Plate Tectonics

1.5 by - Today

Ancient Oceans & Continents

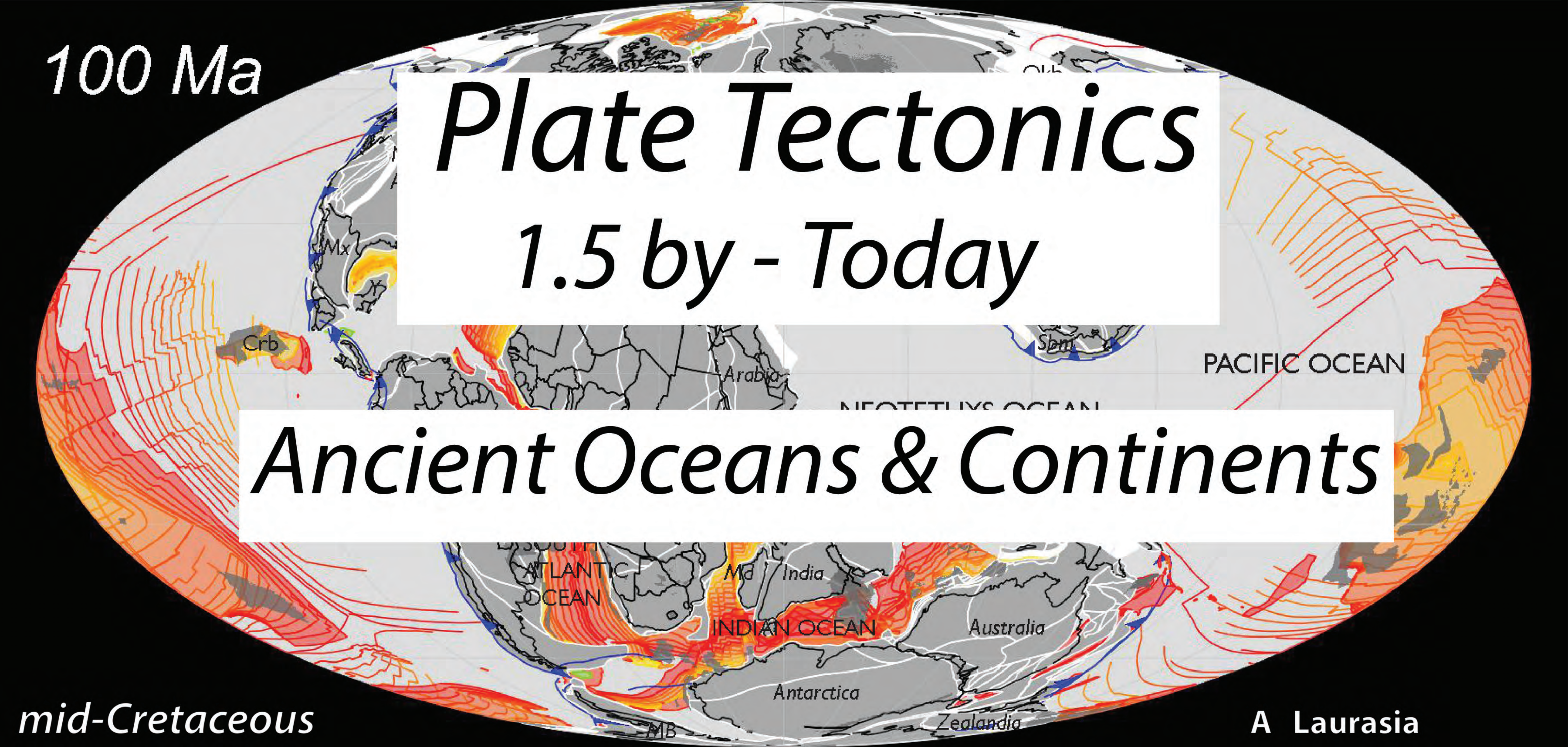

Plate Tectonics during the Last 1.5 billion years: An Atlas of Ancient Oceans and Continents

Introduction

The maps in this atlas are the first draft of a new set of plate tectonic reconstructions that will provide the framework for the revised paleogeographic and paleoclimatic maps that I am preparing for my book, "Earth History: Evolution of the Earth Systems". As the title of this work implies, the goal of this atlas is to identify the major continents and oceans back through time. Tables 1 and 2 list the names of the continents and oceans shown in this atlas. Names shown in bold are newly coined ocean and continent names. Figure 1 is a "tectonic phylogeny" that shows how these continents and oceans have deeloped through time.

Continents

Continents are defined to be regions of the Earth that are underlain by continental crust (~lithosphere). Continents may be "emergent" or "flooded" depending on sea level, which has varied from ~200 meters above modern sea level to ~200 meters below modern sea level. The continental regions on these maps are shown in two colors: gray and white. The gray areas represent extant regions of continental crust. The white regions represent areas of continental crust that have been removed by subduction (tectonic erosion), underthrusting beneath continents (like Greater India), or are simply squeezed and compressed into much narrower zones (e.g. the Rocky Mountains or the Central Asian collision zone).

Continents come in a variety of sizes and shapes. We reserve the name "continent" for regions of continental crust greater than 10 Mkm^2 . The present-day continents are: Africa, Antarctica, Asia, Australia, Europe, North America, and South America. In the Early Ordovician the continents were: Baltica, Cathaysia, Gondwana, Laurentia, and Siberia. Regions with areas less than 10 Mkm^2 are either "subcontinents", like the Indian subcontinent (4.6 Mkm^2), or "island continents" like Greenland or Madagascar. Subcontinents are continental regions that are contiguous with a larger continent, but are considered to be a distinct region. India is subcontinent because it is separated from Asia by the Himalaya mountains and Tibetan plateau. Island continents, on-the-other-hand, are simply very large islands. Zealandia is an example of a mostly submerged an island continent. Finally, Regions of continental crust less than 1 Mkm^2 may be considered to be "microcontinents" (e.g., S. Orkney Islands, Seychelles, Rockall plateau, or Tasman Rise).

The naming conventions for continents . . .

Oceans

Ocean basins are defined to be regions of the Earth that are underlain by oceanic lithosphere. Ocean basins, together with the flooded portions of the continents, comprise the Earth's oceans, seas, and seaways. It is interesting to note that following the definition of continent and ocean proposed here, there are regions of the Earth that can be considered to be both "continents" and "oceans". These regions are the portions of the continents flooded by the sea. For example, the Grand Banks of eastern Canada is part of the continent of North America, but the water above the Grand Banks is part of the Atlantic Ocean. This duality is due to the fact that the landward boundary of the ocean is the shoreline, whereas the seaward boundary of the continent lies near the junction of the continental rise and continental slope. In the past, this duality has lead to a fair degree of confusion when it came to naming oceans and continents. Also, it should be noted that no attempt has been made to show past coastlines on the maps in this atlas.

The derivation of the names of the modern oceans generally falls into one of three categories: mythological names, location names, and descriptive names. For example, the Atlantic Ocean is named after the Greek god, Atlas; the Indian Ocean is named after the subcontinent of India; the Pacific Ocean was named by Francisco Pissarro, who thought that the Pacific Ocean looked "peaceful". Some of Paleozoic and Mesozoic Oceans are named after Greek gods related to Atlas. Tethys was the XXX of Atlas. Iapetus was the XXX of XXX, a Rhea (Rheic Ocean) was the XXX of XXX. Because it is difficult to meaningfully continue these lineages, none of the new oceans are named after Greek gods. Instead we have adopted a dual naming convention. The names of the new oceans either reflect the local geography (e.g., the Mozambique Ocean once ran through most of East Africa, including Mozambique) or a related geologic/tectonic feature (e.g., the Grenville Ocean is the ocean basin that closed during the Grenville Orogeny (~1050 Ma) in eastern North America.

Coining new names for every new ocean, however, can be confusing. To avoid confusion and promote clarity we have tried to make slight modification to existing names, especially if there is a relation of inheritance. For example, originally there was just one ocean called the "Tethys Ocean". However, we now know that three distinct oceans: ProtoTethys, PaleoTethys, and NeoTethys once existed in the Tethyan realm. Using this format, we have coined the new terms "PaleoPanthalassa" and "ProtoPanthalassa" to described earlier versions of the Panthalassic Ocean.

The names of these bodies of water may change slightly depending on the maturity of an ocean basin. A newly formed ocean basin, one that is still relatively narrow, may be called a "sea", like the Red Sea, or if it connects two larger bodies of water, it may be called a "seaway". The term "sea" is also used for bodies of water surrounded or partially enclosed by continents, like the Mediterranean Sea or Weddell Sea. Oceans as they age, gradually narrow as the continents on either side of the ocean approach each other (through subduction of oceanic lithosphere). Thus, it is possible for a once mighty "ocean" to become a narrow "sea" or "seaway" prior to its demise.

Plate Tectonics

Plate boundaries are also shown on these maps, but no attempt has been made to identify the plates (e.g., Pacific, Farallon, Nazca, etc.) or label the individual plate boundaries (e.g., Mid-Atlantic Ridge). (That will come later.) I think that it is important that we have different and distinct names for the continents and oceans, on the one hand, and the plates, which underlie them, on the other hand. For example, it is easy to confuse the "Pacific plate" with the "Pacific ocean". The Pacific Ocean is currently made up of several plates (the Pacific plate, Nazca plate, and Cocos plate – to name a few); whereas there is only one "Pacific plate".

Like an infuriatingly difficult jigsaw puzzle whose pieces change size and shape as you try to solve it, the continents constantly break apart as new ocean basins form, and then reassemble into new shapes as subduction zones bring them back together. The plate tectonic model that I have built has more than 500 "jigsaw puzzle pieces". These puzzle pieces are called "tectonic elements" (Table 3). Figure XX. Is a modern map illustrating all of the tectonic elements used in this model. The major tectonic elements are also labeled on each of the plate tectonic maps (Maps 1 – 46).

(resume writing here)

Methodology & Previous Work

The methods used to reconstruct the past positions of the continents and the configuration of the surrounding ocean basins varies, depending on the age of the reconstruction (Figure 1). As one might, the useful information decreases in both quantity and quality back through time.

Figure 1. Illustrates the various data and methods used to make the plate tectonic reconstructions.

For the Cenozoic, Cretaceous, and late Jurassic . . .

For the early Mesozoic, . . .

For the Paleozoic, . . .

For the Precambrian, . . .

(resume writing here)

Plate Tectonic History 1.5 Billion - Today

The maps in this report have been excerpted from the animation by Scotese and Elling (2017). The full-length version of this animation can be found at https://www.youtube.com/watch?v=IlnwyAbczog.

This animation focuses of the plate tectonic development of our planet during the last 1.5 billion years.

Some highlights:

(add 1.5 by to 750 Ma)

750 Ma - breakup of the supercontinent of Rodinia following the collision of the Congo craton and the closure of the Mozambique Seaway.

750 - 600 Ma - the opening of the Panthalassic Ocean

700 Ma - the opening of the Kipchak Ocean as continental arcs rift away from Siberia

600 Ma - the start of multiple subduction zones along eastern Australia and Antarctica, the north-facing margin of Siberia (Mongolia & Amuria), and the Cadomian region of northern Gondwana

600 – 580 Ma - the conversion of slow-spreading ridges in the Kipchak Sea to subduction zones

580 Ma - the opening of the Iapetus Ocean

580 – 520 Ma - 1500 km of dextral strike-slip motion between Siberia and Laurentia

530 Ma - subduction of the Panthalassic midocean ridge beneath the Tasman-TransAntarctic subduction zone (SZ)

515 Ma - the conversion of the Central Iapetus midocean ridge (MOR) into a subduction zone and the start of the Taconic island arc

510 Ma - subduction of the SW Iapetus MOR beneath the NW Amazonian SZ; and the rifting of the pre-Cordillera terrrane from the southern margin of Laurentia

500 – 400 Ma - accetion and collision of island arcs in the Kipchak Sea to form core of Kazakhstania

495 Ma - the rifiting of Avalonia from Amazonia resulting in the opening of the Rheic Ocean

485 Ma - subduction of the ProtoTethyan MOR beneath the easternmost Kipchak island arc

475 Ma - rifting of the Cathaysian continents (N.China, S. China, Indochina, & Tarim) from the Indo-Australian margin of Gondwana

465 Ma - collision of the Taconic arc with the eastern margin of Laurentia

455 Ma - westward, Andean-style subduction begins along the eastern margin of Laurentia; eastward-dipping subduction begins along the western margin of Laurentia

445 Ma - Avalonia collides along the southern margin of Baltica and subduction begins along the southern margin of Avalonia

440 – 425Ma - 1500 km of sinistral strike-slip motion between Siberia and Laurentia

425 Ma - Baltica collides with Laurentia (Caledonian orogeny); Rheic MOR is subducted beneath Laurassia (Laurentia & Baltica); opening of Seventy Mile back-arc basin (BAB) along the western margin of LAurentia

420 Ma - subduction begins along northern margin of Gondwana

400 Ma - collision of southern Laurentia and northern South America (Acadian orogeny); Laurussia, reverses direction and head northward causing the conversion of MOR is the Seventy Mile Sea to convert to a subduction zone; Amuria begins to rotate counter-clockwise closing the Mongol-Okhotsk Seaway

370 Ma - initial collision between northern Gondwana (Amorican terranes) and Laurussia

360 Ma - collision of Seventy Mile island arc with western Laurussia (Antler /Caribou orogeny); Tarim collides with southern Kazakhstania (Tien Shan orogeny); northward dipping subduction begins beneath the Cathaysian continents (N.China, S. China, Indochina, & Tarim); South China (Yangtze craton) begins to rotate clock-wise closing the QinLing Ocean

360 – 300 Ma - 1000 km of dextral strike-slip collision between Armorican terranes of northern Gondwana and Hercynian Europe

300 Ma – closure of Central Asian Oceans (Altaids) and accretion of Kazakhstania between Europe and Siberia (Urals); subduction of PaleoTethyan MOR beneath Kazakhstania and Cathaysia; rifiting of the Cimmerian continent (Sanandaj-Sirjan terrane of Iran, Sistan and Farah blocks of Afghanistan, Lhasa, QiangTang, and Sibumasu (Siam, Burma, Malaysia, and Sumatra) from the Indo-Australian margin of Gondwana; collisionof LAurusssia and Gondwana to form western half of Pangea (Alleghenian/Variscan orogenies); accretion of Chileana and Patagonian terranes of SW Gondwana (Cape orogeny)

260 Ma - collapse of Seventy Mile back arc basin and collision of Sonoma island arc along western North America; accretion of Marie Byrdland and Zealandia to East Antarctica and eastern Australia; Eruption of the Omeishan LIP in SW China;

255 Ma - closure of Solonker Sea between Amurian and North China

250 Ma - eruption of the West Siberia large igneous province (LIP)

245 Ma - opening of Cache Creek BAB as Wrangellia rifts away from northwestern South America; opening of Slide Mountain BAB as Stikinia rifts away from northern Mexico

240 Ma - Sibumasu collides with Indochina along Bangong-Nujiang Co collision zone

240 – 220- Ma - subduction begins along southern margin of Cimmeria (propogating east to west)

220 Ma - closure of QinLing Seaway and accretion of Songpan-Ganze as South China (Yangtze craton) collides with North China; initial rifiting in Central Atlantic region (Newark group)

200 Ma - eruption of Central Atlantic Magmatic Province (CAMP); PaleoTethyan MOR is subducted beneath Cimmeria; unknown sliver continent rifts away from northern margin of Gondwana; Mongol-Okhotsk seaway narrows; East Gondwana (Madagascar/India/Australia/Antarctica) begins to rift away from West Gondwana (South America/Africa)

195 Ma - Final closure of Paleotethys as Cimmeria accretes to Eurasia; BAB between QiangTang and Lhasa opens;

190 Ma - the Karoo LIP erupts (Walvis Ridge / Tristan da Cunha hot spot)

185 Ma - the Pacific plate is created at the Izanagi/Phoenix/Farallon triple junction

180 Ma - Seafloor spreading starts in Central Atlantic and proto-Caribbean , rifting in Gulf of Mexico and the Western and Eastern Mediterranean; sinistral strike-slip between Mexico and North America; rifting begins in the Canada Basin between the North Slope block and Arctic North America; extension in the southern regions of the North Atlantic (between North America & Greenland, between Greenland – Rockall); subduction begins along eastern margin of Asia (Yenshanian orogeny)

180 – 100Ma - Wrangellia moves ~3000 km northward closing Cache Creek BAB

175 Ma - spreading ridge in Slide Mountain BAB converts to subduction zone as North America is driven westwards;

170 Ma - Seafloor spreading between East and West Gondwana; seafloor spreading between Iberia and North America;

165 Ma - Caribbean (B'') oceanic crust is created near Izanagi/Phoenix/Farallon triple junction

160 Ma - NeoTethyan MOR is subducted beneath Eurasia; Izanagi MOR connects with new MOR north of Exmouth plateau as

150 Ma - Rifting in South Atlantic; Stikine terranes collide with North America closing the Slide Mountain BAB; Lhasa-Qiangtang BAB closes

150 – Today - North America moves westward and the Rocky Mts are thrust skyward (Sierra Nevada, Sevier and Laramide orogenies)

145 Ma - Gulf of Mexico stops opening

140 Ma - Seafloor spreading begins in southern South Atlantic

135 Ma - Eruption of the Etendeka (Namibia)-Serra Gerral (SE Brazil) LIPs

120 Ma _ Rifting in east-central Africa (Chad / Sudan); complete closure of the Mongol-Okhotsk Seaway;

120 -90Ma - Eruption of large LIPs in the SW Pacific (Manihiki, Ontong-Java)

115 – 90 Ma - Creation of the Kerguelen plateau by voluminous reruptiosn at the Kerguelen hot spot (HS)

115 – 75Ma - Opening of the Olyutorska BAB of NE Siberia

110 Ma - Seafloor spreading begins in the northern South Atlantic; the Philippines island arc rifts away from the margin of S. China;

100 Ma - Wrangellia collides with western North America (British Columbia); collision of Caribbean oceanfloor with Mid-America SZ results in "capture" of Caribbean and start of west-dipping SZ along the eastern margin of the Caribbean plate; Rifitiing in the Tasman Sea as Zealandia begins to separate from eastern Australia;

105 Ma - Seafloor spreading stops in the Somali Basin and between NW India and the Lut block;

100 – 50 Ma - Dextral strike-slip along western North America carries Wrangellia and portions of the Stikine terranes, northward (~1500 km).

95 – 50 Ma - Australia slowly rifts away from Antarctica

90 Ma - India rifts away from Madagascar opening the Madagascar basin

90 – Today - Sinistral strike-slip along the northern margin of South America as Caribbean plate moves eastward along transpressive boundary; creation of the Ninety East Ridge by the Kerguelen HS

80 Ma - Obduction of ophiolites in Guatemala and Honduras as Caribbean plate collides with Central America

85 – 70 Ma - The oceanic lithosphere of the Bering Sea is created at the Izanagi MOR

75 - 35Ma - Sea Floor Spreading in the Philippine Sea

65 Ma - India, as it moves northward, collides with Lut block and carries it northward towards Eurasia; Eruption of the Deccan LIP;

60 Ma - Subduction of the Izanagi MOR beneath eastern Asia; Subduction of the NE Indian Ocean MOR north of Australia; Collision of the island arcs that makeup Kamchatka with NE Siberia; Capture of the Sea of Okhotsk;

60 Ma – Today - Collision of Adria/Apulia to form the Alps; 55 Ma - The Pacific plate changes direction (from N to W-NW);

50 Ma - India begins to collide with Asia; Greater Antilles arc (Cuba & Hispaniola) collides with Bahamas platform opening the Yucatan basin; Caribbean plate begins to move eastward with spreading at Cayman Ridge;

50 - 25Ma - Sea floor spreading in the Caroline Sea

50 Ma – Today - The collision of India deforms south-central Asia and results in the southeastward "extrusion' of SE Asia; Australia, together with India, rapidly rifts away from Antarctica

45 Ma - Extension begins in South China Sea

35 Ma - Extension begins in East Africa and Red Sea/Gulf of Aden;

30 Ma - Youngest ocean floor in South China Sea and Sea of Japan; closure of the dep marine connection between Tethys and the eastern Mediterranean;

30 – 15 Ma - Cosica and Sardinia rifts away from the southern coast of France opening the Ligurian Sea , and the Balearic islands rift away from the eastern coast of Spain opening the Balearic Sea (due to slab roll-back);

30 Ma – Today - Extension begins in the Basin and Range; Collision of Arabia and Ian to form the Zagros Mts.;

25 Ma - Subduction of the Farallon MOR beneath northern Mexico/southernmost California resulting in the rifting of Baja California from northwestern Mexico;

25 Ma – Today - Baja California and California west of the San Andreas Fault are carried northwestwards with the Pacific plate; continuing extension in the Basin & Range

20 Ma - Seafloor spreading (oldest ocean floor) in the Gulf of Aden;

15 – 0 Ma - Calabria rifts away from Sardinia opening the Tyrrhenian Sea (due to slab roll-back); ~500 km of dextral motion along the North Anatolian Fault as Turkey is squeezed westwards between Arabia and Eurasia;

10 Ma – Today - The extension in the Aegean Sea; ~150 km sinistral displacement along the Dead Sea Fault ;

Abbreviations Used:

HS – hot spot (i.e. the surface expression of a mantle plume)

MOR - Midocean Ridge

SZ - Subduction Zone

BAB - Back-arc Basin

LIP - Large Igneous Province

Some Definitions:

Continent – a large, mostly emergent landmass foundered on continental lithosphere

Ocean – a large, deep (> 2500 m) ocean basin foundered on oceanic lithosphere

Sea – a medium-sized oceanic region that is partially enclosed or entirely by continents

Seaway – a narrow oceanic region that is connected to open ocean, but is largely surrounded by continents.

Block – A small region lithosphere, usually continental, that is bounded by unspecified tectonic boundaries.

Terrane – a lithospheric region bounded by indentifiable tectonic boundaries that posseses a coherent stratigraphic record.

Plate – A region of lithosphere bounded by one or more of the following tectonic boundaries: midocen ridge (MOR), soubduction zone (SZ), or strike-slip fault (transform or transcurrent).

Tectonic Element – A plate, terrane, or block that has had a unique history of independent movement.

Credits

These plate tectonic reconstructions and aniamtions are based on the PALEOMAP Global Plate Tectonic Model. developed by C.R. Scotese. The were visualized using the program, Gplates, developed by R.D. Müller and EarthByte team .

(insert Gplates logo)

References Cited

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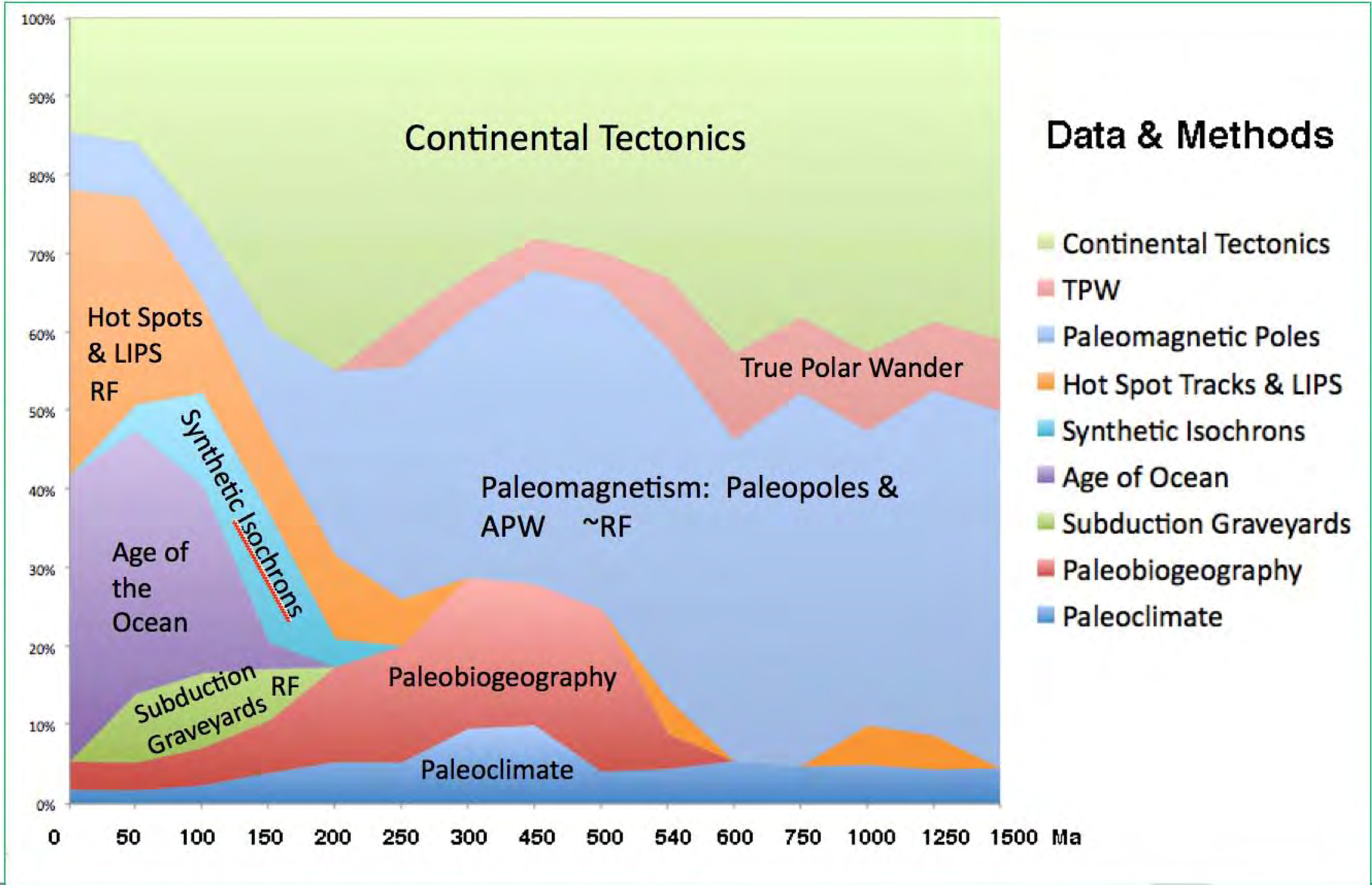


Data & Methods
Continental Tectonics
TPW
Paleomagnetic Poles
Hot Spot Tracks & LIPS
Synthetic Isochrons
Age of Ocean
Subduction Graveyards
Paleobiogeography
Paleoclimate
Continental Tectonics
Hot Spots & LIPS RF
Synthetic Isochrons
Age of the Ocean
Subduction Graveyards RF
True Polar Wander
Paleomagnetism: Paleopoles & APW ~RF
Paleobiogeography
Paleoclimate
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0
50
100
150
200
250
300
450
500
540
600
750
1000
1250
1500 Ma

