

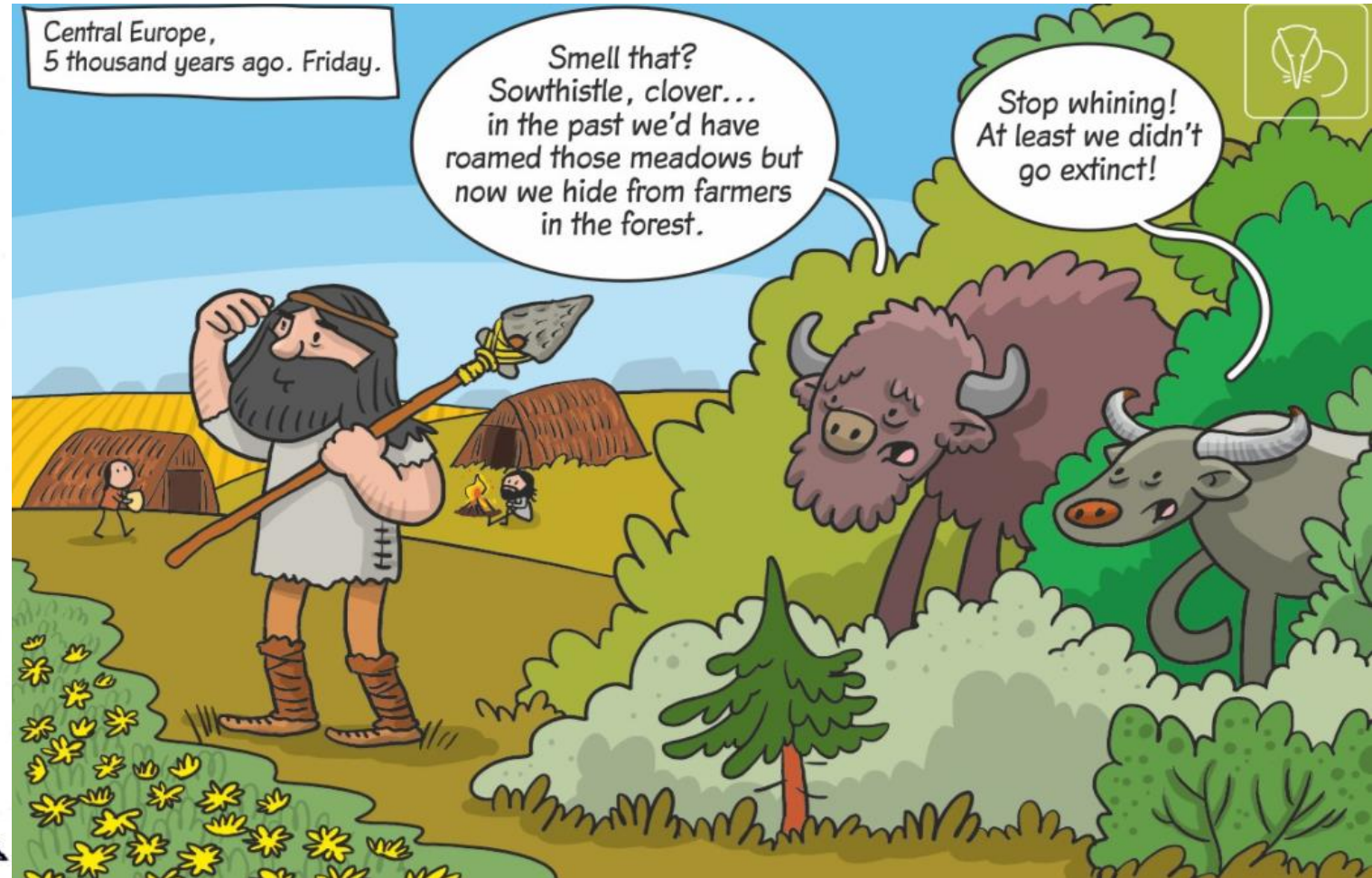
