1

PARADIGM SHIFT

SCALE OF GEOLOGICAL PROCESSES

2

UNIFORMITARIANISM

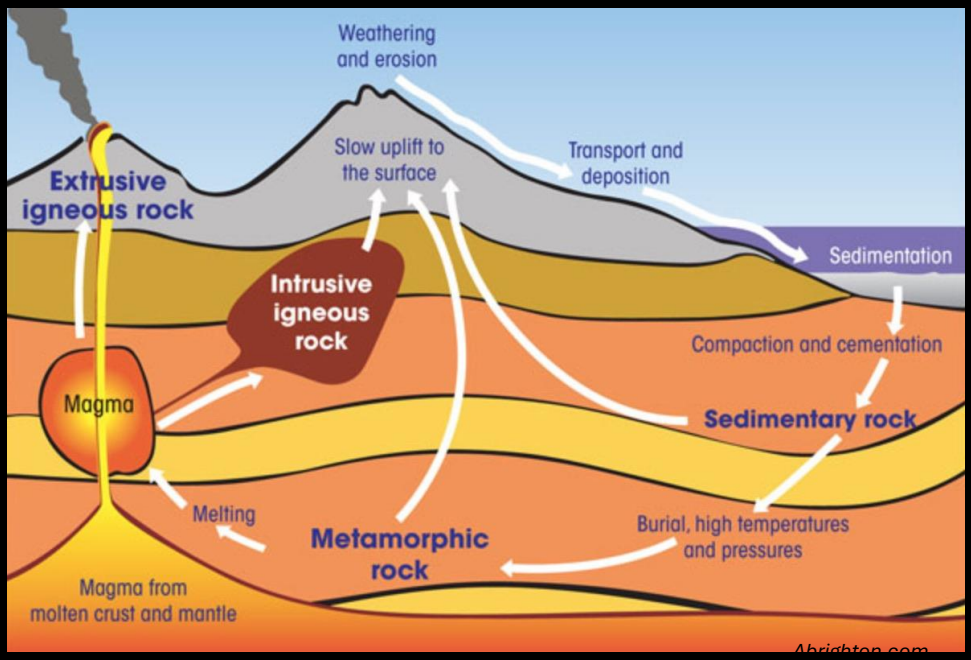
DEEP TIME

3

CATASTROPHISM

“a geological doctrine that changes in the earth's crust have in the past been brought about suddenly by physical forces operating in ways that cannot be observed today.” Merriam-Webster dictionary

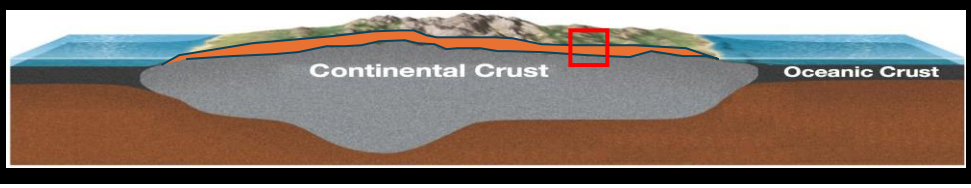
4



5

Percentage of rocks in the crust

- Entire crust
  - 95% igneous and metamorphic, 5% sedimentary
- Surface of crust
  - 75% sedimentary (avg. 3000 m thick on continents, avg. 400 m thick on oceanic crust)
  - 25% igneous and metamorphic

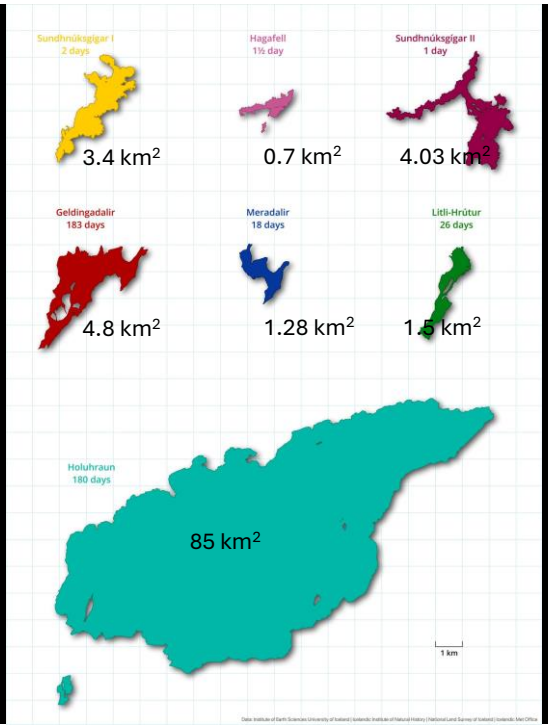


6

Igneous rocks

7

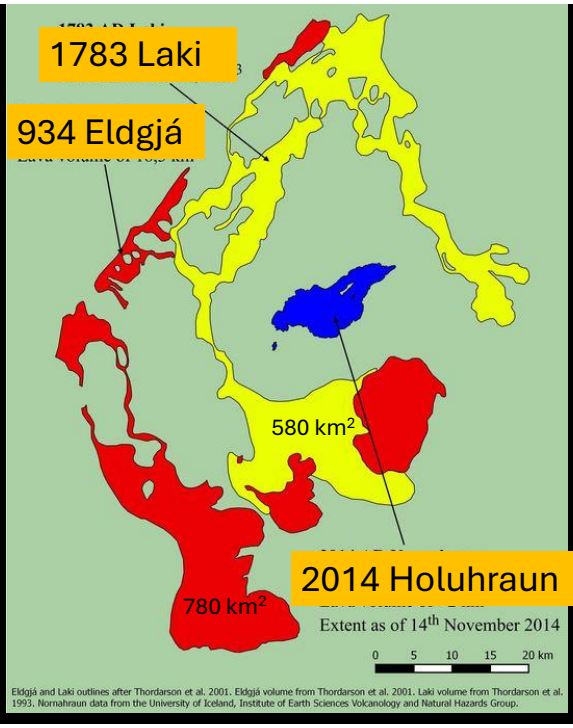
Recent eruptions in Iceland



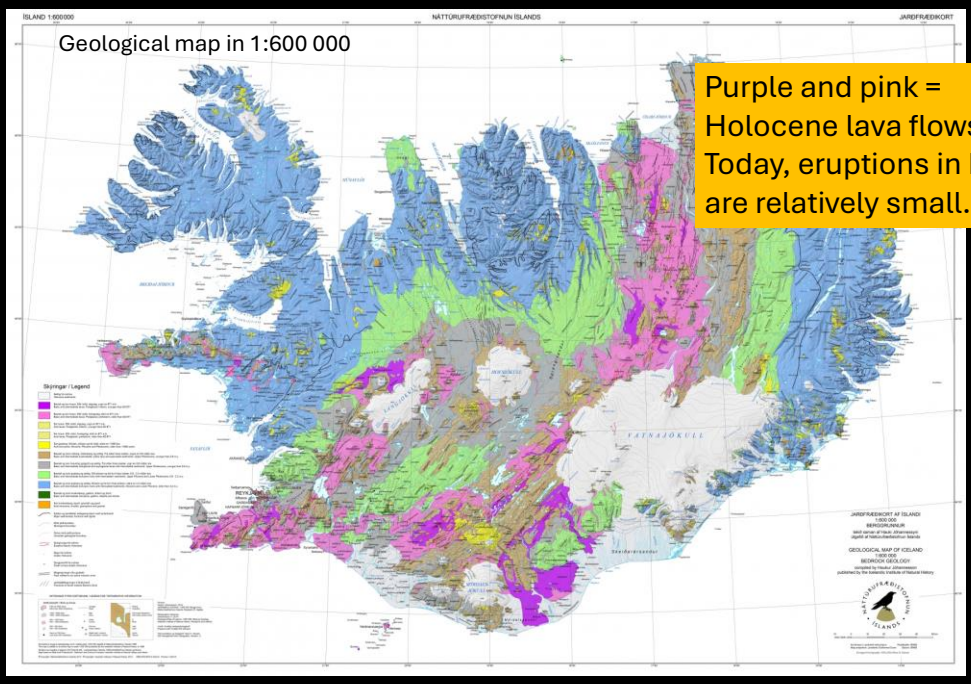
2021-2024

2014

8

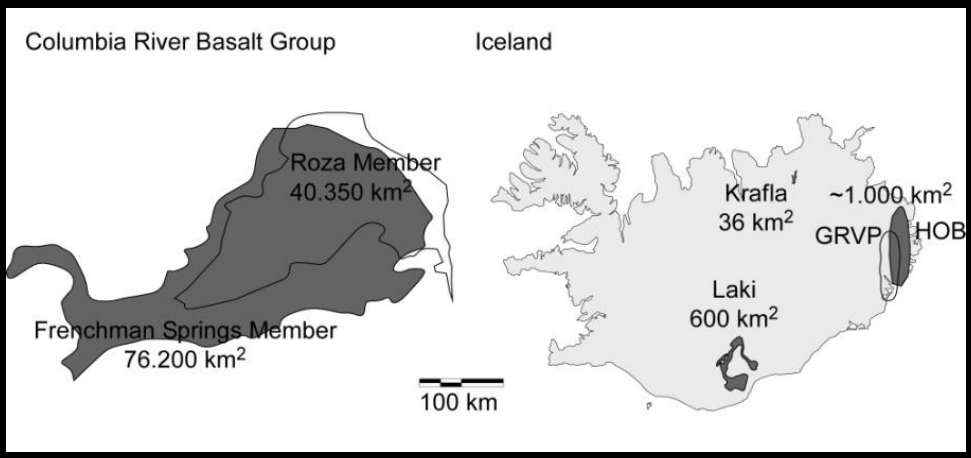

1783 Laki
934 Eldgjá
580 km²
2014 Holuhraun
780 km²
Extent as of 14th November 2014
0 5 10 15 20 km
Eldgjá and Laki outlines after Thordarson et al. 2001. Eldgjá volume from Thordarson et al. 2001. Laki volume from Thordarson et al. 1993. Hornahraun data from the University of Iceland, Institute of Earth Sciences Volcanology and Natural Hazards Group.

9


Geological map in 1:600 000
Purple and pink = Holocene lava flows. Today, eruptions in Iceland are relatively small.

