



Универзитет у Новом Саду  
Природно-математички факултет  
Департман за географију, туризам и хотелијерство

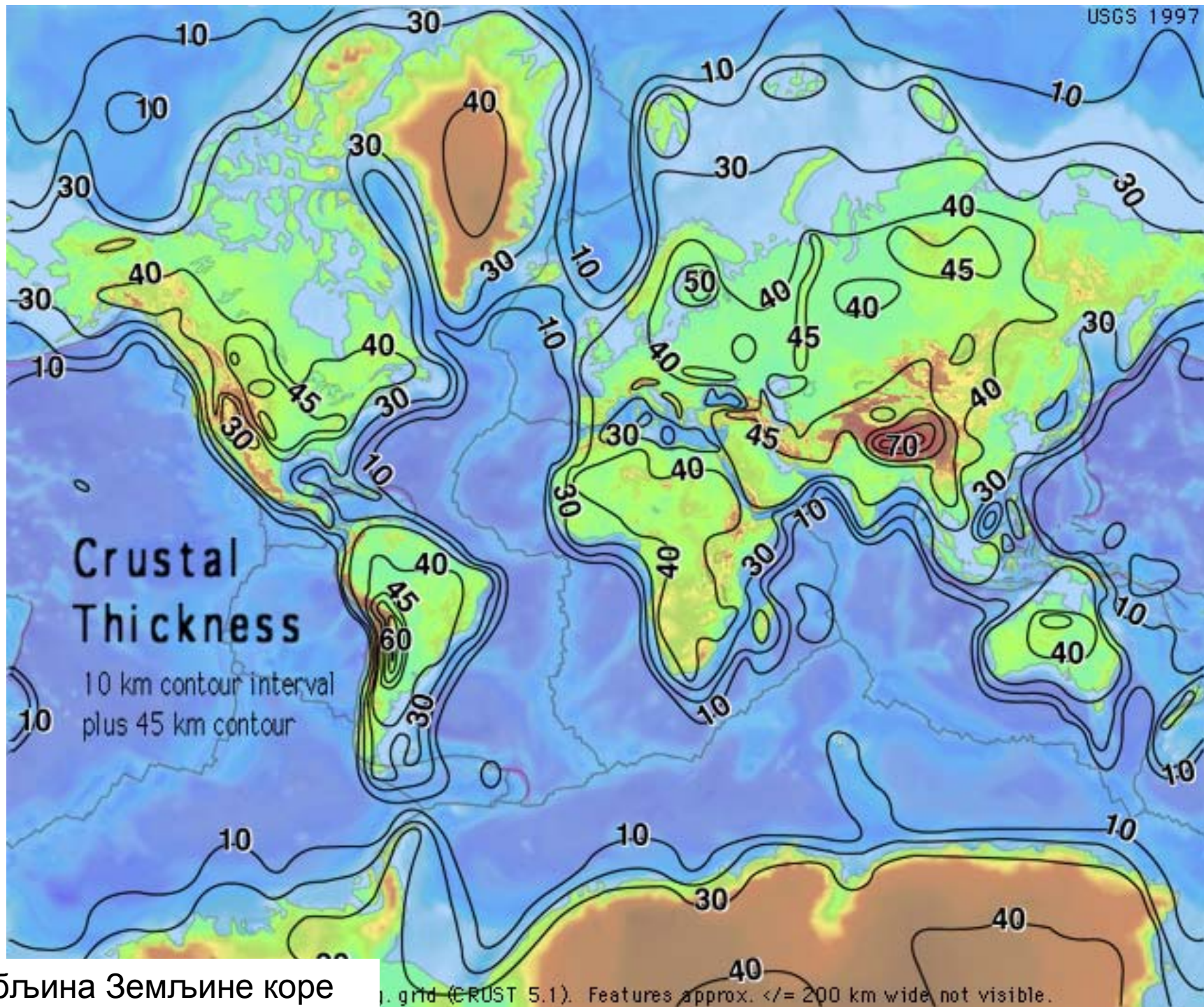
**Др Млађен Јовановић**

*Катедра за Физичку географију*

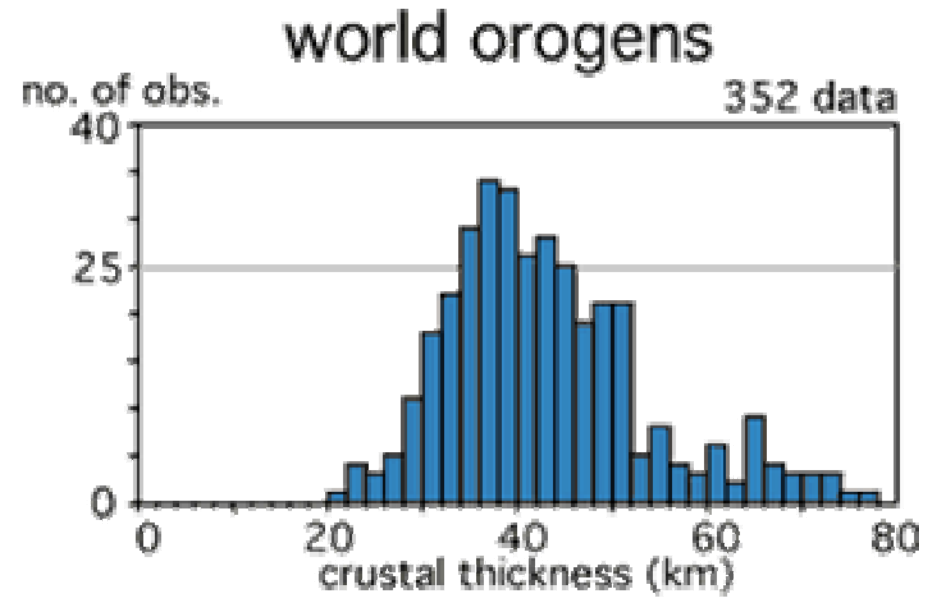
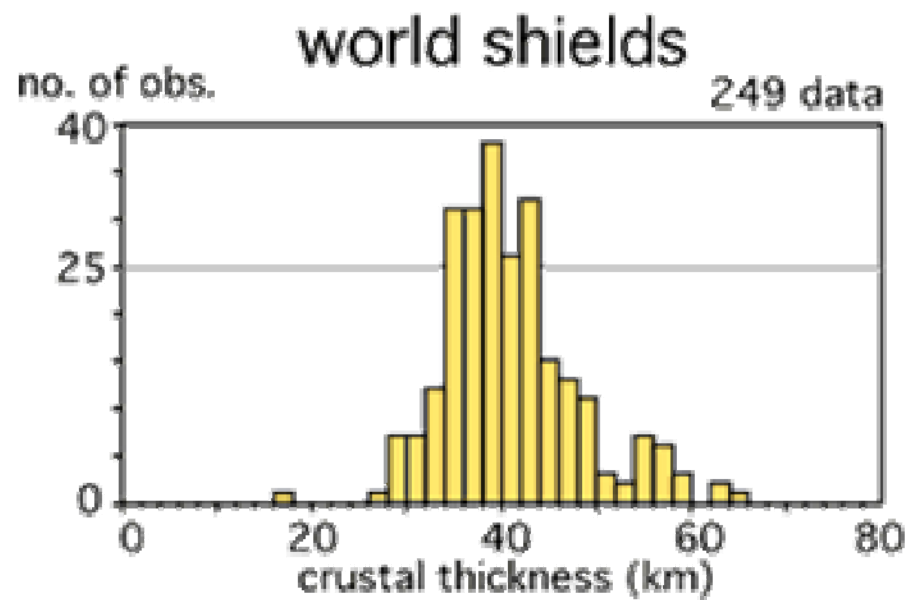


# ОРОГЕНЕТСКИ ЦИКЛУСИ

28. 11. и 2.12. 2013.

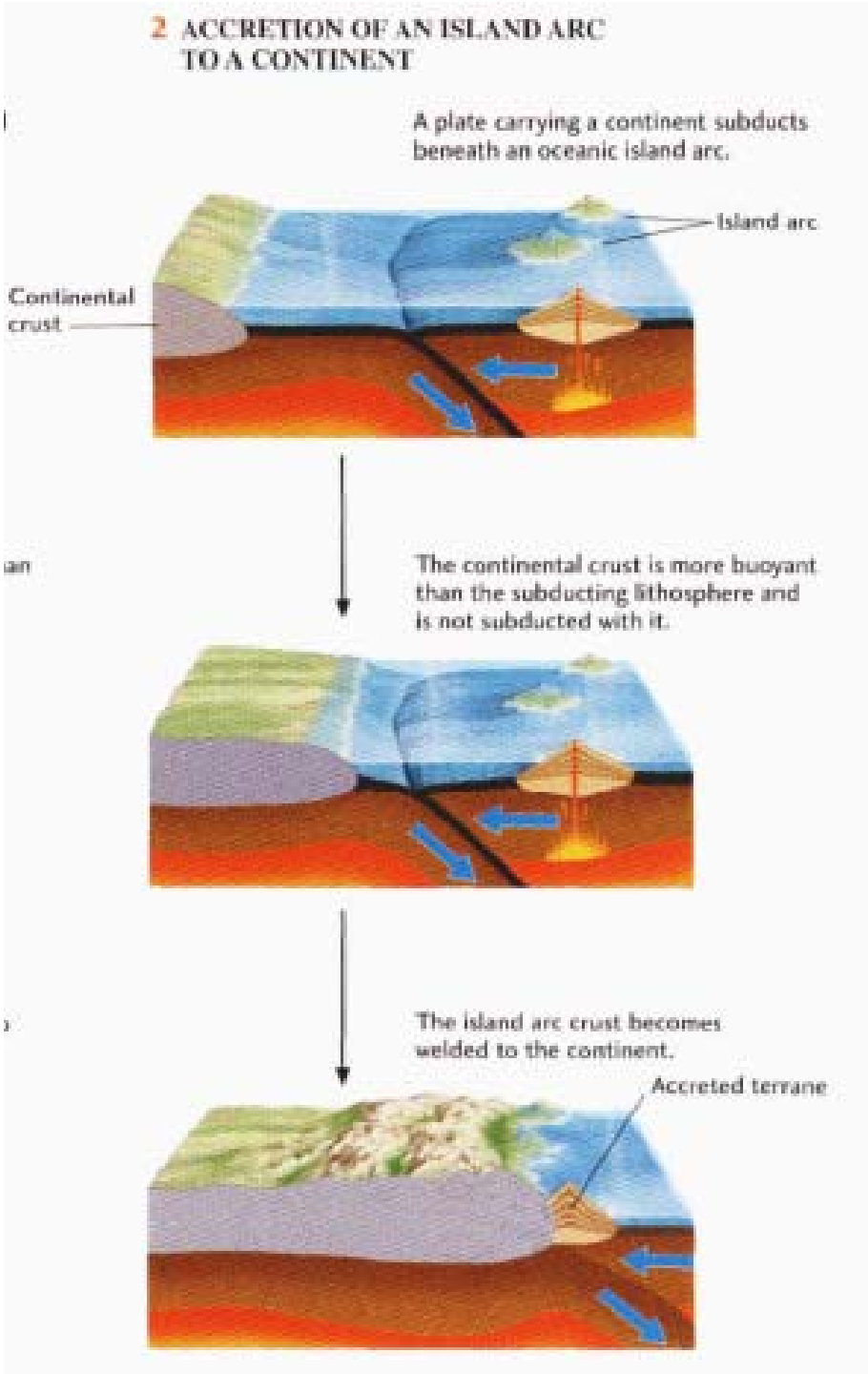
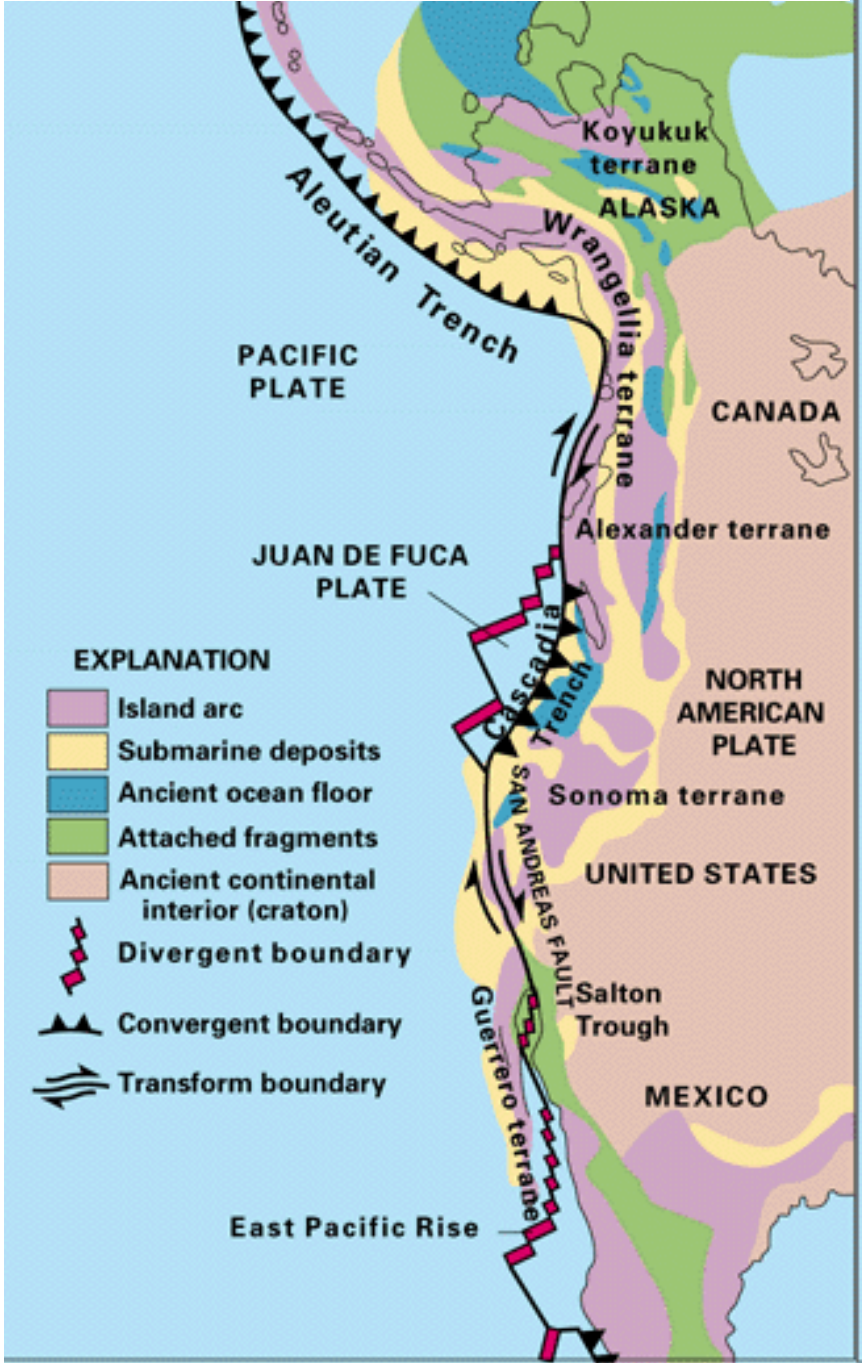


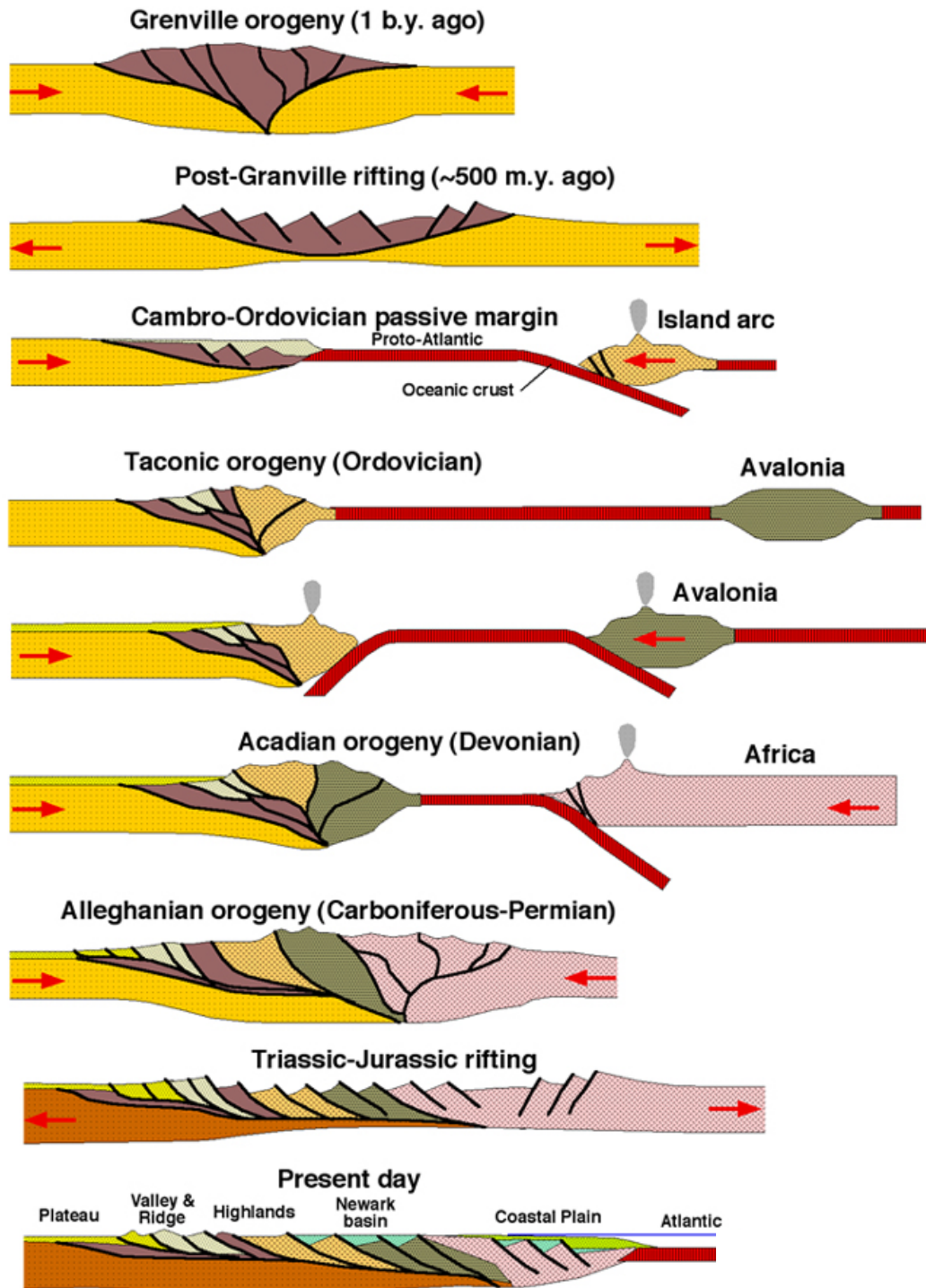
Дебљина Земљине коре



Дебљина Земљине коре

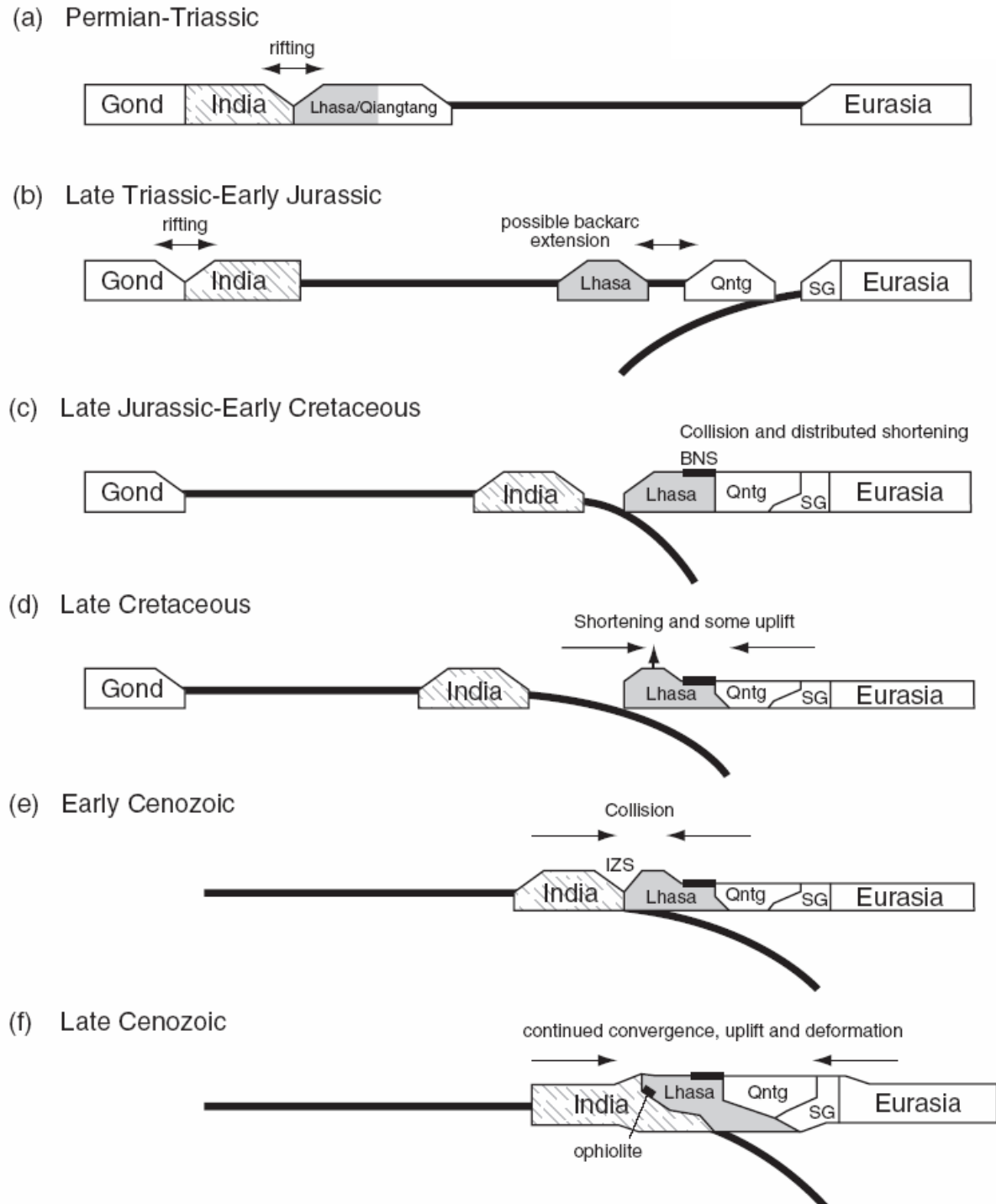
# Еволуција континента 2/4





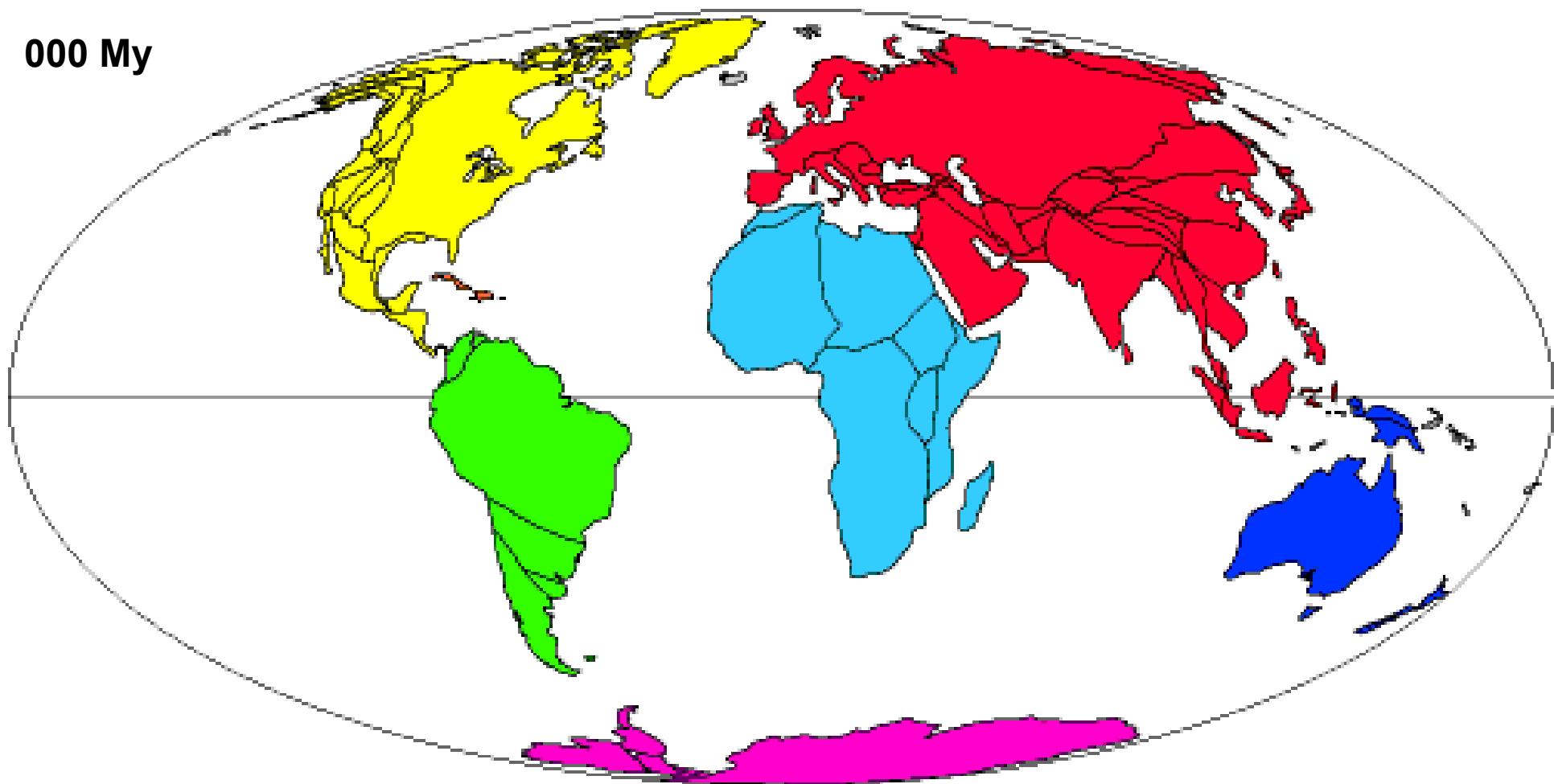
Еволуција Апалача (1 млрд. год. - )

