Dear Editor,

Thank you for the reviewers' thorough examination of our manuscript and data product.
We have carefully reviewed the locations identified by RC1. We found that most of the locations flagged as errors in our classification map are actually filtered out when applying the ESA or GLAD crop mask, as recommended in the paper. Additionally, one location is outside our study area.
Our responses to the reviewers' comments are highlighted in blue in the attached document. We appreciate all the feedback received.
Thank you once again.
Best regards,

Stefania Di Tommaso (on behalf of all authors)

RC1

It is great to see the detailed explanation and revisions from the authors. However, more questions arise following their updates.

Upon examining via the Google Earth Engine, I observed significant variability in the quality of the sugarcane map among different countries. The map performs quite well in American countries such as Brazil, the USA, and Mexico – excellent job! However, there are considerable uncertainties in the product when it comes to Asian countries such as China, India, and Indonesia.

In China, many forests are mistakenly mapped as sugarcane. In India, it appears that many sugarcane fields are omitted, and some forests are incorrectly classified as sugarcane. Similarly, in Indonesia, many palm trees are classified as sugarcane.

Here are some specific regions where I randomly encountered these issues using high-resolution satellite images on Google Maps:

China: [112.6519455701914, 31.93629809997078]; [108.09442950178136, 34.20204491117551]
India: [79.50481993956686, 28.244005880827807]
Indonesia: [104.9733662708124, -3.0038818470766]; [104.39254177115578, -2.441290301781308]
It seems that simply using the threshold of vegetation height and land cover classification maps can't effectively achieve sugarcane mapping across multiple countries. The mapping accuracy is greatly affected by the quality of the land cover maps especially in countries with various crop/forest types. Additionally, I am uncertain whether palm trees are categorized under "crop" in some land cover maps, which might explain why large areas of palm trees in Indonesia are classified as sugarcane.

To address these issues, I suggest introducing a quality grading system for products from different countries. Such labeling would help users make more informed decisions about the data's reliability and suitability for their specific needs.

All in all, this manuscript is well written, but the quality of the products appears to differ significantly across countries and regions. Therefore, I believe that the current final product is not yet mature enough for use on a global scale. I think it would be suitable for publication if the authors can address the issues mentioned above.

We appreciate the thorough review of our paper and data product.

We would like to emphasize that the provided sugarcane map needs to be masked using an appropriate crop mask, as suggested in the paper in the Data availability section. Along with the sugarcane layer, three additional bands are included in the data, representing crop masks from ESA, ESRI, and GLAD. We encourage users to apply one of these crop masks, a combination of them, or an external crop mask that is best suited for the specific study area. The Google Earth Engine script provided included examples of applying crop masks.

Most of the errors identified by the reviewer in our maps are filtered out when using the ESA or GLAD crop masks. We note in the paper in sec. 2.3 that the ESRI crop mask in most regions tends to overclassify crops, including orchards and trees. This is why in the paper, for validation against government statistics, we use the union of the ESA and GLAD crop masks, which is our preferred choice as explained in sec. 4. Additionally, one of the locations in China mentioned by the reviewer is outside our study region.

Brazil is one of the regions where the ESRI mask helps capture some cropland missed by the ESA mask in the northeastern part, as illustrated in figure 2. This is why we are providing sugarcane predictions for the ESRI crop mask pixels as well.

We have modified the script to display the ESA+GLAD crop mask as the default (instead of the ESA+ESRI+GLAD combination) and added a note in the GEE script to remind users to appropriately select a crop mask. The note reads "USAGE: Users must first choose a country and then select the most appropriate crop mask from the ones provided for that specific region. If none of the provided crop masks are suitable, users can use an external crop mask instead." You can access the updated script here: https://code.earthengine.google.com/545a87ce9bc29f2b5ad180955d974f8c?asset=projects%2fl Bell-lab%2Fgedi_sugarcane%2 Maps%2FimgColl_10m_ESAESRIGLAD

On the Zenodo page, the note reads: "USAGE: Users must mask the provided sugarcane map with the most appropriate crop mask from the ones provided. If none of the provided crop masks are suitable, users can use an external crop mask instead."

RC2

Accepted as is.

Thank you for appreciating the originality and data quality of our work.