

IIASA Geo-Wiki land cover map accuracy assessment activities


Linda See, Steffen Fritz and the Geo-Wiki
team



Geo-Wiki: Visualization, Crowdsourcing and Validation Tool

[www.geo-wiki.org](#)
Innovative solutions for: [EO4ECO_Part_B_temp](#) [ARISE Section 4 - Geo](#) [ARISE Proposal - Geo](#) [Source Book on Tropi](#) [Home page – Mapping](#)

ENGAGING CITIZENS IN ENVIRONMENTAL MONITORING




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Games

- » Picture Pile
- » Picture Paint
- » FAQ


Get involved now!

Participate in these ongoing projects and join the citizen science movement to help us address global land cover issues



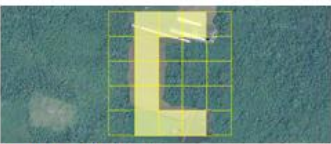
Picture Pile

Sort pictures and win great prizes! You can help us tackle global issues like deforestation.




Picture Paint

Paint pictures and win great prizes! You can help us tackle global issues like deforestation.




Cropland Validation


Validate areas of interest as cropland or non-cropland and win great prizes!




FotoQuest Austria

Join FotoQuest Austria and explore the outdoors! Help us monitor changes in land use and land cover.





Login
You're logged in as [geolms](#).



 **Enter Application**

[Profile](#)
[Logout](#)


Administration

- » Smartphone Legends


Tweets by @Geo_Wiki



Don't miss #CitizenScience day at @NHM_Wien next Tuesday! [bitly/2dpTqk2](#)



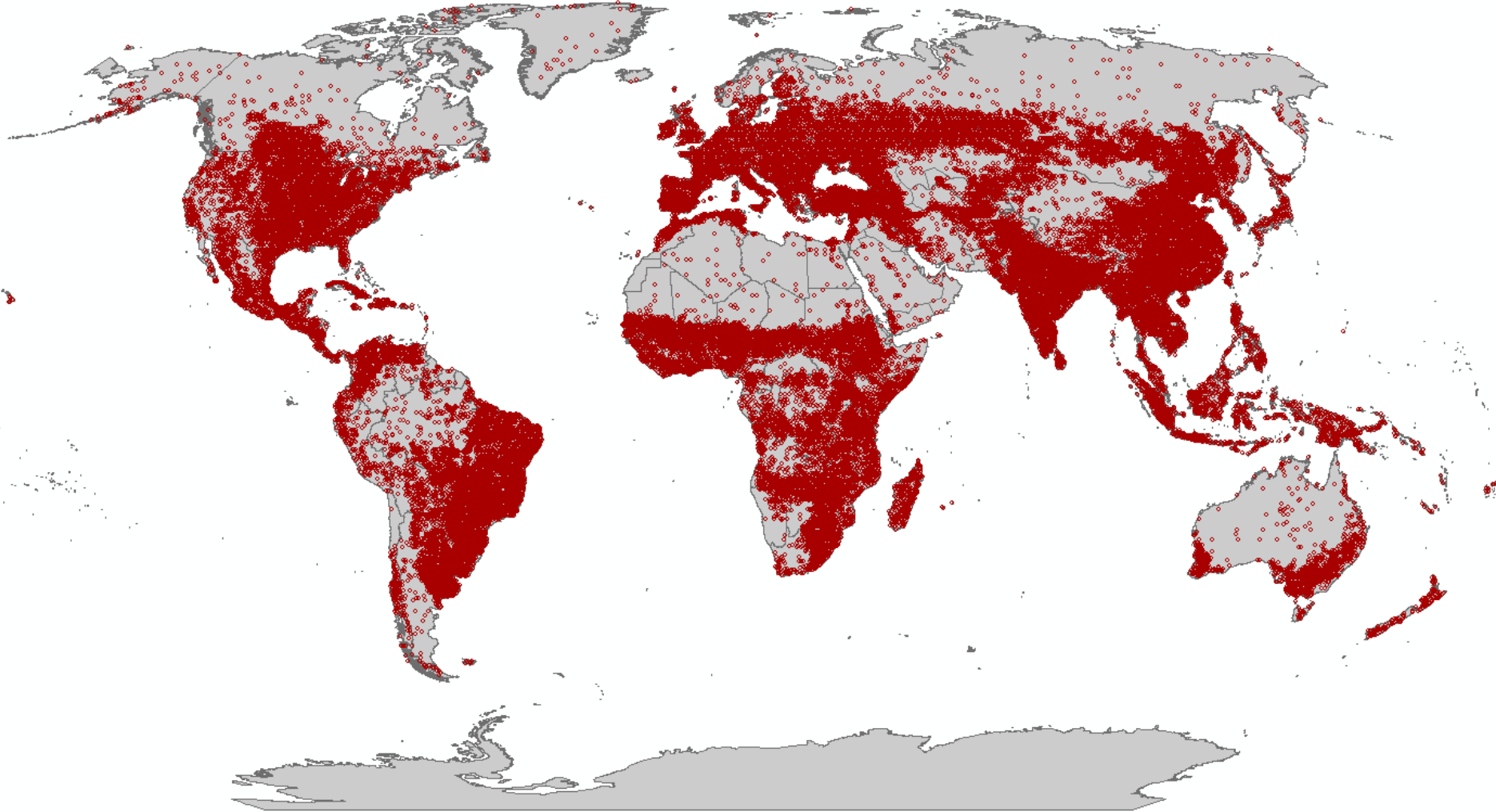
[Embed](#) [View on Twitter](#)



