



12035843

Graphs of Sea Levels at Four British Columbia Stations: Alert Bay, Tofino, Point Atkinson, Prince Rupert

A. Ballantyne



Department of Fisheries and the Environment
Fisheries and Marine Service
Resource Services Branch
Pacific Biological Station
Nanaimo, British Columbia V9R 5K6



March 1978

3 Fisheries & Marine Service
Data Report No. 65



QH
90.5
C33
no. 65
FONT

Fisheries and Marine Service

Data Reports

These reports provide a medium for filing and archiving data, compilations where little or no analysis is included. Such compilations commonly will have been prepared in support of other journal publications or reports. The subject matter of Data Reports reflects the broad interests and policies of the Fisheries and Marine Service, namely, fisheries management, technology and development, ocean sciences and aquatic environments relevant to Canada.

Numbers 1-25 in this series were issued as Fisheries and Marine Service Data Records by the Pacific Biological Station, Nanaimo, B.C. The series name was changed with report number 26.

Data Reports are not intended for general distribution and the contents must not be referred to in other publications without prior written clearance from the issuing establishment. The correct citation appears above the abstract of each report.

Service des pêches et des sciences de la mer

Rapports statistiques

Ces rapports servent de base à la compilation des données de classement et d'archives pour lesquelles il y a peu ou point d'analyse. Cette compilation aura d'ordinaire été préparée pour appuyer d'autres publications ou rapports. Les sujets des Rapports statistiques reflètent la vaste gamme des intérêts et politiques du Service des pêches et de la mer, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les numéros 1-25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer, par la Station biologique du Pacifique, Nanaimo (C.-B.). Le nom de la série a été modifié à partir du numéro 26.

Les Rapports statistiques ne sont pas préparés pour une vaste distribution et leur contenu ne doit pas être mentionné dans une publication sans autorisation écrite préalable de l'établissement auteur. Le titre exact paraît au haut du résumé de chaque rapport.

Fisheries and Marine Service

Data Report 65

March 1978

GRAPHS OF SEA LEVELS AT FOUR BRITISH COLUMBIA STATIONS:

ALERT BAY, TOFINO, POINT ATKINSON, PRINCE RUPERT

by

A. Ballantyne

Department of Fisheries and the Environment

Fisheries and Marine Service

Resource Services Branch

Pacific Biological Station

Nanaimo, British Columbia V9R 5K6

QH

90.5

C33

No.65

(c) Minister of Supply and Services Canada 1978

Cat. no. Fs 97-13/65

ISSN 0701-7634

ABSTRACT

Ballantyne, A. 1978. Graphs of sea levels at four British Columbia stations: Alert Bay, Tofino, Point Atkinson, Prince Rupert. Fish. Mar. Serv. Data Rep. 65: 19 p.

This report contains time-series graphs of actual and smoothed monthly mean sea-level values at four British Columbia coastal tidal gauging stations. The stations are: Alert Bay, Tofino, Point Atkinson and Prince Rupert.

Key words: Sea levels, tide gauging.

/ /
RESUME

Ballantyne, A. 1978. Graphs of sea levels at four British Columbia stations: Alert Bay, Tofino, Point Atkinson, Prince Rupert. Fish. Mar. Serv. Data Rep. 65: 19 p.

Le présent rapport comprend des chronogrammes bruts et lissés de la moyenne mensuelle du niveau de la mer, aux quatre stations marégraphiques d'Alert Bay, de Tofino, de la pointe Atkinson et de Prince Rupert.

Mots clés: Niveau de la mer, marégraphe.

INTRODUCTION

This is the first publication by the Fisheries Oceanographic Section presenting time-series graphs of ocean indices. Actual and smoothed monthly mean sea-level graphs at four tide-gauging stations on the Pacific coast (Fig. 1-8) are contained herein. Monthly mean data were obtained from "Water Levels - Tidal" published by the Marine Environment Data Services Branch, Ocean and Aquatic Sciences, Ottawa, and unpublished data provided through the courtesy of the Tidal and Current Section, Institute of Ocean Sciences, Patricia Bay, Sidney, B.C. Data have not been corrected for inverted barometer effects. Graphs use actual recorded monthly mean values. Smoothed graphs have been filtered by means of an 11-mo running mean with the first and last five values in the entire series being lost. The weights used are: 0.0067, 0.0315, 0.0748, 0.1263, 0.1684, 0.1846, 0.1684, 0.1263, 0.0748, 0.0315, 0.0067. The smoothing program was run on a Xerox 530 computer and graphs were plotted using a Calcomp Plotter. Data are filed on computer tapes at the Pacific Biological Station, Nanaimo, B.C.

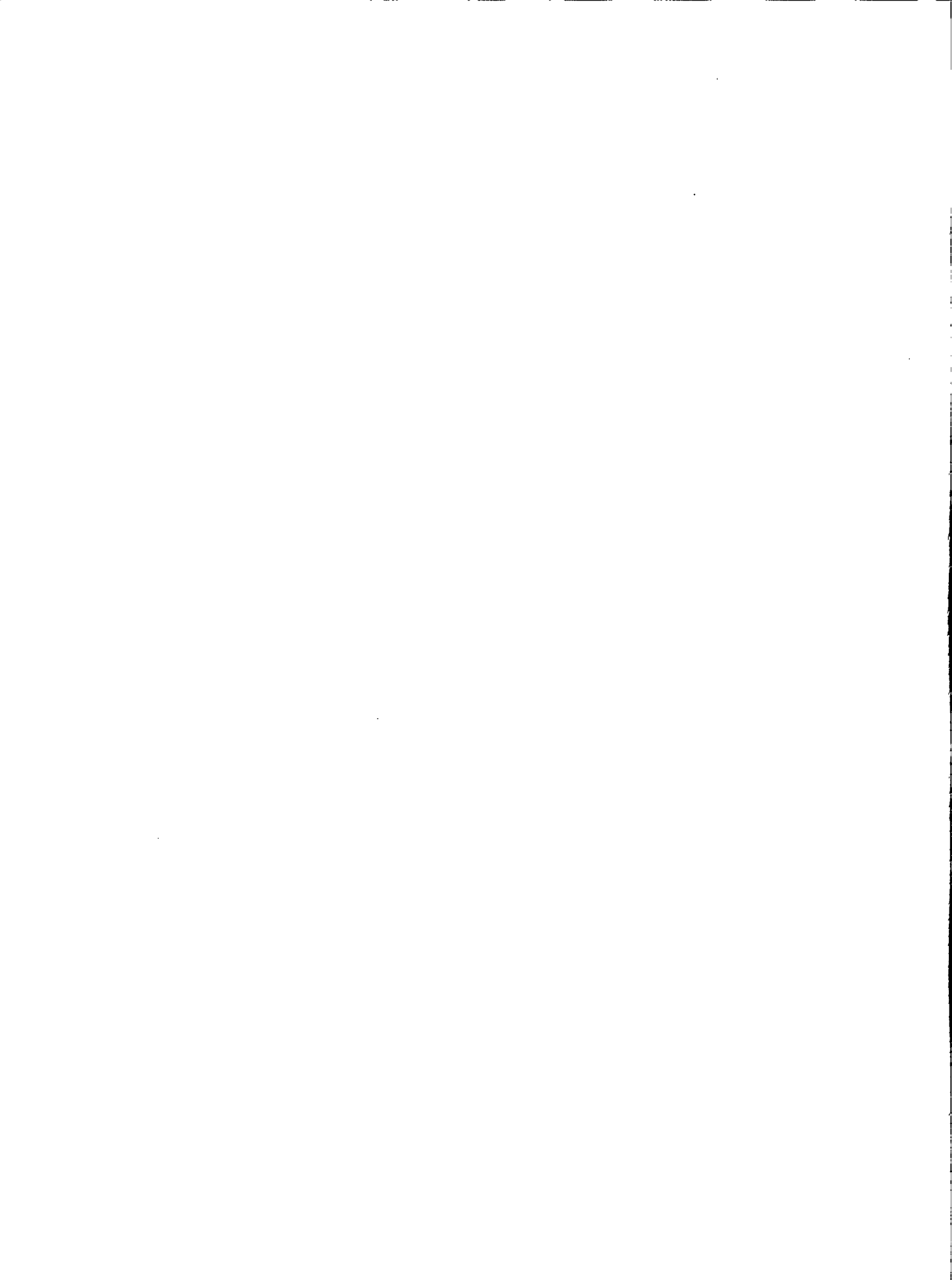
The graph of the monthly mean of daily calculations of Ekman transport normal to the coast (055°) from 51°N to 130°W (Fig. 9) is included for comparison with the monthly mean sea levels. Wickett and Thomson (1973) showed a direct relation exists between monthly mean sea levels at Prince Rupert and monthly mean Ekman transport calculated on an alternate 5° grid from monthly mean surface pressures. In Fig. 9 the computations were calculated on an alternate 2° grid from data extracted from daily pressure charts supplied by Pacific Weather Central, Atmospheric Environment Service, Richmond, B.C., and, therefore, should indicate more accurately the movement of the upper layer of the ocean.

