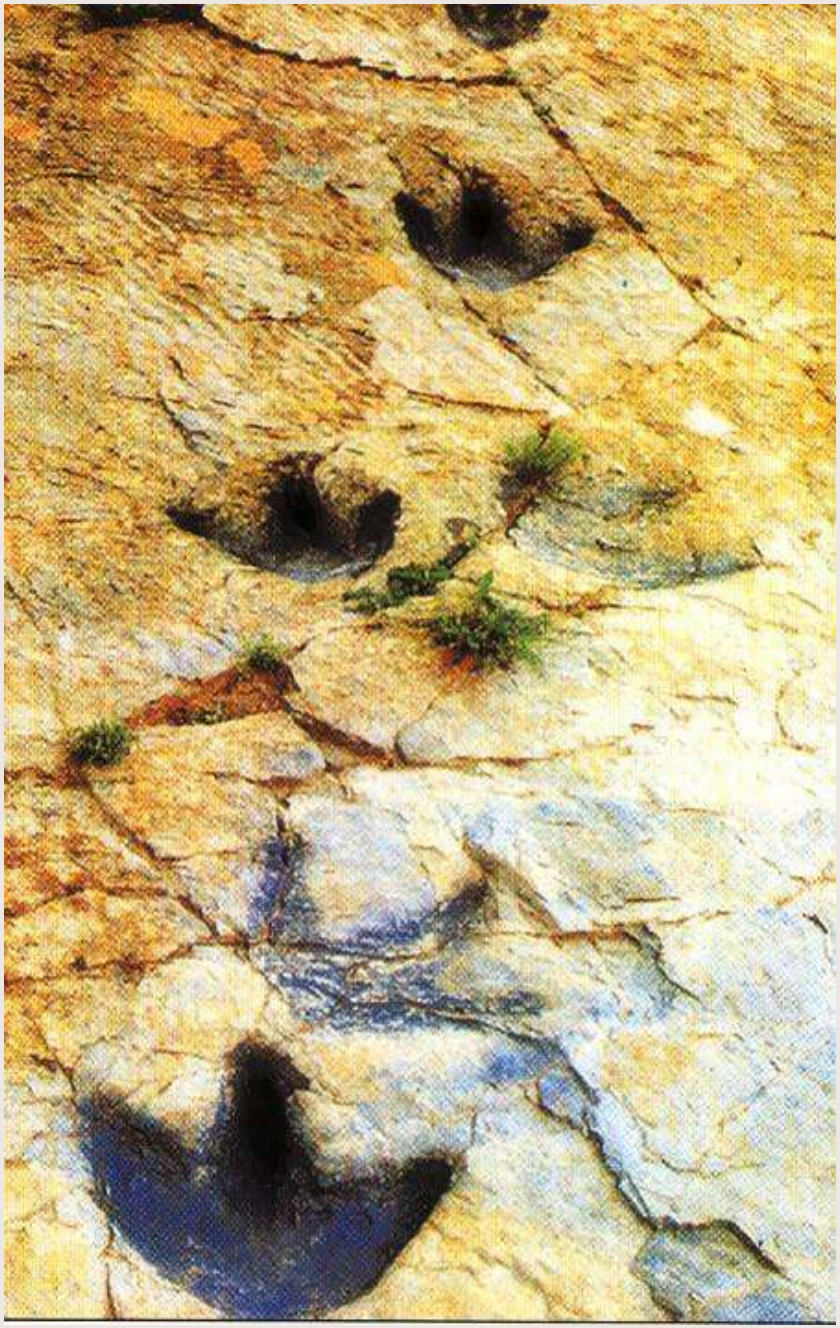
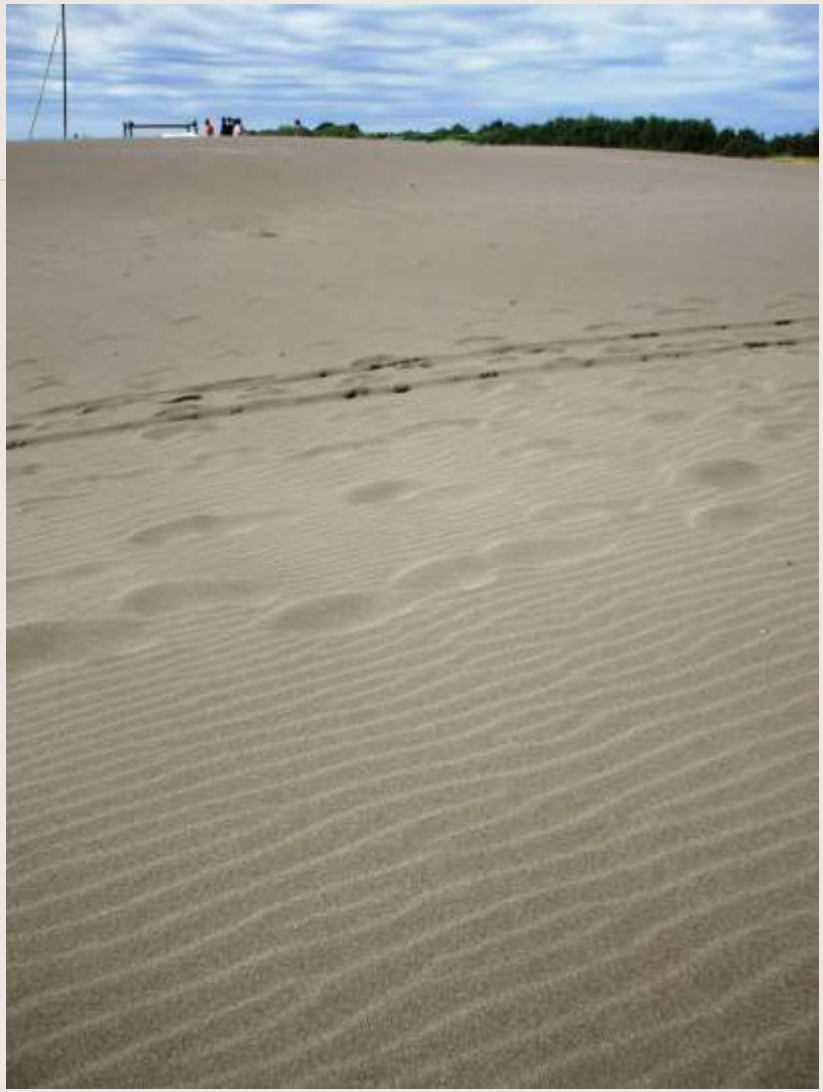
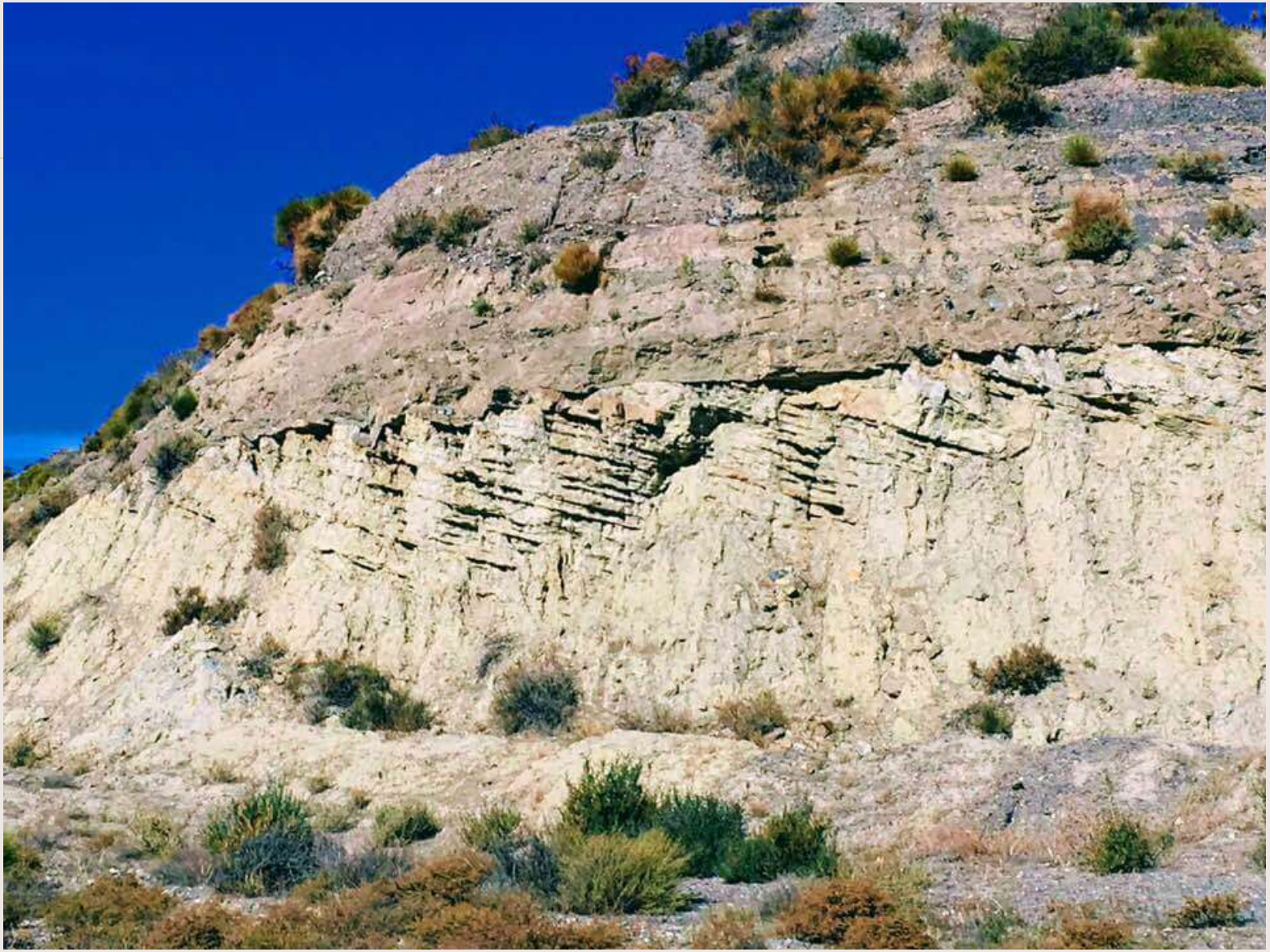
LA EDAD DE LA TIERRA

