# Flow Chart for Sequence of the Planning

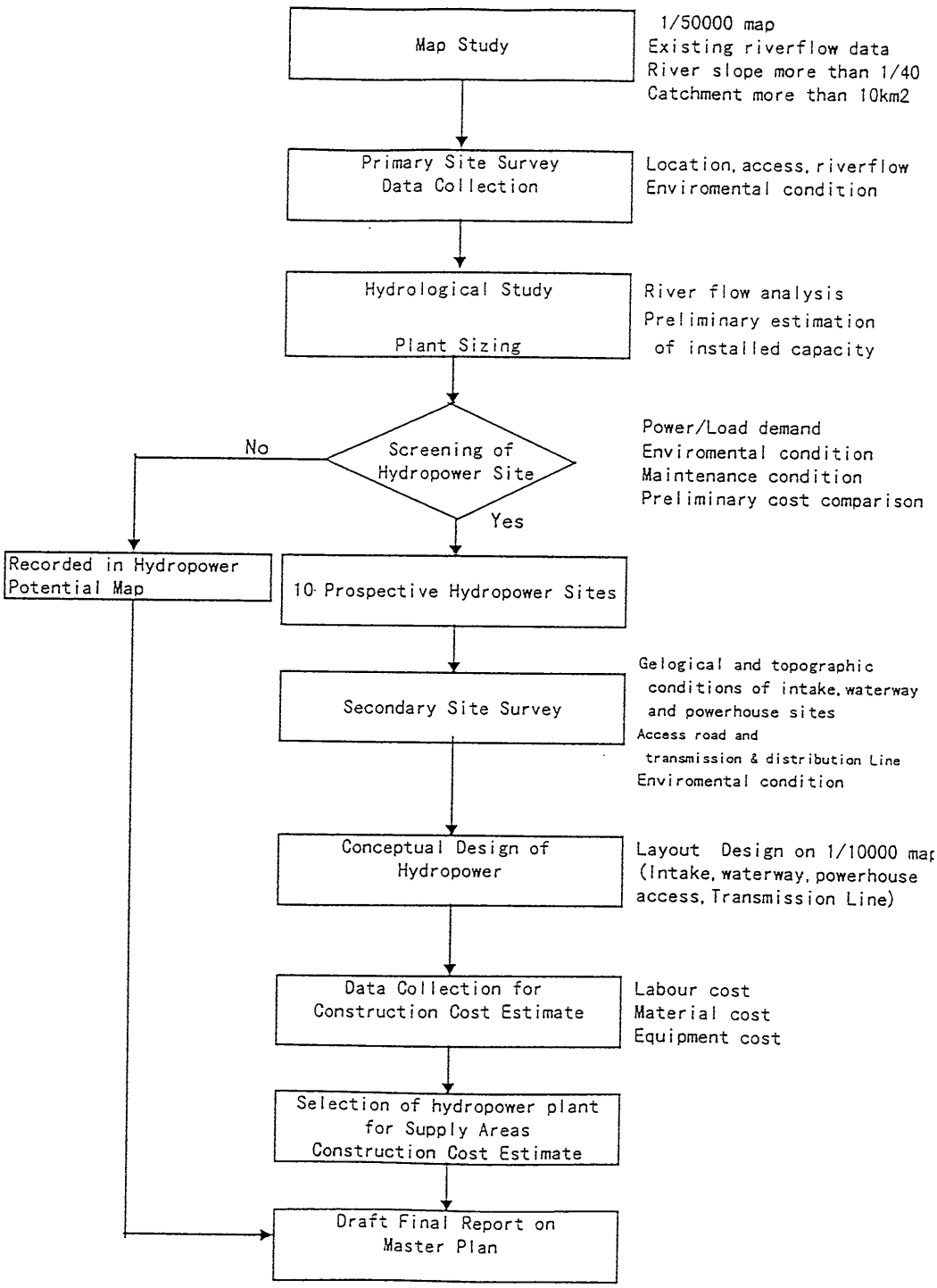
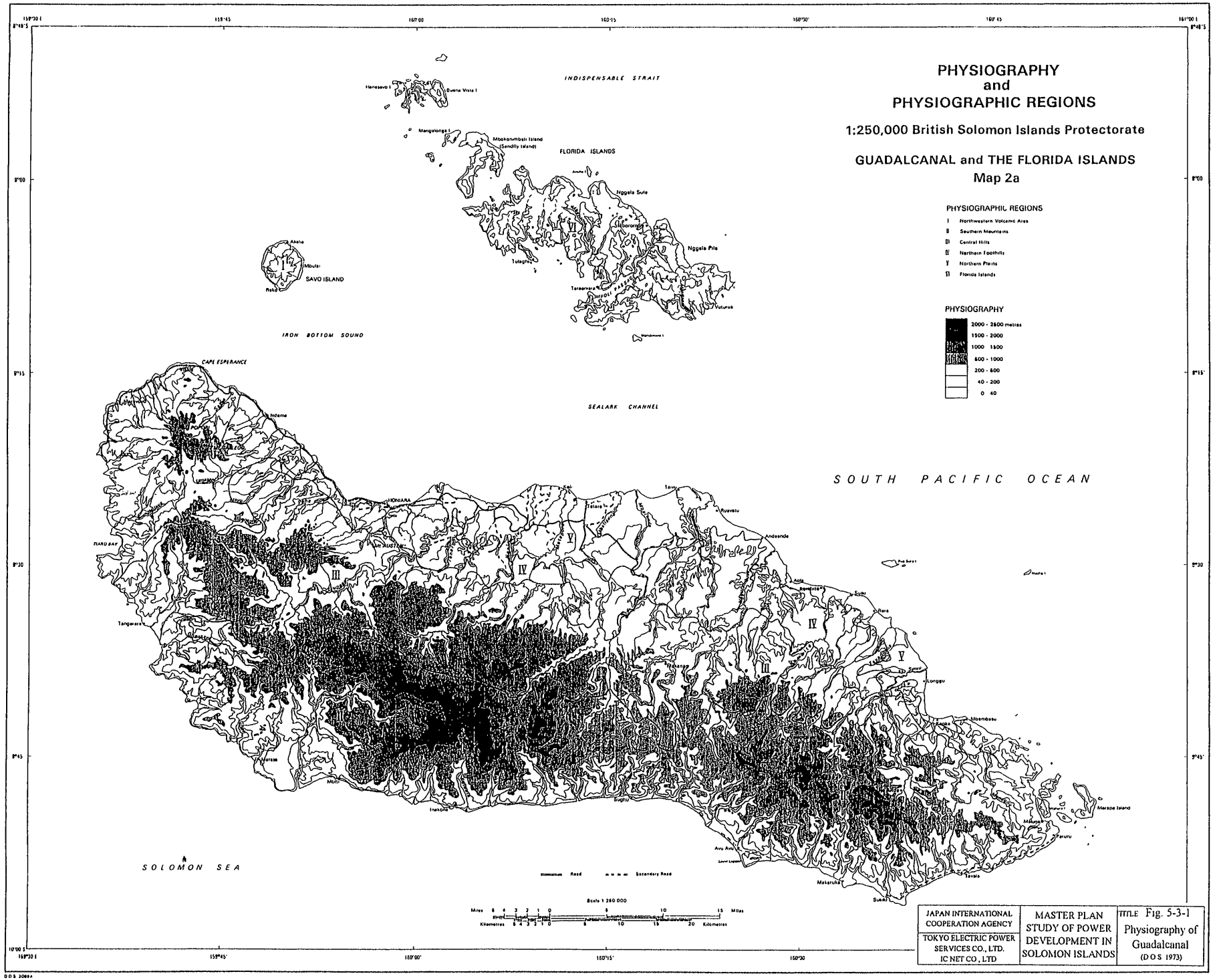
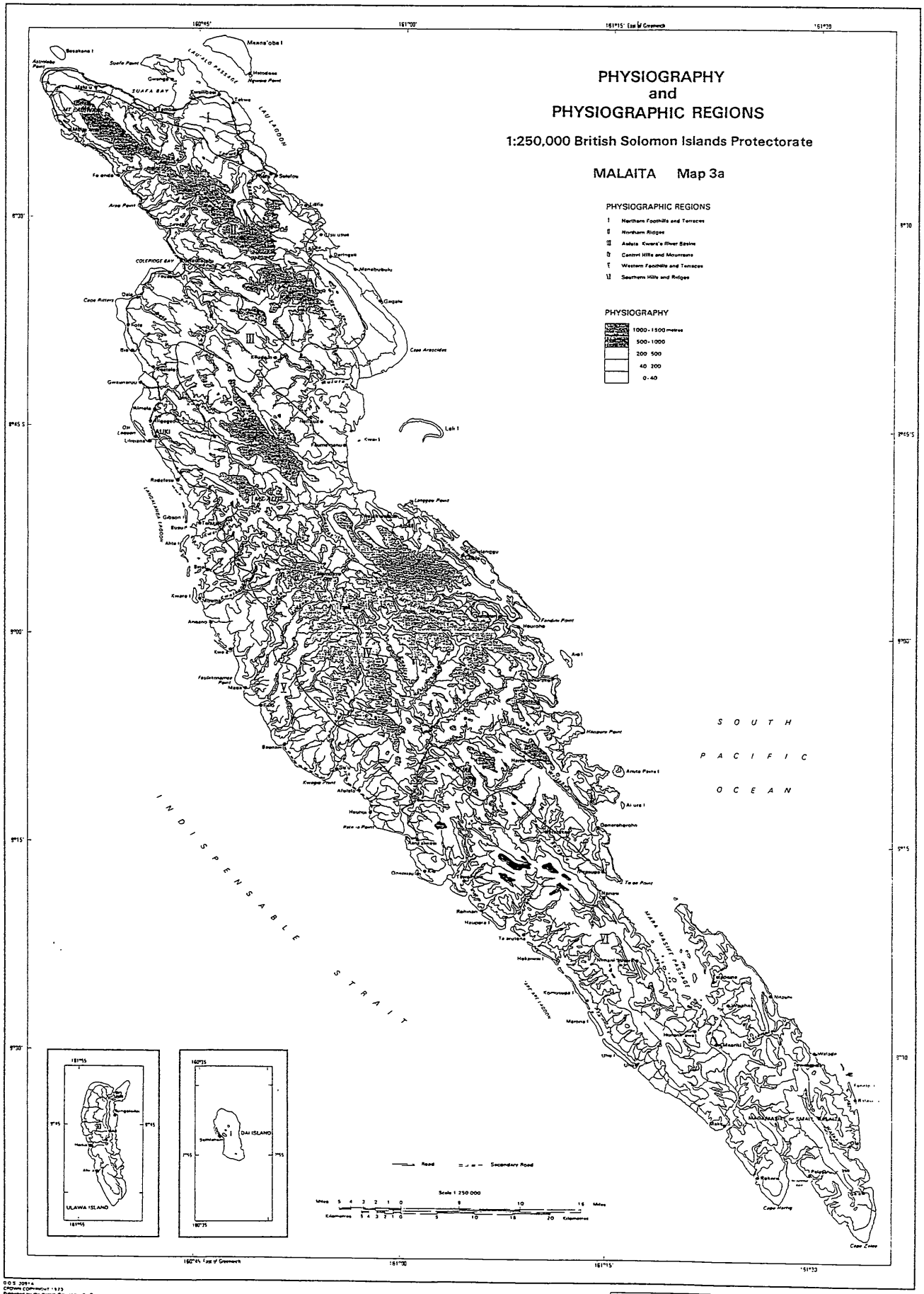



Fig. 5-2-1. Flow Chart for Sequence of the Planning

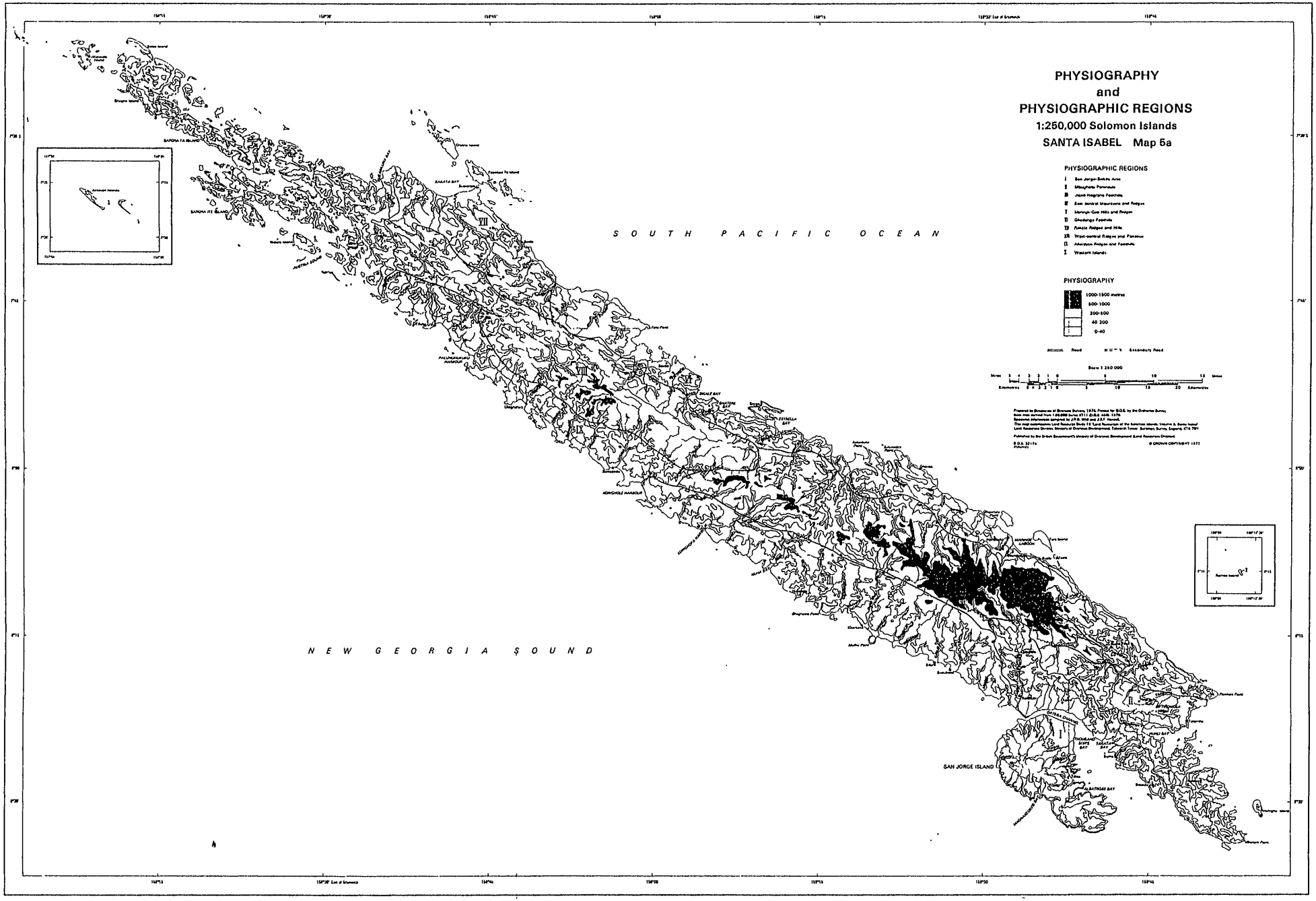

PHYSIOGRAPHY
and
PHYSIOGRAPHIC REGIONS
1:250,000 British Solomon Islands Protectorate
GUADALCANAL and THE FLORIDA ISLANDS
Map 2a
PHYSIOGRAPHIC REGIONS
I Northwestern Volcanic Area
II Southern Mountains
III Central Hills
IV Northern Foothills
V Northern Plains
VI Florida Islands
PHYSIOGRAPHY
2000 - 2600 metres
1500 - 2000
1000 1500
500 - 1000
200 - 500
40 - 200
0 40
INDISPENSABLE STRAIT
FLORIDA ISLANDS
SAVO ISLAND
IRON BOTTOM SOUND
SEALARK CHANNEL
SOUTH PACIFIC OCEAN
SOLOMON SEA
CAPE ESPERANCE
HONIARA
Andesende
Tangarare
Longgu
Marapa Island
Makuruka
Tavala
Sukai
Avu Avu
Inakoha
Sughtu
Mbambatu
Road
Secondary Road
Scale 1 250 000
Miles
Kilometres
JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO ELECTRIC POWER SERVICES CO., LTD.
IC NET CO., LTD
MASTER PLAN STUDY OF POWER DEVELOPMENT IN SOLOMON ISLANDS
TITLE Fig. 5-3-1
Physiography of Guadalcanal
(D O S 1973)



