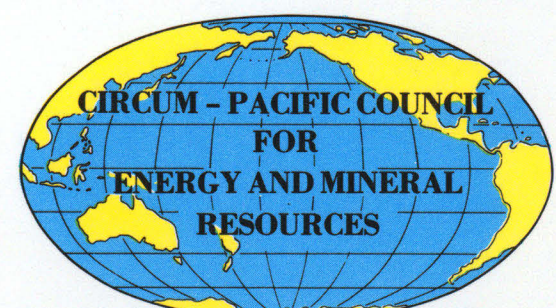




CIRCUM-PACIFIC COUNCIL FOR ENERGY AND MINERAL RESOURCES
MICHAEL T. HUBERTY, Chairman
CIRCUM-PACIFIC MAP PROJECT
JOHN A. ROSENBERG, Director
GEORGE GRYZ, General Chairman

ENERGY-RESOURCES MAP OF THE CIRCUM-PACIFIC REGION

NORTHWEST QUADRANT

TOMOYUKI MORITANI, CHAIRMAN, NORTHWEST QUADRANT PANEL

Compilers and Principal Contributors*

PETROLEUM RESOURCES
Tomoaki Sumi, Geological Survey of Japan, Tsukuba, Ibaraki 305, Japan
Hiroo Inoue, Geological Survey of Japan, Tsukuba, Ibaraki 305, Japan
Masahiko Kato, Japan National Oil Corporation, Tokyo 100, Japan
GEOLOGICAL RESOURCES
Osamu Matsuyoshi, Geological Survey of Japan, Tsukuba, Ibaraki 305, Japan
Tomoaki Sumi, Geological Survey of Japan, Tsukuba, Ibaraki 305, Japan

MAP PRODUCTION BY U.S. GEOLOGICAL SURVEY
Compilation coordinated by George Gryz
Cartography by Frank J. Sidiakuska, Jr.