Geo-Wiki Activities

- Run campaigns to collect data
- Samples differ by campaign
 - Create training samples
 - Global cropland extent 2005
 - Map of human impact
 - Map of field size
 - Create validation samples
 - Peng Gong
 - Cropland layer for SIGMA project
- LACO-Wiki land cover validation tool

Cropland Validation Campaign



Cropland Validation Campaign



Don't show any overlays

- Datasets
- Crop type distribution
IFPRI/SPAM 2005
- SIGMA reference grid
- Geocoding
- Feedback datasets

Sigma Validation

About

Start validation

Stop validation

Leaderboard

JECAM training



Click on each sub-pixel if
contains >50% cropland

Mark all as Cropland

Clear all sub-pixels

Transparency:

Comment (optional):

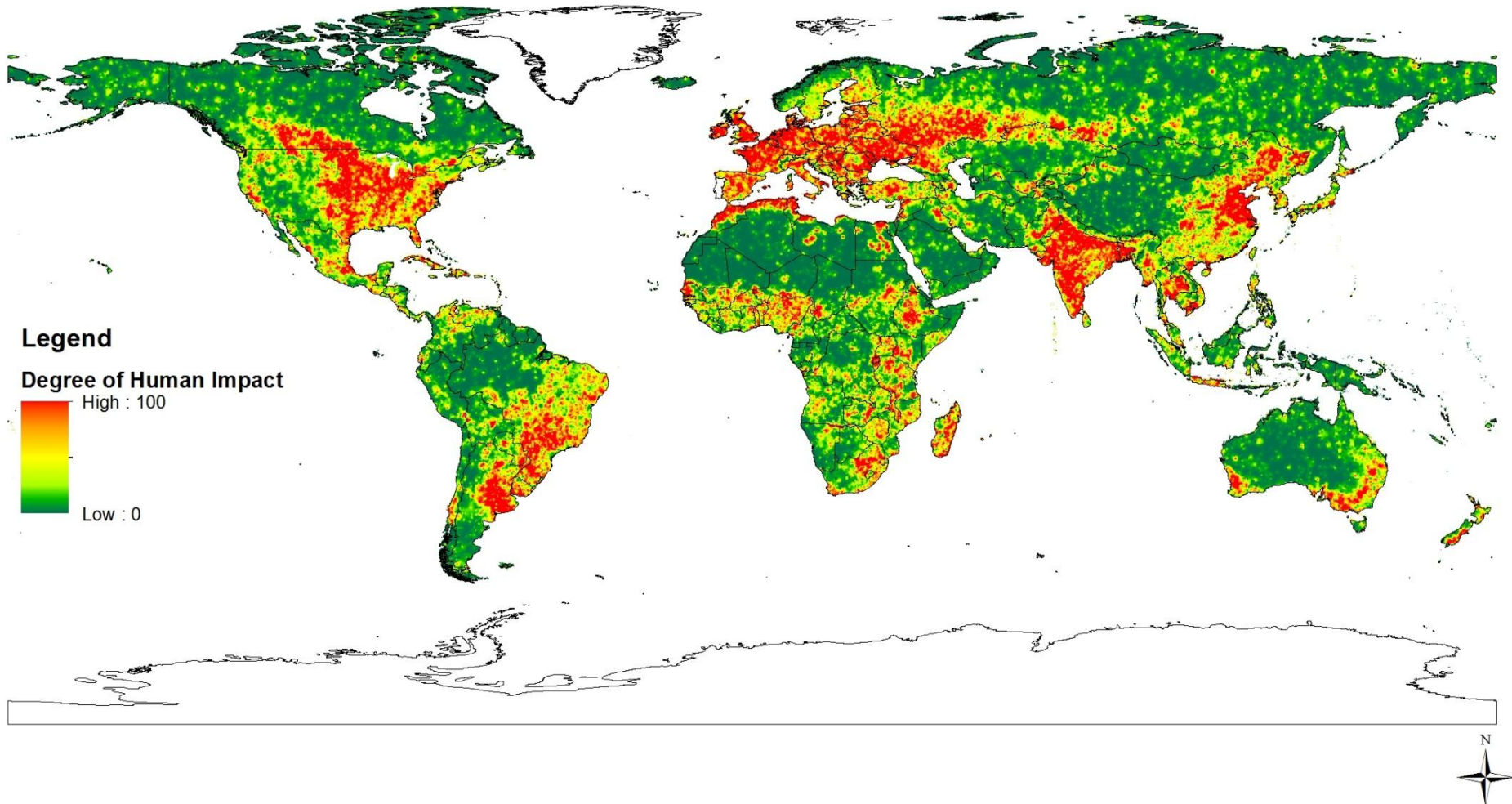
Submit

Skip

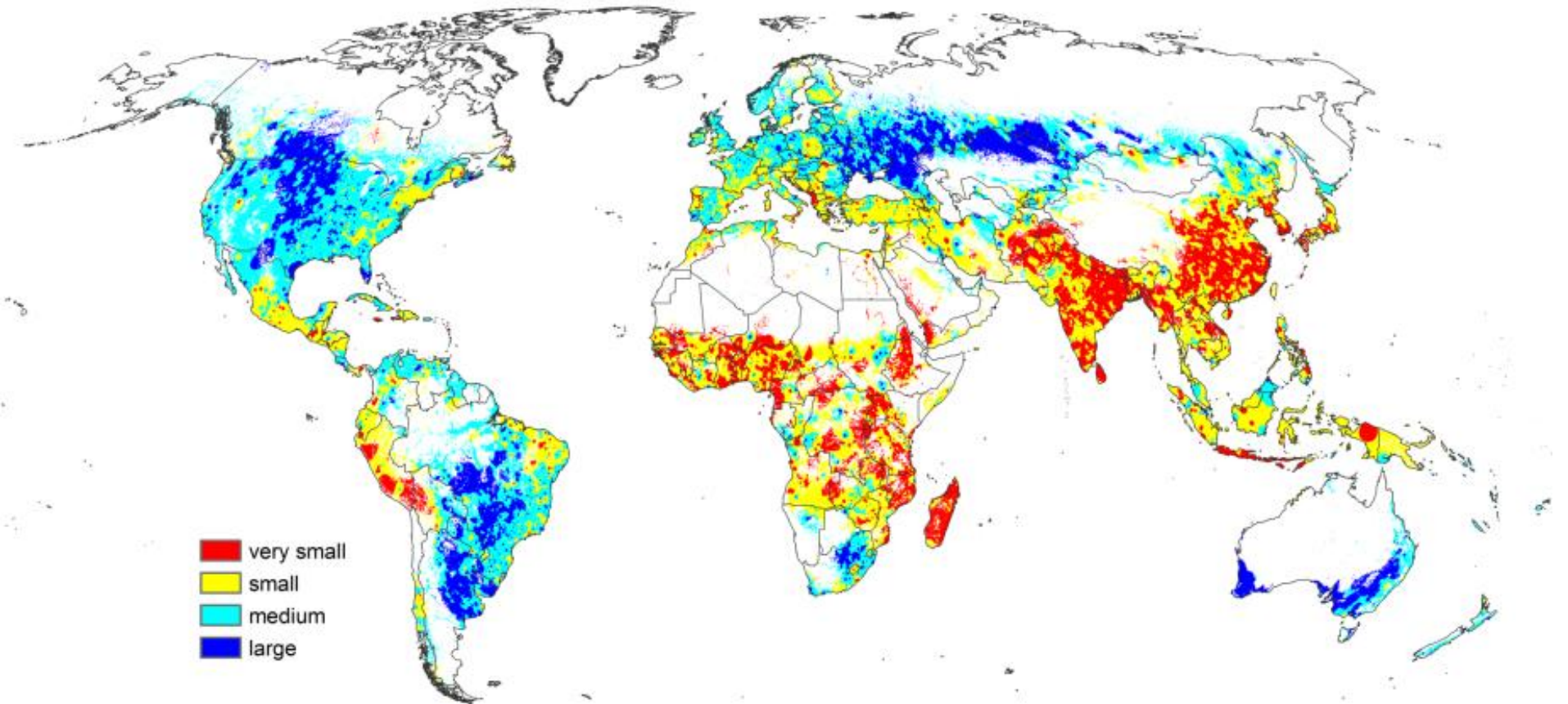
View in Google Earth

Ask experts for help

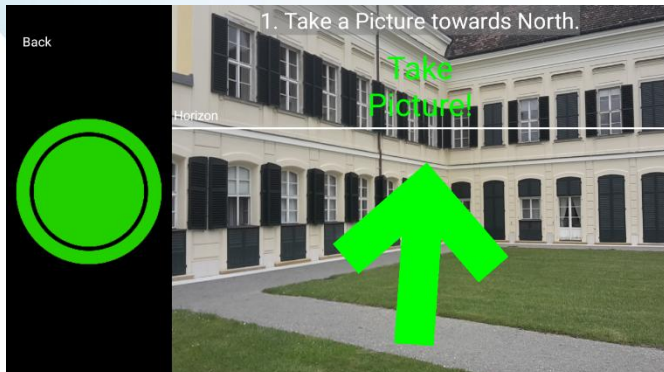
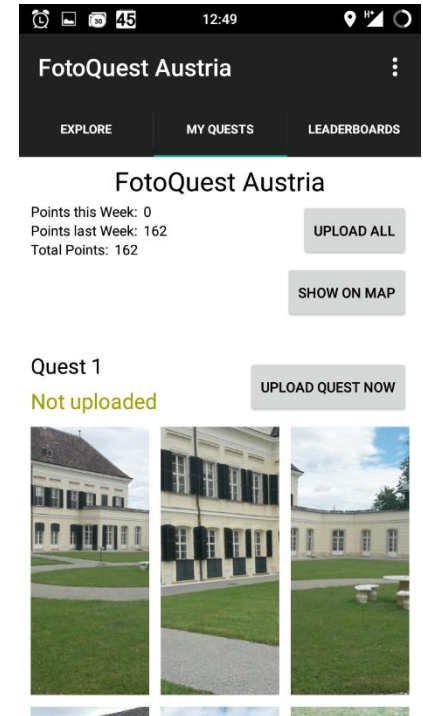
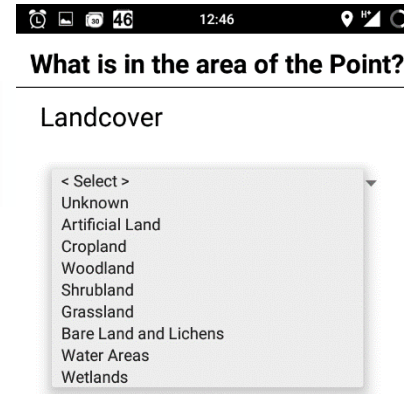
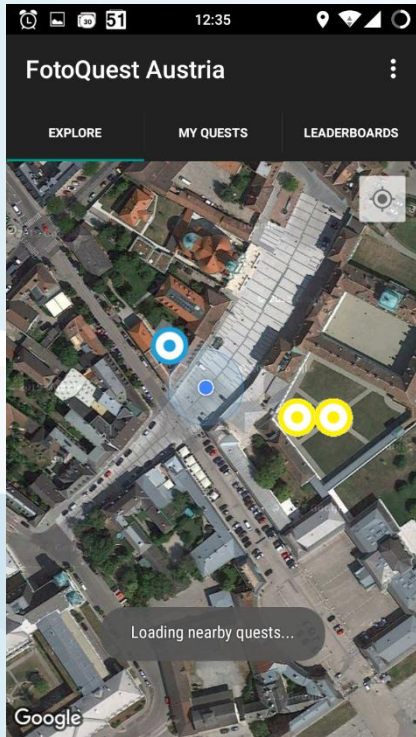
Crowdsourced human impact map