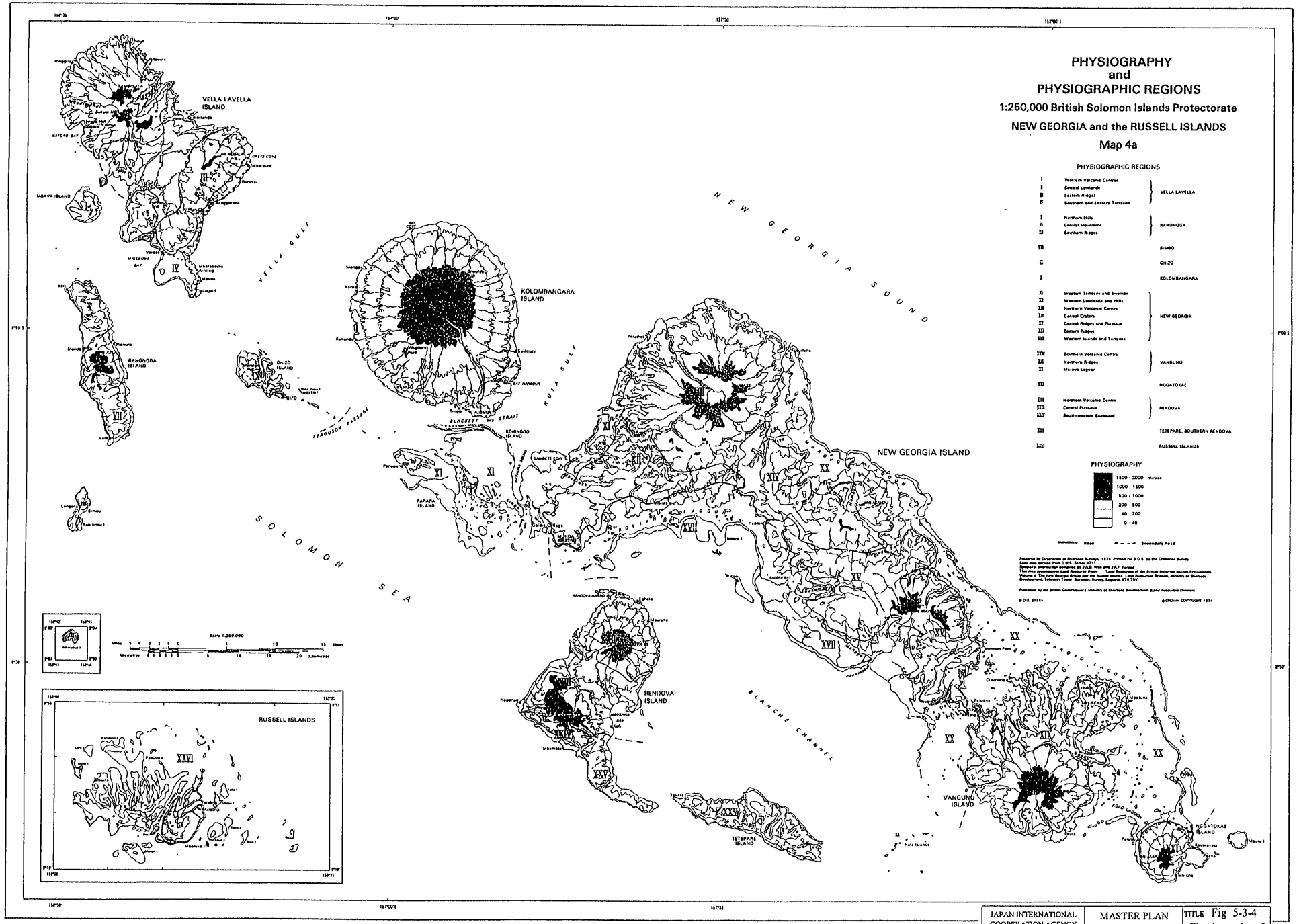

| JAPAN INTERNATIONAL COOPERATION AGENCY | MASTER PLAN STUDY OF POWER DEVELOPMENT IN SOLOMON ISLANDS | TITLE Fig. 5-3-2 Physiography of Malaita (D O S 1973) |
|---|---|---|
| TOKYO ELECTRIC POWER SERVICES CO., LTD<br>IC NET CO., LTD | | |



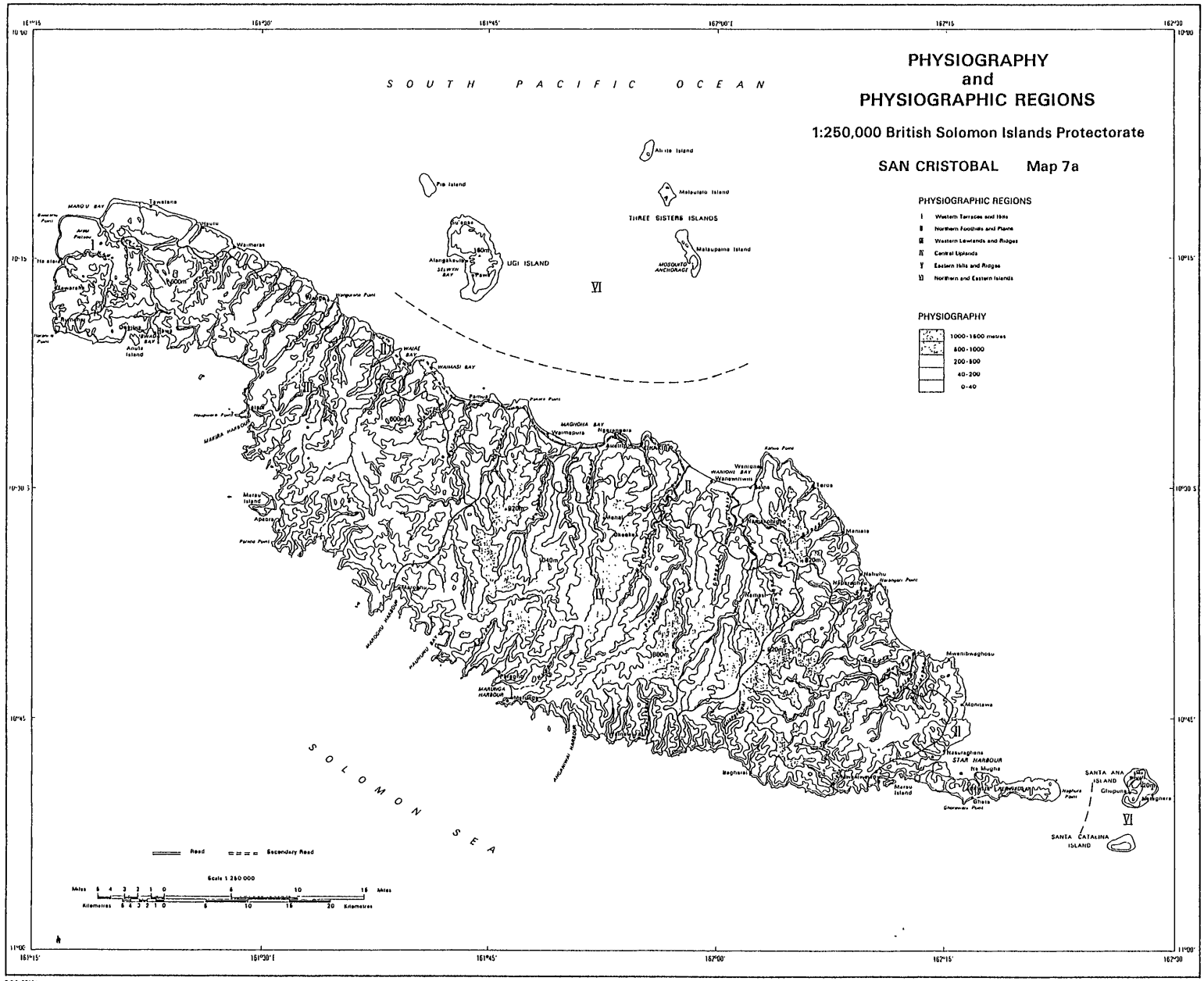
90




| JAPAN INTERNATIONAL COOPERATION AGENCY | MASTER PLAN STUDY OF POWER DEVELOPMENT IN SOLOMON ISLANDS | TITLE Fig. 5-3-3 Physiography of Santa Isabel (D O S 1977) |
|---|---|---|
| TOKYO ELECTRIC POWER SERVICES CO., LTD<br>IC NET CO., LTD | | |

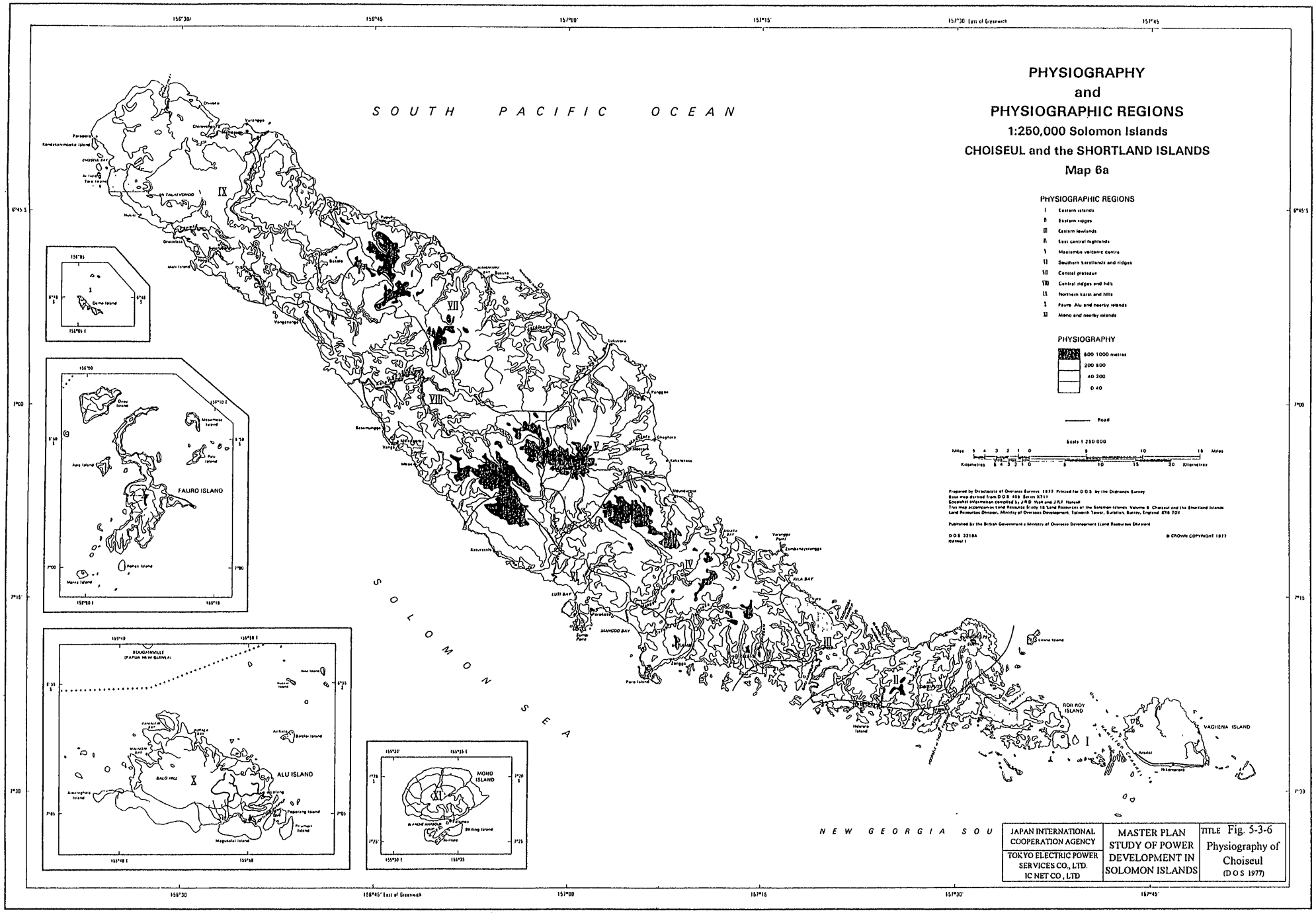


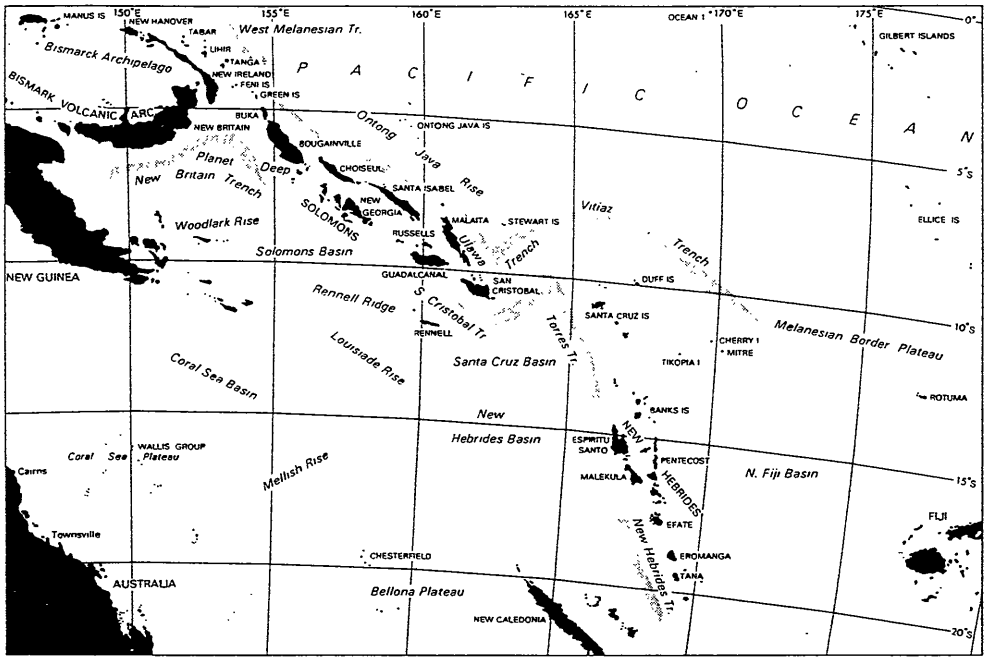

| JAPAN INTERNATIONAL COOPERATION AGENCY | MASTER PLAN STUDY OF POWER DEVELOPMENT IN SOLOMON ISLANDS | TITLE Fig 5-3-4 Physiography of New Georgia Group (D.O.S. 1974) |
|---|---|---|
| TOKYO ELECTRIC POWER SERVICES CO., LTD. IC NET CO., LTD | | |



