

Appendix D

Self-Reported Sample and Data Repositories in the World

Repository Name	URL/Website	Additional Information	Data/ Samples
ARGENTINA			
Córdoba soils: Variability of Superficial Horizon Properties	https://agrounc.maps.arcgis.com/apps/MapSeries/index.html?appid=88db14124aec43ee888e19df8dbb1d3f#	Country Region: Córdoba. https://www.researchgate.net/publication/284716402_Suelos_de_Cordoba_Variabilidad_de_las_propiedades_del_horizonte_superficial .	D
SISINTA: Soil Information System - INTA	http://sisinta.inta.gob.ar	National. Soil profiles repository.	D
AUSTRALIA			
Australian National Soil Archive	https://www.clw.csiro.au/aclep/archive/index.htm also https://www.csiro.au/en/research/natural-environment/land/Soil-archive	National. The CSIRO National Soil Archive stores >71,000 soil specimens, 9,500 sites. Archive's data at Australian Soil Resource Information System (ASRIS). Contact: Linda Karssies linda.karssies@csiro.au . In Black Mountain, ACT.	S
AUSTRIA			
Austrian Agency for Health and Safety (AGES) - Agricultural Long-term field experiments	https://www.ages.at/themen/umwelt/boden/forschung	National. Contact: Dr. Taru Sandén taru.sanden@ages.at .	D, S

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Austrian Soil Protection Program	https://www.verwaltung.steiermark.at/cms/ziel/75777056/DE	National. Sites examined every 10 years since 1986 and archived. Contact: Mag. Dr. Gertrude Billiani gertrude.billiani@stmk.gv.at .	D, S
Pedothek BFW	https://www.bfw.gv.at	National. The repository contains several thousand soil samples. Focus is on forest soils. In Vienna.	D, S
Soil repository of the regional government of Tyrol	https://www.tirol.gv.at/landwirtschaft-forstwirtschaft/agrар/boden-pflanzen-und-ernaehrungssicherheit/bodengesundheit	Country Region: Tyrol.	S
BRAZIL			
Brazilian Soil Information System - BD Solos	https://www.bdsolos.cnptia.embrapa.br/consulta_publica.html	National	D
Free Brazilian Repository for Open Soil Data	www.pedometria.org/febr	National	D
HYBRAS	http://www.cprm.gov.br/en/Hydrology/HYBRAS-4208.html	National. Represents 15 of the 26 Brazilian states and 11 soil groups (WRB). HYBRAS 1.0 is a database of hydrophysical data for Brazilian soils to consolidate water retention and saturated hydraulic conductivity data together with basic soil features and the methods of determination of these hydraulic properties. HYBRAS 1.0 contains ~16 megabytes of data with 445 sampled sites (or profiles) corresponding to 1,075 soil samples (813 are georeferenced).	D
CANADA			
British Columbia Soil Inventory Samples	http://www.env.gov.bc.ca/esd/distdata/ecosystems/Soils_Reports/BC15/bc15-v6_report.pdf	Country Region: British Columbia. Selected soil profile samples (1986–present) collected by the provincial soil survey organization. Collection housed at the Department of Soil Science, UBC. This publication lists the ~4,000 samples by box/project area/soil name or BCSIS number/soil horizon, and depth. Samples available for further testing or research.	S

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CHINA			
China Soil Samples Archive	http://soilsamples.issas.ac.cn	National. At present, a total of 94,476 soil samples from 312 sampling batches have been preserved. Each soil sample has a unique link, but an account is needed to access the sample information. One public account information is: User name: youke, password: 123456.	S
COLOMBIA			
Agrologic Open Data	https://geoportal.igac.gov.co/contenido/datos-abiertos-agrologia	National. Links to shape files of soil types, land use units, and land use conflicts at 1:100,000 scale. Associated visualization at https://geoportal.igac.gov.co/contenido/agrologia-consulta .	D
IRAKA: Soil Information System	https://iraka.agrosavia.co	Country Region: Cundinamarca-Boyacá highlands. Soil information system. Tropical soil profiles.	D
INDIA			
Geological Survey of India	https://www.gsi.gov.in	National	D
Indian Institute of Soil and Water Conservation (IISWC)	www.cswcrtiweb.org	National. Indian Institute of Soil and Water Conservation (IISWC). Kota, research center is typically ravine lands (badlands) and agriculture practiced in the tabletop landscape in close vicinity of the adjoining river. Contact: I. Rashmi rashmiuas25@gmail.com.	D
INDONESIA			
Hasanuddin University	www.unhas.ac.id		
ITALY			
European Soil Sample Archive	https://esdac.jrc.ec.europa.eu	Regional: Europe. European Archive of Soil Samples collected since 2009 during the regular LUCAS soil monitoring survey (ca. 25,000 samples per survey). Nearly 100,000 samples collected throughout the European Union.	D, S

