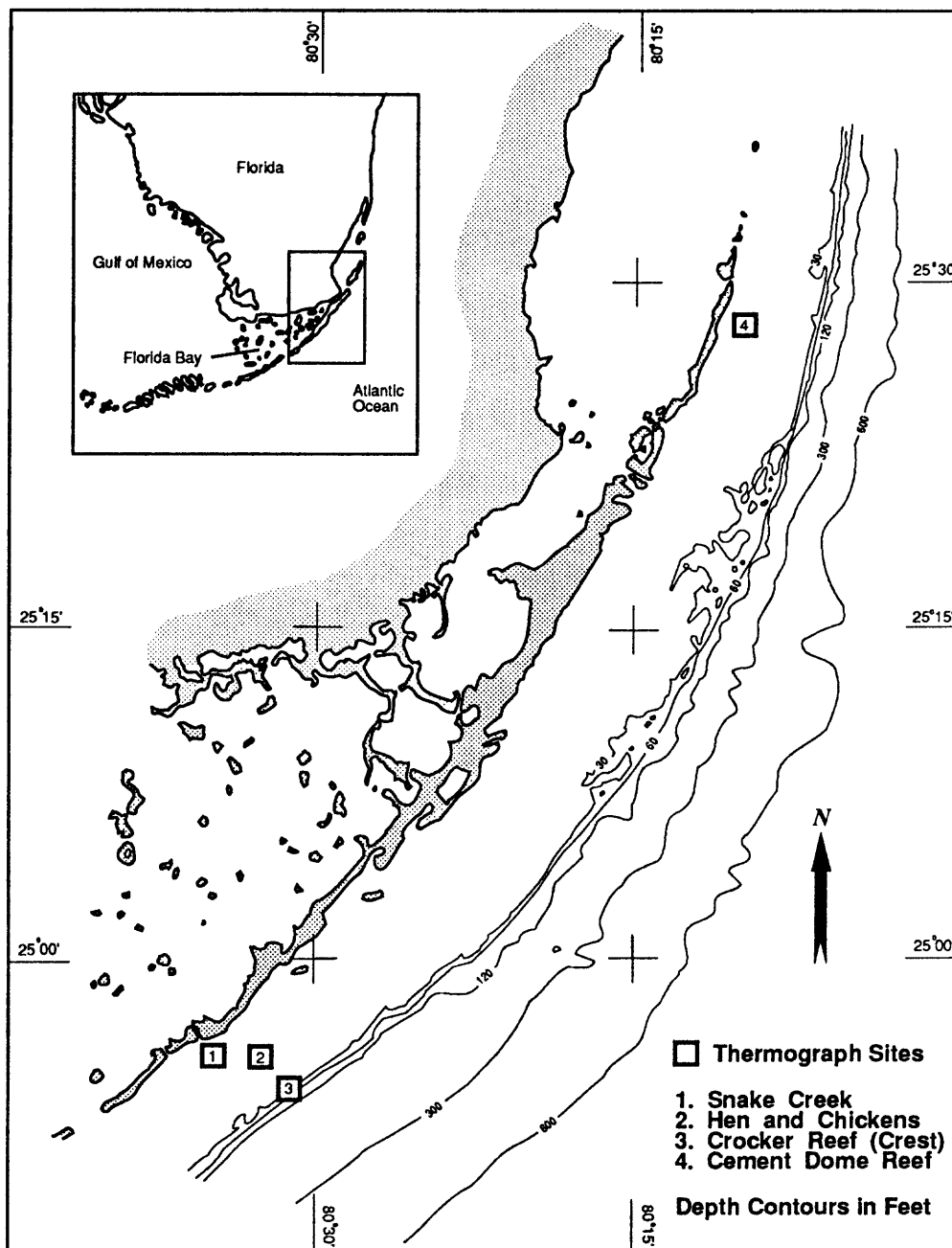


LONG - TERM THERMOGRAPH RECORDS FROM THE UPPER FLORIDA KEYS

Comparisons Between Sites

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards.

This report consists of figures showing correlations of water temperature between four sites in the upper Florida Keys. Data are presented from the Hen and Chickens site from 1975-1987, Cement Dome and Snake Creek sites from 1977-1987 and from the Crocker Reef site from 1981-1987. Locations of the sites are shown on the cover illustration. Descriptions of the sites are found on the following pages. Hourly data were collected using General Oceanics¹ model 3011 thermographs which were placed at sites for a maximum period of 120 days. Thermographs were calibrated at intervals of 120 days or less and record data to ± 0.1 degree C. Data presented here are daily averages of the hourly measurements. Correlations are shown for each two sites as a second-order polynomial regression and as a time series of daily temperature for one year. Missing data is represented by straight lines on yearly temperature variation graphs. Missing data are omitted from regression graphs and calculations.

Acknowledgments - The authors would like to thank the Caribbean Research Center for support to Donna Schroeder during early compilations of this data. Peter Spicer and Karen Higgins of the USGS graciously helped with the presentation format.

¹Use of brand names in this report is for descriptive purposes only and does not imply endorsement by the U. S. Geological Survey.

THERMOGRAPH STATIONS

STATION #1 - SNAKE CREEK

Location: 24° 57.1' N
80° 35.3' W

Station Site: Thermograph placed in shallow hole near mid-channel on ocean side of bridge. Unit partially hidden by loose rock slab with sensor exposed on channel bottom.

Setting: Tidal channel - Eroded into Key Largo Limestone, the channel floor is mostly bedrock with interspersed patches of sediment, algae and seagrass.

Water depth: 3.5 m

STATION #2 - HEN AND CHICKENS REEF

Location: 24° 56.0 N
80° 33.0 W

Station Site: Thermograph concealed in open-ended cavity within star coral (*Montastrea annularis*) 0.5m above seafloor

Setting: Inshore patch reef - A mature patch reef dominated by the star coral with colonies up to 3m high on level rock substrate. Reef area surrounded by generally thin sediment cover and seagrass.

Water Depth: 4m.

STATION #3 - CROCKER REEF

Location: 24° 54.4' N
80° 35.5' W

Station Site: Thermograph concealed under rock outcrop so that sensor is exposed at seafloor

Setting: Low-profile, relict bank on outer edge of reef tract. Rocky surface populated with sea fans (*Gorgonia ventalina*) and other soft coral species with scattered, small colonies of hard corals (including *Dichocoenia stokesii* and *Meandrina meandrites*).

Water Depth: 5m.

STATION #4 - CEMENT DOME

Location: 25° 27.8' N
82° 10.0' W

Station Site: The thermograph is concealed beneath a 1m diameter artificial coral head. Sensor on seafloor near one of several openings at base of artificial coral head.

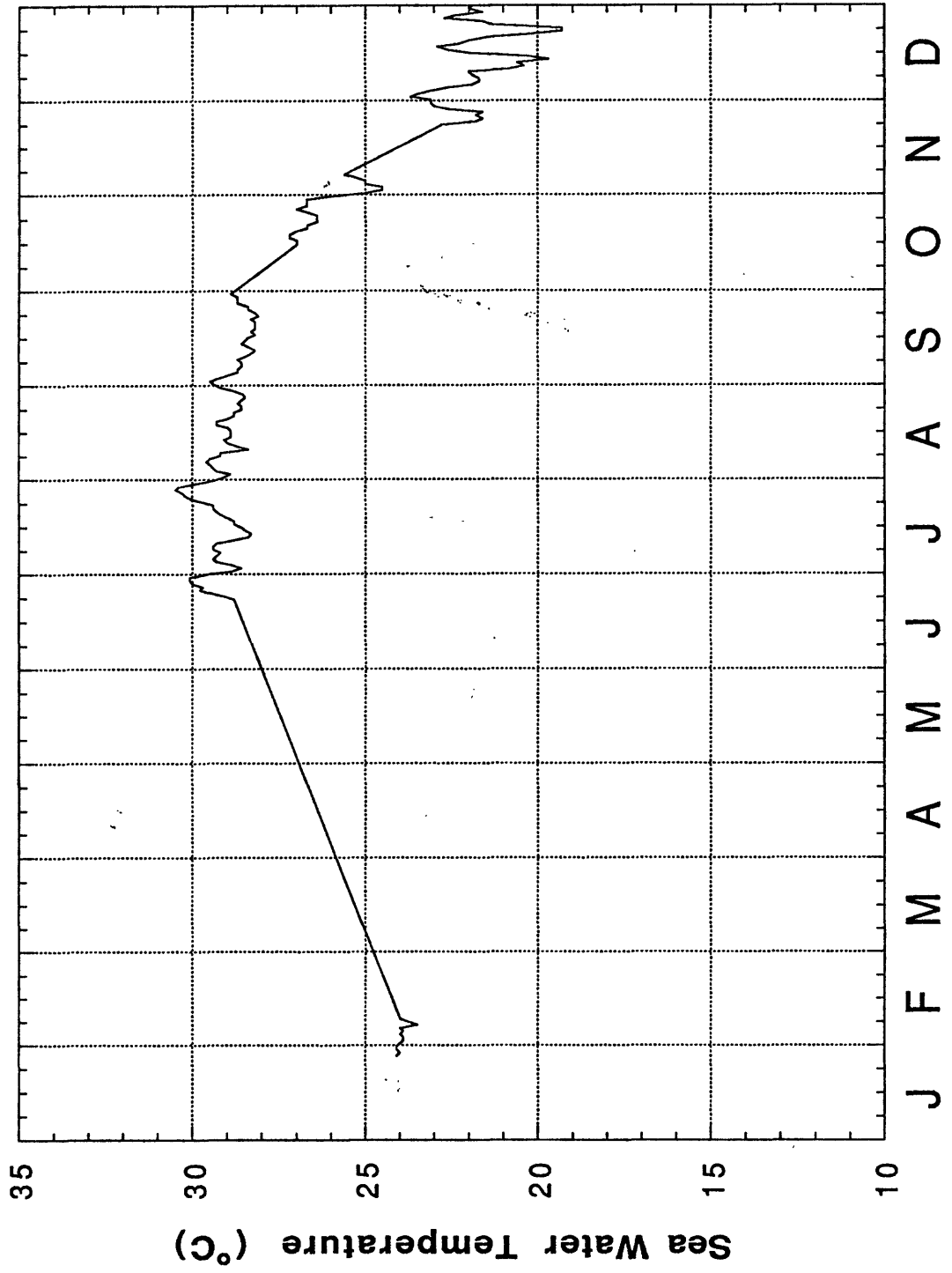
Setting: An artificial patch reef constructed from cement domes appearing as coral heads and seeded with transplanted stony and soft corals. Patch is situated on a rock bottom naturally populated by gorgonians and alcionarians.

Depth: 4.0m

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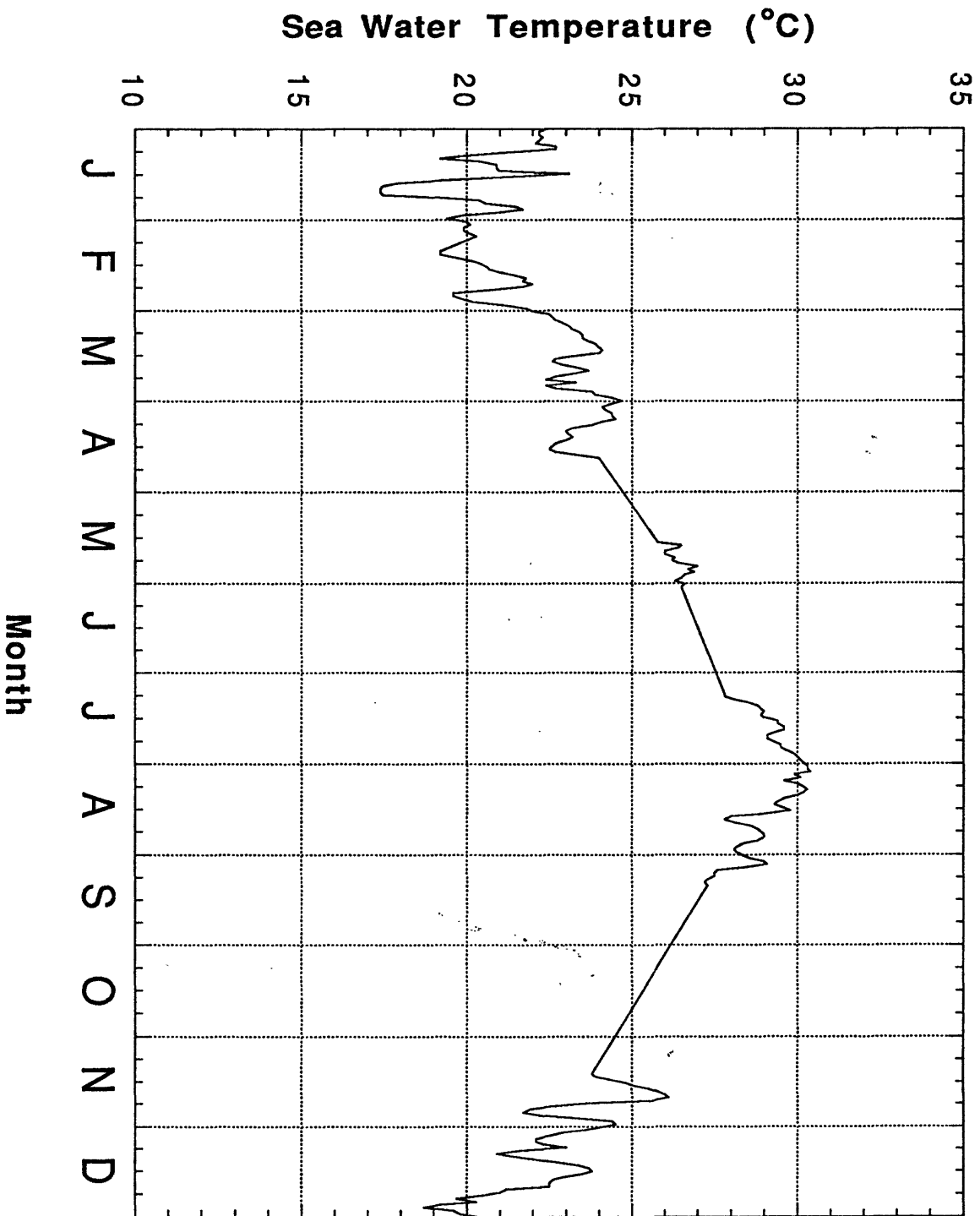
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Hen & Chickens 1975

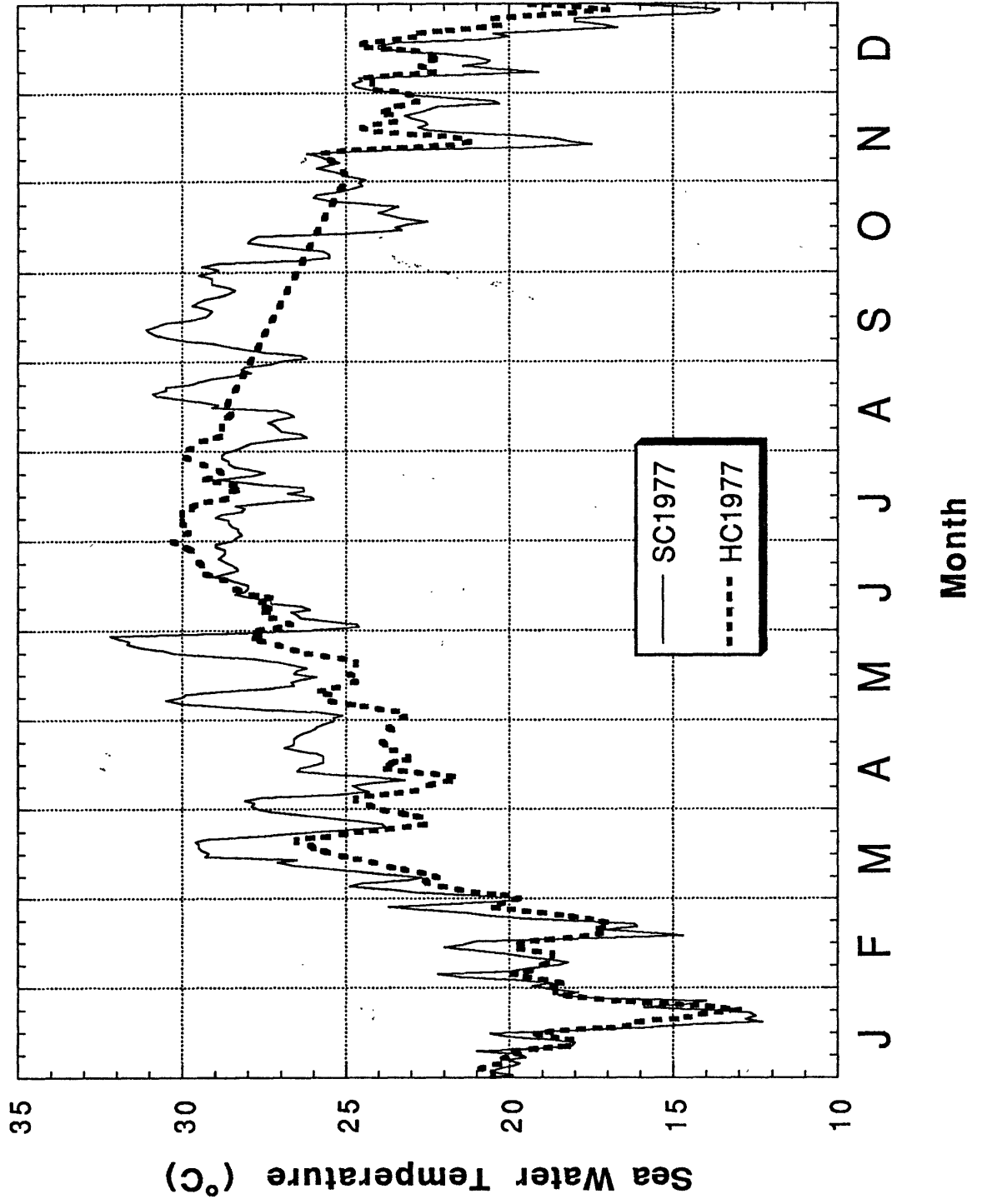


Month

Hen & Chickens 1976

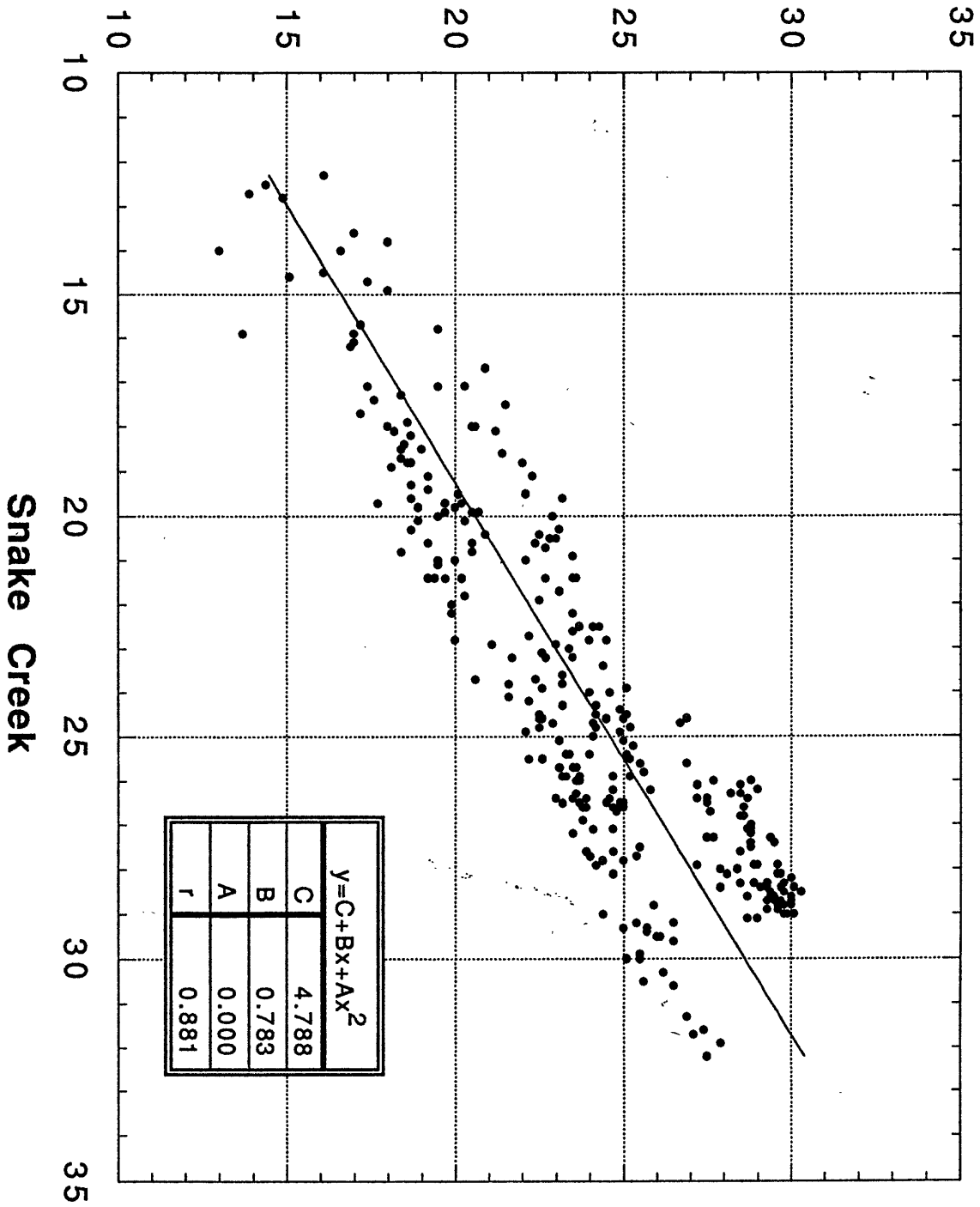


Snake Creek and Hen & Chickens 1977

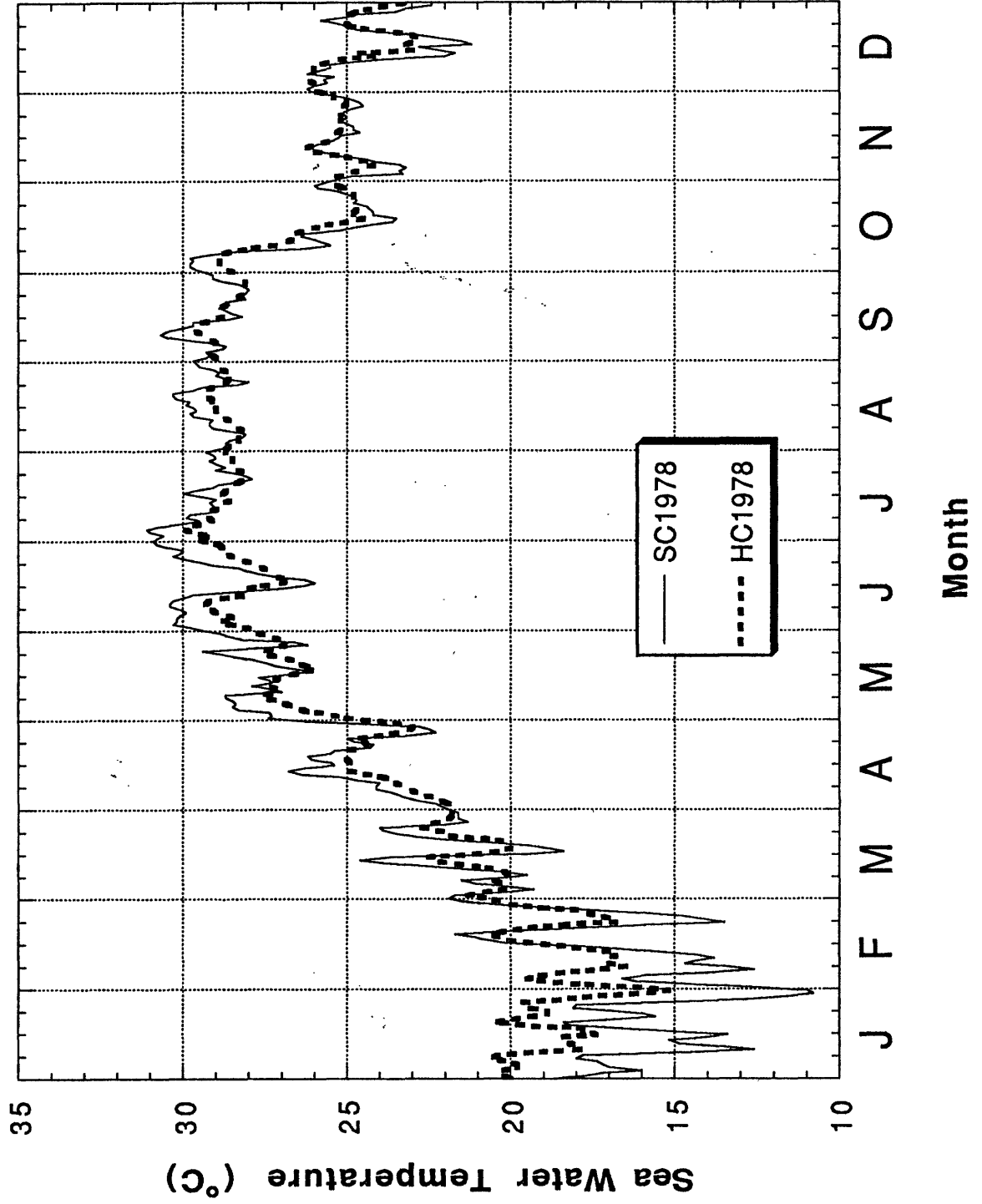


Sea Water Temperature (°C) 1977

Hen and Chickens

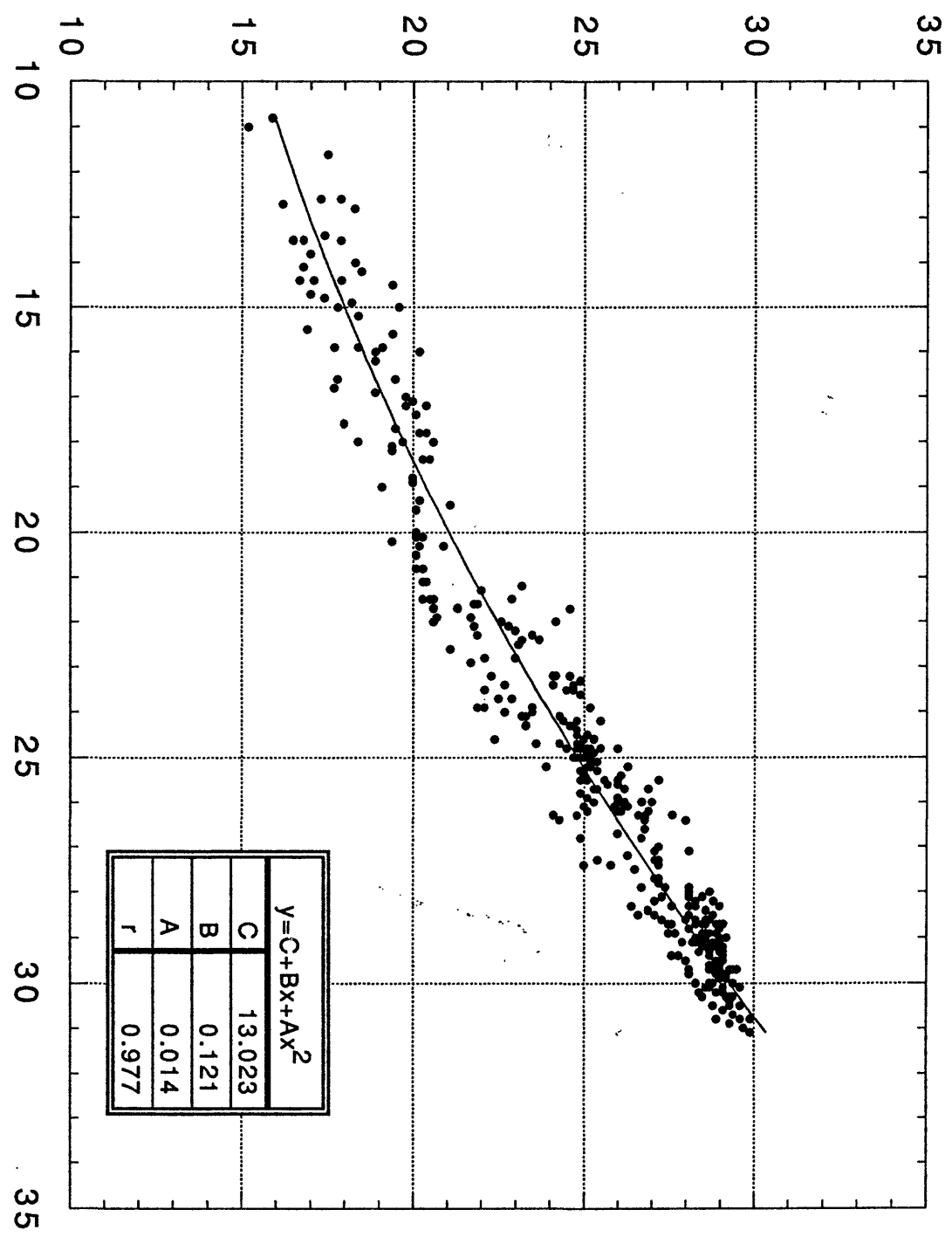


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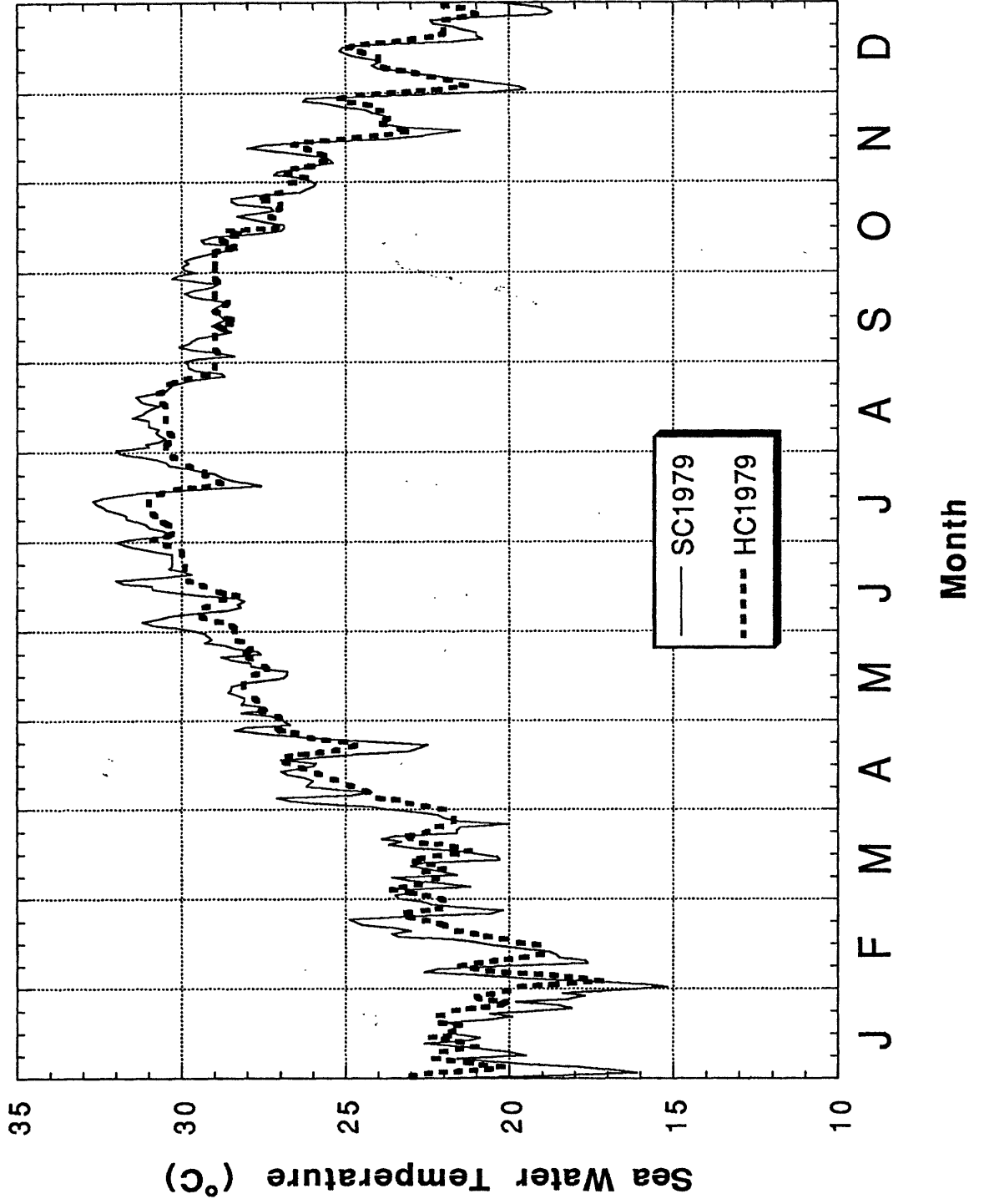


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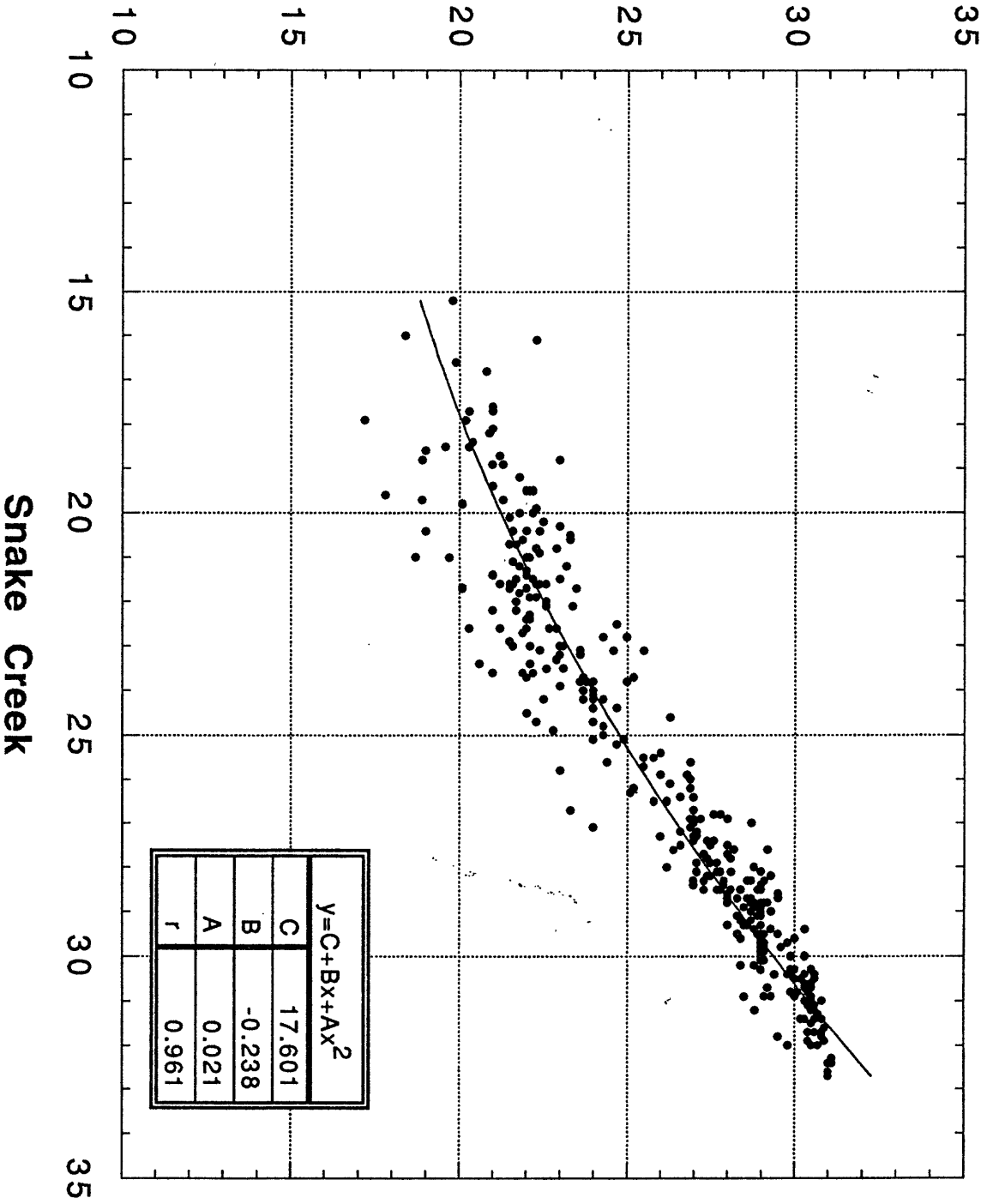


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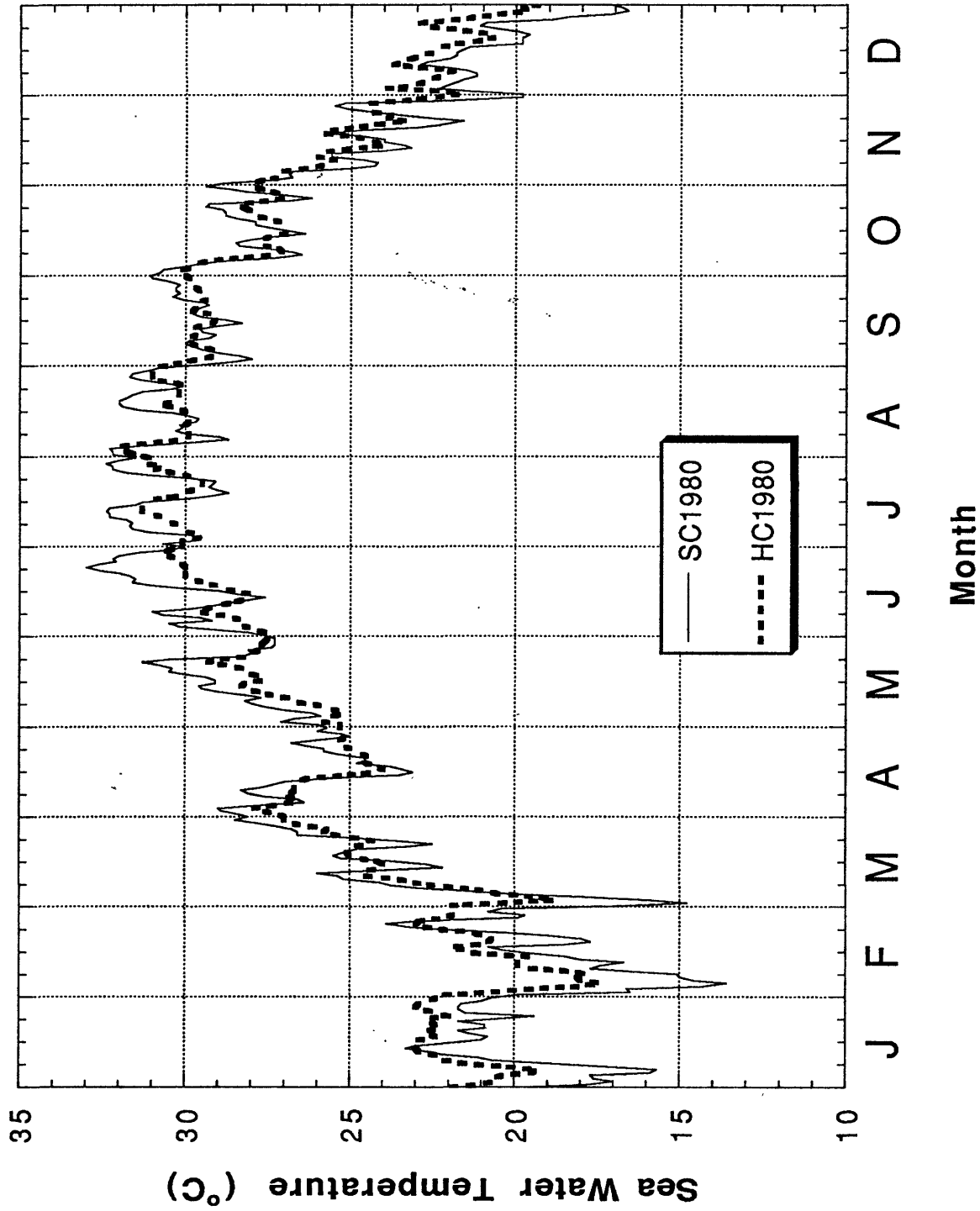


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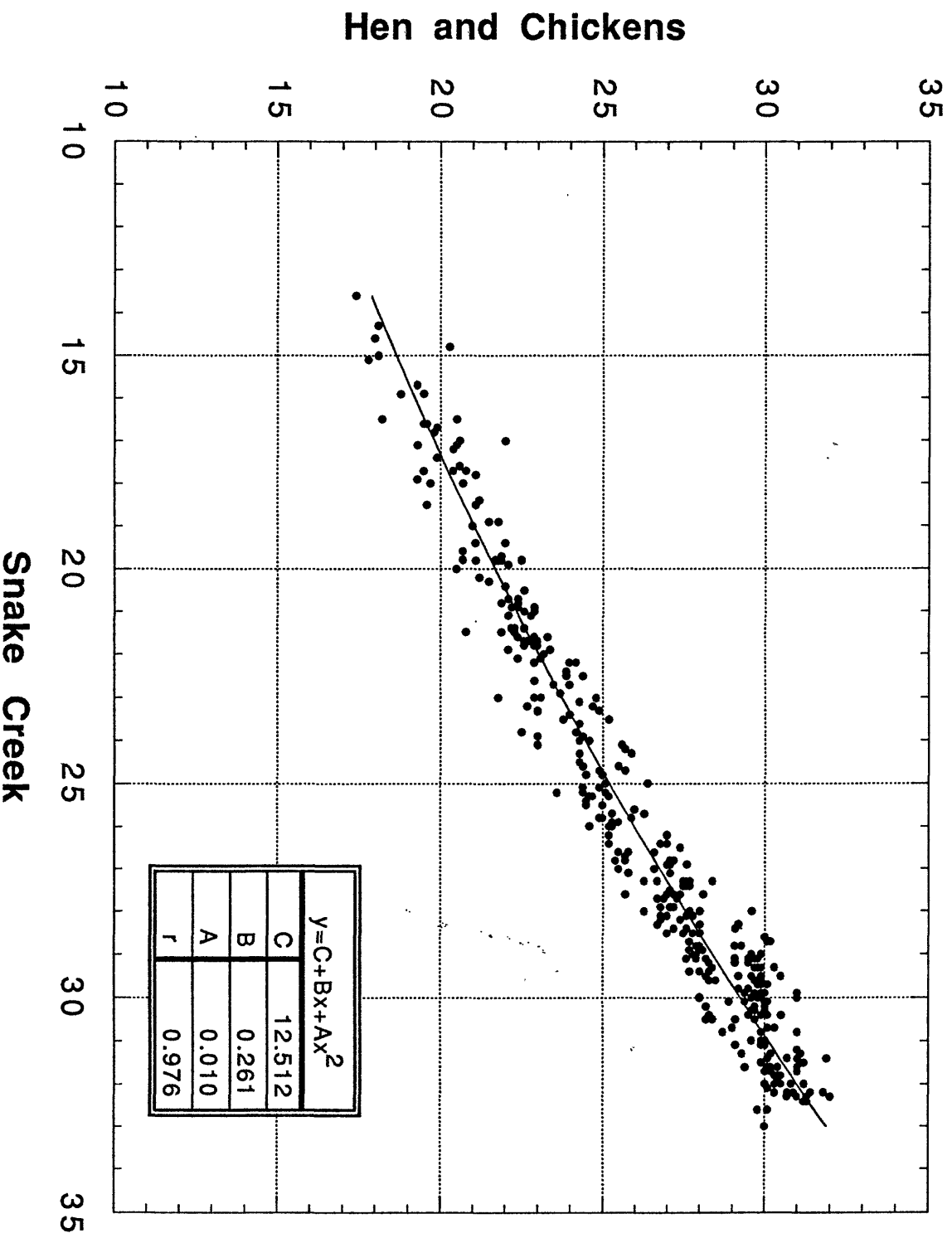
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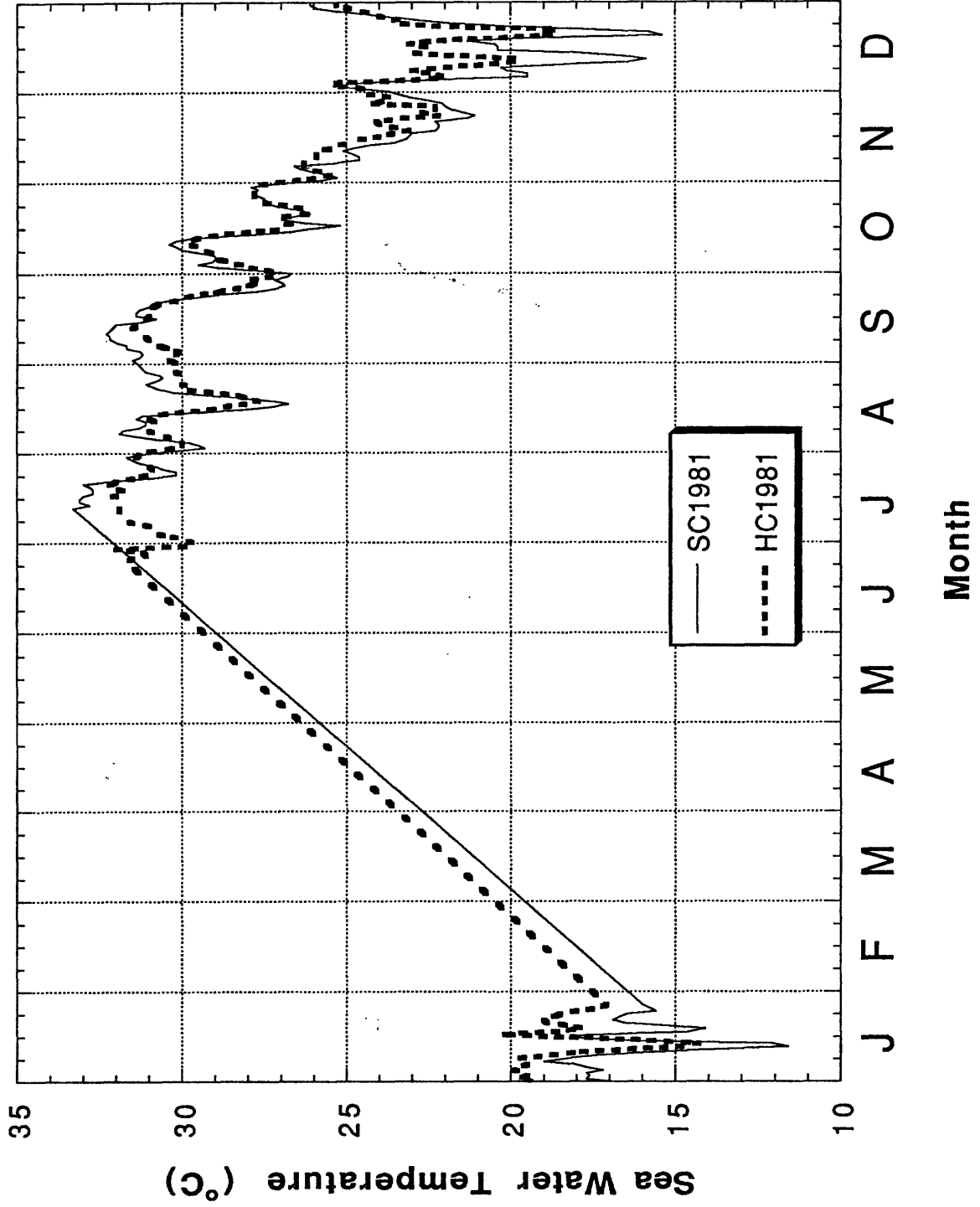
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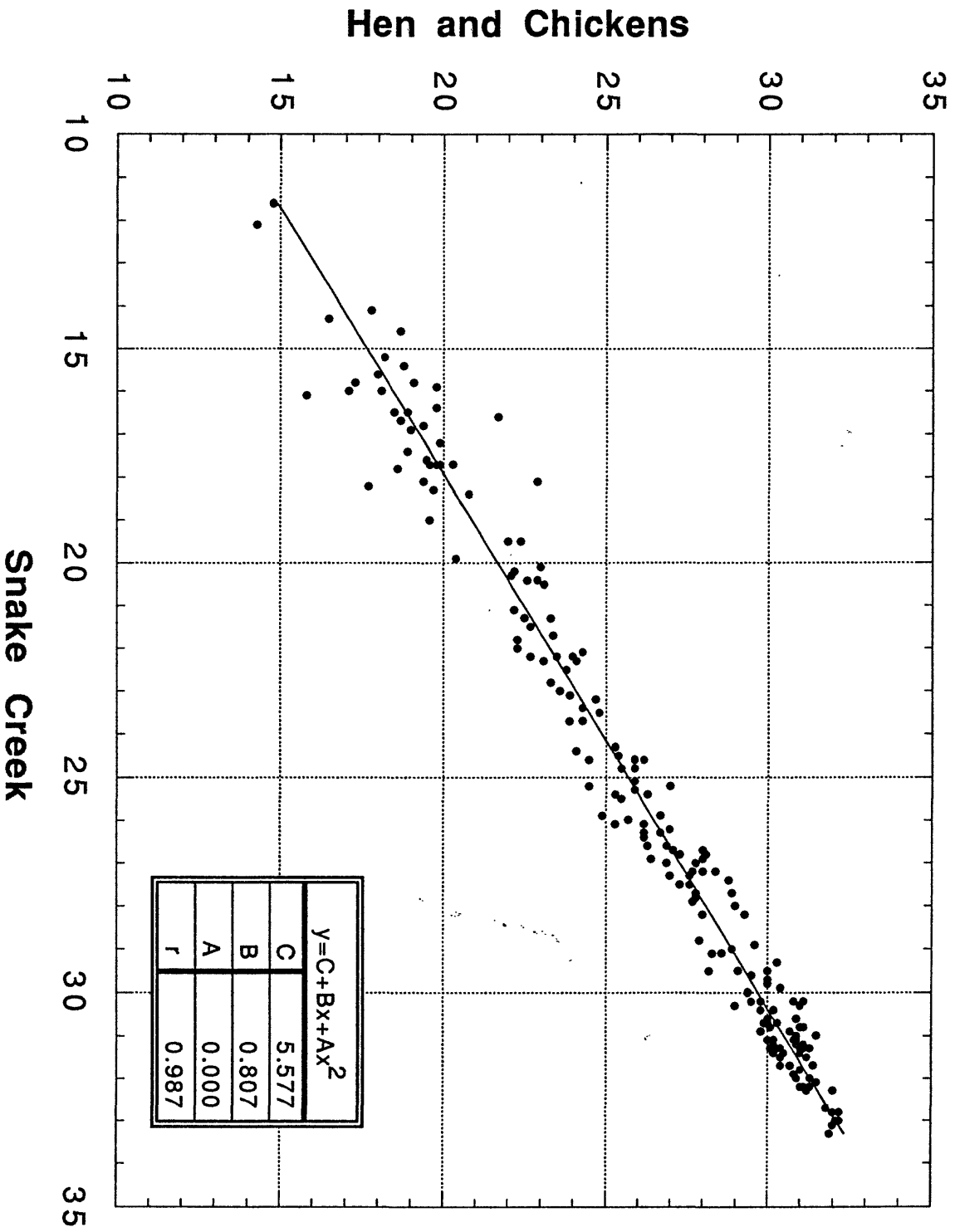
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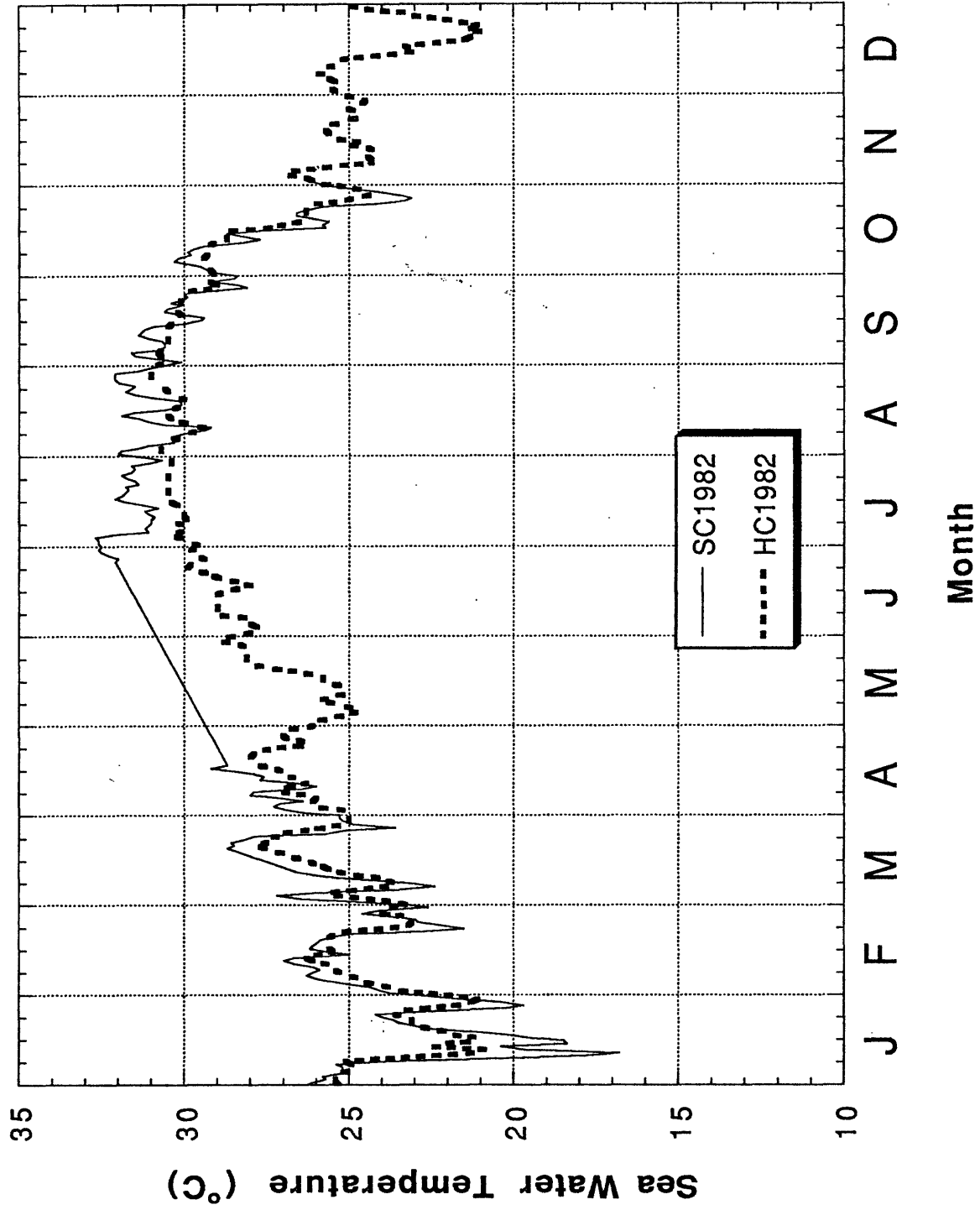
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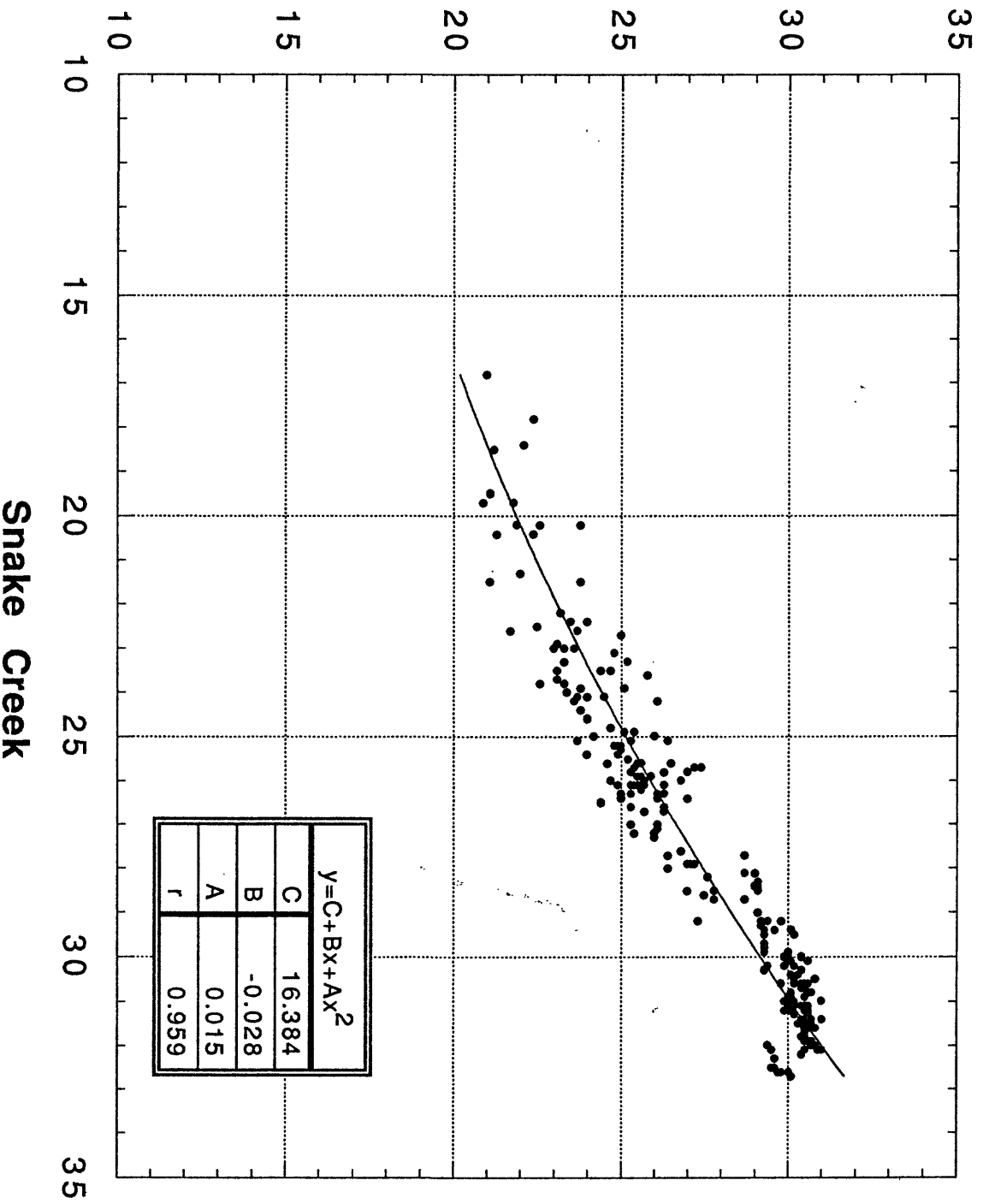