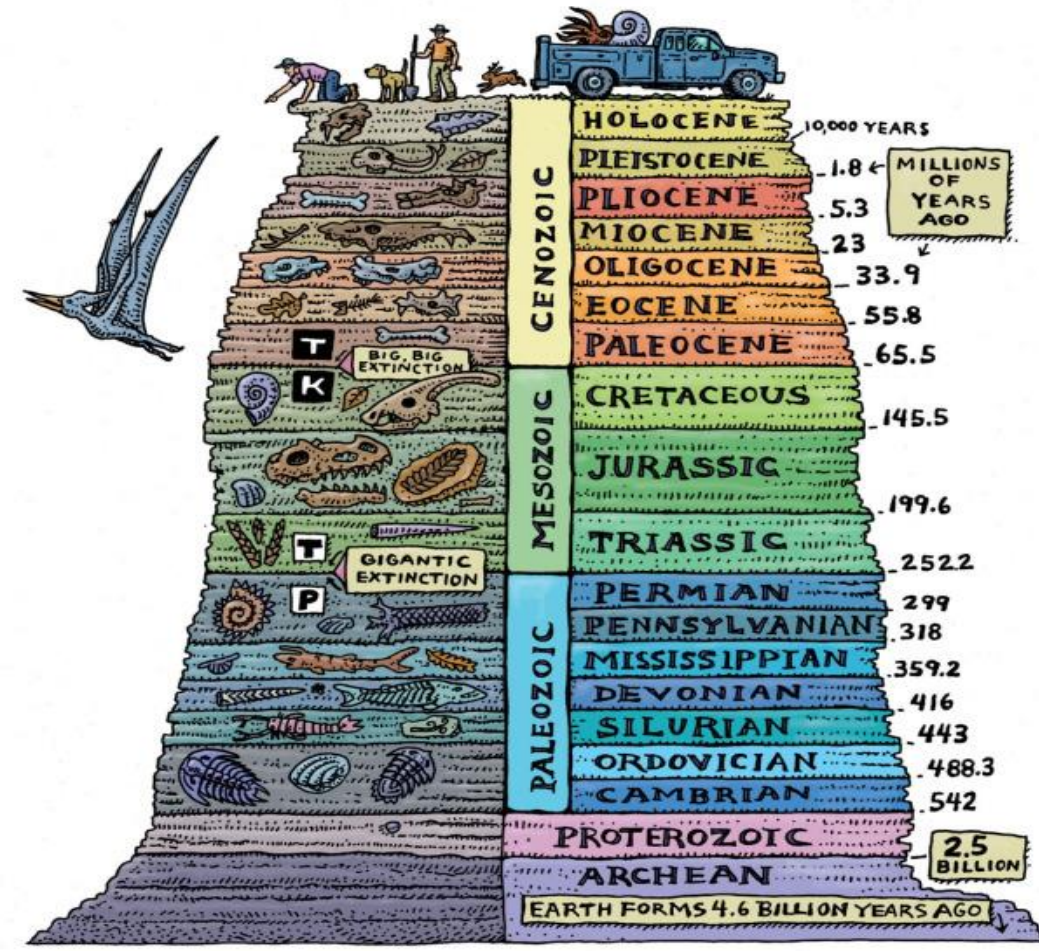
The Contemporary Conjunction