Crowdsourced field size map



FotoQuest Austria/FotoQuest Go



Cropland Capture

GEO-Wiki

About Cropland Capture

By 2050 we will need to feed more than 2 billion additional people on the Earth. By playing Cropland Capture, you will help us to improve basic information about where cropland is located on the Earth's surface. Using this information, we will be better equipped at tackling problems of future food security and the effects of climate change on future food supply.

Get involved and contribute to a good cause! Help us to identify cropland area!

[Continue](#) [What is cropland?](#) [What is NOT cropland?](#)

Win Prizes !!!

←

FAQ

Is there cropland in the red box?

Japan



 NO  YES

Image © 2013 DigitalGlobe

Google earth

  MAYBE  Menu

Week 8 will end in 2 days, 10 hours, 3 min, 46 sec.

Follow us on [twitter](#) to get the latest news about Cropland Capture!

- Provide an open land cover validation platform for the community
- Make it as simple, yet powerful as possible and offer guidance and reproducibility
- Build an open database for training and validation to improve future land cover and land use maps

<http://www.laco-wiki.net/>

Basic Validation Workflow

- Upload a map for validation
 - Vector or raster
- Create a sample (or multiple samples)
 - Random, stratified
- Validate the samples
 - Blind or plausibility
- Create a report with the results
 - Choose different accuracy assessment measures

Logging in / Languages

Laco-Wiki - The Land Cover Va... x +

www.laco-wiki.net/en/Account/Login

Search

LACO-Wiki

The Land Cover Validation Platform


BETA


Home Welcome to LACO-Wiki	Data Create and manage data	Samples Generate your validation samples	Validations Interpretate your samples	Reports View your validation results
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Login



Login to LACO-Wiki

To enjoy the benefits of validated landcover datasets you have to login with one of the following Accounts:

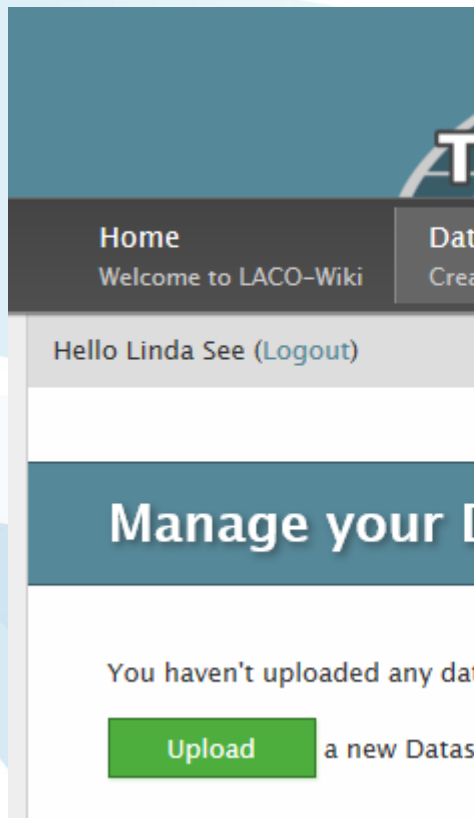






Stay In Touch <ul style="list-style-type: none">Send us a MailJoin us on FacebookFollow us on Twitter	Project Members <div></div>	Languages <div>English Deutsch Español Italiano Português Русский Українська Ελληνικά Český</div>
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Step 1: Data Upload/Management



Create a new Dataset

Here you can create a new dataset. Define a name, the land cover type and choose the corresponding files.

Dataset Information

Dataset Name:

Land Cover Type:

Dataset Description:

Files

Drag and Drop Files here

or

Select Files

No files selected...

Supported file types: Shape (.shp, .shx, .dbf, .prj), GeoTiff (.tif, .tiff, .tfw)

Create Dataset

Step 2: Generate Samples

Create new Sample Collection

Sample Name:

Description:

The given dataset contains a raster file and supports the following sample types:



Random Point

"This approach creates a sample dataset with a definable number of points, which will be randomly distributed over the reference dataset."

Add Sample >>>



Random Pixel

"This approach creates a sample dataset with a definable number of pixels which will be randomly selected from the reference dataset. Duplicates are not possible."

