Erosion hotspots as potential causes of sedimentation in Sebeya River Catchment, Rwanda

AfricaGIS Conference

Kigali, 18-22 November 2019



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MacArthur Foundation

Much sediment load in the river, a number of ecosystem services are interrupted!

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1. Sediment fingerprinting as a tool to identify the sources of river sedimentation: **'erosion hotspots'**



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1.1 **Collecting soil data**: based on geological units in the catchment





1.2 **Collecting sediment data**: based on hydrological networks in the catchment





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Collecting sediment data...: filtration of the water





Field data: storing and labelling





1.3 **Sampled sites**: soil collection

6 geological units: in total **30 soil samples**

1.4 Sampled sites: sediment trapping





Rwanda Standards Board NATIONAL QUALITY TESTING LABORATORIES DIVISIO MATERIALS TESTING LABORATORIES UNIT NON DESTRUCTIVE MECHANICAL TESTS LABORATOR LABORATORY TEST DATA

1.5 Laboratory analysis of field data

1.0 Details of the Sample Name of Customer Address RSB Sample N° Sample Description

: BIRDLIFE INTERNATIONAL

: Po. Box 2527 Kigali, Tel: 0783172651

: RSB 0671/03/18

: Sediment, Nyanzo River (Affluent of Bihongoro) – Sebeya

Catchment - Rutsiro, Season III, collected on 14/02/2018

2.0 Lab. Results

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Parameters tested	Test results
Sulfur content (S), %	0.032
Potassium content (K), %	0.148
Calcium content (Ca), %	0.099
Scandium content (Sc), ppm	<lod< td=""></lod<>
Titanium content (Ti), %	0.260
Vanadium content (V), %	0.003
Chromium content (Cr), %	0.001
Manganese content (Mn), ppm	<lod< td=""></lod<>
Iron content (Fe), %	0.189
Cobalt content (Co), ppm	<lod< td=""></lod<>
Nickel content (Ni), ppm	<lod< td=""></lod<>
Copper content (Cu), %	0.004
Zinc content (Zn),%	0.020
Arsenic content (As), ppm	<lod< td=""></lod<>
Selenium content (Se), ppm	<lod< td=""></lod<>
Rubidium content (Rb), ppm	<lod< td=""></lod<>
Strontium content (Sr), ppm	<lod< td=""></lod<>
Zirconium content (Zr), ppm	<lod< td=""></lod<>
Molybdenum content (Mo), %	0.001
Palladium content (Pd), ppm	<lod< td=""></lod<>
Silver content (Ag), ppm	<lod< td=""></lod<>
Cadmium content (Cd), ppm	<lod< td=""></lod<>
Tin content (Sn), %	0.002
Antimony content (Sb), ppm	<lod< td=""></lod<>
Tellurium content (Te), ppm	<lod< td=""></lod<>
Cesium content (Cs), ppm	<lod< td=""></lod<>
Barium content (Ba), ppm	<lod< td=""></lod<>

Sebeya: 30 soil & 34 sediment samples

The lab results along with sample locations form inputs into the mixing model



Erosion hotspots: ground truthing



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Erosion hotspots: level 1



Erosion hotspots: level 0



2. Local knowledge complements science





2.1 Assessing community's vulnerability to climate change

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2.2 **Developing ecosystem based adaptations**





Adaptation plans suggested by communities themselves

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2.3 Proposed on-site interventions for community 'resilience to climate change



3. On-site interventions...

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On-site interventions...

Land protection, sustainable agriculture, forest conservation, improved livelihoods

BirdLife International is a partner in the **Trillion Trees** programme

- The project steps follow a mixed-method approach:
 scientific evidence + community consultation
- These practices are replicable in other places where water sources are connected with mountainous landscapes and KBAs
- Some of our latest stories here:

https://www.birdlife.org/africa/news/using-science-andcommunity-approaches-fight-climate-change

