

SoilGrids + SoilInfo

Global Soil Data on Your Palm



World Soil Information

Jorge S. Mendes de Jesus <jorge.mendesdejesus@wur.nl>

Tom Hengl <tom.hengl@wur.nl>

ISRIC - Where Are We?

- ISRIC - World Soil Information



- Located at Wageningen WUR

ISRIC - 3 Objectives

- ISRIC - World Data Centre for Soils: **collecting, analysing, dissemination** of soil data
- ISRIC - **Applied research**. Specially in the domain of digital soil mapping
- ISRIC - **Inform and Educate**. World Soil Museum, public information, guest researcher program, spring school



ISRIC

- ISRIC - Spring School 2015



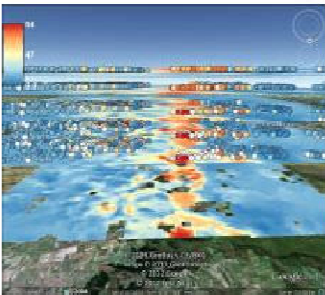
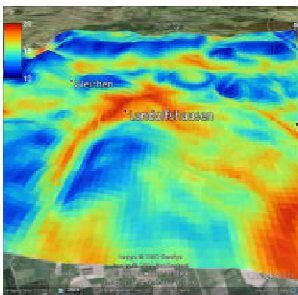
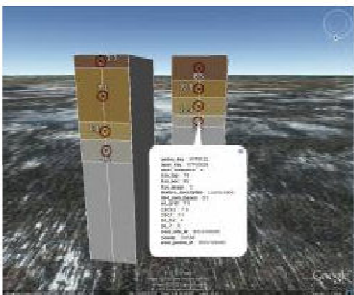
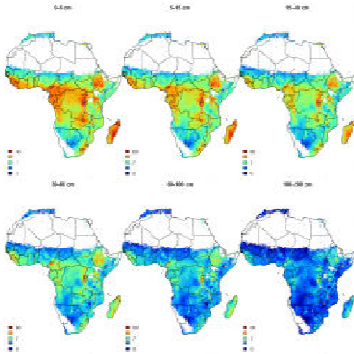
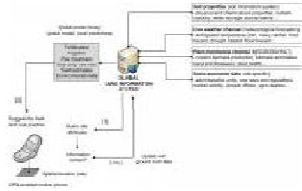
- ISRIC - World Soil Museum