TABLE 1. Oceans

Name of Ocean, Sea, or Seaway	*Etymology*	*Age Range*	*Citation*
Atlantic	Greek god, Atlas	130 – 170 Ma	
North Atlantic	Greek god, Atlas	0 – 130 Ma	
South Atlantic	Greek god, Atlas	0 – 130 Ma	
Indian	India	0 – 130 Ma	
Southwest Indian	SW portion of Indian Ocean		
Southeast Indian	SE portion of Indian Ocean		
Pacific	“pacifico” meaning peaceful	0 – 170 Ma	
Arctic		0 - 150 Ma	
Mediterranean			
Red	seasonal blooms of the red-coloured Trichodesmium erythraeum		Strabo, c. 64 BCE
Ligurian			
Black	Because it was “inhospitable”; Pontus Axeinus		Strabo, c. 64 BCE
Caspian			
Tyrhennian			
Aegean			
Balearic	Balearic islands		
Bering	Arctic explorer,		
Labrador	Territory of Labrador		
Weddell	Antarctic explorer,		
Ross	Antarctic explorer,		
Tasman			
Somali	country of Somalia		
Mozambique	country of Mozambique	dual	
Scotia			
Caribbean			
ProtoCaribbean	“first Caribbean”		
Gulf of Mexico*	country of Mexico		
Philippine	country of the Philippines		
South China	country of China		
Banda	island of Banda		
Japan	island of Japan		
Okhotsk			
NeoTethys	Greek god,		
PaleoTethys	Greek god,		
ProtoTethys	Greek god,		
Cache Creek	regional geology		
Slide Mountain	regional geology		

Seventy Mile	regional geology		
Mongol-Okhotsk	After Mongolia & Sea of Okhotsk		
Angayuchim	Innuit term meaning X		
Kipchak			
Uralian	Ural mountains		**This report**
Sverdrup	Arctic explorer		**This report**
Iapetus	Greek god,		
Rheic	Greek god,		
Aegir	Greek god,		
Panthalassic	Greek meaning "global ocean"		A. Wegener
PaleoPanthalassic	meaning "ancient Panthalassa"		**This report**
ProtoPanthalassic	Meaning "first Panthalassa"		**This report**
Pharusian-Adamastor			
Hijaz			
Arctida	Arctic		Zonenshain
Musgrave	regional geology		**This report**
Cathaysian	archaic word for China		**This report**
Aravalli	regional geology		**This report**
Bundelkhand	regional geology, Bundelkhand craton		**This report**
Gamburtsev	Gamburtsev mountains		**This report**
Grenville	regional geology, Grenville Font		**This report**

* also Neo-Tethys, Neotethys,

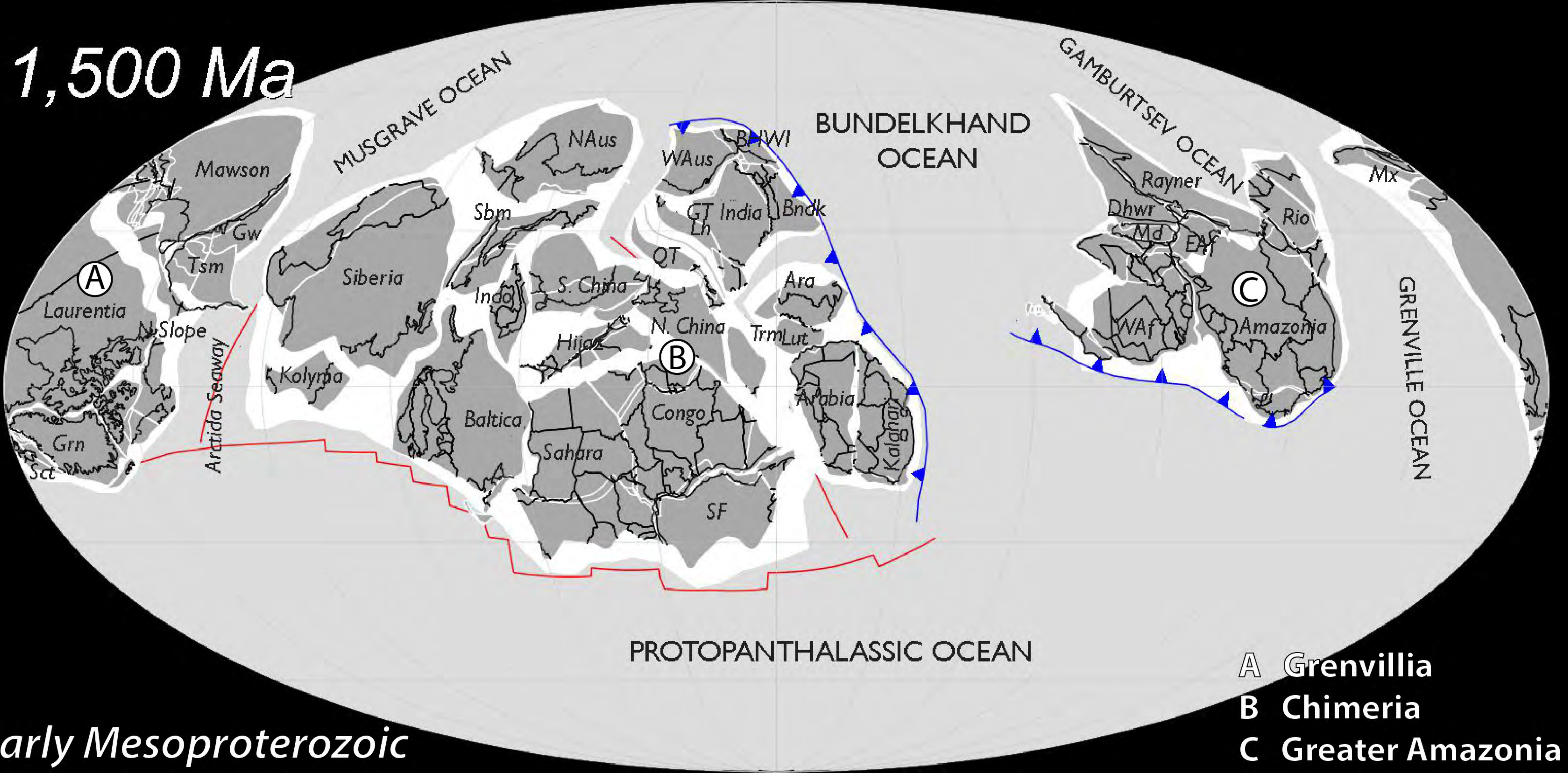
TABLE 2. Continents

Name of Continent , Subcontinent, or Microcontinent	*Etymology*	*Age Range*	*Citation*
Continents			
Africa			
Asia			
East Antarctica			
Australia			
Europe			
North America			
South America			
Pangea			
Laurasia			
Gondwana*			
West Gondwana			
East Gondwana			
Laurussia			
Laurentia			
Baltica			
Cimmeria			
Cathaysia			
Pannotia			
Rodinia			
North Rodinia			
South Rodinia			
Proto-Rodinia			**This report**
Congo Continent			**This report**
Balto-Siberia			**This report**
Terra Borealis			**This report**
Greater Amazonia			**This report**
Grenvillia			**This report**
Chimeria			**This report**
Subcontinents			
India			
Greater India			
Zealandia			
Arabia			
West Antarctica-Marie Byrdland			
Greenland			
Amuria			
North China			
South China			

Kazakhstania			
Armorica			
Avalonia			
Hijaz			
Kalahari craton			
BundelWAus			**This report**
Aravarabia			**This report**
Dharayner			**This report**
Microcontinents			
Madagascar			
Wrangellia			
Stikine			
Yucatan			
Lut			
Turkey			
Chortis			
Adria			
Iberia			
Omolon			
Indochina			
Borneo			
Tarim			
Chileana			
Cuyania			

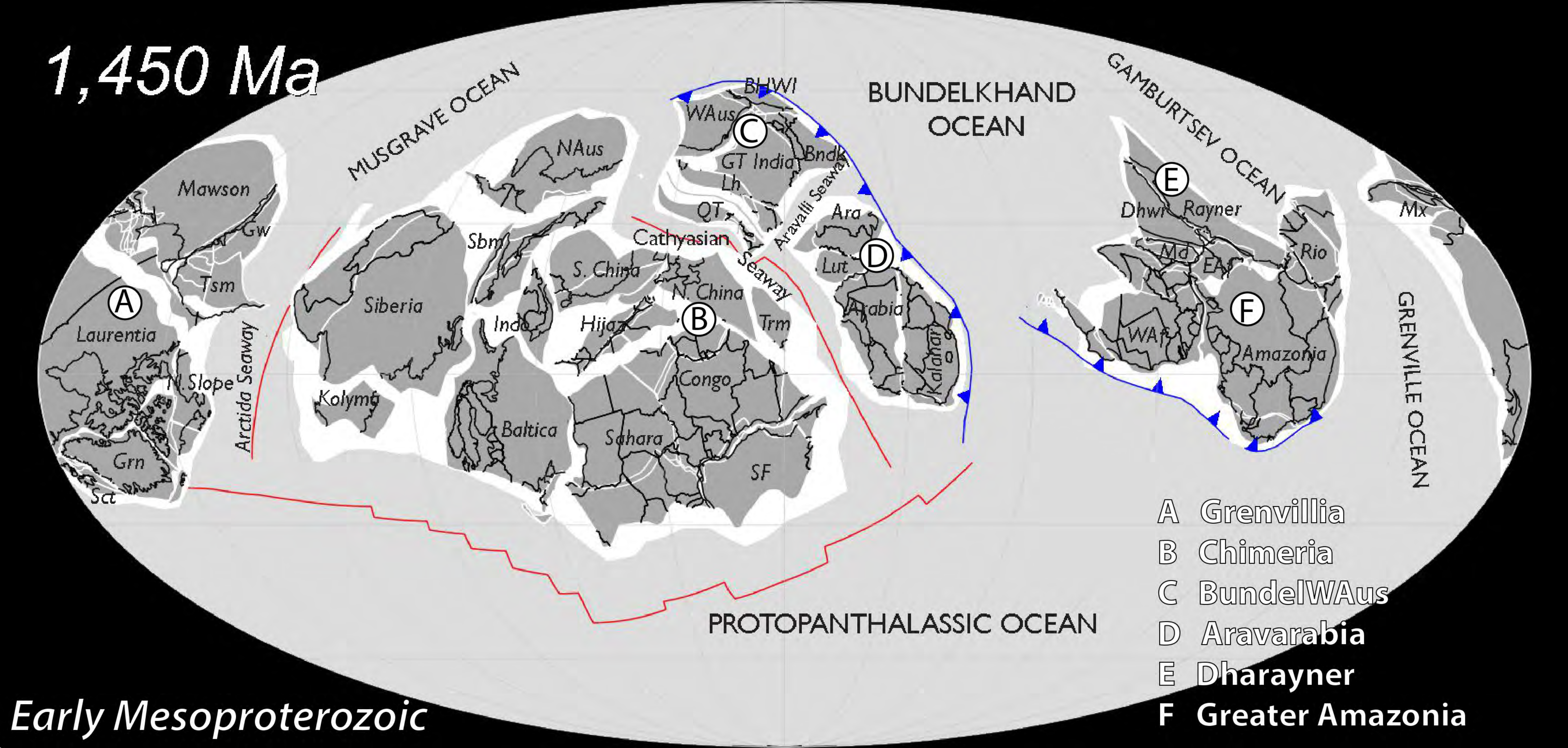
* also Gondwana-Land

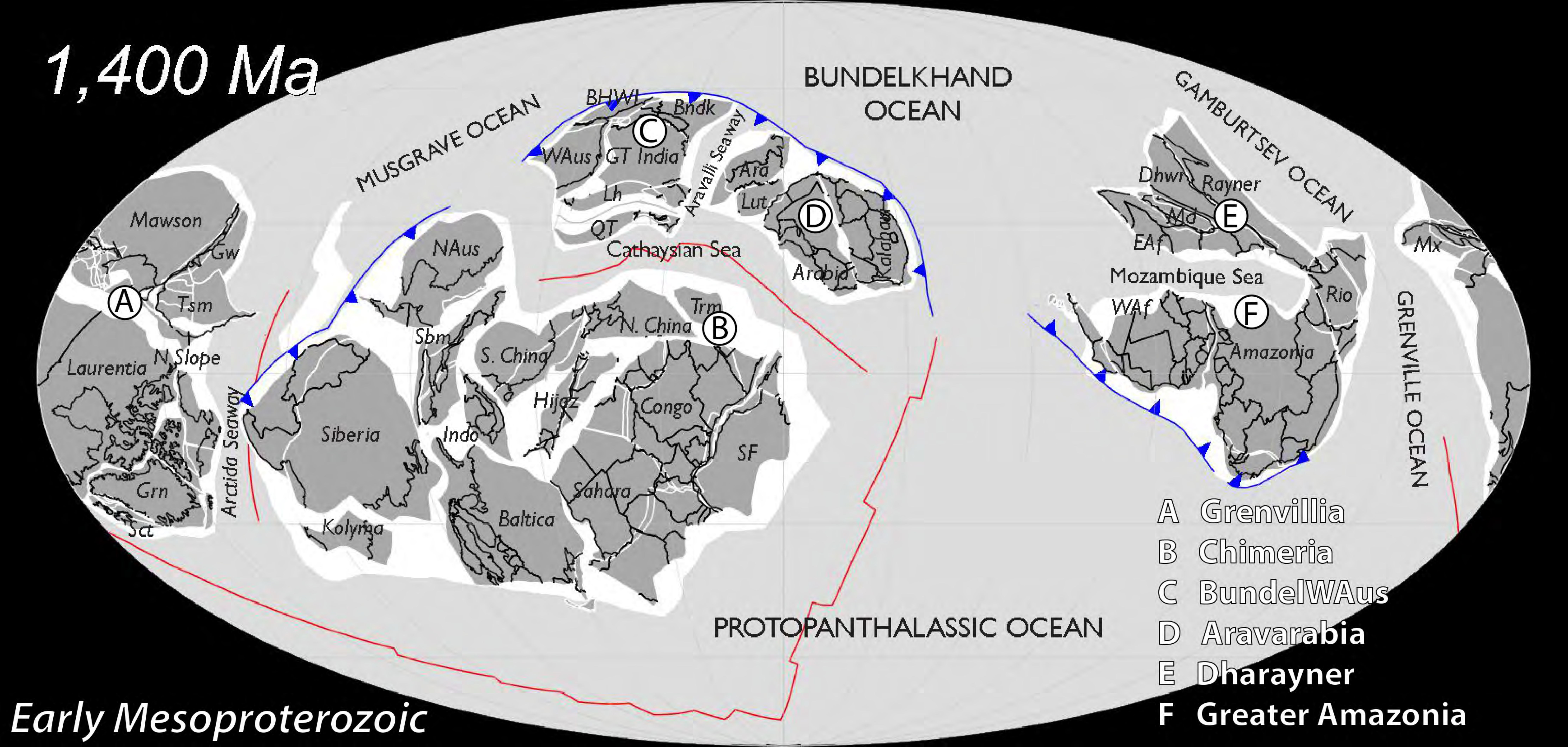
1,500 Ma

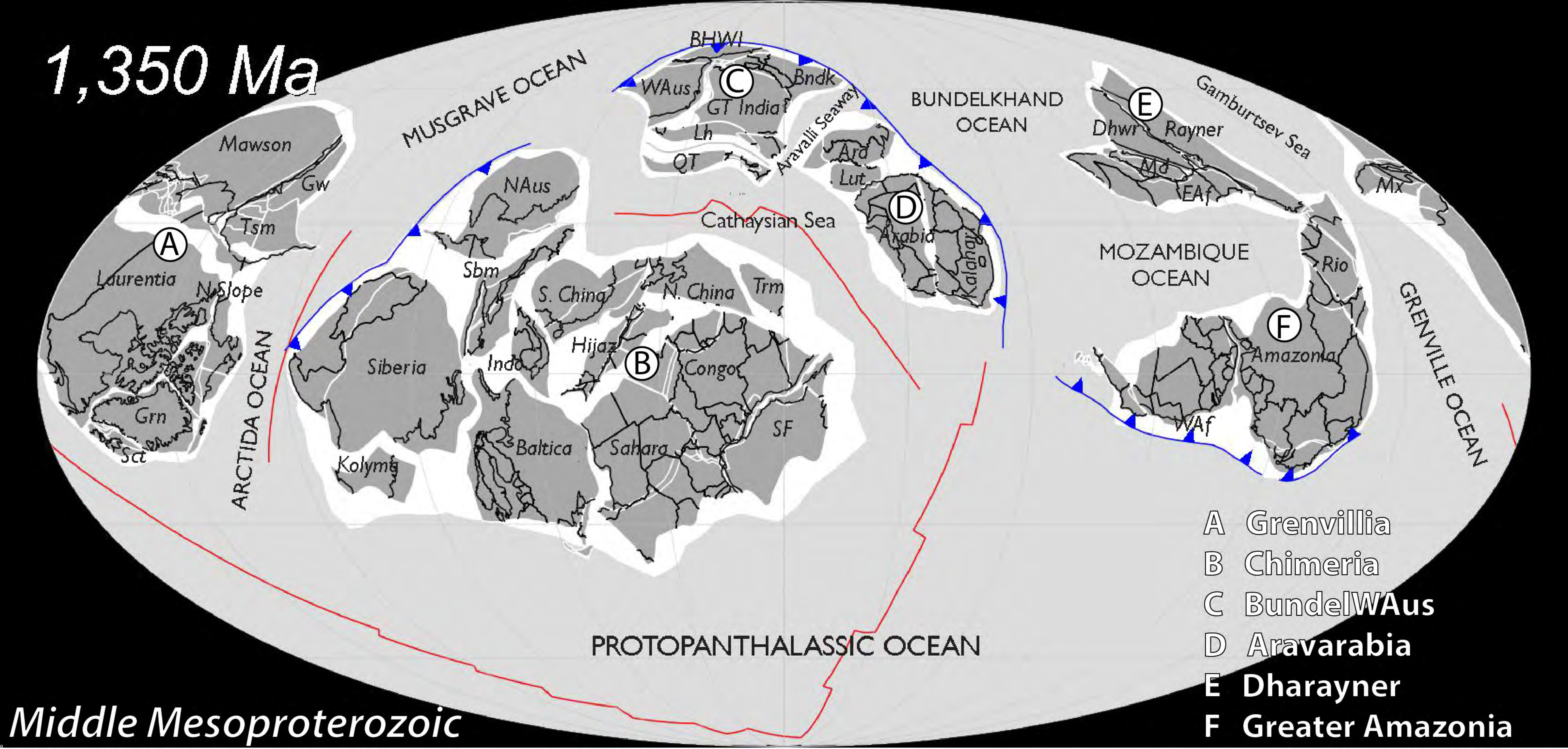


A Grenvillia
B Chimeria
C Greater Amazonia

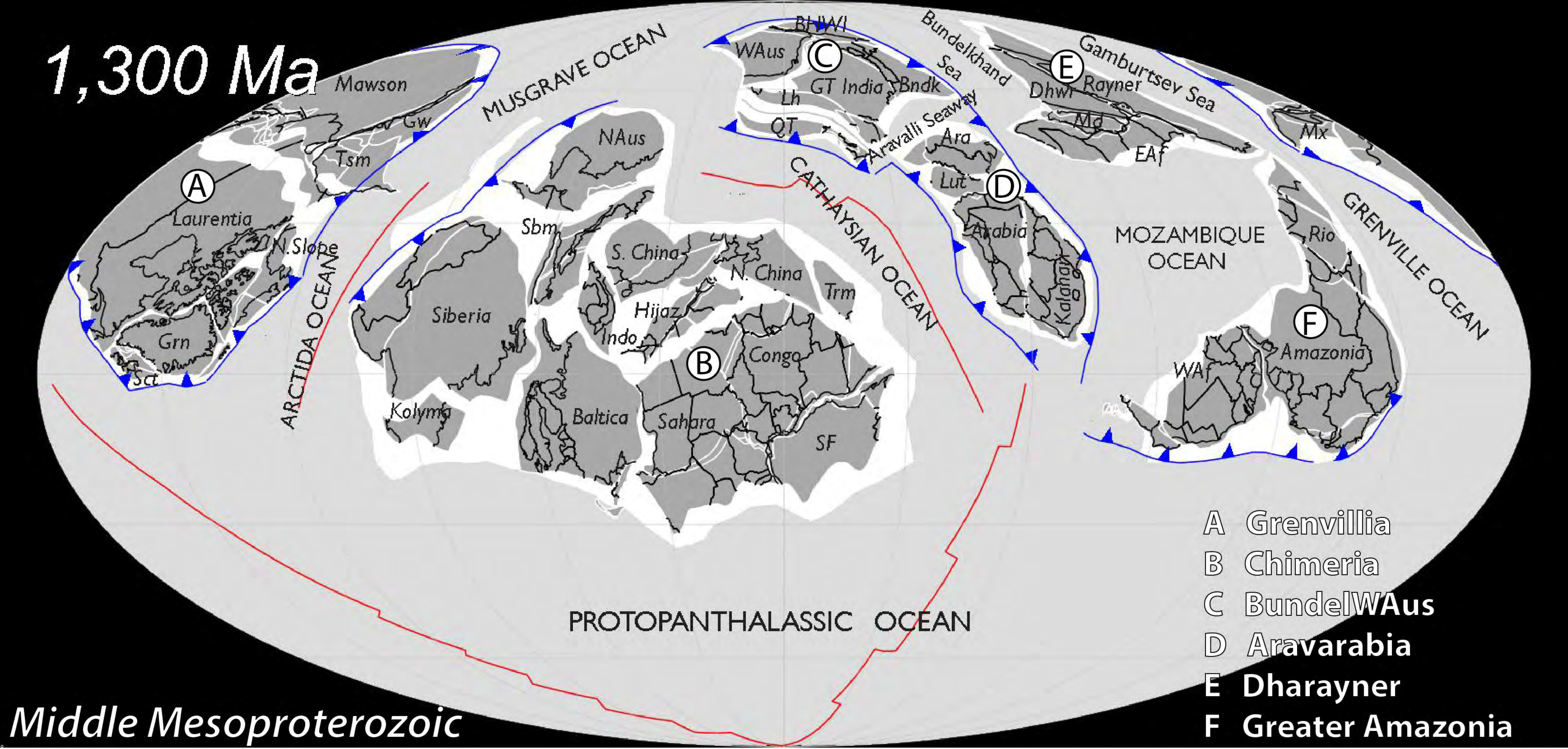
Early Mesoproterozoic


1,450 Ma
MUSGRAVE OCEAN
BUNDELKHAND OCEAN
GAMBURTSEV OCEAN
GRENVILLE OCEAN
PROTOPANTHALASSIC OCEAN
Mawson
Gw
Tsm
Laurentia
N. Slope
Grn
Sct
Arctida Seaway
Siberia
Kolyma
Sbm
NAus
Indo
Baltica
S. China
Cathyasian Seaway
N. China
Hijaz
Trm
Congo
Sahara
SF
BHWI
WAus
GT India
Bndk
Lh
QT
Aravalli Seaway
Ara
Lut
Arabia
Kalahar
Dhwr
Rayner
Md
EA
Rio
WAf
Amazonia
Mx
A Grenvillia
B Chimeria
C BundelWAus
D Aravarabia
E Dharayner
F Greater Amazonia
Early Mesoproterozoic

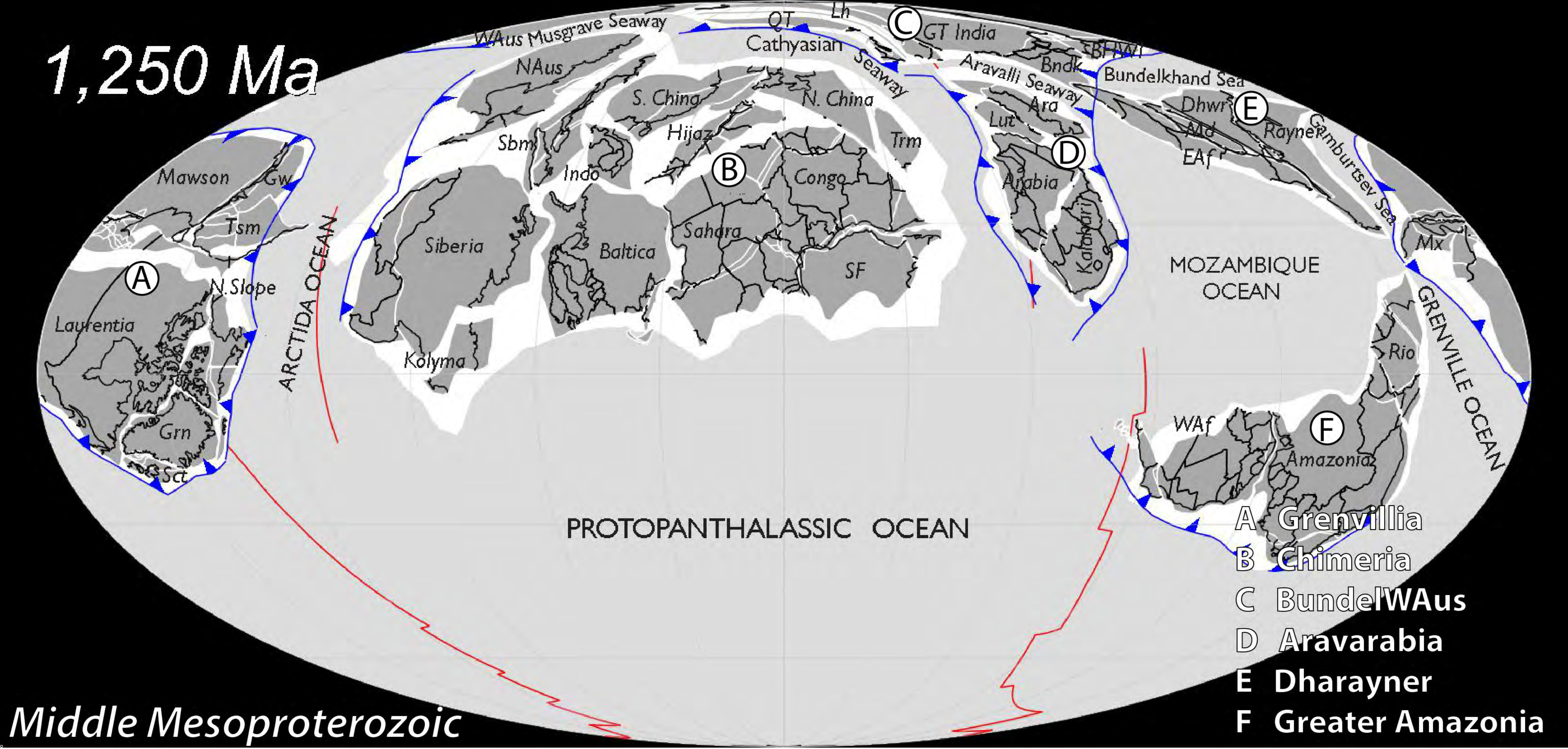

1,400 Ma
Early Mesoproterozoic
MUSGRAVE OCEAN
BUNDELKHAND OCEAN
GAMBURTSEV OCEAN
GRENVILLE OCEAN
PROTOPANTHALASSIC OCEAN
Cathaysian Sea
Mozambique Sea
Aravalli Seaway
Arctida Seaway
BHWI
Bndk
WAus
GT India
Lh
QT
Ara
Lut
Arabia
Kalahari
Dhwr
Rayner
Md
EAf
Mx
Rio
WAf
Amazonia
Mawson
Gw
Tsm
N. Slope
Laurentia
Grn
Sct
NAus
Sbm
S. China
N. China
Trm
Hijaz
Congo
SF
Siberia
Indo
Kolyma
Baltica
Sahara
A Grenvillia
B Chimeria
C BundelWAus
D Aravarabia
E Dharayner
F Greater Amazonia