# Формирање Хималаја

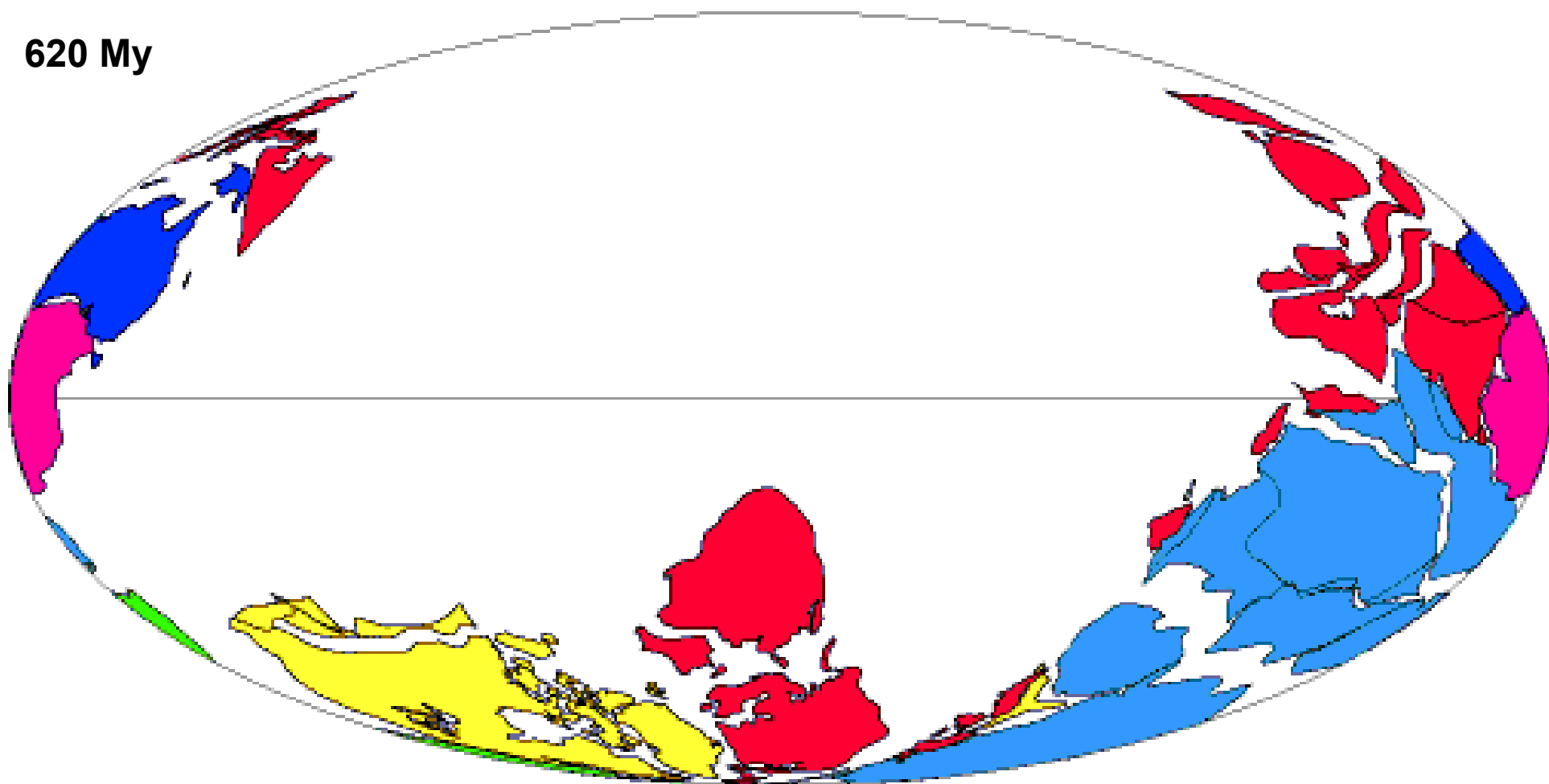


**Figure 10.15** Possible sequence of events in the evolution of the Himalayan-Tibetan orogen (modified from Haines et al., 2003, by permission of the American Geophysical Union. Copyright © 2003 American Geophysical Union). Interpretation incorporates relationships developed by Allègre et al. (1984) and Yin & Harrison (2000). BNS, Bangong-Nujiang suture; SG, Songpan-Ganzi terrane; Gond, Gondwana; Qntg, Qiantang terrane; IZS, Indus-Zangbo suture.

000 My

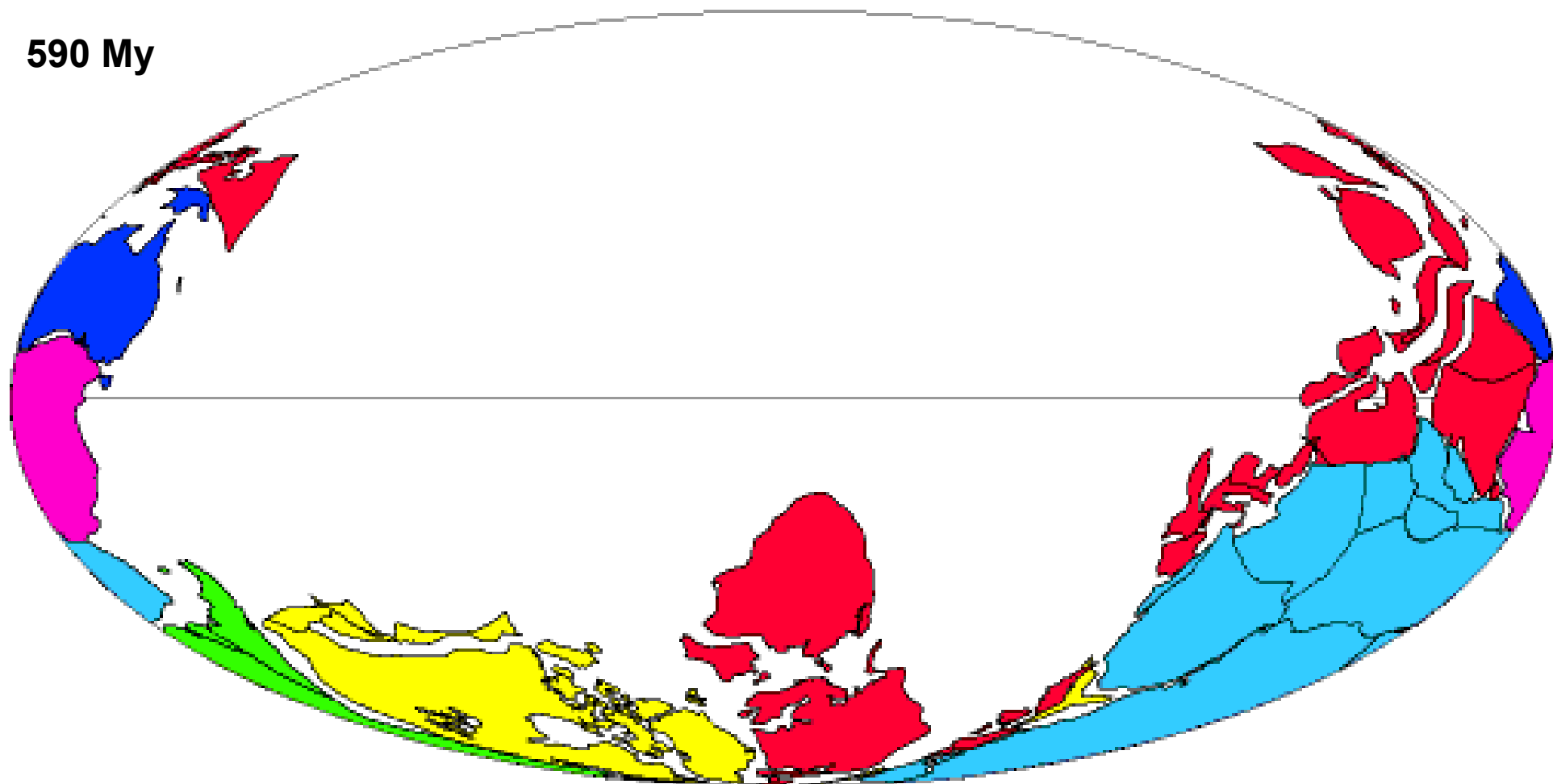


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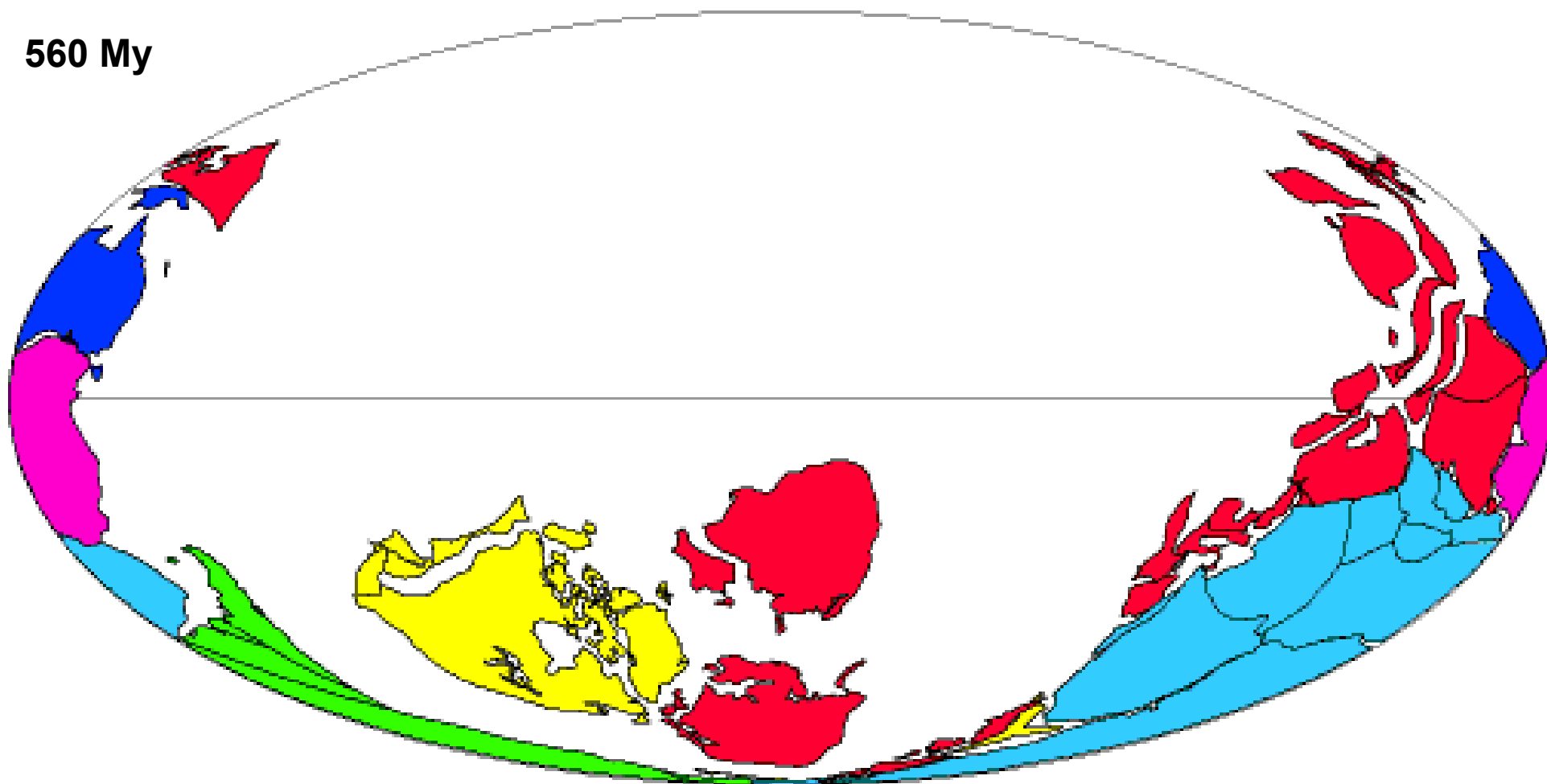