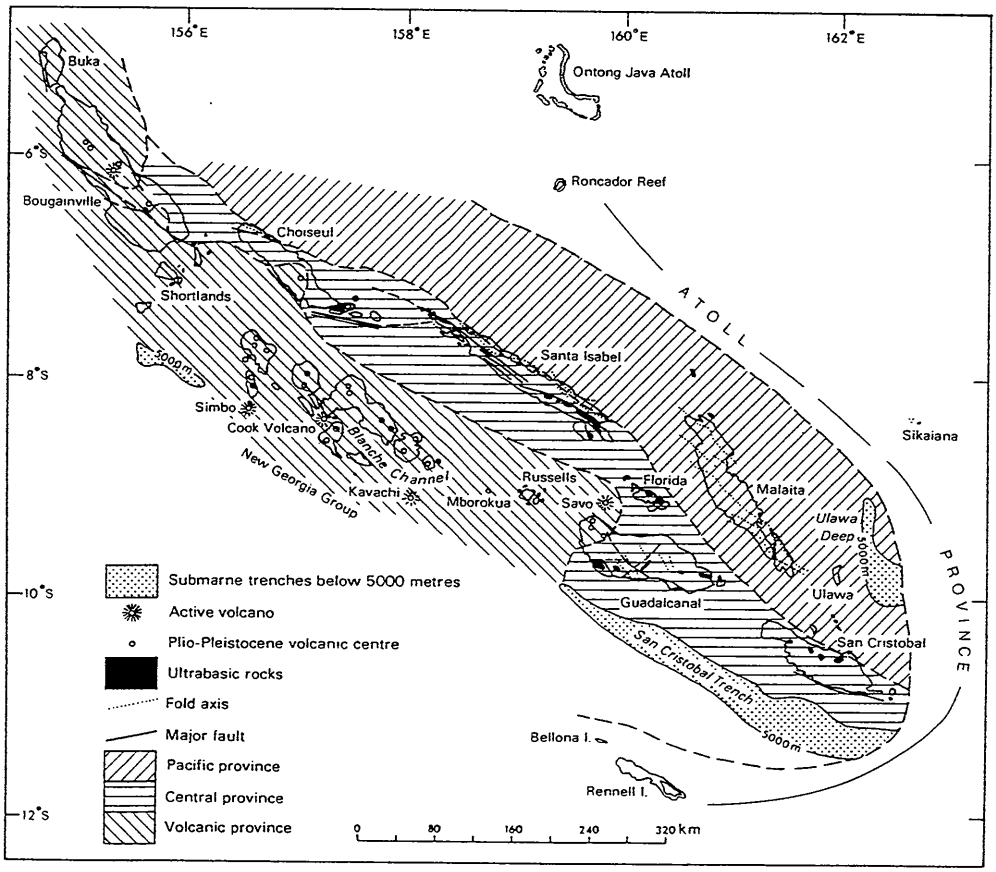



| JAPAN INTERNATIONAL COOPERATION AGENCY | MASTER PLAN STUDY OF POWER DEVELOPMENT IN SOLOMON ISLANDS | TITLE Fig. 5-3-5 Physiography of San Cristobal (DOS 1975) |
|---|---|---|
| TOKYO ELECTRIC POWER SERVICES CO., LTD<br>IC NET CO., LTD | | |


PHYSIOGRAPHY
and
PHYSIOGRAPHIC REGIONS
1:250,000 Solomon Islands
CHOISEUL and the SHORTLAND ISLANDS
Map 6a
PHYSIOGRAPHIC REGIONS
I Eastern islands
II Eastern ridges
III Eastern lowlands
IV East central highlands
V Mastamba volcanic centre
VI Southern karstlands and ridges
VII Central plateau
VIII Central ridges and hills
IX Northern karst and hills
X Faura, Alu and nearby islands
XI Mono and nearby islands
PHYSIOGRAPHY
800 1000 metres
200 800
40 200
0 40
Road
Scale 1 250 000
Miles 5 4 3 2 1 0 5 10 15 Miles
Kilometres 8 6 4 2 0 8 10 15 20 Kilometres
Prepared by Directorate of Overseas Surveys 1977 Printed for D O S by the Ordnance Survey
Base map derived from D O S 458 Series X711
Specialist information compiled by J R D Wyatt and J R F Hansell
This map accompanies Land Resource Study 18 Land Resources of the Solomon Islands Volume 6 Choiseul and the Shortland Islands
Land Resources Division, Ministry of Overseas Development, Tolworth Tower, Surbiton, Surrey, England KT6 7DY
Published by the British Government s Ministry of Overseas Development (Land Resources Division)
D O S 3318A
© CROWN COPYRIGHT 1977
SOUTH PACIFIC OCEAN
SOLOMON SEA
NEW GEORGIA SOU
FAURO ISLAND
ALU ISLAND
MONO ISLAND
ROB ROY ISLAND
VAGHENA ISLAND
BOUGAINVILLE (PAPUA NEW GUINEA)
JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO ELECTRIC POWER SERVICES CO., LTD.
IC NET CO., LTD
MASTER PLAN STUDY OF POWER DEVELOPMENT IN SOLOMON ISLANDS
TITLE Fig. 5-3-6
Physiography of Choiseul
(D O S 1977)



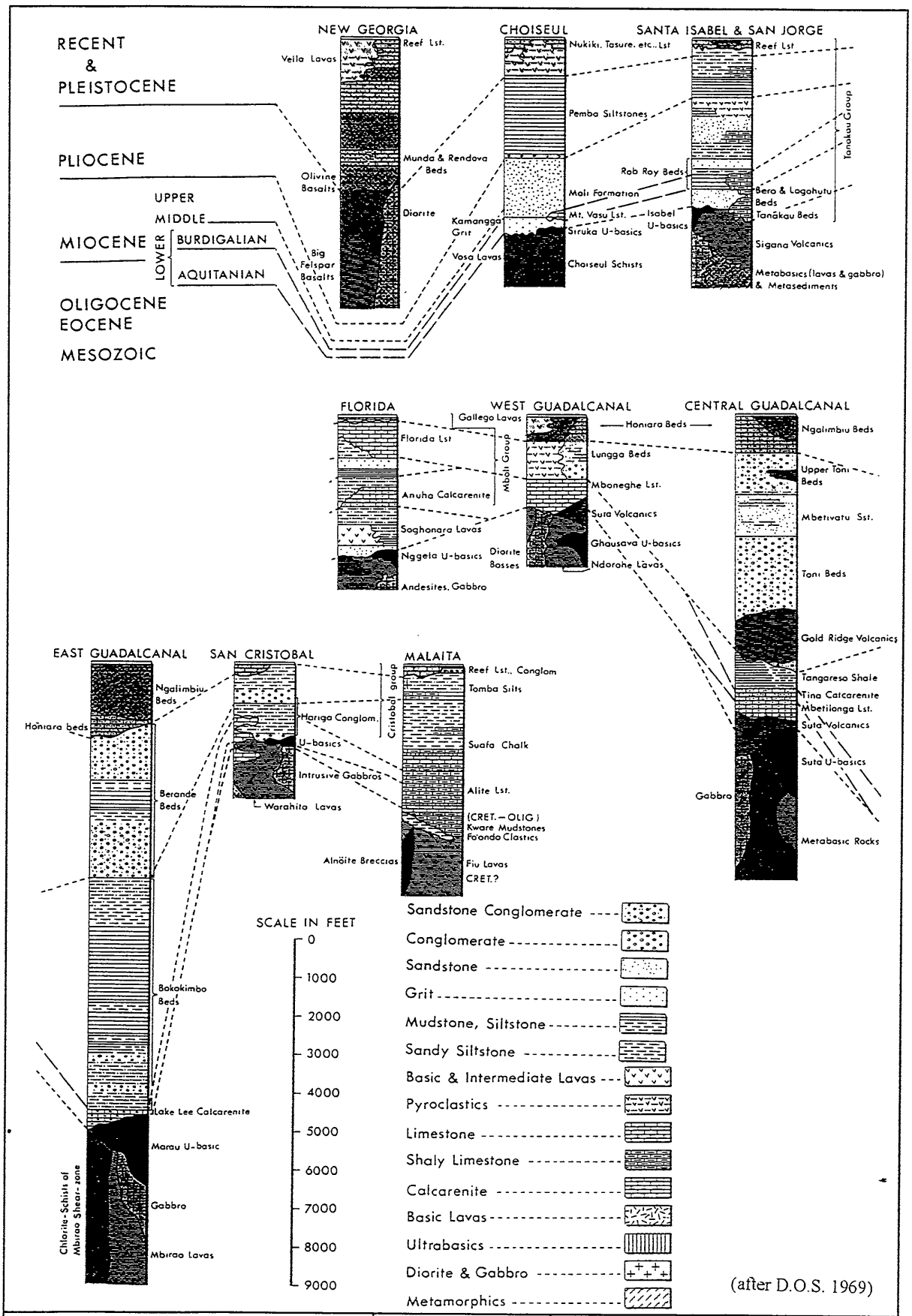

Map of the Melanesian archipelagos




The geological provinces of the Solomon Islands

(after Hackman 1980)

| | | |
|---|---|---|
| JAPAN INTERNATIONAL COOPERATION AGENCY | MASTER PLAN STUDY OF POWER DEVELOPMENT IN SOLOMON ISLANDS | TITLE<br>Fig. 5-3-7 Geological setting and Provinces of the Solomon Islands |
| TOKYO ELECTRIC POWER SERVICES CO., LTD.<br>IC NET CO., LTD | | |




(after D.O.S. 1969)

| JAPAN INTERNATIONAL COOPERATION AGENCY | MASTER PLAN STUDY OF POWER DEVELOPMENT IN SOLOMON ISLANDS | TITLE Fig. 5-3-8 Generalized Stratigraphy of the Solomon Islands |
|---|---|---|
| TOKYO ELECTRIC POWER SERVICES CO., LTD. IC NET CO., LTD | | |

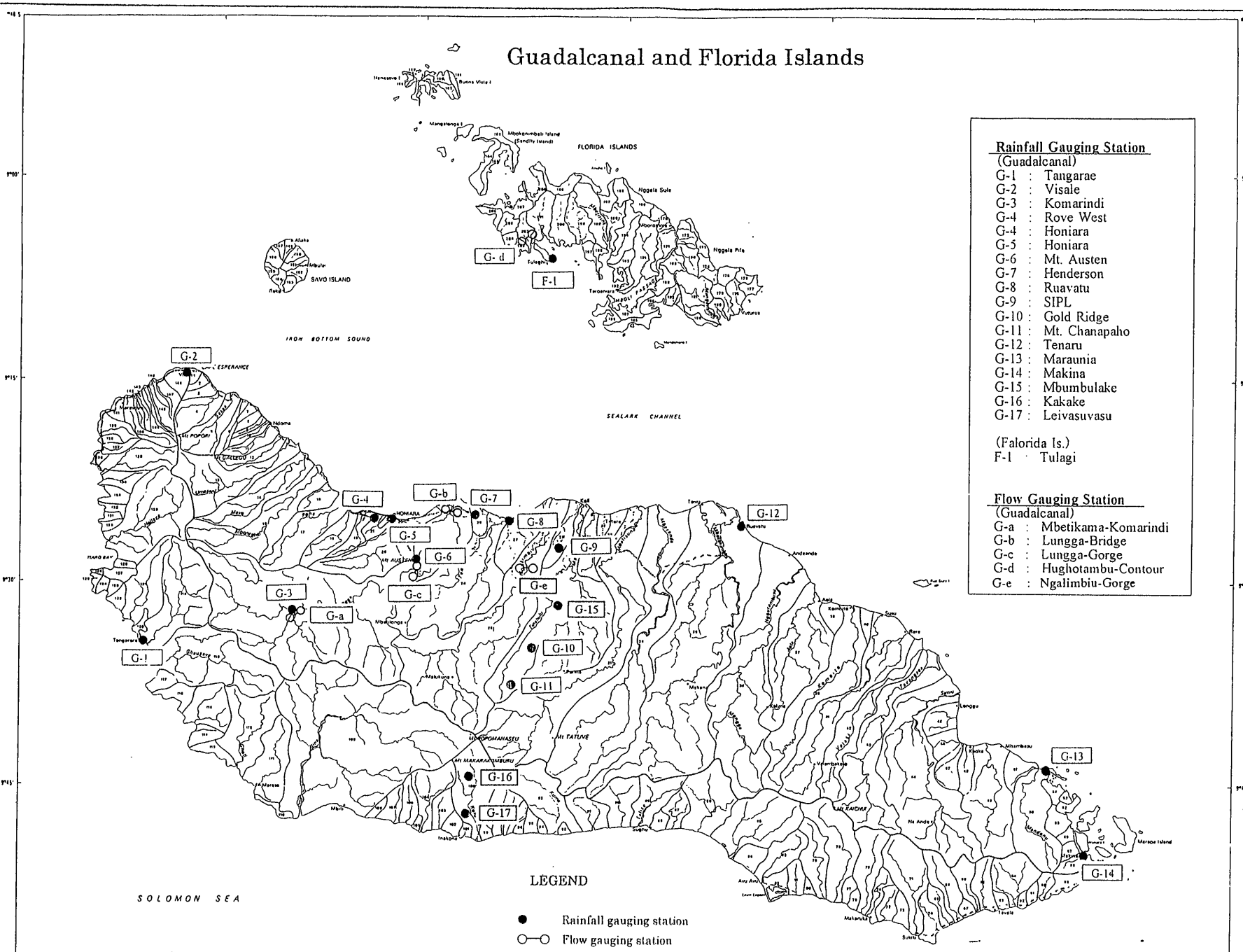



Fig. 5-3-9 Location Map of Meteorological Station (Guadalcanal and Florida Is.)

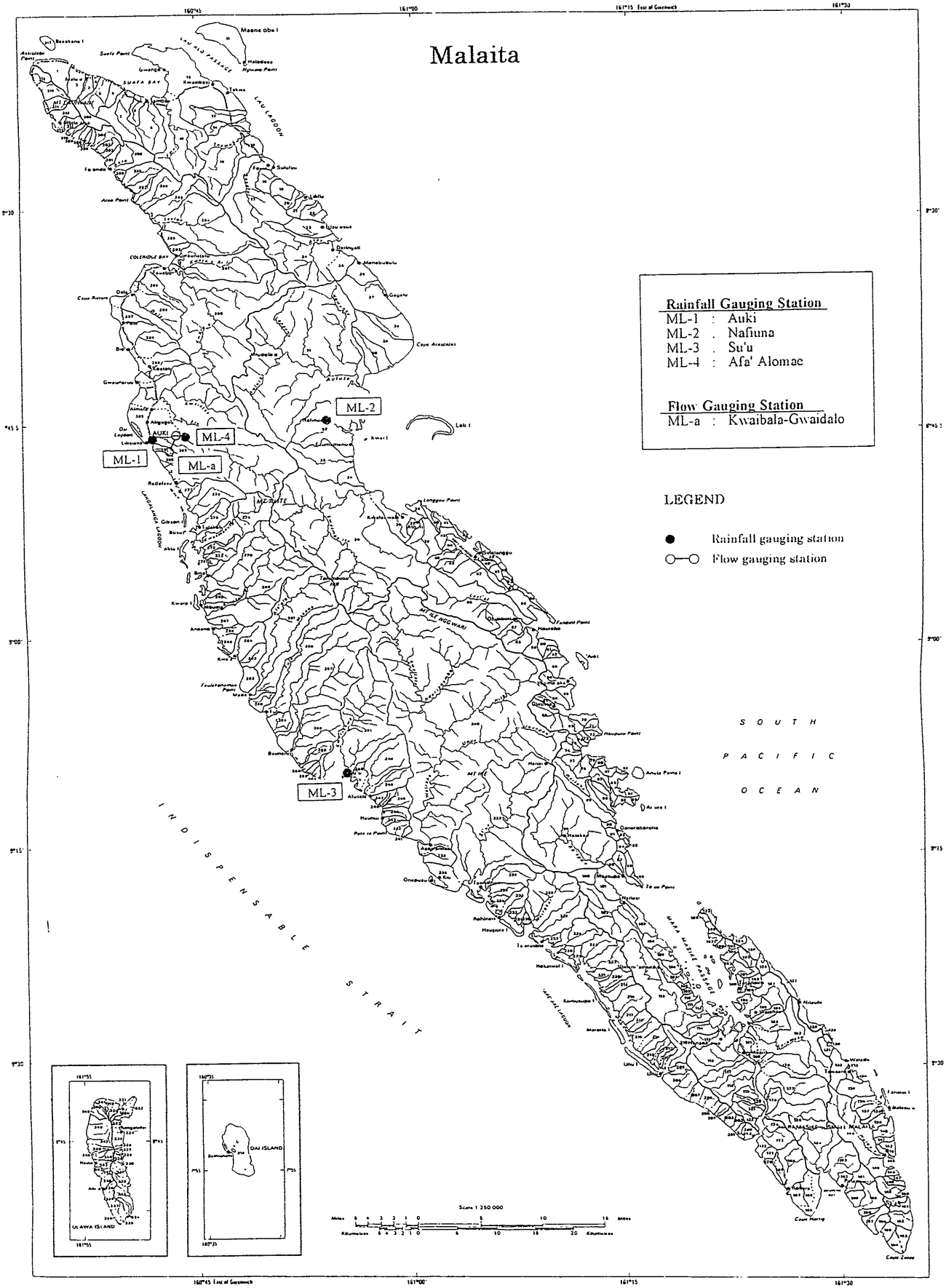



Fig. 5-3-10 Location Map of Meteorological Station (Malaita)