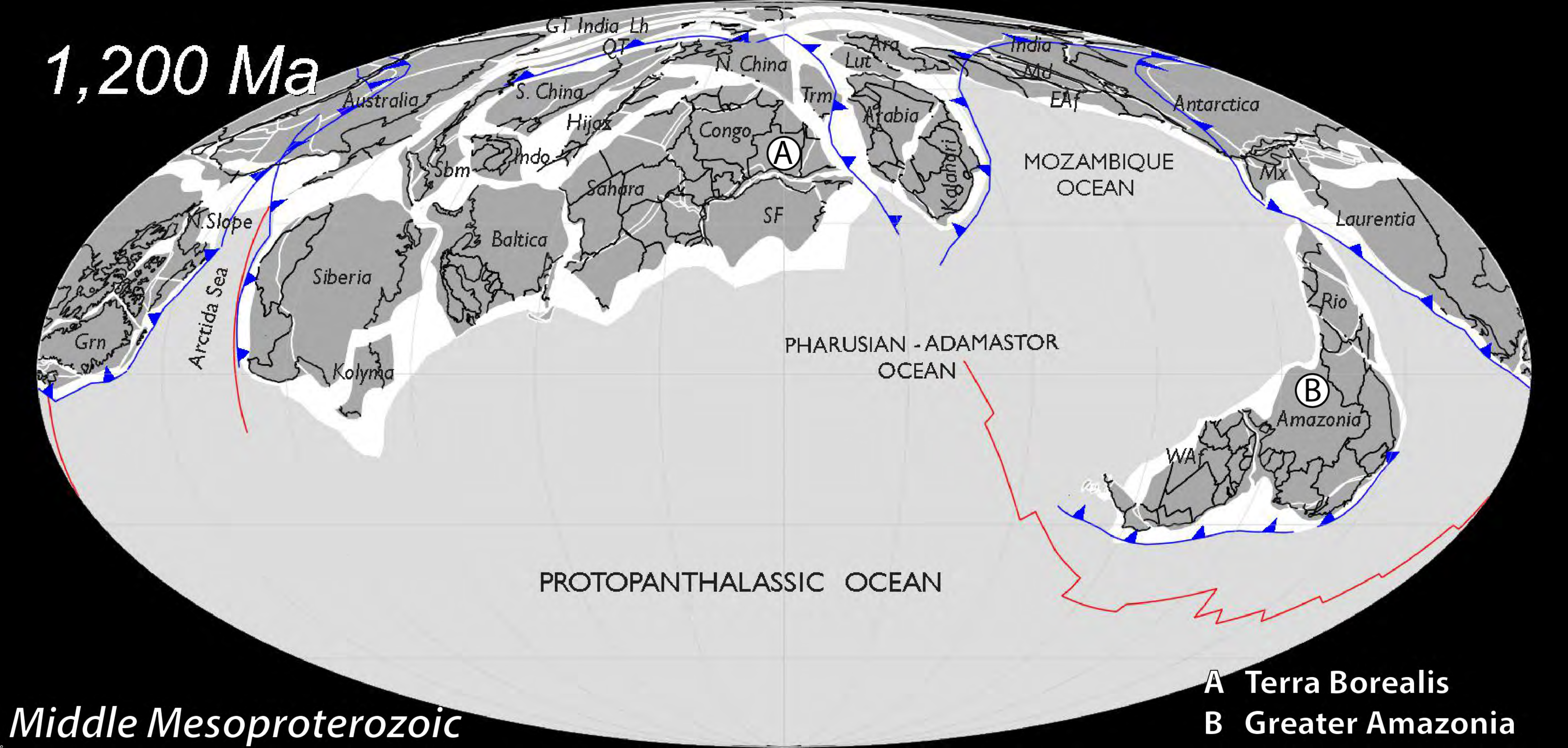


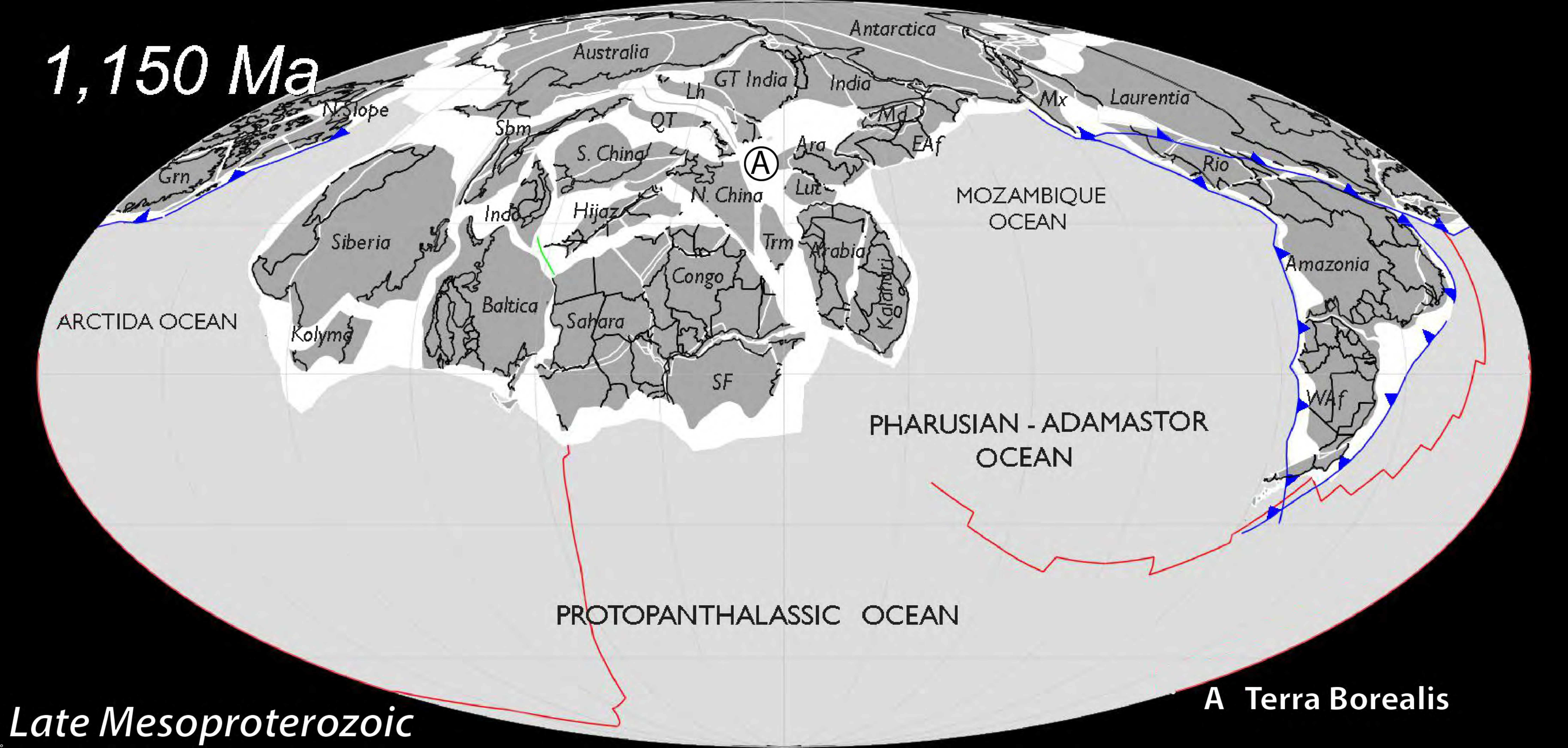
1,350 Ma
MUSGRAVE OCEAN
BHWI
WAus
Bndk
GT India
Lh
QT
Aravalli Seaway
BUNDELKHAND OCEAN
Ard
Lut
Arabia
Kalahari
Cathaysian Sea
Gamburtsev Sea
Dhwr
Rayner
Md
EAf
Mx
Mawson
Gw
Tsm
Laurentia
N. Slope
Grn
Sct
ARCTIDA OCEAN
NAus
Sbm
S. China
N. China
Trm
Hijaz
Congo
Siberia
Indo
Baltica
Sahara
SF
Kolyma
MOZAMBIQUE OCEAN
Rio
Amazonia
WAf
GRENVILLE OCEAN
PROTOPANTHALASSIC OCEAN
A Grenvillia
B Chimeria
C BundelWAus
D Aravarabia
E Dharayner
F Greater Amazonia
Middle Mesoproterozoic

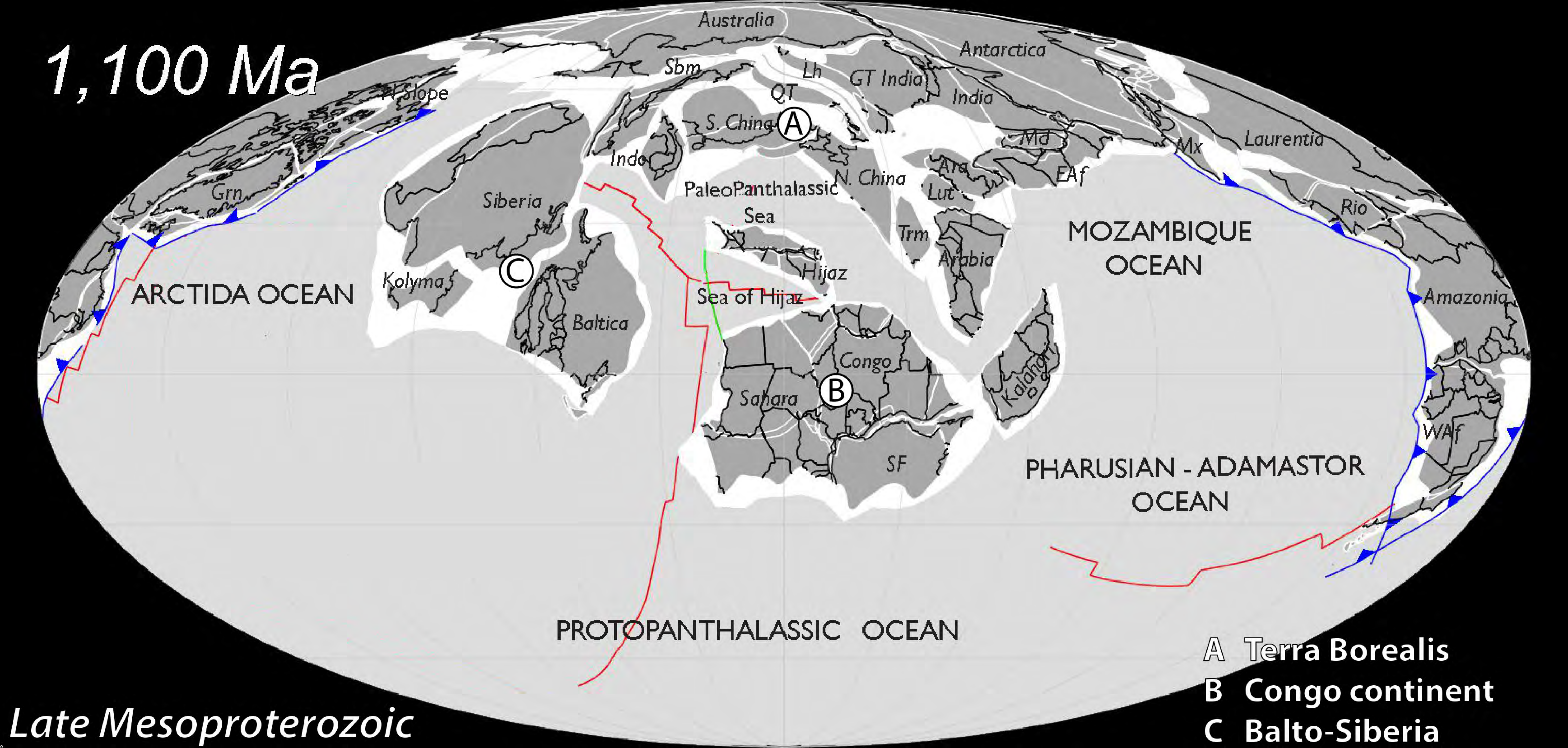


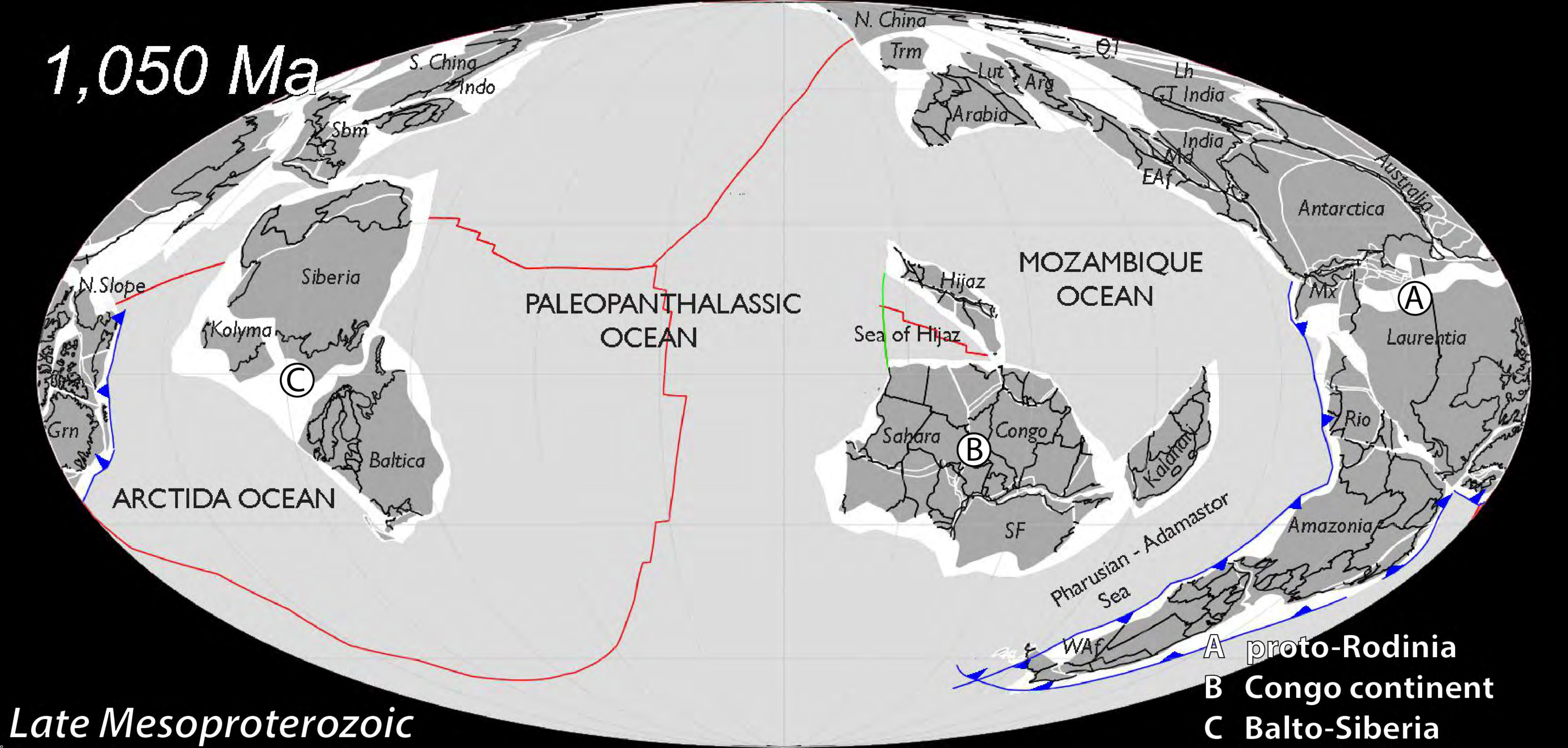
1,300 Ma
Middle Mesoproterozoic
MUSGRAVE OCEAN
ARCTIDA OCEAN
CATHAYSIAN OCEAN
MOZAMBIQUE OCEAN
GRENVILLE OCEAN
PROTOPANTHALASSIC OCEAN
Bundelkhand Sea
Gamburtsev Sea
Aravalli Seaway
Mawson
Gw
Tsm
Laurentia
N. Slope
Grn
Sct
NAus
Sbm
Siberia
Kolyma
Baltica
S. China
N. China
Trm
Hijaz
Indo
Congo
Sahara
SF
BHWI
WAus
GT India
Bndk
Lh
QT
Ara
Lut
Arabia
Kalahari
Dhwr
Rayner
Md
EAf
Mx
Rio
Amazonia
WAf
A Grenvillia
B Chimeria
C BundelWAus
D Aravarabia
E Dharayner
F Greater Amazonia

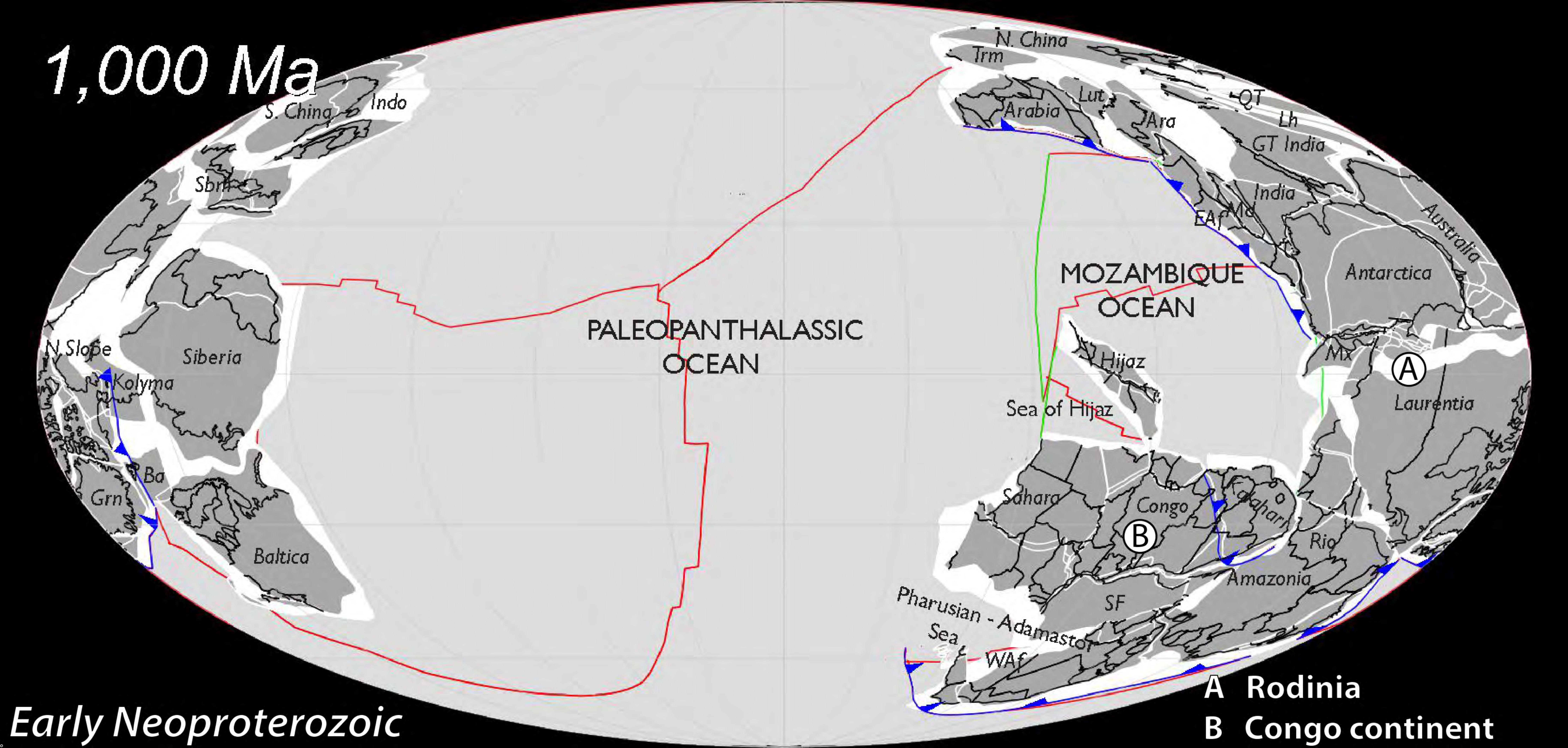

1,250 Ma
Middle Mesoproterozoic
WAus Musgrave Seaway
QT
Lh
GT India
BHWI
Cathyasian Seaway
Aravalli Seaway
Bndk
Bundelkhand Sea
NAus
S. China
N. China
Ara
Lut
Dhwr
Md
EAf
Rayner
Gamburtsev Sea
Mawson
Gw
Tsm
Sbm
Hijaz
Indo
Trm
Congo
Arabia
Siberia
Baltica
Sahara
SF
Kalahari
N.Slope
Laurentia
ARCTIDA OCEAN
MOZAMBIQUE OCEAN
Mx
Kolyma
Rio
GRENVILLE OCEAN
Grn
Sct
WAf
Amazonia
PROTOPANTHALASSIC OCEAN
A Grenvillia
B Chimeria
C BundelWAus
D Aravarabia
E Dharayner
F Greater Amazonia

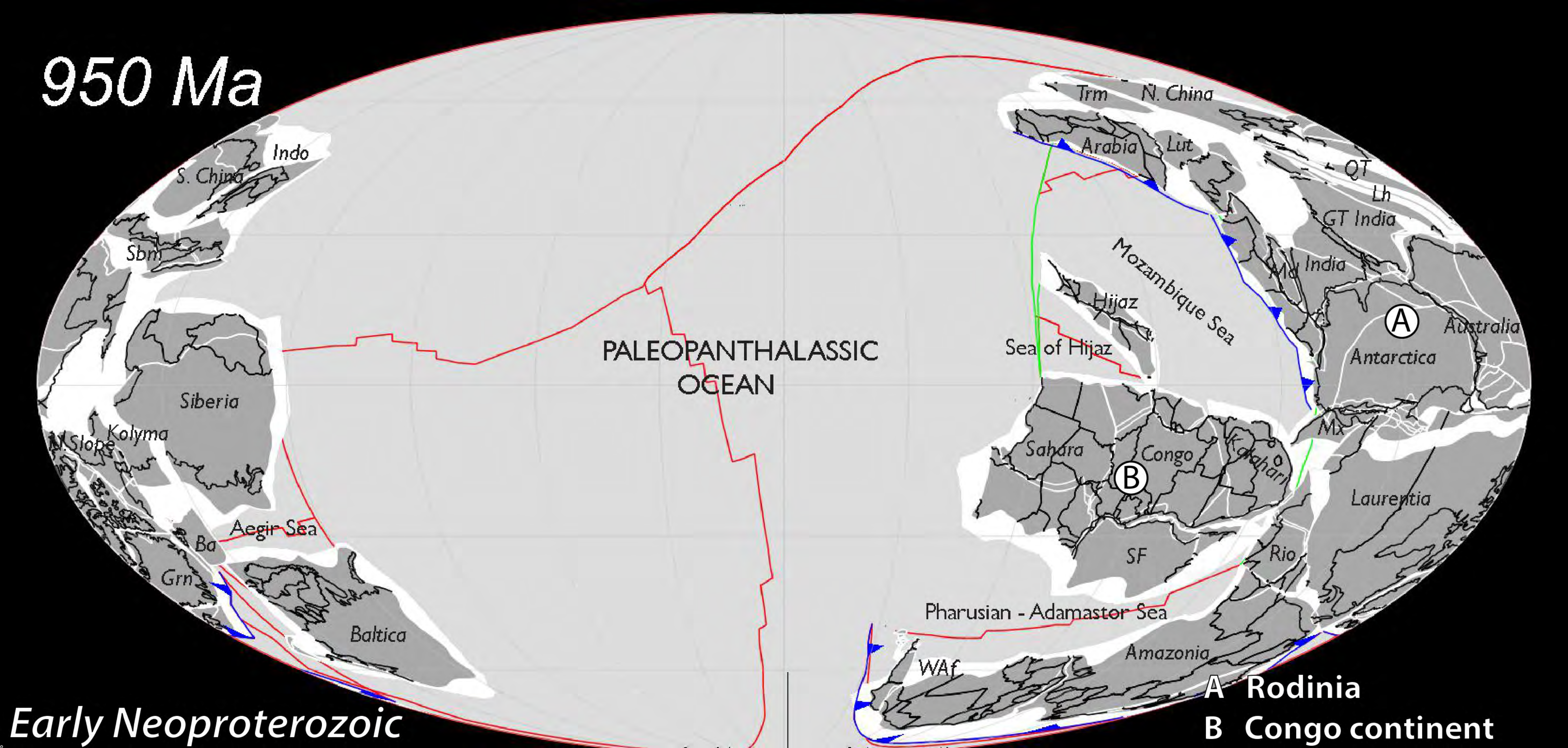

1,200 Ma
GT India Lh
QT
Australia
S. China
N. China
Hijaz
Indo
Sbm
Congo
A
Trm
Lut
Ara
Arabia
Kalahari
India
Md
EAf
Antarctica
MOZAMBIQUE OCEAN
Mx
Laurentia
Sahara
SF
N. Slope
Baltica
Siberia
Arctida Sea
Grn
Kolyma
Rio
PHARUSIAN - ADAMASTOR OCEAN
B
Amazonia
WAf
PROTOPANTHALASSIC OCEAN
A Terra Borealis
B Greater Amazonia
Middle Mesoproterozoic

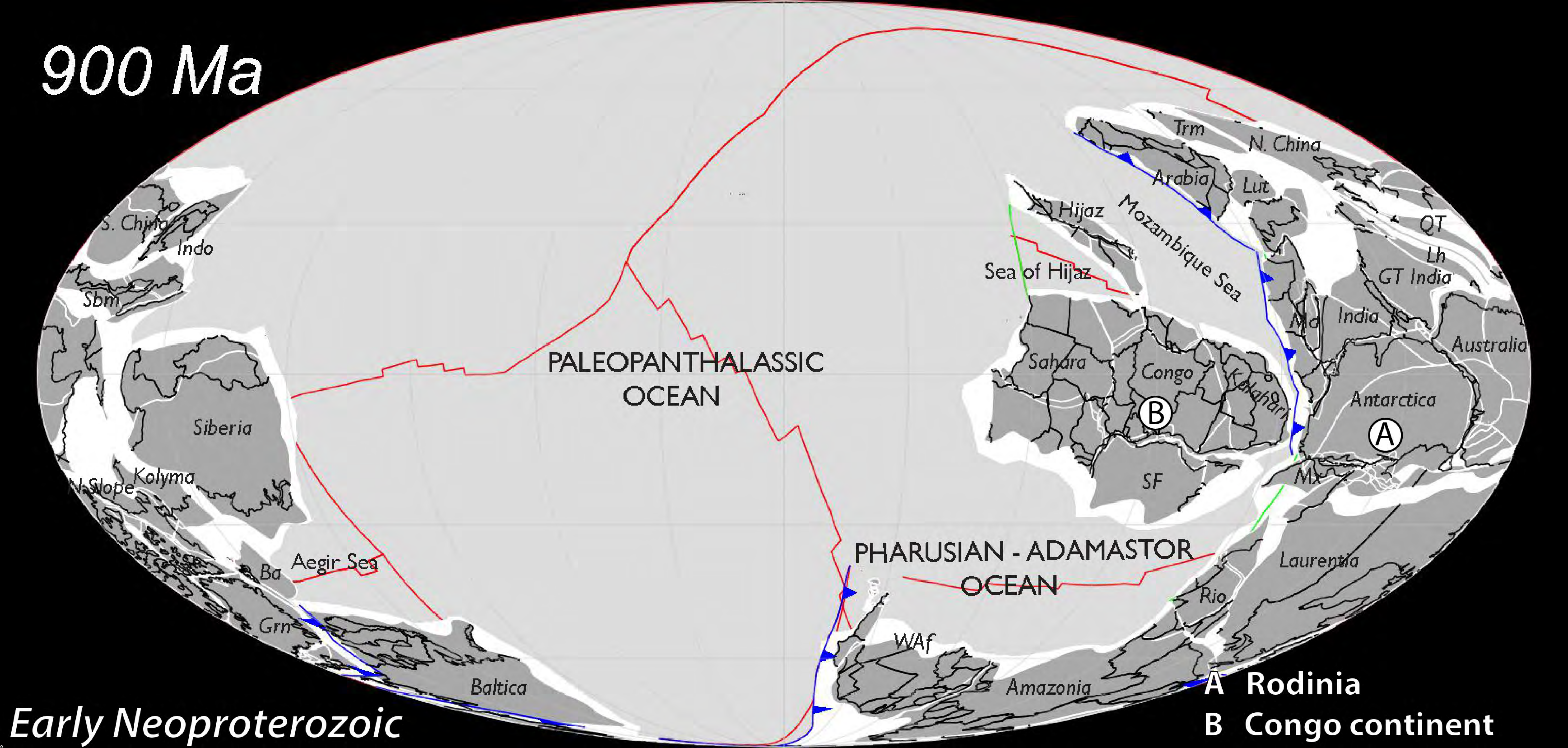

1,150 Ma
Antarctica
Australia
GT India
India
Lh
N.Slope
Mx
Laurentia
Md
QT
Sbm
EAf
Ara
S. China
Rio
Grn
N. China
Lut
MOZAMBIQUE
OCEAN
Indo
Hijaz
Siberia
Trm
Arabia
Amazonia
Congo
Kalahari
ARCTIDA OCEAN
Baltica
Sahara
Kolyma
SF
WAf
PHARUSIAN - ADAMASTOR
OCEAN
PROTOPANTHALASSIC OCEAN
A Terra Borealis
Late Mesoproterozoic

