

Dynamic Tectonic & Metallogenic Model

DYNAMIC COMPUTER MODEL FOR THE TECTONICS AND METALLOGENESIS OF THE CIRCUM-NORTH PACIFIC

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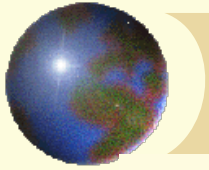
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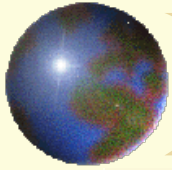
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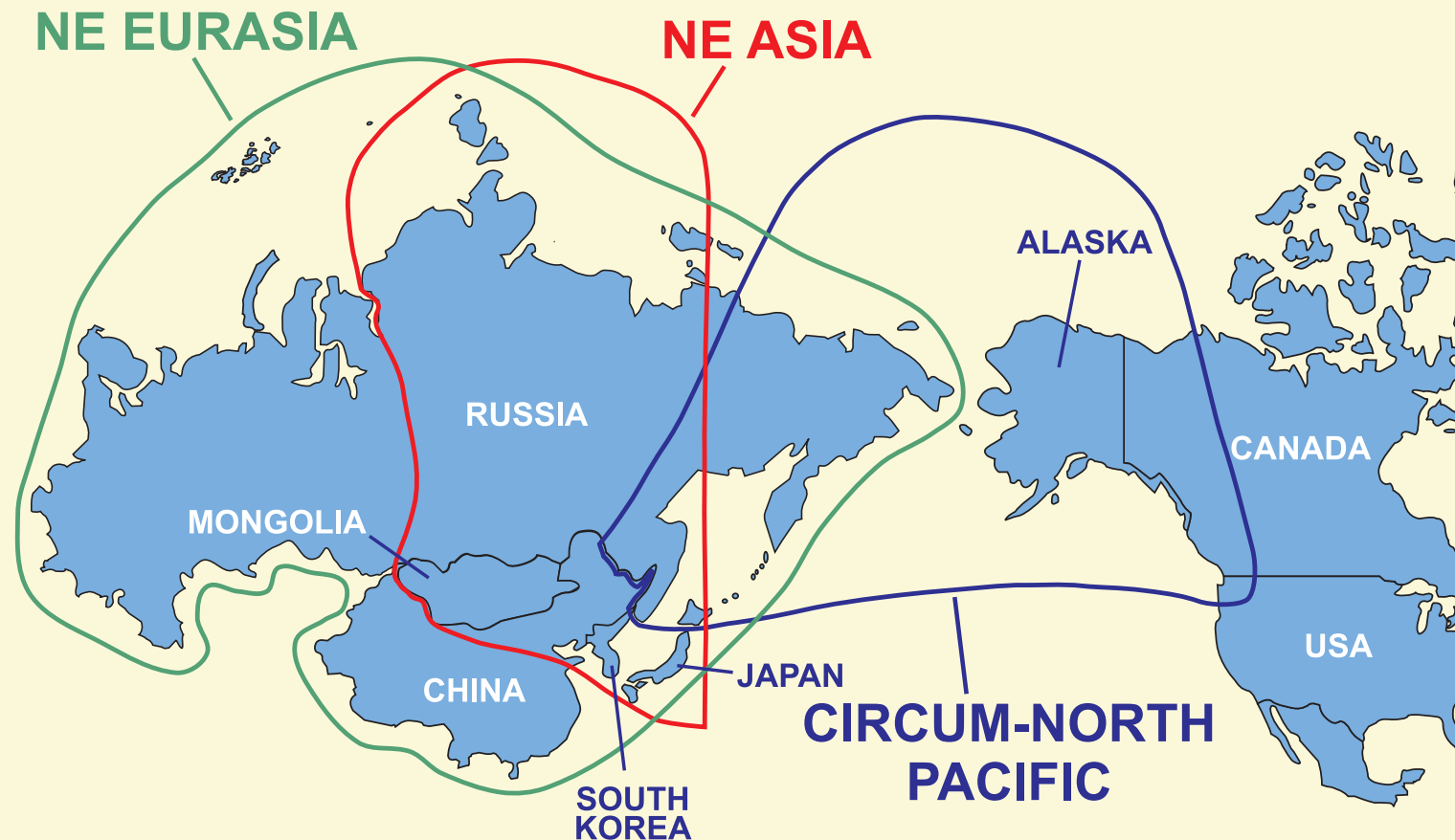
PURPOSES OF TALK