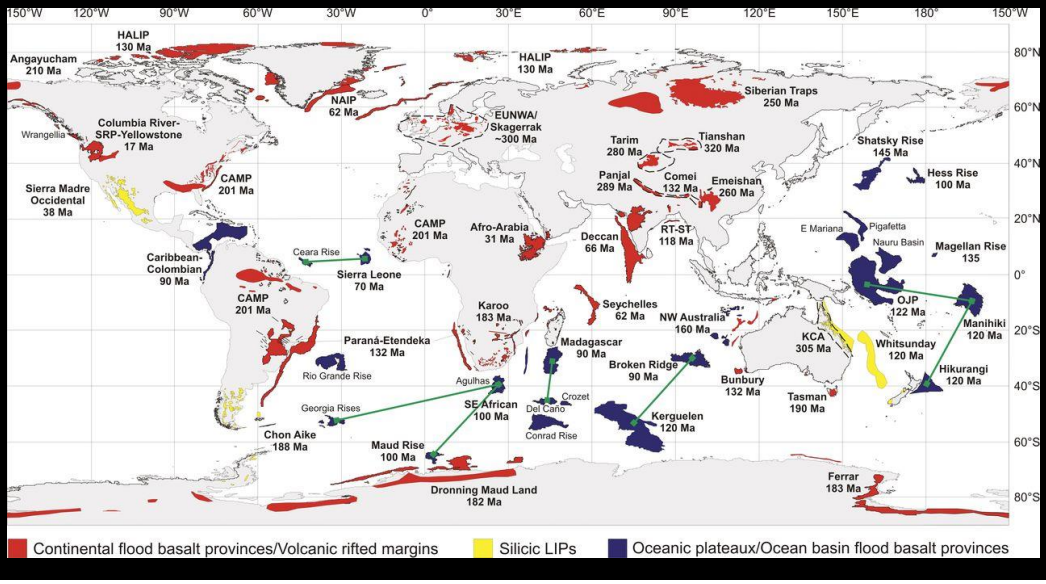
10

Comparison between lava flows in Iceland and pre-historic lava flows in the Columbia River Basalt (USA)



11

Flood basalt provinces



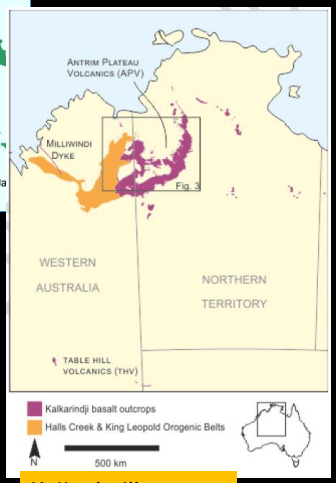
12

Paraná-Etendeka
1.5 million km^2
2.3 million km^3

Steward et. al. 1996

Siberian traps
7 million km^2
4 million km^3

Deccan traps
500,000 km^2
1 million km^3



Kalkarindji
500,000 km^2
- 2 million km^2
? million km^3

13

Individual lava flows in the "smallest" flood basalt province – The Columbia River Basalt Group

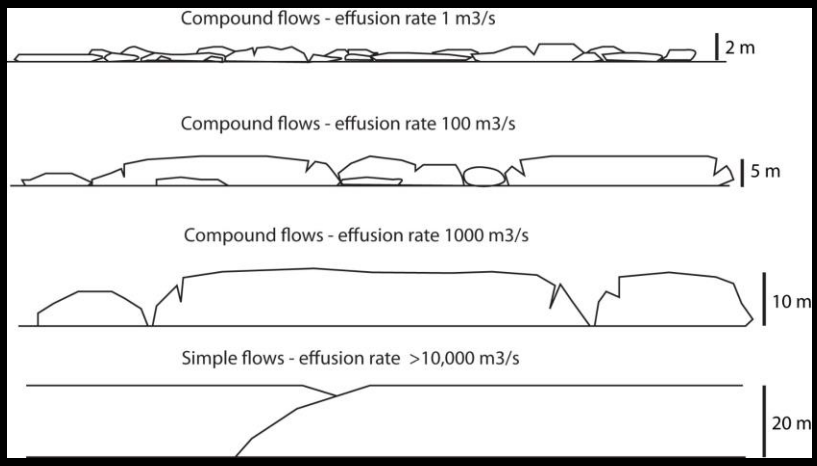
Lava flow	Volume km^3
McCoy Canyon flow	4,300
Umtanum flows	2,750
Sand Hollow flow	2,660
Pruitt Draw flow	2,350
Museum flow	2,350
Rosalia flow	1,900
Joseph Creek flow	1,850

The 1783-84 Laki lava field in Iceland has volume of about 15 km3

14

Lava morphology

Proportional scaling of the lava flows



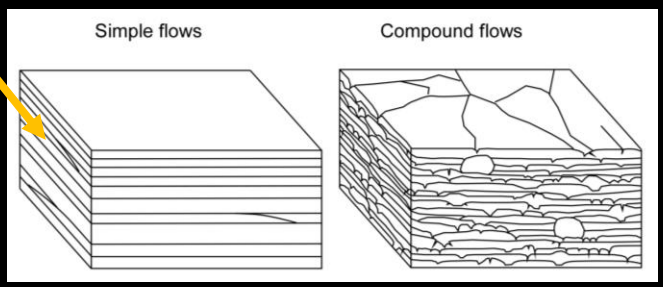
15

Lava architecture

"Flood basalt piles such as constitute the Columbia River Plateau, the Tertiary lavas of Iceland and the Faroes, and the Deccan Traps of India include both simple and compound lavas in the make-up."

Walker, 1971

Evidence of very large eruptions



Tabular flows "simple flows" (*classic-tabular flow facies*)

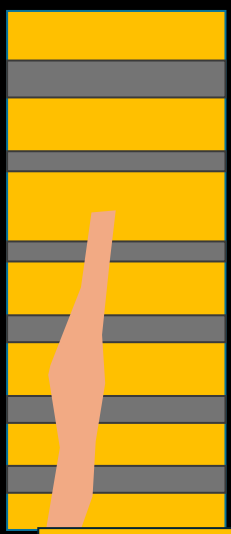
Compound flows (*compound-braided flow facies*)

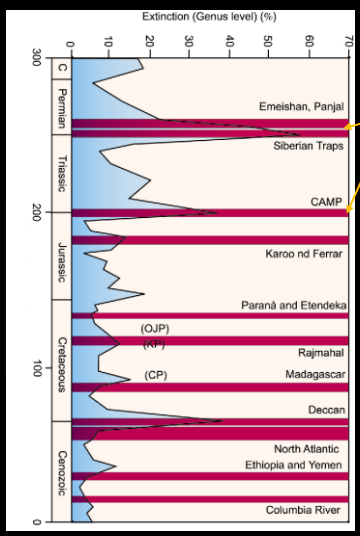
Walker, 1971
Jerram, 2012

16

17

Geologic column



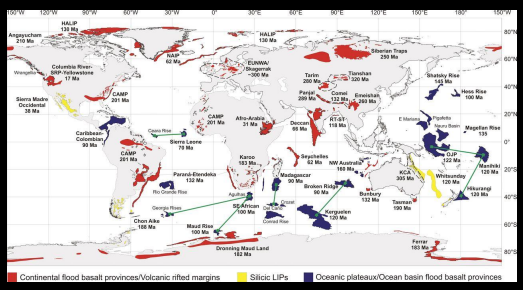


Flood basalts

Volcanic rock

Sedimentary rock

Intrusive rock



Large-scale volcanic eruptions in the geological record are the rule, rather than the exception.

18

Sedimentary rocks

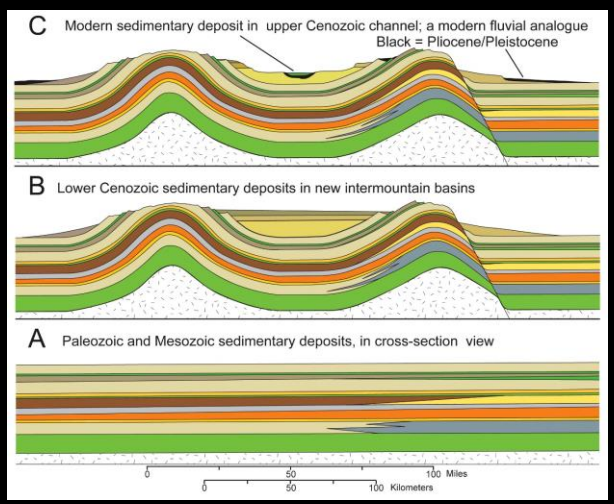
19

Geographically widespread formations – compared with modern processes

Less widespread deposits in the Cenozoic

Based on actual data from Rocky Mt. area

Widespread deposits in the Paleozoic and Mesozoic

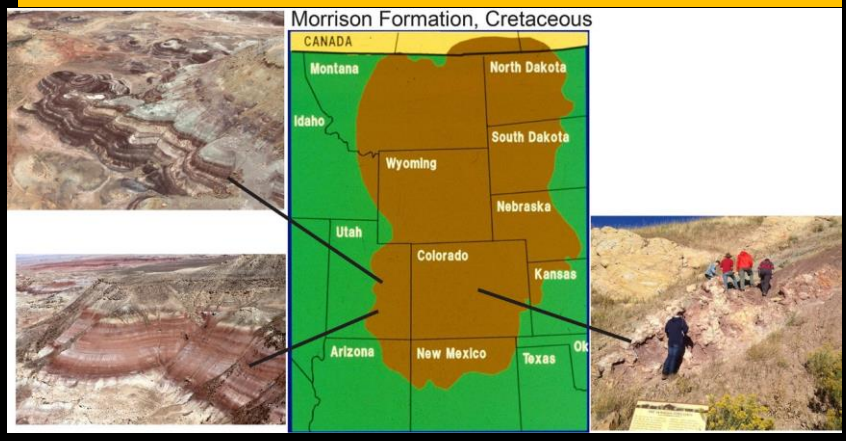


Slides courtesy by Leonard Brand

20

Geographically widespread formations

Morrison Fm. 1.5 million sq km (600,000 sq mi)



