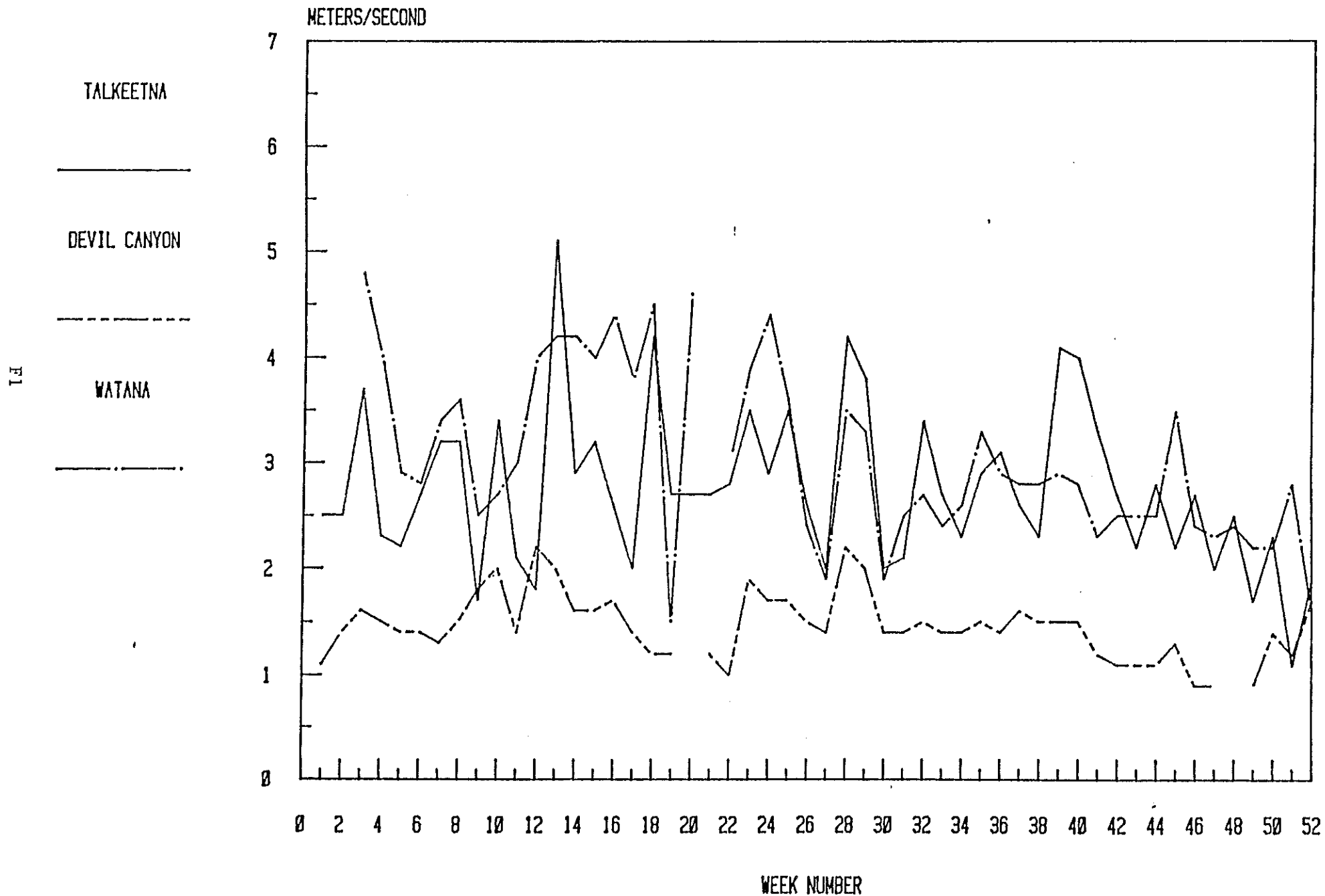


APPENDIX F

Basin weekly wind speeds

AVERAGE WEEKLY WIND SPEEDS

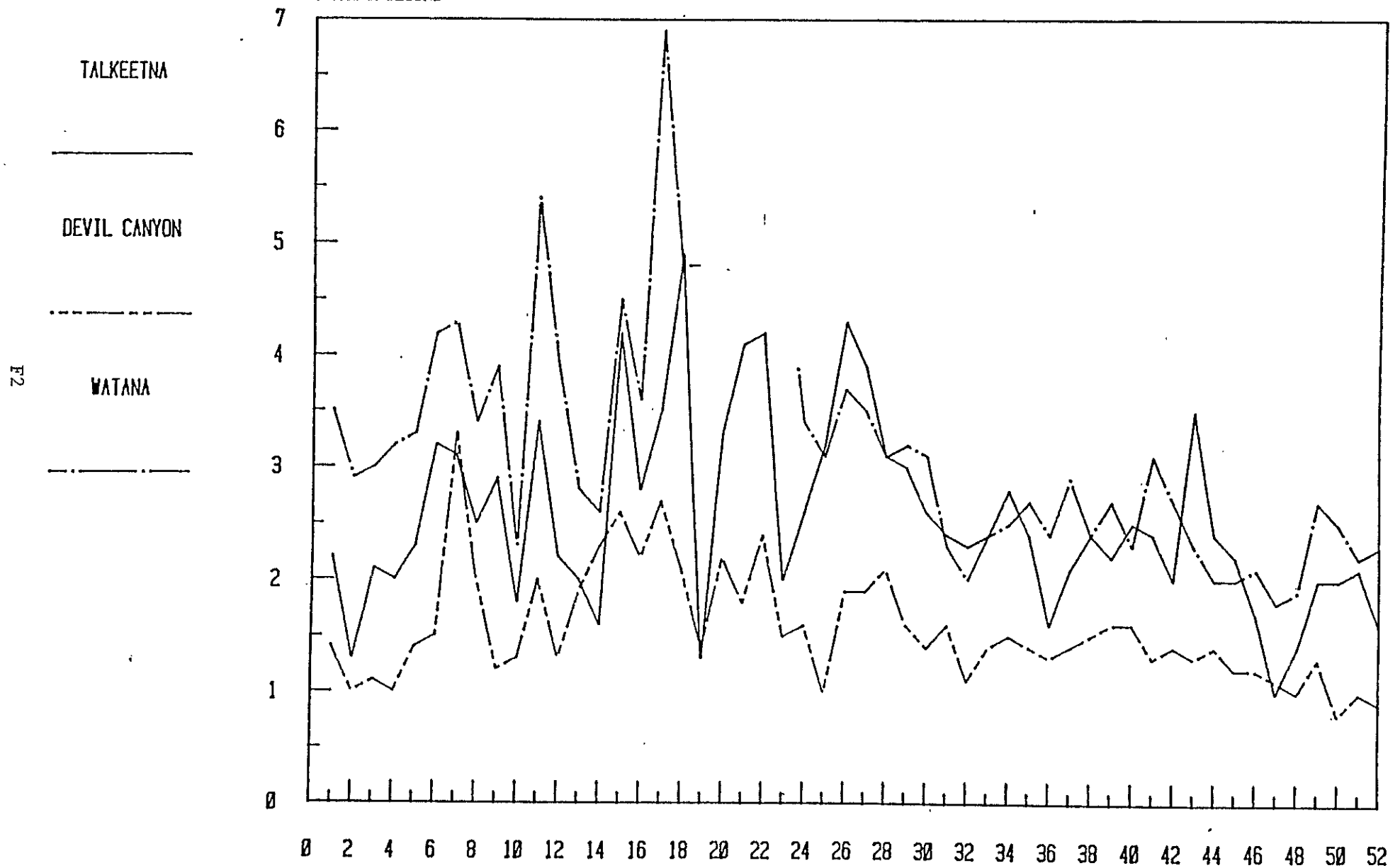
WATER YEAR 1981



AVERAGE WEEKLY WIND SPEEDS

WATER YEAR 1982

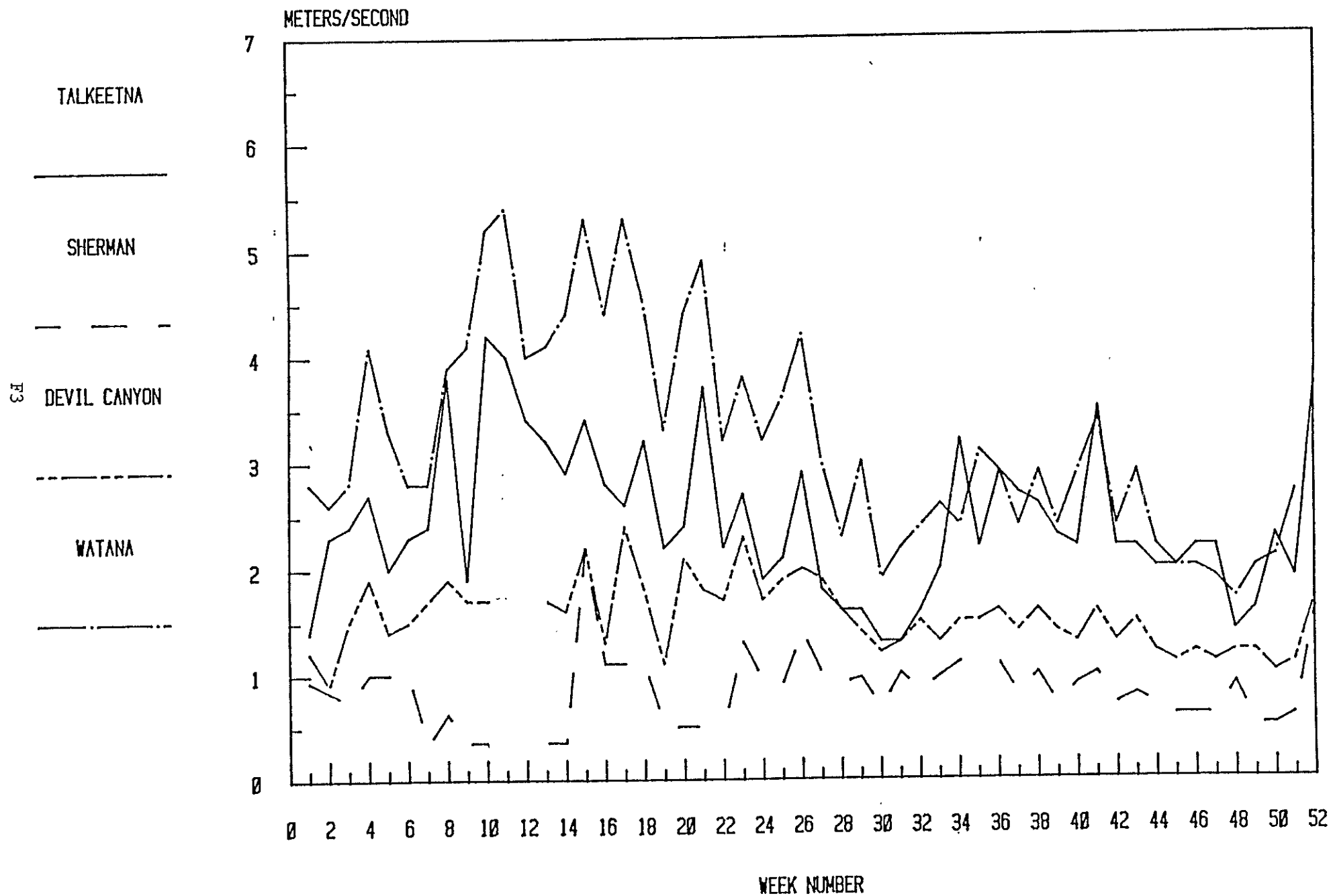
METERS/SECOND



WEEK NUMBER

AVERAGE WEEKLY WIND SPEEDS

WATER YEAR 1983



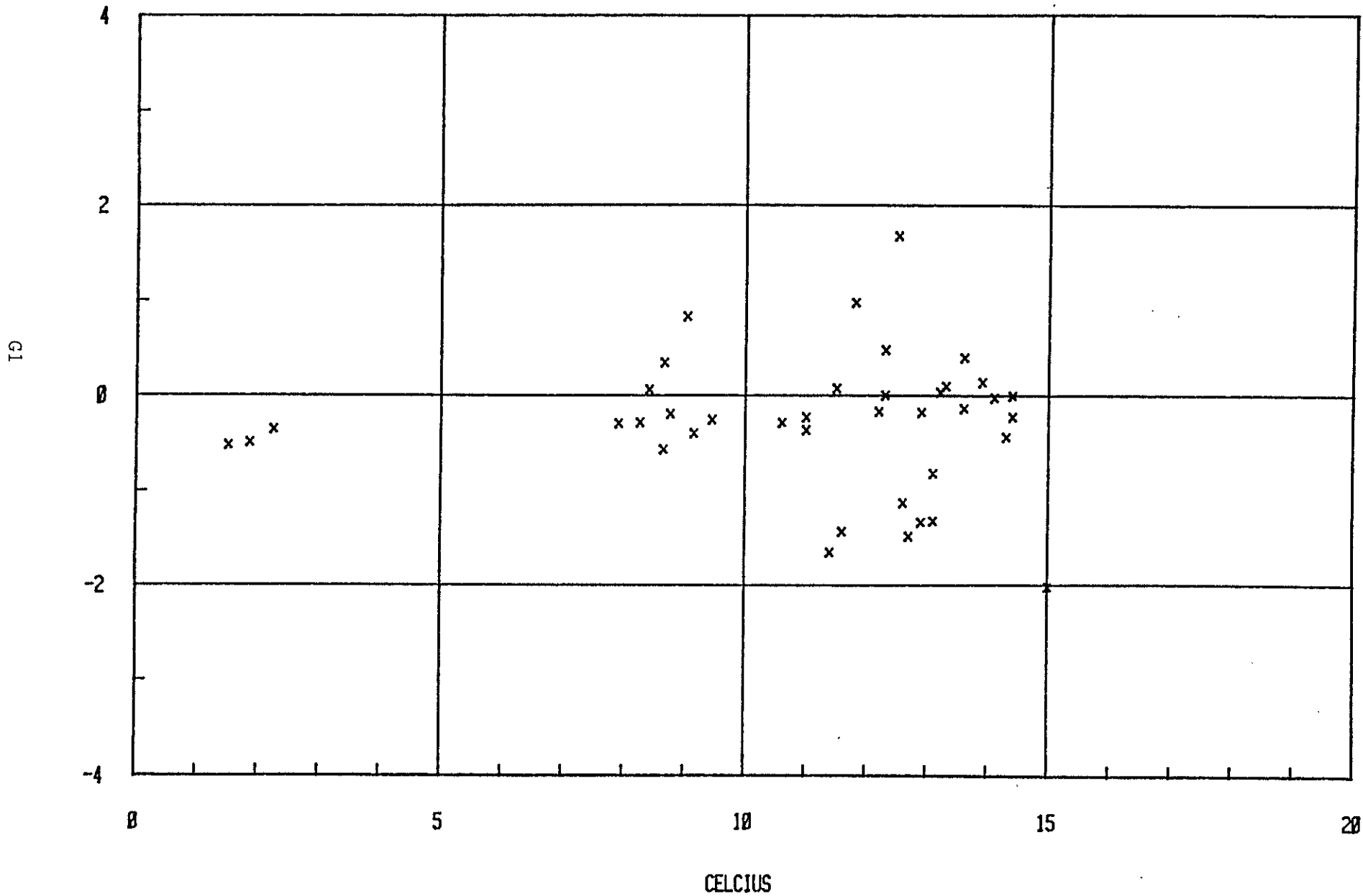
APPENDIX G

Residual errors as functions of air temperature,
humidity, possible sunshine and wind speed.

STREAM TEMPERATURE RESIDUALS

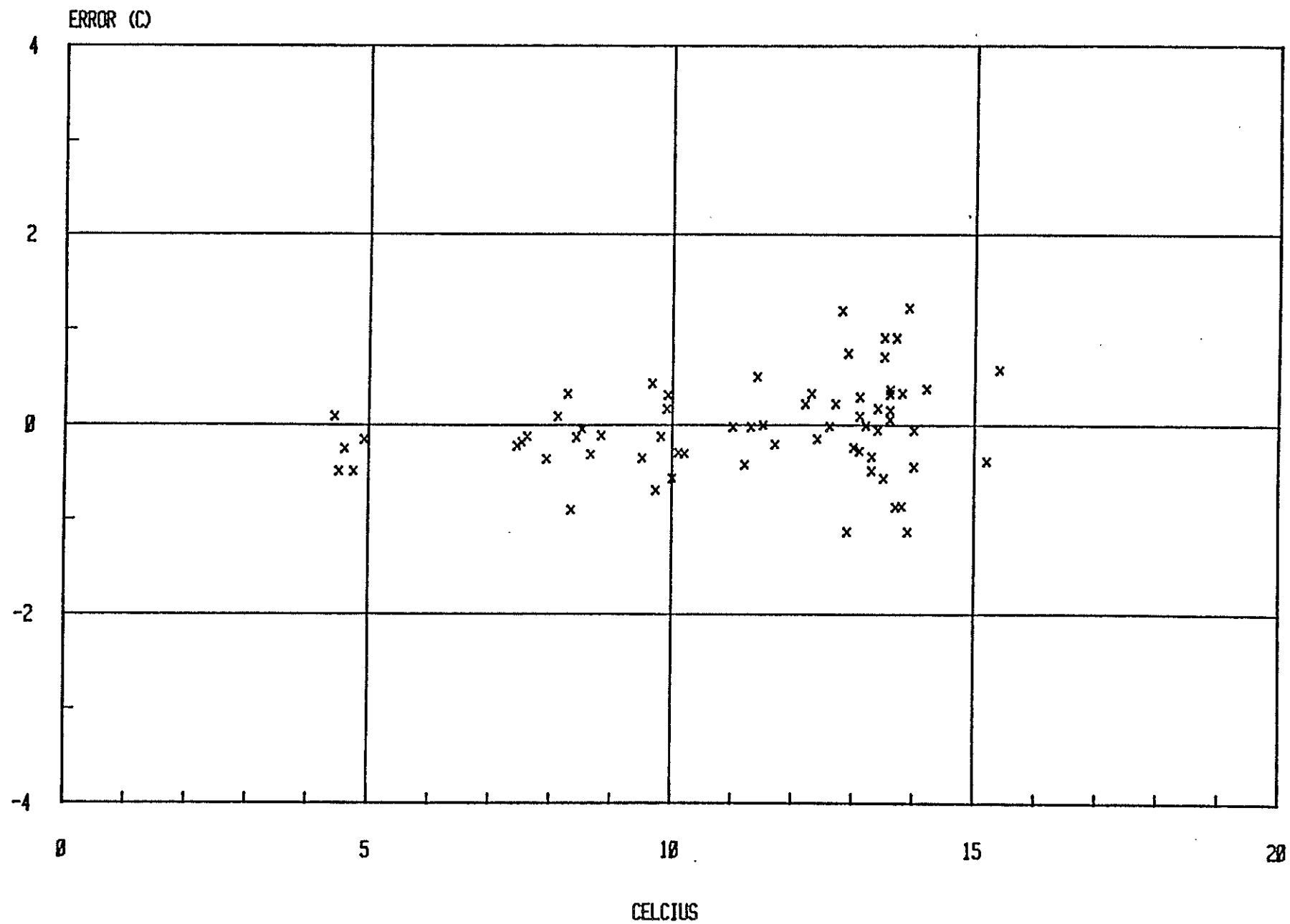
AIR TEMPERATURE 1981

ERROR (C)



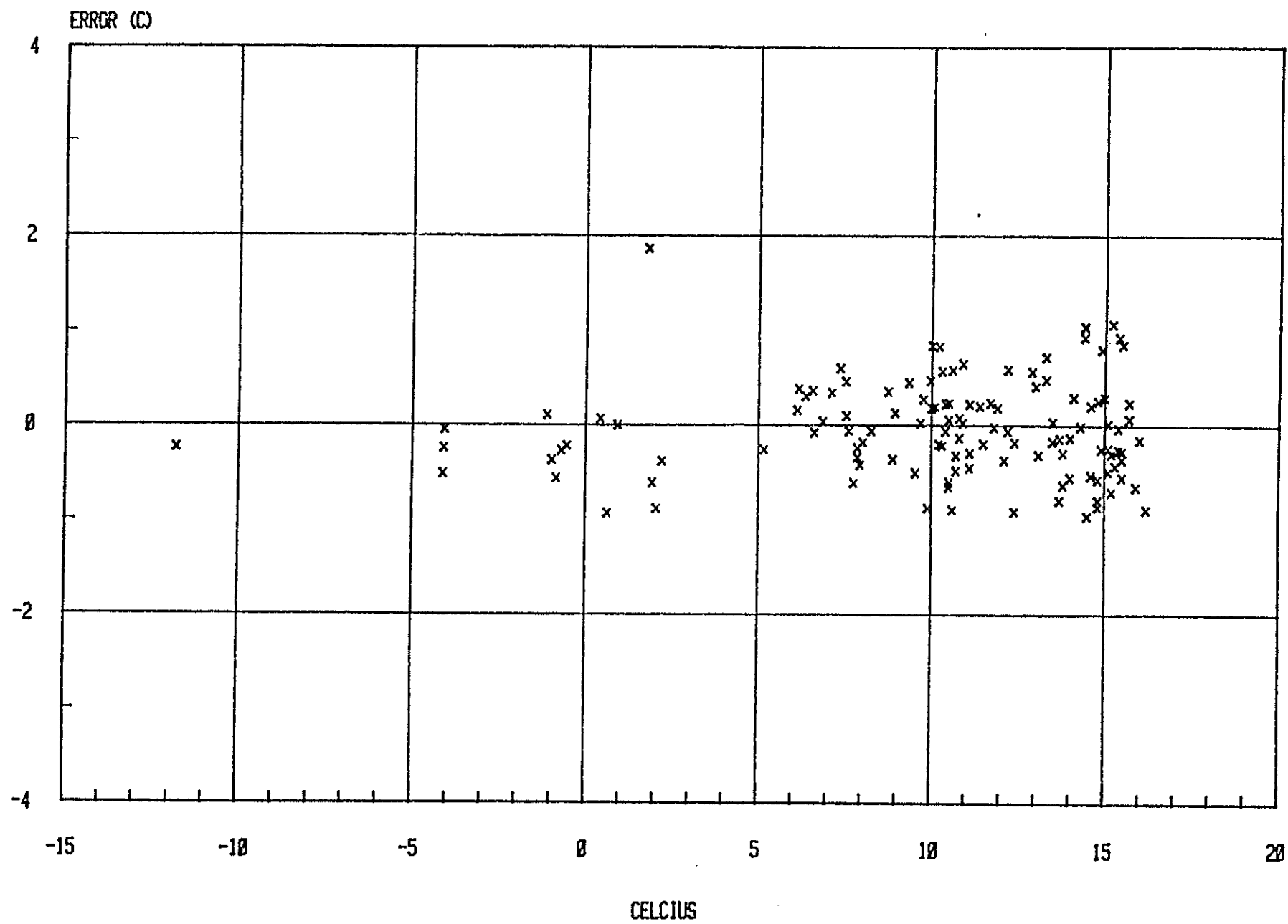
STREAM TEMPERATURE RESIDUALS

AIR TEMPERATURE 1982



STREAM TEMPERATURE RESIDUALS

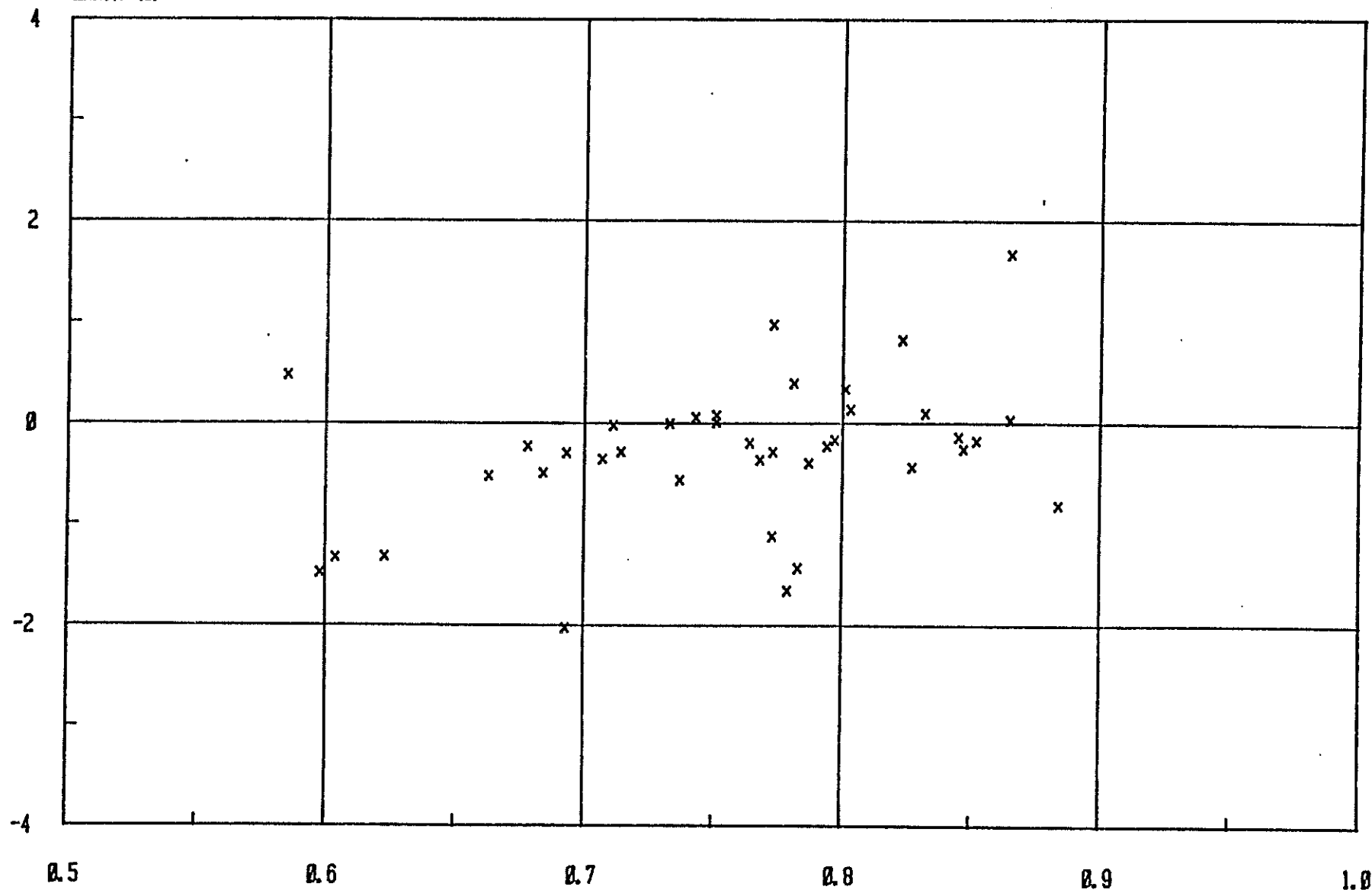
AIR TEMPERATURE 1983



STREAM TEMPERATURE RESIDUALS

RELATIVE HUMIDITY 1981

ERROR (C)



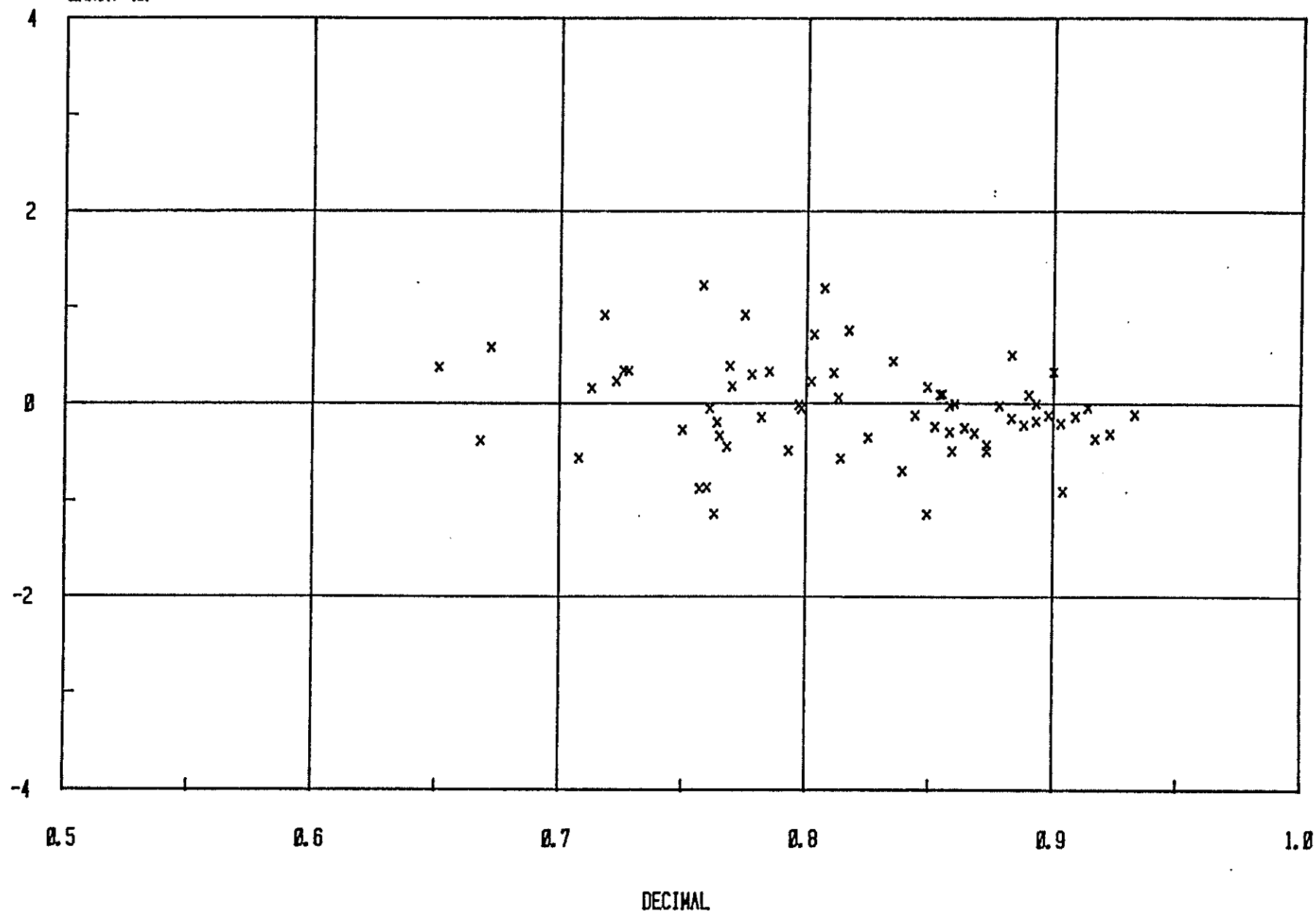
DECIMAL

STREAM TEMPERATURE RESIDUALS

RELATIVE HUMIDITY 1982

ERROR (C)

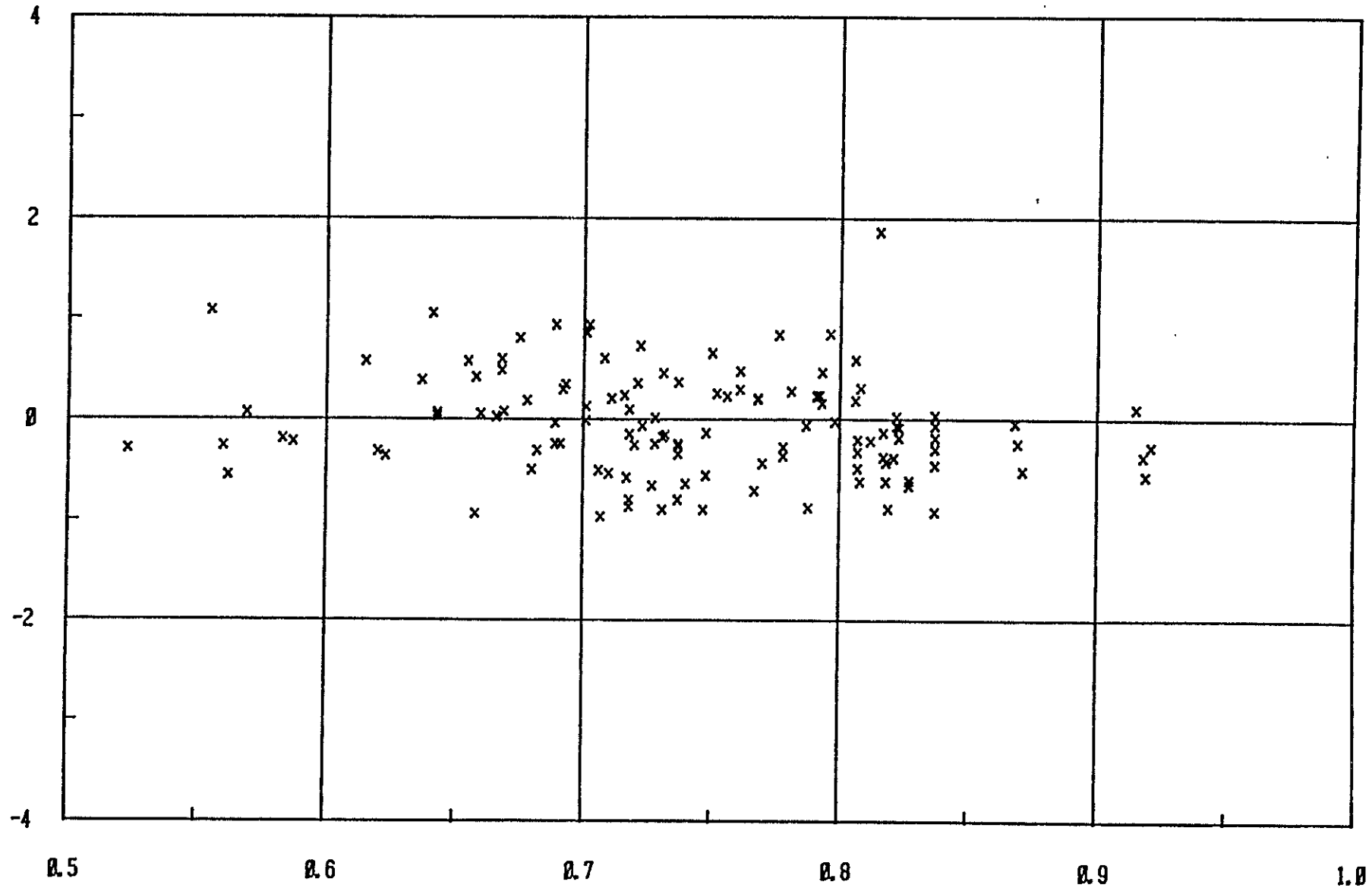
65



STREAM TEMPERATURE RESIDUALS

RELATIVE HUMIDITY 1983

ERROR (C)



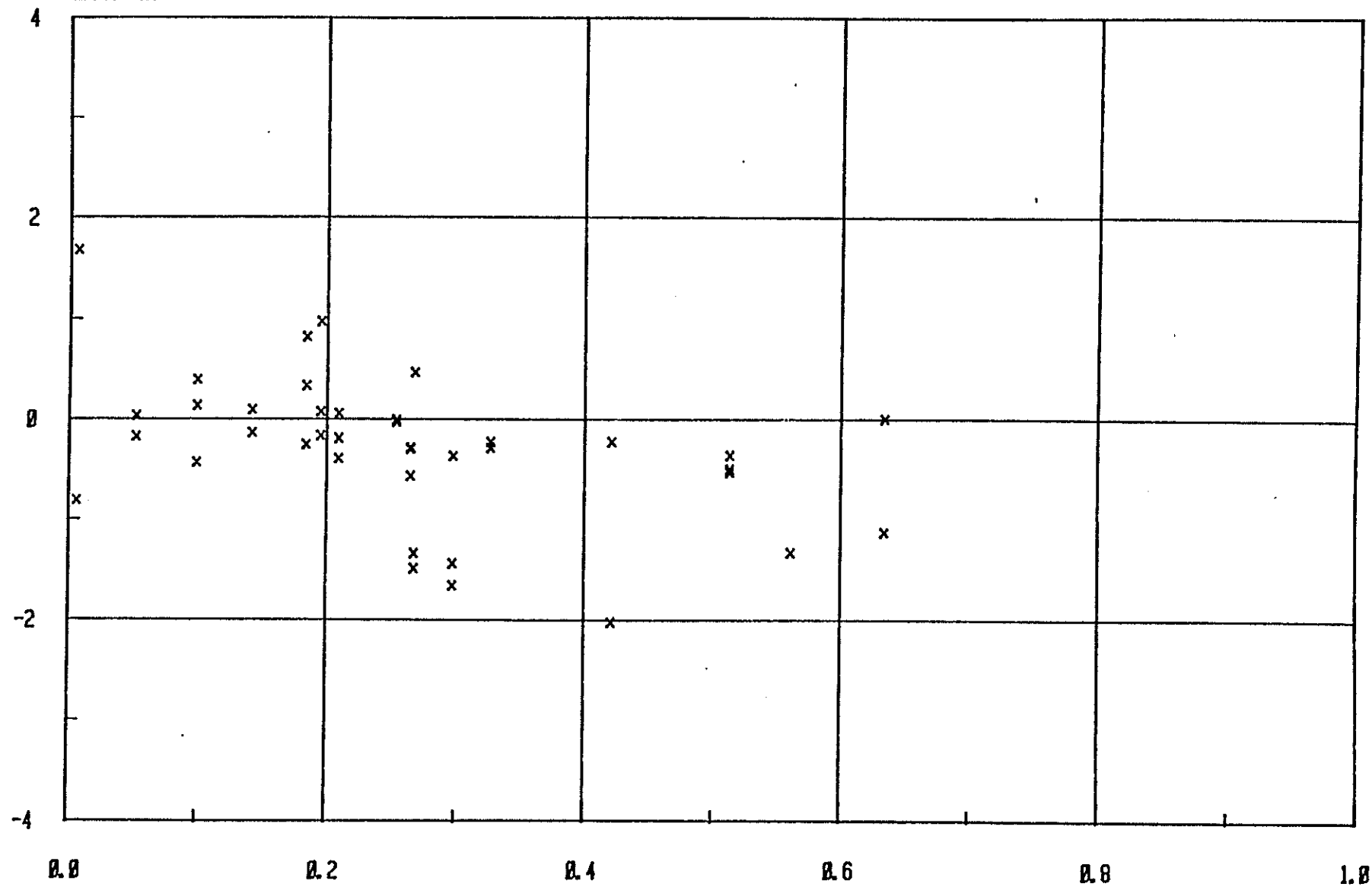
DECIMAL



STREAM TEMPERATURE RESIDUALS

POSSIBLE SUNSHINE 1981

ERROR (C)



DECIMAL

STREAM TEMPERATURE RESIDUALS

POSSIBLE SUNSHINE 1982



4

2

8

-2

-4

LD

B.2

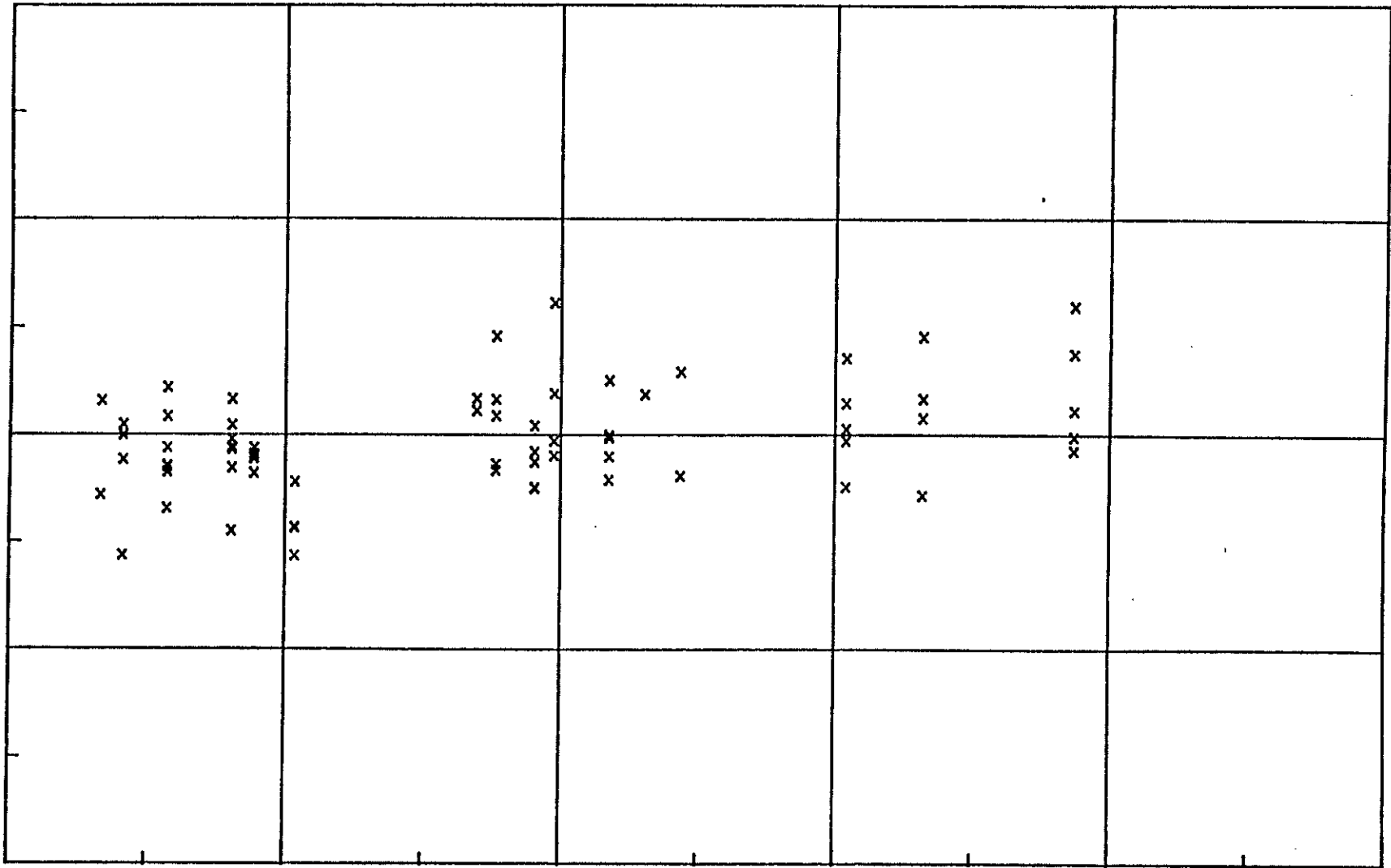
Q4

2.6

18

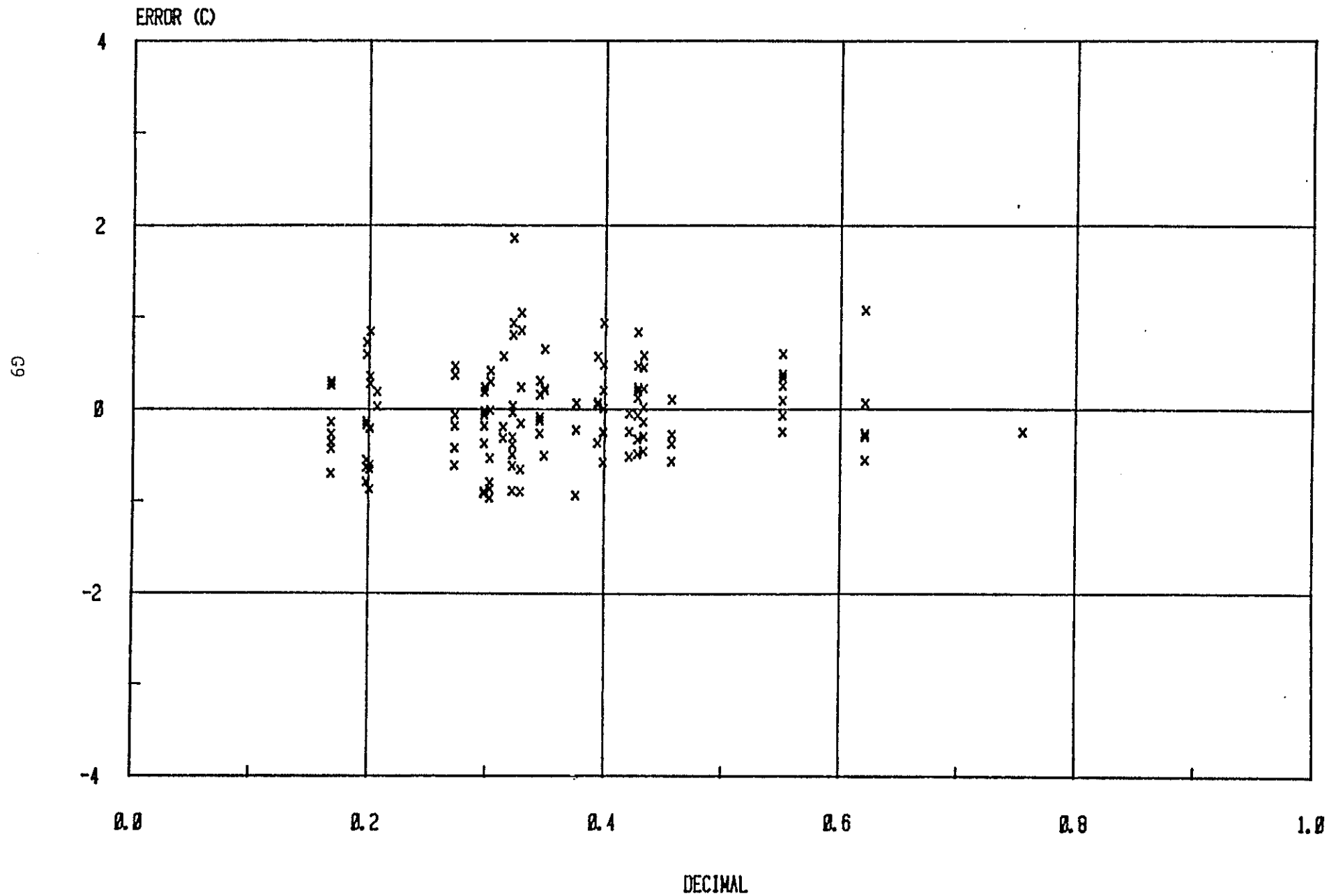
1.8

DECIMAL



STREAM TEMPERATURE RESIDUALS

POSSIBLE SUNSHINE 1983

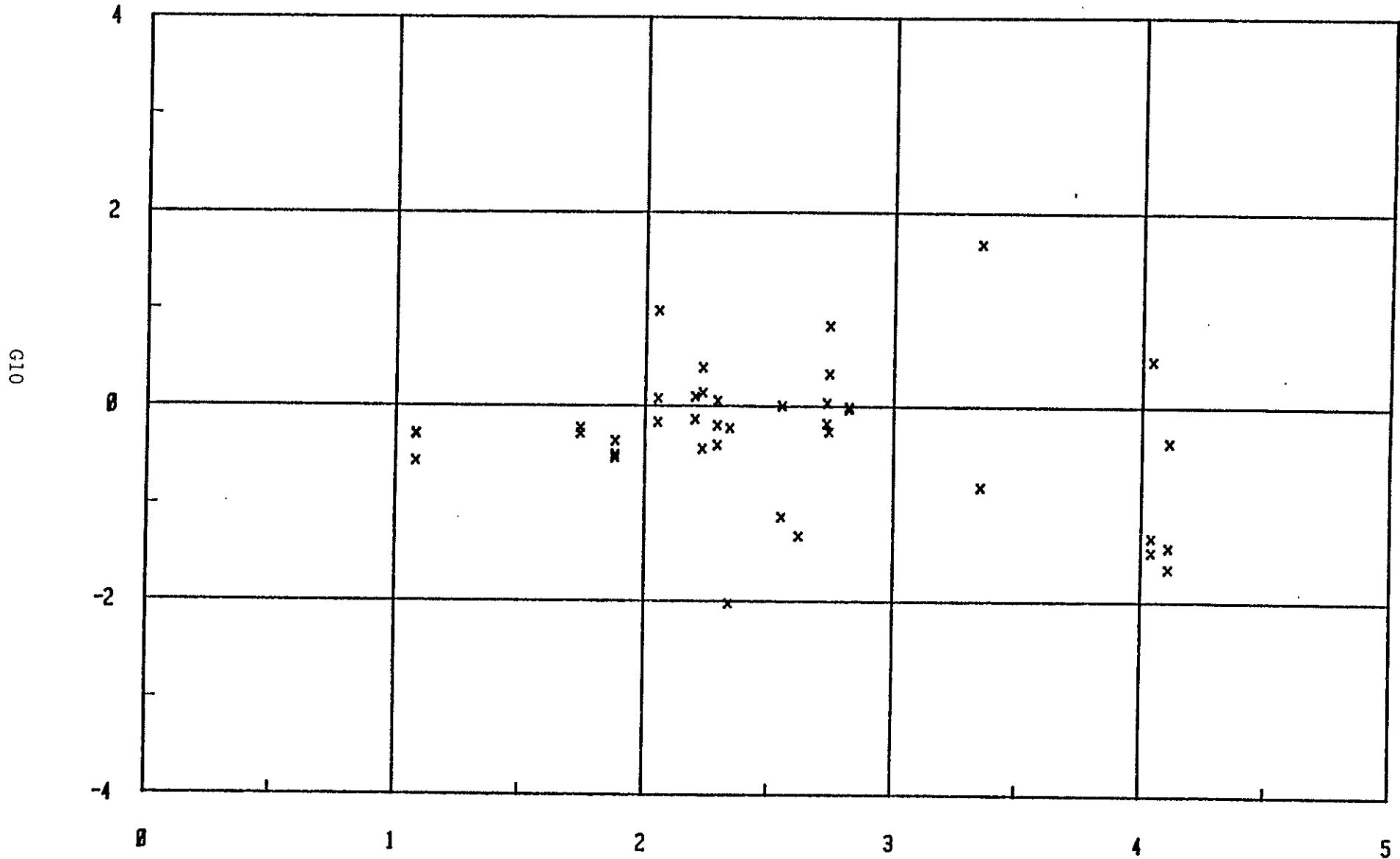


STREAM TEMPERATURE RESIDUALS

WIND SPEED

1981

ERROR (C)



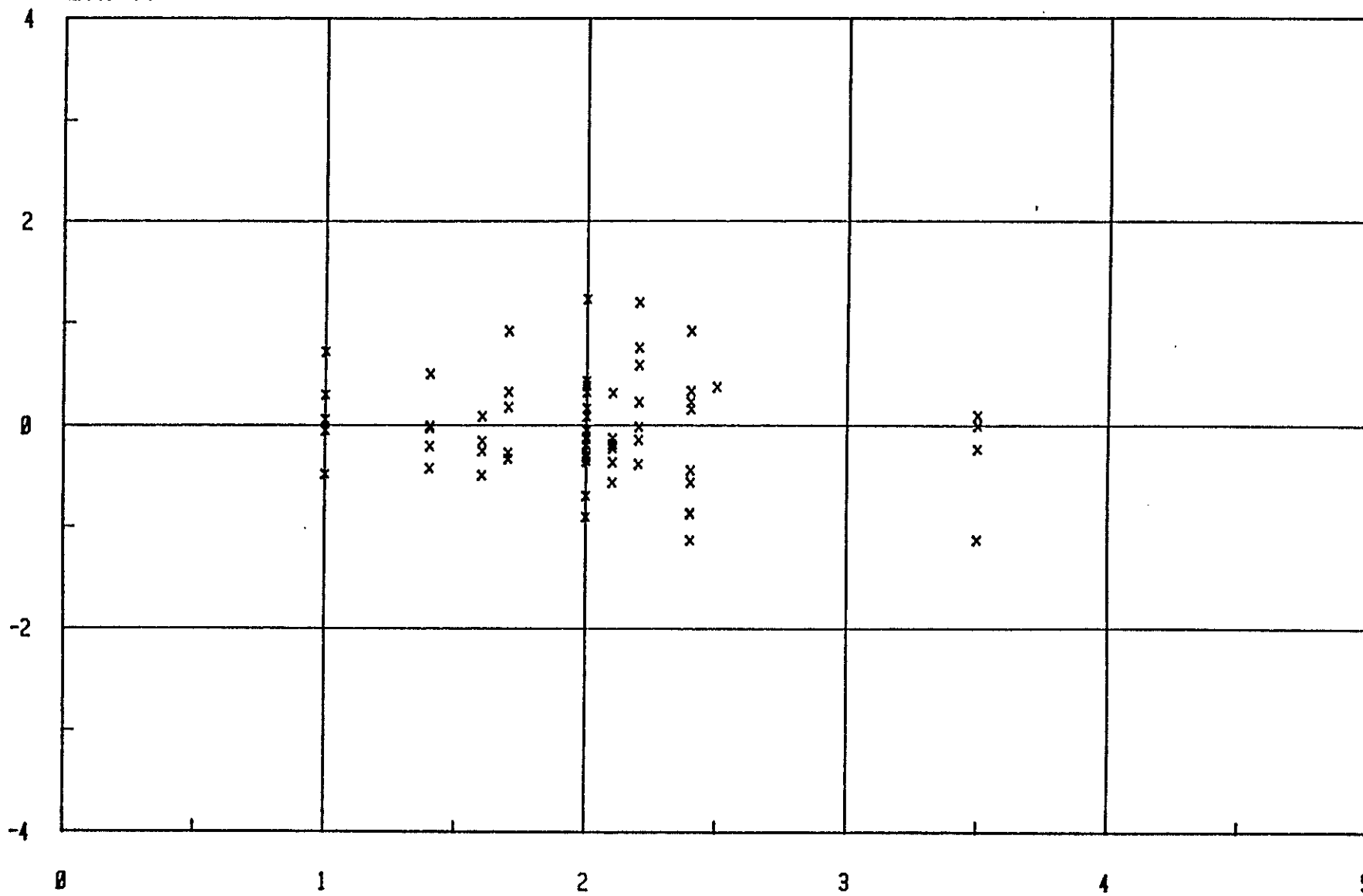
METERS/SECOND

STREAM TEMPERATURE RESIDUALS

WIND SPEED

1982

ERROR (C)



METERS/SECOND

611

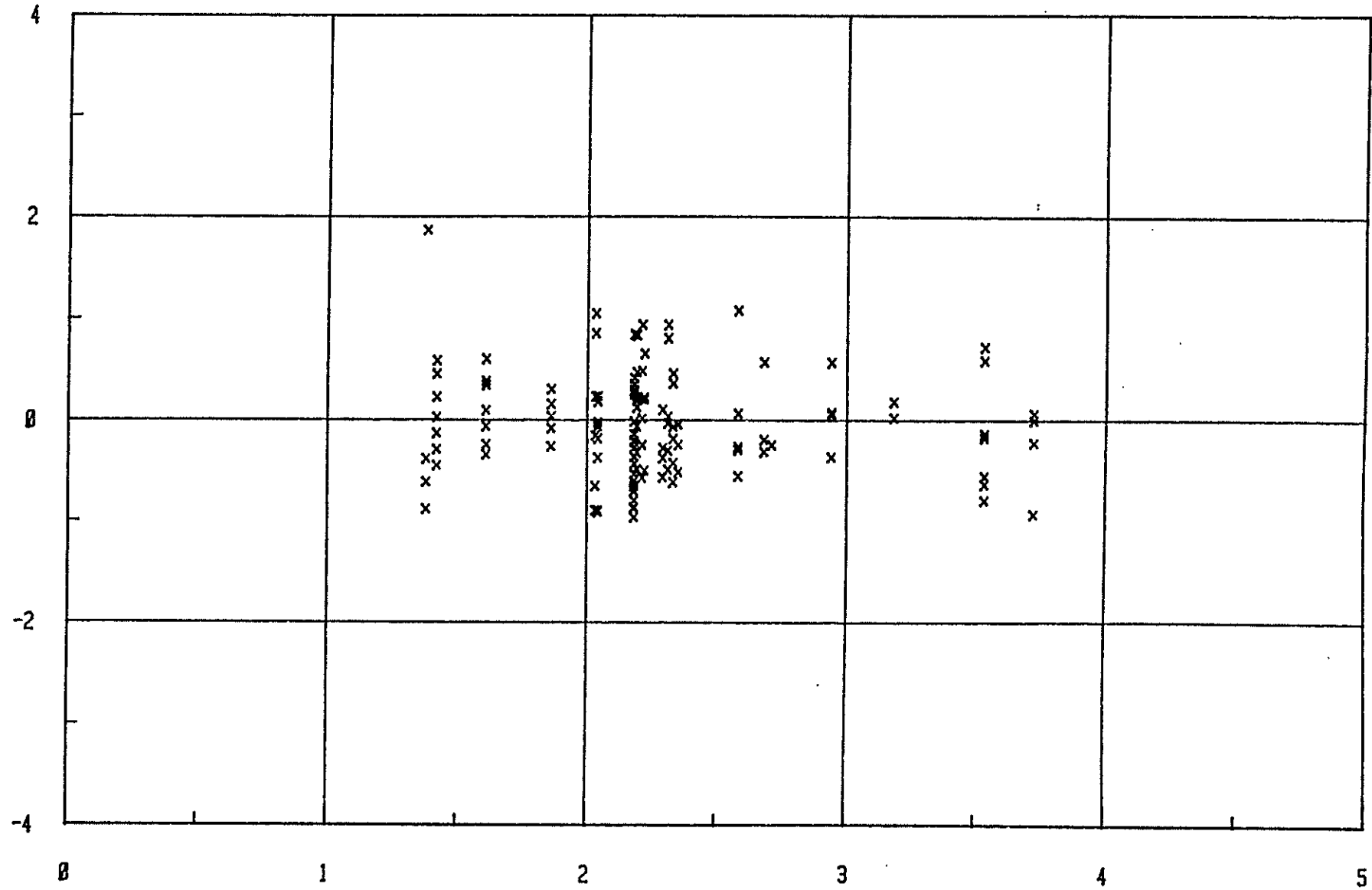
STREAM TEMPERATURE RESIDUALS

WIND SPEED

1983

ERROR (C)

G12



METERS/SECOND

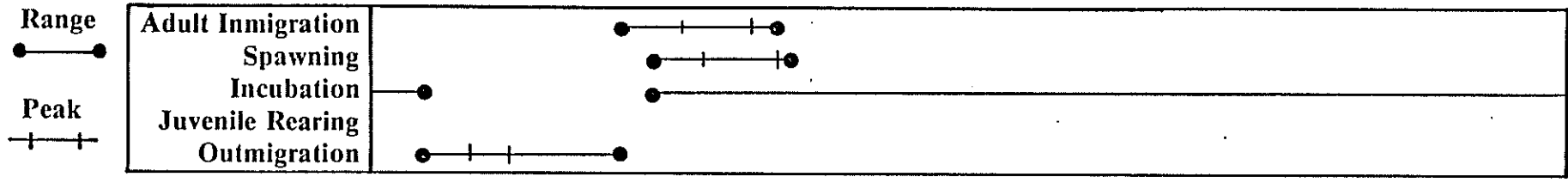
APPENDIX H

Temperature histories for river miles 100, 130 and 150 in relation to the five Pacific salmon life phase activities for natural, Watana filling, Watana-only and Watana/Devil Canyon operational scenarios.

Appendix H. Temperature history plots for
river miles 150, 130 and 100

<u>Salmon species and scenarios</u>	<u>Pages</u>
Pink salmon - operating project	H1 - H12
Pink salmon - Watana filling	H13 - H21
Coho salmon - operating project	H22- H33
Coho salmon - Watana filling	H34 - H42
Sockeye salmon - operating project	H43 - H54
Sockeye salmon - Watana filling	H55 - H63
Chum salmon - operating project	H64 - H75
Chum salmon - Watana filling	H76 - H84
Chinook salmon - operating project	H85 - H96
Chinook salmon - Watana filling	H97 - H105

PINK SALMON

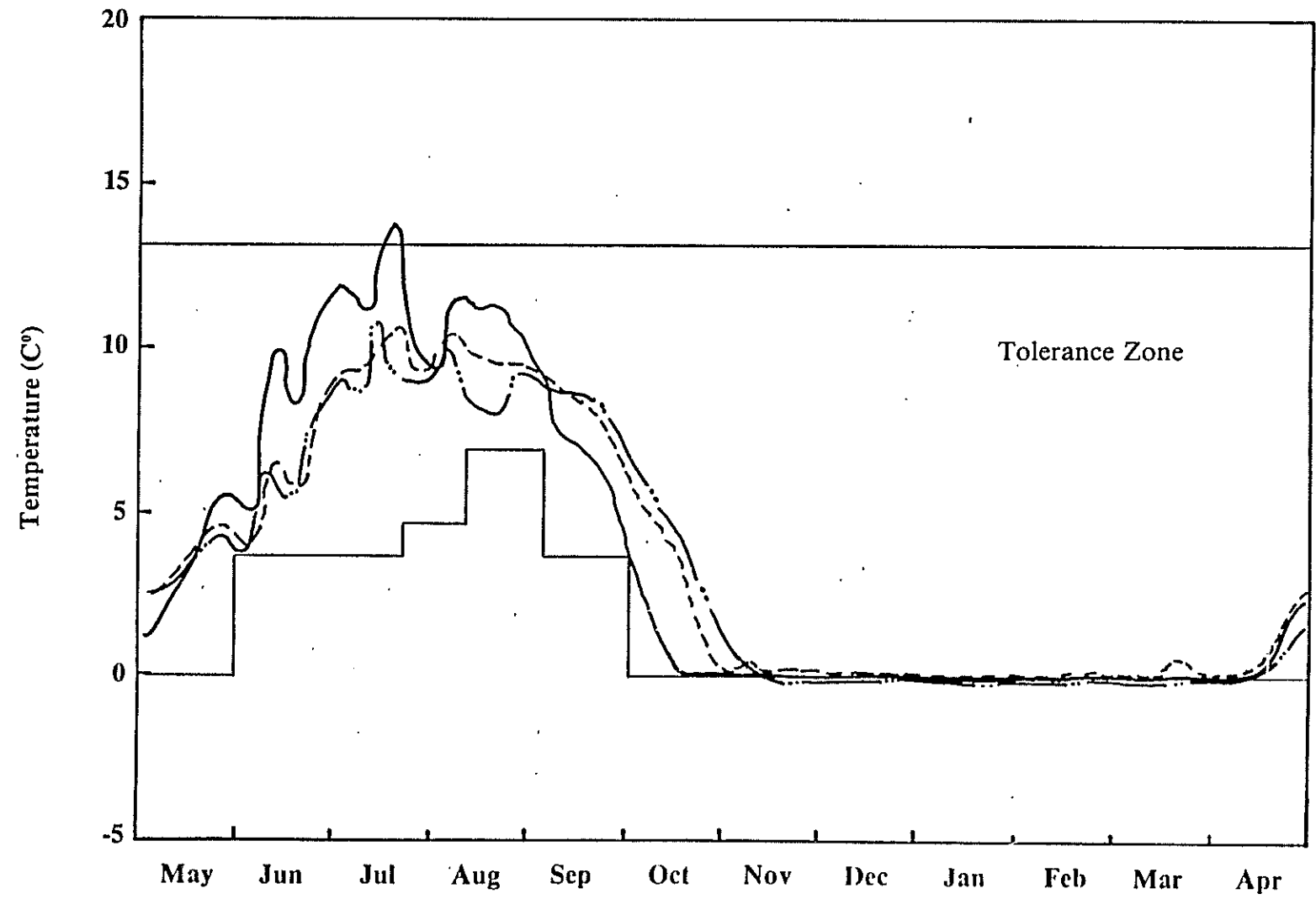


TH

Devil's Canyon
2002
— · · —

Watana
1996
- - - - -

Natural
— — — — —

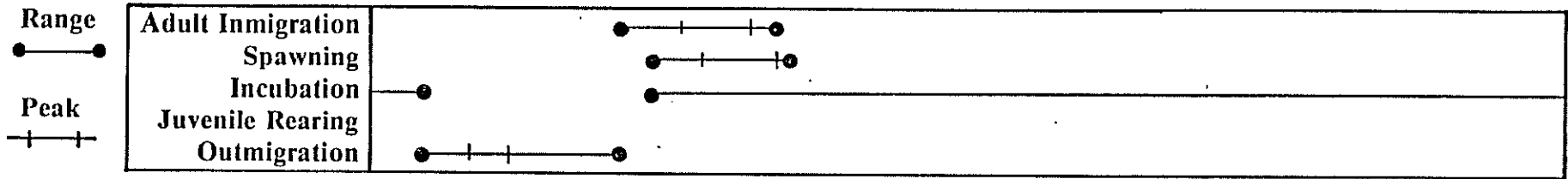


1971-1972

River Mile 100



PINK SALMON

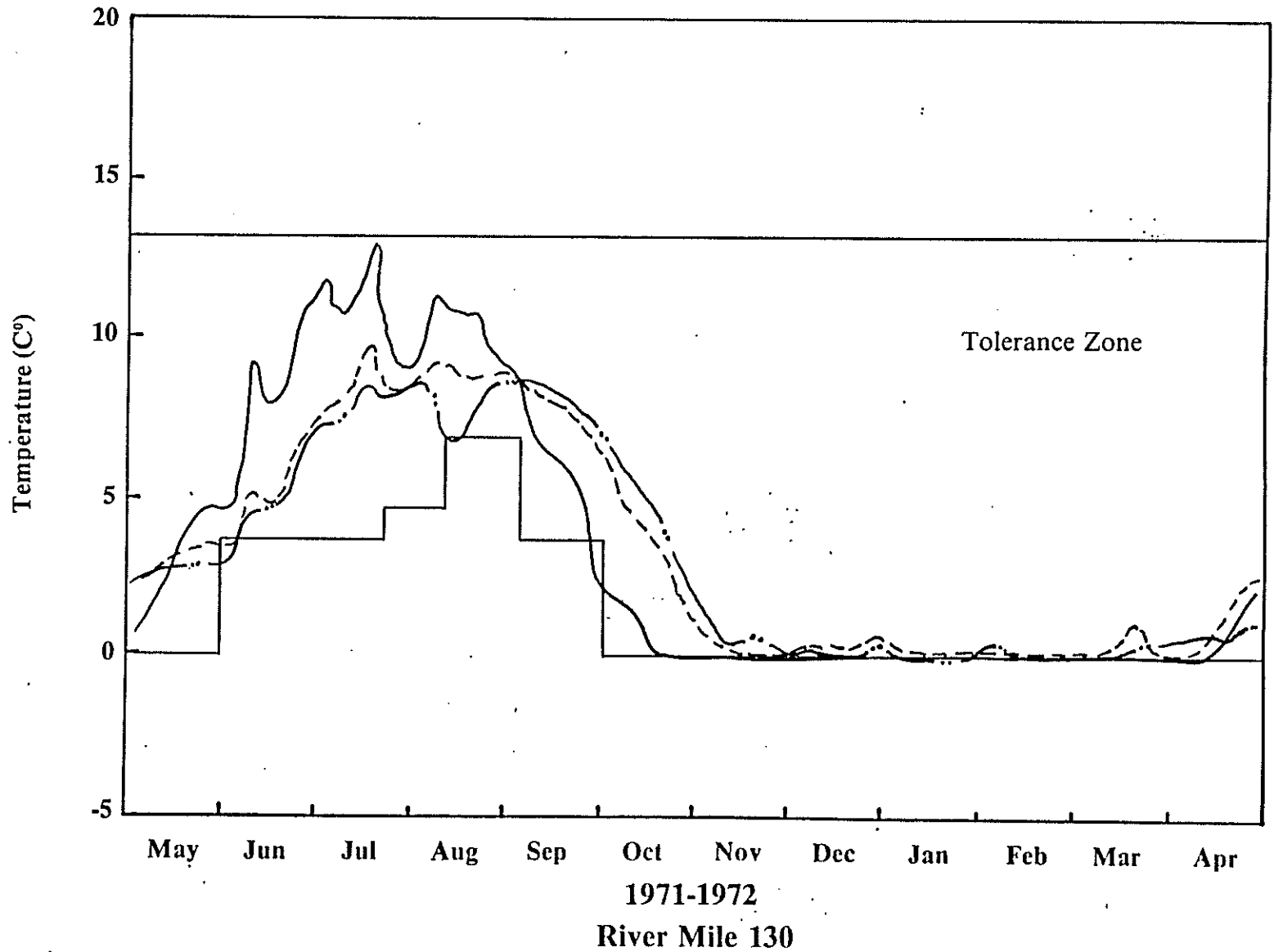


Devil's Canyon
2002

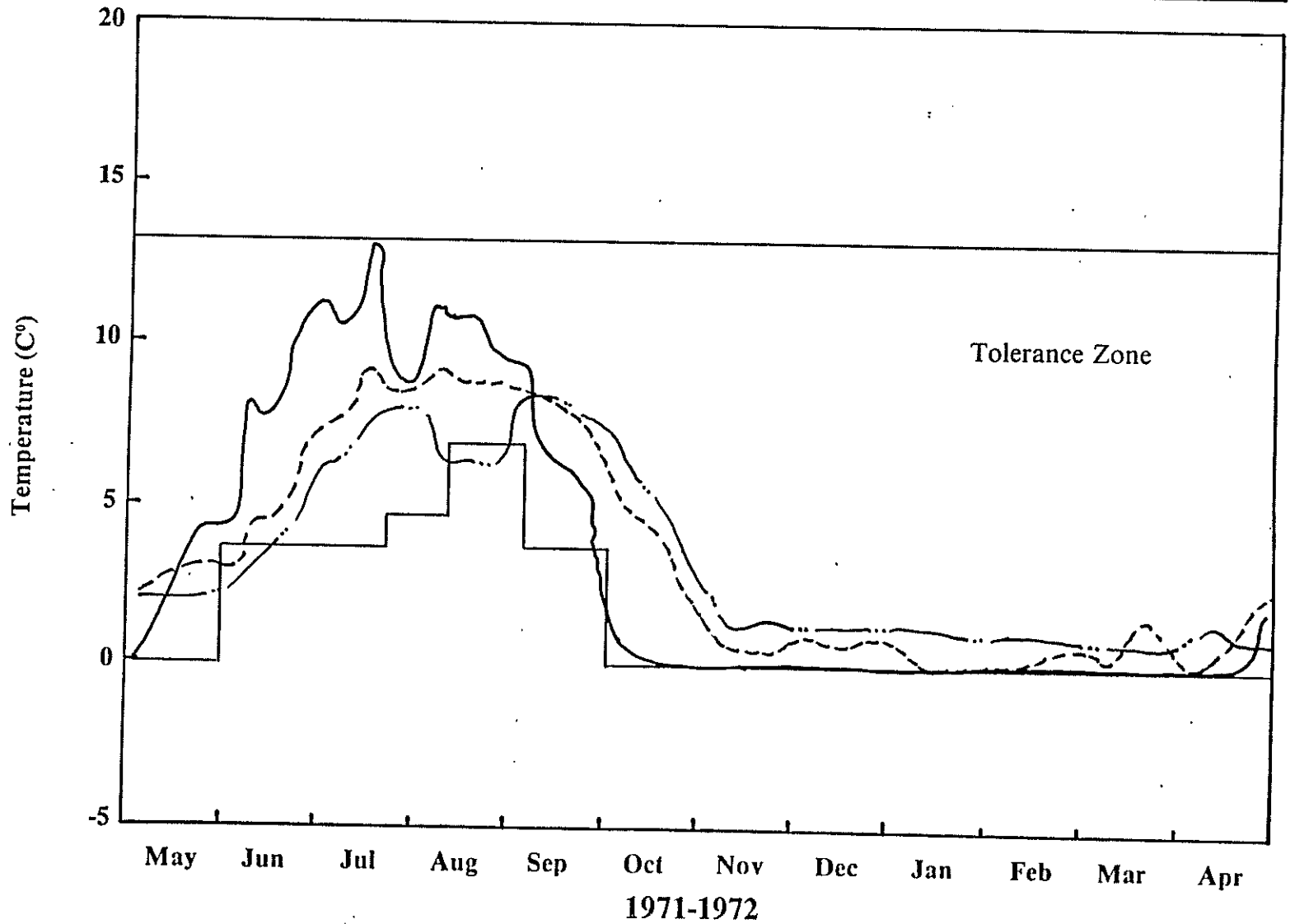
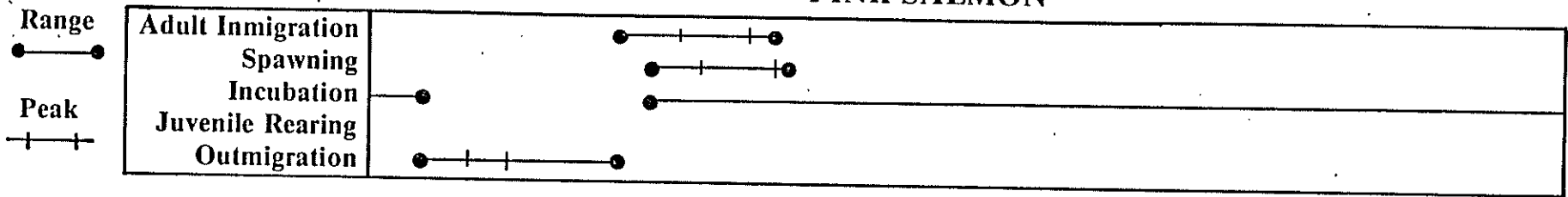
H₂

