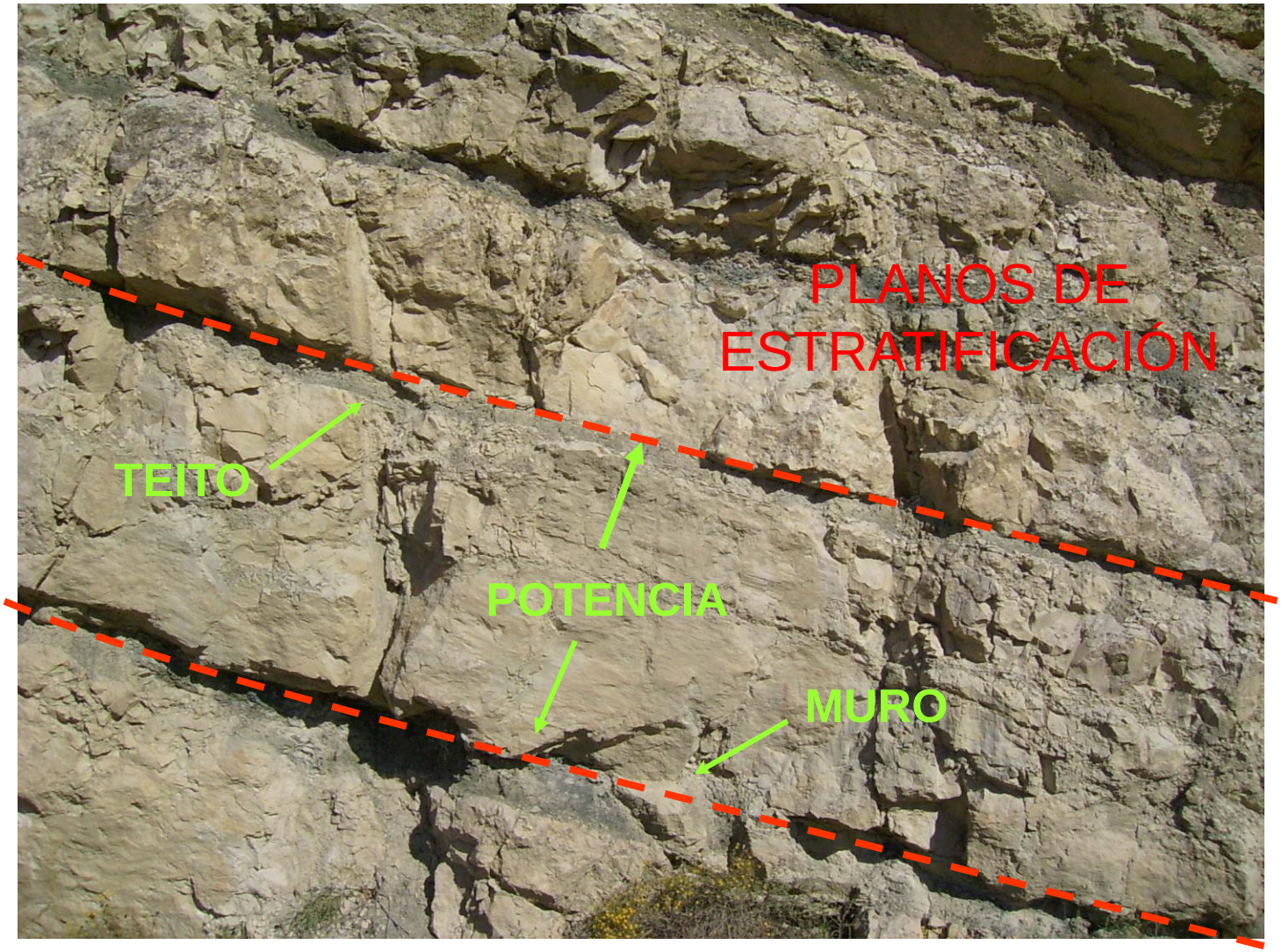
A estatigrafía

Disposición en capas que presentan as rochas sedimentarias

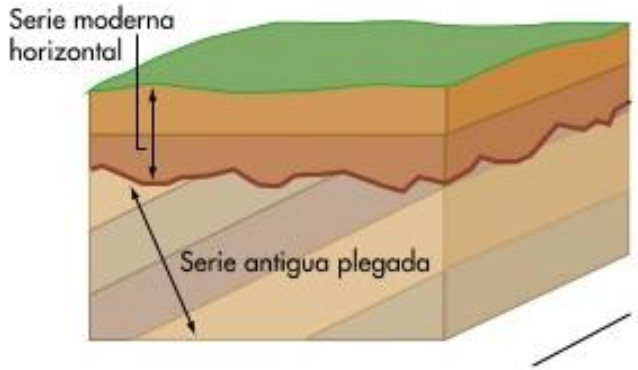
ESTRATIFICACIÓN



Secuencias e series estratigráficas

<u>Secuencia estratigráfica</u>:
Sucesión de dous ou máis estratos de distinta litoloxía, separados unicamente polos planos de estratificación.

<u>Serie estratigráfica</u>:
Sucesión de varias secuencias estratigráficas separadas entre sí por descontinuidades. A súa representación gráfica denomínase **columna estratigráfica**.

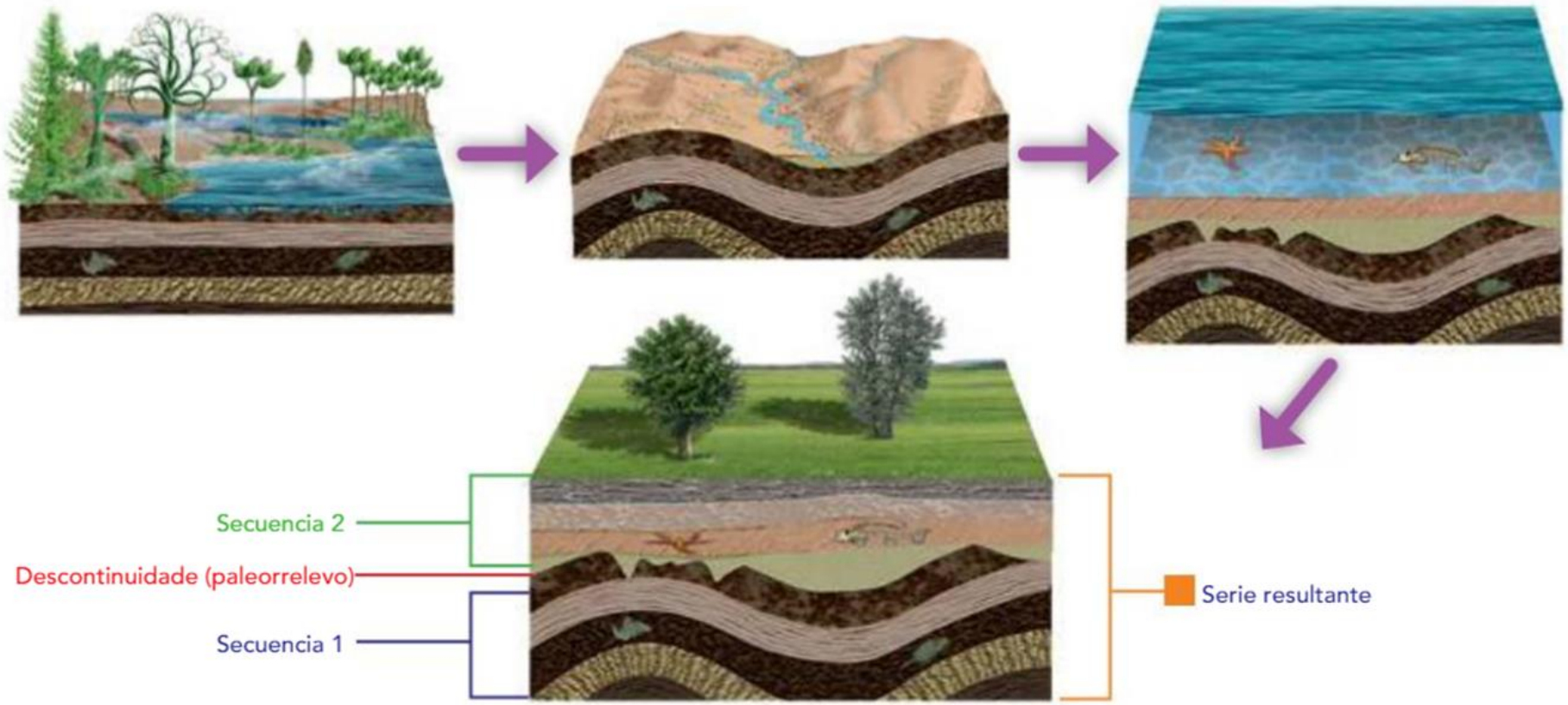


En detalle: orixe dunha serie estratigráfica con dúas secuencias

1 Depósito dunha secuencia de estratos nun ambiente pantanoso.

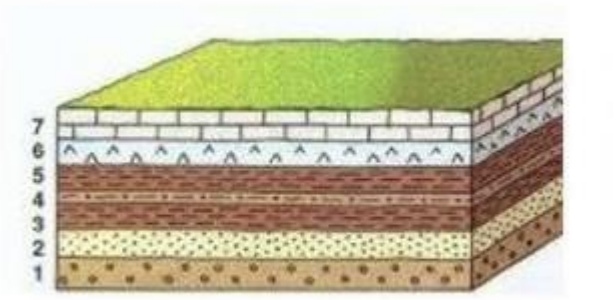
Dobramento e erosión das rochas formadas. Fórmase un paleorrelevo.

2 Depósito dunha secuencia nova sobre o paleorrelevo anterior.

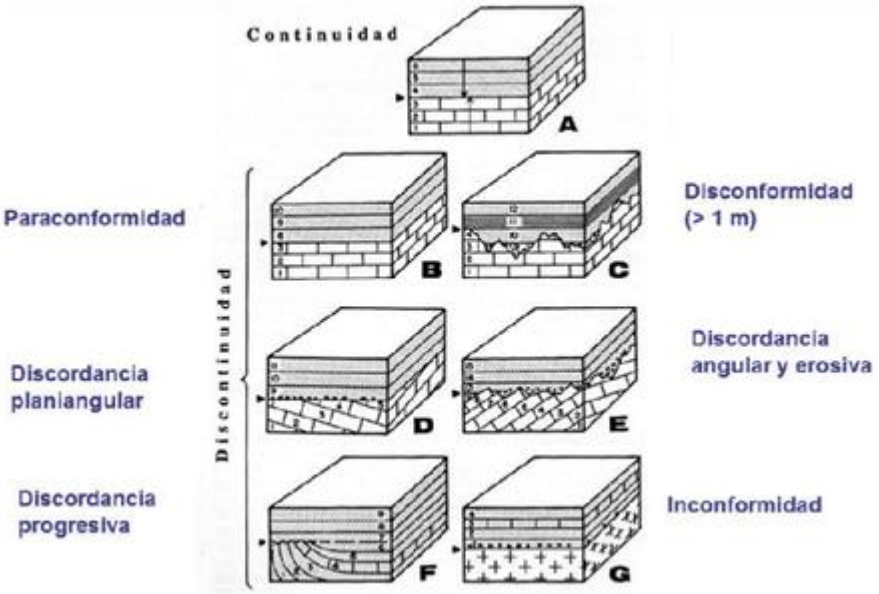


Os estratos dunha serie poden ser:

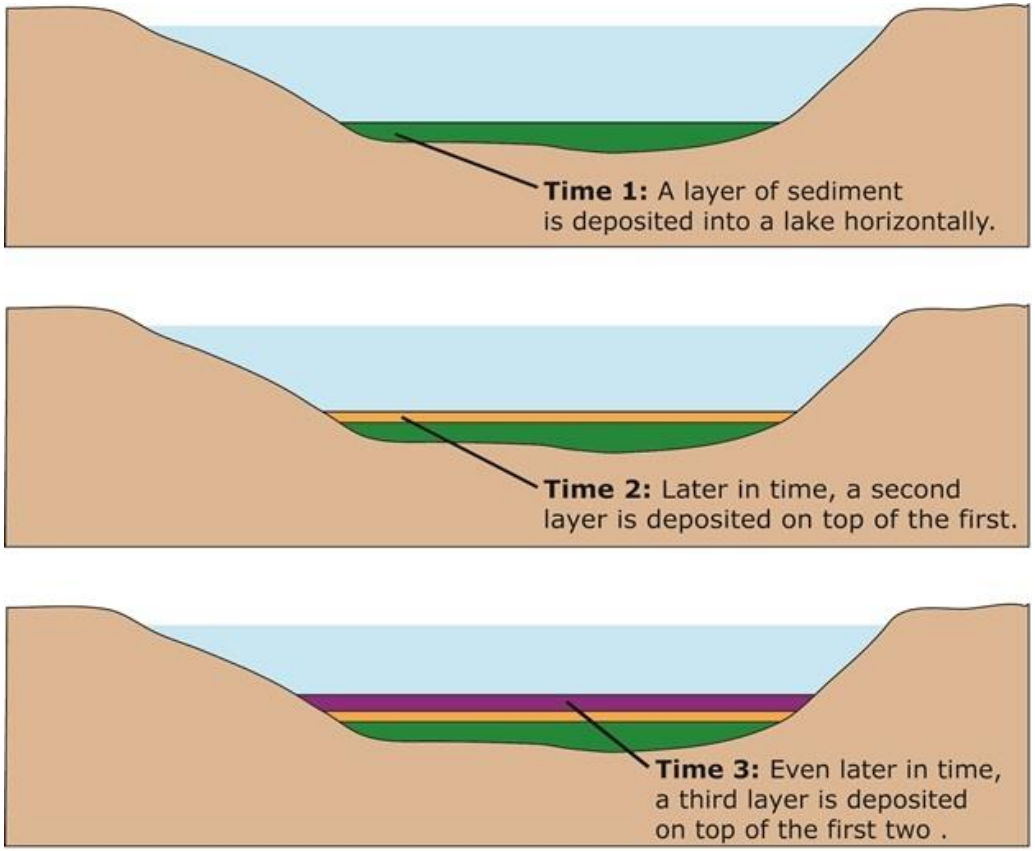
- Concordantes: estratos depositados sen interrupción

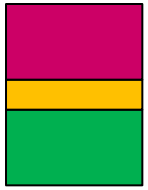


- Discordantes: estratos con interrupcións na sedimentación (descontinuidades estatrigráficas)



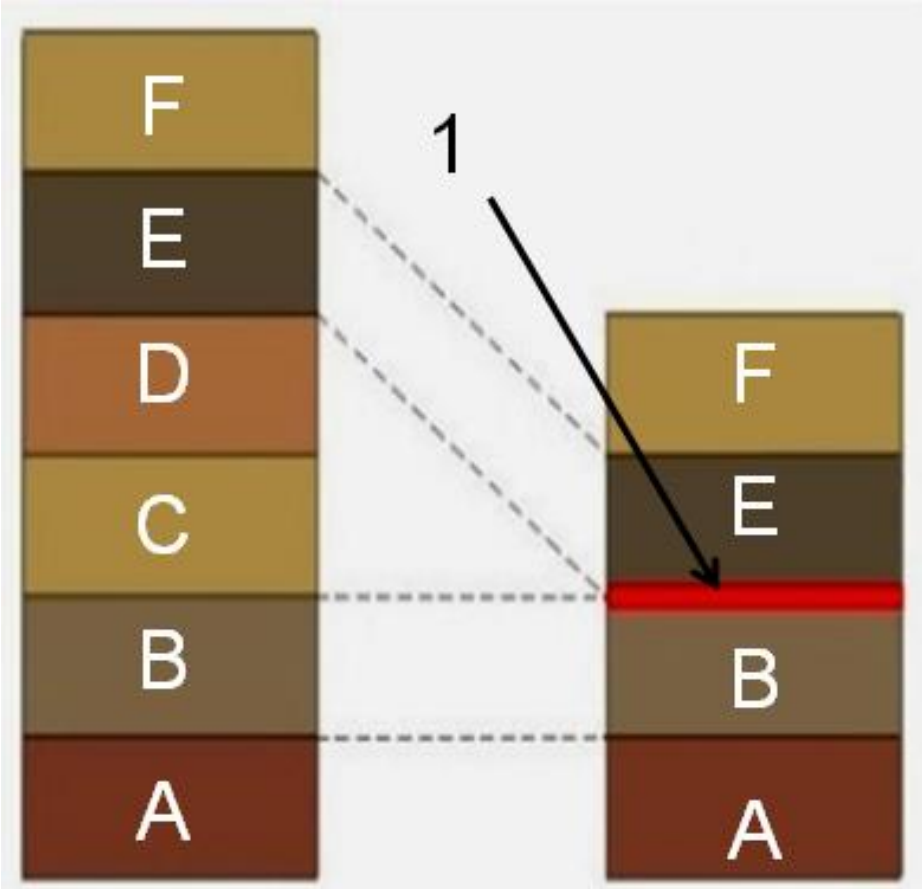
ESTRATOS CONCORDANTES





CONTACTO CONCORDANTE

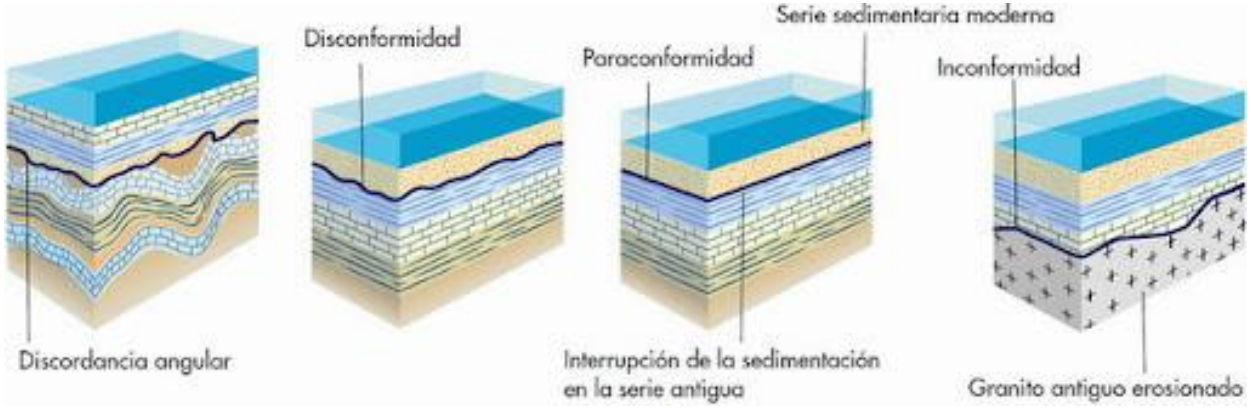
DISCORDANCIA



LAGOA ESTRATIGRÁFICA: ESTRATOS C, D

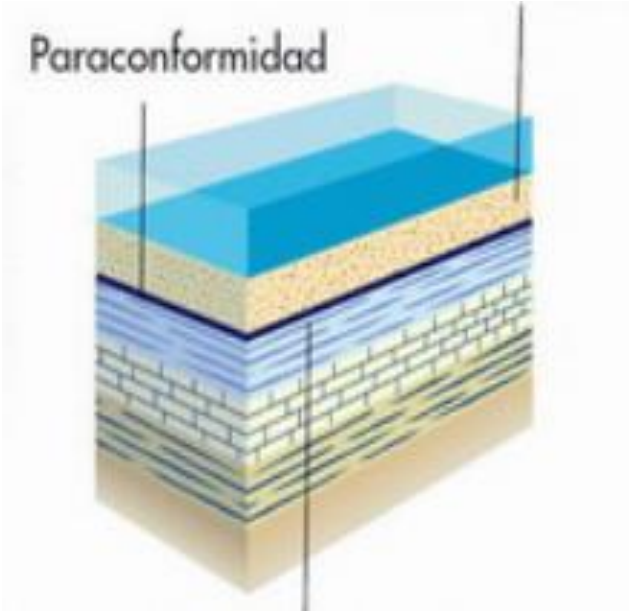
TIPOS DE DISCORDANCIAS

- PARACONFORMIDADE
- DISCONFORMIDADE
- DISCORDANCIA ANGULAR
- INCONFORMIDADE

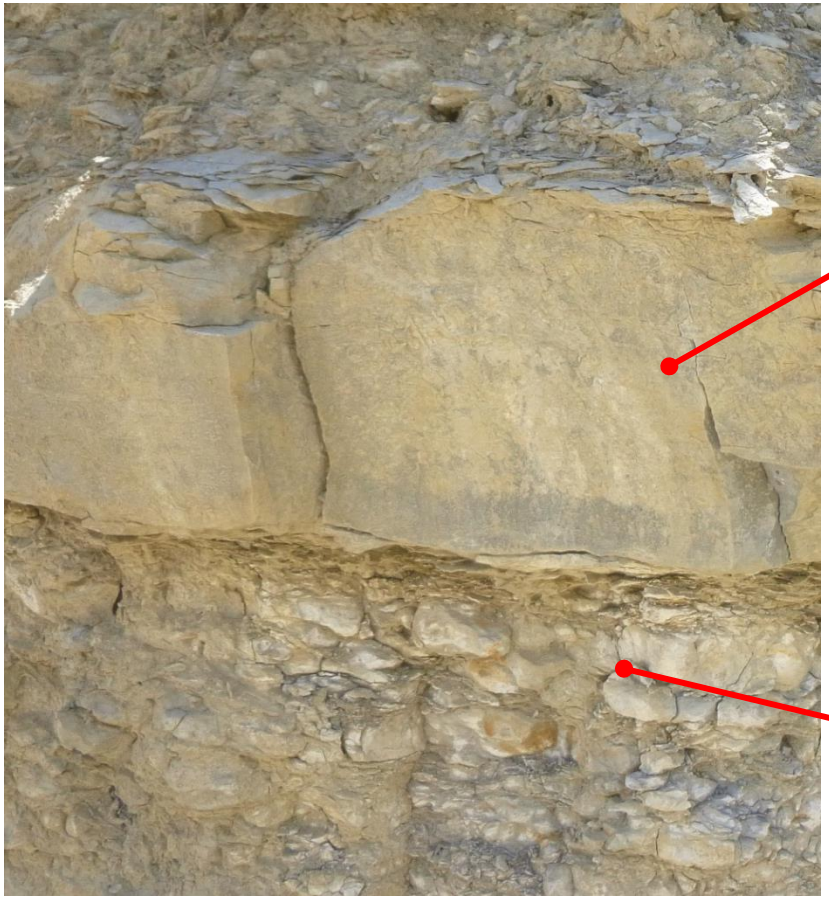


Tipos de descontinuidades

Paraconformidade: interrupción da sedimentación sen que a primeira secuencia se erosione nin se dobre. Mantense o paralelismo entre os estratos inferiores e superiores.