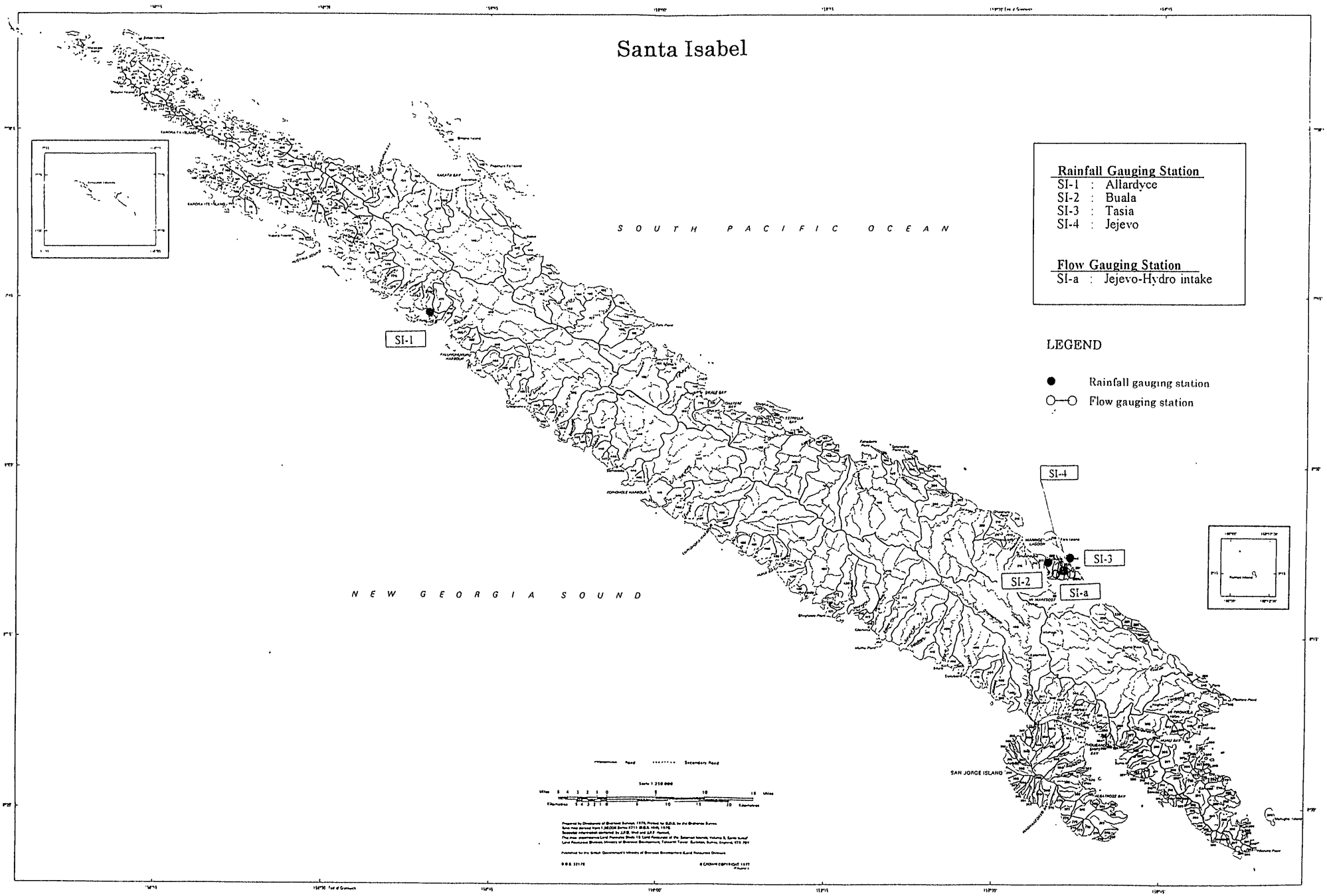



Fig. 5-3-11 Location Map of Meteorological Station (Santa Isabel)

# San Cristobal

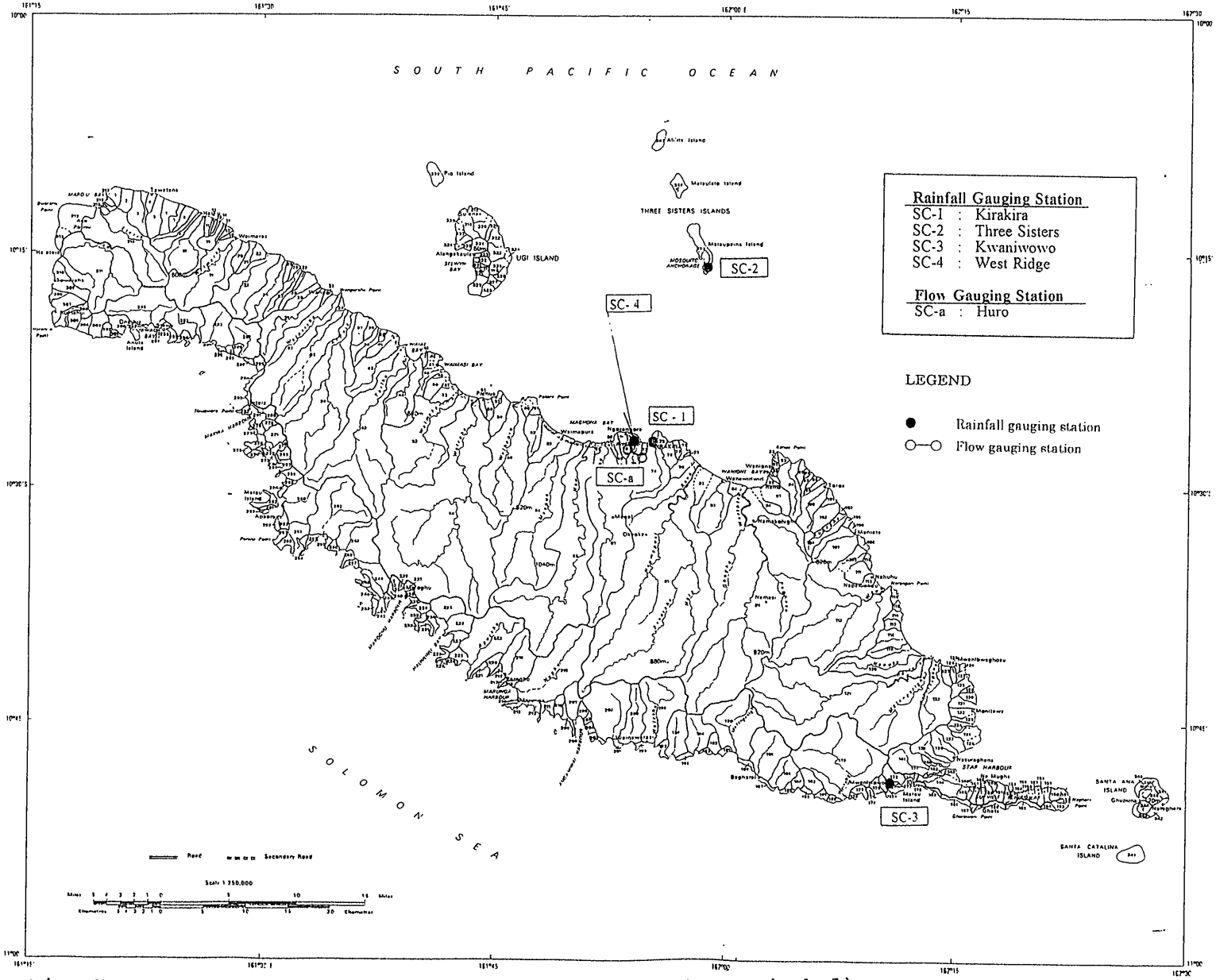



Fig. 5-3-12 Location Map of Meteorological Station (San Cristbal)

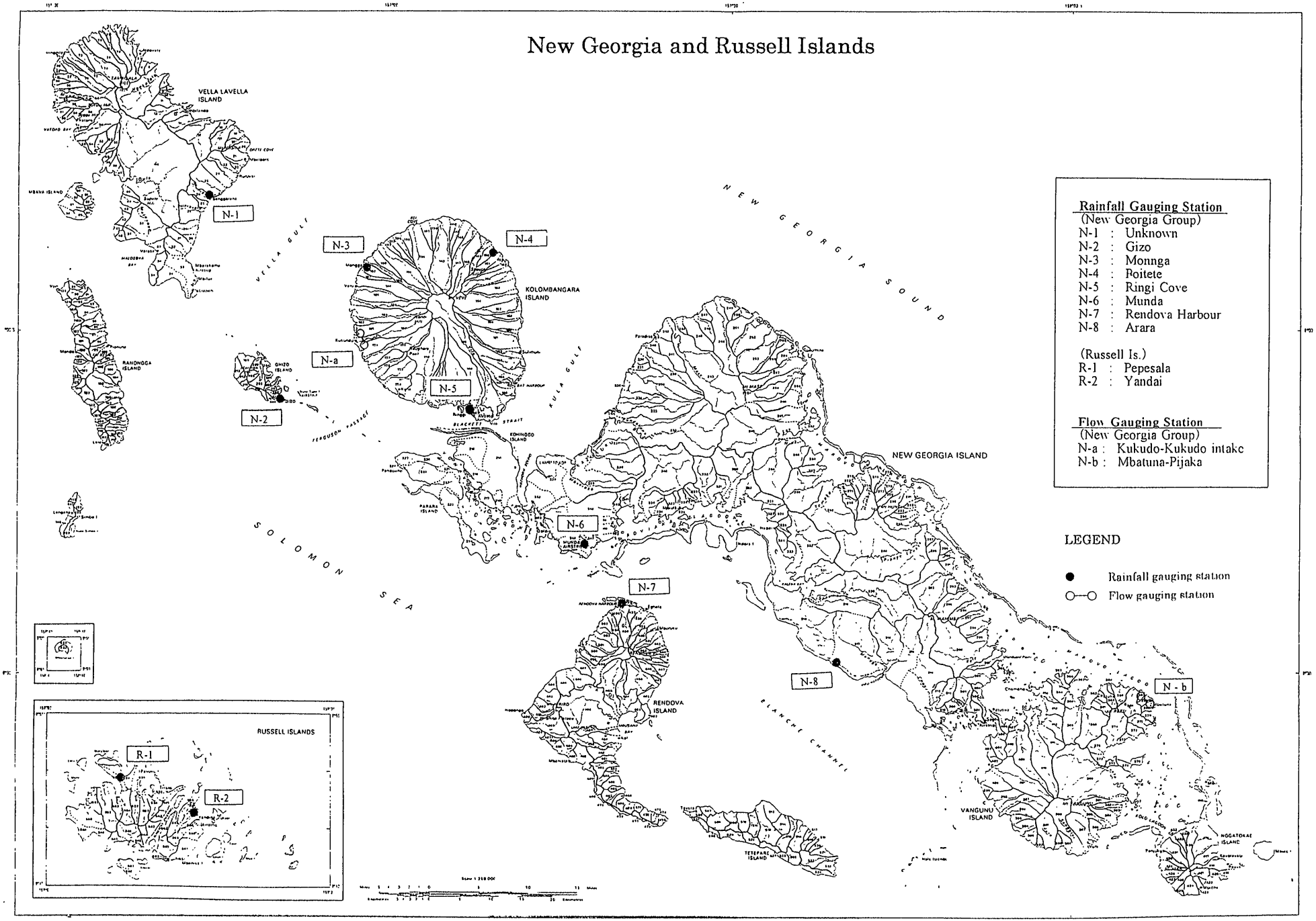



Fig. 5-3-13 Location Map of Meteorological Station (New Georgia and Russel Is.)

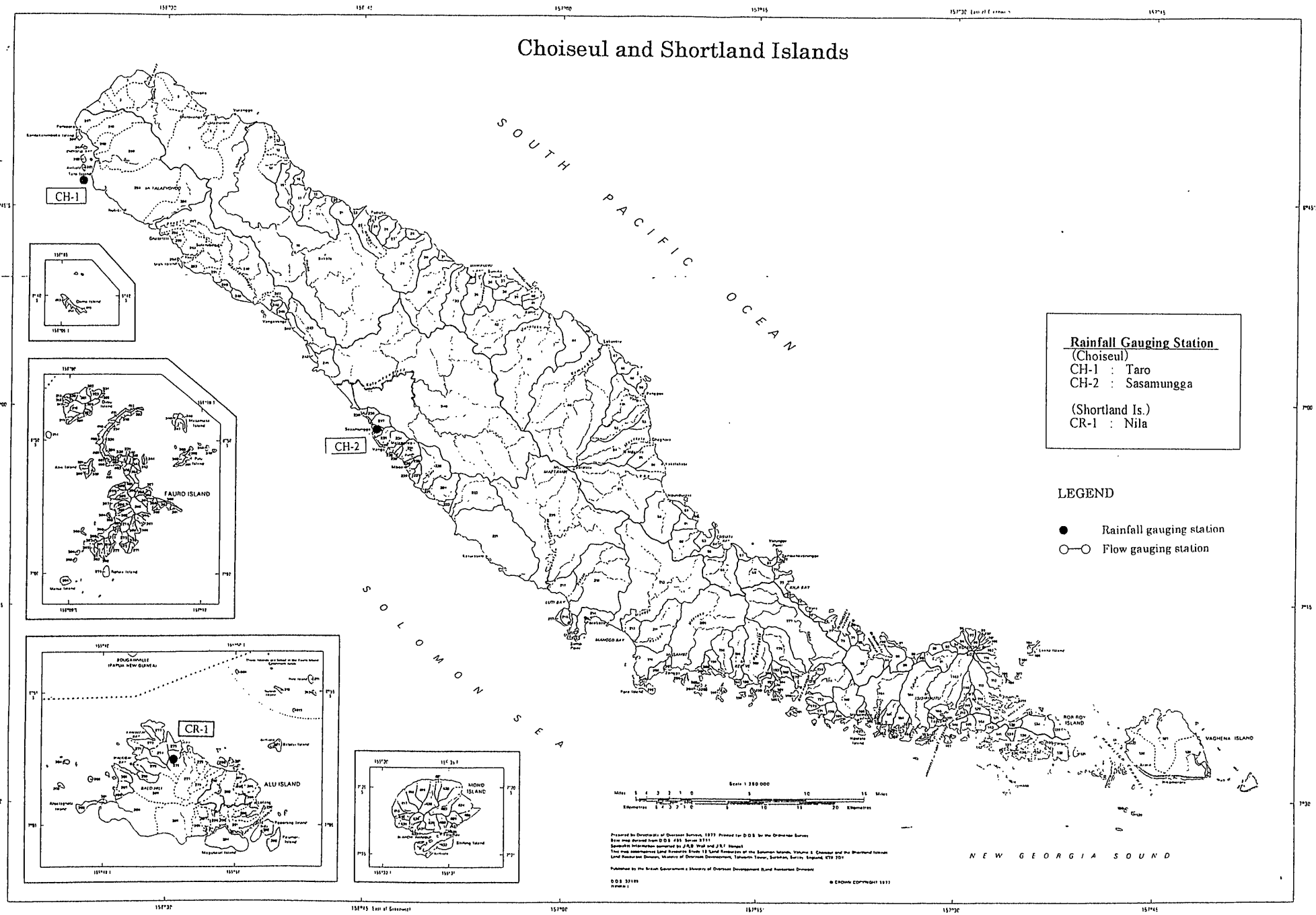
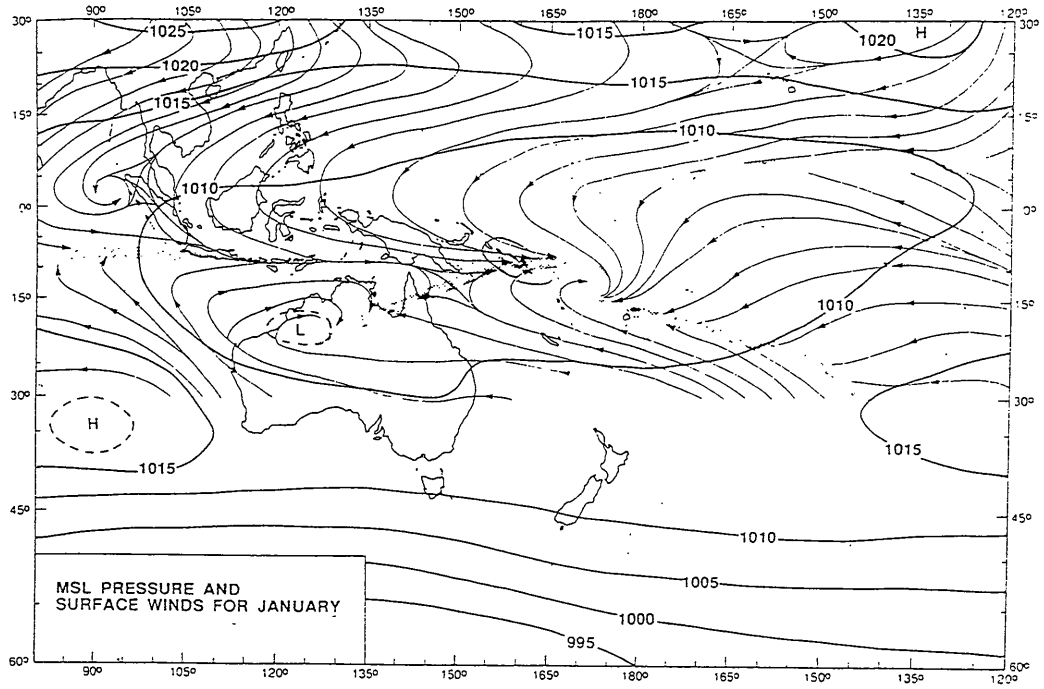



Fig. 5-3-14 Location Map of Meteorological Station (Choiseul and Shortland Is.)