Watana
1996

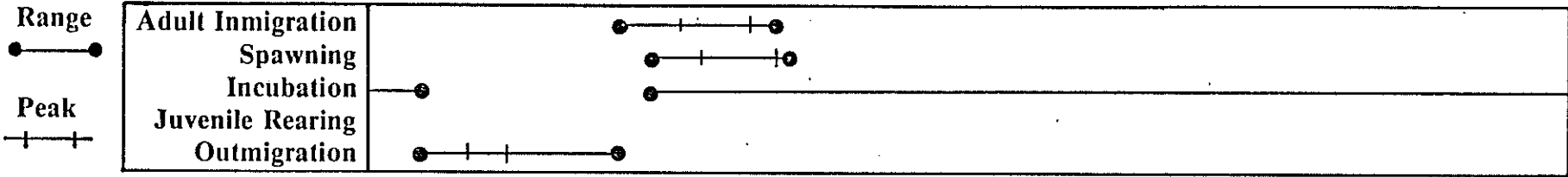
Natural



PINK SALMON



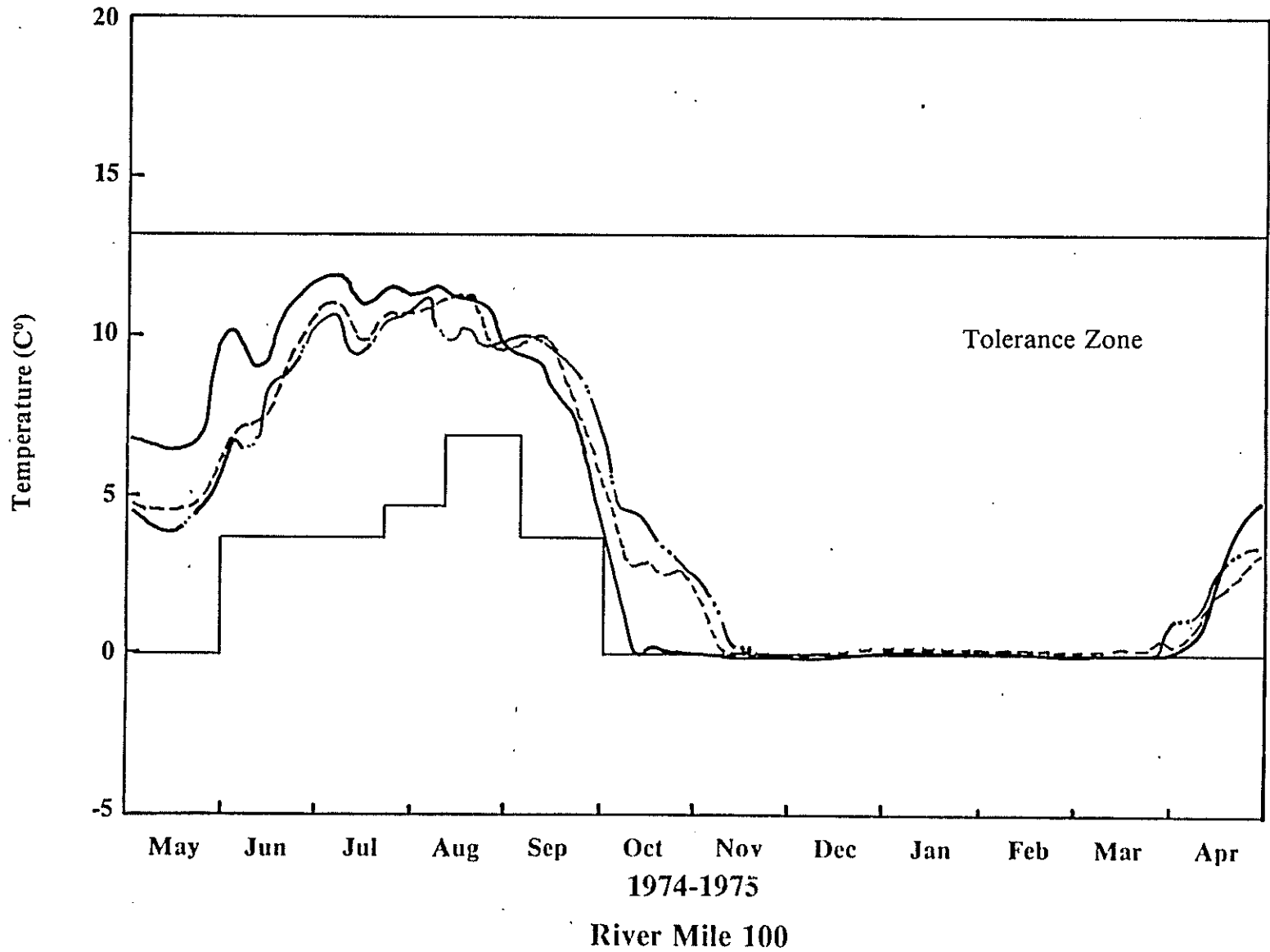
PINK SALMON



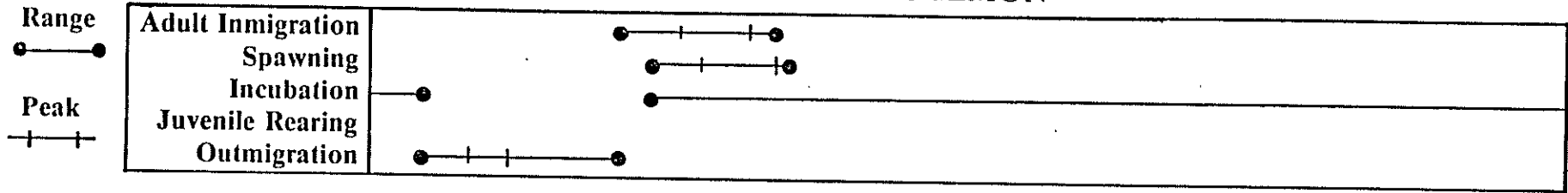
Devil's Canyon
 2002

 Watana
 1996

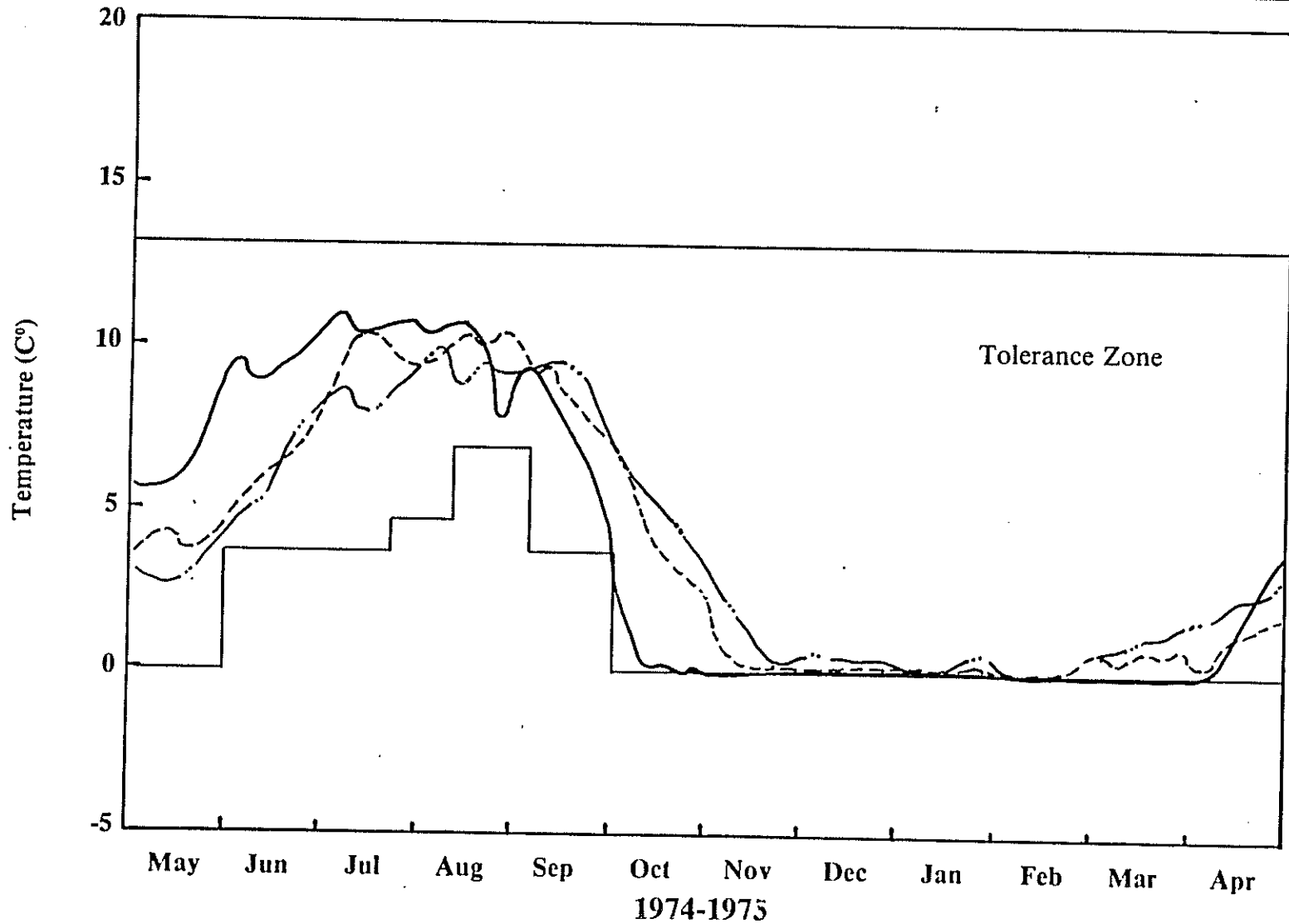
 Natural



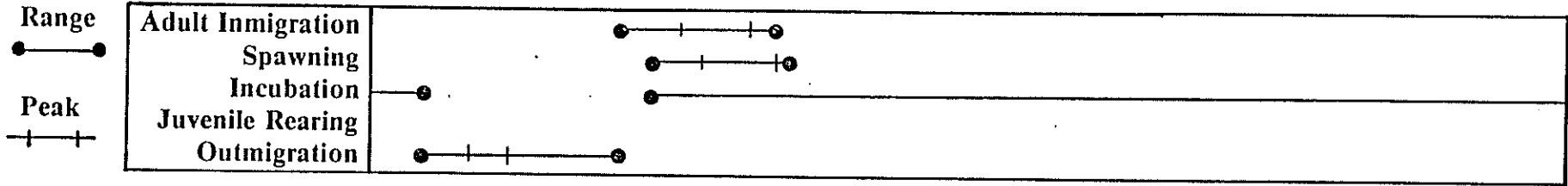
PINK SALMON



Devil's Canyon
 2002
 — · — · —
 Watana
 1996
 - - - - -
 Natural
 —————



PINK SALMON

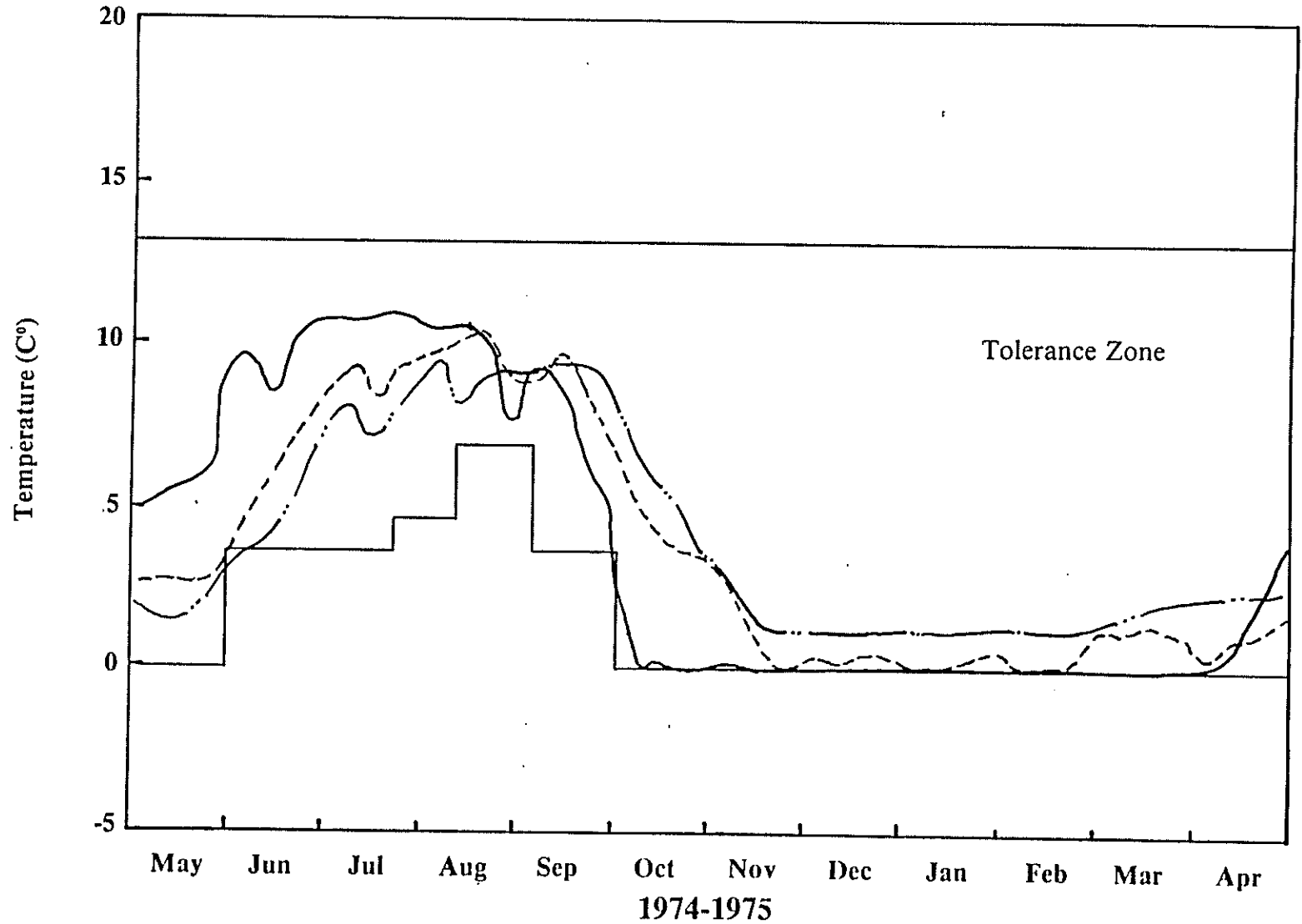


Devil's Canyon
2002

9H

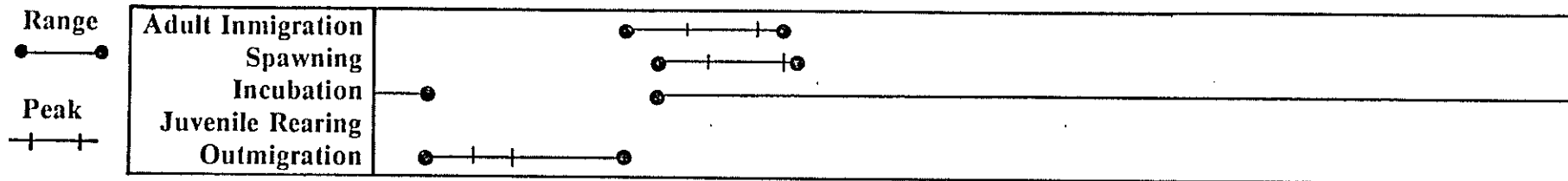
Watana
1996

Natural



River Mile 150

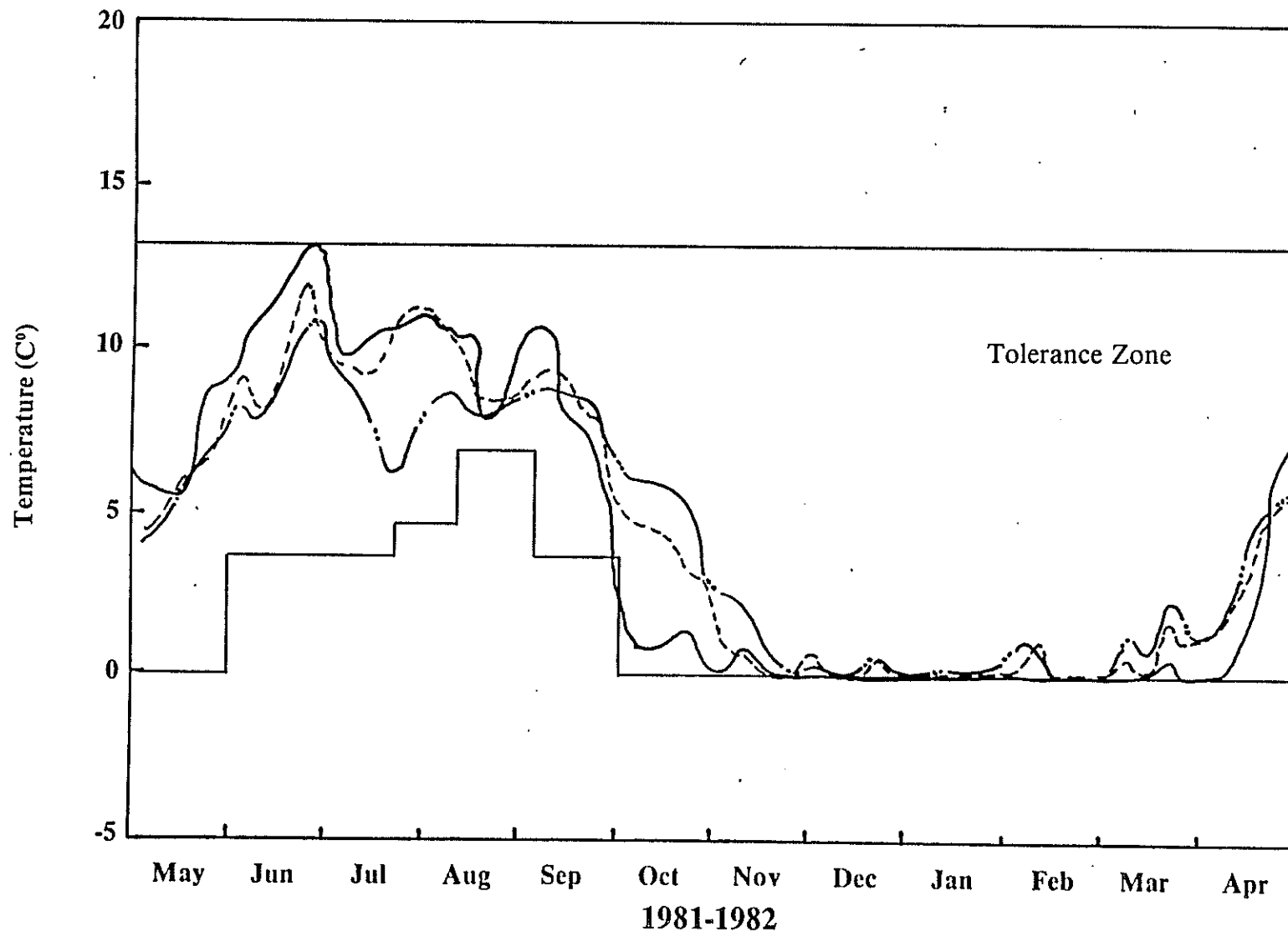
PINK SALMON



Devil's Canyon
2002

Watana
1996

Natural

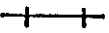


PINK SALMON

Range



Peak



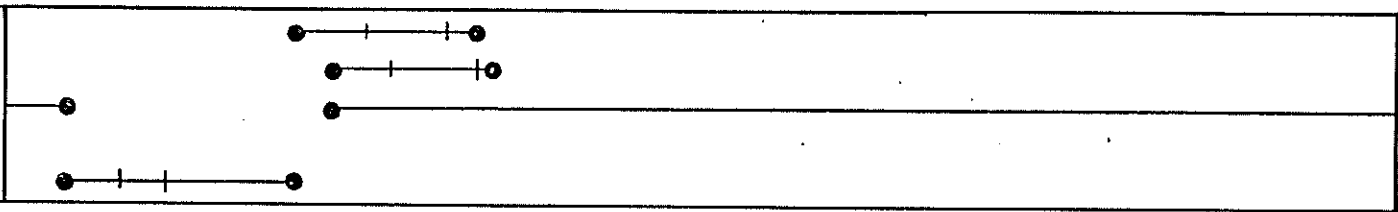
Adult Immigration

Spawning

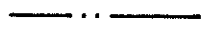
Incubation

Juvenile Rearing

Outmigration



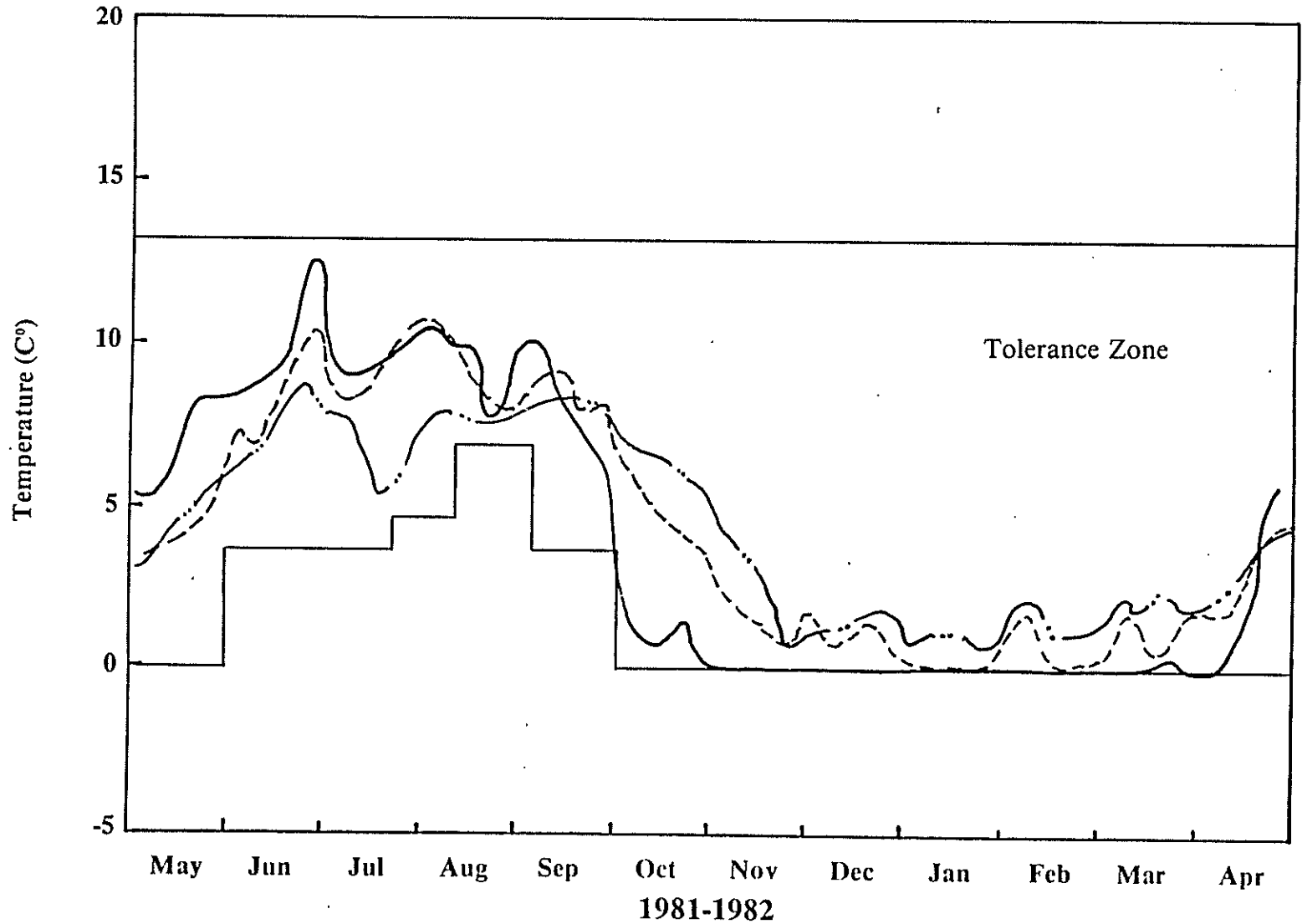
Devil's Canyon
2002



Watana
1996

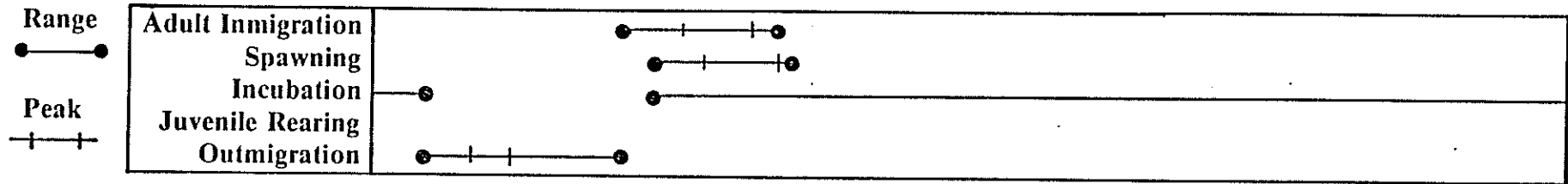


Natural

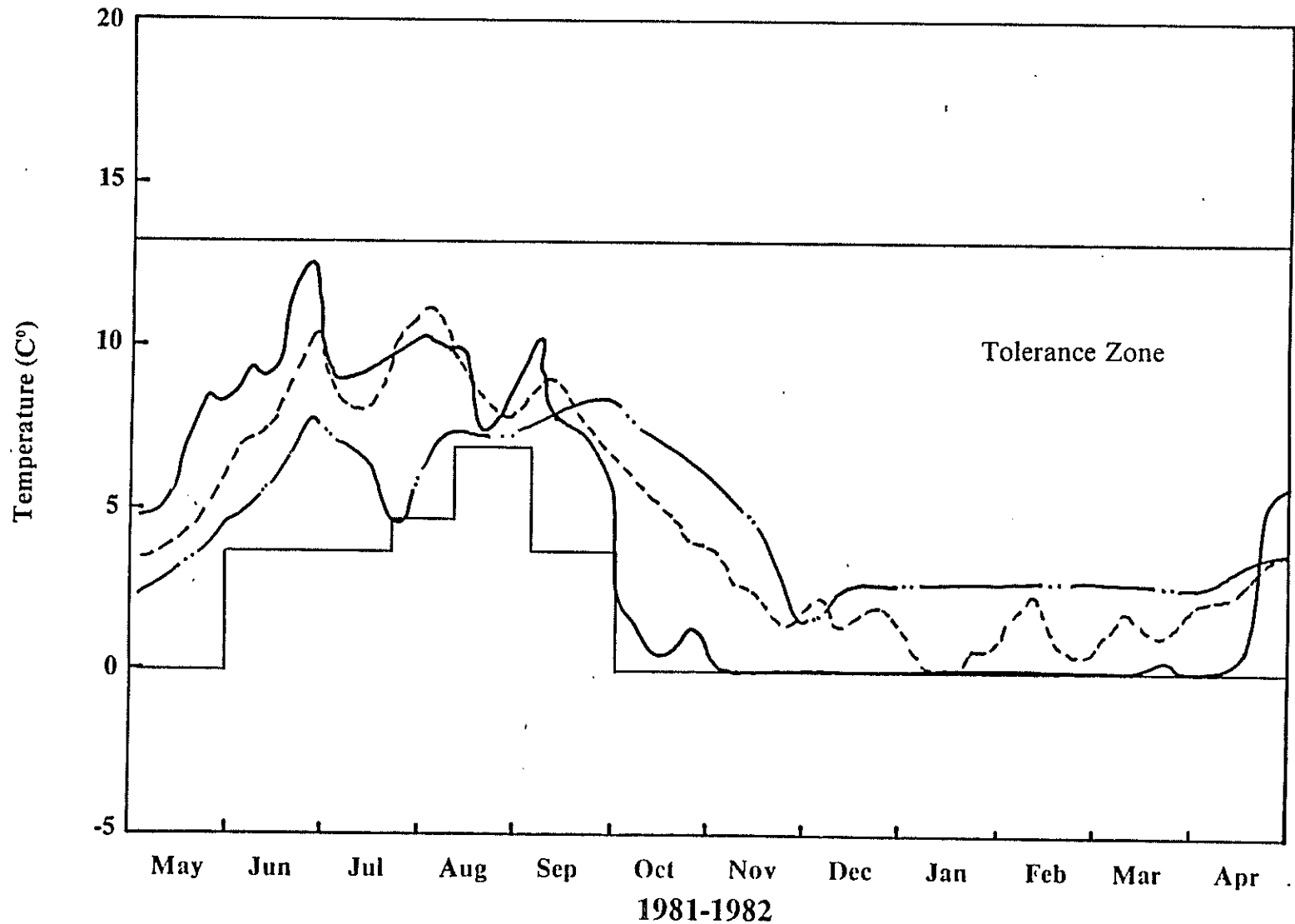


River Mile 130

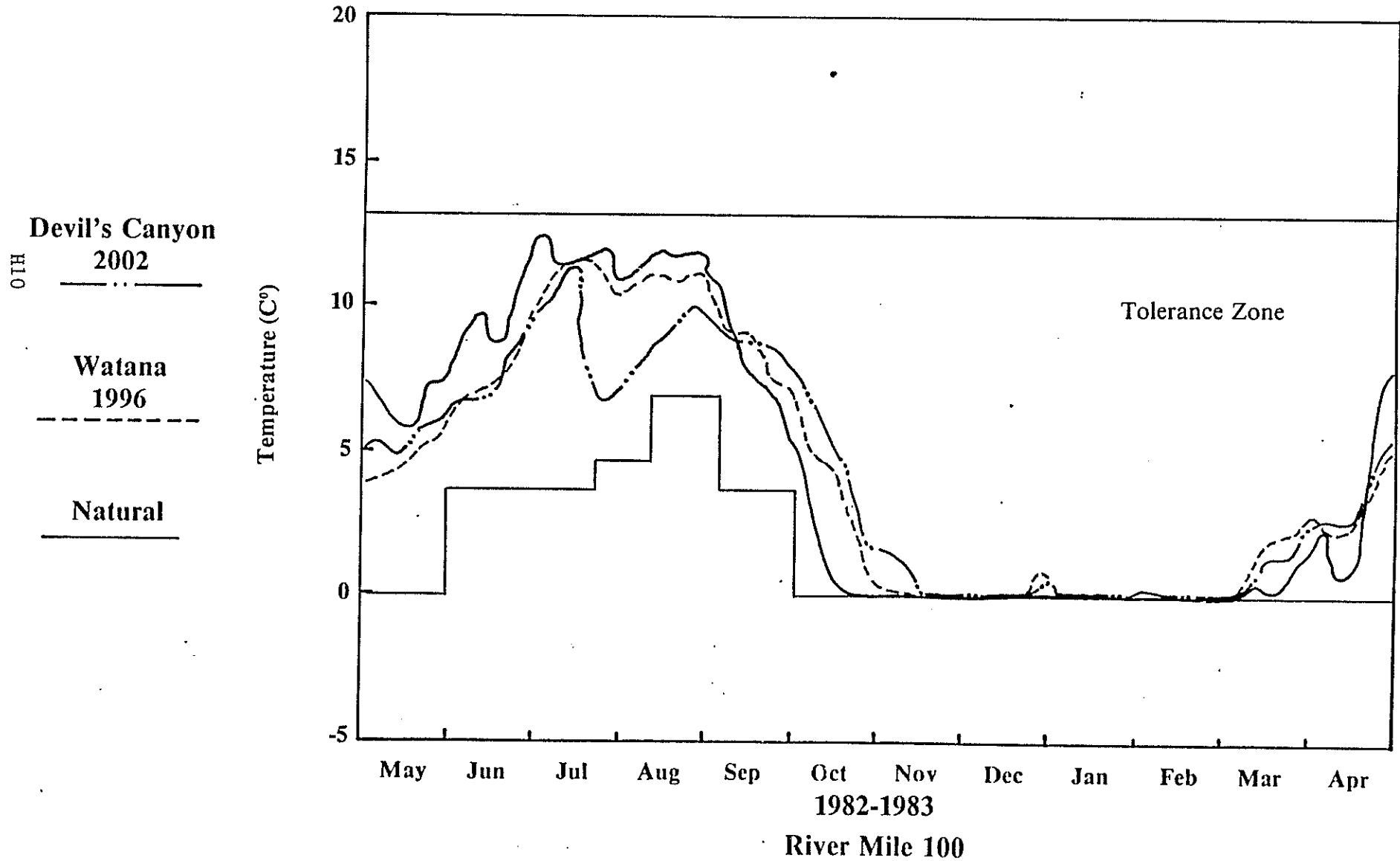
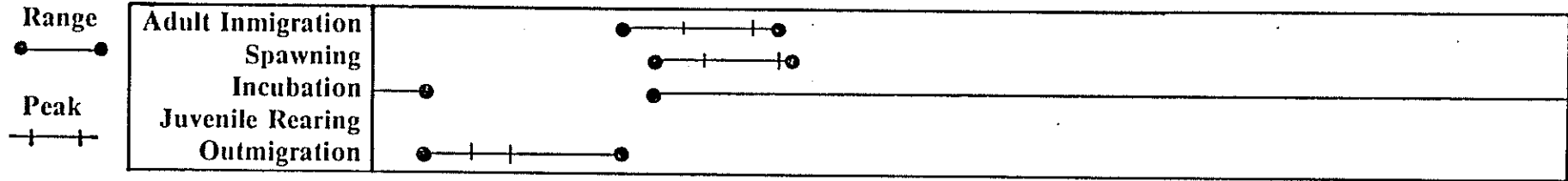
PINK SALMON



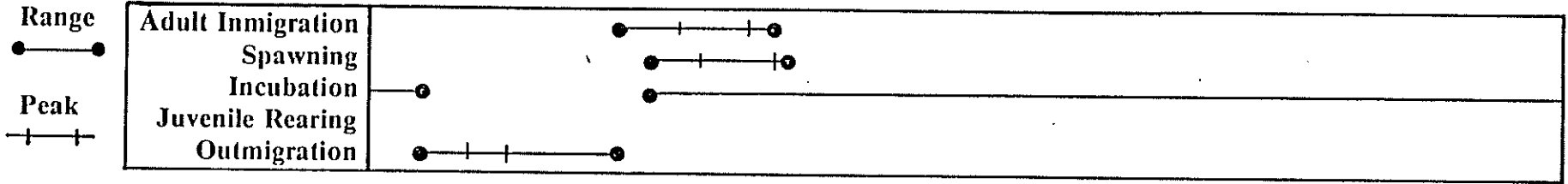
6H Devil's Canyon
 2002
 — · — · —
 Watana
 1996
 - - - - -
 Natural
 —————



PINK SALMON



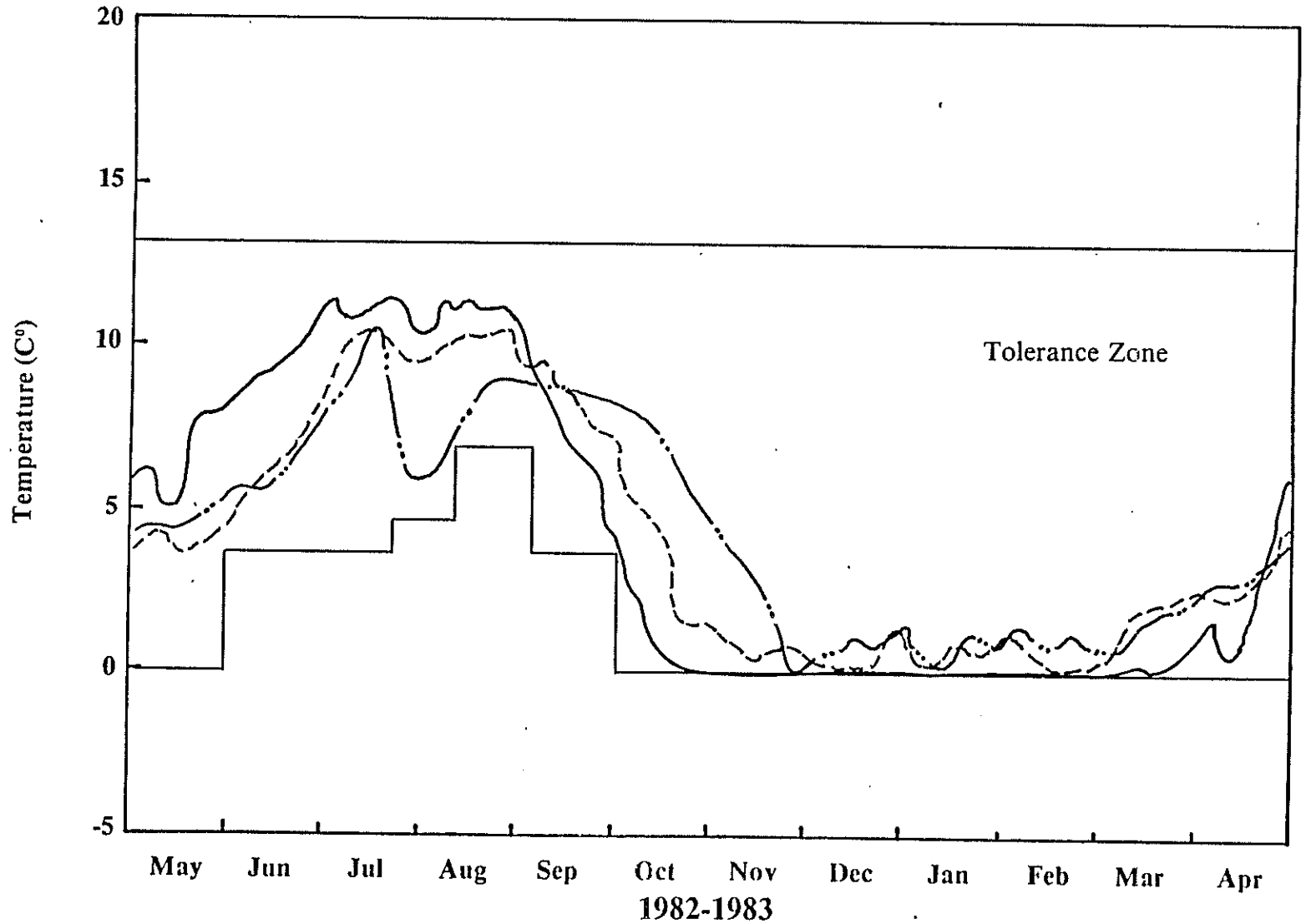
PINK SALMON



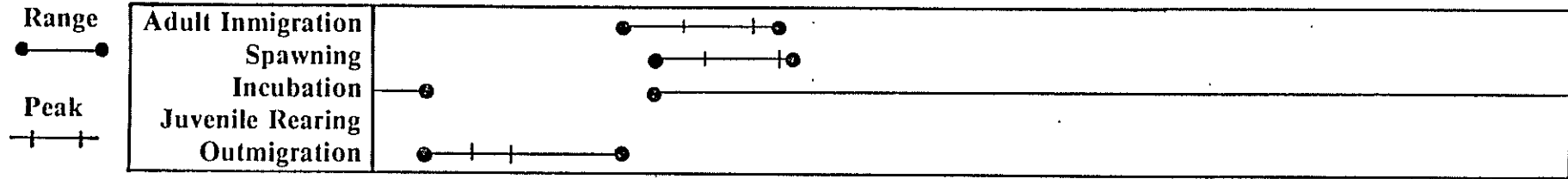
Devil's Canyon
 2002

 Watana
 1996

 Natural



PINK SALMON

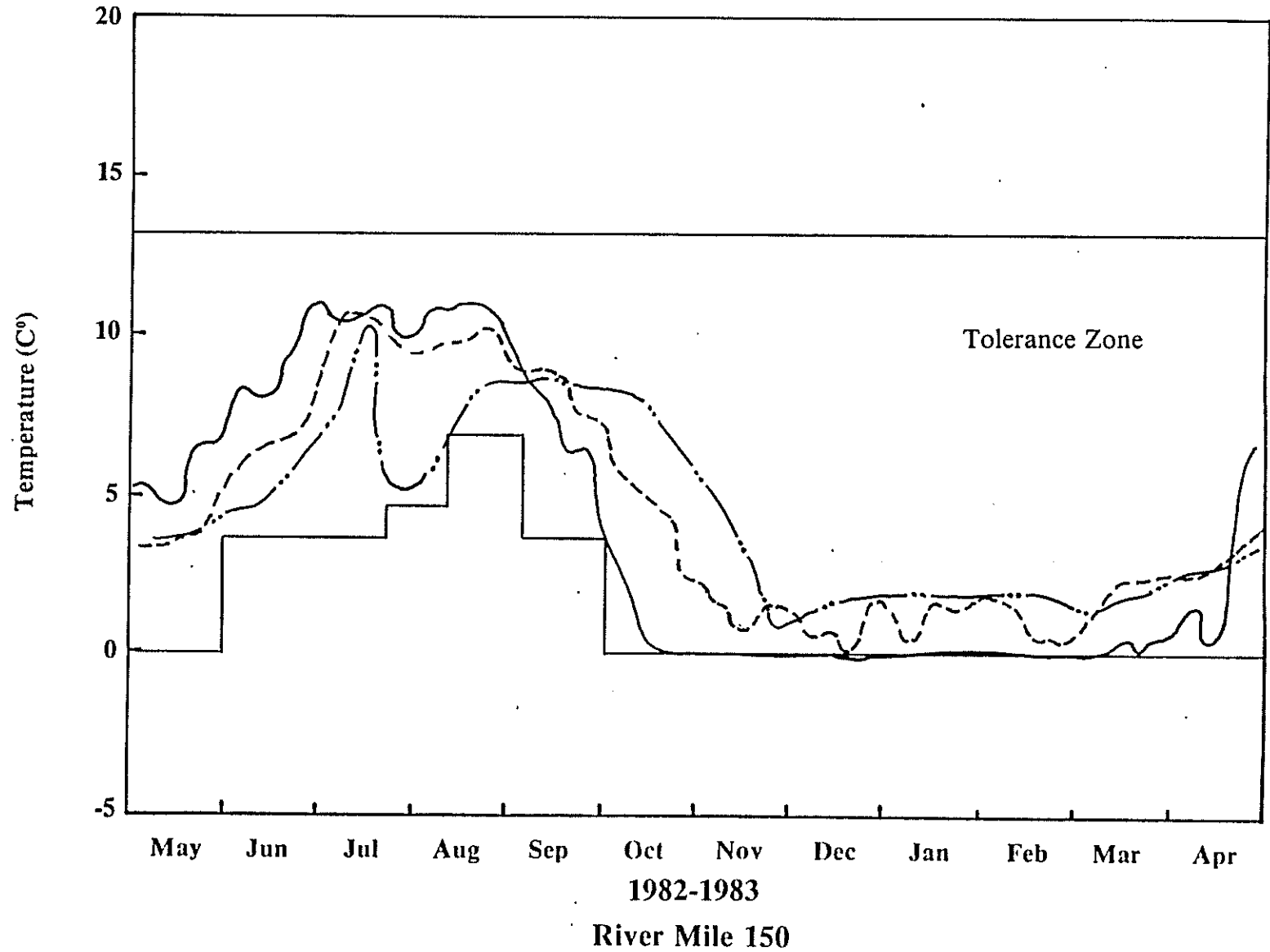


H12

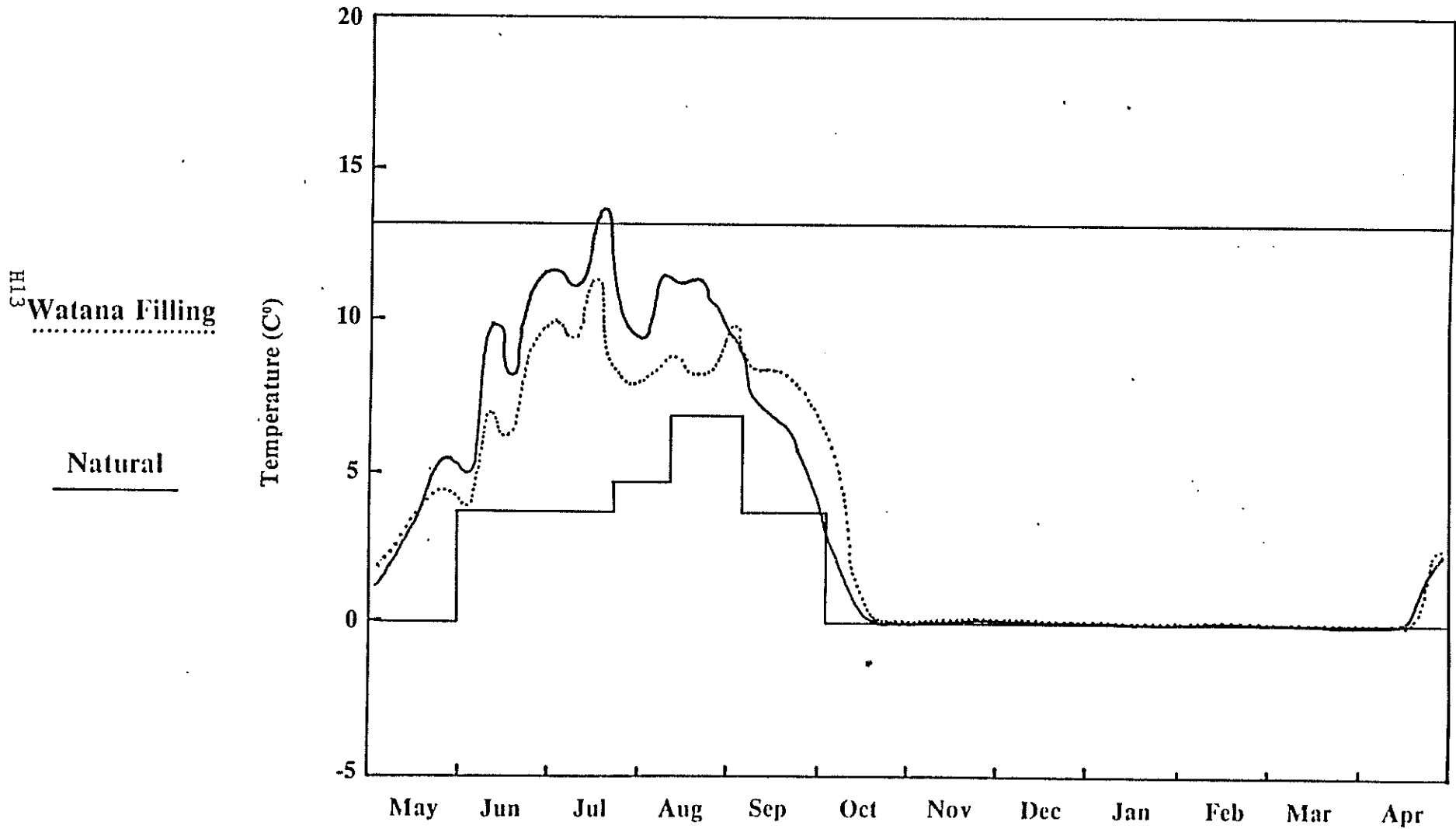
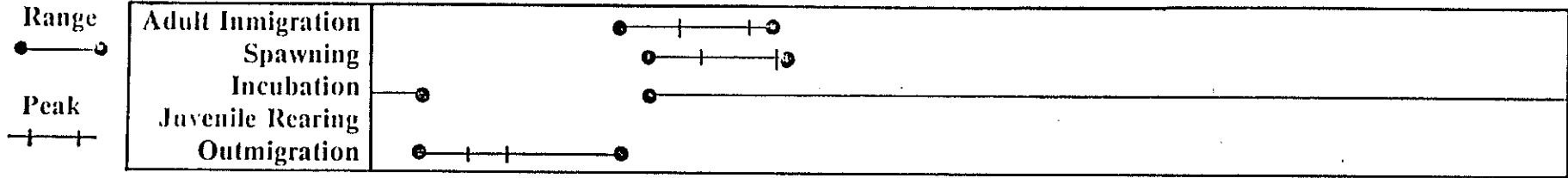
Devil's Canyon
2002
— · · —

Watana
1996
- - - - -

Natural
— — — — —



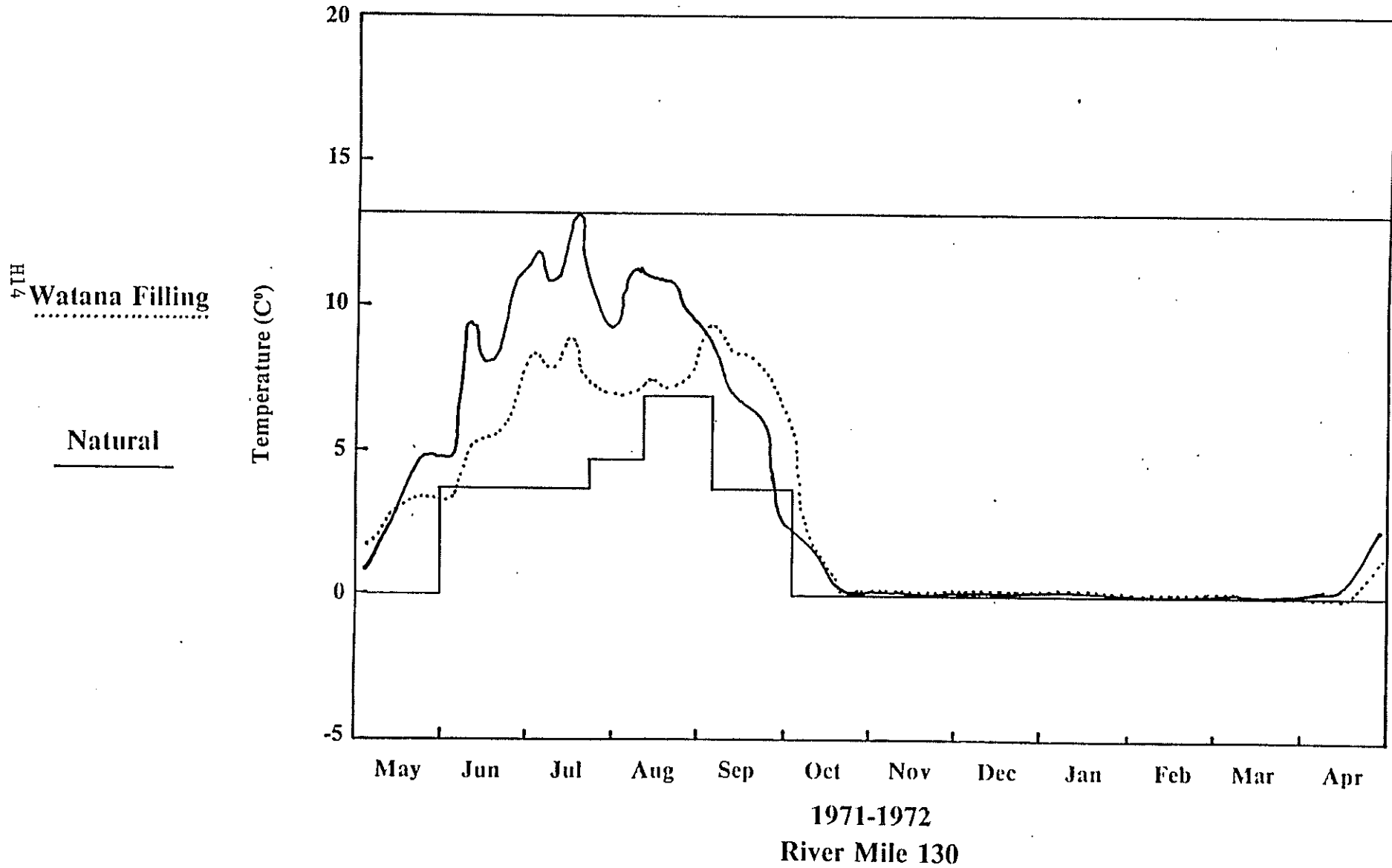
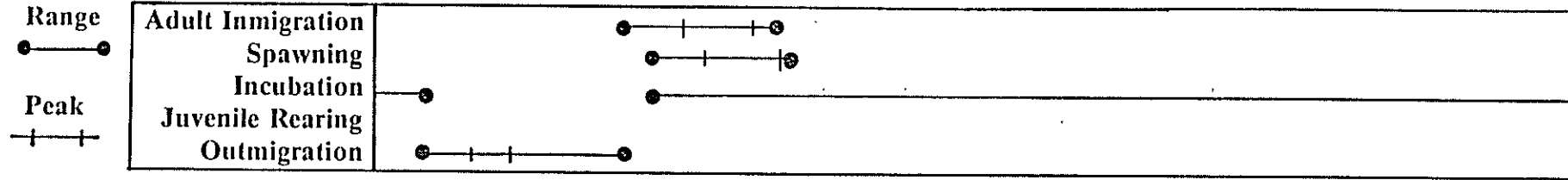
PINK SALMON



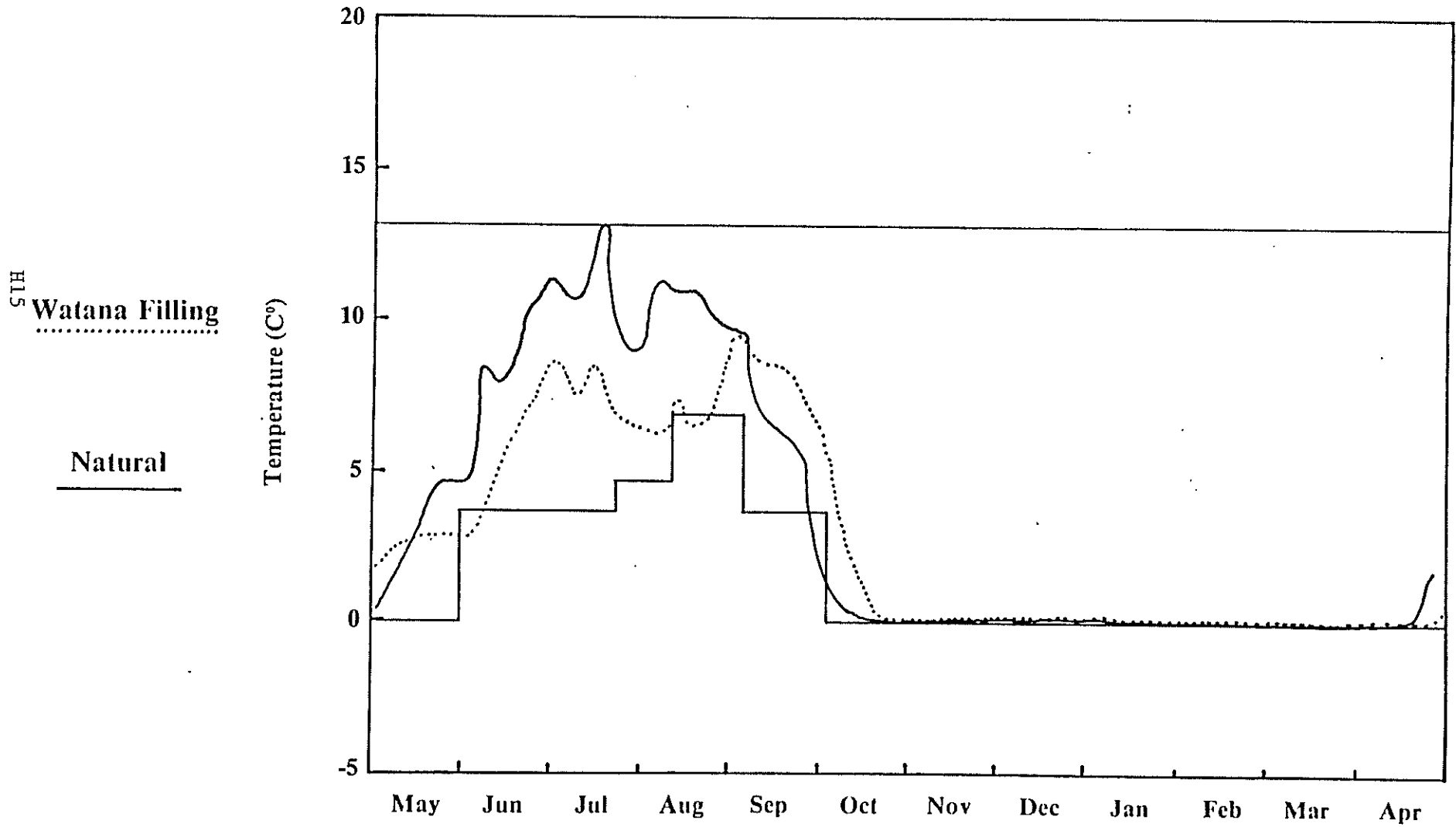
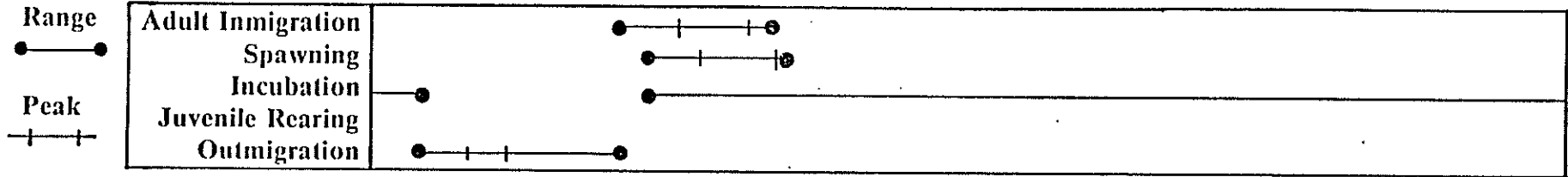
1971-1972

River Mile 190

PINK SALMON



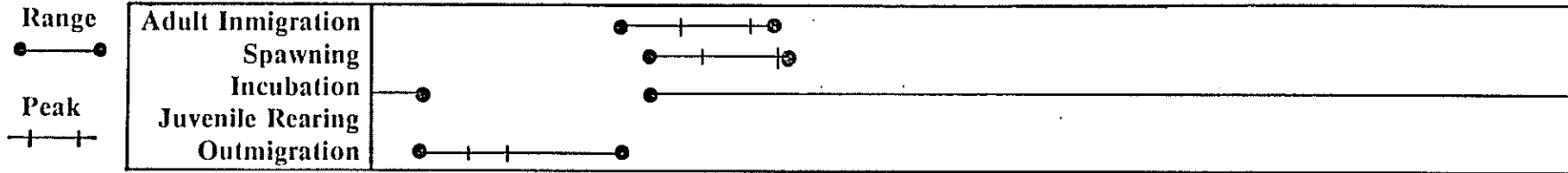
PINK SALMON



1971-1972

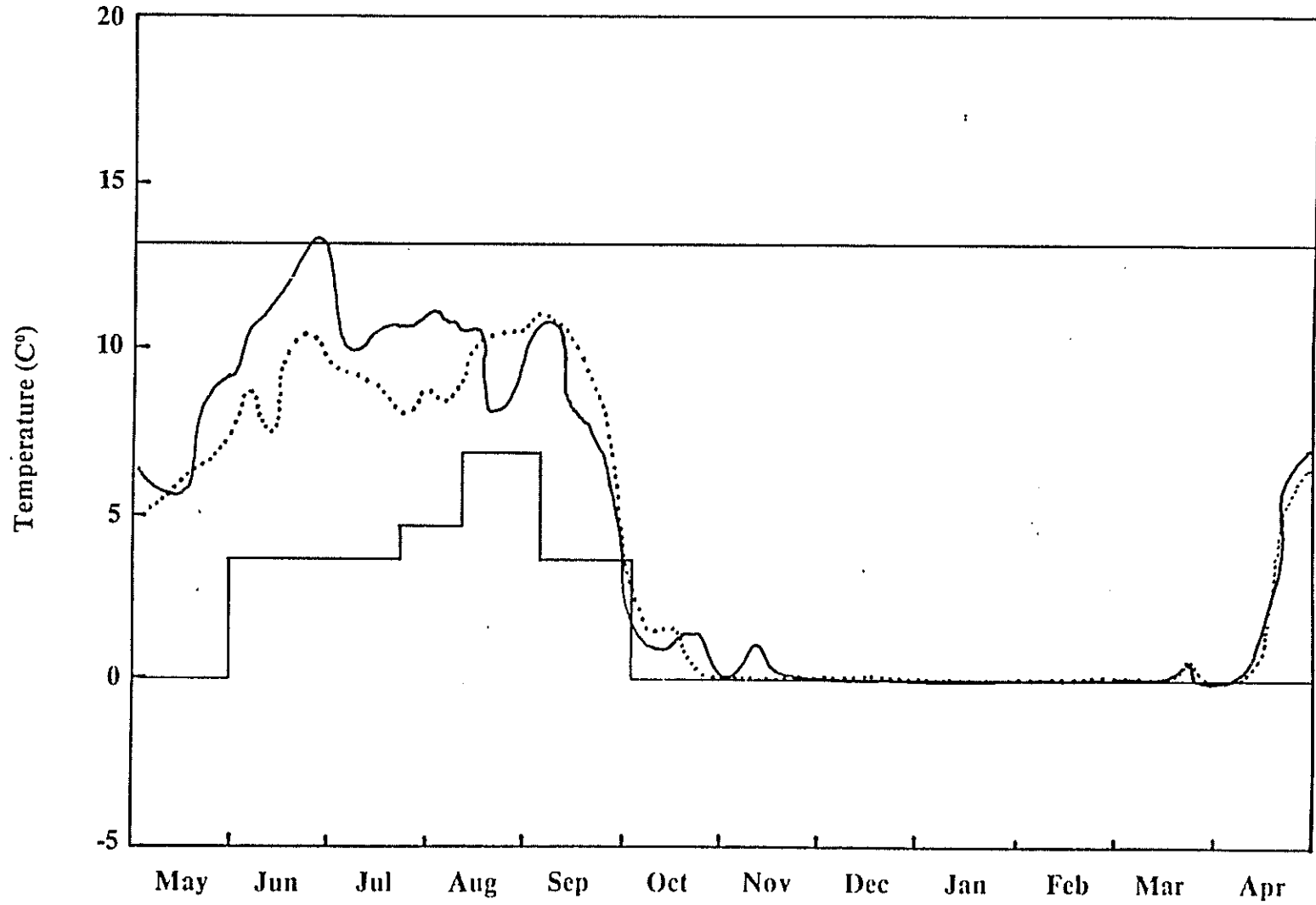
River Mile 150

PINK SALMON



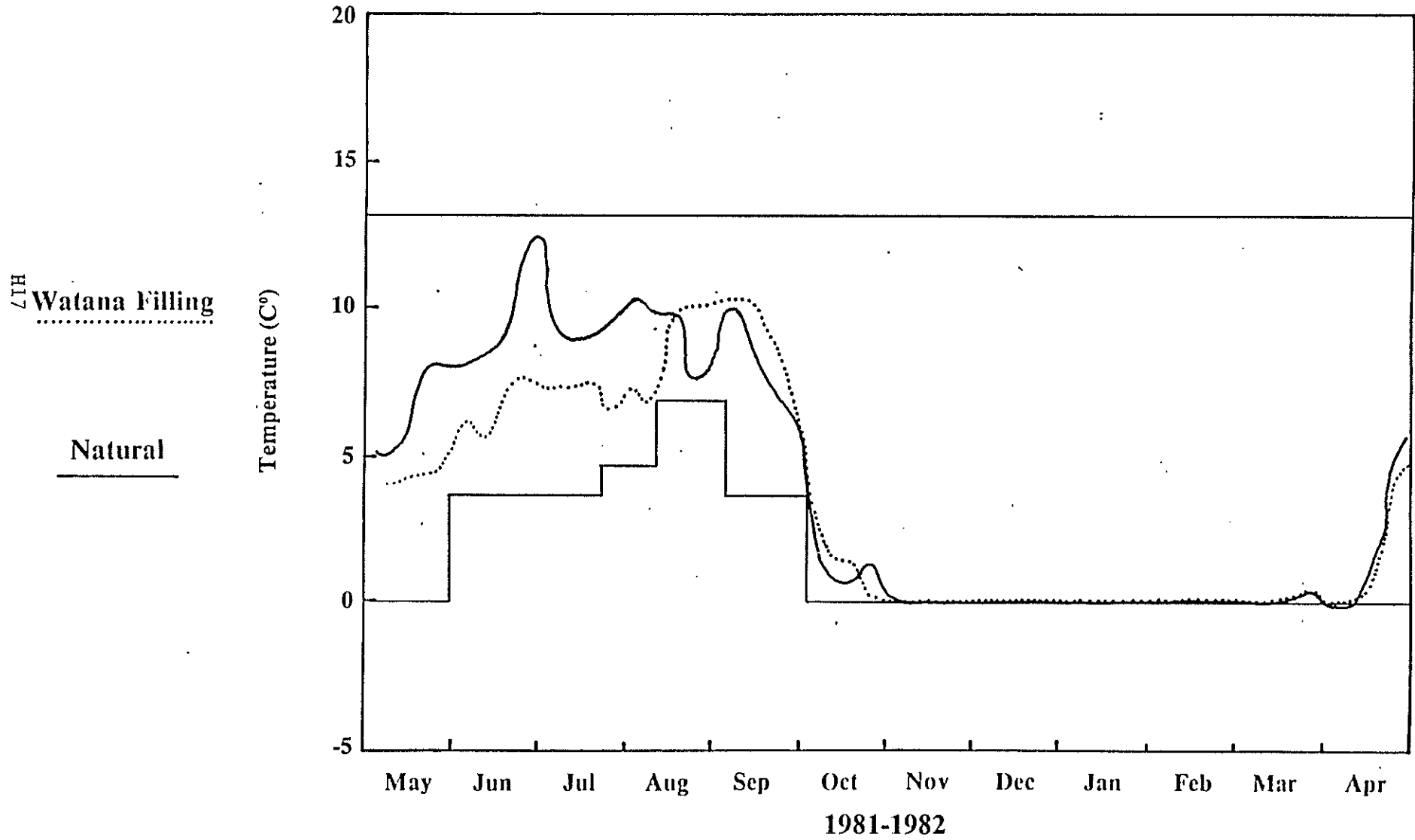
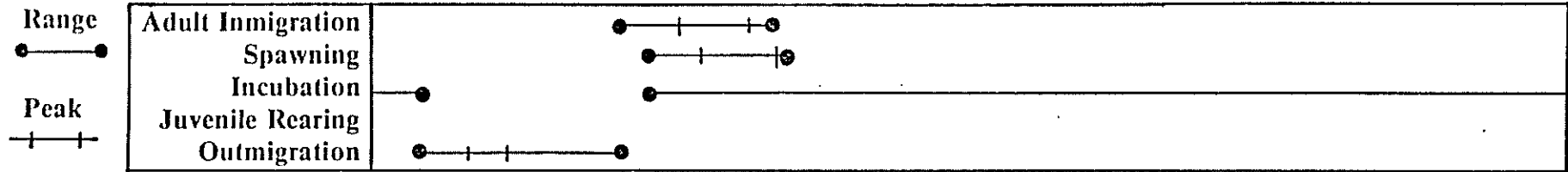
⁹¹H
Watana Filling

