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UNIVERSITY OF CALIFORNIA

EARTH SCIENCES DIVISION

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**The Ahuachapán Geothermal Field,
El Salvador—Reservoir Analysis**

Volume III: Appendices F through I

Z. Aunzo, G.S. Bodvarsson, C. Laky, M.J. Lippmann,
B. Steingrimsson, A.H. Truesdell, and P.A. Witherspoon

August 1989

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The Ahuachapán Geothermal Field, El Salvador
— Reservoir Analysis —

Volume III: Appendices F through I

by

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Principal Investigators

Gudmundur S. Bodvarsson and Marcelo J. Lippmann

prepared for

Earth and Space Science Division
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

August 1989

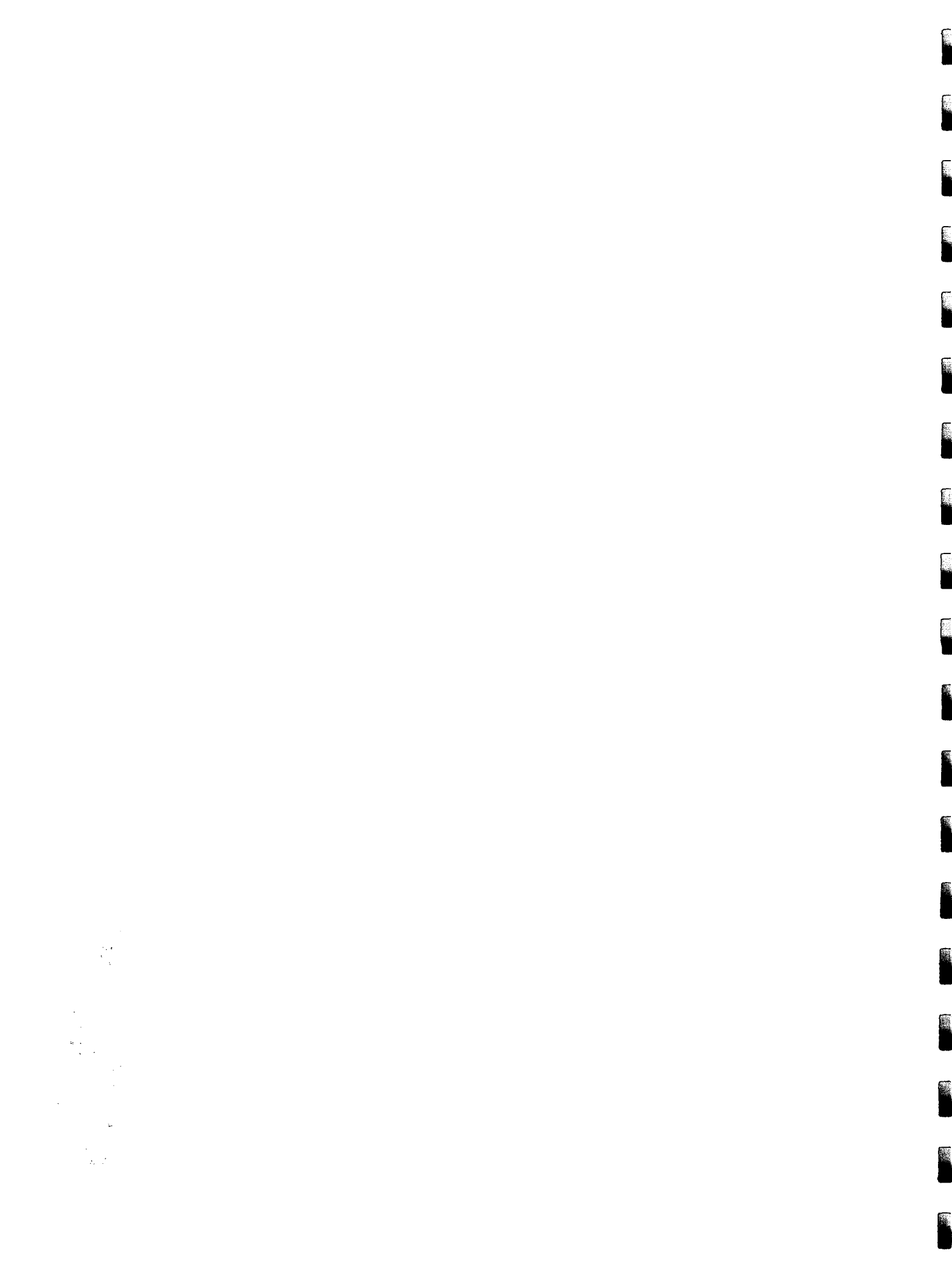
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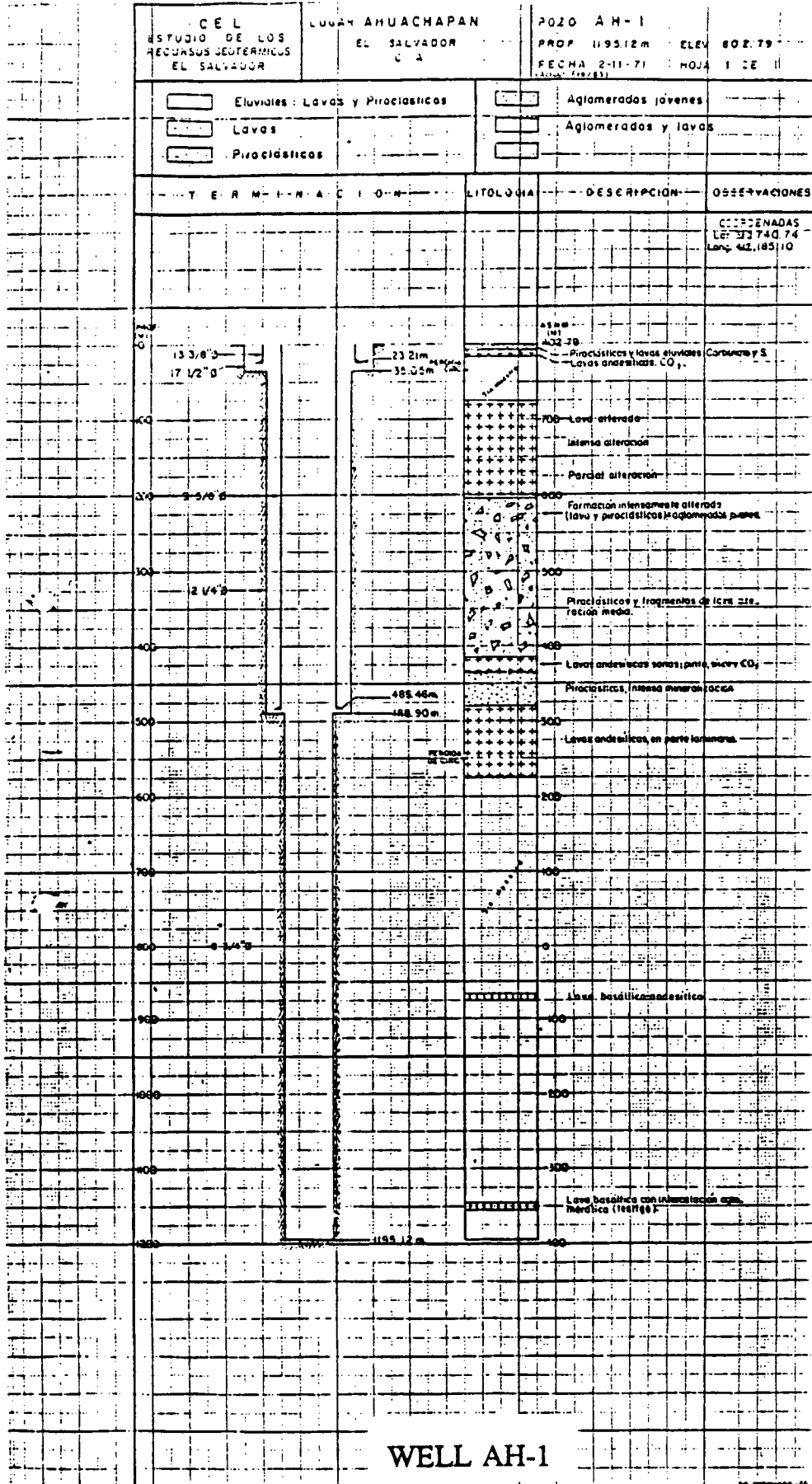
MASTER

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APPENDIX F

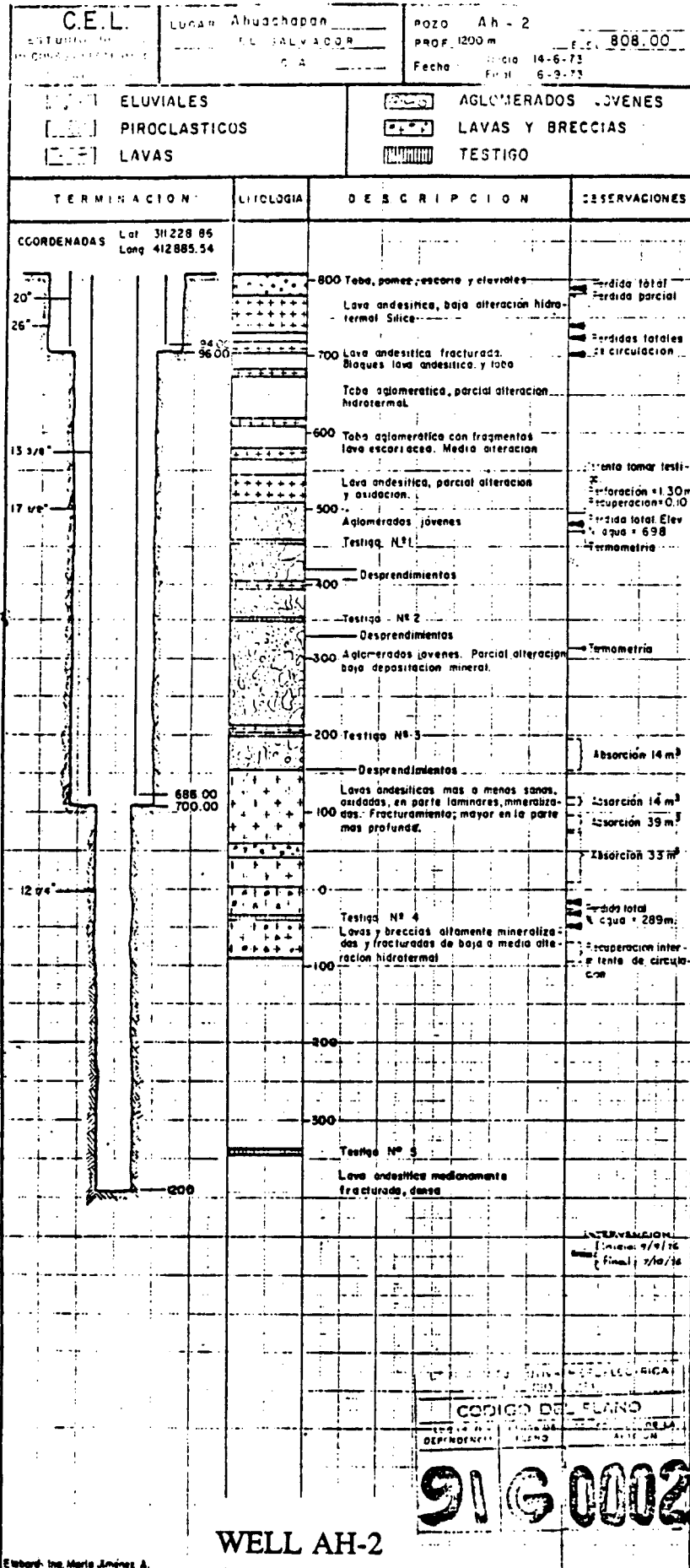
(Well Lithology Logs)





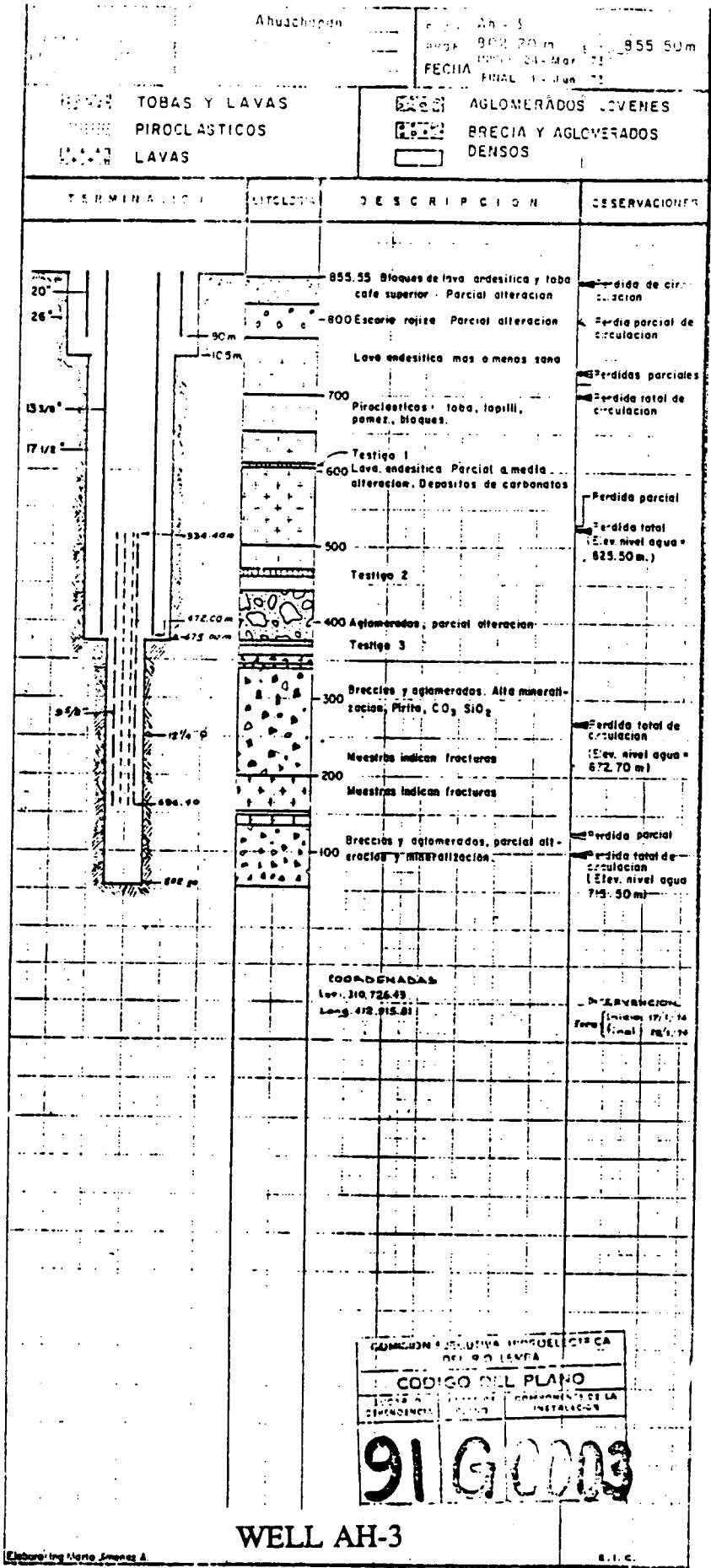
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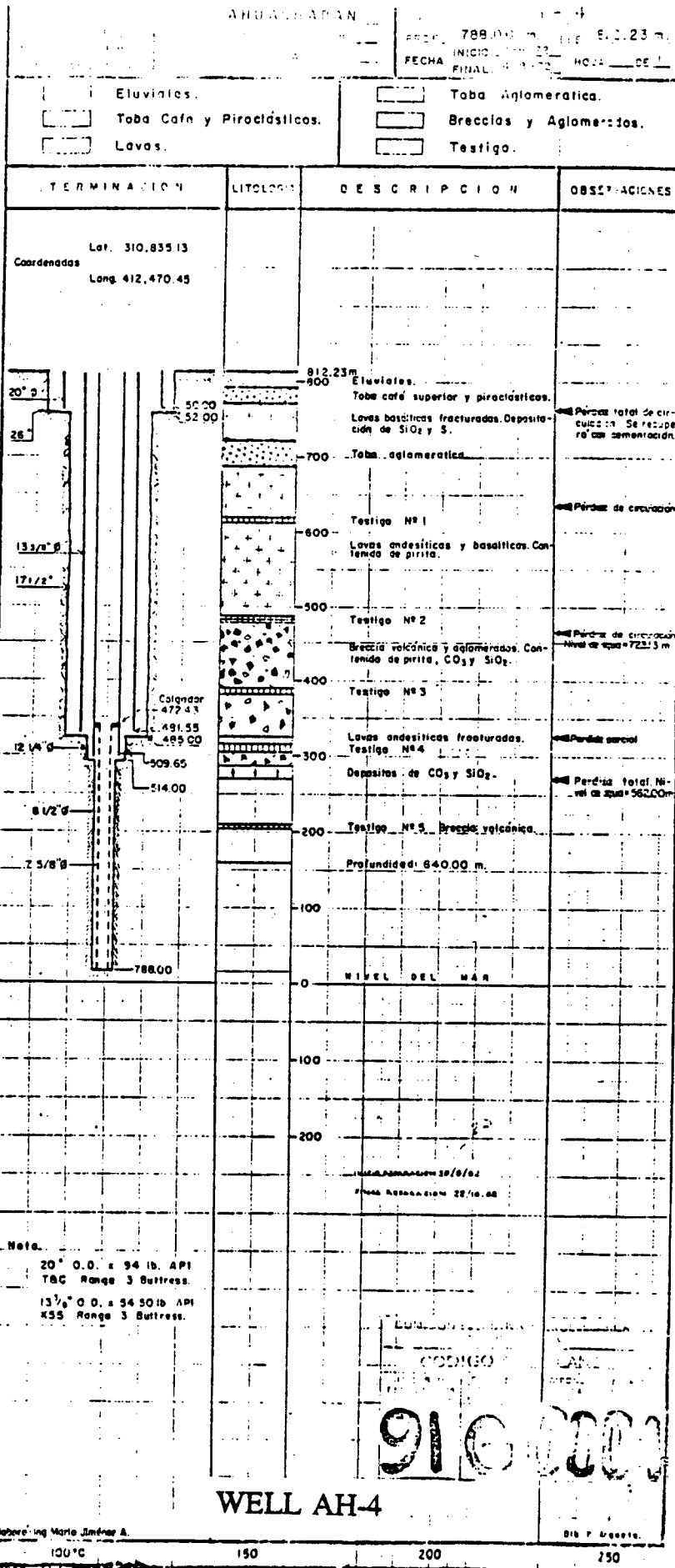


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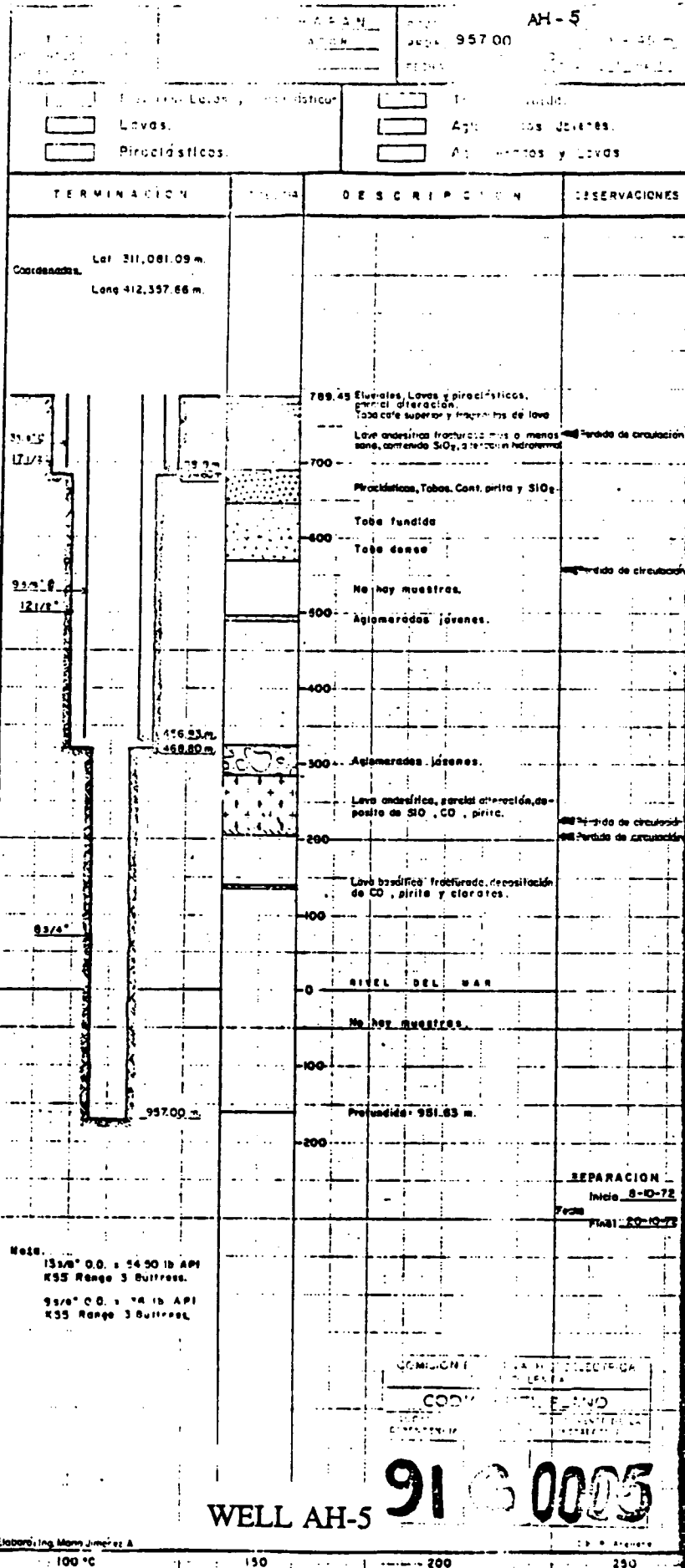
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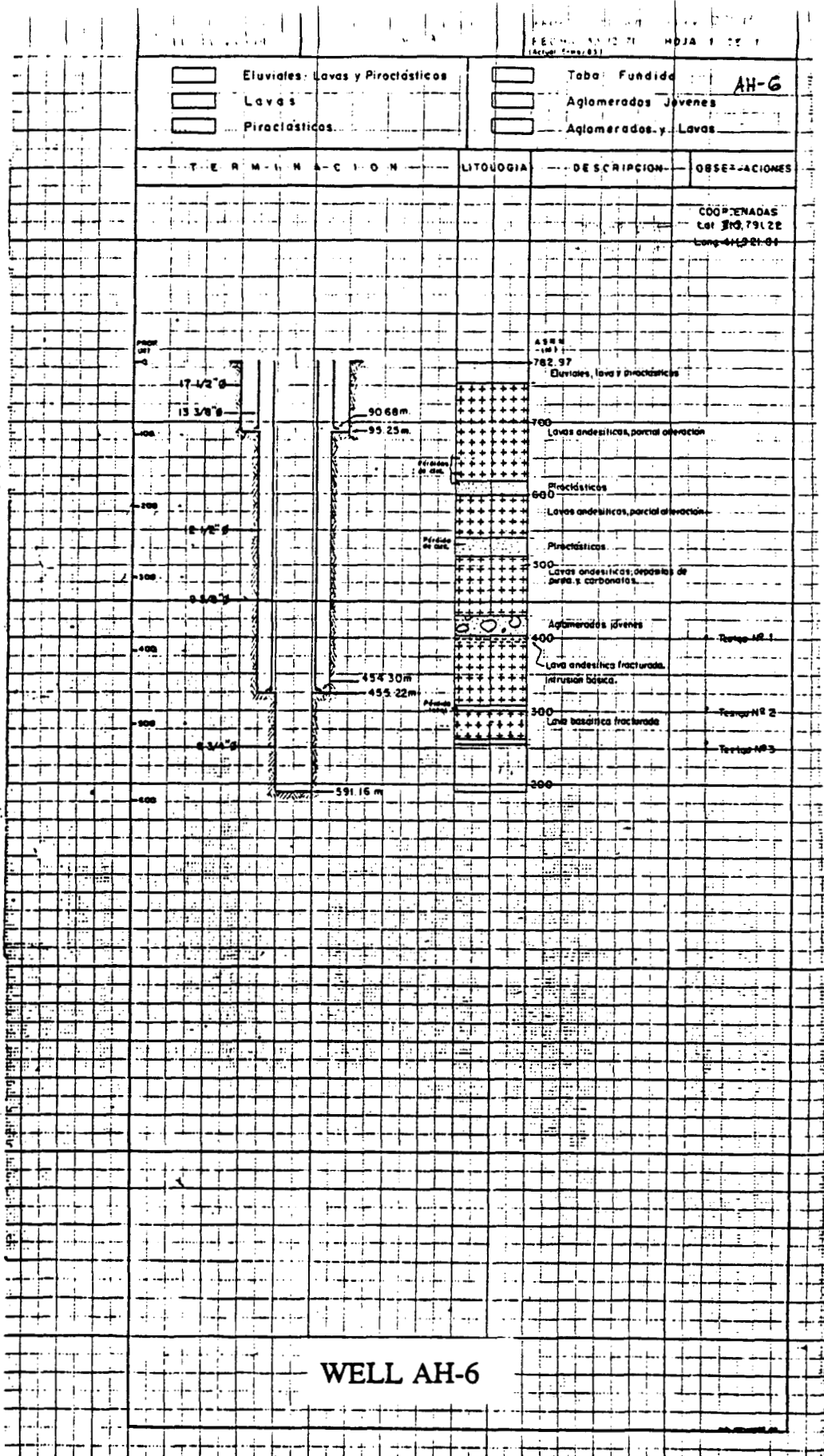


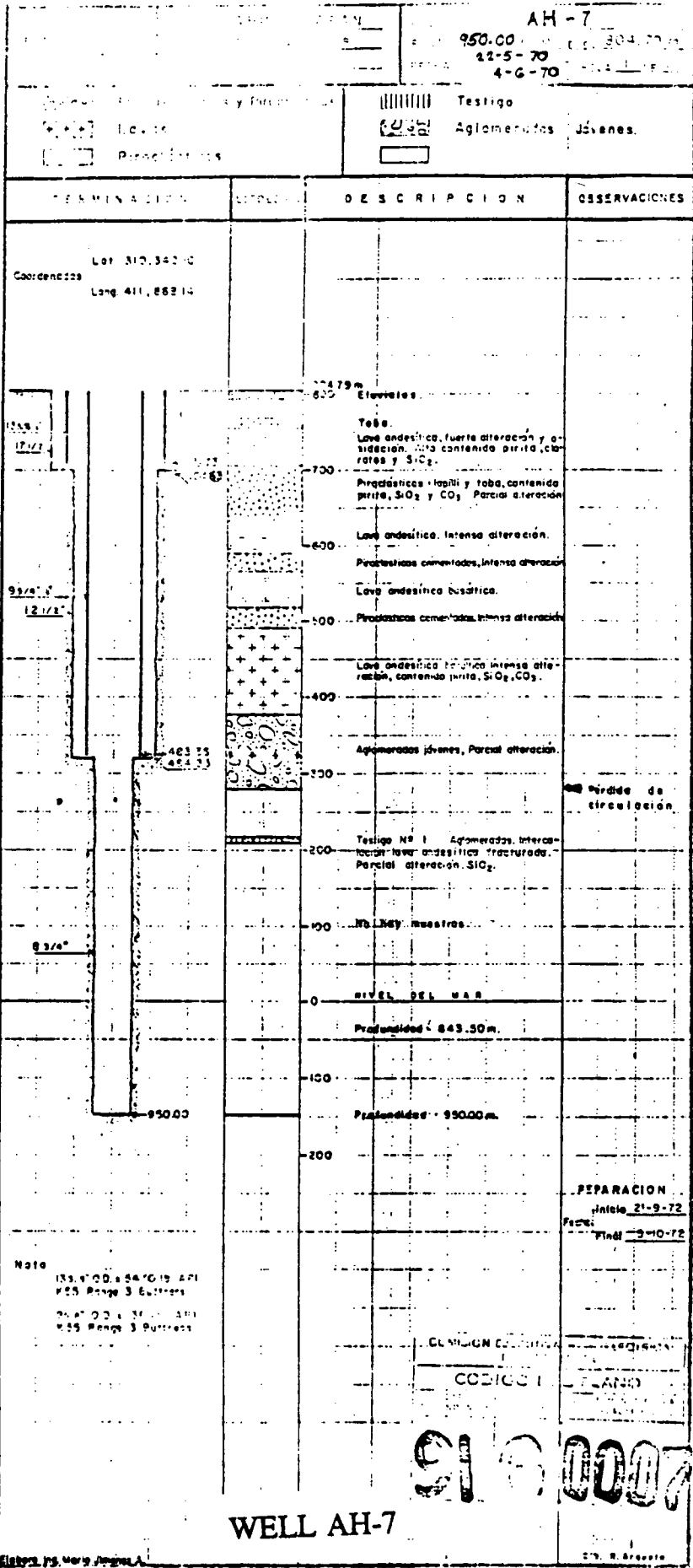
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WELL AH-5

91 G 0005

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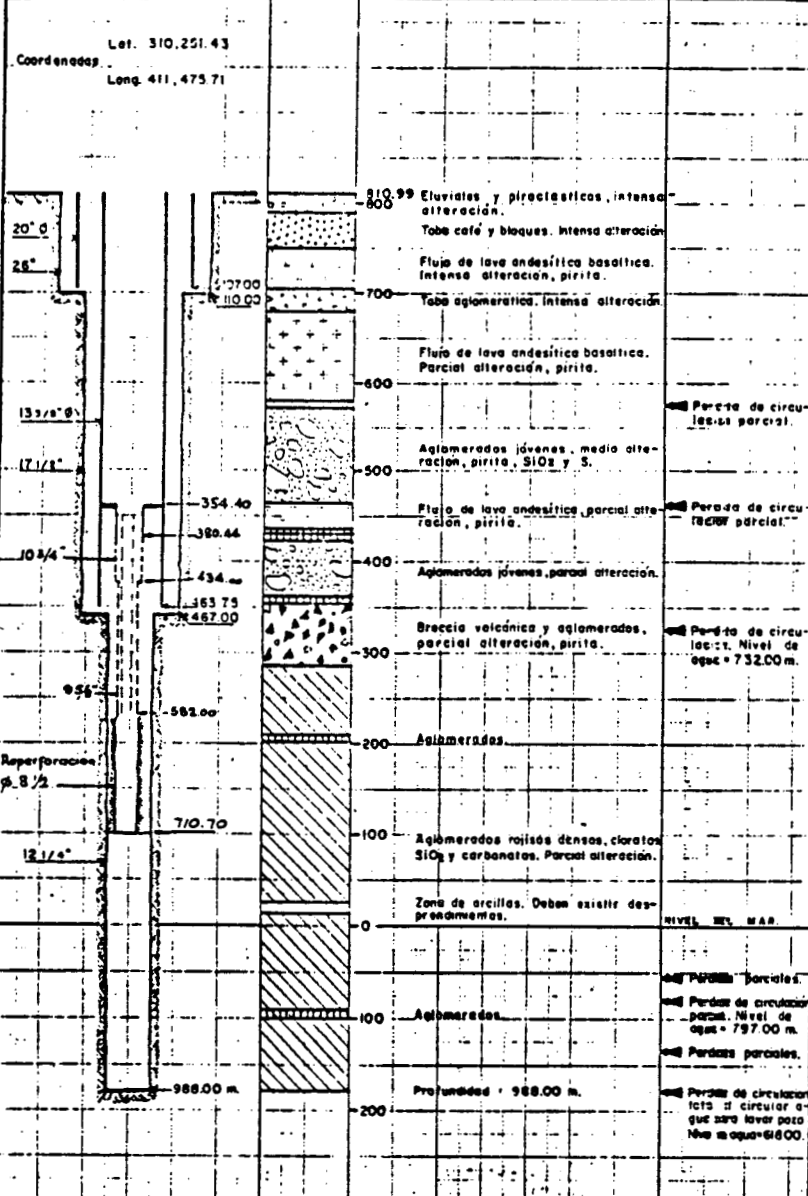
WELL AH-7

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ESTUDIO DE LOS RECURSOS GEOTERMICOS DEL SALVADOR	LUGAR AHUACHAPAN	POZO Ah-8
	EL SALVADOR	PROF. 988.00 m. ELEV. 510.99 m.
		FECHA INICIO 13-3-73 HOJA DE 1

<input type="checkbox"/> Eluviales.	<input type="checkbox"/> Aglomerados Jóvenes
<input type="checkbox"/> Lavas.	<input type="checkbox"/> Breccia y Aglomerados.
<input type="checkbox"/> Toba Café y Piroclásticos.	<input type="checkbox"/> Aglomerados Densos y Lavas.

TERMINACION	LITOLOGIA	DESCRIPCION	OBSERVACIONES
-------------	-----------	-------------	---------------



Nota:
20" O.D. a 94 lb. API
T&C Range 3 Buttress.
13 3/4" O.D. a 54.50 lb. API
K55 Range 3 Buttress.

Reparación: Inicio 12-Sep-73
Final 13-Oct-73

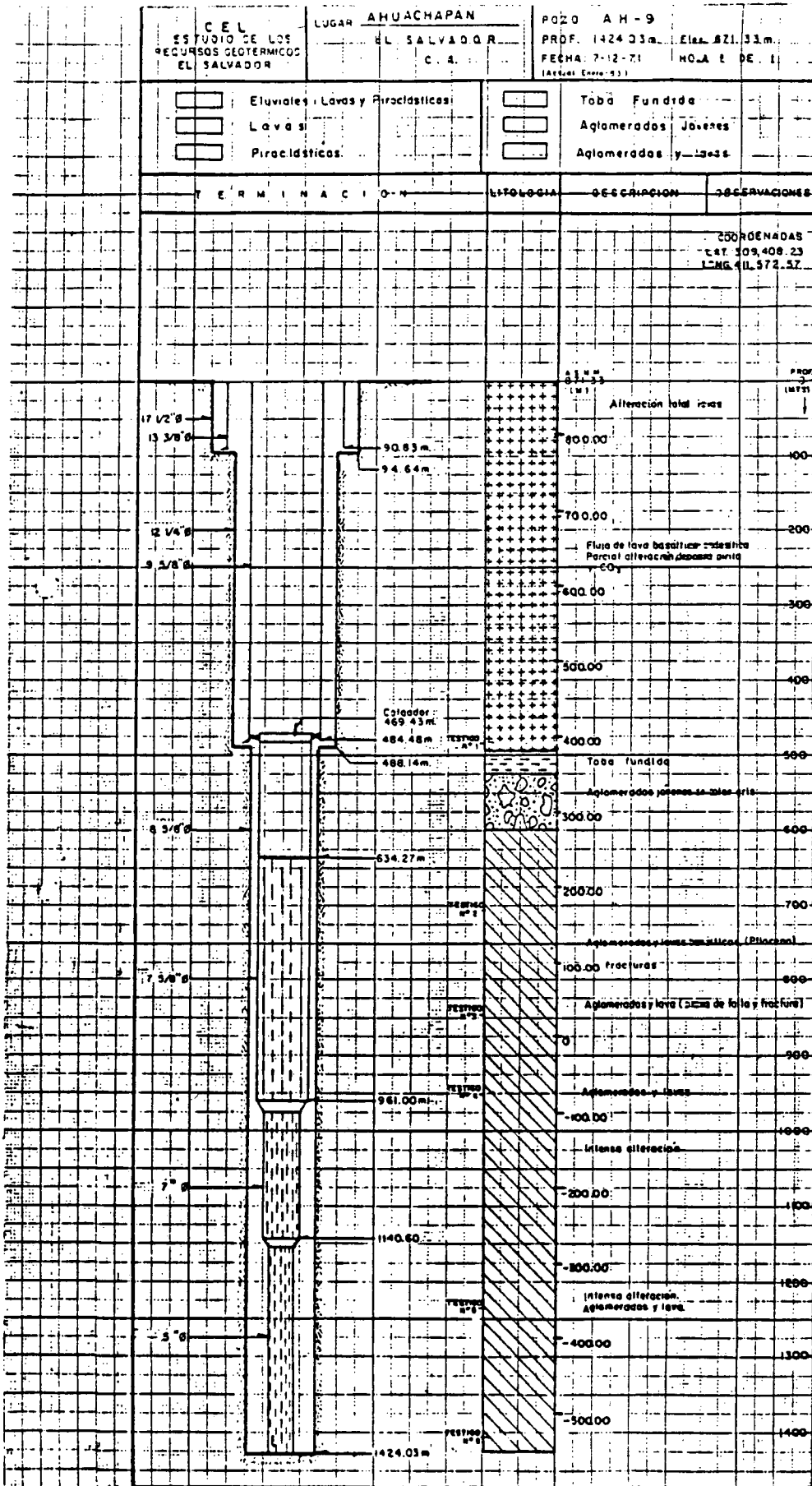
CODIGO DEL PLANO
CLASE DE COMPARTE DE LA INSTALACION

9160003

WELL AH-8

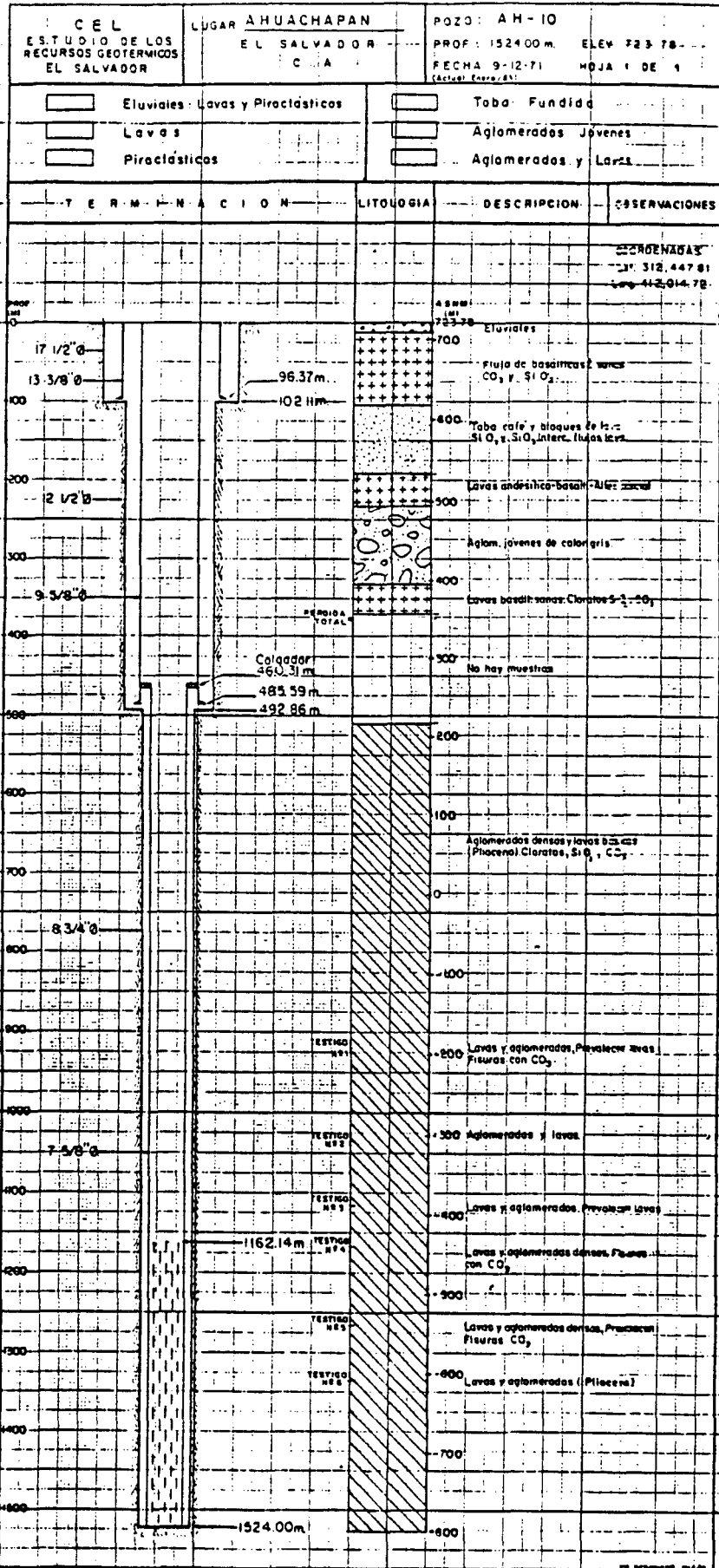
Elaboró Ing. Mario Jimenez A. Dib. E. Arceño.

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WELL AH-9

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WELL AH-10

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ESTUDIO DE LOS RECURSOS GEOTERMICOS DEL SALVADOR
 EL SALVADOR
 No. 94300 m Elev. 759 30 m
 FECHA INICIO 25-10-72 Hora 1 de 1
 FINAL 11-1-73

- | | |
|--|--|
| <input type="checkbox"/> ELUVIALES | <input type="checkbox"/> AGLOMERADOS JOVENES |
| <input type="checkbox"/> PIROCLASTICOS | <input type="checkbox"/> LAVAS Y BRECCIAS |
| <input type="checkbox"/> LAVAS | |

TERMINACION	LITOLOGIA	DESCRIPCION	OBSERVACIONES
Cordones de Lat. 3N 619 32 Long. 42 319 08			
20° s		759.30 Elvales: lava y piroclásticos	
26°		700 Taba café, bloques de lava y escoria, intercalación de pomez.	Perdida total de circulación (Prof 31m) - No se toma nivel de agua.
		Flujo de lava andesítica-basáltica, fracturada parcialmente. Deposición de SiO ₂	
		Piroclásticos: polvo volcanico, lapilli, escoria	
13 3/4° s		600 Lavas andesíticas	
		Agglomerados jóvenes	
17 1/2°		500 Testigo N° 1 Lavas andesítica-basálticas	Perdida total de circulación (Prof 325 50 m) Elev. N. agua = 740 m.
		400 Agglomerados jóvenes	
		300 Testigo N° 2 Arcillas	
12 1/4°		200 Lavas andesítica-basálticas	
		Agglomerados jóvenes	
		100 Testigo N° 3 Lavas basálticas. Aparecen bloques de color gris cenizo y otros alterados rosos	Perdida parcial de circulación (16m)
		0 Lavas basálticas y breccias volcanicas	
		100 Testigo N° 4 Lavas basálticas fracturadas	Perdida parcial de circulación (12m) Elev. N. agua = 602 m Absorción Absorción Absorción
		Fondo 943.34 m	
		INTERVENCIÓN Fecha: 14/10/73 Firma: [Firma]	

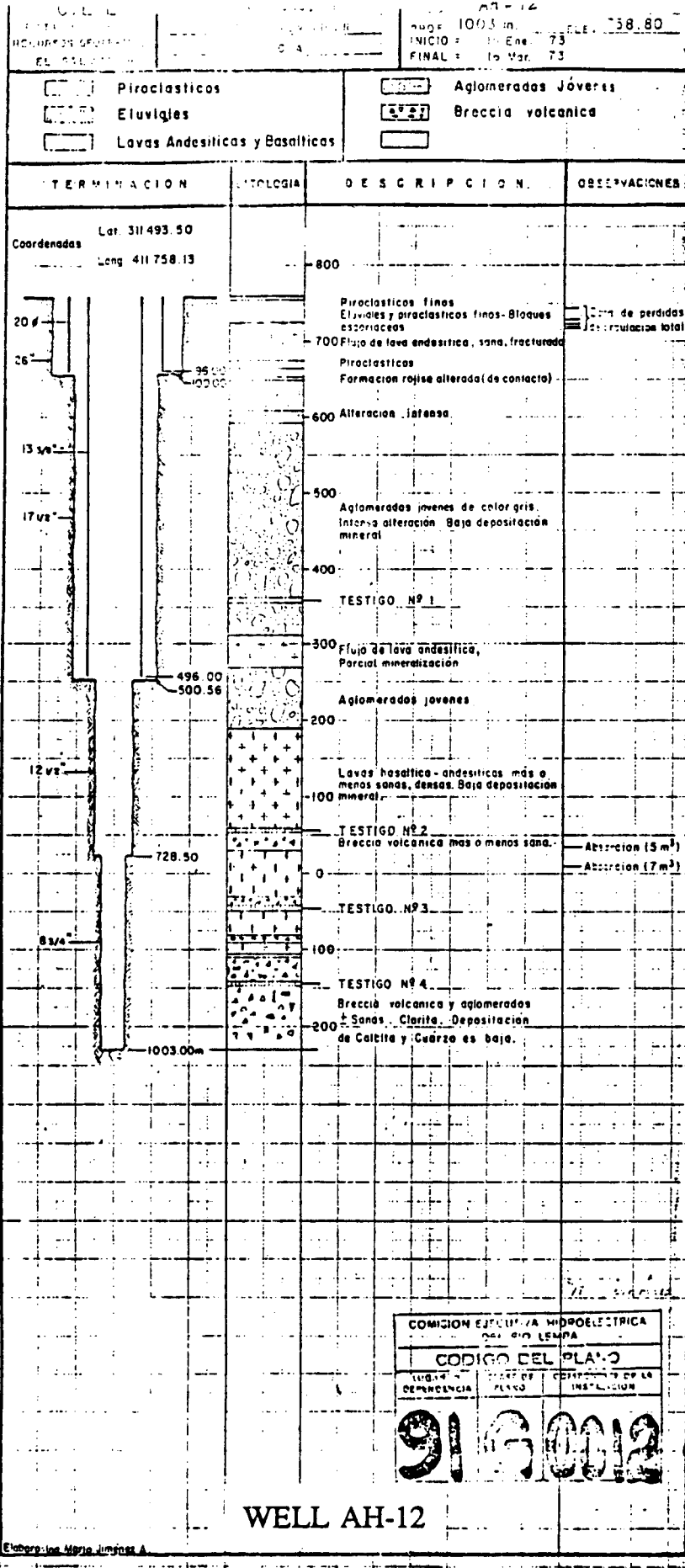
Nota:
 20° 00' s 9410 API
 T.P.C. Rango 3 Butress.
 13 3/4° 00' s 945016 API
 K55 Rango 3 Butress.

COMISION EJECUTIVA HIDROELECTRICA DEL NO LEMP
CODIGO DEL PLANO
 AUC. N. DE IDENTIFICACION: 916011
 PLANO N.º: []
 COMPONENTE DE LA INSTALACION: []

Nota: Desde elevación 169 m se efectuó cosechis de café ubicado en testigo N° 4

WELL AH-11

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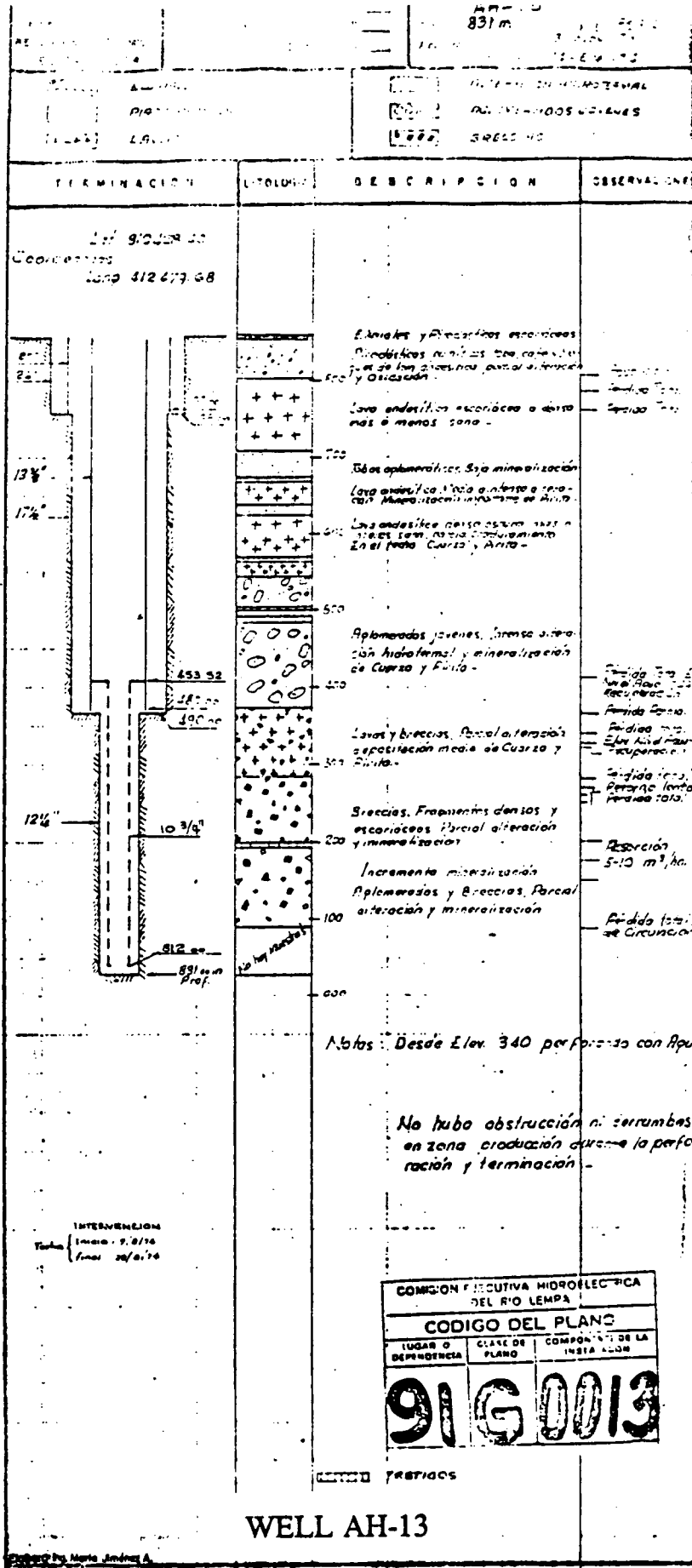


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COMISION EJECUTIVA HIDROELECTRICA DEL CHILE
 CODIGO DEL PLANO
 SUB-DEPENDENCIA PLANO CERTIFICADO DE LA INSTALACION
9160012

WELL AH-12

Elaboracion: Maria Jimenez A.



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LOCALIDAD: AHUACHAPAN
 PROYECTO: AH-14
 PROFUNDIDAD: 1056.00 MTS. ELEVACION: 821-77. M.
 INICIO: 12 de Febrero 1976
 FECHA: FINAL: 12 de Mayo 1976

ELUVIALES
 AGLOMERADOS
 PIROCLASTICOS

 LAVAS

TERMINACION	LITOLOGIA	DESCRIPCION	OBSERVACIONES
26"		Eluviales	
20"		Lavas andesiticas parcialmente alteradas Deposicion de silice y carbonatos	Pérdida total circulación
133'			Pérdida intermitente
172'		piroclasticos. Tabas aglomeradas y fragmentos lava andesitica. Meda e intensa alteracion. Lavas andesiticas fracturadas, meda alteracion. Intensa mineraliz. Pirita, Sulfuro, Calcita	Pérdida tot. circ.
348.00 m.		Aglomerados, parcial a meda alteracion Mineralizacion Calcita y Silice	
93'		Testigo N°1 Andesito, denso, poco fisurado, fresca - permeabilidad reservada	Pérdida tot. circ.
464.60 m.		Aglomerado amigdalado, fracturado, amigdalos rellenos de SiO2 y CaCO3, poco denso, clarificado y poco purificado	Pérdida parcial
570.00		Aglomerados y lava aglomerada con estratos de taba arcillosa intercalados - amigdalos con SiO2, CaCO3 y feldespatoides - Perm. reservada	Pérdida parcial
73'		Lava andesitica	Pérdida total
698.00 m.		No hay recuperacion de muestras	
800.00 m.		Testigo N°3 Lava andesitico-basaltica, denso, sana, poco fisurada	
817'		No hay muestras	

INTERVENCIÓN
 Inicio: 19/10/76
 Final: 22/11/76

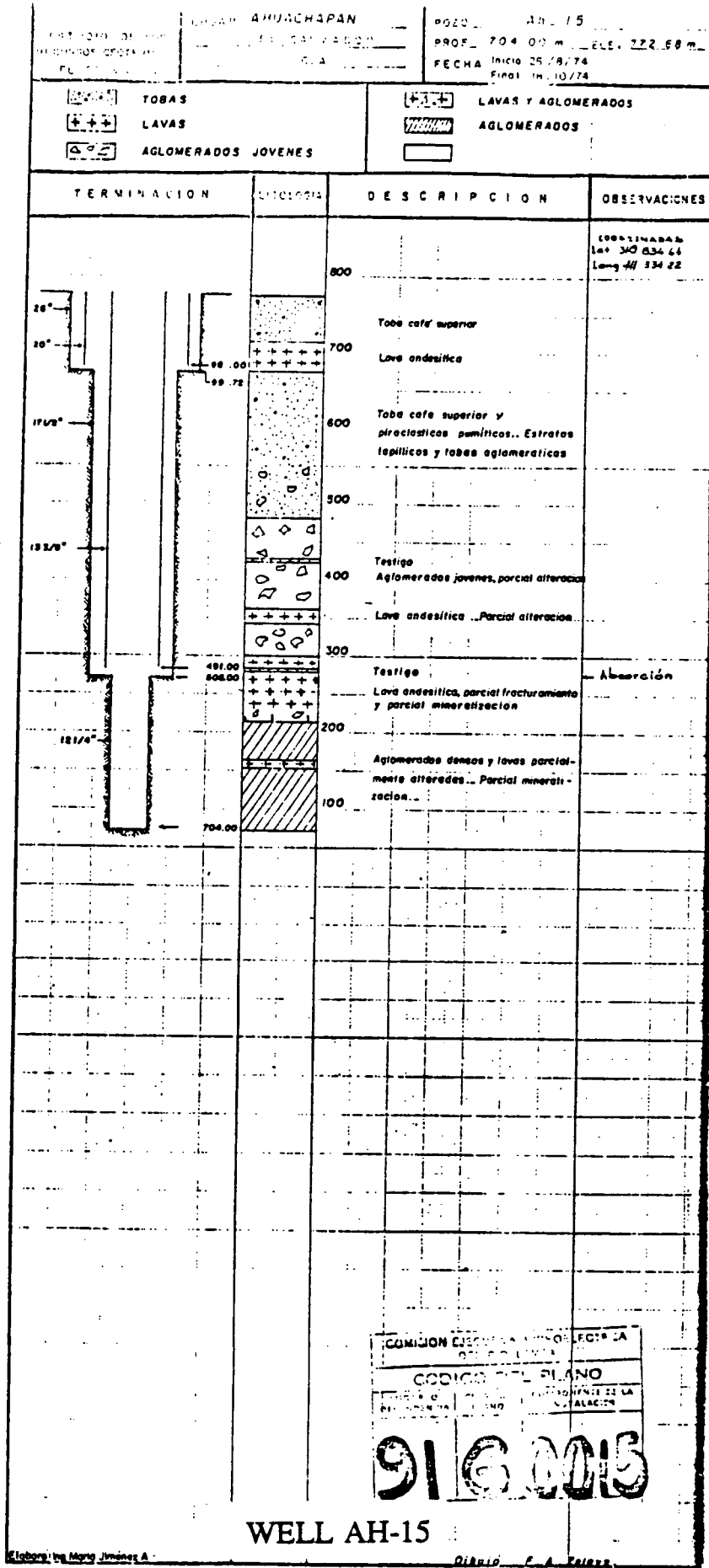
NOTA: Los perdas totales observados durante la perforación se recuperaron - la pérdida total definitiva ocurrió después de circular e inyectar agua a presión. Se hizo intervención profundizandole con 6 V8 hasta 1056 mts (25-10-77)

COORDENADAS:
 LATITUD 910938.58
 LONGITUD 913705.56

COMISION EJECUTIVA HIDROELECTRICA
 DEL GOBIERNO DE GUATEMALA
 CODIGO DEL PLANO
 91G0014

WELL AH-14

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COMISION ESCUELA MINOR LEGISLA
 CODIGO DEL PLANO
 9160015

WELL AH-15

PROF. 1006.00m ELEV. 868 Tm.
FECHA Inicio 19/3/74
Final 5/8/74

TERMINACION	LITOLOGIA	DESCRIPCION	OBSERVACIONES
<p>COORDENADAS: LAT. 30° 44' 00" S LONG. 106° 12' 00" W</p>			
<p>ELUVIALES TOSAS LAVAS</p>			
<p>AGLOMERADOS JOVELLES BRECCIAS TESTIGOS</p>			
20'		700 Toba café pomez, bloques Lava Lava andesítica. De sano a medianamente alterada.	perda total
17 1/2'		700 Lava andesítica. Parcial a media alteración. Fracturada. Pinta, Silica y Carbonatos.	perda total
13 3/8'		500 Lavas... escoriáceas Escoria rojizo. Andesitas Agglomerados y lavas aglom.	perda total
10 3/4'		400 Lavas y breccias. Fragmentos densos y escoriáceos. Intensa mineralización cloritización.	perda intern. perda total.
10 3/4'		300 Lava andesítica densa algunas fracturadas. Aglomerados.	
9 5/8'		400 Lava andesítica densa parcialmente fracturada.	
1006		200 Lava andesítica en parte aglomerada.	

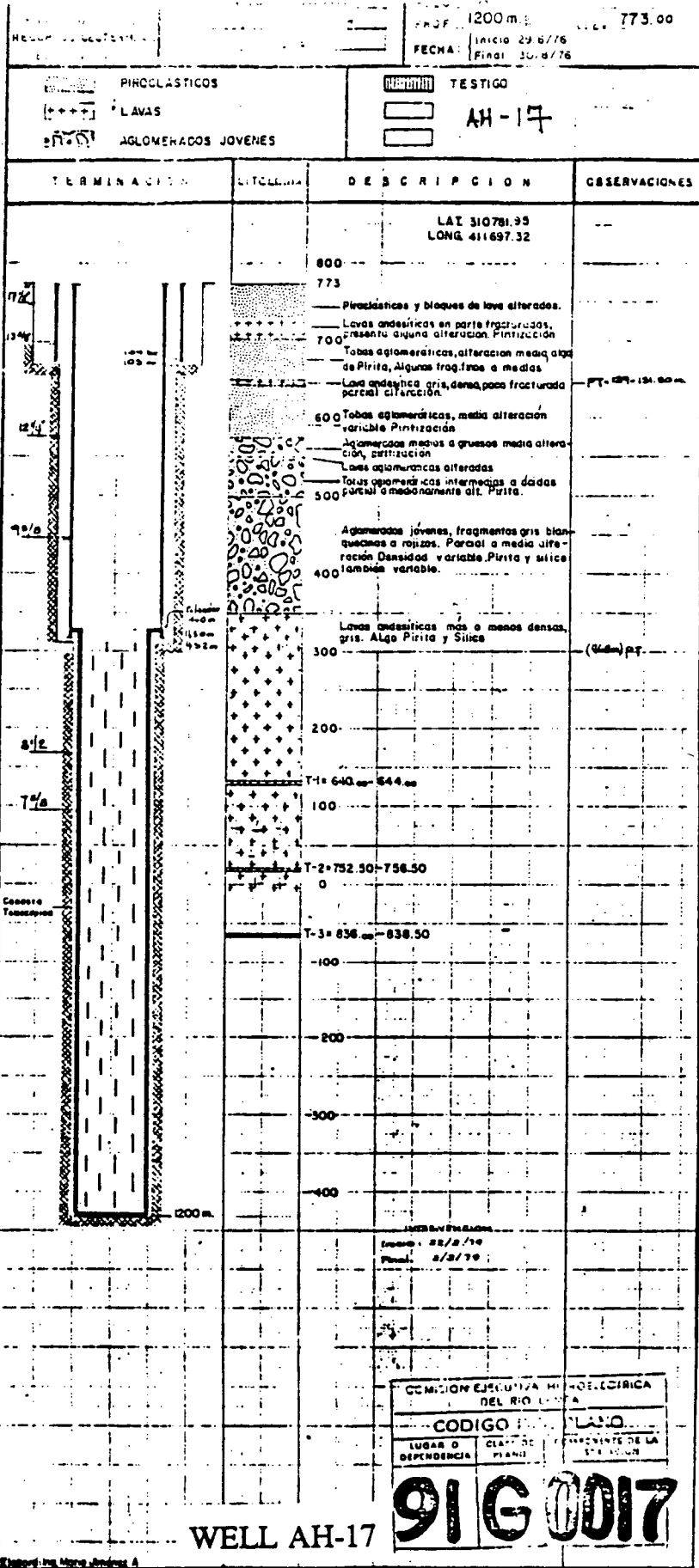
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COMISION NACIONAL DE ENERGIA ATOMICA
COMISION NACIONAL DE ENERGIA ATOMICA
INGENIERO EN GEOTECNIA

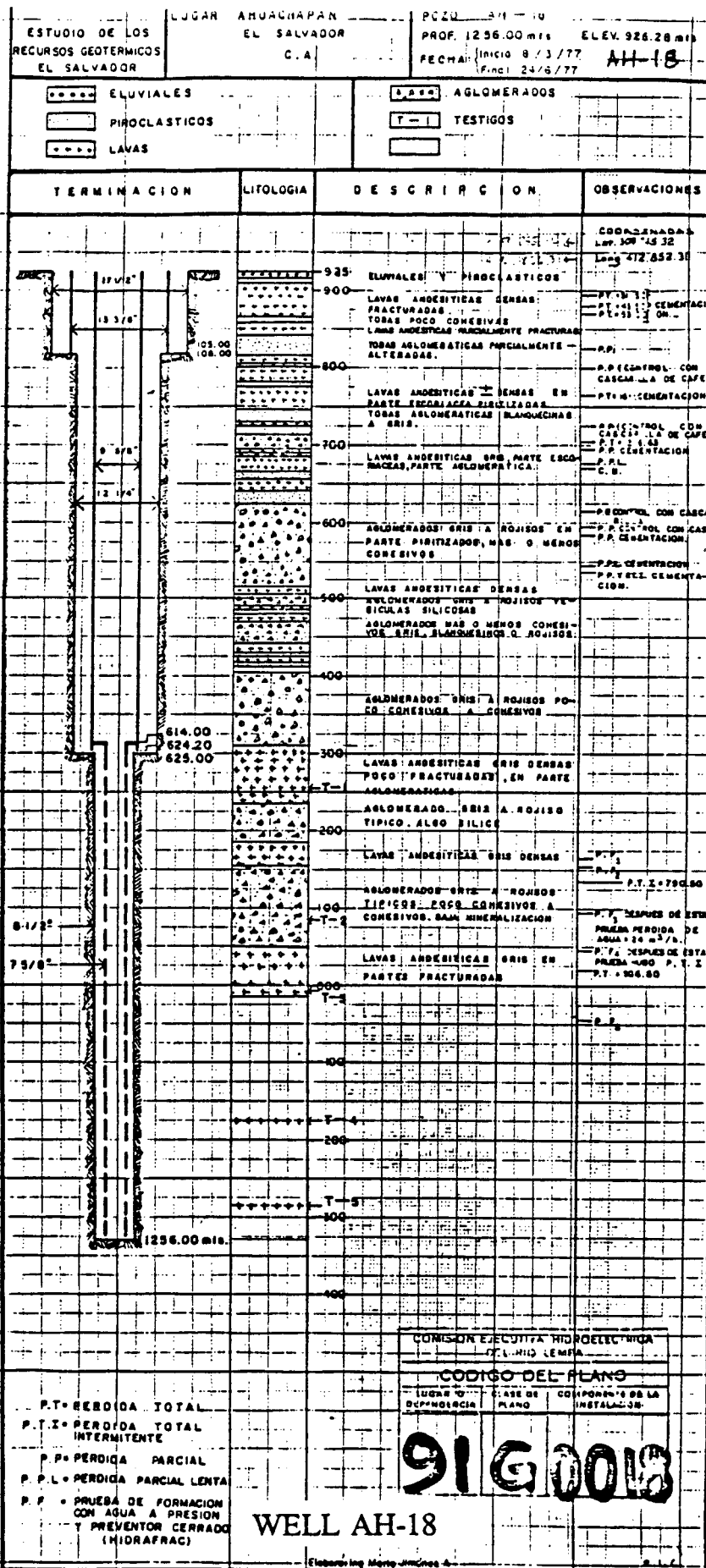
91 G 0016

WELL AH-16

Elaborado por: Mario Jimenez A.



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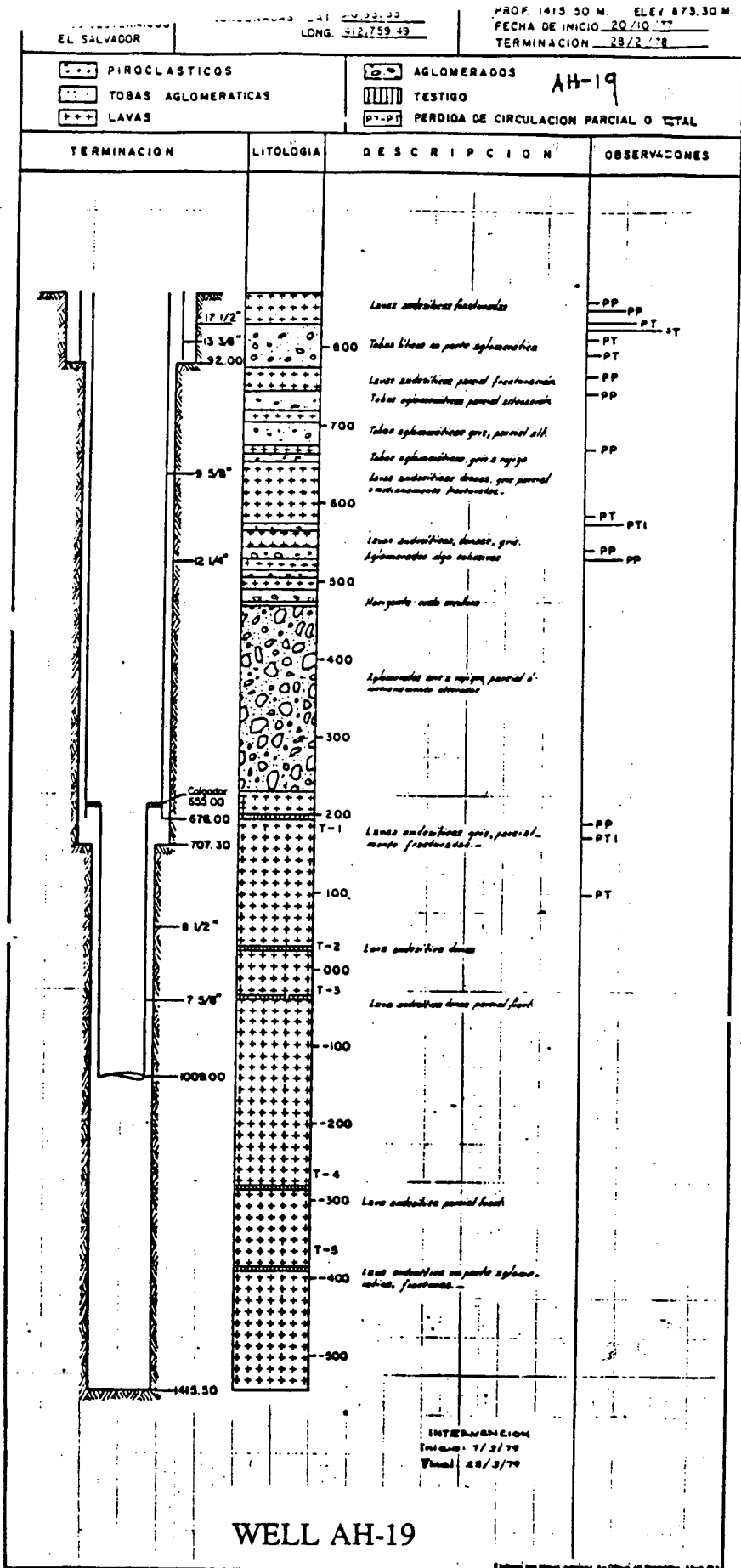
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COMISOR EJECUTIVA HIDROELECTRICA DEL EL SALVADOR
 CODIGO DEL PLANO
 LUGAR O DIFERENCIAL PLANO CLASE DE COMPONENTES DE LA INSTALACION
91G0018

P.T. PERDIDA TOTAL
 P.T.I. PERDIDA TOTAL INTERMITENTE
 P.P. PERDIDA PARCIAL
 P.P.L. PERDIDA PARCIAL LENTA
 P.P. PRUEBA DE FORMACION CON AGUA A PRESION Y PREVENTOR CERRADO (MIDAFRAC)

WELL AH-18

Elaborado por: Mario Jimenez



WELL AH-19

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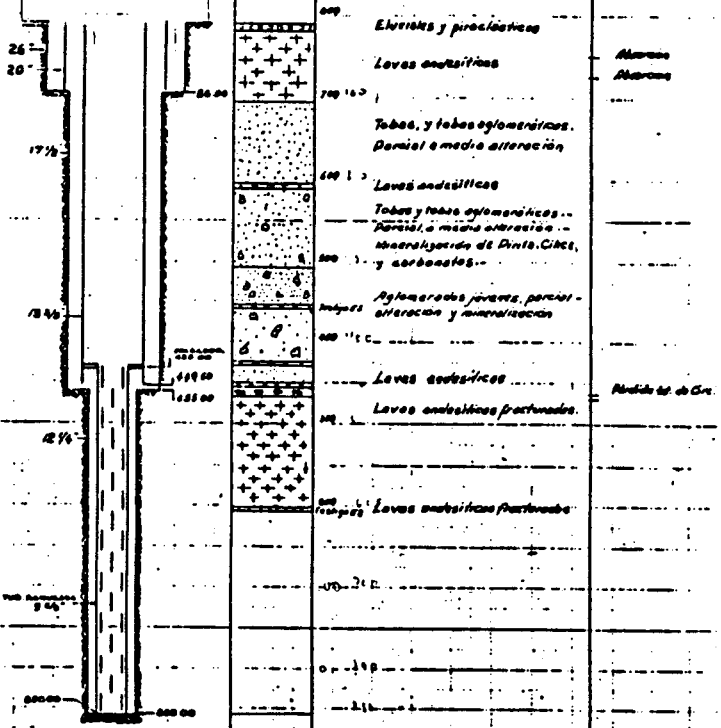
ESTUDIO DE LOS RECURSOS GEOTERMICOS	LITAH. <u>ABURCHAPAN</u> EL SALVADOR C.A.	PROY. <u>Ah-20</u> PROF. <u>550.00m</u> (LEV. <u>22 83m</u>)
--	--	--

<input type="checkbox"/> <i>Arcaicos</i>	<input type="checkbox"/>
<input type="checkbox"/> <i>Levas</i>	<input type="checkbox"/>
<input type="checkbox"/> <i>Agglomerados juvenes</i>	<input type="checkbox"/>

TERMINACION	LITOLOGIA	DESCRIPCION	OBSERVACIONES
-------------	-----------	-------------	---------------

COORDENADAS:
 Lat. 310 986.62
 Long. 412 087.67

Inicio: 26-10-74
 Fin: 20-12-74



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COMISION EJECUTIVA
 DE RECURSOS MINERALES
 CODIGO DEL
 LITIOGRAFICO
 9160019

WELL AH-20

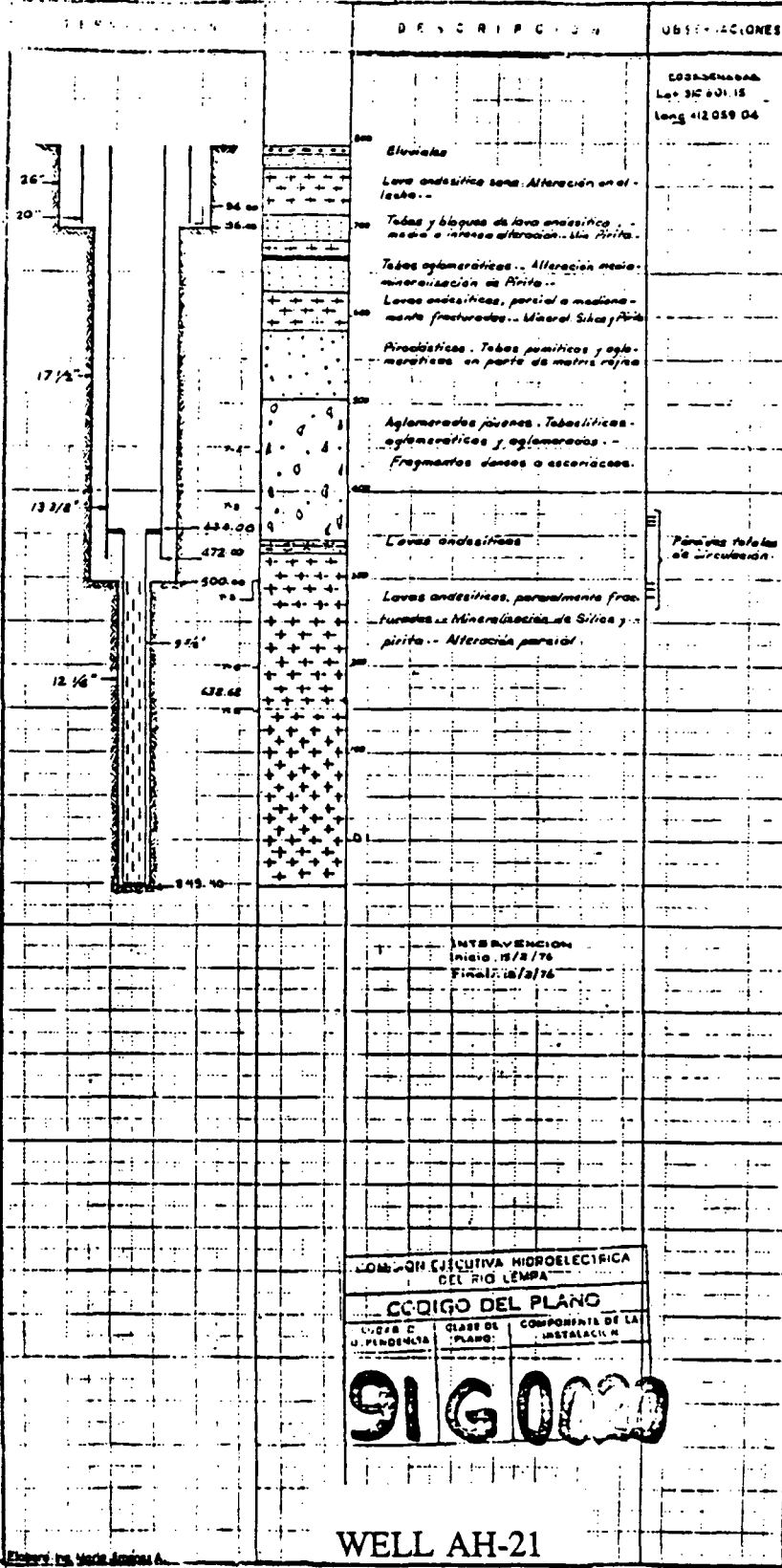
AH-21

849.40 795.00

Eluviales
Piroclásticas
Lavas

Suelo
Testigo

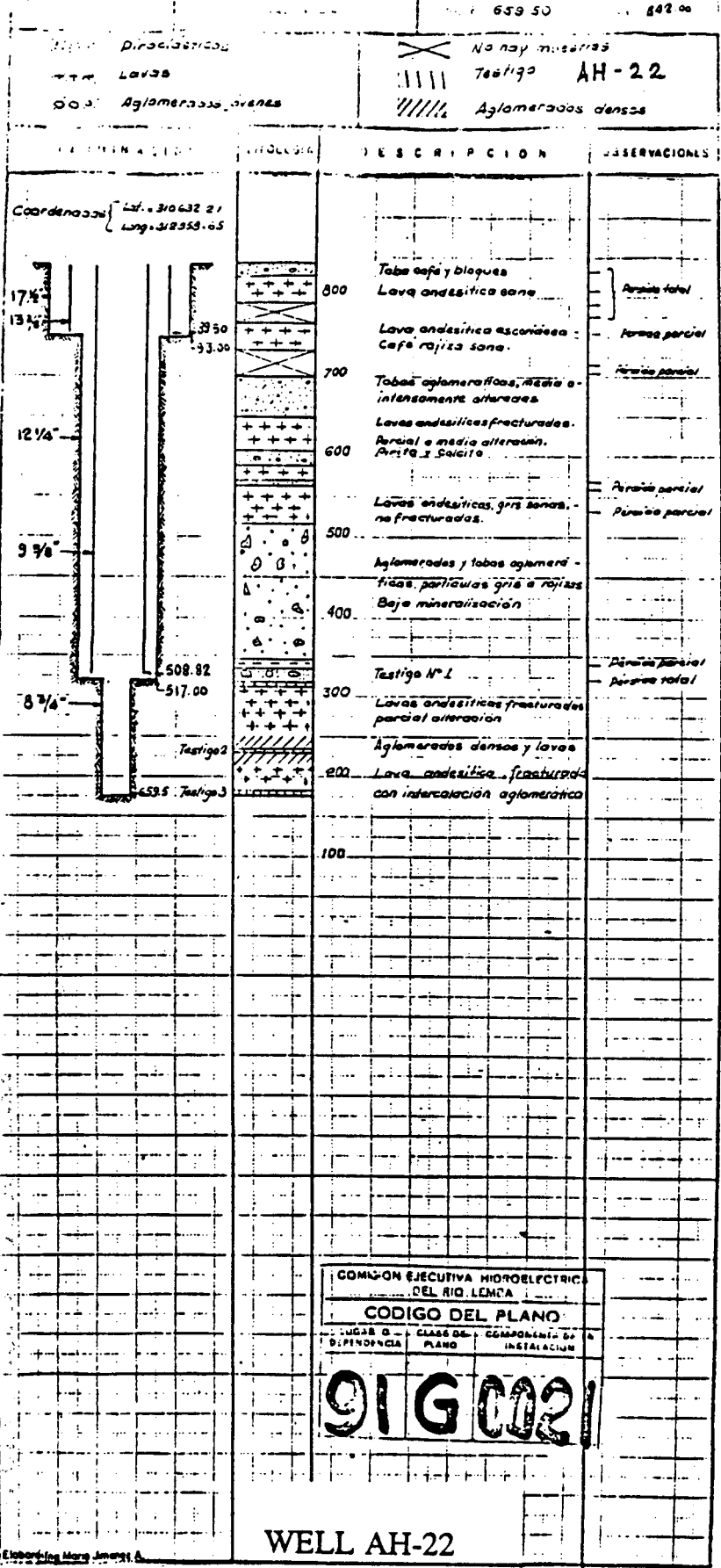
AH-21



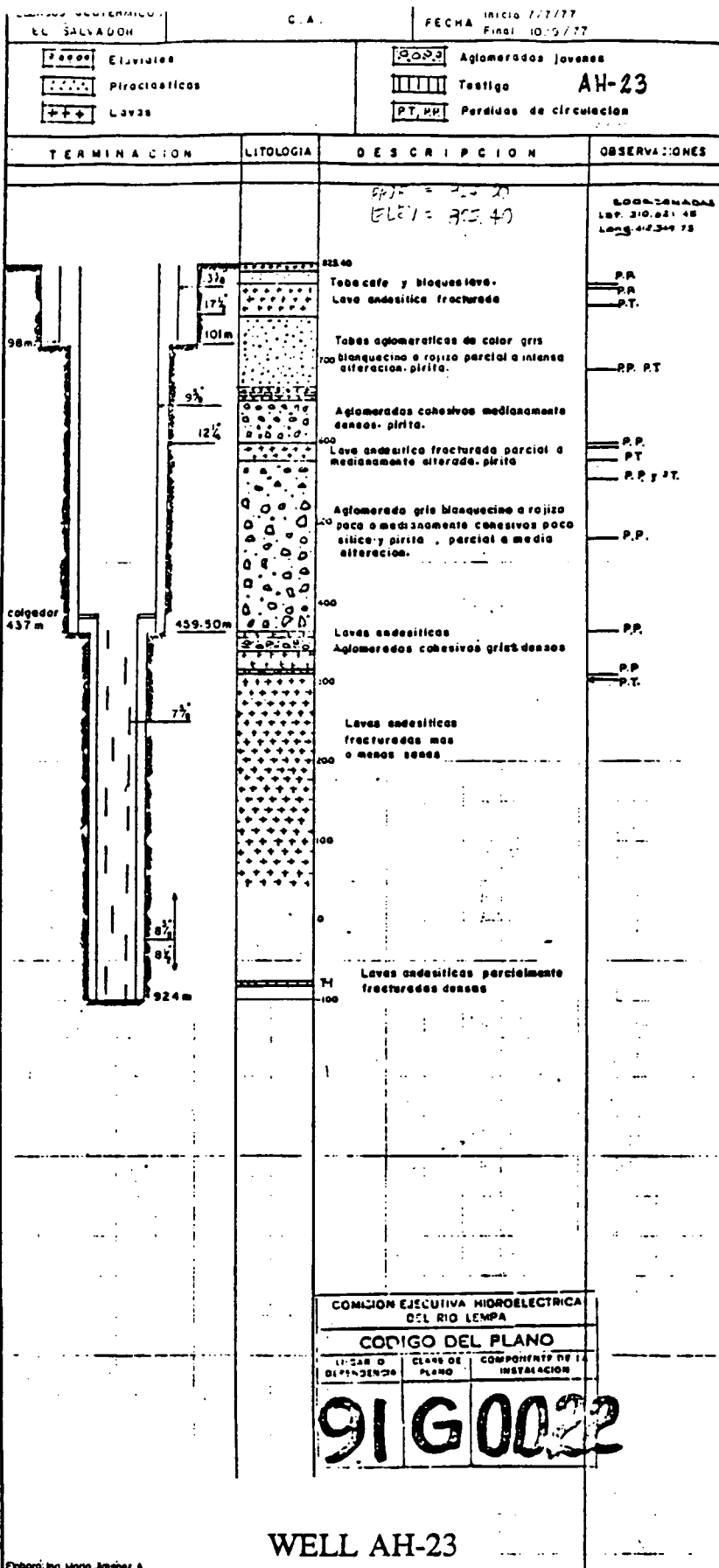
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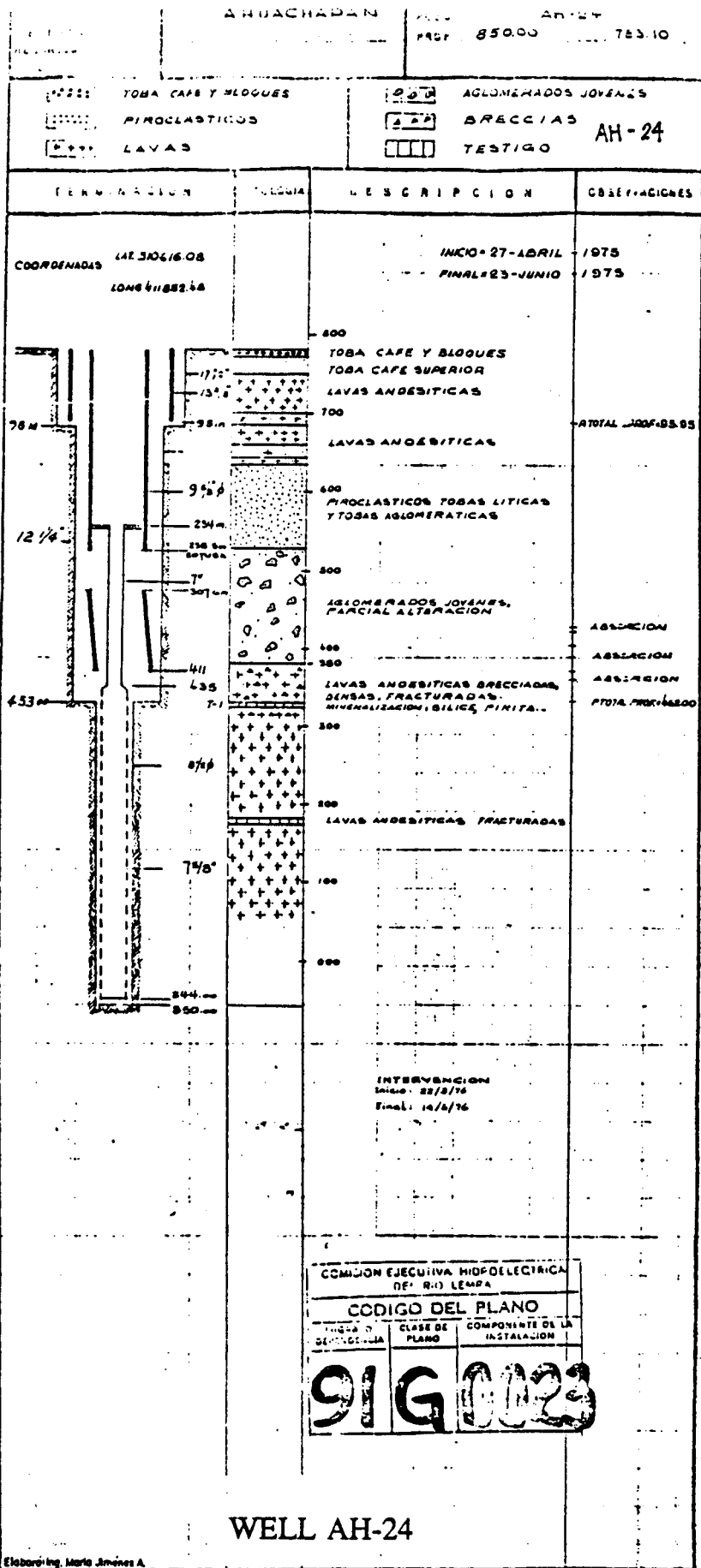
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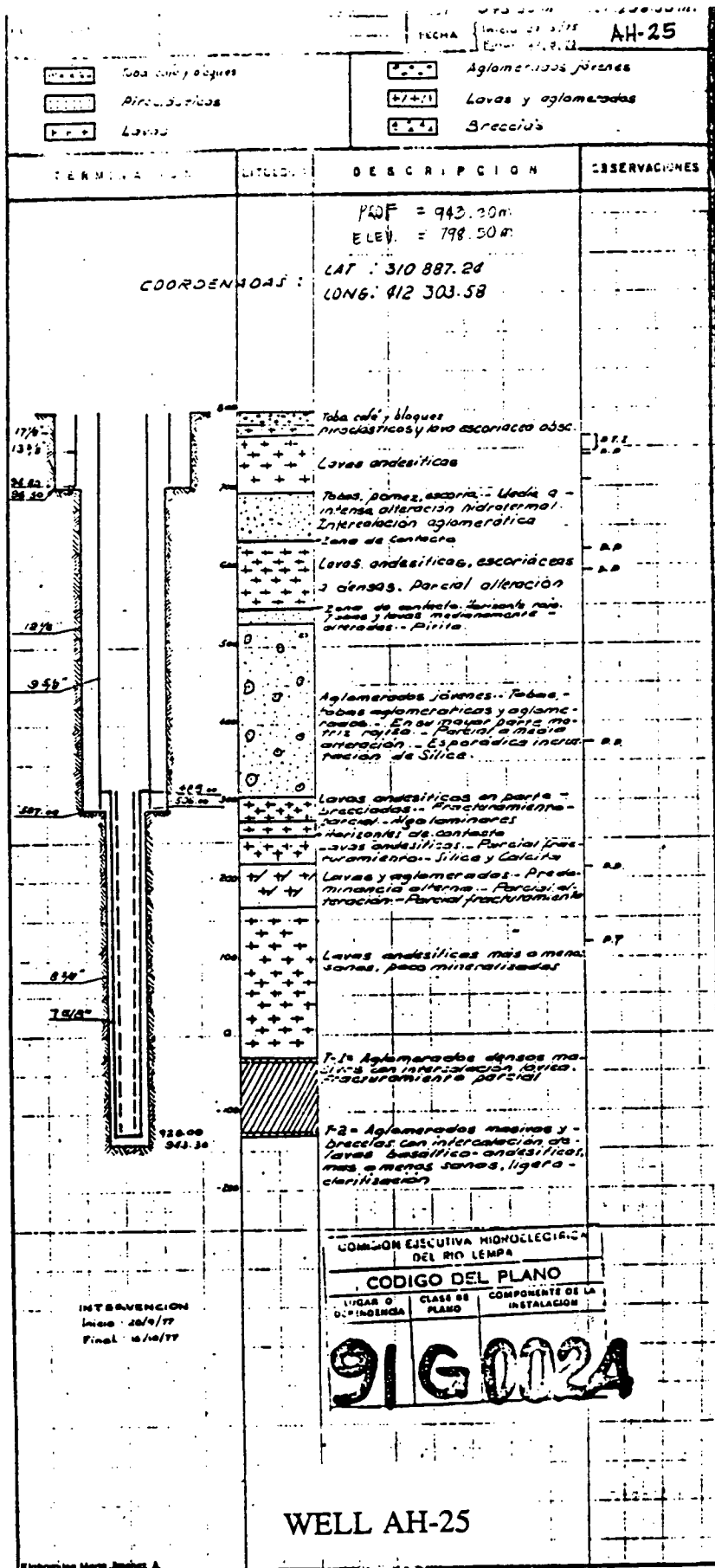
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PROFUNDIDAD 791.70 m. Fecha: 1971.10.15

- CALICHE Y BLOQUES
- PIROCLASTICOS
- TUFFS Y LAPILLOS
- CALICHE
- AGLOMERADOS MASIVOS
- ZONA CALCINIZADA

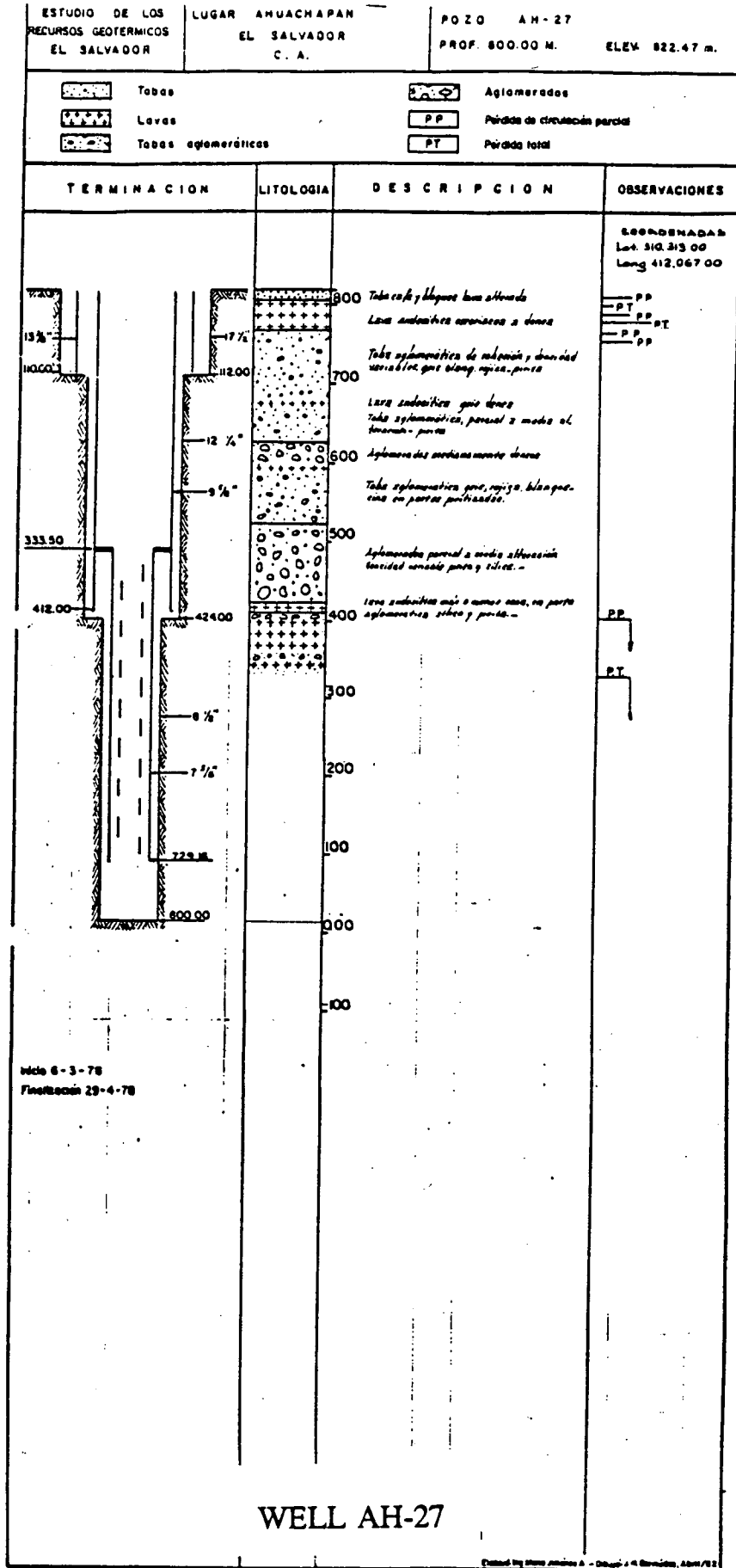
TERMINACION	LITOLÓGICA	DESCRIPCION	OBSERVACIONES
<p>COORDENADAS LATITUD = 370 730 00 LONGITUD = 48 080 00</p>			
		CONTRATA SUELO	
		ESTRATIGRAFIA	
		Tubo caliche y bloques.	
		Sucesión litológica de estratos piroclásticos intercalados con flujos de lava. - Parcial calcificación y mineralización.	
		Biocálcicos y tuffs opacamérficos. - Parcial calcificación y mineralización.	
		Tuffs aglomerados y opacamérficos - gruesos a rajados. - Parcial calcificación y mineralización (aglomerados rajados).	
		Suelo rojo	
		Sucesión litológica de flujos de lavas andesíticas. - Fracturadas, fisuradas y rajadas. - Parcialmente calcificadas y mineralizadas (andesitas basálticas de Anapocapán).	

COMMON E. ...
 CODIGO DE ...
 DEPENDENCIA ...
 CLASIFICACION ...
 PLAN ...
 NATACION ...

P.P. = Parímetro parcial
 P.P.R. = Parímetro radial (parímetro)
 P.P.P. = Parímetro radial (parímetro)
 Testigo

91 G 0025 WELL AH-26

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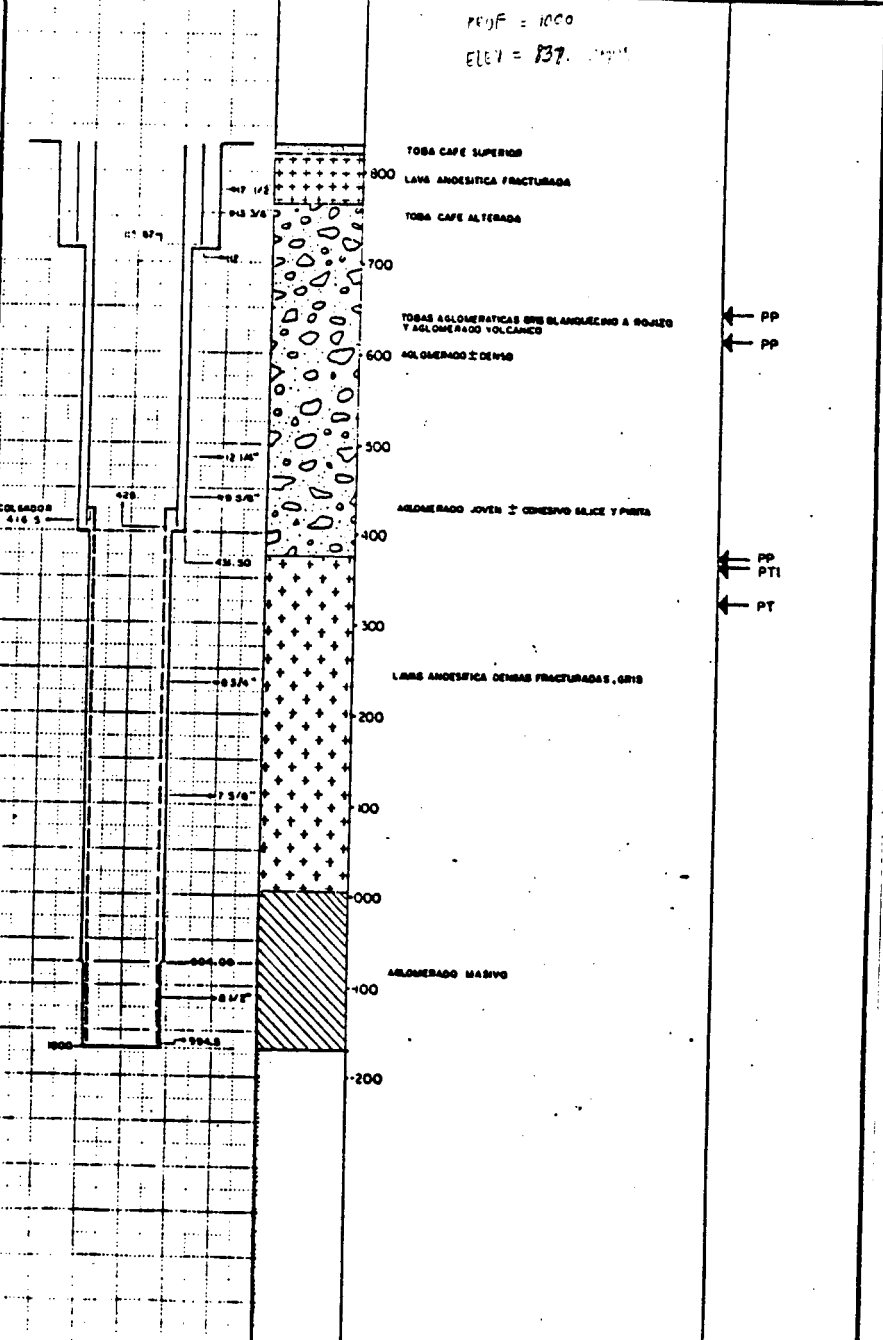


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PERFORACIONES GEOTERMICAS EL SALVADOR LOTE 412,207 22 FECHA DE INICIO 16/9/78 DE DETERMINACION 23/11/78 AH-28

TOBAS AGLOMERADOS MASIVOS PT PERDIDA TOTAL
 LAVAS PP PERDIDA PARCIAL DE CIRCULACION
 AGLOMERADOS JOVENES PTI PERDIDA TOTAL INTERMITENTE

TERMINACION LITOLOGIA DESCRIPCION OBSERVACIONES



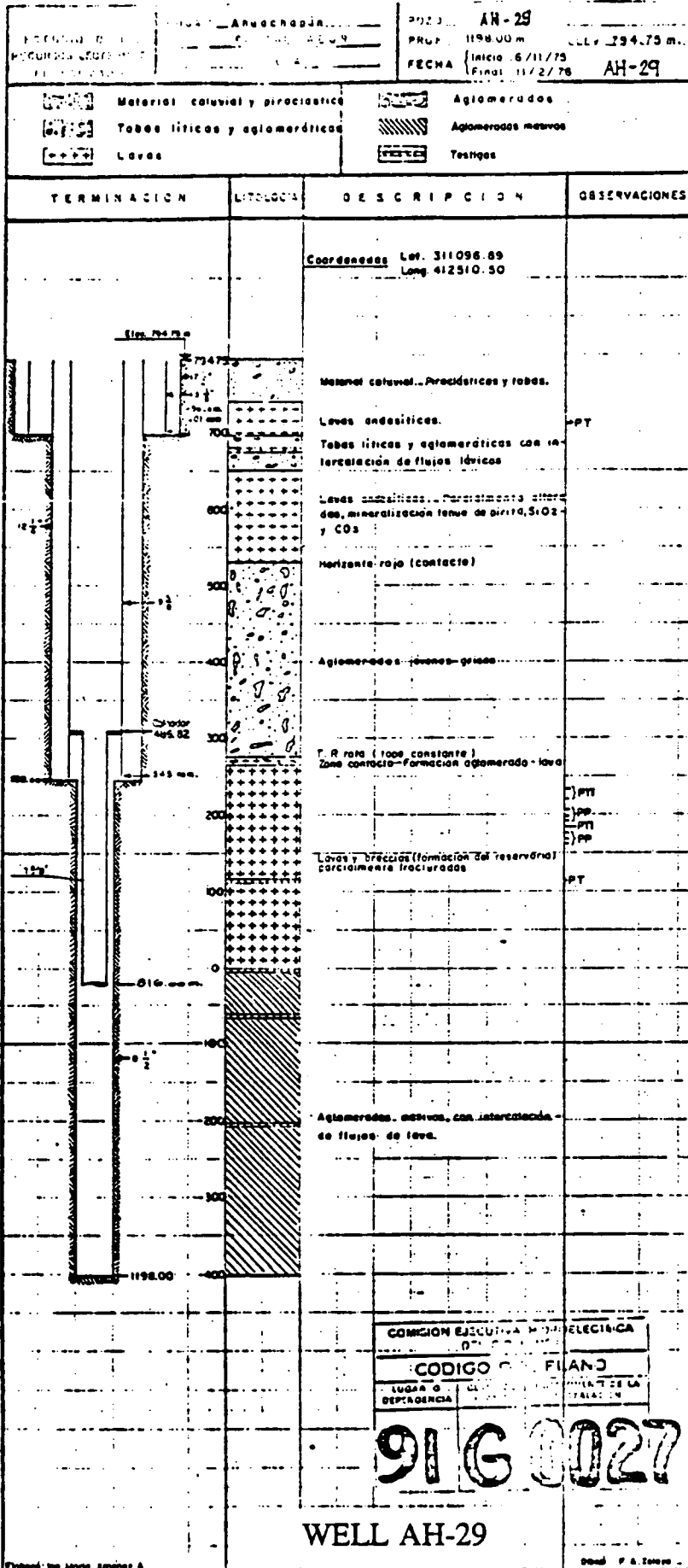
COMISION EJECUTIVA HIDROELECTRICA DEL RIO LEMPA
 CODIGO DEL PLANO

LINEA O DEPENDENCIA	CLASE DE PLANO	COMPONENTE DE LA INSTALACION

91 G 0026

WELL AH-28

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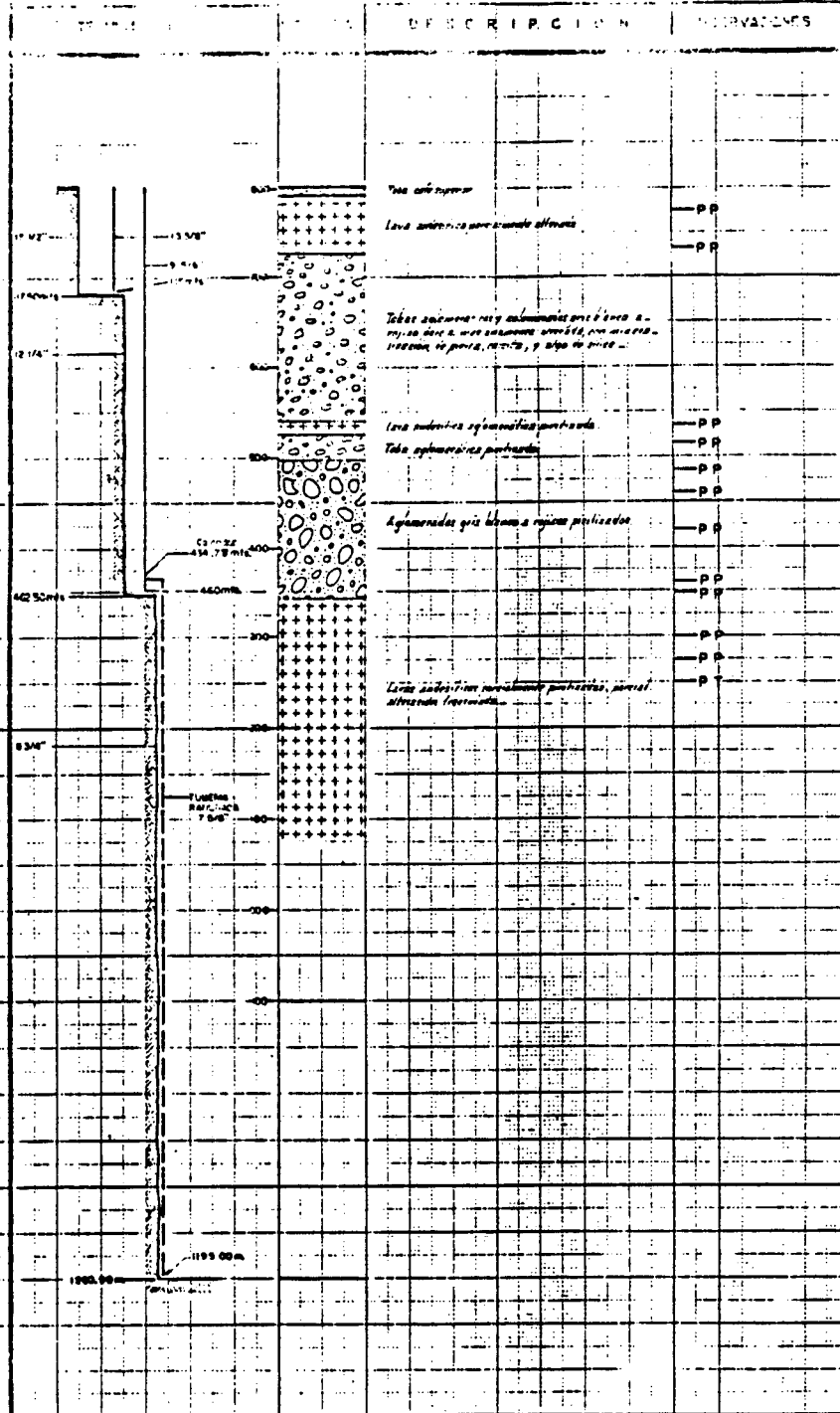
APROXIMACION
310,461 C3
411,989.53

AH - 30

17/2/79
5/12/79

Toba Cnfa
Lava Andesita
Toba Aglomerada y aglomeradas

Lava Andesita



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Introducción
Fecha: 13 Sept. 85
Final: 4 Oct. 85

COMISION EJECUTIVA HIDROELECTRICA
1913 - 1930 - LEMPA
CODIGO DEL PLANI
ESTADO PLANO
ESTACIONES DE LA
INVESTIGACION

91G0023

WELL AH-30

AH-31

31

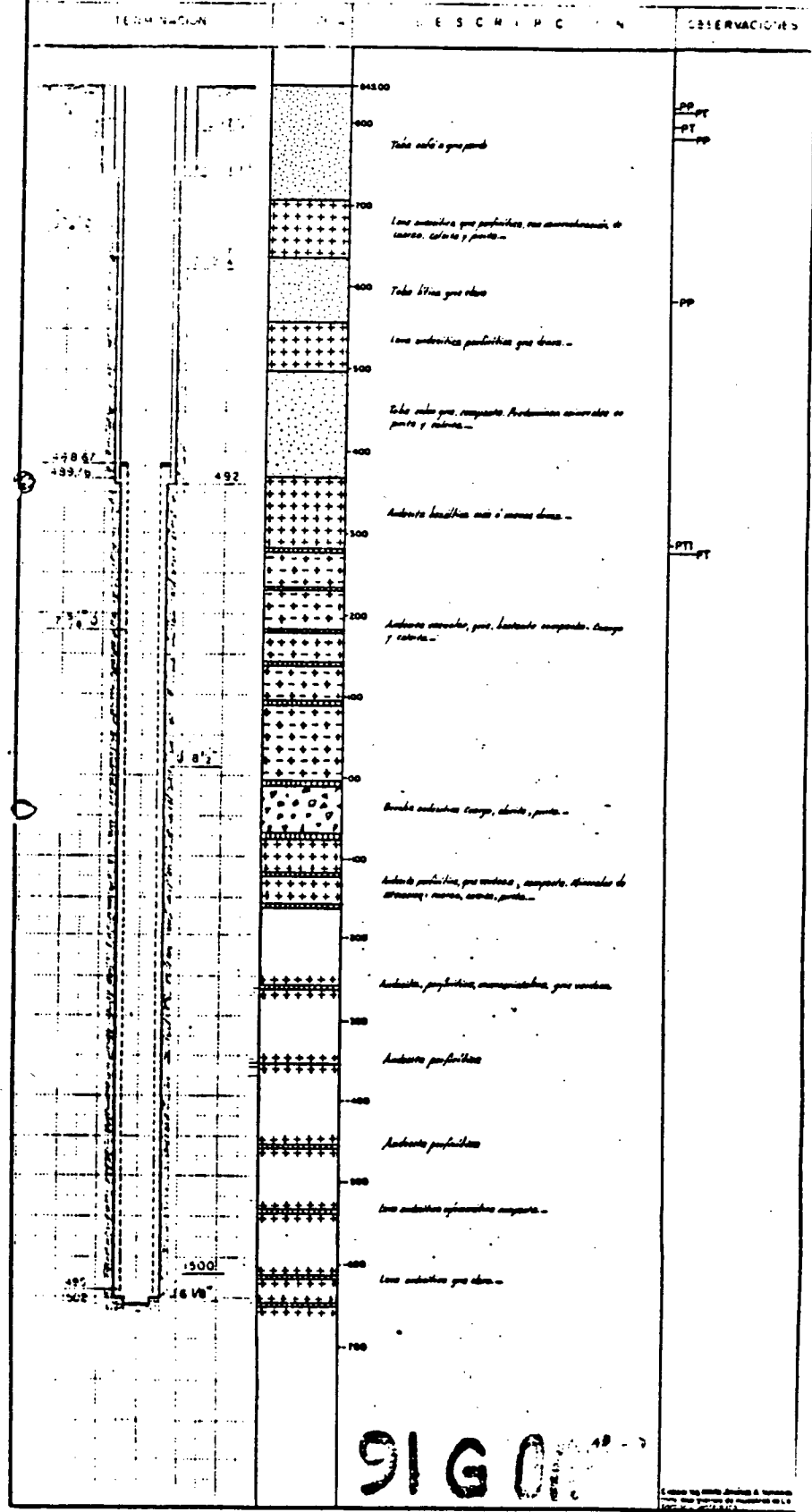
1500

345 mts. a. n.

1961

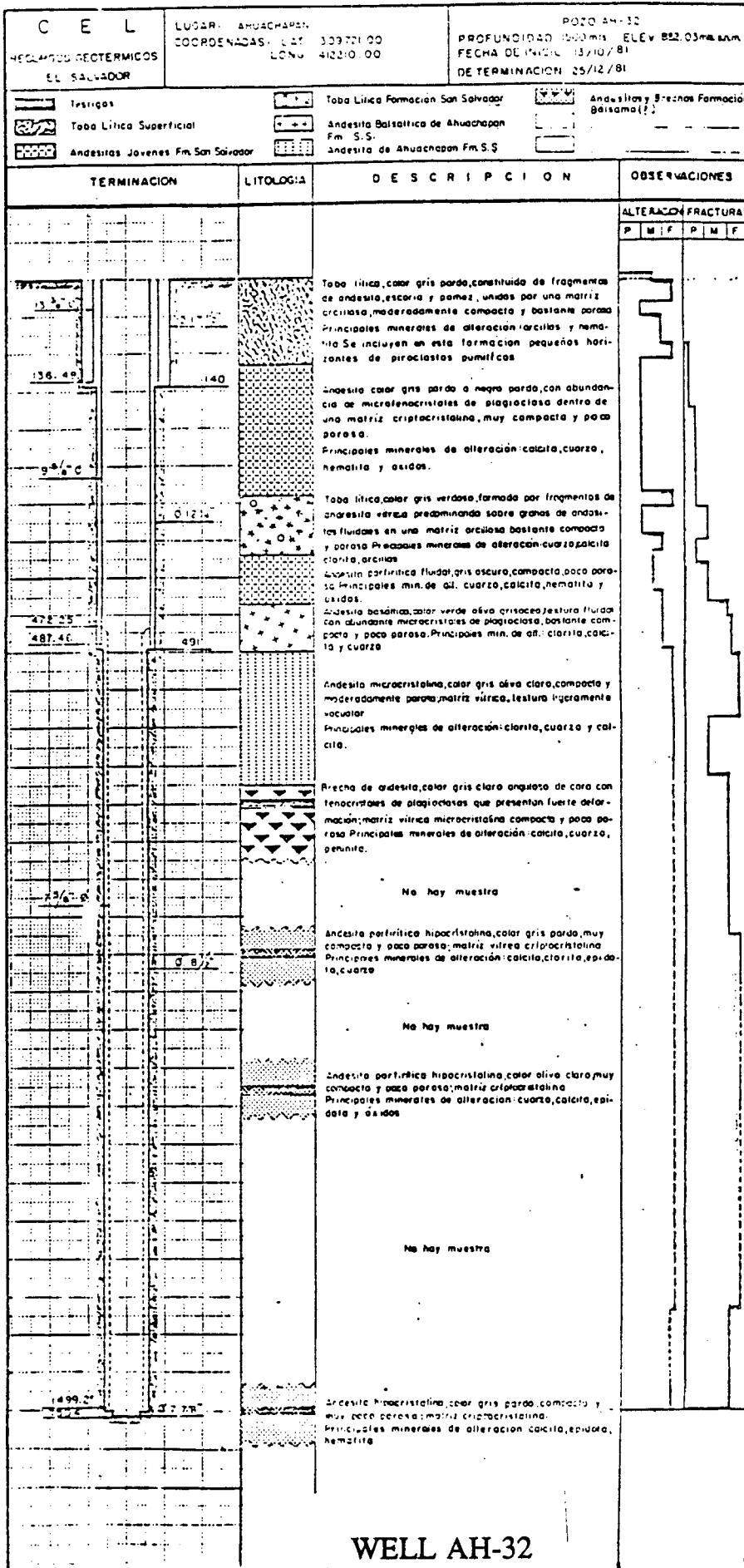
1961

-  TOBAS
-  LAVAS
-  BRECCIAS
-  TESTIGO
-  PERDIDA PARCIAL DE CIRCULACION
-  PERDIDA TOTAL INTERMITENTE
-  PERDIDA TOTAL
- 
- 



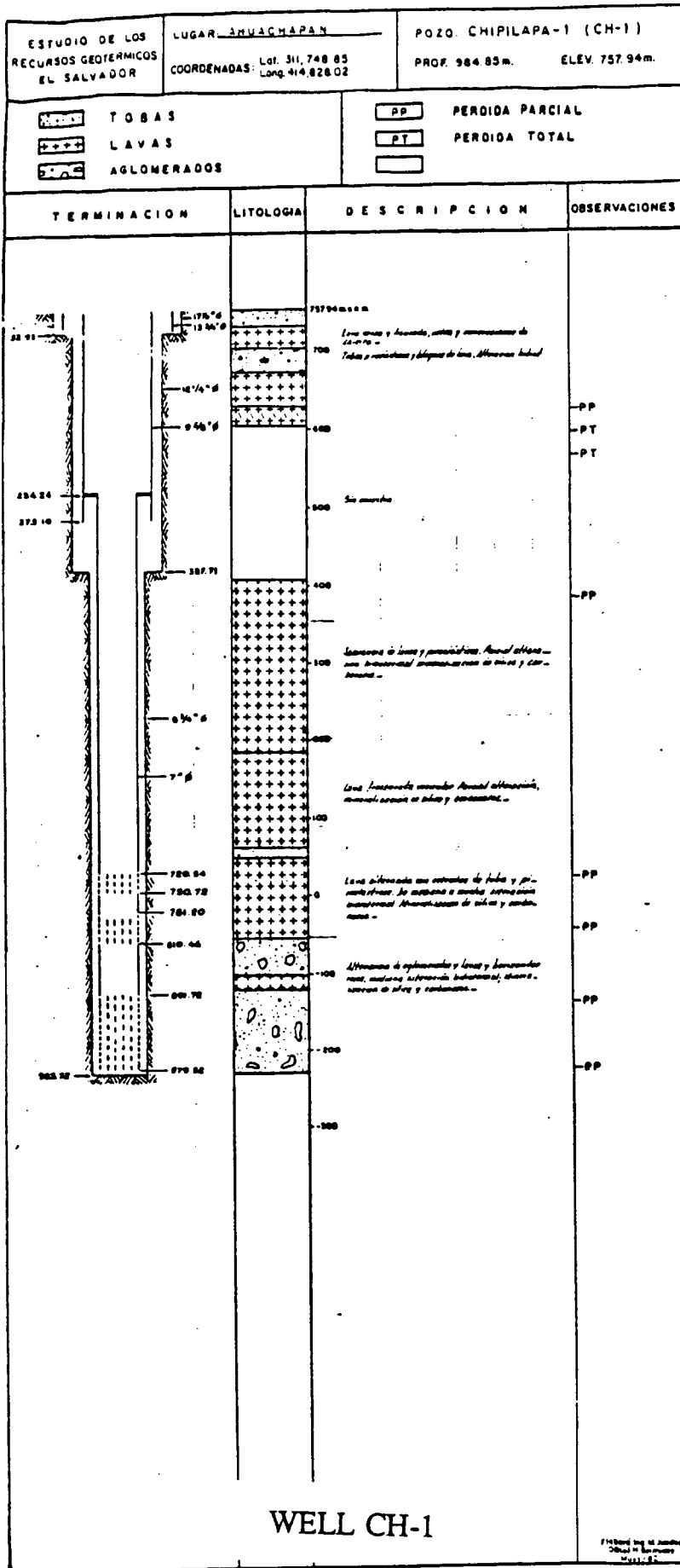
91 G 01

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WELL AH-32

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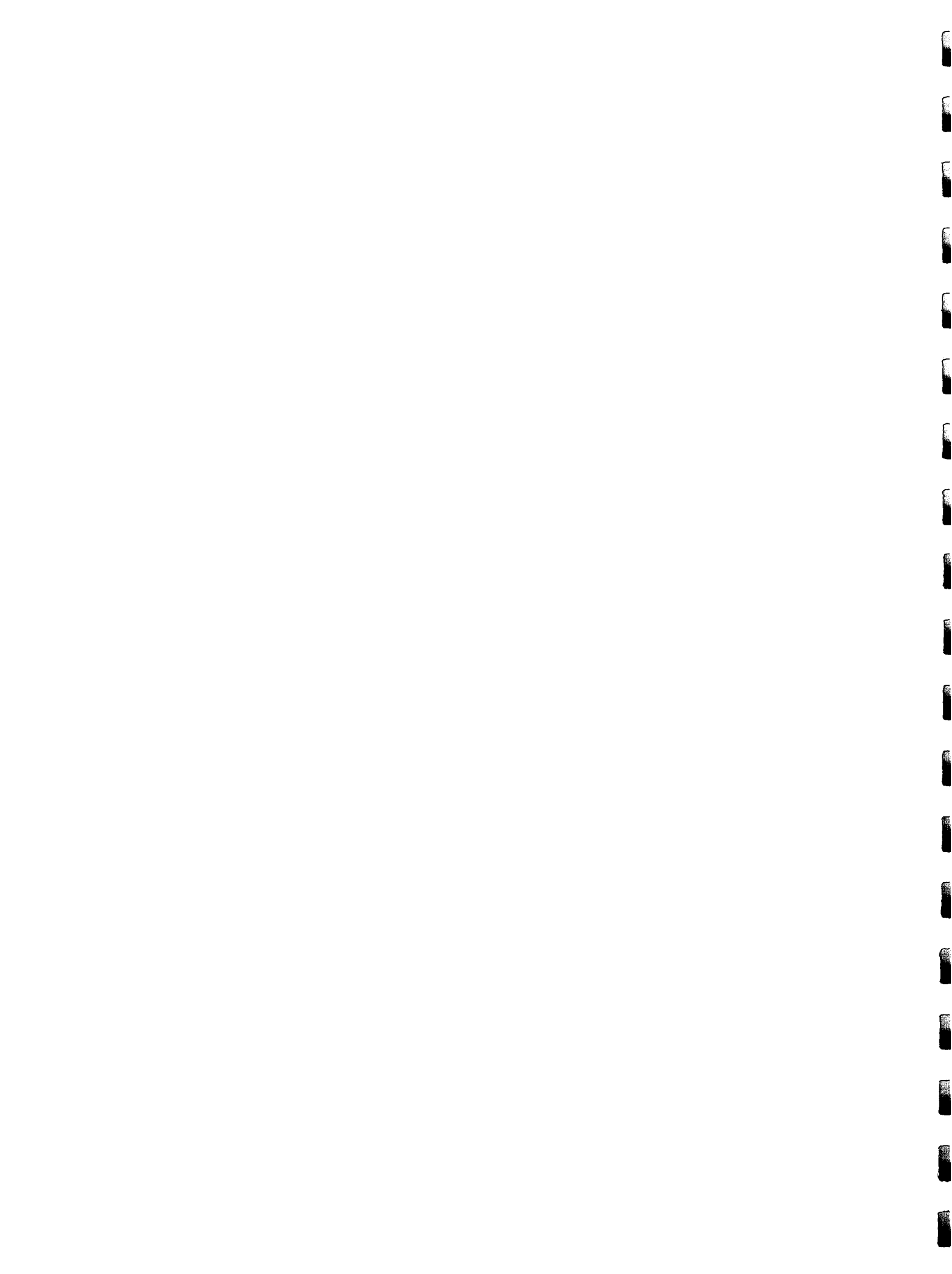
WELL CH-1

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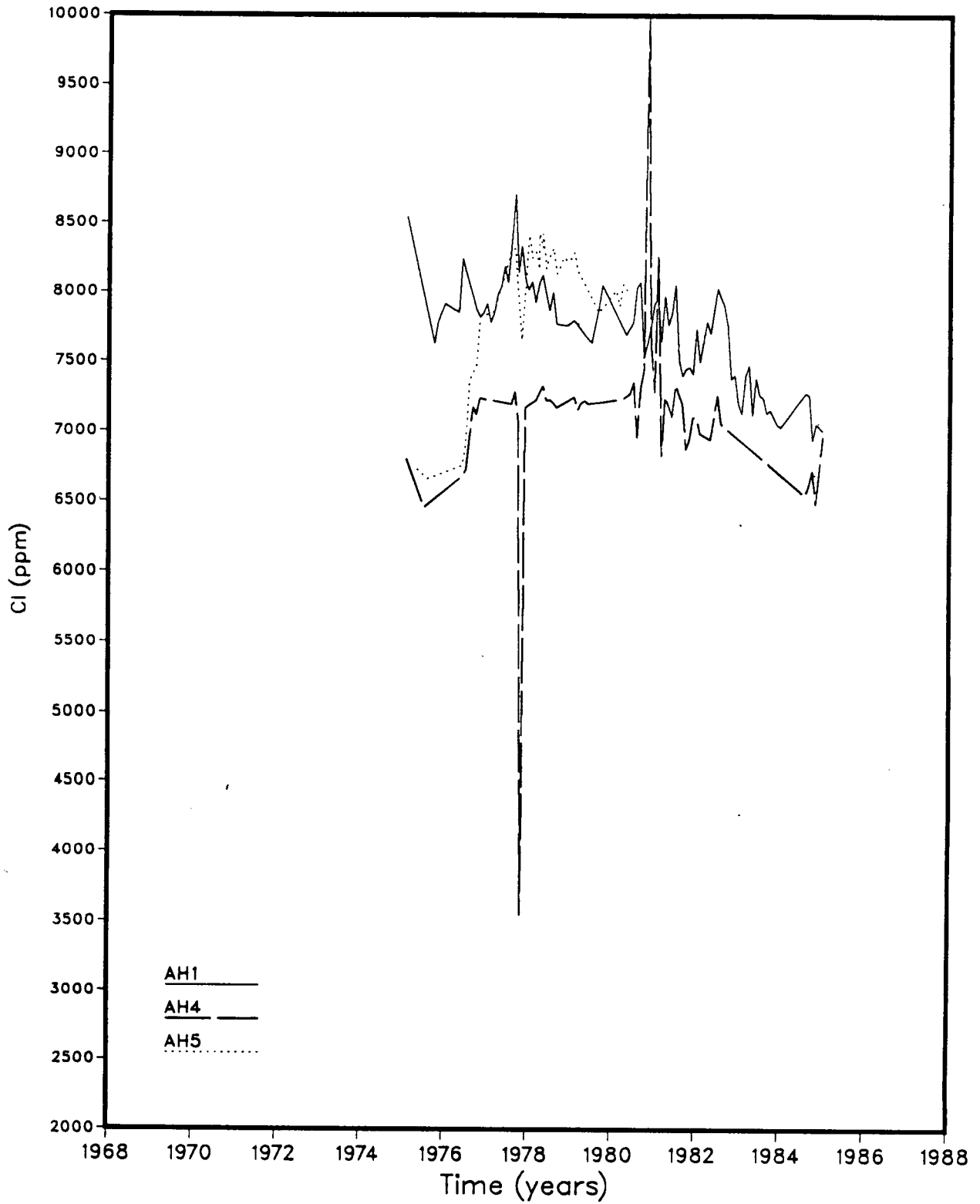
Elaborado por el Servicio Geológico de El Salvador

APPENDIX G

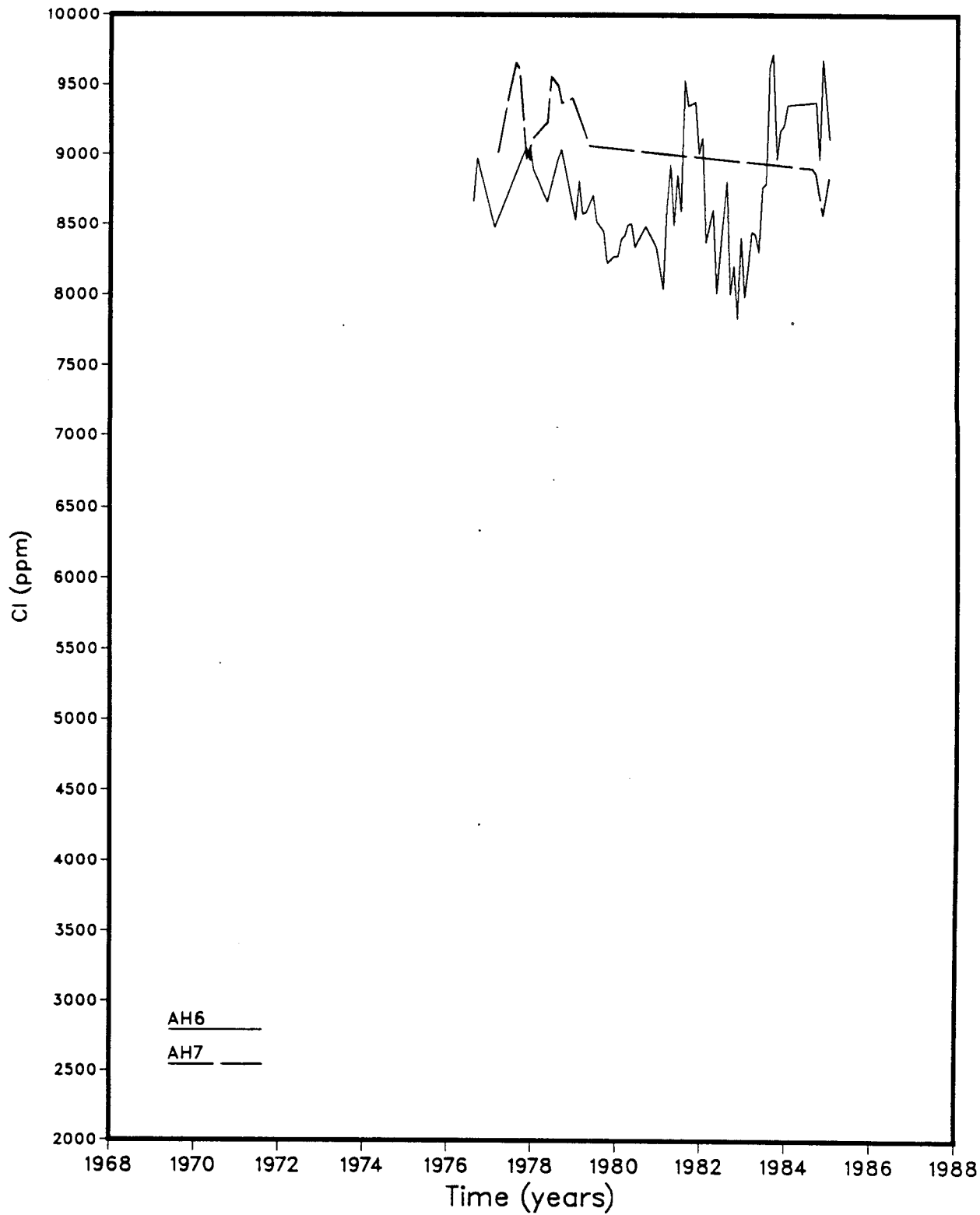
(Water and Gas Chemistry Plots)



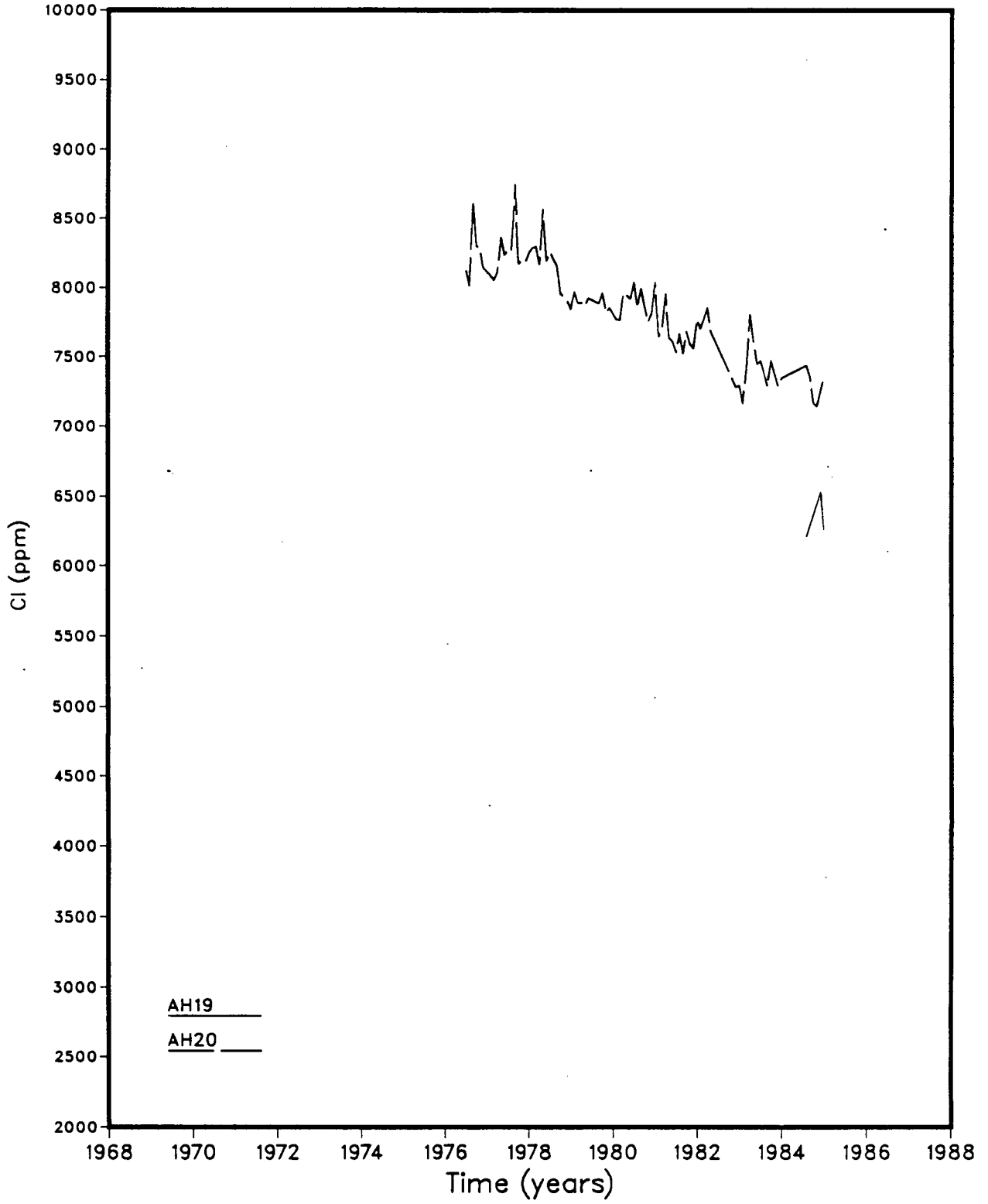
Water Chemistry (Cl Reservoir)



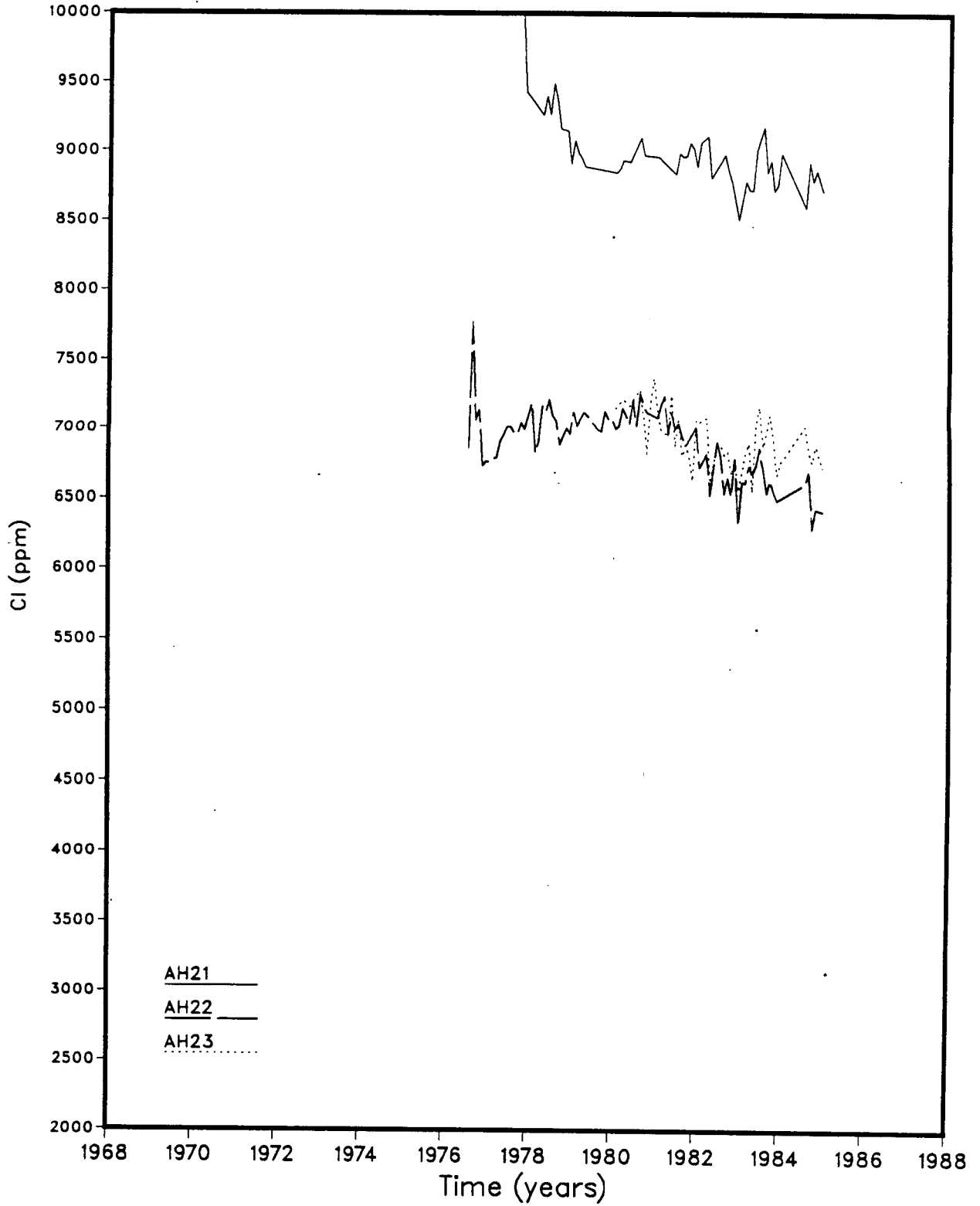
Water Chemistry (Cl Reservoir)



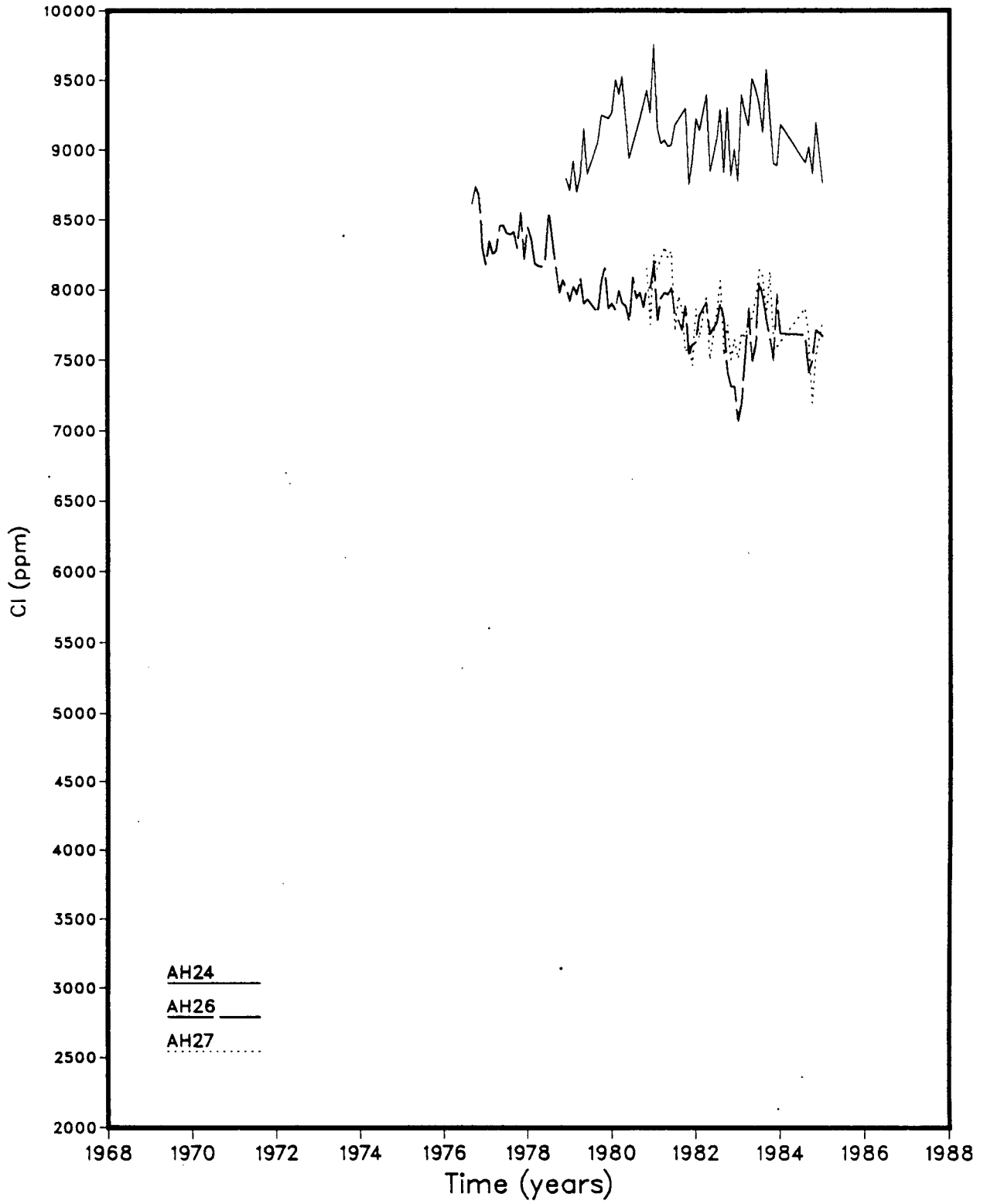
Water Chemistry (Cl Reservoir)



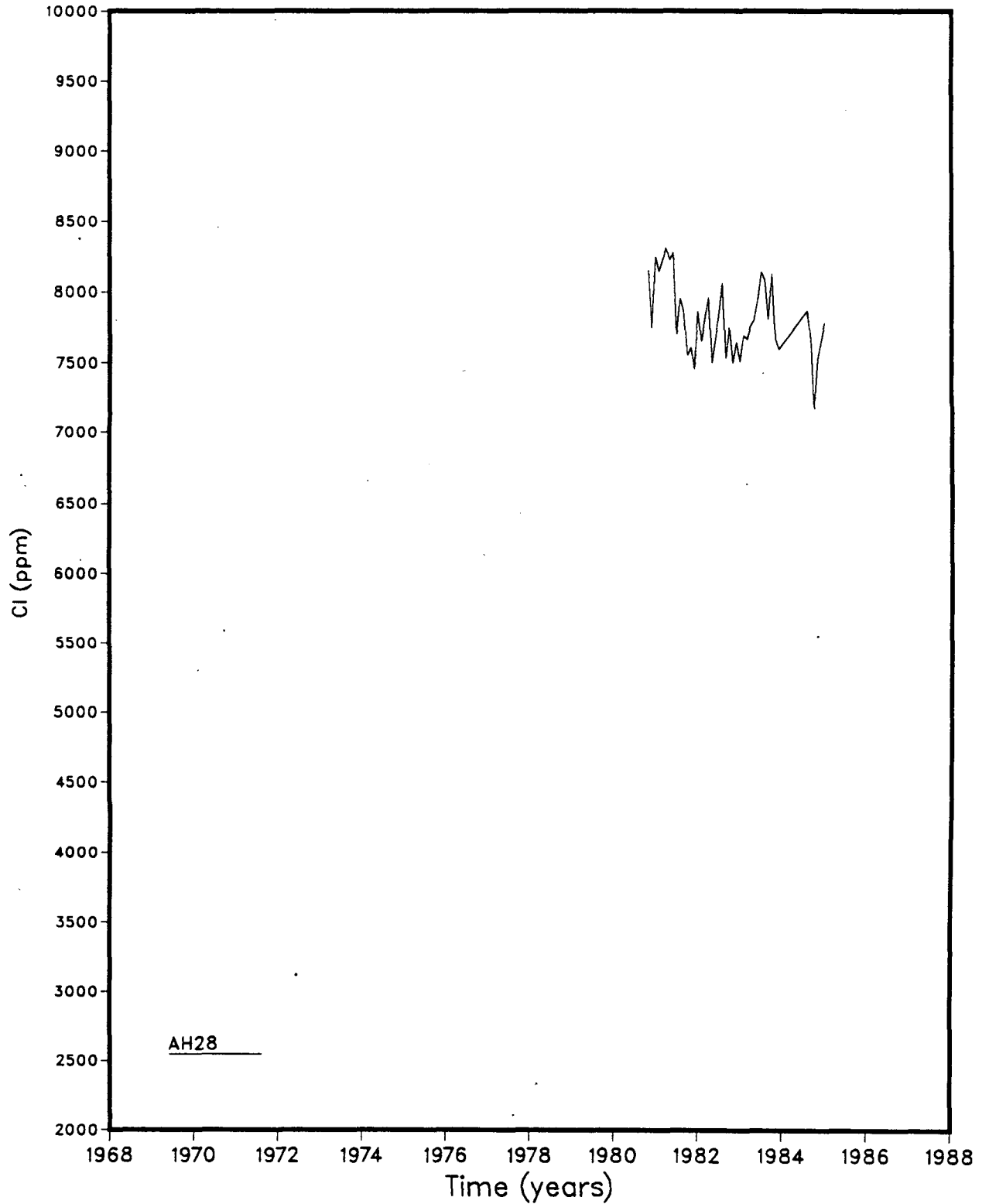
Water Chemistry (Cl Reservoir)



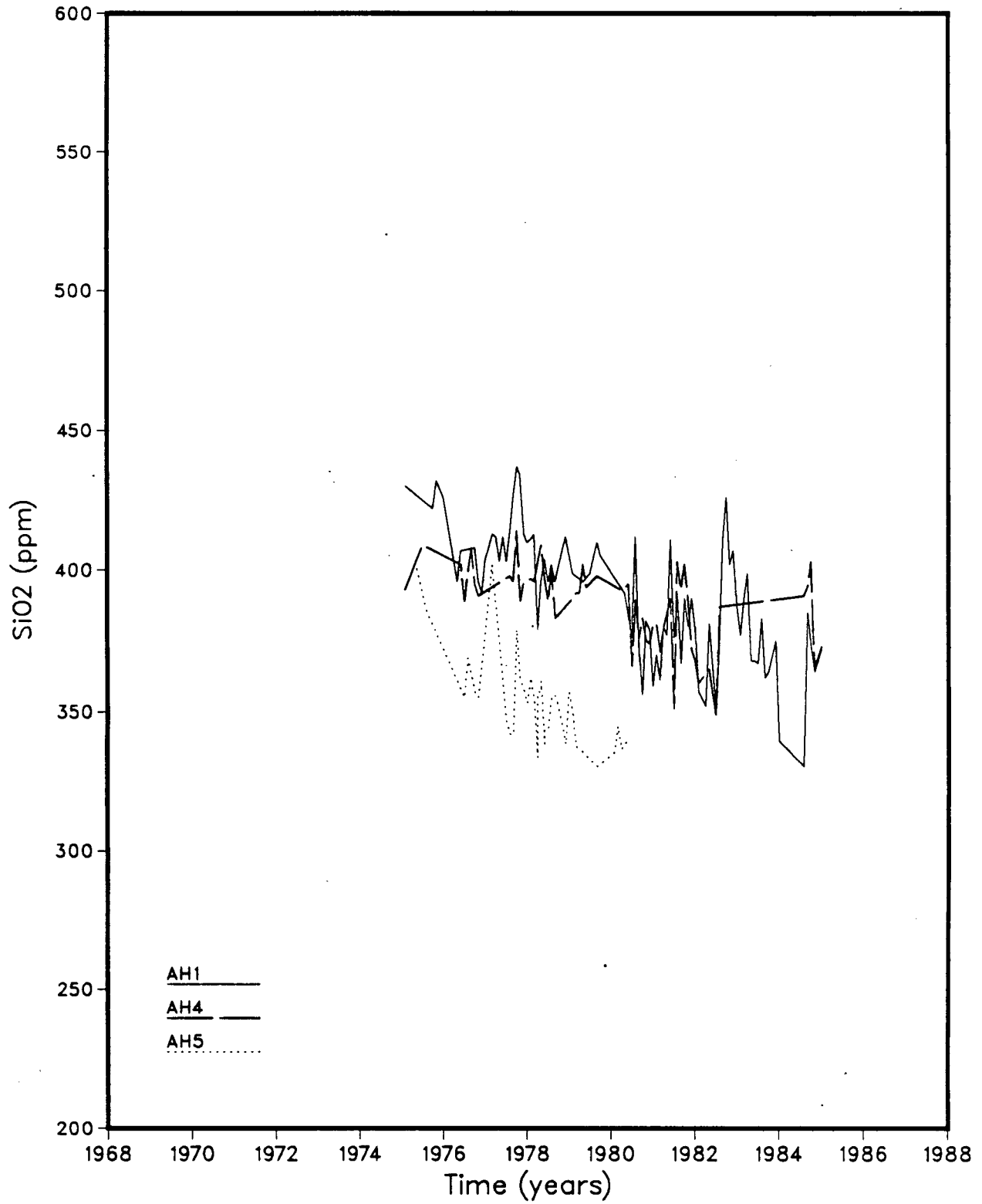
Water Chemistry (Cl Reservoir)



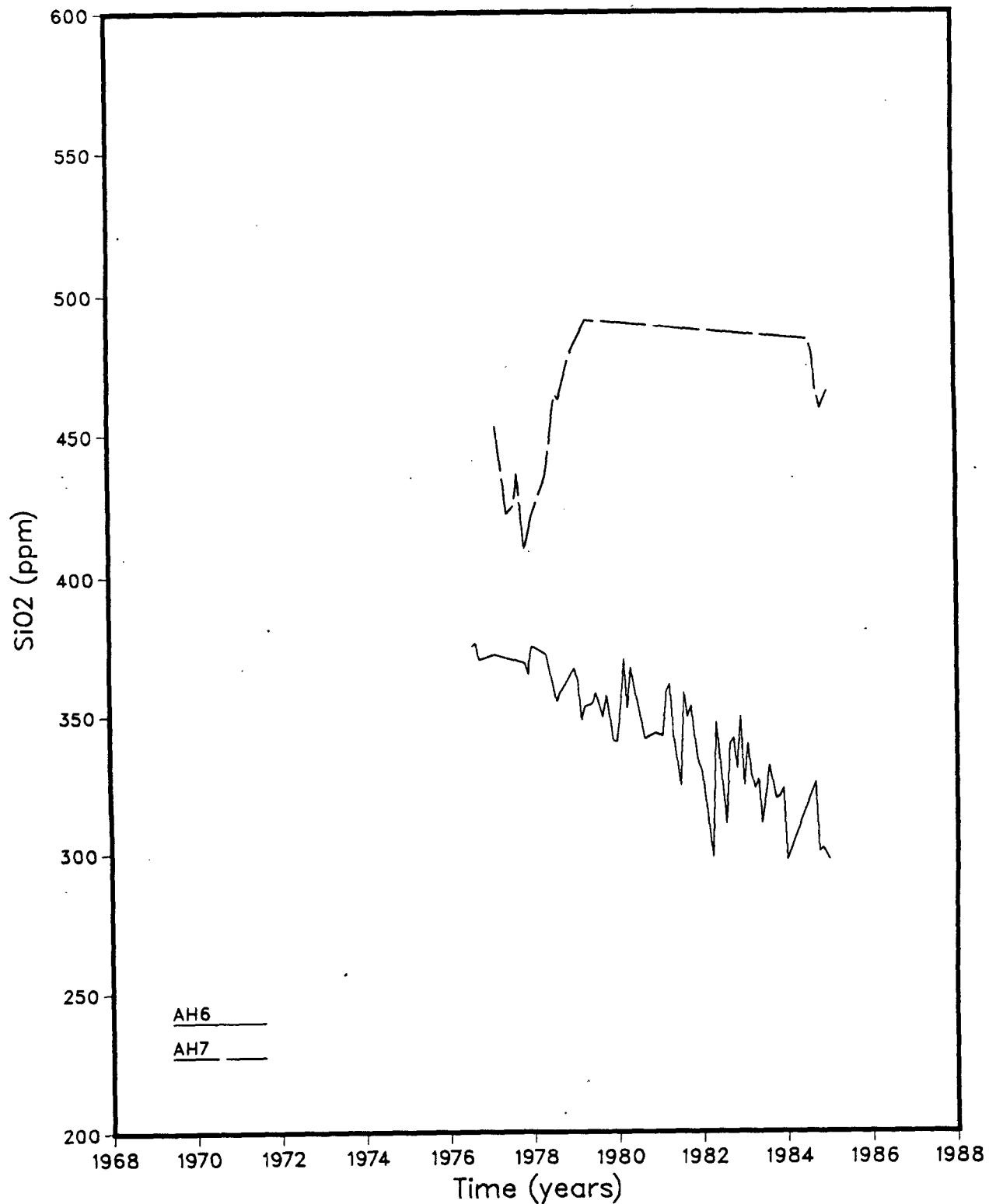
Water Chemistry (Cl Reservoir)



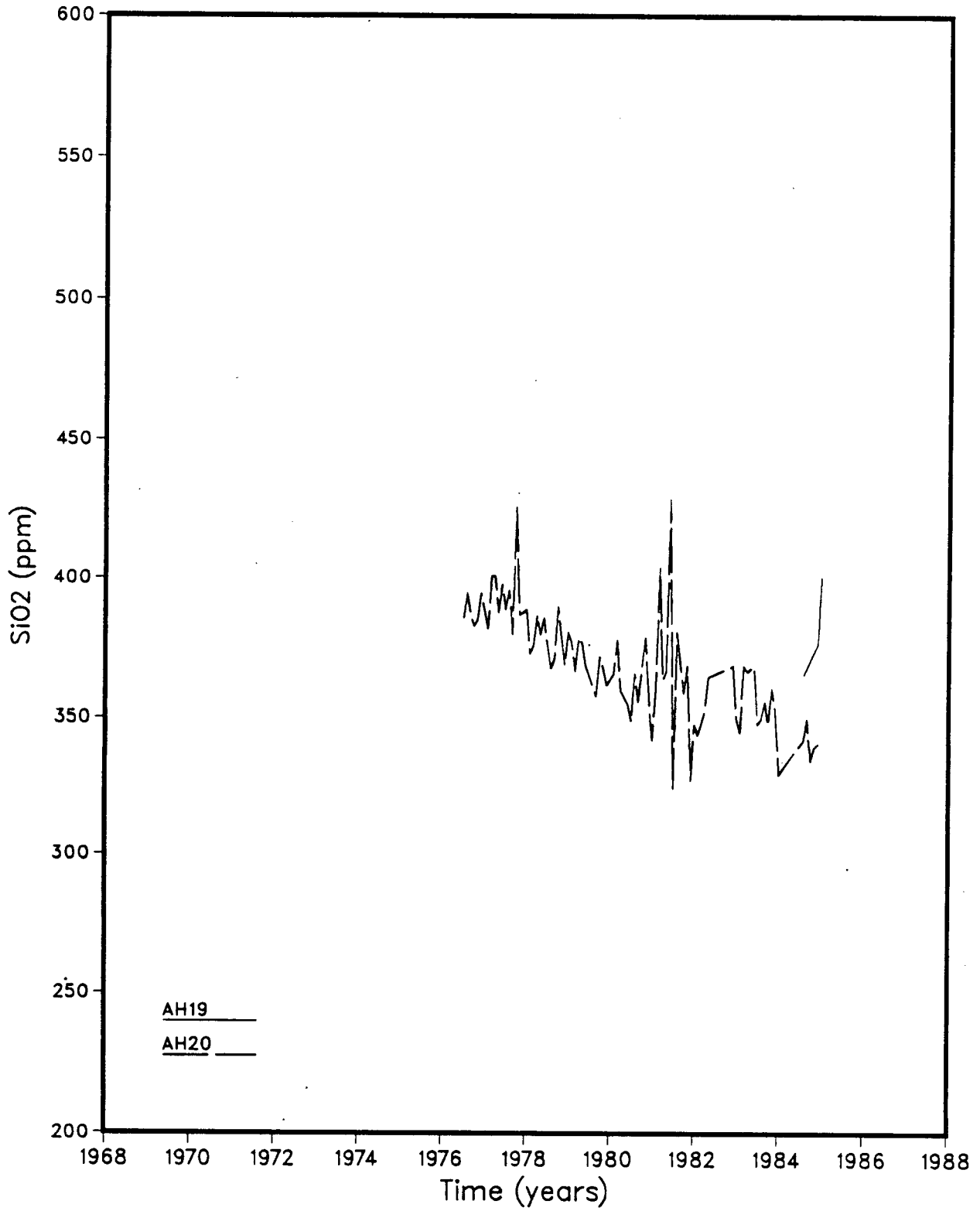
Water Chemistry (SiO₂ Reservoir)



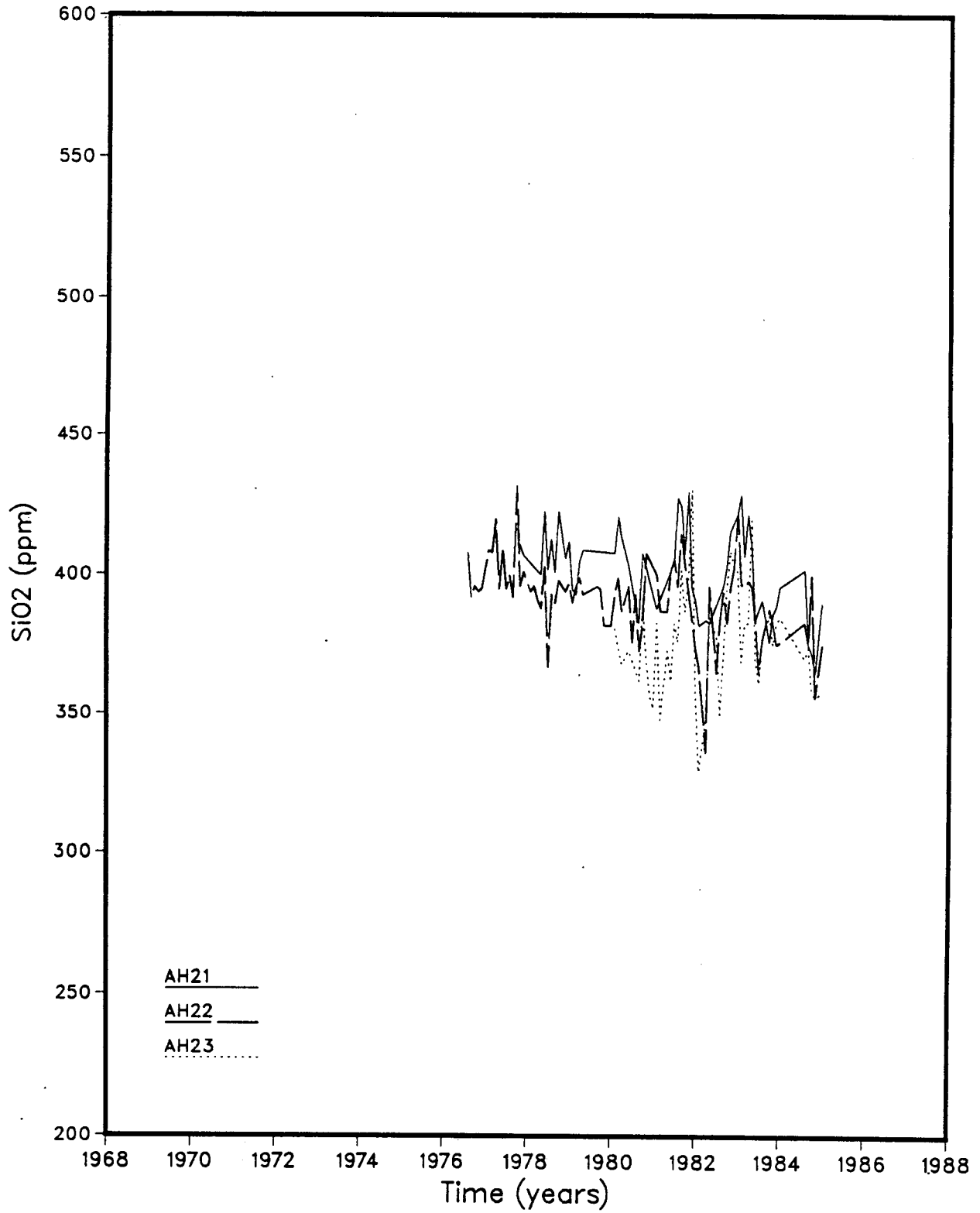
Water Chemistry (SiO₂ Reservoir)



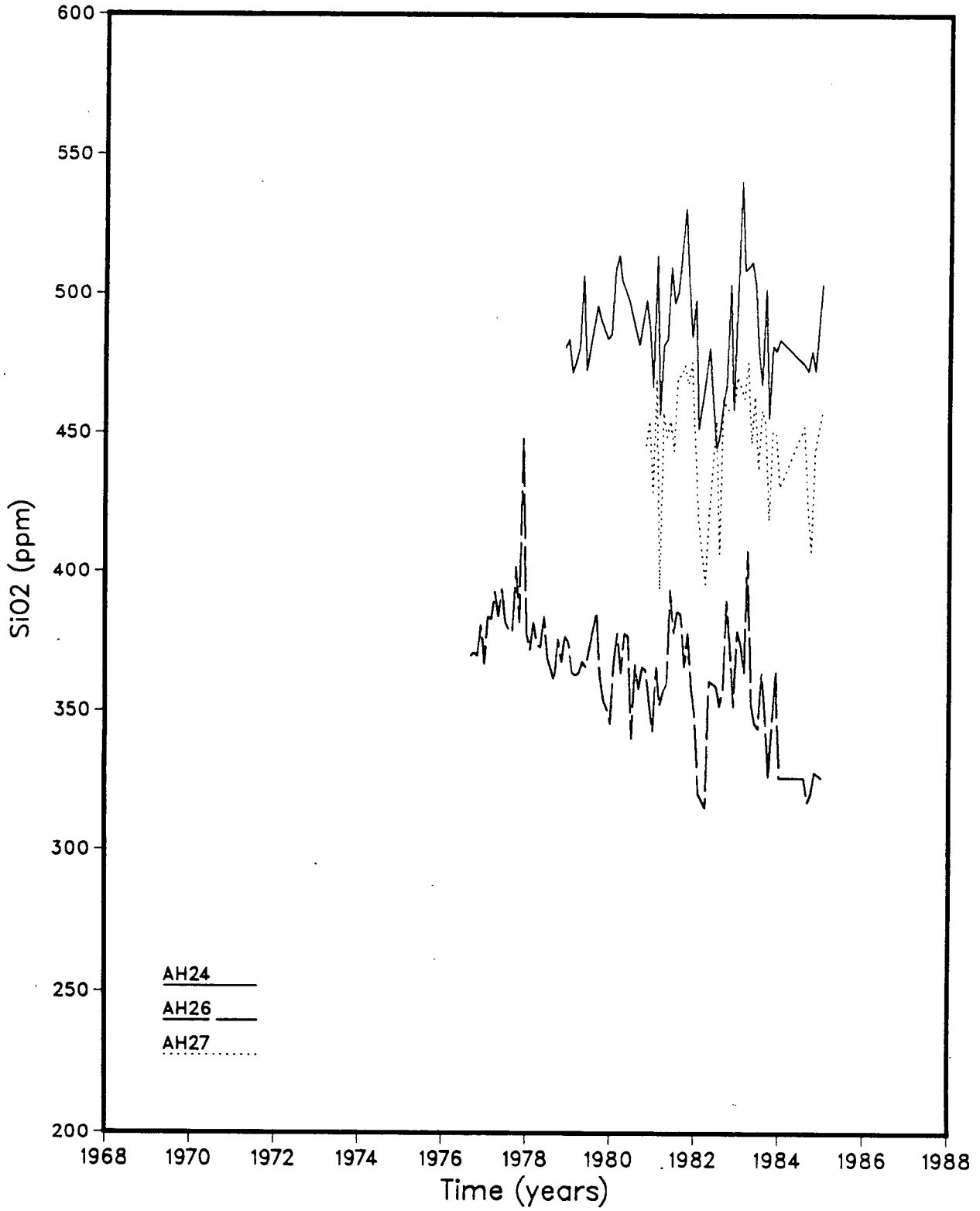
Water Chemistry (SiO₂ Reservoir)



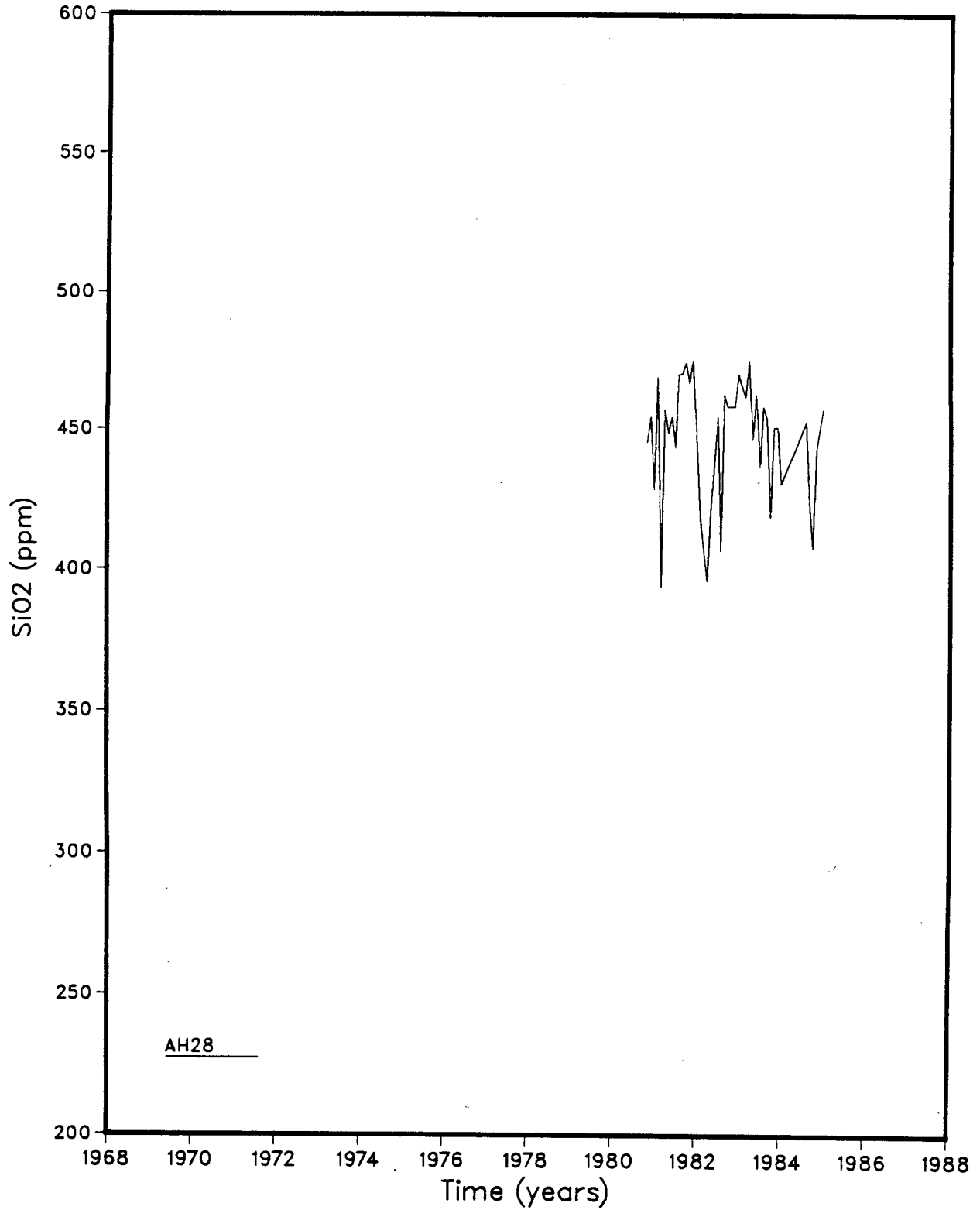
Water Chemistry (SiO₂ Reservoir)



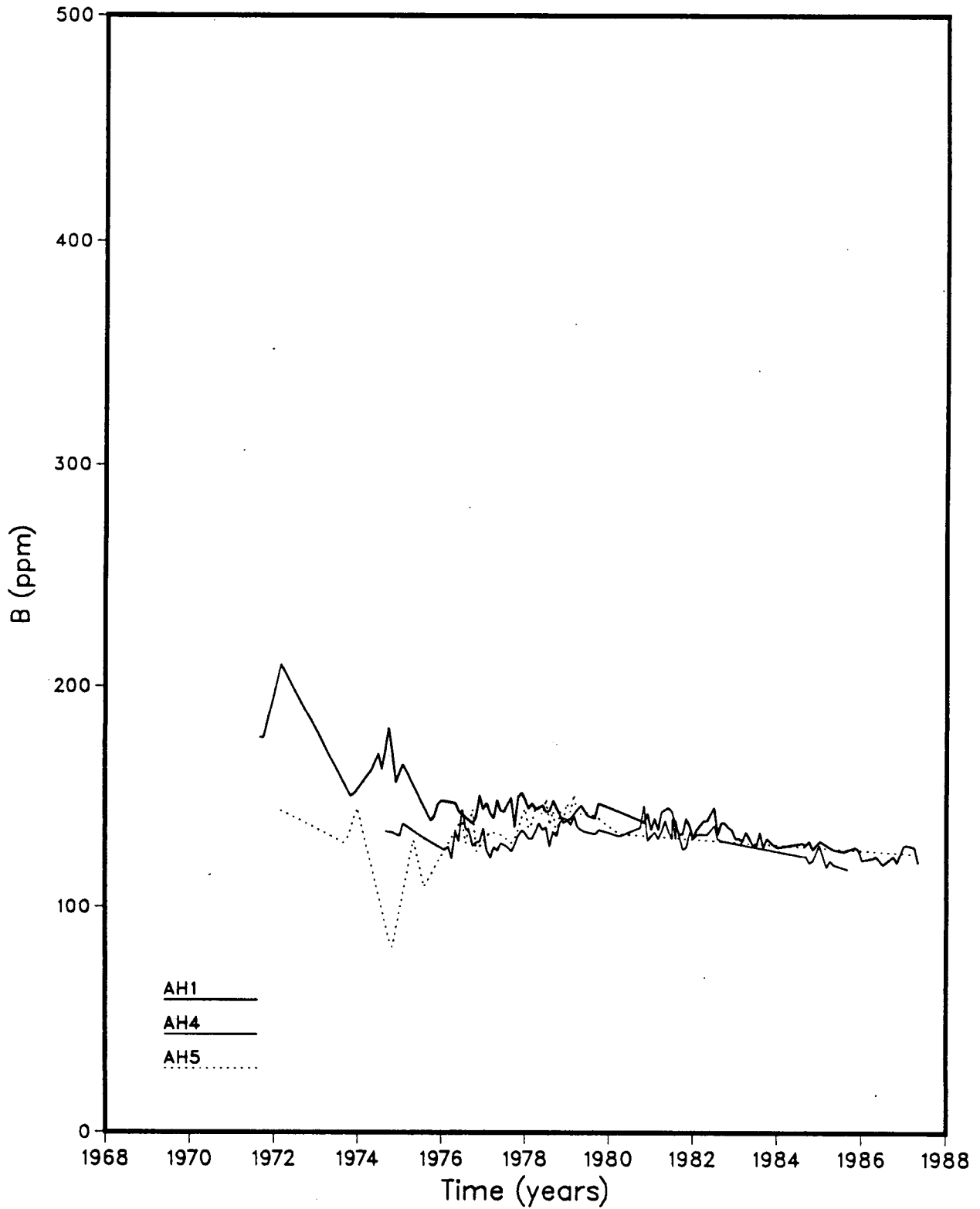
Water Chemistry (SiO₂ Reservoir)