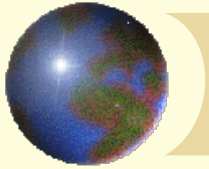
- 1. Show Professional Paper on Phanerozoic tectonic evolution of Circum-North Pacific on which dynamic model is based.**
- 2. Briefly review methods and concepts for construction of the dynamic tectonic model.**
- 3. Show examples of static time-slice diagrams from which dynamic model was constructed.**
- 4. Show a preliminary example of a newly-developed dynamic computer model for the tectonics of Northeast Asia.**
- 5. Distribute copies of CD with Dynamic Model and Professional Paper, and copies of project brochures.**



Dynamic Tectonic & Metallogenic Model

MINERAL RESOURCE STUDIES IN EURA AND WESTERN NORTH AMERICA





Dynamic Tectonic & Metallogenic Model

MAJOR PARTICIPANTS IN CIRCUM-NORTH PACIFIC AND NORTHEAST ASIA RESOURCE PROJECTS

CIRCUM-NORTH PACIFIC PROJECT:

RUSSIAN ACADEMY OF SCIENCES
ROSKOMNEDRA (NOW MINISTRY OF
NATURAL RESOURCES)
ALASKA DIVISION OF GEOLOGY AND
GEOPHYSICAL SURVEYS
GEOLOGICAL SURVEY OF CANADA
U.S. GEOLOGICAL SURVEY

NE ASIA PROJECT:

RUSSIAN ACADEMY OF SCIENCES
RUSSIAN MINISTRY OF NATURAL
RESOURCES
MONGOLIAN ACADEMY OF SCIENCES

MONGOLIAN MINISTRY OF MINES,
ENERGY, AND RESOURCES
CHINESE MINISTRY OF GEOLOGY
KOREAN INSTITUTE OF GEOLOGY AND
MINING
GEOLOGICAL SURVEY OF JAPAN
U.S. GEOLOGICAL SURVEY

MAJOR COLLABORATORS:

NORTHWEST MINING ASSOCIATION
ALASKA MINERS ASSOCIATION
UNIVERSITY OF ALASKA
MICHIGAN STATE UNIVERSITY
COLORADO SCHOOL OF MINES
STANFORD UNIVERSITY
UNIVERSITY OF ARIZONA

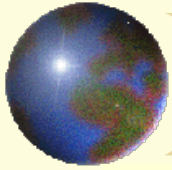


The Global Mineral Resource Assessment Project (GMRAP)

A USGS Cooperative
International Project to
Assess the World's
Undiscovered Nonfuel
Mineral Resources

Klaus J. Schulz, Project Chief
**Joseph A. Briskey, Associate
Project Chief**





Dynamic Tectonic & Metallogenic Model

PROJECT PAMPHLETS FOR CIRCUM-NORTH PACIFIC AND NORTHEAST ASIA

USGS
science for a changing world

**MINERAL DEPOSITS, METALLOGENESIS,
AND TECTONICS OF THE RUSSIAN FAR EAST,
ALASKA, AND THE CANADIAN CORDILLERA**
Project Summary

