Extending geo-wiki.org to applications for agriculture :

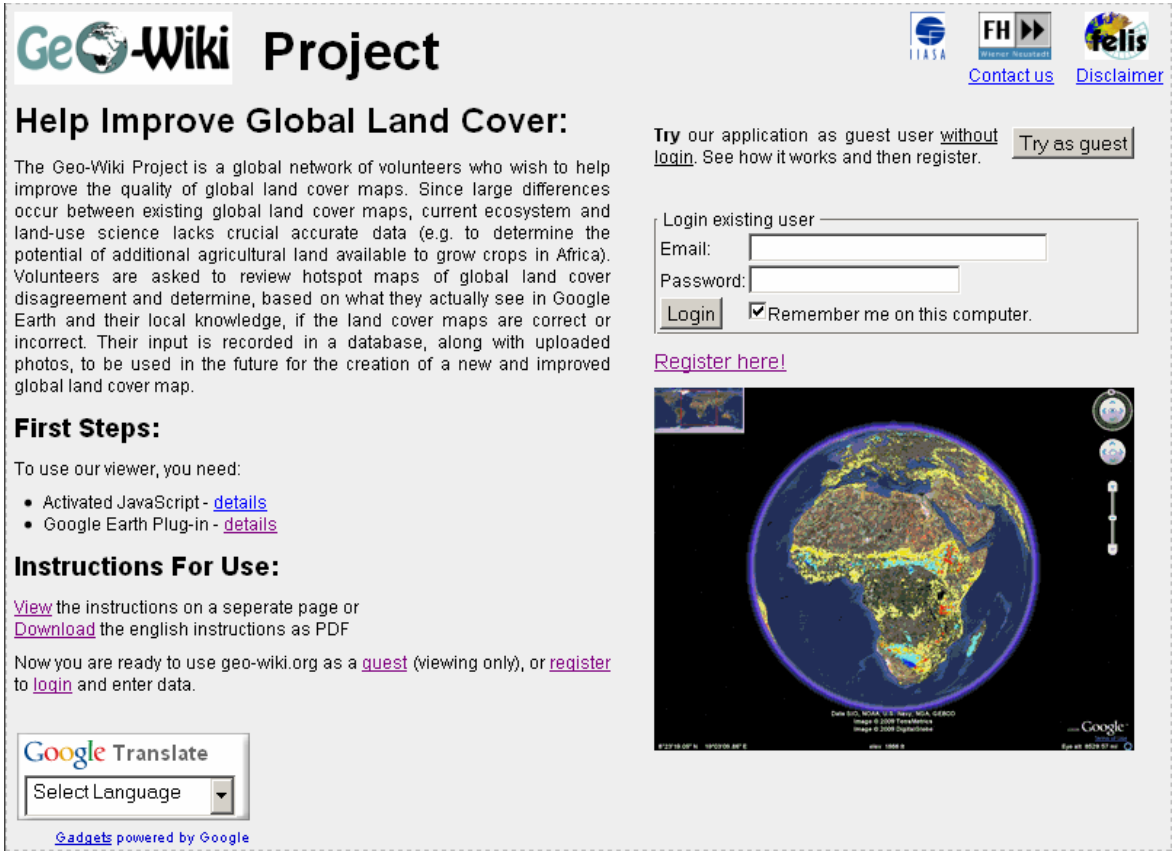
towards a *global agricultural map comparison, validation and crop type identification internet tool*