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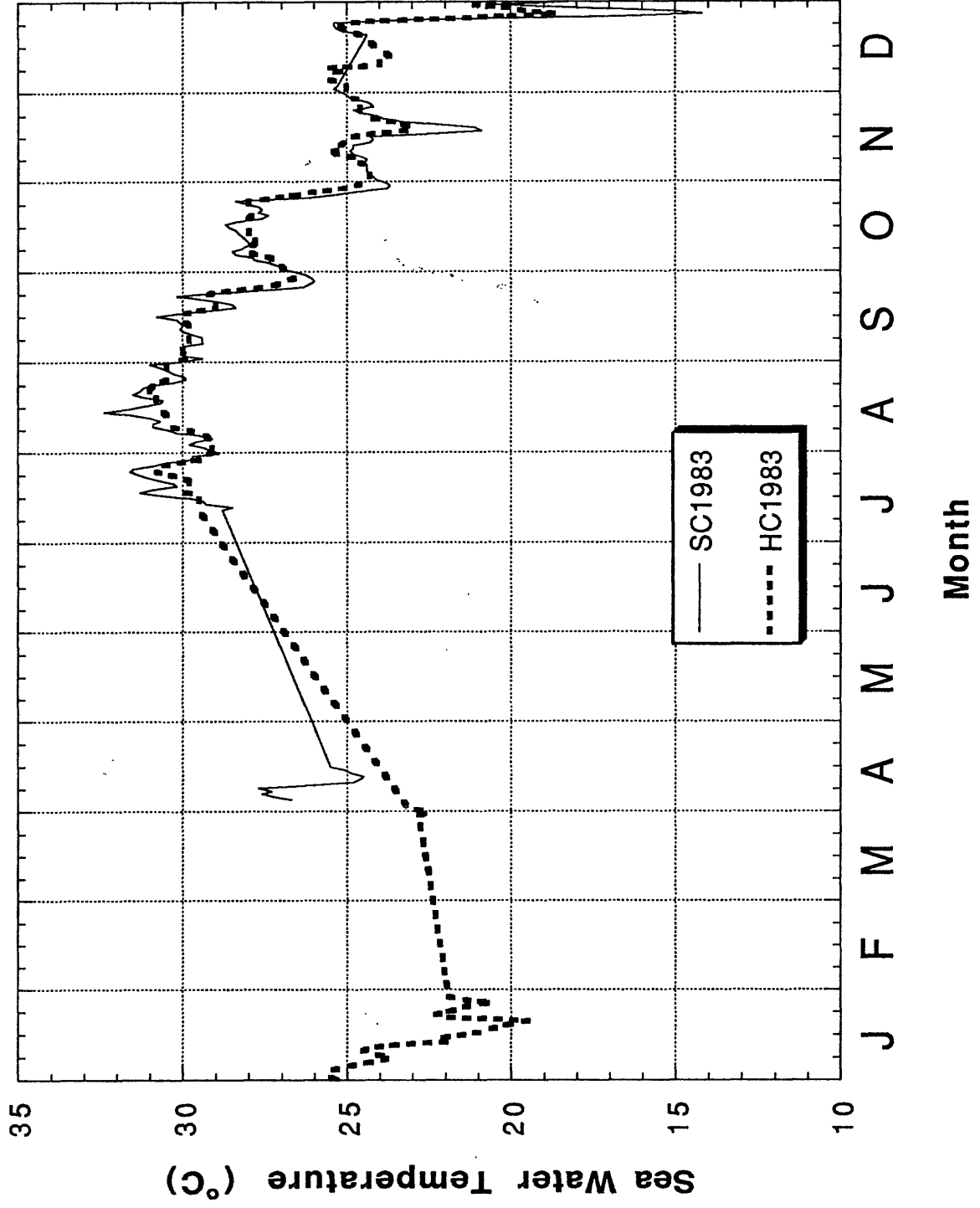


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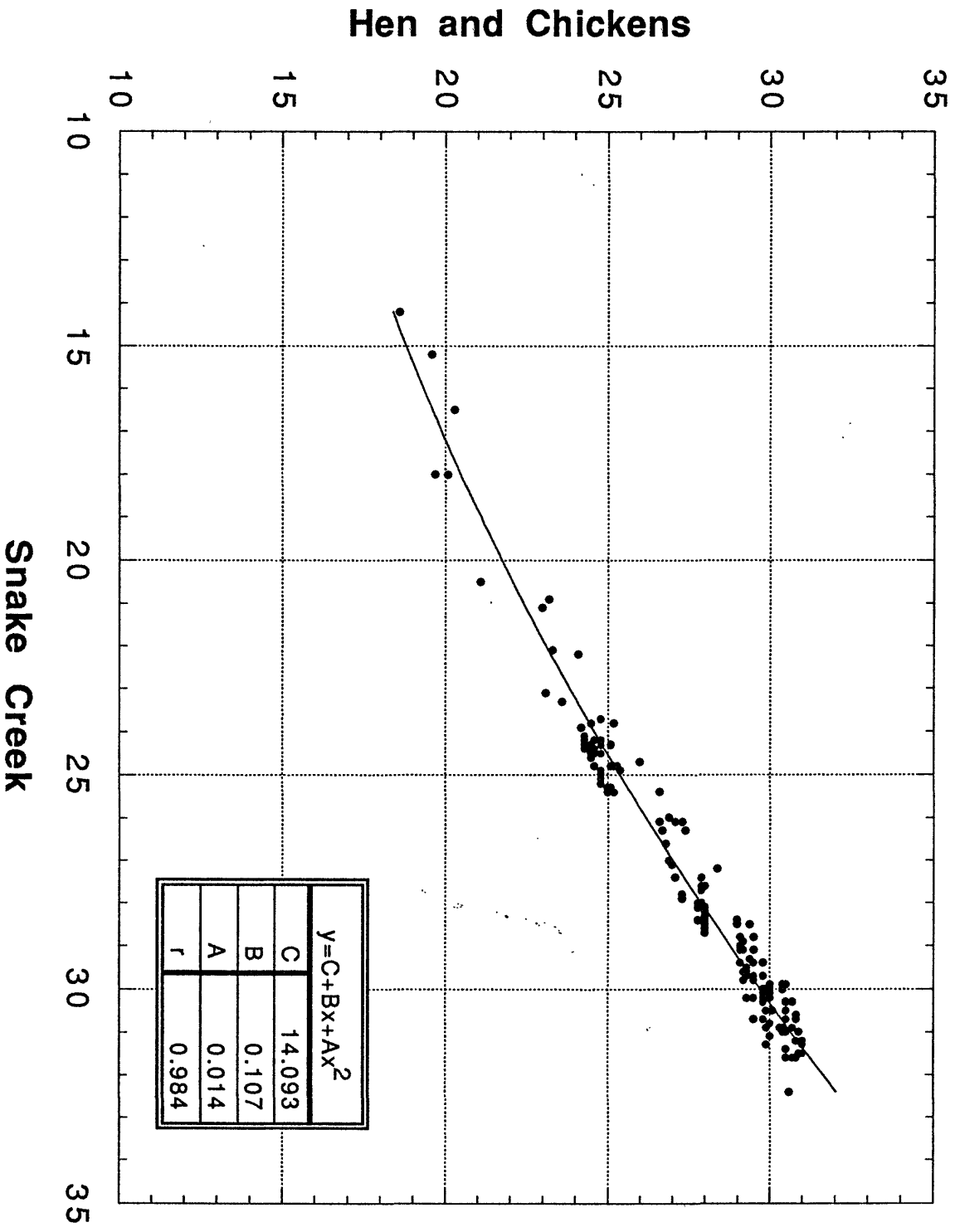
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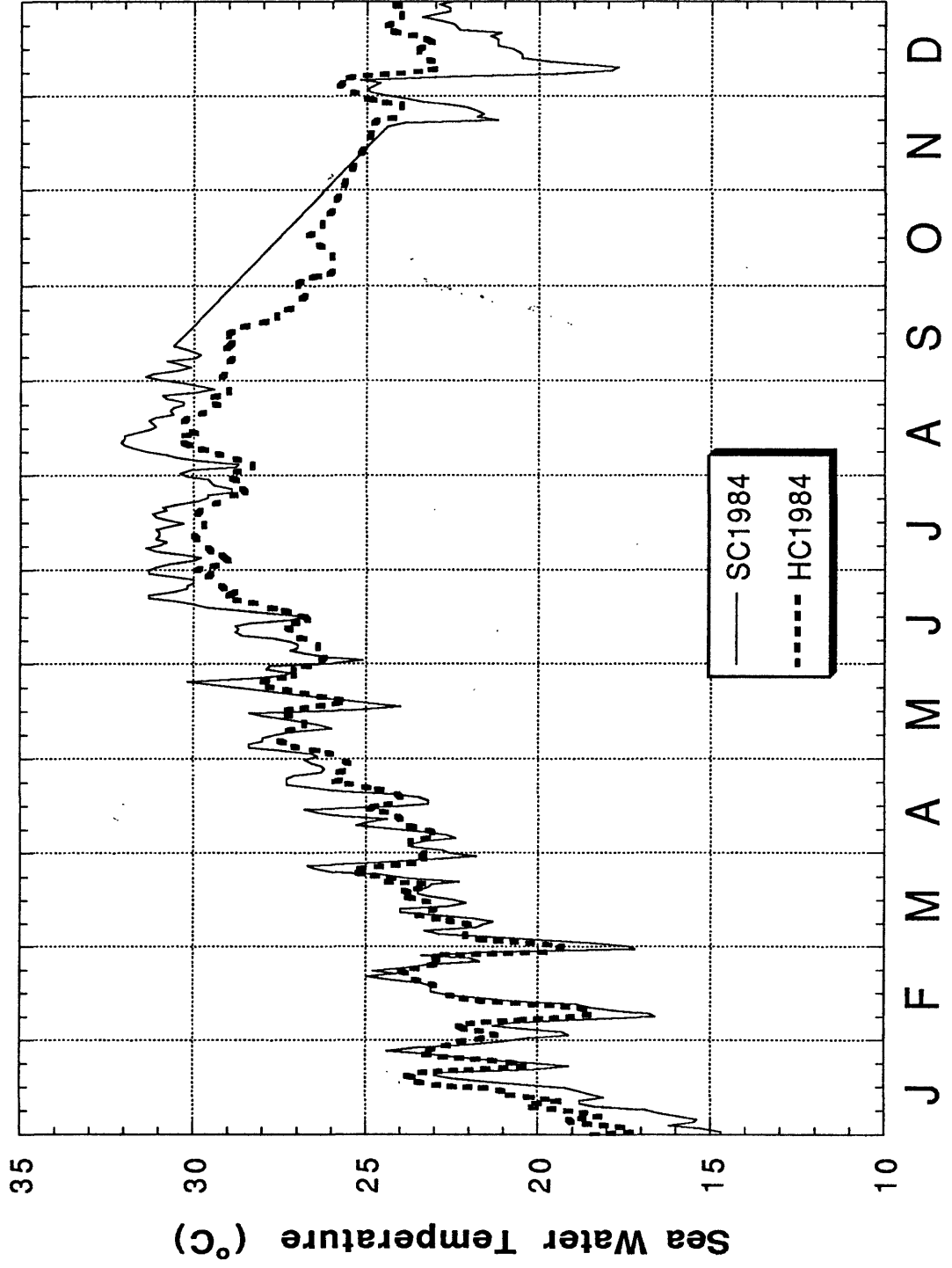
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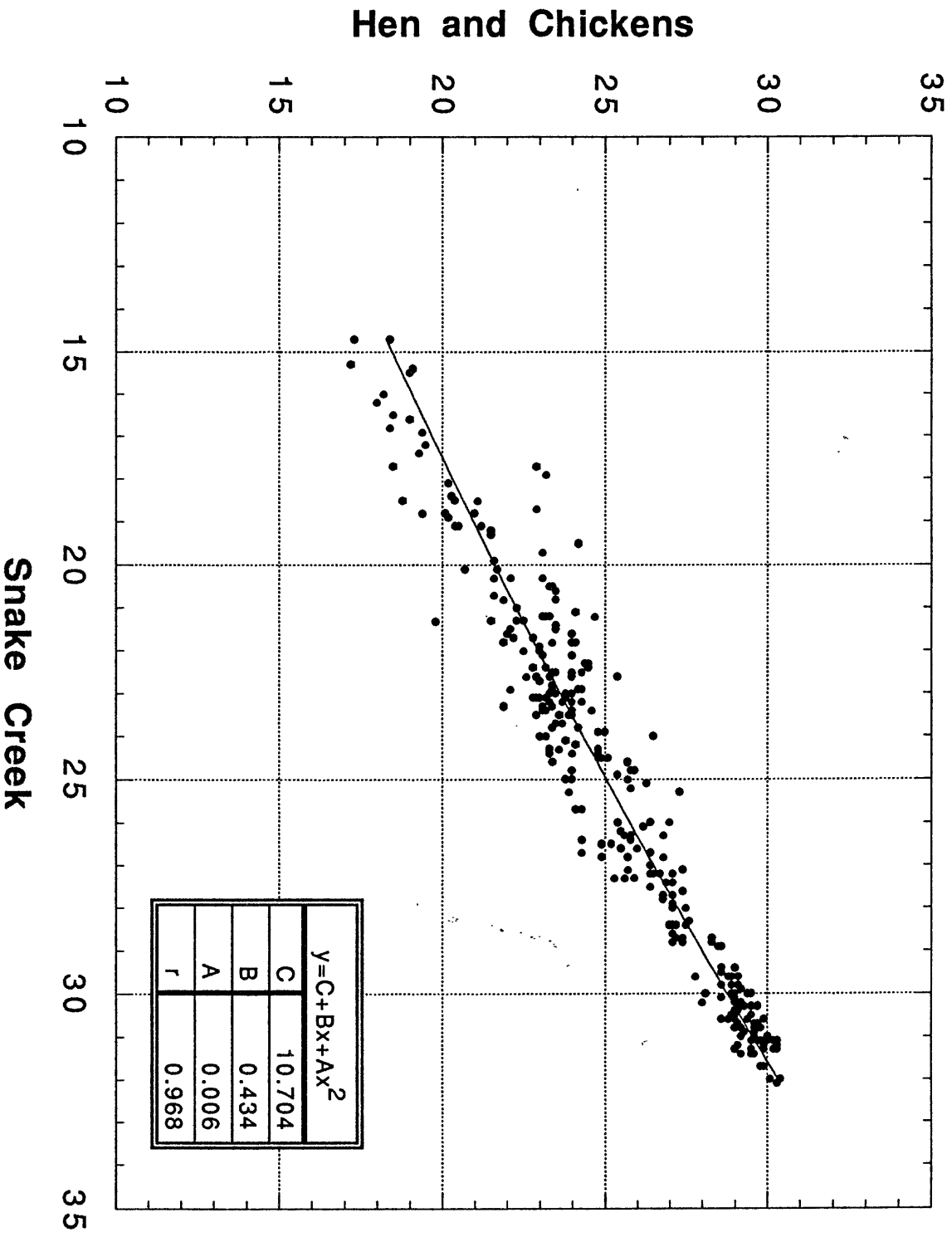
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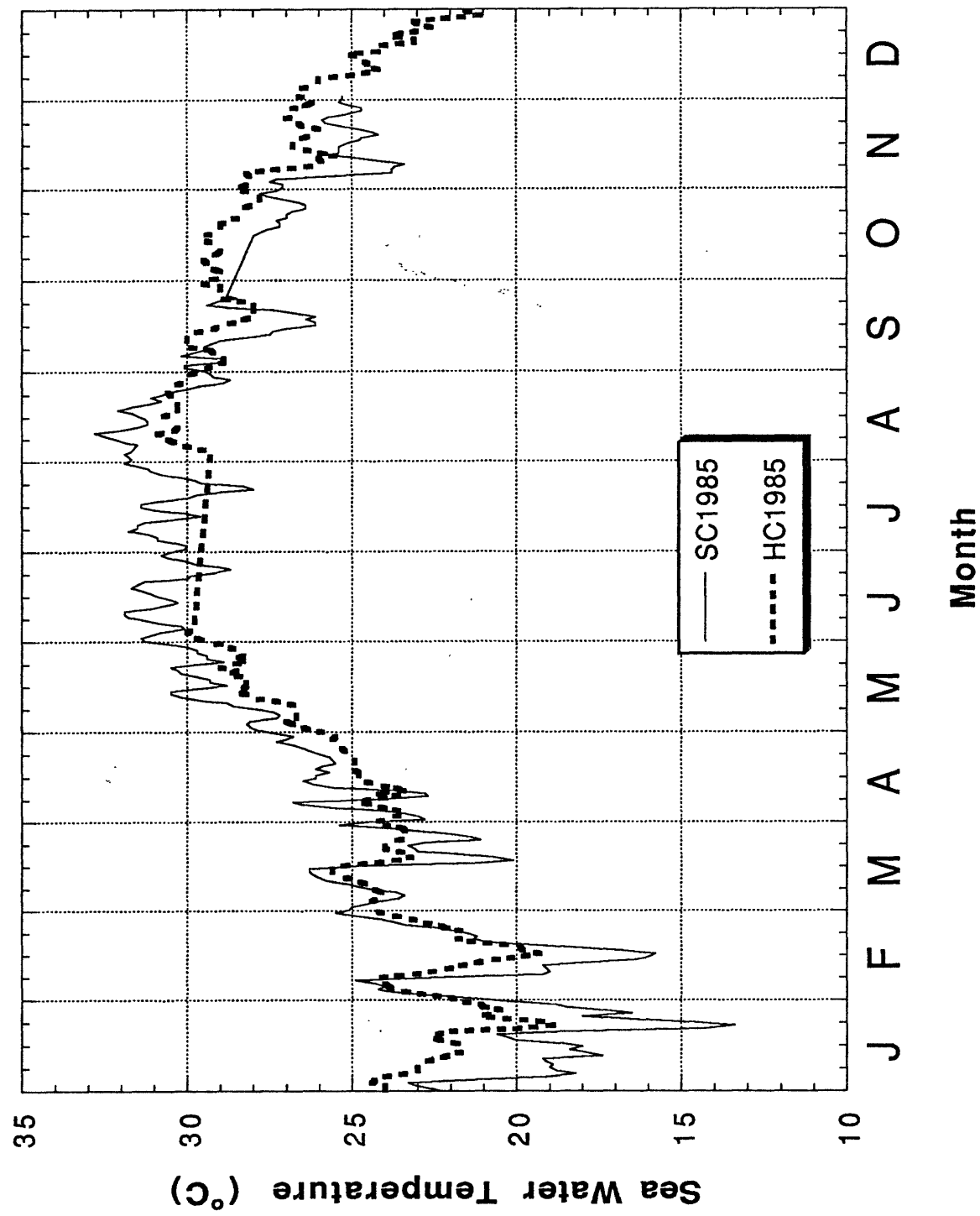
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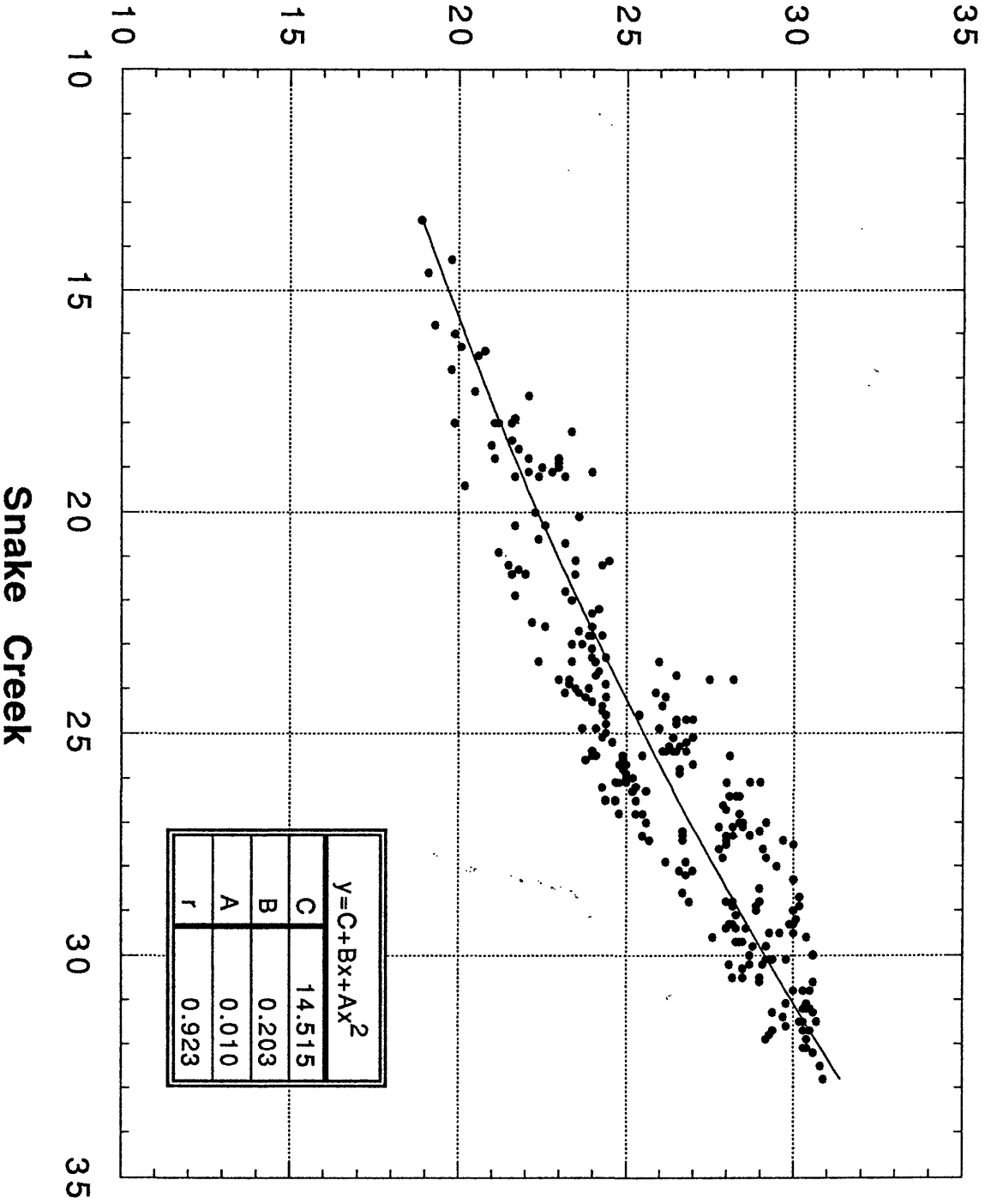


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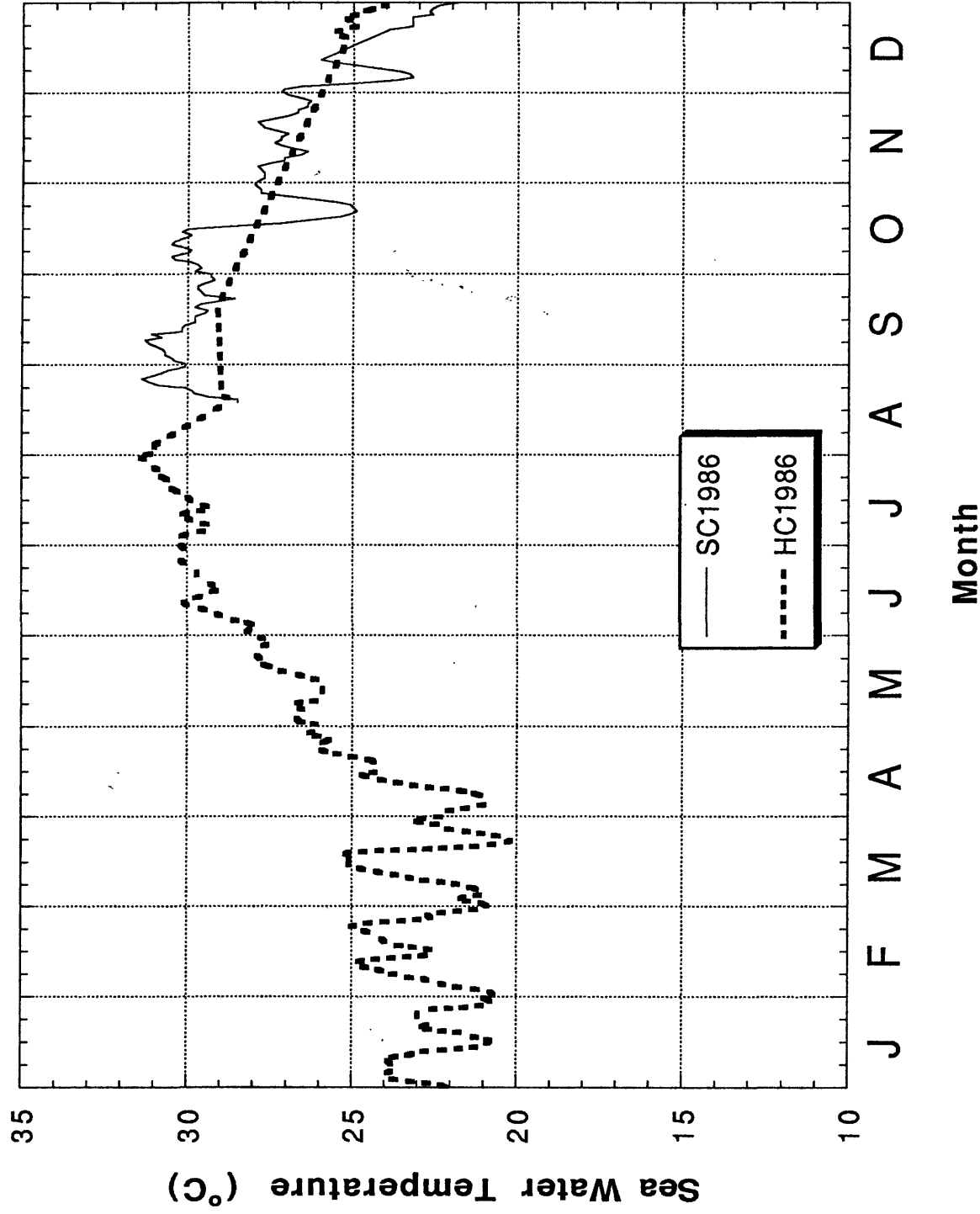


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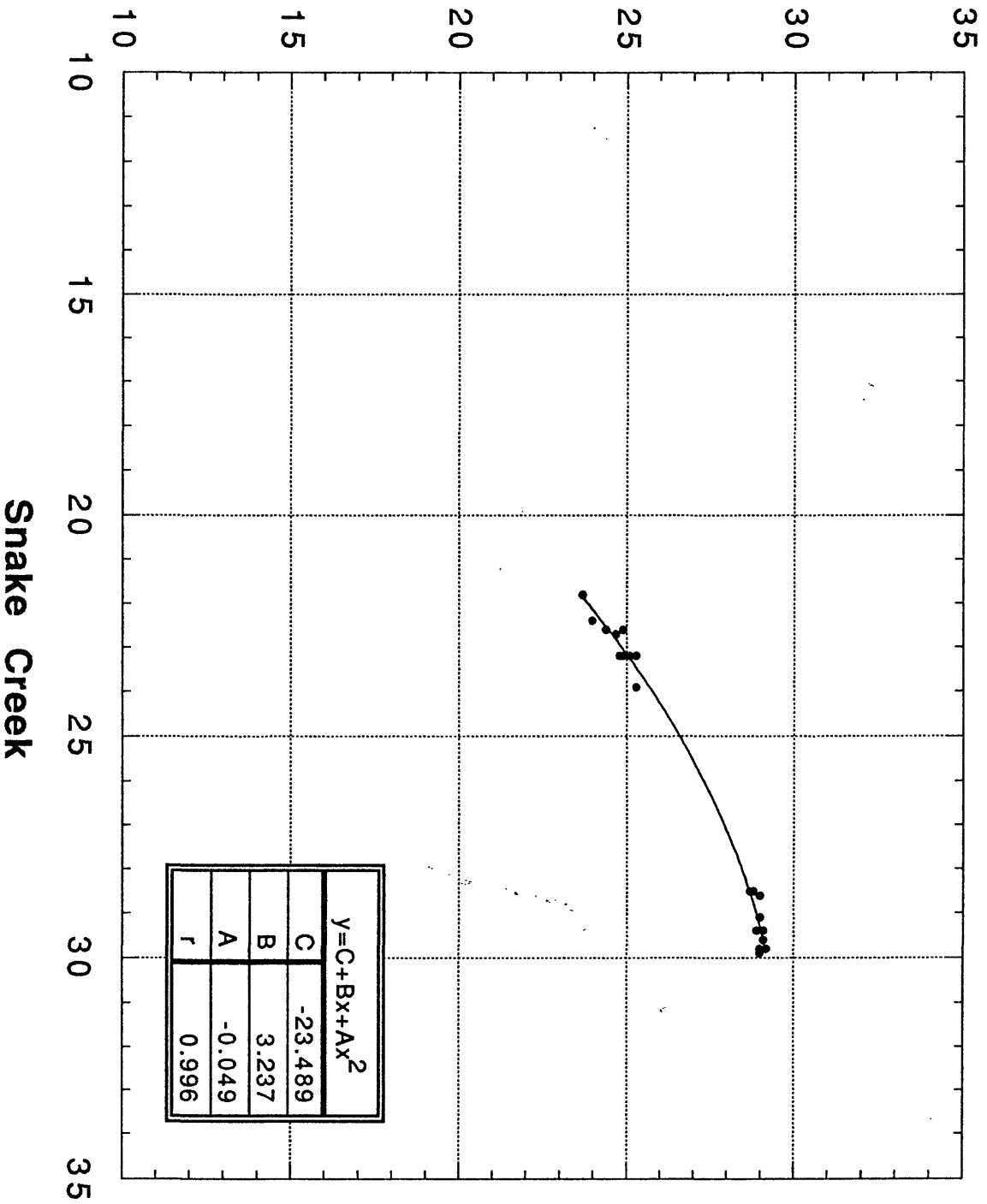


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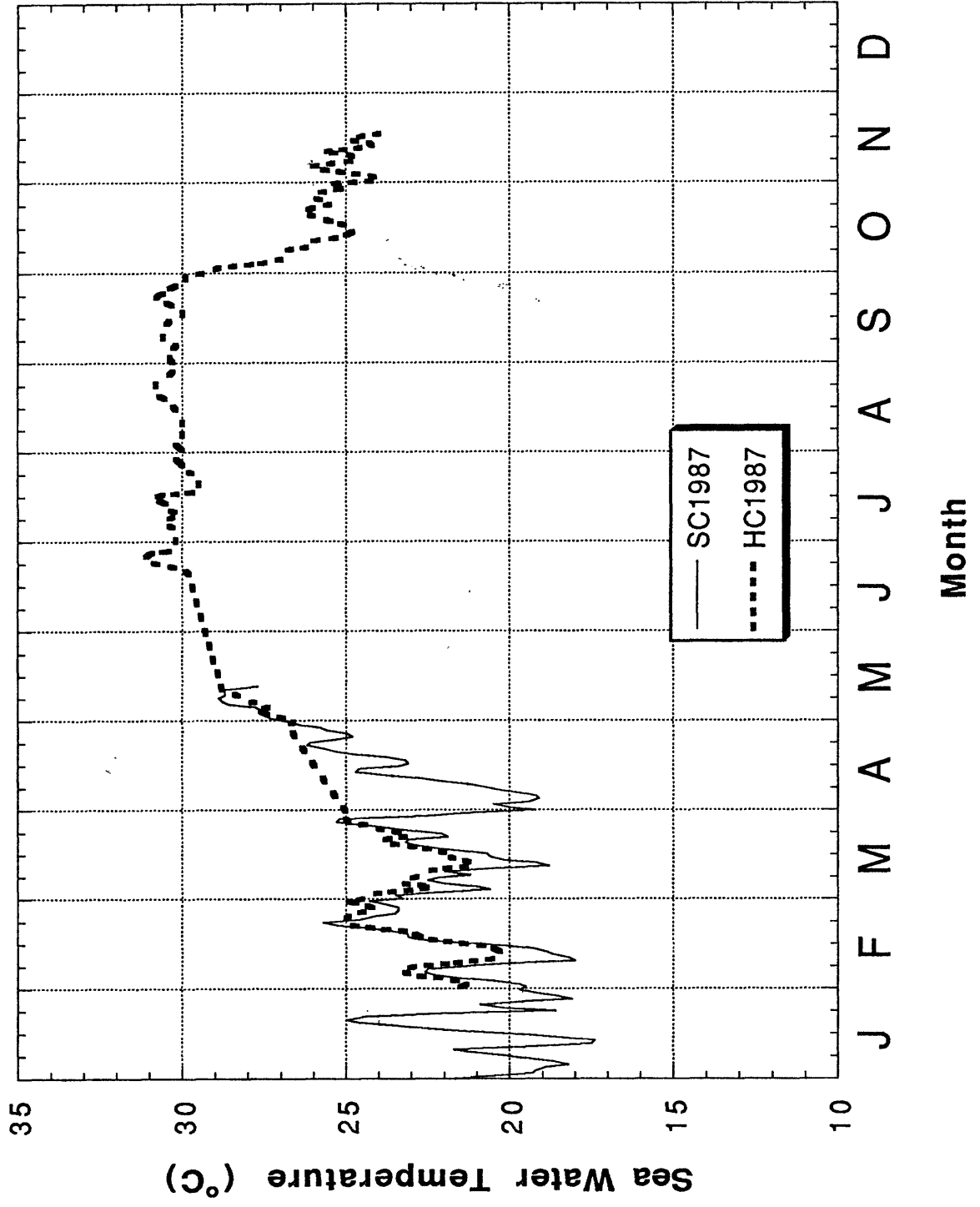


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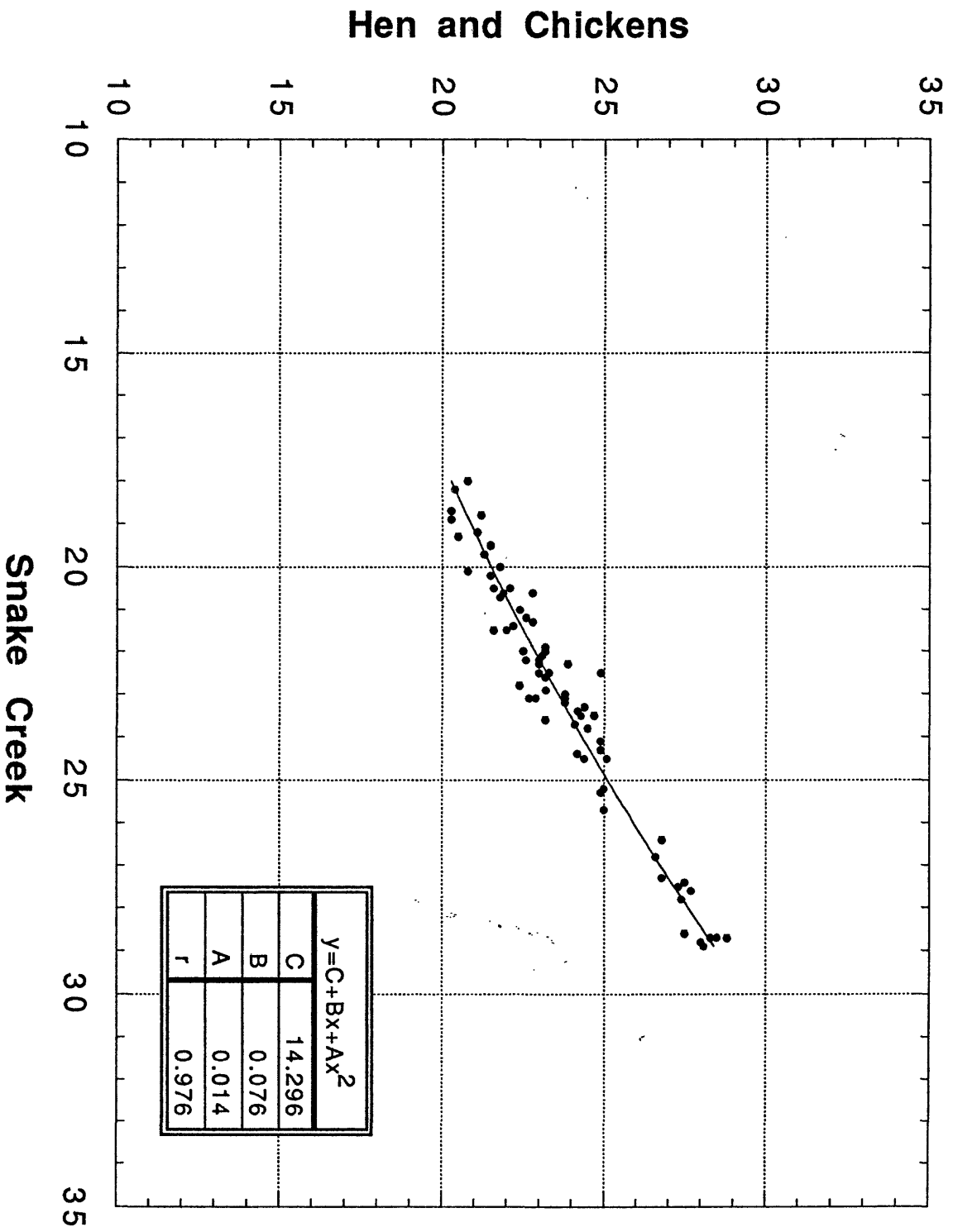
Hen and Chickens



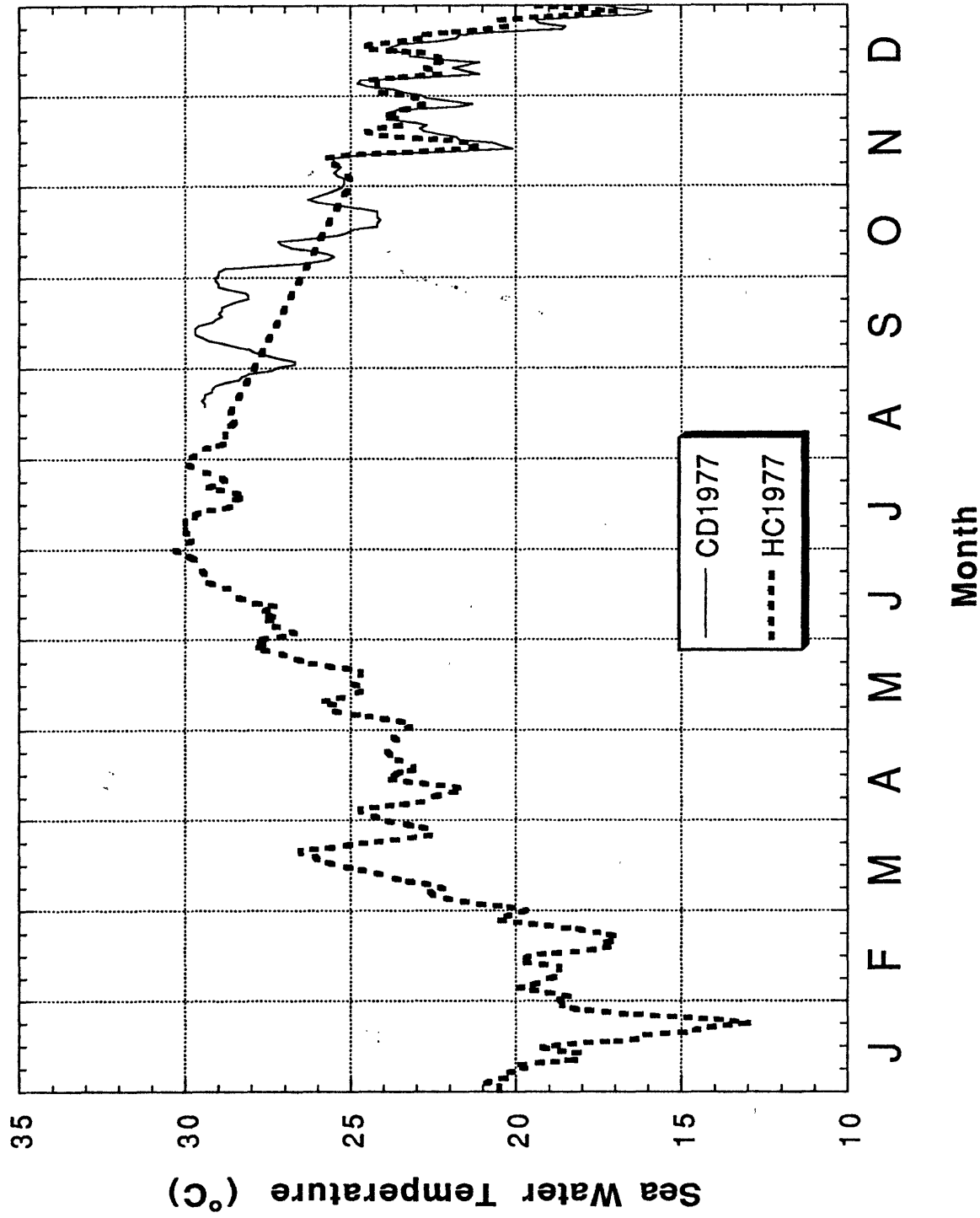
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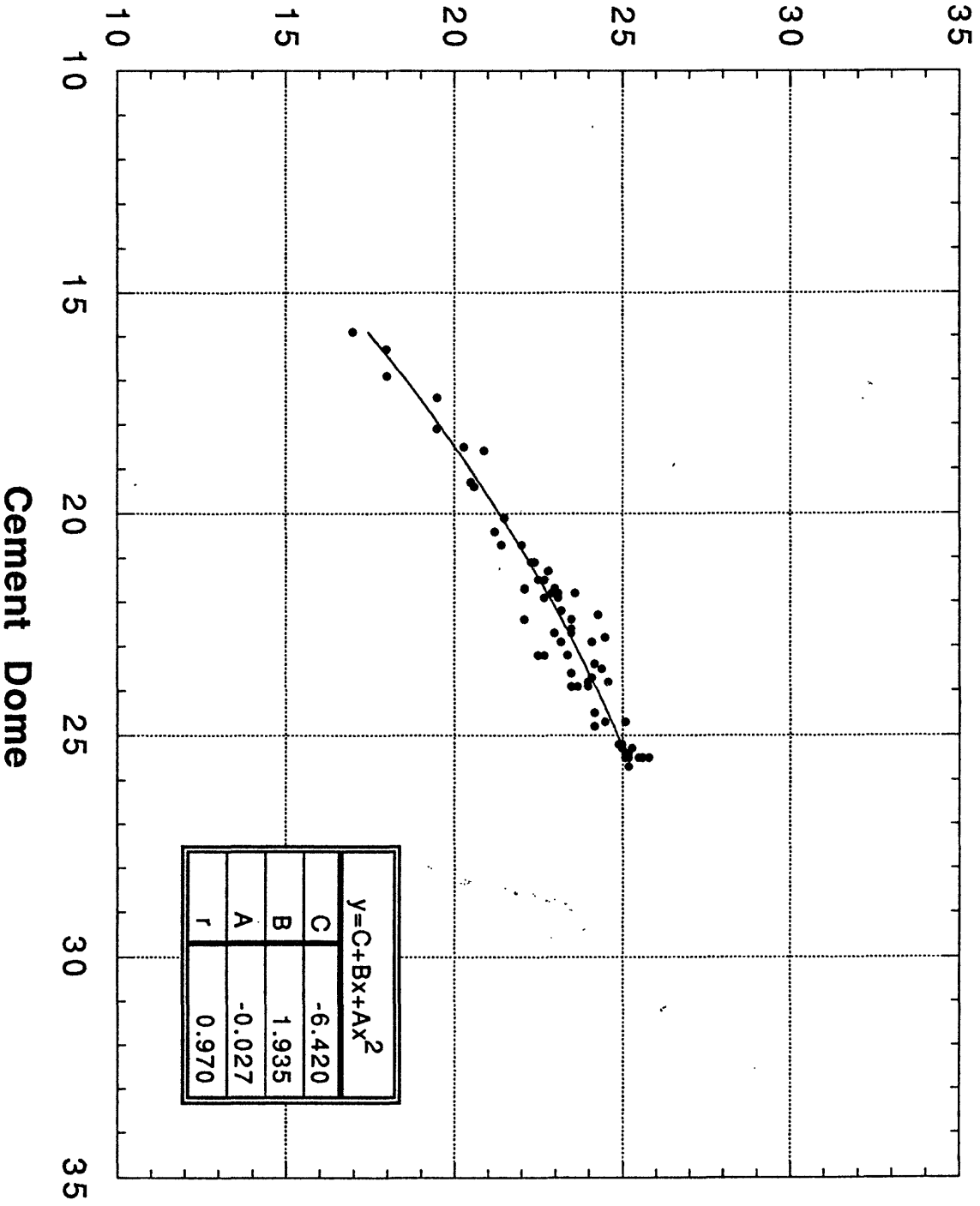