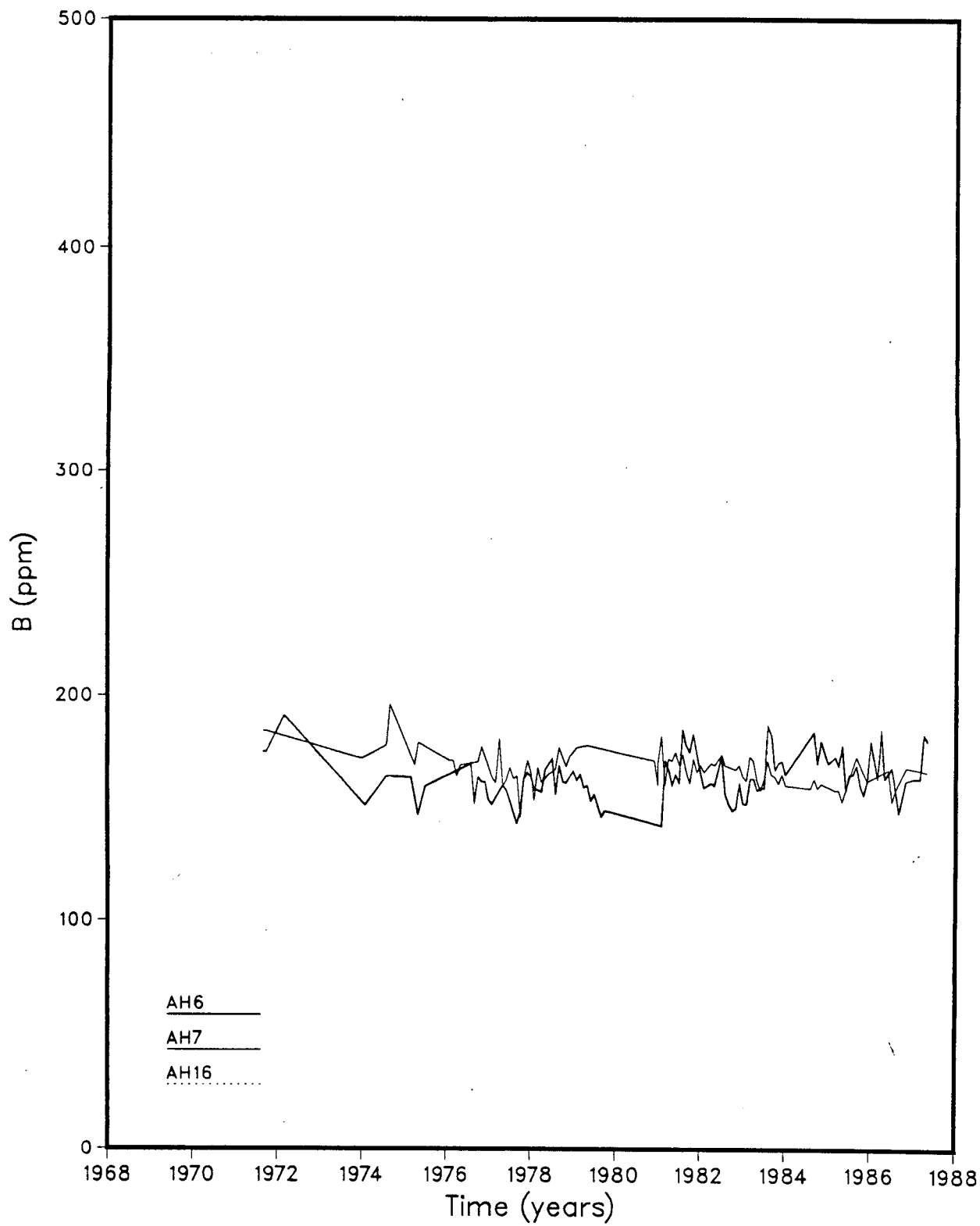
Water Chemistry (SiO₂ Reservoir)



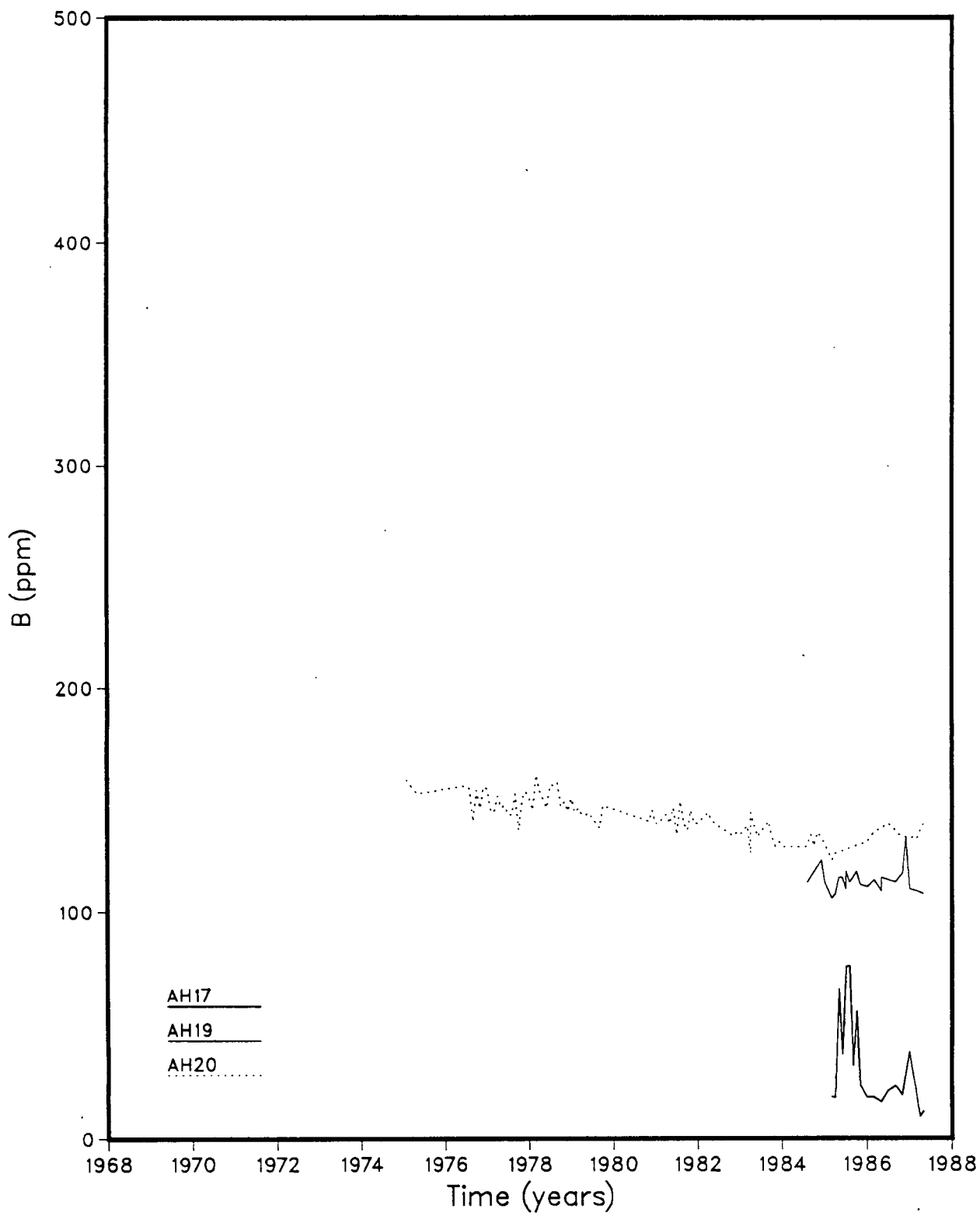
Water Chemistry (B)



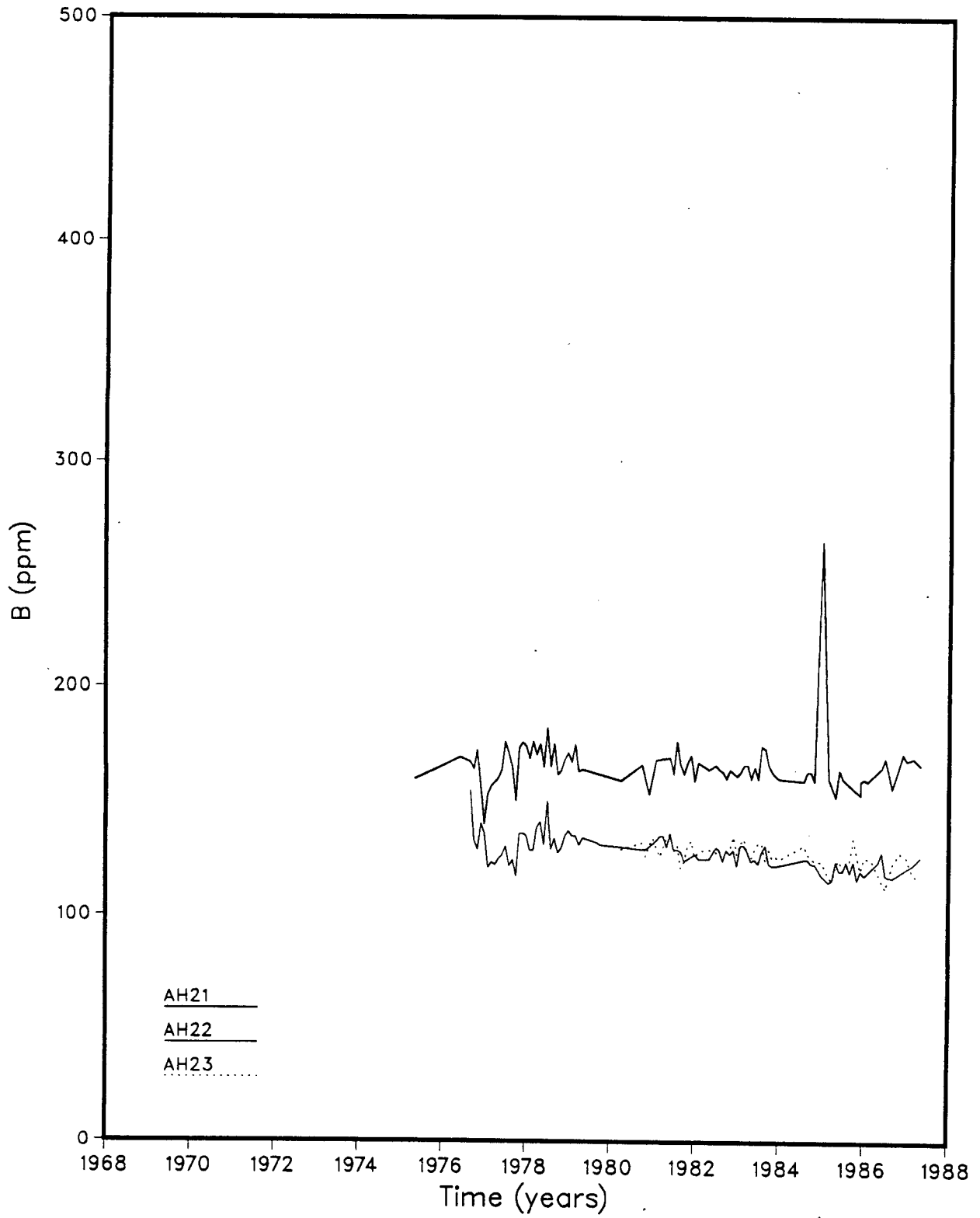
Water Chemistry (B)



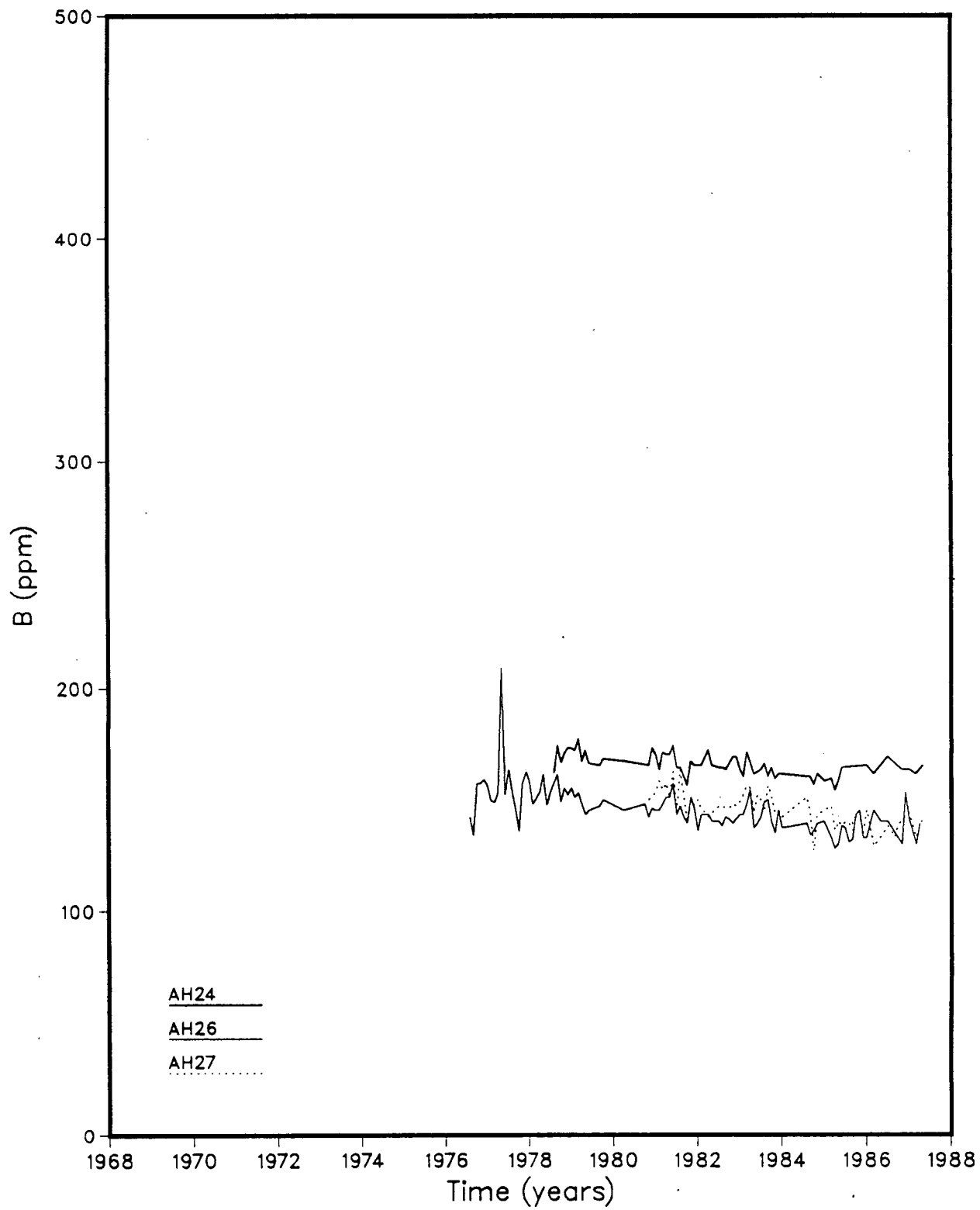
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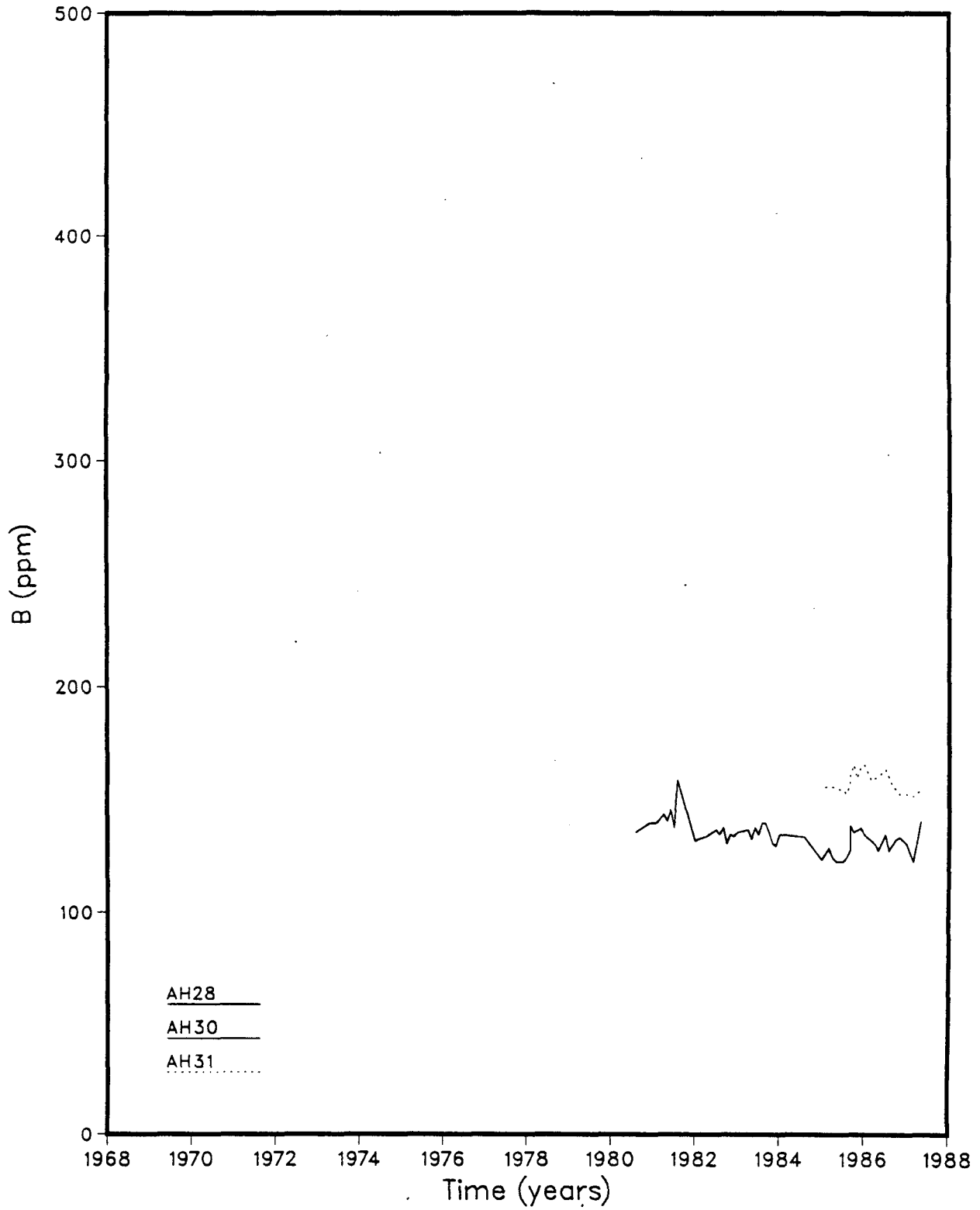
Water Chemistry (B)



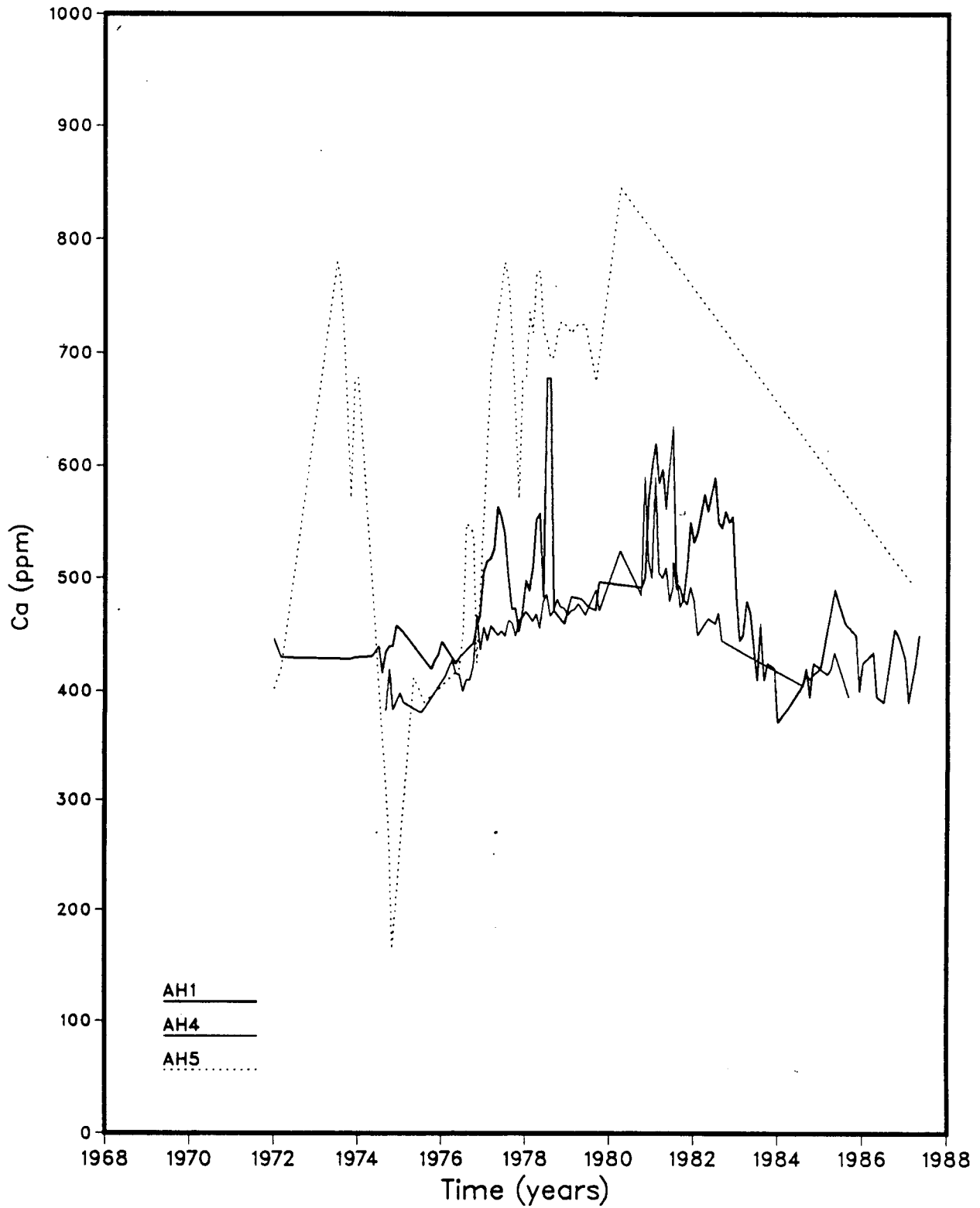
Water Chemistry (B)



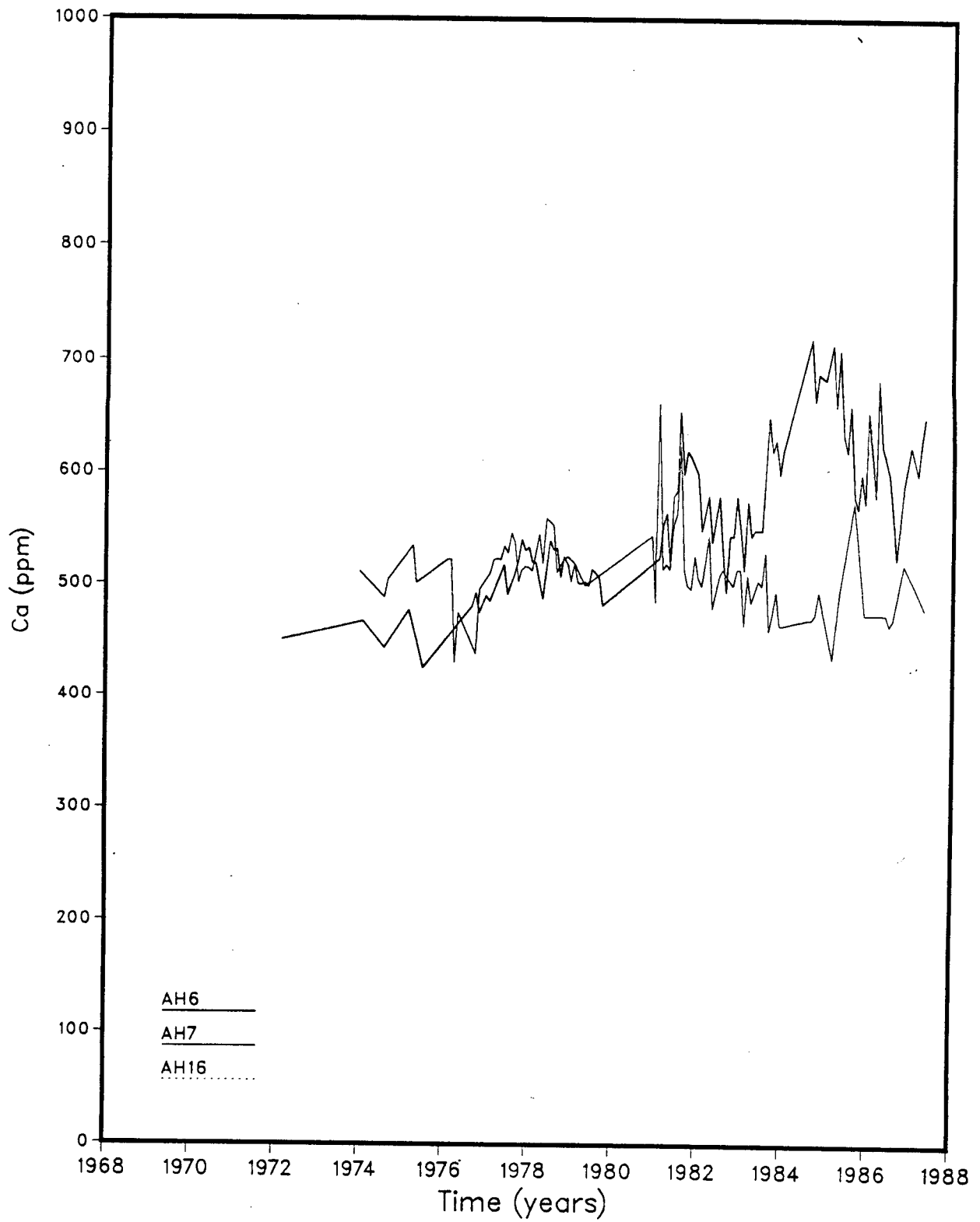
Water Chemistry (B)



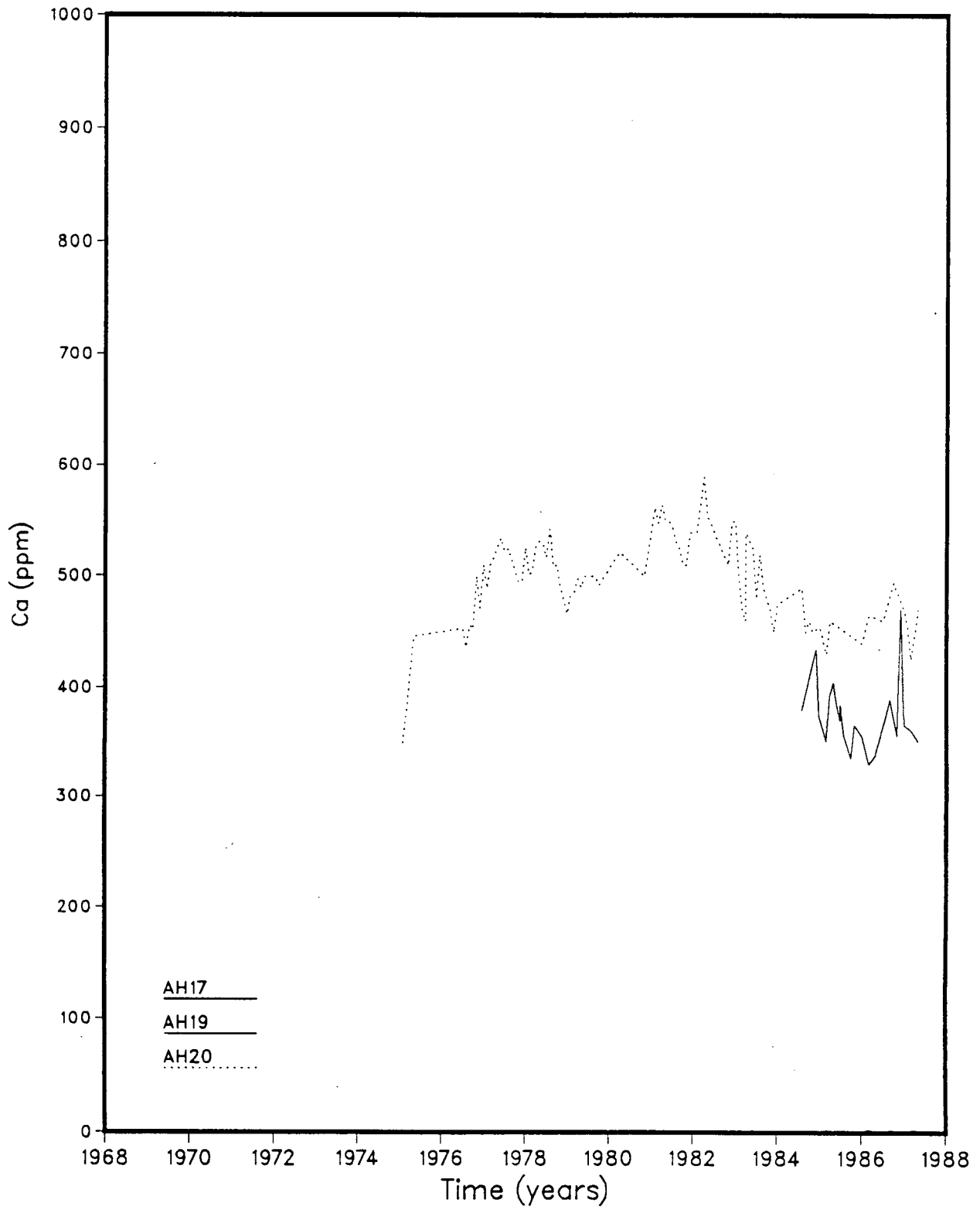
Water Chemistry (Ca)



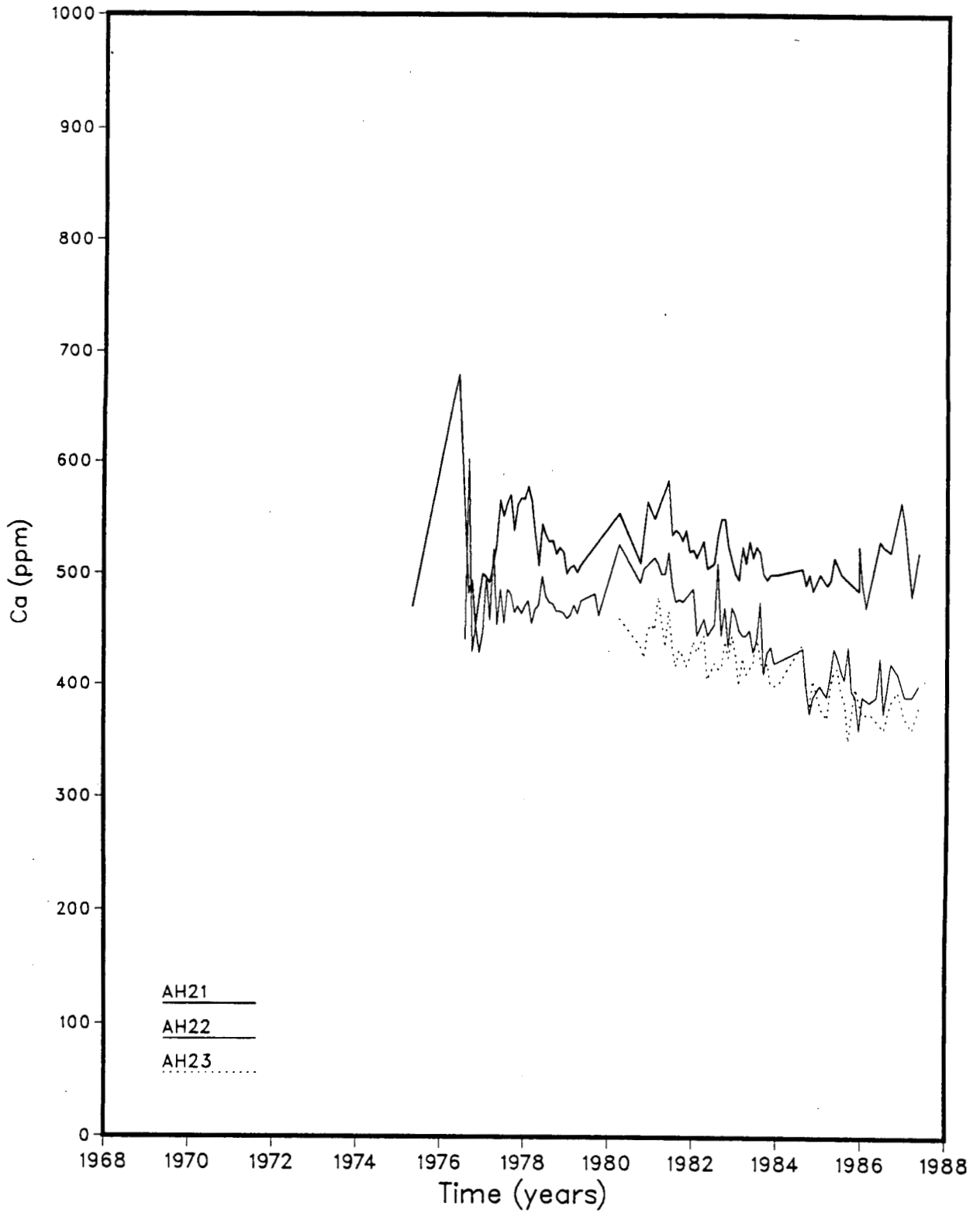
Water Chemistry (Ca)



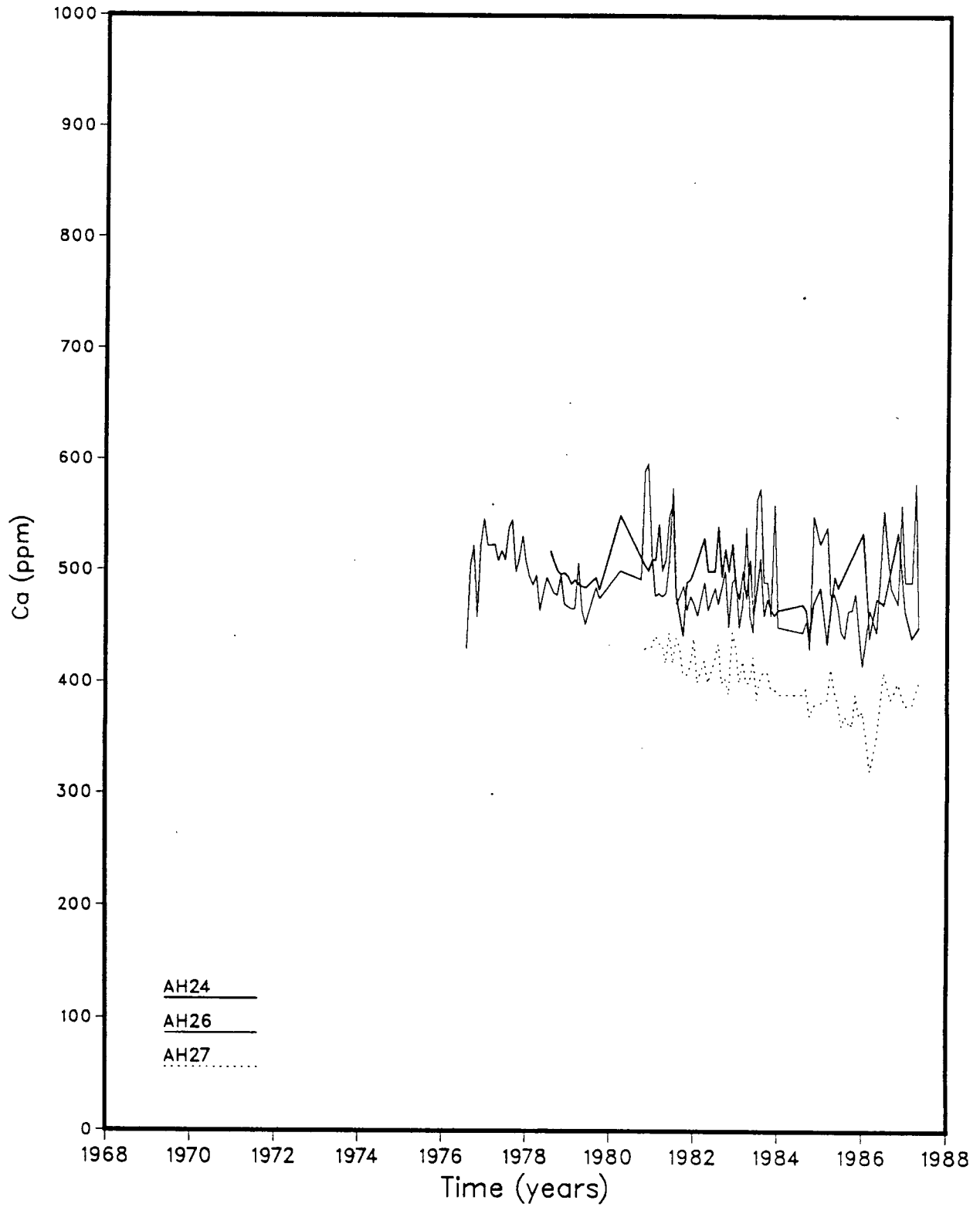
Water Chemistry (Ca)



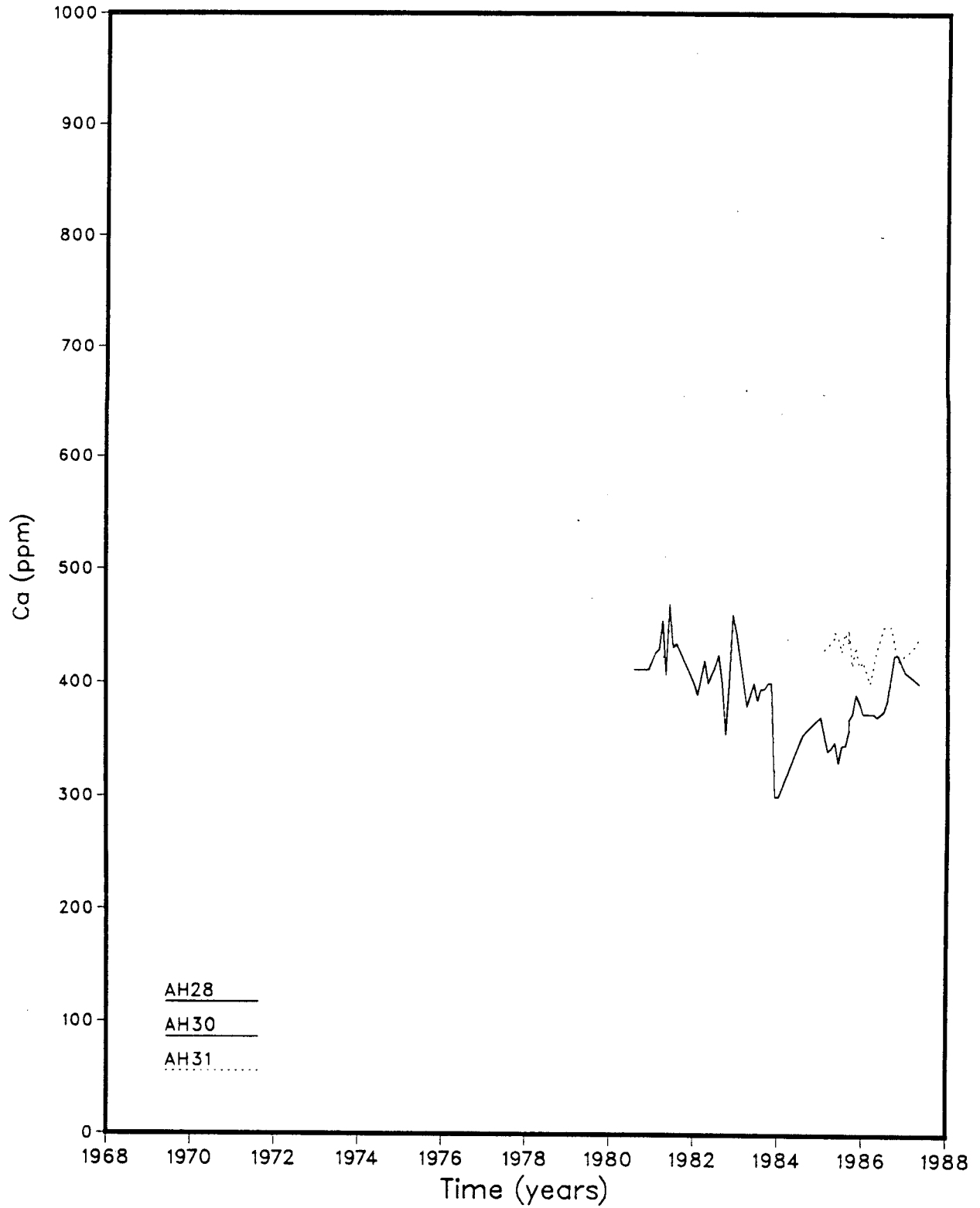
Water Chemistry (Ca)



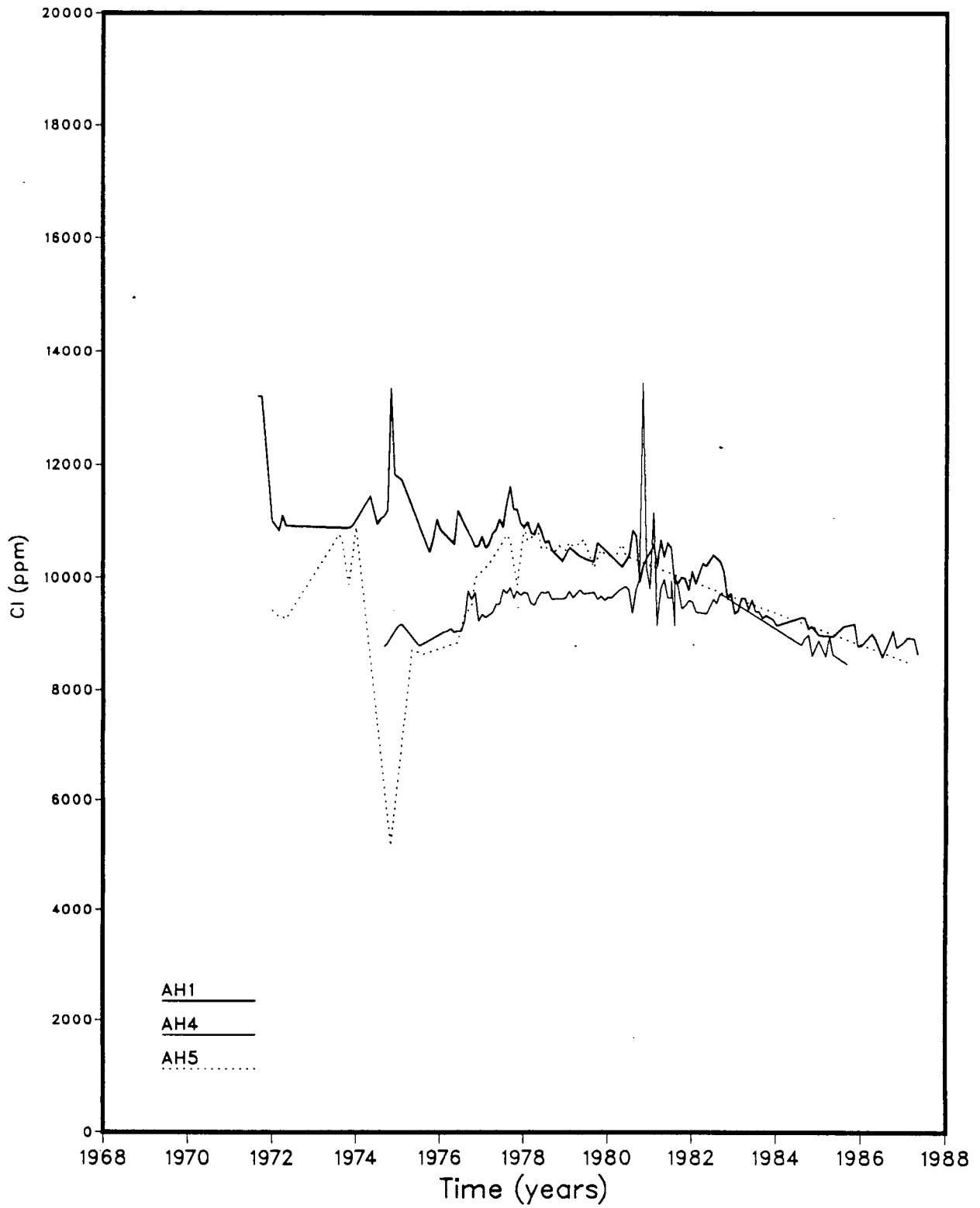
Water Chemistry (Ca)



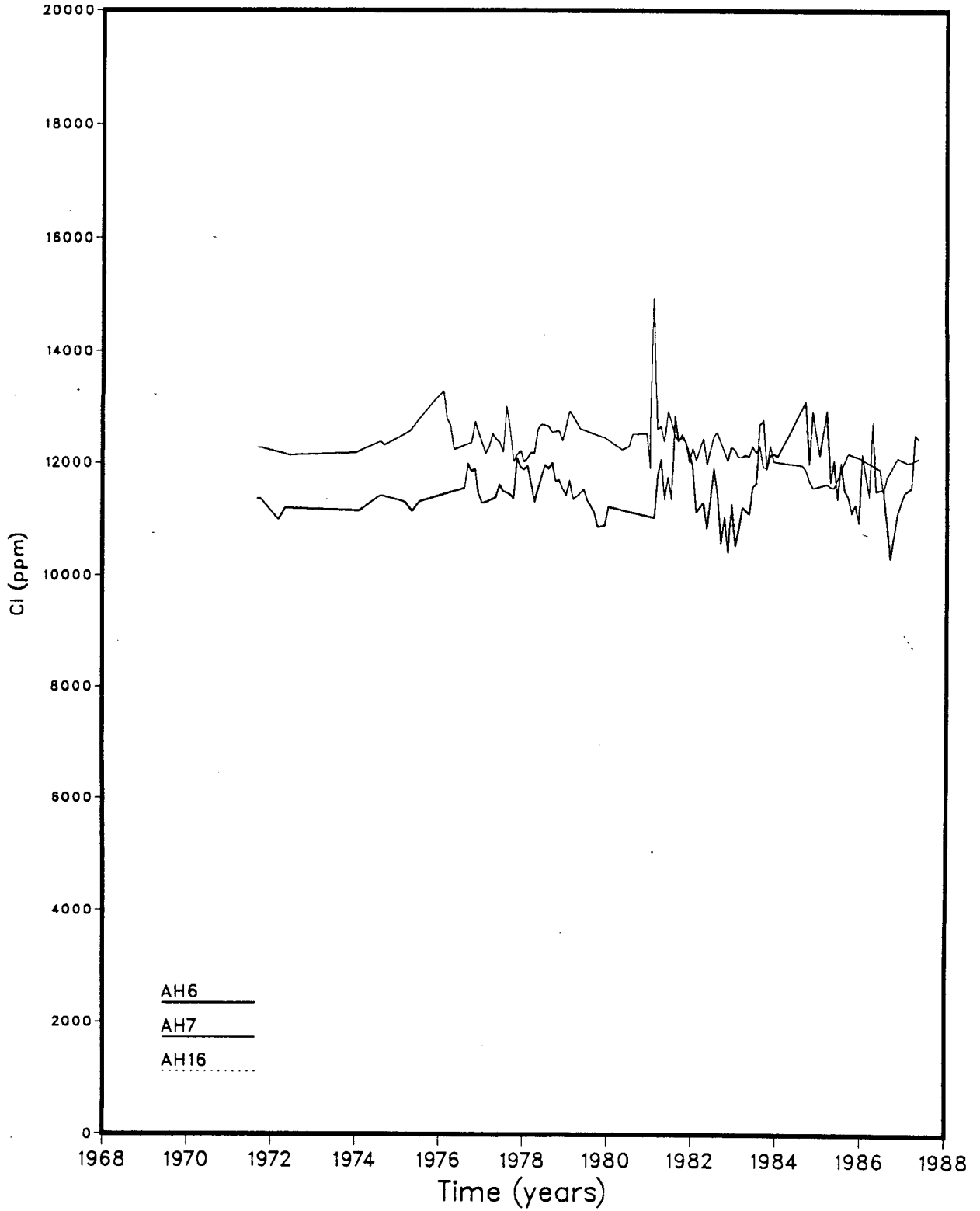
Water Chemistry (Ca)



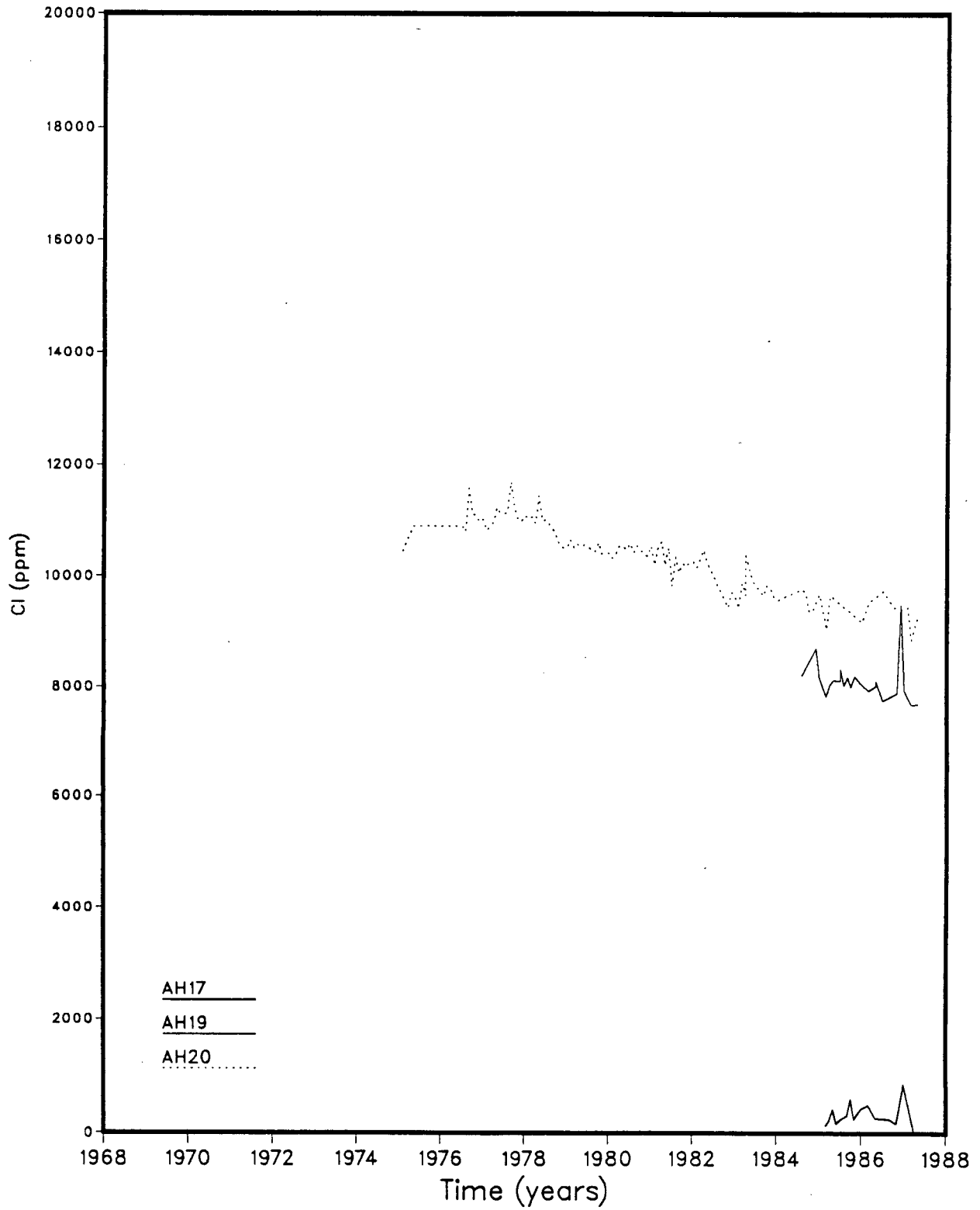
Water Chemistry (Cl)



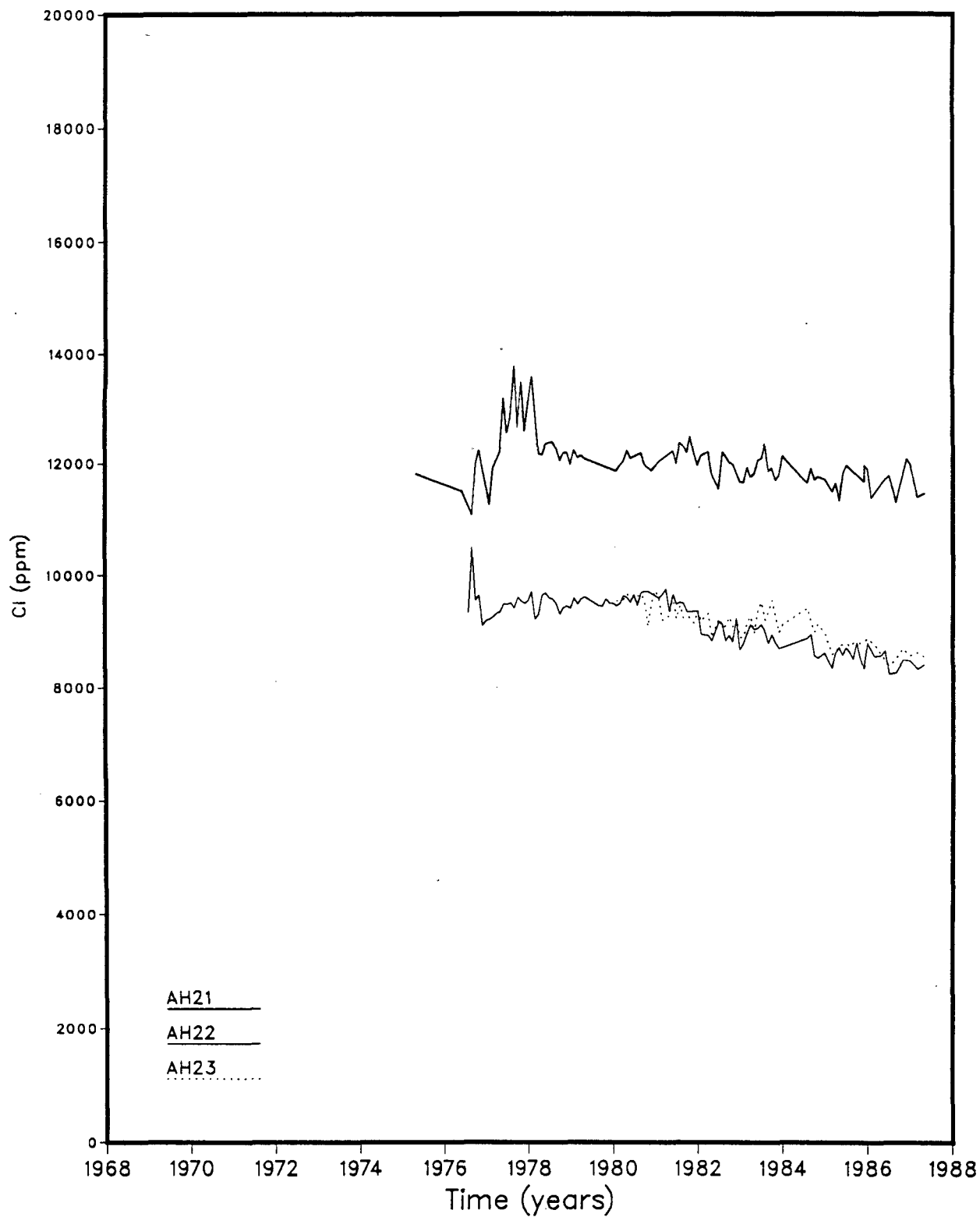
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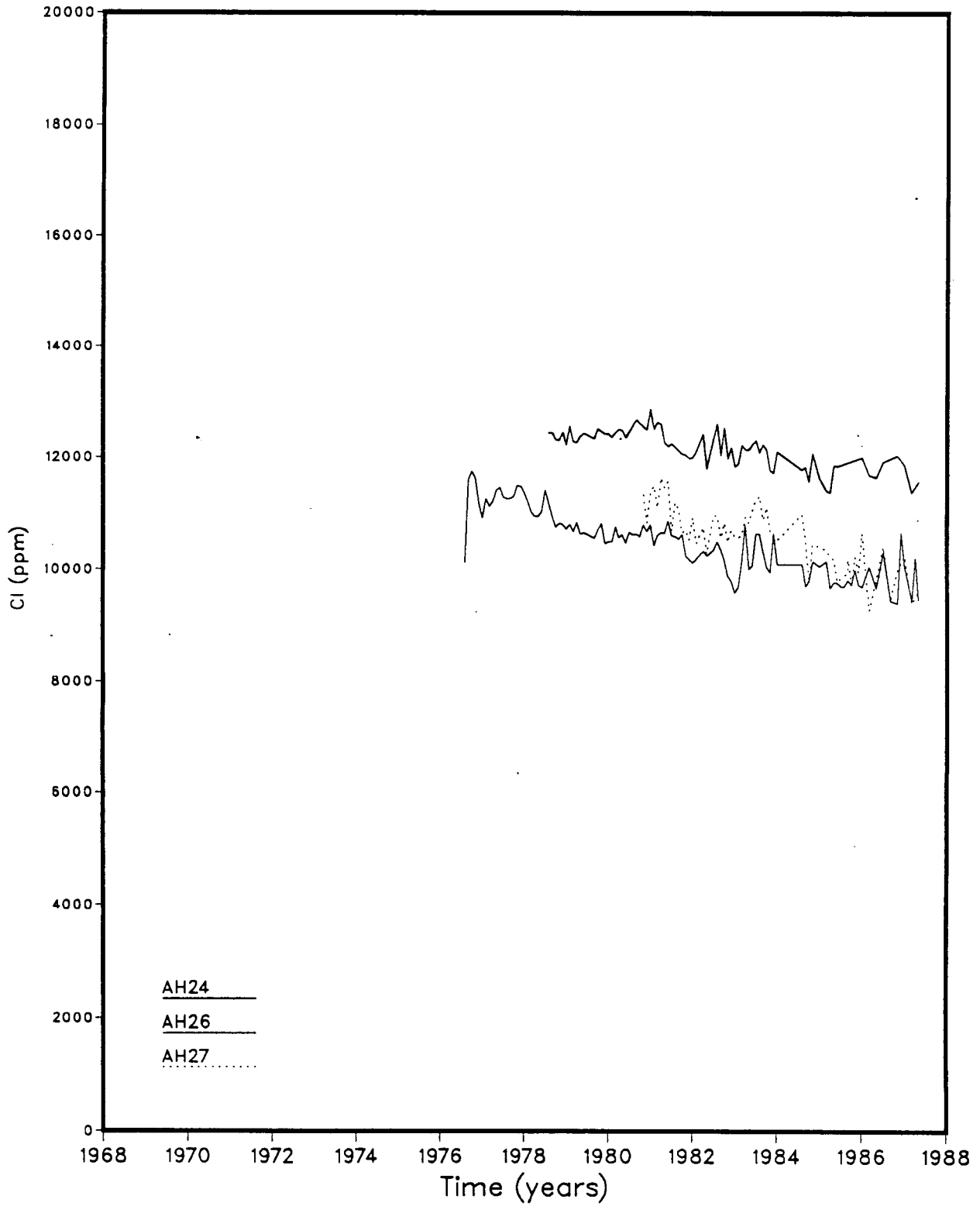
Water Chemistry (Cl)



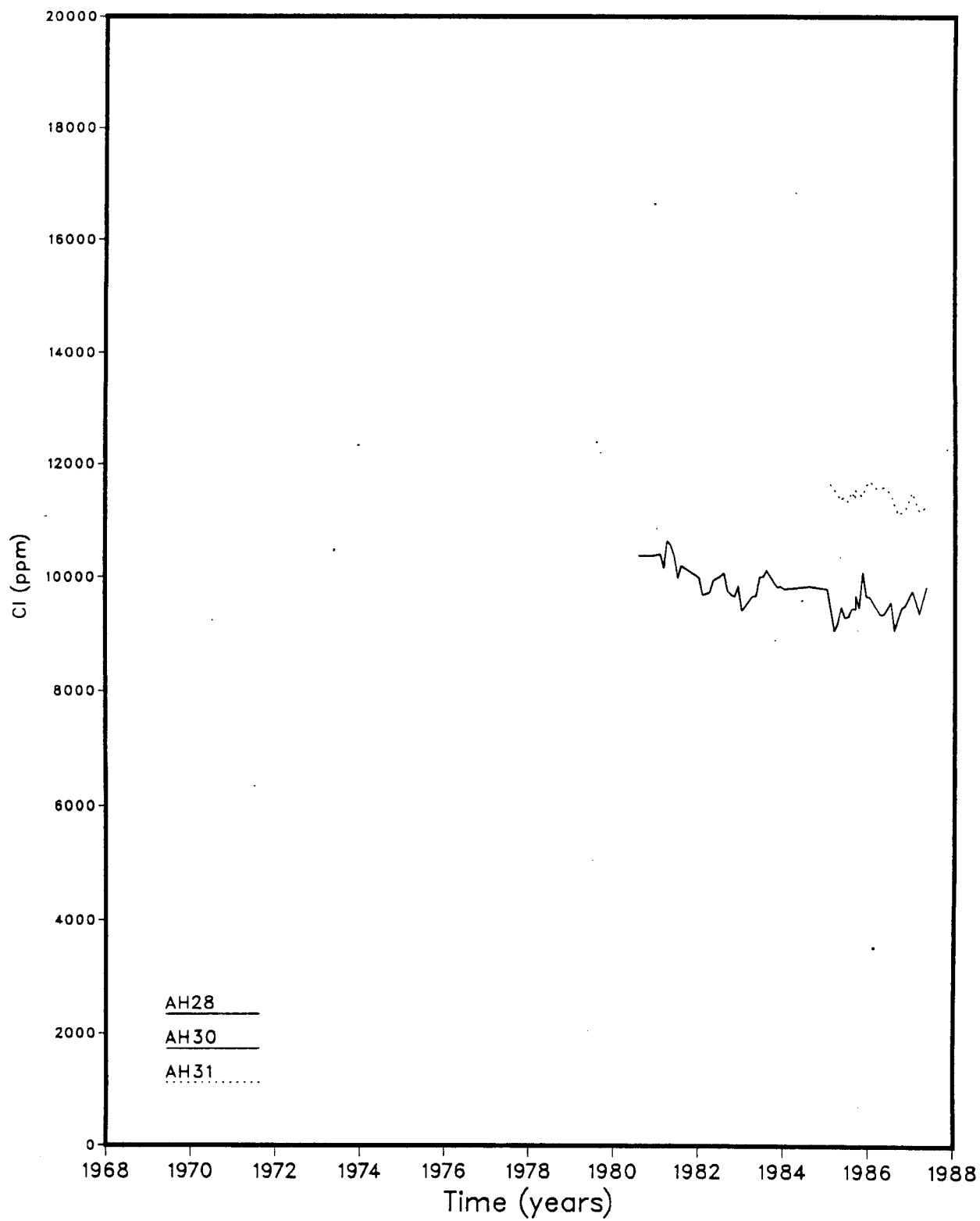
Water Chemistry (Cl)



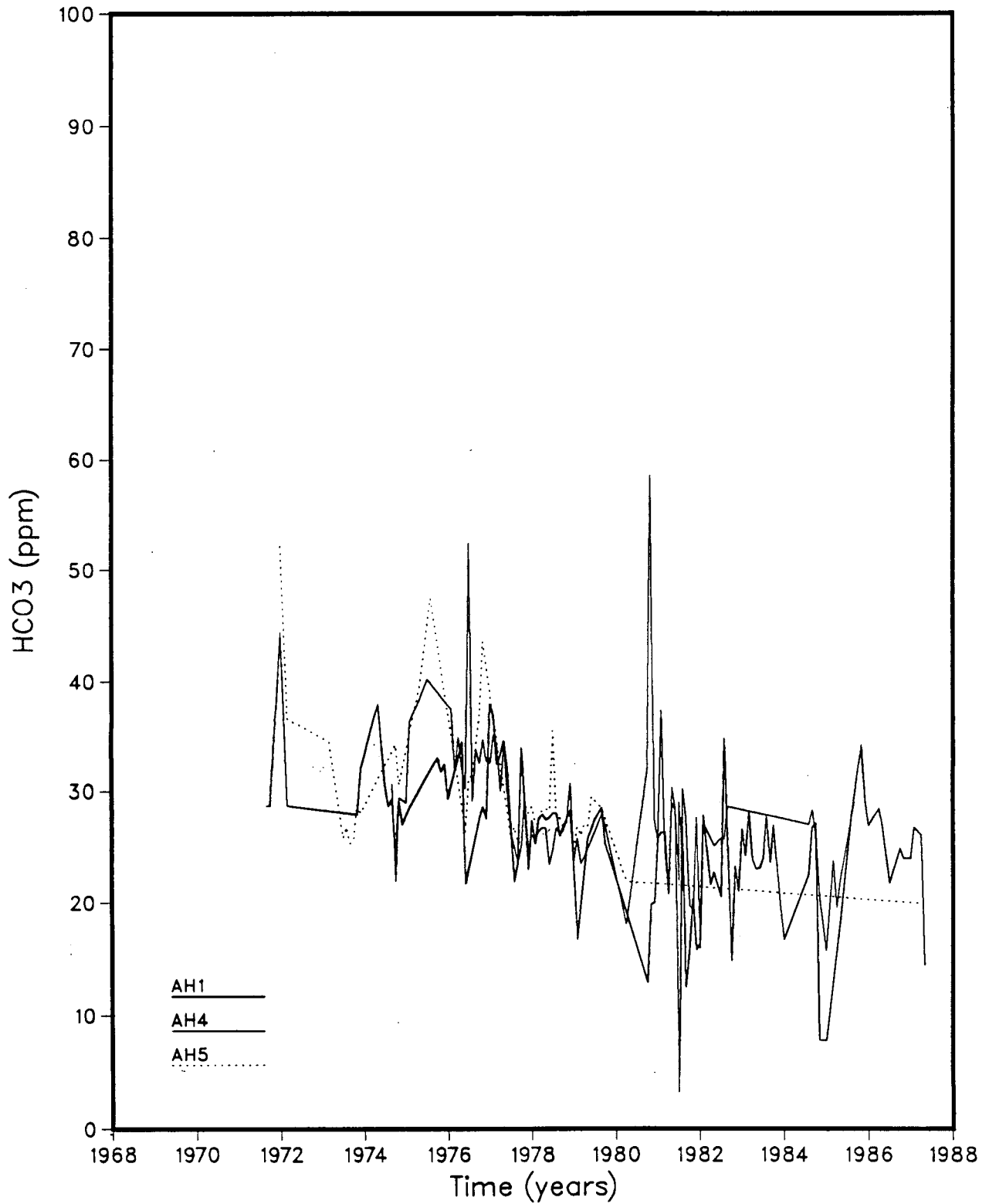
Water Chemistry (Cl)



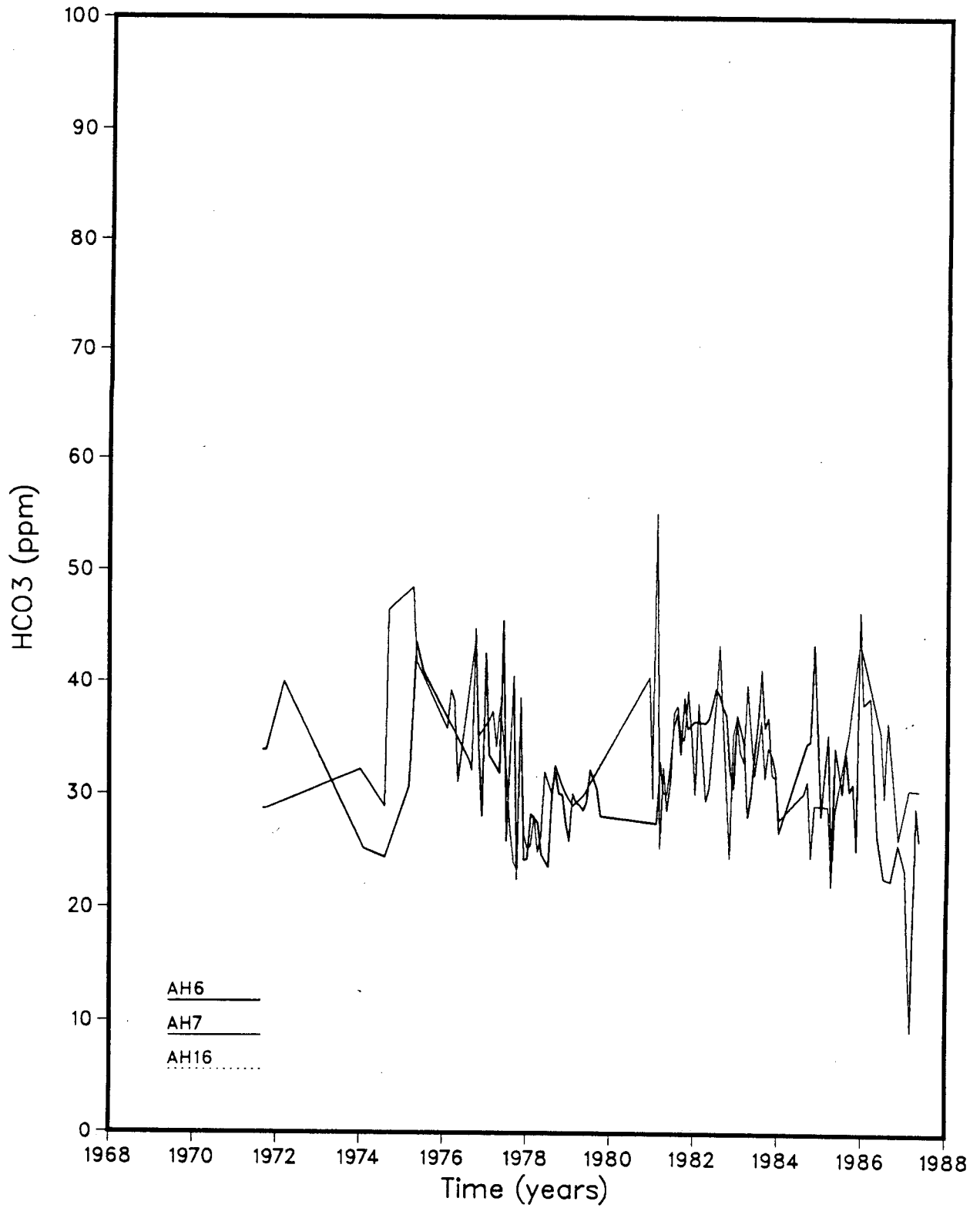
Water Chemistry (Cl)



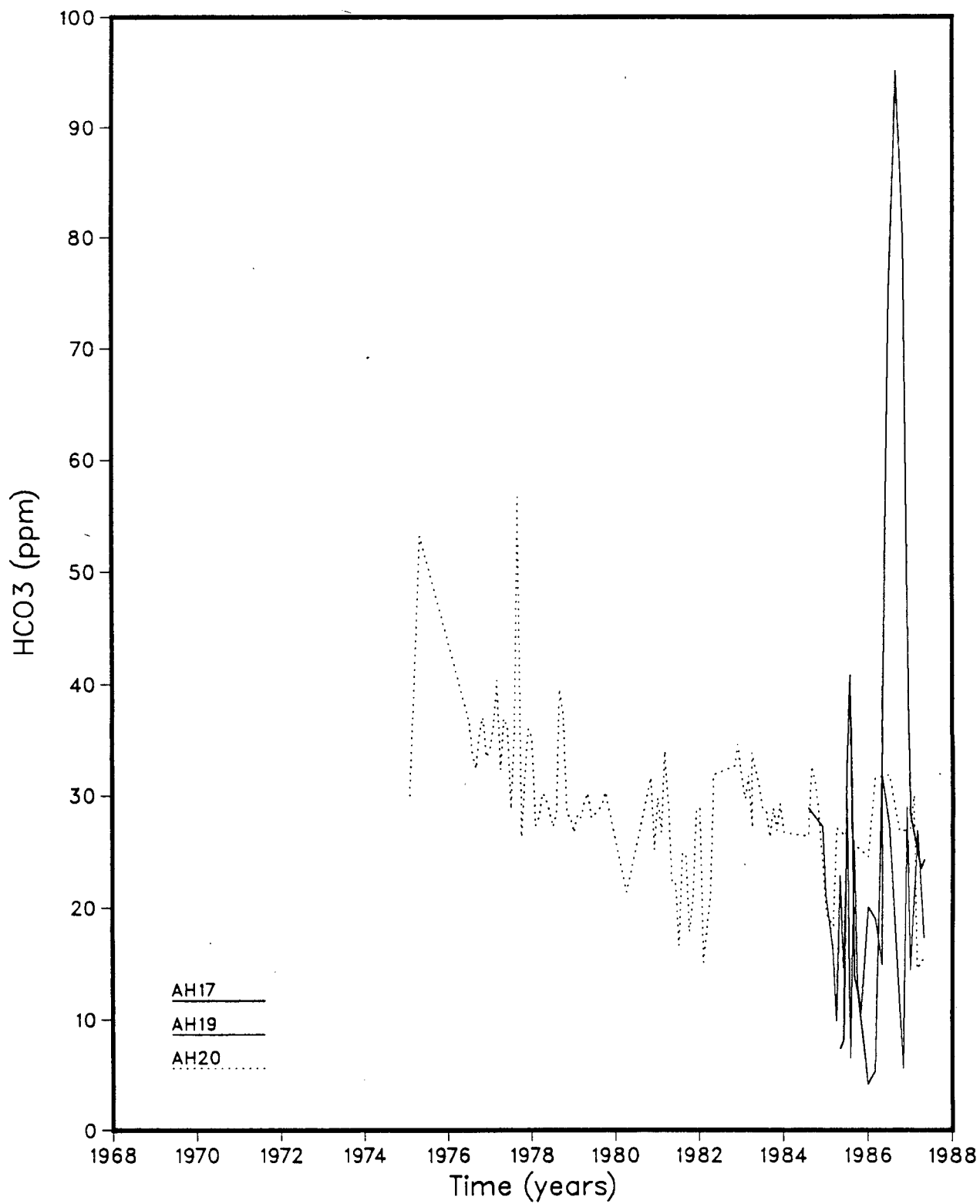
Water Chemistry (HCO₃)



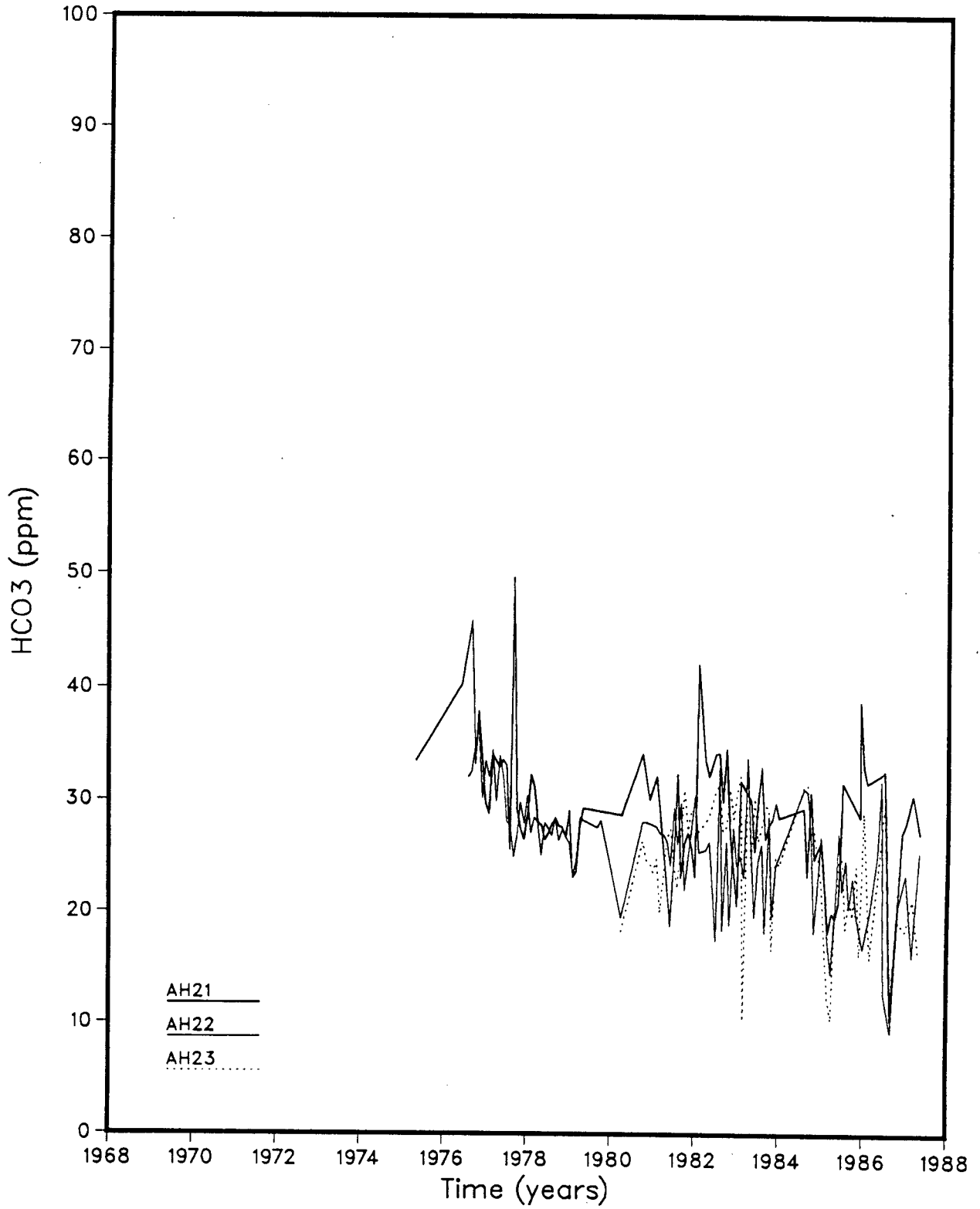
Water Chemistry (HCO₃)



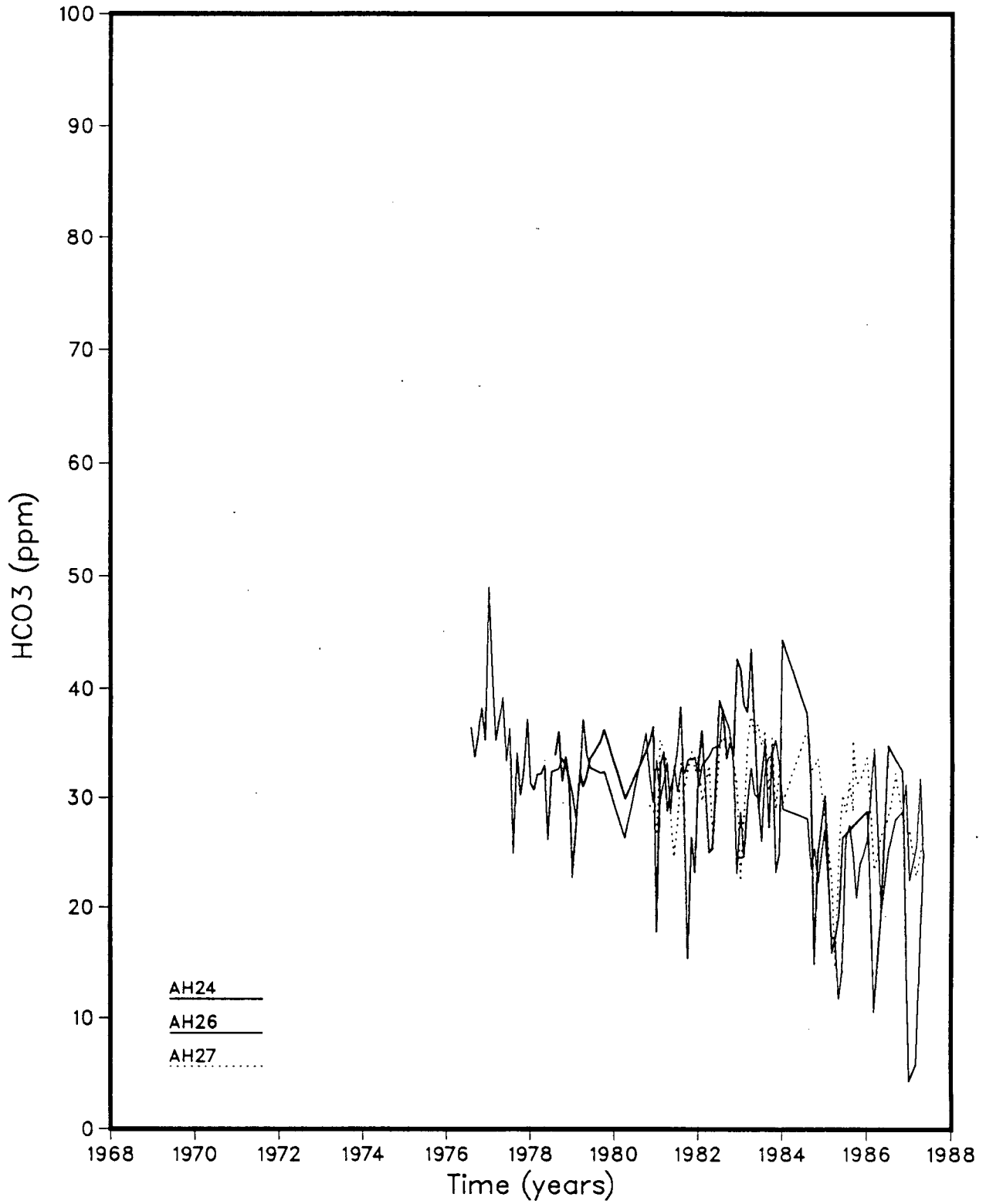
Water Chemistry (HCO₃)



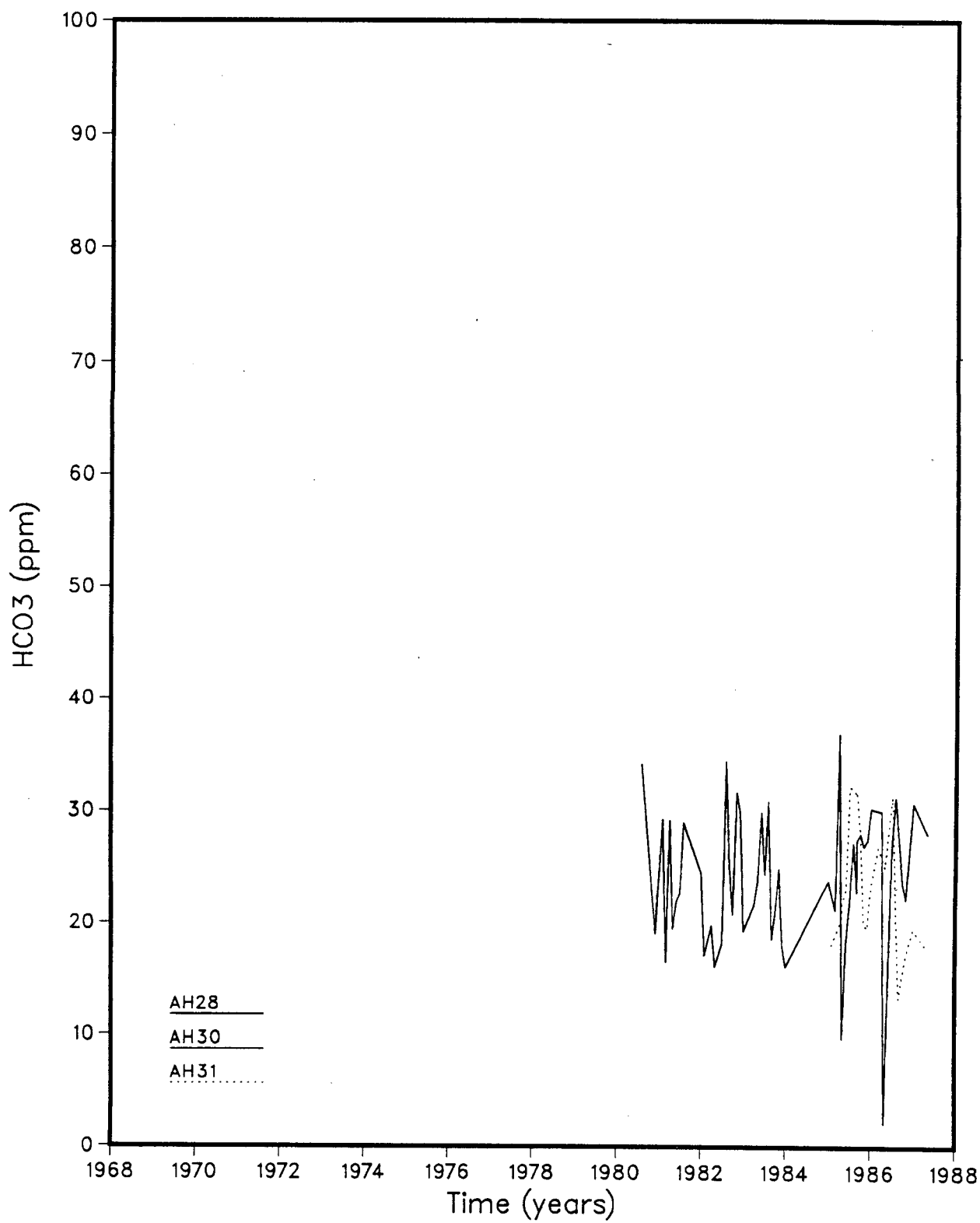
Water Chemistry (HCO₃)



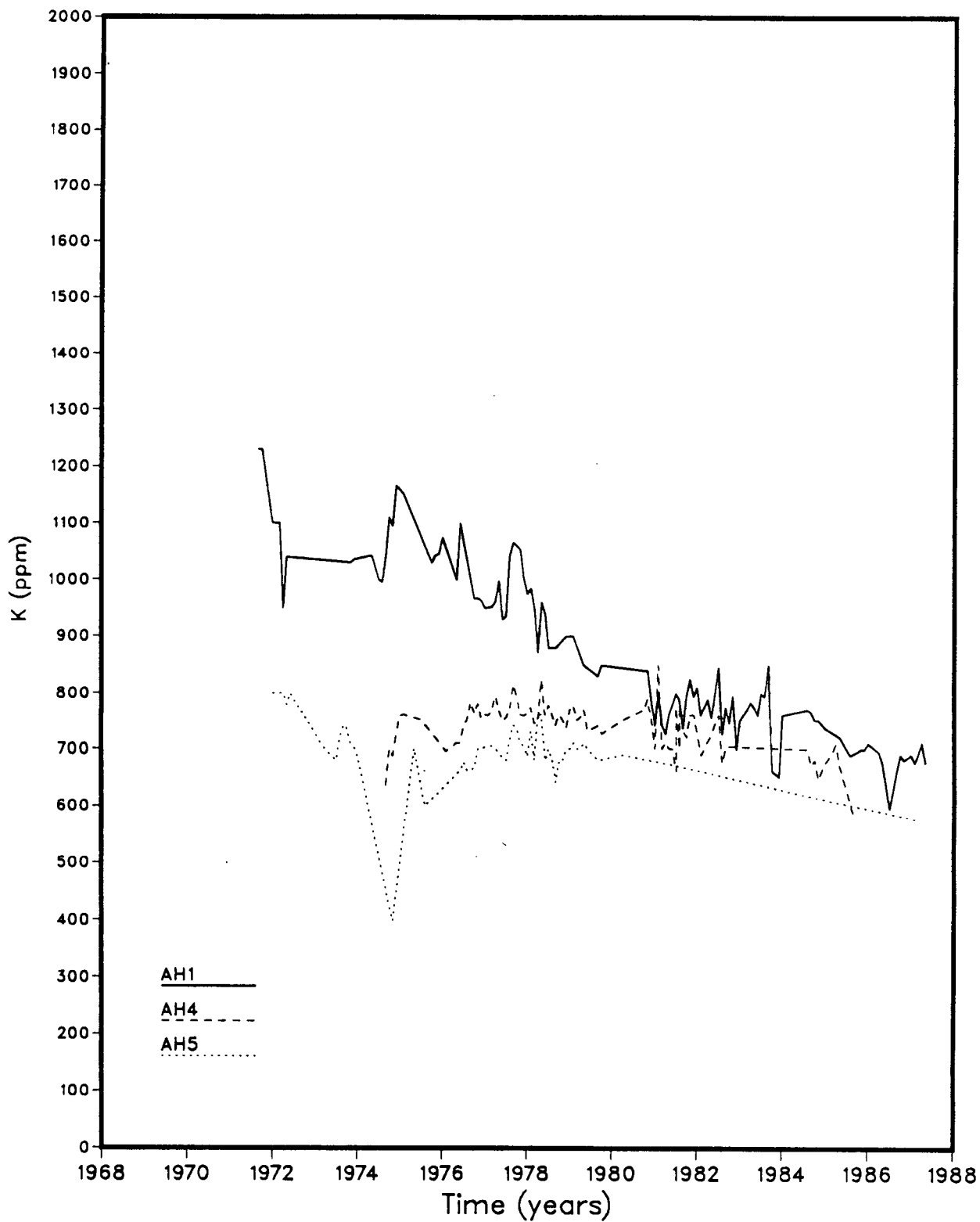
Water Chemistry (HCO₃)



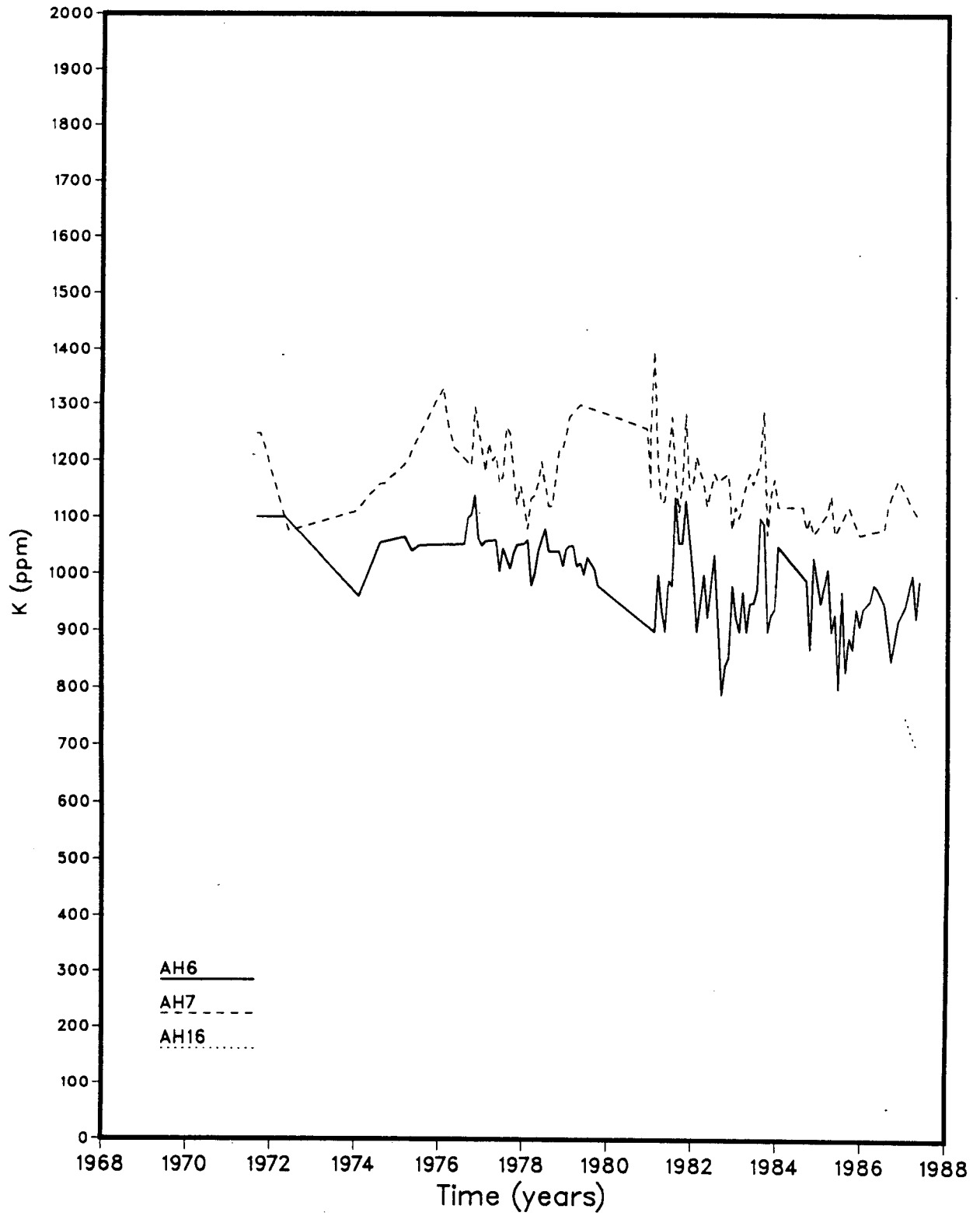
Water Chemistry (HCO₃)



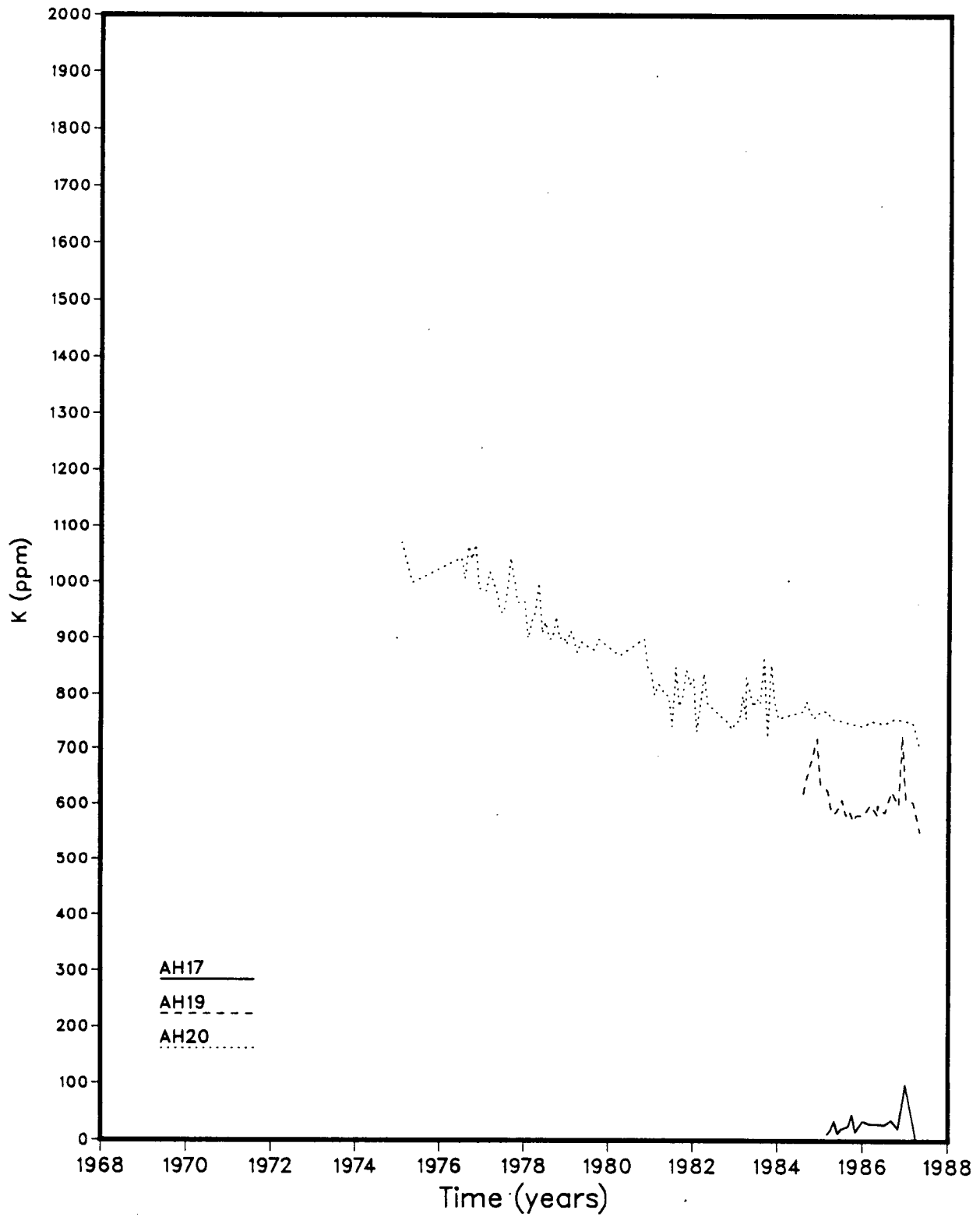
Water Chemistry (K)



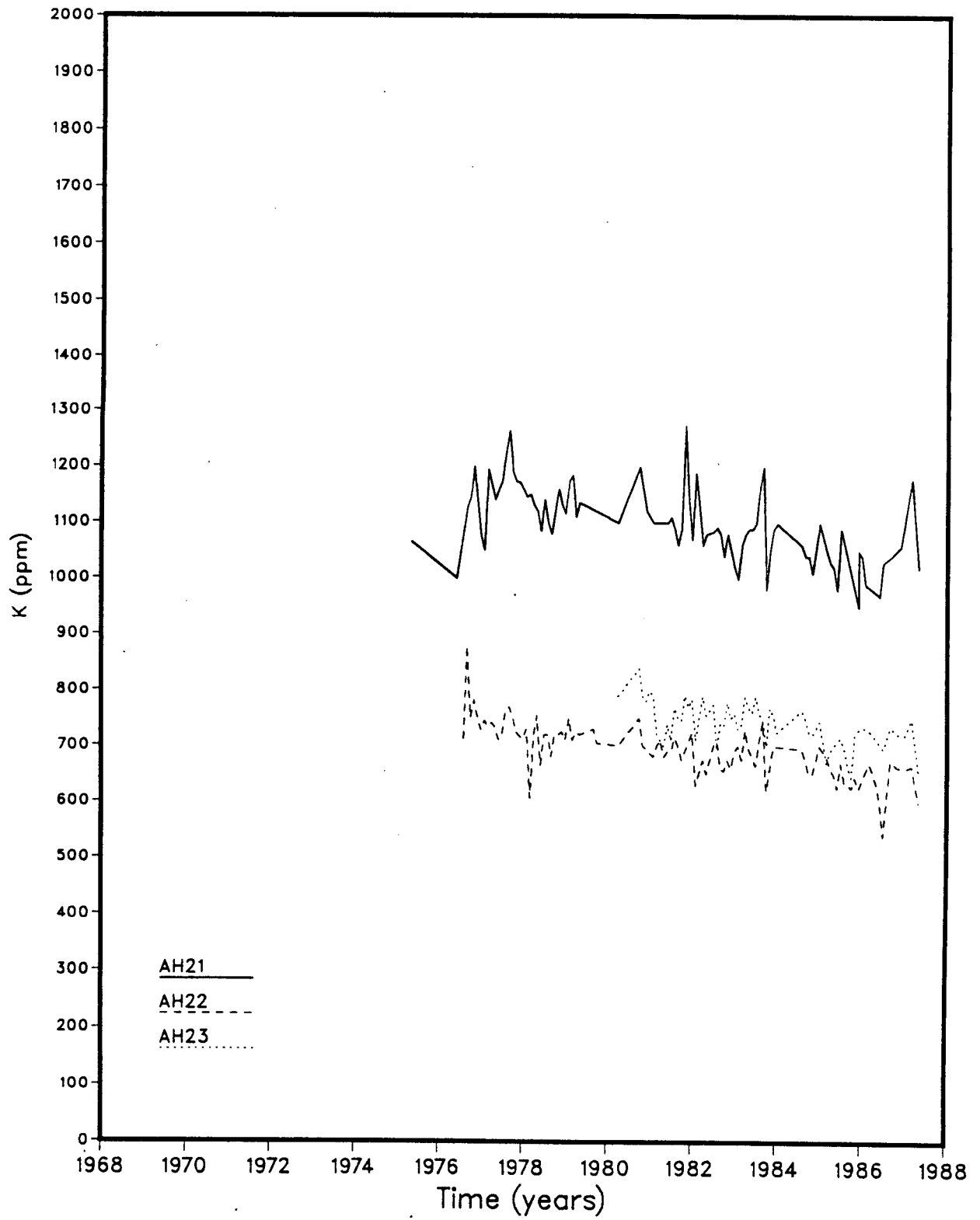
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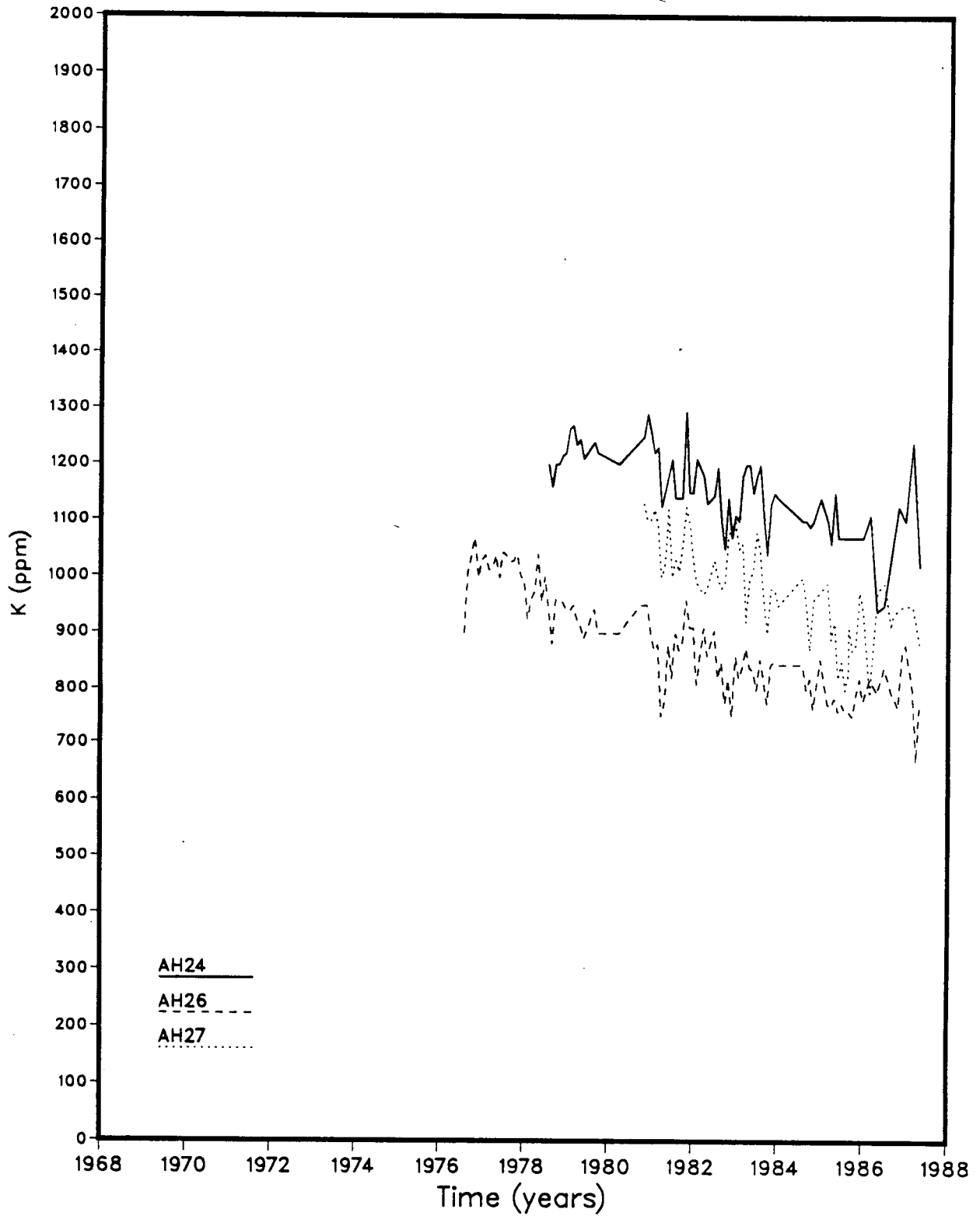
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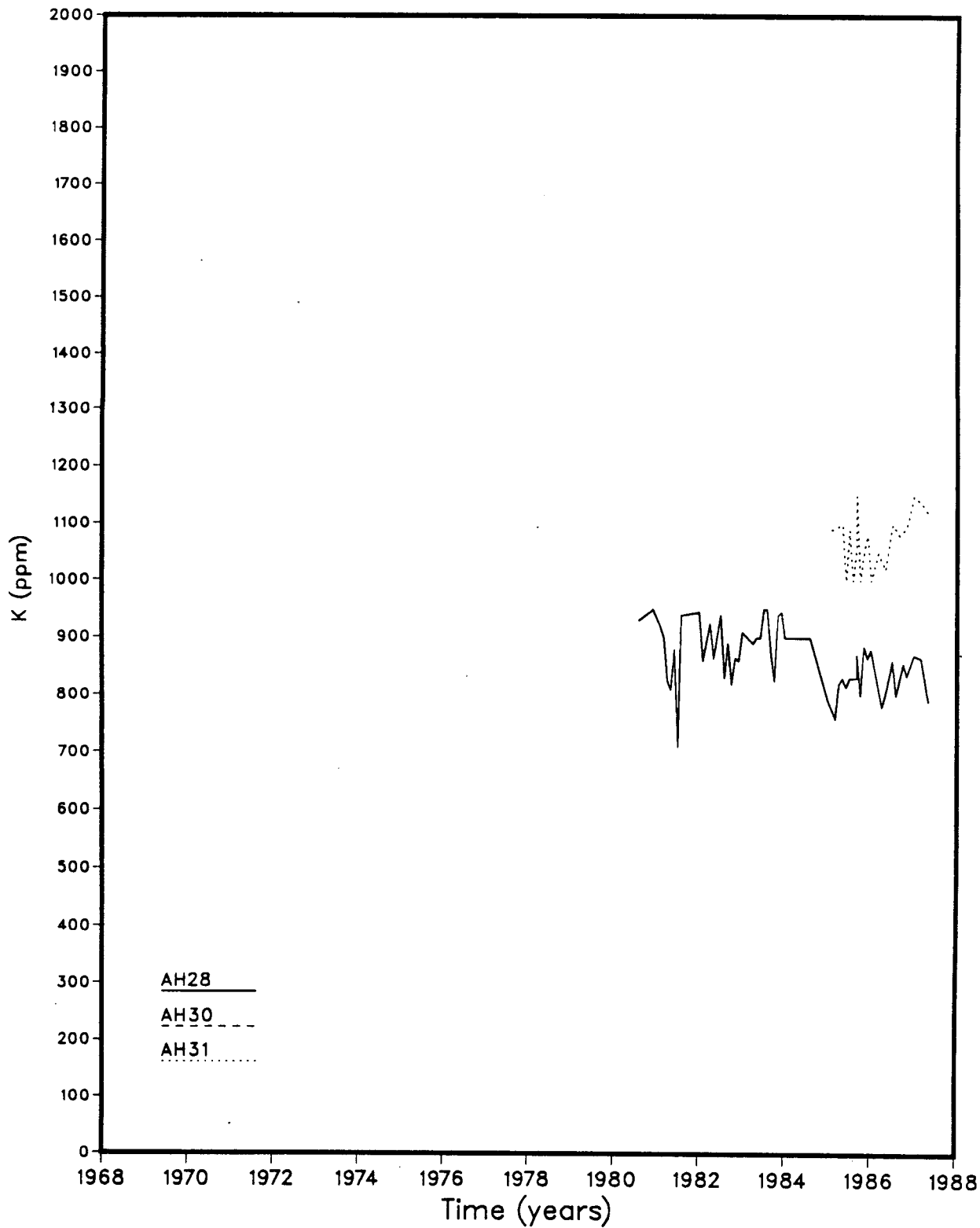
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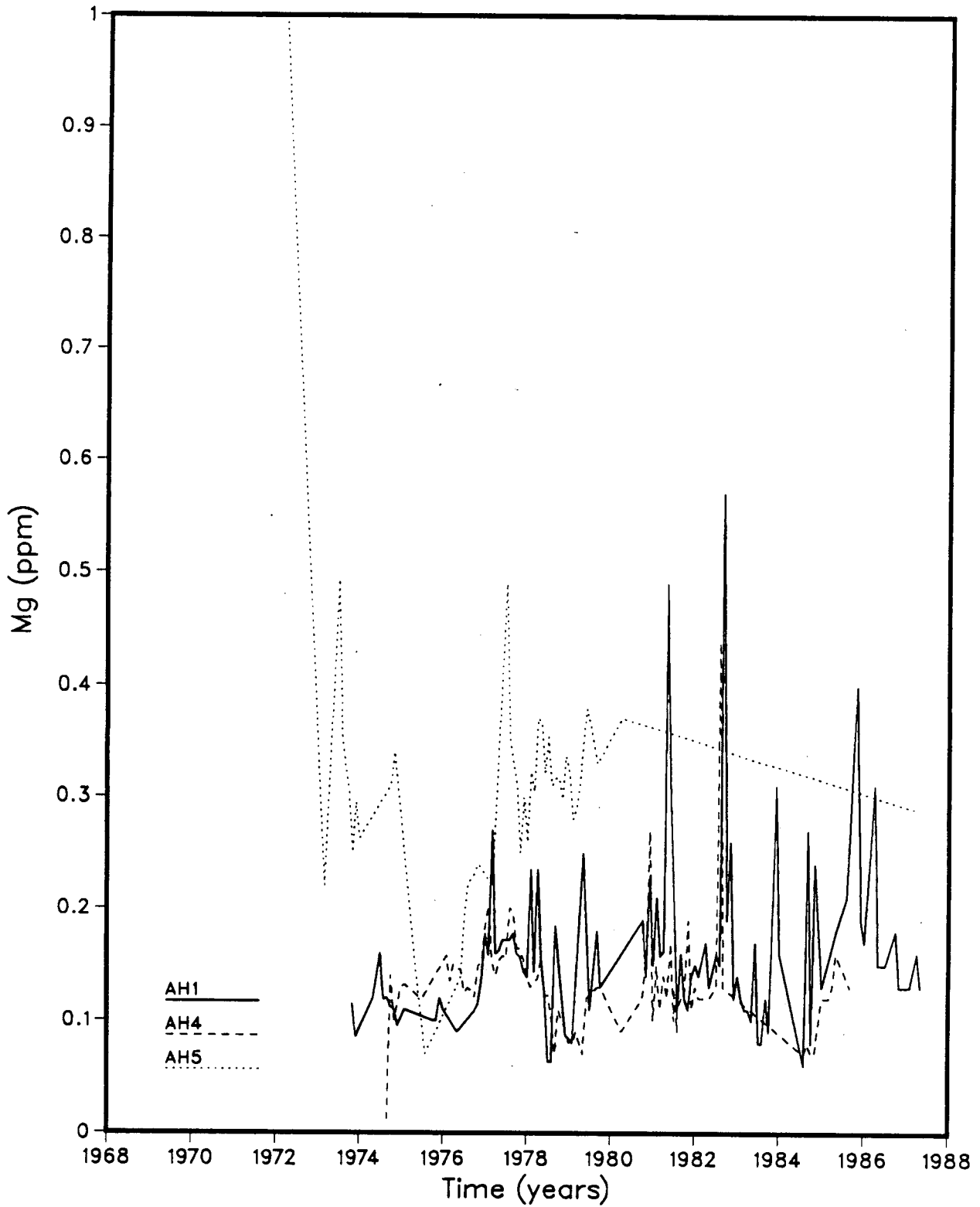
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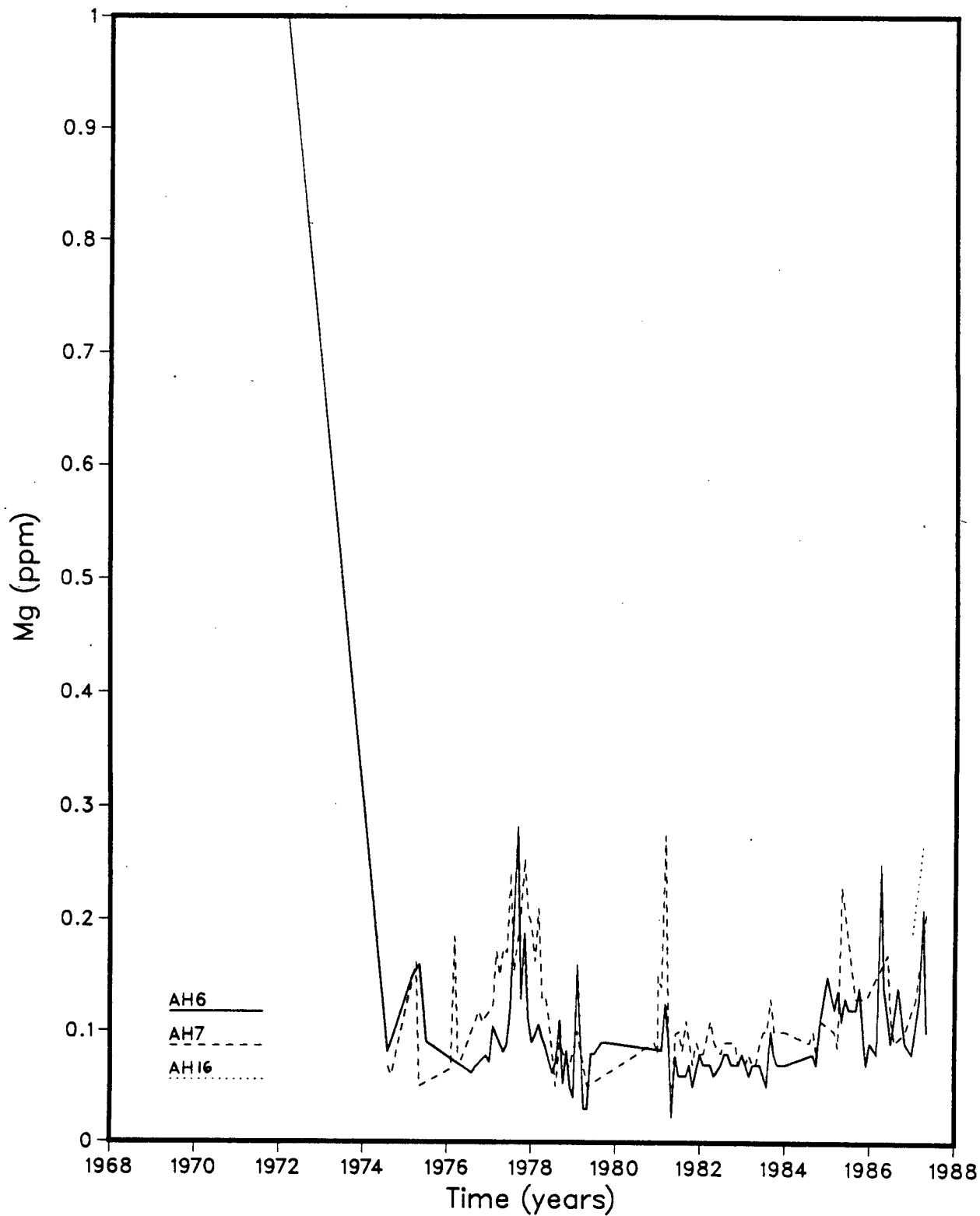
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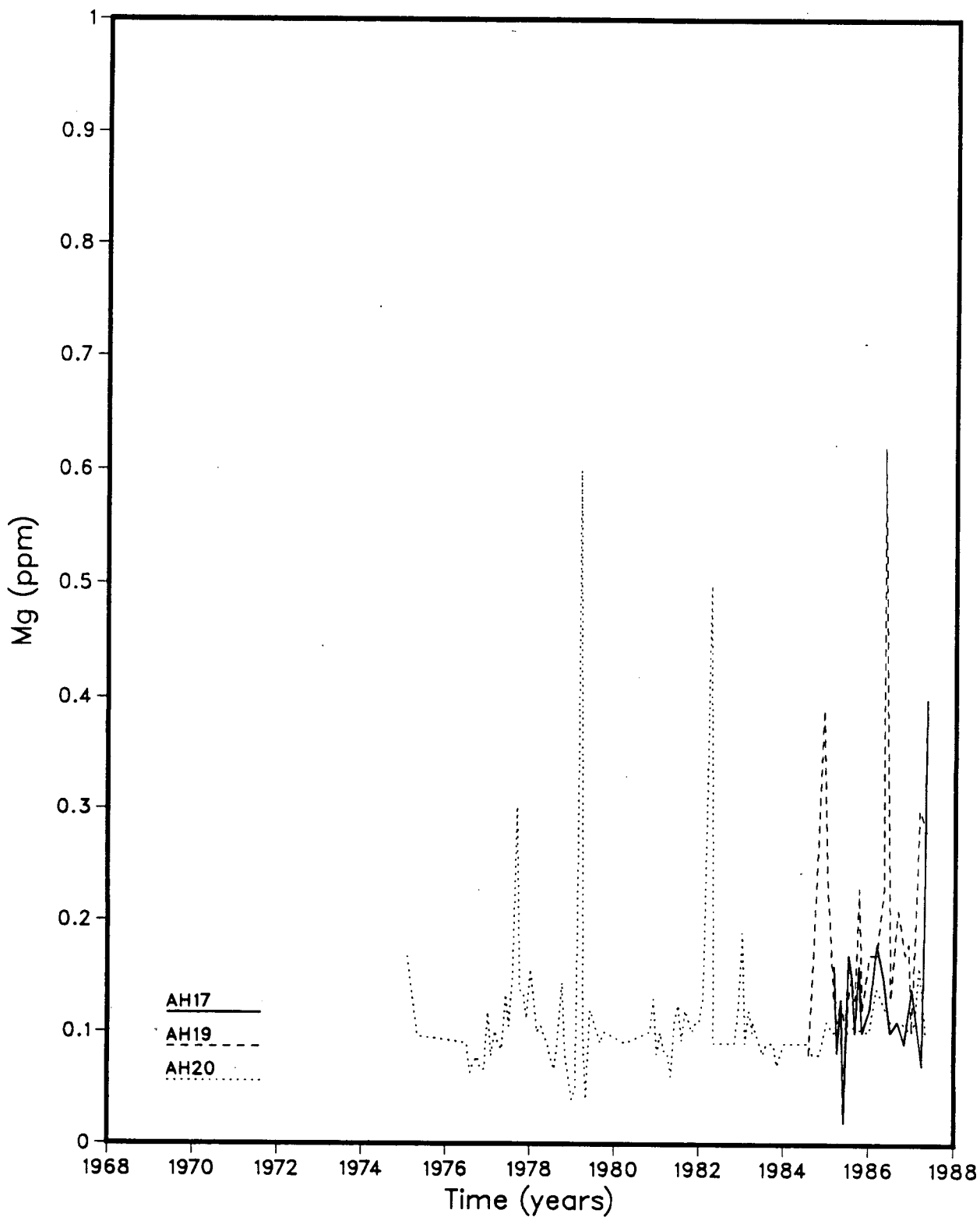
Water Chemistry (Mg)



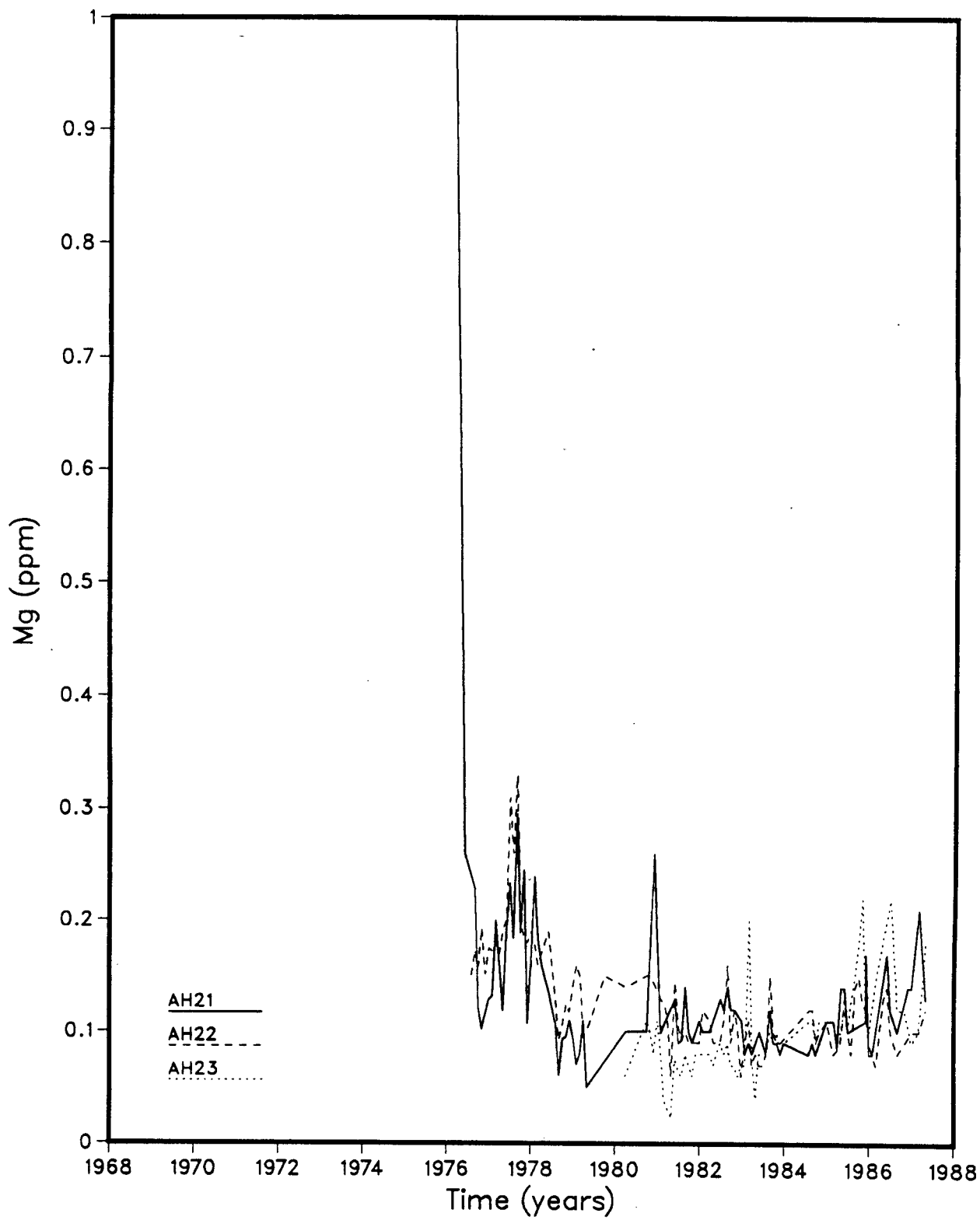
Water Chemistry (Mg)



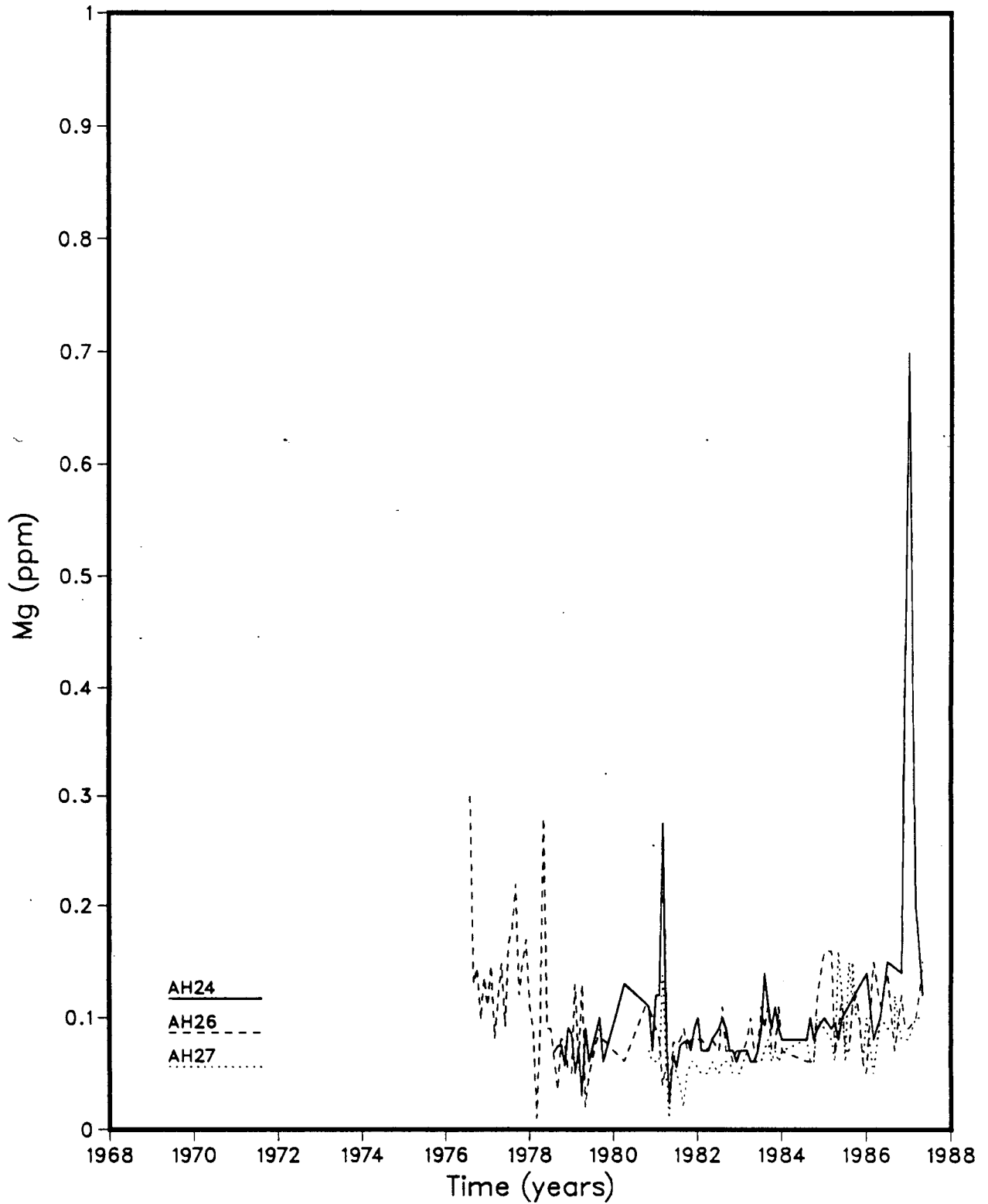
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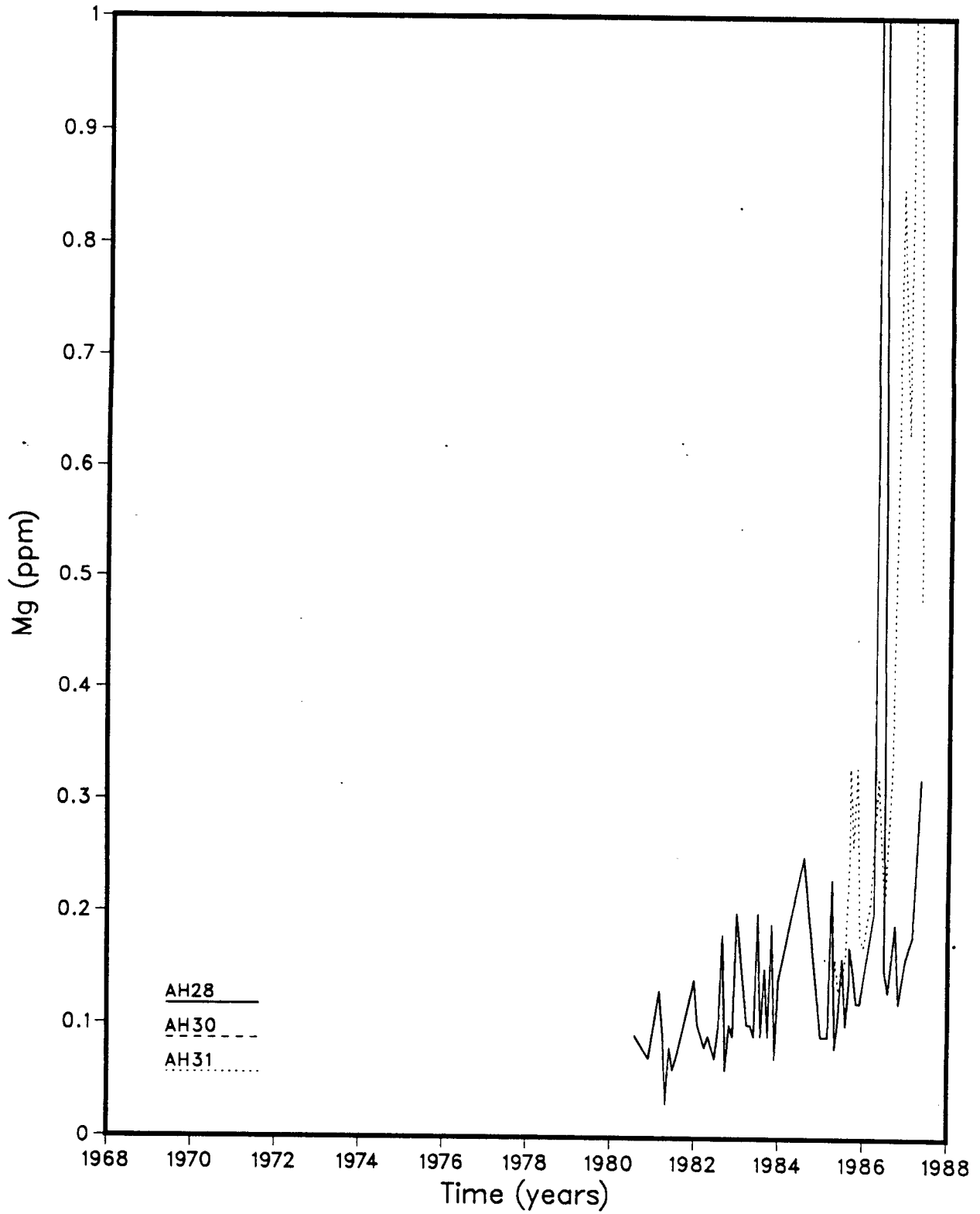
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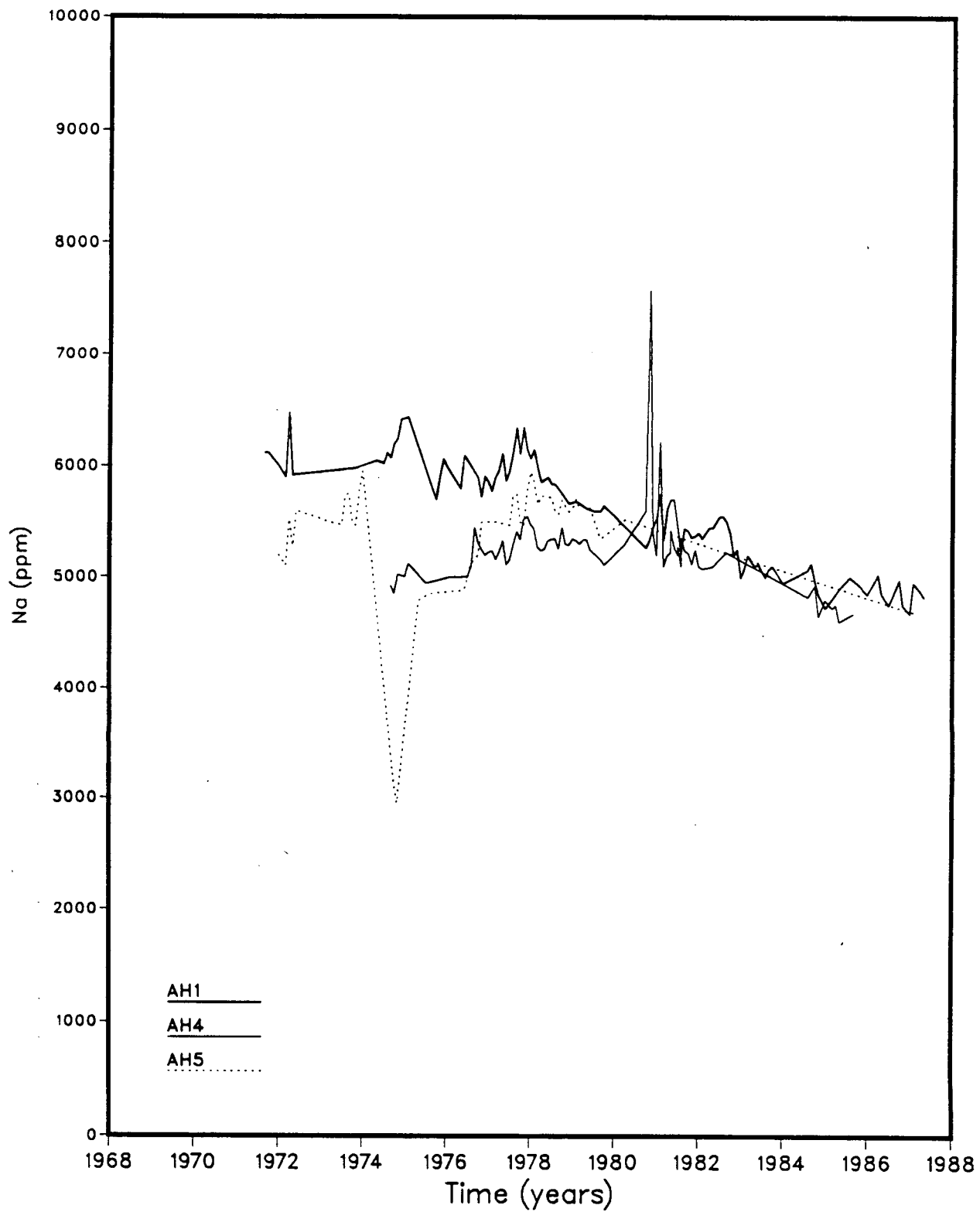
Water Chemistry (Mg)



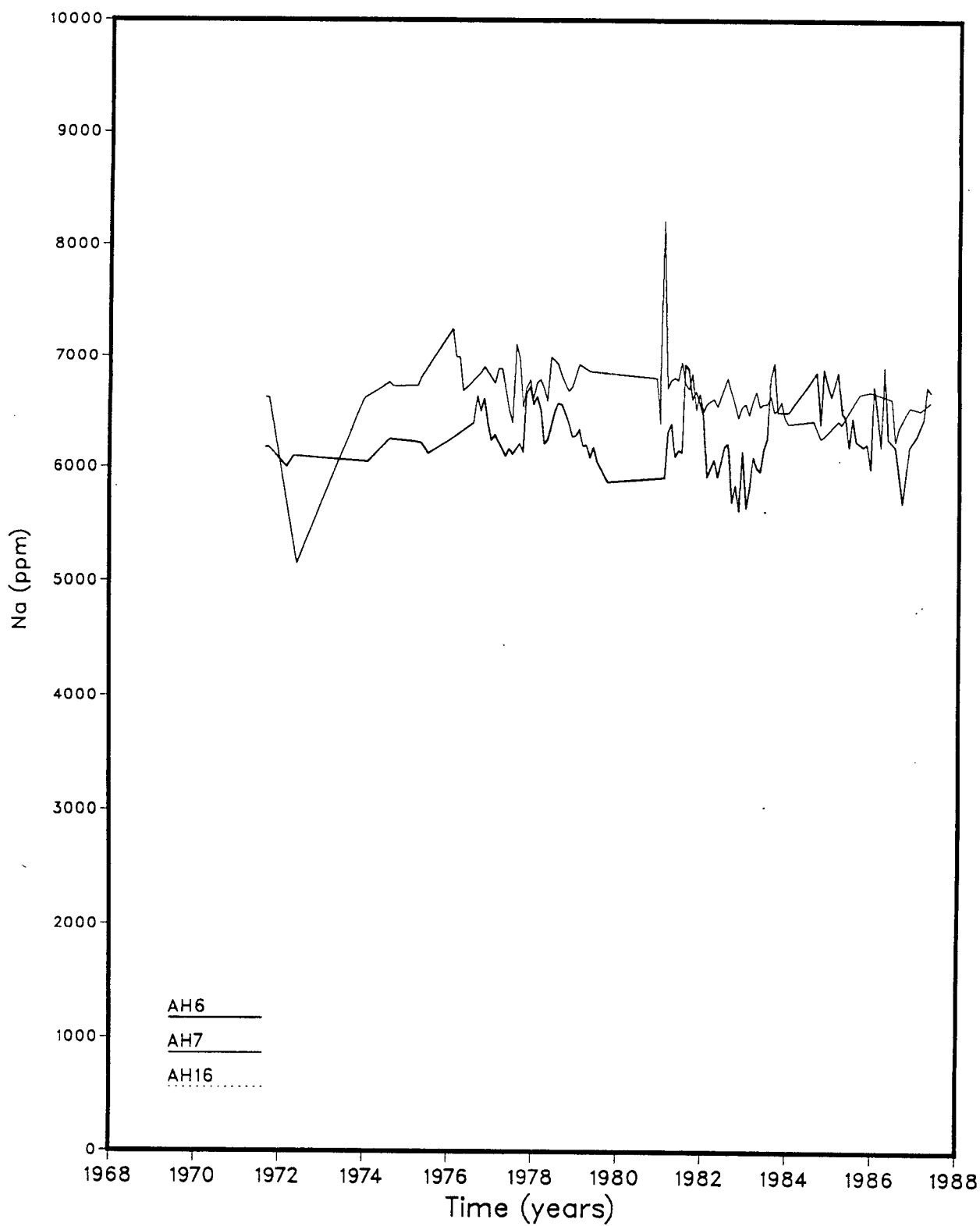
Water Chemistry (Mg)



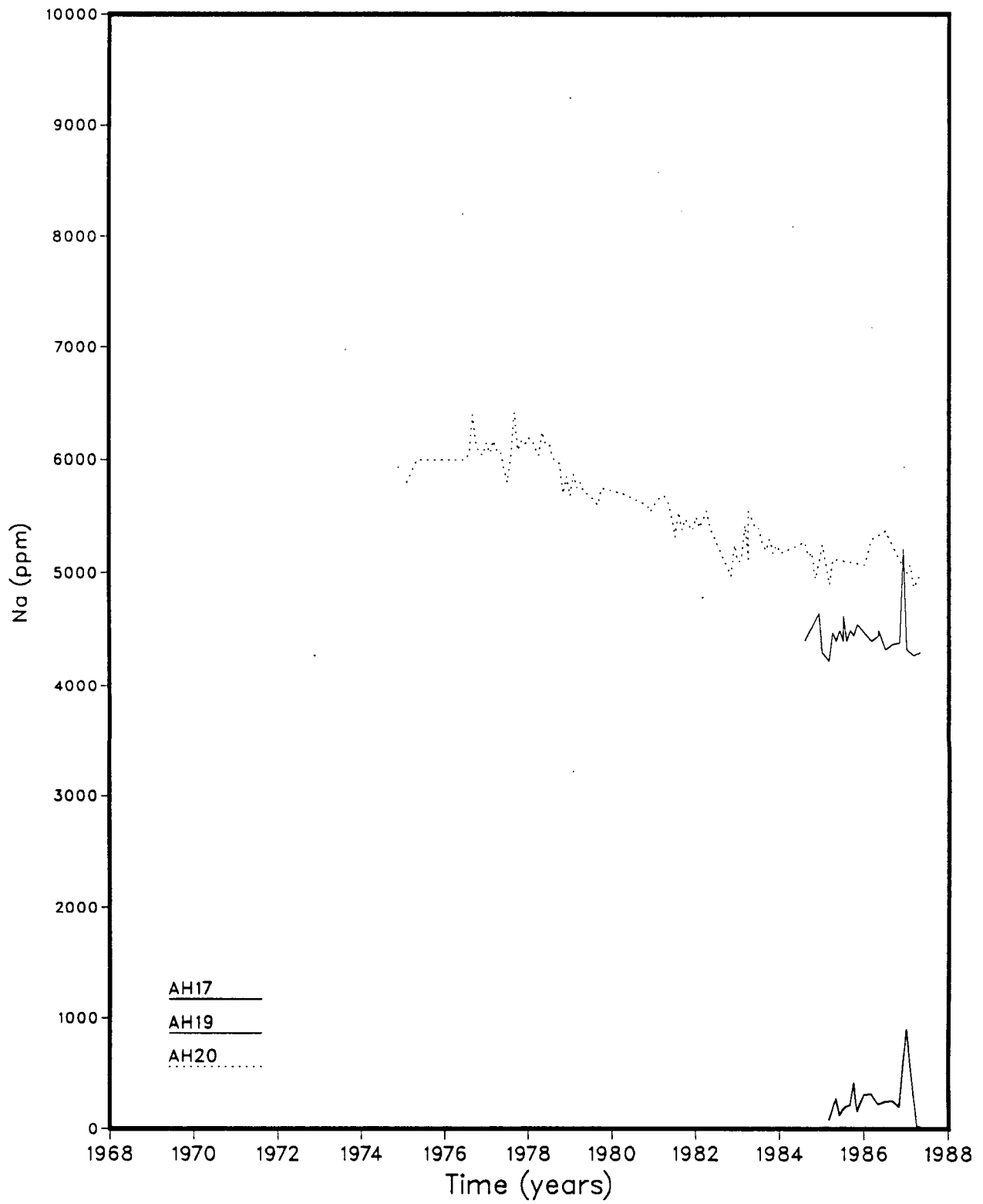
Water Chemistry (Na)



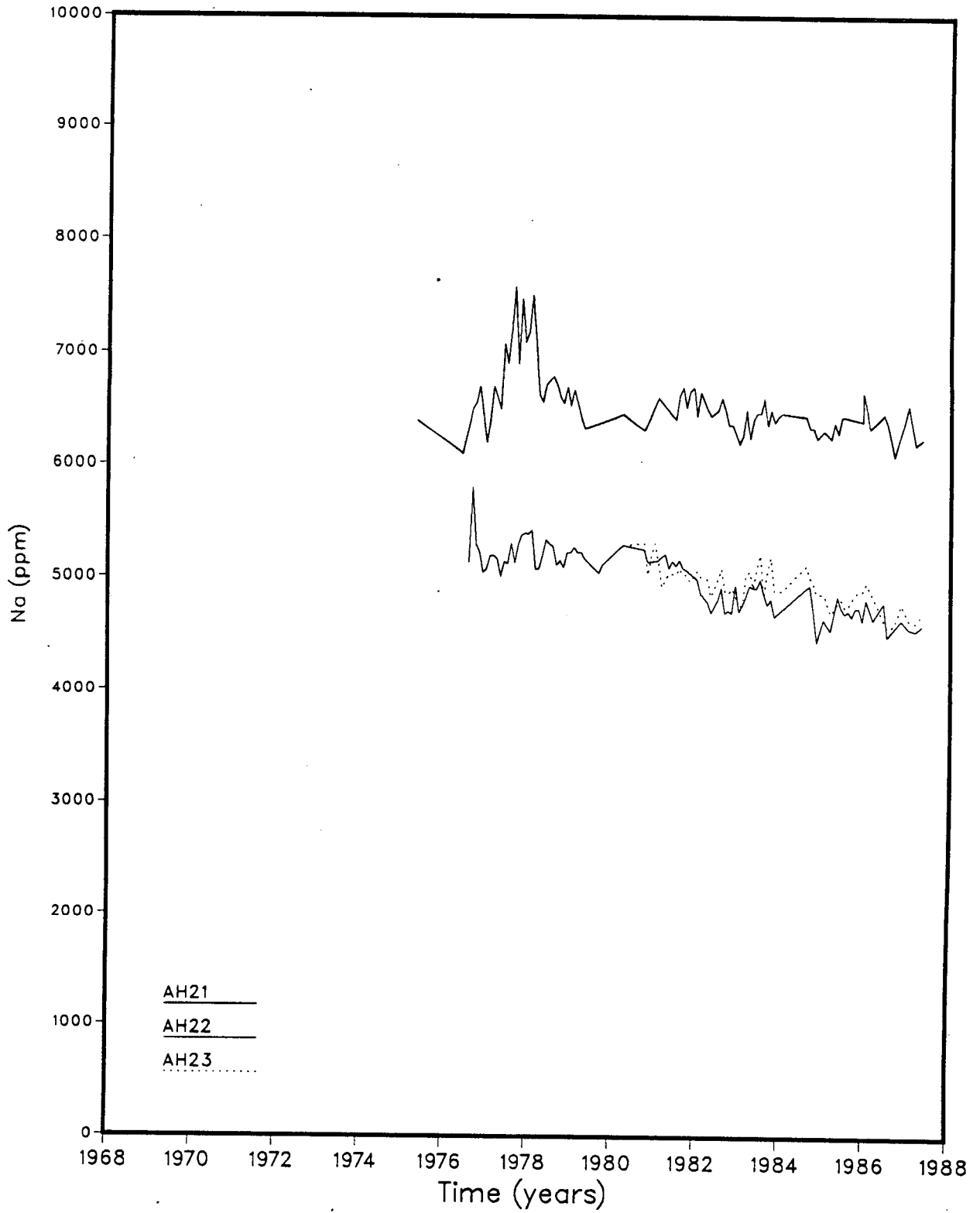
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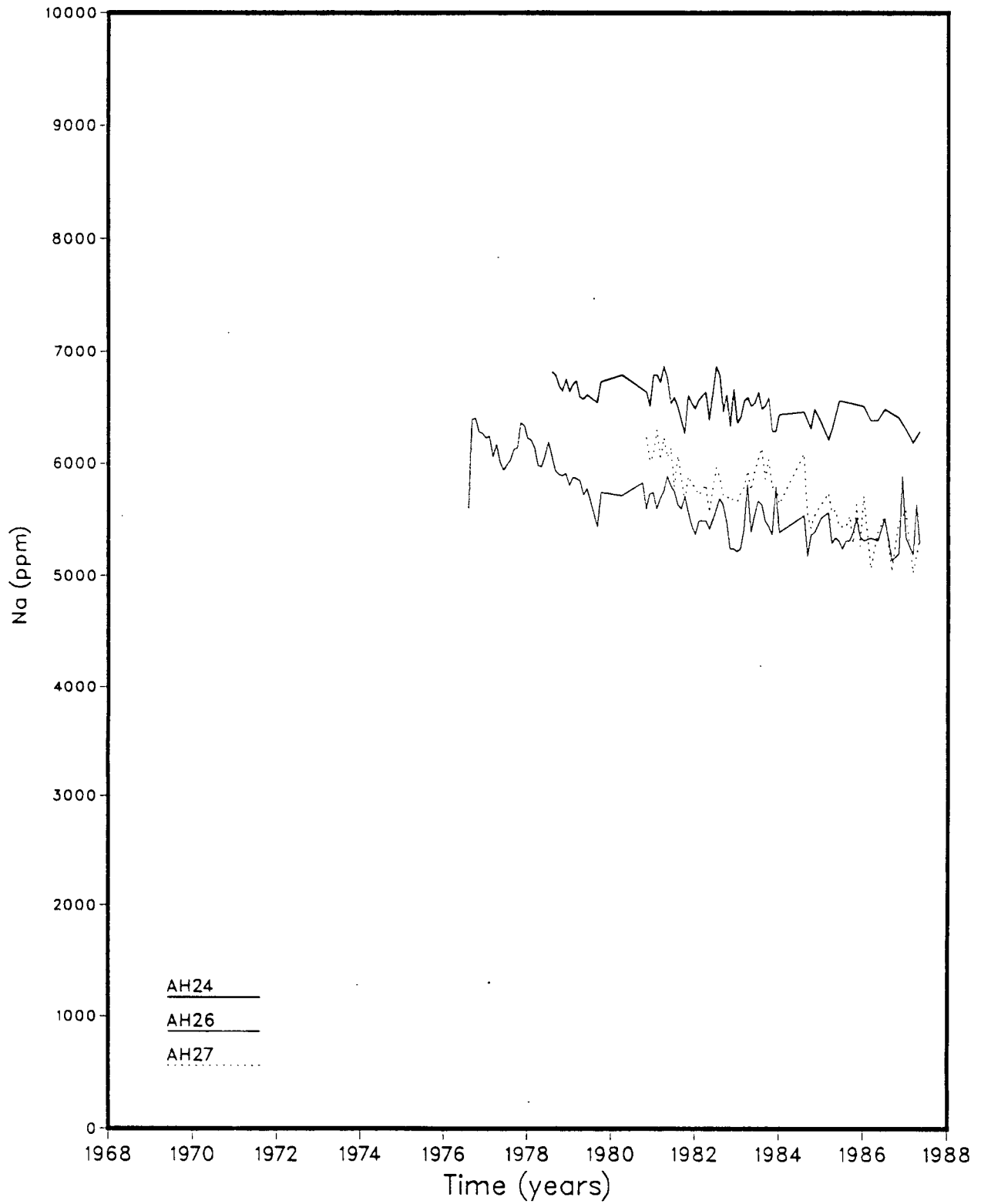
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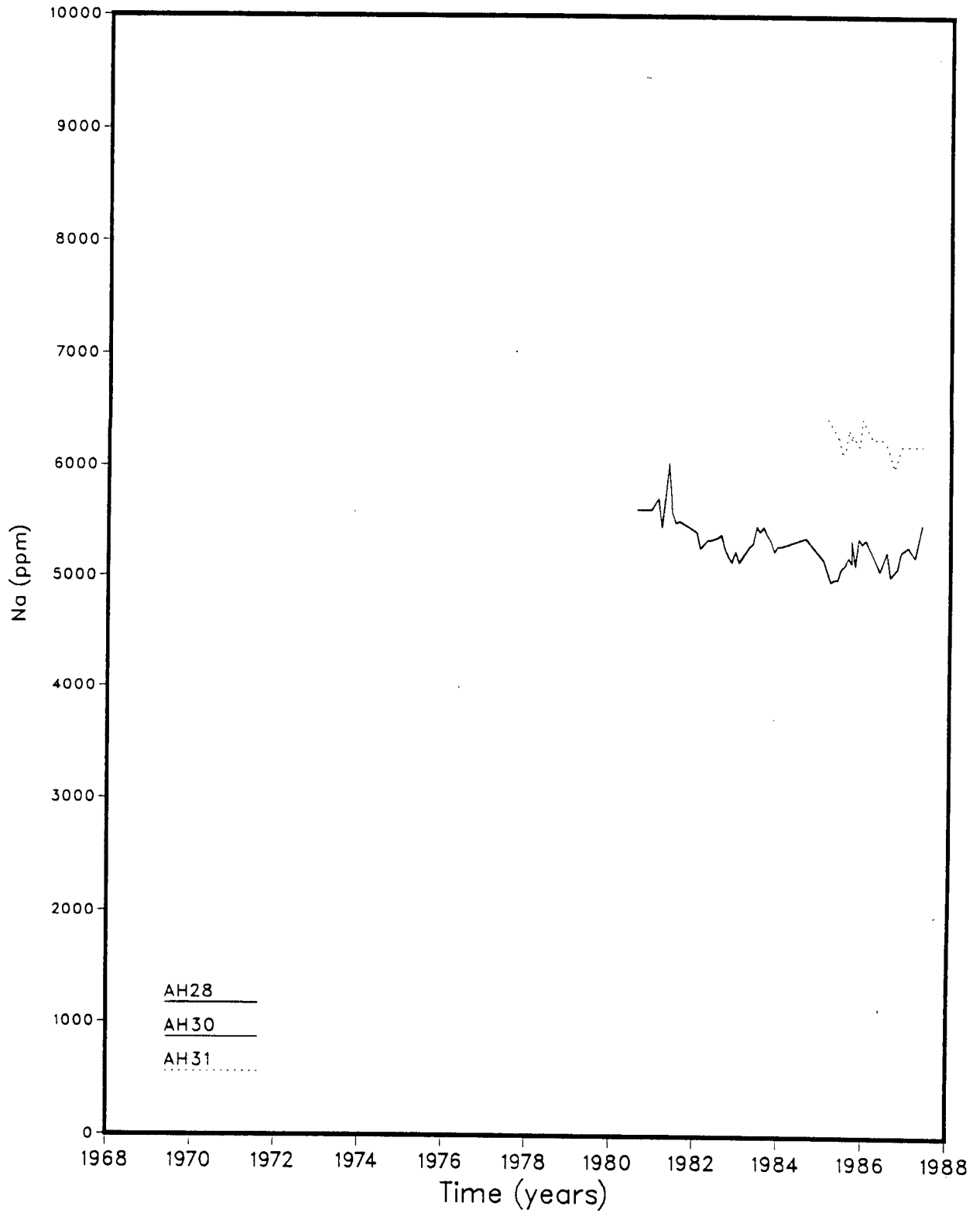
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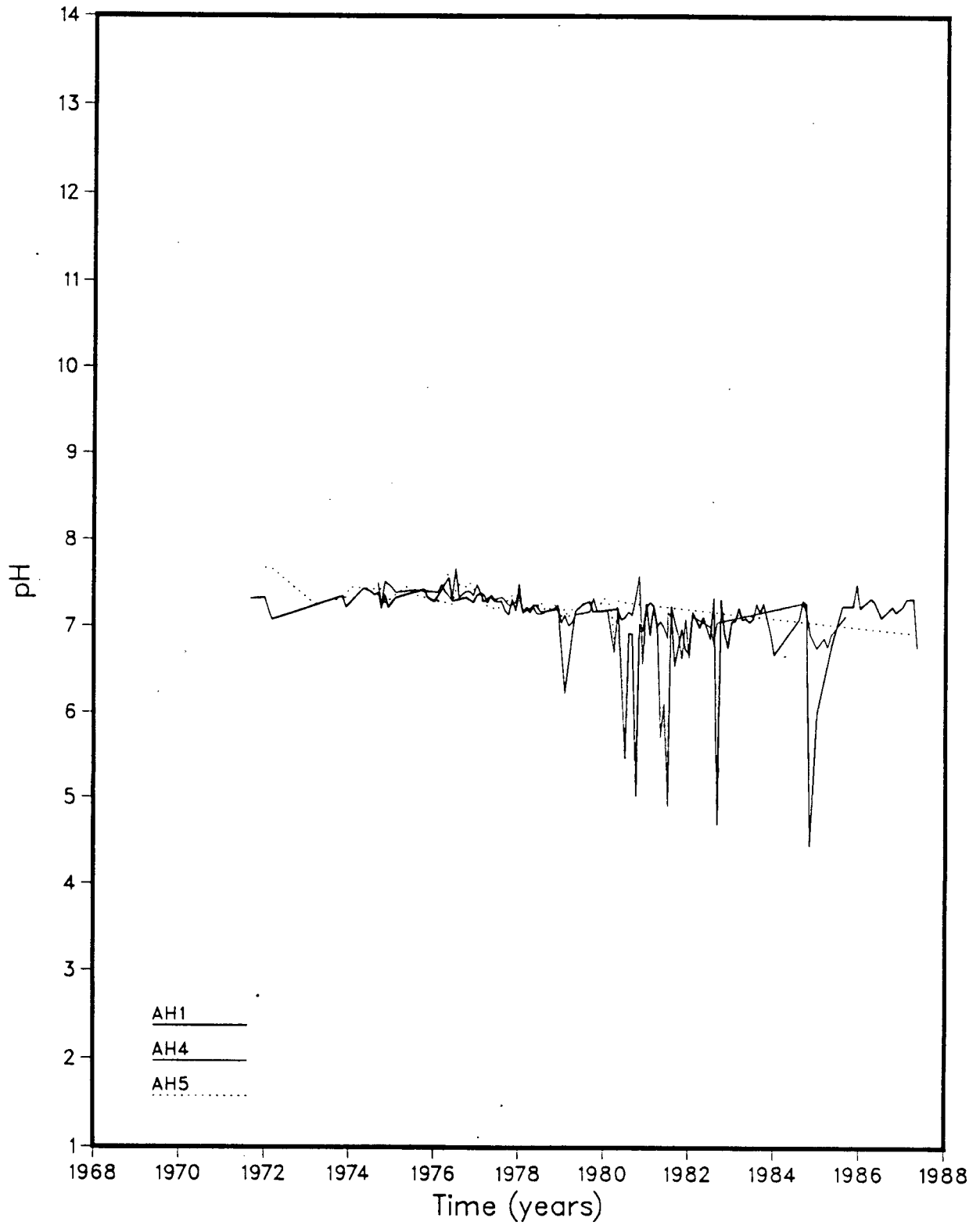
Water Chemistry (Na)



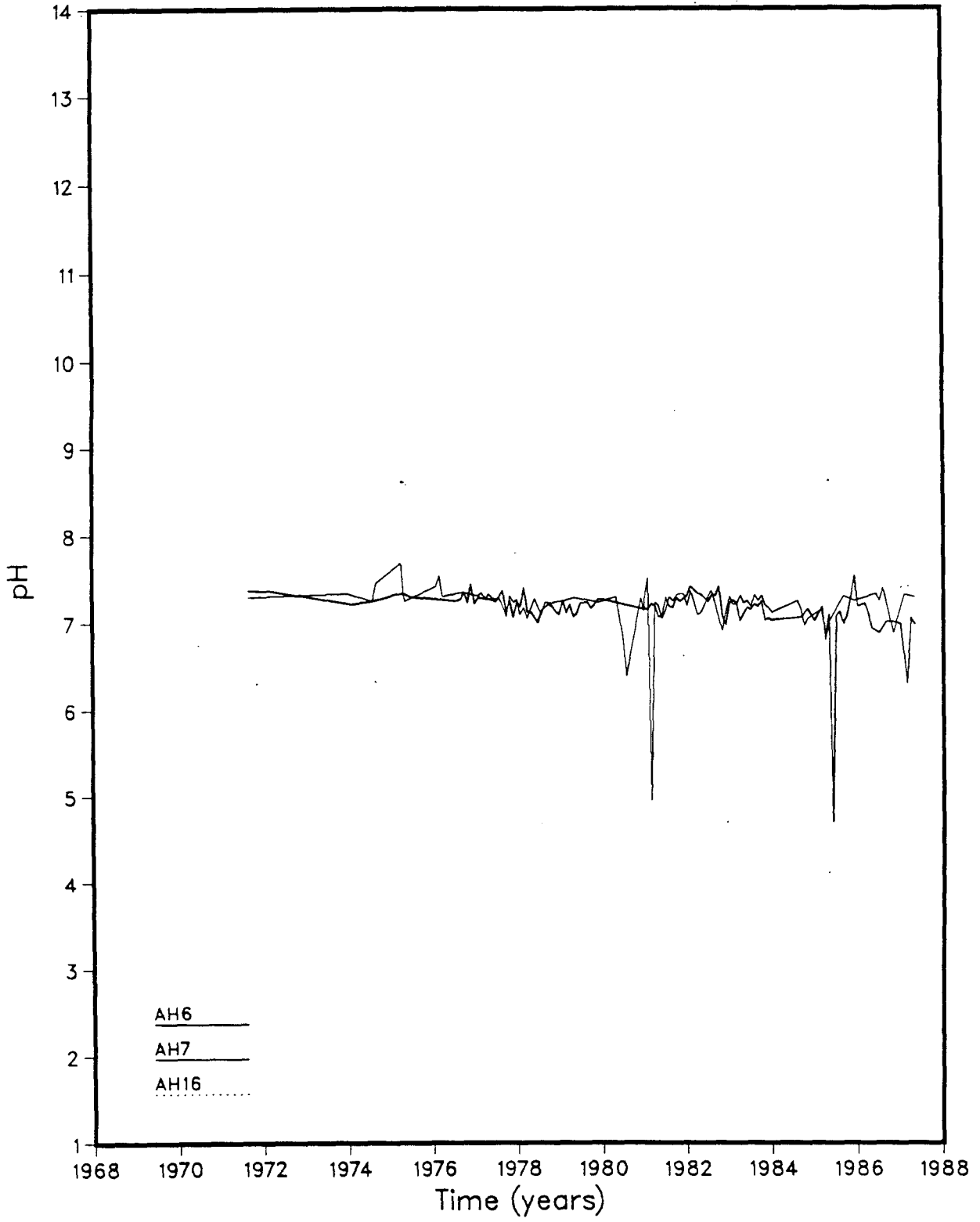
Water Chemistry (Na)



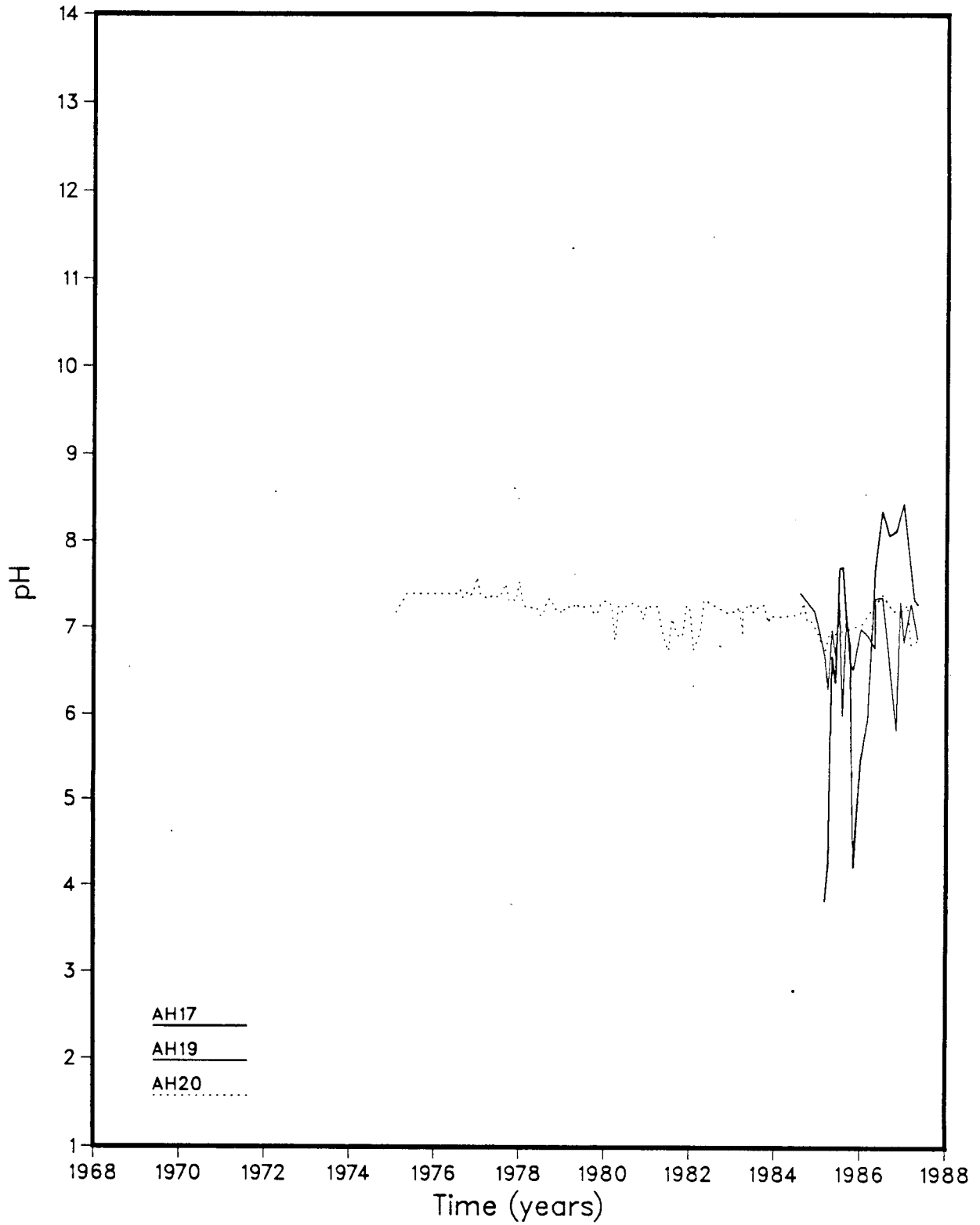
Water Chemistry (pH)



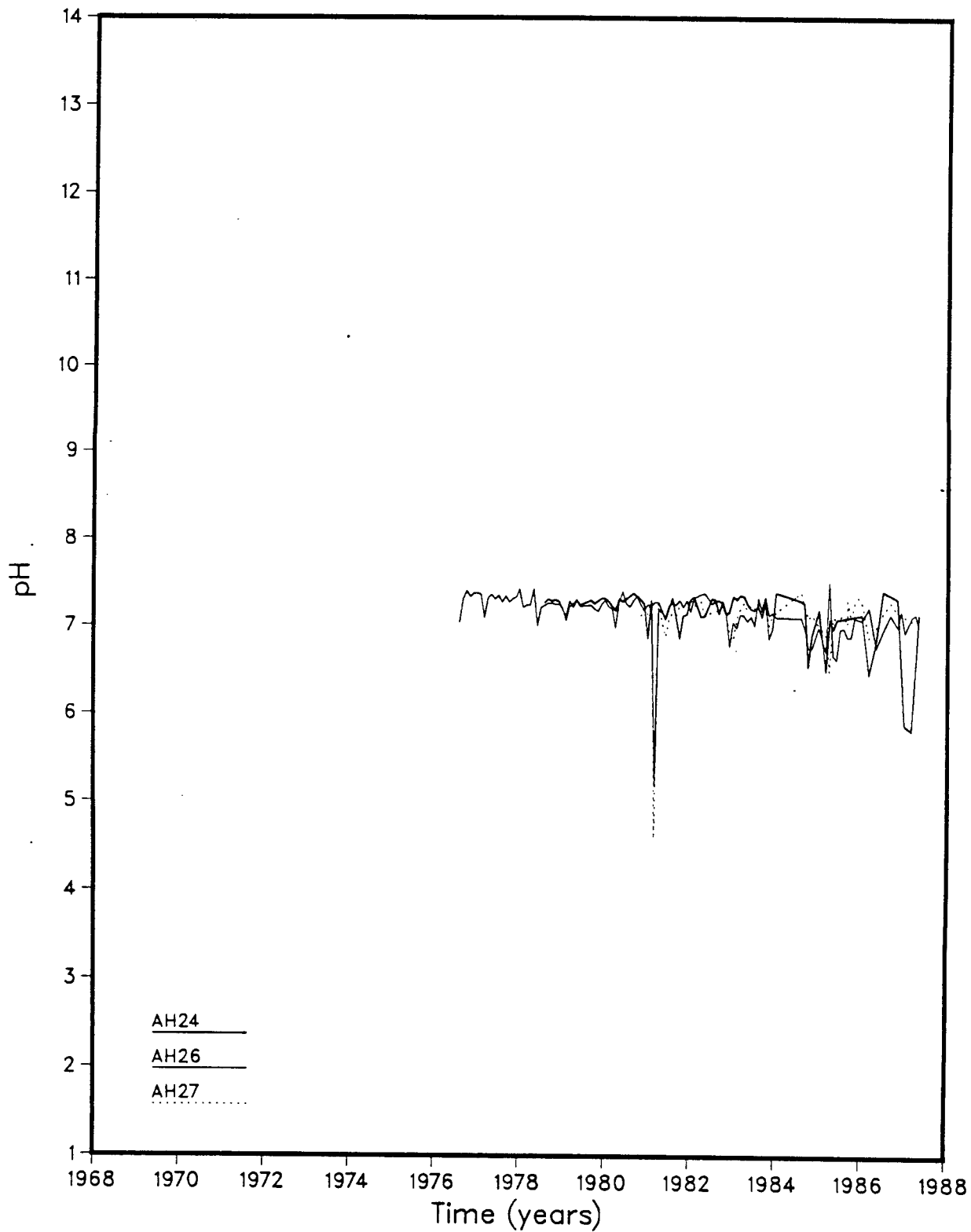
Water Chemistry (pH)



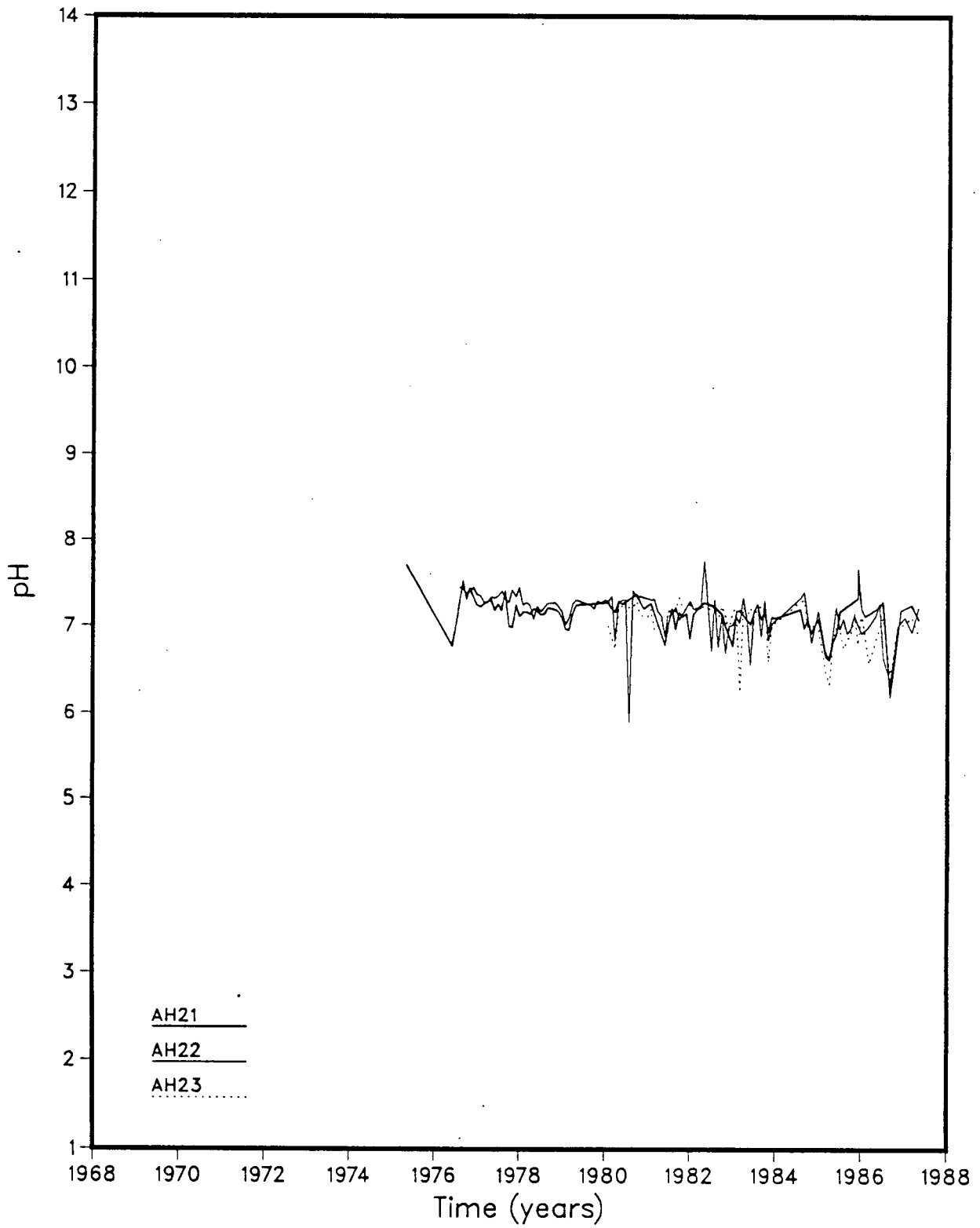
Water Chemistry (pH)