Background: Introduction to Geo-wiki.org

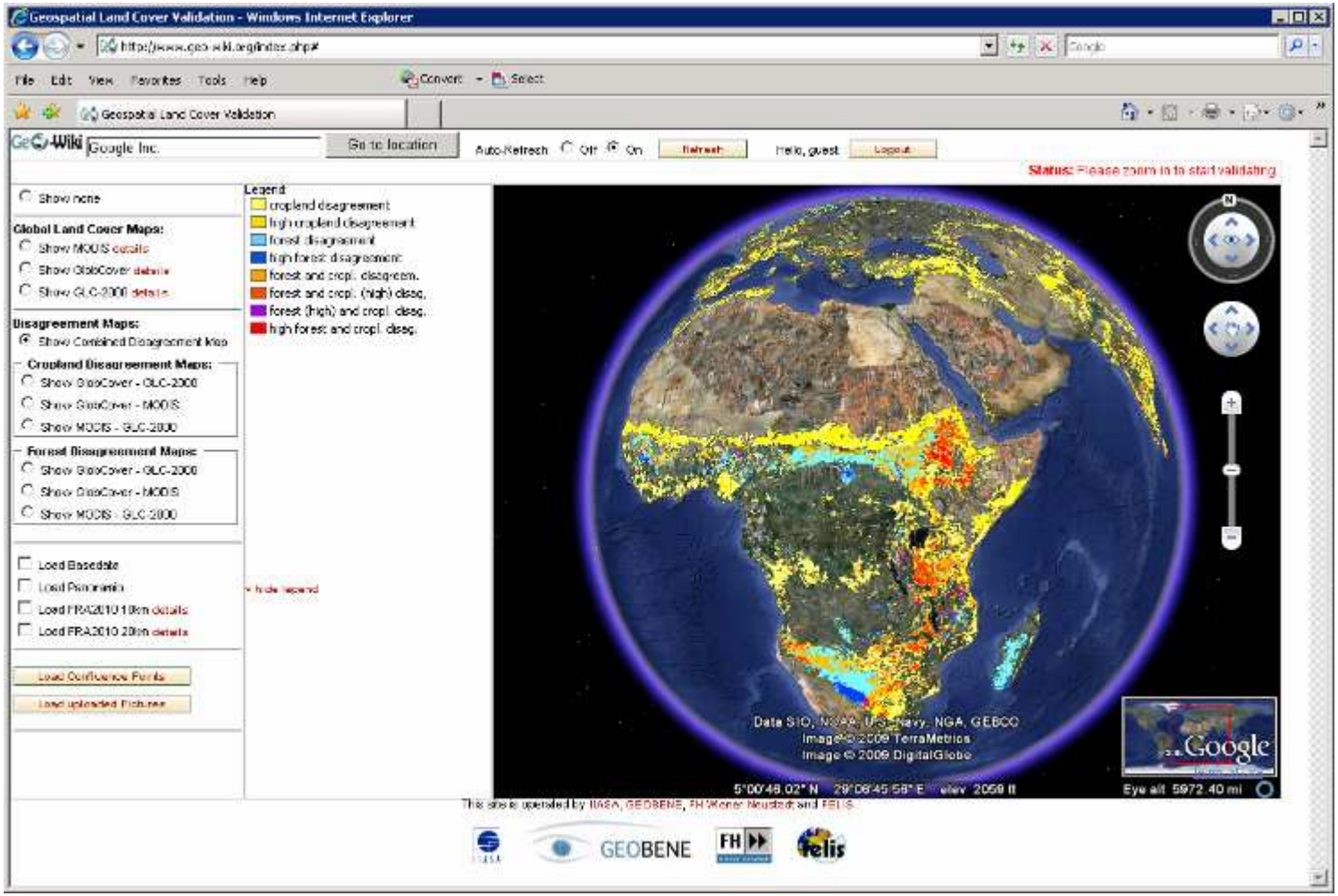
Since large differences occur between existing global land cover maps, current ecosystem and land-use science lacks crucial accurate data (e.g. to determine the potential of additional agricultural land available to grow crops in Africa).

Volunteers are asked to review hotspot maps of global land cover disagreement and determine, based on what they actually see in Google Earth and their local knowledge, if the land cover maps are correct or incorrect and provide the correct land cover information on the pixel level

Their input is recorded in a database, along with uploaded photos, to be used in the future as validation sites and possibly for the creation of a new and improved global land cover map.