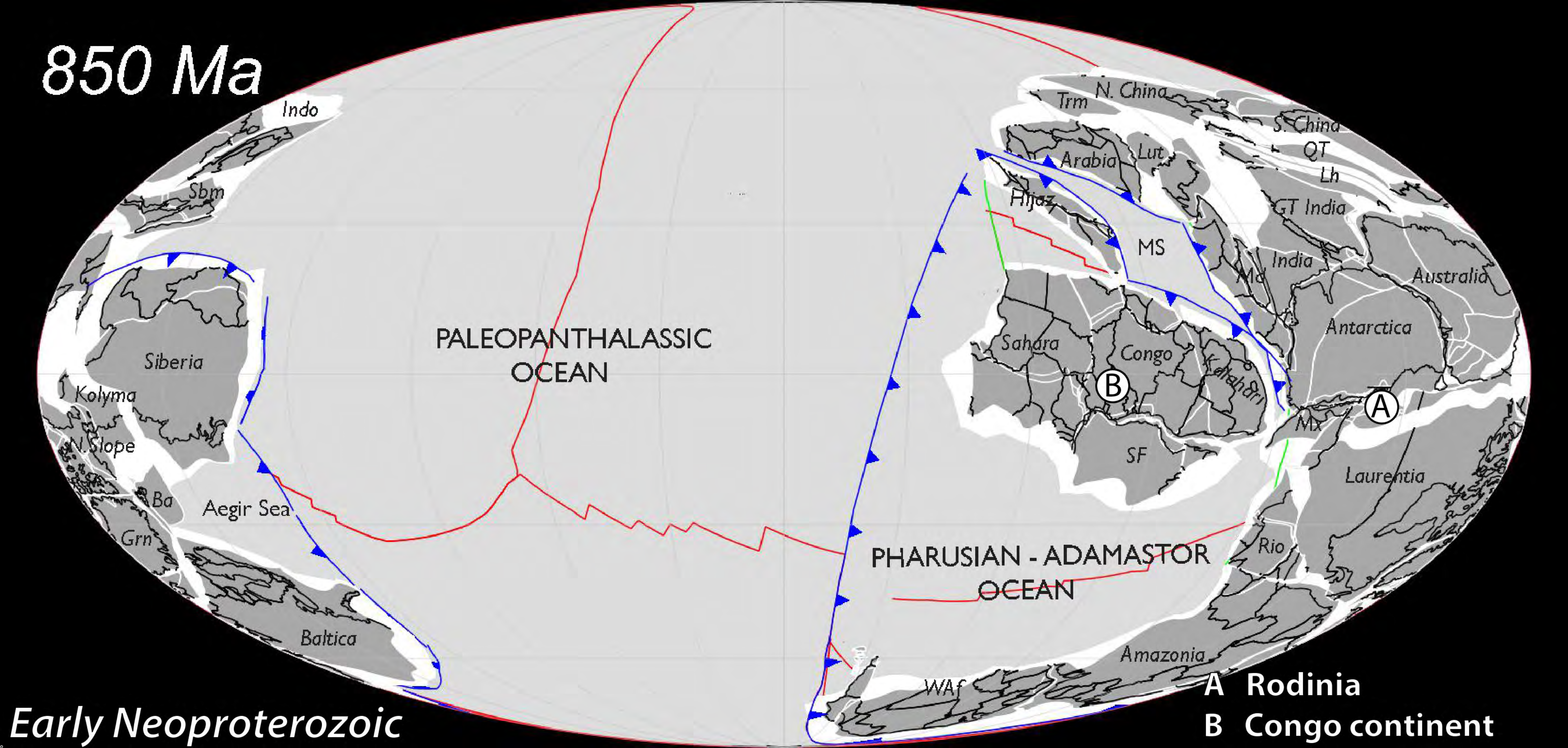

1,100 Ma
Australia
Antarctica
Sbm
Lh
GT India
N Slope
QT
India
S. China
A
Md
Mx
Laurentia
Indo
Ara
EAf
N. China
Grn
PaleoPanthalassic
Sea
Lut
Siberia
Rio
MOZAMBIQUE
OCEAN
Trm
Arabia
Hijaz
C
Kolyma
ARCTIDA OCEAN
Sea of Hijaz
Amazonia
Baltica
Congo
Kalahari
B
Sahara
WAf
SF
PHARUSIAN - ADAMASTOR
OCEAN
PROTOPANTHALASSIC OCEAN
A Terra Borealis
B Congo continent
C Balto-Siberia
Late Mesoproterozoic


1,050 Ma
S. China
Indo
Sbm
N. China
Trm
Lut
Arg
Lh
GT India
Arabia
India
Md
EAf
Australia
Antarctica
MOZAMBIQUE OCEAN
Hijaz
Sea of Hijaz
N.Slope
Siberia
Kolyma
C
PALEOPANTHALASSIC OCEAN
Mx
A
Laurentia
Grn
Baltica
ARCTIDA OCEAN
Sahara
B
Congo
Kalahari
Rio
SF
Amazonia
Pharusian - Adamastor Sea
WAf
A proto-Rodinia
B Congo continent
C Balto-Siberia
Late Mesoproterozoic

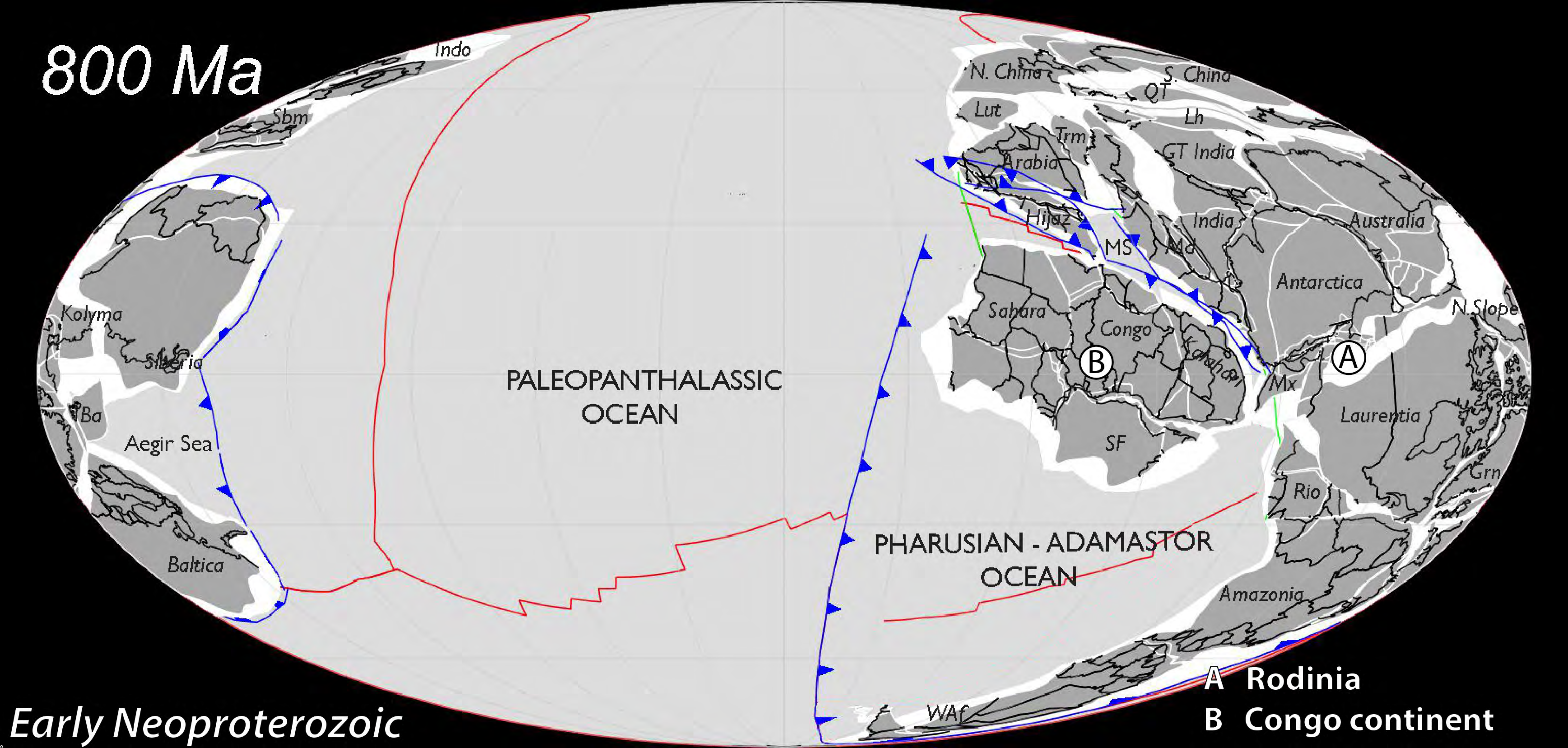

1,000 Ma
N. China
Trm
S. China
Indo
Sbr
Arabia
Lut
Ara
QT
Lh
GT India
India
Md
EAf
Australia
Antarctica
MOZAMBIQUE
OCEAN
PALEOPANTHALASSIC
OCEAN
N.Slope
Siberia
Kolyma
Hijaz
Mx
A
Laurentia
Sea of Hijaz
Ba
Grn
Sahara
Congo
Kalahari
B
Rio
Baltica
Amazonia
SF
Pharusian - Adamastor
Sea
WAf
A Rodinia
B Congo continent
Early Neoproterozoic

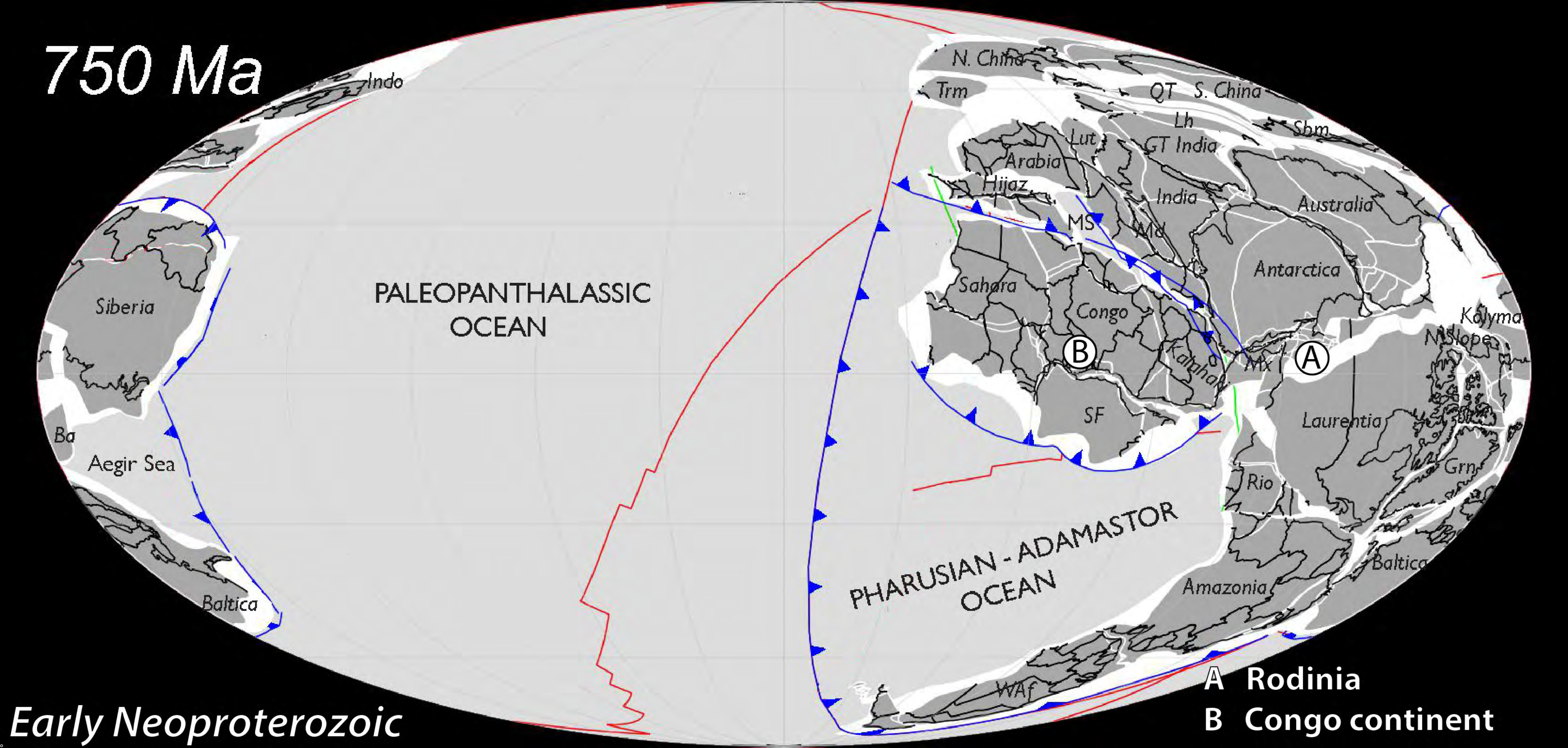

950 Ma
Indo
S. China
Sbm
Siberia
Kolyma
N.Slope
Aegir Sea
Ba
Grn
Baltica
PALEOPANTHALASSIC
OCEAN
Trm
N. China
Arabia
Lut
QT
Lh
GT India
India
Md
Mozambique Sea
Hijaz
Sea of Hijaz
A
Australia
Antarctica
Mx
Sahara
Congo
Kalahari
B
Laurentia
SF
Rio
Pharusian - Adamastor Sea
Amazonia
WAf
A Rodinia
B Congo continent
Early Neoproterozoic


900 Ma
Early Neoproterozoic
PALEOPANTHALASSIC OCEAN
PHARUSIAN - ADAMASTOR OCEAN
Aegir Sea
Sea of Hijaz
Mozambique Sea
S. China
Indo
Sbm
Siberia
Kolyma
N. Slope
Ba
Grn
Baltica
WAf
Amazonia
Rio
Laurentia
Mx
Antarctica
Australia
India
GT India
Lh
QT
Md
Lut
N. China
Trm
Arabia
Hijaz
Sahara
Congo
Kalahari
SF
A
B
A Rodinia
B Congo continent

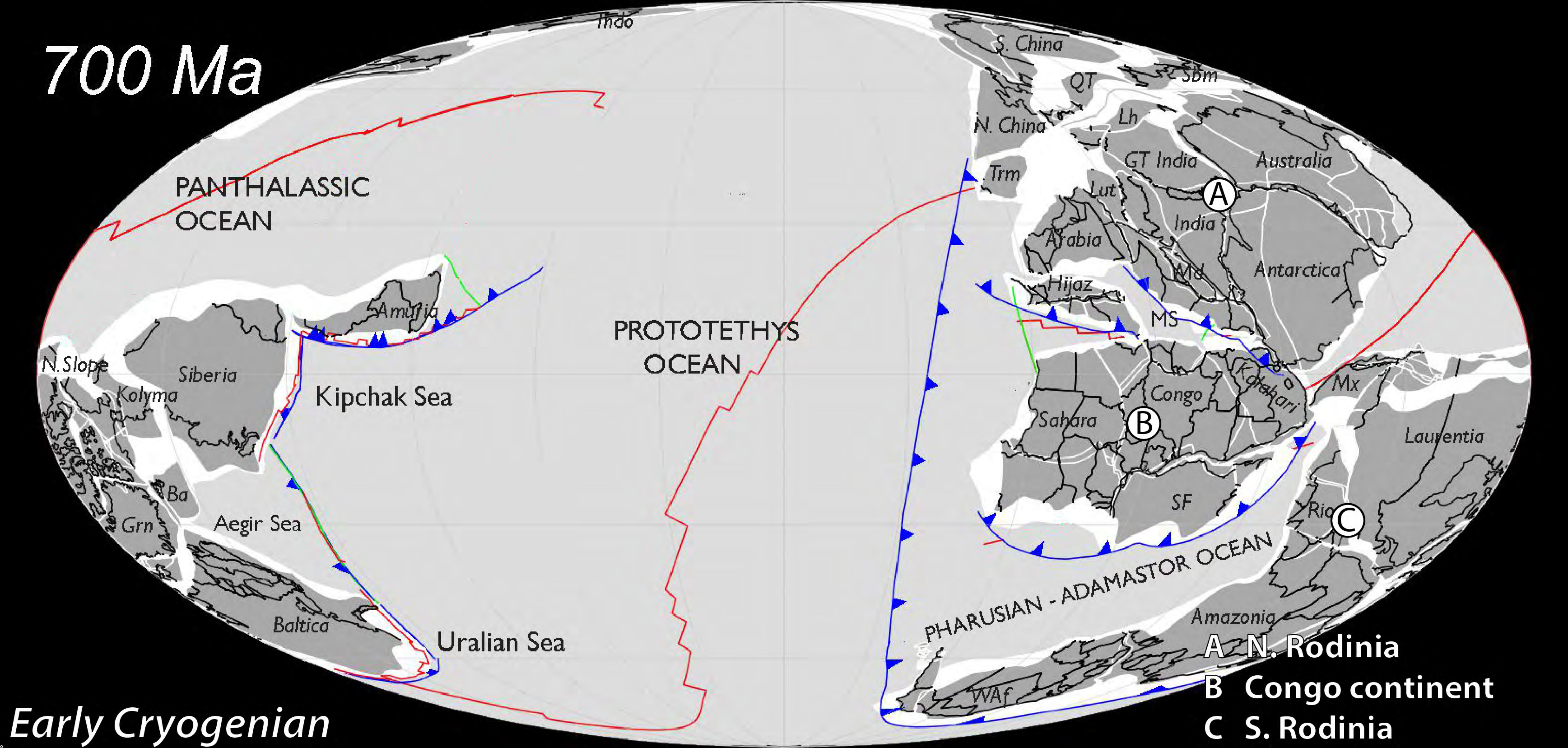


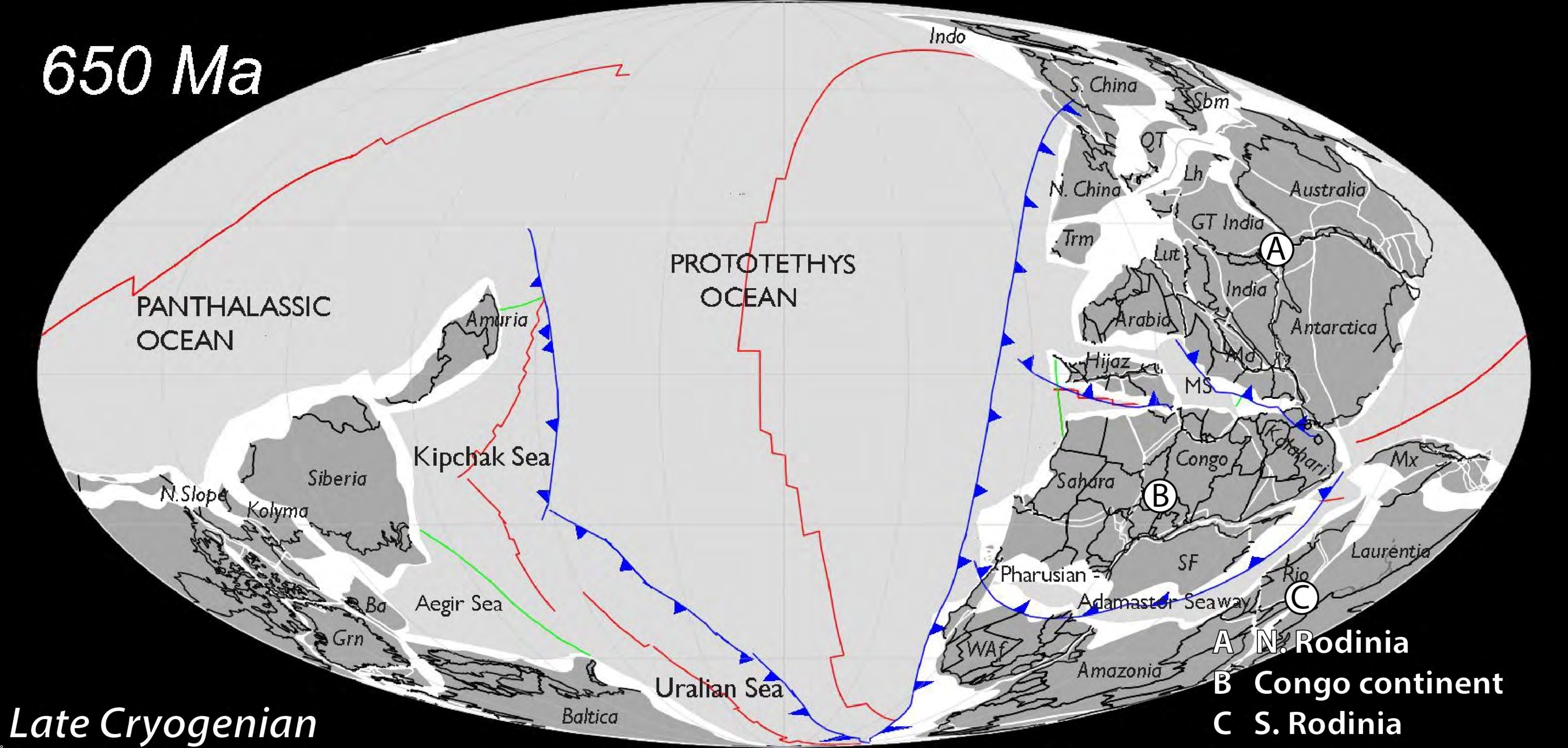
850 Ma
Indo
Sbm
Siberia
Kolyma
N. Slope
Ba
Grn
Aegir Sea
Baltica
PALEOPANTHALASSIC
OCEAN
Trm
N. China
S. China
QT
Lh
Arabia
Lut
Hijaz
GT India
MS
India
Md
Australia
Antarctica
Sahara
Congo
Kalahari
B
A
Mx
SF
Laurentia
Rio
PHARUSIAN - ADAMASTOR
OCEAN
Amazonia
WAf
Early Neoproterozoic
A Rodinia
B Congo continent


800 Ma
Indo
Sbm
N. China
S. China
QT
Lut
Lh
Trm
GT India
Arabia
Hijaz
India
Australia
MS
Md
Antarctica
Kolyma
Sahara
Congo
N.Slope
Siberia
B
A
Kalahari
Mx
PALEOPANTHALASSIC OCEAN
Ba
Laurentia
Aegir Sea
SF
Grn
Rio
Baltica
PHARUSIAN - ADAMASTOR OCEAN
Amazonia
WAf
Early Neoproterozoic
A Rodinia
B Congo continent