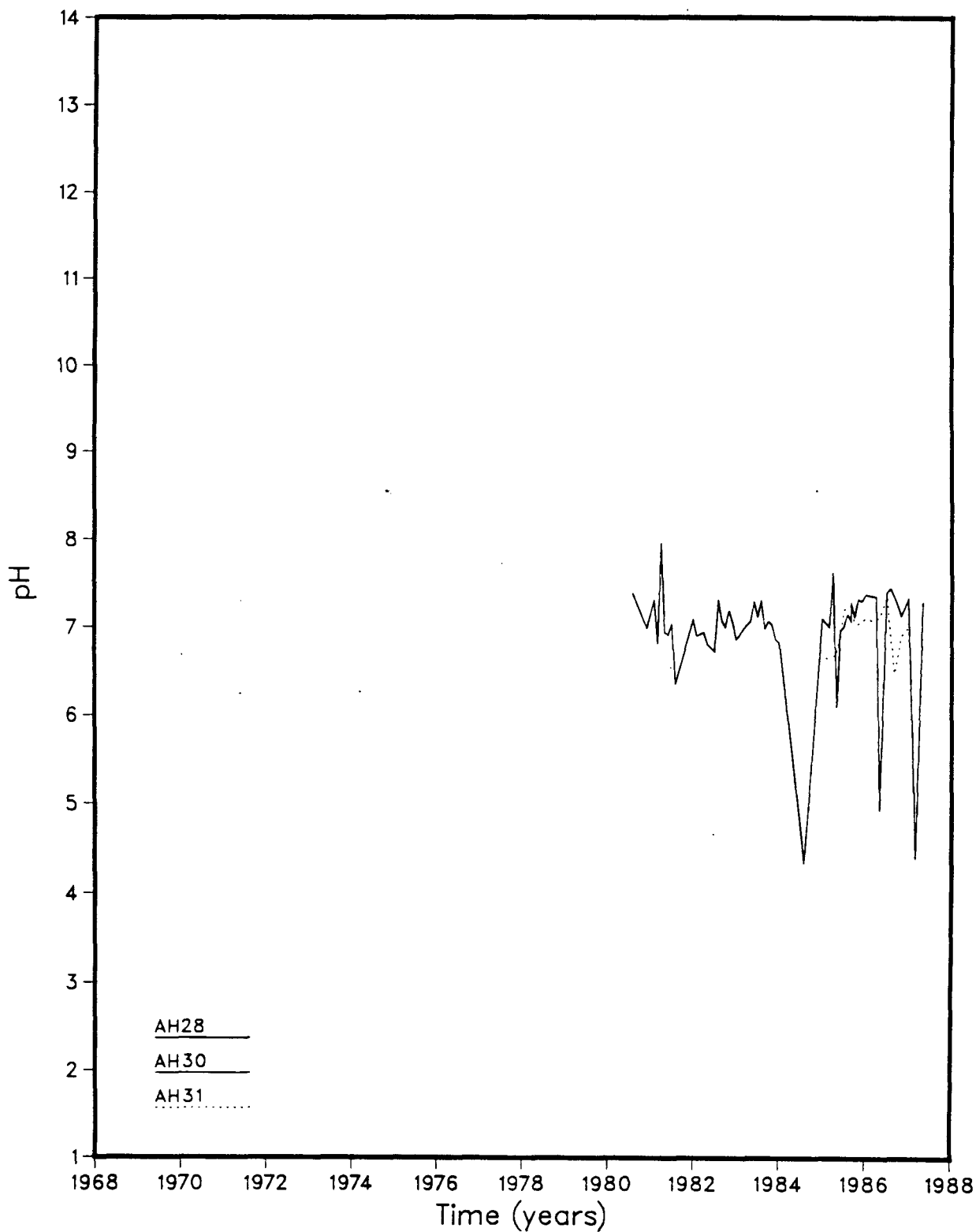
Water Chemistry (pH)



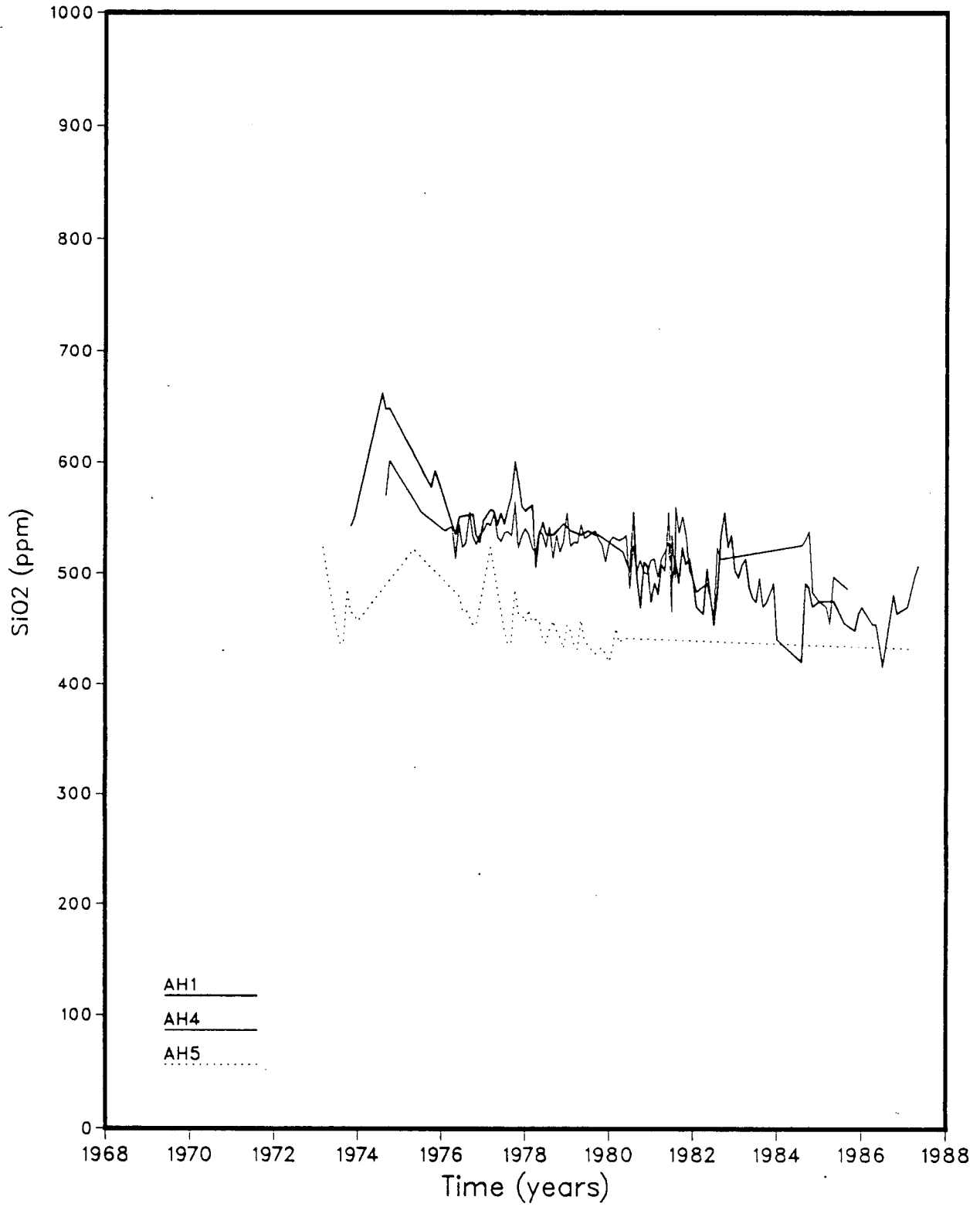
Water Chemistry (pH)



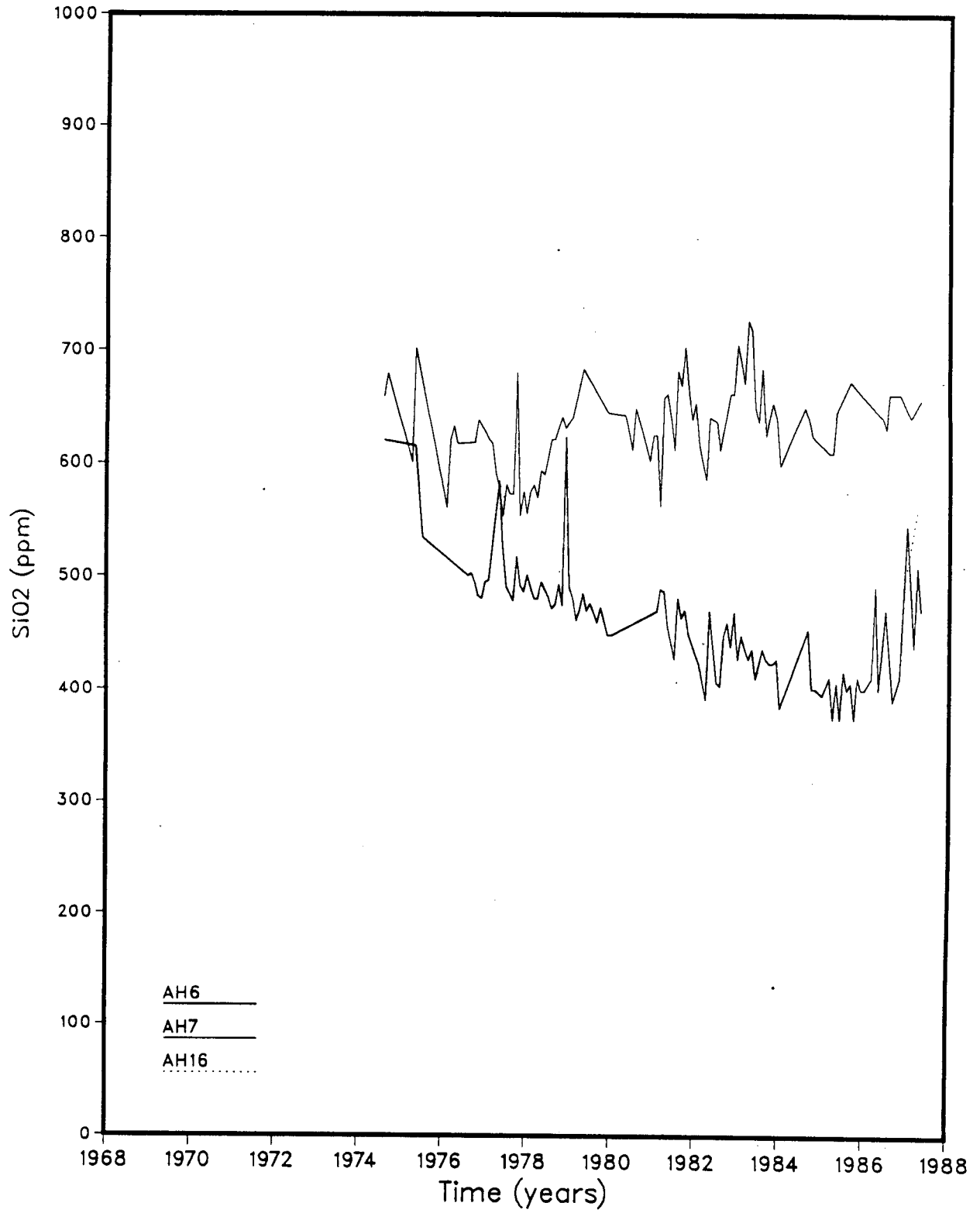
Water Chemistry (pH)



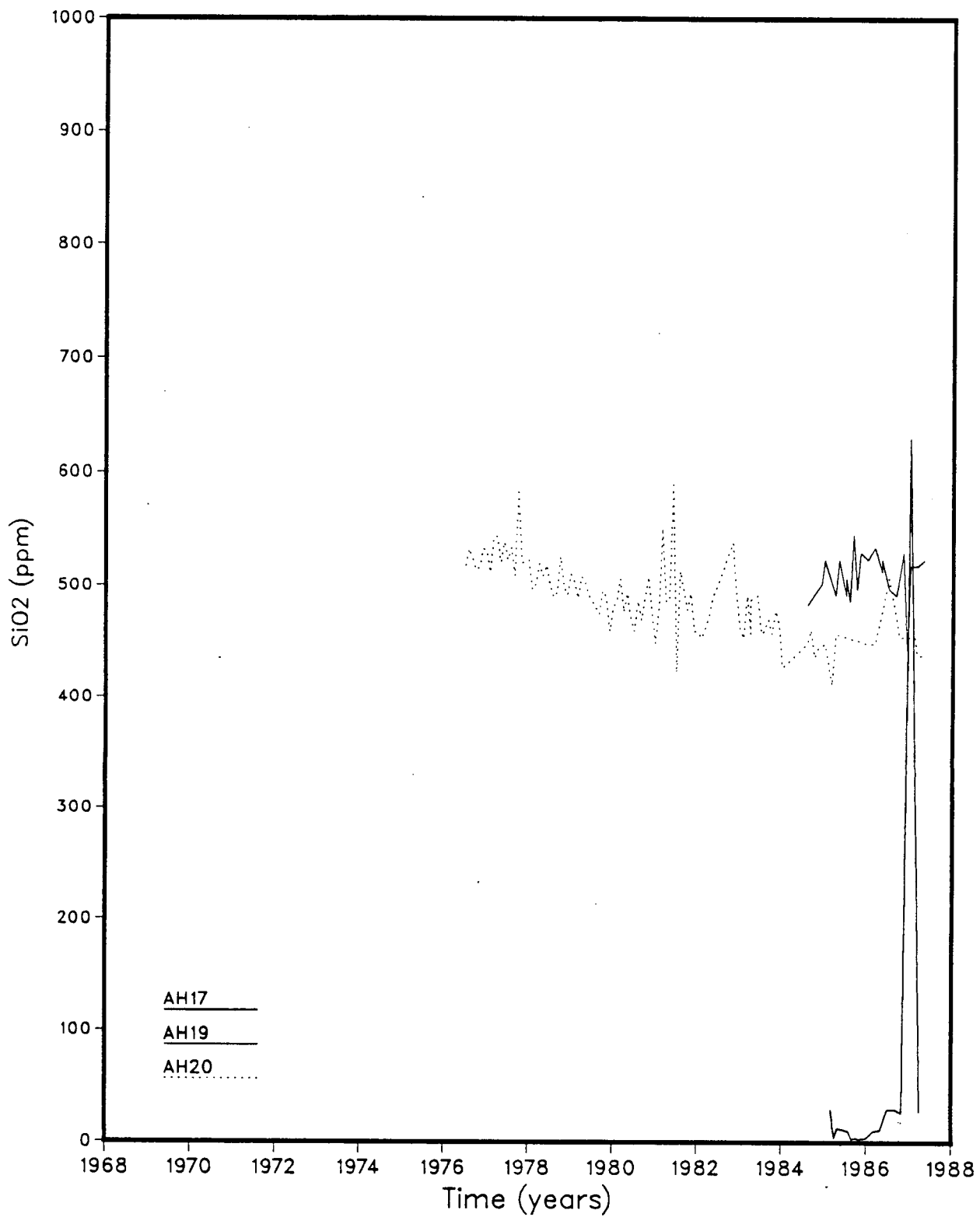
Water Chemistry (SiO₂)



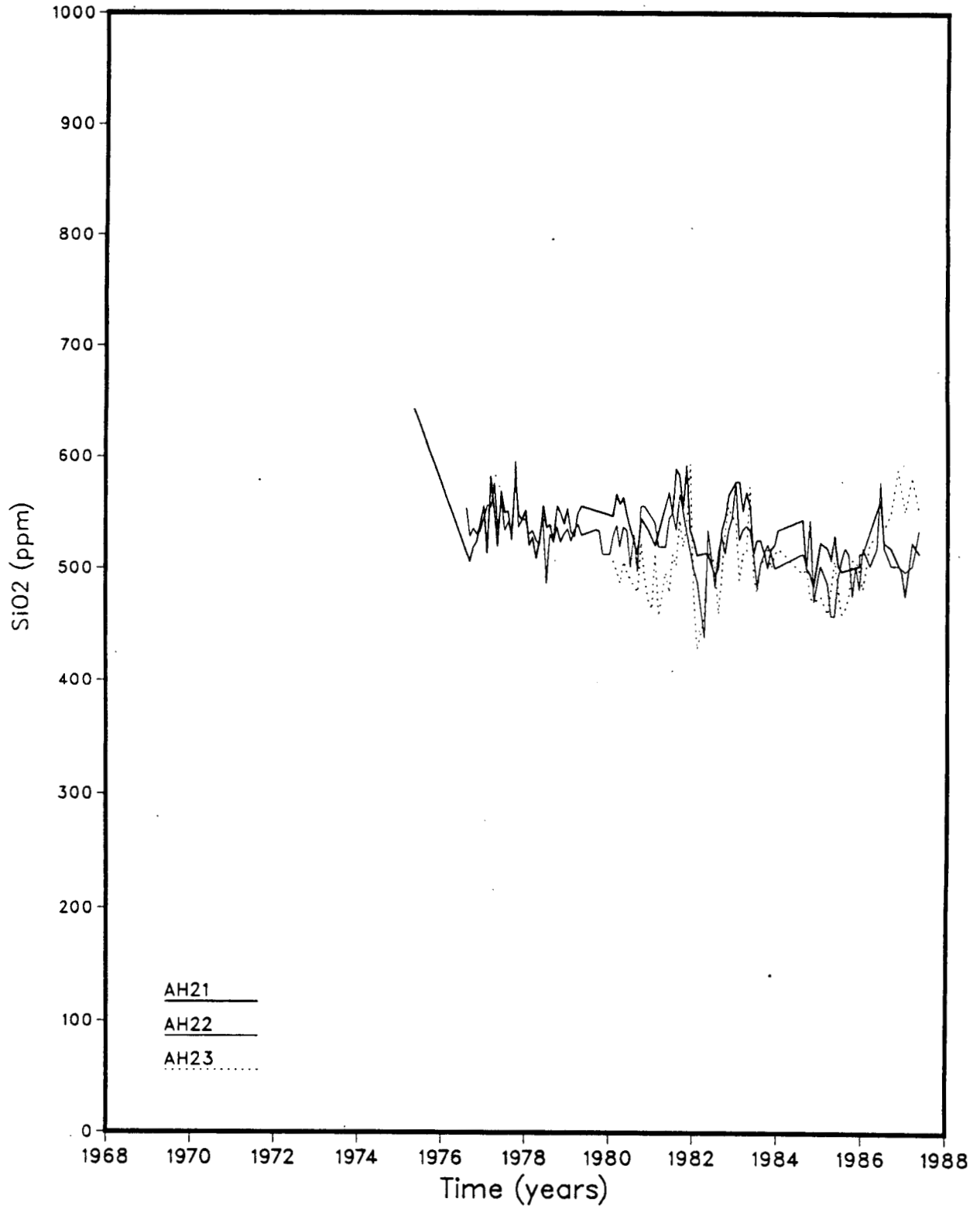
Water Chemistry (SiO₂)



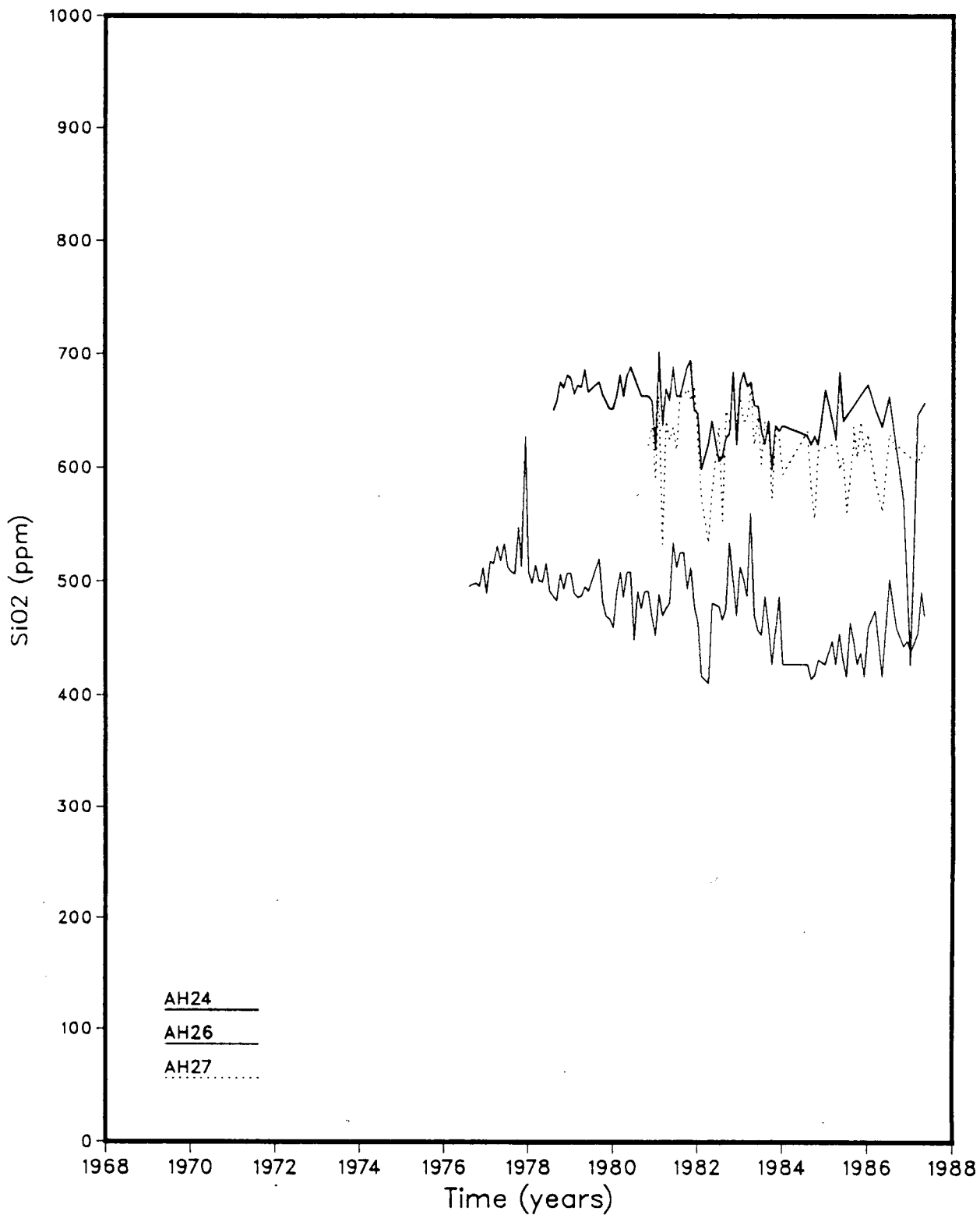
Water Chemistry (SiO₂)



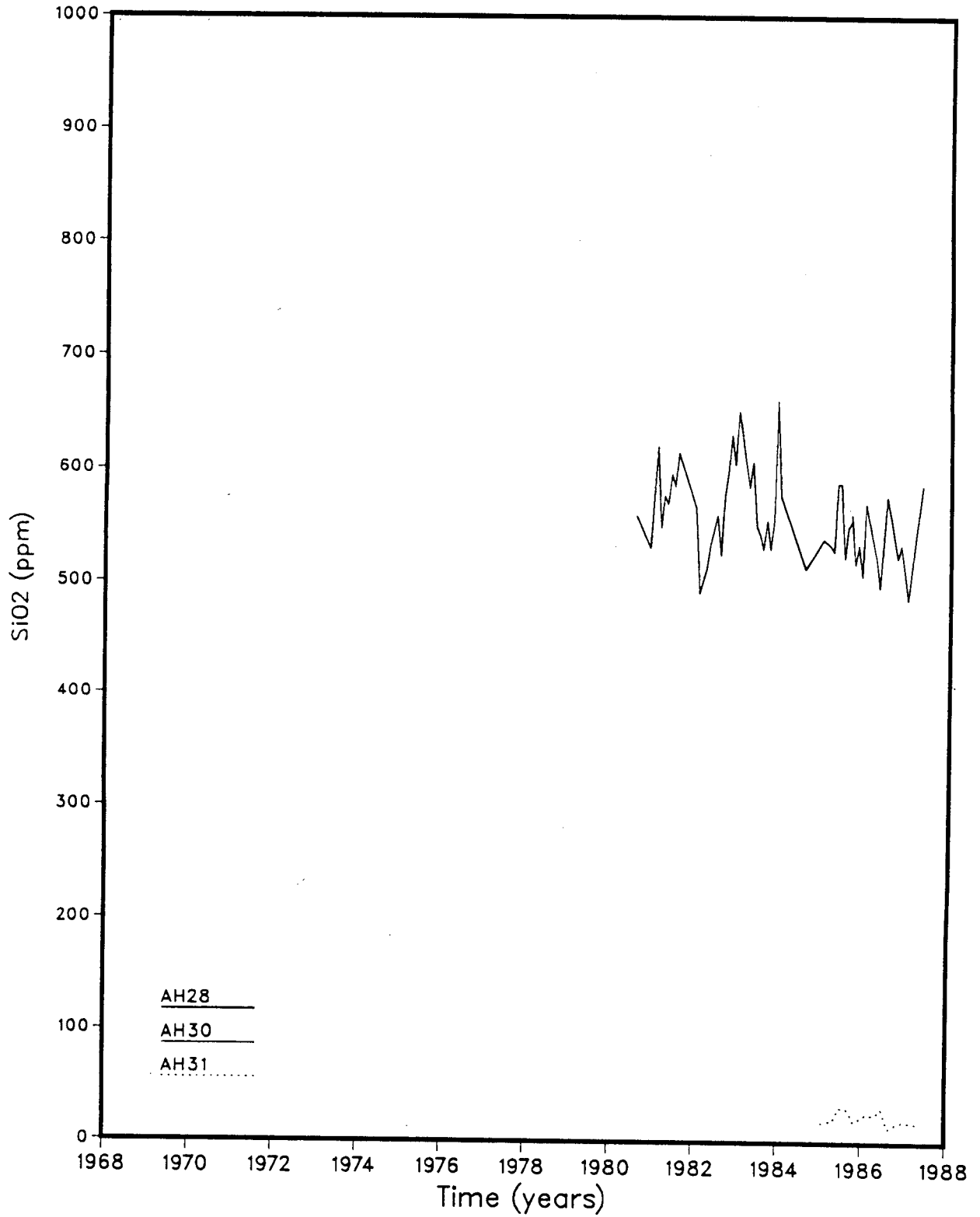
Water Chemistry (SiO₂)



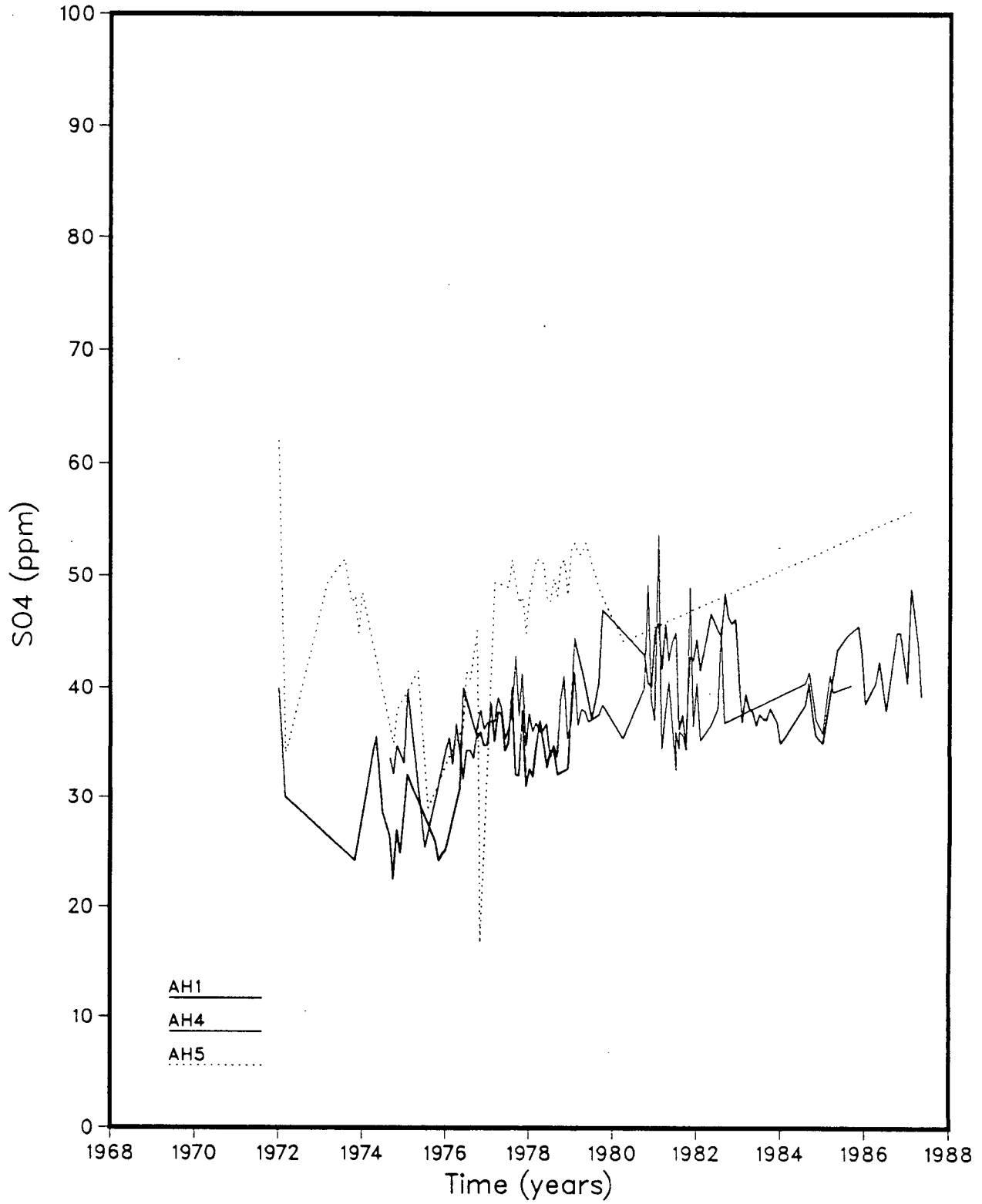
Water Chemistry (SiO₂)



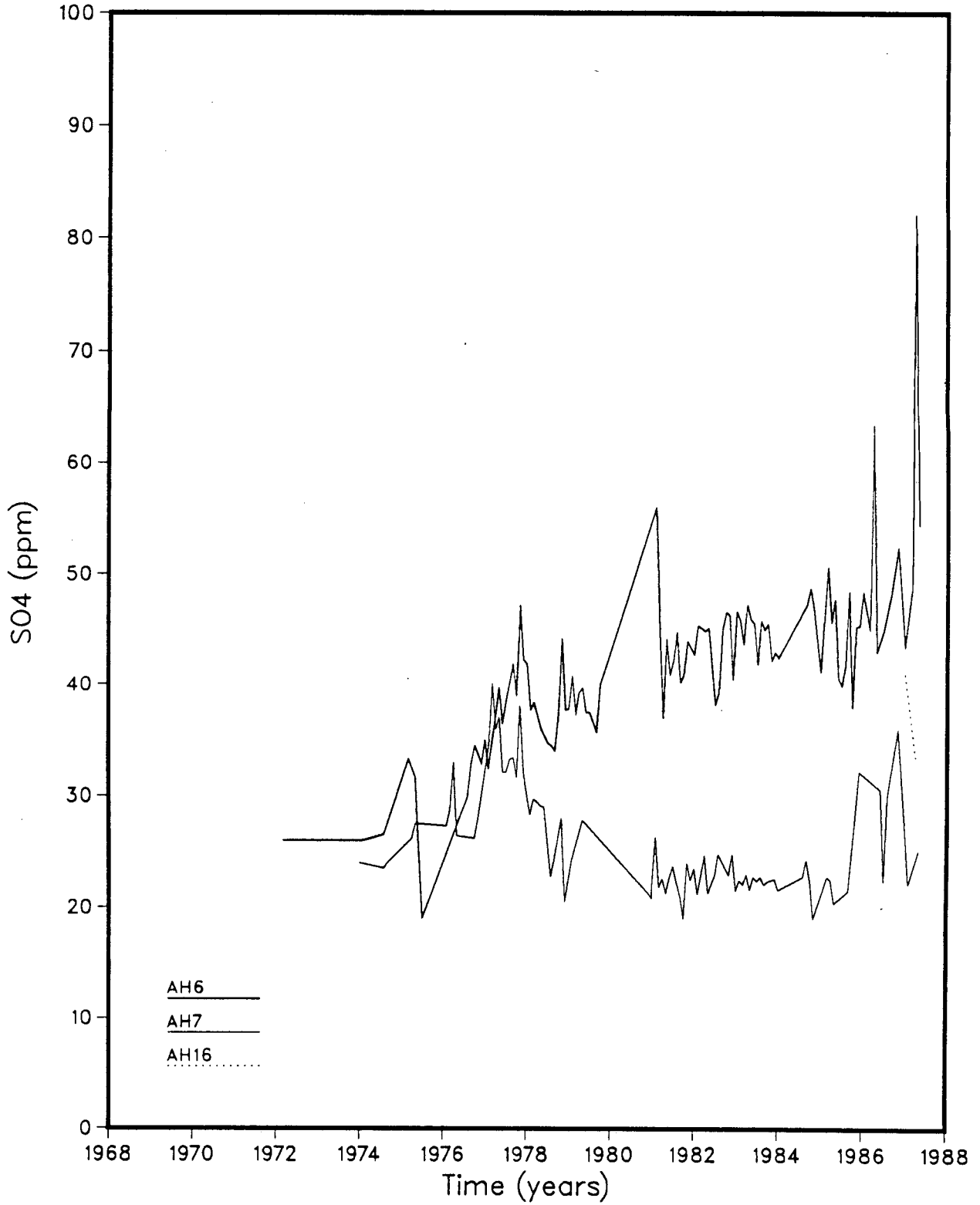
Water Chemistry (SiO₂)



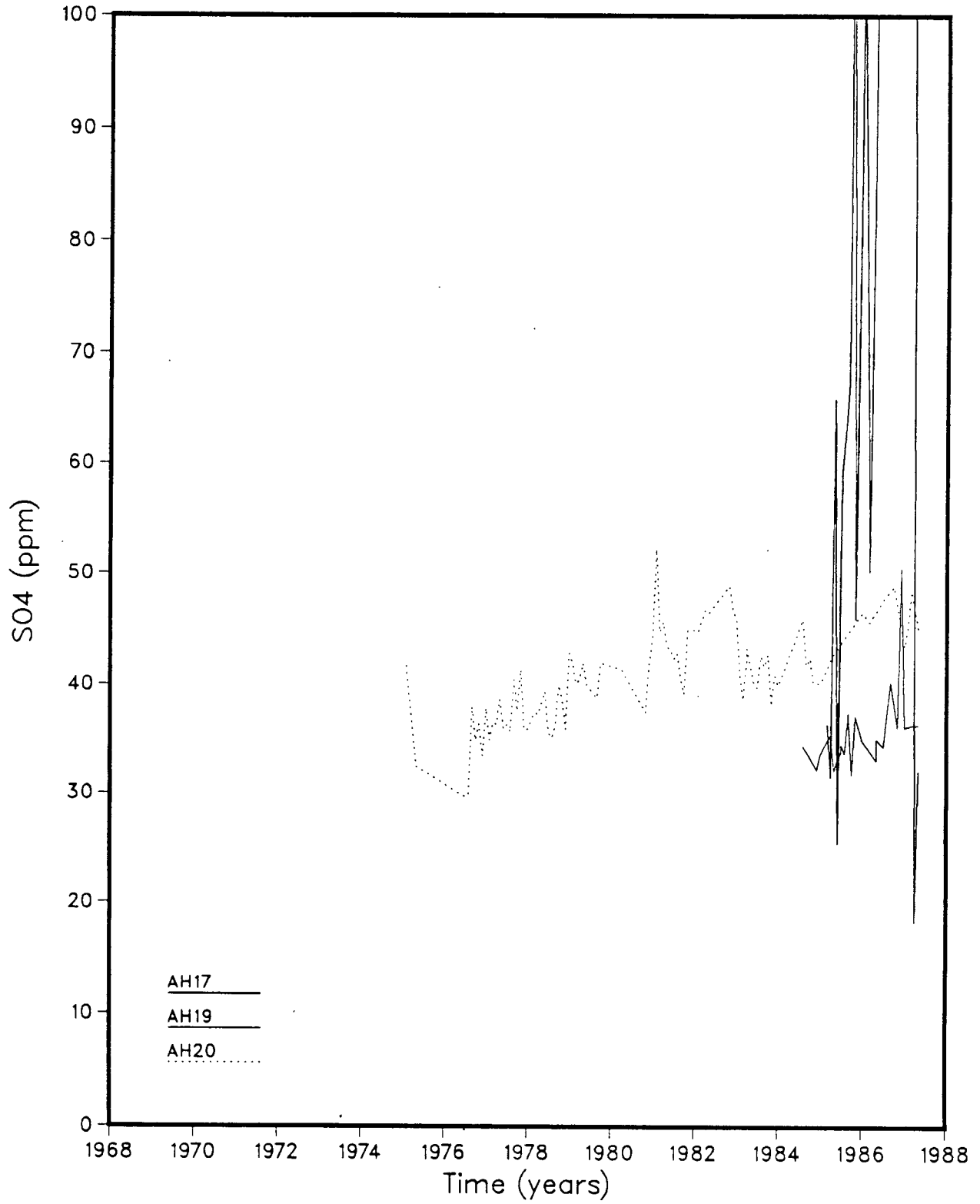
Water Chemistry (SO4)



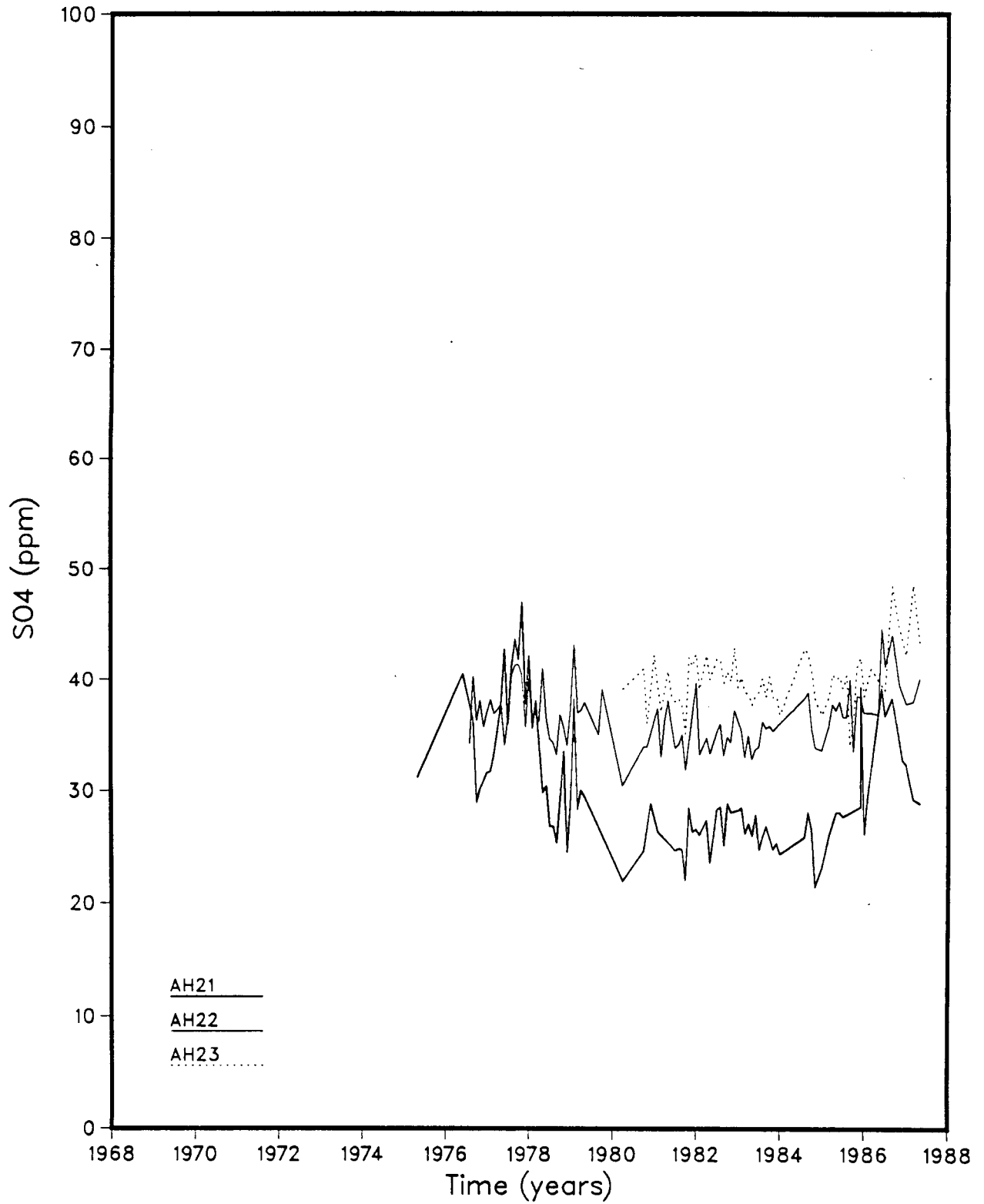
Water Chemistry (SO4)



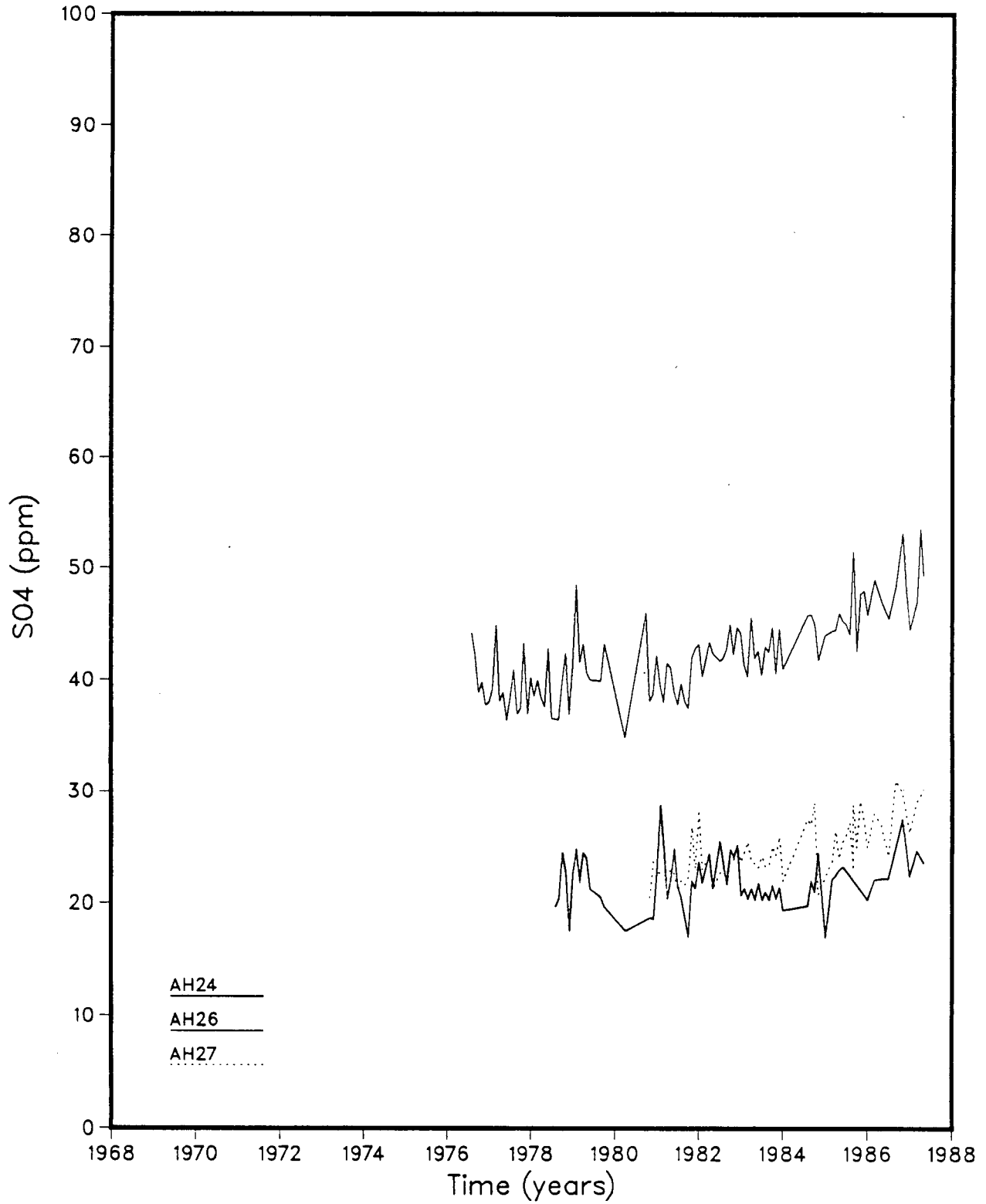
Water Chemistry (SO4)



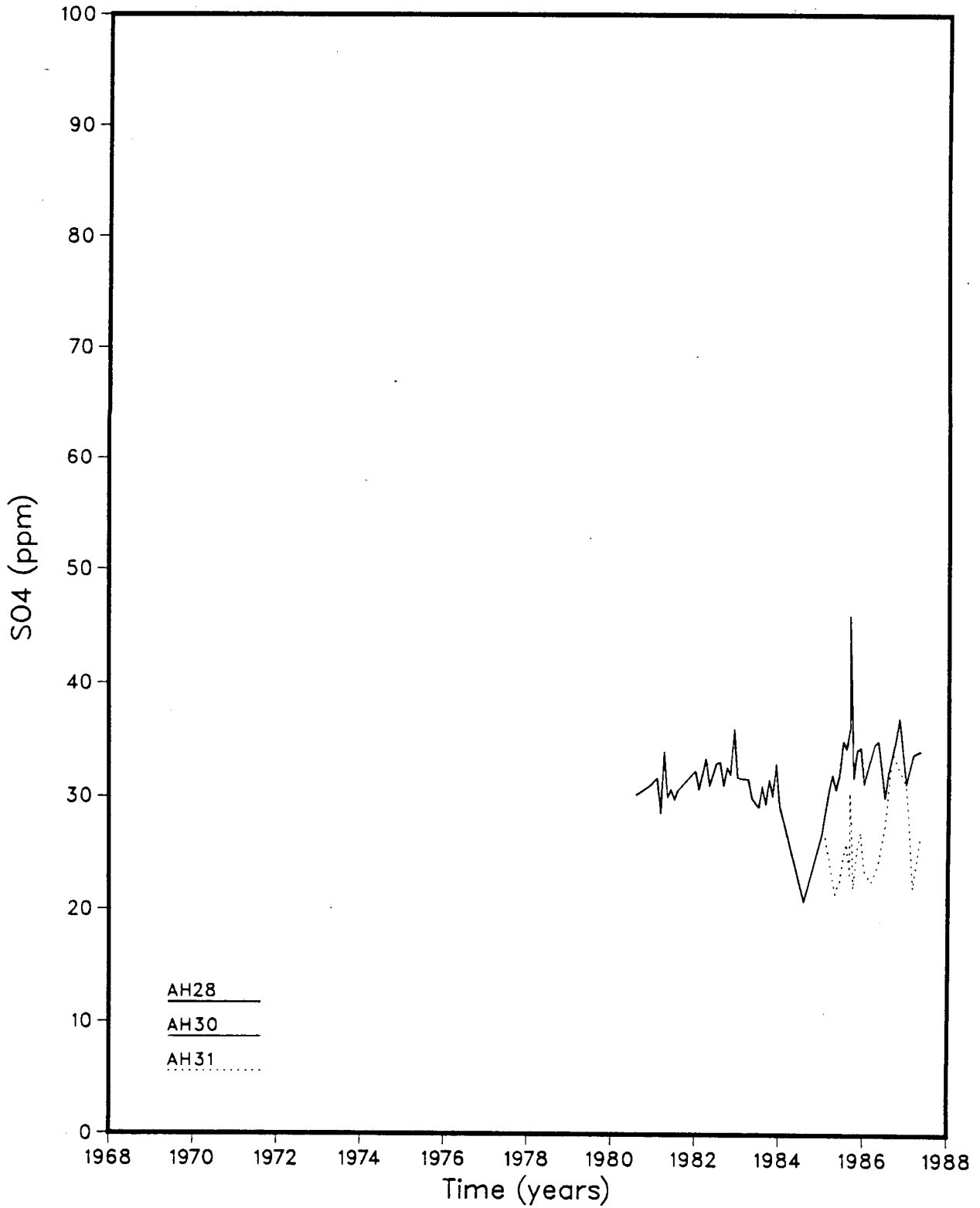
Water Chemistry (SO4)



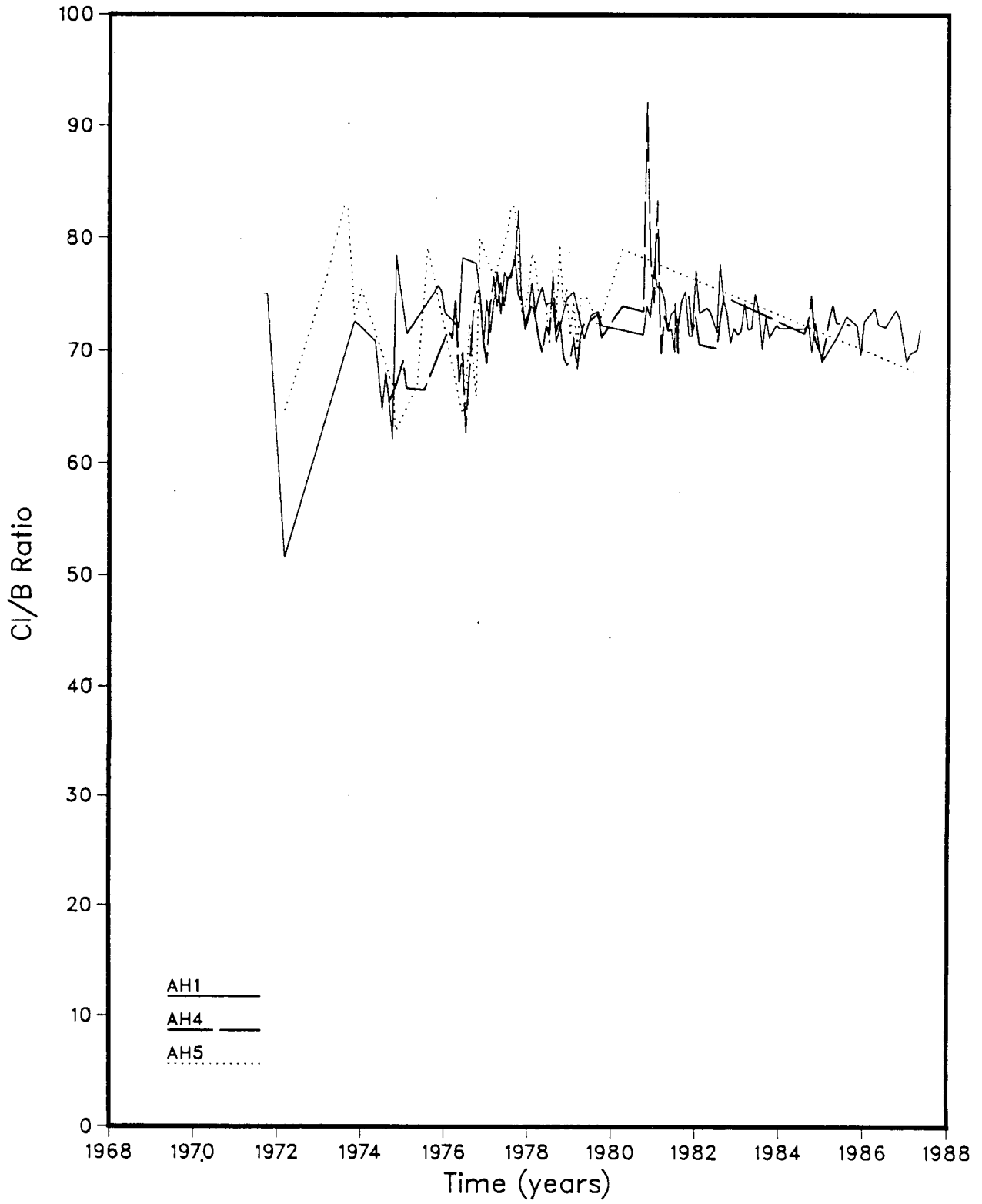
Water Chemistry (SO4)



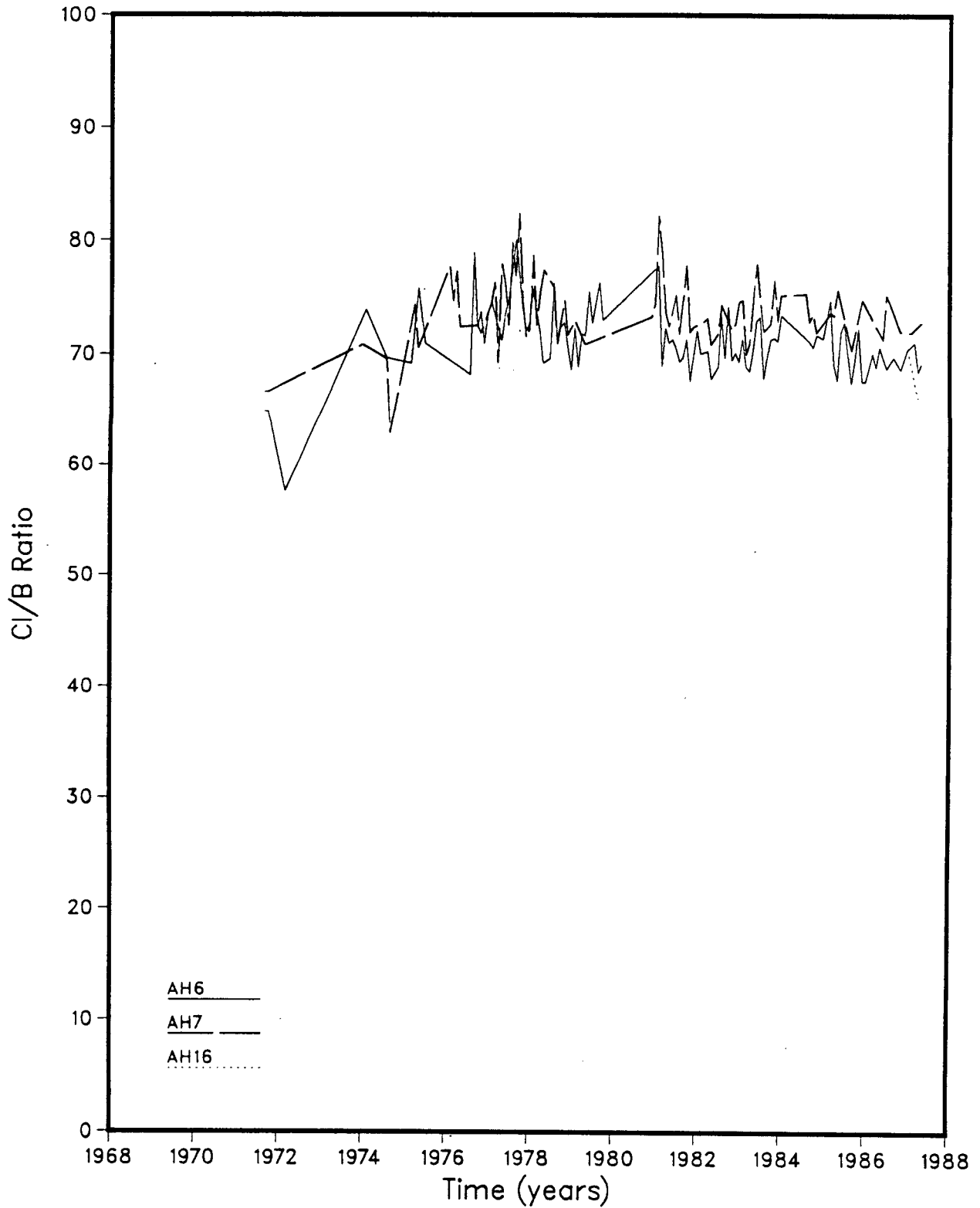
Water Chemistry (SO4)



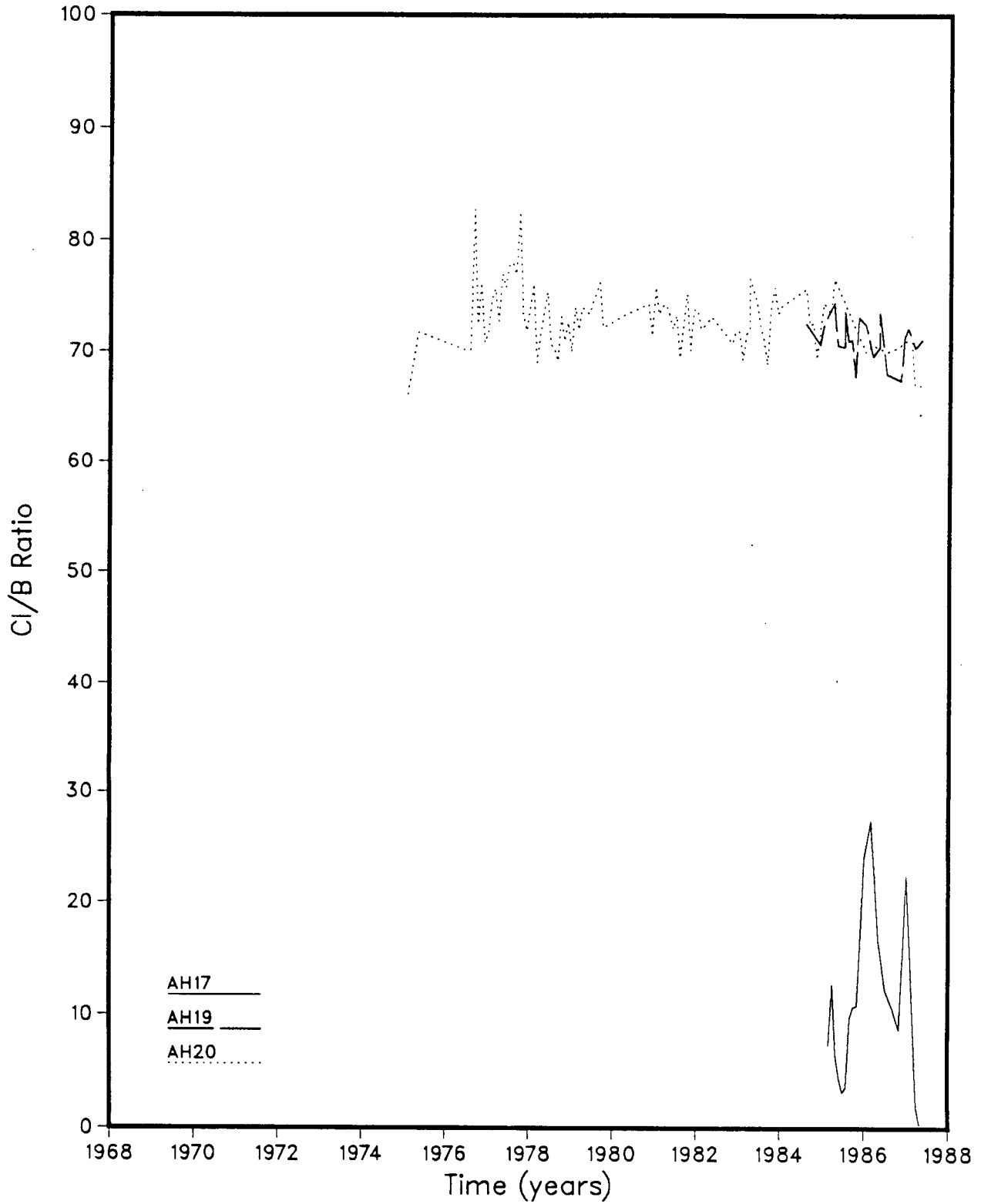
Water Chemistry (Cl/B)



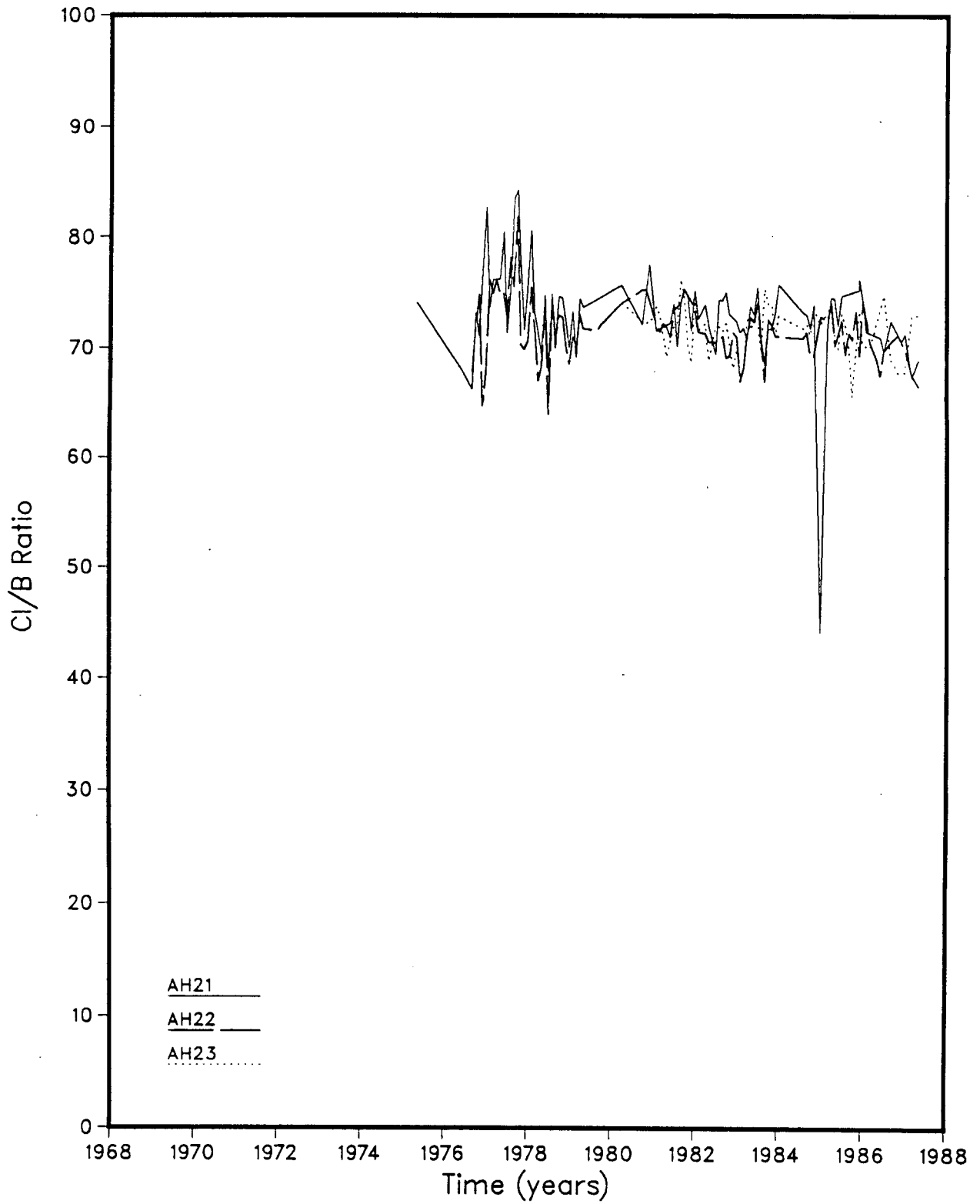
Water Chemistry (Cl/B)



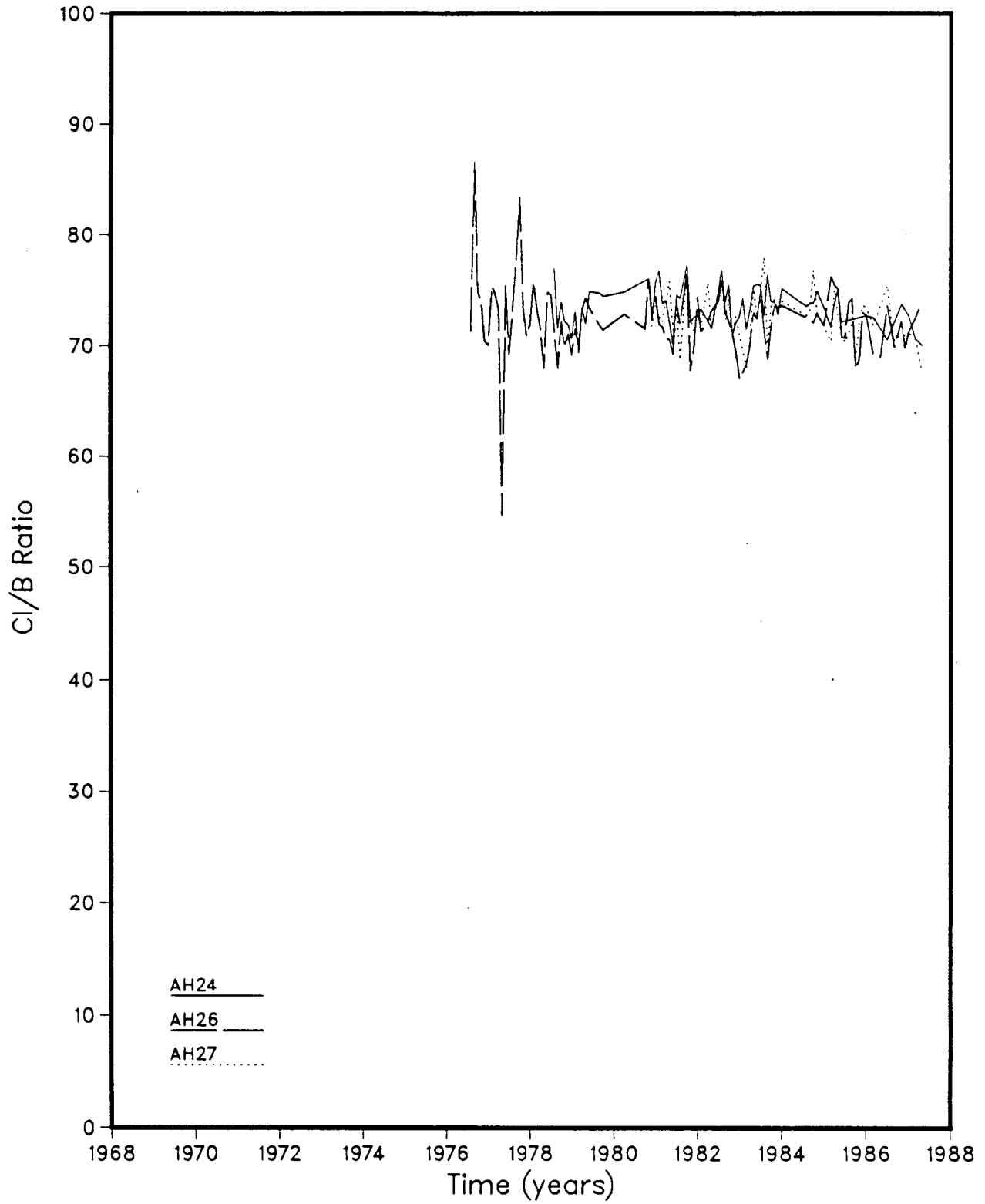
Water Chemistry (Cl/B)



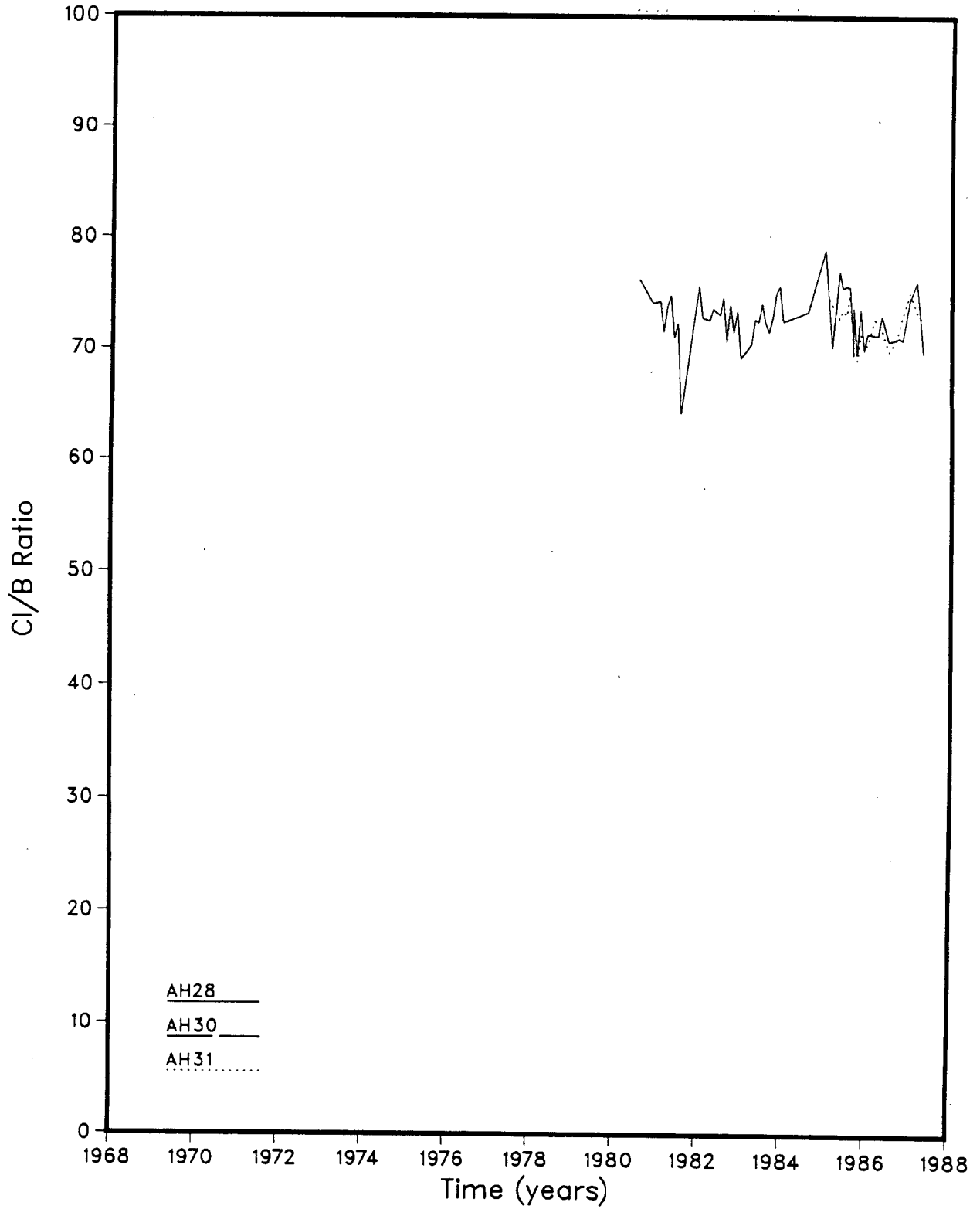
Water Chemistry (Cl/B)



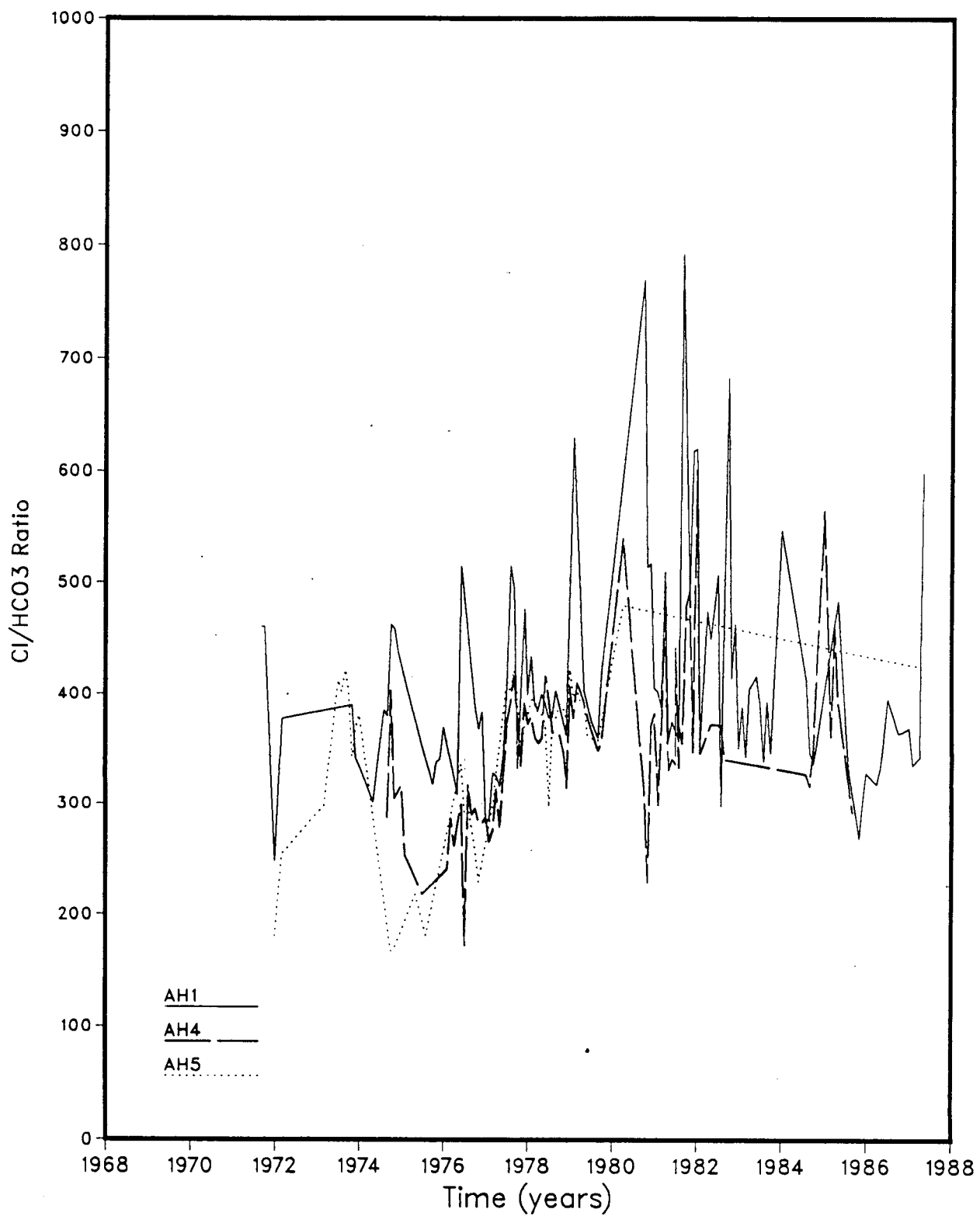
Water Chemistry (Cl/B)



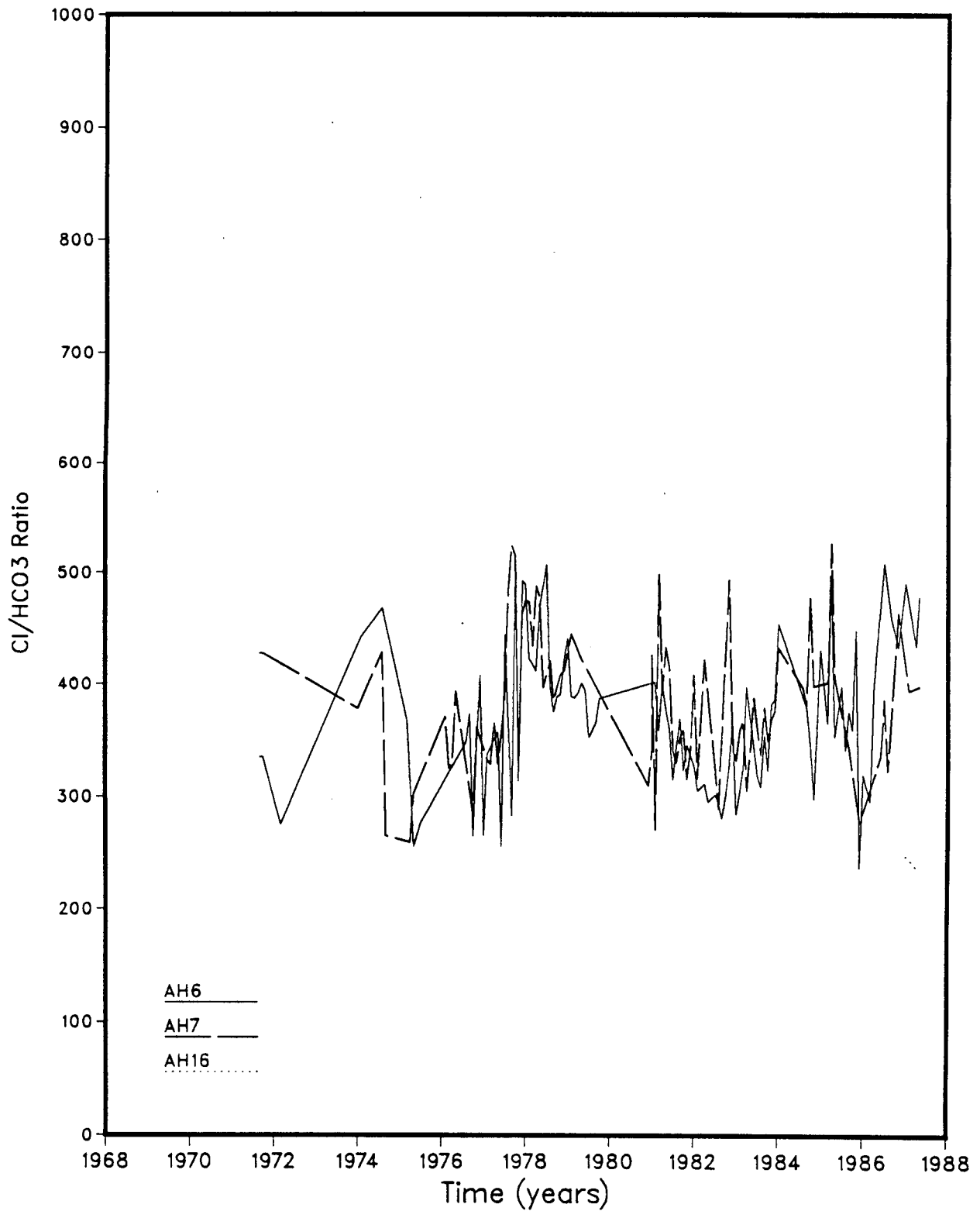
Water Chemistry (Cl/B)



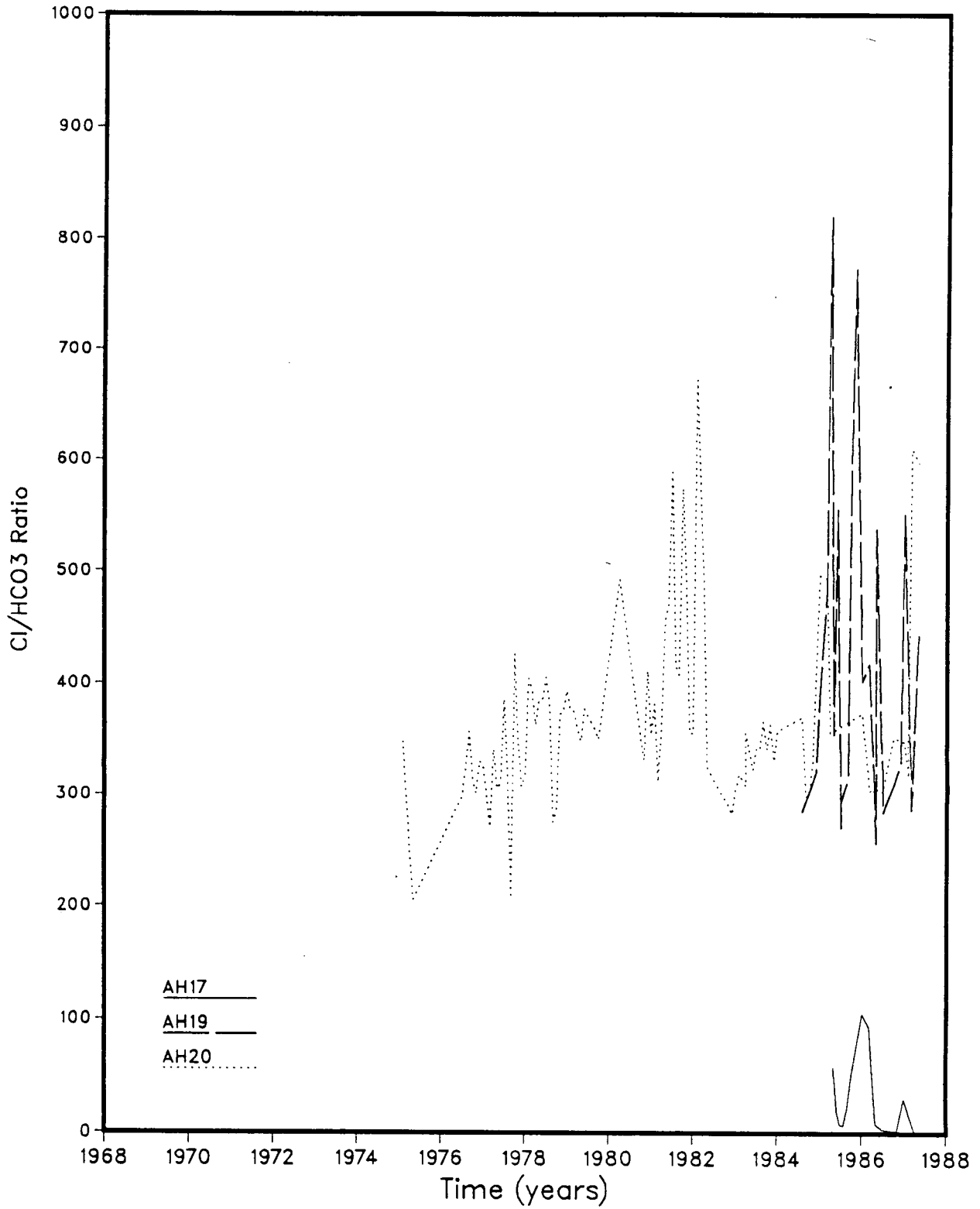
Water Chemistry (Cl/HCO₃)



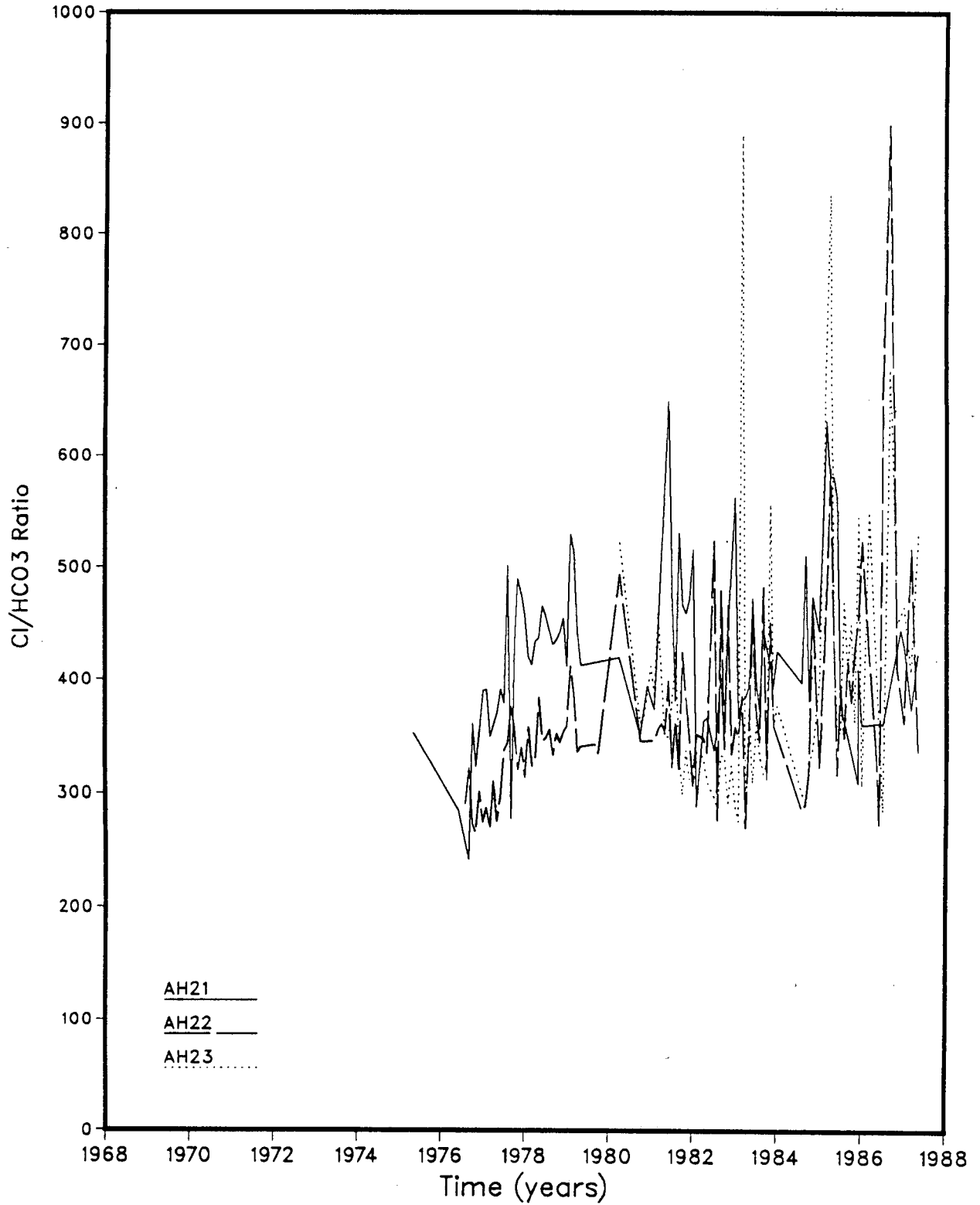
Water Chemistry (Cl/HCO₃)



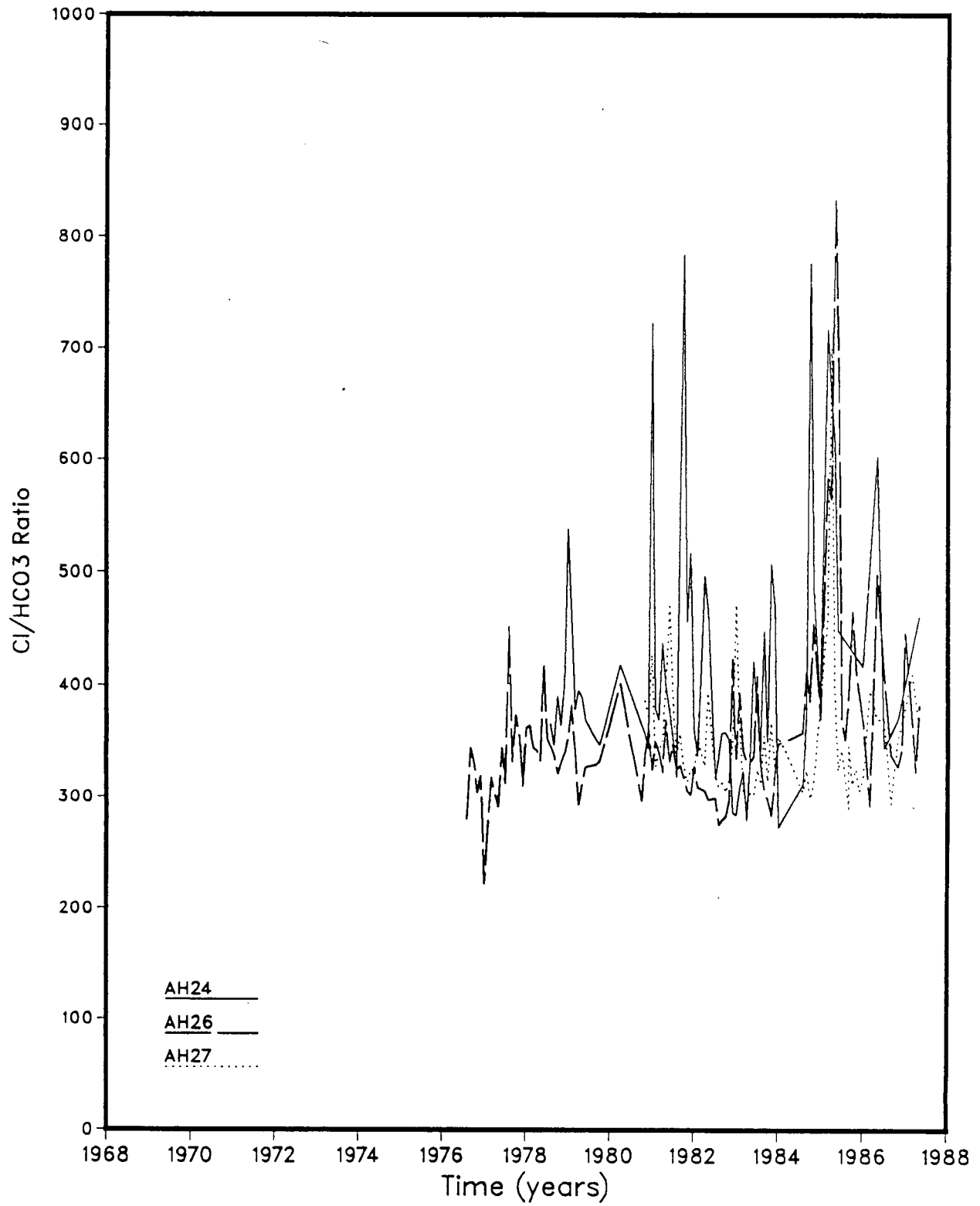
Water Chemistry (Cl/HCO₃)



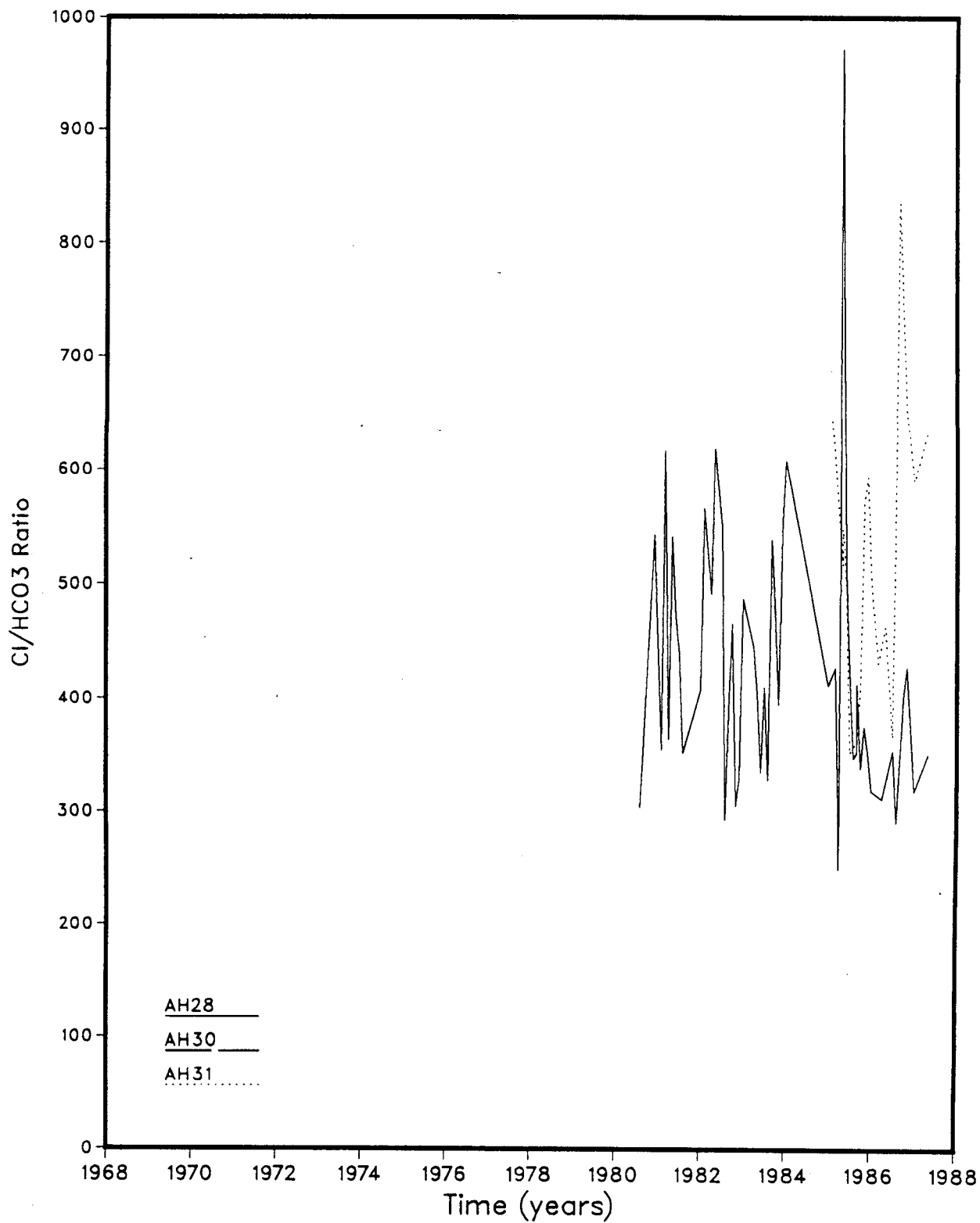
Water Chemistry (Cl/HCO₃)



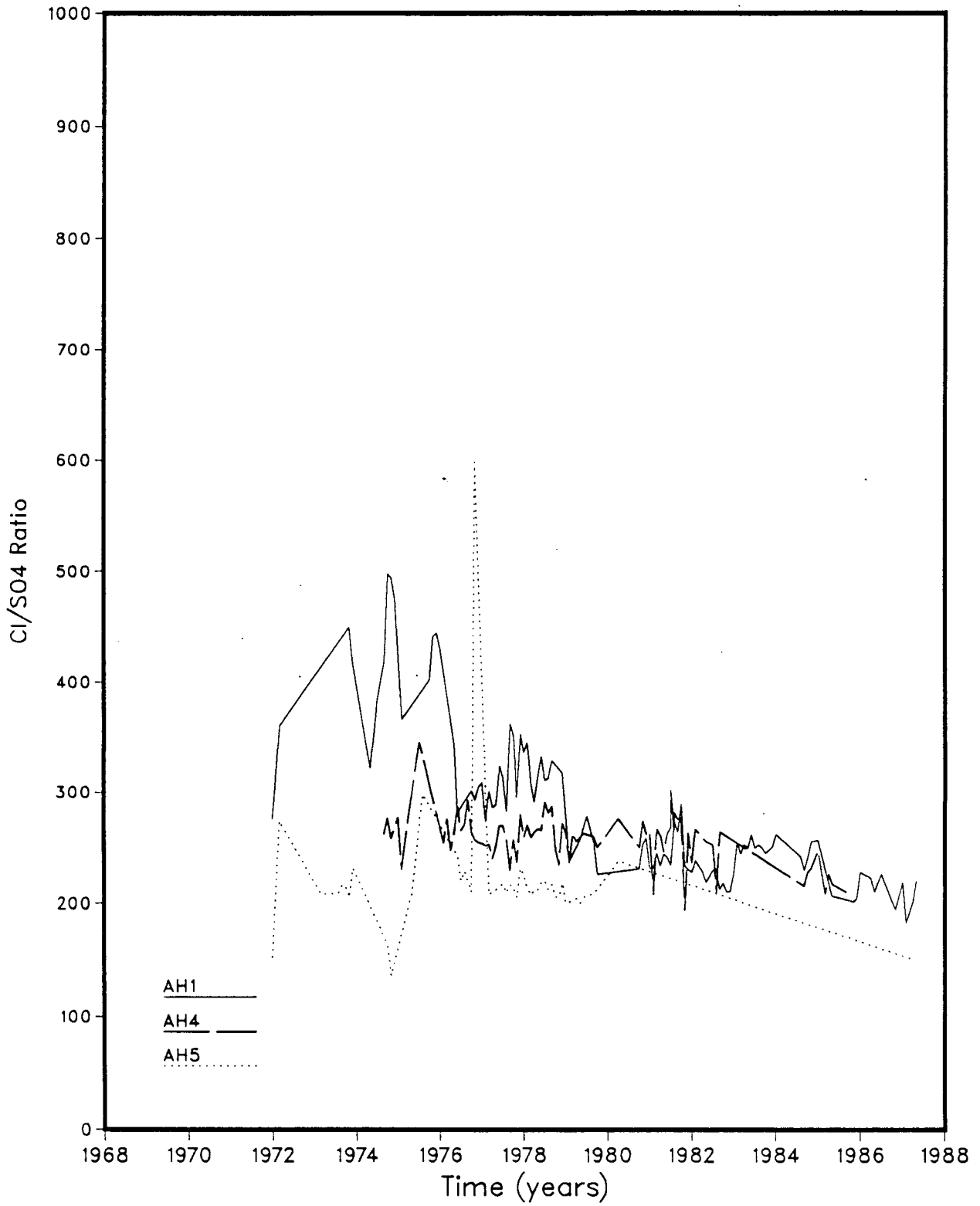
Water Chemistry (Cl/HCO₃)



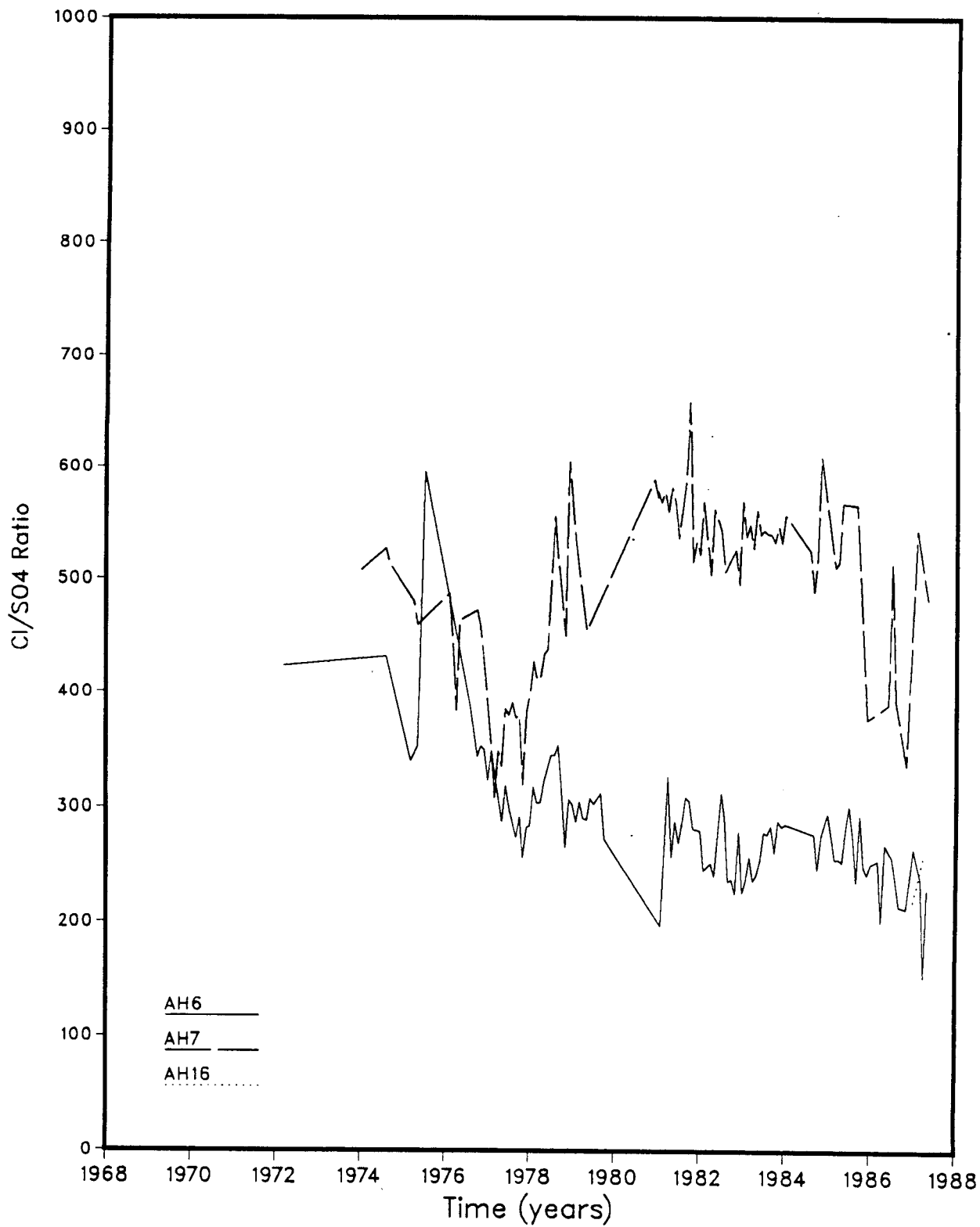
Water Chemistry (Cl/HCO₃)



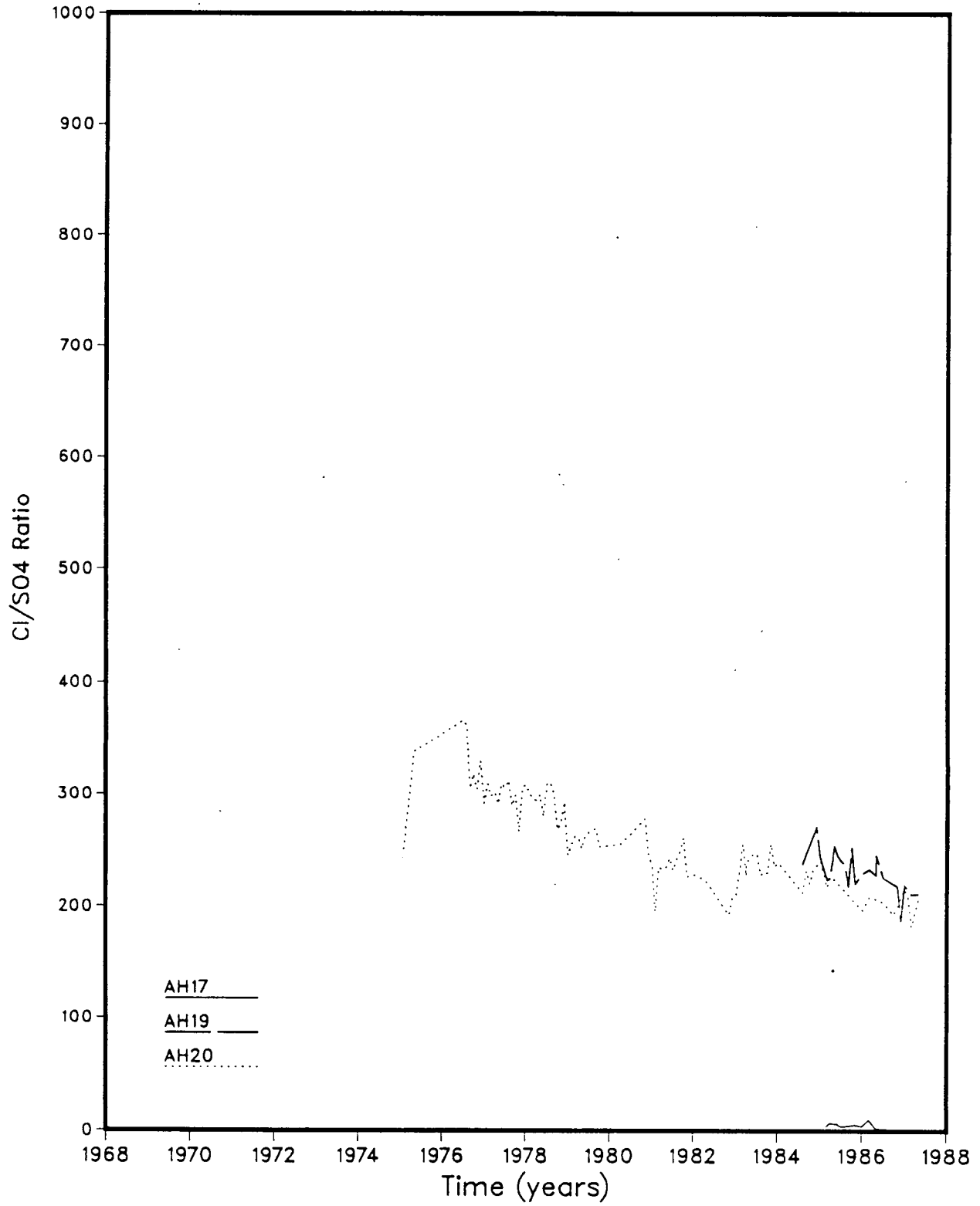
Water Chemistry (Cl/SO4)



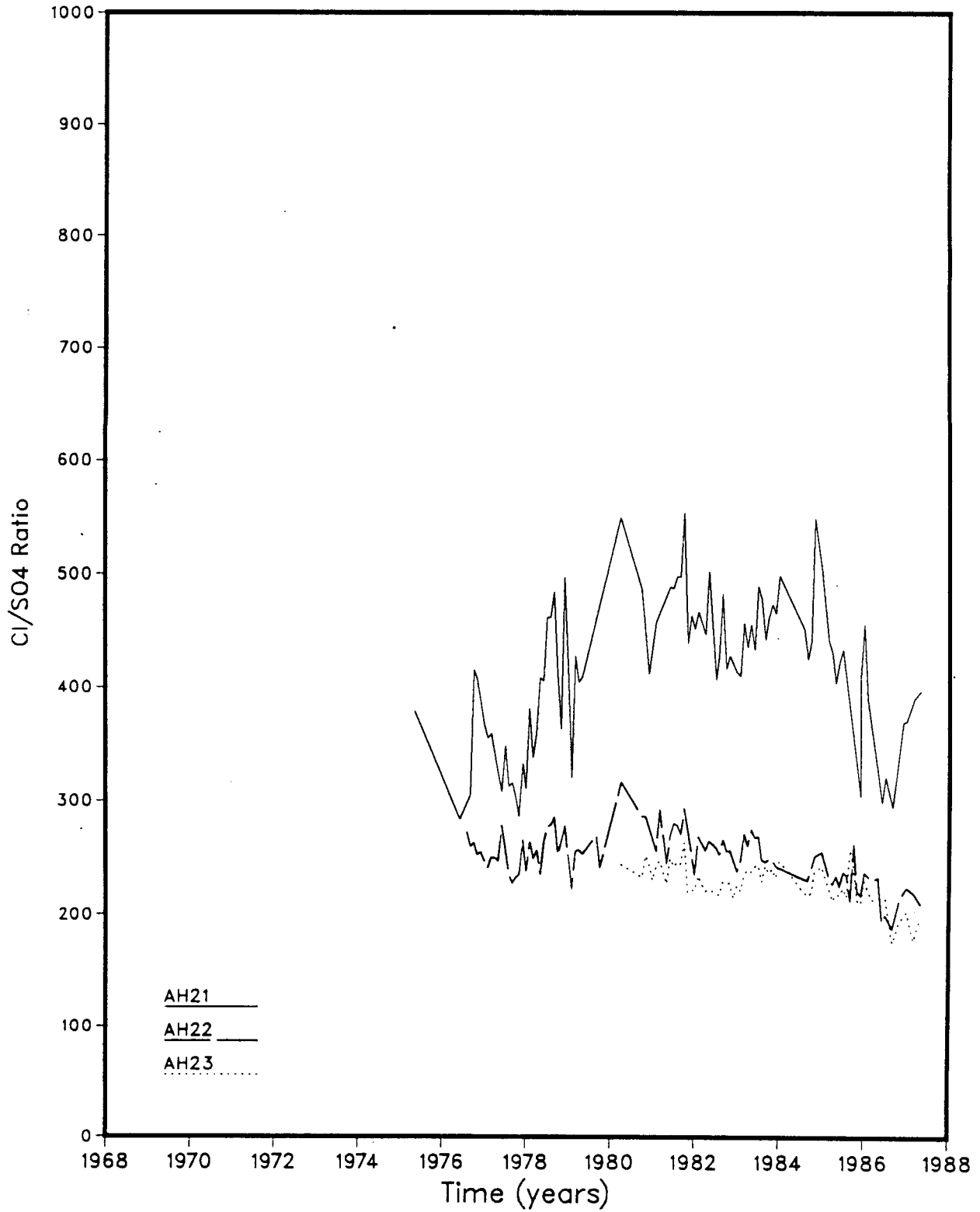
Water Chemistry (Cl/SO4)



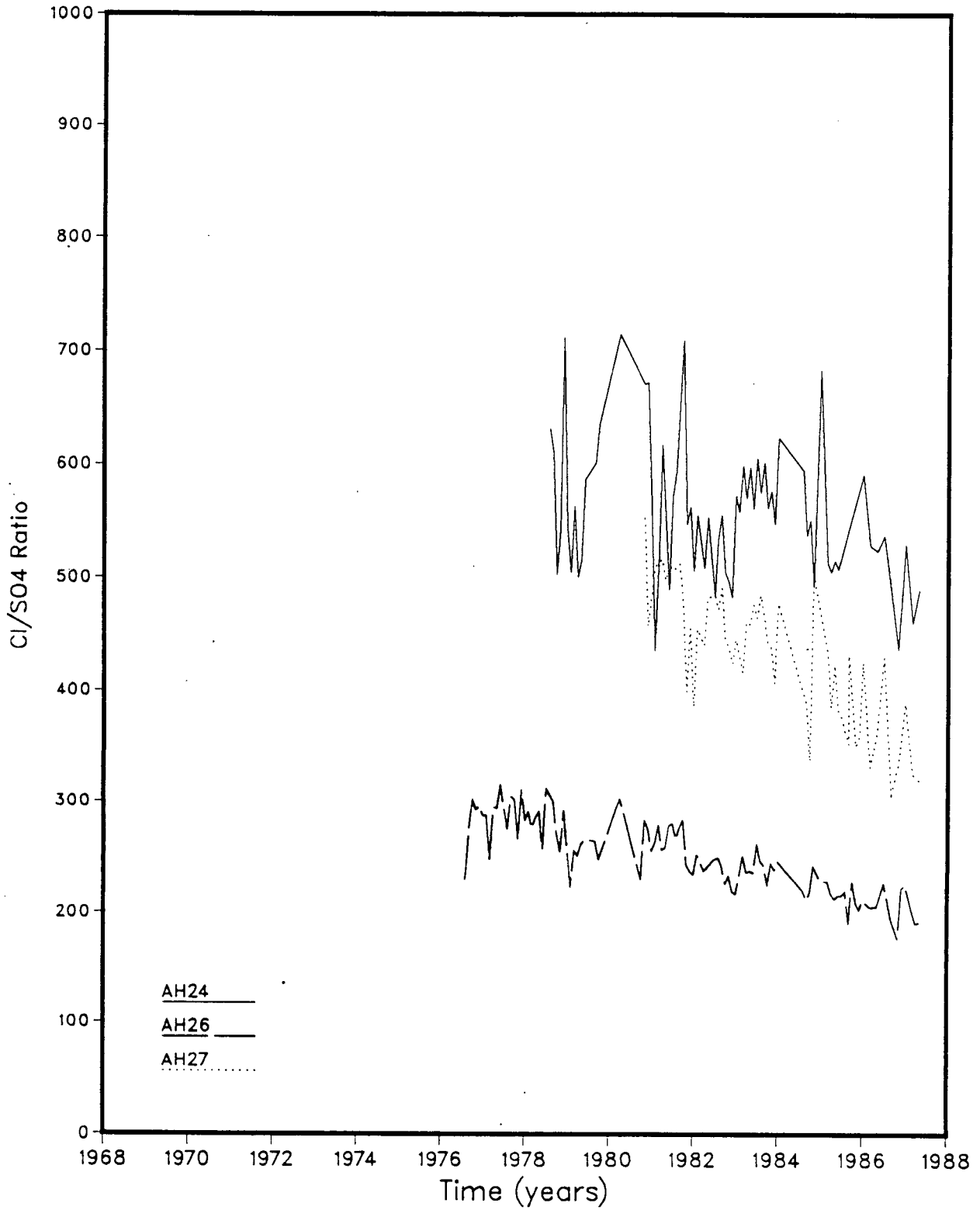
Water Chemistry (Cl/SO4)



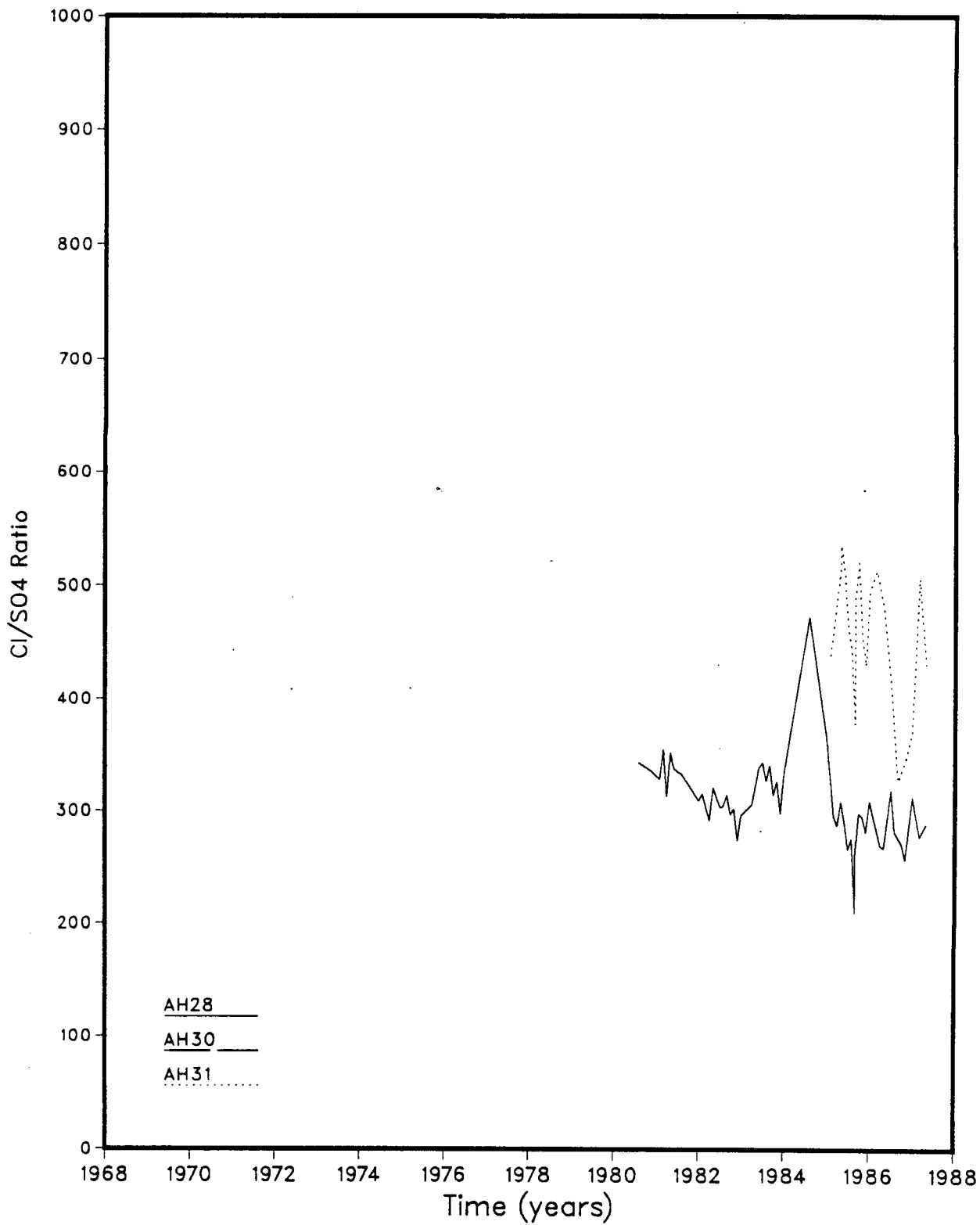
Water Chemistry (Cl/SO4)



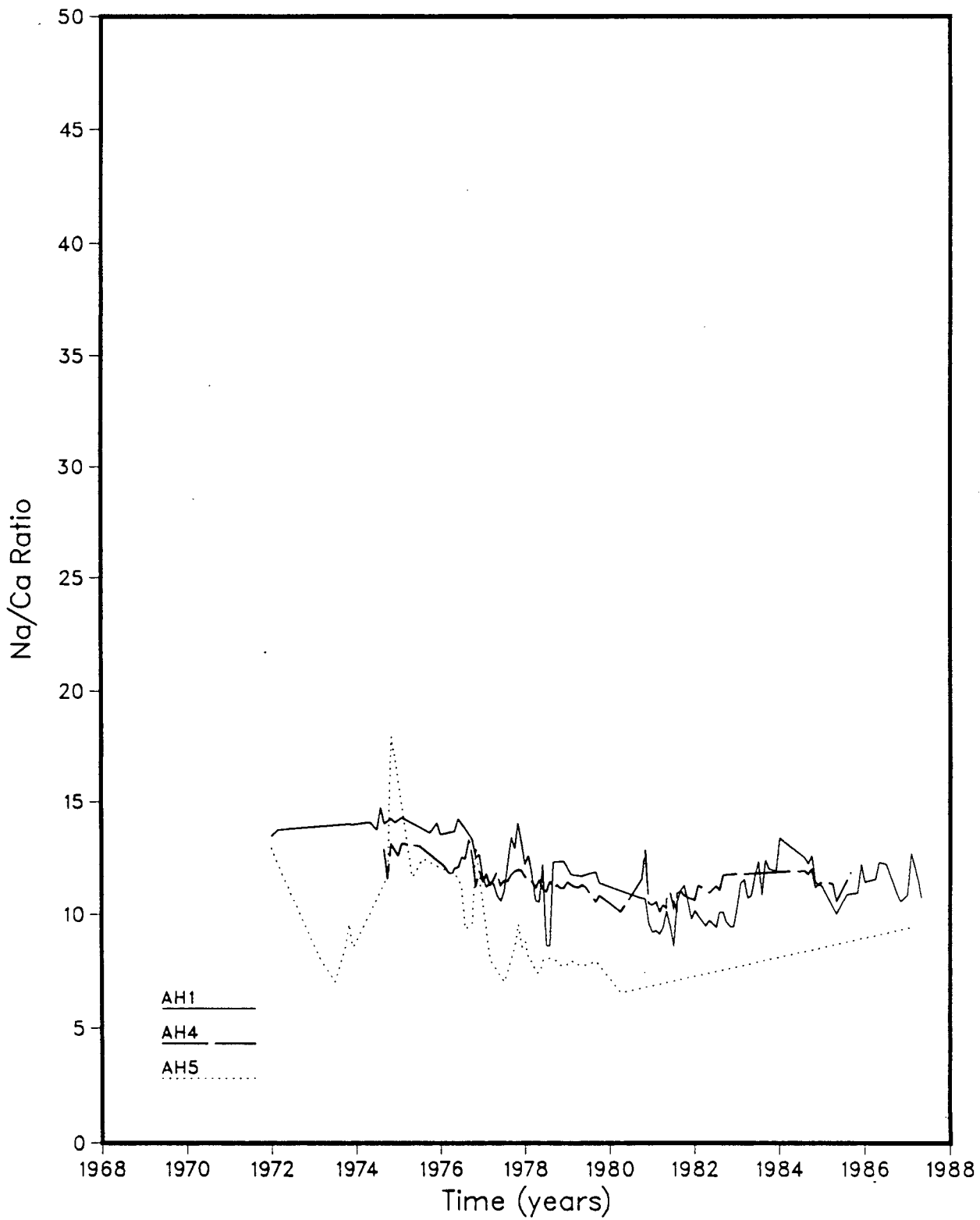
Water Chemistry (Cl/SO4)



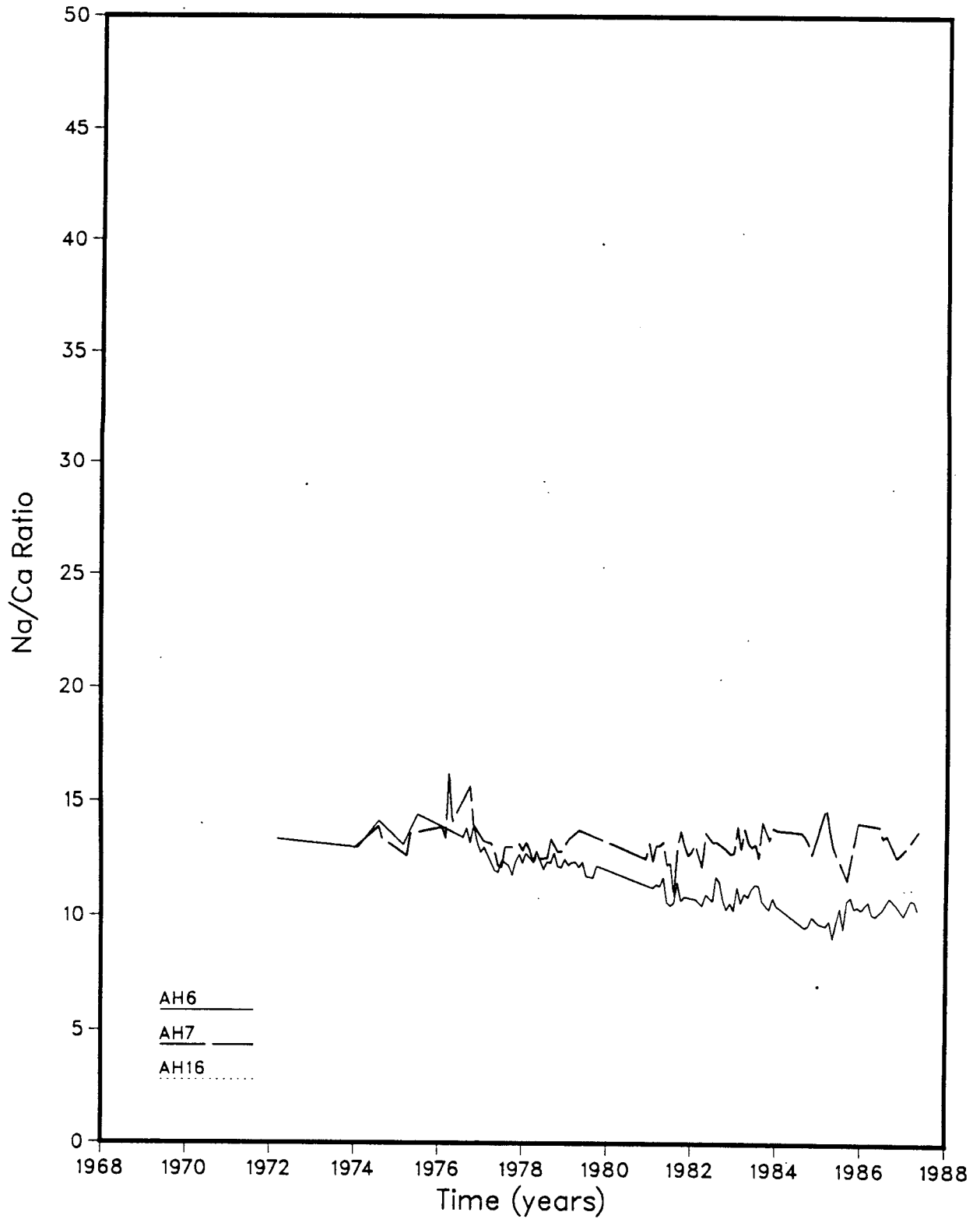
Water Chemistry (Cl/SO4)



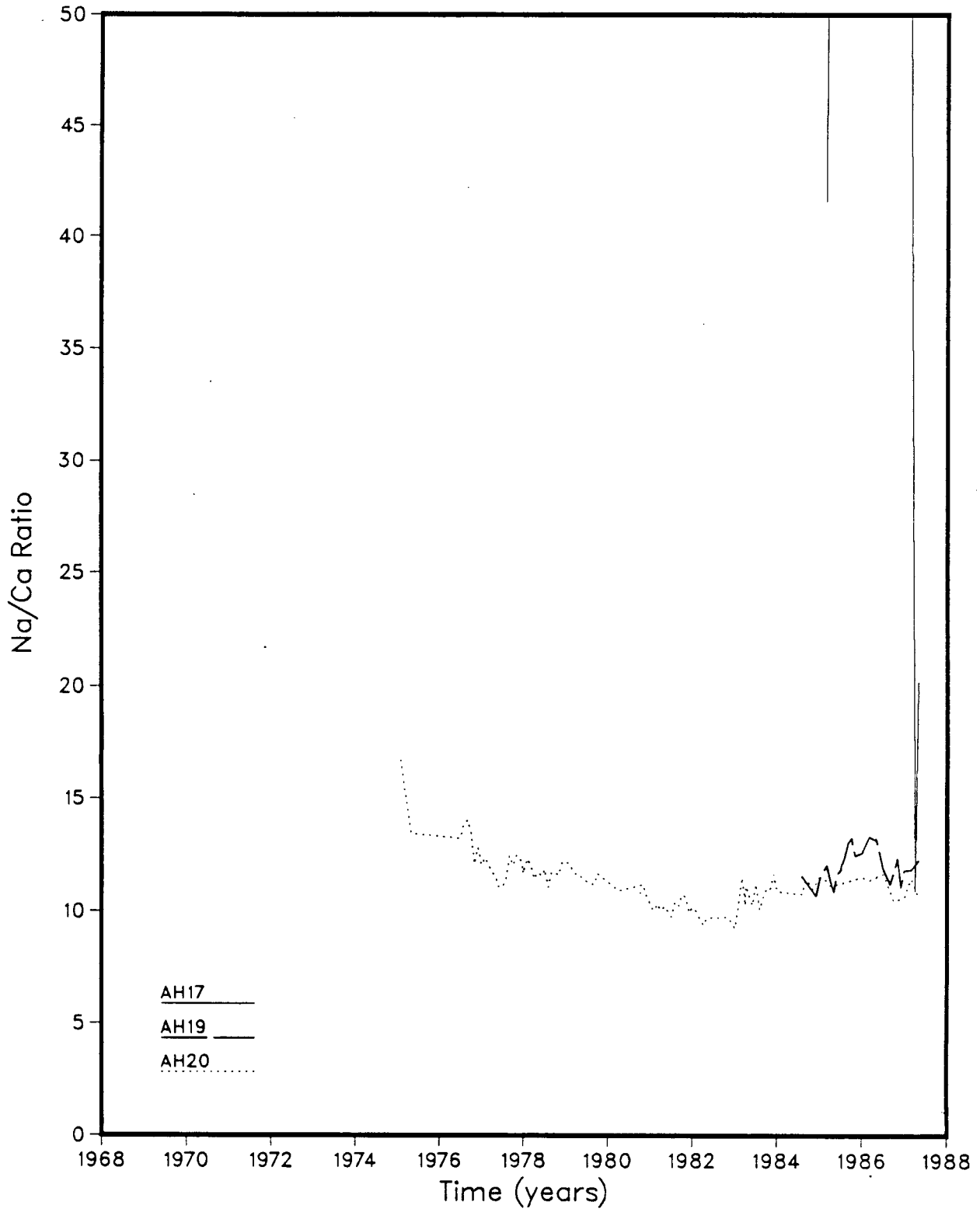
Water Chemistry (Na/Ca)



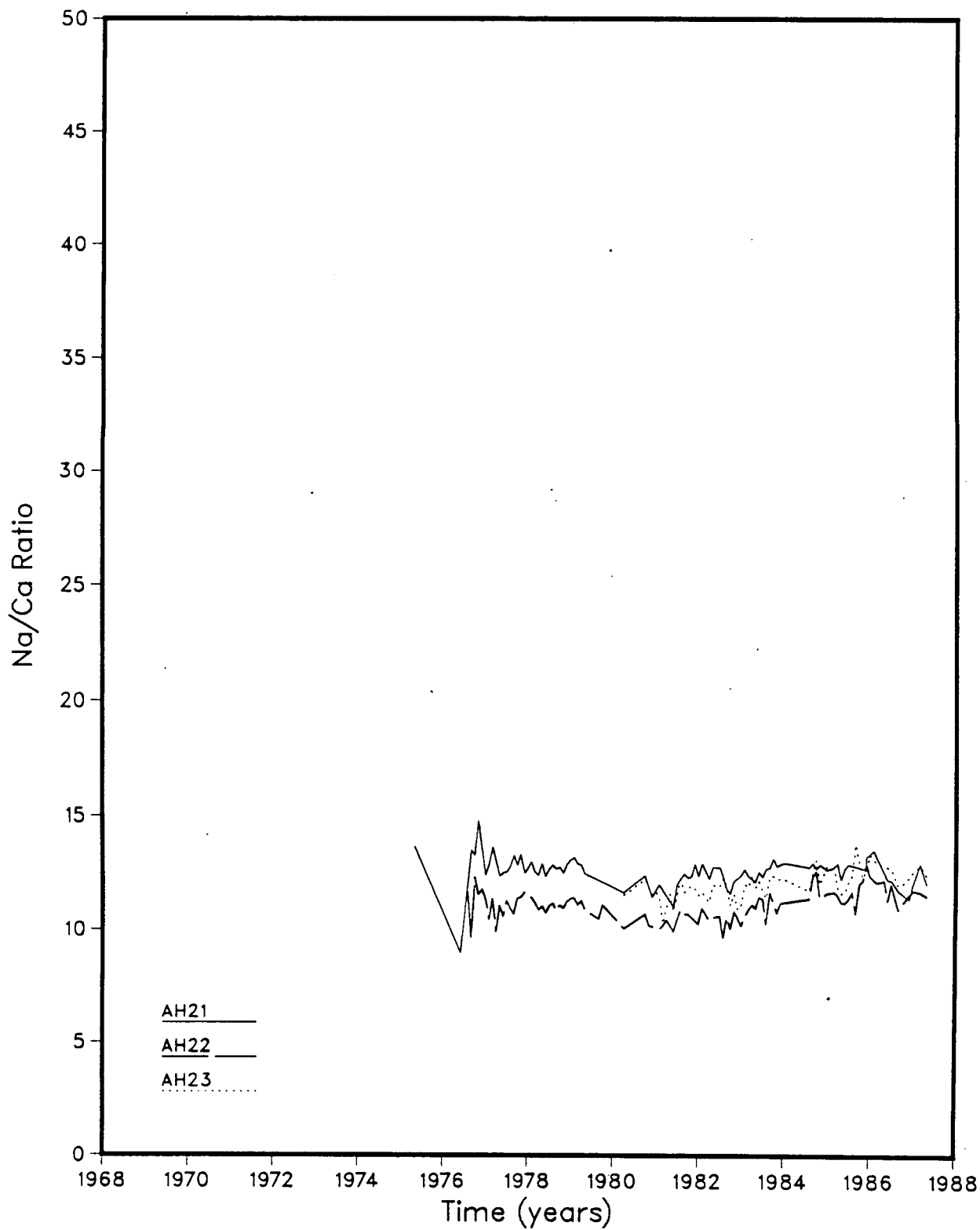
Water Chemistry (Na/Ca)



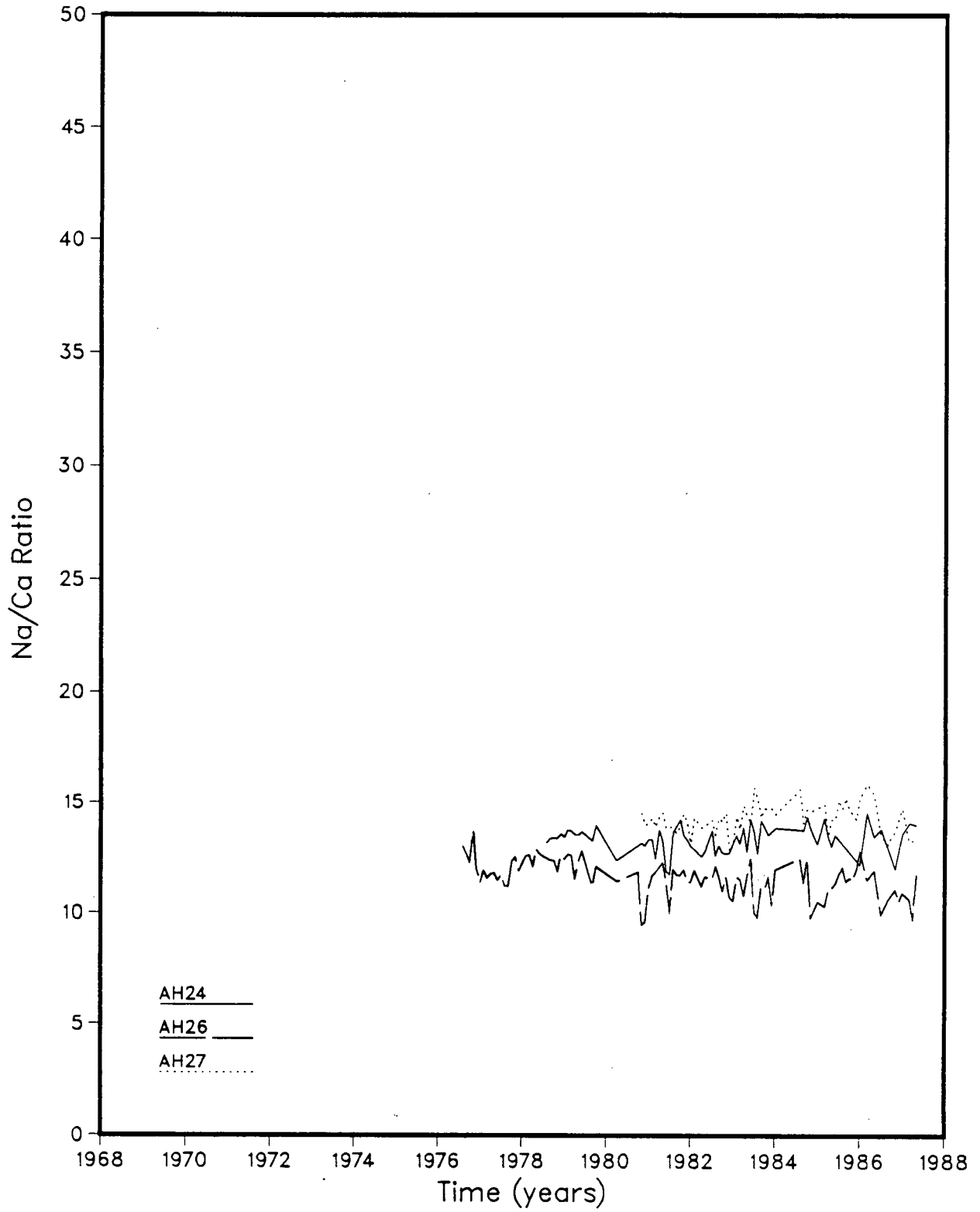
Water Chemistry (Na/Ca)



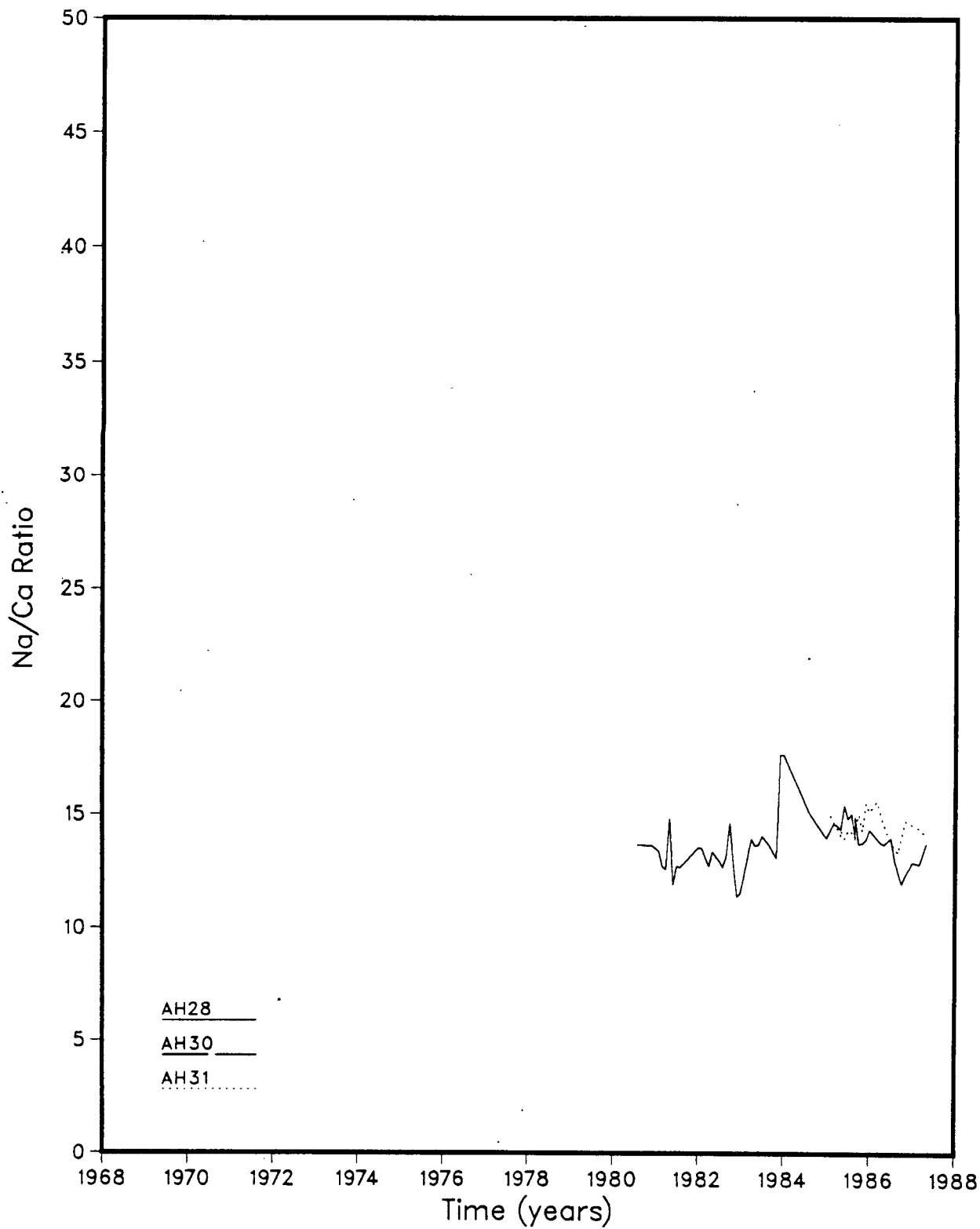
Water Chemistry (Na/Ca)



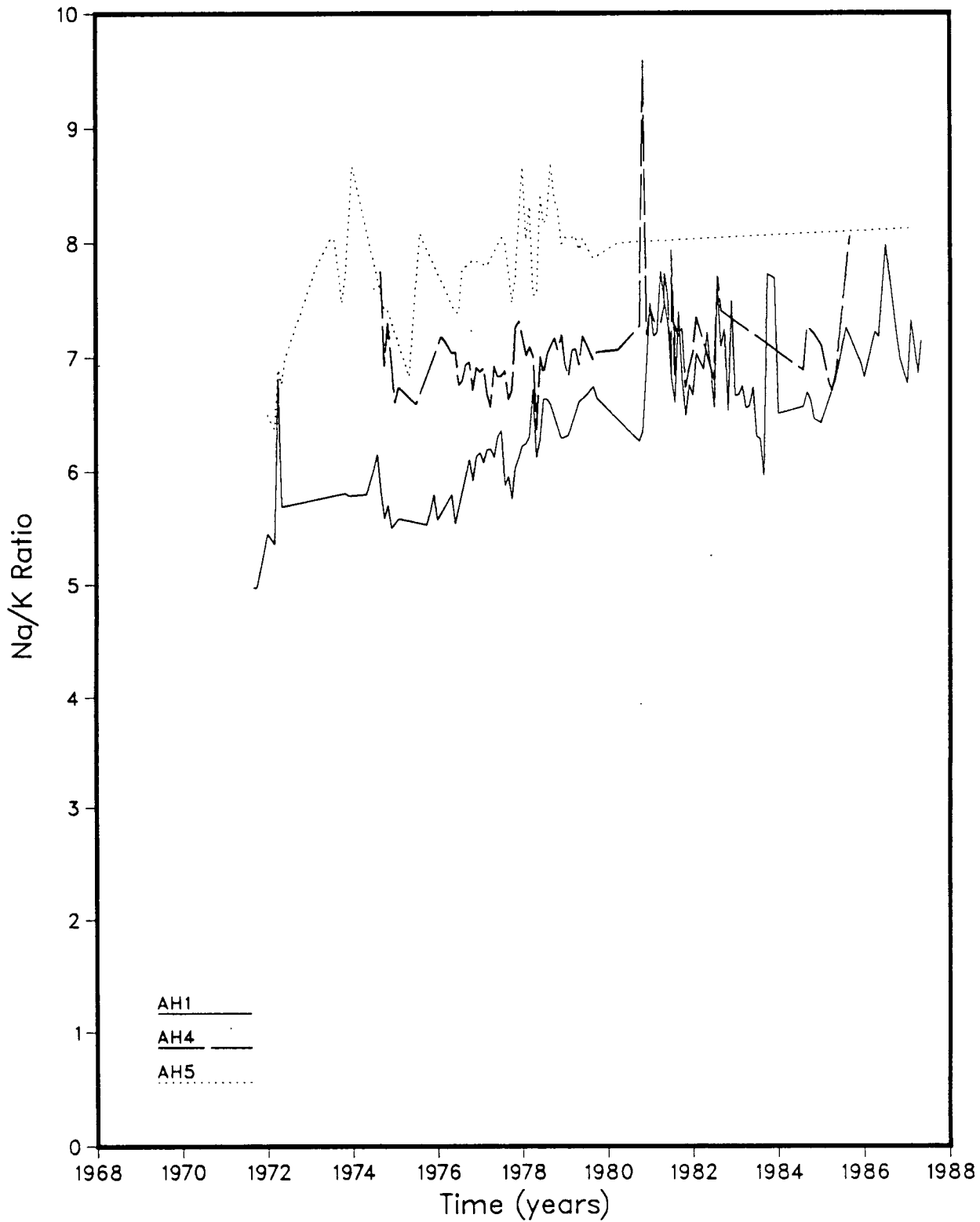
Water Chemistry (Na/Ca)



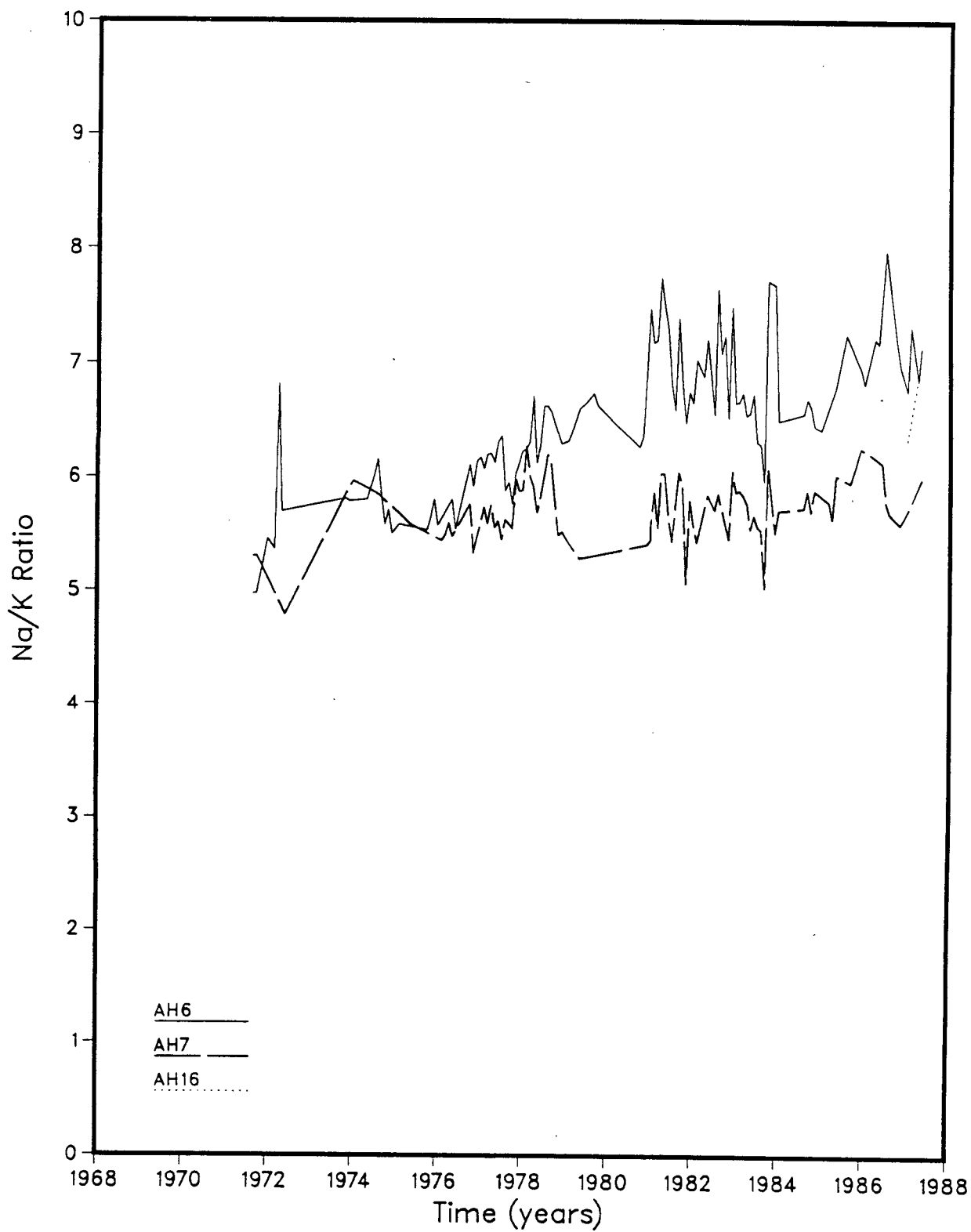
Water Chemistry (Na/Ca)



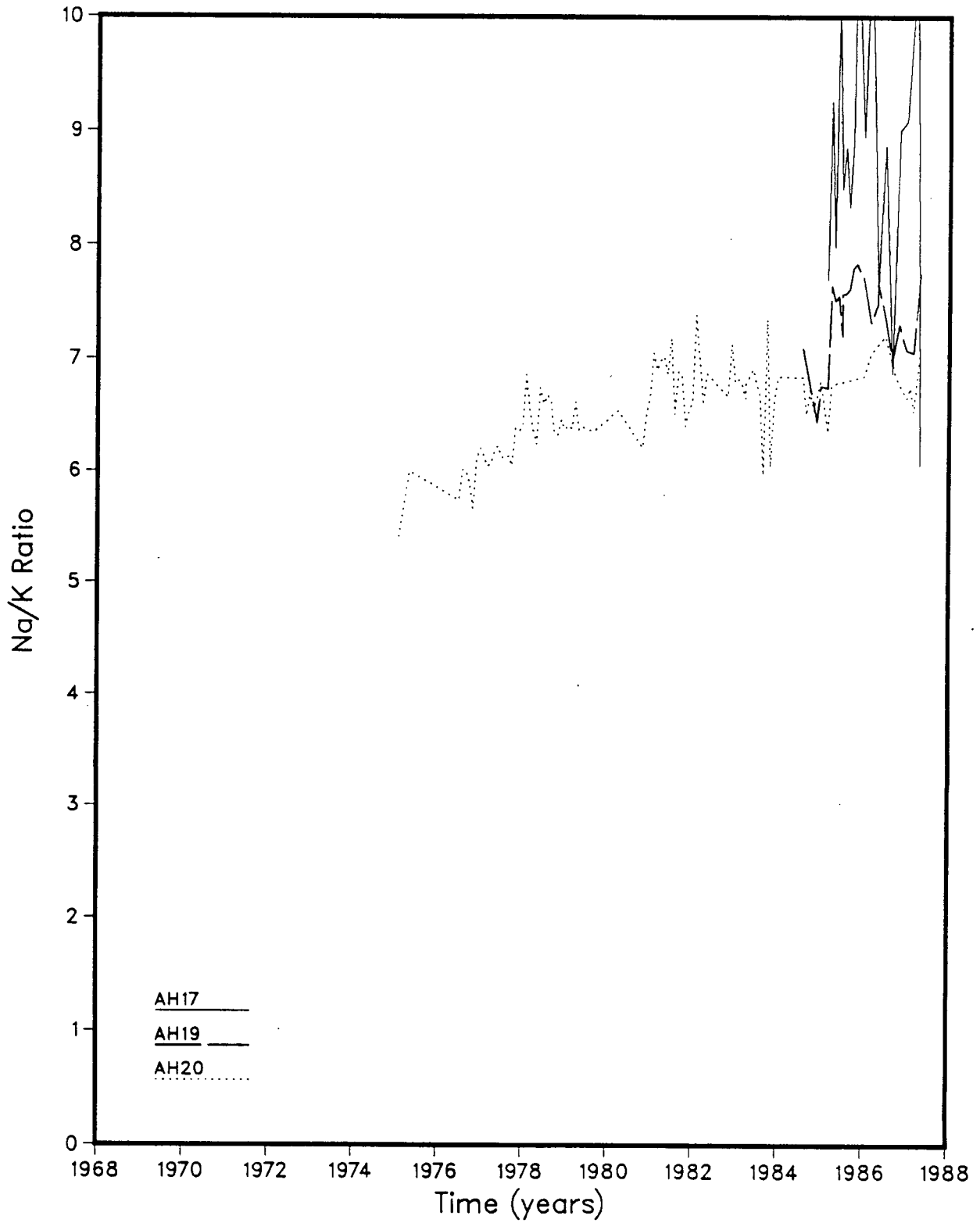
Water Chemistry (Na/K)



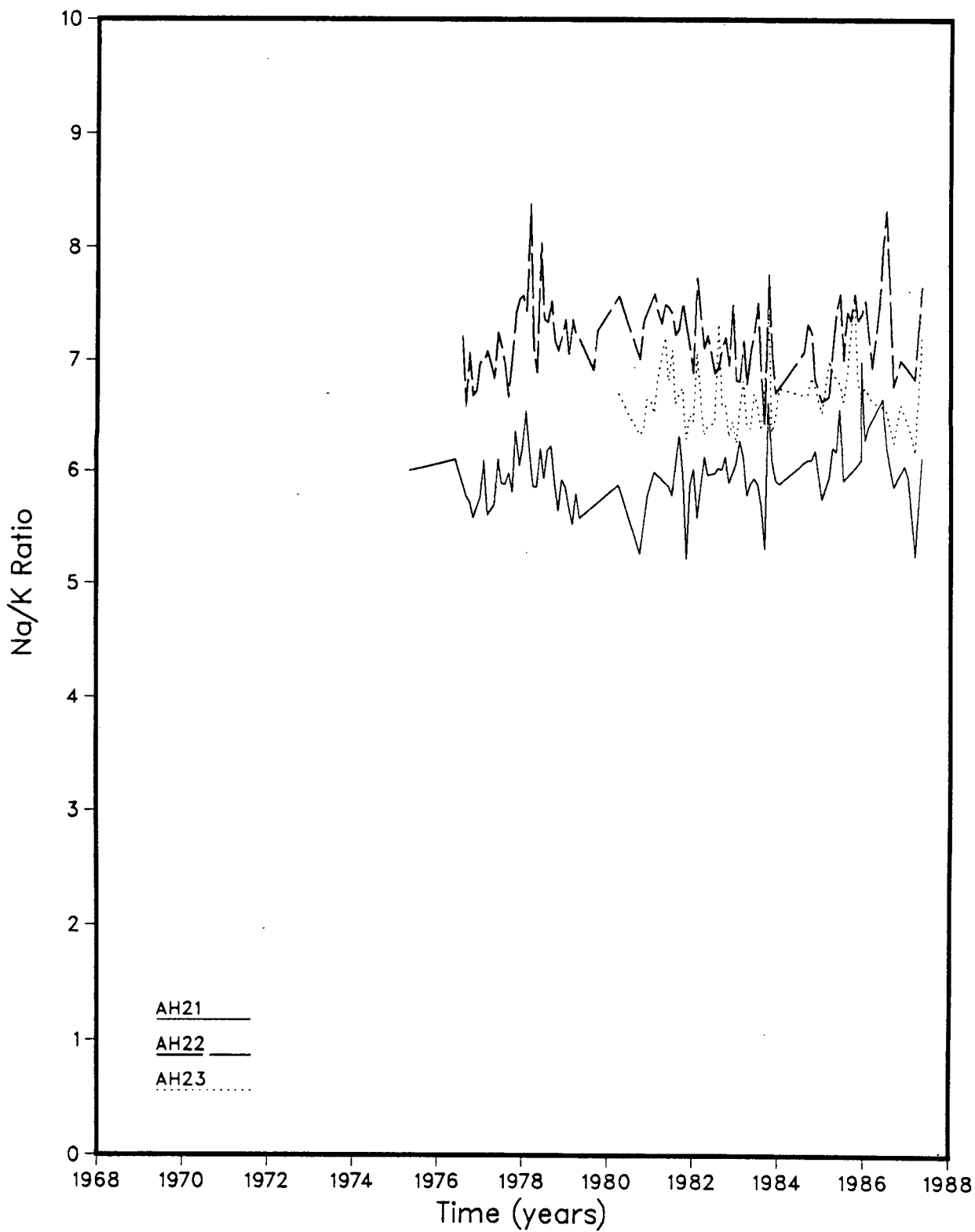
Water Chemistry (Na/K)



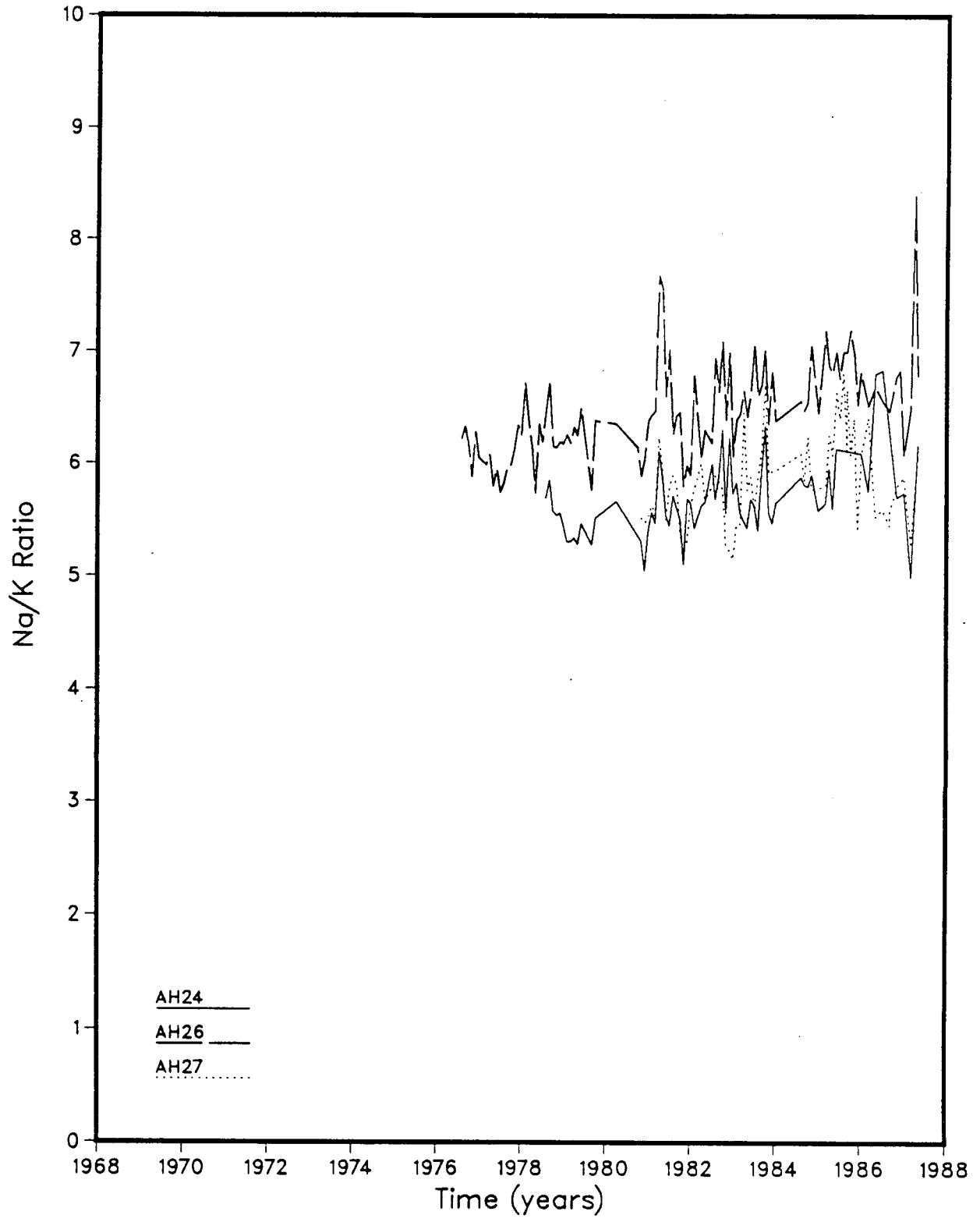
Water Chemistry (Na/K)



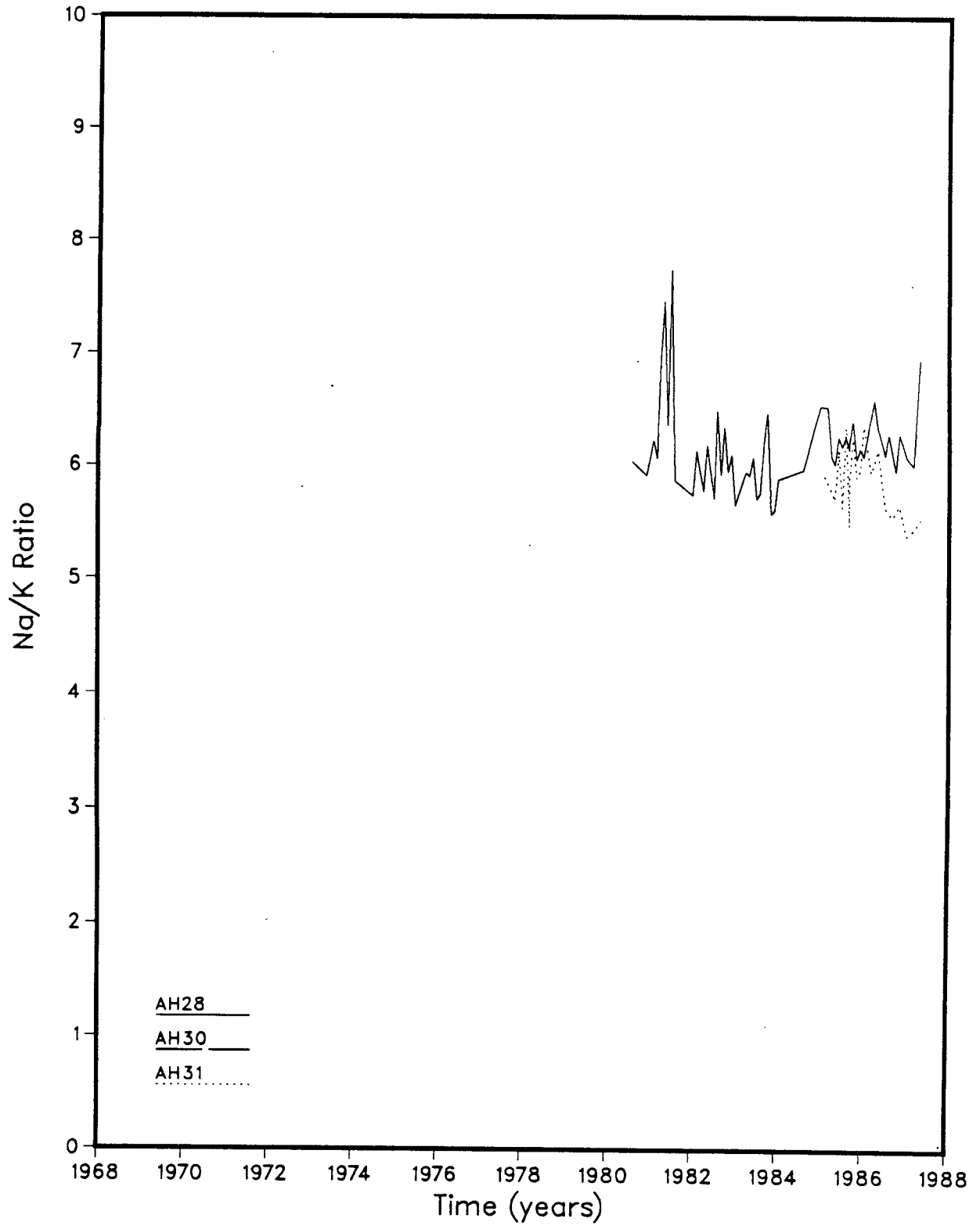
Water Chemistry (Na/K)



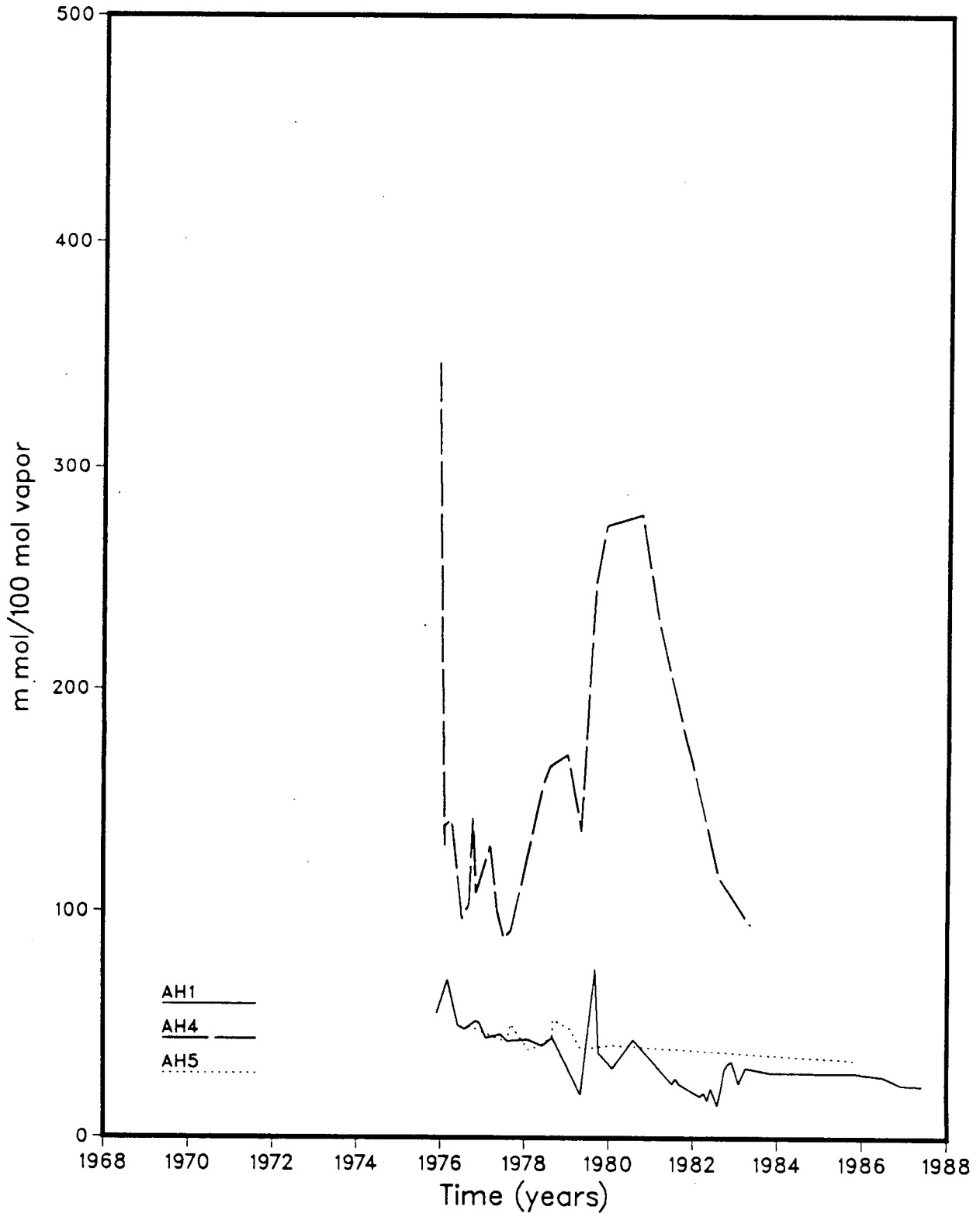
Water Chemistry (Na/K)



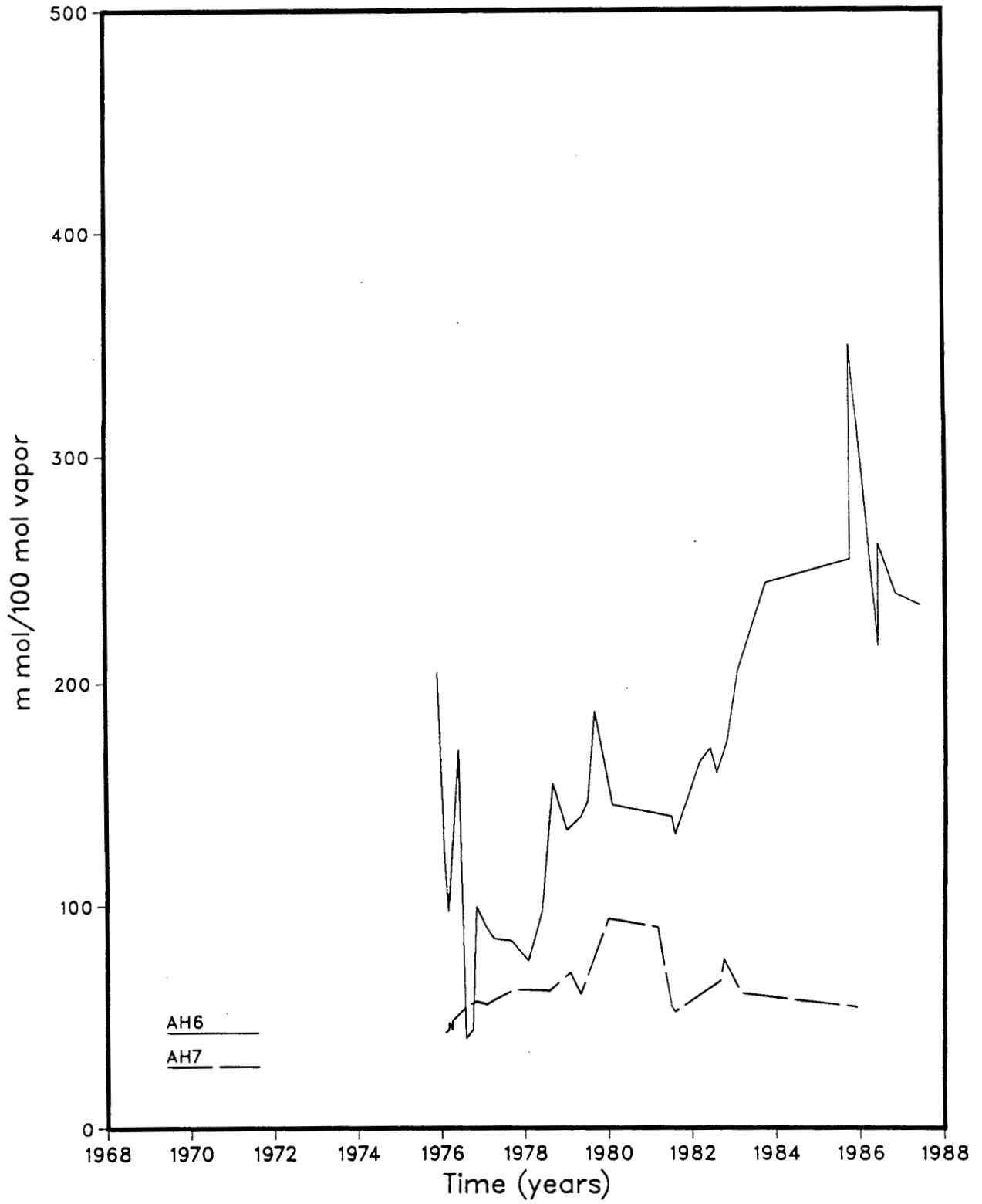
Water Chemistry (Na/K)



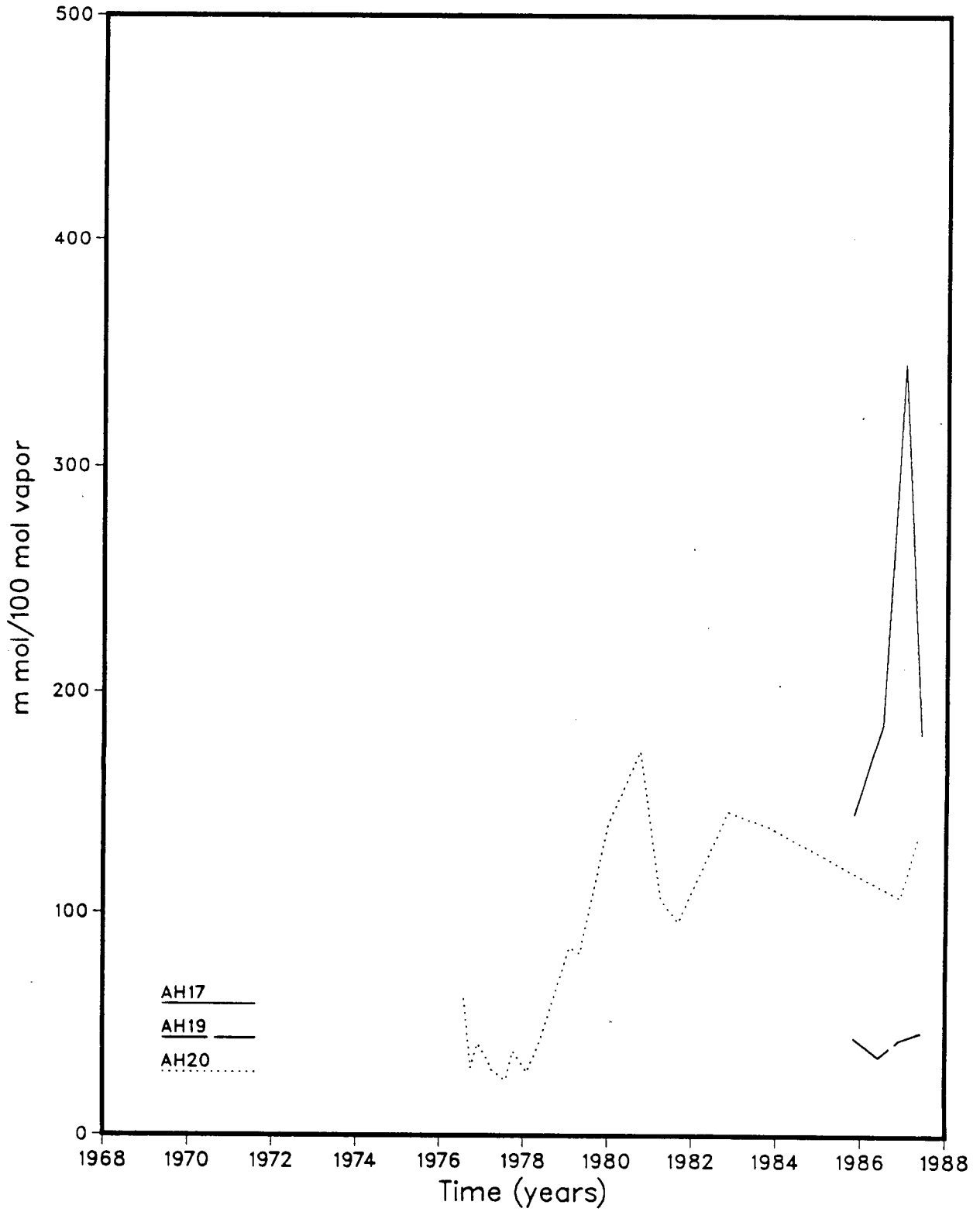
Gas Chemistry (CO₂)