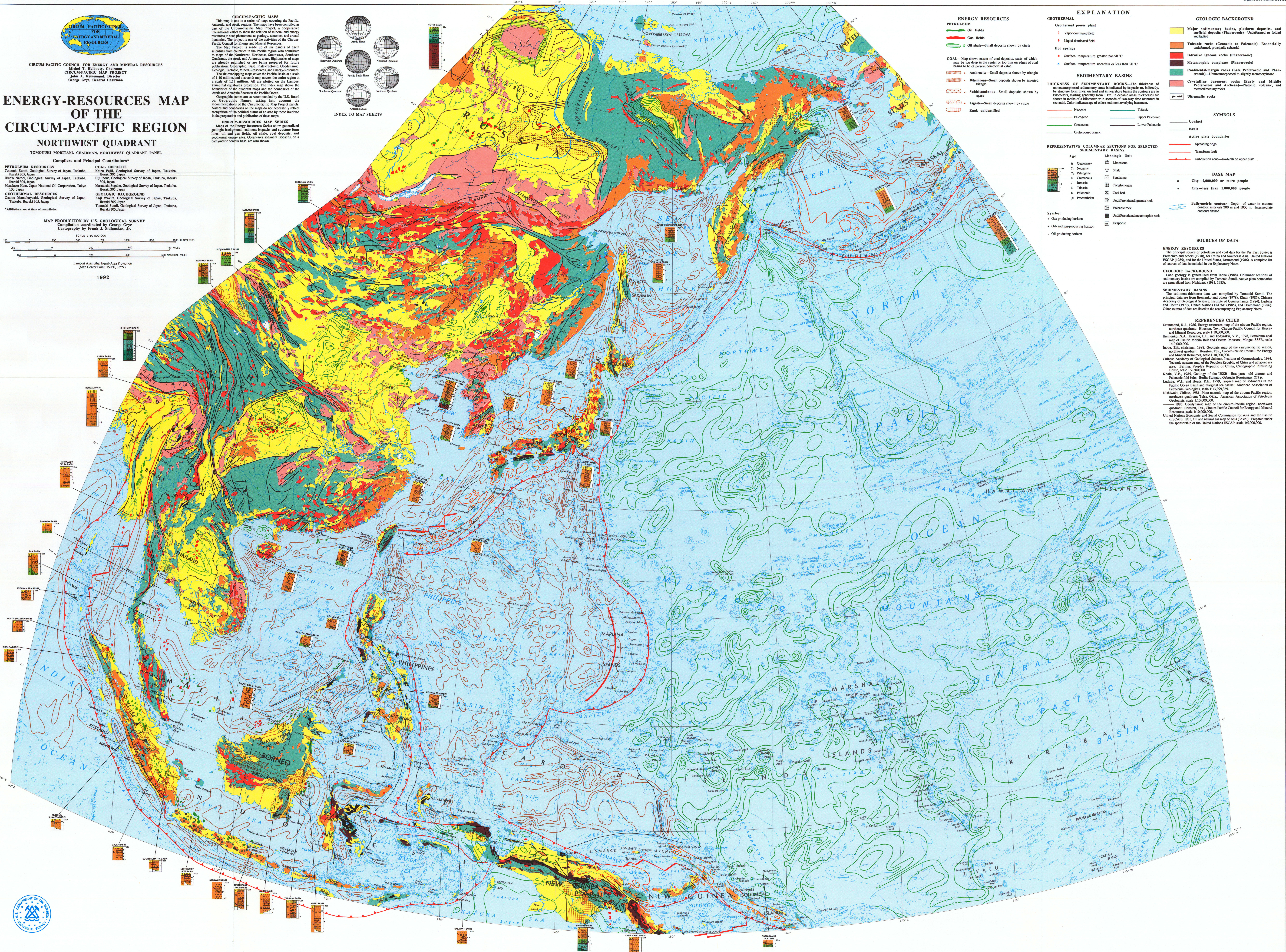
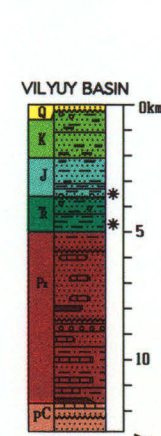
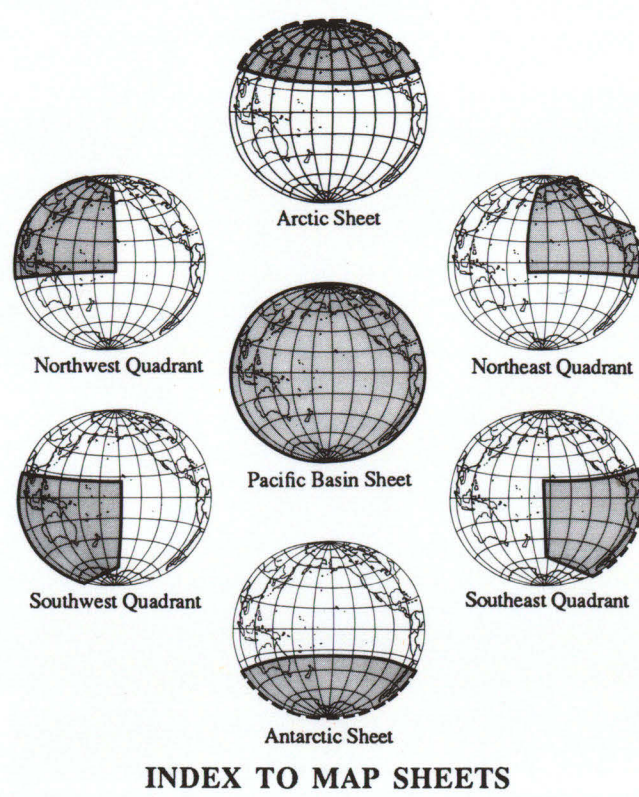
SCALE 1:10,000,000
750 0 750 1500 KILOMETERS
750 0 750 1500 NAUTICAL MILES
Lambert Azimuthal Equal-Area Projection
(Map Center Point: 150°E, 30°N)

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 relation of mineral and energy resources to such phenomena as geology, tectonics, and crustal structure. 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 maps of the Northwest, Northeast, Southwest, Southeast, the Arctic and Antarctic areas. Eight series of maps are already published or are being prepared for future publication: Geographic, Base, Plate-Tectonic, Geodynamic, Geologic, Tectonic, Mineral Resources, and Energy Resources. The six overlapping maps cover the Pacific Basin at a scale of 1:17 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 areas.