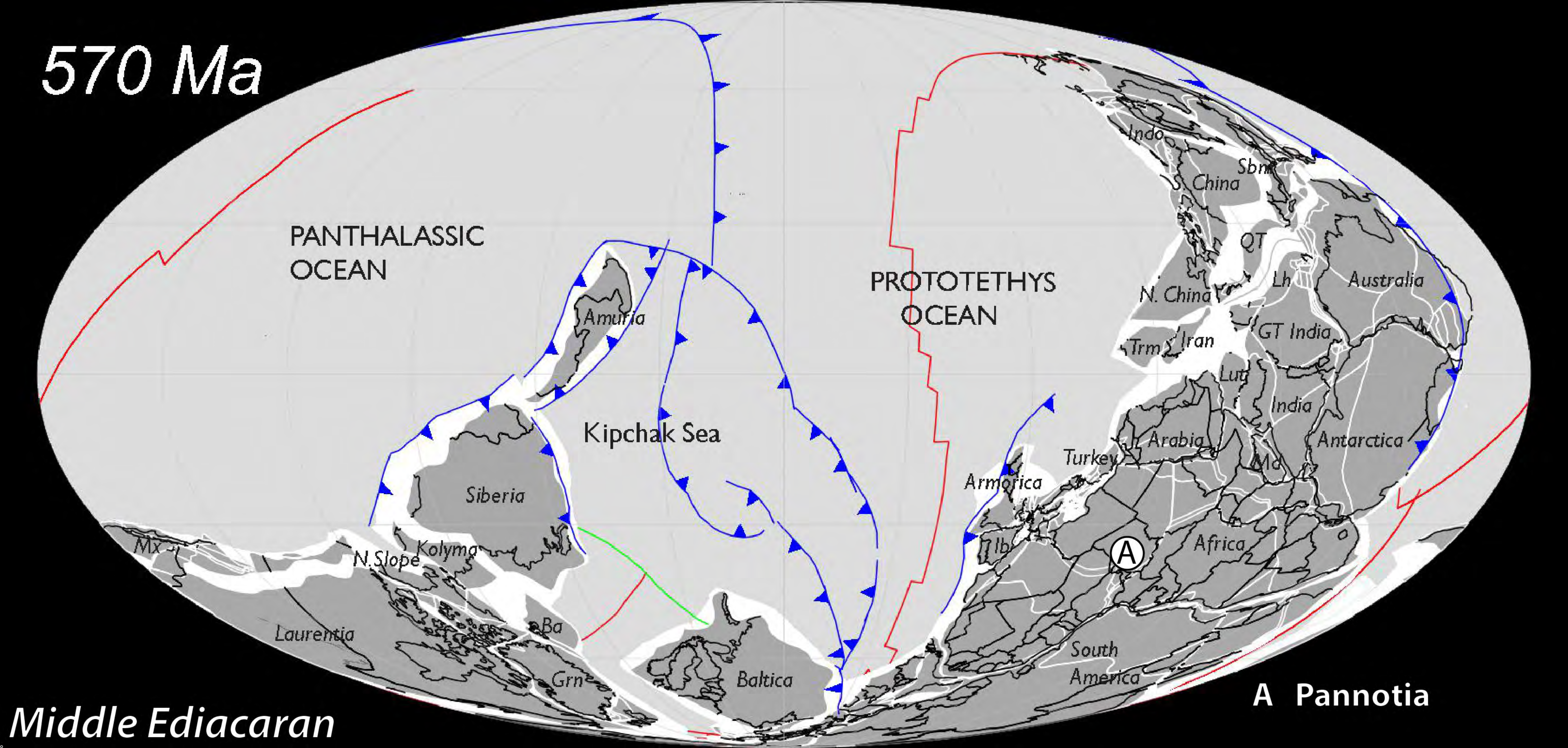


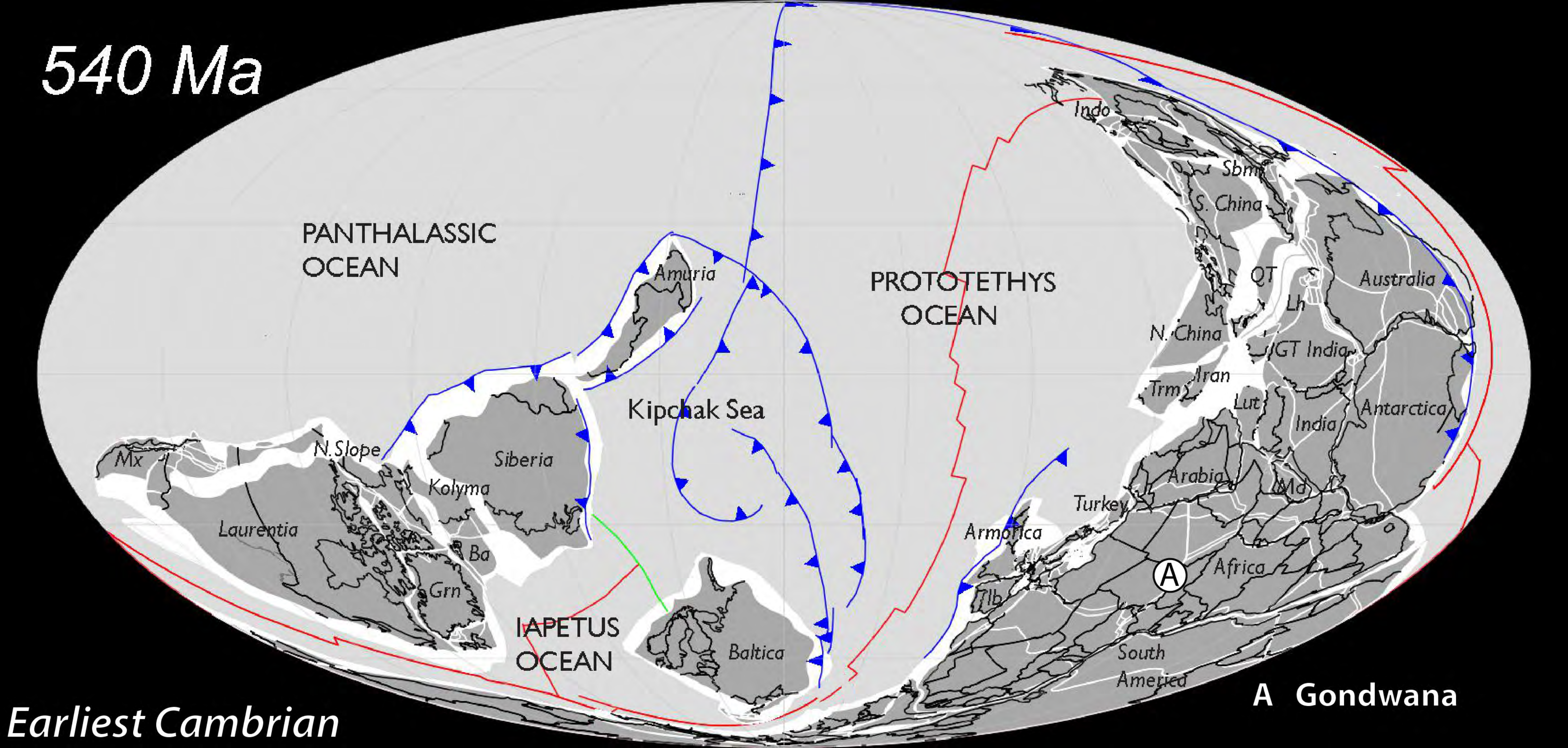
750 Ma
Indo
N. China
Trm
QT
S. China
Lh
Sbm
Lut
GT
India
Arabia
Hijaz
India
Australia
MS
Md
Antarctica
Siberia
PALEOPANTHALASSIC
OCEAN
Sahara
Congo
Kolyma
N Slope
B
Kalahari
Mx
A
SF
Laurentia
Ba
Aegir Sea
Rio
Grn
PHARUSIAN - ADAMASTOR
OCEAN
Baltica
Amazonia
Baltica
WAf
A Rodinia
B Congo continent
Early Neoproterozoic


700 Ma
Indo
S. China
QT
Sbm
N. China
Lh
GT India
Australia
Trm
Lut
A
India
Arabia
Antarctica
Md
Hijaz
MS
PANTHALASSIC
OCEAN
Amuria
PROTOTETHYS
OCEAN
N. Slope
Siberia
Kolyma
Kipchak Sea
Congo
Kalahari
Mx
Sahara
B
Laurentia
Ba
Grn
Aegir Sea
SF
Rio
C
PHARUSIAN - ADAMASTOR OCEAN
Baltica
Uralian Sea
Amazonia
WAf
A N. Rodinia
B Congo continent
C S. Rodinia
Early Cryogenian

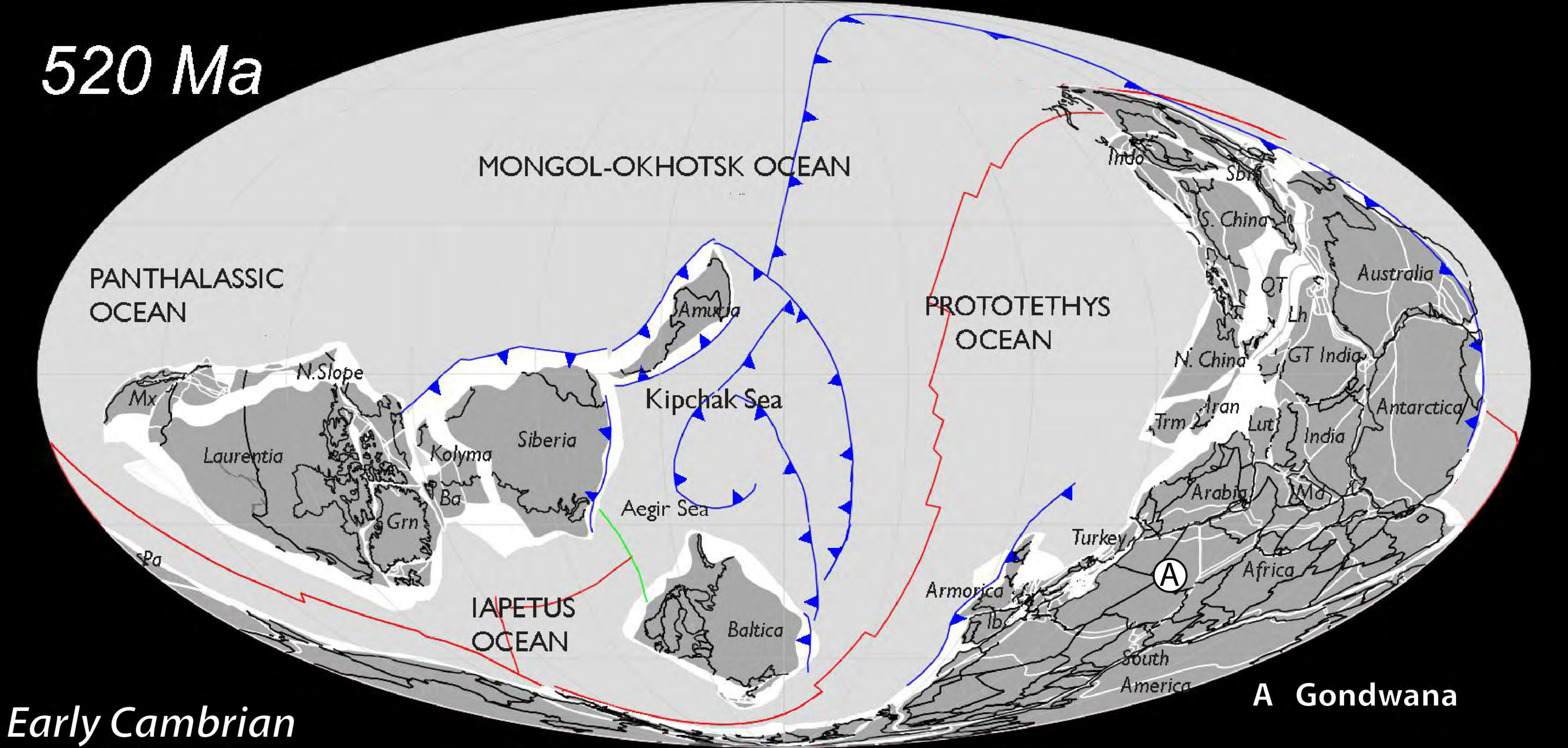

650 Ma
Late Cryogenian
PANTHALASSIC OCEAN
PROTOTETHYS OCEAN
Kipchak Sea
Aegir Sea
Uralian Sea
Pharusian - Adamastor Seaway
Indo
S. China
Sbm
QT
Lh
N. China
Australia
GT India
Trm
Lut
India
Arabia
Antarctica
Hijaz
Md
MS
Amuria
Siberia
N. Slope
Kolyma
Ba
Grn
Baltica
Sahara
Congo
Kalahari
Mx
SF
Laurentia
Rio
WAf
Amazonia
A
B
C
A N. Rodinia
B Congo continent
C S. Rodinia

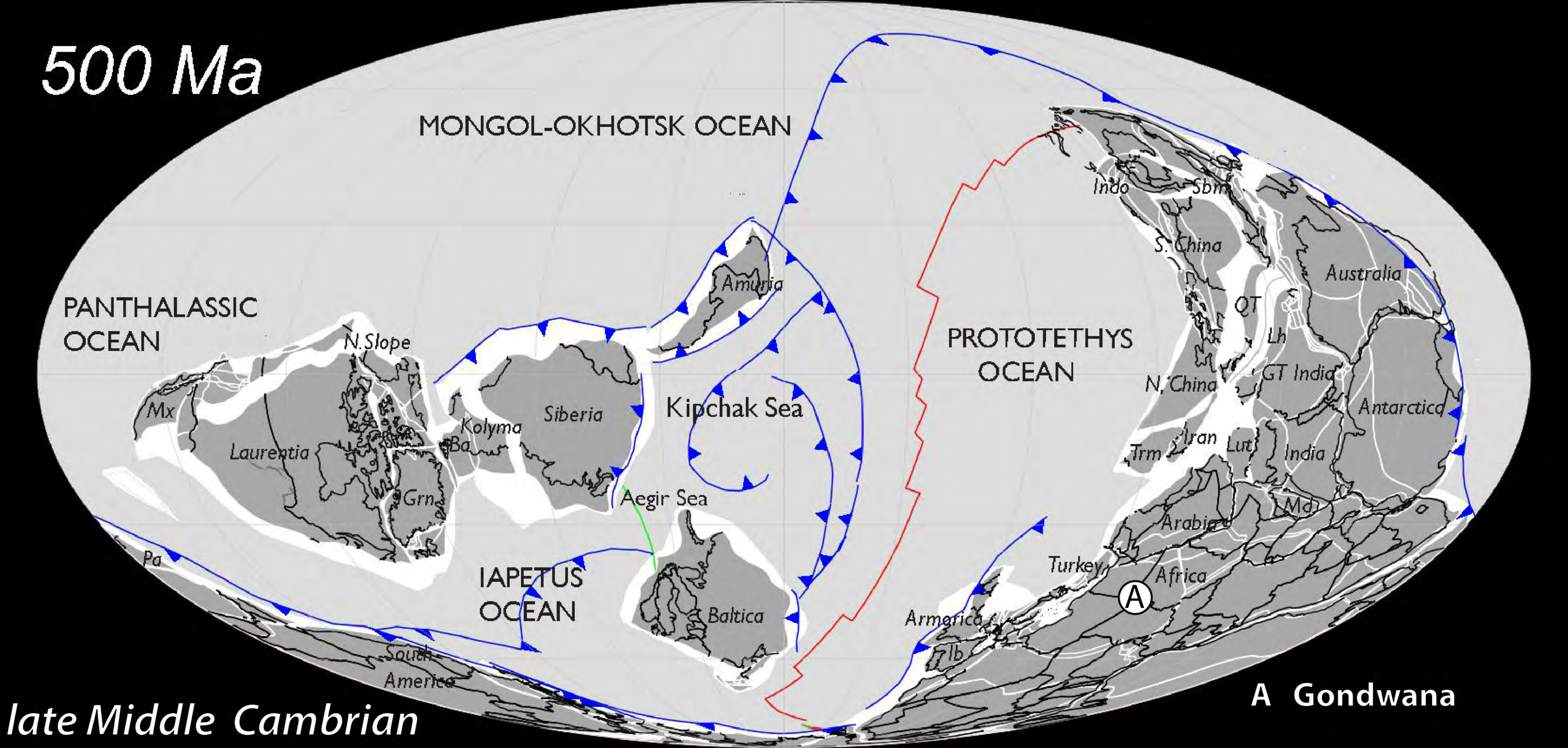
600 Ma
PANTHALASSIC OCEAN
PROTOTETHYS OCEAN
Kipchak Sea
Amuria
Siberia
Kolyma
N.Slope
Laurentia
Ba
Baltica
Grn
Indo
Sbm
S. China
QT
Lh
N. China
Australia
Trm
Iran
GT India
Lut
India
Arabia
Antarctica
Turkey
Md
Armorica
A
Ib
Africa
Mx
South America
Early Ediacaran
A Pannotia

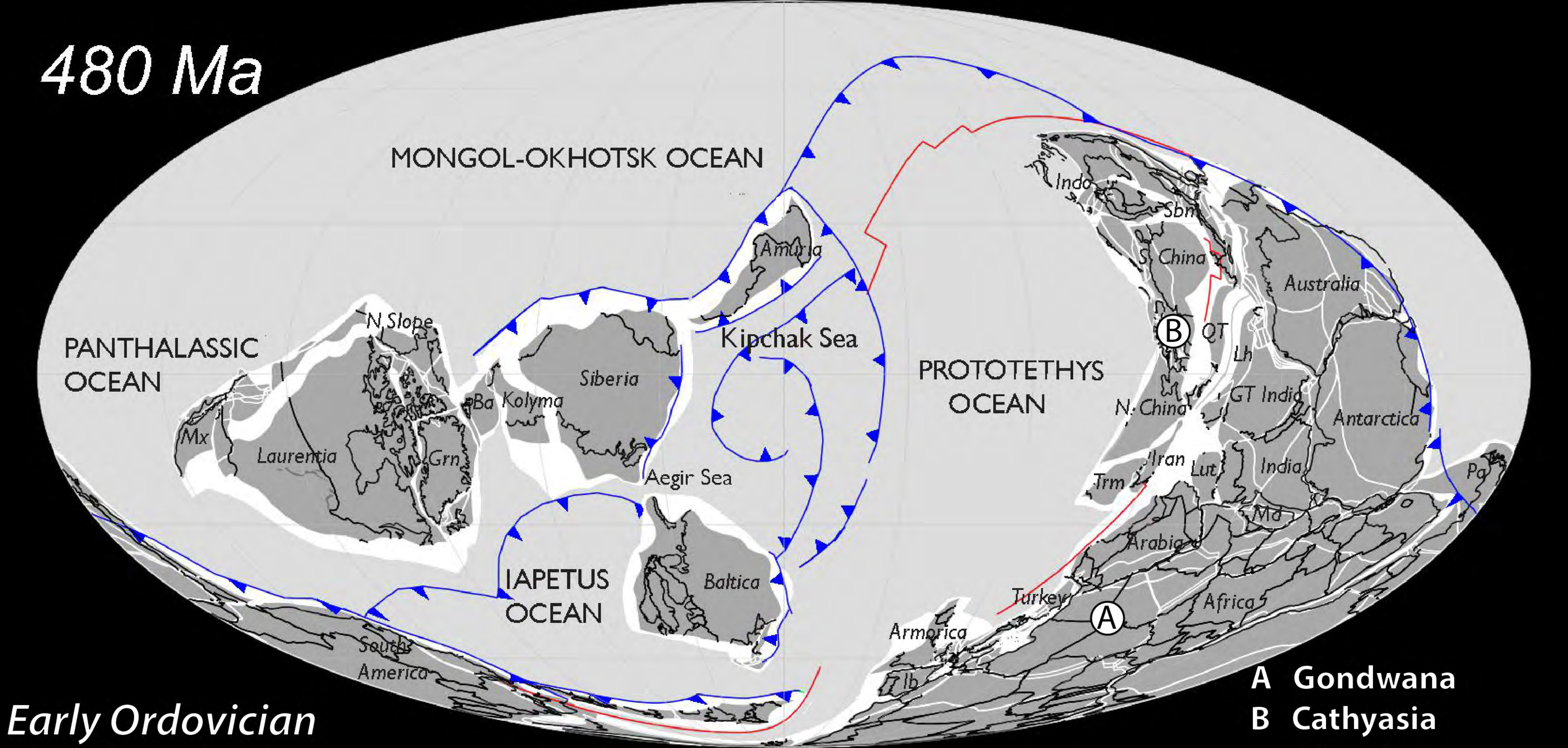

570 Ma
PANTHALASSIC OCEAN
PROTOTETHYS OCEAN
Kipchak Sea
Amuria
Siberia
Kolyma
N.Slope
Mx
Laurentia
Ba
Grn
Baltica
Indo
China
Sbm
QT
Lh
Australia
N. China
GT India
Trm
Iran
Lut
India
Arabia
Antarctica
Turkey
Mo
Armorica
Ib
Africa
A
South America
A Pannotia
Middle Ediacaran

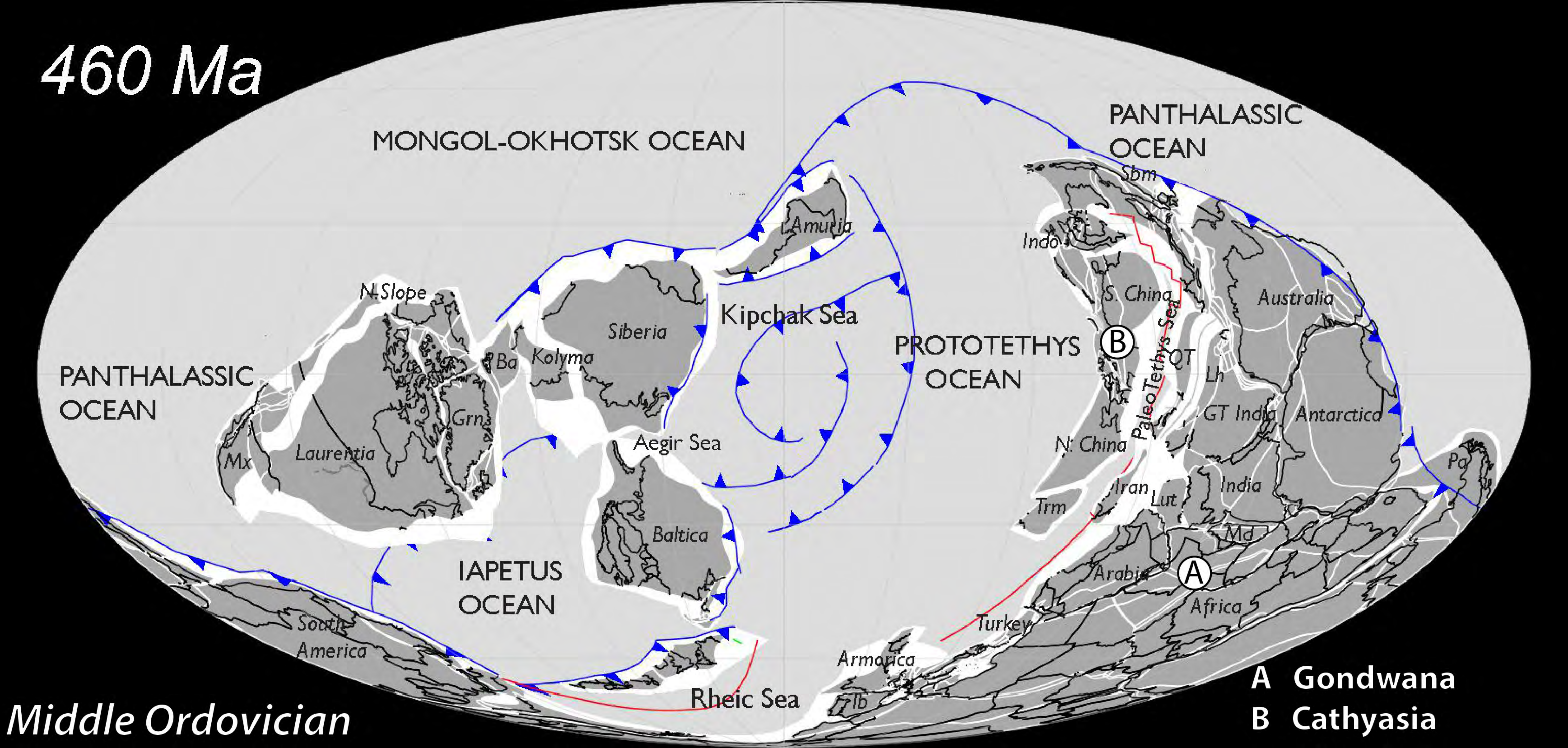


540 Ma
PANTHALASSIC OCEAN
Amuria
PROTOTETHYS OCEAN
Indo
Sbm
S. China
QT
Australia
Lh
N. China
GT India
Iran
Trm
Lut
India
Antarctica
Kipchak Sea
N.Slope
Mx
Siberia
Kolyma
Laurentia
Ba
Grn
Arabia
Md
Turkey
Armorica
Africa
A
Tlb
IAPETUS OCEAN
Baltica
South America
A Gondwana
Earliest Cambrian

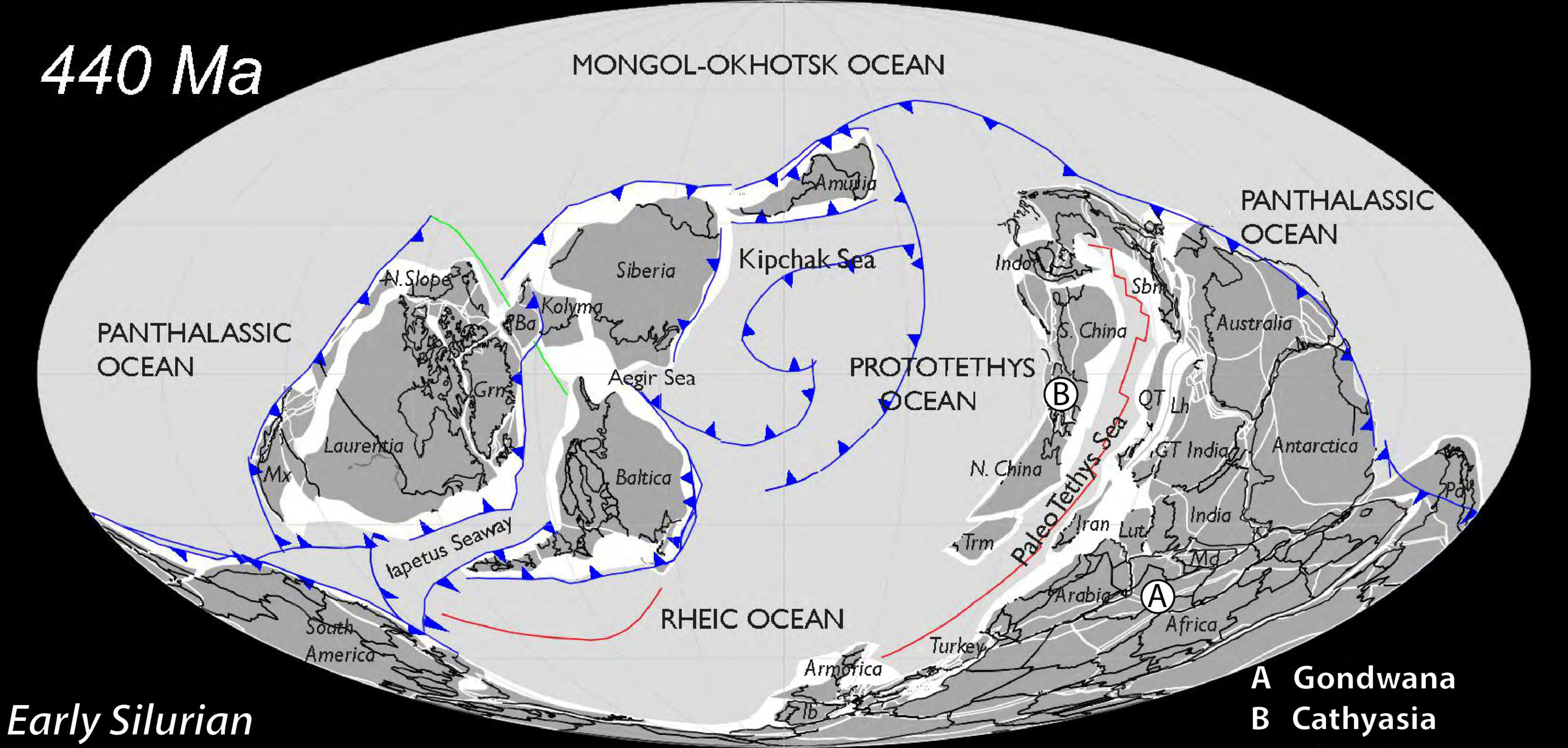

520 Ma
MONGOL-OKHOTSK OCEAN
PANTHALASSIC OCEAN
PROTOTETHYS OCEAN
Kipchak Sea
Aegir Sea
IAPETUS OCEAN
Amuria
N.Slope
Mx
Laurentia
Siberia
Kolyma
Ba
Grn
Pa
Baltica
Indo
Sbm
S. China
Australia
QT
Lh
N. China
GT India
Iran
Trm
Lut
Antarctica
India
Arabia
Md
Turkey
A
Africa
Armorica
Ib
South America
A Gondwana
Early Cambrian