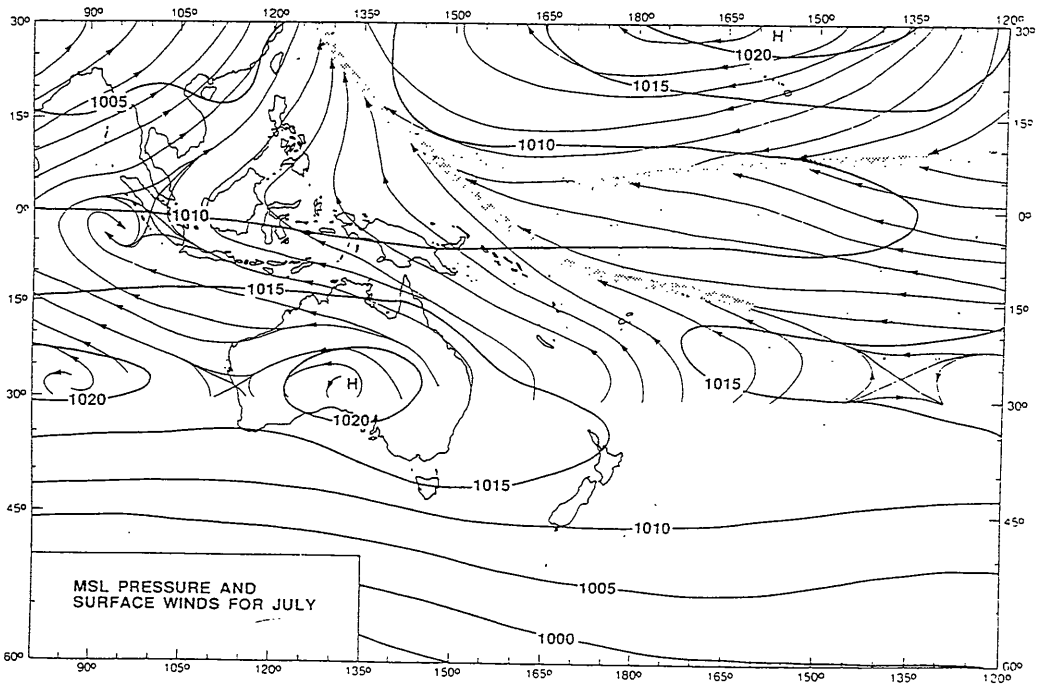




Fig. 5-3-15 Long-term Average Patterns of Mean Sea Level Pressure (hpa) and Surface Winds from January and July

Source: "Claimate Change and Its Possible Impacts in the Southwest Pacific Region" by JW Zillman, W K Downey and M J Manton, Bureau of Meteorogy, Melbourne, Australia

Scientific Lecture Presented at the Tenth Session of WMO Regional Association V, Singapore 14-24 November 1989

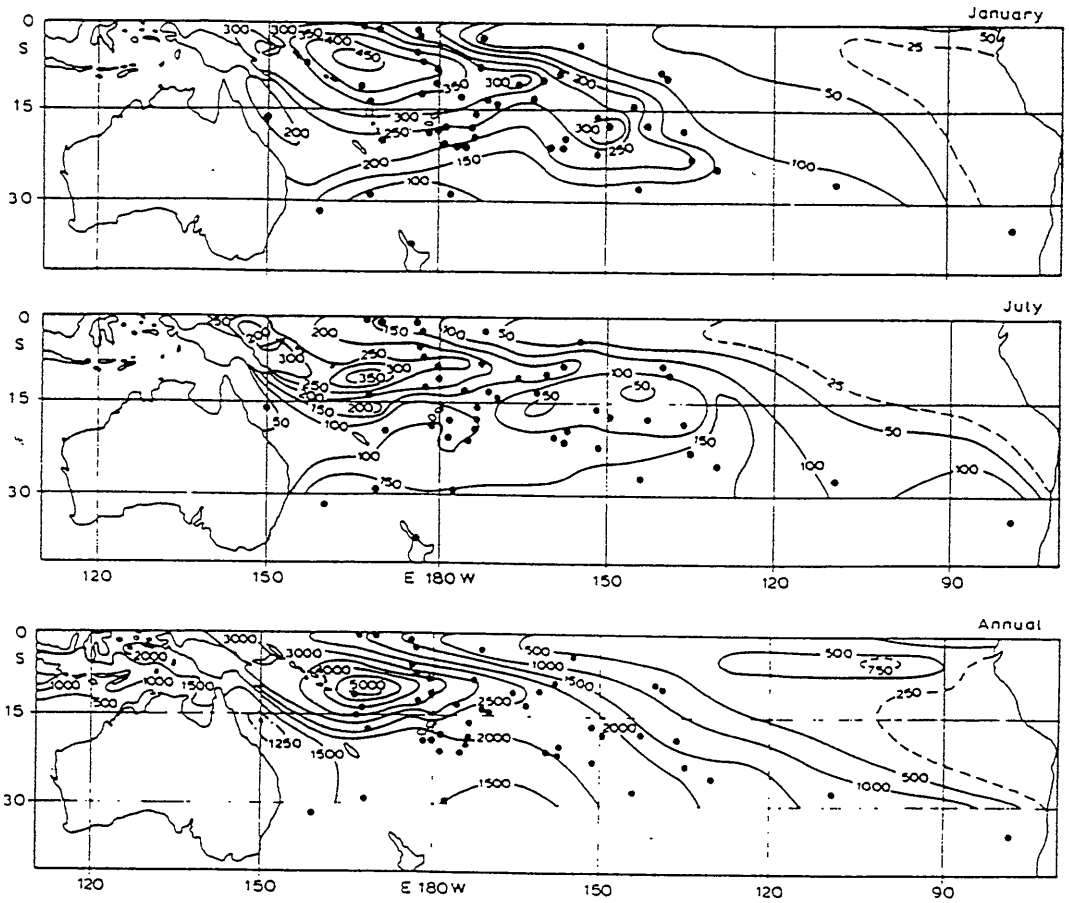
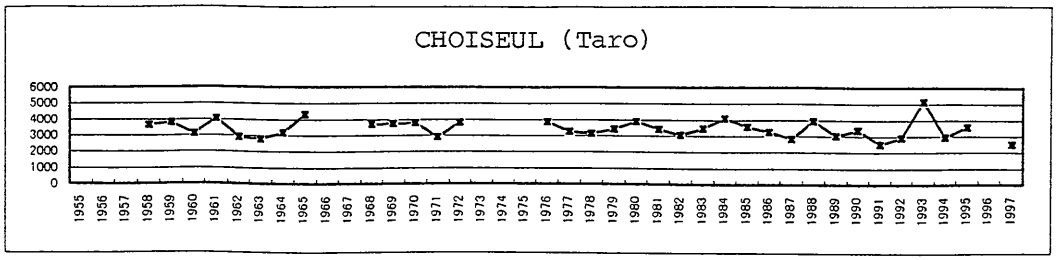
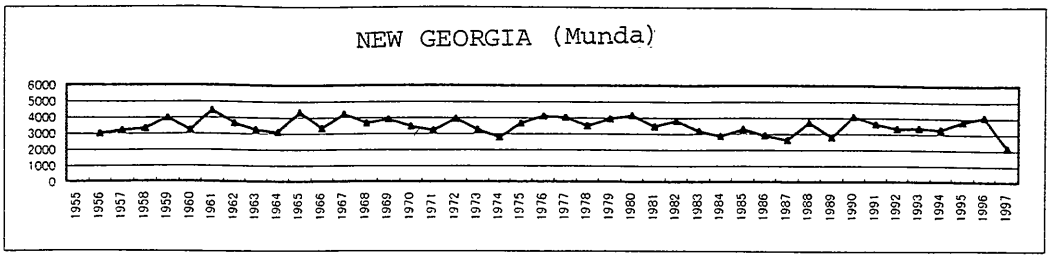



Fig.5-3-16 Mean Precipitation at Lower Altitudes of the South Pacific: January, July, and Annual, in mm (After Taylor 1973)

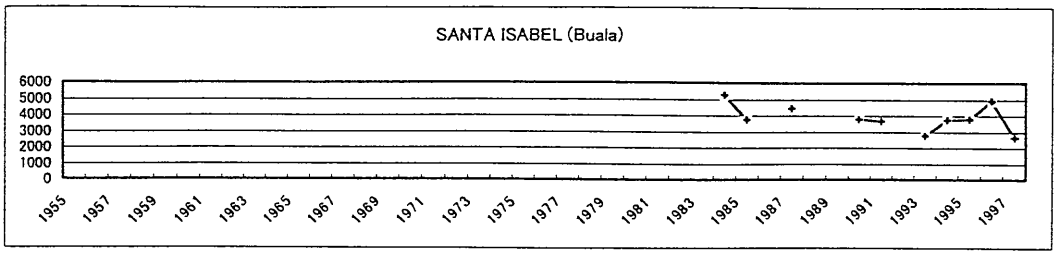
Source: Climate of the South Pacific Ocean
by N.A. Streten and J.W. Zillman



