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comment

Interactive comment on "LUCAS Copernicus 2018: Earth Observation relevant in-situ data on land cover throughout the European Union" *by* Raphaël d'Andrimont et al.

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The manuscript by d'Andrimont et al. "summarizes the LUCAS Copernicus protocol to collect homogeneous land cover and proposes a methodology to create a ready-to-use dataset for Earth Observation land cover and land use applications with high resolution satellite imagery". Both aims are conducted in the frame of a new LUCAS module that is specifically tailored to EO, the LUCAS Copernicus module. The module but most of all a standardized way to provide in-situ data as training data for further LULC developments is of high importance and crucial. Both, the data set and the efforts of all persons involved are highly appreciated.

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Discussion paper

The present manuscript describes the protocol how in-situ data are obtained and proposes a methodology to create a ready to use dataset for further usage. It is well written, concise and informative. In certain parts it lacks clarity especially for an interested reader who is not a LULC expert. Some of it is induced by a diversity of used terms whose relation is not directly tangible. Some other relates to numerous points (LUCAS theoretical grid point, LUCAS Copernicus point point) and metrics (buffer and distances) for which it is unclear what really is of relevance and used during the survey or later on to e.g. define homogeneity. Regarding the term diversity a glossary may provide the essential light in the dark, while a simple process chart could disentangle the point/metric puzzle.

Since it is a data paper in which it is also asked to check the data quality and usability, let me mention that one decisive file was missing (LUCAS_2018_Copernicus_attributes.csv). Thus I could not completely verify its content, but I will gladly do it as soon as the revised version of the manuscript is available.

These comments alongside further smaller ones are added to the *.pdf to facilitate preparing the final version of the manuscript that I would be happy to receive again.

Yet, overall the manuscript is very well developed and needs just some tweaks before being publishable. Congratulations.

Sincerly, Ulf Mallast

Please also note the supplement to this comment:
https://essd.copernicus.org/preprints/essd-2020-178/essd-2020-178-RC3-supplement.pdf

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LUCAS Copernicus 2018: Earth Observation relevant in-situ data on land cover throughout the European Union

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Abstract.

The Land Use/Cover Area frame Survey (LUCAS) is a regular in-situ land cover and land use ground survey exercise that extends over the whole of the European Union. LUCAS was carried out in 2006, 2009, 2012, 2015, and 2018. A new LUCAS module specifically tailored to Earth Observation was introduced in 2018: the LUCAS Copernicus module, aiming

5   at surveying land cover extent up to 51 meters in four cardinal directions around a point of observation. This paper first summarizes the LUCAS Copernicus protocol to collect homogeneous land cover on a surface area of up to a 0.52 ha. Secondly, it proposes a methodology to create a ready-to-use dataset for Earth Observation land cover and land use applications with high resolution satellite imagery. As a result, a total of 63 364 LUCAS points distributed over 26 level-2 land cover classes were surveyed on the ground. Using homogeneous extent information in the four cardinal direction, a polygon was delineated for

10   each of such point. Through geo-spatial analysis and by semantically linking the LUCAS core and Copernicus land cover observations, 58 428 polygons are provided with a level-3 land cover (66 specific classes including crop type) and land use (38 classes) information as inherited from the LUCAS core observation. The open-access dataset supplied with this manuscript (https://doi.org/10.6084/m9.figshare.12382667.v3 (d'Andrimont, 2020)) provides a unique opportunity to train and validate decametric sensor-based products such as those obtained from the Copernicus Sentinel-1 and -2 satellites. A follow-up of the

15   LUCAS Copernicus module is already planned for 2022. In 2022, a simplified version of the LUCAS Copernicus module will be carried out on 150 000 LUCAS points for which in-situ surveying is planned. This guarantees a continuity in the effort to find synergies between statistical in-situ surveying and the need to collect in-situ data relevant for Earth Observation in the European Union.

1   Introduction

20   The Land Use/Cover Area frame Survey (LUCAS) is a regular in-situ land cover and land use data collection exercise that extends over the whole of the European Union (EU) (Gallego and Delincé, 2010; Eurostat, 2018c). LUCAS has been carried out in 2006, 2009, 2012, 2015, and 2018. During these five campaigns, a total of 1 351 293 points were surveyed and 5.4 million photos were collected. On each of these surveyed points, observations were recorded on up to 109 variables. The

Fig. 1.