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



ENERGY RESOURCES

- PETROLEUM**
Oil fields
Gas fields
Oil shale—Small deposits shown by circle
Anthracite—Small deposits shown by triangle
Bituminous—Small deposits shown by inverted triangle
Subbituminous—Small deposits shown by square
Lignite—Small deposits shown by circle
Rank unidentified
- COAL**—Map shows extent of coal deposits, parts of which may be as deep in the center as on edges of coal basins to be of present commercial value.

EXPLANATION

- GEOLOGICAL**
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 unconsolidated sedimentary rocks is indicated by isopachs or, indirectly, by structure from lines on land and in nearshore basins. The contour is in kilometers, starting generally from 1 km. In oceanic areas thicknesses are shown in tenths of a kilometer or in seconds of two-way time (contours in seconds). Color indicates age of oldest sedimentary basins.

- SEDIMENTARY BASINS**
Neogene
Paleogene
Cretaceous
Cretaceous-Jurassic
- SEDIMENTARY BASINS**
Tertiary
Upper Paleozoic
Lower Paleozoic
Cretaceous-Jurassic

- REPRESENTATIVE COLUMBIAN SECTIONS FOR SELECTED SEDIMENTARY BASINS**
Age
Lithologic Unit
Quaternary
Tertiary
Paleogene
Cretaceous
Jurassic
Triassic
Paleozoic
Precambrian

- BASE MAP**
City—1,000,000 or more people
City—less than 1,000,000 people
Bathymetric contour—Depth of water in meters; contour interval 200 m and 1000 m. Intermediate contours dashed
- SYMBOLS**
Contact
Fault
Active plate boundaries
Spreading ridge
Transform fault
Subduction zone—swath on upper plate

- SYMBOLS**
Gas-producing horizon
Oil- and gas-producing horizon
Oil-producing horizon

GEOLOGICAL BACKGROUND

- Major sedimentary basins, platform deposits, and surficial deposits (Phanerozoic)—Undifferentiated to folded and faulted
Volcanic rocks (Cenozoic to Paleozoic)—Essentially undifferentiated, principally subvolcanic
Intrusive igneous rocks (Phanerozoic)
Metamorphic rocks (Phanerozoic)
Continental-margin rocks (Late Paleozoic and Phanerozoic)—Unconsolidated to slightly metamorphosed
Crystalline basement rocks (Early and Middle Paleozoic and Archean)—Plutonic, volcanic, and metamorphic rocks
Ultramafic rocks

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

- BASE MAP**
City—1,000,000 or more people
City—less than 1,000,000 people
Bathymetric contour—Depth of water in meters; contour interval 200 m and 1000 m. Intermediate contours dashed

- SYMBOLS**
Gas-producing horizon
Oil- and gas-producing horizon
Oil-producing horizon

ENERGY RESOURCES
The principal source of petroleum and coal data for the Far East Soviet is Ermakova and others (1975), for China and Southeast Asia, United Nations ESCAP (1985), and for the United States, Drummond (1986). A complete list of sources of data is included in the Explanatory Notes.

GEOLOGICAL BACKGROUND
Land geology is generalized from Inoue (1988). Columnar sections of sedimentary basins are compiled by Tomoaki Sumi. Active plate boundaries are generalized from Nishiwaki (1981, 1985).

SEDIMENTARY BASINS
The sediment-thickness data was compiled by Tomoaki Sumi. The principal data are from Ermakova and others (1975), Khan (1985), Chinese Academy of Geological Sciences, Institute of Geomechanics (1984), Ludwig and Houtz (1979), United Nations ESCAP (1985), and Drummond (1986). Other sources of data are listed in the accompanying Explanatory Notes.

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