Cement Dome and Hen & Chickens 1977

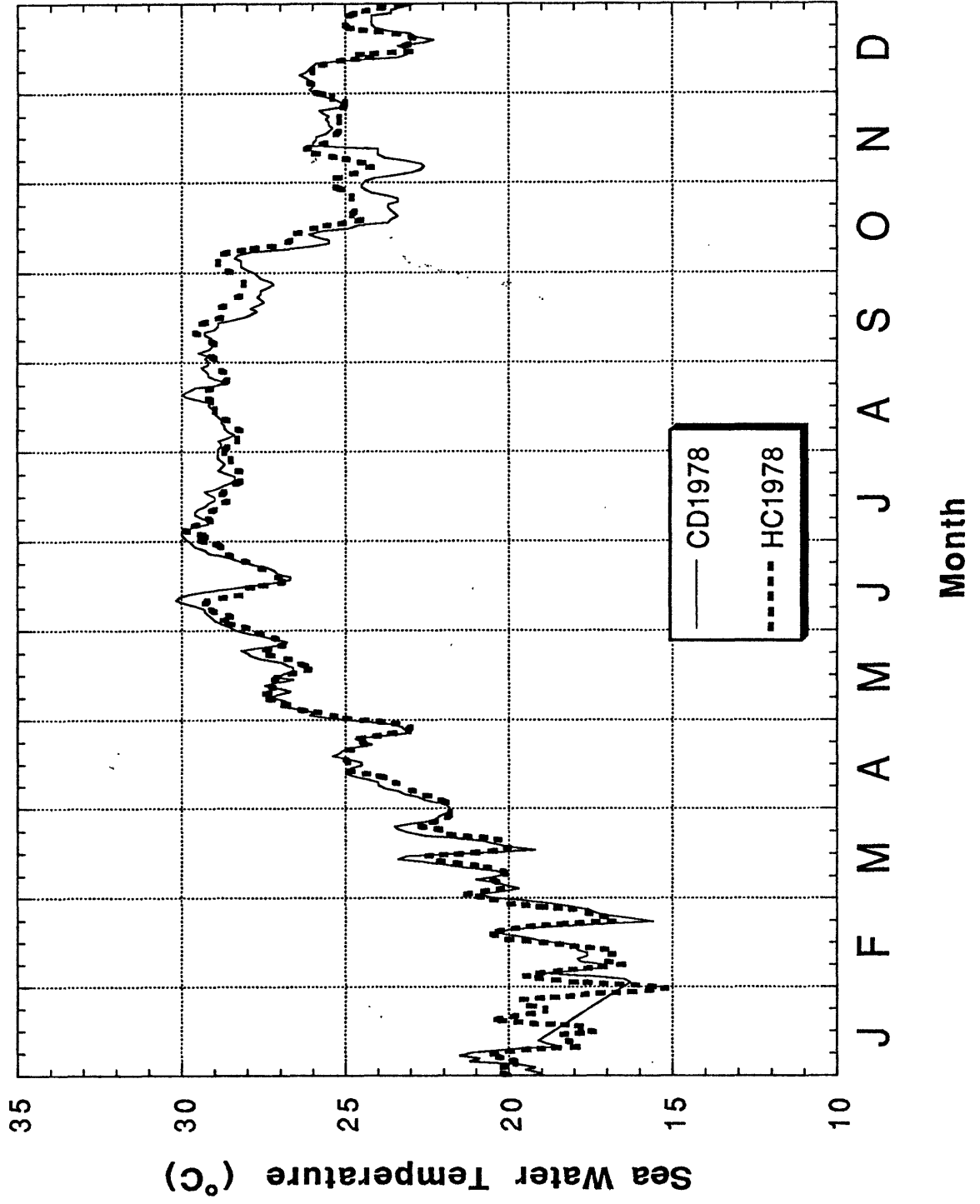


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Hen and Chickens

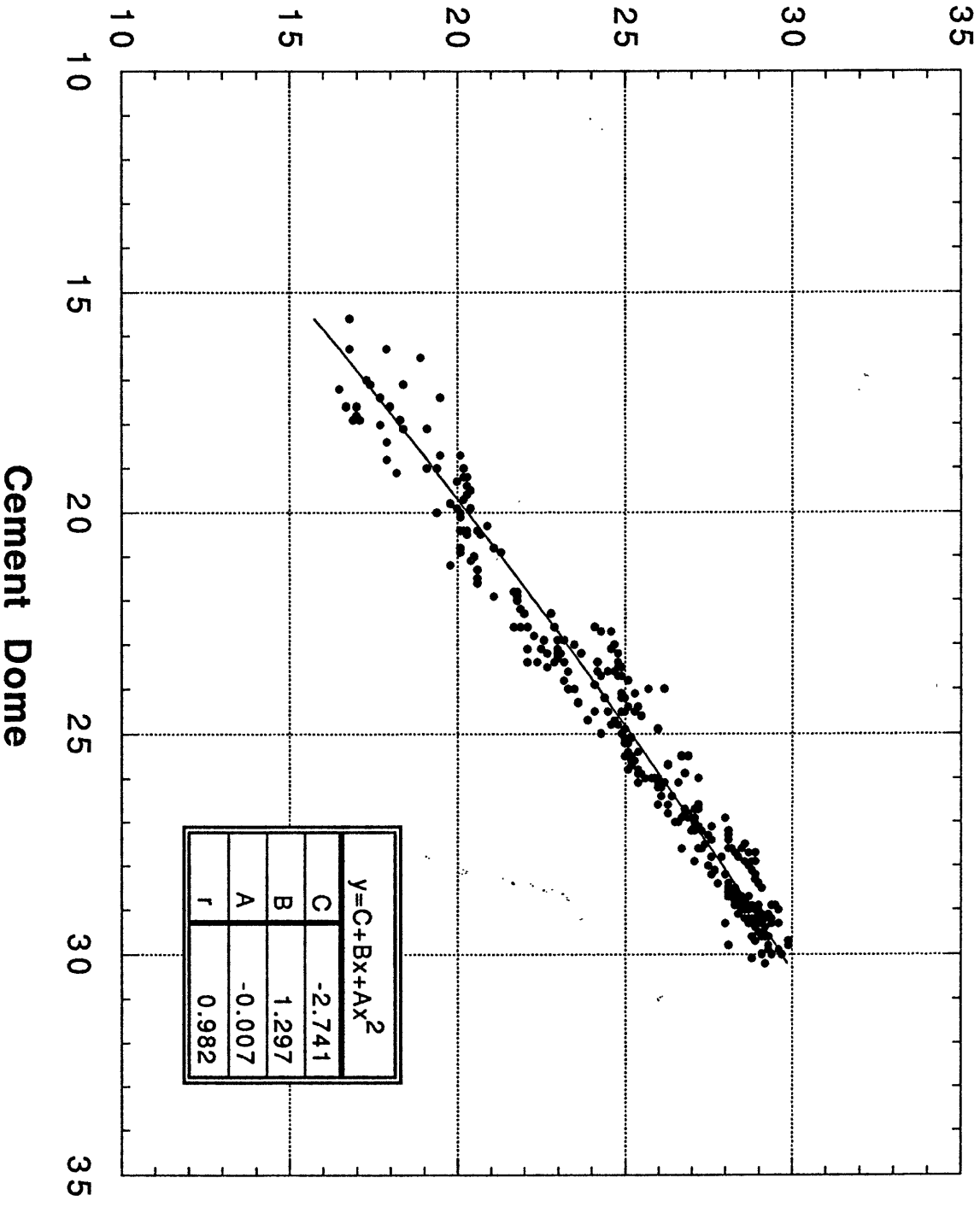


Cement Dome and Hen & Chickens 1978

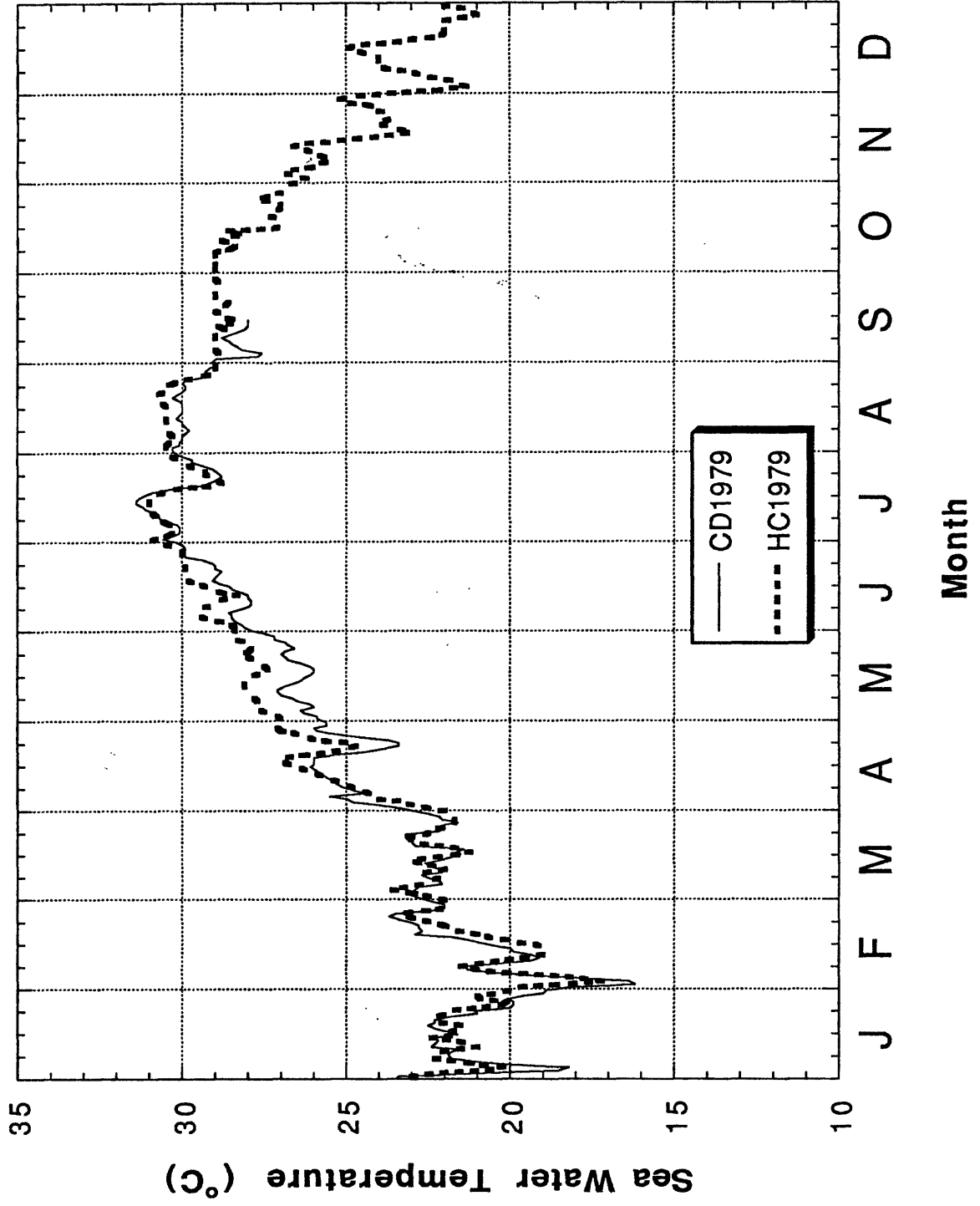


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Hen and Chickens

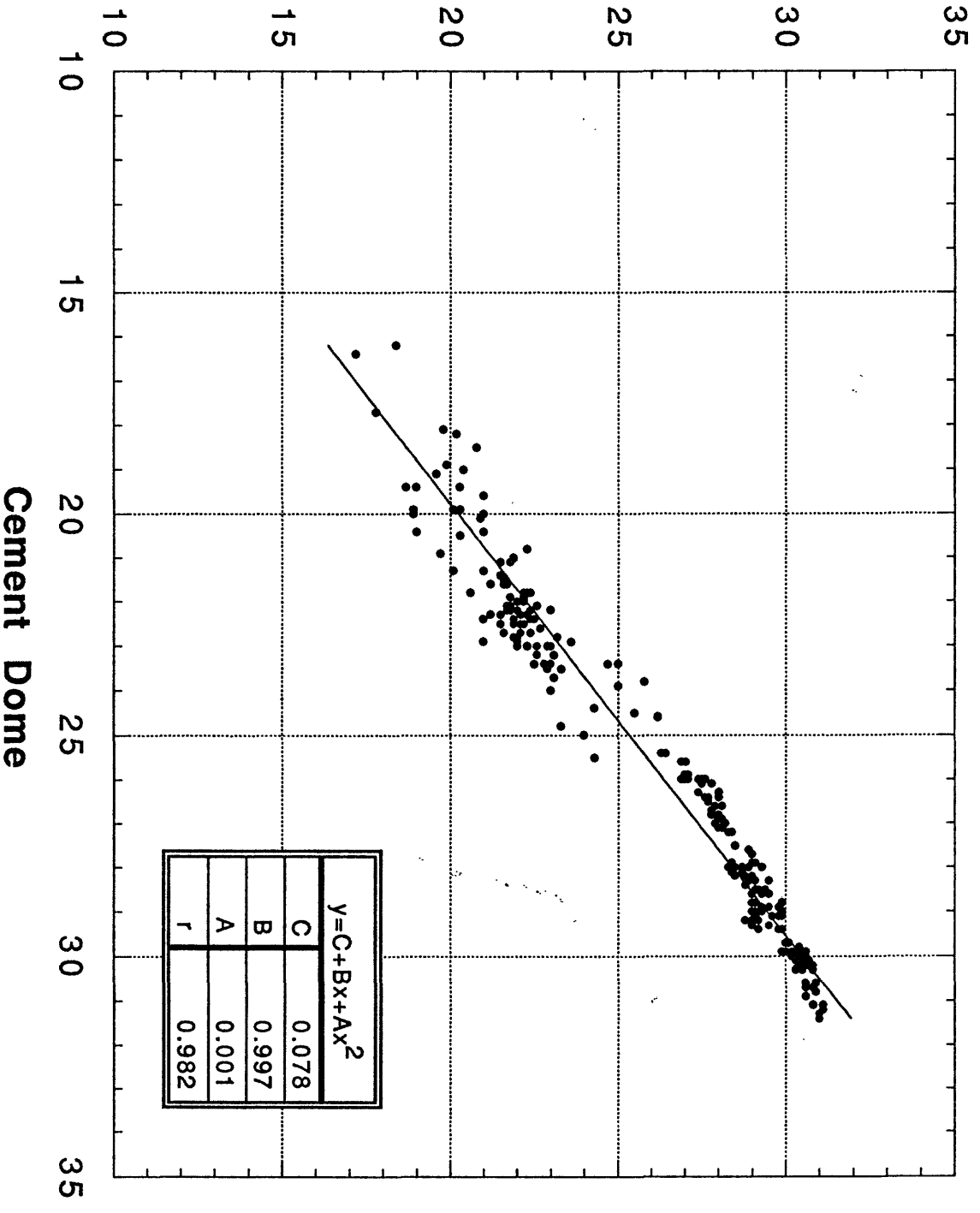


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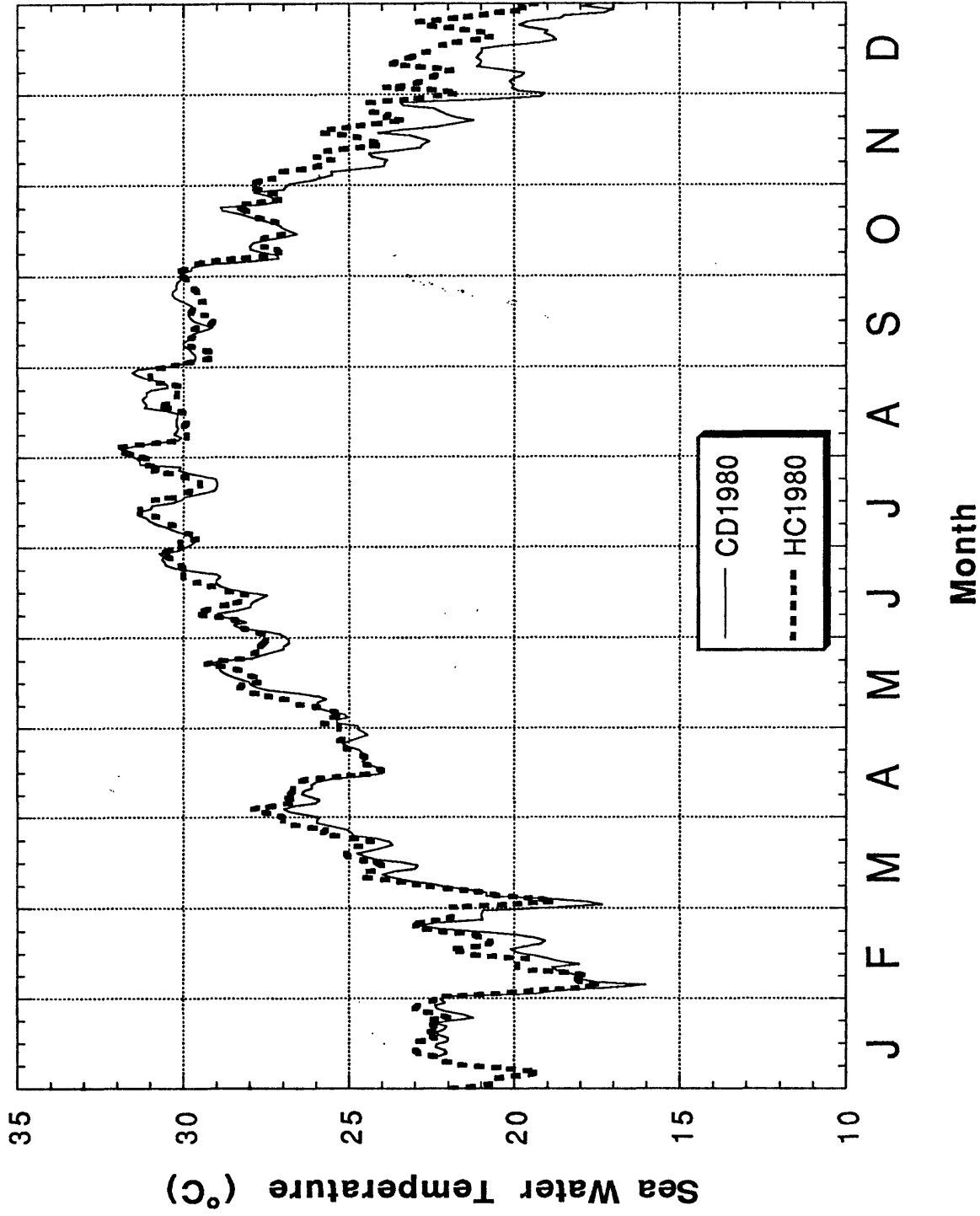


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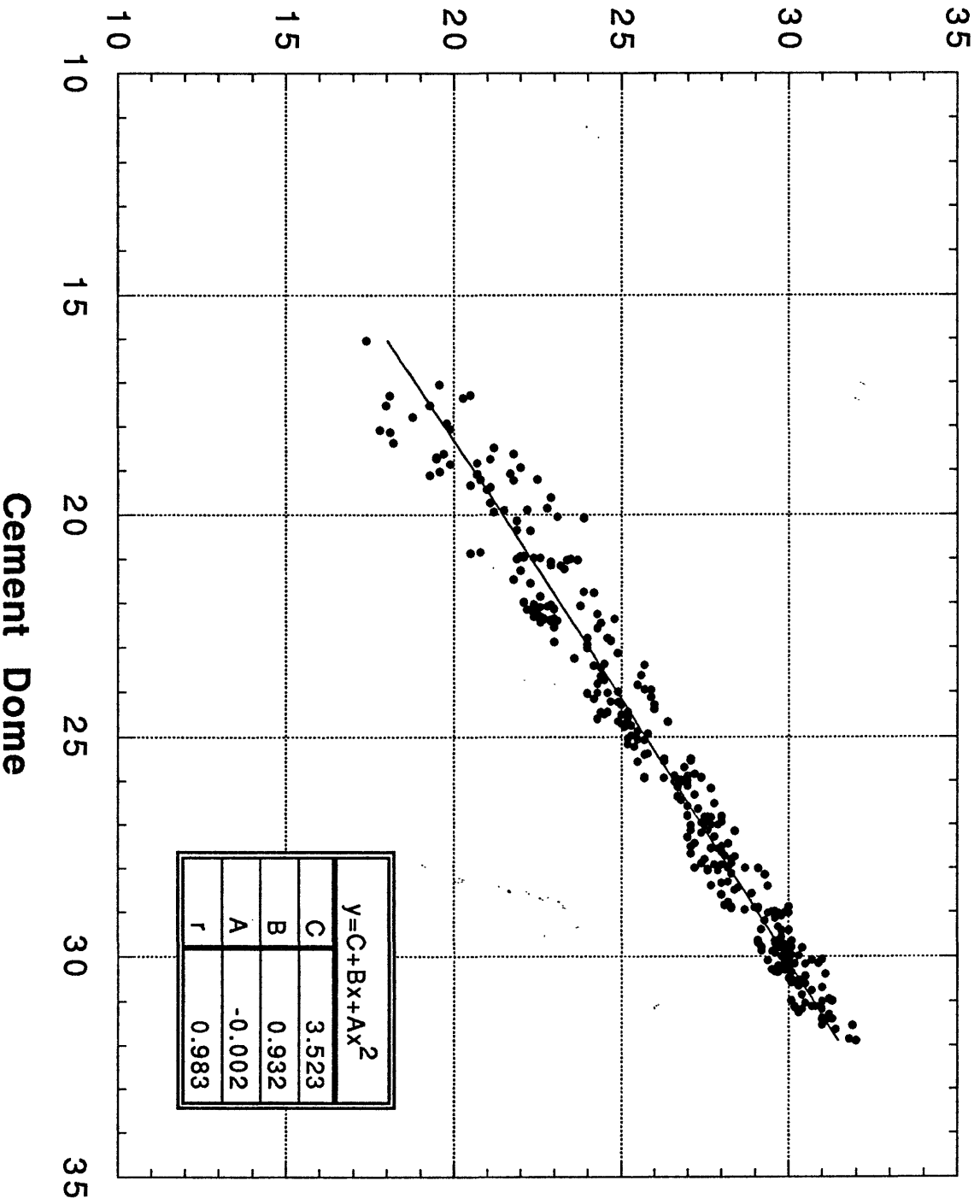


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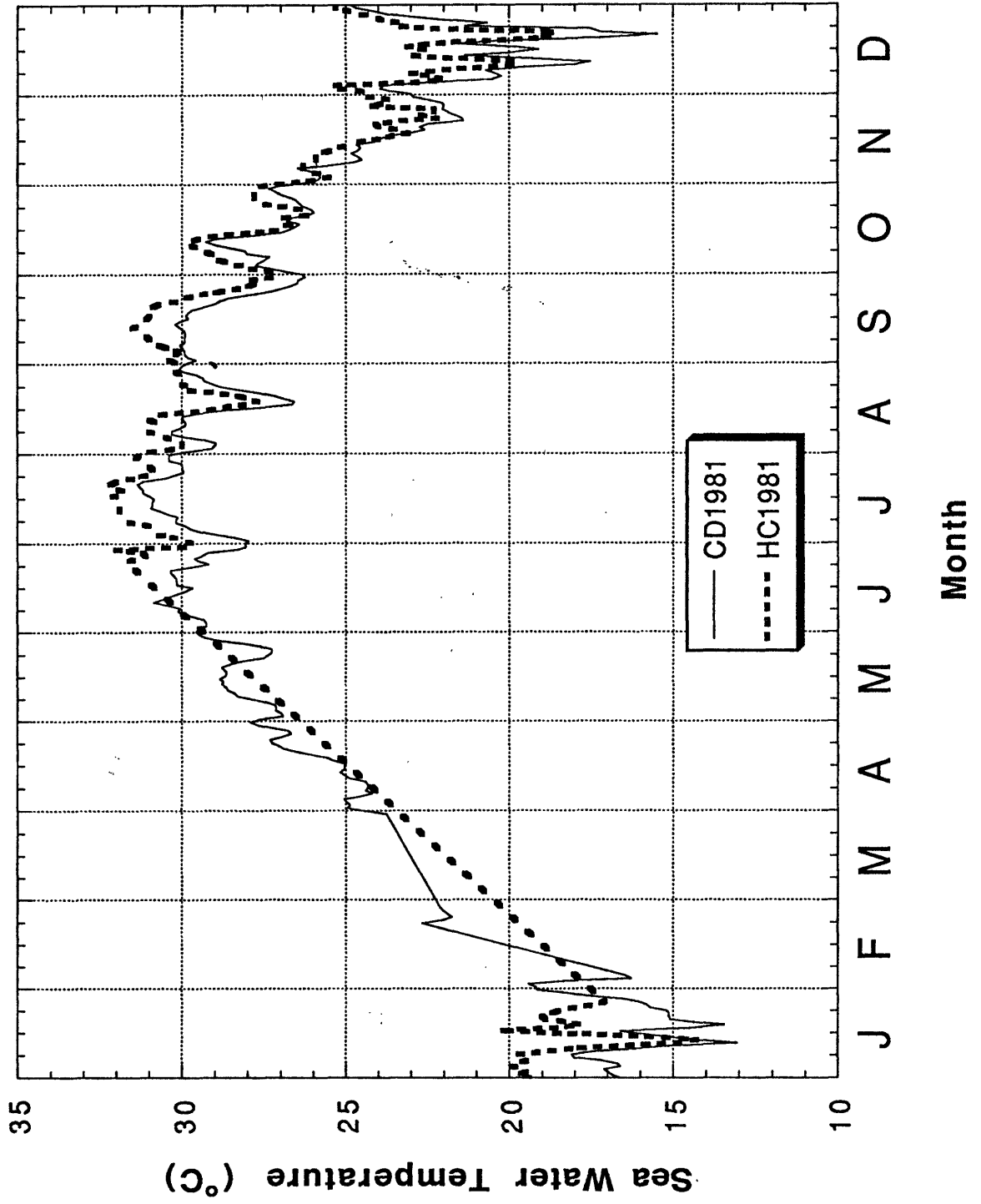


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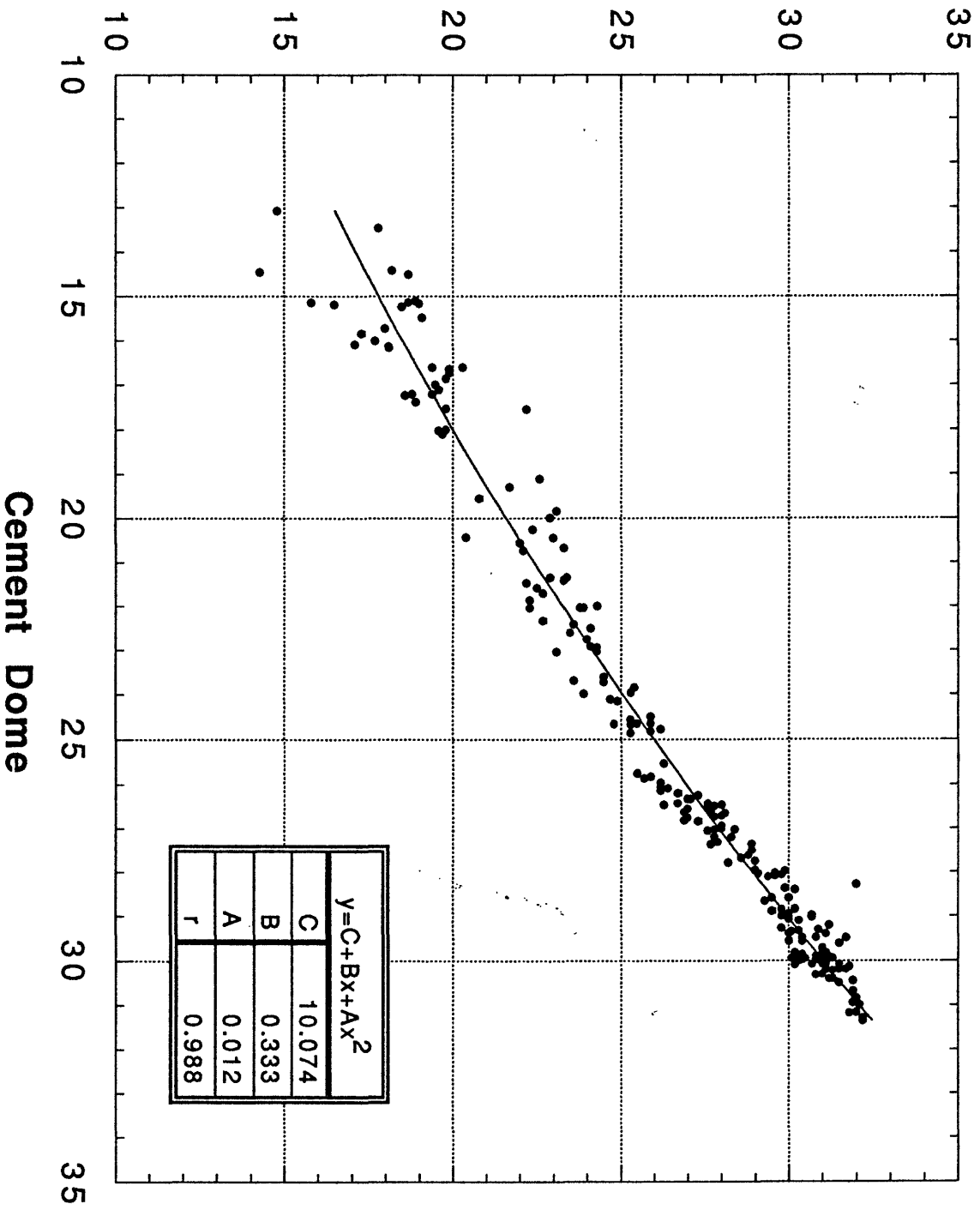


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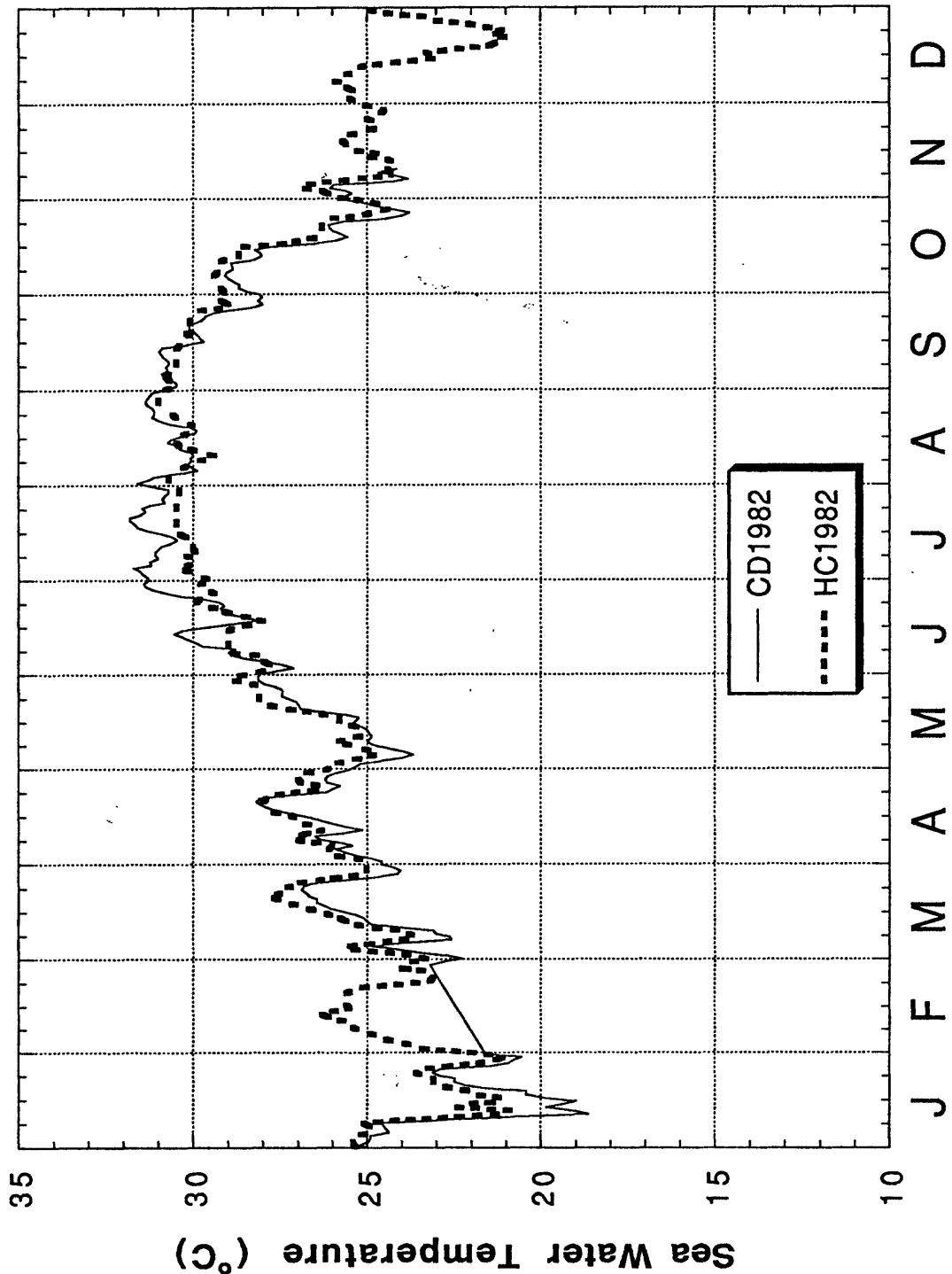


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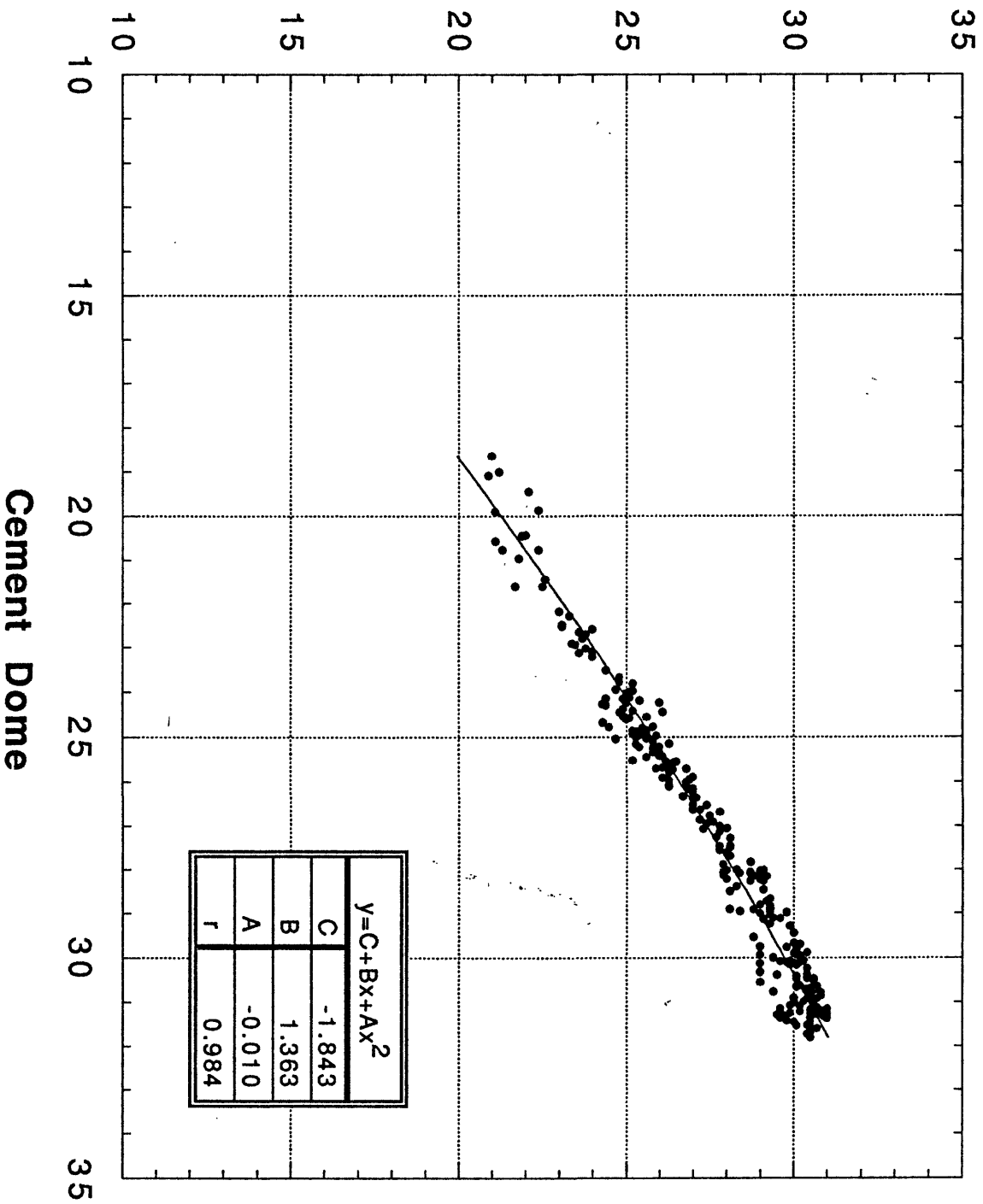


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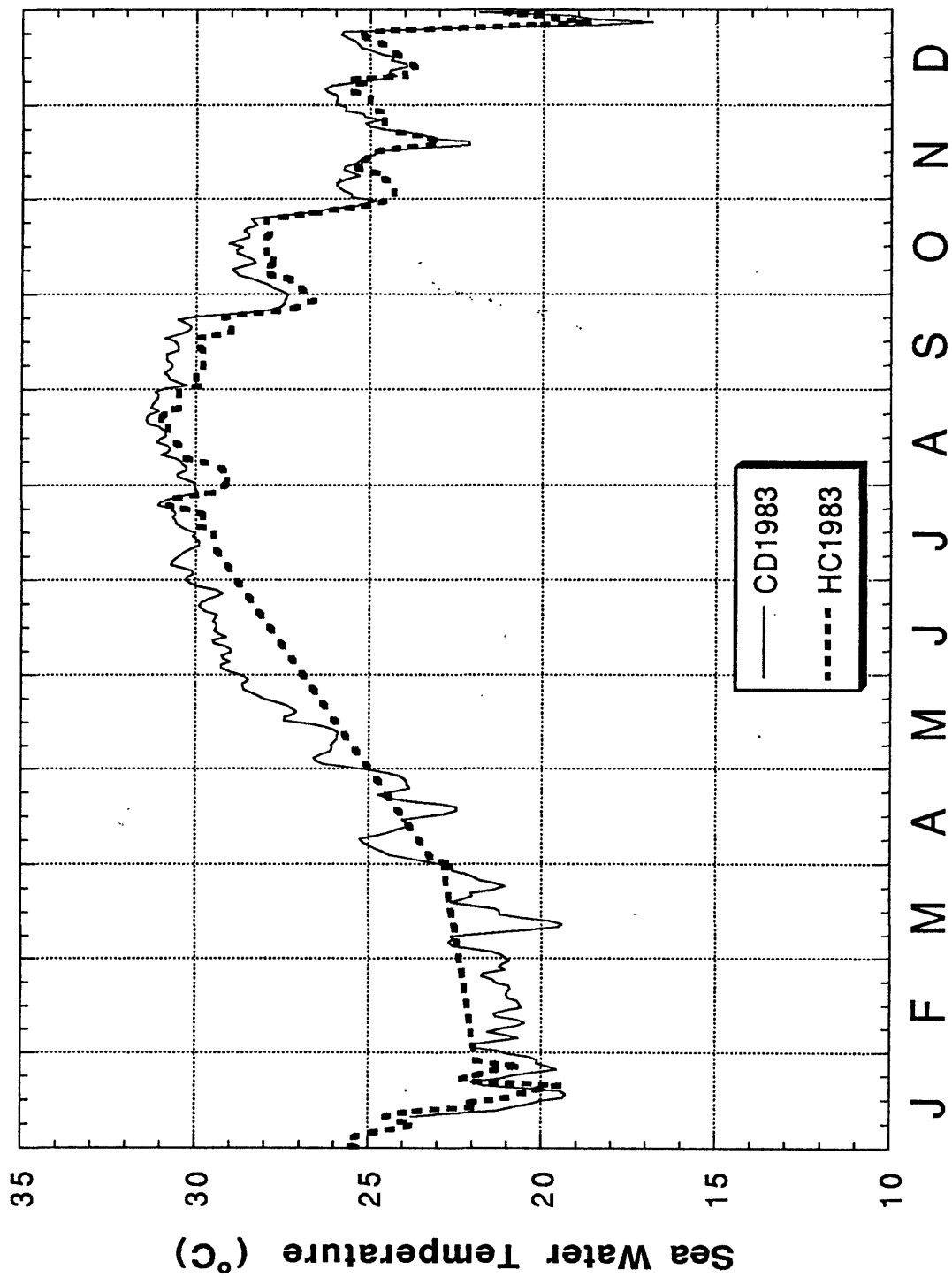


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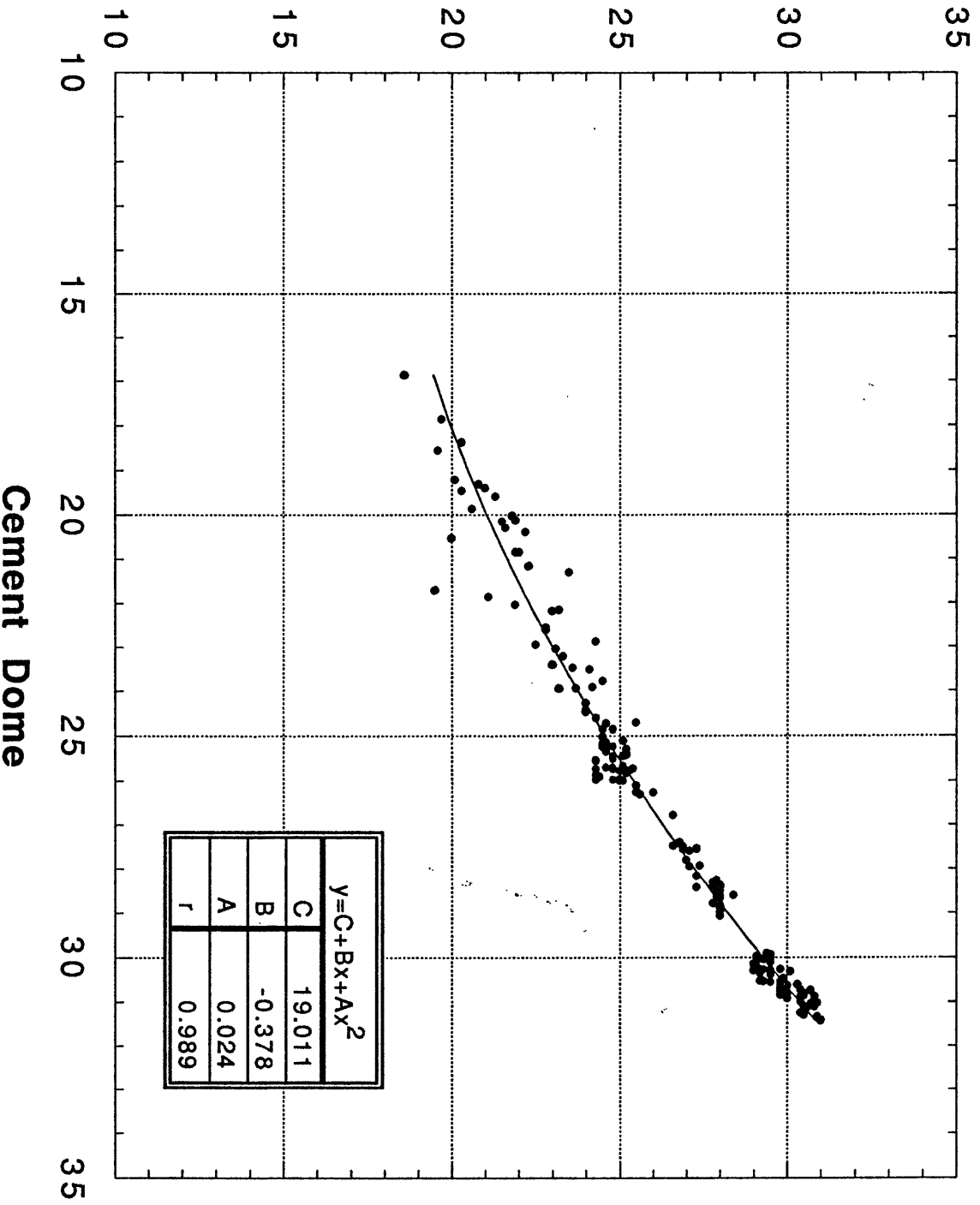


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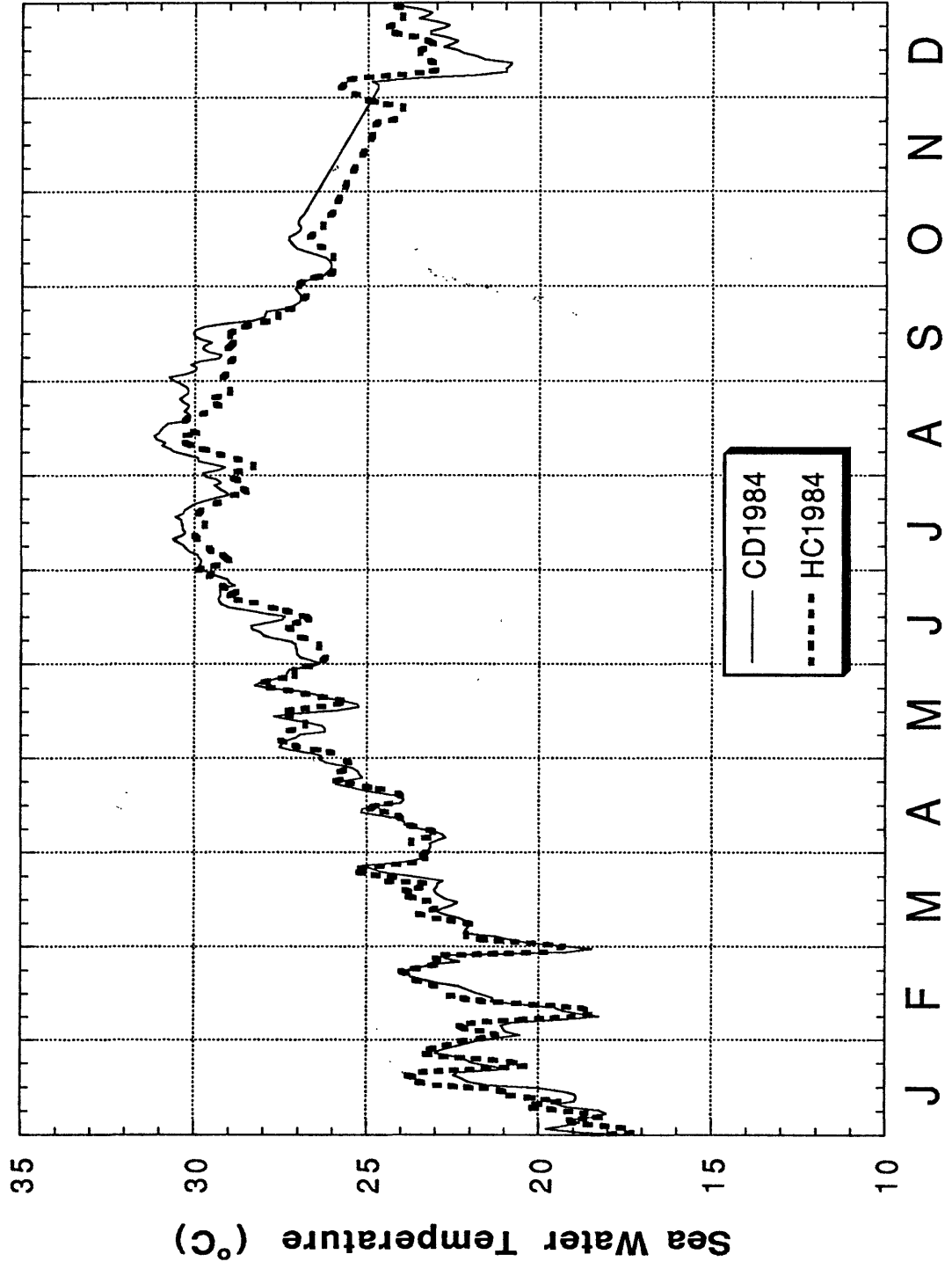


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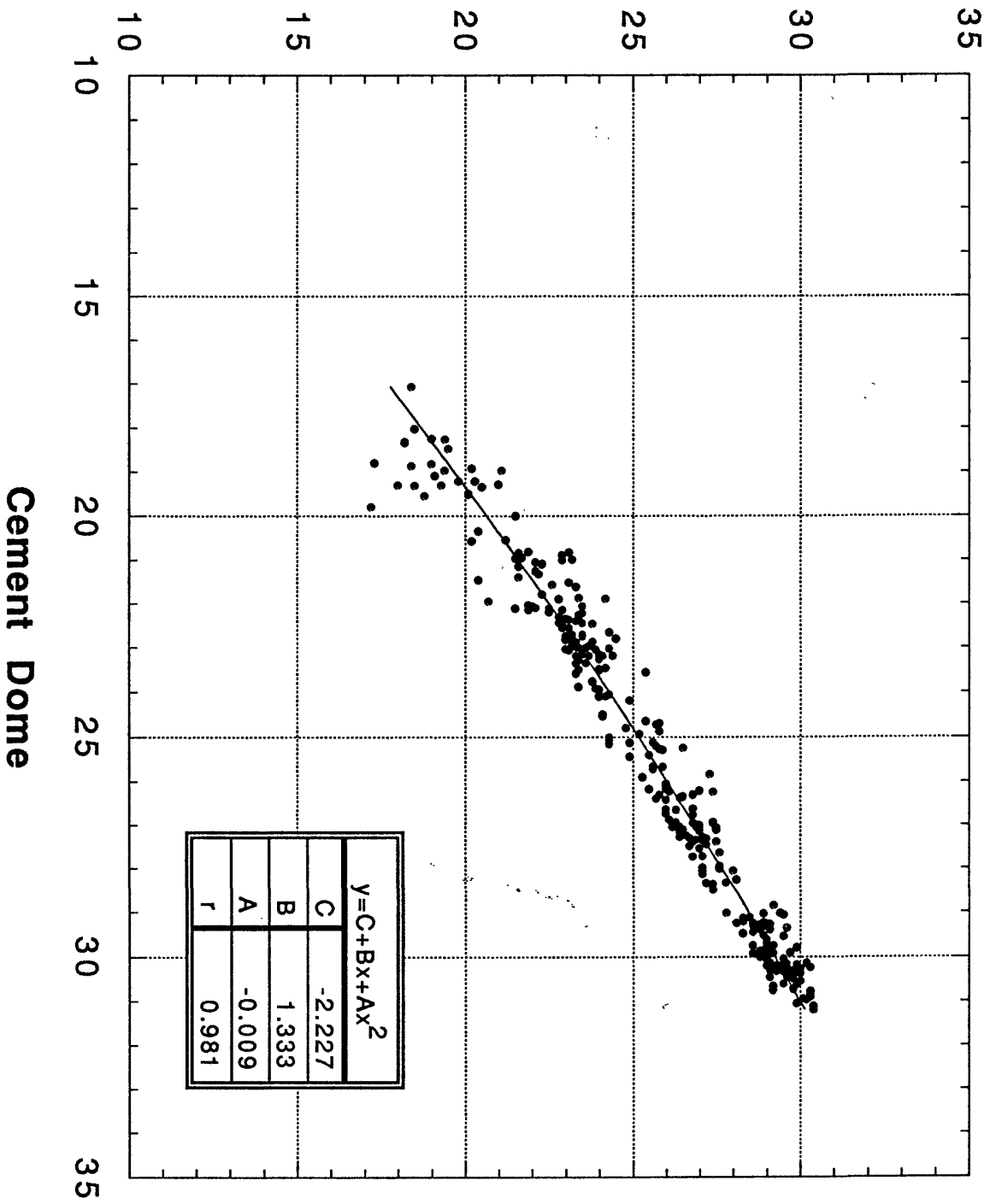