ACKNOWLEDGMENT

My thanks to Mr. W. Percy Wickett, who suggested this report, for his advice and guidance throughout.

REFERENCE

- Wickett, W. P., and J. A. Thomson. 1973. Transport computations and Ekman transport charts for the North Pacific Ocean, 1971 (with a note on mean sea level). Fish. Res. Board Can. Tech. Rep. 308: 15 p.



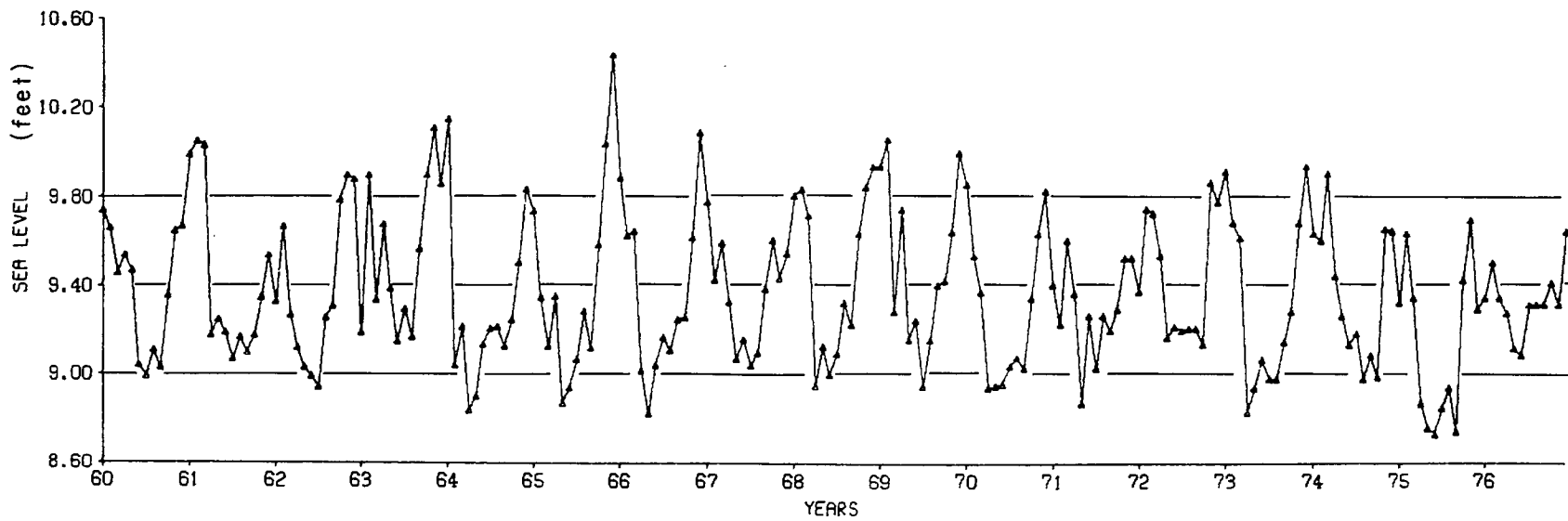
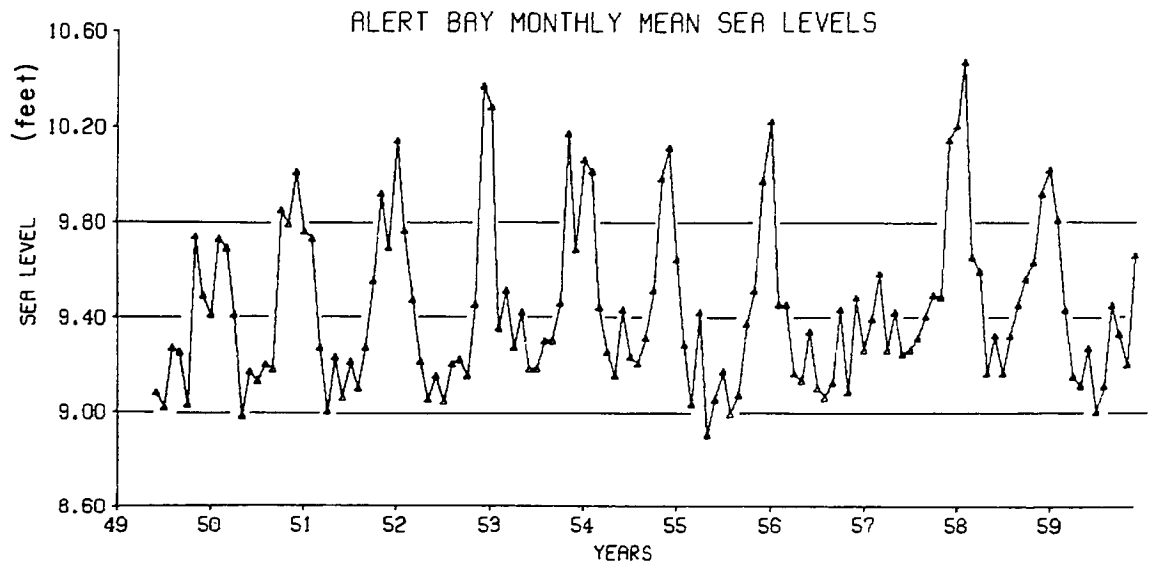
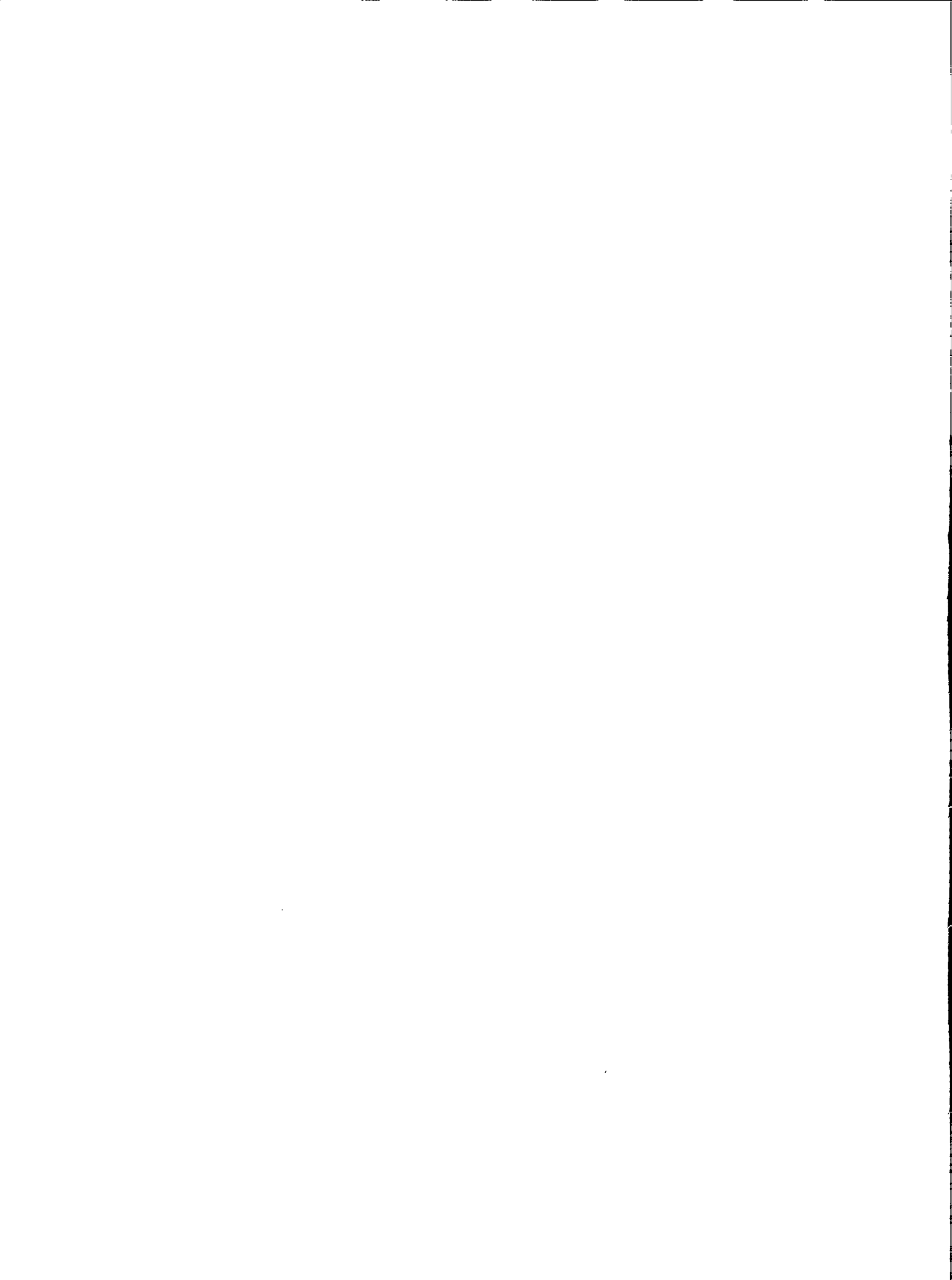