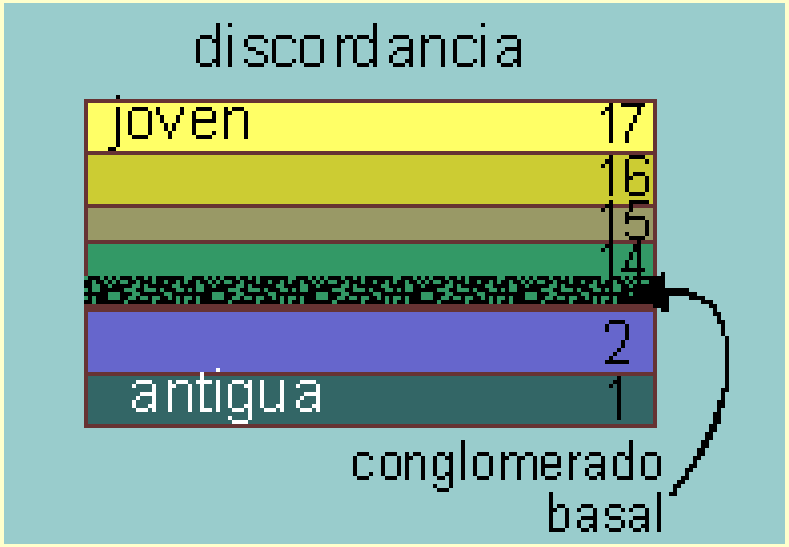
Métodos de datación

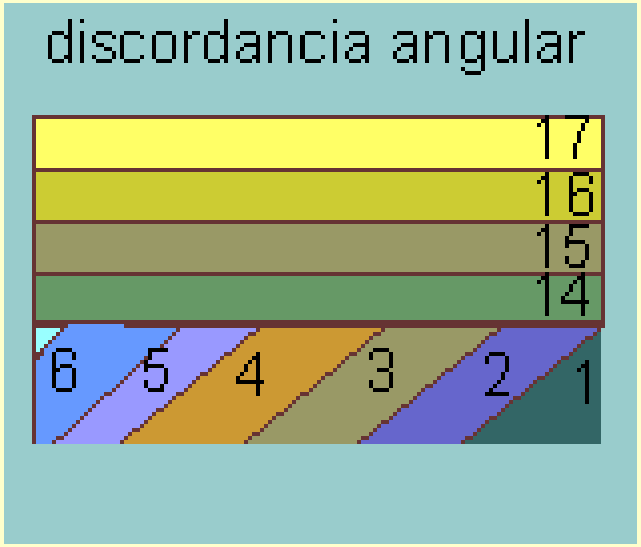


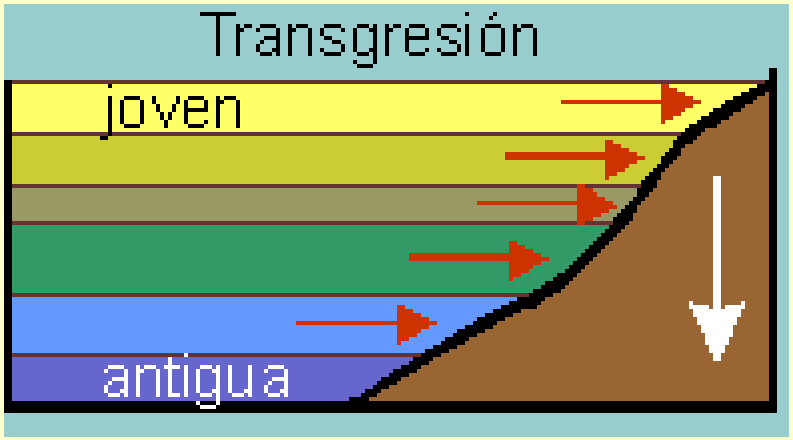




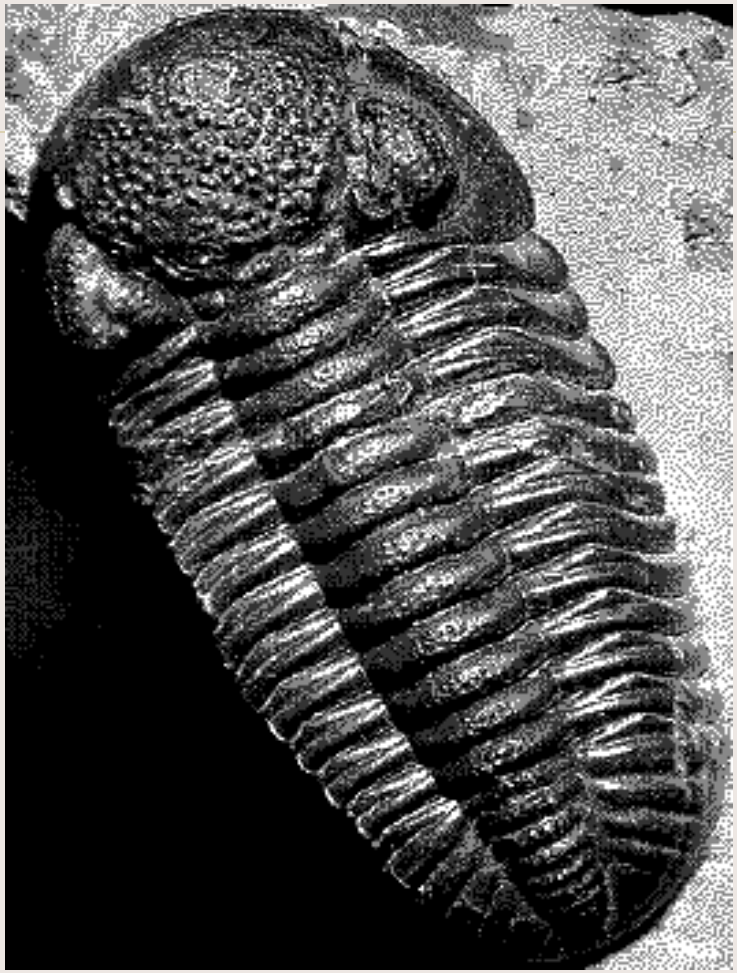