GEOGRAPHIC INDEX MAP

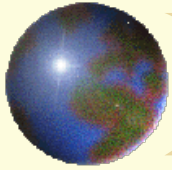
USGS
science for a changing world

**MINERAL RESOURCES, METALLOGENESIS,
AND TECTONICS OF NORTHEAST ASIA**
Project Summary

PROJECT AREA: EASTERN AND SOUTHERN SIBERIA, MONGOLIA,
NORTHEASTERN CHINA, SOUTH KOREA, AND JAPAN

PREVIOUS PROJECT AREA: RUSSIAN FAR EAST,
ALASKA, & CANADIAN CORDILLERA

GEOGRAPHIC INDEX MAP



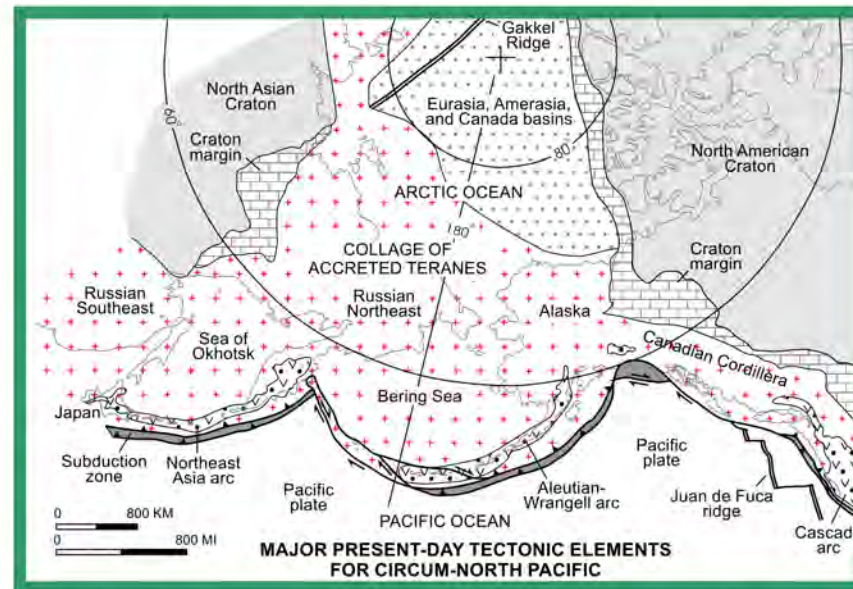
Dynamic Tectonic & Metallogenic Model



Phanerozoic Tectonic Evolution of the Circum-North Pacific

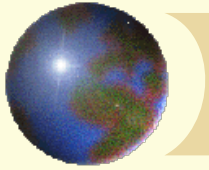
U.S. Geological Survey Professional Paper 1626

PREPARED IN COLLABORATION WITH:
ALASKA DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS
GEOLOGICAL SURVEY OF CANADA
RUSSIAN ACADEMY OF SCIENCES
RUSSIAN MINISTRY OF NATURAL RESOURCES



Available for free downloading from USGS Web site: <http://geopubs.wr.usgs.gov/prof-paper/pp1626/>

U.S. Department of the Interior
U.S. Geological Survey



Dynamic Tectonic & Metallogenic Model



Dynamic Computer Model for the Metallogenesis and Tectonics of the Circum-North Pacific



By Christopher R. Scotese, Warren J. Nokleberg, James W.H. Monger, Ian O. Norton, Leonid M. Parfenov, Thomas K. Bundtzen, Kenneth M. Dawson, Roman A. Eremin, Yuri F. Frolov, Kazuya Fujita, Nikolai A. Goryachev, Alexander I. Khanchuk, Anany I. Pozdeev, Vladimir V. Ratkin, Sergey M. Rodinov, Ilya S. Rozenblum, David W. Scholl, Vladimir I. Shpikerman, Anatoly A. Sidorov, and David B. Stone

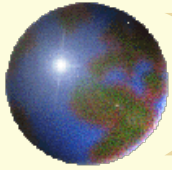
Warren J. Nokleberg and Michael F. Diggles, Editors