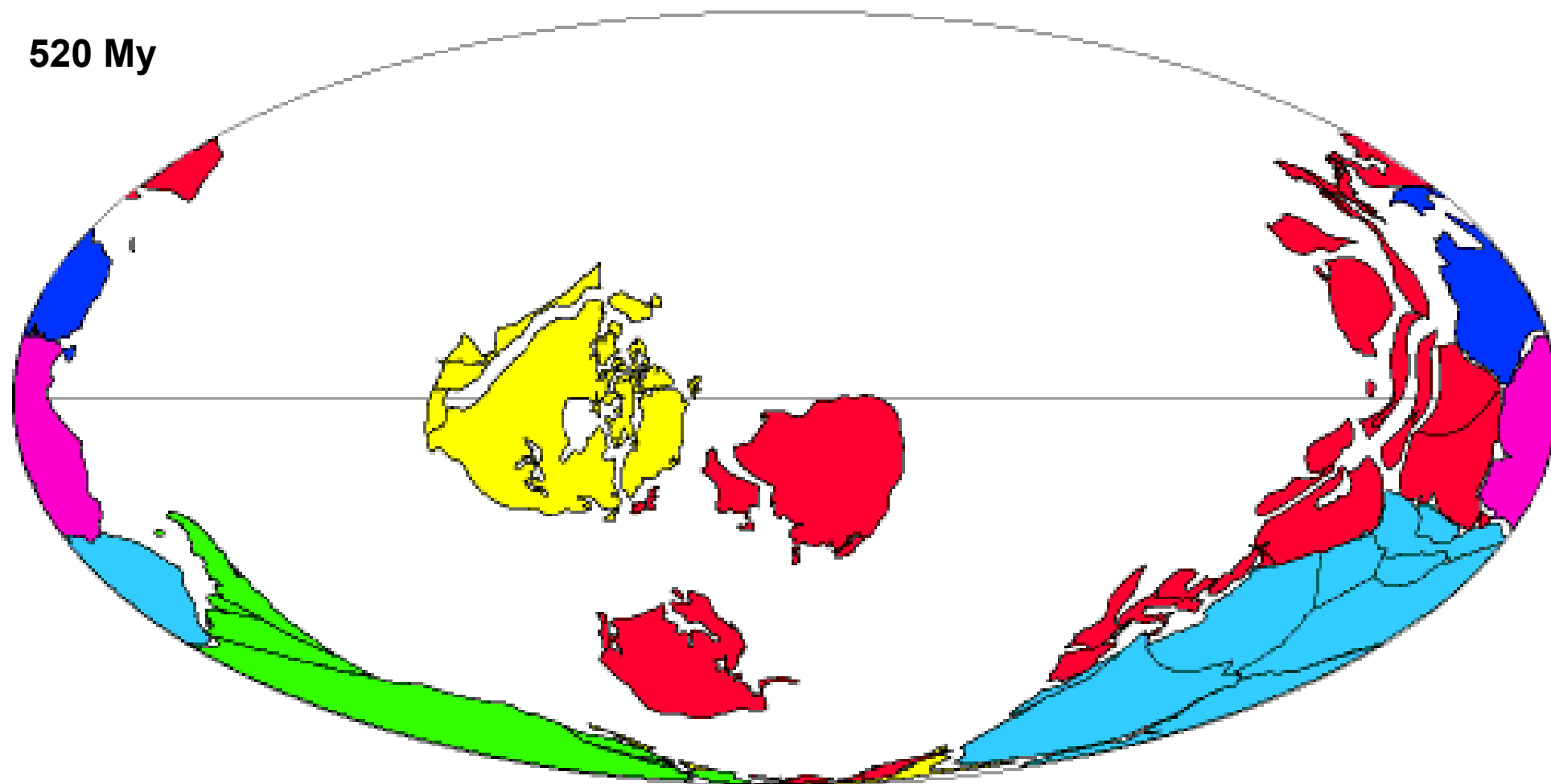
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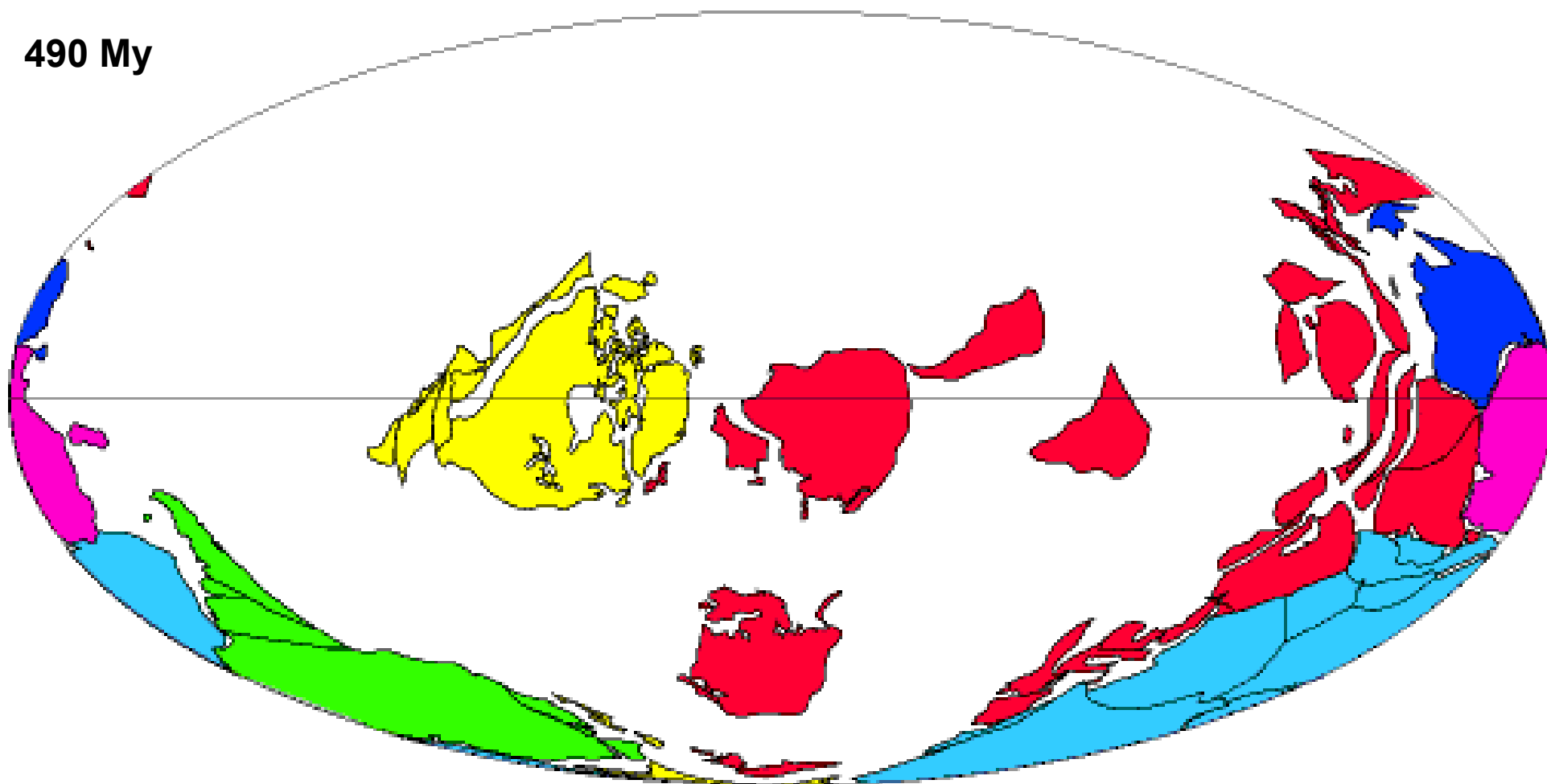
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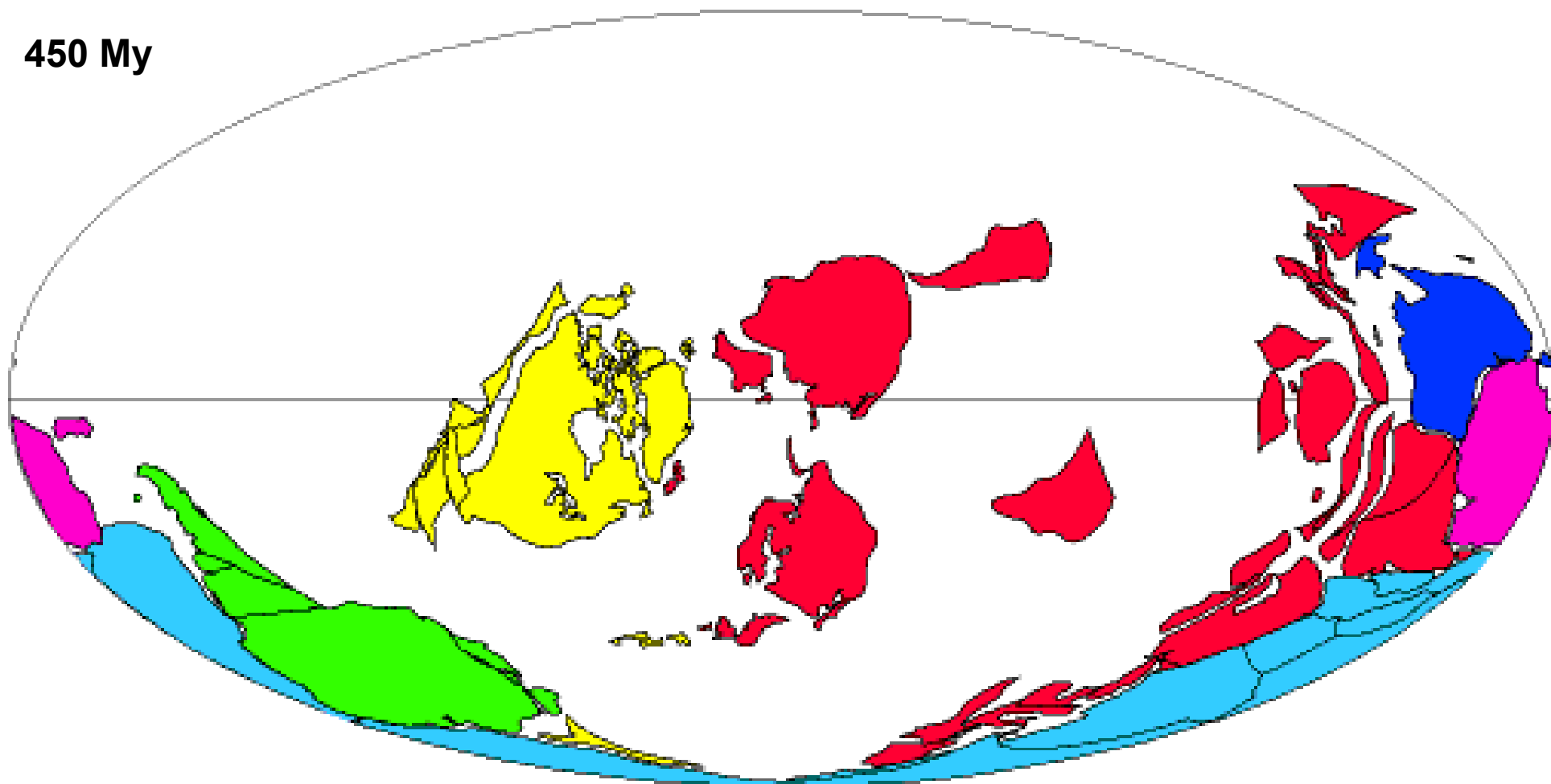
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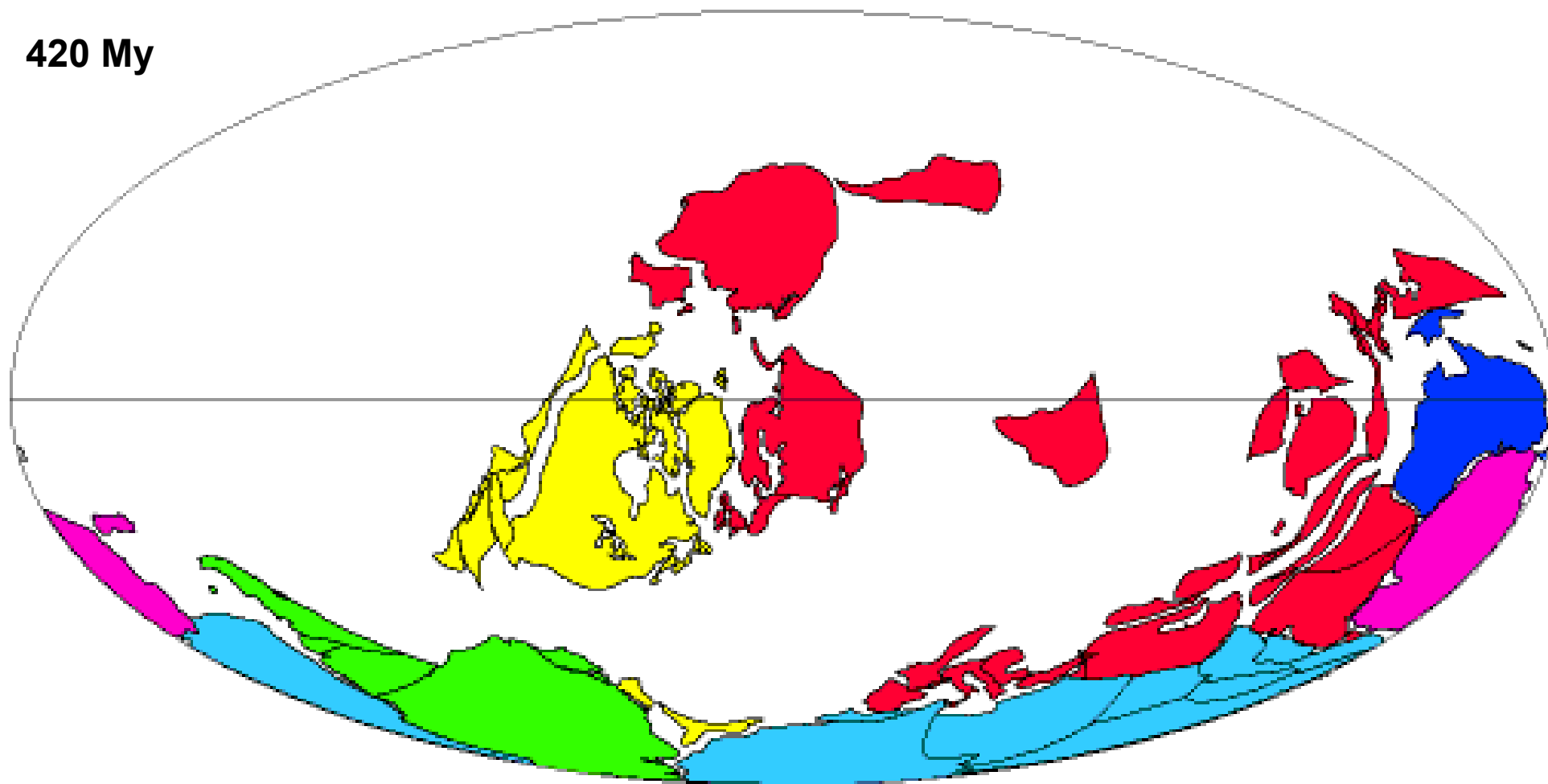
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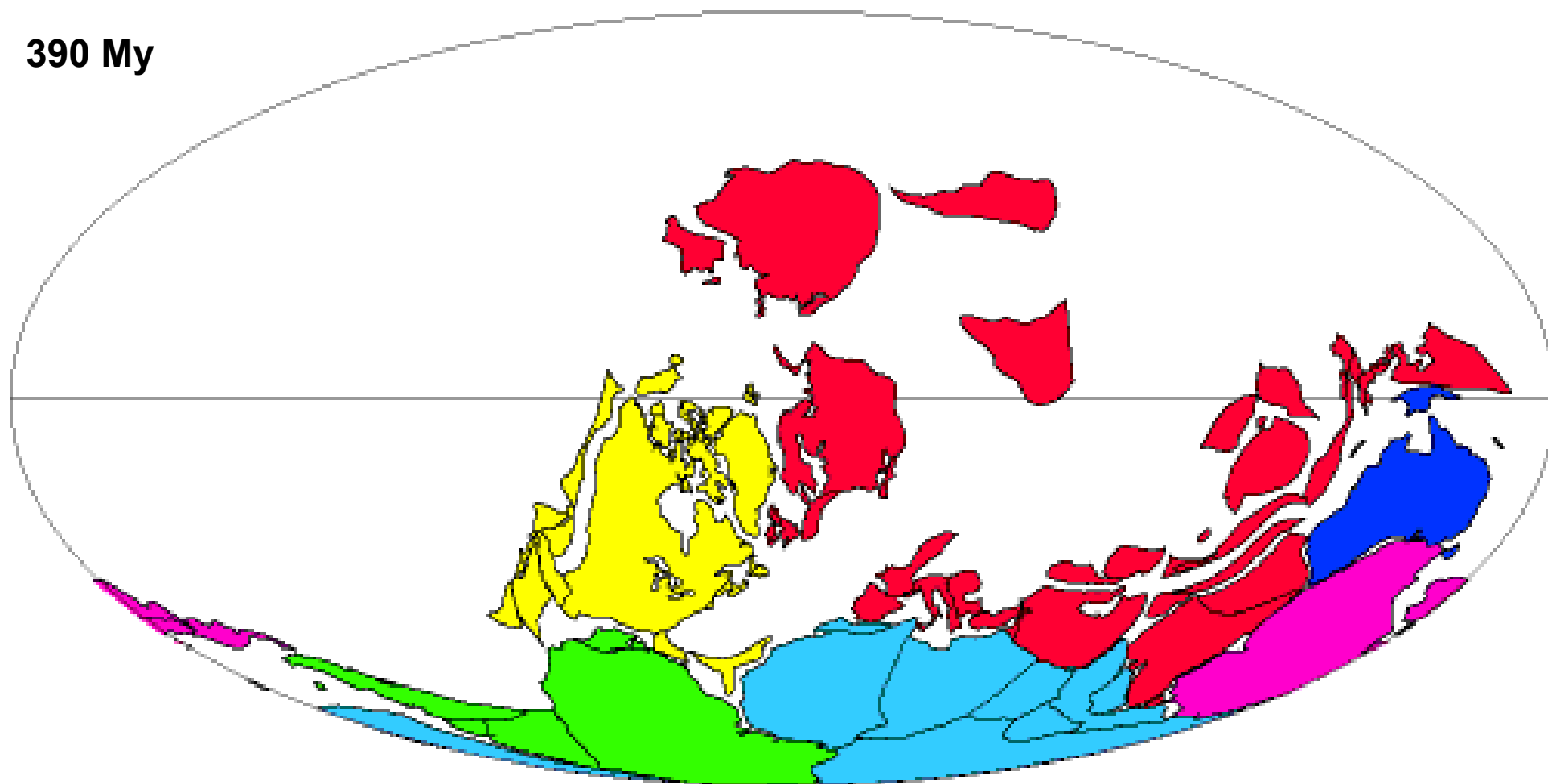
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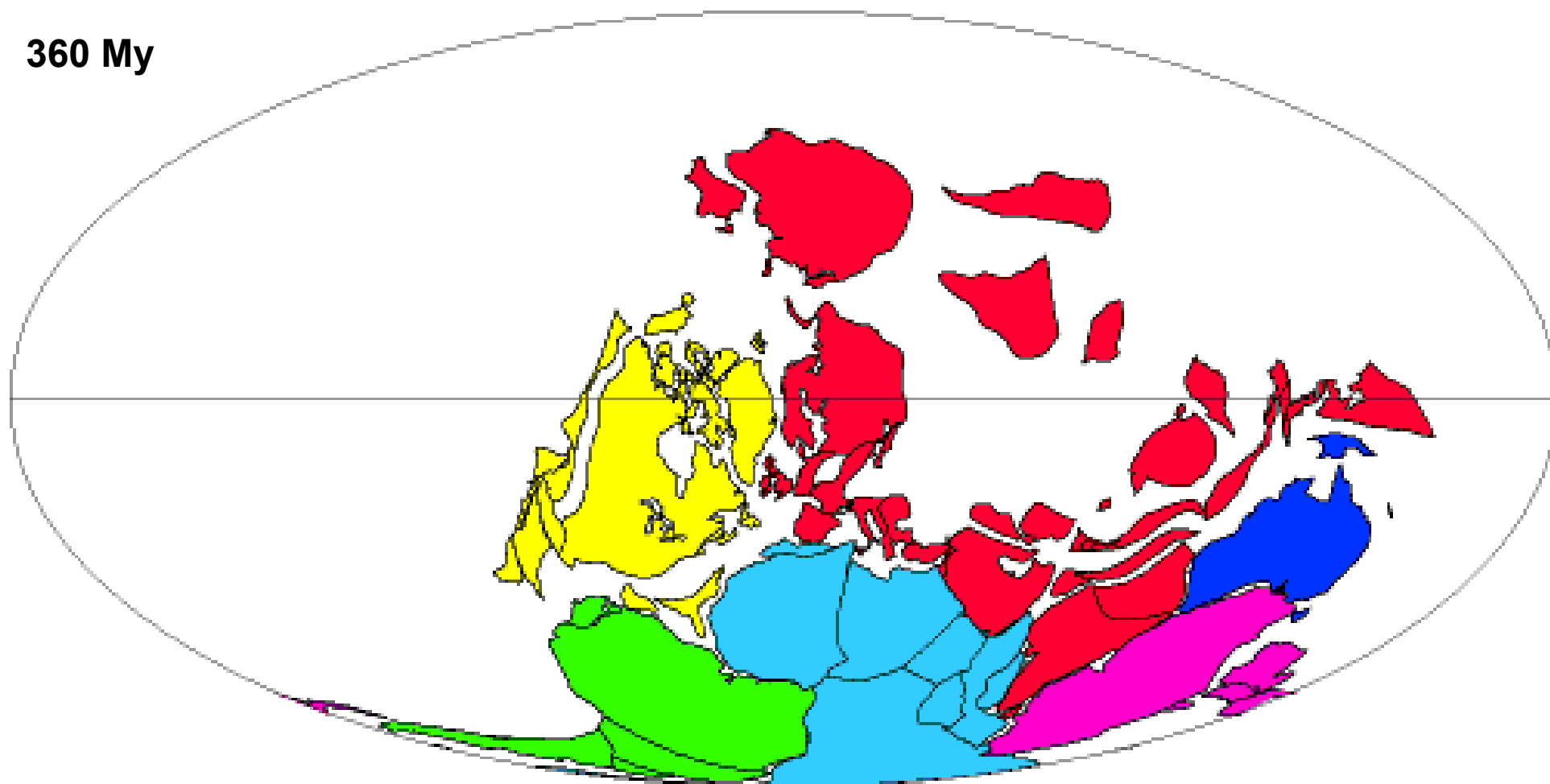
420 My