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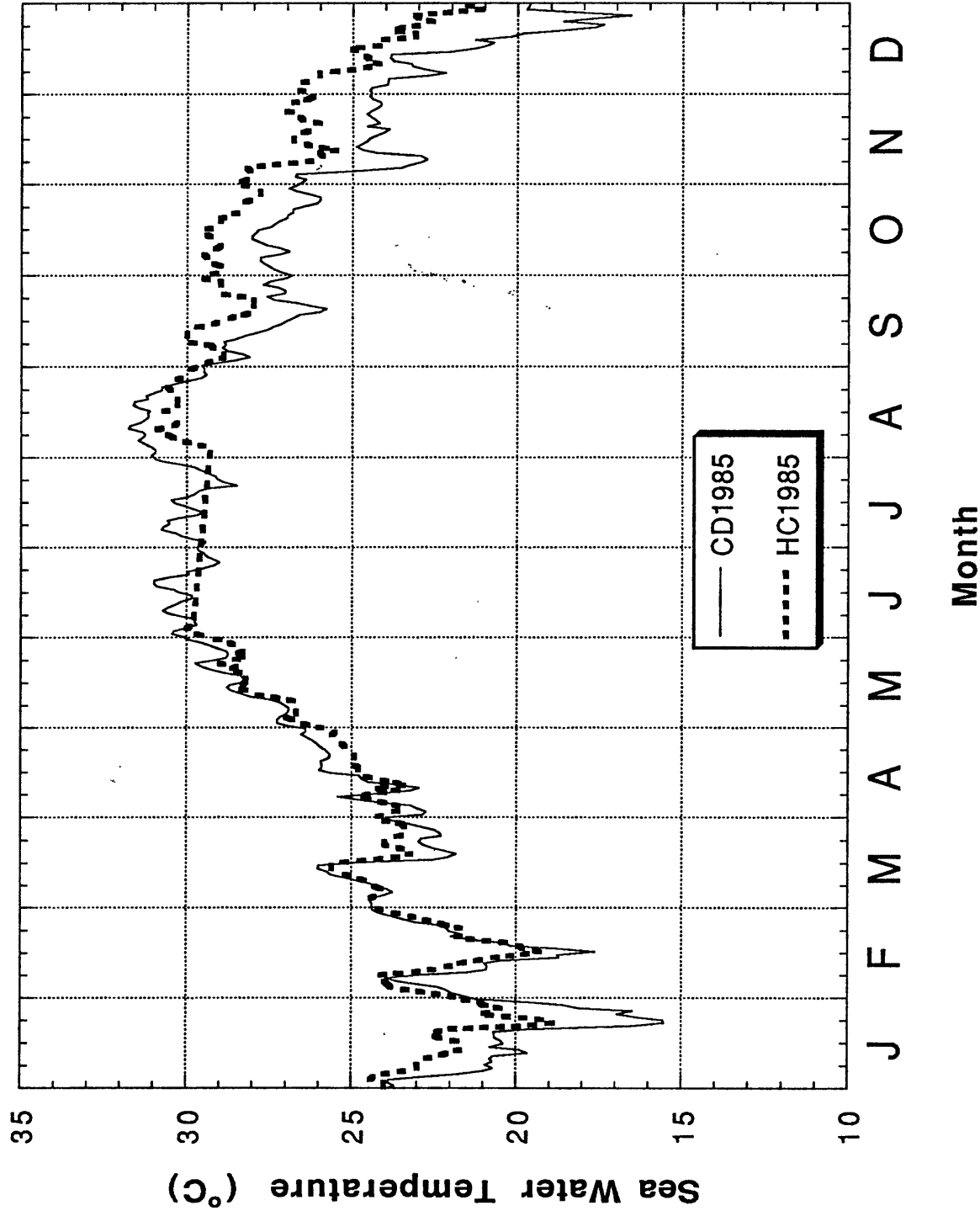


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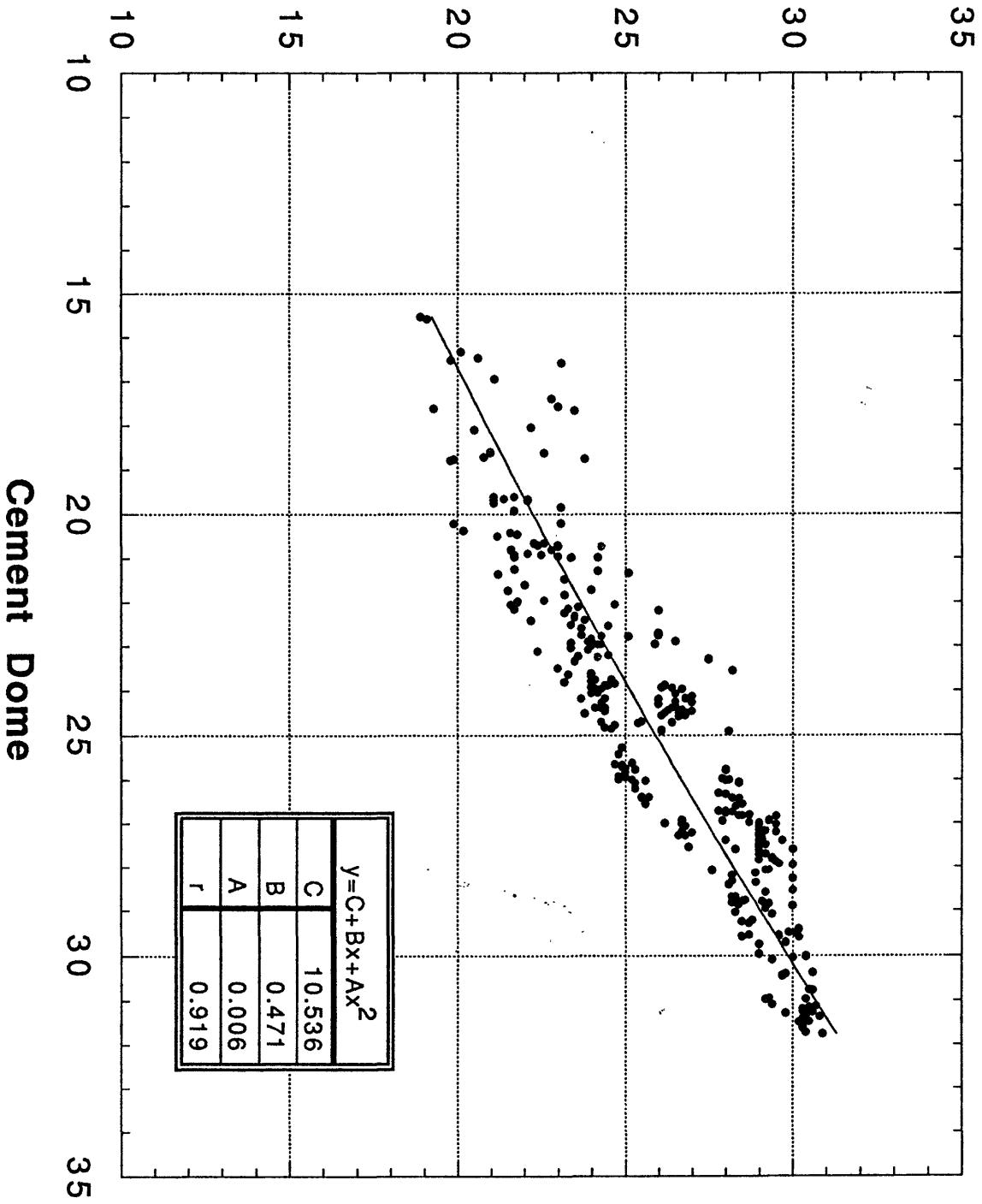


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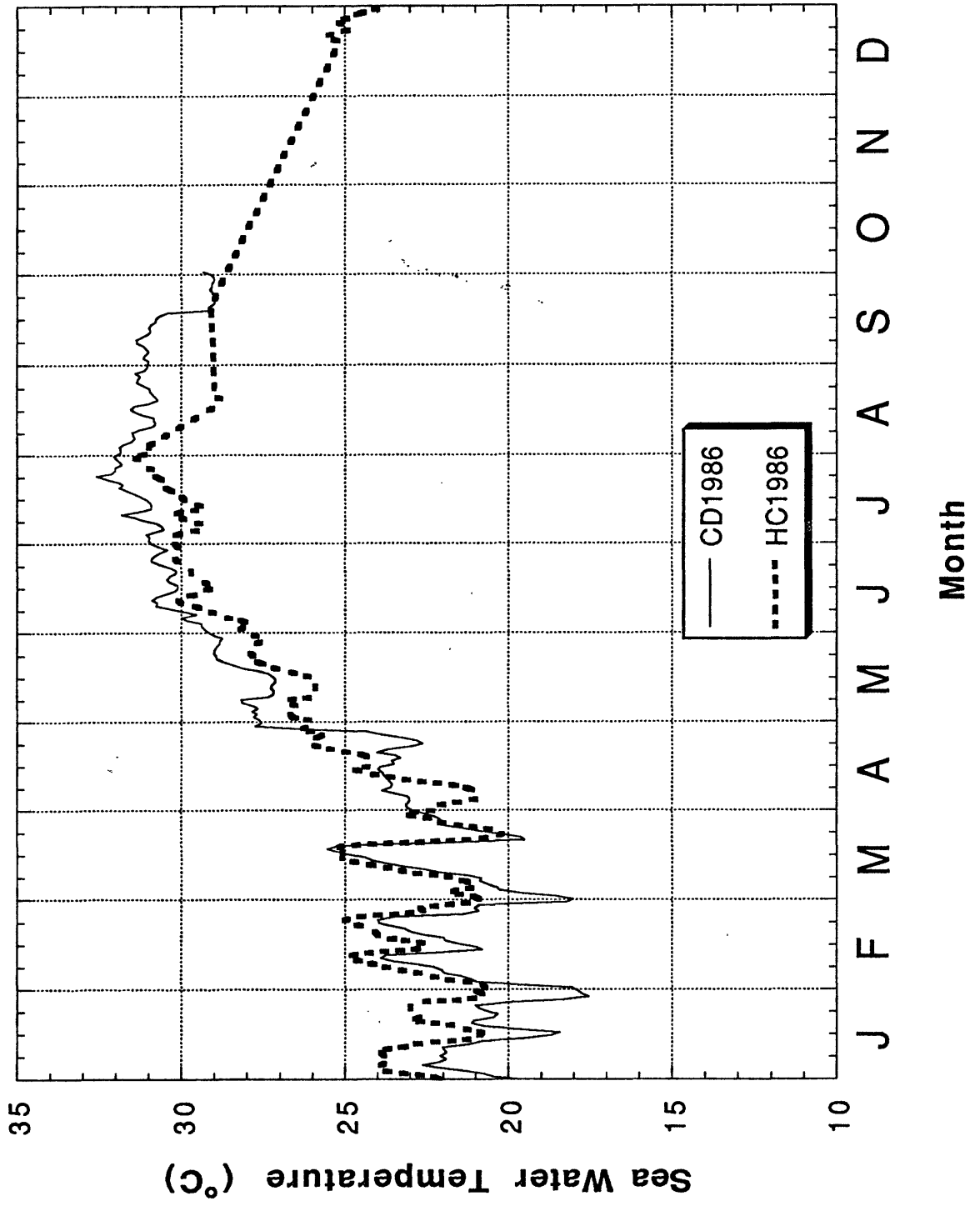


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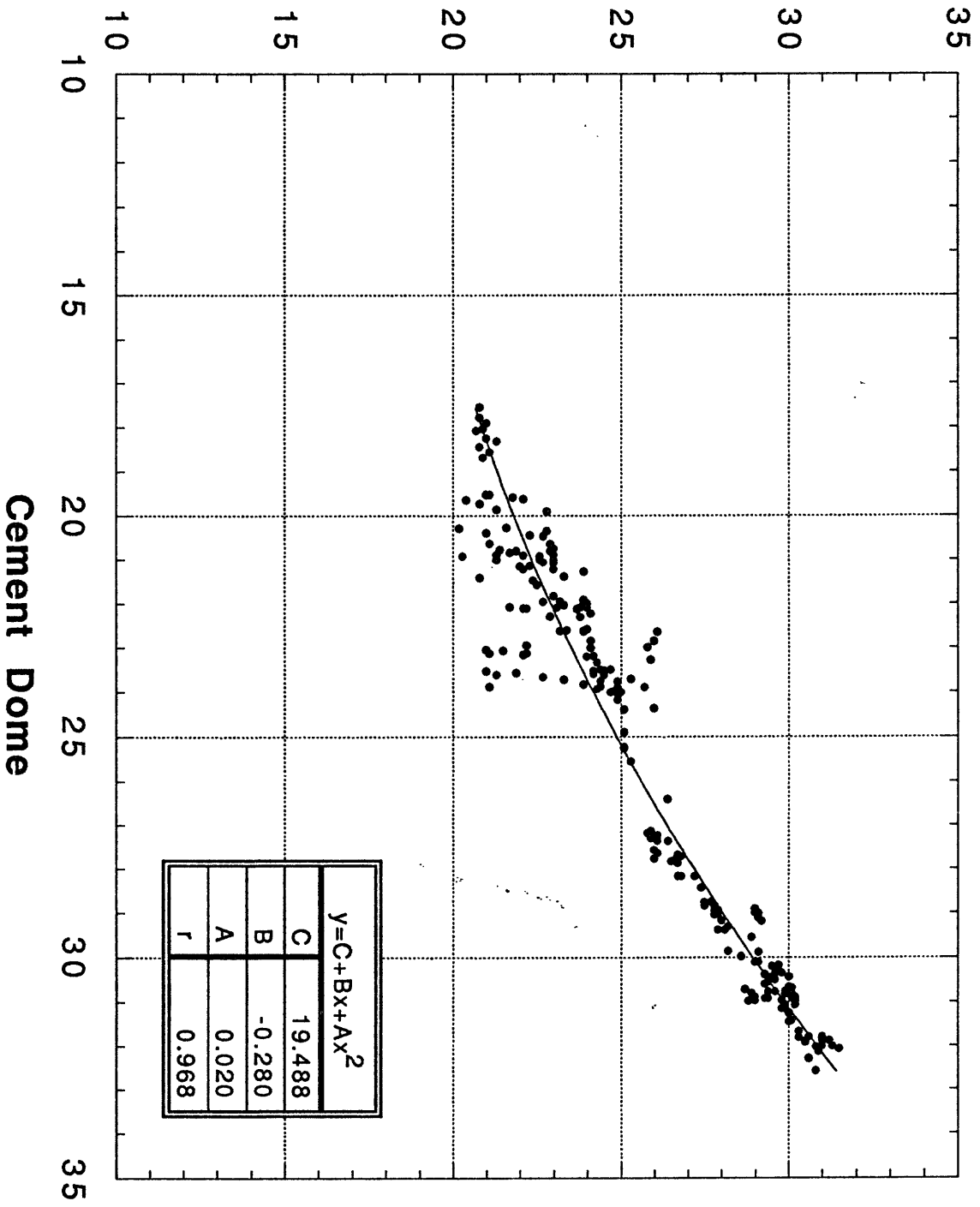


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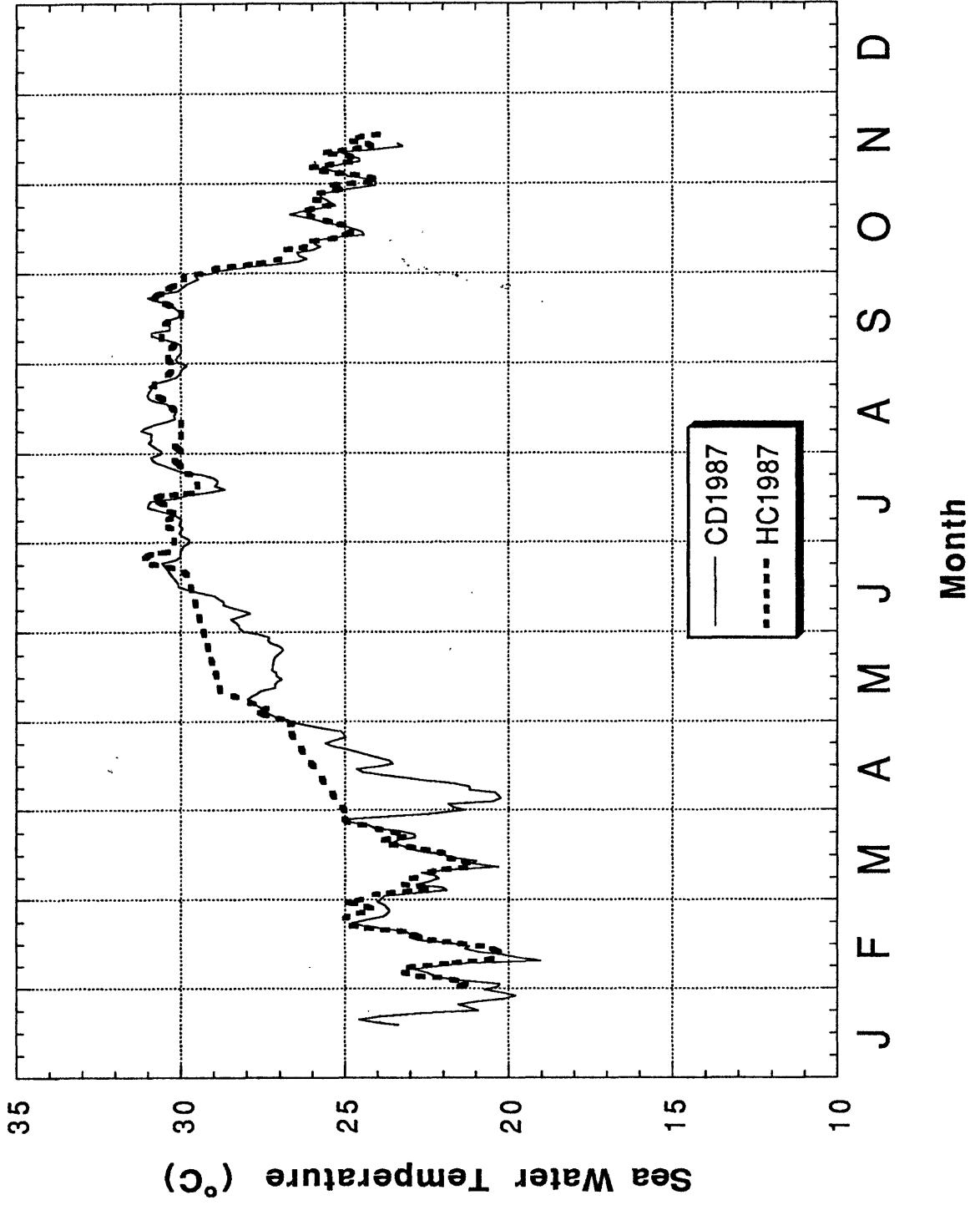


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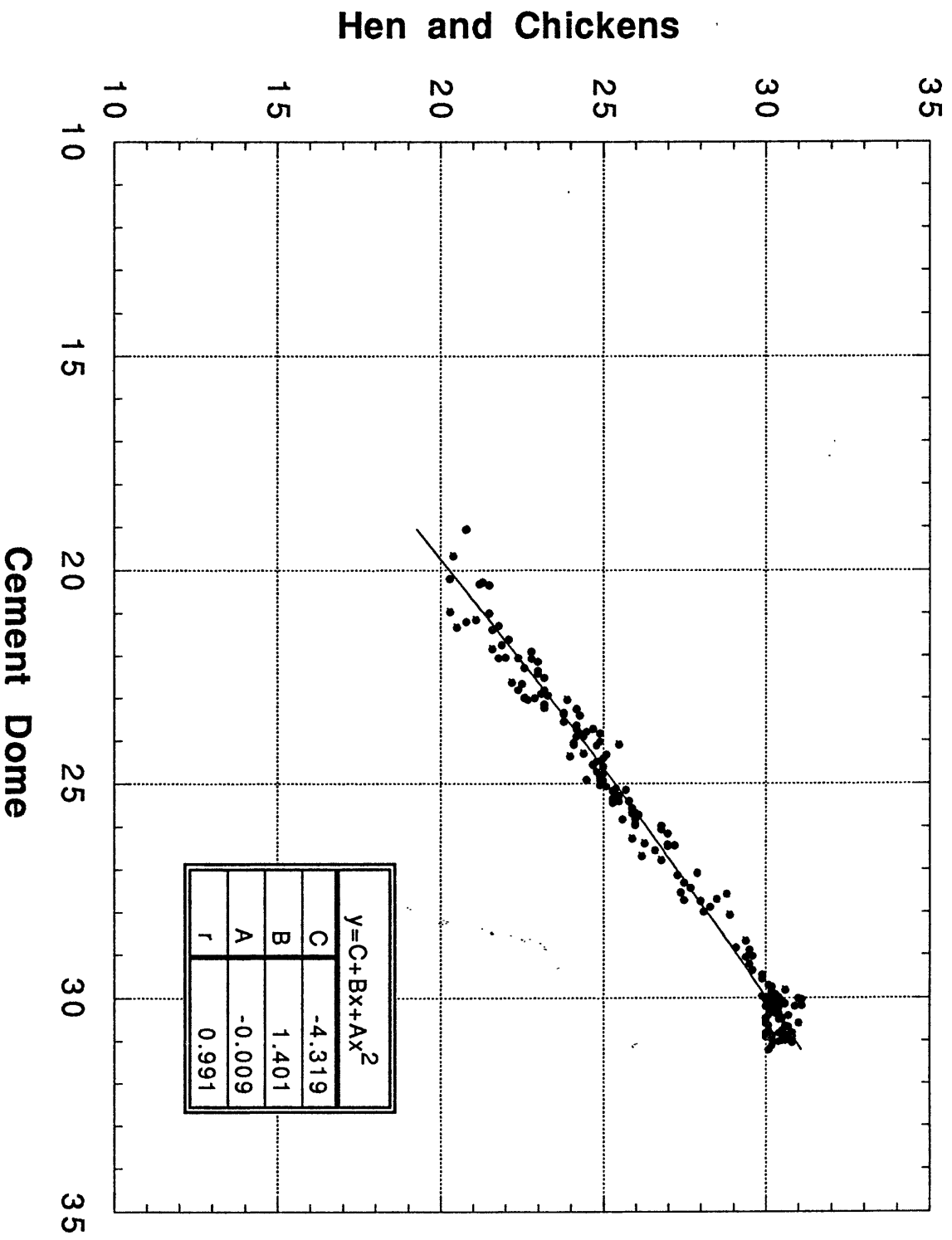
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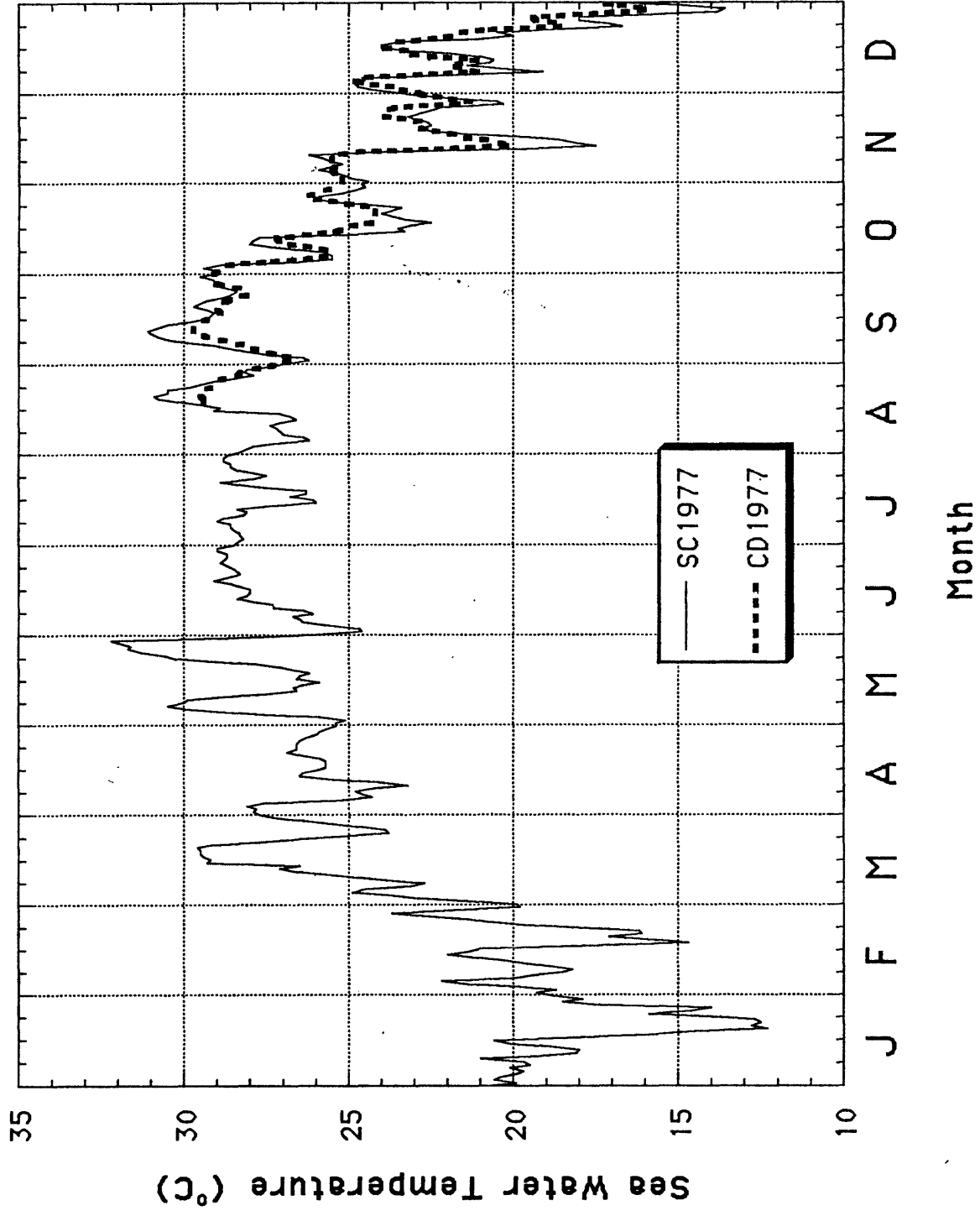
Cement Dome and Hen & Chickens 1987



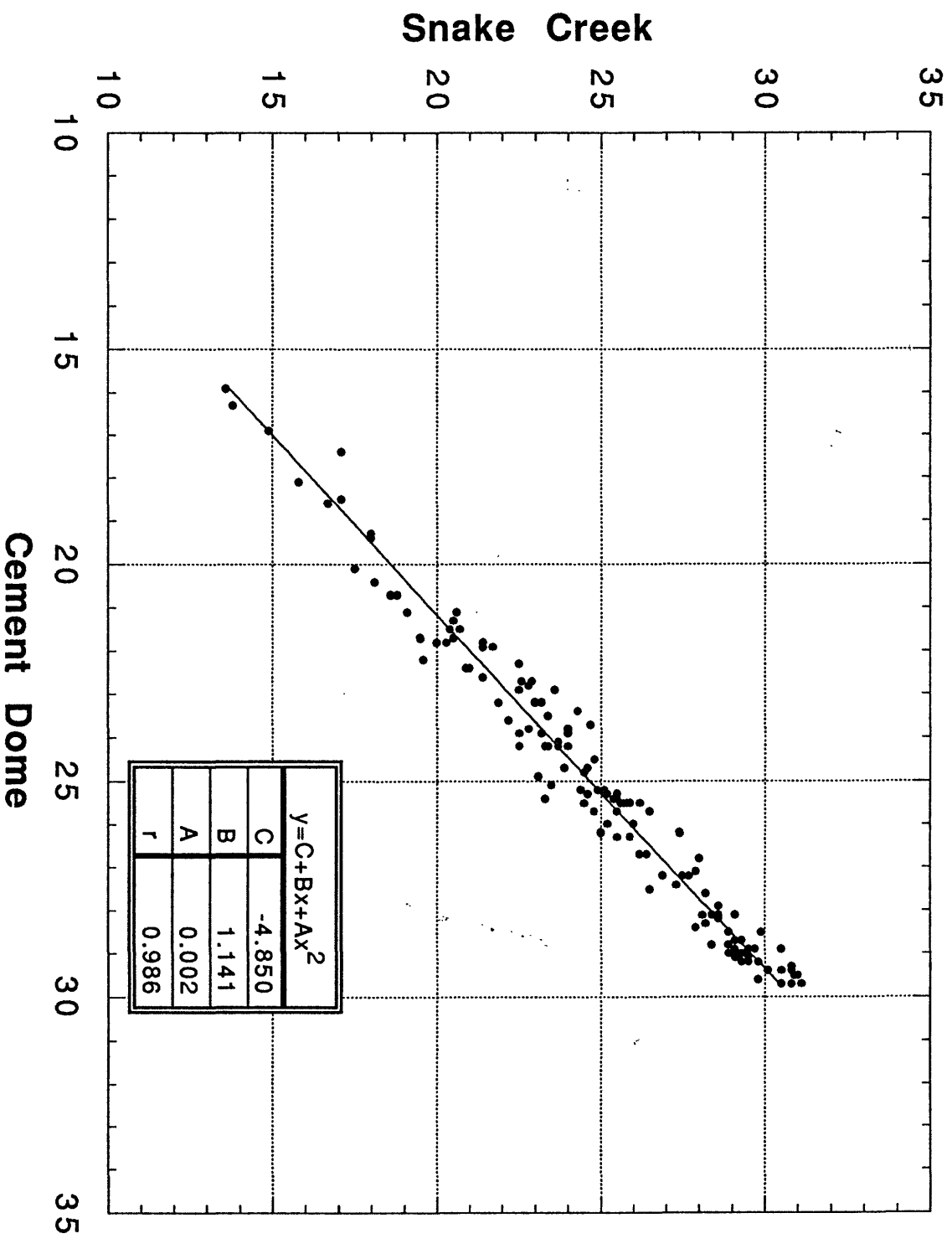
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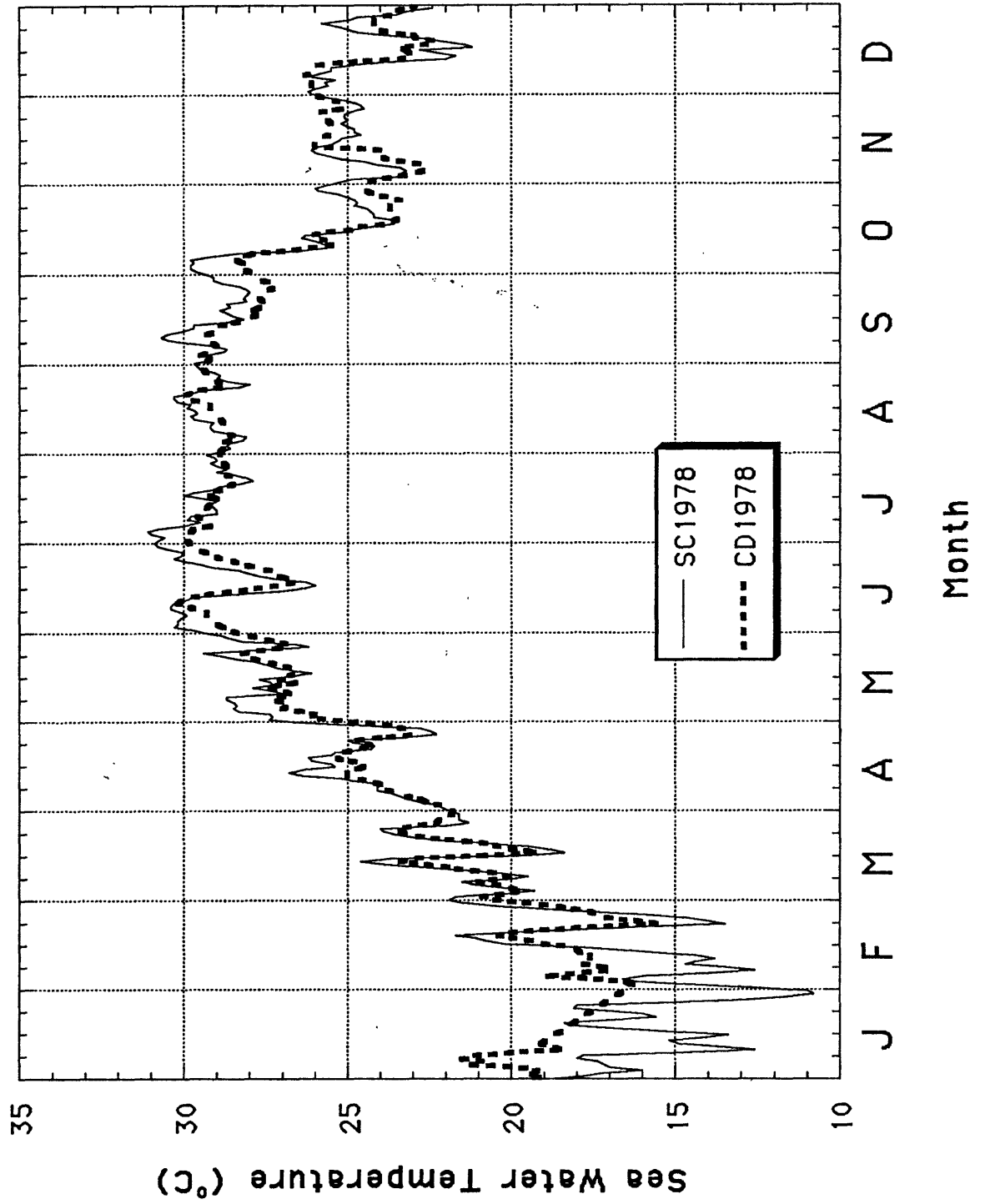
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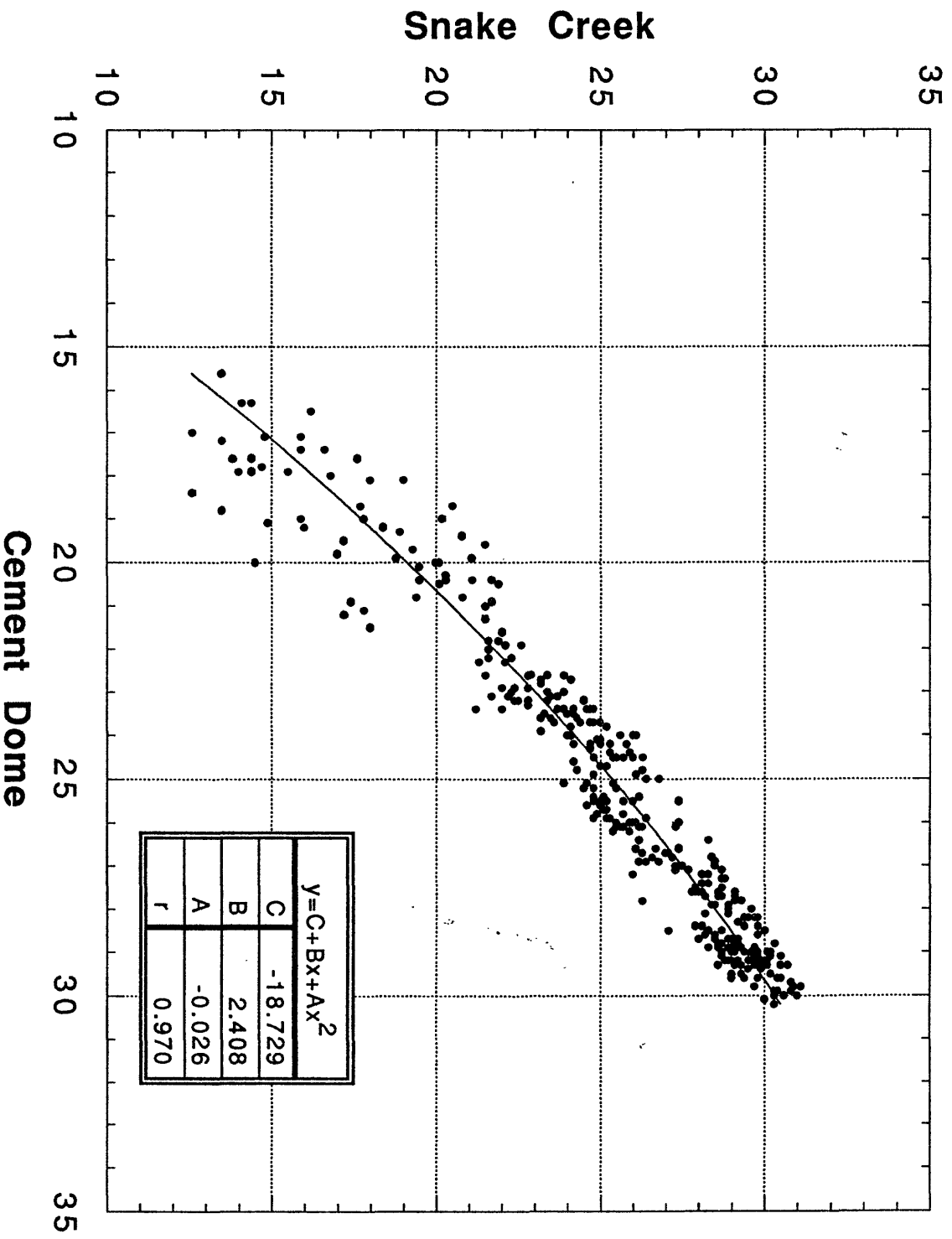
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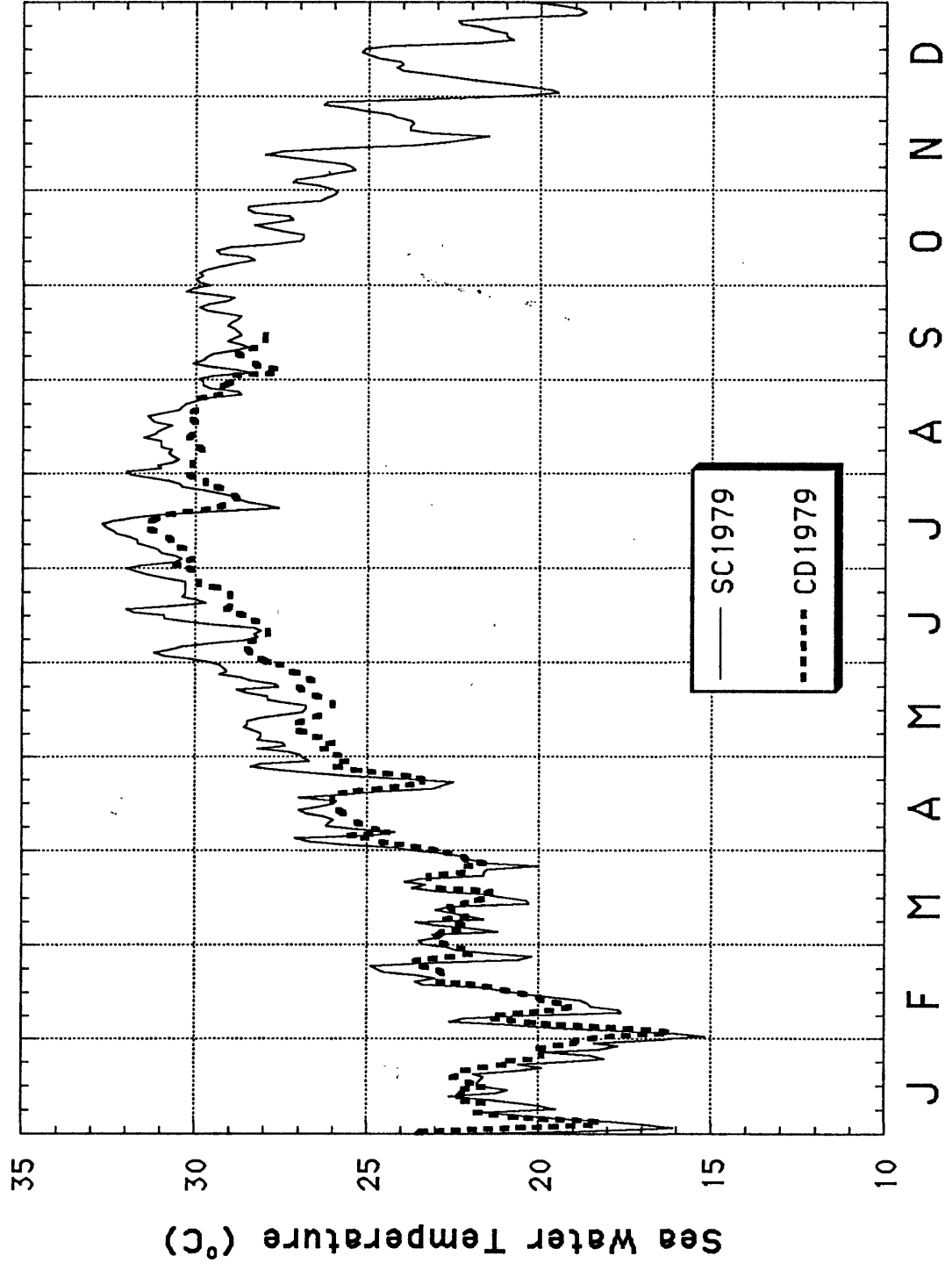
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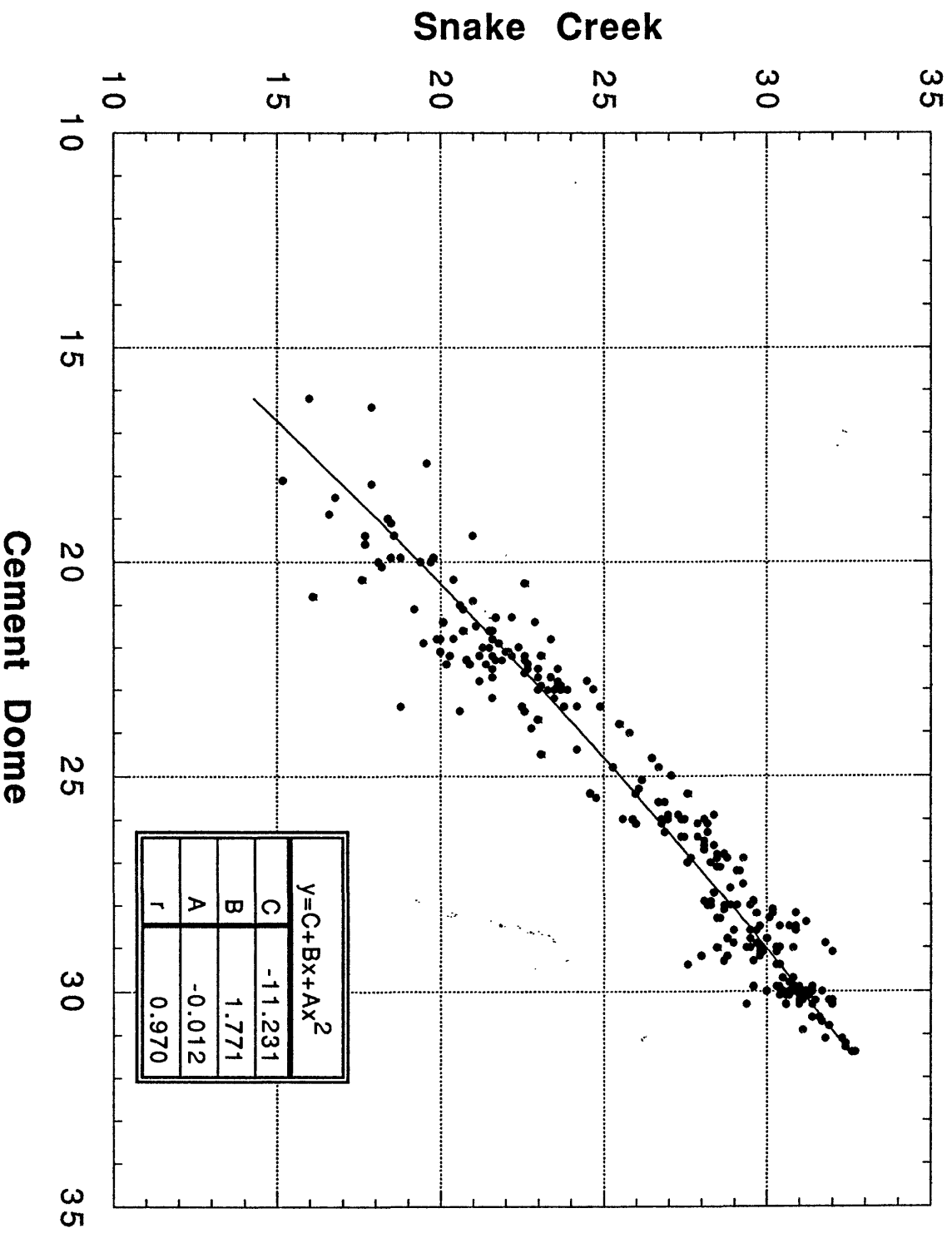
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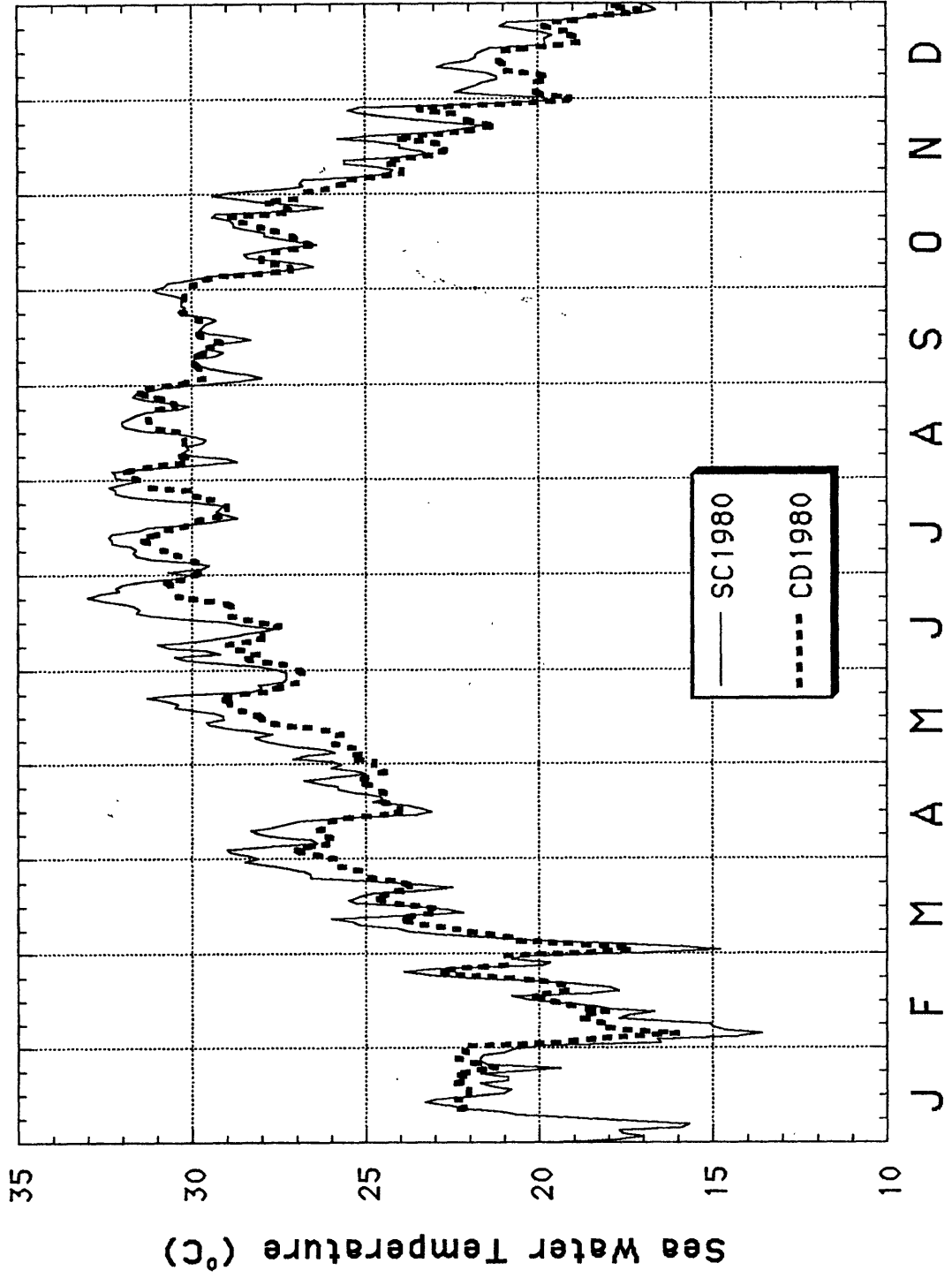
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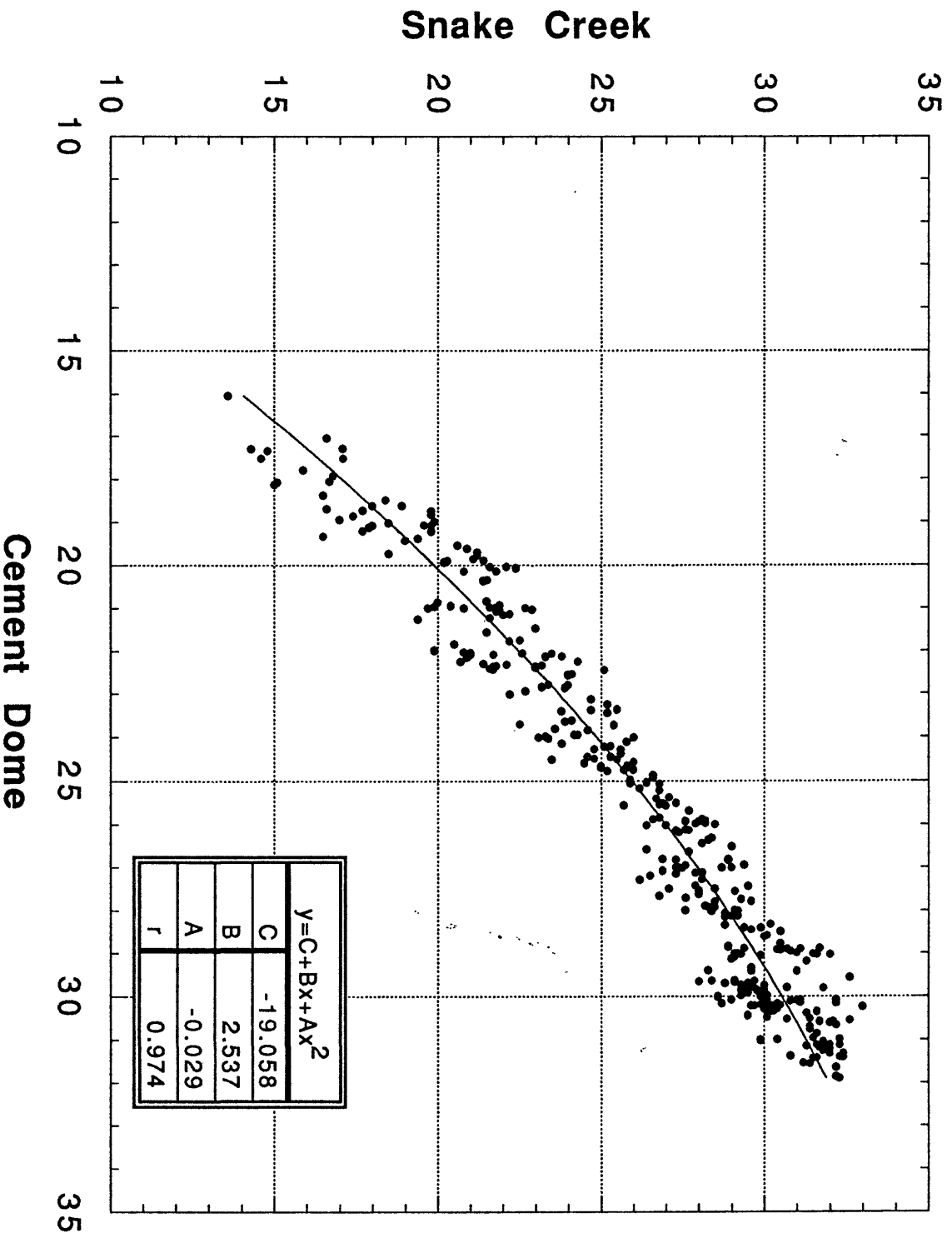
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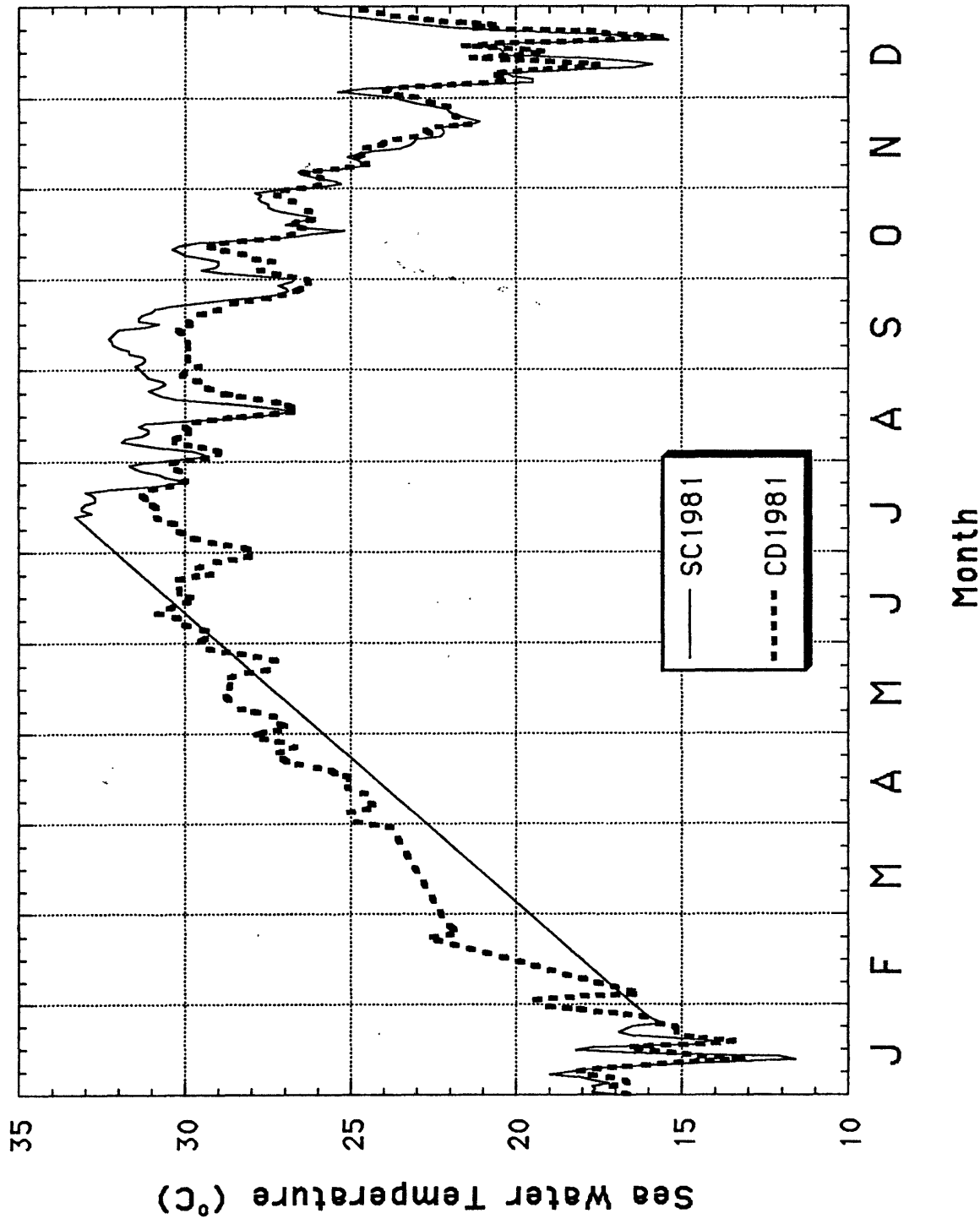
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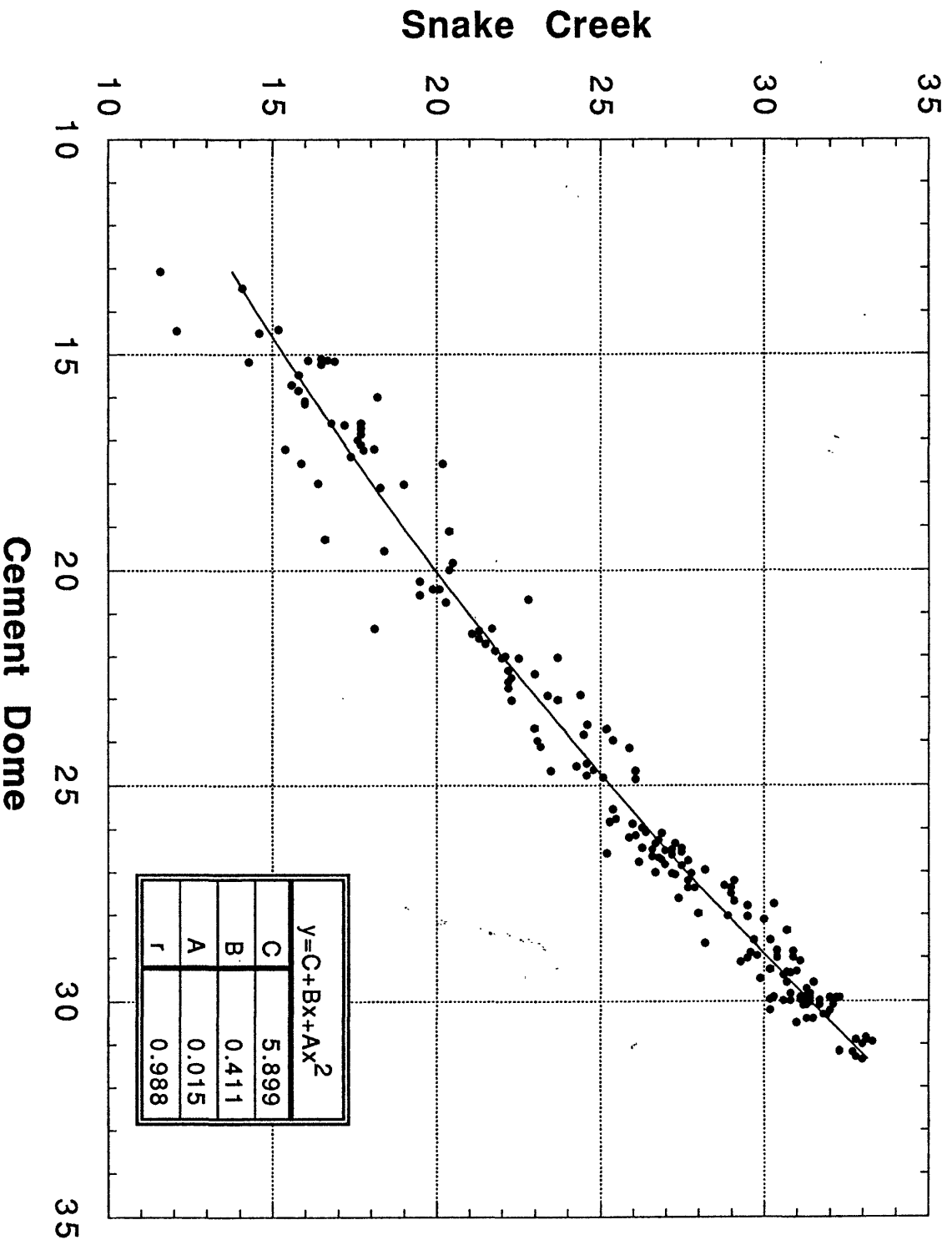
Sea Water Temperature (°C) 1980