Open-File Report 01-261

2001

U.S. Department of the Interior

U.S. Geological Survey



Dynamic Tectonic & Metallogenic Model

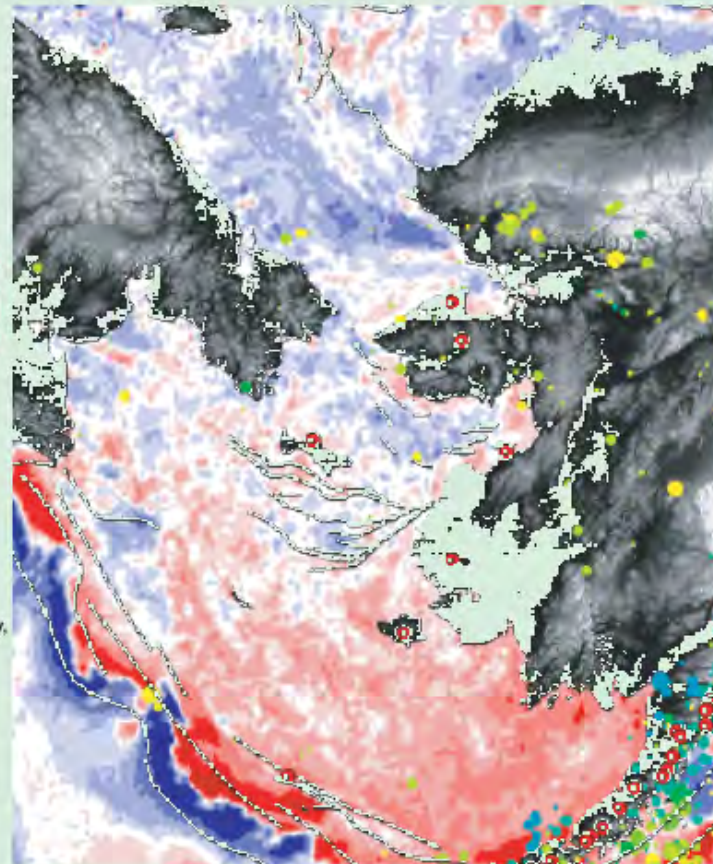
GEOGRAPHIC INFORMATION SYSTEMS (GIS) COMPILATION of GEOPHYSICAL, GEOLOGIC and TECTONIC DATA for the BERING SHELF, CHUKCHI SEA, ARCTIC MARGIN and ADJACENT LANDMASSES

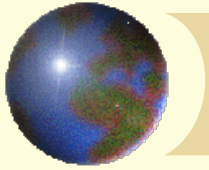


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Mark Greninger,
and
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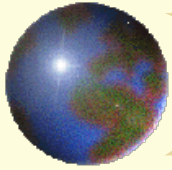
Dynamic Tectonic & Metallogenic Model

TECTONIC DEFINITIONS

TERRANE: A FAULT-BOUNDED GEOLOGIC UNIT THAT IS CHARACTERIZED BY A UNIQUE GEOLOGIC HISTORY THAT DIFFERS MARKEDLY FROM THAT OF ADJACENT TERRANES. IS A PHYSICAL ENTITY, A STRATIGRAPHIC SUCCESSION BOUNDED BY FAULTS.

ACCRETION: TECTONIC JUXTAPOSITION OF TWO OR MORE TERRANES, OR COLLISION OF A TERRANE TO A CONTINENTAL MARGIN

OVERLAP ASSEMBLAGE: A SEQUENCE OF SEDIMENTARY AND (OR) IGNEOUS ROCKS DEPOSITED ON, OR INTRUDED INTO TWO OR MORE ADJACENT TERRANES.