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GLOSIS	http://www.fao.org/global-soil-partnership/en	Global. GLOSIS is being built by the Global Soil Partnership as a federated system by connecting national and institutional individual systems using global soil data exchange standards. GLOSIS has also a global component that develops global country-driven products such as GSOCmap (Global Soil Organic Carbon Map), GSOCseq (Global Soil Organic Carbon Sequestration Potential Map), GSERmap (Global Soil Erosion Map).	D
KENYA			
iSDAsoil Africa soil property and nutrient maps	https://isda-africa.com/isdasoil	Regional: Africa. Production steps are explained in detail in Hengl et al. 2021. African soil properties and nutrients mapped at 30-m spatial resolution using two-scale ensemble machine learning. <i>Scientific Reports</i> 11:6130. https://doi.org/10.1038/s41598-021-85639-y .	D
MEXICO			
Soil Profile Datasets	https://www.inegi.org.mx/temas/edafologia	Regional: Aguascalientes.	D
THE NETHERLANDS			
Eurofins Agro Center	www.eurofins-agro.com	Soil reference samples from 1946 until now. Contact: Dr.ir. J.A. (Arjan) Reijneveld ArjanReijneveld@Eurofins.com . In Wageningen.	S
ISRIC Data Hub	https://data.isric.org/geonetwork/srv/eng/catalog.search#/home	Global. Global point data and maps. ISRIC is the World Data Centre for Soils and a regular member of the International Science Council (ISC) World Data System.	D
ISRIC Soil Geographic Databases	https://www.isric.org/explore/soil-geographic-databases	Global. Extensive overview of soil geographic databases outside of ISRIC, moderated by David Rossiter.	D
ISRIC Soil Reference Collection and World Soil Museum	https://wsm.isric.org	Global. World Reference Collection on Soils maintained and hosted by ISRIC. Note Richer-de-Forges et al. 2021. A review of the world's soil museums and exhibitions. In <i>Advances in Agronomy</i> , vol. 166, D. L. Sparks, ed. Cambridge, MA: Academic Press. Pp. 277–304. https://doi.org/10.1016/bs.agron.2020.10.003 .	S

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ISRIC World Soil Information (WDC Soils)	https://www.isric.org	Global. Soil science.	D, S
OpenLandMap	https://gitlab.com/openlandmap/compiled-ess-point-data-sets	Global. Global compilation of soil profiles and samples. Points are imported using reproducible procedures (Rmarkdown) then overlaid and used to produce global predictions at 250-m spatial resolution and published on https://OpenLandMap.org .	D, S
NEW ZEALAND			
National Soil Archive	https://soils.landcareresearch.co.nz/soils-at-manaaki-whenua/national-soils-archive	National. Covers work in New Zealand, the Pacific, and Antarctica by the D.S.I.R. Soil Bureau (1946–1992), and Manaaki Whenua - Landcare Research (since 1992). In Palmerston North.	S
SPAIN			
Edafoteca EPS	www.suelosdearagon.com	Country Region: Aragón. Repository of samples from soil profiles mainly from High Aragón, with basic analytical data (granulometry, pH, EC).	D, S
SWEDEN			
Swedish University of Agricultural Sciences	www.slu.se	National. Air dried soil has been archived at room temperature for the past ~60 years. Contact: Forskare Agr. Dr. Sabina Braun sabina.braun@slu.se (Sveriges lantbruksuniversitet).	S
UNITED KINGDOM			
James Hutton Institute - National Soil Archive	https://www.hutton.ac.uk/about/facilities/national-soils-archive	National: Scotland. The National Soils Archive is at the James Hutton Institute (Aberdeen). Soil samples collected from 1934–present. Associated data about them within the Scottish Soils Database. Samples from the systematic Soil Survey of Scotland, the National Soil Inventory of Scotland (NSIS) 1978–1987, and NSIS2 (2007–2009). More than 48,000 air-dried soil samples collected from ~14,000 locations. Dedicated email address: nationalsoilsarchive@hutton.ac.uk , Contact: Allan Lilly allan.lilly@hutton.ac.uk .	S