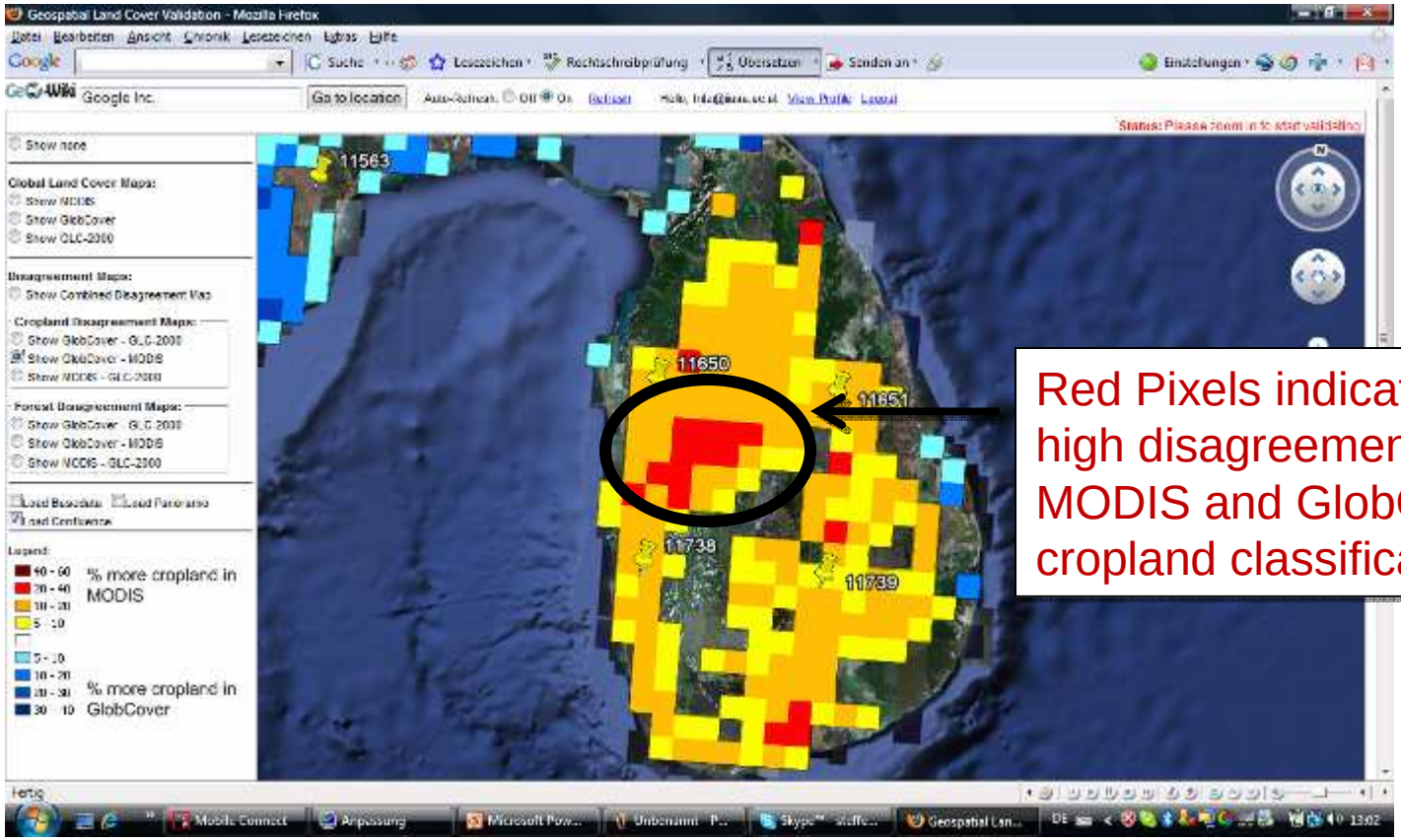


Background – Current Geo-wiki.org: Overall Disagreement in the agricultural as well as forest domain



