Using airborne imagery to map the distribution, abundance, and floral cycle of flowering plants – A world first study conducted in the context of the EU-funded Bee Health Programme at icipe

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Why is this important?
• Understand how bee colonies interact with the ‘floral environment’.
• Enables beekeepers to manage “what to expect from an apiary”.
• Value of flowering plants in view of pollination and food security, also linked to conservation.
• Understand biodiversity and measure climate change effects.

What we did:
We deployed a hyperspectral sensor on an aircraft, and imagery for a 10 by 10 km² study area in central Kenya was captured, while flowering plants were also tagged in the field.

Results:
A. We determined the flowering intensity for each picture element (pixel) in the airborne hyperspectral imagery.
B. ‘Raw’ image hyperspectral data for a sub-section of the study area.
C. Mapping result showing the distribution and abundance of flowering plants in the landscape for the two image acquisition periods. The same image sub-set as in B is shown.

Ipomoea kituiensis (1), and Acacia tortilis (2), could be mapped with high accuracy. Acacia nilotica (3) was mapped with lower accuracy.

Illustration showing airborne mapping