Natural



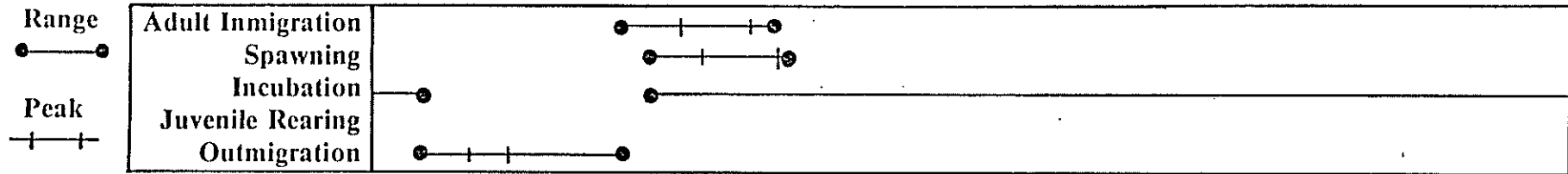
1981-1982
River Mile 100

PINK SALMON



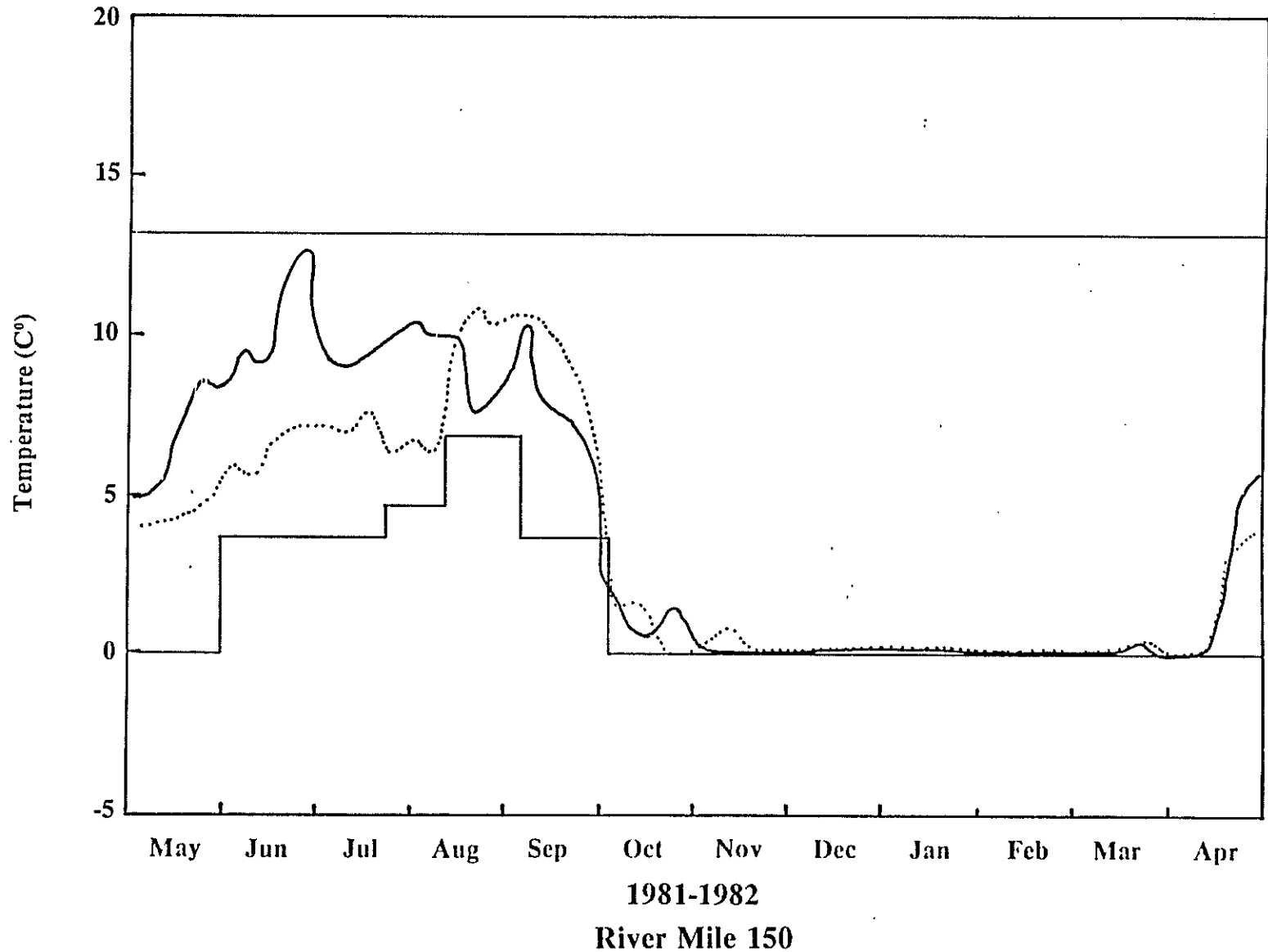
River Mile 130

PINK SALMON



818 **Watana Filling**

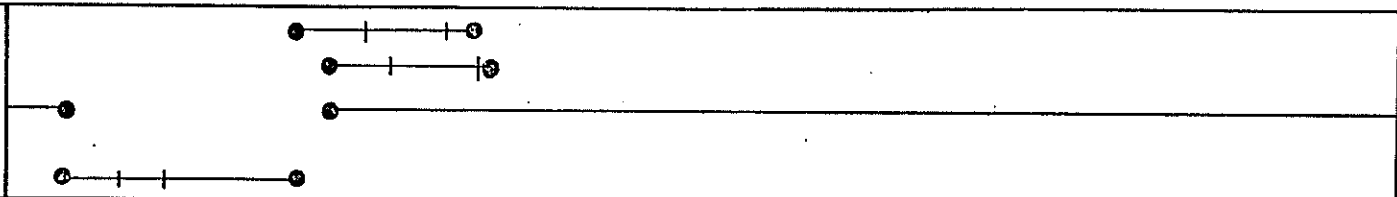
Natural



PINK SALMON

Range
●—●
Peak
+—+

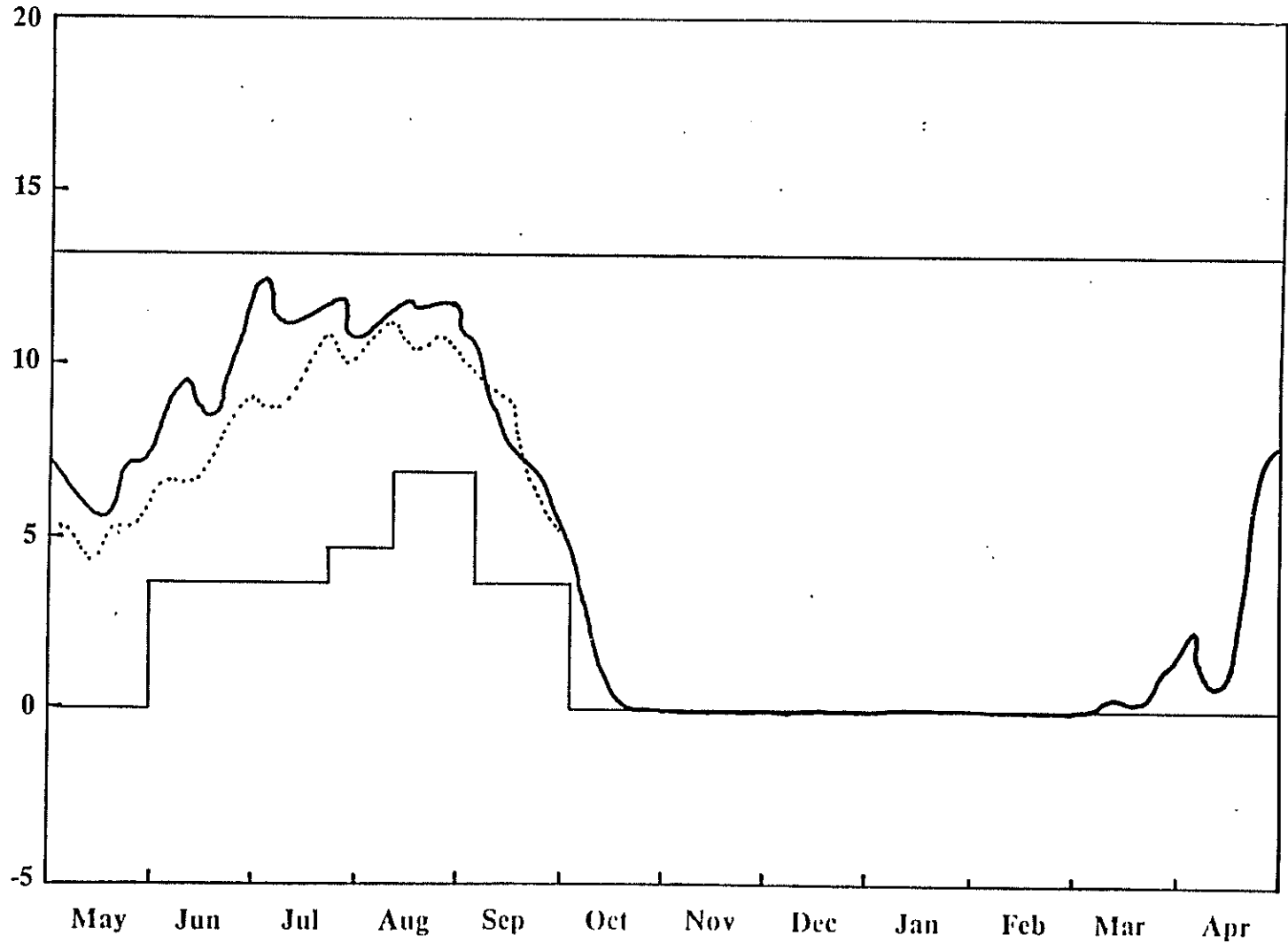
Adult Immigration
Spawning
Incubation
Juvenile Rearing
Outmigration



6TH
Watana Filling

Natural

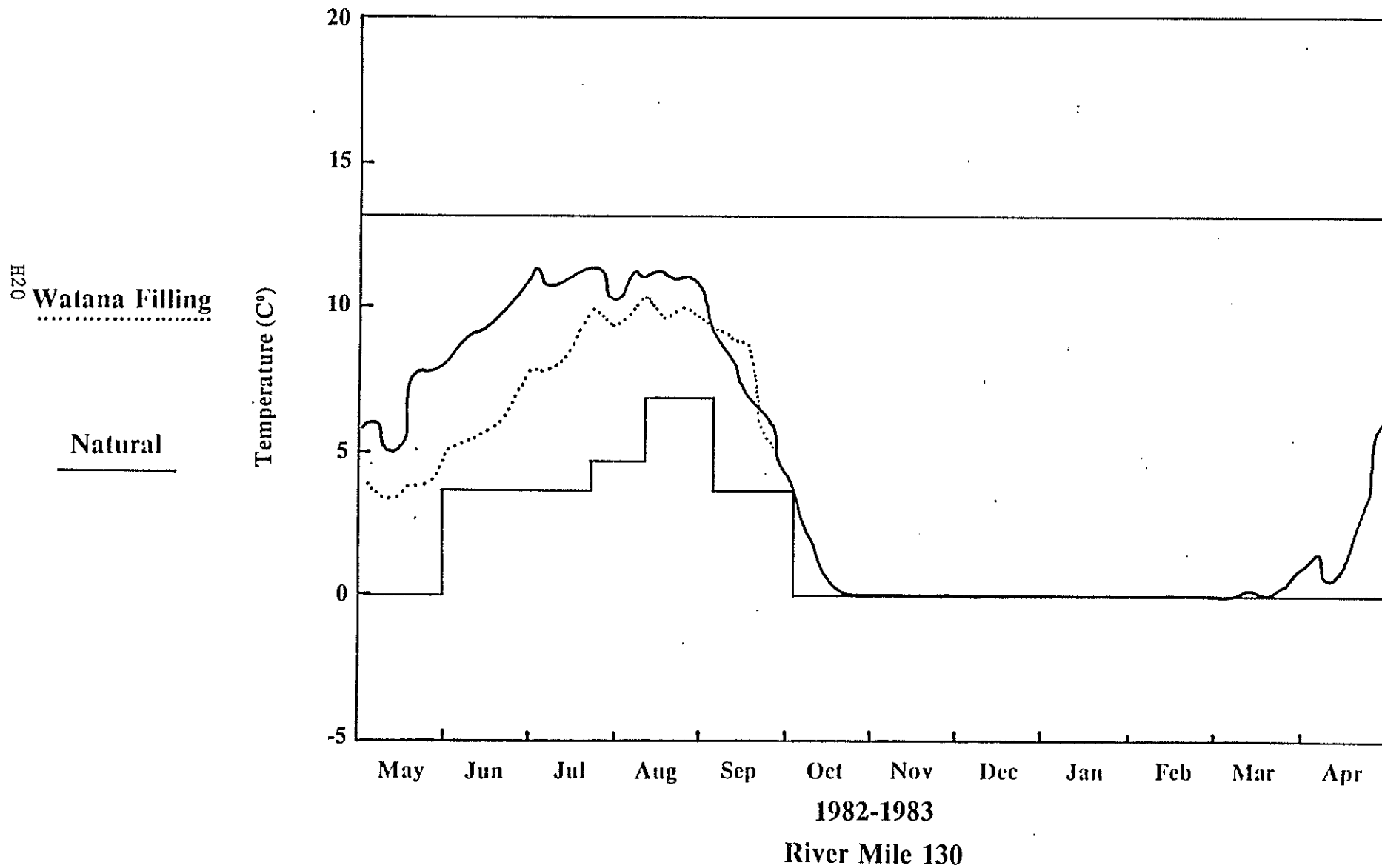
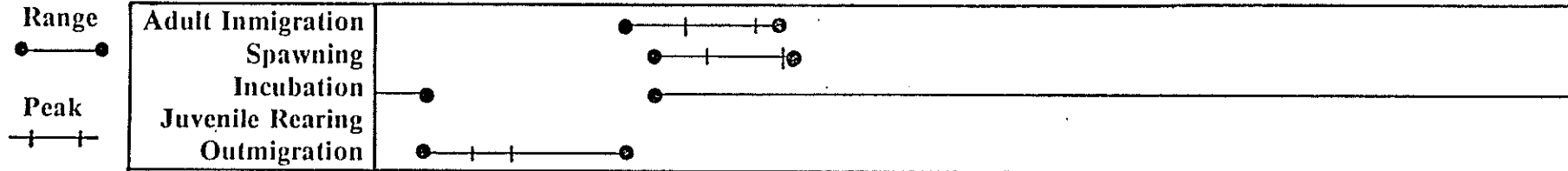
Temperature (C°)



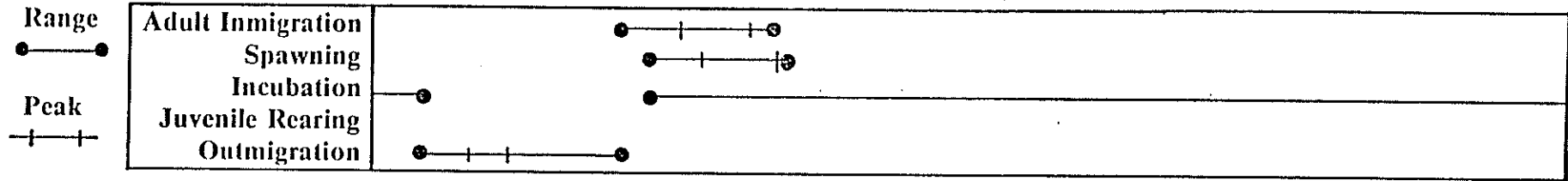
1982-1983

River Mile 100

PINK SALMON

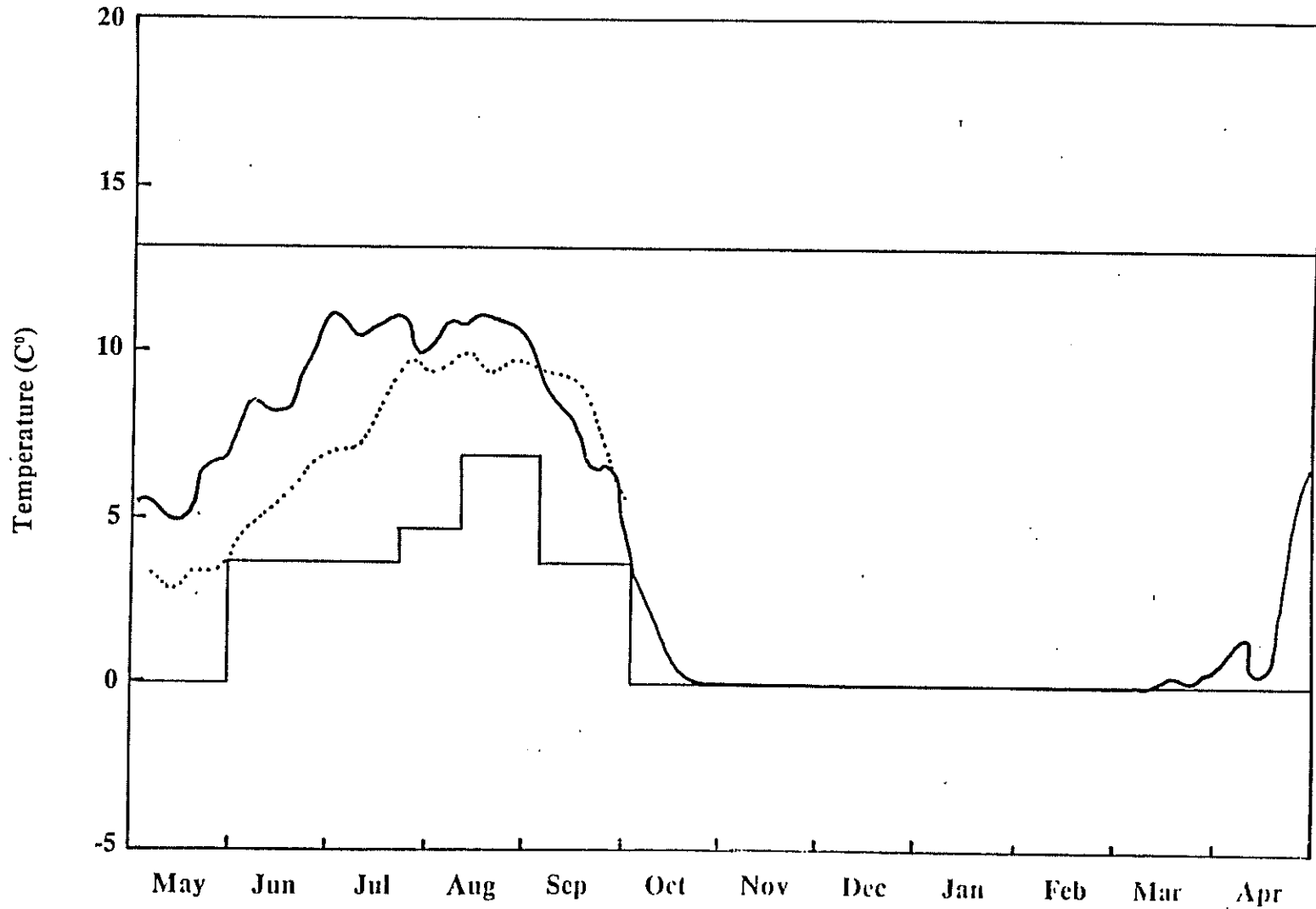


PINK SALMON

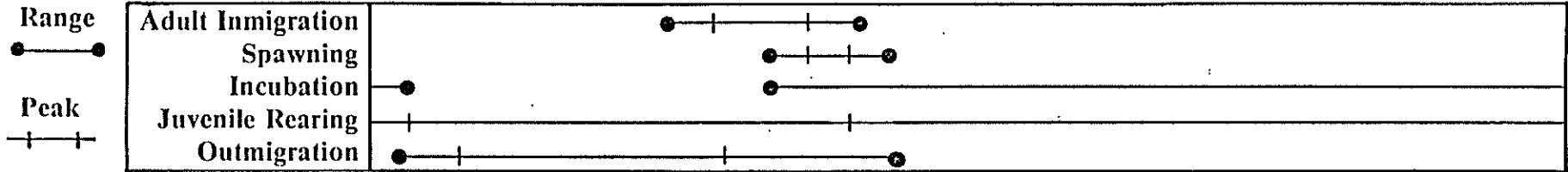


H21
Watana Filling

Natural



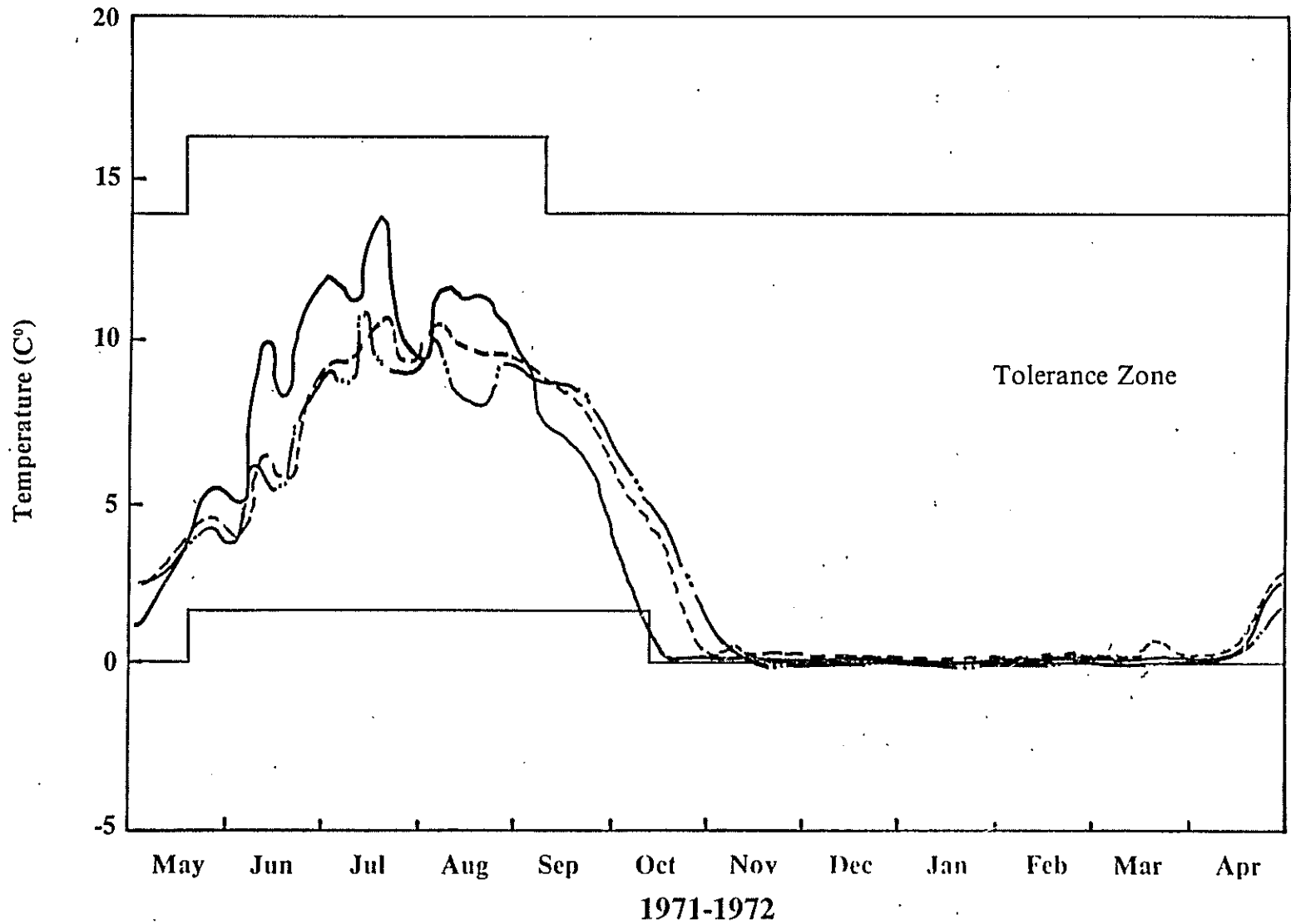
COHO SALMON



H22 Devil's Canyon
2002

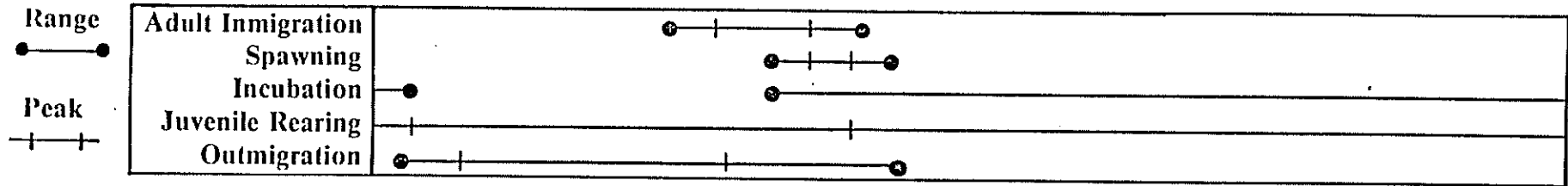
Watana
1996

Natural



River Mile 100

COHO SALMON

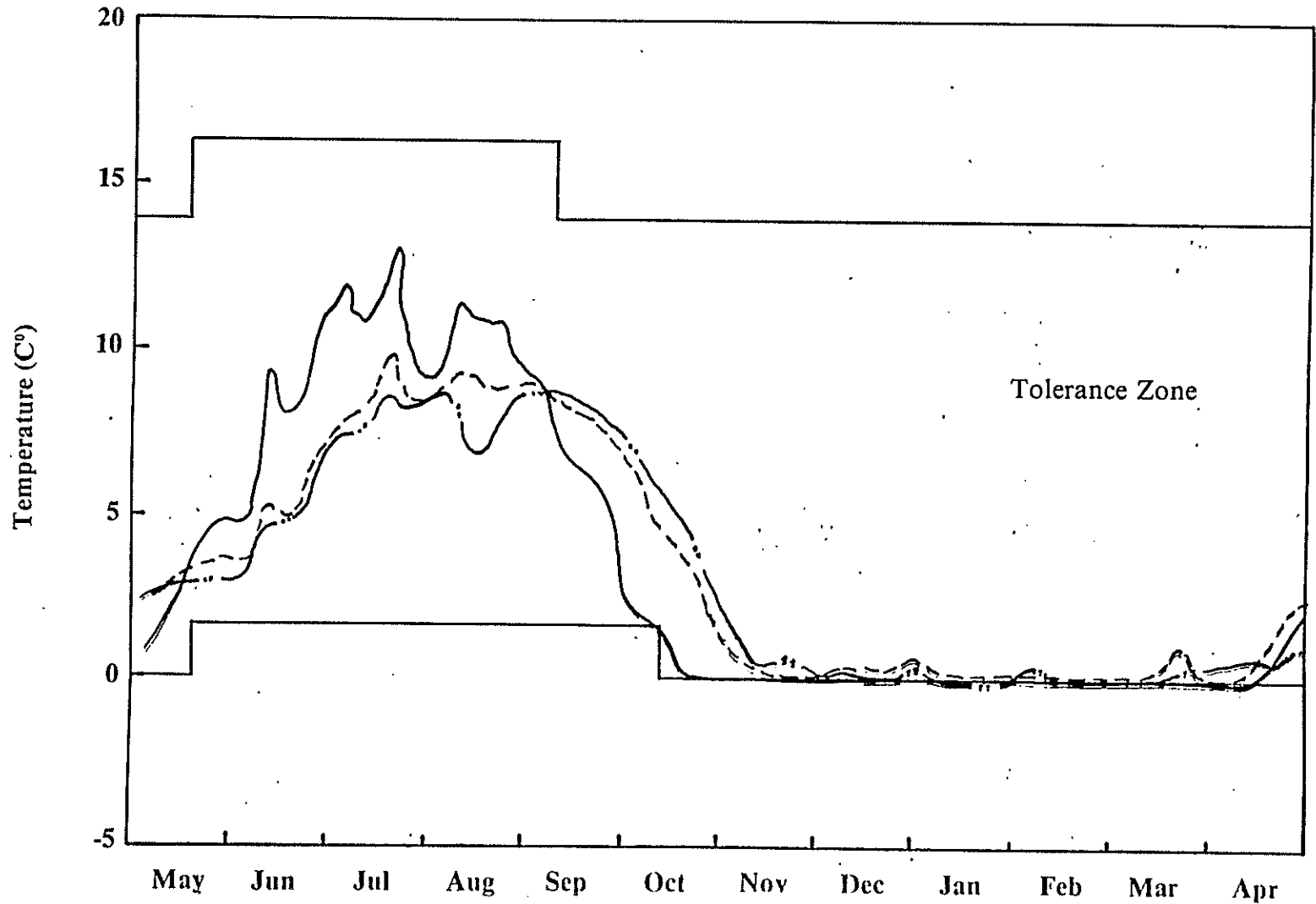


H23

Devil's Canyon
2002

Watana
1996

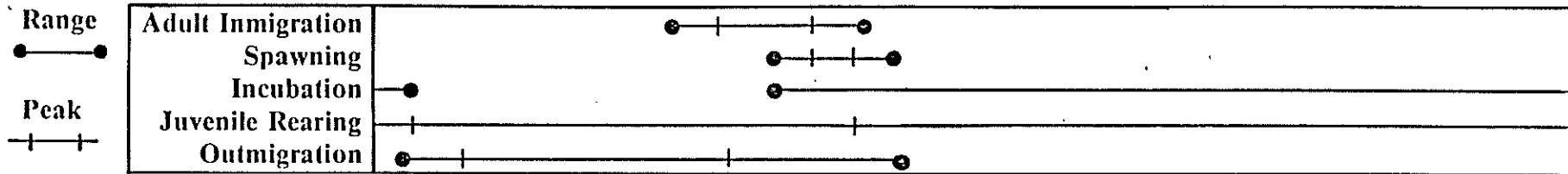
Natural



1971-1972

River Mile 120

COHO SALMON

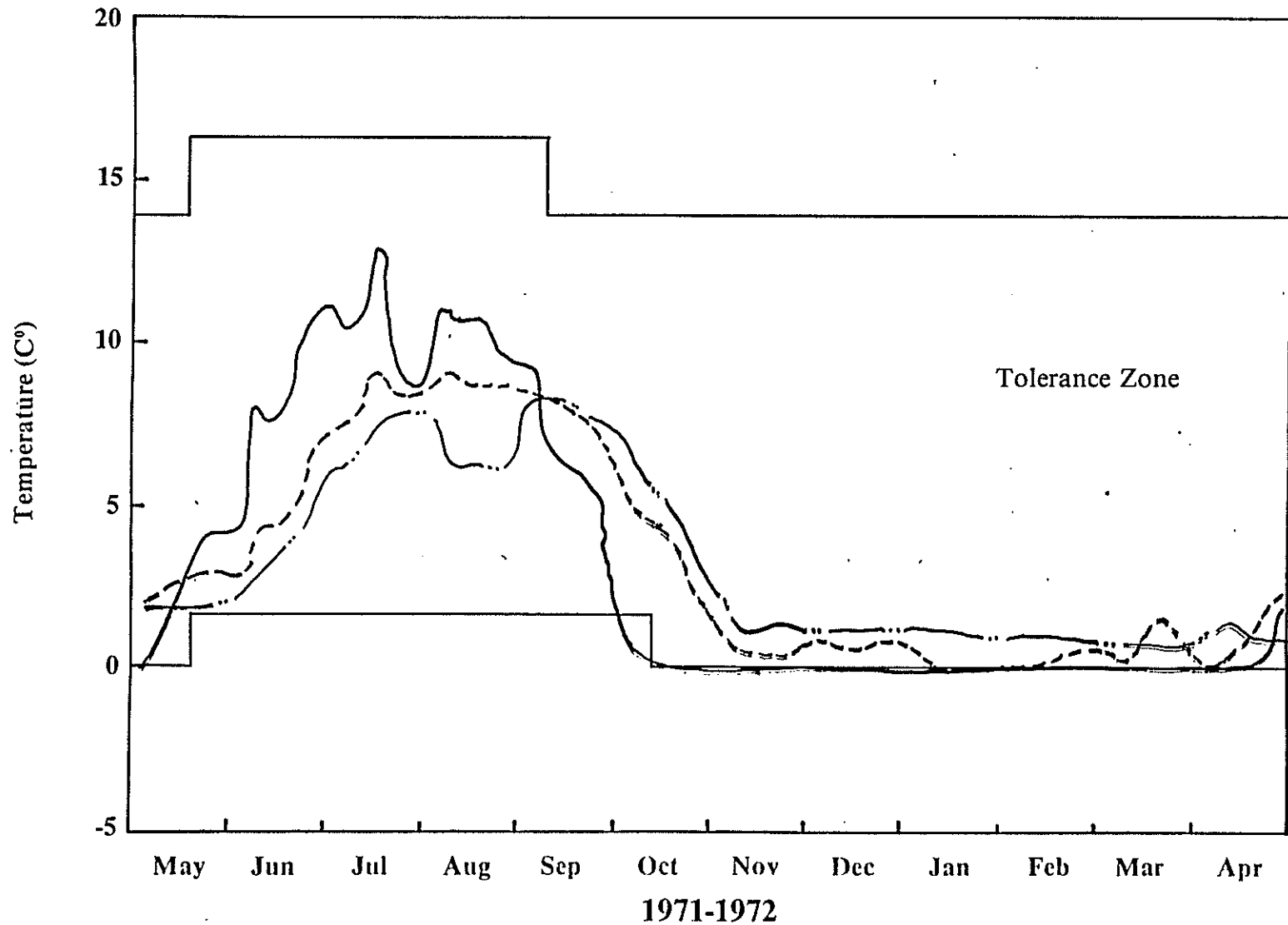


H24

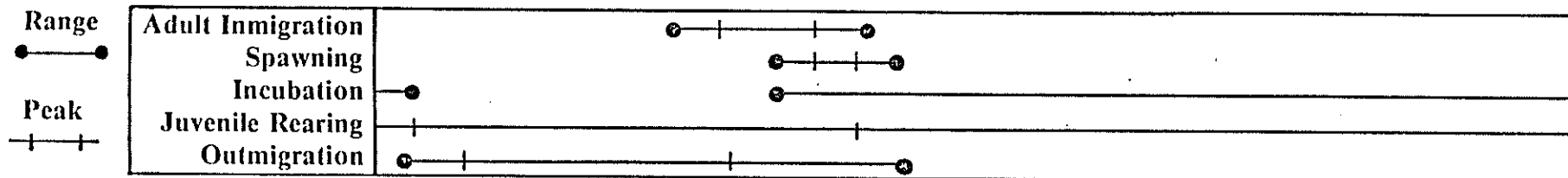
Devil's Canyon
2002

Watana
1996

Natural



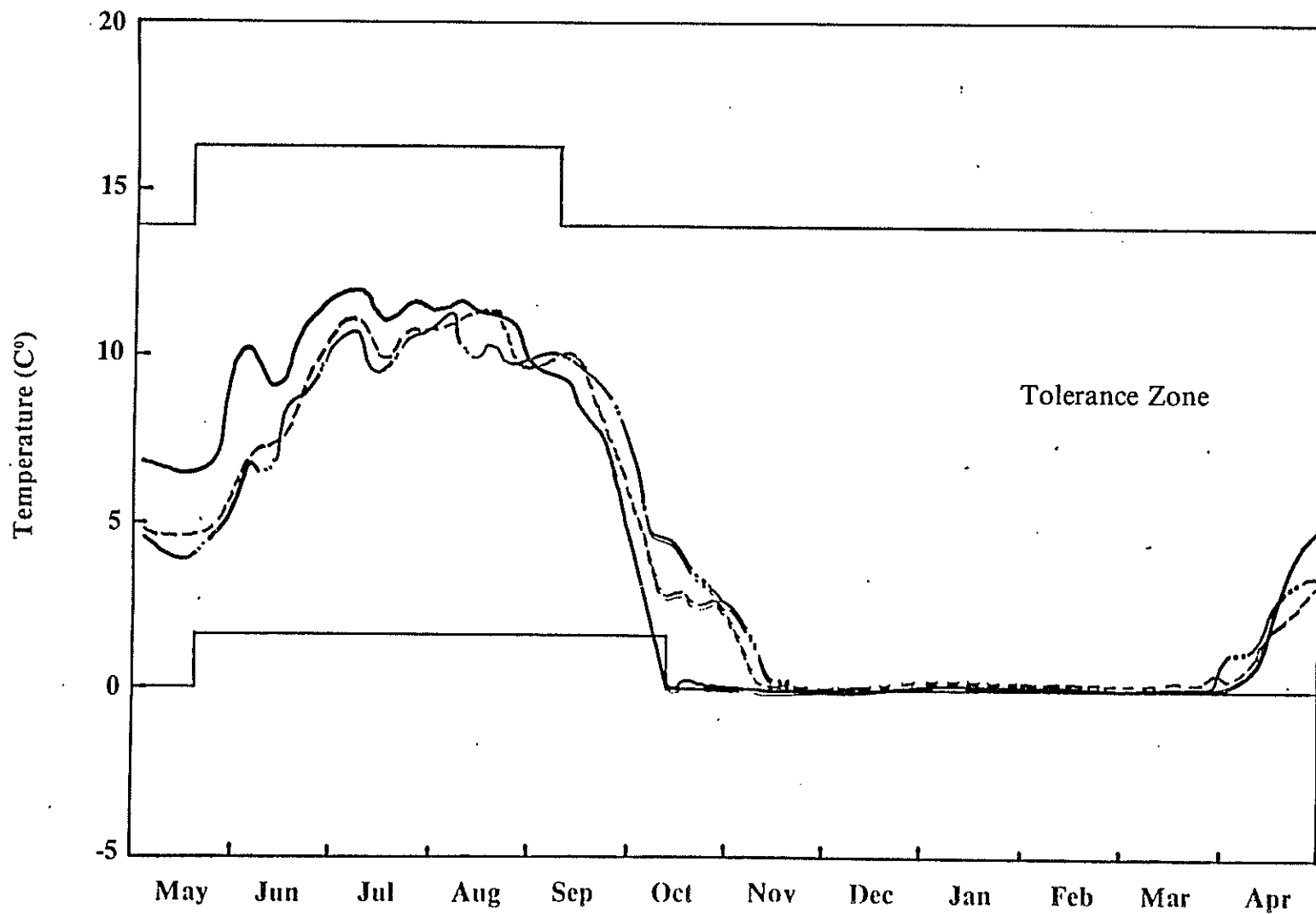
COHO SALMON



H25 Devil's Canyon
2002

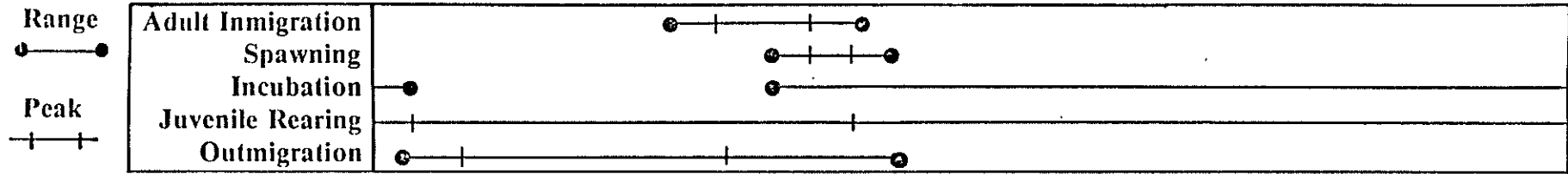
Watana
1996

Natural



1974-1975

COHO SALMON

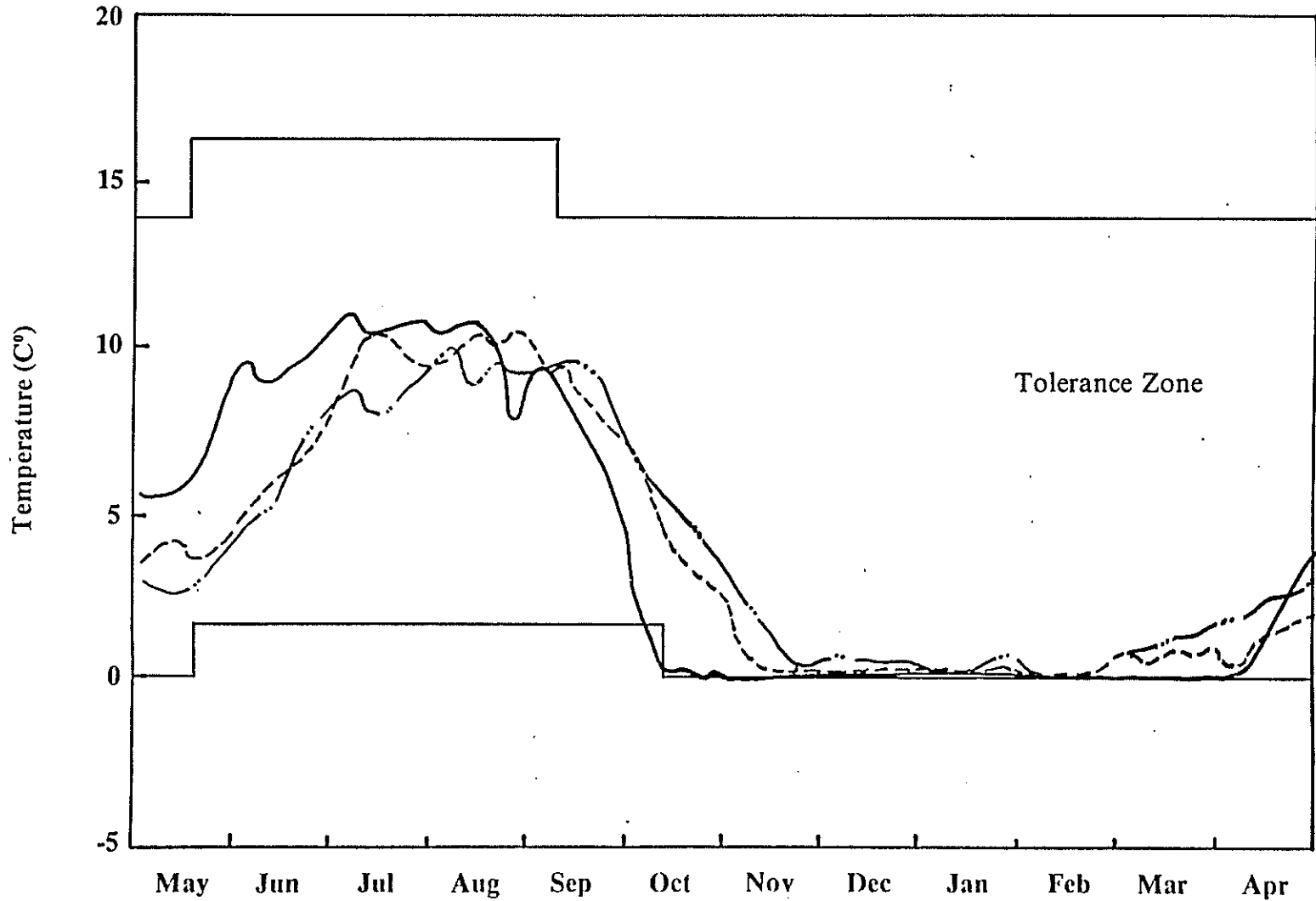


H26

Devil's Canyon
2002

Watana
1996

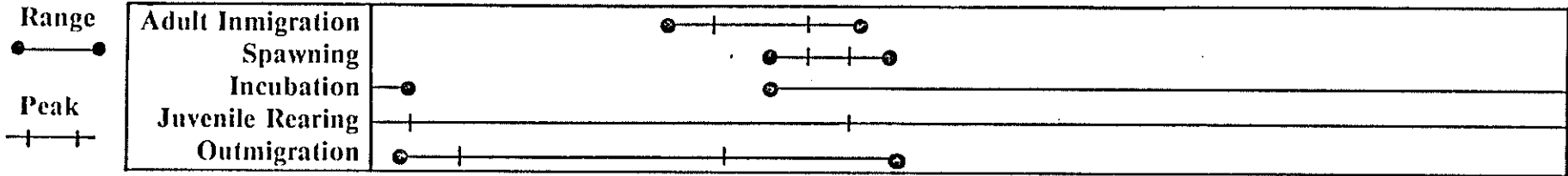
Natural



1974-1975

River Mile 120

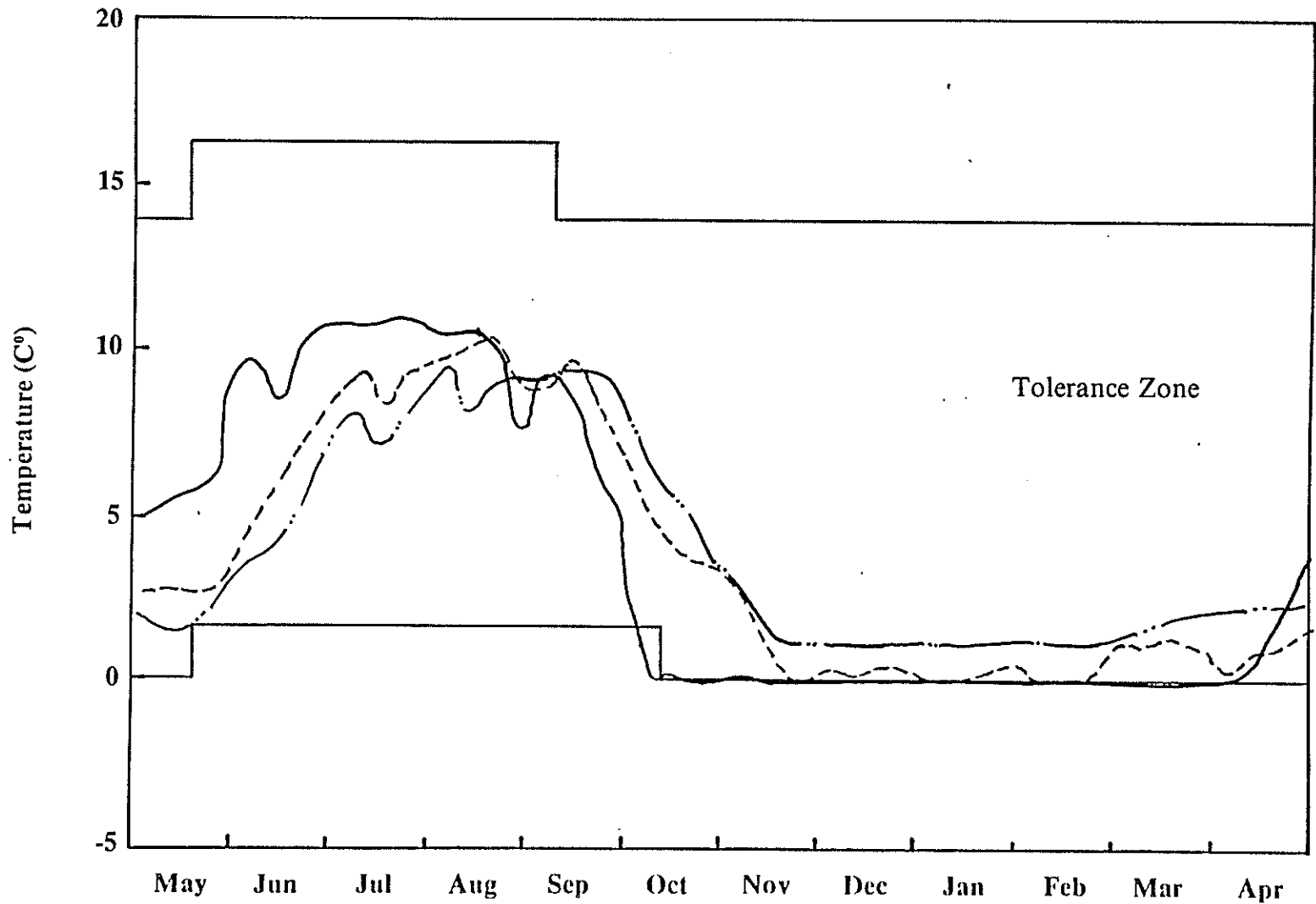
COHO SALMON



Devil's Canyon
2002

Watana
1996

Natural

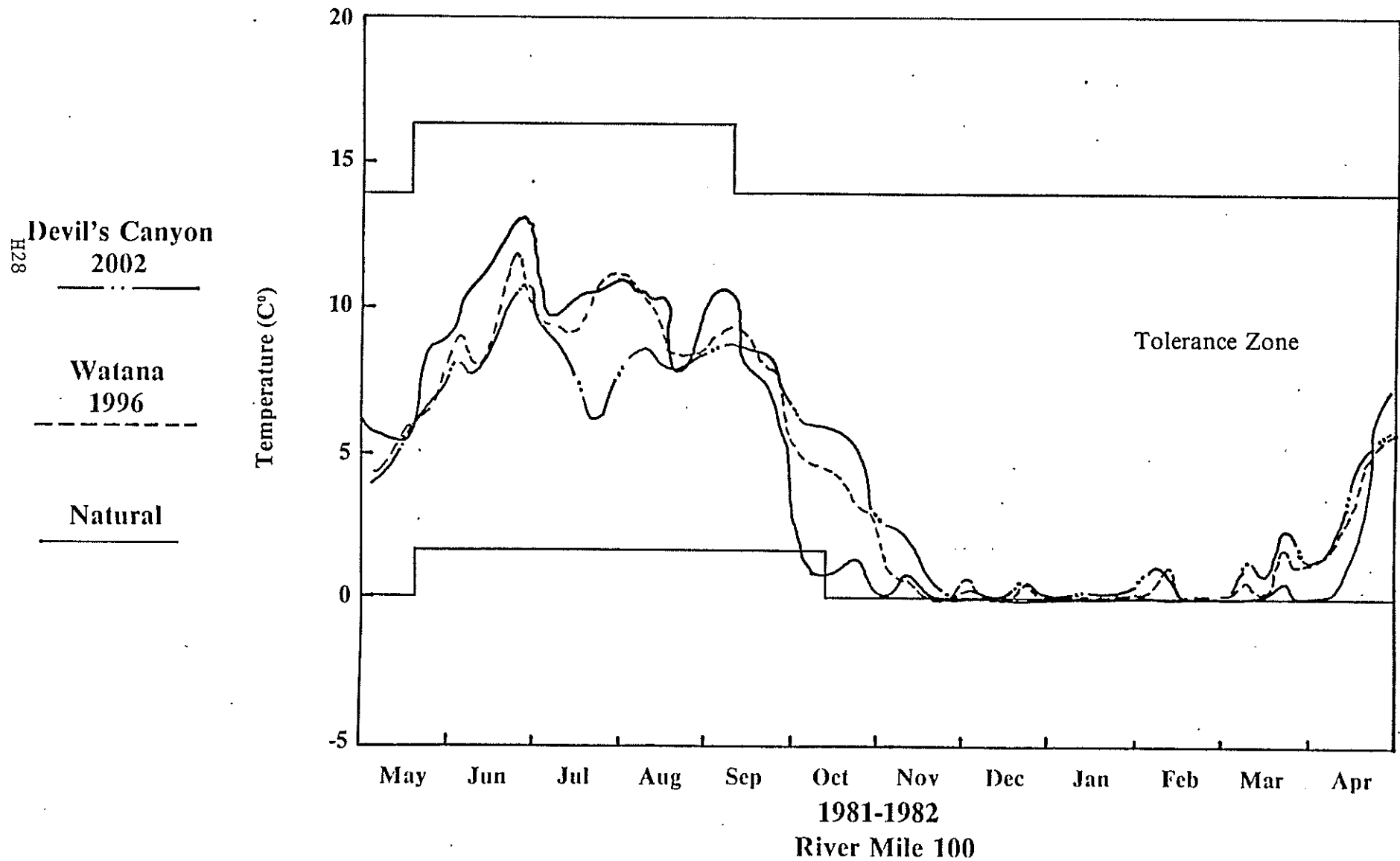


1974-1975

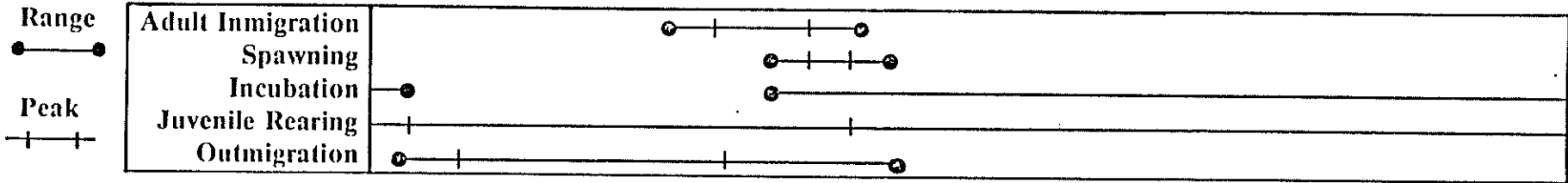
Range
● — ●

Peak
| — |

Life History Stage	Approximate Time Period (Years)
Adult Immigration	1965 – 1975
Spawning	1970 – 1980
Incubation	1975 – 1985
Juvenile Rearing	1980 – 1990
Outmigration	1985 – 1995



COHO SALMON

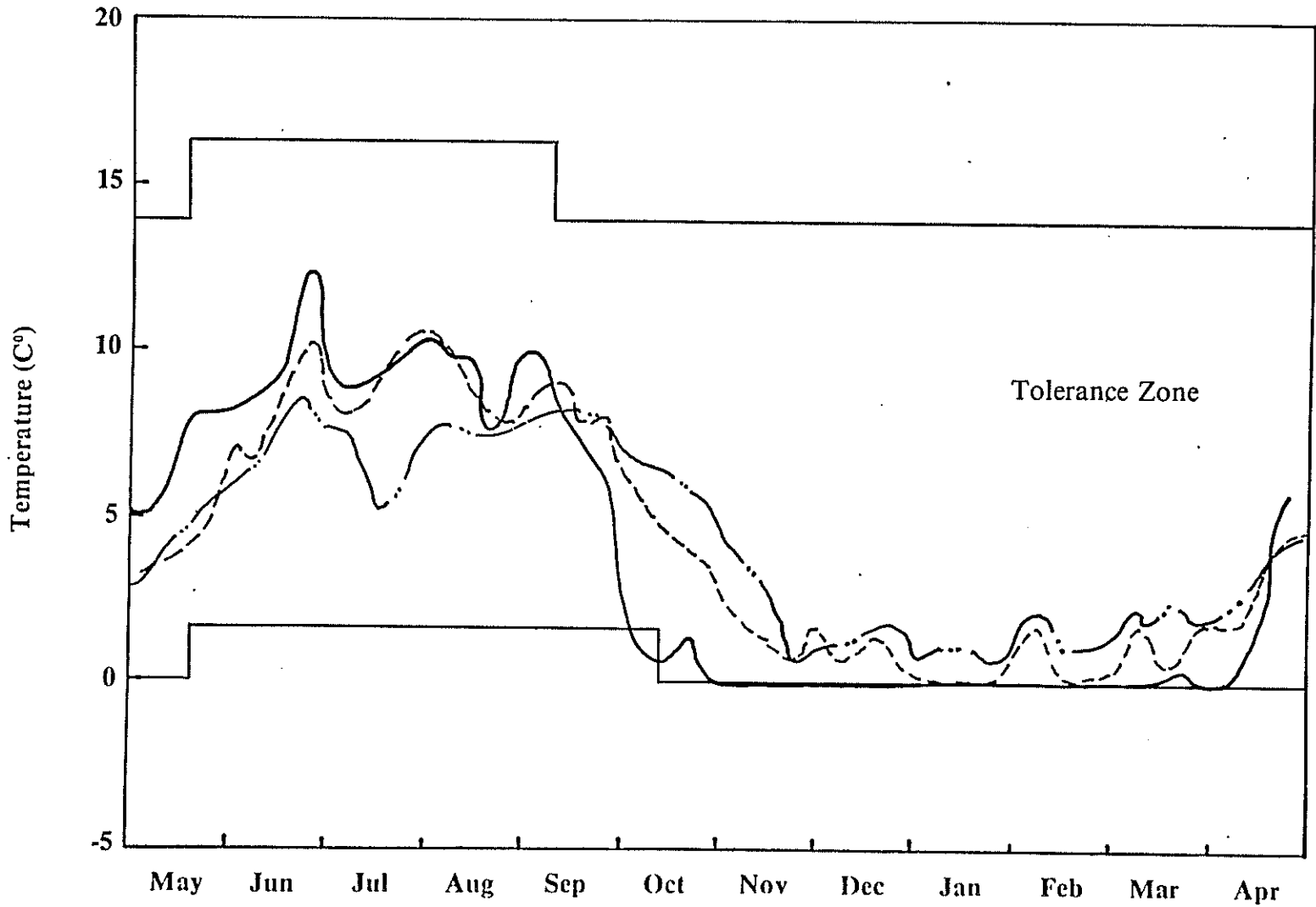


H29

Devil's Canyon
2002

Watana
1996

Natural



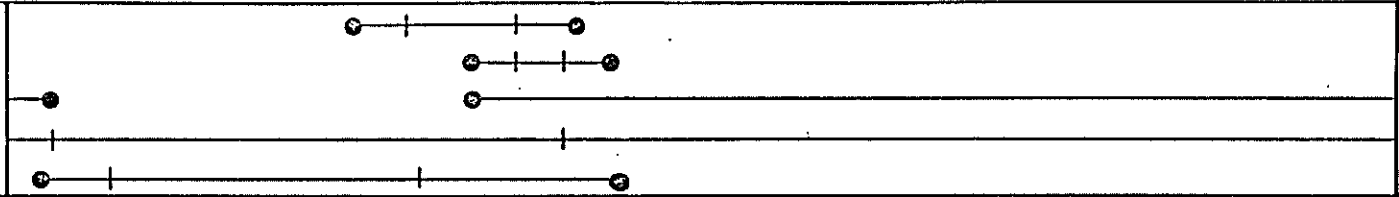
1981-1982

River Mile 130

COHO SALMON

Range
●—●
Peak
+—+

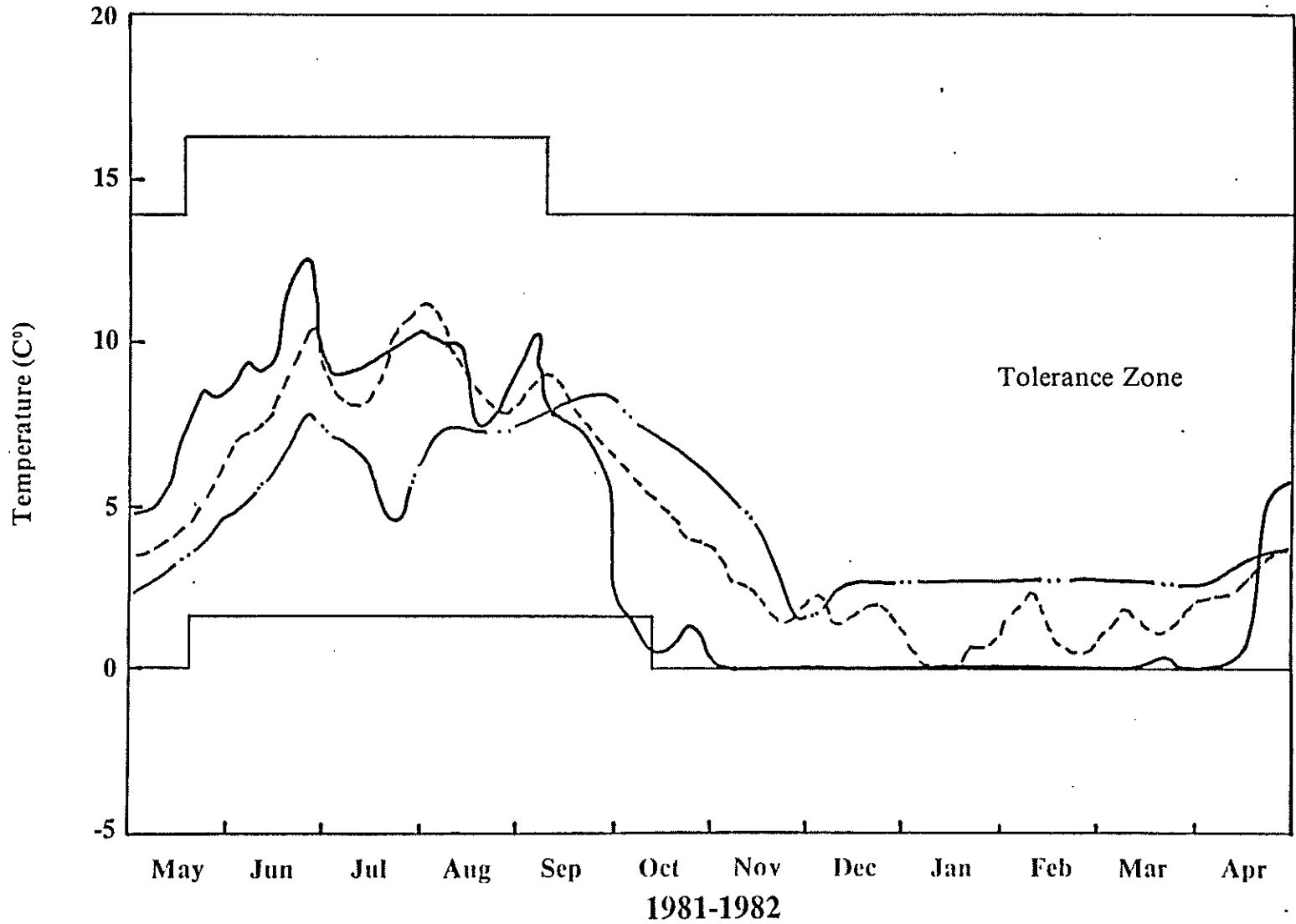
Adult Immigration
Spawning
Incubation
Juvenile Rearing
Outmigration



Devil's Canyon
2002

Watana
1996

Natural

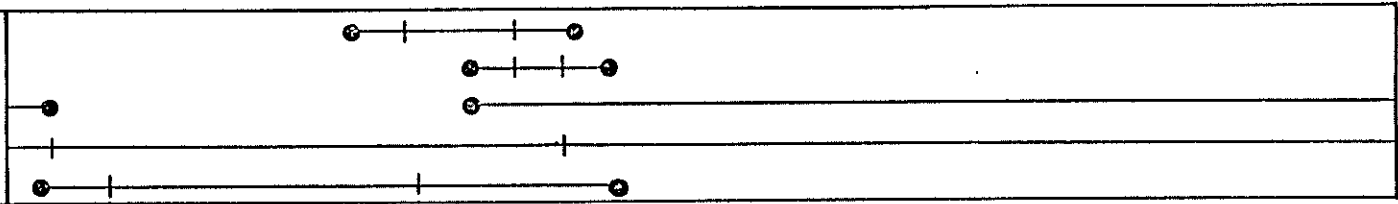


River Mile 150

COHO SALMON

Range
●—●
Peak
+—+

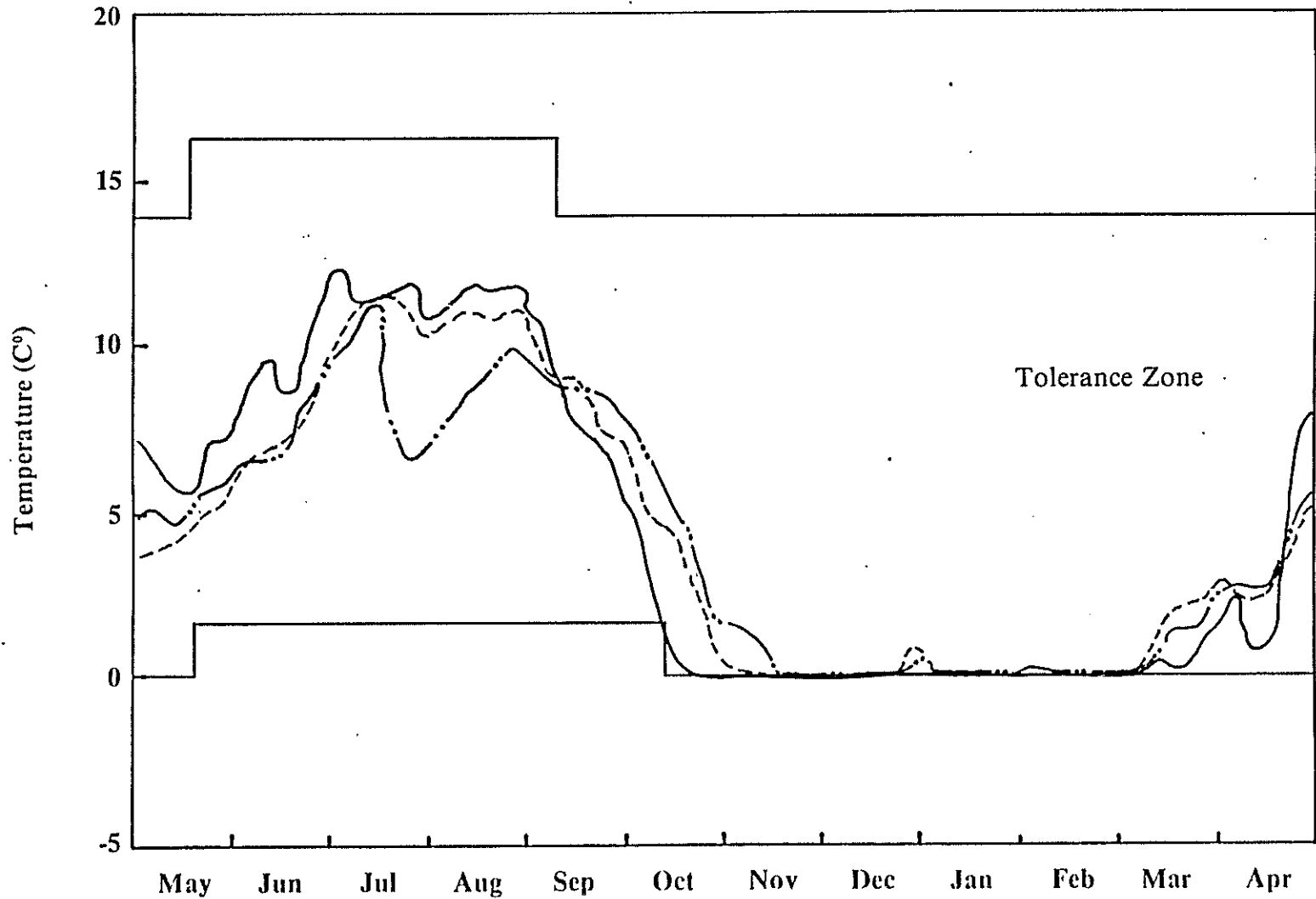
Adult Immigration
Spawning
Incubation
Juvenile Rearing
Outmigration