Repository Name	URL/Website	Additional Information	Data/ Samples
LandIS (Land Information System)	http://www.landis.org.uk	National. LandIS, the “Land Information System,” is an environmental information system operated by Cranfield University, United Kingdom, and contains soil and soil-related information for England and Wales including spatial mapping of soils at a variety of scales, as well as corresponding soil property and agro-climatological data. Soil Survey of England and Wales samples (ca. 1960–2000), includes soil profile and topsoil samples.	D, S
Natural History Museum	https://www.nhm.ac.uk	Contact: Giles Miller (g.miller@nhm.ac.uk).	S
Rothamsted Sample Archive	https://www.rothamsted.ac.uk/sample-archive	National with some international samples. Rothamsted’s Long-term Experiments (1843), the oldest, continuous agronomic experiments in the world. Most archived soils are from sites in SE England and the United Kingdom.	D, S
UK Centre for Ecology and Hydrology Soil Bank (UKCEH)	https://www.ceh.ac.uk/our-science/research-facilities	National. The UKCEH Soil Bank includes frozen and air-dried soil samples from national monitoring and survey scheme across the United Kingdom (covering England, Scotland and Wales); these archived soil samples are linked to a wide variety of existing soil, vegetation, and habitat data from plot locations, in some cases going back to 1978.	D, S
WOSSAC (World Soil Survey Archive and Catalogue)	http://www.wossac.com	Global. The World Soil Survey Archive and Catalogue (WOSSAC) at Cranfield University, United Kingdom, is home to soil survey reports, maps, imagery, and photographs produced over the past 80 years from 342 territories worldwide.	D

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UNITED STATES			
Advanced Polar Experimental Facility, Monte L. Bean Life Science Museum	https://mlbean.byu.edu	Regional: Primarily Antarctica. Frozen soil repository, soils are primarily from Antarctica-Northern Victoria Land to Southern Victoria Land through the southern Transantarctic Mountains. Soils are cross referenced with invertebrate community structure, abundance, chemistry data, and GPS coordinates. Soils are frozen to preserve a snapshot of the biota at time of collections.	S
Annual soil moisture predictions across CONUS using remote sensing and terrain analysis	https://www.hydroshare.org/resource/b8f6eae9d89241cf8b5904033460af61	National. Annual soil moisture predictions across conterminous United States using remote sensing and terrain analysis across 1 km grids (1991–2016).	D
Argonne Soil Archive	None	Country Region: Central U.S. DOE project-related archive; Chronosequence and repeated temporal sampling; Soils from elevated CO ₂ experiments in Kansas, Tennessee, Wisconsin, and Illinois; Soils from prairie restorations in Illinois; Soils from switchgrass experiments in Tennessee, Illinois, Missouri, and Texas. Lemont, IL.	D, S
Argonne Soil Carbon Scientific Focus Area	https://ess.science.energy.gov/anl-sfa	Country Region: Alaska. DOE project-related archive; Permafrost region soils from many sites across Alaska; Depths up to 3 meters. Lemont, IL.	D, S
Argonne Soil Flux Towers	http://www.atmos.anl.gov/FERMI/index.html	Country Region: Illinois. DOE project-related archive; AmeriFlux sites US-IB1 (agricultural site) and US-IB2 (grassland). Repeated temporal soil samples over >10 years.	D, S
Automated Reference Toolset (ART)-Data	https://www.sciencebase.gov/catalog/item/58b88fa8e4b01ccd5500c259	Country Region: Mountain U.S. Soil family particle size maps of Colorado Plateau used for evaluating disturbance recovery and land treatment outcomes.	D