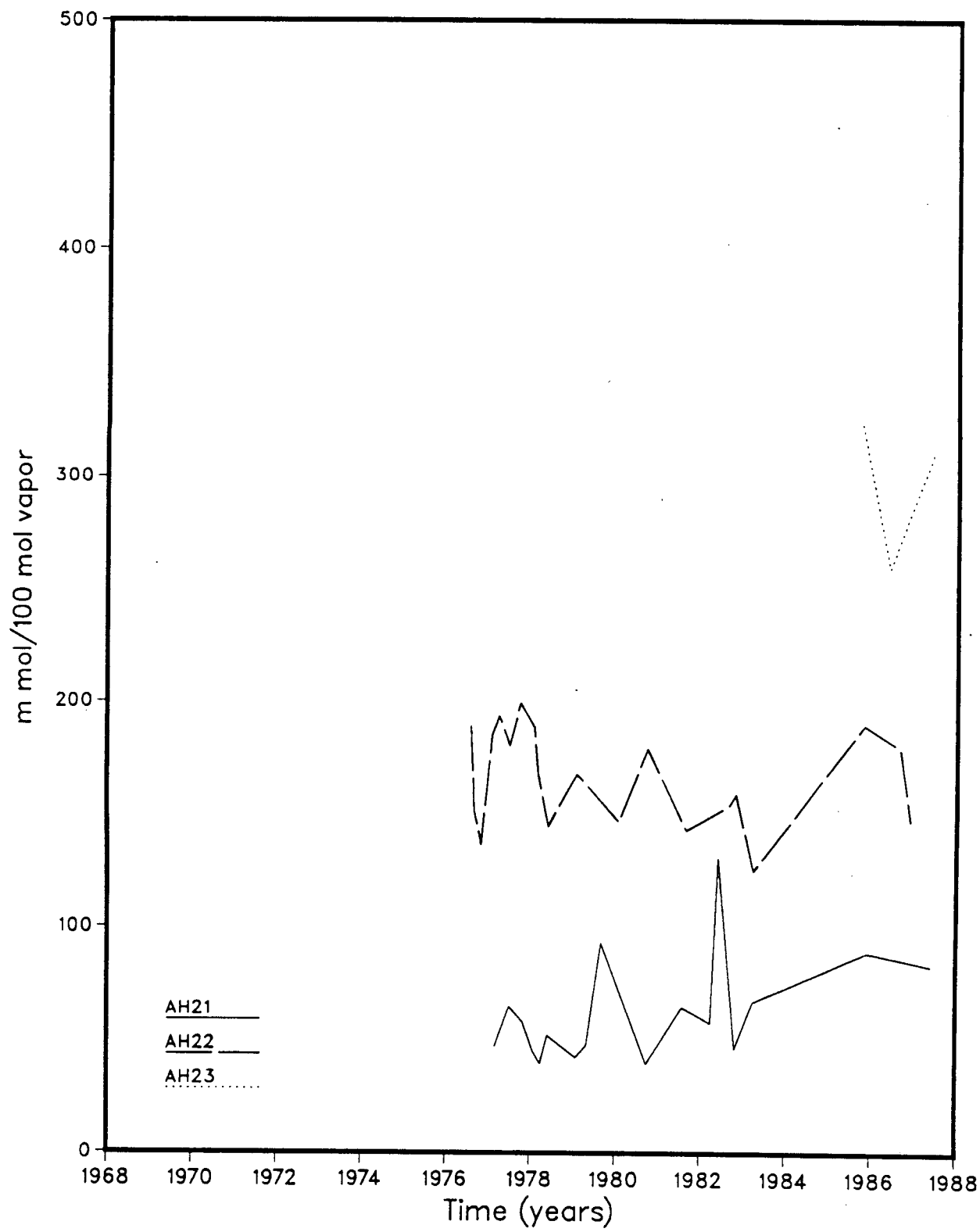
Gas Chemistry (CO₂)



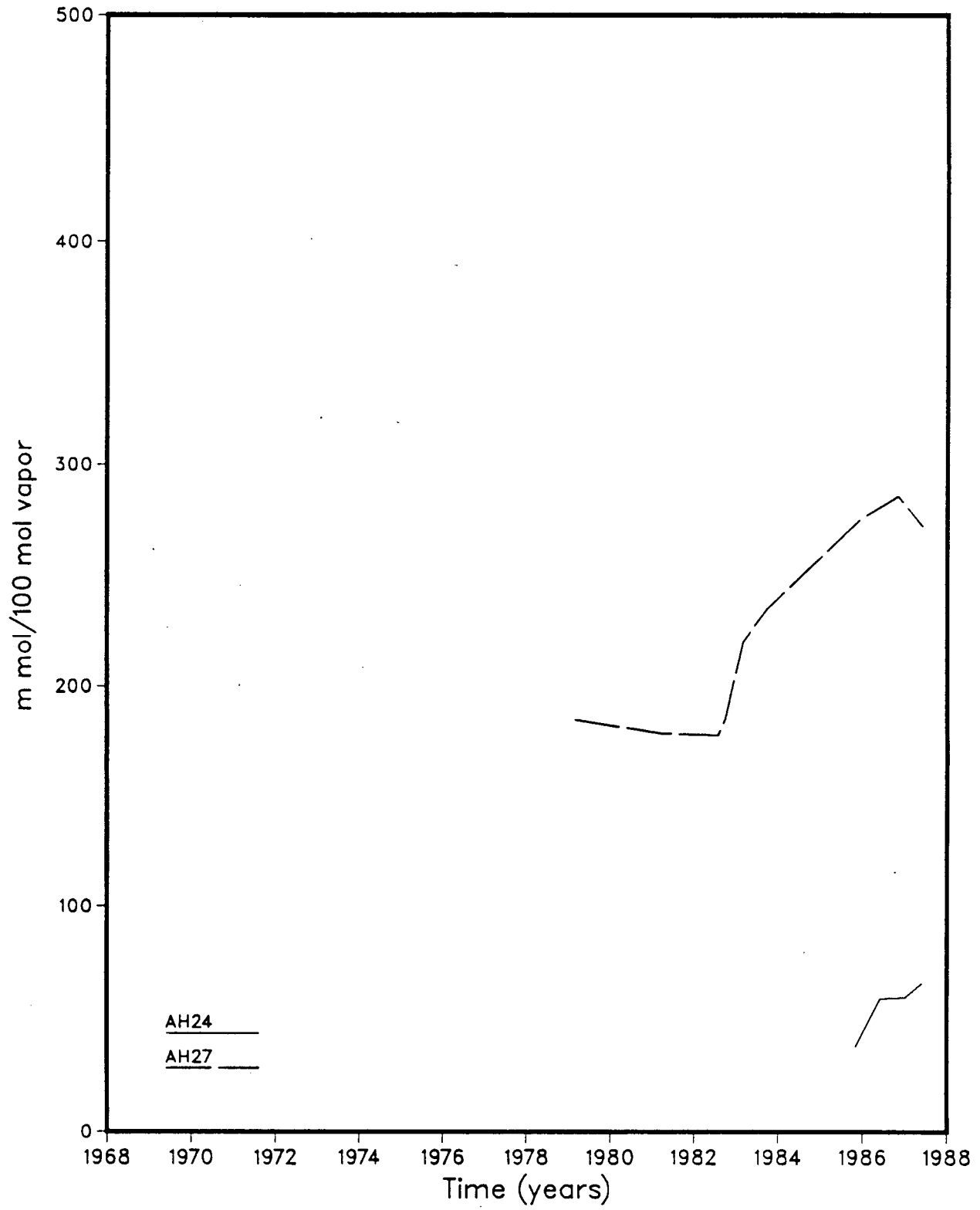
Gas Chemistry (CO₂)



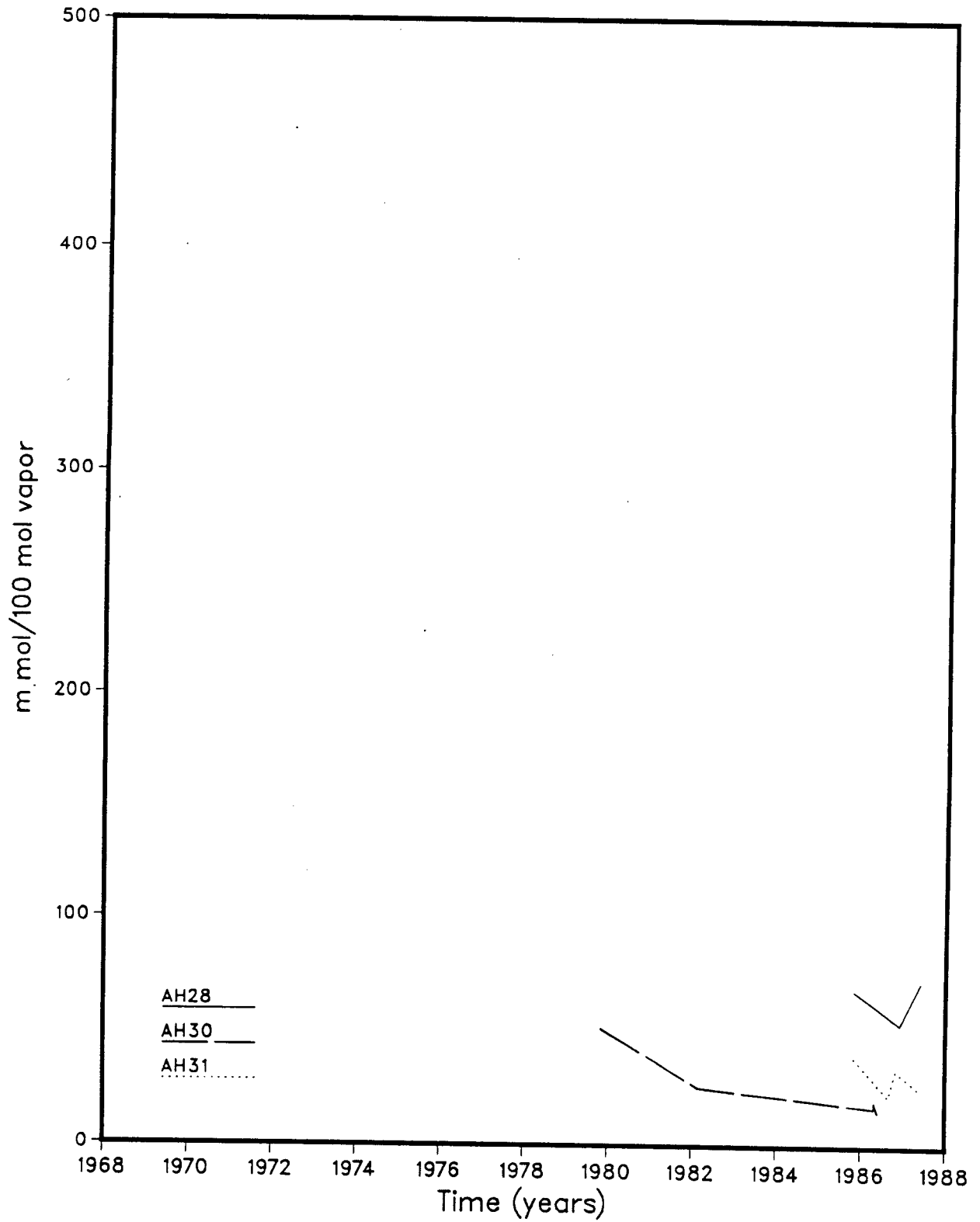
Gas Chemistry (CO₂)



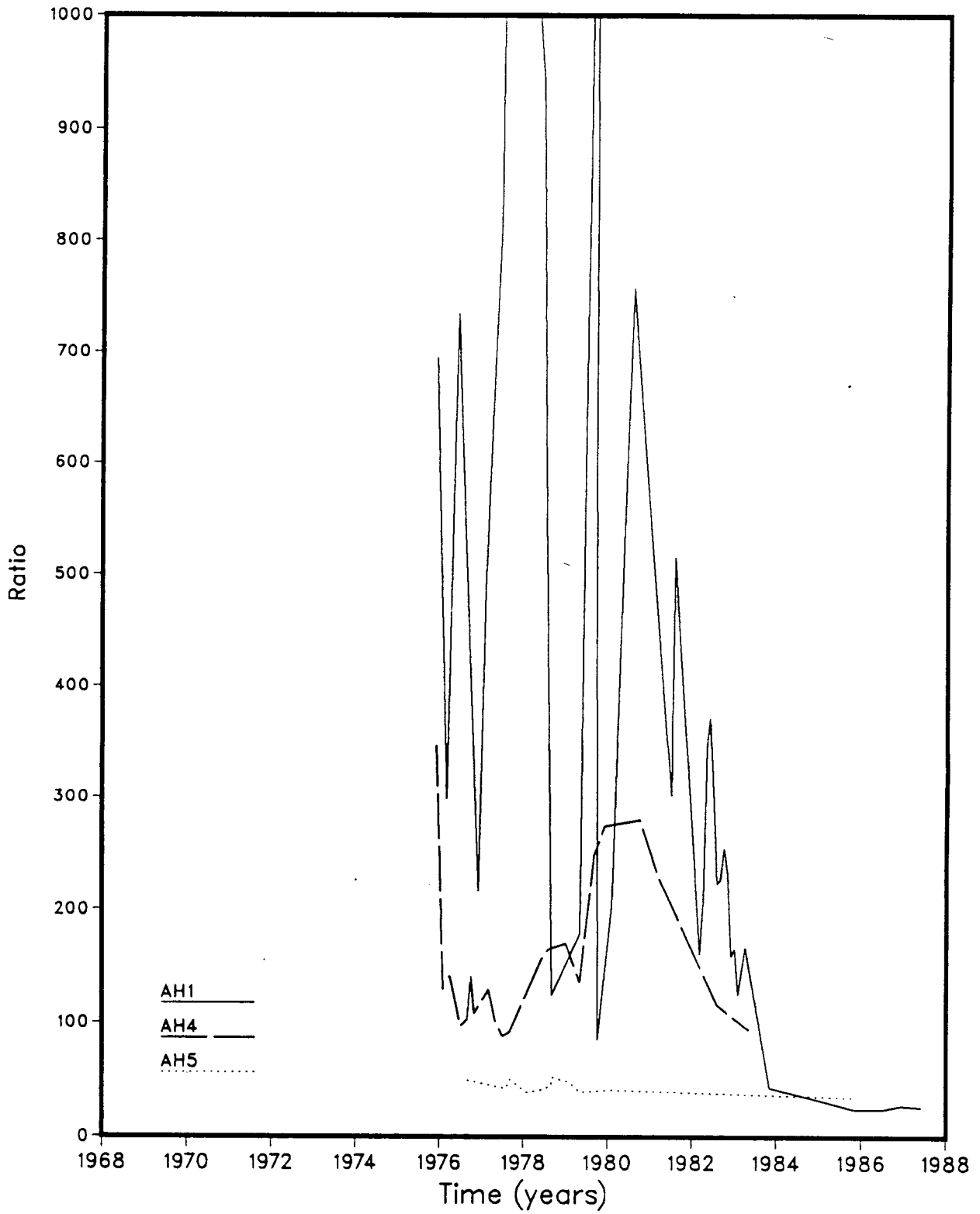
Gas Chemistry (CO₂)



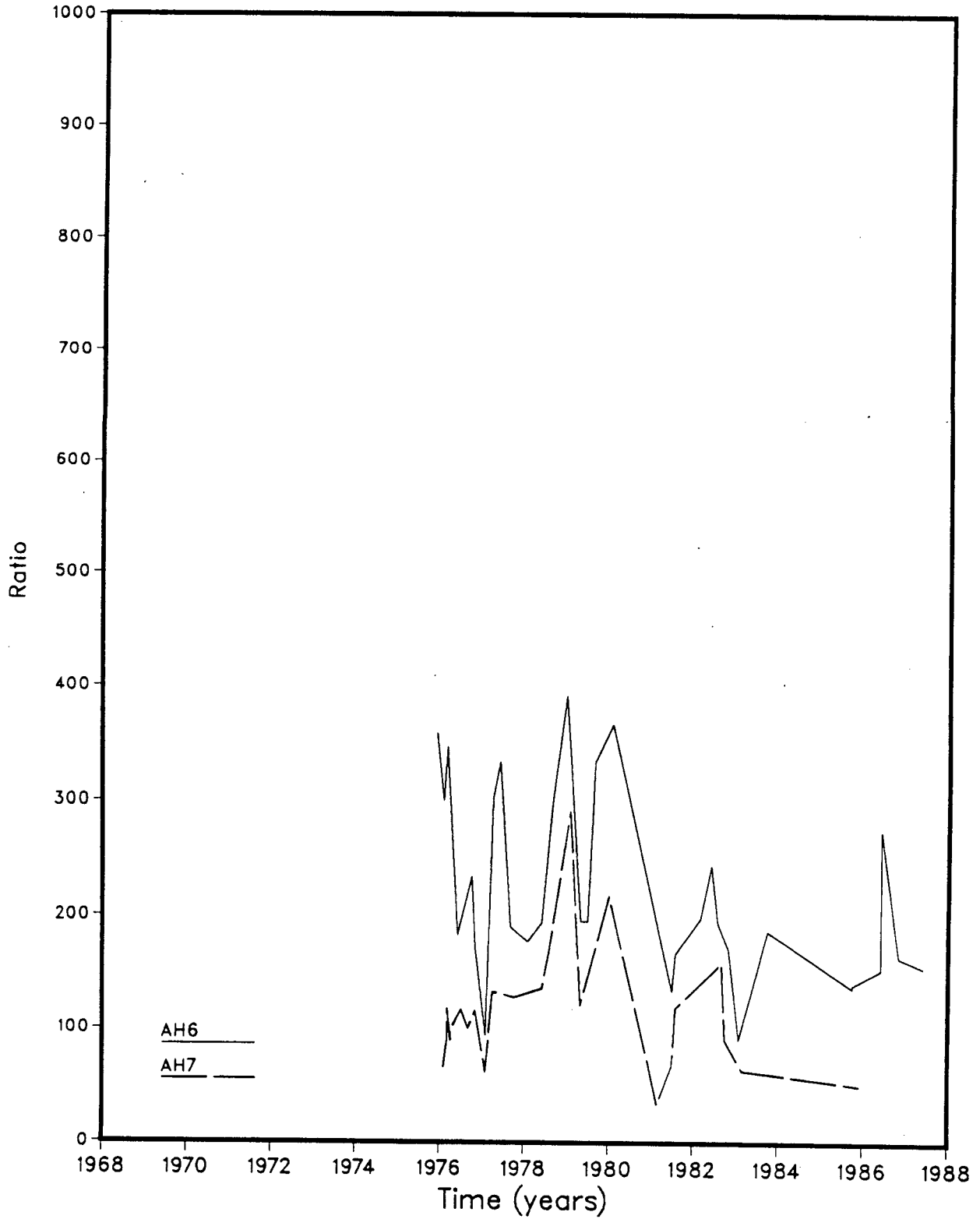
Gas Chemistry (CO₂)



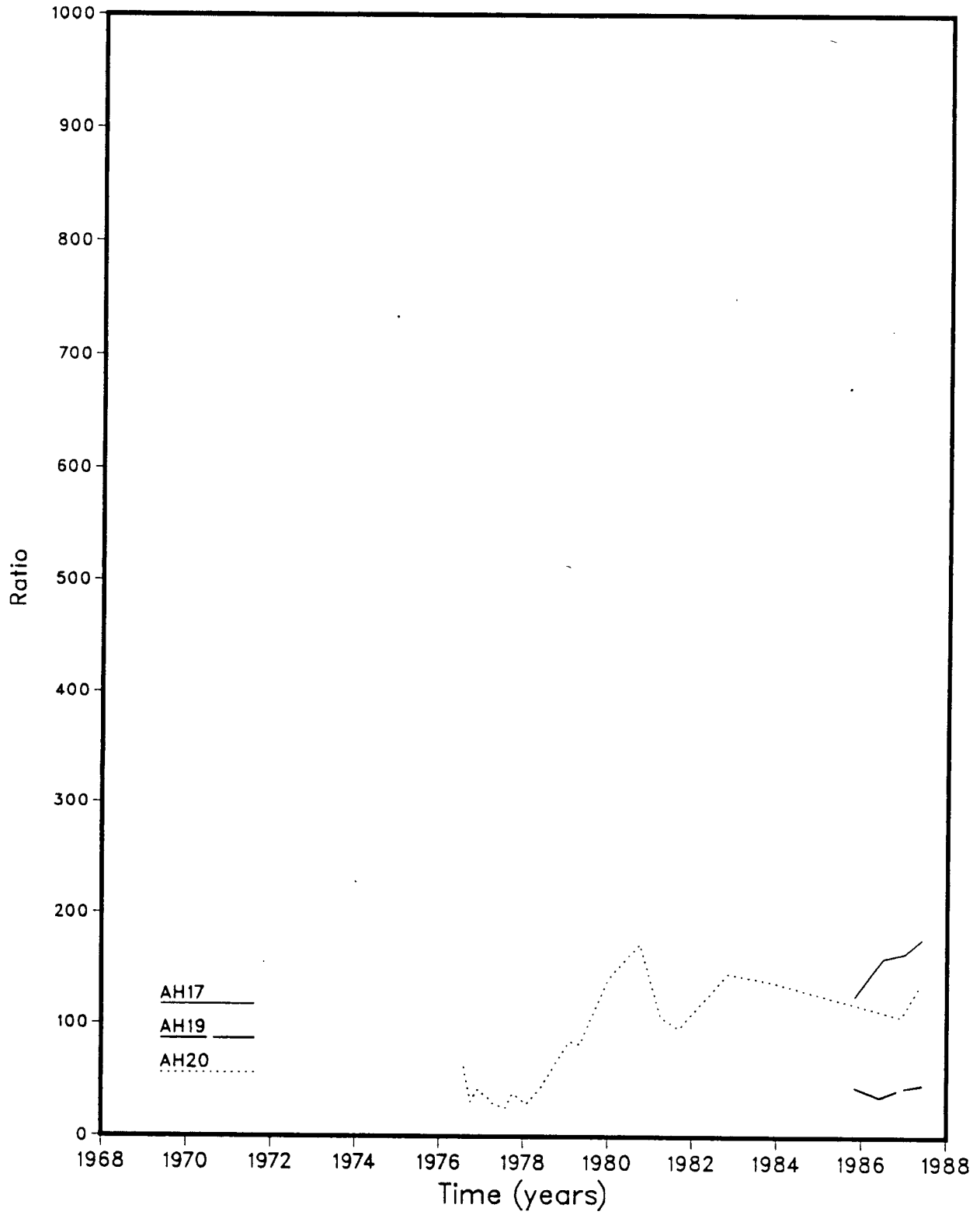
CO₂/H₂ Ratio



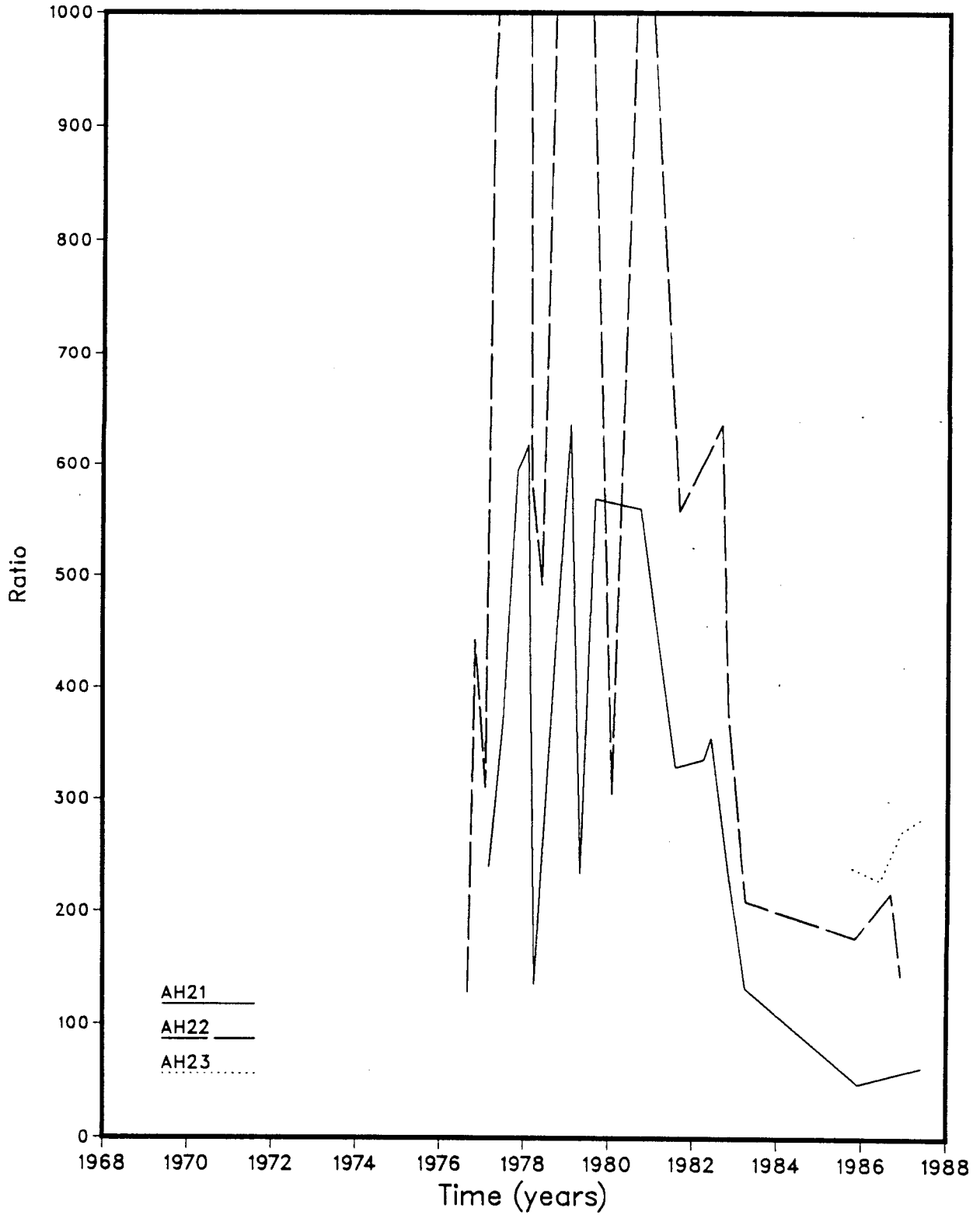
CO₂/H₂ Ratio



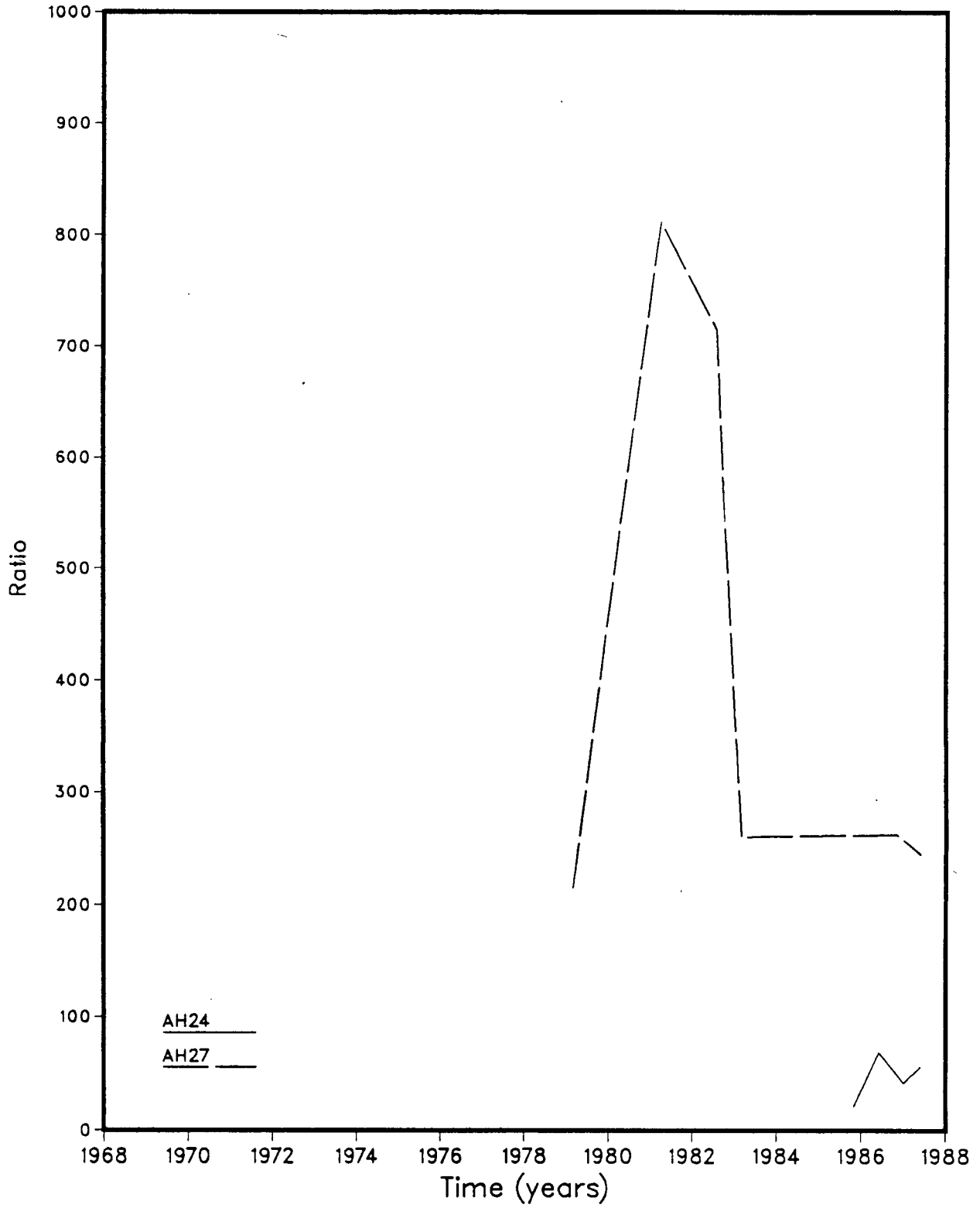
CO₂/H₂ Ratio



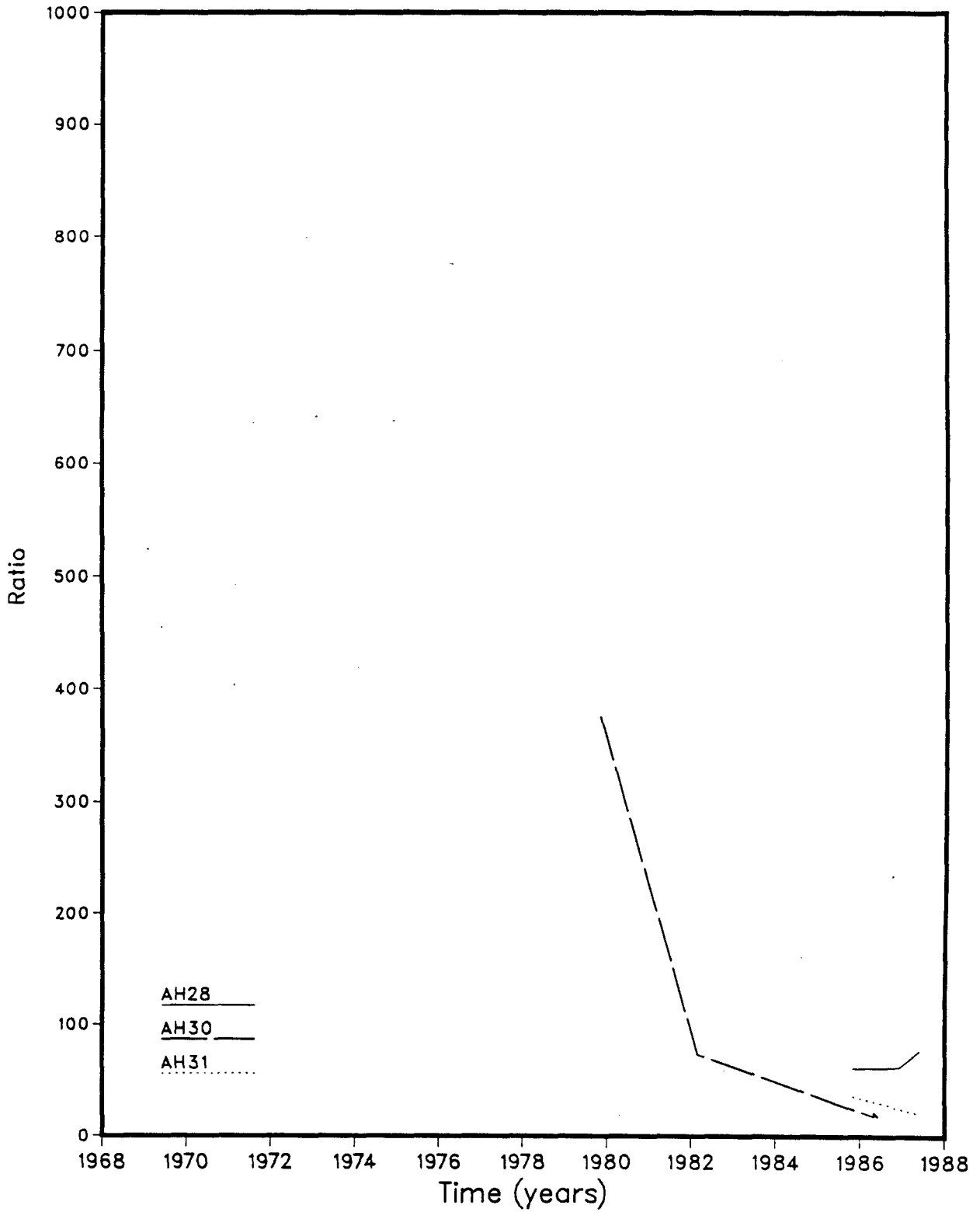
CO₂/H₂ Ratio



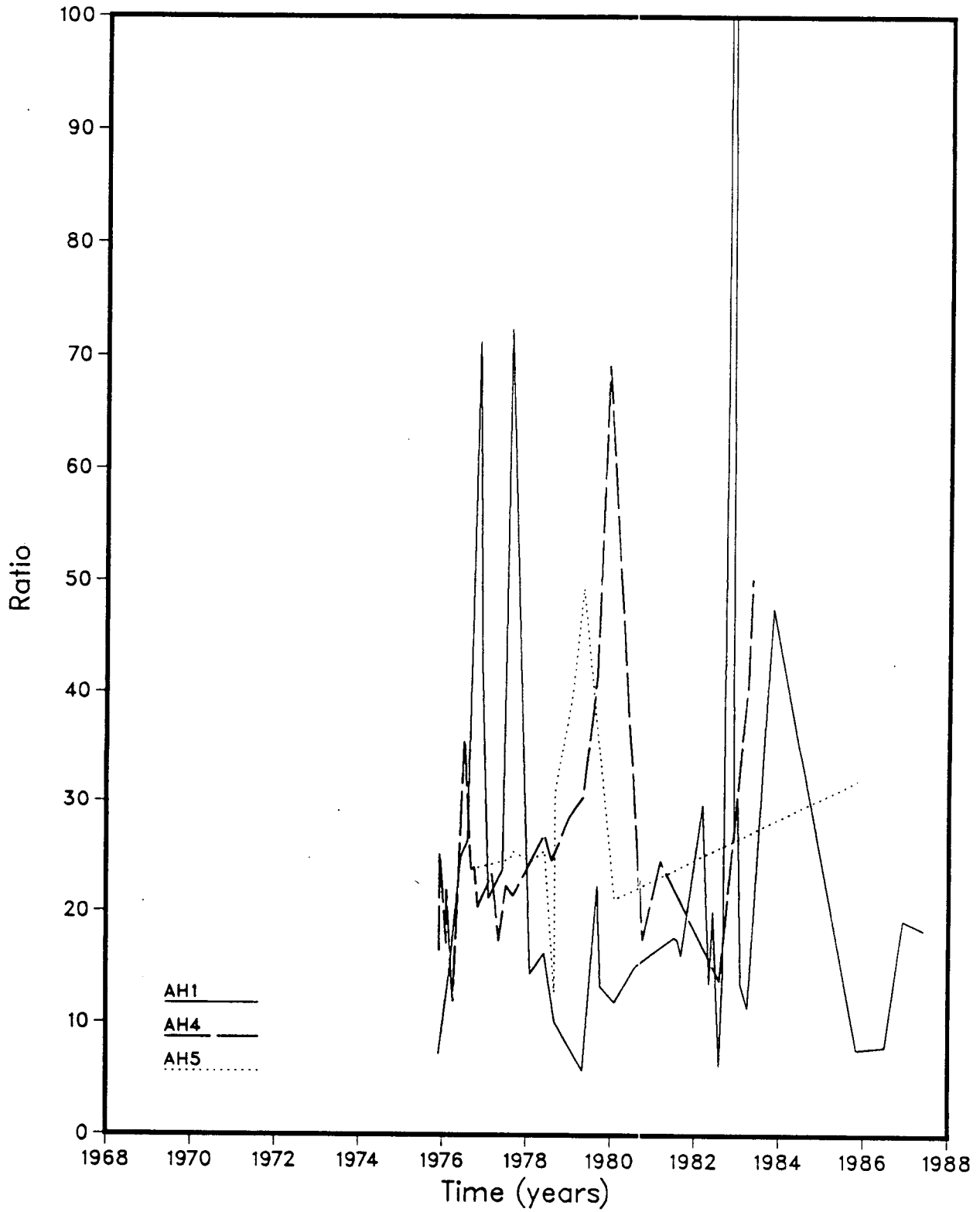
CO₂/H₂ Ratio



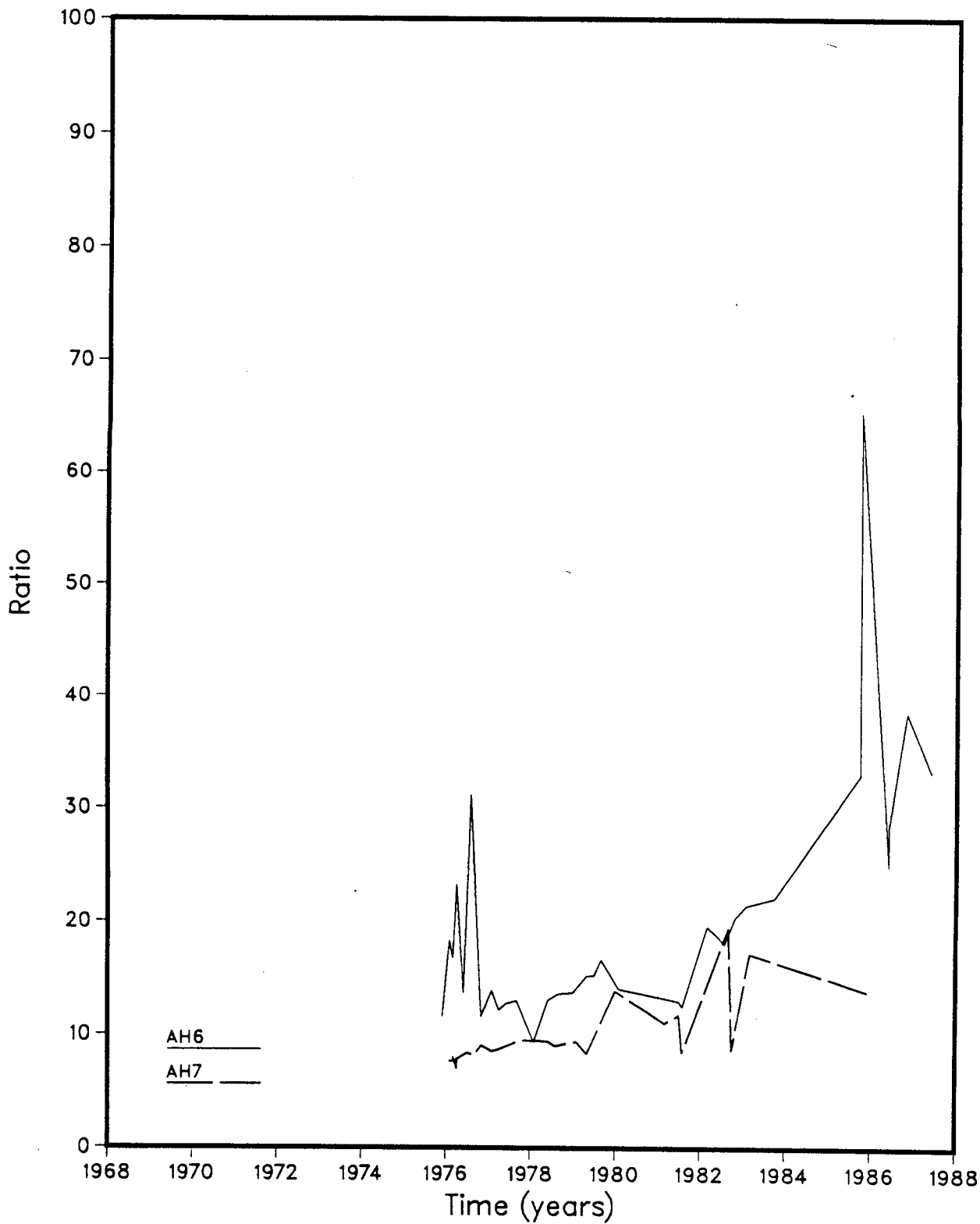
CO₂/H₂ Ratio



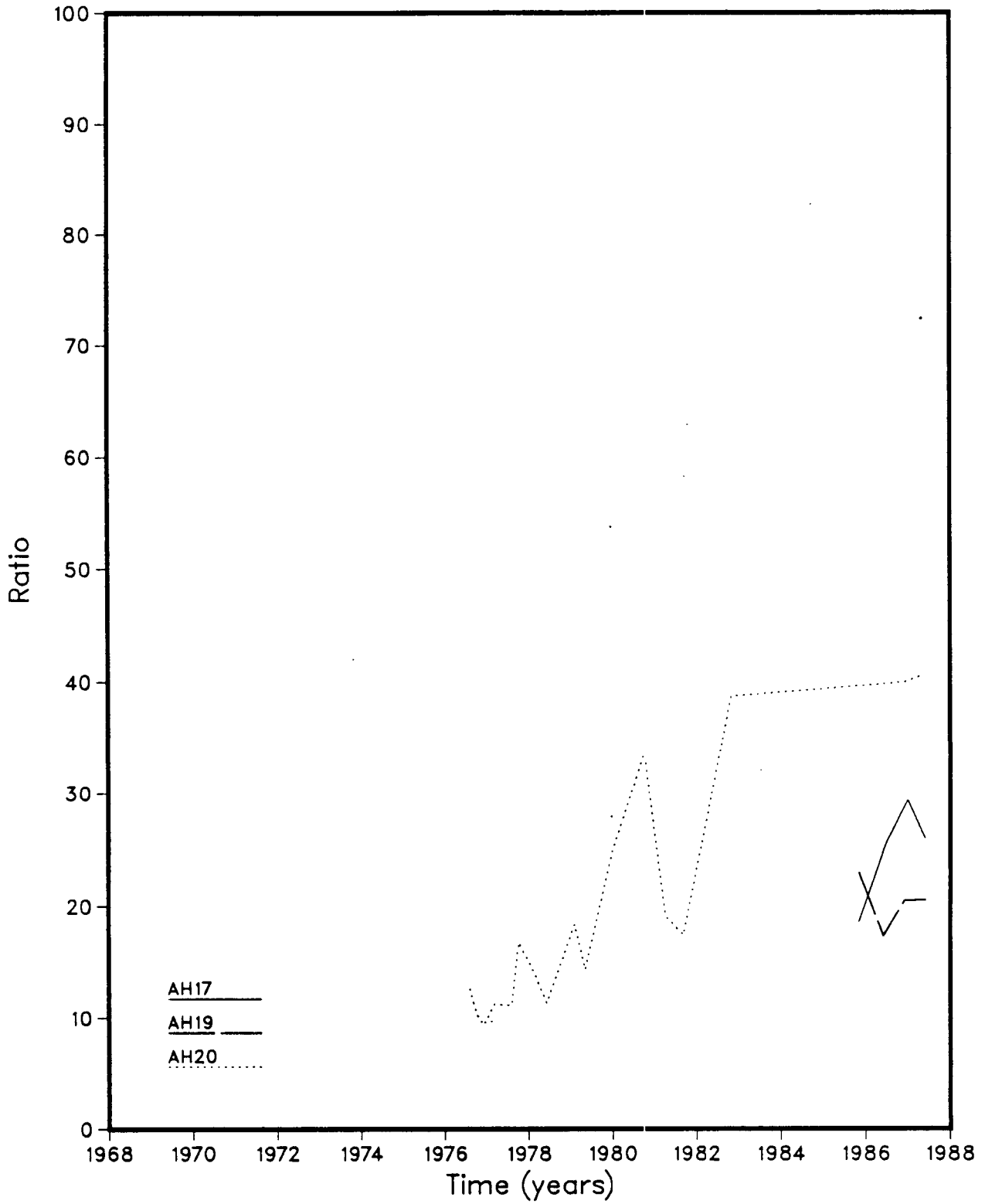
CO₂/H₂S Ratio



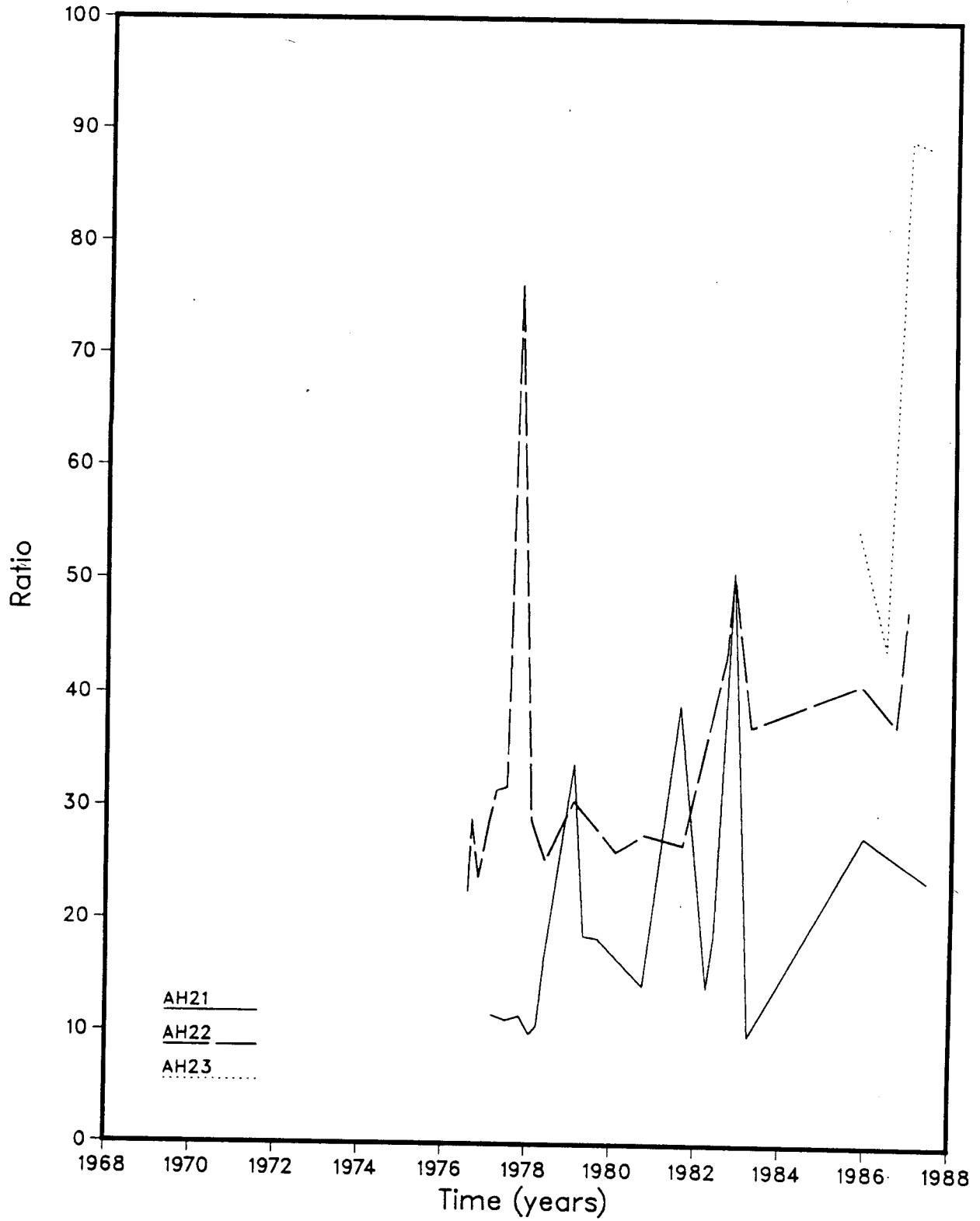
CO₂/H₂S Ratio



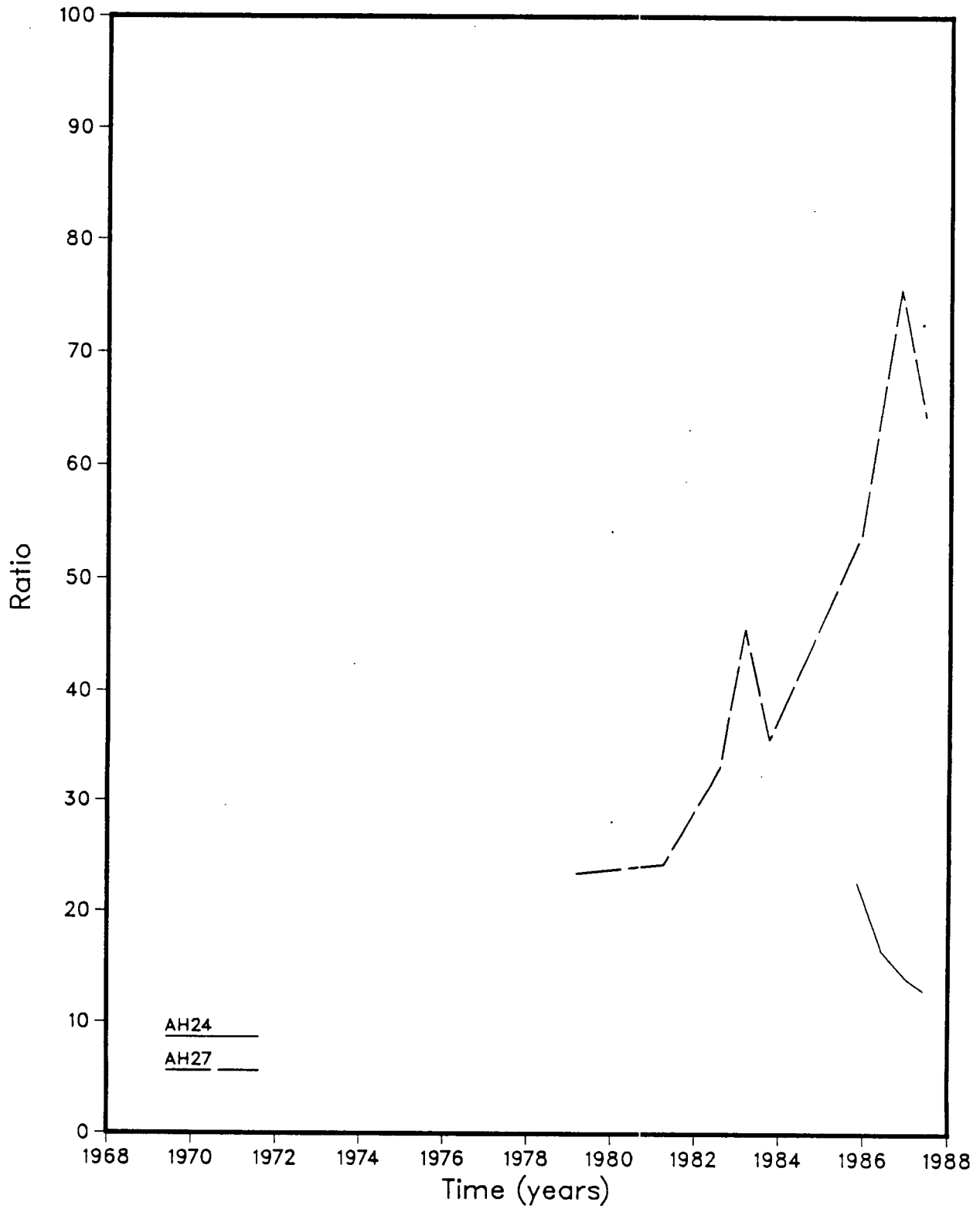
CO₂/H₂S Ratio



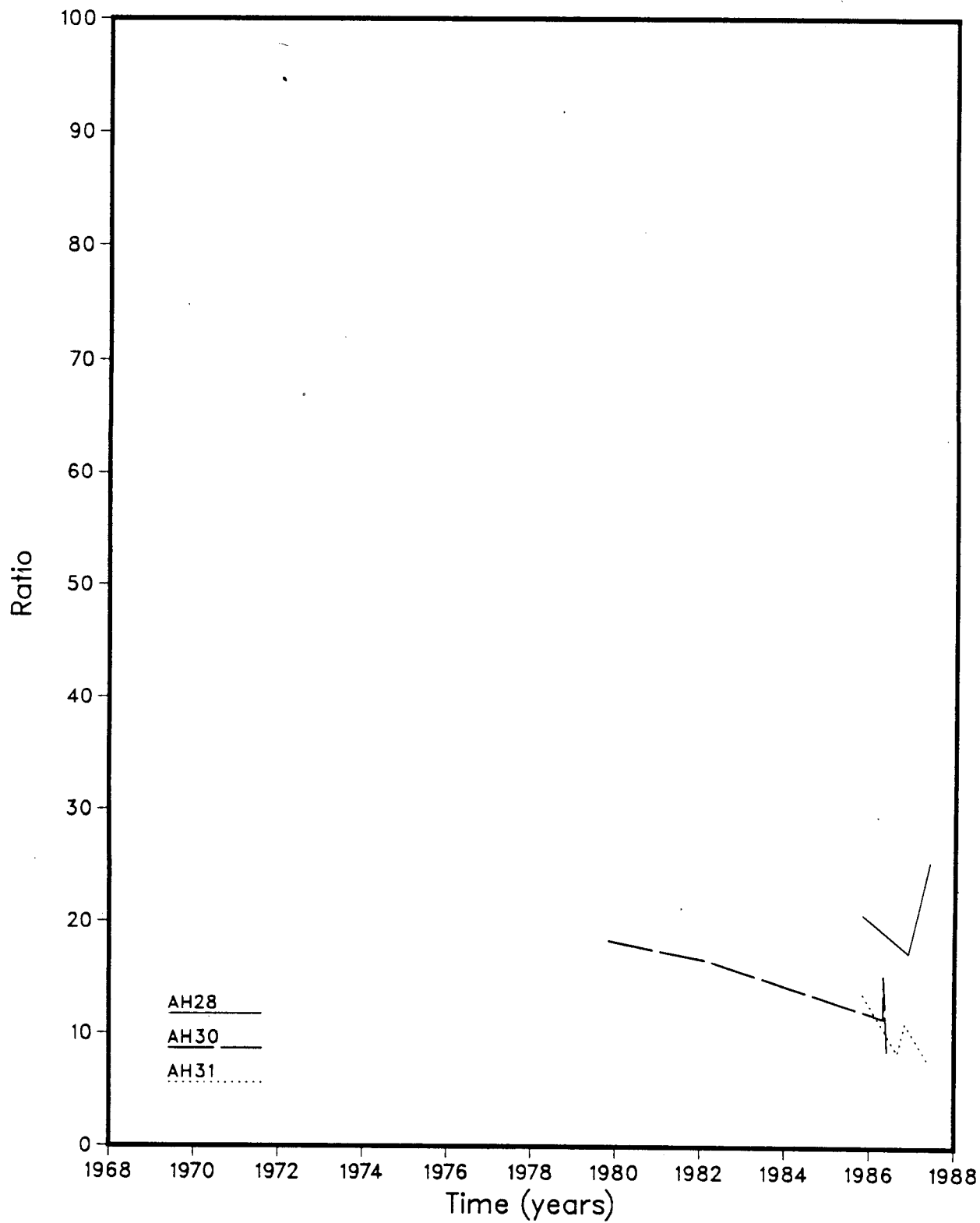
CO₂/H₂S Ratio



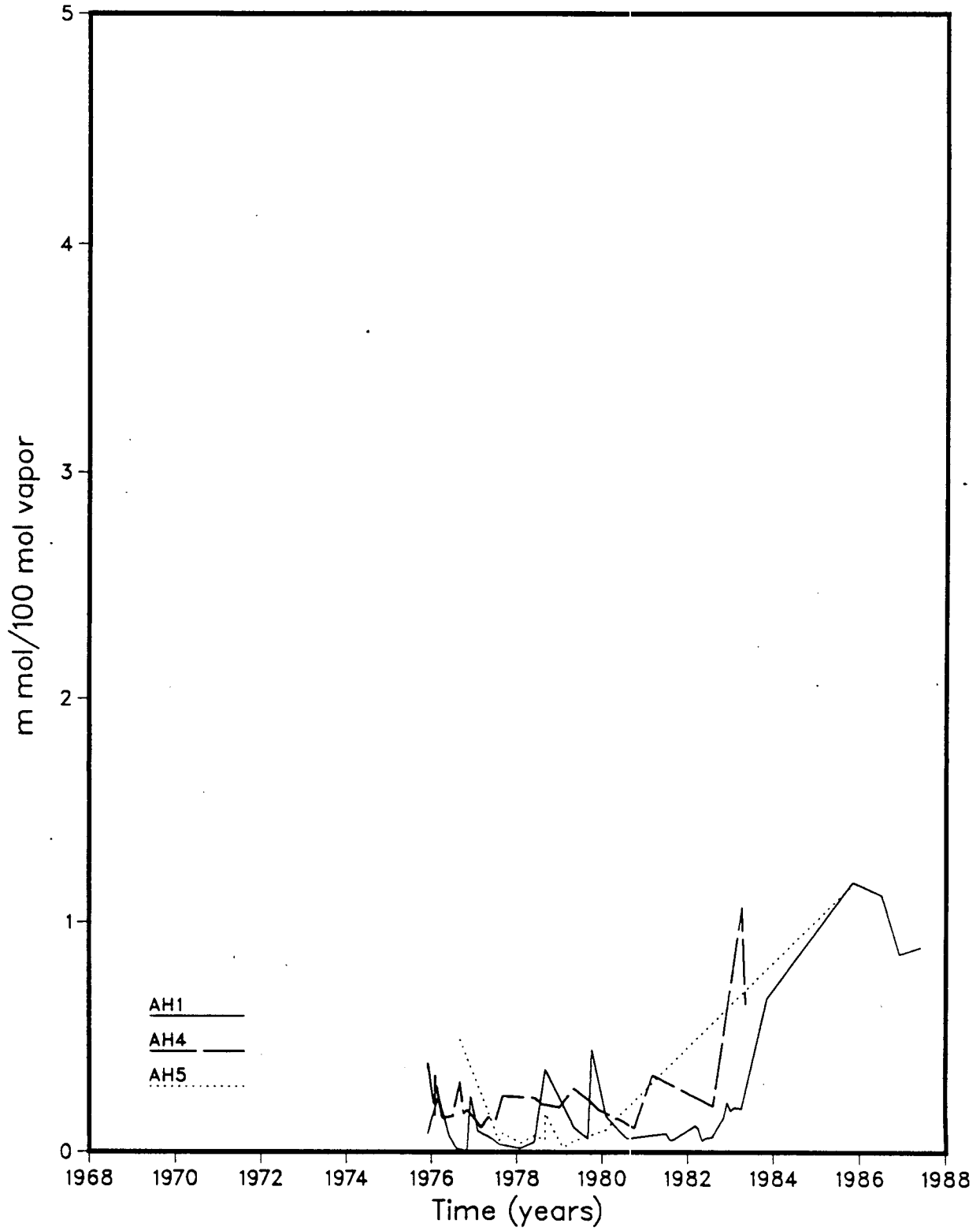
CO₂/H₂S Ratio



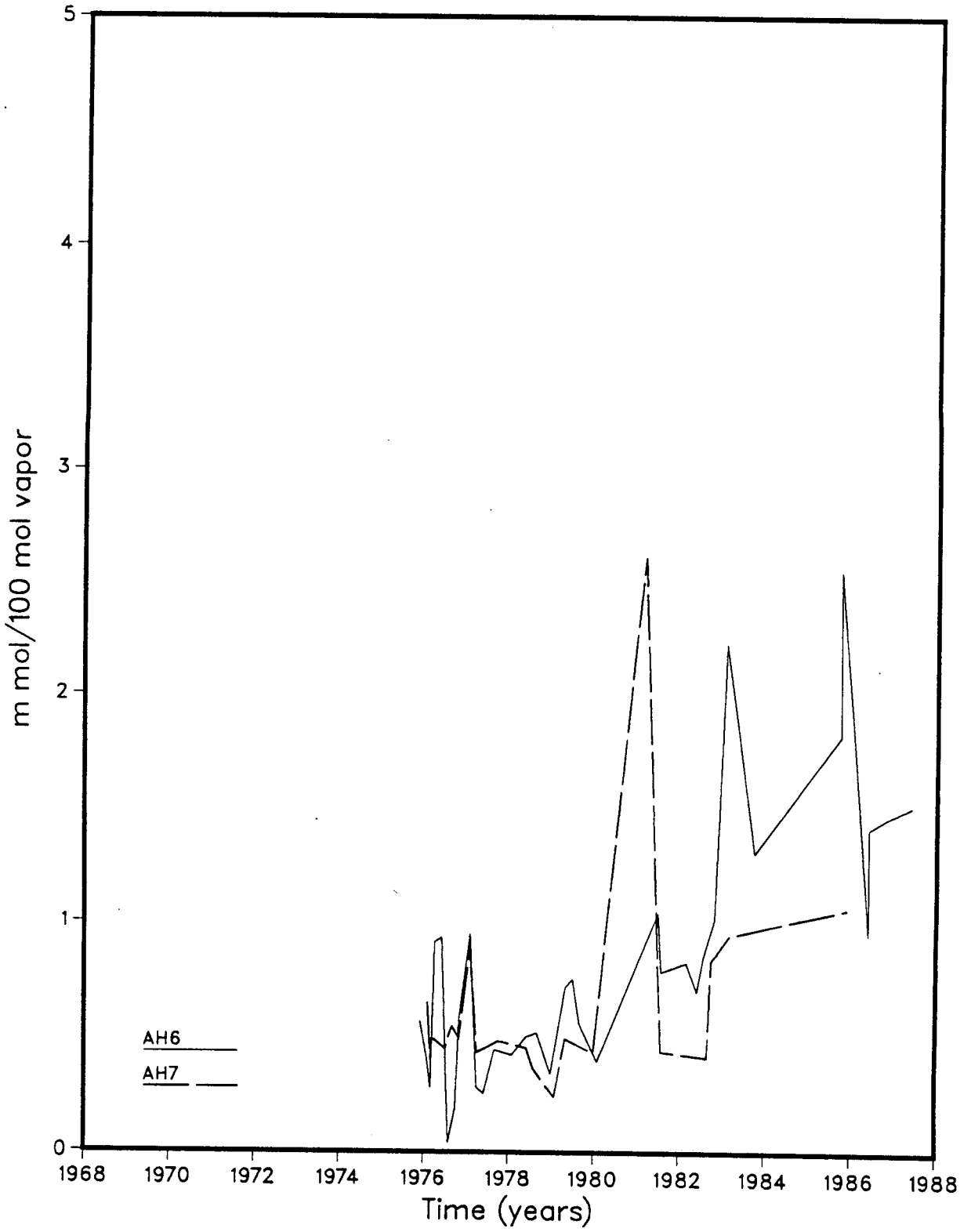
CO₂/H₂S Ratio



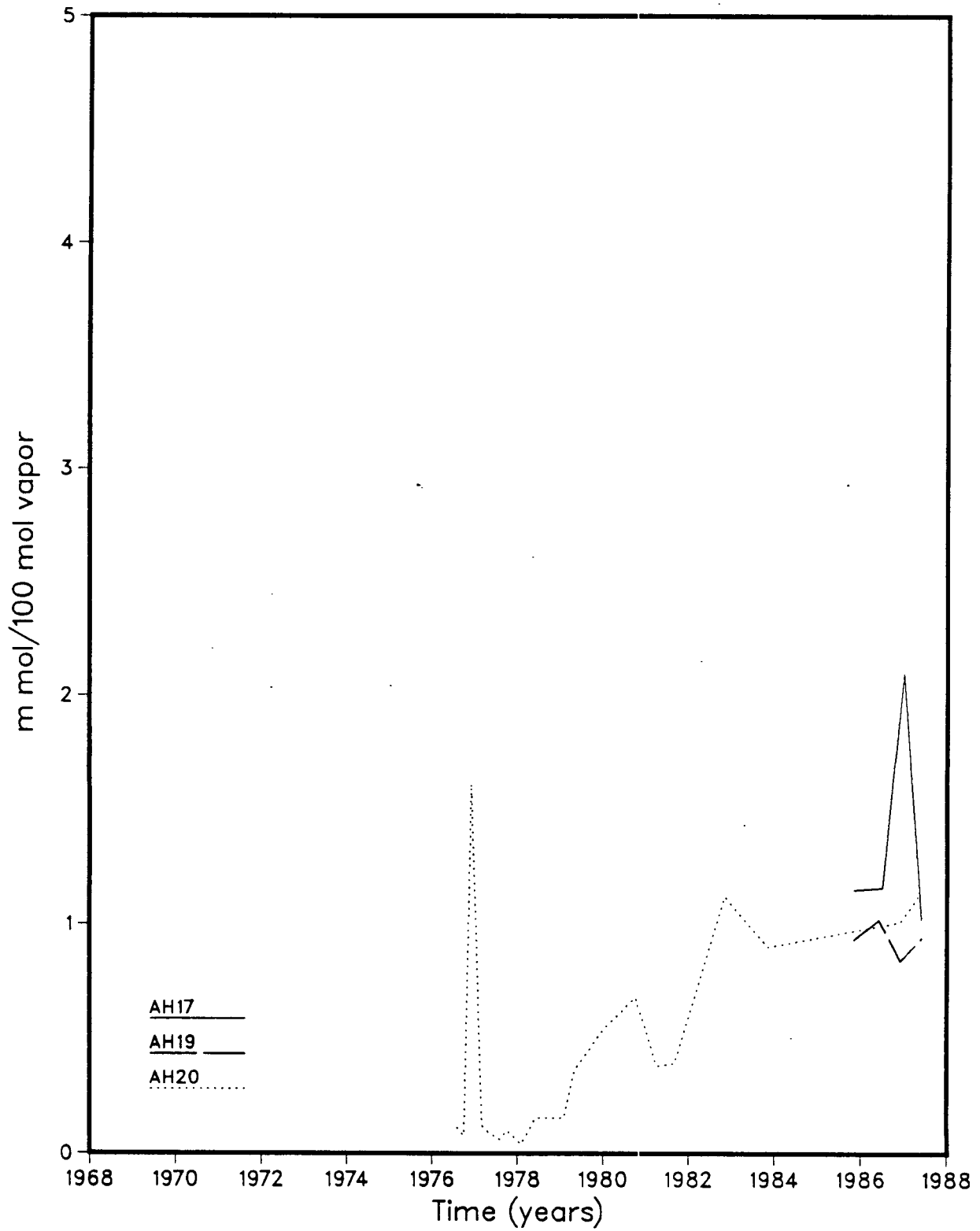
Gas Chemistry (H2)



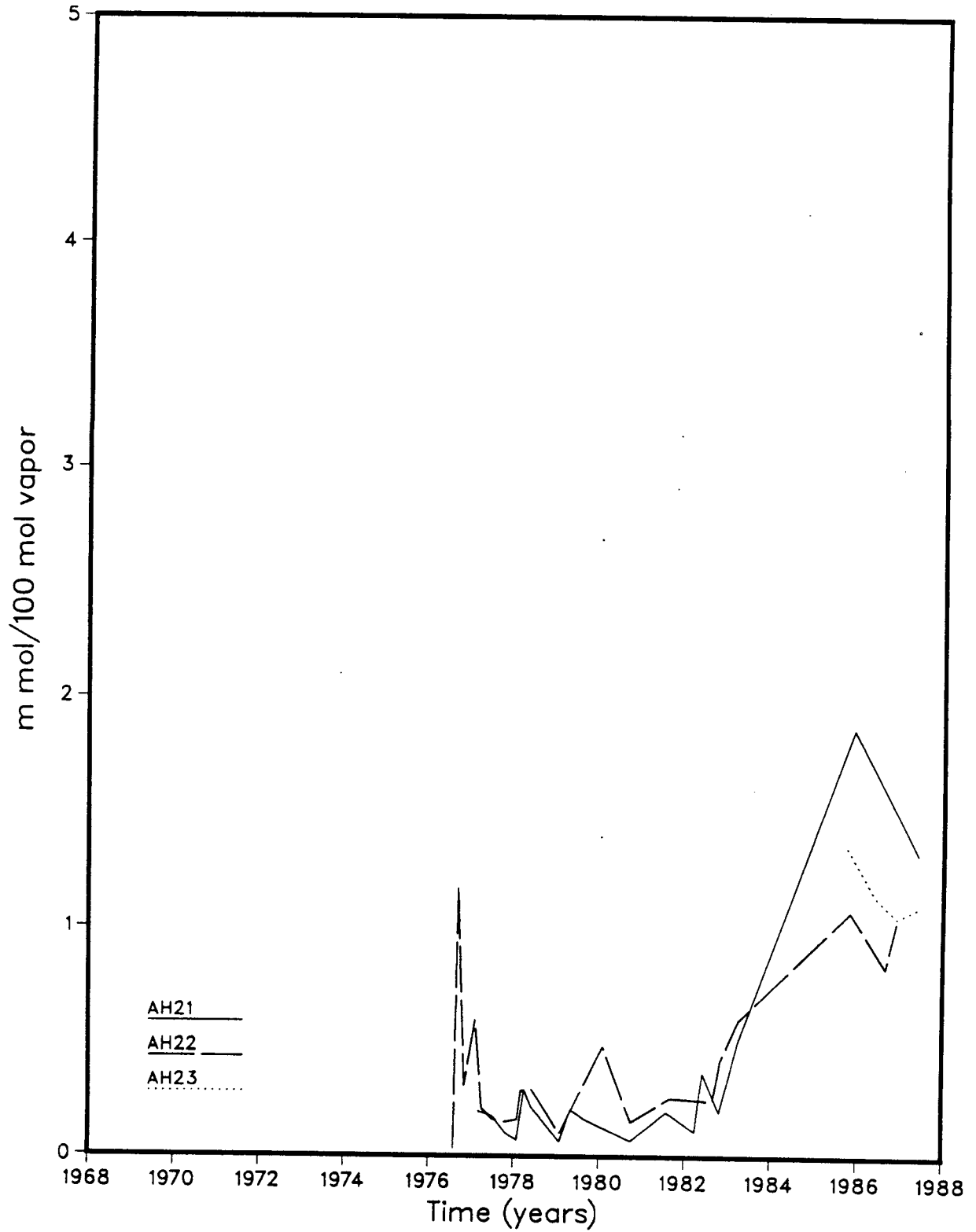
Gas Chemistry (H2)



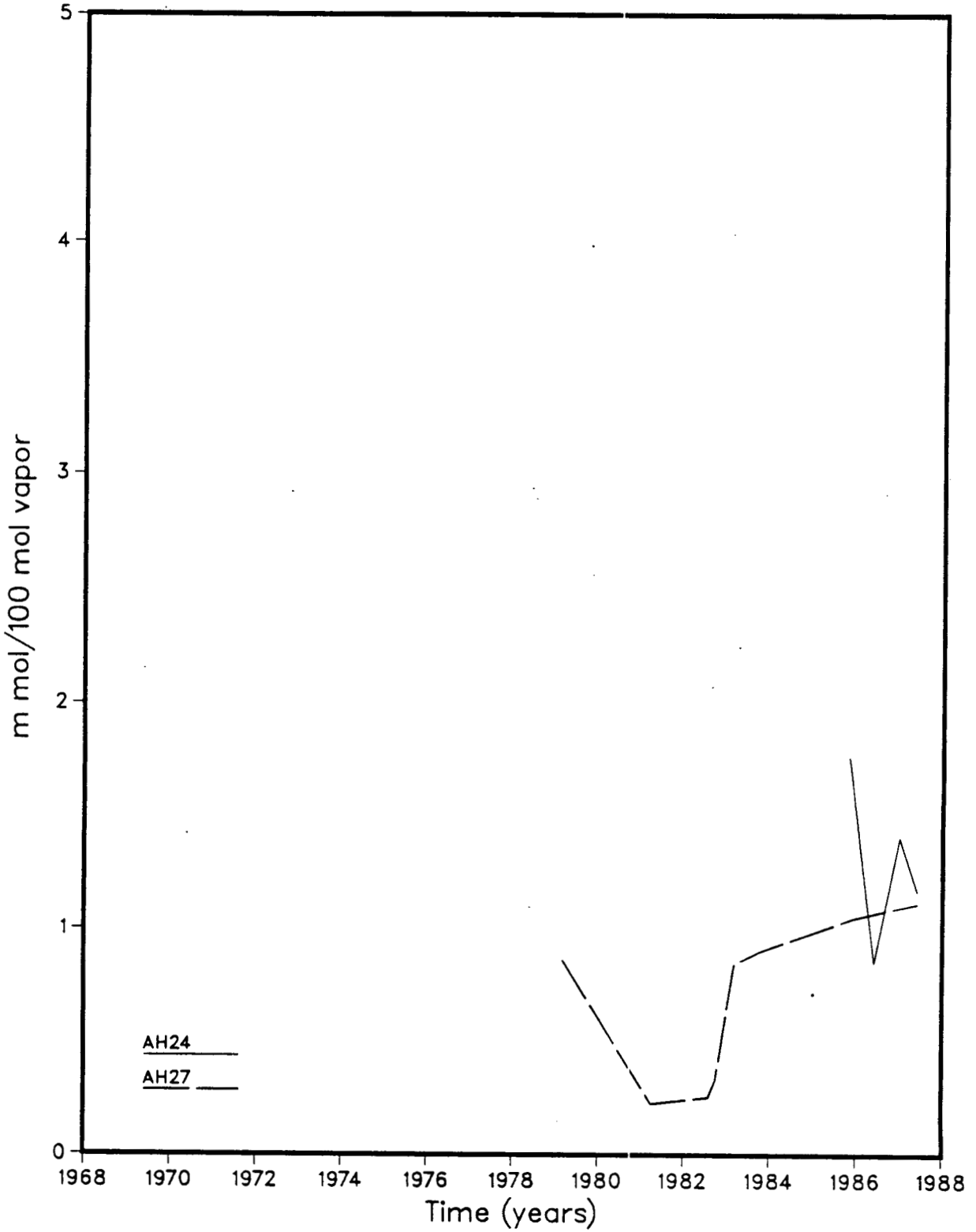
Gas Chemistry (H2)



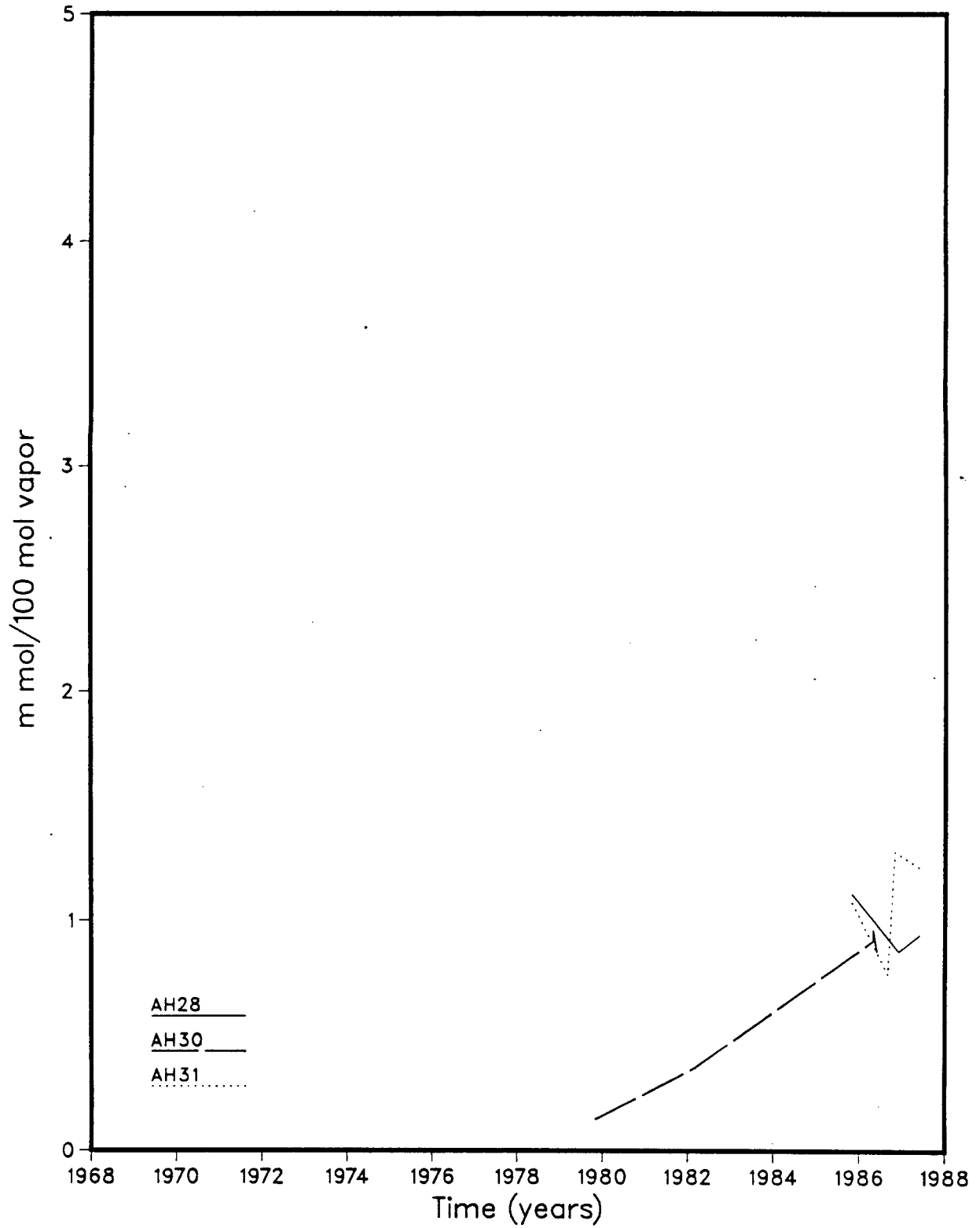
Gas Chemistry (H2)



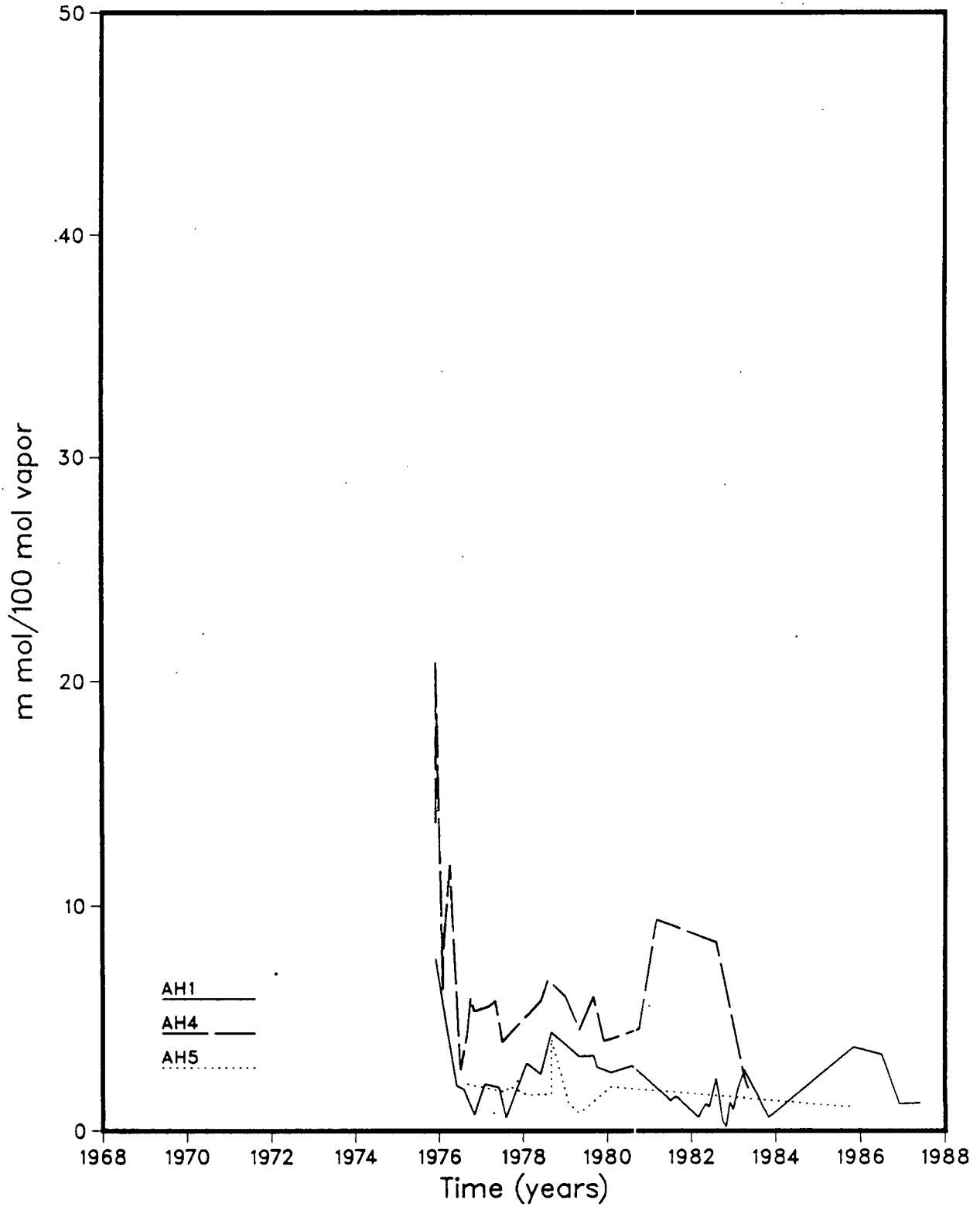
Gas Chemistry (H2)



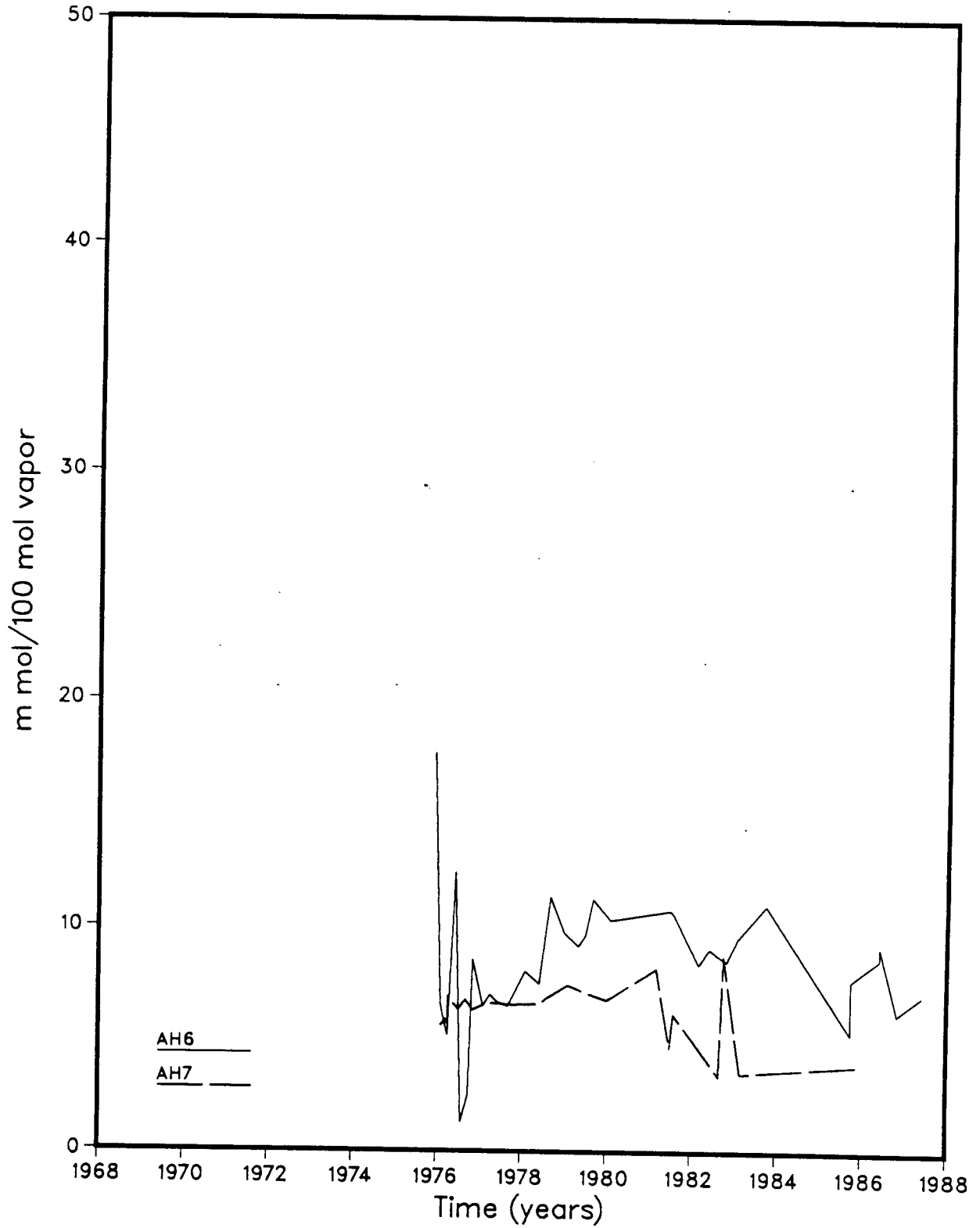
Gas Chemistry (H₂)



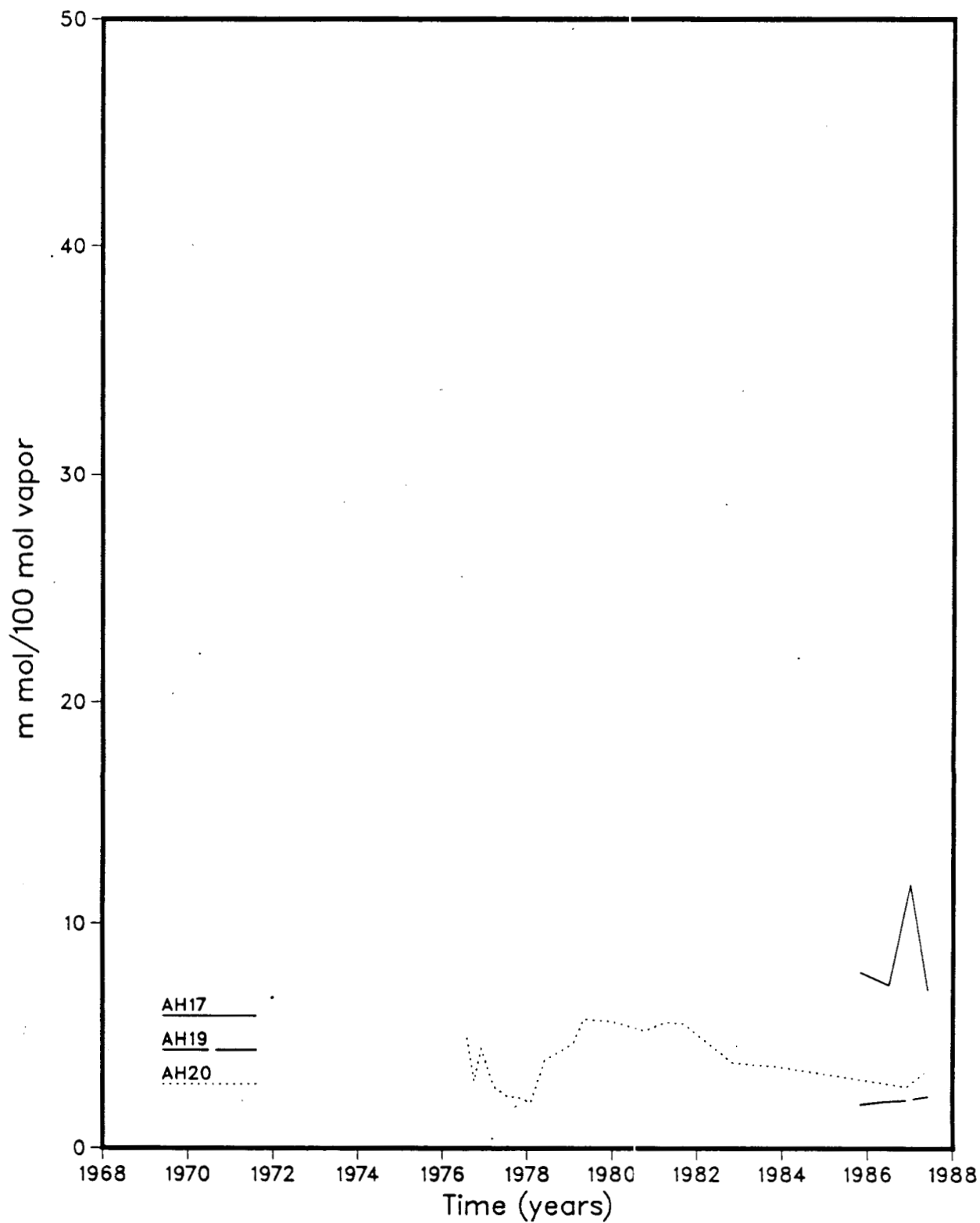
Gas Chemistry (H₂S)



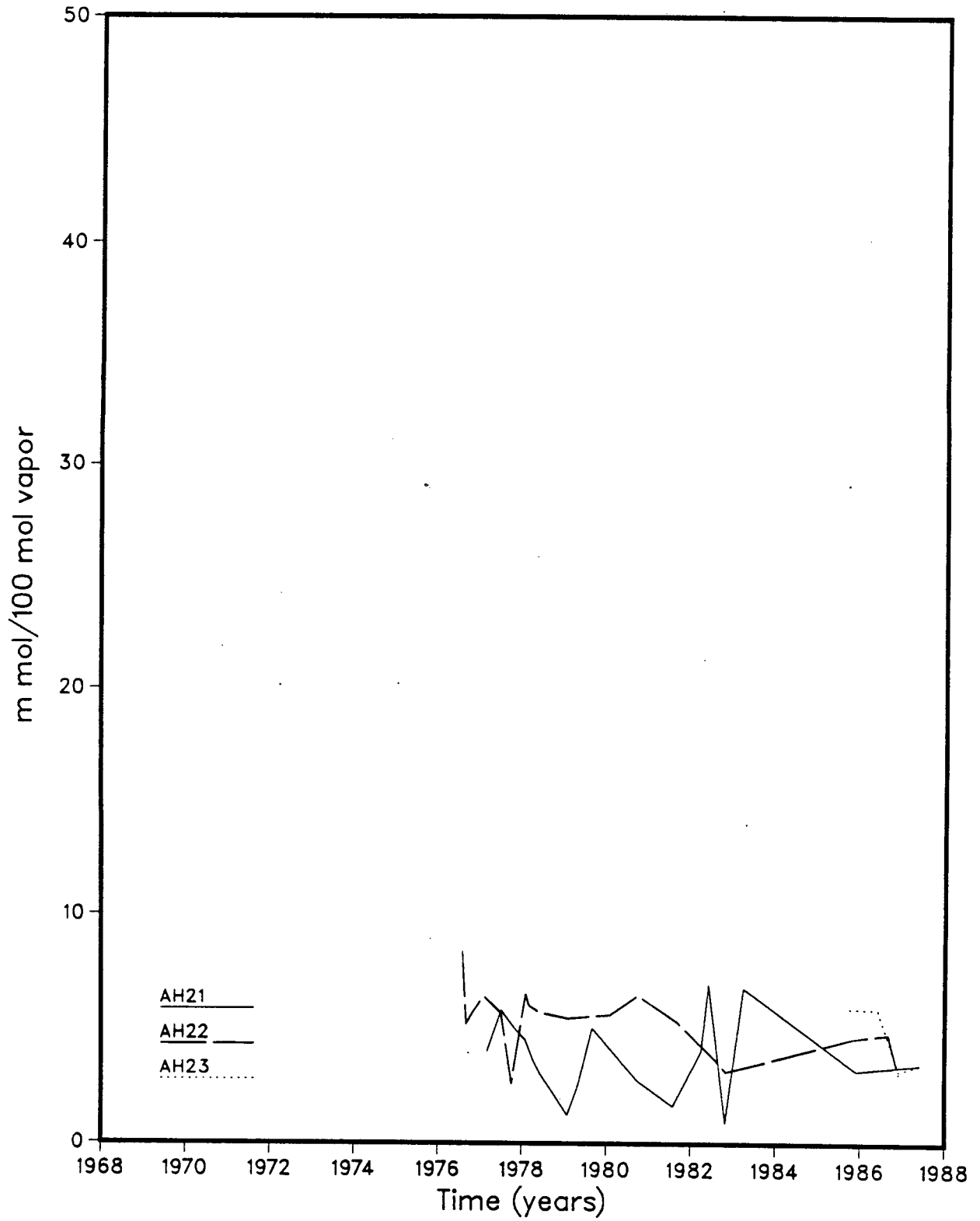
Gas Chemistry (H₂S)



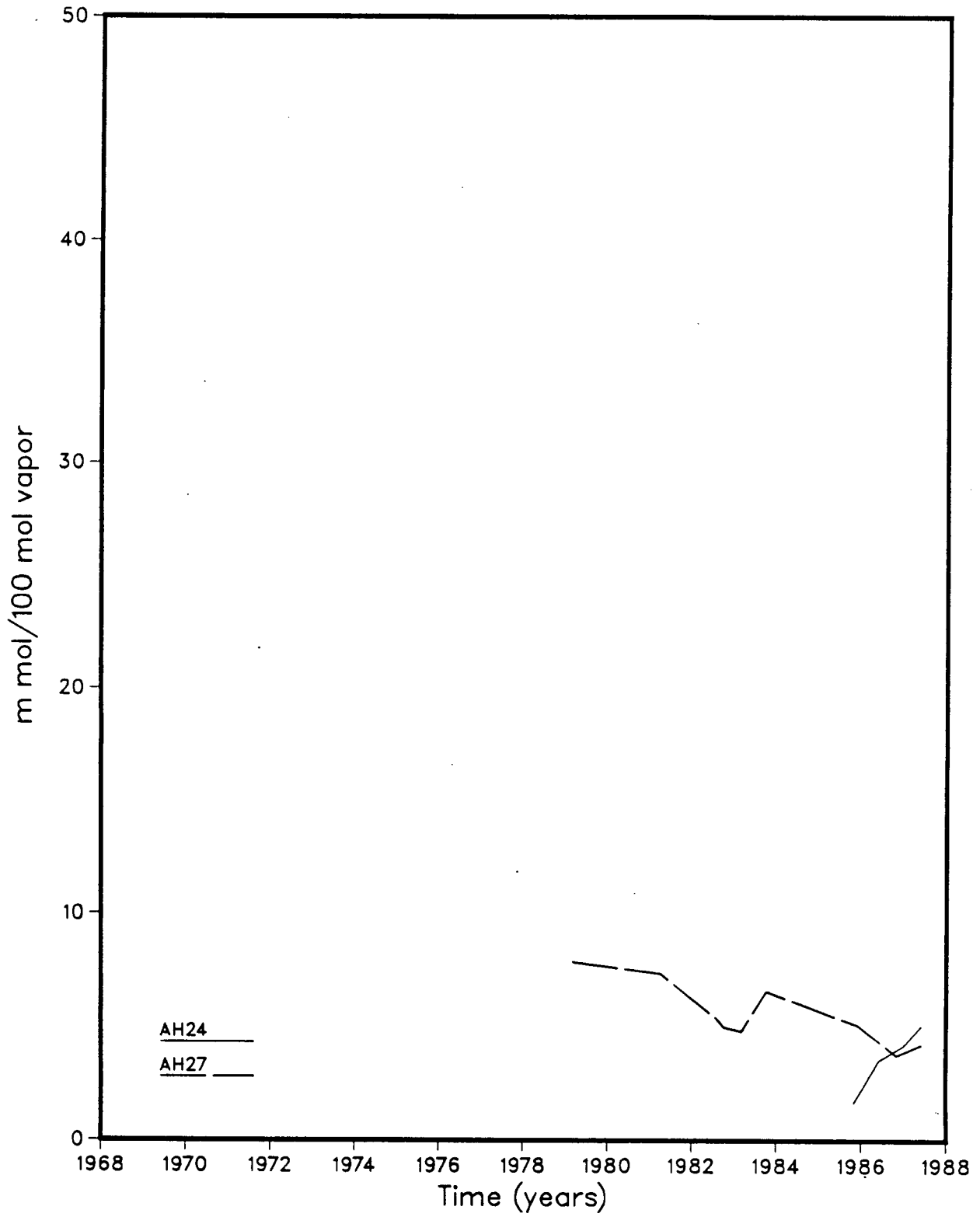
Gas Chemistry (H₂S)



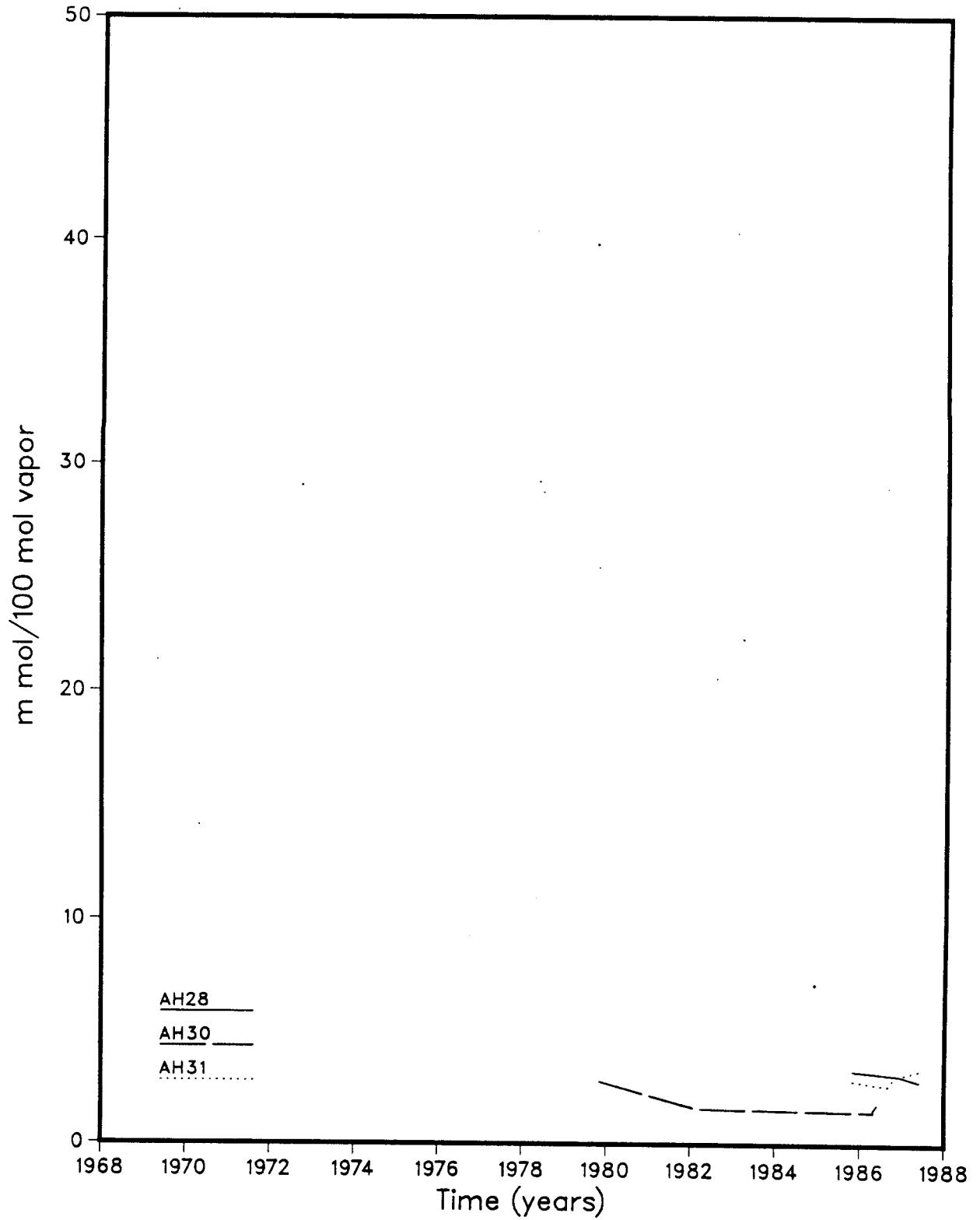
Gas Chemistry (H₂S)



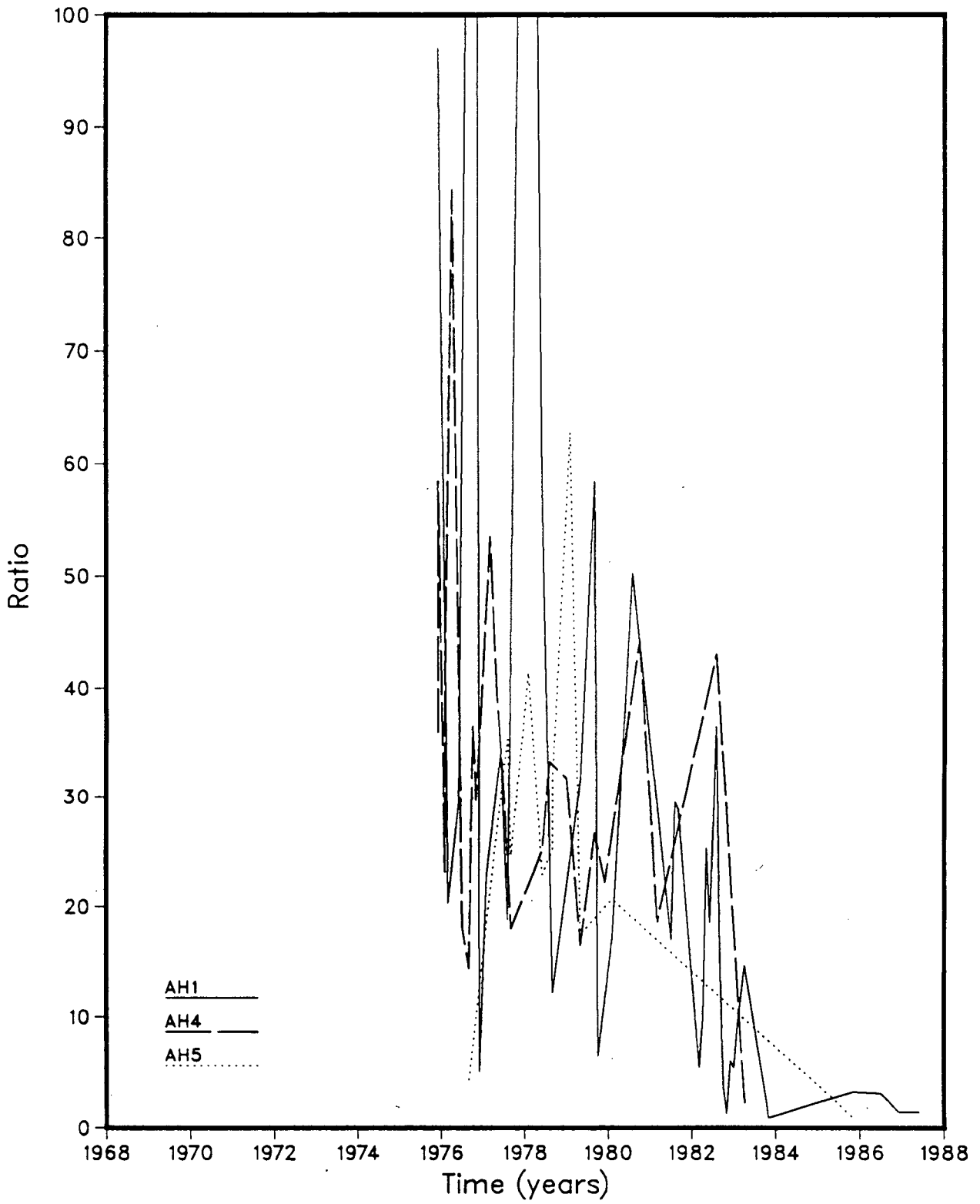
Gas Chemistry (H₂S)



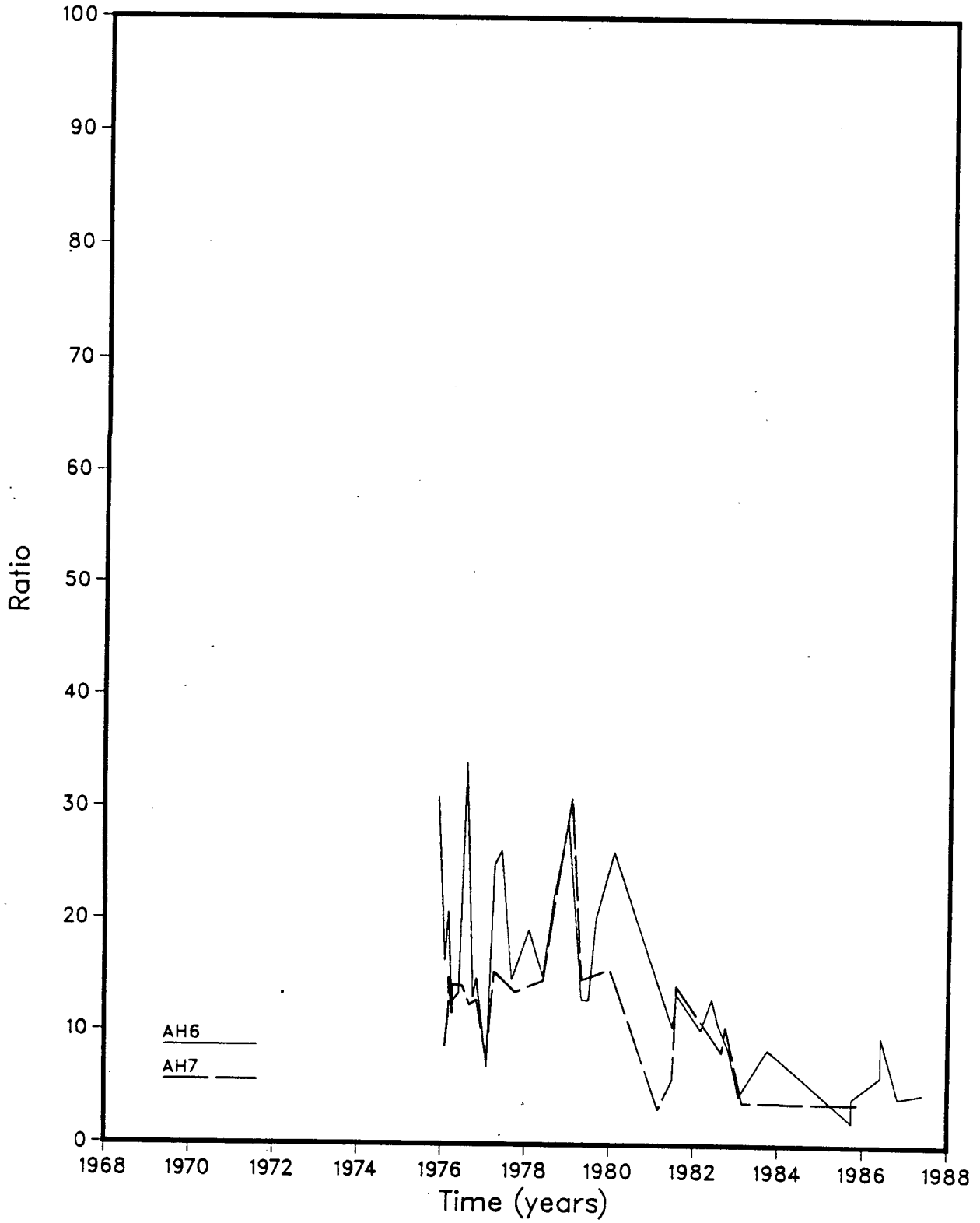
Gas Chemistry (H₂S)



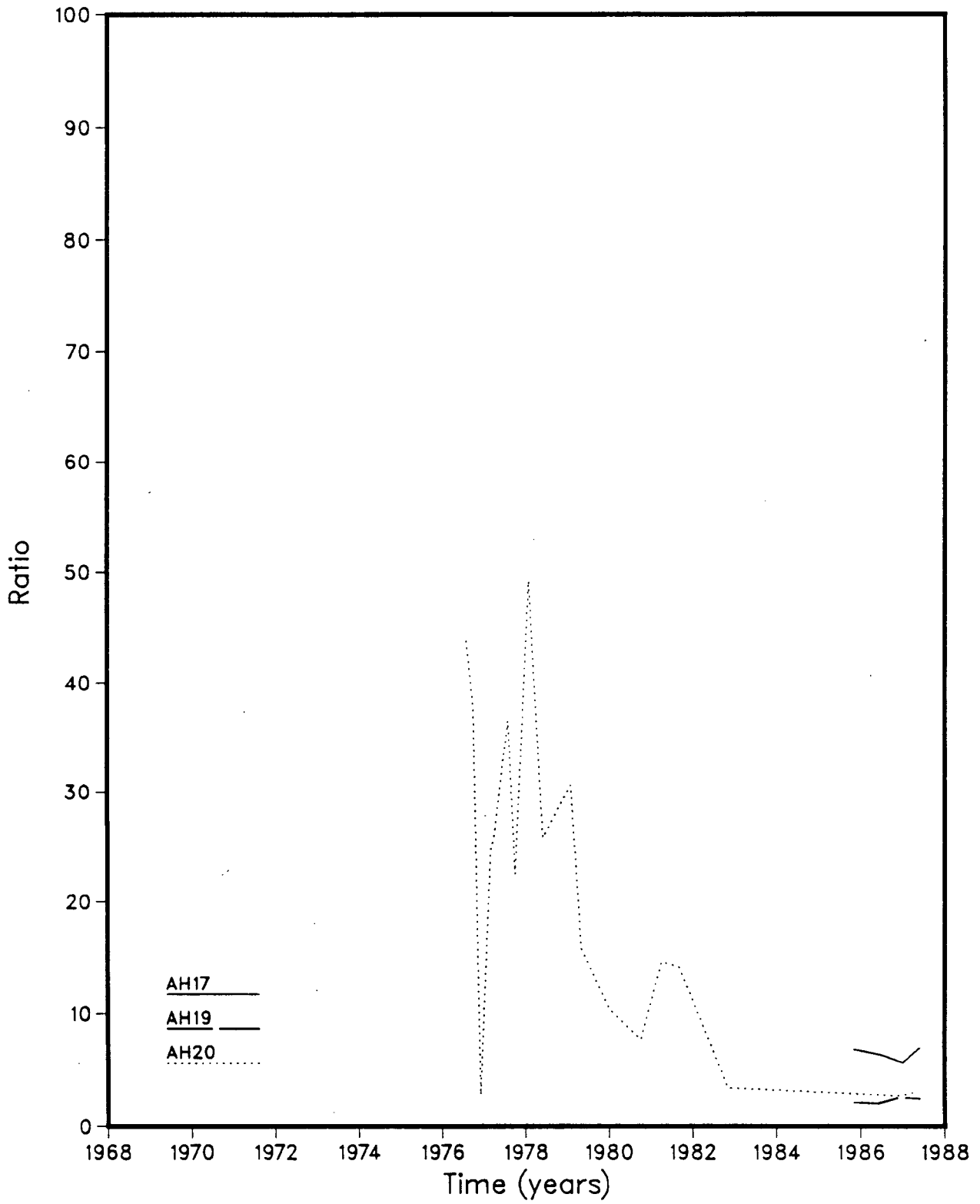
H₂S/H₂ Ratio



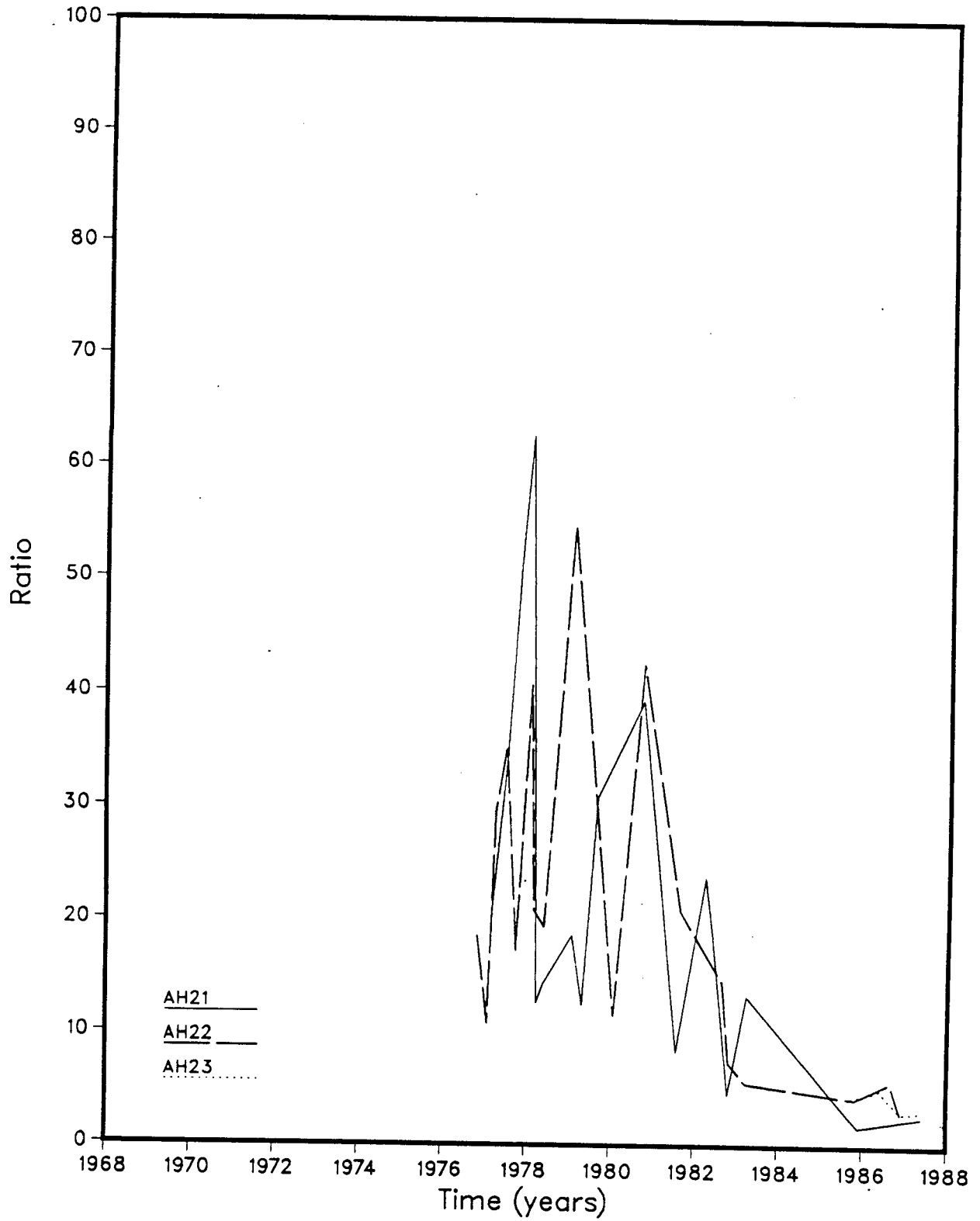
H₂S/H₂ Ratio



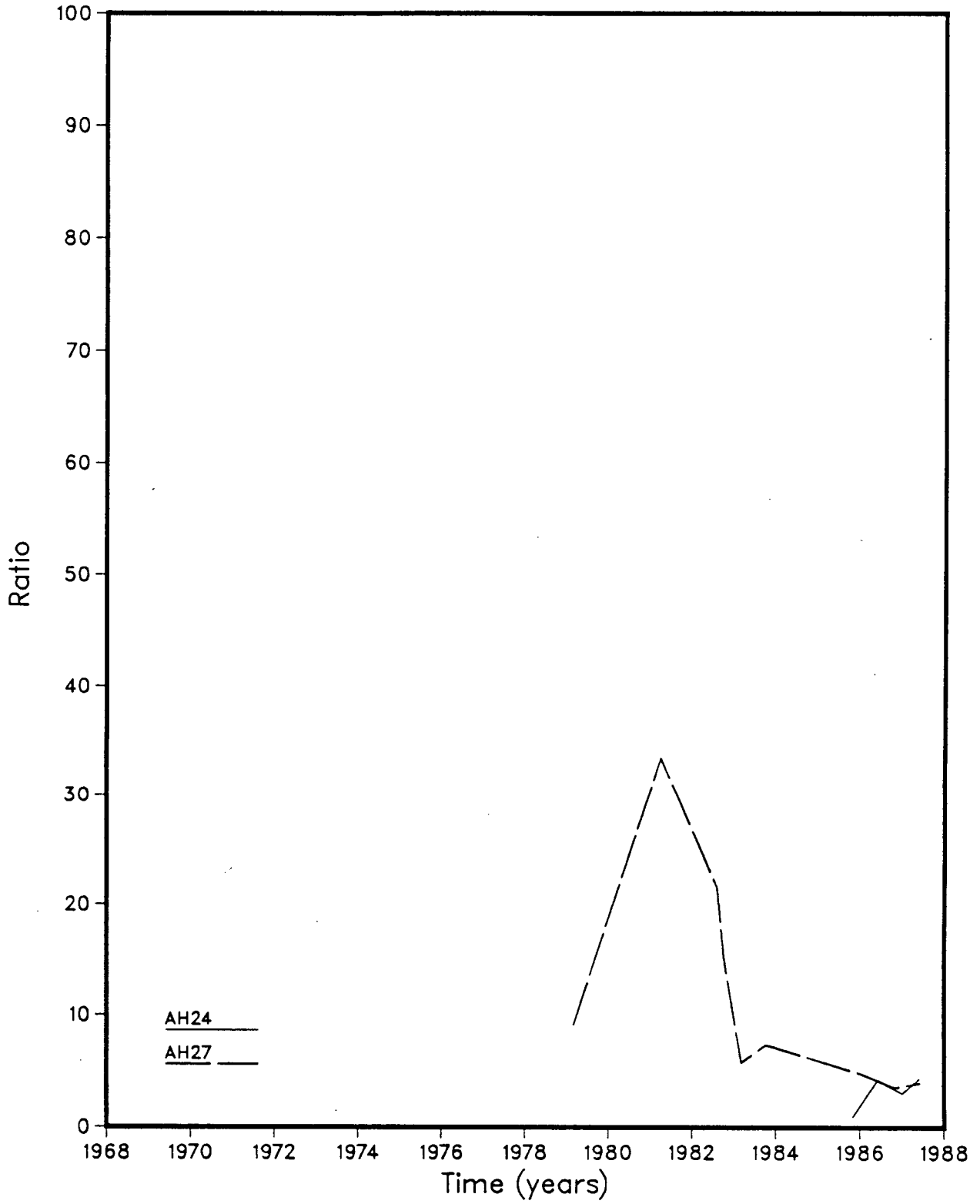
H₂S/H₂ Ratio



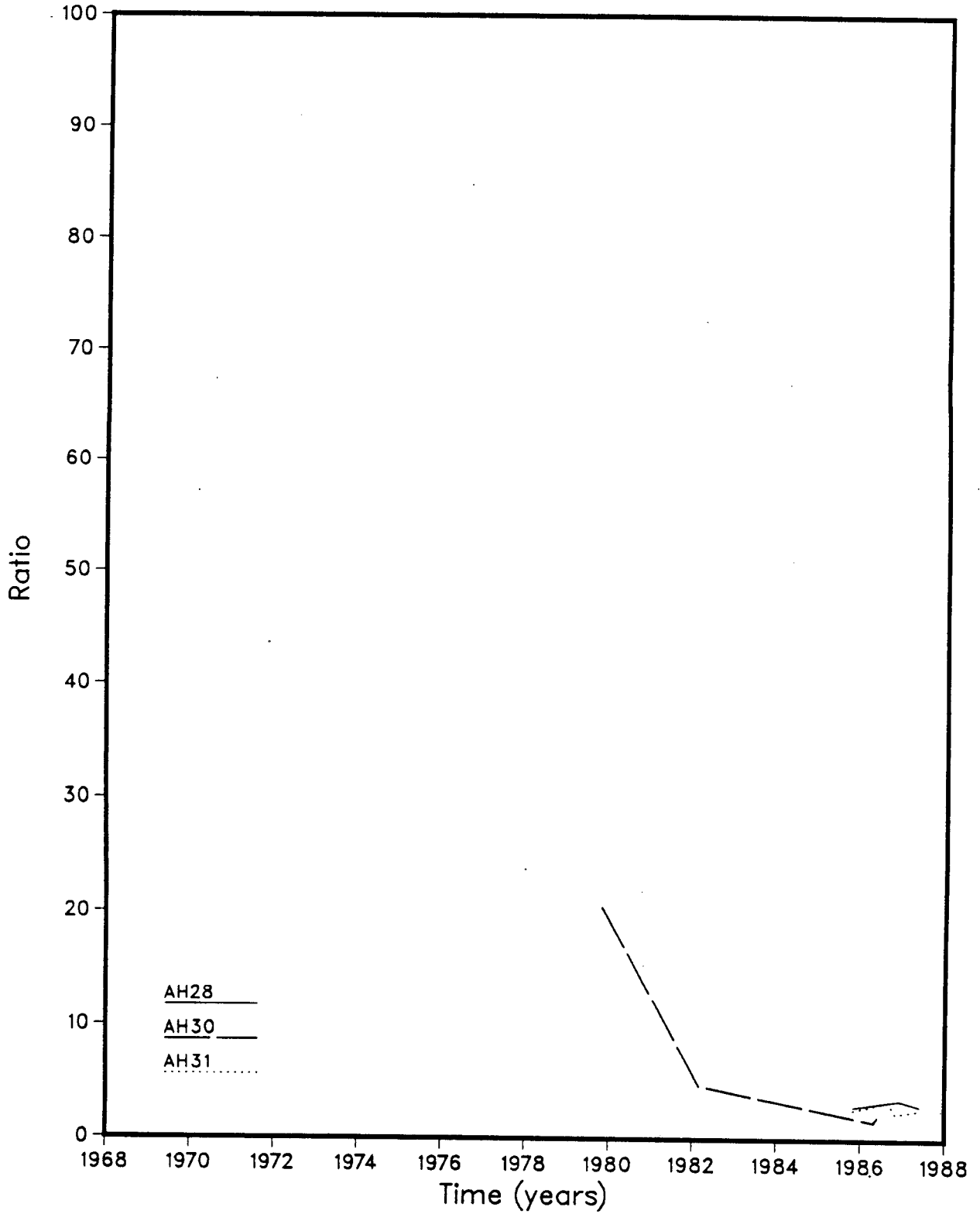
H₂S/H₂ Ratio



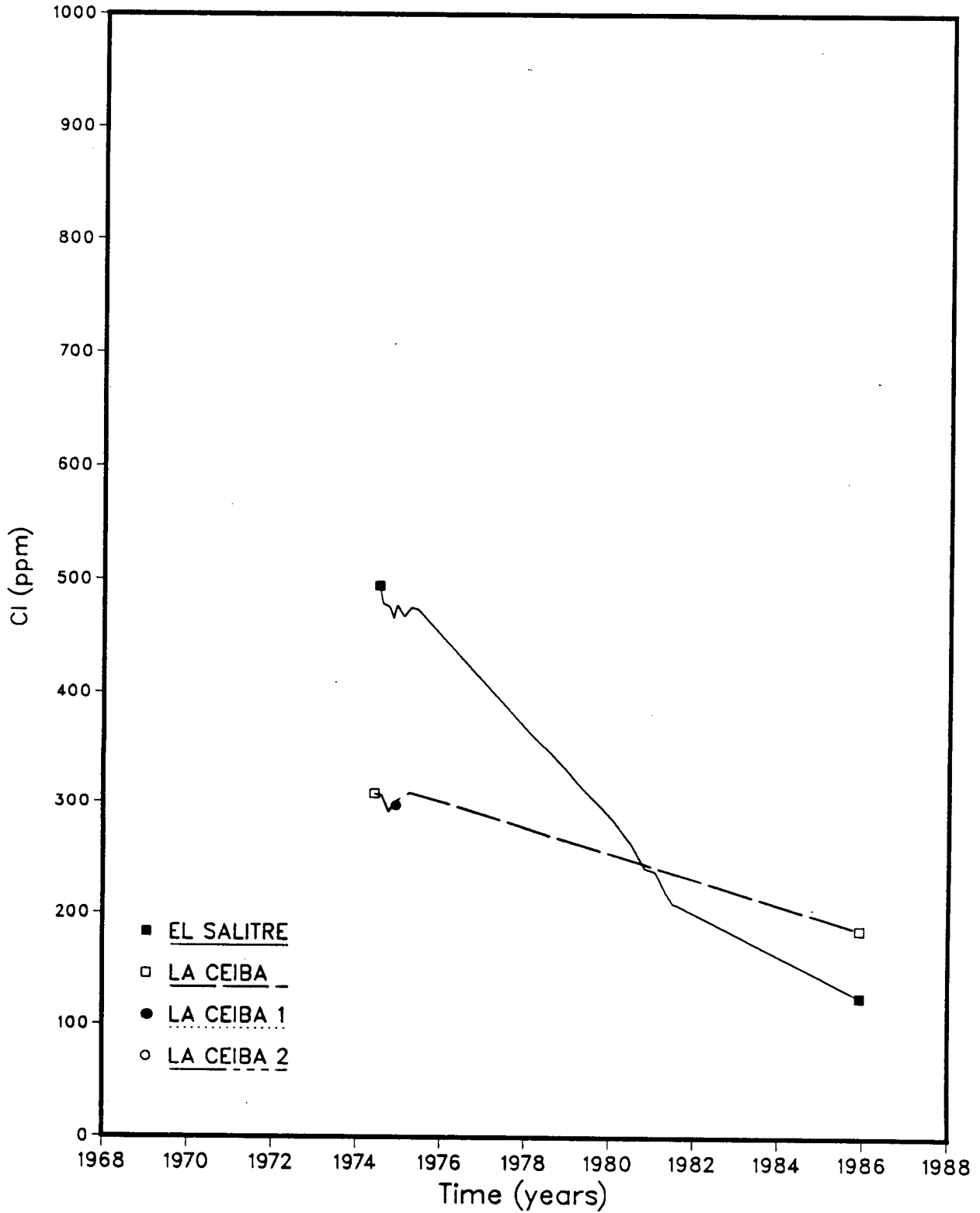
H₂S/H₂ Ratio



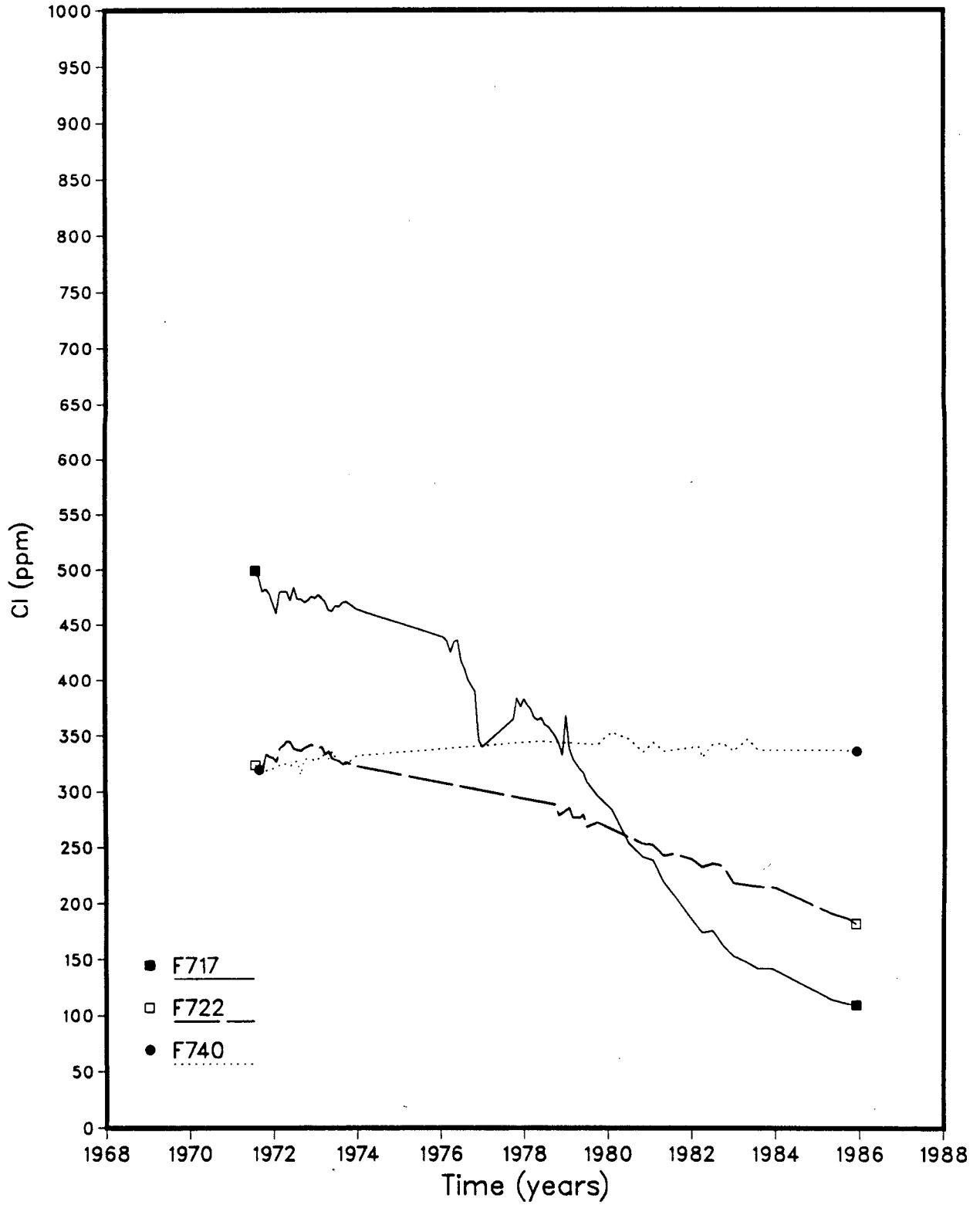
H₂S/H₂ Ratio



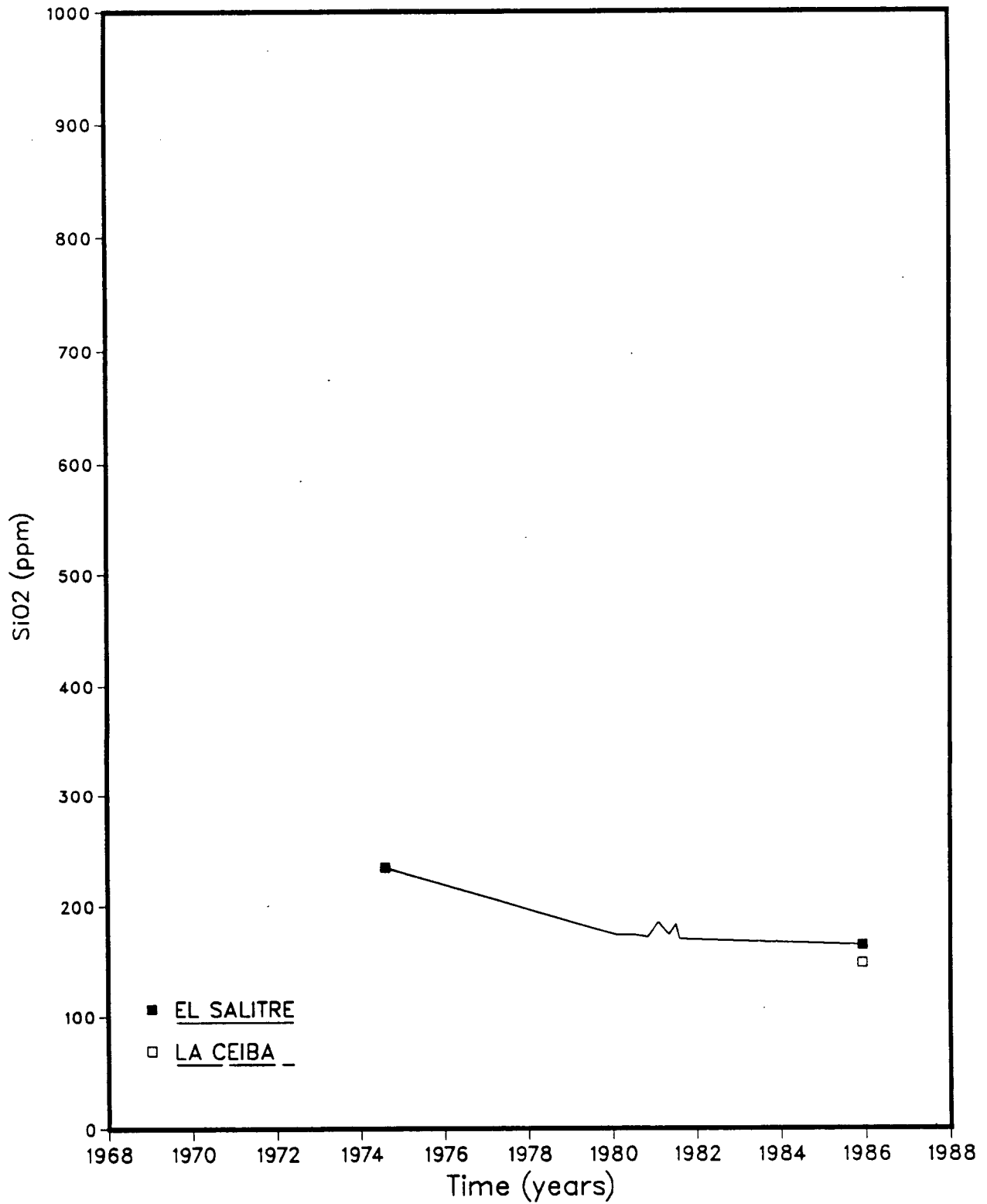
Water Chemistry (Cl)



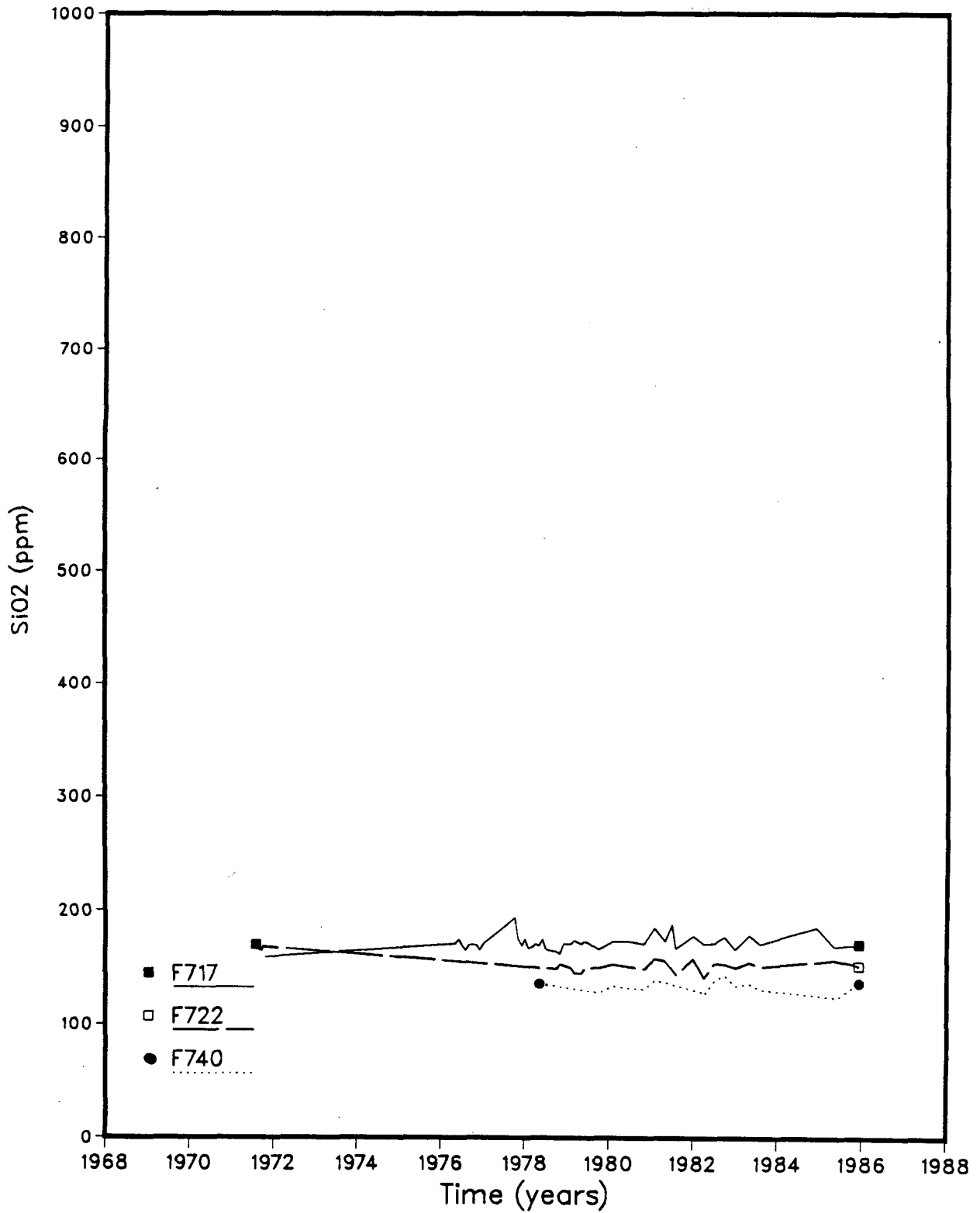
Water Chemistry (Cl)



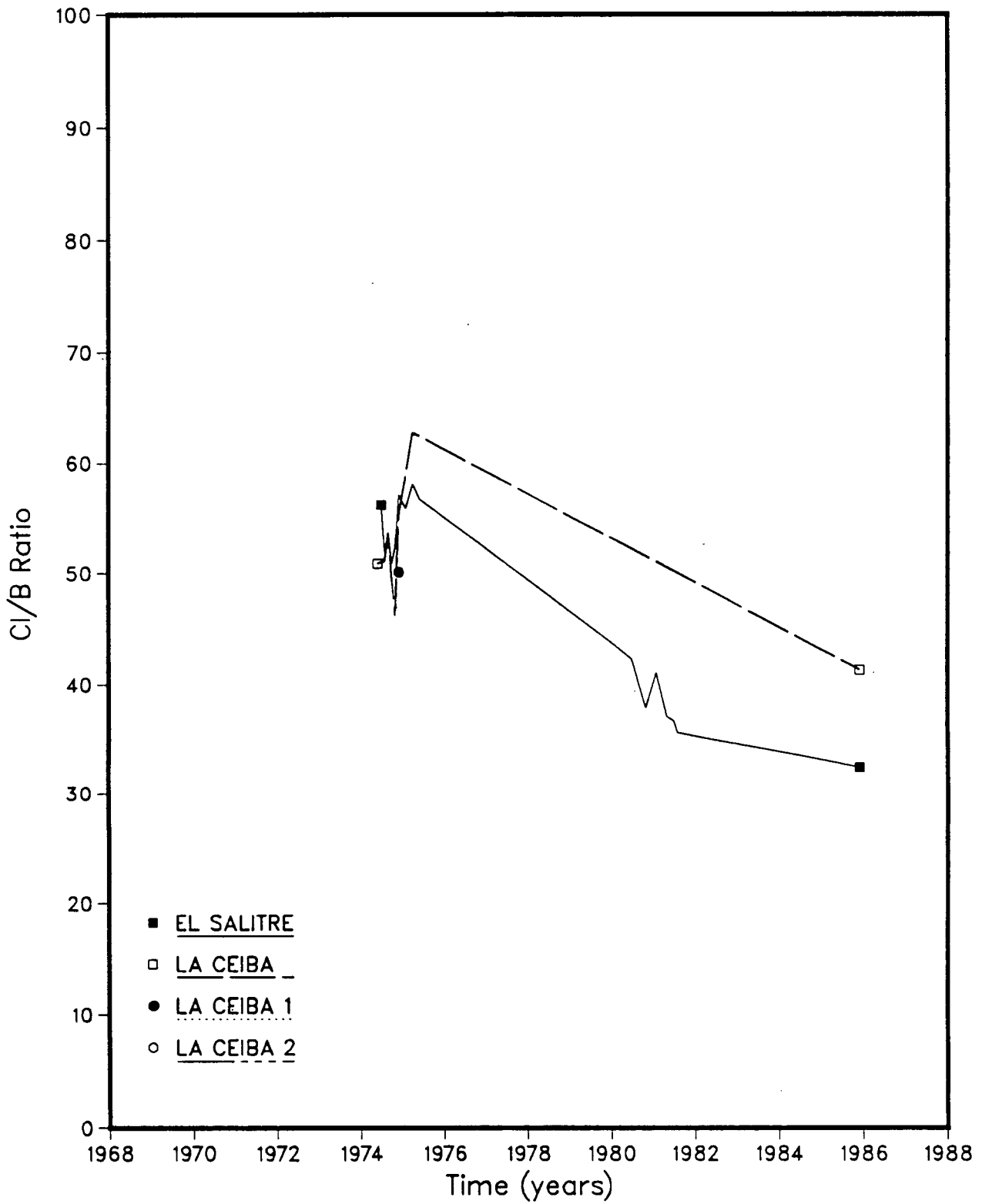
Water Chemistry (SiO₂)



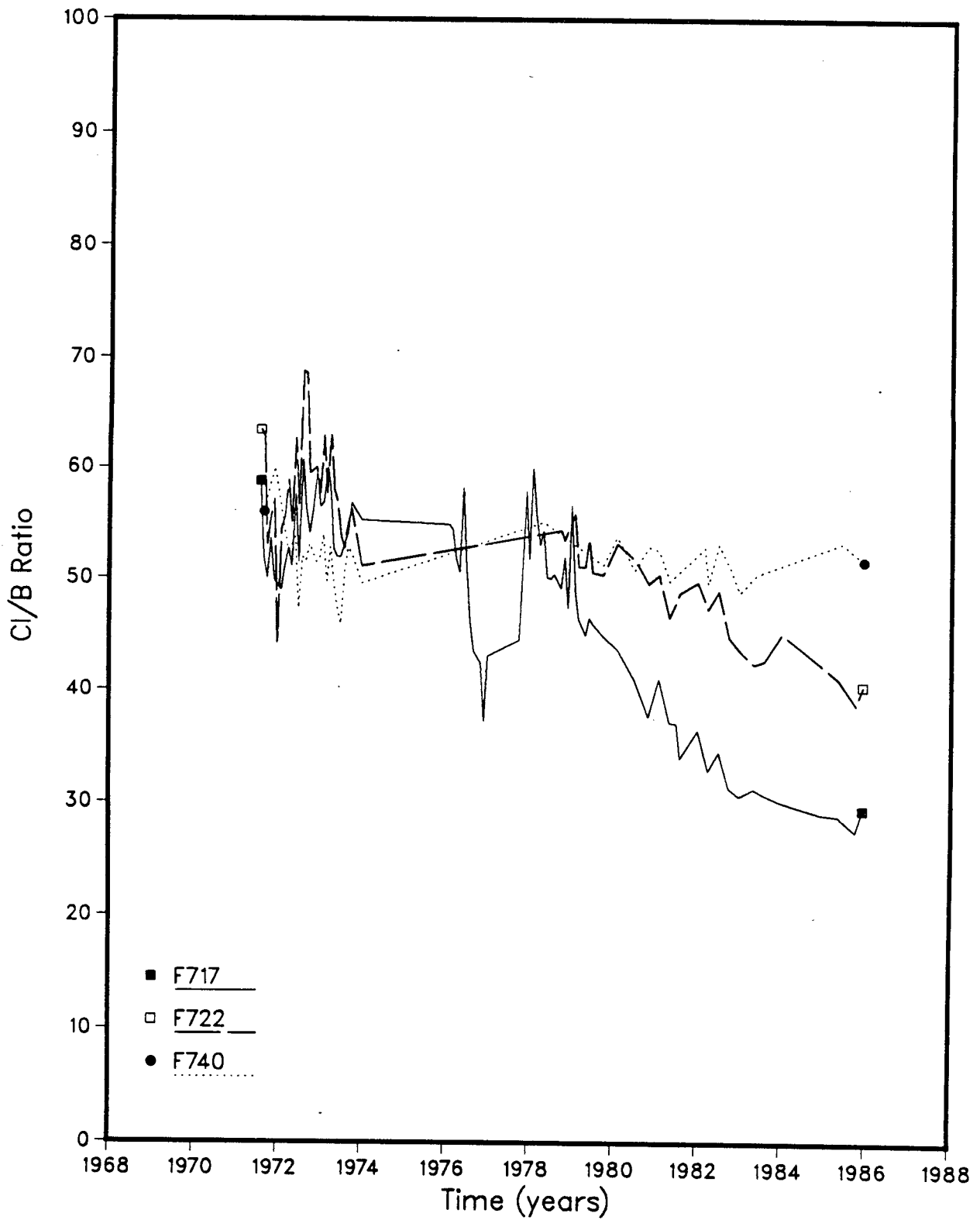
Water Chemistry (SiO₂)



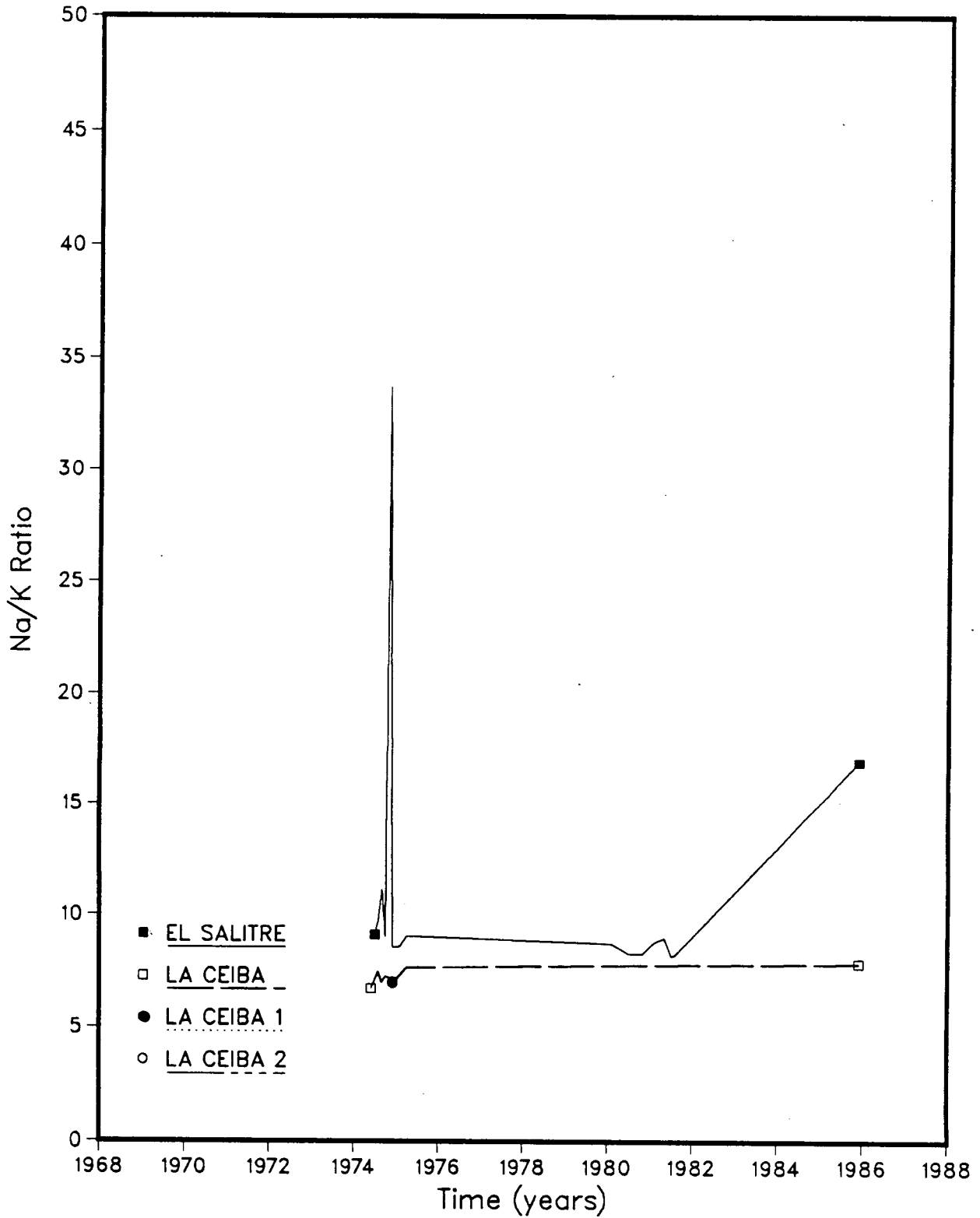
Water Chemistry (Cl/B)



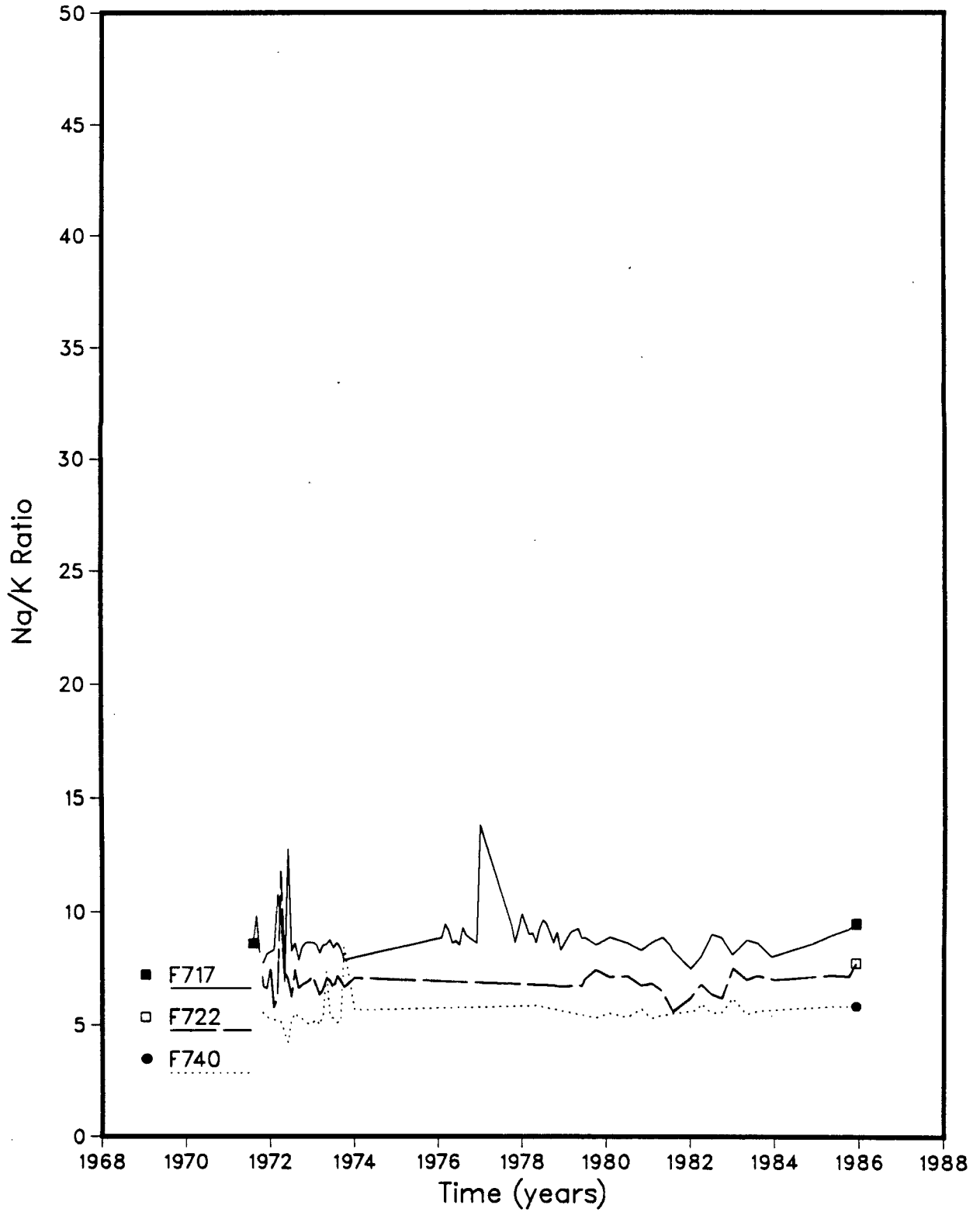
Water Chemistry (Cl/B)



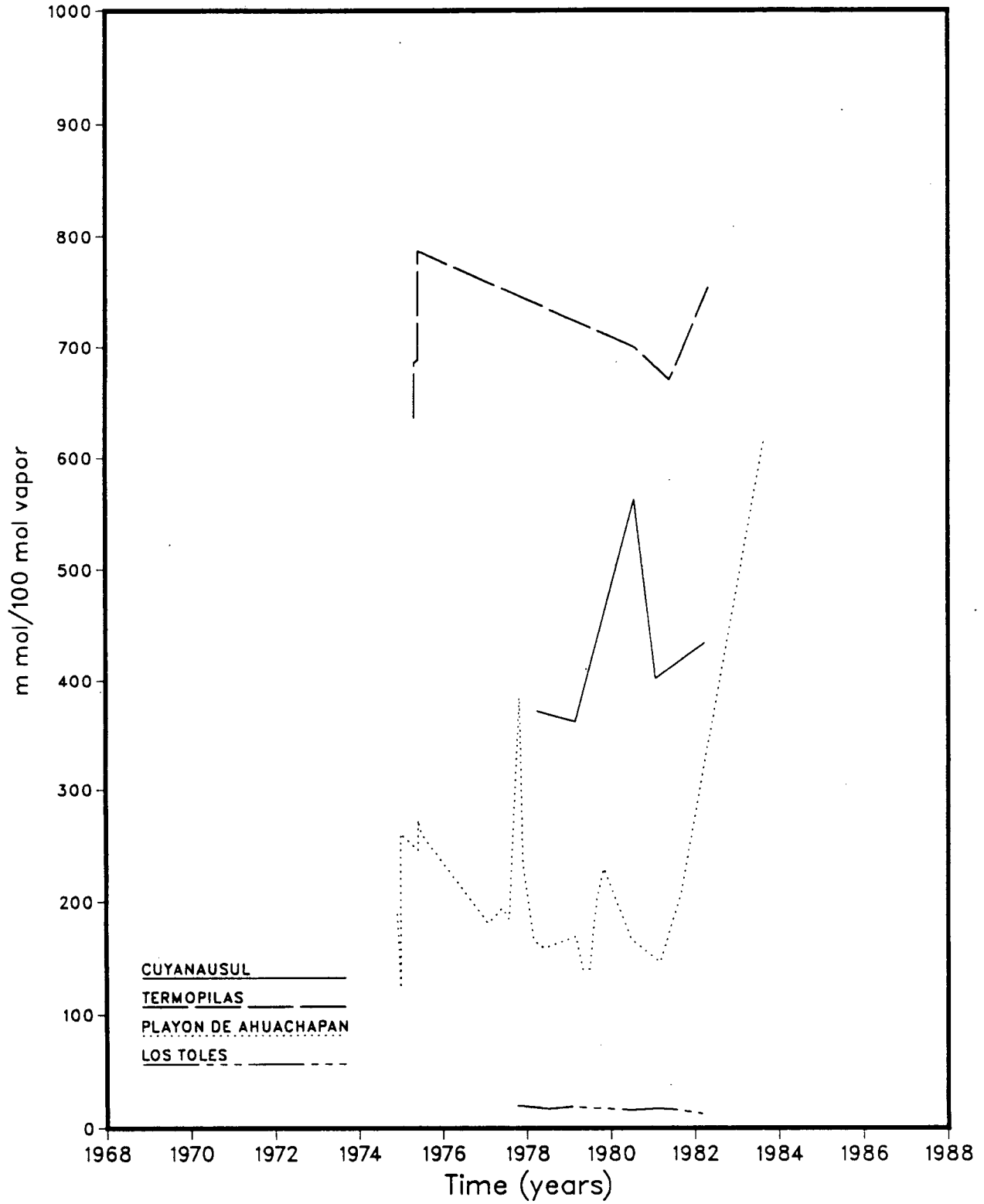
Water Chemistry (Na/K)



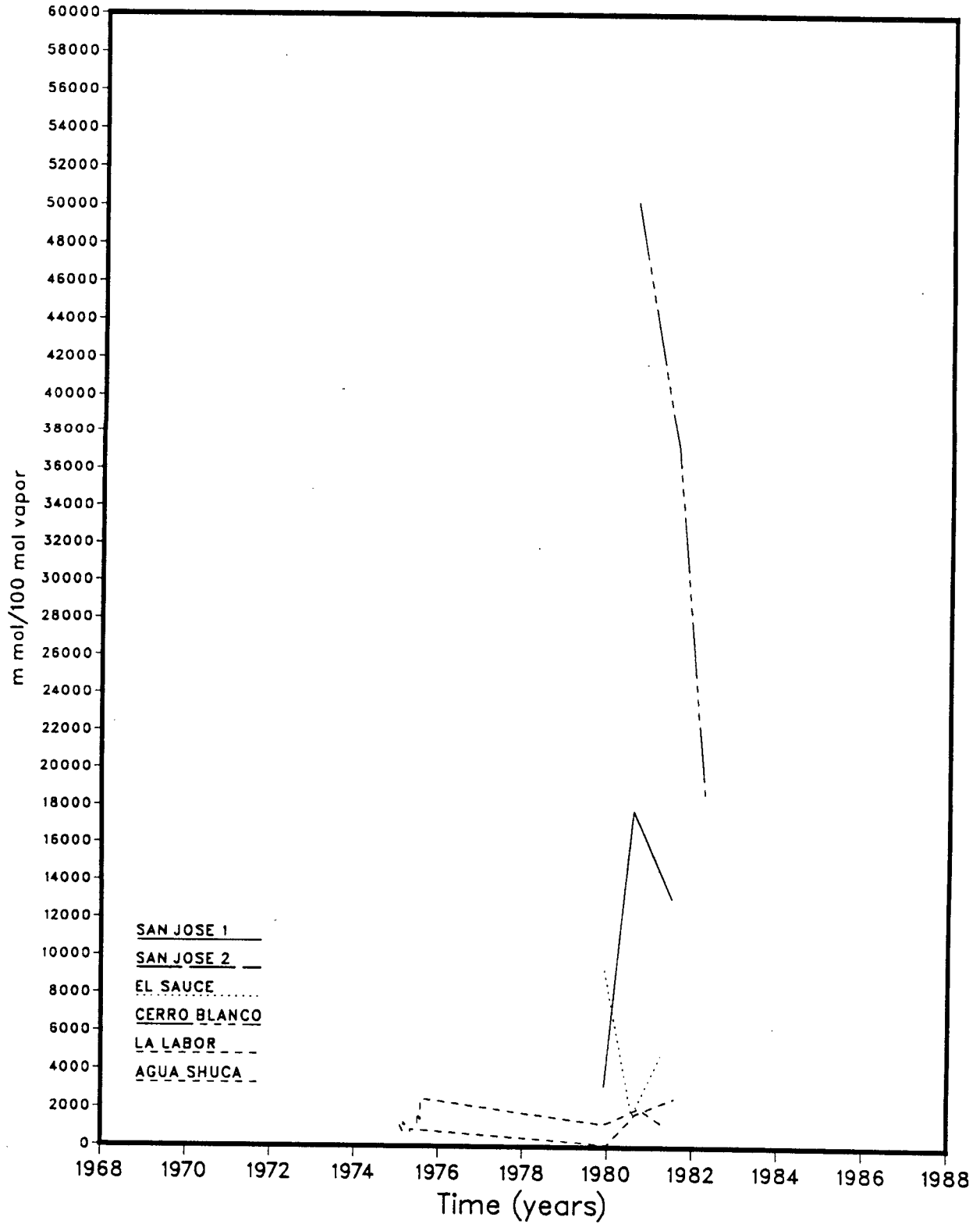
Water Chemistry (Na/K)



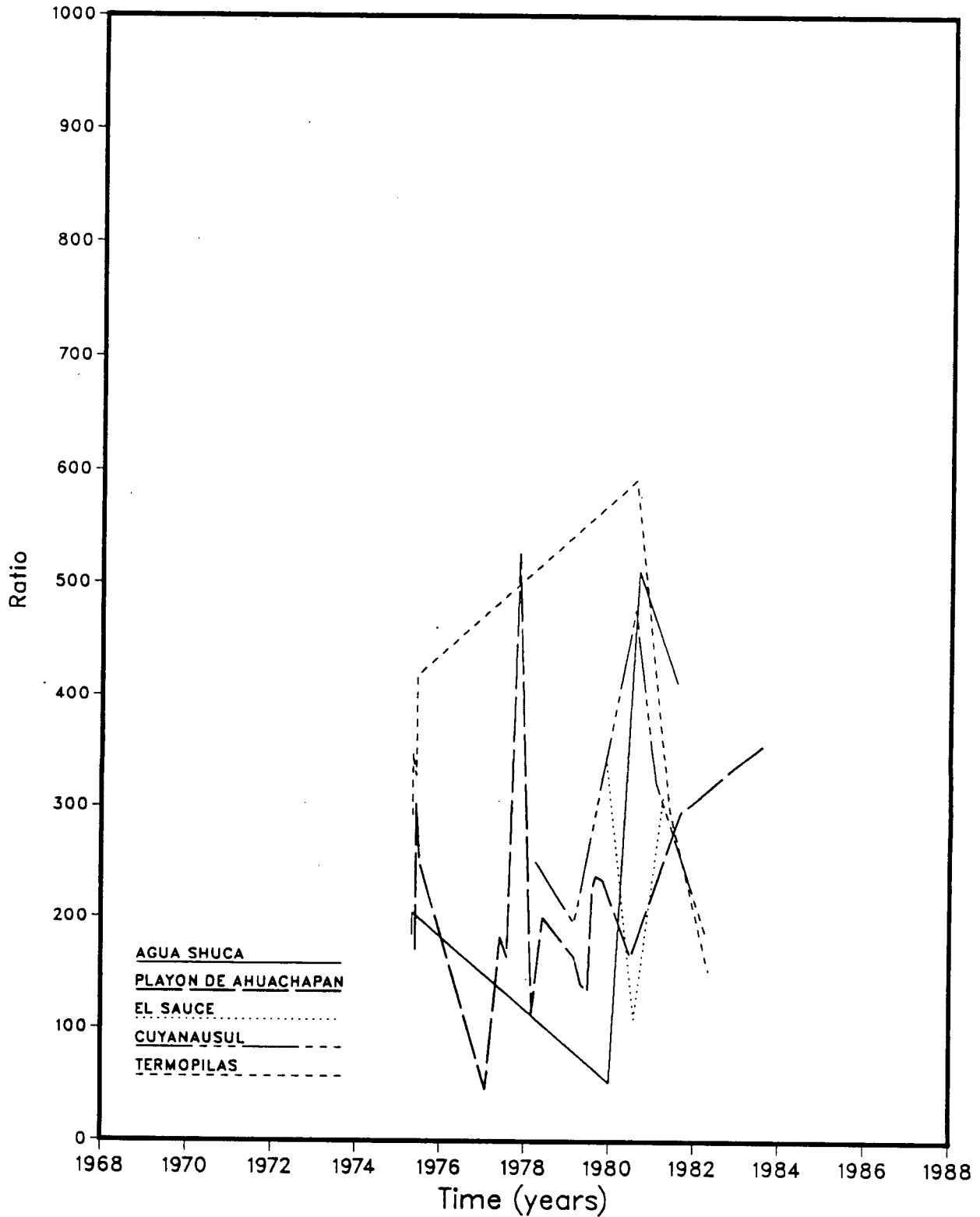
Gas Chemistry (CO₂)



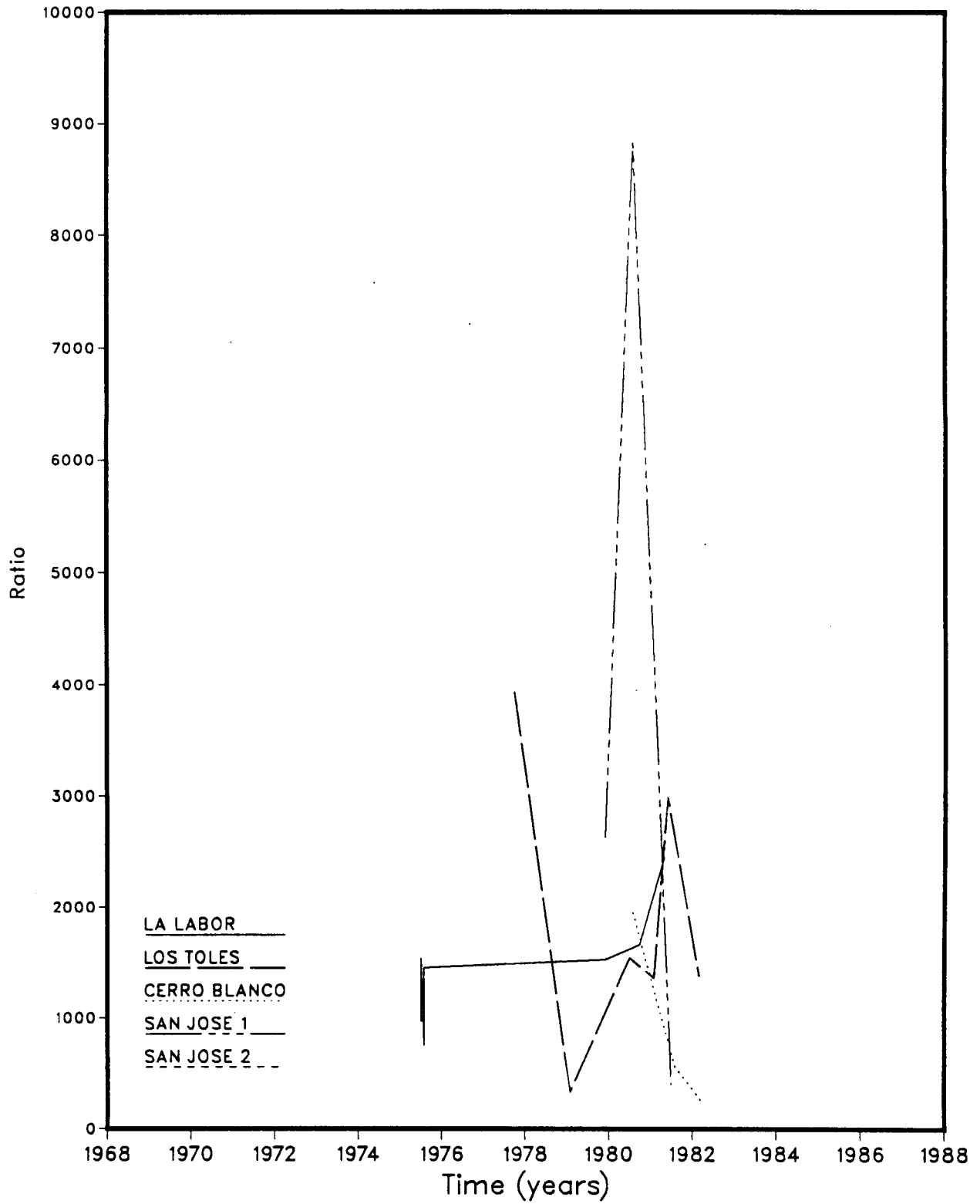
Gas Chemistry (CO₂)