Devil's Canyon
2002

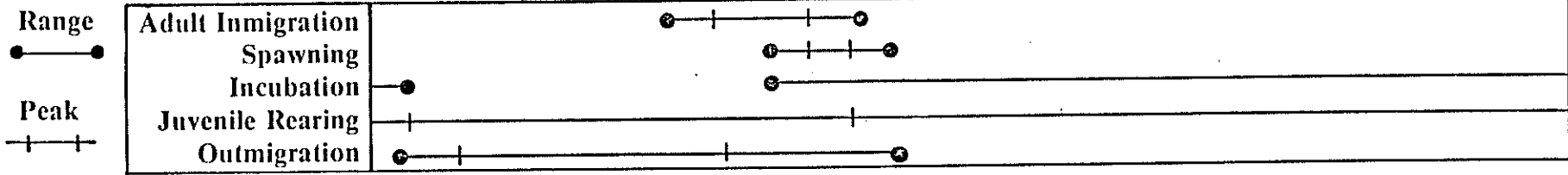
Watana
1996

Natural



1982-1983

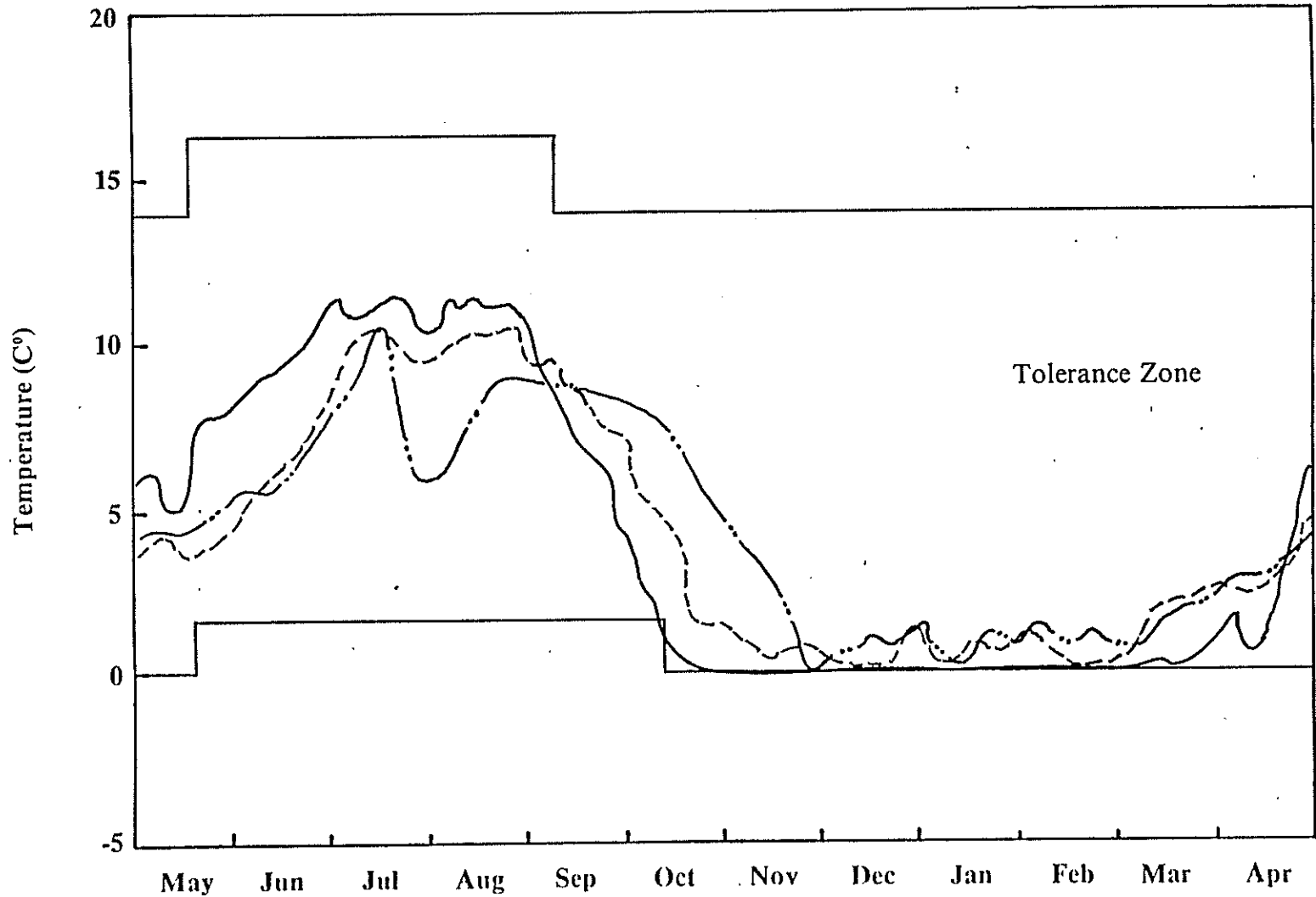
COHO SALMON



H32 Devil's Canyon
2002

Watana
1996

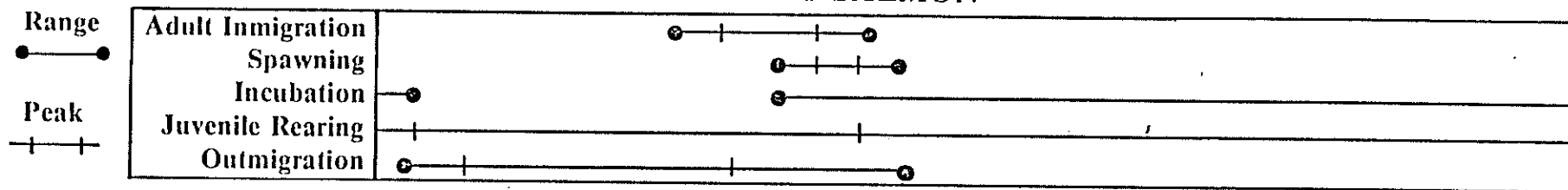
Natural



1982-1983

River Mile 130

COHO SALMON

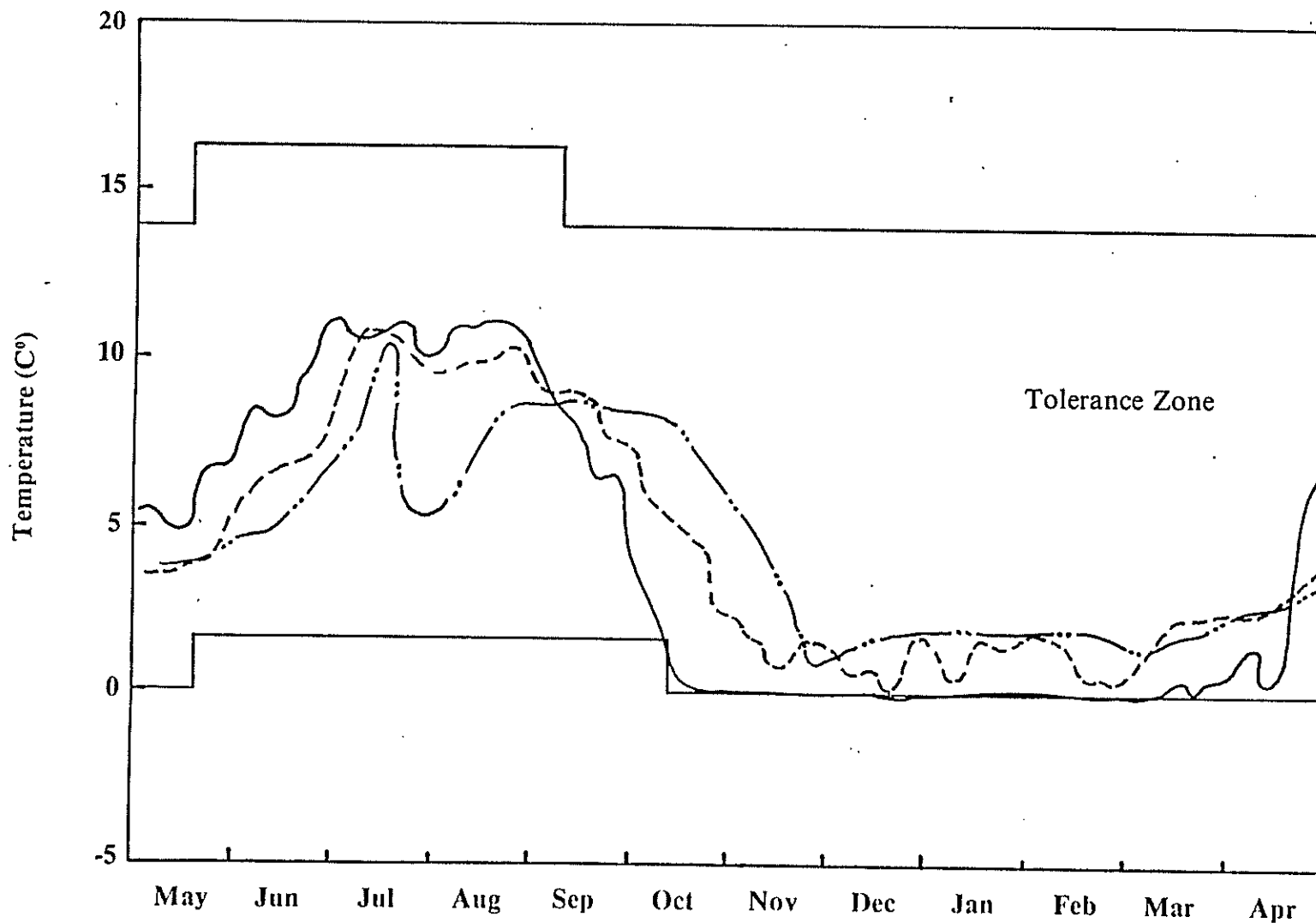


833

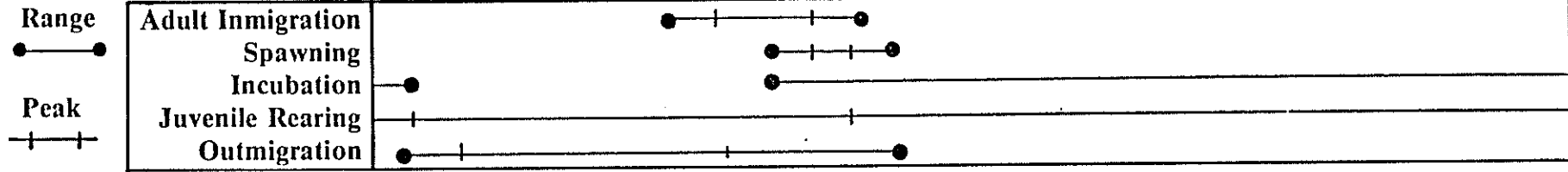
Devil's Canyon
2002

Watana
1996

Natural



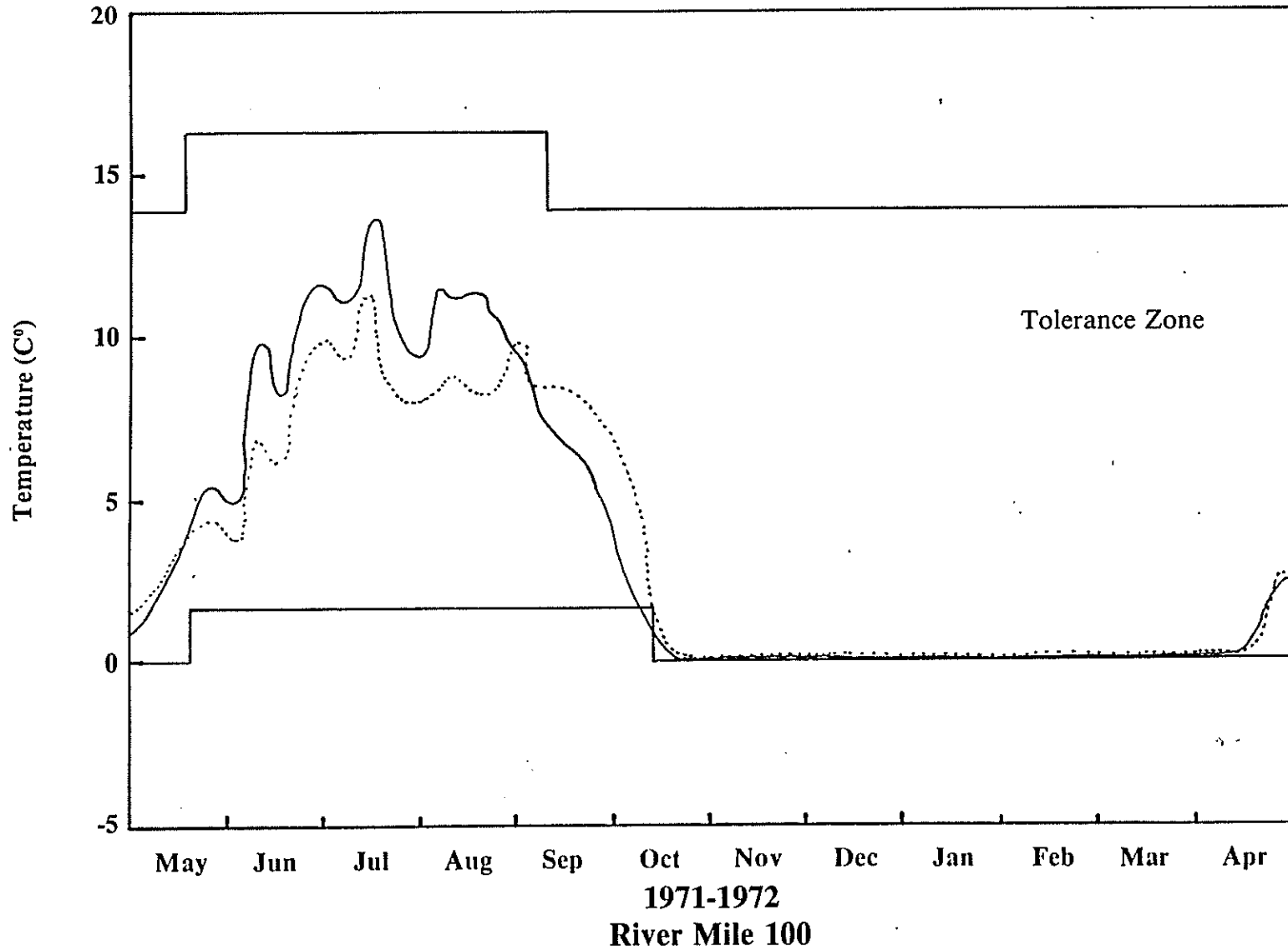
COHO SALMON



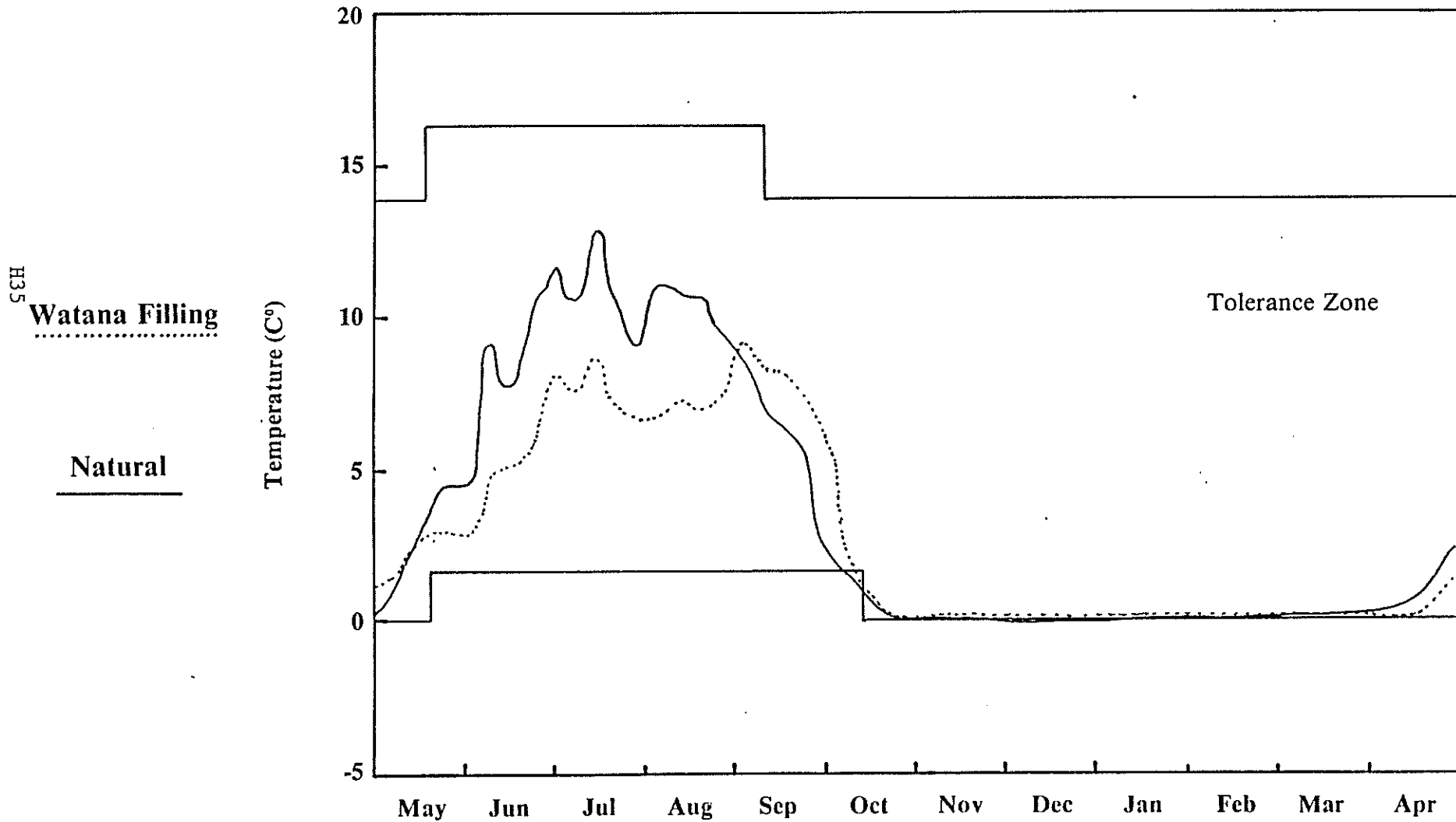
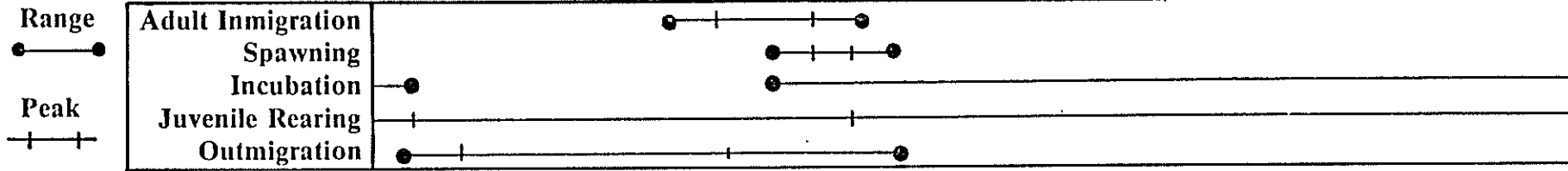
H34

Watana Filling

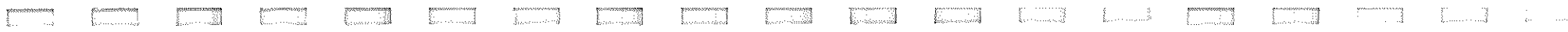
Natural



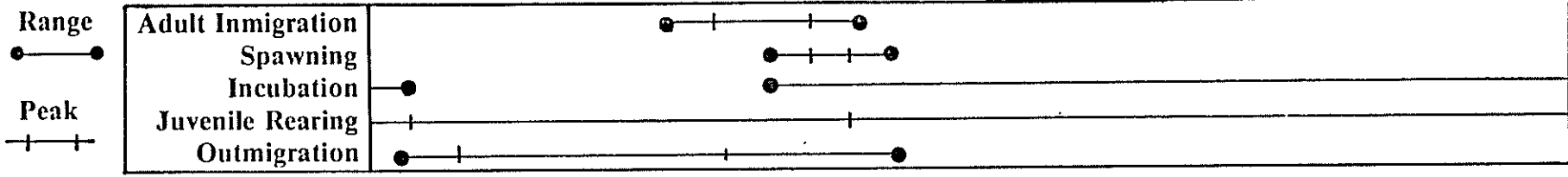
COHO SALMON



1971-1972
River Mile 130



COHO SALMON



⁹³H

Watana Filling

Natural

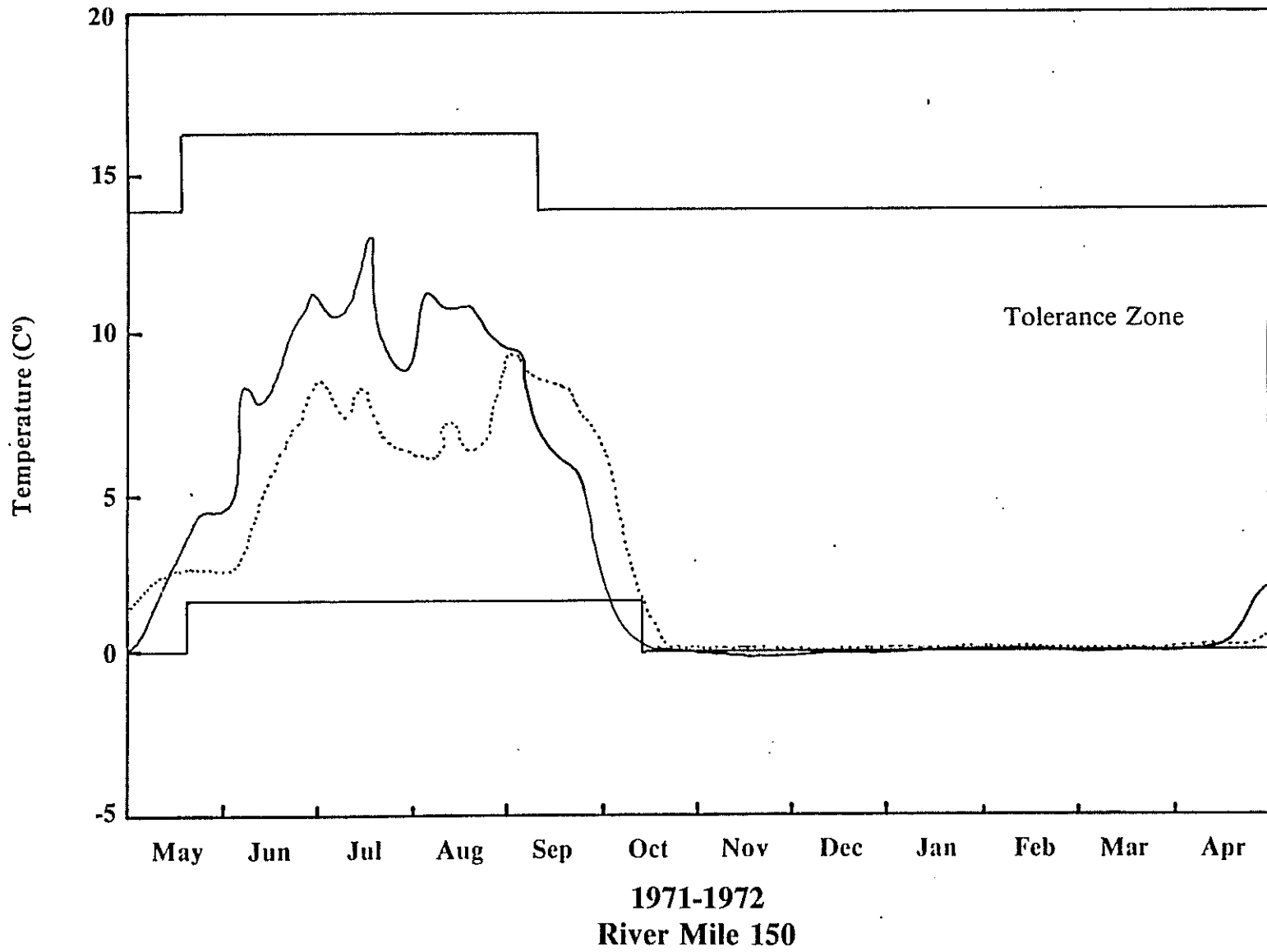
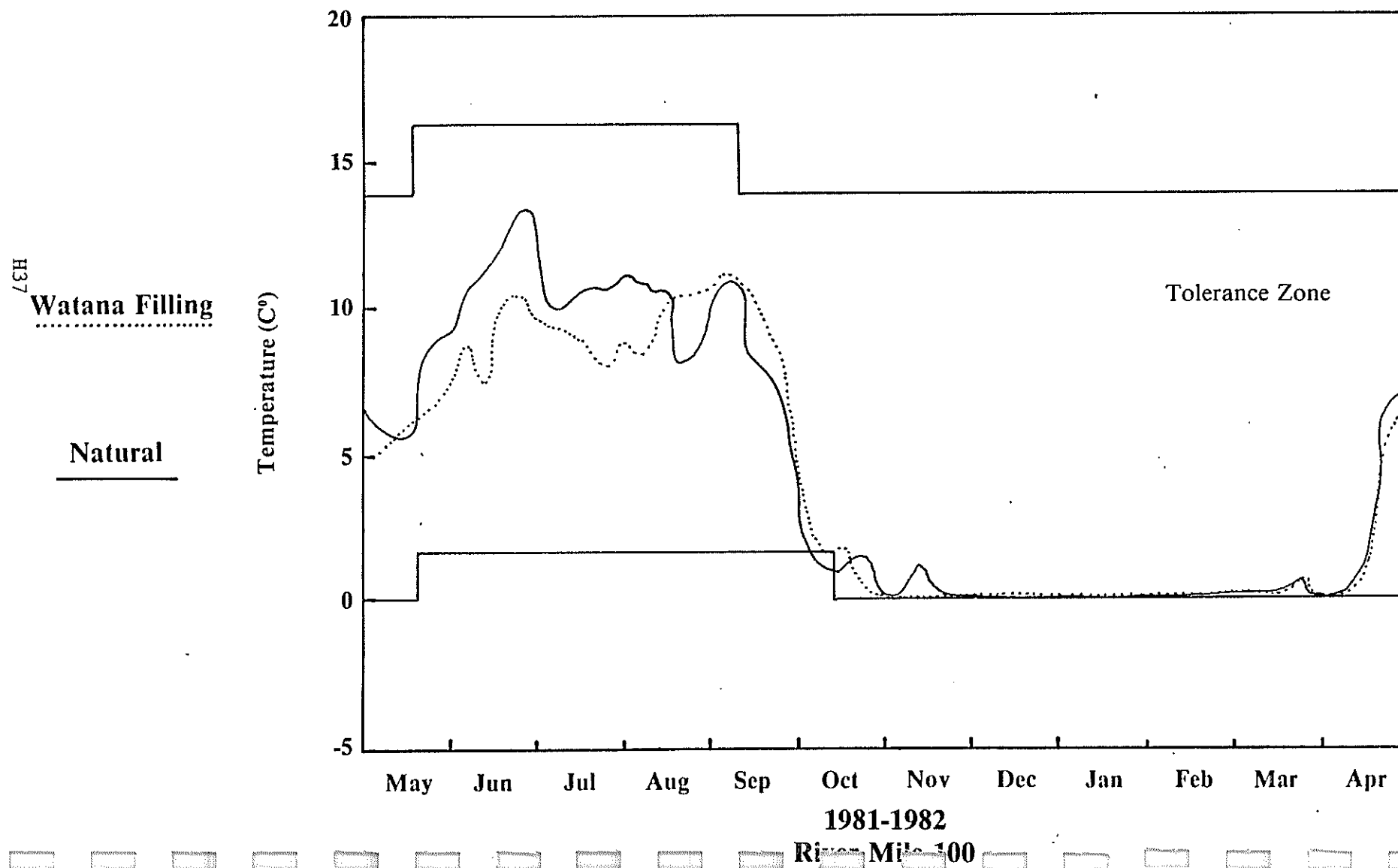
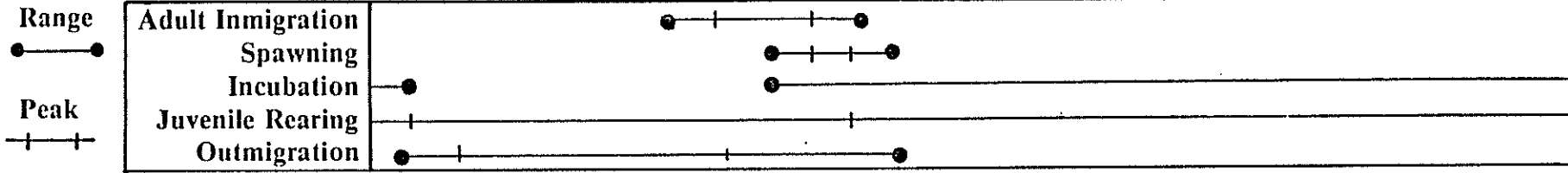


Figure 1 is a horizontal timeline diagram illustrating the life history of the Atlantic croaker. The timeline is marked with months from January to December. Key events are indicated by dots and lines: Range (January to February), Adult Immigration (April to May), Spawning (June to July), Incubation (July to August), Juvenile Rearing (August to September), and Outmigration (October to November).





COHO SALMON

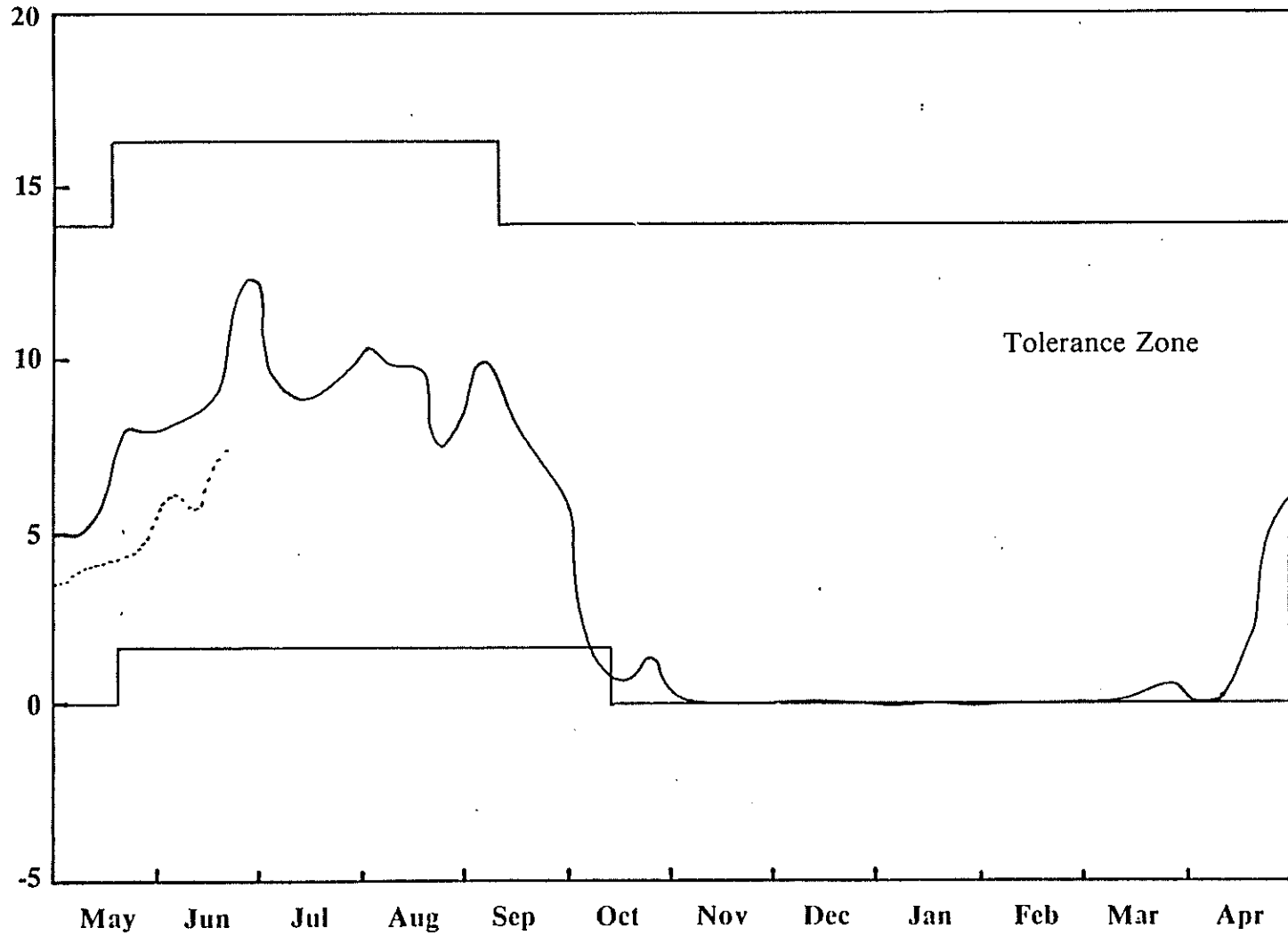


H38

Watana Filling
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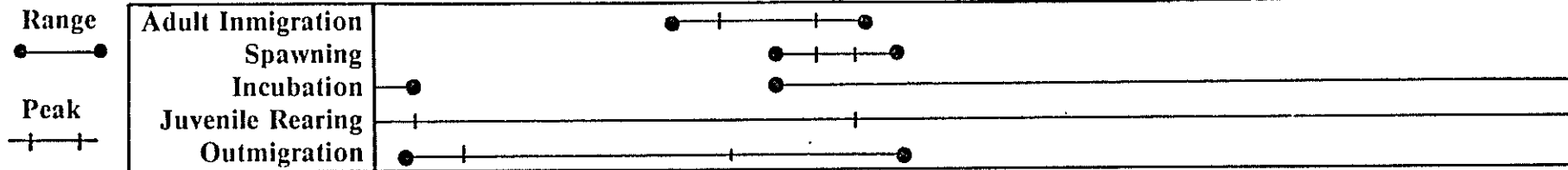
Natural

Temperature (C°)



1981-1982
River Mile 130

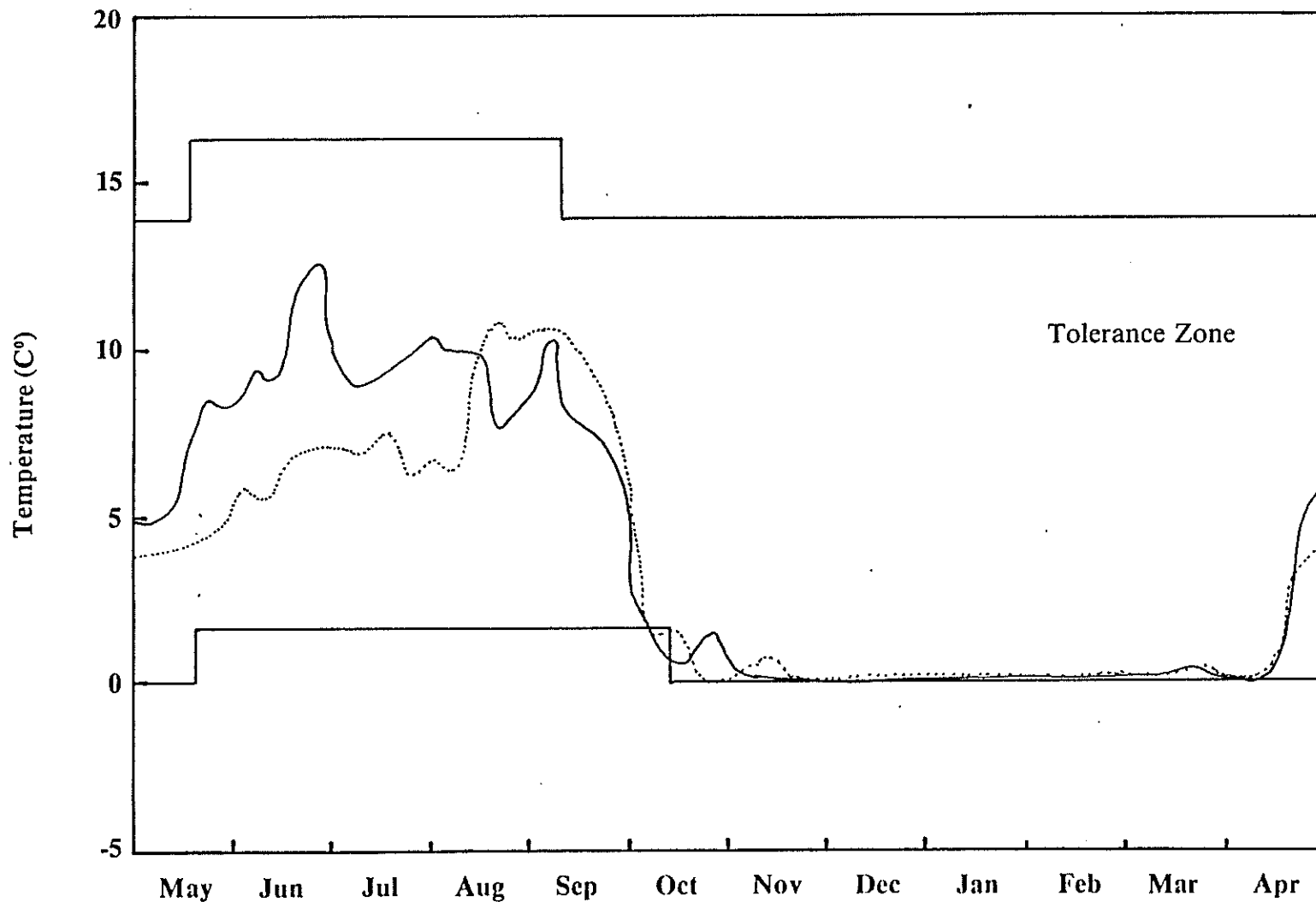
COHO SALMON



139H

Watana Filling

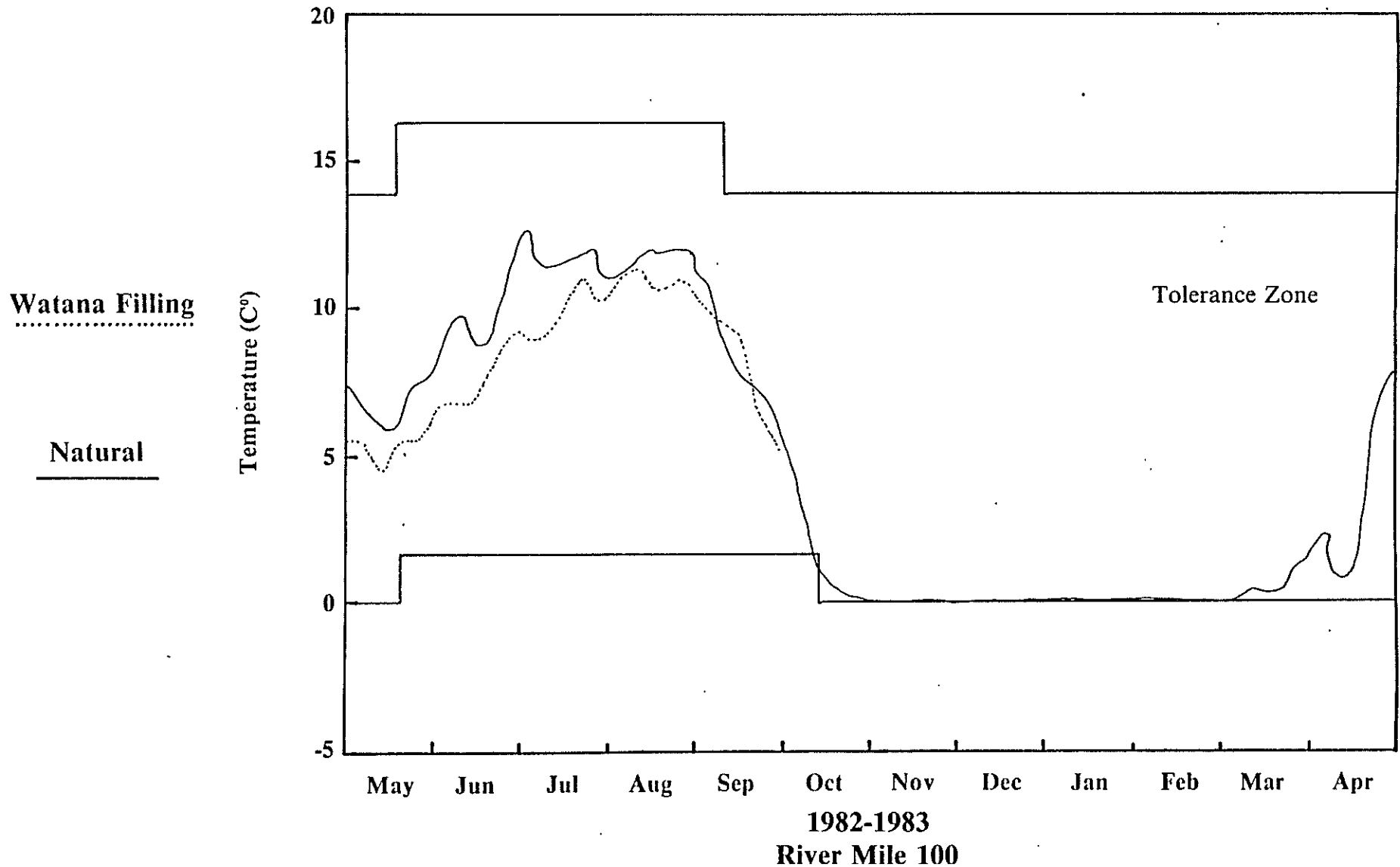
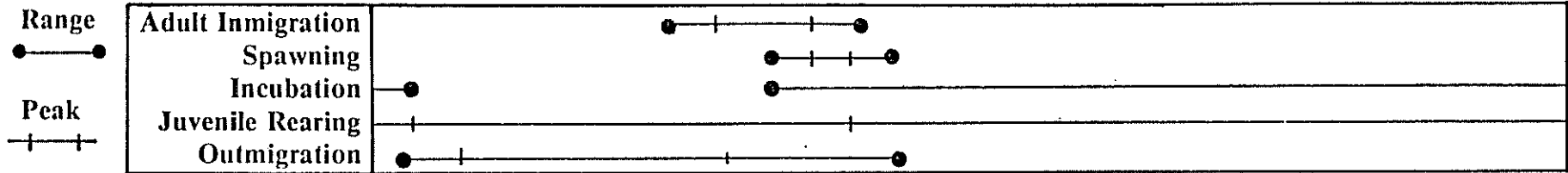
Natural



1981-1982

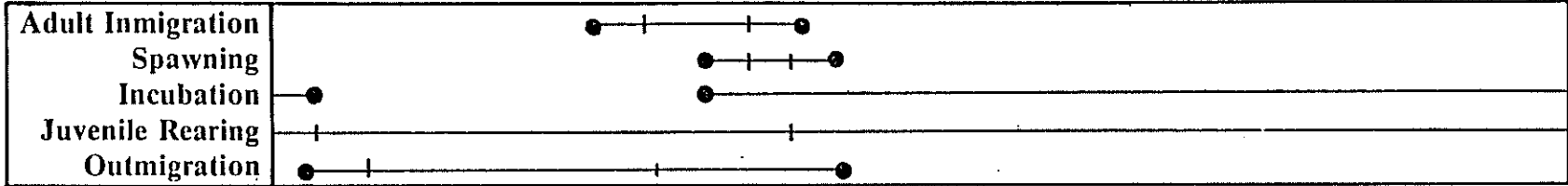
River Mile 150

COHO SALMON



COHO SALMON

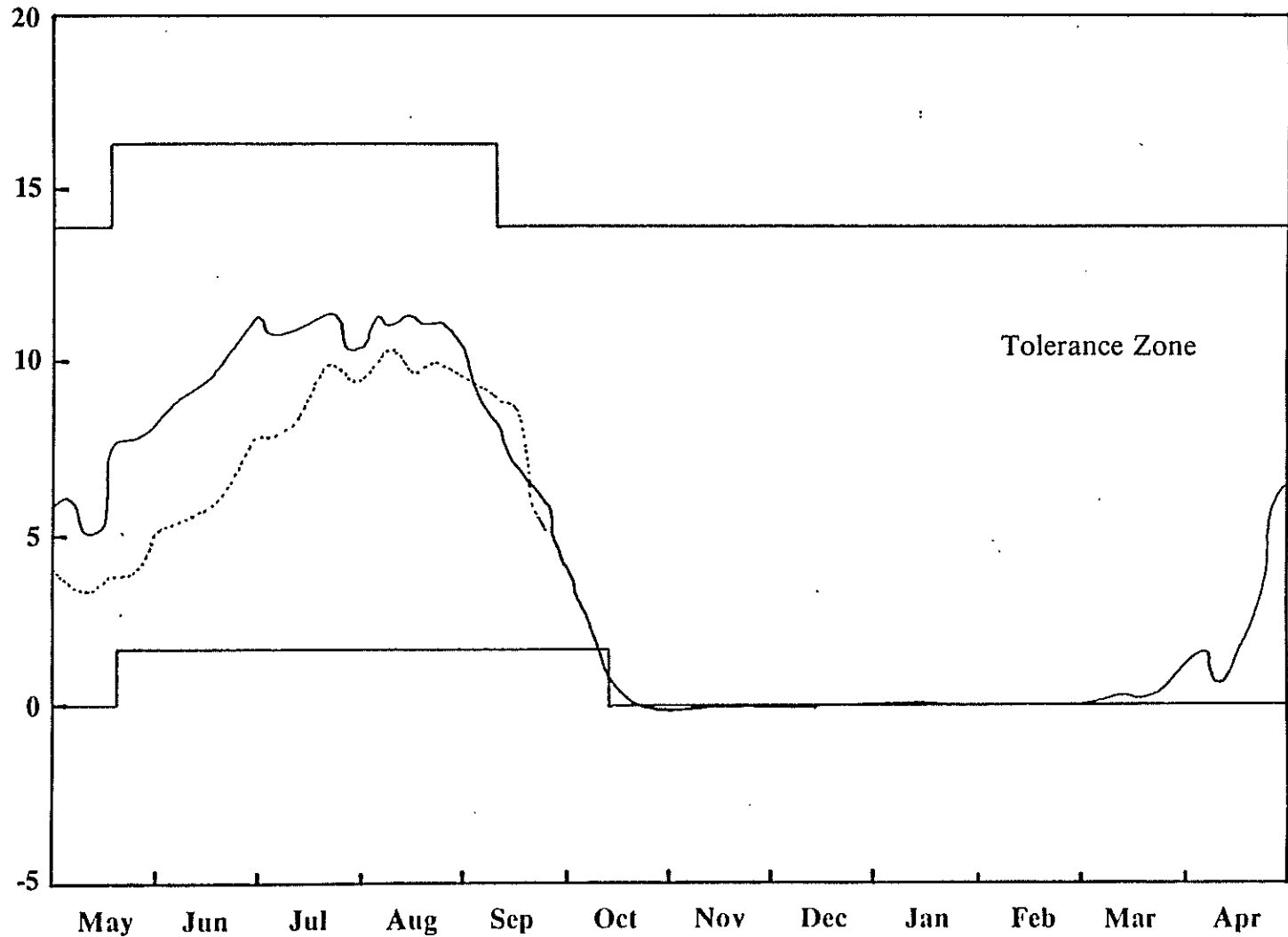
Range
●—●
Peak
+—+



^{H41} Watana Filling

Natural

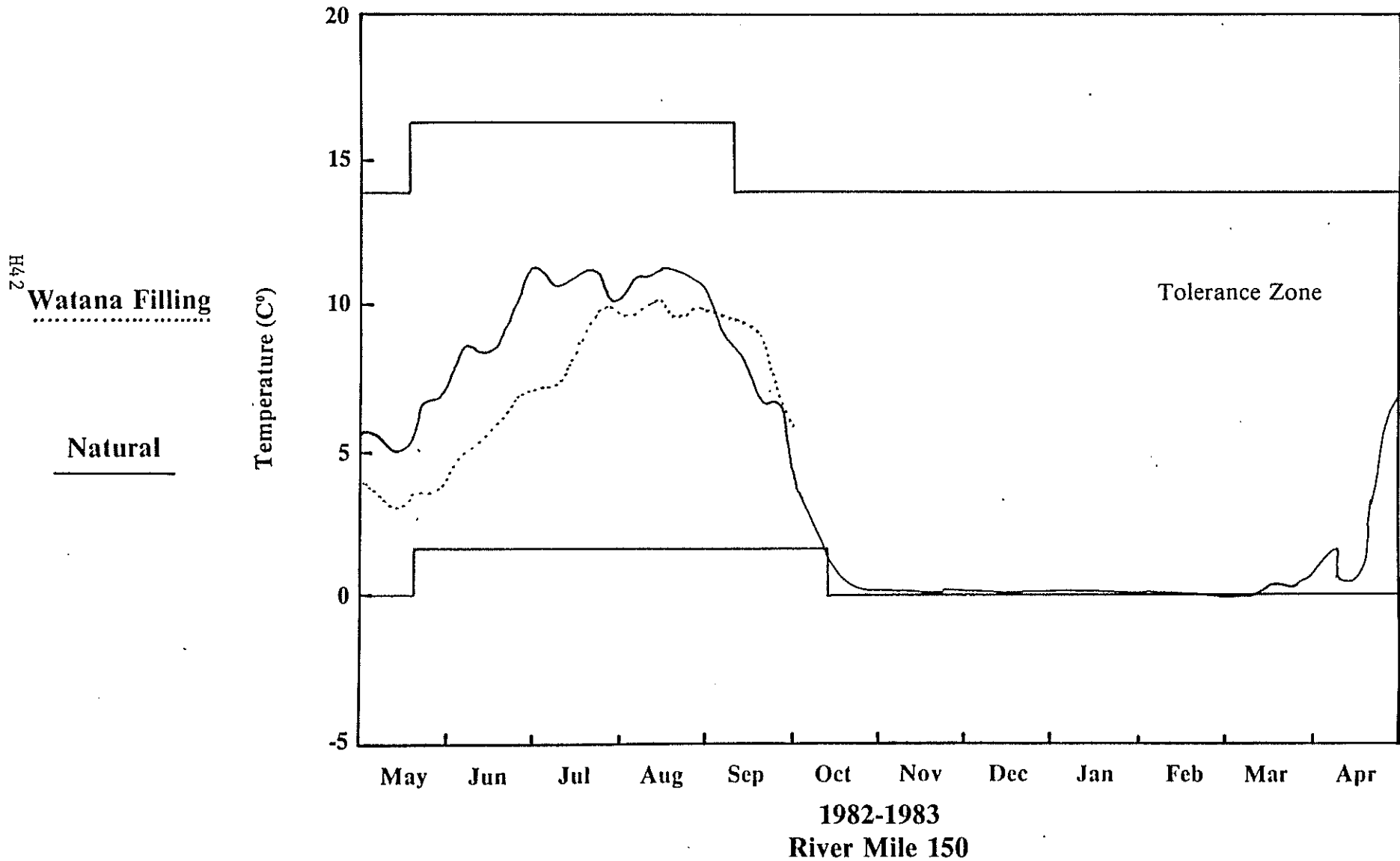
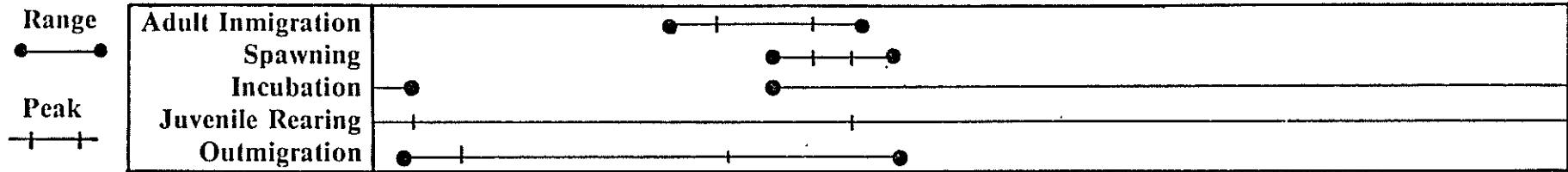
Temperature (C°)



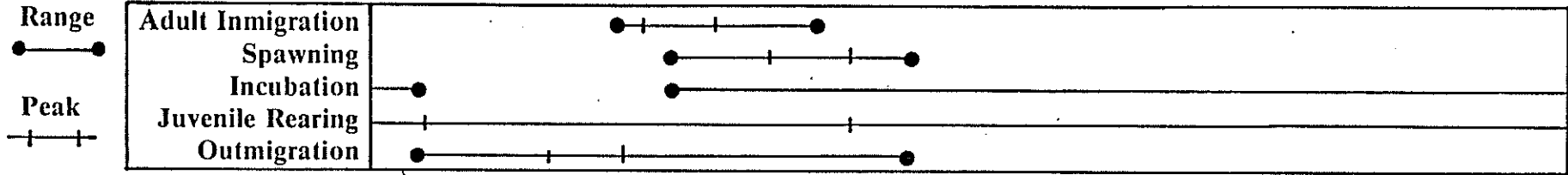
1982-1983

River Mile 130

COHO SALMON



SOCKEYE SALMON

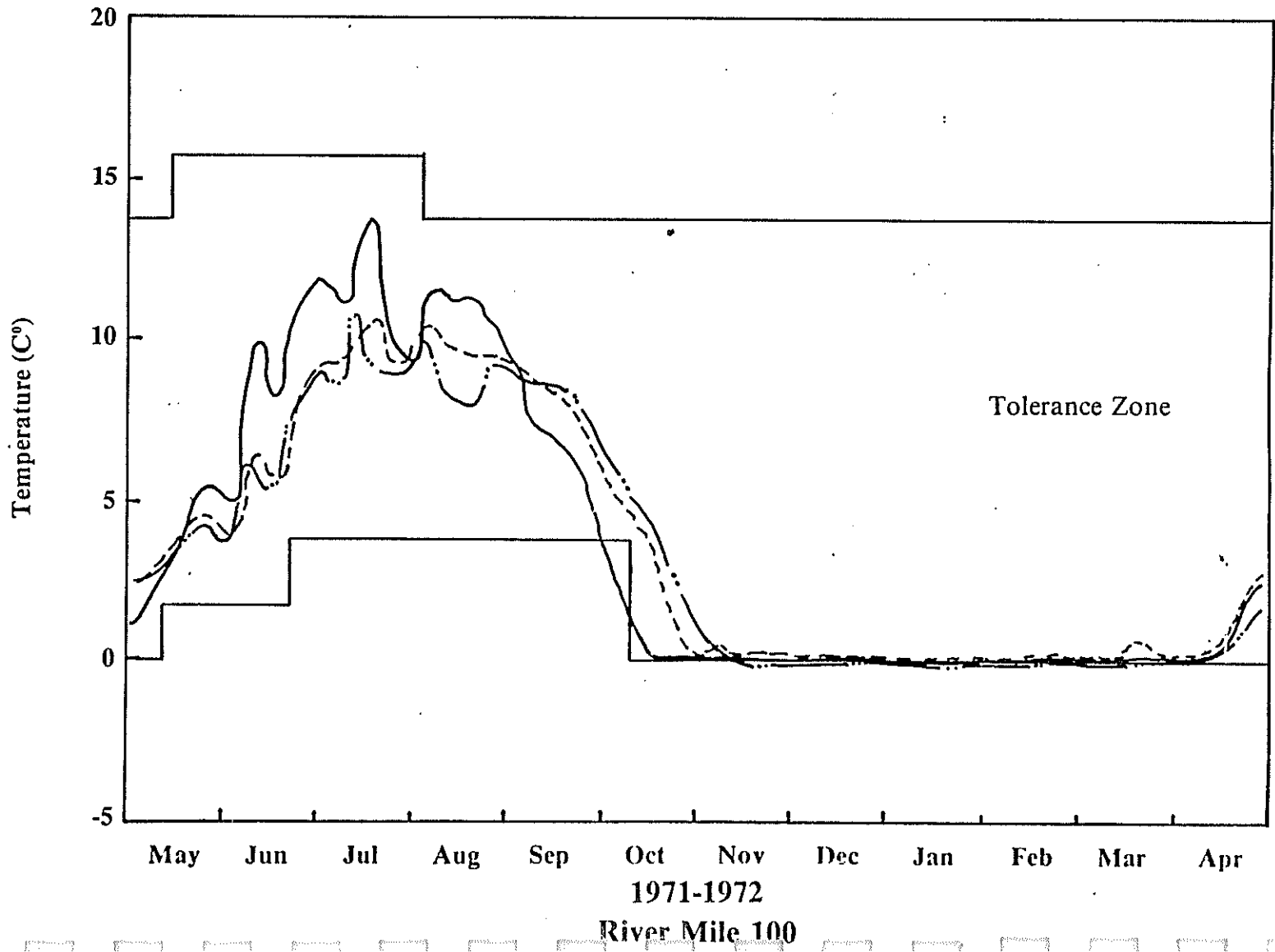


Devil's Canyon
2002

H43

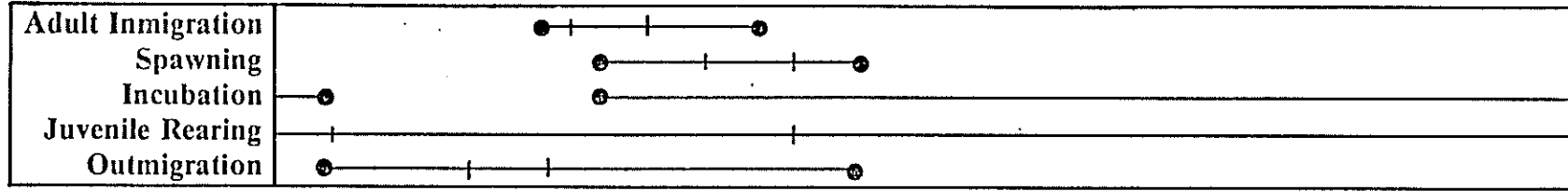
Watana
1996

Natural

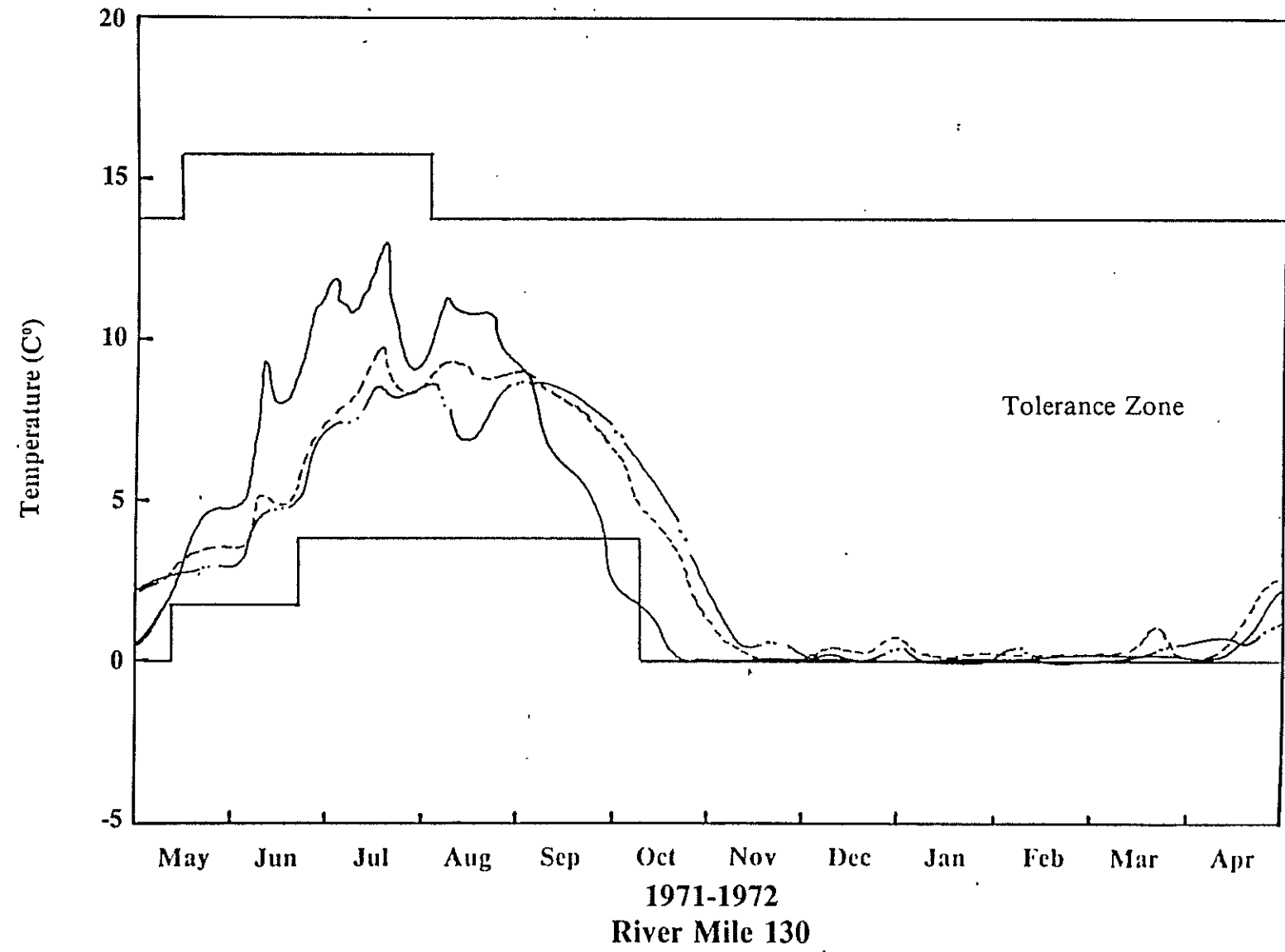


SOCKEYE SALMON

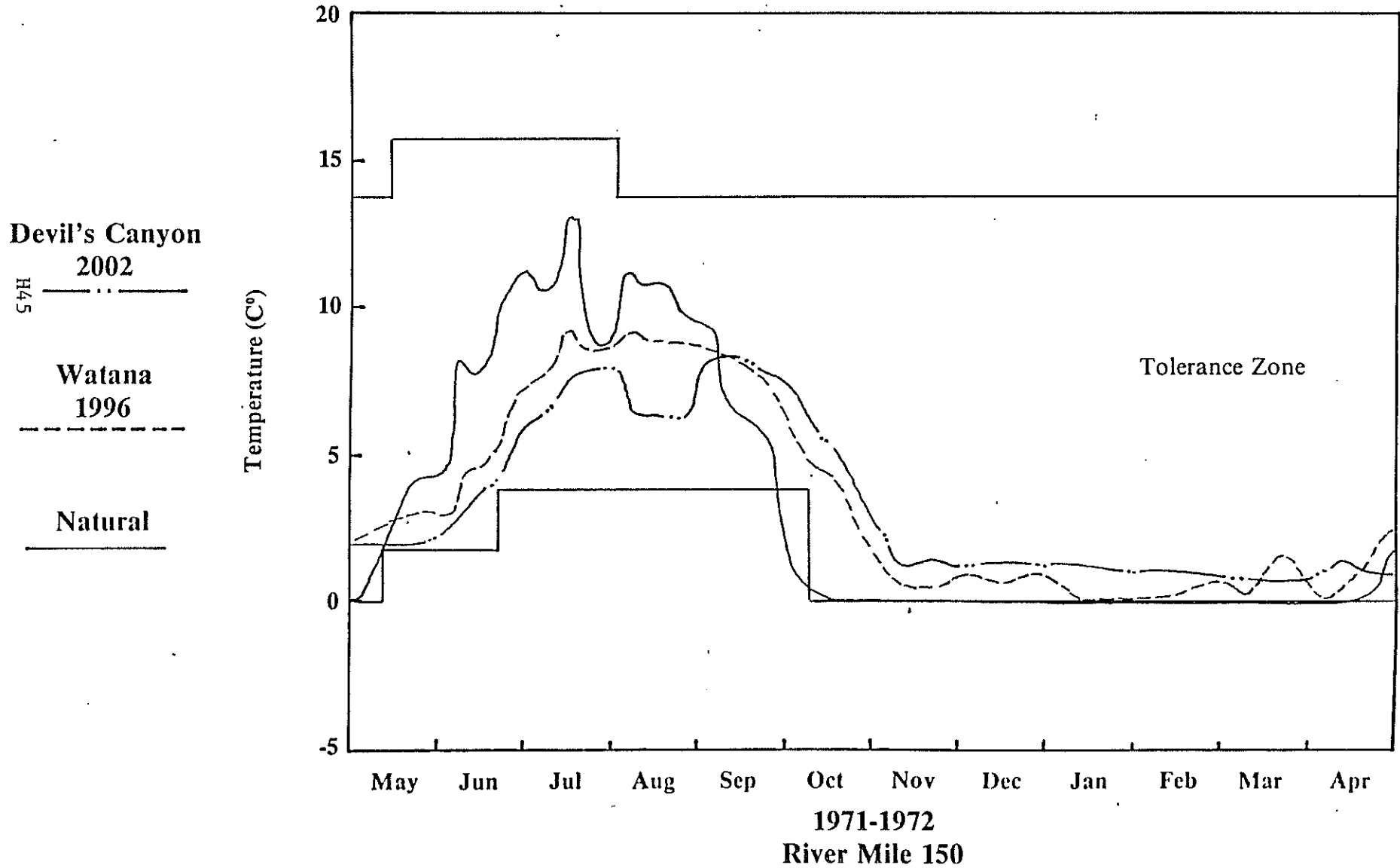
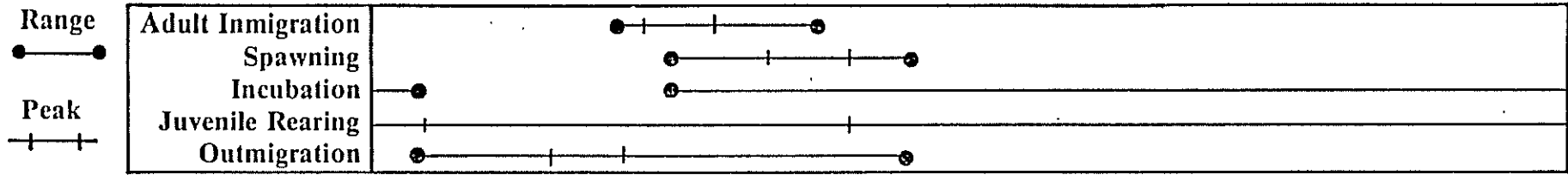
Range
Peak



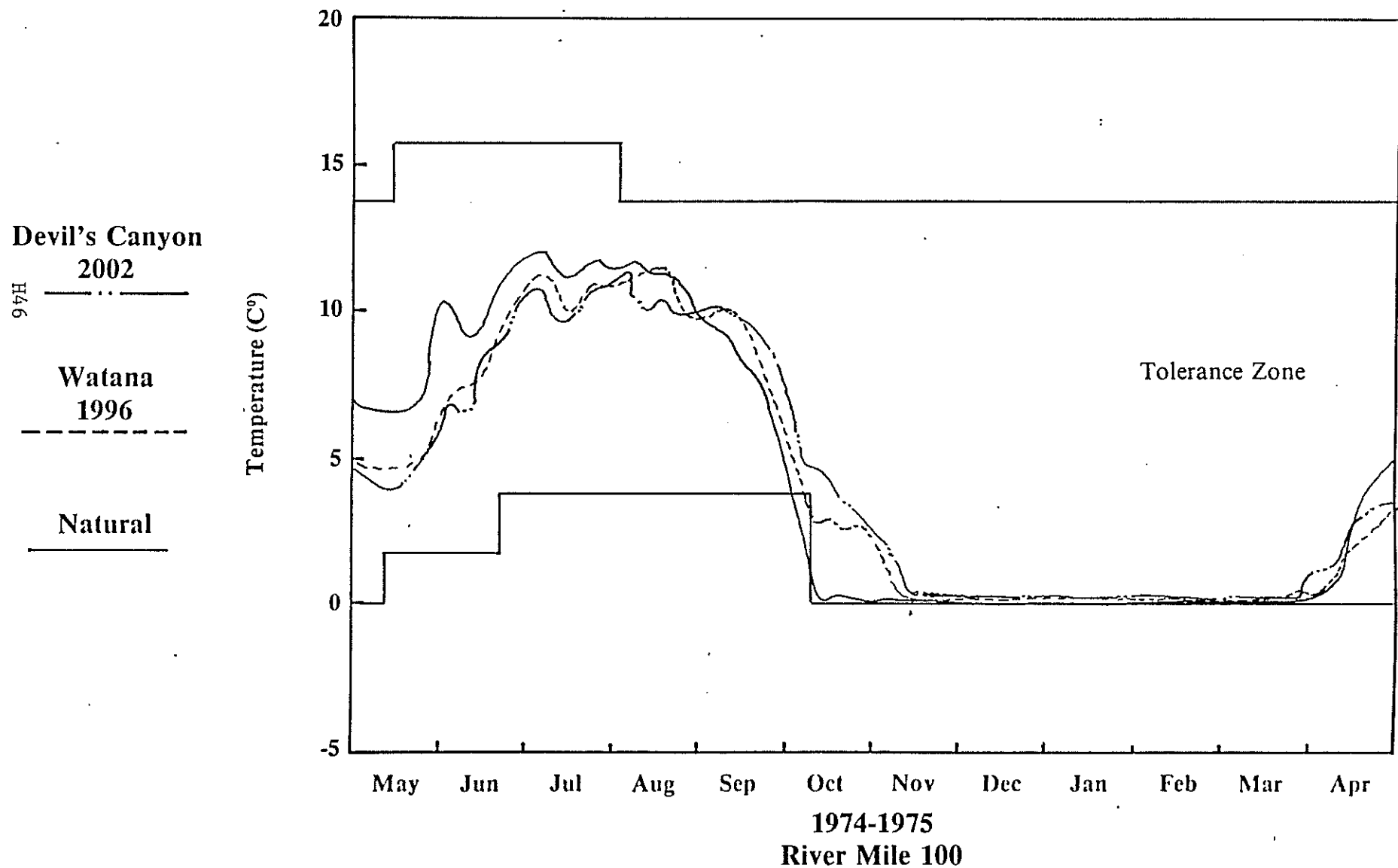
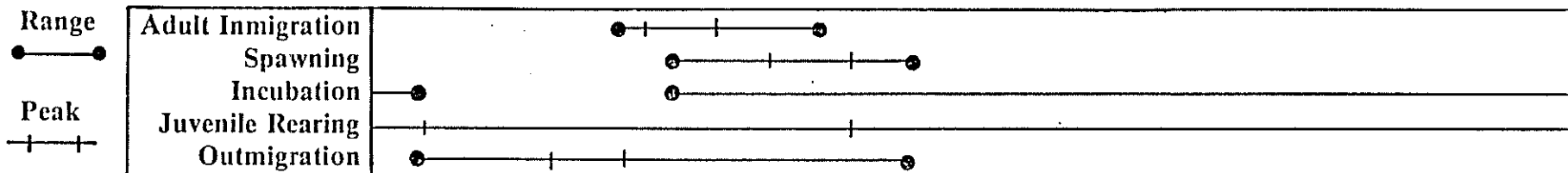
Devil's Canyon
2002
Watana
1996
Natural