Repository Name	URL/Website	Additional Information	Data/ Samples
California Soil Vegetation Survey	https://bigcb.berkeley.edu/soil/index.html	Country Region: California. About 14,000 archived samples in jars stored at UC Berkeley. Collected from 1920s to the 1980s (most 1950s–1960s from California Soil Vegetation Survey). Collection digitized by the Berkeley Natural History Museums.	S
Ecosystem Dynamics Interpretive Tool (EDIT)	https://edit.jornada.nmsu.edu	National. The Ecosystem Dynamics Interpretive Tool (EDIT) is an online information system for the development and sharing of ecological site descriptions, ecosystem state and transition models, and land management knowledge. EDIT is the primary repository of Ecological Site information produced by the USDA-NRCS. The framework is also being used to support the development of other ecological land classifications in the United States and elsewhere.	D
Global High- Resolution Soil Profile Database for Crop Modeling Applications	https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/1PEEY0	Global. Global dataset with variables useful in crop modeling applications. Set of DSSAT compatible soil profiles on 5 arc-minute grid. Six soil properties (bulk density, organic carbon, percentage of clay and silt, soil pH and cation exchange capacity) available from the original SoilGrids 1 km or ISRIC-AfSIS were directly used as DSSAT inputs. Pedo-transfer function applied to derive some soil hydraulic properties (saturated hydraulic conductivity, soil-water content at field capacity, wilting point and saturation) that are critical to simulate crop growth. For other required variables, HarvestChoice's HC27 database are used as a reference. Final outputs are provided in *.SOL file format (DSSAT soil database) for each country at 5-min resolution. In addition, uncertainty maps for organic carbon and soil-water content at wilting points at the top 15 cm soil layers.	D

Repository Name	URL/Website	Additional Information	Data/ Samples
HC27 Generic Soil Profile Database	https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/90WJ9W#:~:text=The%20HC27%20soil%20profile%20database,content%20(proxy%20of%20fertility)	Agronomic soil properties for 27 generic soils, mapped over a global grid at 5 arc-minute resolution.	D
Illinois Soil Archive	Contact Andrew Margenot (margenot@illinois.edu) with questions. For Morrow Plots information, see https://aces.illinois.edu/research/history/morrow-plots	Country Region: Illinois. (1861–present day). More than 3,000 samples from a combination of county-level soil surveys (including pre-NRCS) and University of Illinois field experiments (including Morrow Plots). Samples are currently being inventoried and re-organized. Will construct a publicly accessible database.	S
Jordan Soil Fertility Plot Samples	https://agsci.psu.edu	Country Region: Pennsylvania. 45 sealed glass jars containing 1915 and 1931 samples from the plots laid out in 1881 by Dr. W. H. Jordan. Experiment ended in 1958. Bibliography with photographs, archival documents, and published experiment bulletins. Soil samples at the Pasto Agricultural Museum, Penn State College of Agricultural Sciences.	S
Kellogg Biological Station LTER	https://lter.kbs.msu.edu	Country Region: Michigan. Part of the Kellogg Biological Station Long-term Ecological Research Site.	D, S
Kellogg Soil Survey Laboratory (KSSL)	https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/research	National and International. The Charles E. Kellogg Soil Survey Laboratory (KSSL) is the key source for soil analytical data for the National Cooperative Soil Survey (NCSS). The KSSL receives samples from U.S. soil survey project offices, universities, and other government and nongovernment organizations. Publicly accessible database of historic soil analytical data and associated site information from thousands of sites in all States and worldwide. KSSL might have the world's largest collection of analyzed and cataloged soil samples, some from before 1940.	D, S

