



CIRCUM-PACIFIC COUNCIL FOR ENERGY AND MINERAL RESOURCES
FOR
CIRCUM-PACIFIC MAP PROJECT
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ENERGY-RESOURCES MAP OF THE CIRCUM-PACIFIC REGION

NORTHWEST QUADRANT

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MAP PRODUCTION BY U.S. GEOLOGICAL SURVEY

Compilation coordinated by George Gryc

Cartography by Frank J. Sidlakowski, Jr.

SCALE 1:10,000,000

0 250 500 750 1000 KILOMETERS

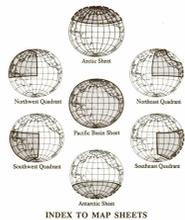
0 250 500 750 1000 NAUTICAL MILES

Lambert Azimuthal Equal-Area Projection
(Map Center Point: 150°E, 30°N)

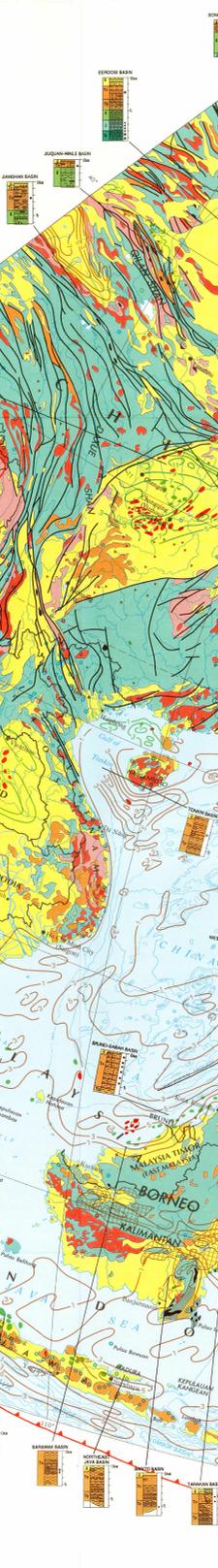
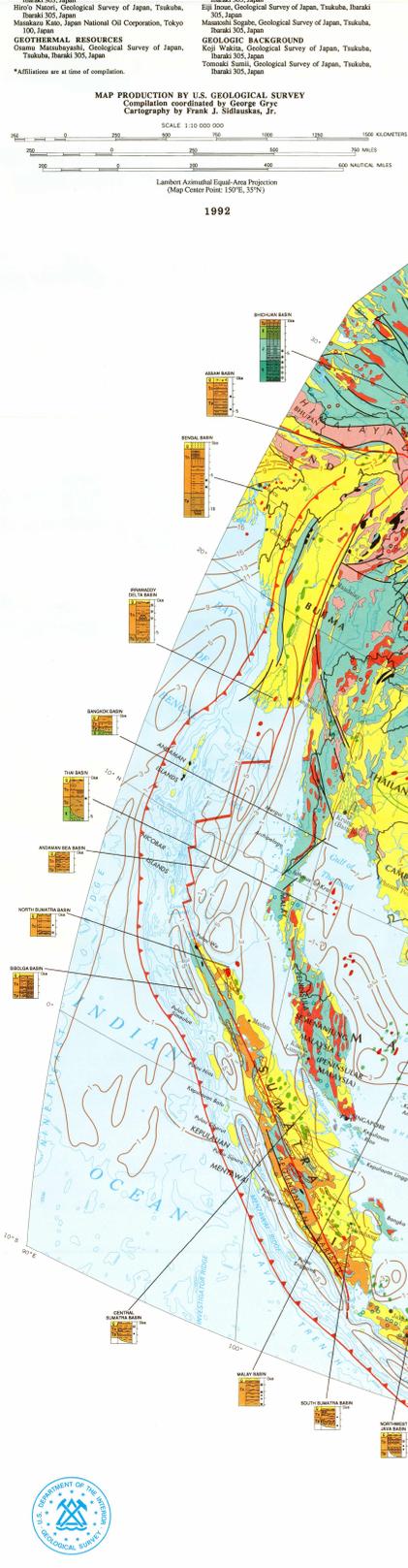
1992