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TECTONIC ENVIRONMENTS

CRATONAL

PASSIVE CONTINENTAL MARGIN

METAMORPHOSED CONTINENTAL MARGIN

CONTINENTAL-MARGIN ARC

ISLAND ARC

OCEANIC CRUST, SEAMOUNT, OPHIOLITE

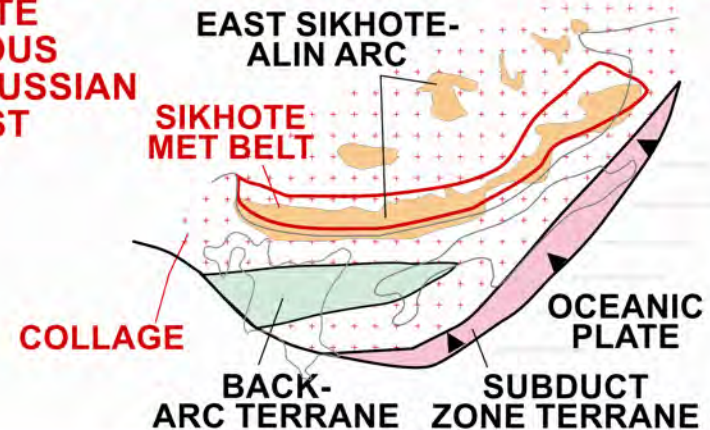
ACCRETIONARY WEDGE AND SUBDUCTION ZONE

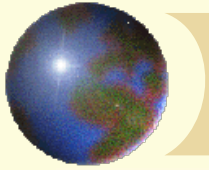
TURBIDITE BASIN

METAMORPHOSED

SAMPLE OF TECTONIC ENVIRONMENTS

MAJOR LATE
CRETACEOUS
UNITS IN RUSSIAN
SOUTHEAST







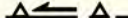



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EXPLANATION FOR METALLOGENIC-TECTONIC MODEL






TECTONIC ENVIRONMENTS

	CRATONAL
	CRATON-MARGIN
	IGNEOUS ARC
	SUBDUCTION ZONE
	BACK-ARC
	POST-ACCRETION
	OCEANIC PLATE
	COLLAGE OF ACCRETED TERRANES