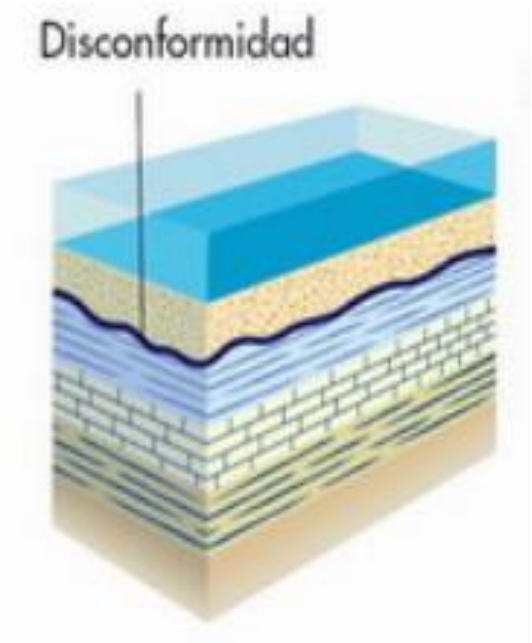


PARACONFORMIDADE

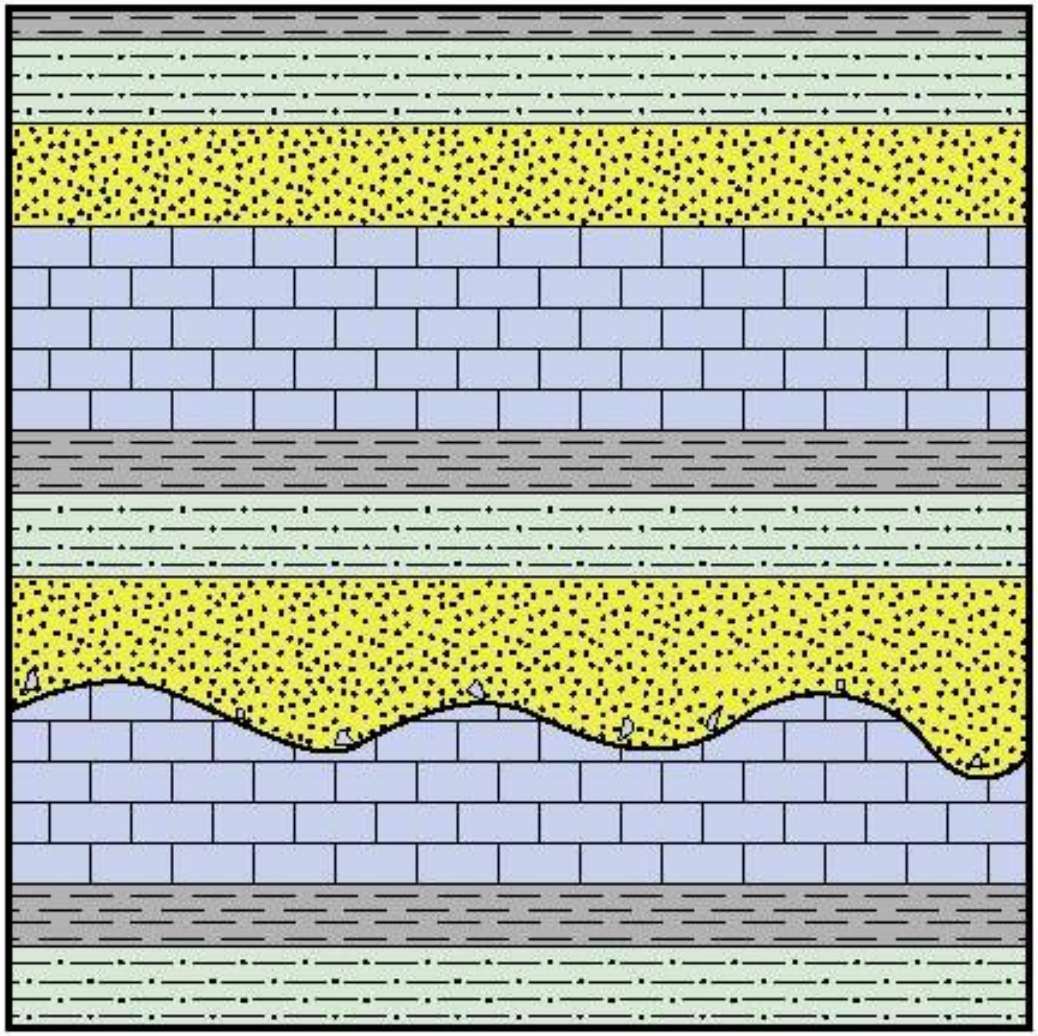


Tipos de descontinuidades

Desconformidade: Interrupción da sedimentación na conca e proceso erosivo que afecta a secuencia antiga, sen producirse dobramento. Os estratos antigos e novos manteñen o paralelismo.



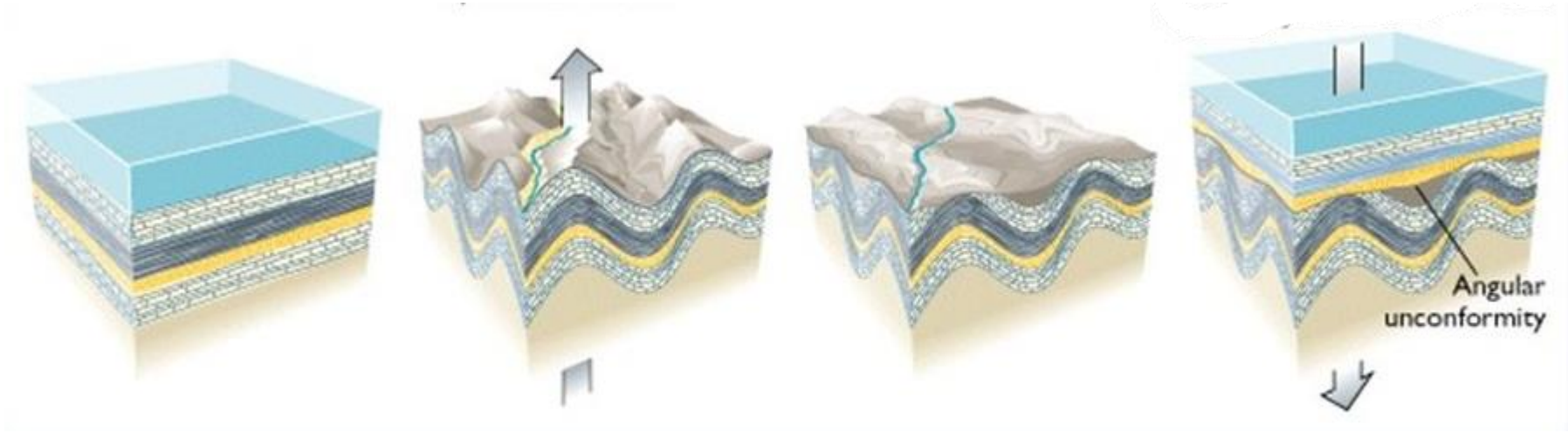
DISCONFORMIDADE



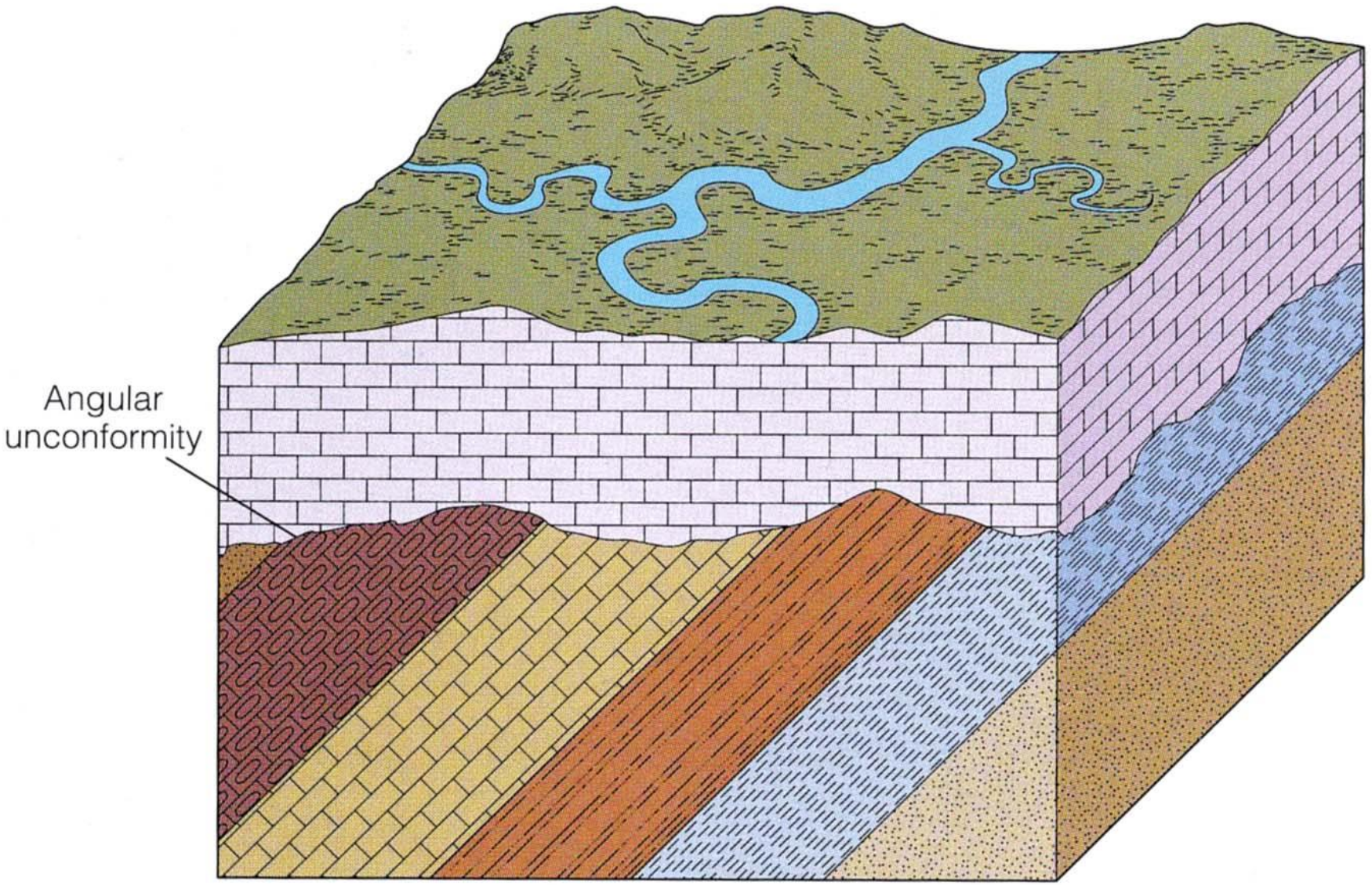
SUPERFICIE DE EROSIÓN

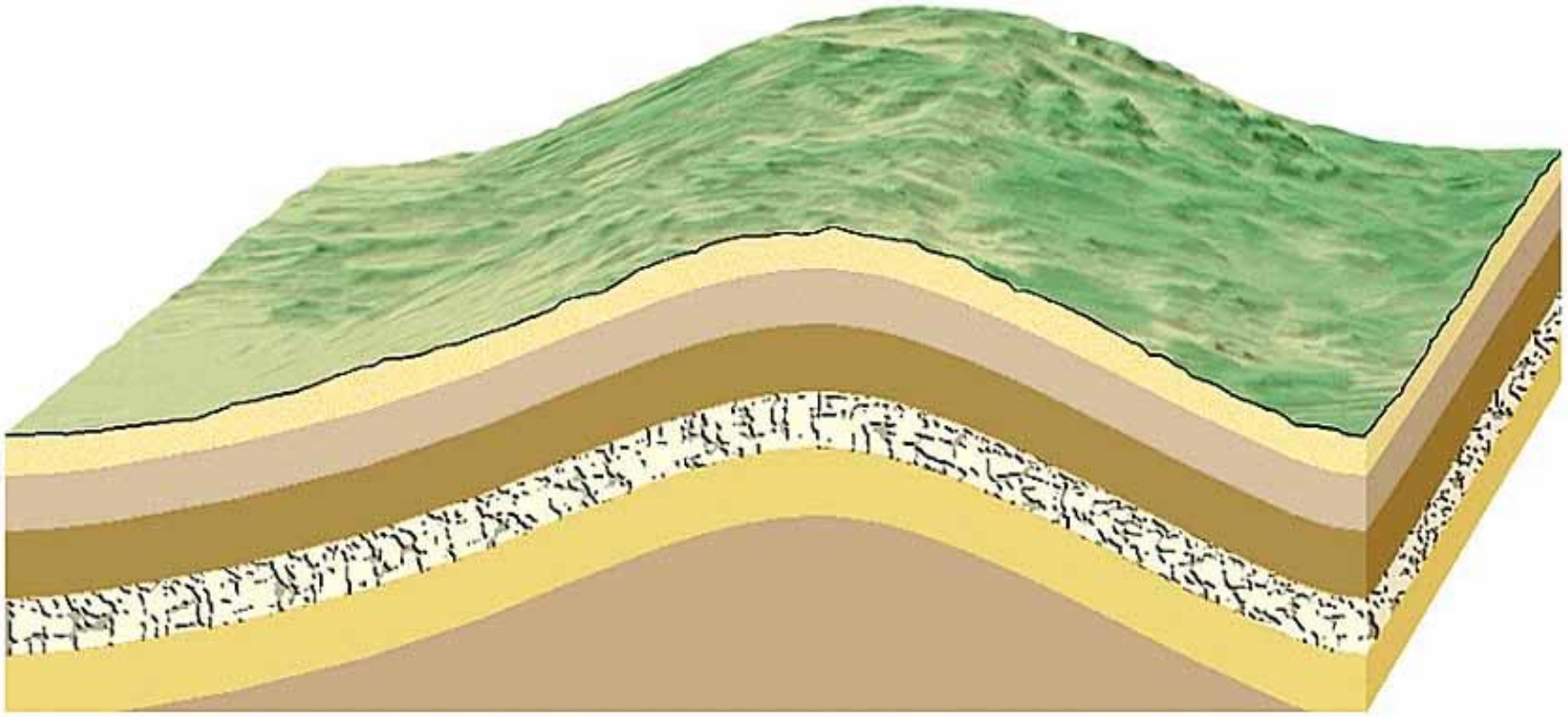
Tipos de descontinuidades

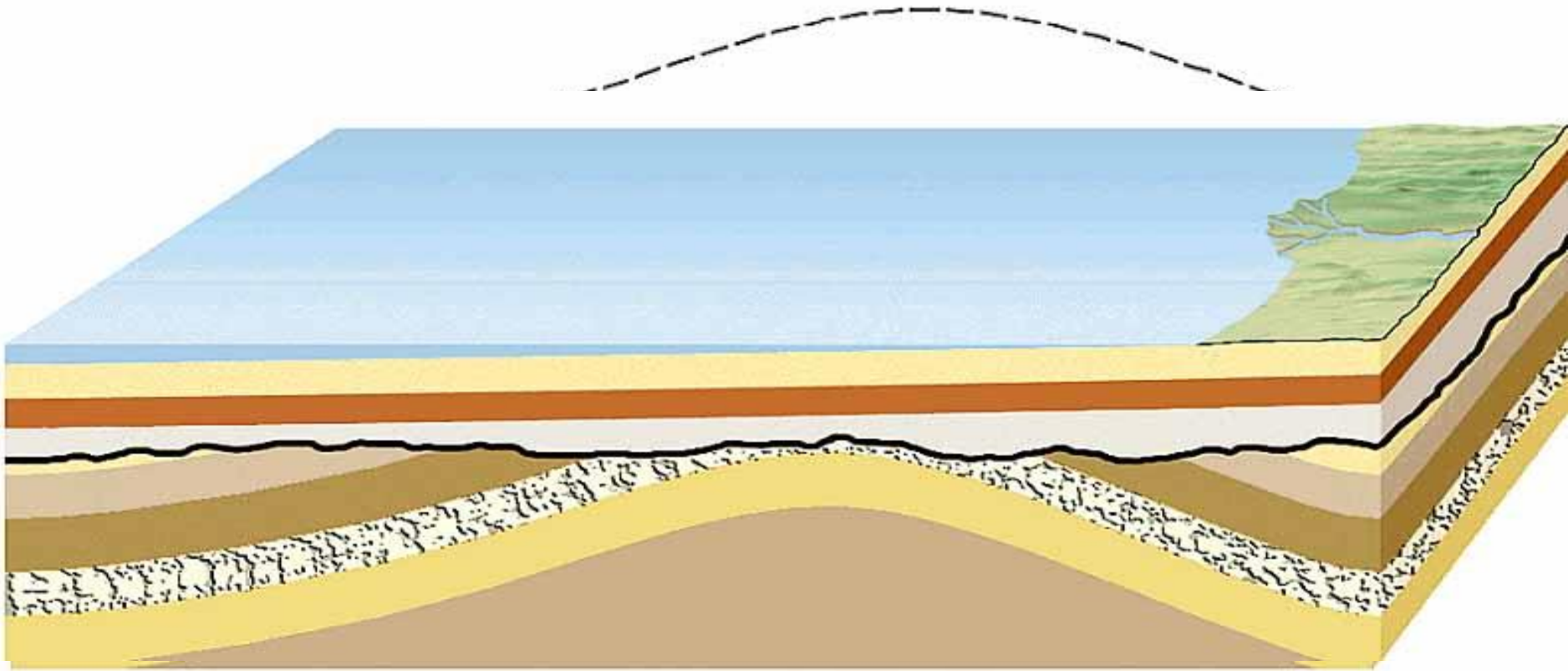
Discordancia angular: a secuencia máis antiga se dobra e se erosiona antes de que se deposite a seguinte. Os estratos das secuencias superior e inferior non son paralelos.



DISCORDANCIA ANGULAR

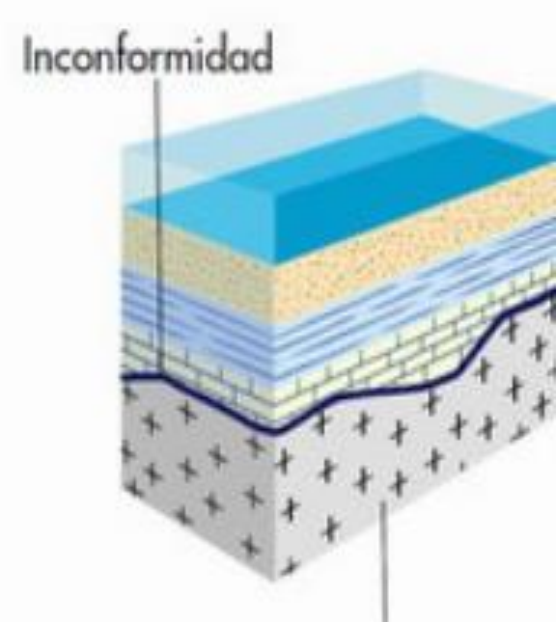




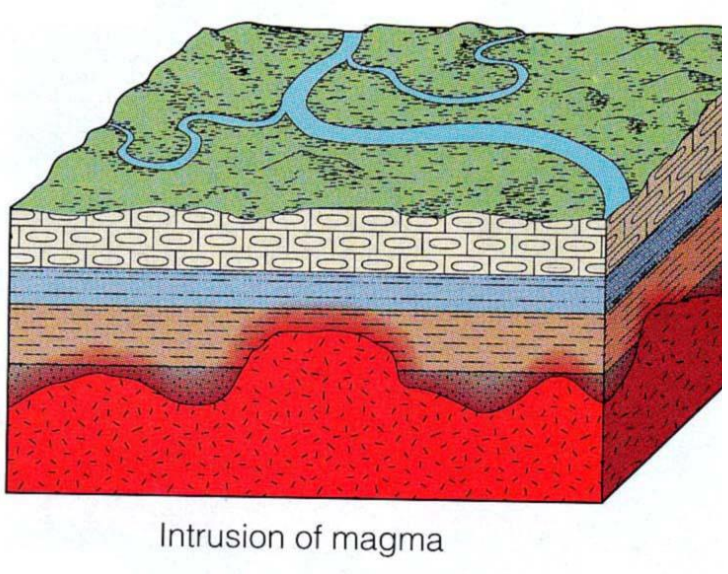


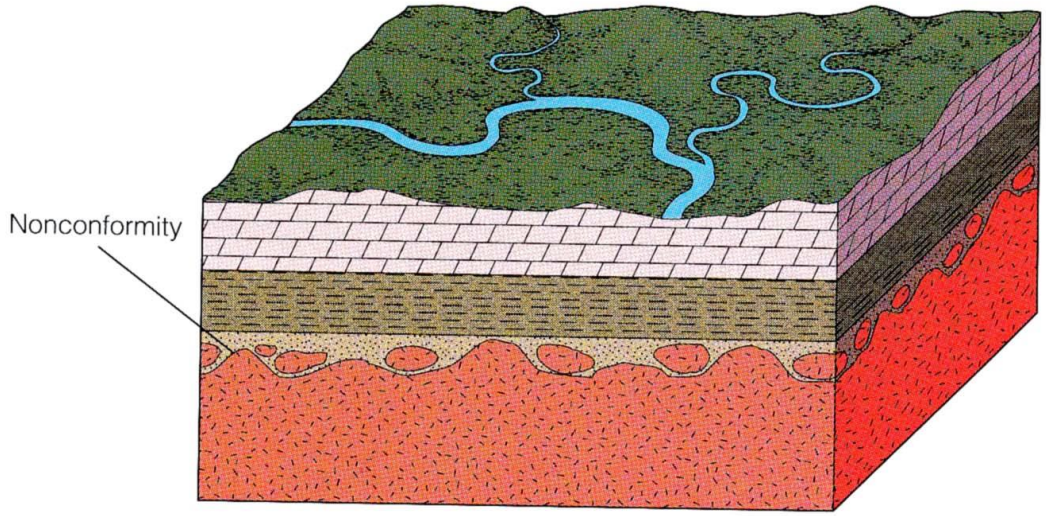
Tipos de descontinuidades

Inconformidade: Os estratos novos depositanse sobre unha base ígnea erosionada.



INCONFORMIDADE

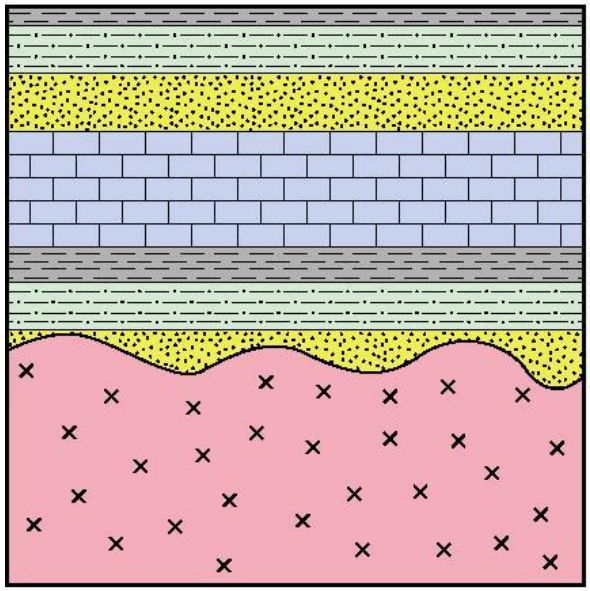




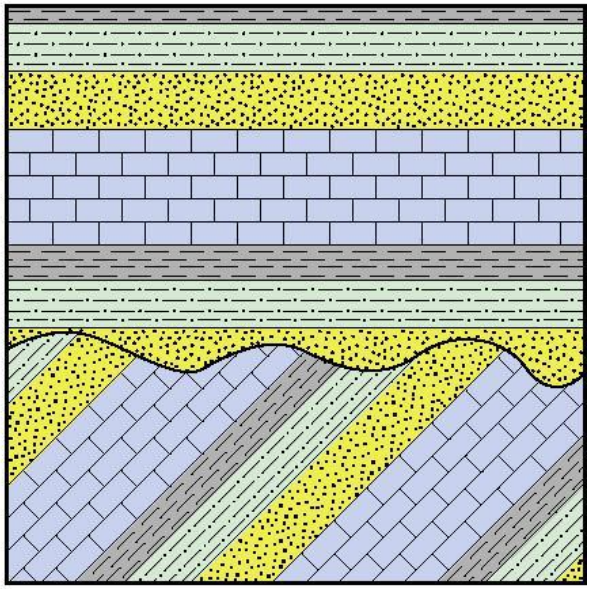
?