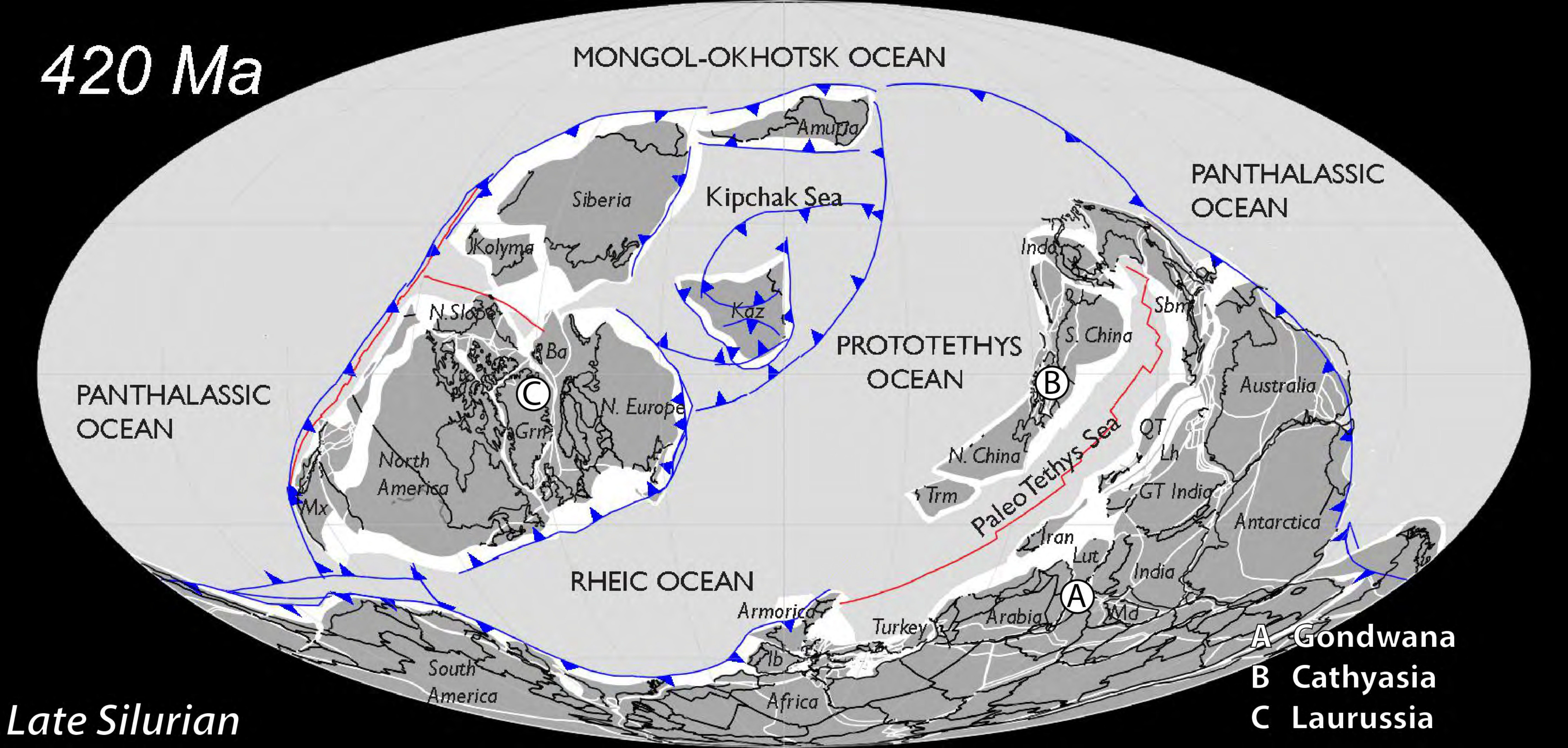

500 Ma
MONGOL-OKHOTSK OCEAN
PANTHALASSIC
OCEAN
N.Slope
Mx
Laurentia
Grn
Ba
Kolyma
Siberia
Amuria
Kipchak Sea
Aegir Sea
IAPETUS
OCEAN
Baltica
Pa
South
America
PROTOTETHYS
OCEAN
Indo
Sbm
S. China
Australia
QT
Lh
GT India
N. China
Antarctica
Trm
Iran
Lut
India
Md
Arabia
Turkey
Africa
A
Armorica
Ib
A Gondwana
late Middle Cambrian


480 Ma
MONGOL-OKHOTSK OCEAN
PANTHALASSIC OCEAN
PROTOTETHYS OCEAN
IAPETUS OCEAN
Kipchak Sea
Aegir Sea
N.Slope
Mx
Laurentia
Grn
Ba
Kolyma
Siberia
Amuria
Baltica
South America
Armorica
Ib
Turkey
Africa
Arabia
Md
Trm
Iran
Lut
India
Antarctica
Australia
GT India
Lh
QT
N. China
S. China
Sbn
Indo
Pa
A
B
Early Ordovician
A Gondwana
B Cathyasia

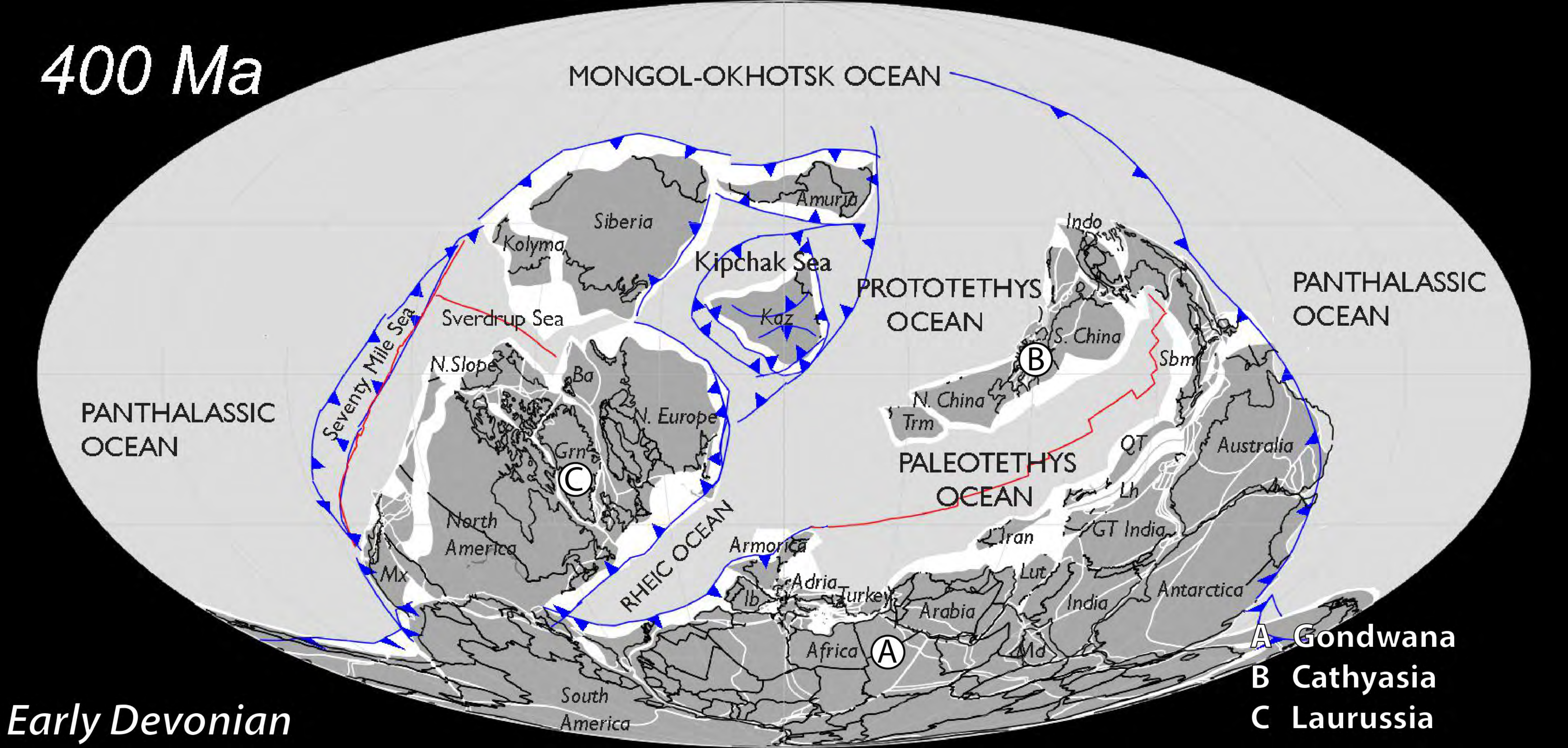


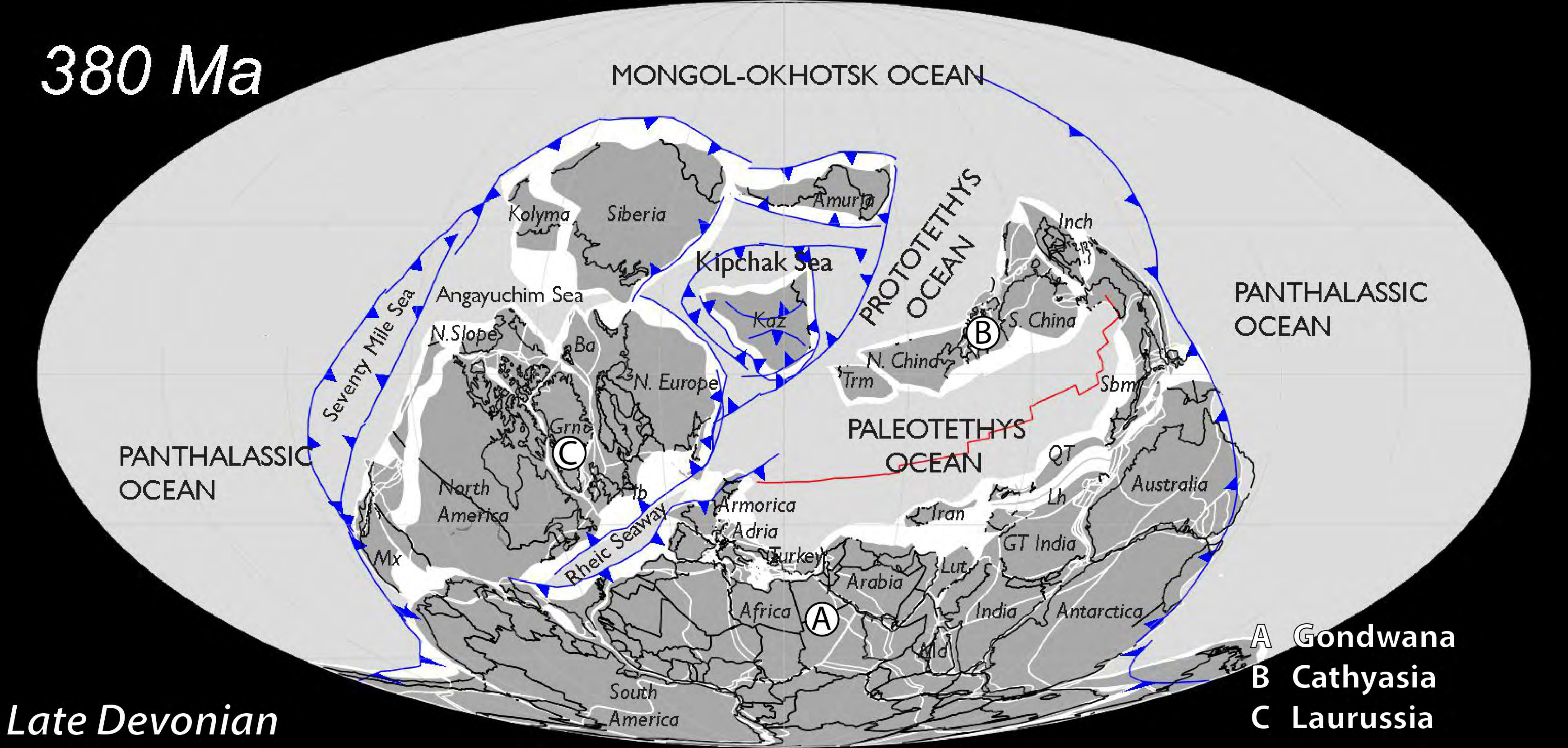
460 Ma
MONGOL-OKHOTSK OCEAN
PANTHALASSIC OCEAN
Sbm
Amuria
Indo
S. China
Australia
Kipchak Sea
N.Slope
Siberia
PROTOTETHYS OCEAN
B
QT
PaleoTethys Sea
Lh
Ba
Kolyma
PANTHALASSIC OCEAN
Grn
GT India
Antarctica
Aegir Sea
N. China
Mx
Laurentia
Pa
Iran
Lut
India
Trm
Baltica
Md
IAPETUS OCEAN
Arabia
A
Africa
South America
Turkey
Armorica
Rheic Sea
Ib
Middle Ordovician
A Gondwana
B Cathyasia


440 Ma
MONGOL-OKHOTSK OCEAN
PANTHALASSIC OCEAN
Amuria
Kipchak Sea
Siberia
N. Slope
Kolyma
Ba
Grn
Laurentia
Mx
Aegir Sea
PROTOTETHYS OCEAN
Baltica
Iapetus Seaway
RHEIC OCEAN
South America
Armorica
Ib
Turkey
Indo
Sbm
S. China
B
QT
Lh
N. China
PaleoTethys Sea
GT India
Trm
Iran
Lut
India
Md
Arabia
A
Africa
PANTHALASSIC OCEAN
Australia
Antarctica
Pa
Early Silurian
A Gondwana
B Cathyasia



420 Ma
MONGOL-OKHOTSK OCEAN
Amuria
Siberia
Kipchak Sea
Kolyma
Kaz
PANTHALASSIC OCEAN
N.Slope
Ba
C
N. Europe
Grn
North America
Mx
PROTOTETHYS OCEAN
Inda
S. China
B
Sbm
Australia
N. China
Trm
Paleo Tethys Sea
QT
Lh
GT India
Antarctica
Iran
Lut
India
A
Arabia
Md
Turkey
RHEIC OCEAN
Armorica
Ib
Africa
South America
Late Silurian
A Gondwana
B Cathyasia
C Laurussia

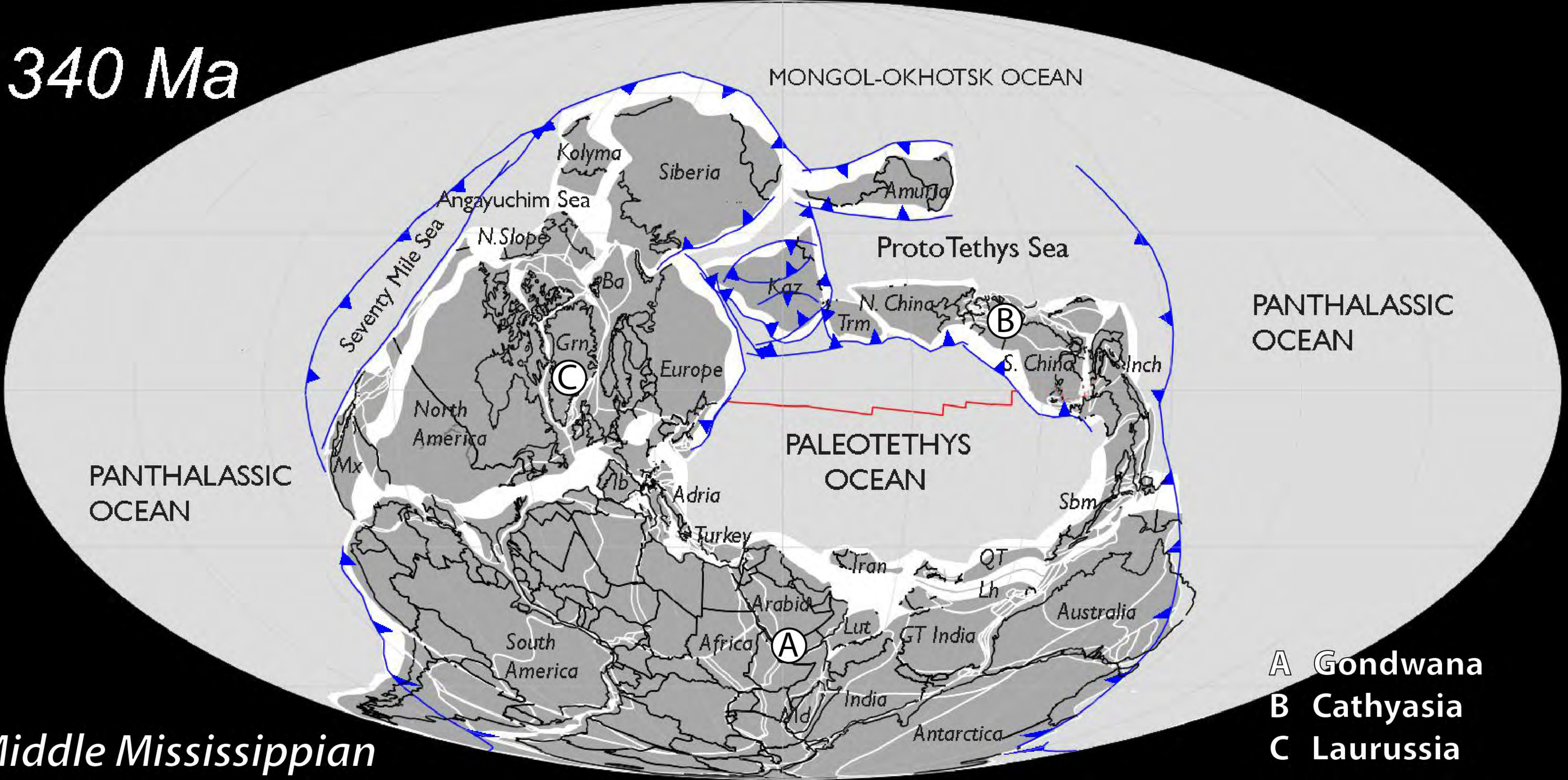

400 Ma
MONGOL-OKHOTSK OCEAN
Amuria
Siberia
Kolyma
Kipchak Sea
Kaz
PROTOTETHYS
OCEAN
Indo
PANTHALASSIC
OCEAN
Sverdrup Sea
Seventy Mile Sea
S. China
Sbm
N.Slope
Ba
N. China
Trm
PANTHALASSIC
OCEAN
N. Europe
Grn
QT
Australia
PALEOTETHYS
OCEAN
Lh
North
America
RHEIC OCEAN
GT India
Iran
Armorica
Lut
Mx
Adria
Turkey
Ib
Arabia
India
Antarctica
Africa
Md
South
America
Early Devonian
A Gondwana
B Cathyasia
C Laurussia



380 Ma
MONGOL-OKHOTSK OCEAN
Kolyma
Siberia
Amuria
Kipchak Sea
Kaz
PROTOTETHYS OCEAN
Inch
S. China
B
N. China
Trm
PANTHALASSIC OCEAN
Angayuchim Sea
Seventy Mile Sea
N.Slope
Ba
N. Europe
Grn
C
Sbm
PALEOTETHYS OCEAN
PANTHALASSIC OCEAN
North America
Ib
Rheic Seaway
Armorica
Adria
Turkey
QT
Lh
Australia
Iran
GT India
Lut
Arabia
Mx
Africa
A
India
Antarctica
Mad
South America
Late Devonian
A Gondwana
B Cathyasia
C Laurussia

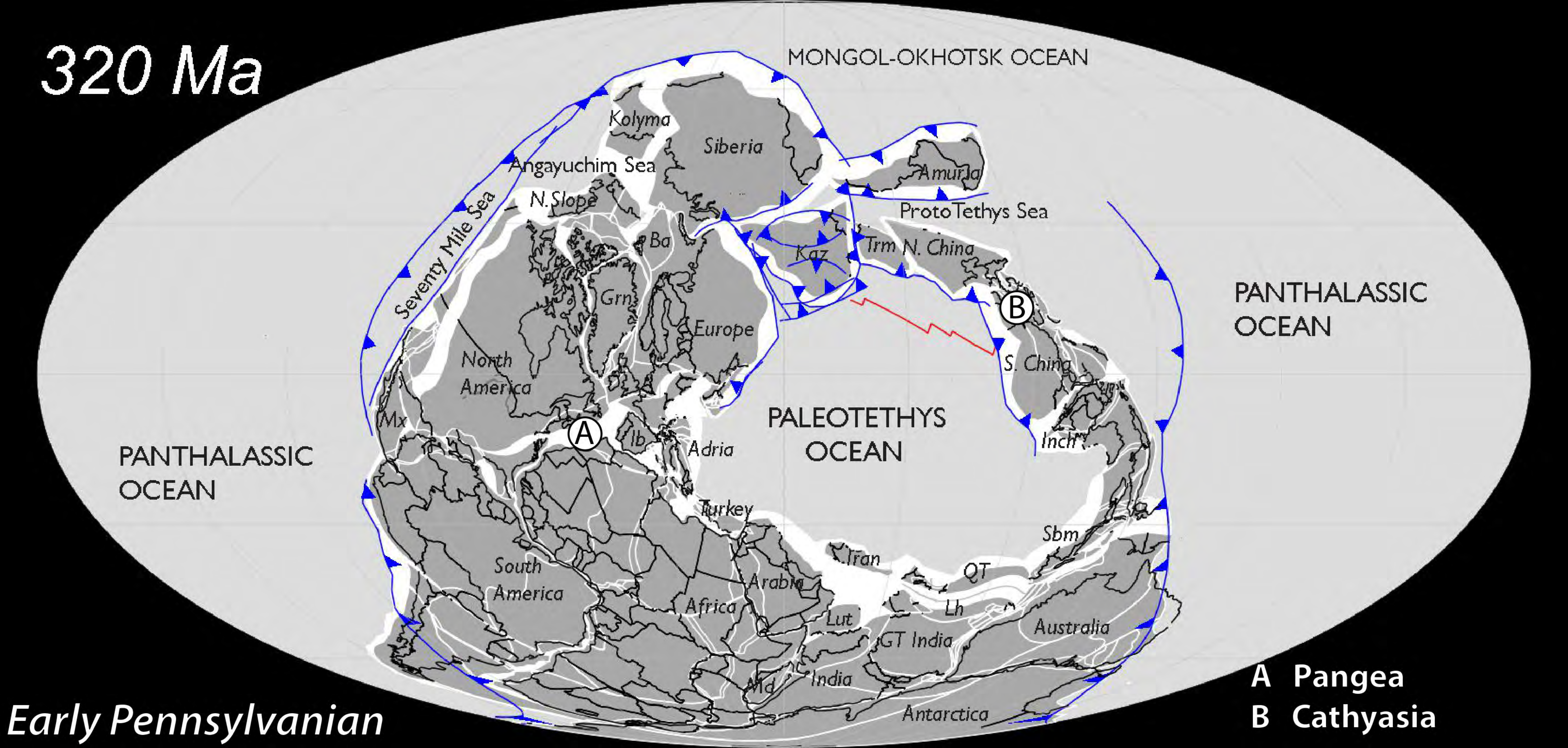

360 Ma
MONGOL-OKHOTSK OCEAN
Kolyma
Siberia
Amuria
Proto Tethys Sea
Inch
Angayuchim Sea
B
S. China
N. China
PANTHALASSIC OCEAN
Seventy Mile Sea
N. Slope
Ba
Kaz
Trm
N. Europe
Grn
C
PALEOTETHYS OCEAN
Sbm
PANTHALASSIC OCEAN
North America
QT
Ib
Adria
Turkey
Iran
Lh
Mx
Australia
Arabia
Lut
GT India
Africa
A
India
Md
Antarctica
South America
A Gondwana
B Cathyasia
C Laurussia
Latest Devonian