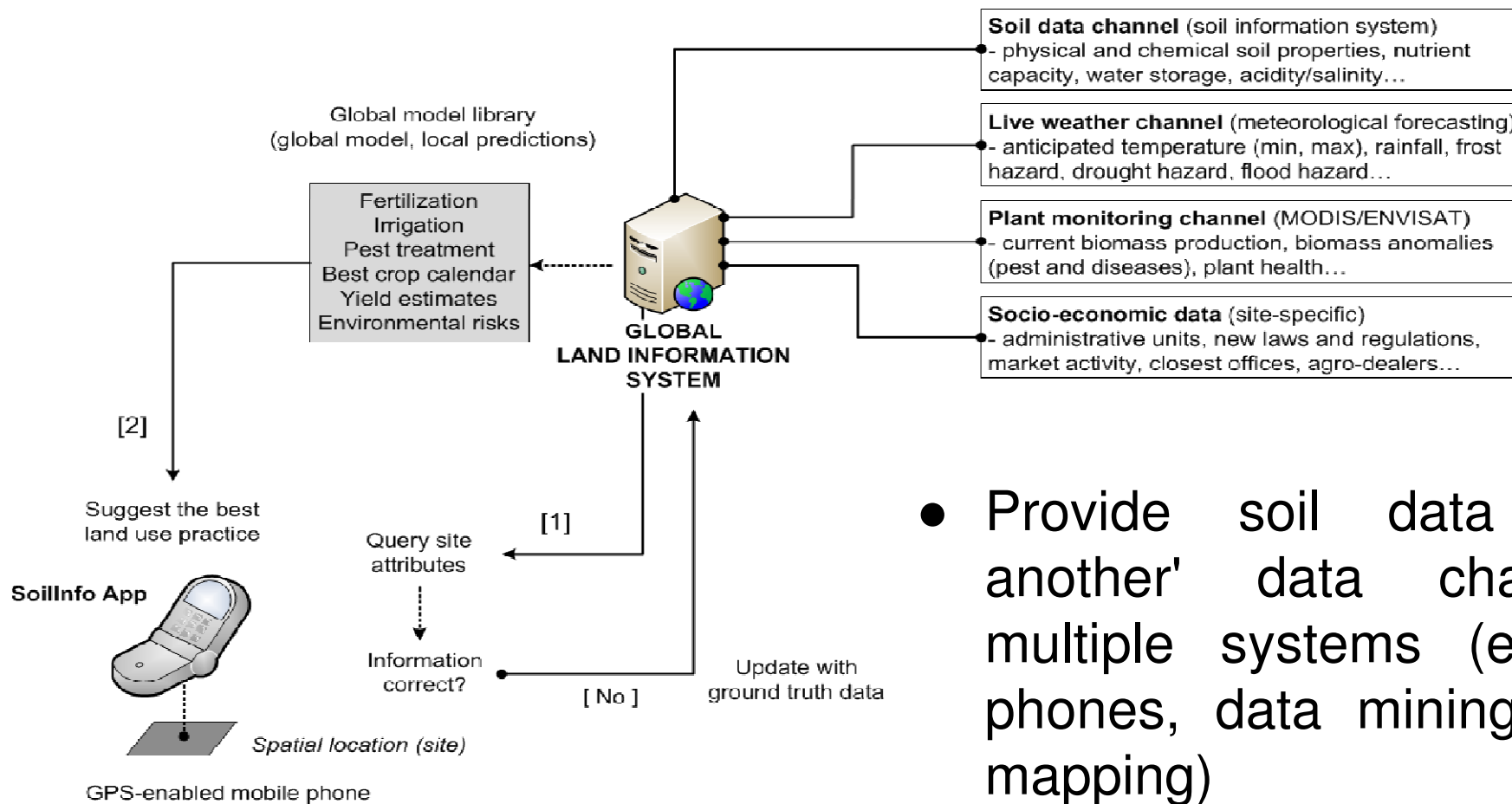
World Soil Information

ISRIC - Global Soil Information Facilities

- GSIF (Global Soil Information Facilities) is ISRIC's framework for production of open soil data.
- Highly oriented for development geoinformatics/information tools
- Based on open source principles

3D soil mapping	plotKML tutorial	Soil data classes in R	SoilGrids1km tutorial	SoilInfo App
				

ISRIC - Vision



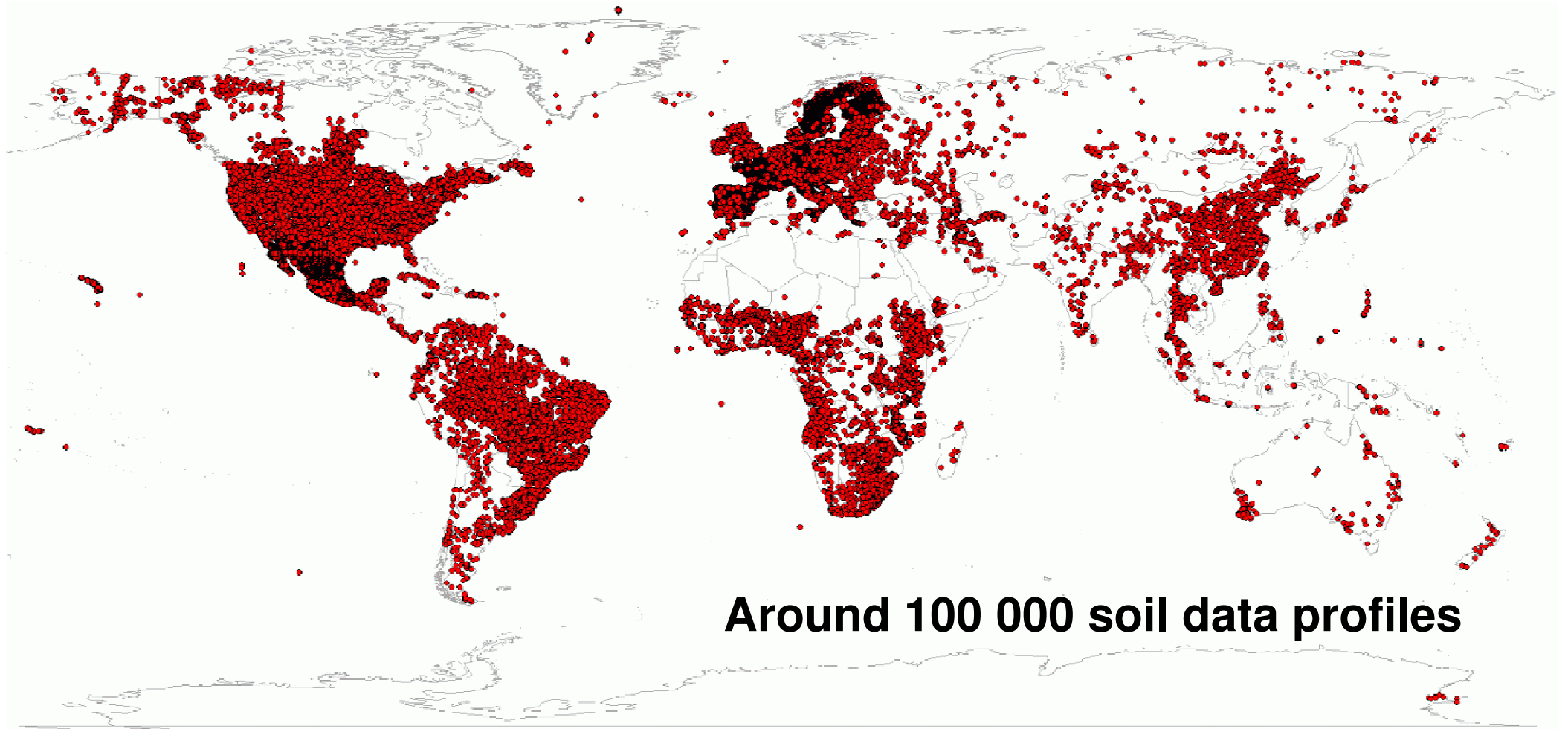
- Provide soil data as 'yet another' data channel for multiple systems (e.g mobile phones, data mining systems, mapping)

