CIE5401: Lecture 4: Introduction to Remote Sensing
Assignment 4: Mapping Small Reservoirs in West Africa

Deadline: 08:45 on 12th March 2018 **contact:** s.c.steele-dunne@tudelft.nl

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The objectives of this assignment are:

1) Map small reservoirs in Burkina Faso using LandSat Bands 3,4 and 5
2) Determine the areas and volumes of the small reservoirs in your area.

Use the In addition to the maps and answers to the questions below, make sure to provide a brief description of the geoprocessing tools used to obtain your maps/results.

NOTE: Detailed instructions are given in Classification_GRASS_SSD.pdf
Submit your report as a single .pdf via Blackboard.

Question 1:
Make a map of NDVI and use the NDVI colormap from GRASS. Annotate your NDVI map to highlight some small reservoirs and other noteworthy features e.g. bare soil, dense vegetation, urban areas, roads etc.. (anything you can identify!

Question 2:
Make a false color composite using the three data bands.. Annotate your RGB image to highlight some small reservoirs and other noteworthy features.

Question 3:
Use your NDVI map and false color composite to make a training map for your classification

Question 4:
Use your training map and the three data bands to perform the classification.

Question 5:
Produce a shapefile that includes all the water bodies identified in your classification. Hand-check your results to check if they indeed are small reservoirs.If they are spurious pixels, or part of a river, or part of the tail end of one of the large reservoirs, then remove them. The shapefile of ground-based observations of reservoir locations might be helpful here too. Also compare them to your NDVI map and false color composite.

Make a map showing your small reservoirs before and after the clean-up.

Question 6:
Calculate the areas of the small reservoirs in your image. Make a histogram (in matlab) of the area values.

Question 7:
What is the total volume of water stored in small reservoirs in your area?