Fig. 1. Monthly mean sea level (ft) at Alert Bay, 1949-76 (January values are plotted immediately above the year).



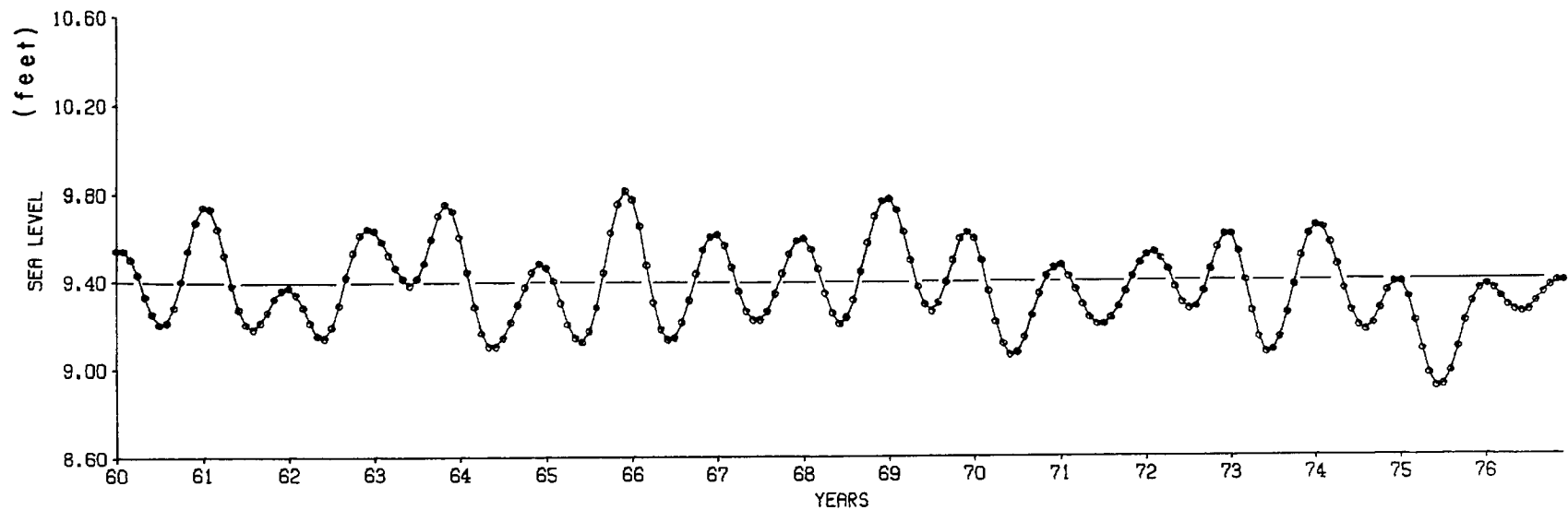
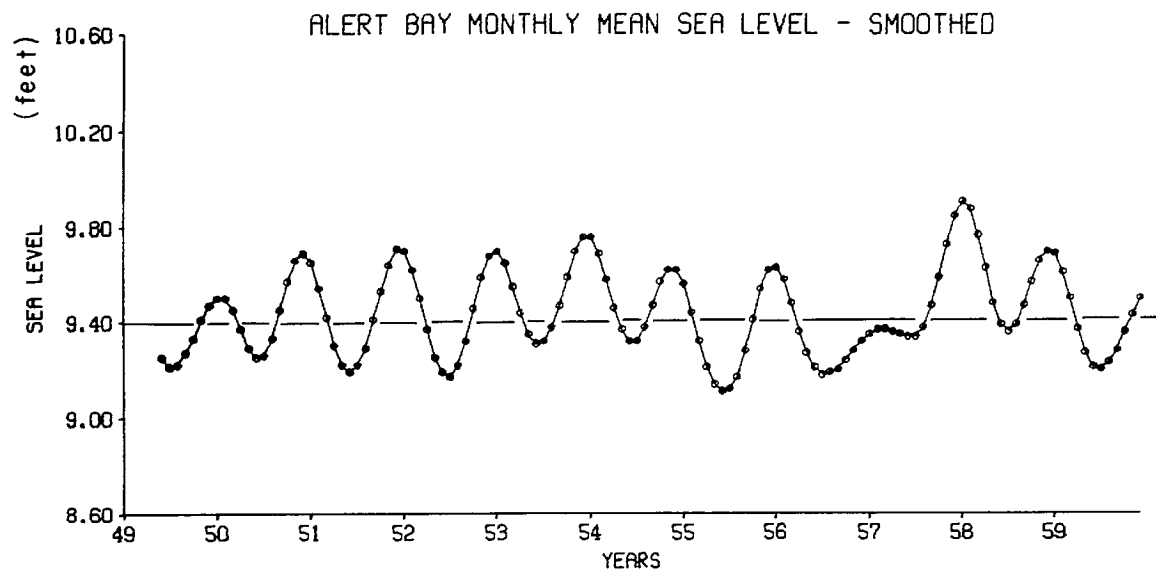


Fig. 2. Smoothed monthly mean sea level (ft) at Alert Bay, 1949-76 (January values are plotted immediately above the year).



