Project0A
11 juin 2020

1 When the data has been collected ?

In [2], the data has been collected *over two southern hemisphere summer growing seasons (2000/2001 and 2001/2002).*

2 Where is the area monitored ?

In [2], it is mentioned that the area monitored is *near Coleambally in New South Wales (NSW), Australia.*

3 What is it expected to be used for ?

In [2], it is claimed that the collected allows *monitoring and measurement of crop growth from a space platform based on field-scale calibration. The aim is to assess changes in plant chemistry, including changes in nitrogen levels such as those developed for forests, and to model crop yields.*

4 Why this dataset is publicly available ?

In [1], it is mentioned in the abstract that this dataset has been created and made publicly available. He explains that *since classification results are directly dependent on the dataset used, it is fundamental to compare and validate the classification approaches in public datasets.*

5 What are the wavelengths being used ?

Table 3 of page 1249 in [2] gives the signification of an approximate information upon the different wavelengths provided.
— The first 50 are for visible and near infrared wavelengths.
— The remaining 126 are for short wave infrared wavelengths.

6 What are the different classes in the ground truth ?

1. Dense Urban Fabric
2. Mineral Extraction Sites
3. Non Irrigated Arable Land
4. Fruit Trees
5. Olive Groves
6. Broad leaved Forest
7. Coniferous Forest
8. Mixed Forest
9. Dense Sclerophyllous Vegetation
10. Sparse Sclerophyllous Vegetation
11. Sparsely Vegetated Areas
12. Rocks and Sand
13. Water
14. Coastal Water

7 What is the spatial resolution?

Based on [2], the resolution is 2m per pixel.

8 Is it calibrated?

In [2], the data is claimed to be *well calibrated*.

Références

[1] L. Christovam, G. Pessoa, M. Shimabukuro, and M. Galo. Land use and land cover classification using hyperspectral imagery : Evaluating the performance of spectral angle mapper, support vector machine and random forest. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XLII-2/W13 :1841–1847, June 2019.

[2] B. Datt, T. McVicara, T. Niel, D. Jupp, and J. Pearlman. Preprocessing EO-1 hyperion hyperspectral data to support the application of agricultural indexes. *IEEE Transactions on Geoscience and Remote Sensing*, 41 :1246–1259, July 2003.

A How the database has been extracted

This is the website where data has been found.

```
https://zenodo.org/record/1222202
```

This is the Matlab code used to build the database

```
clear
cd 'C:\Users\utilisateur\Downloads\HyRANK_satellite\HyRank_satellite\TRainingSet'
im=imread('Dioni.tif');
im_GT=imread('Dioni_GT.tif');
X=zeros(size(im,1)*size(im,2),size(im,3));
Y=zeros(size(im,1)*size(im,2),1);
n=1;
for i=1:size(im,1)
  for j=1:size(im,2)
    for k=1:size(im,3)
      X(n,k)=im(i,j,k);
      Y(n)=im_GT(i,j);
    end
  end
end
metadata.size=[size(im,1) size(im,2)];
metadata.classes_l={'Dense_Urban_Fabric','Mineral_Extraction_Sites',...
'Non_Irrigated_Arable_Land','Fruit_Trees','Olive_Groves',...
'Broad_leaved_Forest','Coniferous_Forest','Mixed_Forest',...
'Dense_Scleorophyllous_Vegetation','Sparse_Sclerophyllous_Vegetation',...
'Sparsely_Vegetated_Areas','Rocks_and_Sand','Water','Coastal_Water'};
metadata.C=14;
metadata.features_s.VNIR_428_to_926=[1:(57-8+1)];
metadata.features_s.SWIR1_933_1346=...
  metadata.features_s.VNIR_428_to_926(end)+[1:(120-79+1)];
metadata.features_s.SWIR2_1427_1810=...
  metadata.features_s.SWIR1_933_1346(end)+[1:(166-128+1)];
metadata.features_s.SWIR3_1942_2385=...
  metadata.features_s.SWIR2_1427_1810(end)+[1:(223-179+1)];
i=uint16(ceil(rand(1)*size(im,1)));
```

```
j=uint16(ceil(rand(1)*size(im,2)));
metadata.x_ij=reshape(im(i,j,:),1,176);
metadata.y_ij=im_GT(i,j);
metadata.F=size(im,3);
save project0a.mat X Y metadata;
```