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12.001 Introduction to Geology  
Spring 2008

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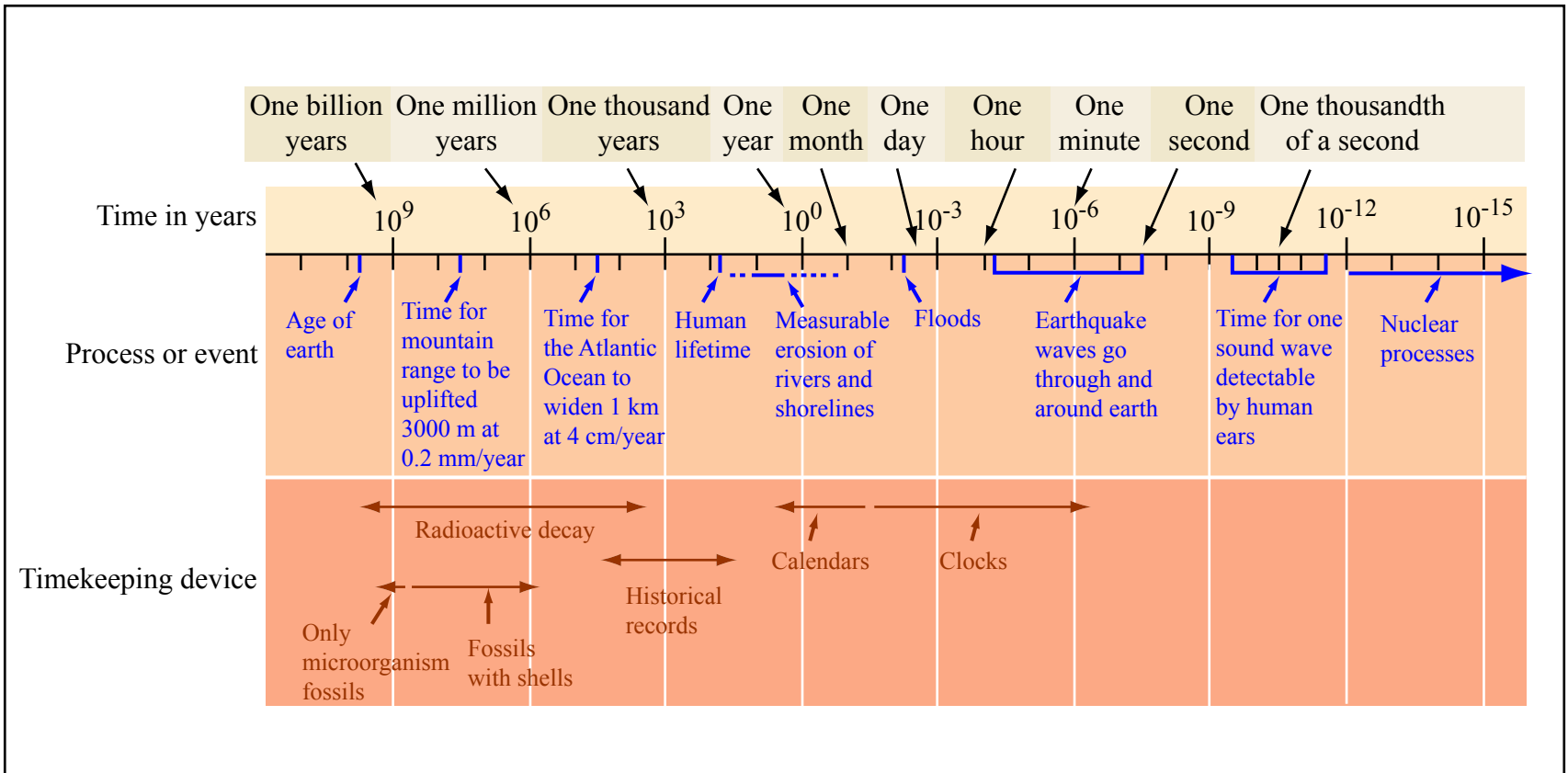


Figure by MIT OpenCourseWare.