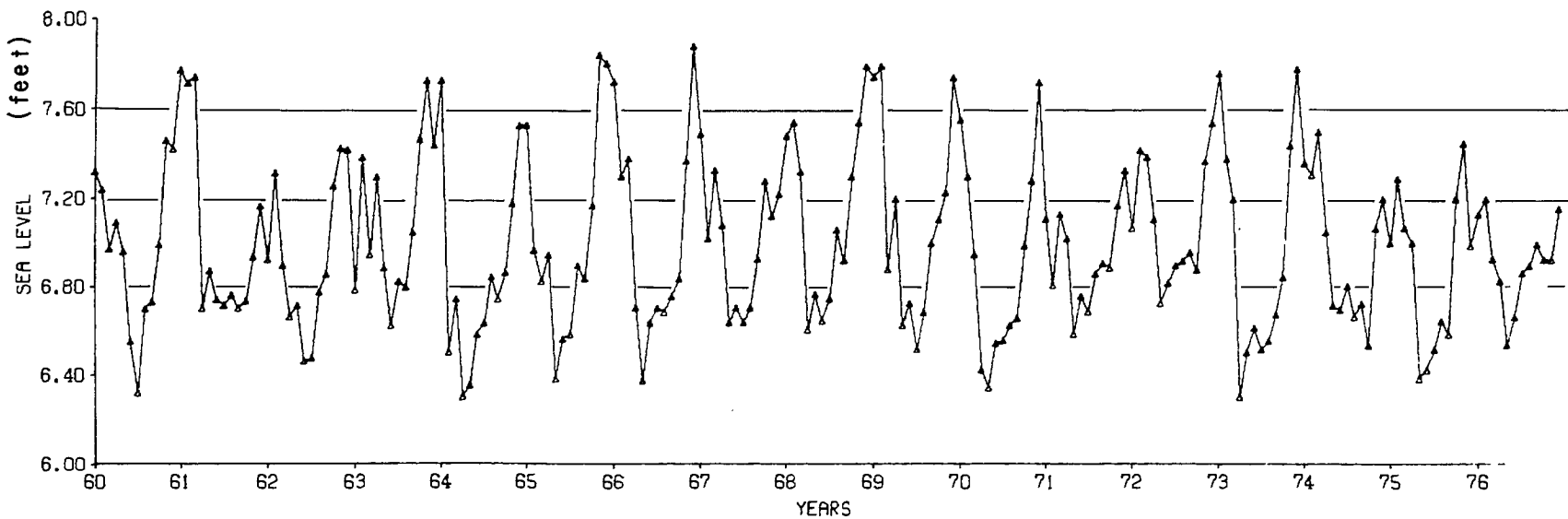
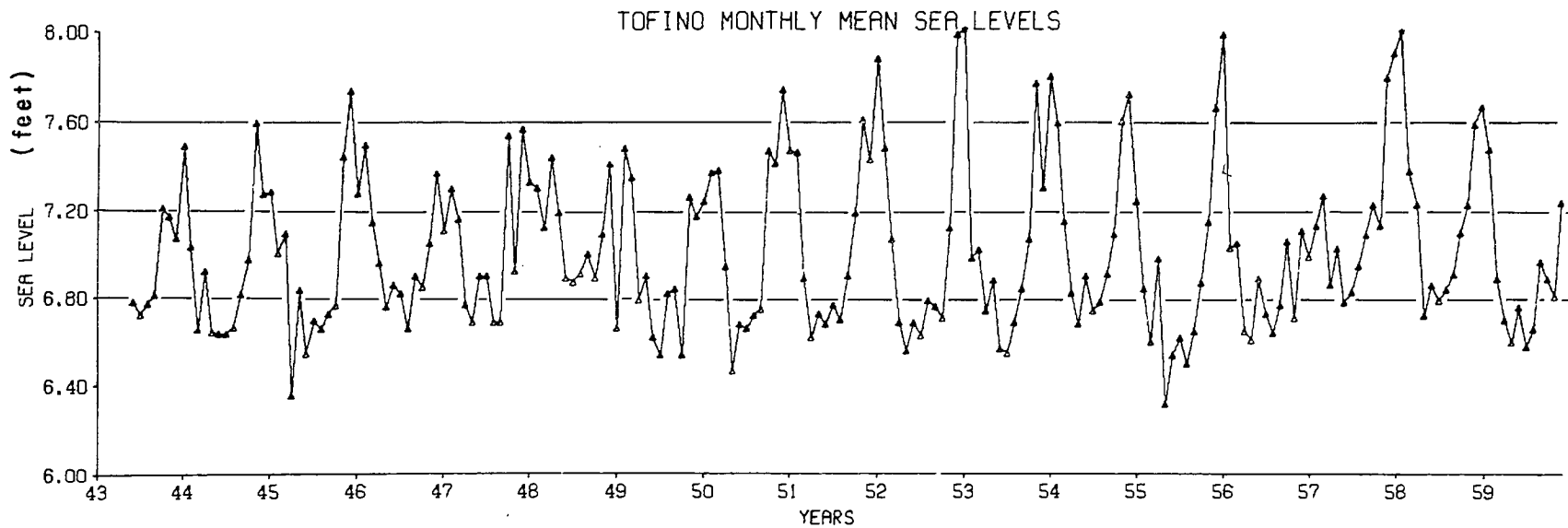


Fig. 3. Monthly mean sea level (ft) at Tofino, 1943-76 (January values are plotted immediately above the year).