Repository Name	URL/Website	Additional Information	Data/ Samples
NASIS and Waverly Soil Survey Office files	http://soils.usda.gov	Country Region: Minnesota, Iowa, Wisconsin, Missouri, Illinois. Major land resource areas (MLRAs) 104 and 108C.	D
NEON Biorepository	https://biorepo.neonscience.org/portal	National. Soil samples collected from National Ecological Observatory Network (NEON) sites. Includes small samples stored frozen in liquid nitrogen or ultra-low temperature freezers. Also air-dried archives.	S
NEON Megapit Soil Archive	https://www.neonscience.org/data/samples-specimens/megapit-soil-archive	National. Soils were collected by horizon down to 2 m deep from U.S. National Ecological Observatory Network (NEON) terrestrial sites to establish the Megapit Soil Archive. Extensive metadata, including soil physical and chemical properties, root biomass distribution, pedon descriptions, and photos, are available from the NEON data portal. Subsamples are available upon request. Sample processing: Air dried; mineral soils sieved to <2 mm. Original sample mass: Up to 3.6 kg.	S
Point Blue Conservation Science Soil Archive	https://www.pointblue.org/our-work/working-landscapes	Country Region: California. Archive of air-dried surface soils from across California's rangelands (thousands of samples collected across 25 counties from primarily privately-owned ranches; collected in a standardized way over time).	S
POLARIS	http://hydrology.cee.duke.edu/POLARIS	National. Conterminous U.S. soil classes and properties.	D
Predictive soil property maps	https://www.sciencebase.gov/catalog/item/5e063e5ce4b0b207aa0a6f45	Country Region: Upper Colorado River Basin. Soil property maps with prediction uncertainty at 30-meter resolution for the Colorado River Basin above Lake Mead.	D
Soil Properties and Class 100m Grids United States	https://scholarsphere.psu.edu/resources/ea4b6c45-9eba-4b89-aba6-ff7246880fb1	National. Conterminous U.S. soil class and property maps. 100-m grids.	D
Soil Property and Class Maps of the CONUS at 100m spatial resolution	https://doi.org/10.2136/sssaj2017.04.0122	National. Conterminous United States.	D

Repository Name	URL/Website	Additional Information	Data/ Samples
SoilHealthDB	https://github.com/jinshijian/SoilHealthDB	Global. Database for measurements related to soil health assessment.	D
U.S. National Park Service	https://www.nps.gov/index.htm ; contact: Ann Hitchcock (Ann_Hitchcock@nps.gov)	National. Forty Parks in various U.S. regions and states with catalog records documenting more than 100 soil sample collections each. Locations include Northeast: MD, DE, others; Southwest: NM, AZ, others.	S
USDA-Long-Term Agroecosystem Research (LTAR) network	https://ltar.ars.usda.gov	National. This is a developing network and database spearheaded by the USDA Agricultural Research Service.	D
USDA National Soil Survey Center	https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053895	National. Portal to the Kellogg Soil Survey Laboratory, Soil Business Systems, Soil Survey Standards, Soil Survey Research, Ecological Sites, and the National Plant Data Team. In Lincoln, NE.	D, S
USDA Natural Resources Conservation Service (NRCS)	https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home	National. The SSURGO database contains information about soil as collected by NRCS over the course of a century. The information can be displayed in tables or as maps and is available for most areas in the United States and the Territories, Commonwealths, and Island Nations served by the USDA-NRCS. The map units describe soils and other components that have unique properties, interpretations, and productivity. Information was collected at scales ranging from 1:12,000 to 1:63,360. More details were gathered at a scale of 1:12,000 than at a scale of 1:63,360.	D
USGS California Archives	contacts: Corey Lawrence (clawrence@usgs.gov); Courtney Creamer (ccreamer@usgs.gov)	Country Region: California. Chronosequence Archive: 3,000+ samples (1975–2010); Marine Terrace Archive: 600+ samples (2000–2020).	S
USGS Denver Archives	contacts: Corey Lawrence (clawrence@usgs.gov); Courtney Creamer (ccreamer@usgs.gov)	Country Region: Colorado, Mojave Desert, Great Basin, other western U.S. Desert Soils Archive: 750+ samples (1985–2005); Drylands Archive: 750+ samples (1997–2008).	S