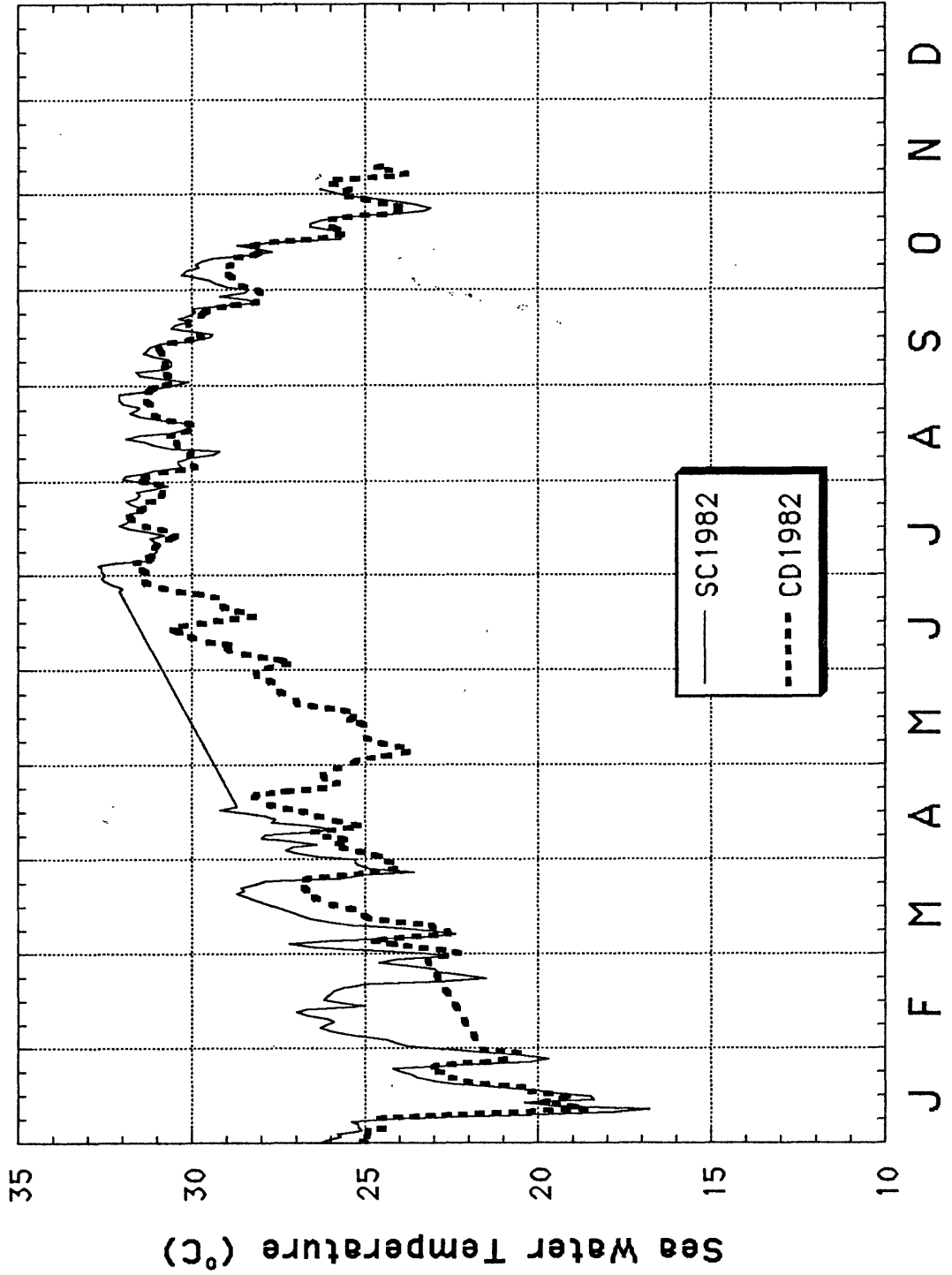
Snake Creek and Cement Dome 1981



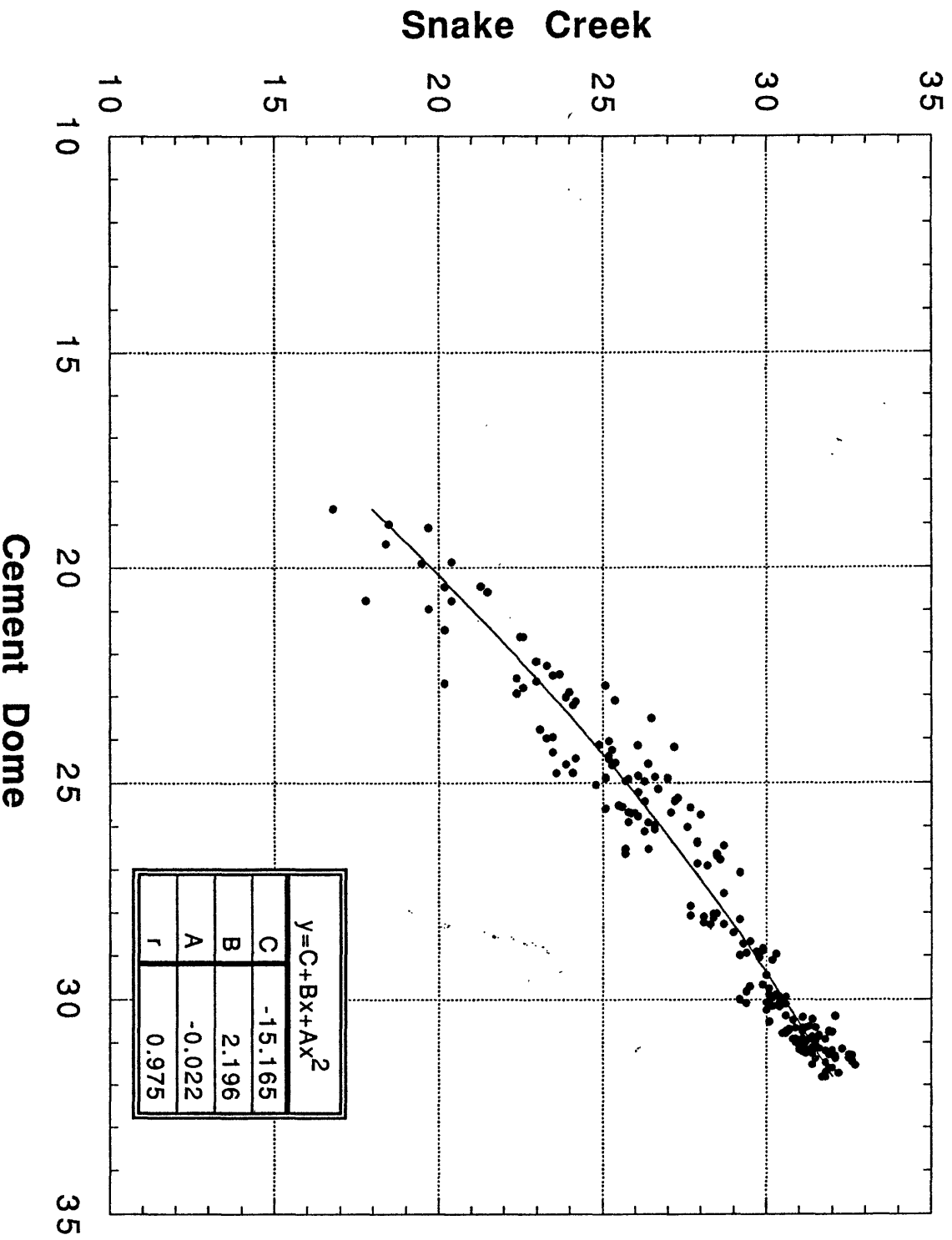
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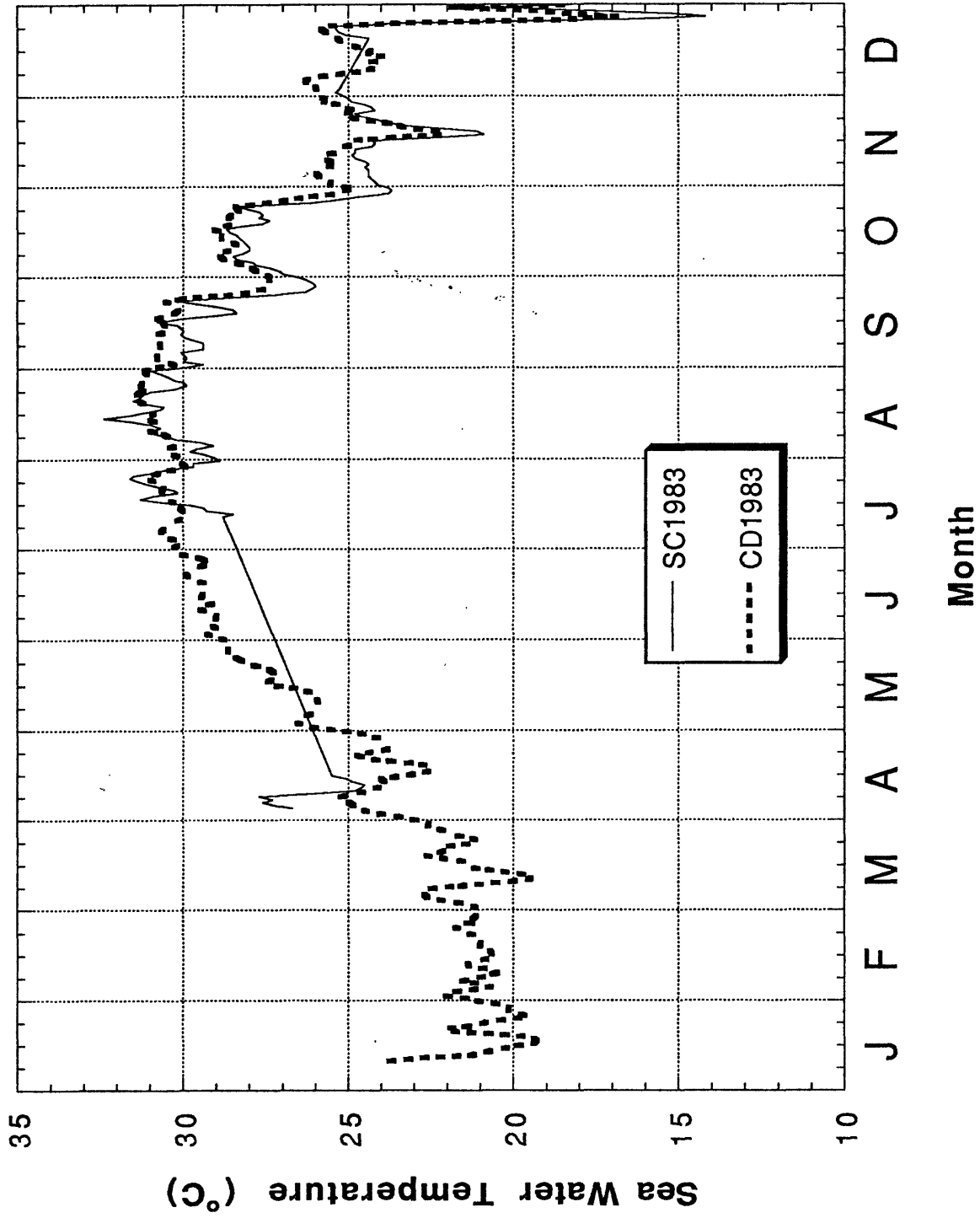
Snake Creek and Cement Dome 1982



Sea Water Temperature (°C) 1982

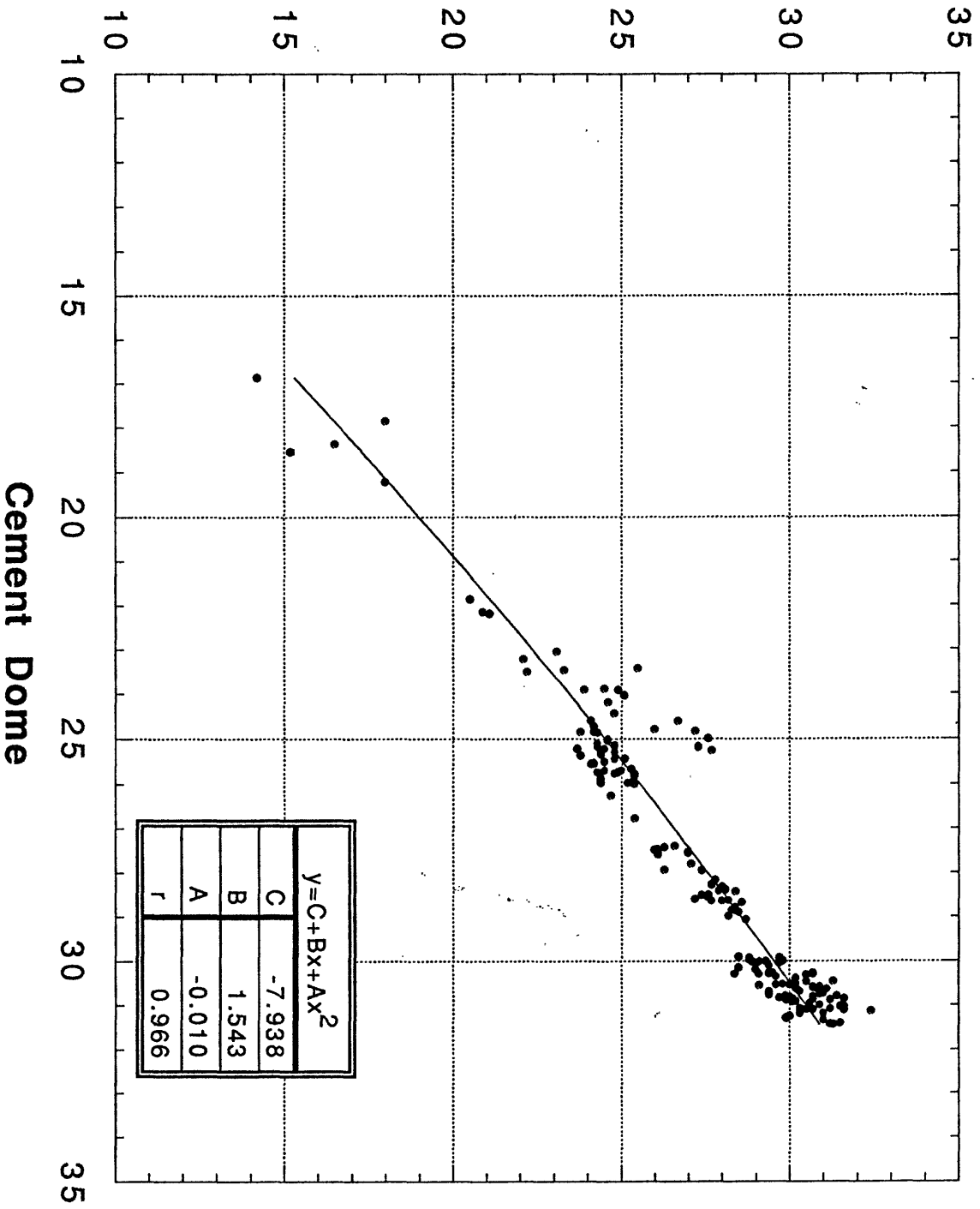


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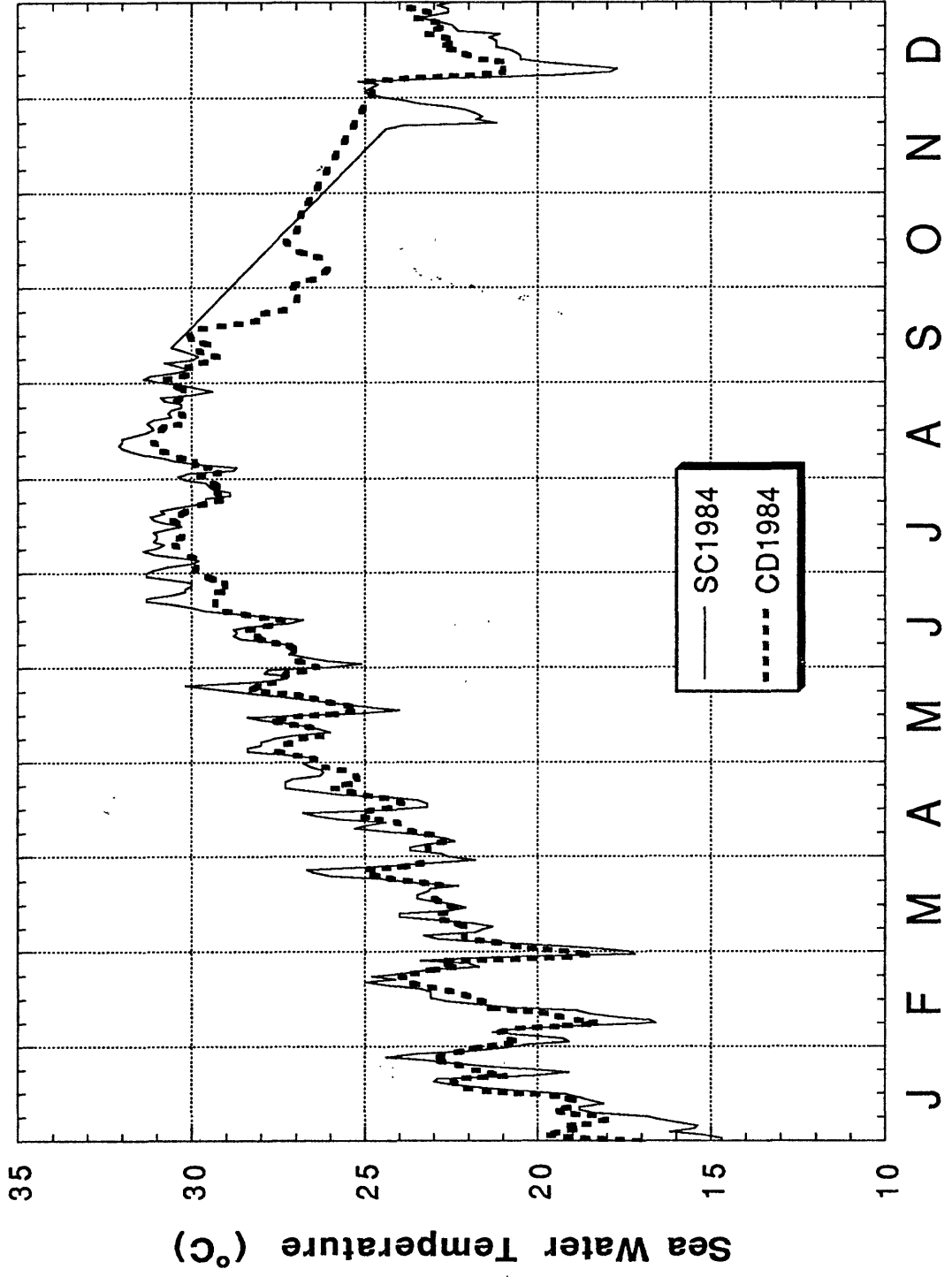


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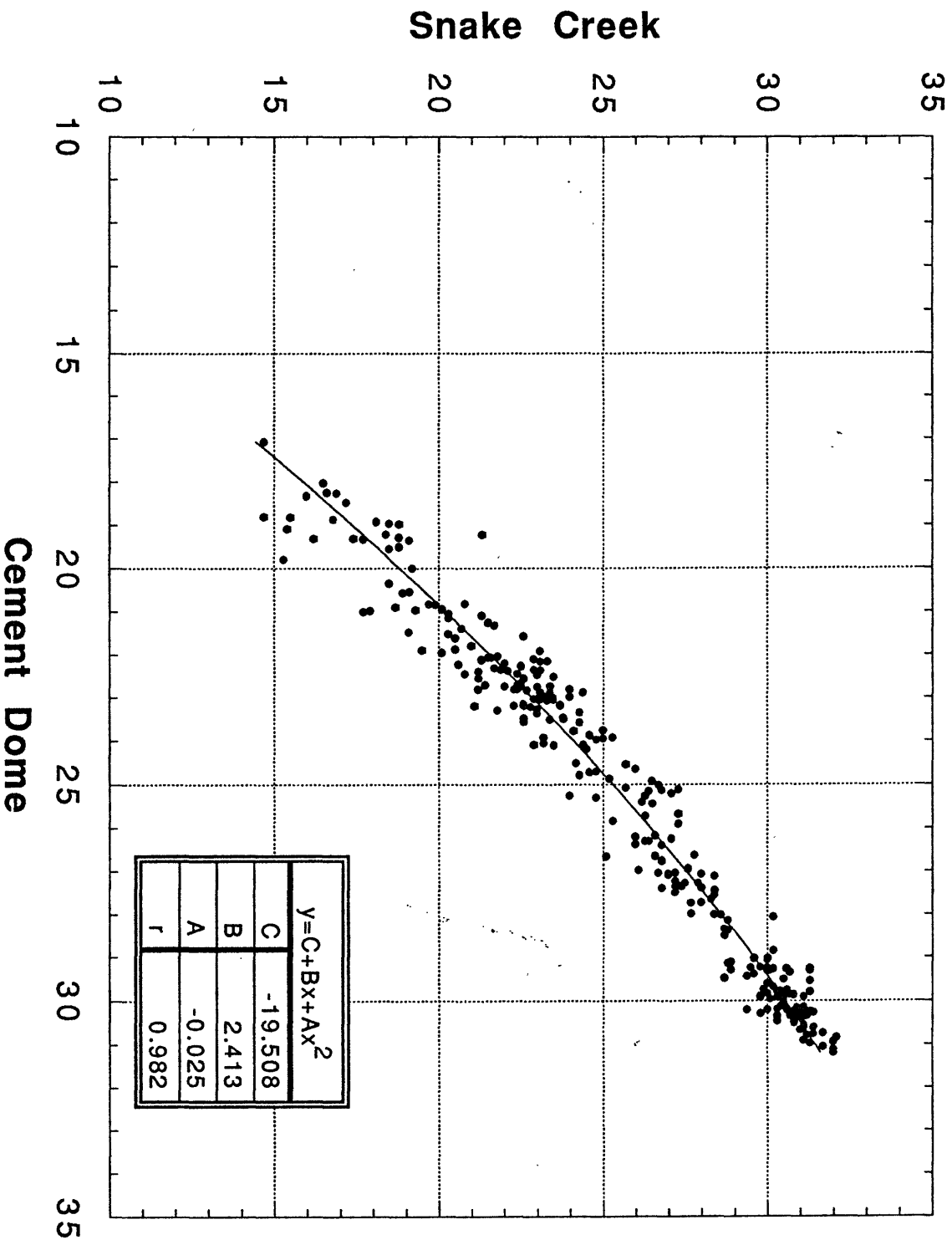
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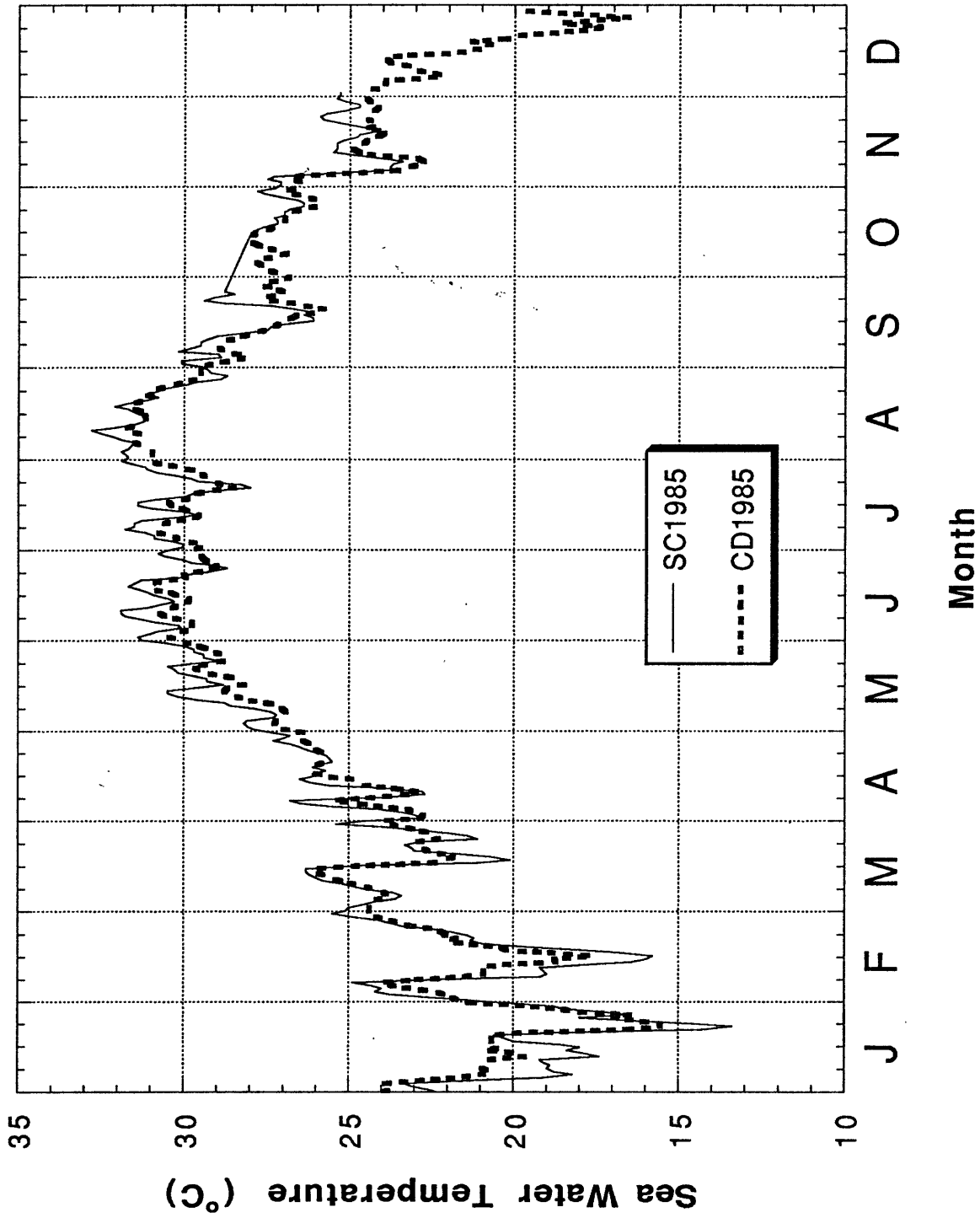
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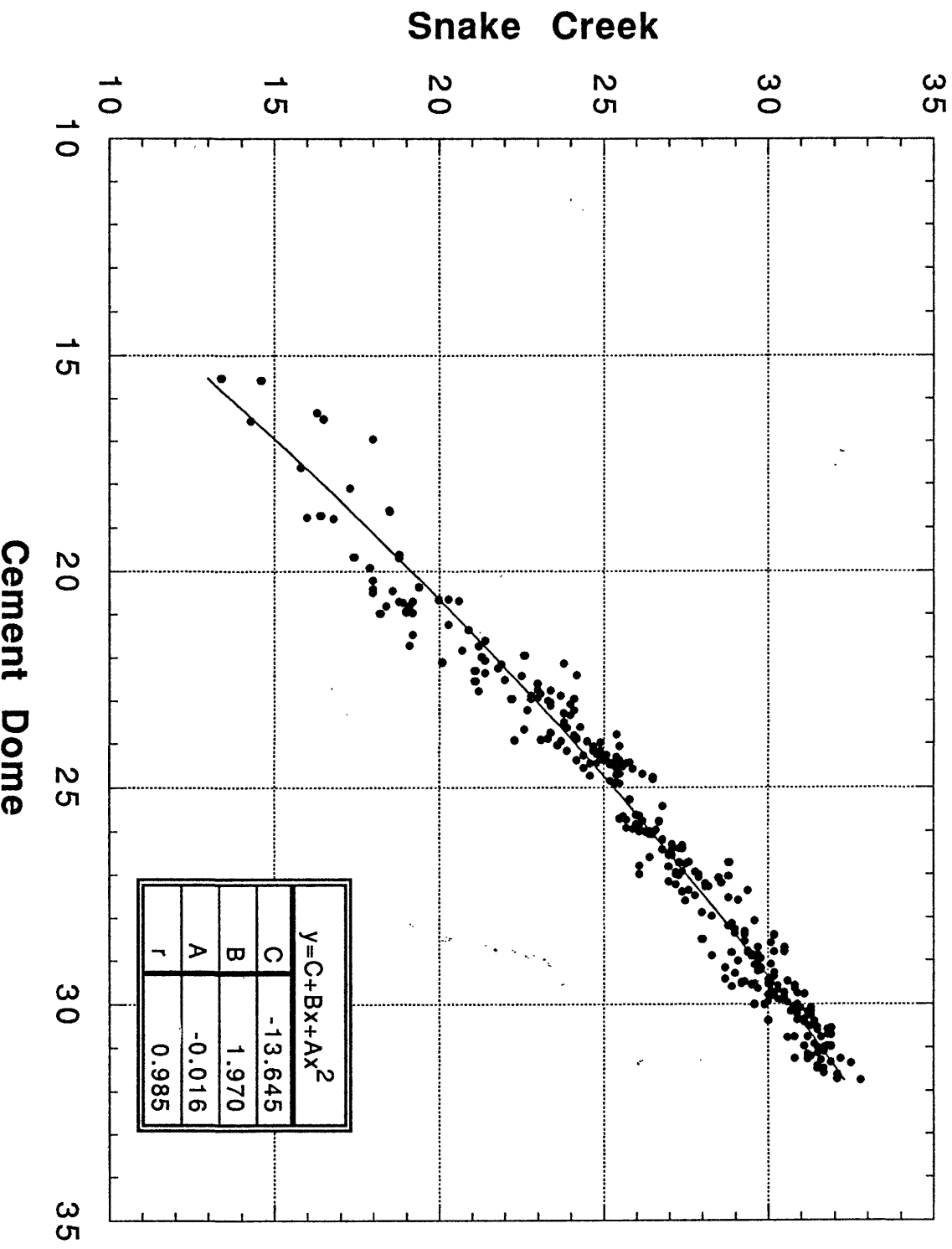
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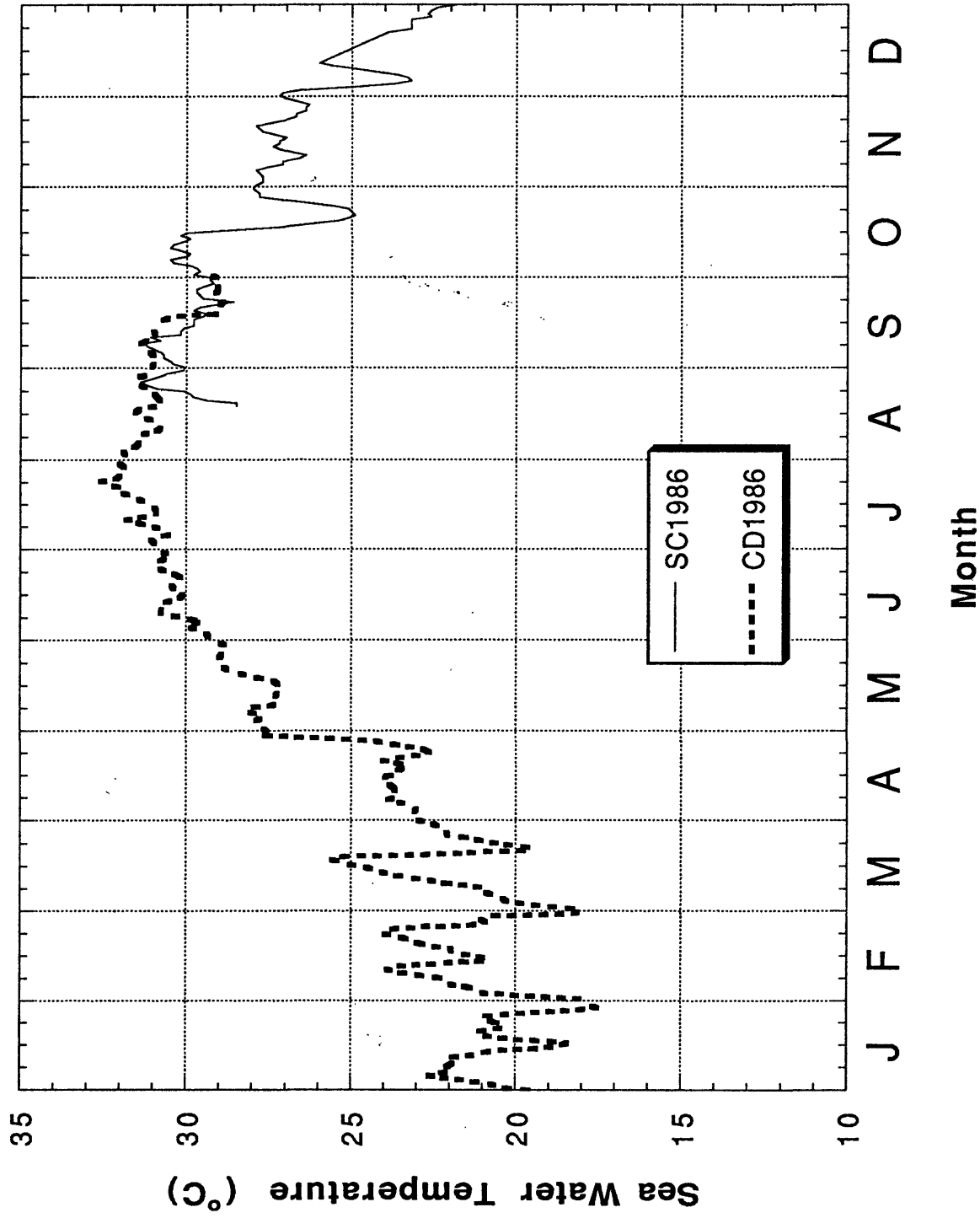
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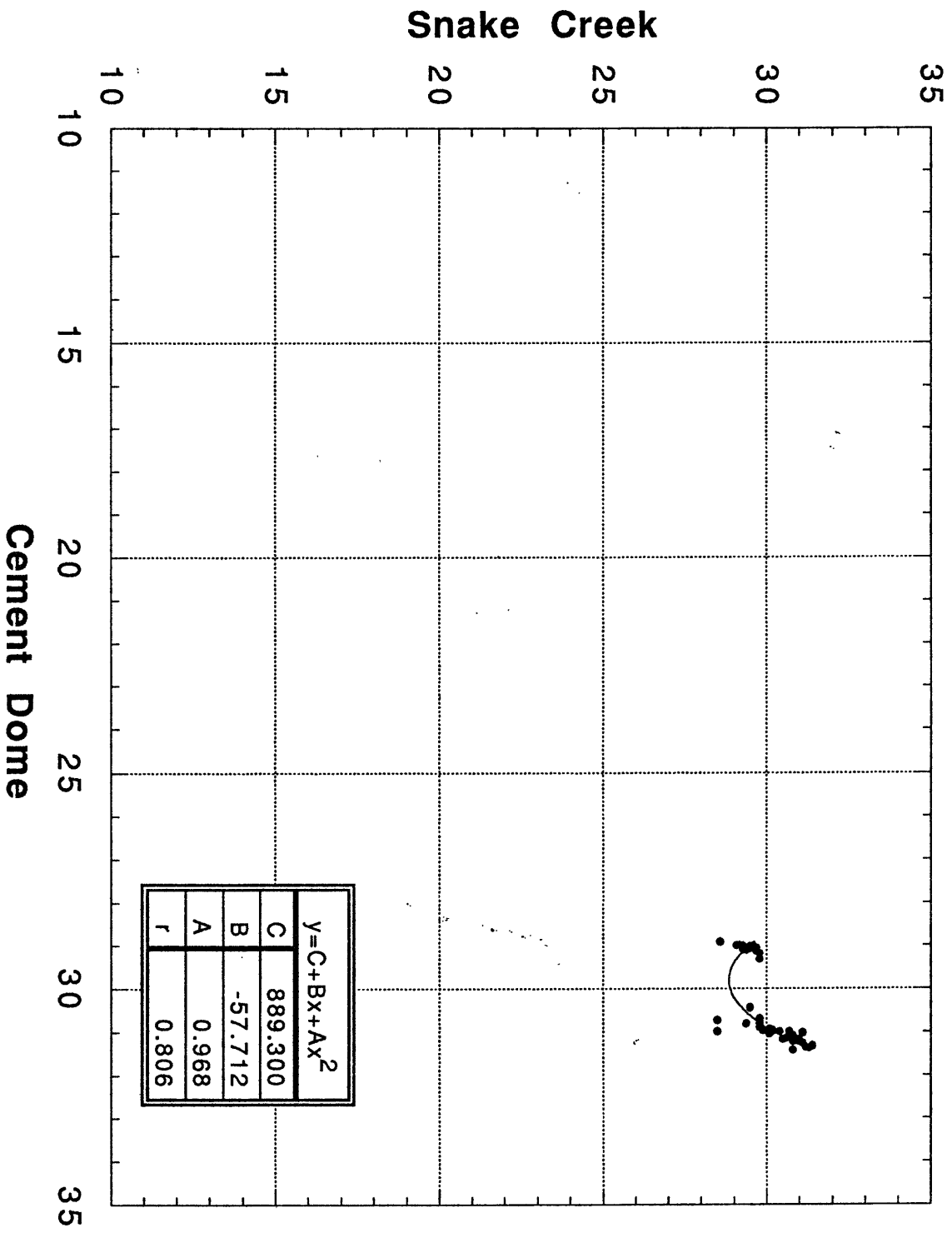
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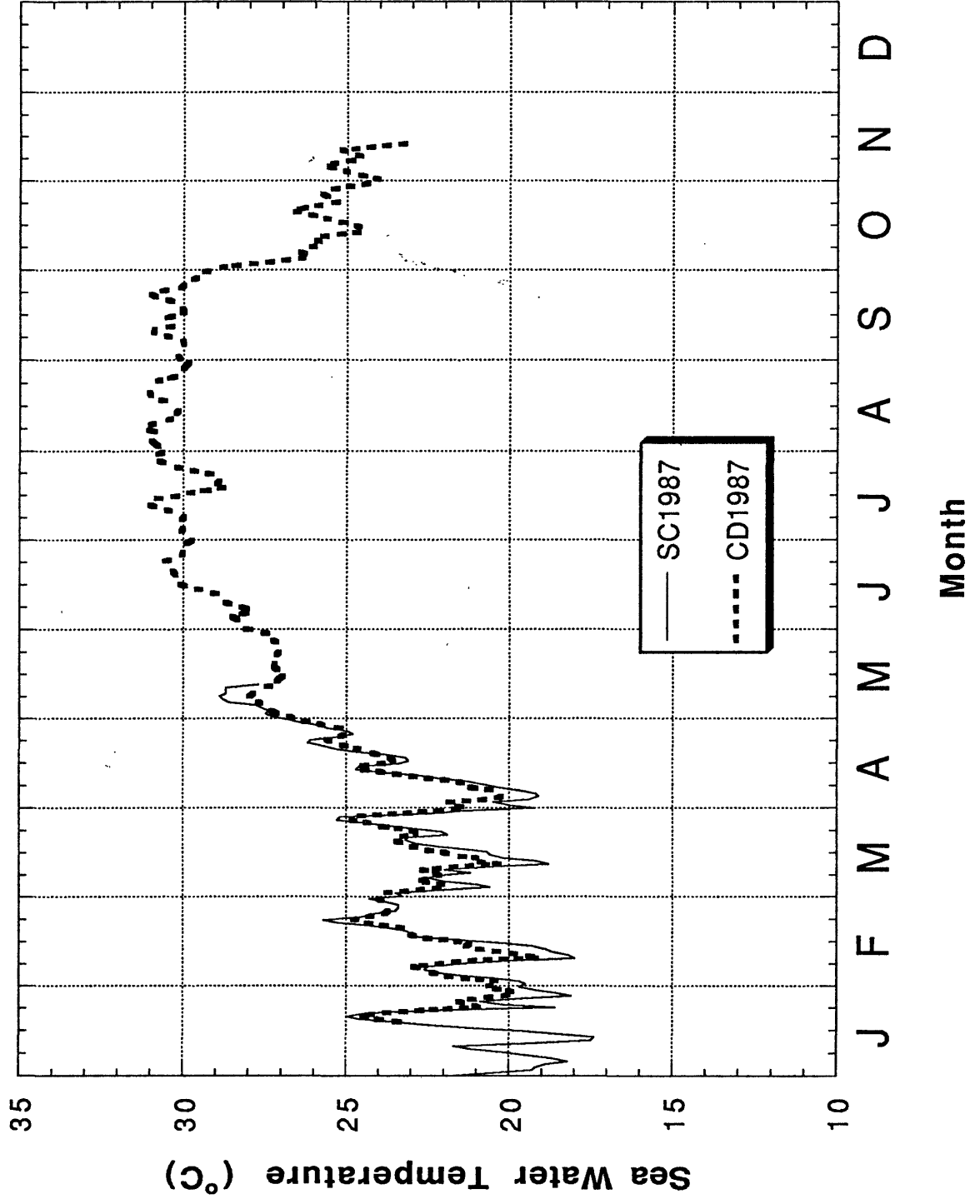
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Sea Water Temperature (°C) 1986