TOFINO MONTHLY MEAN SEA LEVEL - SMOOTHED

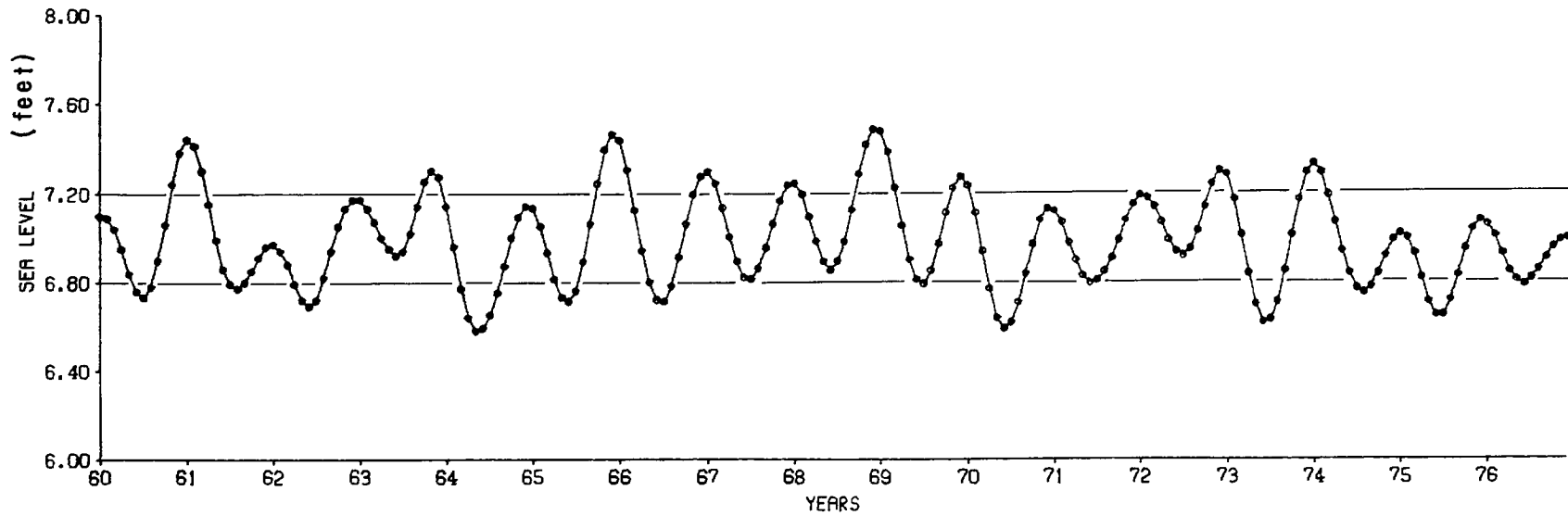
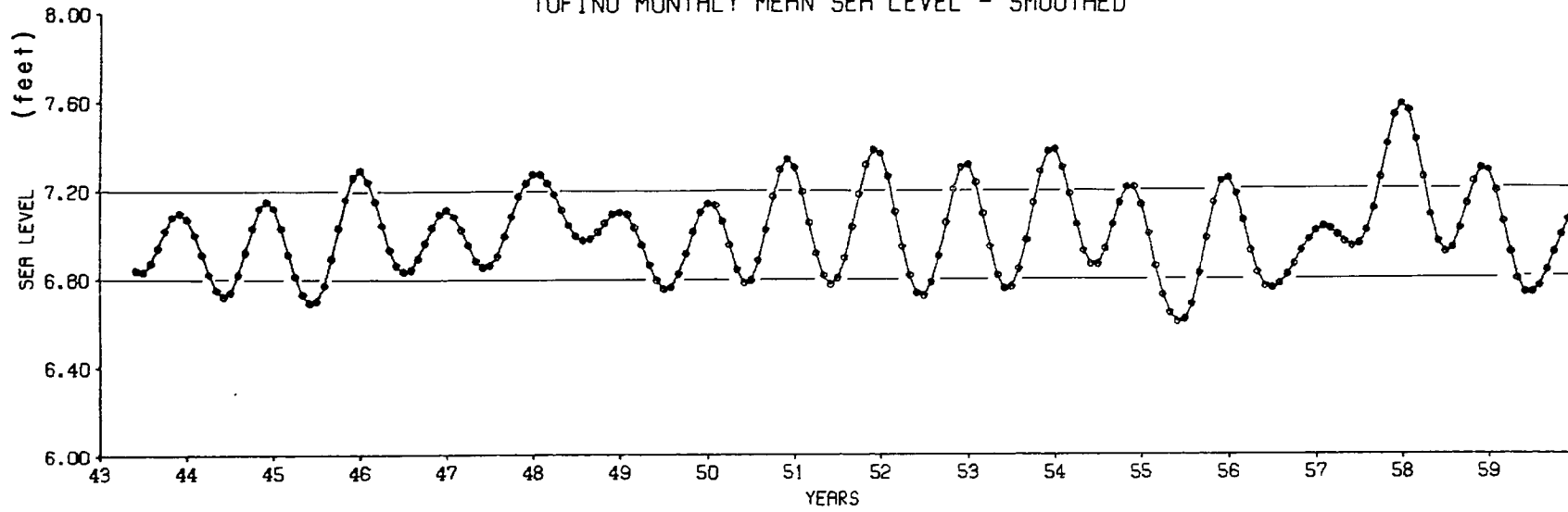


Fig. 4. Smoothed monthly mean sea level (ft) at Tofino, 1943-76 (January values are plotted immediately above the year).



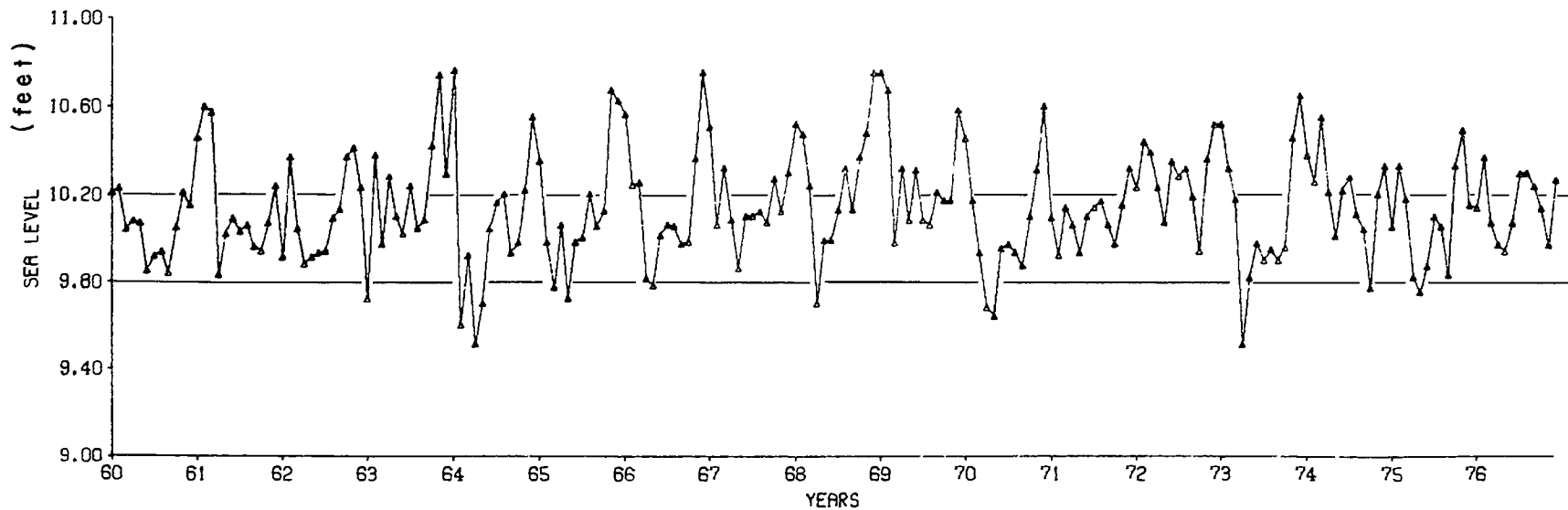
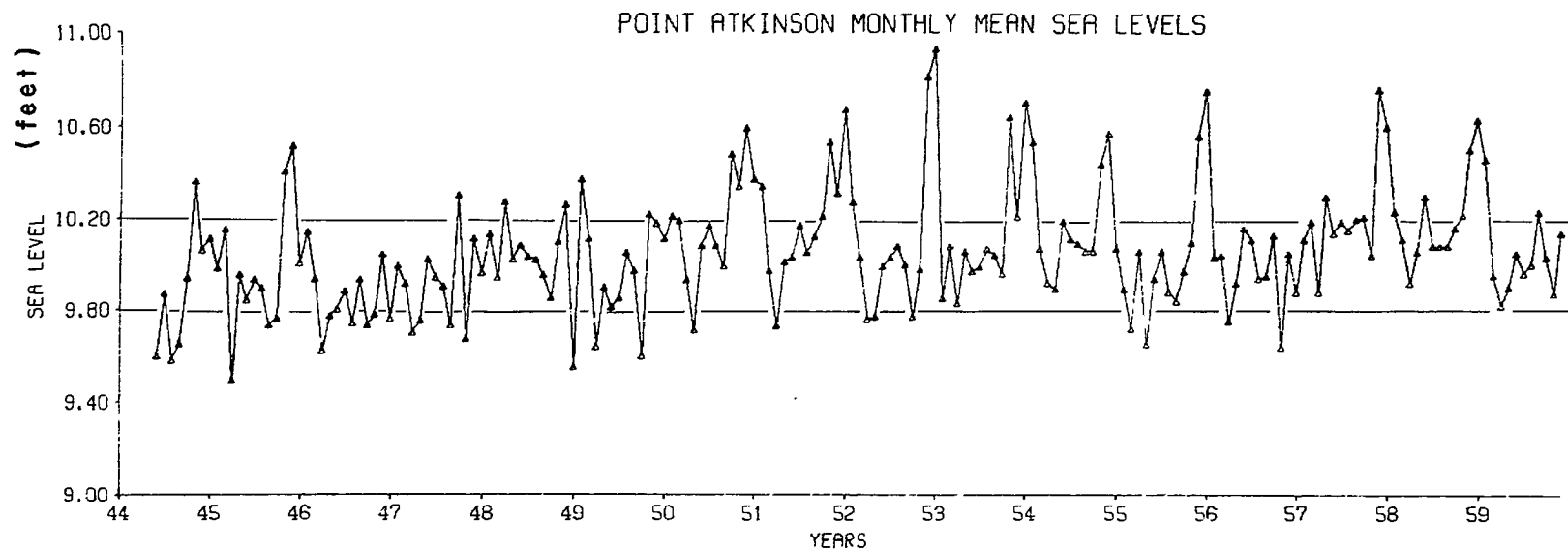