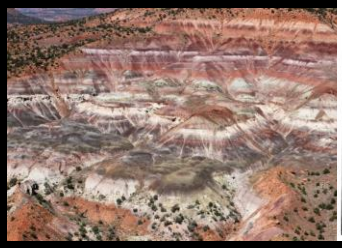
Slides courtesy by Leonard Brand

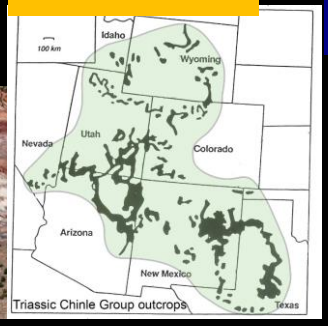
21

Geographically widespread formations

Dakota 815,000 sq km

Chinle 300,000 sq km

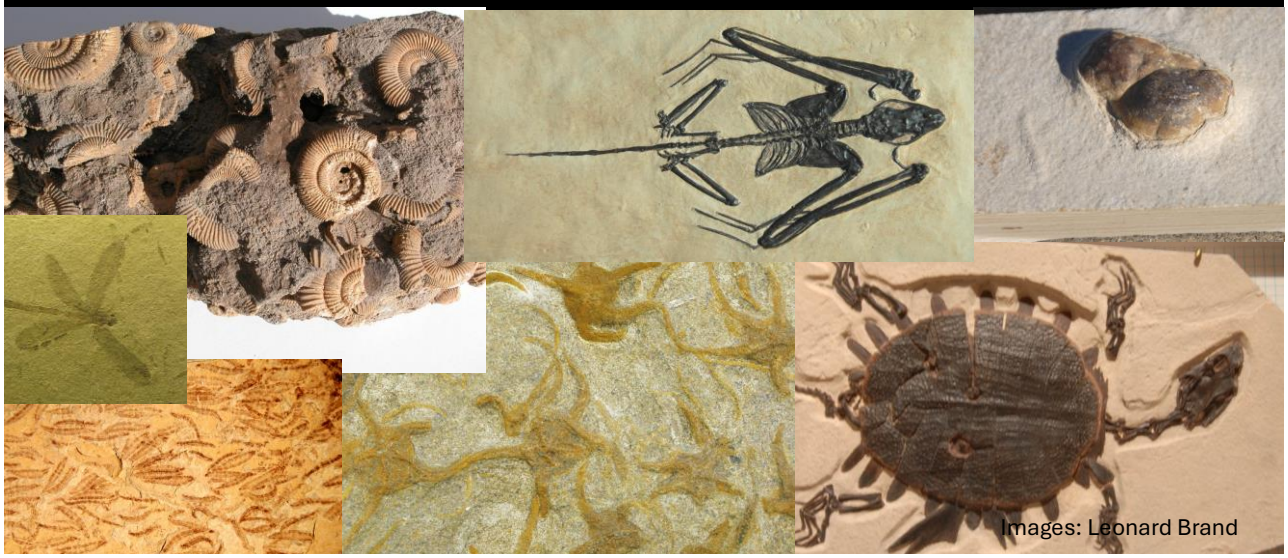




Shinarump 260,000 sq km

22

Evidence for rapid formation of many sedimentary formations - Mass burial of animals and plants



23

Well preserved fossils = rapid burial

There are too many well-preserved fossils for the conventional model

Fossil record calls for a global catastrophe

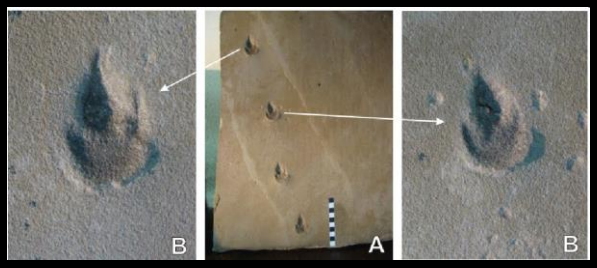
24

Trace Fossils

Coconino sandstone (USA)

http://grandcanyon.areaparks.com/

Botucatu Formation (Brazil)



http://colecionadoresdeossos.blogspot.com/2011/04/fauna-do-paleo-deserto-do-botucatu.html

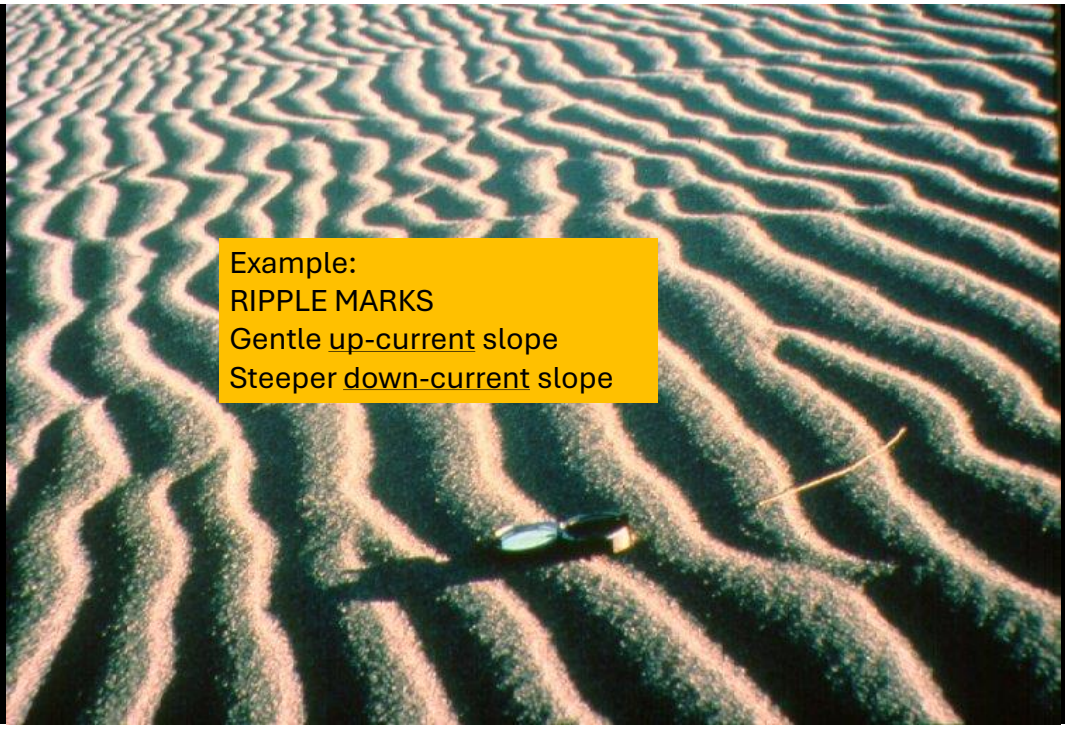
25

Evidence for rapid formation of many sedimentary formations - Paleocurrents

What are Paleocurrents?

- **Paleocurrents** are flow directions derived from features of sedimentary rocks that reveal the sense of the current of wind or water that deposited the sediment.
- All sedimentary rocks contain paleocurrent indicators, some of which can be read and interpreted. E.g. ripple marks

26



27

www.nature.com/scientificdata

SCIENTIFIC DATA

OPEN

SUBJECT CATEGORIES
» sedimentology
» tectonics
» geology

Global database of paleocurrent trends through the Phanerozoic and Precambrian

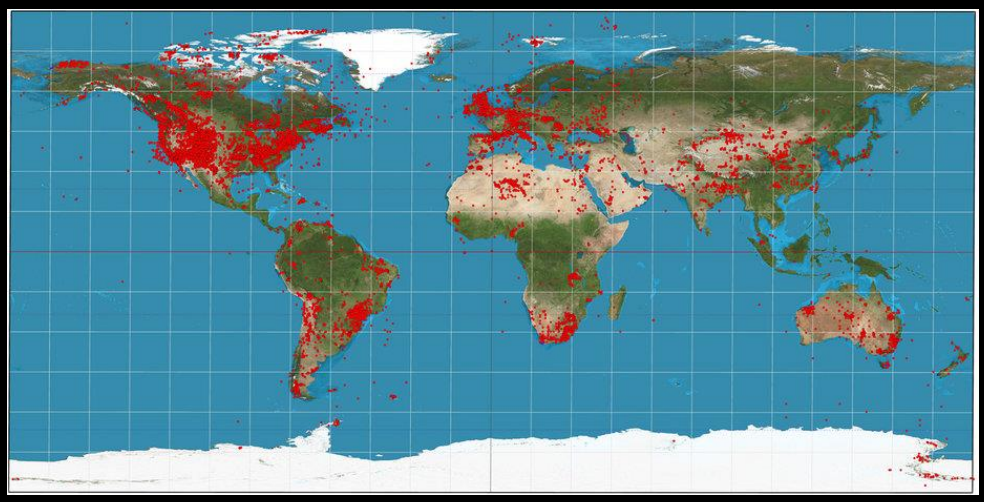
Leonard Brand[1], Mingmin Wang[2] & Arthur Chadwick[3]

Received: 12 January 2015
Accepted: 20 April 2015
Published: 9 June 2015

Paleocurrents are sedimentological features contained in all sedimentary deposits, enabling the direction of movement of the sediment and the containing fluid at the time of deposition to be determined. This database contains paleocurrent directions and other relevant associated data from published sources and theses and dissertations for the entire Phanerozoic and Precambrian for all continents. Such information may be of general interest to sedimentologists and will be of specific interest in sedimentary basin analysis, and to petroleum geologists and mineralogists seeking source areas. Paleocurrents may also be useful in plate reconstructions and in testing the timing of global tectonic events.

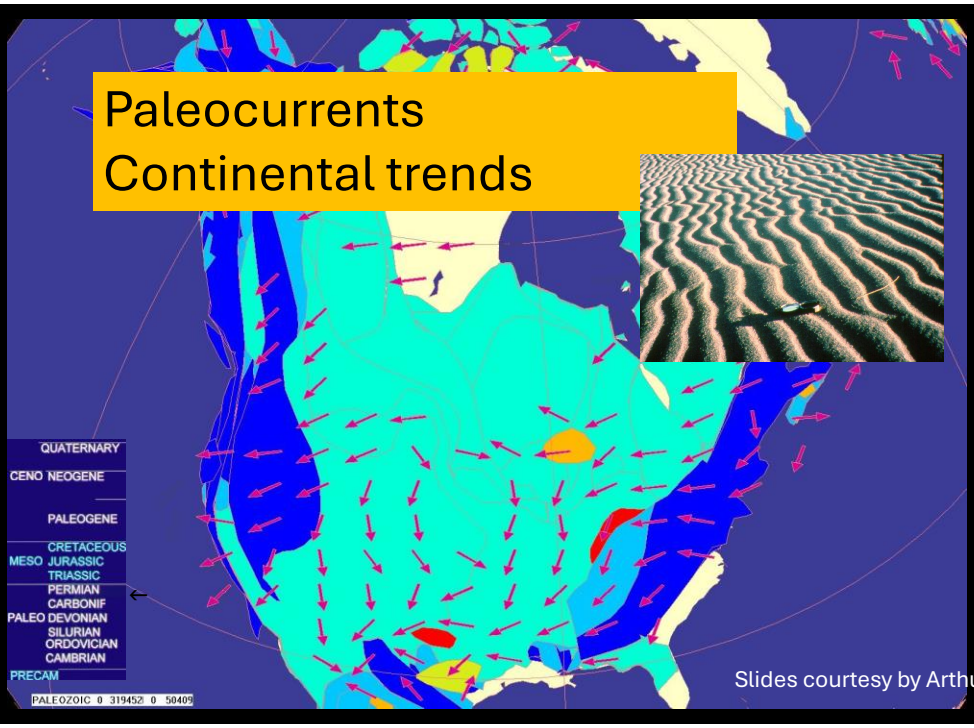
Brand, L. *et al*. Global database of paleocurrent trends through the Phanerozoic and Precambrian. *Sci. Data* 2:150025 doi: 10.1038/sdata.2015.25 (2015).