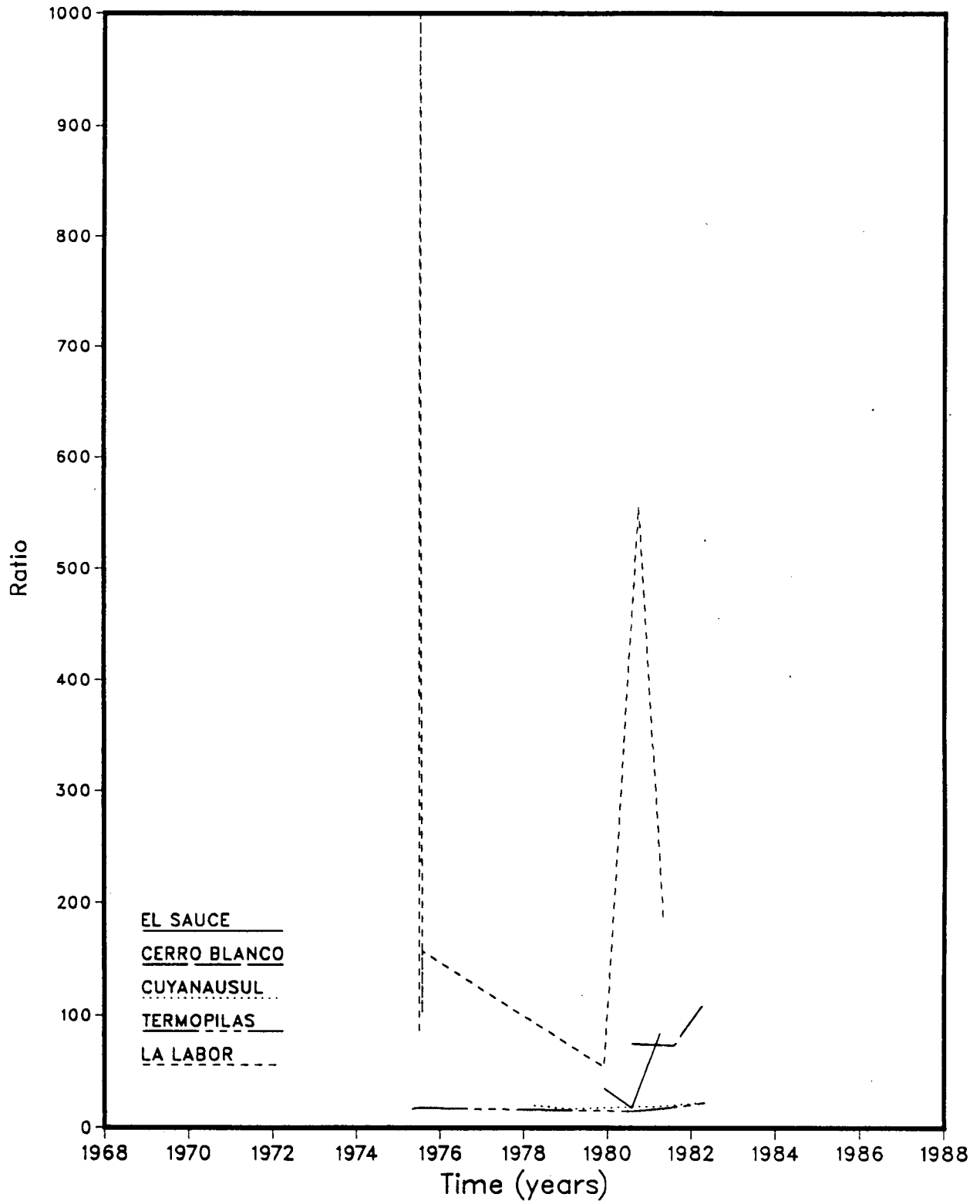
CO₂/H₂ Ratio



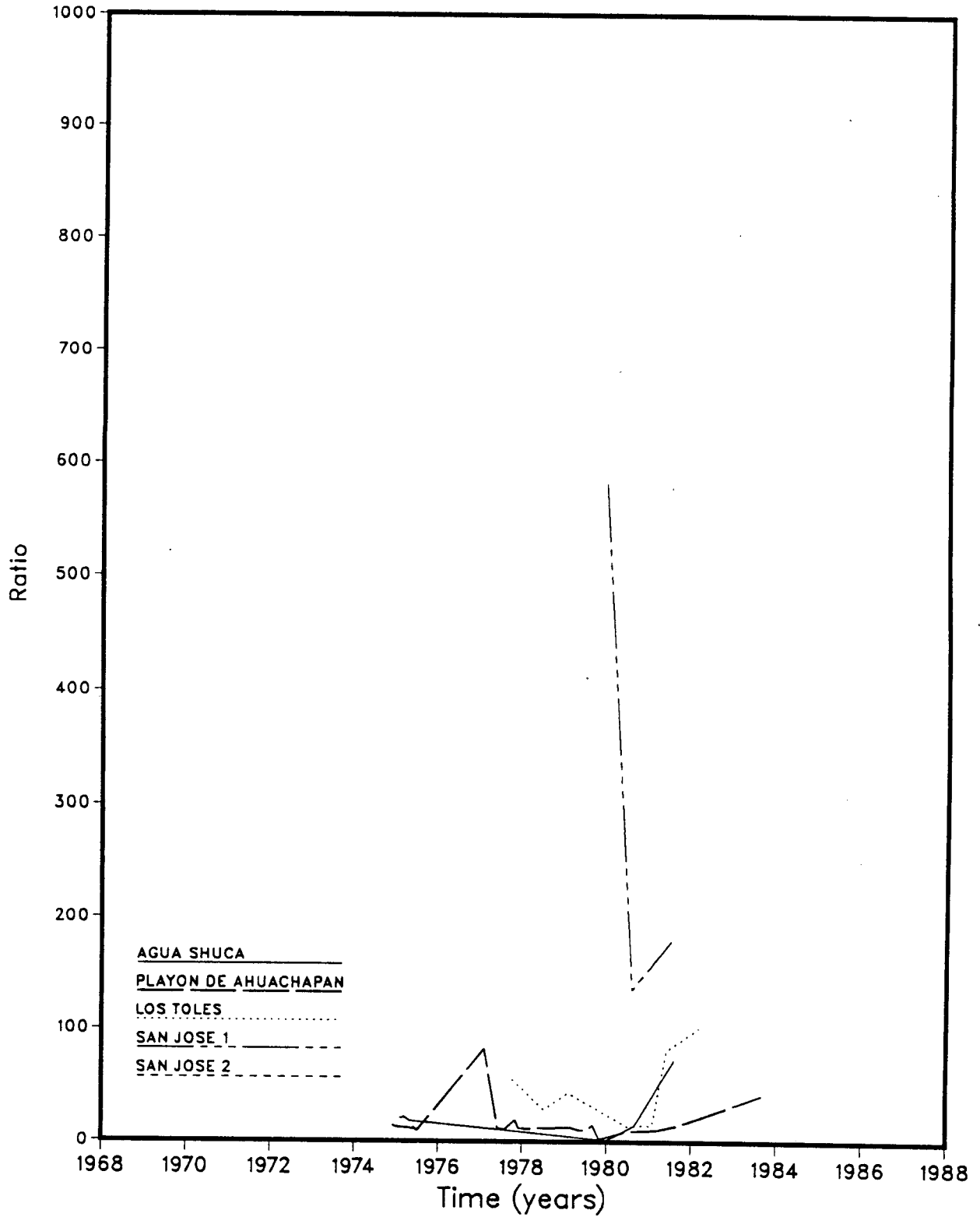
C02/H2 Ratio



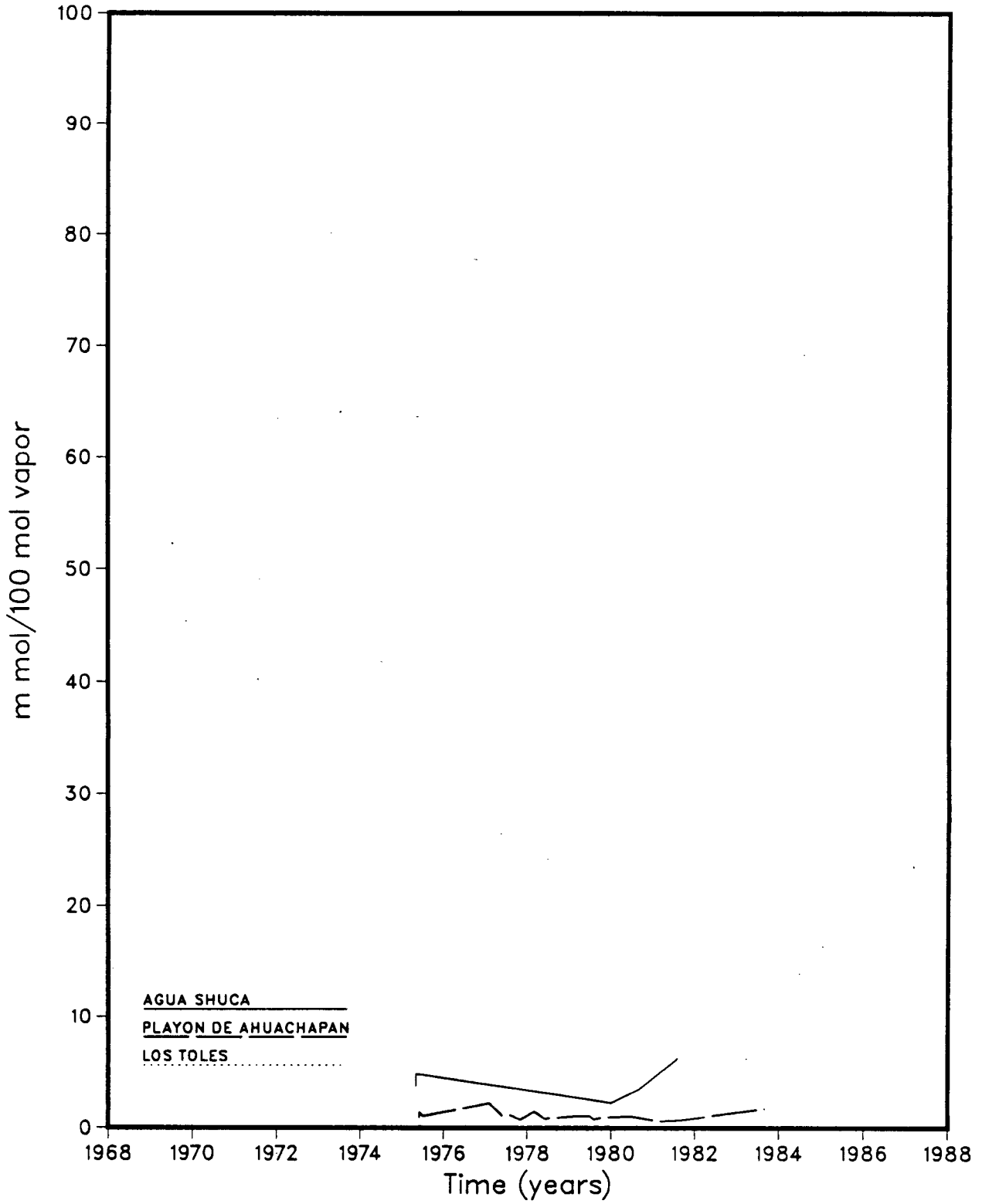
CO₂/H₂S Ratio



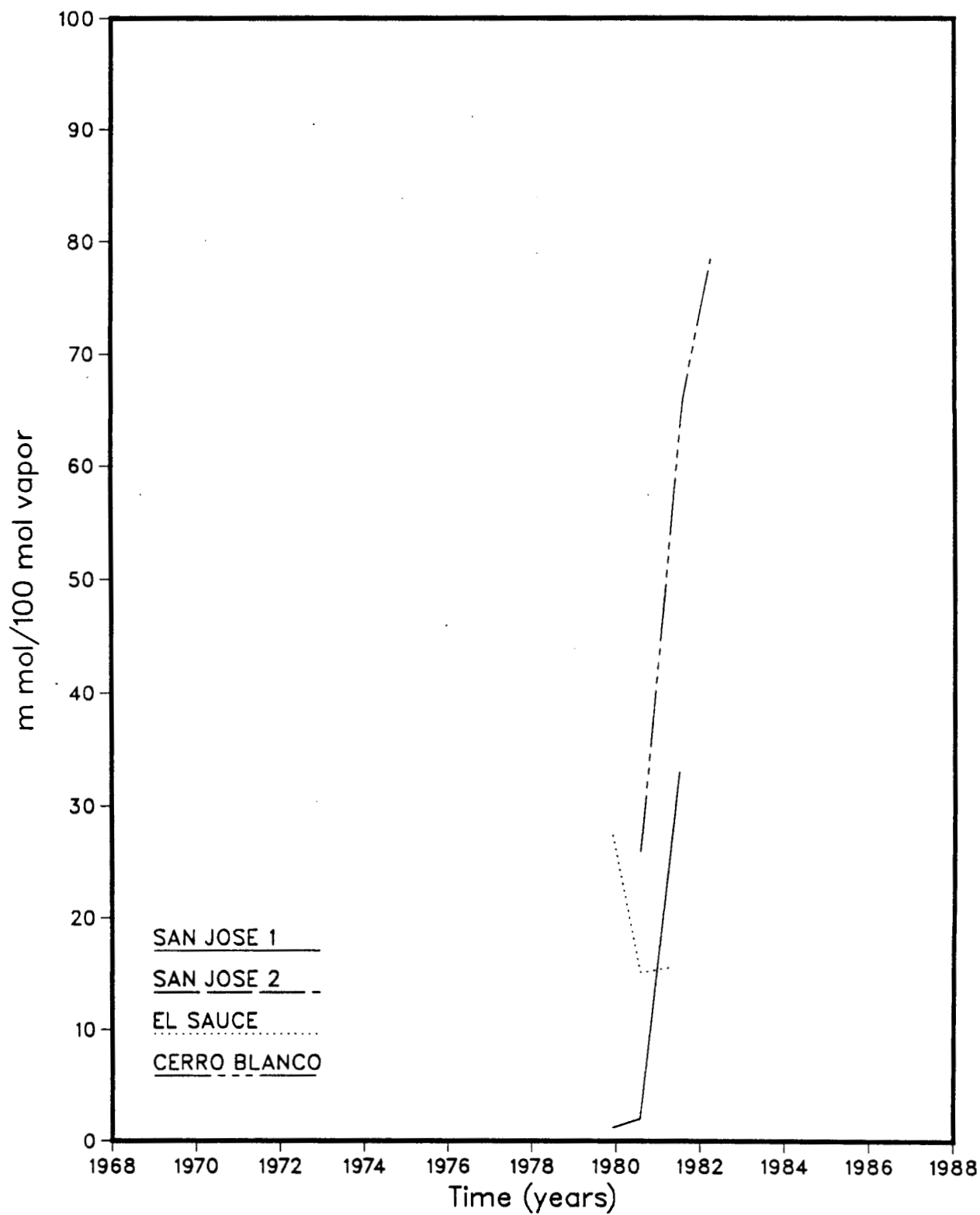
CO₂/H₂S Ratio



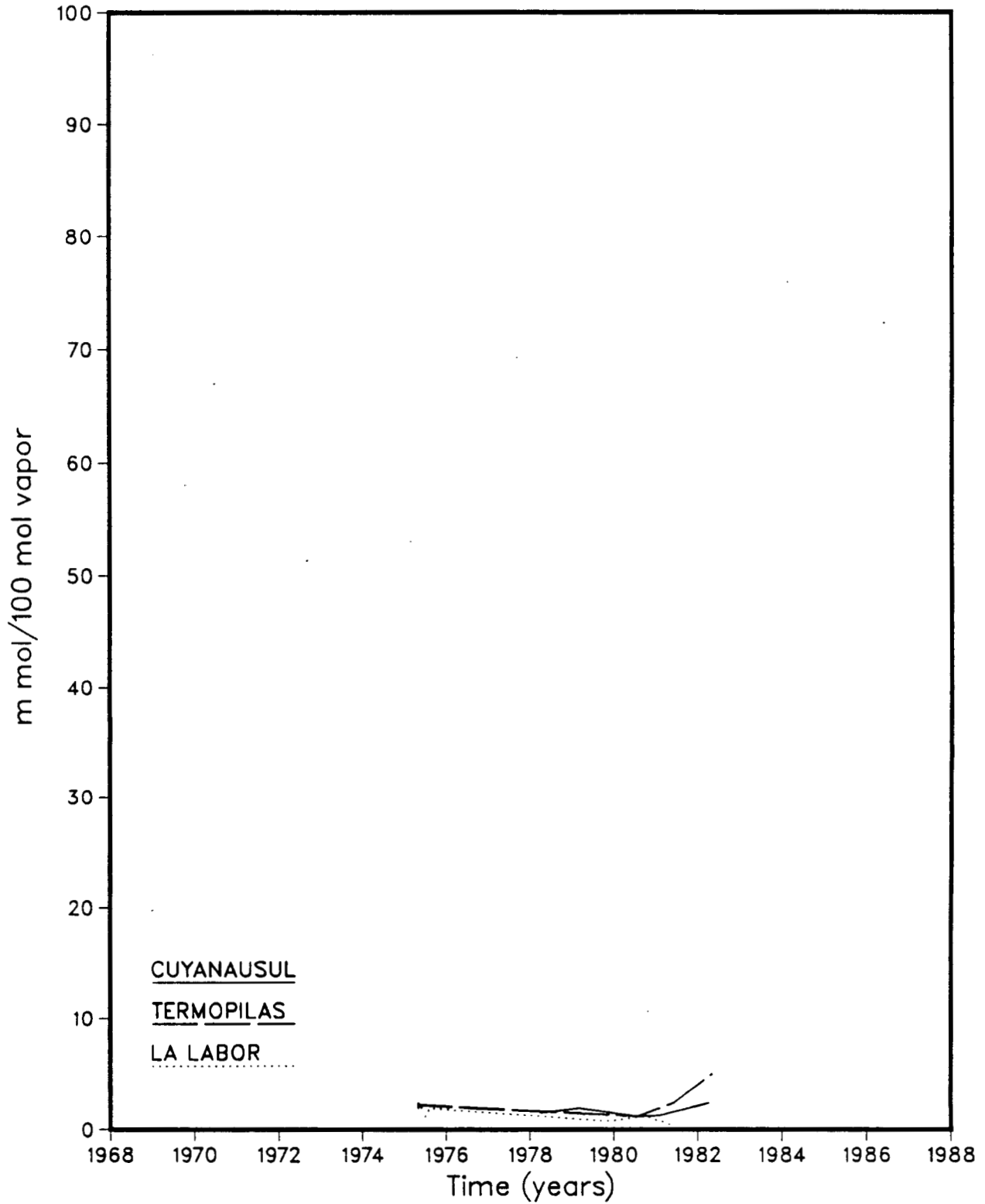
Gas Chemistry (H2)

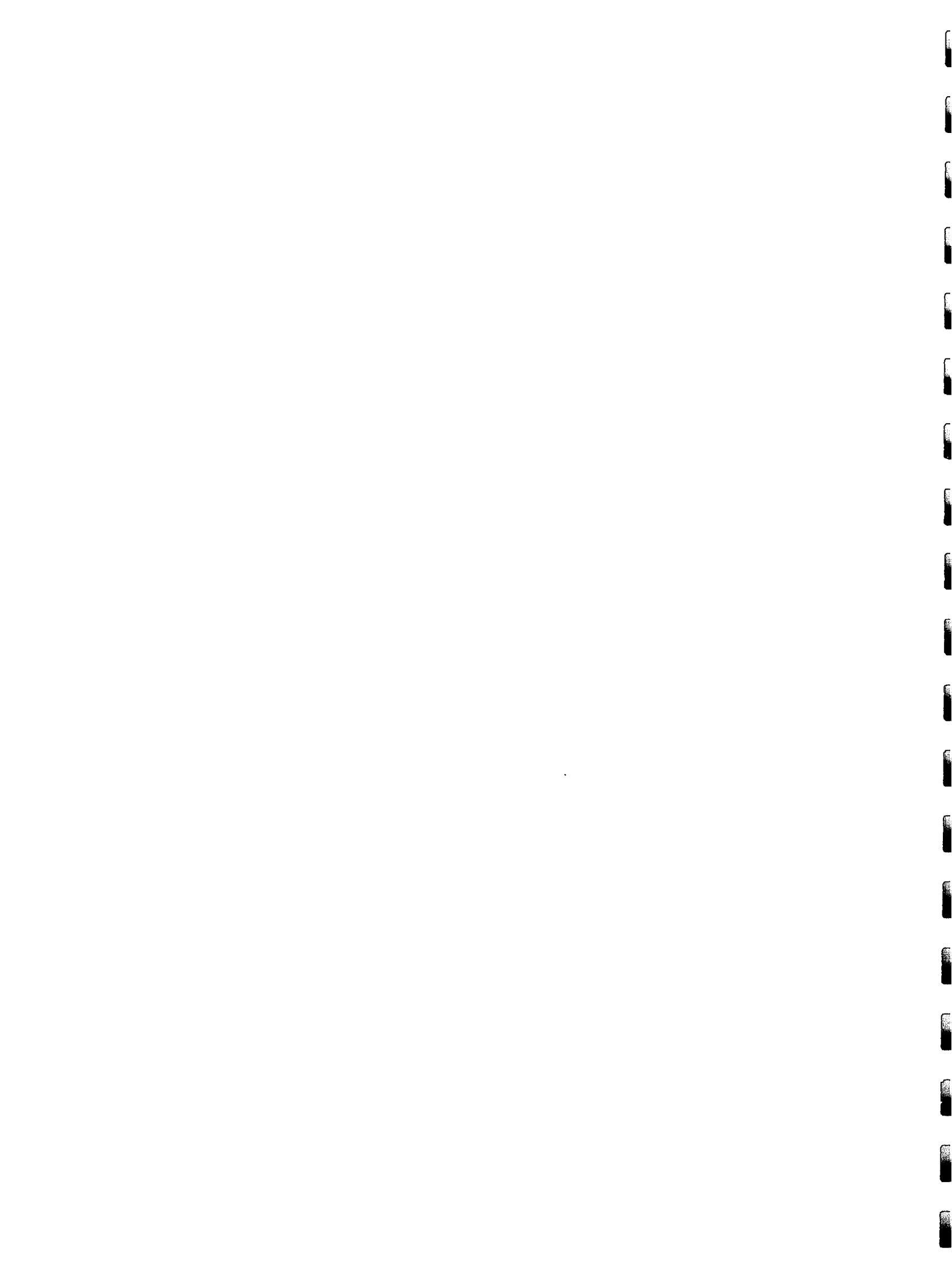


Gas Chemistry (H2)



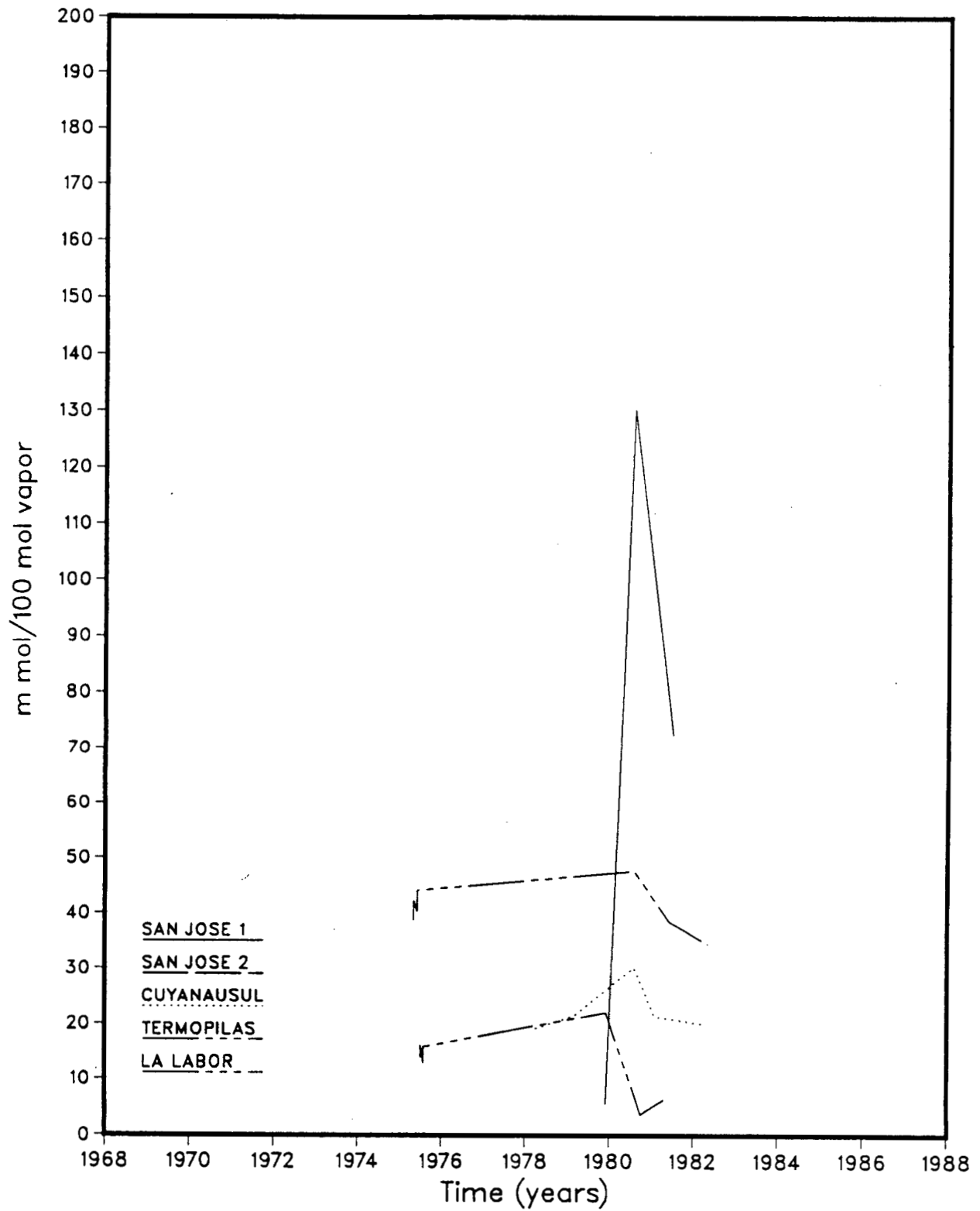
Gas Chemistry (H₂)



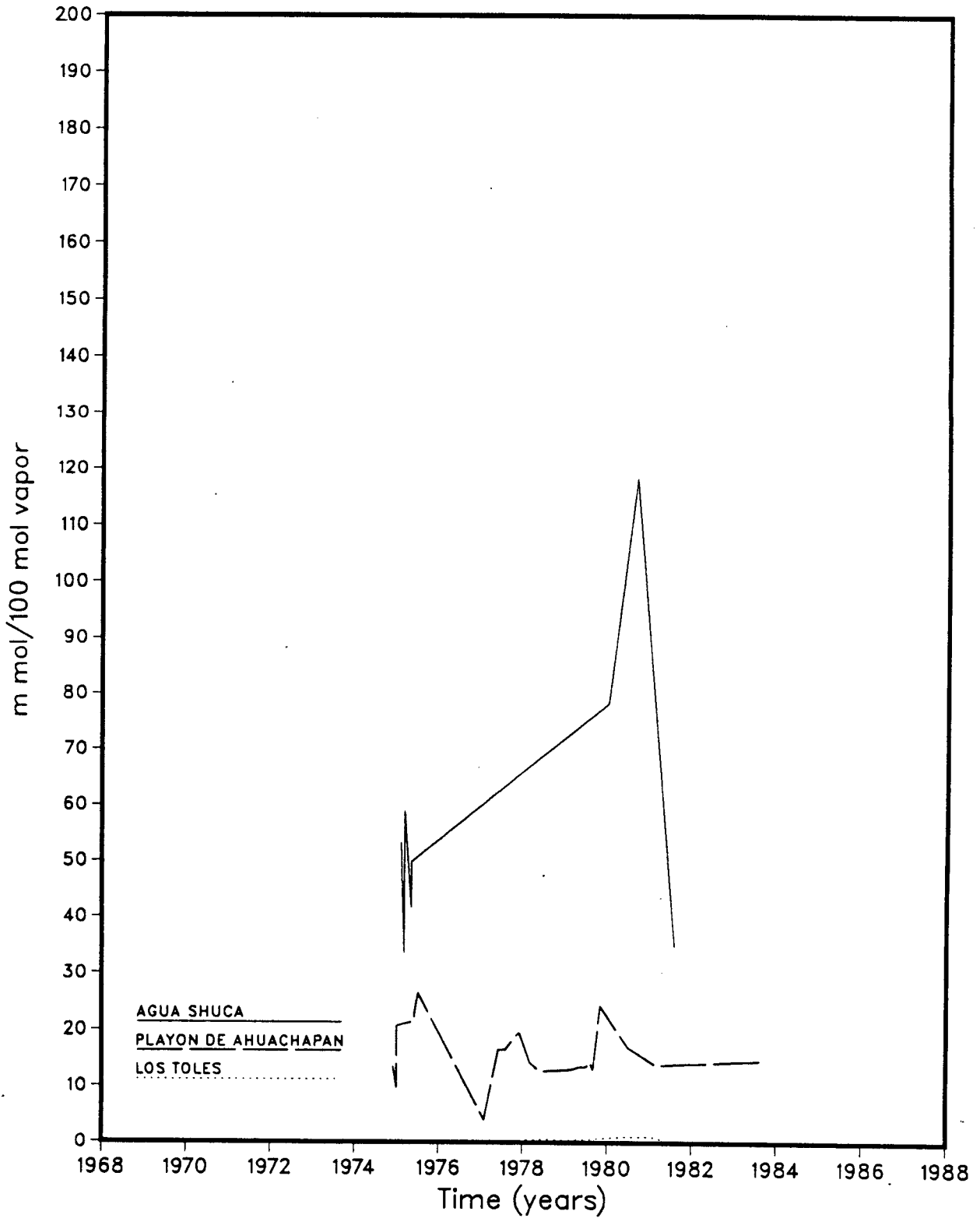


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Gas Chemistry (H₂S)

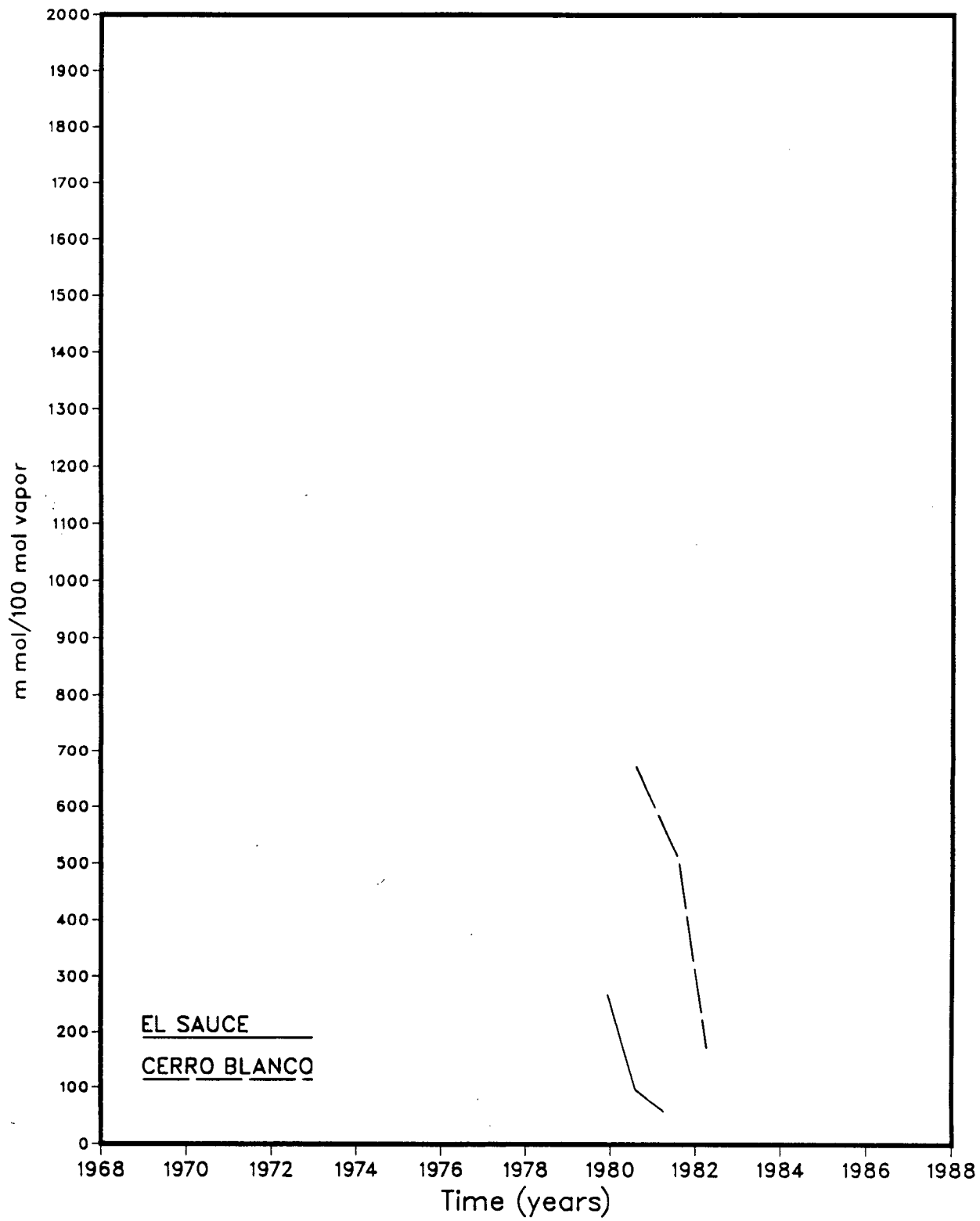


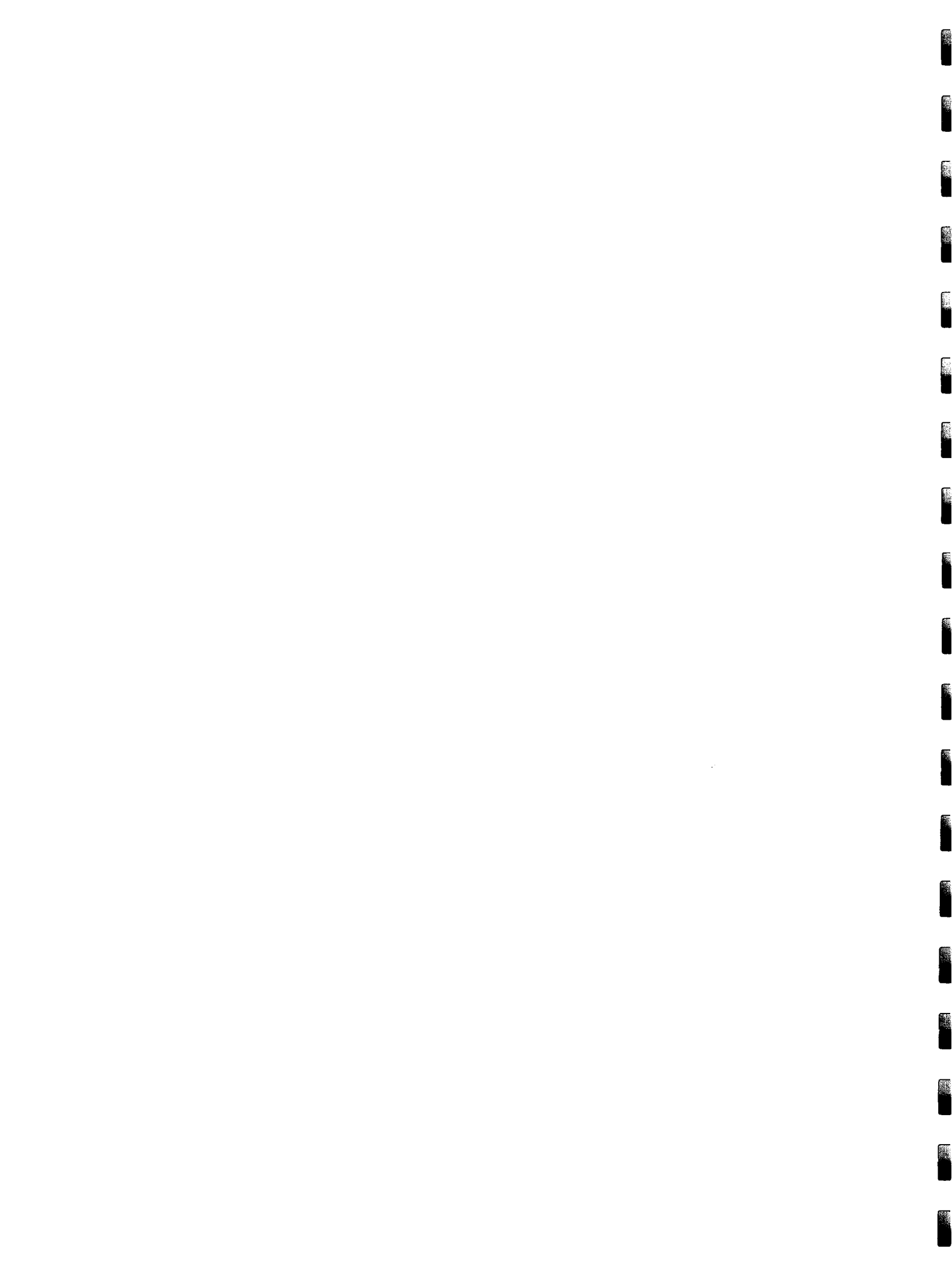
Gas Chemistry (H₂S)



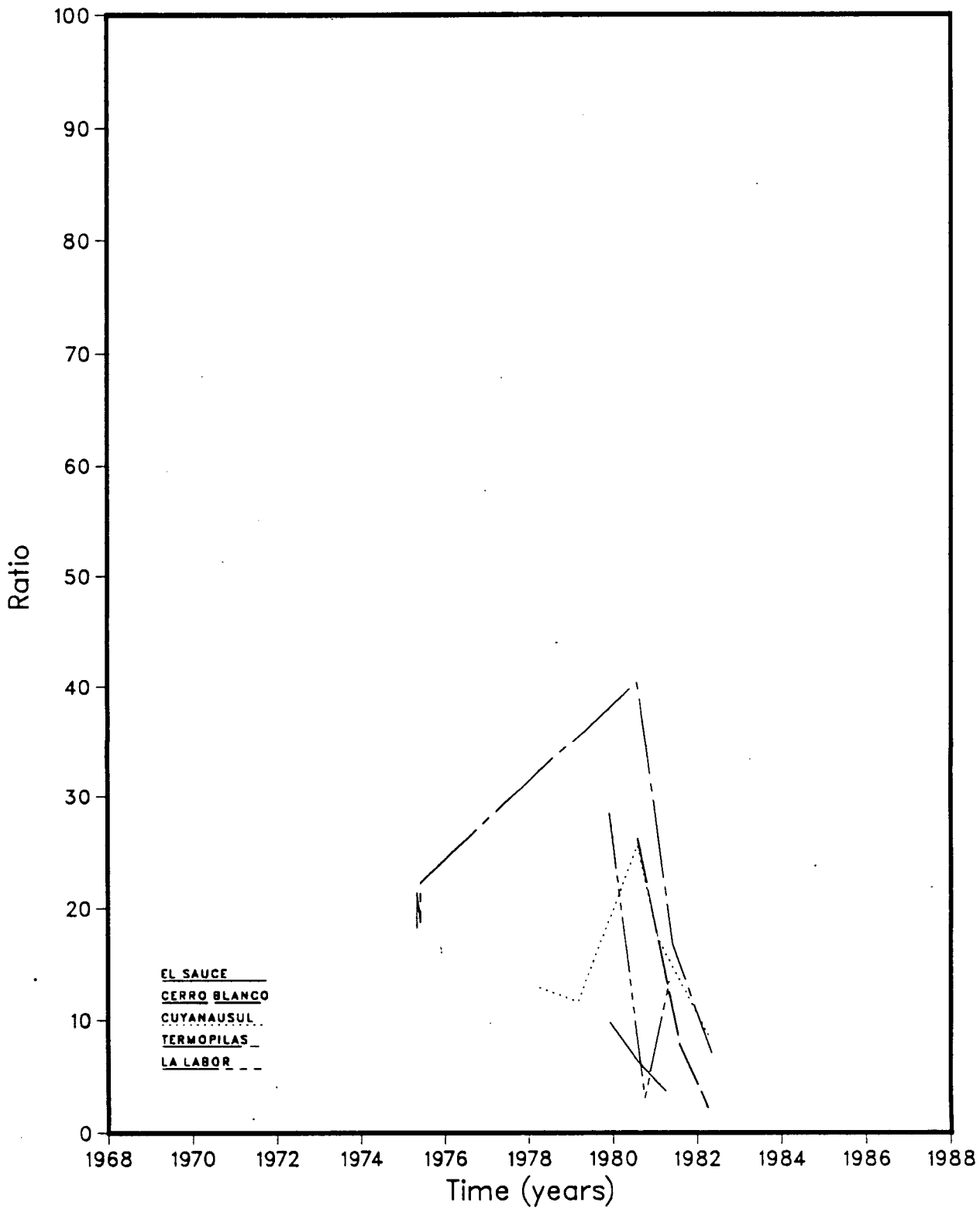
-G161- / 162

Gas Chemistry (H₂S)

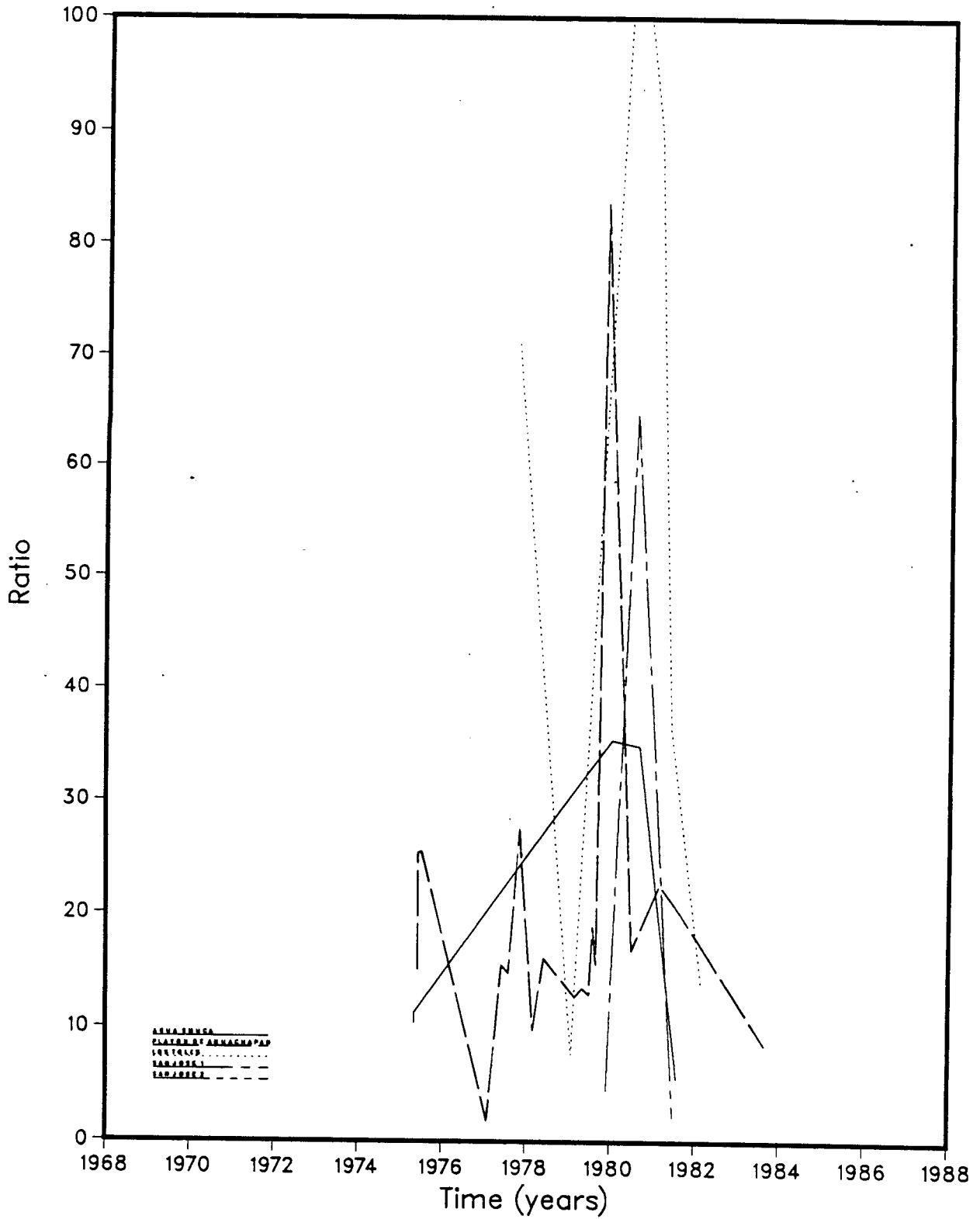




H₂S/H₂ Ratio



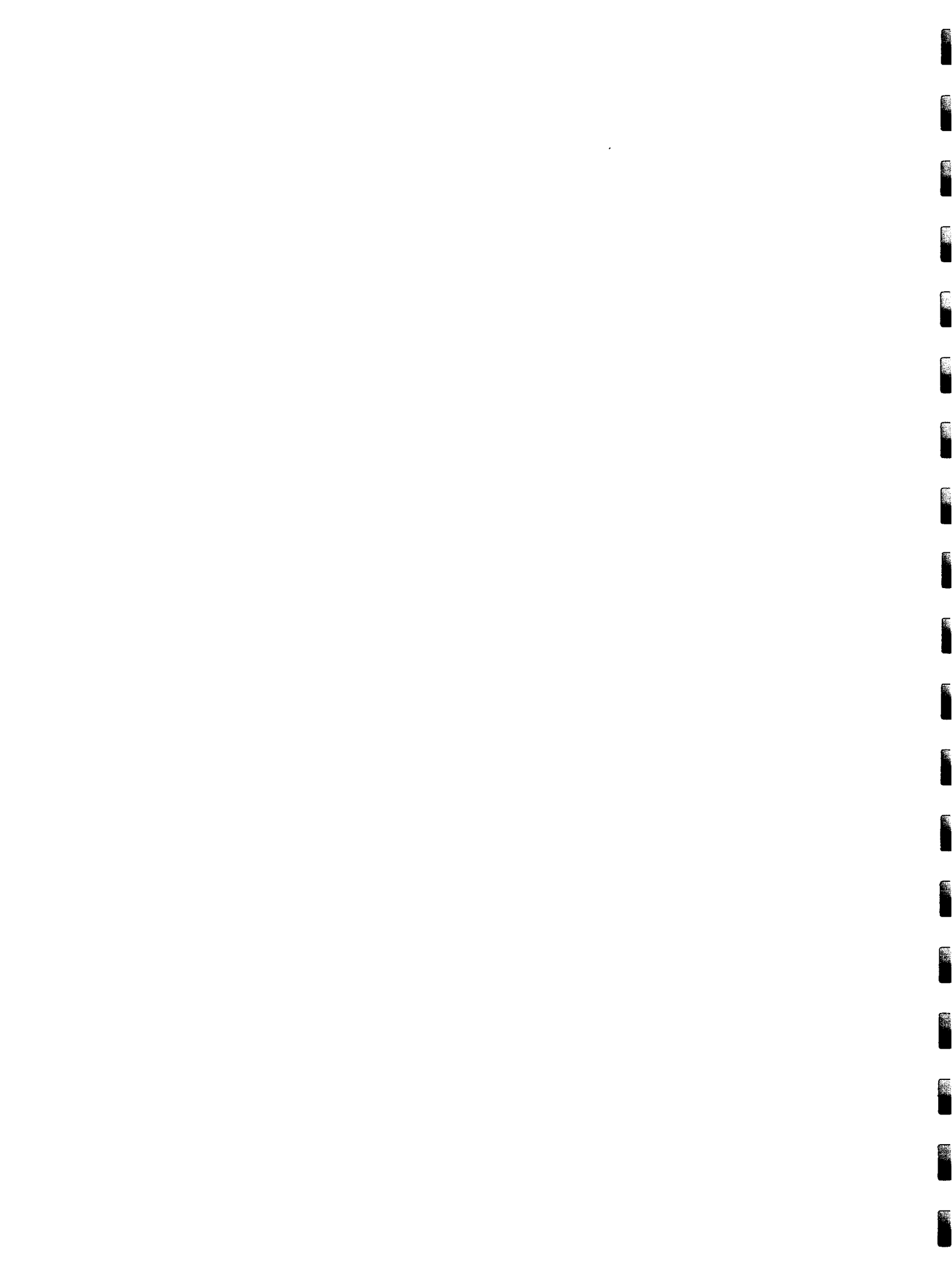
H₂S/H₂ Ratio



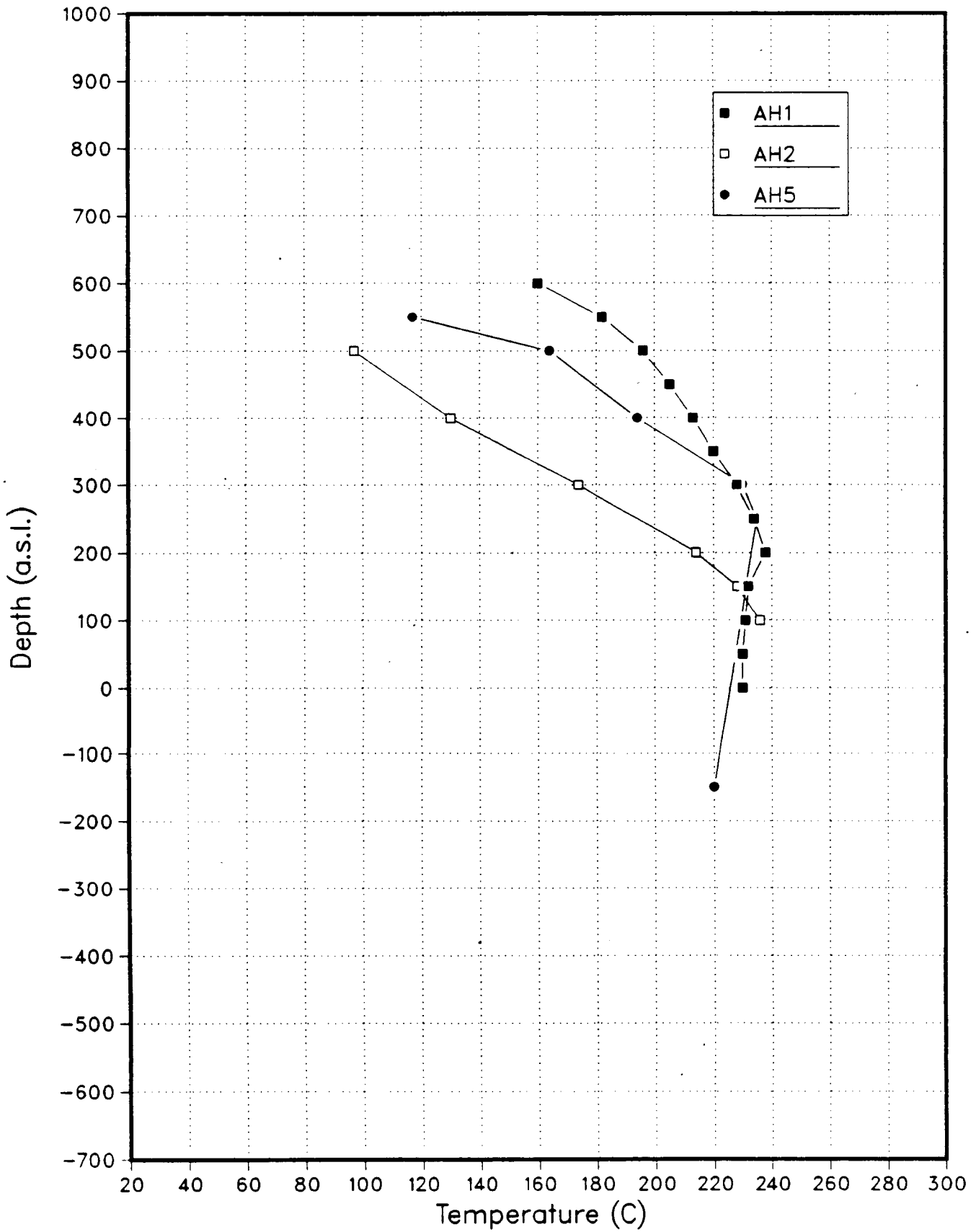
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APPENDIX H

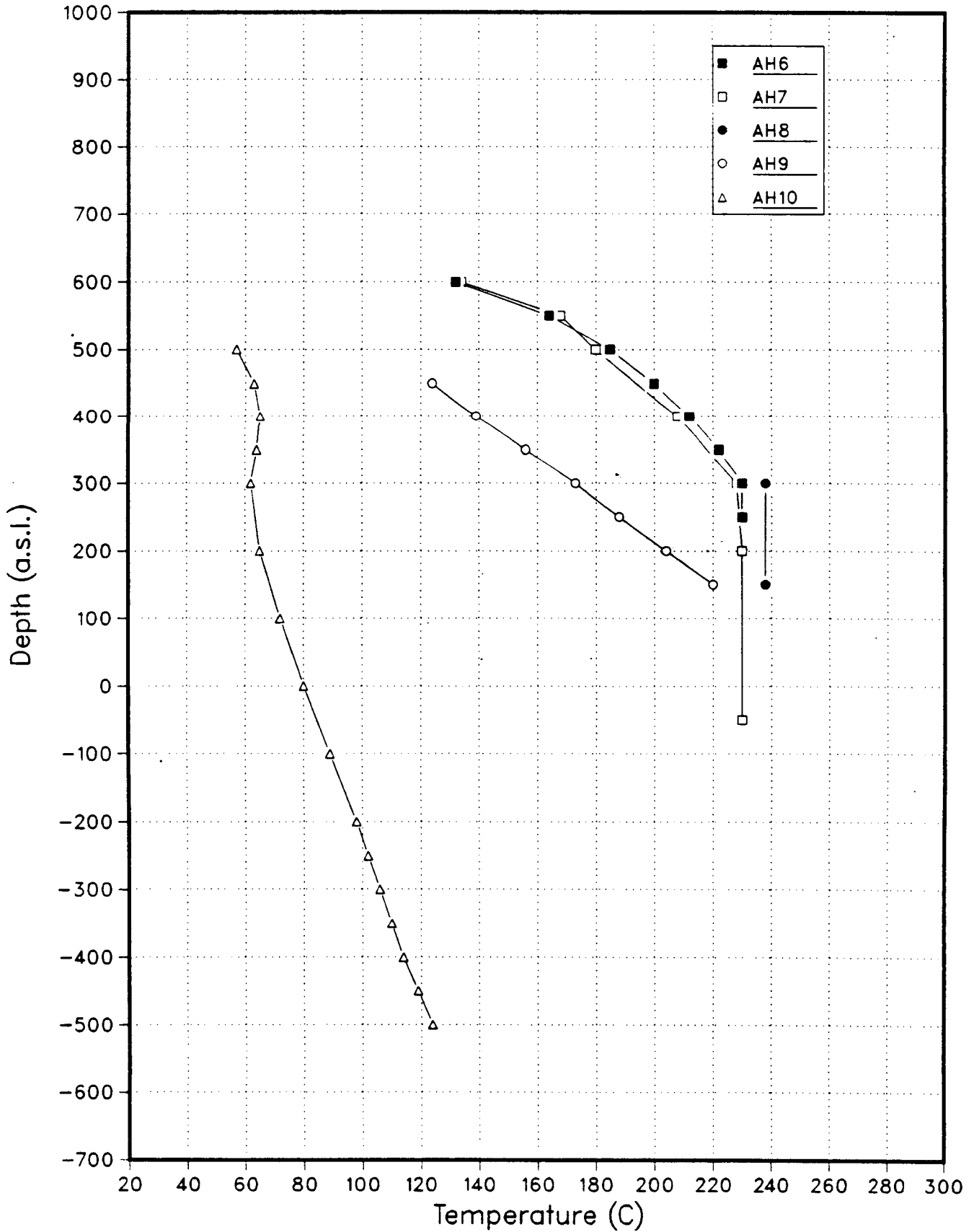
(Production Data)