Add Sample >>>

Your Samples

Add new samples by clicking the buttons on the left.

Select at least one sample type from the left to submit your sample collection.

Submit Sample



Stratified Point

"This approach creates a sample dataset with a definable number of points per class (e.g. land cover), which will be randomly distributed over the specified classes of the reference dataset."

Add Sample >>>



Stratified Pixel

"This approach creates a sample dataset with a definable number of pixels per class (e.g. land cover), which will be randomly selected from the specified classes of the reference dataset."

Add Sample >>>

Step 3: Validate

Create your Validation exercise

Here you can define a validation exercise for your previously created samples.

Your Sample:

Sample Name LCZ Sample 1

Description First sample of the Dublin LCZ map

• RandomPixel – 100

Sample Name LCZ Sample 1

Dataset Name LCZ Map of Dublin

Validation Settings

Name:

LCZ Sample 1 Validation 1



Description:

First validation session for sample 1



Method:

☒ Blind Validation:

☐ Plausibility Validation:

Save

- Blind: no information from the map
- Plausibility: verify if class is correct or not
- Enhanced: verify and correct

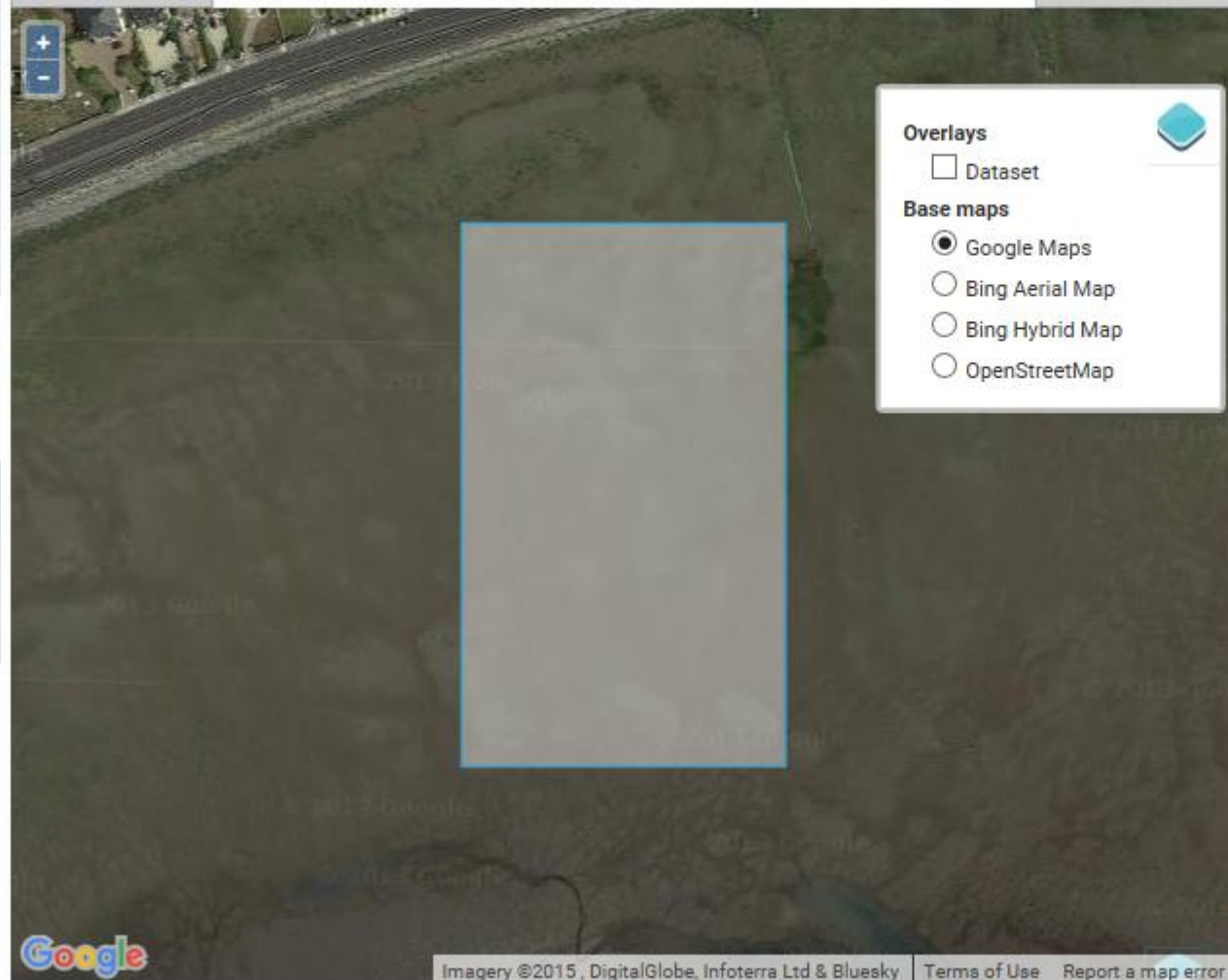
Here you can validate your previously created samples.