Fig. 5. Monthly mean sea level (ft) at Point Atkinson, 1944-76 (January values are plotted immediately above the year).



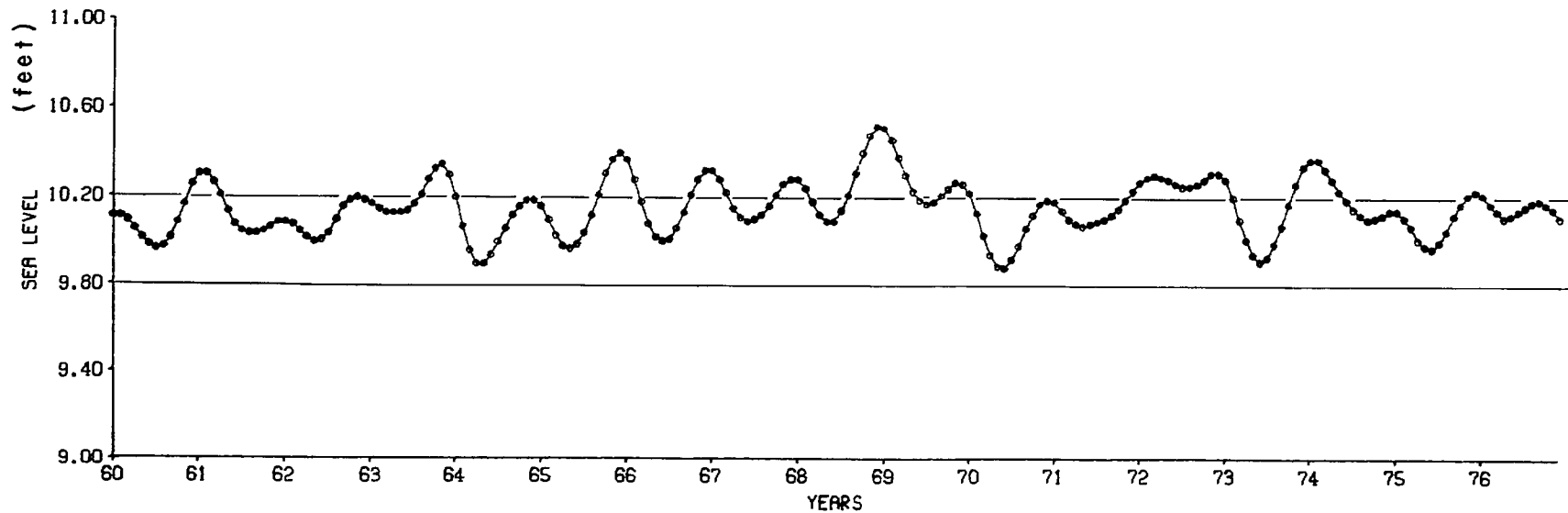
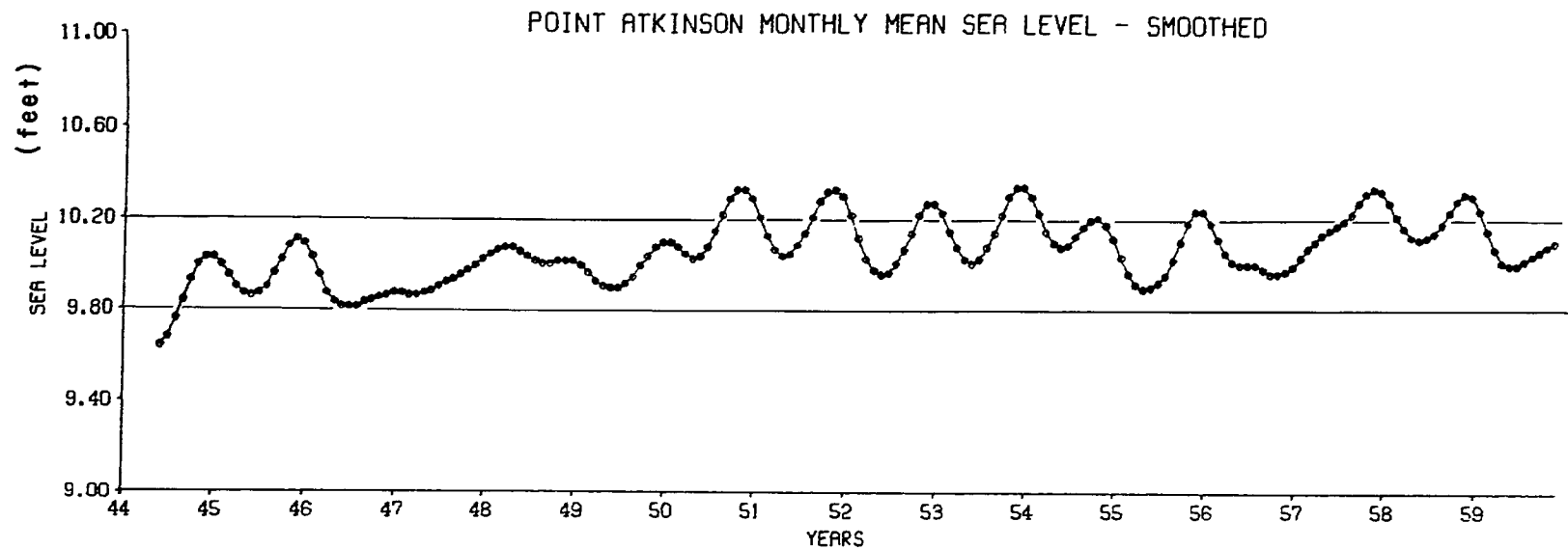


Fig. 6. Smoothed monthly mean sea level (ft) at Point Atkinson, 1944-76 (January values are plotted immediately above the year).