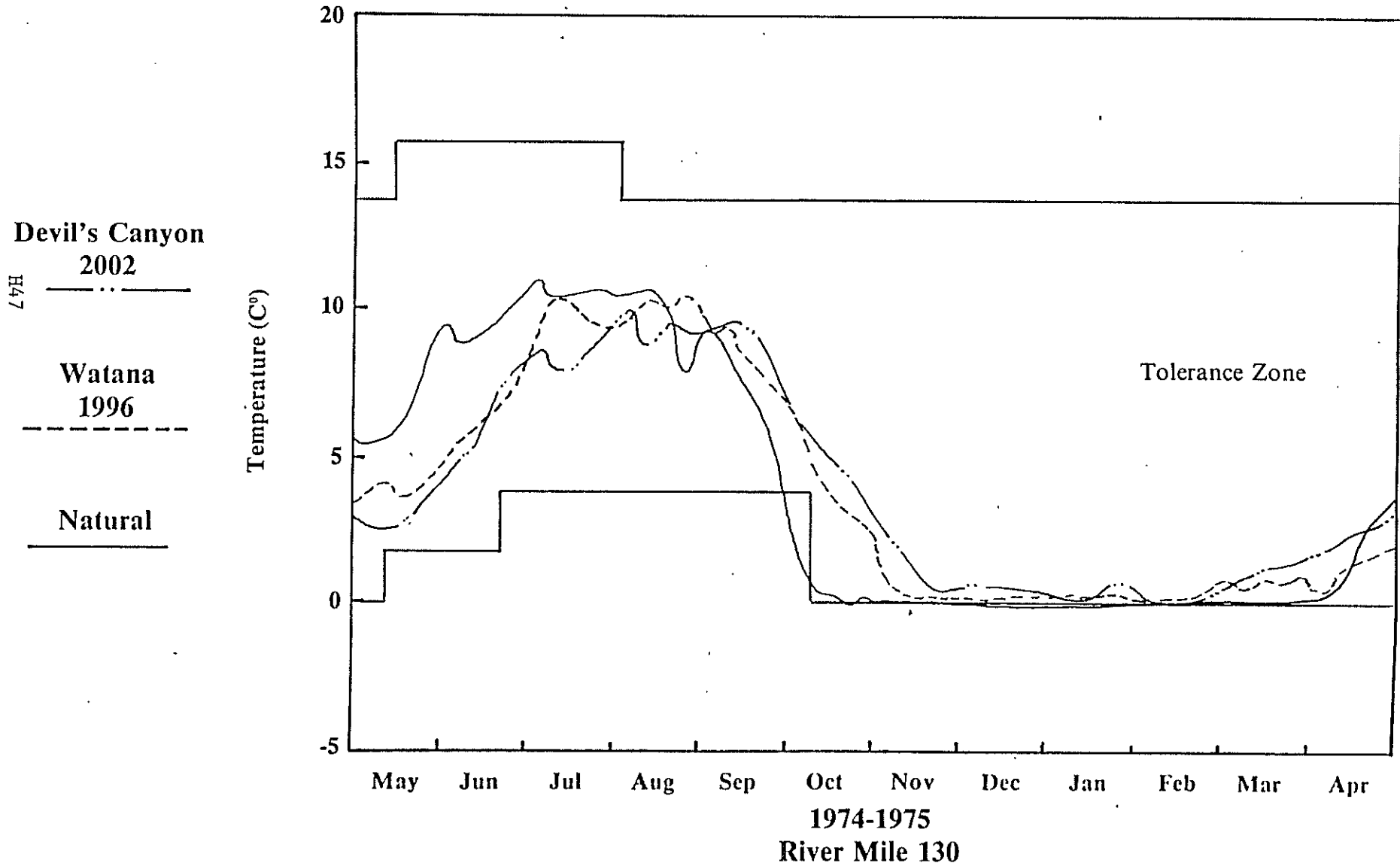
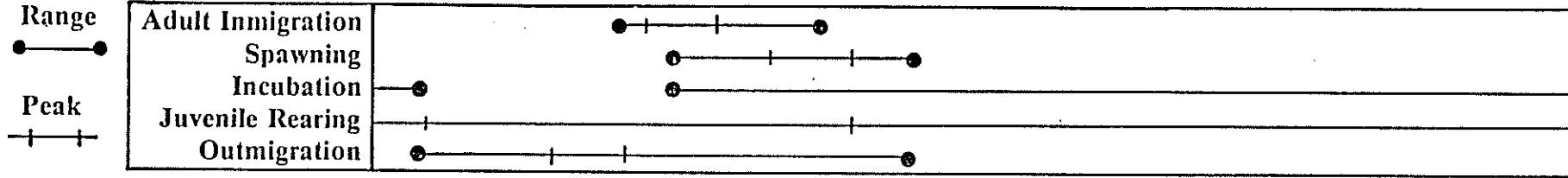
SOCKEYE SALMON



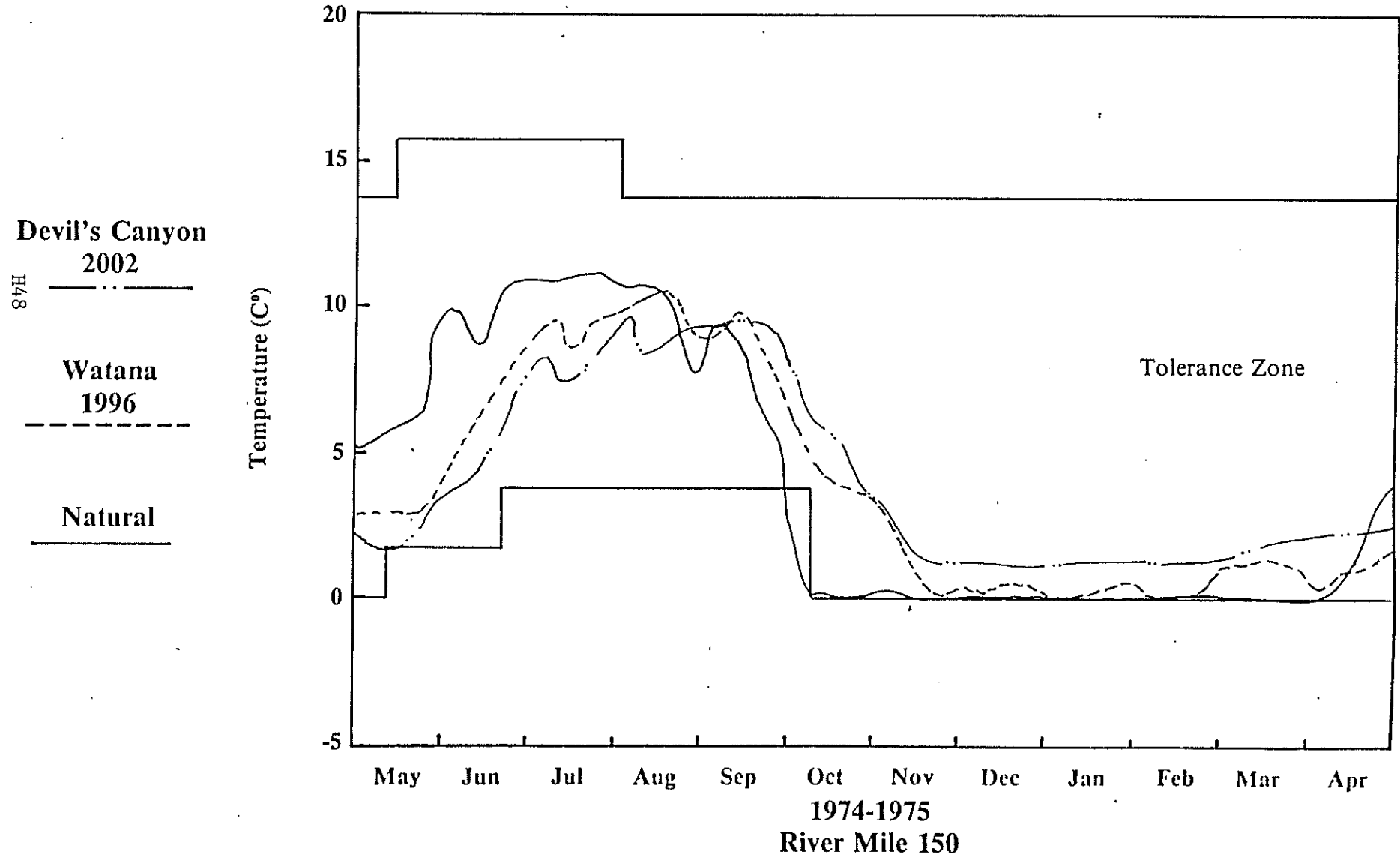
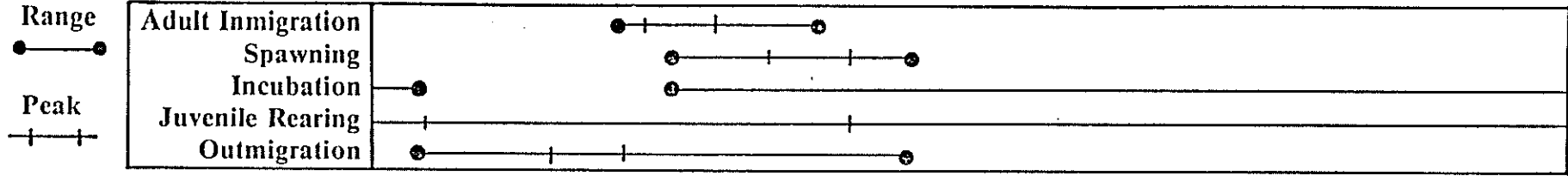
SOCKEYE SALMON



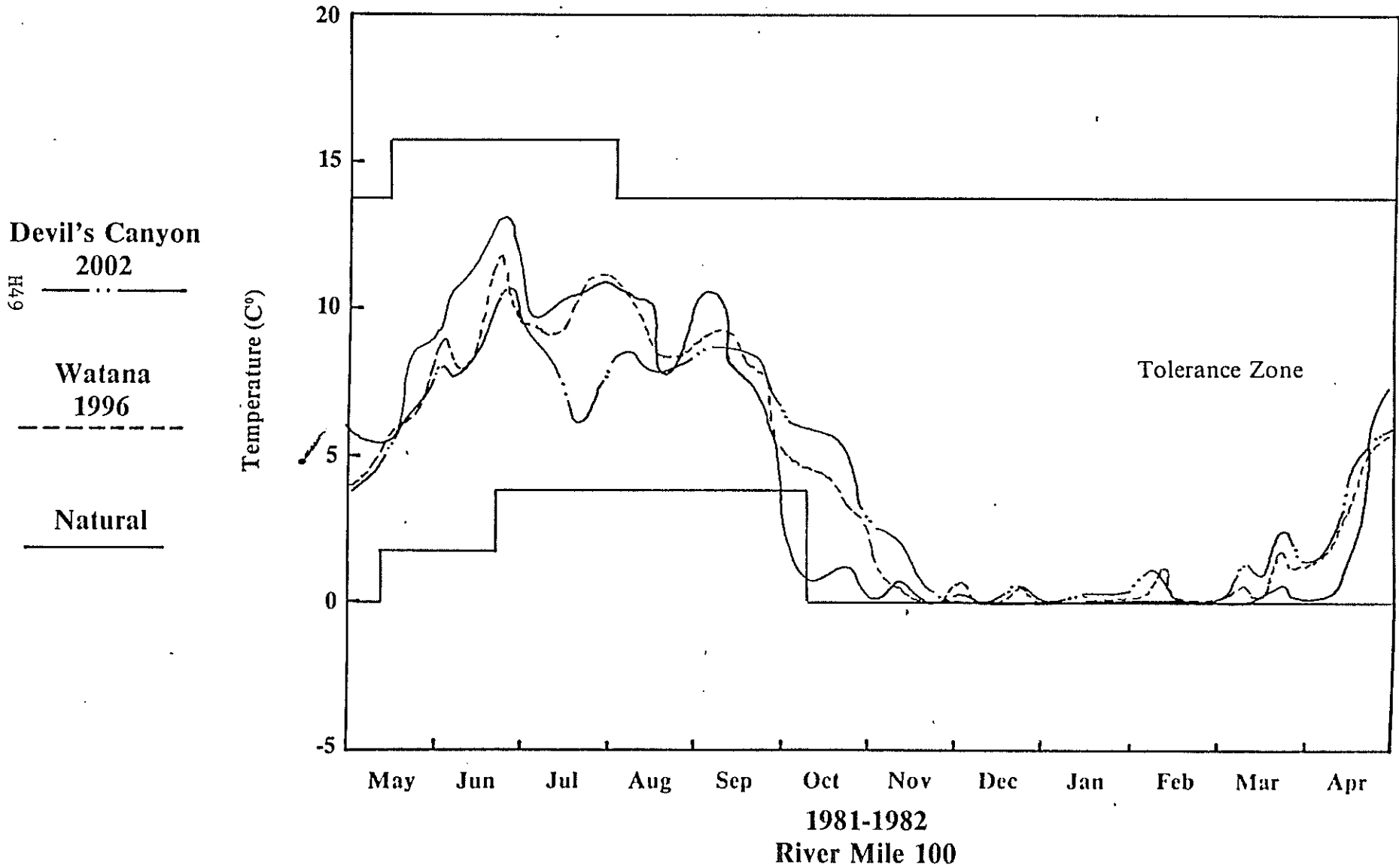
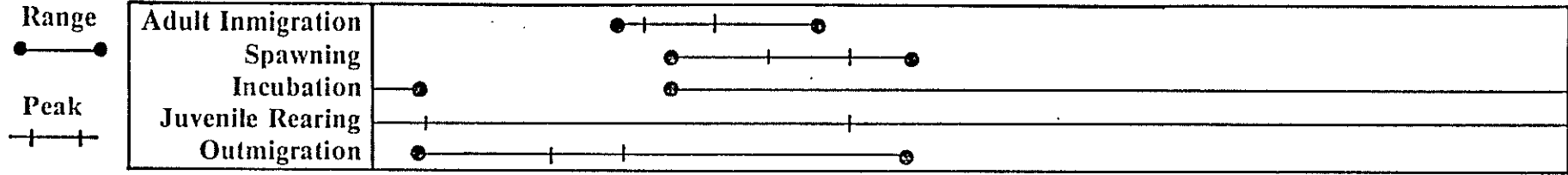
SOCKEYE SALMON



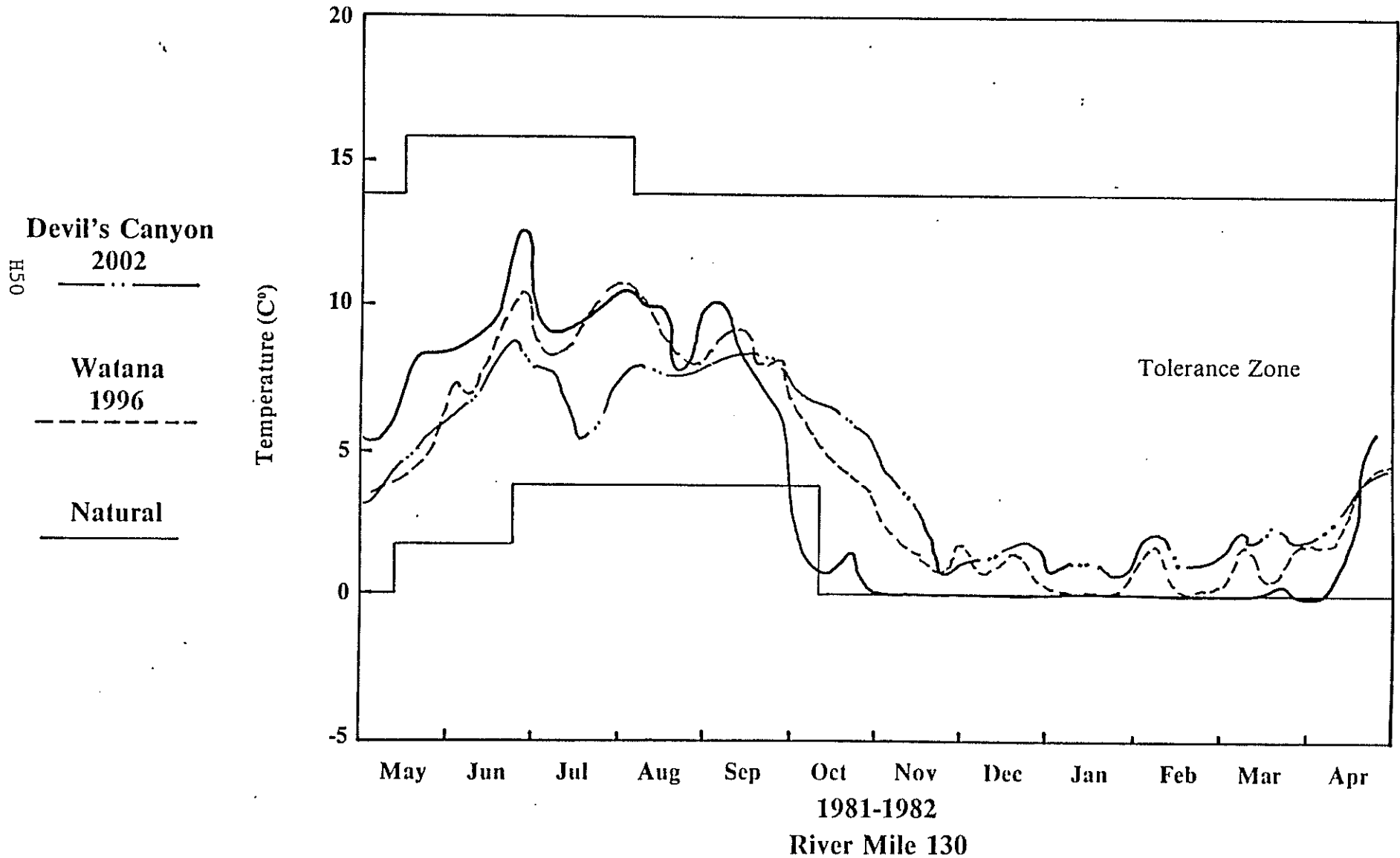
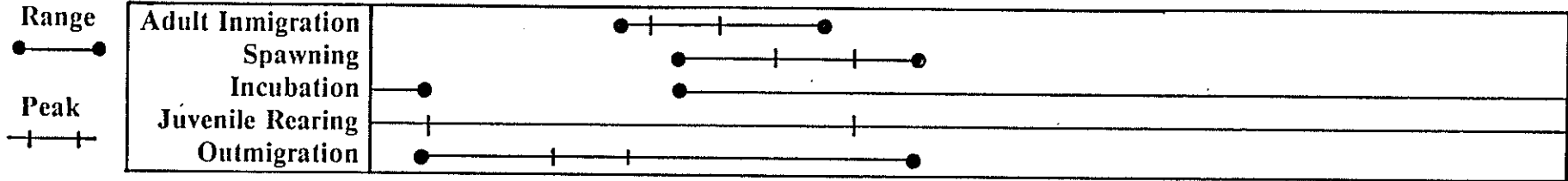
SOCKEYE SALMON



SOCKEYE SALMON



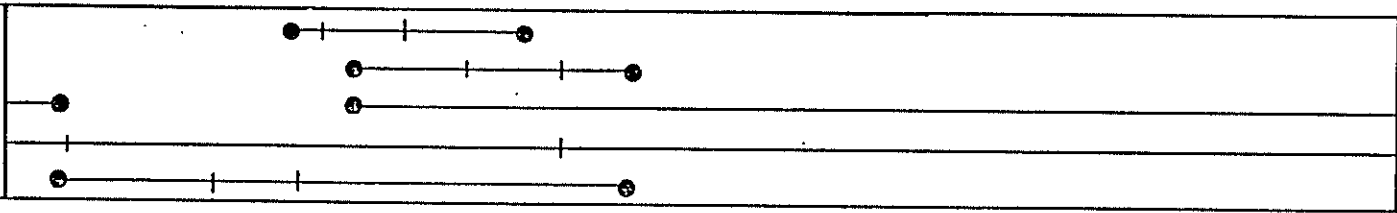
SOCKEYE SALMON



SOCKEYE SALMON

Range
Peak

Adult Immigration
Spawning
Incubation
Juvenile Rearing
Outmigration

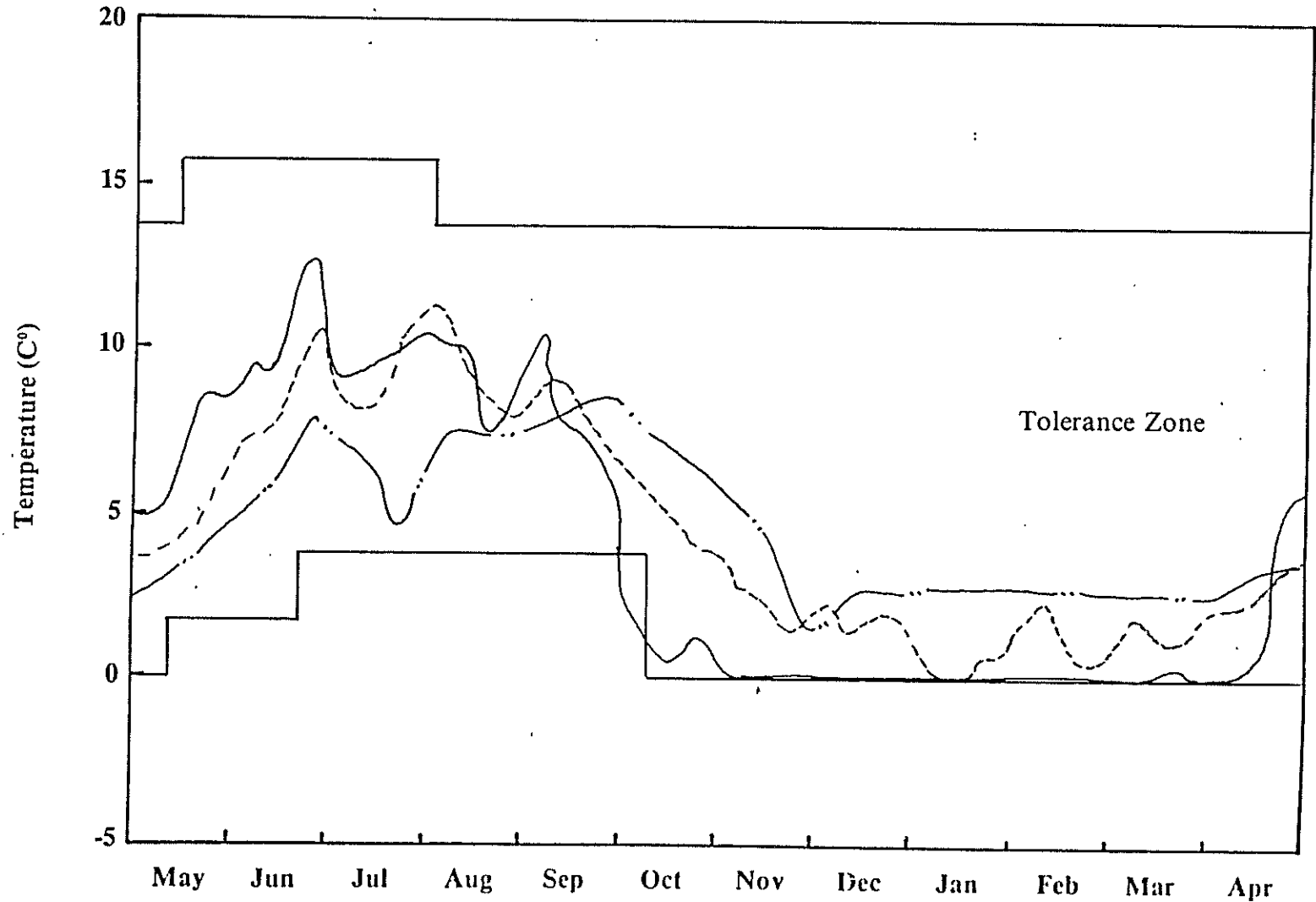


Devil's Canyon
2002

HSI

Watana
1996

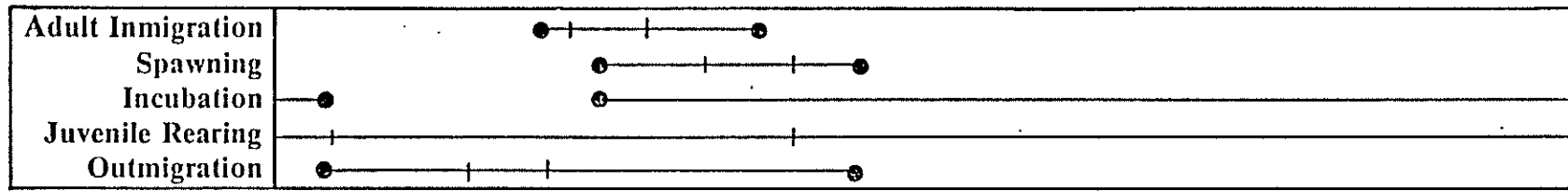
Natural



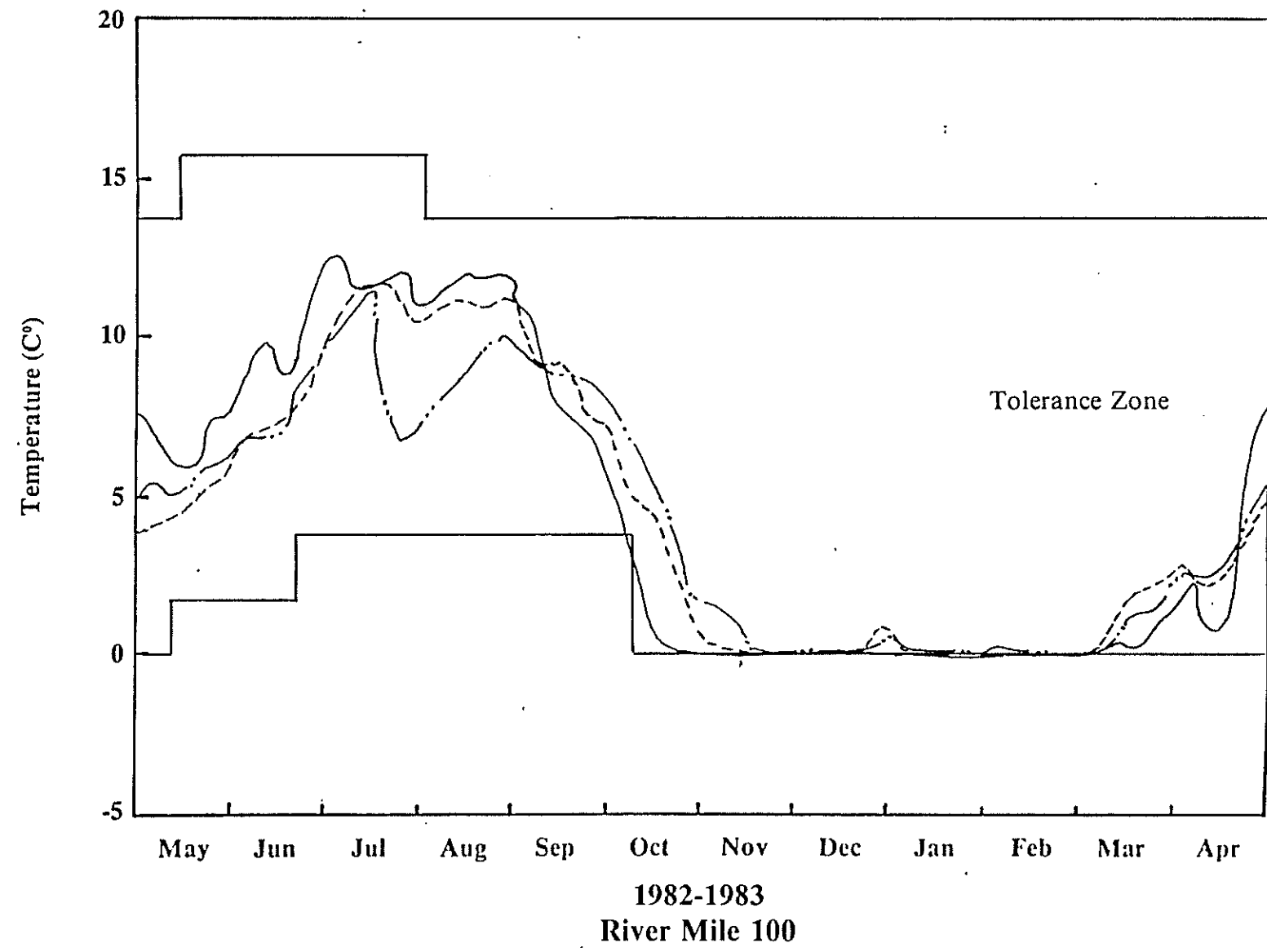
1981-1982
River Mile 150

SOCKEYE SALMON

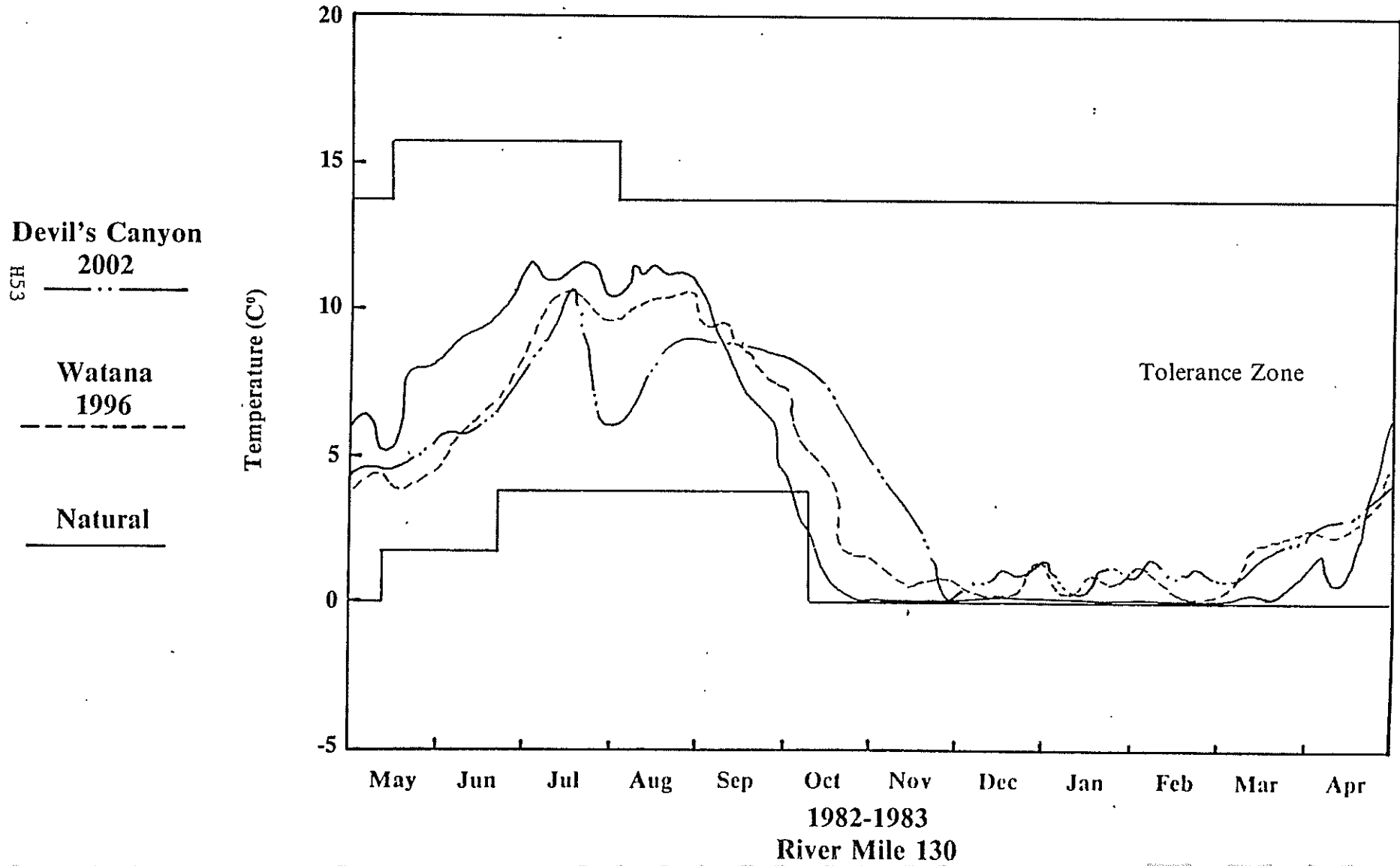
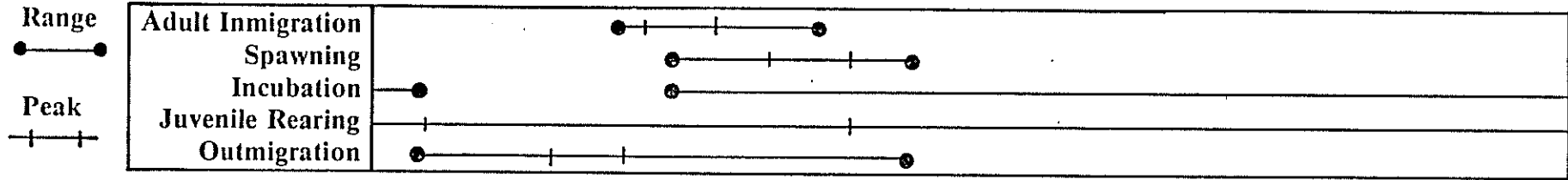
Range
●—●
Peak
+—+



Devil's Canyon
2002
H52
— · · —
Watana
1996
- - - -
Natural
— — — —



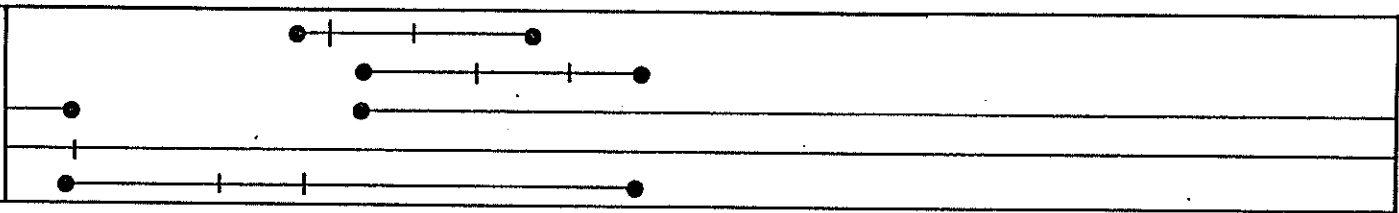
SOCKEYE SALMON



SOCKEYE SALMON

Range
●—●
Peak
+—+

Adult Immigration
Spawning
Incubation
Juvenile Rearing
Outmigration

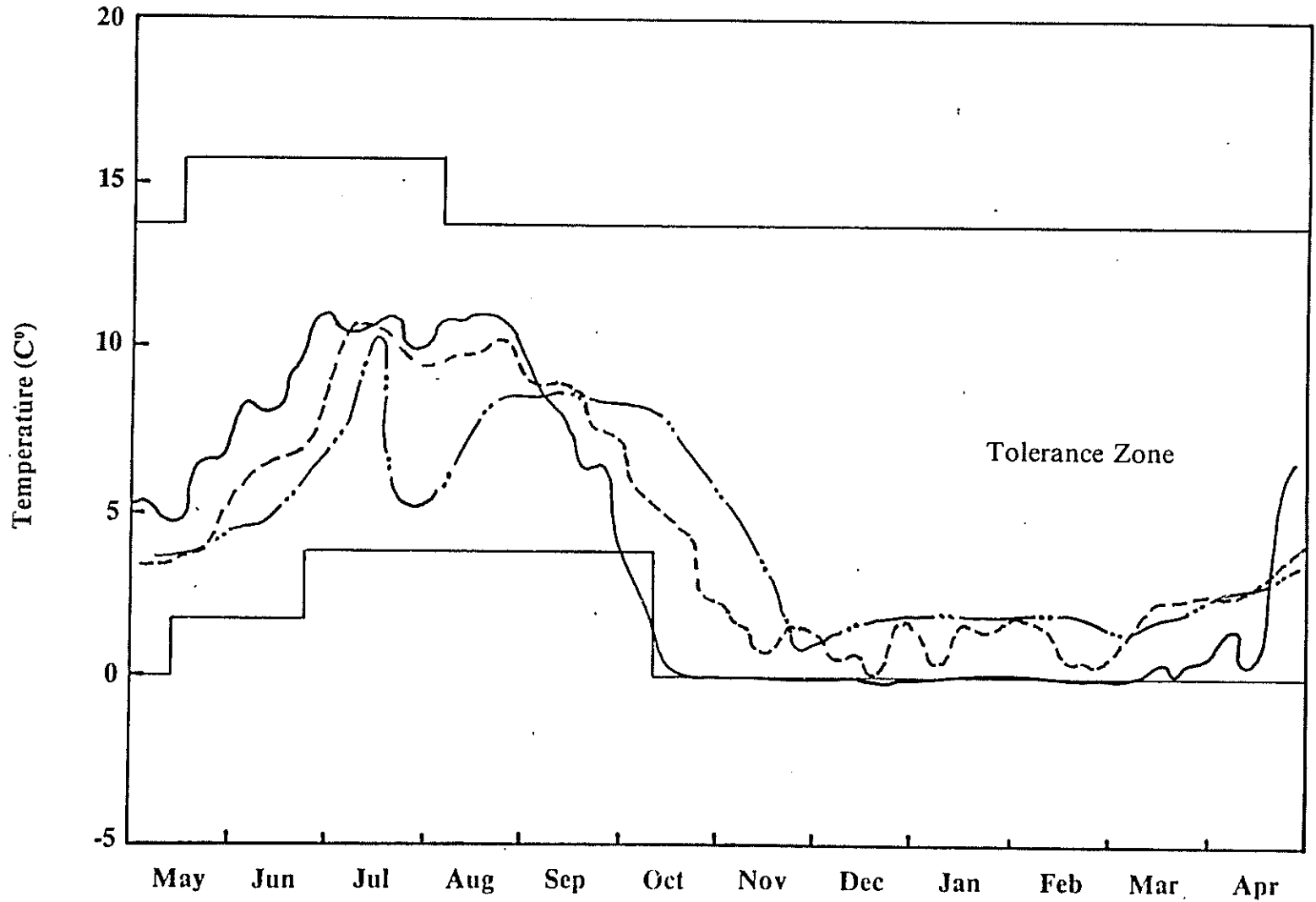


Devil's Canyon
2002

HS4

Watana
1996

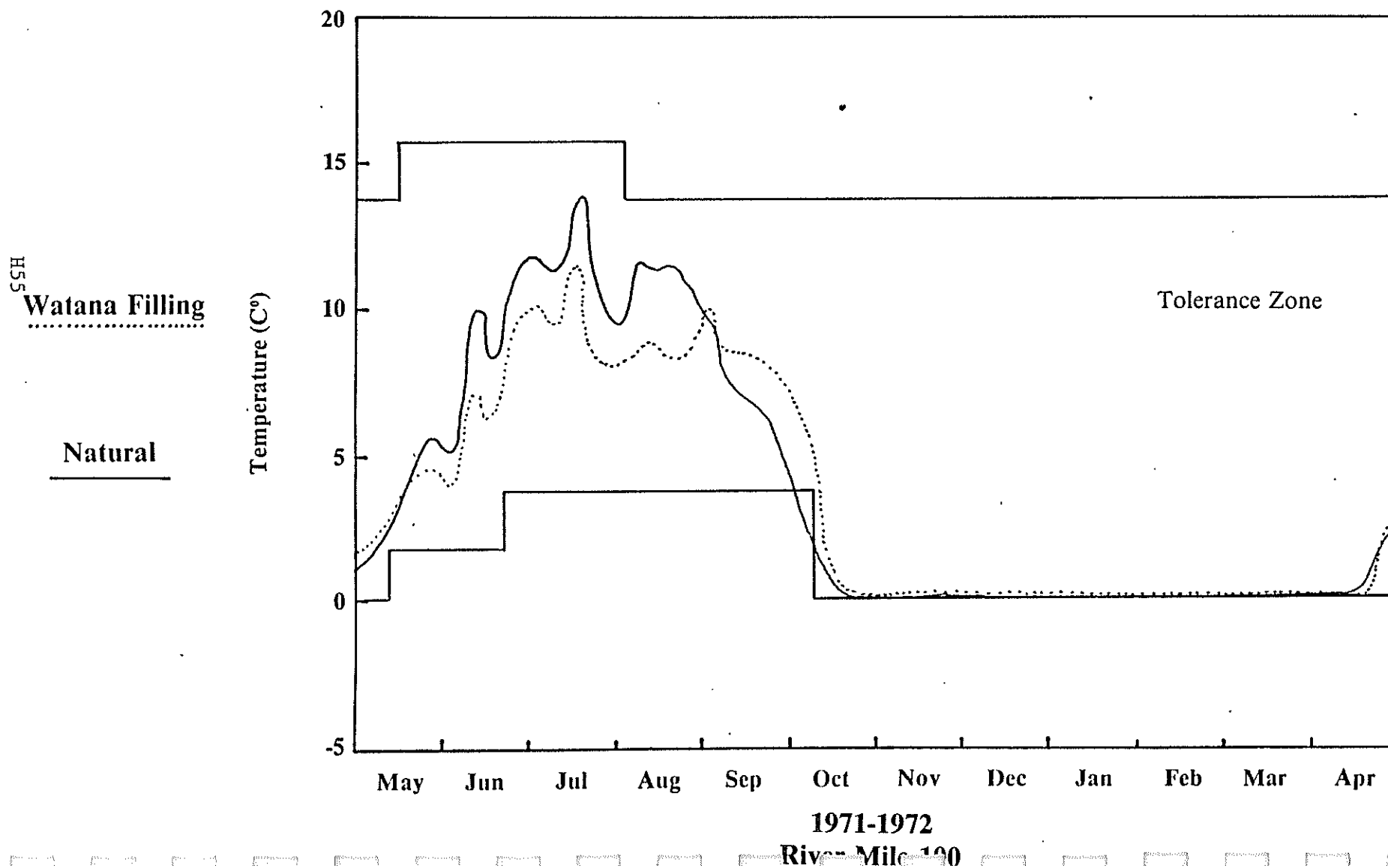
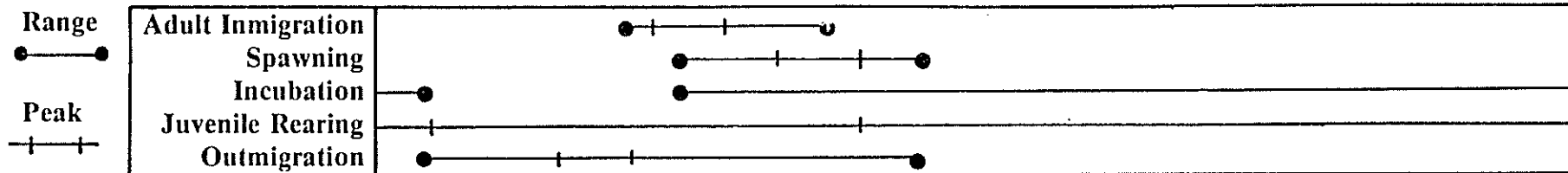
Natural



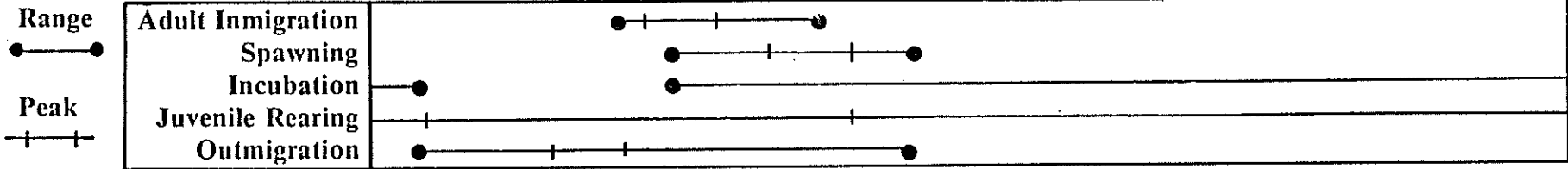
1982-1983

River Mile 150

SOCKEYE SALMON

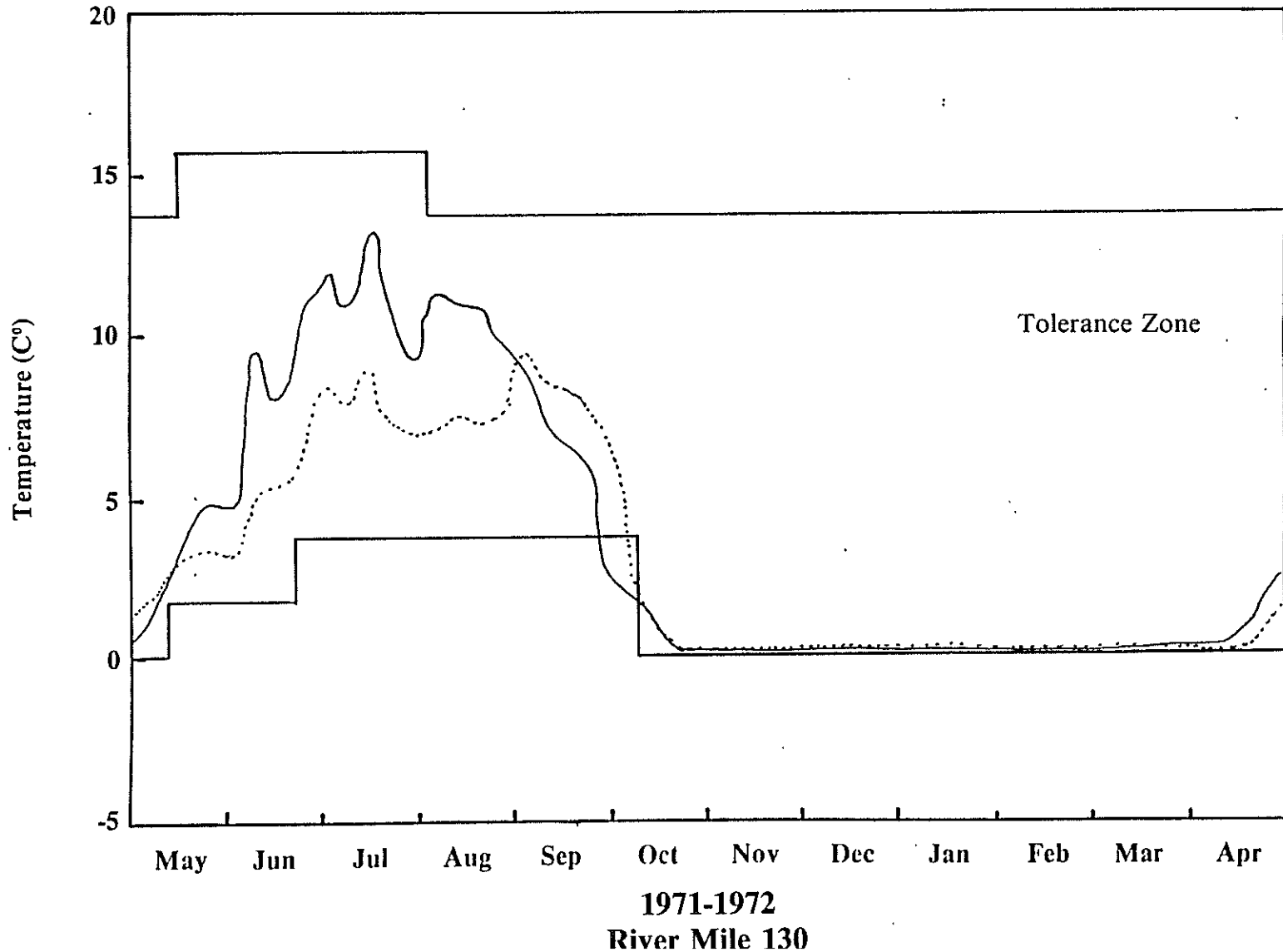


SOCKEYE SALMON

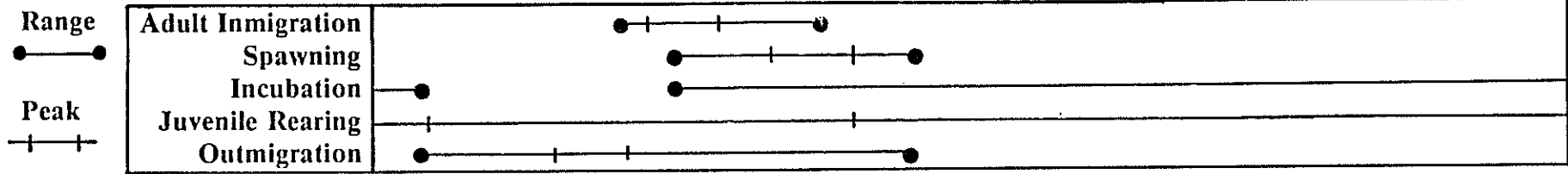


H56
 Watana Filling

Natural



SOCKEYE SALMON

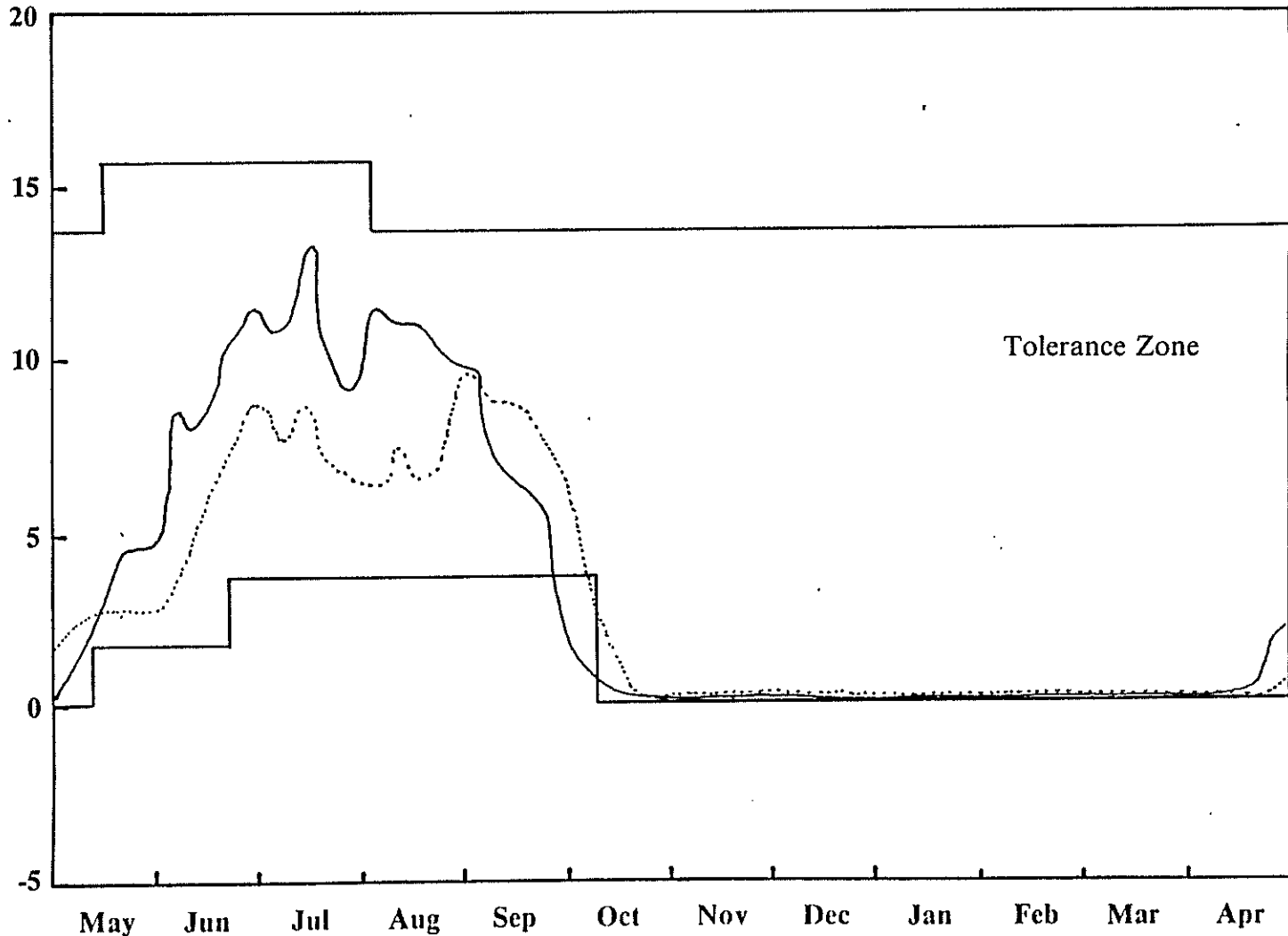


157

Watana Filling

Natural

Temperature (C°)



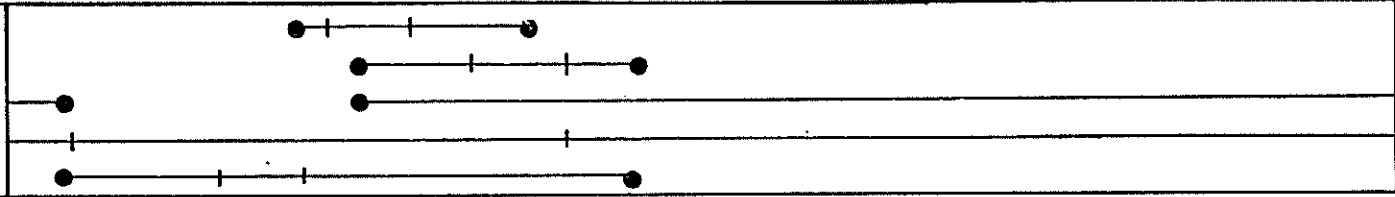
1971-1972

River Mile 150

SOCKEYE SALMON

Range
●—●
Peak
+—+

Adult Immigration
Spawning
Incubation
Juvenile Rearing
Outmigration

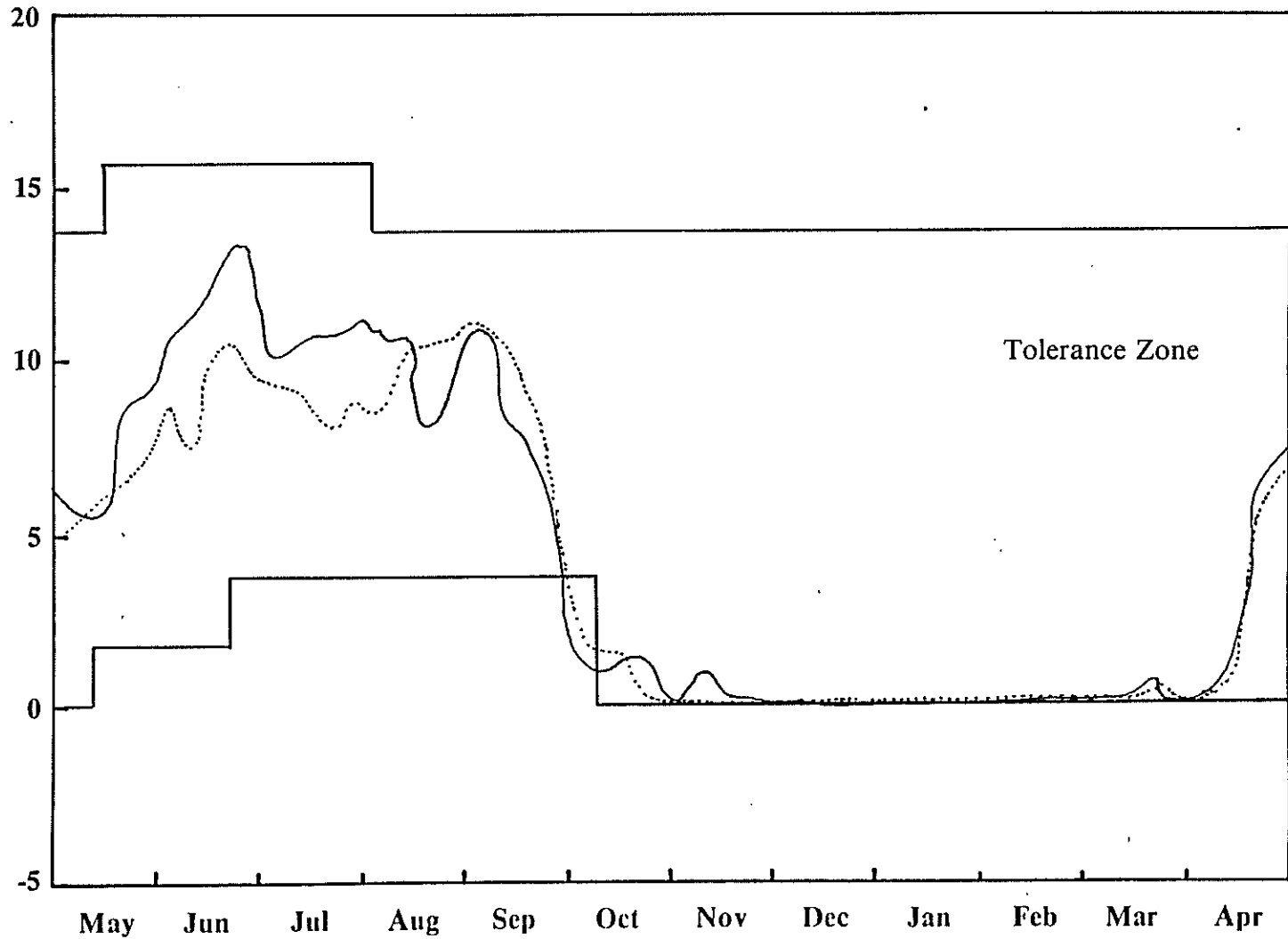


H58

Watana Filling

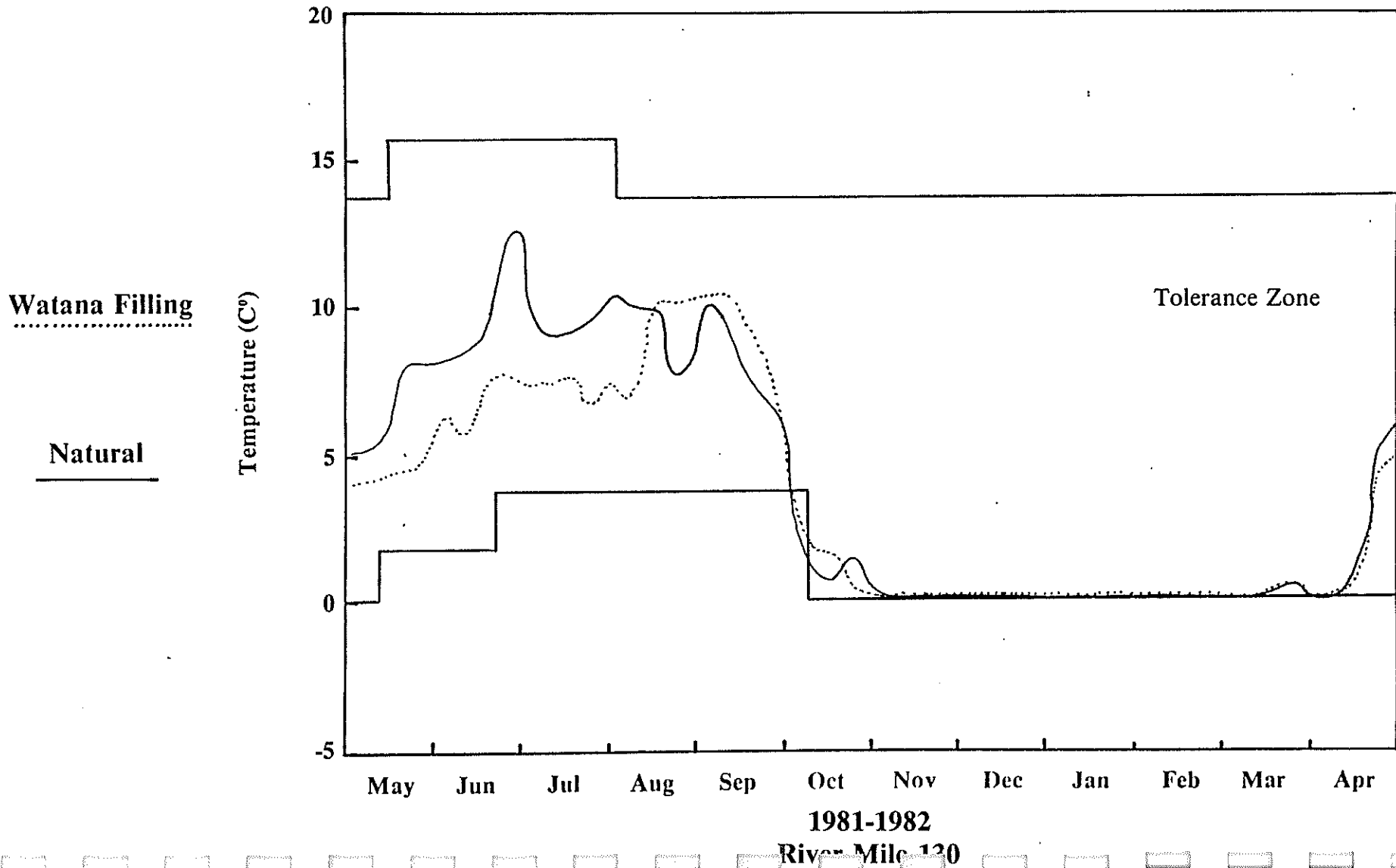
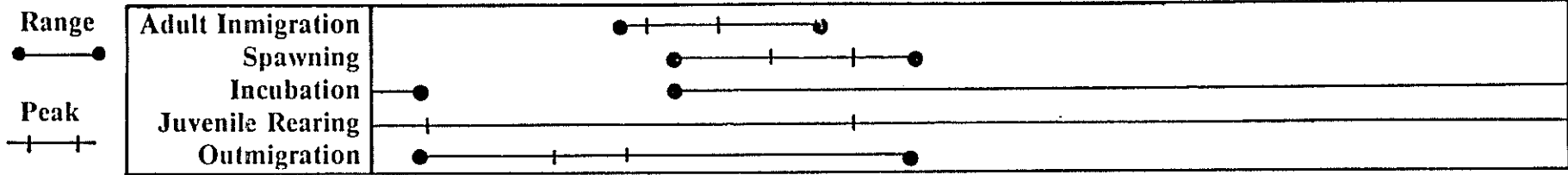
Natural

Temperature (C°)



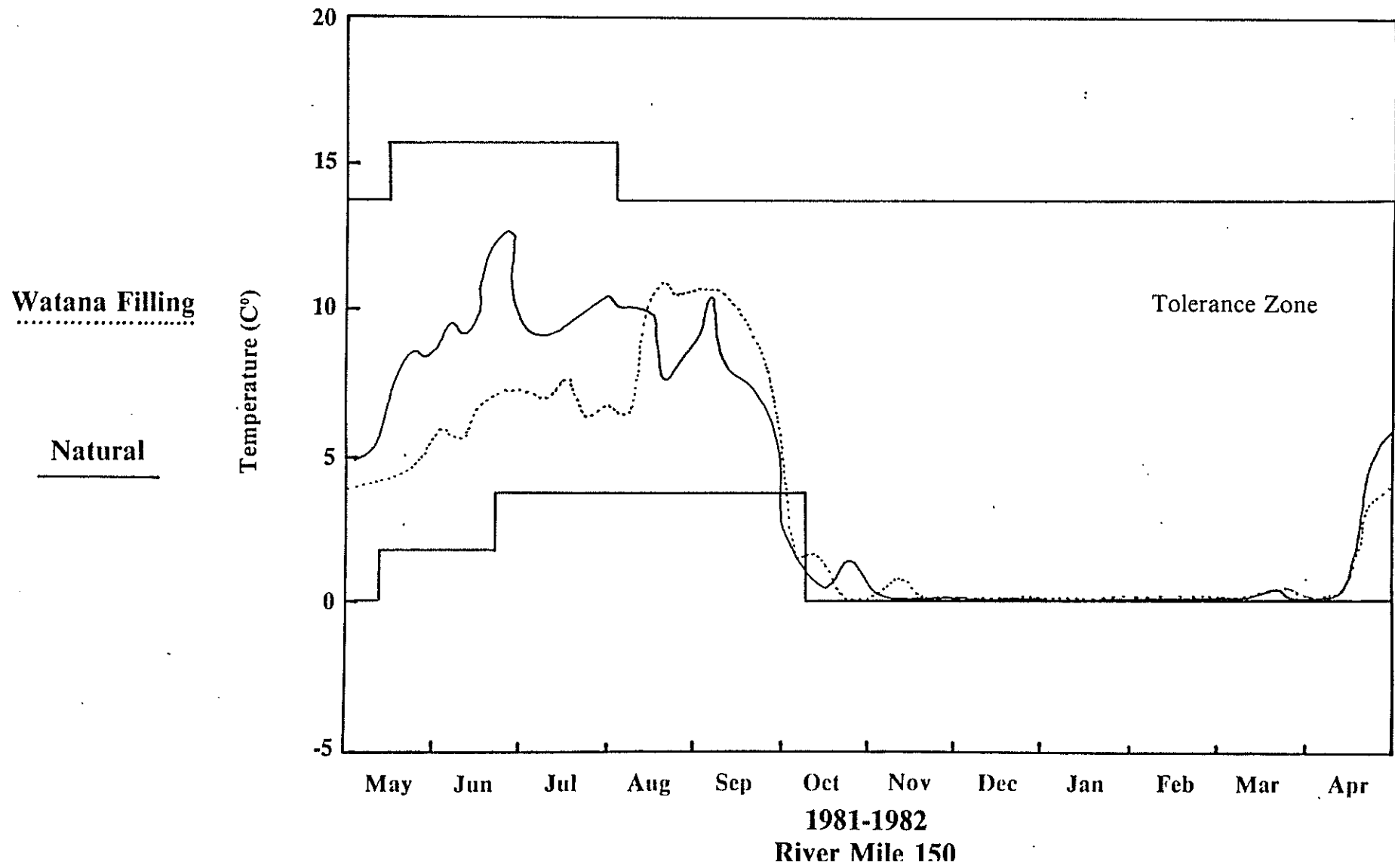
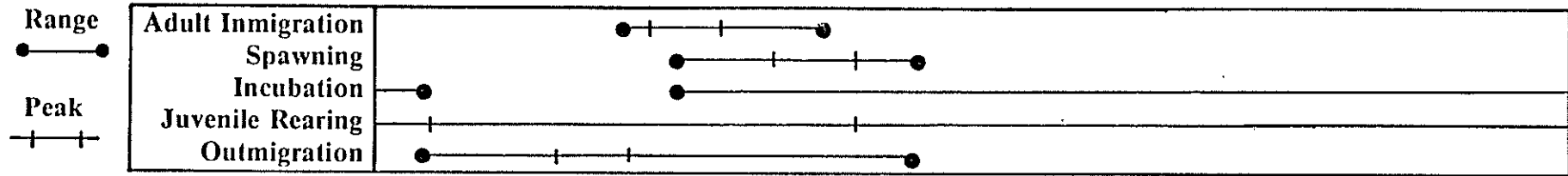
1981-1982
River Mile 100

SOCKEYE SALMON

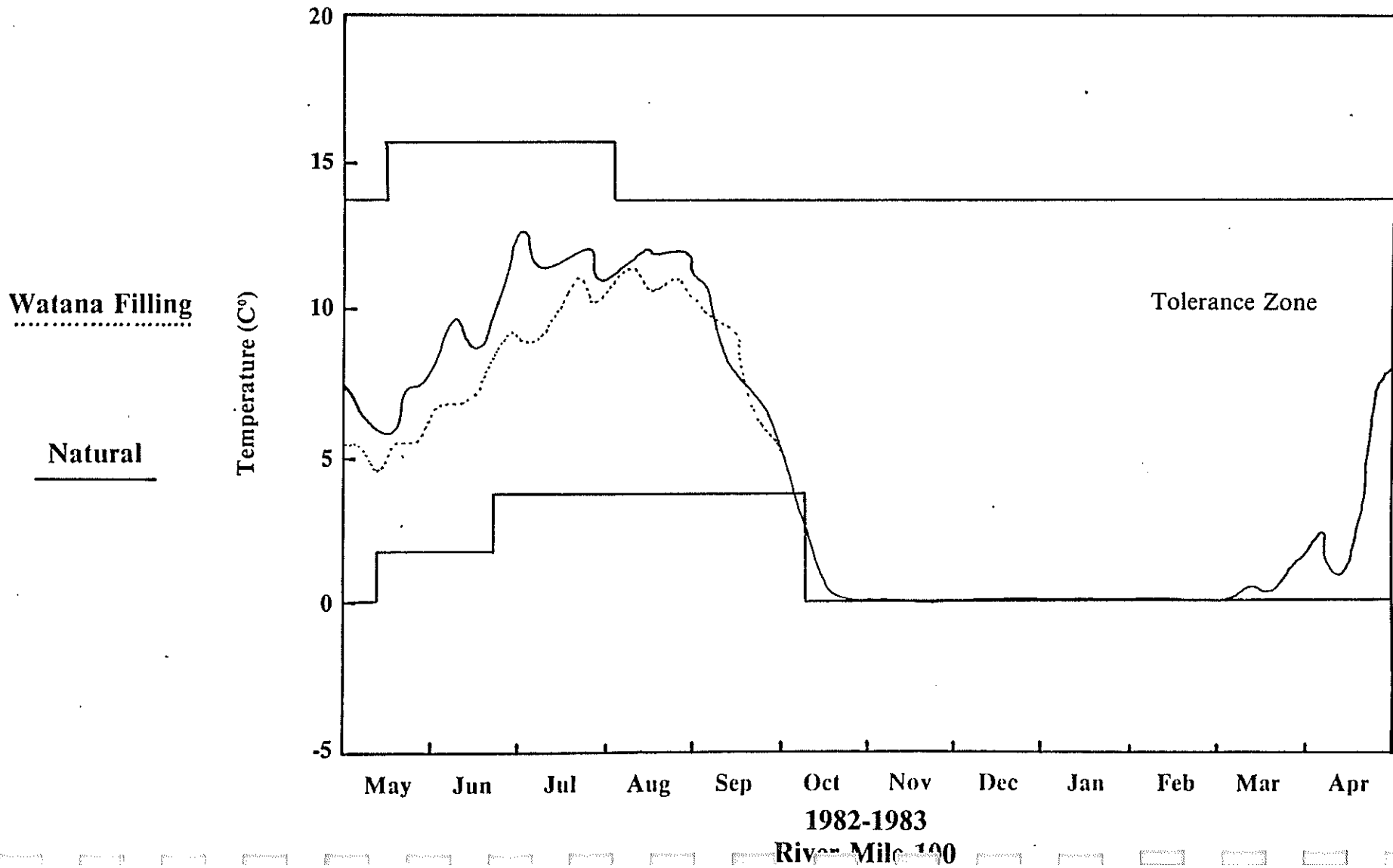
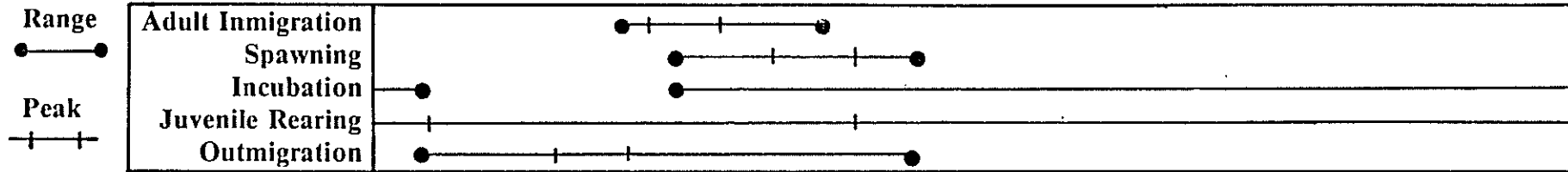




