EGU2020-1503
https://doi.org/10.5194/egusphere-egu2020-1503
EGU General Assembly 2020

Monitoring African Bush Elephants with the OSOP Raspberry Shake and Boom

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In terms of terrestrial animal communication, elephants are especially noteworthy because they have been documented to produce some of the loudest sounds at frequencies between 10-35 Hz. Their vocalisations, or 'rumbles', with fundamental frequencies in the infrasonic range (≤ 20 Hz) can have amplitudes as high as 117 dB. Here we present our efforts to evaluate the performance of the Raspberry Shake and Boom, a low-cost seismic and acoustic sensor, for identifying and monitoring the movements of African Bush Elephants (*Loxodonta africana*). The test area was the Adventures with Elephants elephant reserve in South Africa which includes a herd of 7 elephants (3 females, 2 males, and 2 juveniles). Within the reserve we deployed a local network of 5 Raspberry Shake and Boom units in October 2019 in order to record seismo-acoustic waves generated by the herd. The network also included other seismic and acoustic sensors of different sensitivities which were used to assess the performance Raspberry Shake and Boom units. We show that the Raspberry Shake and Boom units performed well during the deployment, with clear recordings of elephant movement and rumbles. The acoustic data also suggests that we may be able to discriminate between individual elephants due to the distinct frequencies of their rumbles. This presentation will provide general information on the potential use of low-cost sensor units for the purpose of unobtrusively monitoring vulnerable wildlife such as elephants.