Discordancias

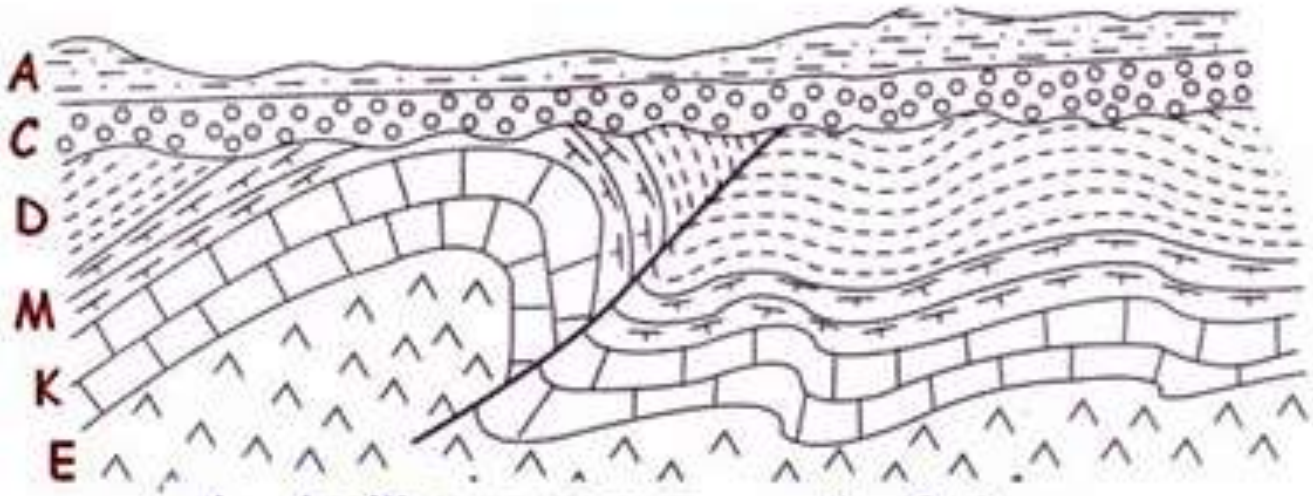




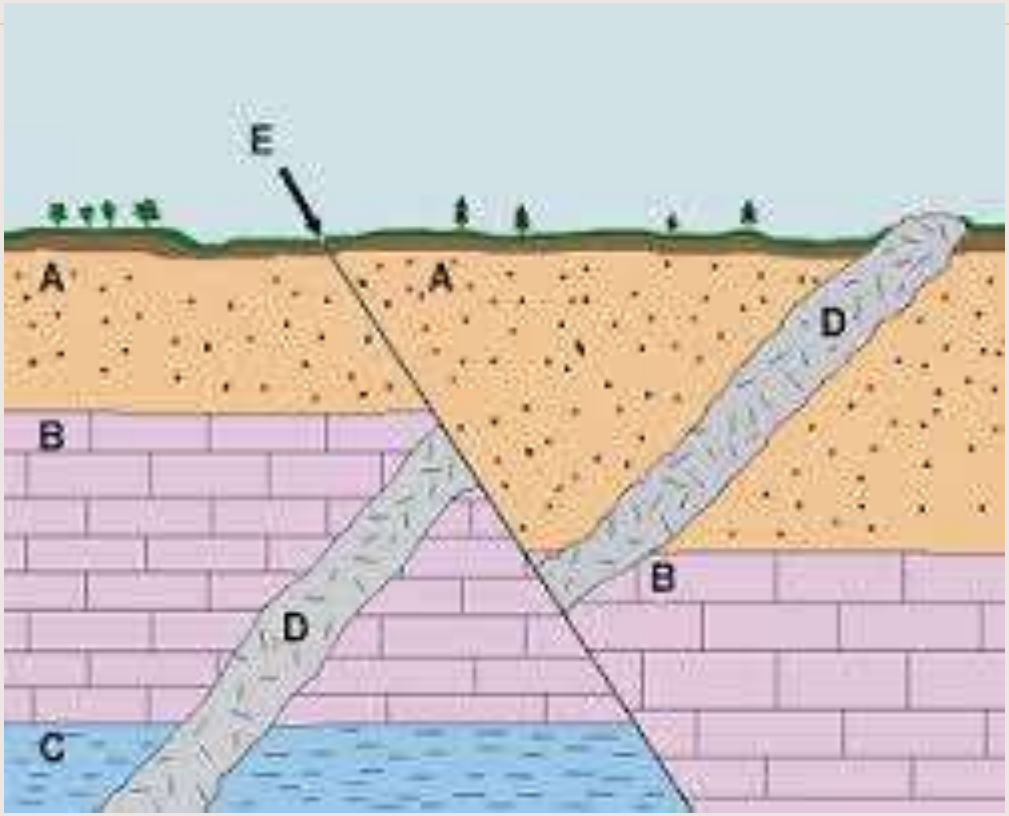


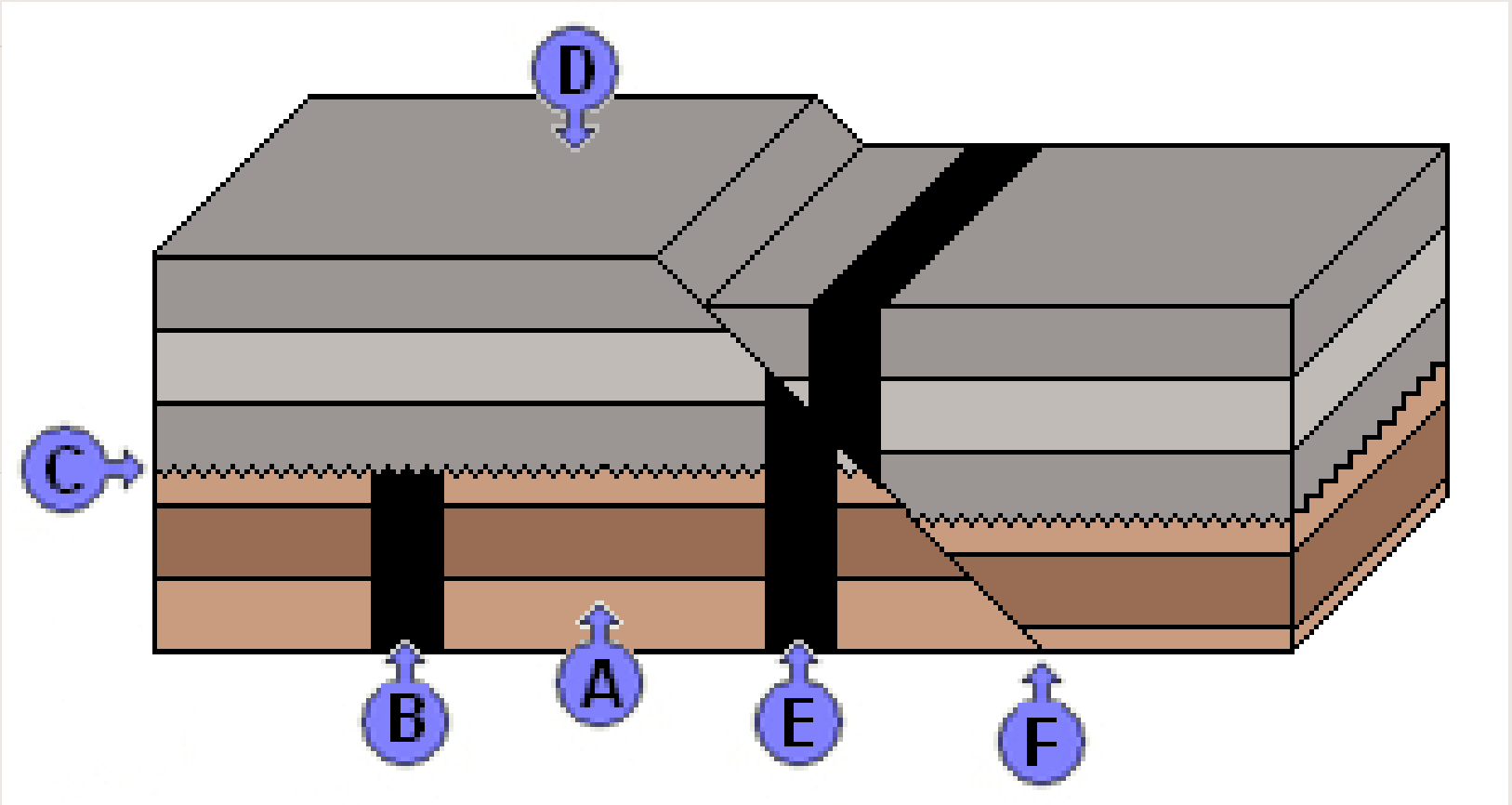
Oxynotoceras (Jurassic) 13cm diameter