CONTACTO INTRUSIVO

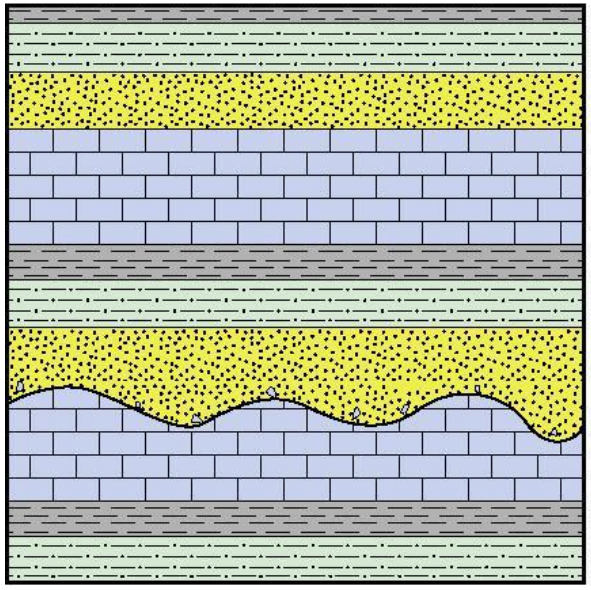
Nonconformity



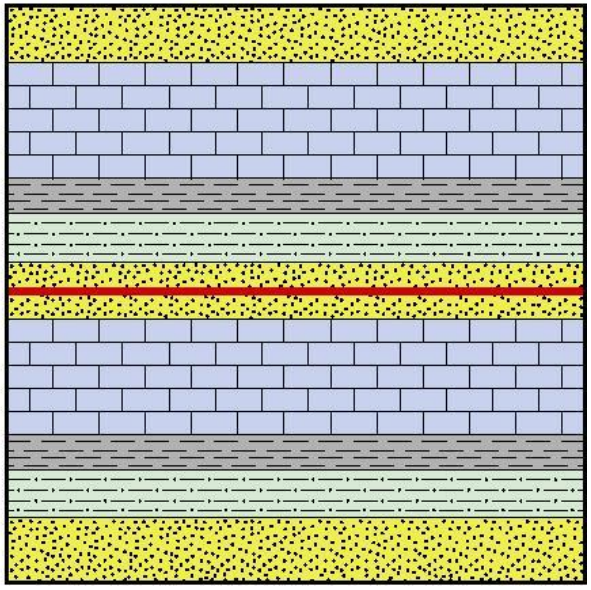
Angular unconformity



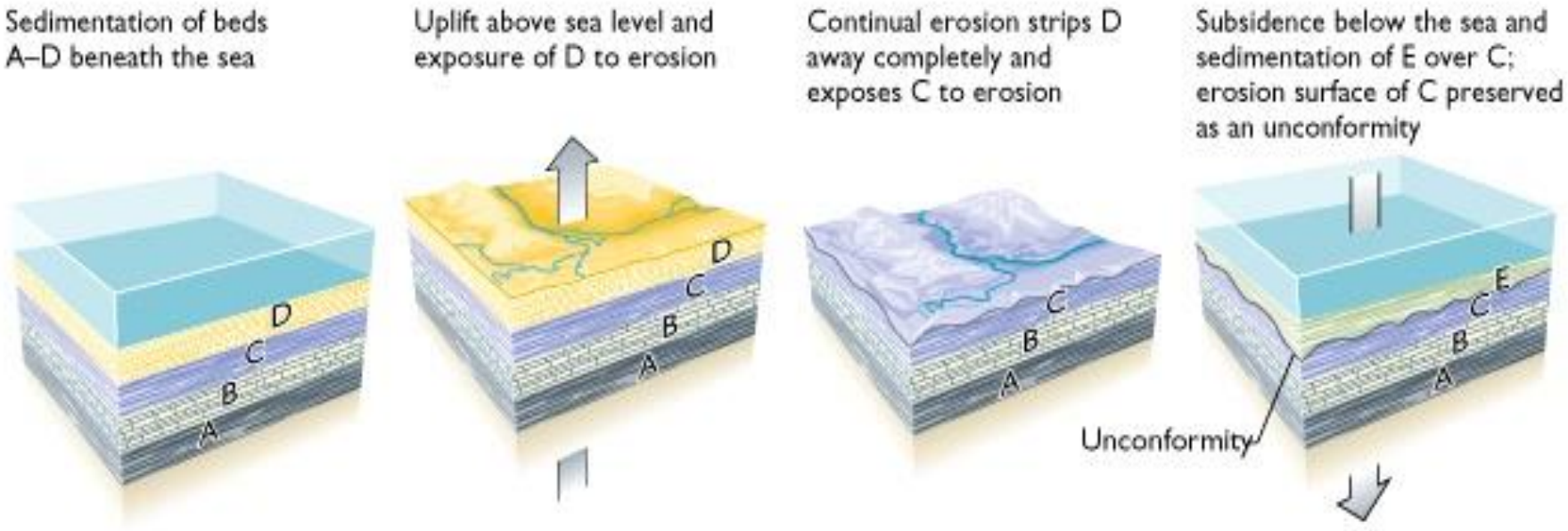
Disconformity



Paraconformity

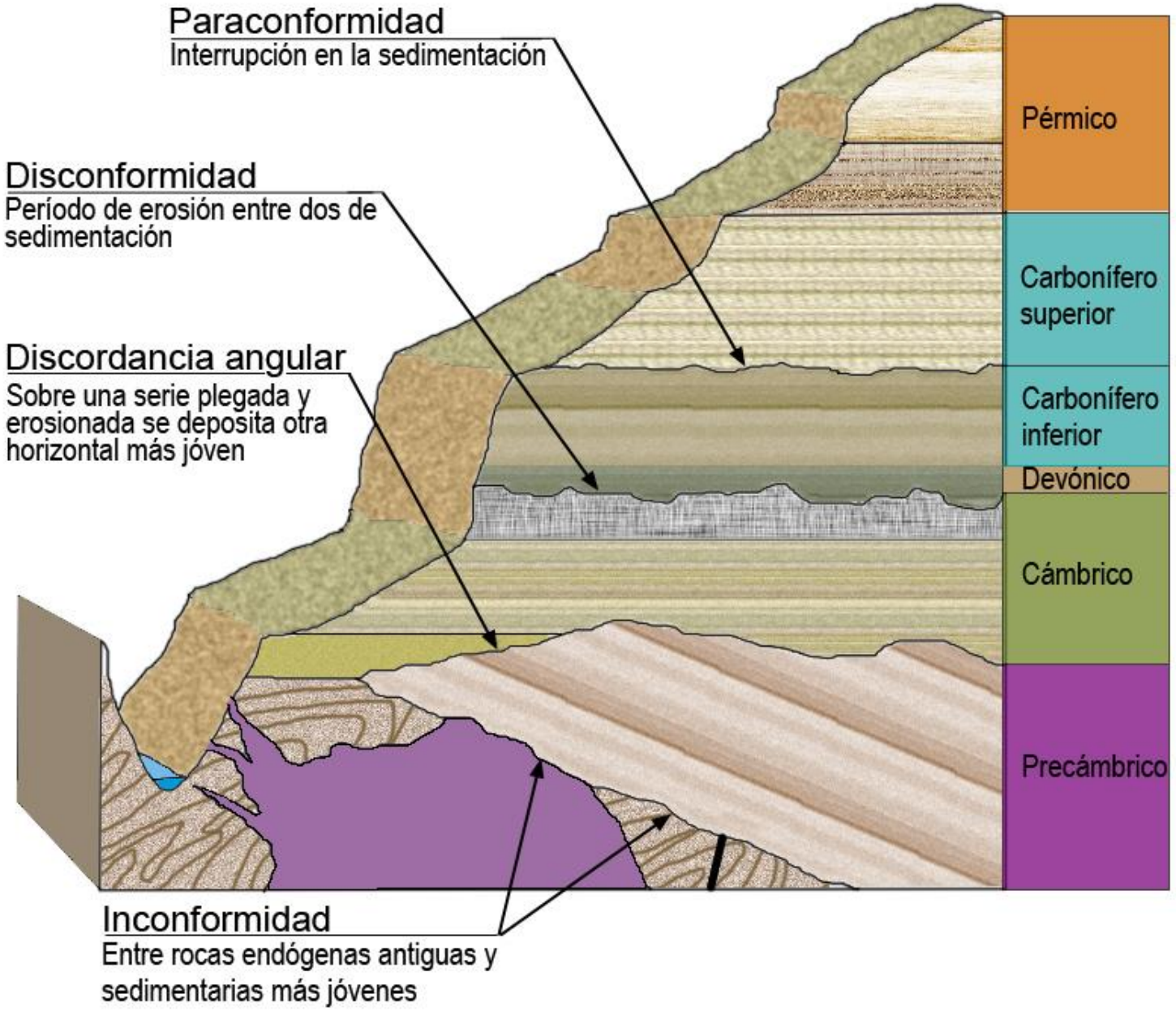


SECUENCIA DE ACONTECEMENTOS



James Hutton (1726-1797) the "father of modern geology"

Siccar Point (Scoland)


Paraconformidad
Interrupción en la sedimentación
Disconformidad
Período de erosión entre dos de sedimentación
Discordancia angular
Sobre una serie plegada y erosionada se deposita otra horizontal más jóven
Inconformidad
Entre rocas endógenas antiguas y sedimentarias más jóvenes
Pérmico
Carbonífero superior
Carbonífero inferior
Devónico
Cámbrico
Precámbrico

Estudo do rexistro estratigráfico

Datación relativa: ordea os estratos segundo a súa secuencia de formación.

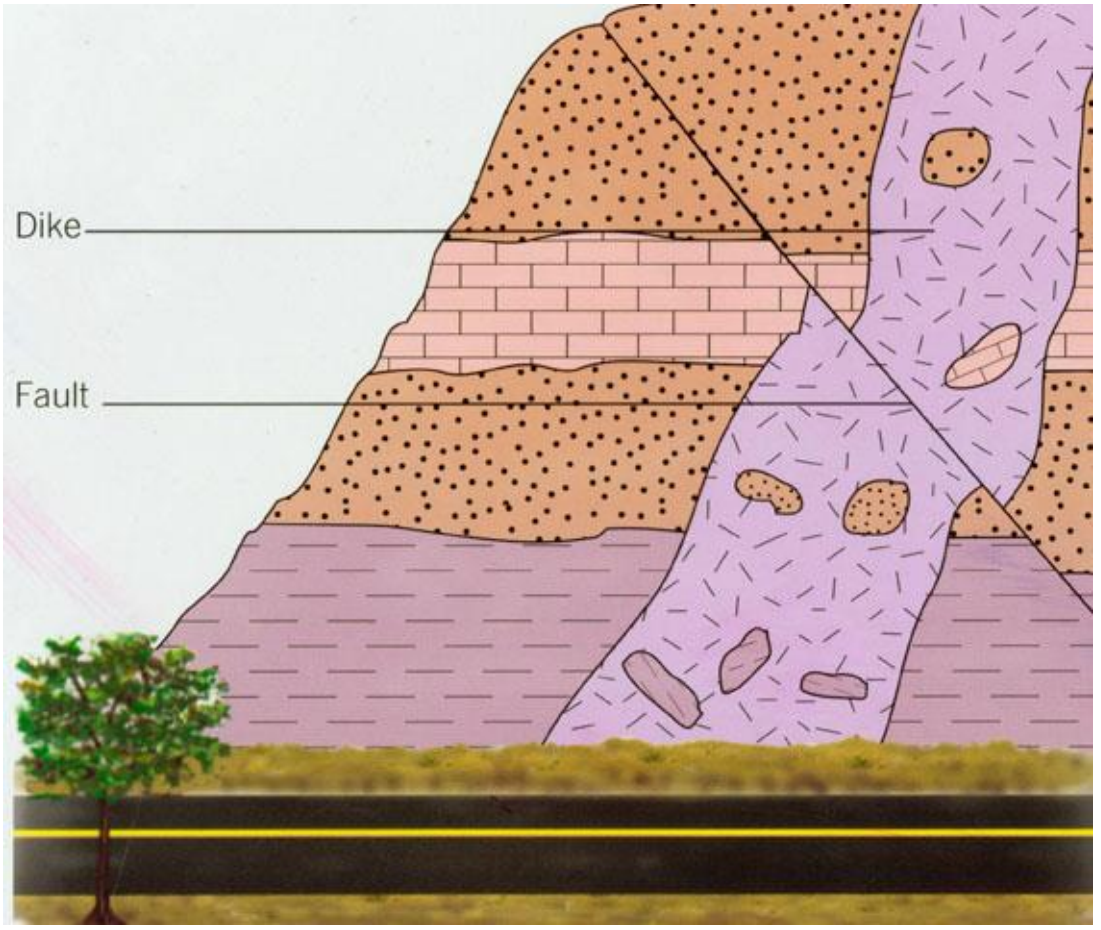
Principios básicos da estratigrafía

- **Principio de horizontalidade orixinal**
- **Principio de superposición de estratos**
- **Principio de continuidade lateral**
- **Principio de sucesión faunística**
- **Principio de sucesión de acontecementos**
- **Principio de actualismo e uniformismo**

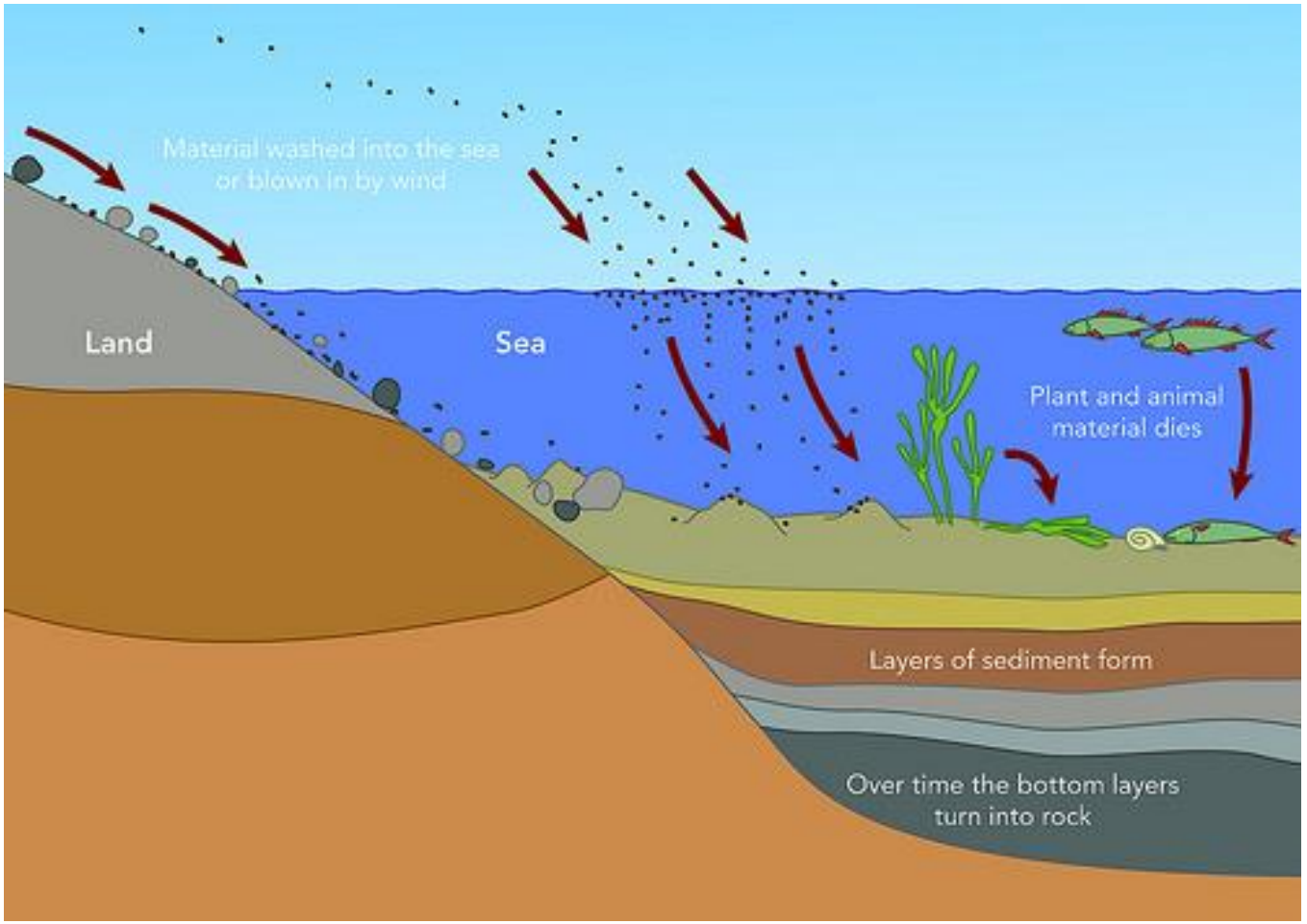
PRINCIPIOS BÁSICOS

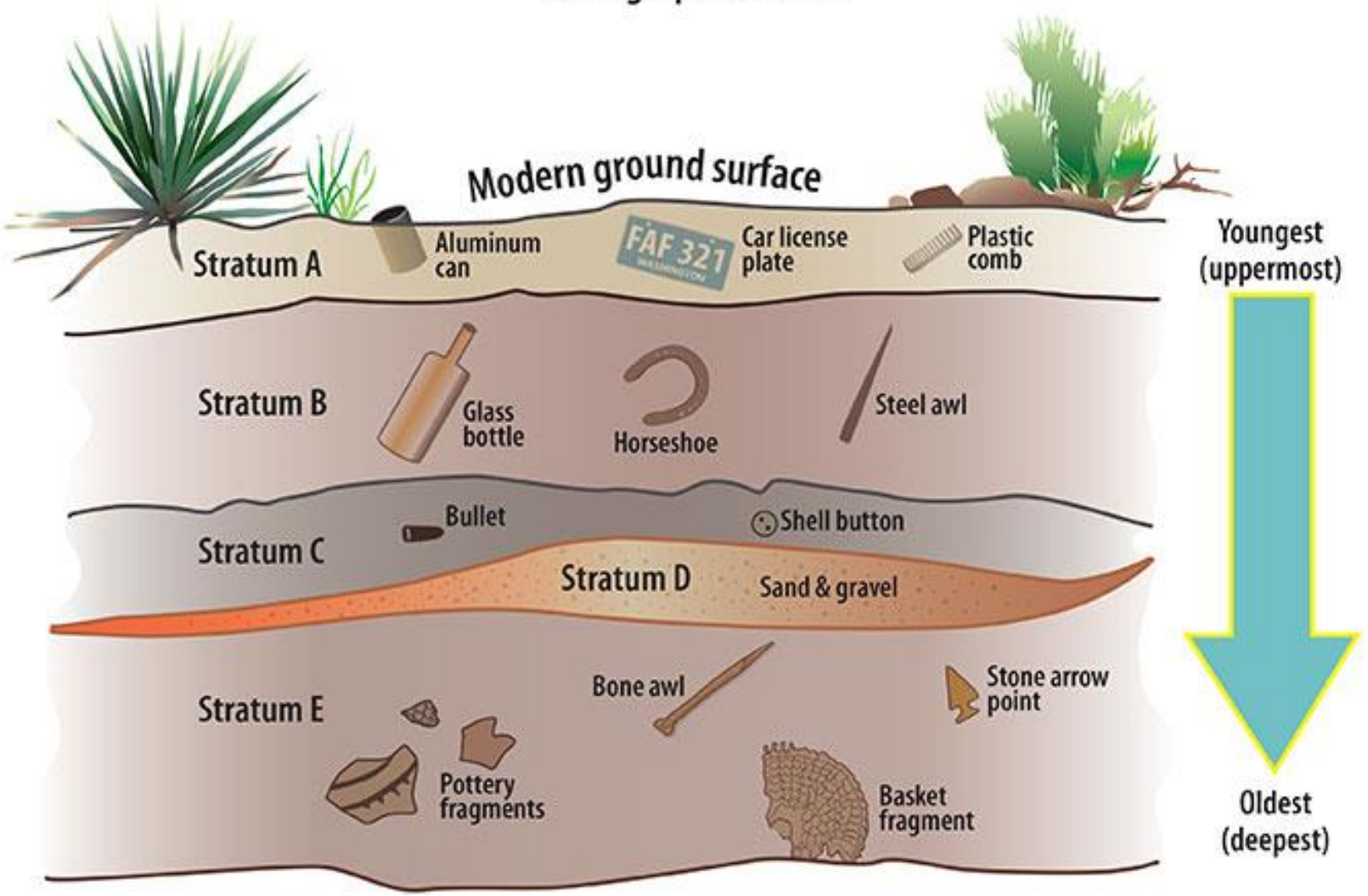
PRINCIPIO DA SUPERPOSICIÓN DOS ESTRATOS
PRINCIPIO DAS INTERSECCIÓNS

Nicholas Steno 1638 - 1686



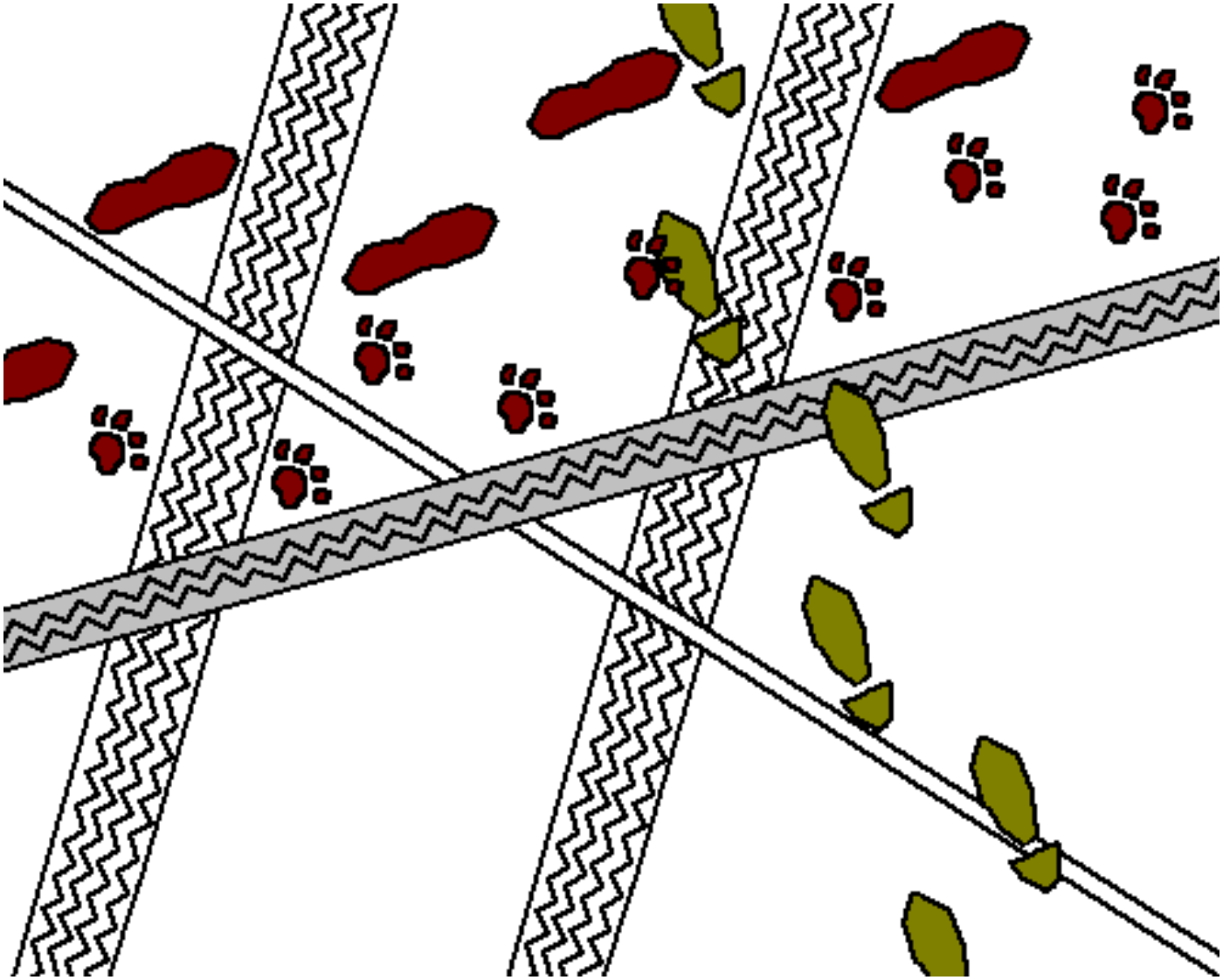
SUPERPOSICIÓN NORMAL DOS ESTRATOS



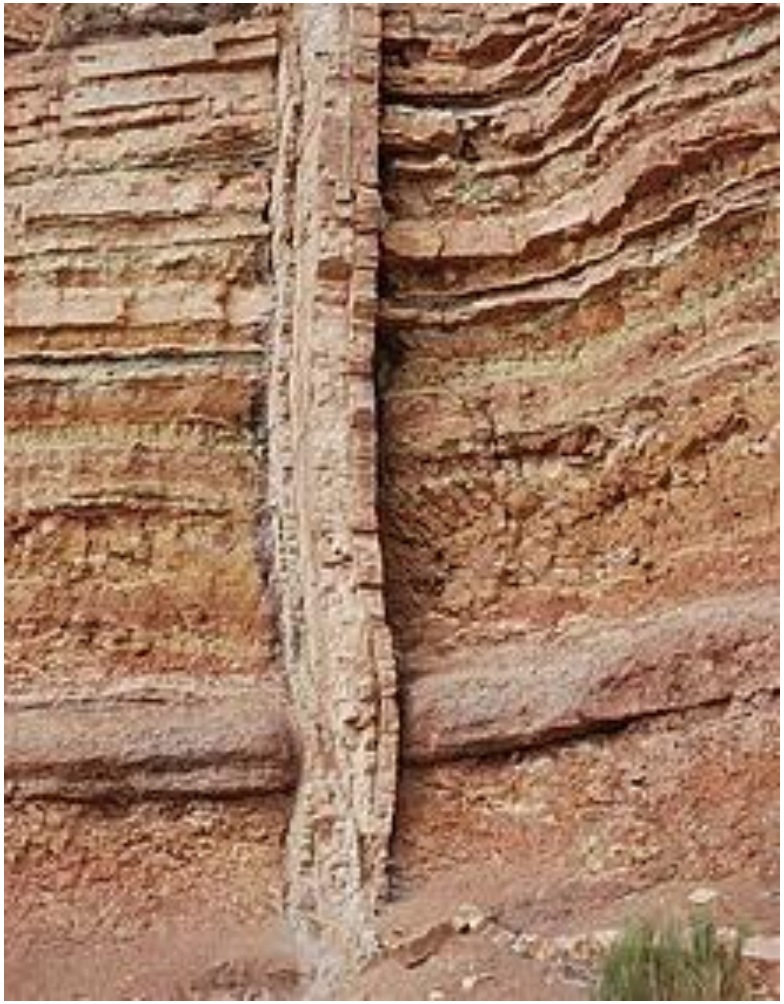

Stratigraphic Profile
Modern ground surface
Stratum A
Aluminum can
FAF 321
Car license plate
Plastic comb
Youngest (uppermost)
Stratum B
Glass bottle
Horseshoe
Steel awl
Stratum C
Bullet
Shell button
Stratum D
Sand & gravel
Stratum E
Bone awl
Stone arrow point
Pottery fragments
Basket fragment
Oldest (deepest)