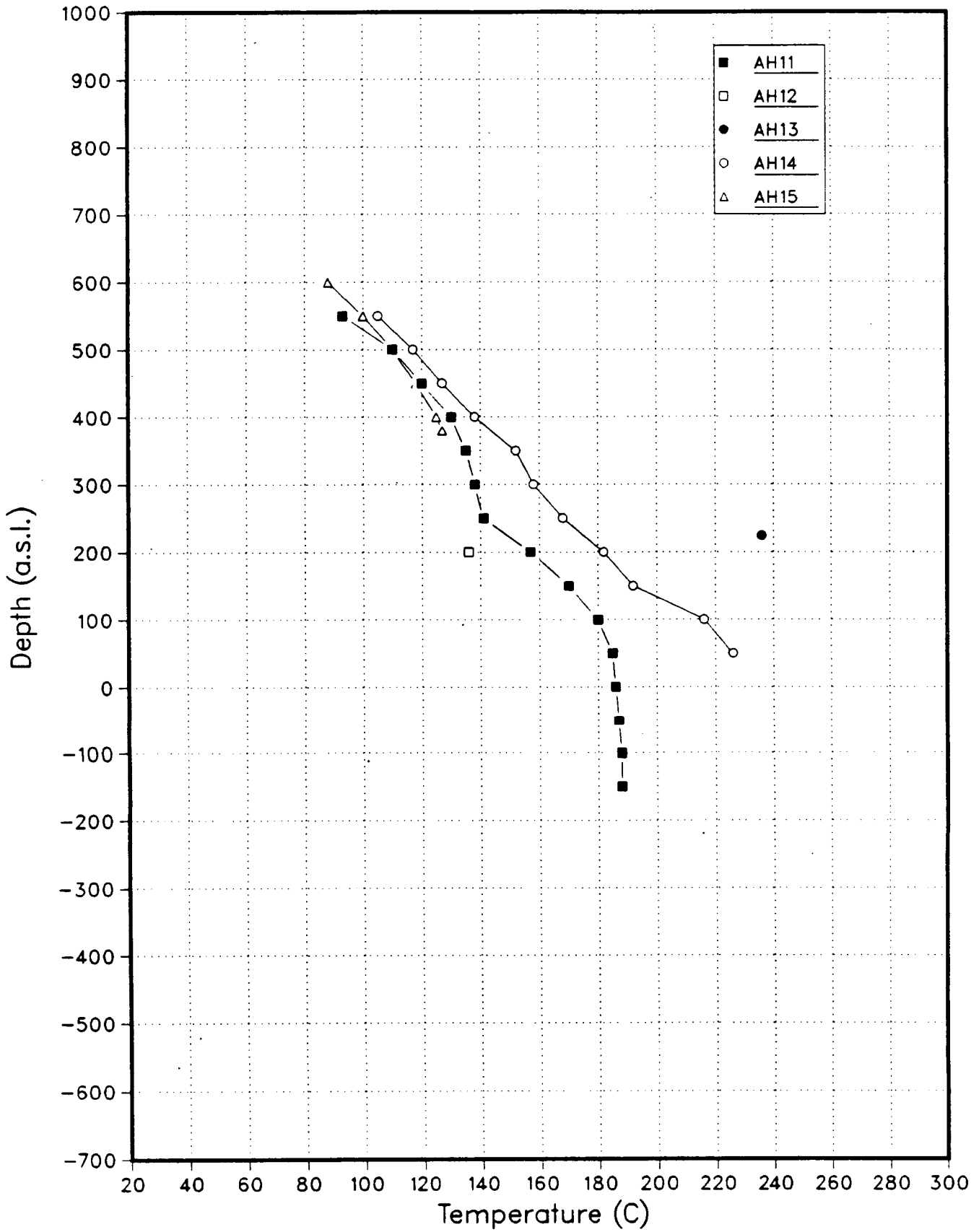
Stable Temperature Profile



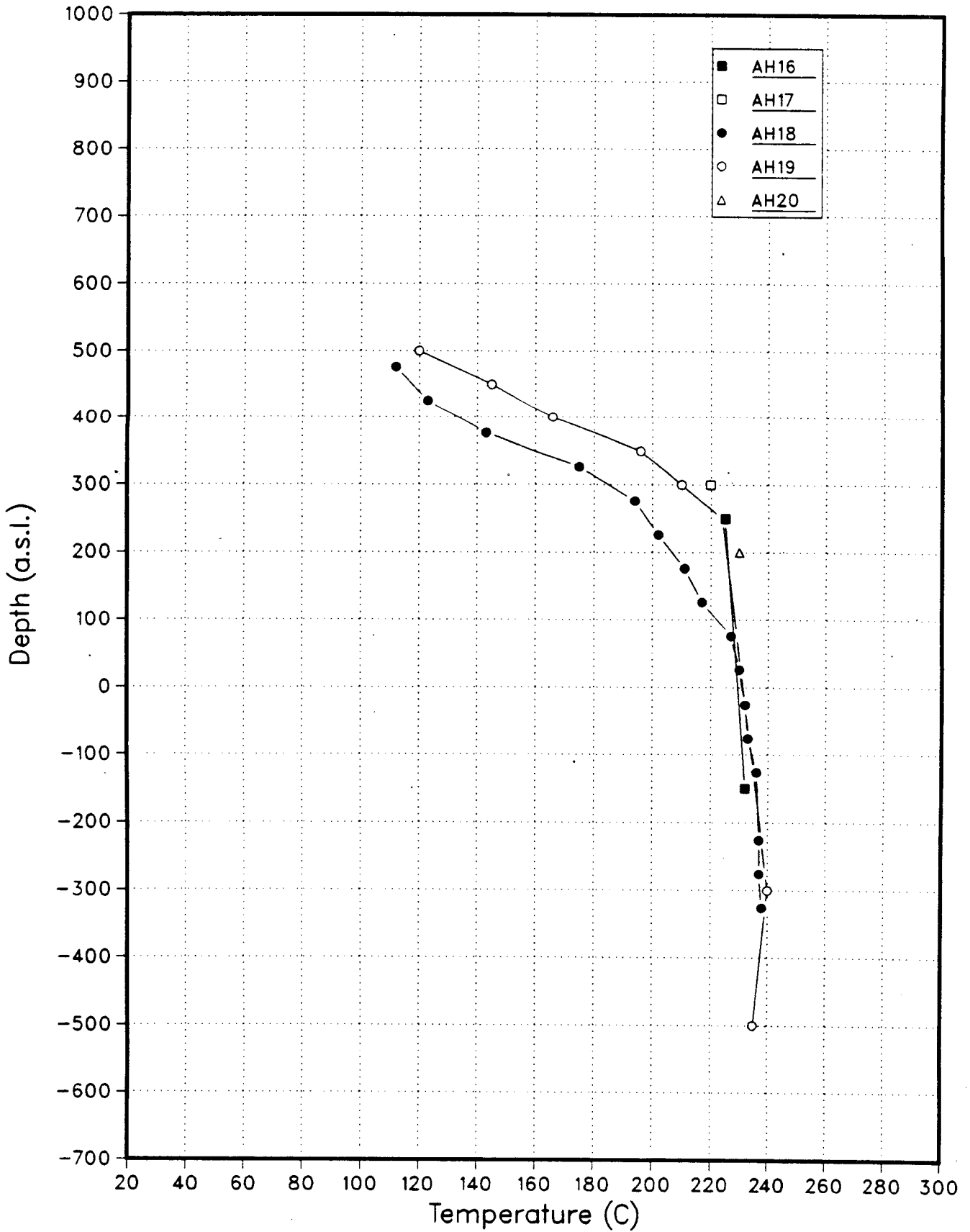
Stable Temperature Profile



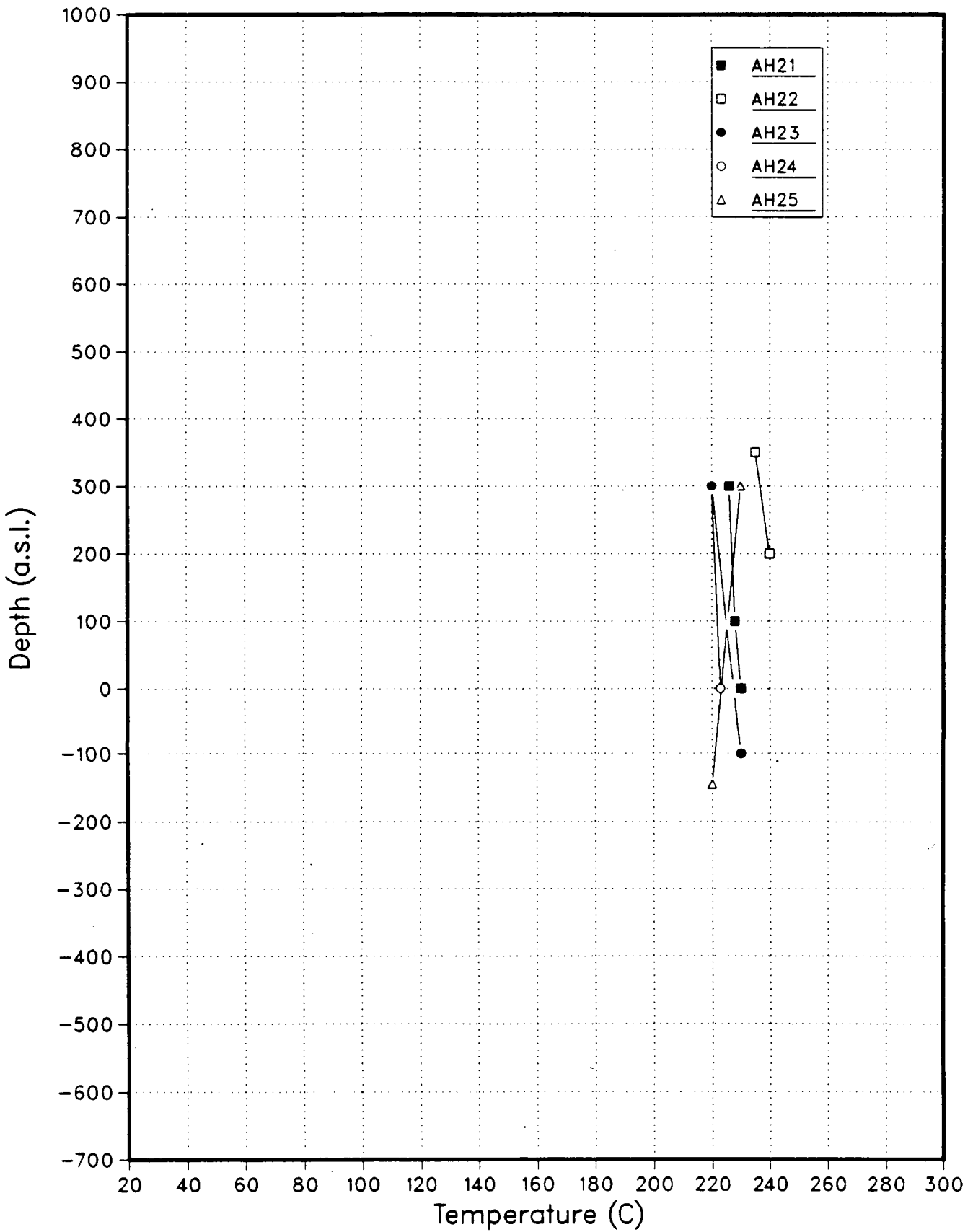
Stable Temperature Profile



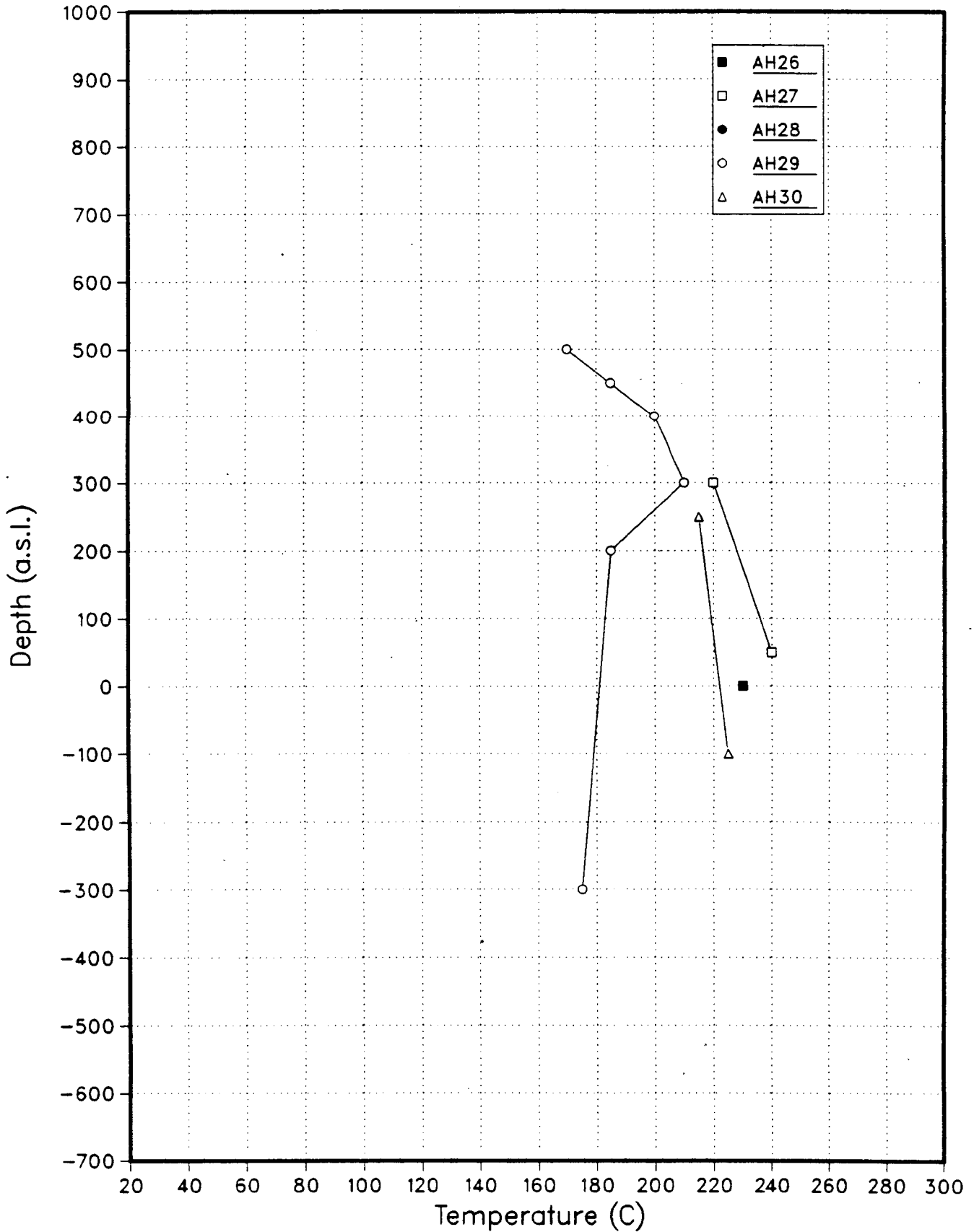
Stable Temperature Profile



Stable Temperature Profile

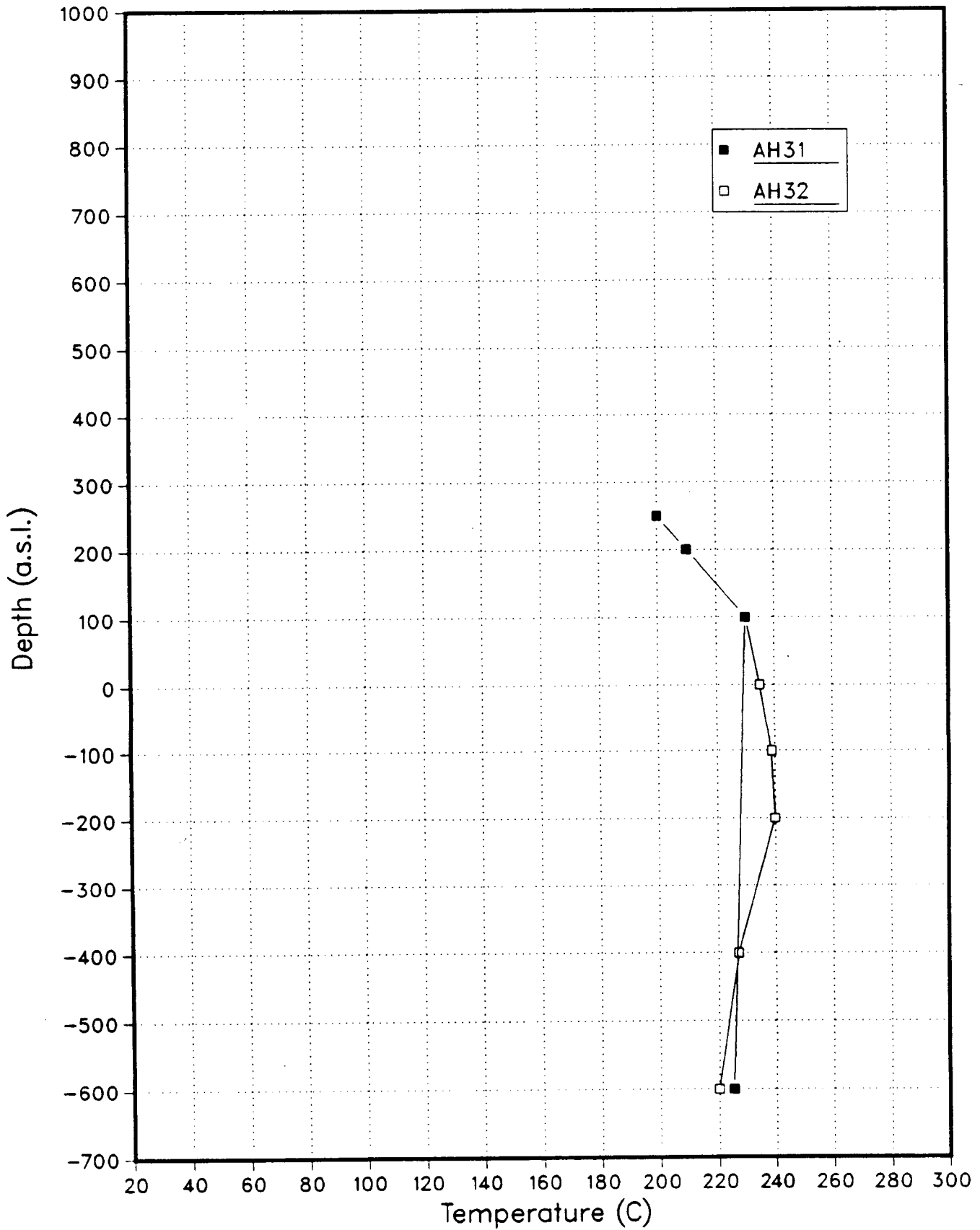


Stable Temperature Profile



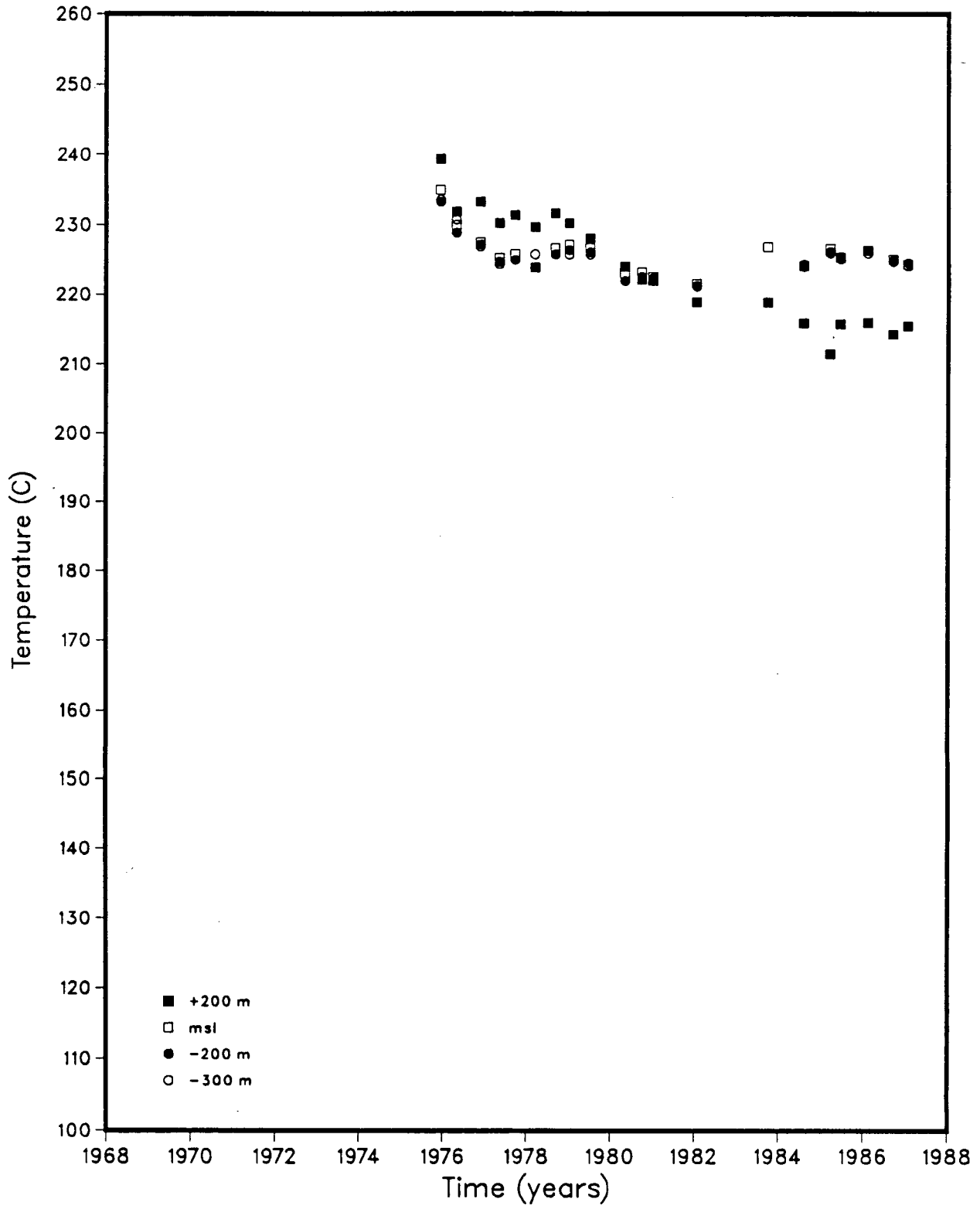
- H9 - / 10

Stable Temperature Profile

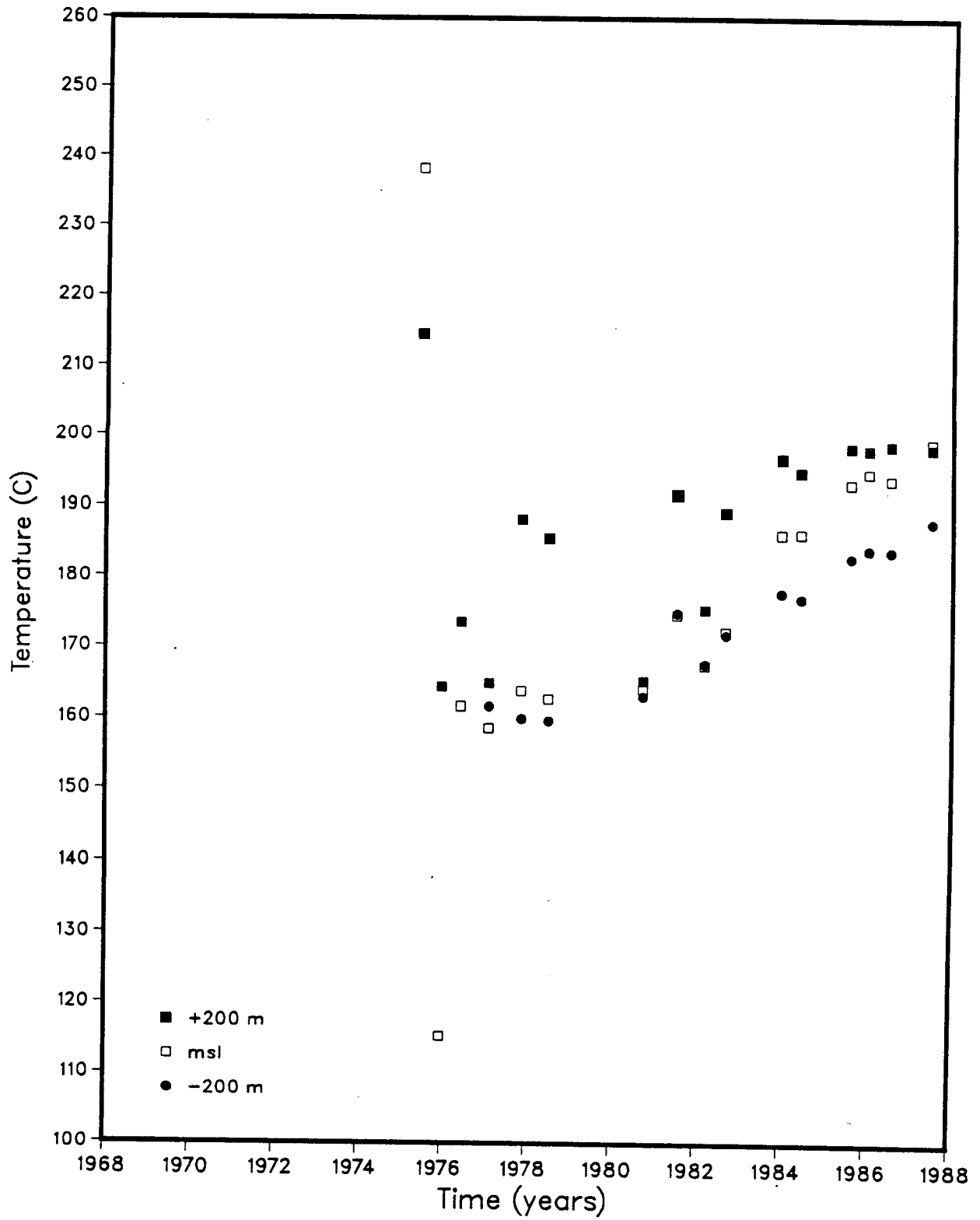




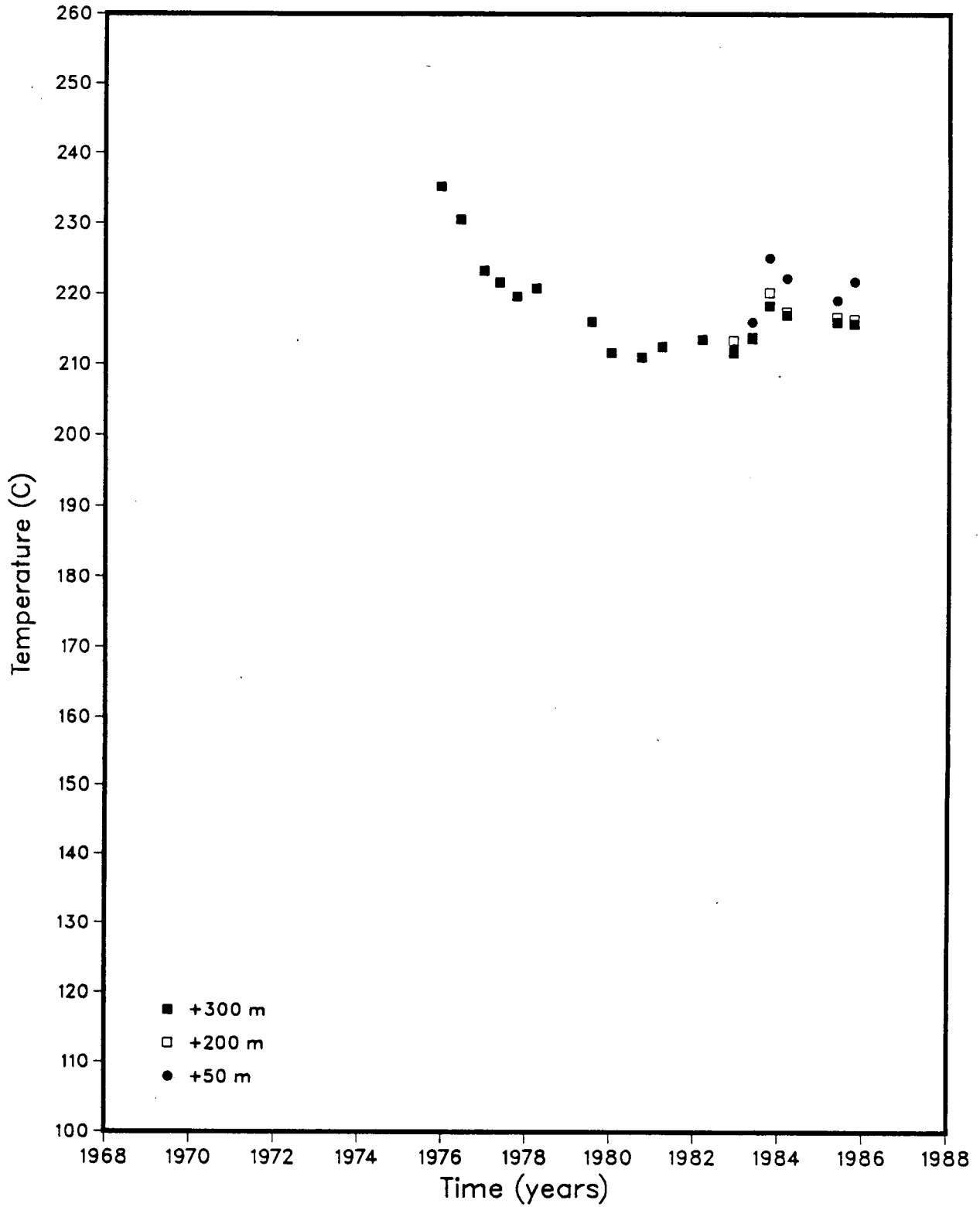
AH1 Temperature Trend



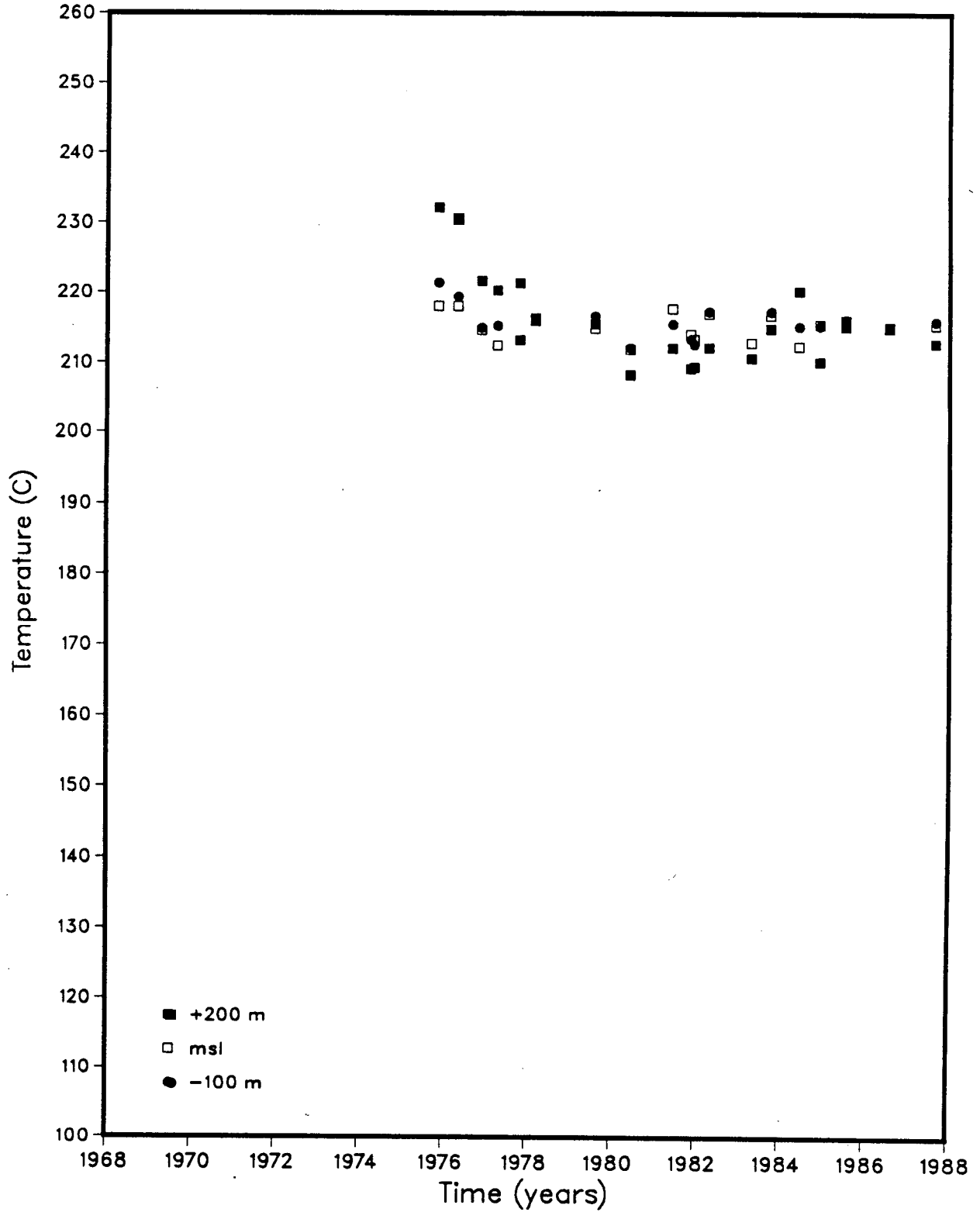
AH2 Temperature Trend



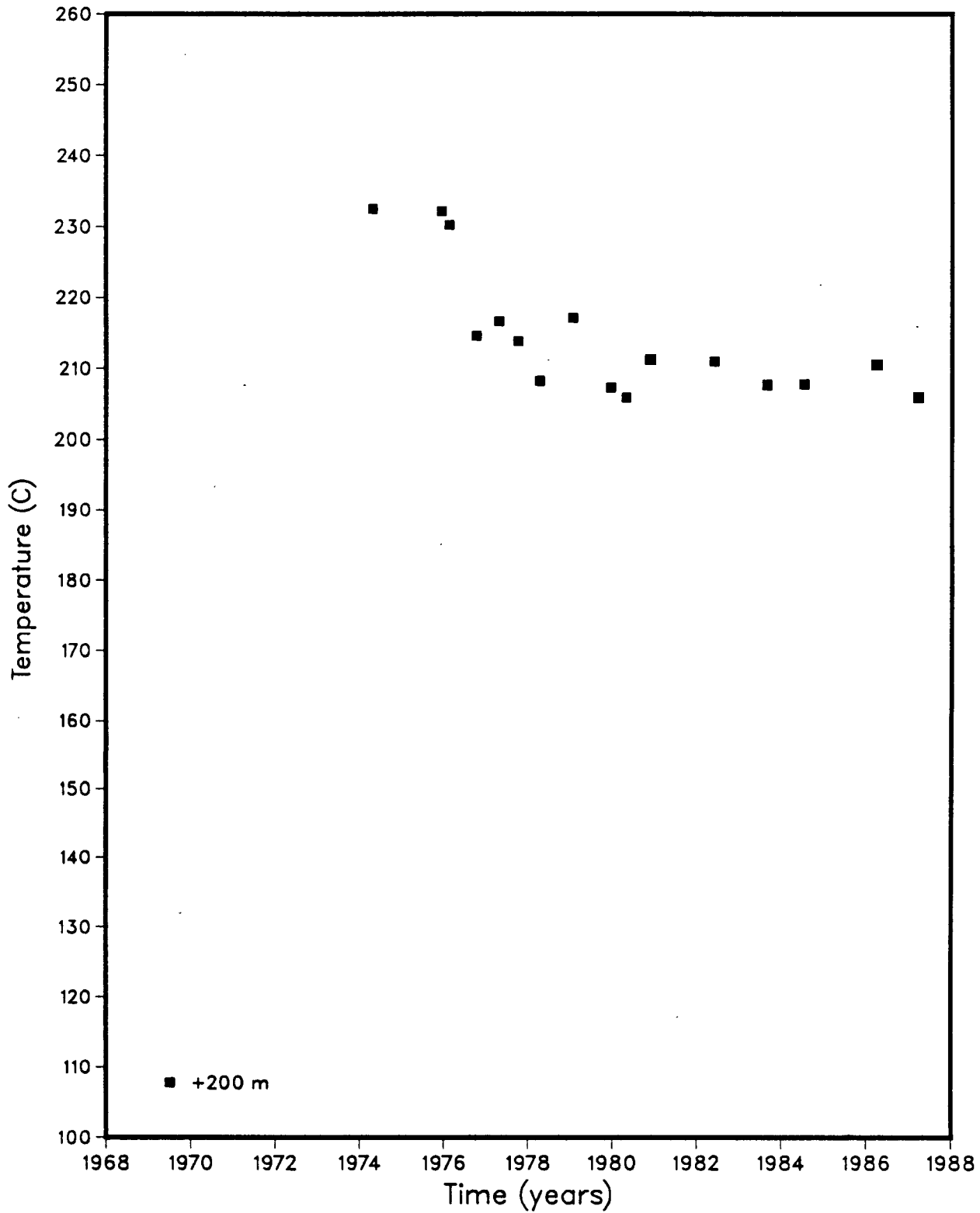
AH4 Temperature Trend



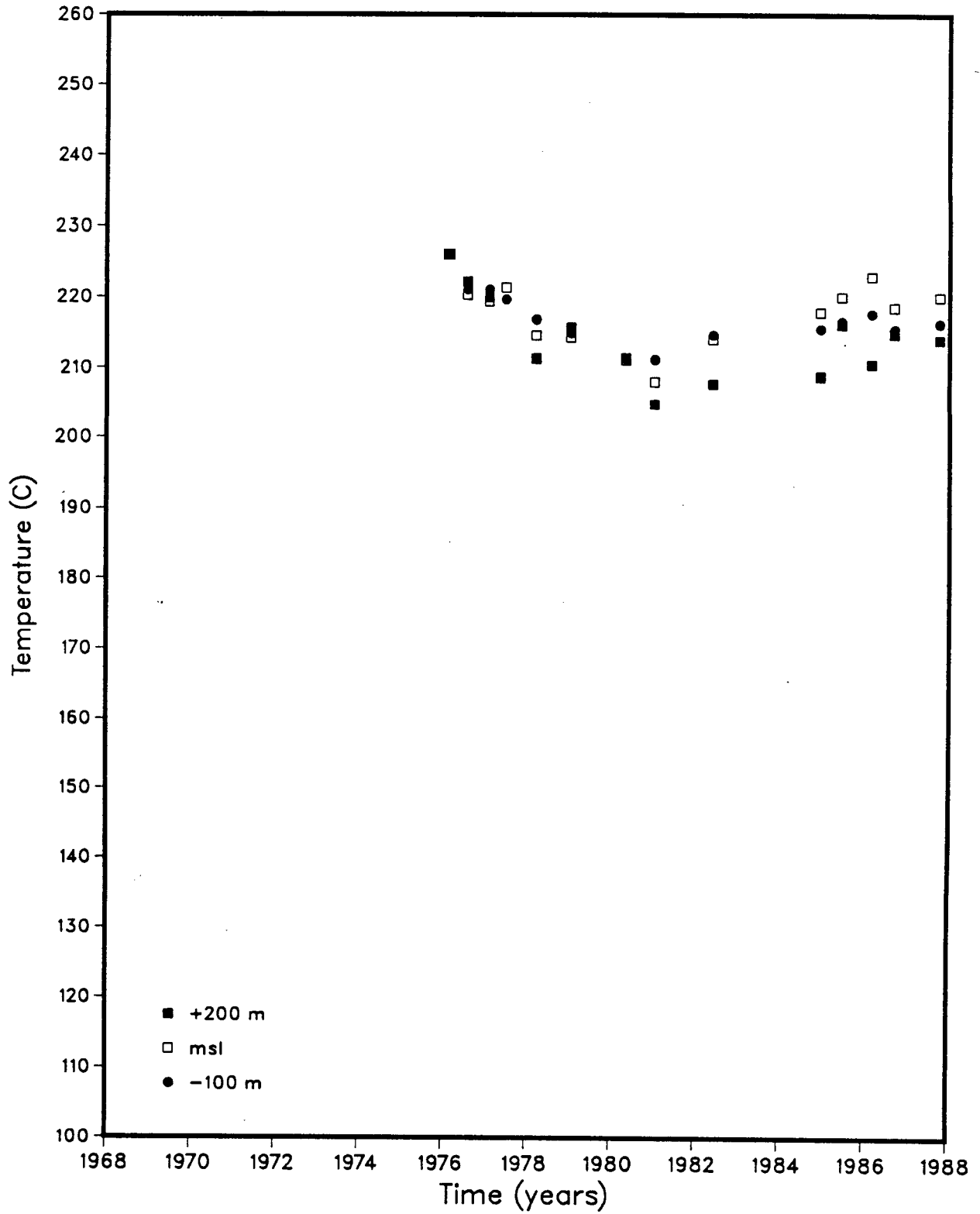
AH5 Temperature Trend



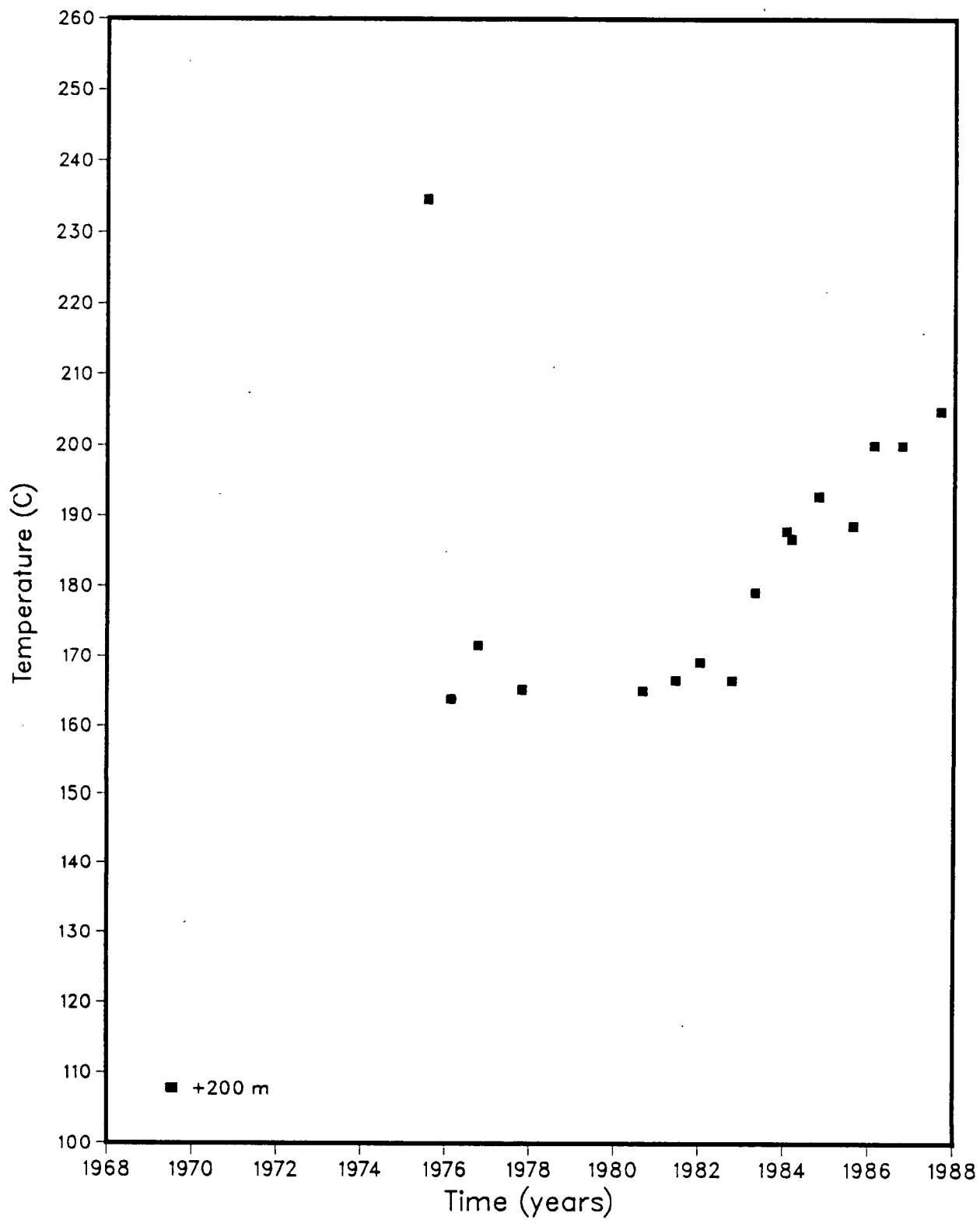
AH6 Temperature Trend



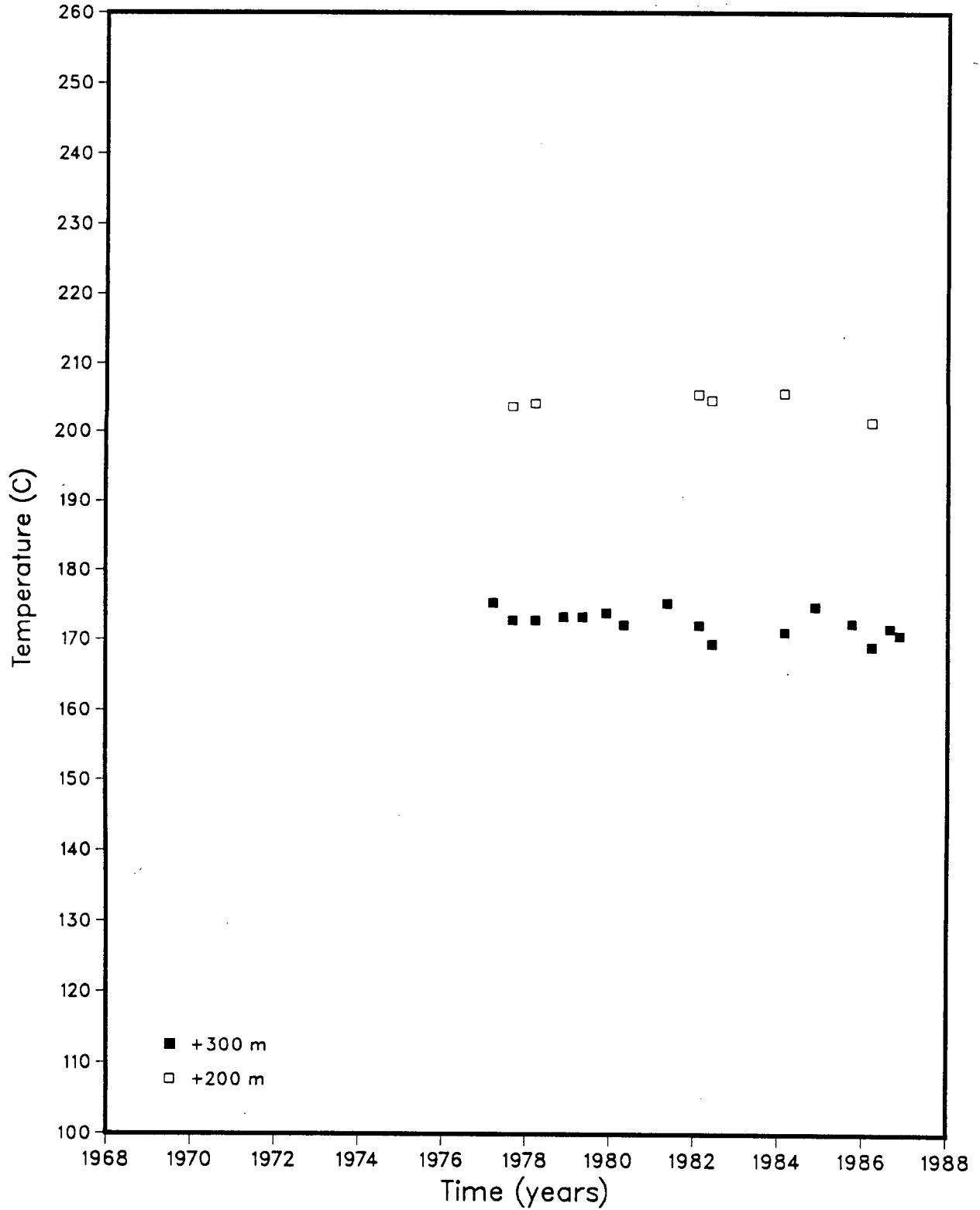
AH7 Temperature Trend



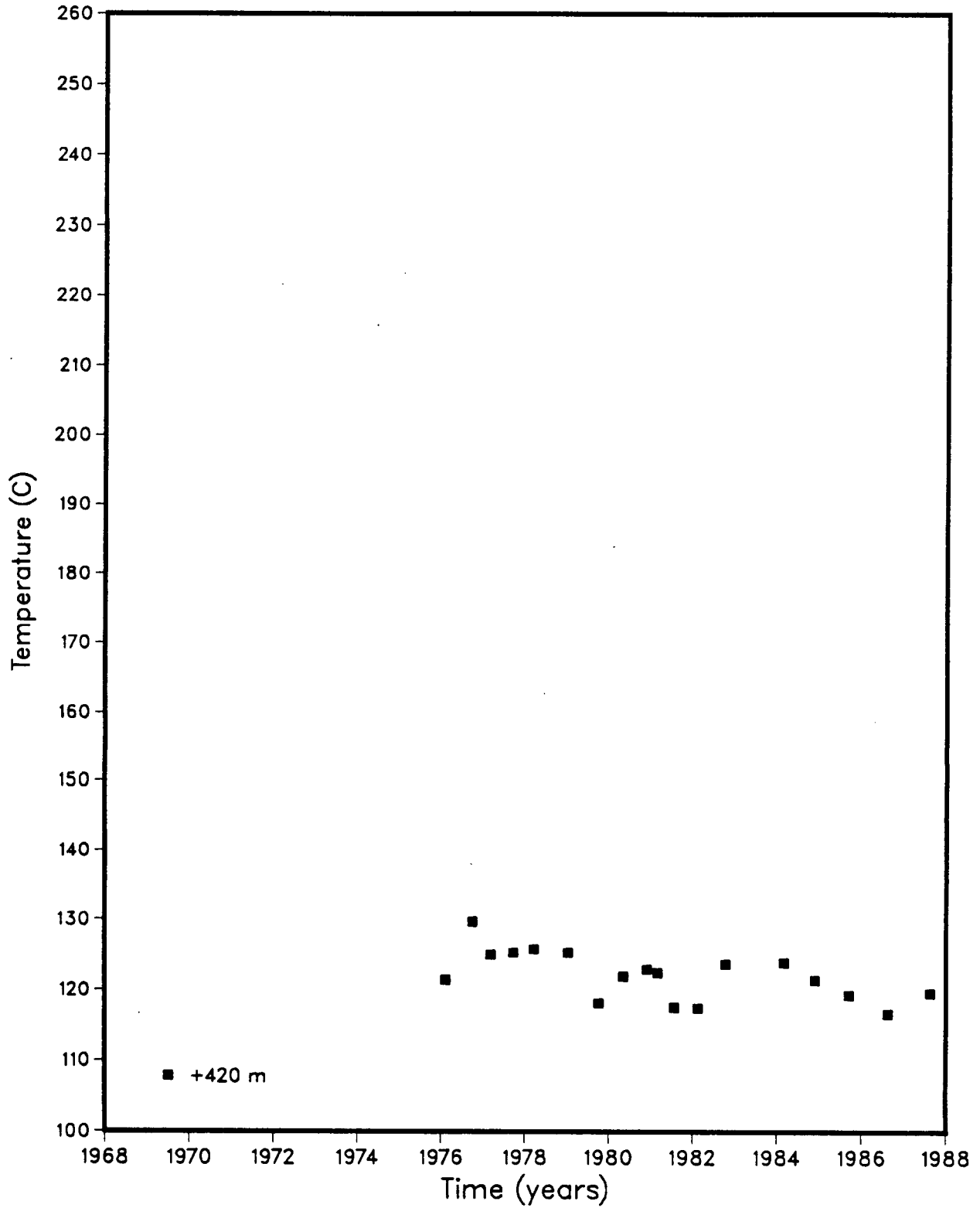
AH8 Temperature Trend



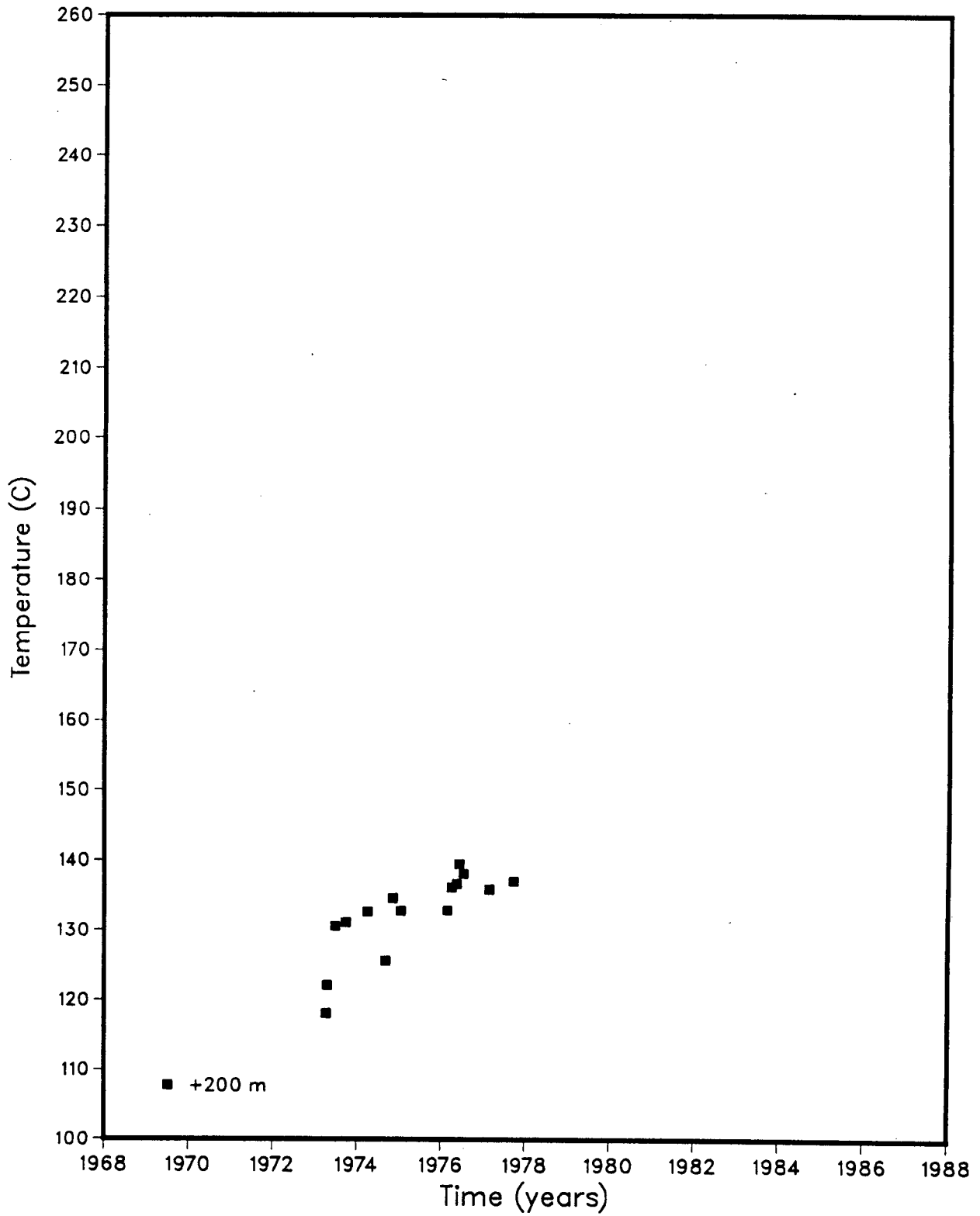
AH9 Temperature Trend



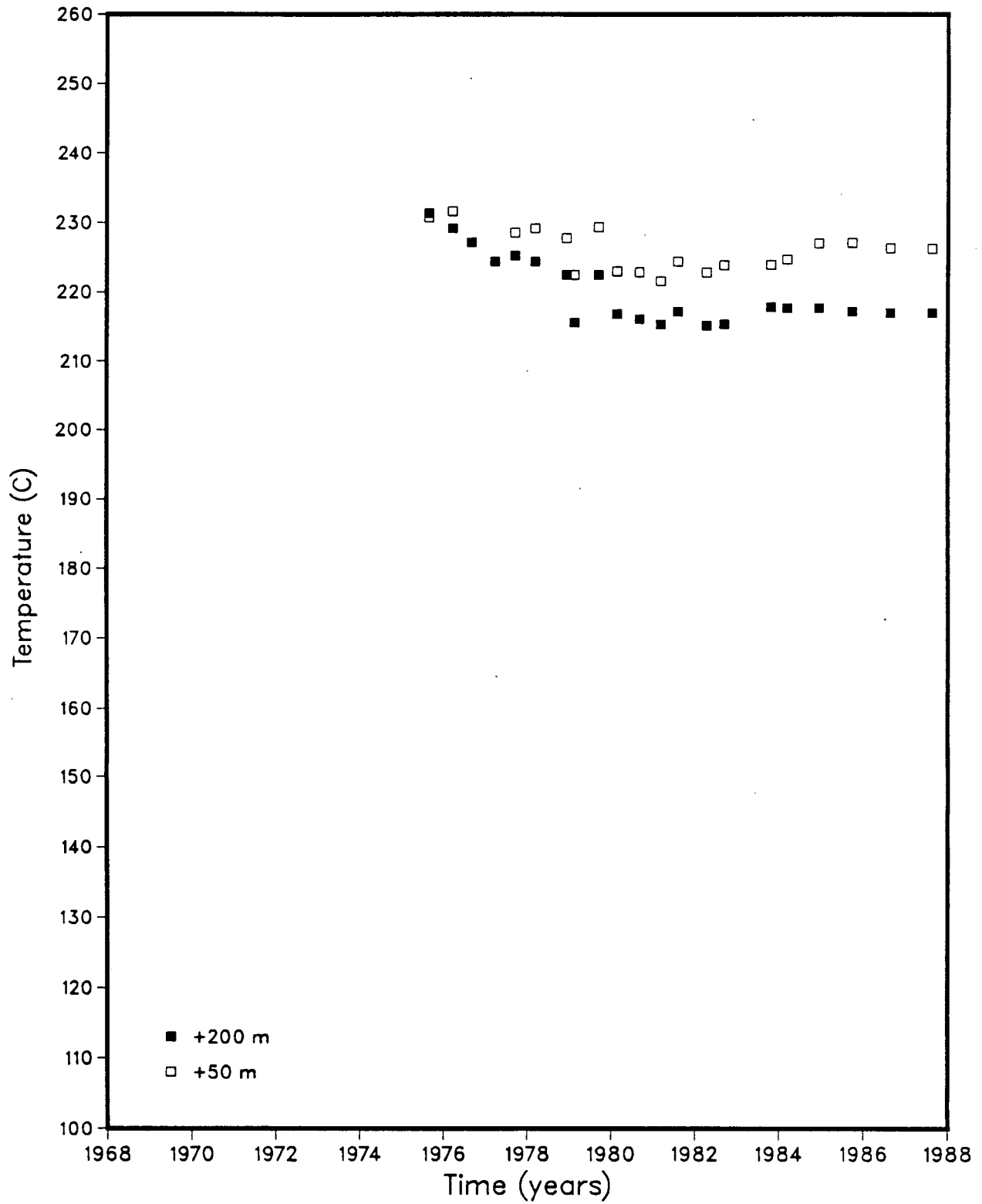
AH11 Temperature Trend



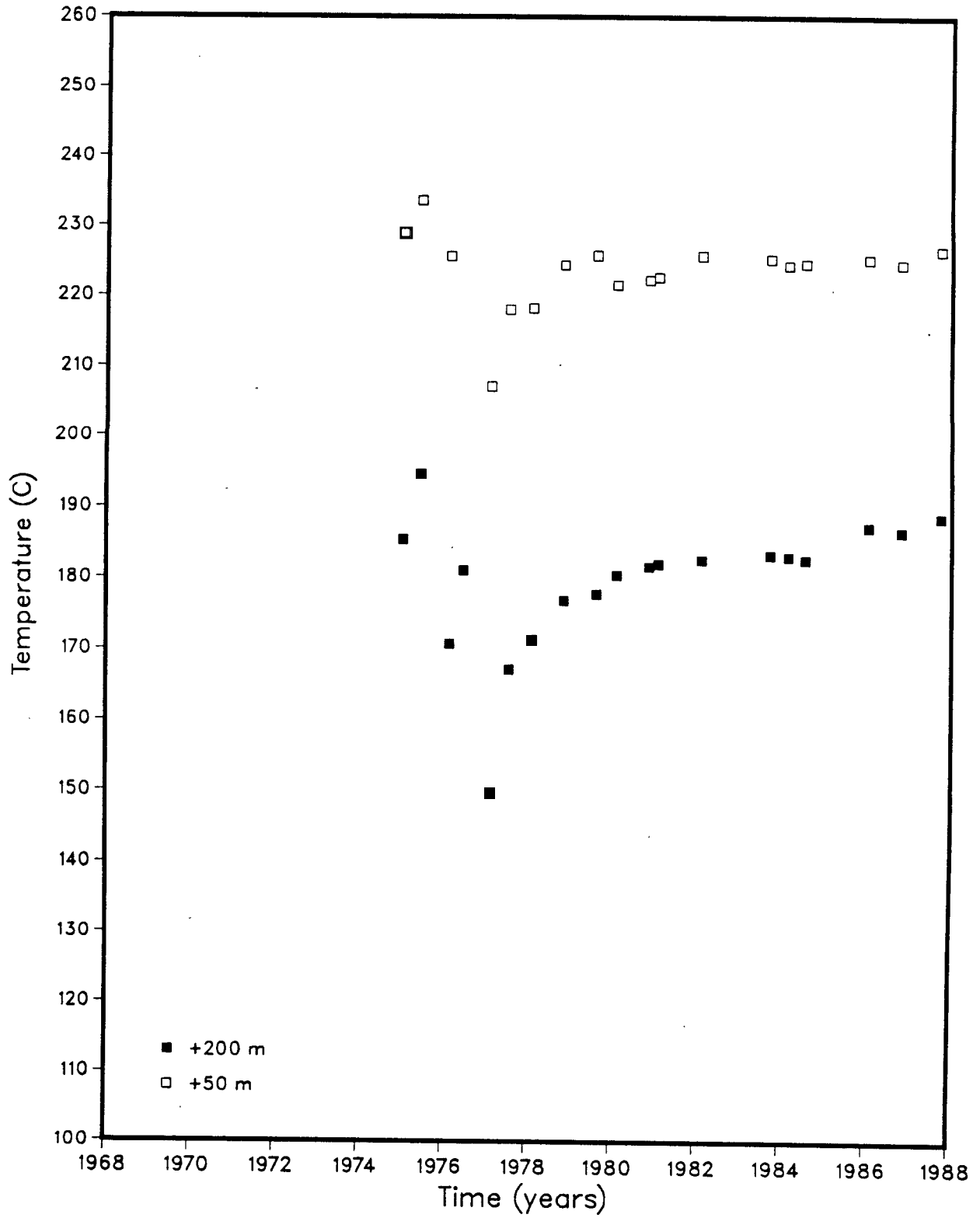
AH12 Temperature Trend



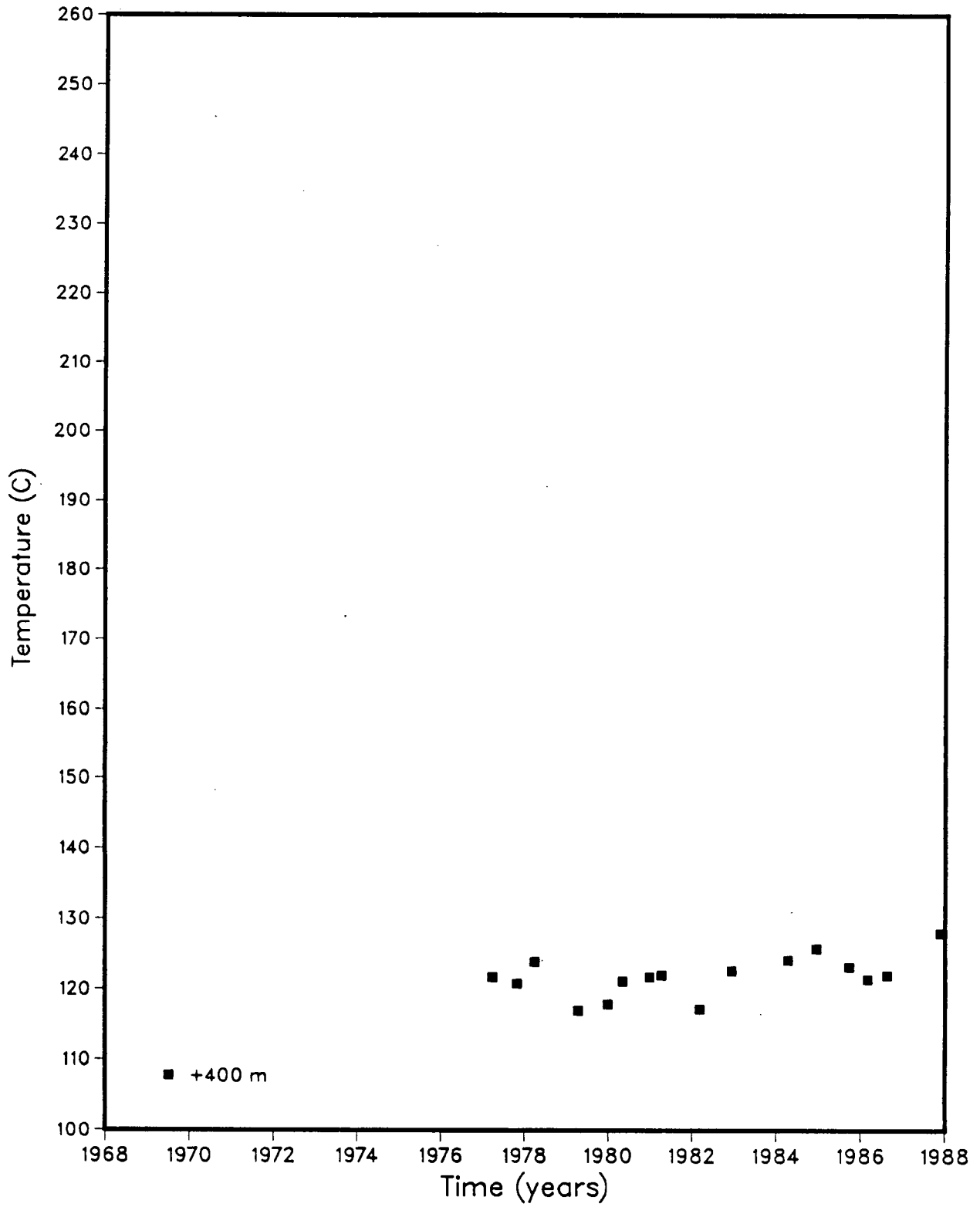
AH13 Temperature Trend



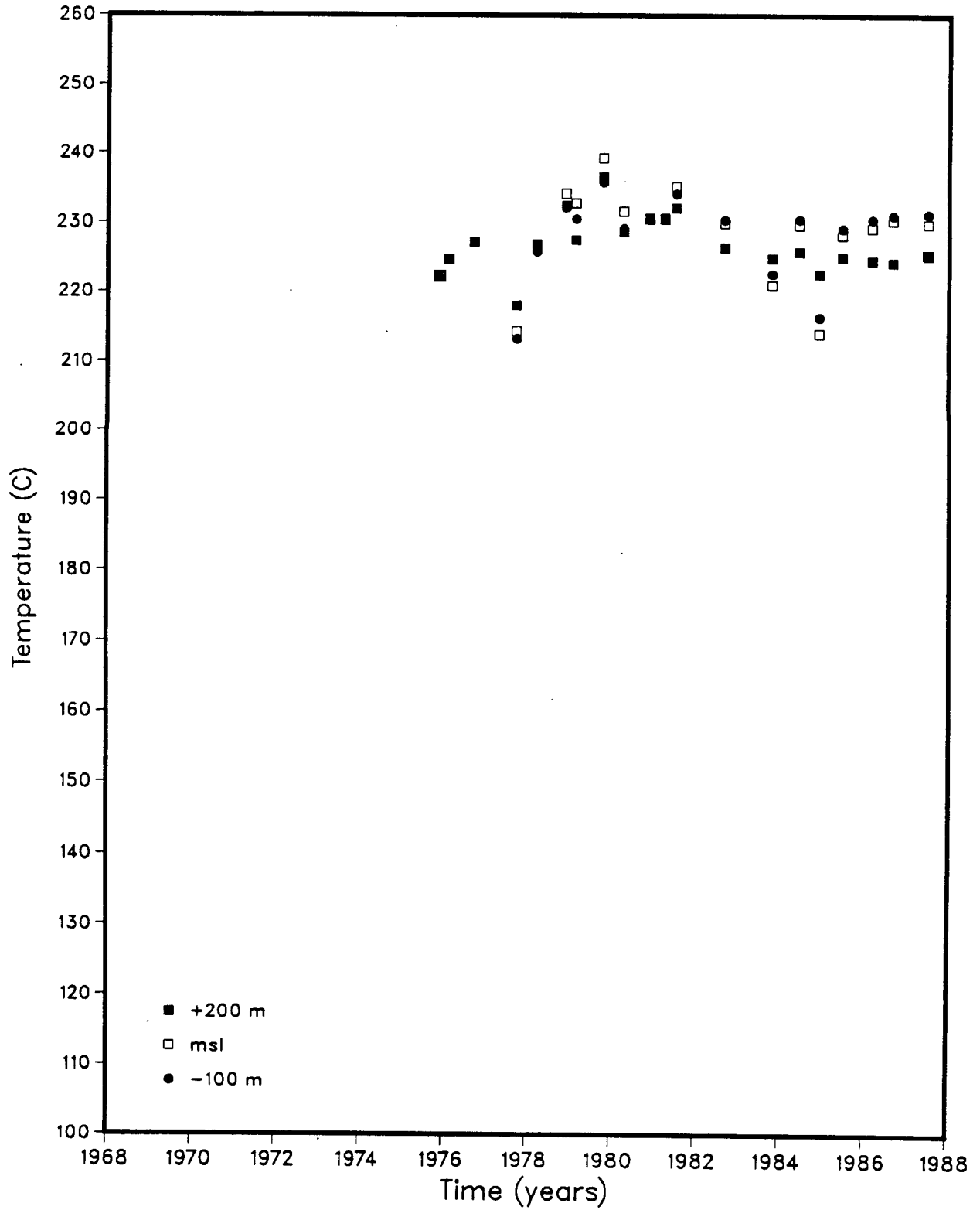
AH14 Temperature Trend



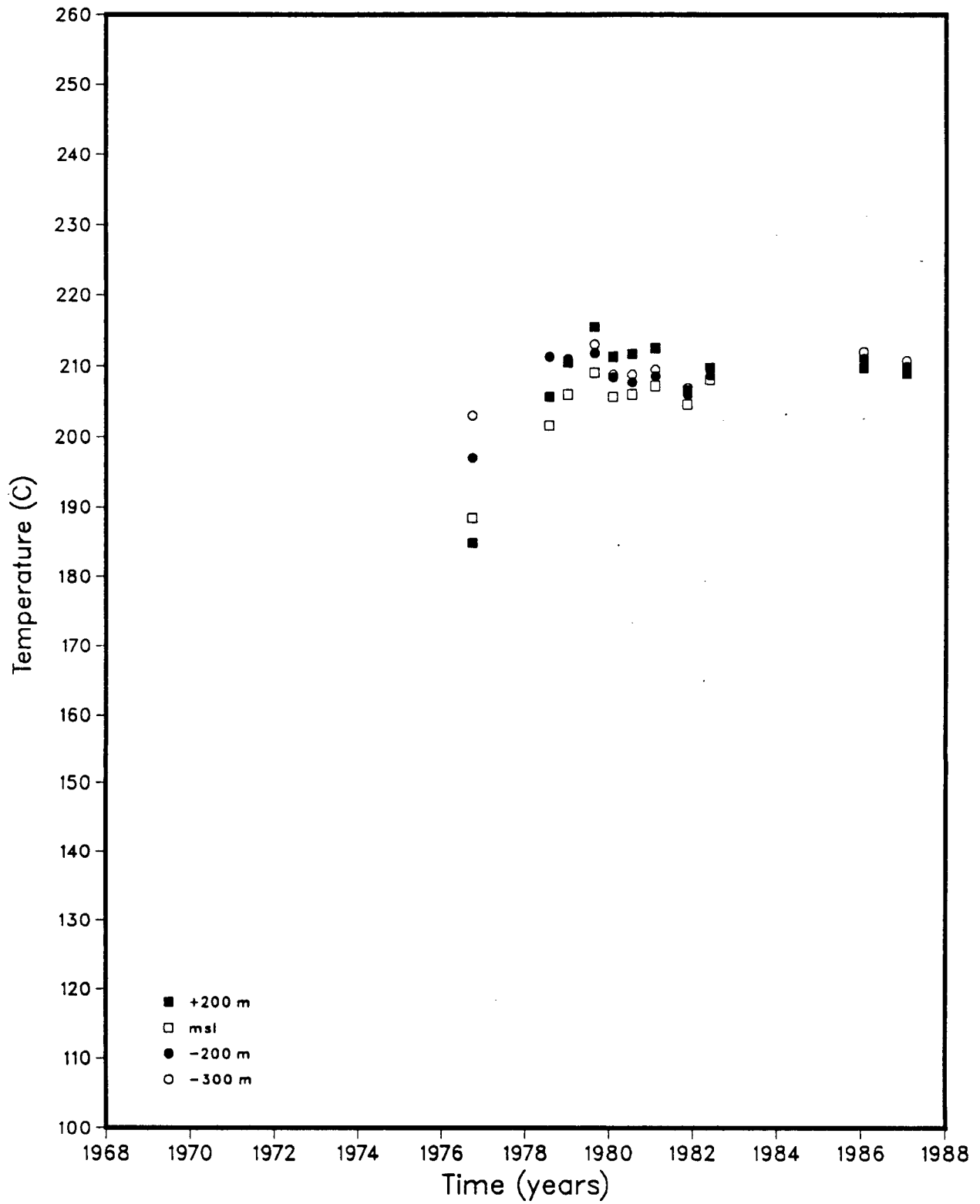
AH15 Temperature Trend



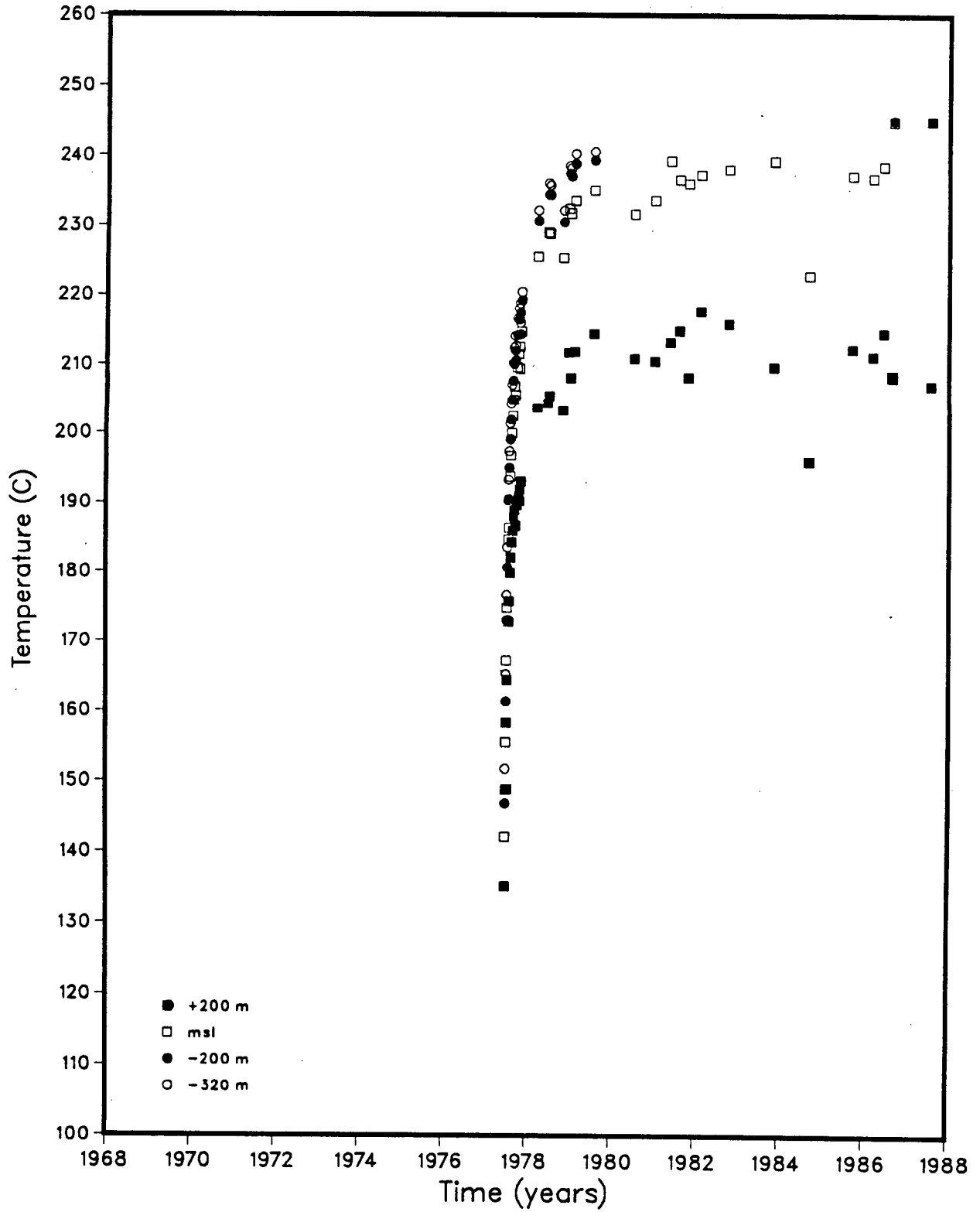
AH16 Temperature Trend



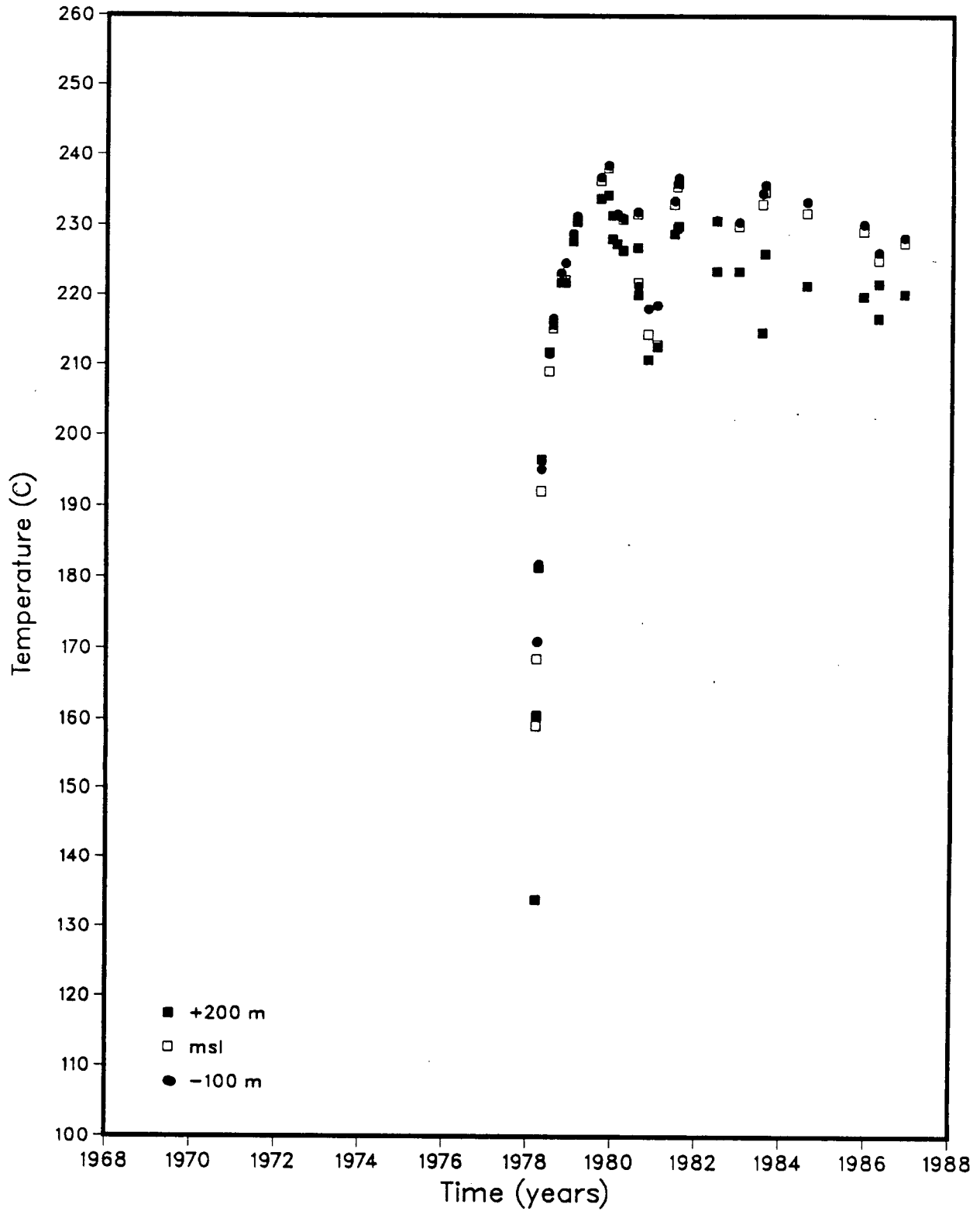
AH17 Temperature Trend



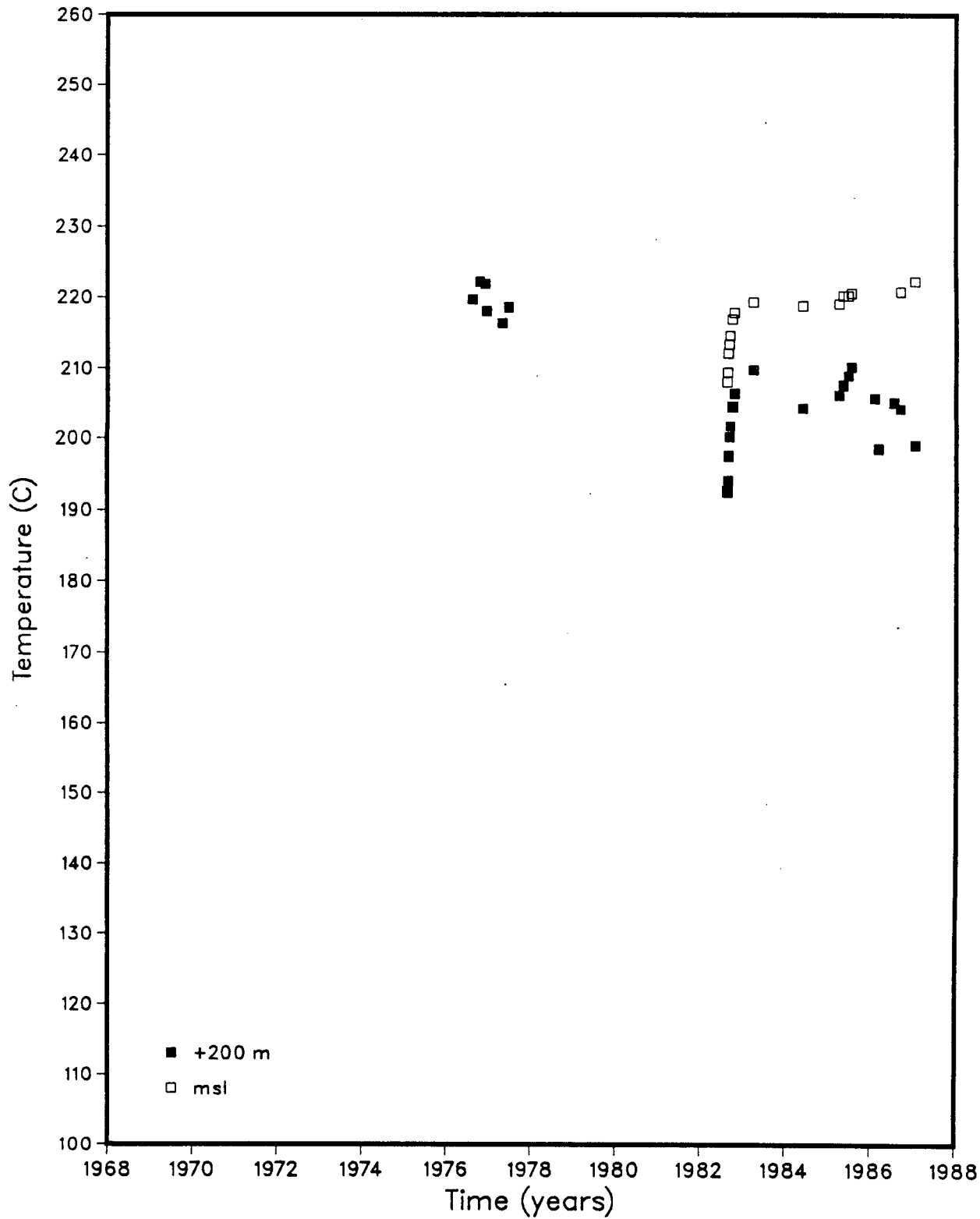
AH18 Temperature Trend



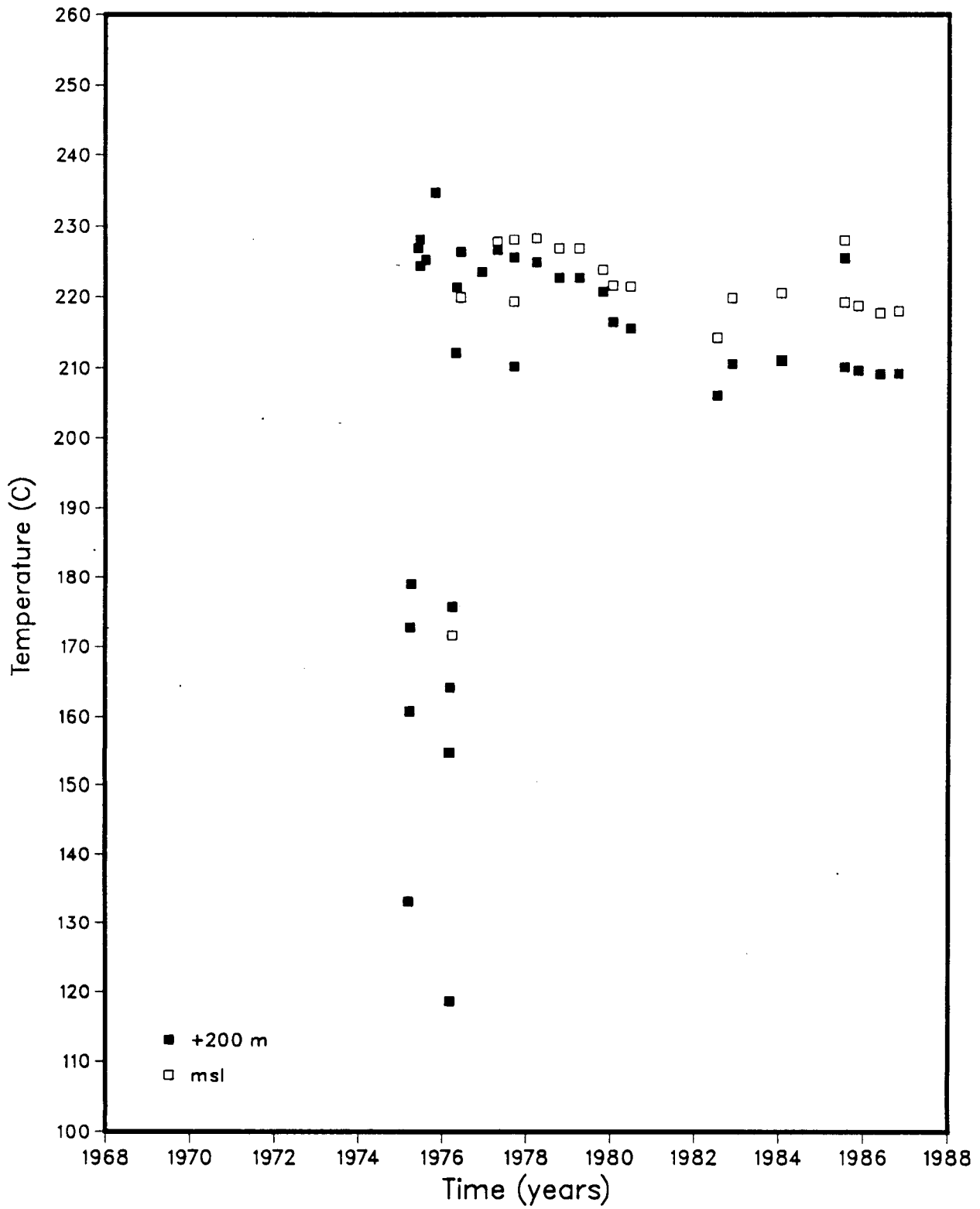
AH19 Temperature Trend



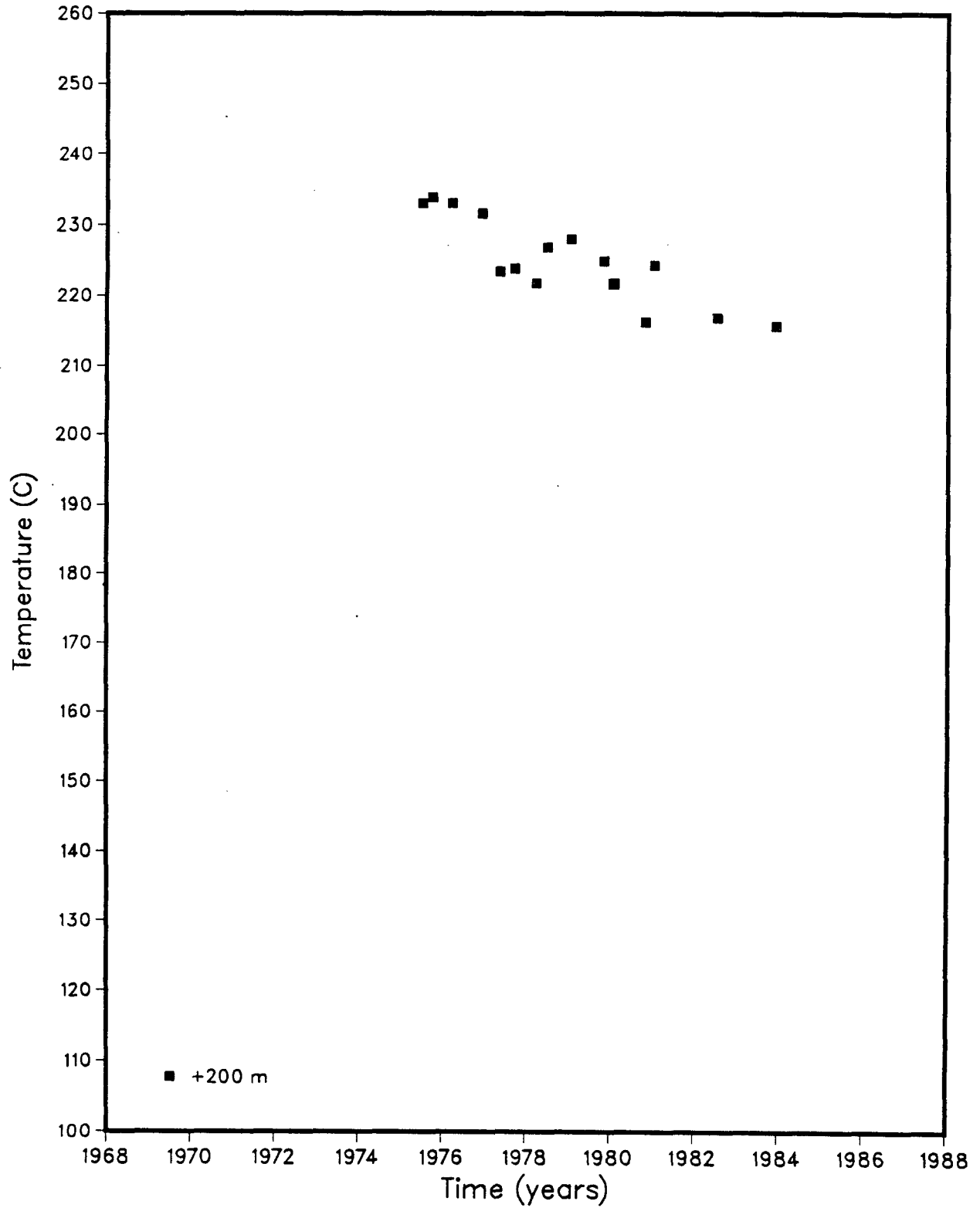
AH20 Temperature Trend



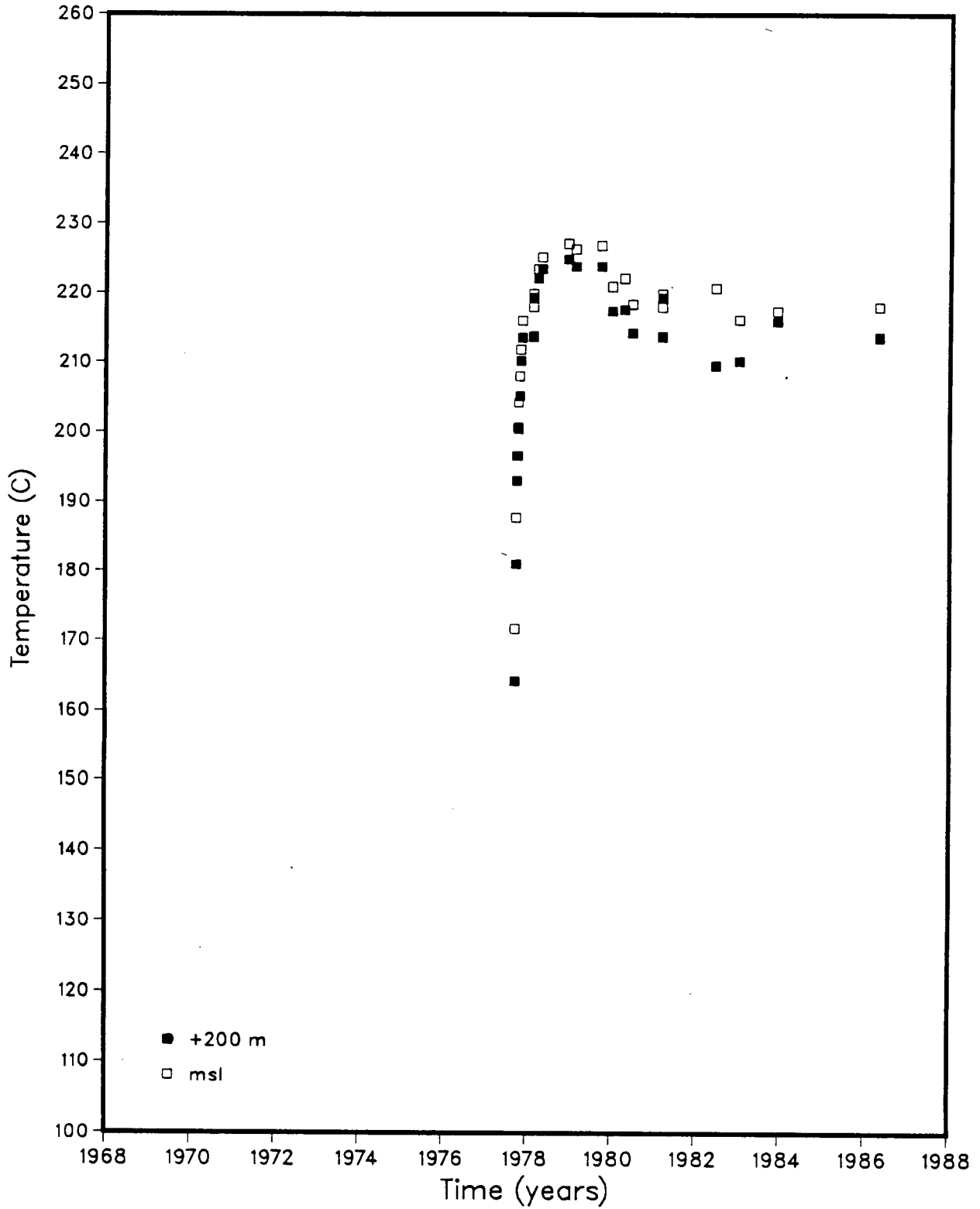
AH21 Temperature Trend



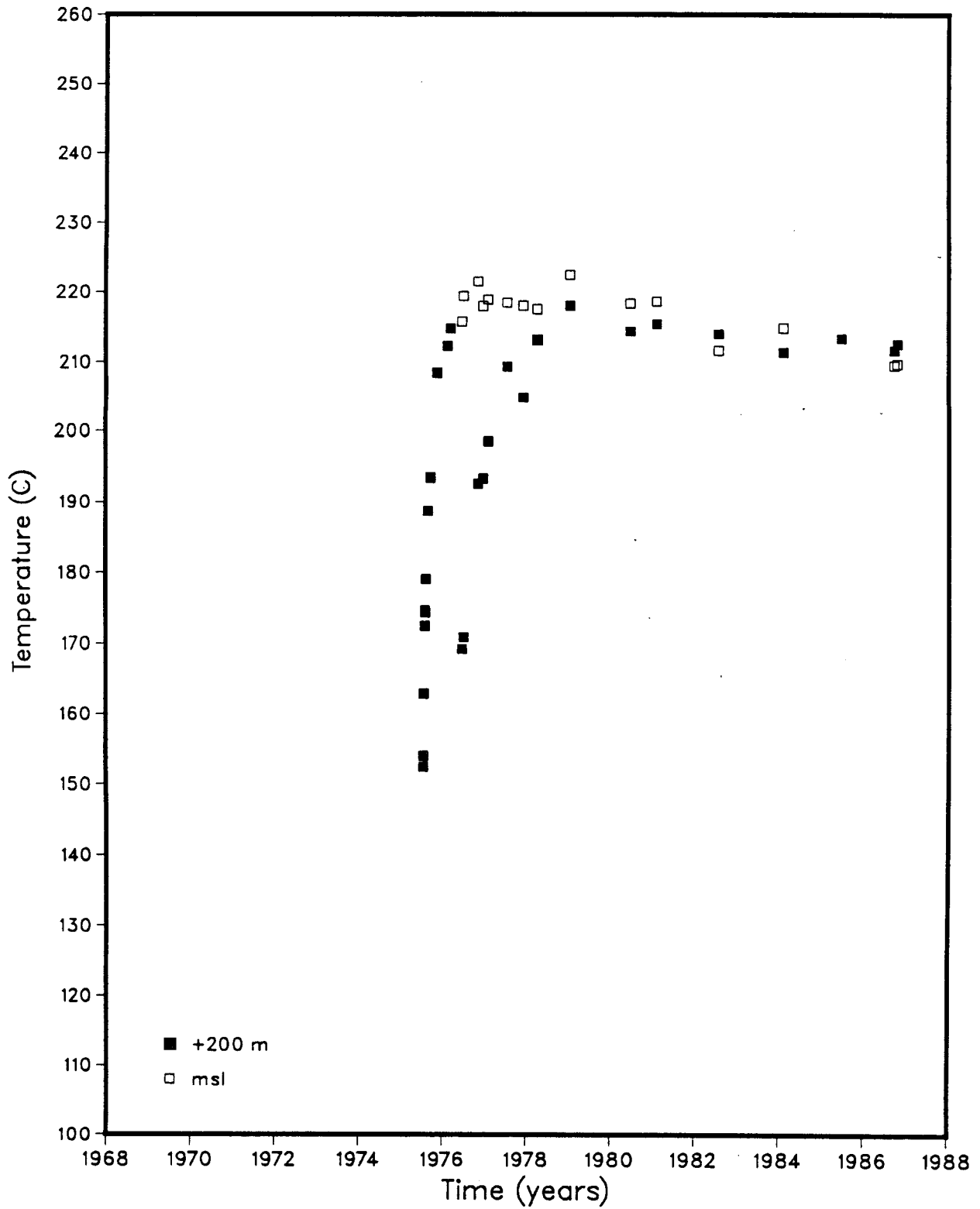
AH22 Temperature Trend



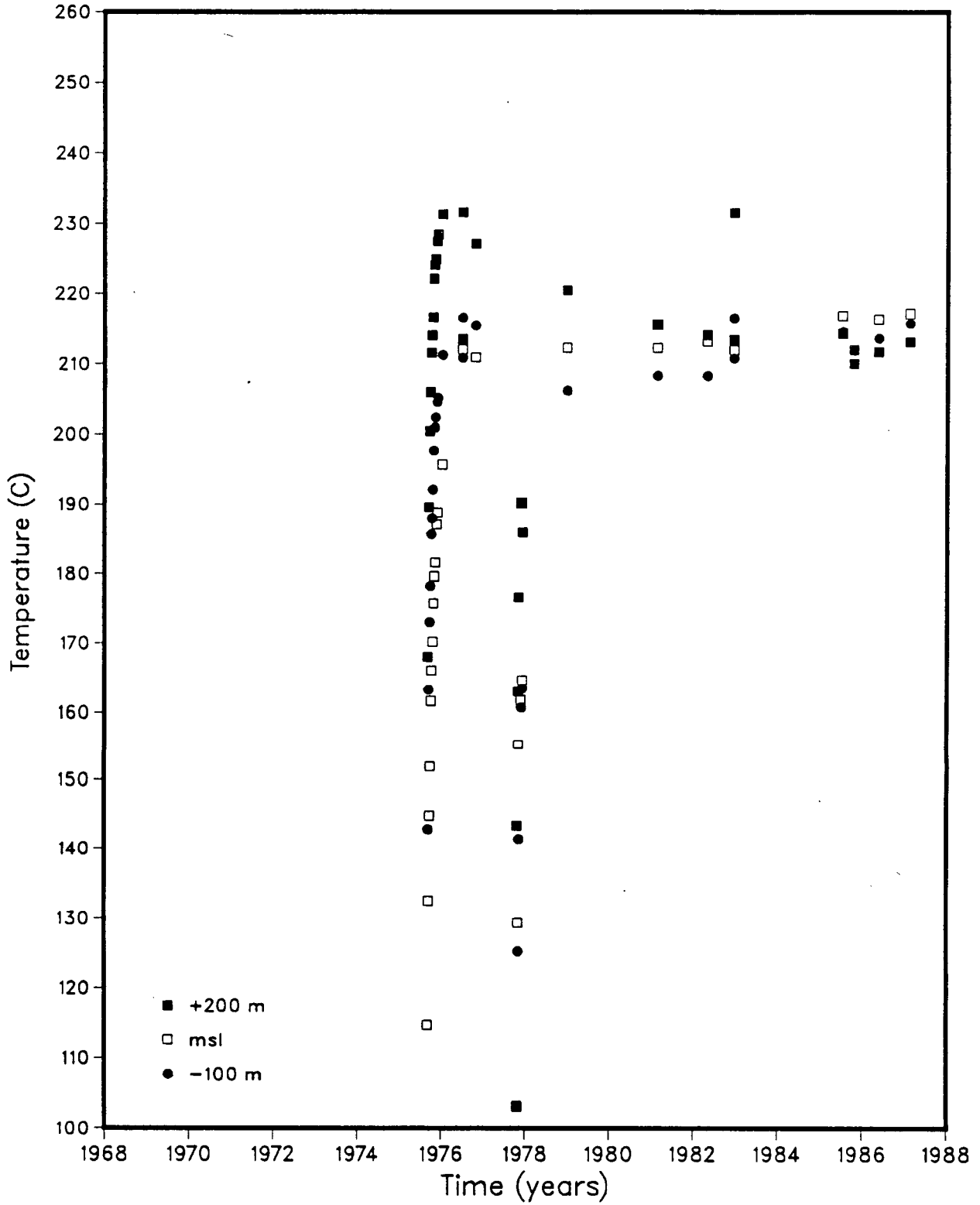
AH23 Temperature Trend



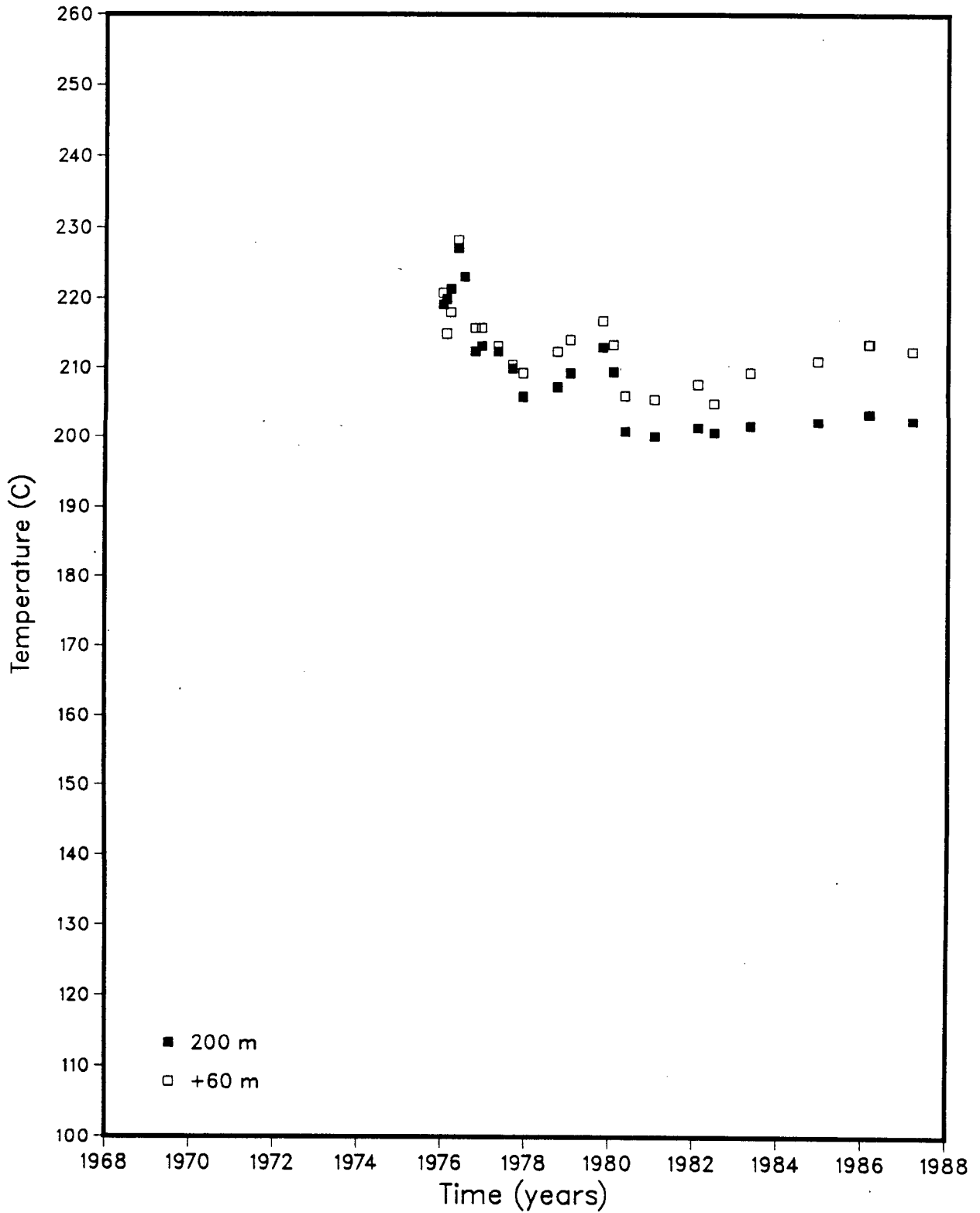
AH24 Temperature Trend



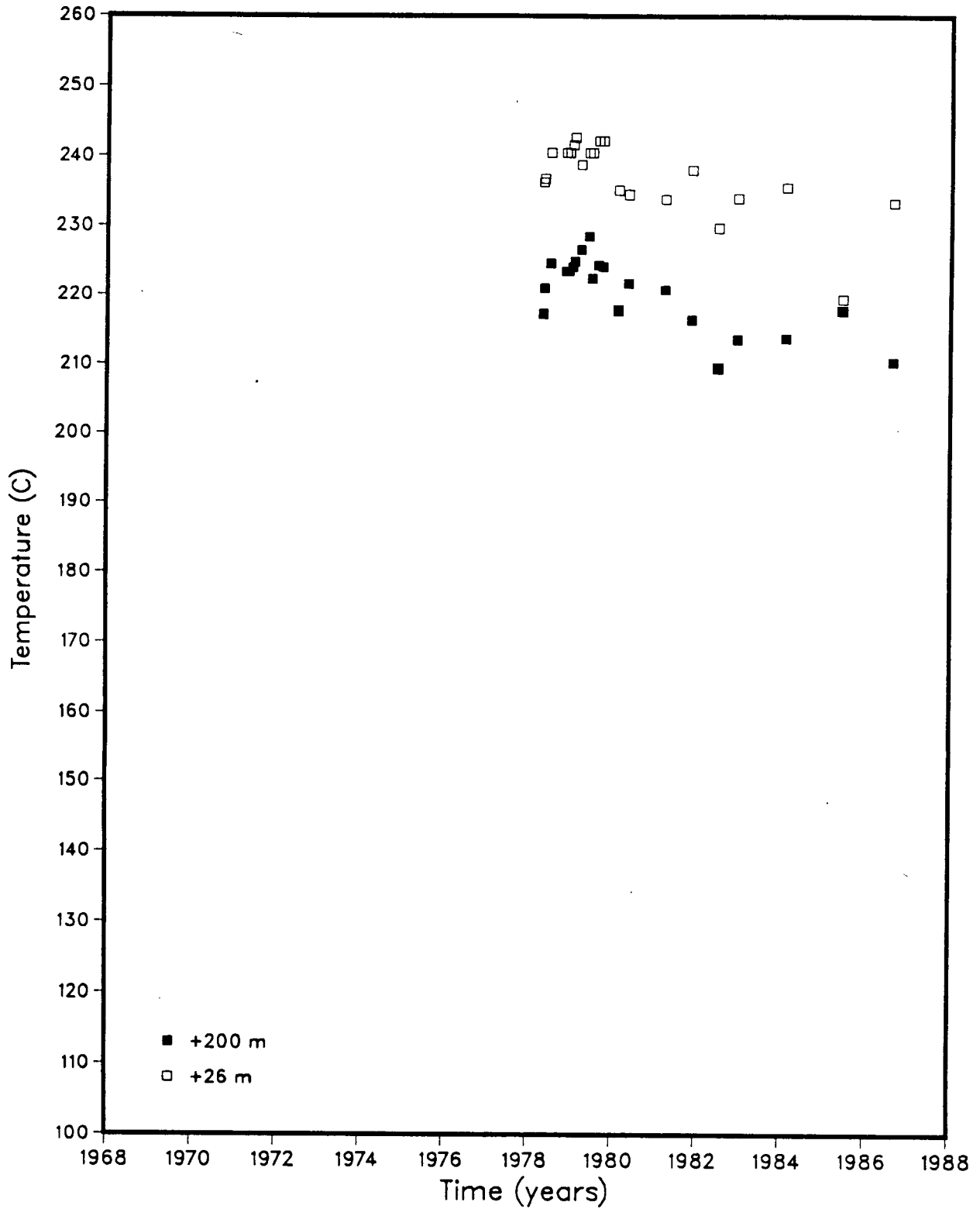
AH25 Temperature Trend



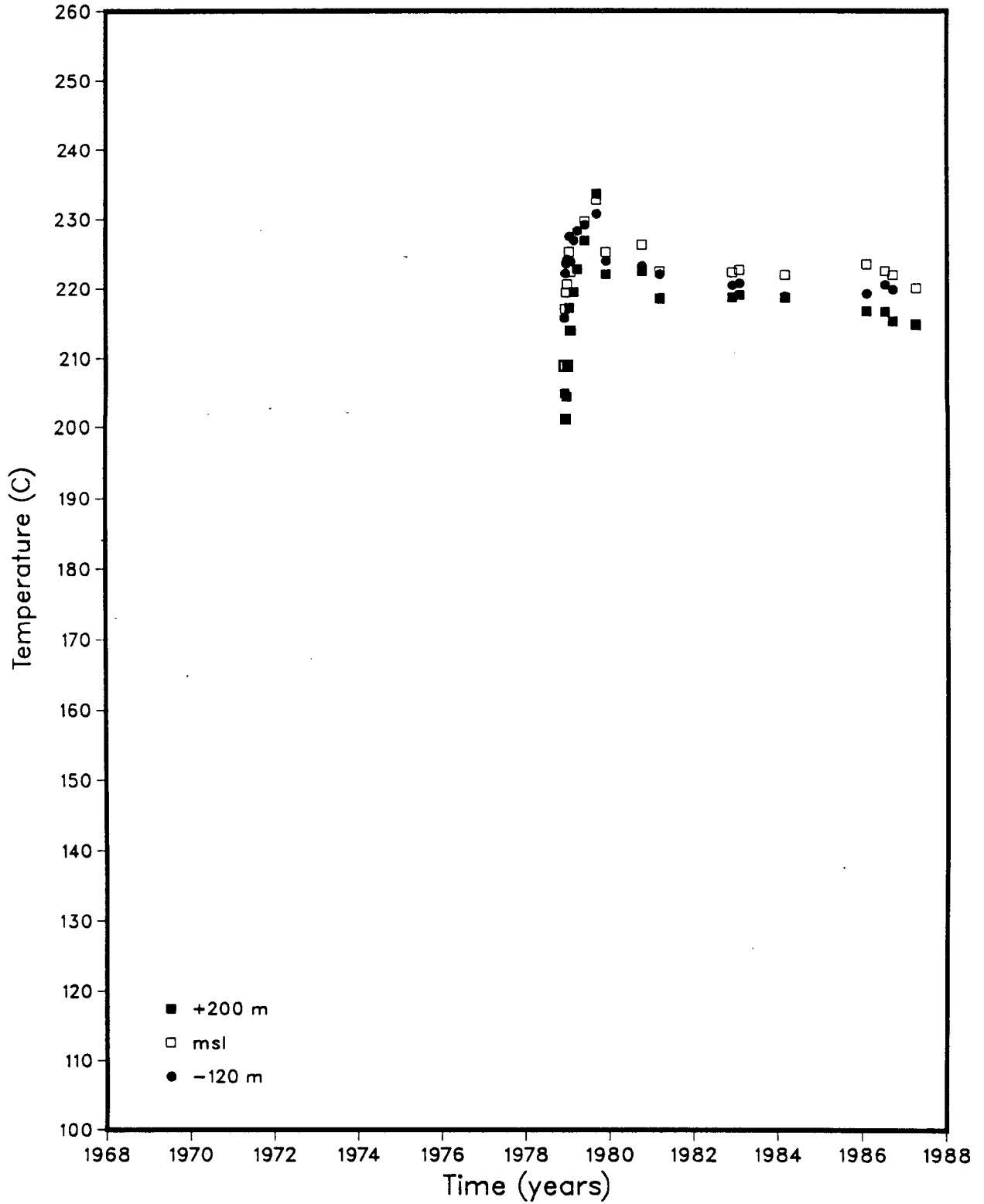
AH26 Temperature Trend



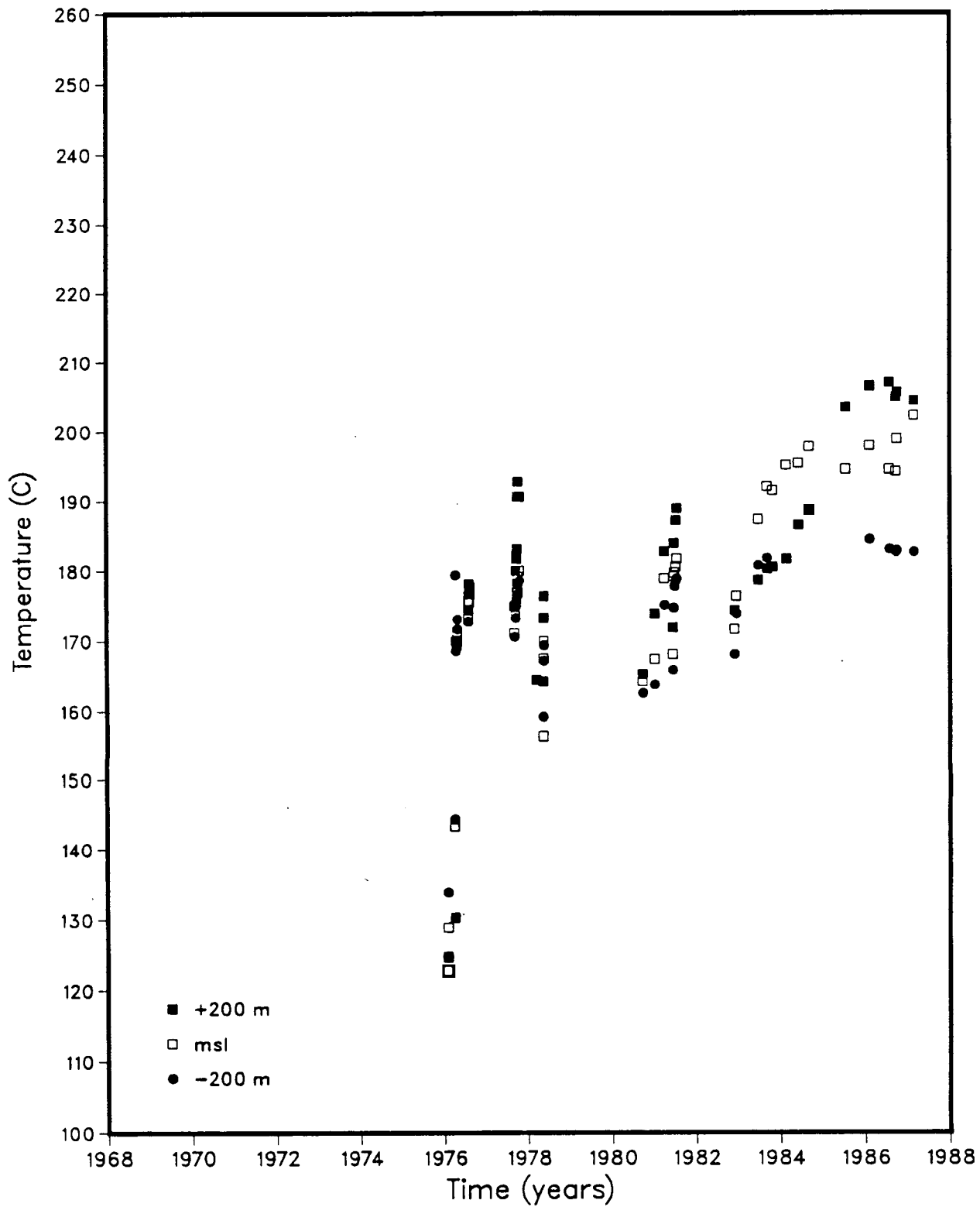
AH27 Temperature Trend



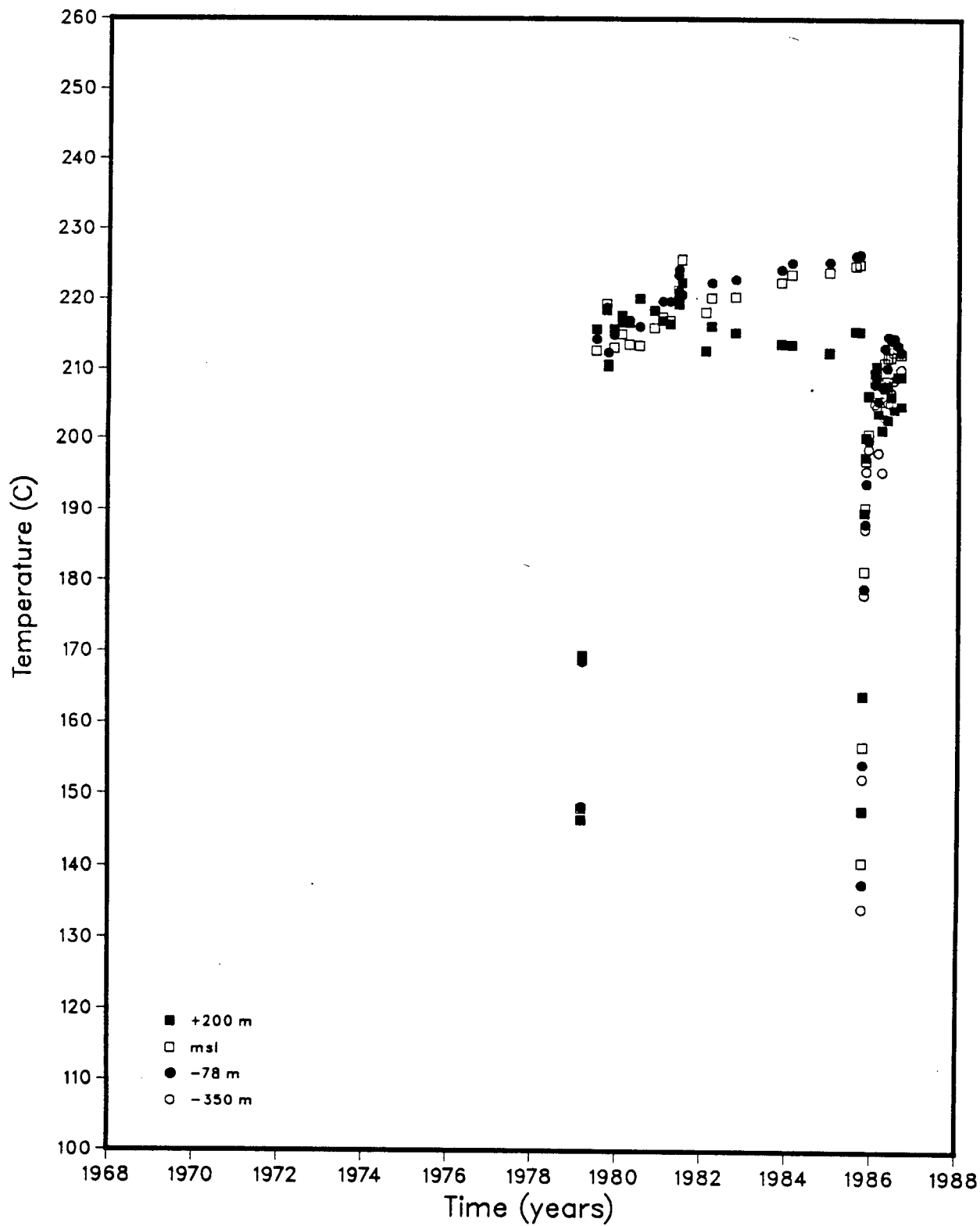
AH28 Temperature Trend



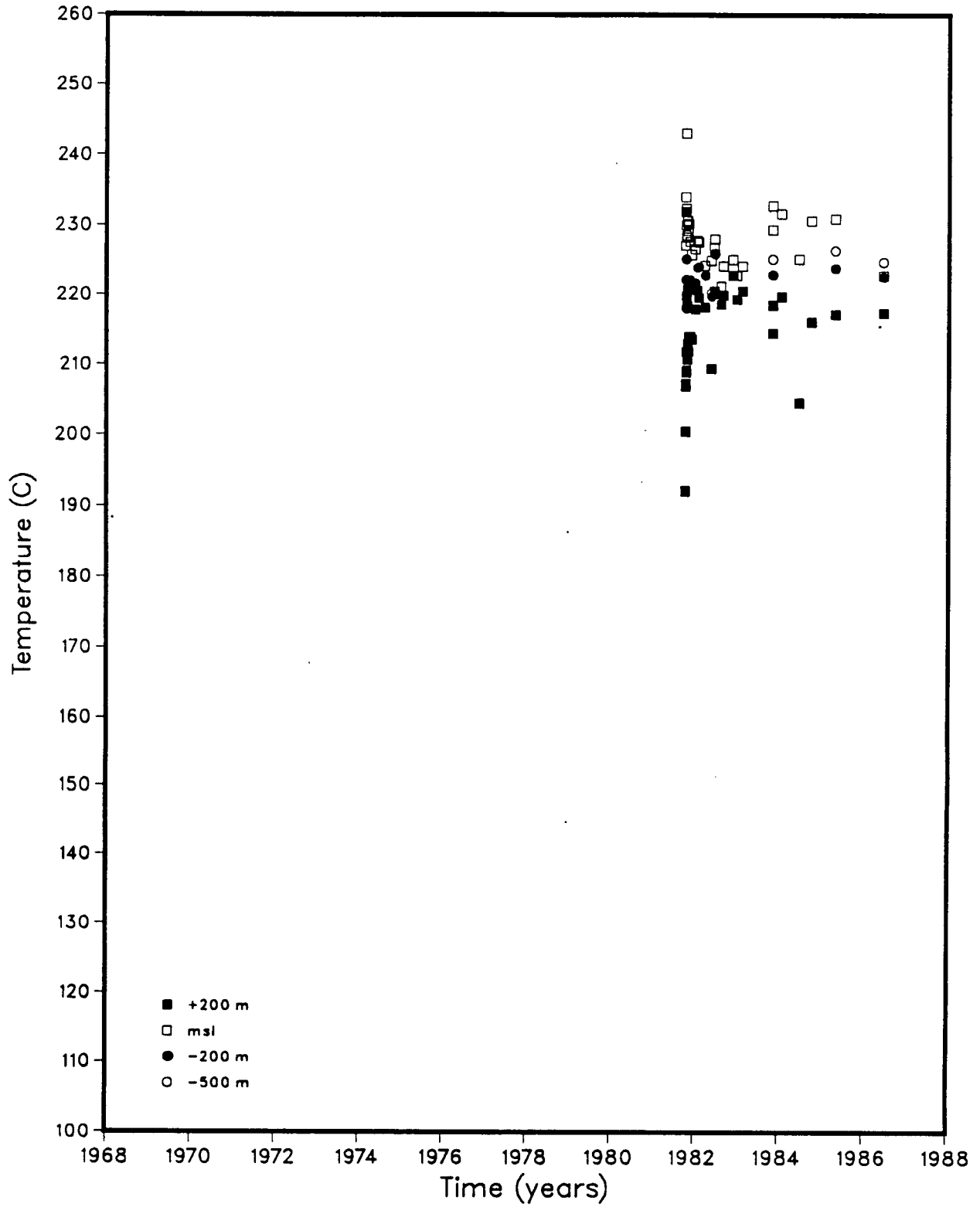
AH29 Temperature Trend



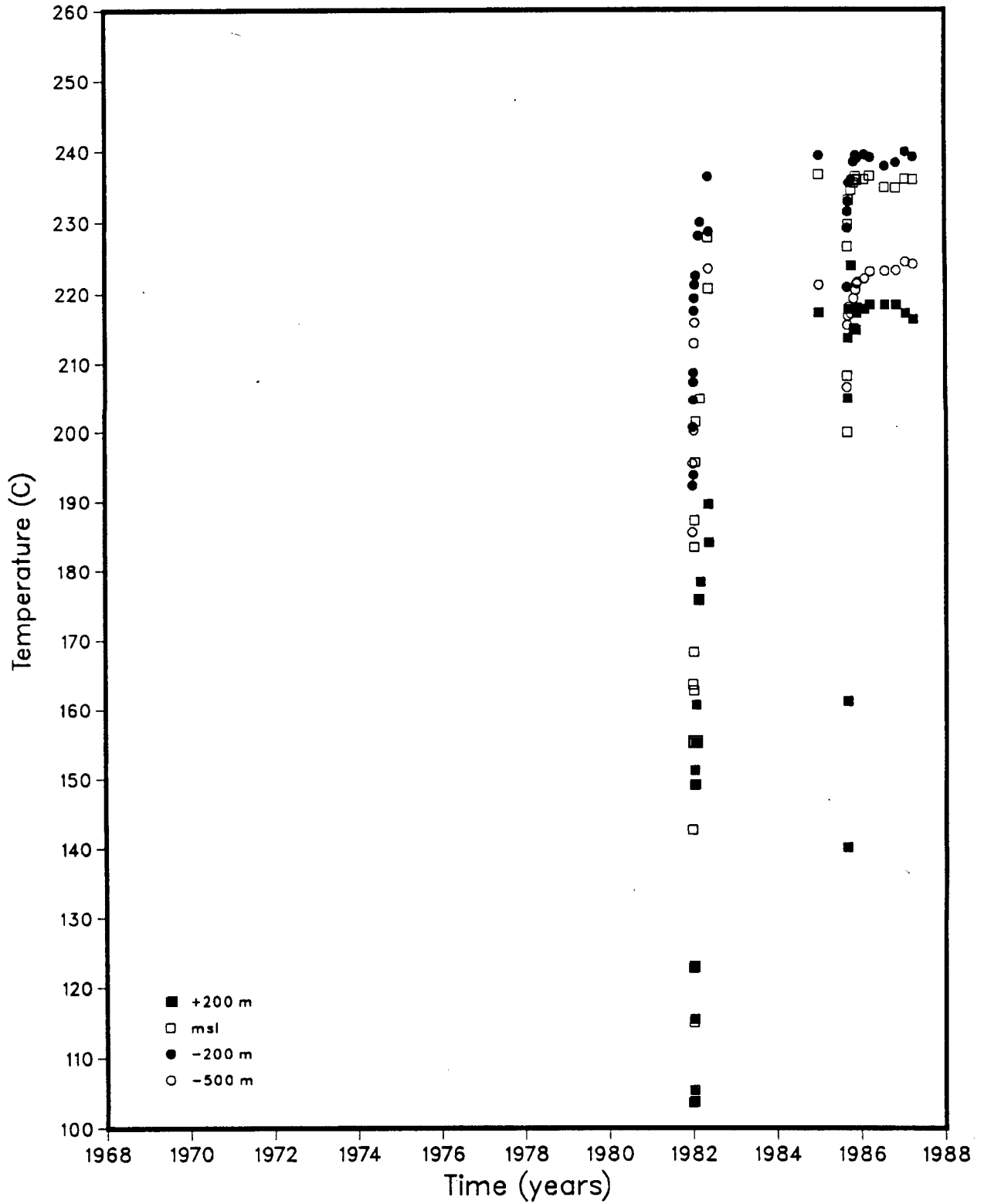
AH30 Temperature Trend



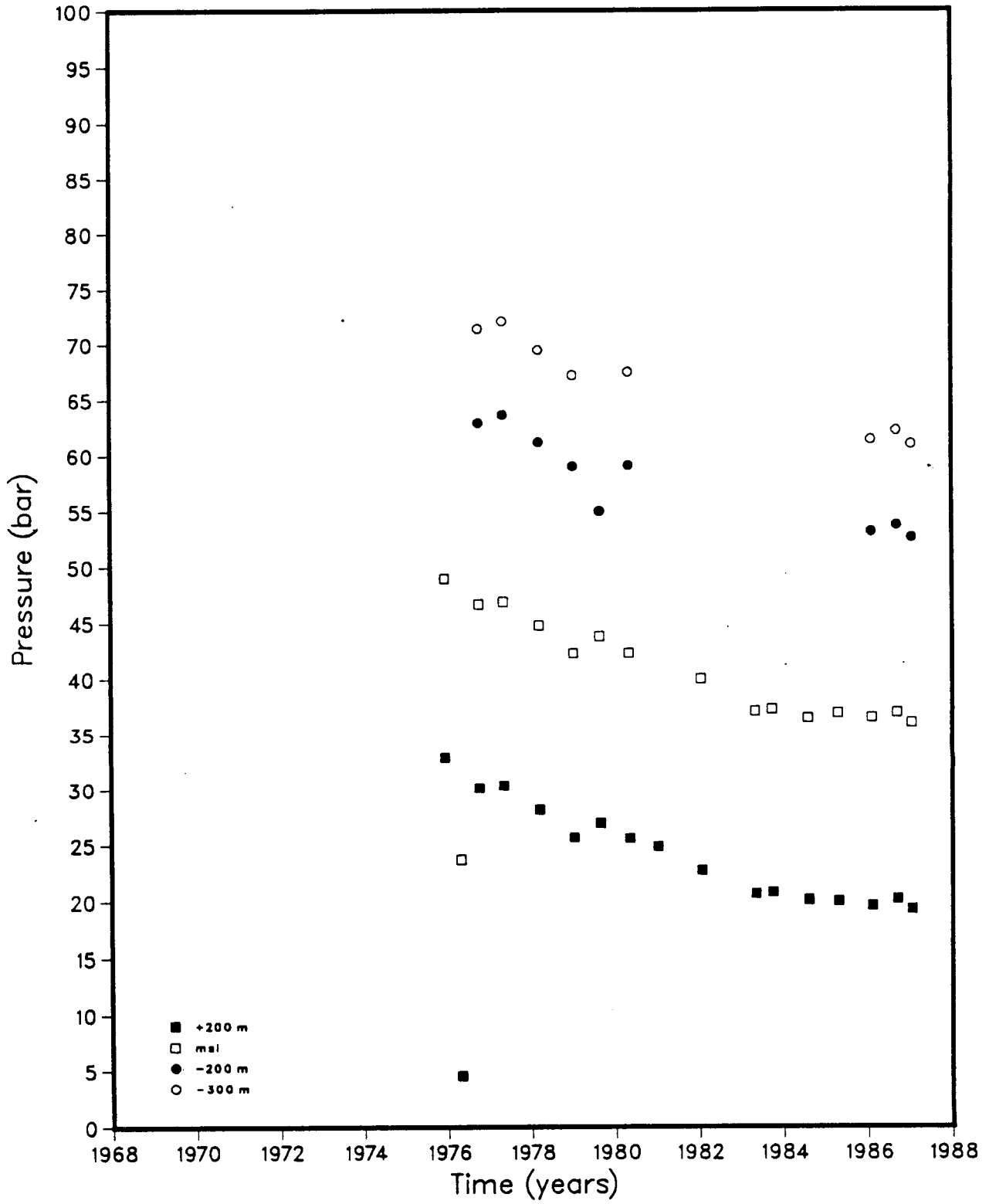
AH31 Temperature Trend



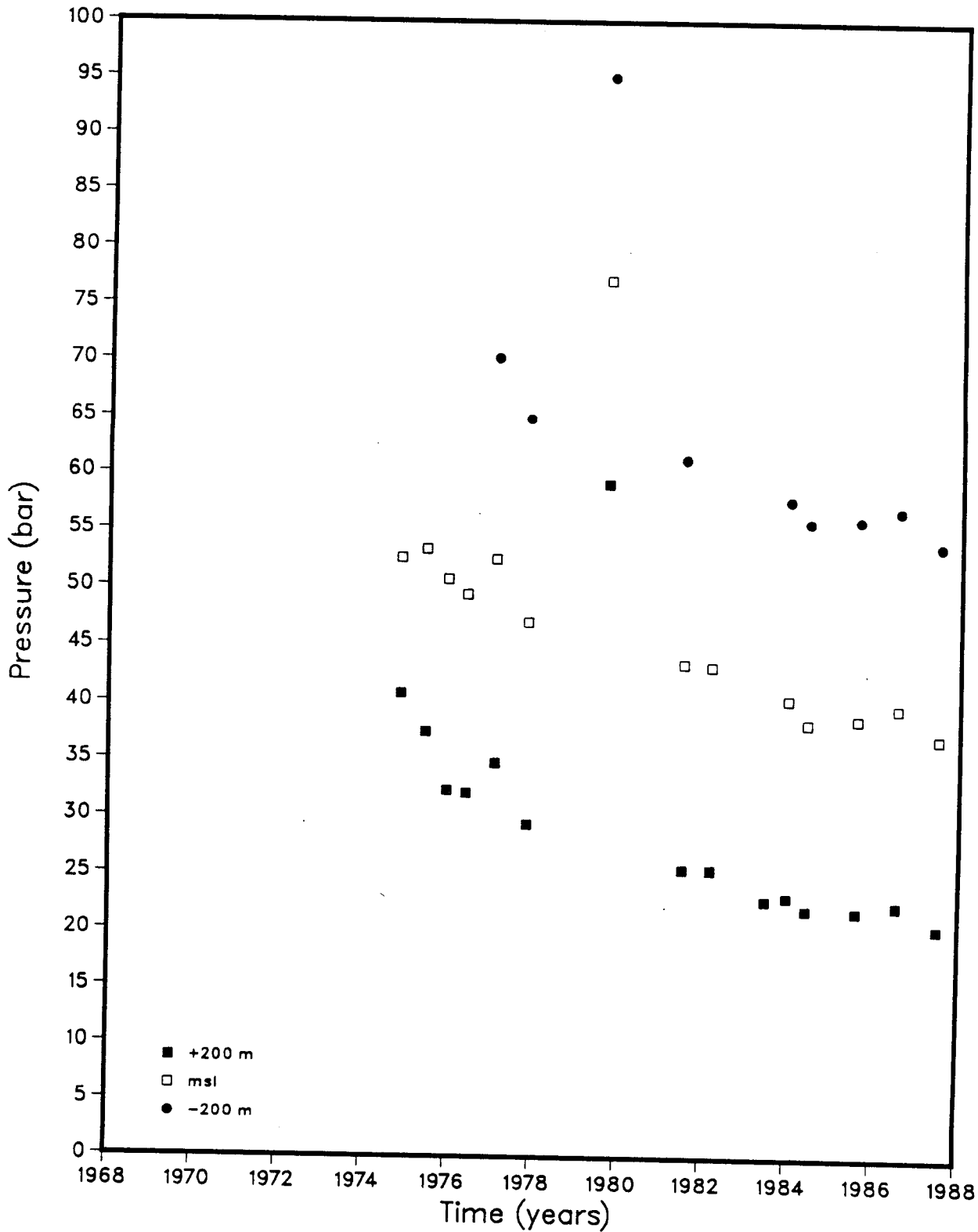
AH32 Temperature Trend



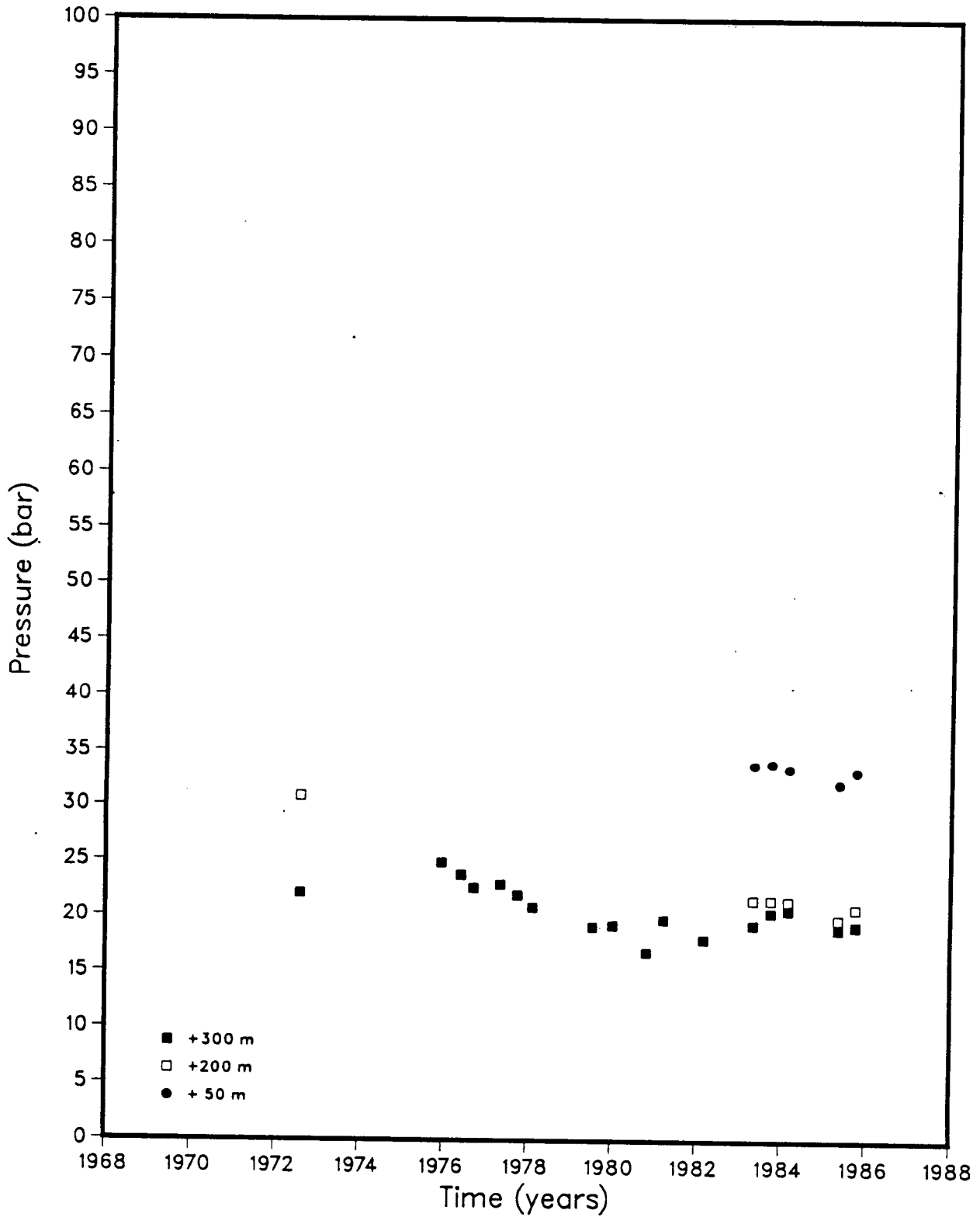
AH1 Pressure Trend



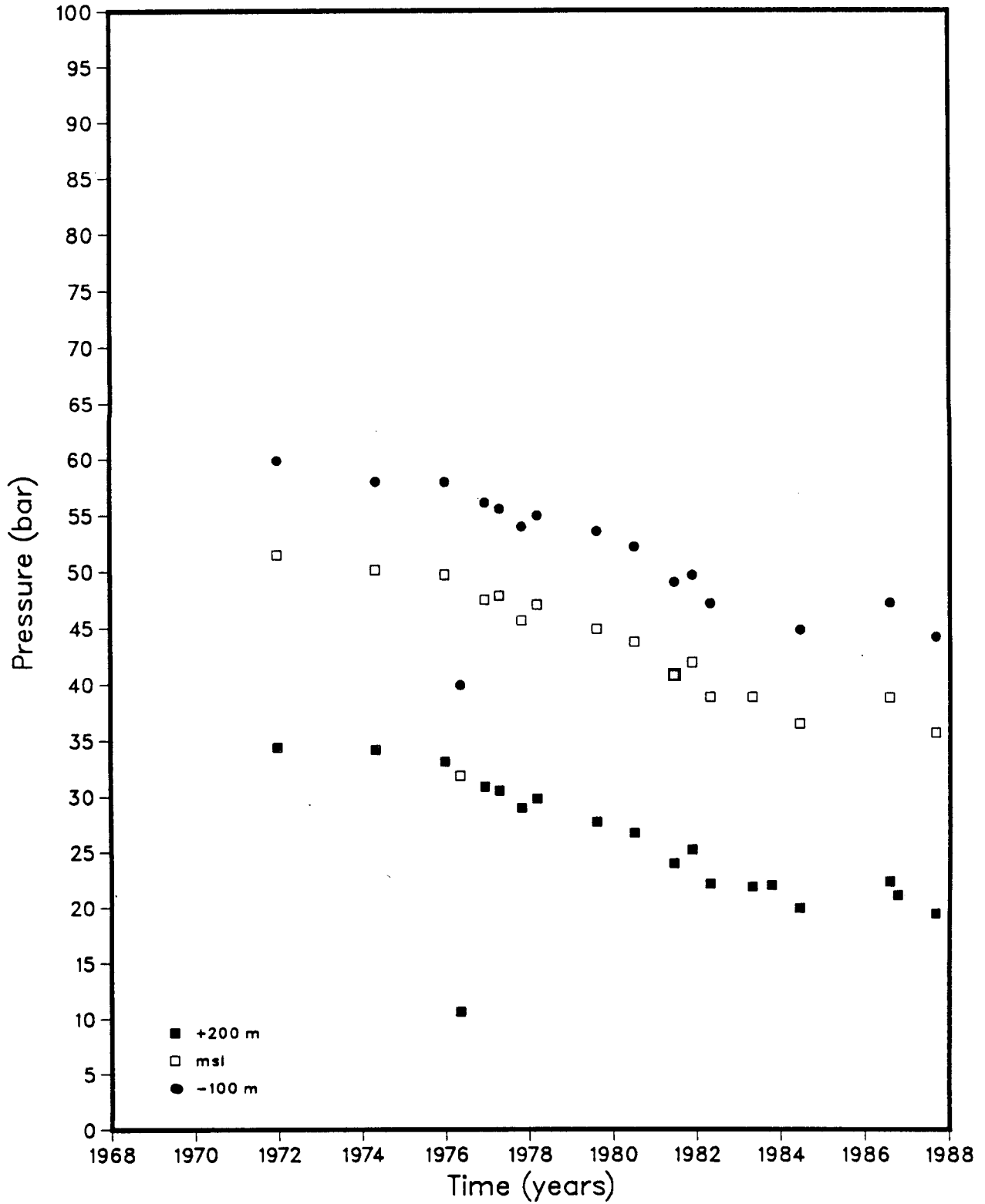
AH2 Pressure Trend



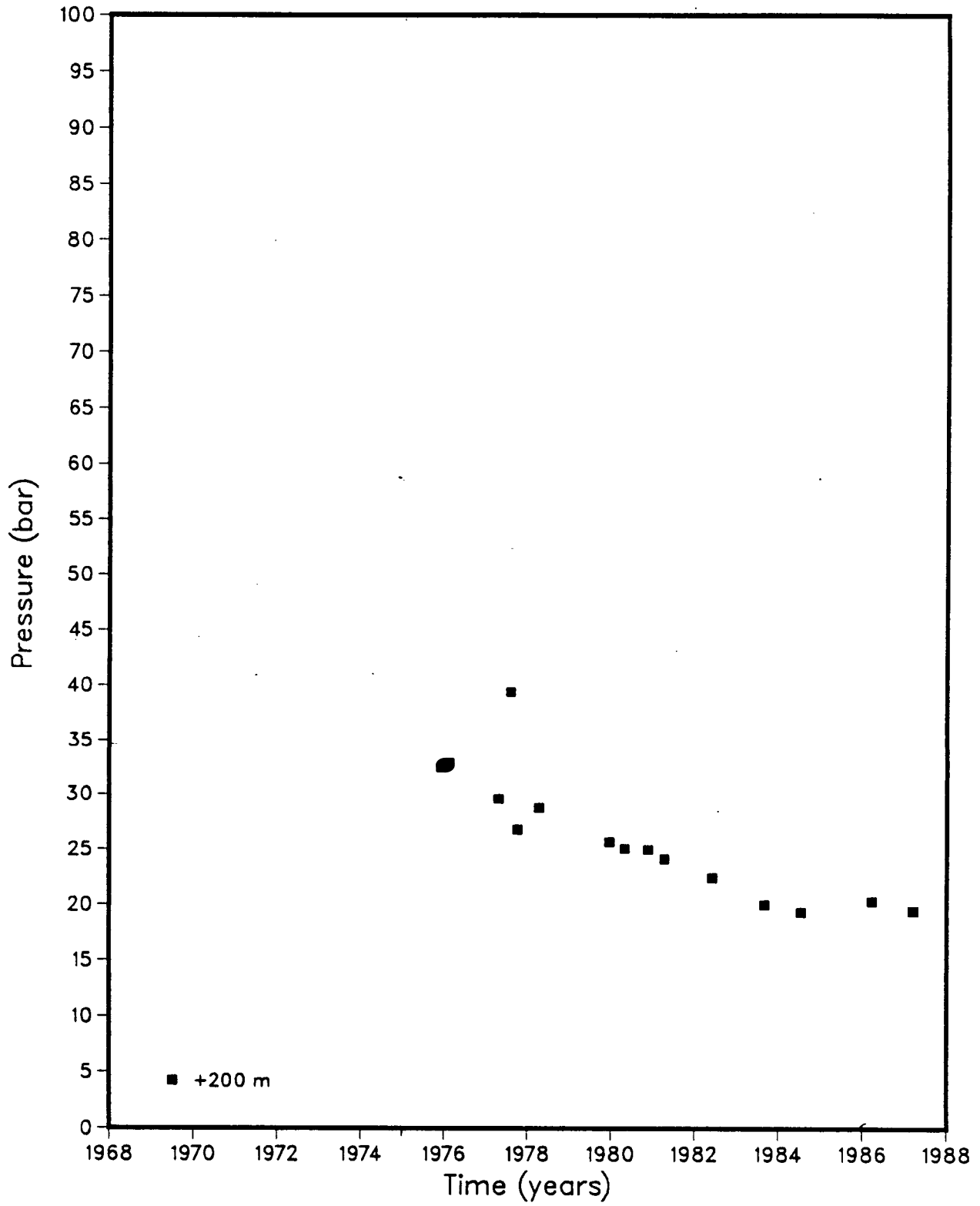
AH4 Pressure Trend



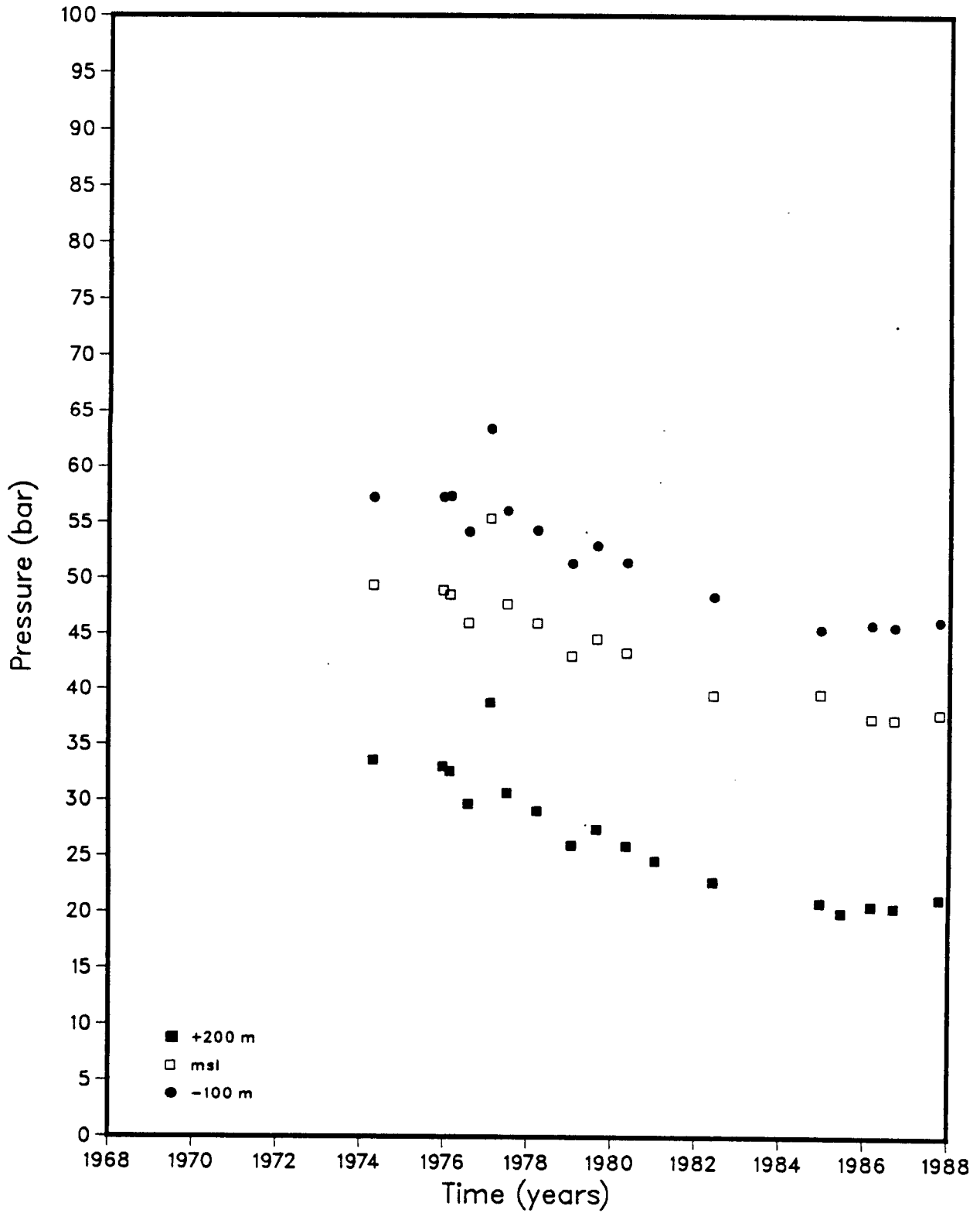
AH5 Pressure Trend



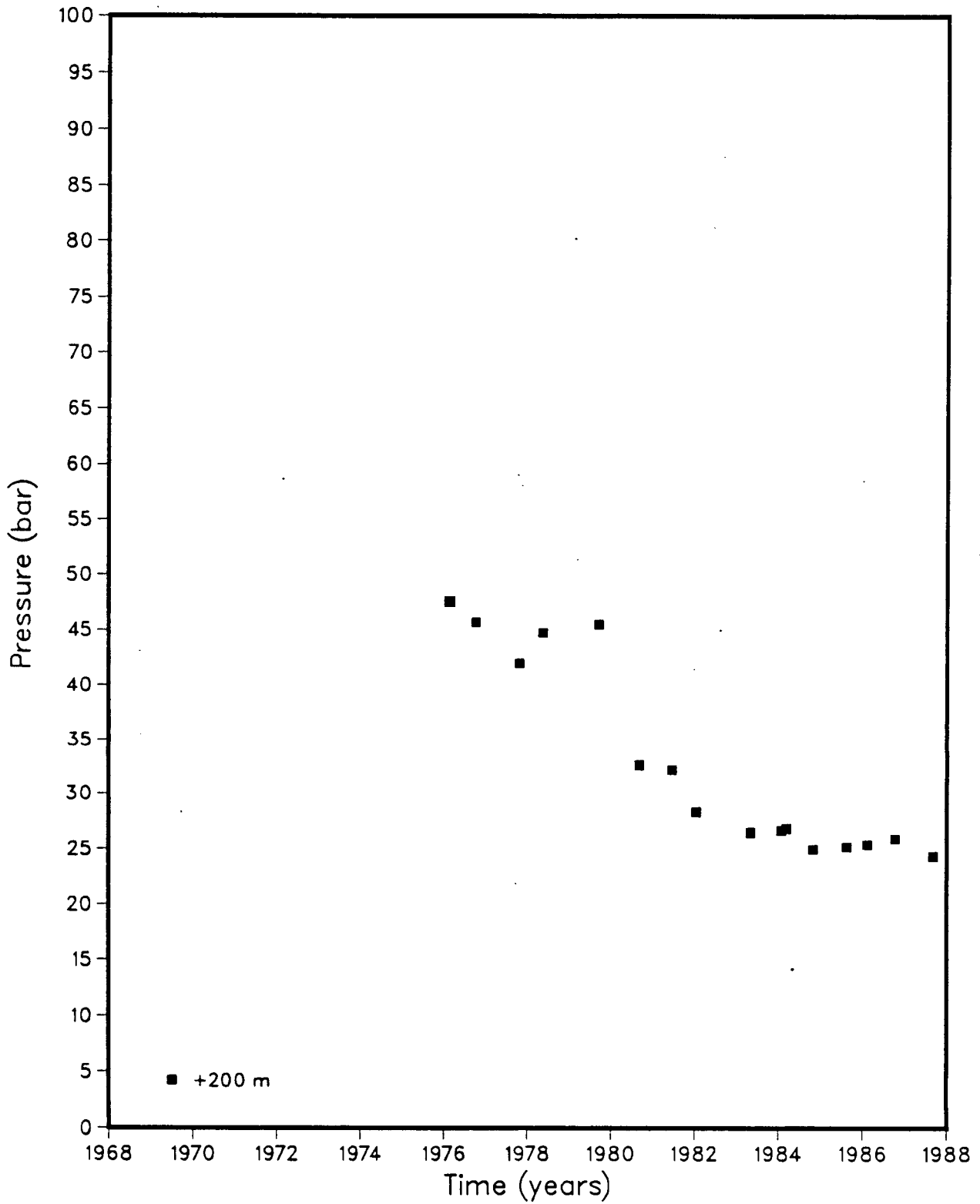
AH6 Pressure Trend



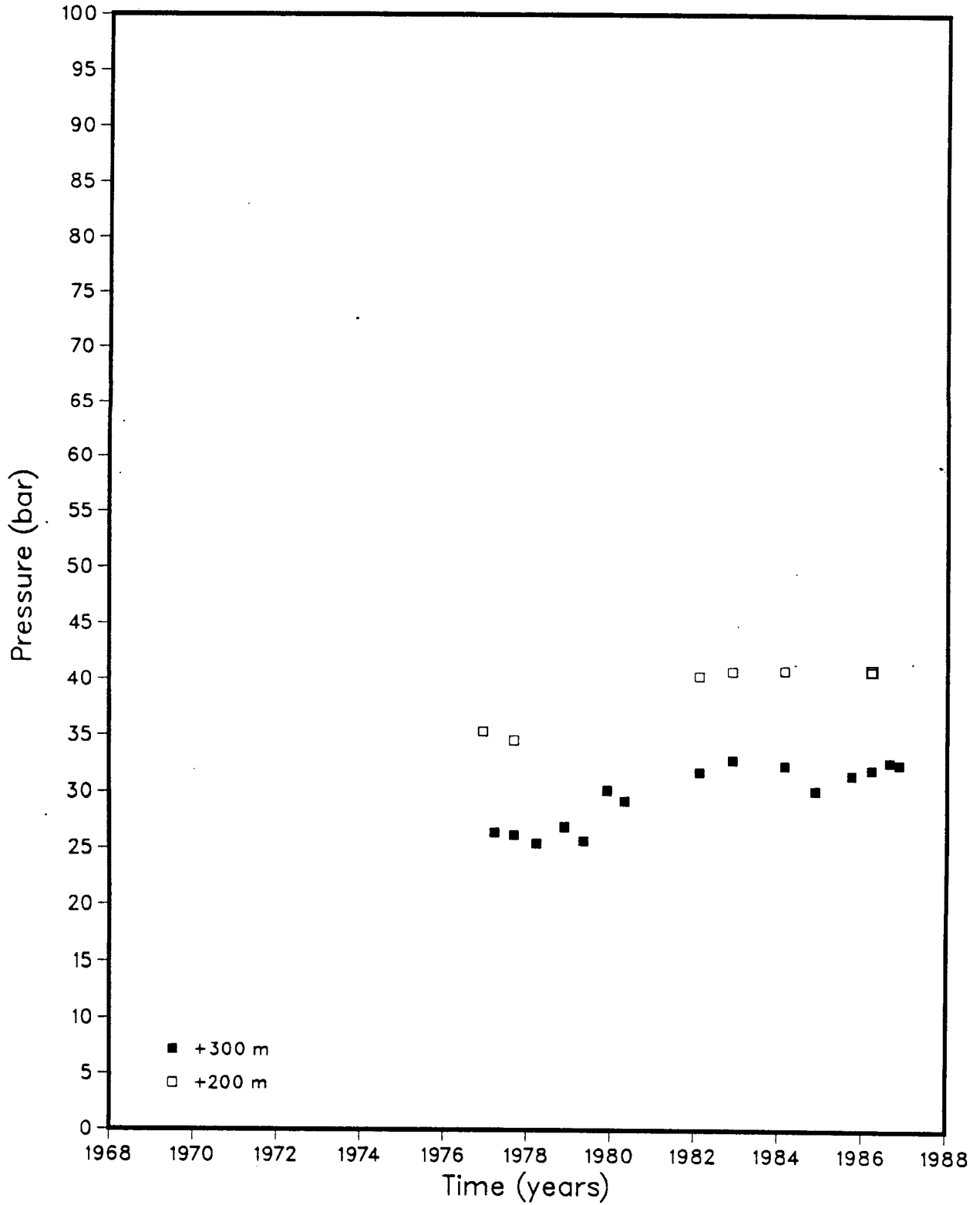
AH7 Pressure Trend



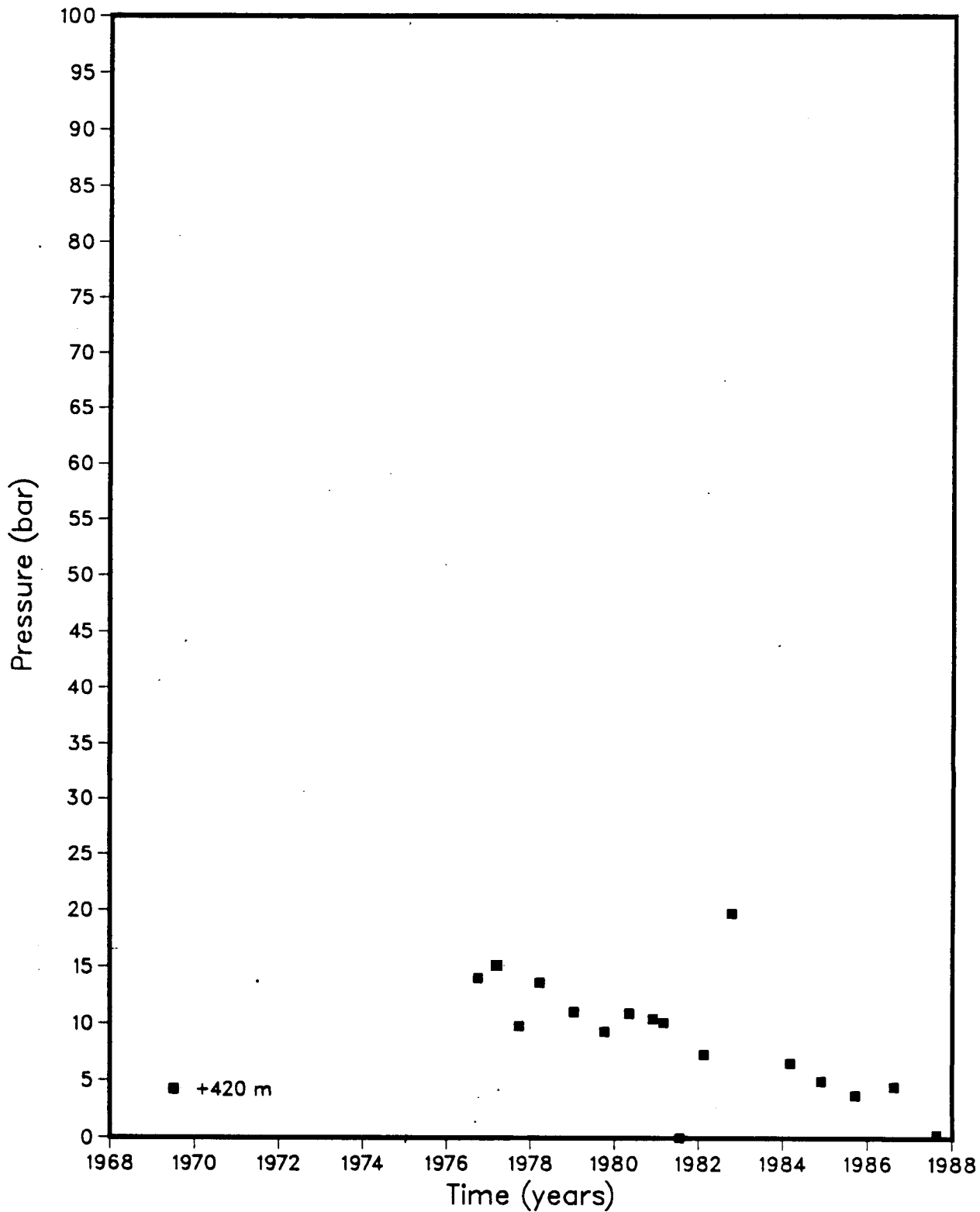
AH8 Pressure Trend



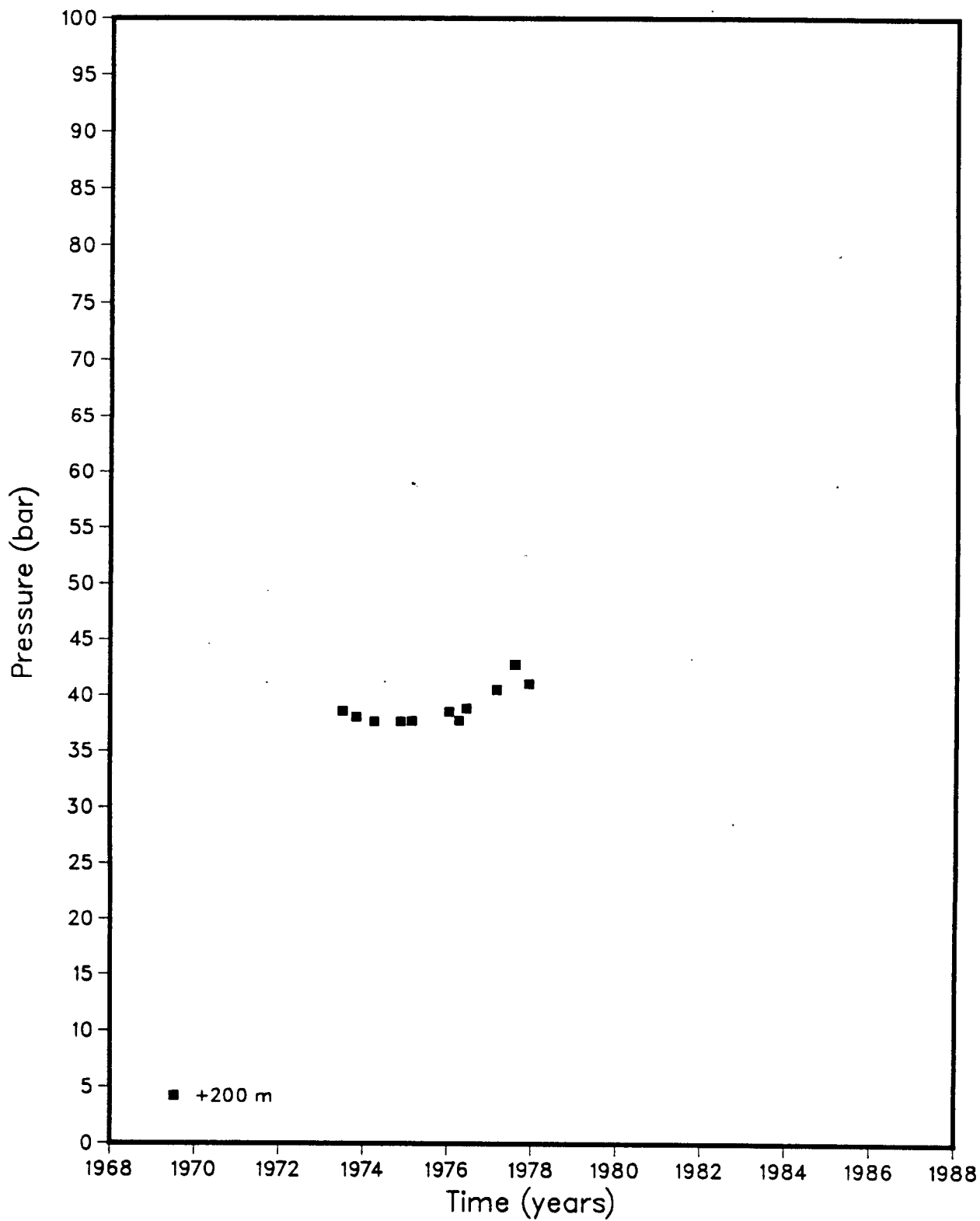
AH9 Pressure Trend



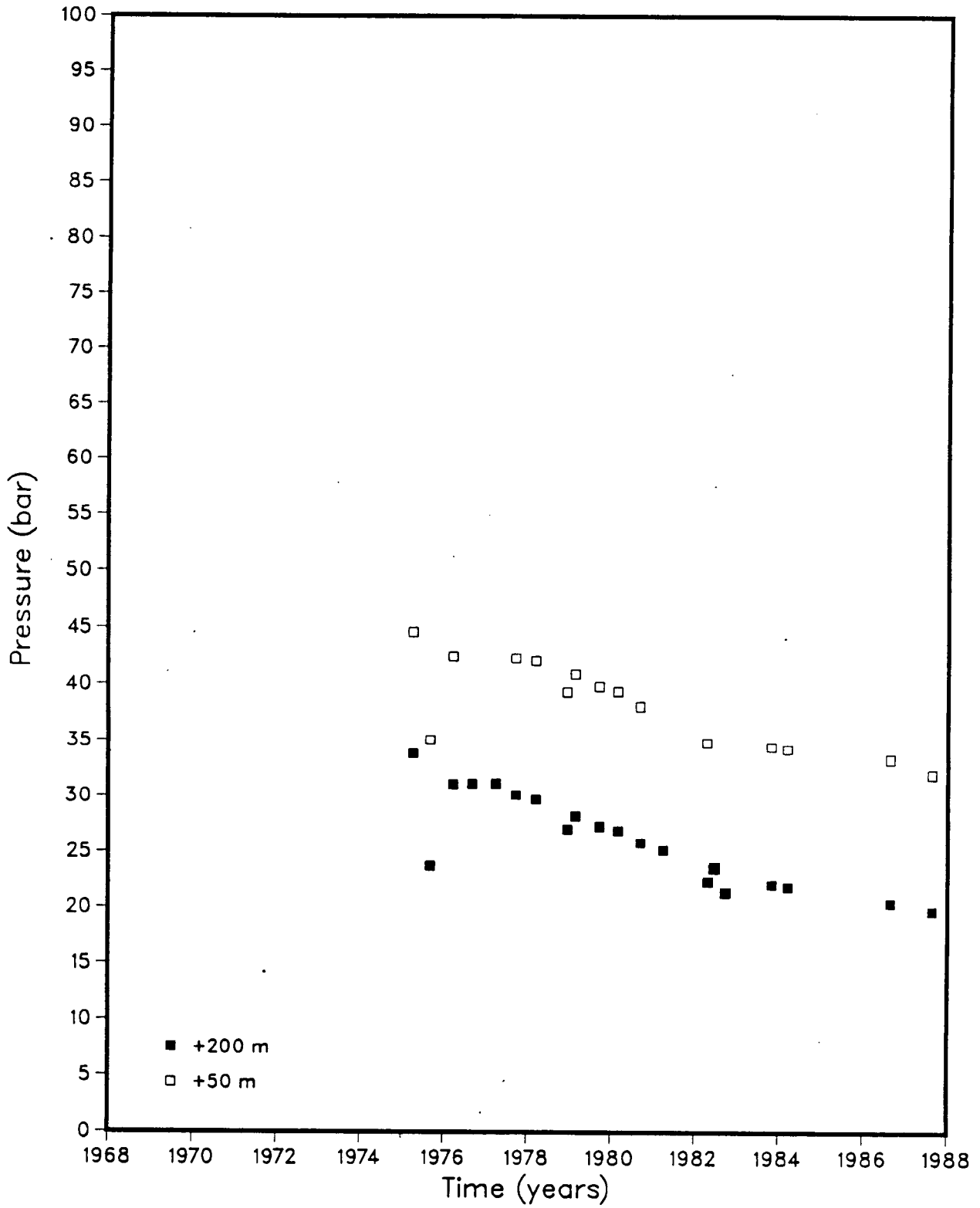
AH11 Pressure Trend



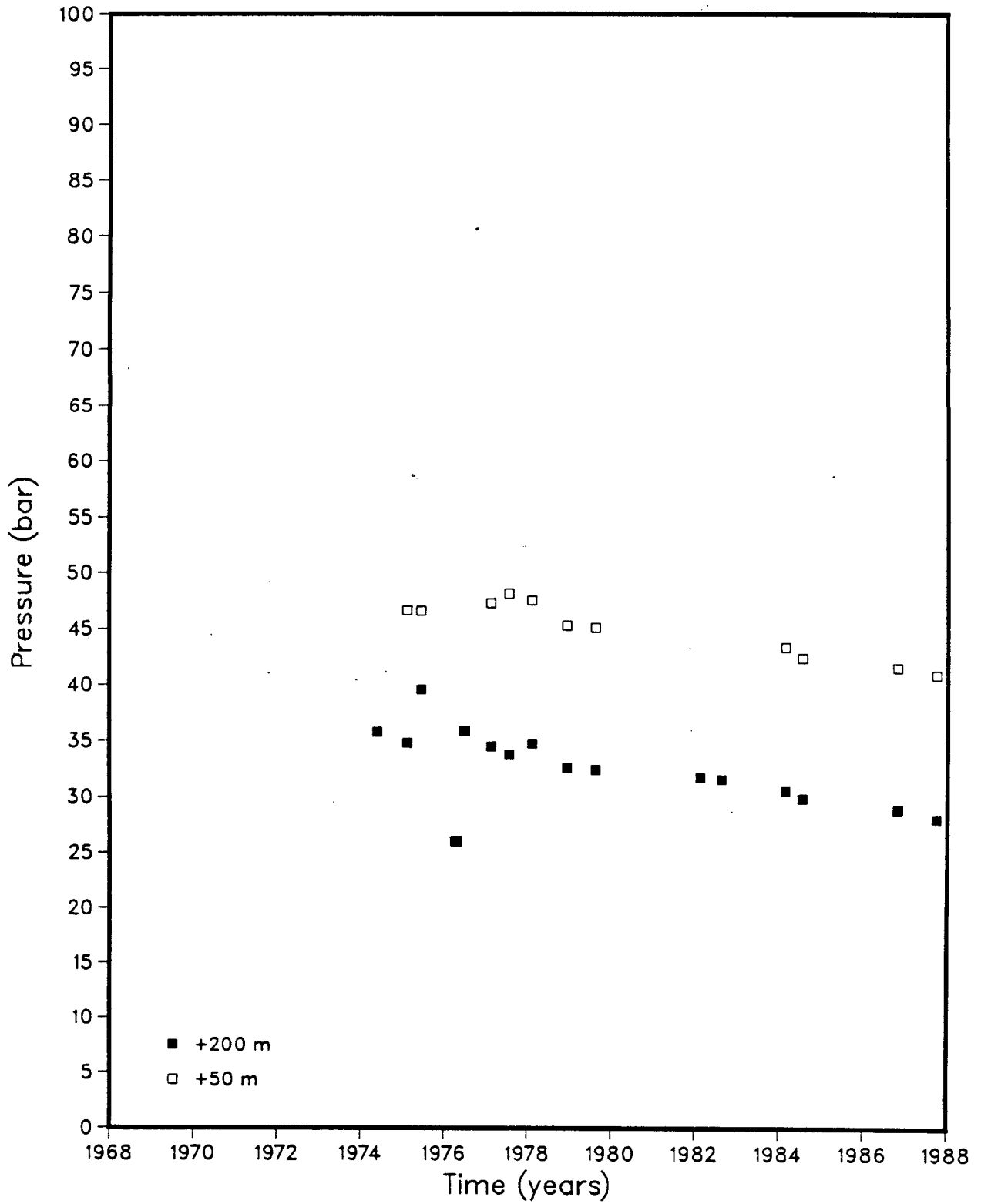
AH12 Pressure Trend



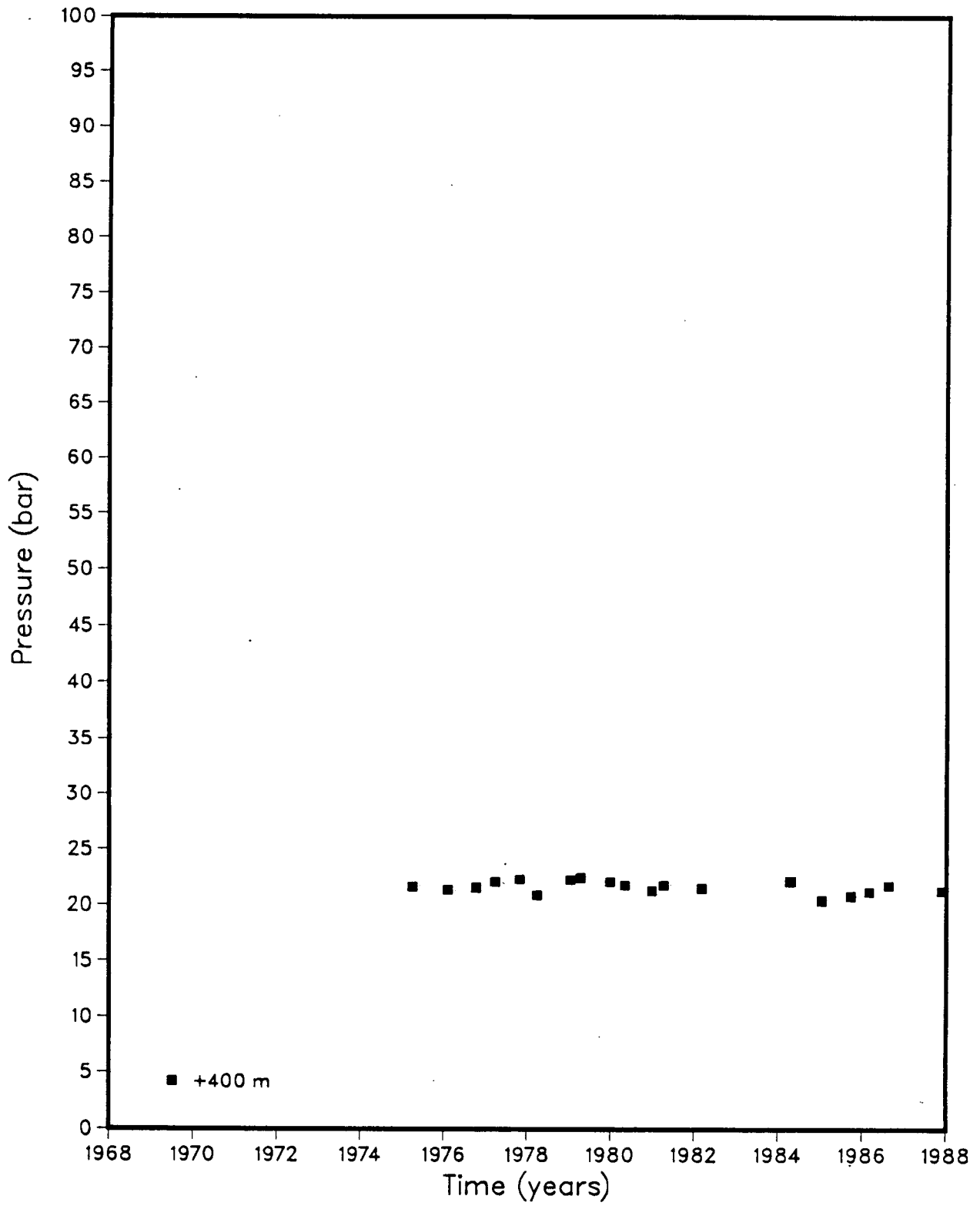
AH13 Pressure Trend



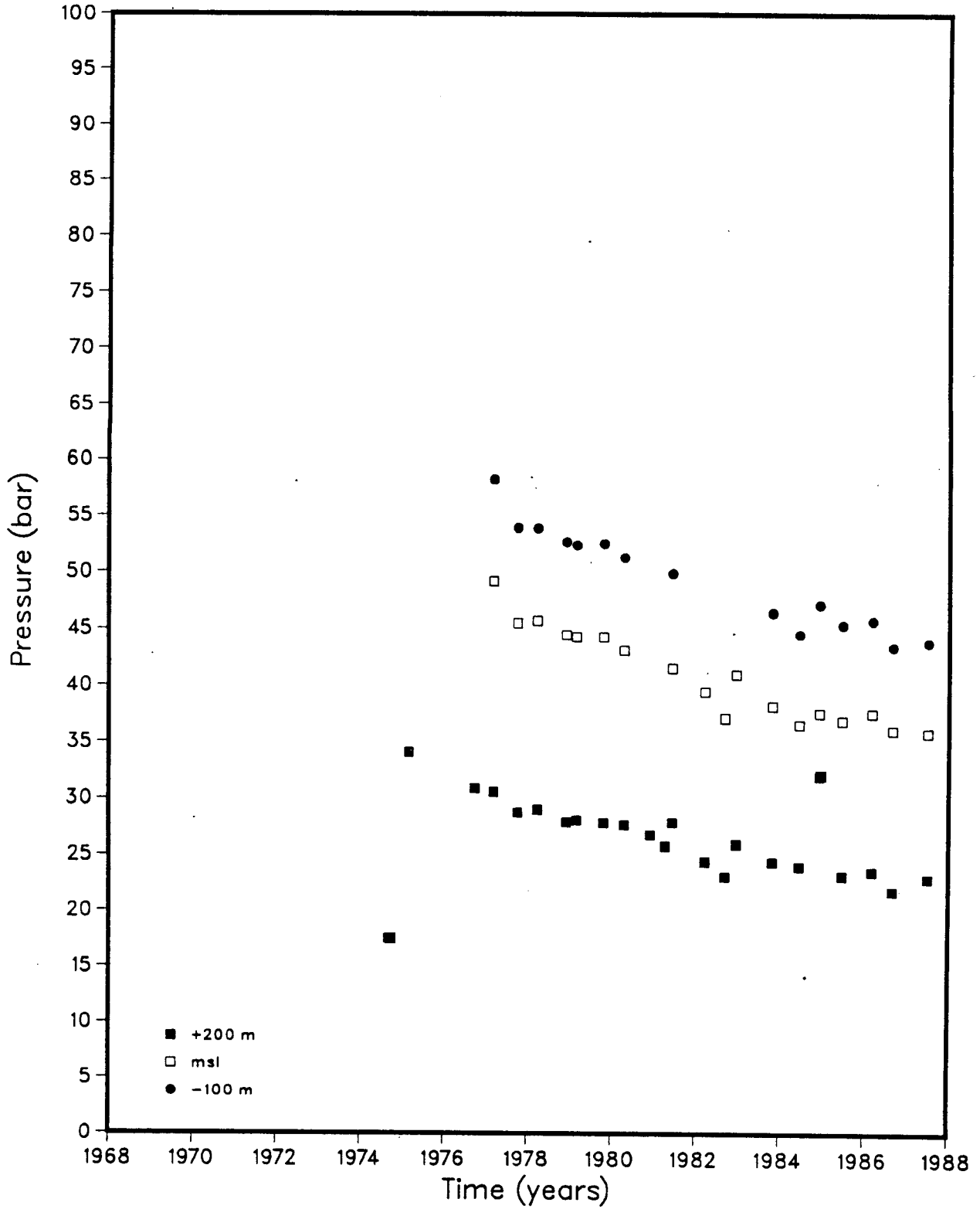
AH14 Pressure Trend



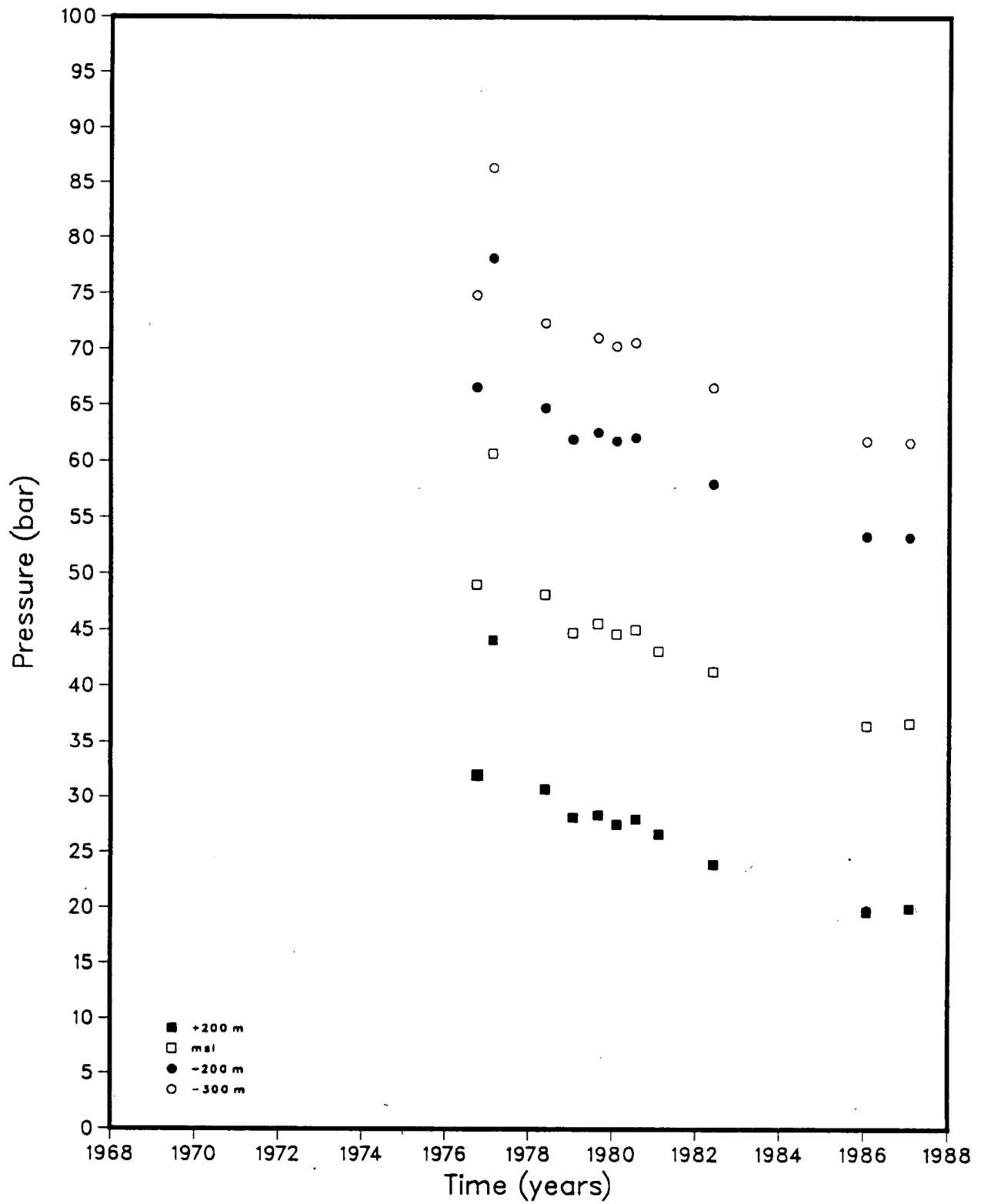
AH15 Pressure Trend



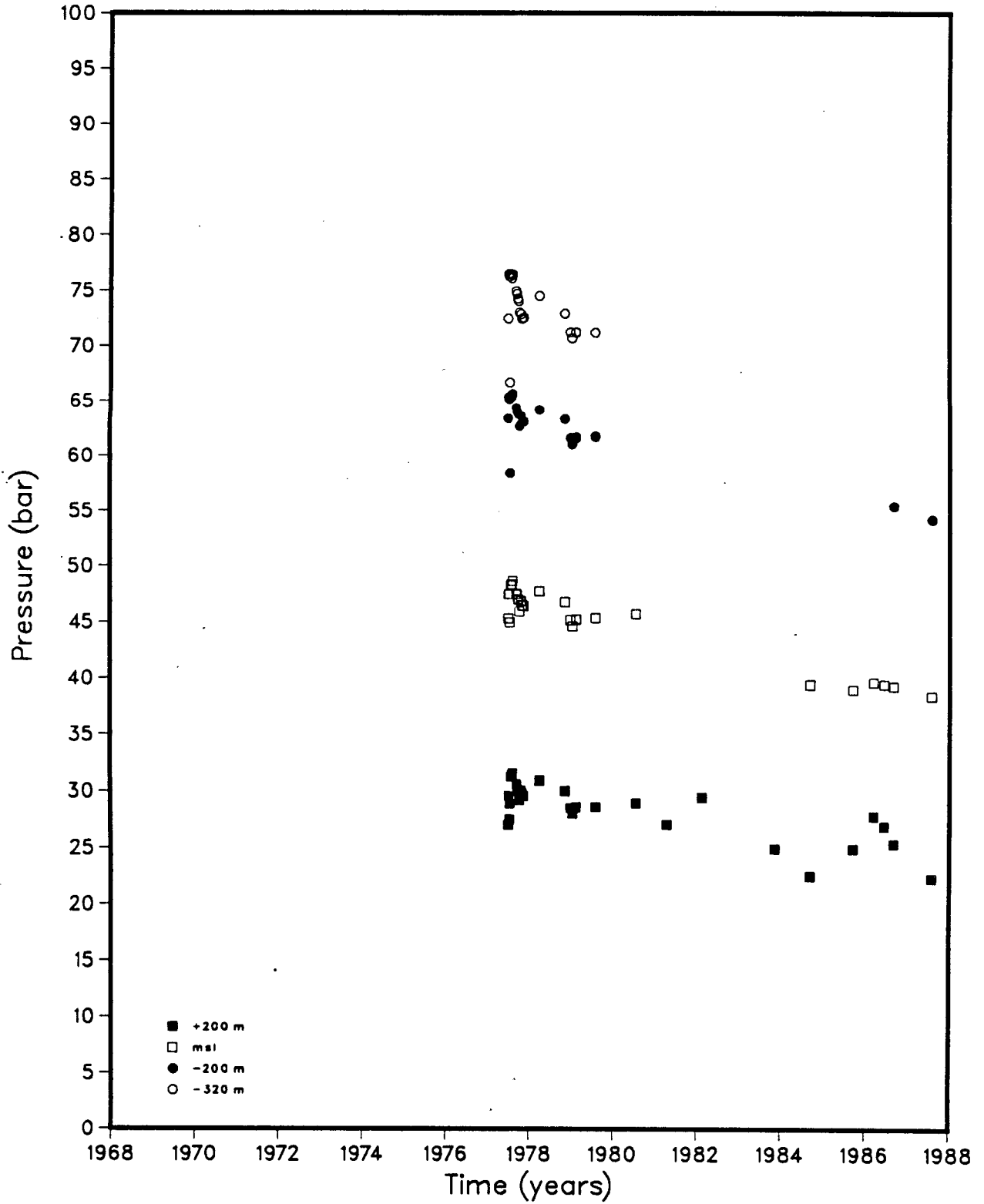
AH16 Pressure Trend



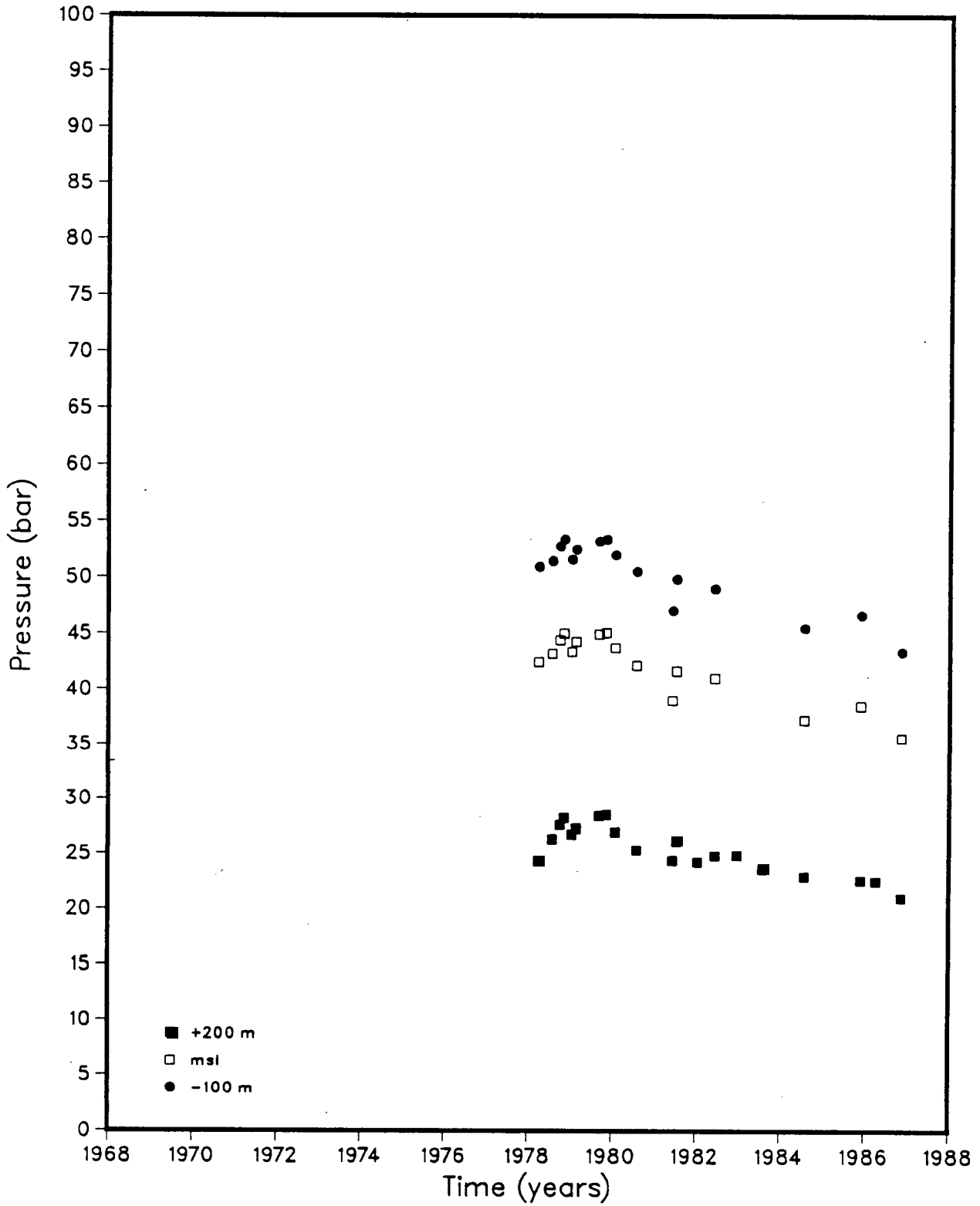
AH17 Pressure Trend



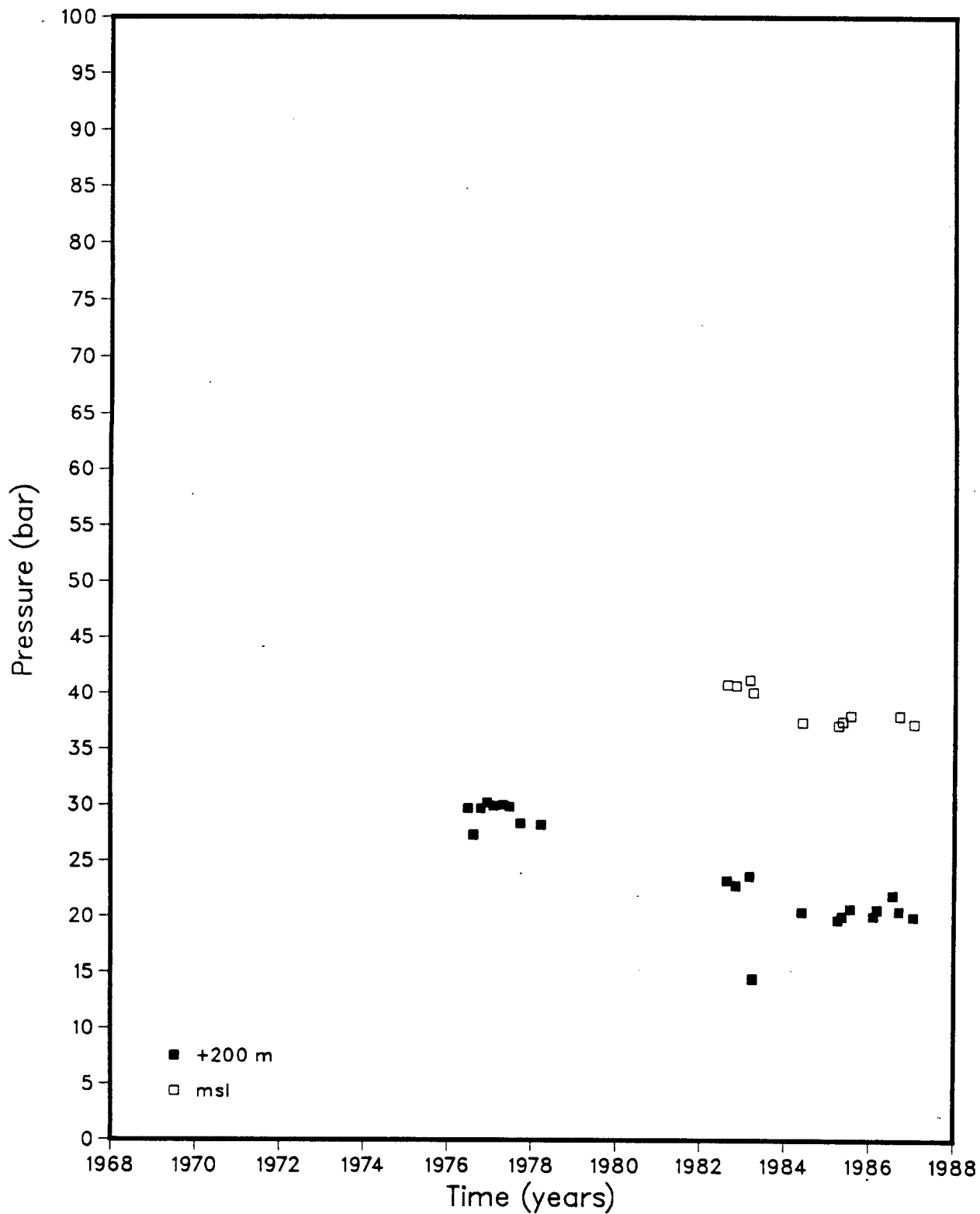
AH18 Pressure Trend



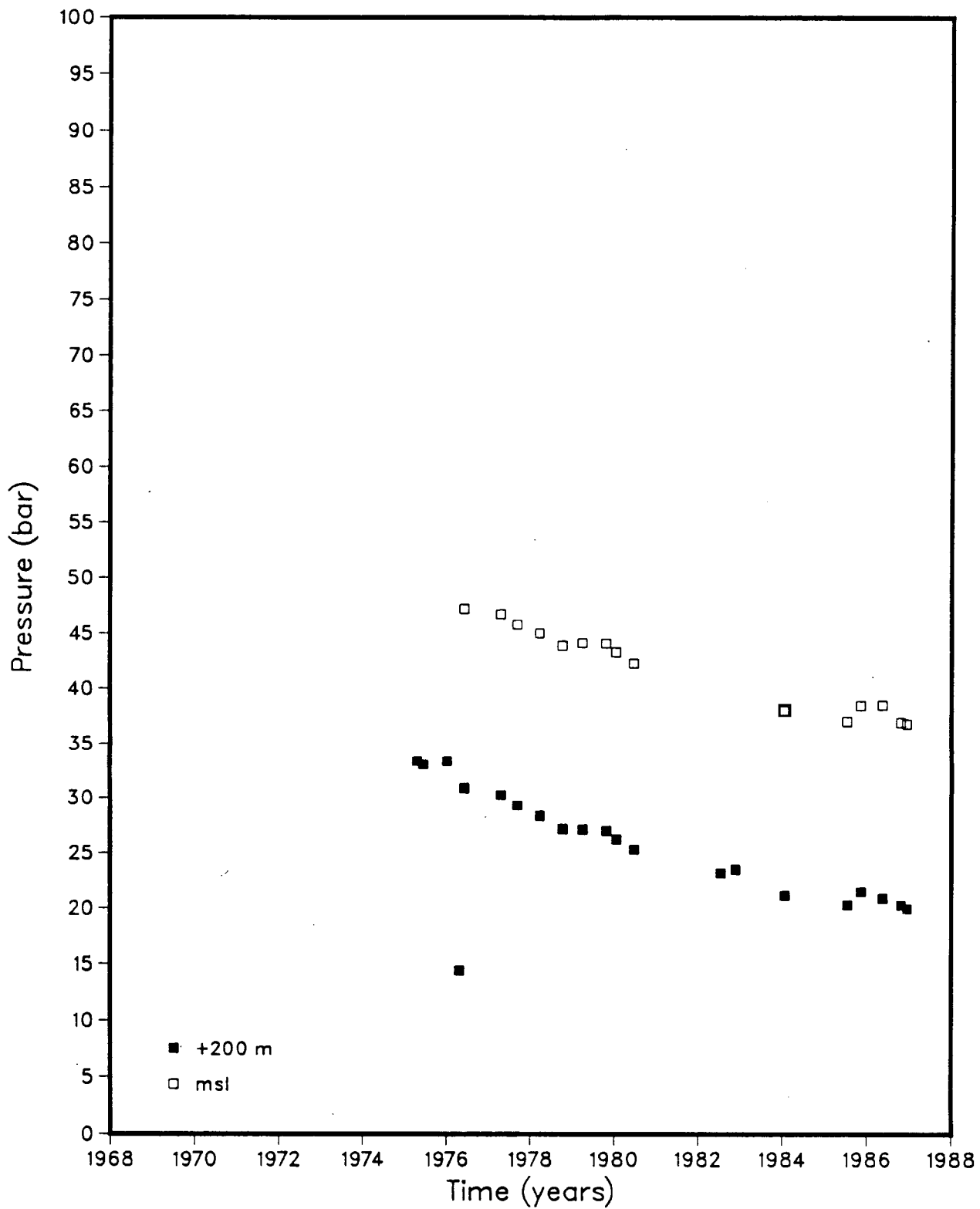
AH19 Pressure Trend



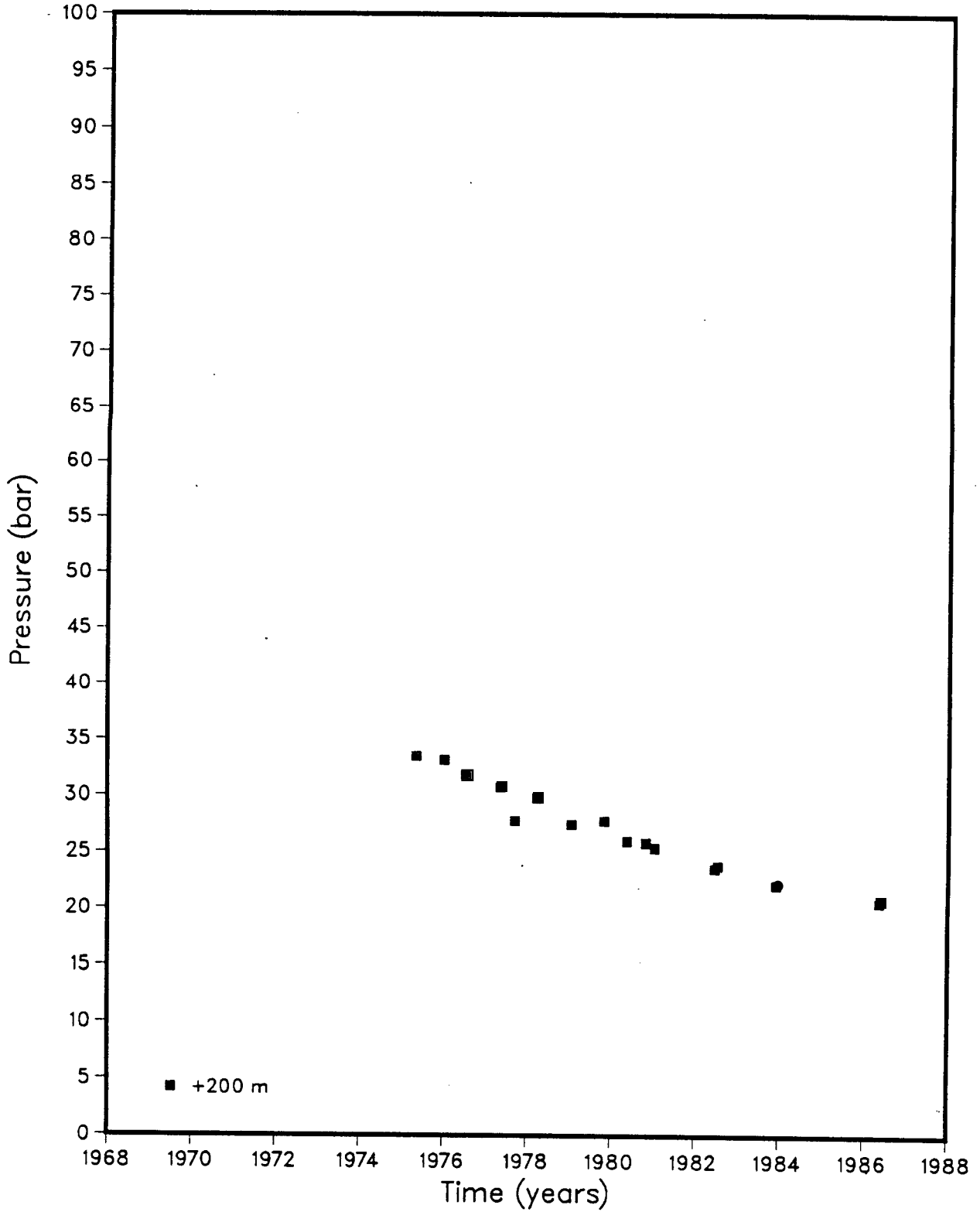
AH20 Pressure Trend