ISRIC - SoilGrids

- **Soilgrids** - A system for automated soil mapping (soilgrids1km is an output of soilgrids)
- **Soilgrids1km** - Global 3D Soil Information System at 1km resolution
- **Soilgrids.org** / **Soilinfo app** / **Soilgrids REST** - Services for data distribution and/or consultation



ISRIC - Soil Point Data



Around 100 000 soil data profiles



World Soil Information

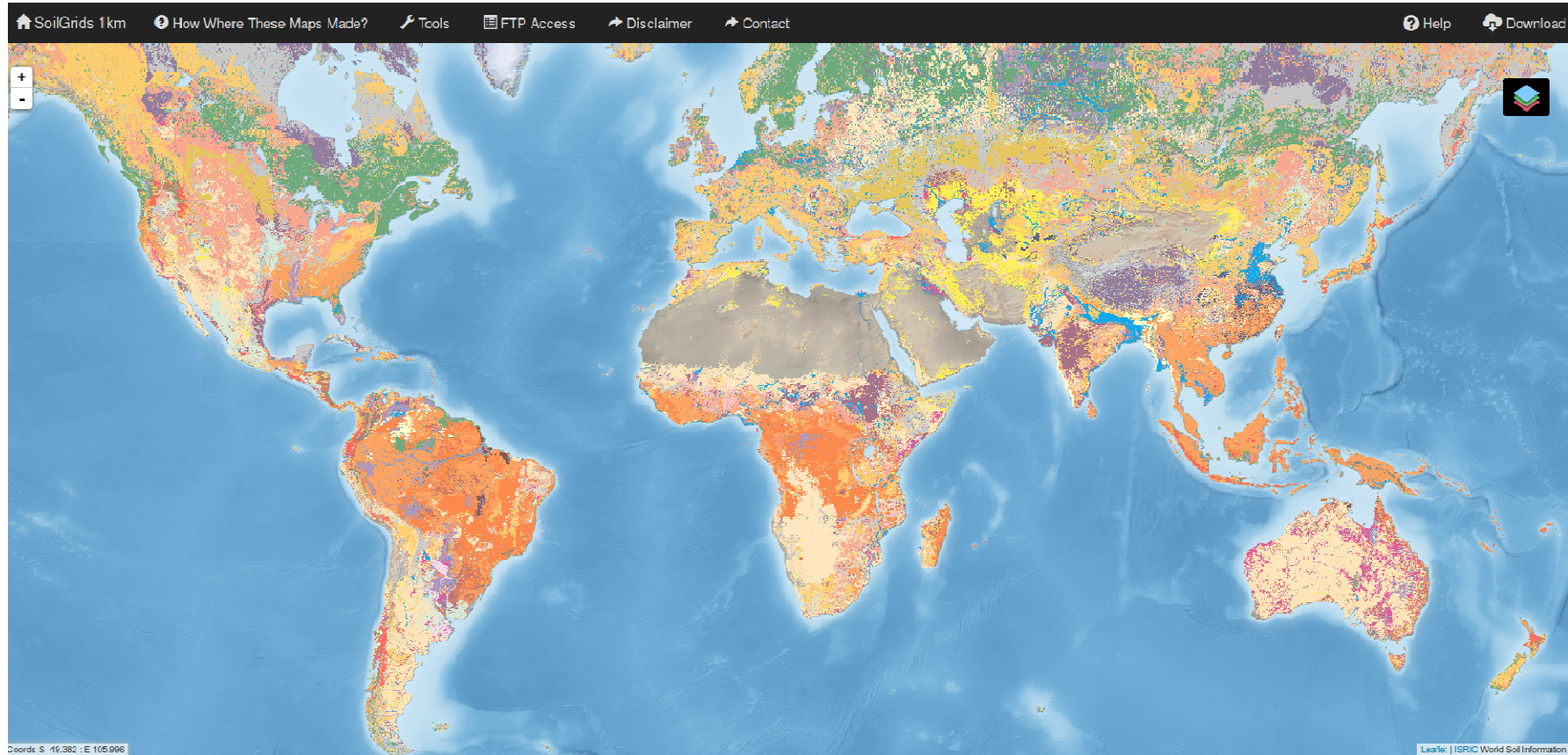
ISRIC - Data Sources

- USDA National Resources Conservation Service,
- European Commission's Joint Research Centre,
- Africa Soil Information Service project,
- Mexican Instituto Nacional de Estadística y Geografía/CONABIO,
- University of São Paulo,
- Agriculture and Agri-Food Canada, Institute of Soil Science,
- Chinese Academy of Sciences,
- ... and others.