390 My

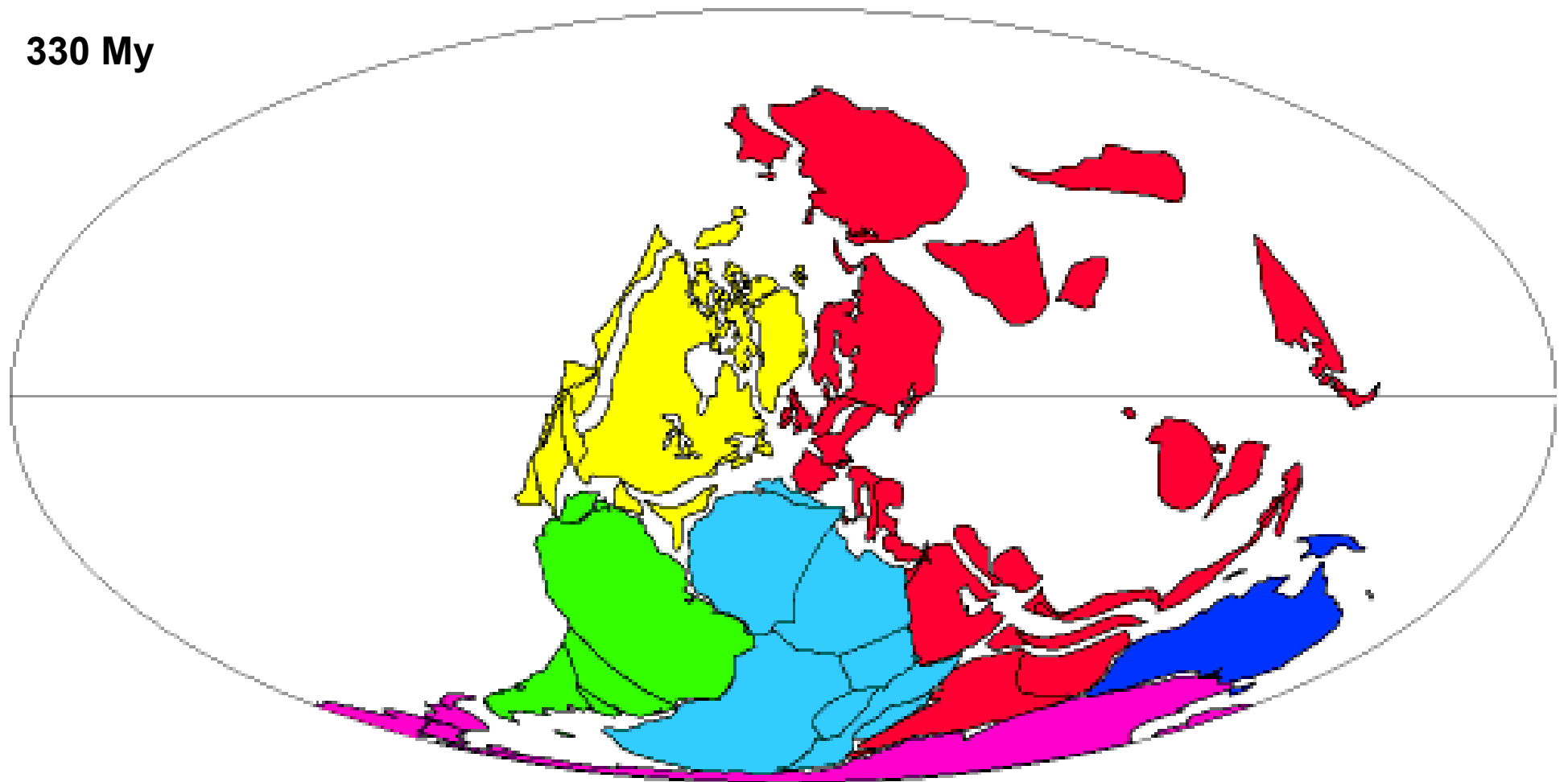


360 My

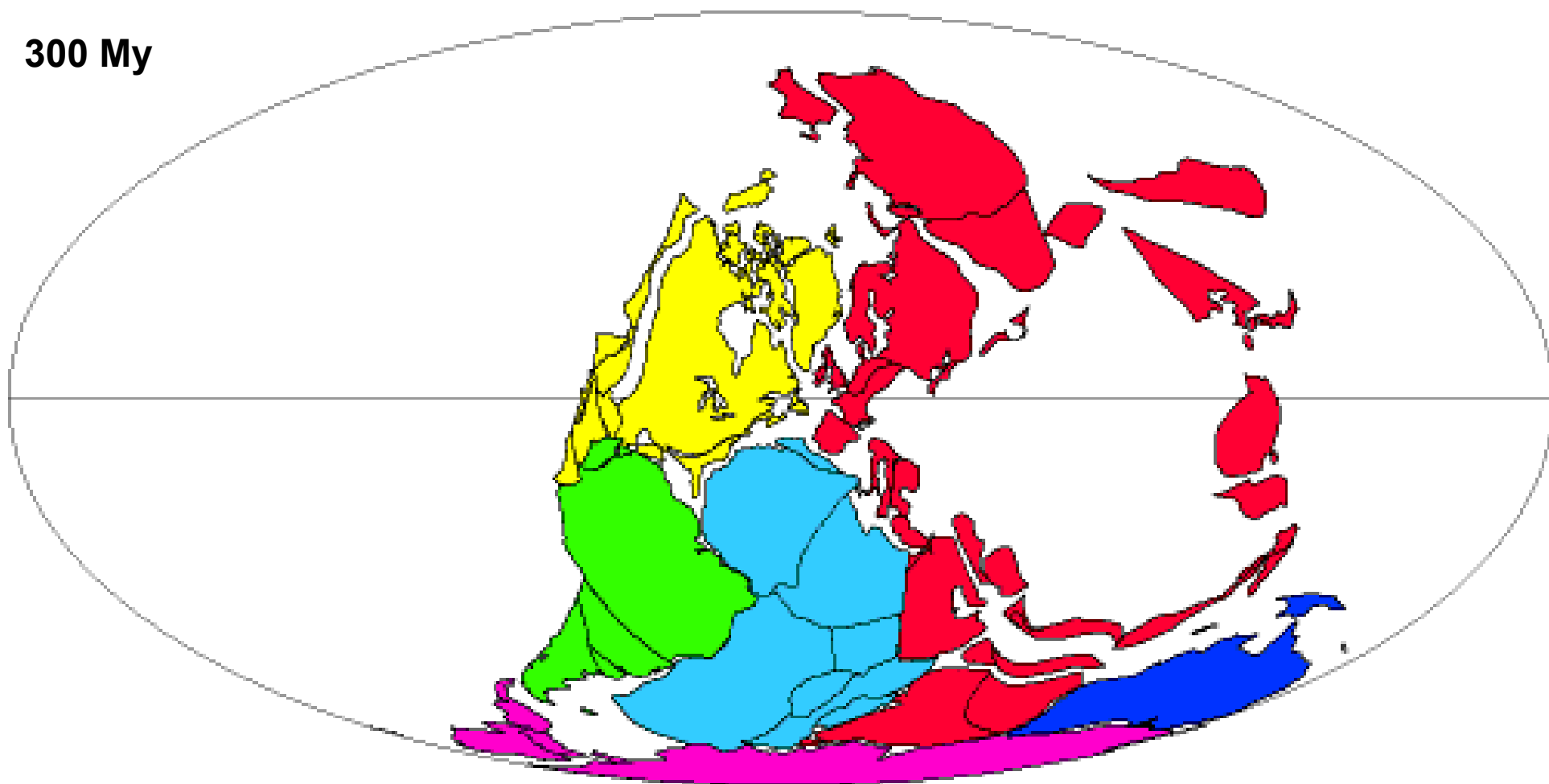




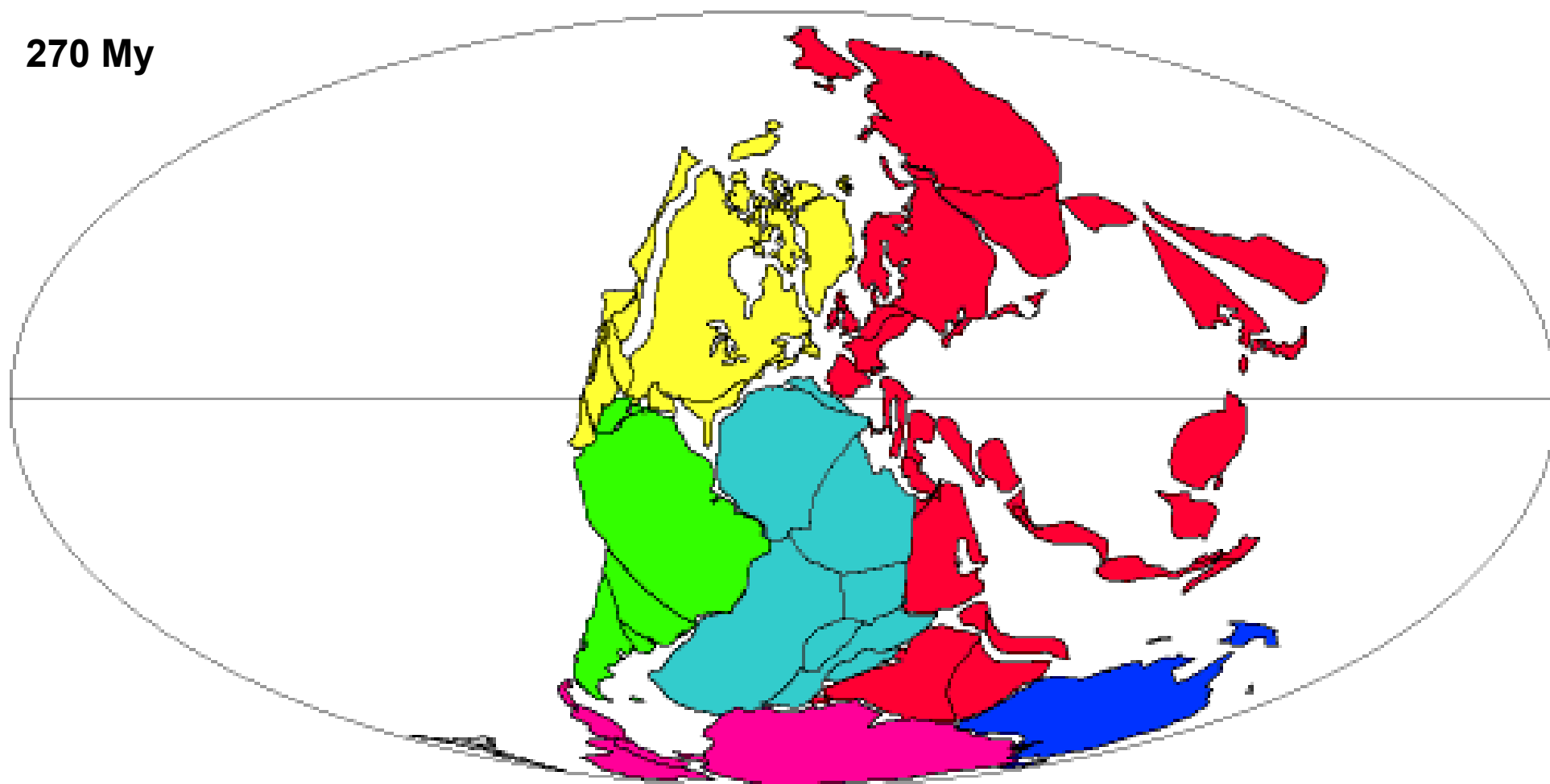
330 My



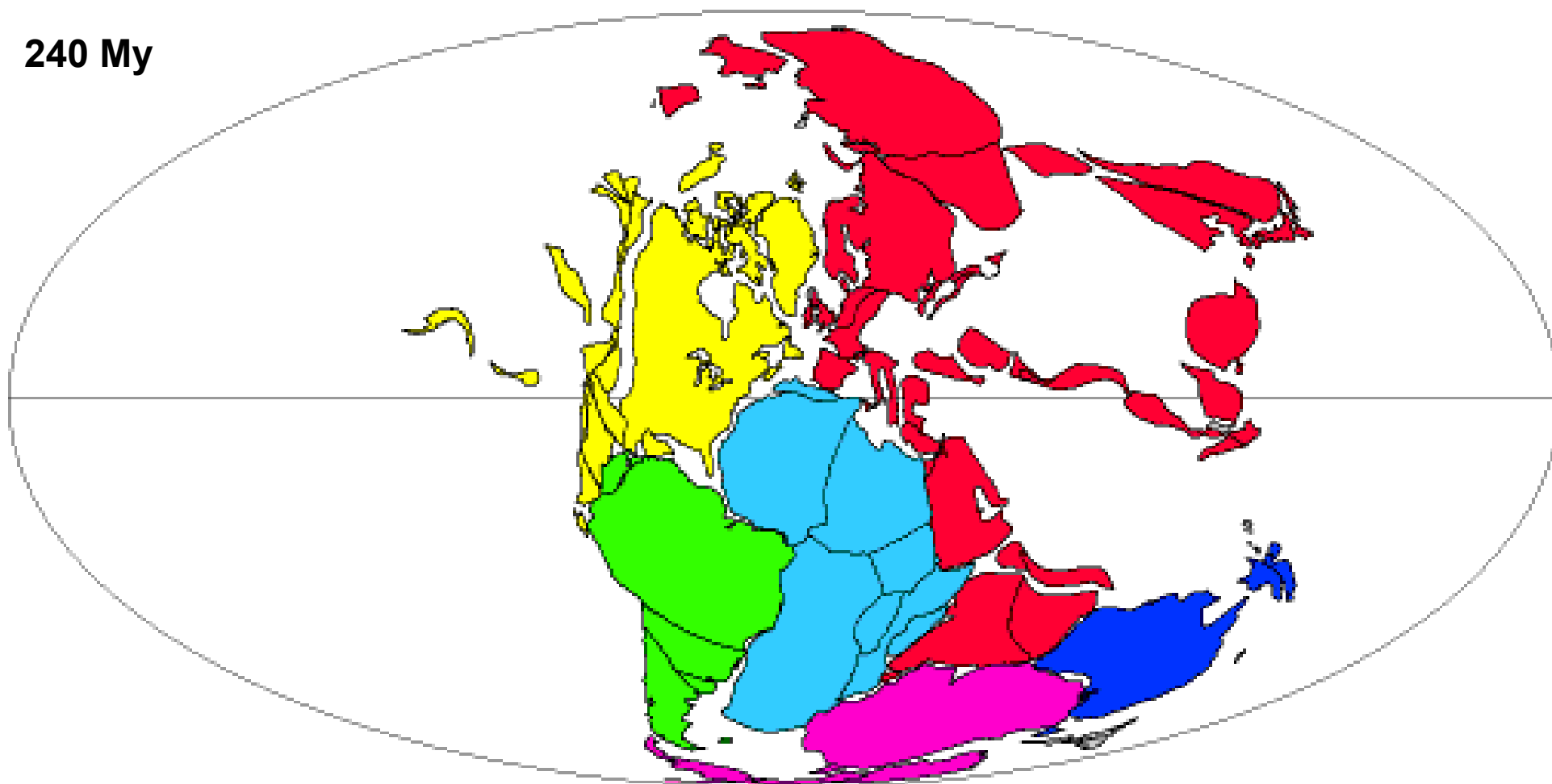
300 My



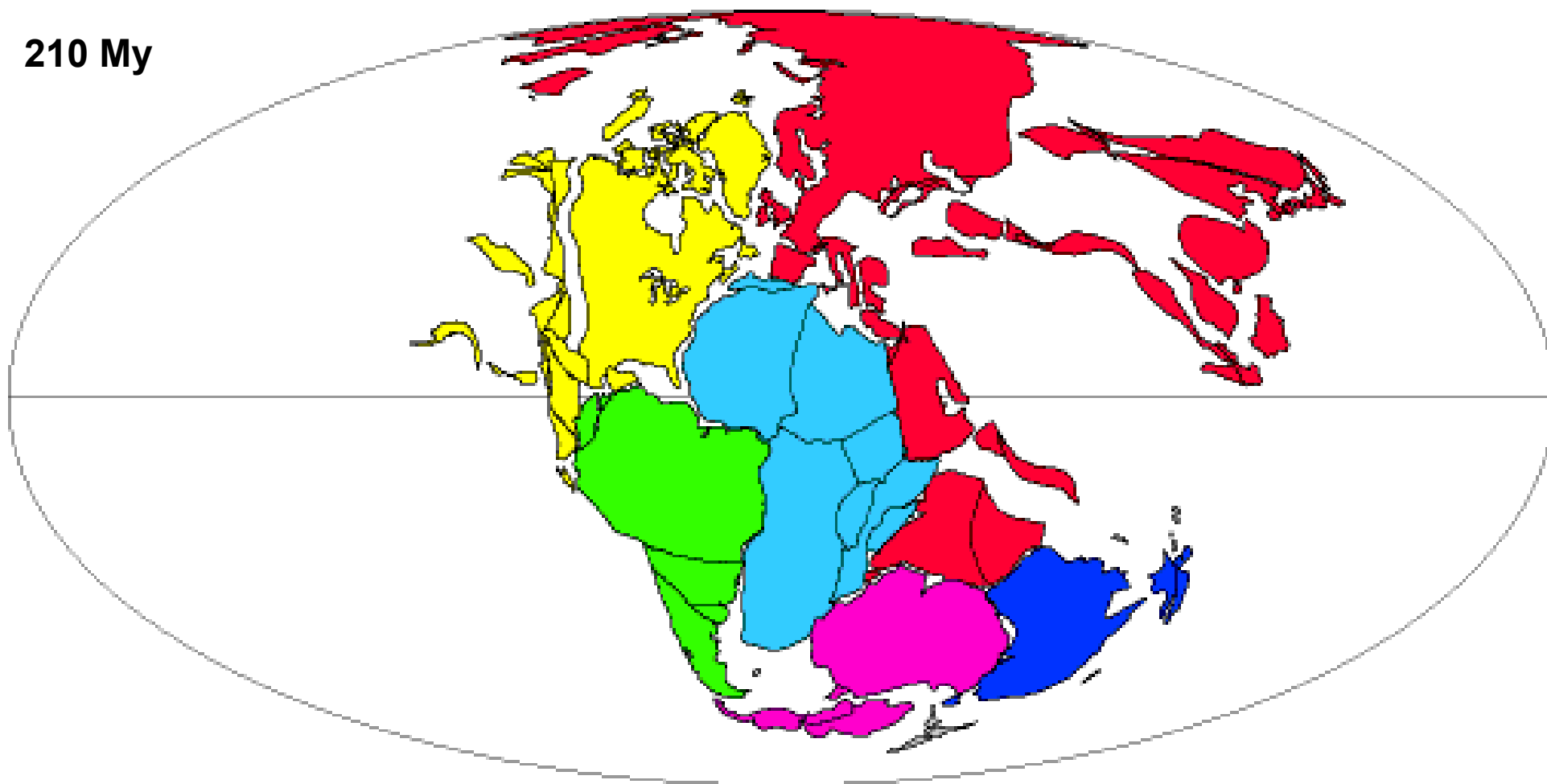
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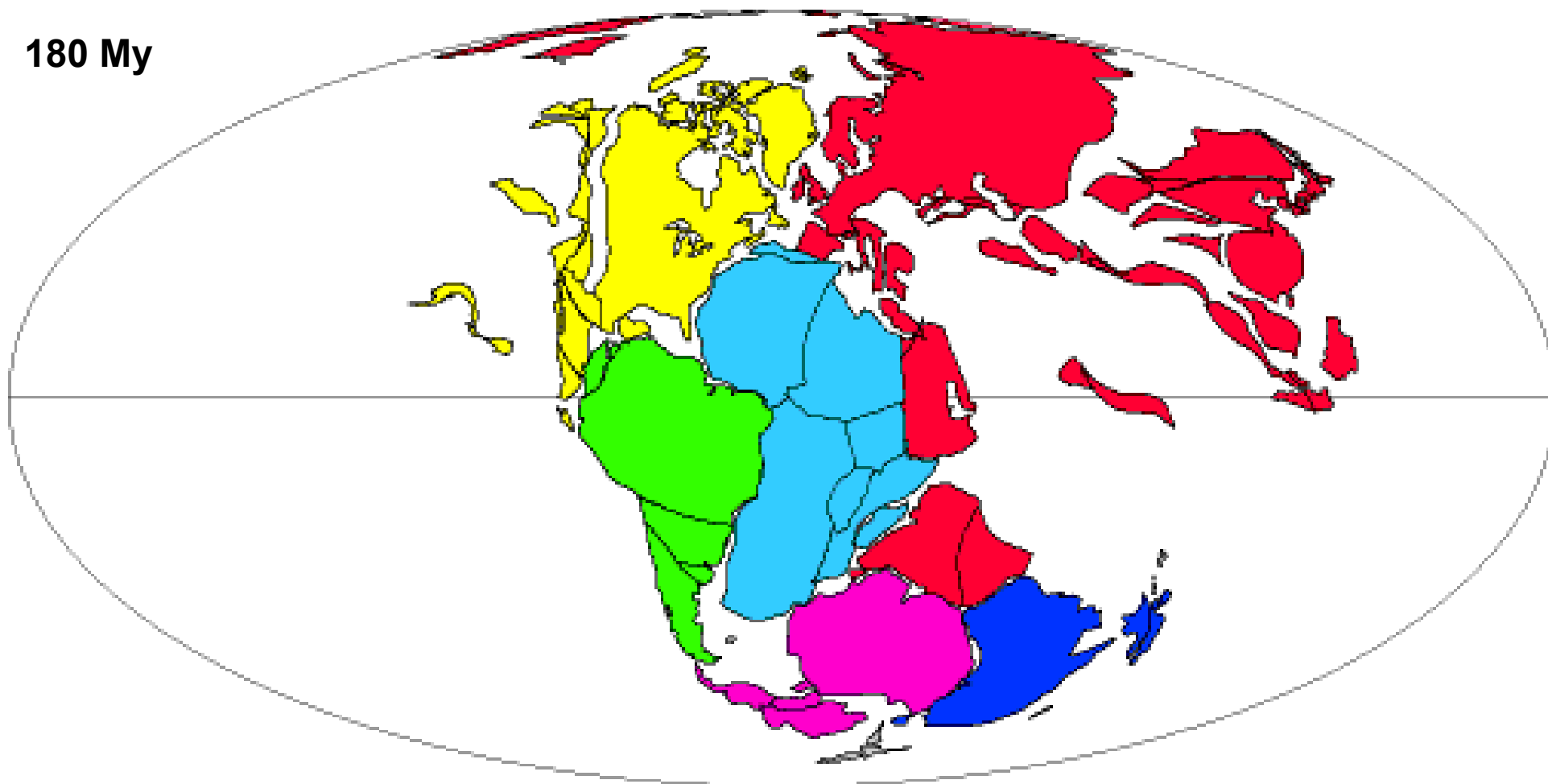
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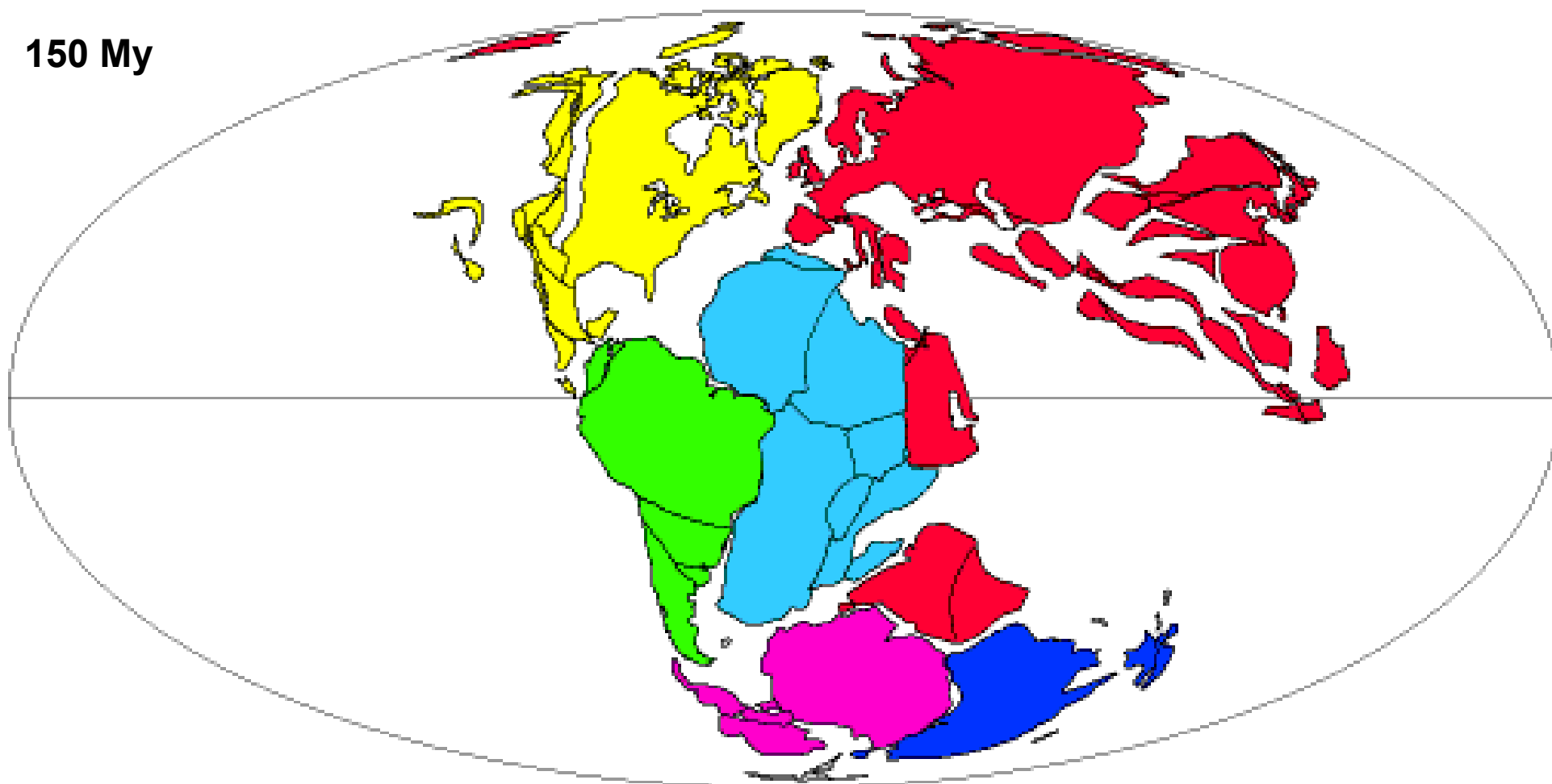
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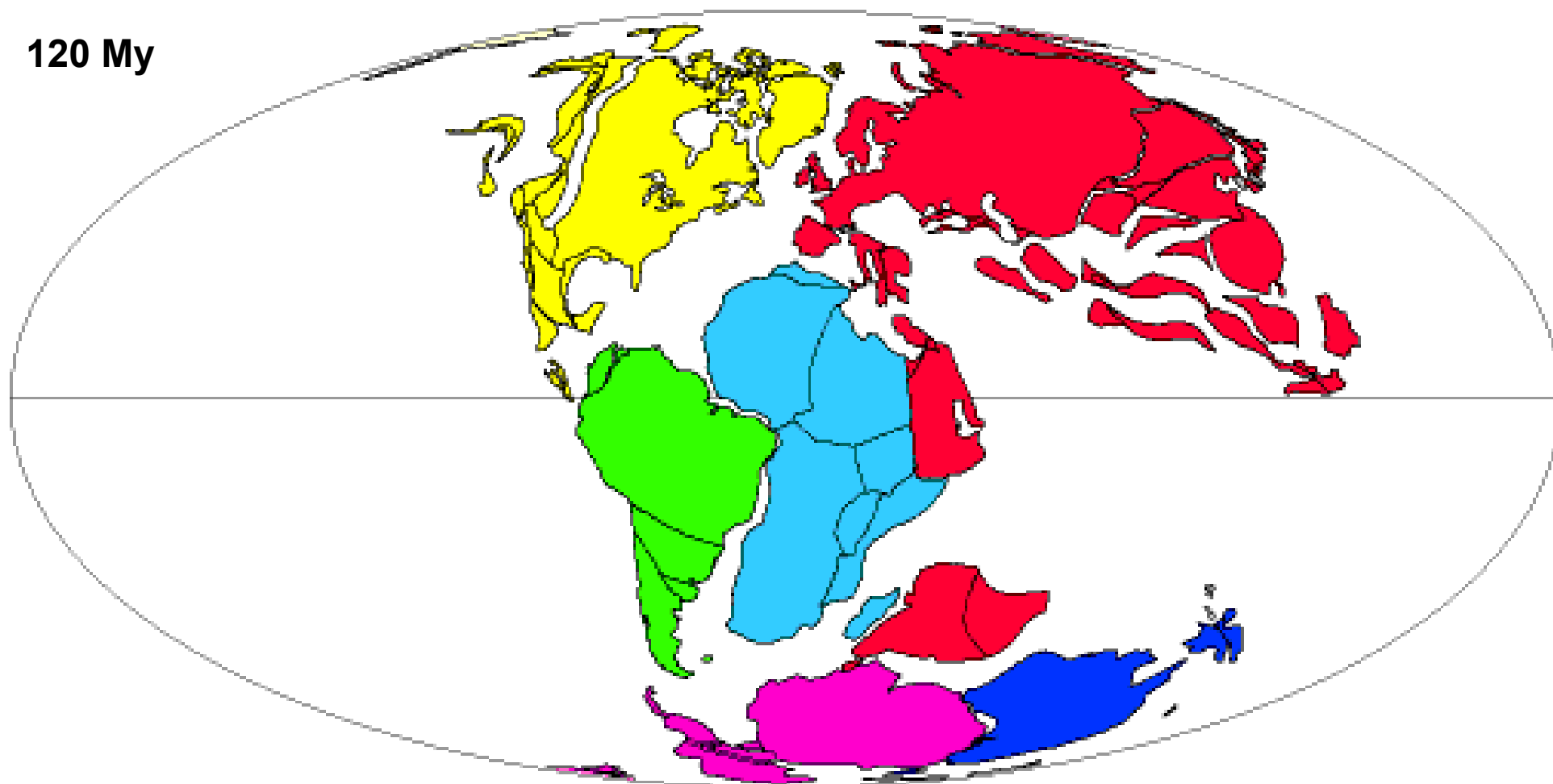
180 My