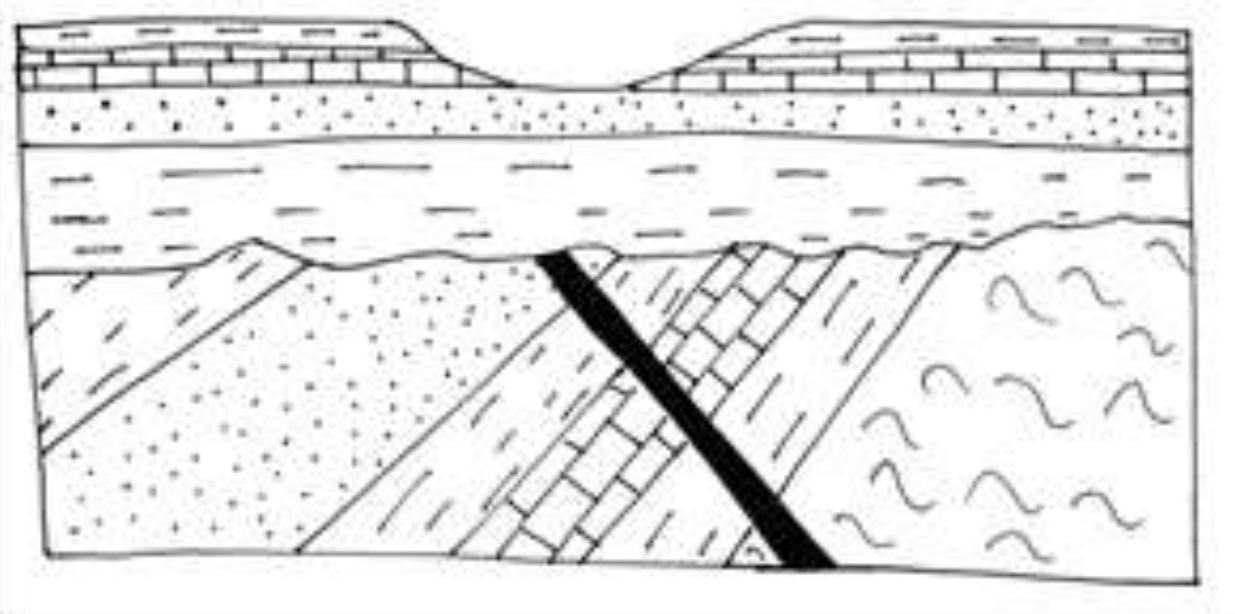


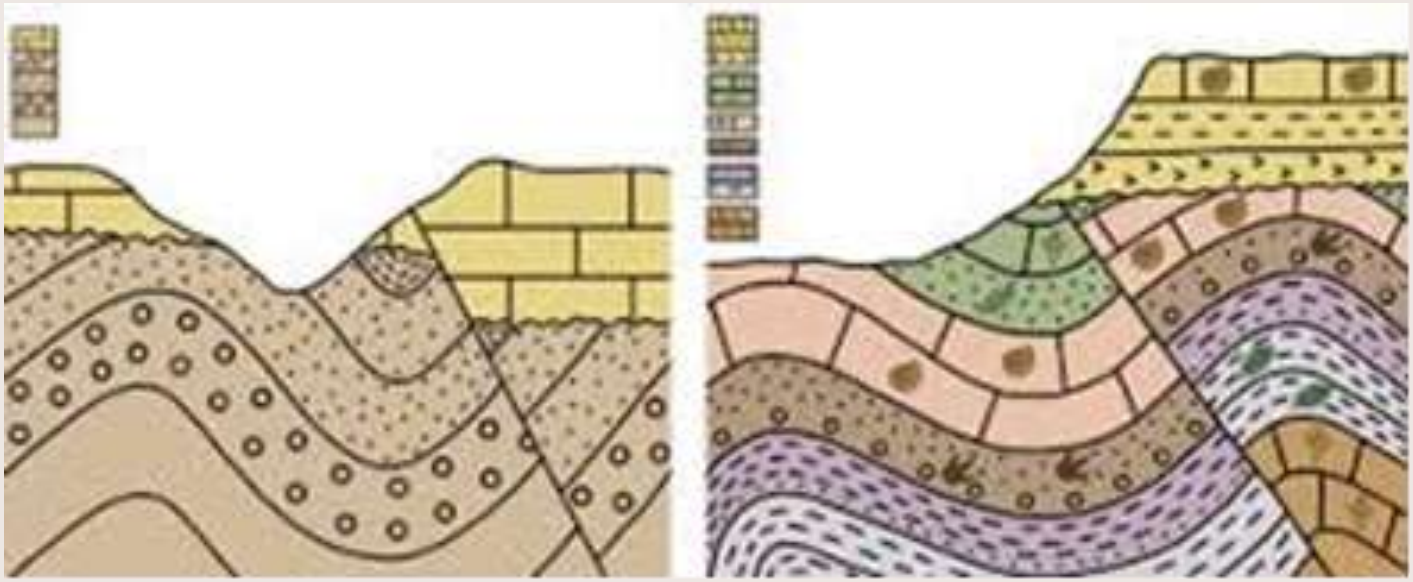


A- Arcillas y arenas
C- Conglomerados
E- Evaporitas y arcillas
K- Calizas
D- Arcillas
M- Margas