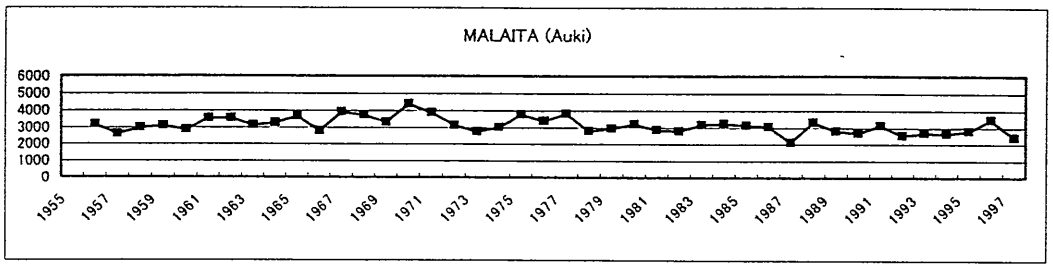

mean raifall : 3,375mm
data : 1976-97
entries : 20



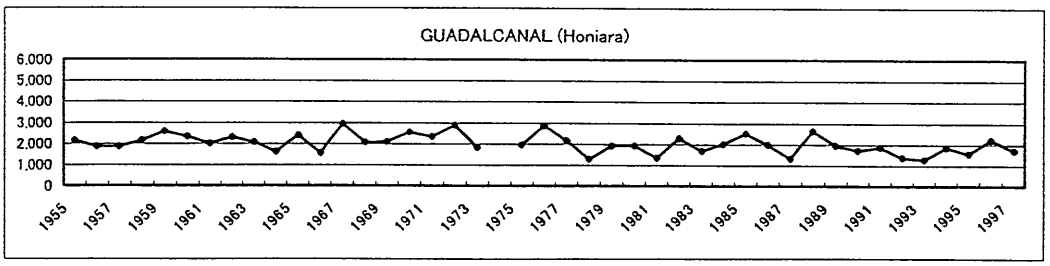

mean raifall : 3,492mm
data : 1956-97
entries : 42



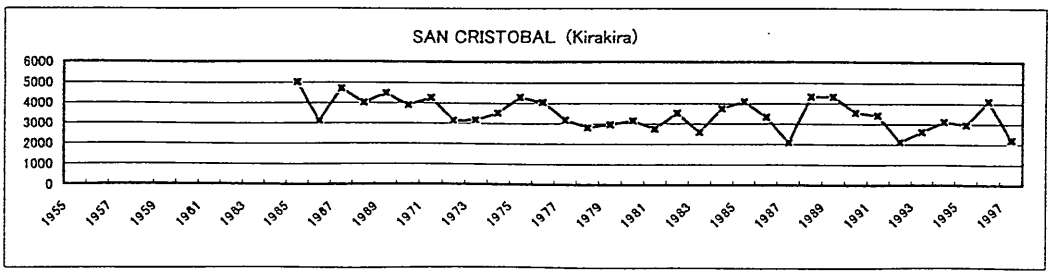

mean raifall : 3,860mm
data : 1984-97
entries : 10



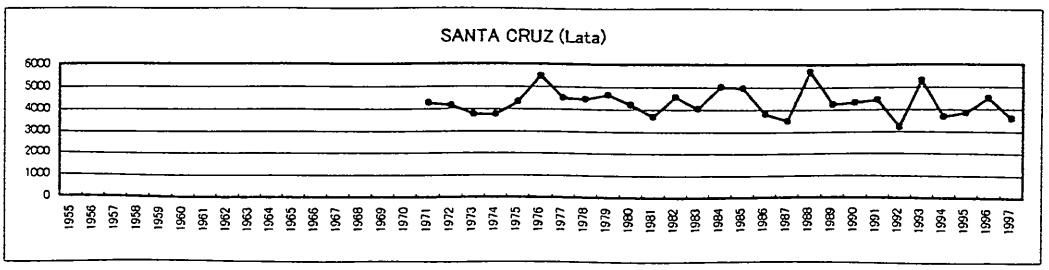

mean raifall : 3,109mm
data : 1956-97
entries : 37




mean raifall : 2,004mm
data : 1955-73
1980-97
entries : 37

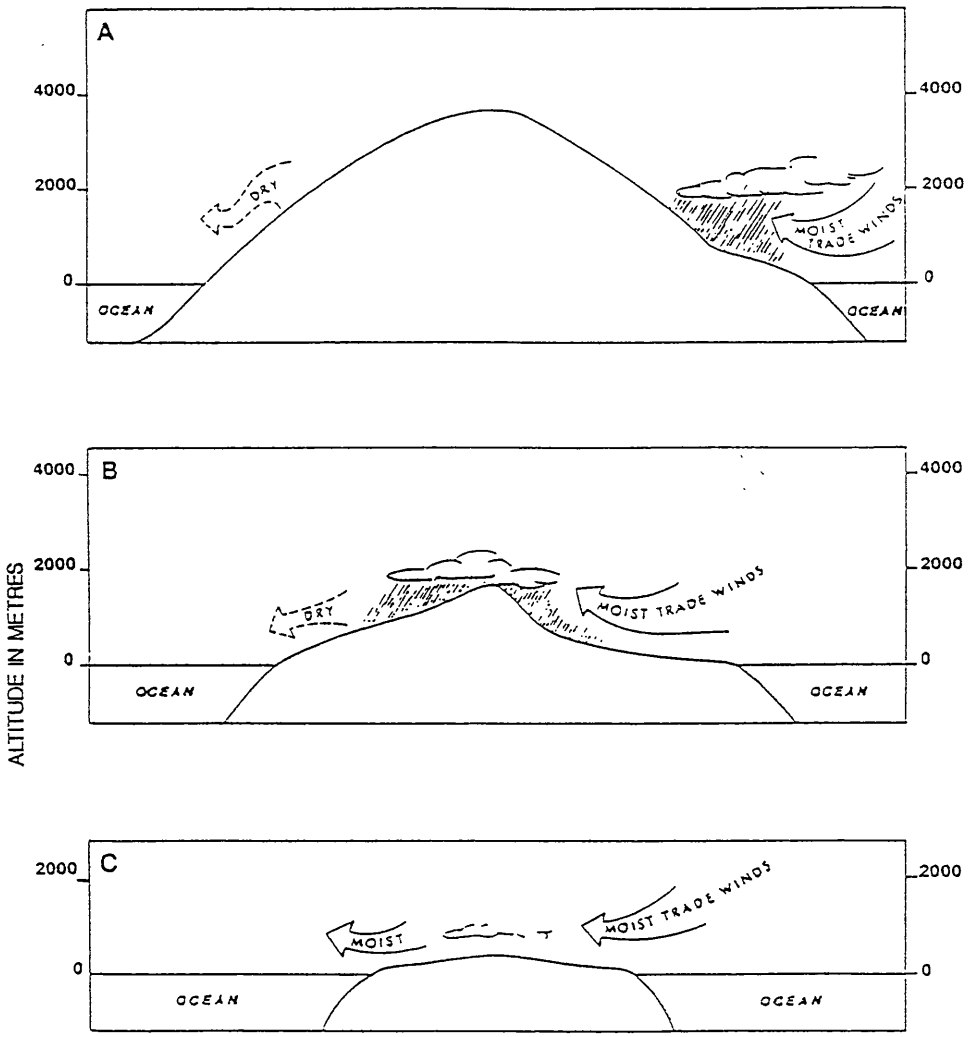



mean raifall : 3,454mm
data : 1965-97
entries : 33




mean raifall : 4,271mm
data : 1971-97
entries : 27

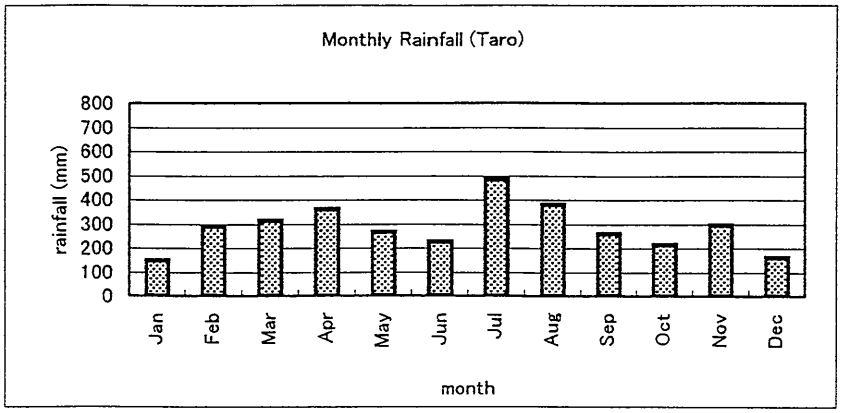
Fig 5-3-17 Annual Rainfall in Major Islands




Orographic effects of islands of different altitudes on rainfall. (A) Poor rainfall distribution. Most of the island is dry except on the windward side below 2,000 m; (B) Ideal rainfall distribution. Rainfall decreases rapidly from maximum near crest. Rainfall in coastal areas depends on distance from rainfall maximum; (C) Island mostly dry. These examples are based on the Hawaiian islands and the same conditions may not apply to all islands with similar topography (modified from Takasaki, 1978).

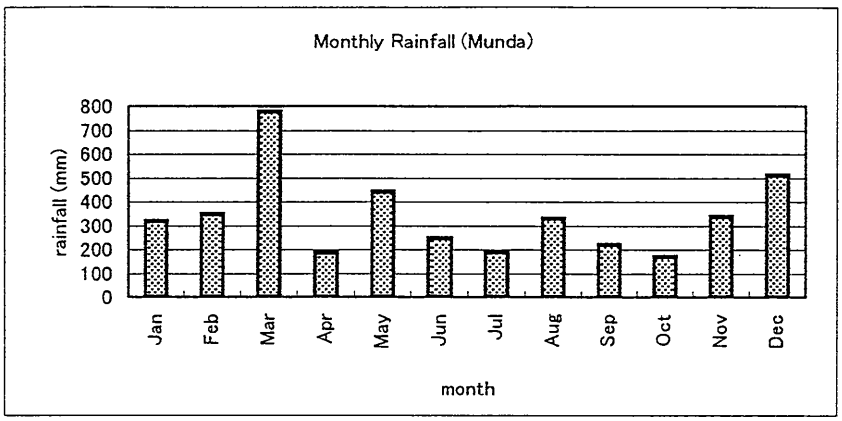
Fig.5-3-18Orographic Effects of Islands of Different Altitudes on Rainfall

Source: Hydrology and water resources of small islands: a practical guide
Edited by A. Falkland, UNESCO 1991



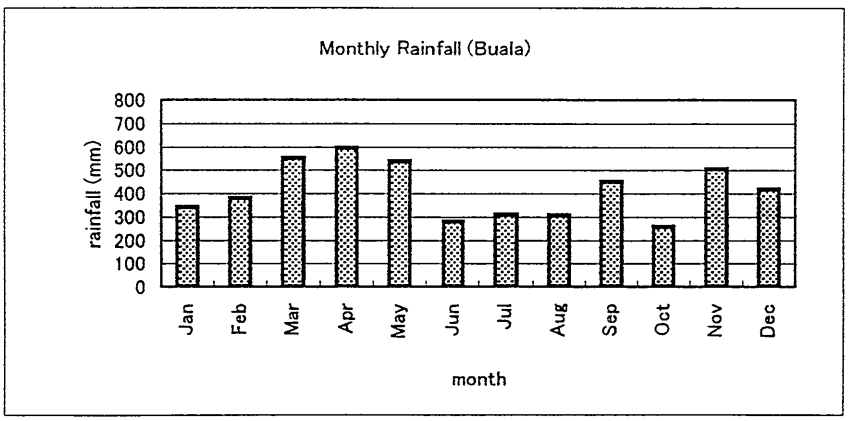

Year:1979

Total:3386mm



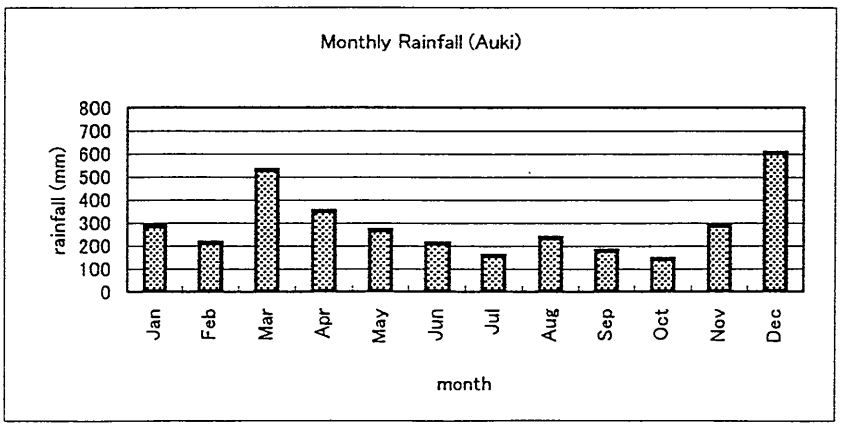

Year:1993

Total:4058mm




Year:1993

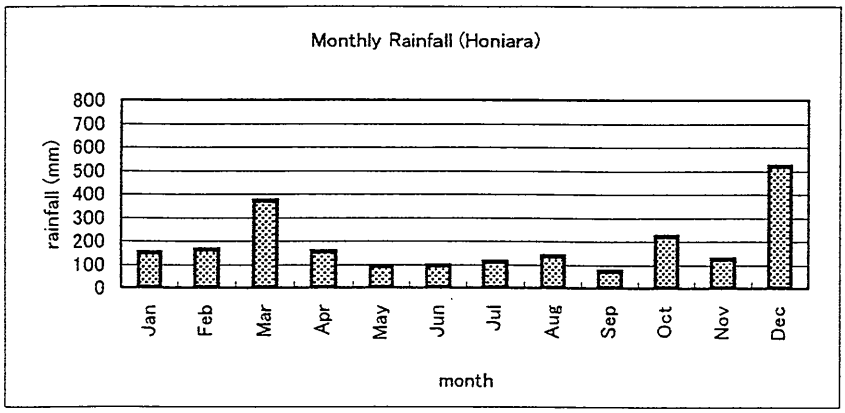
Total:4911mm




Year:1993

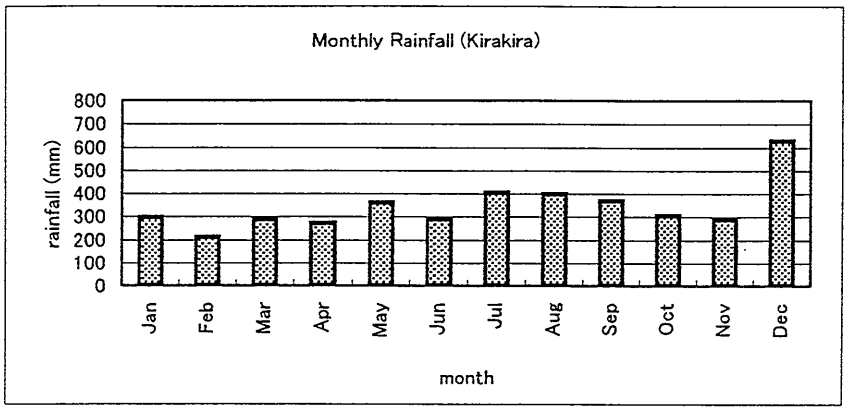
Total:3444mm

Fig.5-3-19 Monthly Rainfall Pattern (1)



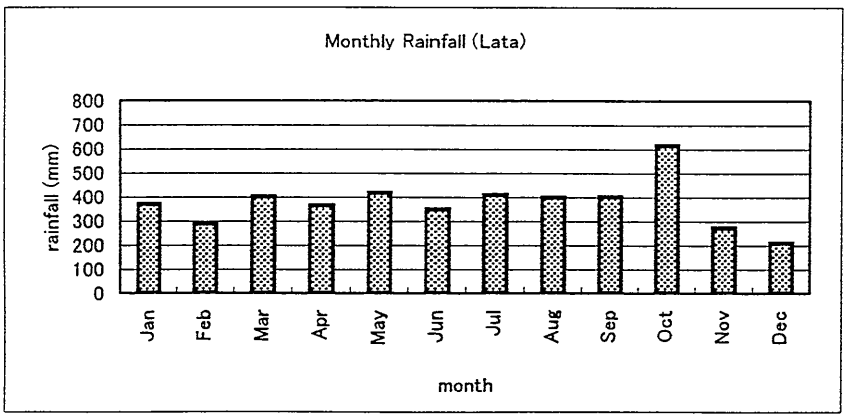

Year:1993

Total:2191mm




Year:1993

Total:4089mm




Year:1993

Total:4481mm

Fig.5-3-20 Monthly Rainfall Pattern (2)