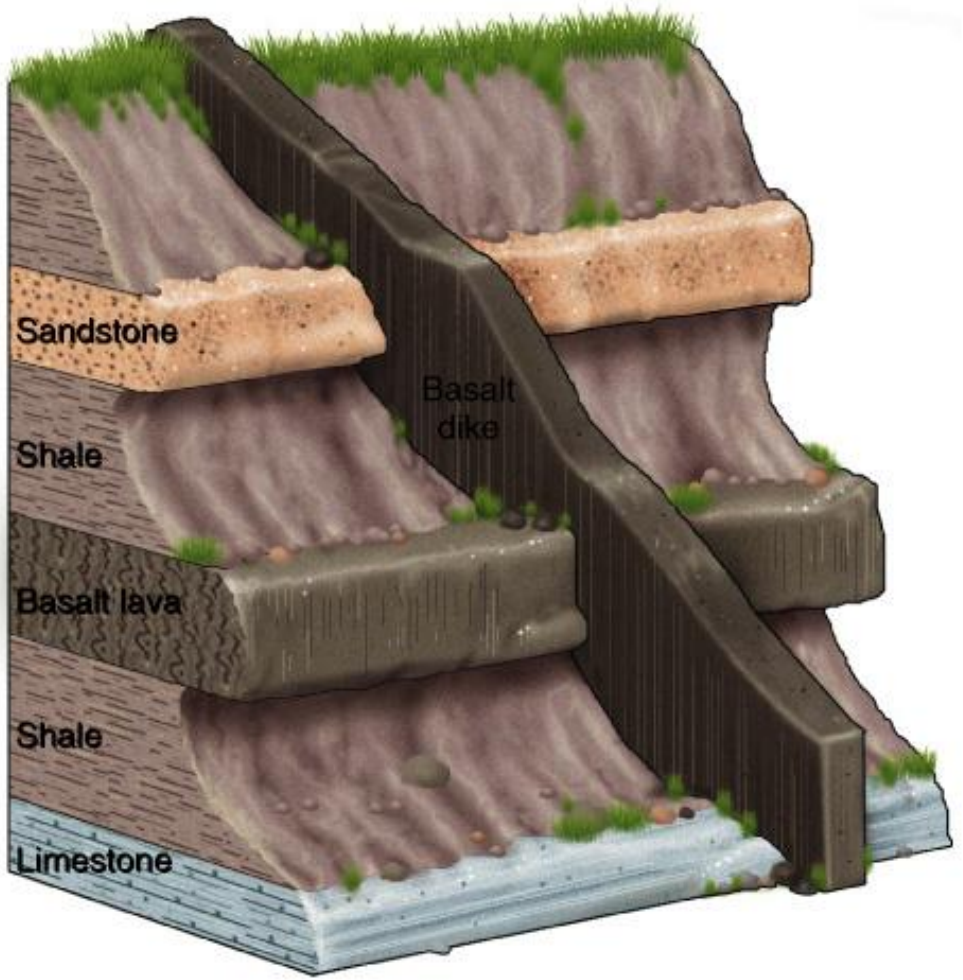
The Crime Scene

- The Nephew has a seeing-eye dog
- The Maid Drives a car
- The Cook Rides a motorcycle
- The Handyman Rides a bike
- The Butler Walks to work

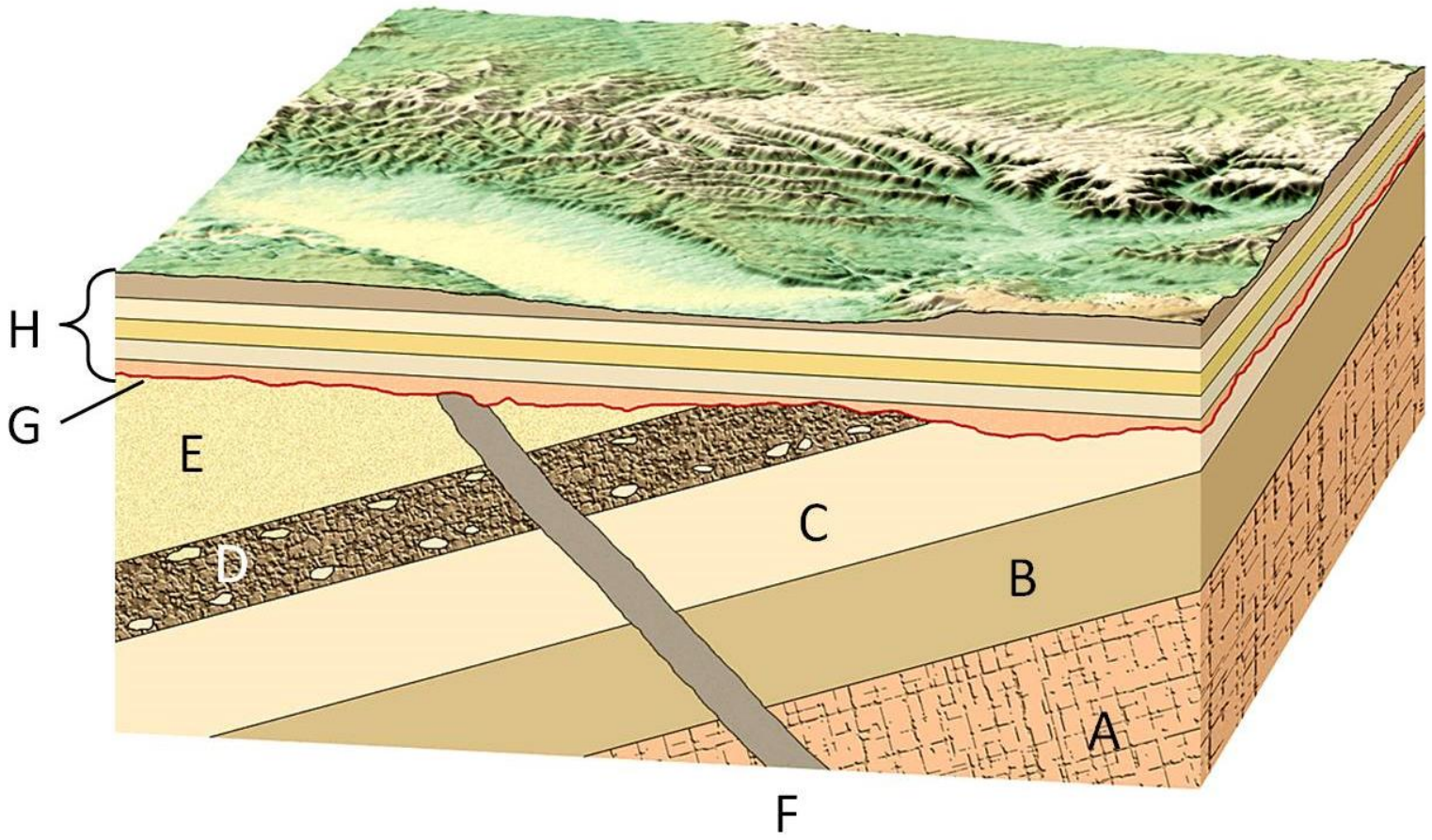


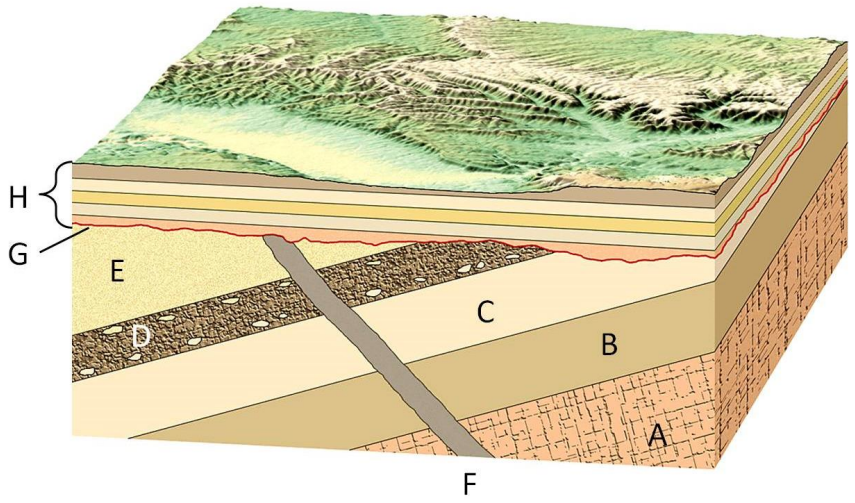
PRINCIPIO DAS INTERSECCIÓNS





HISTORIA XEOLÓXICA



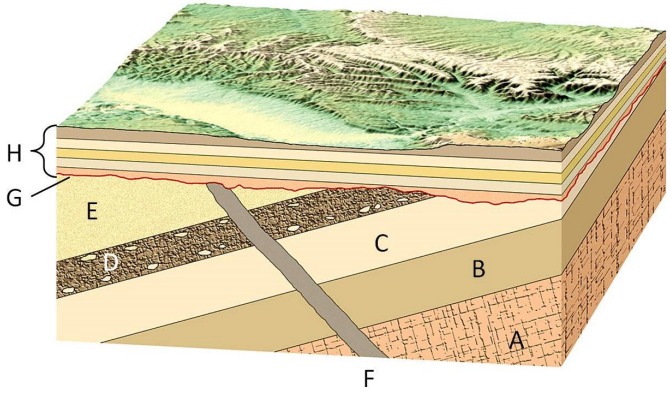


IDADE RELATIVA ?

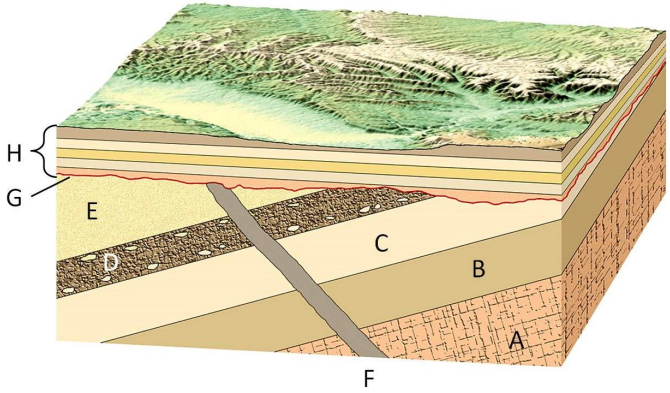
A-B-C-D-E-F-G-H

Falta algo ?