We are open to collaborations and we would like for your institute to be part of this list



ISRIC - Soilgrids 1km



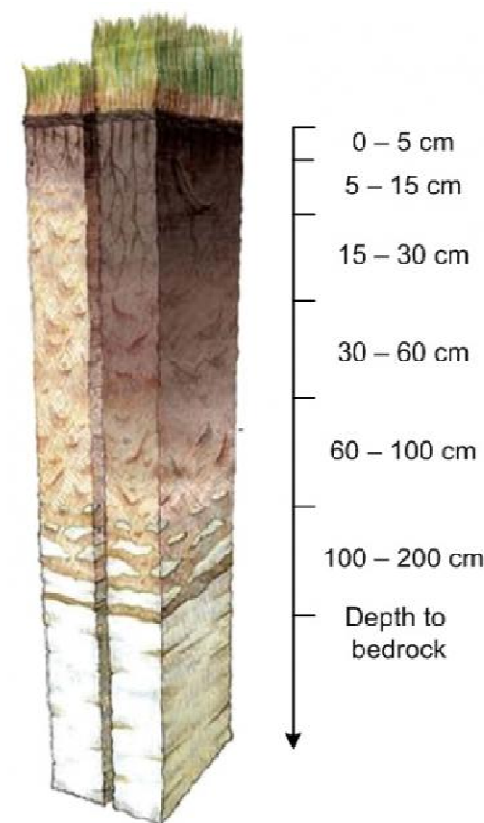
Soil Taxonomical Class WRB @ 1km
View and Download: <http://soilgrids.org>



World Soil Information

ISRIC - Soilgrids 1km

- **3D dataset** - Remember that soils have different properties according to depth
- Full dataset (so far):
 - 9 parameters (e.g: pH, Org. carbon, texture)
 - 3 levels of confidence (lower, median, upper)
 - 6 depth intervals (figure right)
 - 2 soil class taxonomies (WRB and USDA) (each class also with distribution map)
- Size dataset :
 - No compression: **270 gigas**
 - GeoTIFF deflate compress: **25 gigas**



ISRIC - REST API



[REST SoilGrids](#) [Home](#) [Stream/Download](#) [Query](#) [Description](#) [Errors](#) [→ Disclaimer](#) [→ SoilGrids](#) [→ ISRIC](#)

REST SoilGrids API

This is the supporting page of Soilgrids REST API documentation. Here developers can find the necessary documentation to access the REST interface, query data and download tiles. Developers can access soil information and values in a simple and straight forward way, without major technical requirements

<http://rest.soilgrids.org/>



World Soil Information

ISRIC - Soilgrids 1km

[http://rest.soilgrids.org/query?
lon=-9.417&lat=38.768&
attributes=ORCDRC,CEC&
confidence=M&depths=sd1](http://rest.soilgrids.org/query?lon=-9.417&lat=38.768&attributes=ORCDRC,CEC&confidence=M&depths=sd1)

- REST Queries (top) return GeoJSONS (right) or GeoTiff tiles.
- From June 2014 till May 2015: **200 000 requests (172,850 queries)**

```
{"type": "Feature",  
  "geometry": {  
    "type": "Point",  
    "coordinates": [-9.417,38.768]},  
    "crs": {"type": "name", "properties": {"name":  
"urn:ogc:def:crs:OGC:1.3:CRS84"}},  
    "timestamp": "1432038701.1",  
    "raw": true,  
    "properties": {  
      "soilmask": "soil",  
      "ORCDRC": {  
        "M": {  
          "sd1": 56}},  
      "CEC": {  
        "M": {  
          "sd1": 15},  
          "publication_date": "2014-  
04-02"}}
```



ISRIC - SoilInfo



Google play Search

Categories Home Top Charts New Releases

My apps Shop Games Editors' Choice

SOIL INFO SoilInfo - soil data app
ISRIC - World Soil Information - June 5, 2014
Education

Installed

This app is compatible with some of your devices.

★★★★★ (19)

View in iTunes

This app is designed for both iPhone and iPad

Free
Category: Education
Released: Jul 26, 2014
Version: 0.3.3
Size: 5.4 MB
Languages: English, German
Seller: Stichting International Soil Reference and Information Centre (ISRIC)
© ISRIC - World Soil Information
Rated 4+

Compatibility: Requires iOS 5.0 or later. Compatible with iPhone, iPad, and iPod touch. This app is optimized for iPhone 5.

Customer Ratings
We have not received enough ratings to display an average for the current version of this application.

SoilInfo [View More by This Developer](#)

By ISRIC - World Soil Information
Open iTunes to buy and download apps.

SOIL INFO

View in iTunes

This app is designed for both iPhone and iPad

Free
Category: Education
Released: Jul 26, 2014
Version: 0.3.3
Size: 5.4 MB
Languages: English, German
Seller: Stichting International Soil Reference and Information Centre (ISRIC)
© ISRIC - World Soil Information
Rated 4+

Compatibility: Requires iOS 5.0 or later. Compatible with iPhone, iPad, and iPod touch. This app is optimized for iPhone 5.