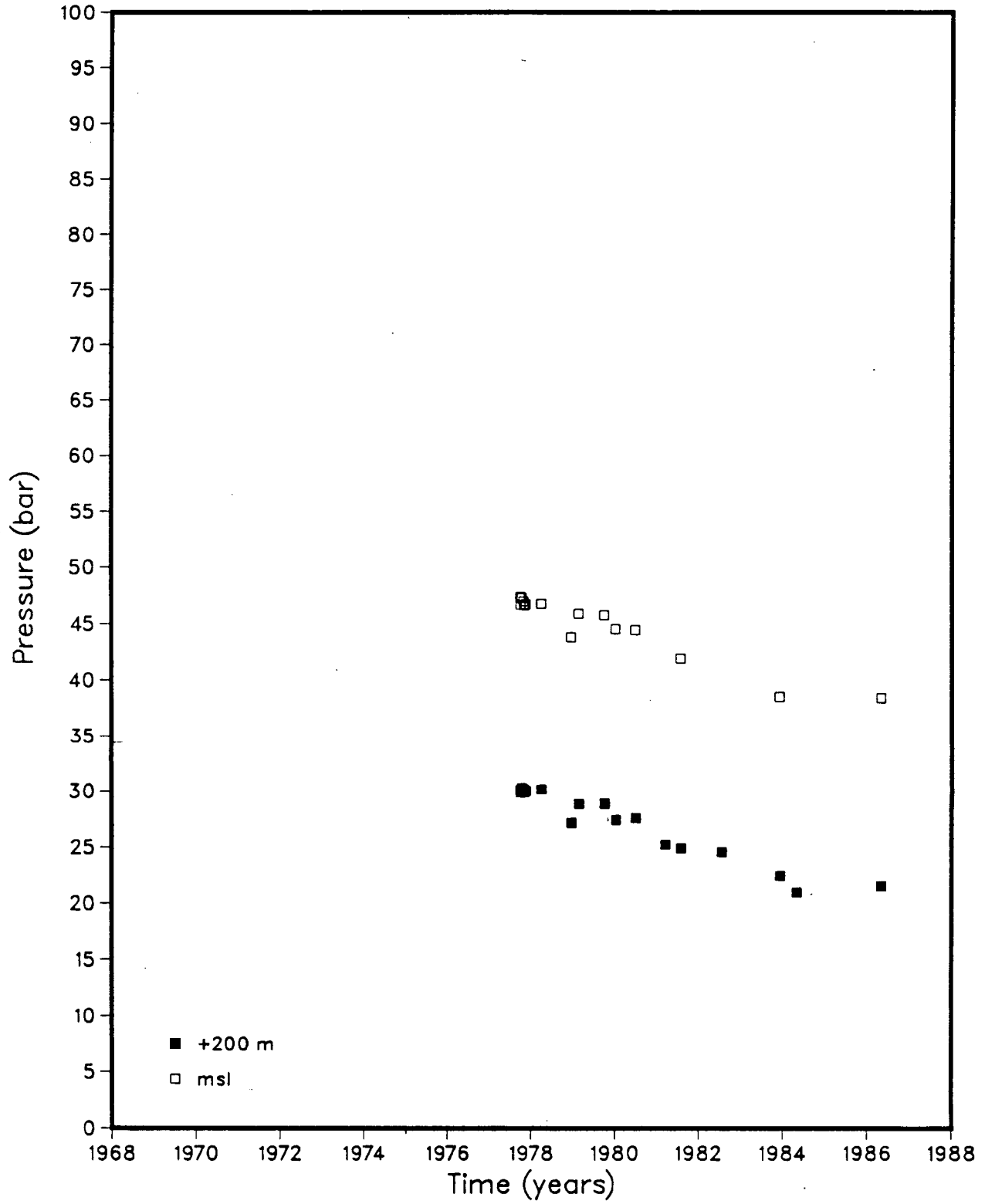
AH21 Pressure Trend



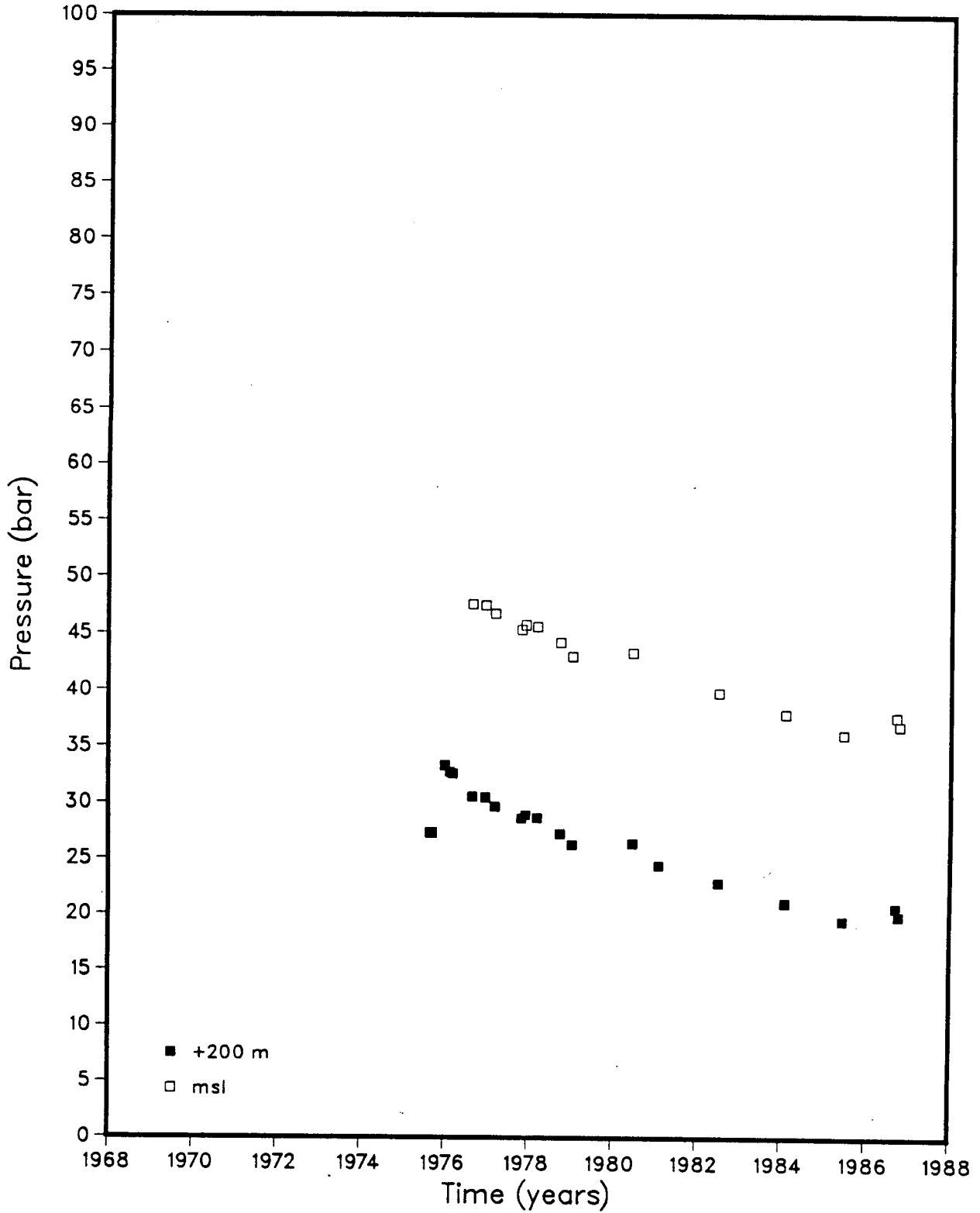
AH22 Pressure Trend



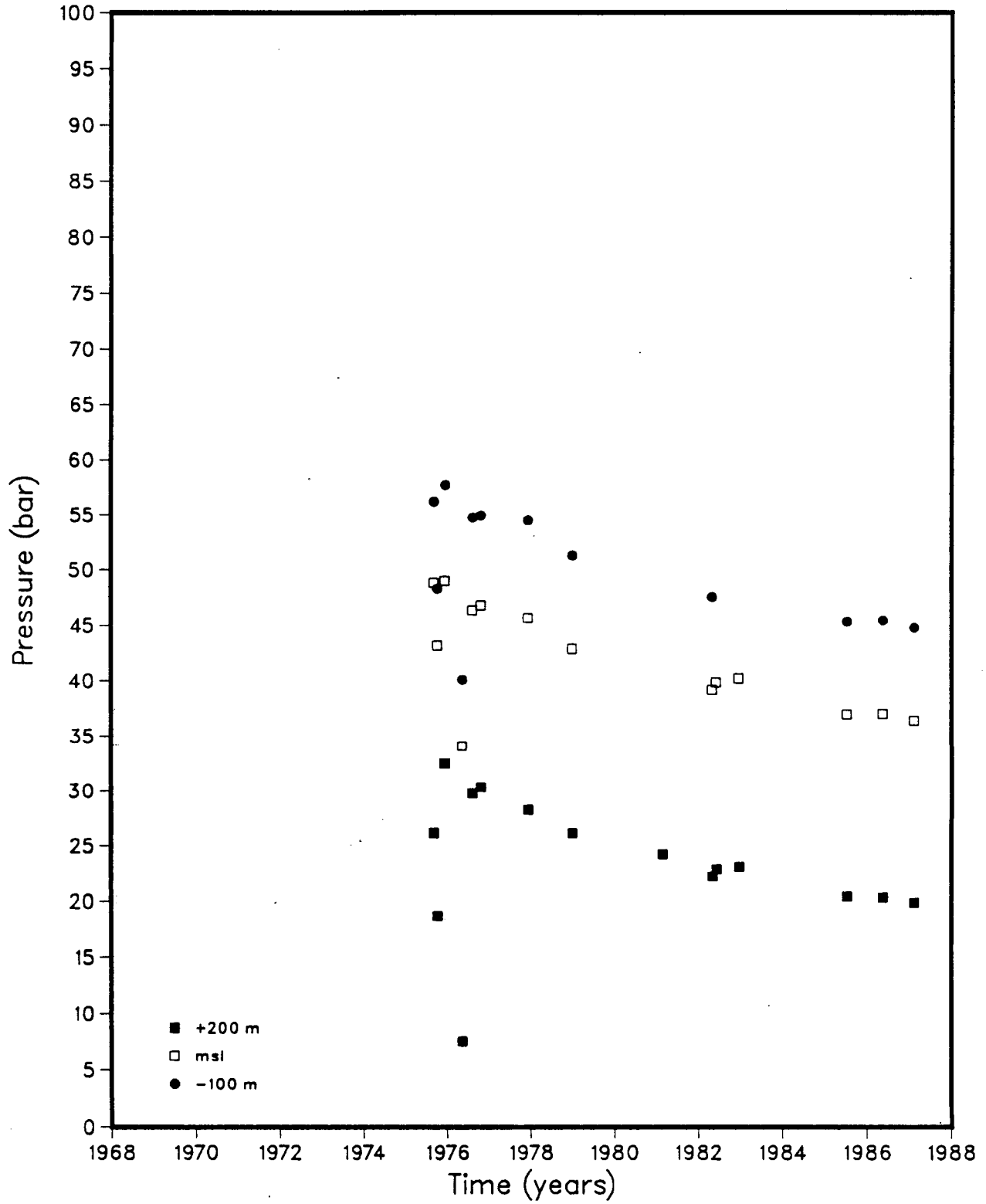
AH23 Pressure Trend



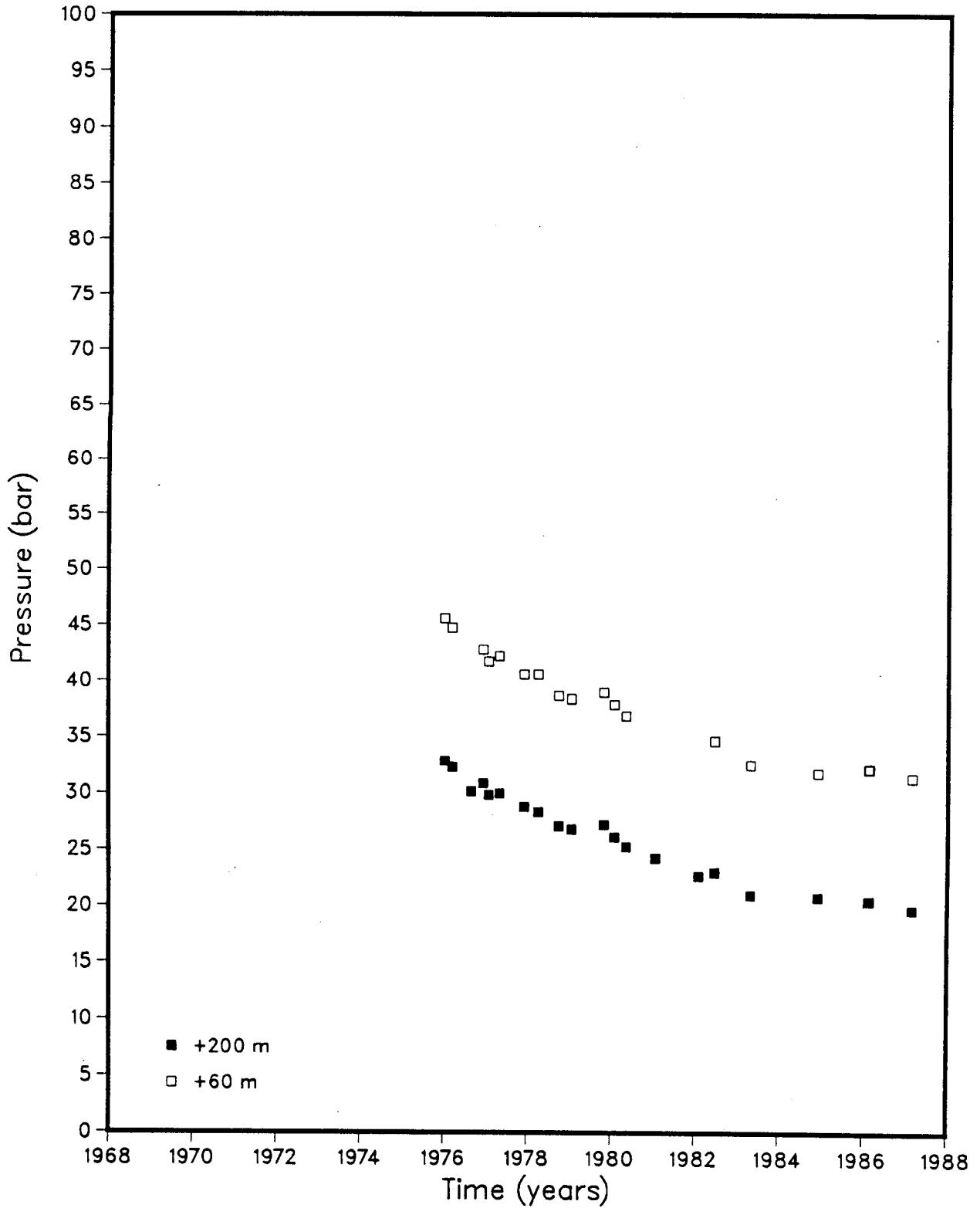
AH24 Pressure Trend



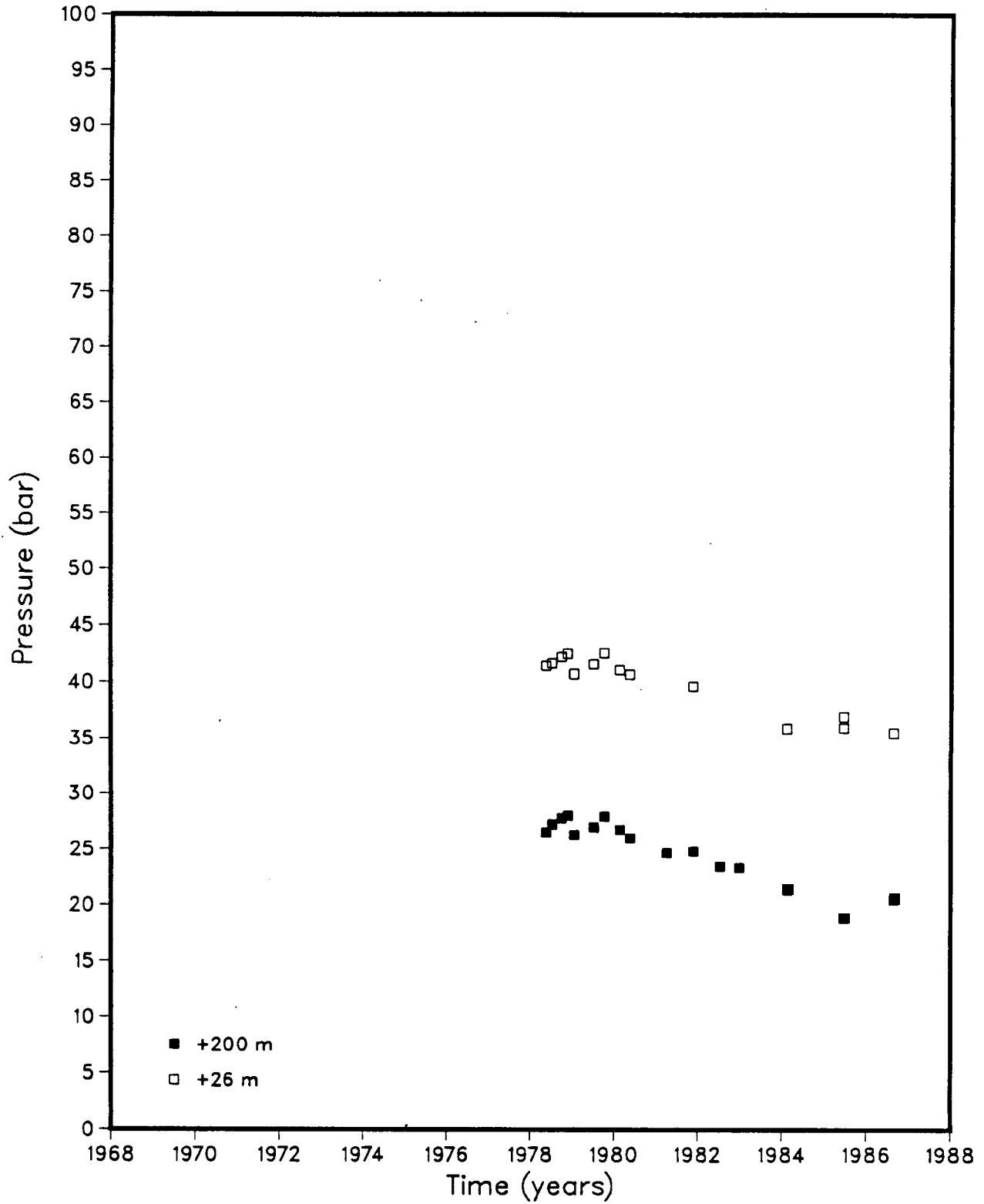
AH25 Pressure Trend



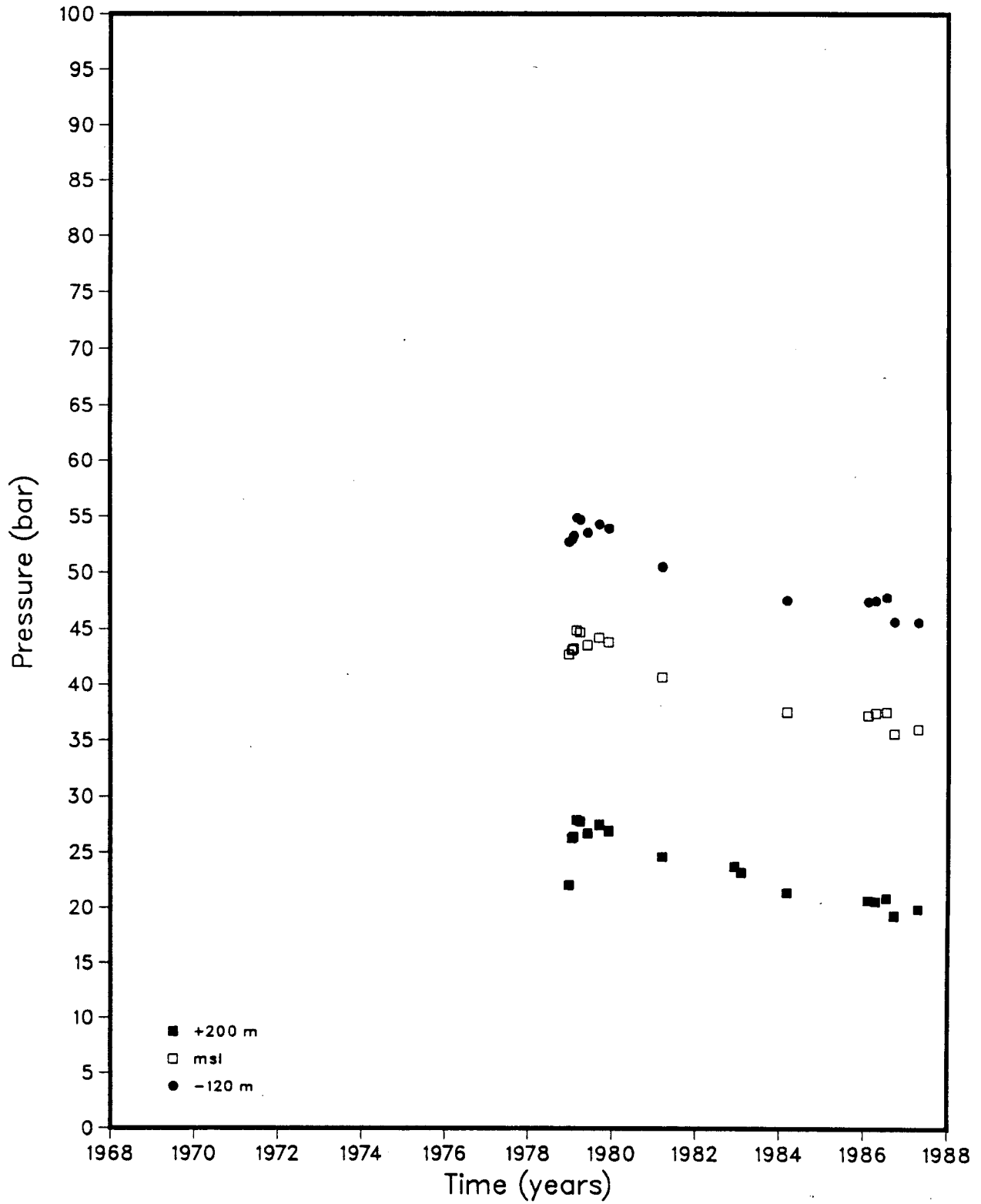
AH26 Pressure Trend



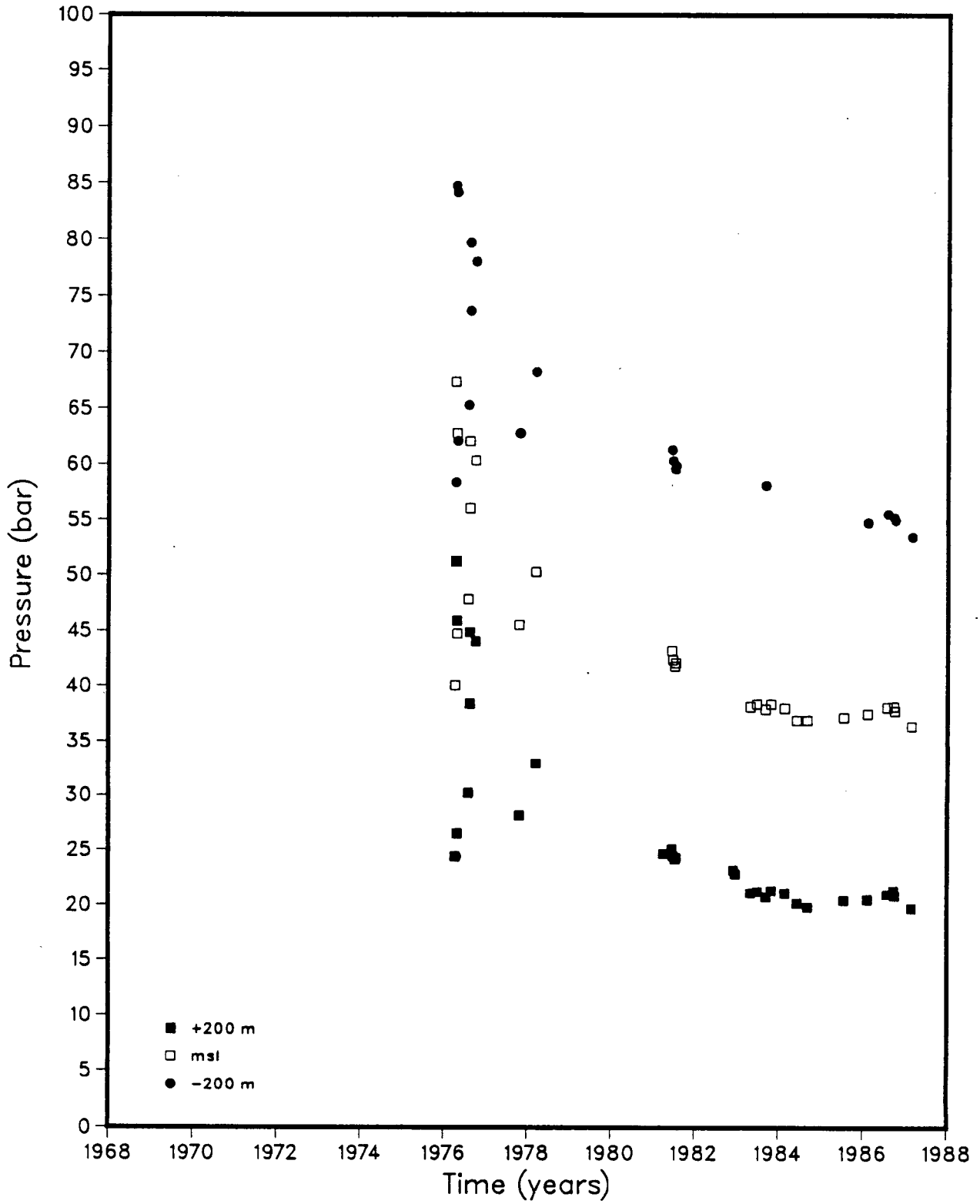
AH27 Pressure Trend



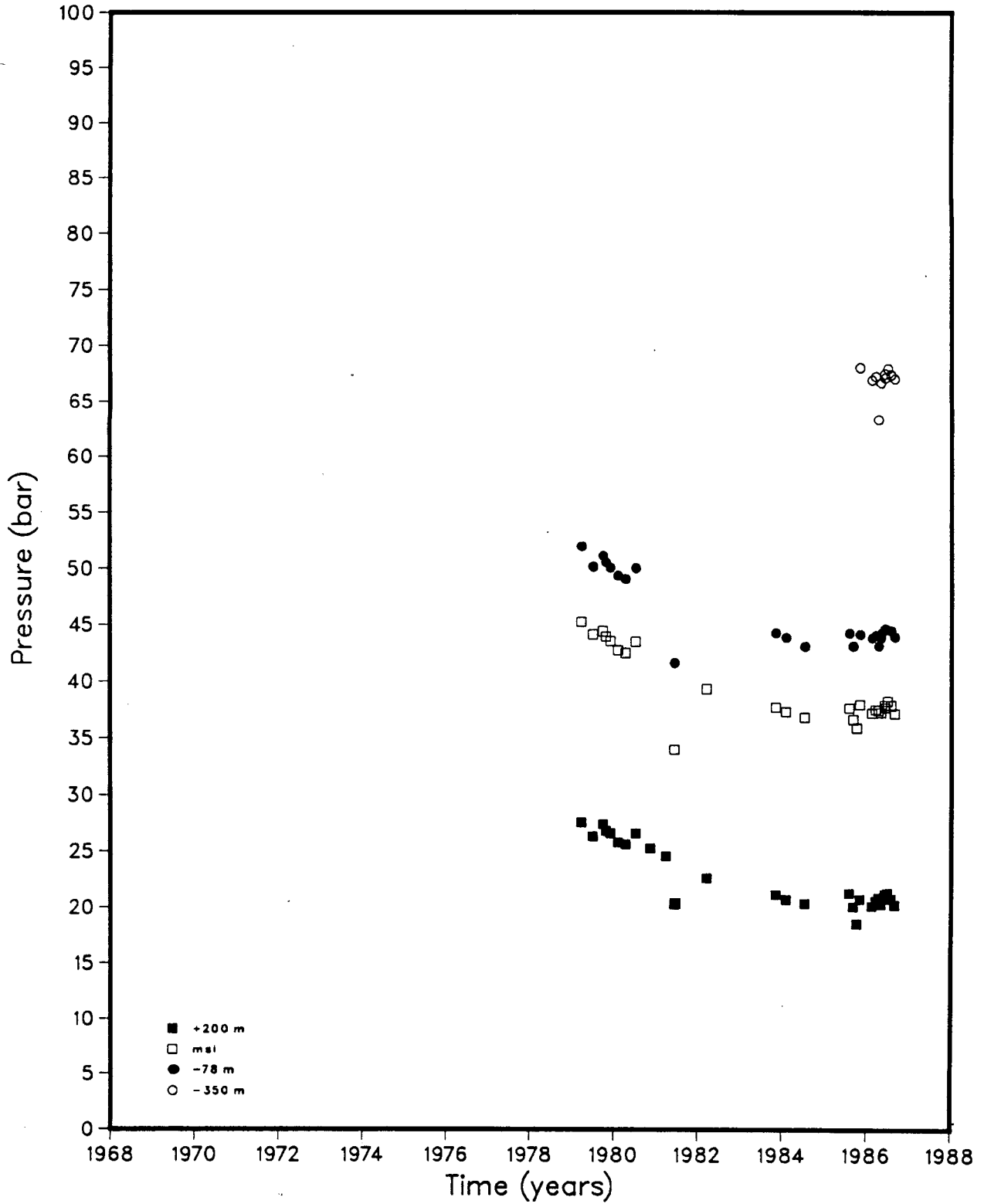
AH28 Pressure Trend



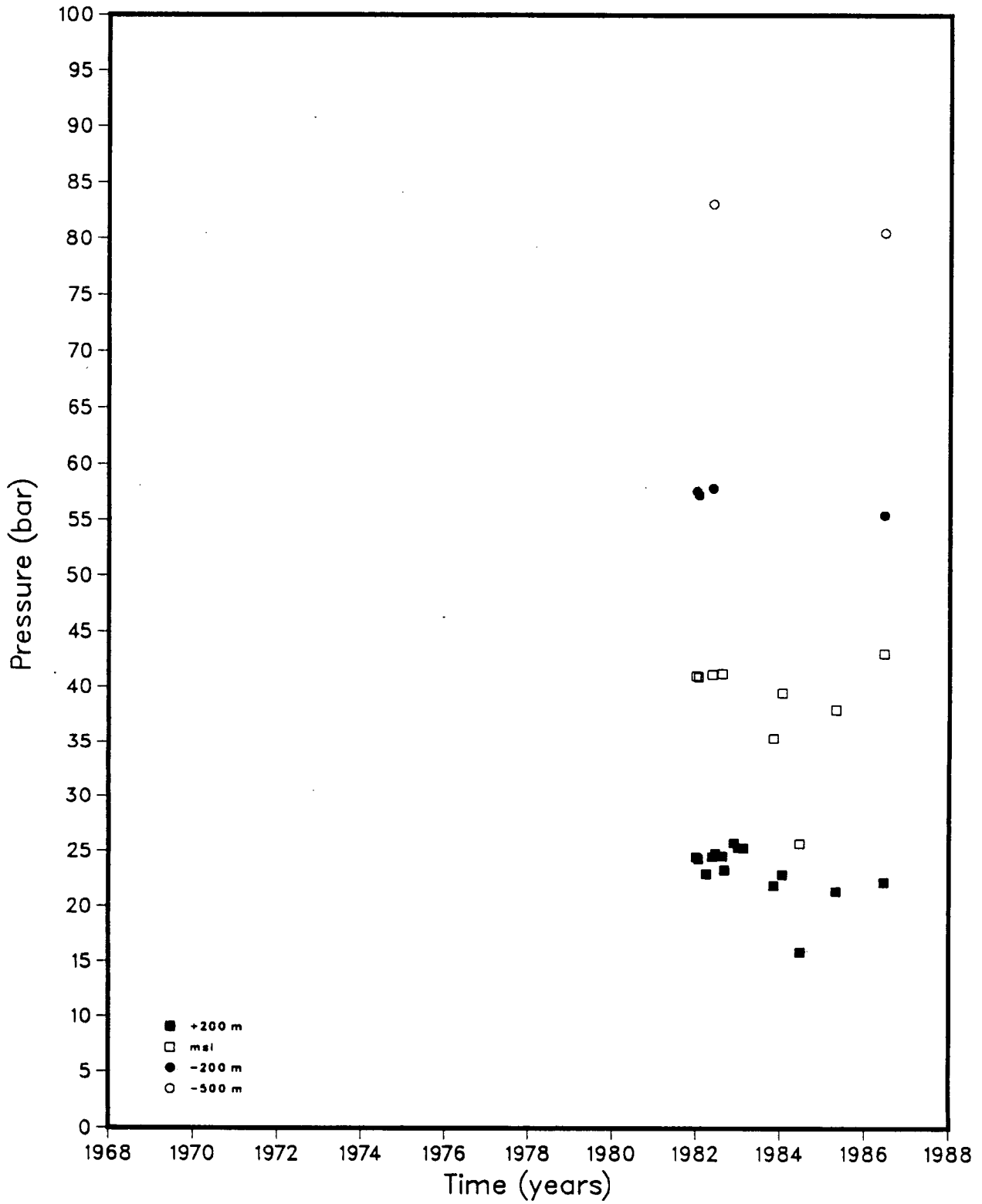
AH29 Pressure Trend



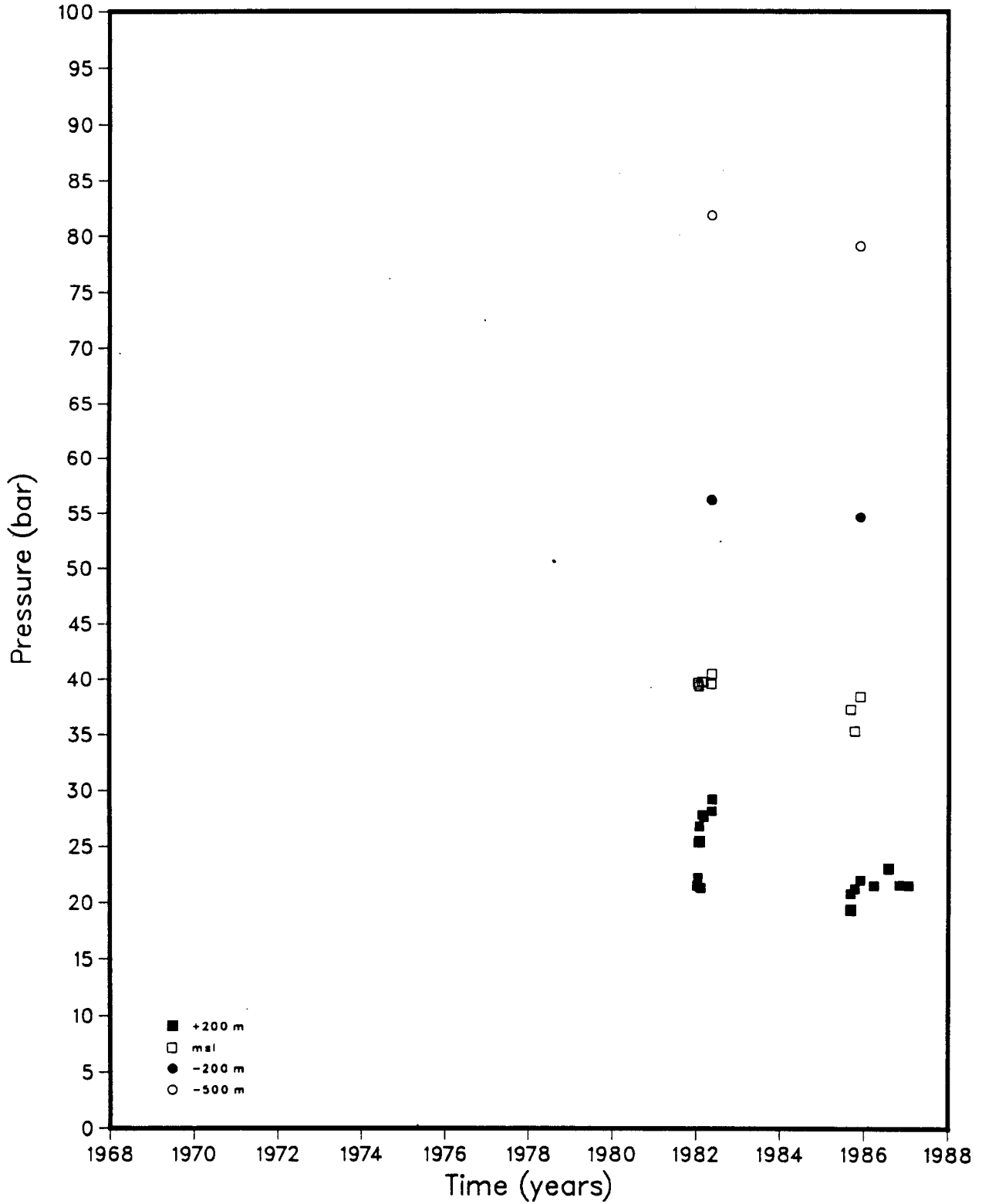
AH30 Pressure Trend



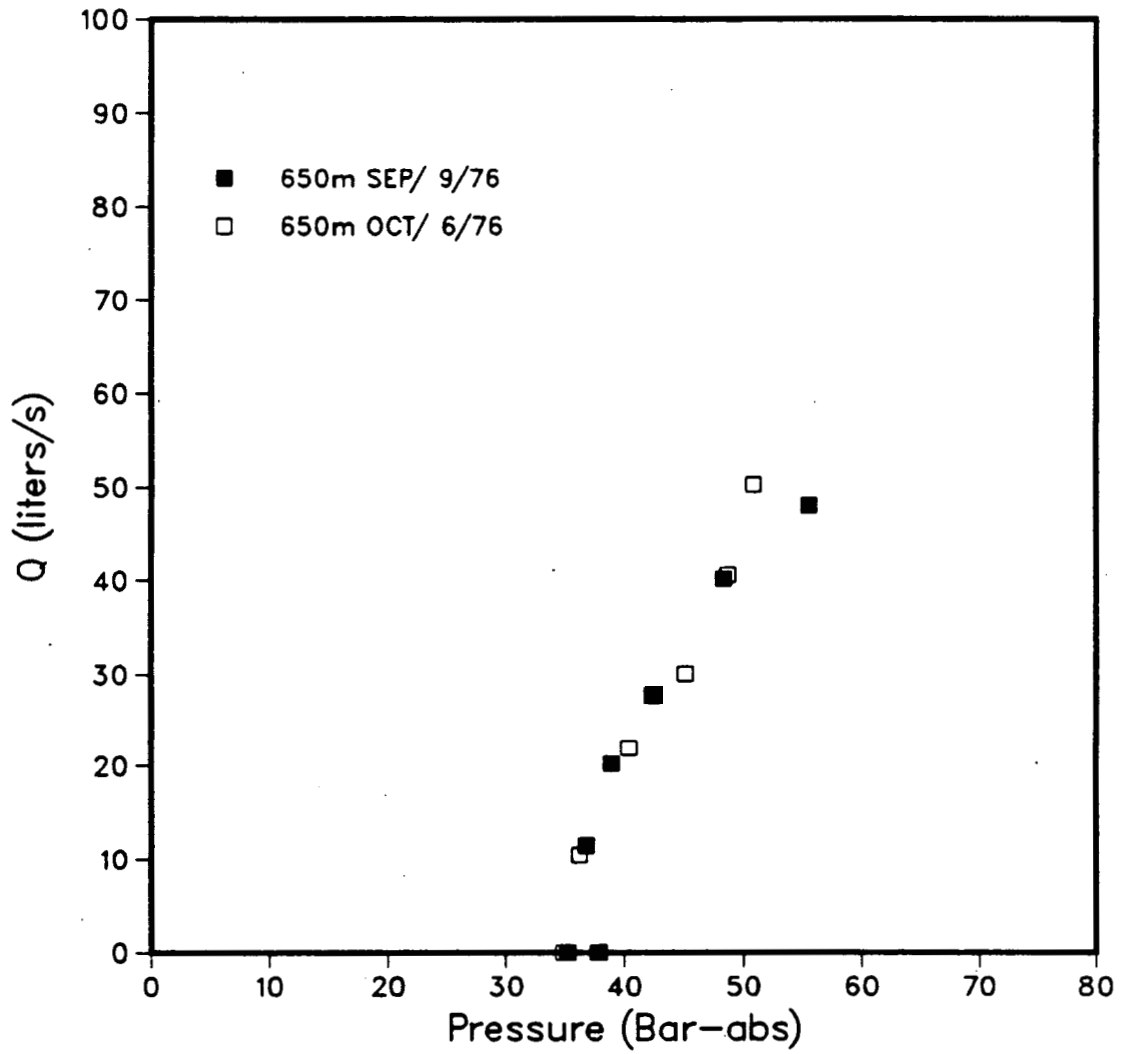
AH31 Pressure Trend



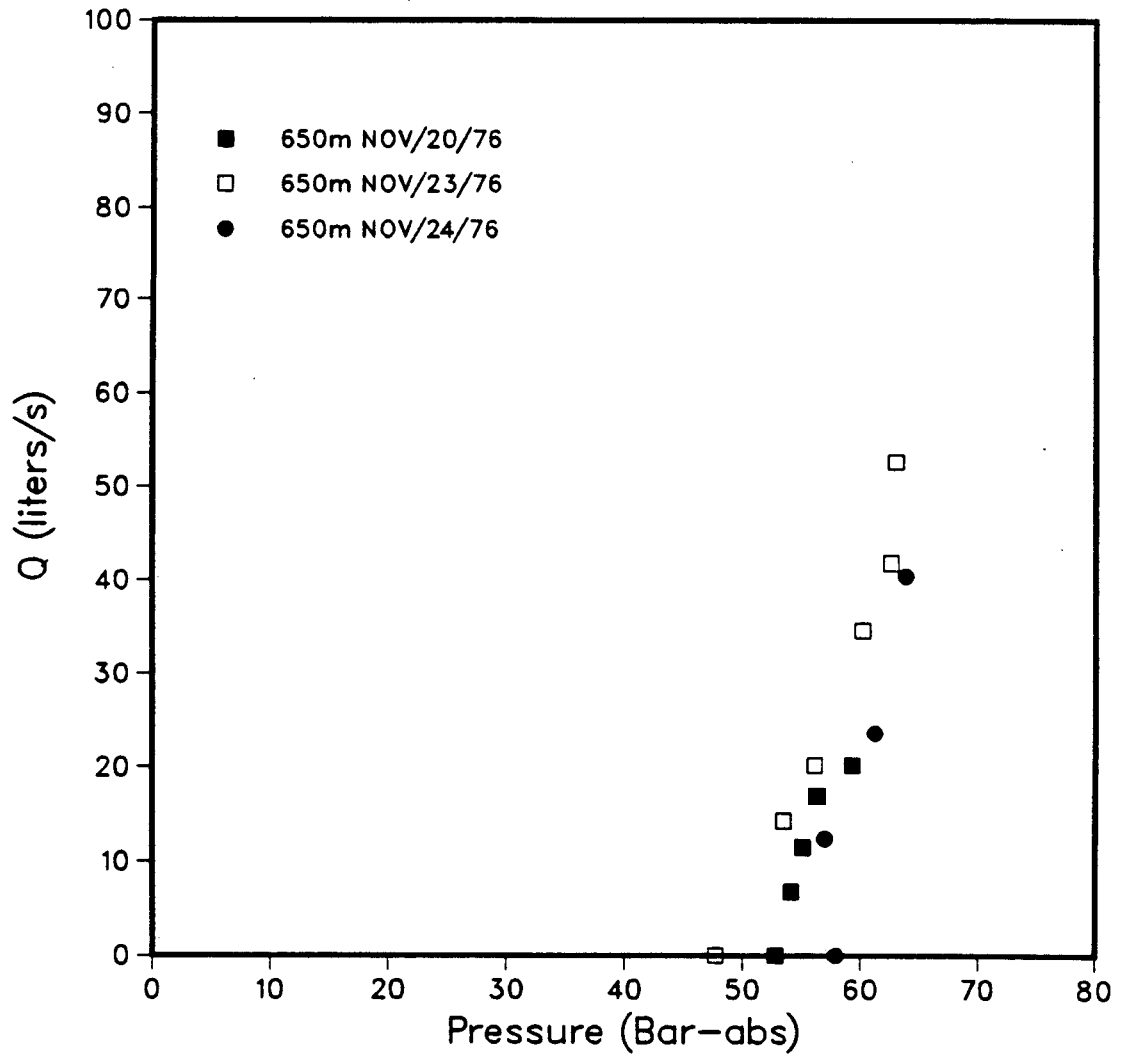
AH32 Pressure Trend



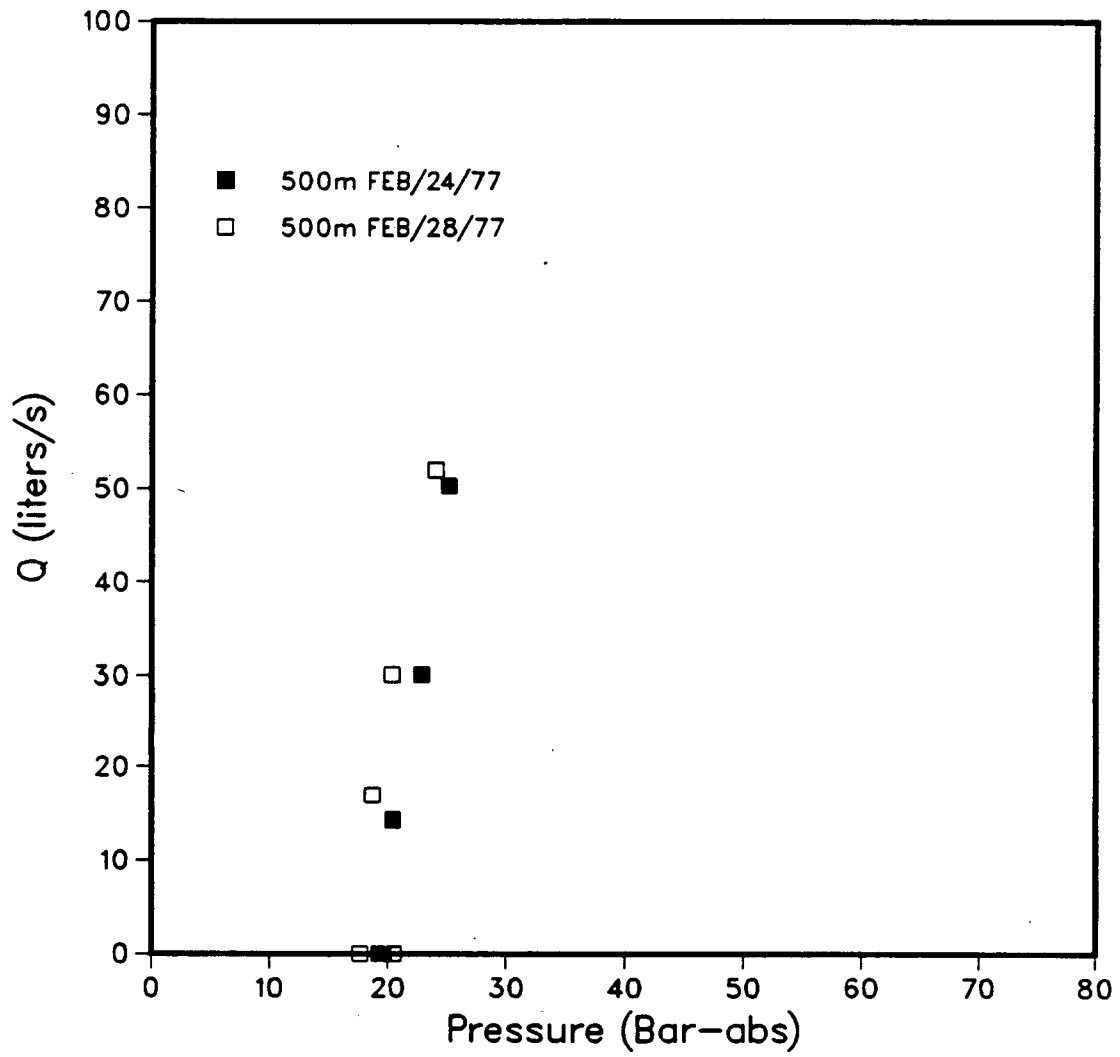
AH2 Injectivity Index Test



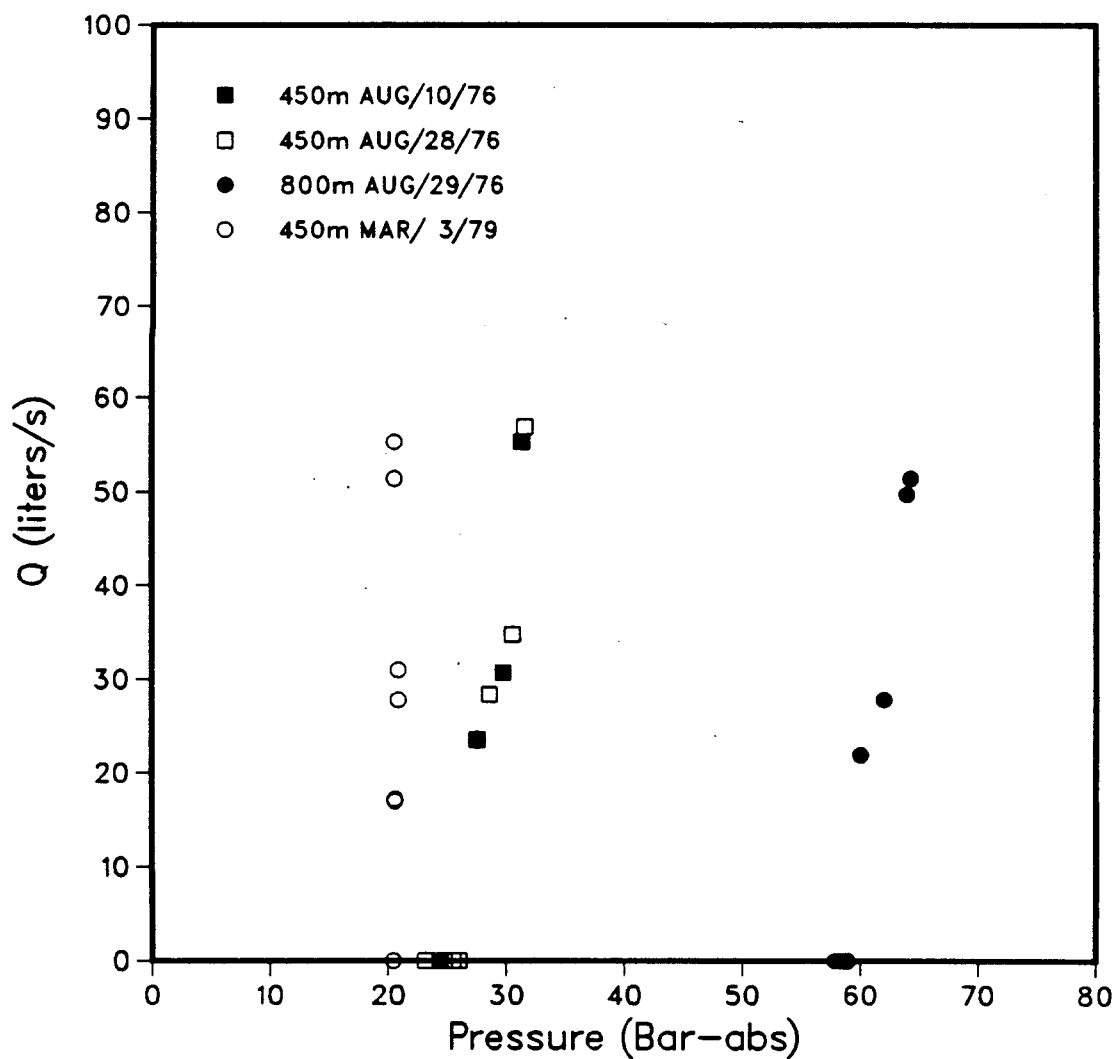
AH14 Injectivity Index Test



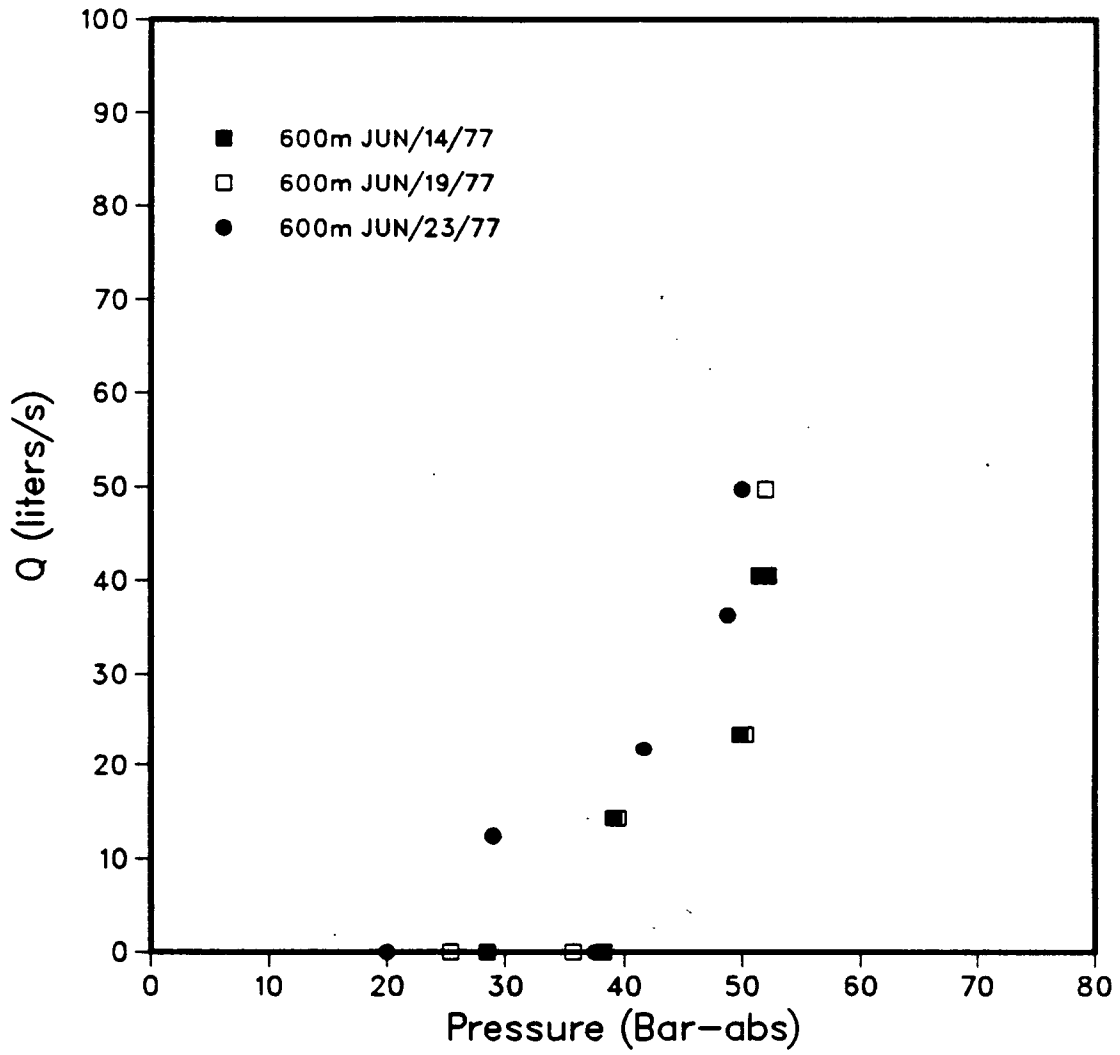
AH16 Injectivity Index Test



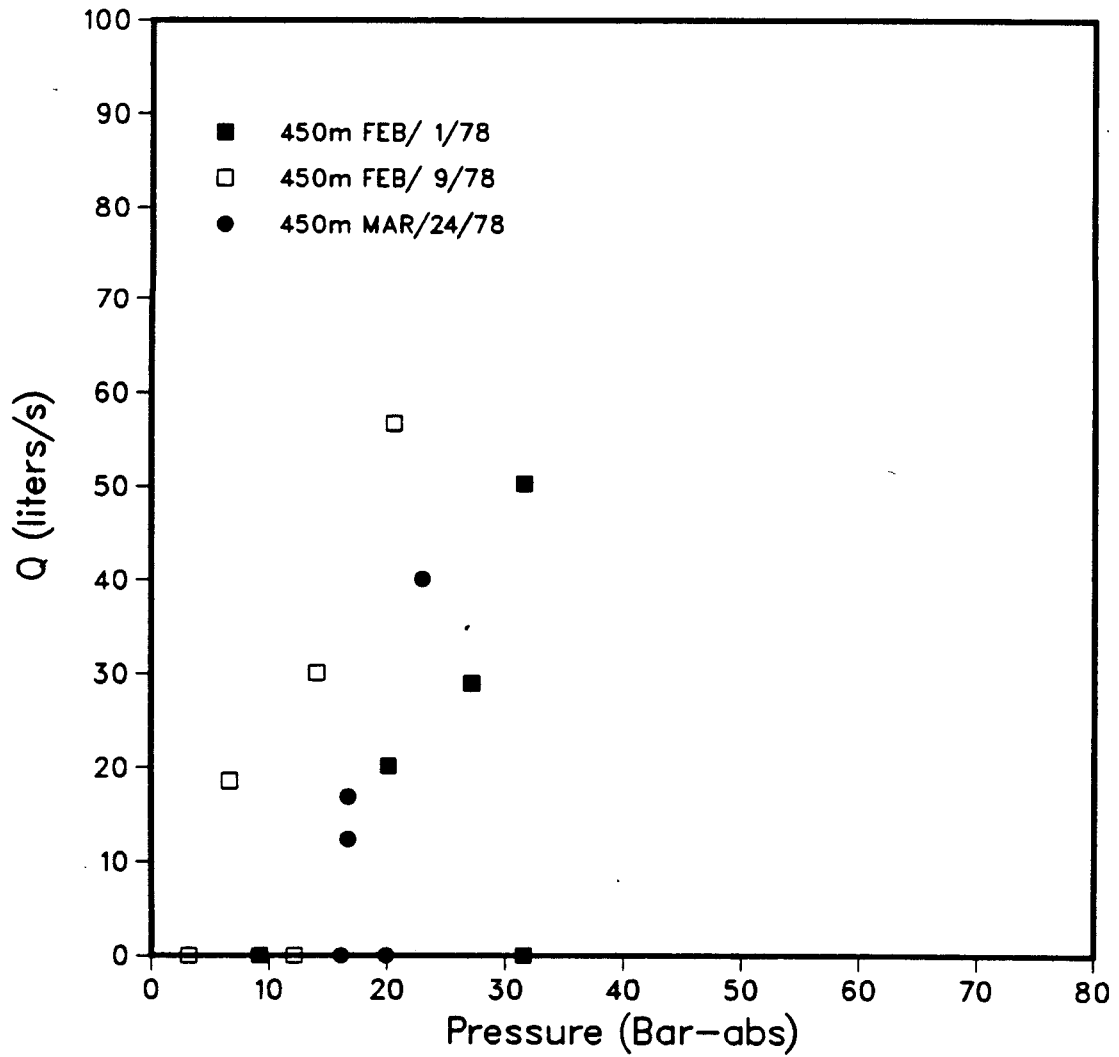
AH17 Injectivity Index Test



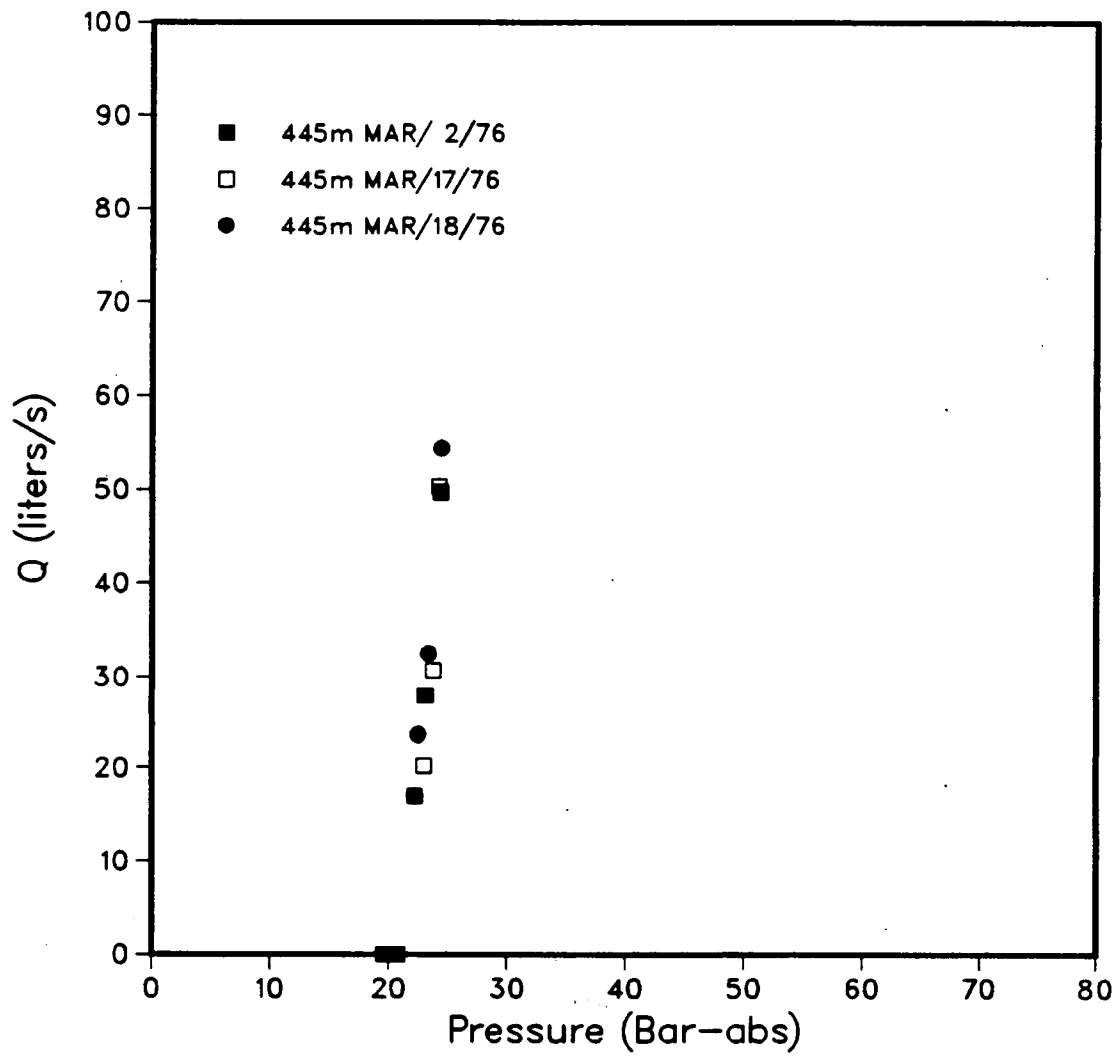
AH18 Injectivity Index Test



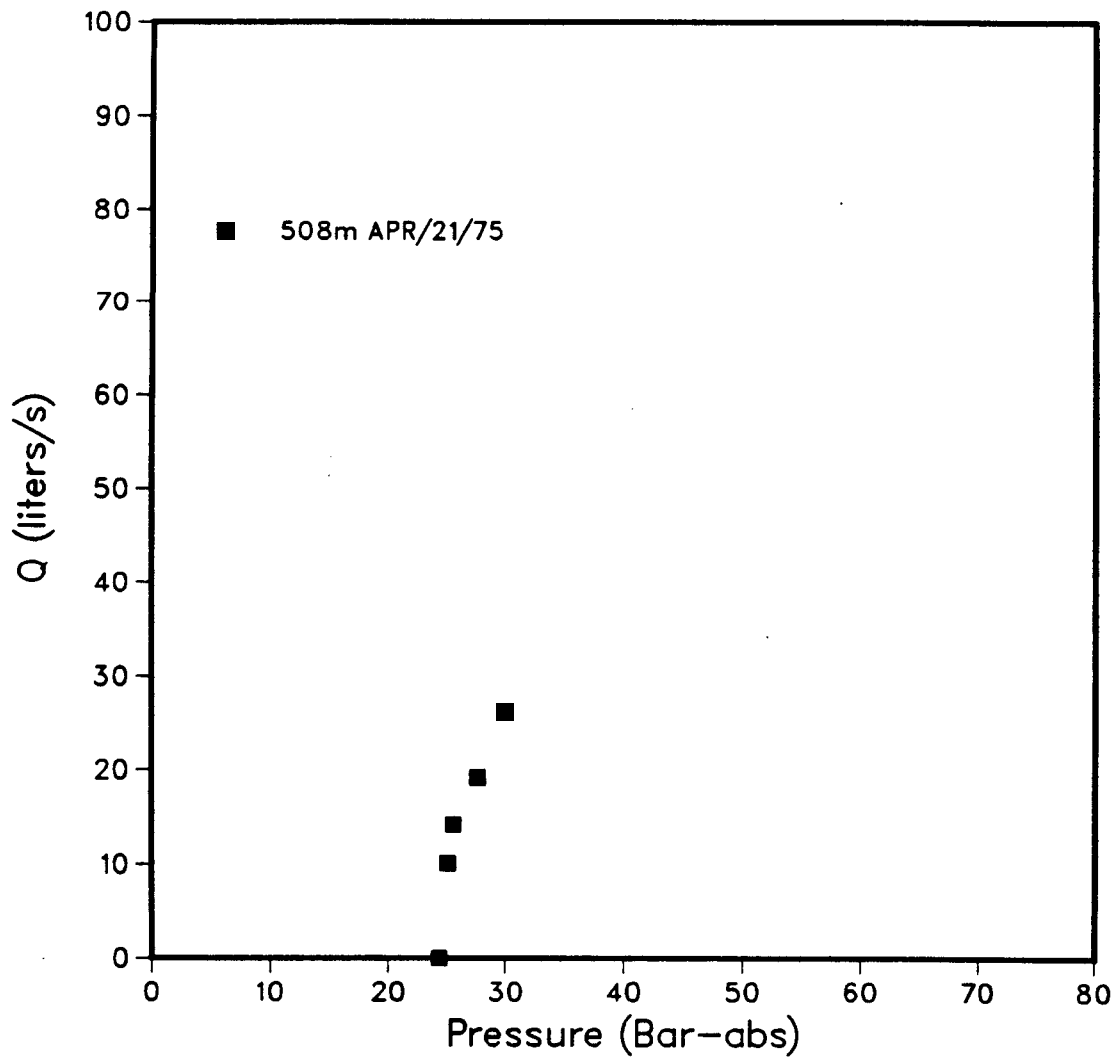
AH19 Injectivity Index Test



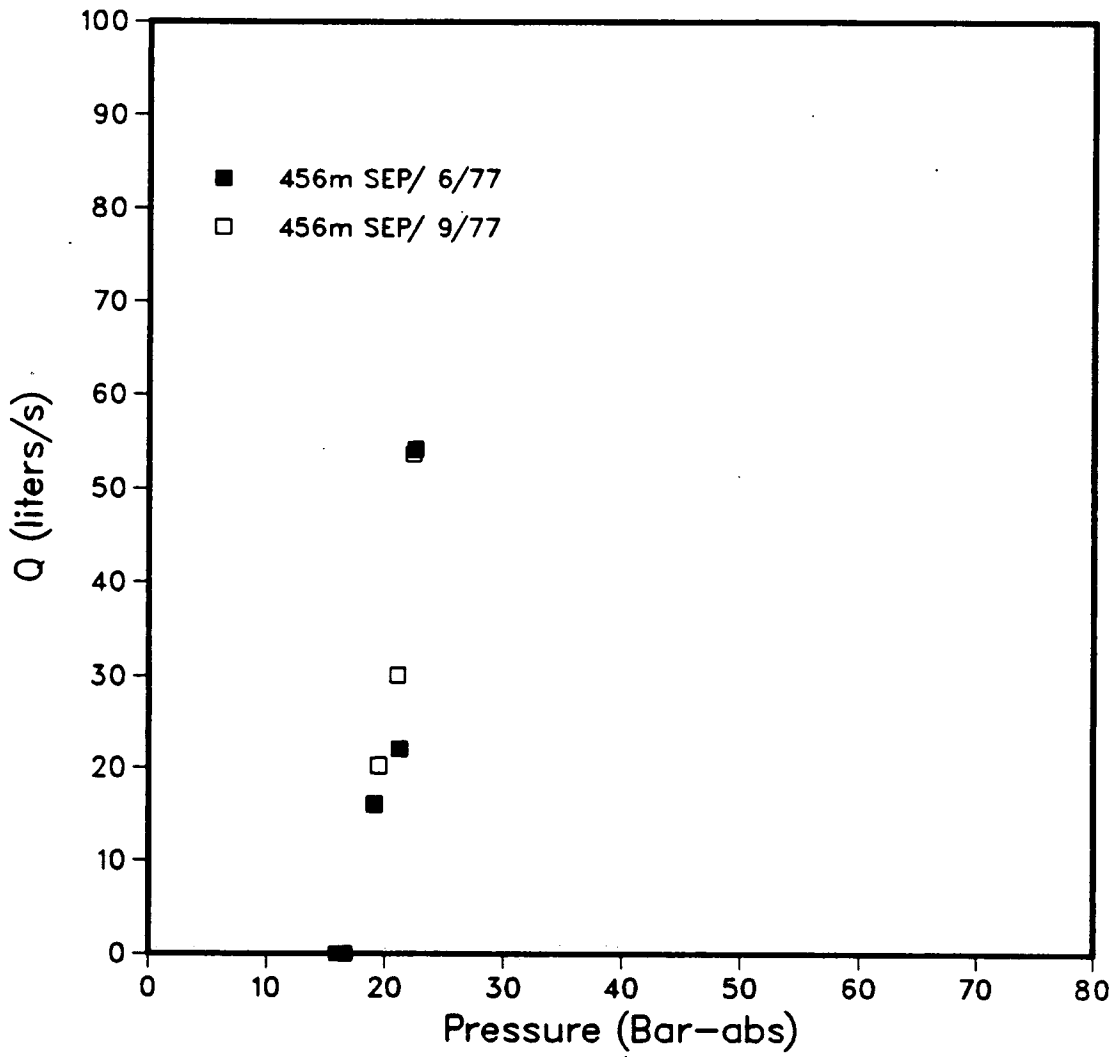
AH21 Injectivity Index Test



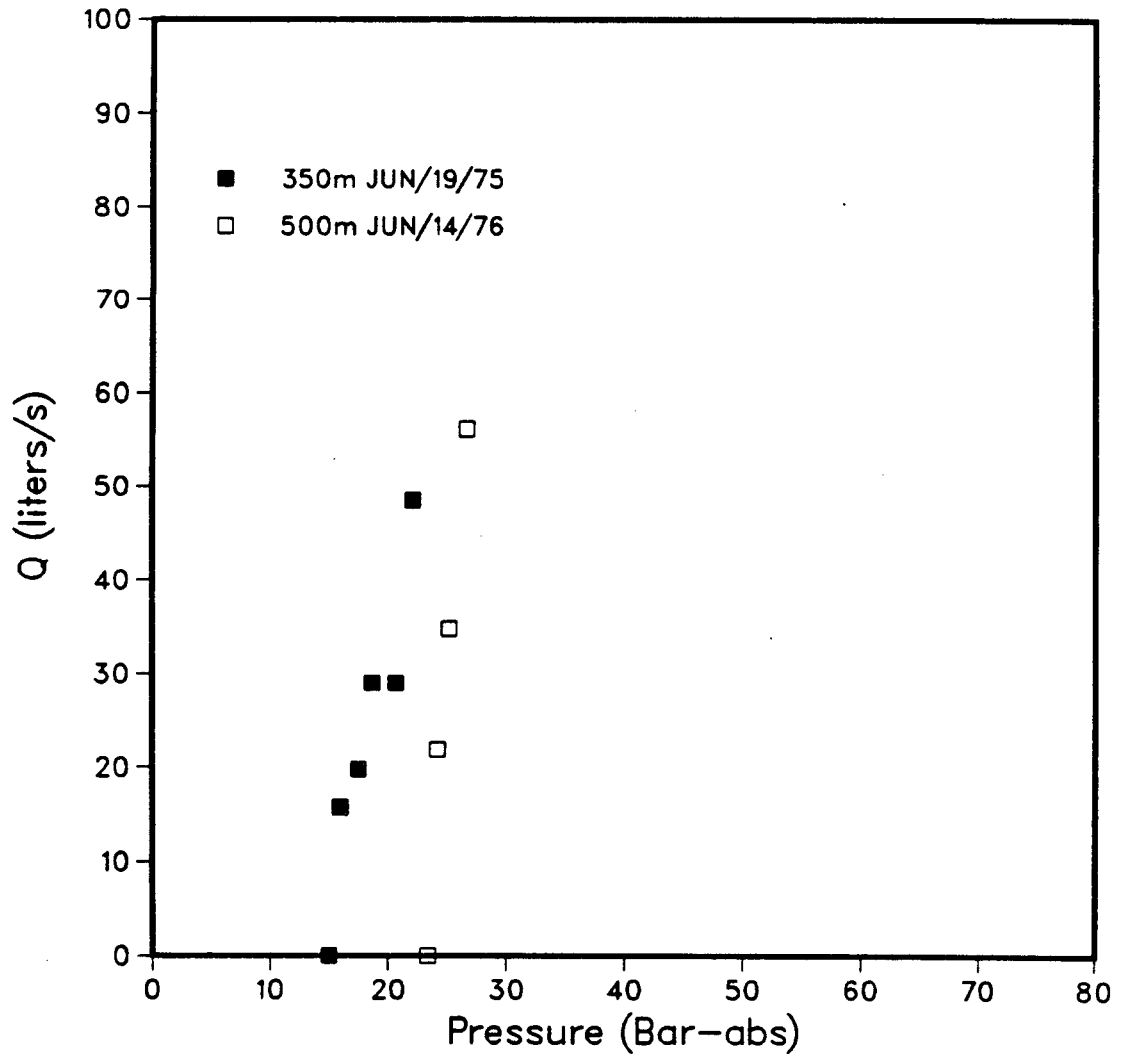
AH22 Injectivity Index Test



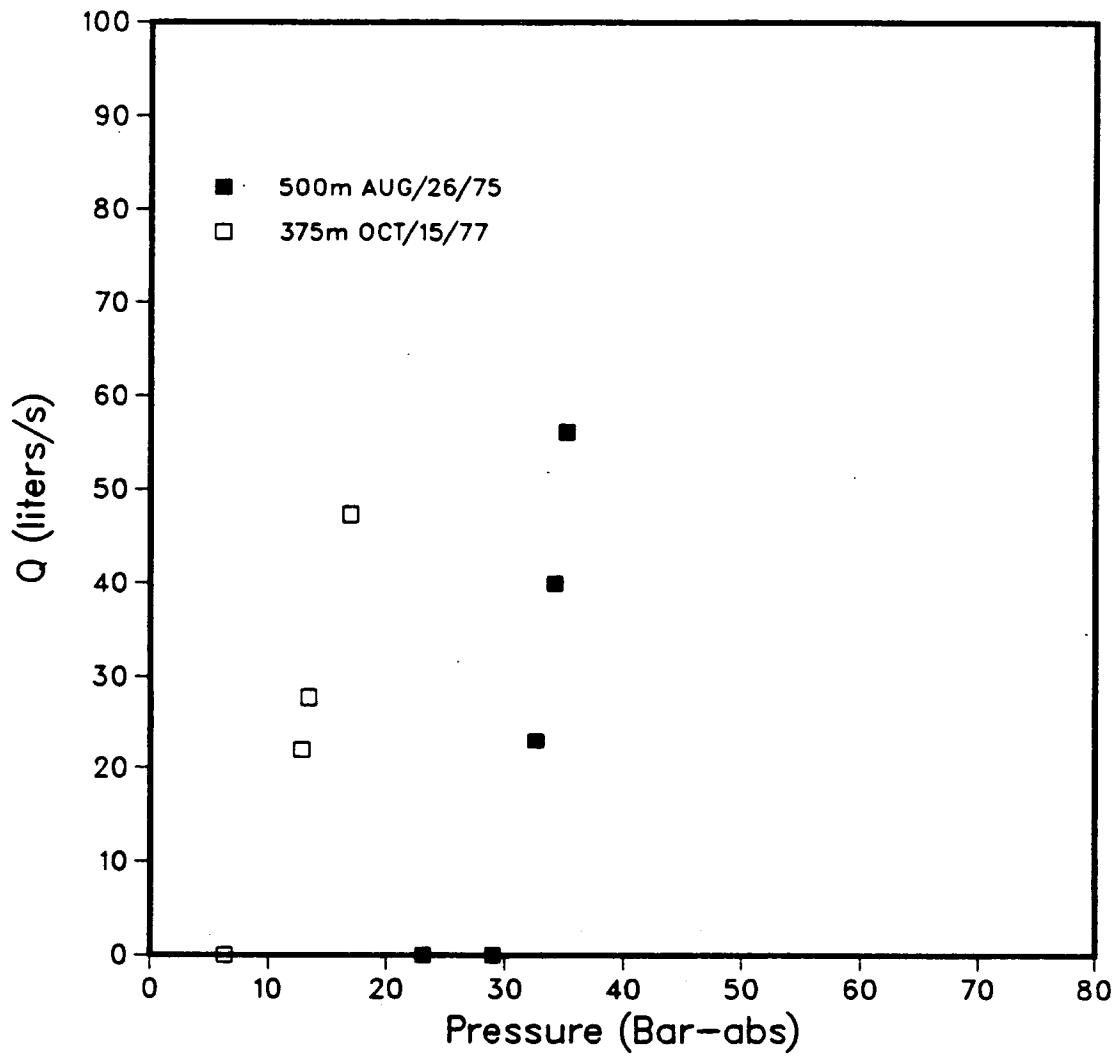
AH23 Injectivity Index Test



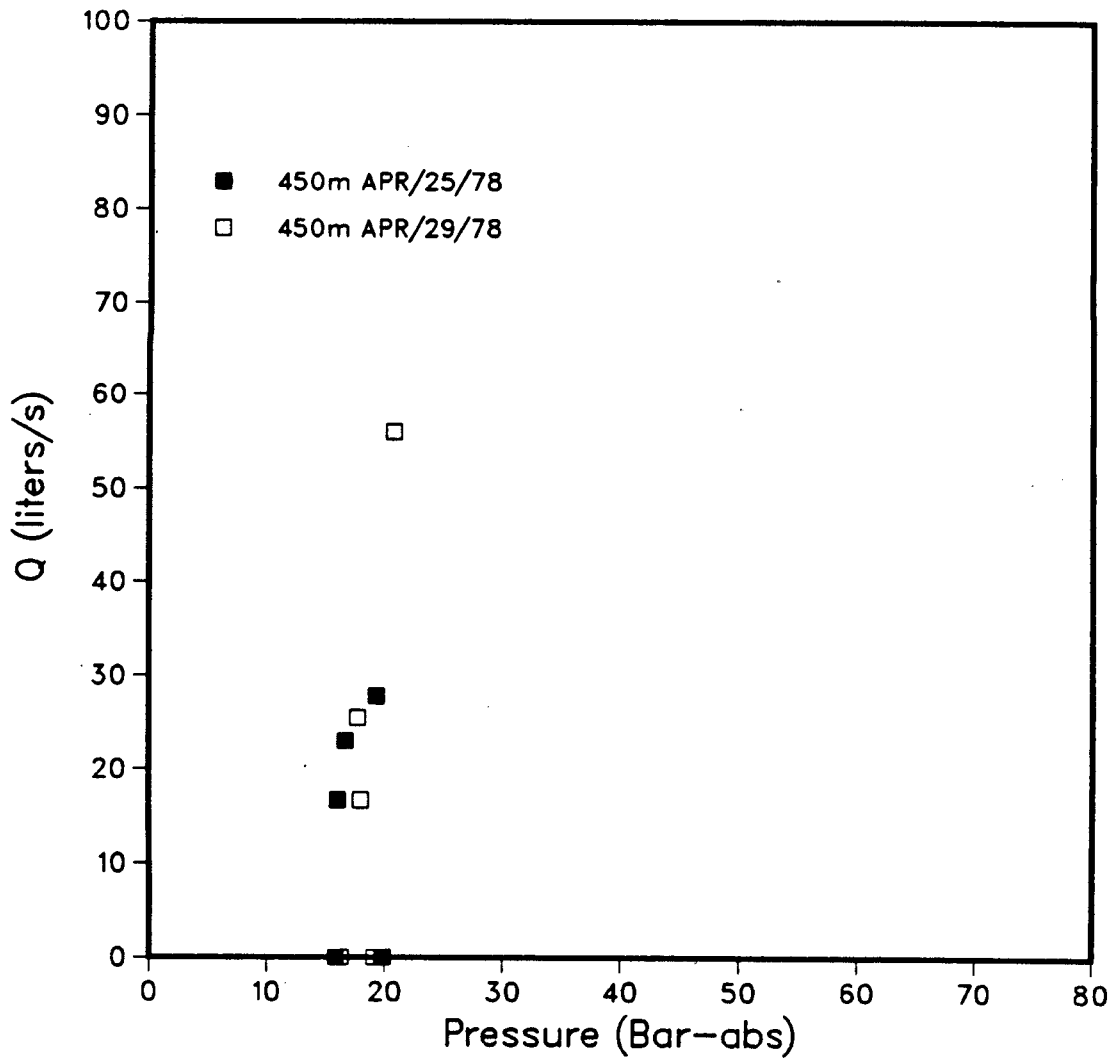
AH24 Injectivity Index Test



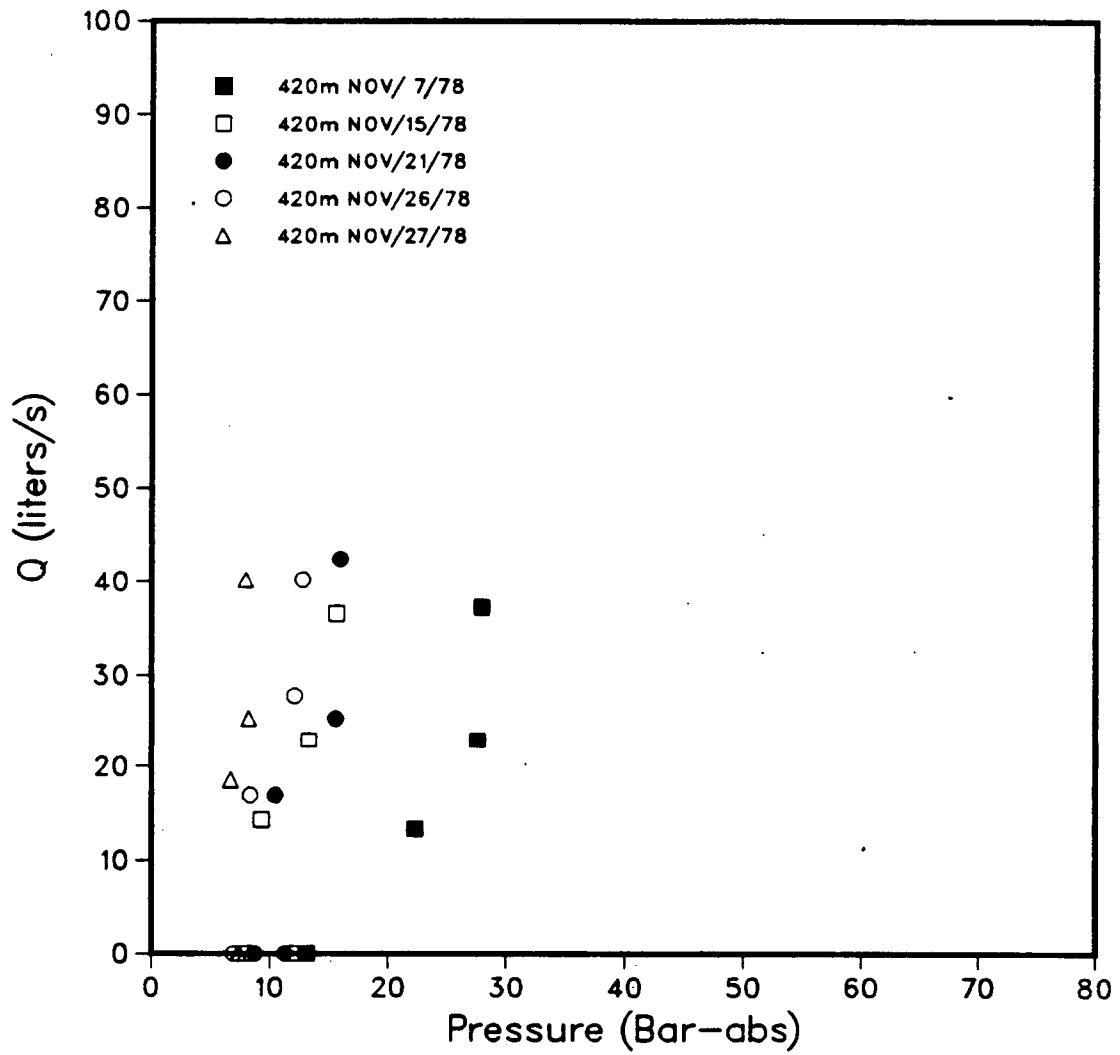
AH25 Injectivity Index Test



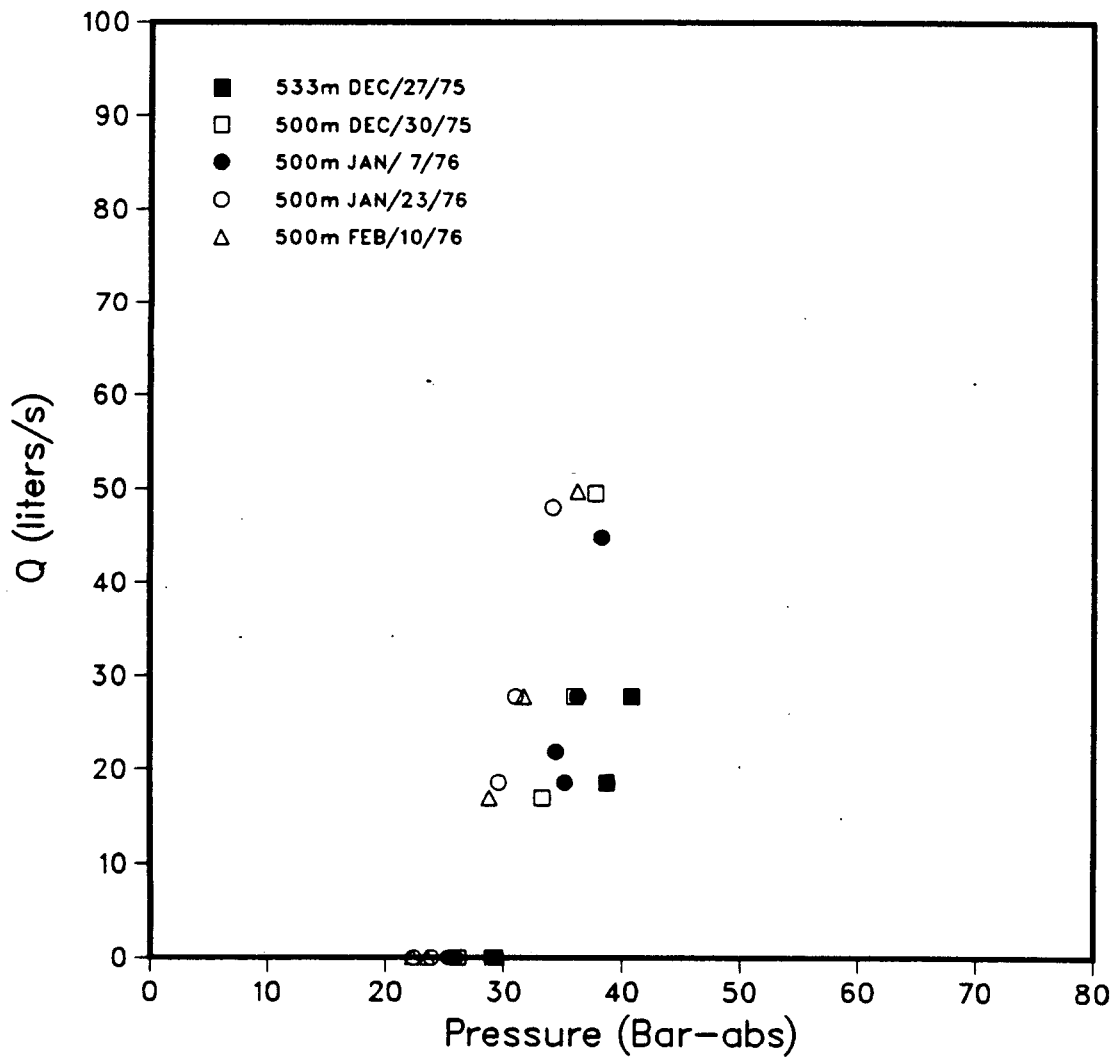
AH27 Injectivity Index Test



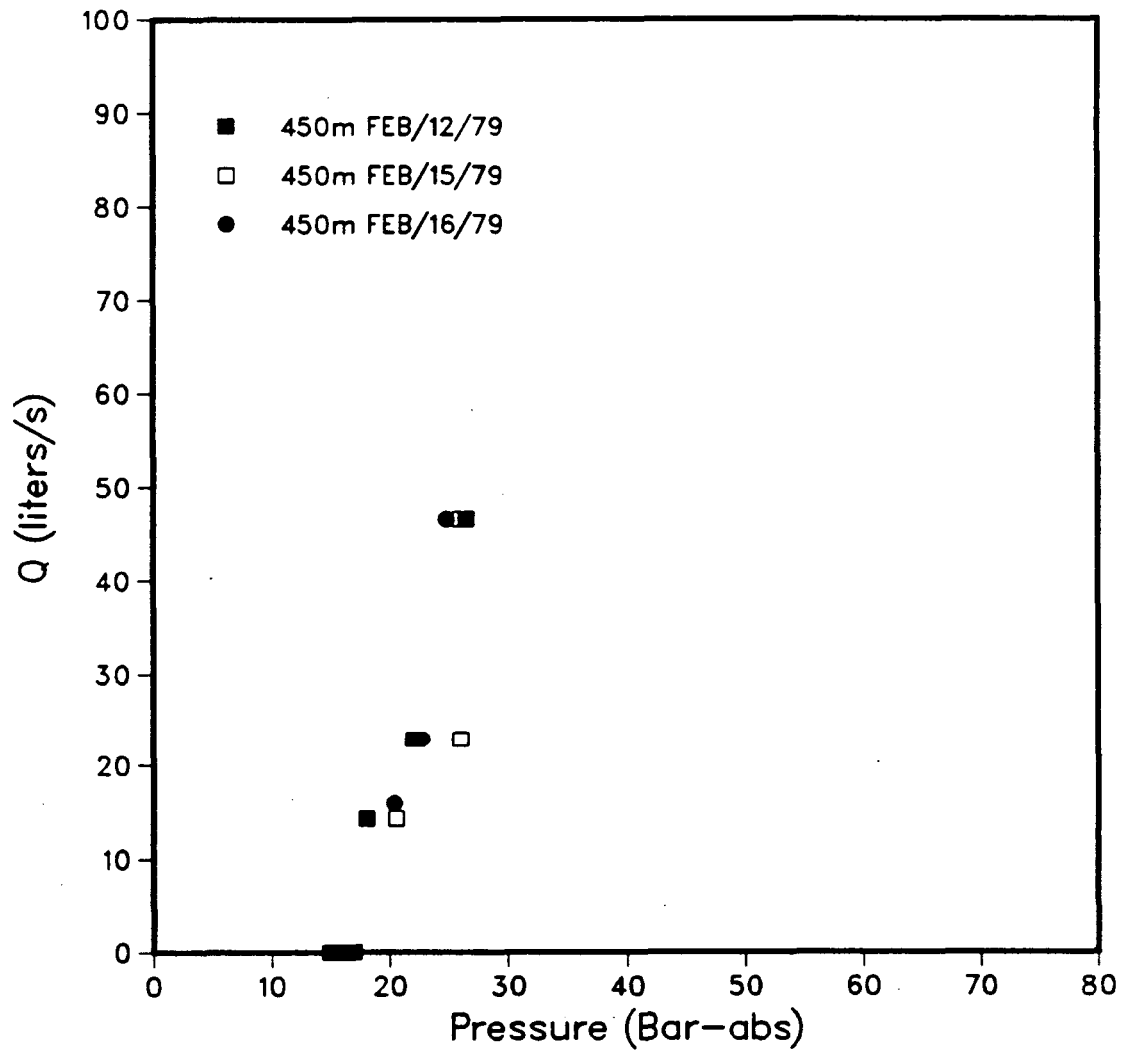
AH28 Injectivity Index Test



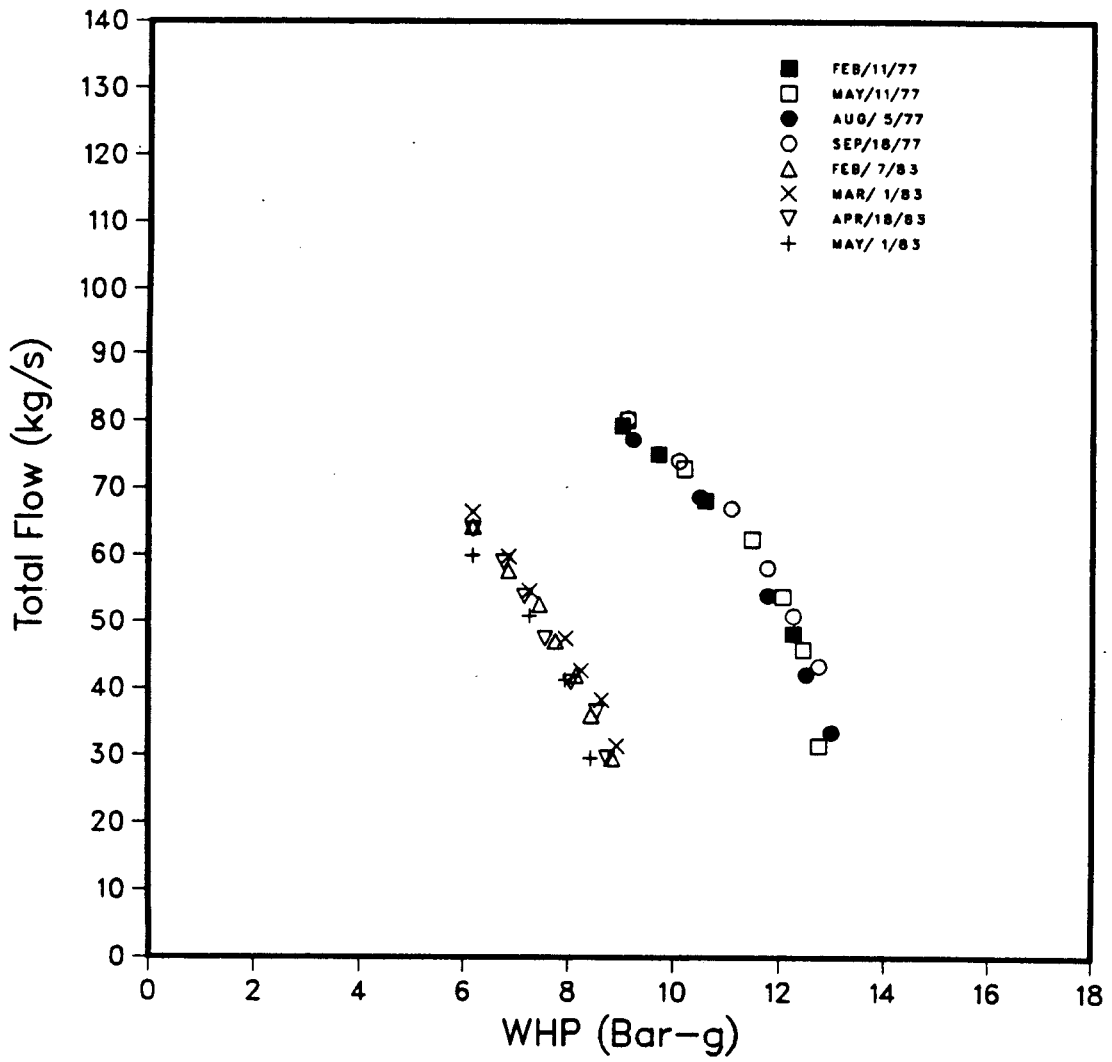
AH29 Injectivity Index Test



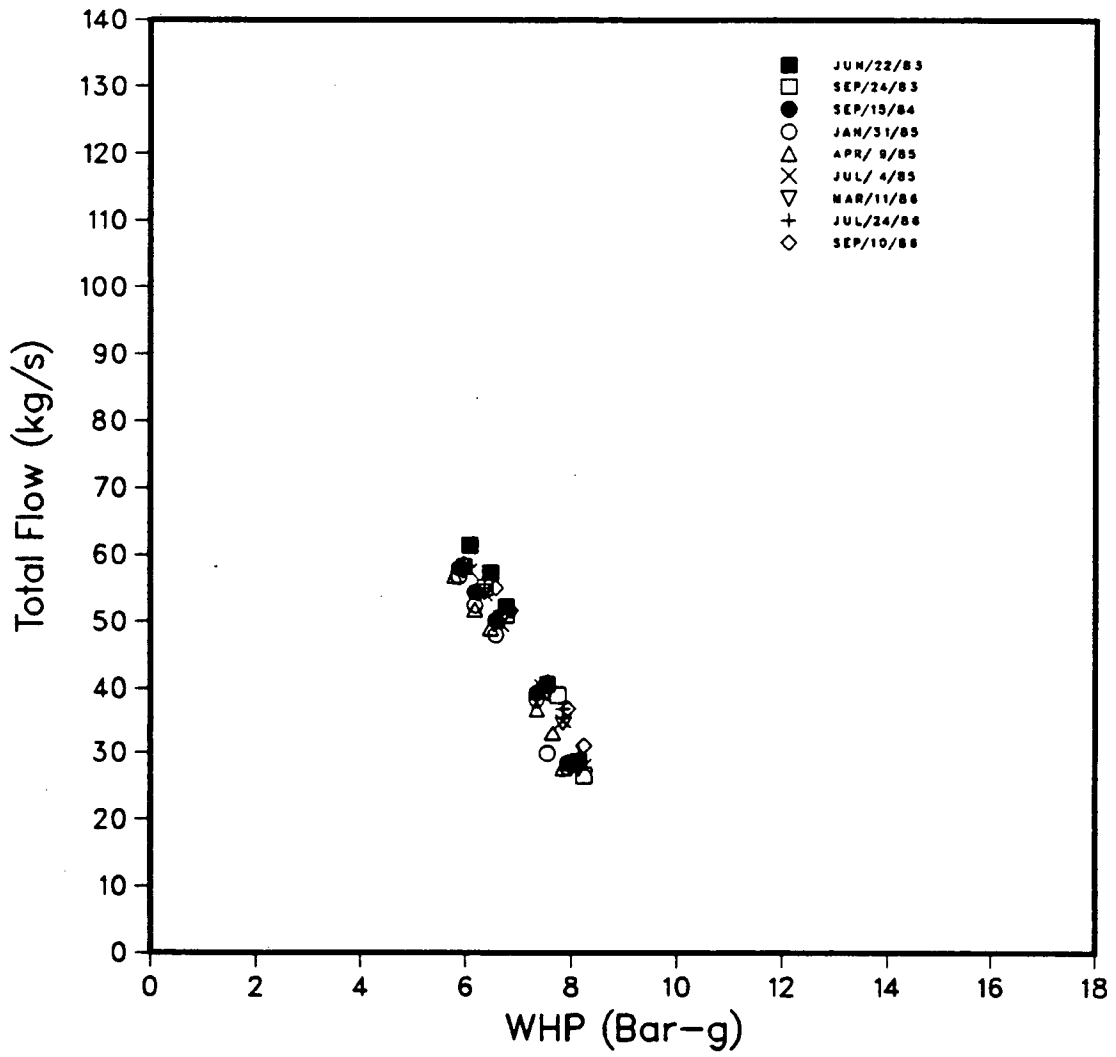
AH30 Injectivity Index Test



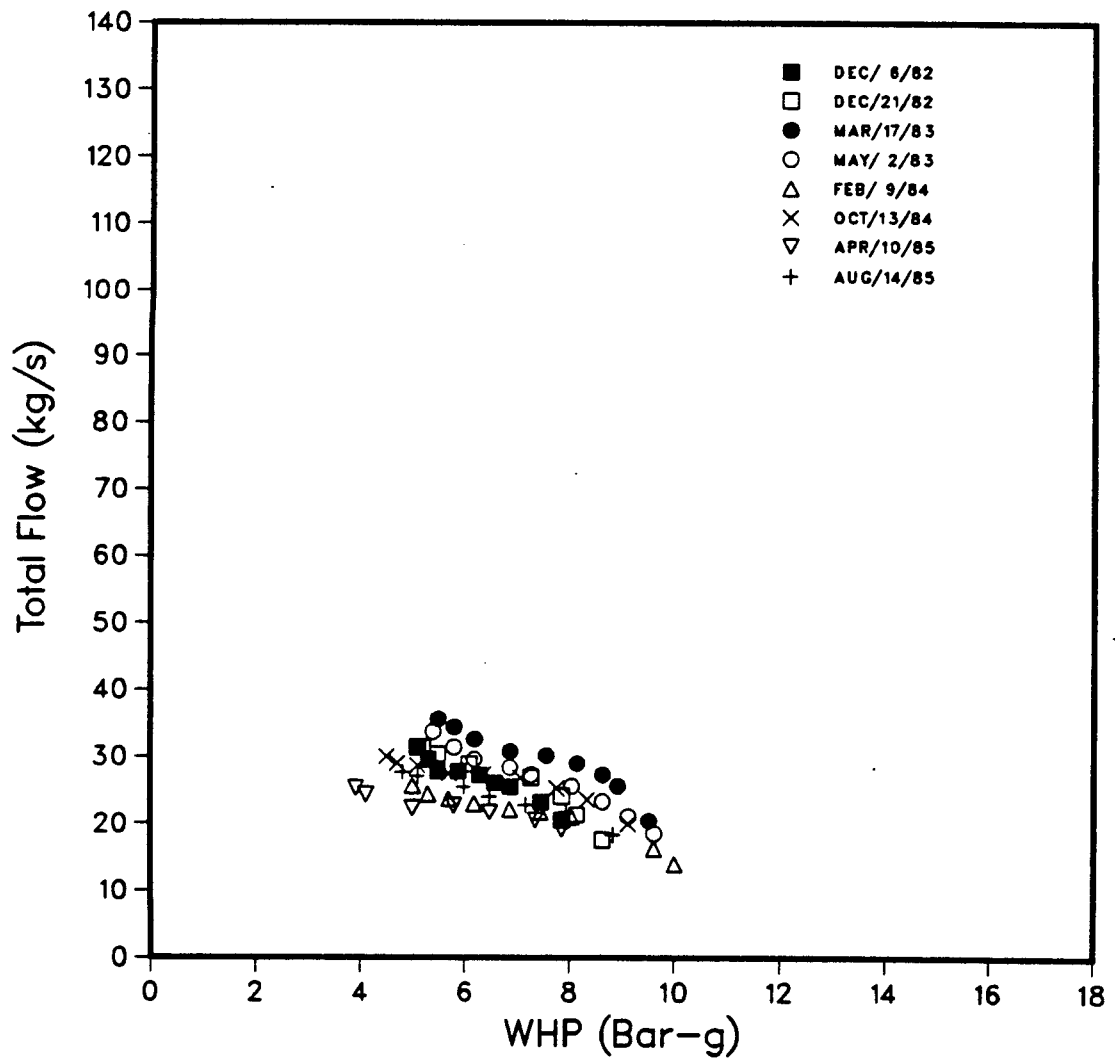
AH1 WHP vs. Flow



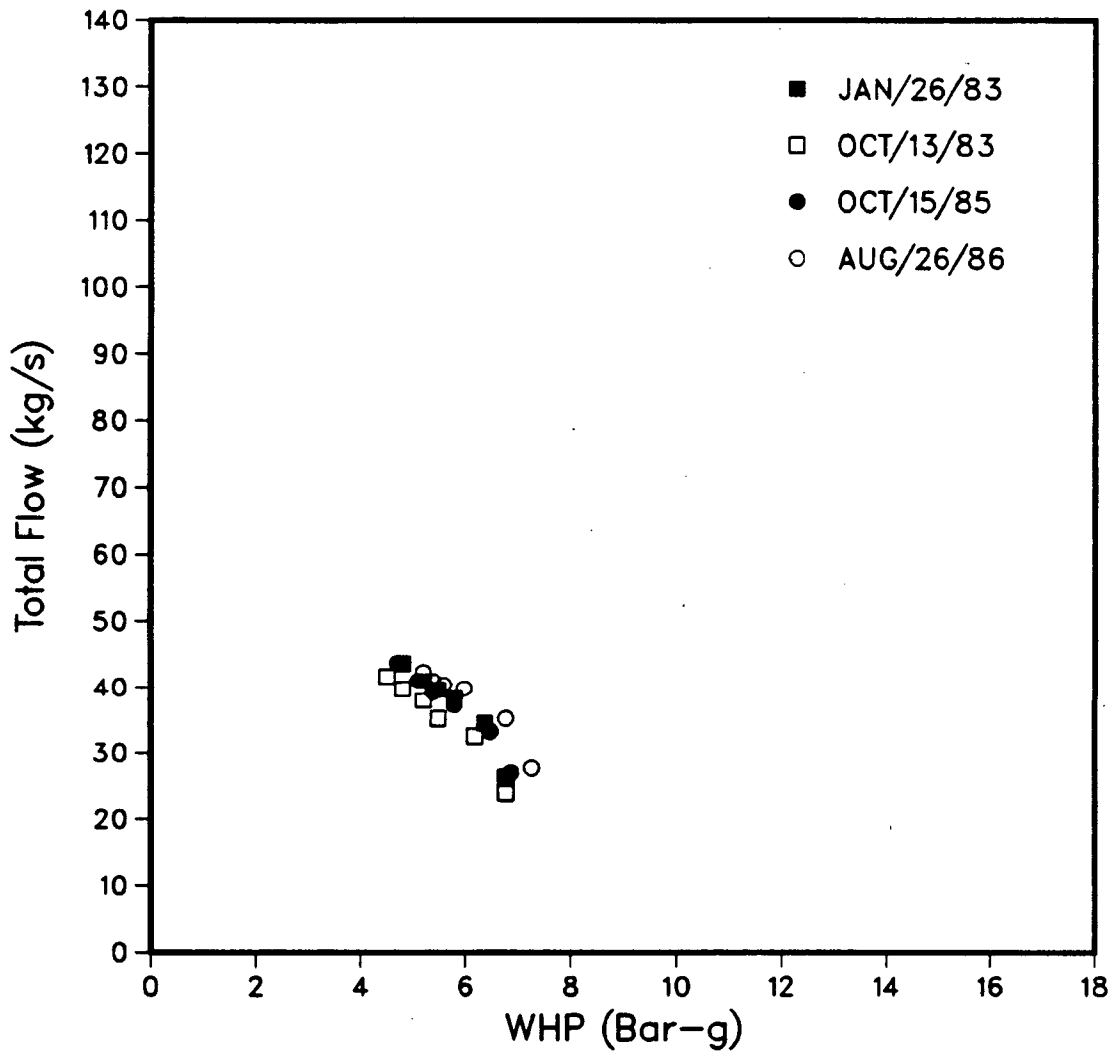
AH1 WHP vs. Flow



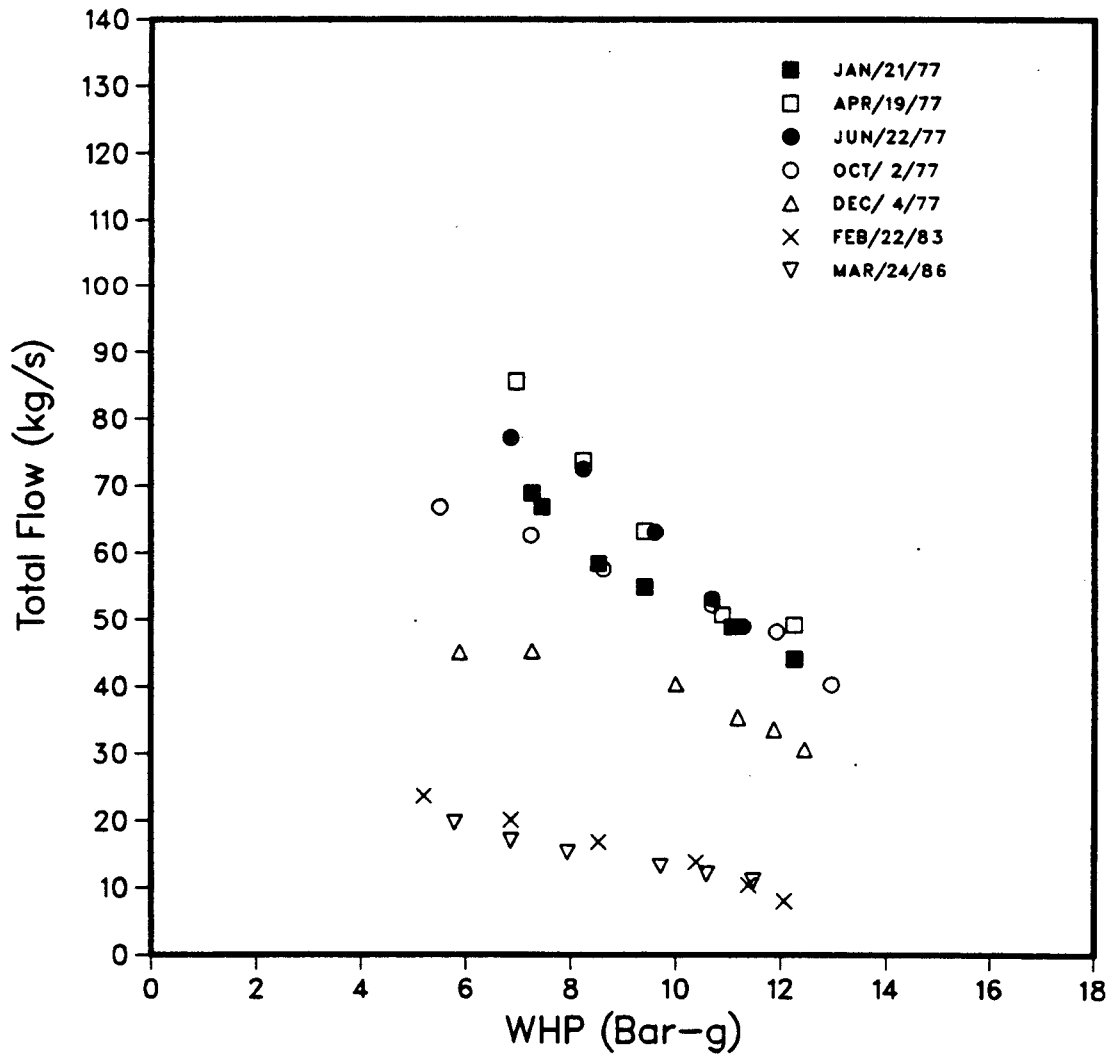
AH4 WHP vs. Flow



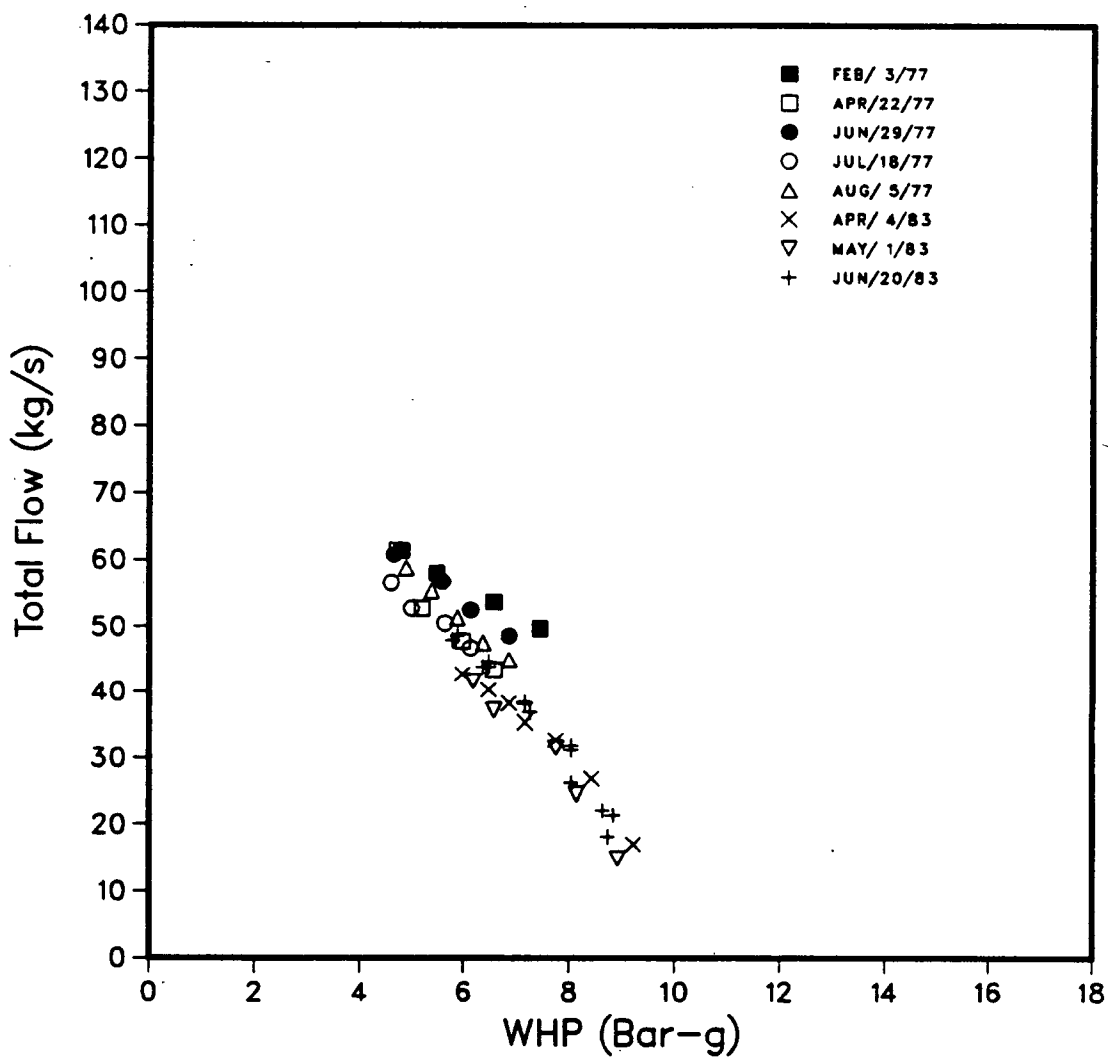
AH5 WHP vs. Flow



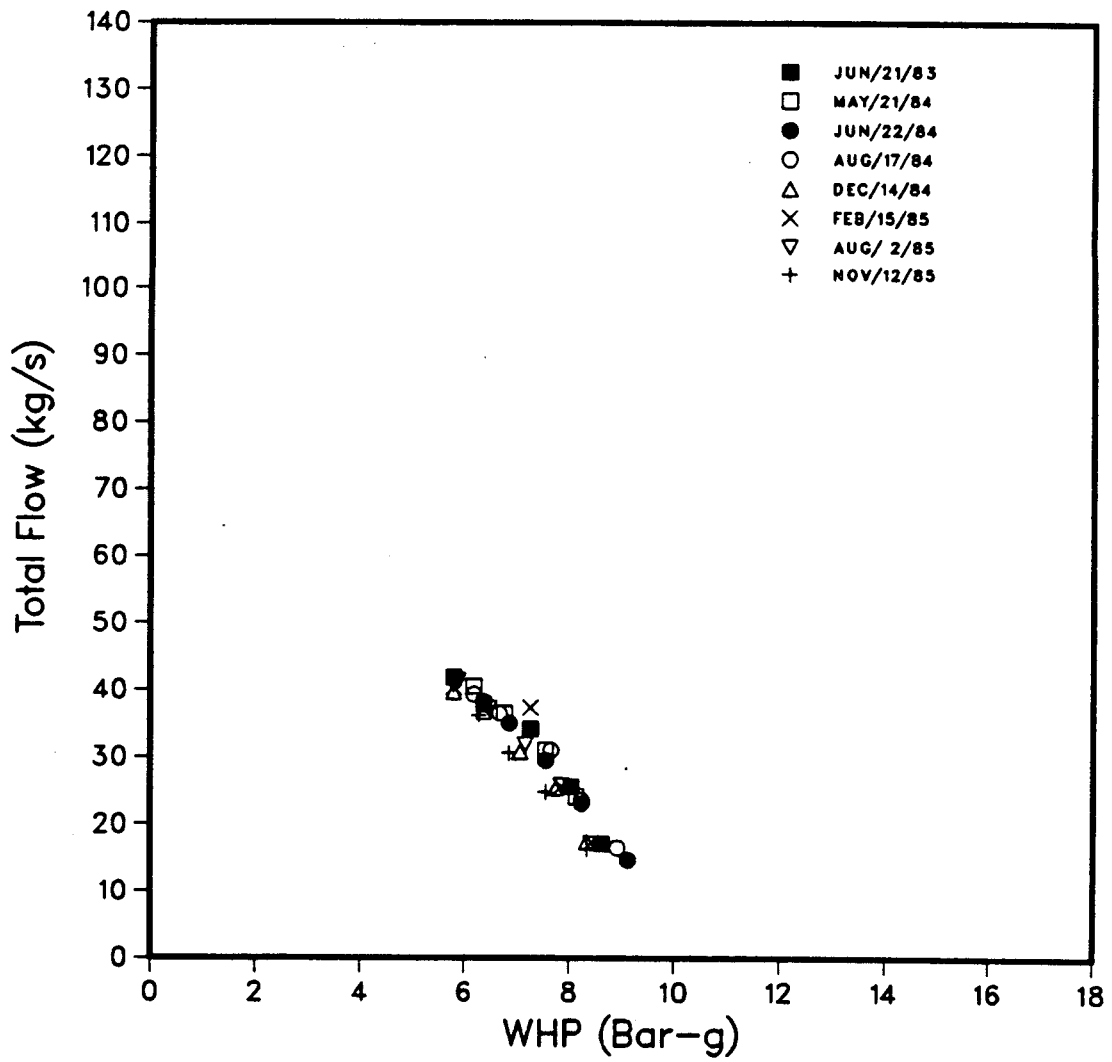
AH6 WHP vs. Flow



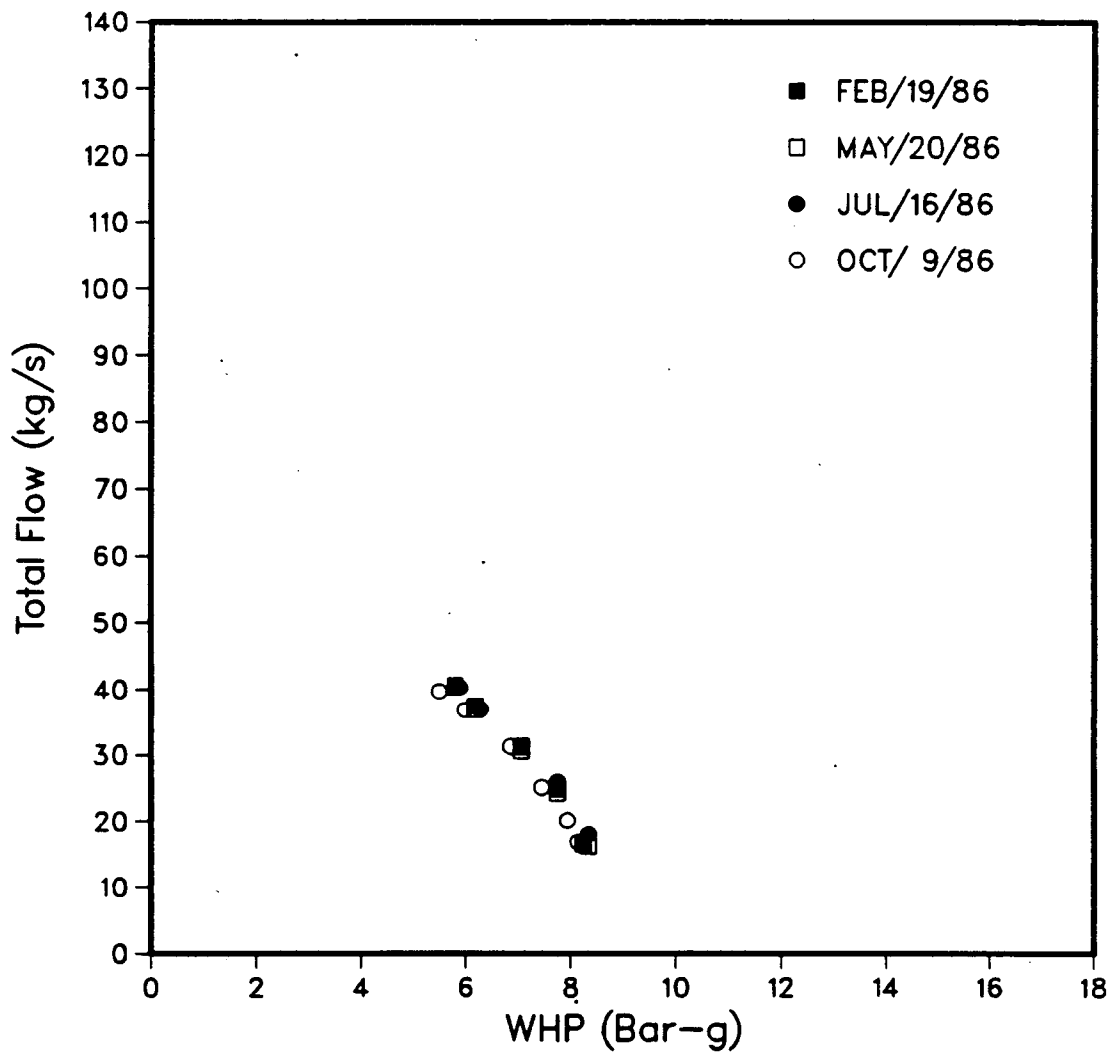
AH7 WHP vs. Flow



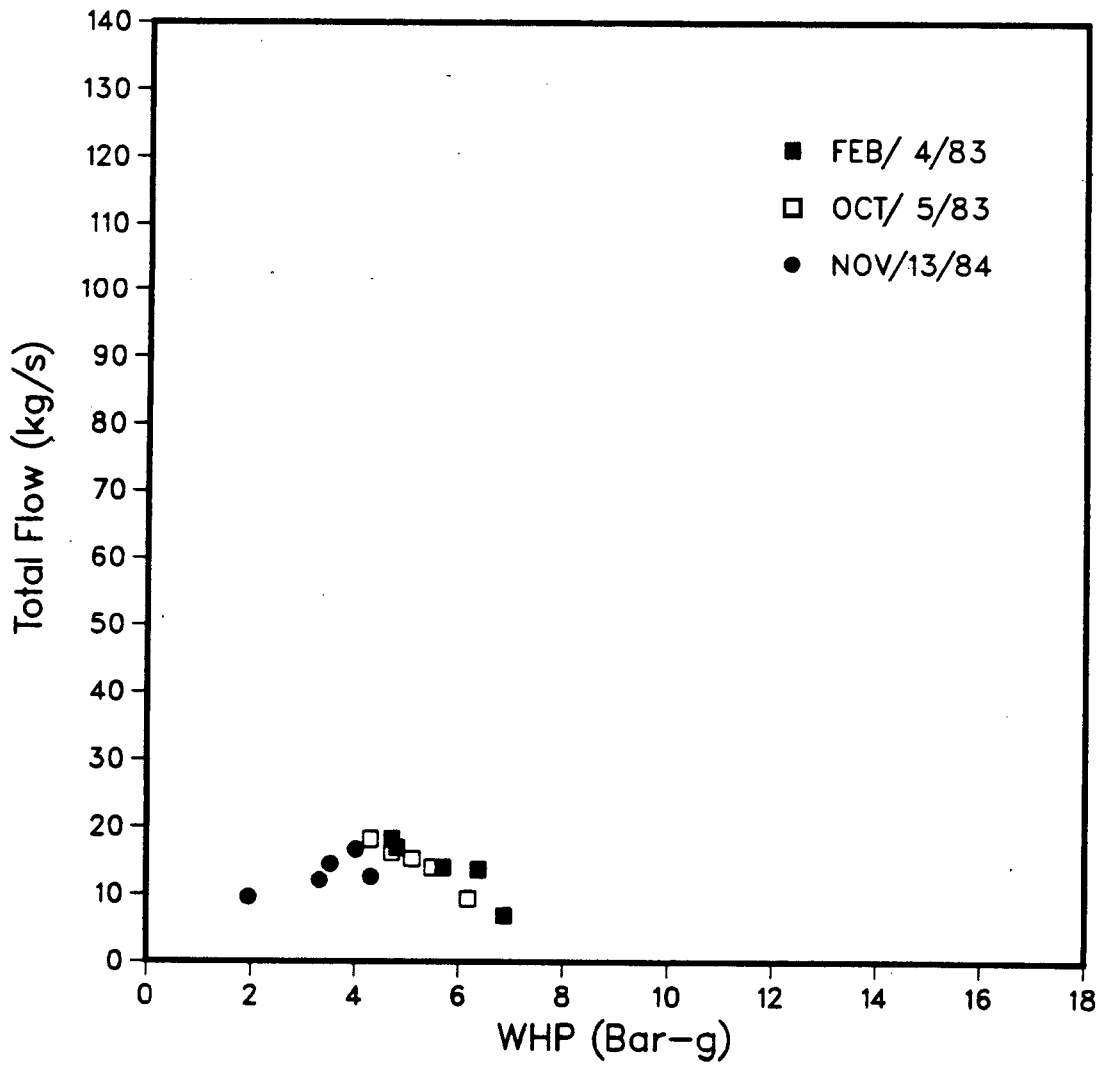
AH7 WHP vs. Flow



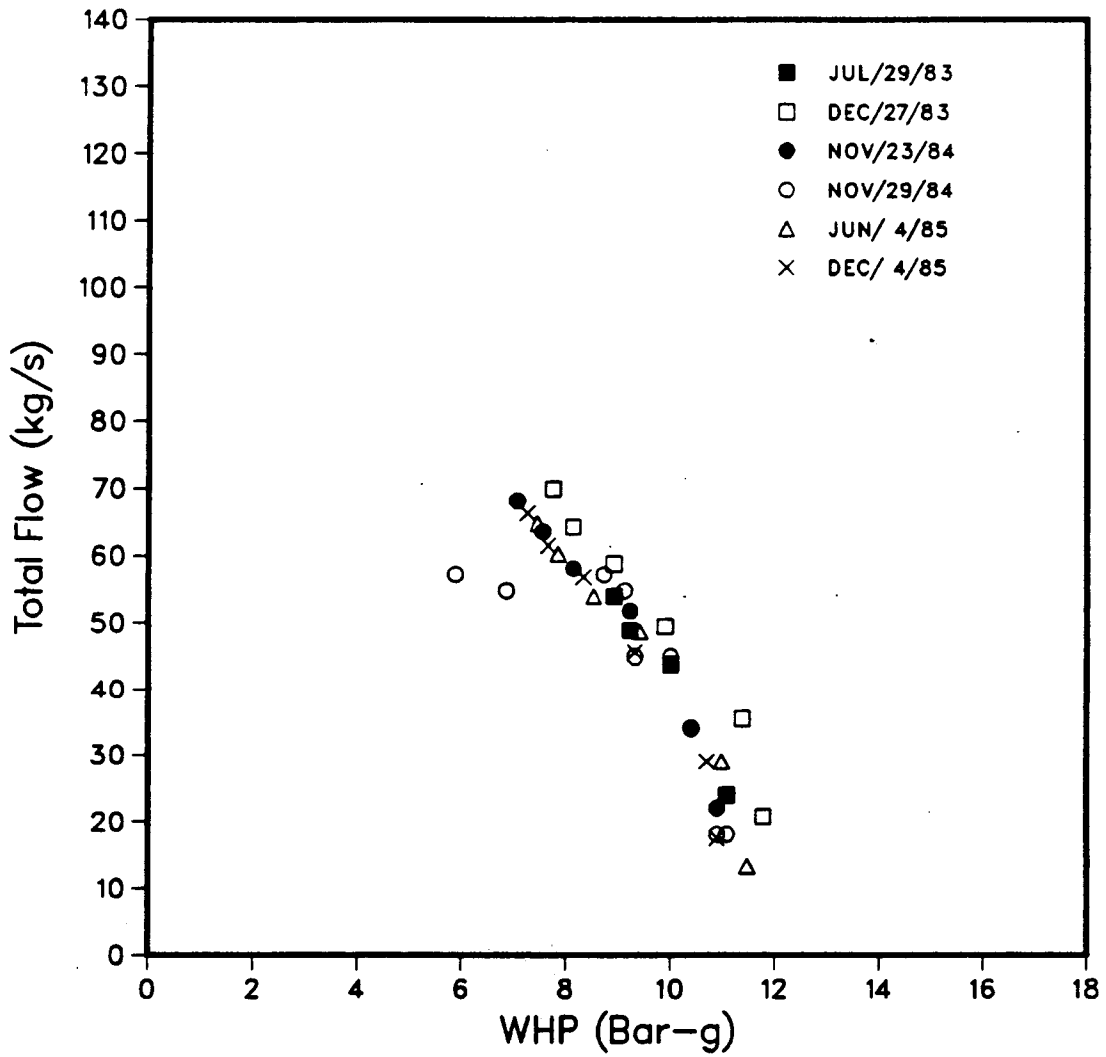
AH7 WHP vs. Flow



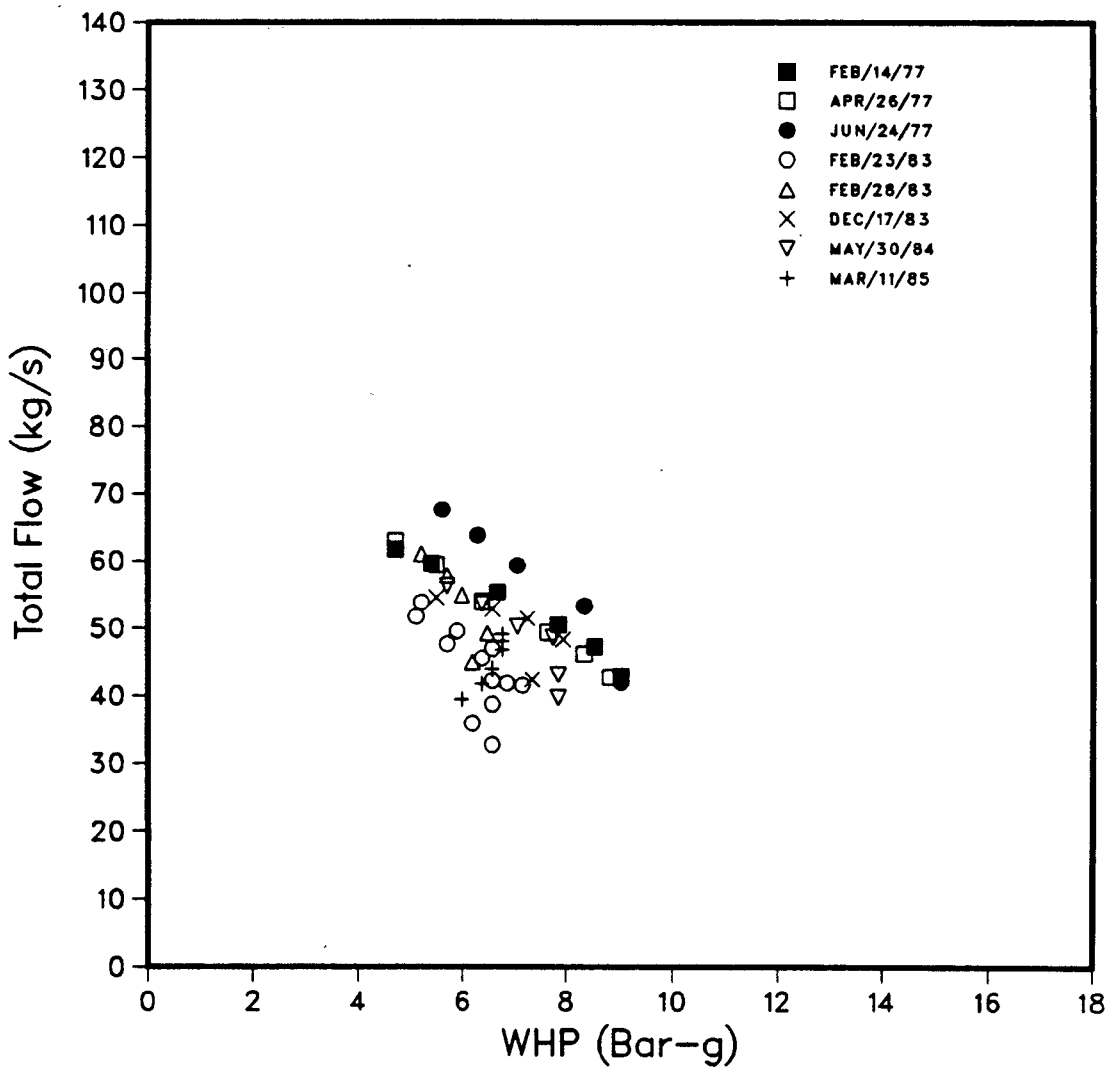
AH16 WHP vs. Flow



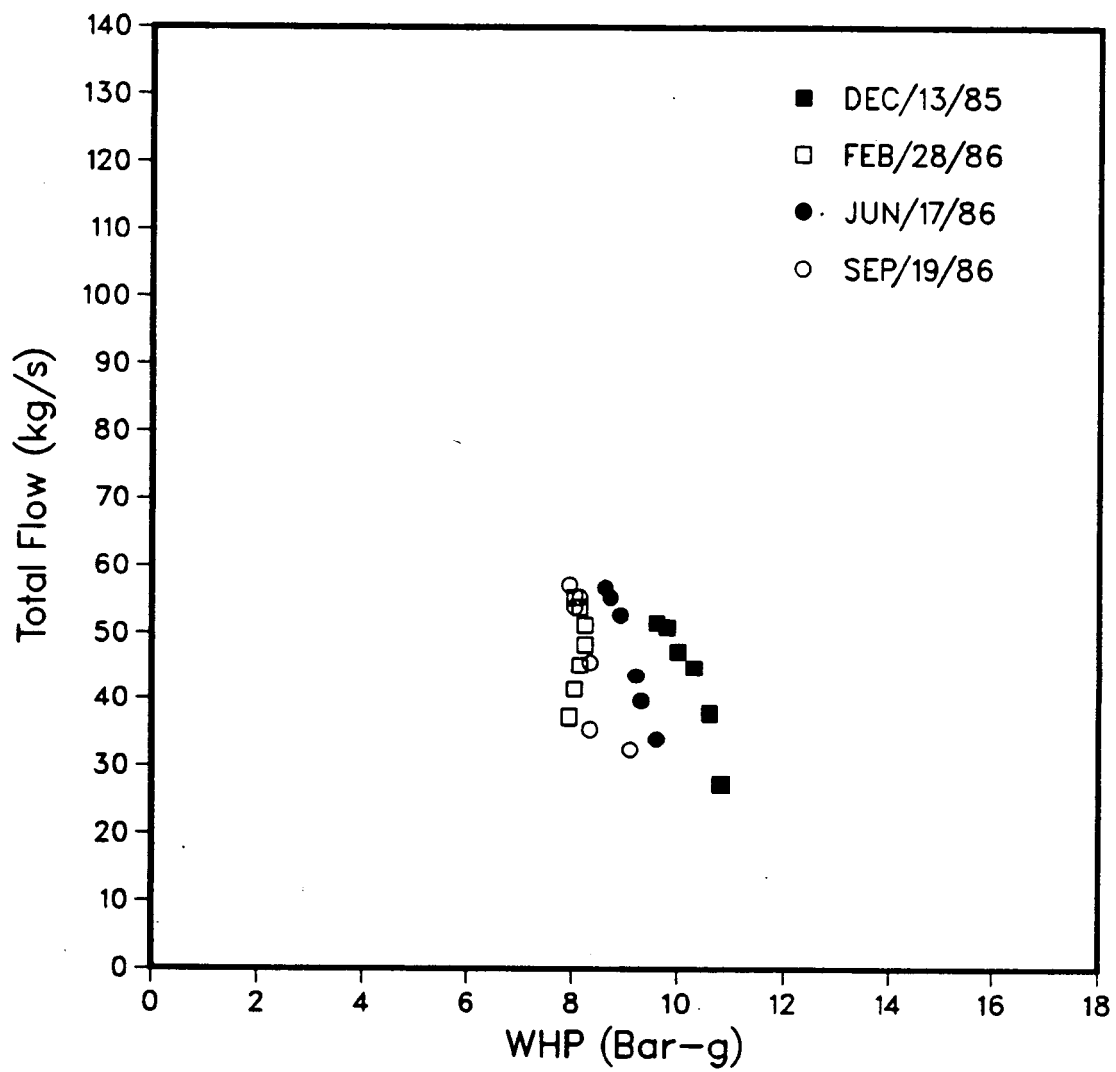
AH19 WHP vs. Flow



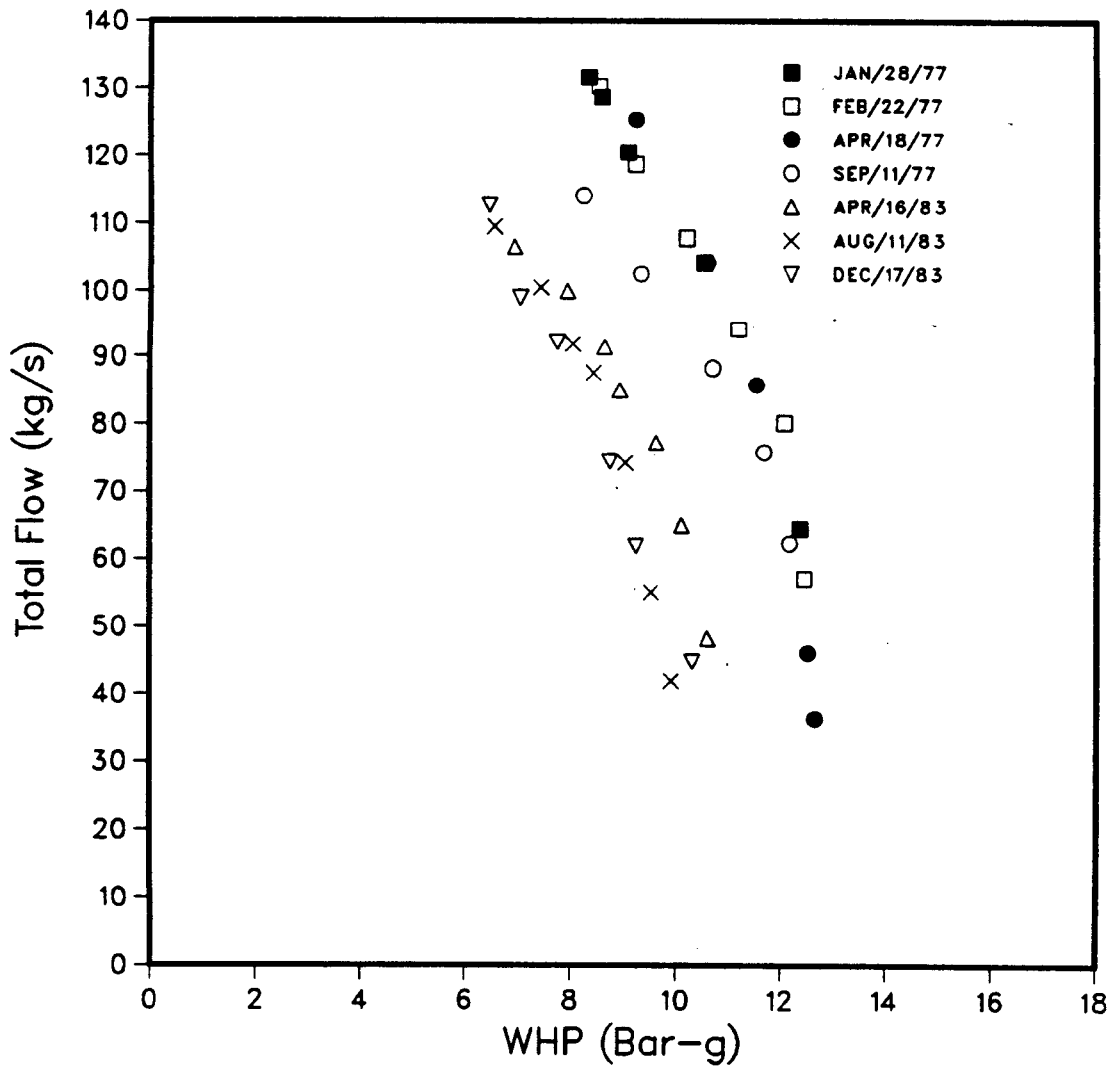
AH20 WHP vs. Flow



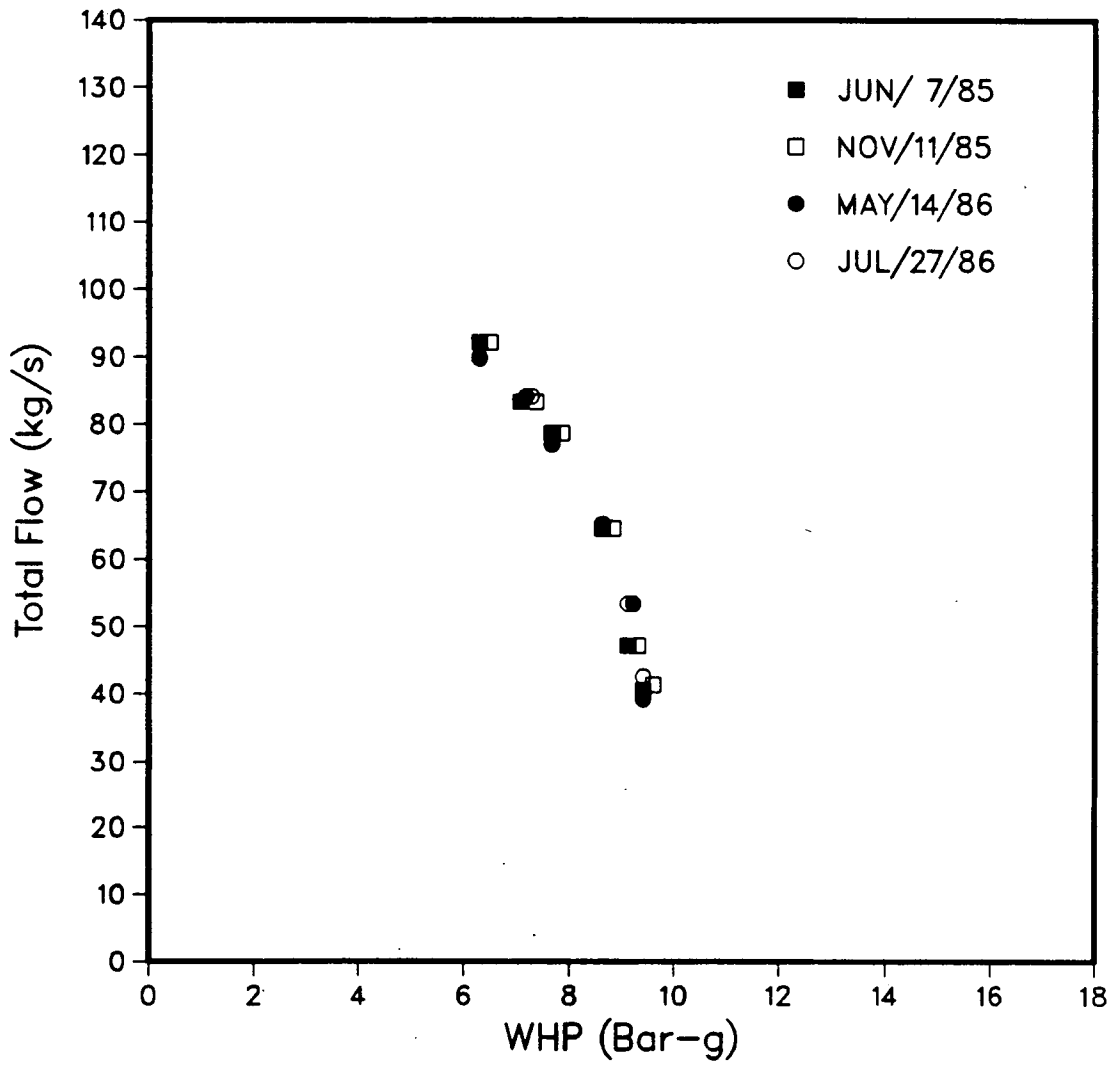
AH20 WHP vs. Flow



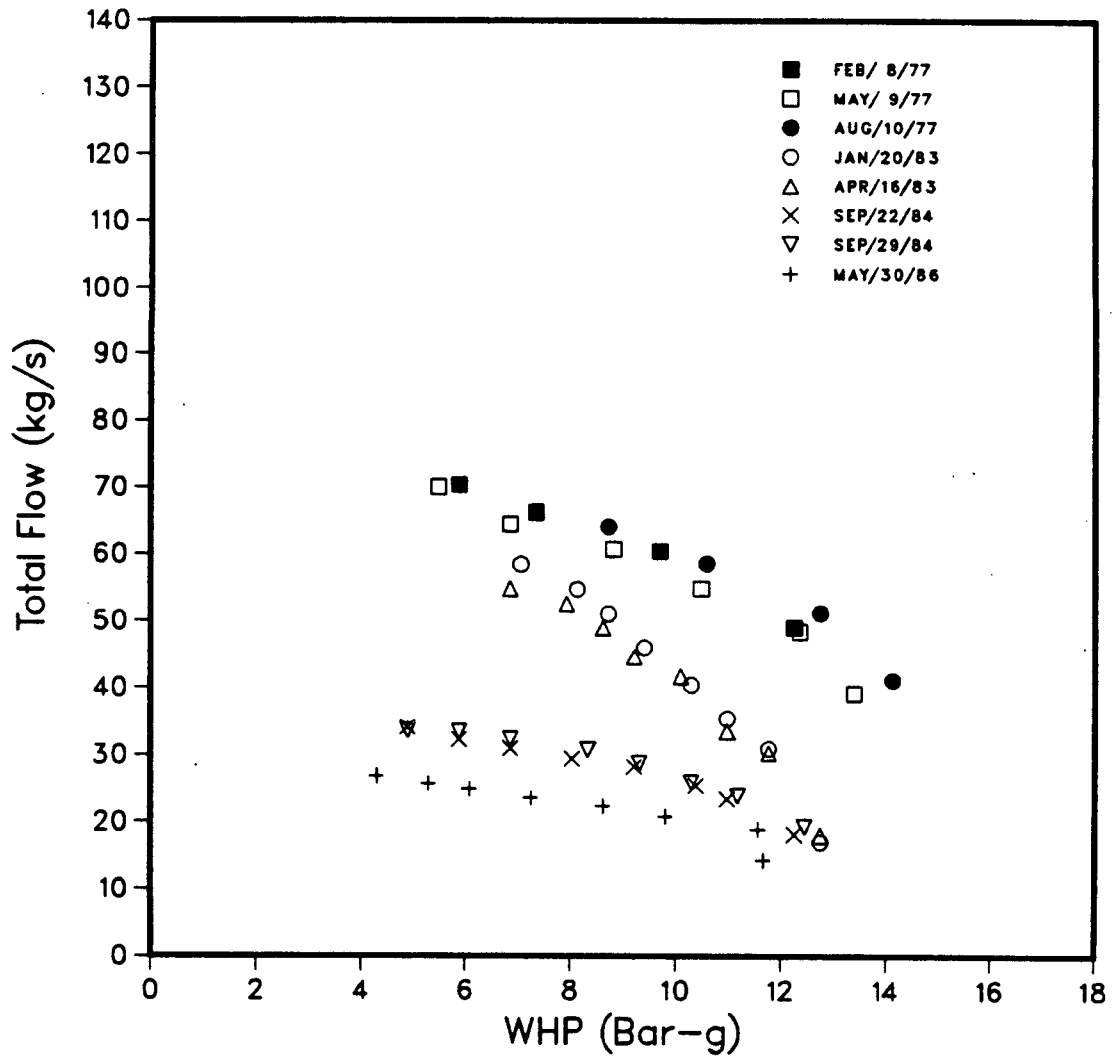
AH21 WHP vs. Flow



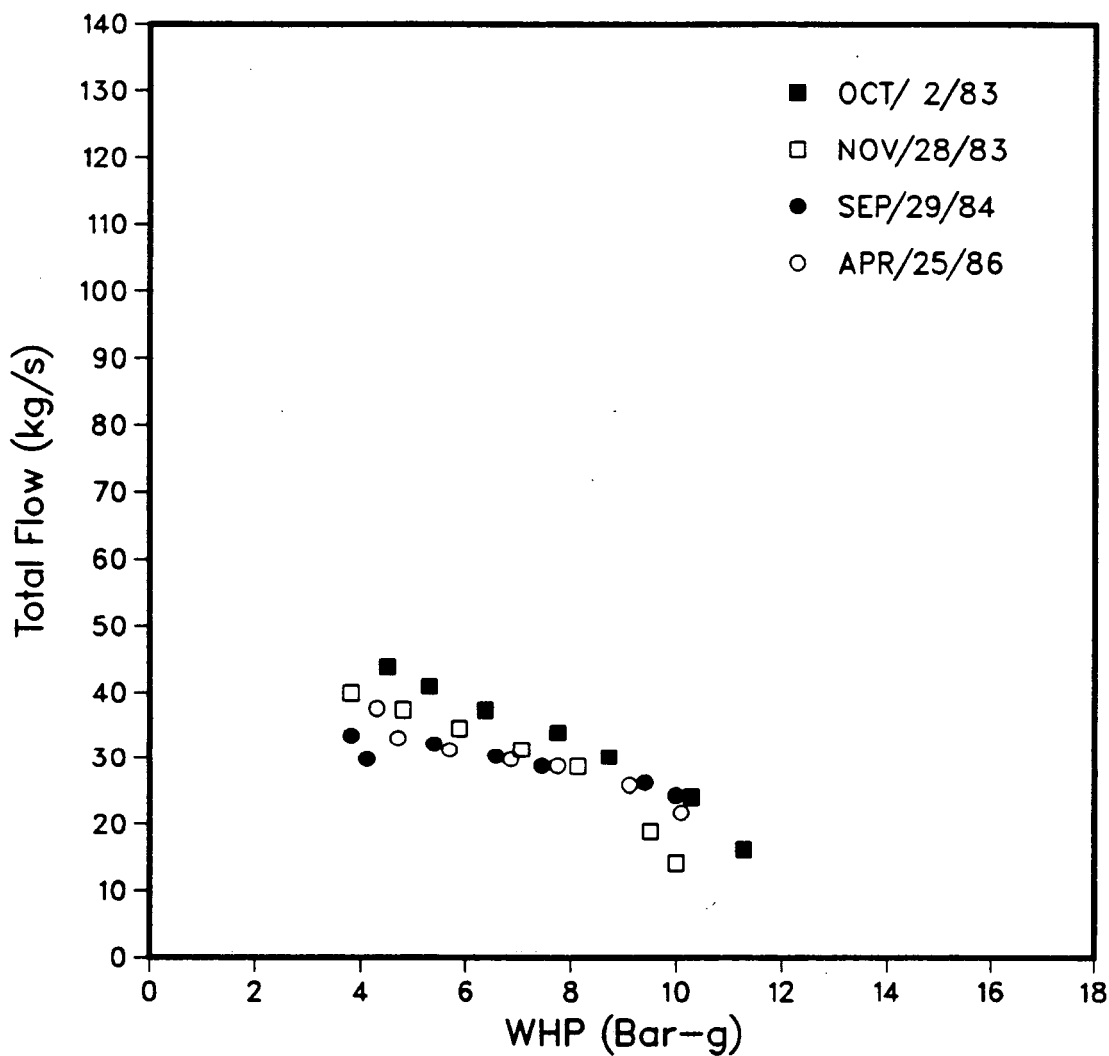
AH21 WHP vs. Flow



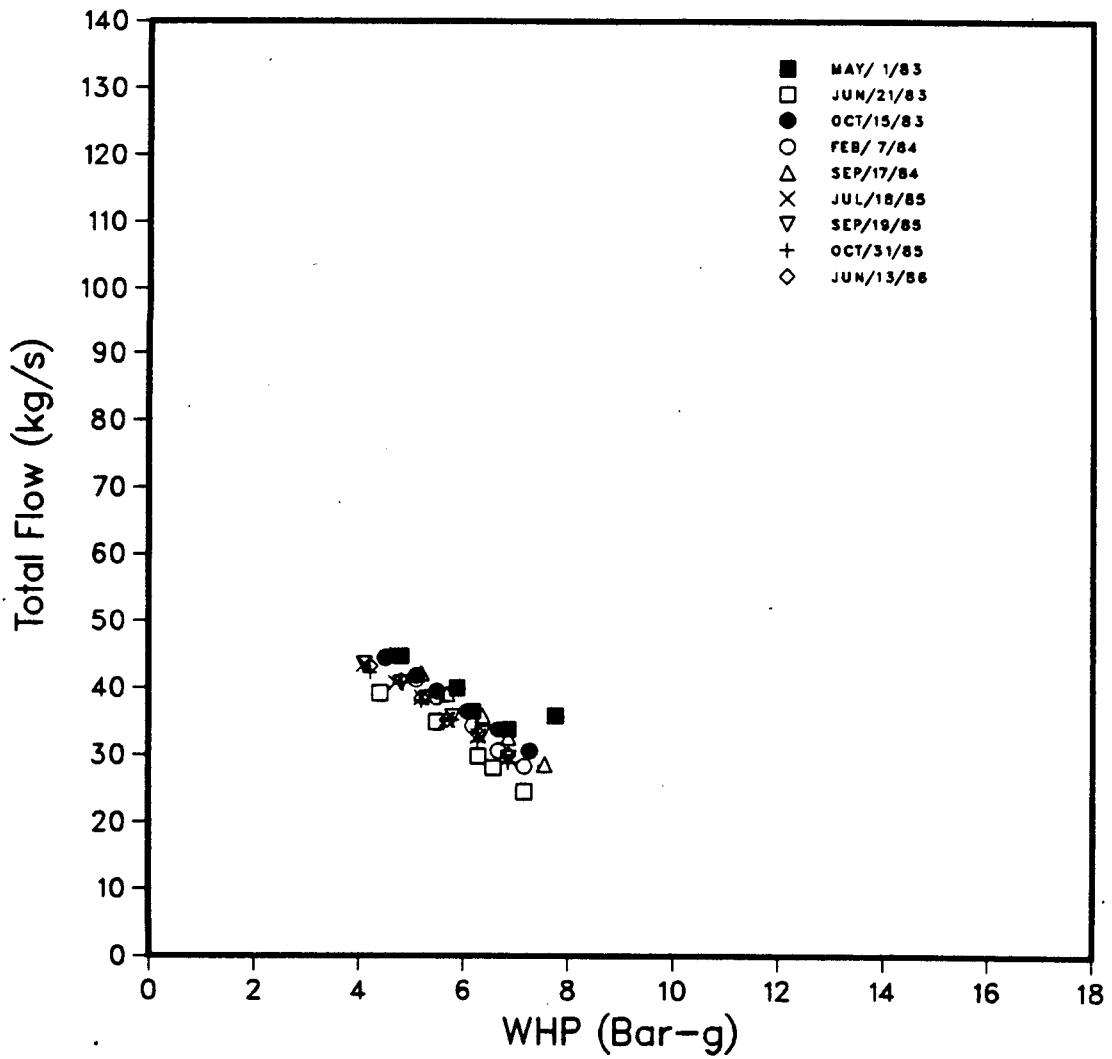
AH22 WHP vs. Flow



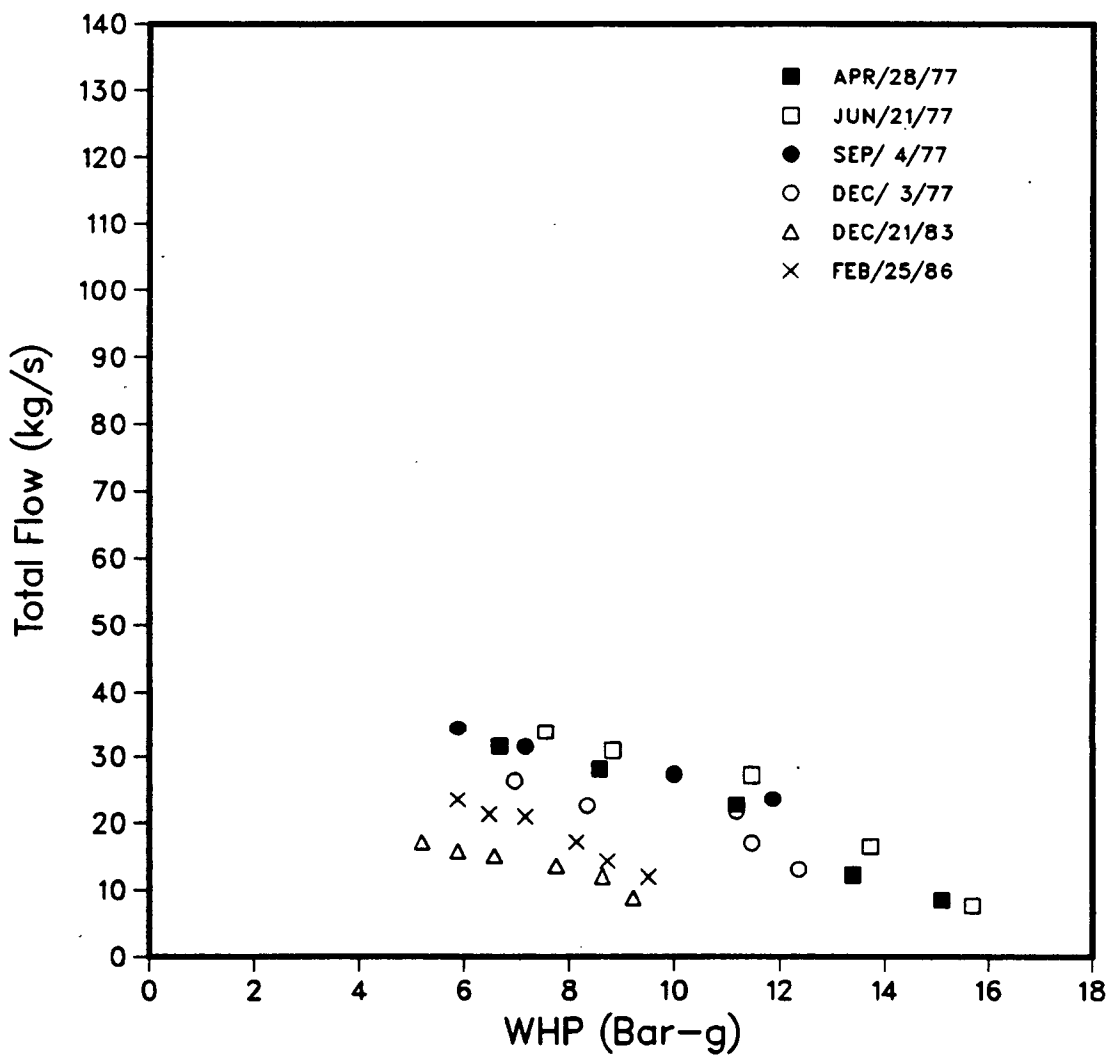
AH23 WHP vs. Flow



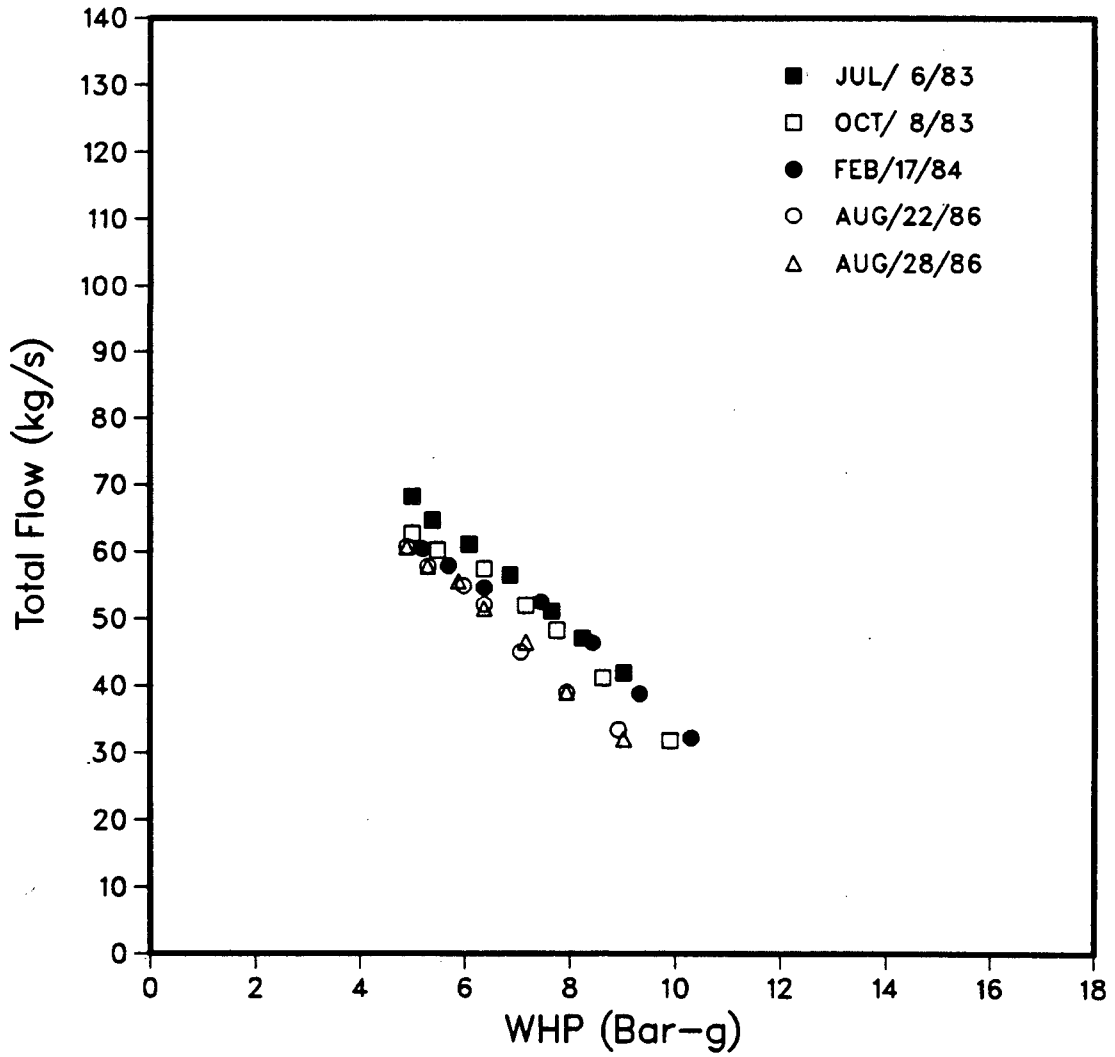
AH24 WHP vs. Flow



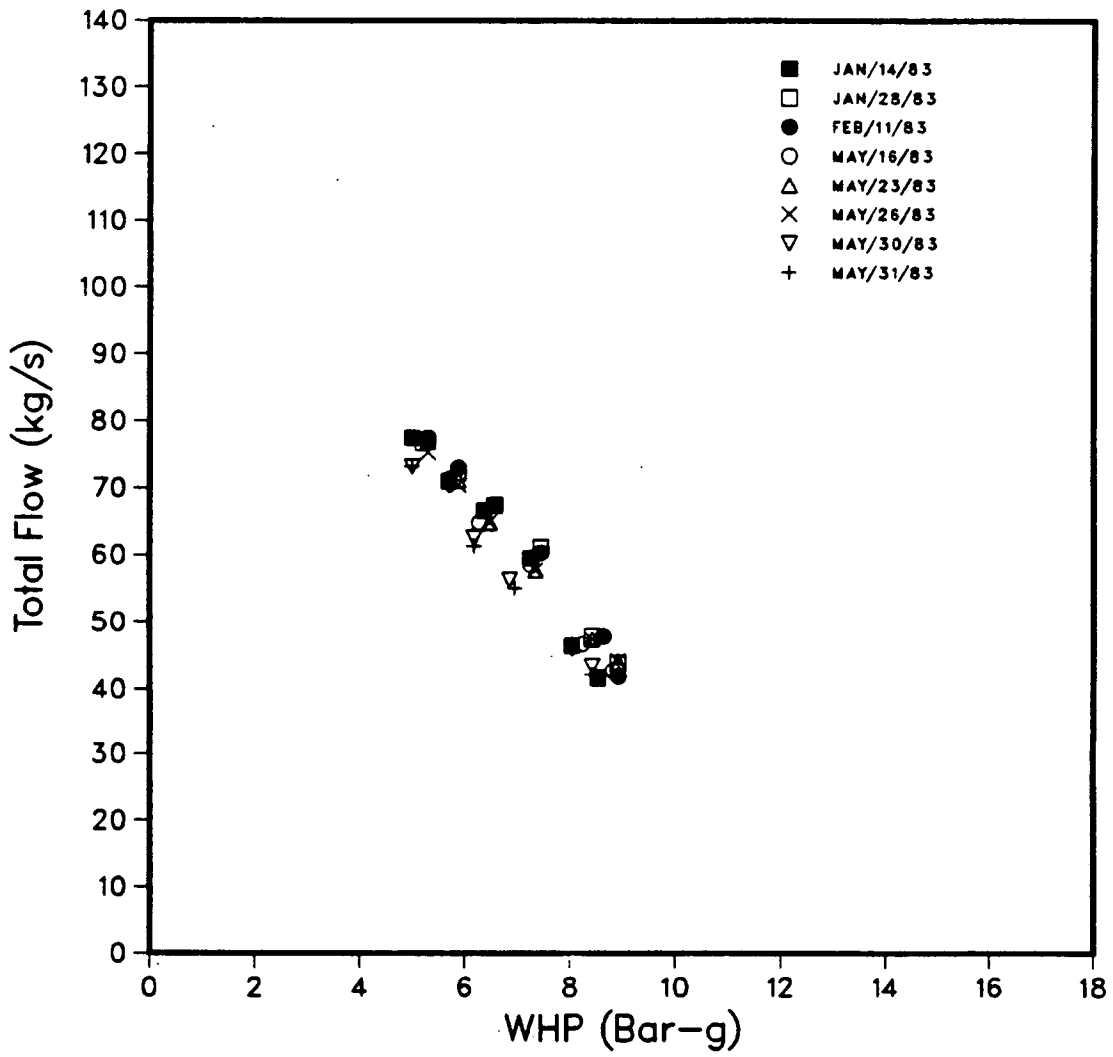
AH26 WHP vs. Flow



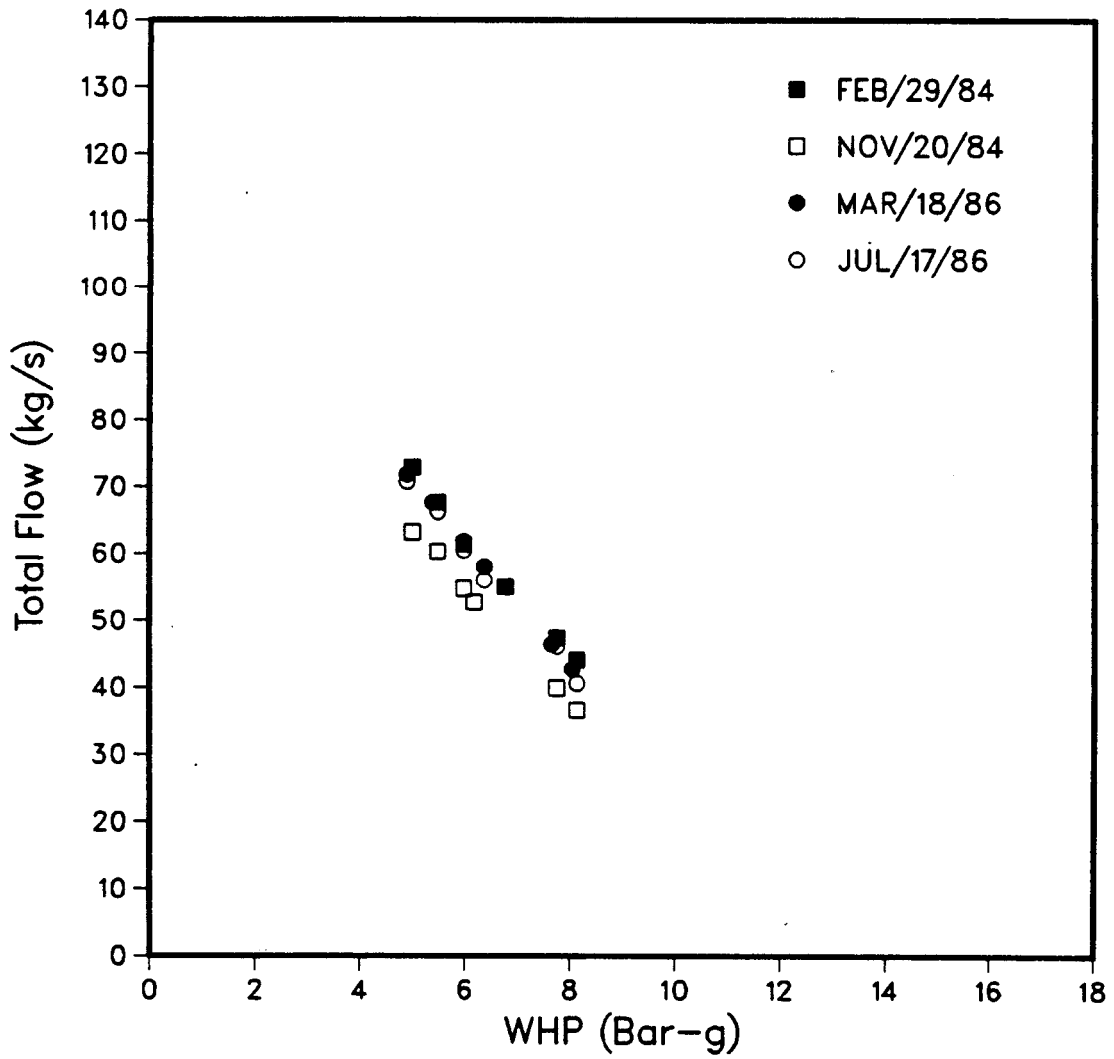
AH27 WHP vs. Flow



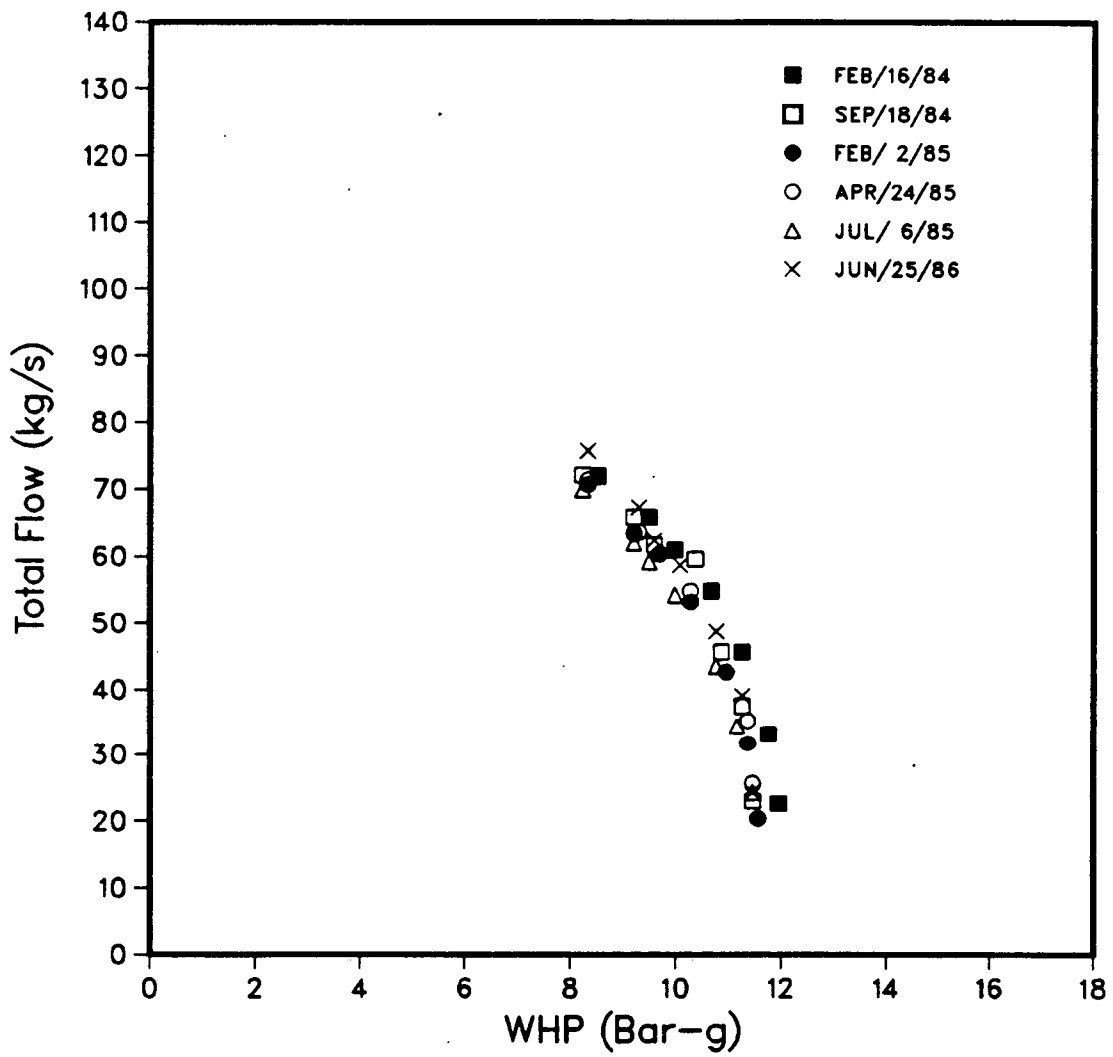
AH28 WHP vs. Flow



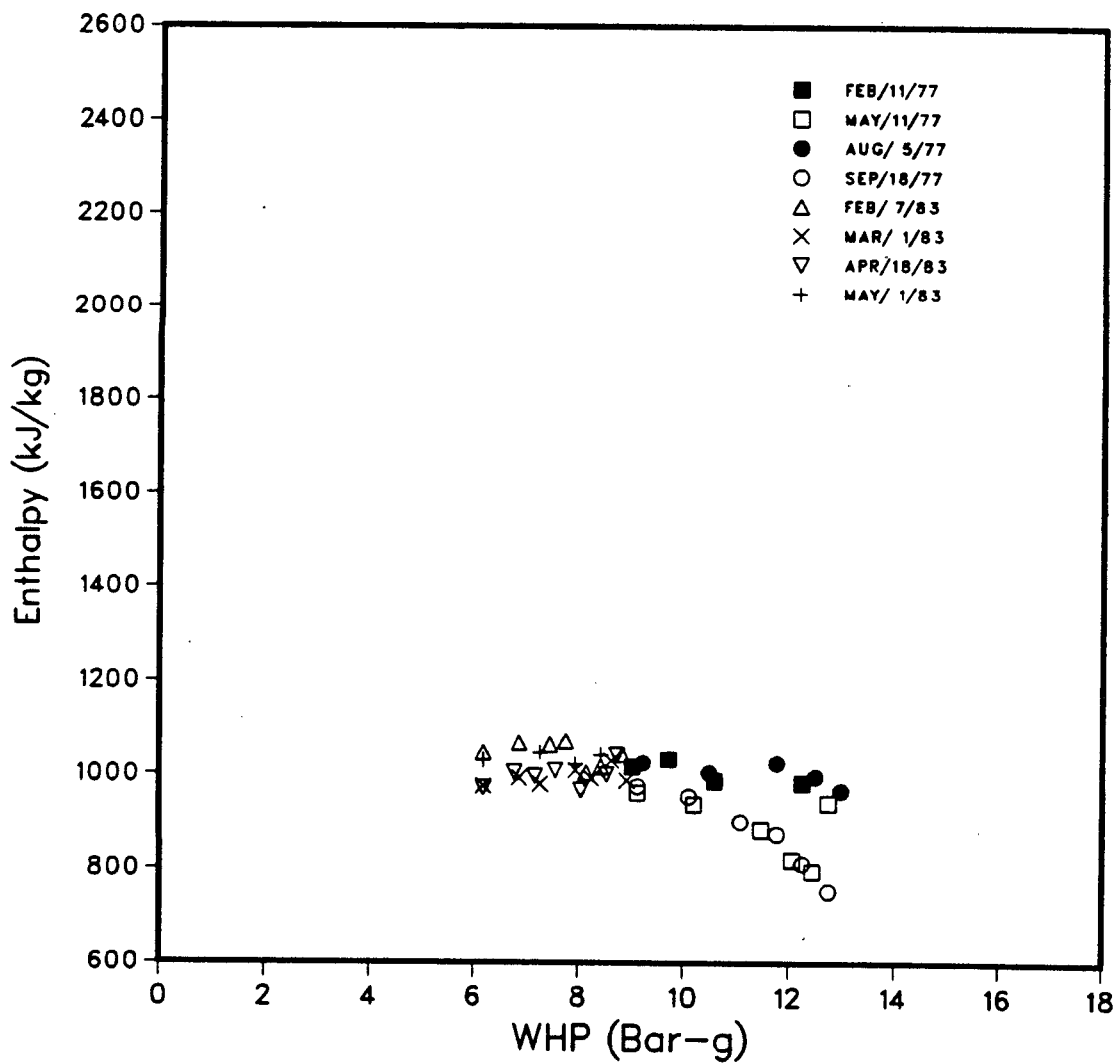
AH28 WHP vs. Flow



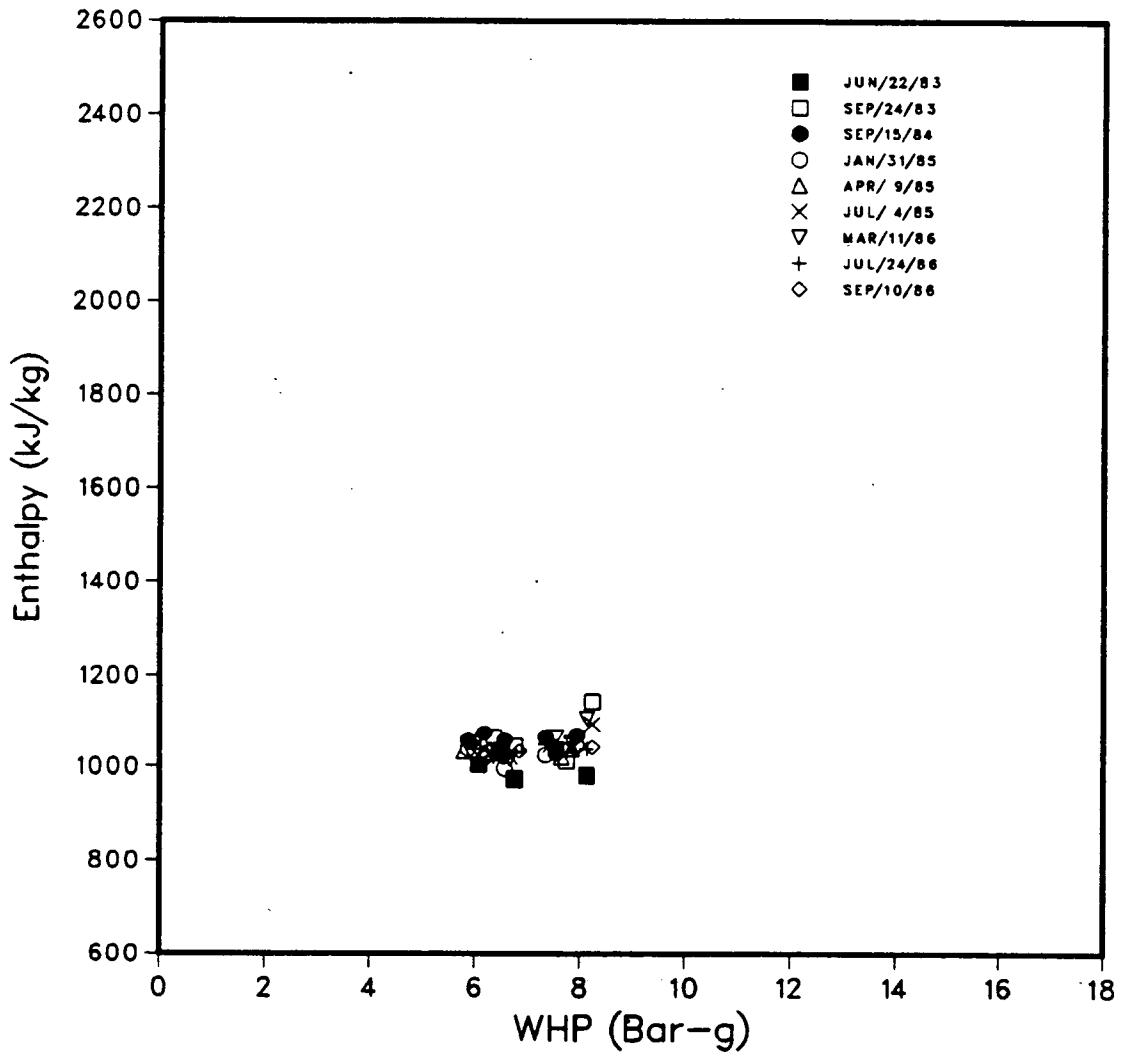
AH31 WHP vs. Flow



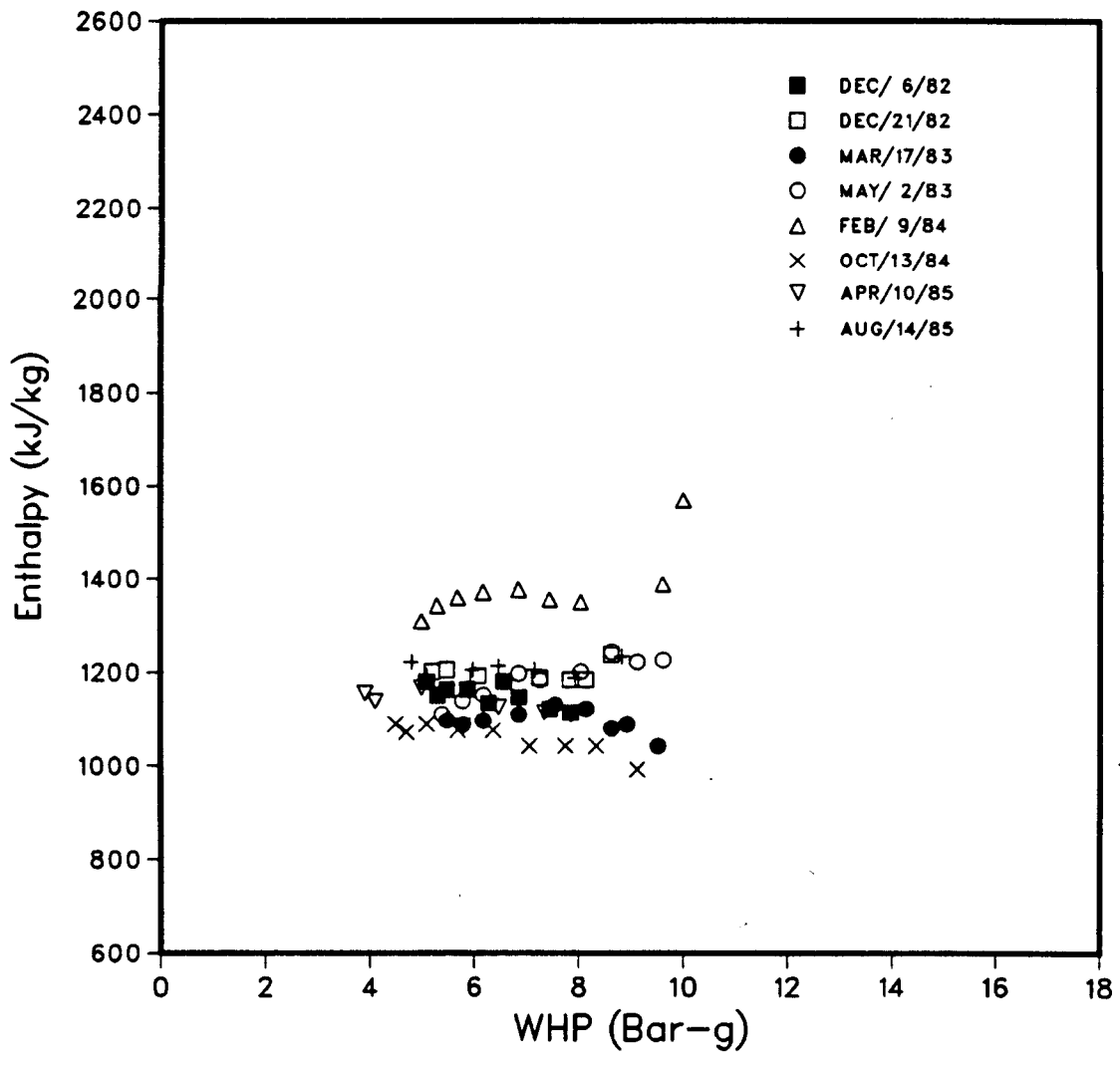
AH1 WHP vs. Enthalpy



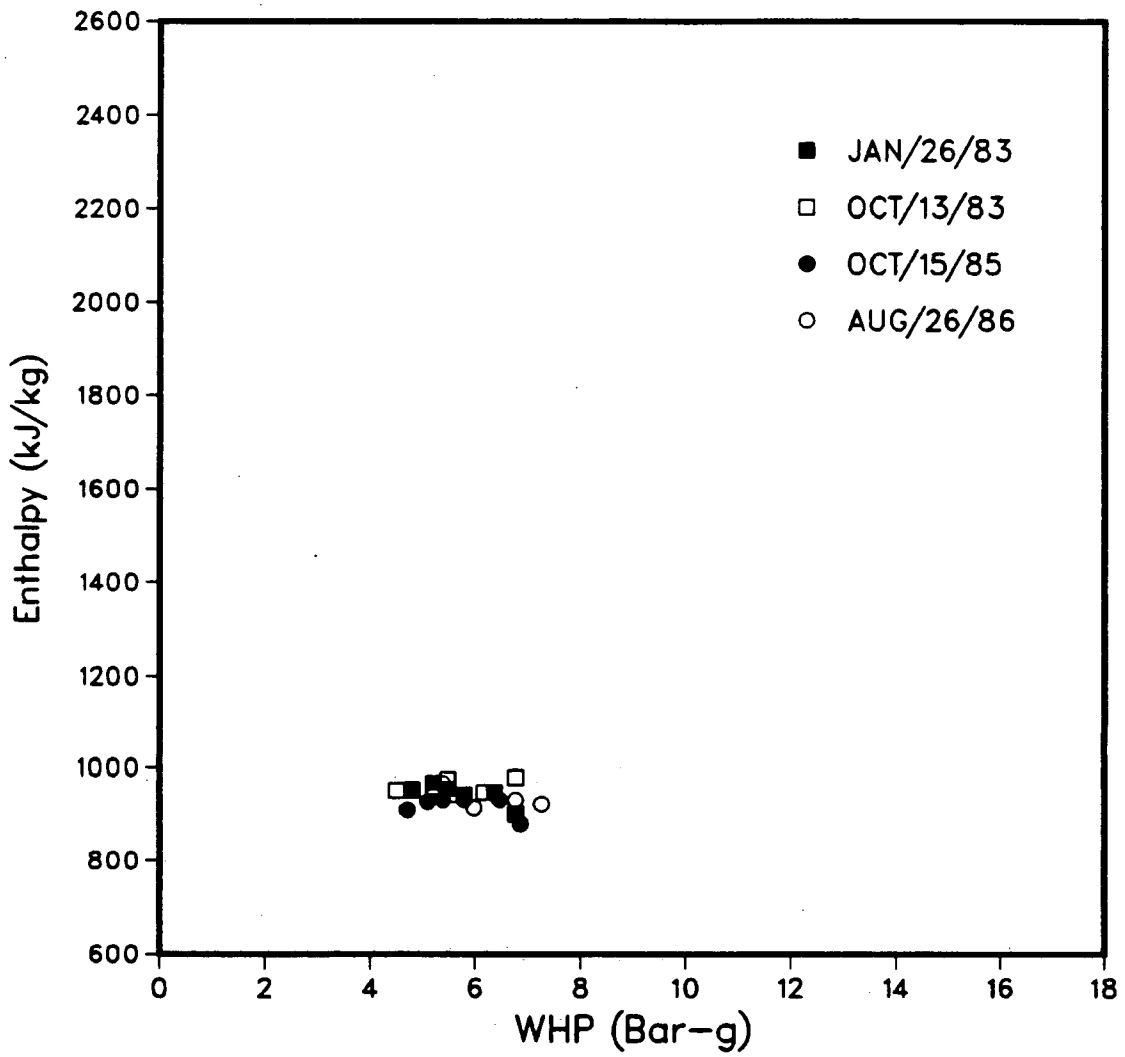
AH1 WHP vs. Enthalpy



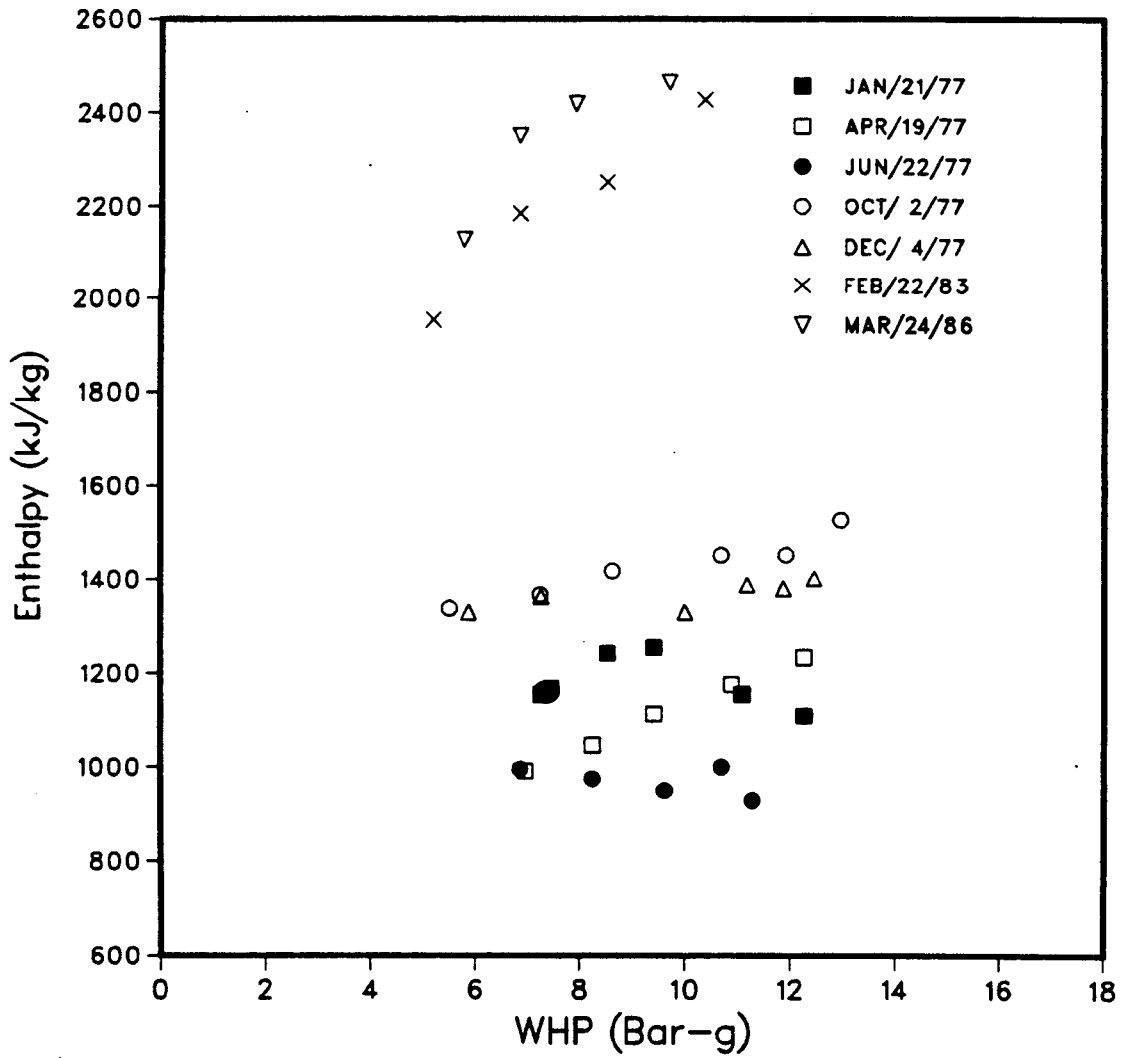
AH4 WHP vs. Enthalpy



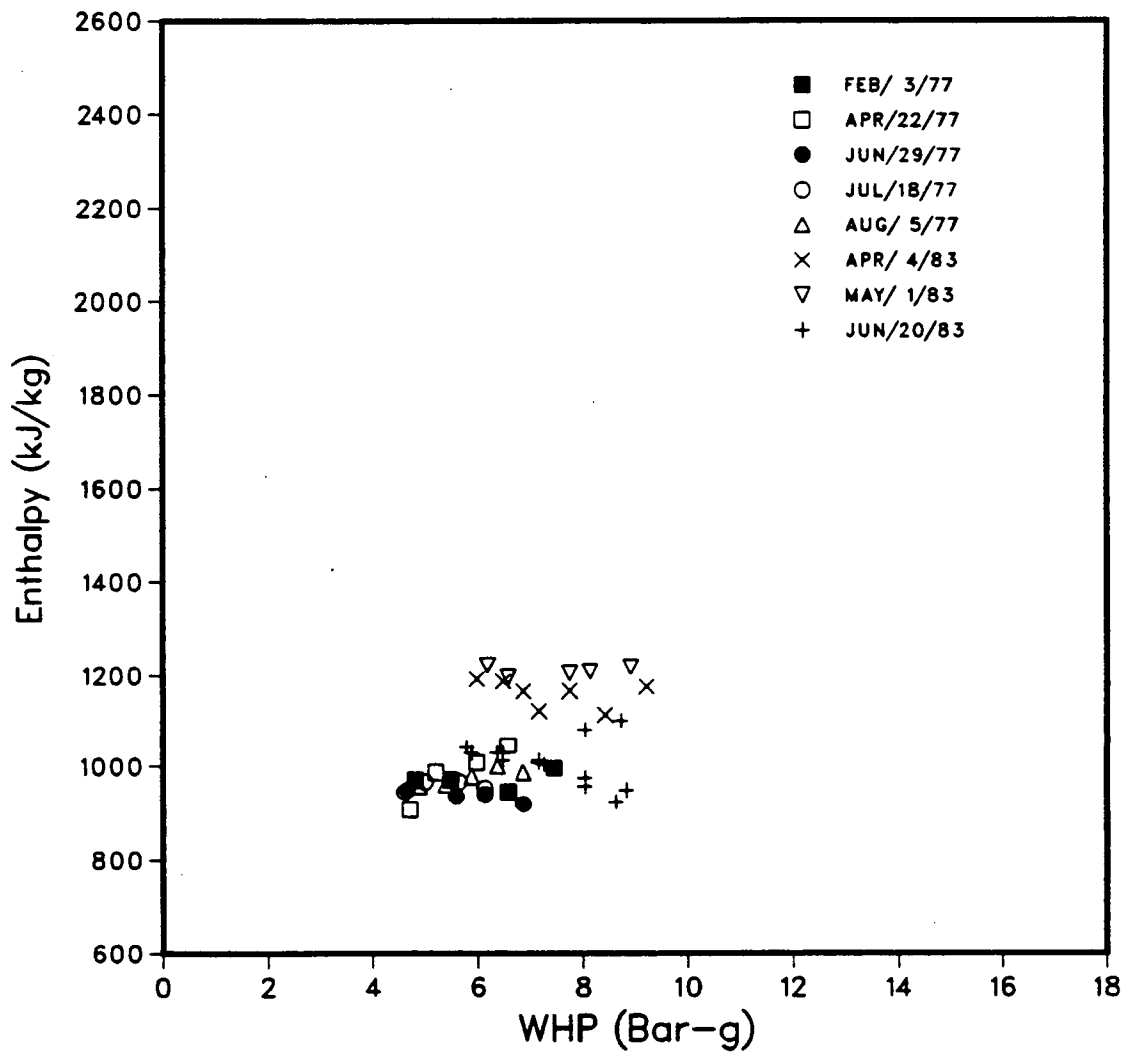
AH5 WHP vs. Enthalpy



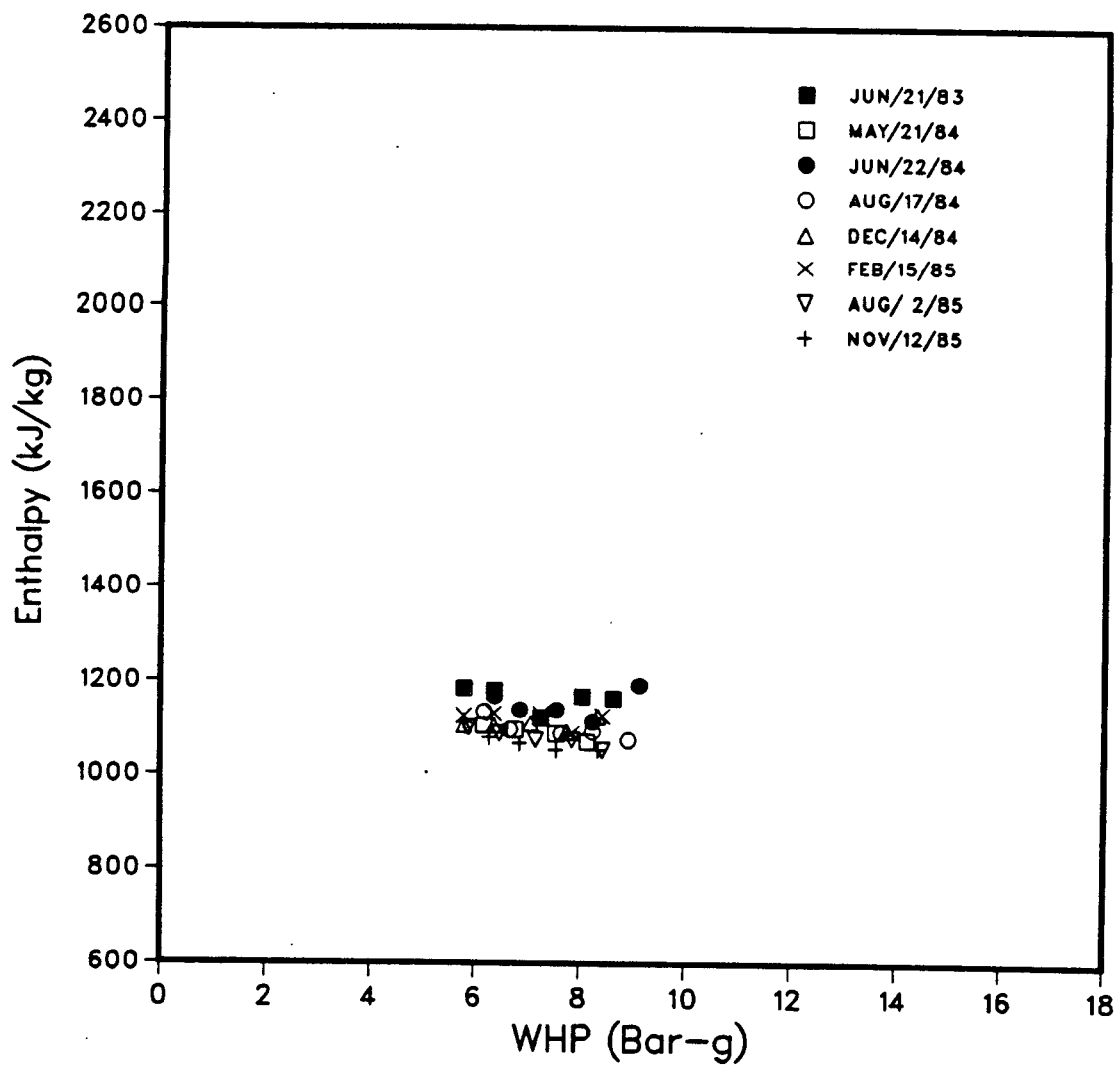
AH6 WHP vs. Enthalpy



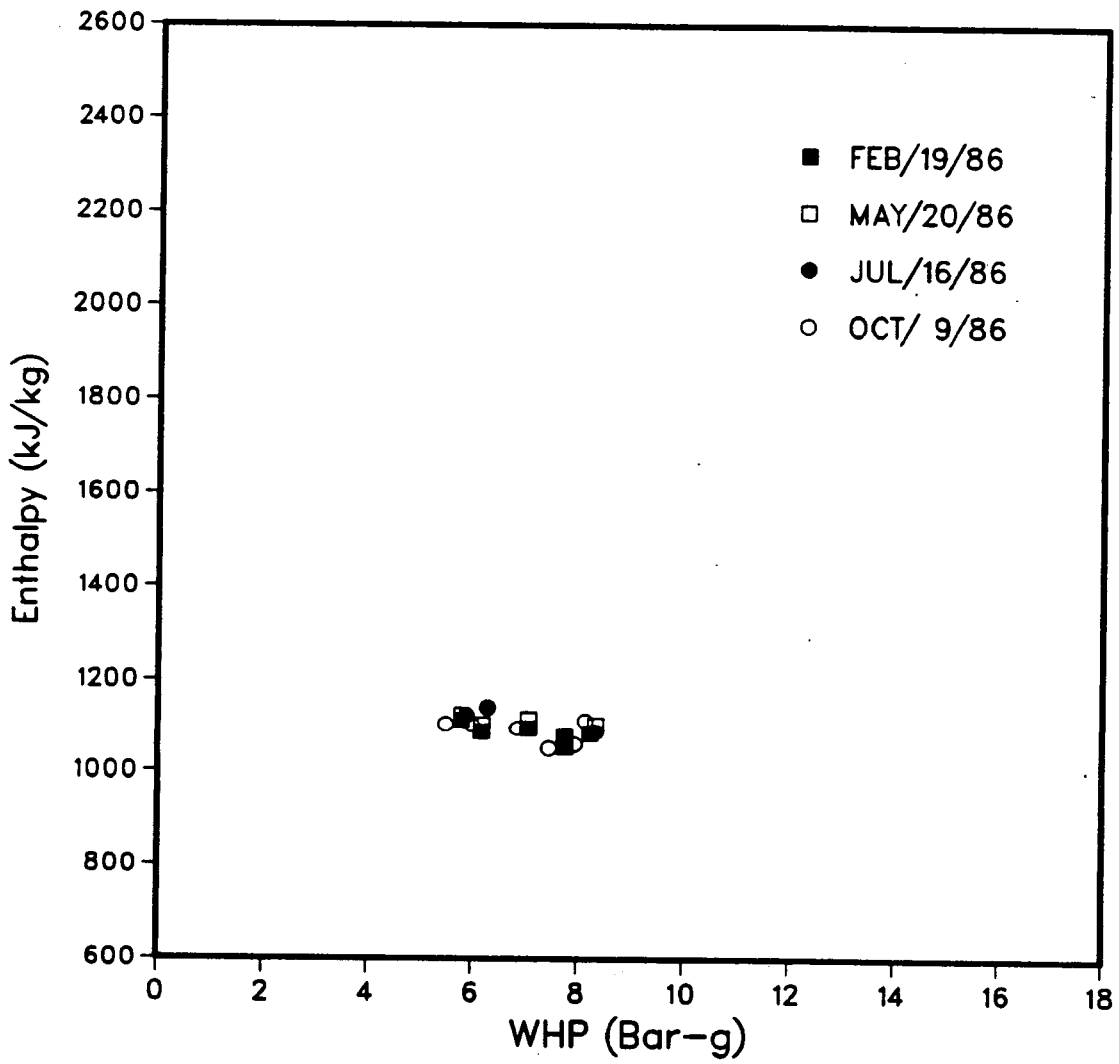
AH7 WHP vs. Enthalpy



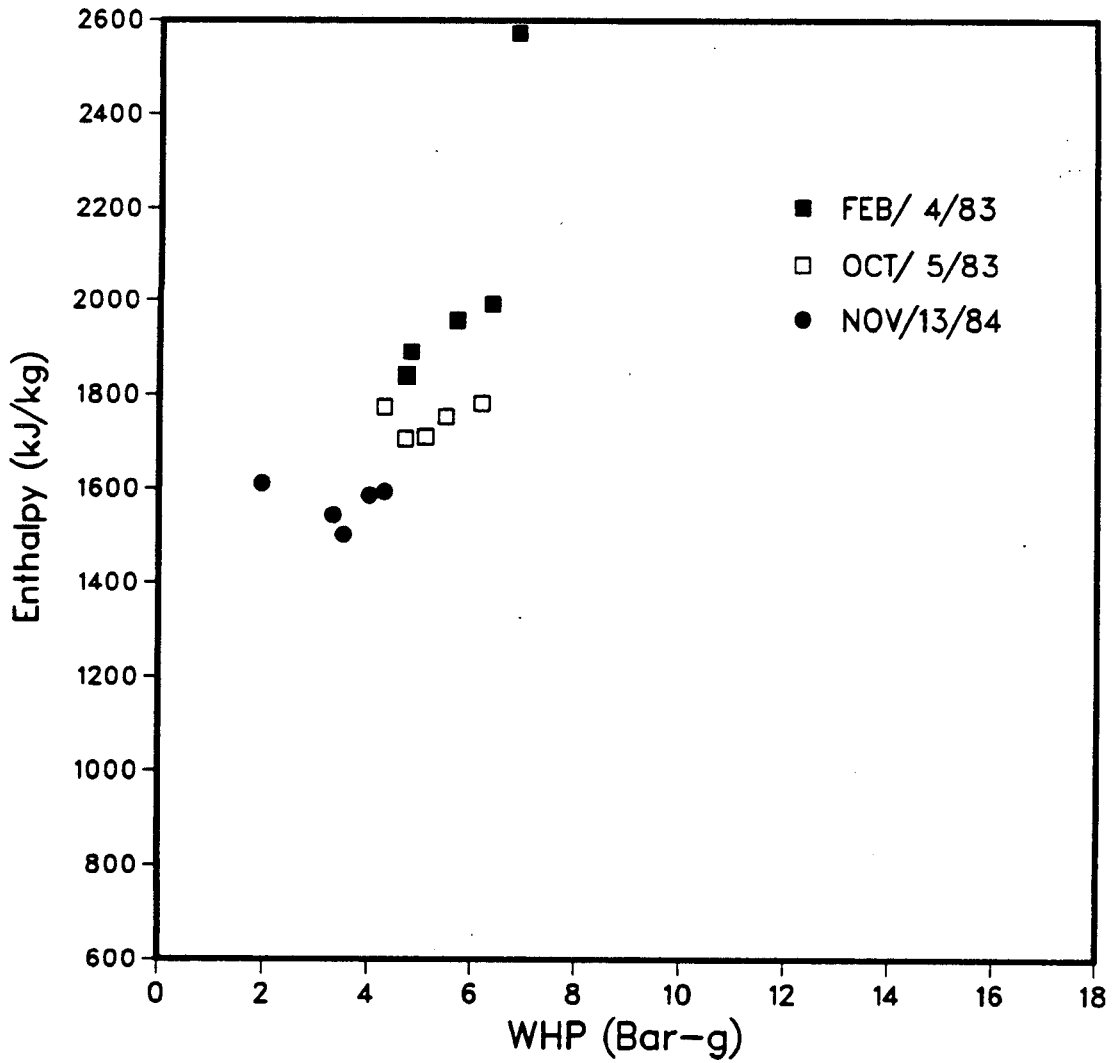