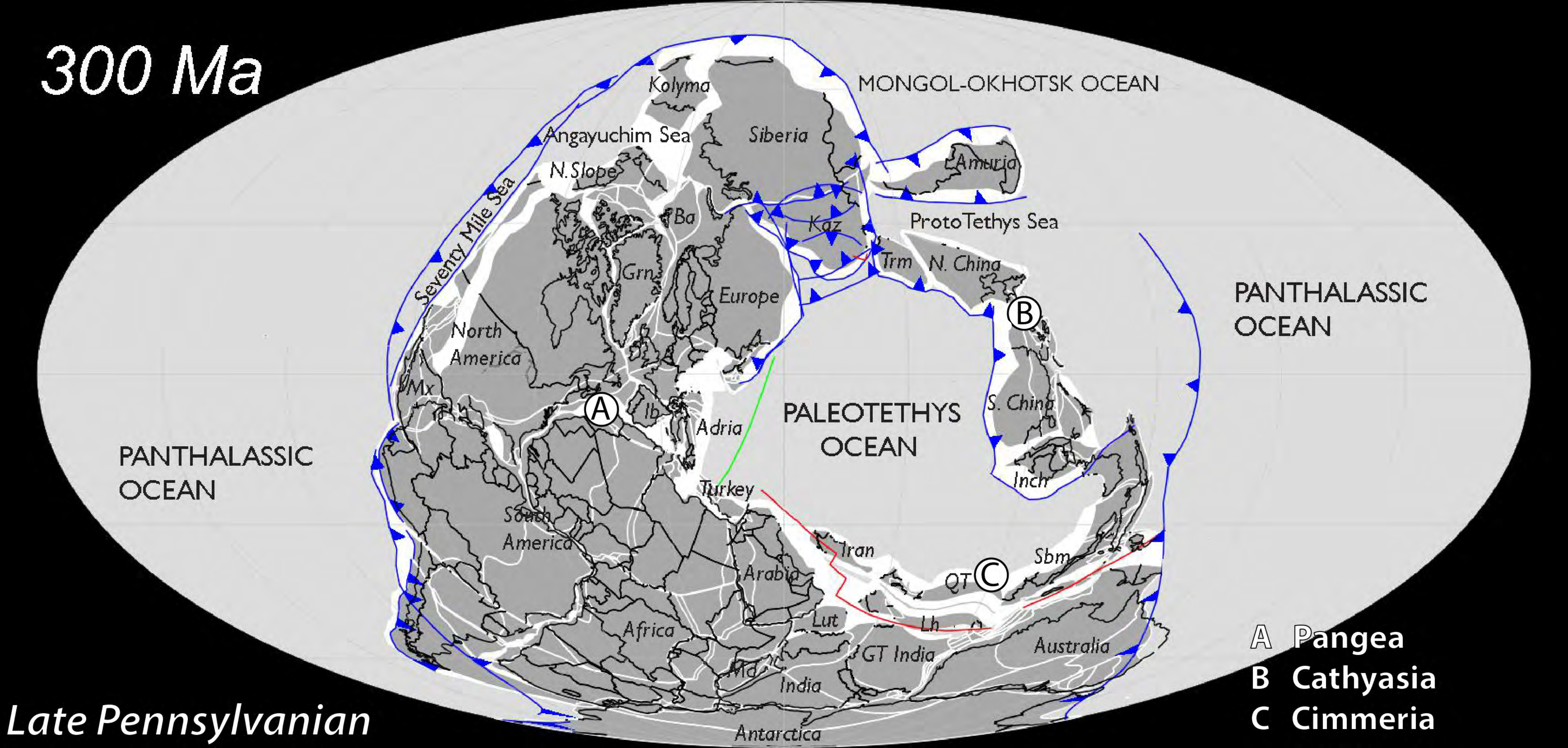
340 Ma



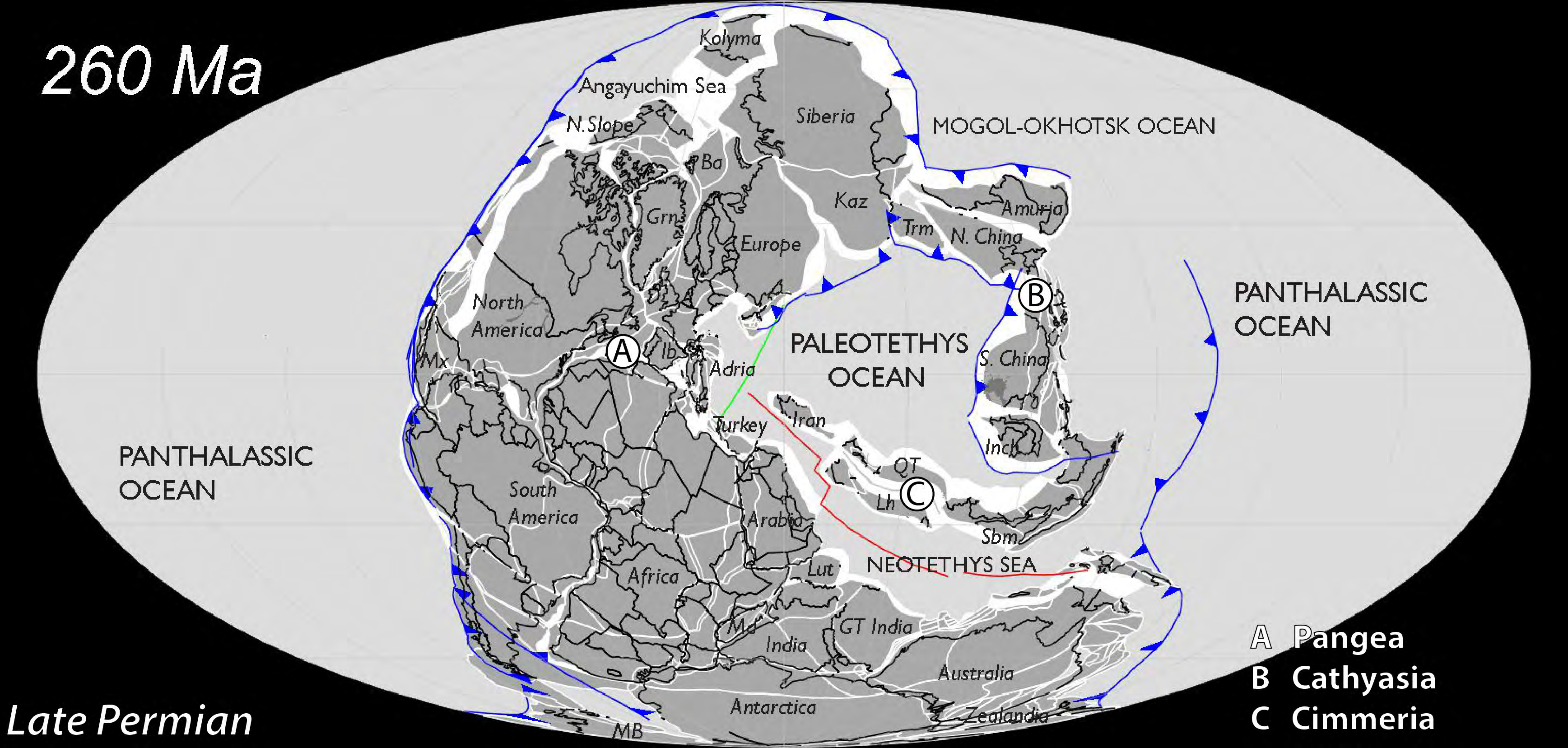
A Gondwana
B Cathyasia
C Laurussia

Middle Mississippian

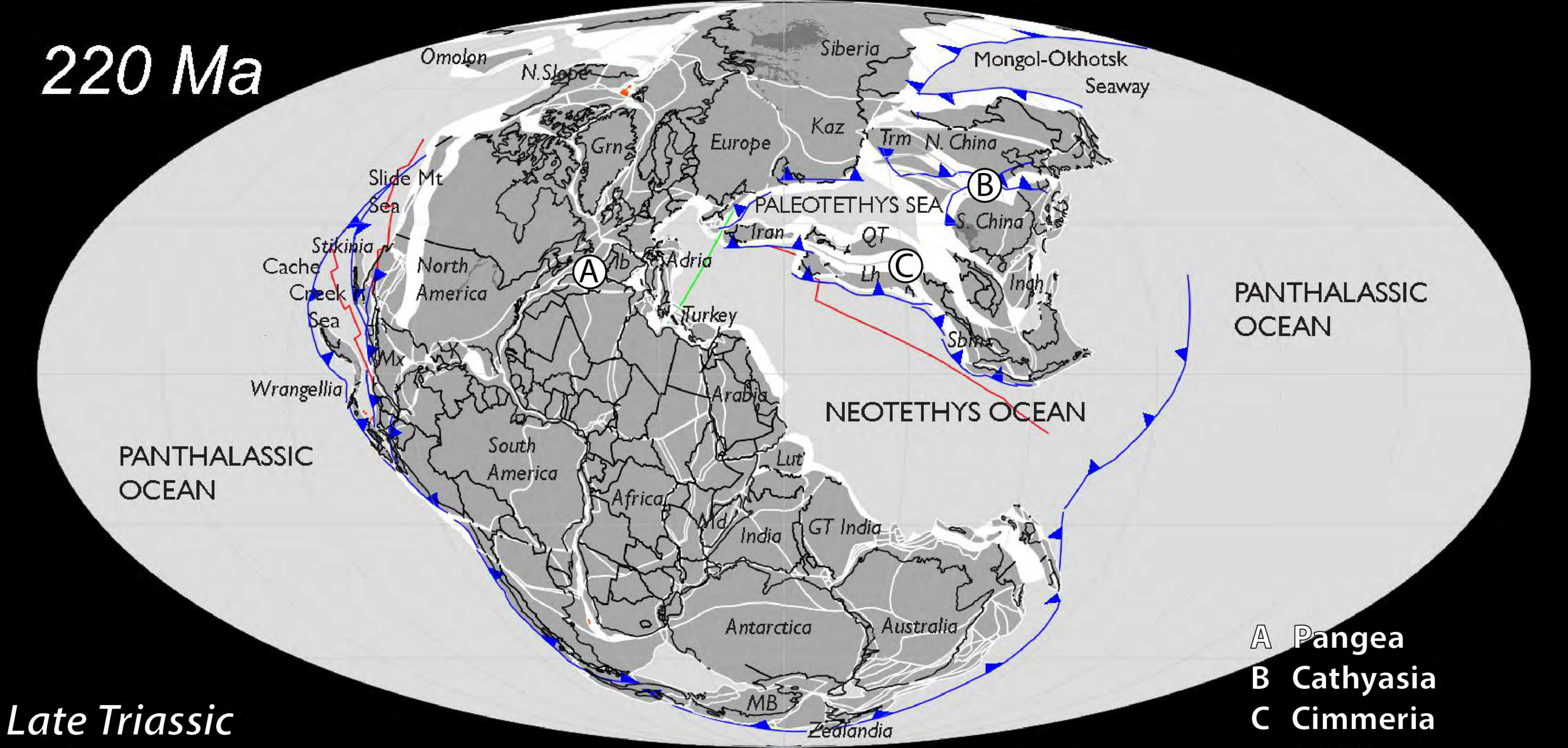

320 Ma
MONGOL-OKHOTSK OCEAN
Kolyma
Siberia
Angayuchim Sea
Amuria
N. Slope
ProtoTethys Sea
Seventy Mile Sea
Ba
Kaz
Trm
N. China
Grn
Europe
PANTHALASSIC OCEAN
North America
S. China
PALEOTETHYS OCEAN
Mx
Ib
Adria
Inch
PANTHALASSIC OCEAN
Turkey
Sbm
Iran
QT
South America
Arabia
Africa
Lh
Lut
GT India
Australia
Md
India
Antarctica
A Pangea
B Cathyasia
Early Pennsylvanian

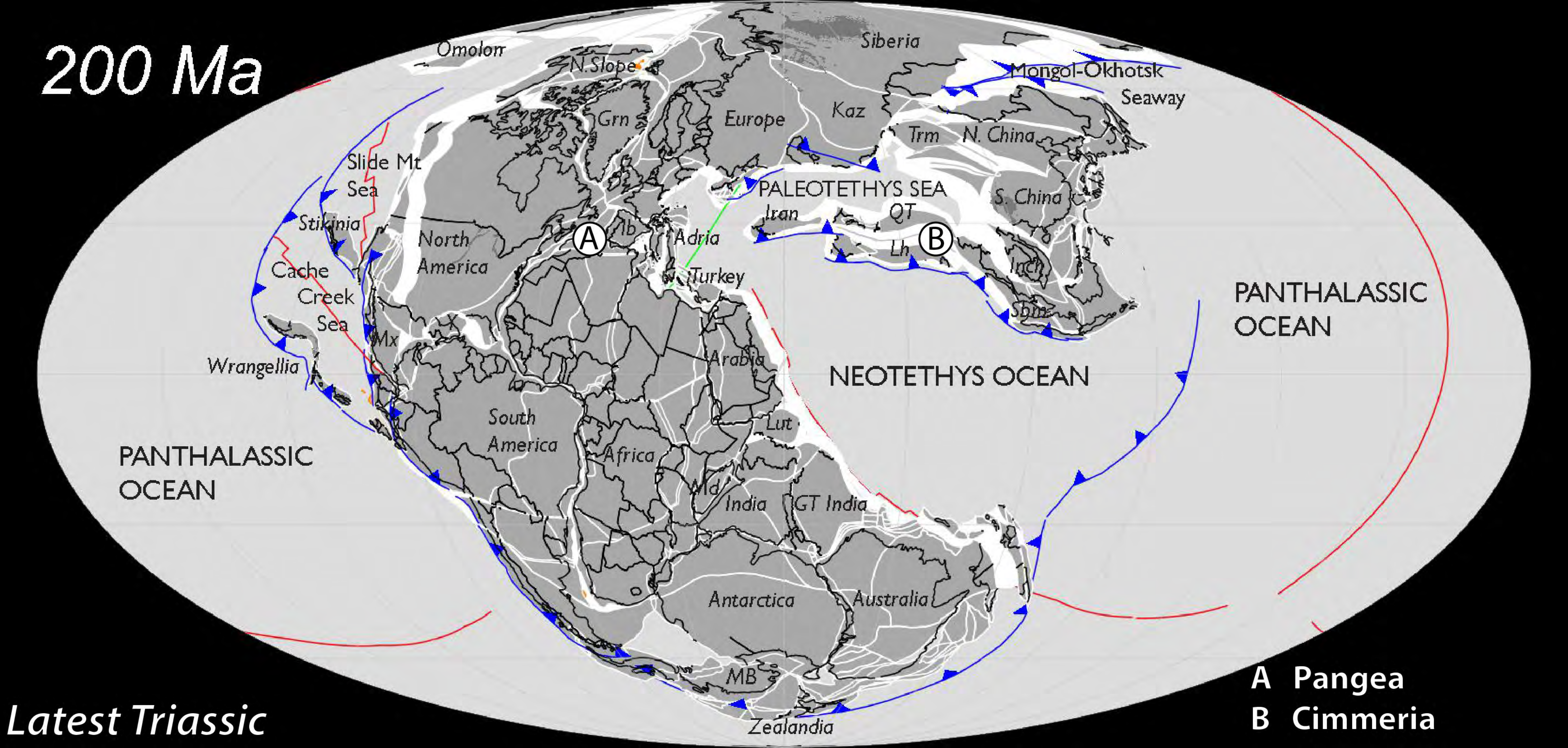

300 Ma
MONGOL-OKHOTSK OCEAN
Kolyma
Siberia
Angayuchim Sea
Amuria
N. Slope
Seventy Mile Sea
Ba
Kaz
ProtoTethys Sea
Trm
N. China
Grn
Europe
PANTHALASSIC OCEAN
B
North America
Mx
A
Ib
S. China
Adria
PALEOTETHYS OCEAN
PANTHALASSIC OCEAN
Inch
Turkey
South America
Iran
Sbm
QT
C
Arabia
Lut
Lh
Africa
Australia
GT India
Md
India
Antarctica
A Pangea
B Cathyasia
C Cimmeria
Late Pennsylvanian

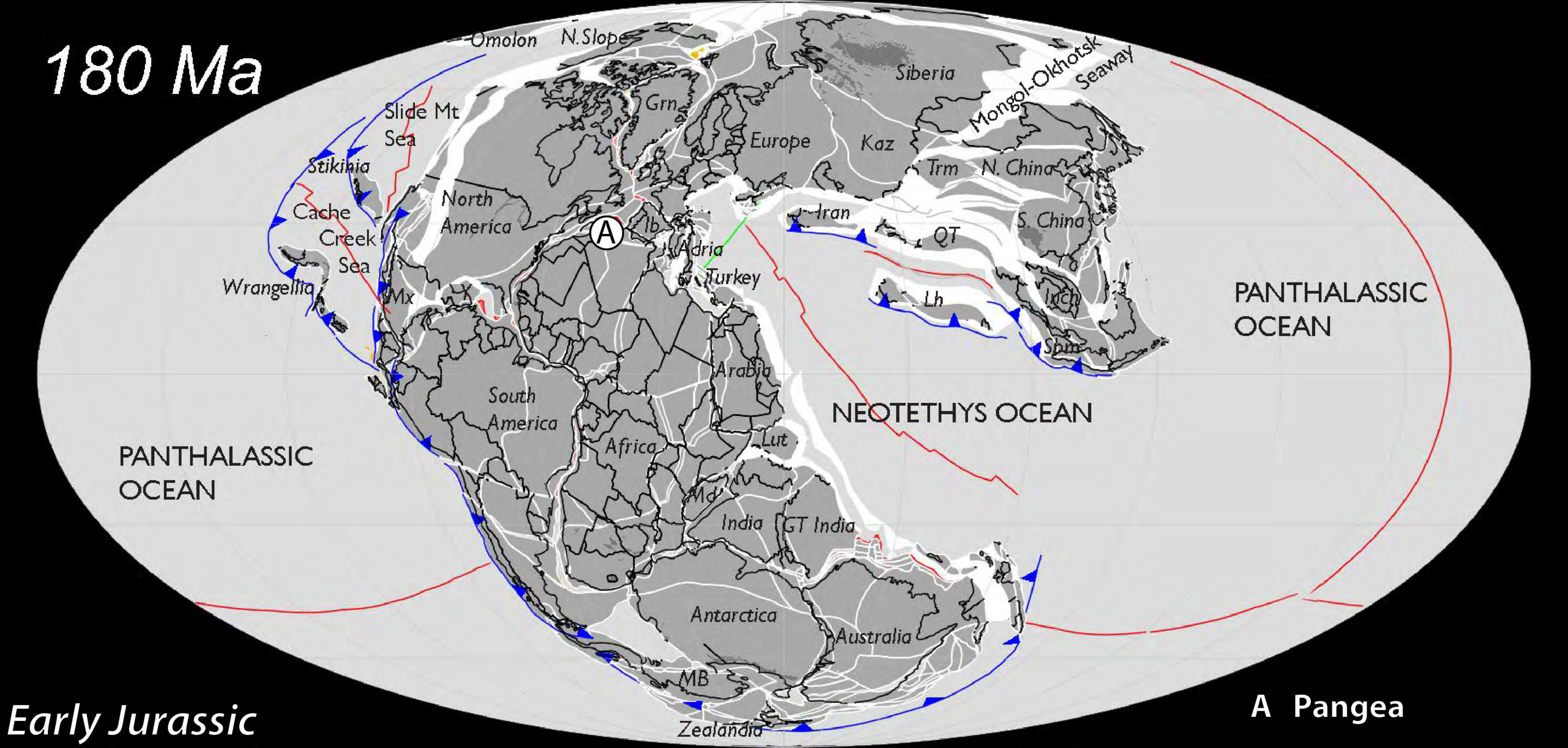
280 Ma
Kolyma
Angayuchim Sea
N.Slope
Siberia
MONGOL-OKHOTSK OCEAN
Ba
Amuria
Kaz
Grn
Trm
ProtoTethys Sea
Europe
N. China
North America
PANTHALASSIC OCEAN
B
Mx
A
Ib
PALEOTETHYS OCEAN
Adria
S. China
PANTHALASSIC OCEAN
Turkey
Iran
Inch
South America
Arabia
QT
C
Lh
Sbm
Africa
Lut
NeoTethys Sea
Pa
Md
GT India
India
Australia
Antarctica
Zealandia
A Pangea
B Cathyasia
C Cimmeria
Early Permian

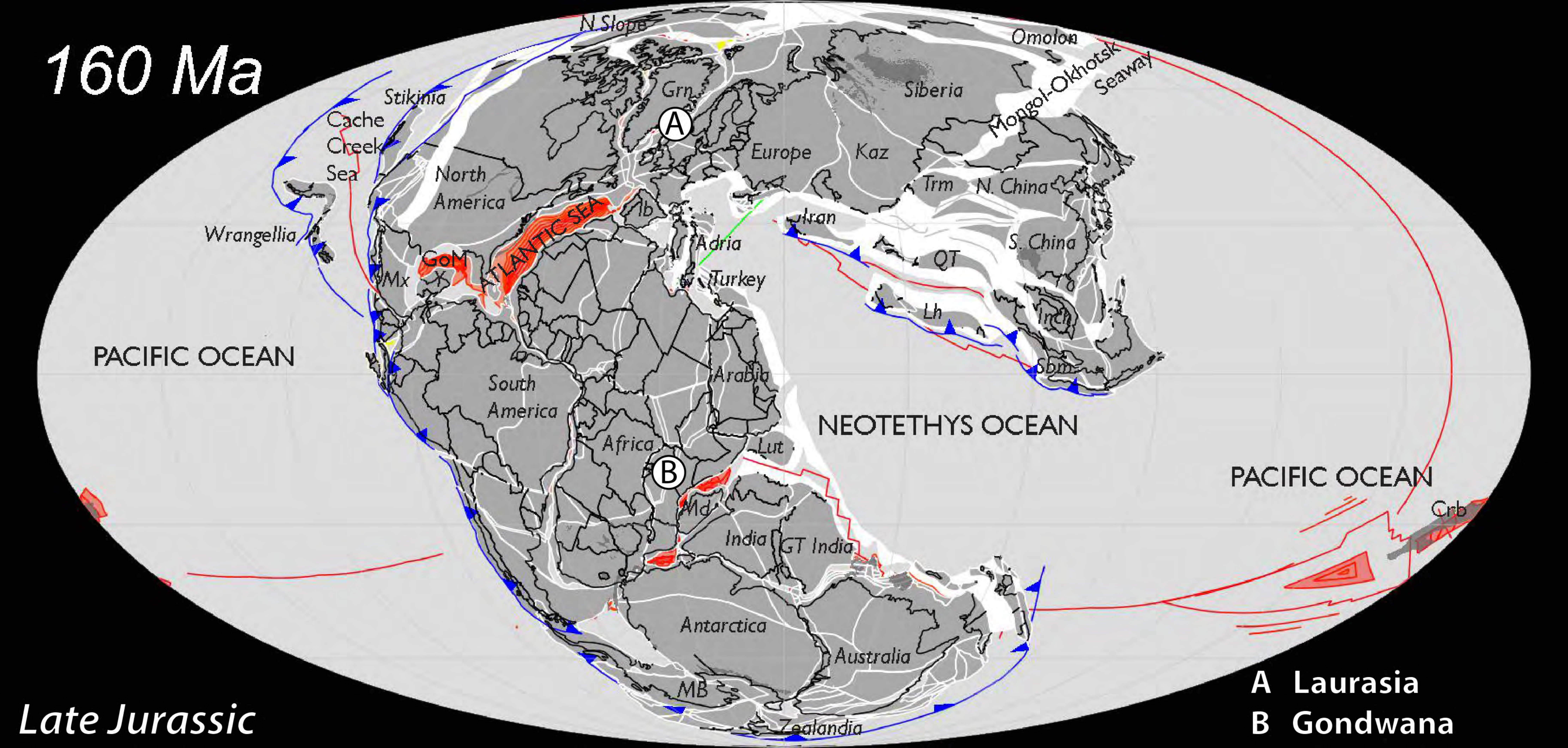

260 Ma
Late Permian
Kolyma
Angayuchim Sea
N. Slope
Siberia
MOGOL-OKHOTSK OCEAN
Ba
Kaz
Amuria
Grn
Trm
N. China
Europe
B
PANTHALASSIC
OCEAN
North
America
A
Ib
PALEOTETHYS
OCEAN
Mx
Adria
S. China
Iran
Turkey
Inch
PANTHALASSIC
OCEAN
QT
C
Lh
South
America
Arabia
Sbm
NEOTETHYS SEA
Lut
Africa
Md
GT India
India
Australia
Antarctica
Zealandia
MB
A Pangea
B Cathyasia
C Cimmeria


240 Ma
Kolyma
Omolon
MOGOL-OKHOTSK OCEAN
Siberia
Angayuchim Sea
Amuria
N. Slope
Ba
Kaz
Trm
N. China
Grn
Europe
B
S. China
PALEOTETHYS SEA
PANTHALASSIC OCEAN
North America
Iran
A
Ib
Adria
QT
Inch
C
Lh
Sbm
Mx
Turkey
PANTHALASSIC OCEAN
Arabia
NEOTETHYS OCEAN
South America
Lut
Africa
GT India
Md
India
Australia
A Pangea
B Cathyasia
C Cimmeria
Antarctica
Middle Triassic
Zealandia
MB

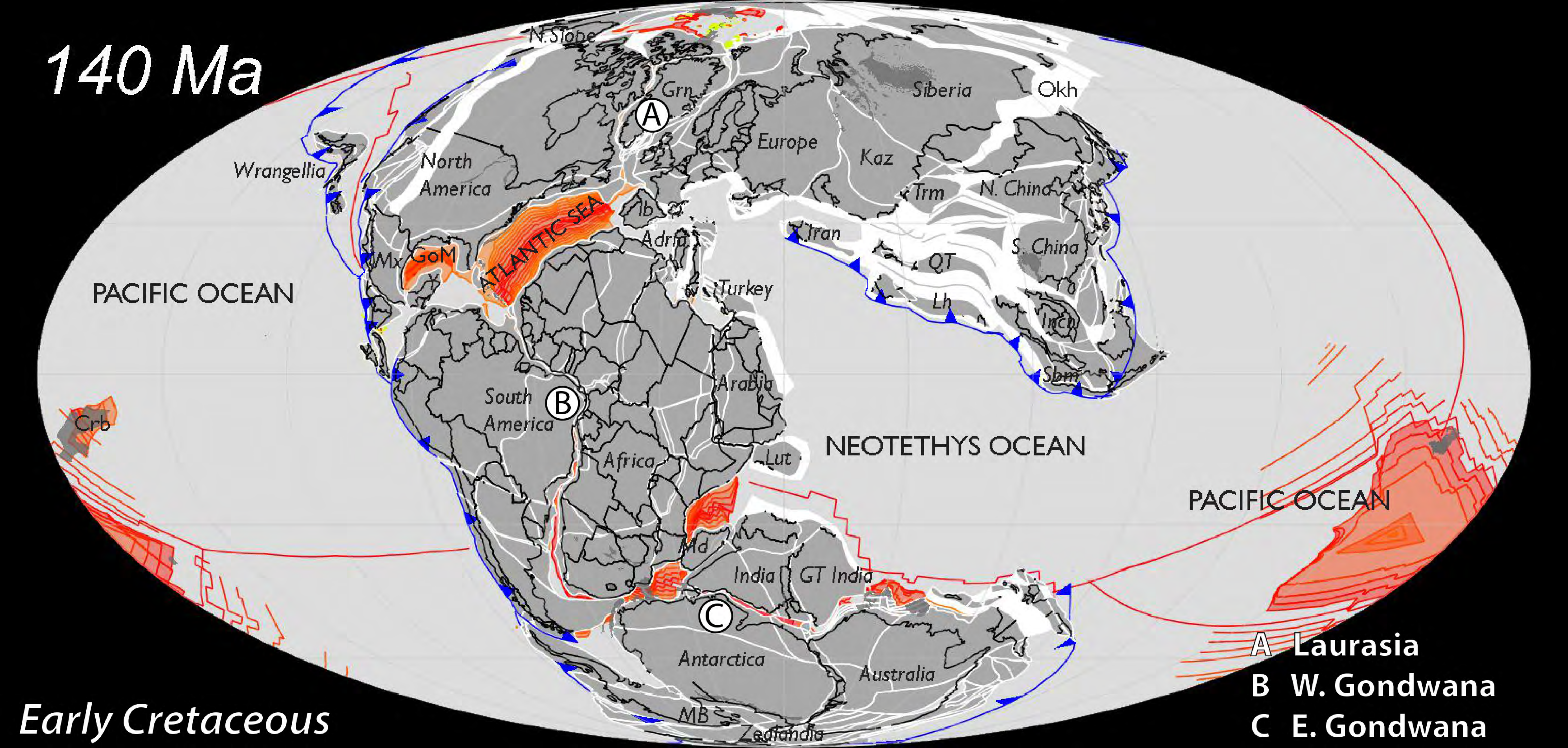

220 Ma
Omolon
N.Slope
Siberia
Mongol-Okhotsk
Seaway
Kaz
Grn
Europe
Trm
N. China
B
Slide Mt
Sea
PALEOTETHYS SEA
S. China
Stikinia
Iran
QT
Cache
Creek
Sea
North
America
A
Ib
Adria
C
Lh
Indh
PANTHALASSIC
OCEAN
Turkey
Sbm
Mx
Wrangellia
Arabia
NEOTETHYS OCEAN
PANTHALASSIC
OCEAN
South
America
Lut
Africa
Md
India
GT India
Antarctica
Australia
MB
Zealandia
Late Triassic
A Pangea
B Cathyasia
C Cimmeria


200 Ma
Omolon
N. Slope
Siberia
Mongol-Okhotsk
Seaway
Grn
Europe
Kaz
Trm
N. China
Slide Mt
Sea
PALEOTETHYS SEA
S. China
Iran
QT
Stikinia
North
America
A
Ib
Adria
B
Lh
Indch
Cache
Creek
Sea
Turkey
PANTHALASSIC
OCEAN
Mx
Arabia
Wrangellia
NEOTETHYS OCEAN
Lut
South
America
Africa
PANTHALASSIC
OCEAN
Md
India
GT India
Antarctica
Australia
MB
Zealandia
Latest Triassic
A Pangea
B Cimmeria


180 Ma
Omolon
N.Slope
Siberia
Mongol-Okhotsk Seaway
Slide Mt Sea
Grn
Europe
Kaz
Stikinia
Trm
N. China
North America
Cache Creek Sea
Iran
S. China
A
Ib
QT
Adria
Turkey
Wrangellia
Mx
Lh
Inch
PANTHALASSIC OCEAN
Sbm
Arabia
South America
NEOTETHYS OCEAN
Africa
Lut
PANTHALASSIC OCEAN
Md
India
GT India
Antarctica
Australia
MB
Zealandia
Early Jurassic
A Pangea