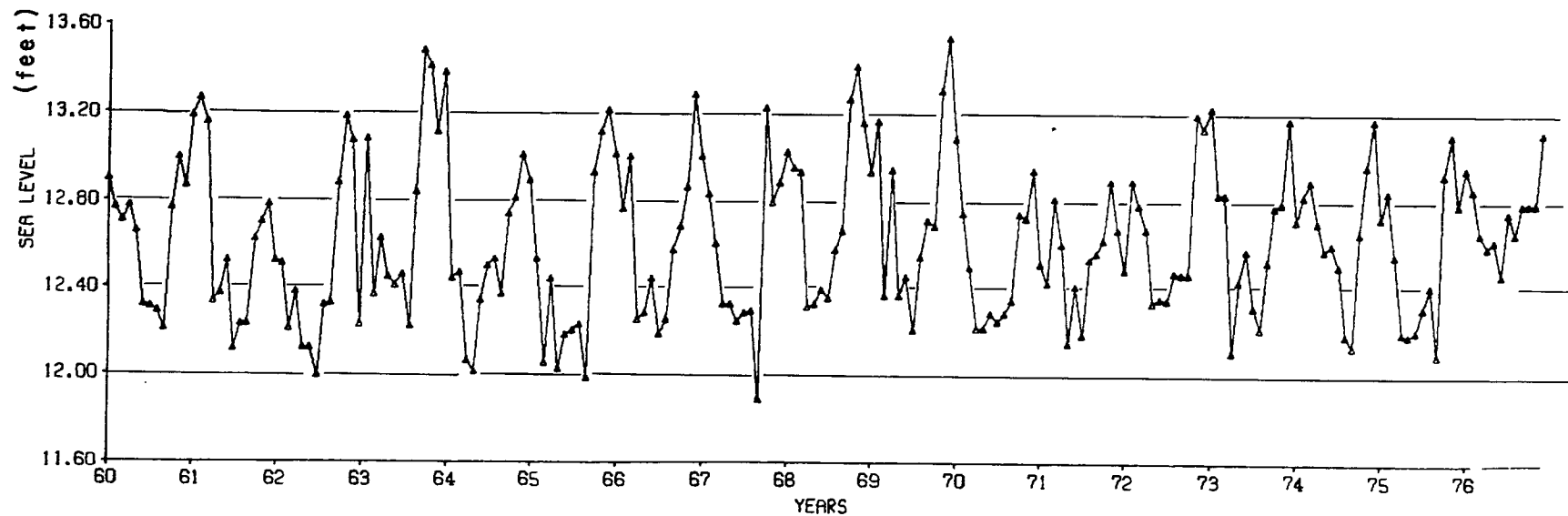
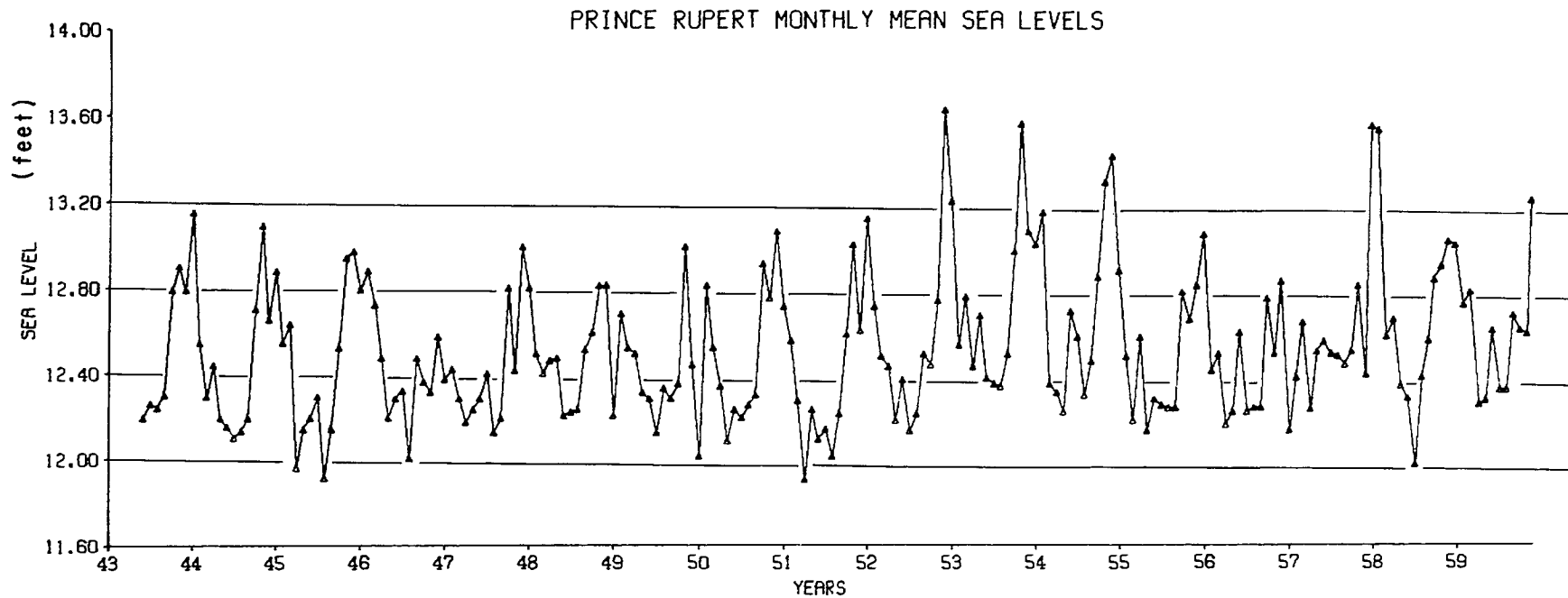


Fig. 7. Monthly mean sea level (ft) at Prince Rupert, 1943-76 (January values are plotted immediately above the year).