28



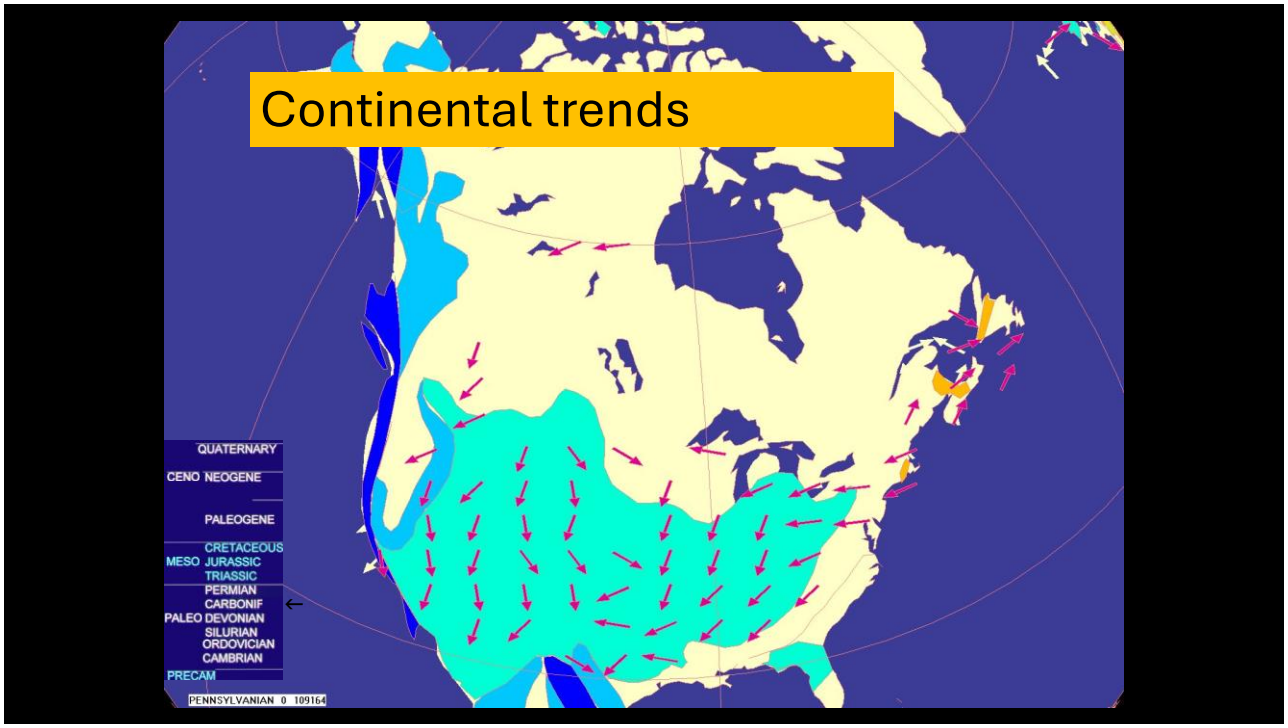
Location of paleocurrent data

29

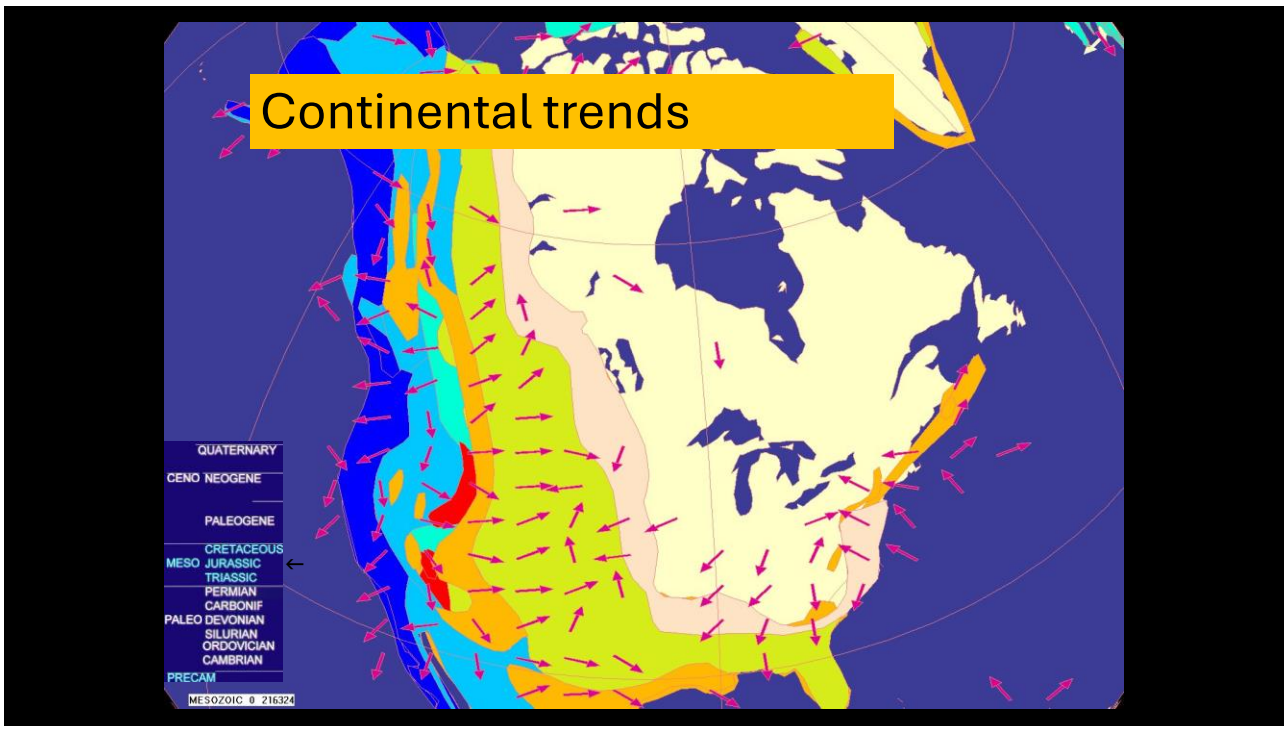


Slides courtesy by Arthur Chadwick

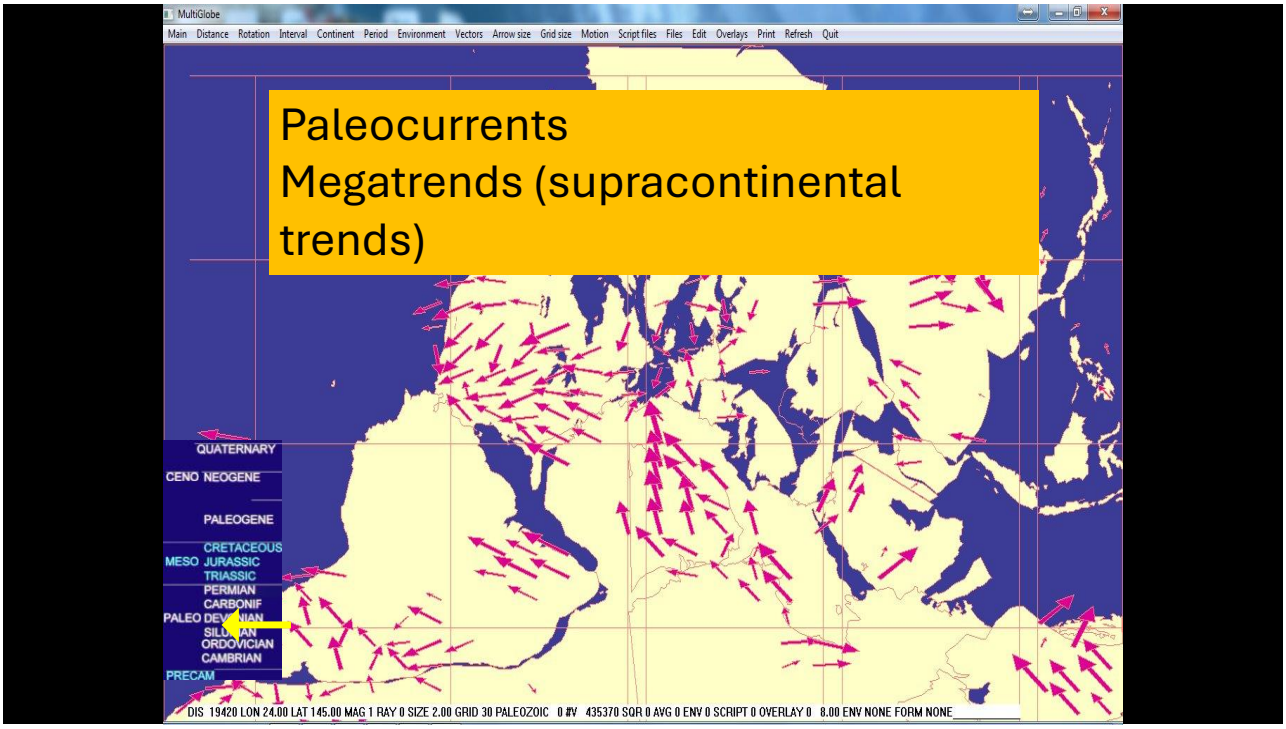
30


Continental trends
QUATERNARY
CENO NEOGENE
PALEOGENE
CRETACEOUS
MESO JURASSIC
TRIASSIC
PERMIAN
CARBONIF
PALEO DEVONIAN
SILURIAN
ORDOVICIAN
CAMBRIAN
PRECAM
PENNSYLVANIAN 0 109164

31


Continental trends
QUATERNARY
CENO NEOGENE
PALEOGENE
CRETACEOUS
MESO JURASSIC
TRIASSIC
PERMIAN
CARBONIF
PALEO DEVONIAN
SILURIAN
ORDOVICIAN
CAMBRIAN
PRECAM
MESOZOIC 0 216324

32



33

Conclusions - Paleocurrents

- Continent-wide paleocurrents are unexpected (anomalous) but recognized and probably could be accommodated in conventional models.
- Supracontinental (megatrends) are unexpected and unrecognized and probably cannot be accommodated in conventional models.
- A global catastrophic flood is consistent with the observations and worthy of further consideration.