CIRCUM-PACIFIC MAPS
This map is one in a series of maps covering the Pacific, Atlantic, and Arctic regions. The maps have been compiled as part of the Circum-Pacific Map Project, a cooperative international effort to show the status of mineral and energy resources to such phenomena as geology, tectonics, and crustal dynamics. The project is one of the activities of the Circum-Pacific Council for Energy and Mineral Resources.
The Map Project is made up of six panels of earth scientists from countries in the Pacific region who contribute to maps of the Northwest, Northeast, Southeast, Southwest, Arctic, and Antarctic areas. Eight series of maps are already published or are being prepared for future publication: Geologic, Basic, Plate Tectonic, Geodynamic, Geologic, Tectonic, Mineral Resources, and Energy Resources. The six overlapping maps cover the Pacific Basin at a scale of 1:10 million. All are plotted on the Lambert azimuthal equal-area projection. The index map shows the boundaries of the quadrant maps and the boundaries of the Arctic and Antarctic Shores in the Pacific Ocean.
Geographic names are as recommended by the U.S. Board on Geographic Names, unless otherwise indicated. The recommendations of the Circum-Pacific Map Project panels. Names and boundaries on the maps do not necessarily reflect recognition of the political status of an area by those involved in the preparation and publication of these maps.

ENERGY-RESOURCES MAP SERIES
Maps of the Energy-Resources Series show generalized geologic background, sedimentary basins, and structure from lines, oil and gas fields, oil shale, coal deposits, and geothermal energy sites. Cross-area sedimentary isopachs, on a bathymetric contour base, are also shown.



INDEX TO MAP SHEETS



ENERGY RESOURCES
PETROLEUM
Oil fields
Gas fields
Oil shale—Small deposits shown by circle
Coal—Map shows extent of coal deposits, parts of which may be too deep in the center or too thin on edge of coal basin to be of present commercial value.
Anthracite—Small deposits shown by inverted triangle
Bituminous—Small deposits shown by inverted triangle
Subbituminous—Small deposits shown by square
Lignite—Small deposits shown by circle
Rank unidentified

EXPLANATION
GEOTHERMAL
Geothermal power plant
Vapor-dominated field
Liquid-dominated field
Hot springs
Surface temperature greater than 90°C
Surface temperature uncertain or less than 90°C

SEDIMENTARY BASINS
THICKNESS OF SEDIMENTARY ROCKS—The thickness of unmetamorphosed sedimentary rocks is indicated by isopach or, indirectly, by structure from lines, on land and in shallow basins the contour is in kilometers, starting generally from 1 km; in oceanic areas thicknesses are shown in meters or in seconds of two-way time (shown in seconds). Color indicates age of oldest sediment overlying basement.

REPRESENTATIVE COLUMNAR SECTIONS FOR SELECTED SEDIMENTARY BASINS

AGE
Quaternary
Neogene
Paleogene
Cretaceous
Jurassic
Triassic
Paleozoic
Precambrian

LITHOLOGIC UNIT
Limestone
Shale
Sandstone
Conglomerate
Coal bed
Unmetamorphosed igneous rock
Volcanic rock
Unmetamorphosed metamorphic rock
Eoprotite

BASE MAP
City—1,000,000 or more people
City—less than 1,000,000 people
Bathymetric contour—Depth of water in meters; contour intervals 200 m and 1000 m. Immediate contours shown.

SYMBOLS
Gas producing horizon
Oil and gas producing horizon
Oil producing horizon

SYMBOLS
Contact
Fault
Active plate boundaries
Spreading ridge
Transform fault
Subduction zone—swath on upper plate

SOURCES OF DATA
ENERGY RESOURCES
The principal source of petroleum and coal data for the Far East Series is Enomoto and others (1978), for China and Southeast Asia, United Nations ESCAP (1983), and for the United States, Drummond (1966). A complete list of sources of data is included in the Explanatory Notes.

GEOLOGIC BACKGROUND
Land geology is generalized from Inoué (1988). Columnar sections of sedimentary basins are compiled by Tomonaki Sumi. Active plate boundaries are generalized from Nakawaki (1981, 1985).

SEDIMENTARY BASINS
The sediment-thickness data was compiled by Tomonaki Sumi. The principal data are from Enomoto and others (1978), Khan (1983), Chinese Academy of Geological Science, Institute of Geomechanics (1984), Ludwig and Hesse (1978), United Nations ESCAP (1983), and Drummond (1966). Other sources of data are listed in the accompanying Explanatory Notes.

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