The Geo-wiki.org currently compares three satellite derived land cover datasets (MODIS 500m product, Globcover version 2, GLC-2000 Version1. Disagreement is analysed based on a conservative approach using one a one to many mapping approach of land cover categories (see Fritz and See, GCB, 2008)

Cropland Disagreement: Example Sri Lanka

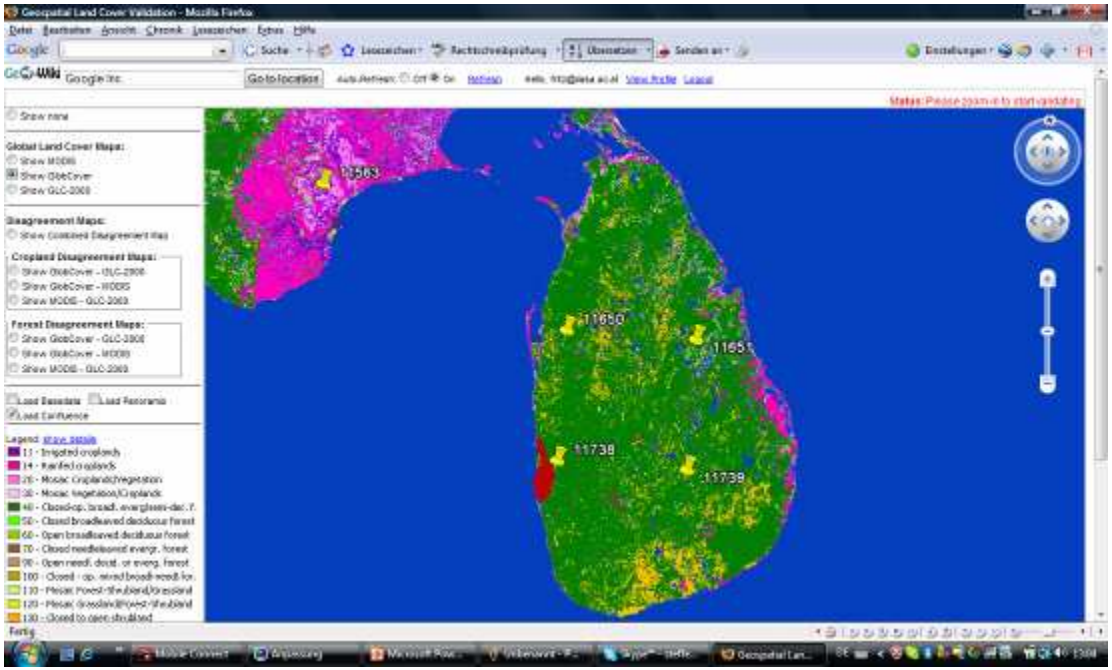


Red Pixels indicate areas of high disagreement between MODIS and GlobCover cropland classification