Customer Ratings
We have not received enough ratings to display an average for the current version of this application.

Screenshots

iPhone | iPad

Bulk density, 100-200cm mean | 53,2784, 2,48054

World Reference Base group | 37,3702, 126,738

0-5cm
5-15cm
15-30cm
30-60cm
60-100cm
100-200cm

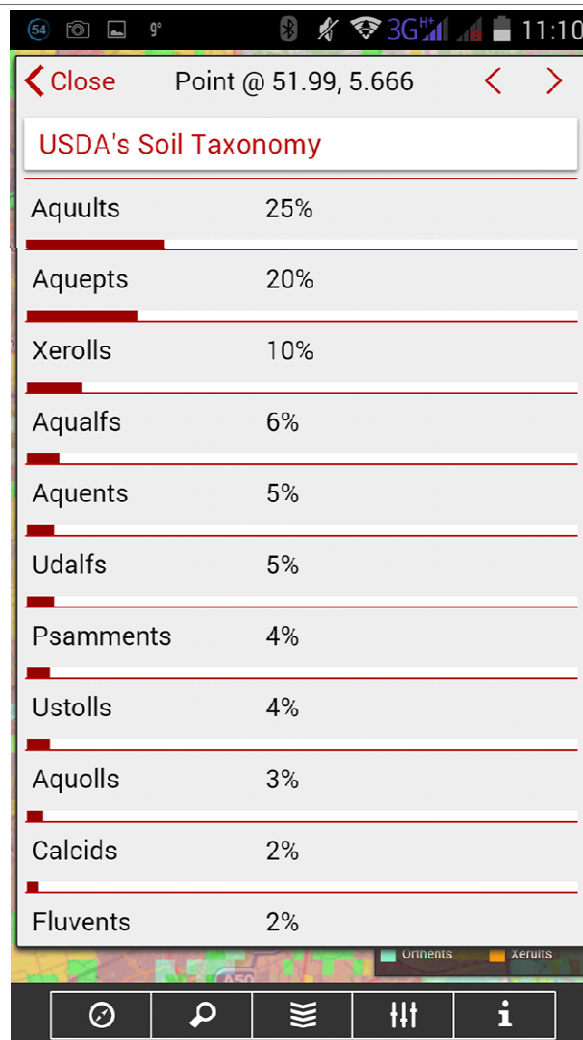
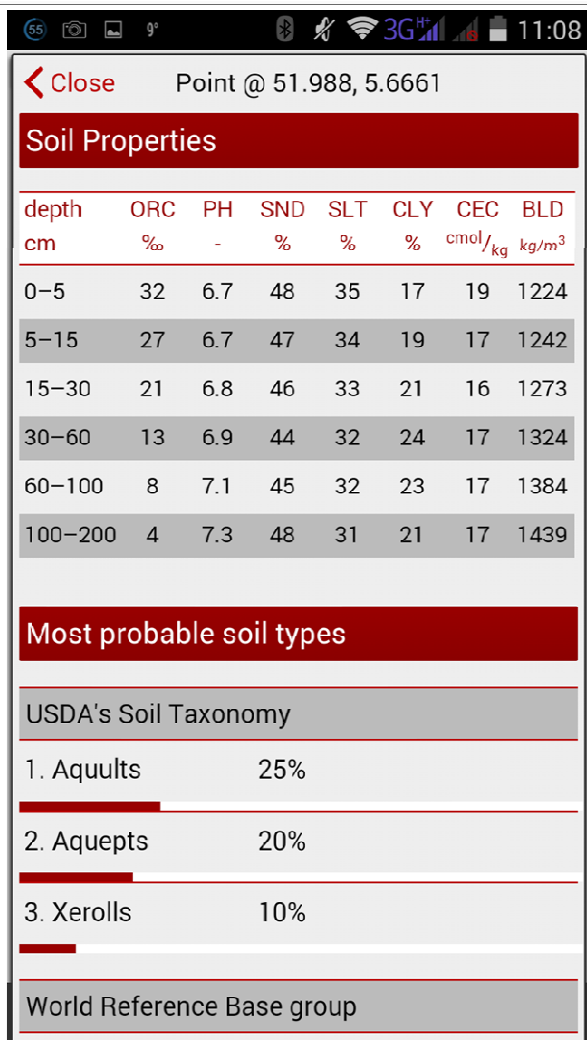
lower limit: stream upper limit