E
A
A
D
B
B
D
C

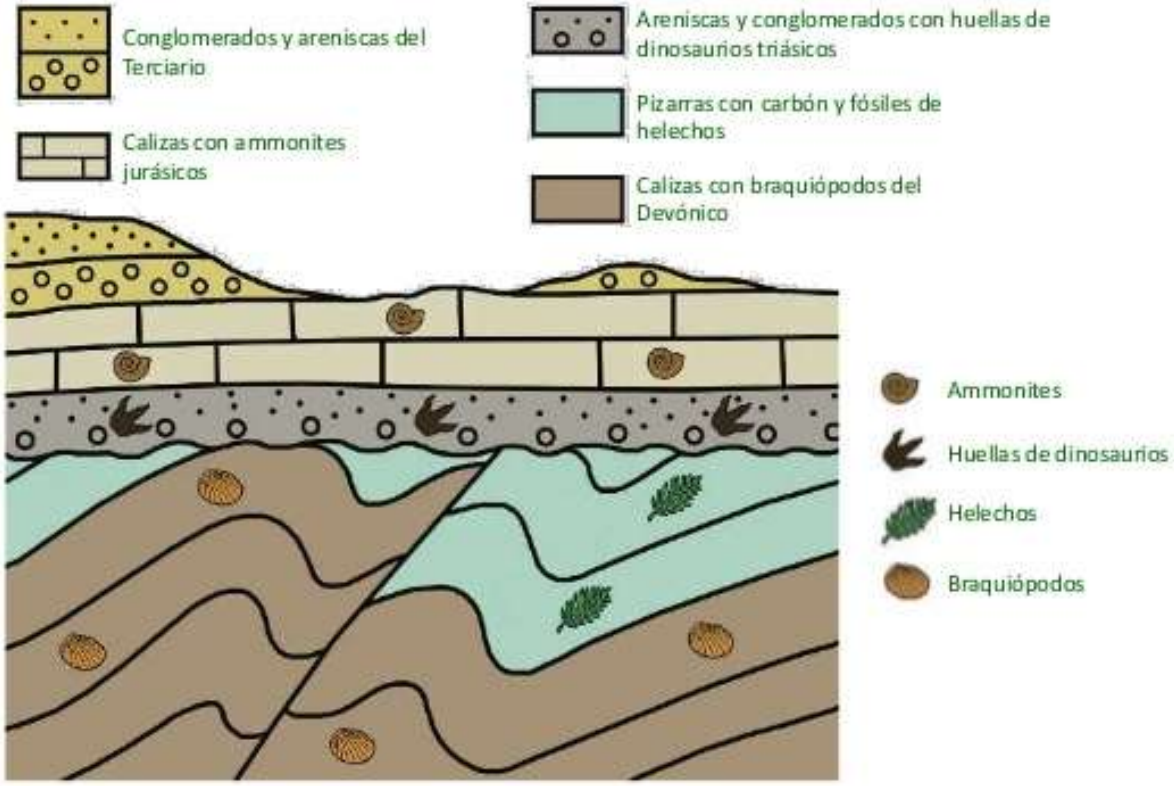

D
C
B
A
E
F



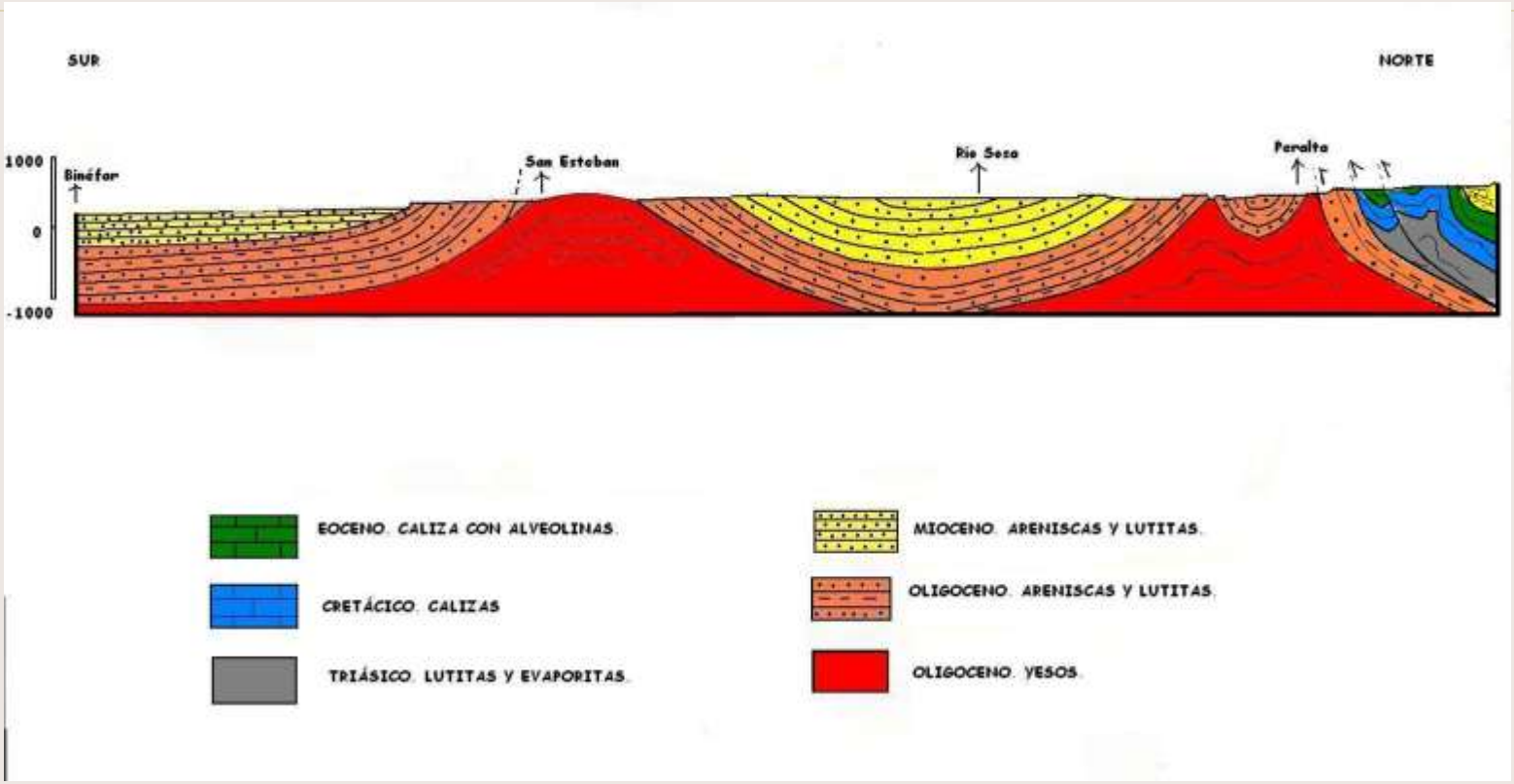


Análisis de cortes geológicos

Corte 4



CORTE GEOLÓGICO BINÉFAR-PERALTA DE LA SAL.

