

Annex 1

Egypt

The following is an example of some custom aggregations performed on the spatially aggregated dataset of Egypt. The examples are not comprehensive in that they are not the only aggregations that can be performed. There are many aggregations that can be done, depending on the specific use of the data.

Example 1 – Bare Areas

A user requests that they require all bare areas in Egypt for a study involving the migration of sand. From your knowledge of the land cover database you know that the user needs all consolidated and unconsolidated bare areas in Egypt. To make it easier for the user, you decide to separate the distinction between bare rock, bare soil and loose and shifting sands i.e. the aggregation will have three classes: one for bare rock and very stony soils (class 1), one for bare soil (class 2) and one for loose and shifting sands and dunes (class 3).

The major land cover group that you are interested in is Bare Areas (B16 or Group 6).

The classifiers you are interested in for class 1 (bare rock and hardpans) are:

Bare Areas (Major LC group 6 – B16)

Bare Rock (A3)
Bare soil (A5)
Very stony (A13)

For class 2 (bare soil) you need the following classifiers:

Bare Areas (Major LC group 6 – B16)

Bare Soil (A5)
Stony (A12)

For class 3 (loose and shifting sands and dunes) you need the following classifiers:

Bare Areas (Major LC group 6 – B16)

Loose and Shifting Sands (A6)

These classifiers and the associated codes can be found in the LCCS manual, Appendix C, page 169.

Also keep in mind that some polygons codes are made up of two or three land cover classes, indicating a mixed unit e.g. A/B or A/B/C. This means that land cover codes can occur in the first, second or third class.

- 100% polygon area is the single class only. Occurs in **CODE1** only. Applies to codes which contain only single classes i.e. CODE2 and CODE3 fields are empty and only CODE1 has a value. E.g. **A (100)**
- A – indicates 60% polygon area. Only occurs in **CODE1** when it is first in a mixed class of two codes only e.g. **A/B (60/40)** i.e. CODE3 is empty, CODE2 has a value AND CODE1 has a value.
- B – indicates 40% polygon area. Occurs in **CODE1** when it is first in a mixed class of three codes e.g., **A/B/C (40/30/30)**. I.e. CODE3 and CODE2 and CODE1 have a value.
Also occurs in **CODE2** when it is the second class in a mixed class of two codes e.g. **A/B (60/40)**. I.e. CODE3 is empty AND CODE2 has a value AND CODE1 has a value.
- C – indicates 30% polygon area. Occurs in **CODE2** when it is second in a mixed class of three codes e.g. **A/B/C (40/30/30)**. I.e. CODE1 and CODE2 and CODE3 have a value.
Also occurs in **CODE3** when it is third class in a mixed class of three codes e.g. **A/B/C (40/30/30)**. I.e. CODE1 and CODE2 and CODE3 have a value. CODE3 is always C except in the presence of scattered or isolated agriculture (in which case a 'D' is assigned indicating 15%).

1. Create a description table indicating the above in ArcView.

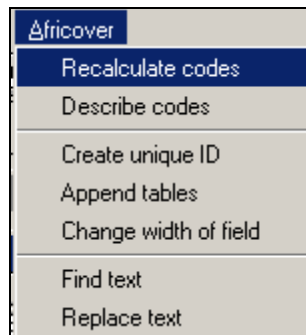
1	description of class
1A	description of class (60% polygon area)
1B	description of class (40% polygon area)
1C	description of class (30% polygon area)
1D	description of class (15% polygon area) (Agriculture only – isolated and scattered)

In this case however, we are only interested in the first class as bare areas usually occur only as a single class or as the first class in a mixed unit.

