SOIL SURVEY GEOGRAPHIC DATABASE

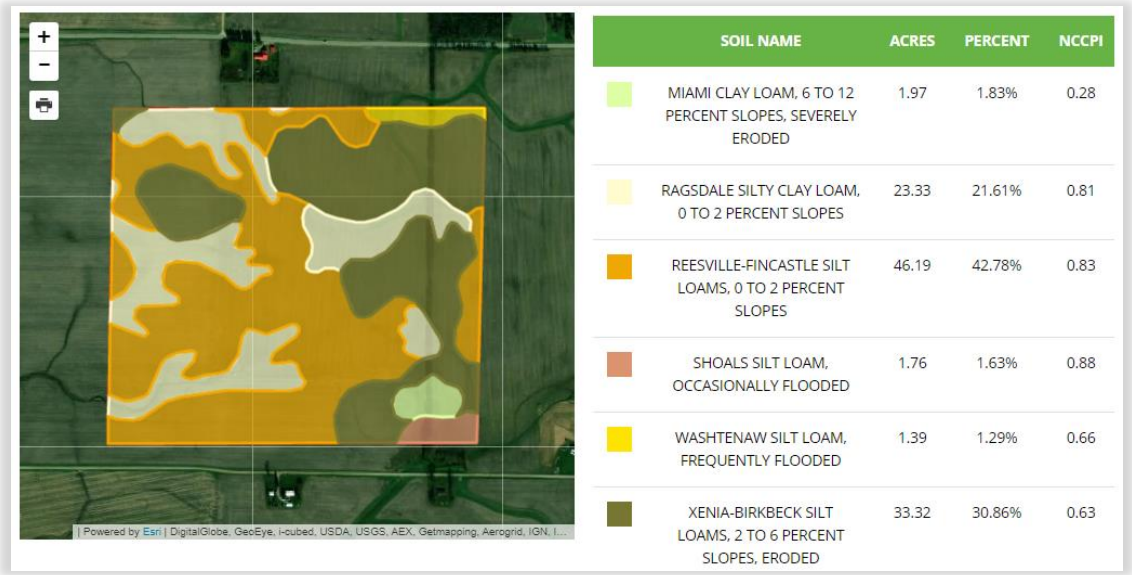
API Documentation 2020

API Portal | GitHub Repo | Jupyter Notebook | Purchase

Service Overview

The Soil Survey Geographic Database (SSURGO) Soils API provides soil type and soil type attribute averages (e.g., NCCPI) by field for a shape entered. This API uses GET request with a subscription key, but we can also provide POST request endpoint. Soil Type data is derived from NRCS USDA; average soil type attribute data are available for processing for the continental USA. It uses data provided by the USDA NRCS, which can be downloaded from http://sdmdataaccess.nrcs.usda.gov. Those soil type attributes contain both numerical data type and categorical (ordinal) data type, which can be found from the links in the reference.

This API is utilized to drive the Ag-Analytics FarmScope panel below, for illustration. Area calculations from the API are provided in square meters and can be easily converted to acres on the front-end. The API Response contains shapes/features in ESRI JSON format, as well as the calculated metric (e.g., National Commodity Crop Productivity Index) and areas of each shape, the soil type name, the area for the sums of each soil type across all features for display in the table, metadata related to projection and other information. This API can be easily called and mapped using any standard front-end JavaScript mapping library (e.g., Leaflet).



SSURGO API in FarmScope

POST Request

POST Request Example – application/x-www-form-urlencoded

```
inputShape={"geometryType":"esriGeometryPolygon","features":[{"geometry":{"rings":
[[[-117.238391742523, 47.361909235884],[-117.236812404541, 47.3702758170121],
[-117.2384265738, 47.3702727251689],[-117.238452279092, 47.3764430152127],
[-117.227687263087, 47.3764376942387],[-117.227683192821, 47.3688392932326],
[-117.230711395677, 47.369062799795],[-117.231448818202, 47.3690734961619],
[-117.232302264435, 47.3690308469639],[-117.232557405738, 47.3690005654039],
[-117.232777461542, 47.3689471011173],[-117.234658812225, 47.3684611927385],
[-117.234909864397, 47.3684121954782],[-117.23515564795, 47.3683951410649]]],
"spatialReference":{"wkid":4326}}}]}
&inputFields=nccpi2all&env:outSR=4326&env:processSR=&f=json
```

Header Parameters

content-type: "application/x-www-form-urlencoded"

Ocp-Apim-Subscription-Key: Subscription keys are given upon purchase Purchase APIs

POST Request Parameters

Parameter	Data Type	Required?	Default	Options	Description
inputShape	Esri Geometry	Yes	--	See esriGeometry Type Constants	The shape information for the field, as an Esri Geometry object
inputFields	String	Yes	aws0_5	Full NRCS List	The soil metric to return, see the NRCS variables PDF for full list with descriptions
f	String	Yes	json	pjson/json	Response format
env:outSR	Number	Yes	4326	See WKID list	The well-known ID of the spatial reference of the output geometries