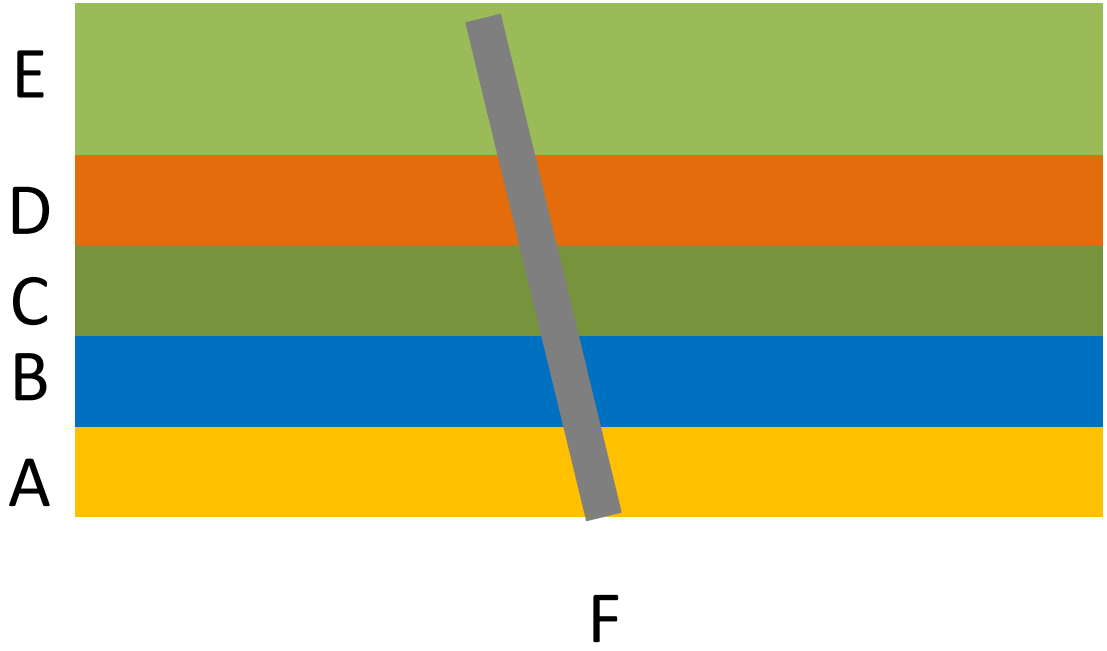
Estratos inclinados

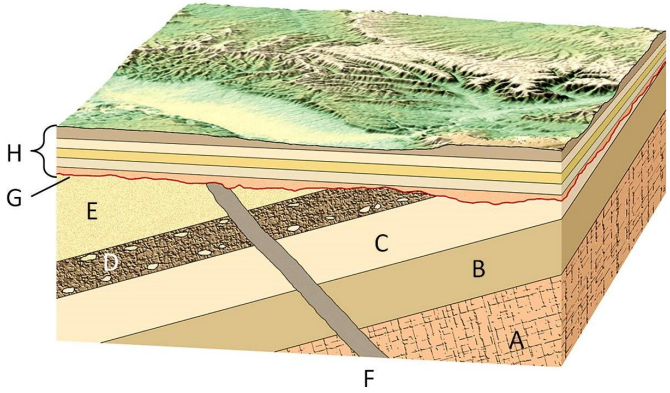


SEDIMENTACIÓN E LITIFICACIÓN DOS ESTRATOS: A, B, C, D, E

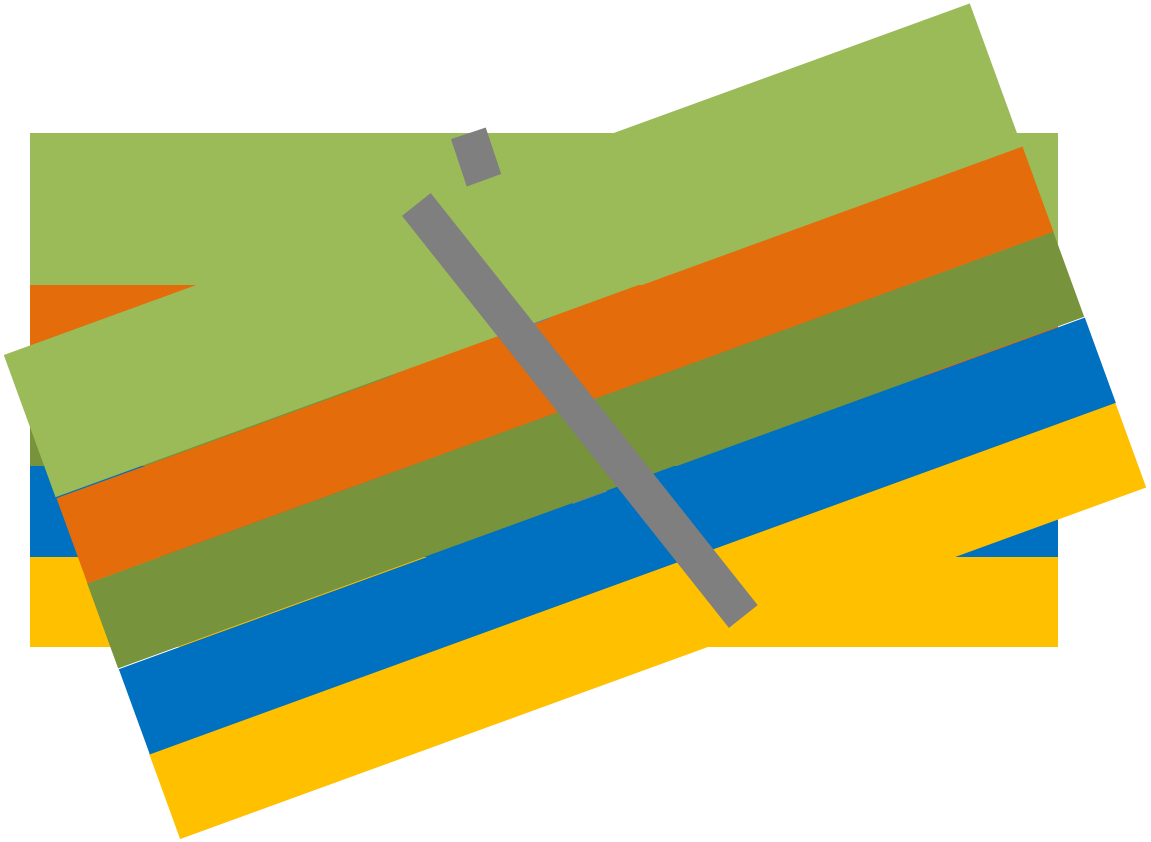


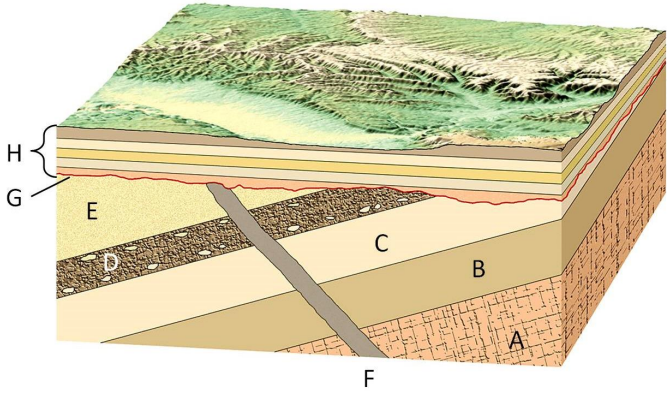
INTRUSIÓN DO DIQUE F





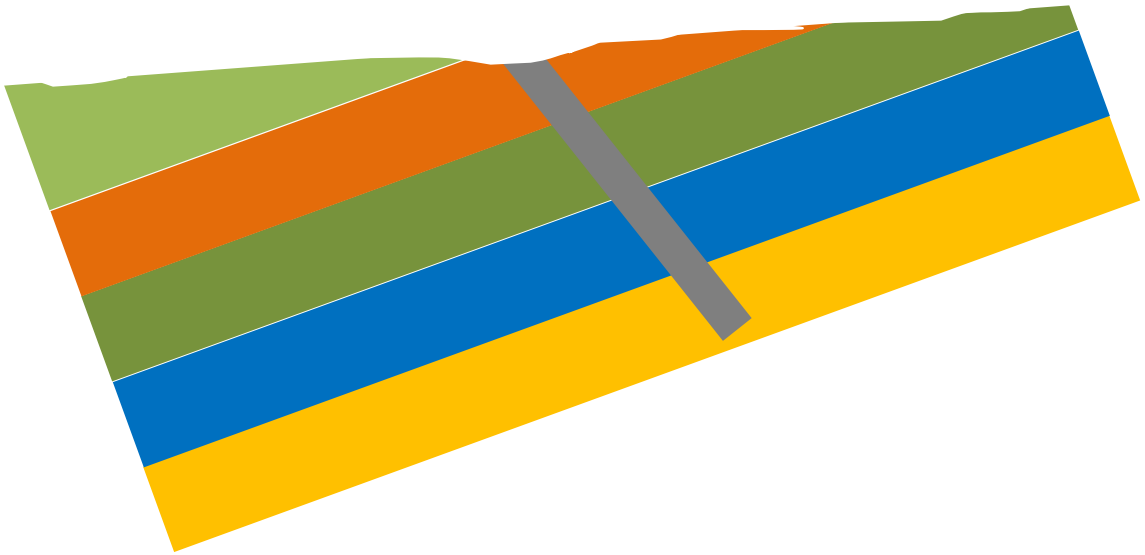
DEFORMACIÓN: FORMACIÓN DUN PREGO

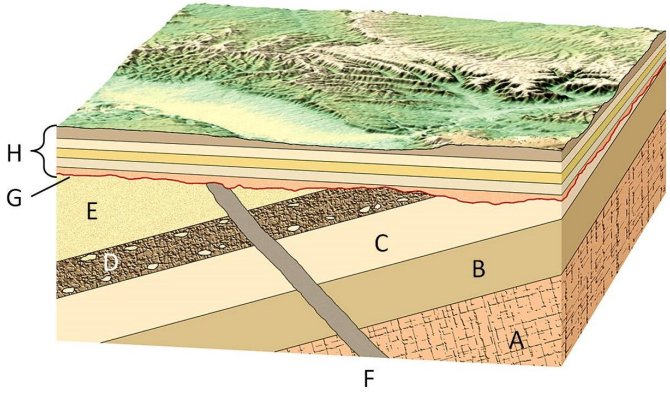




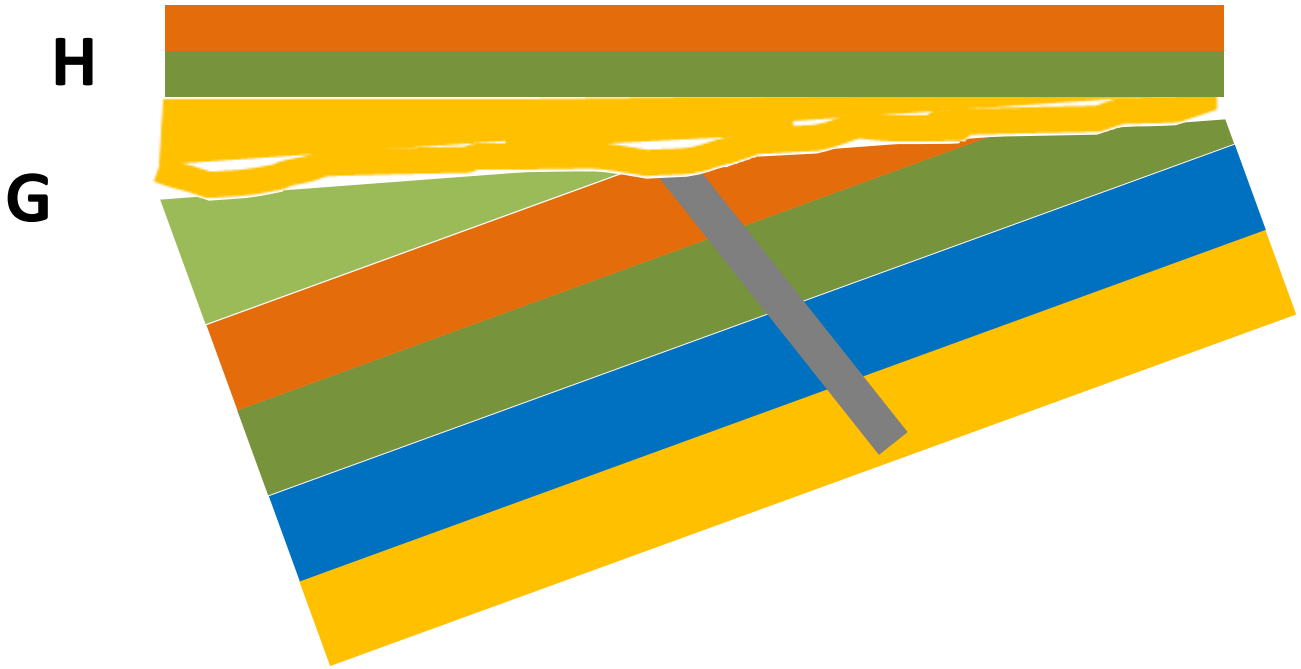
EROSIÓN: SUPERFICIE G

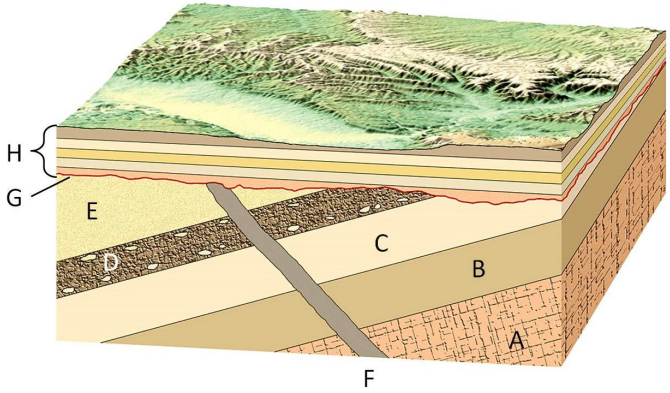
G



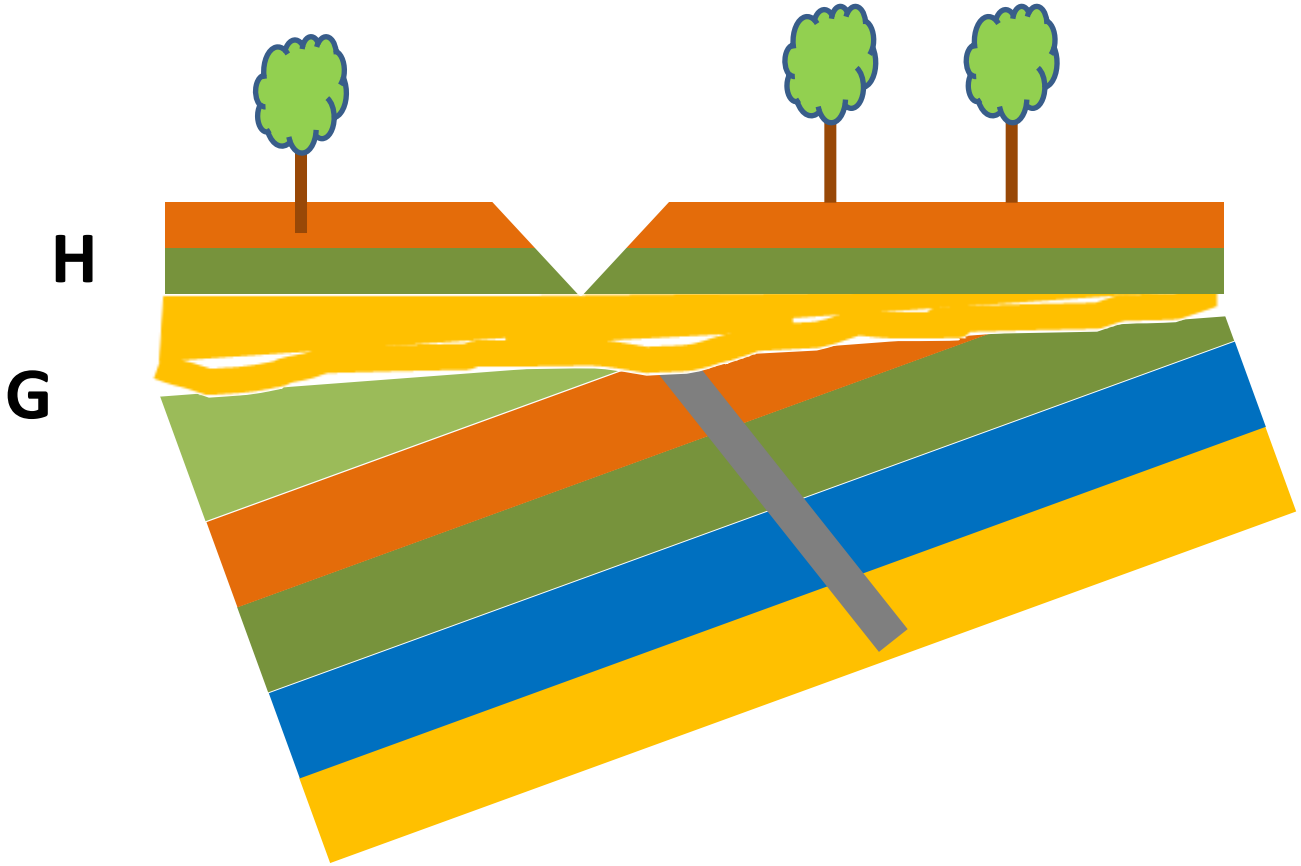


SEDIMENTACIÓN: SERIE H

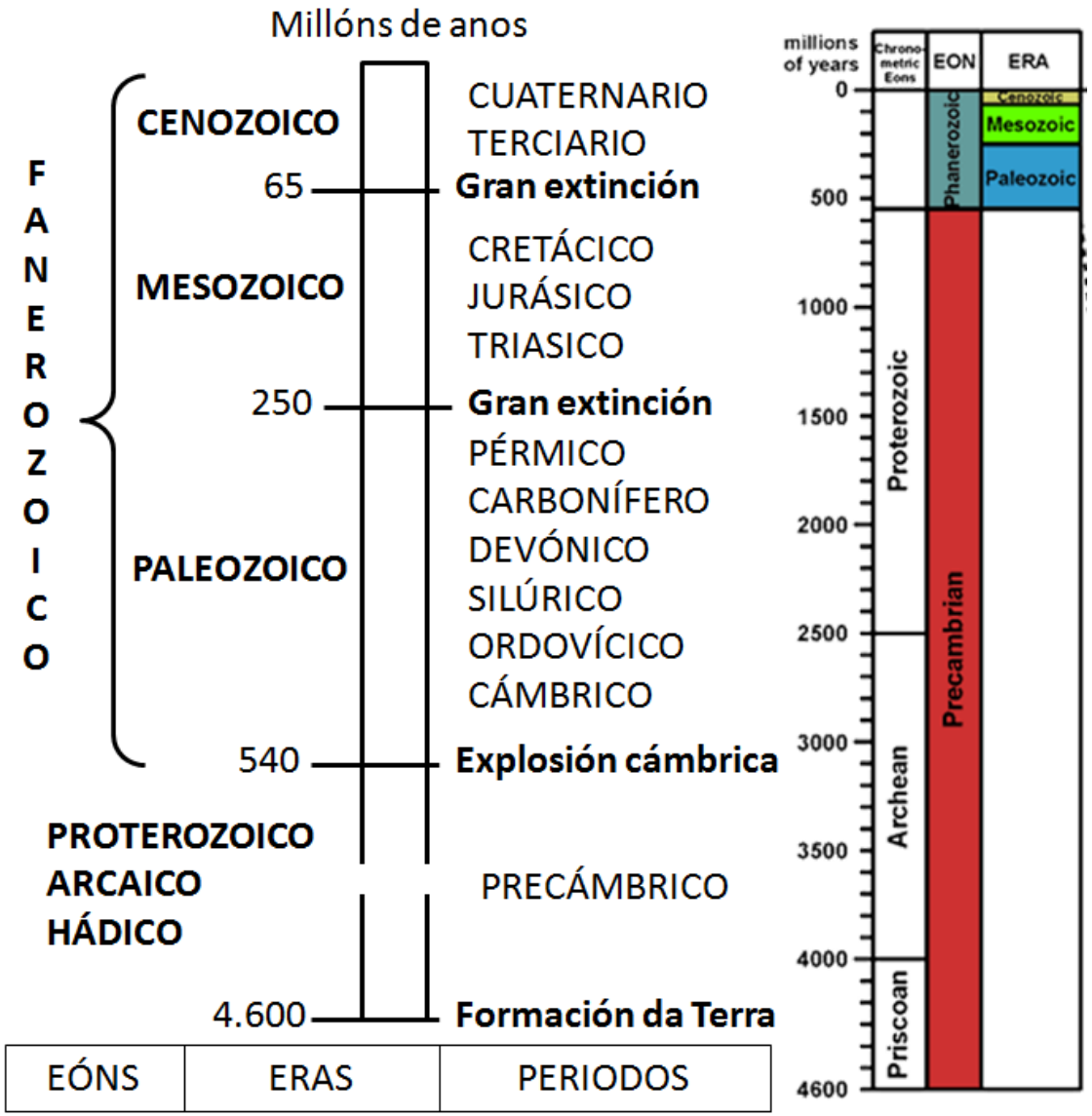


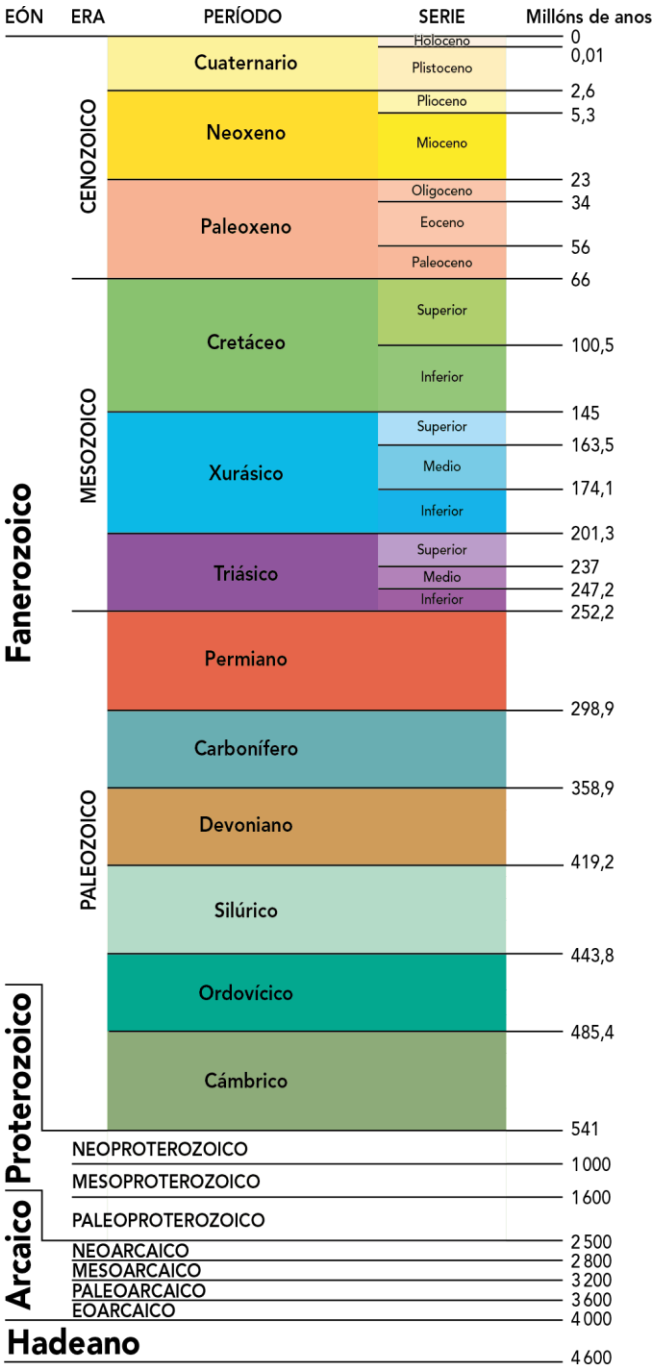


EROSIÓN:
SUPERFICIE ACTUAL



O CADRO DO TEMPO XEOLÓXICO

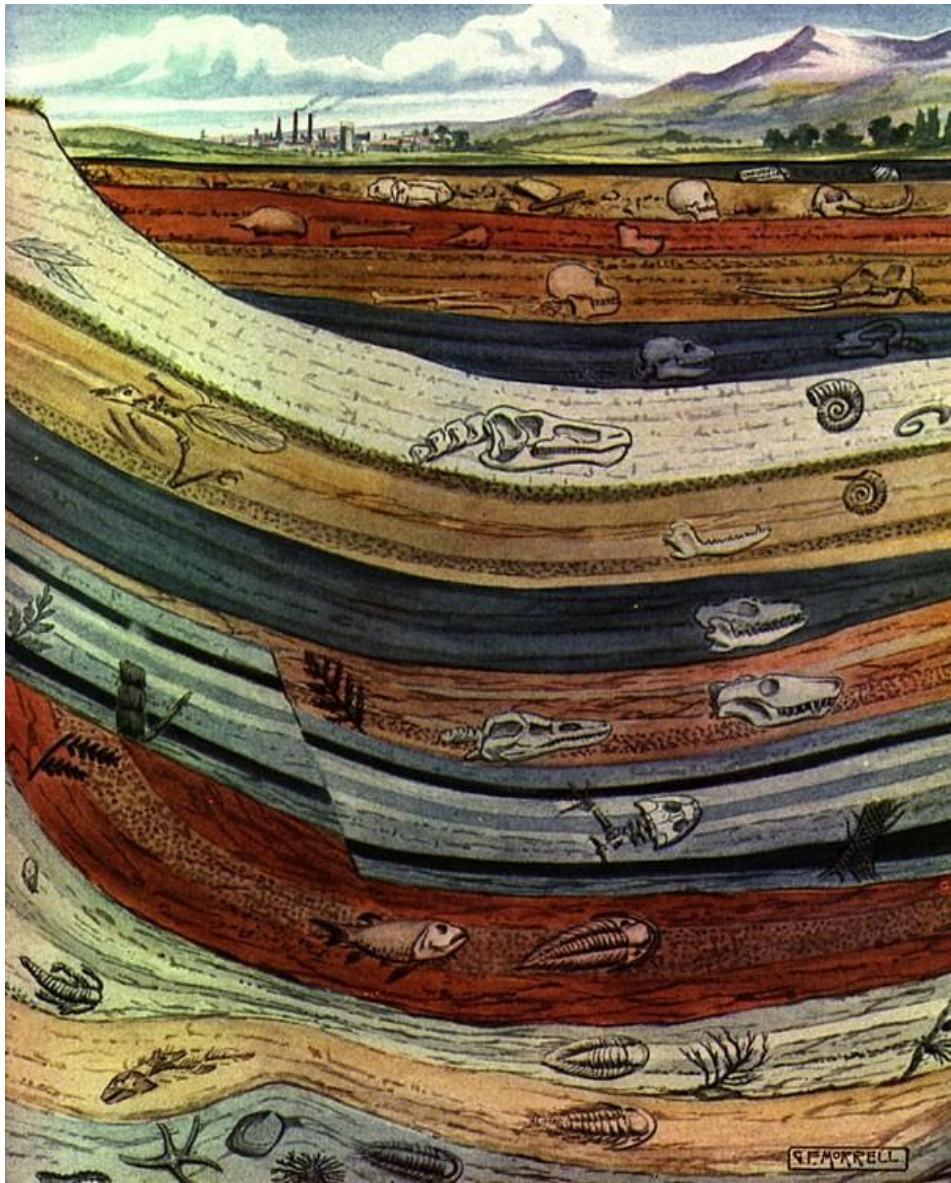



EÓN
ERA
PERÍODO
SERIE
Millóns de anos
Holoceno
0
Plistoceno
0,01
Cuaternario
2,6
Plioceno
5,3
Neoxeno
Mioceno
23
Oligoceno
34
Paleoxeno
Eoceno
56
Paleoceno
66
CENOZOICO
Superior
Cretáceo
100,5
Inferior
145
Superior
163,5
Xurásico
Medio
174,1
Inferior
201,3
Superior
237
Triásico
Medio
247,2
Inferior
252,2
MESOZOICO
Fanerozoico
Permiano
298,9
Carbonífero
358,9
Devoniano
419,2
Silúrico
443,8
Ordovícico
485,4
Cámbrico
541
PALEOZOICO
NEOPROTEROZOICO
1 000
MESOPROTEROZOICO
1 600
PALEOPROTEROZOICO
2 500
Proterozoico
NEOARCAICO
2 800
MESOARCAICO
3 200
PALEOARCAICO
3 600
EOARCAICO
4 000
Arcaico
Hadeano
4 600

FÓSIL?

Paleontoloxía

Fósil: resto dun ser vivo ou da súa actividade preservado nas rochas



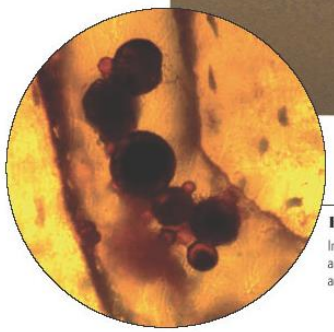
FOSILIZACIÓN

ENTERRAMENTO

MORTE

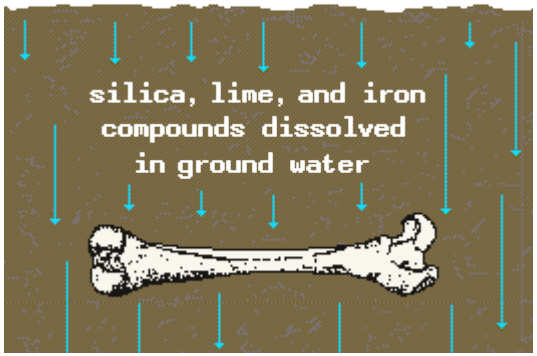
MINERALIZACIÓN

EXPOSICIÓN

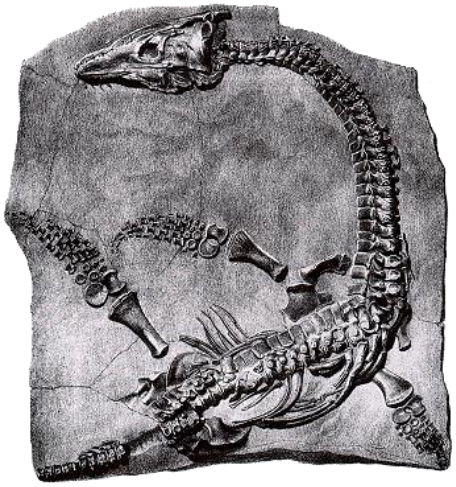


Early Discovery

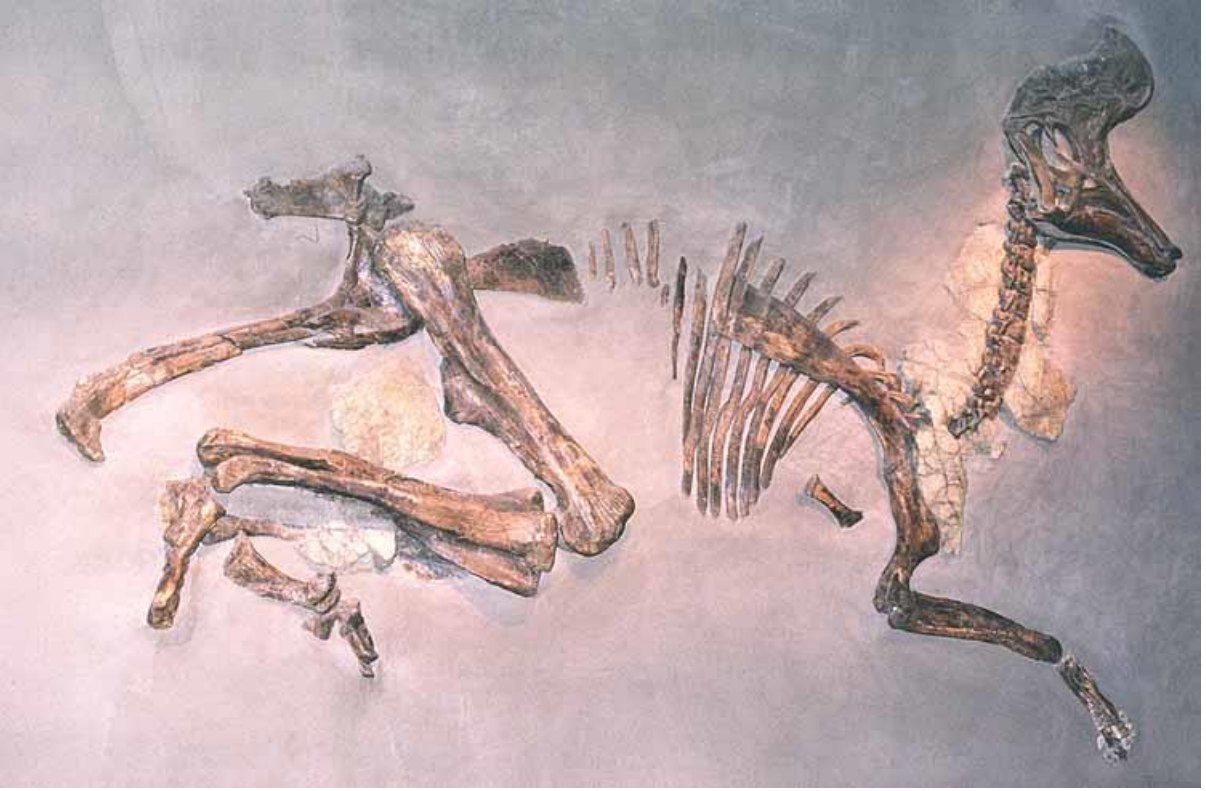
In contrast to the typical look of fossilized bone under a microscope, a slice of a *T. rex* bone viewed by the author contained structures resembling blood cells.