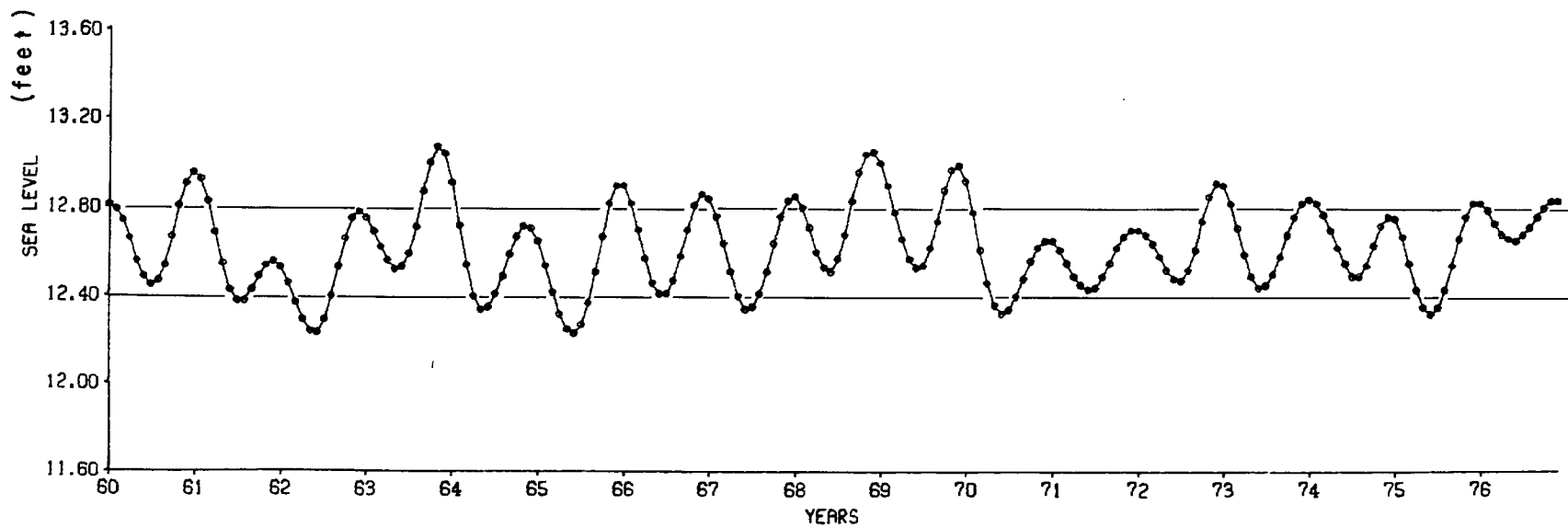
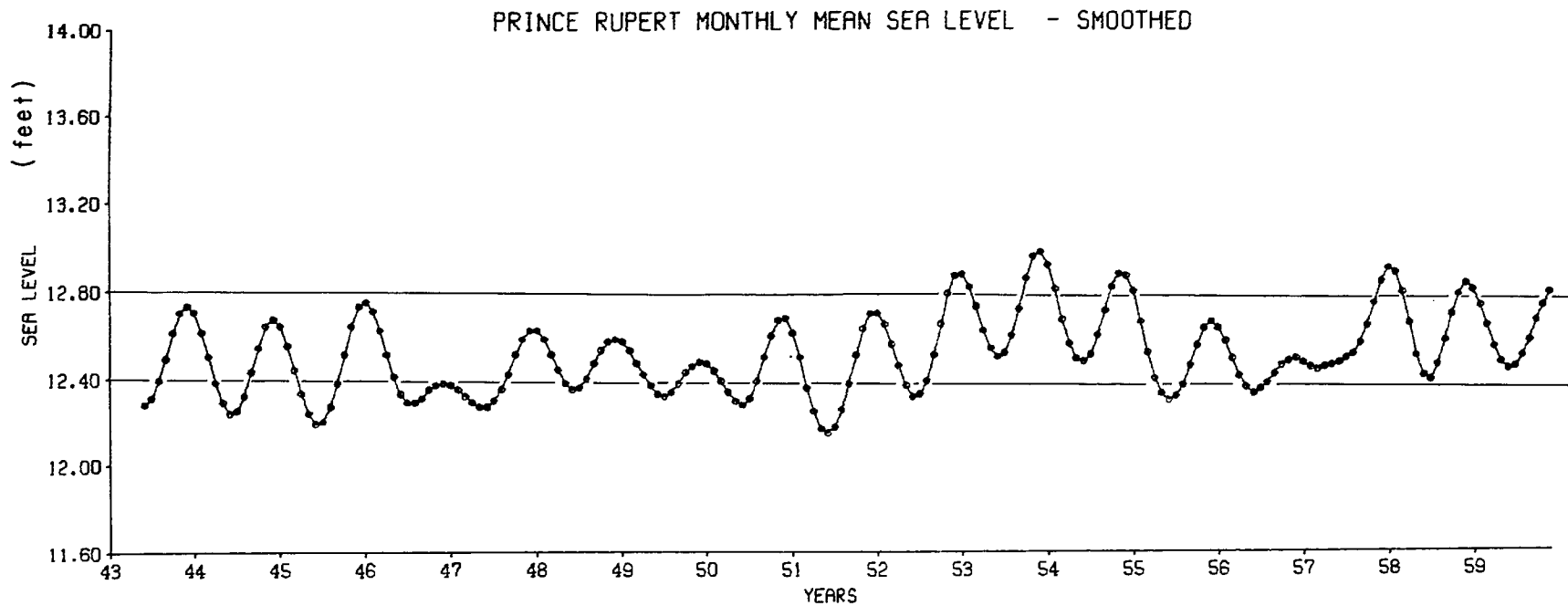


Fig. 8. Smoothed monthly mean sea level (ft) at Prince Rupert, 1943-76 (January values are plotted immediately above the year).



EKMAN TRANSPORT NORMAL TO COAST

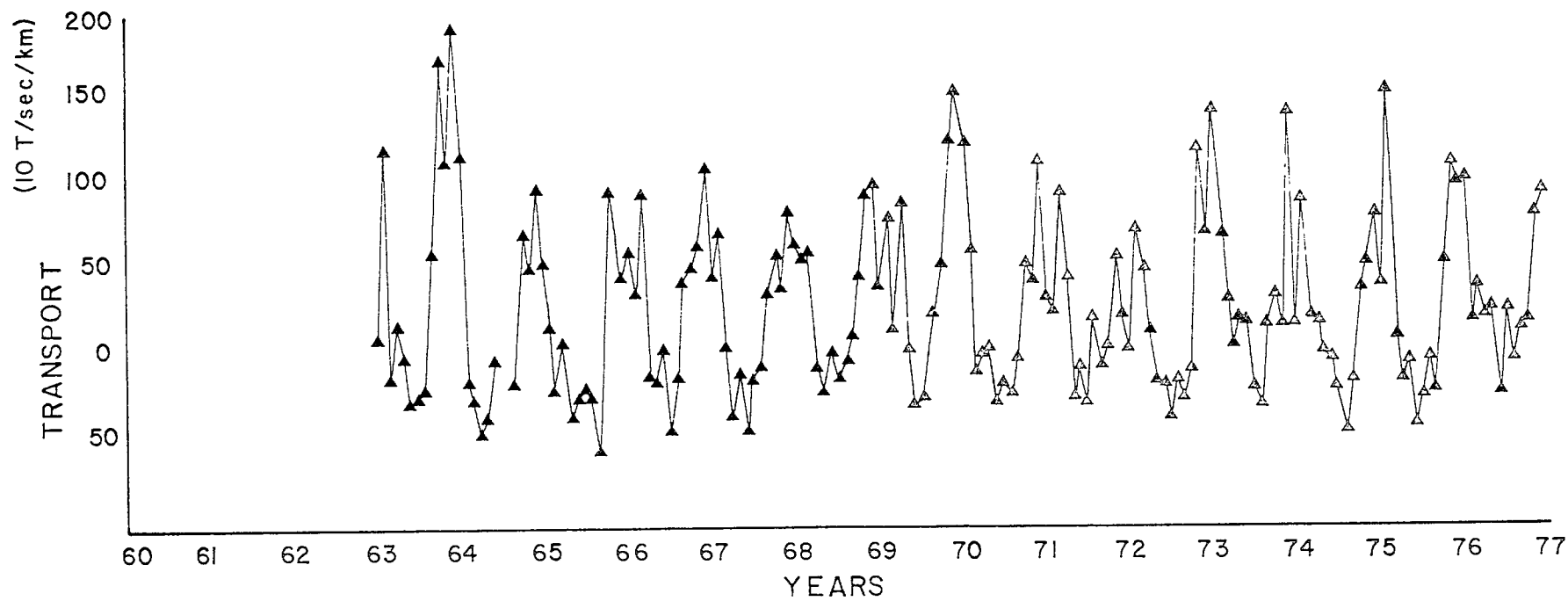


Fig. 9. Monthly mean Ekman transport normal to the coast. Transport components are resolved along 05° from 51°N 130°W .



Fisheries and Environment
Canada

Pêches et Environnement
Canada

0024040A

CANADA. FISHERIES & MARINE

SCIENTIFIC INFORMATION

FISHERIES & MARINE SERVICES

DATA REPORT