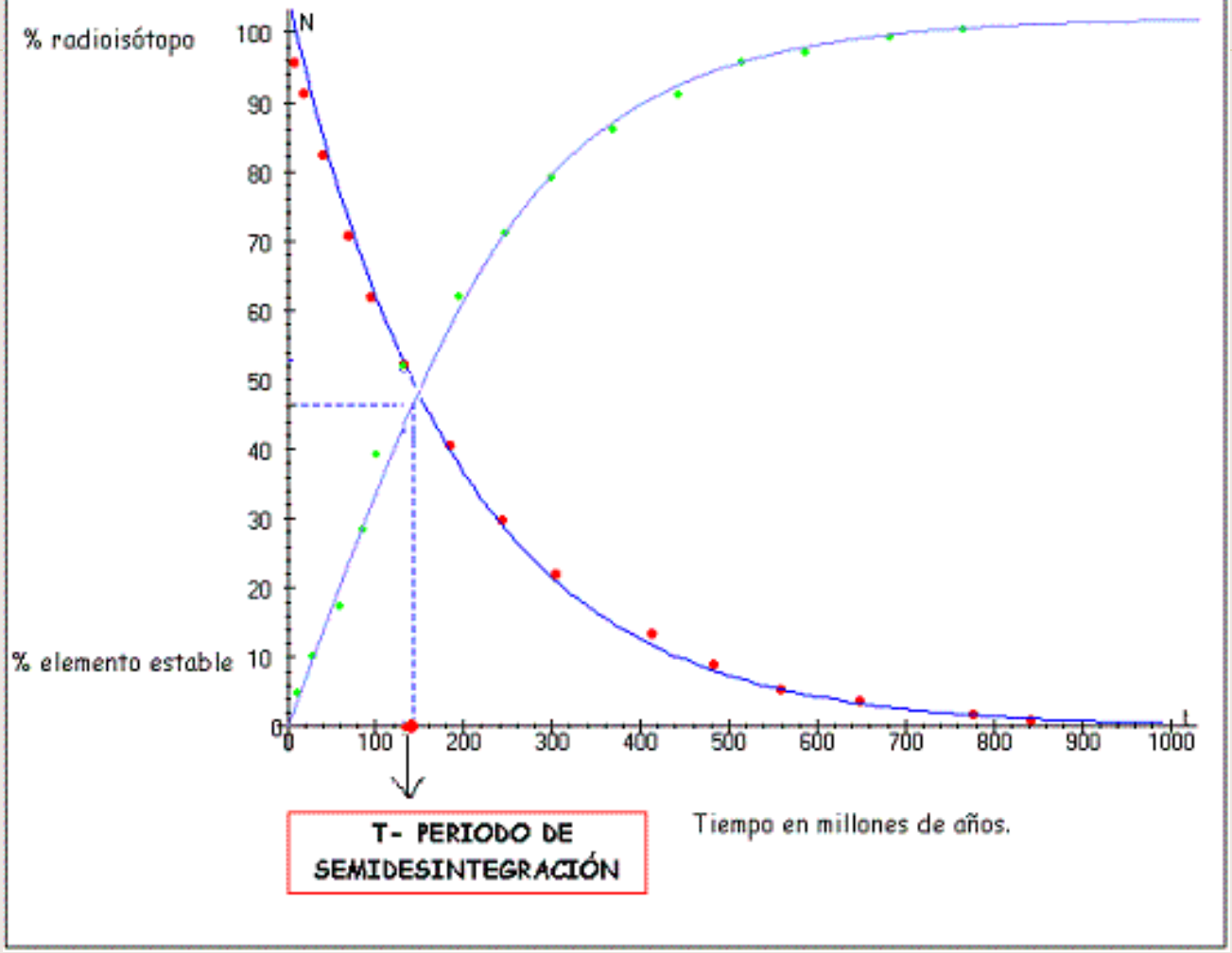


DATACIÓN ABSOLUTA: ANILLOS DE CRECIMIENTO

VARVAS GLACIARES


1 cm

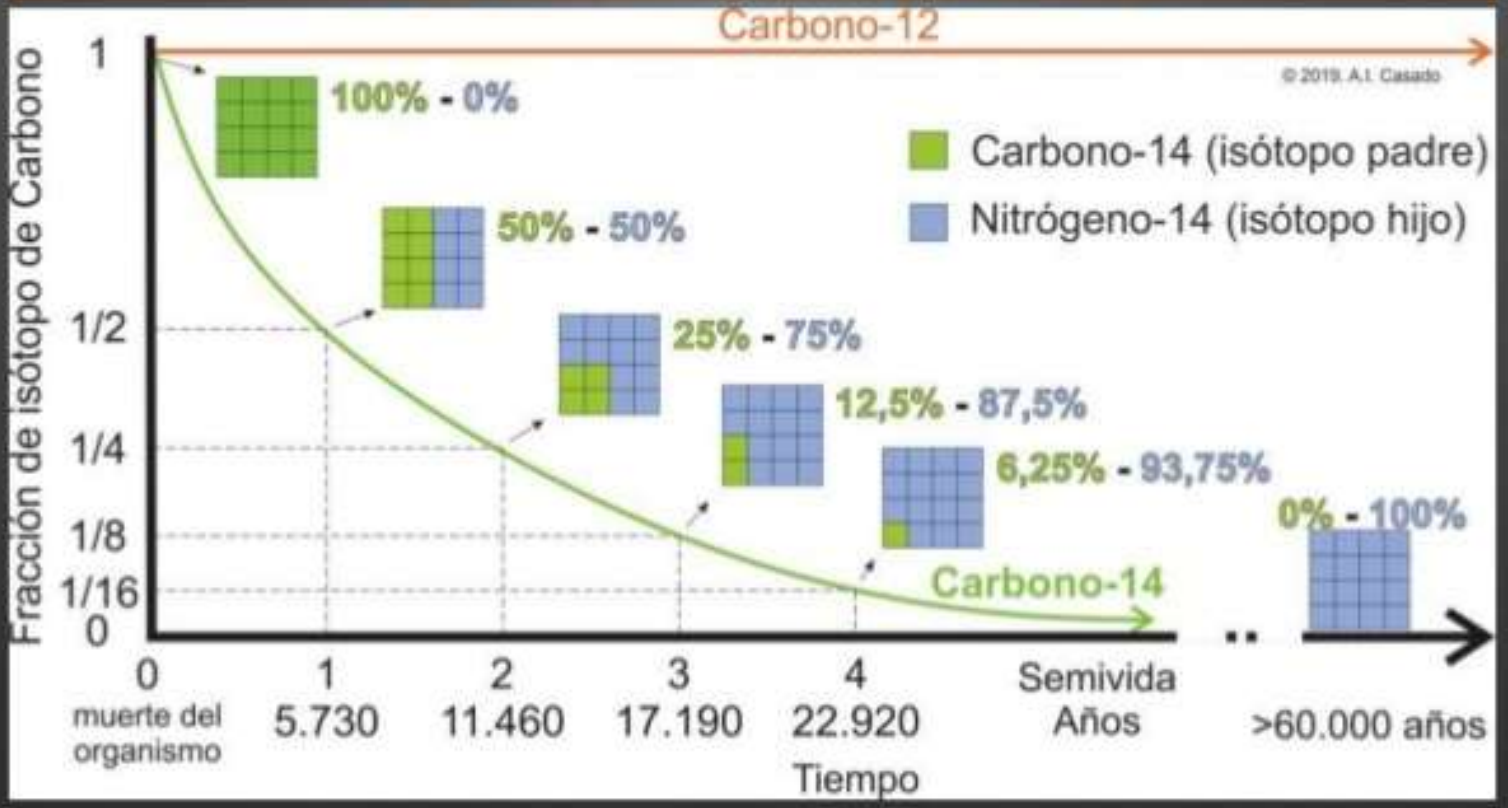
LA DESINTEGRACIÓN RADIOISOTÓPICA.