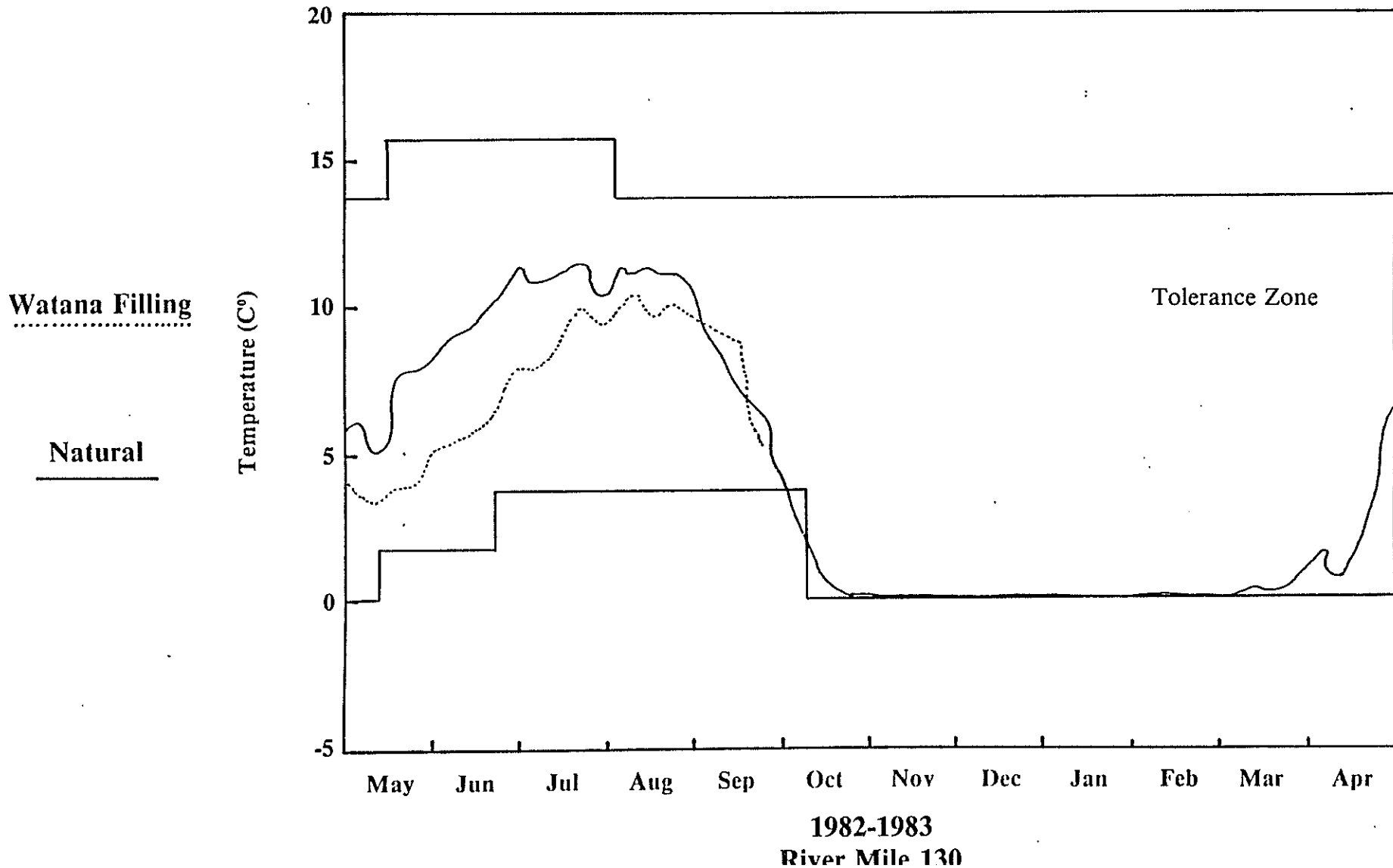
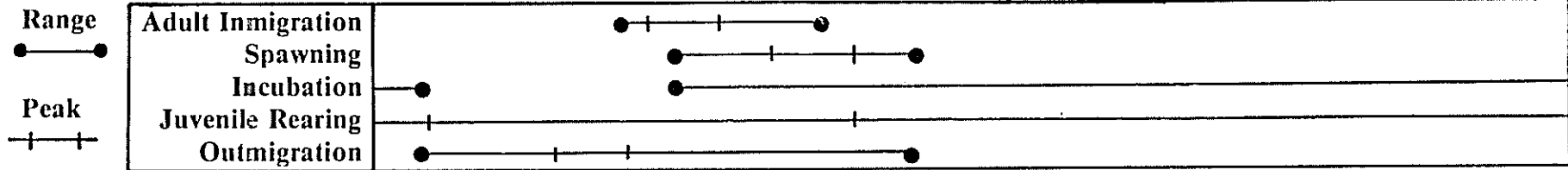
SOCKEYE SALMON



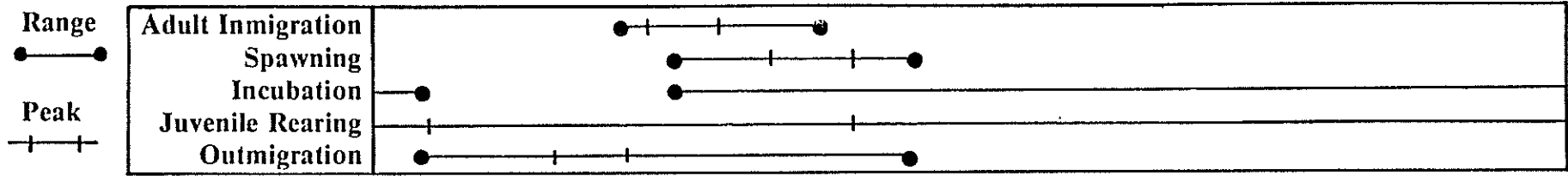
SOCKEYE SALMON



SOCKEYE SALMON



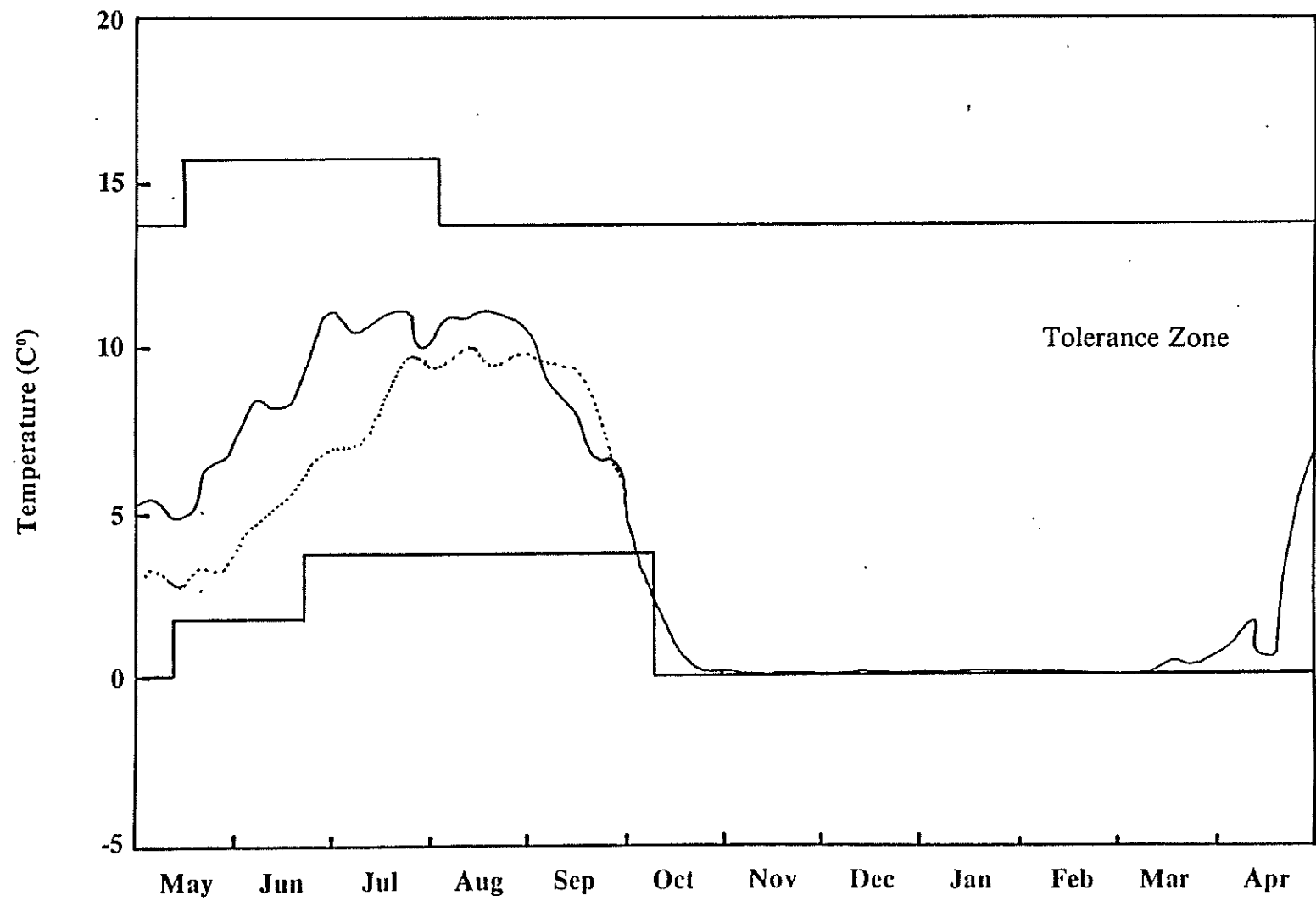
SOCKEYE SALMON



H63

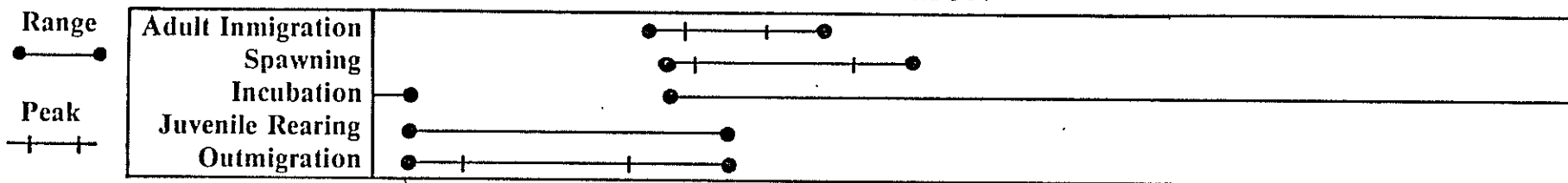
Watana Filling

Natural



1982-1983
River Mile 150

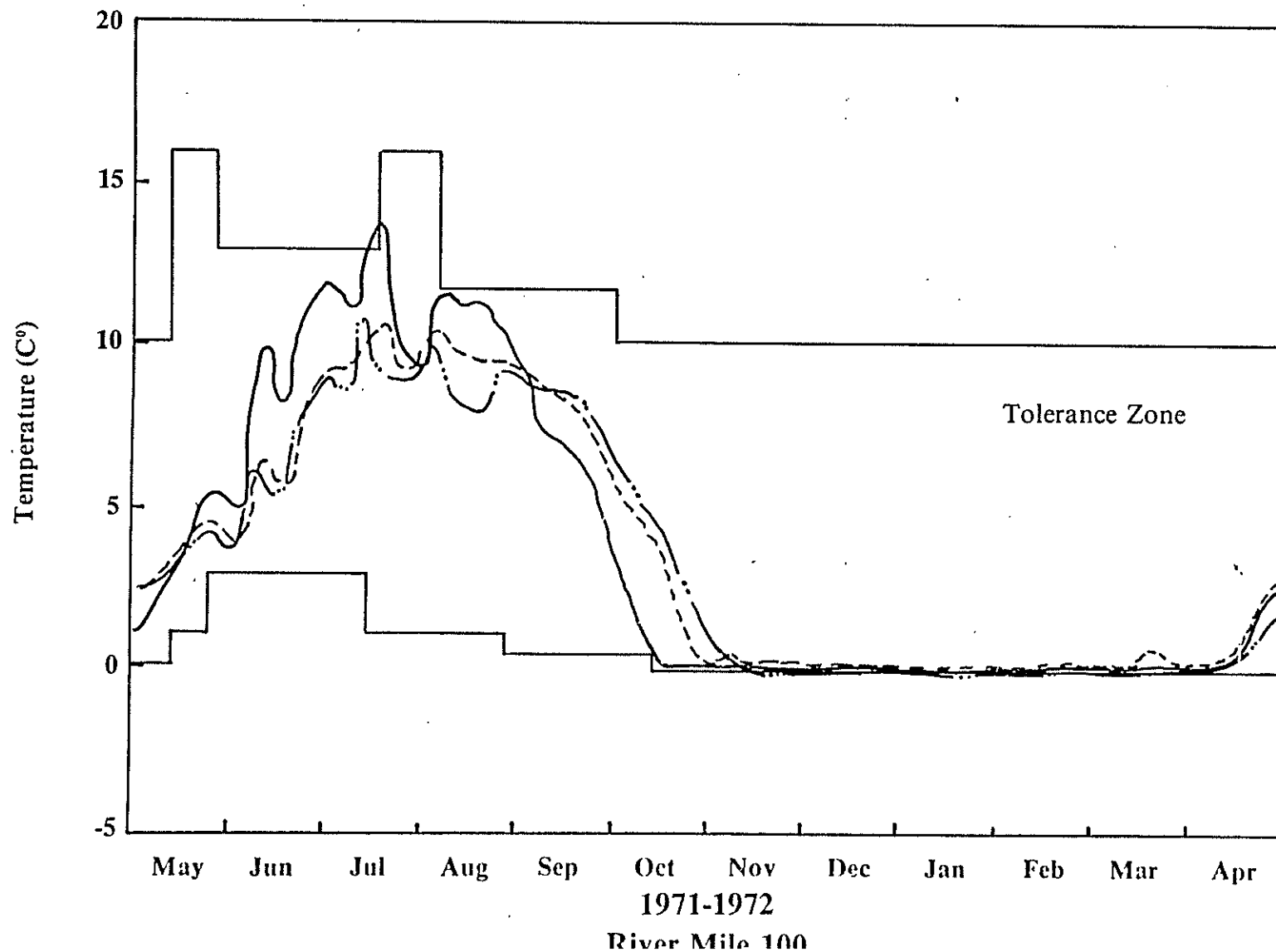
CHUM SALMON



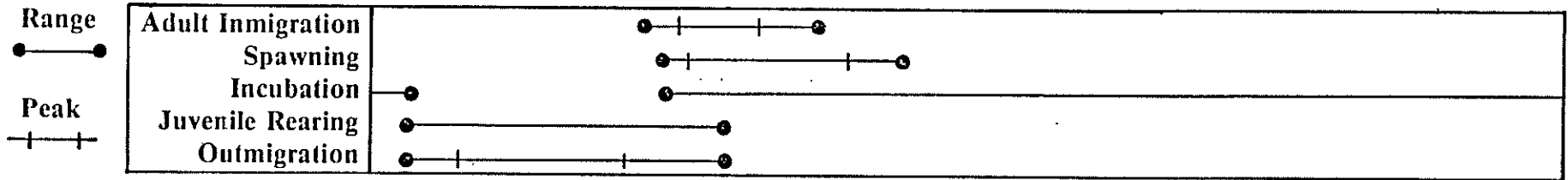
Devil's Canyon
2002

Watana
1996

Natural



CHUM SALMON

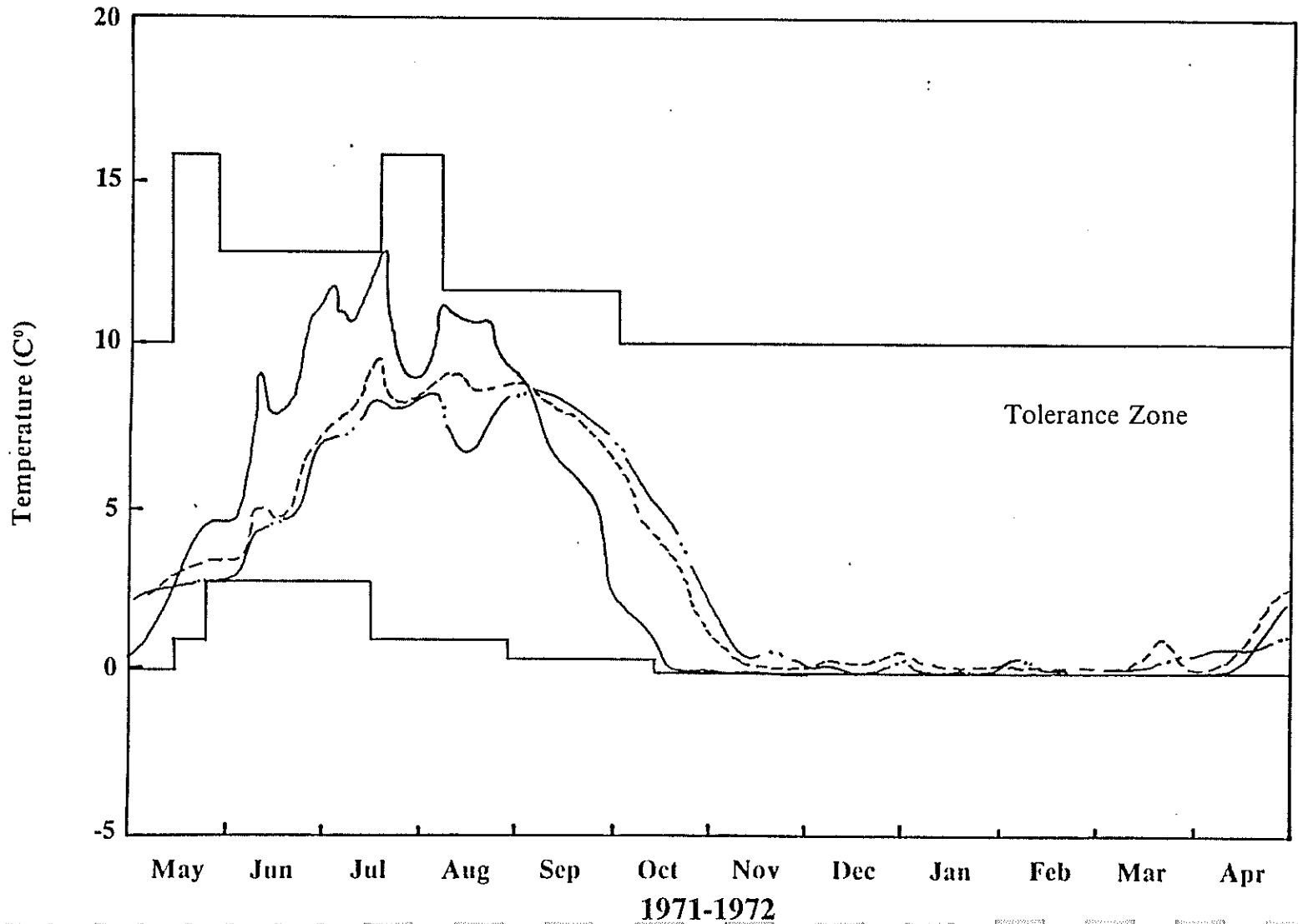


H65

Devil's Canyon
2002

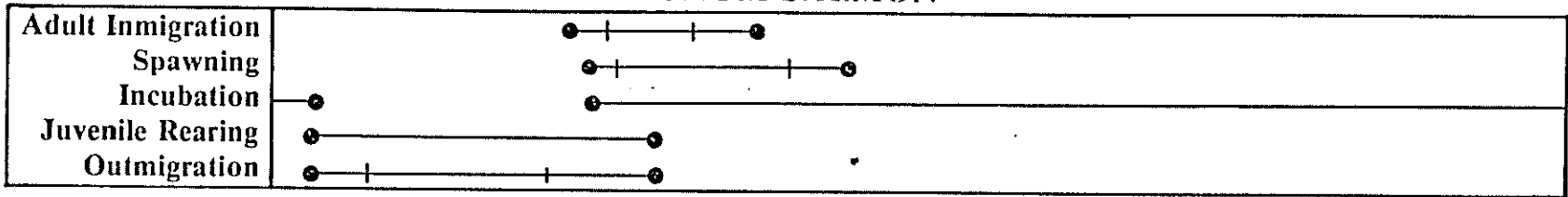
Watana
1996

Natural



CHUM SALMON

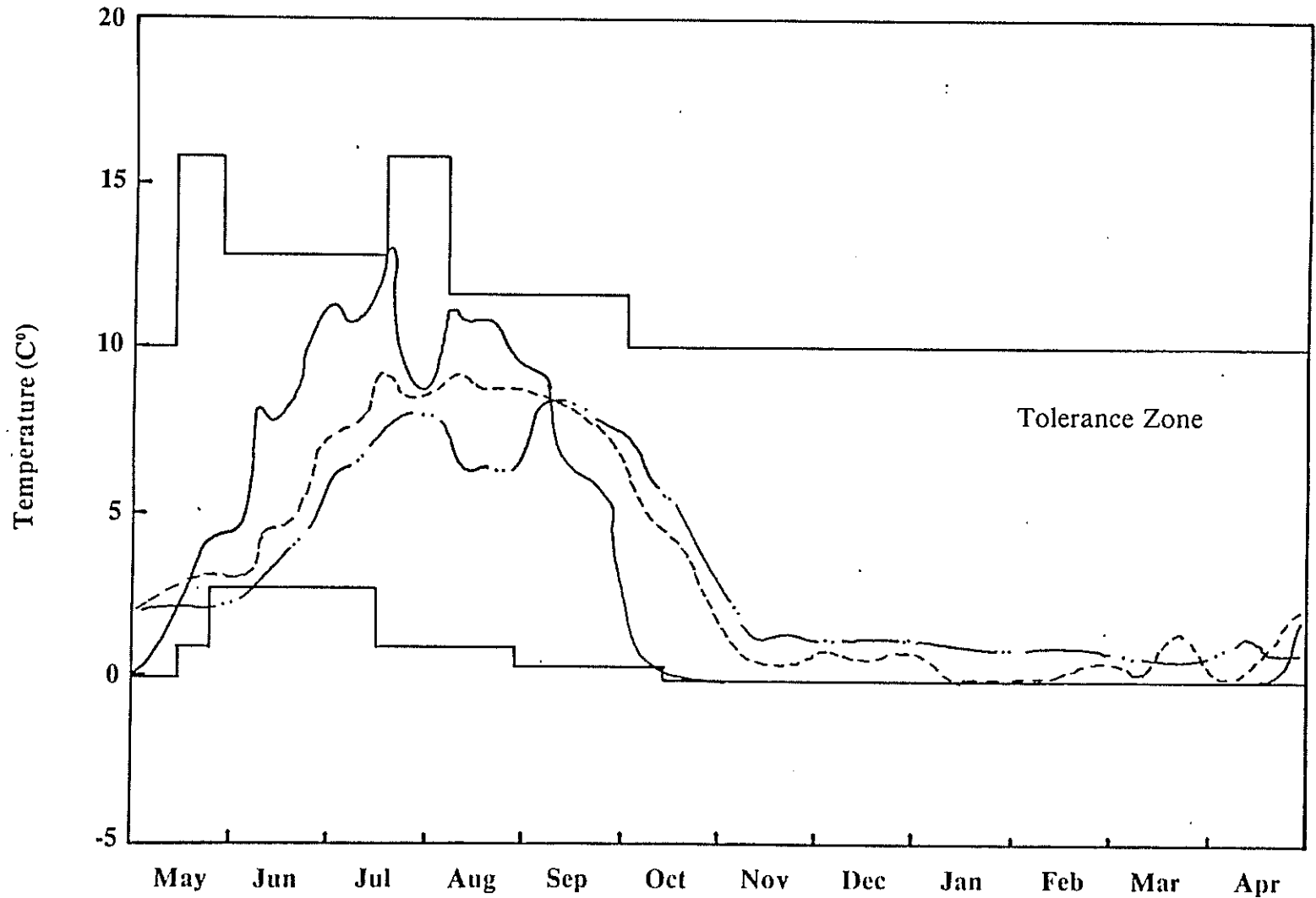
Range
●—●
Peak
+—+



Devil's Canyon
2002
— · — · —

Watana
1996
- - - - -

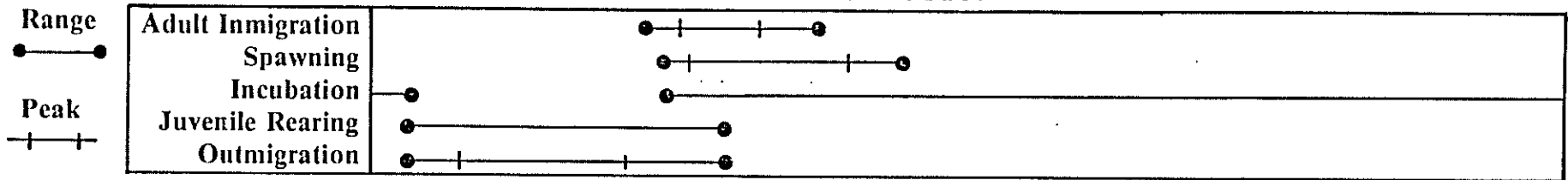
Natural
—————



1971-1972

Distance Miles 150

CHUM SALMON

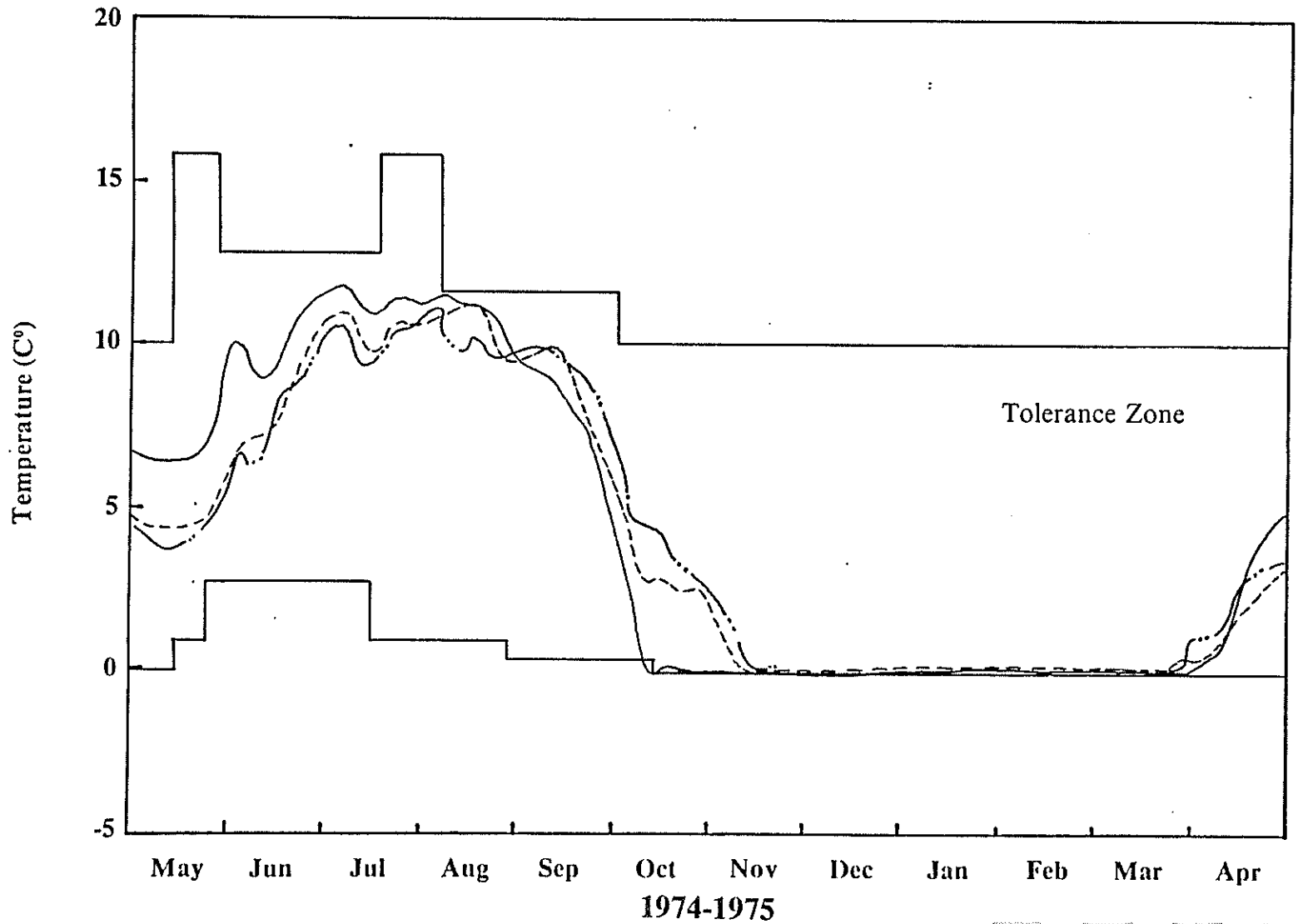


H67

Devil's Canyon
2002

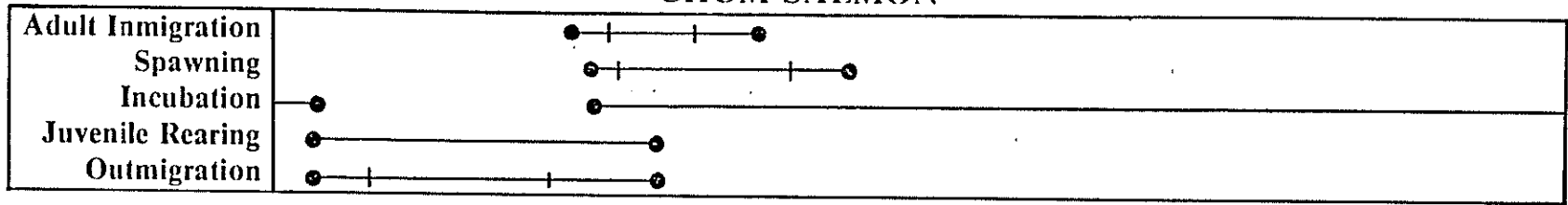
Watana
1996

Natural



CHUM SALMON

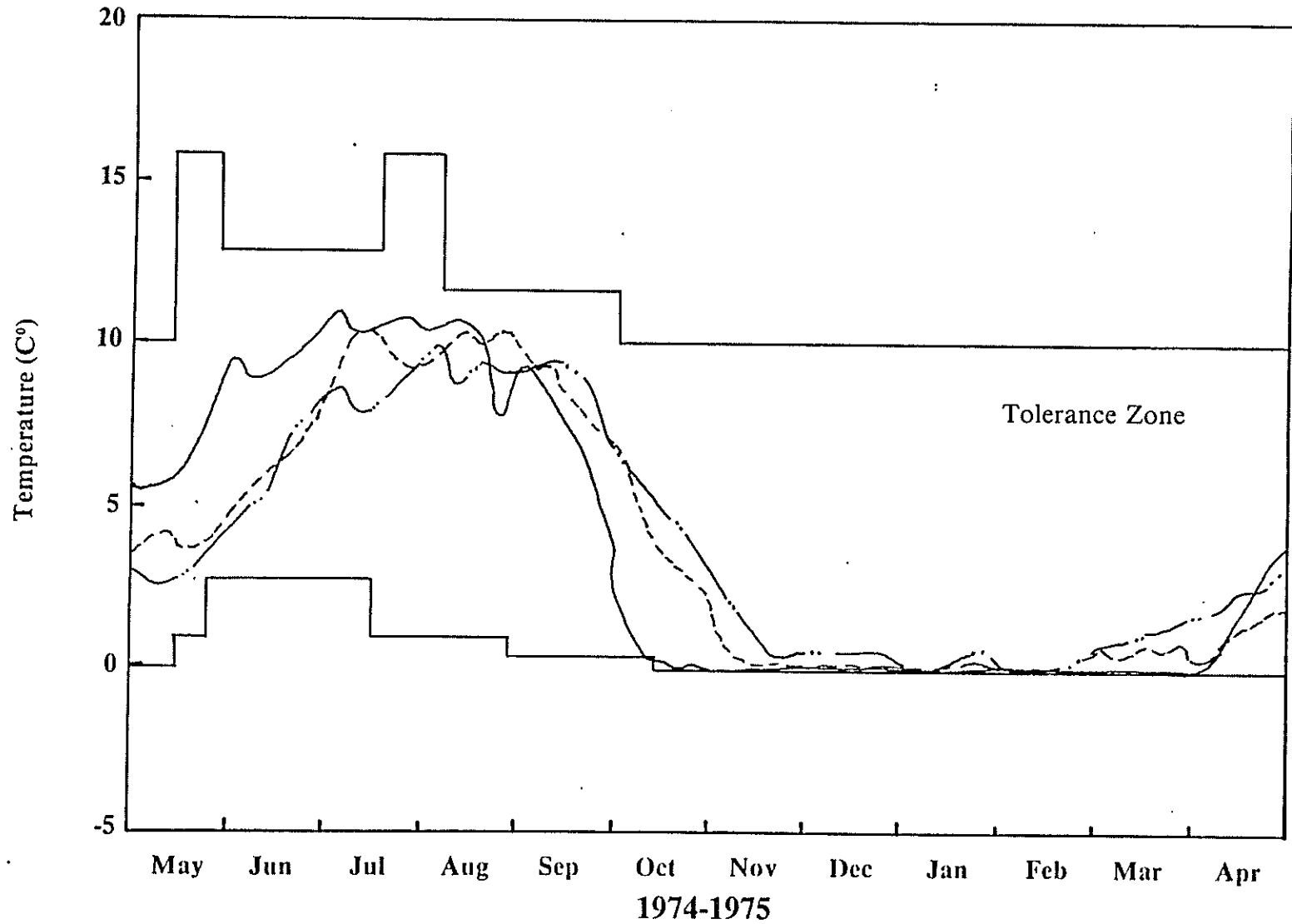
Range
●—●
Peak
—+—



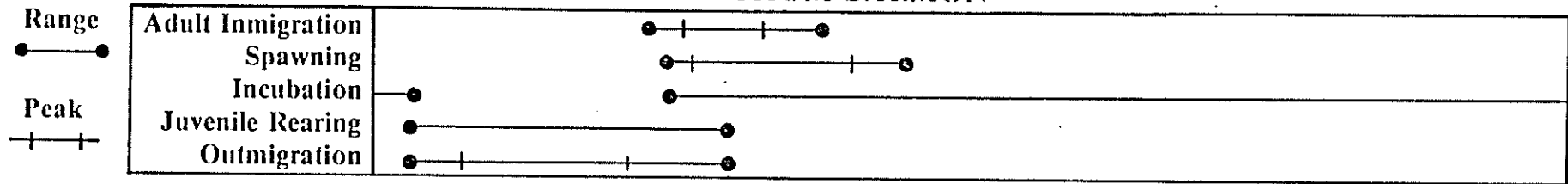
Devil's Canyon
2002

Watana
1996

Natural



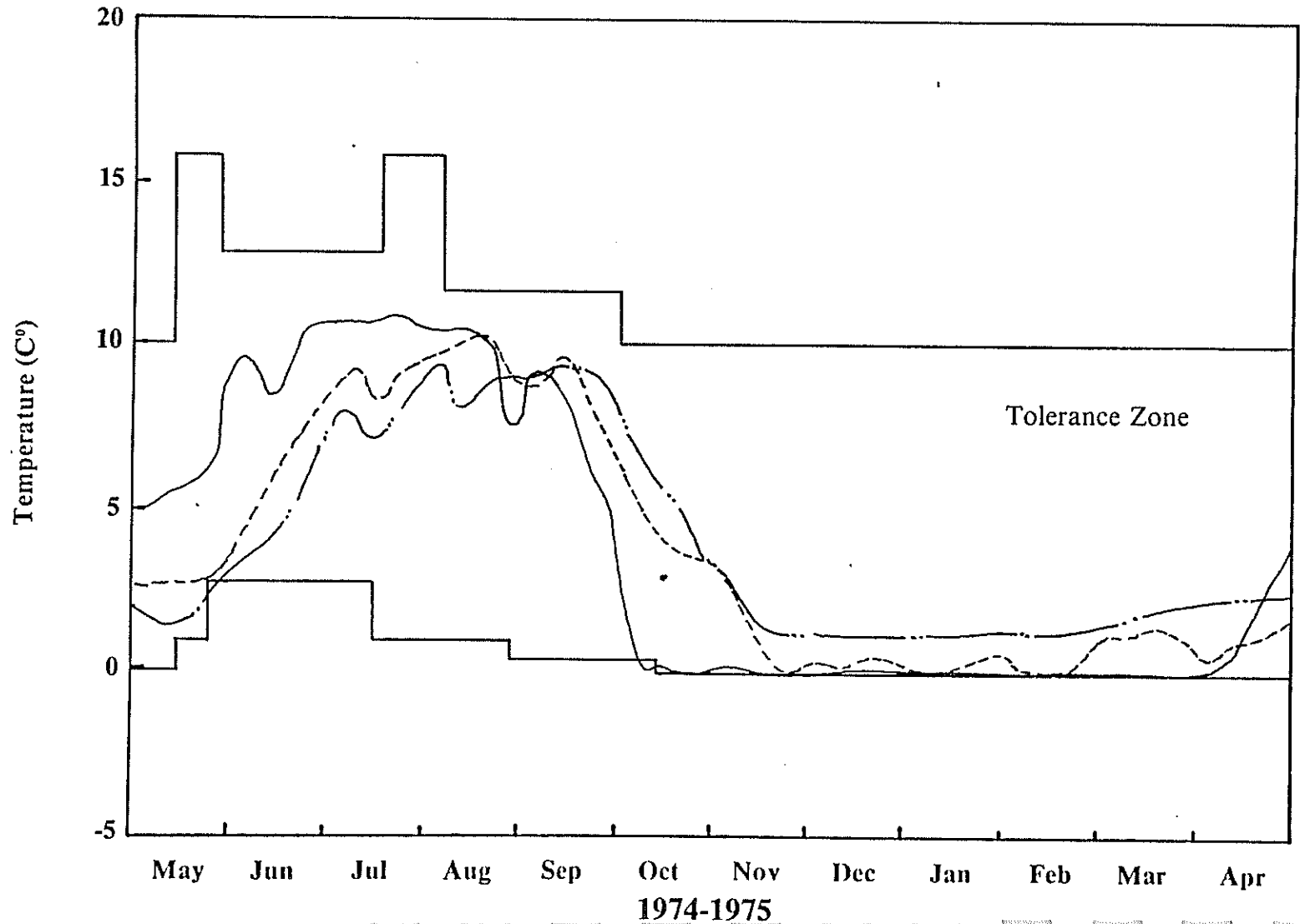
CHUM SALMON



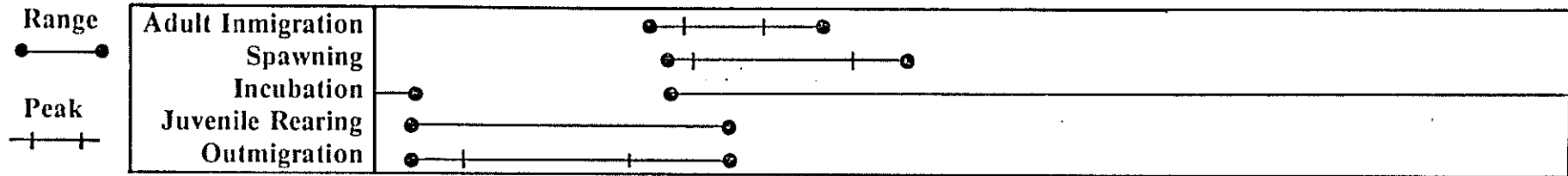
Devil's Canyon
2002

Watana
1996

Natural



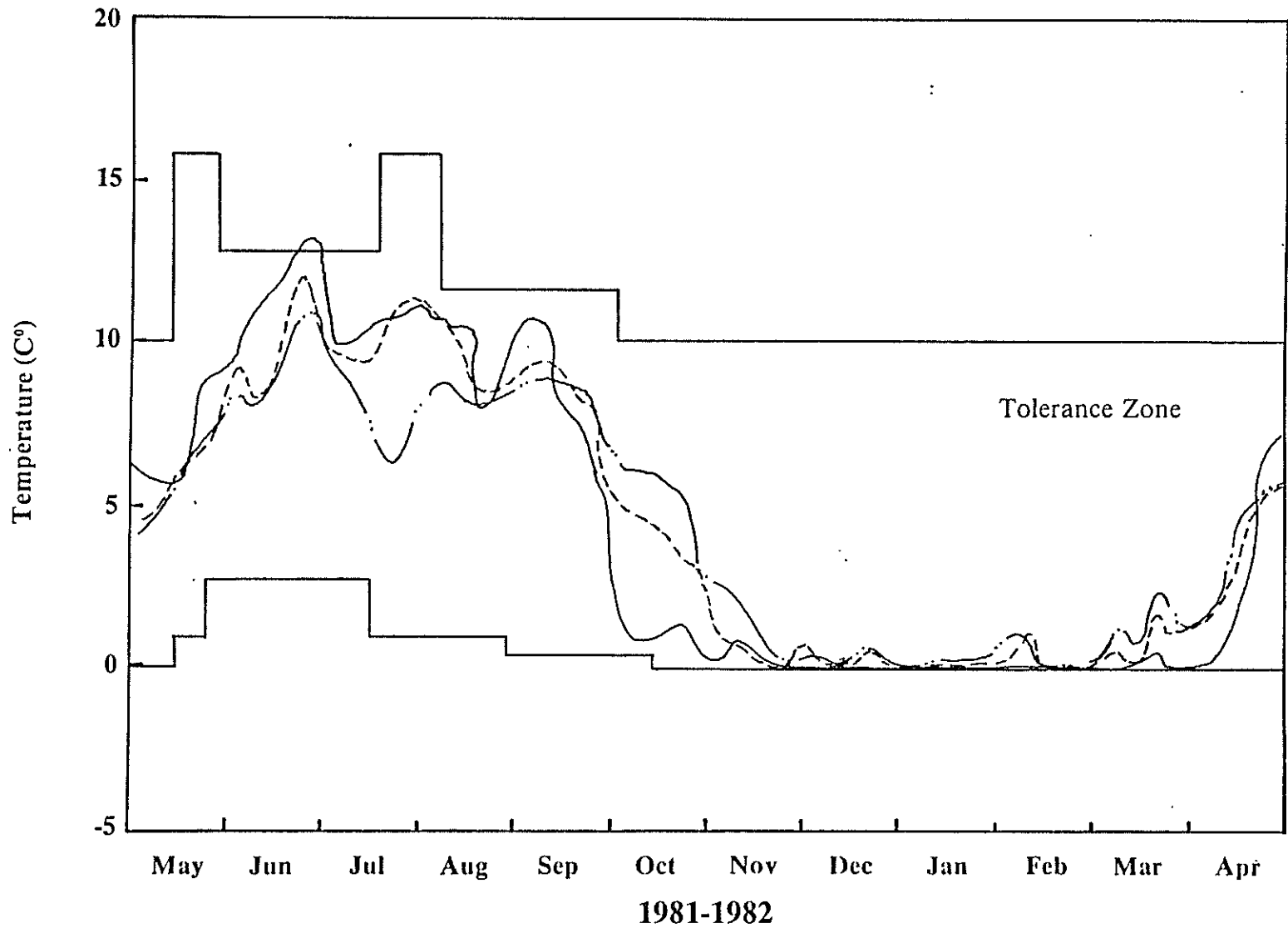
CHUM SALMON



Devil's Canyon
2002

Watana
1996

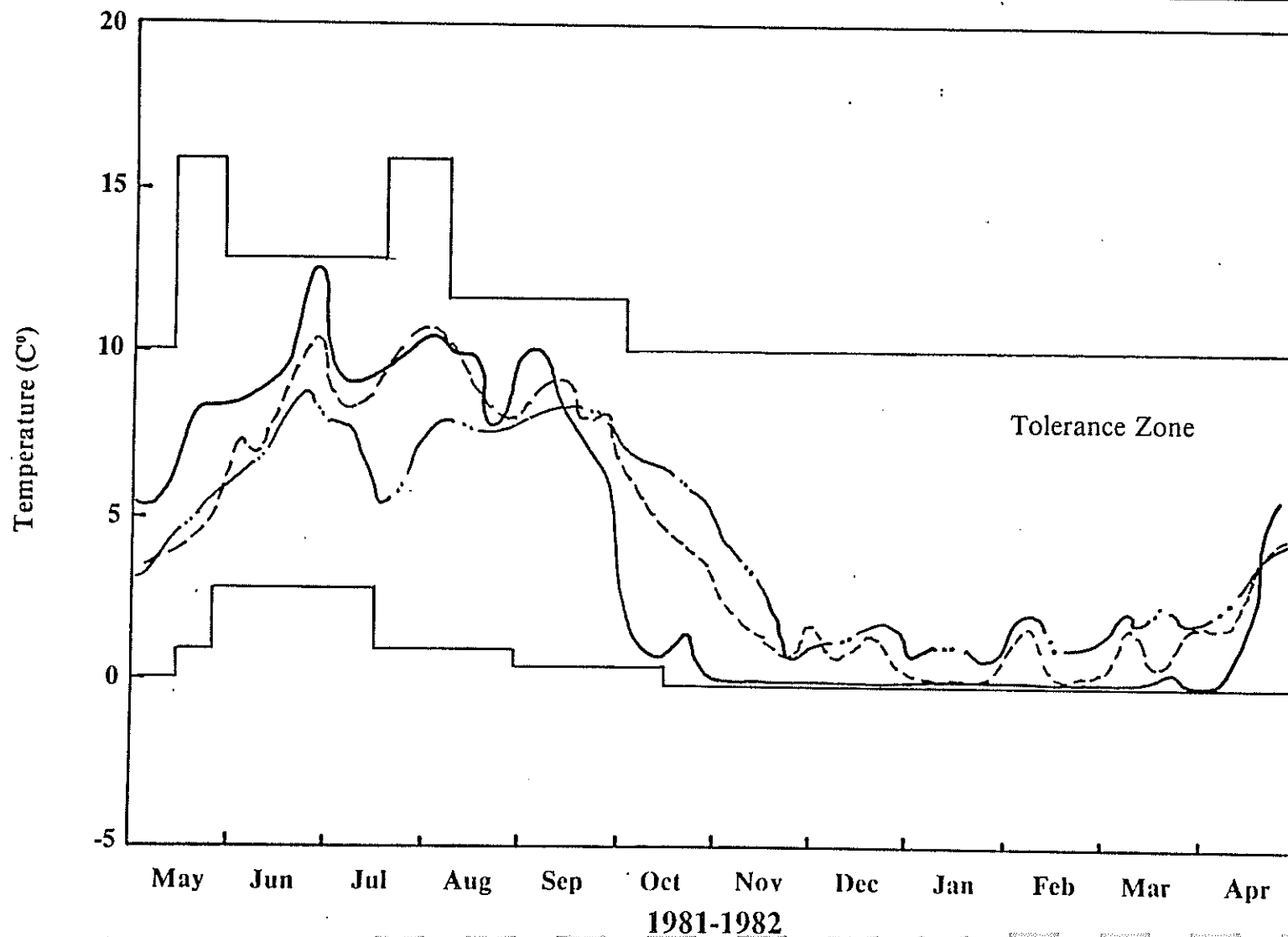
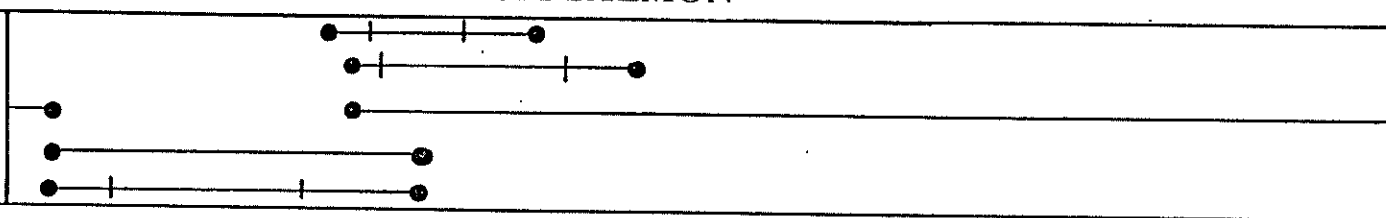
Natural



CHUM SALMON

Range
●—●
Peak
+—+

Adult Immigration
Spawning
Incubation
Juvenile Rearing
Outmigration



H71 Devil's Canyon
2002

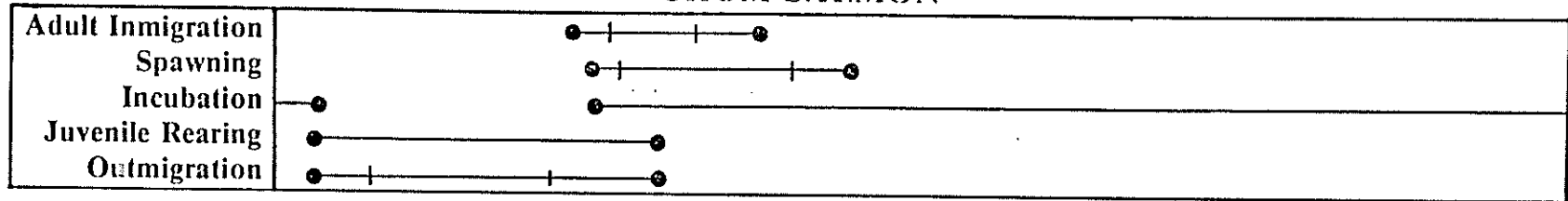
Watana
1996

Natural

Tolerance Zone

CHUM SALMON

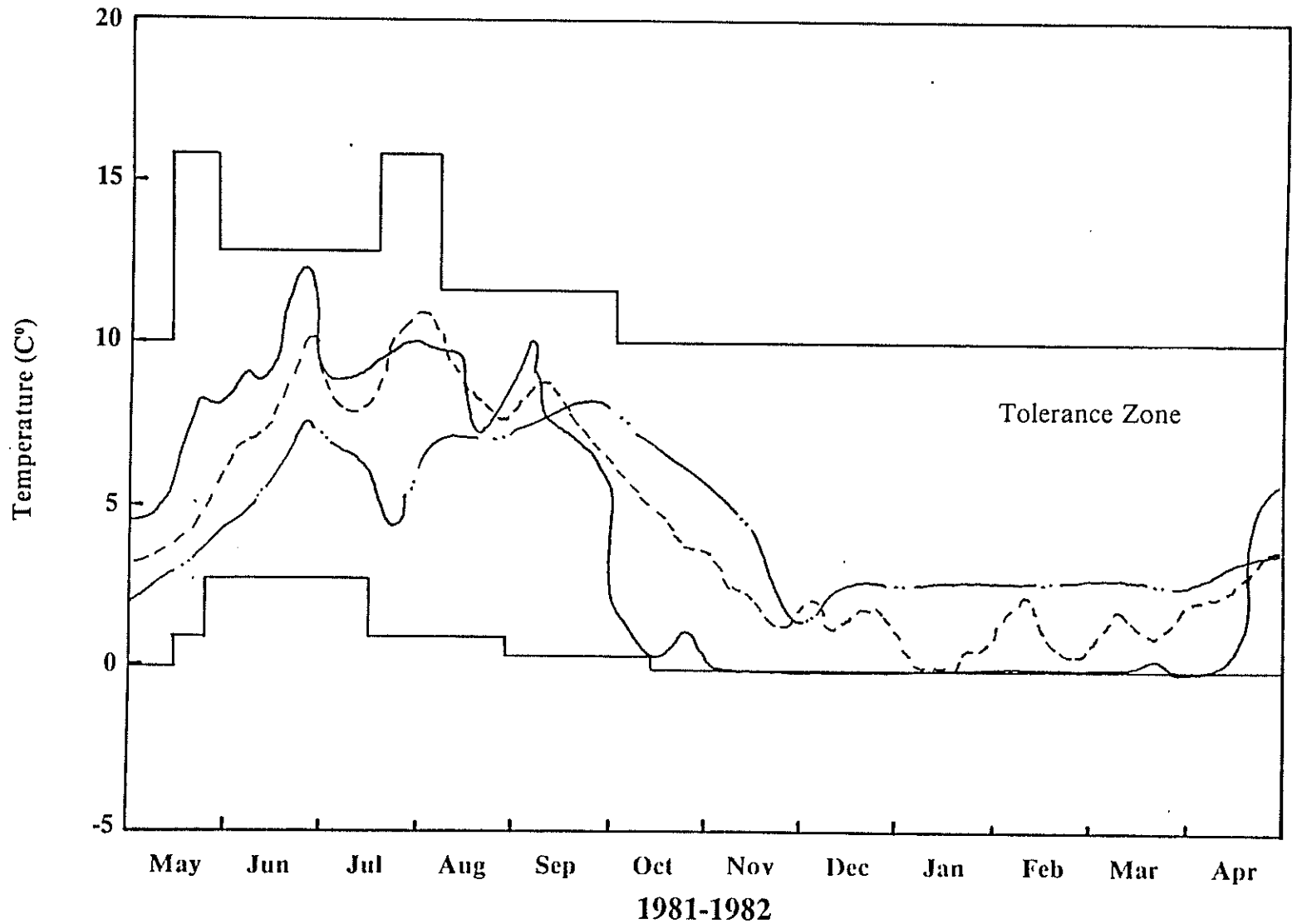
Range
●—●
Peak
+—+



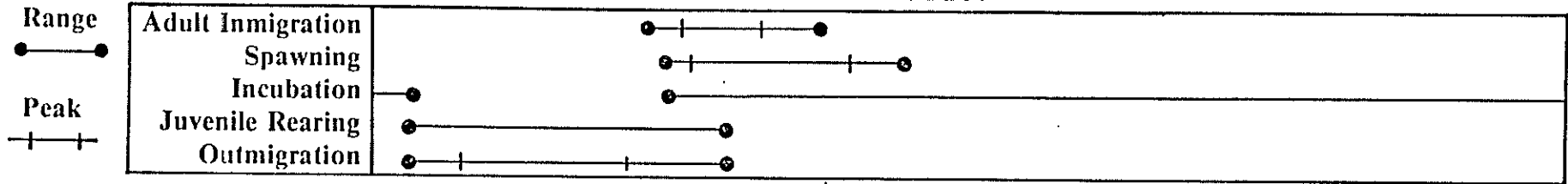
Devil's Canyon
2002

Watana
1996

Natural



CHUM SALMON

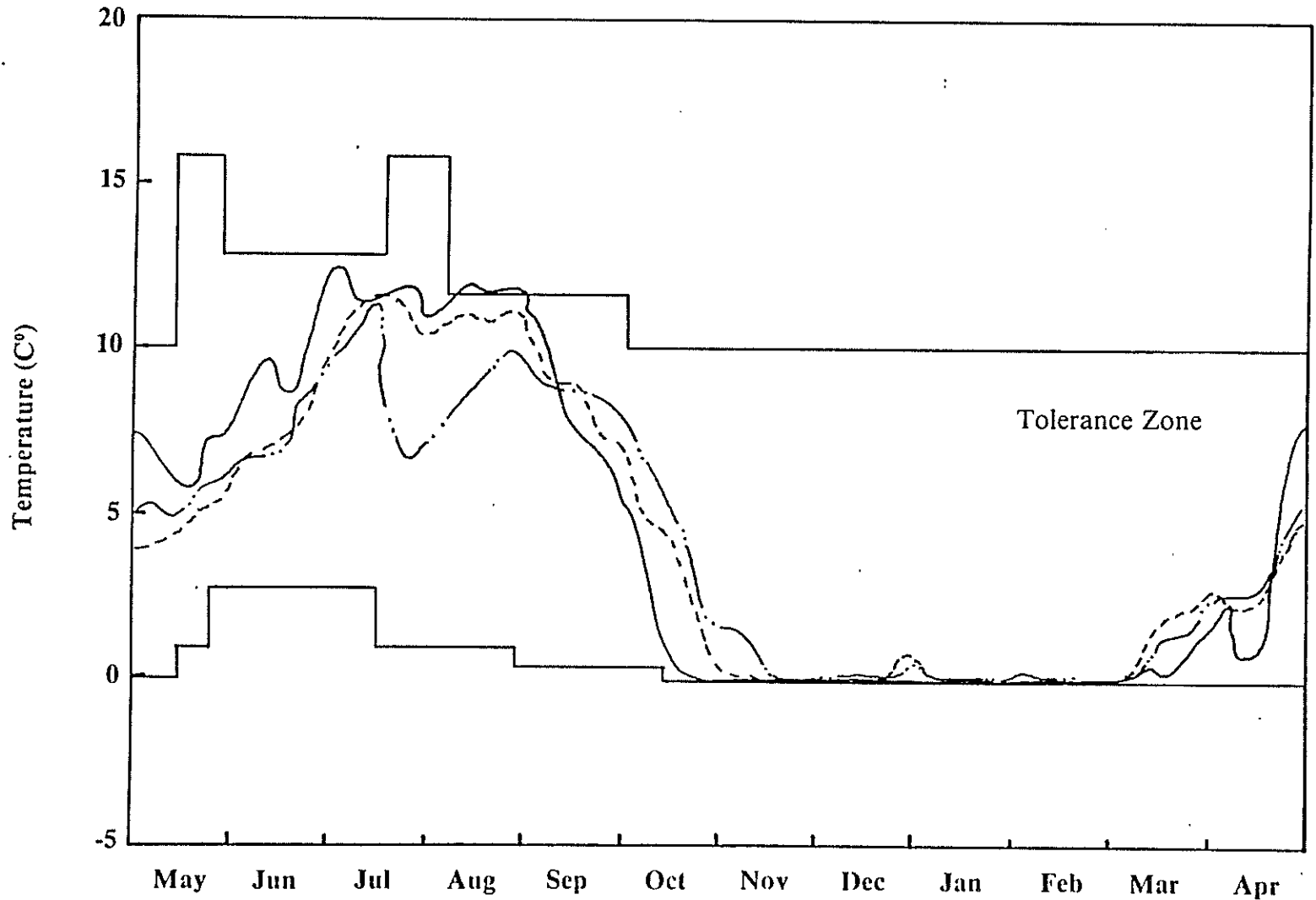


H73

Devil's Canyon
2002

Watana
1996

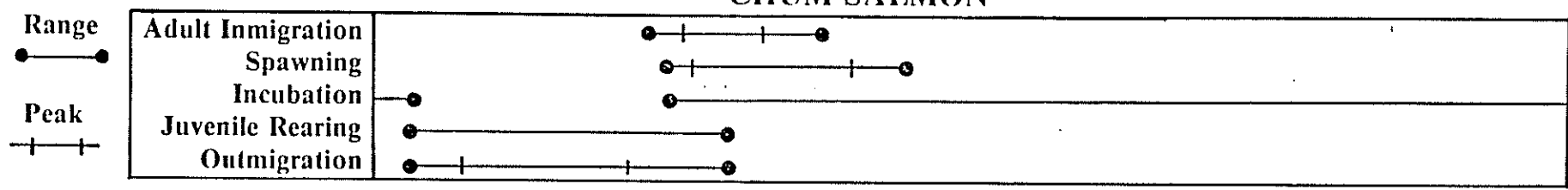
Natural



1982-1983



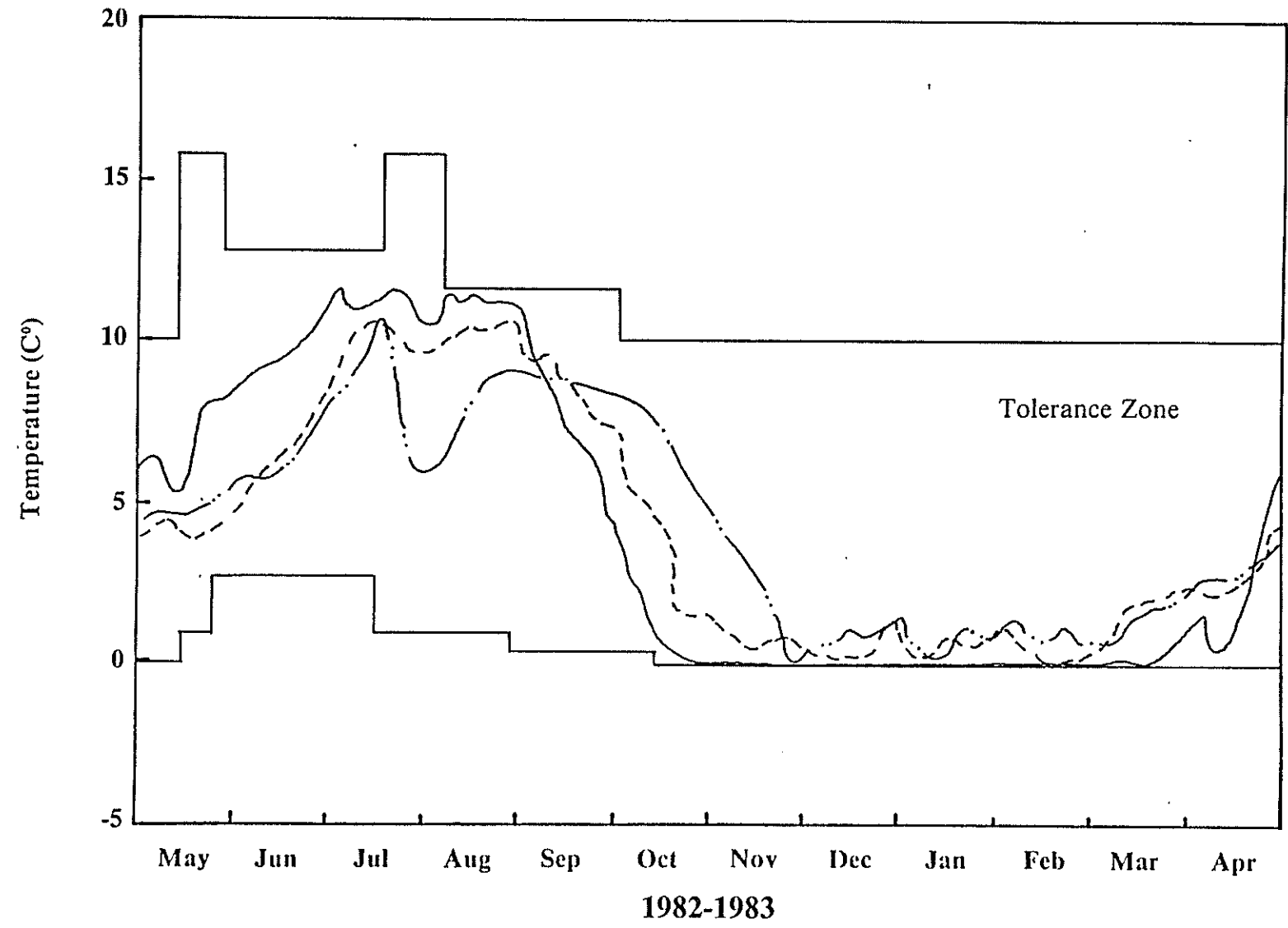
CHUM SALMON



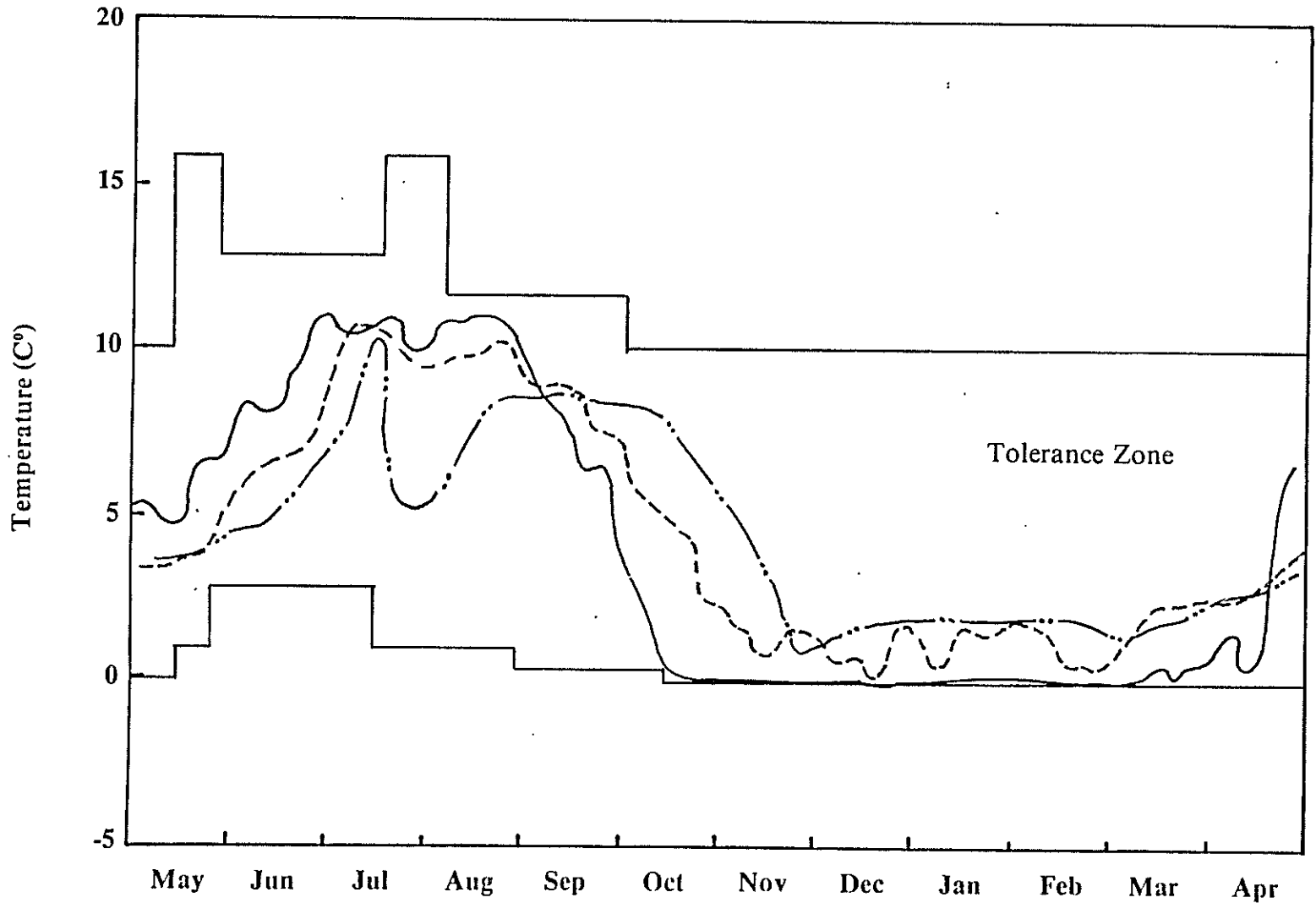
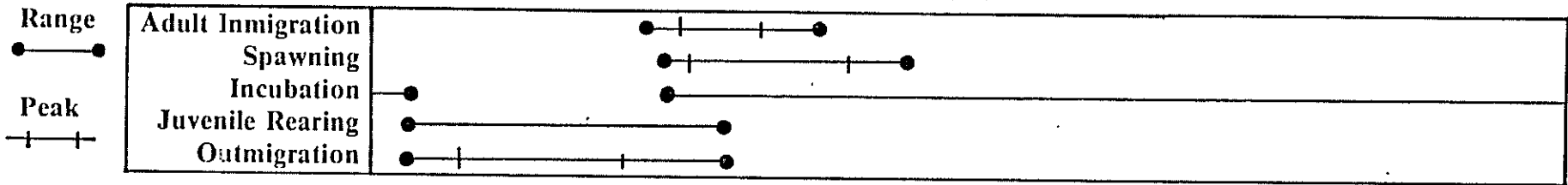
Devil's Canyon
2002