Locate Query Layers Info

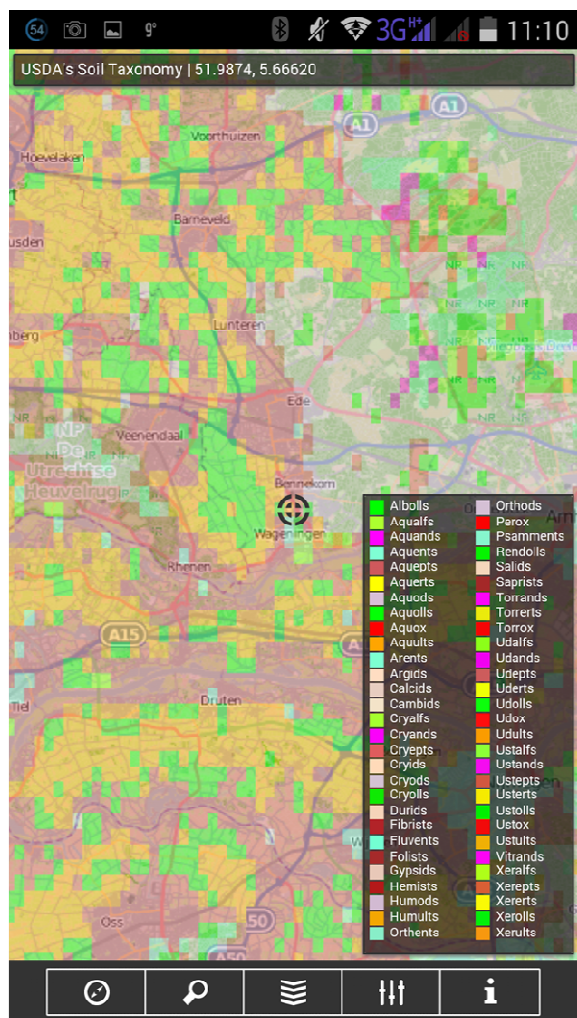
2500 installs and 1500 active users (1 years)



ISRIC - SoilInfo



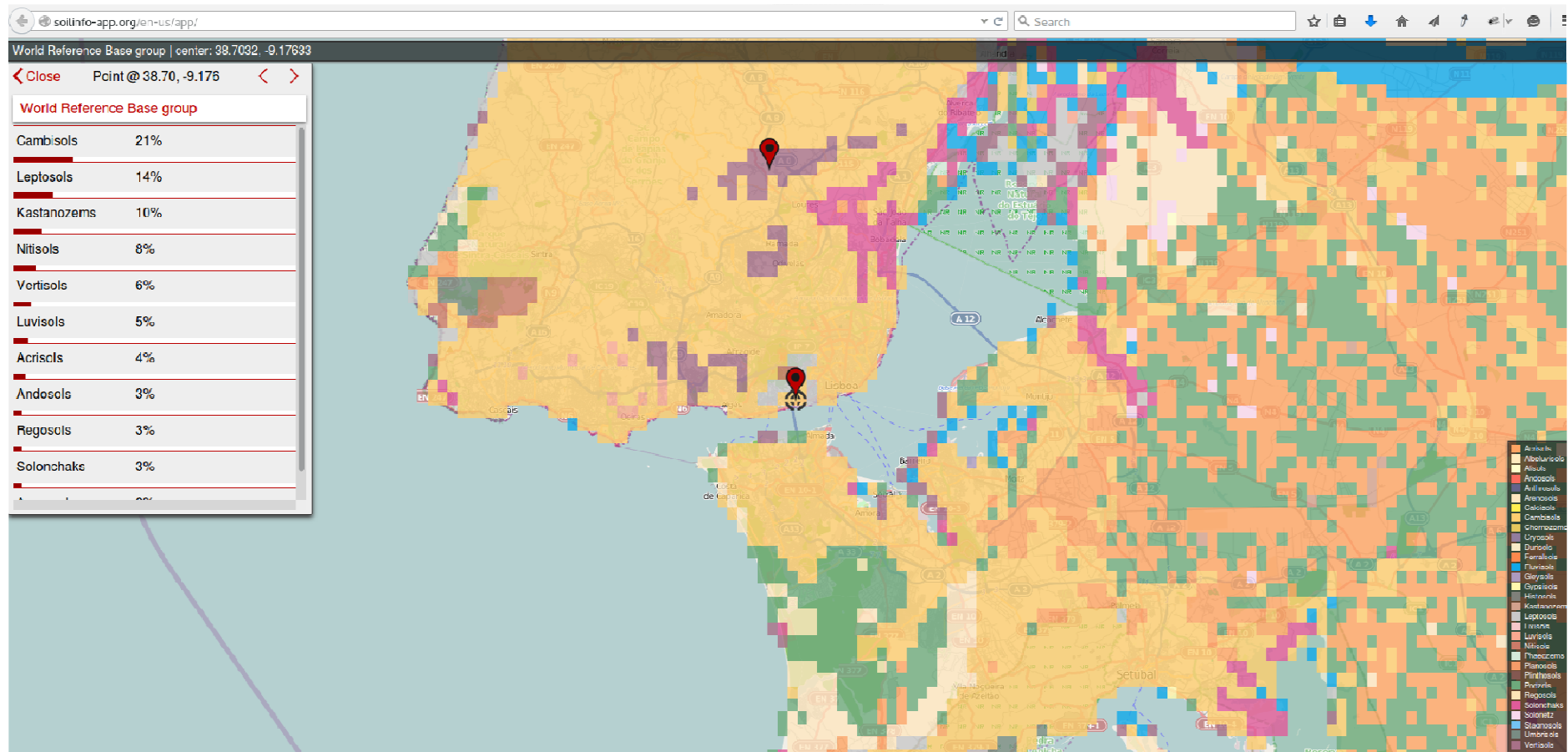
ISRIC - SoilInfo



- **Soilinfo app - Web mapping and visual interpretation of maps**
- **Lite version for low bandwidth**
- **All layers from dataset can be queried**

