Energy Harvesting, Storage and Management for Automated Environment Monitoring in the East African Region

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June Progress Report
June in brief

- Fully registered PhD Candidate who has completed his third year!
- Paper on objective 2 sent to PLOS ONE
Obj3 Progress

- Linear Models have come out quite well. Explanation.

  ![Graph showing radiation and power over time]

- Linear relationship between irradiance and power output

![Graph showing linear relationship between solar irradiance and power output of solar panel. The correlation coefficient $R^2 = 0.99674$.](attachment:graph.png)
The Insolation SOC relationship has a similar trend
The Linear relationship during the charge and discharge phases means we are justified to use a linear model.

(a) charging

(b) discharging
Using 2W solar panel - better results

- There was less interference in this experiment. Predicted SOC and actual SOC have smaller error margins and high correlation.
Prediction run using Jan-June data 2018

- What the battery state of charge would have looked like if 2W panel had been deployed in Jan. 27% minima on April 26th
June Plans

- Proceed with Nonlinear or discrete calculus? Explanation.
- Draft Thesis
Other news

- Accepted for postdoctoral position at University of Oxford in the Energy and Power Group. Starts April 2019? 24 months
- DC nanogrids. Task: Develop an energy management algorithm that distributes energy between the nano hub and loads in order to maximise PV yield, balance power availability and manage the lifetime of the energy storage elements
- A lot of work in Energy harvesting, storage and remote monitoring: Similar to WIMEA in a number of ways. Pilot projects in Kenya and Arua
- 2 presentations