Watana
1996

Natural

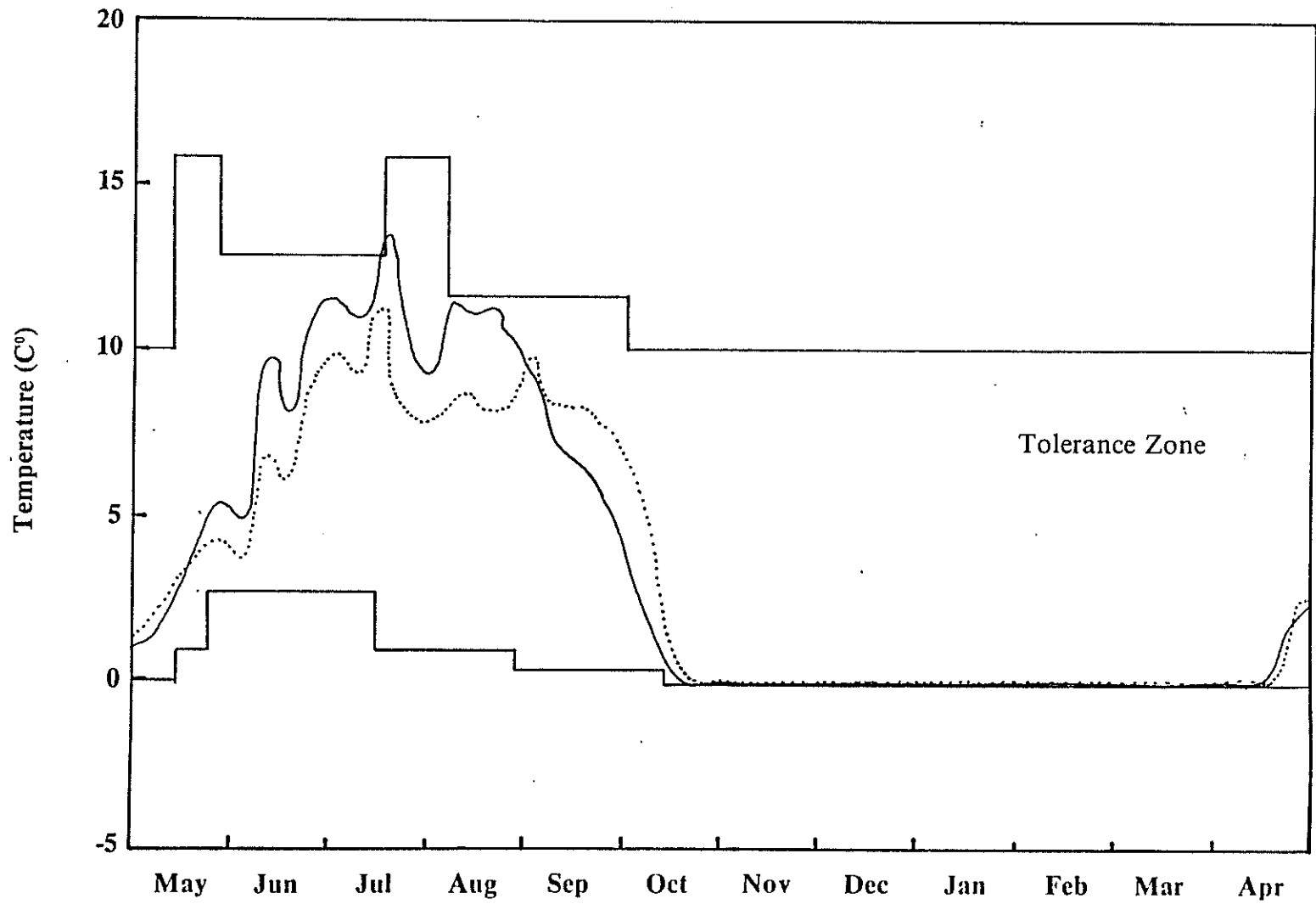
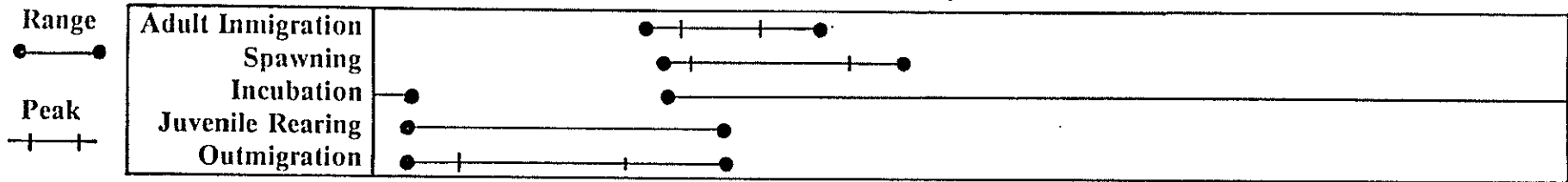


CHUM SALMON



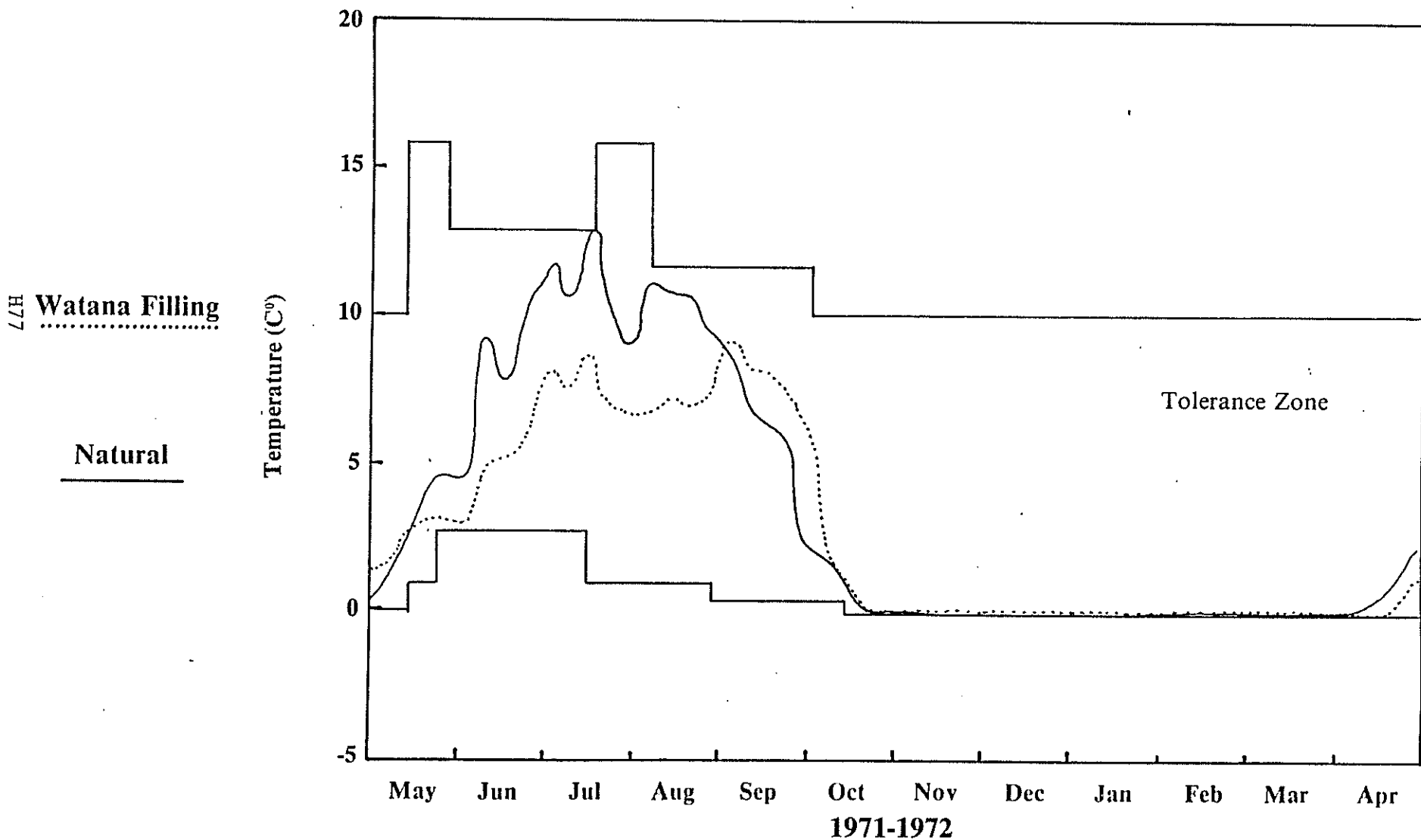
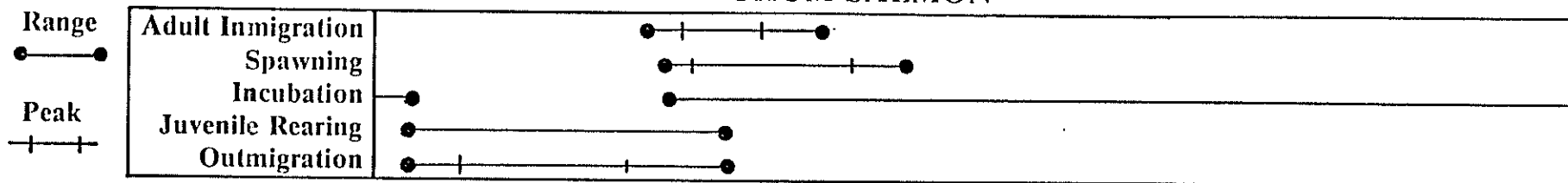
1082-1083

CHUM SALMON

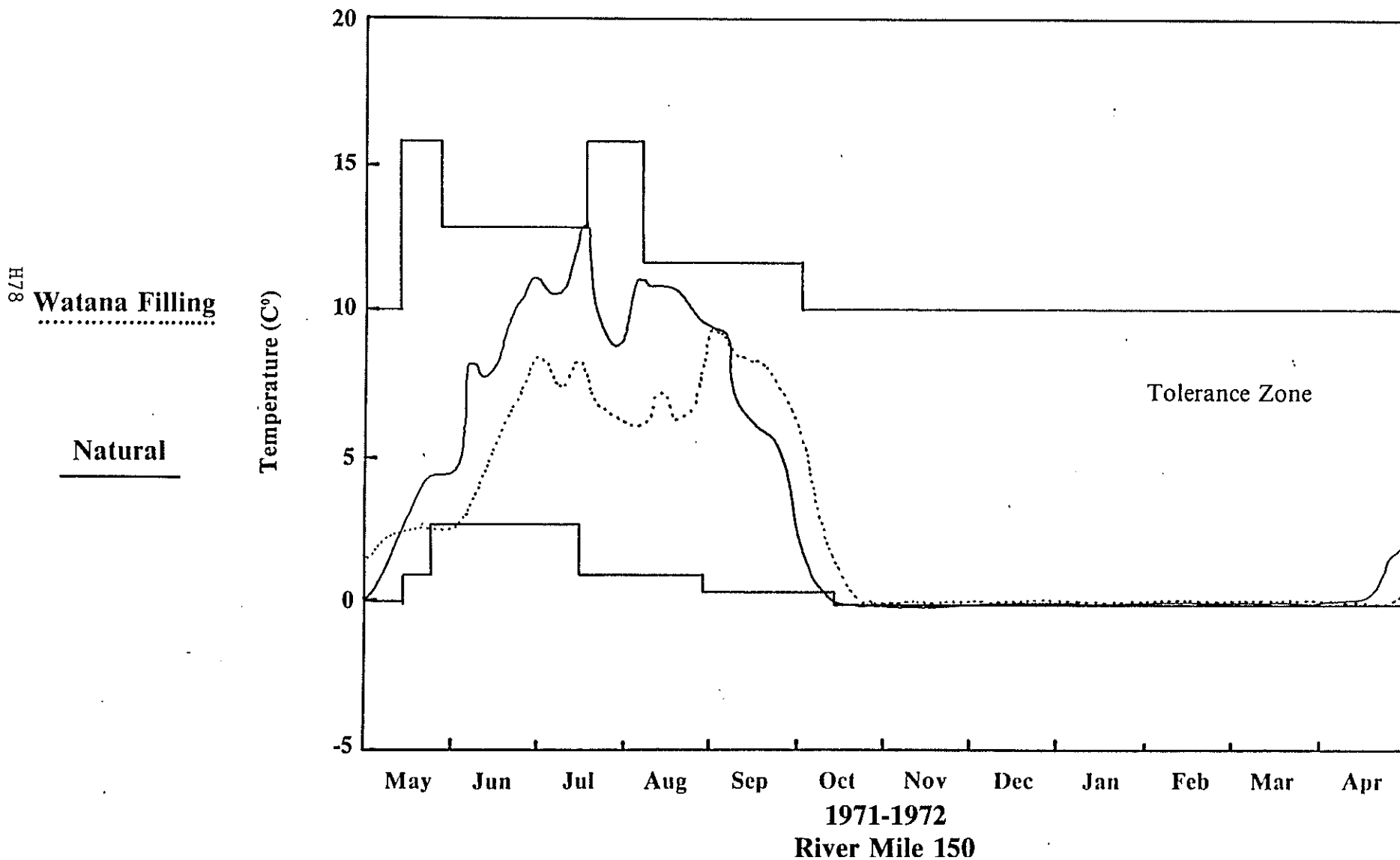
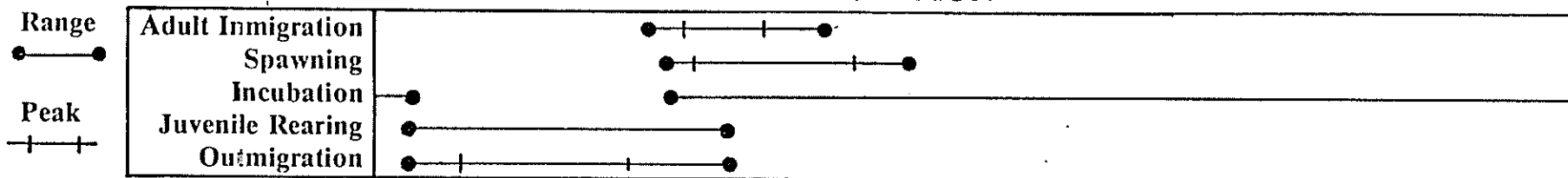


1971-1972
River Mile 100

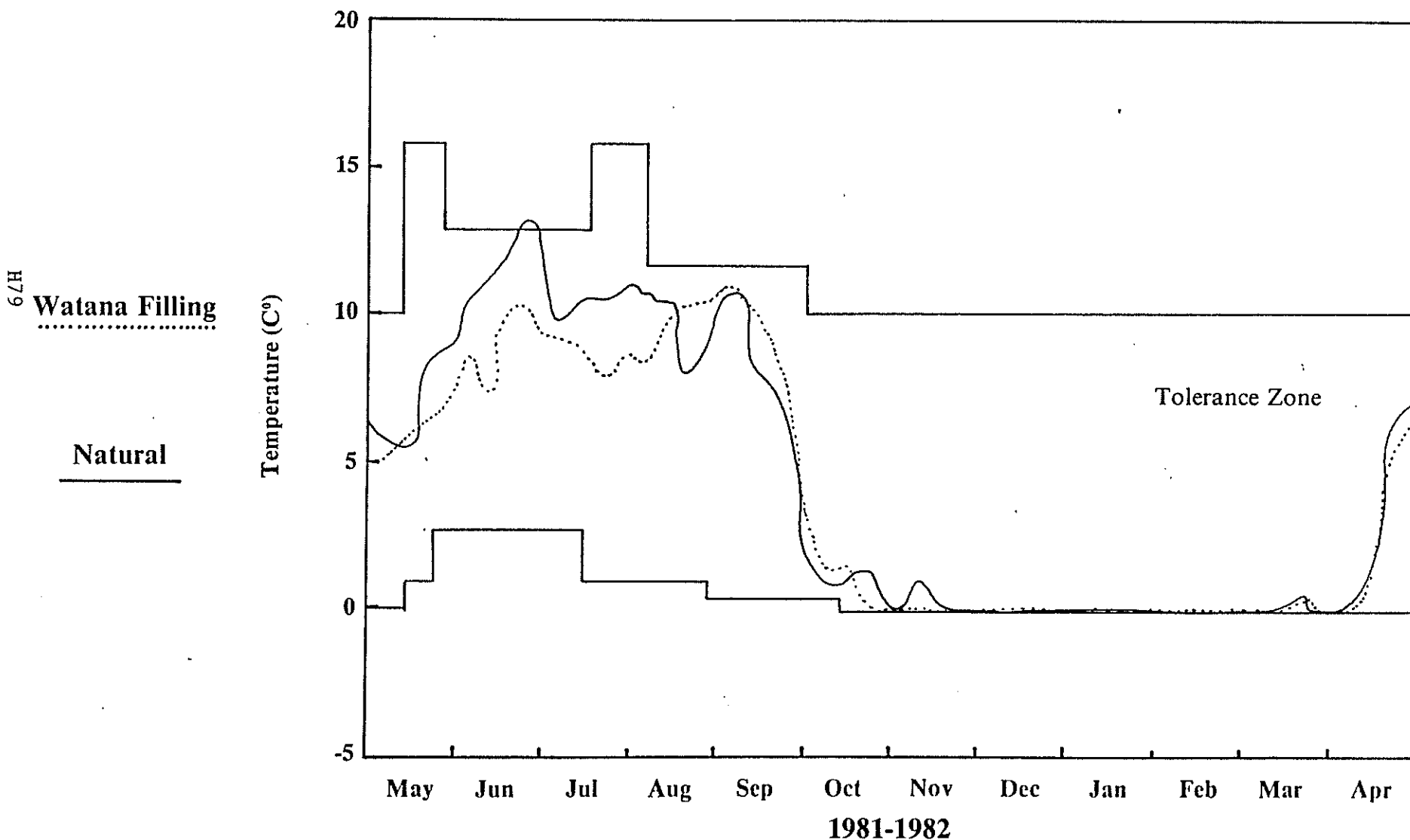
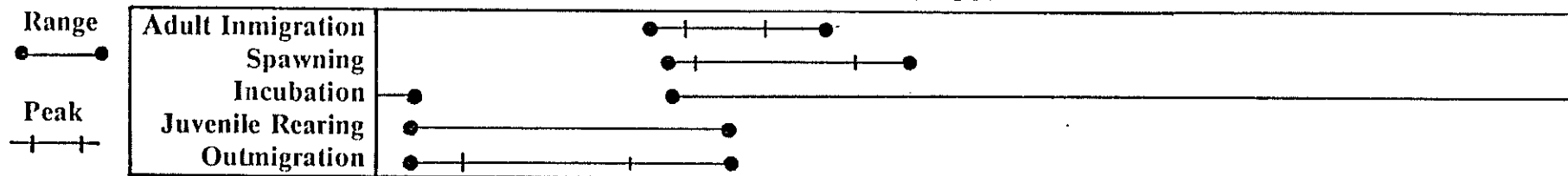
CHUM SALMON



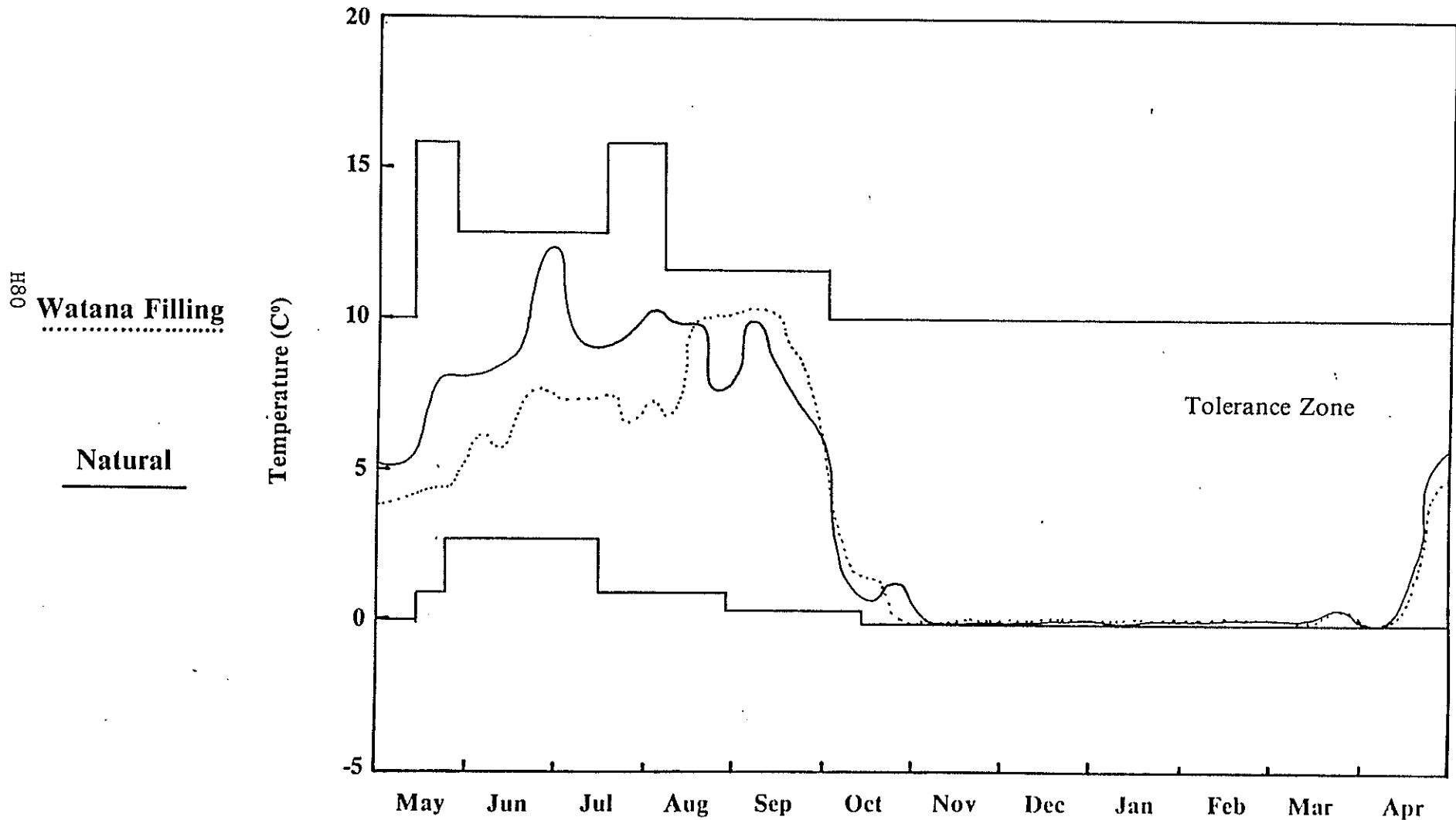
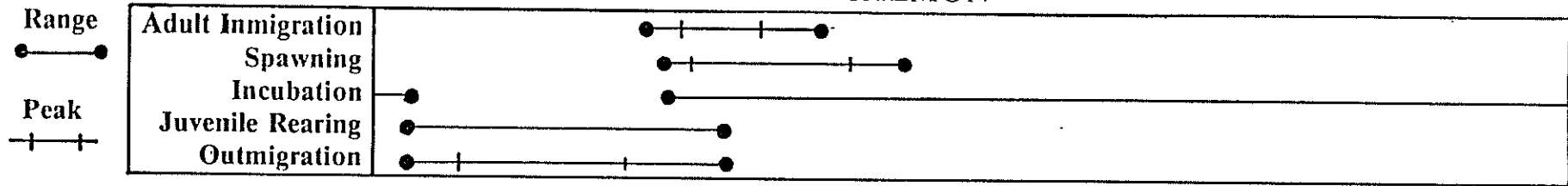
CHUM SALMON



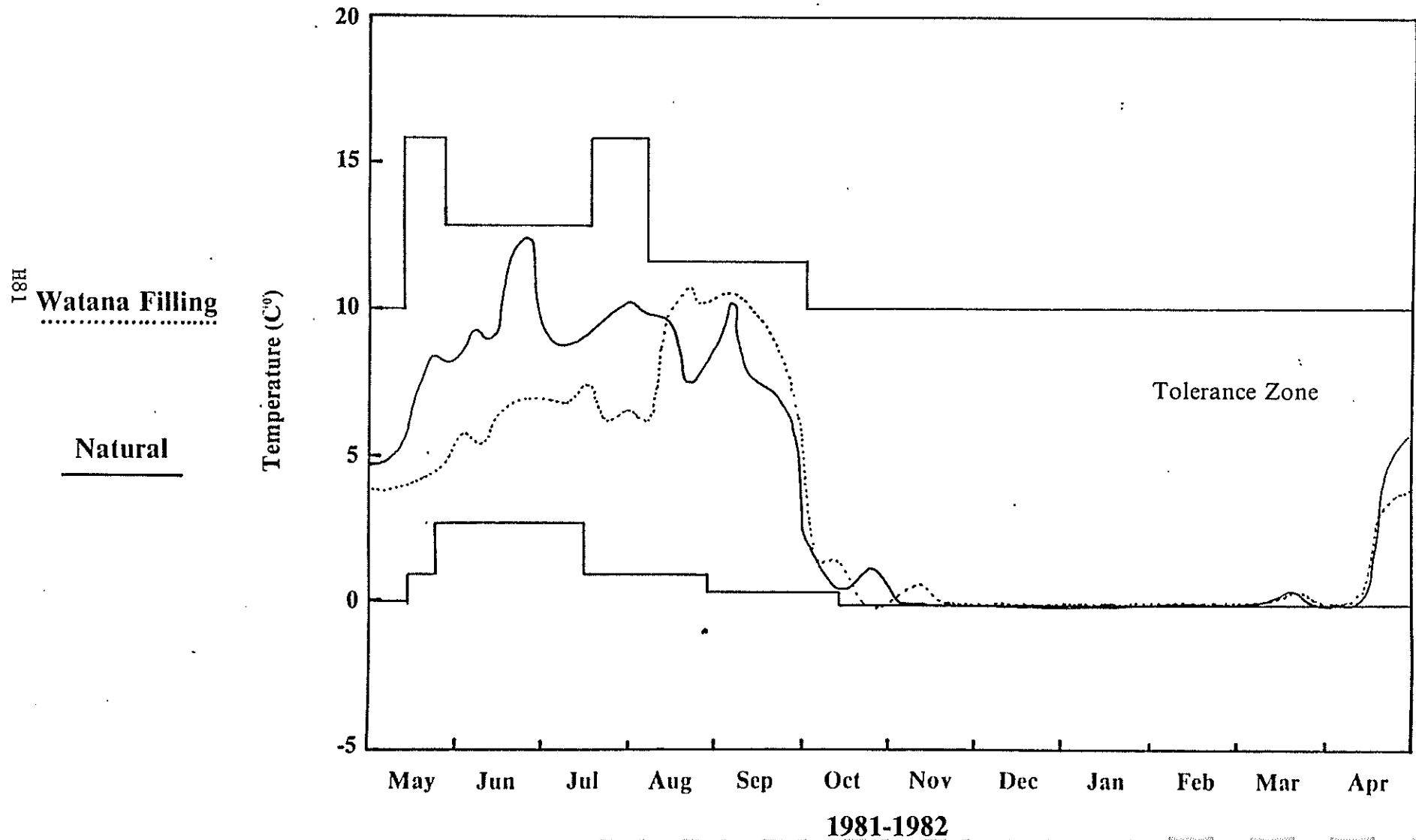
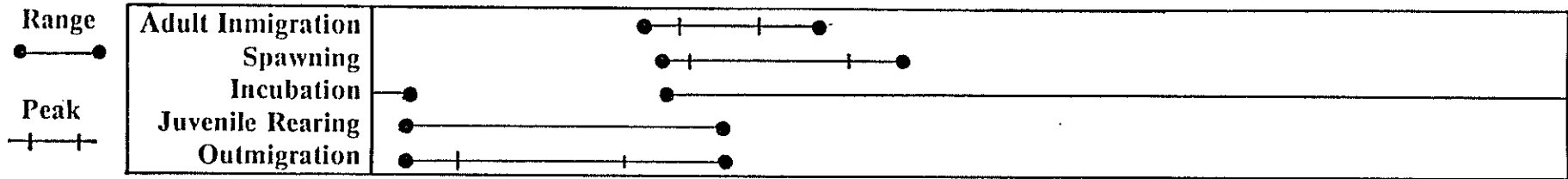
CHUM SALMON



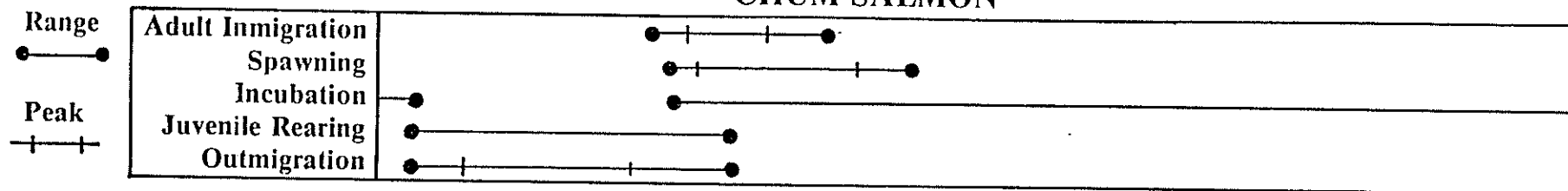
CHUM SALMON



CHUM SALMON



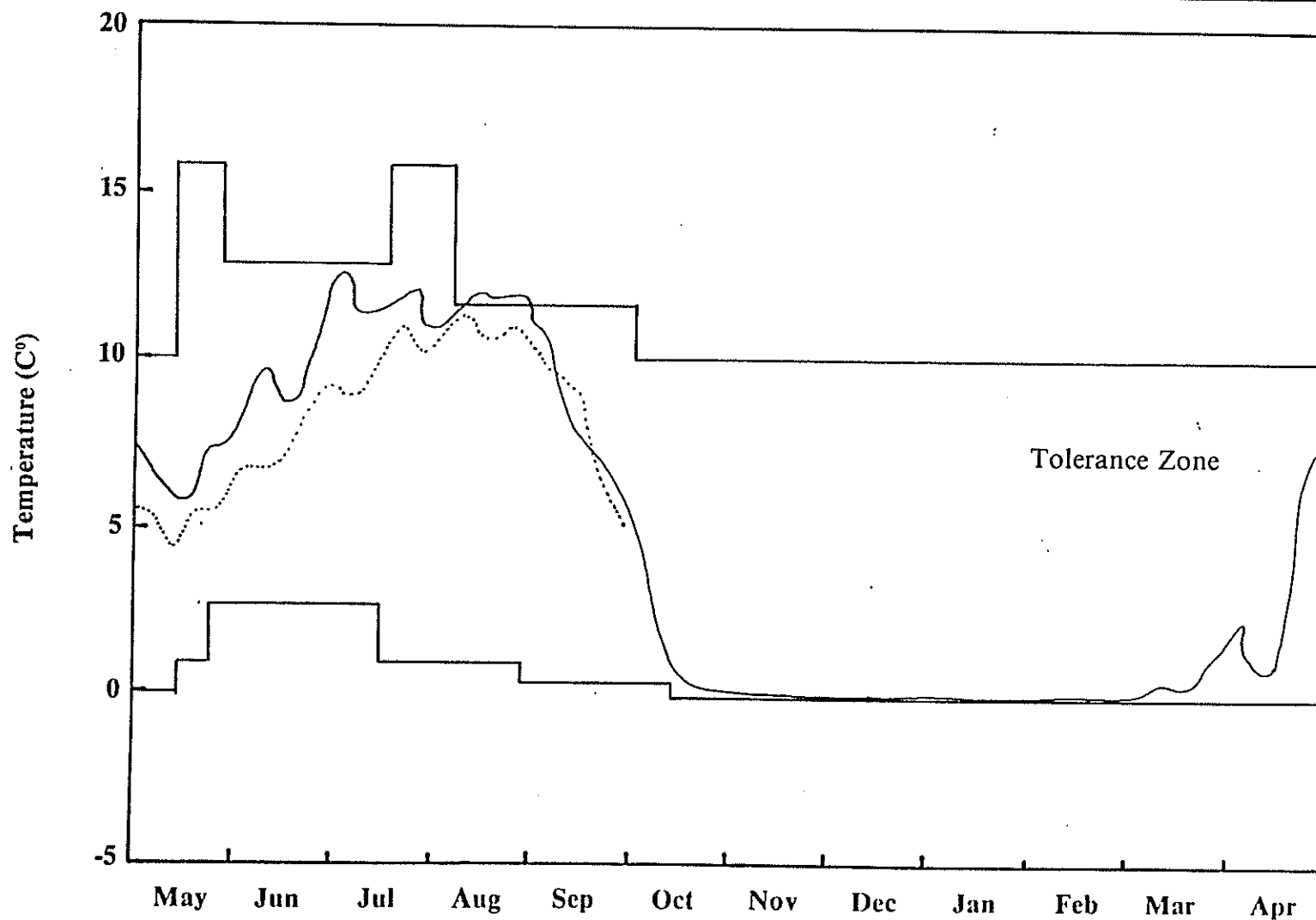
CHUM SALMON



H82

Watana Filling

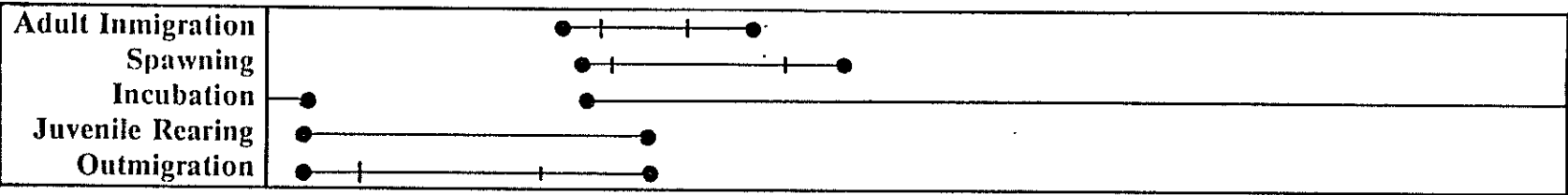
Natural



1982-1983

CHUM SALMON

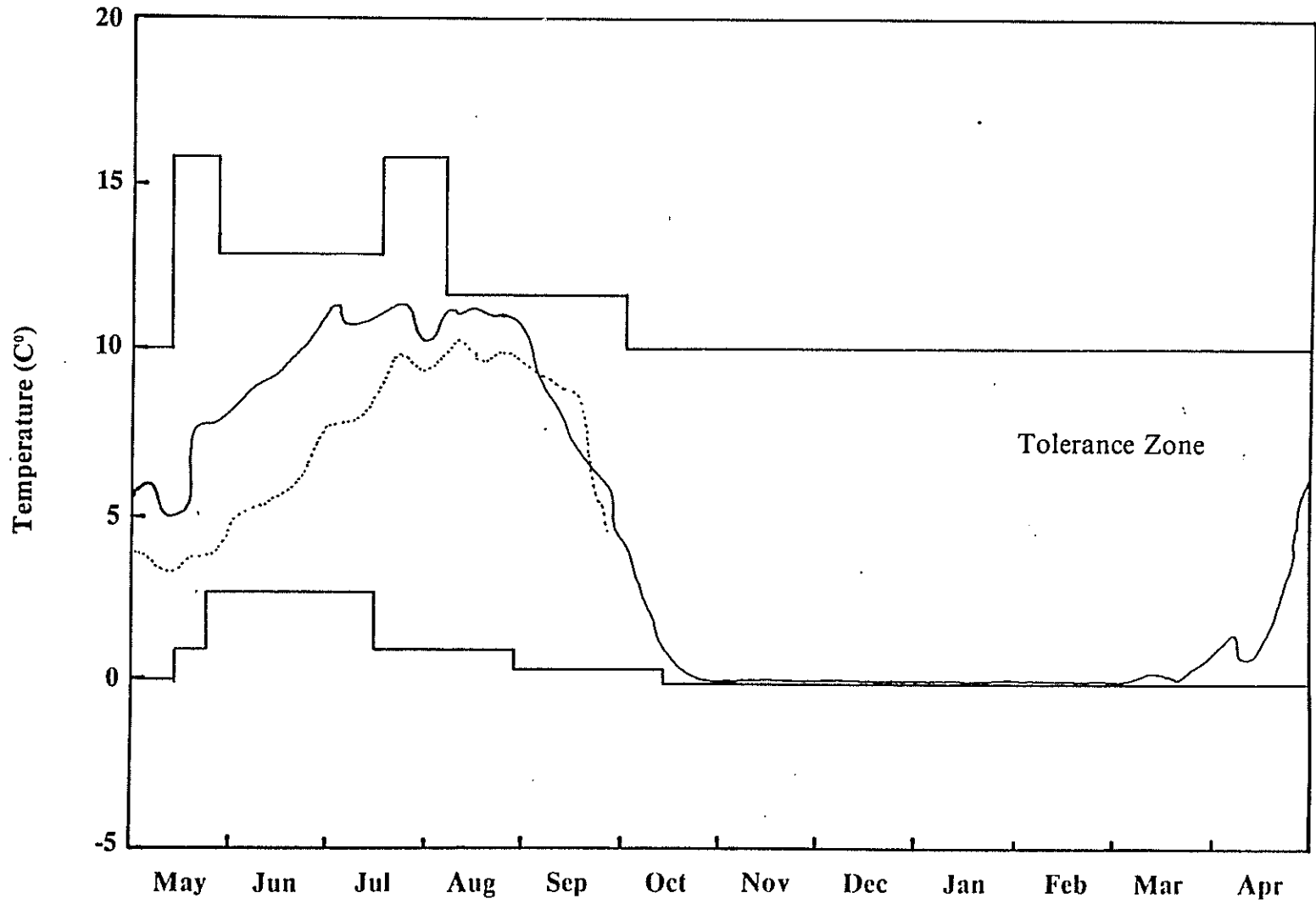
Range
Peak



1983

Watana Filling

Natural

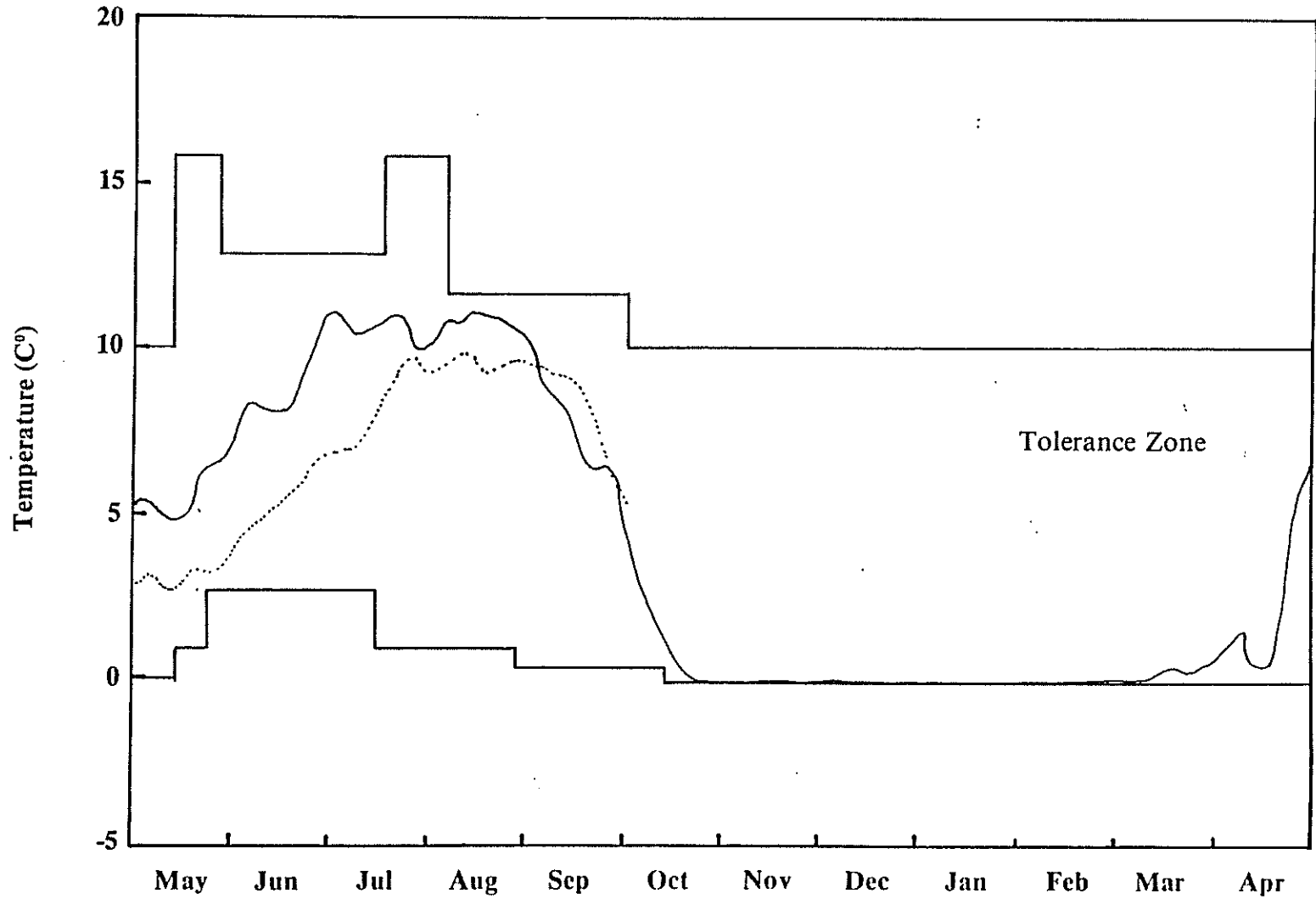
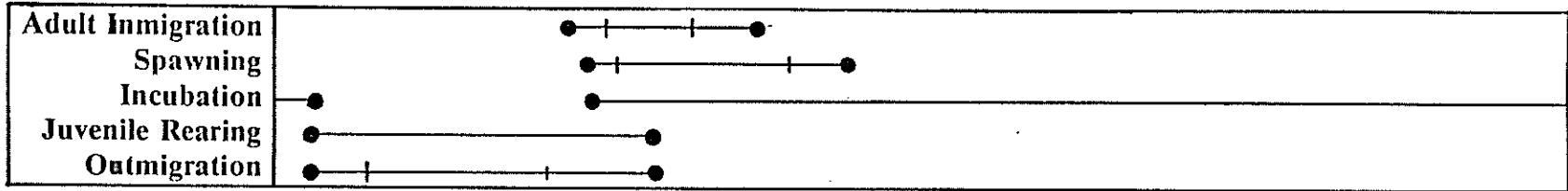


1982-1983

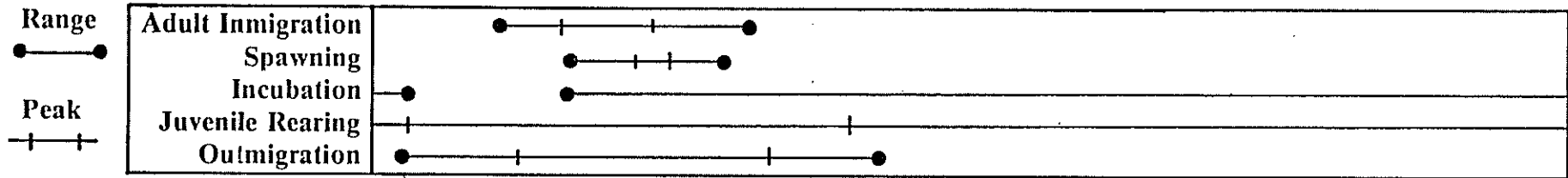
River Mile 10

CHUM SALMON

Range
●—●
Peak
+—+



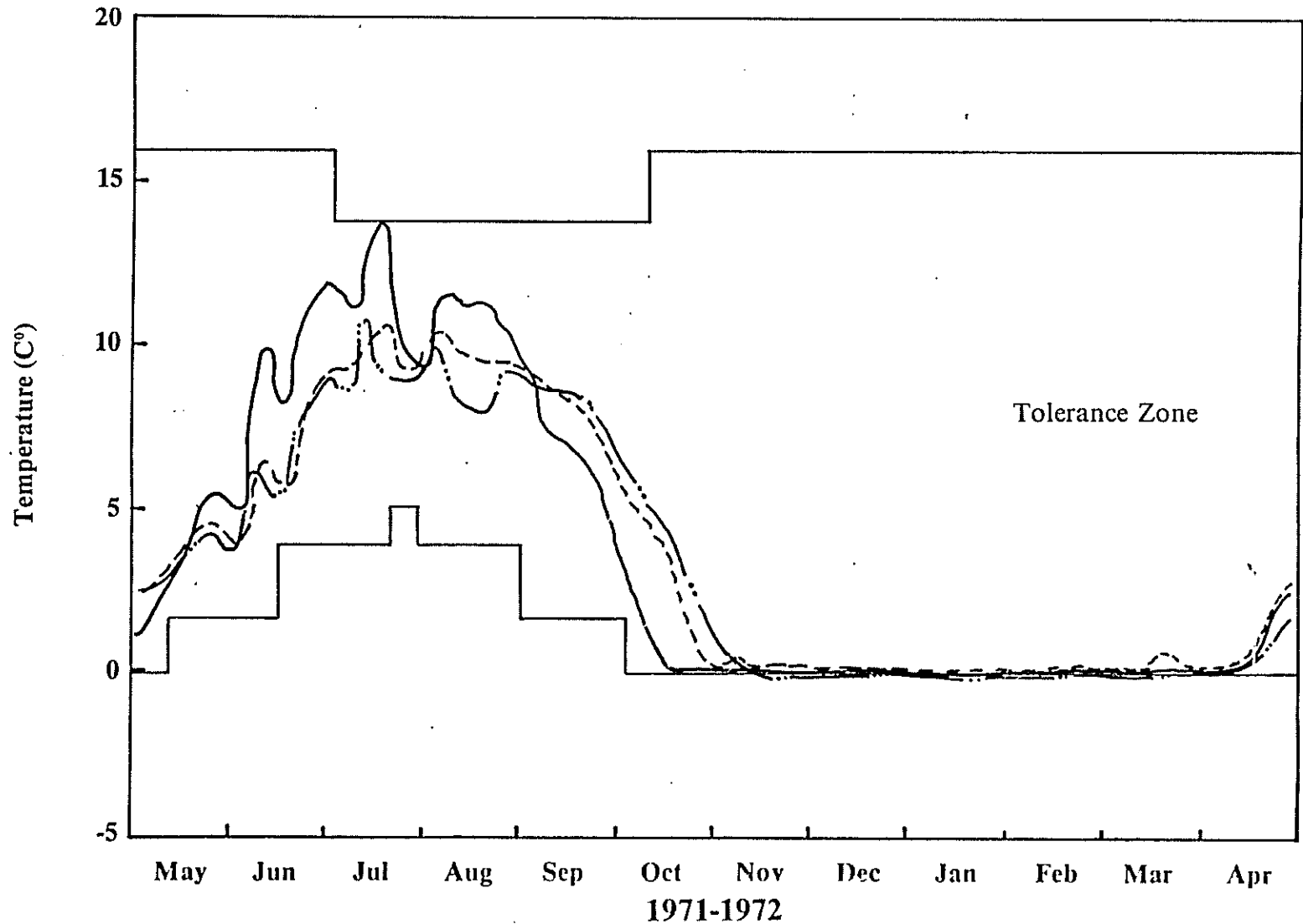
CHINOOK SALMON



Devil's Canyon
2002

Watana
1996

Natural

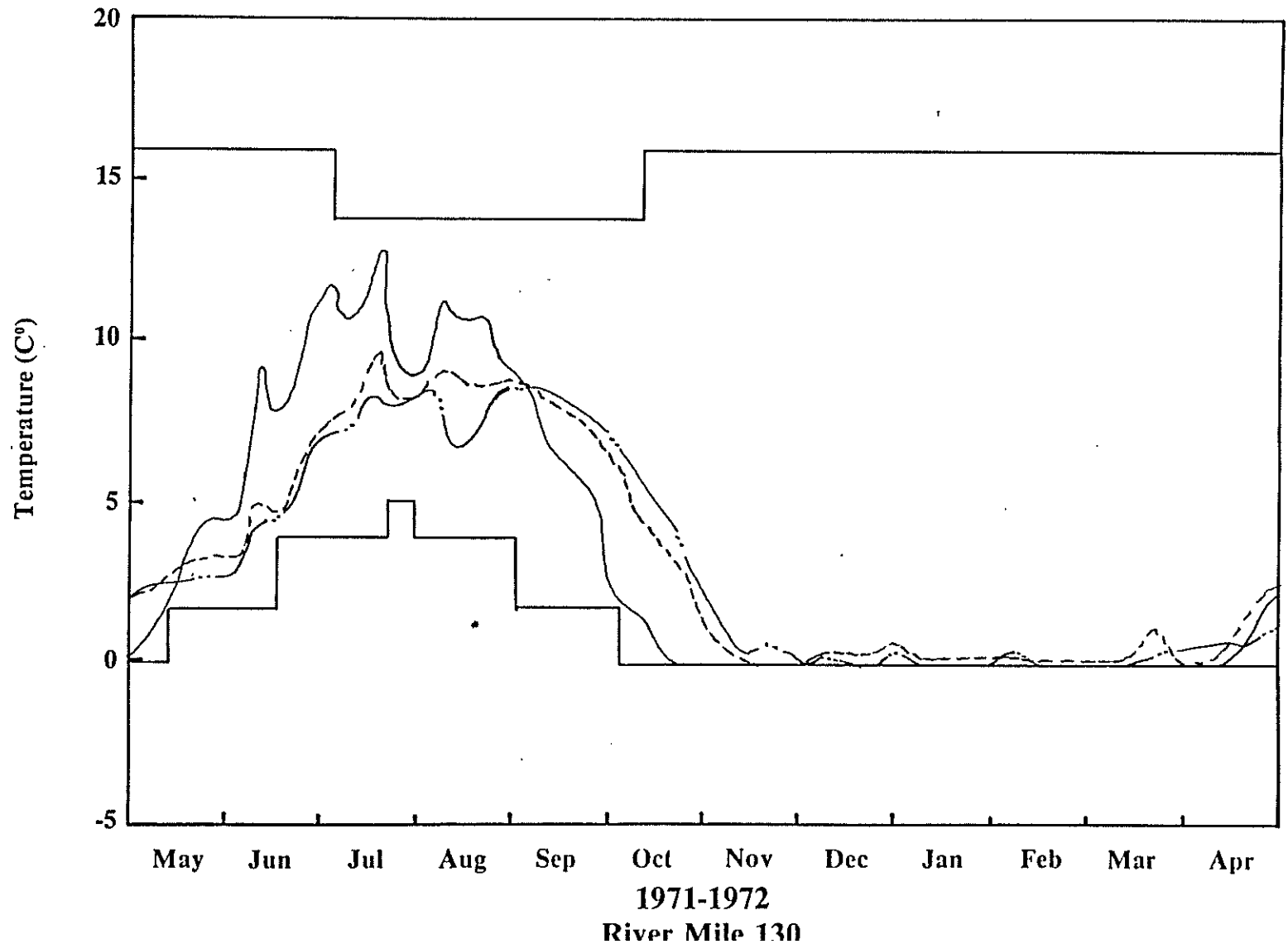


1971-1972

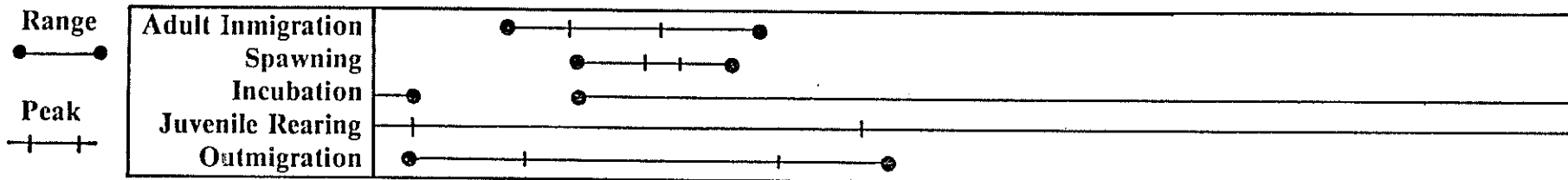
Figure 1 shows a sequence of 14 diagrams illustrating the steps of the proposed algorithm. The diagrams are arranged in a single row, separated by plus signs. Each diagram shows a grid of nodes (represented by small squares) with various operations (Add, Sub, Mul, Div, Mod) being performed on different parts of the grid. The sequence starts with a single node and gradually builds up a more complex structure, ending with a final state labeled 'Step 14'.



Natural



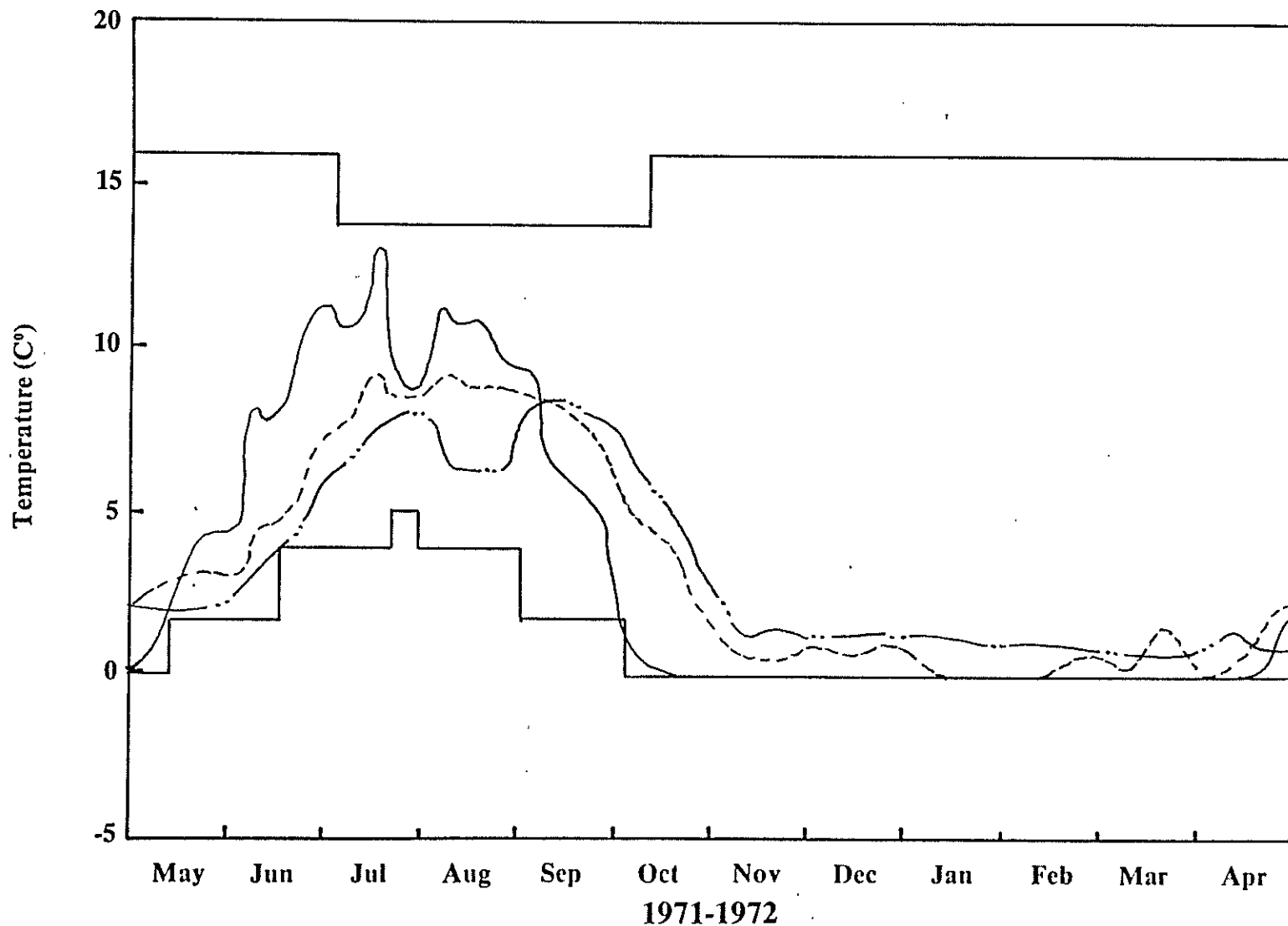
CHINOOK SALMON



Devil's Canyon
2002

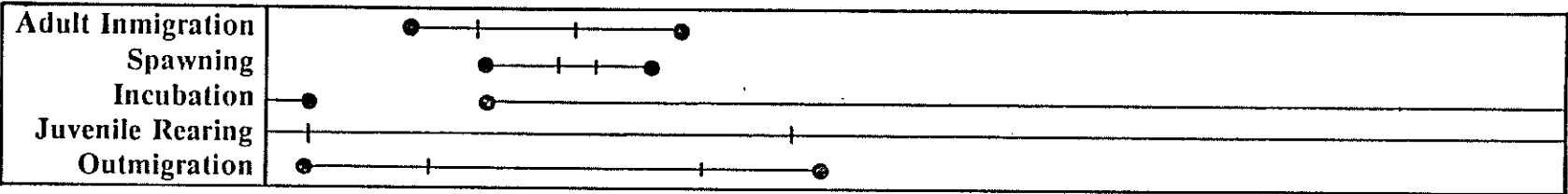
Watana
1996

Natural

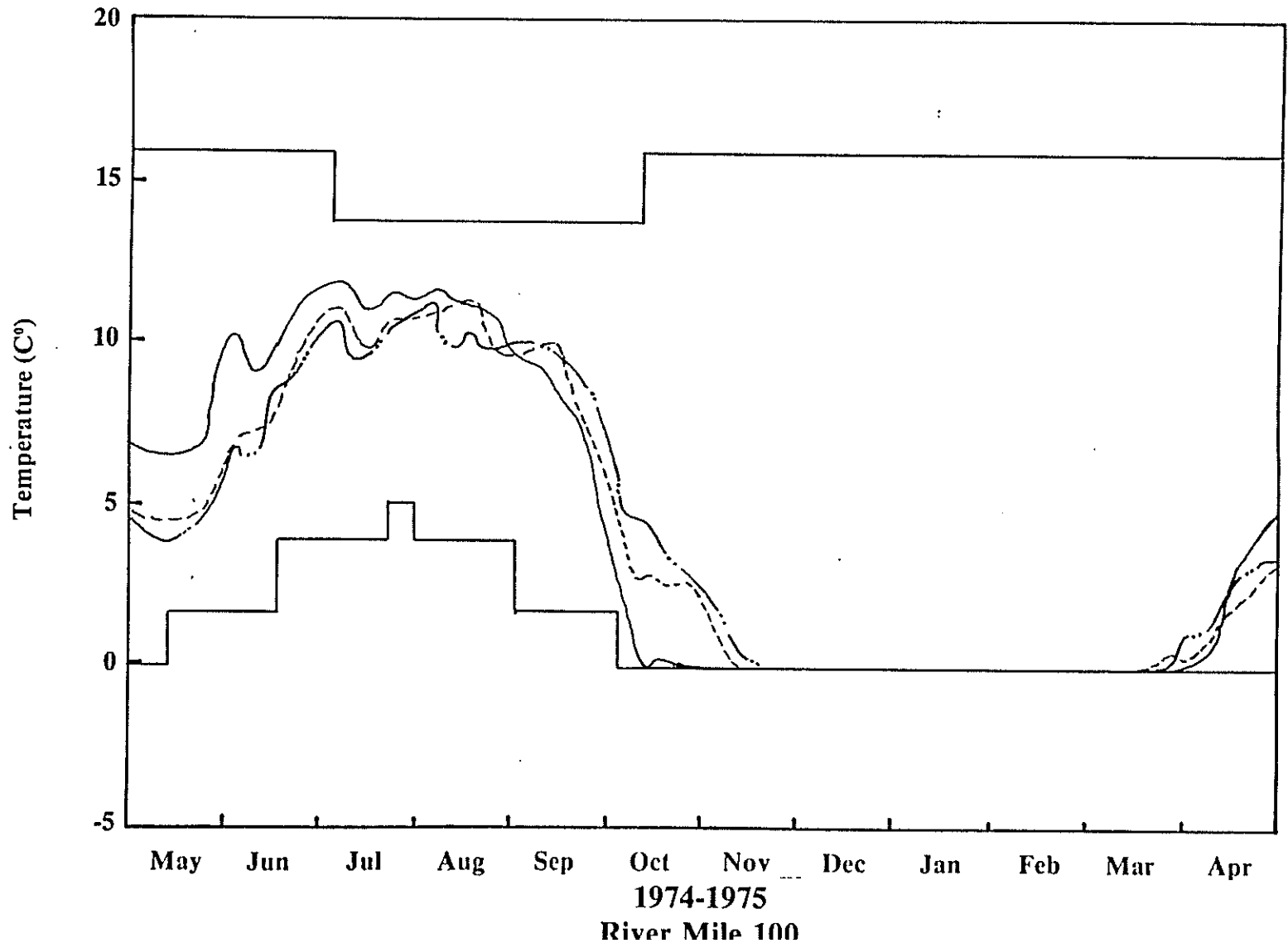


CHINOOK SALMON

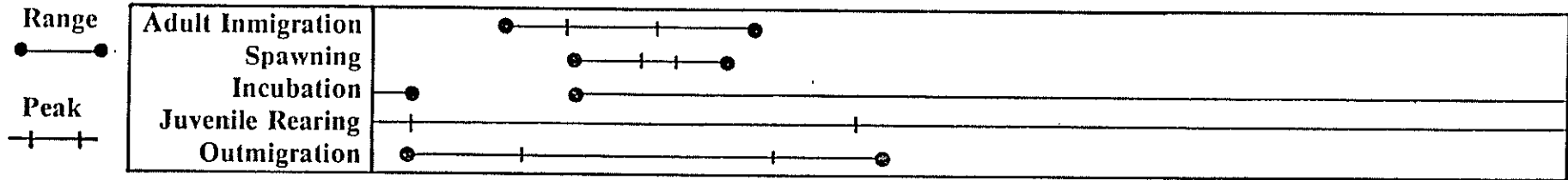
Range
●—●
Peak
+—+



88H
Devil's Canyon
2002
— · — · —
Watana
1996
- - - - -
Natural
—————



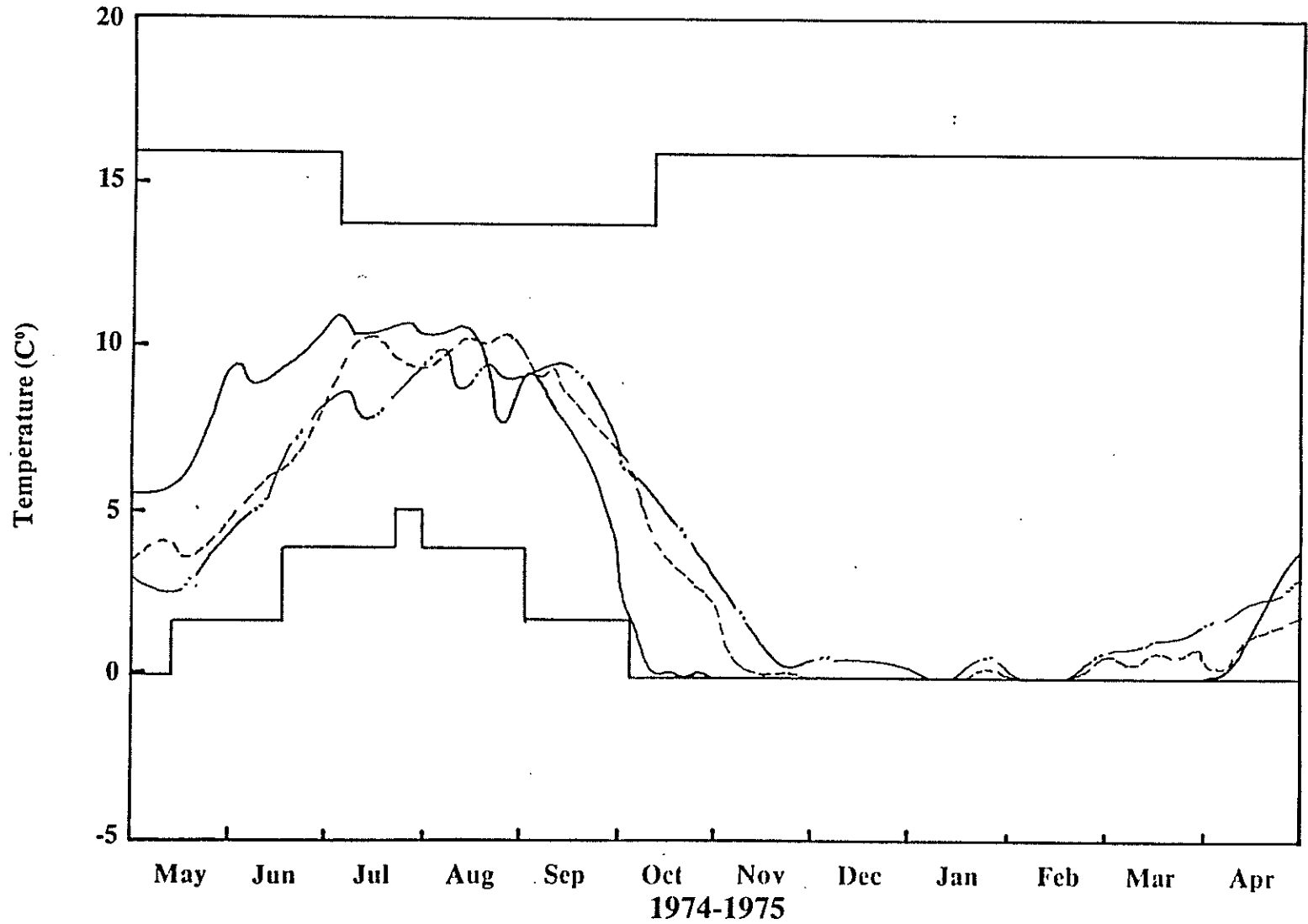
CHINOOK SALMON



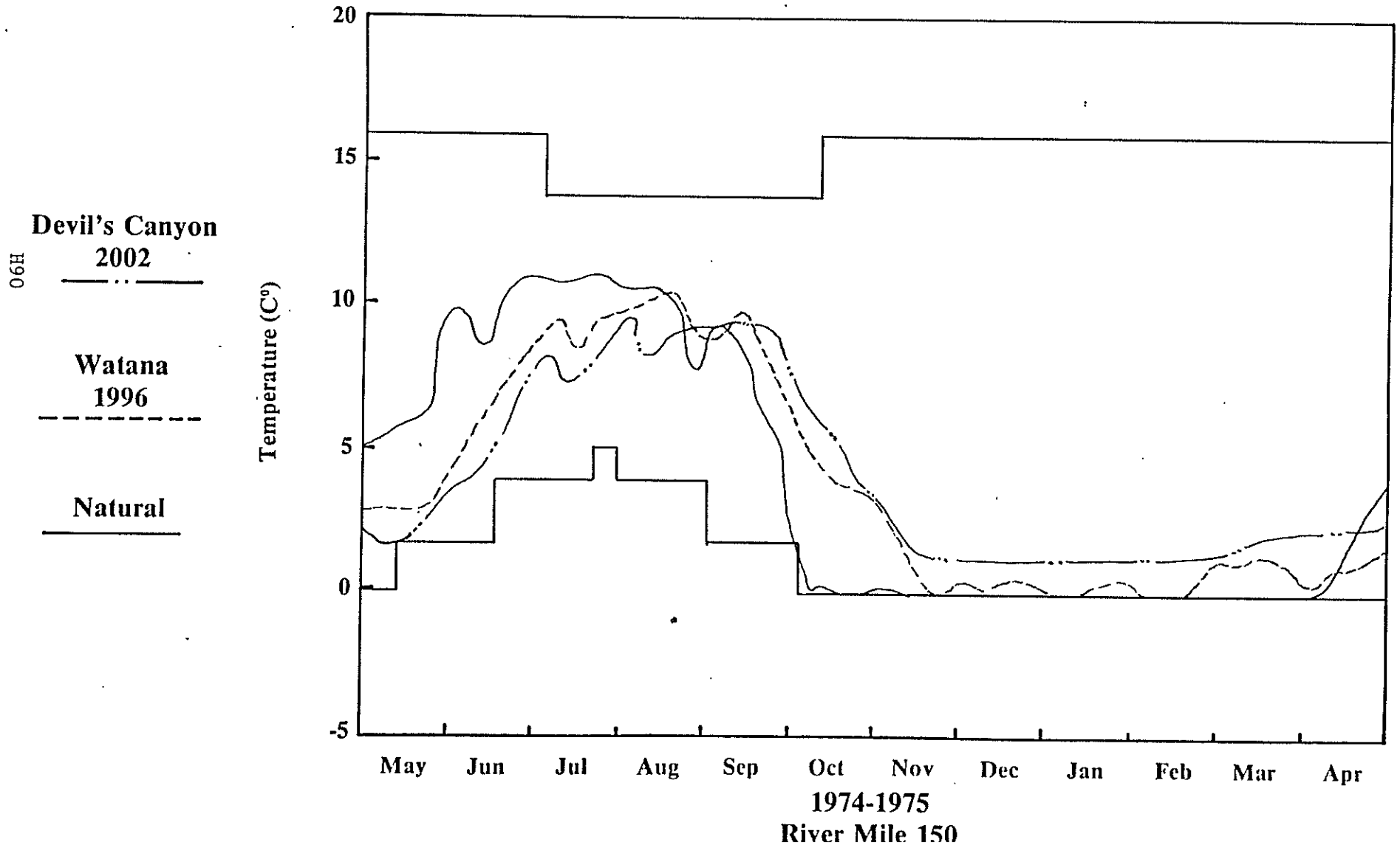
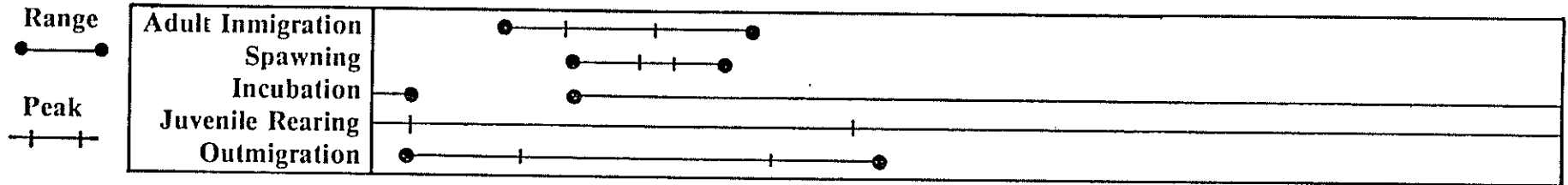
Devil's Canyon
2002

