Carbon monitoring using remote sensing in agriculture: review protocol

1- Topic and objectives

Objectives:

1.1 Summarize the findings the previous decade of literature on the use of remote sensing to monitor terrestrial carbon in croplands.

1.2 Conduct a thorough literature analysis with a focus on the various sensors, spectral properties, and scales utilized in the context of agriculture to measure above- and below-ground carbon.

2- Search

2.1 keywords

"remote sensing" AND "carbon*" AND [agriculture OR cropland]

2.2 Search engines

  i)   Web of Science
  ii)   Scopus
  iii)   Google Scholar

2.3 Data quality and filtering

  i)   First visual screening of tittle, abstract and keywords, to remove non relevant manuscripts
  ii)   Import the bibliographic data as csv in a python environment
  iii)   Assigned the corresponding JCR Report (Q1, Q2, Q3) based on journal names
  iv)   Locating duplicates in python
  v)   Thorough visual screening of the whole manuscript based on the requirements listed above.
  vi)   Second collection of manuscripts based on the bibliography listed on the selected records and circling back through steps 2.3.i to 2.3.v.

2.4 Selection criteria of required parameters

  i)   Use of remote sensing platforms (spaceborne, airborne, UAS)
  ii)   Carbon assessment, either at soil level thought soil samples or at plant level though different methods
  iii)   Study site must be in croplands
  iv)   Only records from 2012

Other useful information extracted from the records:

  i)   Type of spectral information used in the analysis (multispectral, hyperspectral or both)
  ii)   Platform (spaceborne, airborne, UAS or a combination)
  iii)   What fraction was targeted, above or below ground
  iv)   Statistical method employed
  v)   Country or area where the study was conducted

3- Extract data

  i)   Using text mining and natural language analysis raw data was extracted from all the records to find the most relevant topics and groups of words
  ii)   Visual extraction of more complex data to be identified by the model as well as gaps fillers.
  iii)   Code available at: https://github.com/LucianaNieto/preliminary_exam