Name LCZ Sample 1 Validation 1

Validation 1 of 100

 \gg

Classify the object:



	LCZ 1 (1)
	LCZ 2 (2)
	LCZ 3 (3)
	LCZ 4 (4)
	LCZ 5 (5)
	LCZ 6 (6)
	LCZ 7 (7)
	LCZ 8 (8)
	LCZ 9 (9)
	LCZ 10 (10)
	LCZ A (101)
	LCZ B (102)
	LCZ C (104)
	LCZ D (105)
	LCZ E (106)
	LCZ F (107)
	LCZ G (108)

Description First validation session for sample 1

Name LCZ Sample 1 Validation 1

Validation 1 of 100
















Dublin Road
Sutton ED
Kilbarrack Lower

Overlays
☐ Dataset

Base maps
☐ Google Maps
☐ Bing Aerial Map
☐ Bing Hybrid Map
☒ OpenStreetMap

Google
Imagery ©2015, DigitalGlobe, Infoterra Ltd & Bluesky

Classify the object:

	LCZ 1 (1)
	LCZ 2 (2)
	LCZ 3 (3)
	LCZ 4 (4)
	LCZ 5 (5)
	LCZ 6 (6)
	LCZ 7 (7)
	LCZ 8 (8)
	LCZ 9 (9)
	LCZ 10 (10)
	LCZ A (101)
	LCZ B (102)
	LCZ C (104)
	LCZ D (105)
	LCZ E (106)
	LCZ F (107)
	LCZ G (108)

Description First validation session for sample 1

Here you can validate your previously created samples.

Name LCZ Sample 1 Validation 1


<<


Validation 2 of 100


>>

+

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










Imagery ©2015, DigitalGlobe | [Terms of Use](#) | [Report a map error](#)

Description First validation session for sample 1

Classify the object:

	LCZ 1 (1)
	LCZ 2 (2)
	LCZ 3 (3)
	LCZ 4 (4)
	LCZ 5 (5)
	LCZ 6 (6)
	LCZ 7 (7)
	LCZ 8 (8)
	LCZ 9 (9)
	LCZ 10 (10)
	LCZ A (101)
	LCZ B (102)
	LCZ C (104)
	LCZ D (105)
	LCZ E (106)
	LCZ F (107)
	LCZ G (108)

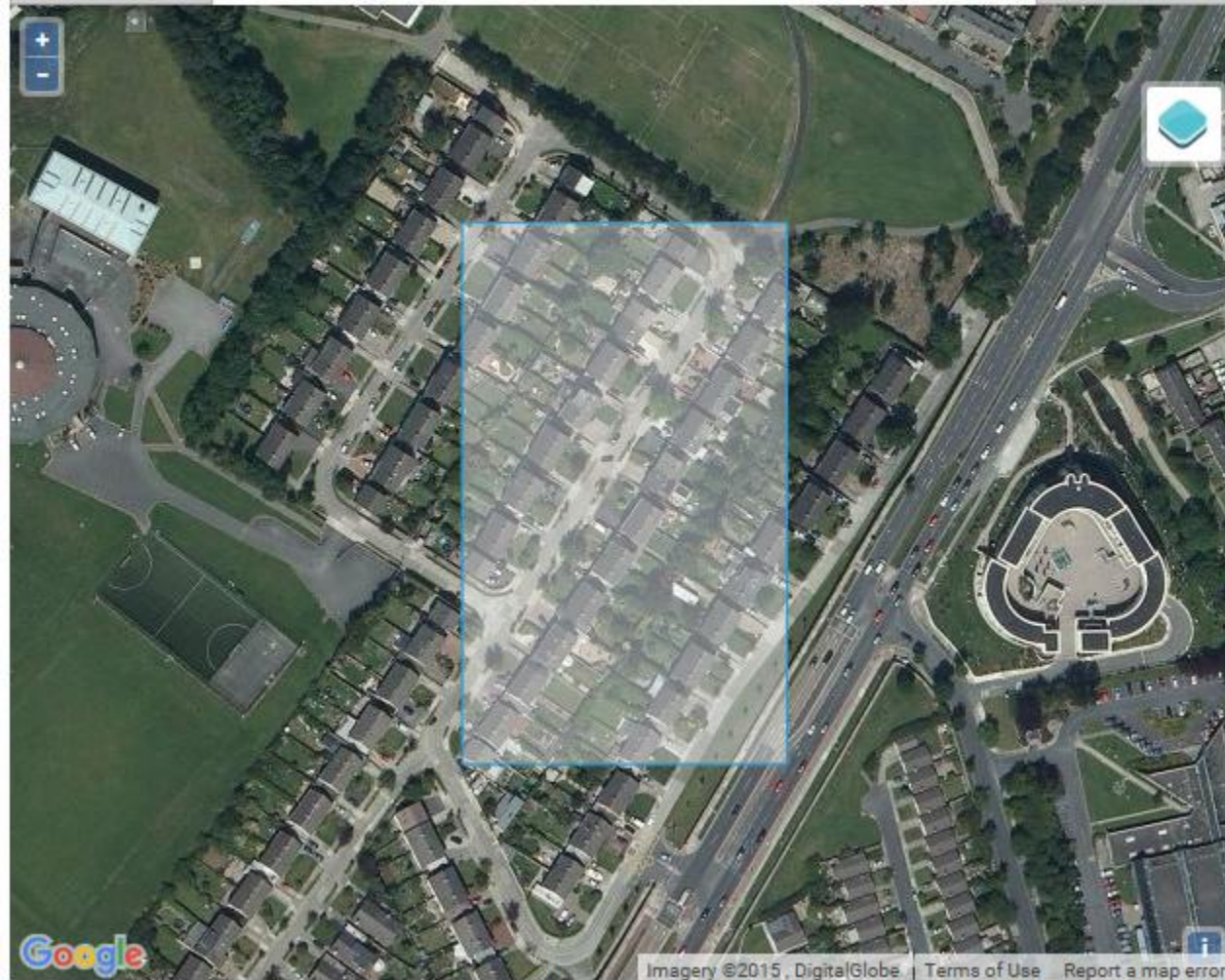
Here you can validate your previously created samples.