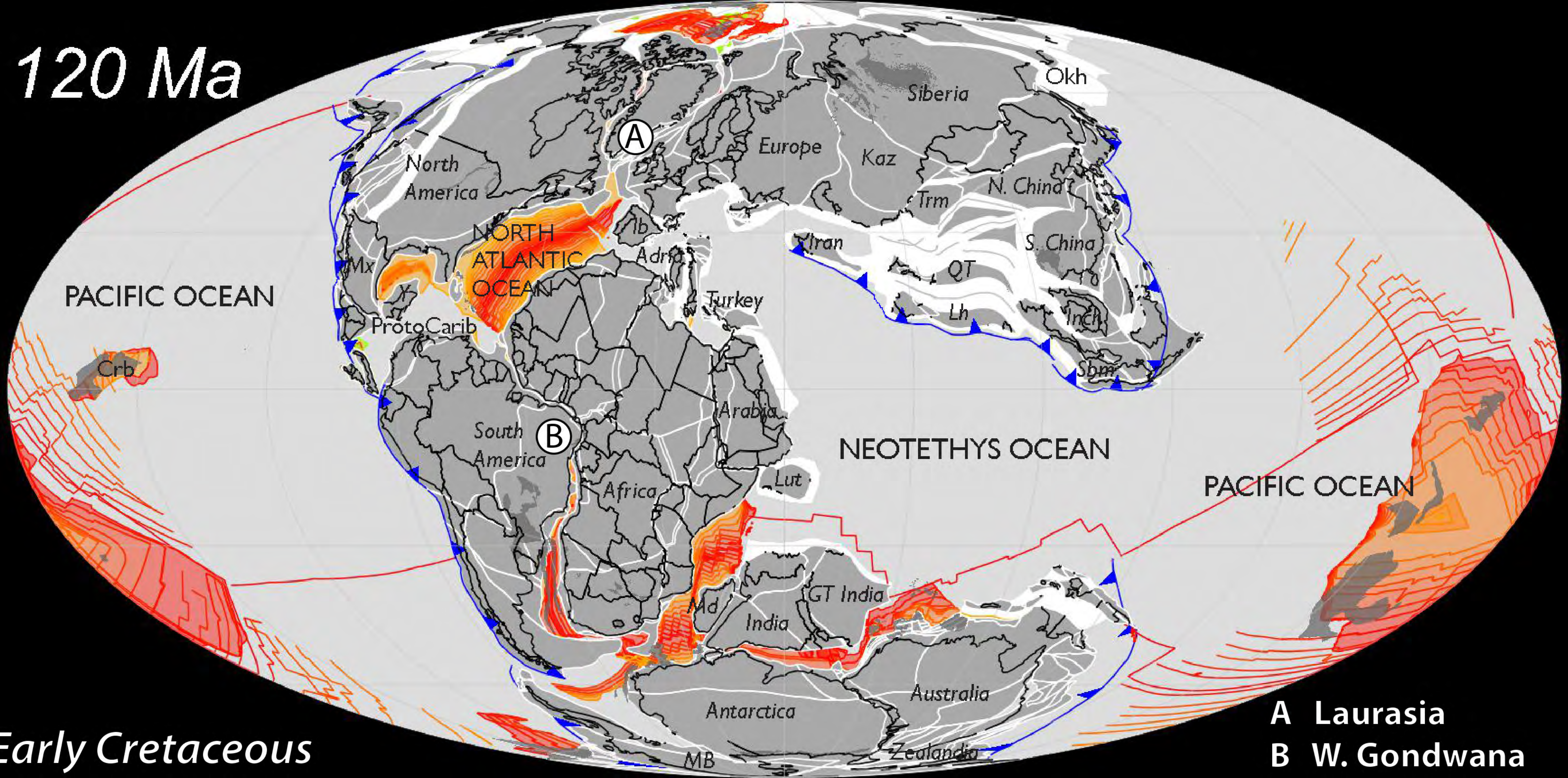


160 Ma
N. Slope
Omolon
Mongol-Okhotsk
Seaway
Grn
Siberia
Stikinia
Cache
Creek
Sea
A
Europe
Kaz
North
America
Trm
N. China
Ib
Iran
Wrangellia
ATLANTIC SEA
Adria
S. China
QT
GoM
Mx
Turkey
Lh
Inch
Sbm
PACIFIC OCEAN
South
America
Arabia
NEOTETHYS OCEAN
Africa
Lut
B
PACIFIC OCEAN
Md
Crb
India
GT India
Antarctica
Australia
MB
Zealandia
Late Jurassic
A Laurasia
B Gondwana



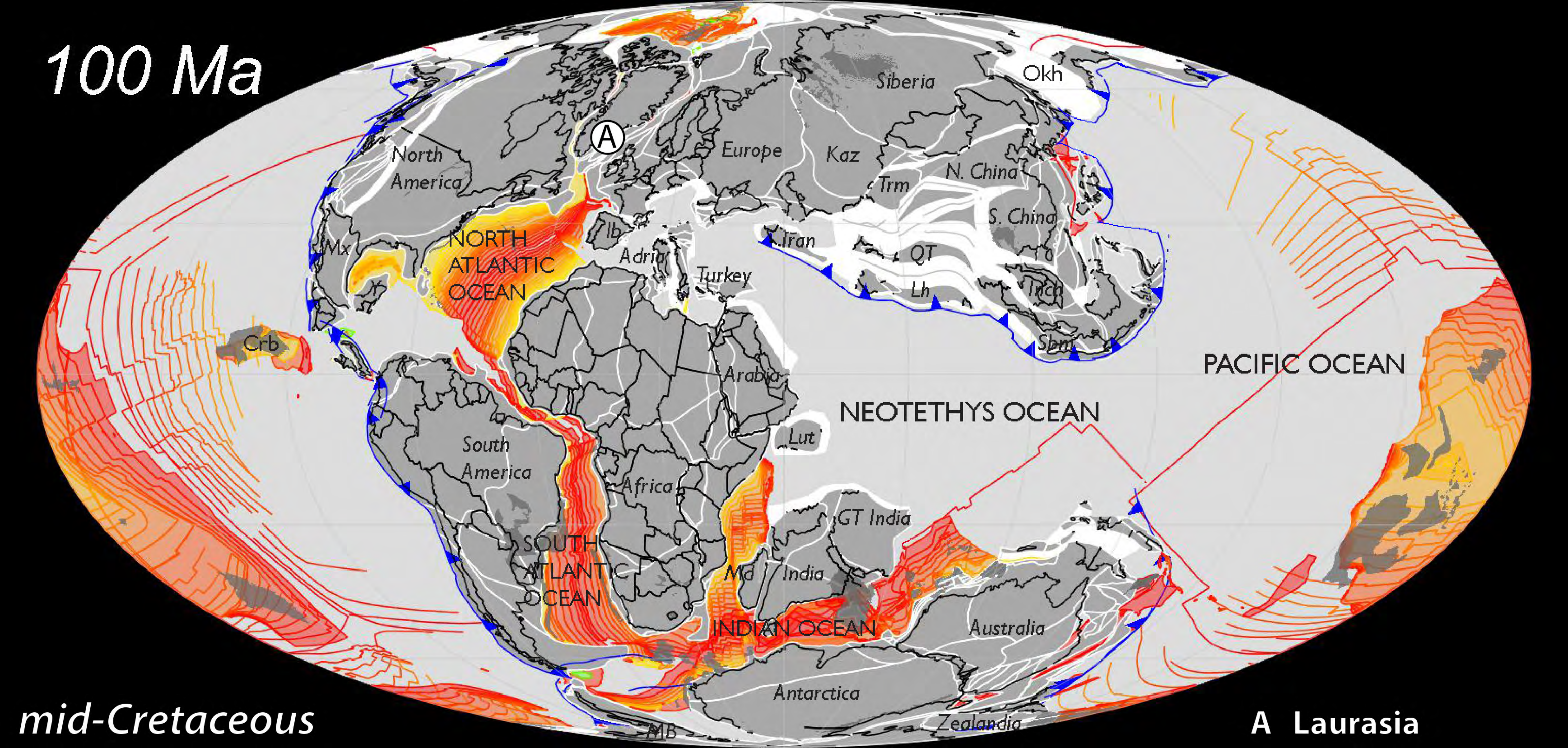
140 Ma
N. Slope
Grn
A
Siberia
Okh
Europe
Kaz
Wrangellia
North America
Trm
N. China
Ib
ATLANTIC SEA
Iran
Adria
S. China
Mx
GoM
QT
PACIFIC OCEAN
Turkey
Lh
Inch
Sbm
Arabia
South America
B
Crb
Africa
Lut
NEOTETHYS OCEAN
PACIFIC OCEAN
Md
India
GT India
C
Antarctica
Australia
MB
Zealandia
A Laurasia
B W. Gondwana
C E. Gondwana
Early Cretaceous

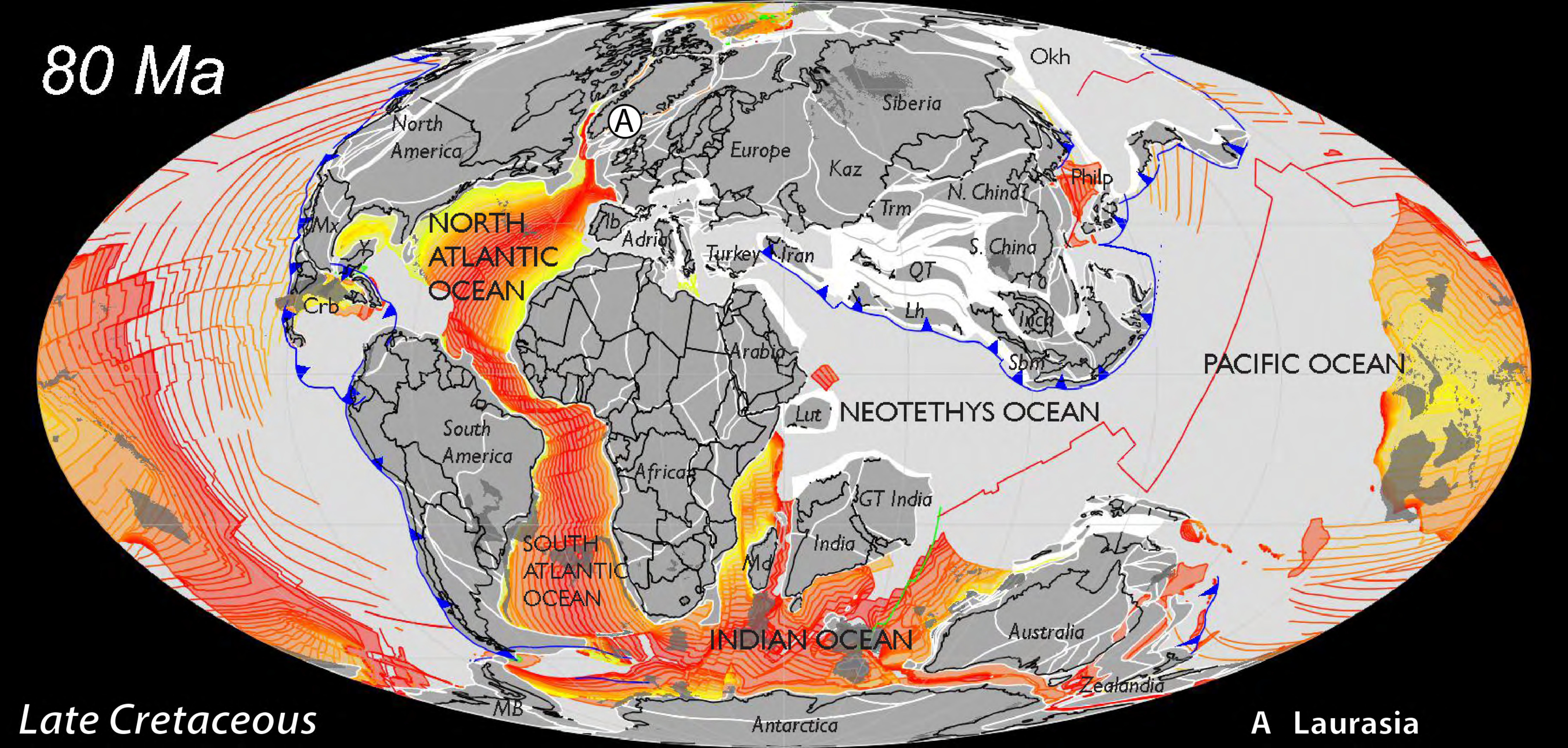
120 Ma

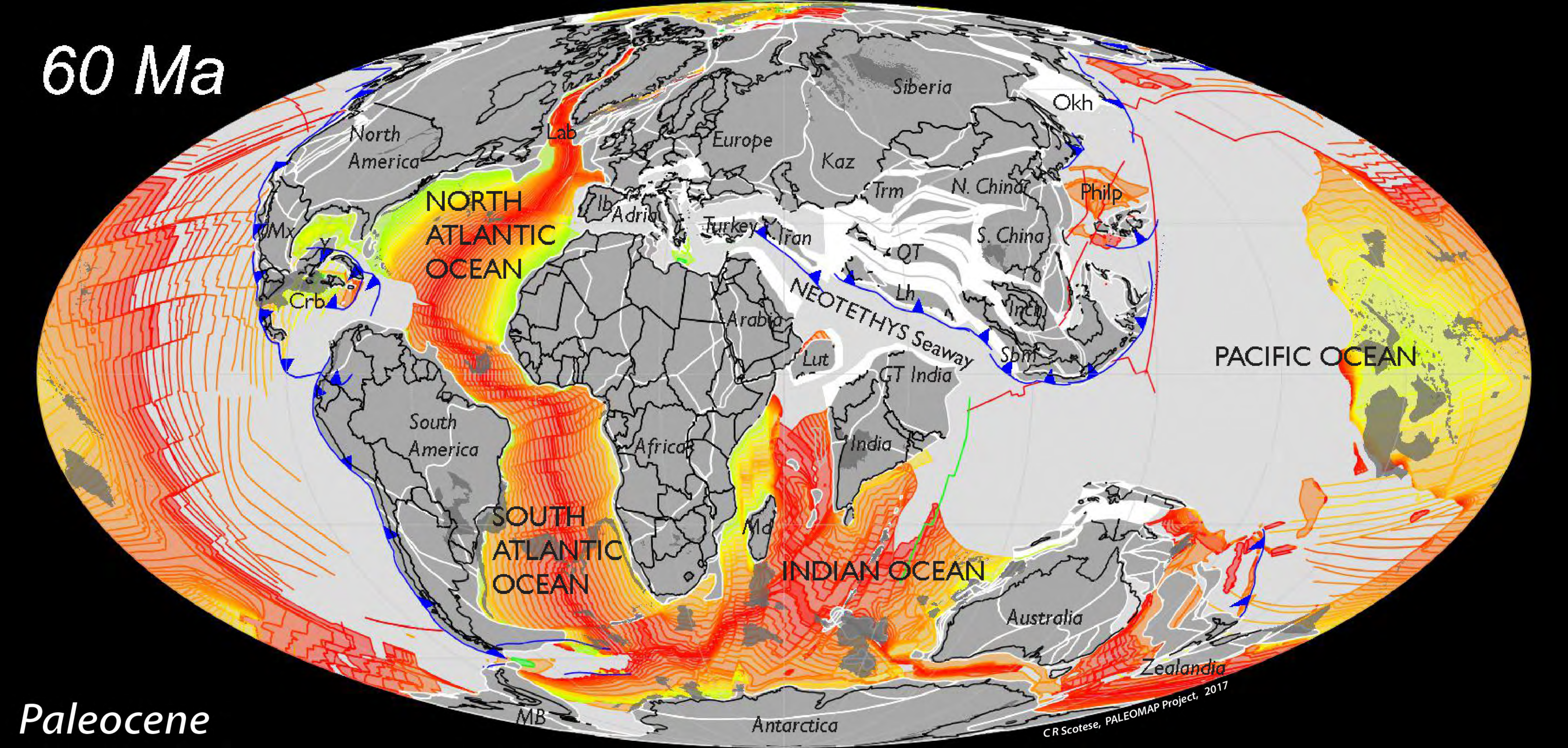


Early Cretaceous

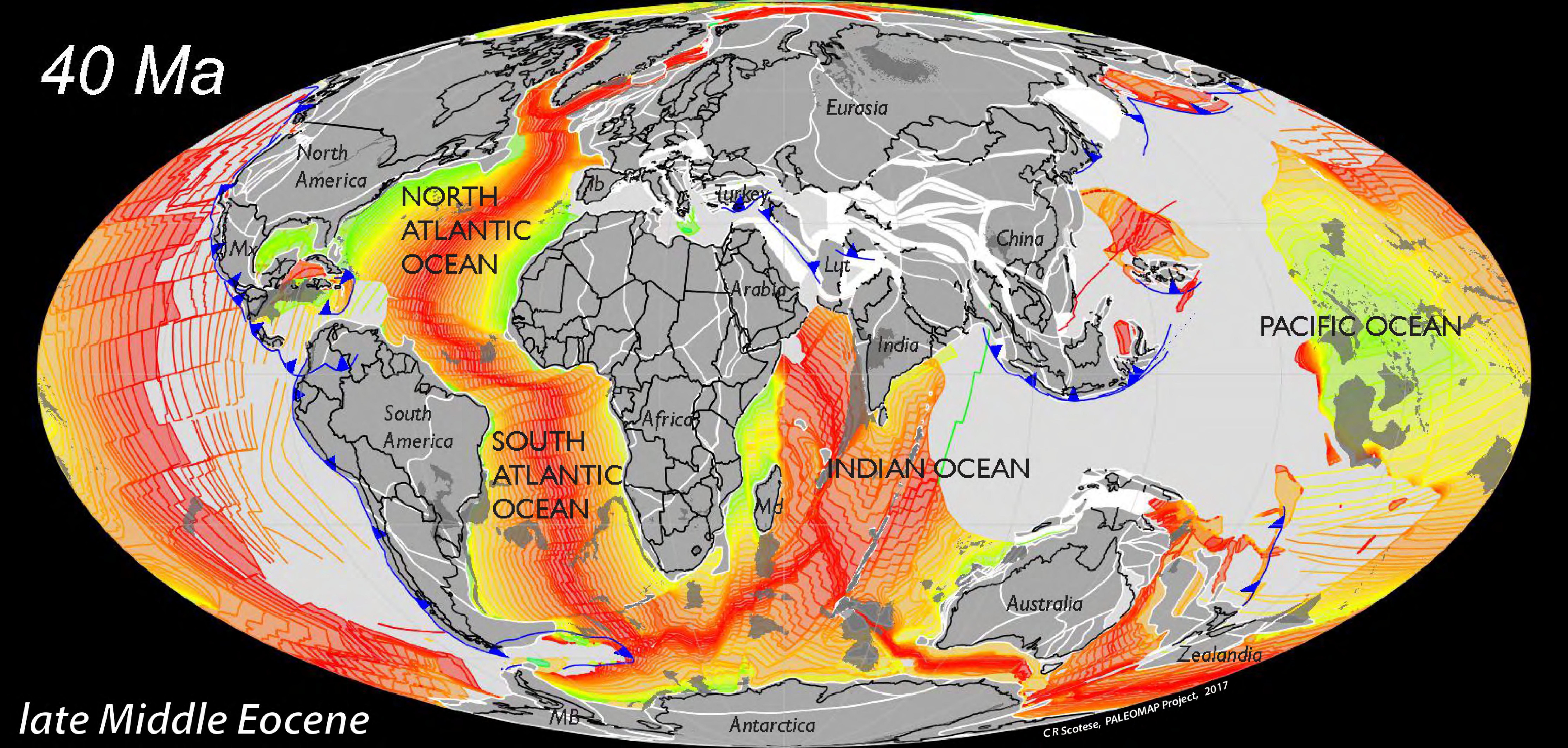
A Laurasia
B W. Gondwana

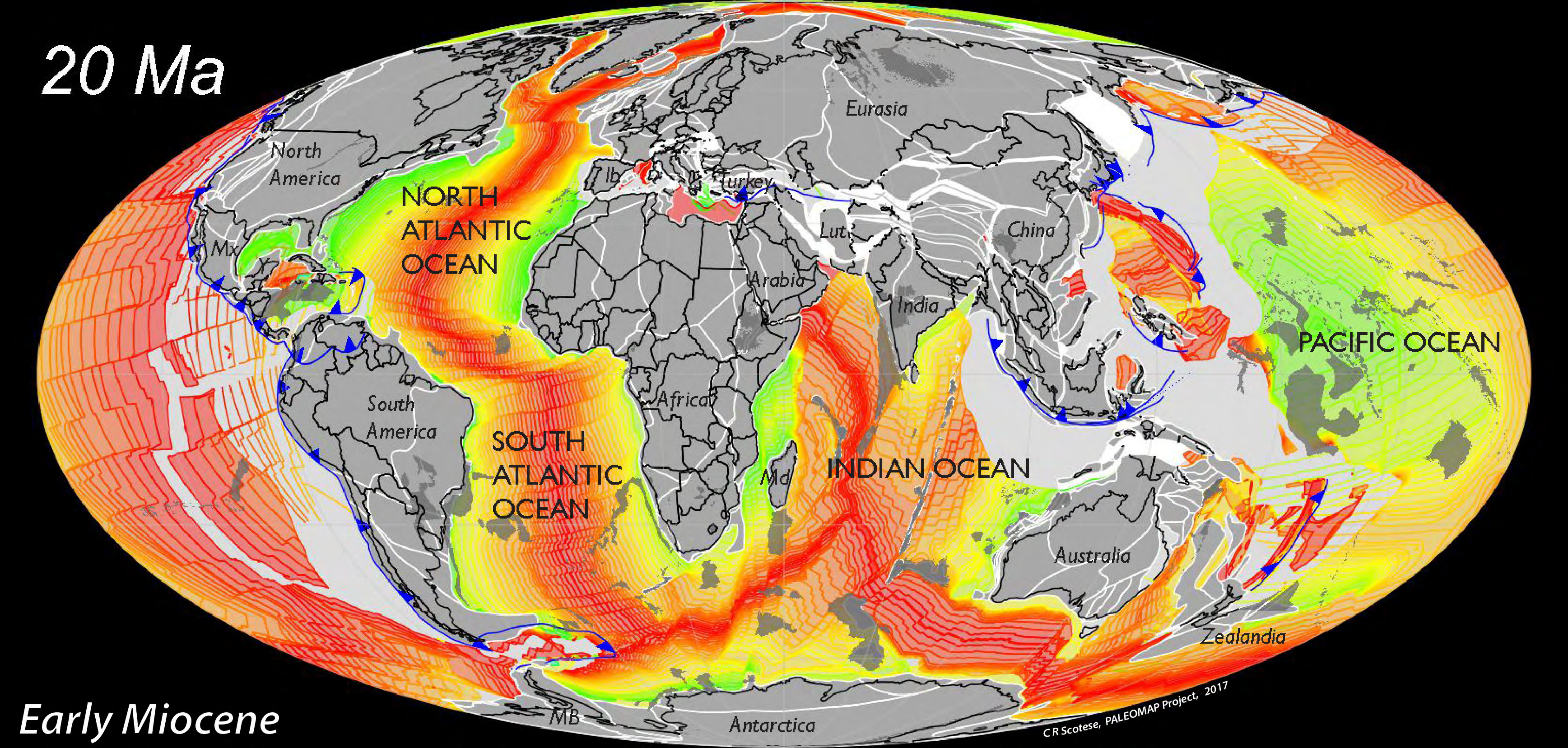

100 Ma
North America
Mx
Crb
NORTH ATLANTIC OCEAN
Ib
Adria
Europe
Turkey
Kaz
Siberia
Okh
Trm
N. China
S. China
Iran
QT
Lh
Sbm
Arabia
Lut
NEOTETHYS OCEAN
PACIFIC OCEAN
South America
Africa
SOUTH ATLANTIC OCEAN
Md
India
GT India
INDIAN OCEAN
Australia
Antarctica
Zealandia
MB
mid-Cretaceous
A Laurasia

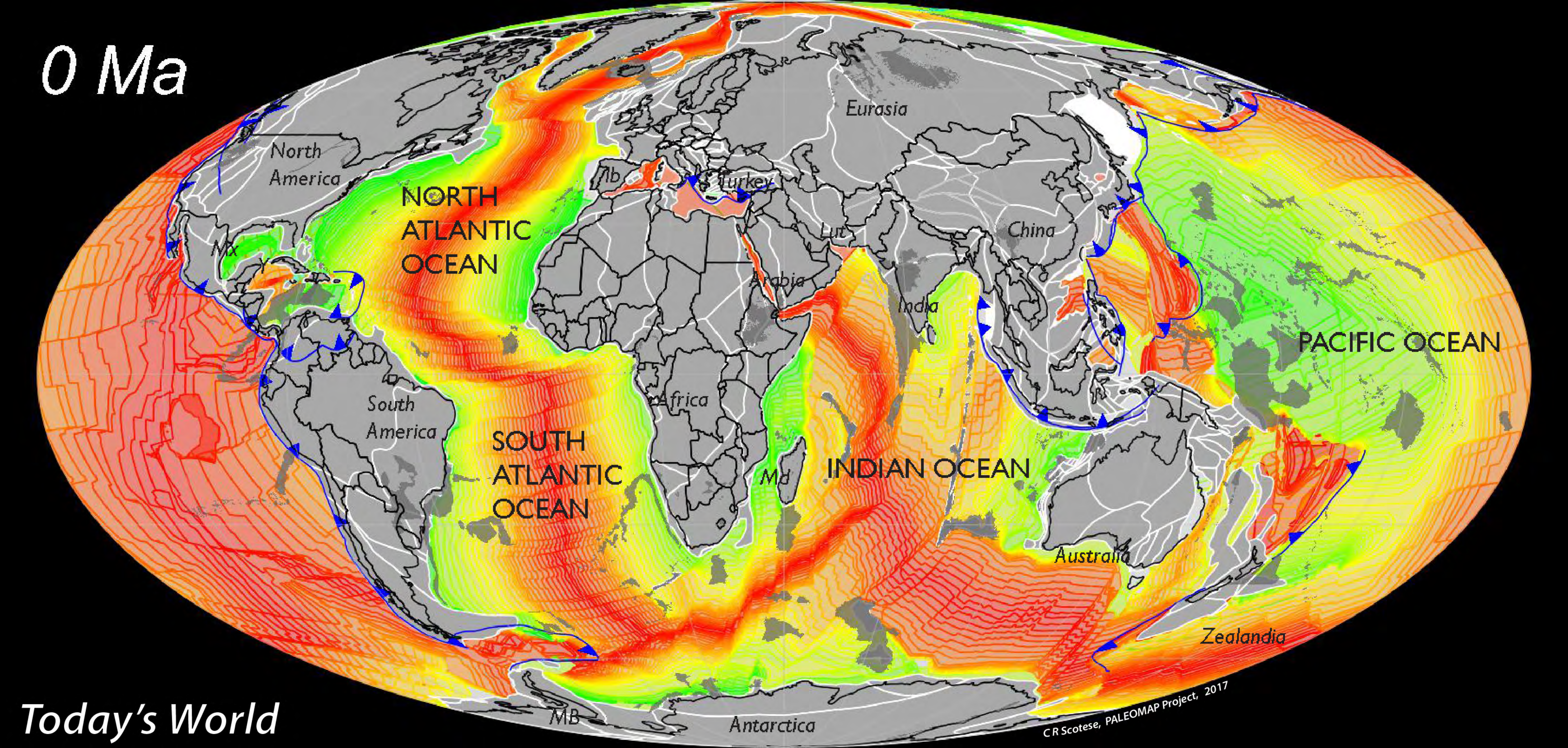

80 Ma
North America
Europe
Siberia
Okh
Kaz
N. China
Philp
Trm
Mx
Ib
Adria
NORTH ATLANTIC OCEAN
Turkey
Iran
S. China
QT
Crb
Lh
Inch
Arabia
Sbm
PACIFIC OCEAN
Lut
NEOTETHYS OCEAN
South America
Africa
GT India
India
Md
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
Australia
Zealandia
MB
Antarctica
Late Cretaceous
A Laurasia



60 Ma
Paleocene
North America
Lab
Europe
Siberia
Okh
Kaz
Trm
N. China
Philp
Ib
Adria
Turkey
Iran
S. China
QT
Mx
Y
Crb
NORTH ATLANTIC OCEAN
NEOTETHYS Seaway
Lh
Indo
Arabia
Sbm
Lut
GT India
PACIFIC OCEAN
South America
Africa
India
Md
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
Australia
Zealandia
MB
Antarctica
C R Scotese, PALEOMAP Project, 2017


40 Ma
North America
NORTH ATLANTIC OCEAN
Ib
Turkey
Eurasia
China
Mx
Lut
Arabia
India
PACIFIC OCEAN
South America
Africa
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
Md
Australia
Zealandia
MB
Antarctica
late Middle Eocene
C R Scotese, PALEOMAP Project, 2017


20 Ma
North America
Mx
NORTH ATLANTIC OCEAN
Ib
Turkey
Eurasia
Lut
Arabia
India
China
PACIFIC OCEAN
South America
SOUTH ATLANTIC OCEAN
Africa
Md
INDIAN OCEAN
Australia
Zealandia
MB
Antarctica
C R Scotese, PALEOMAP Project, 2017
Early Miocene


0 Ma
North America
Eurasia
Ib
Turkey
NORTH ATLANTIC OCEAN
Mx
Lut
China
Arabia
India
PACIFIC OCEAN
South America
Africa
SOUTH ATLANTIC OCEAN
Md
INDIAN OCEAN
Australia
Zealandia
MB
Antarctica
Today's World
C R Scotese, PALEOMAP Project, 2017