TIPOS DE FÓSILES: PARTES DO SER VIVO



XERALMENTE PARTES DURAS PARCIALMENTE MINERALIZADAS



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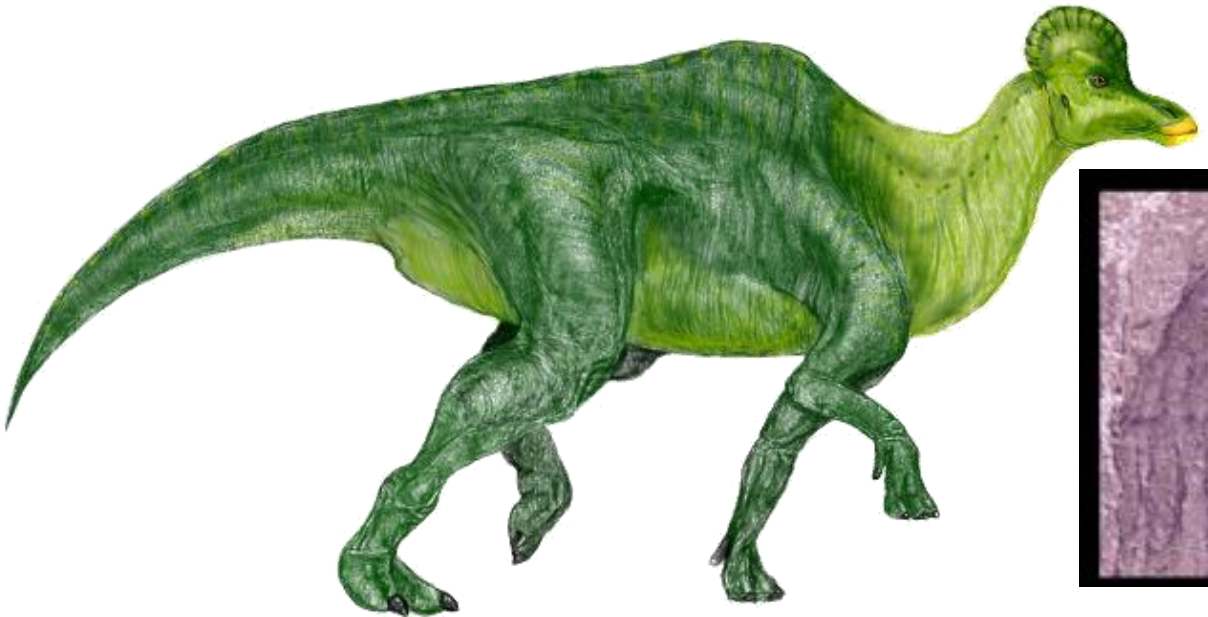
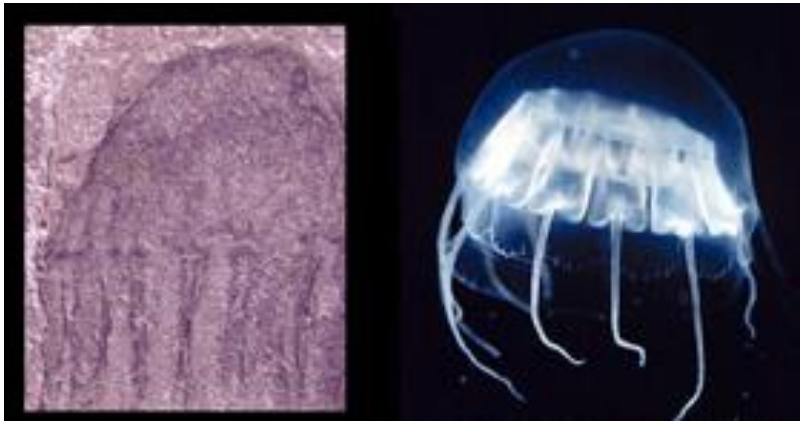
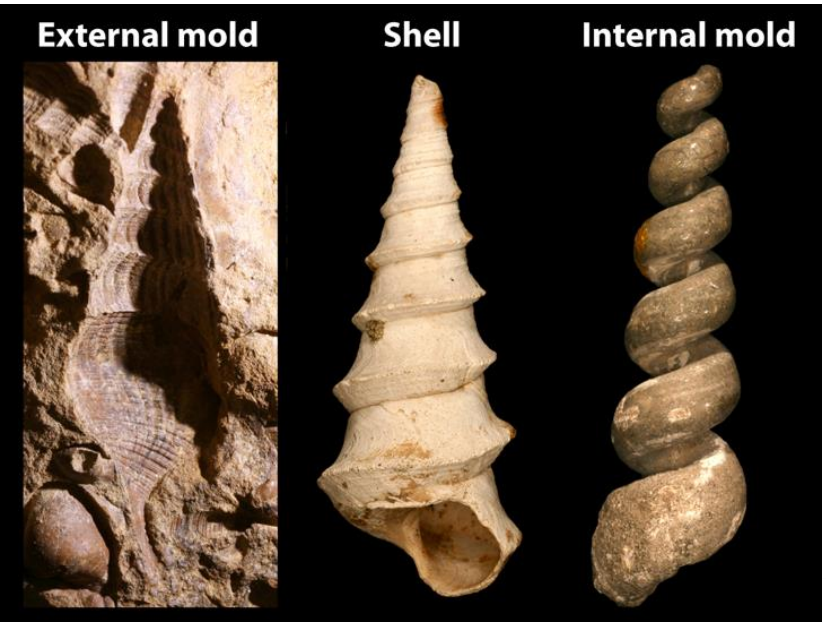
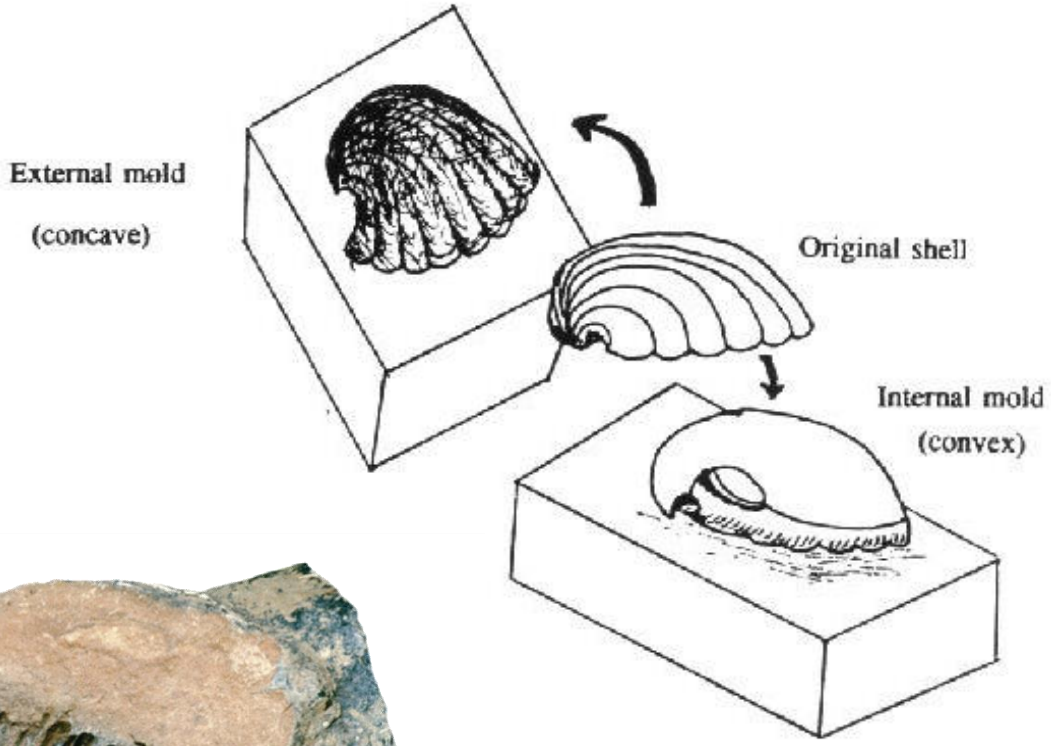
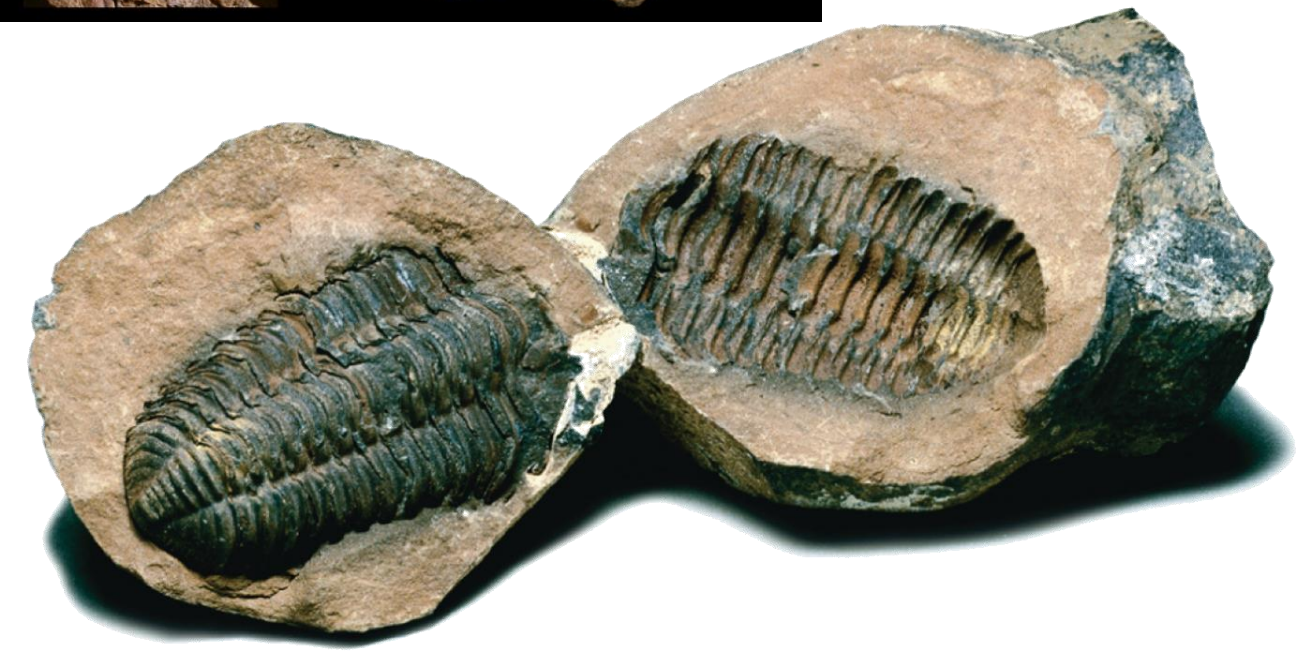




TIPOS DE FÓSILES: MOLDES

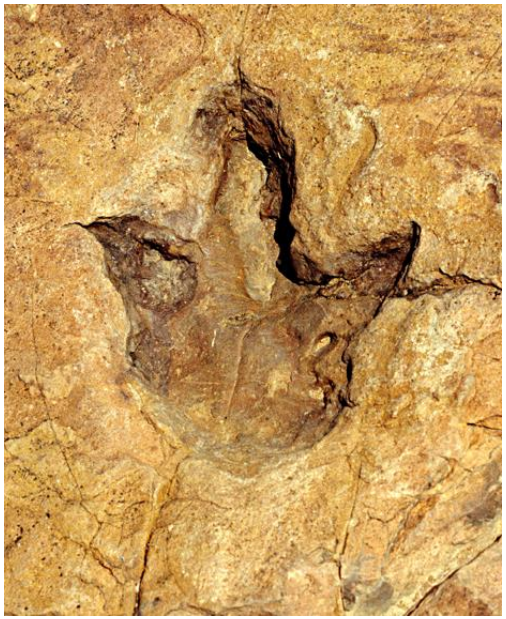




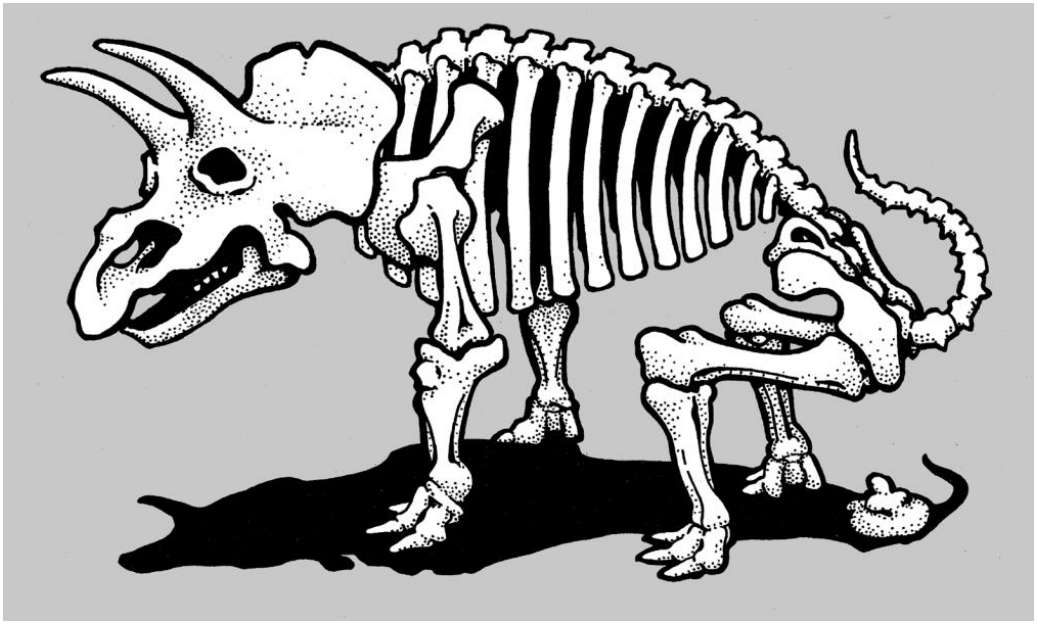


TIPOS DE FÓSILES: PEGADAS

ICNITAS



TIPOS DE FÓSILES: COPROLITOS



EXCREMENTOS FÓSILES

OUTROS XEITOS DE PRESERVACIÓN: CARBONIZACIÓN

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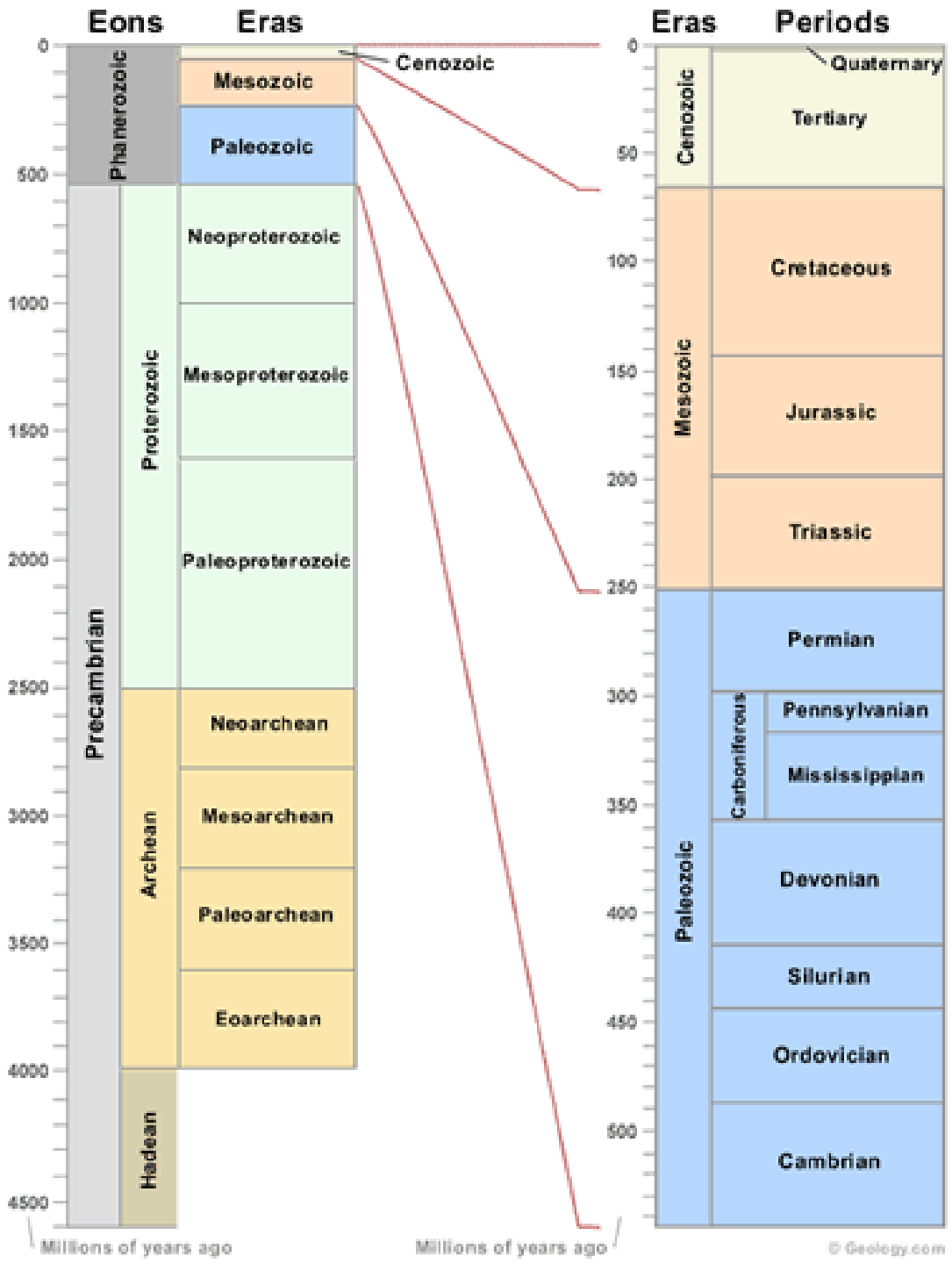
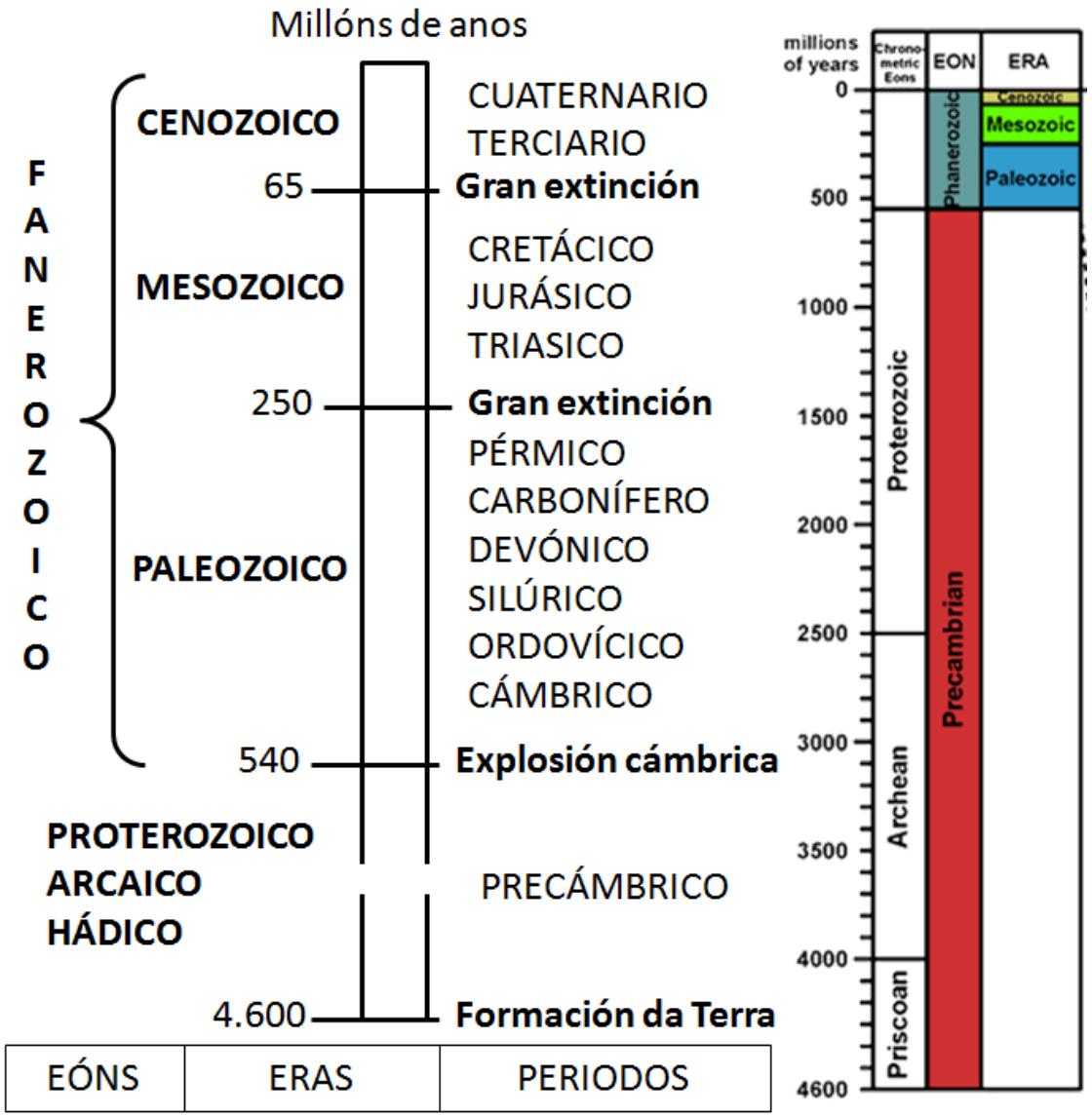


EXEMPLOS DE FÓSILES. O CADRO DO TEMPO XEOLÓXICO

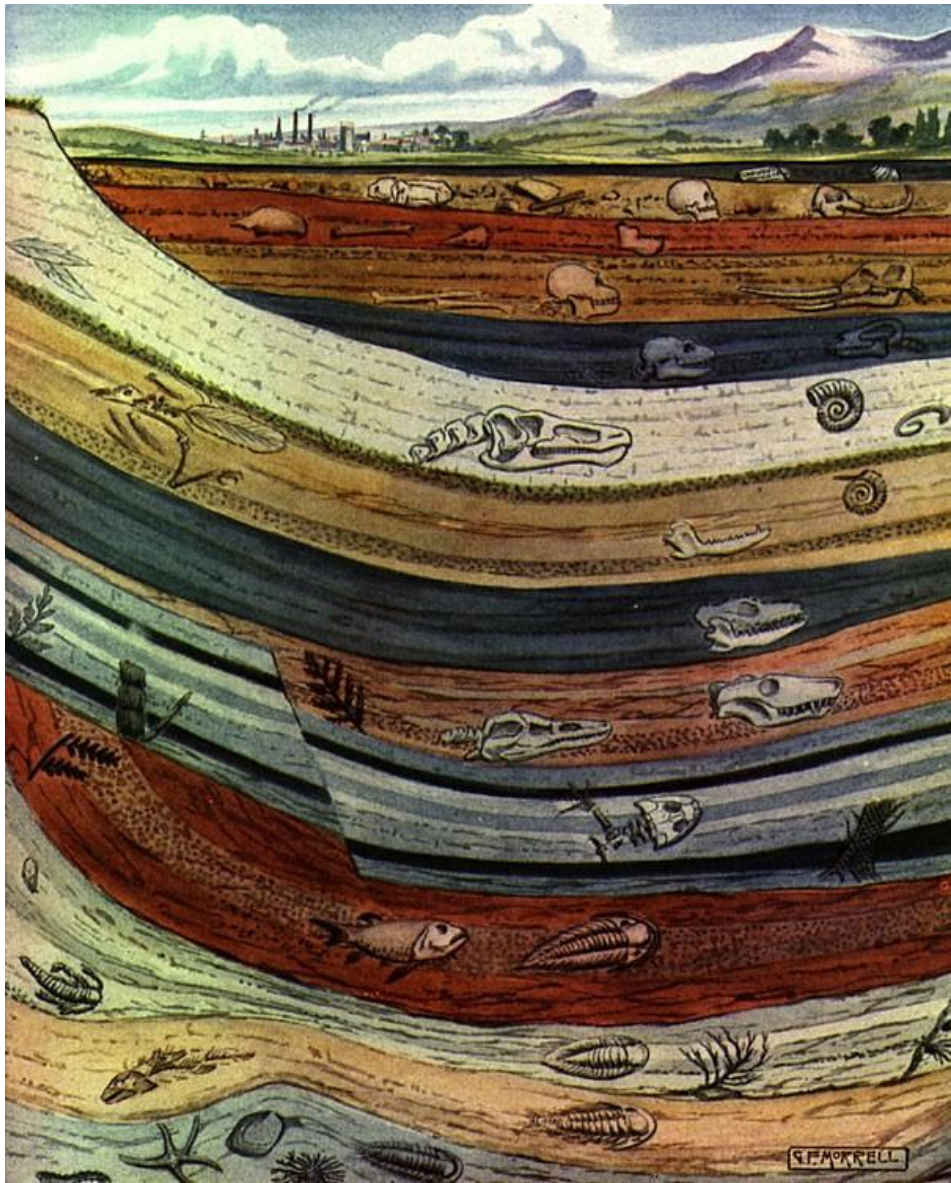
O CADRO DO TEMPO XEOLÓXICO



FÓSIL?