Fig. 10.1

## Barreme, France



**Anke Friedrich (professor, U. Hannover, Ph.D. MIT) poses by an ammonite in the type locality**

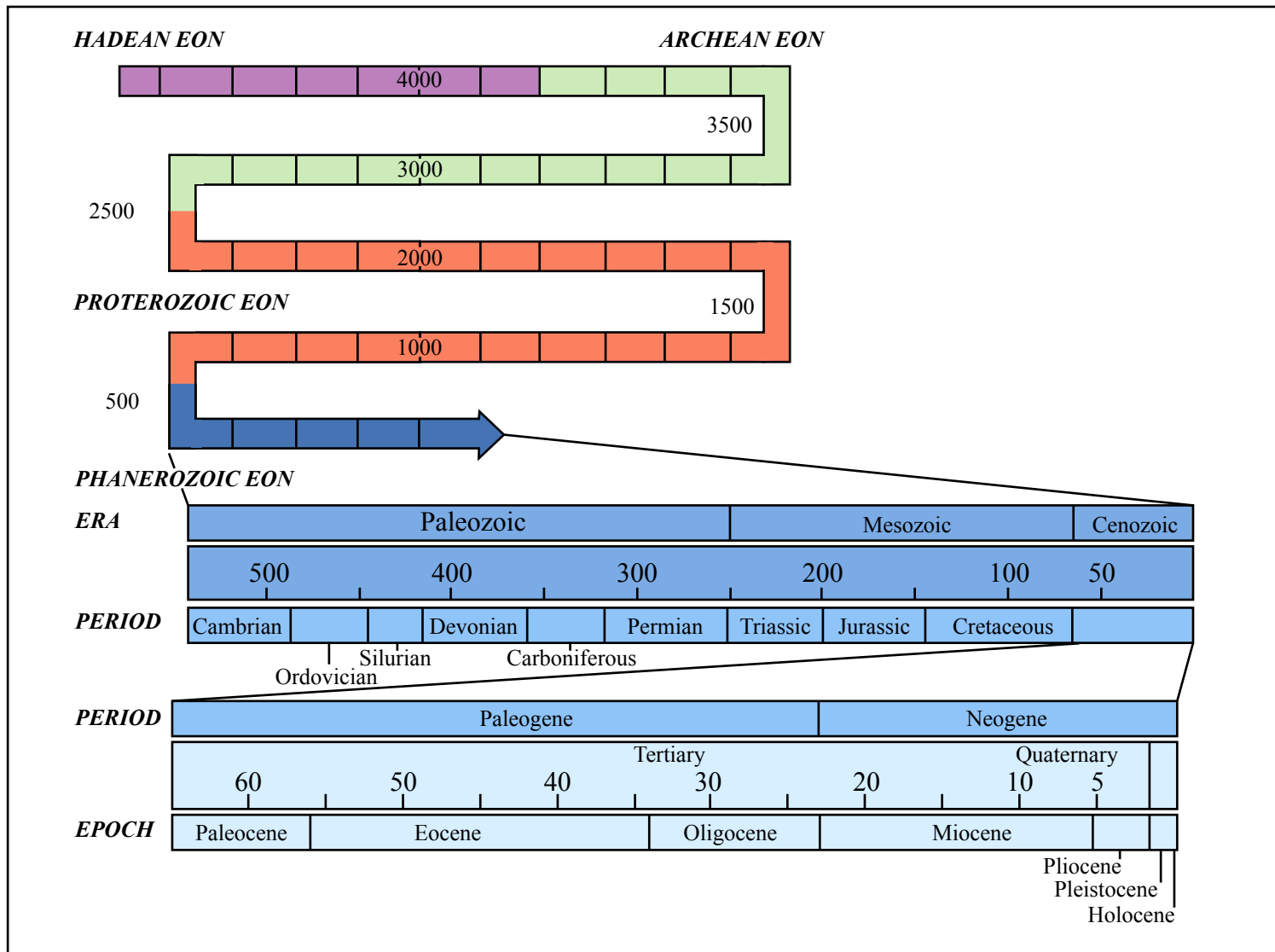
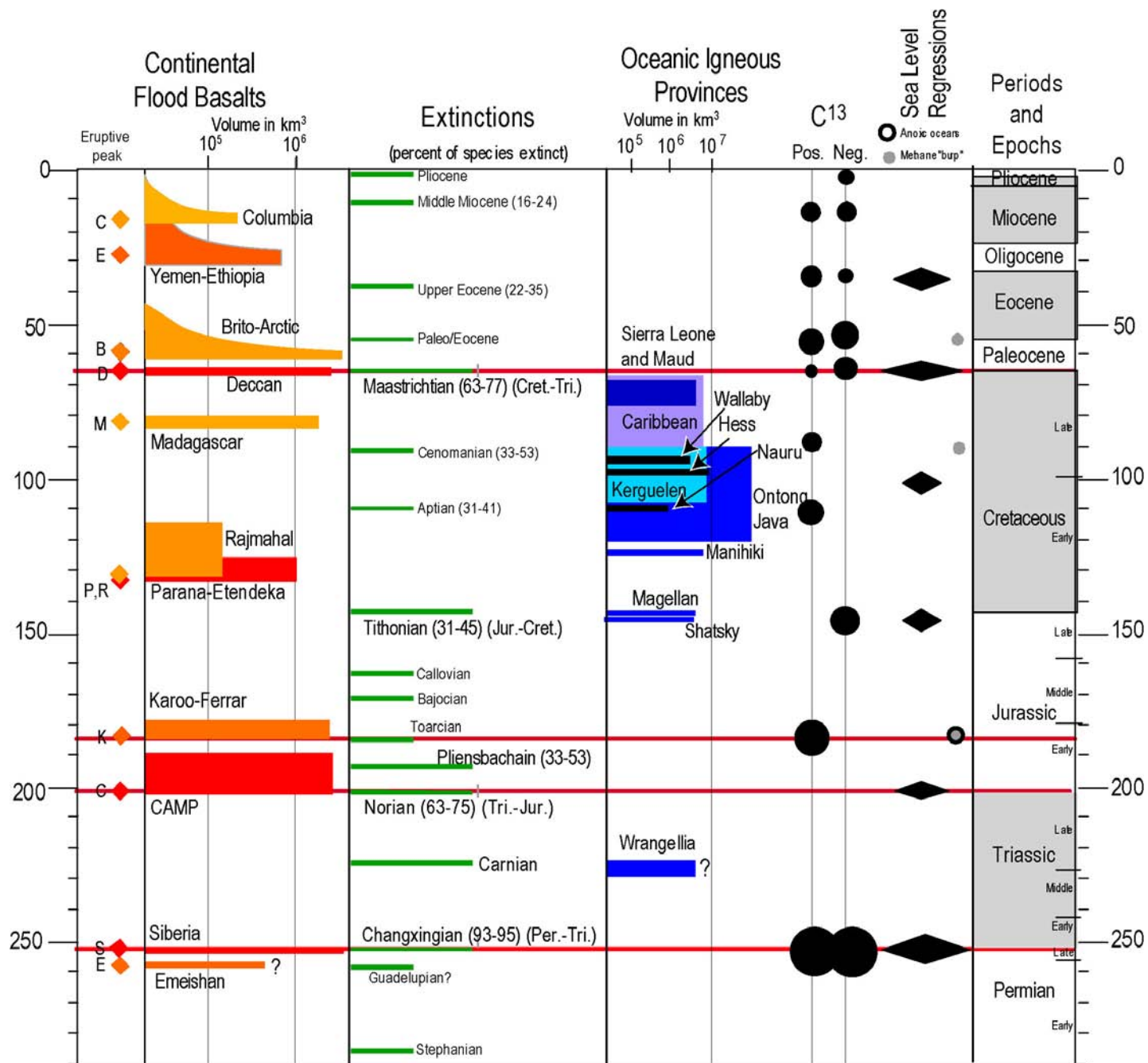


Figure by MIT OpenCourseWare.