Tiempo geológico: datación absoluta

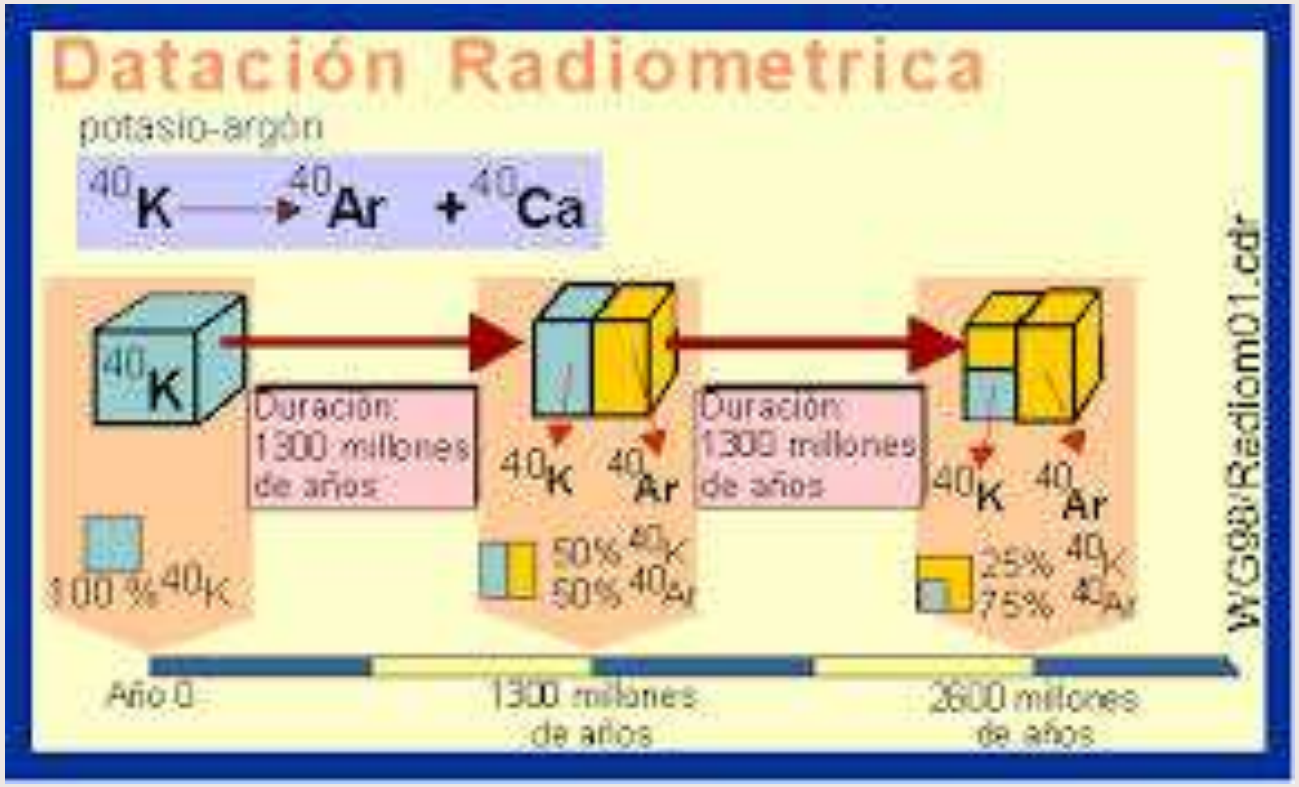
Método de datación por carbono radiactivo

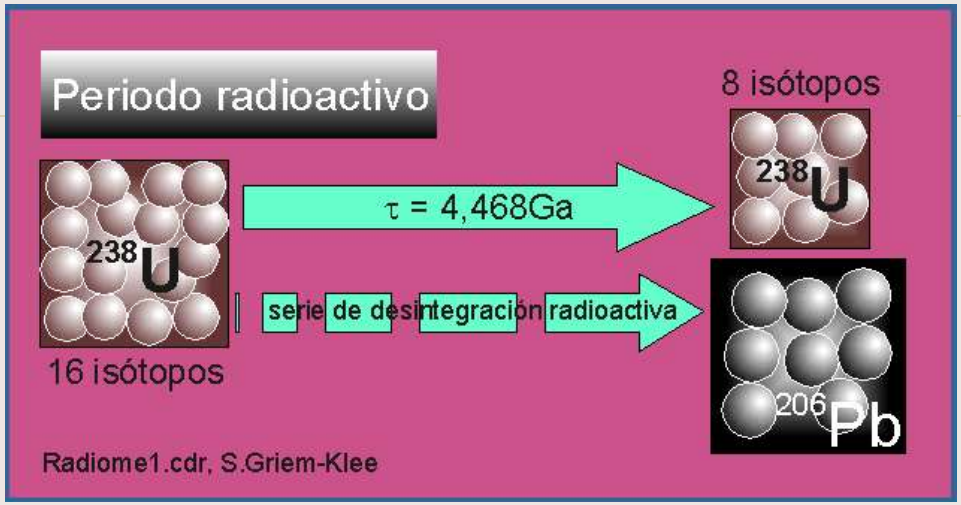
Esta técnica de datación se basa en averiguar la proporción C14/C12 en materiales orgánicos: fibras vegetales, madera, huesos, pelo, carbón, etc.



Tiempo geológico: datación absoluta

El espectómetro de masas es un instrumento que mide las proporciones de átomos de diferentes masas.


Datación Radiometrica
potasio-argón
40K → 40Ar + 40Ca
40K
Duración:
1300 millones
de años
40K 40Ar
Duración:
1300 millones
de años
40K 40Ar
100 % 40K
50% 40K
50% 40Ar
25% 40K
75% 40Ar
Año 0
1300 millones
de años
2600 millones
de años
WG98\Radiom01.cdr



Tritio---→ ^{3}He T = 12,3 años

^{39}Ar ---→ ^{39}K T = 269 años

^{14}C ---→ ^{14}N T= 5730 años

^{10}Be ---→ ^{10}B T = 1,5 m.a.

^{235}U----→ ^{207}Pb T= 713 m.a.

^{238}U ----→ ^{206}Pb T= 4510 m. a.

^{232}Th --→ ^{208}Pb T = 13900 m.a.

^{187}Re --→ ^{187}Os T = 43000 m. a.