150 My

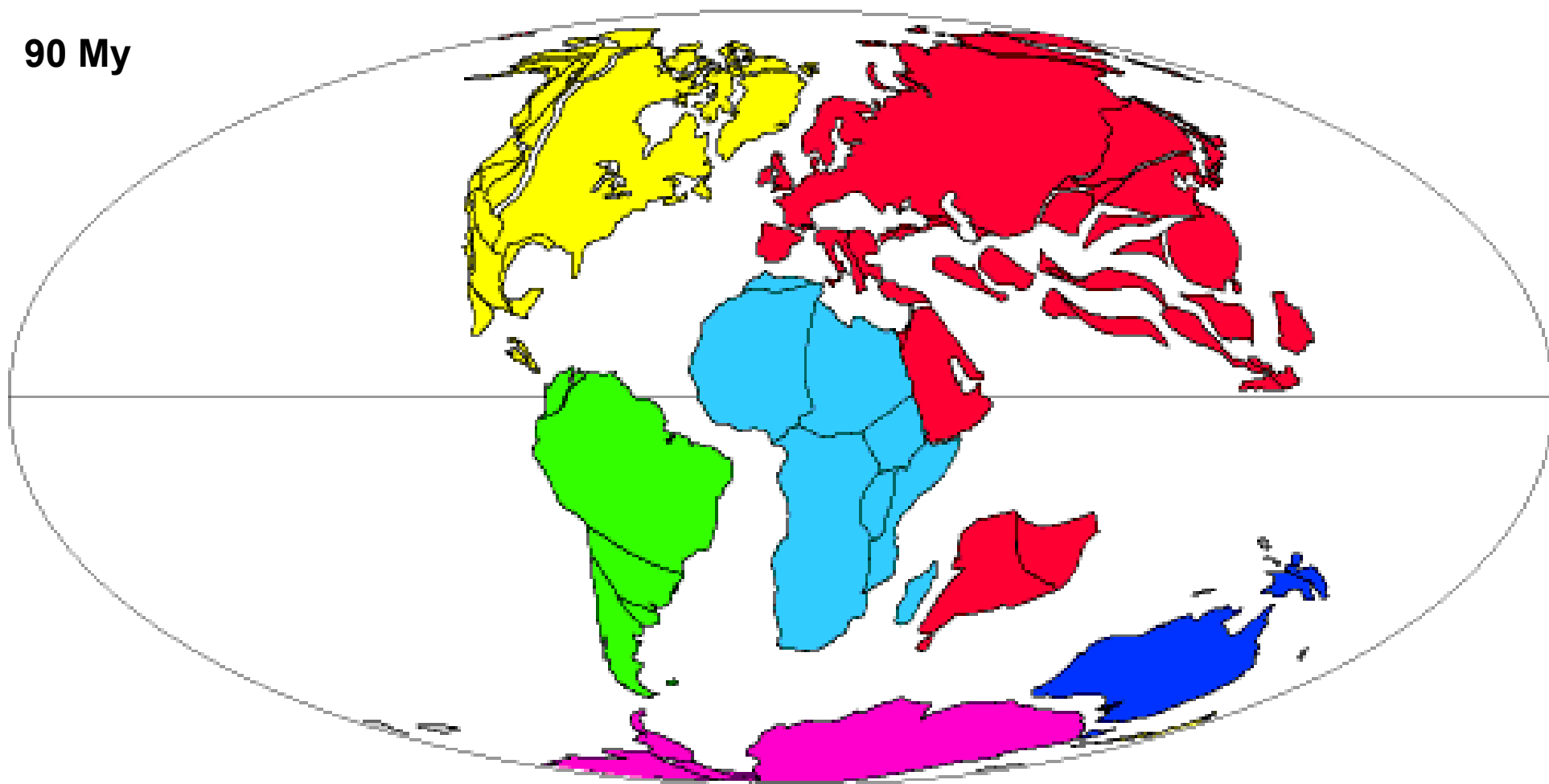


120 My

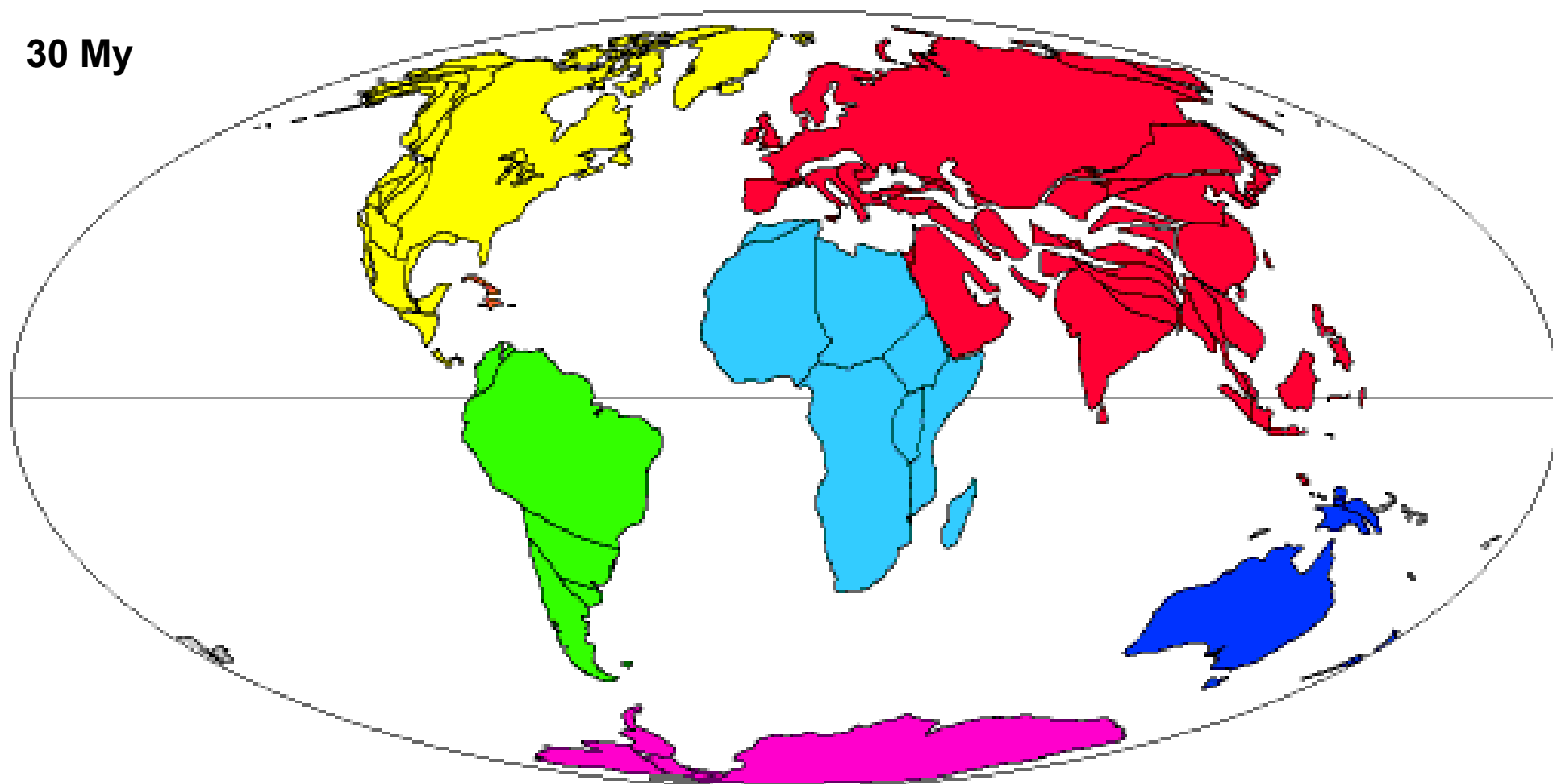




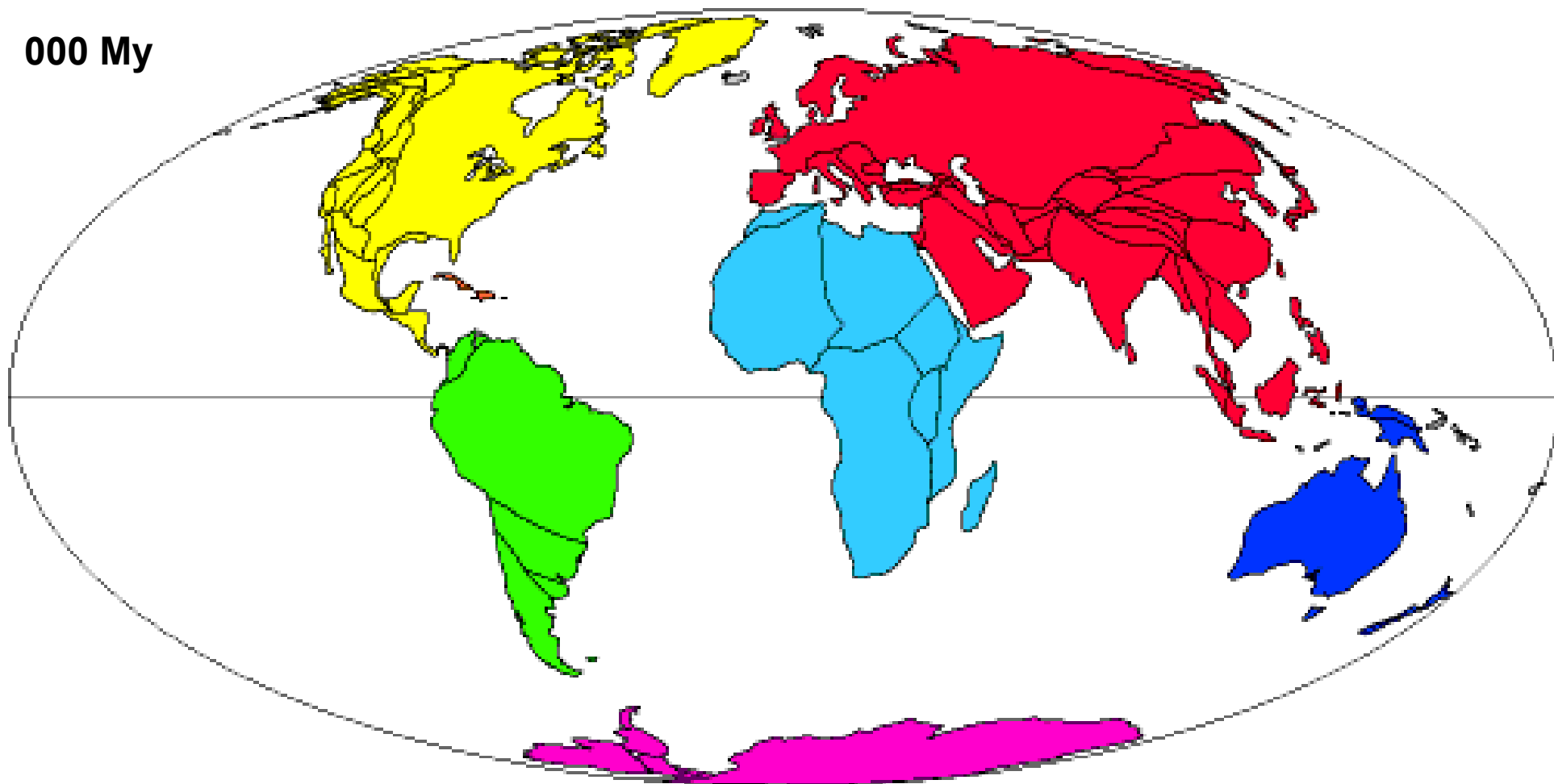
90 My



30 My



000 My

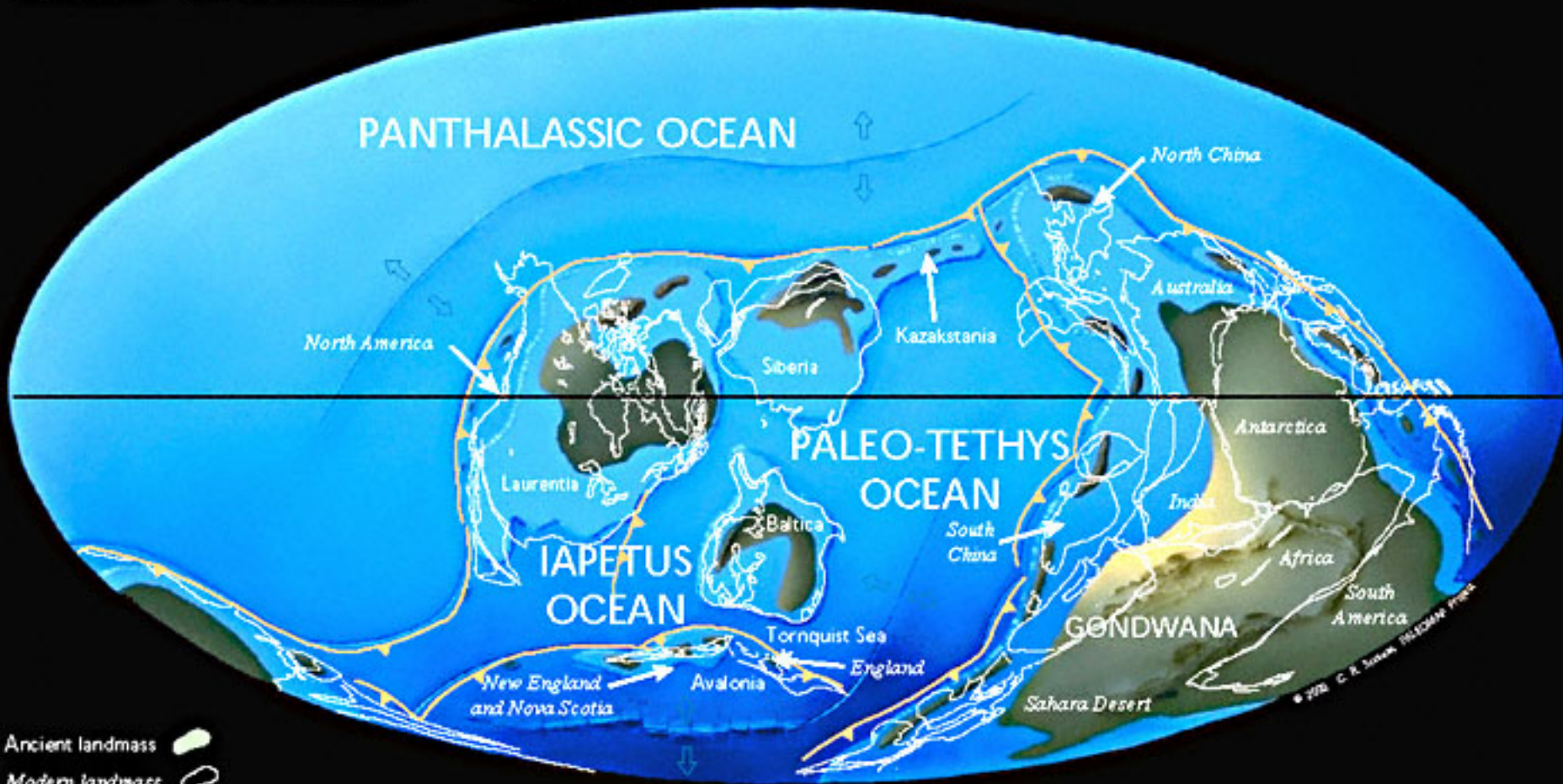


# КАЛЕДОНСКИ ОРОГЕНЕТСКИ ЦИКЛУС

- КРАЈЕМ ОРДОВИЦИЈУМА, ТАКОНСКОМ ФАЗОМ (450 My)

- ДО СРЕДИНЕ ДЕВОНА

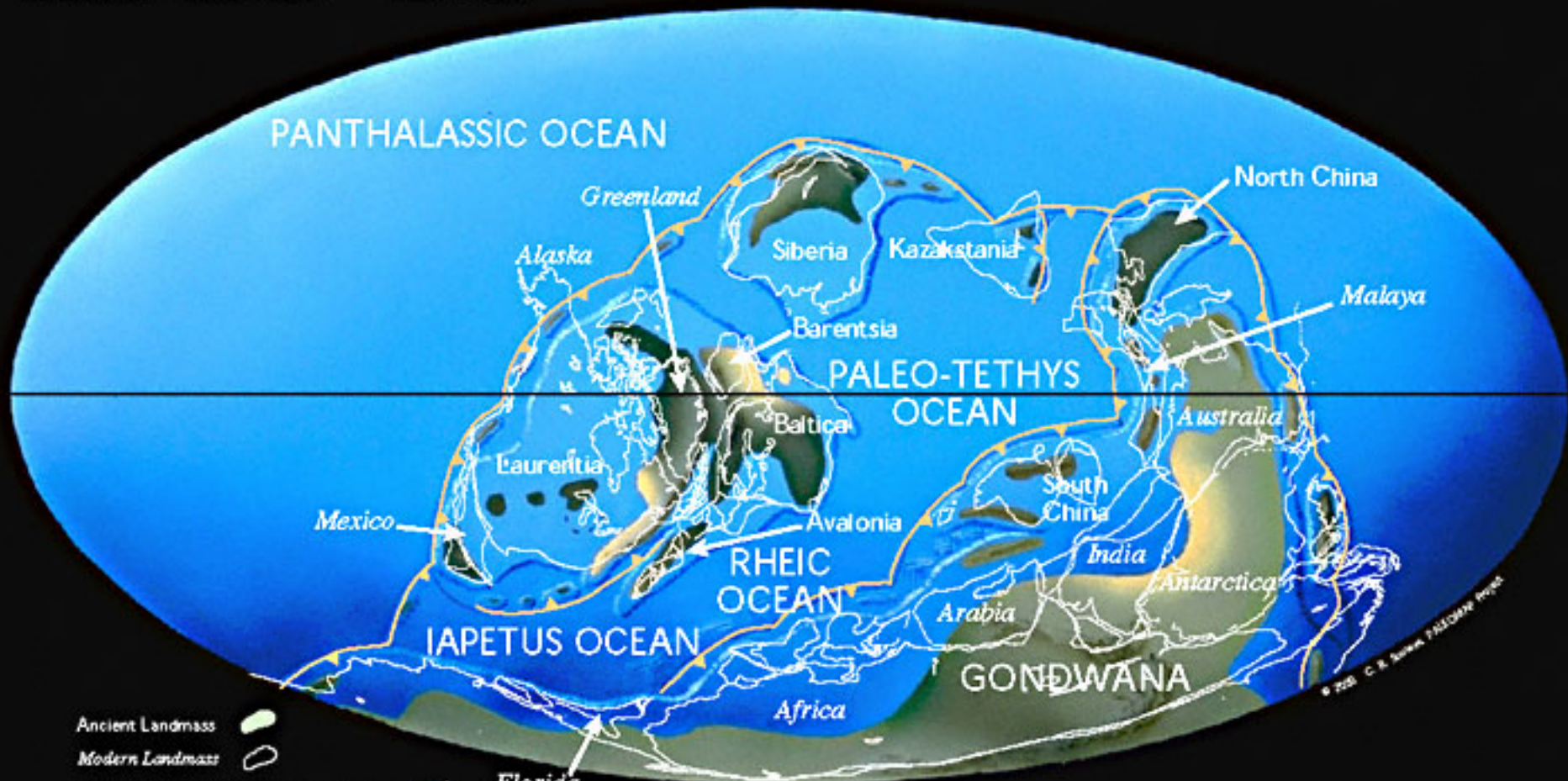
# Middle Ordovician 458 Ma







- Ancient landmass
- Modern landmass
- Subduction Zone (triangles point in the direction of subduction)
- Sea Floor Spreading Ridge

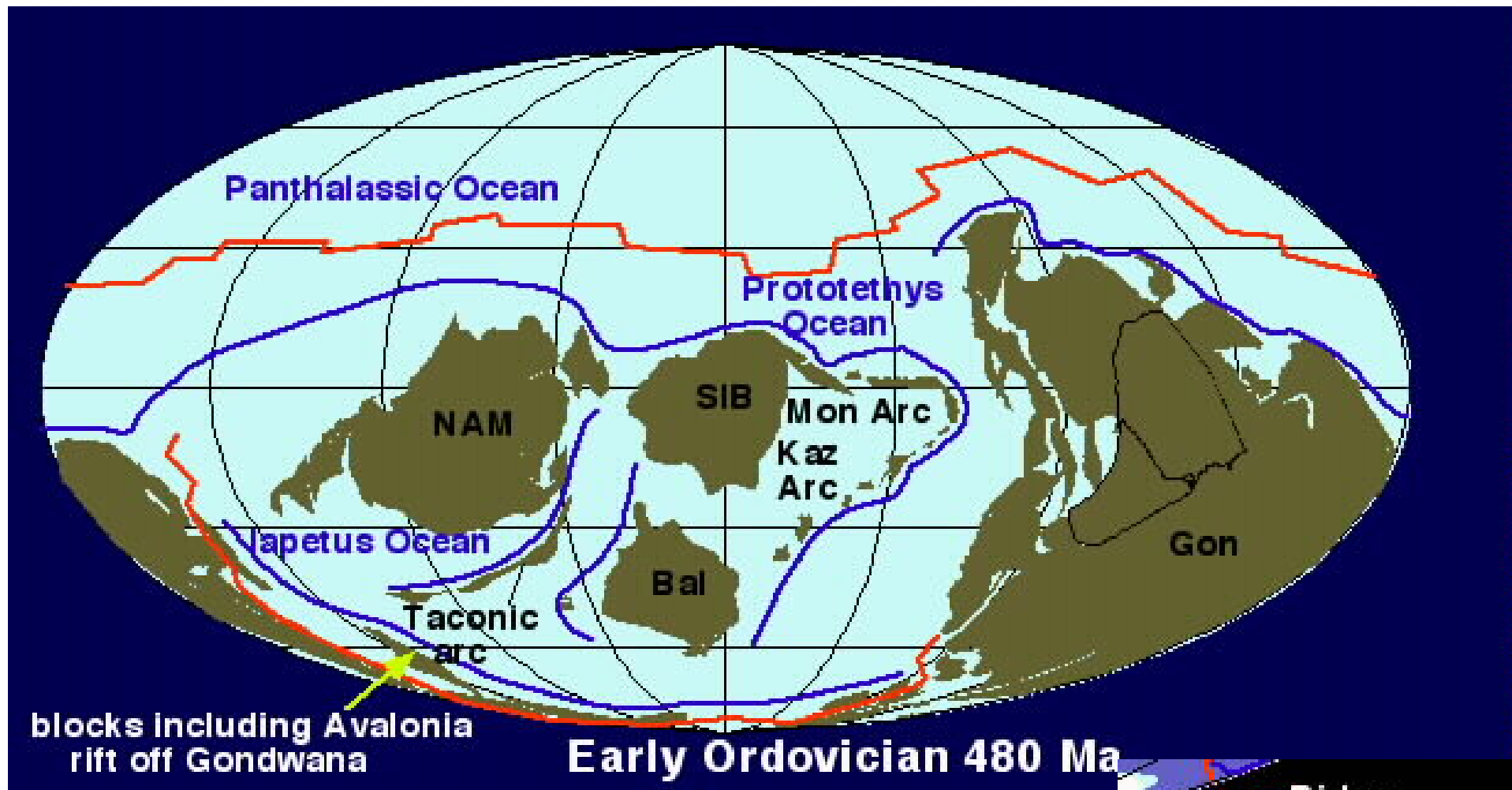
© 2005 C. R. Scotese, Paleogeographic Press

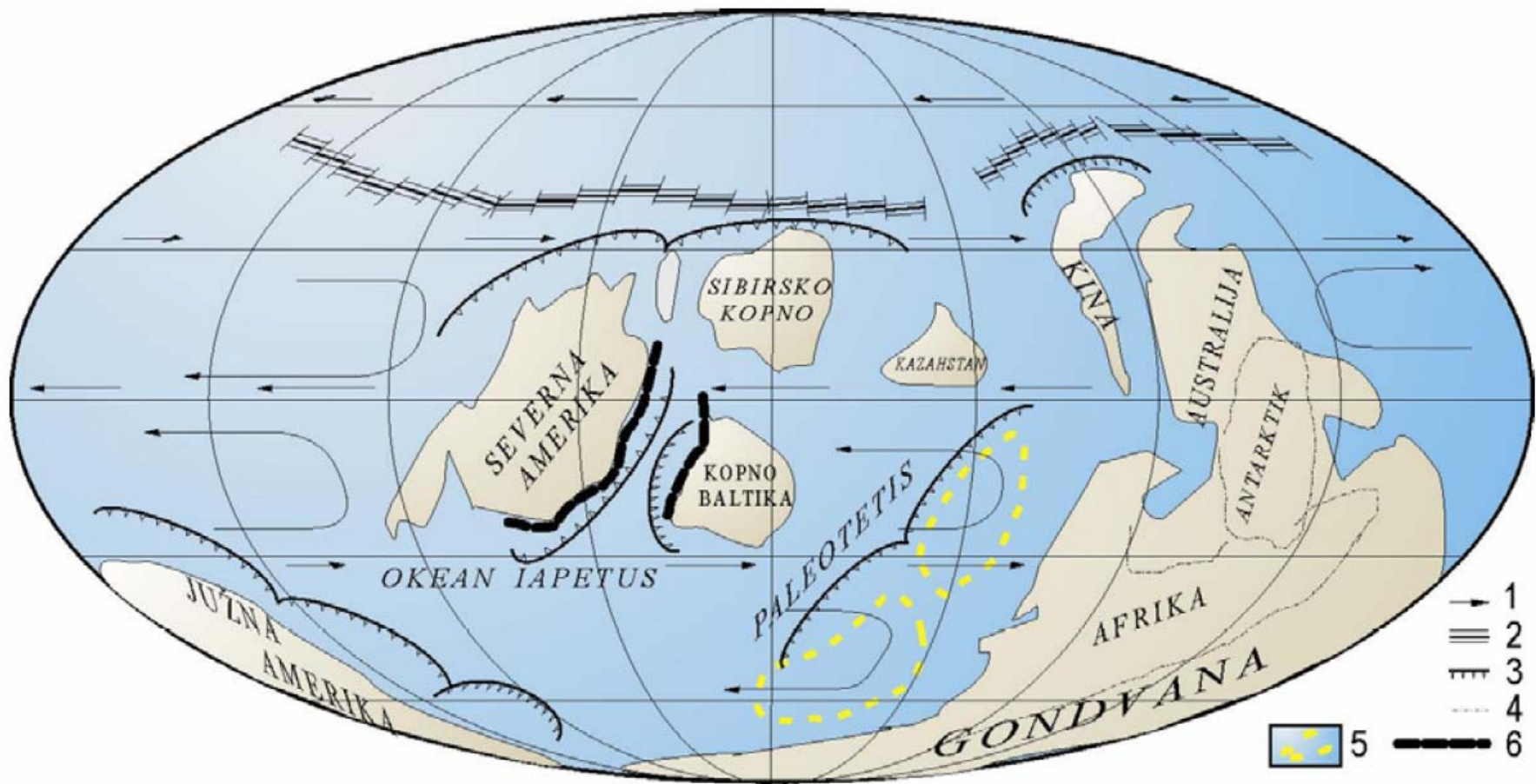
# Middle Silurian 425 Ma



- Ancient Landmass 
- Modern Landmass 
- Subduction Zone (triangles point in the direction of subduction) 
- Sea Floor Spreading Ridge 

