



Black Soils and the EU

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The most fertile

soils in the world



CHERNOZEMS

Soil with a deep, dark surface horizon that is rich in organic matter and secondary calcium carbonate concentrations in the deeper horizons (from the Russian for *chern*, black, and *zemlja*, earth).

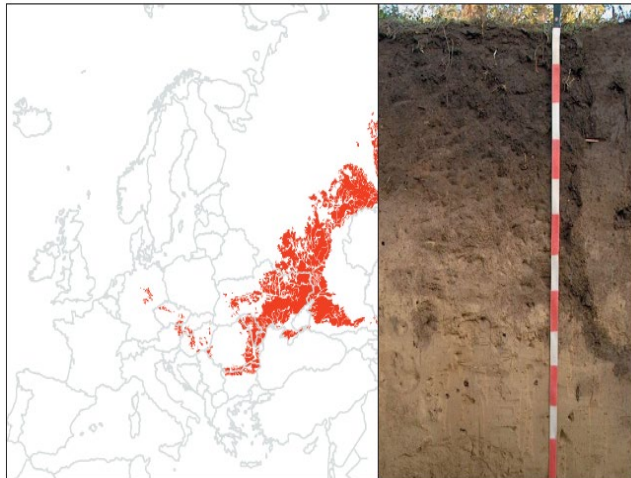
Soil having a very dark brown or blackish surface horizon with a significant accumulation of organic matter, a high pH and having calcium carbonate deposits within 50 cm of the lower limit of the humus rich horizon. Chernozems show high biological activity and are typically found in the long-grass steppe regions of the world, especially in Eastern Europe, Ukraine, Russia, Canada and the USA. Chernozems are amongst the most productive soil types in the world.



Left: The main source of the high organic content of Chernozems is the annual decay of grass;

Below: the dark surface soil material is generally mixed to significant depths by the high biological activity; The map shows the location of areas in Europe where Chernozems are the dominant soil type.

Cover 9 % of Europe.



KASTANOZEMS

Soil with surface horizon rich in organic matter and with calcium carbonate or gypsum accumulation in subsurface horizons (from the Latin *castanea*, chestnut, and the Russian, *zemlja*, meaning earth or land).

Kastanozems have a deep, dark coloured surface horizon with a significant accumulation of organic matter, high pH and an accumulation of calcium carbonate within 100 cm of the soil surface. Kastanozems occur mainly in the dry parts of the steppe regions of the world and are shallower and lighter in colour than Chernozems.



Left: Kastanozems being "observed" in the field; Below: Secondary calcium carbonate accumulation occurs close to the surface; The map shows the location of areas in Europe where Kastanozems are the dominant soil type.

Cover 2 % of Europe.



PHAEOZEMS

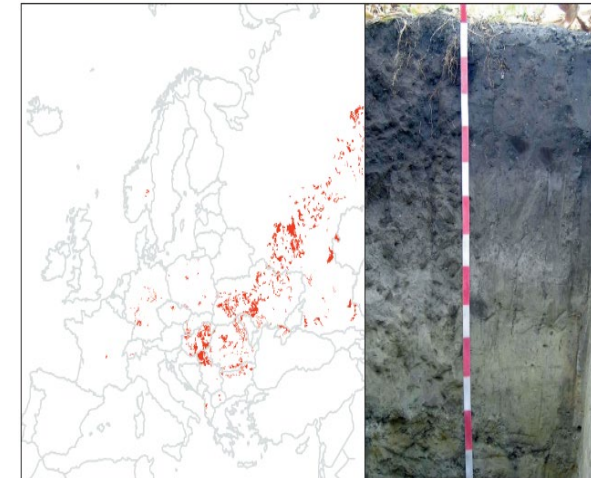
Soil with a deep, dark surface horizon that is rich in organic matter without secondary calcium carbonate concentrations within 1m (from the Greek, *phaios*, meaning dusk and the Russian, *zemlja*, meaning earth or land).

Phaeozems are found in wet steppe (prairie) regions and are much like Chernozems and Kastanozems but more intensively leached in wet seasons. Consequently, they have a dark, humus-rich surface horizon and have no secondary carbonates in the upper metre of soil. Commonly used international names are Brunizems (Argentina, France), Parabraunerde-Tsjernozems (Germany) and Aquolls in the order of the Mollisols (Soil Taxonomy).