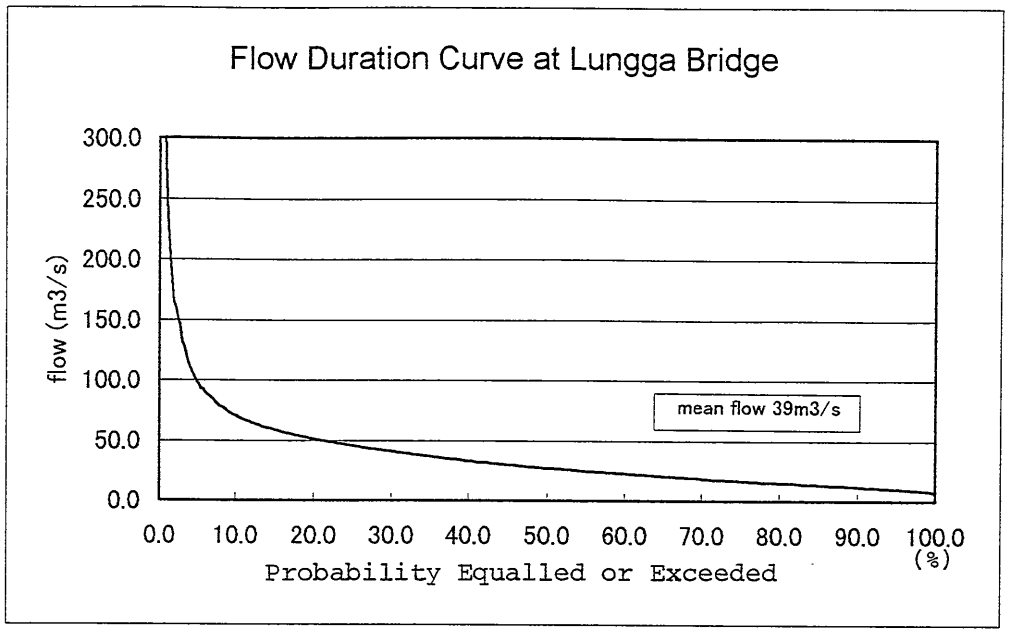



Fig. 5-3-21 Flow Duration Curve at Lungga Bridge

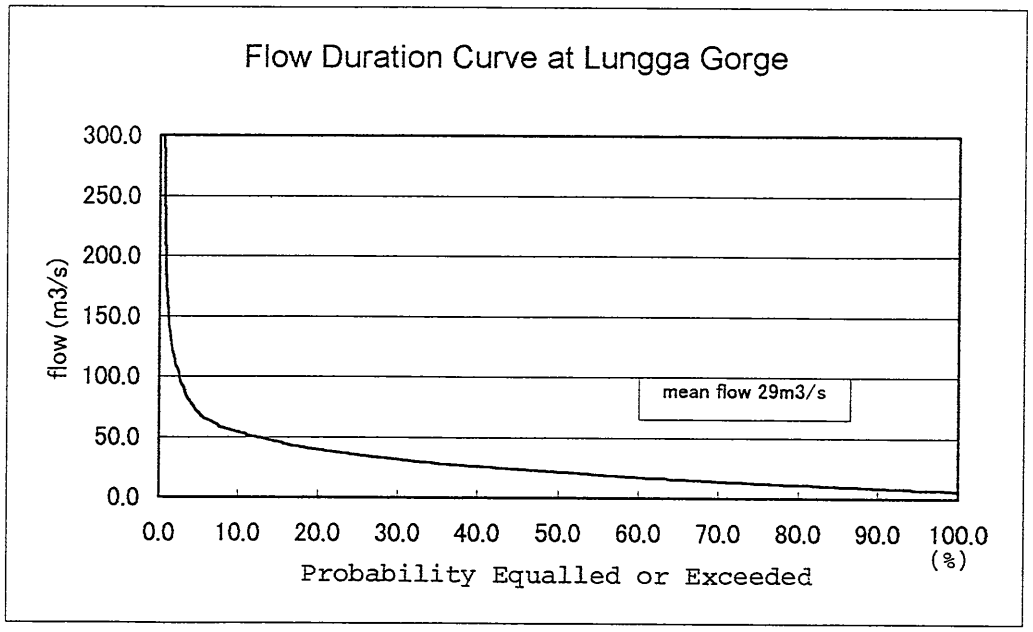



Fig. 5-3-22 Flow Duration Curve at Lungga Gorge

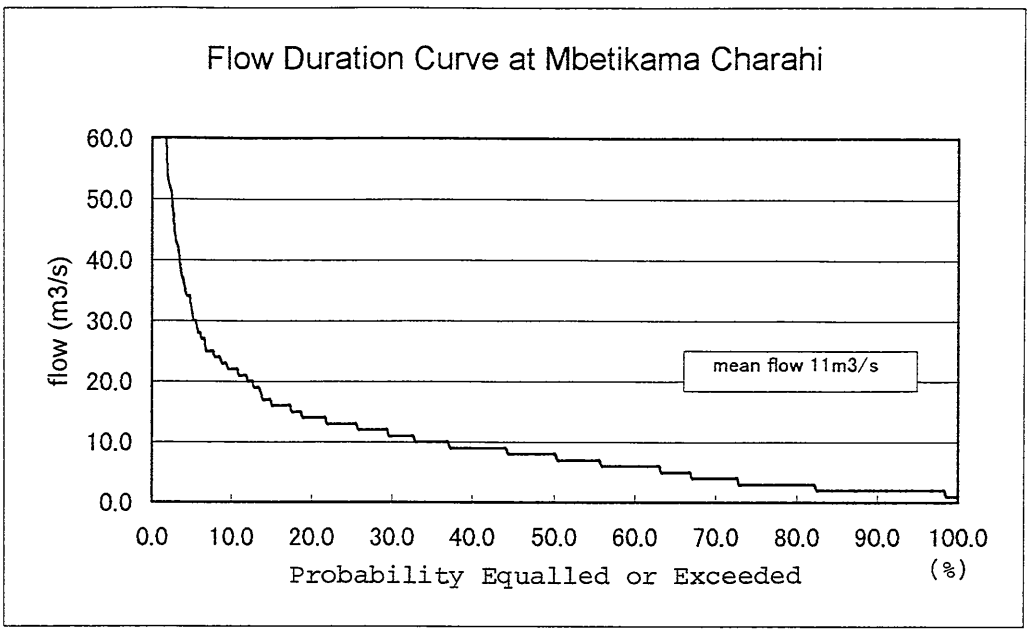



Fig. 5-3-23 Flow Duration Curve at Charahi

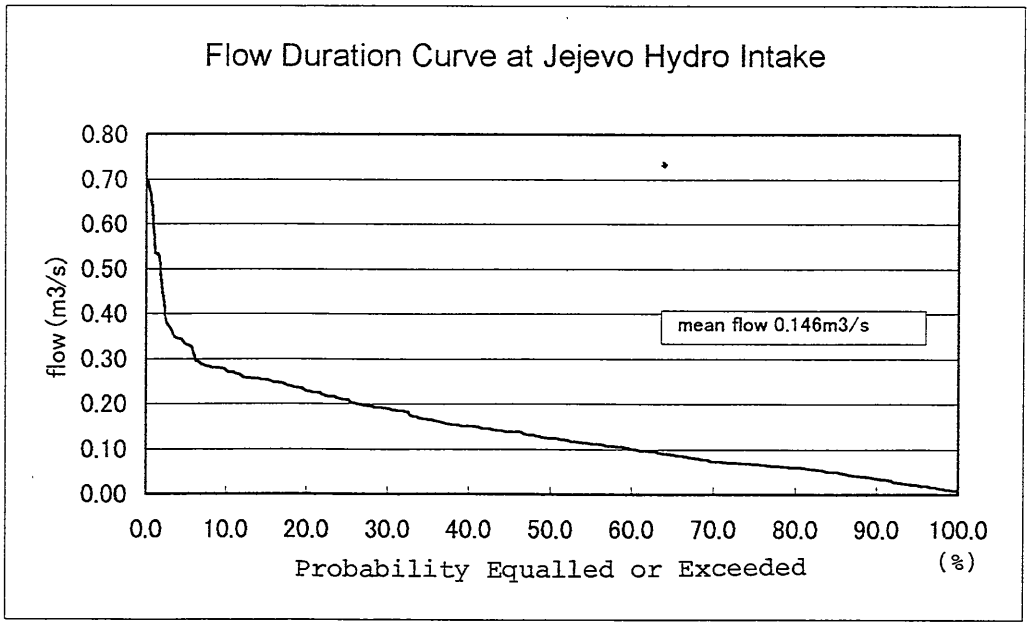
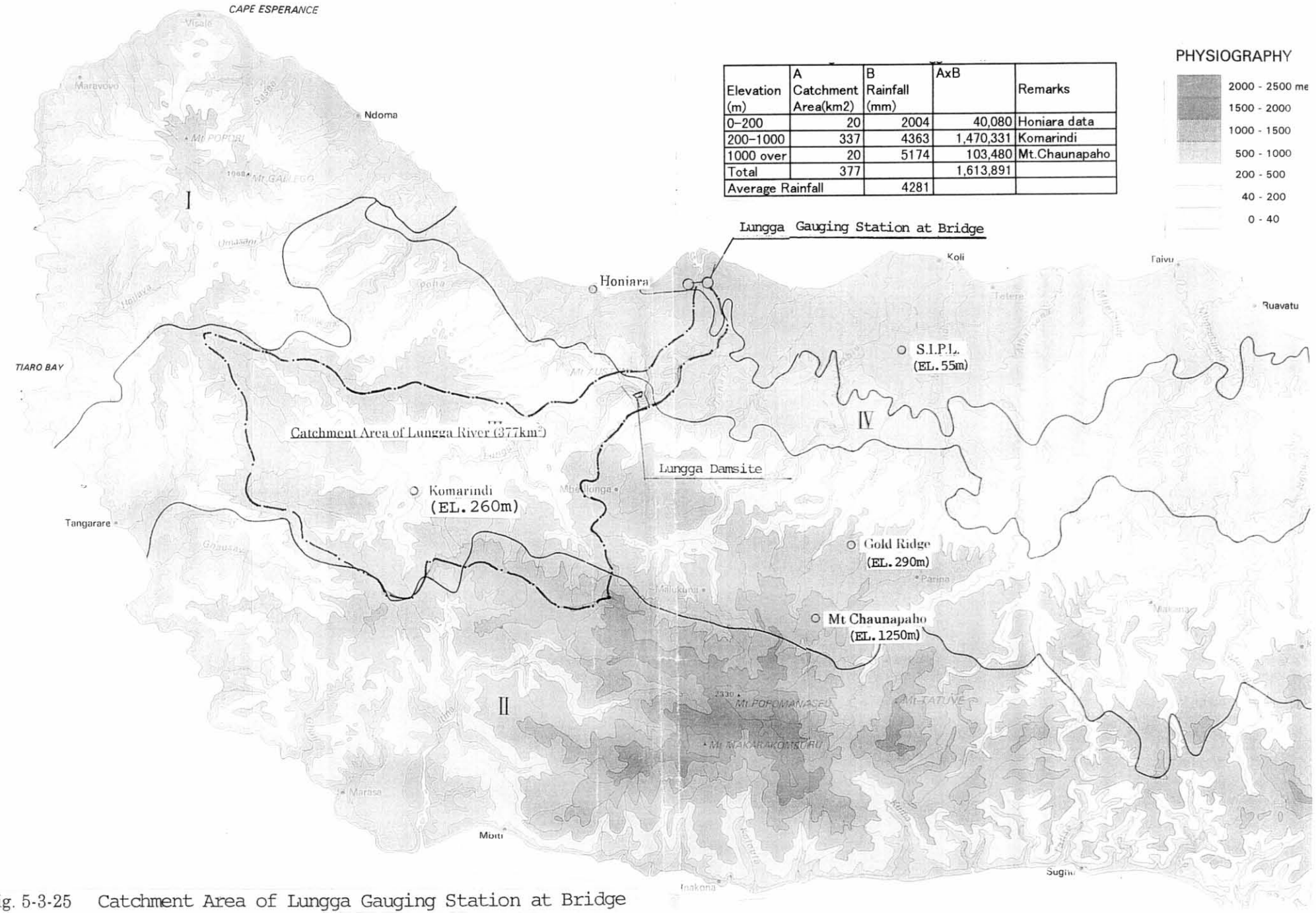
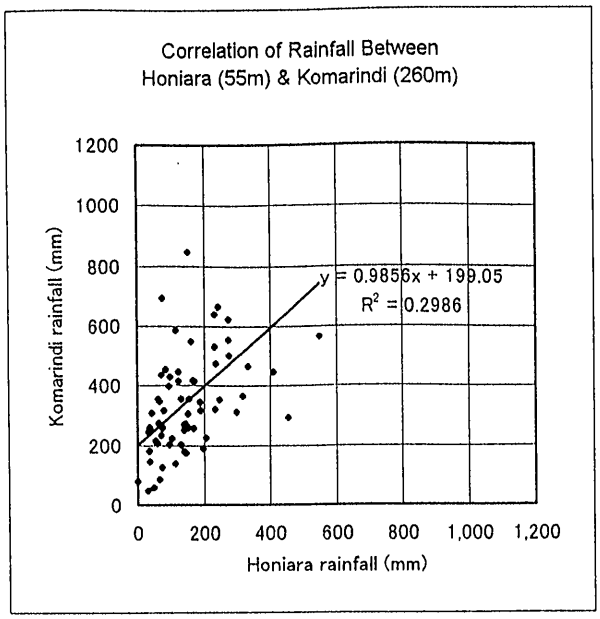



Fig. 5-3-24 Flow Duration Curve at Jejevo Hydro Intake




| Elevation (m) | A Catchment Area(km2) | B Rainfall (mm) | AxB | Remarks |
|---|---|---|---|---|
| 0–200 | 20 | 2004 | 40,080 | Honiara data |
| 200–1000 | 337 | 4363 | 1,470,331 | Komarindi |
| 1000 over | 20 | 5174 | 103,480 | Mt.Chaunapaho |
| Total | 377 | | 1,613,891 | |
| Average Rainfall | | 4281 | | |

Fig. 5-3-25 Catchment Area of Lungga Gauging Station at Bridge



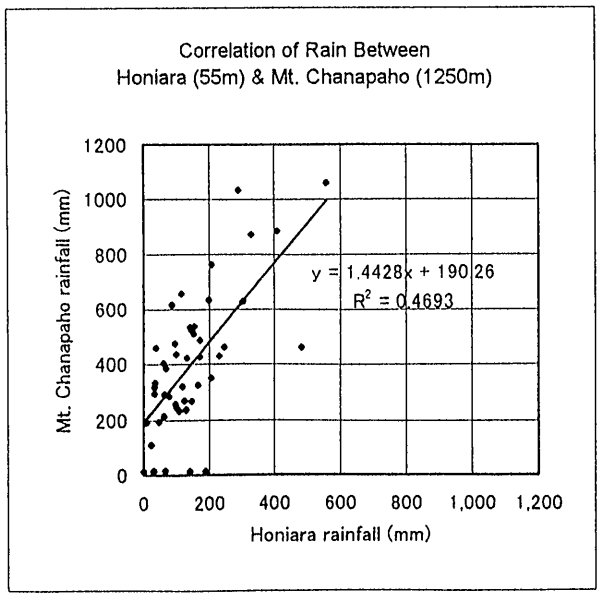

Honiara Annual Rainfall:2004mm

Komarindi Annual Rainfall:4363mm

[=0.9856 x 2004 + 199.05 x 12
=4363 mm]

data : monthly rainfall
1986.12~93.4
entries : 64

Fig. 5-3-26 Monthly Rainfall Correlation between Honiara and Komarindi




Honiara Annual Rainfall:2004mm

Mt.Chaunapaho Annual Rainfall:5174mm

[=1.4428 x 2004 + 190.26 x 12
=5174 mm]

data : monthly rainfall
1984.10~93.9
entries : 47

Fig. 5-3-27 Monthly Rainfall Correlation between Honiara and Mt.Chaunapaho



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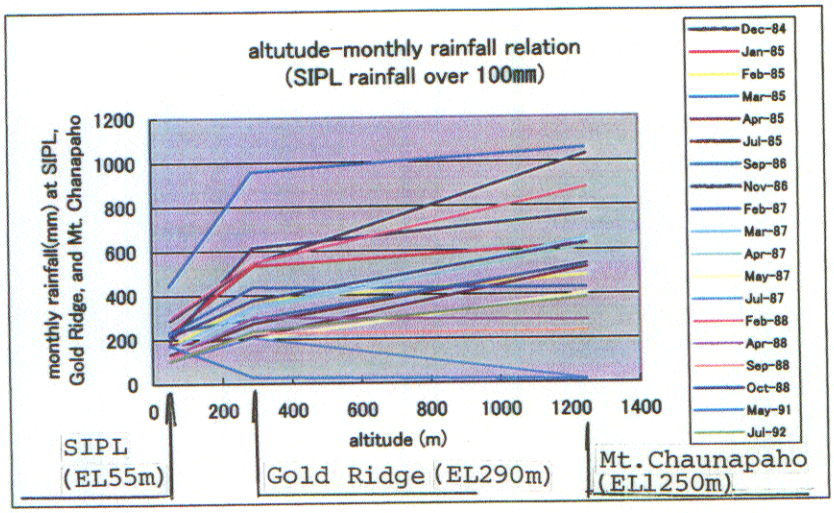


data : 1984.9-92.6
entries : 19

Fig. 5-3-28 Alutitude - Monthly Rainfall Relation



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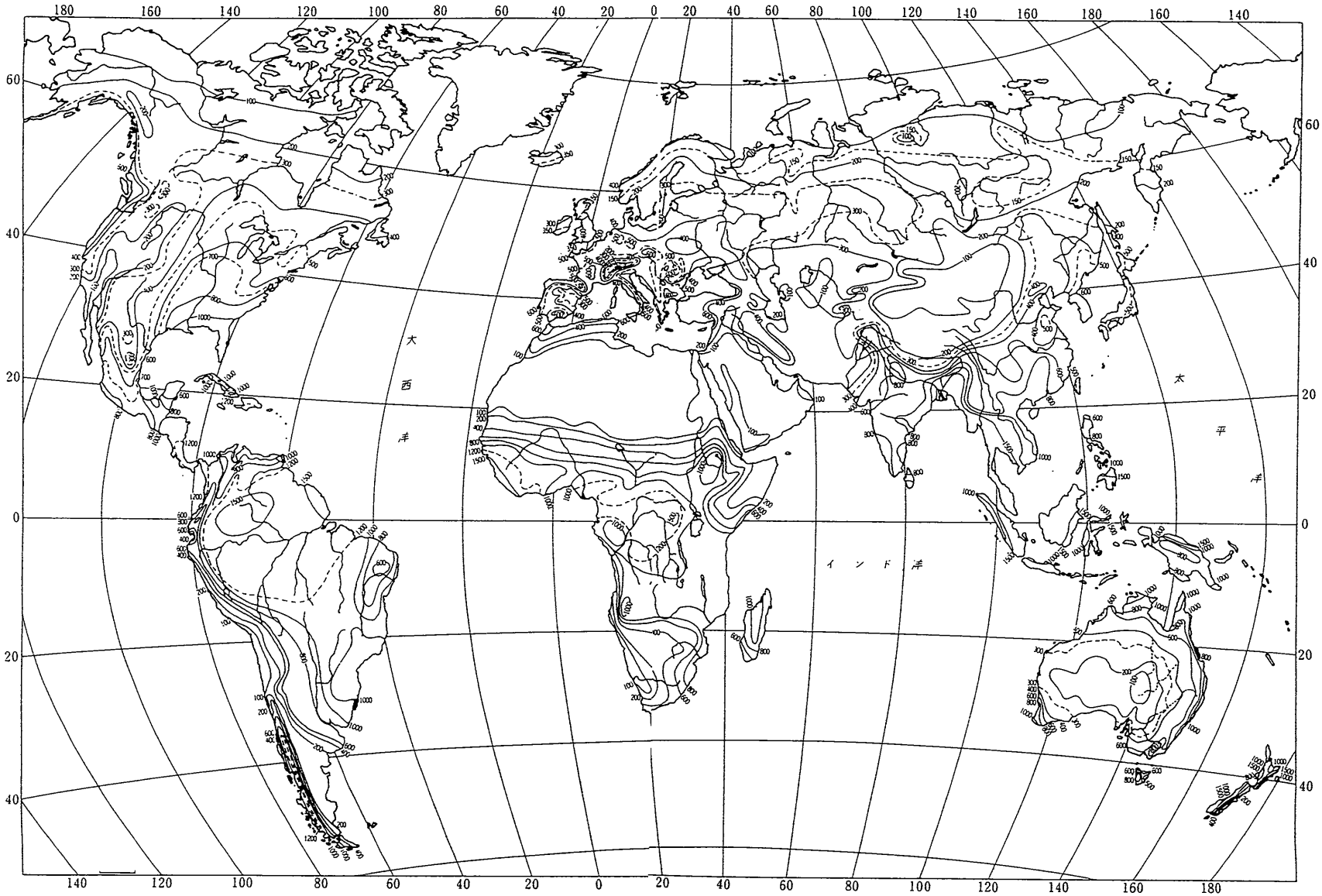
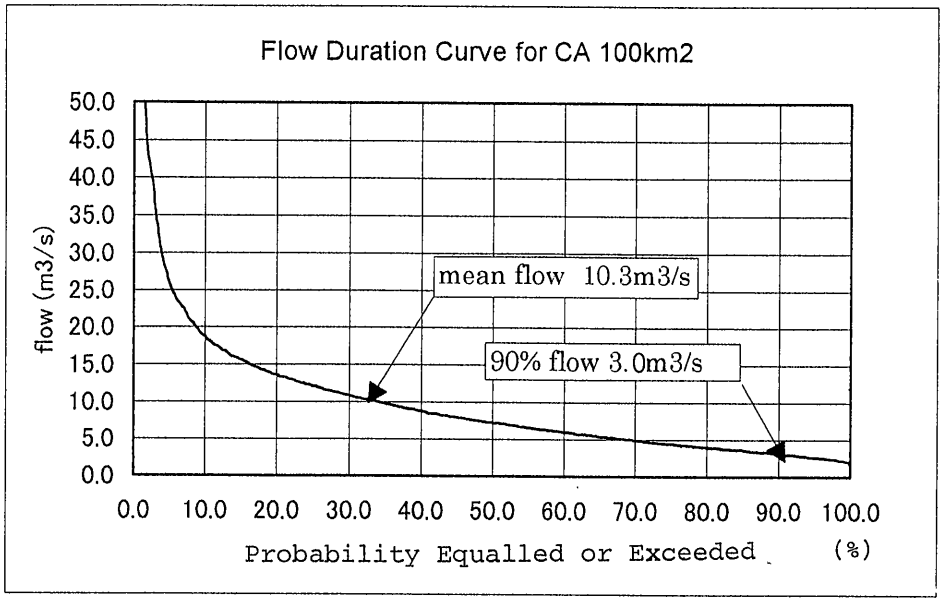