- **climate catastrophe: climatology**
- **the 6th mass extinction: biology**
- **the “Anthropocene”: geology**



From Holocene to Anthropocene



“Age of Humans”

- Crutzen and Stoermer (2000), The “Anthropocene”
- anthropozoic era – Stoppani (1873); anthropogenic age – Pavlov (1913); ‘noösphere’ – Teilhard de Chardin and Le Roy (1924)
- expansion of mankind in the past three centuries in numbers (**a ten-fold increase!**)
- per capita exploitation of earth’s resources
- urbanization has **increased tenfold in the past century**
- emission of CO₂, SO₂, NO, CO
- The “Anthropocene” – central role of **humans**

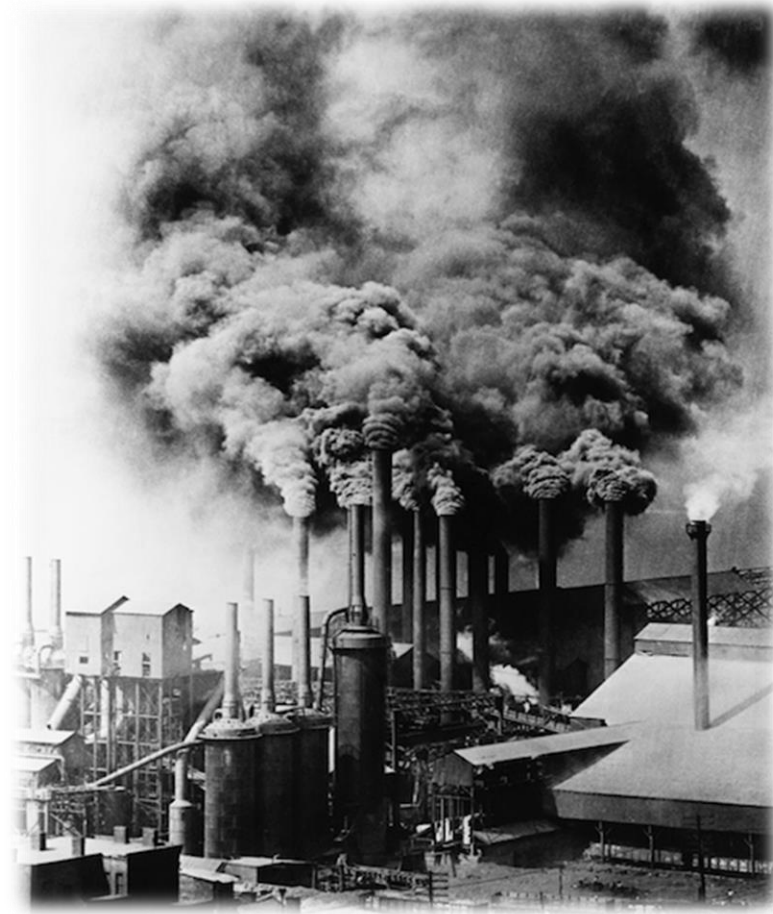
ANTHROPOCENE

an•thro•po•cene

(n) the proposed current geological epoch, in which humans are the primary cause of permanent planetary change.

The dating debate

- **Crutzen and Stoermer – industrialization**
- **CO₂ concentration in atmosphere from 270–275 parts per million (ppm) to 310 ppm in the mid-twentieth century**
- **From linear to exponential growth – the “Great Acceleration” (Steffen 2005; Steffen et al. 2015); the “1950s syndrome” (Pfister 1995)**



Stratigraphic Signatures

- **The Anthropocene Working Group**
- **Report to be submitted to the Subcommittee on Quaternary Stratigraphy**
- **International Commission on Stratigraphy > International Union of Geological Sciences**

To what extent are human actions recorded as measurable signals in geological strata?

Is the Anthropocene world markedly different from the stable Holocene Epoch?

Evidences

- new materials, such as elemental aluminum, concrete, plastic, and carbon particles
- alterations in the processes of sediment creation
- altered geochemical signals in sediments and ice sheets
- increases in nitrogen and phosphorus
- presence in sediments and ice of radionuclides released by nuclear bomb testing
- changes in the carbon cycle based on data from ice core samples
- increase in global temperature and rising sea levels
- alterations in biodiversity

From strata to multi-layered arguments...

- **New stratigraphic signatures!**

“The Anthropocene is functionally and stratigraphically distinct from the Holocene” (Waters et al. 2016).

- **From geology to climate science**
- **Transformations in earth systems**
- **“planetary boundaries” and the search for “safe operating space for humanity” (Rockstrom et al. 2009; Steffen et al. 2015)**

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