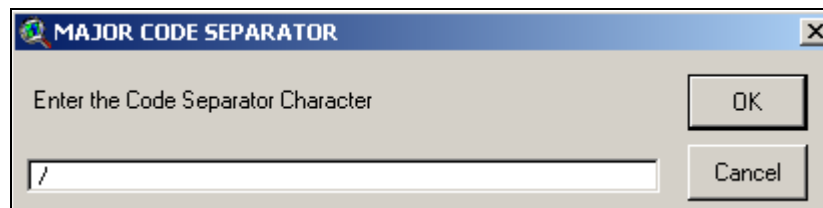
For this aggregation example the table will look as follows:

bare-areas-desc.dbf	
ba-id	ba-desc
1	Bare rock and very stony soils
1A	Bare rock and very stony soils(60% polygon area)
1B	Bare rock and very stony soils(40% polygon area)
2	Bare soil
2A	Bare soil (60% polygon area)
2B	Bare soil (40% polygon area)
3	Loose and shifting sands and dunes
3A	Loose and shifting sands and dunes (60% polygon area)
3B	Loose and shifting sands and dunes (40% polygon area)

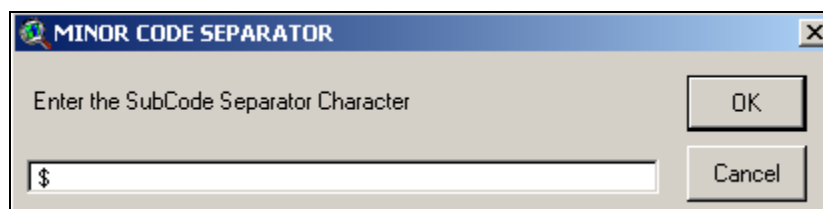
2. Load the Africover extension and recalculate the lccode field of the landcover table without the subcode separator i.e. enter \$ in the subcode separator. This separates the lccode for each code into 3 separate fields.



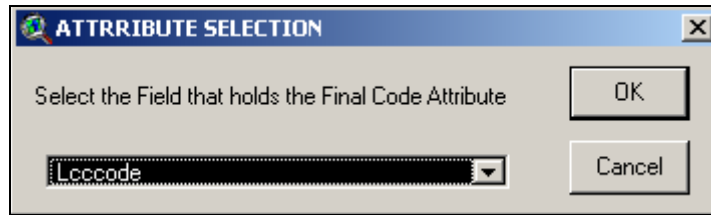
Choose the major code separator.



Choose the minor code separator.



Choose the field that is to be separated.



3. Create 3 new fields: grp_code1, grp_code2 and grp_code3.

You are now going to assign the major land cover group for each class, so as to make querying easier later.

Select code3 starting with a 6. This will give you all code3 values within the Bare Areas land cover group.

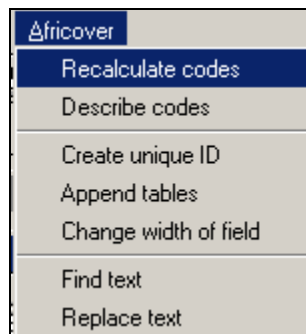
([Code3] = "6*")

Calculate grp_code3 = "B16" – B16 corresponds to the major land cover group of Bare areas.

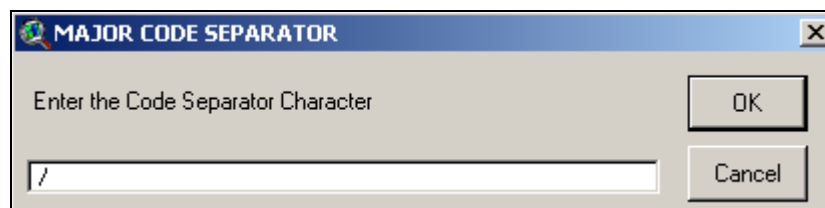
([Grp_code3] = "B16")

Repeat this procedure for code2 and code1, making sure to calculate grp_code2 and grp_code1 respectively.

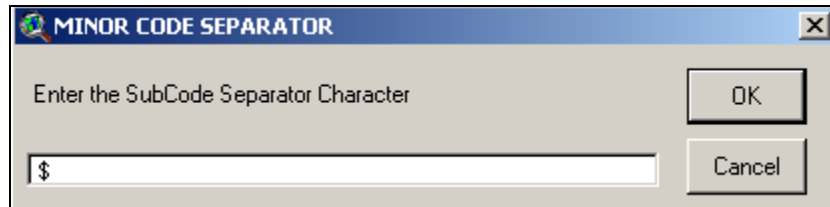
4. Using the Africover extension, recalculate the lcclevel field of the landcover table without the subcode separator i.e. enter \$ in the subcode separator. This separates the lcclevel for each code into 3 separate fields.