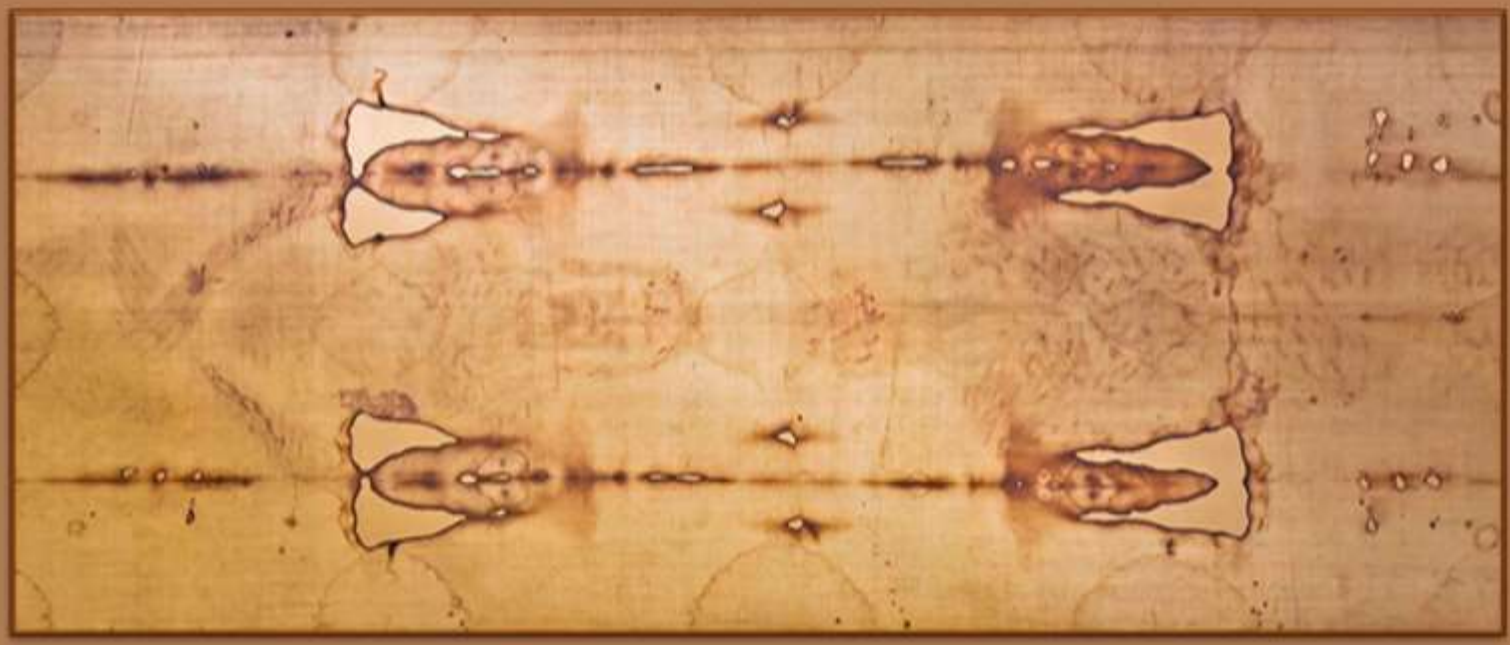
^{87}Rb --→ ^{87}Sr T = 46000 m. a.

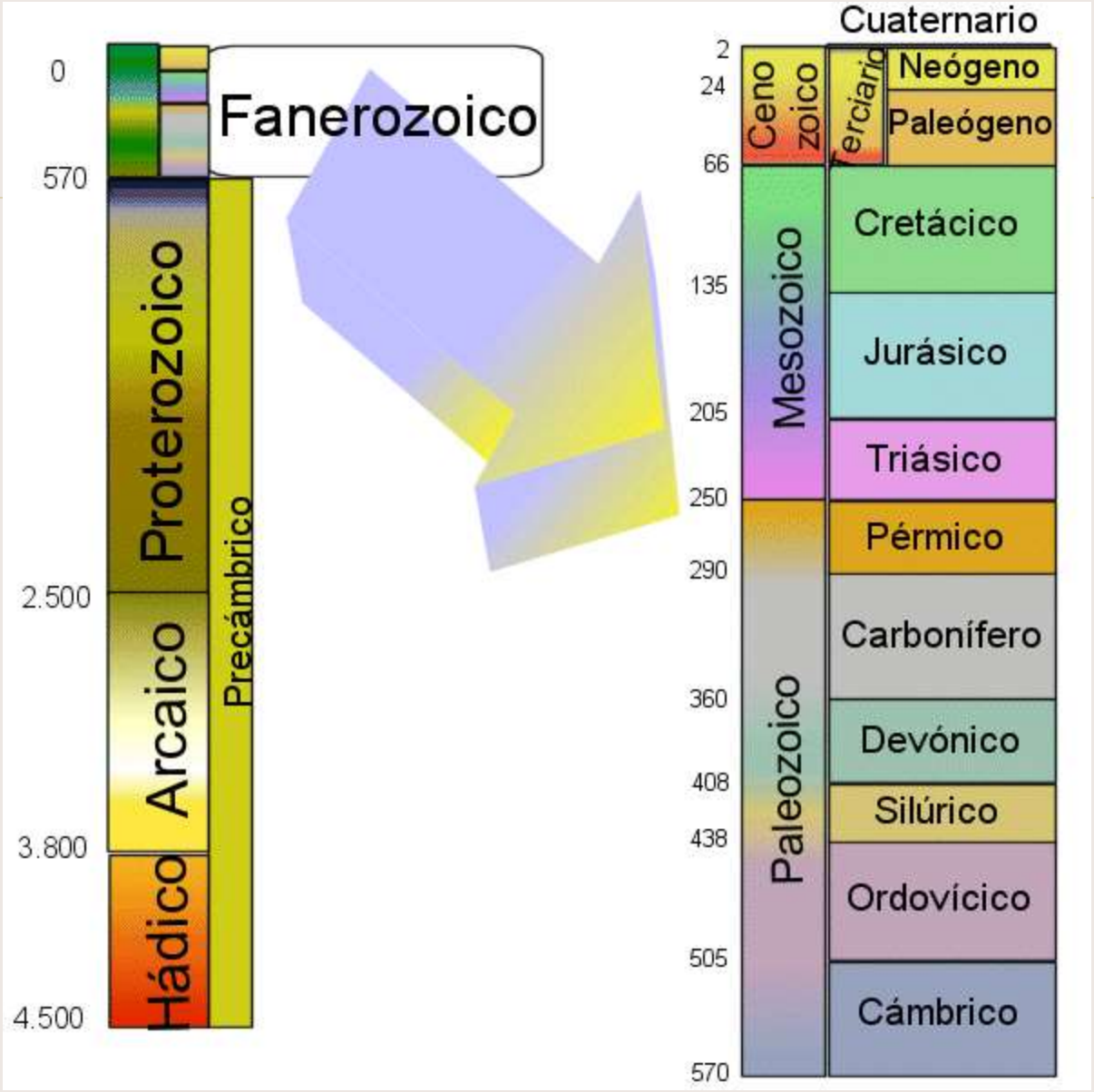
Carbon 14 dating

Developed in 1949 by Willard Libby (Chemistry Nobel Prize in 1960) and perfected in 1977 with the creation of mass spectrometry by particle accelerator, the radiocarbon or carbon 14 is a very dependable method to measure organic remains of up to 60,000 years old, although it is not foolproof.

Dating problems

Something inconvenient about the method is that it assumes that the production of carbon 14 in the atmosphere has been constant for the last 60,000 years. However, there have been fluctuations in different ages and places that have to be taken into consideration. Additionally, the samples may have been contaminated after the death of the living organism, concluding in a dating of later age than the real one.




Fanerozoico
Proterozoico
Arcaico
Hádico
Precámbrico
0
570
2.500
3.800
4.500
Cuaternario
2
24
66
135
205
250
290
360
408
438
505
570
Ceno zoico
Terciario
Neógeno
Paleógeno
Mesozoico
Cretácico
Jurásico
Triásico
Paleozoico
Pérmico
Carbonífero
Devónico
Silúrico
Ordovícico
Cámbrico