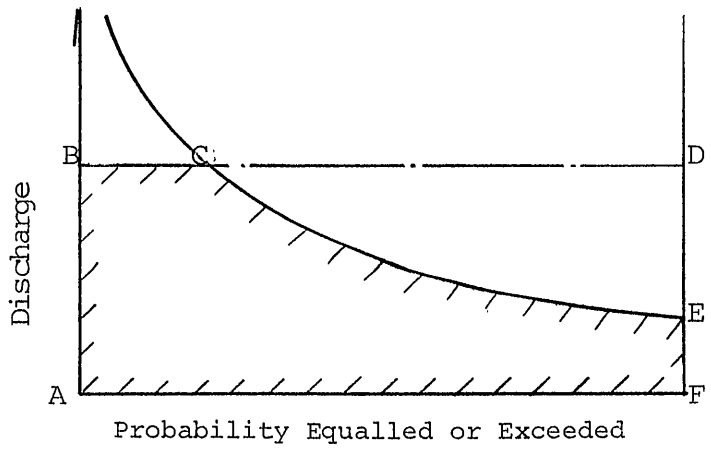

Fig. 5-3-29 Actual Evapotranspiration E mm (after Lvovitch, 1973)

Source: "Zusetu Suimon Gaku" (Hydrology in Graphic)
by S. Yamamoto and T. Takahashi, 1987




Data : Lungga Bridge, Catchment Area 377km2

Fig. 5-4-1 Flow Duration Curve for Catchment Area 100km$^2$




$$\text{Flow Utilization Factor} = \frac{A\ B\ C\ E\ F}{A\ B\ D\ F}$$

Fig. 5-4-2 Flow Utilization Factor

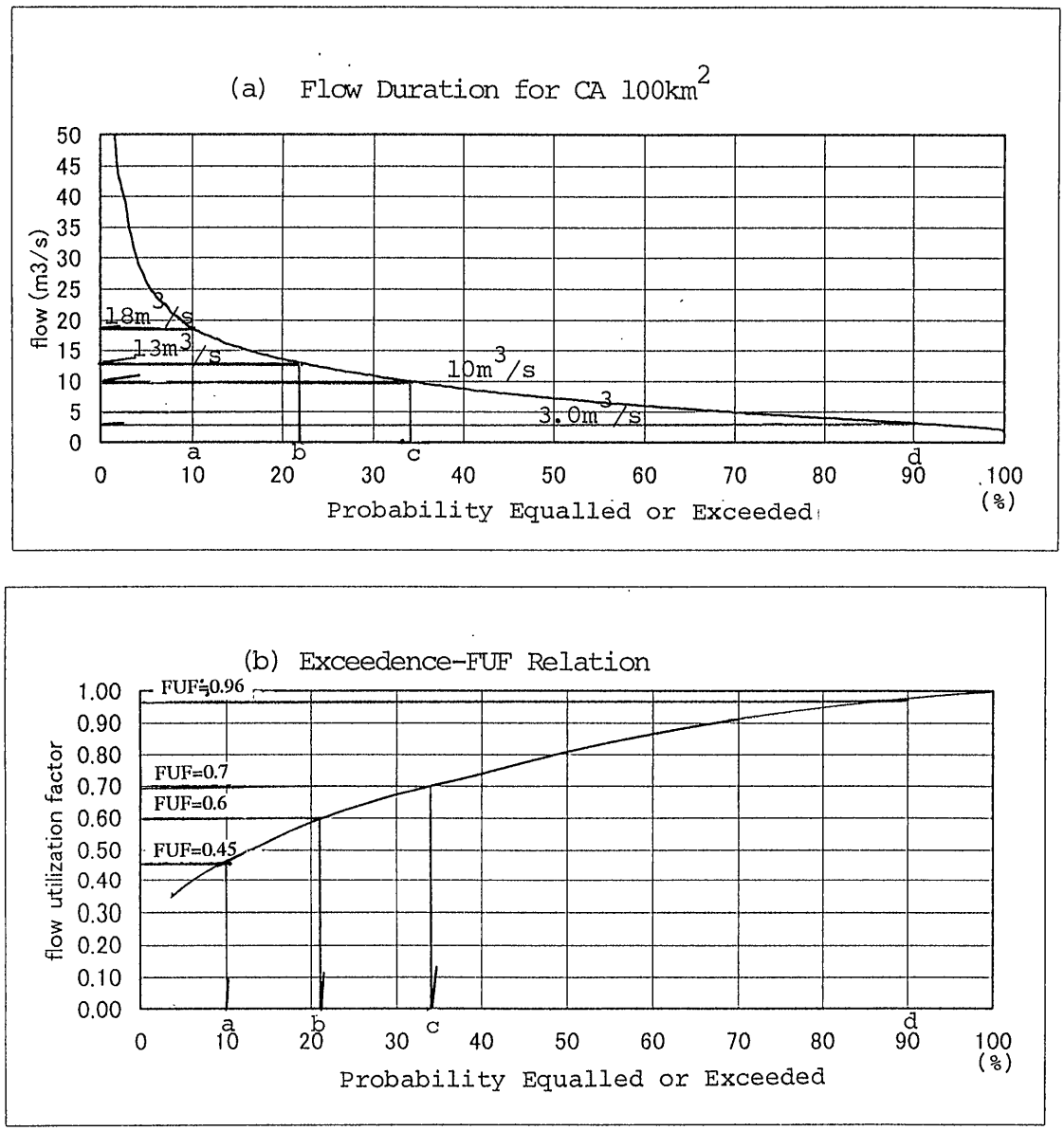
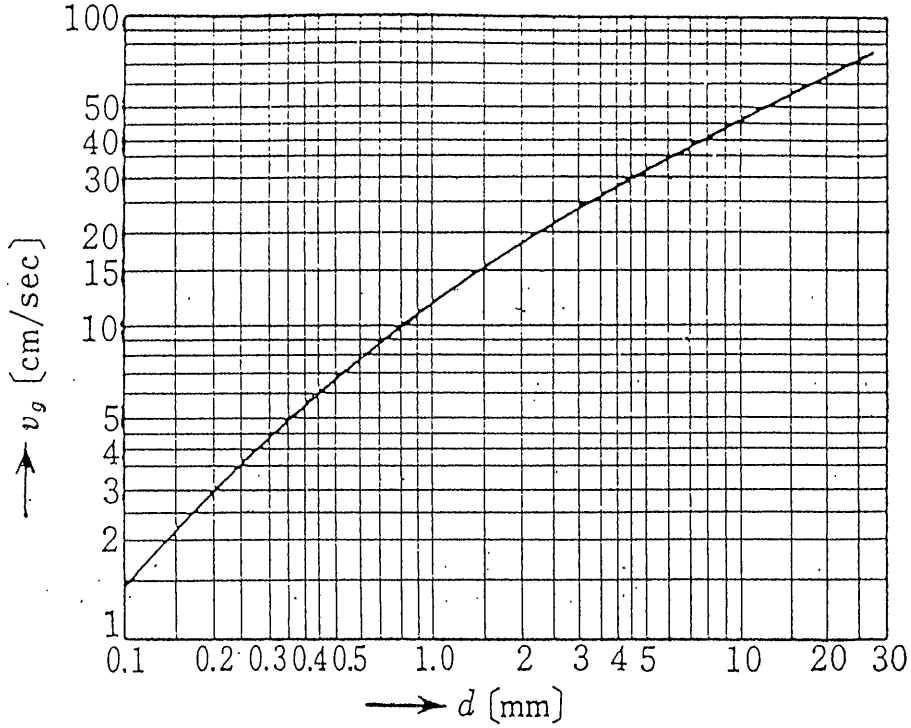



Fig.5-4-3 Flow Duration and Flow Utilization Factor(FUF)




Where, d;sand particle diameter
Vg;marginal-settling speed of sediment

**Fig. 5-6-1 Marginal-Settling Speed of Sediment**

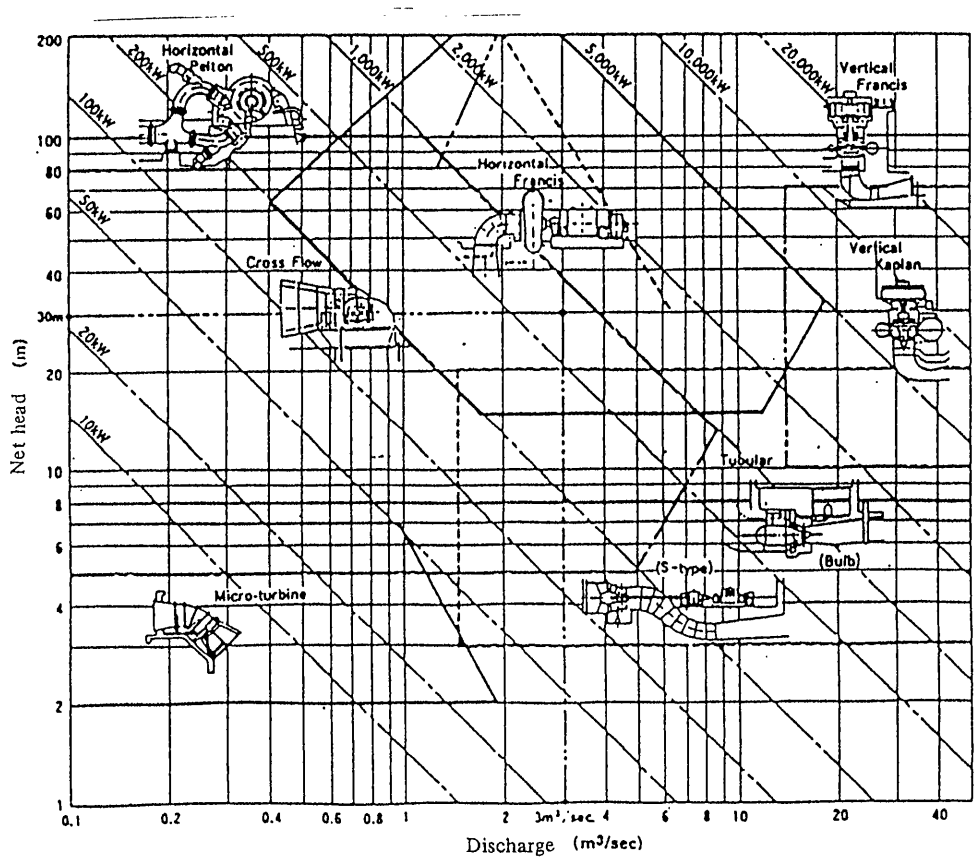



**Fig. 5-6-2 Turbine Selection Diagram**

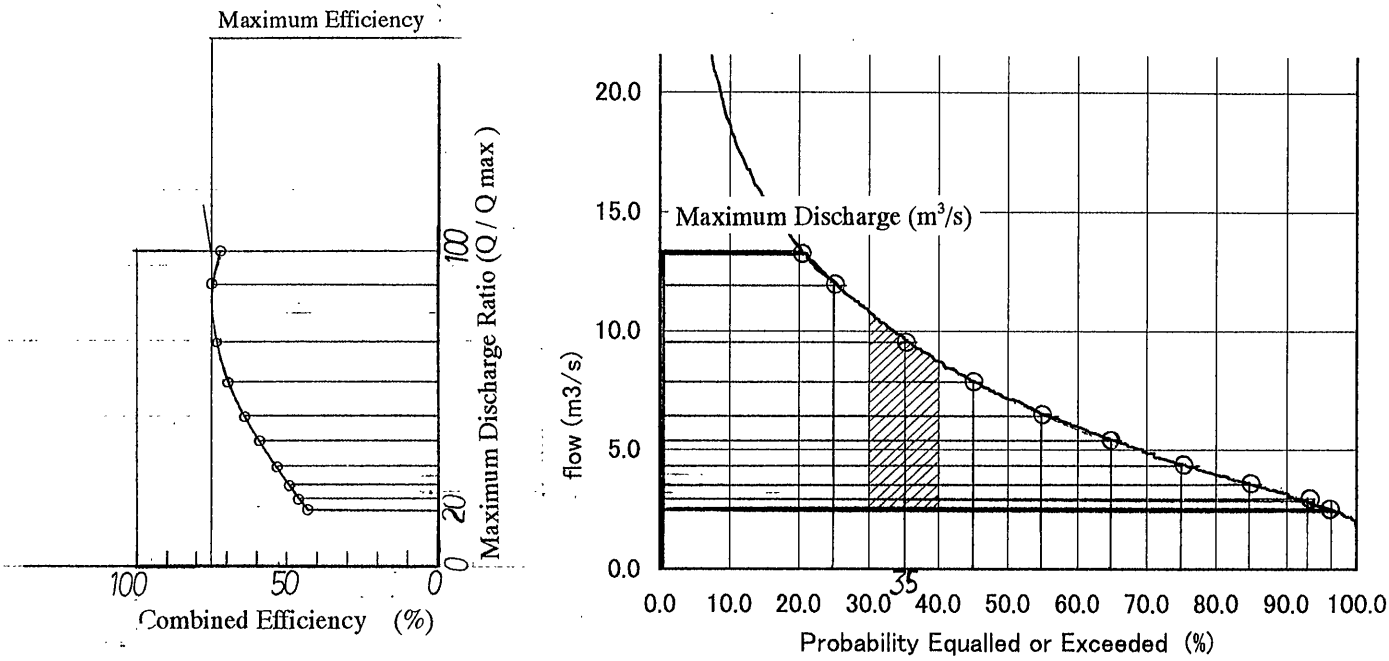



Fig. 5-6-3 Calculation of Annual Output Energy