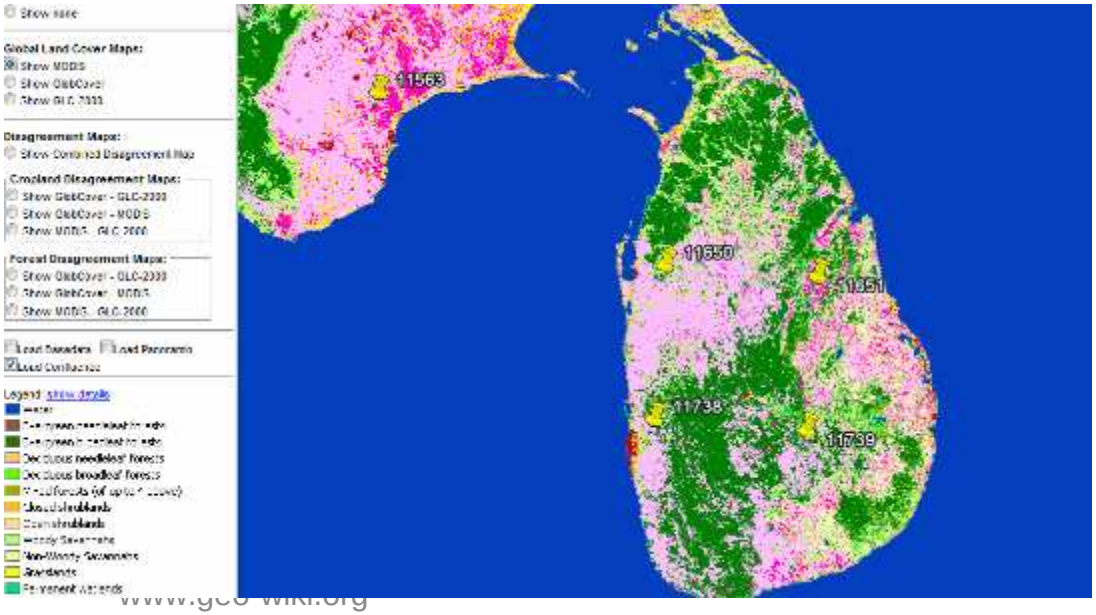
The geo-wiki.org has been designed to further advance the study of land cover validation. It is now possible with only an internet connection, to simultaneously view and visually analyze land cover anywhere on the planet. For example if you go to Sri Lanka and activate the overall disagreement button, areas of high forest and cropland disagreement appear (see Figure) in red.

Background: Cropland Example Sri Lanka

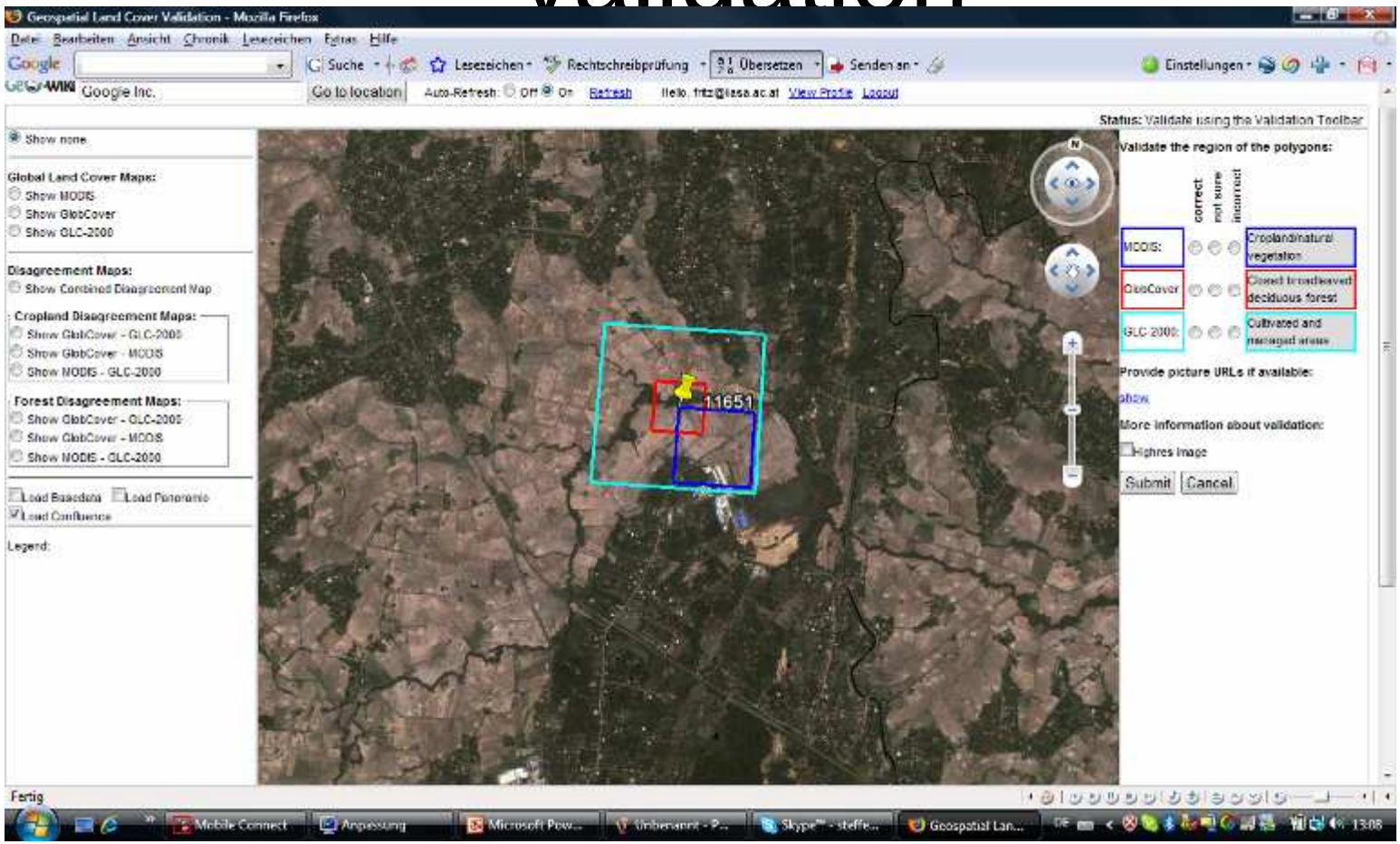
When activating the Globcover button, the Globcover map can be visualised showing mainly Forest