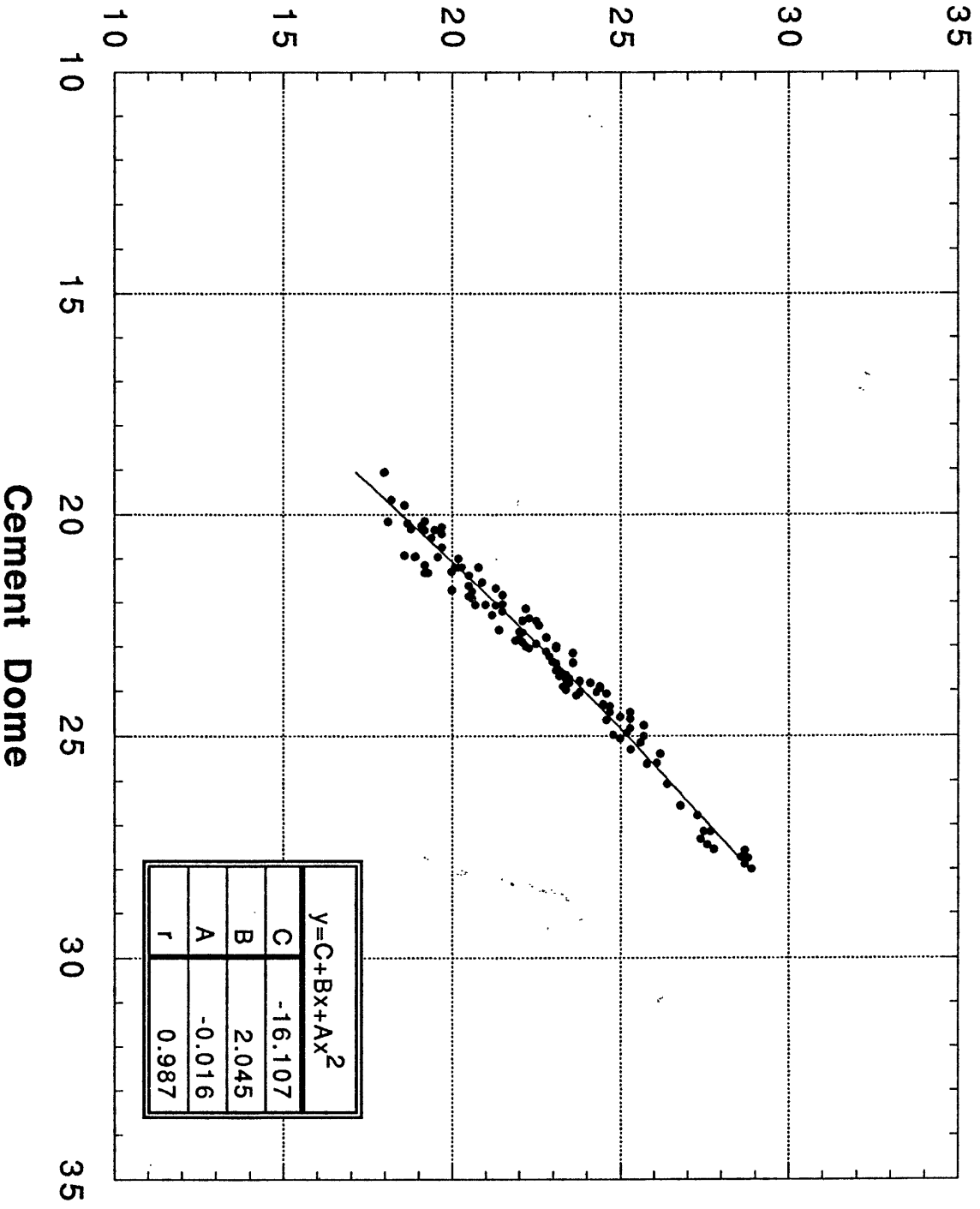


Snake Creek and Cement Dome 1987

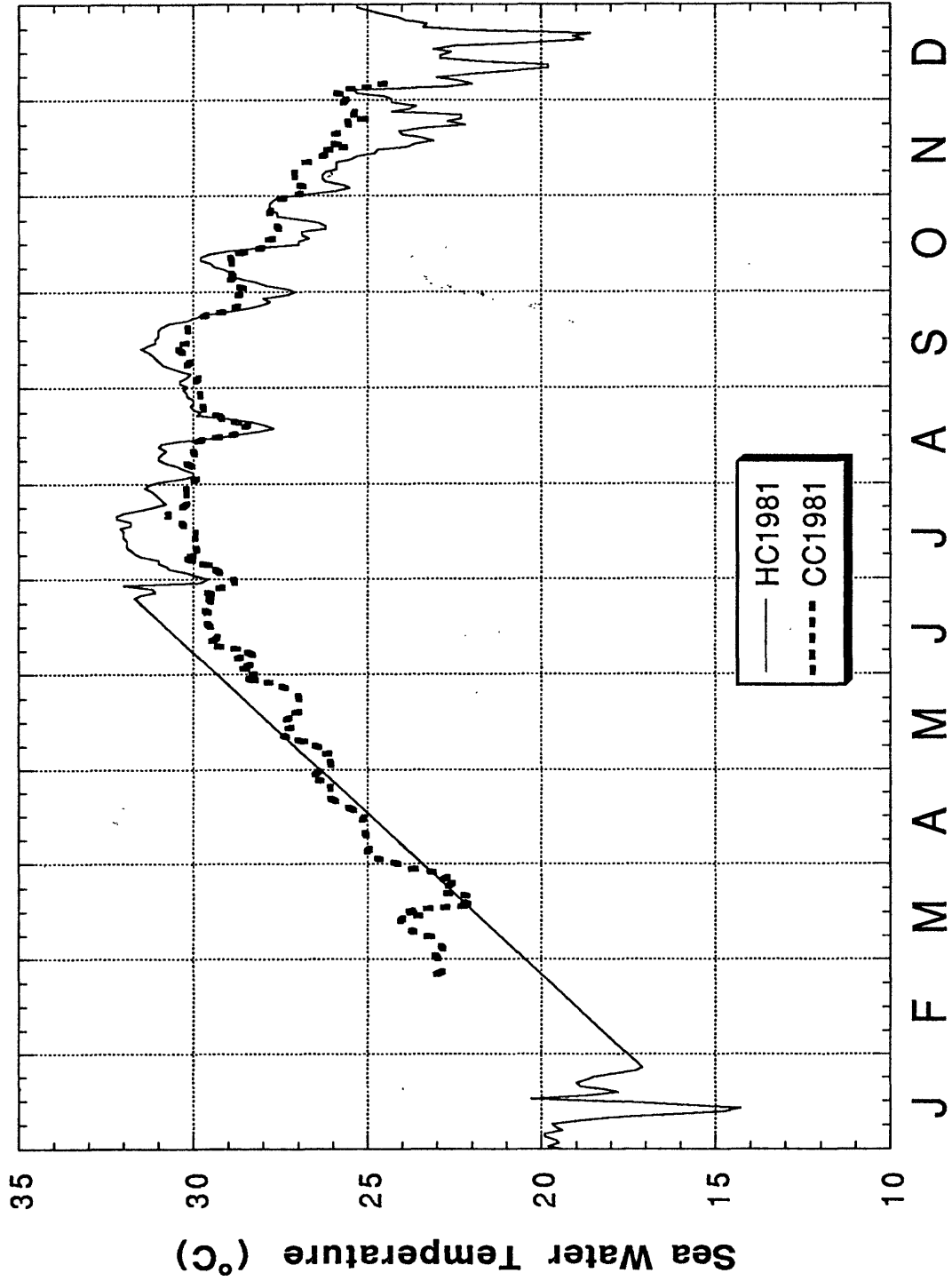


Sea Water Temperature (°C) 1987

Snake Creek

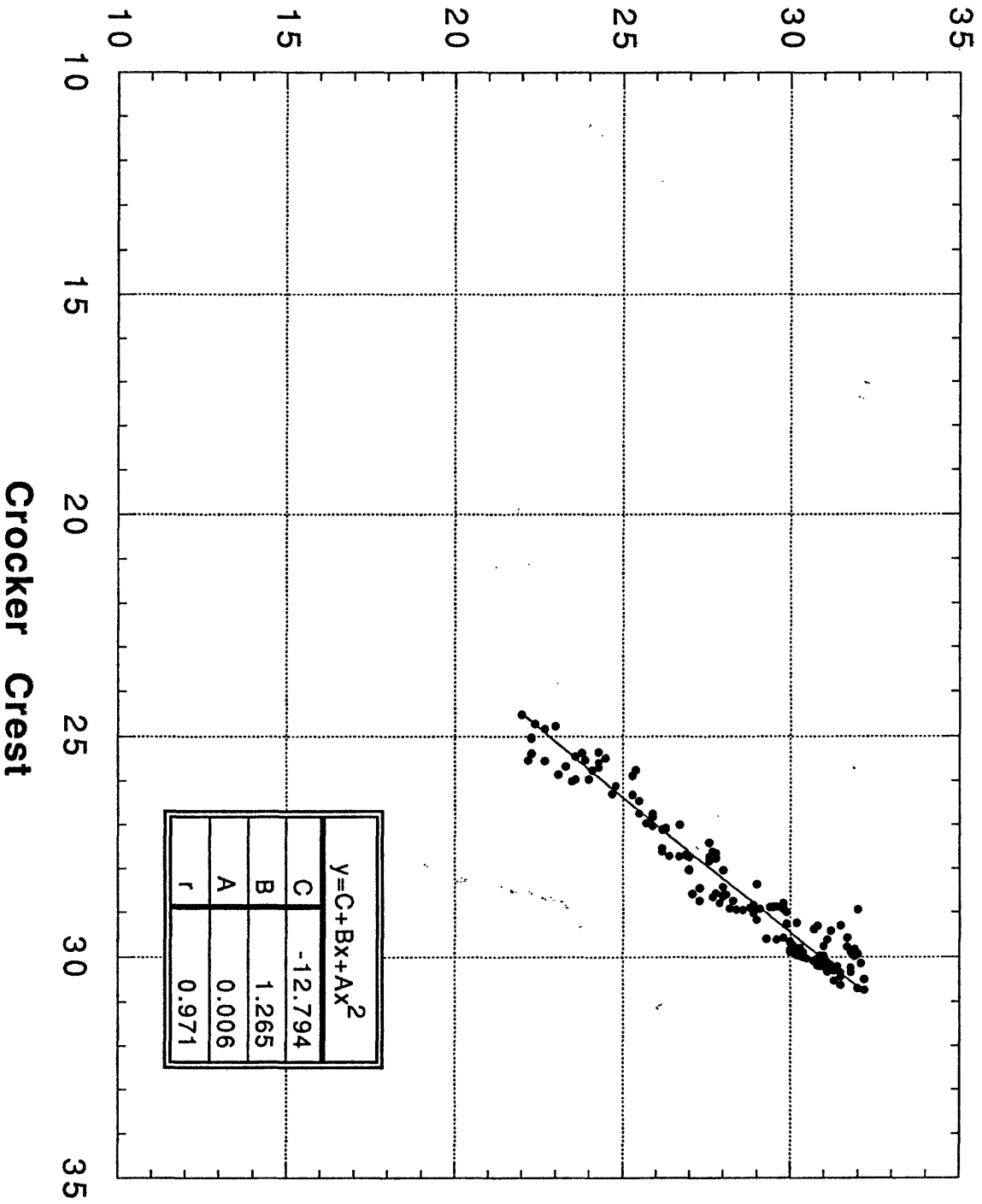


Hen & Chickens and Crocker Crest 1981

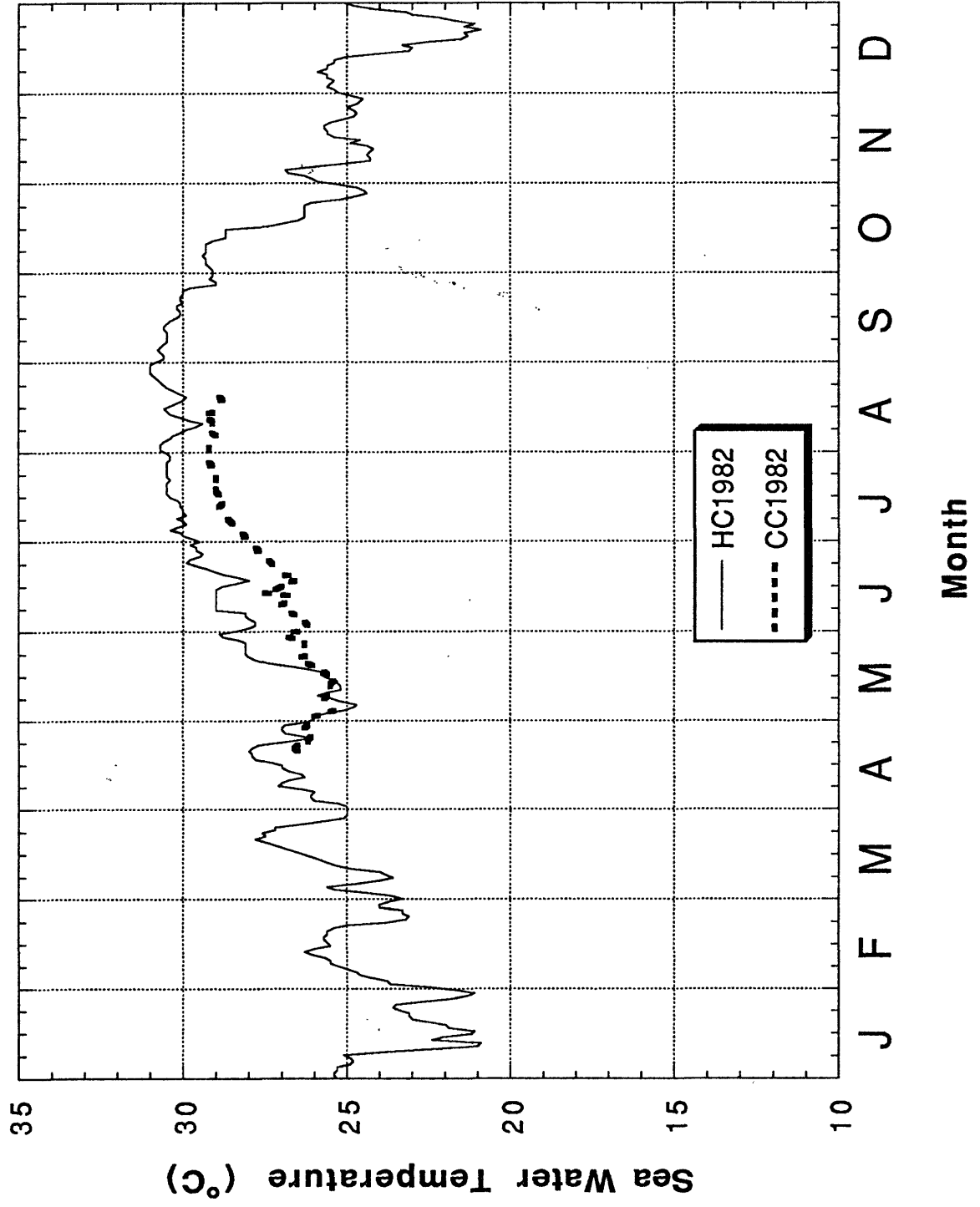


Sea Water Temperature (°C) 1981

Hen and Chickens

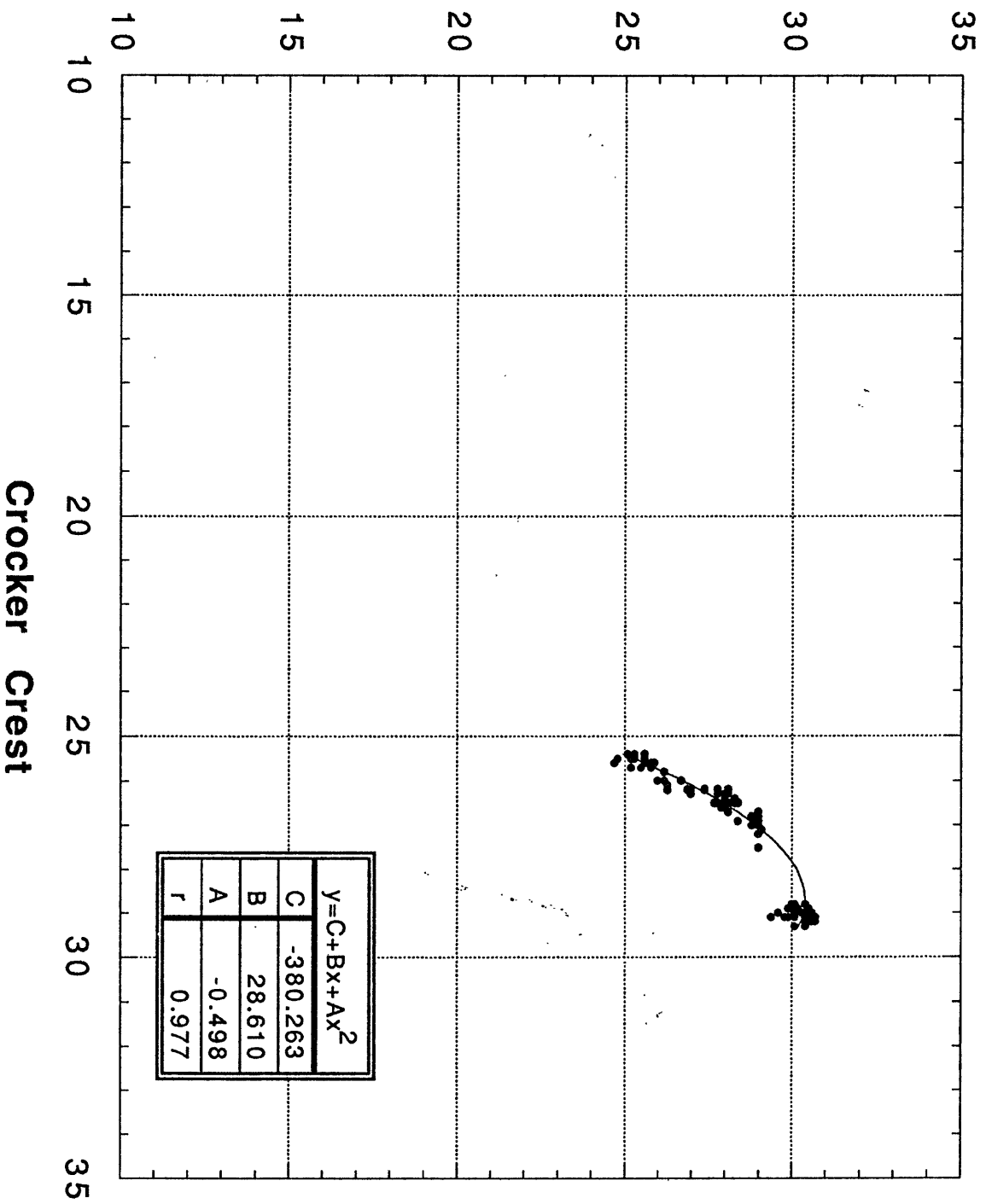


Hen & Chickens and Crocker Crest 1982

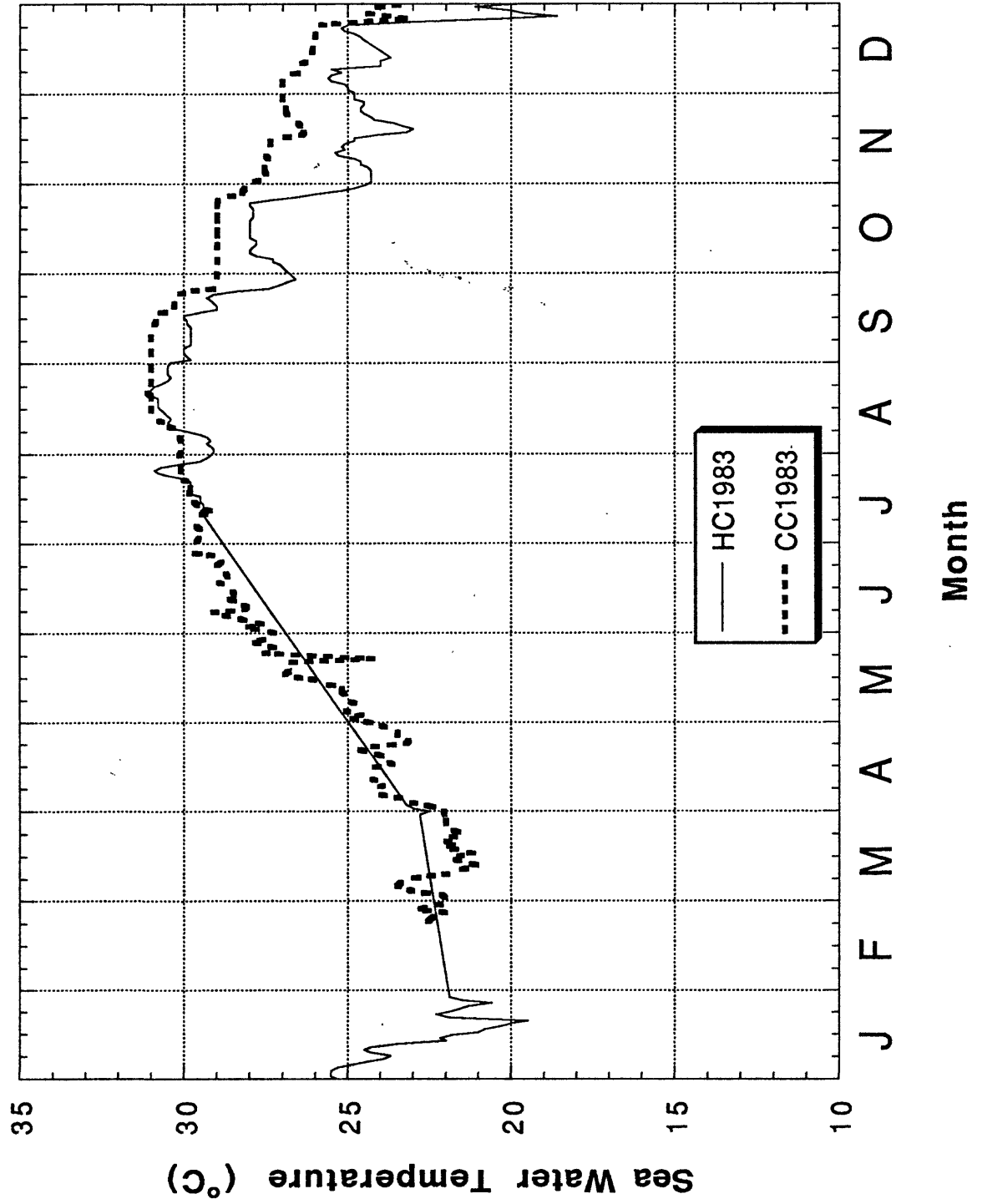


Sea Water Temperature (°C) 1982

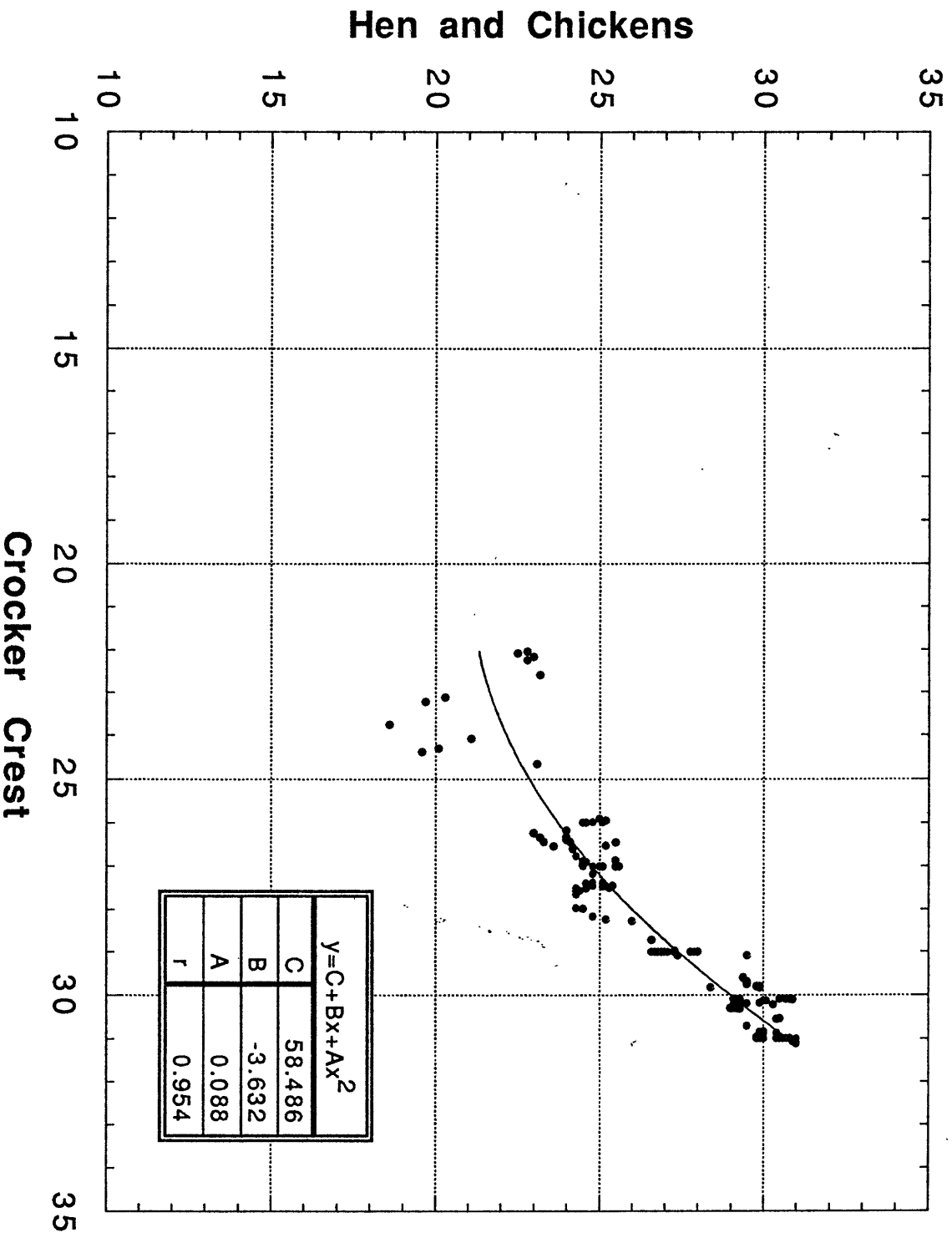
Hen and Chickens



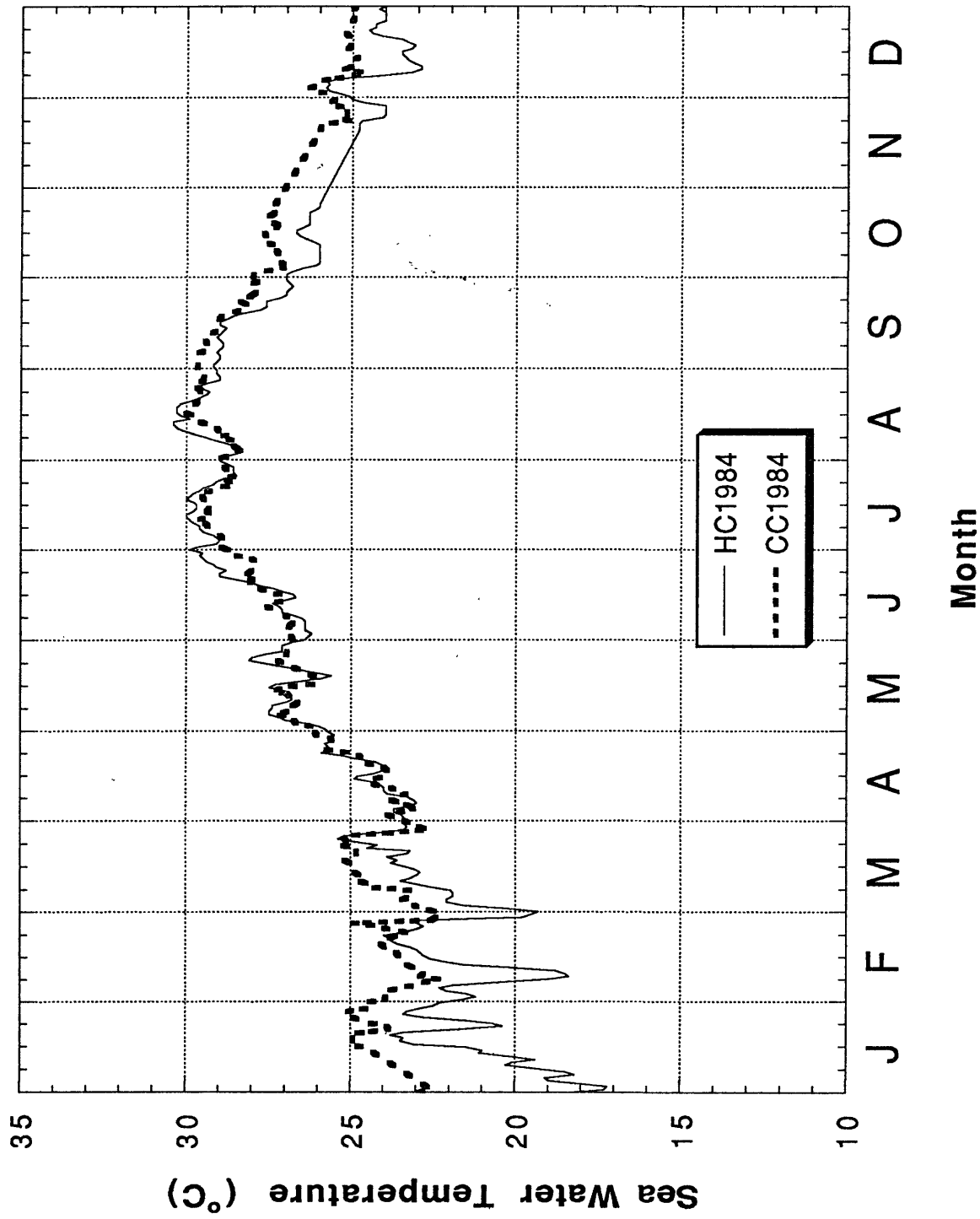
Hen & Chickens and Crocker Crest 1983



Sea Water Temperature (°C) 1983

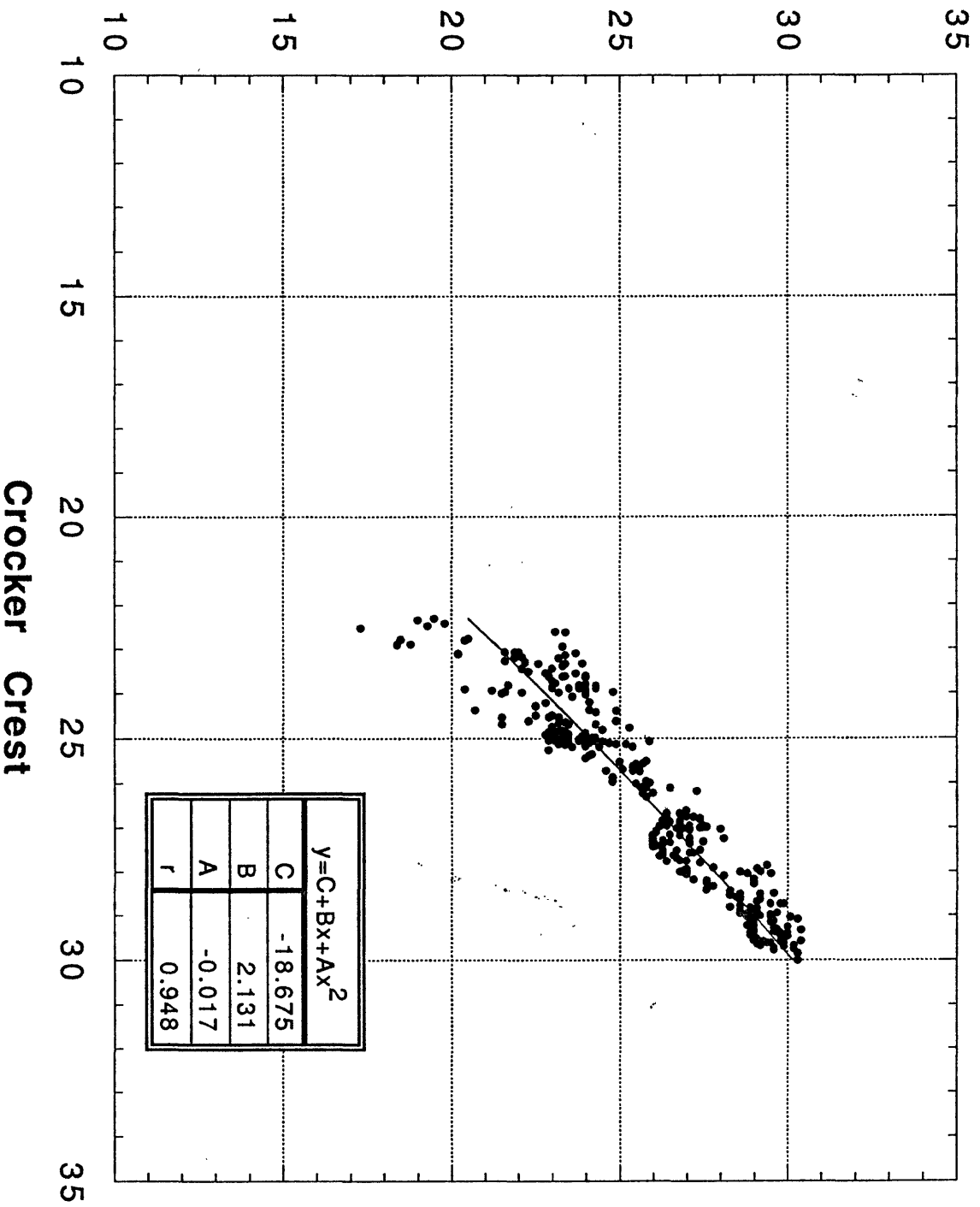


Hen & Chickens and Crocker Crest 1984

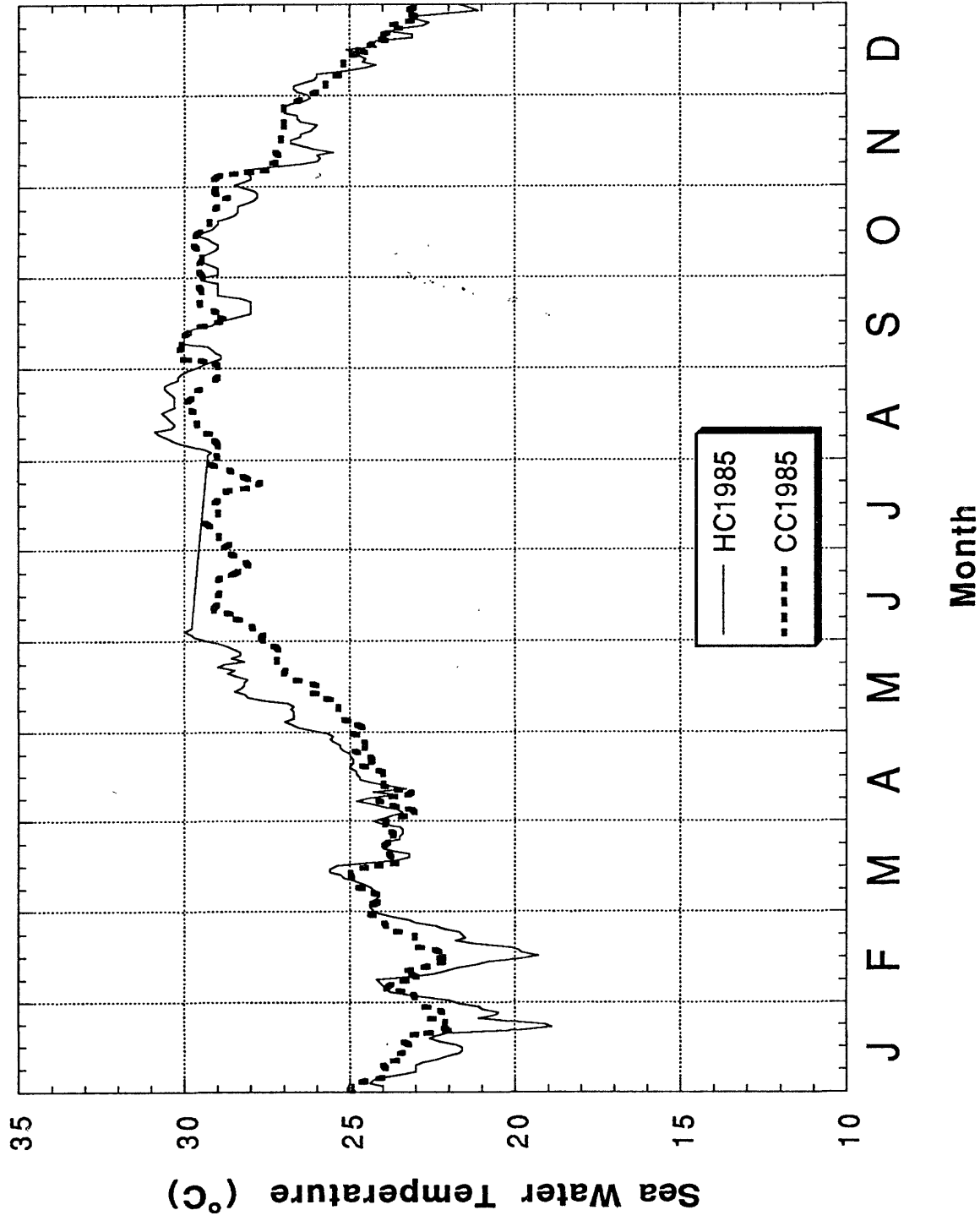


Sea Water Temperature (°C) 1984

Hen and Chickens

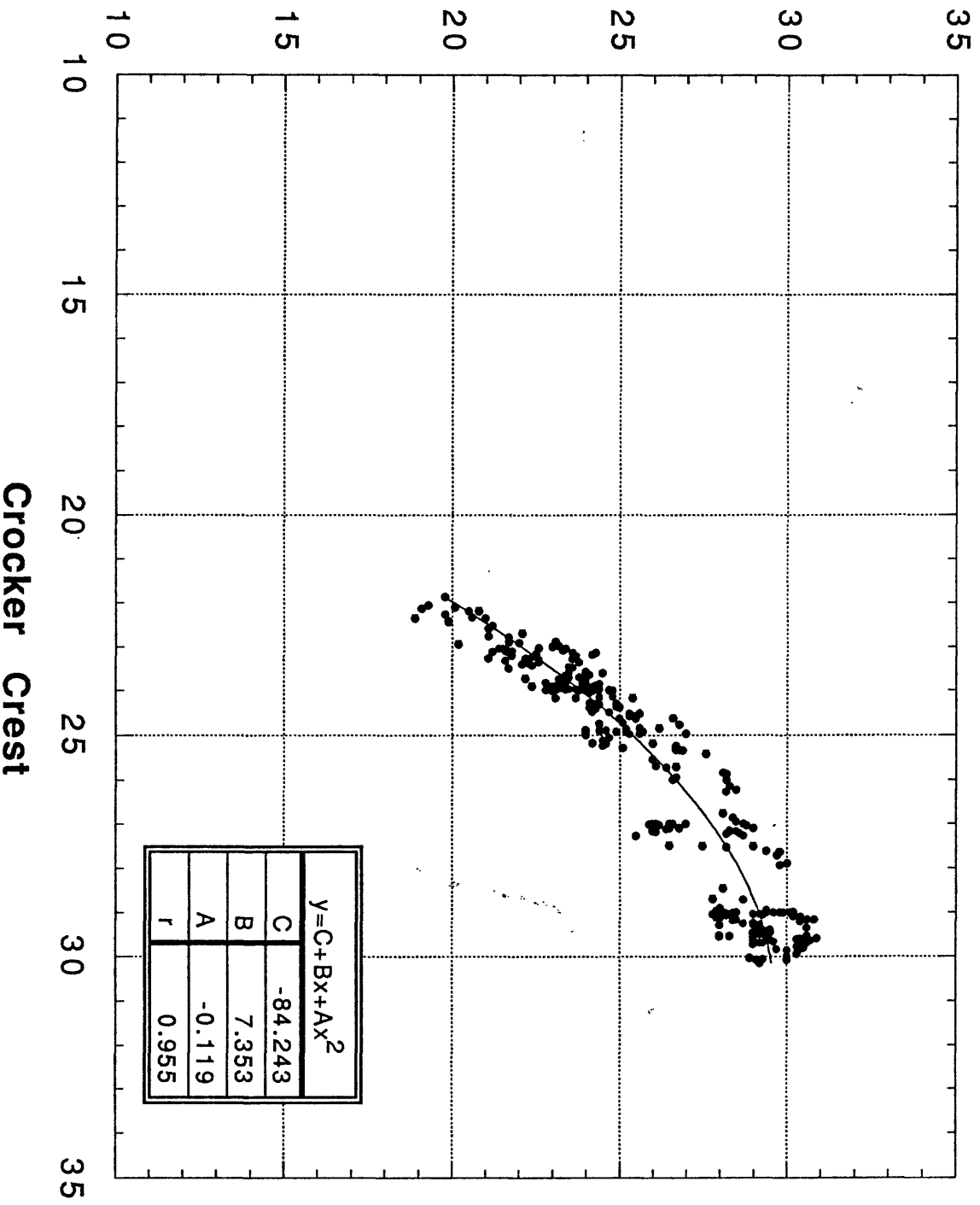


Hen & Chickens and Crocker Crest 1985

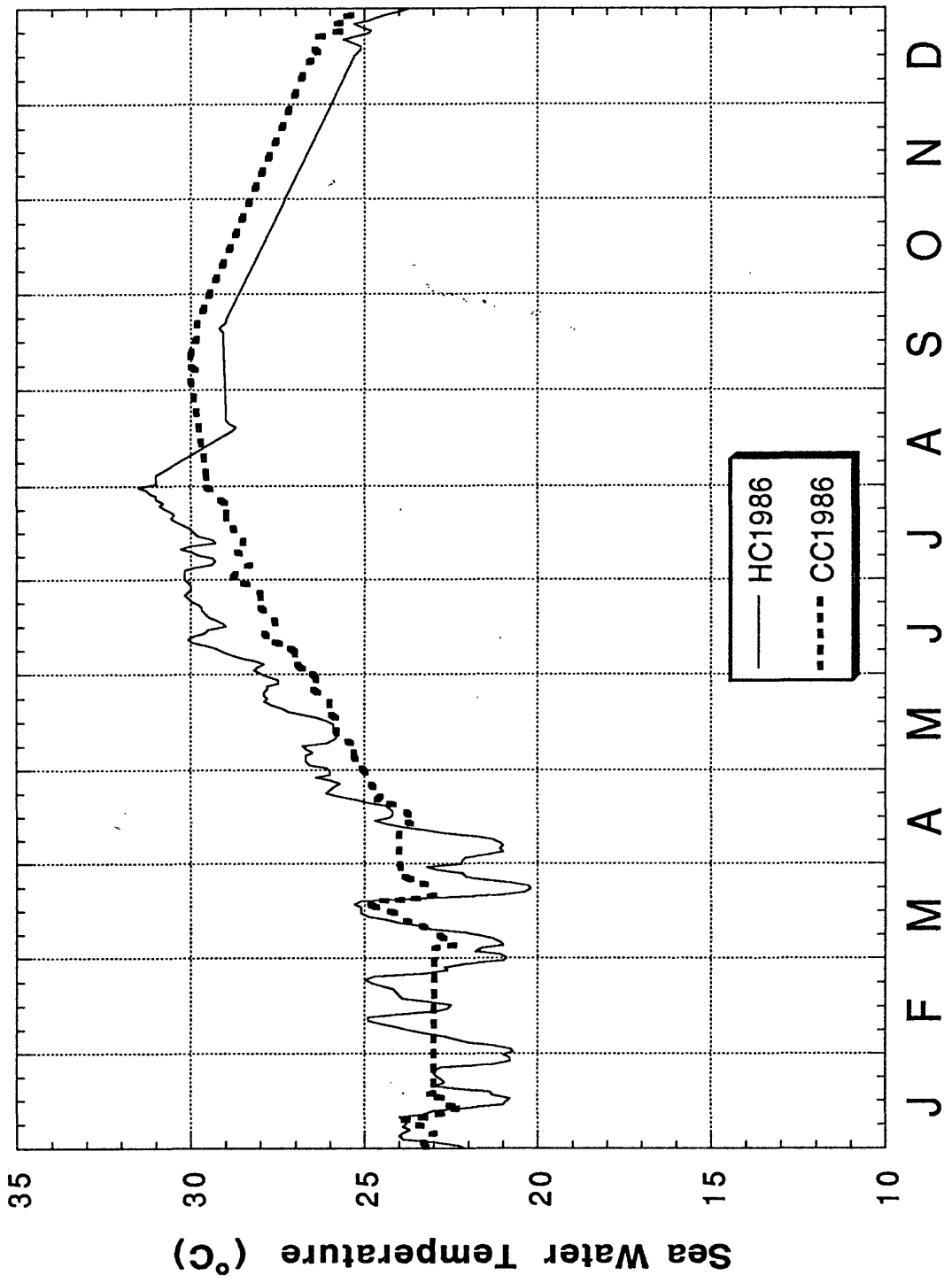


Sea Water Temperature (°C) 1985

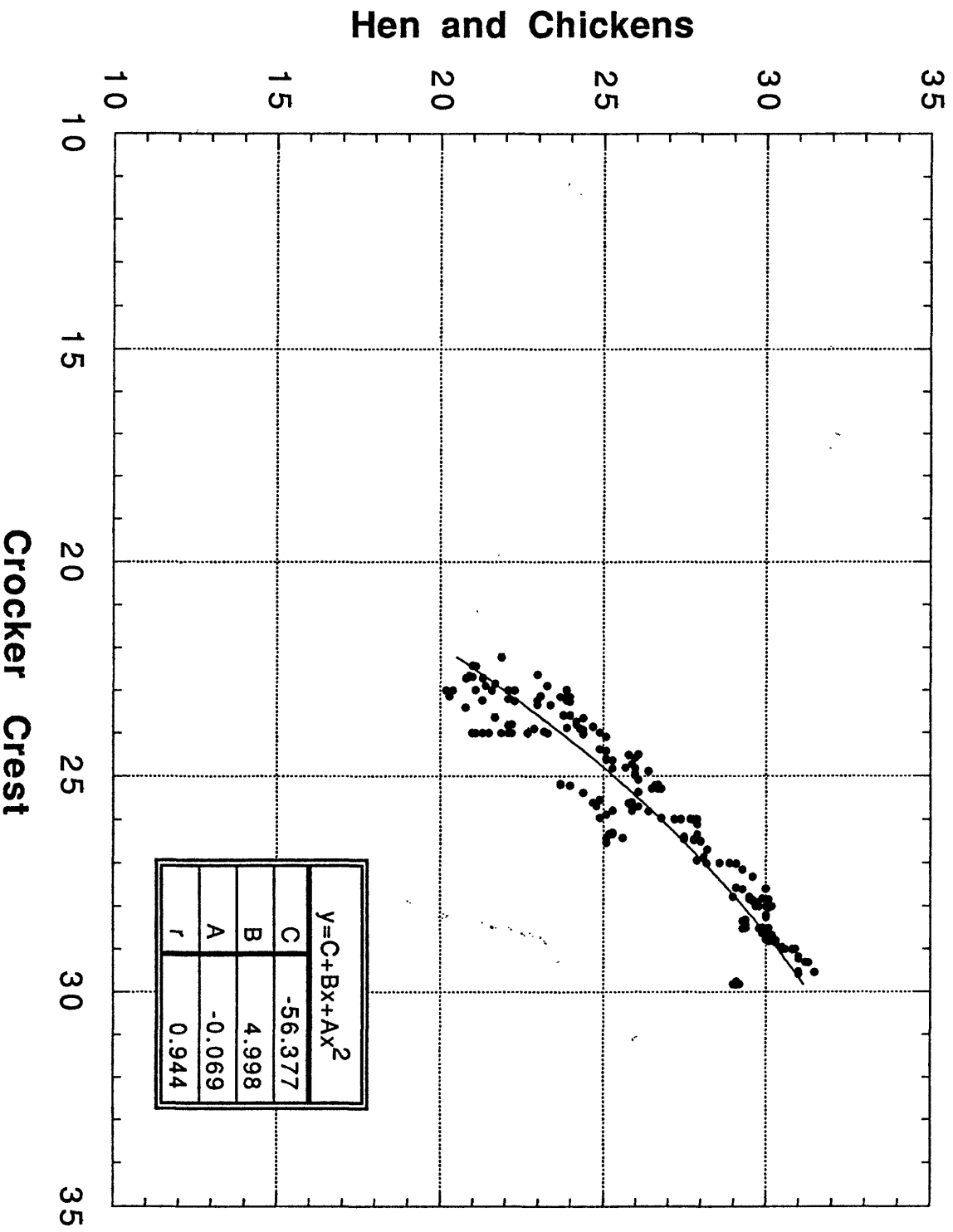
Hen and Chickens



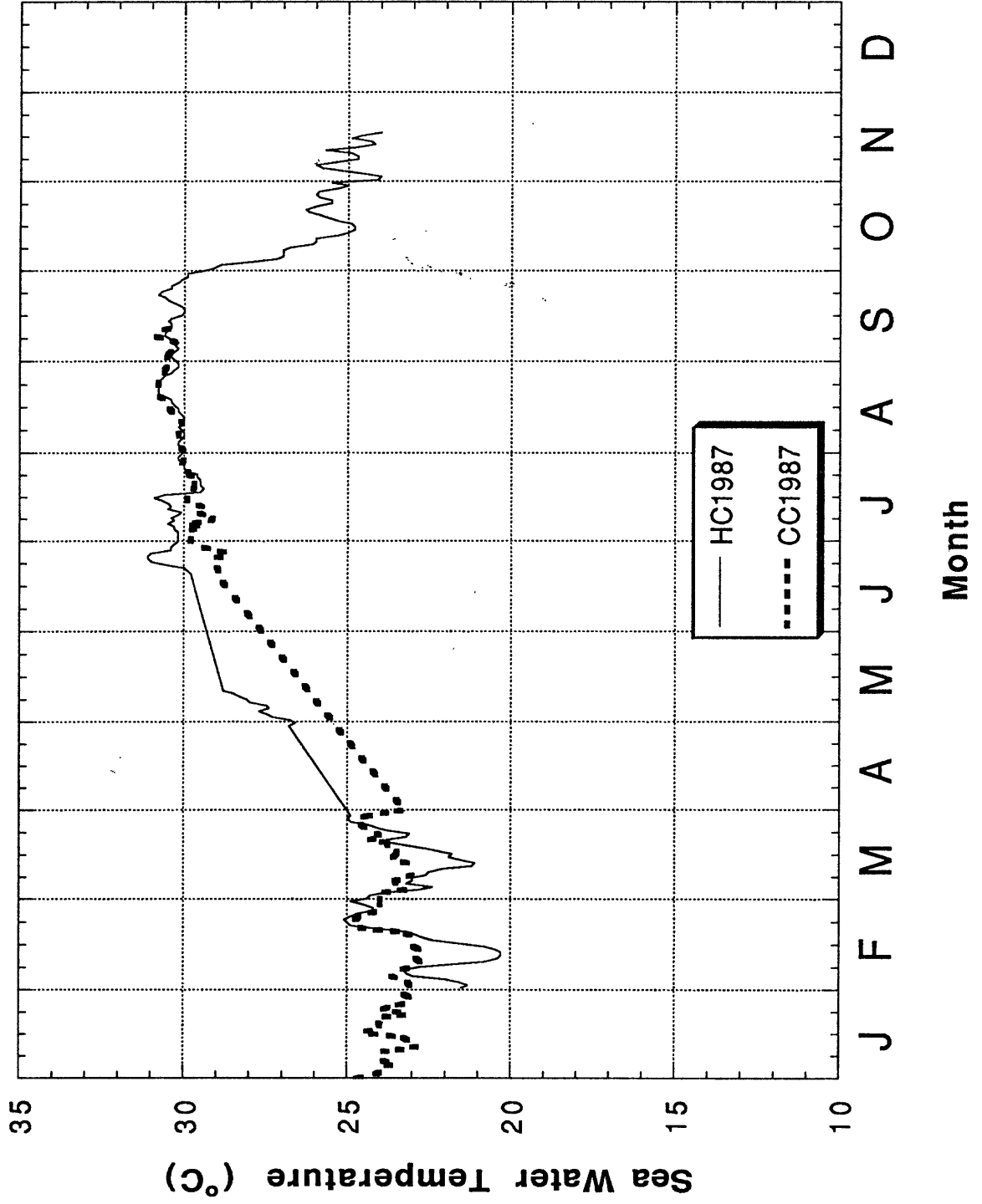
Hen & Chickens and Crocker Crest 1986



Sea Water Temperature (°C) 1986