Elkins-Tanton, 2005

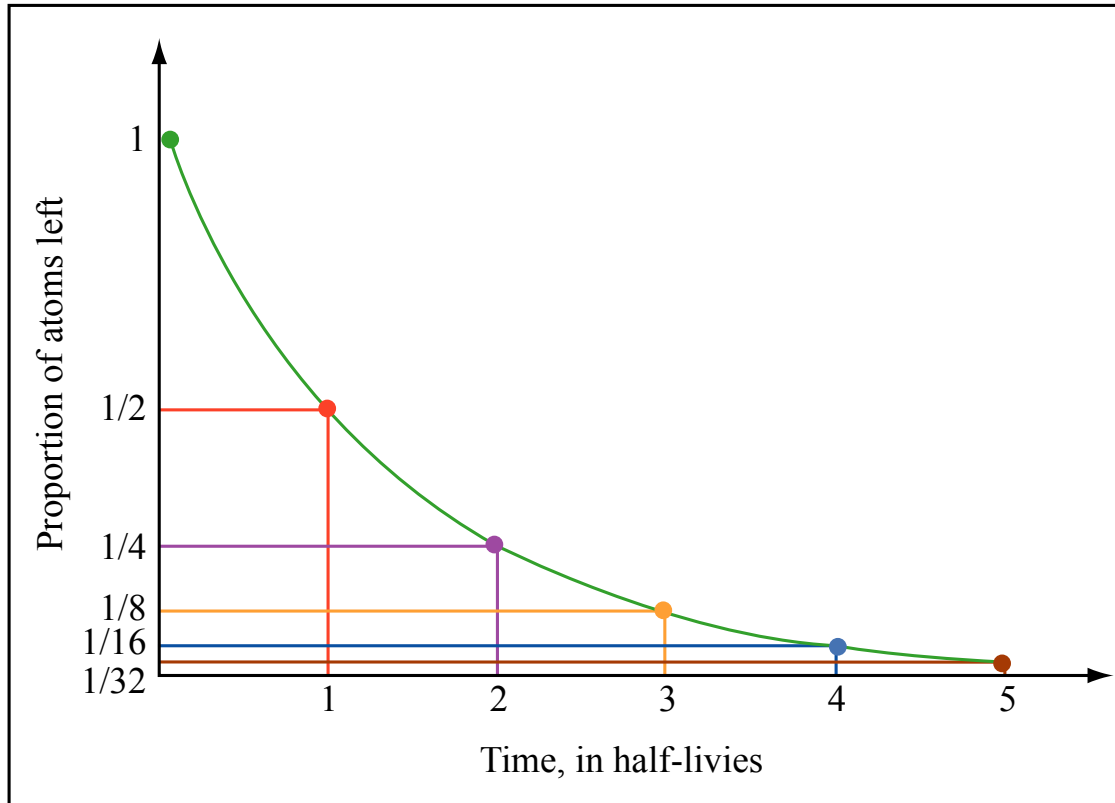


Figure by MIT OpenCourseWare.

### Major Radioactive Elements Used in Radiometric Dating

Isotopes		Half-life of Parent (years)	Effective Dating Range (years)	Minerals and Materials That can be Dated
Parent	Daughter			
Uranium-238	Lead-206	4.4 billion	10 million-4.6 billion	Zircon Apatite
Uranium-235	Lead-207	0.7 billion	10 million-4.6 billion	Zircon Apatite
Potassium-40	Argon-40	1.3 billion	50,000-4.6 billion	Muscovite, Biotite Hornblende
Rubidium-87	Strontium-87	47 billion	10 million-4.6 billion	Muscovite, Biotite Potassium feldspar
Carbon-14	Nitrogen-14	5730	100-70,000	Wood, charcol, peat Bone and tissue Shells and other calcium carbonates

Figure by MIT OpenCourseWare.