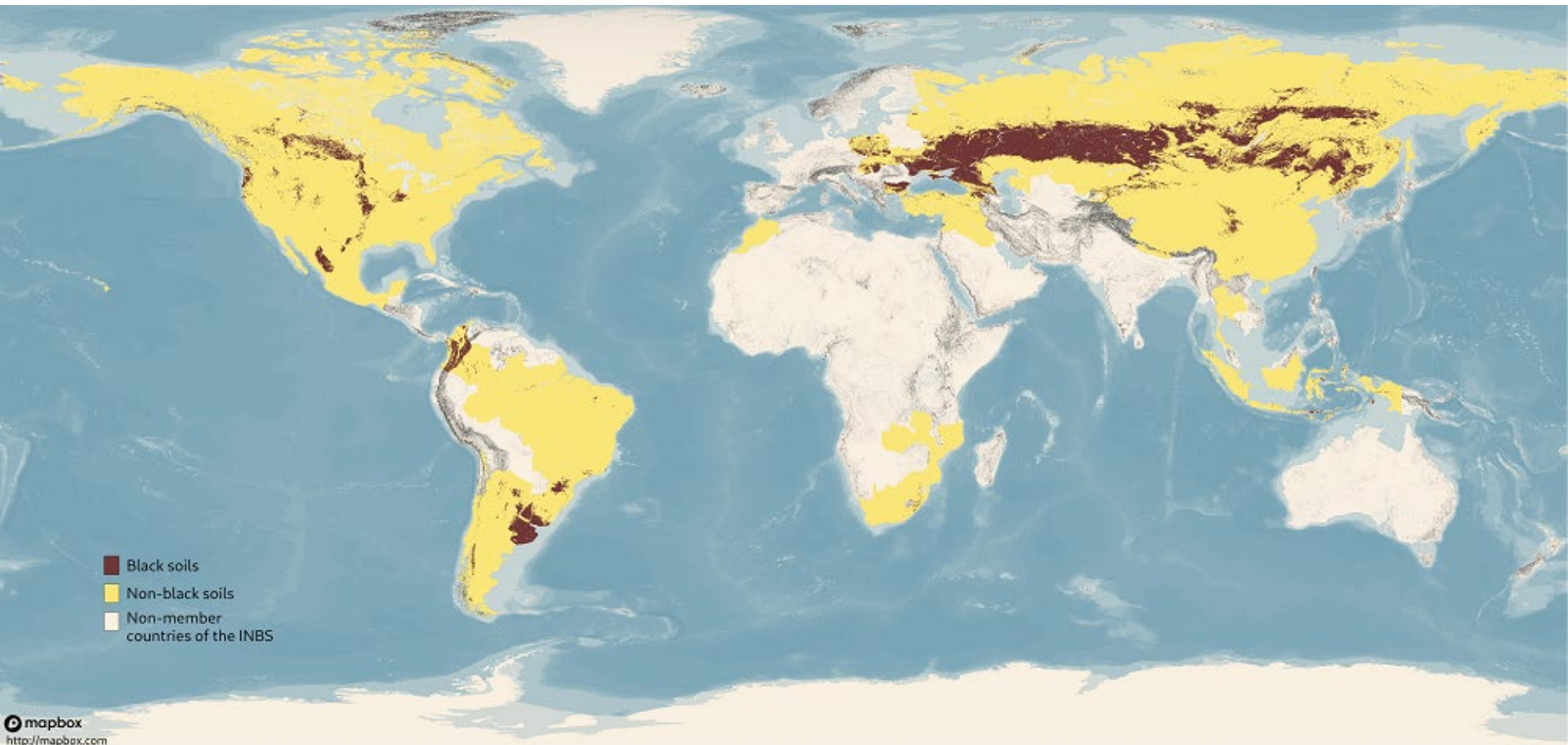


Left: Chernozems and Phaeozems are highly productive soil types and are used mainly for cereal crop production; Below: Phaeozems are more intensively leached than other steppe (prairie) soils and do not have secondary carbonates in the upper horizons; The map shows the location of areas in Europe where Phaeozems are the dominant soil type.

Cover 3 % of Europe.



Global distribution of Black Soils



THE MAJOR SOIL TYPES OF EUROPE



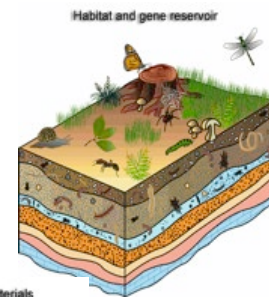
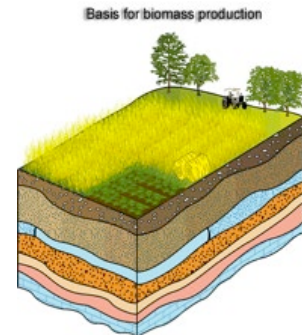
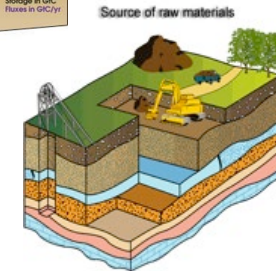
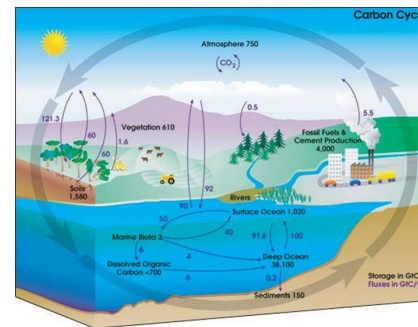
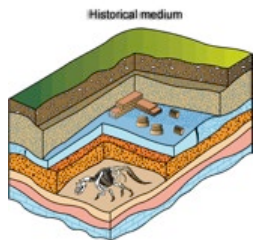
EU Vision for Soils

By 2050, all EU soil ecosystems are in **healthy condition** and are thus more resilient, which will require very decisive changes in this decade.

By then, protection, sustainable use and restoration of soil has become the norm. Healthy soils contribute as key solution to our big challenges to achieve climate neutrality, a clean and circular economy, revert biodiversity loss, safeguard human health, halt desertification and revert land degradation.

Healthy Soils deliver multiple services (soil functions as identified in the Soil Thematic Strategy COM(2006) 231):

1. Biomass production, including in agriculture and forestry;
2. Storing, filtering and transforming nutrients, substances and water;
3. Biodiversity pool, such as habitats, species and genes;
4. Physical and cultural environment for humans and human activities;
5. Source of raw materials;
6. Acting as carbon pool;
7. Archive of geological and archeological heritage.




A vision for Black Soils

- *Black Soils feed the world*
- *Black Soils are a limited, non-renewable, natural resource and need to be protected for future generations*
- *Black Soils are heavily degraded in many areas of the world and need to be restored*
- *A global agreement for the sustainable management of Black Soils would help in protecting and restoring this precious resource*

Thank you for your attention!

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 #EUSoil

<https://ec.europa.eu/jrc/en/eu-soil-observatory>

EU SOIL
OBSERVATORY