GET Request

GET Request Example – application/json

```
{
"inputShape":{
"geometryType":"esriGeometryPolygon","features":[{"geometry":{"rings":[[[-
95.973782, 40.304692], [-95.973732, 40.300839], [-95.973706, 40.297503],[-
95.974429, 40.297515], [-95.975498, 40.297522], [-95.975591, 40.297522],[-
95.976765, 40.29753],[-95.980238, 40.297552], [-95.980489, 40.297553], [-
95.983115,40.29755],[-95.983121,40.297943],[-95.983154, 40.300268], [-95.983155,
40.300372], [-95.983157, 40.300529],[-95.983167, 40.301191],[-95.98318,
40.301863], [-95.98318, 40.302066],[-95.981465, 40.302046],[-95.980183,
40.301462], [-95.97983, 40.301208],[-95.979615, 40.301431], [-95.97936,
40.301735],[-95.979486, 40.302235],[-95.979573,  40.302839], [-95.979583,
40.303079], [-95.97956, 40.303274],[-95.979307, 40.303292],[-95.978928,
40.303165], [95.978387, 40.303099],[-95.977985, 40.303097],[-95.977768,
40.303263], [-95.977775, 40.303423],[ 95.977843, 40.303639],[-95.977884,
40.304221], [-95.977697, 40.304706], [95.973782, 40.304692]]], "spatialReference":
{"wkid":4326}}}],
"inputFields": "nccpi2all", "env:outSR":"4326", "f":"json"
}
```

Header Parameters

content-type: "application/json"

Ocp-Apim-Subscription-Key: Subscription keys are given upon purchase Purchase APIs

GET Request Parameters

Parameter	Data Type	Required?	Default	Options	Description
inputShape	Esri Geometry	Yes	--	See esriGeometryType Constants	The shape information for the field, as an Esri Geometry object
inputFields	String	Yes	aws0_5	Full NRCS List	The soil metric to return, see the NRCS variables PDF for full list with descriptions
f	String	Yes	json	pjson/json	Response format
spatialReference wkid	Number	Yes	{"wkid": 4326}	See WKID list	The well-known ID of the spatial reference of the output geometries

Example Response


```
{"results":[{"paramName":"output1","dataType":"GPRecordSet","value":{"displayField
Name":"","fields":[{"name":"FID","type":"esriFieldTypeOID","alias":"FID"},{"name":
"intersect_FID_inputShapeProjected","type":"esriFieldTypeInteger","alias":"interse
ct.FID_inputShapeProjected"},{"name":"FREQUENCY","type":"esriFieldTypeInteger","al
ias":"FREQUENCY"},{"name":.... },"geometry":{"rings":[[[-89.314253125999983,
40.26377621000006]....]]]}}], "exceededTransferLimit":false}},
{"paramName":"output3", "dataType":"GPRecordSet", "value":{"displayFieldName":"",
"fields":[{"name":"FID", "type":"esriFieldTypeOID", "alias":"FID"},
{"name":"intersect_MUKEY","type":"esriFieldTypeString","alias":"intersect.MUKEY","
length":30},{"name":"intersect_FID_inputShapeProjected","type":"esriFieldTypeInteg
er","alias":"intersect.FID_inputShapeProjected"},{"name":....}],"features":[{"attr
ibutes":{"FID":1,"intersect_MUKEY":"1595742","intersect_FID_inputShapeProjected":0
,"FREQUENCY":2,"MIN_valu1_nccpi2all":0.93900001049041748,"SUM_intersect_Shape_Area
1":9007.802734375,"FIRST_valu1_MUNAME":"Buckhart silt loam, 2 to 5 percent
slopes", "wa_nccpi2all": 0.040151220935292074}}, {"attributes": {"FID":2,
"intersect_MUKEY":"1595752", "intersect_FID_inputShapeProjected":0, "FREQUENCY":5,
"MIN_valu1_nccpi2all": 0.92400002479553223, "SUM_intersect_Shape_Area1":
43879.985595703125, "FIRST_valu1_MUNAME": "Ipava silt loam, 0 to 2 percent
slopes", "wa_nccpi2all": 0.19246543752731546}}, {"attributes": {"FID":3,
"intersect_MUKEY":"1595762", "intersect_FID_inputShapeProjected":0, "FREQUENCY":3,
"MIN_valu1_nccpi2all": 0.83099997043609619,
"SUM_intersect_Shape_Area1":48154.41943359375, "FIRST_valu1_MUNAME": ....}}],
"exceededTransferLimit":false}}], "messages":[]}
```


Please see below citations for full response parameters

Citations:

- USGS SSURGO Information
- USGS SSURGO Metadata (Tables and Columns)
- USGS SSURGO Metadata (Tables Column Descriptions)
- UDSDA NRCS Input Field Variables and Descriptions
- Esri – esriGeometryType Information and Constants
- WKID List

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