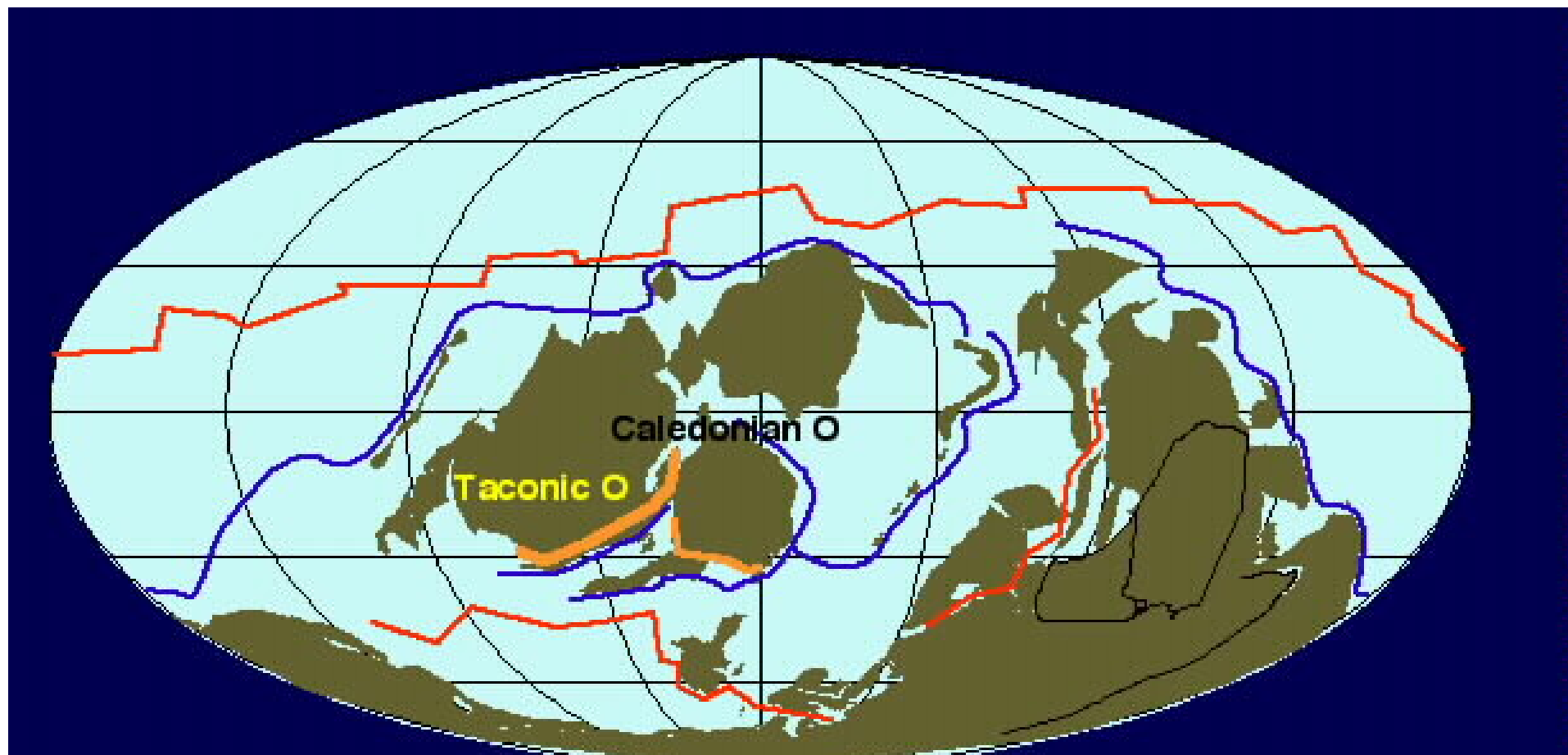
© 2001 C. R. Scotese, Paleogeography





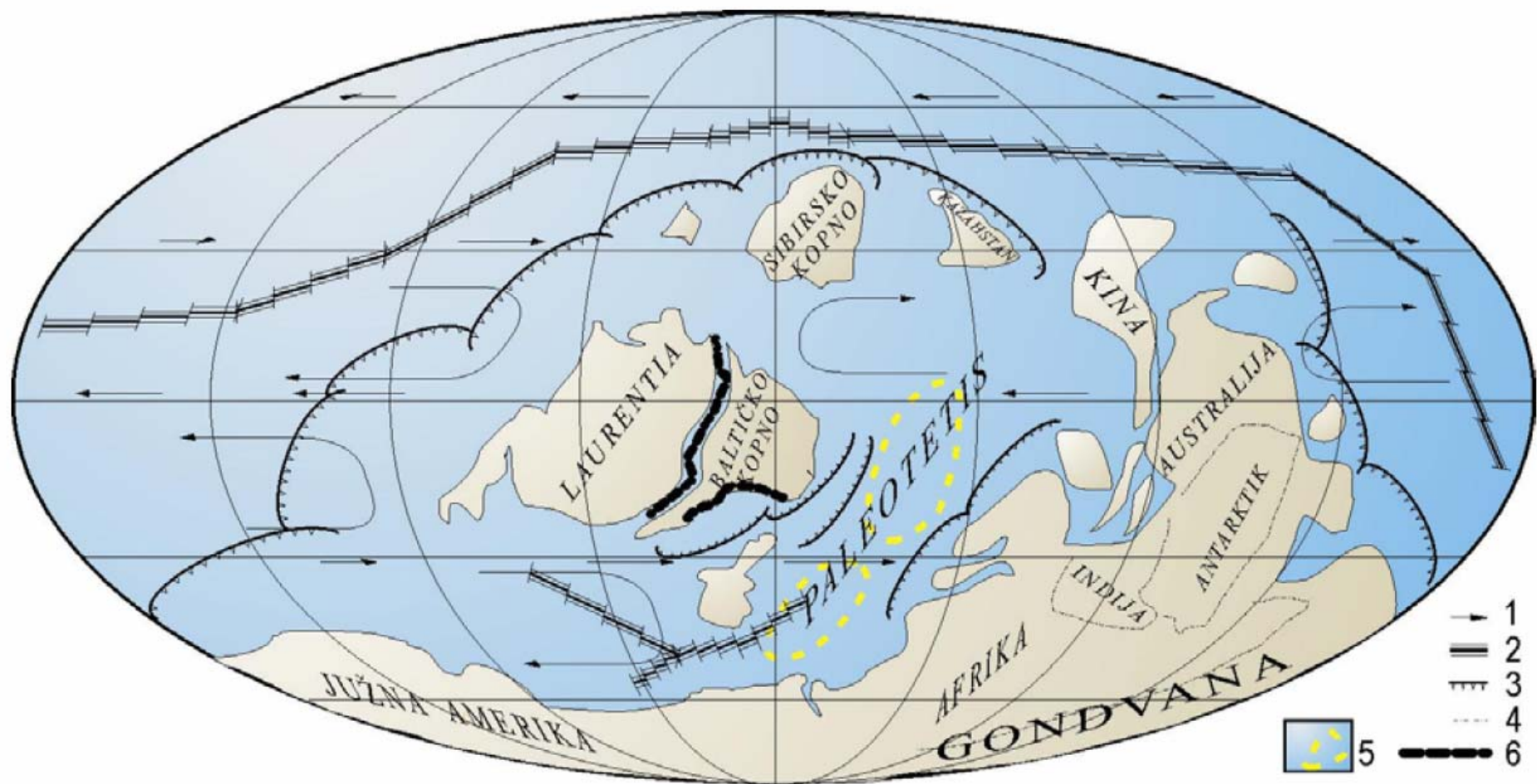
Sl. 21. Raspored kopna i mora u gornjem ordovicijumu, pre 450 miliona godina (SCOTESE et al., 1979, delimično prilagođeno). Legenda: 1. pravci većih morskih struja, 2. zone širenja okeanskog dna, 3. zone subdukcije, 4. aproksimativne granice savremenih kontinenata, 5. pretpostavljeni položaj naših terena, 6. planinski venci nastali usled takonske orogeneze.



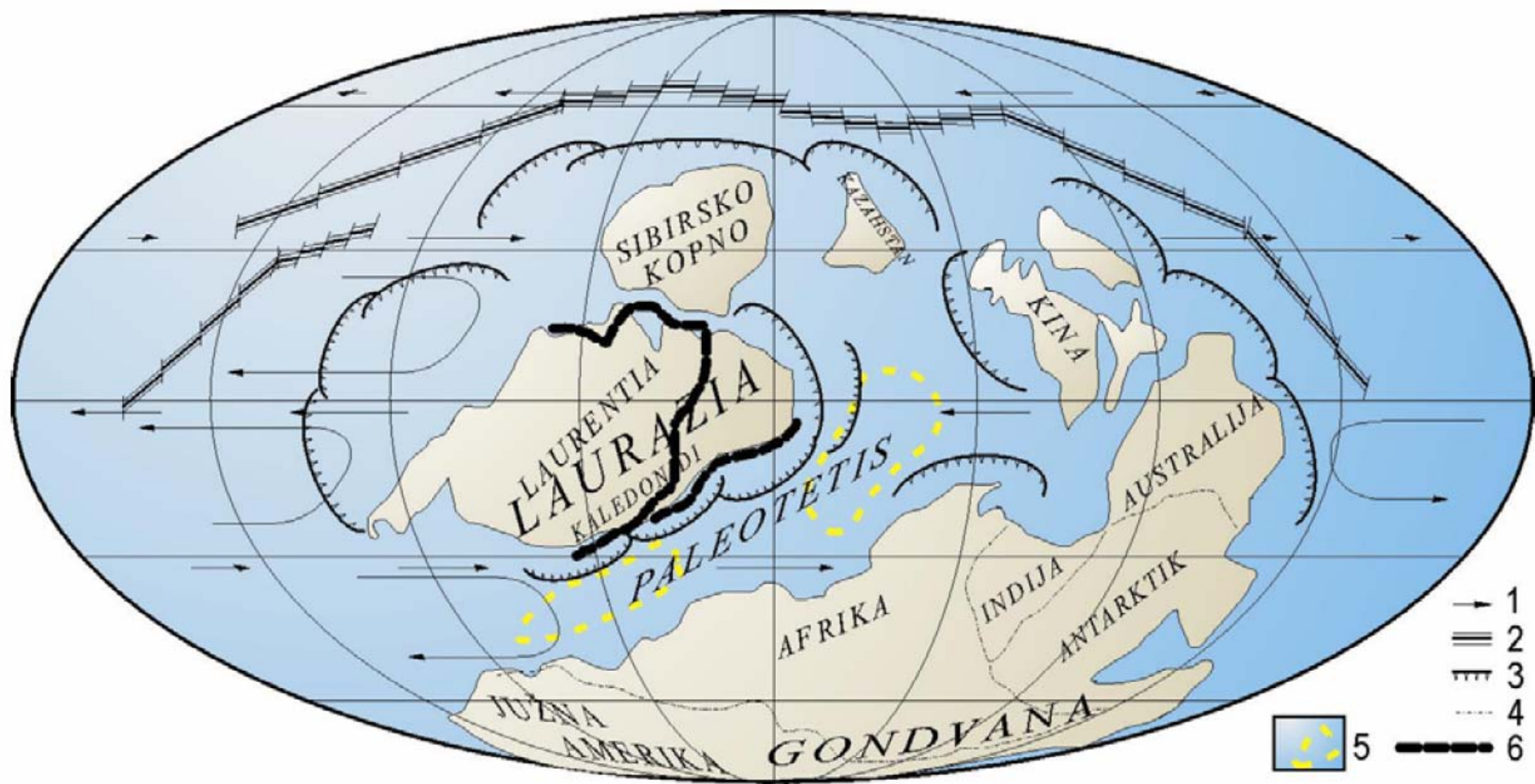


Early Silurian 440 Ma

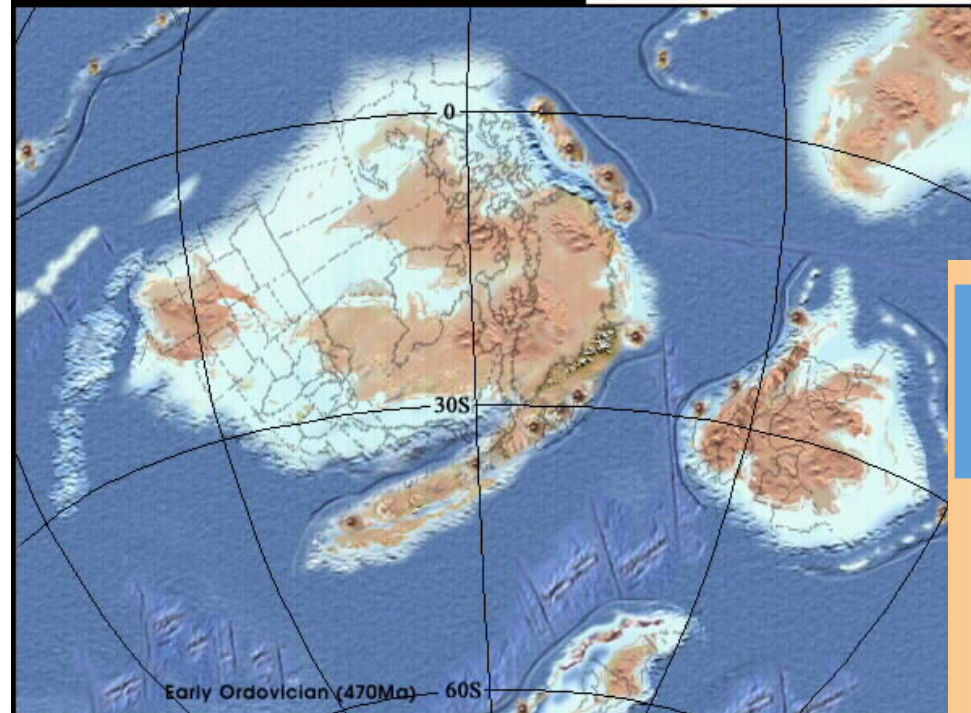
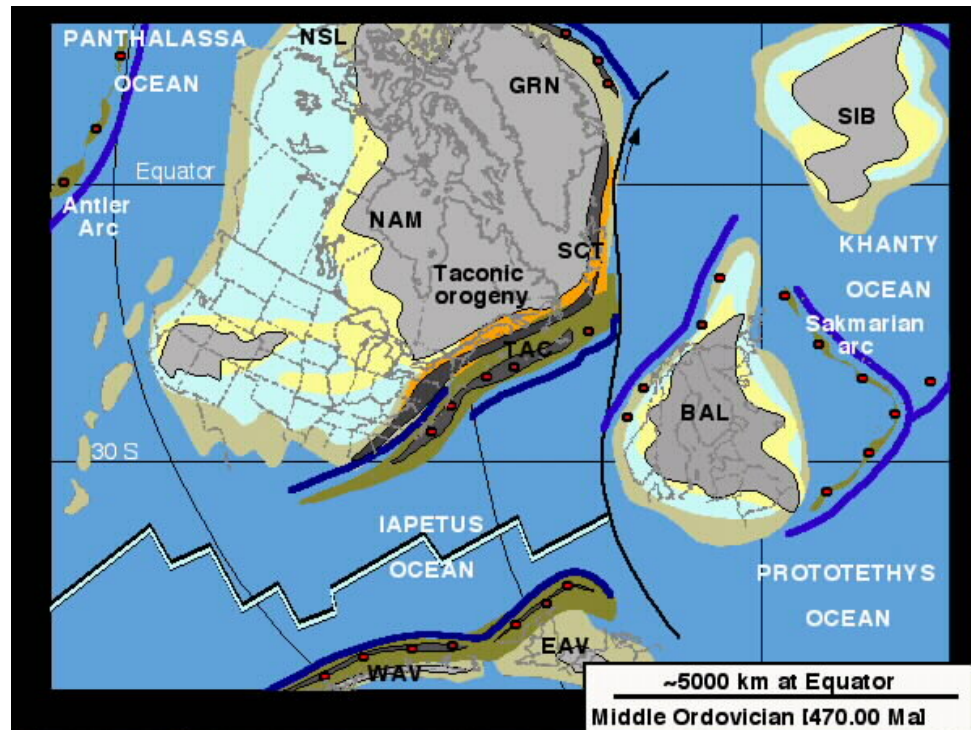




Sl. 28. Raspored kopna i mora u donjem siluru, pre 430 miliona godina (SCOTESE et al., 1979, delimično prilagođeno).  
 Legenda: 1. pravci većih morskih struja, 2. zone širenja okeanskog dna, 3. zone subdukcije, 4. aproksimativne granice savremenih kontinenata, 5. pretpostavljeni položaj naših terena, 6. planinski venci nastali kao rezultat kaledonske orogeneze.



Sl. 42. Raspored kopna i mora u donjem devonu, pre 400 miliona godina (SCOTESE et al., 1979, delimično prilagođeno).  
 Legenda: 1. pravci većih morskih struja, 2. zone širenja okeanskog dna, 3. zone subdukcije, 4. aproksimativne granice savremenih kontinenata, 5. pretpostavljeni položaj naših terena, 6. planinski venci nastali kao rezultat kaledonske orogeneze.

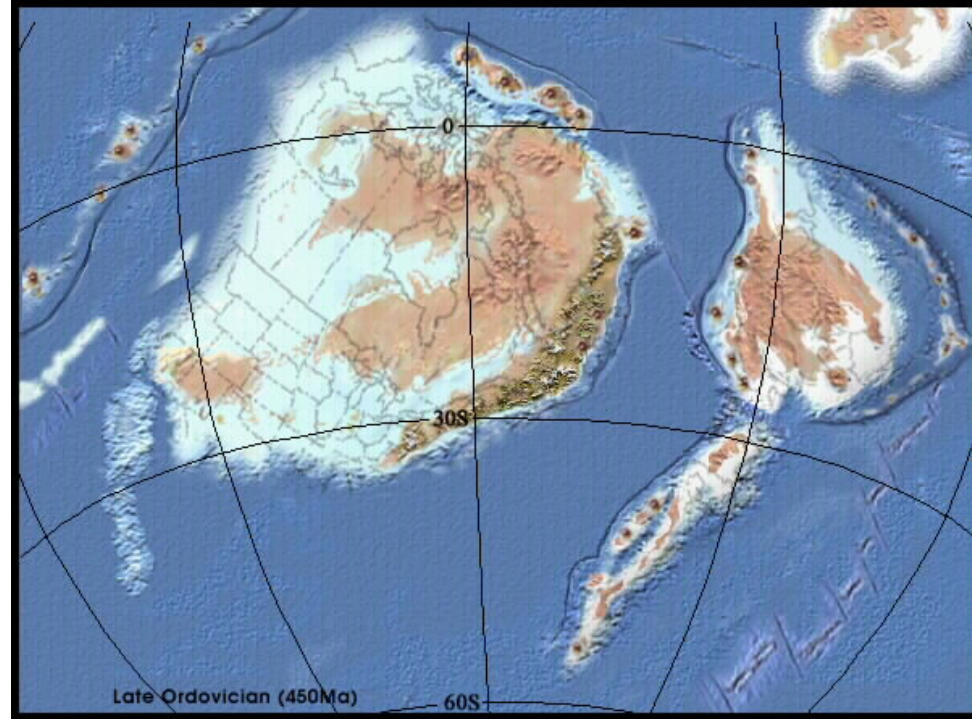
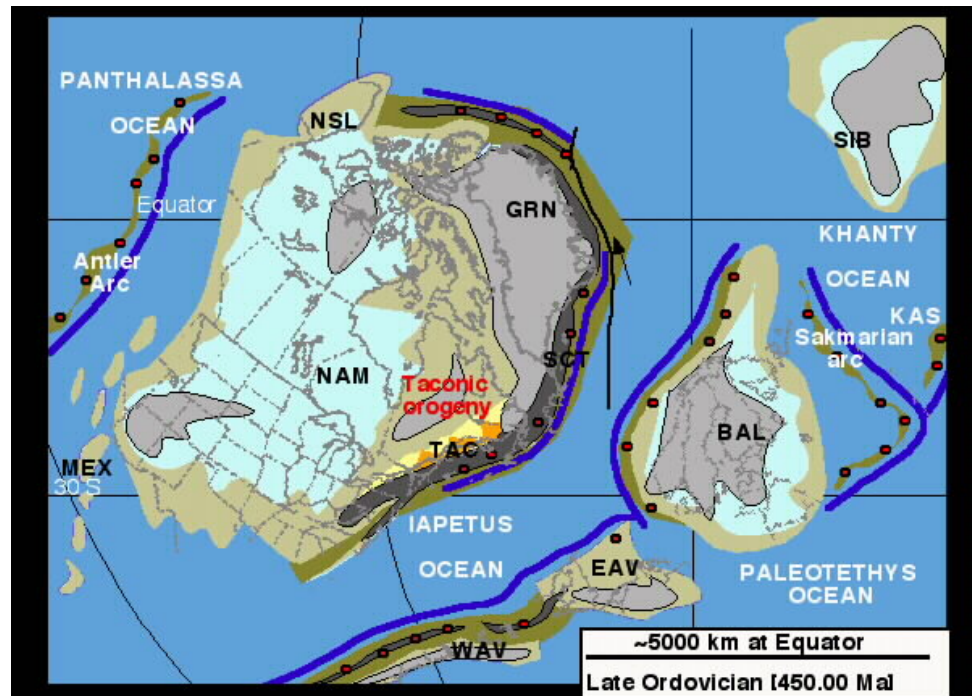


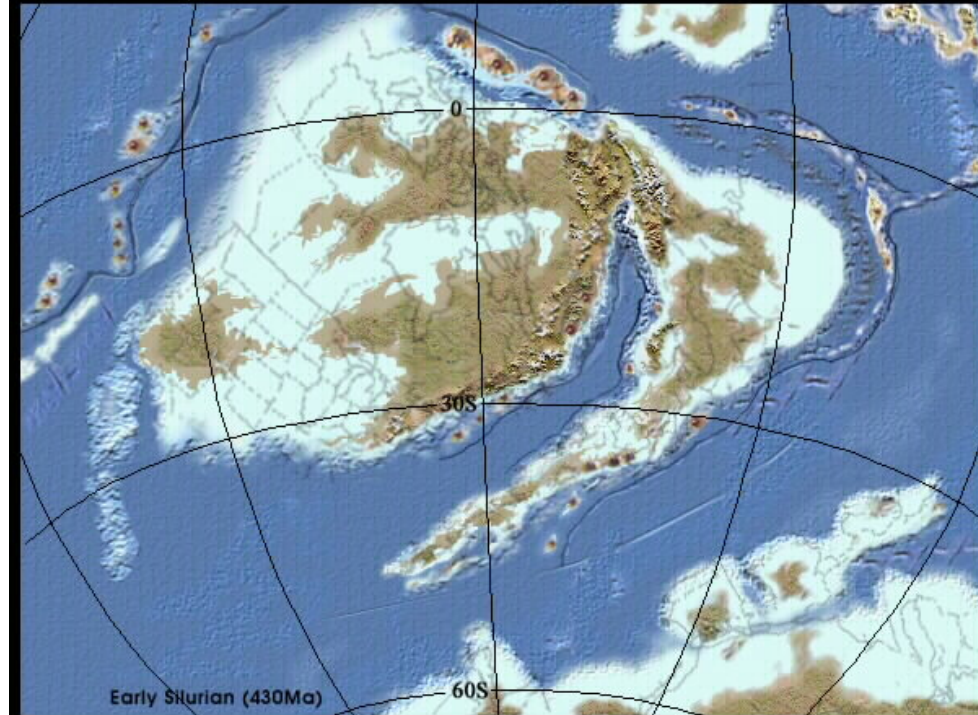
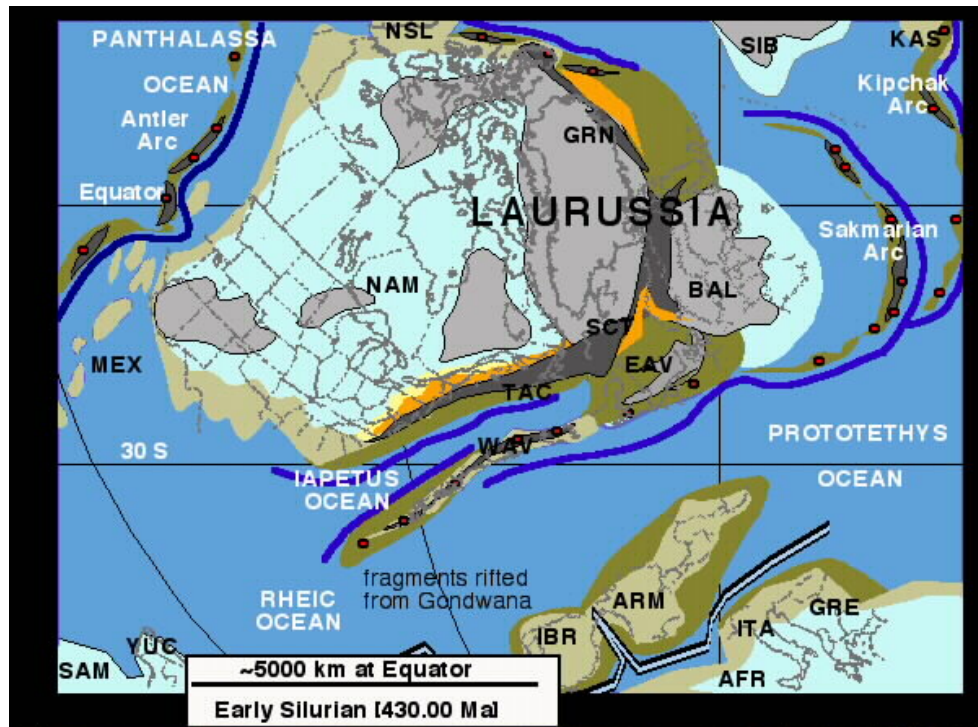
**Sediments / Tectonics**

