Fotoquest Go: A Citizen Science Approach to the Collection of in-situ Land Cover and Land Use Data for Calibration and Validation

Steffen Fritz, Tobias Sturn, Mathias Karner, Inian Moorthy, Linda See, Juan Carlos Laso Bayas, Dilek Fraisl

International Institute for Applied Systems Analysis

EARSel Symposium
July 2 | Salzburg

WeObserve EO4CO Workshop

@FotoQuest_Go
@LandSense
@WeObserveEU
Motivation

Uncovering the potential of citizen science and earth observation to improve the way we see, map and understand the world

Improving the quality of Earth Observation-based Land Use & Land Cover (LULC) maps/products
EO-based mapping has a conventional top-down approach.

It is possible to involve citizens and interested experts to crowdsourcethe needed information using a more participatory approach.
Land Use/Cover Area Frame Survey (LUCAS)

- Systematic sample every 3 years
- Trained surveyors
- Validate CORINE land cover maps
- Publically available for cal/val of EO products
A more participatory approach to land use/cover mapping?
Connecting citizens with satellite imagery to transform environmental decision making

September 2016 → August 2020

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 689812
FotoQuest Go

Mobile application for in-situ data collection to promote community-based LULC awareness and monitoring

http://fotoquest-go.org/
FotoQuest Go

Step 1: Navigate to Location
Step 2: Take photos
Step 3: Answer questions
Step 4: Submit for QA
Step 5: Feedback to contributor

Photos in 4 cardinal directions plus target location itself
FotoQuest Go - 2018

- 138 users
- 1600+ quests
- 7600+ photos

June → September
Contributions

- User is at the exact location
- Land Use/Cover identified correctly
- Check change to previous LUCAS data
- Four photos taken in the cardinal directions
- Quality of photos
Good examples

• FotoQuest user is getting closer to the point than LUCAS
• LUCAS surveyors do not walk to very remote points
• FotoQuest user is reaching points in water!
Not perfect examples

• FotoQuest user has not reached the target location
• User identifies wrong crop type or wrong field
• Photo quality & usability
Quality Feedback

Financial incentive (€1 / point) for points approved by an expert

<table>
<thead>
<tr>
<th>Month</th>
<th>Percentage of high quality points</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>45%</td>
</tr>
<tr>
<td>August</td>
<td>52%</td>
</tr>
<tr>
<td>September</td>
<td>75%</td>
</tr>
</tbody>
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Lessons learned

- Feedback on quality and communication with participants is critical.
- Evidence of learning can be observed.
- Potential low-cost & valuable complementary dataset to LUCAS.
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