AH7 WHP vs. Enthalpy



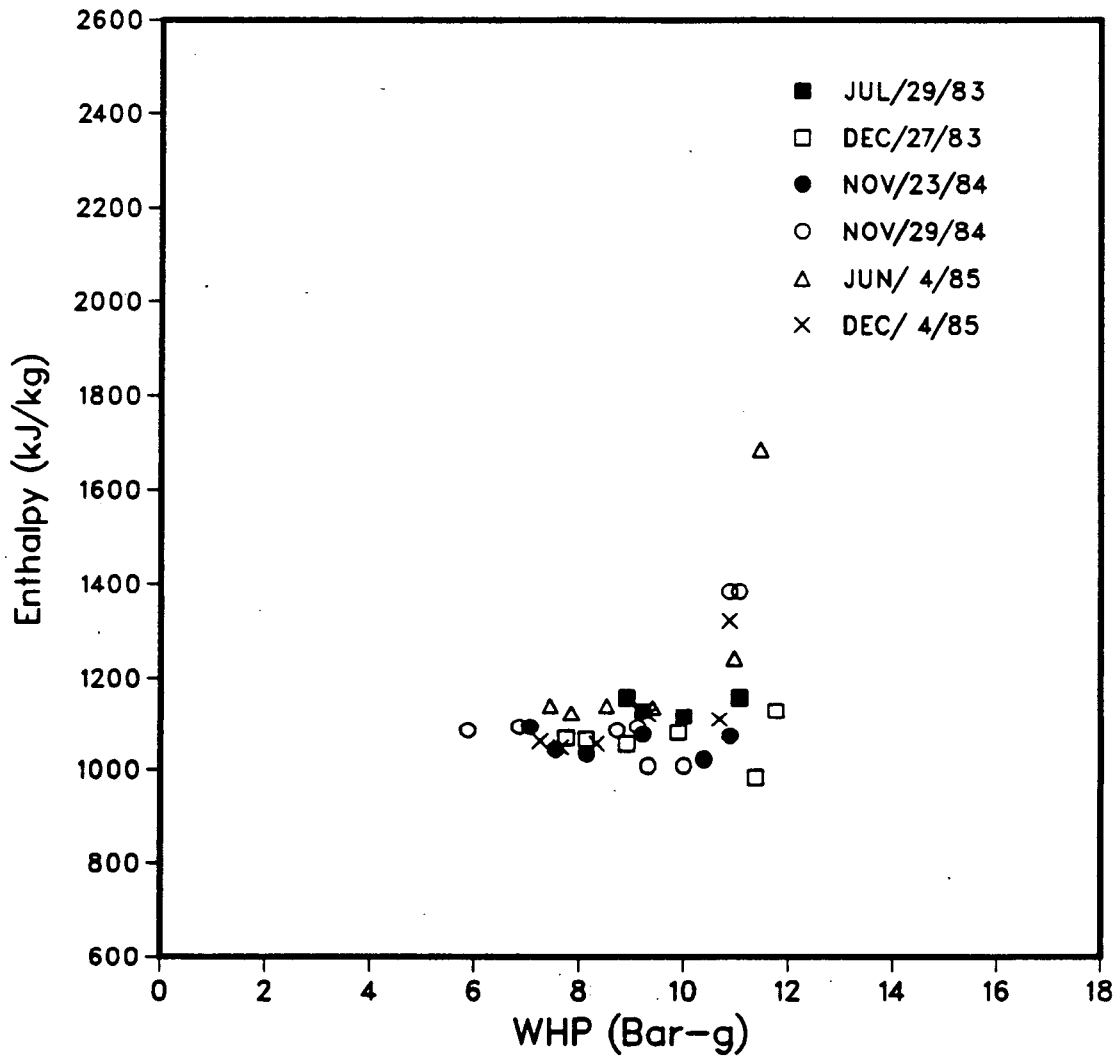
AH7 WHP vs. Enthalpy



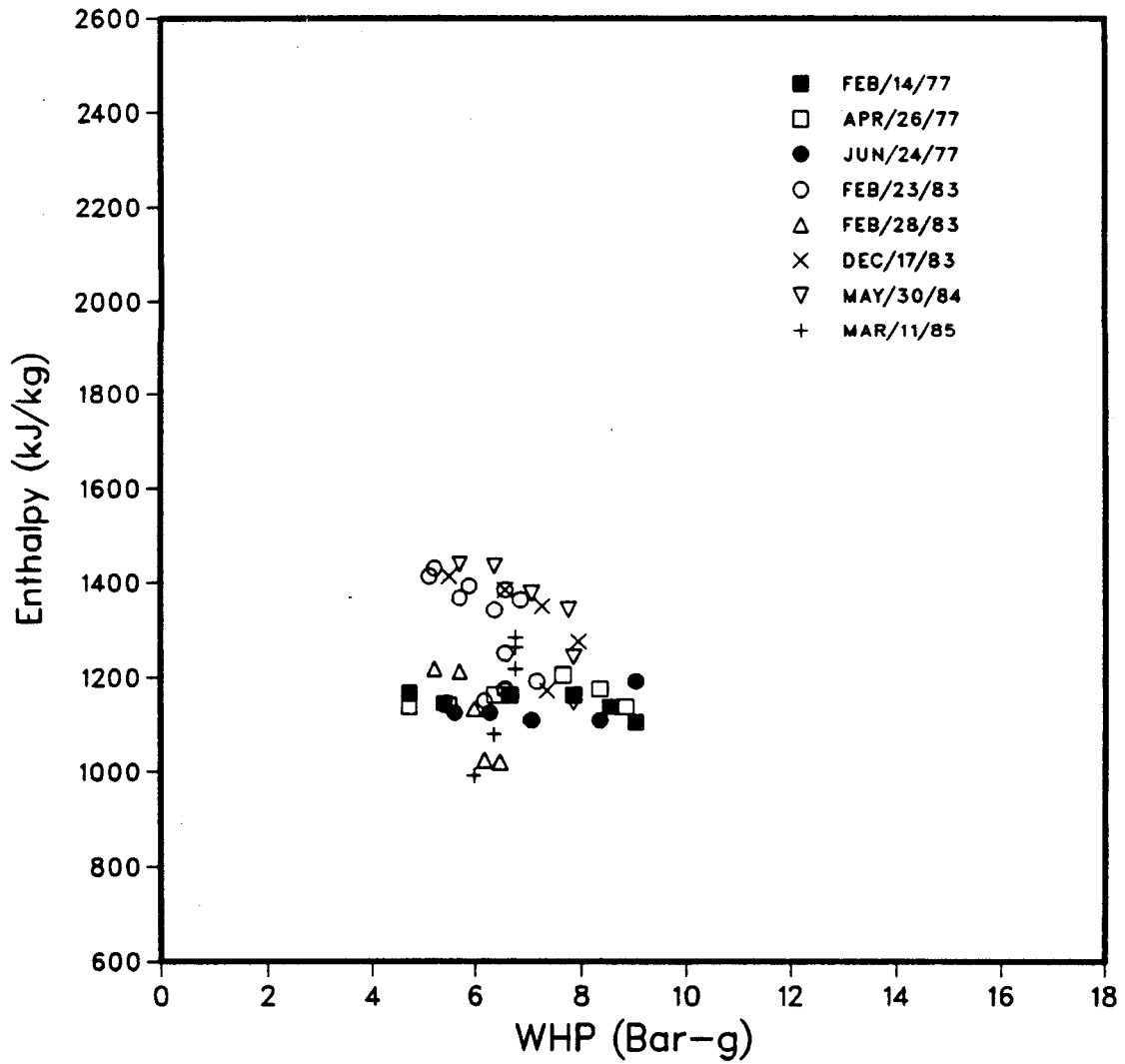
AH16 WHP vs. Enthalpy



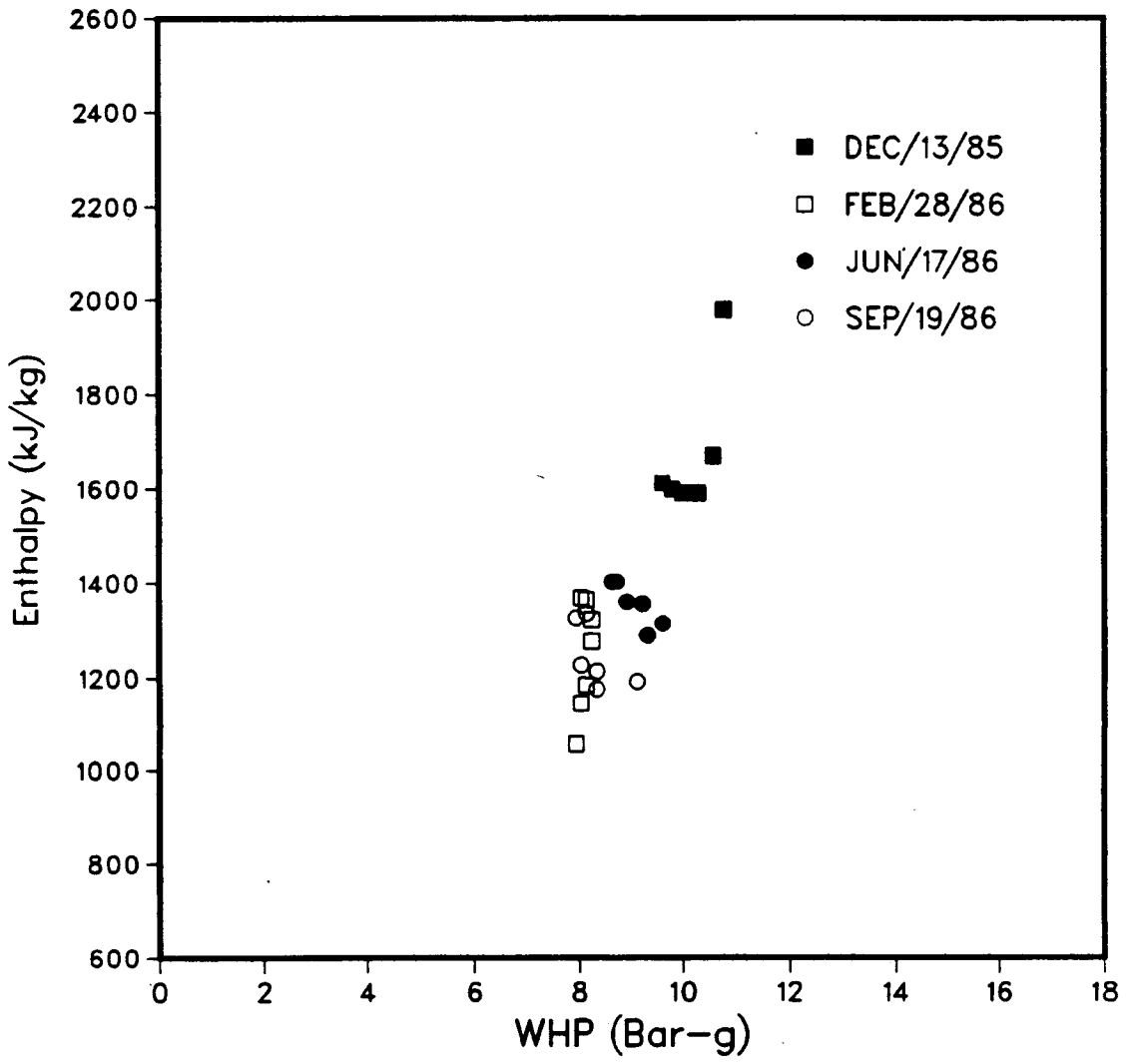
AH19 WHP vs. Enthalpy



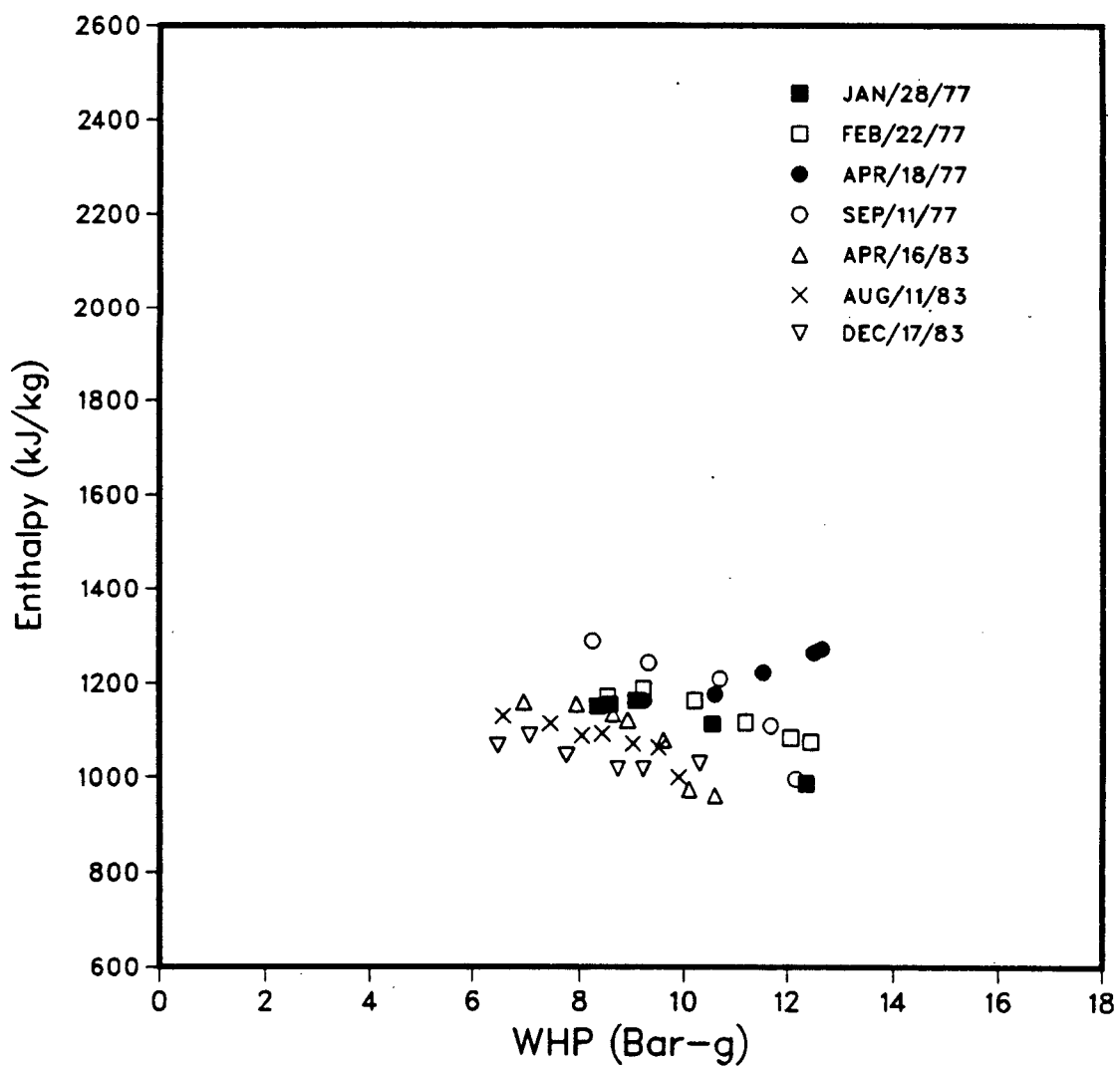
AH20 WHP vs. Enthalpy



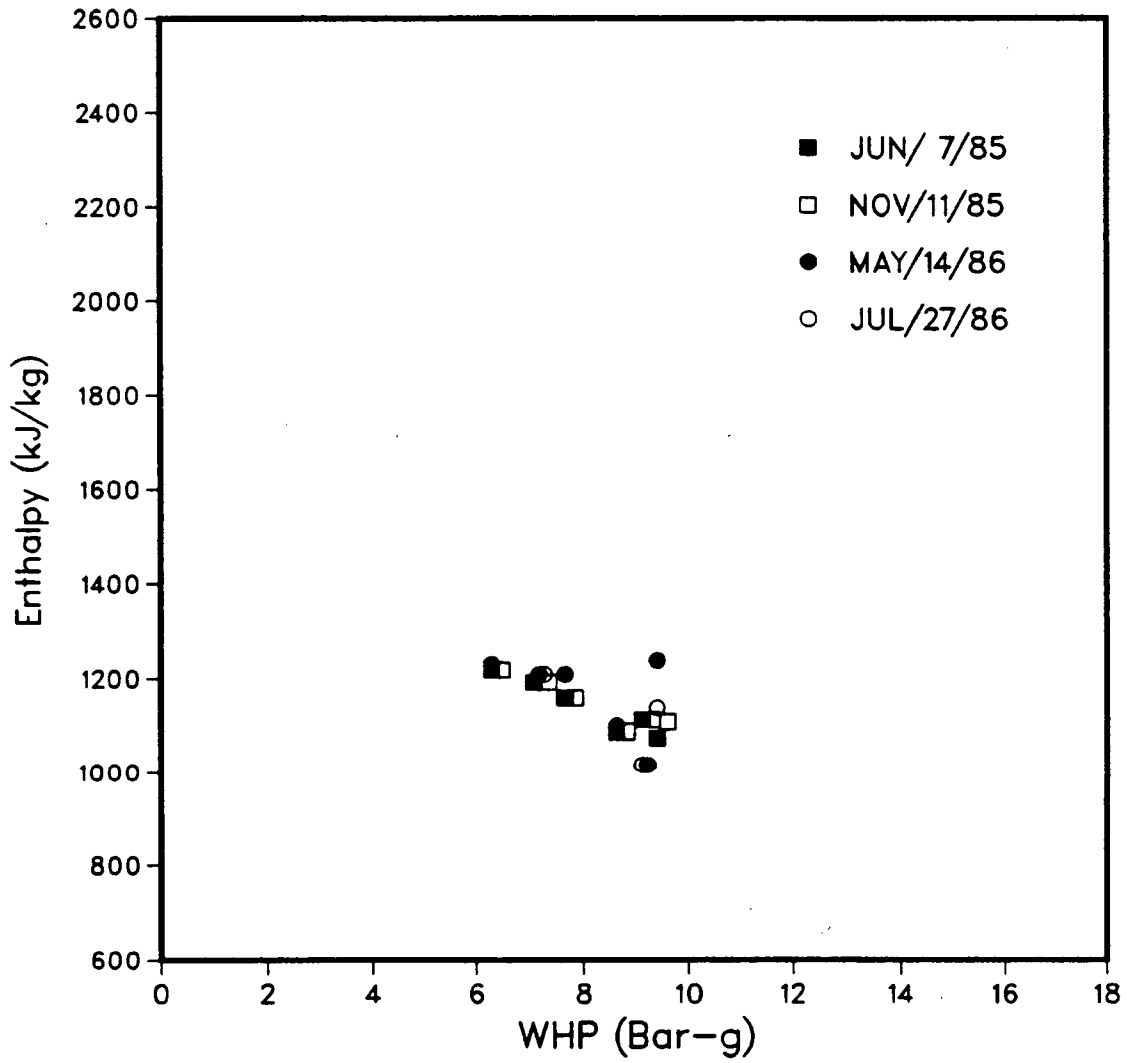
AH20 WHP vs. Enthalpy



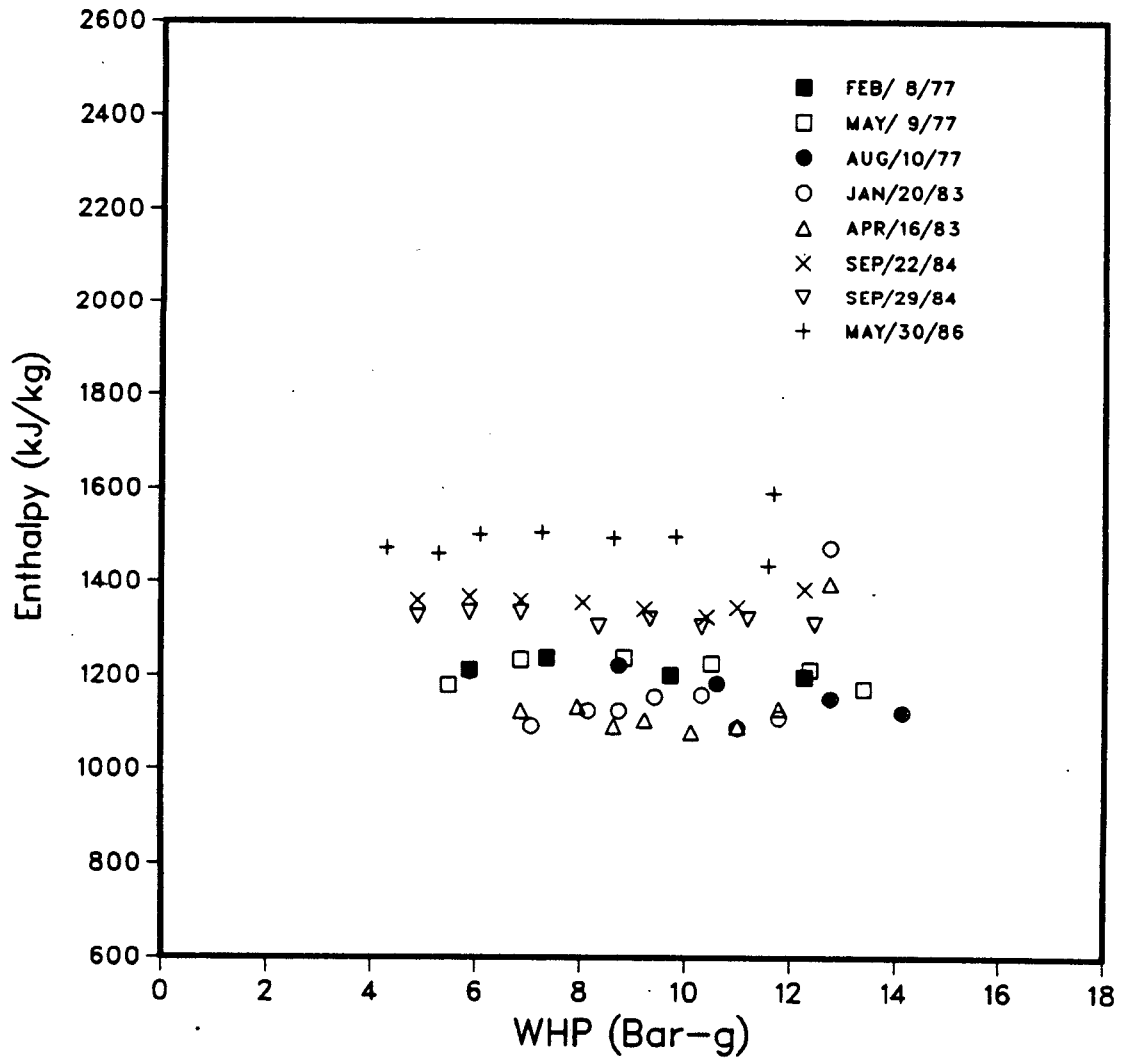
AH21 WHP vs. Enthalpy



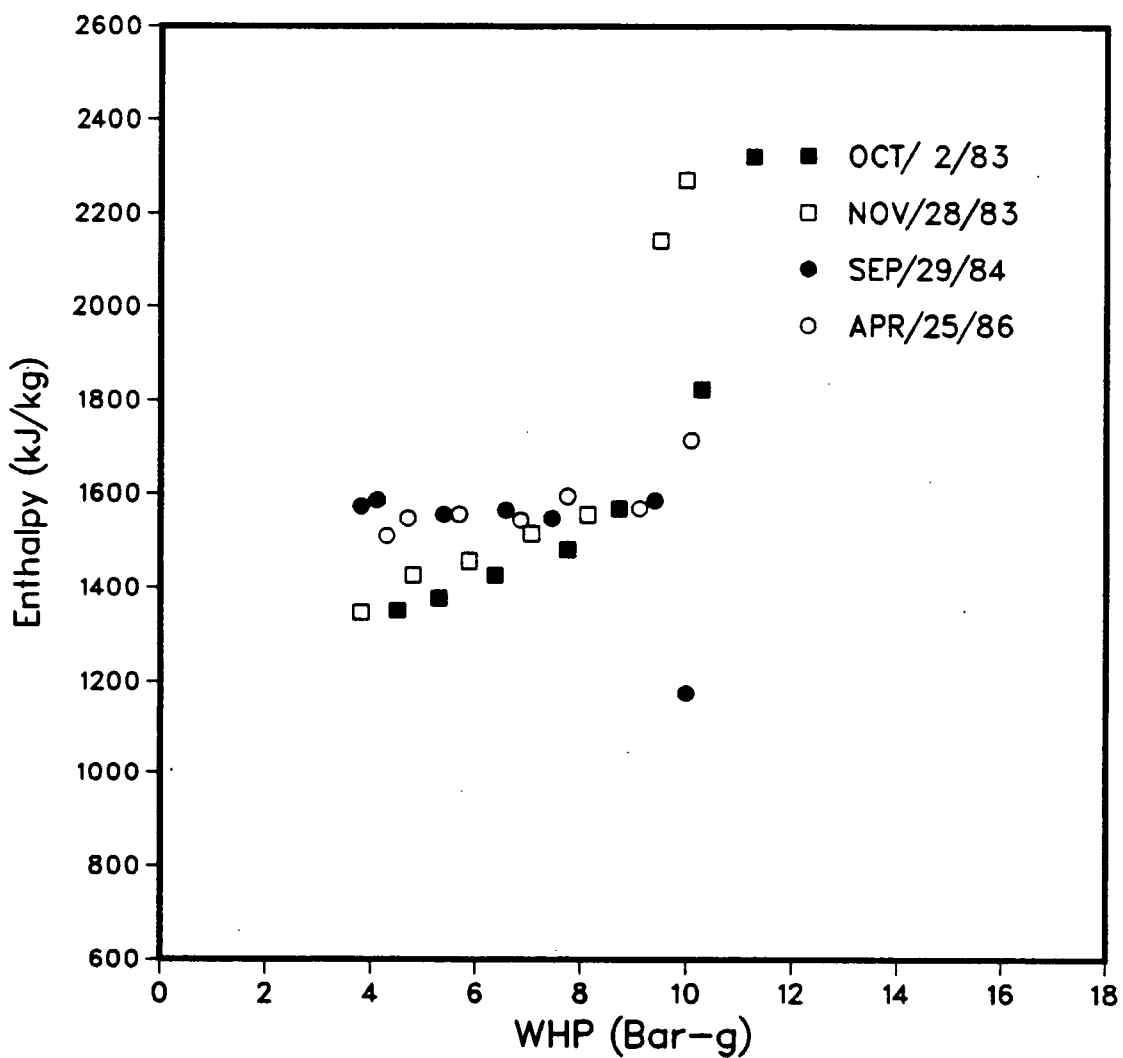
AH21 WHP vs. Enthalpy



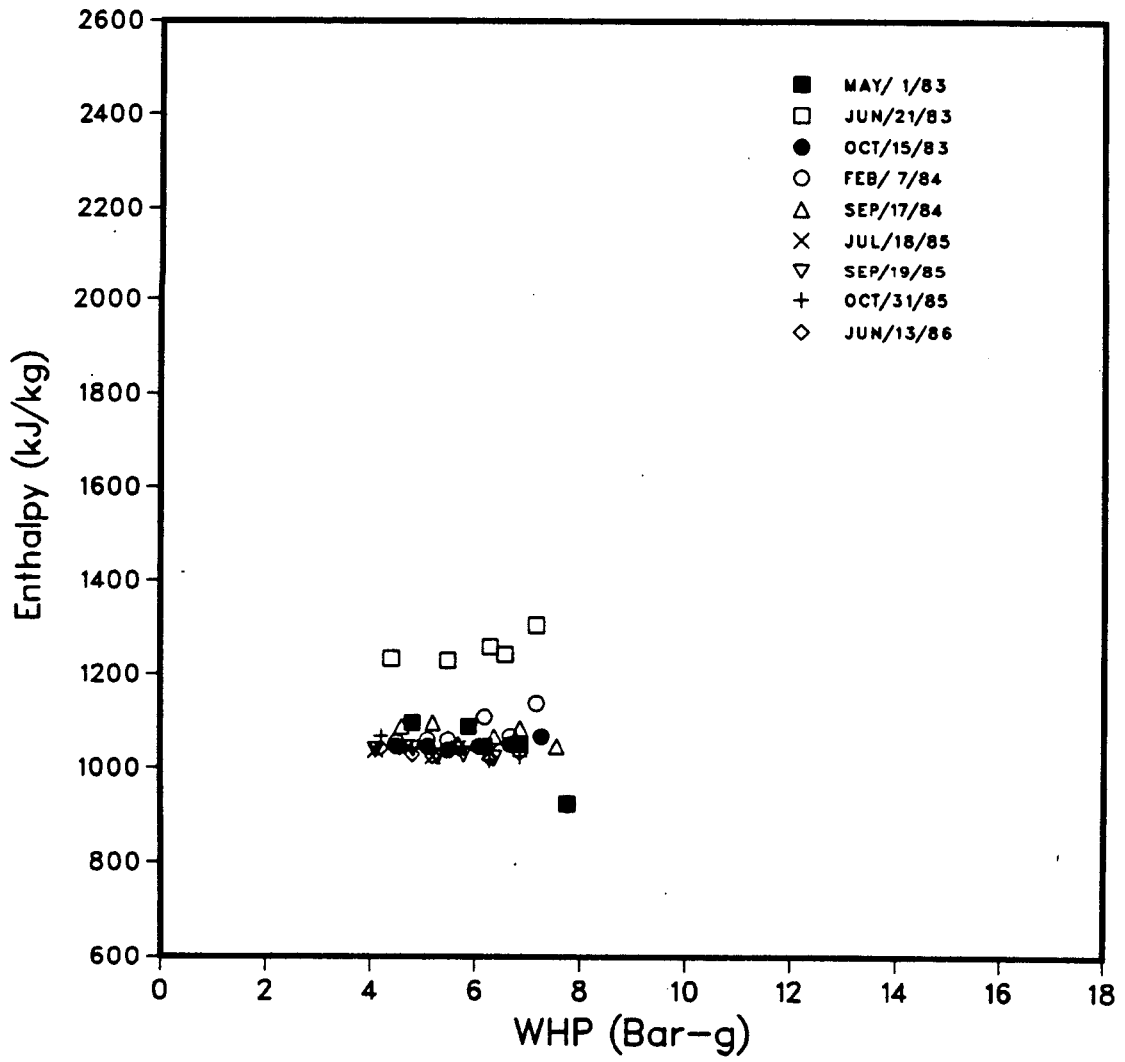
AH22 WHP vs. Enthalpy



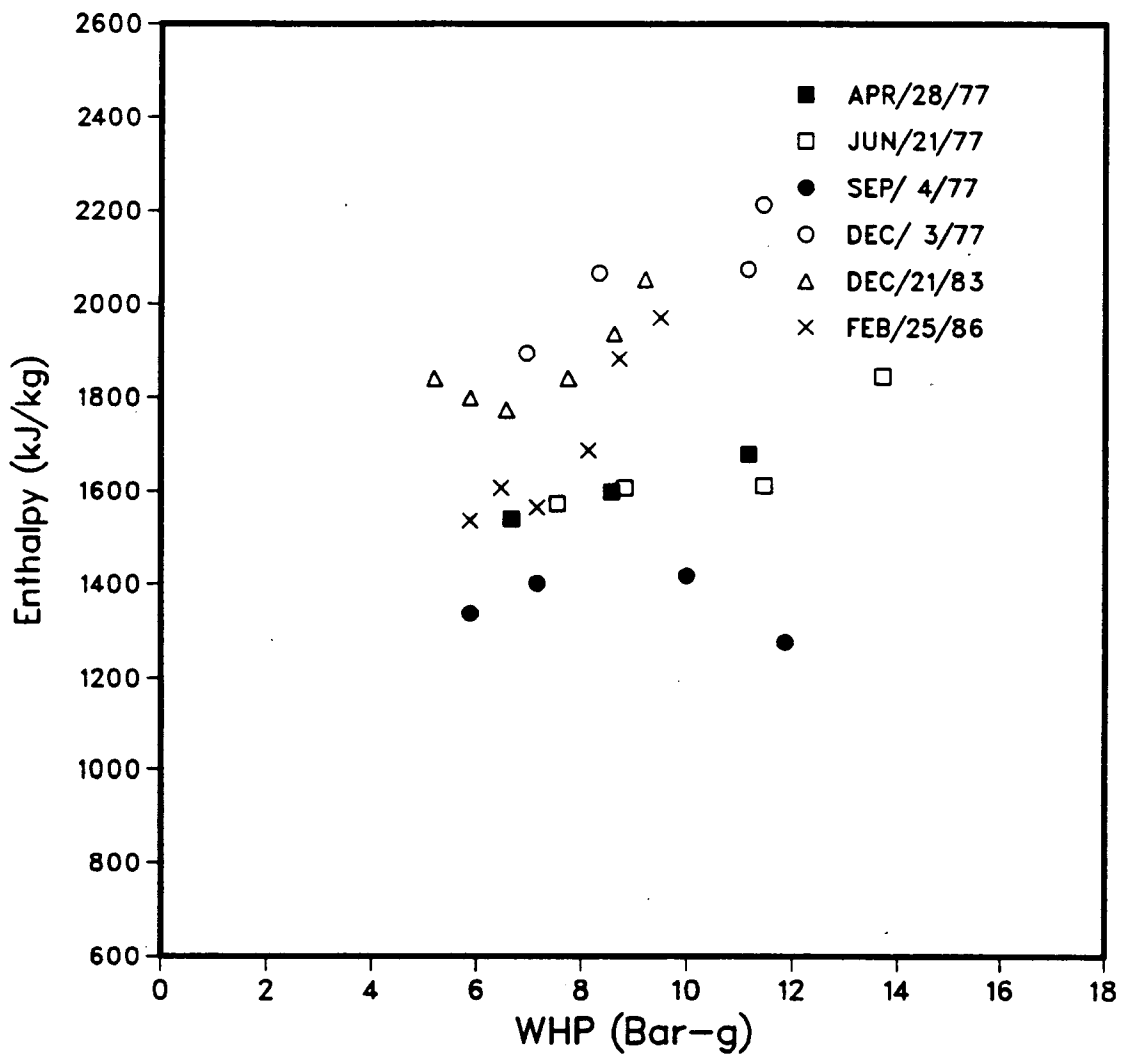
AH23 WHP vs. Enthalpy



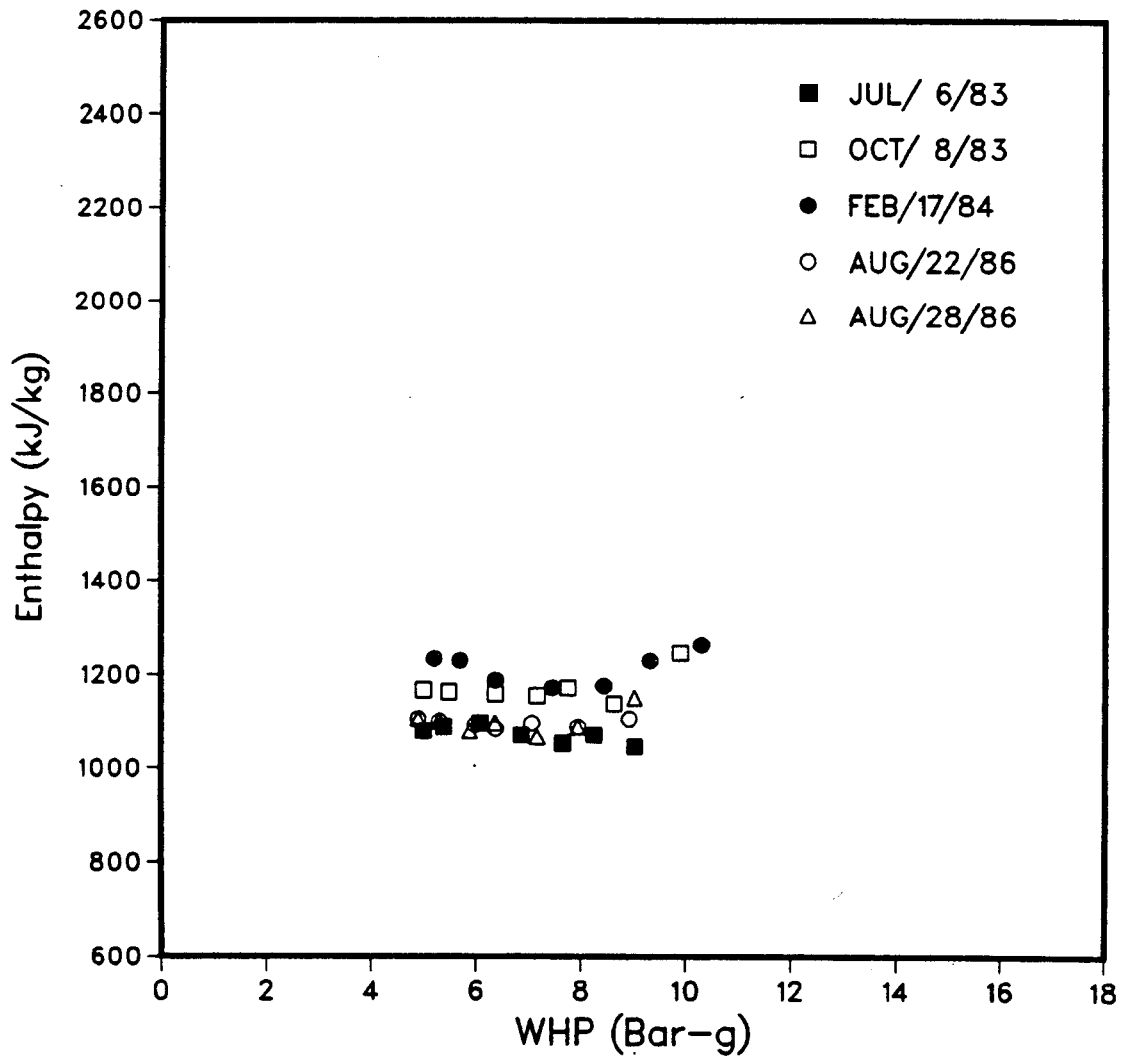
AH24 WHP vs. Enthalpy



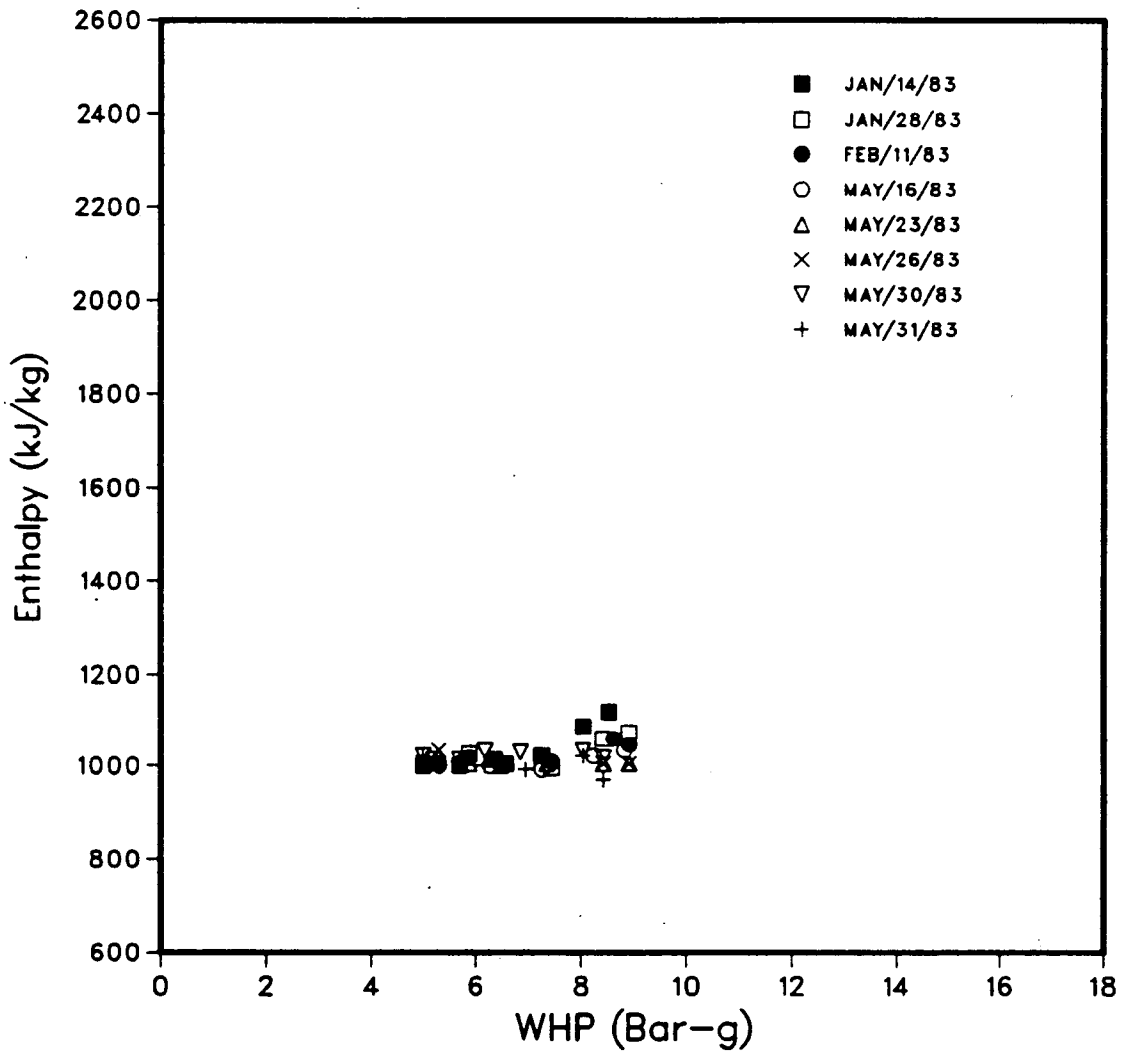
AH26 WHP vs. Enthalpy



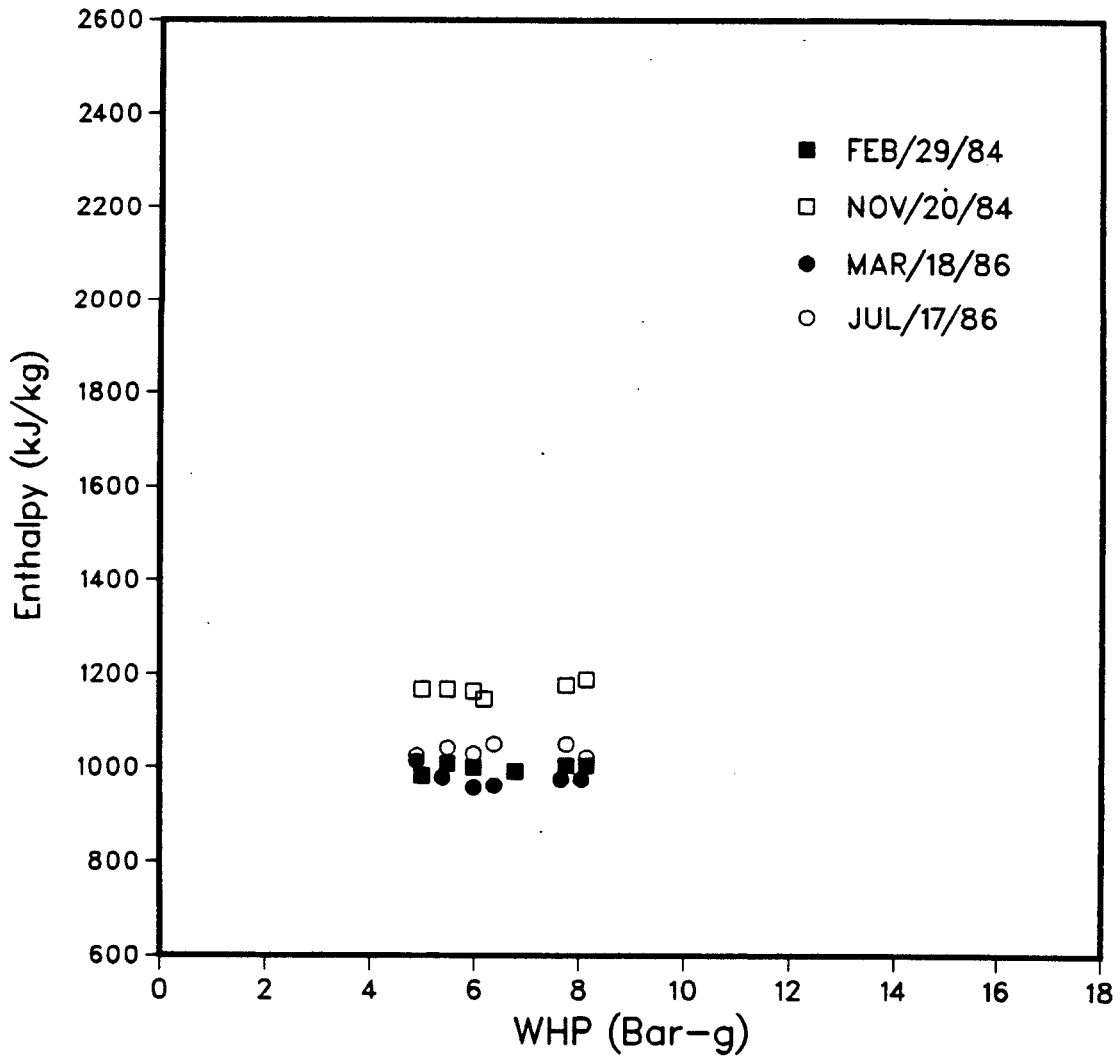
AH27 WHP vs. Enthalpy



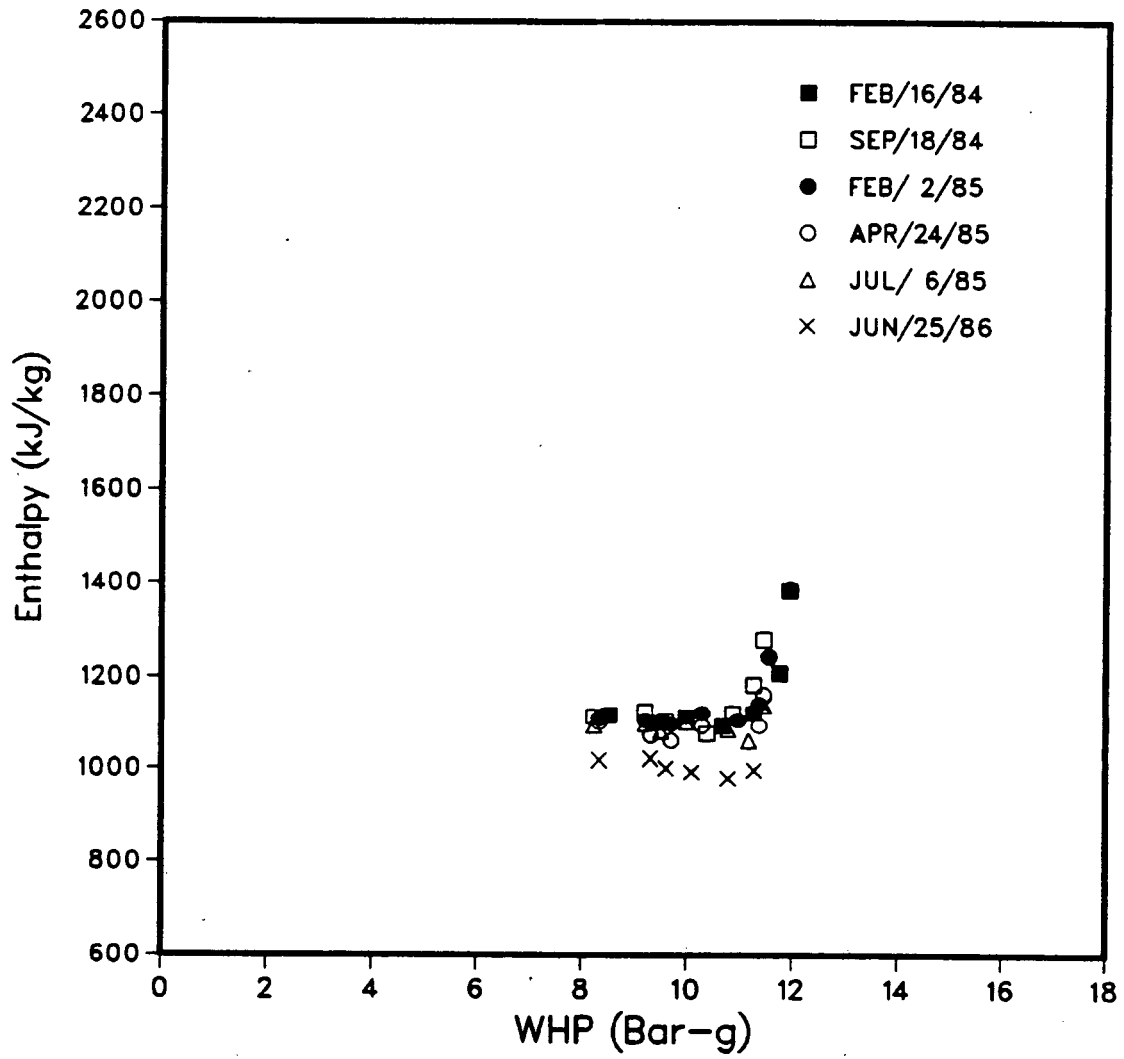
AH28 WHP vs. Enthalpy



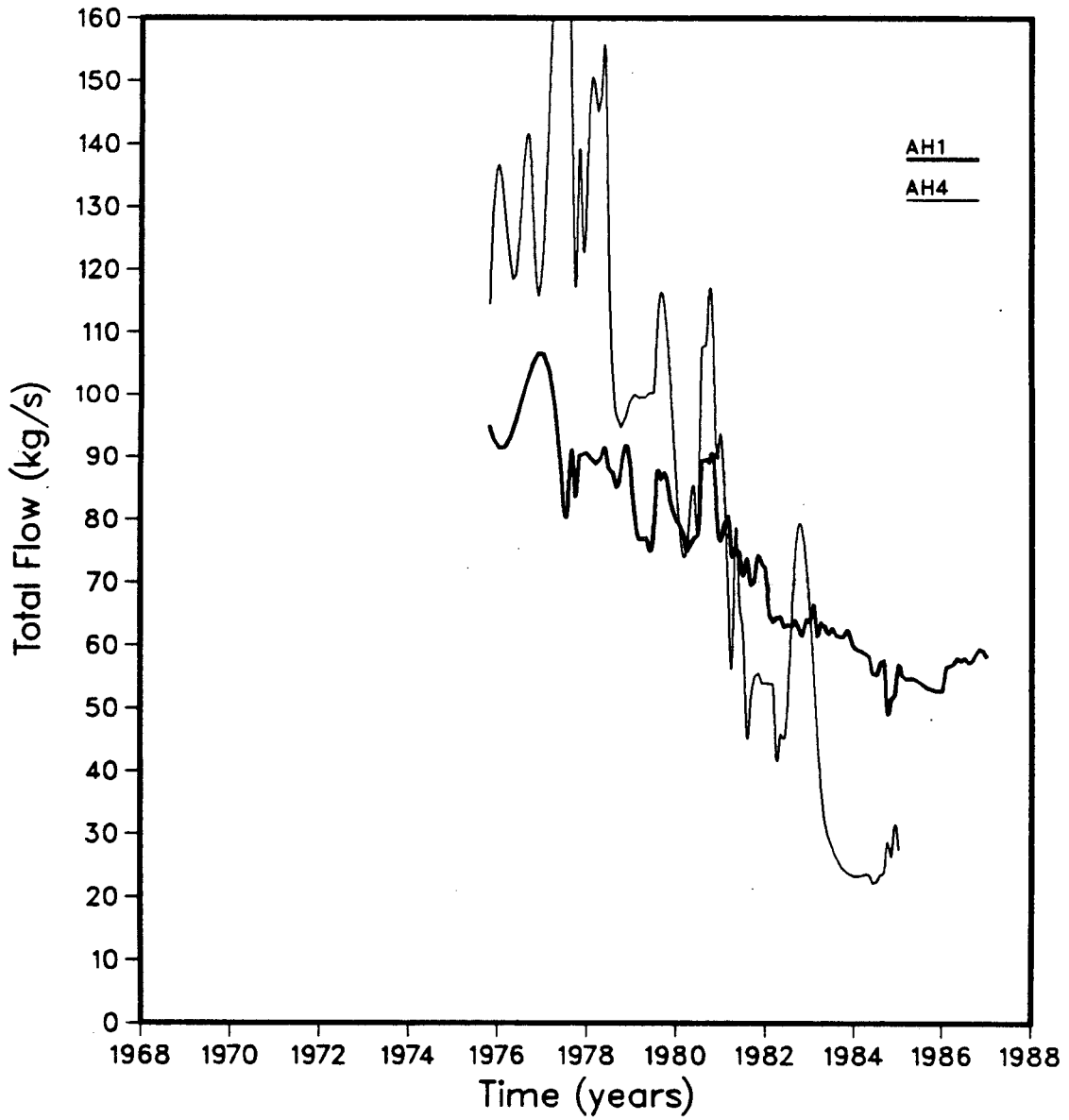
AH28 WHP vs. Enthalpy



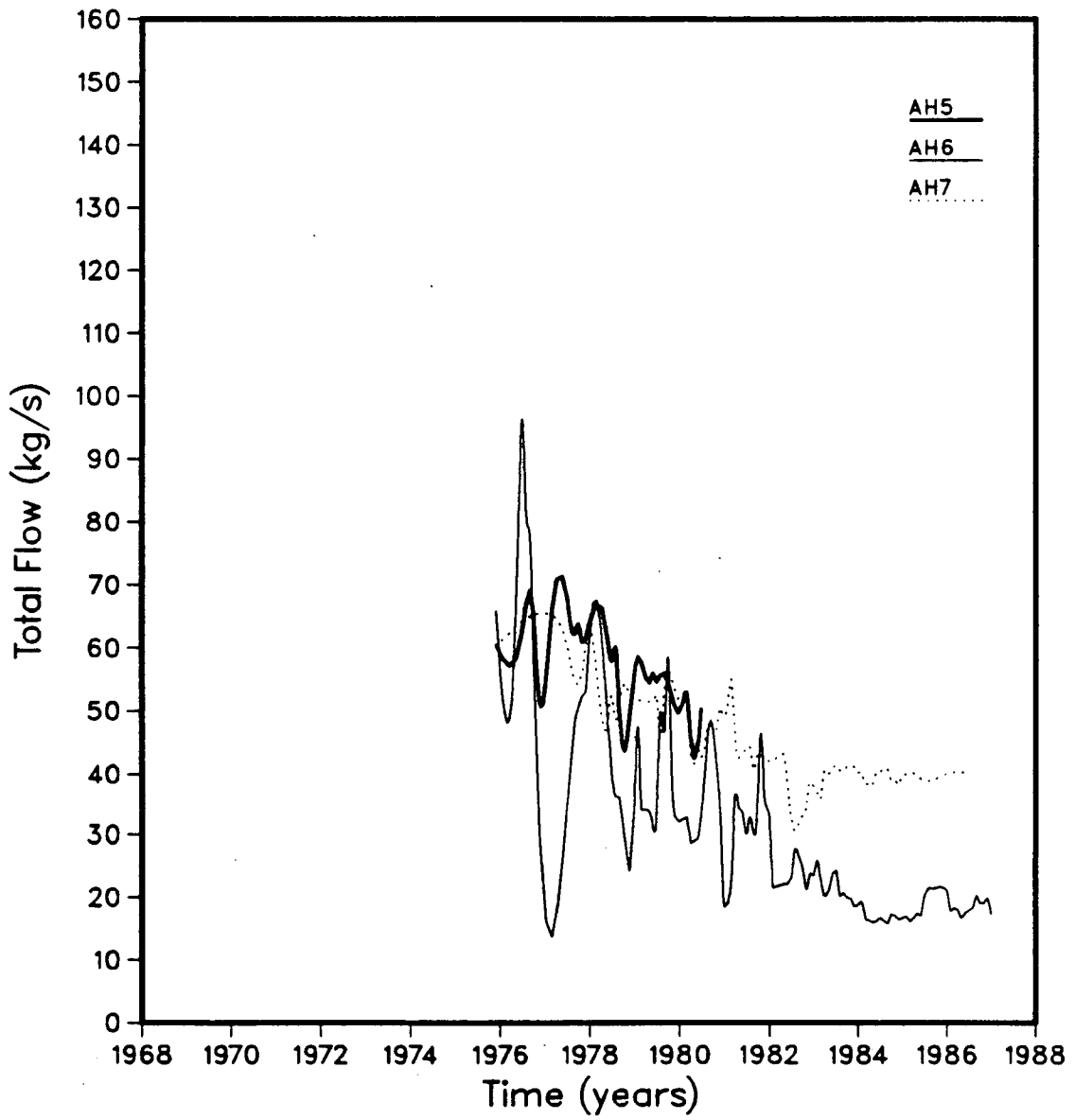
AH31 WHP vs. Enthalpy



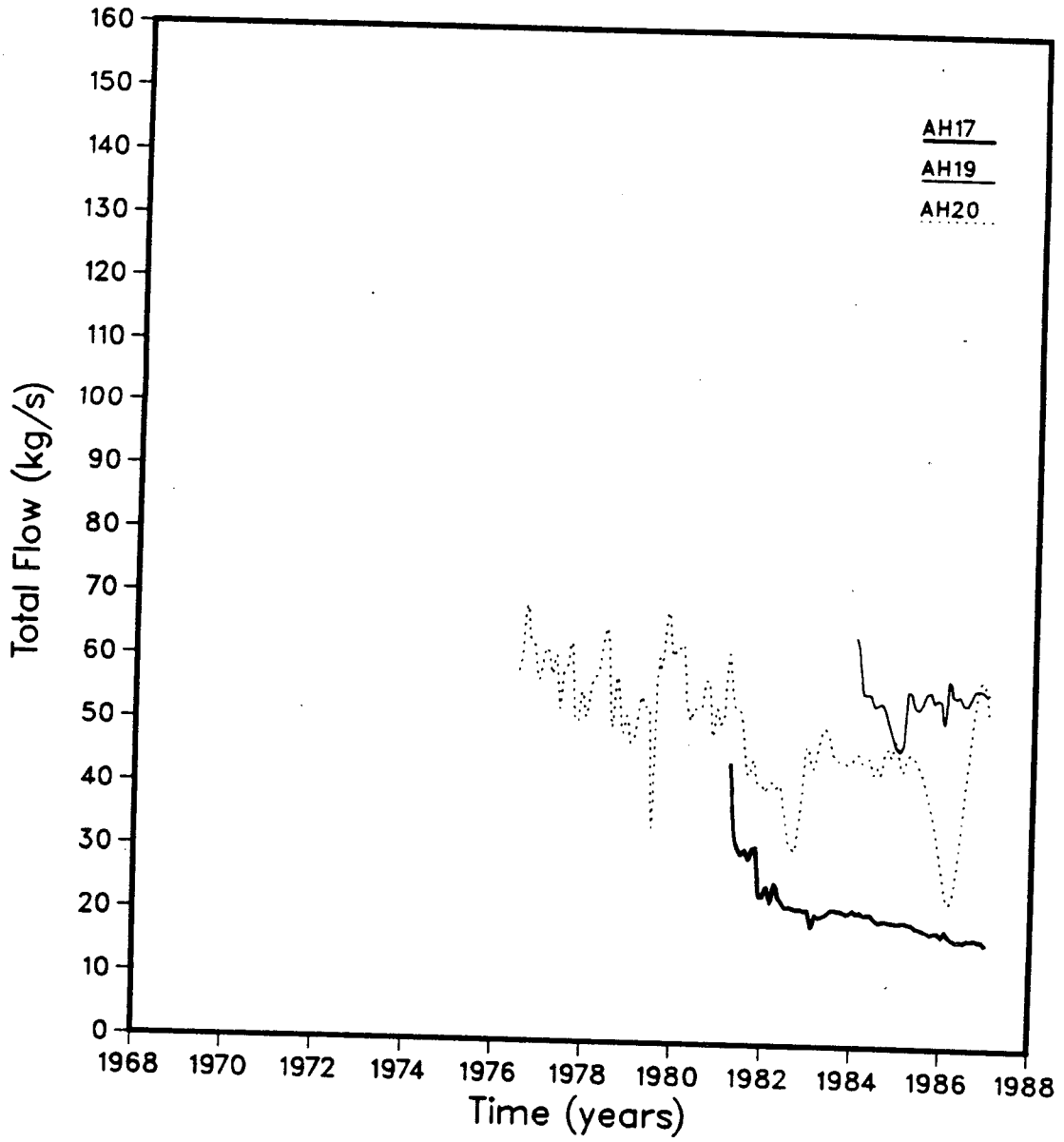
Mass Flow Trend



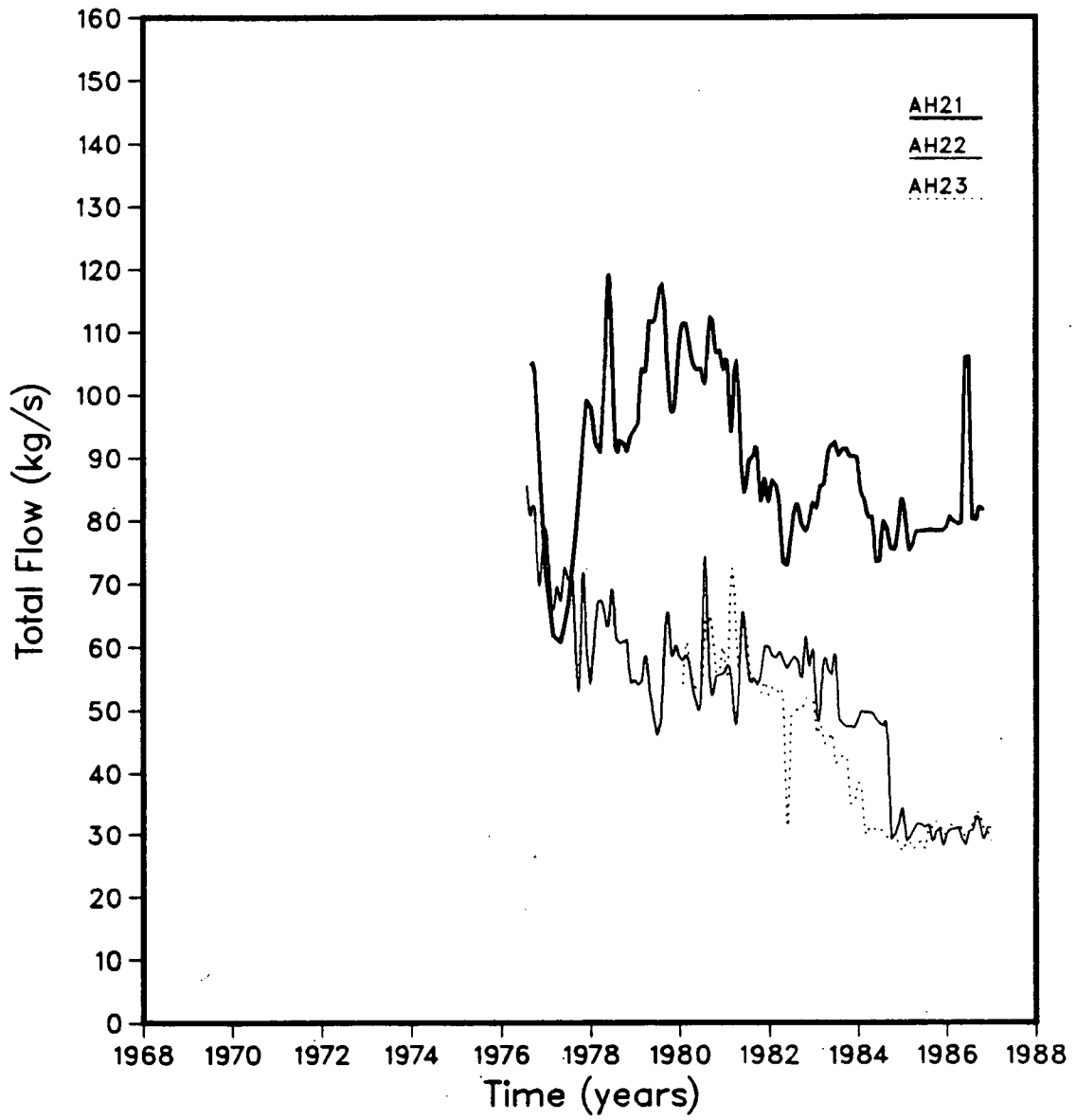
Mass Flow Trend



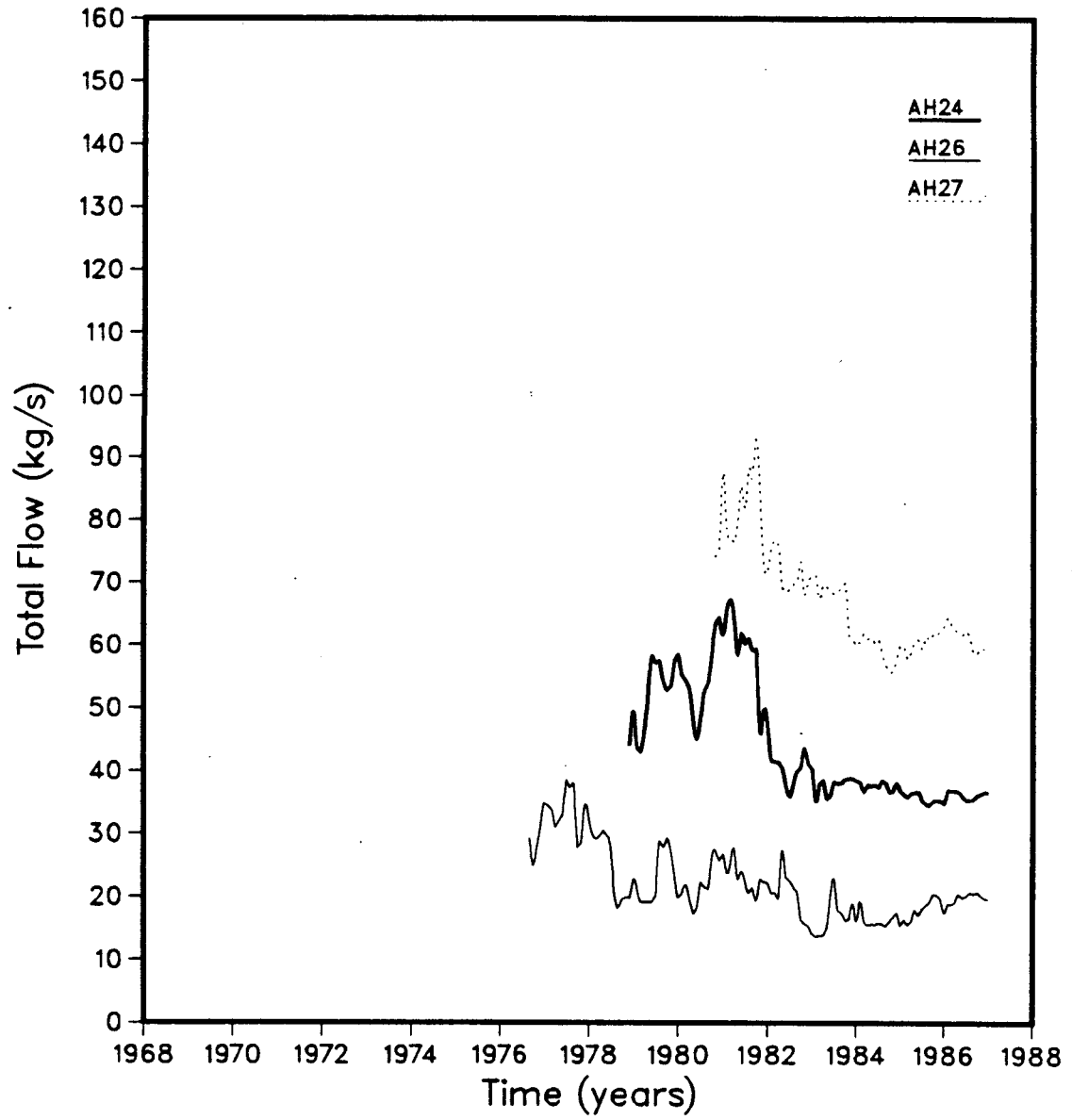
Mass Flow Trend



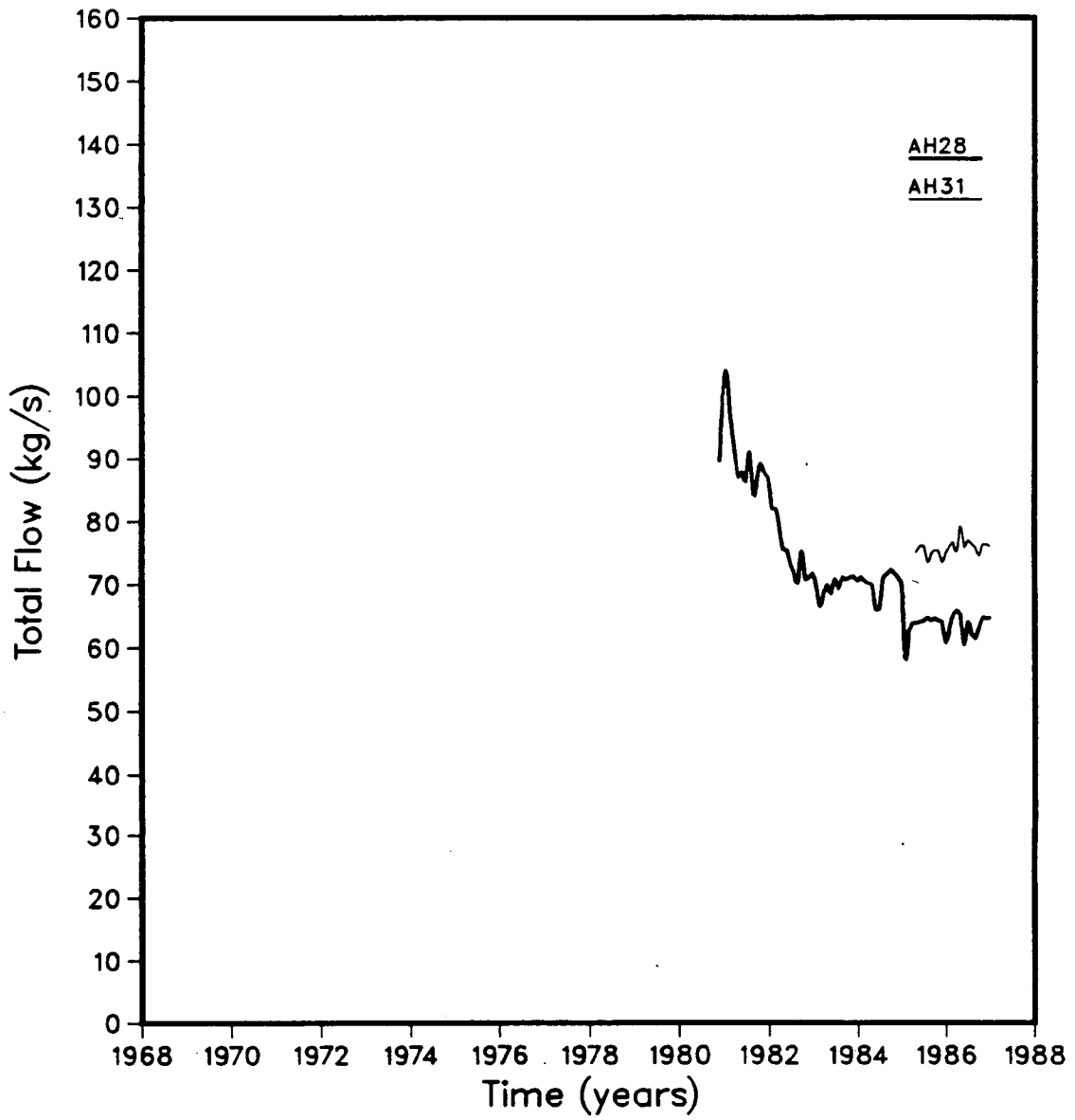
Mass Flow Trend



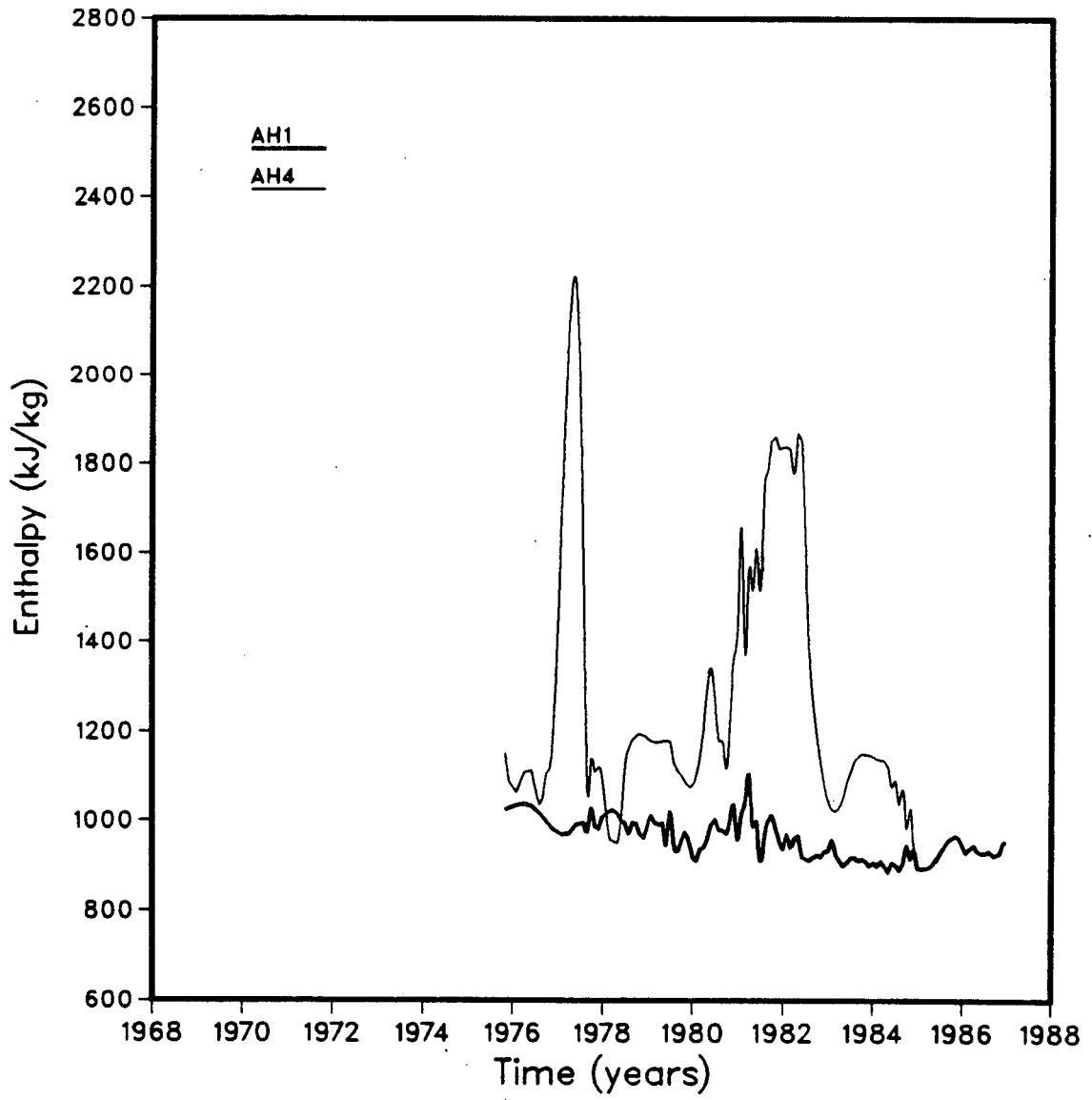
Mass Flow Trend



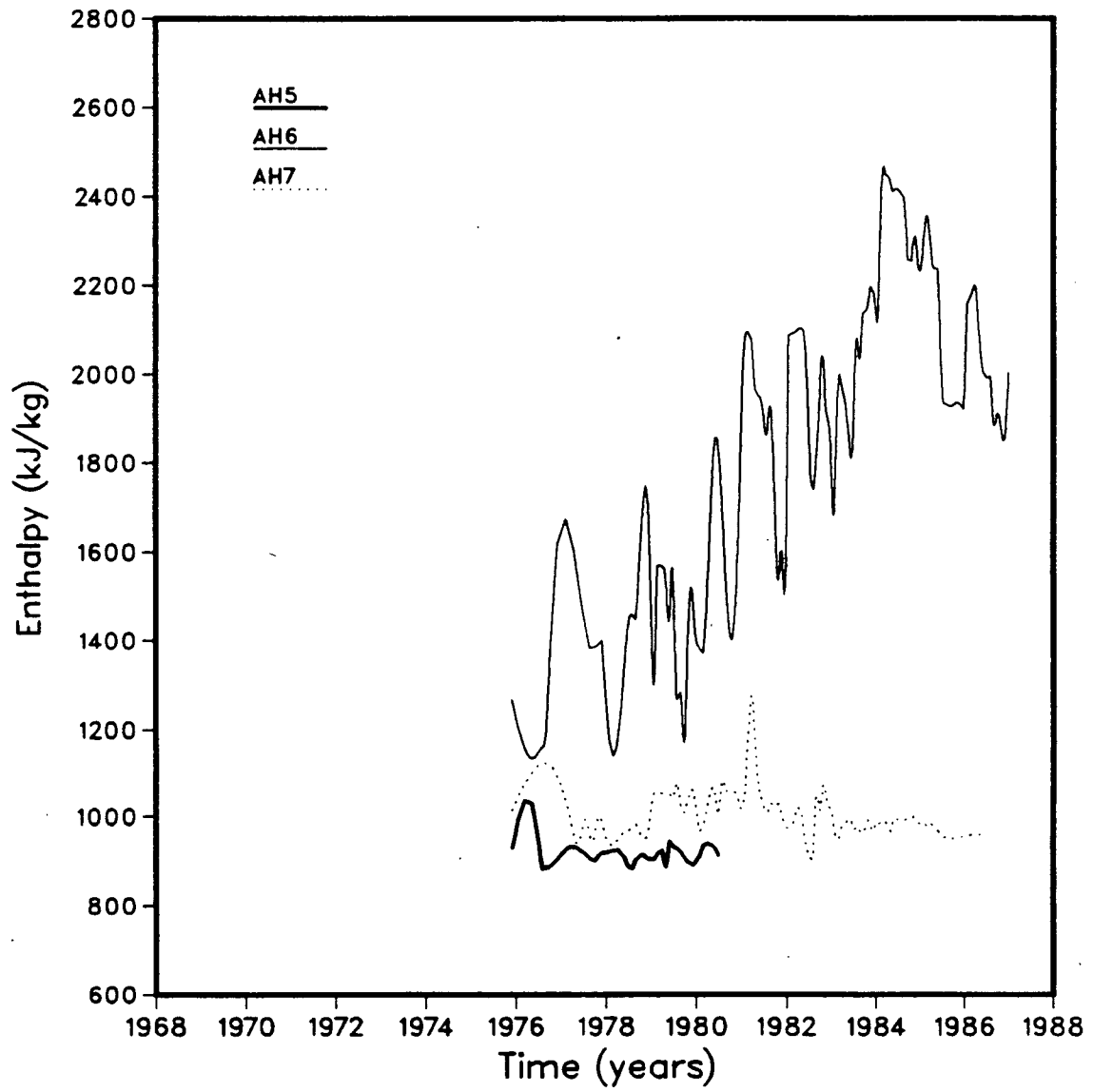
Mass Flow Trend



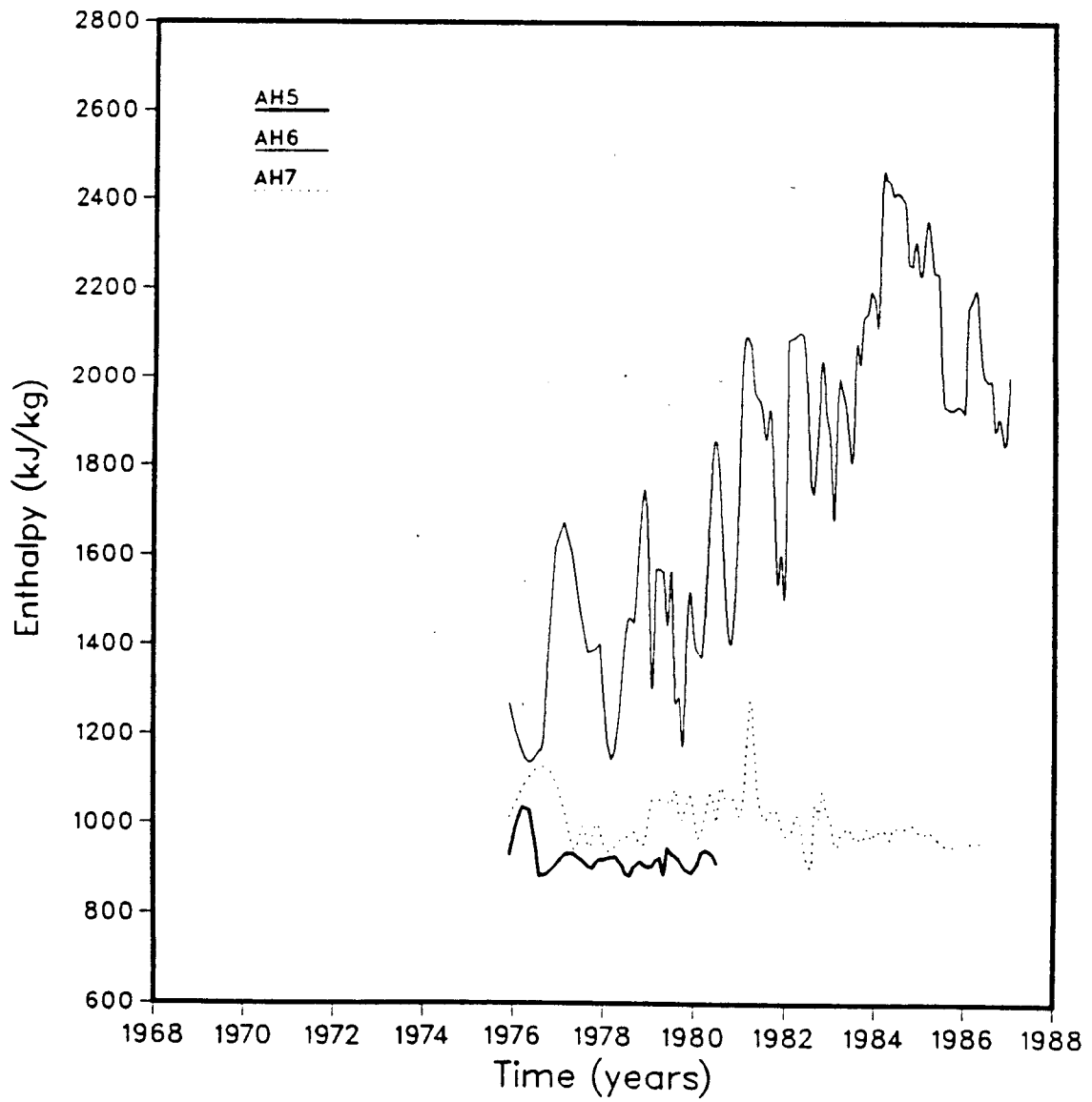
Enthalpy Trend



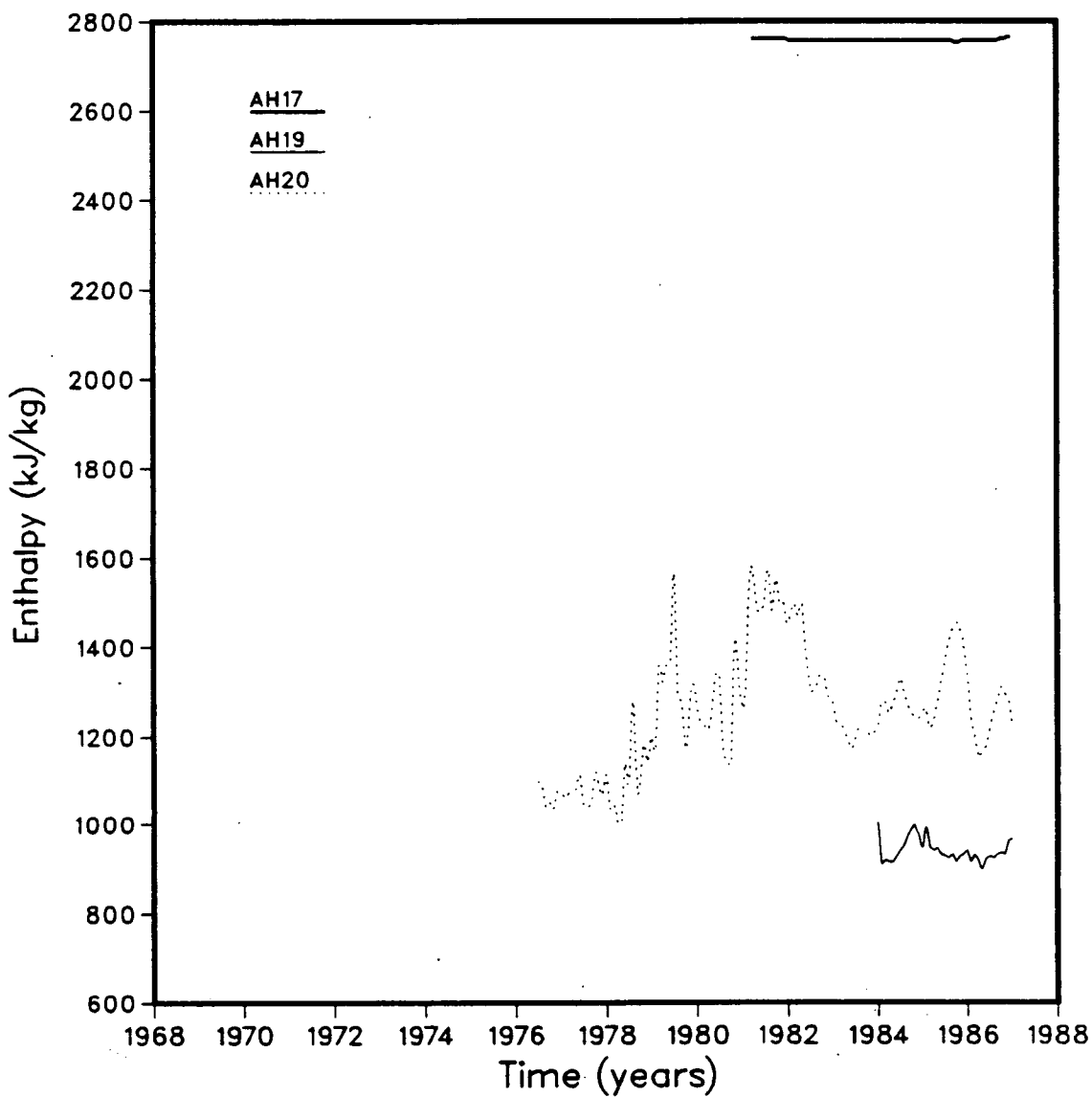
Enthalpy Trend



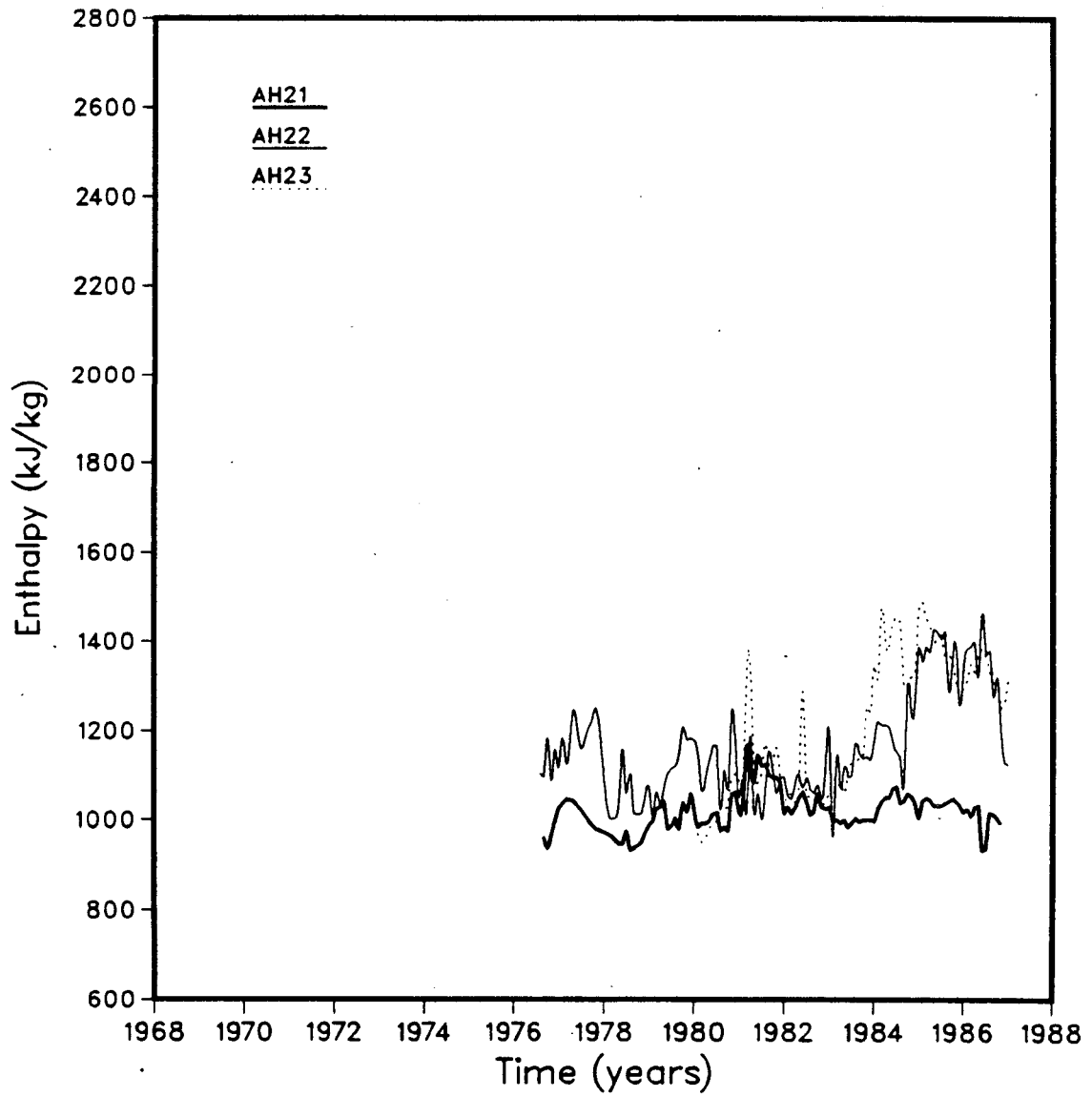
Enthalpy Trend



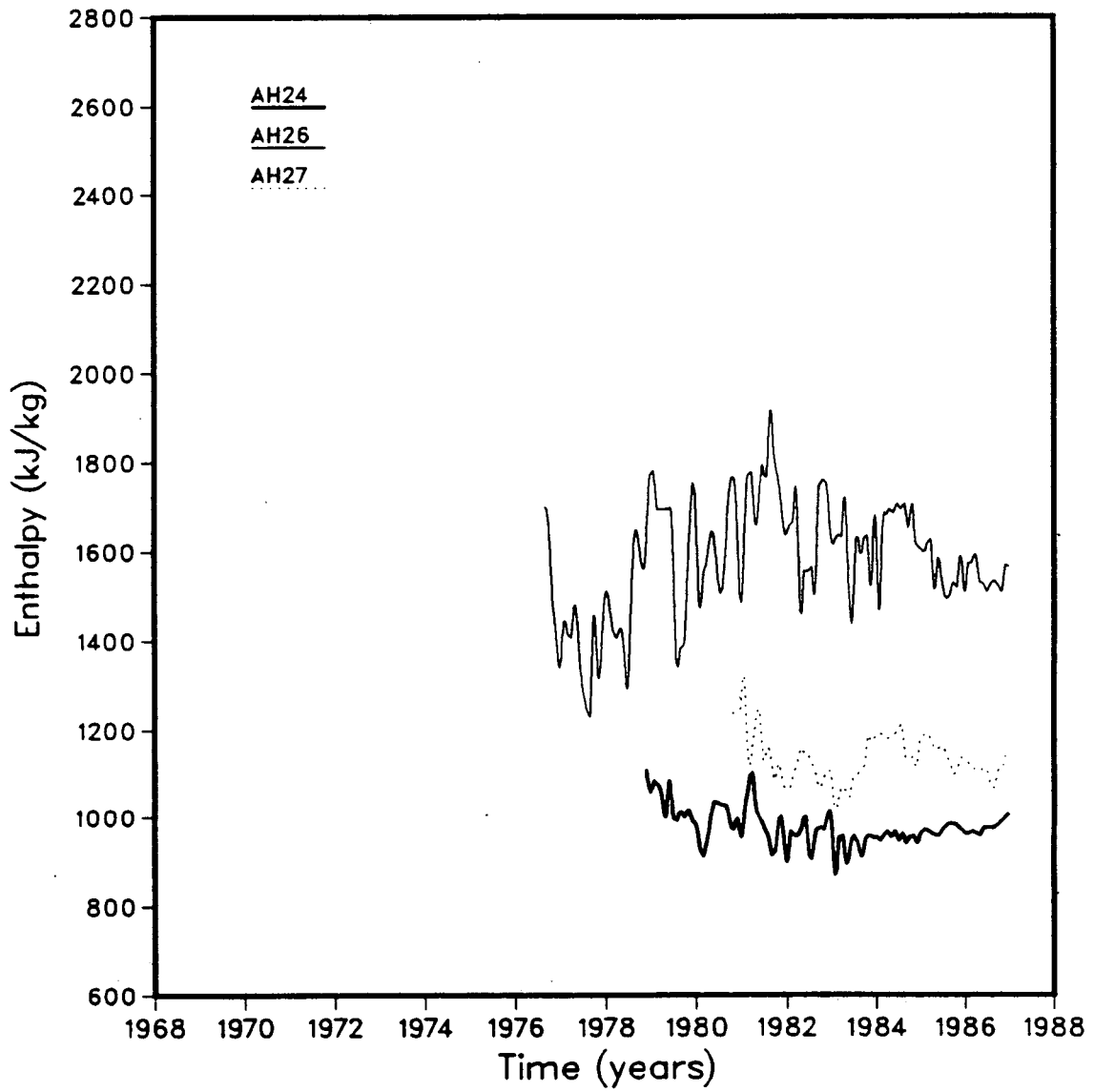
Enthalpy Trend



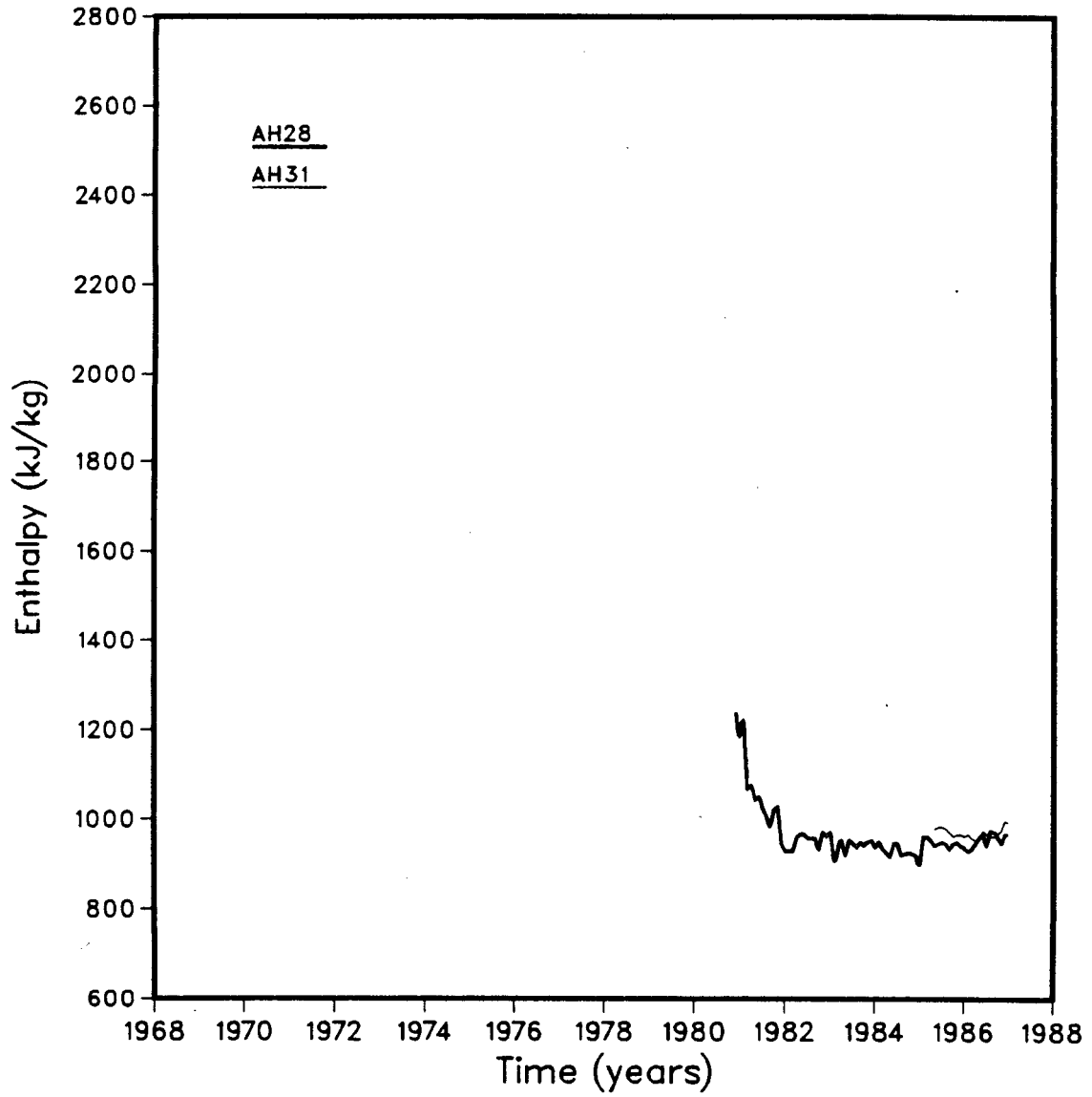
Enthalpy Trend



Enthalpy Trend



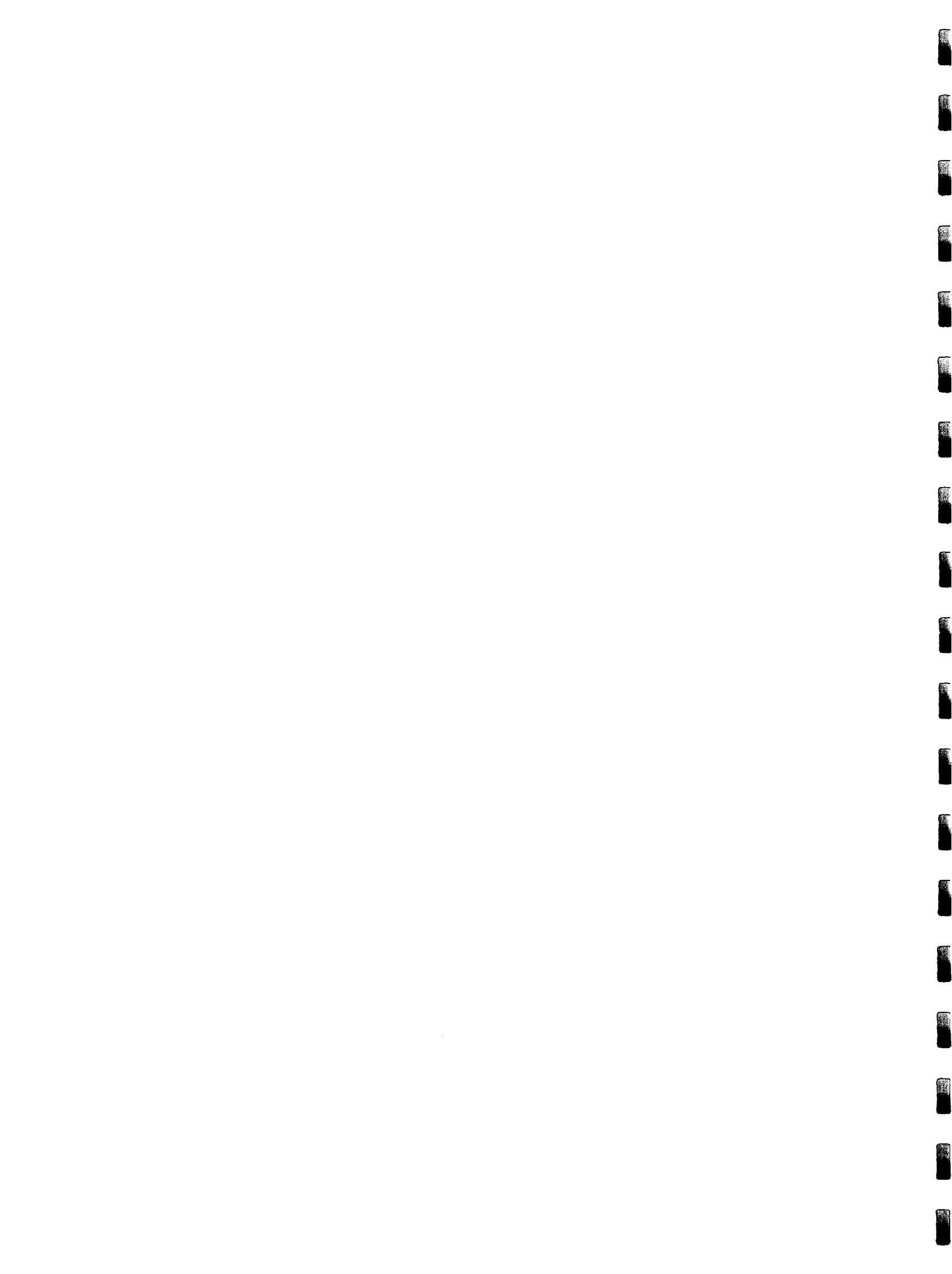
Enthalpy Trend



12

APPENDIX I

(Geochemical Temperatures and Chloride Trends)



KEY

TEMPERATURE PLOTS:

□ : T_{NKC}

+ : T_{SIL}

△ : T_E

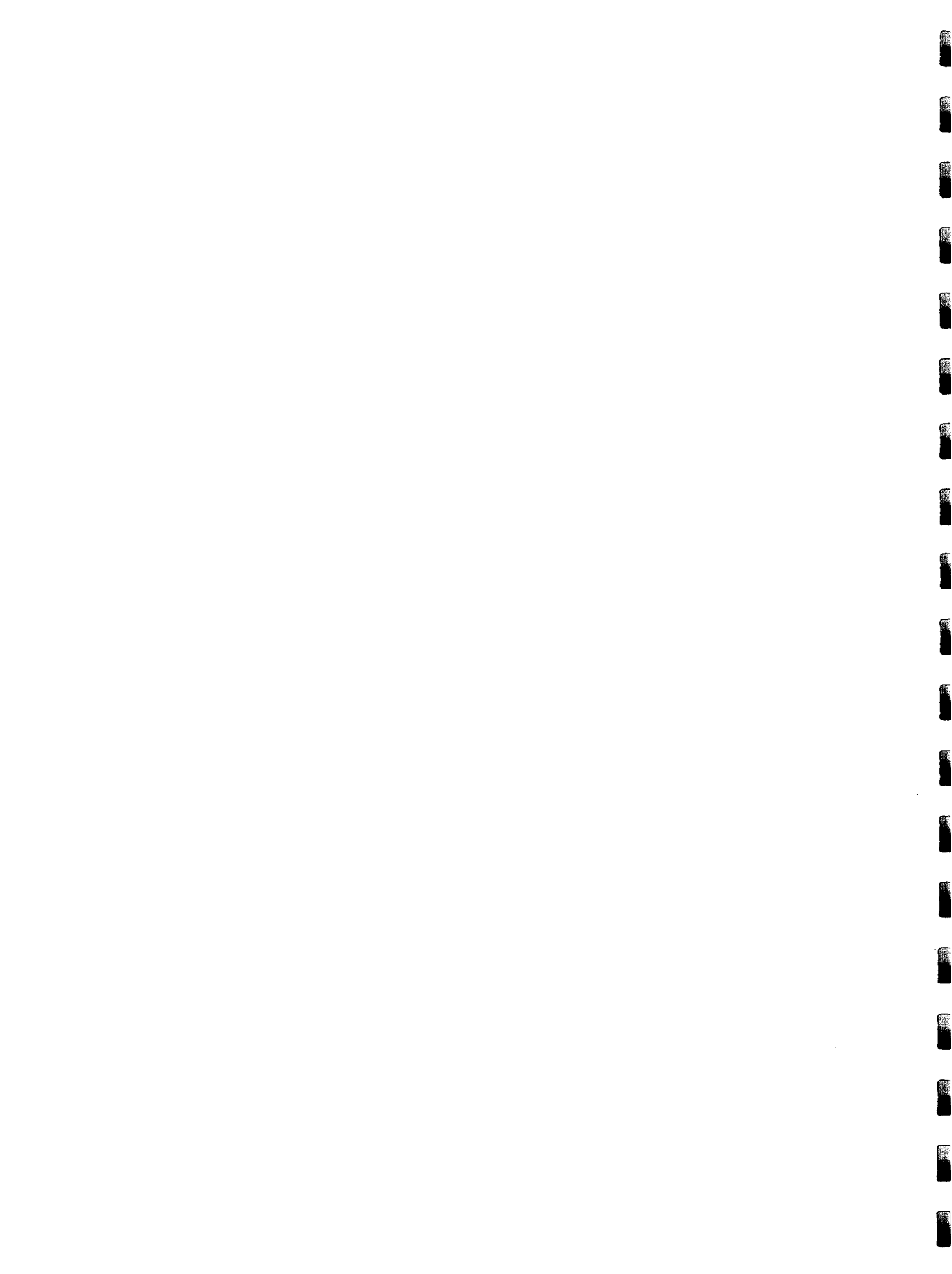
CHLORIDE PLOTS:

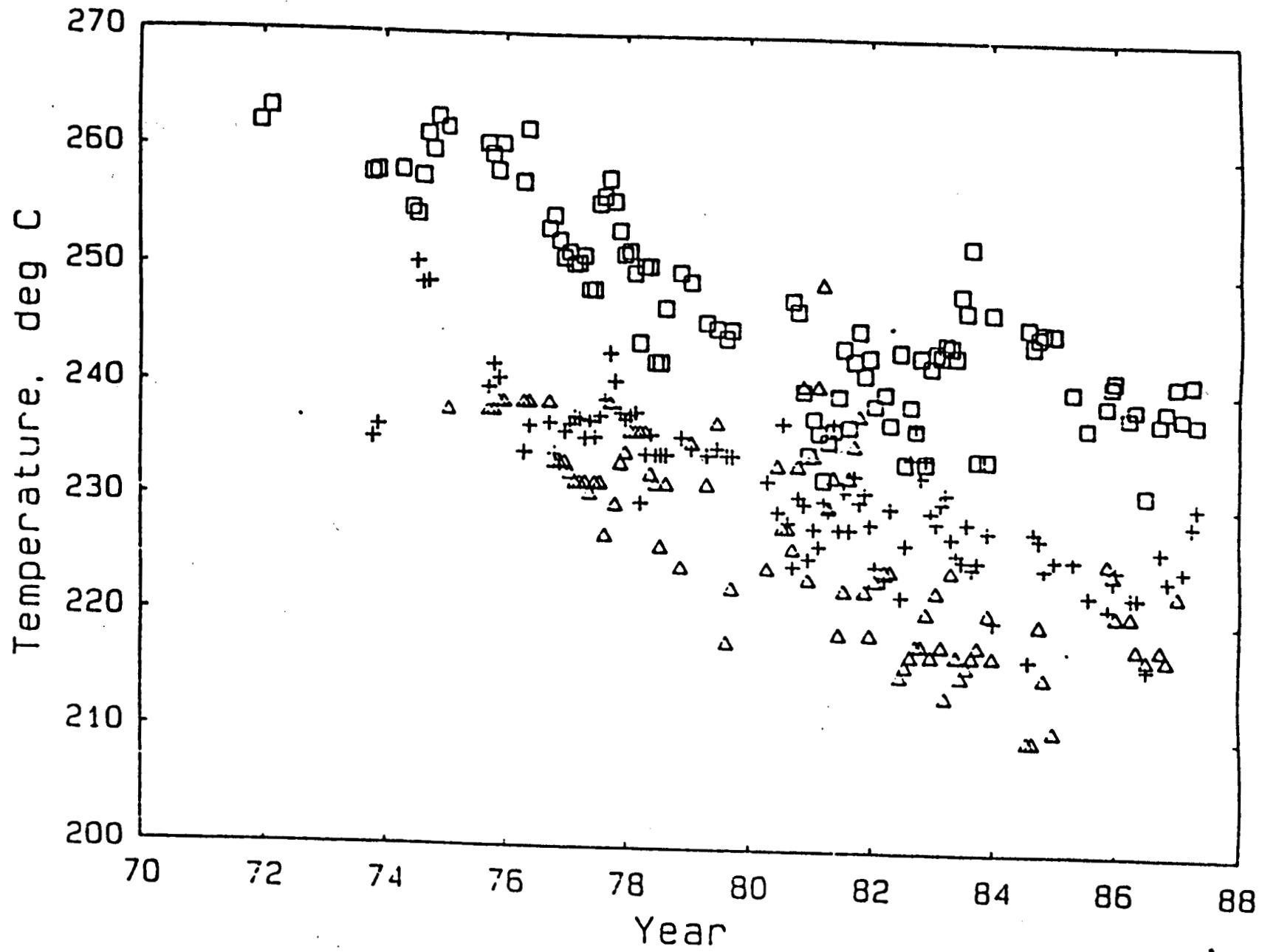
+ : Chloride (as analyzed)

□ : Aquifer Chloride (calc. from T_{NKC})

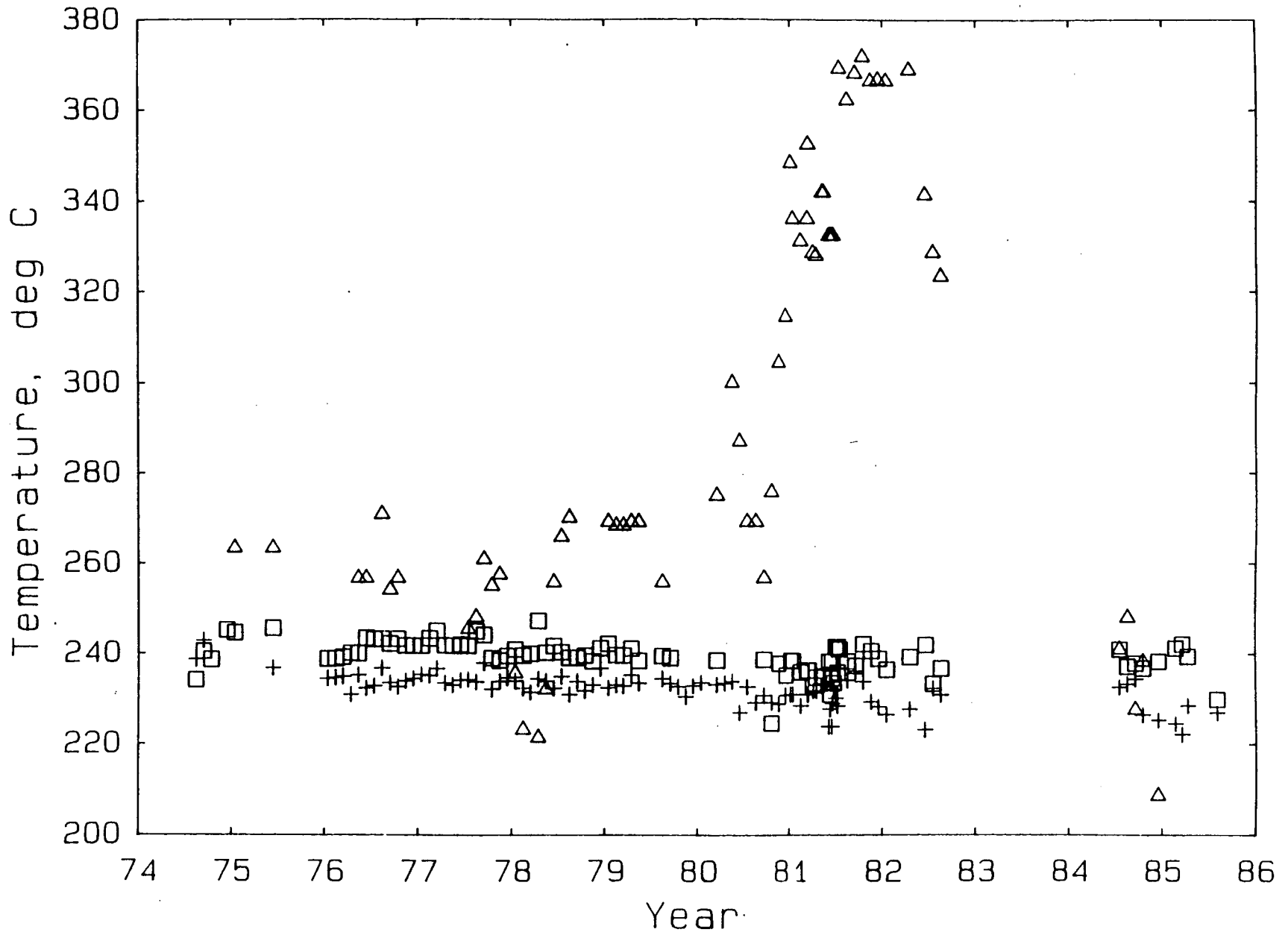
× : Aquifer Chloride (calc. from T_E)

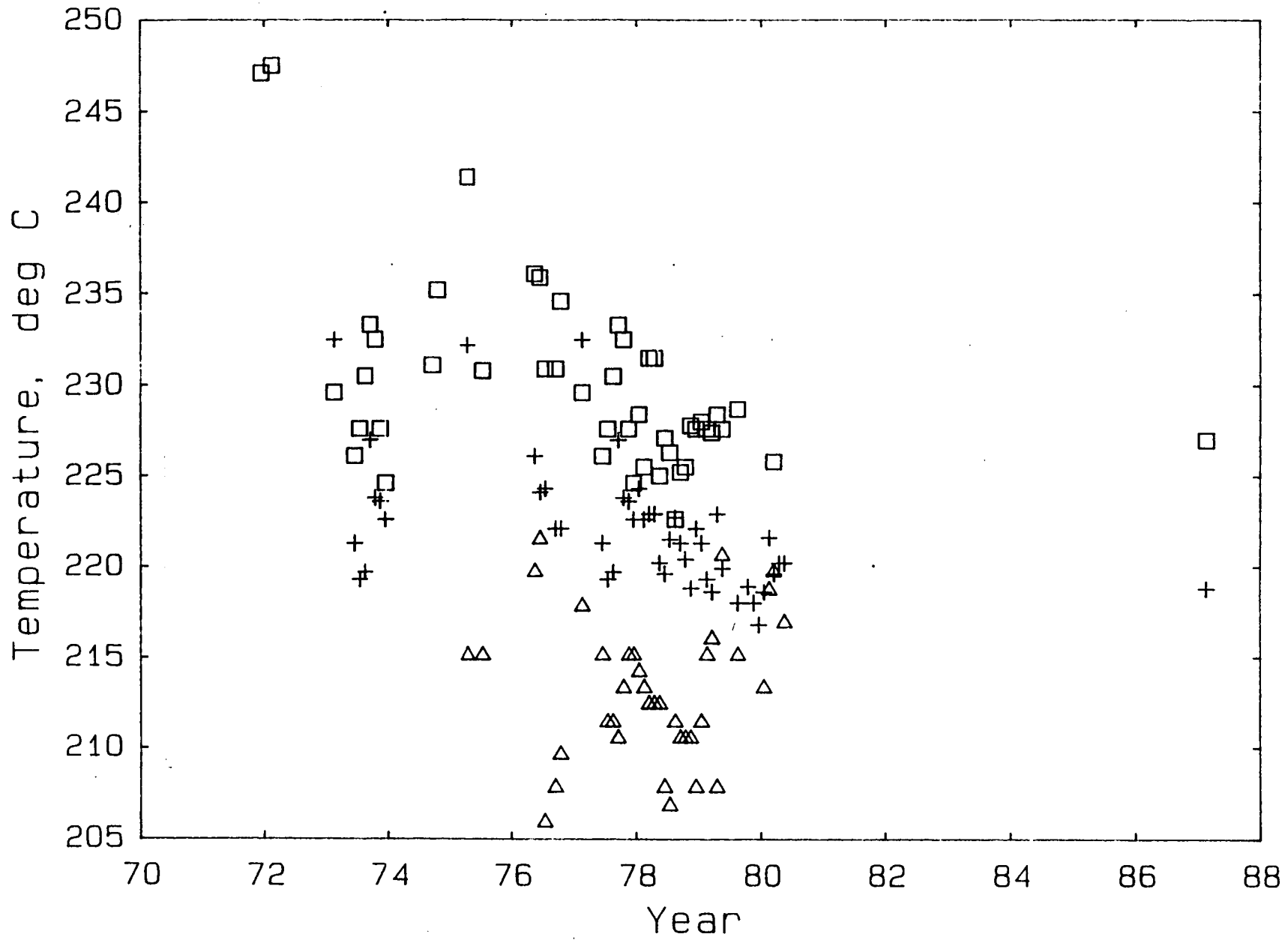
◇ : Aquifer Chloride (calc. from T_{SIL})



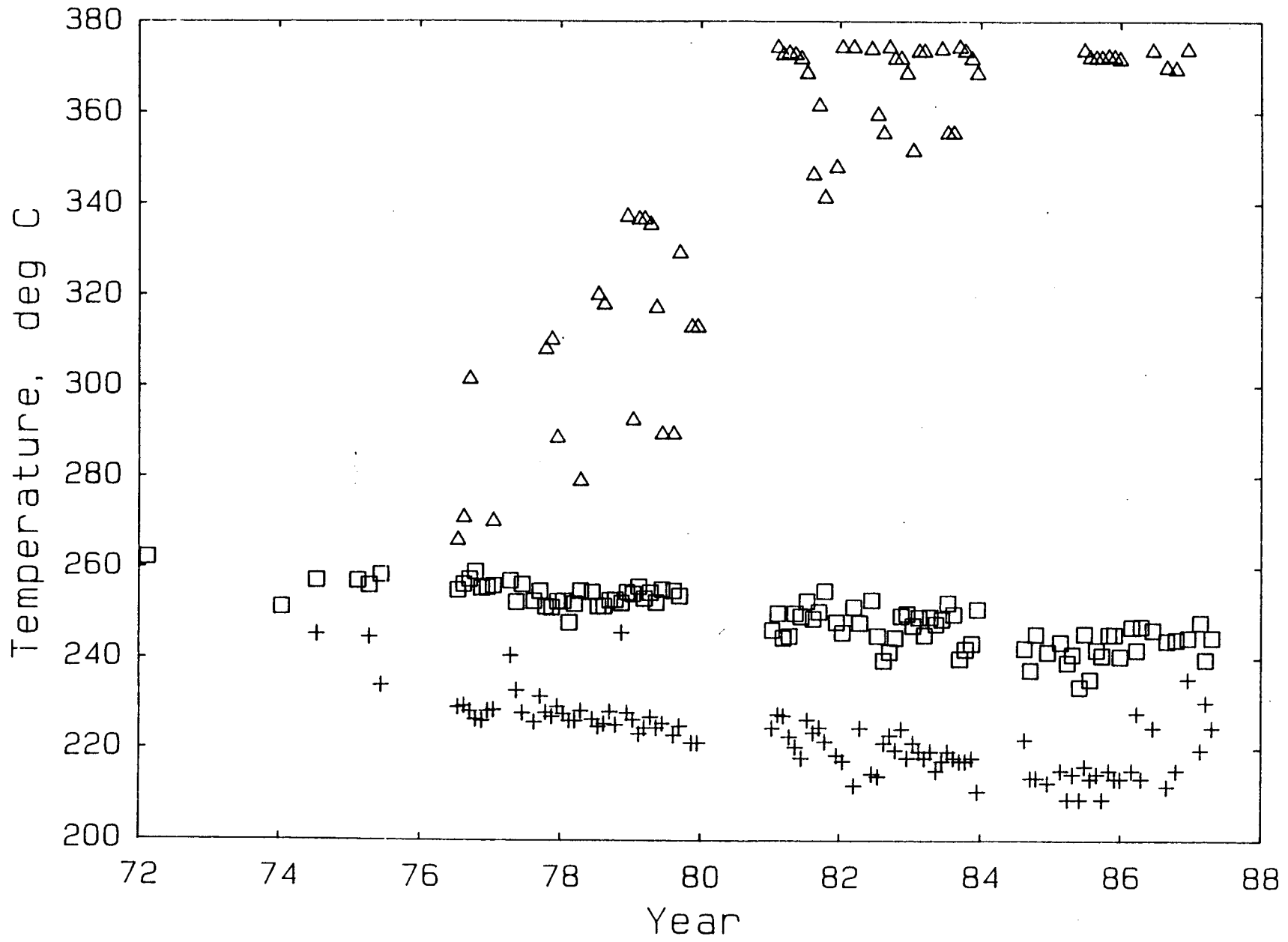


WELL AH-1

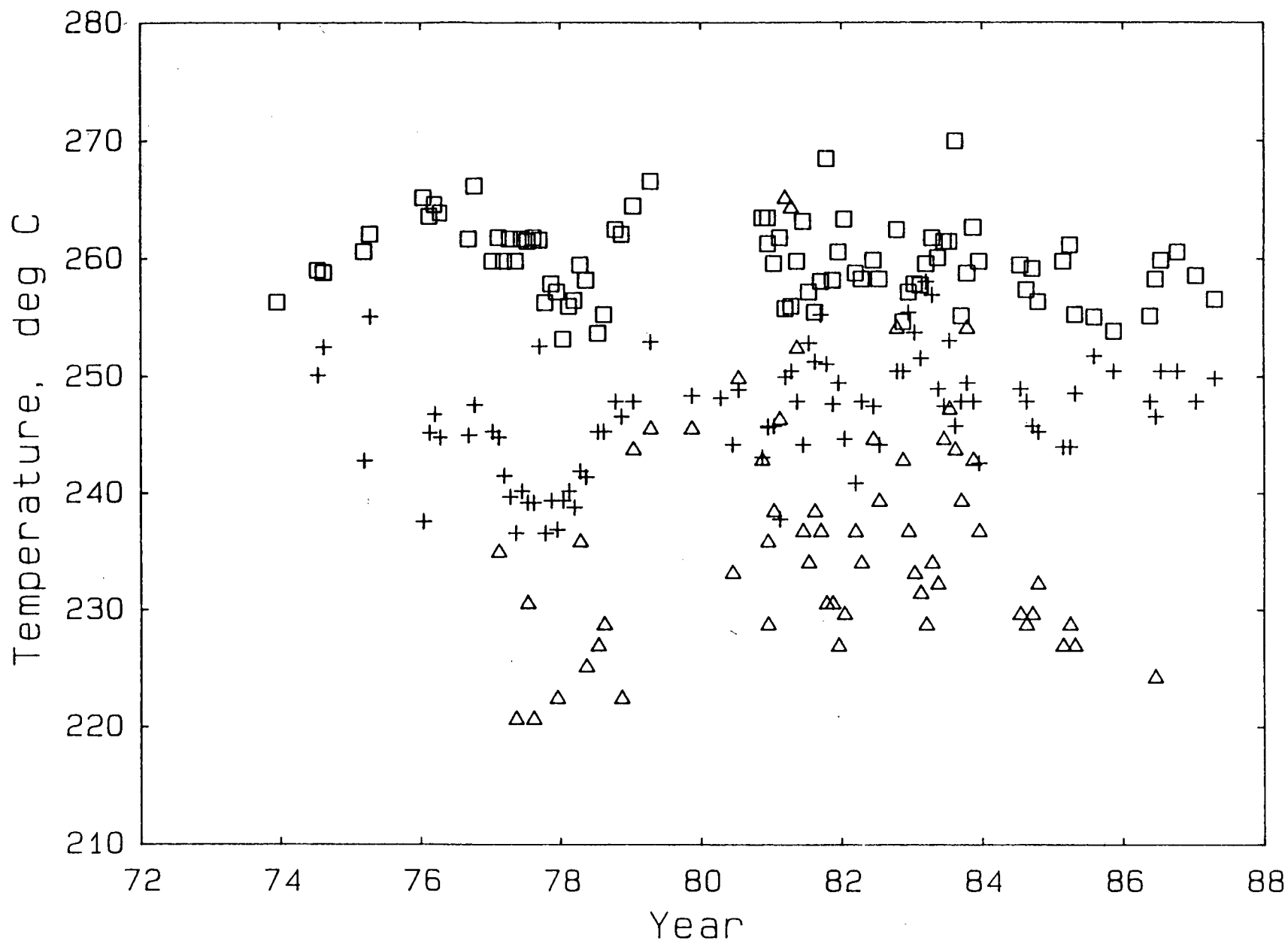




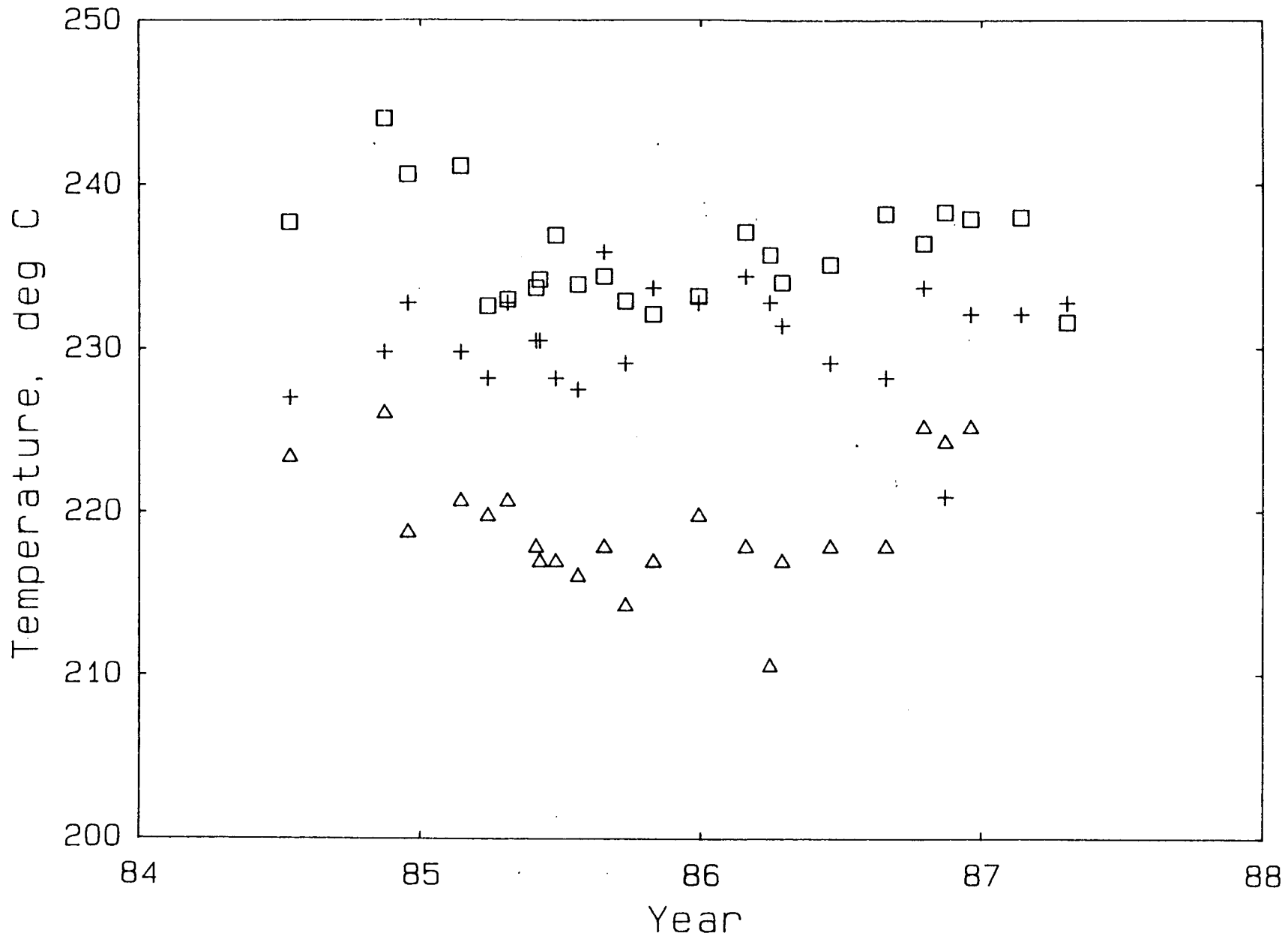
WELL AH-5



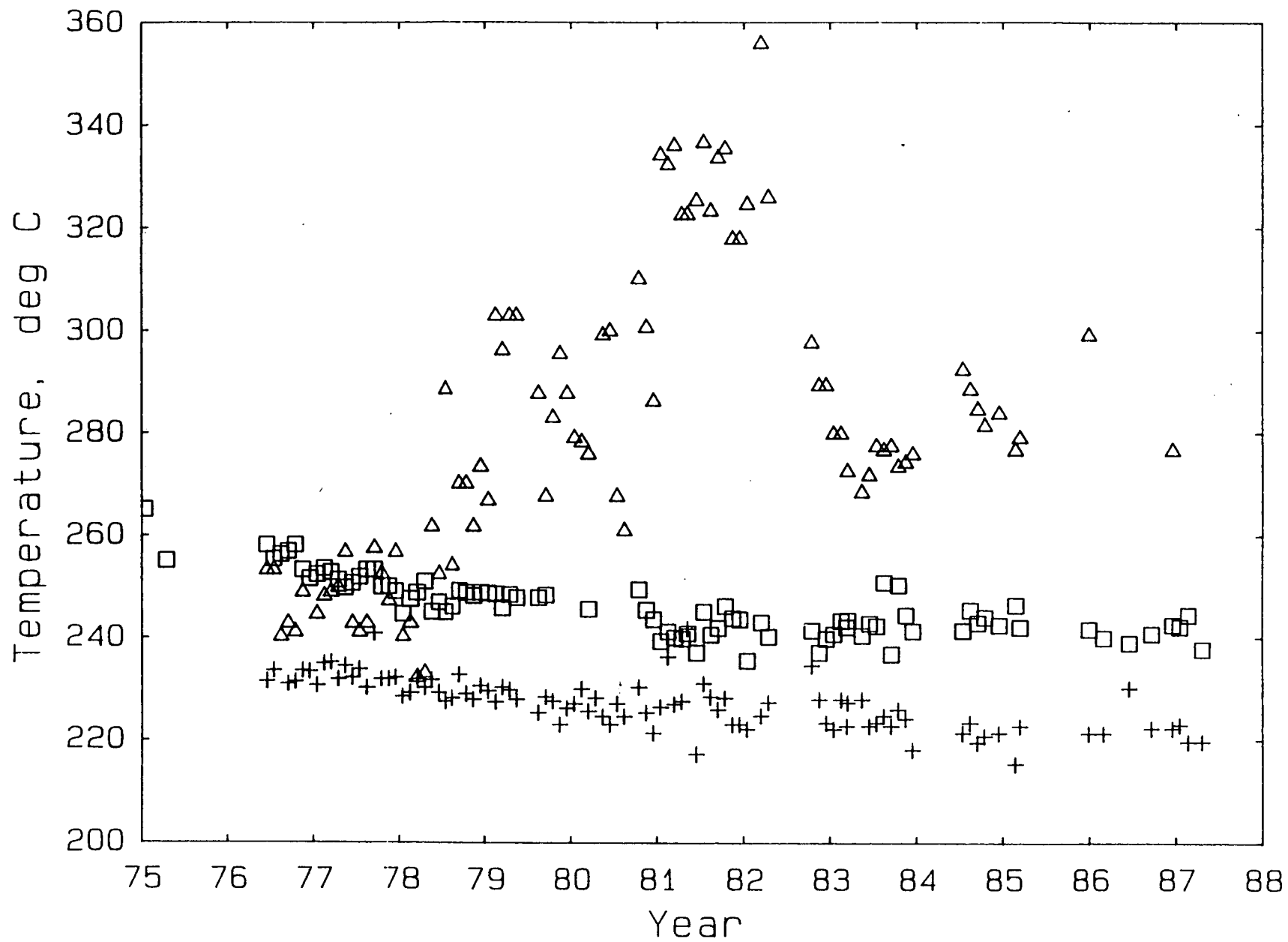
WELL AH-6



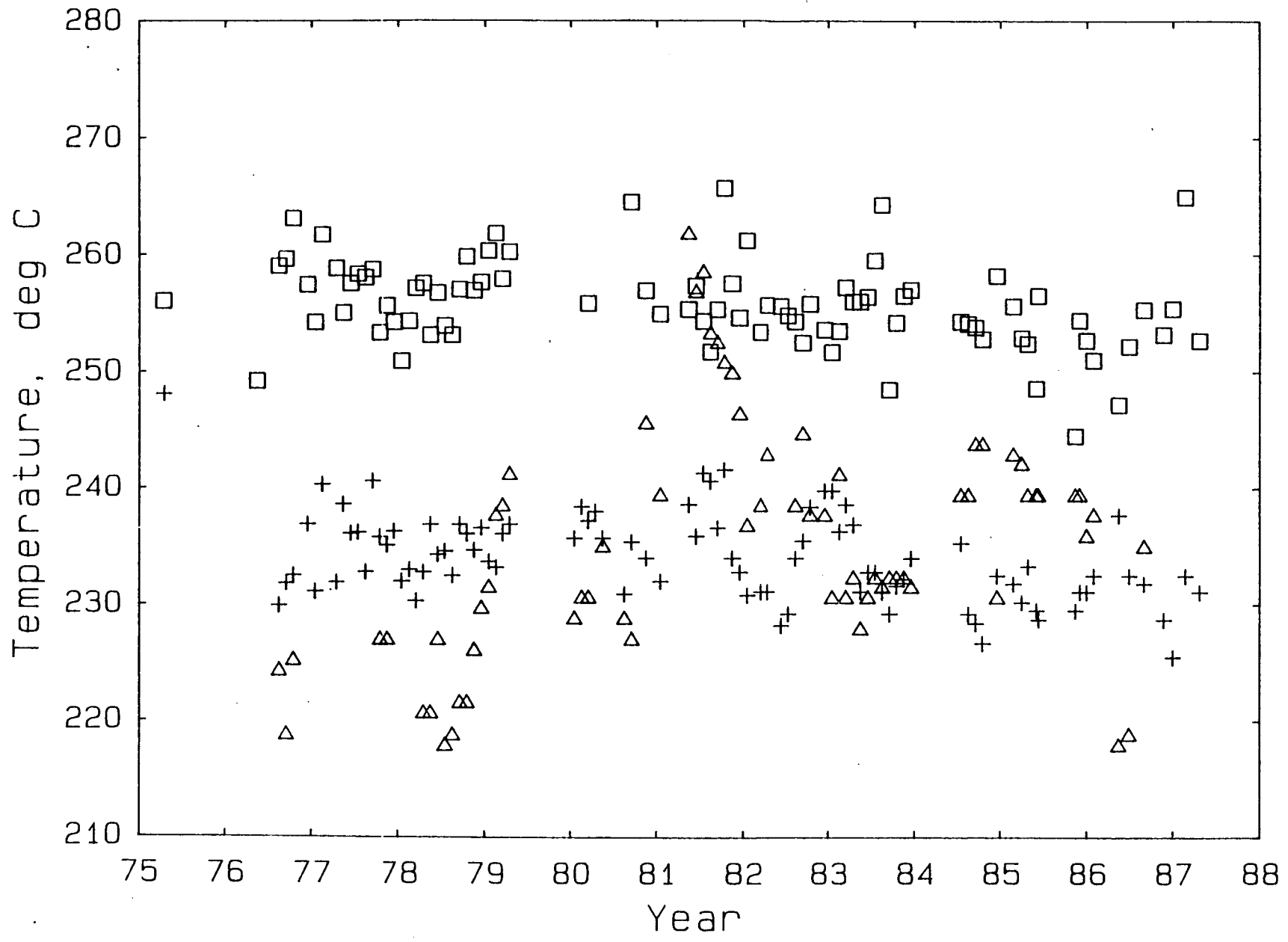
WELL AH-7



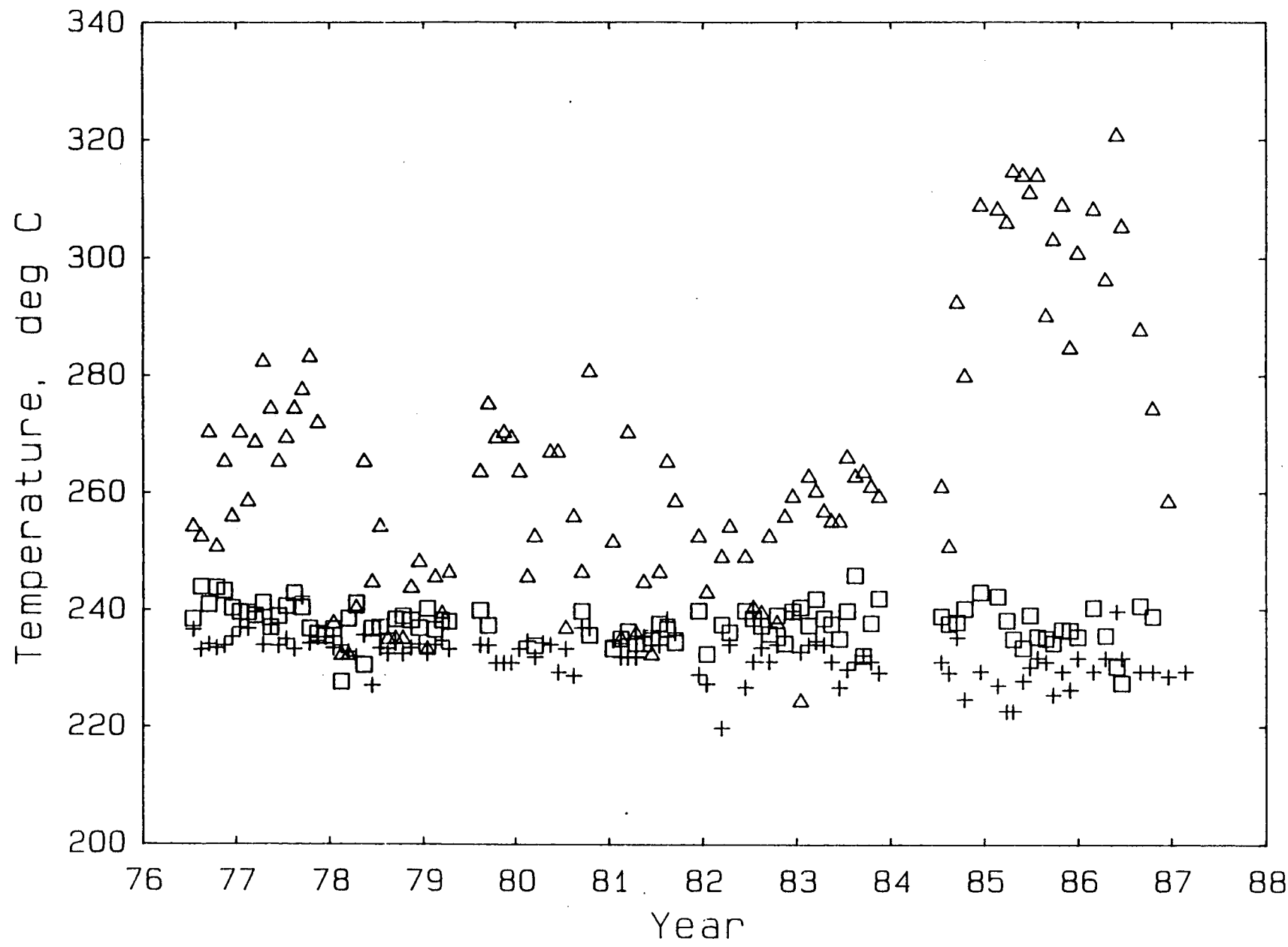
WELL AH-19



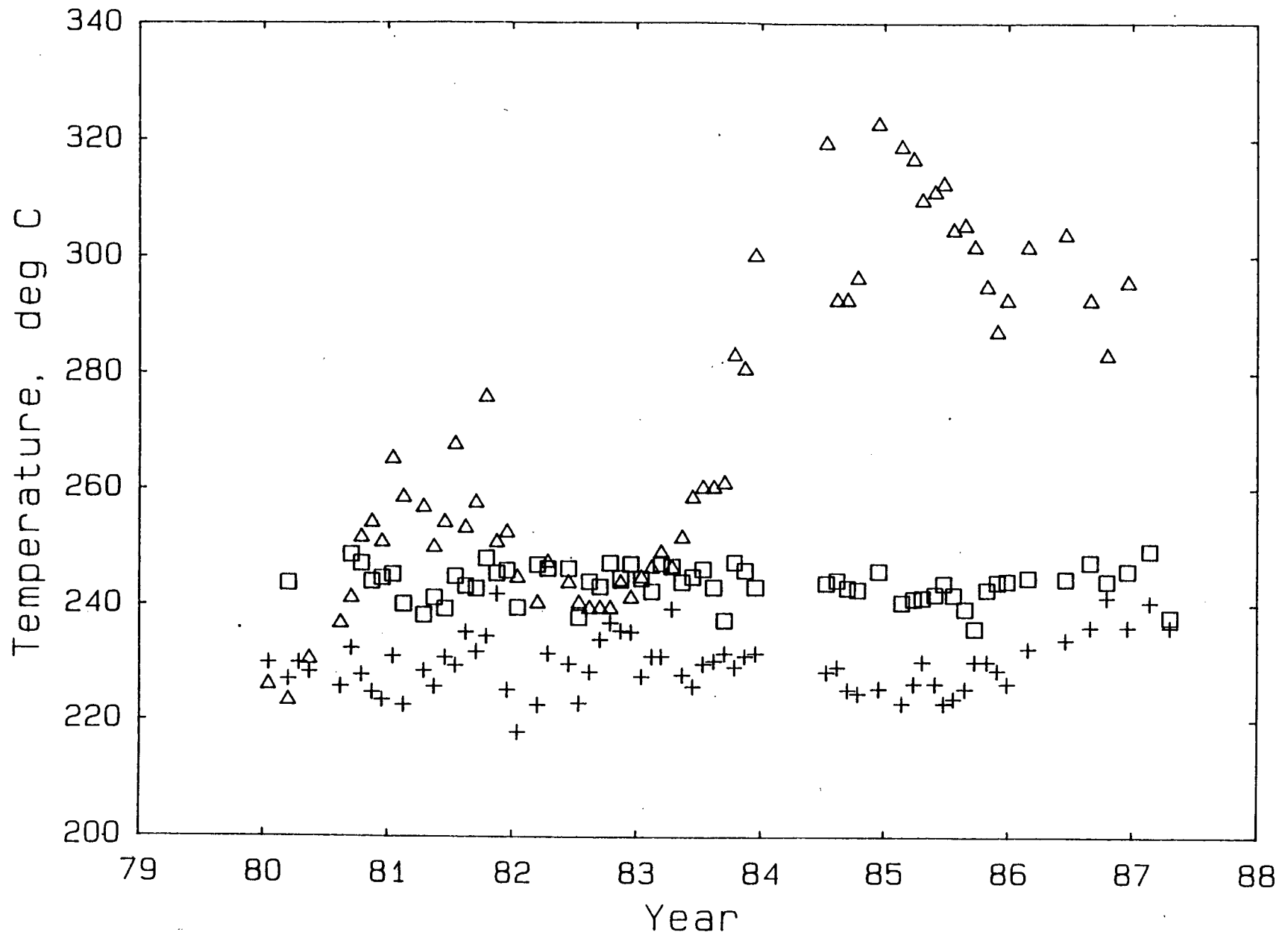
WELL AH-20



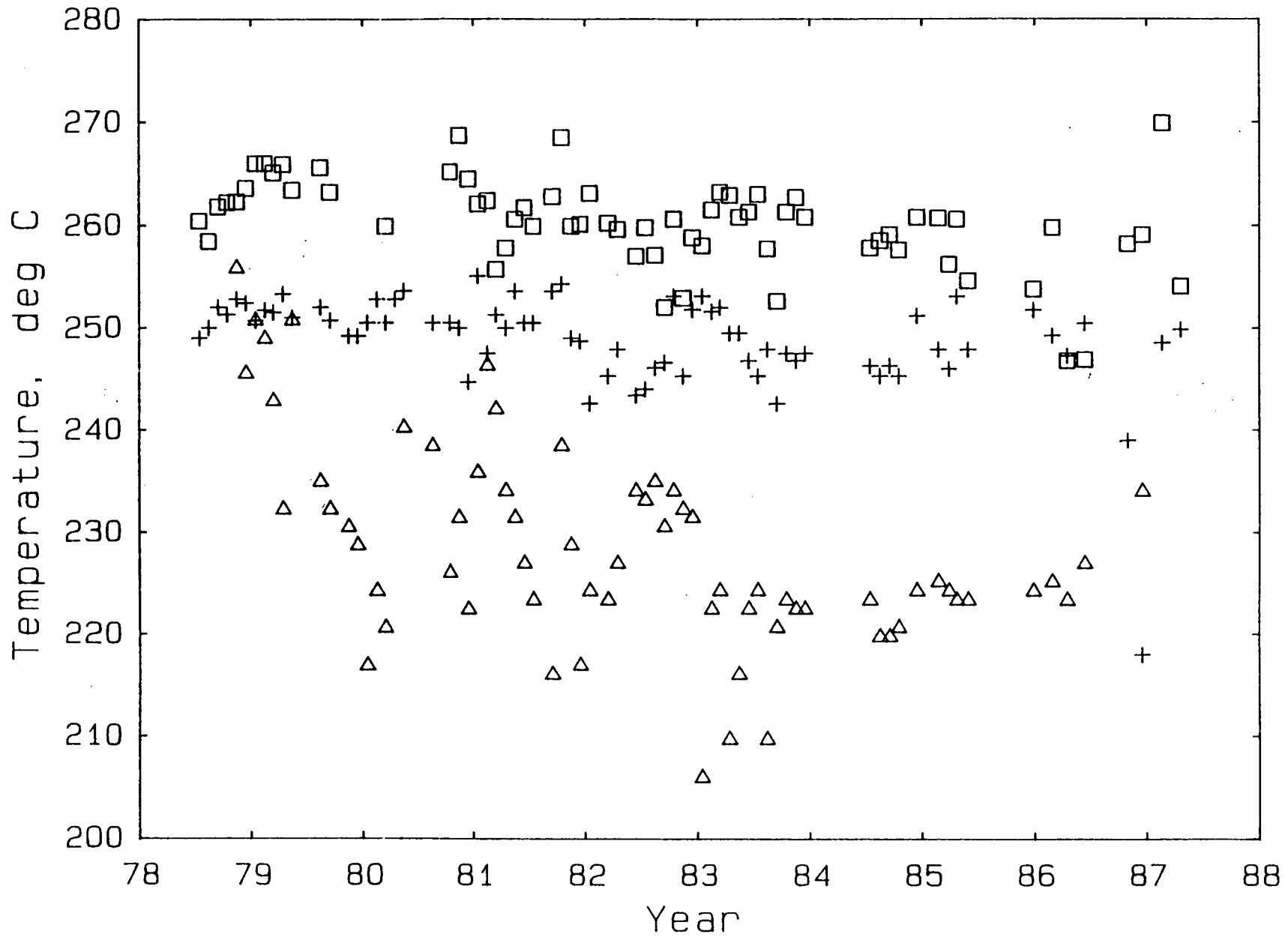
WELL AH-21



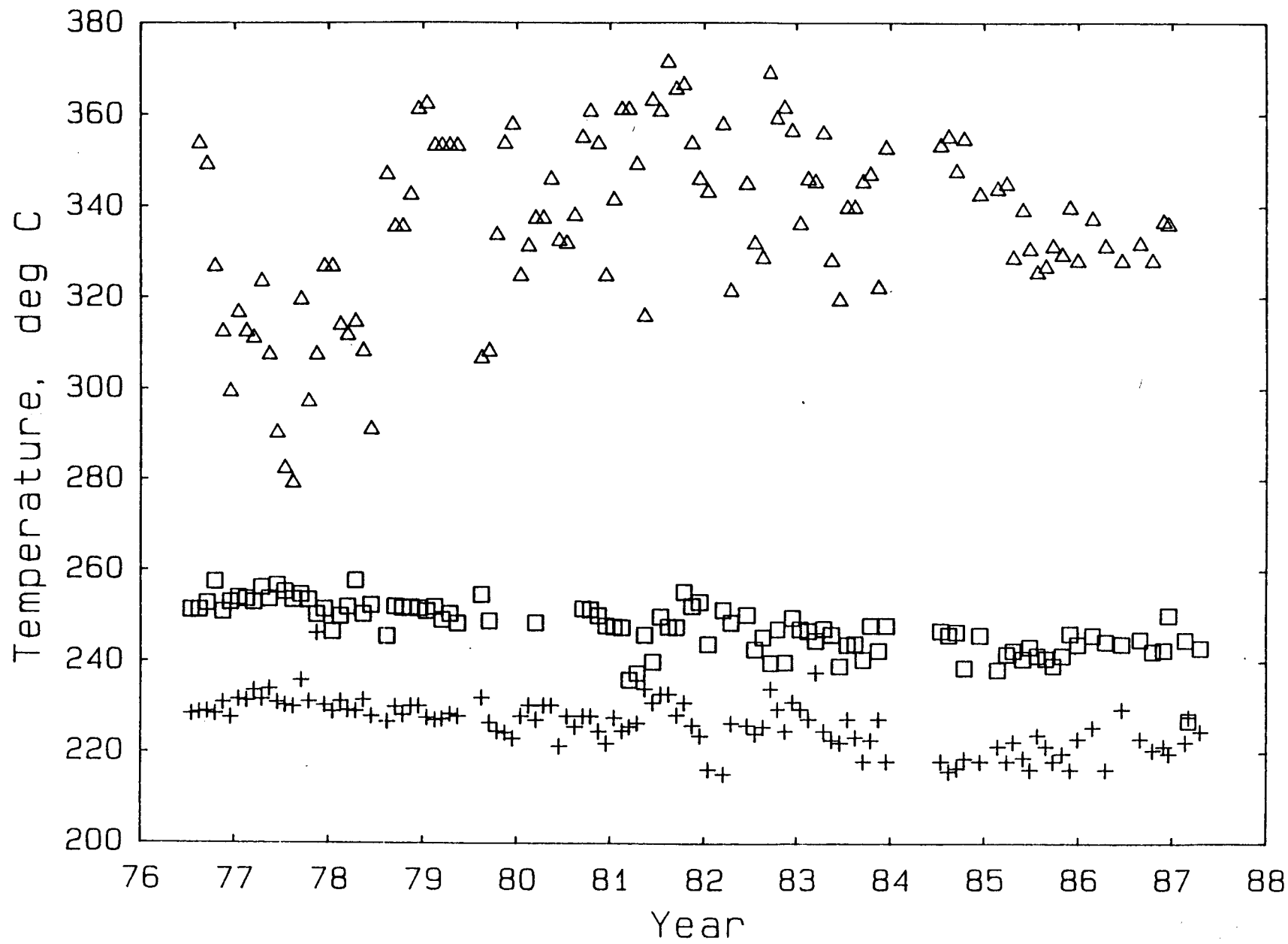
WELL AH-22

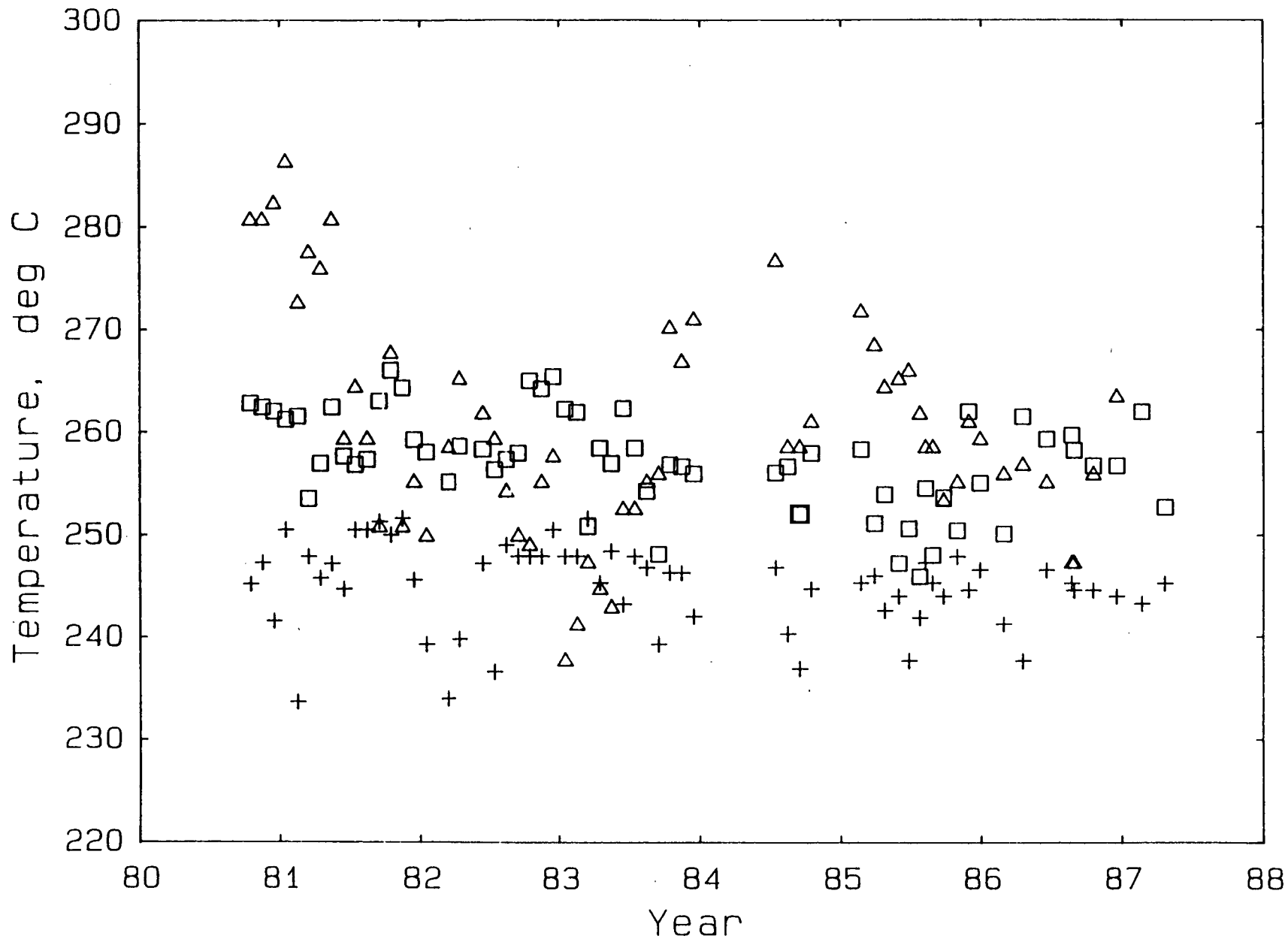


WELL AH-23

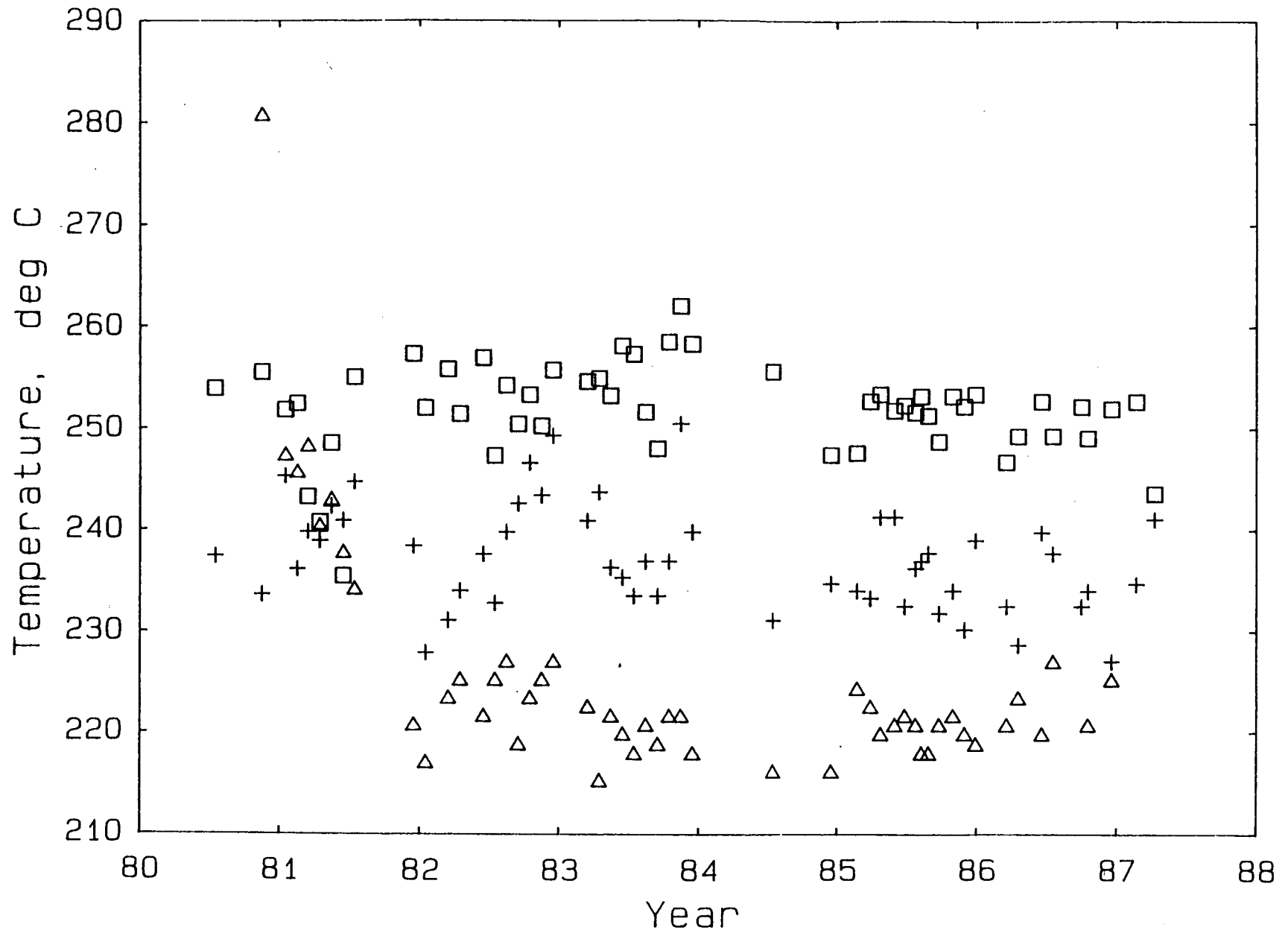


WELL AH-24

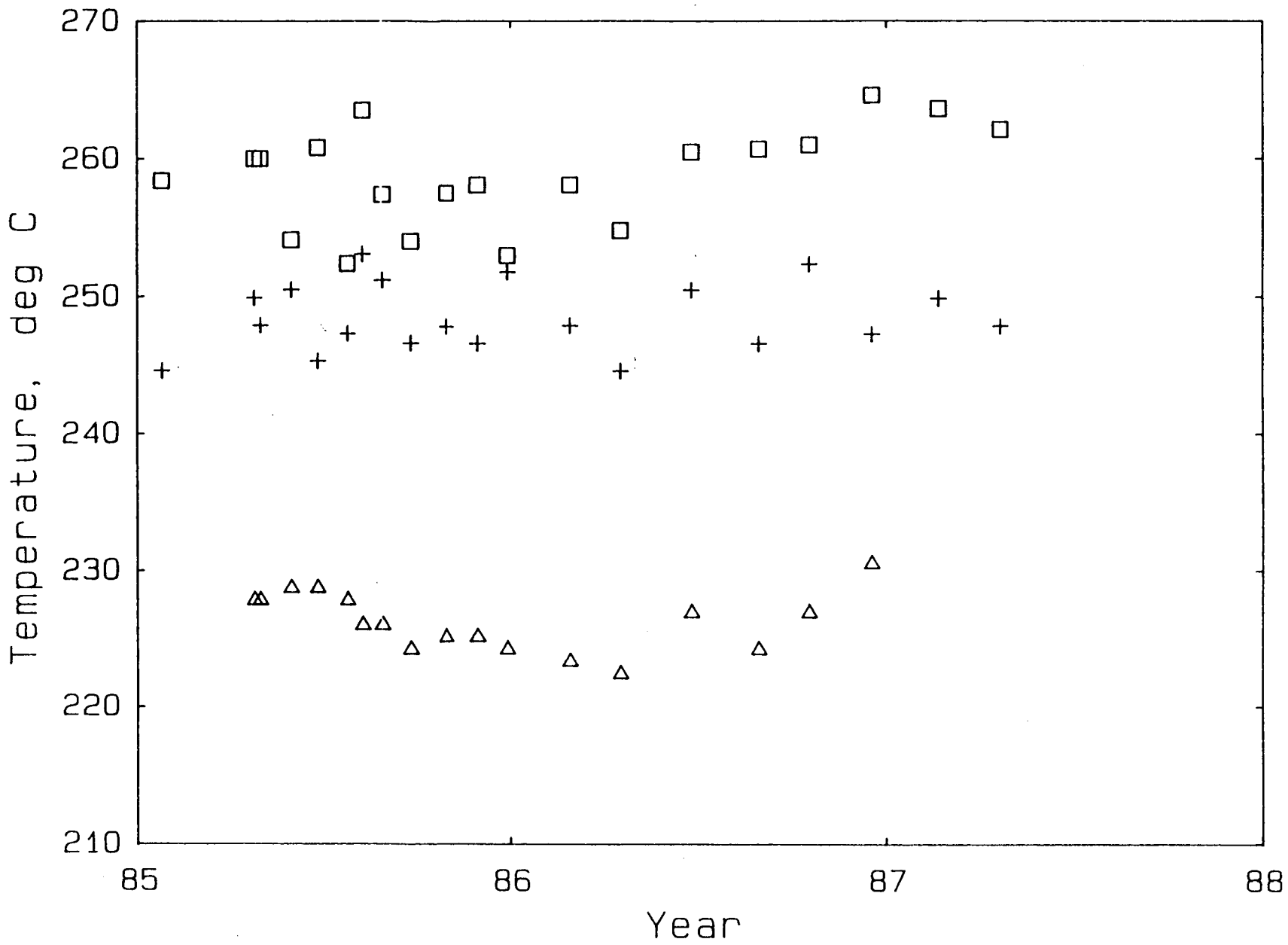




WELL AH-27

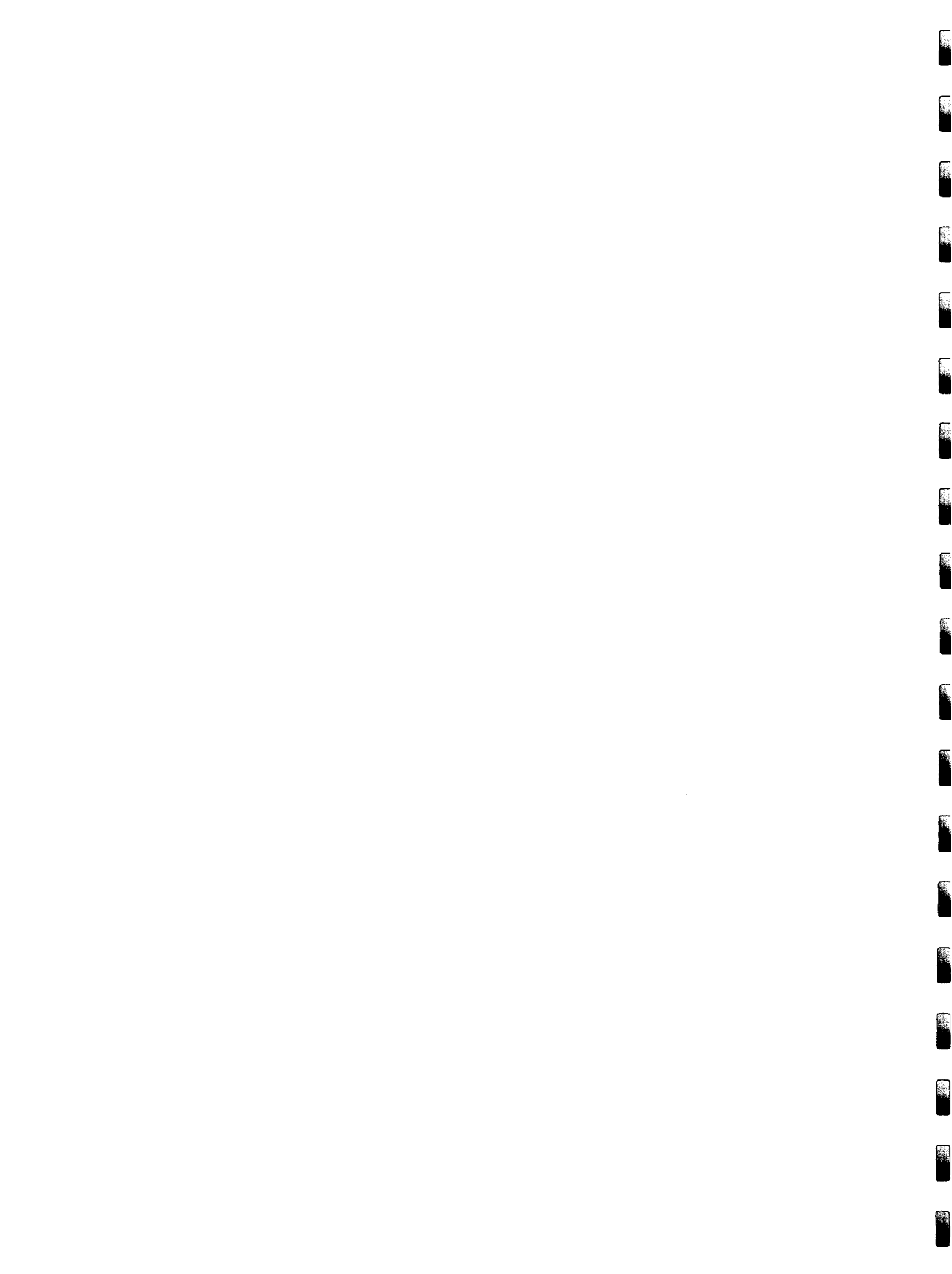


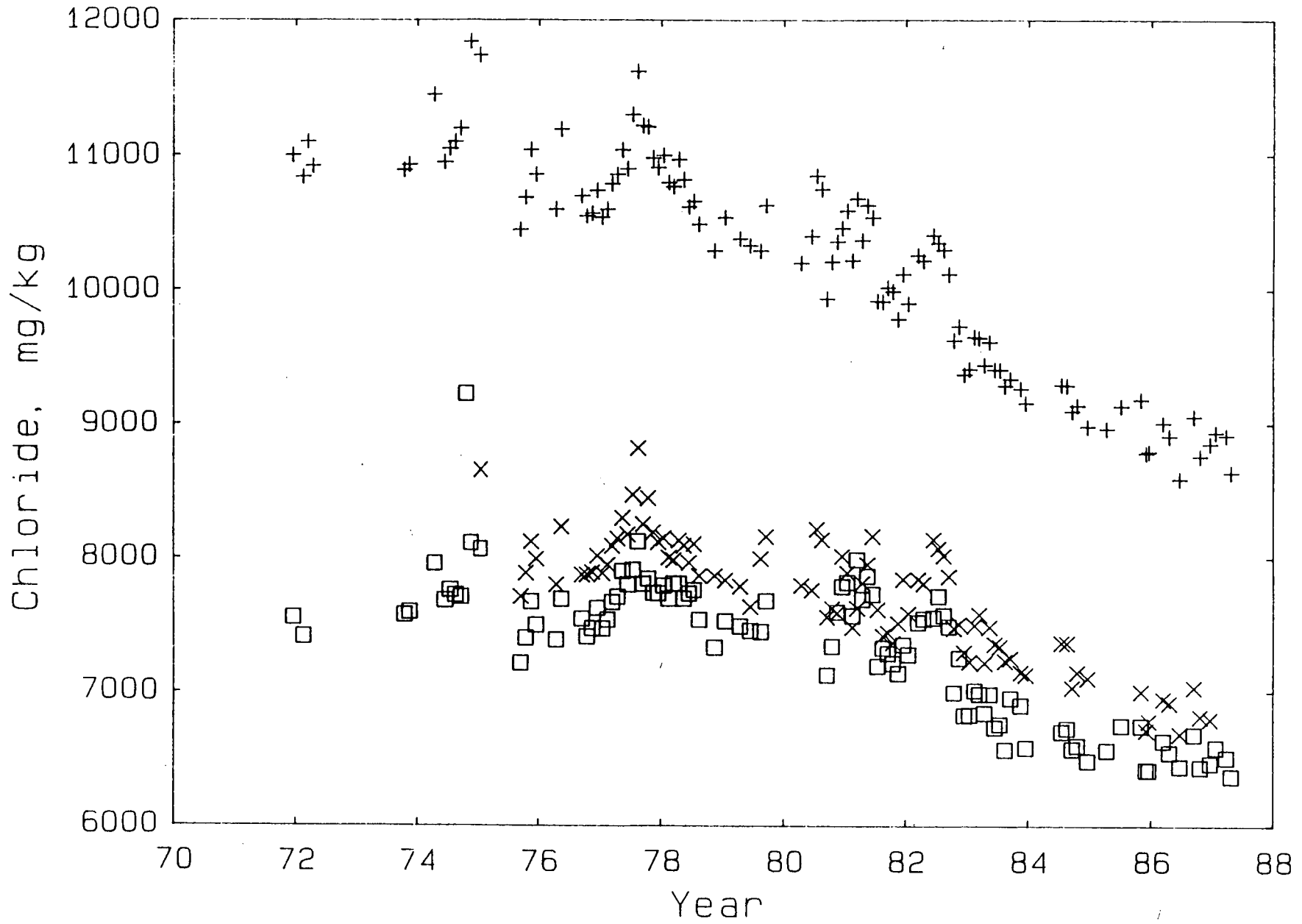
WELL AH-28



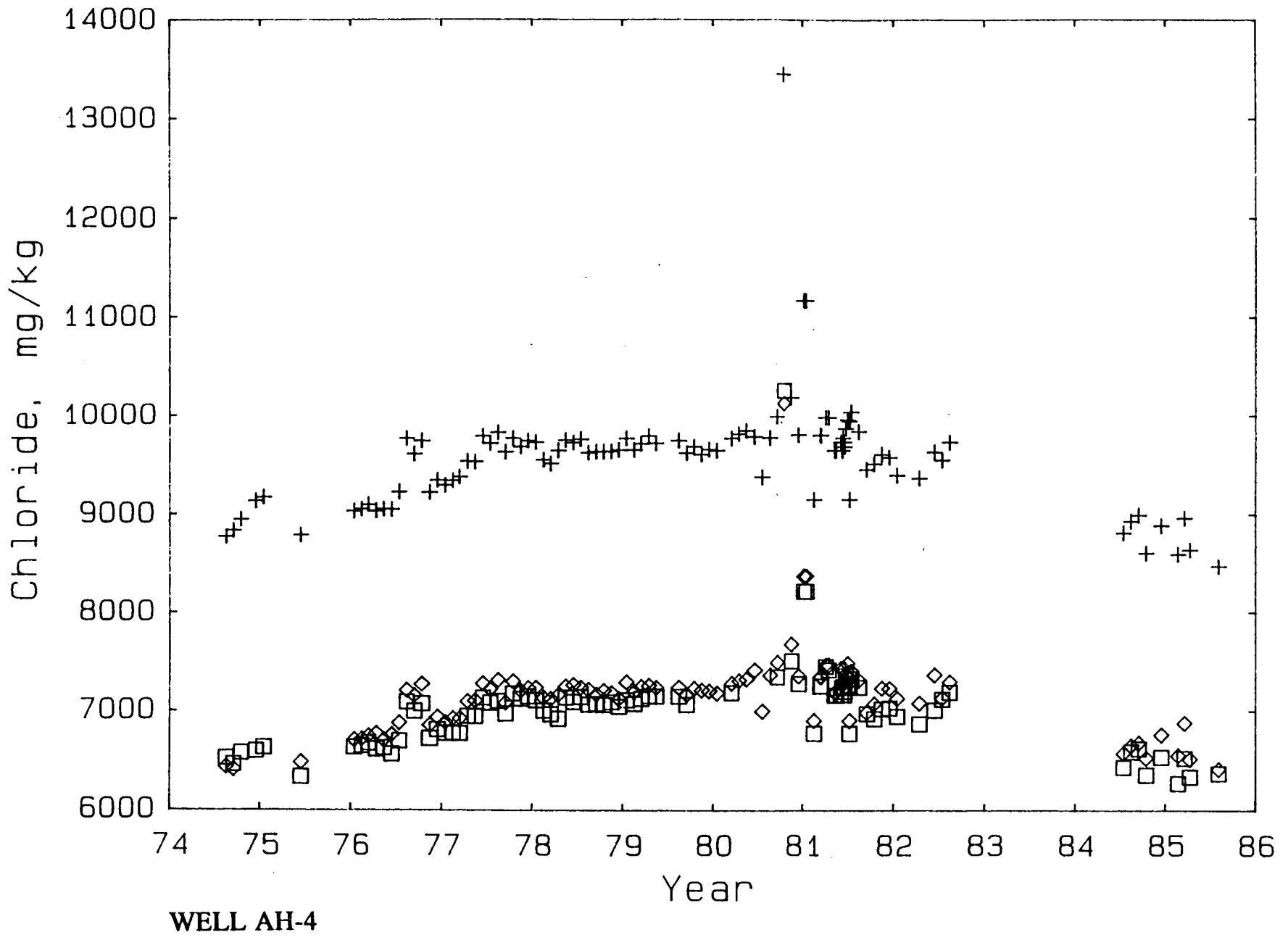
WELL AH-31

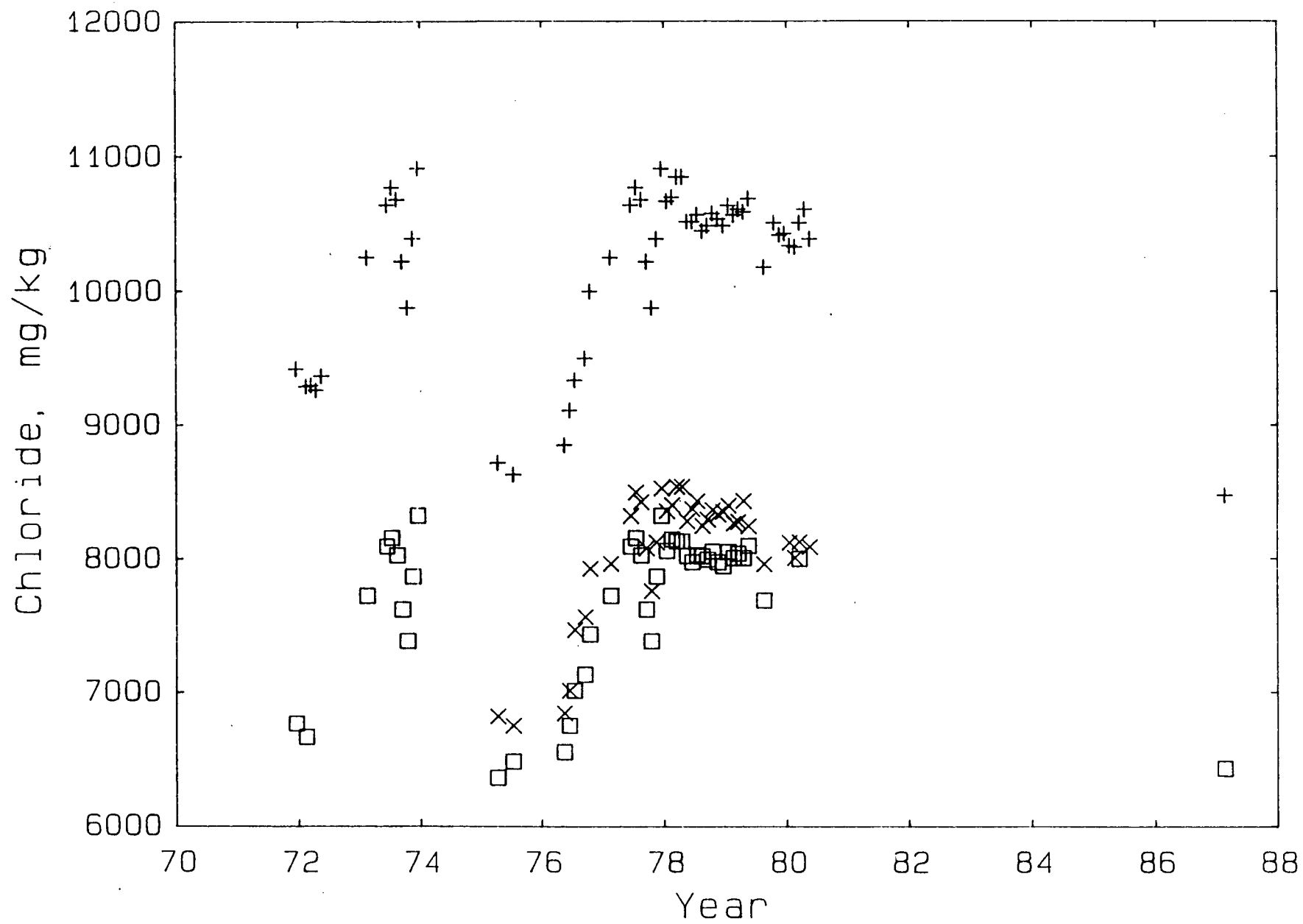
-119-
20

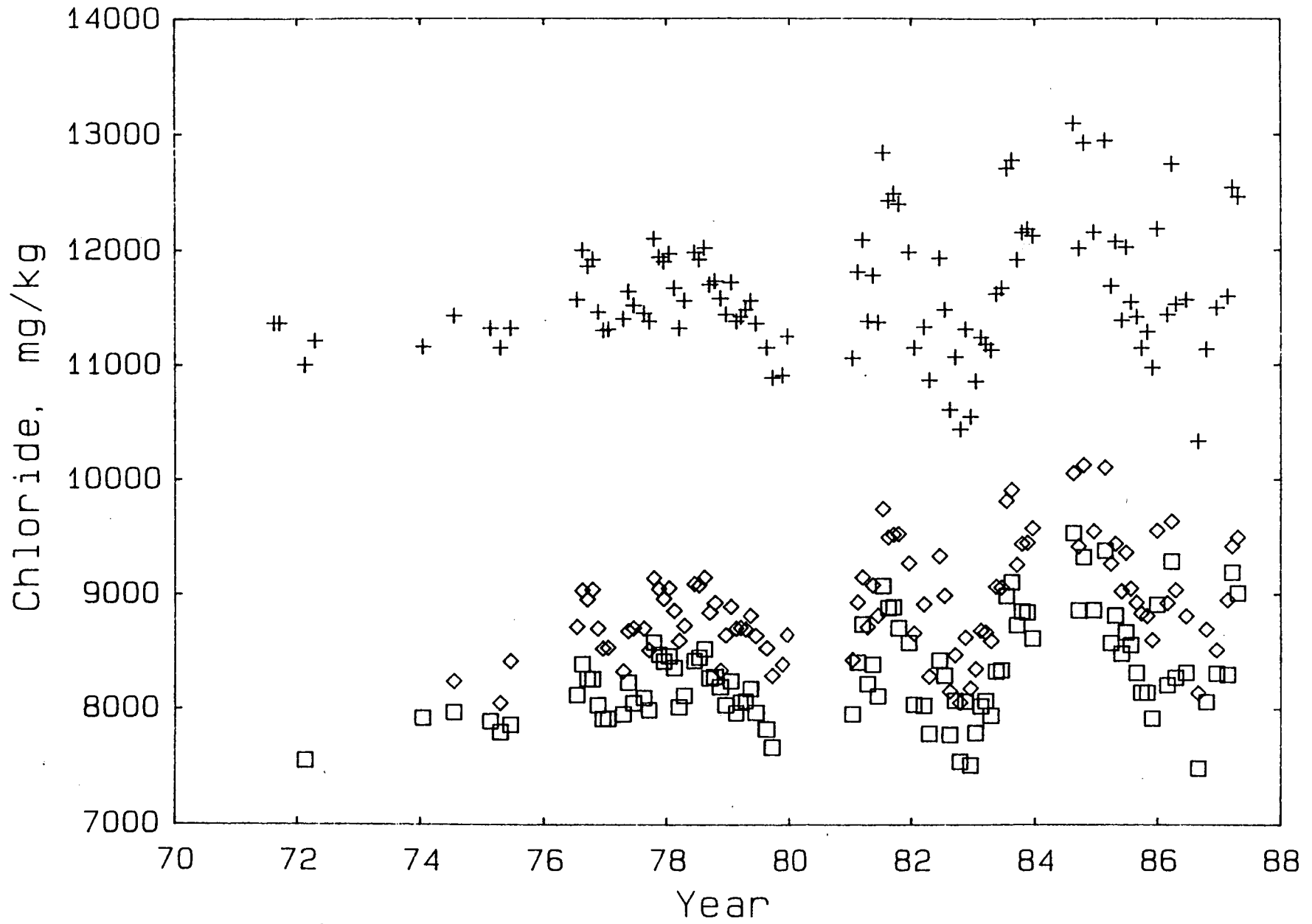


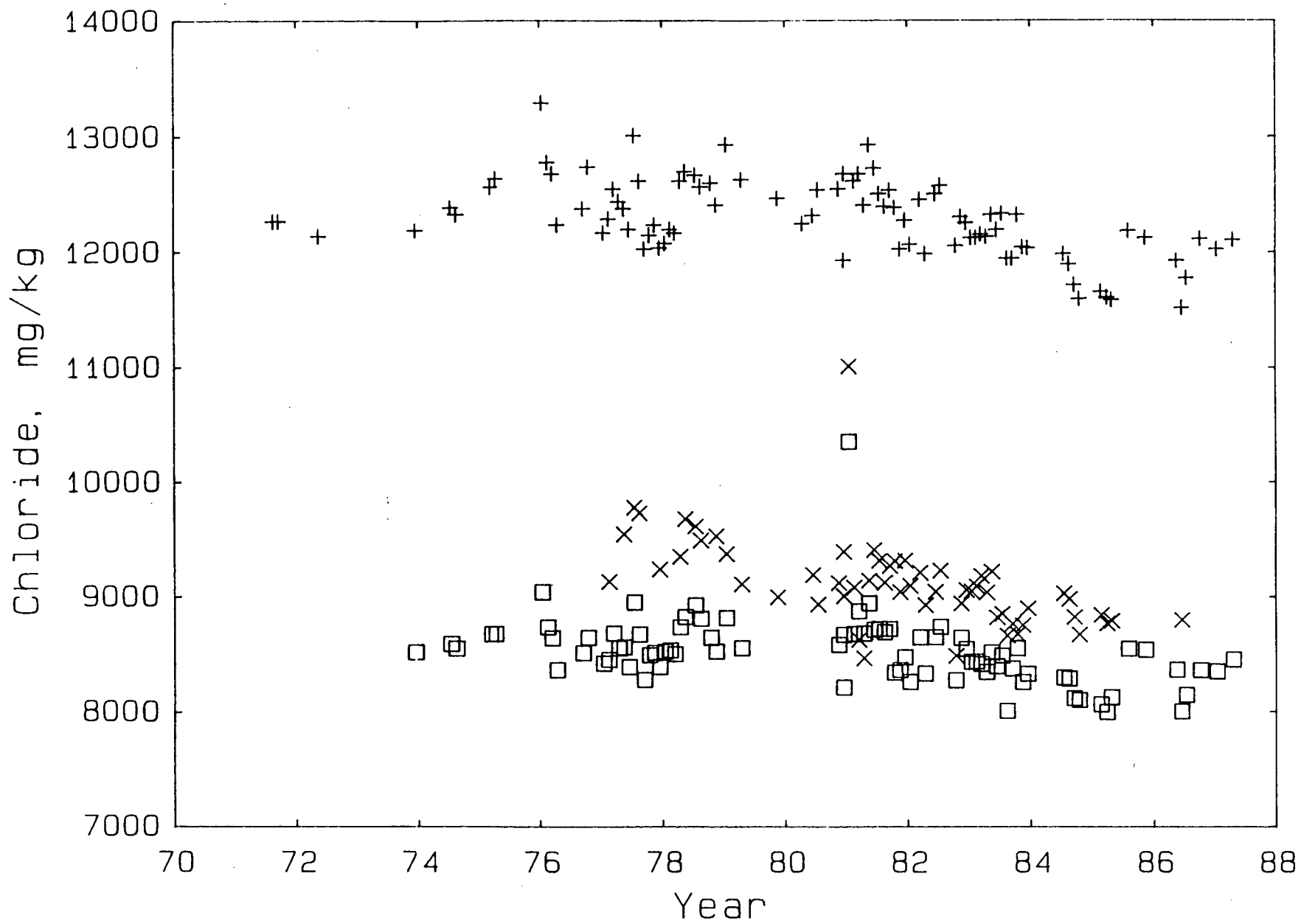


WELL AH-1

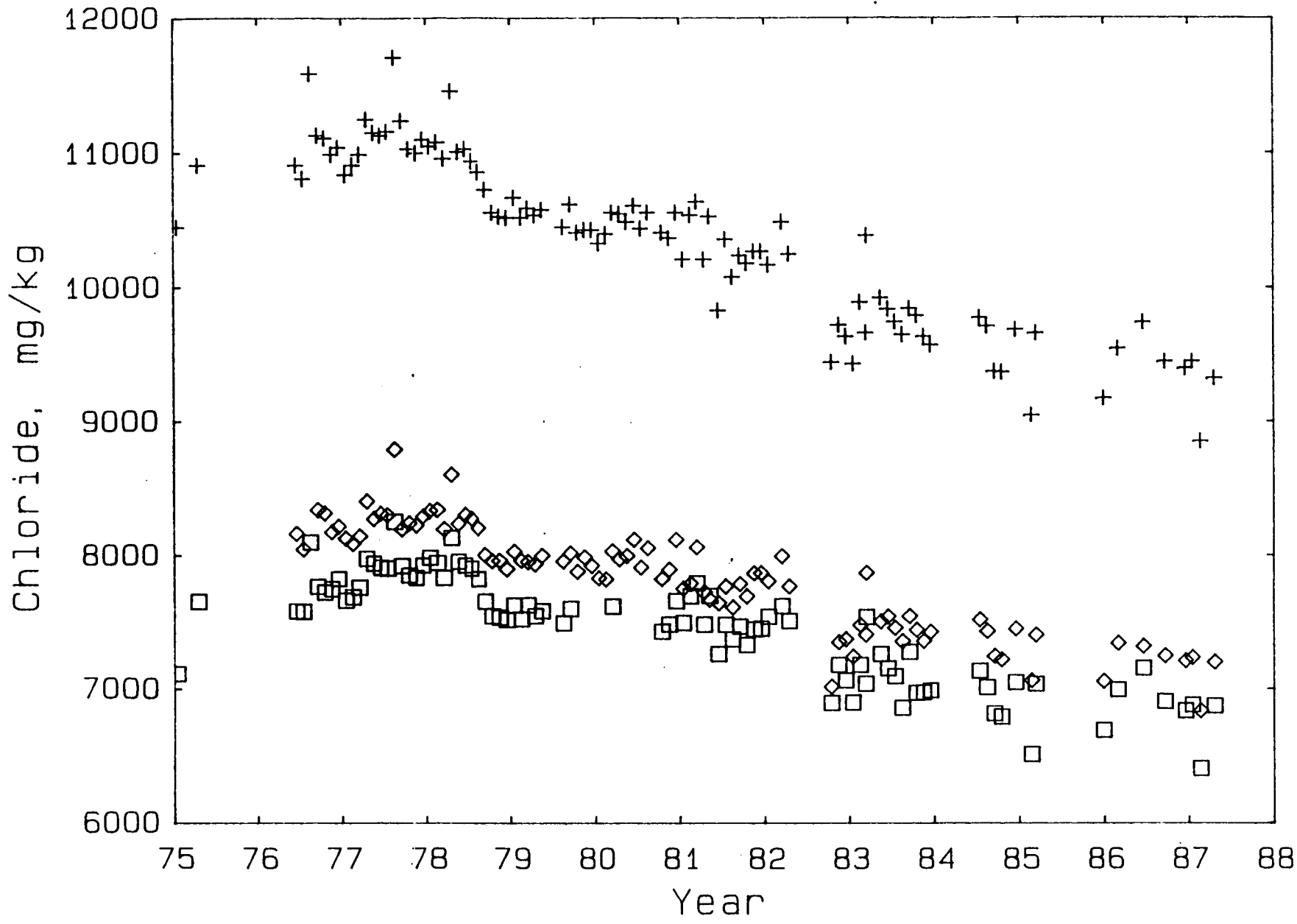




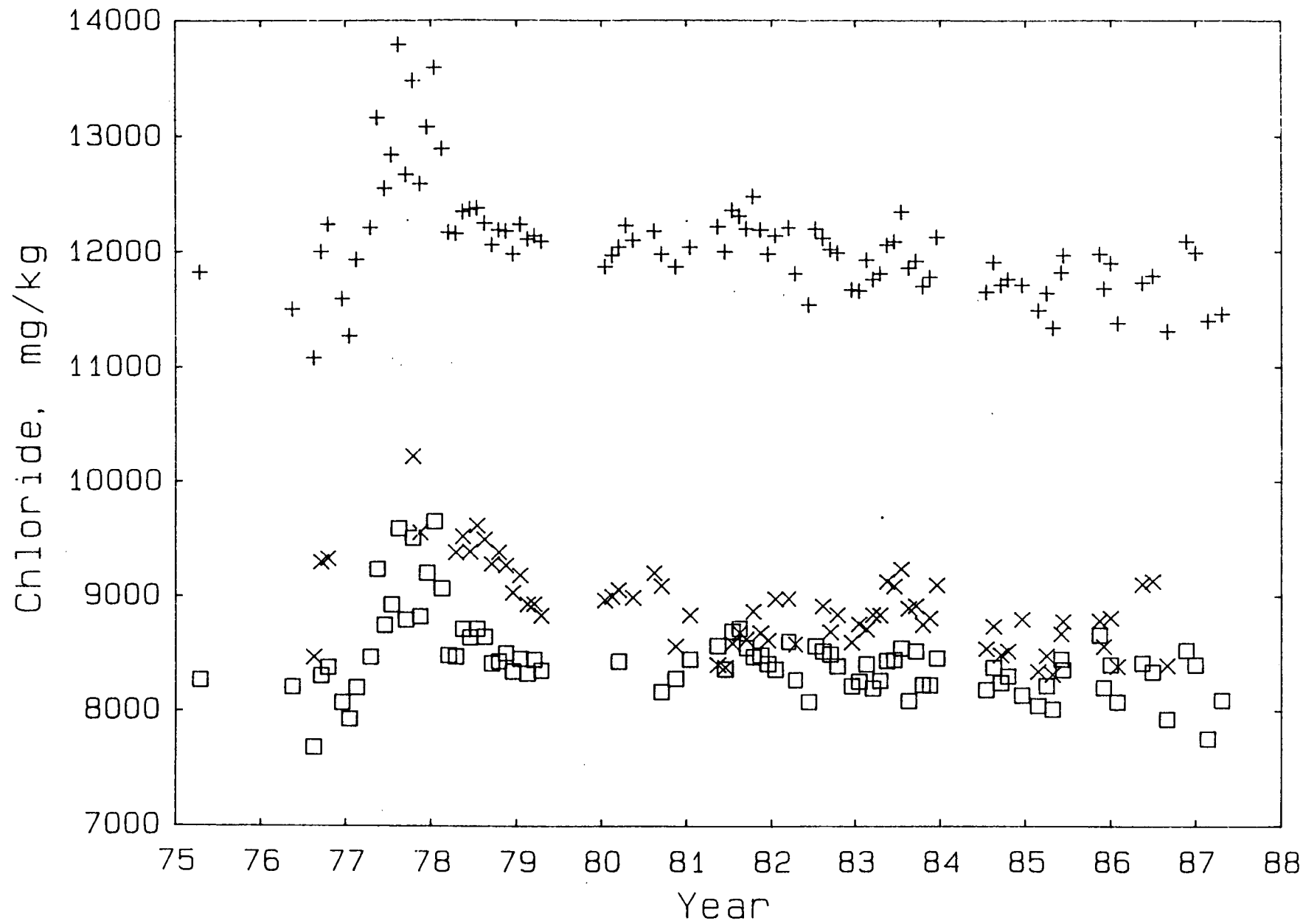




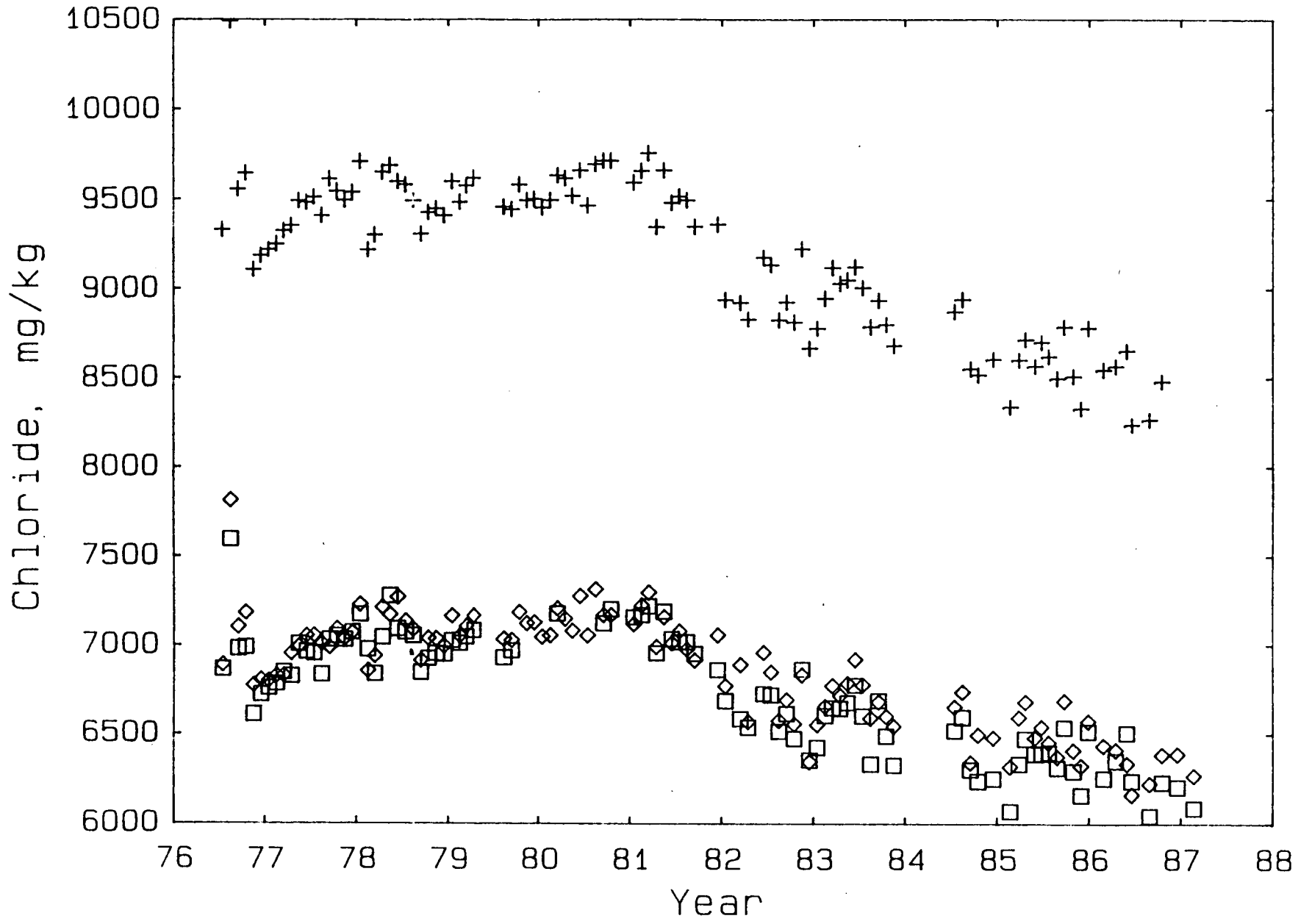
WELL AH-7



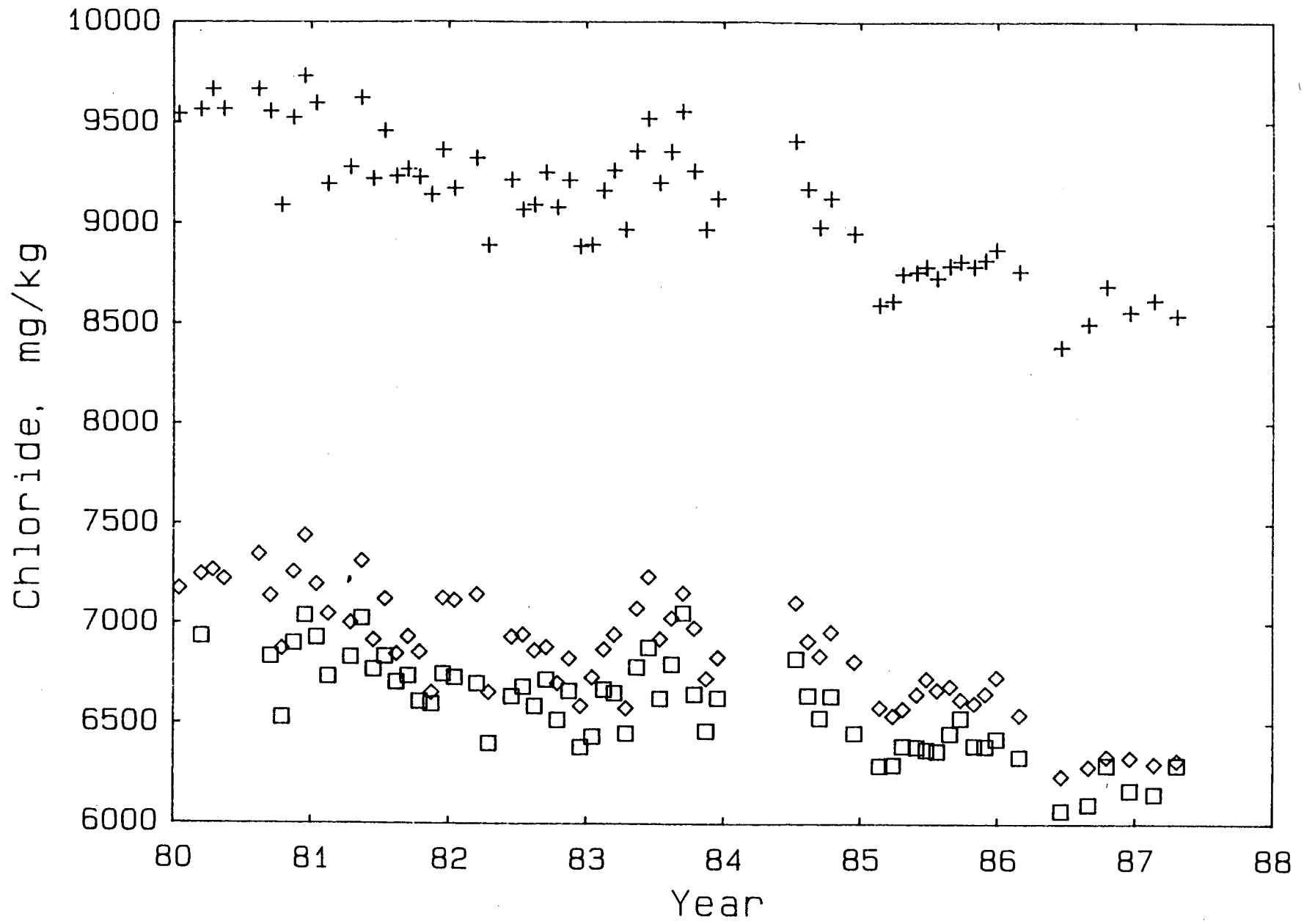
WELL AH-20



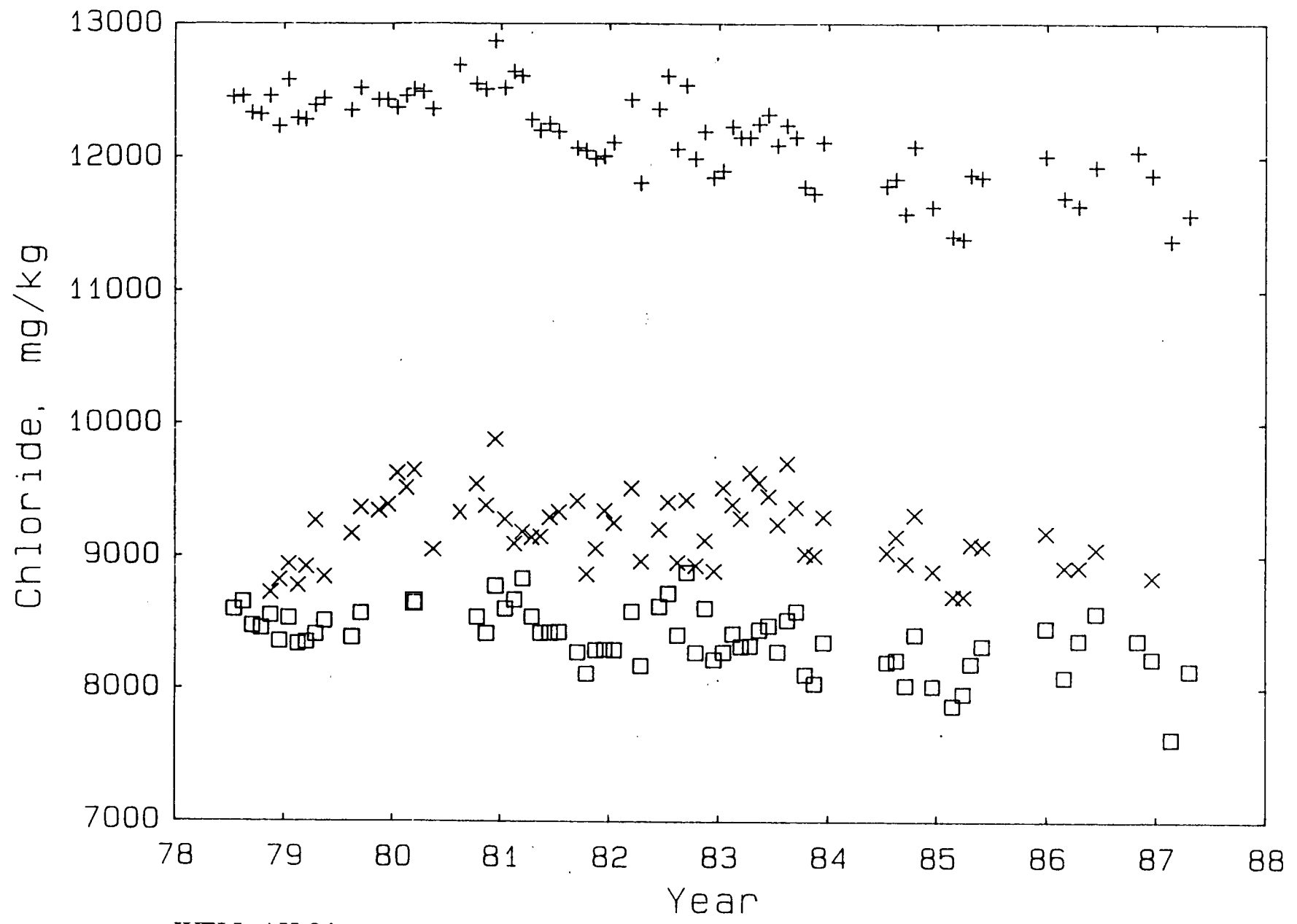
WELL AH-21



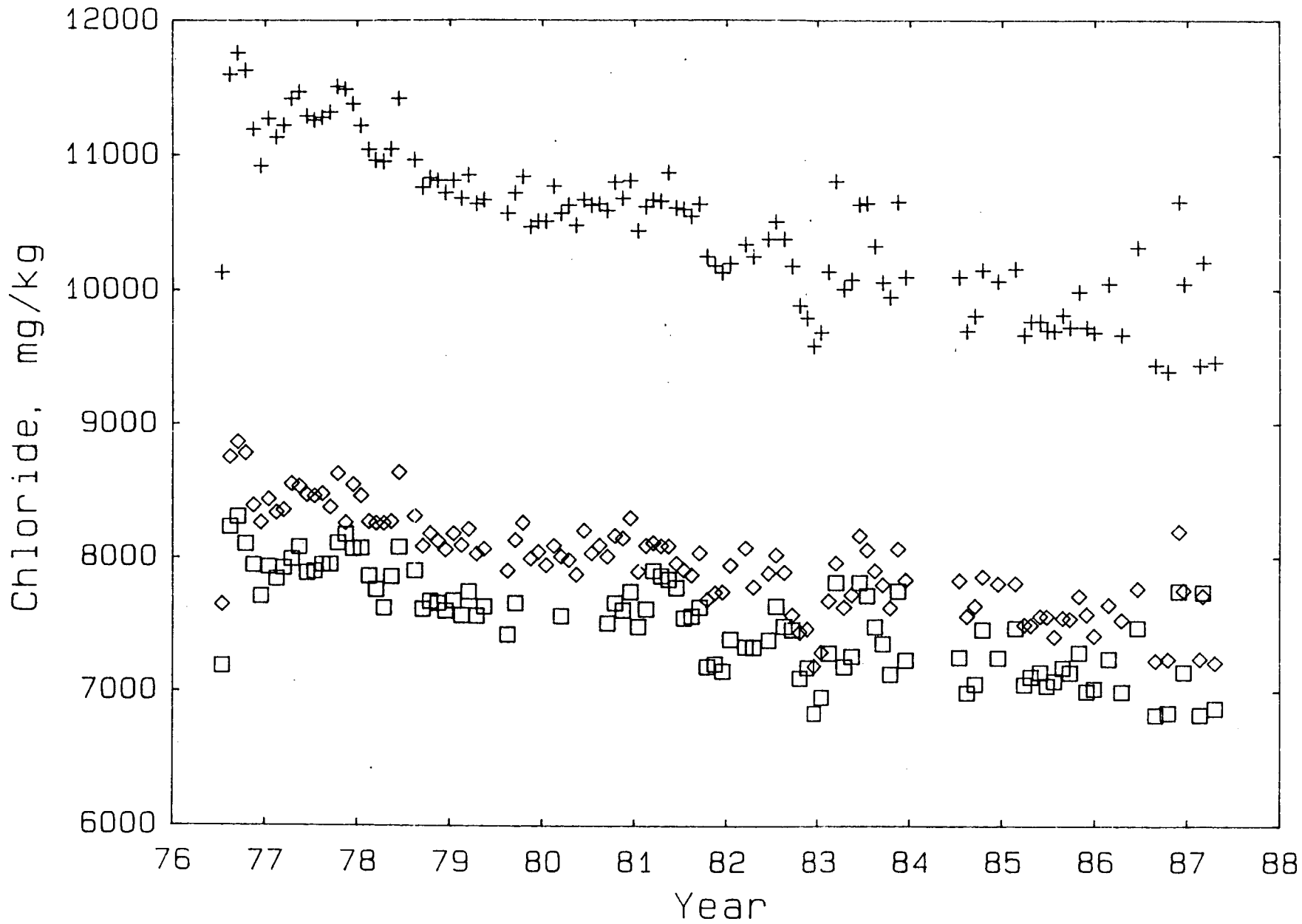
WELL AH-22



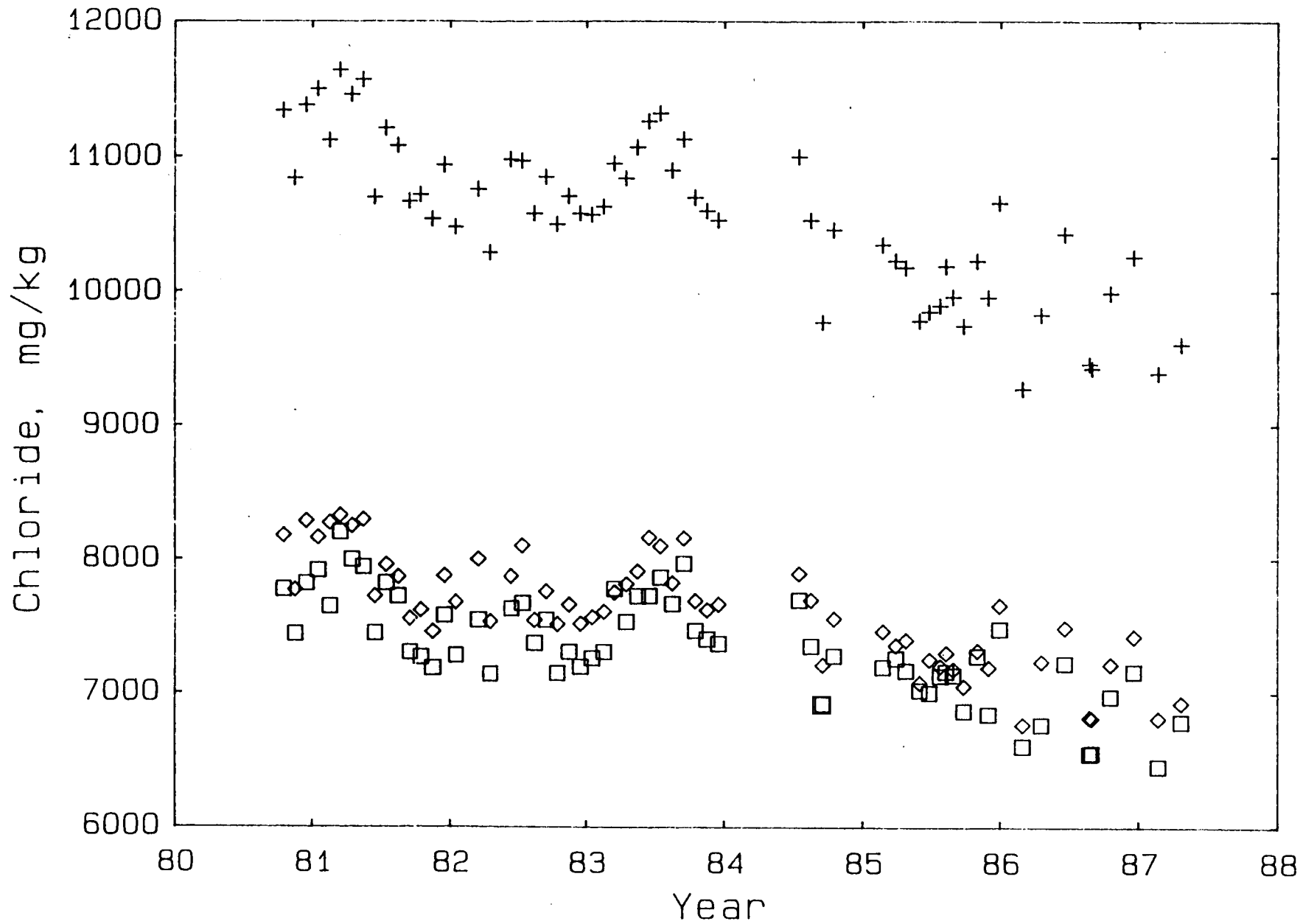
WELL AH-23



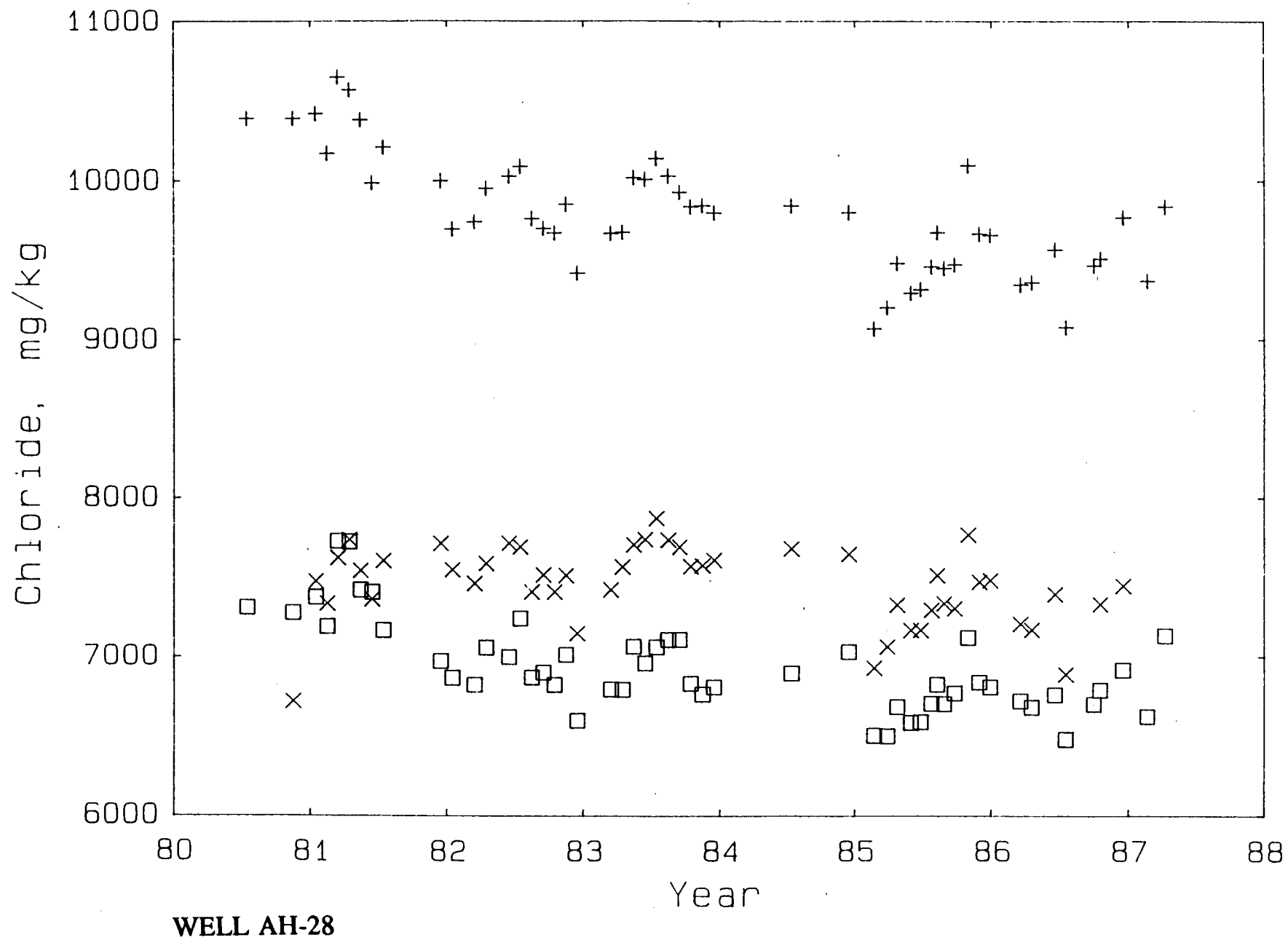
WELL AH-24

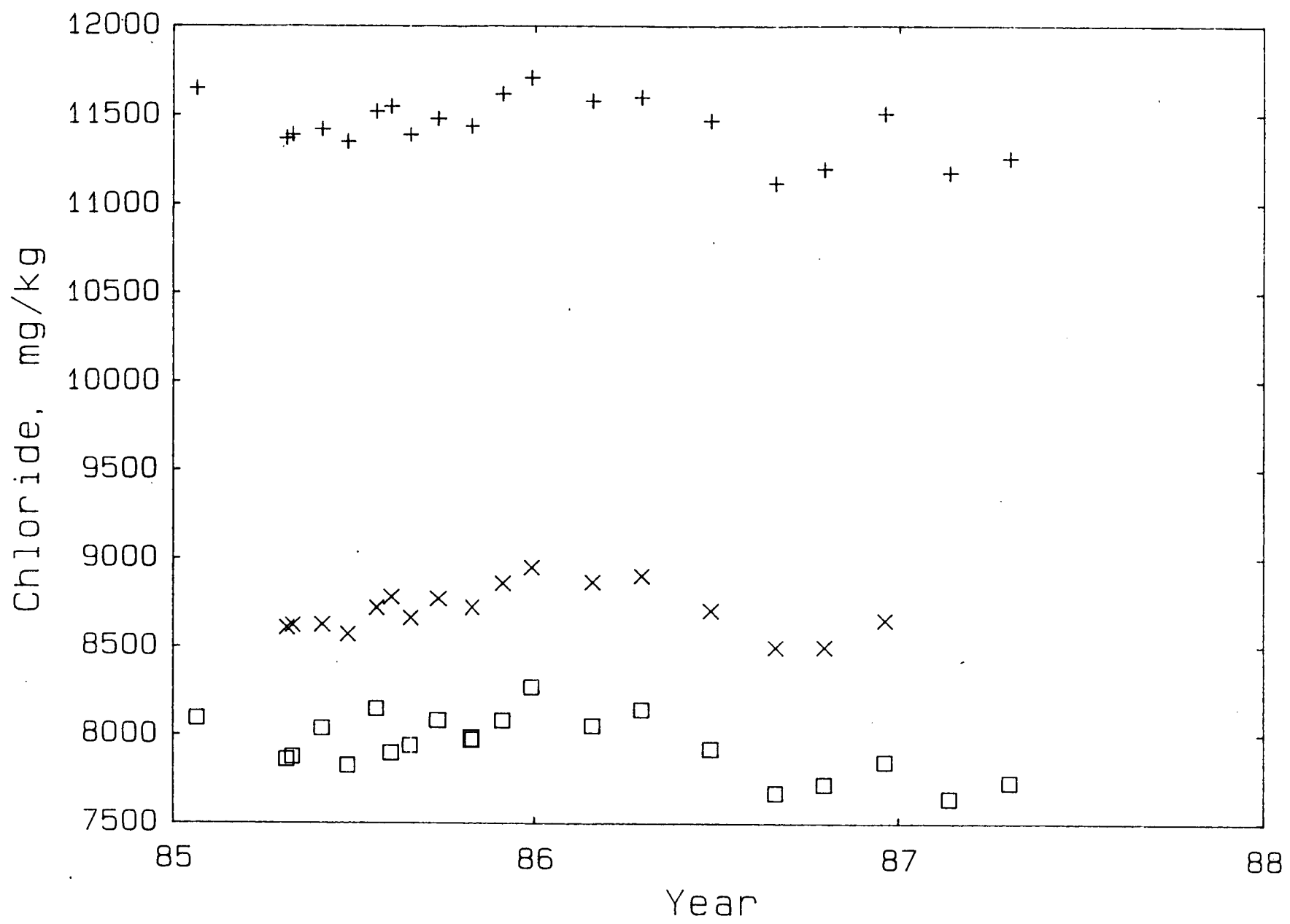


WELL AH-26



WELL AH-27





WELL AH-31