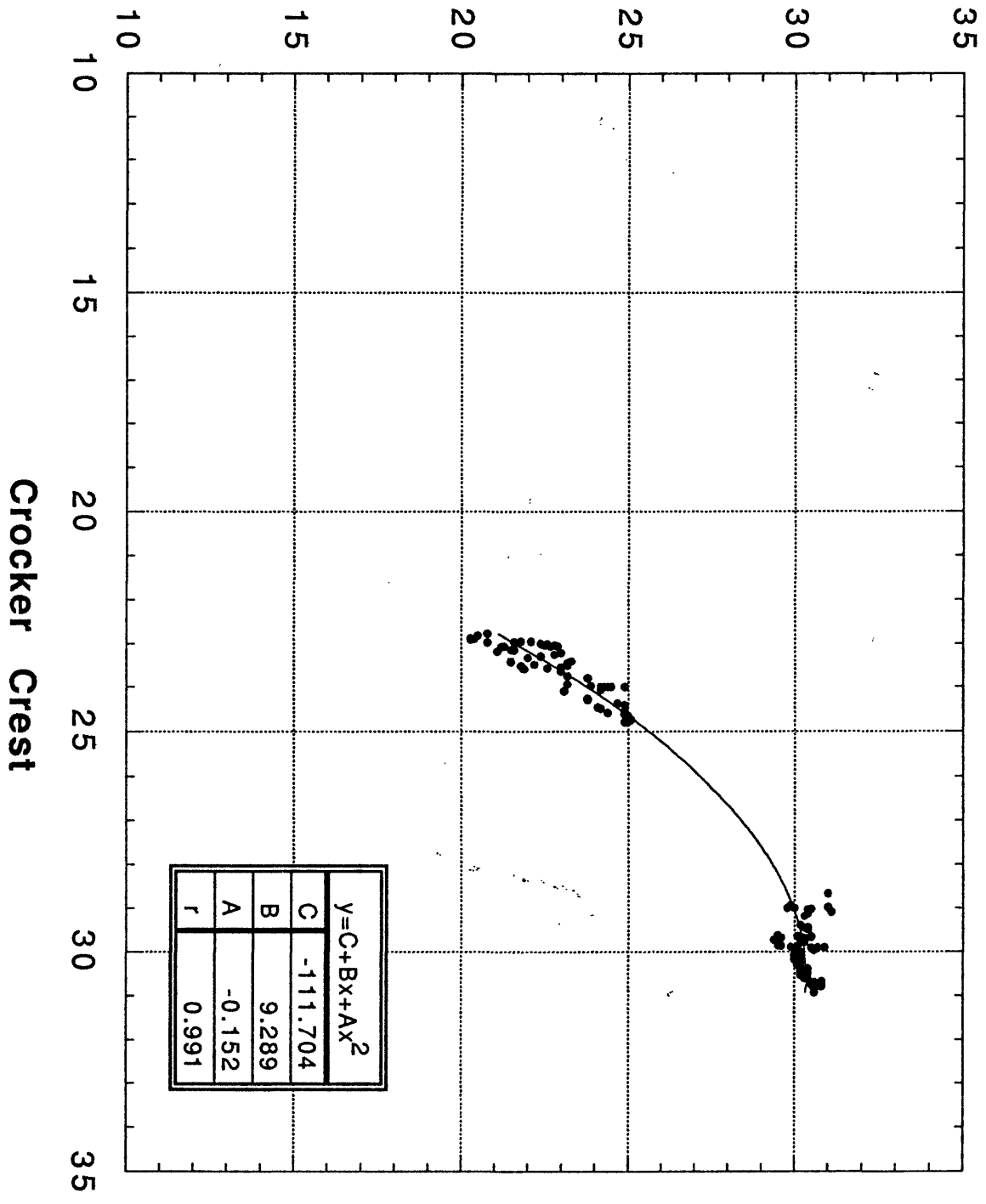


Hen & Chickens and Crocker Crest 1987

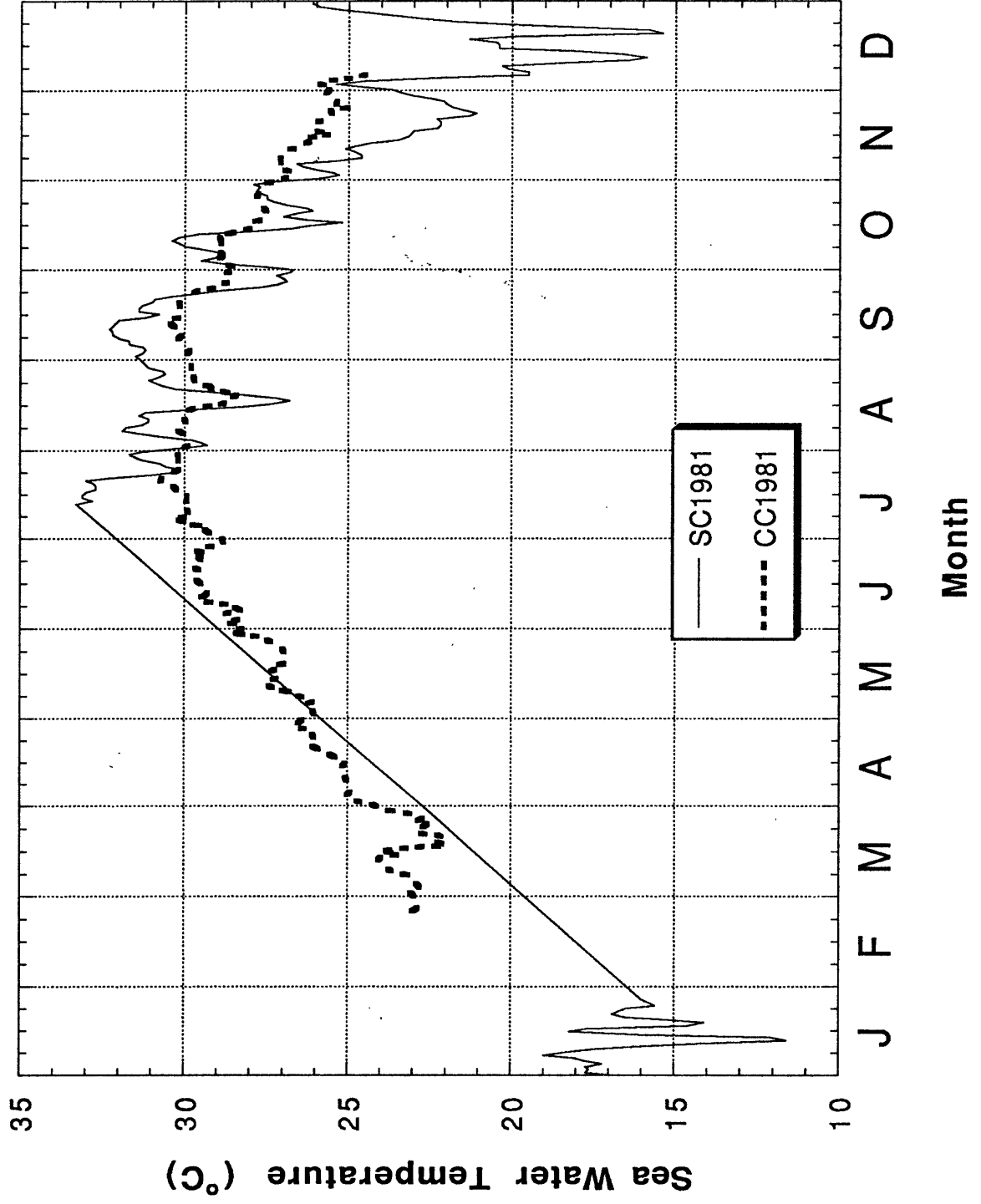


Sea Water Temperature (°C) 1987

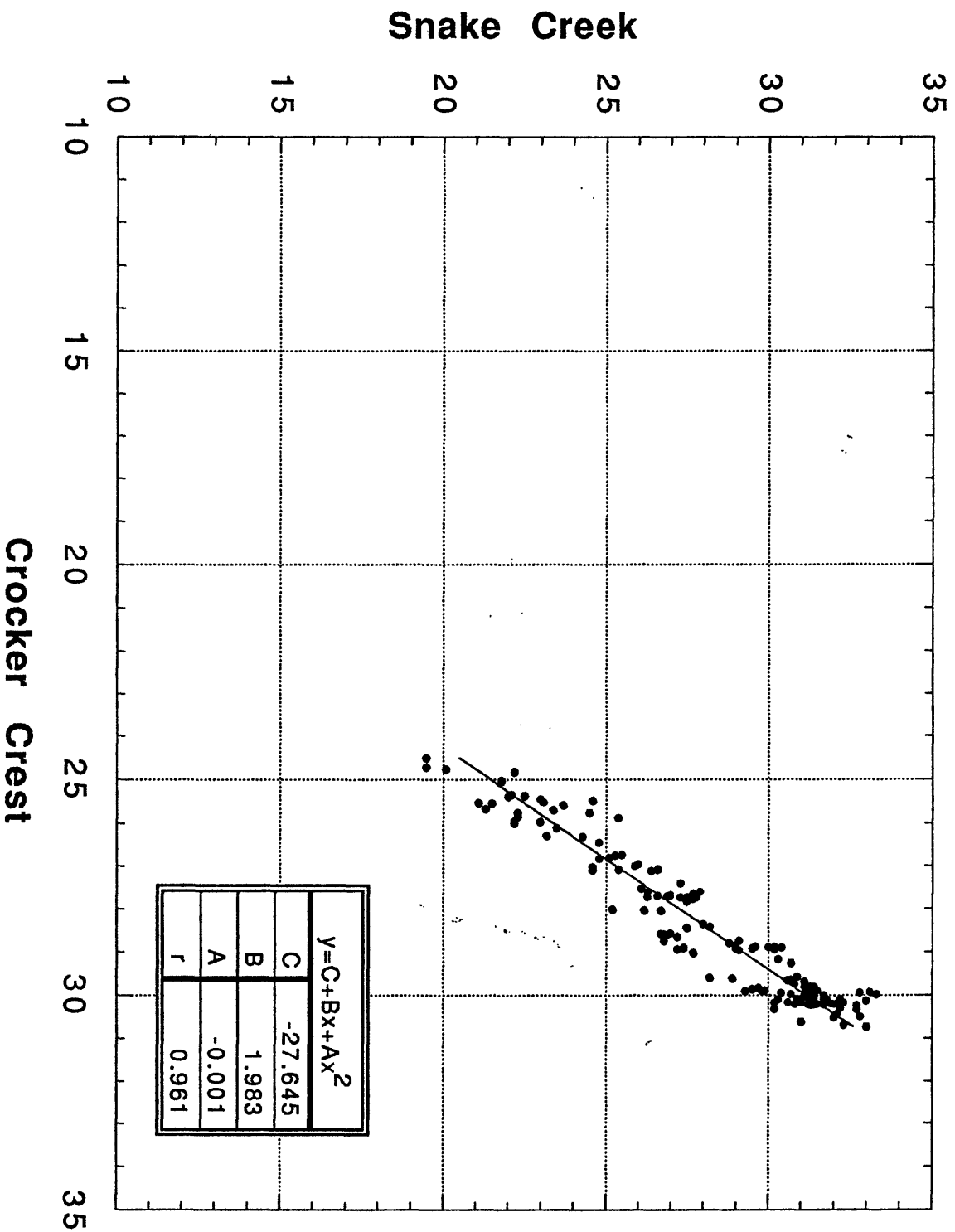
Hen and Chickens



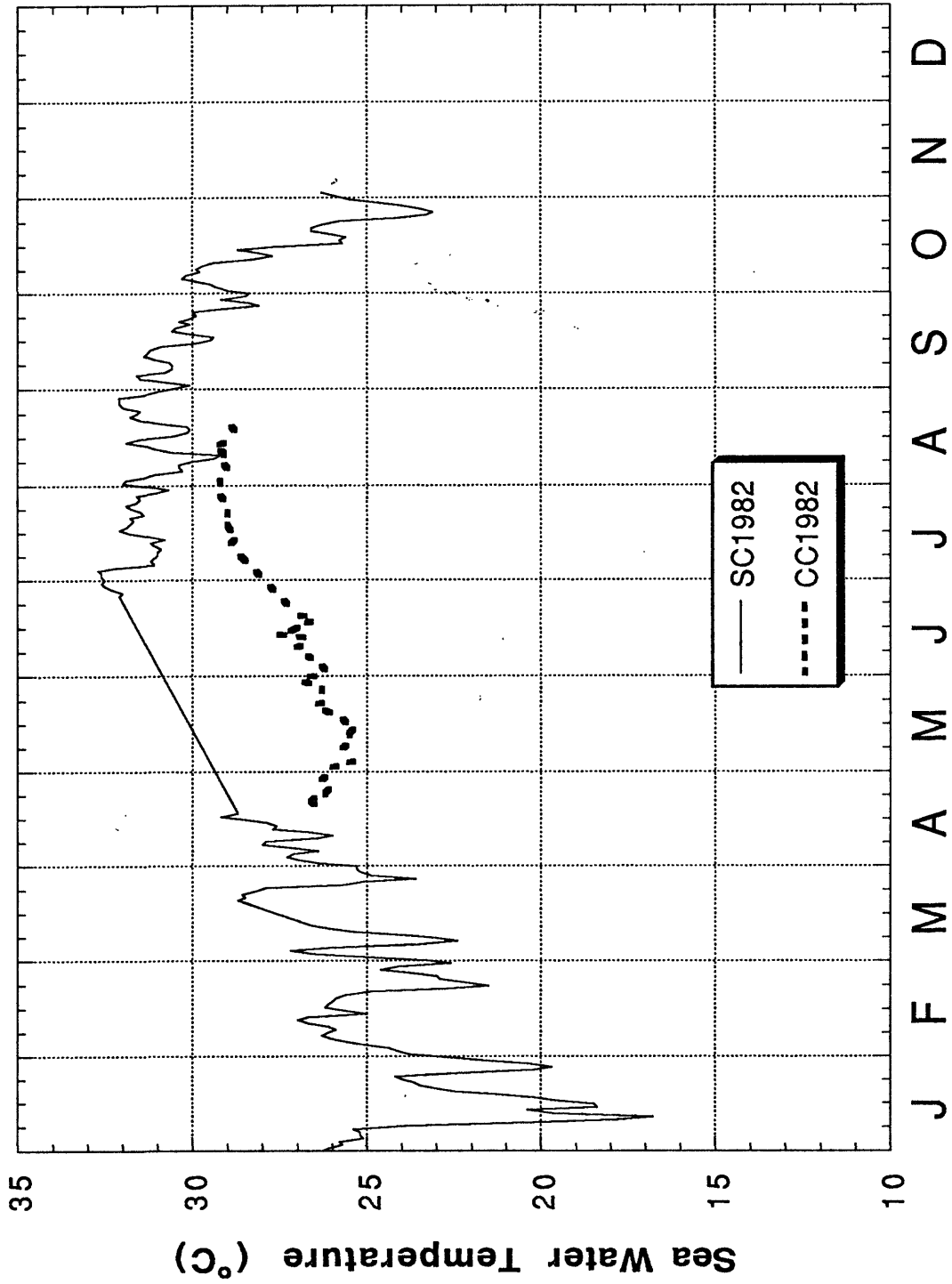
Snake Creek and Crocker Crest 1981



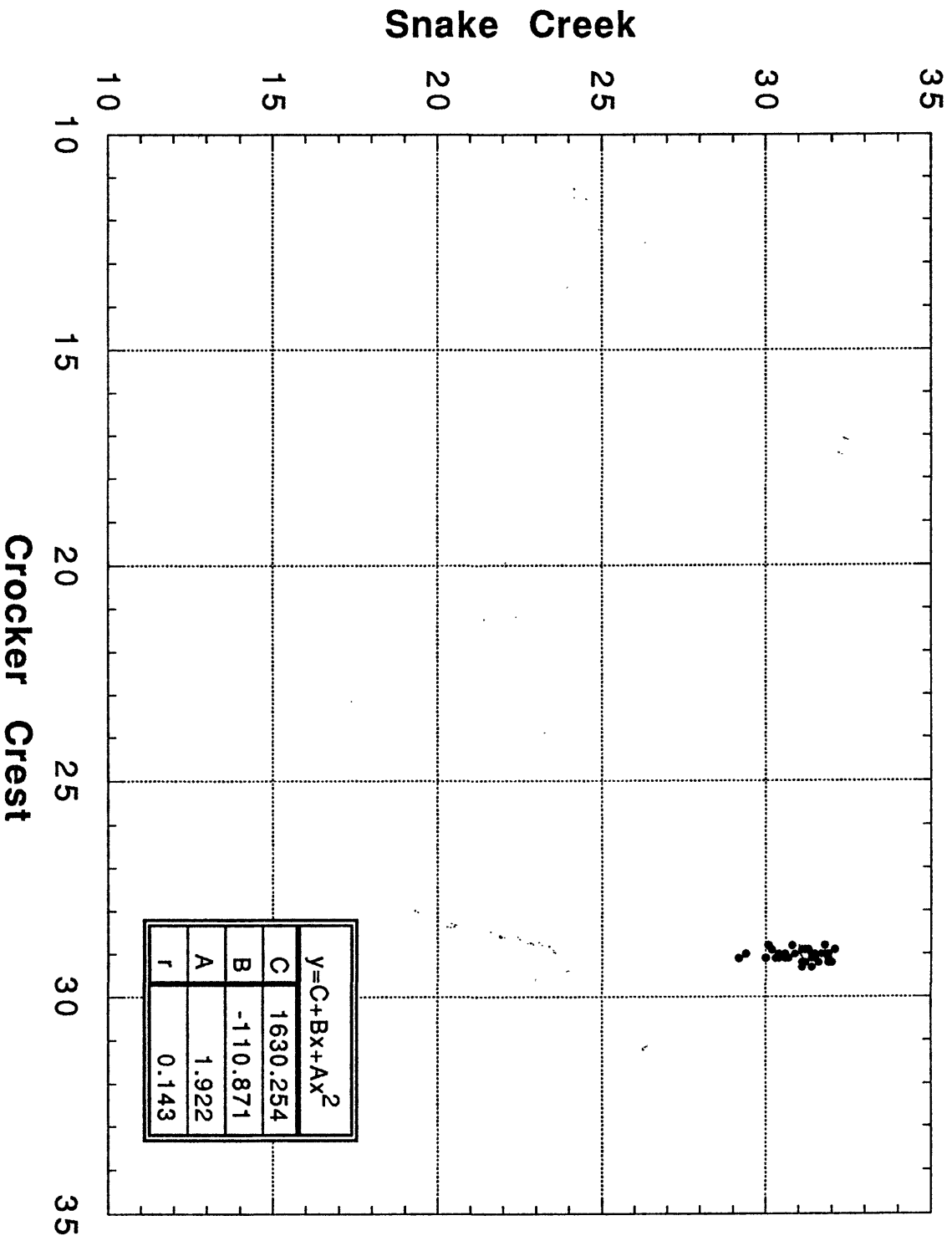
Sea Water Temperature (°C) 1981



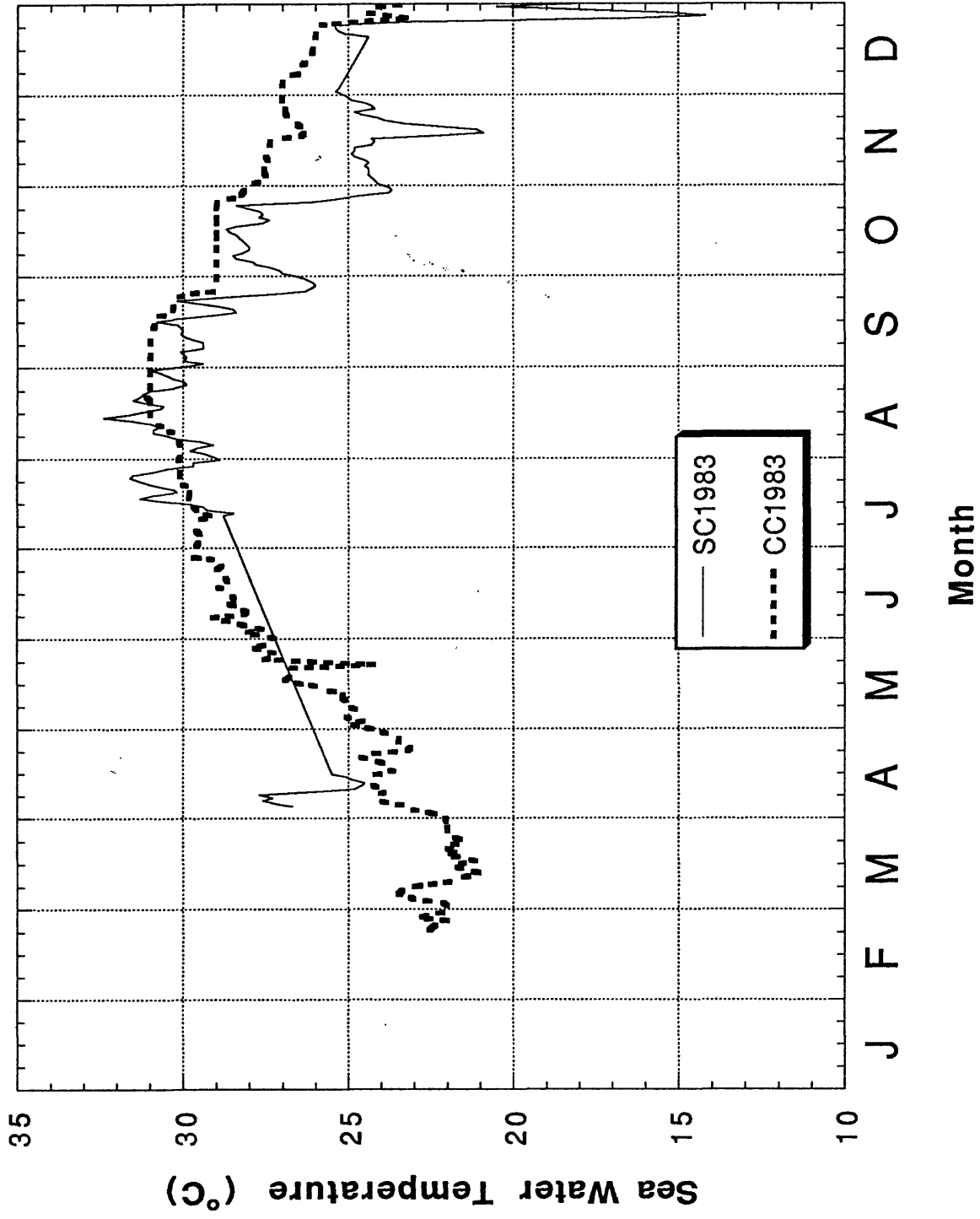
Snake Creek and Crocker Crest 1982



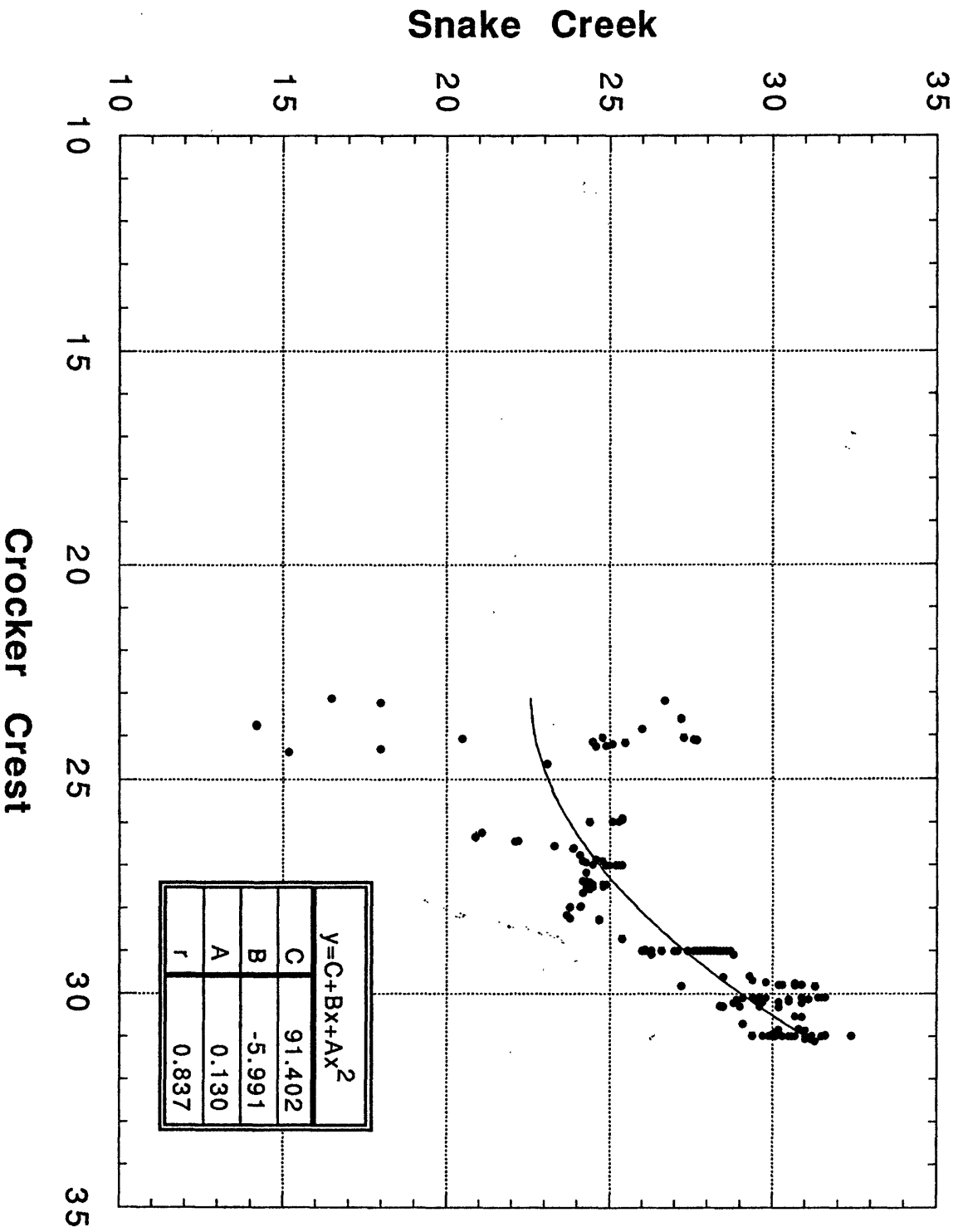
Sea Water Temperature (°C) 1982



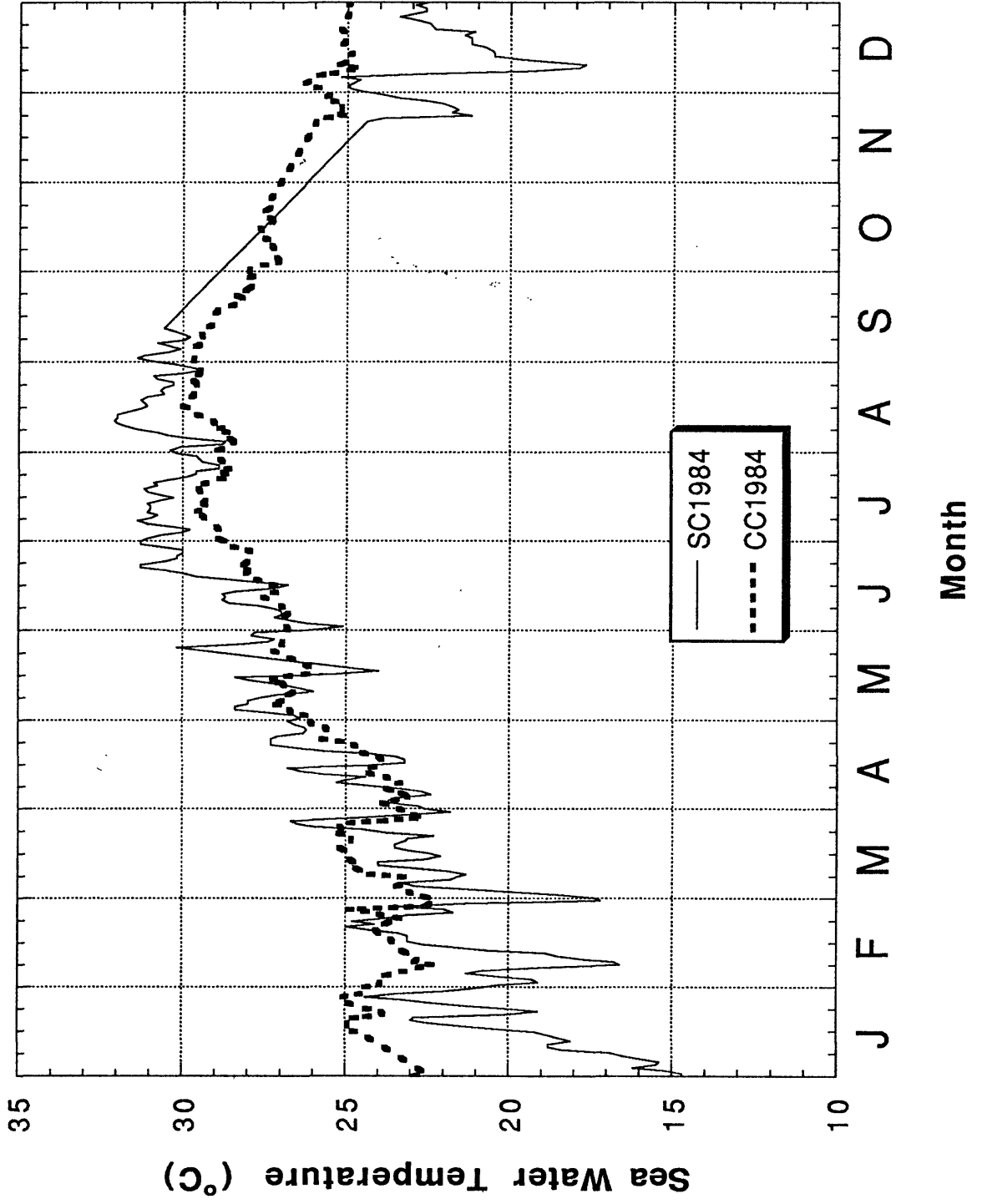
Snake Creek and Crocker Crest 1983



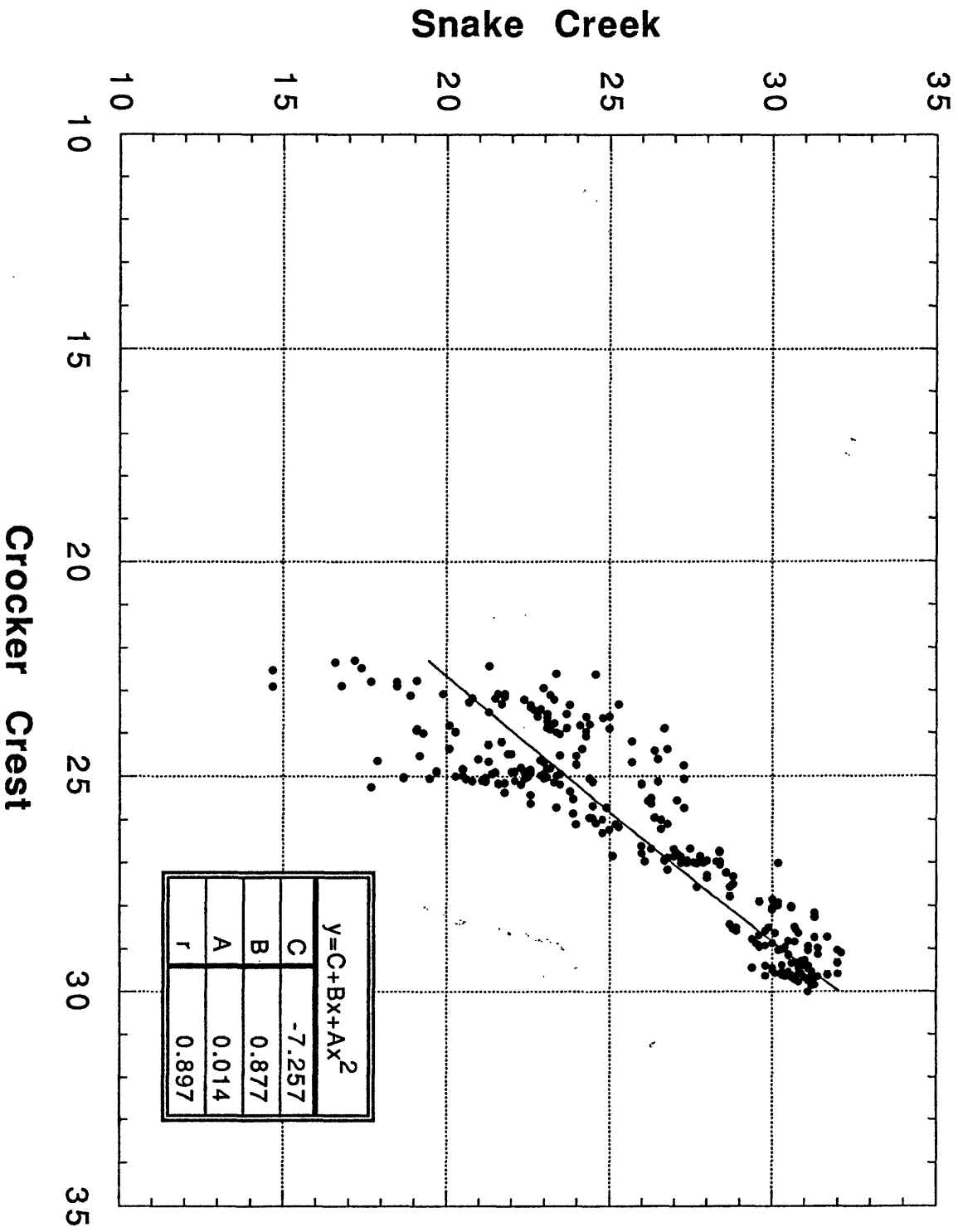
Sea Water Temperature (°C) 1983



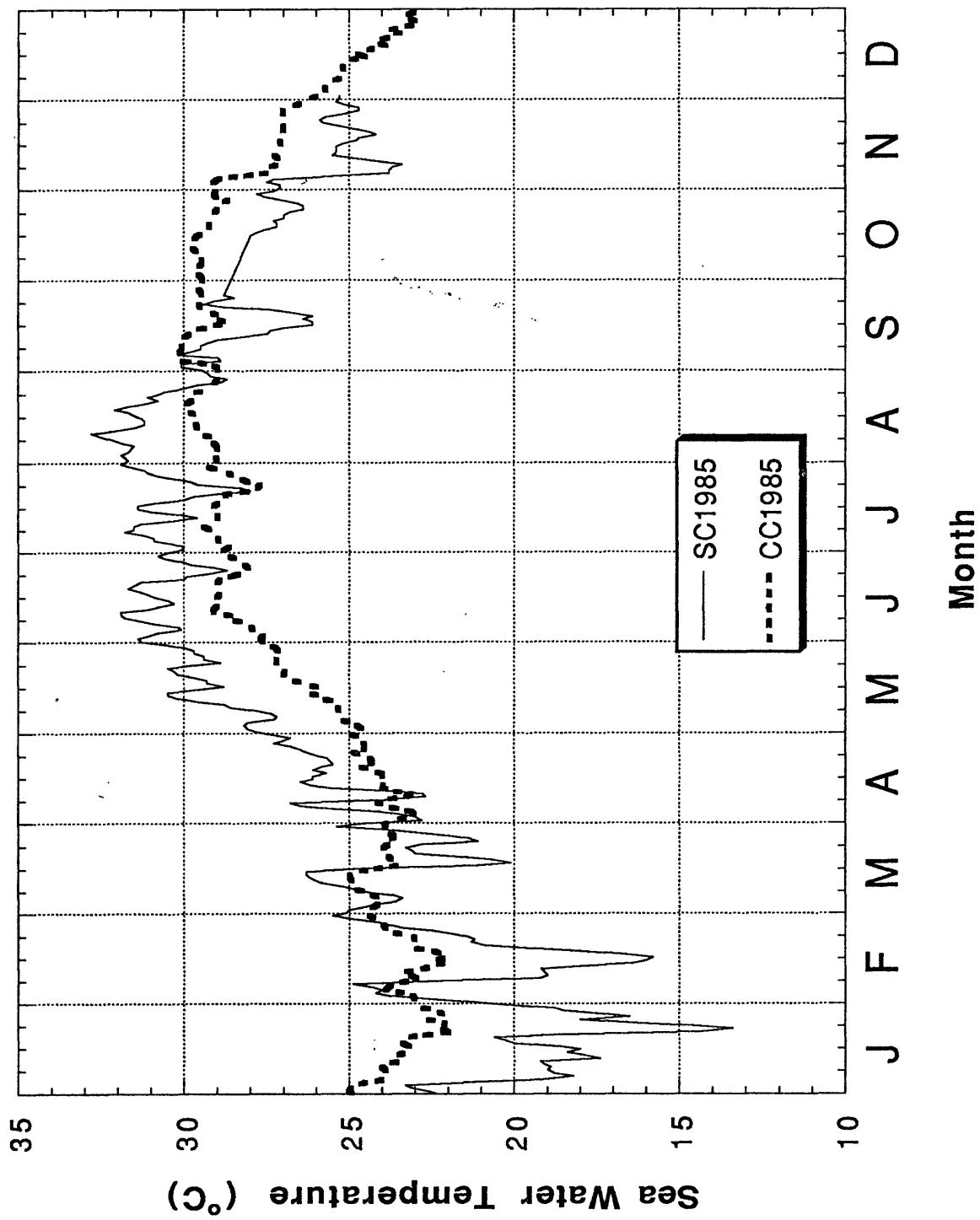
Snake Creek and Crocker Crest 1984



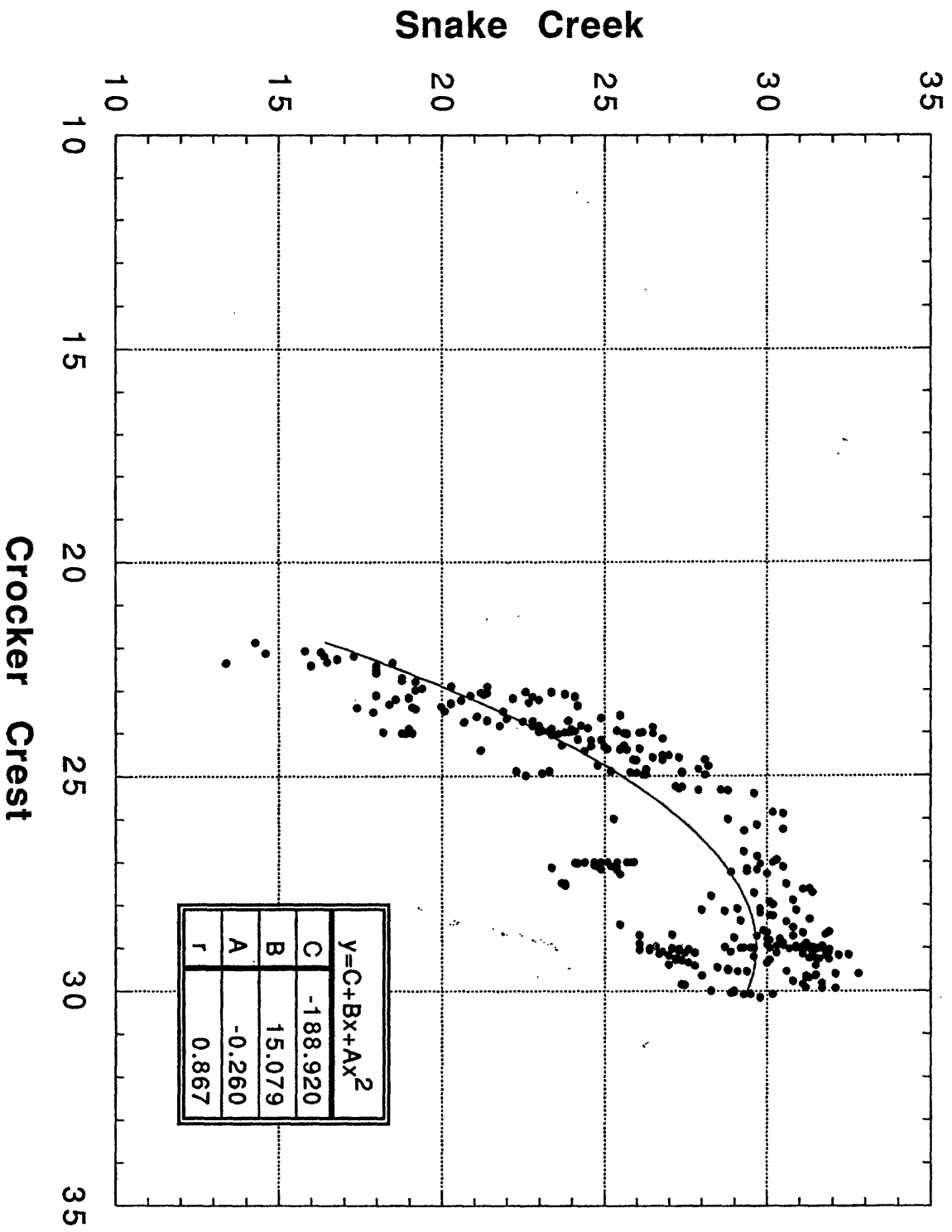
Sea Water Temperature (°C) 1984



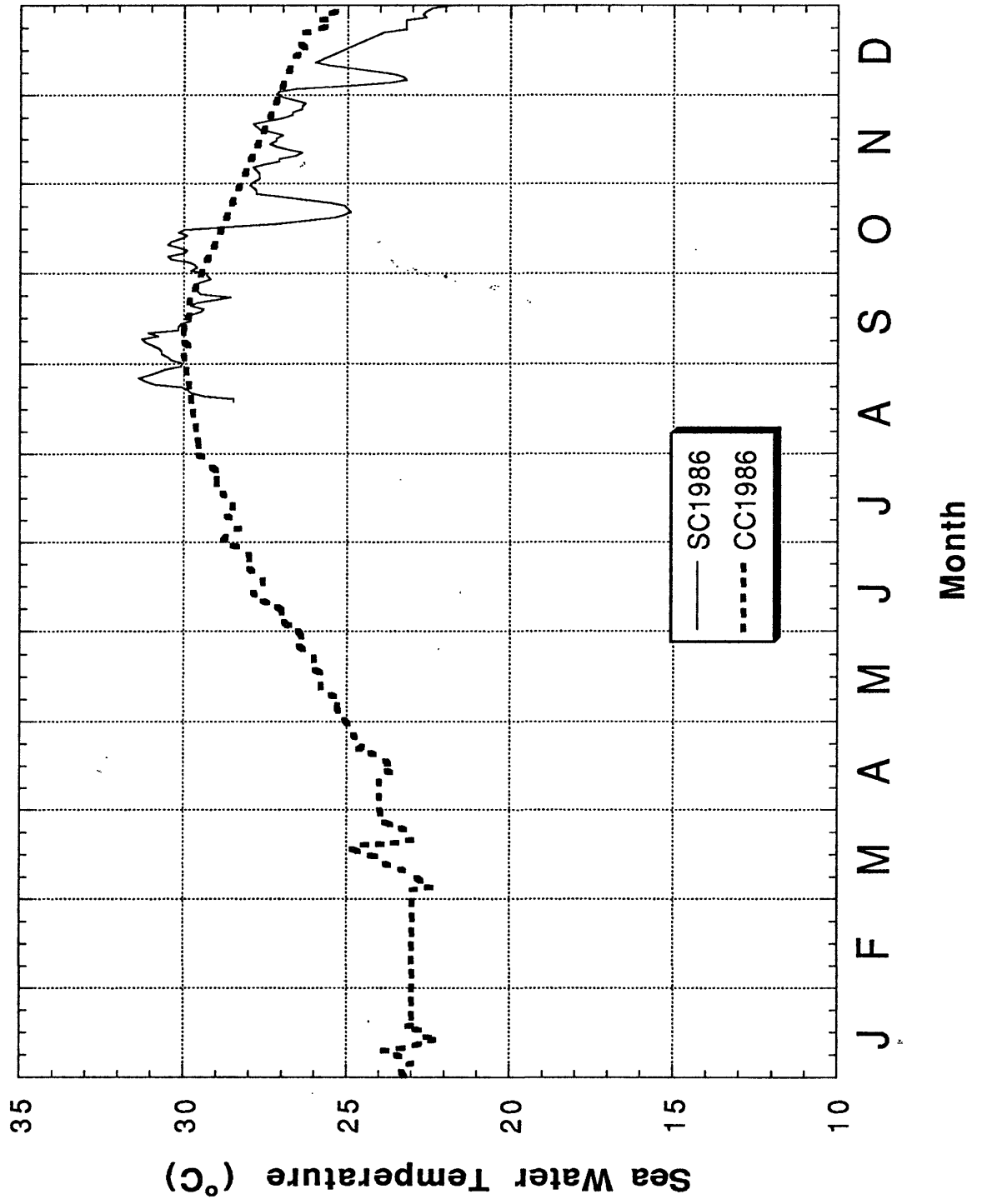
Snake Creek and Crocker Crest 1985



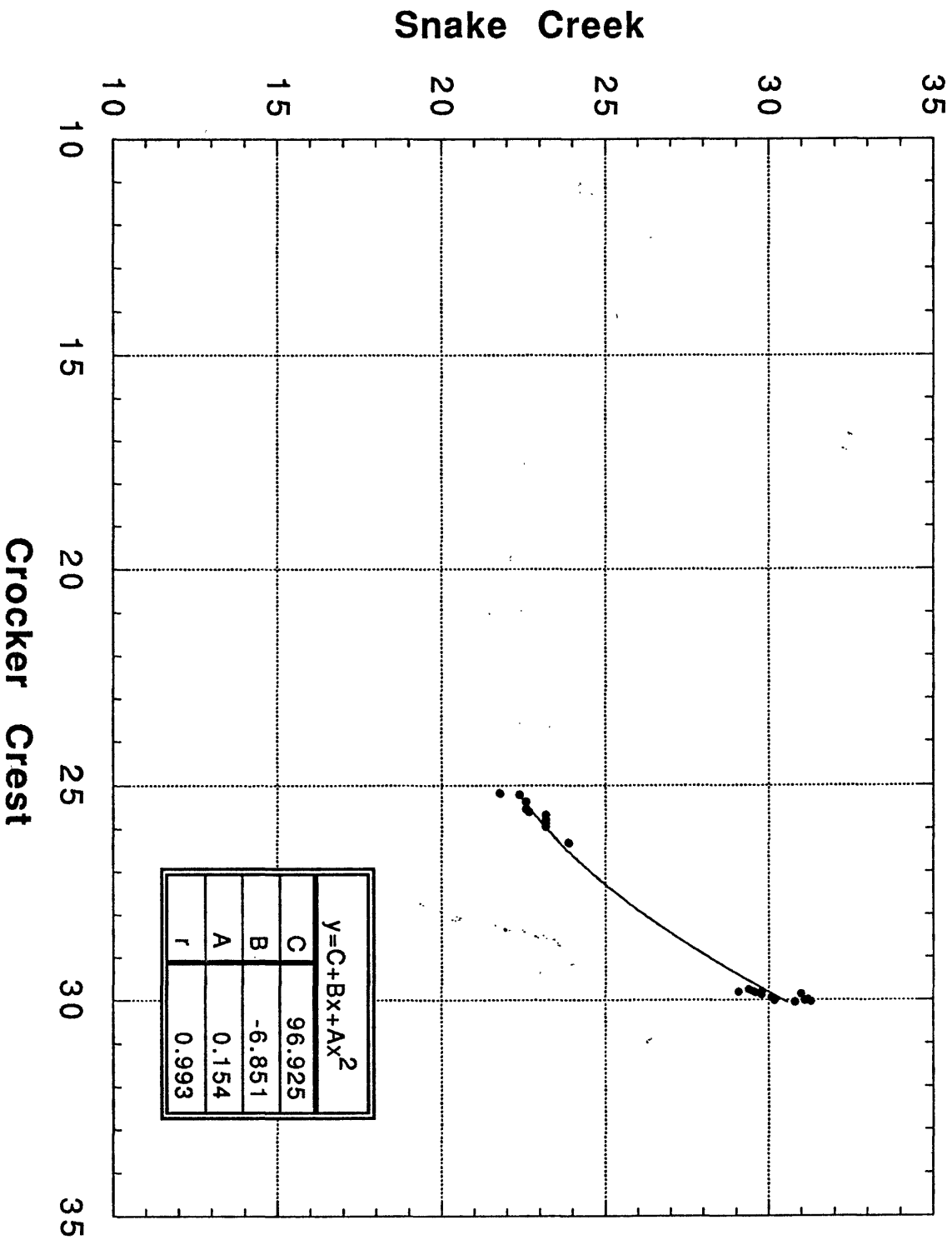
Sea Water Temperature (°C) 1985



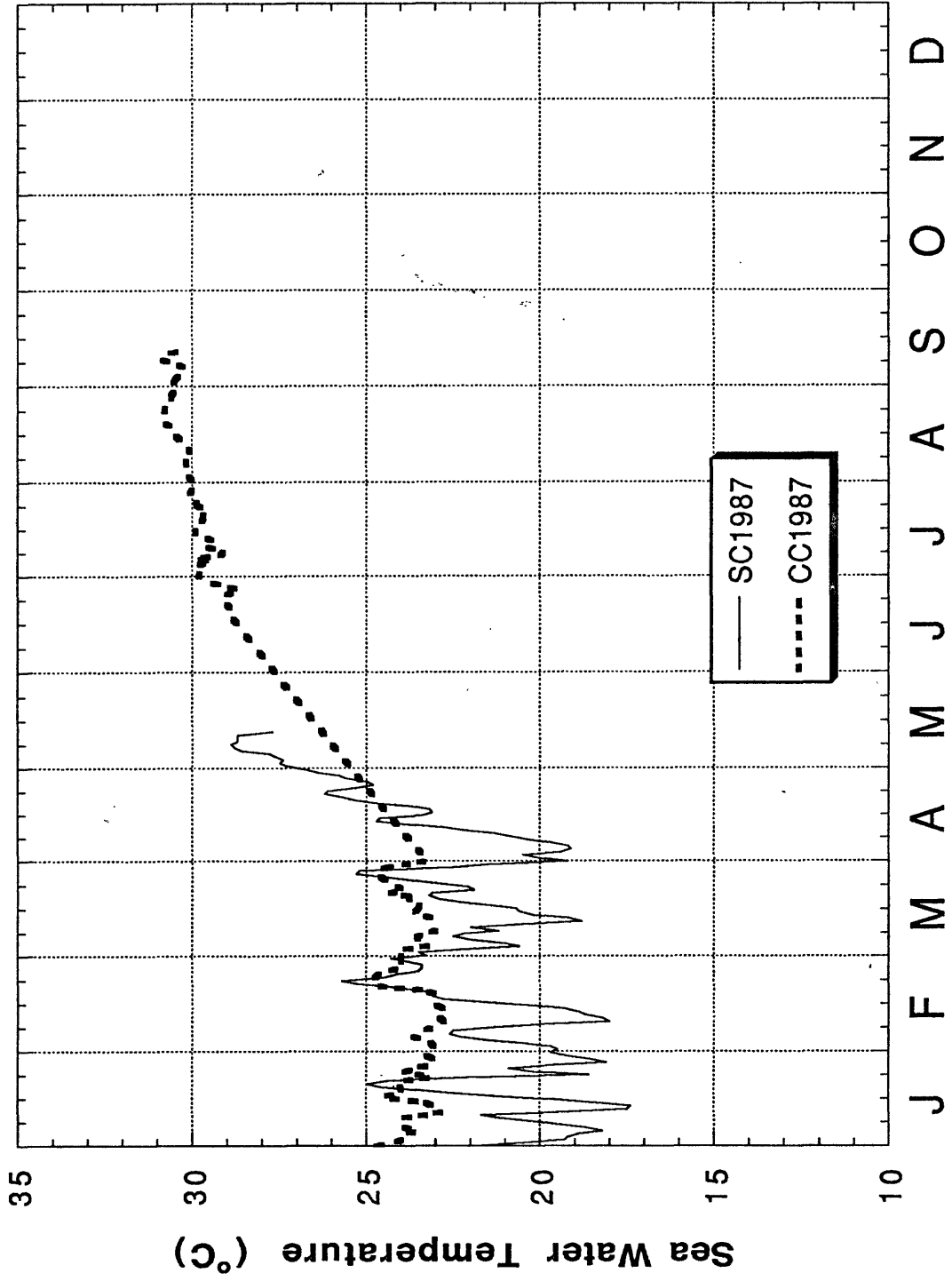
Snake Creek and Crocker Crest 1986



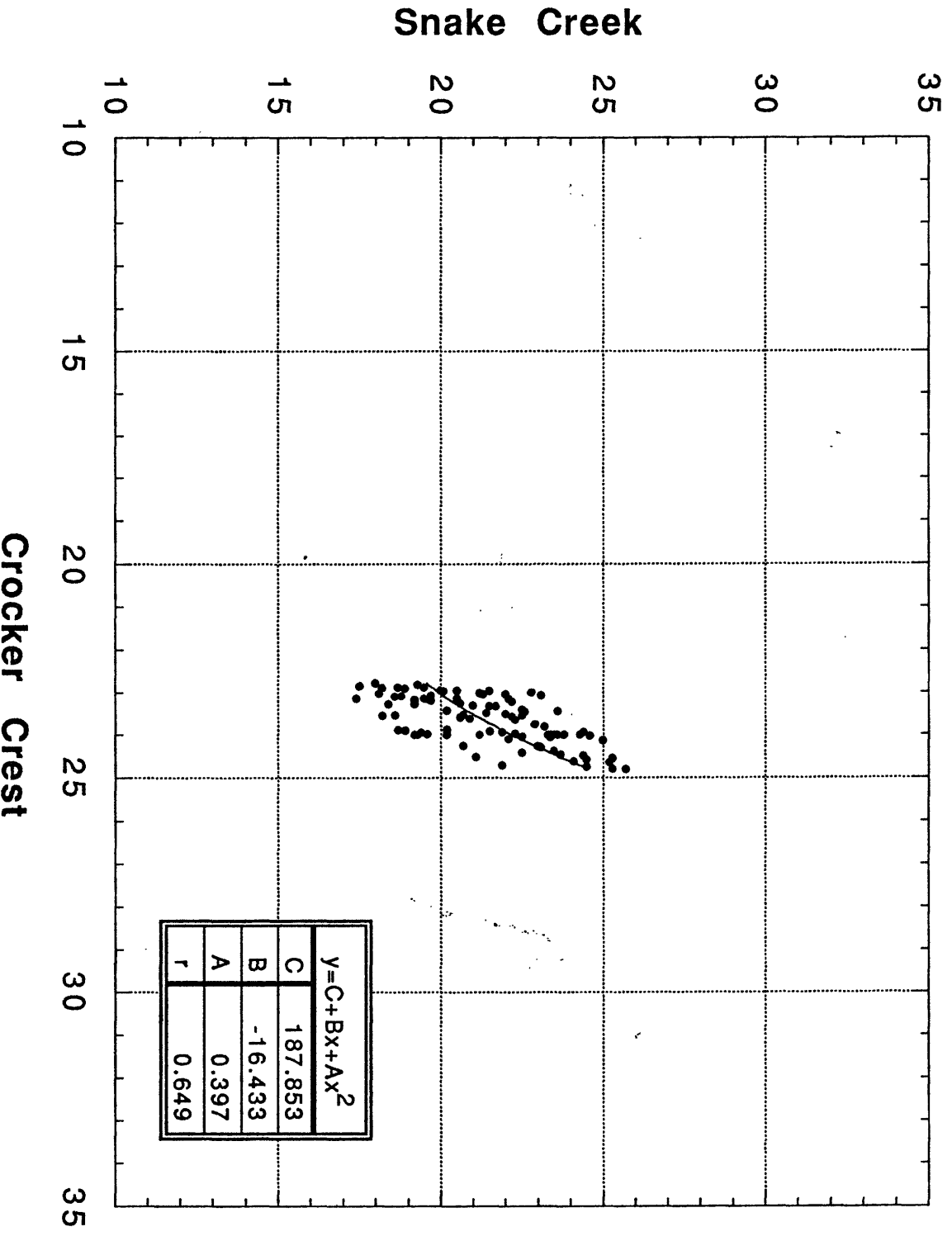
Sea Water Temperature (°C) 1986



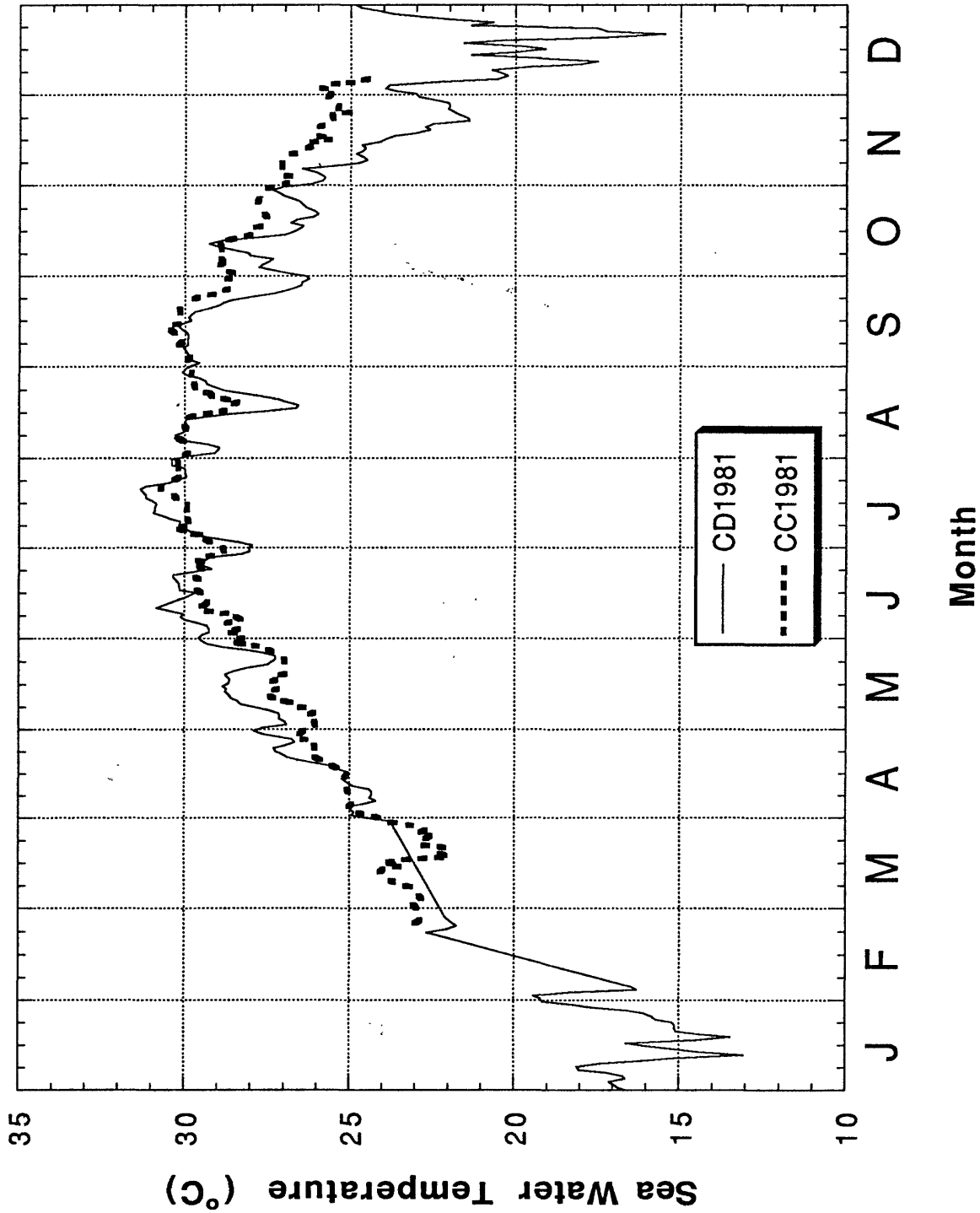