Paleontoloxía

Fósil: resto dun ser vivo ou da súa actividade preservado nas rochas



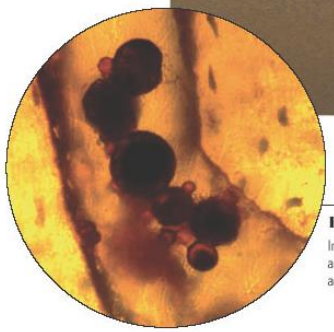
FOSILIZACIÓN

ENTERRAMENTO

MORTE

MINERALIZACIÓN

EXPOSICIÓN



Early Discovery

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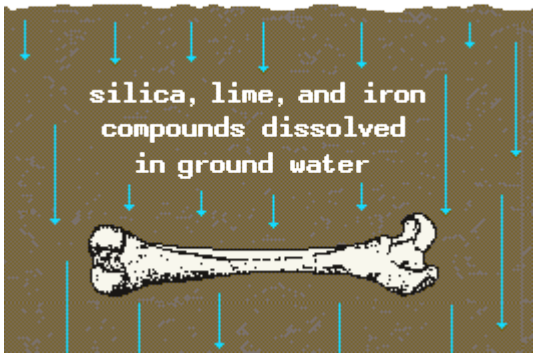

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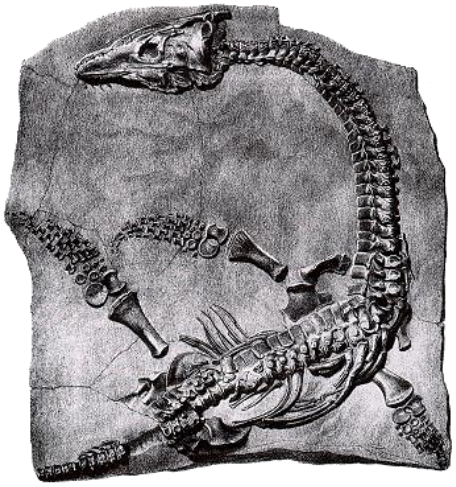
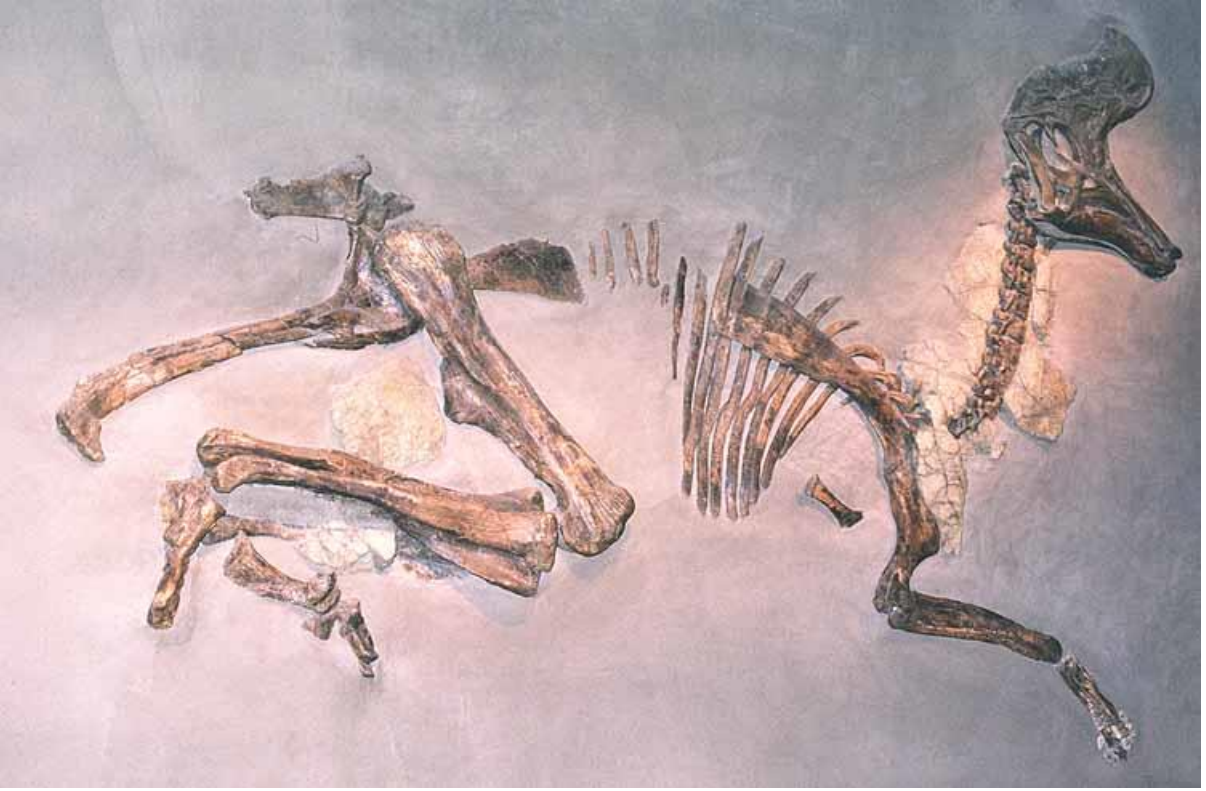


XERALMENTE PARTES DURAS PARCIALMENTE MINERALIZADAS



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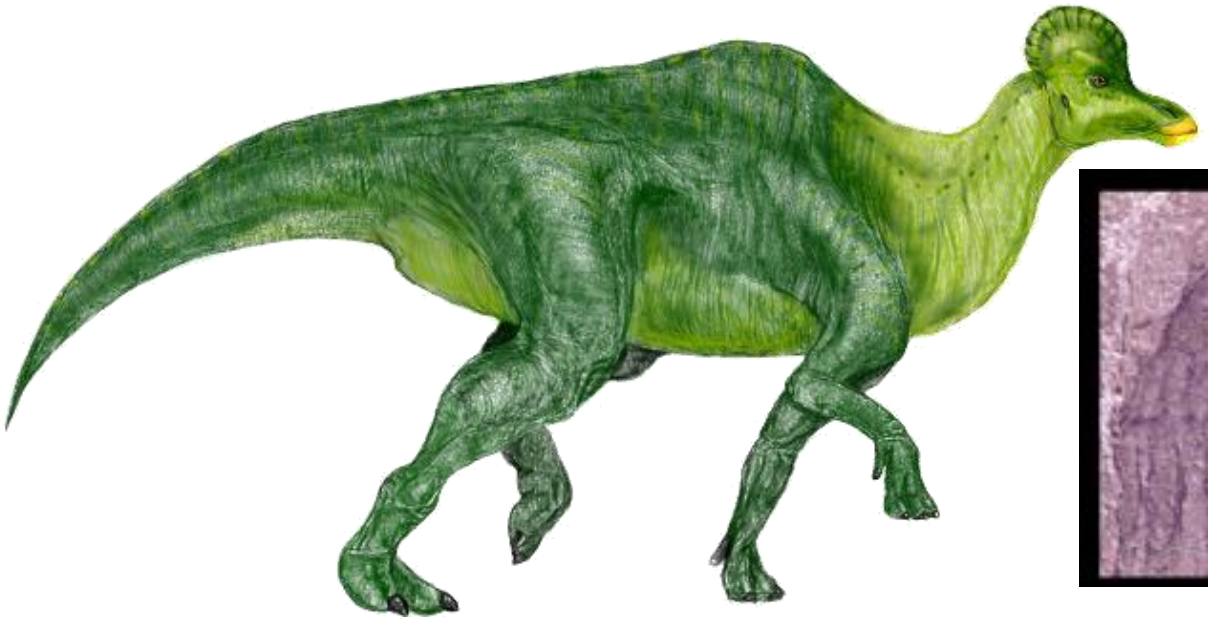
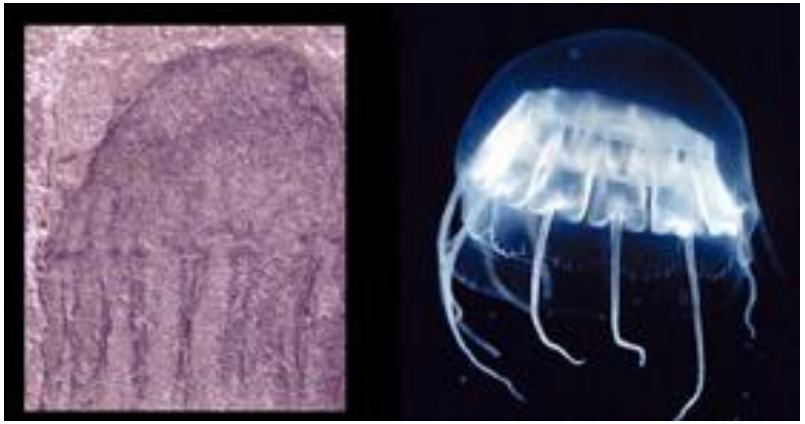
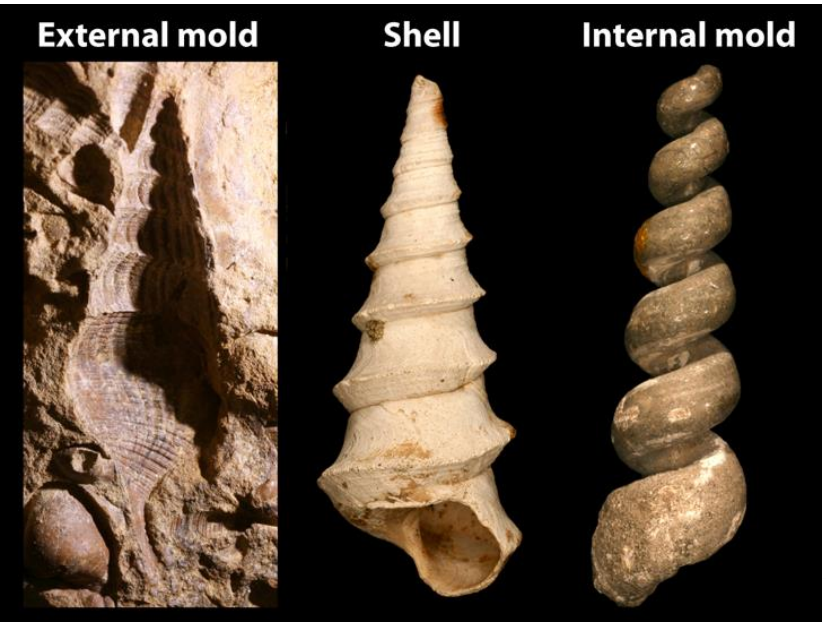
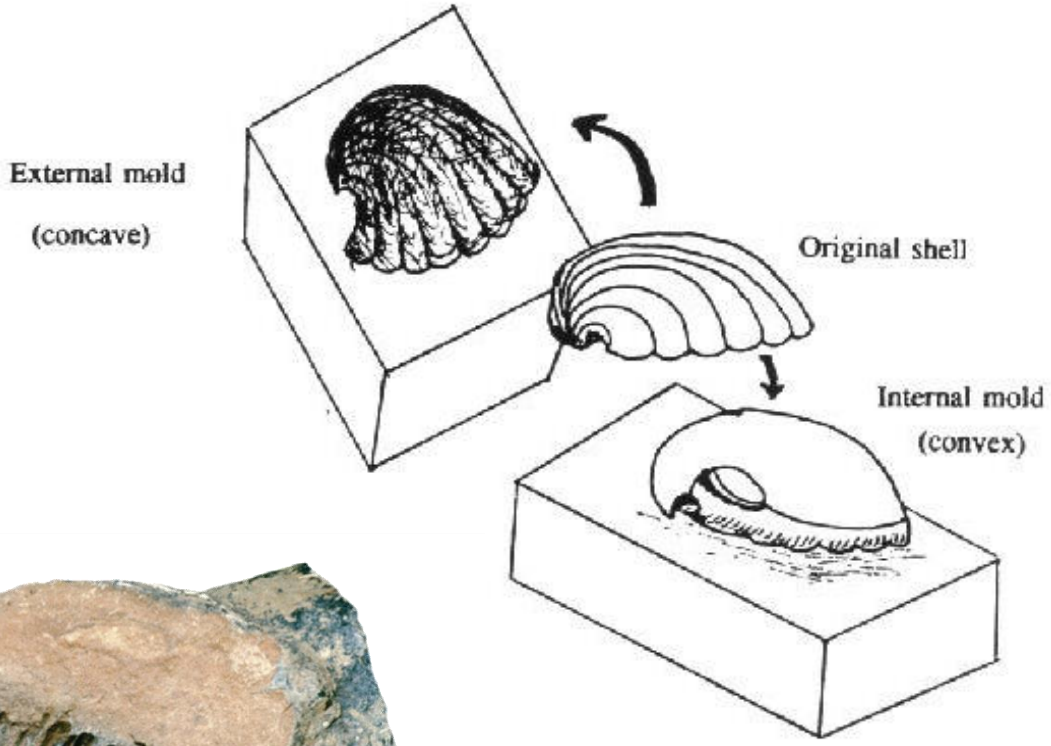
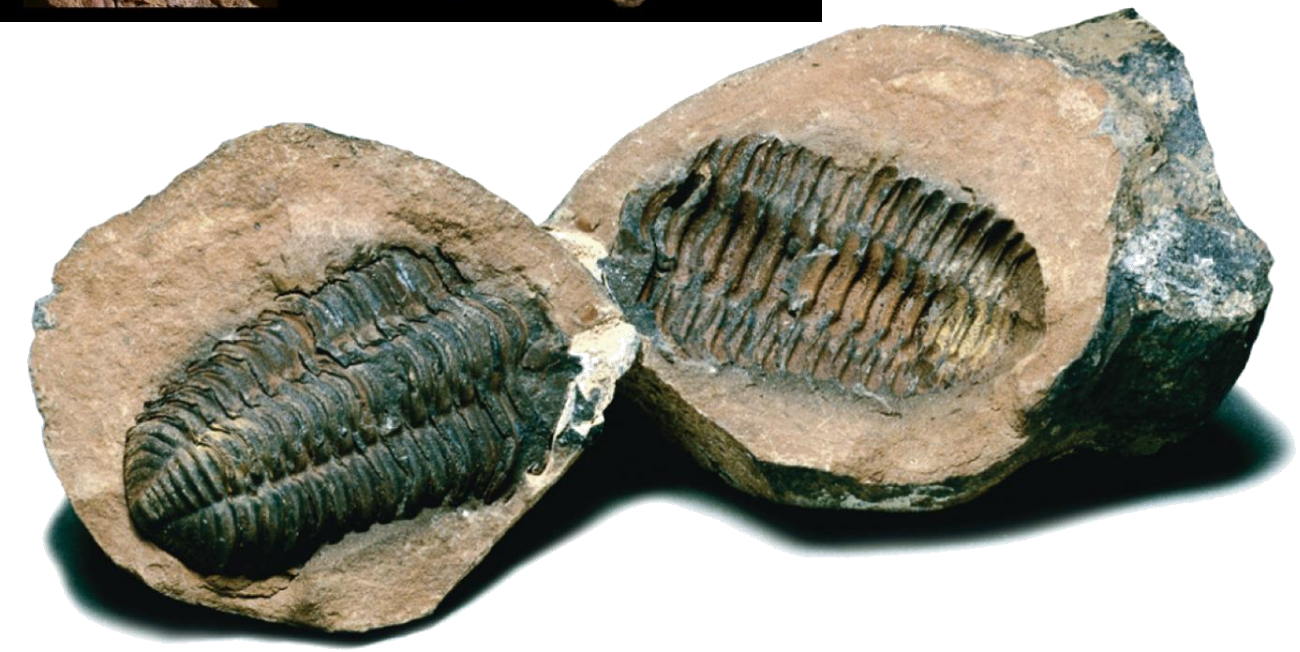




TIPOS DE FÓSILES: MOLDES

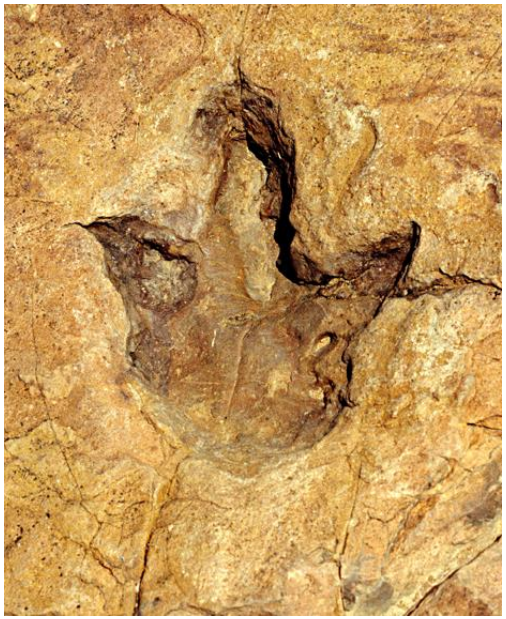




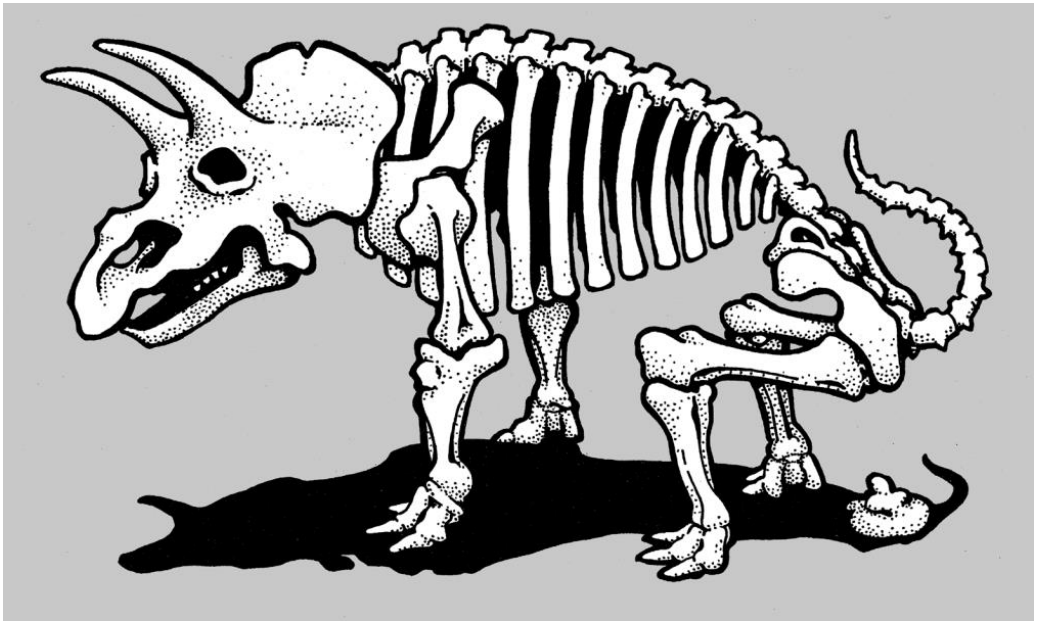


TIPOS DE FÓSILES: PEGADAS

ICNITAS



TIPOS DE FÓSILES: COPROLITOS



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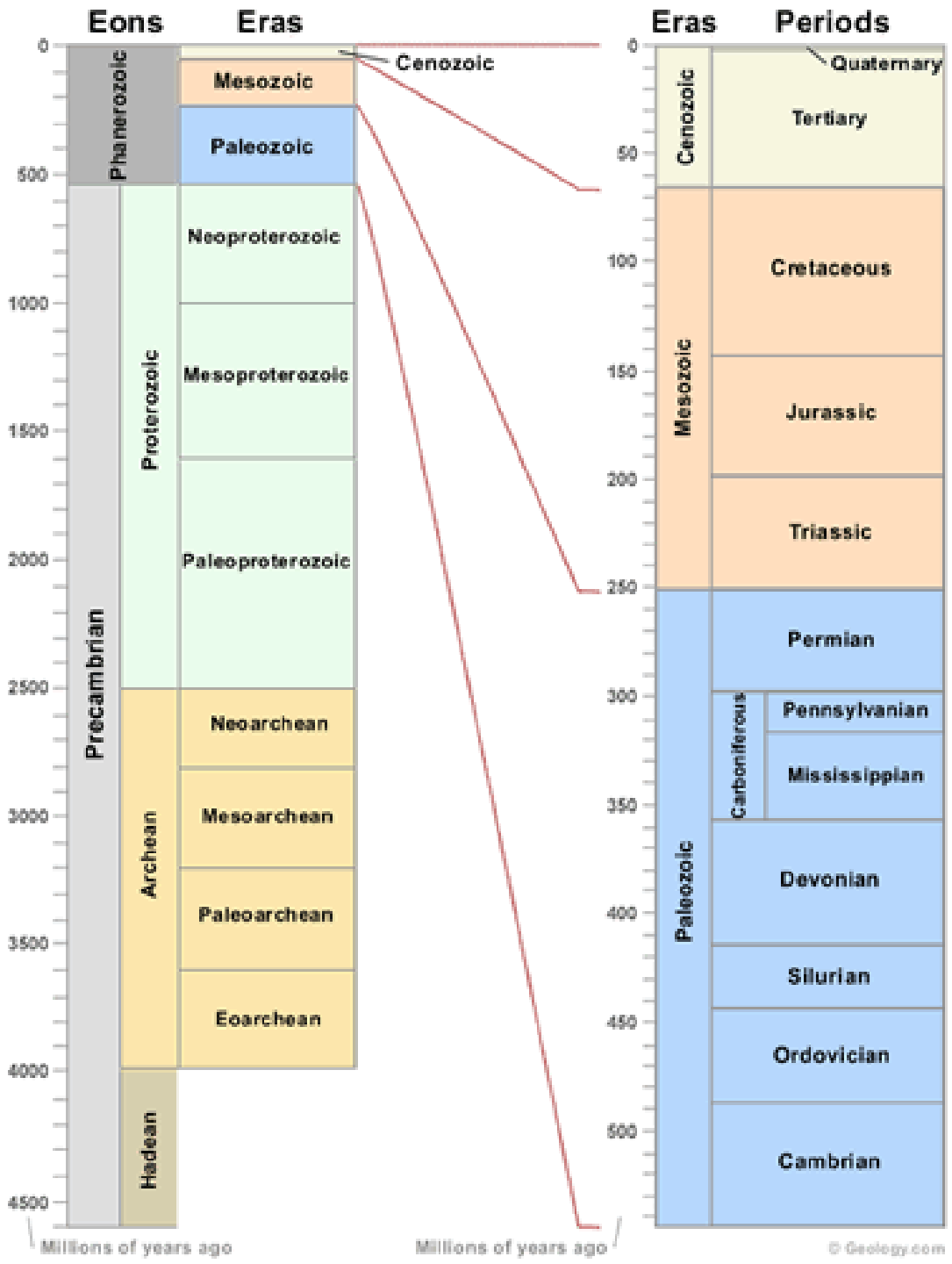
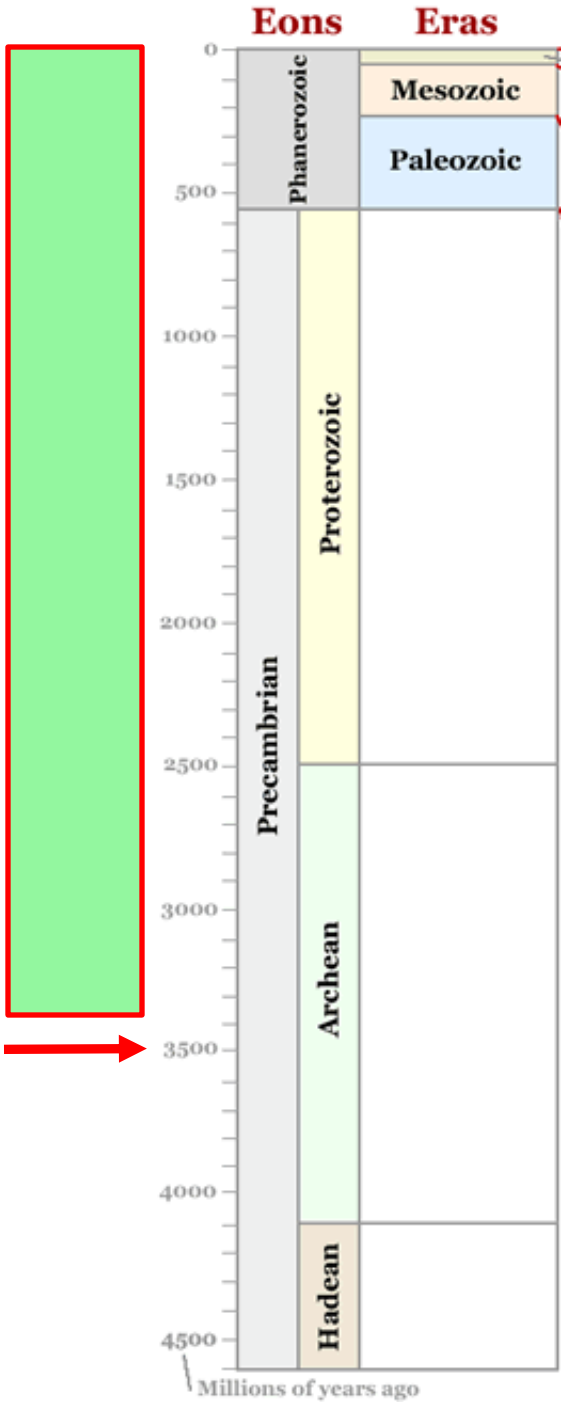
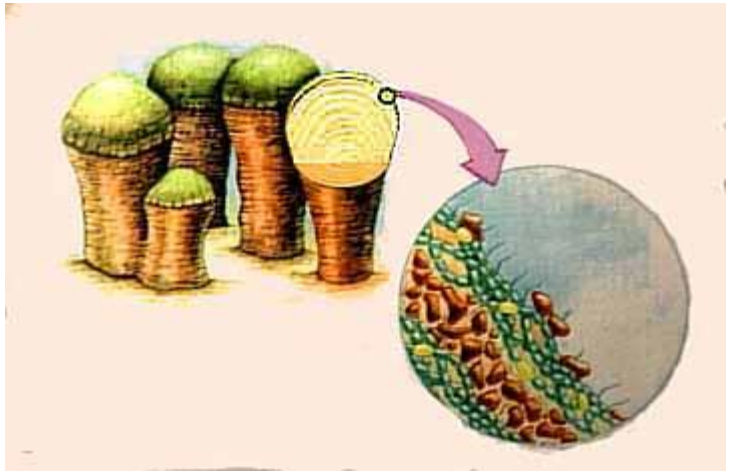