35

Time in between lava flows and sedimentary formations

36

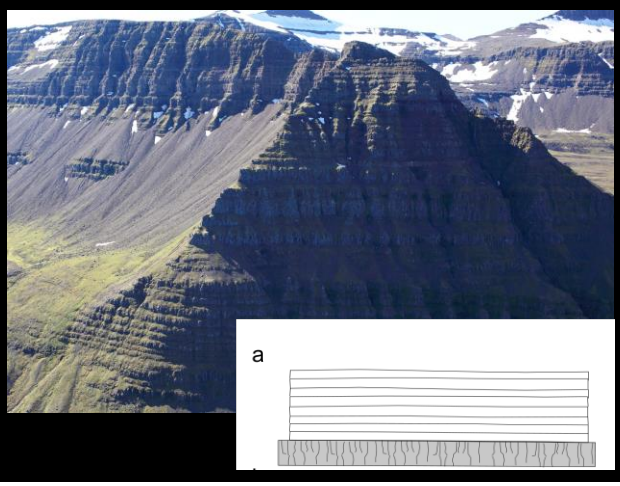
East Iceland - The lava piles lack evidence of prolonged time in beween flows

Lack features of modern environments e.g

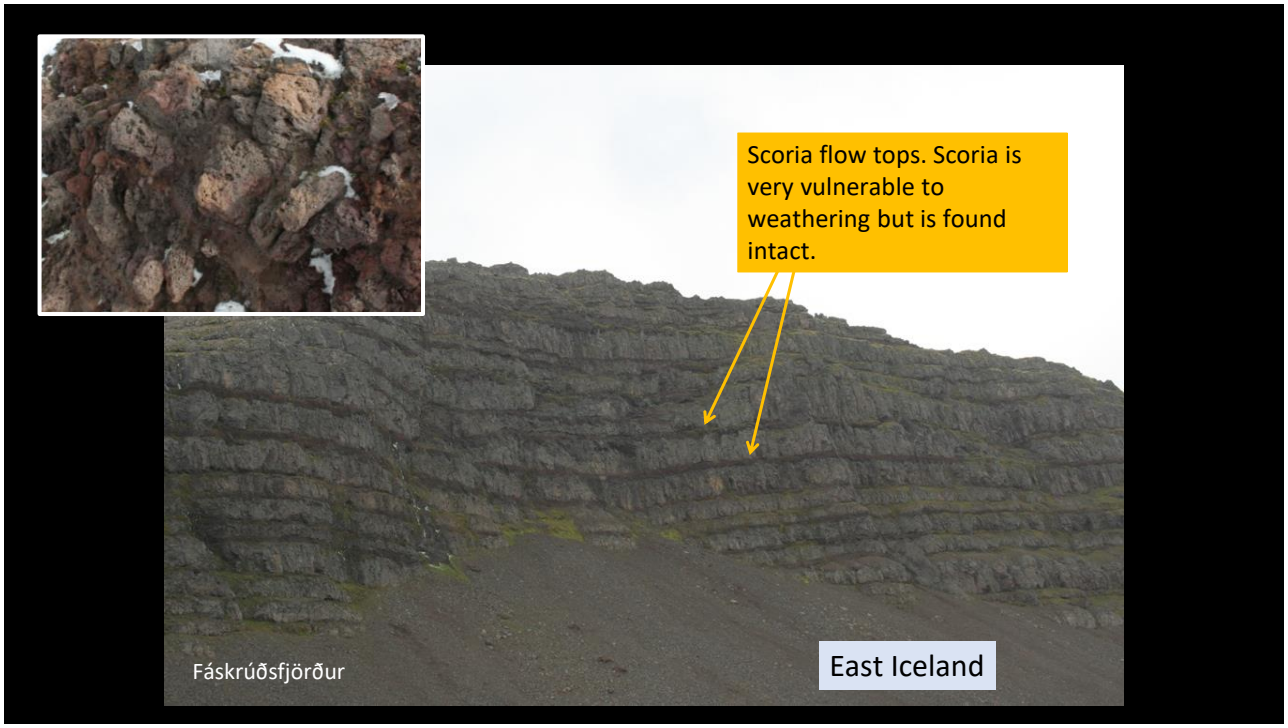
- erosion
- weathering into the lava – soil formation
- river sediments
- tree roots

Show evidence for rapid deposition:

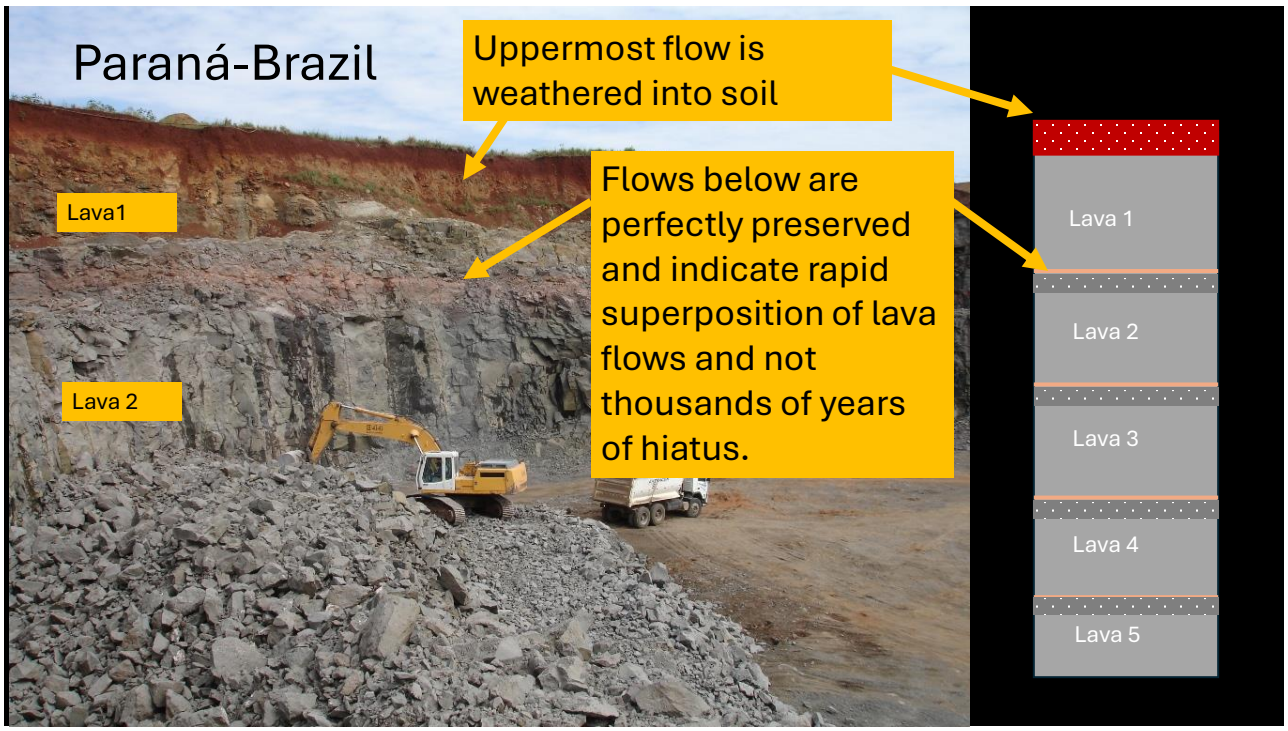
- Stacks of flows with same morphology
- Sediments are volcanic in between flows e.g. ash
- Plants remains are allochtonous (transported into place)



37


Scoria flow tops. Scoria is very vulnerable to weathering but is found intact.
Fáskrúðsfjörður
East Iceland

38


Paraná-Brazil
Uppermost flow is weathered into soil
Flows below are perfectly preserved and indicate rapid superposition of lava flows and not thousands of years of hiatus.
Lava1
Lava 2
Lava 1
Lava 2
Lava 3
Lava 4
Lava 5

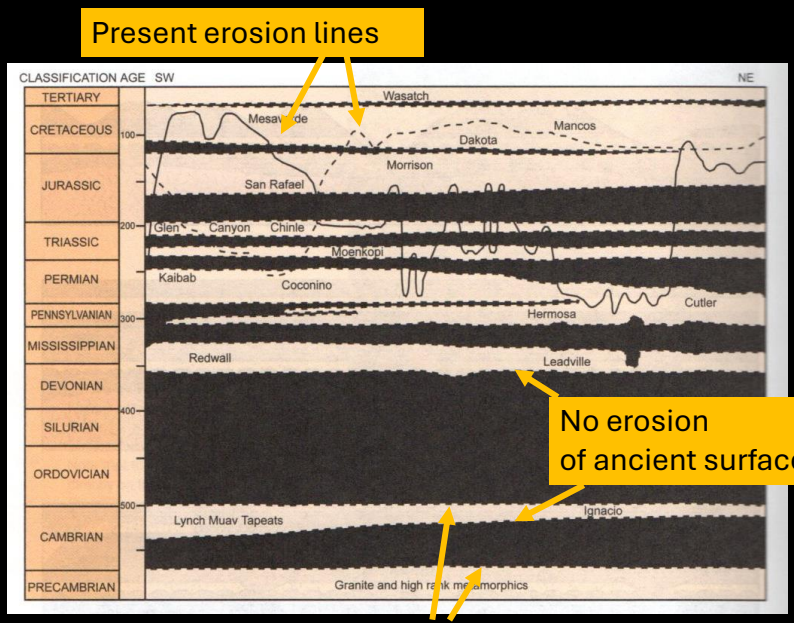
39

Evidence for lack of time in sedimentary formations - Paraconformities in the Grand Canyon

