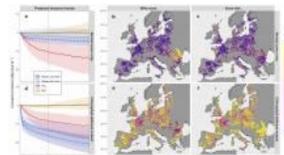## Projections of Global soil erosion by water (2015-2070)

We use the latest projections of climate and land use change to assess potential global soil erosion rates by water to address policy questions. Three alternative (2.6, 4.5, and 8.5) RCP scenarios were used and resulted in a potential increase of global soil erosion rate by 30-66% by 2070. The Global South is estimated to bear the brunt of the erosion. Rich countries with high fertilizer use and moderate climates can expect erosion at a lower rate. Current conservation agriculture practices will only reduce the projected soil erosion rate by 5%. The study has been published recently in PNAS. Data are available in ESDAC.

https://esdac.jrc.ec.europa.eu/content/global-soil-erosion-water-2070
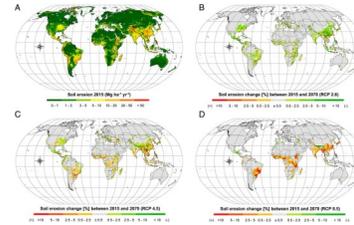
## Carbon mitigation potential and radiative agricultural land management

To reach the Paris climate targets, the mitigation capacity needs to be maximized across all components of the Earth system, especially land. Mitigation actions through land management, such as cover crops in agricultural soils, are often evaluated in terms of their carbon sequestration potential, while radiative forcing related to surface albedo changes is often ignored. The aim of this study was to assess the mitigation potential of cover crops, both as changes in biogenic greenhouse gas fluxes (CO_2 and N_2O) and albedo-driven radiative forcing at the top of the atmosphere. To achieve this, we have integrated a biogeochemistry model framework running on approximately 8,000 locations across the European Union with detailed soil data, supplemented with time series of albedo measurements derived from satellite remote sensing.

https://esdac.jrc.ec.europa.eu/content/carbon-mitigation-potential-and-radiative-agricultural-land-management

Global phosphorus losses due to soil erosion

The world's food production depends directly on phosphorus. We combine spatially distributed global soil erosion estimates (only considering sheet and rill erosion by water) with spatially distributed global P content for cropland soils to assess global soil P loss. The world's soils are currently being depleted in P in spite of high chemical fertilizer input. Africa, South America and Eastern Europe have the highest P depletion rates. Agricultural soils worldwide will be depleted by 4–19 kg ha^{-1} yr^{-1}, with average losses of P due to erosion by water contributing over 50% of total P losses. The study has been published in Nature Communications and the data are available in ESDAC.

https://esdac.jrc.ec.europa.eu/content/global-phosphorus-losses-due-soil-erosion
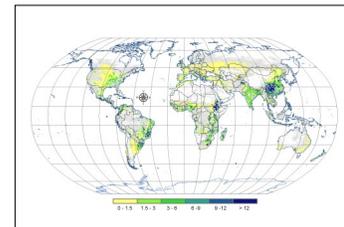
Sustainable soil management within the European Green Deal

The new European Green Deal has the ambition to make the European Union the first climate-neutral continent by 2050. The European Commission presented an ambitious package of measures within the Biodiversity Strategy 2030, the Farm to Fork Strategy and the European Climate Law including actions to protect our soils. The Farm to Fork Strategy addresses soil pollution with 50% reduction in use of chemical pesticides by 2030 and aims 20% reduction in fertilizer use plus a decrease of nutrient losses by at least 50%. The Biodiversity Strategy has the ambition to set a minimum of 30% of the EU's land area as protected areas, limit urban sprawl, reduce the pesticides risk, bring back at least 10% of agricultural area under high-diversity landscape features, put forward the 25% of the EU's agricultural land as organically farmed, progress in the remediation of contaminated sites, reduce land degradation and plant more than three billion new trees. The maintenance of wetlands and the enhancement of soil organic carbon are also addressed in the EU Climate Law.

More Details