When activating the MODIS button, the MODIS map can be visualised showing large areas of cropland/natural vegetation.



Background: Pixel based validation



Volunteers are asked to determine, based on what they actually see in Google Earth and their local knowledge, if the land cover maps are correct or incorrect and provide the correct land cover information on the pixel level. The Land cover class is directly read from a database and shown.

Linking Geo-wiki/Google with Degree Confluence Project

Vest

The current geo-wiki land cover validation tool is directly linked to the Global Degree Confluence Project and Panoramio voluntees can additionally uploade pictures (any URL or link to the confluence project, http://confluence.org/) and using images from Google Earth.
Example is confluence point in Sri Lanka (8°N 81°E,visit #1)

Proposed Project: Extending the current Geo-wiki.org project for gathering crop and crop type specific information

It is proposed to adjust and modify the currently existing geo-wiki.org land cover validation tool and adjust it in particular to land use and crop specific information. This will be done in part by using information from existing geo-referenced household surveys with land cover information collected by FAO, IFPRI (contact with Liang You), Navin Ramankutty, other CGIAR, possibly JRC (contact with Leo Olivier)

We plan to publish all the gathered information on point specific land use and crop type information and make it openly accessible to the research community as well as the wider public

Rice field , spring 2000

Corn field, spring 200

Mockup of future validation and information tool

www.geo-wiki.org

Geo-Portal Ready

Geo-wiki.org is geo-portal.org compatible, fitting under both ecosystems and agriculture, in particular under assessment services.

The extended version of geo-wiki.org could be linked with the current geo-portal, either just with a direct link or by enabling certain functionality e.g. visualising validated land-use crop type sites

Role of ADC/UIC and Ag CoP

- **Currently there are large uncertainties in land-use and crop specific classification products**
- **This tool can enable the Ag CoP as well as other GEO CoPs to obtain validated land-cover information, improved cropland masks as well as crop-type layers**
- **Ag CoP has expressed a great interest in this information and the data in the visualization and distribution tool**

We would like ADC/UIC to help

- **promote the tool among the GEO CoPs**
- **suggest further funding sources for continued development of this project (ie. Develop functionality for users to upload their own land-cover products into the geo-wiki, functionality for downloading selected areas of interest from the geo-wiki)**
- **suggest volunteer groups such as geography/ ag students who can help validate cropland products**

Additional background information can be found at:

http://www.mdpi.com/2072-4292/1/3/345

Thank You!

For more information please Contact
Steffen Fritz: fritz@iiasa.ac.at

Additional information on the geo-wiki can be found at:
http://www.mdpi.com/2072-4292/1/3/345