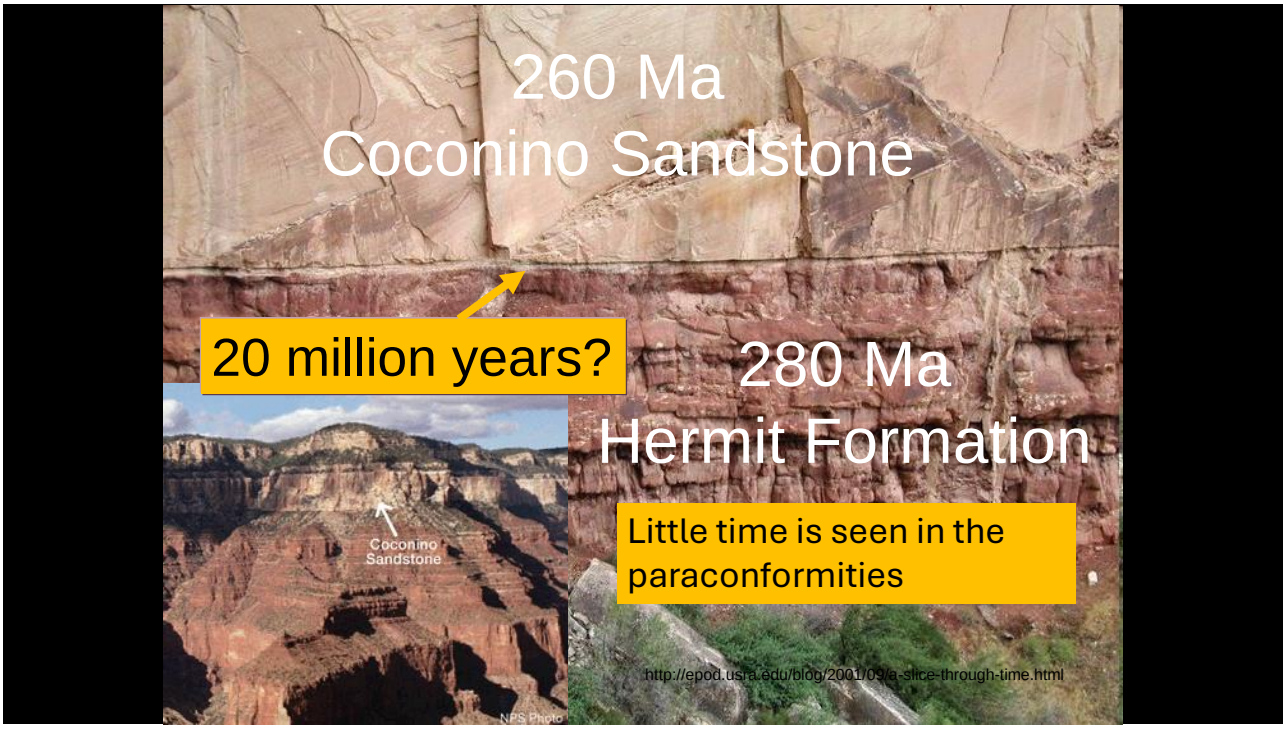
Credit: Leonard Brand

40

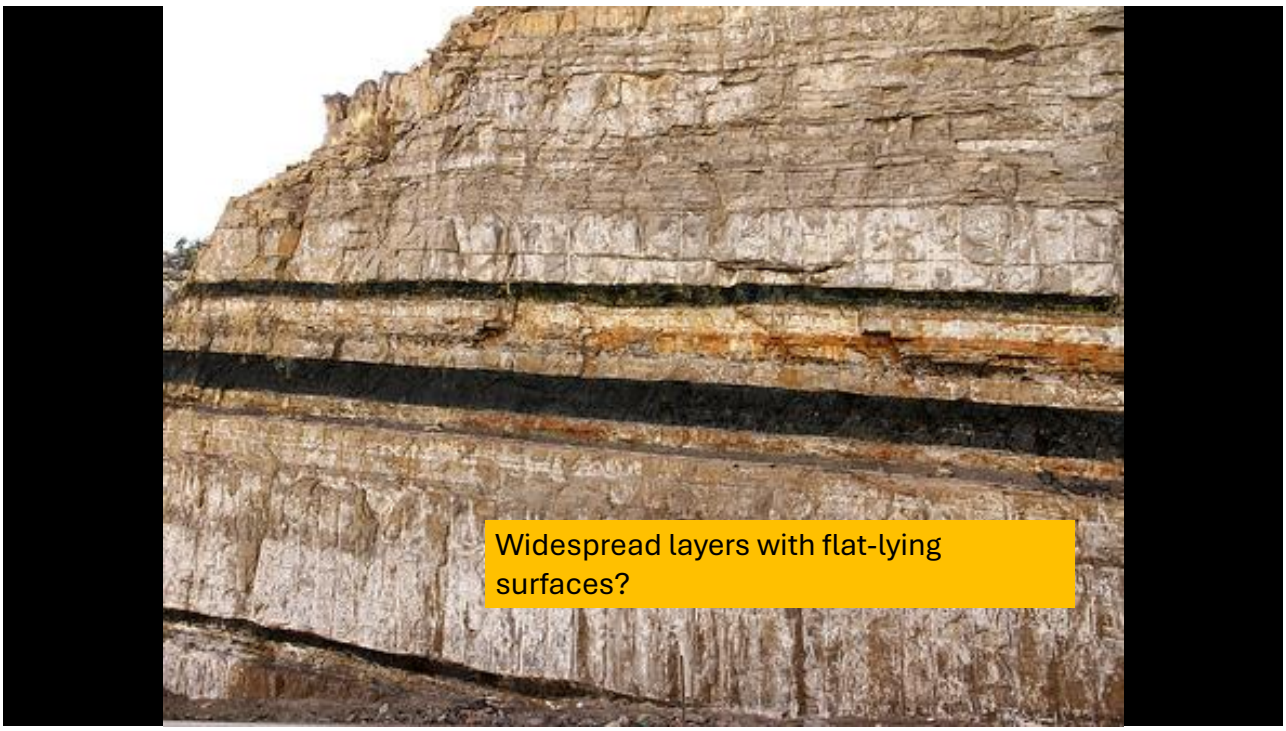
Sedimentary sequences in the Grand Canyon



41


260 Ma
Coconino Sandstone
20 million years?
280 Ma
Hermit Formation
Coconino Sandstone
NPS Photo
Little time is seen in the paraconformities
http://epod.usra.edu/blog/2001/09/a-slice-through-time.html

42

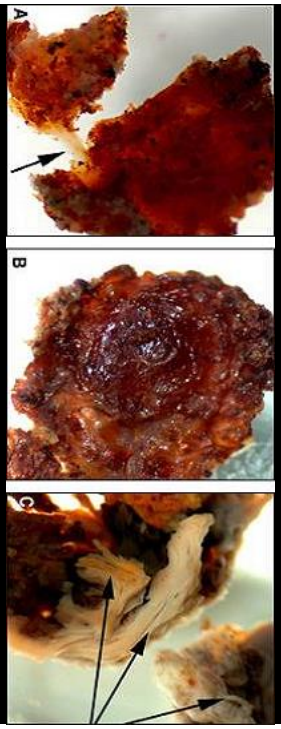

Widespread layers with flat-lying surfaces?

43

Other arguments that contradict radiometric ages - Soft tissues in fossils

Geologists claim that fossilization requires millions of years to occur. However, many fossils have been found with fully articulated skeletons, hair, scales, feathers, and soft fleshy parts such as skin, cartilage, unborn fetuses and stomachs containing the animals' last meal.

Figures: From the marrow cavity of a fossilized Tyrannosaurus Rex thighbone, scientists have extracted soft tissue. The flexible tissue can be stretched (see arrow) and returns to its original form. (See references Schweitzer et al.)



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Fossil Analyses with Verified Original Soft Tissues

	Publication Date	Brief Description	Evolutionary Age	Publication
		Articles Published in Peer-Reviewed Journals		
1	5/30/1977	Catfish fatty fin in Green River	50MY	H. P. Buchheim and R. C. Surdam, *Geology*, 5: 198.
2	6/14/1992	Osteocalcin in a seismosaur bone	150MY	Muyzer, G. et al, *Geology*, 20: 871-874.
3	9/25/1992	DNA in amber	30MY	Morell, V. et al, *Science*, 257: 1860.
4	6/16/1994	Unaltered amino acids in amber insects	130 MY	Bada, J. L. et al, *Geochemica et Cosmochemica Acta*, 58 (14): 3131-3135.
5	6/16/1994	Dinosaur DNA from hadrosaur bone	65MY	Woodward, S. R., N. J. Weyand and M. Bunnell, *Science*, 266 (5188): 1229-1232.
6	5/19/1995	Live bacteria spores from amber	25-40MY	Cano, R. J. and M. K. Borucki, *Science*, 268 (5213): 1060 - 1064.
7	6/10/1997	Hemoglobin fragments in *T. rex* bone	67MY	Schweitzer, M. et al, *PNAS*, 94 (12): 6291-6296.
8	6/2/1999	Live bacteria from halite deposit	250MY	Vreeland, R. H. et al, American Society for Microbiology, 99th General Meeting, June 2, 1999, Chicago.
9	6/21/1999	Live bacteria from separate rock salts	250MY	Stan-Lotter, H. et al, *Microbiology*, 145 (12): 3565-3574.
10	6/21/1999	Ichthyosaur skin	190MY	Linghan-Soliar, T. et al, *Proc. Royal Soc. B*, 266 (1436): 2367-2373.
11	6/21/1999	Keratin in Madagascar Cretaceous bird	65MY	Schweitzer, M. H. et al, *J. Vert. Paleo*, 19 (4): 712-722 .
12	9/1/2001	*T. rex* collagen SEM scans	65MY	Armitage, M., *Creation Research Society Quarterly*, 38 (2): 61-66.
13	6/26/2004	Live (non-spore) bacteria in amber	120MY	Greenblatt, C. L. et al, *Microbial Ecology*, 48 (1): 120-127.
14	3/24/2005	*T. rex* soft tissue	68MY	Schweitzer, M. et al, *Science*, 307: 1952-1955.
15	7/25/2006	Soft frog, intact	10MY	McNamara, M. et al, *Geology*, 34: 641-644.
16	6/30/2007	*T. rex* collagen	68MY	Scweitzer, M. et al, *Science*, 316: 277-280
17	8/1/2007	Bloody frog bone marrow	10MY	McNamara, M.E. et al, *Geology*, 34 (8): 641-644.
18	4/7/2008	*Psittacosaurus* skin	125MY	Linghan-Soliar, T. et al, *Proc. Royal Soc. B*, 275: 775-780.
19	7/8/2008	Feather melanocytes	100MY	Vinther, J. et al, *Biology Letters*, 4: 522-525.
20	4/30/2009	Hadrosaur blood vessels	80MY	Schweitzer, M. et al, *Science*, 324 (5927): 626-631.
21	8/26/2009	Purple Messel feather nanostructure	40MY	Vinther, J. et al, *Biology Letters*, 6 (1): 128-131.
22	5/19/2009	Primate "Ida" soft body outline	40MY	Franzen, J. L. et al, *PLoS ONE*, 4 (5): e5723.
23	7/1/2009	Hadrosaur skin cell structures	66MY	Manning, P. et al, *Proc. Royal Soc. B*, 276: 3429-3437.
24	10/2/2009	Fungal chitin ubiquitous in Permo-triassic	250MY	Jin, Y. G. et al, *Science*, 289 (5478): 432-436.
25	8/18/2009	Squid ink	150MY	Whilby, P. R. et al, *Geology Today*, 24 (3): 95-98.
26	11/5/2009	Salamander muscle, whole	18MY	McNamara, M. et al, *Proc. Royal Soc. B*, 277 (1680): 423-427.

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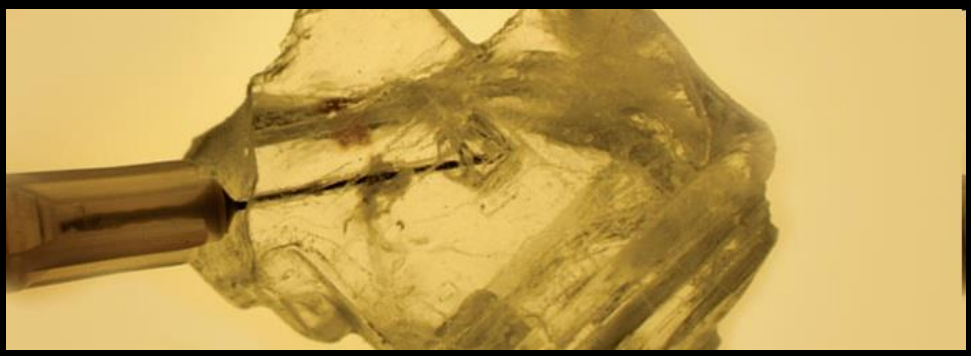
Intact DNA in ancient salt deposits



- DNA—has a short half-life time of ~500 years
- The salt deposits are assigned ages hundreds of millions of years old.