CONTACTS AND FAULTS

	CONTACT
	THRUST FAULT
	OBLIQUE THRUST FAULT
	STRIKE-SLIP FAULT
	SUBDUCTION ZONE
	TRANSFORM FAULT

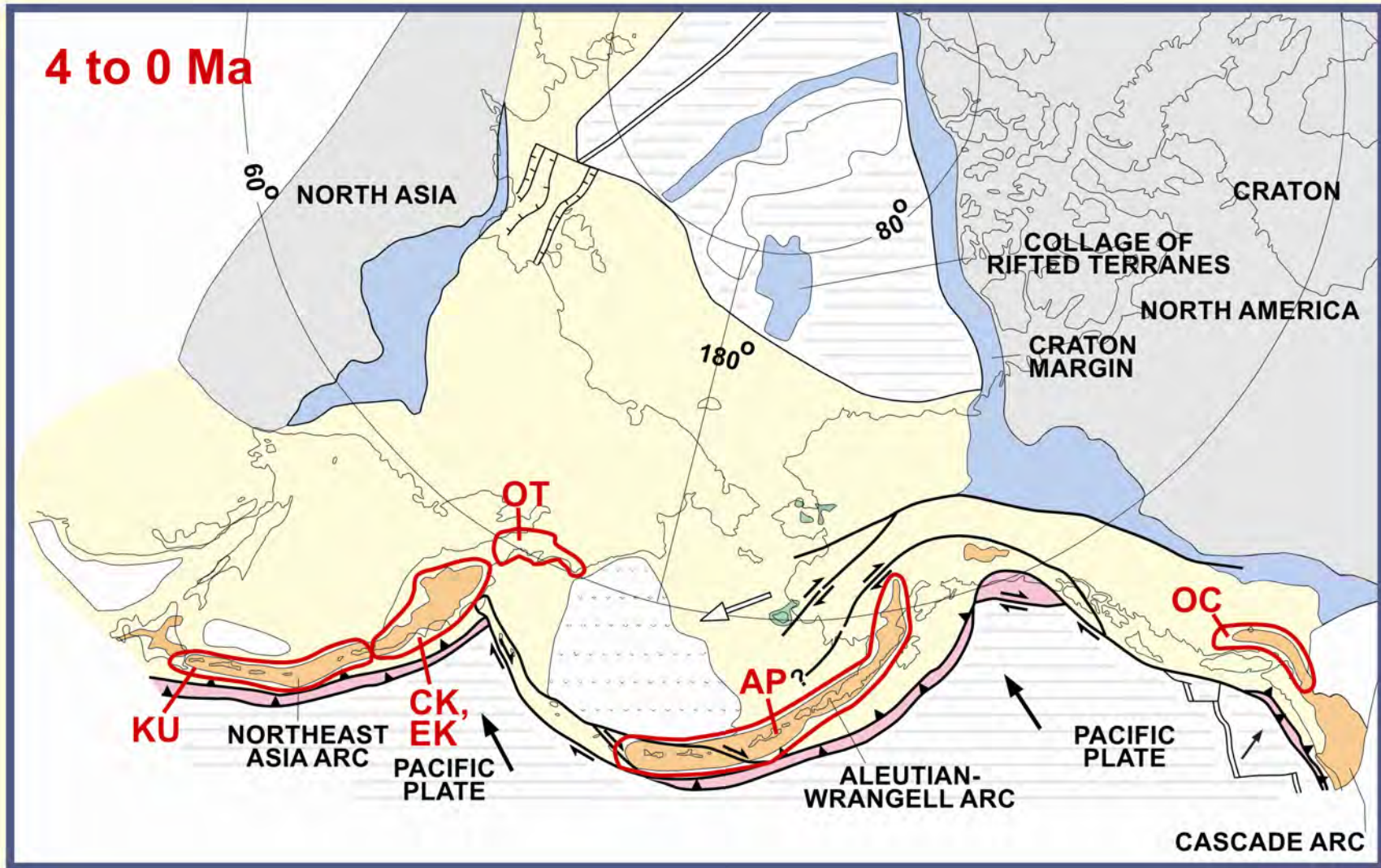
SYMBOLS

	OCEANIC RIDGE
	BACK-ARC SPREADING
	SUBDUCTION-RELATED PLUTONIC ROCKS
	COLLISIONAL GRANITES
	RELATIVE PLATE MOTION

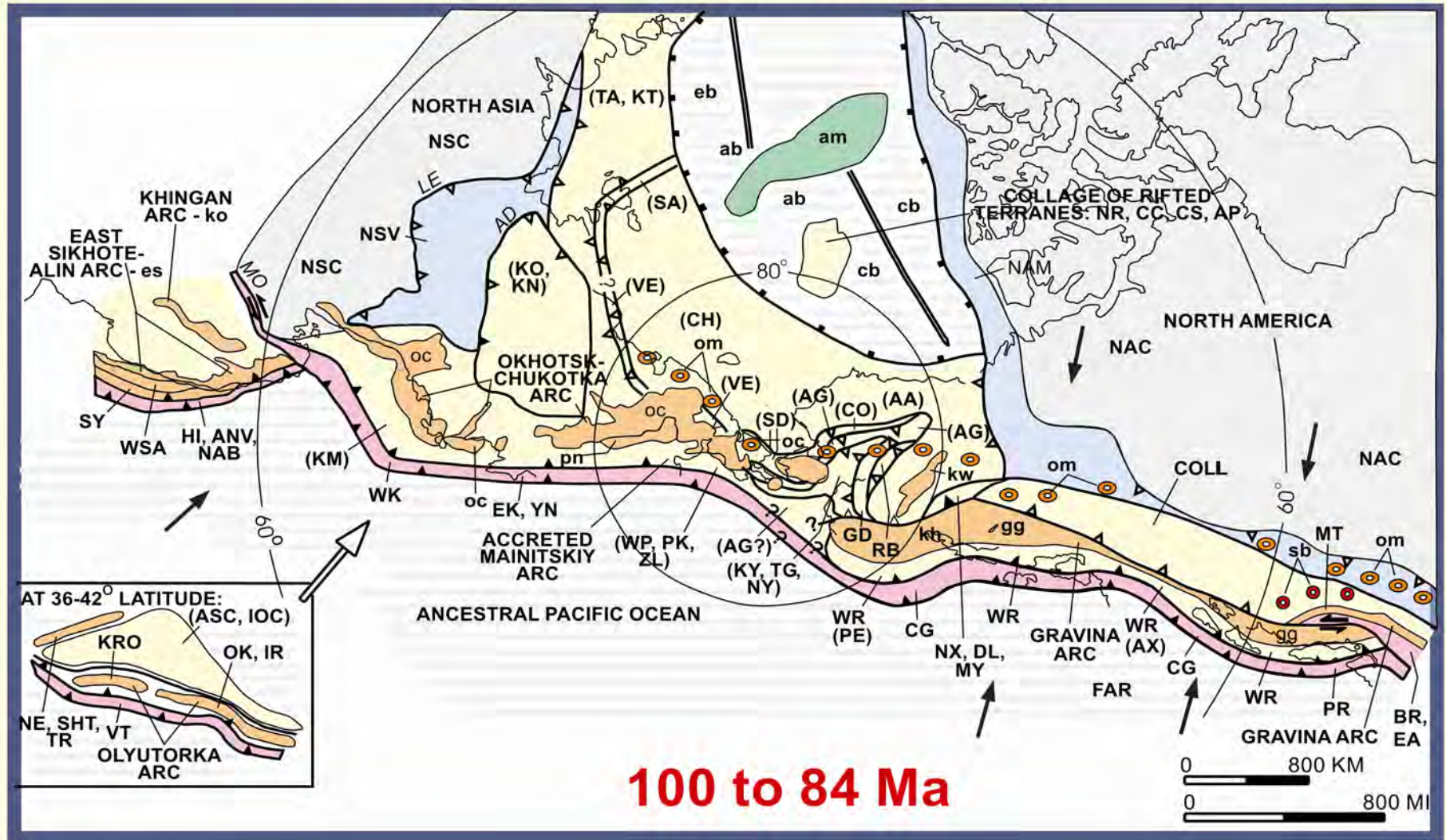
TECTONIC ENVIRONMENTS FOR METALLOGENIC BELTS

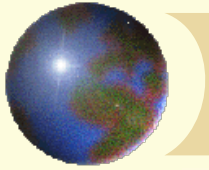
	SUBDUCTION - AXIAL ARC, FOREARC, AND BACKARC
	COLLISIONAL - ANATECTIC IGNEOUS ARC & REGIONAL METAMORPHISM
	POST-COLLISION - EXTENSIONAL METAMORPHISM
	RIFTING - SEA FLOOR, BACK-ARC, CONTINENTAL
	TRANSFORM MARGIN - IGNEOUS ARC AND REGIONAL METAMORPHISM

PRESENT STAGE OF TECTONIC MODEL FOR CIRCUM-NORTH PACIFIC



MID- TO LATE CRETACEOUS STAGE OF TECTONIC MODEL FOR CIRCUM-NORTH PACIFIC





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CONCLUSIONS

Today, we have attempted to:

1. Show Professional Paper on Phanerozoic tectonic evolution of Circum-North Pacific on which dynamic model is based.
2. Briefly review methods and concepts for construction of the dynamic tectonic model.
3. Show examples of static time-slice diagrams from which dynamic model was constructed.
4. Distribute copies of CD with Dynamic Model and Professional Paper, and copies of project brochures.
5. We thank you for your interest in this work.