Watana
1996

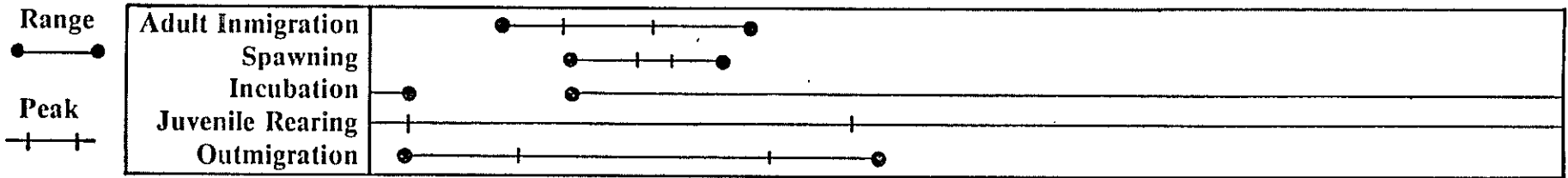
Natural



CHINOOK SALMON



CHINOOK SALMON

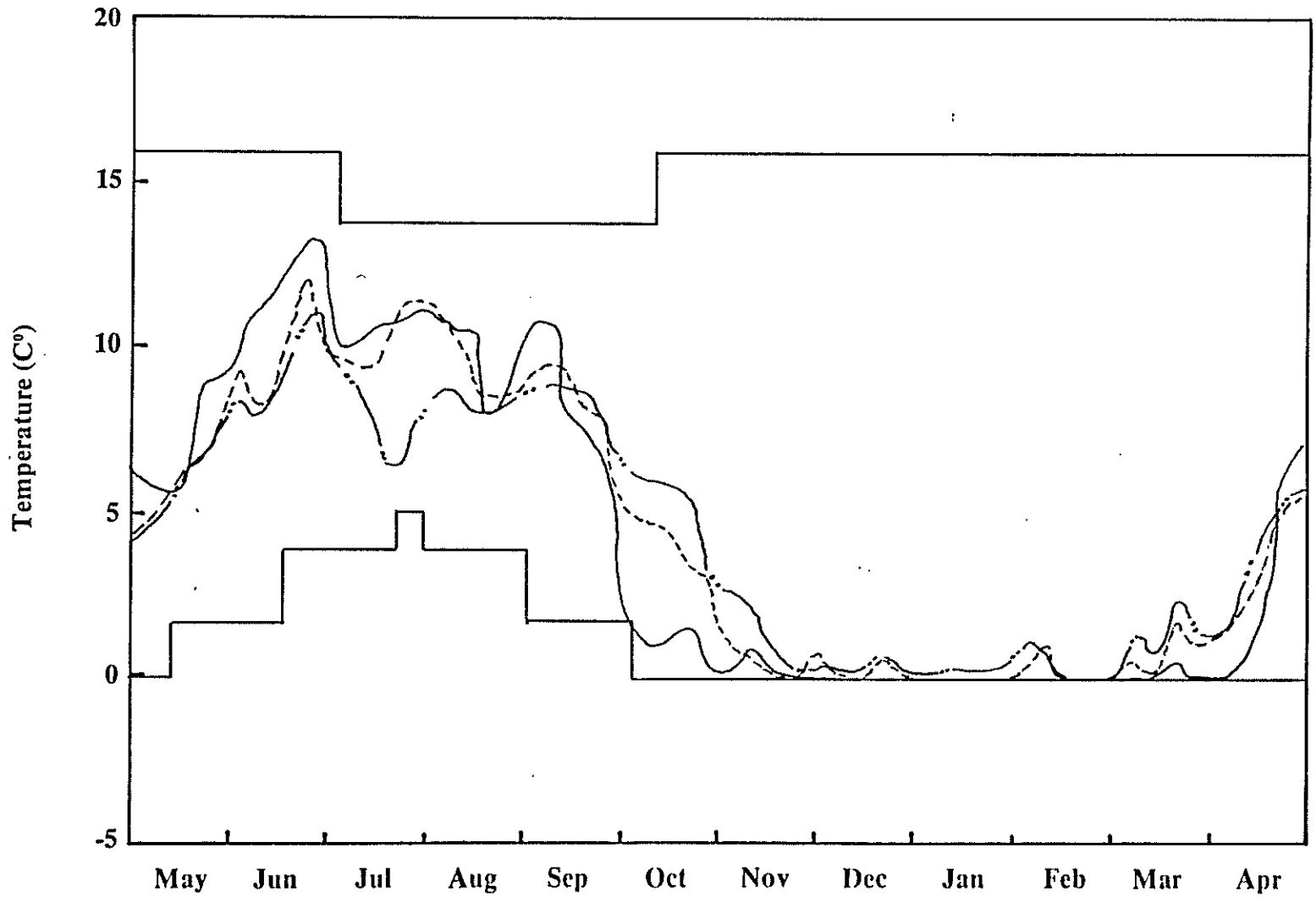


16H

Devil's Canyon
2002
— · — · —

Watana
1996
- - - - -

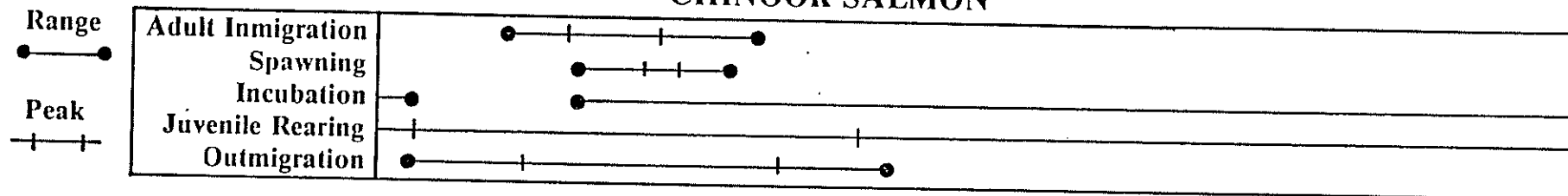
Natural
—————



1981-1982

Devil's Canyon

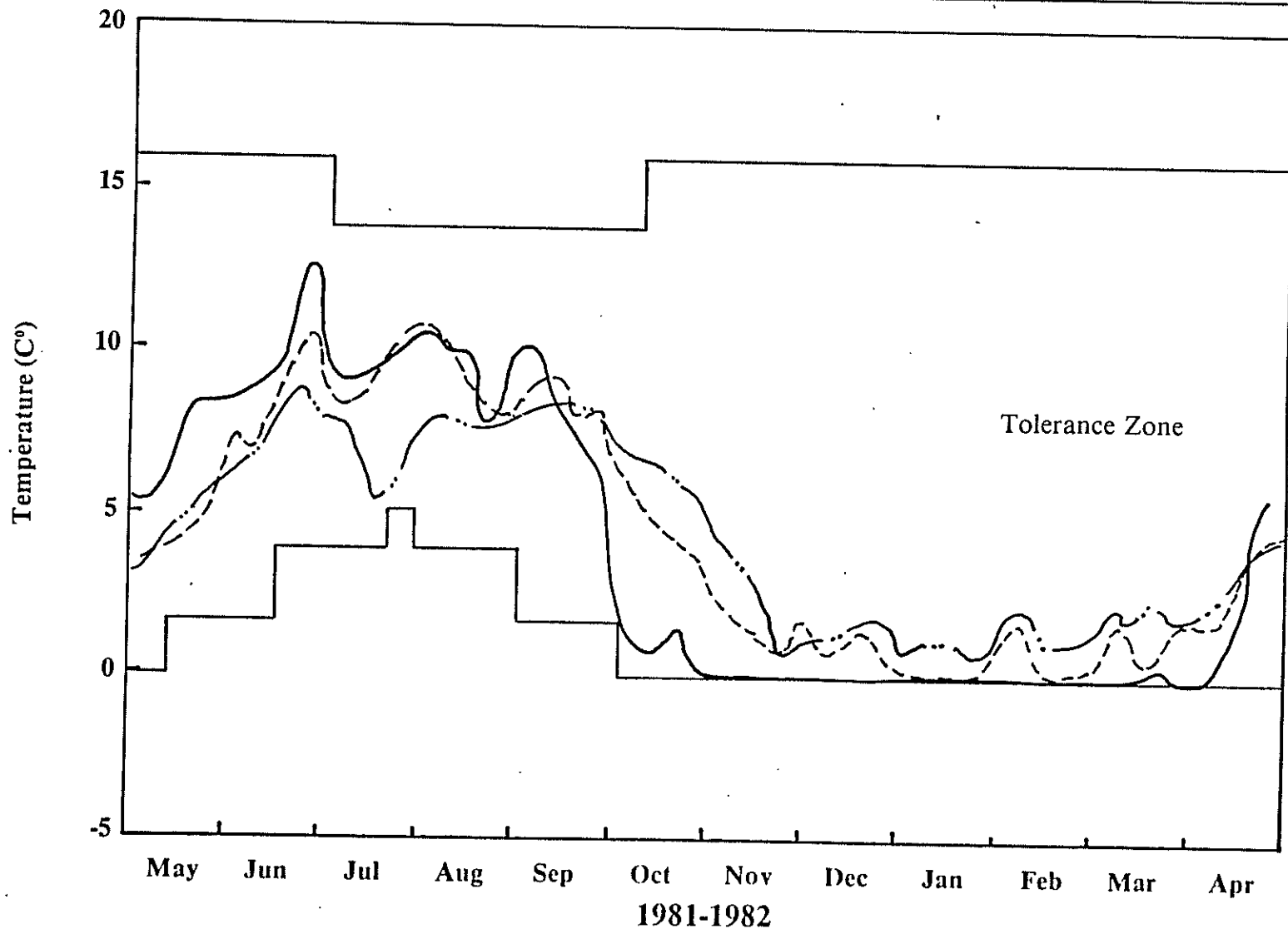
CHINOOK SALMON



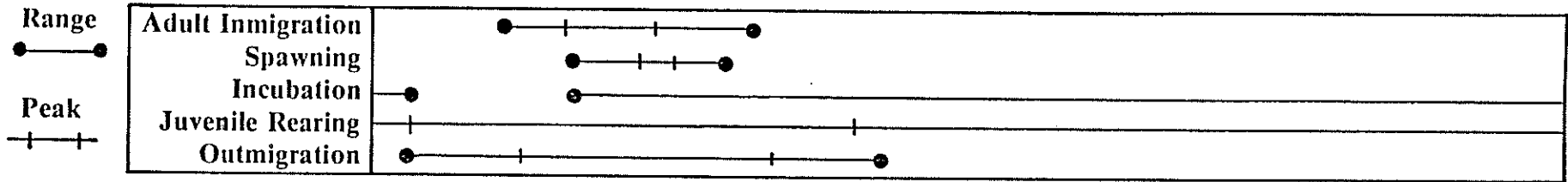
H92 Devil's Canyon
2002

Watana
1996

Natural



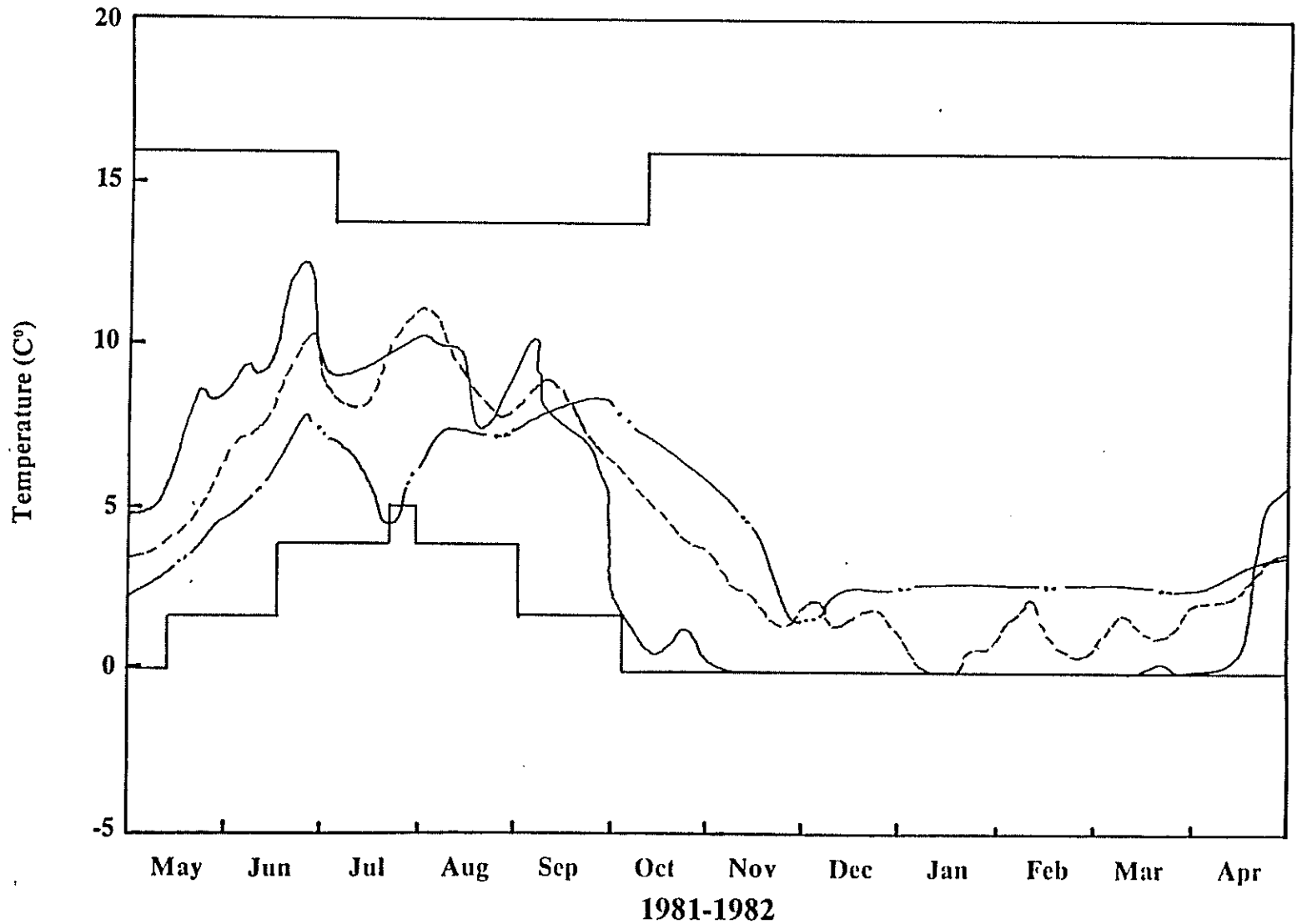
CHINOOK SALMON



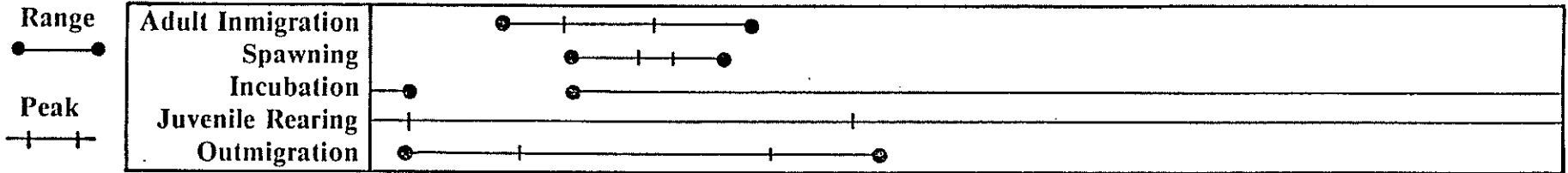
Devil's Canyon
2002

Watana
1996

Natural



CHINOOK SALMON

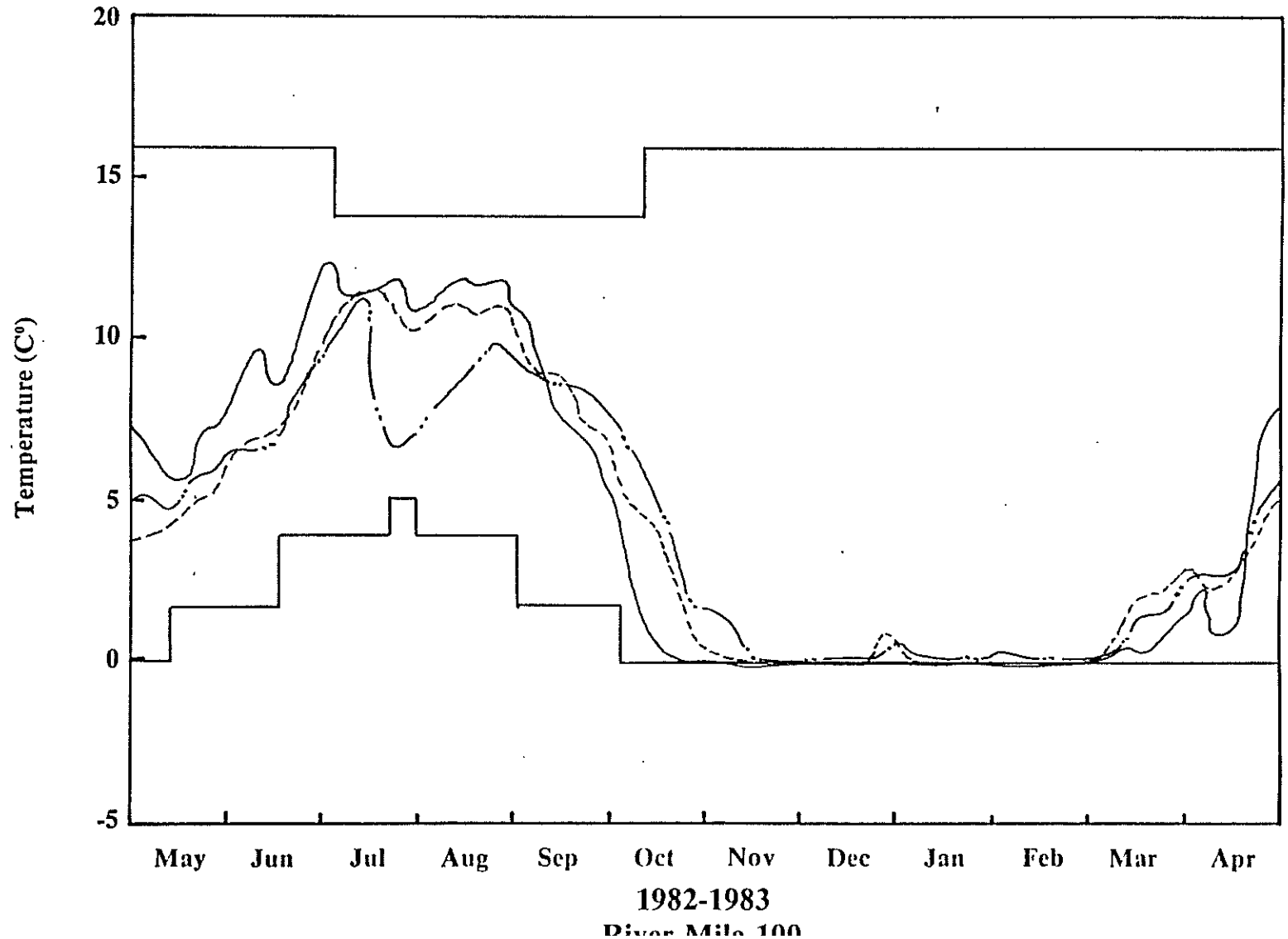


46H

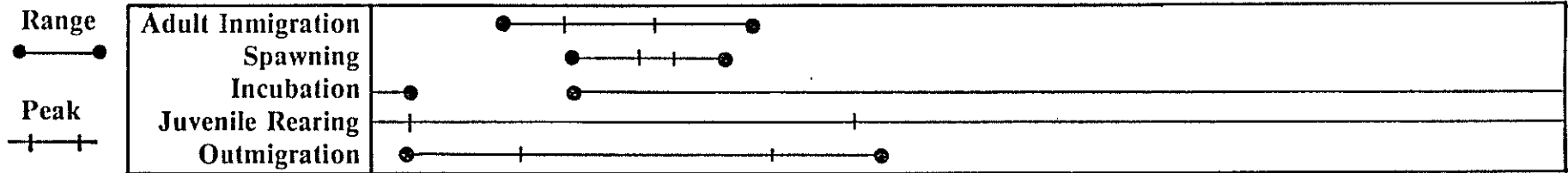
Devil's Canyon
2002
.....

Watana
1996

Natural



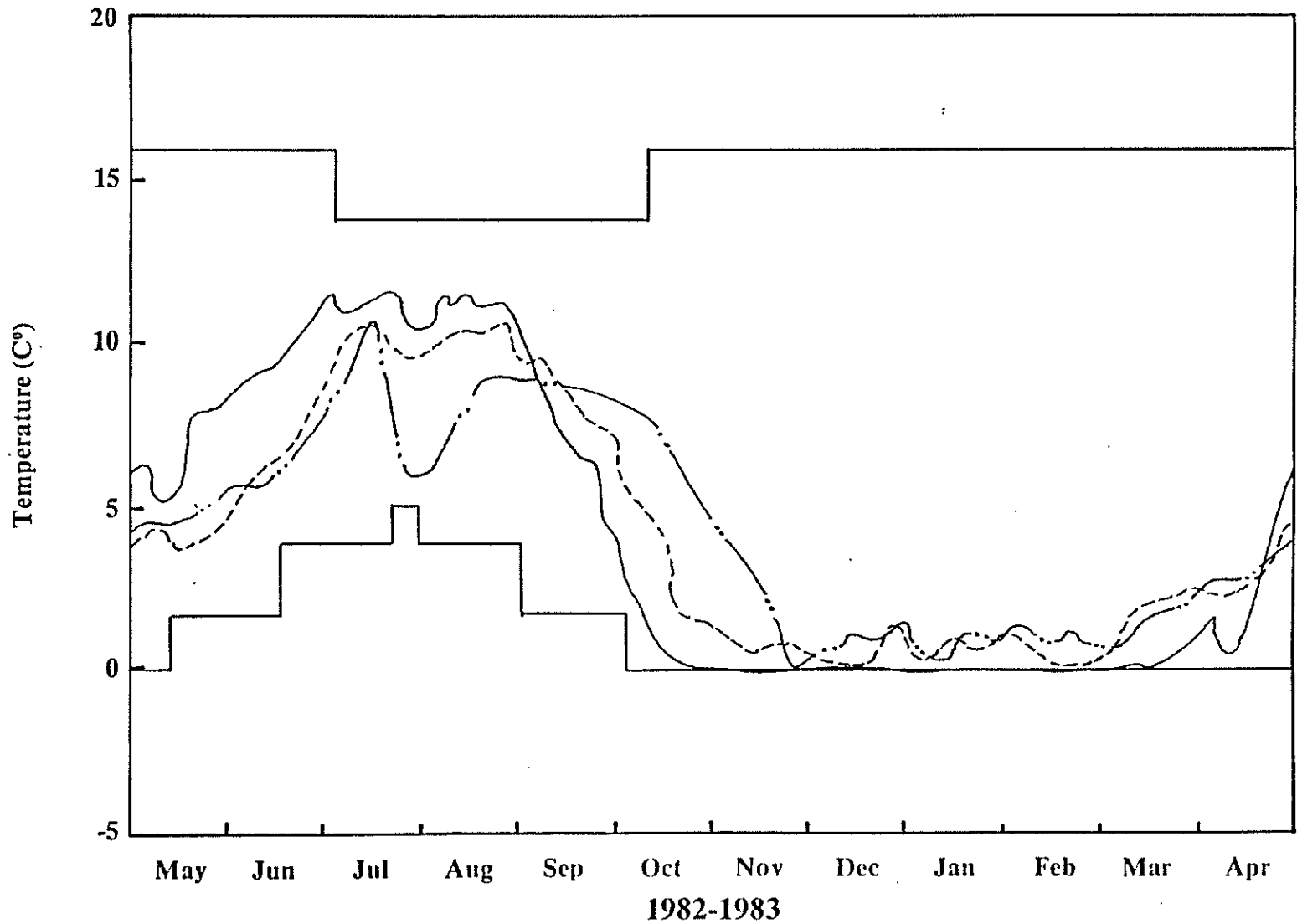
CHINOOK SALMON



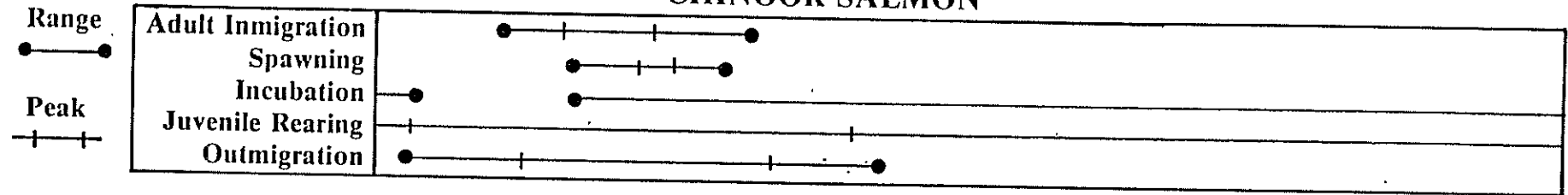
Devil's Canyon
2002

Watana
1996

Natural



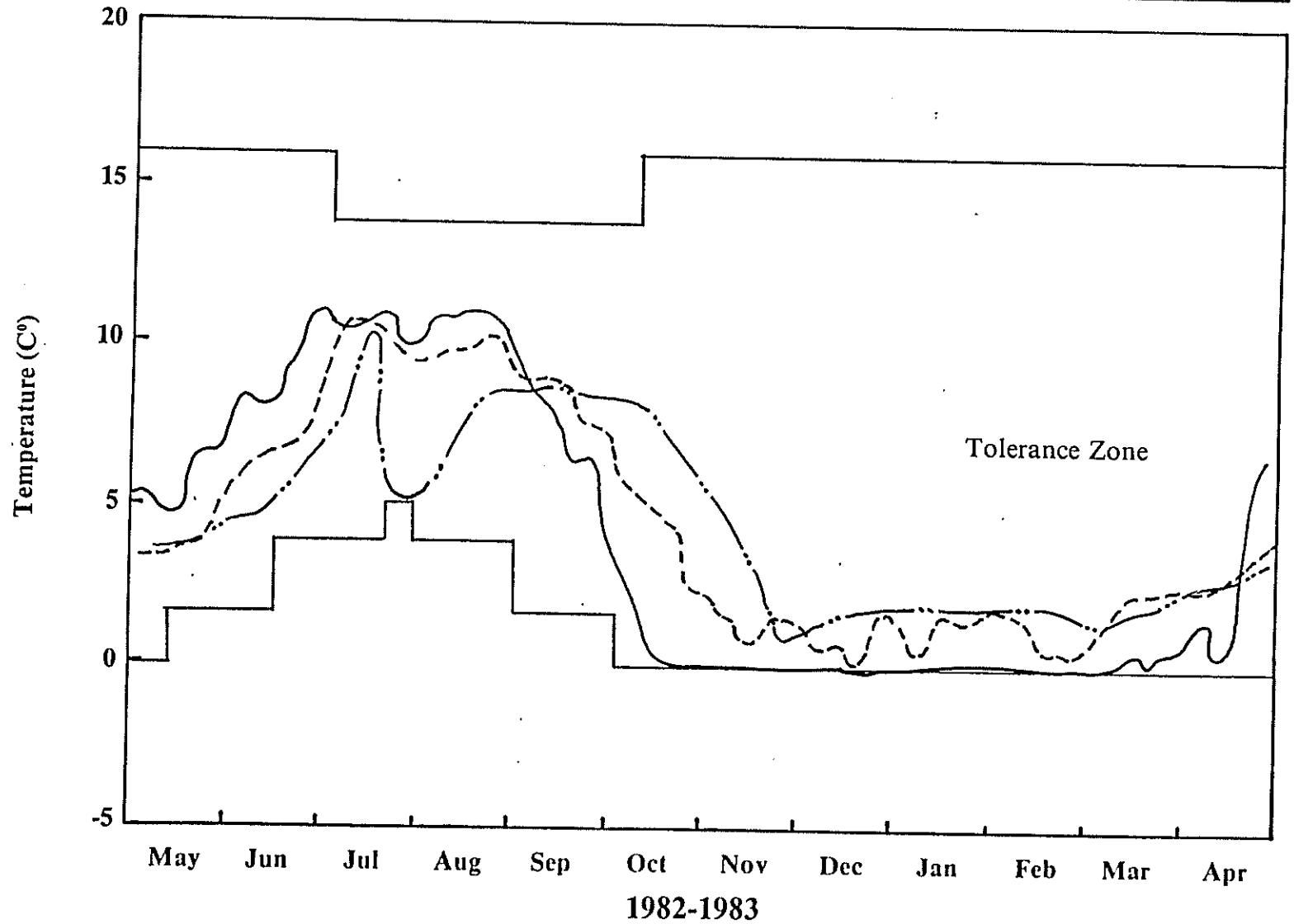
CHINOOK SALMON



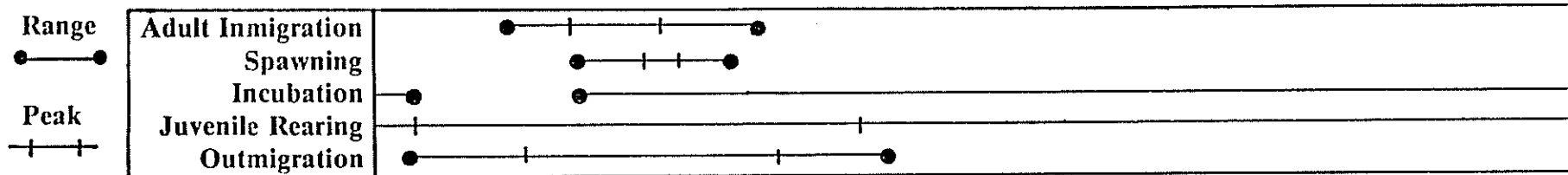
96H
Devil's Canyon
2002

Watana
1996

Natural



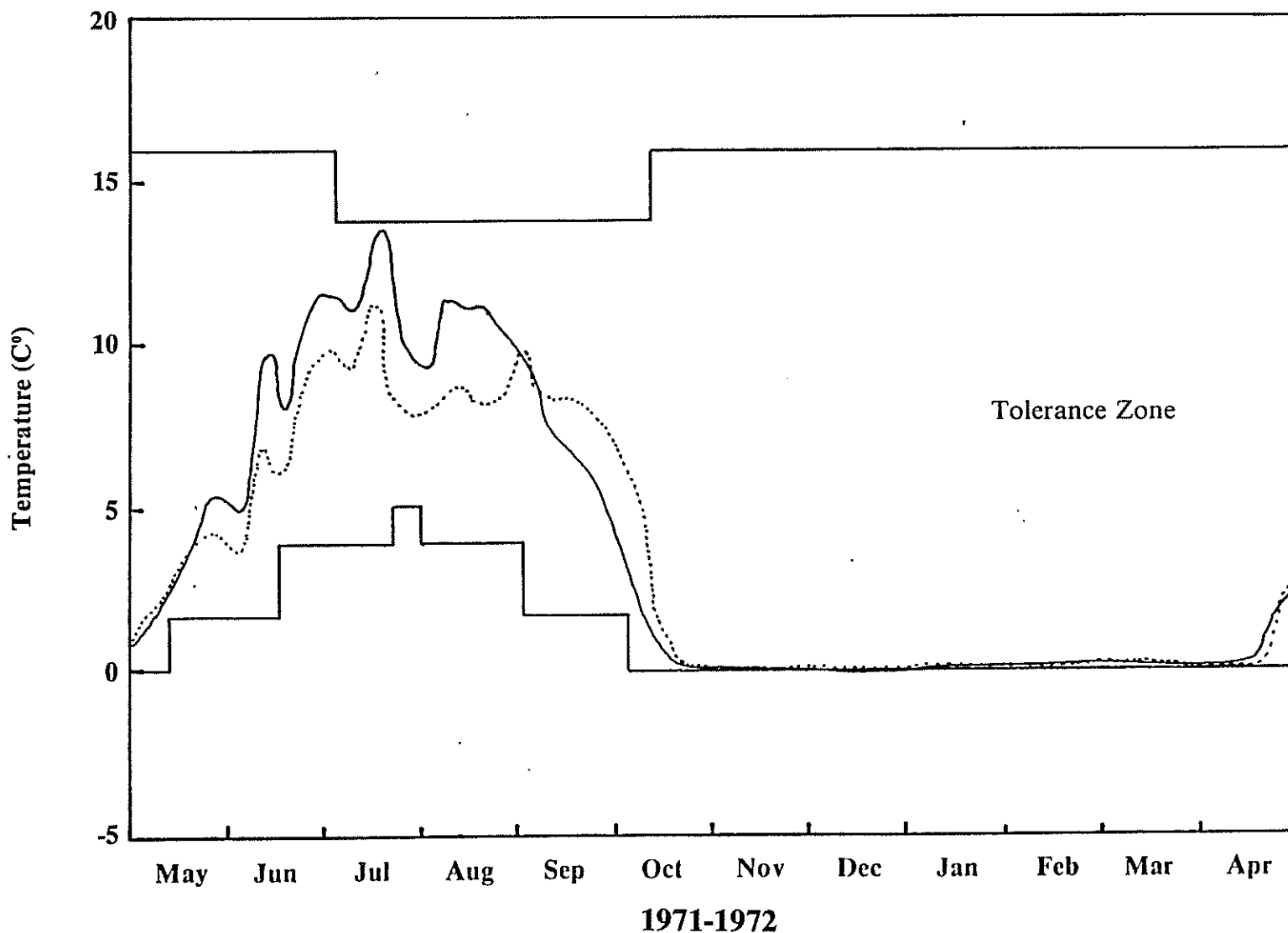
CHINOOK SALMON



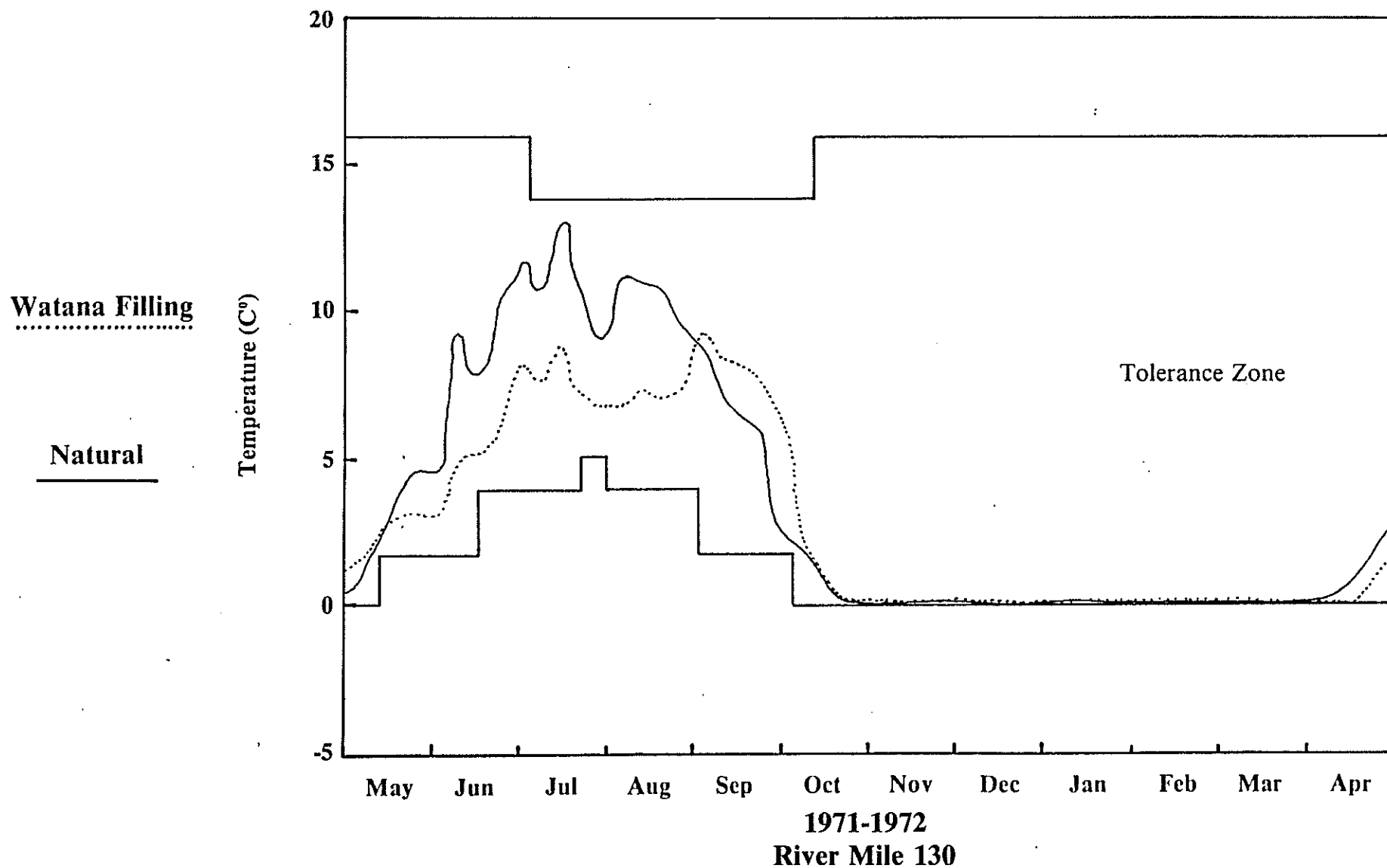
H97

Watana Filling

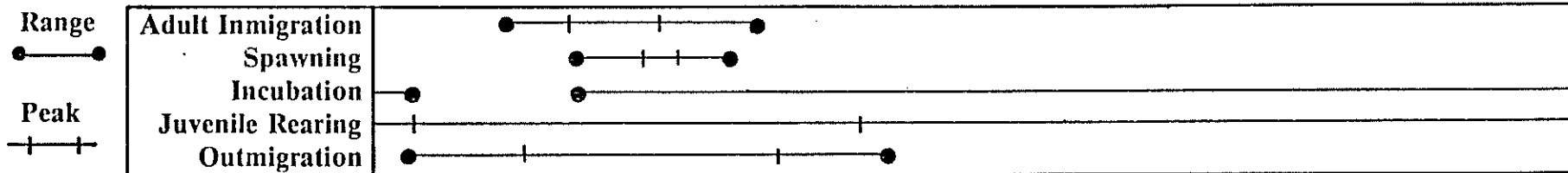
Natural



Riv Mile 0

[illegible]

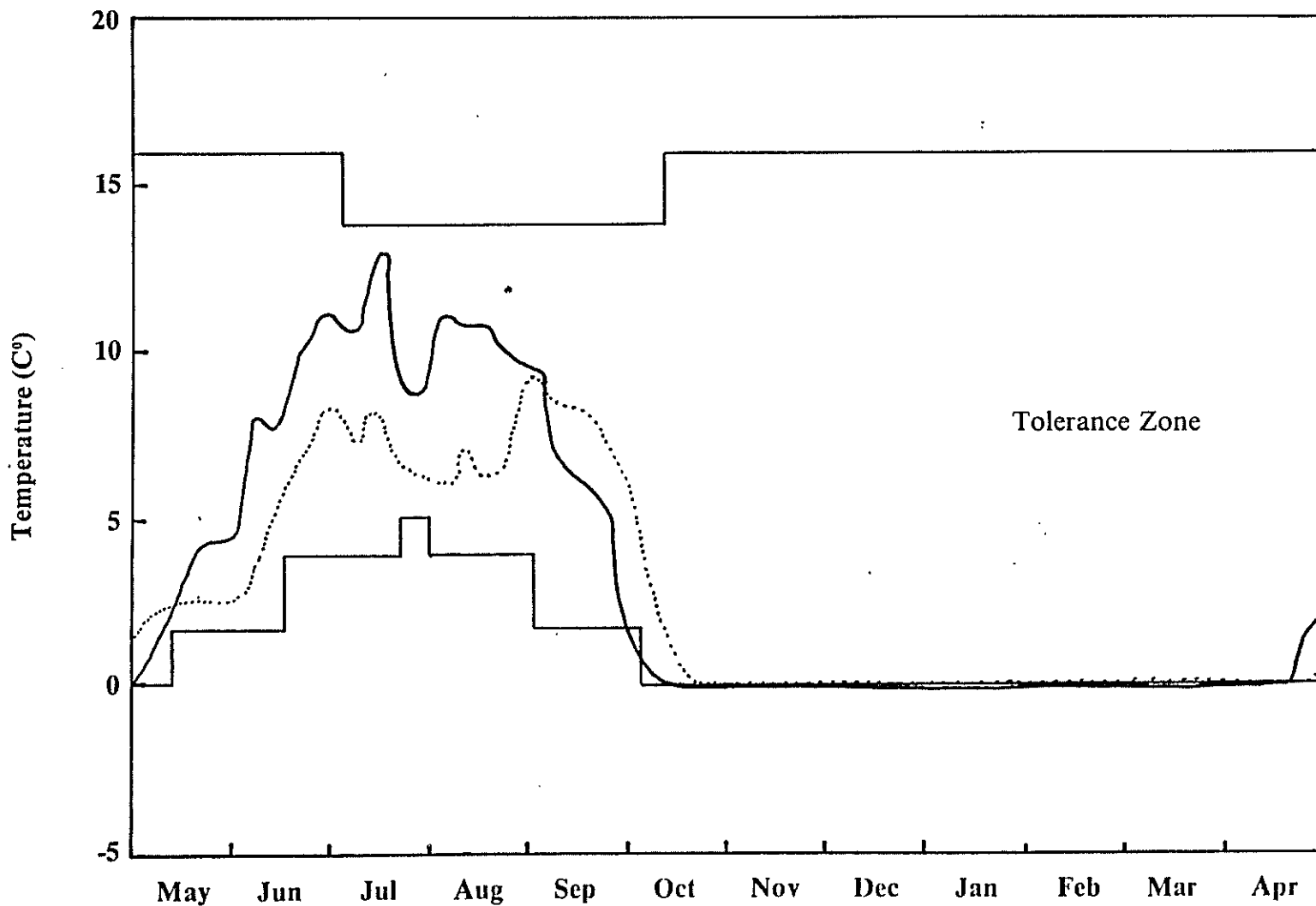
CHINOOK SALMON



66H

Watana Filling

Natural



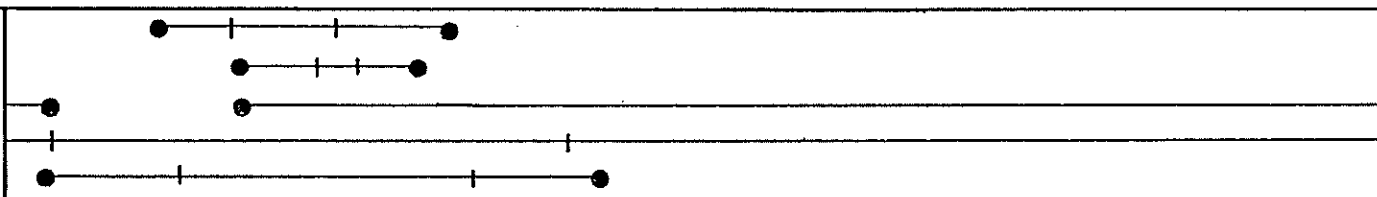
1971-1972

Riv. Mile 150

CHINOOK SALMON

Range
Peak

Adult Immigration
Spawning
Incubation
Juvenile Rearing
Outmigration

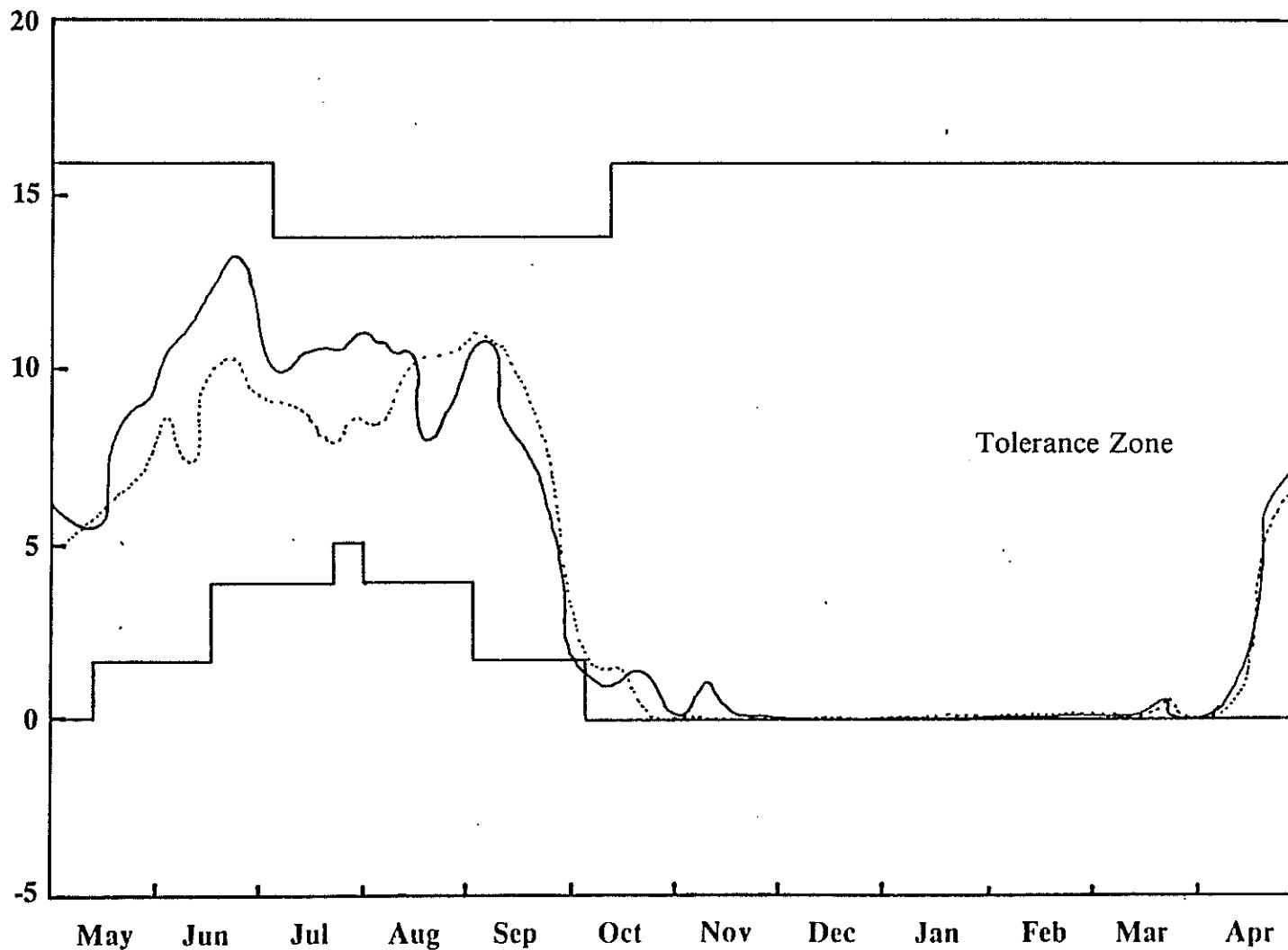


001100

Watana Filling

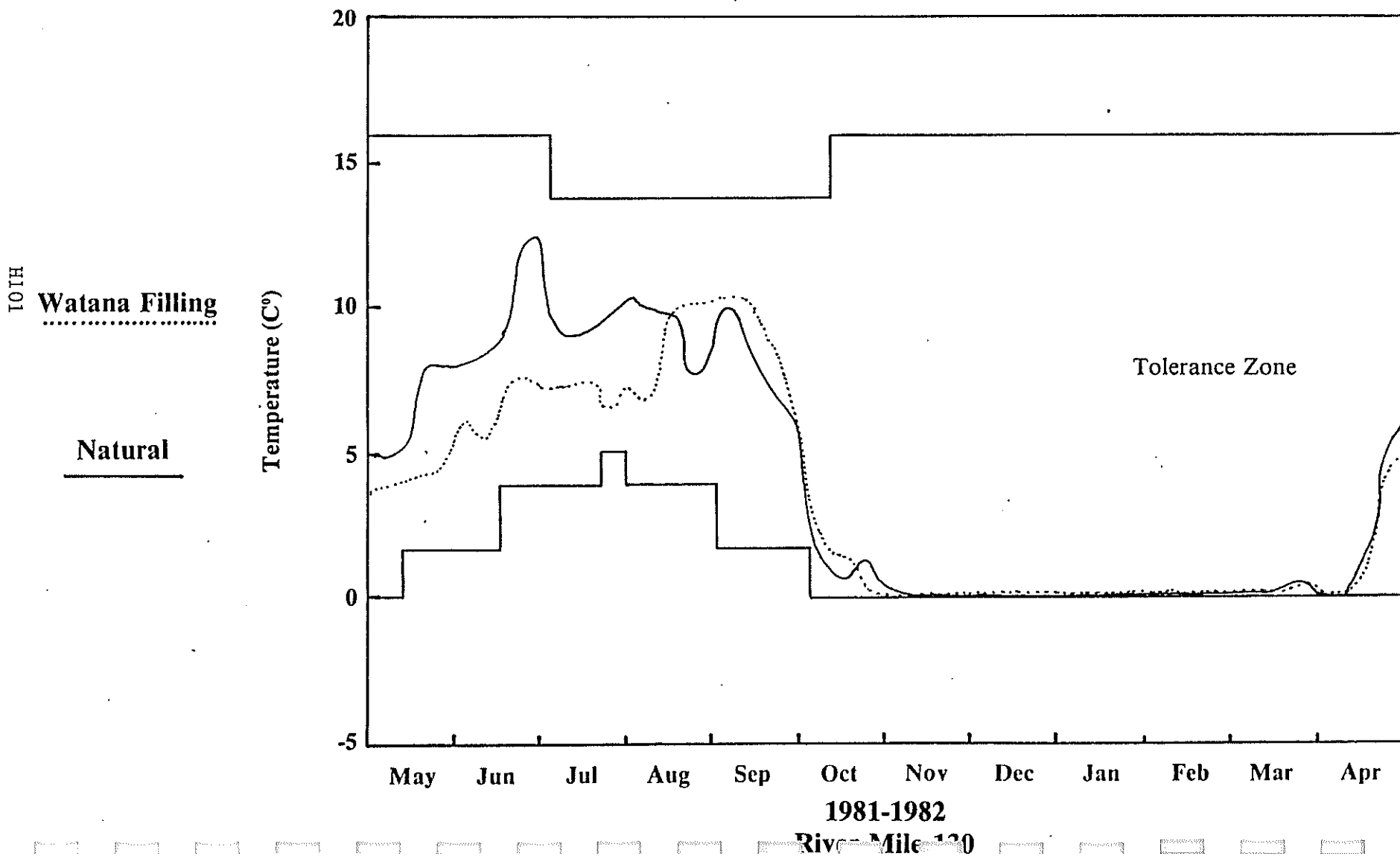
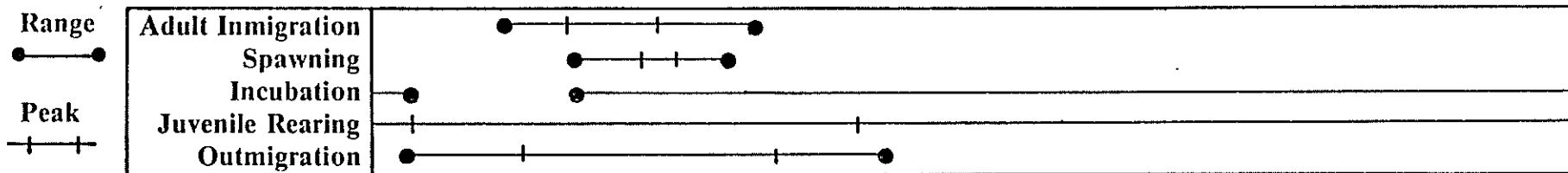
Natural

Temperature (C°)

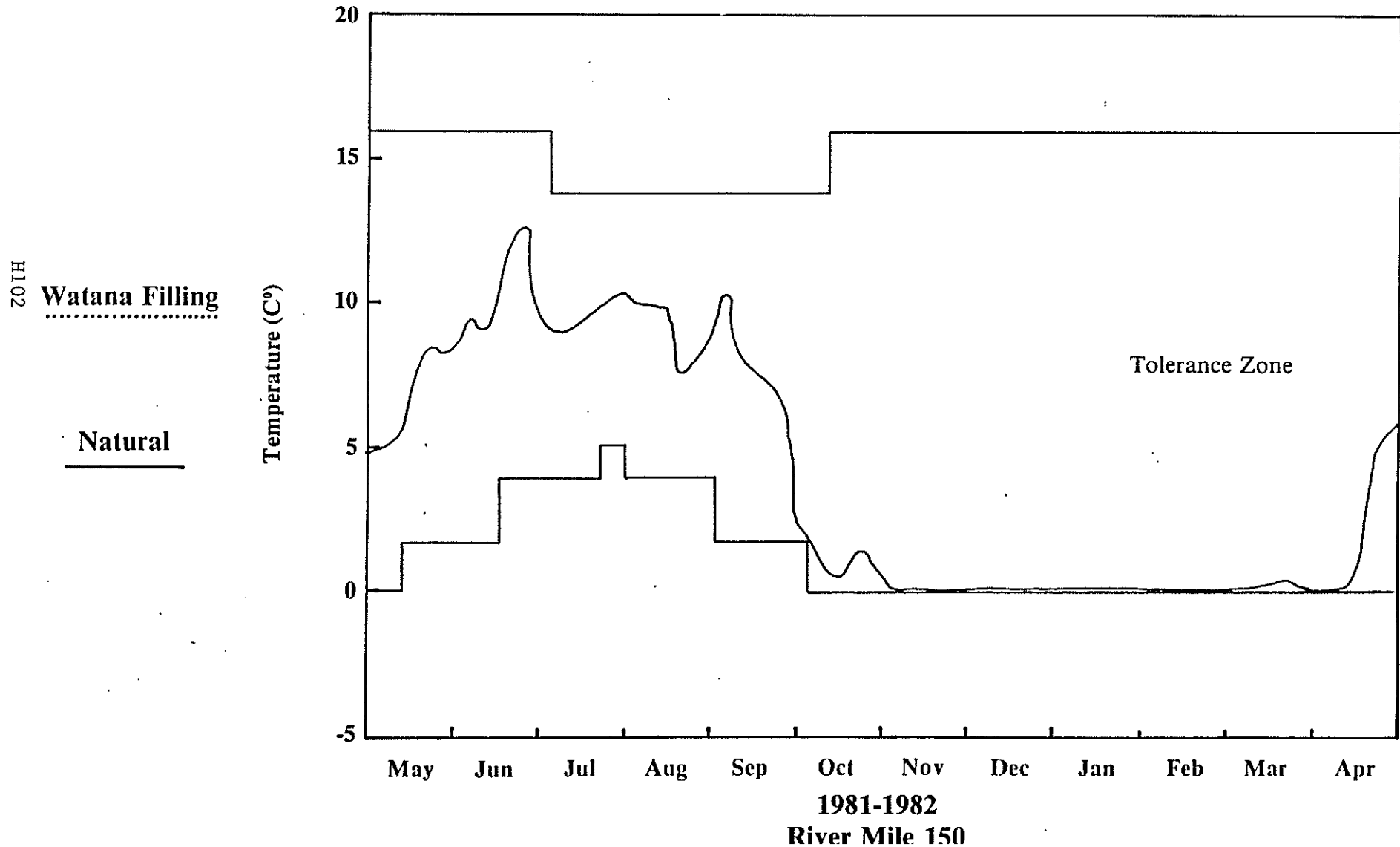
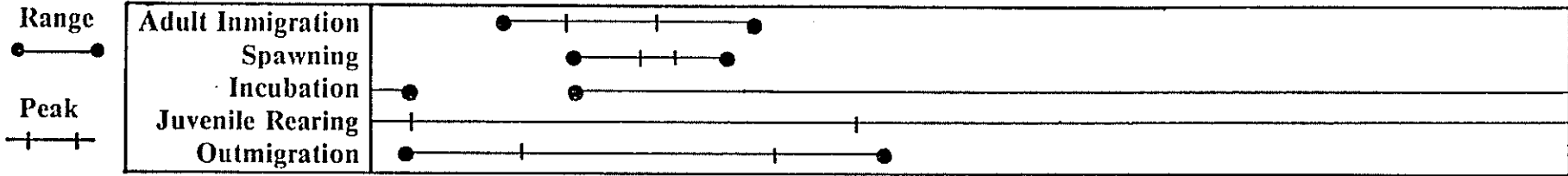


1981-1982
Diver Mile 100

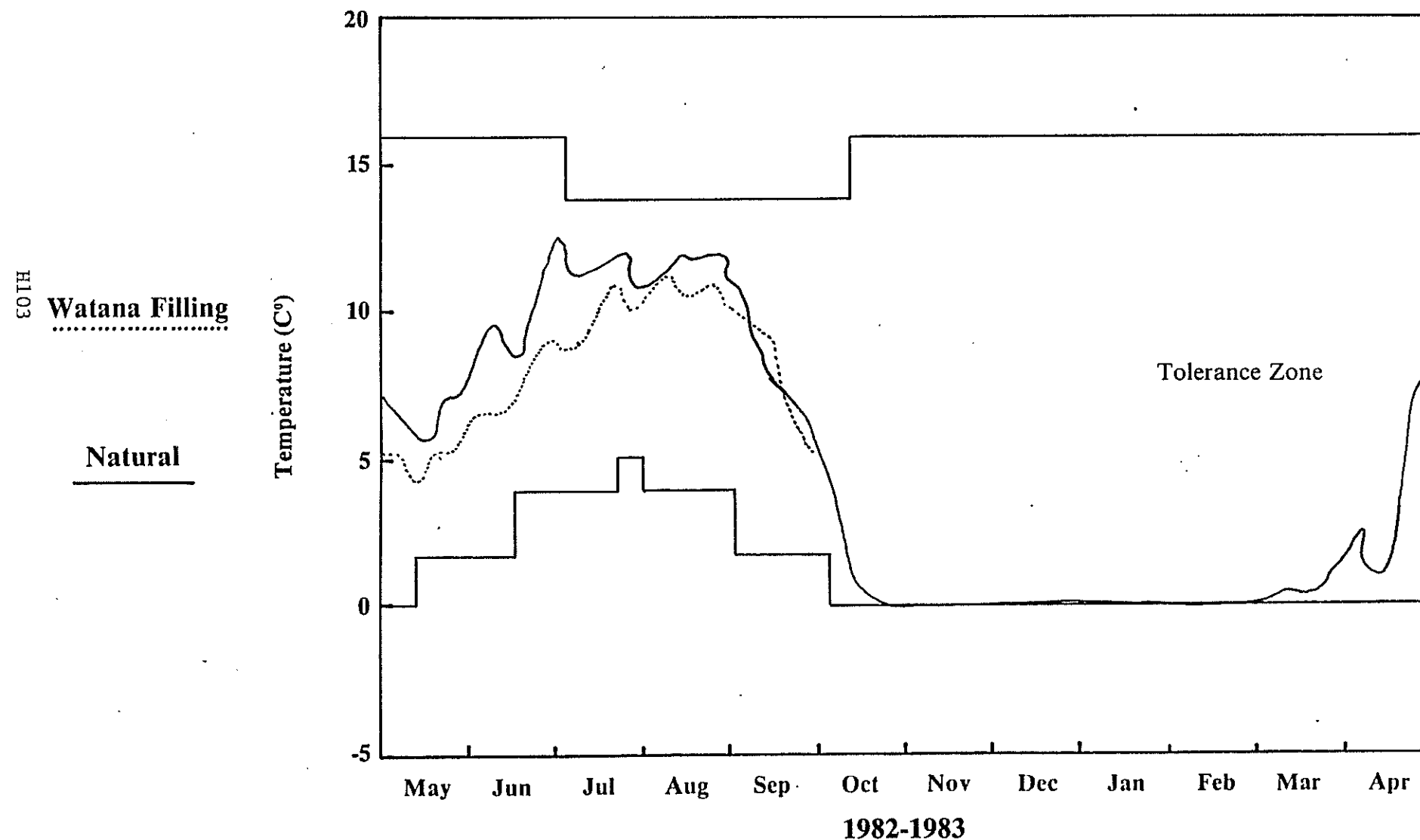
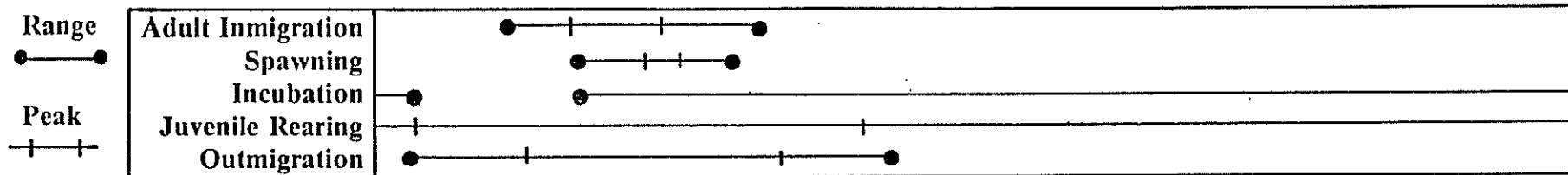
CHINOOK SALMON



CHINOOK SALMON



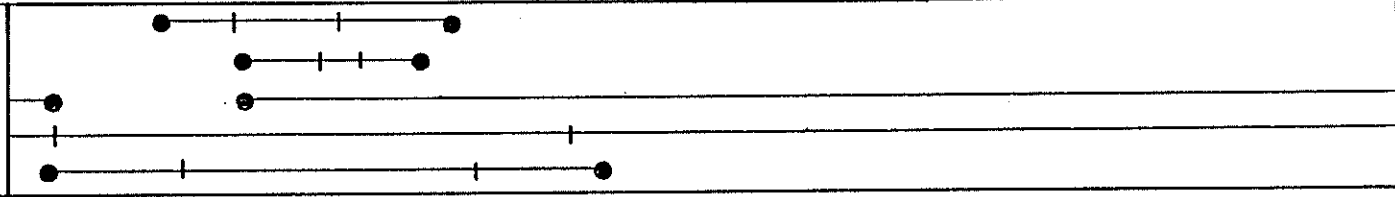
CHINOOK SALMON



CHINOOK SALMON

Range
●—●
Peak
+—+

Adult Immigration
Spawning
Incubation
Juvenile Rearing
Outmigration

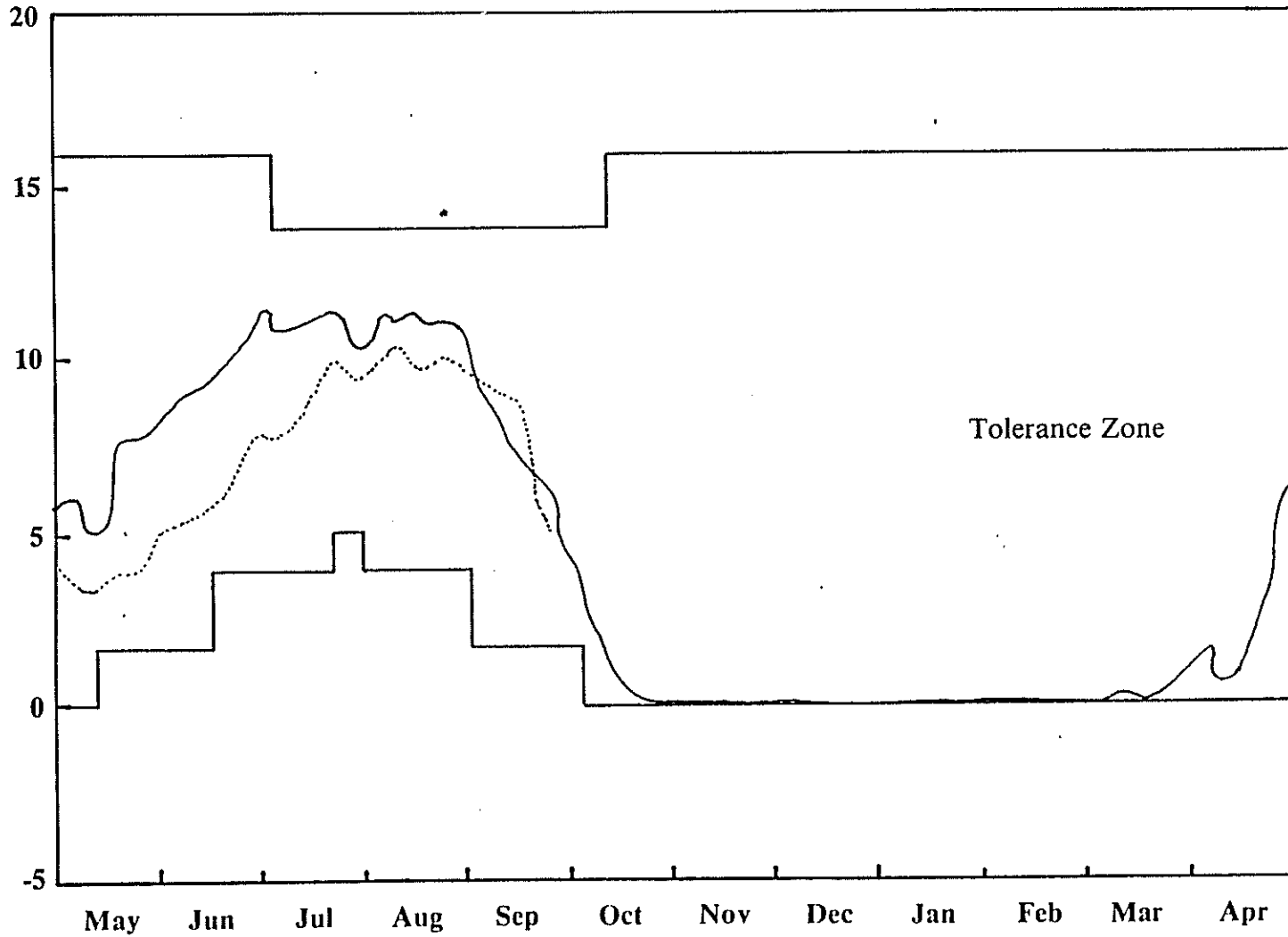


401H

Watana Filling

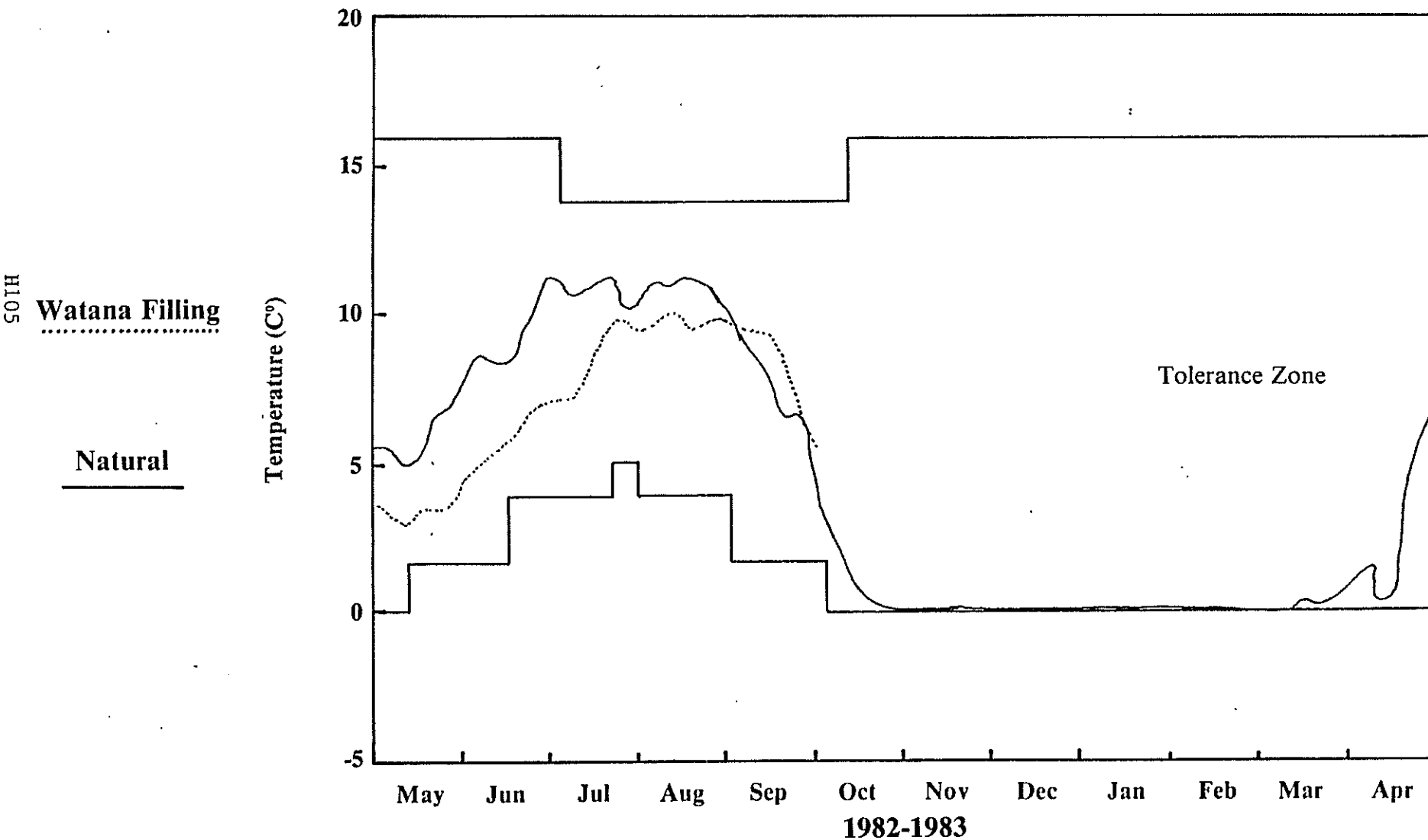
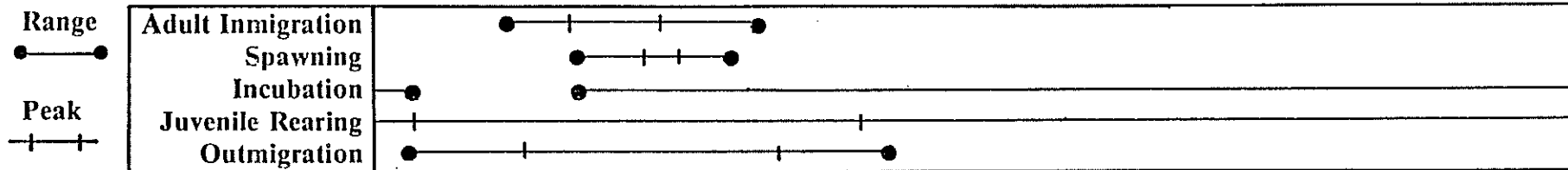
Natural

Temperature (C°)



1982-1983
River Mile 130

CHINOOK SALMON



River Mile 150