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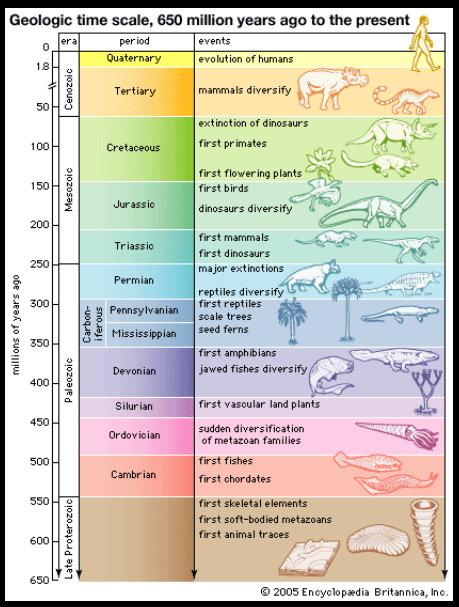
The fossil record



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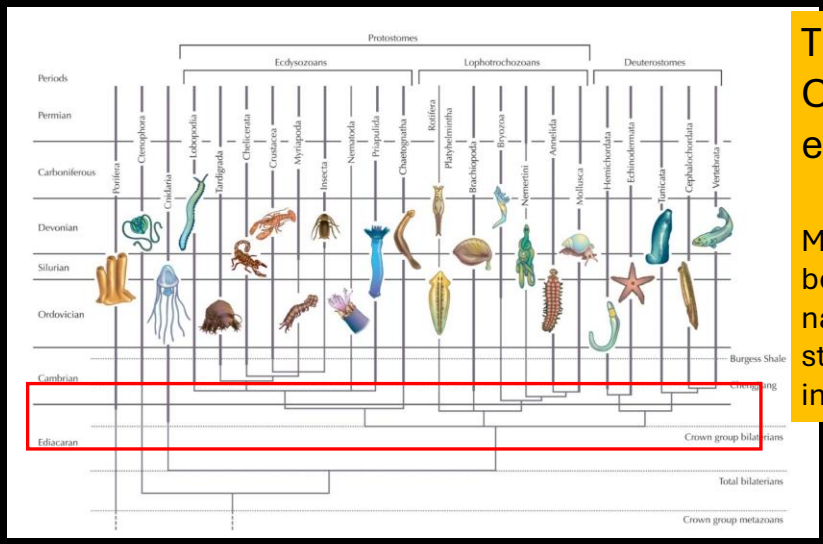
STRATIGRAPHIC DISTRIBUTION OF FOSSILS

- Coordinated appearance (radiation)



From Barton et al., 2007, Evolution, Cold Spring Harbor Laboratory Press

The Cambiran explosion

Most phyla and body plans in narrow stratigraphic interval.

Slides courtesy by Ronny Nalin

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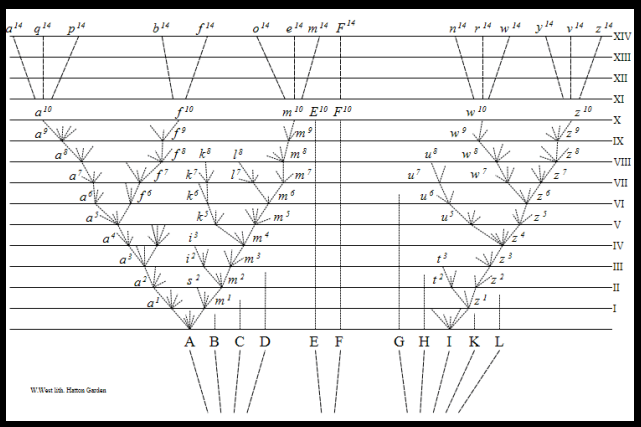
Radiations and appearance of new body plans



From Darwin, C. R., 1859

Evolutionary model:
Differences between organisms emerge with time.
Higher taxonomic categories should appear gradually and progressively as diversification proceeds.

Slides courtesy by Ronny Nalin

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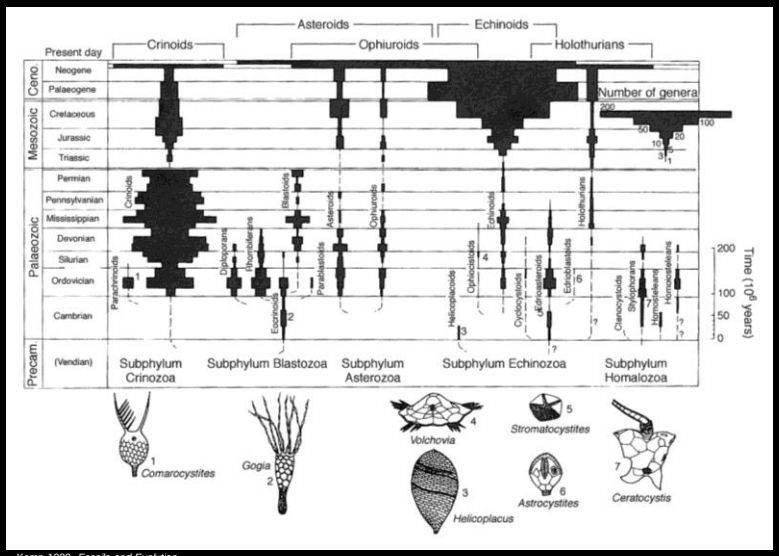
Abrupt appearance not just at the level of phyla

Echinoderm phylogeny

Sea urchin, http://www.arkive.org/sad souvenirs.html

Slides courtesy by Ronny Nalin



Kemp 1999, *Fossils and Evolution*

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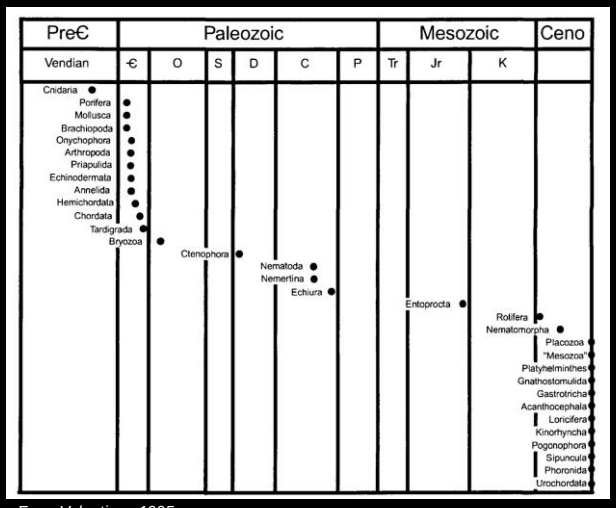
Appearance of new body plans



From Valentine , 1995

Peak of fossil appearance for animal body plans is quite low and sudden in the geologic record and does not gradually increase with time

Bimodal distribution is most likely preservation artifact (soft and small). Most likely, all phyla appeared by the end of the Cambrian

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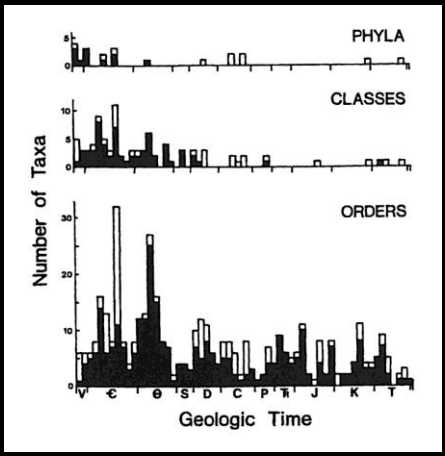
Appearance of new body plans



From Erwin et al., 1987

Same early peak of fossil appearance for animal body plans is seen at the class and order level

"This record runs counter to what might be expected during the origin of phyla, which would be the divergences of two lineages form common ancestors, at first at the species level only. Then as time passed their differences would become more pronounced, the two lineages becoming as distinctive as average genera, and then as average families, then as orders, and so forth." J.W. Valentine, 2004, On the Origin of Phyla, p. 444.

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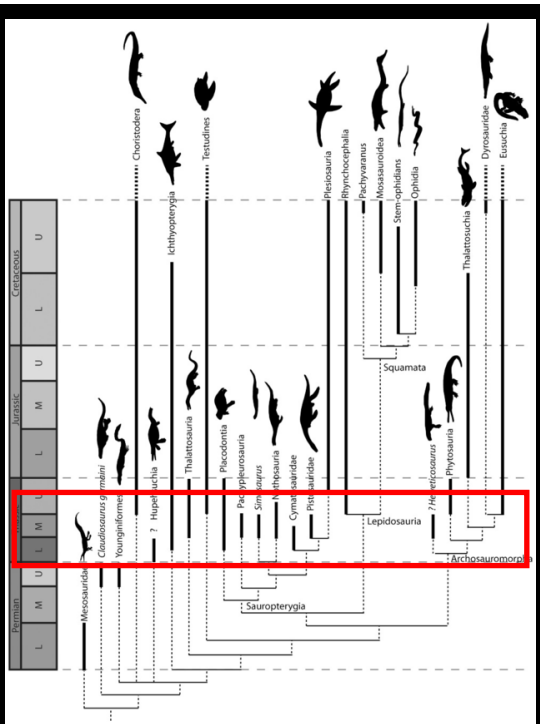
Radiations and abrupt appearance

Numerous orders of marine reptiles (Triassic)



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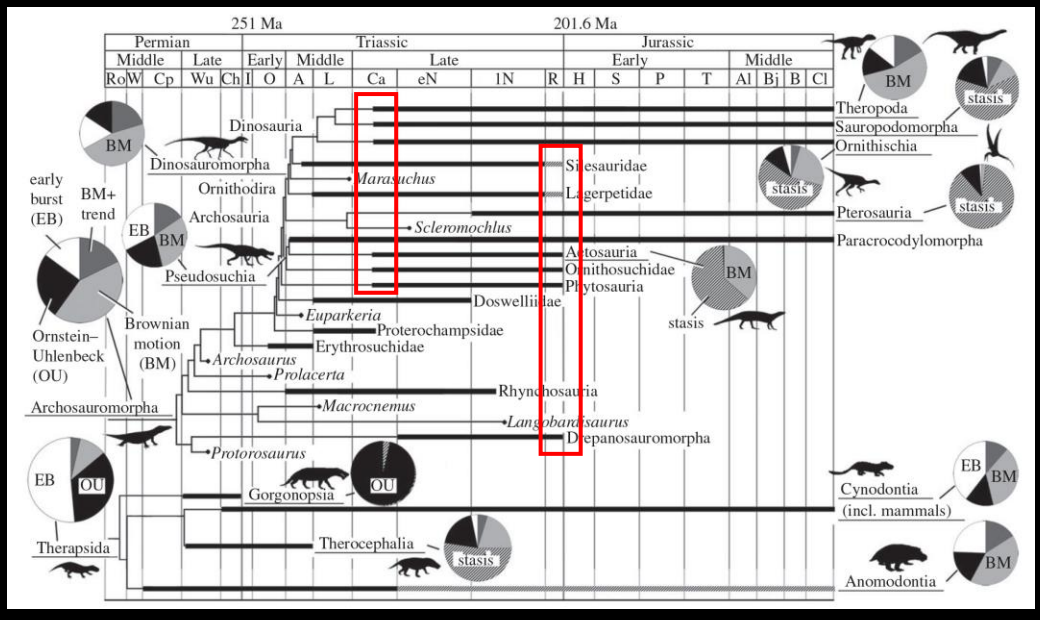
Mesozoic: age of reptiles