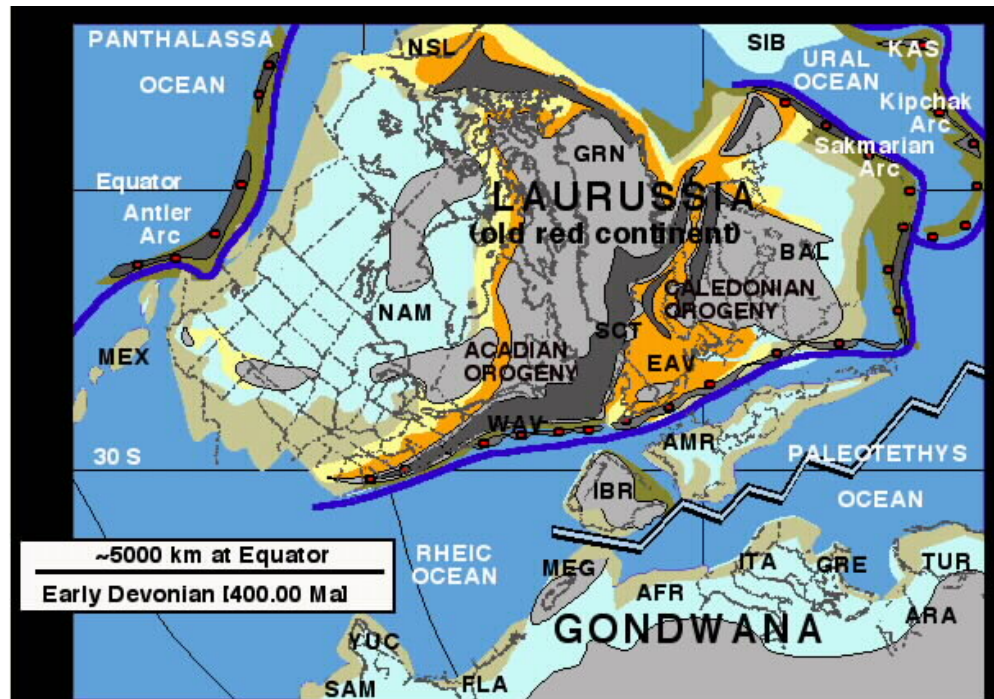
**Paleogeography**

**List of Plates and Abbreviations**

ARA-Arabia	IBR-Iberia (Spain)	PCO- Precordillera
AFR-Africa	Portugal	(Andes)
ARM- Armoria	IRA-Iran	SAM-South America
ISE-South Europe	ITA-Italy	SCT-Scotland
BAL-Baltica	KAS-Kazakhstan	SIB-Siberia
INE-North Europe	ICentral Asia	TAC-Taconia
EAV-East Avalonia	MEX-Mexico	(East US)
(England)	MEG-Meguma	(East US)
GRE-Greece	(East US)	TUR-Turkey
GRN-Greenland	NAM-North America	WAV-West Avalonia
	(Alaska)	(East US)
	NSL-North Slope	YUC-Yucatan







**Sediments / Tectonics**

- volcano
- volcanic flow (only major ones shown)
- positive area, shield
- active orogeny
- major shear, transform
- continental ss-ms-cong
- sandstone
- mudstone
- carbonate
- spreading center
- Trench
- deep-water
- sema (flysch)

**Paleogeography**

- ocean trench
- humid lowlands
- lake
- epicontinental pericontinental sea
- arc
- dunes
- arid lowlands
- uplands
- mountains
- oceanic plateau
- mid-ocean ridge

**List of Plates and Abbreviations**

ARA-Arabia	IBR-Iberia (Spain)	PCO- Precordillera
AFR-Africa	Portugal	IAndesl
ARM- Armoria	IRA-Iran	SAM-South America
ISE-South Europol	ITA-Italy	SC T-Scotland
BAL-Baltica	KAS-Kasakhstan	SIB-Siberia
INE-North Europol	ICentral Asia	TAC-Taconia
EAV-East Avalonia	MEX-Mexico	IEast USl
IEnglandl	MEG-Meguma	TUR-Turkey
GRE-Greece	IEast USl	WAV-West Avalonia
GRN-Greenland	NAM-North America	IEast USl
	NSL-North Slope	YUC-Yucatan
	Alaska	

# ВАРИСЦИШКИ (ХЕРЦИНСКИ) ОРОГЕНЕТСКИ ЦИКЛУС




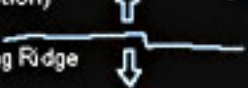
- КРАЈЕМ ДЕВОНА, БРЕТОНСКОМ ФАЗОМ (360 My)

- ДО ТРИЈАСА (250 My)



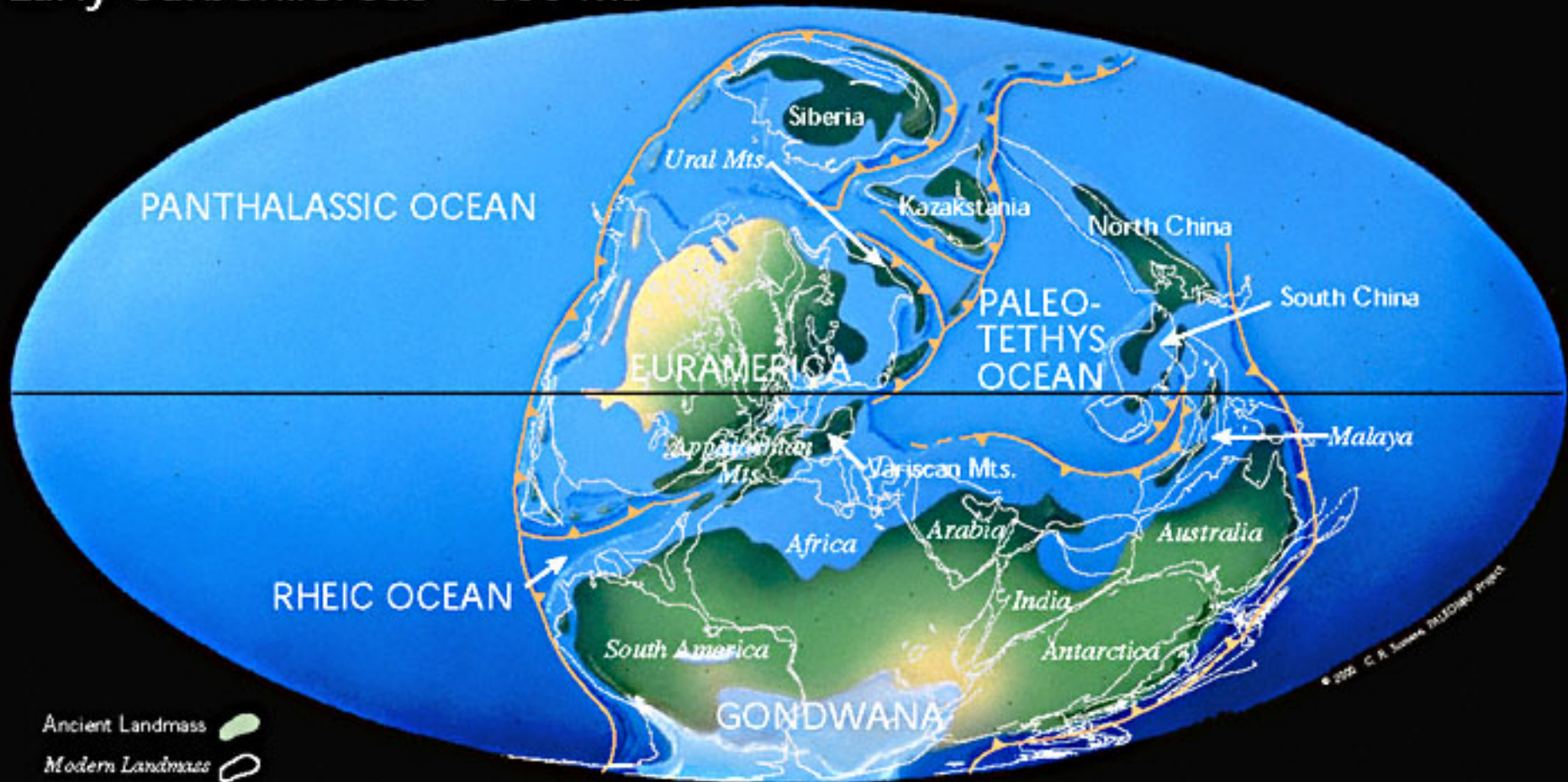
# Early Devonian 390 Ma







- Ancient Landmass 
- Modern Landmass 
- Subduction Zone (triangles point in the direction of subduction) 
- Sea Floor Spreading Ridge 

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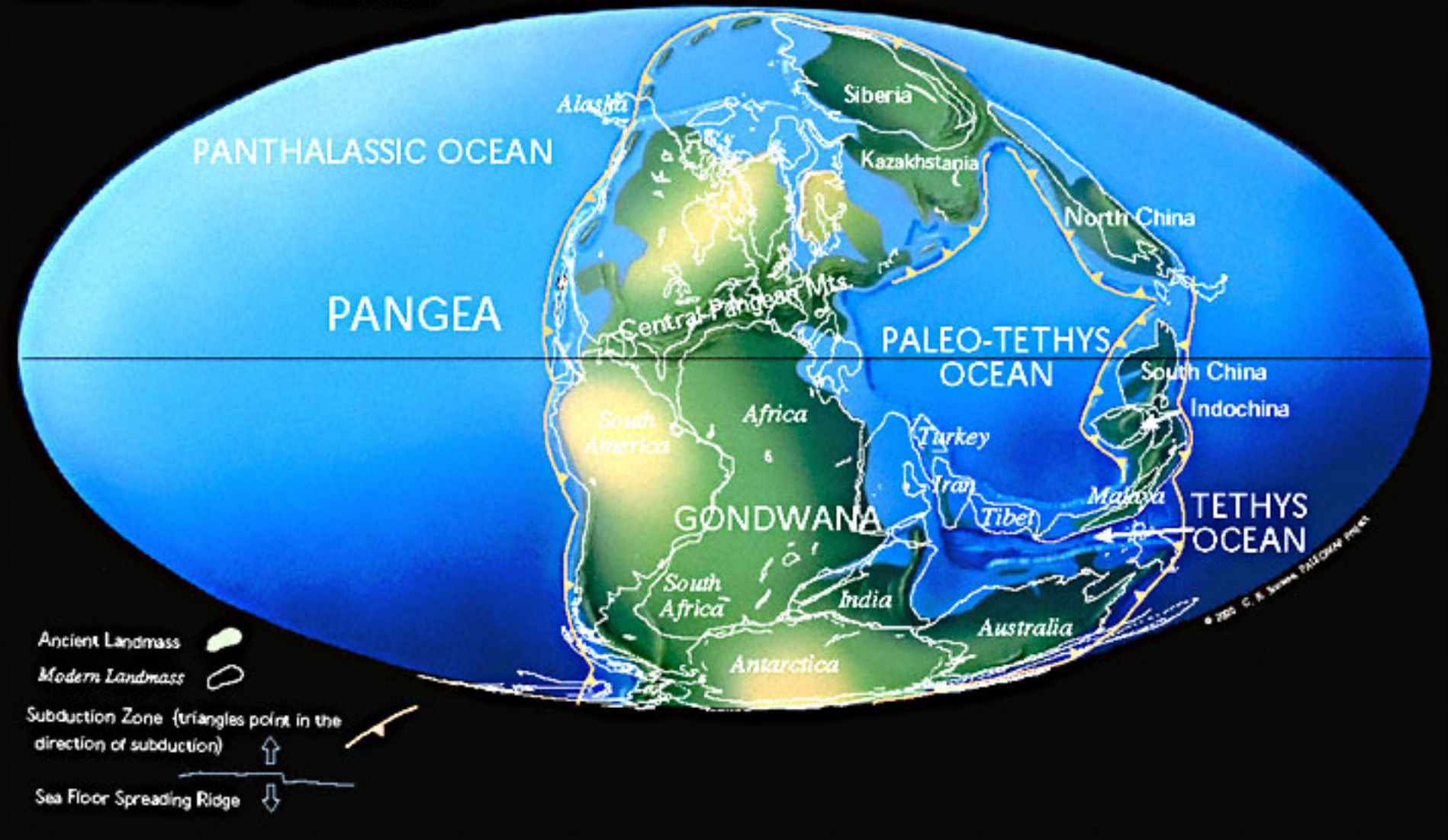
# Early Carboniferous 356 Ma



- Ancient Landmass 
- Modern Landmasses 
- Subduction Zone (triangles point in the direction of subduction) 
- Sea Floor Spreading Ridge 

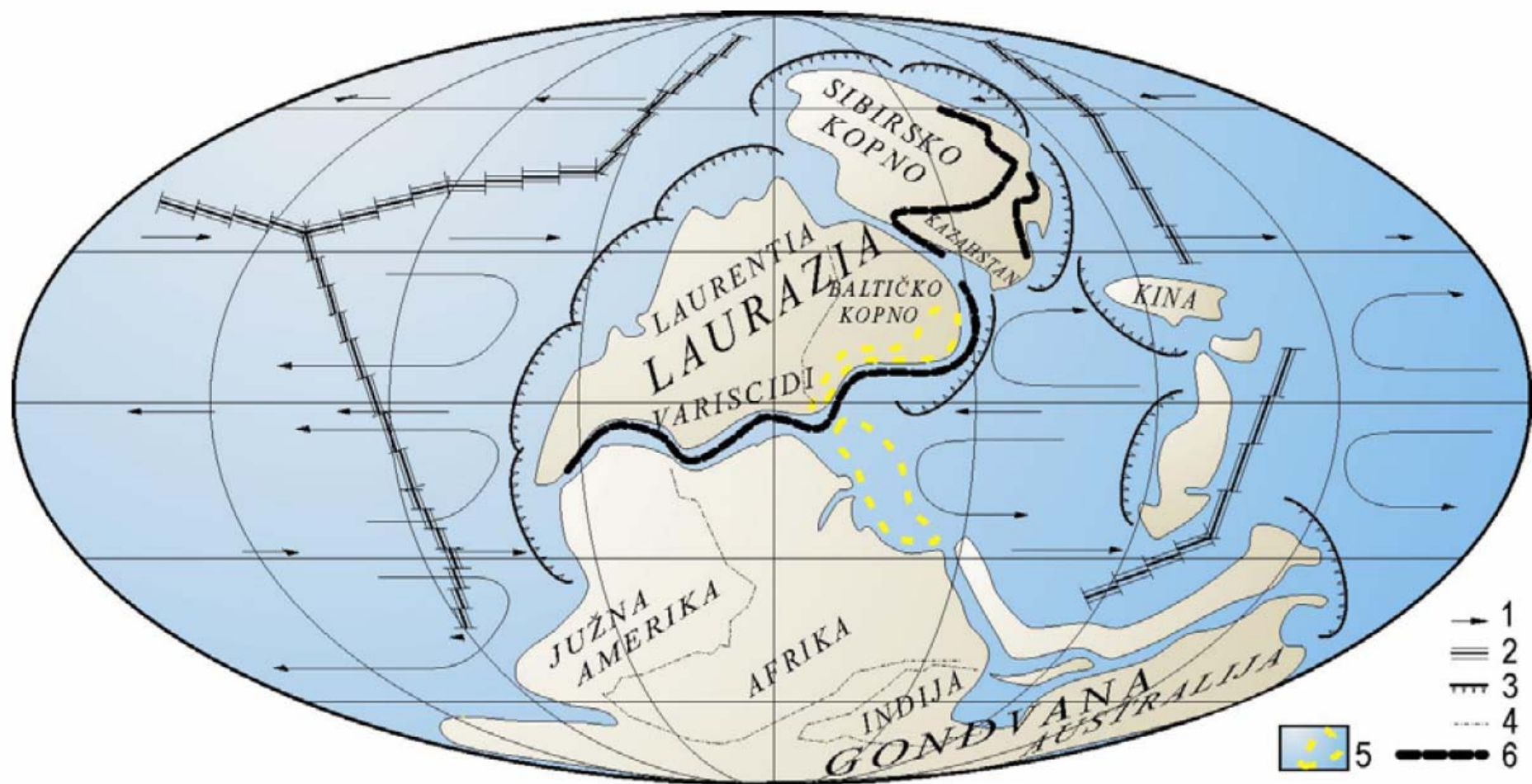
© 2002 C. R. Scotese, D1301002 Project

Late Permian 255 Ma

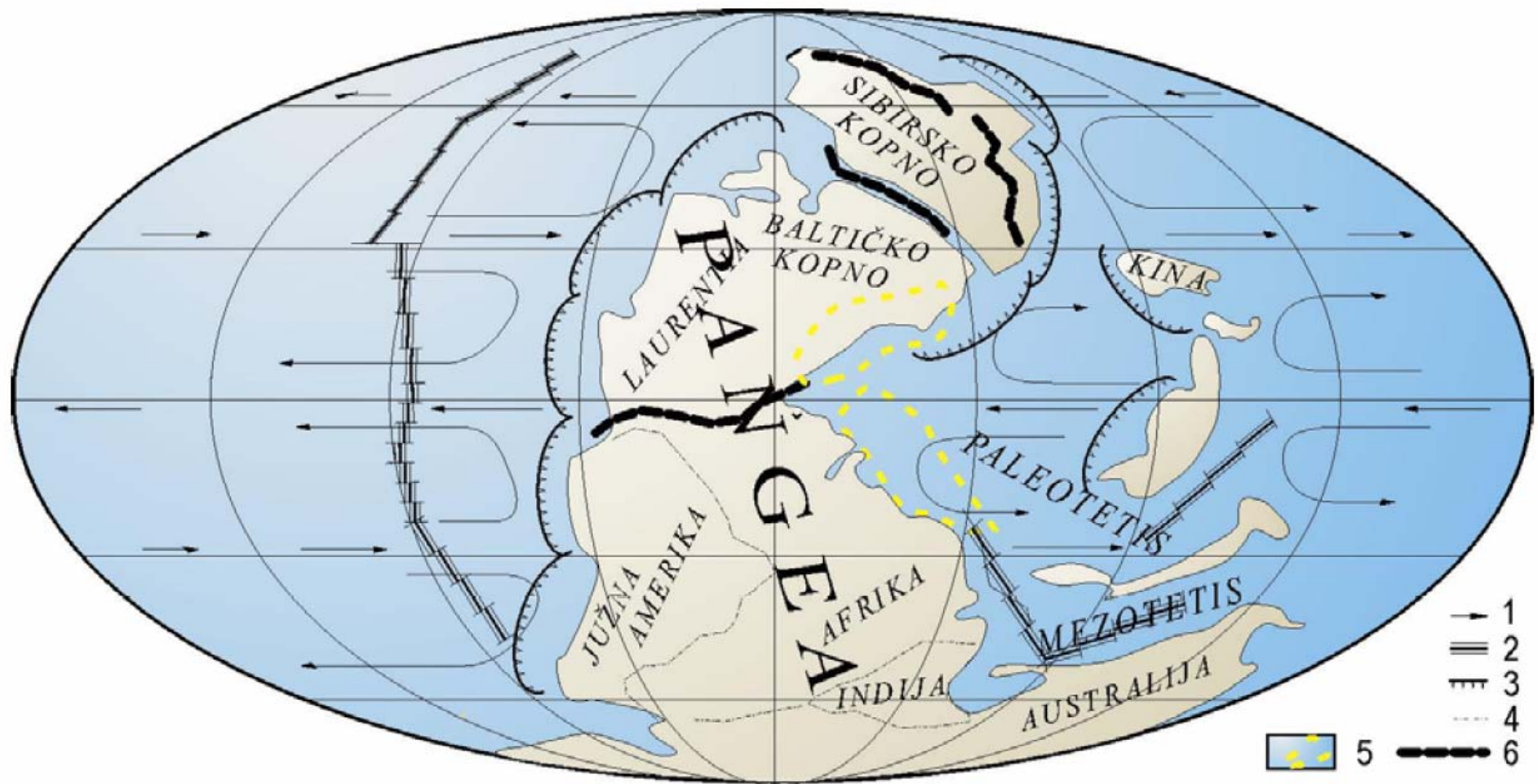




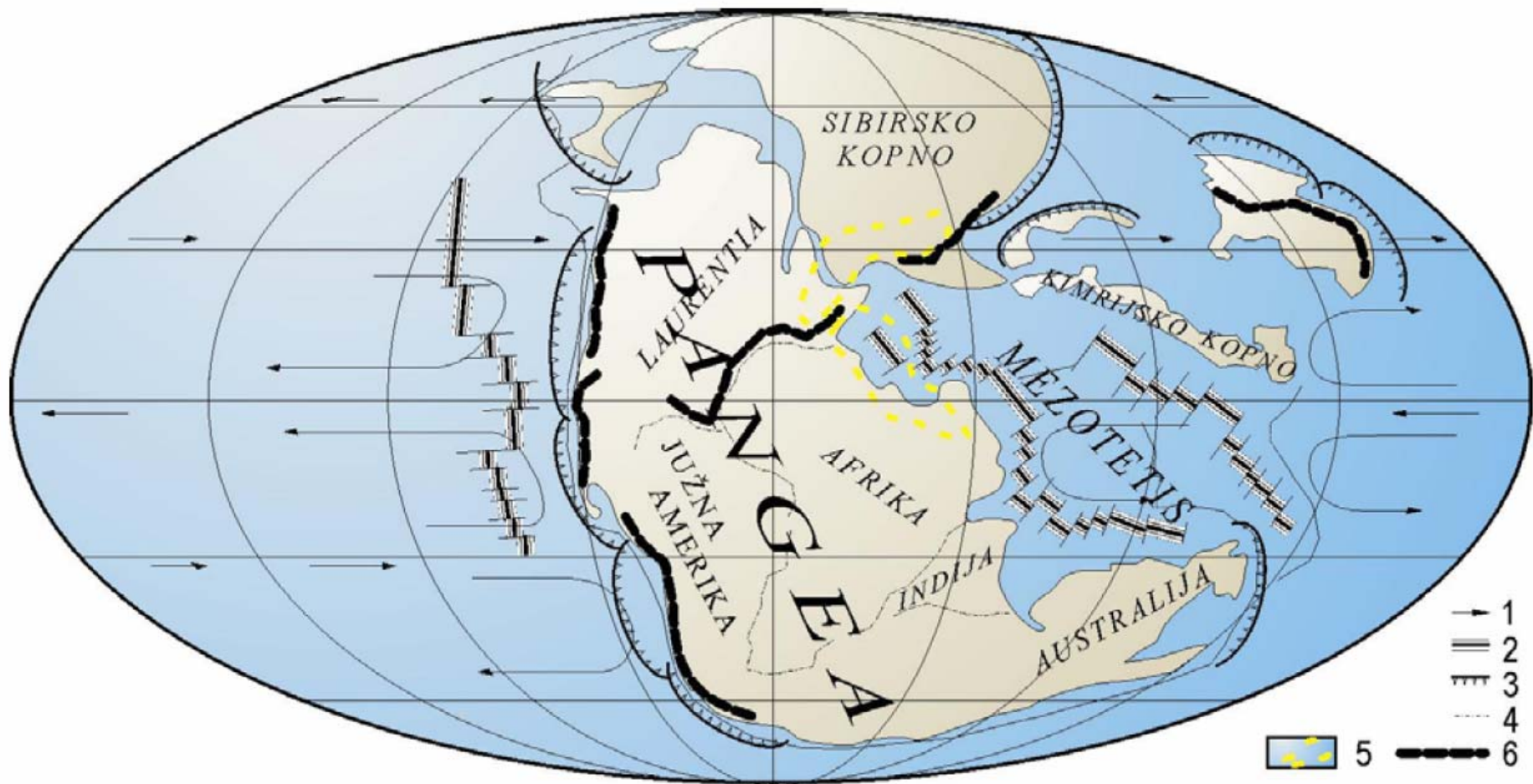
Sl. 58. Raspored kopna i mora početkom karbona, pre 360 miliona godina (SCOTSE et al., 1979, delimično prilagođeno).  
 Legenda: 1. pravci većih morskih struja, 2. zone širenja okeanskog dna, 3. zone subdukcije, 4. aproksimativne granice savremenih kontinenata, 5. pretpostavljeni položaj naših terena, 6. planinski venci nastali kao rezultat hercinske orogeneze.