Snake Creek and Crocker Crest 1987



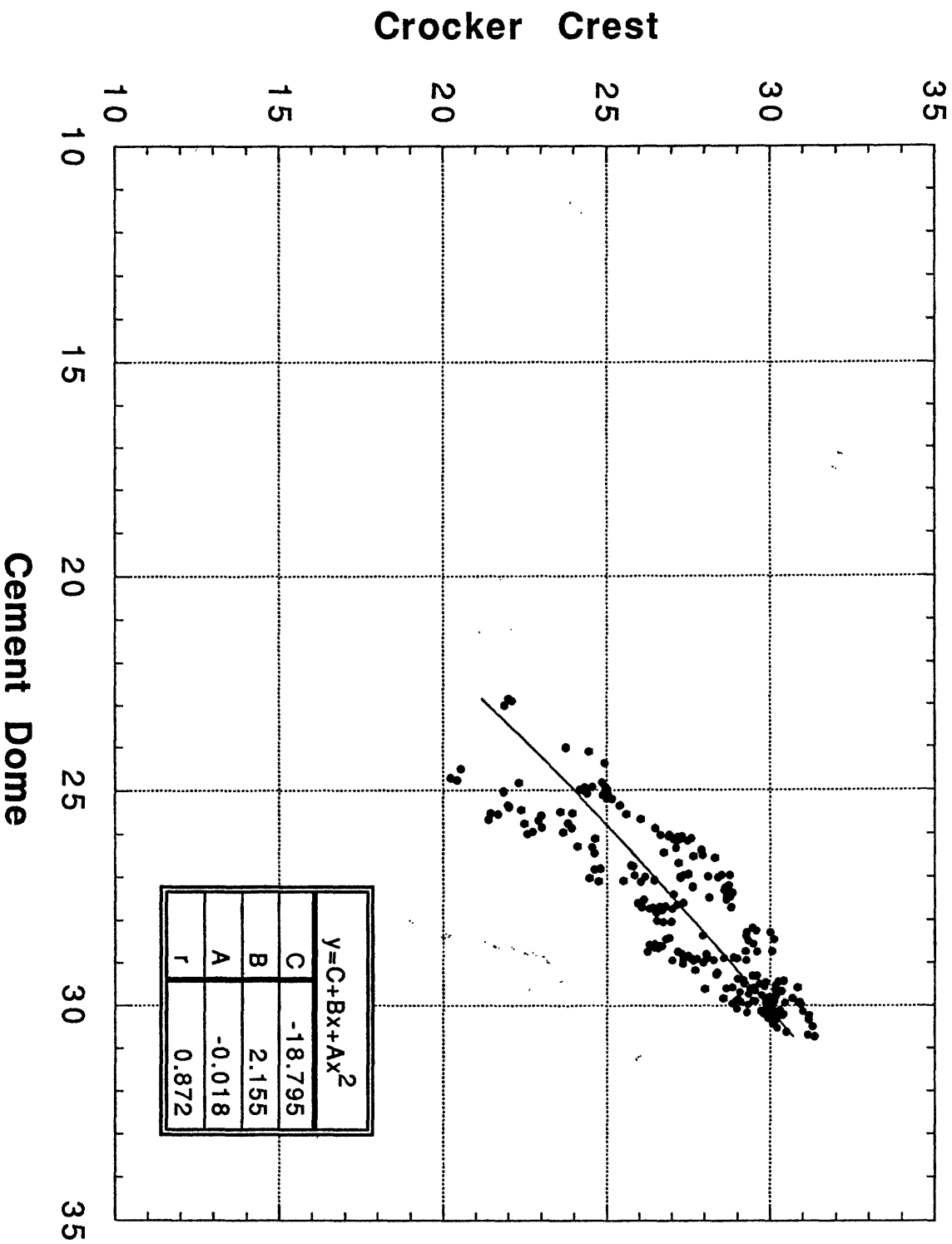
Sea Water Temperature (°C) 1987



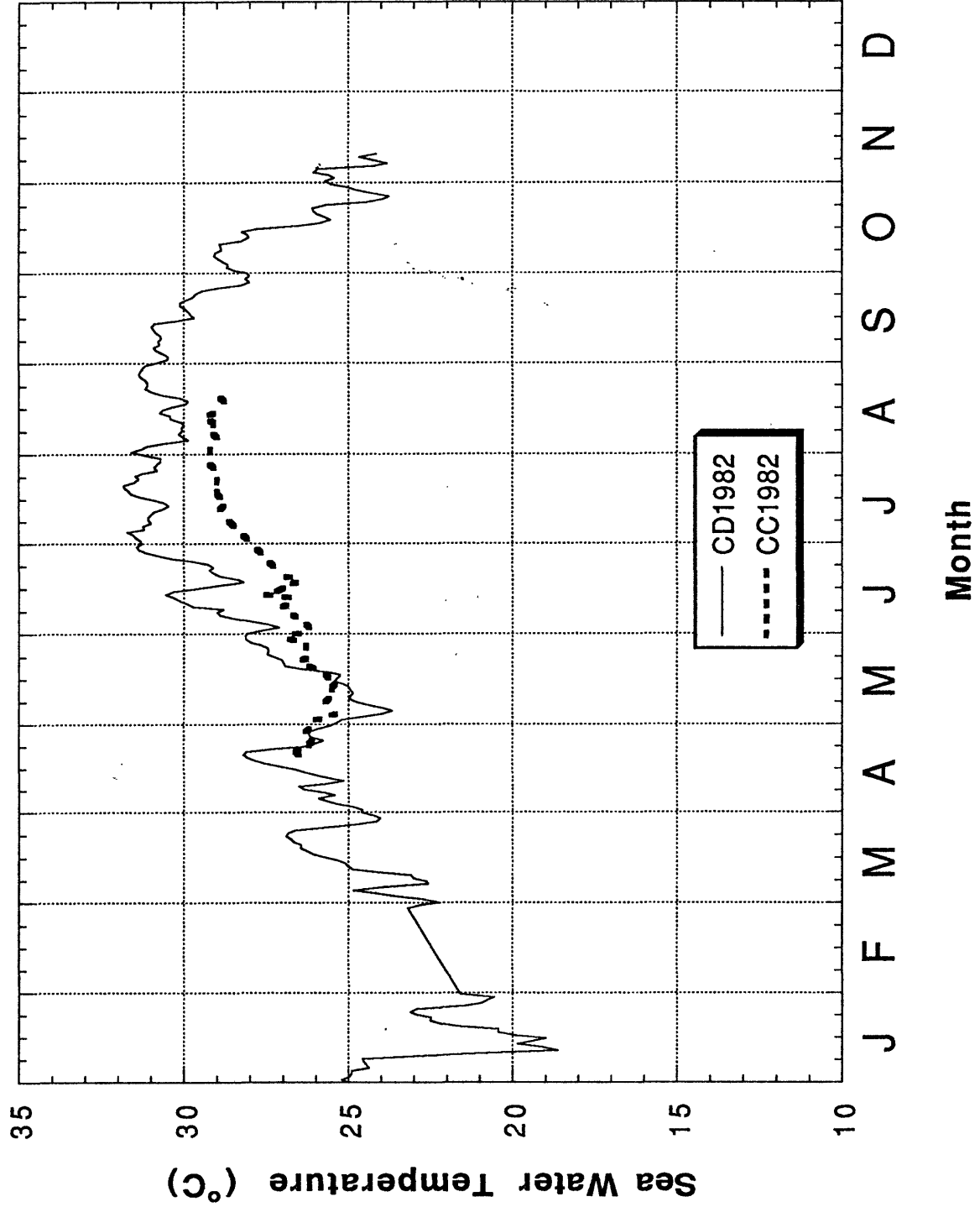
Cement Dome and Crocker Crest 1981



Sea Water Temperature (°C) 1981

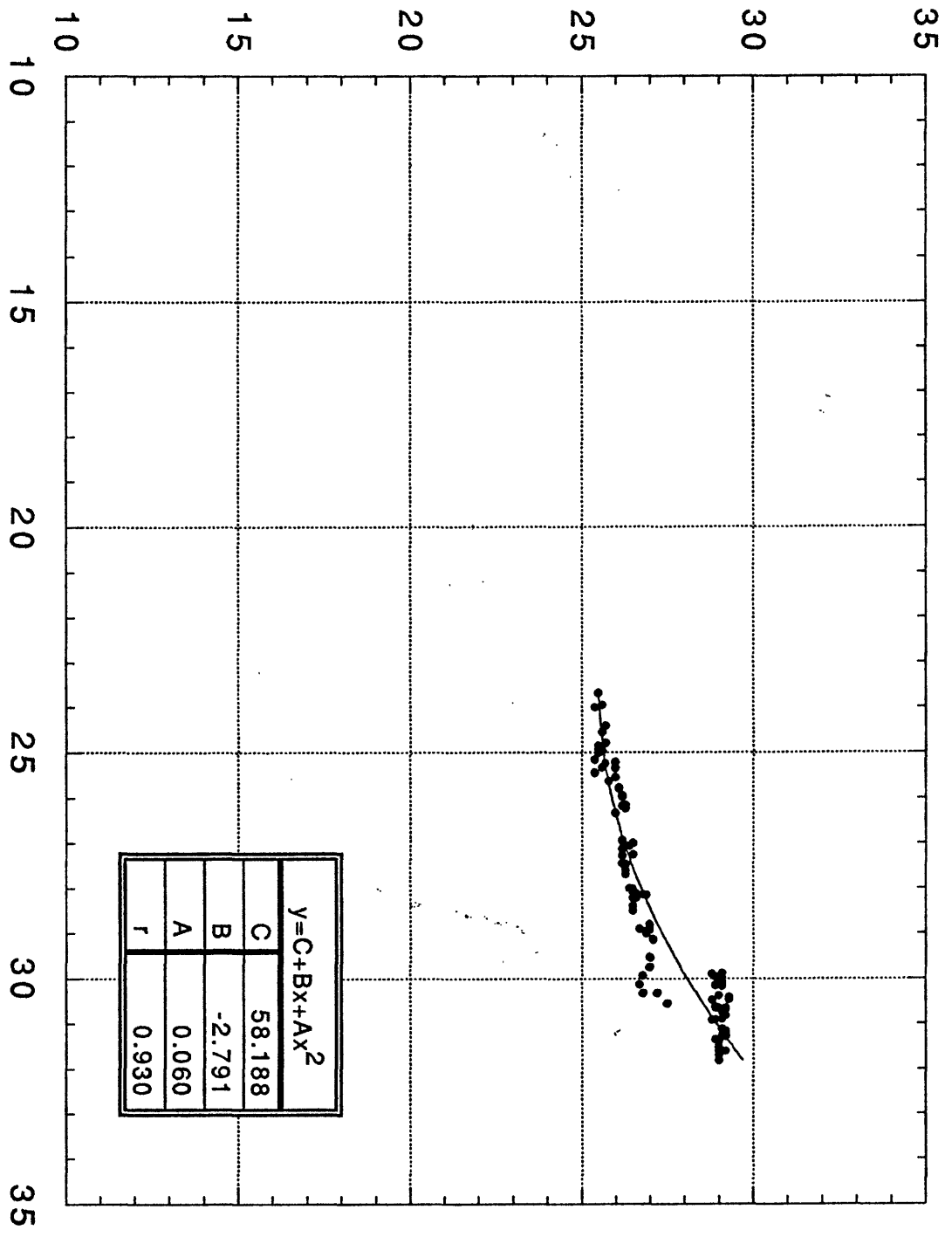


Cement Dome and Crocker Crest 1982



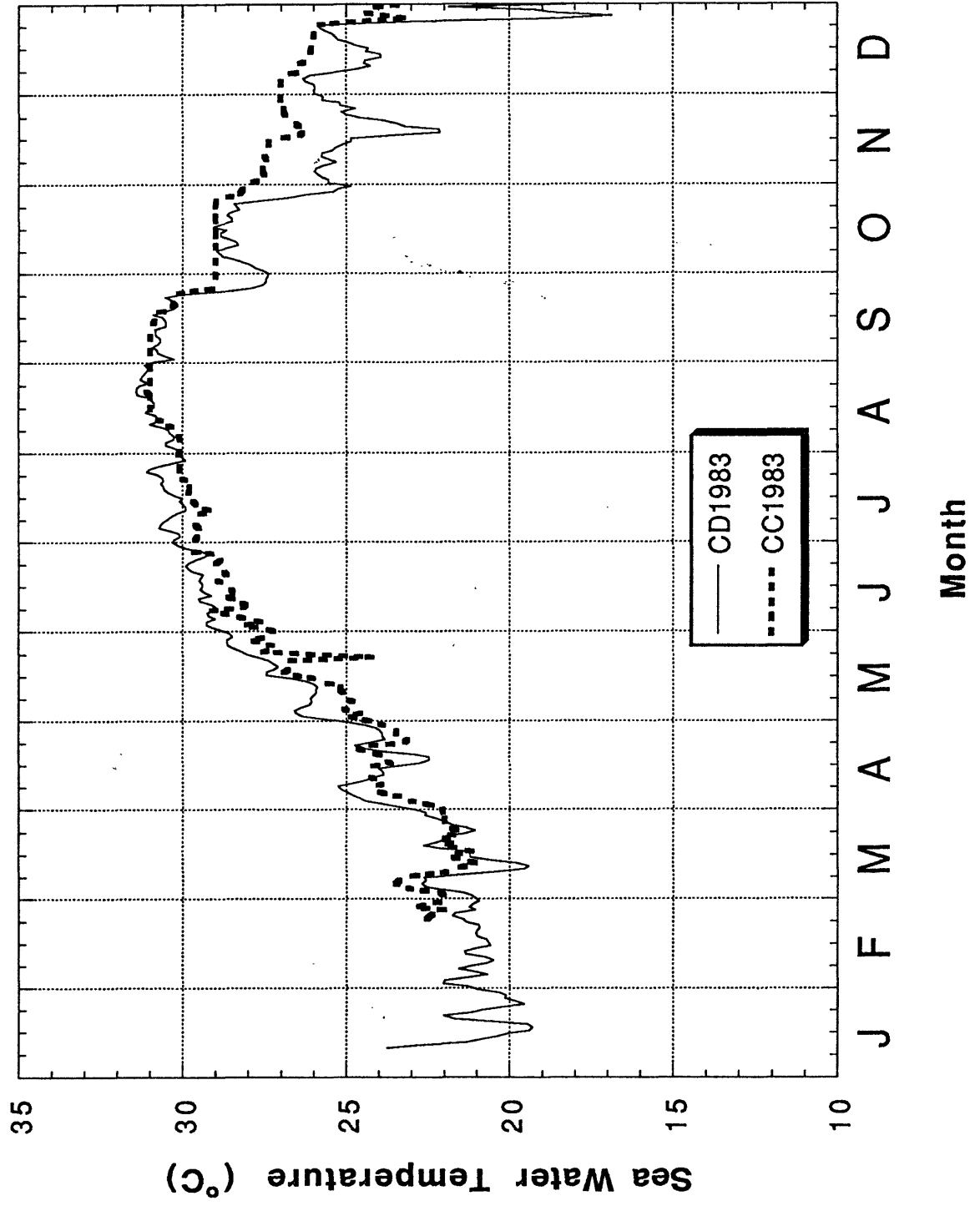
Sea Water Temperature (°C) 1982

Crocker Crest



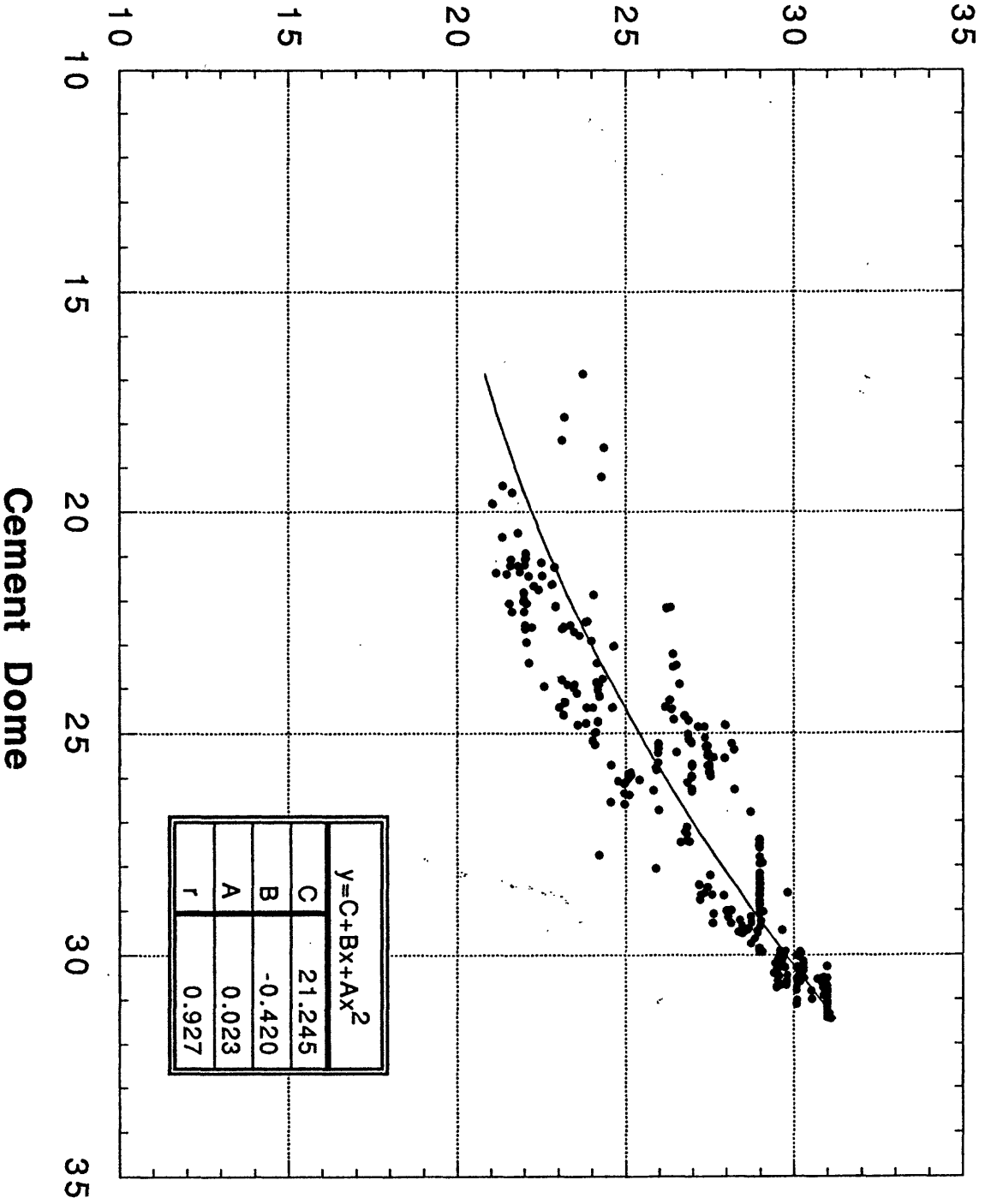
Cement Dome

Cement Dome and Crocker Crest 1983

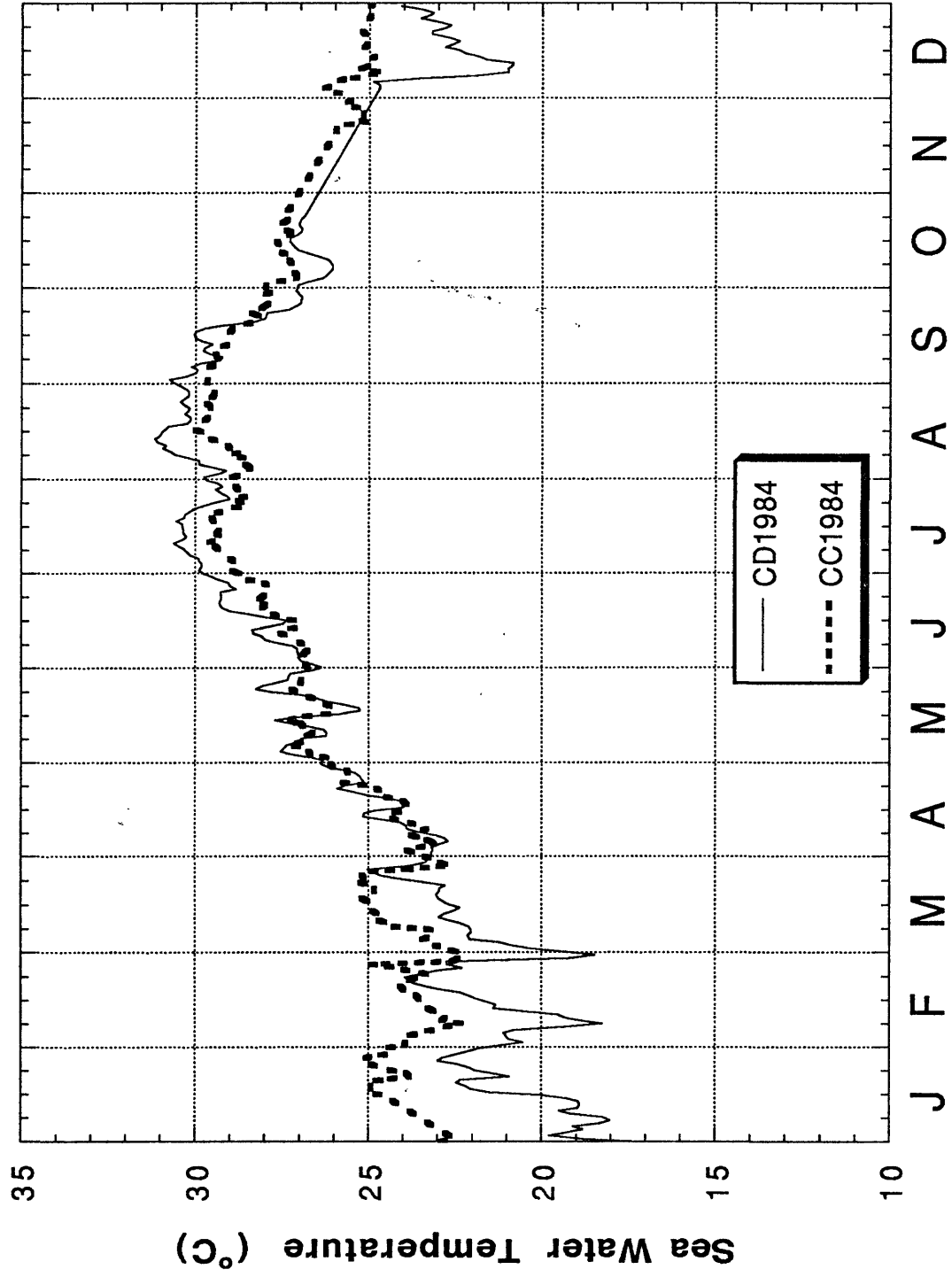


Sea Water Temperature (°C) 1983

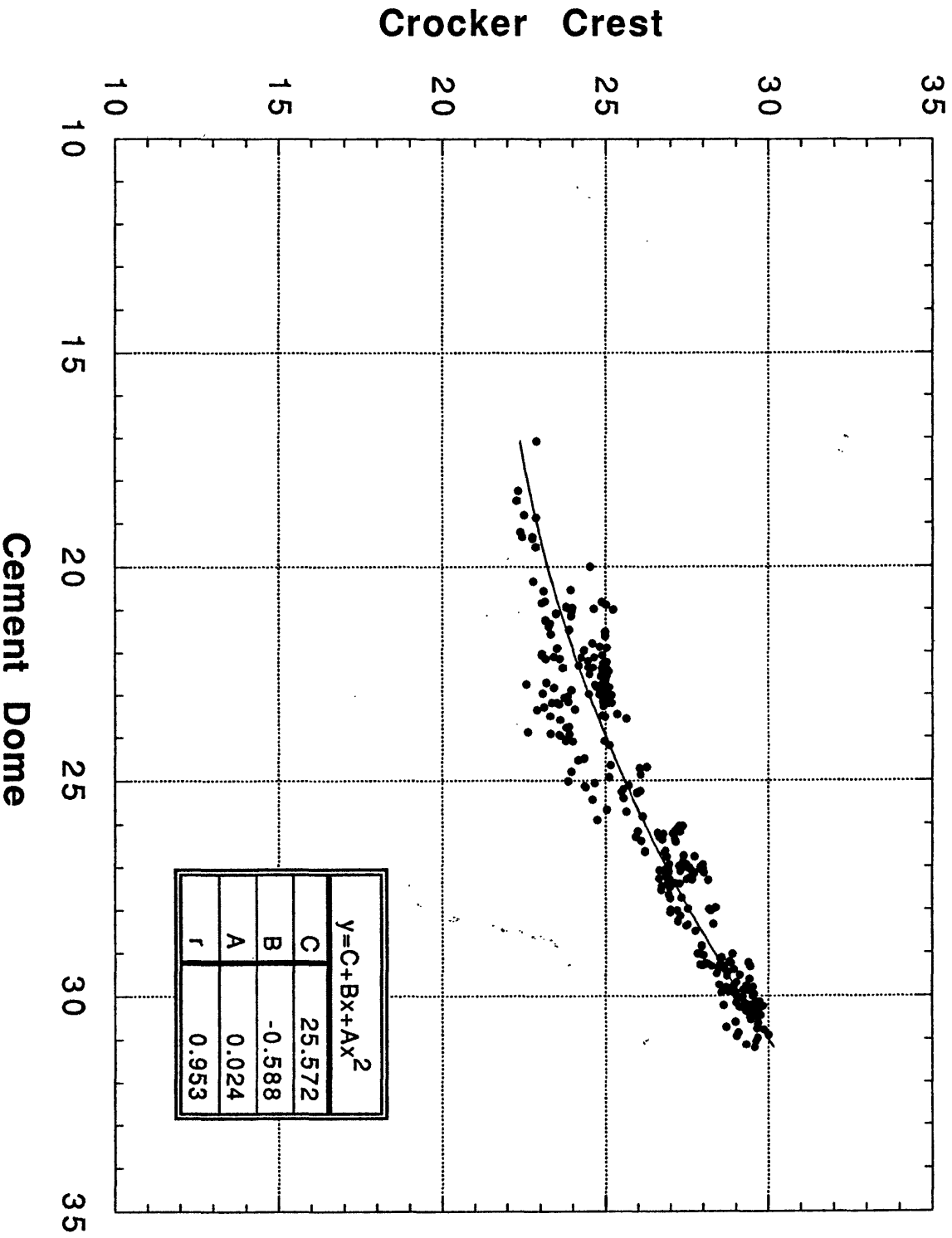
Crocker Crest



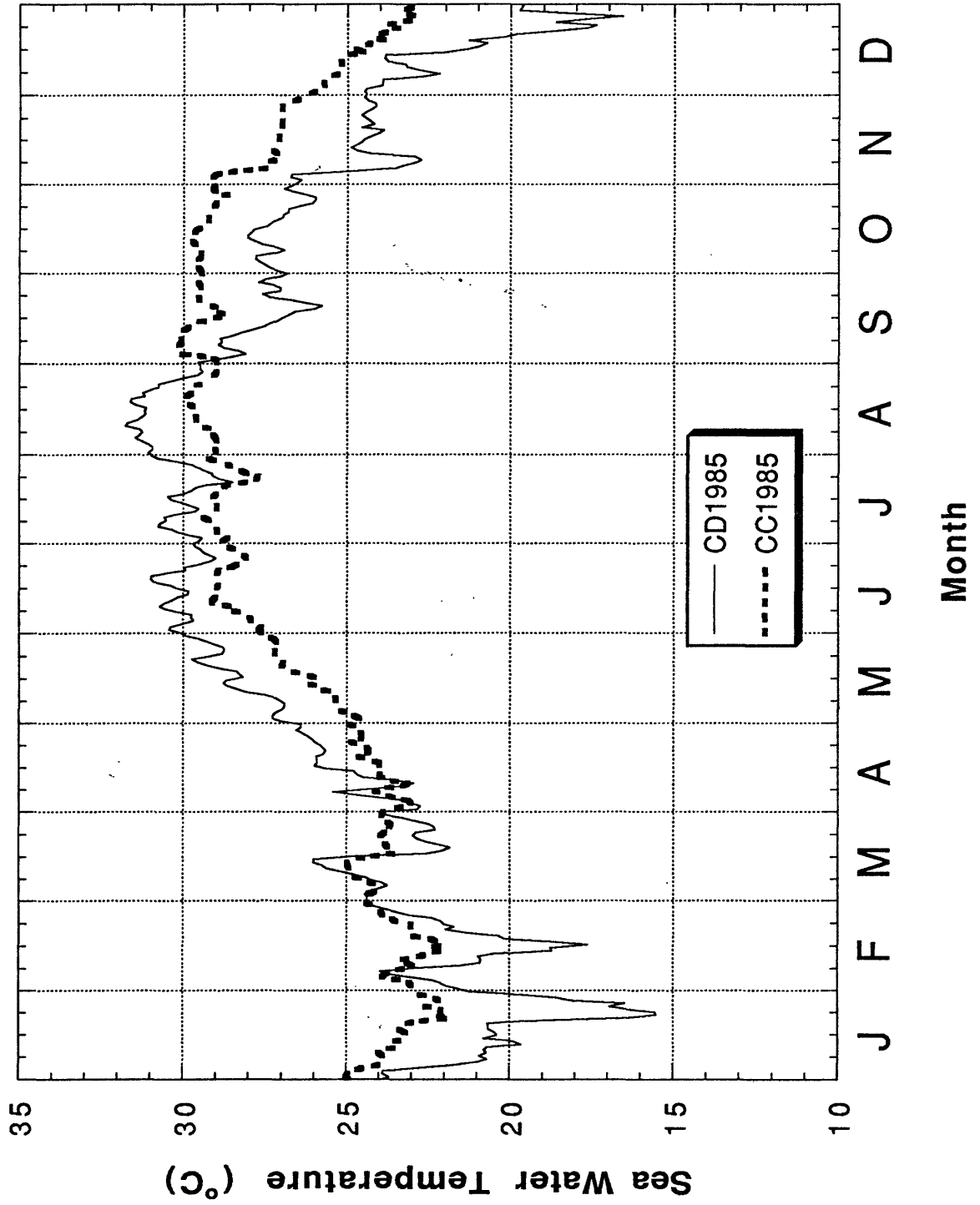
Cement Dome and Crocker Crest 1984



Sea Water Temperature (°C) 1984

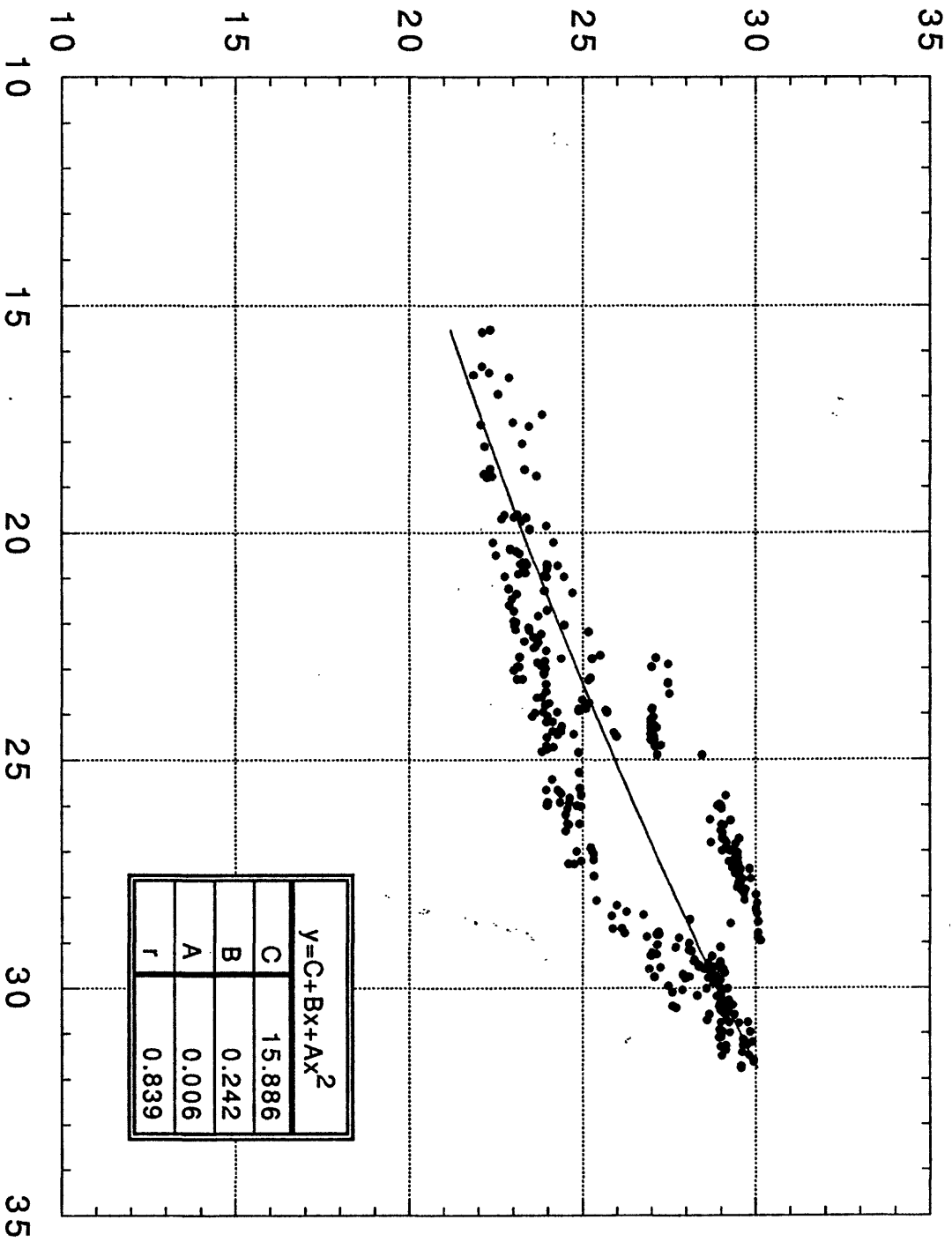


Cement Dome and Crocker Crest 1985



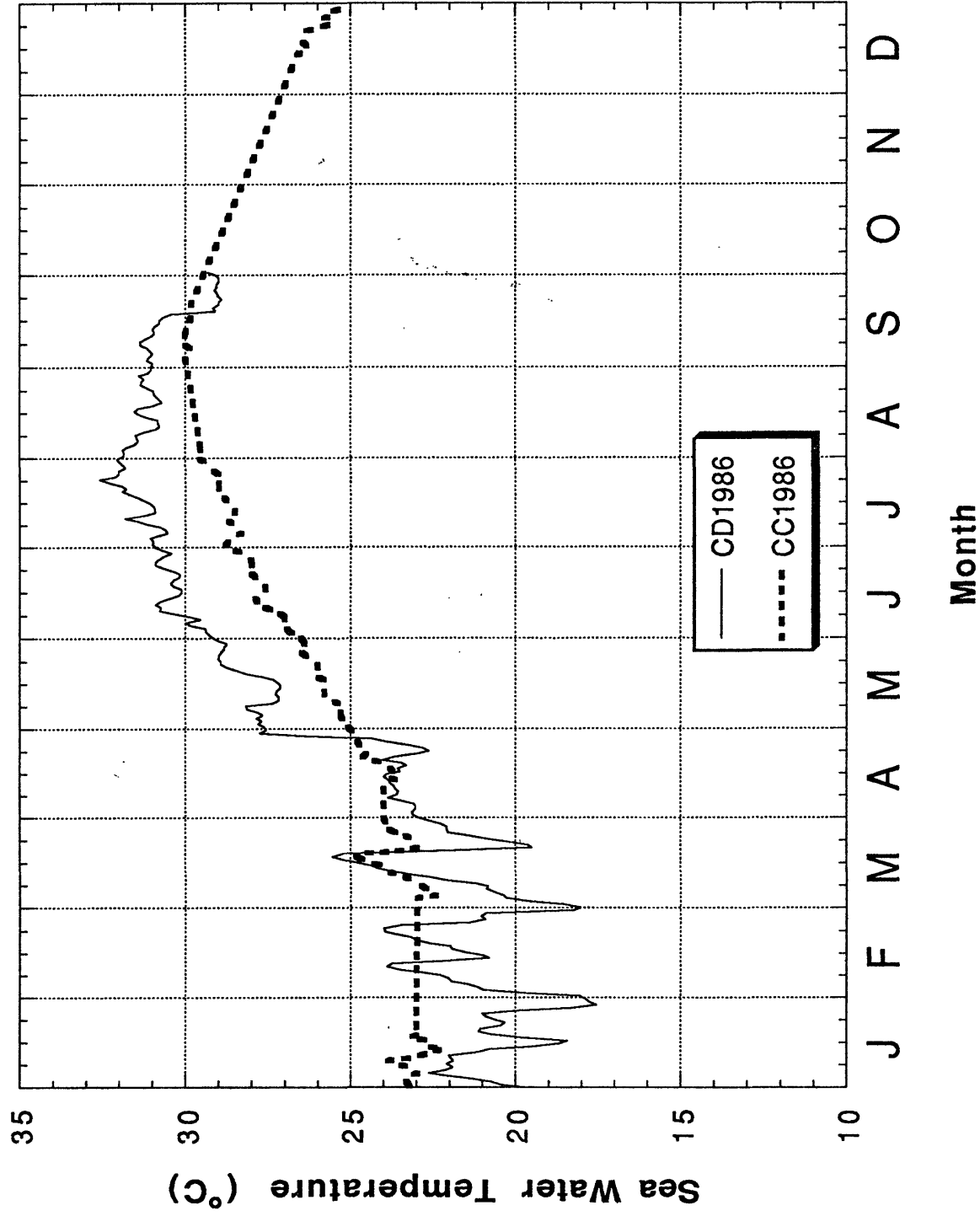
Sea Water Temperature (°C) 1985

Crocker Crest

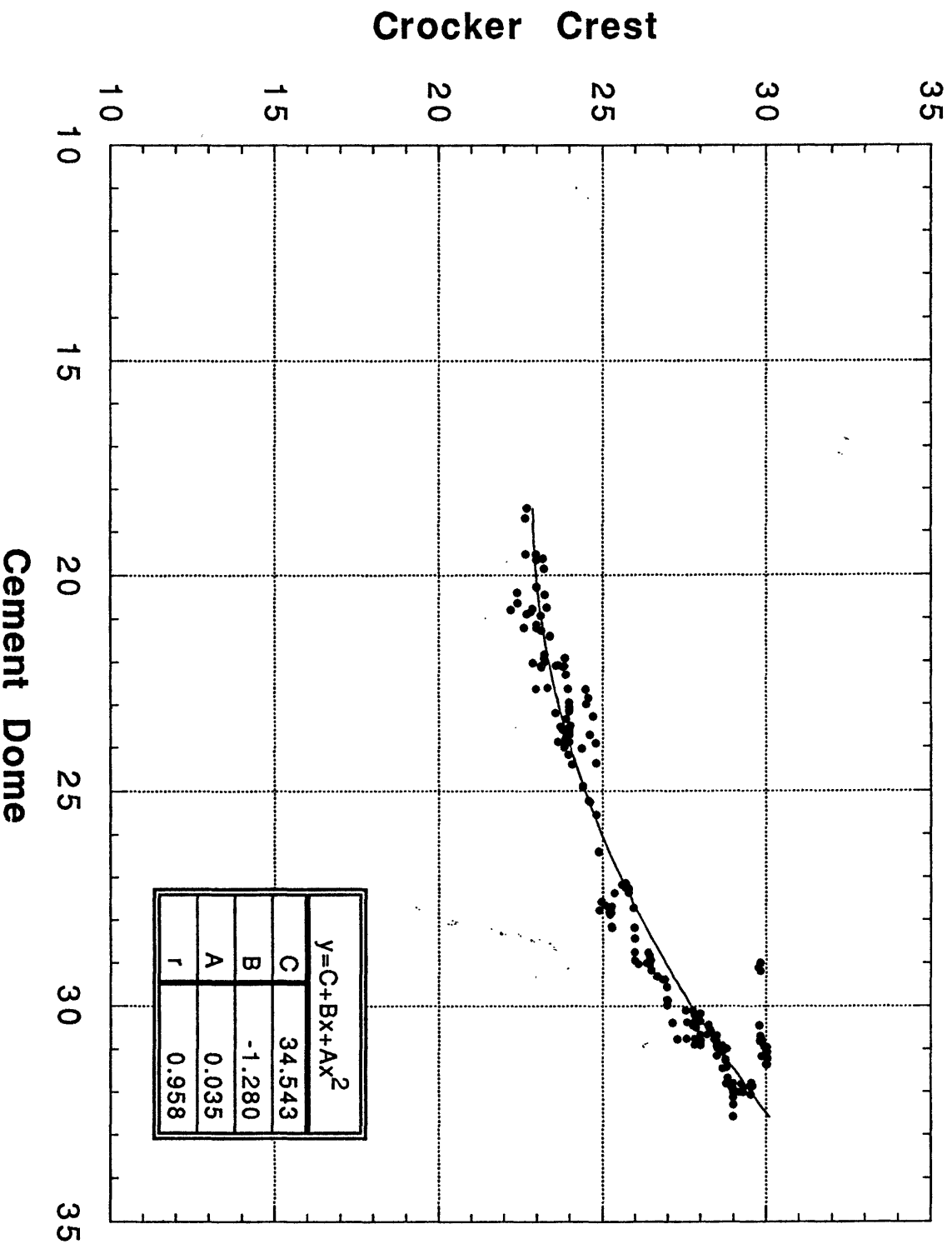


Cement Dome

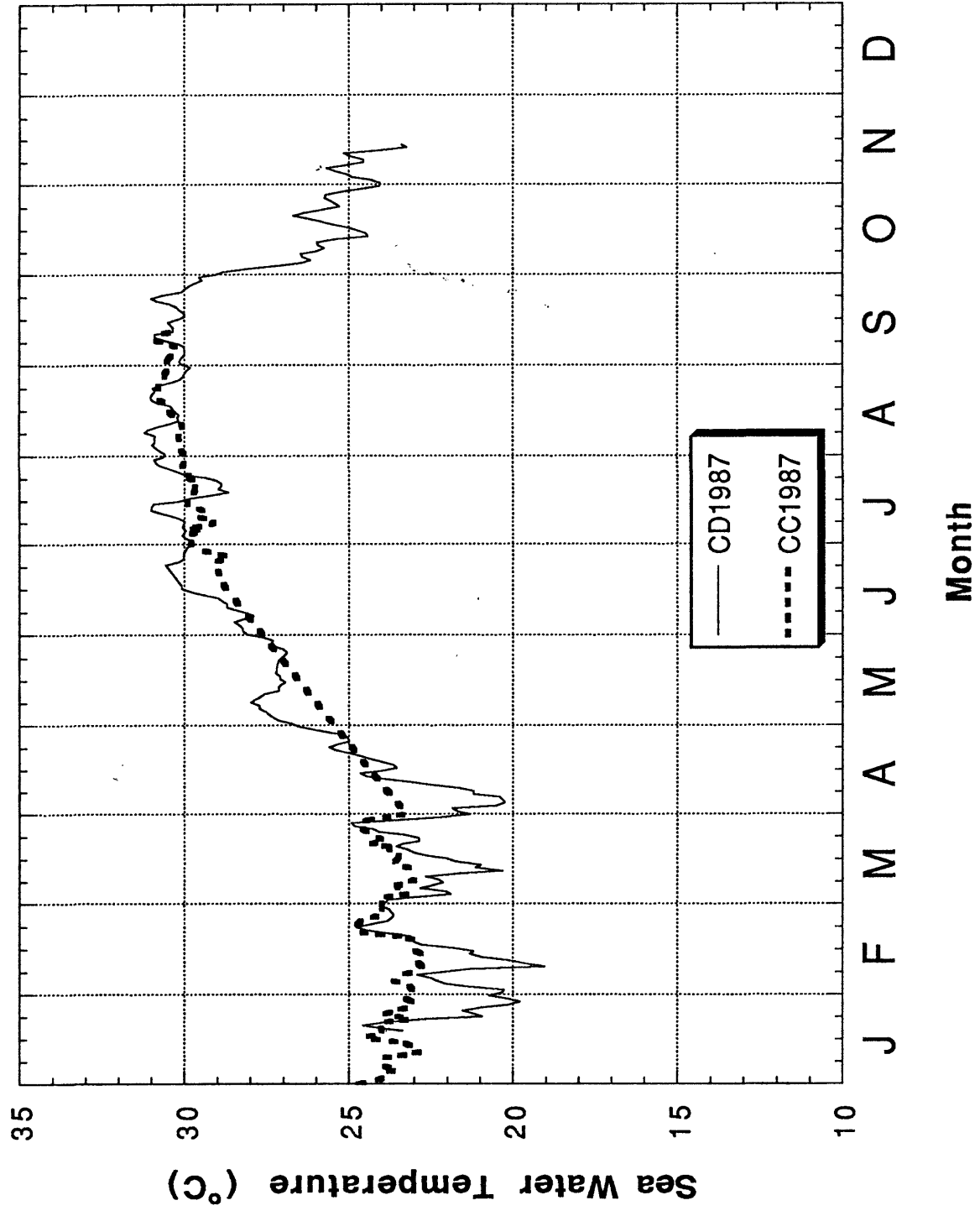
Cement Dome and Crocker Crest 1986



Sea Water Temperature (°C) 1986



Cement Dome and Crocker Crest 1987



Sea Water Temperature (°C) 1987

Crocker Crest