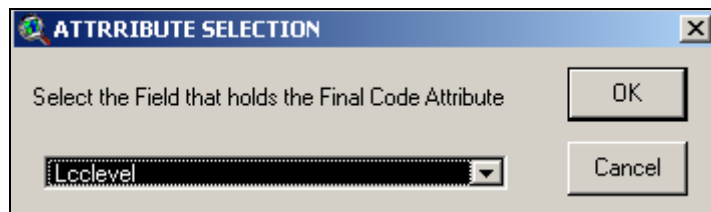
Choose the major code separator.



Choose the minor code separator.



Choose the field that is to be separated.



Please note that code1, code2 and code3 now contain lcclevel (classifiers) and not lcccode as before.

Now you can begin to assign aggregation classes. Since we are doing bare areas we can go straight to the first class and the letter B.

c) Finding bare areas in the 1st class of a mixed unit and single units

Create a field called id1.

- **Finding bare rock and very stony soil**

NOTE: remember that the 1st class can have a single unit value, an A value or a B value. It is a single unit value when it is a single class i.e. there are no mixed units. I.e. CODE2 is empty AND CODE3 is empty.

It is A when it is the first class in a mixed class of two codes e.g. A/B (**60**/40). I.e. CODE3 is empty and CODE2 with a value.

It is B when it is first in a mixed class of three codes e.g. A/B/C (**40**/30/30). I.e. CODE1 and CODE2 and CODE3 have a value.

- First assign the **B** value.

Select all grp_code1 that fall into the **bare areas** major land cover group.

([Grp_code1] = "B16")

Select from the above set, all the code1, code2 and code3 that have a value.

([Code3] <> "")

The above selection selects nothing. This means there are no polygons with bare areas in the 1st class and occur in a mixed class of 3 codes.

- Assigning the **A** value

Select all grp_code1 that fall into the **bare areas** major land cover group.

([Grp_code1] = "B16")

From the above selection, select all Code3 that are empty and all Code 2 with a value.

([Code3] = "") and ([Code2] <> "")

You now need to find the classifiers that you identified earlier, from the currently selected features.

Bare Rock (A3)
Bare soil (A5)
Very stony (A13)

([Code1] = "A3*") or ([Code1] = "A5-A13*") make sure to select from the currently selected set.

The selected polygons indicate all areas with bare areas that have bare rock or very stony soil in the 1st class and occur in a mixed class of 2 codes.

Calculate id1 = "1A" where 1 indicates bare rock or very stony soil and A indicates 60% of the polygon area.

- Assign the **single** class

Select all grp_code1 that fall into the **bare areas** major land cover group.

([Grp_code1] = "B16")

From the above selection, select all Code3 that are empty and all Code 2 that are empty.

([Code3] = "") and ([Code2] = "")

You now need to find the classifiers that you identified earlier, from the currently selected features.

Bare Rock (A3)
Bare soil (A5)
Very stony (A13)

([Code1] = "A3*") or ([Code1] = "A5-A13*") make sure to select from the currently selected set.

The selected polygons indicate all areas with bare areas that have bare rock or hardpans in the 1st class and occur as a single unit.

Calculate id1 = "1" where 1 indicates bare rock or very stony soil and the absence of a letter indicates 100% of the polygon area.

- **Finding bare soil**

NOTE: remember that the 1st class can have a single unit value, an A value or a B value. It is a single unit value when it is a single class i.e. there are no mixed units. I.e. CODE2 is empty AND CODE3 is empty.

It is A when it is the first class in a mixed class of two codes e.g. A/B (60/40). I.e. CODE3 is empty and CODE2 with a value.

It is B when it is first in a mixed class of three codes e.g. A/B/C (40/30/30). I.e. CODE1 and CODE2 and CODE3 have a value.

- First assign the **B** value.

Select all grp_code1 that fall into the **bare areas** major land cover group.