Sl. 59. Raspored kopna i mora krajem karbona, pre 300 miliona godina (SCOTESE et al., 1979, delimično prilagođeno).  
 Legenda: 1. pravci većih morskih struja, 2. zone širenja okeanskog dna, 3. zone subdukcije, 4. aproksimativne granice savremenih kontinenata, 5. pretpostavljeni položaj naših terena, 6. planinski venci nastali kao rezultat hercinske orogeneze.



Sl. 85. Raspored kopna i mora sredinom perma, pre 270 miliona godina (SCOTESE et al., 1979, delimično prilagođeno).  
 Legenda: 1. pravci većih morskih struja, 2. zone širenja okeanskog dna, 3. zone subdukcije, 4. aproksimativne granice savremenih kontinenata, 5. pretpostavljeni položaj naših terena, 6. planinski venci nastali kao rezultat hercinske orogeneze.



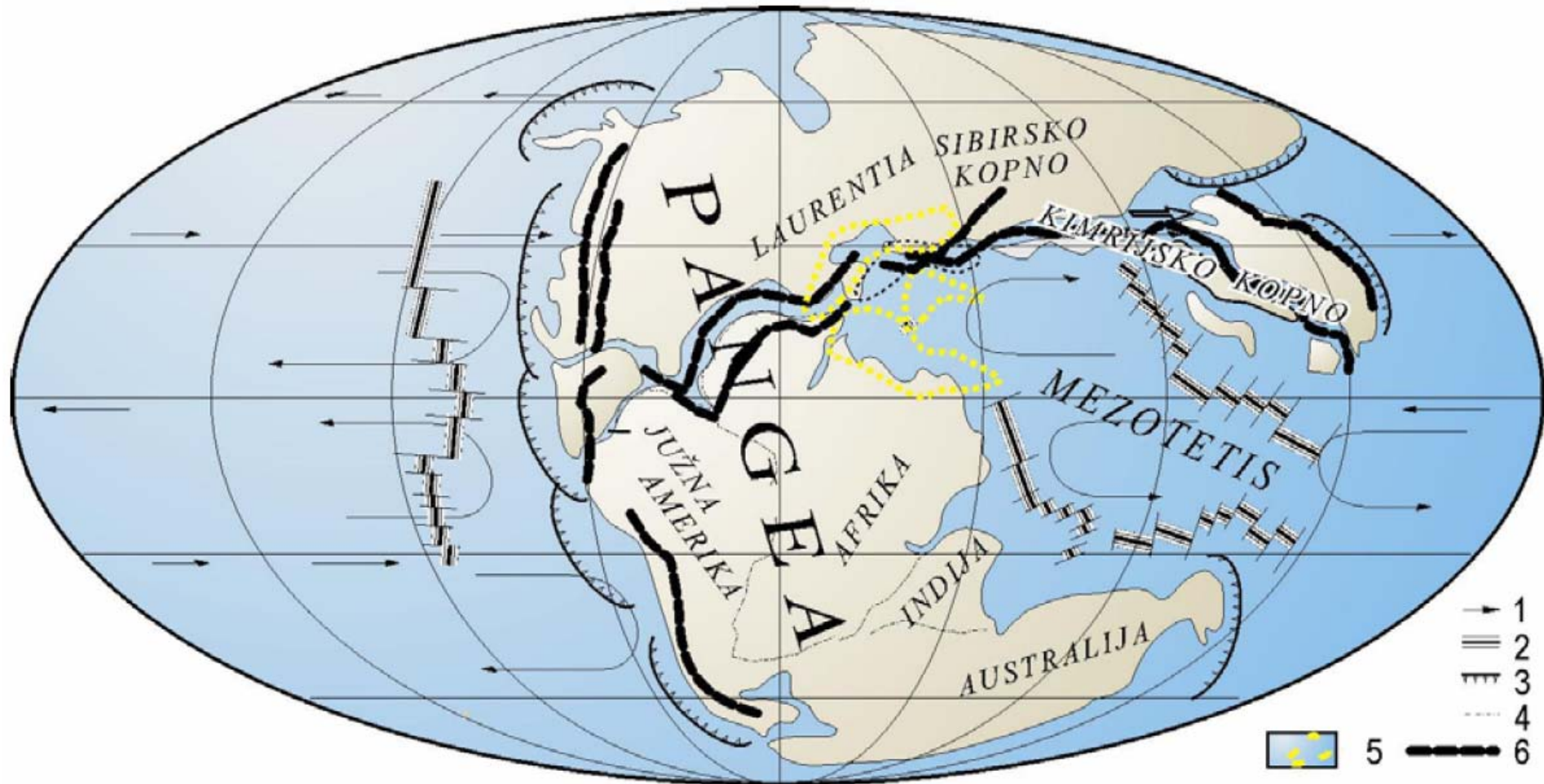
Sl. 103. Raspored kopna i mora tokom trijasa, pre 220 miliona godina (SMITH et al., 1981, delimično prilagođeno). Legenda:  
 1. pravci većih morskih struja, 2. zone širenja okeanske kore, 3. zone subdukcije, 4. aproksimativne granice savremenih kontinentata, 5 položaj naših terena.

# АЛПСКИ ОРОГЕНЕТСКИ ЦИКЛУС

-ДОЊА КРЕДА (140 Му) (старокимеричка? младокимеричка?)

1. Аустријска (доња/горња креда)
2. Субхерцинска (горња креда)
3. Ларамијска (горња креда и палеоген)
4. Пиринејска (доњи еоцен)
5. Савска (олигоцен и миоцен)
6. Штајерска (средњи миоцен)
7. Атичка (миоцен и плиоцен)
8. Роданска (средњи плиоцен)
9. Влашка (плиоцен и плеистоцен)
10. Пасаденска (плеистоцен и холоцен)





Sl. 163. Raspored kopna i mora tokom srednje Jure, pre 160 miliona godina (SMITH et al., 1981, delimično prilagođeno).  
 Legenda: 1. pravci većih morskih struja, 2. zone širenja okeanske kore, 3. zone subdukcije, 4. aproksimativne granice savremenih kontinenata, 5. položaj naših terena.

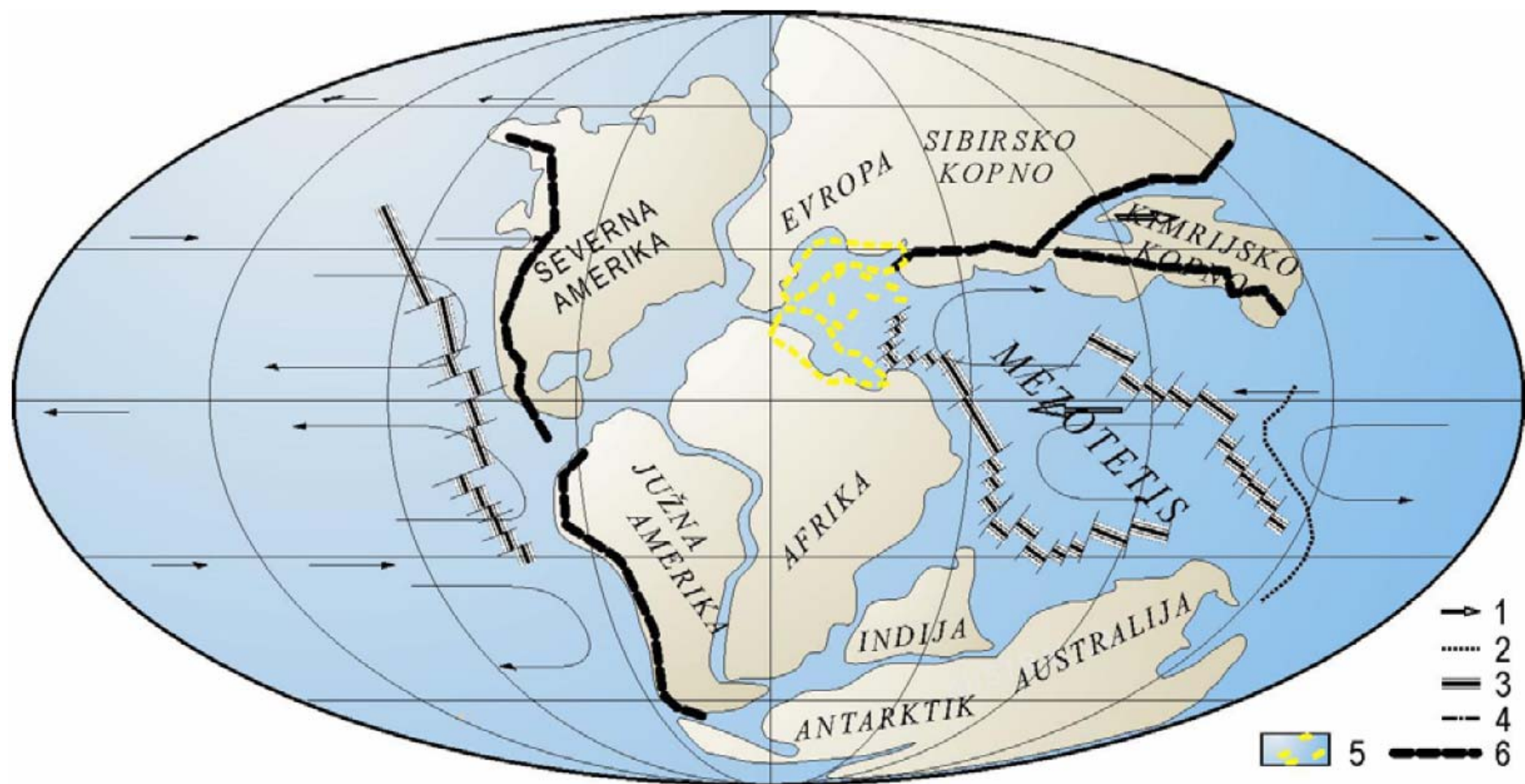


Late Jurassic 152 Ma

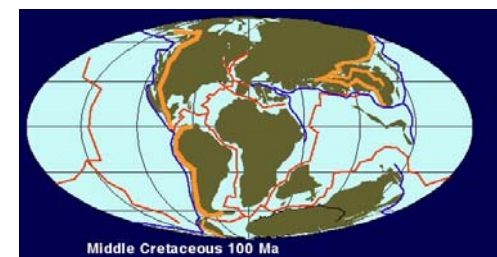


- Ancient Landmass
- Modern Landmass
- Subduction Zone (triangles point in the direction of subduction)
- Sea Floor Spreading Ridge

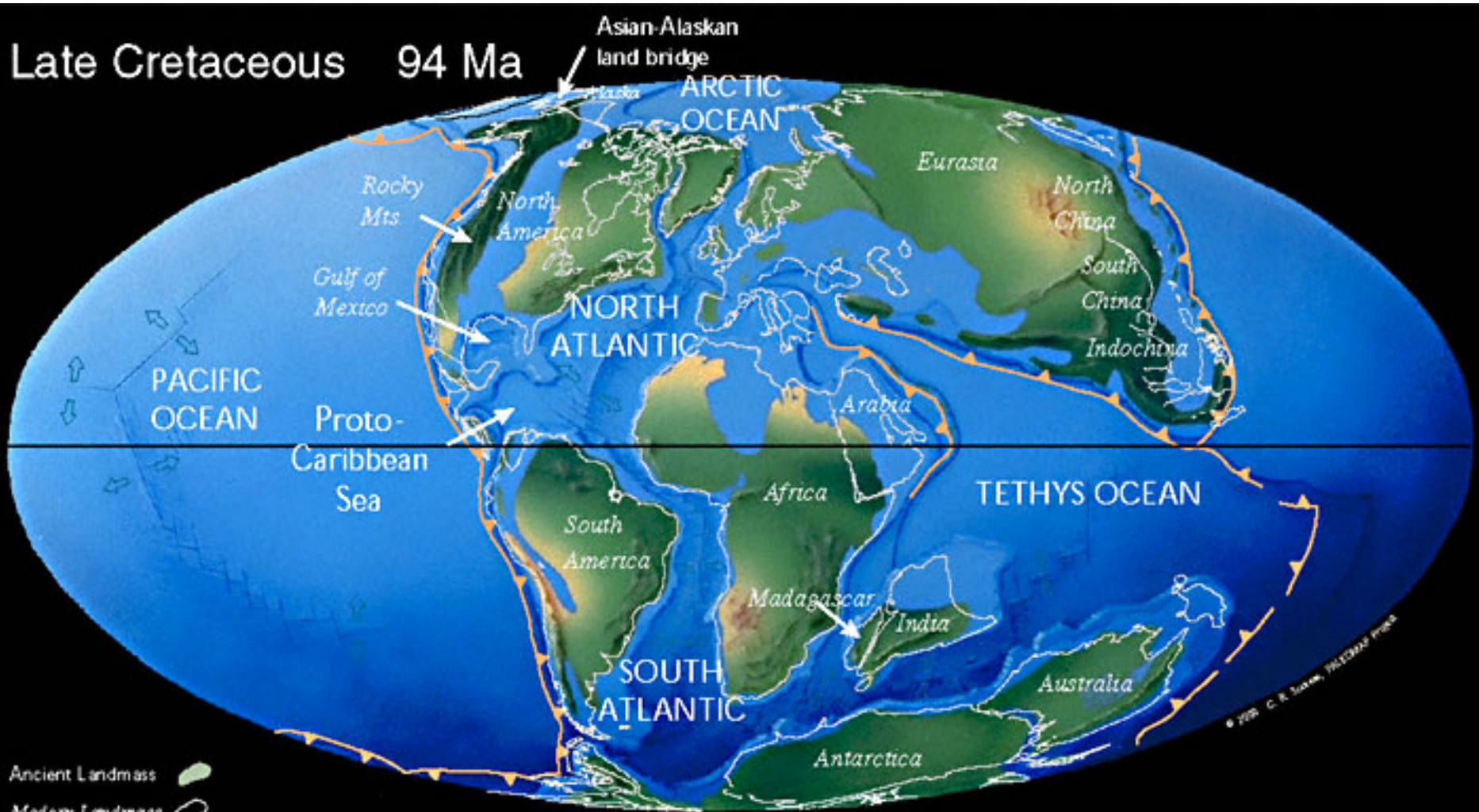
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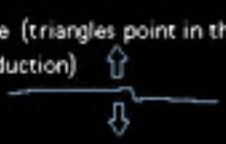


Sl. 242. Raspored kopna i mora sredinom krede, pre 100 miliona godina (SMITH et al., 1981, delimično prilagođeno).  
 Legenda: 1. pravci većih morskih struja, 2. zone širenja okeanske kore, 3. zone subdukcije, 4. aproksimativne granice savremenih kontinenata, 5 položaj naših terena.



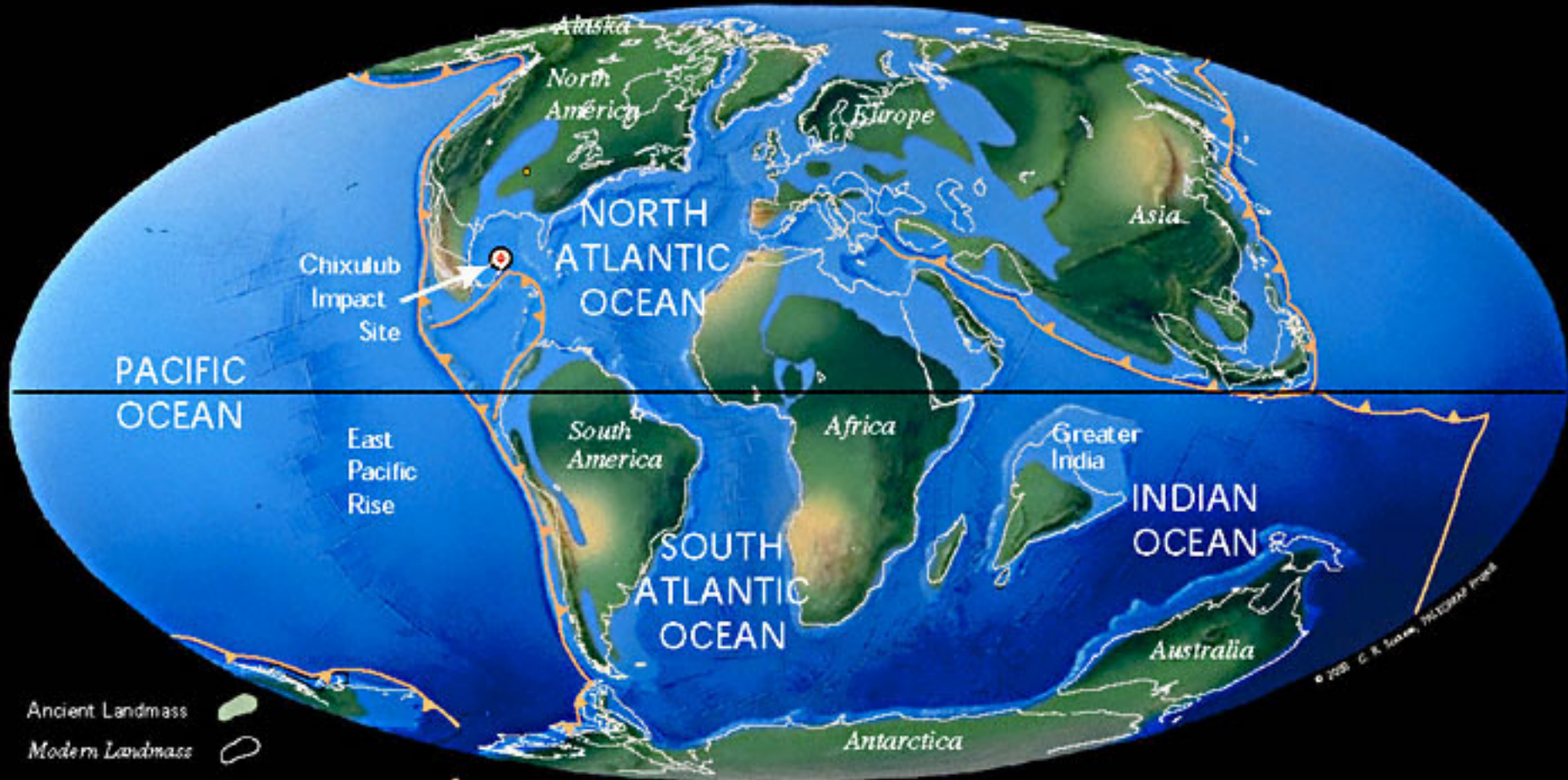
Late Cretaceous 94 Ma



Ancient Landmass   
Modern Landmass   
Subduction Zone (triangles point in the direction of subduction) 

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# K/T Boundary 66 Ma



Ancient Landmass

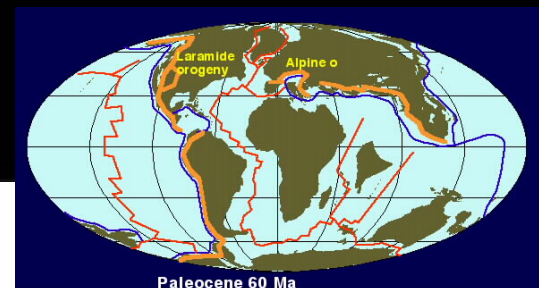
Modern Landmass

Subduction Zone (triangles point in the direction of subduction)

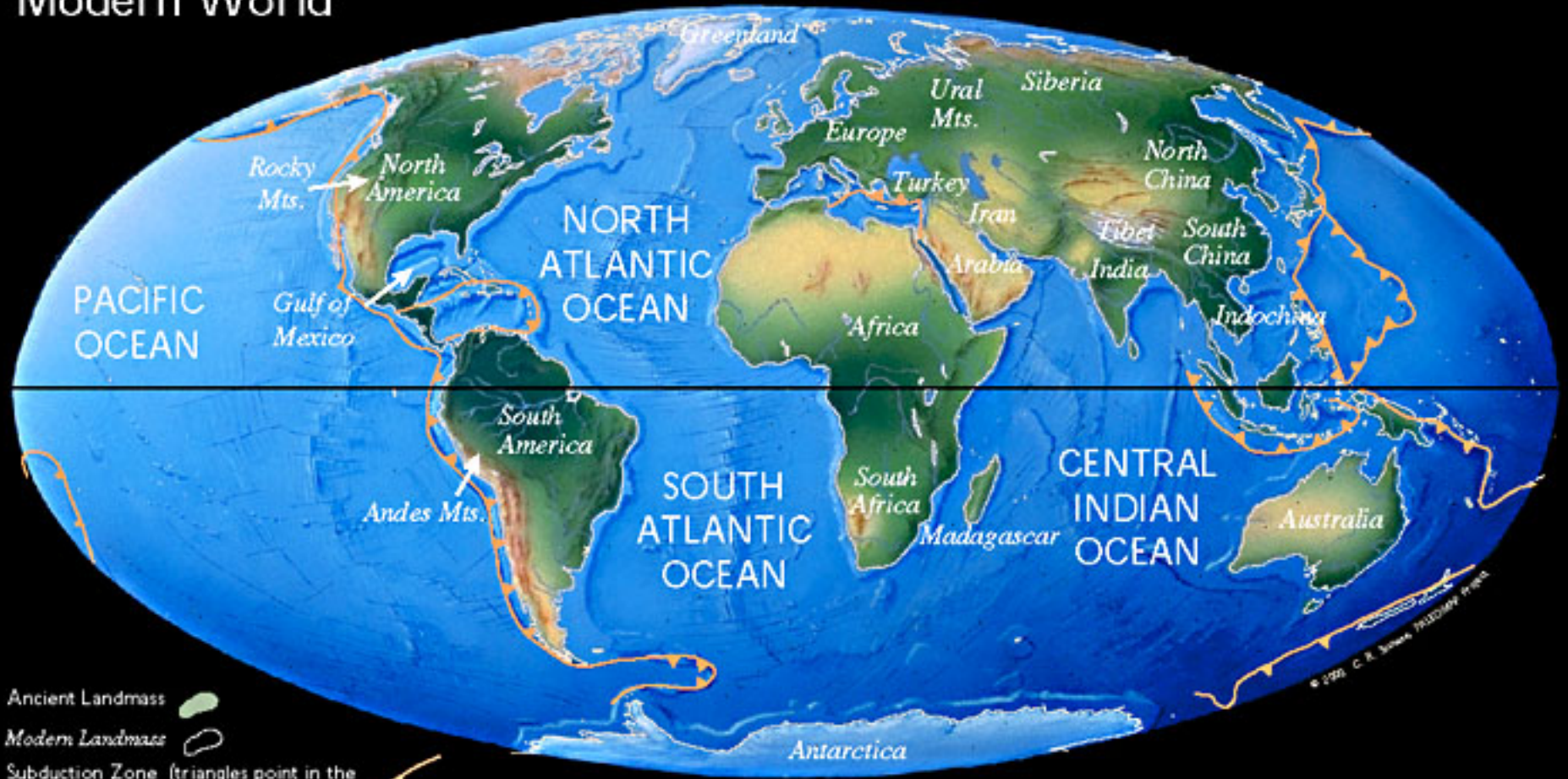
Sea Floor Spreading Ridge





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# Middle Eocene 50.2 Ma



# Modern World



- Ancient Landmass 
- Modern Landmass 
- Subduction Zone (triangles point in the direction of subduction) 
- Sea Floor Spreading Ridge 

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