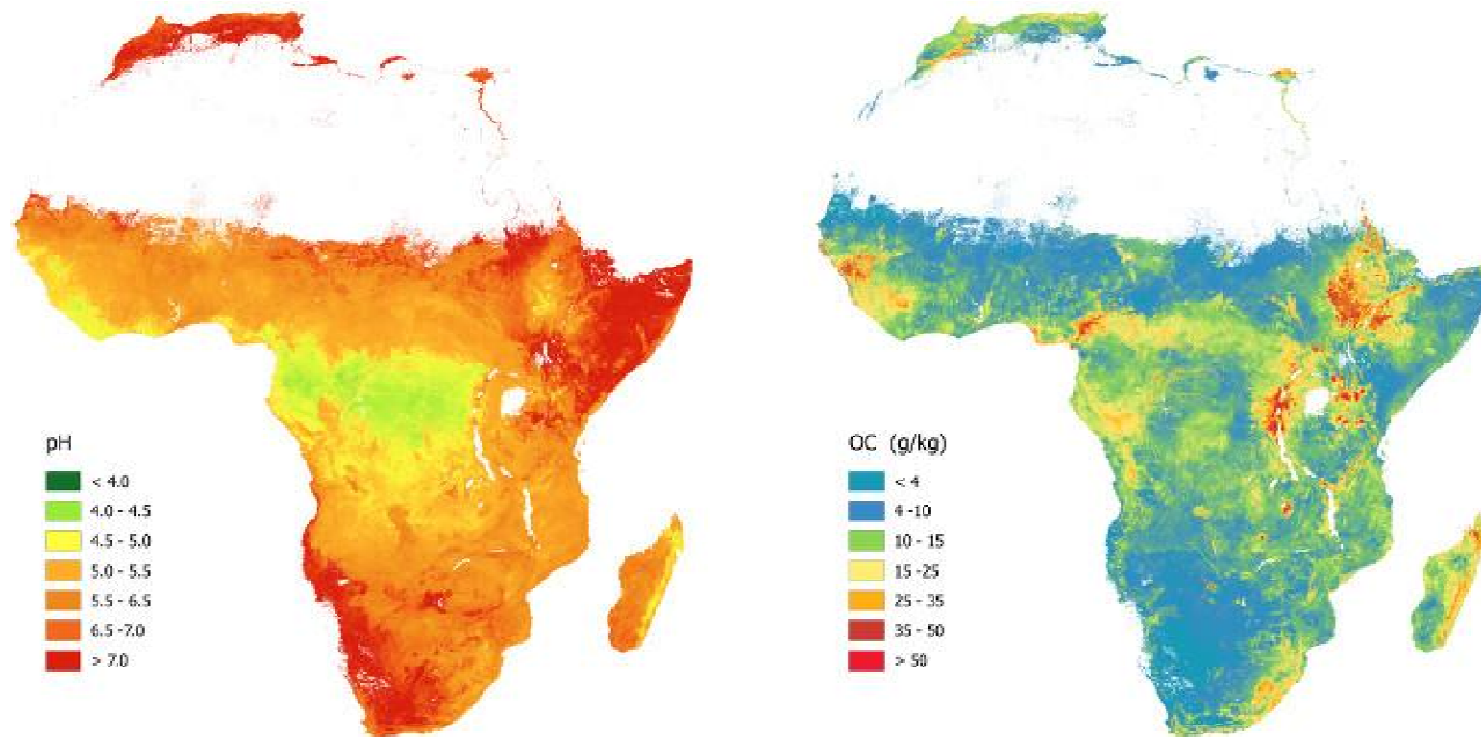
ISRIC - SoilInfo Desktop

- Desktop version: <http://soilinfo-app.org/en-us/app/>



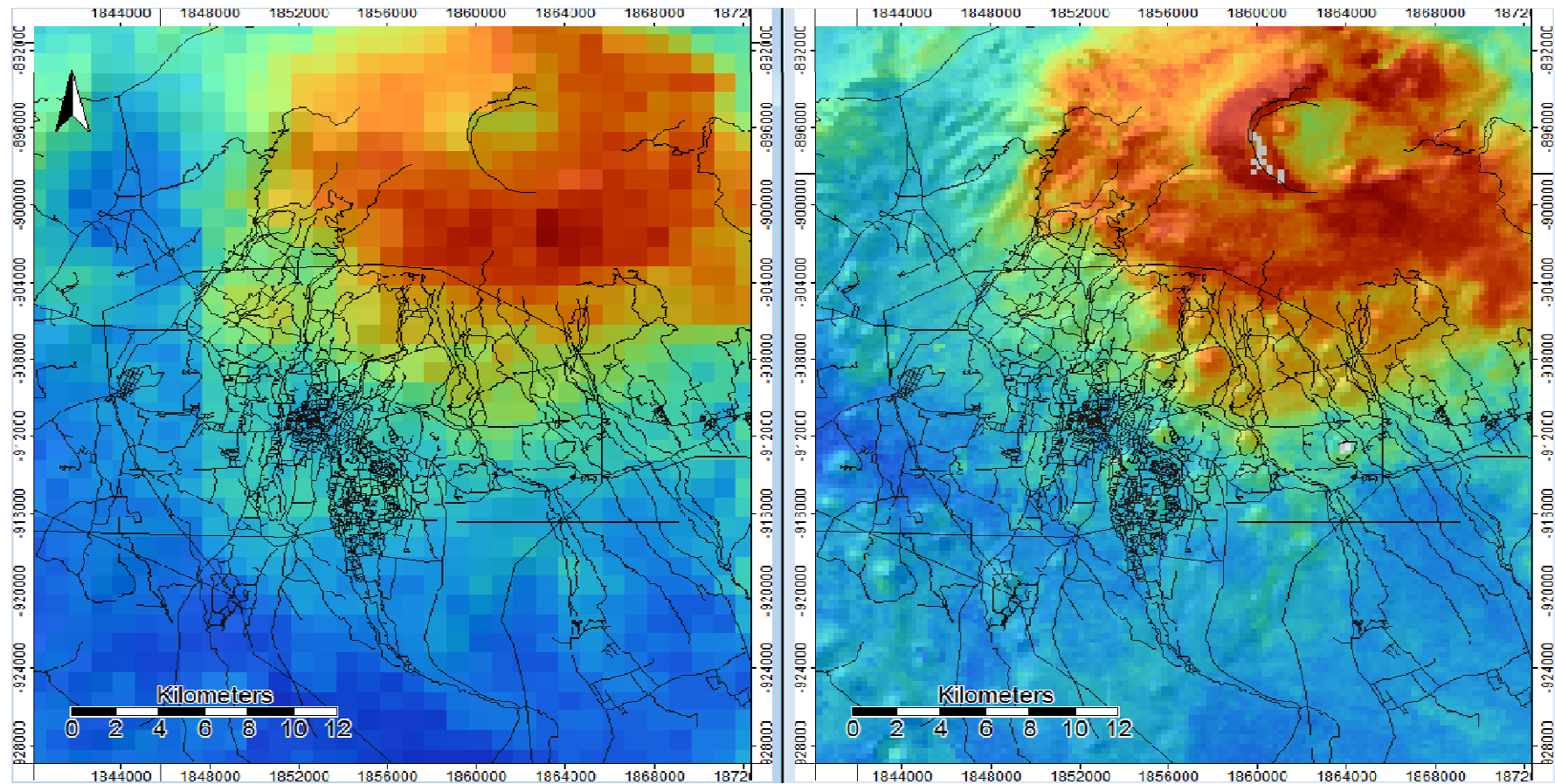
ISRIC - The future is coming

- **250mt resolution**
- **Africa covariances already available (AfSIS project)**



ISRIC - The future is coming

- **Comparison between 1km and 250mt (Arusha)**



ISRIC - Obtaining the data/information

- General information: <http://www.isric.org/content/soilgrids>
- FAQ: <http://www.isric.org/content/faq-soilgrids>
- Tile download: <http://soilgrids.org>
- FTP: <ftp://ftp.soilgrids.org> (login: soilgrids pwd: soilgrids)
- Disclaimer: <http://www.isric.org/content/disclaimer-soilgrids>

ISRIC - Obtaining the data/information


Peer review publication:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0105992>

 OPEN ACCESS  PEER-REVIEWED

RESEARCH ARTICLE

SoilGrids1km — Global Soil Information Based on Automated Mapping

Tomislav Hengl , Jorge Mendes de Jesus, Robert A. MacMillan, Niels H. Batjes, Gerard B. M. Heuvelink, Eloi Ribeiro, Alessandro Samuel-Rosa, Bas Kempen, Johan G. B. Leenaars, Markus G. Walsh, Maria Ruiperez Gonzalez

Published: August 29, 2014 • DOI: [10.1371/journal.pone.0105992](https://doi.org/10.1371/journal.pone.0105992)

1 Save	0 Citations
5,865 Views	62 Shares

Article	Authors	Metrics	Comments	Related Content
---------	---------	---------	----------	-----------------

Download PDF 

Print

Share

Correction (1)

Abstract

Introduction


Materials and Methods

Results

Discussion

Correction

1 Dec 2014: The PLOS ONE Staff (2014) Correction: SoilGrids1km — Global Soil Information Based on Automated Mapping. PLoS ONE 9(12): e114788. doi: [10.1371/journal.pone.0114788](https://doi.org/10.1371/journal.pone.0114788) | [View correction](#)

 CrossMark

Related PLOS Articles

[Correction: SoilGrids1km — Global Soil Information Based on Automated Mapping](#)



Thank you!



World Soil Information