([Grp_code1] = "B16")

Select from the above set, all the code1, code2 and code3 that have a value.

([Code3] <> "")

The above selection selects nothing. This means there are no polygons with bare areas in the 1st class and occur in a mixed class of 3 codes.

- Assigning the **A** value

Select all grp_code1 that fall into the **bare areas** major land cover group.

([Grp_code1] = "B16")

From the above selection, select all Code3 that are empty and all Code 2 with a value.

([Code3] = "") and ([Code2] <> "")

You now need to find the classifiers that you identified earlier, from the currently selected features.

Bare Soil (A5)
Stony (A12)

([Code1] = "A5-A12*") make sure to select from the currently selected set.

The selected polygons indicate all areas with bare areas that have bare soil in the 1st class and occur in a mixed class of 2 codes.

Calculate id1 = "2A" where 2 indicates bare soil and A indicates 60% of the polygon area.

- Assign the **single** class

Select all grp_code1 that fall into the **bare areas** major land cover group.

([Grp_code1] = "B16")

From the above selection, select all Code3 that are empty and all Code 2 that are empty.

([Code3] = "") and ([Code2] = "")

You now need to find the classifiers that you identified earlier, from the currently selected features.

Bare Soil (A5)
Stony (A12)

([Code1] = "A5-A12*") make sure to select from the currently selected set.

The selected polygons indicate all areas with bare areas that have bare soil in the 1st class and occur as a single unit.

Calculate id1 = "2" where 2 indicates bare soil and the absence of a letter indicates 100% of the polygon area.

- **Finding loose and shifting sands**

NOTE: remember that the 1st class can have a single unit value, an A value or a B value. It is a single unit value when it is a single class i.e. there are no mixed units. I.e. CODE2 is empty AND CODE3 is empty.

It is A when it is the first class in a mixed class of two codes e.g. A/B (60/40). I.e. CODE3 is empty and CODE2 with a value.

It is B when it is first in a mixed class of three codes e.g. A/B/C (40/30/30). I.e. CODE1 and CODE2 and CODE3 have a value.

- First assign the **B** value.

Select all grp_code1 that fall into the **bare areas** major land cover group.

([Grp_code1] = "B16")

Select from the above set, all the code1, code2 and code3 that have a value.

([Code3] <> "")

The above selection selects nothing. This means there are no polygons with bare areas in the 1st class and occur in a mixed class of 3 codes.

- Assigning the **A** value

Select all grp_code1 that fall into the **bare areas** major land cover group.

([Grp_code1] = "B16")

From the above selection, select all Code3 that are empty and all Code 2 with a value.

([Code3] = "") and ([Code2] <> "")

You now need to find the classifiers that you identified earlier, from the currently selected features.

Loose and shifting sands (A6)

([Code1] = "A6*") make sure to select from the currently selected set.

The selected polygons indicate all areas with bare areas that have loose and shifting sands in the 1st class and occur in a mixed class of 2 codes.

Calculate id1 = "3A" where 3 indicates loose and shifting sands and A indicates 60% of the polygon area.

- Assign the **single** class

Select all grp_code1 that fall into the **bare areas** major land cover group.

([Grp_code1] = "B16")

From the above selection, select all Code3 that are empty and all Code 2 that are empty.

([Code3] = "") and ([Code2] = "")

You now need to find the classifiers that you identified earlier, from the currently selected features.

Loose and shifting sands (A6)

([Code1] = "A6*") make sure to select from the currently selected set.

The selected polygons indicate all areas with bare areas that have loose and shifting sands in the 1st class and occur as a single unit.

Calculate id1 = "3" where 3 indicates loose and shifting sands and the absence of a letter indicates 100% of the polygon area.

5. **Select all the records in the id1 field that have a value. Convert this selection to a shapefile and delete all unwanted fields.**
6. **Dissolve the shapefile on the id field using the Geoprocessing extension to remove unwanted polygons and then explode using the Africover extension, to remove multi-part polygons. You can then join the description table to the id field and calculate area for the new shapefile.**

This is the aggregation for bare areas that has bare rock and very stony soils, bare soils and loose and shifting sands in Egypt.