Name LCZ Sample 2

Validation 4 of 100

<<

>>



Classification:

LCZ 6 (6)

Correct

Incorrect

Description This is the second sample to illustrate how plausibility validation varies from blind validation

Validate your Samples

Here you can validate your previously created samples.

Name Plausibility Validation 1

<<

Validation 5 of 100

>>

**Classification:**

Trees (9)

Correct**Incorrect**

Grafiken © 2015, DigitalGlobe, GeoBasis-DE/BKG, Geoimage Austria | Nutzungsbedingungen | Fehler bei Google Maps melden

Description Mixed sample plausibility validation

Step 4: View Results

Create your Report

Here you can create a new report

Report Settings

Report name:

Description:

Raw Data:

Style:

Statistical values:

☒ **User Accuracy**

The user accuracy presents the fraction of correctly classified class.

☒ **Producer Accuracy**

The producer accuracy presented in Table 10 shows that the quantity disagreement is the most frequent error, with a value of 0.233333.

☒ Overall Accuracy

The overall accuracy is calculated as the total number of correctly classified pixels (diagonal elements) divided by the total number of test pixels.

[illegible]

Accuracy Assessment

- Raw data / confusion matrix
- Possibility to weight confusion matrix by object area
- Overall accuracy / errors of omission and commission
- Kappa
- Average Mutual Information (AMI)
- Quantitative and Allocation Disagreement (Pontius and Millones, 2011)
- We can add others based on user needs

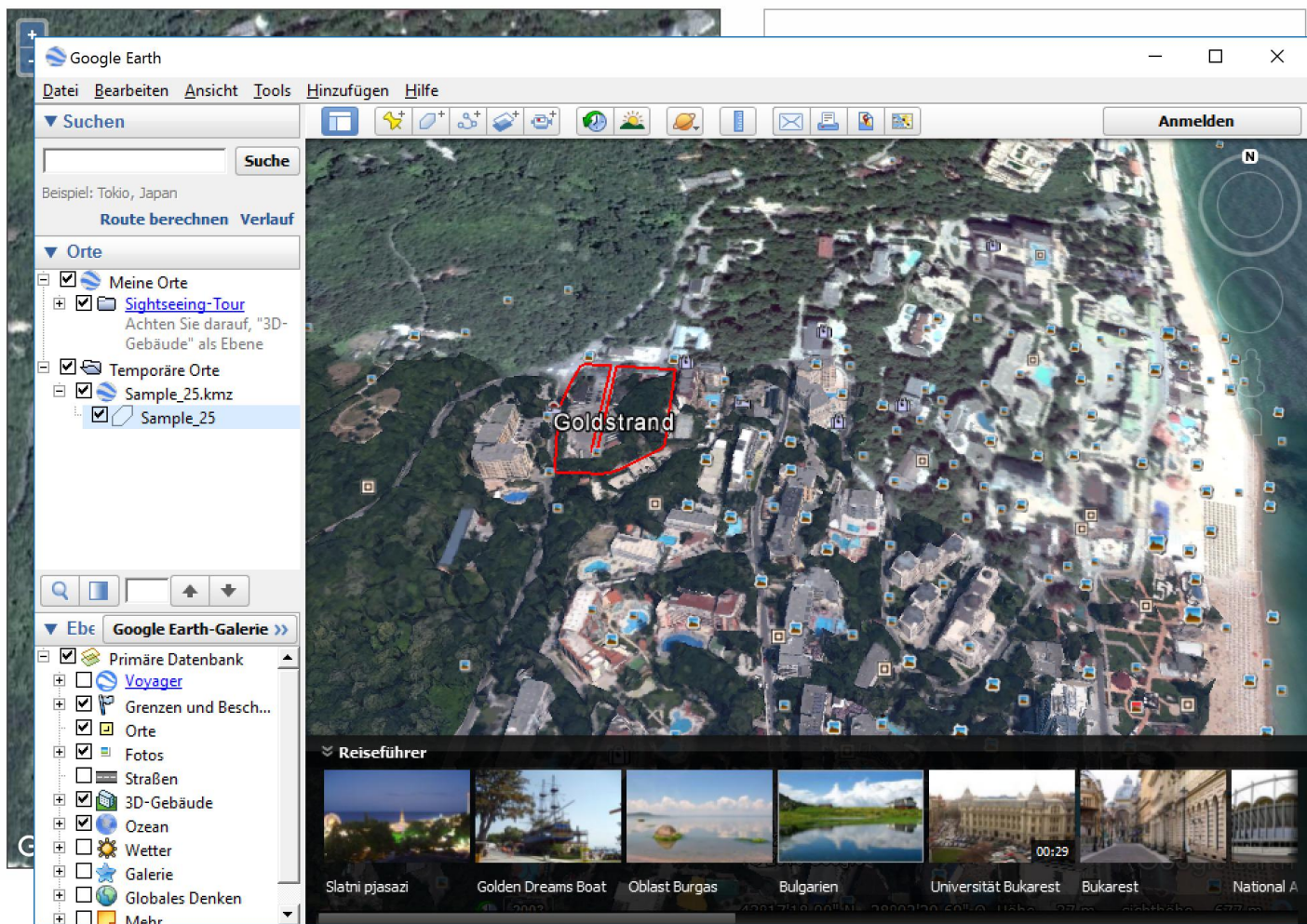
New Features

- ETRS1989 LAEA Support
- Stratified vector sampling
- RGB imagery upload and external WMS
- Configurable validation sessions
- KMZ export
- Improved usability, more languages

