The 36th International Symposium on Remote Sensing of Environment,
11 – 15 May 2015, Berlin, Germany, ISRSE36-248

A COMPARISON OF CROWDSOURCED DATA FROM THE CROPLAND CAPTURE GAME WITH DEGREES OF CONFLUENCE AND REMOTE SENSING IMAGERY

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THEME: Airborne and Innovative Remote Sensing Platforms and Techniques in the special session: Sourcing the Crowd - EO in Partnership with Citizens

KEY WORDS: Crowdsourcing, Cropland, Degrees of Confluence, Land Cover, Data Quality

ABSTRACT:

Greater amounts of calibration and validation data are needed to improve land cover maps derived from remote sensing. Geo-Wiki is a crowdsourcing tool that has been developed for this purpose, in particular to collect calibration and validation data using high resolution satellite imagery. Geo-Wiki data have been used in the development of a number of derivative land cover products and for independent validation purposes. More recently, a game version of Geo-Wiki, called Cropland Capture, collected around 5 million samples of the Earth's surface at ~190,000 unique locations with regards to presence or absence of cropland. Thus each location has multiple answers from which majority agreement and confidence in the answers can be determined. Some of these locations were the latitude / longitude intersections or the Degrees of Confluence, where players were asked to examine the photos from this project in relation to presence/absence of cropland. This paper compares the answers from the players with the photos from the Degrees of Confluence project in order to determine how well the crowd can identify the presence of cropland. Since the Degrees of Confluence requires contributors to submit photos in four cardinal directions, we also examine whether the direction in which the photograph was taken has any influence on the ability of the crowd to interpret the photograph. Finally, we compare the answers with high resolution satellite imagery at the same locations to determine the correspondence between the answers of the players, the presence/absence of cropland in the photos and what is visible from high resolution satellite imagery. These results have implications for the use of crowdsourcing for land cover recognition from photographs, which could be used for calibration and validation of land cover products, as well as identifying those locations where the photographs from the Degrees of Confluence project are incorrectly georeferenced.

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