

Supplementary Materials

Input-Output Global Hybrid Analysis of Agricultural Primary Production (IO-GHAAPP)

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IO-GHAAPP Data

The supplementary materials include the files **IO-GHAAPP-2010.h5** (keys: **A**, **L**, **Q**, **T**, **V**, **X** and **Y**) and **IO-GHAAPP-2010-Q.h5** (key: **Q**). HDF files can easily be handled in Python with the Pandas package.

```
1 # Get the available keys
2 io_ghaapp = pandas.HDFStore('IO-GHAAPP-2010.h5')
3 io_ghaapp.keys()
4
5 # Import from an HDFStore
6 io_ghaapp_t = io_ghaapp['T']
7 io_ghaapp.close()
8
9 # Import from a file
10 io_ghaapp_t = pd.read_hdf(
11     'IO-GHAAPP-2010.h5',
12     key='T'
13 )
```

Python Scripts

Data Preparation

- **gloria-to-hdf.py**: Script for converting the GLORIA homogeneous multi-regional supply-use-table (MR-SUT) from *.csv to *.h5 or *.npz and into the corresponding environmentally-extended multi-regional input-output (EE-MRIO) table.
 - Import CSV files
 - Assign indices
 - Crop to use blocks
 - Save
- **gloria-crop.py** (optional): Crop the GLORIA EE-MRIO table. Cropping can be done to allow for quick test runs.

Combining GLORIA and SPAM

Overview of the main scripts. Additional snippets are given in **./py**.

1. **spam-rasterstats.py**: Intersect the geometries of *Natural Earth Data*, *Bunsen et al. 2021* and *Pfister and Bayer 2019* and extract the corresponding raster statistics from **./data-inputs/spam/spam2010v2r0_global*.geotiff** (IFPRI, 2019).
 - **./data/spam-rasterstats/spam2010v2r0_global*.geotiff.h5**: Raster without statistics
 - **./data/spam-rasterstats/intersect.gpkg** Raster statistics with geometries

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2. `disaggregation-vectors.py`: Turn the raster statistics into disaggregation vectors and save them in `./data/disaggregation-information.csv`
3. `disaggregate.py`: Deploy the disaggregation vectors in `./data/disaggregation-information.csv` to disaggregate the GLORIA database.
4. `satellites.py`: Compile the satellite accounts