RGB Imagery Upload & External WMS

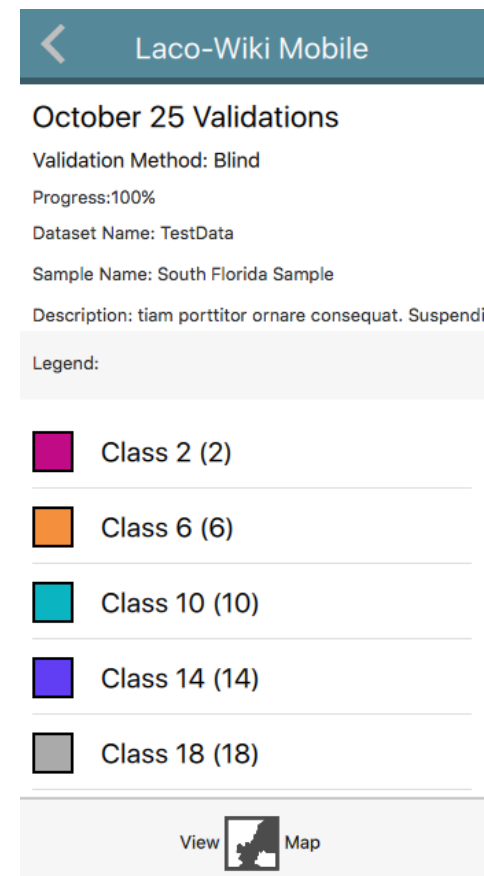
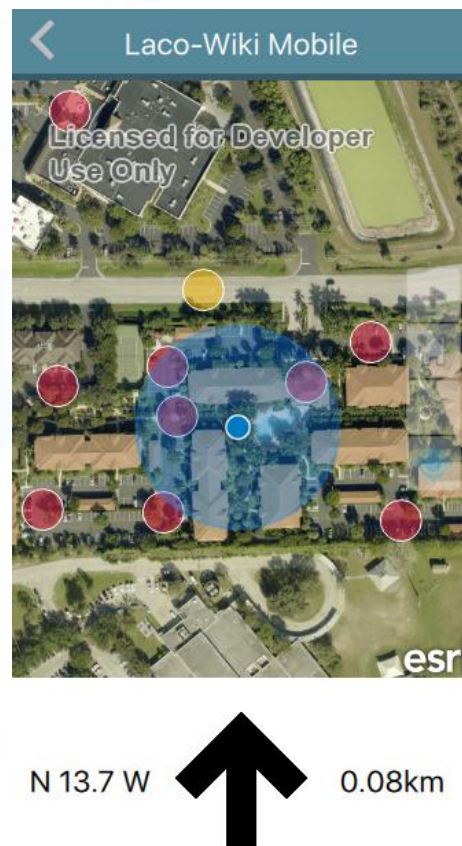
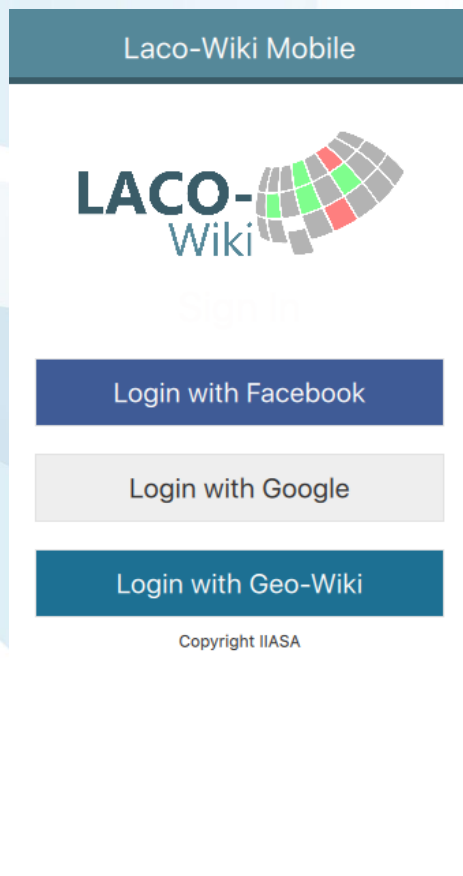
- RGB raster images
 - Can be uploaded beforehand
 - Can be shared like normal data sets
 - Can be selected as background layer or overlay in the validation process
- External WMS
 - WMS URL and Layers can be entered in the validation process and used as background layer or overlay

KMZ Export



In-situ component – LACO-Wiki Mobile

Based on the idea of FotoQuestGo



Ongoing and Future Work

- Enhanced plausibility validation
- Sample upload and export
- Systematic sampling / area of interest sampling
- Additional predefined background layers / feature layers (e.g. Geo-Wiki/geo-tagged pictures)
- Campaign functionality (LandSense project)
- Features required by users

Thank you!

<http://www.laco-wiki.net/>

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