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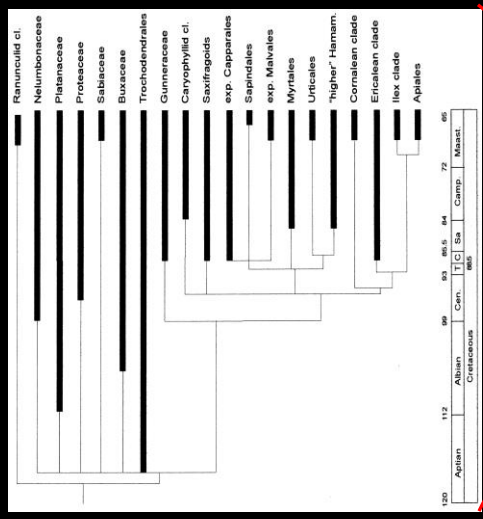
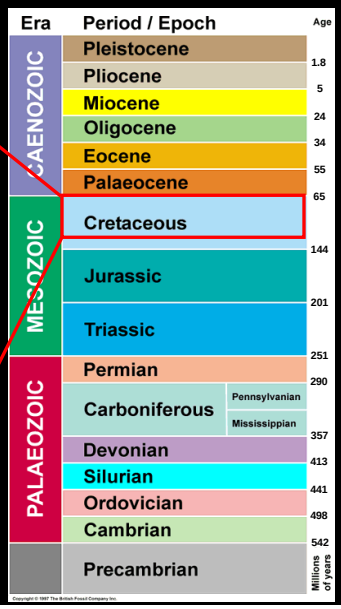
Cretaceous radiation of Angiosperms



D. Dilcher 2000, *PNAS* 97, 7030-7036



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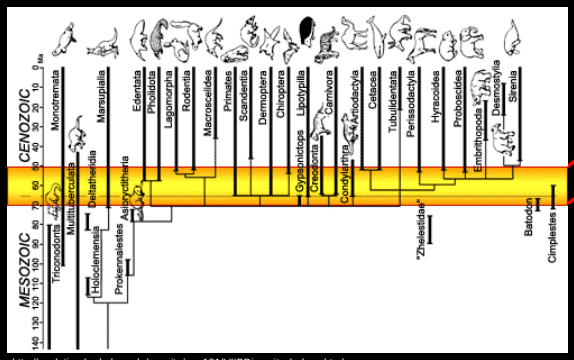
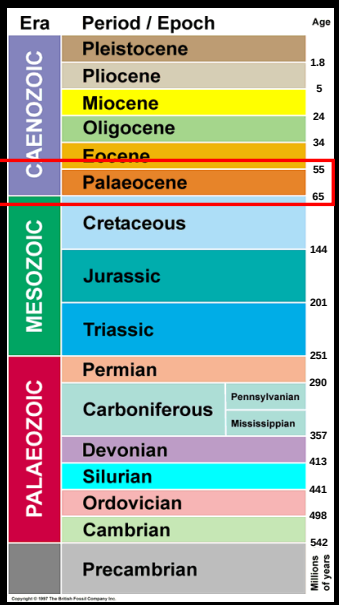
Lower Cenozoic radiation of mammals



http://evolution.berkeley.edu/evosite/evo101/VIIBDiversityclades.shtml

Cambrian "explosion"



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Summary

The current conventional view

Slow and gradual deposition/
Gradual evolution of biota

Deep time

Where science is heading

Large-scale catastrophic deposition/
Abrupt appearance of biota

Much shorter timeframe

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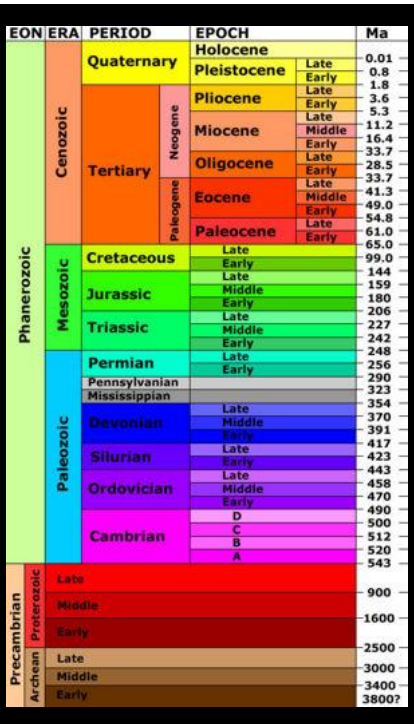
The geologic column in a model if life is recent



PRESENT PROCESSES
NOT SO RAPID PROCESSES
(post-flood)

LARGE-SCALE, RAPID PROCESSES
(Nohas flood)

LIFE Created
(Creation rocks, pre-creation rocks?)

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Conclusions - The Big Picture

- Many of these catastrophic events presented are interpreted by creationists to be correlated and interconnected.
- The time derived from radiometric dating systems, is not seen in the geologic record.
- The fossil record does not show slow and gradual development of life, but abrupt appearances and rapid diversification.
- A world-wide catastrophic event is a good candidate for explaining these geological formations.
- The geologic data correlates well with Scripture which describes a World-wide Flood.

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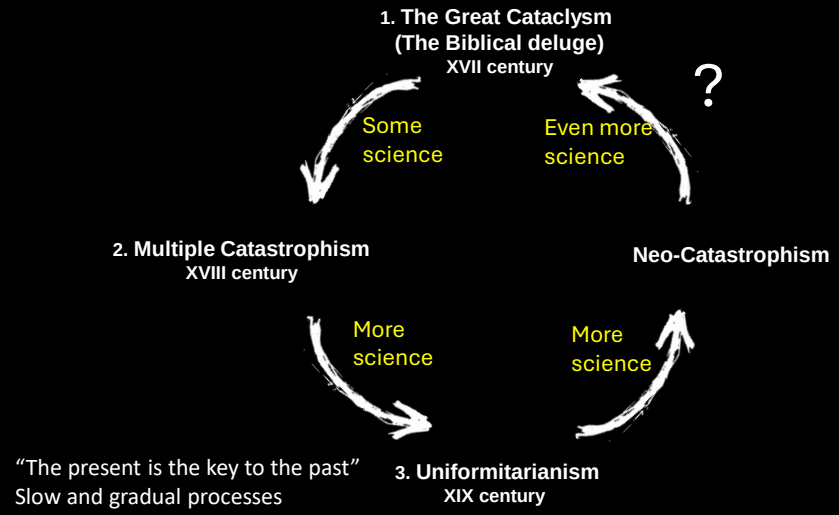
Where is science heading?

Catastrophism X Uniformitarianism



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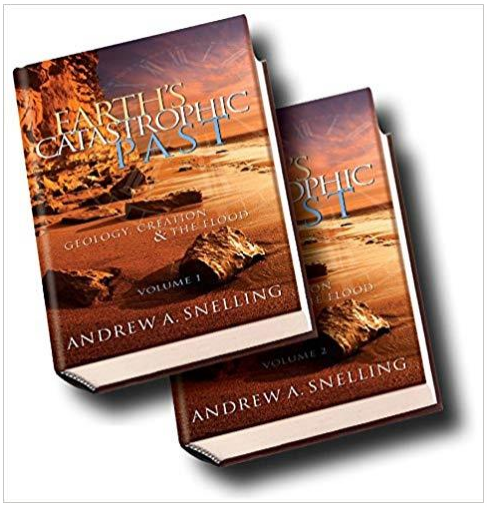
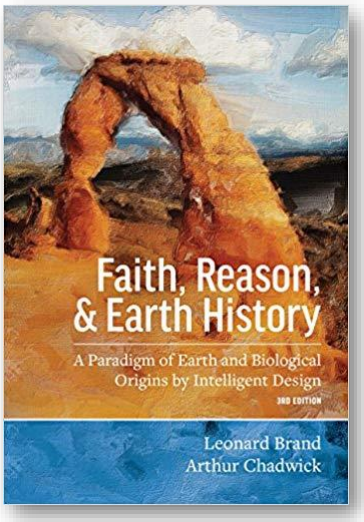
Book recommendations





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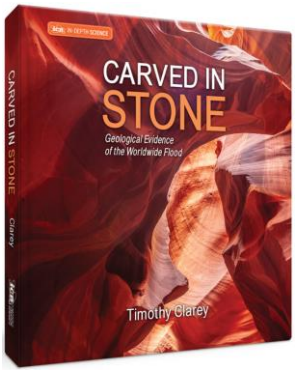
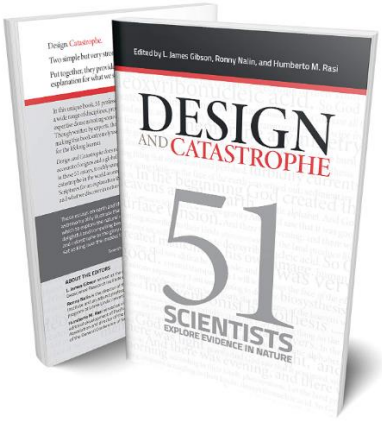
Book recommendations





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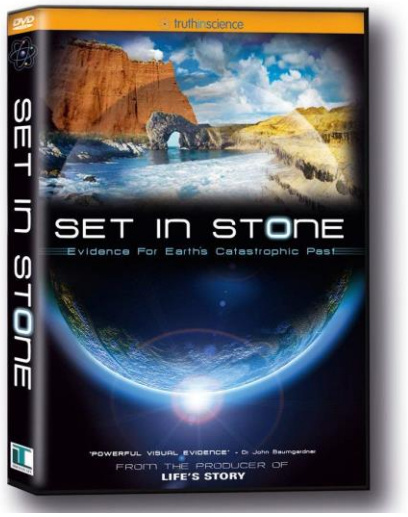
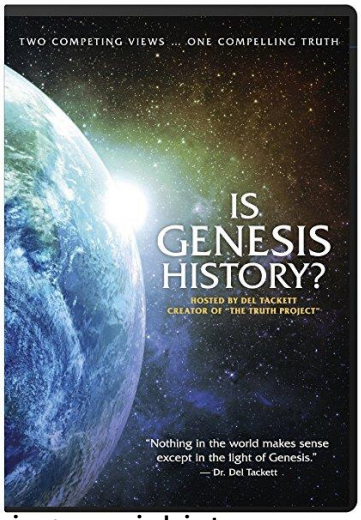
Movies





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