EXEMPLOS DE FÓSILES. O CADRO DO TEMPO XEOLÓXICO

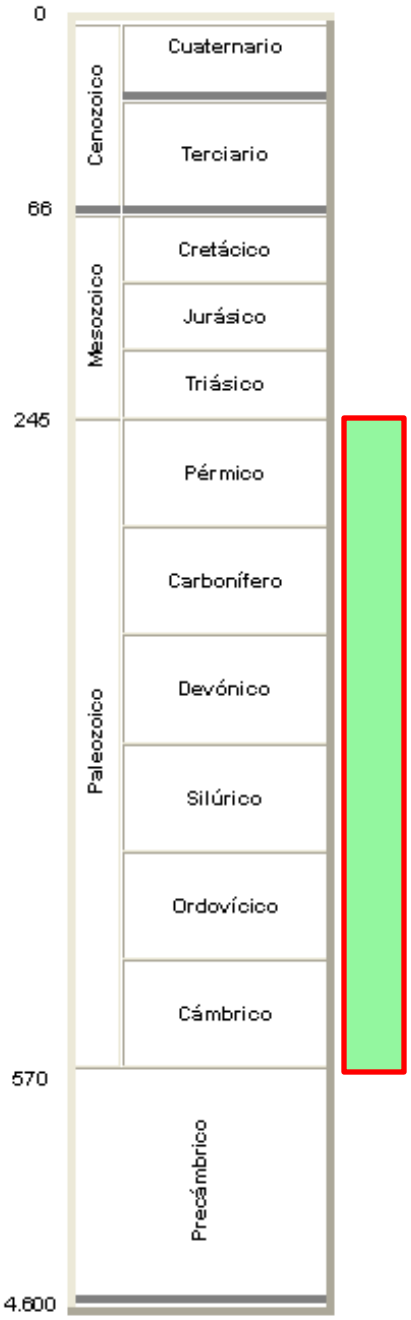


ESTROMATOLITOS

Orixinados
por bacterias



ESTROMATOLITOS ACTUALES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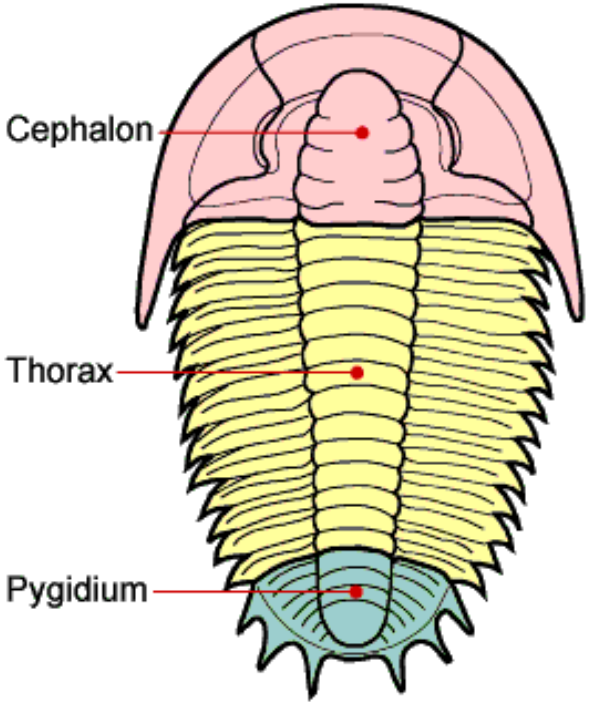
Cenozoico
Cuaternario
Terciario
66
Mesozoico
Cretácico
Jurásico
Triásico
245
Paleozoico
Pérmico
Carbonífero
Devónico
Silúrico
Ordovícico
Cámbrico
570
Precámbrico
4.600

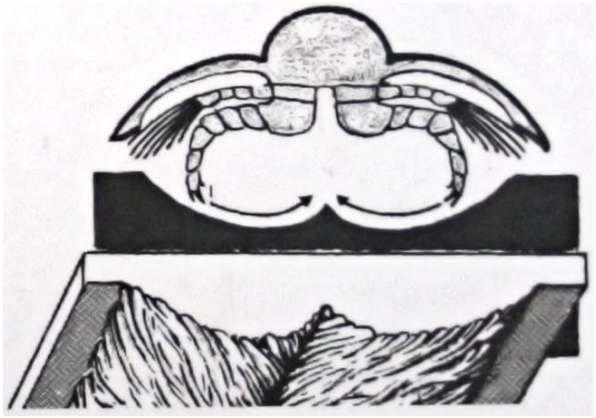
TRILOBITES

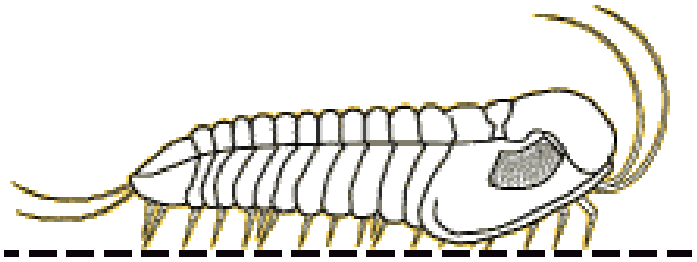

Cephalon
Thorax
Pygidium

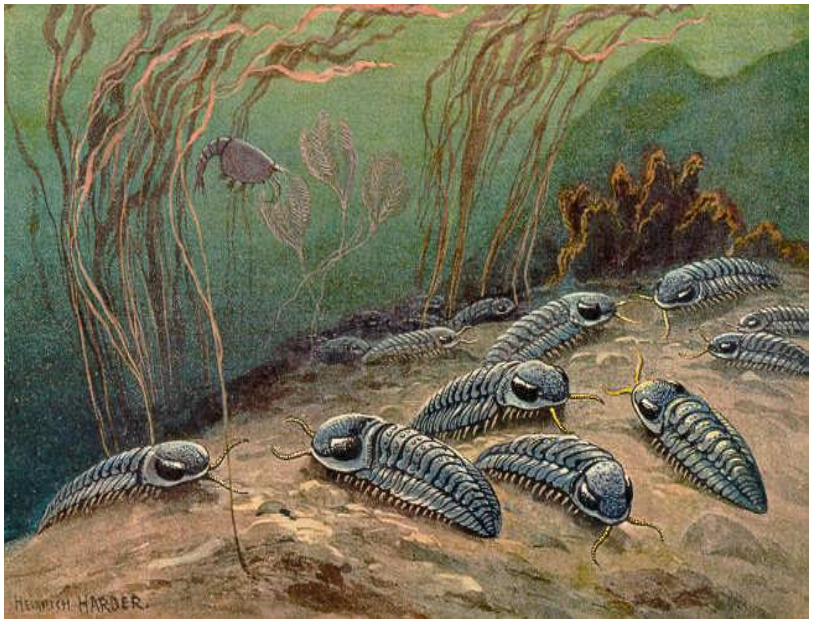
Calymene

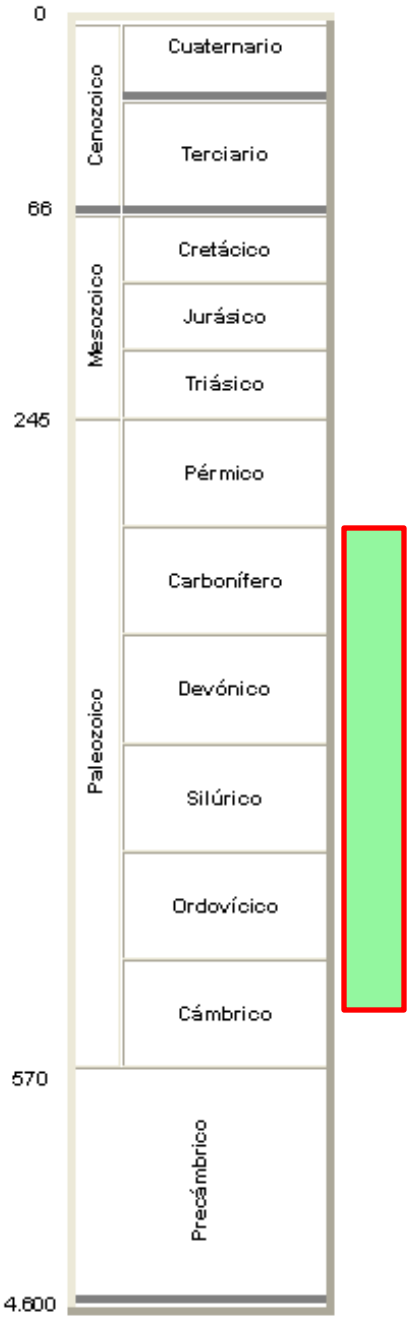
Paradoxides

CRUZIANA: PEGADAS DA MARCHA DOS TRILOBITES

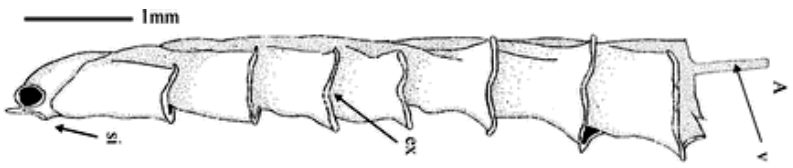








GRAPTOLITES



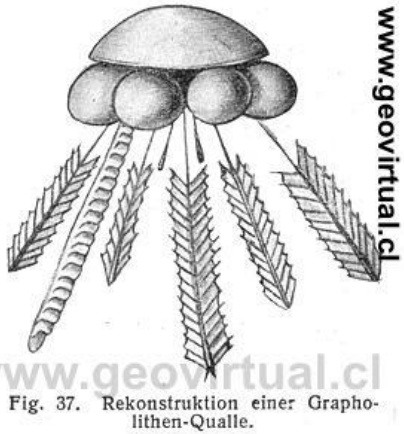
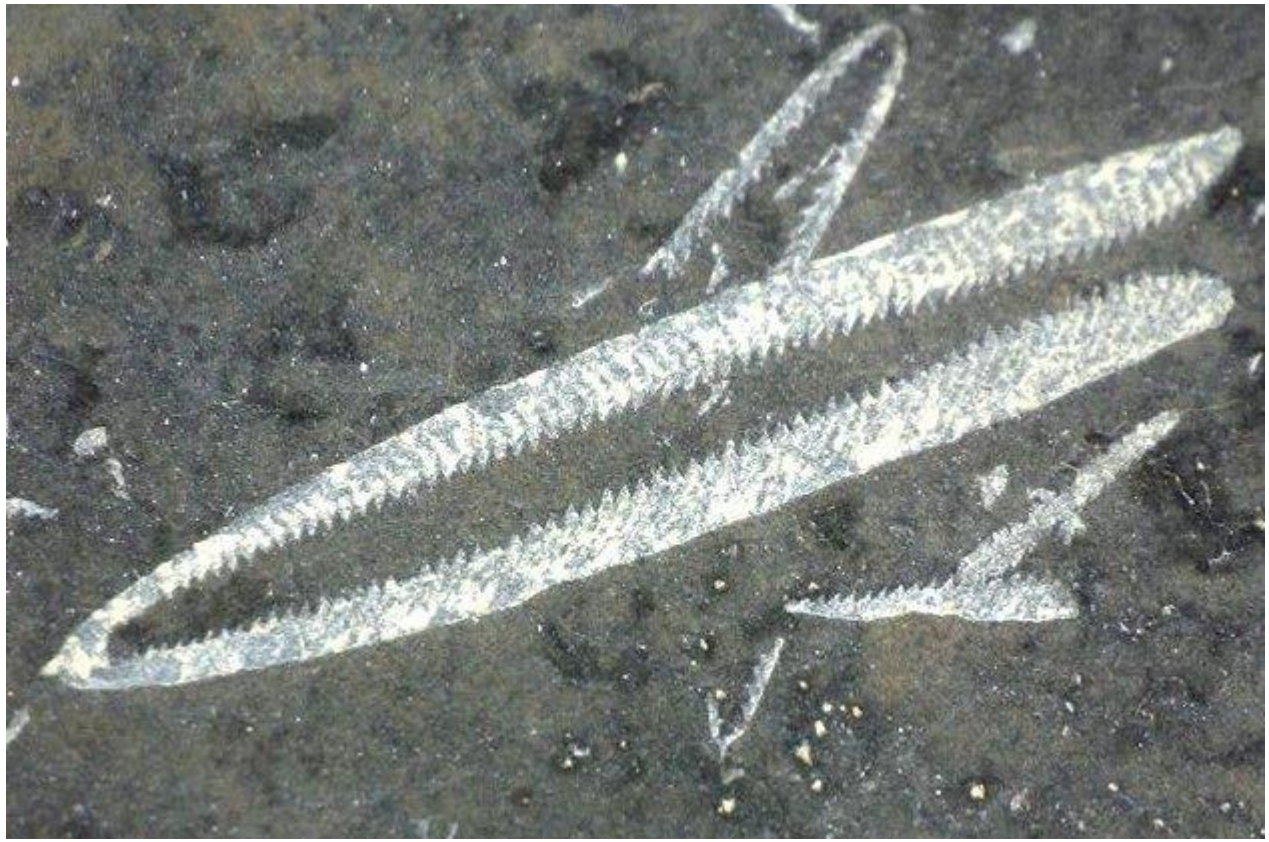
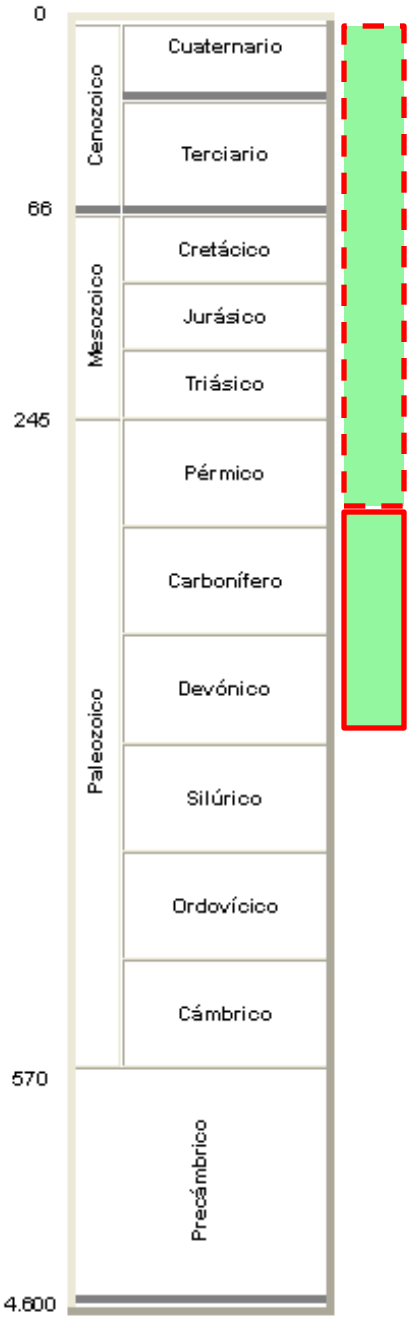


Fig. 37. Rekonstruktion einer Graptholithen-Qualle.



Monograptus



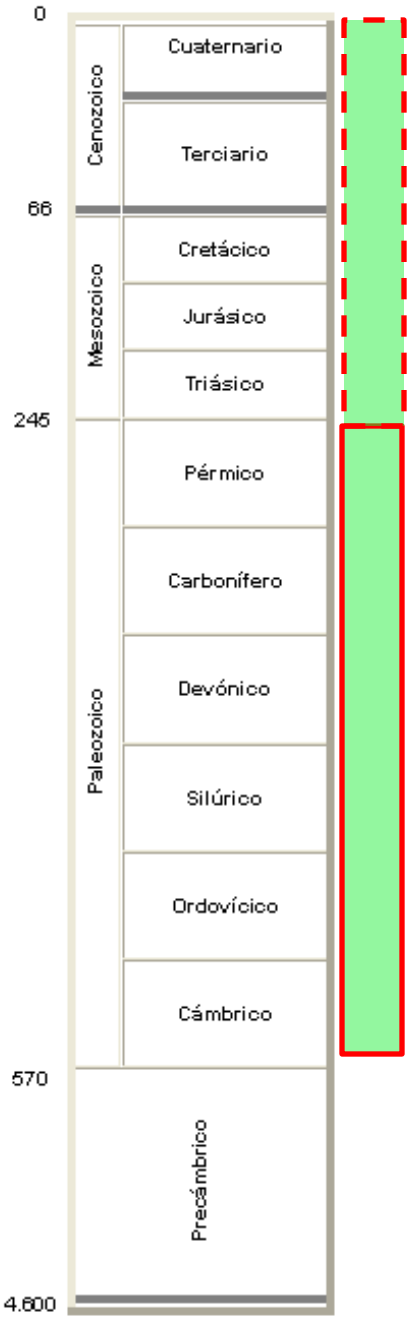
FENTOS FÓSILES

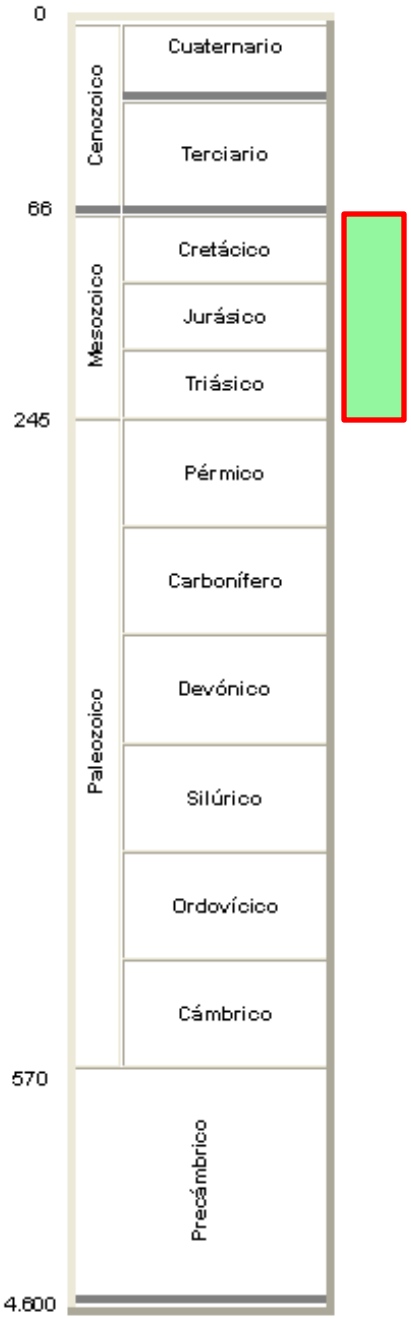
Lepidodendron

Pecopteris


© 2001 Brooks/Cole Publishing/ITP

BRAQUIÓPODOS

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Cenozoico
Cuaternario
Terciario
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Mesozoico
Cretácico
Jurásico
Triásico
245
Paleozoico
Pérmico
Carbonífero
Devónico
Silúrico
Ordovícico
Cámbrico
570
Precámbrico
4.600


27
28
29
30


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0
Cenozoico
Cuaternario
Terciario
66
Mesozoico
Cretácico
Jurásico
Triásico
245
Paleozoico
Pérmico
Carbonífero
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Precámbrico
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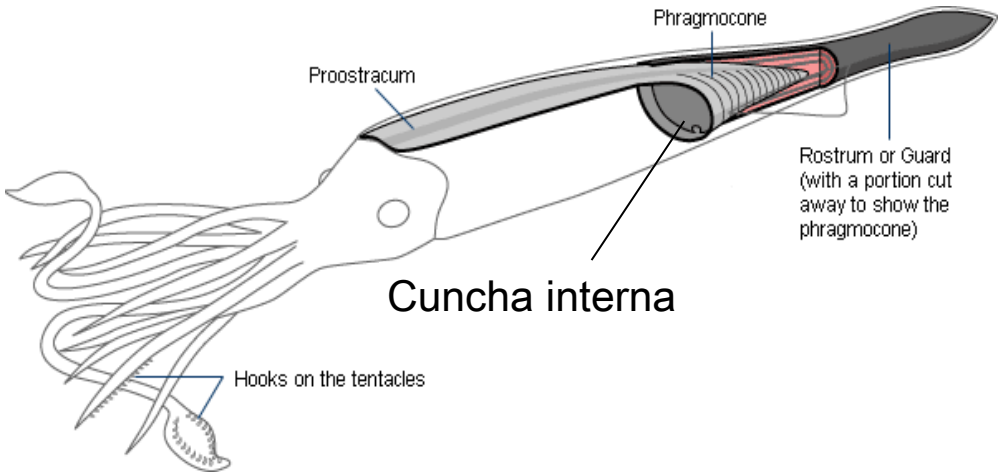
BELEMNITES


Phragmocone
Proostracum
Rostrum or Guard (with a portion cut away to show the phragmocone)
Cuncha interna
Hooks on the tentacles


A
B
C

RÉPTILES MESOZOICOS

Stegosaurus

Allosaurus

NUMMULITES


0
Cenozoico
Cuaternario
Terciario
66
Mesozoico
Cretácico
Jurásico
Triásico
245
Paleozoico
Pérmico
Carbonífero
Devónico
Silúrico
Ordovícico
Cámbrico
570
Precámbrico
4.600


W. Griem (2009)
www.geovirtual.cl

DENTES DE TIBURONS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Cenozoico
Cuaternario
Terciario
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Mesozoico
Cretácico
Jurásico
Triásico
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Paleozoico
Pérmico
Carbonífero
Devónico
Silúrico
Ordovícico
Cámbrico
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Precámbrico
4.600

Smilodon


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Terciario
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Mesozoico
Cretácico
Jurásico
Triásico
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Paleozoico
Pérmico
Carbonífero
Devónico
Silúrico
Ordovícico
Cámbrico
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Precámbrico
4.600

Mammuthus

HOMINIDOS

Australopithecus afarensis
3,5 ma