

Registration Code: 7911882482

Session Selection: Advancing earth system science with geophysical observations

Title: Investigating short-period microseisms near Lake Malawi

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Body:

Newly available broadband seismic data surrounding Lake Malawi provide an opportunity to investigate interactions between lake processes and the ambient noise field. The SEGMeNT (Study of Extension and maGmatism in Malawi aNd Tanzania) experiment involved the deployment of six broadband ocean-bottom seismometers (OBS) within the northern and central basins of Lake Malawi. This project provides one of the only seismic datasets collected in a sublacustrine environment (Accardo et al., 2017; Shillington et al., 2016). Power spectral analyses at lake-bottom and land stations surrounding Lake Malawi reveal a pervasive transient noise signal that manifests daily as peaks in power at periods of about 1-3 s that persist for several hours—a signature distinct from those of ocean microseisms (Figure 1). Recent studies at longer timescales identify similarly unique signals as lake-generated microseisms traveling primarily as fundamental Rayleigh waves (Xu et al., 2017), though the dominant source mechanisms remain unclear (Anthony et al., 2018). Preliminary applications of frequency-dependent polarization analysis (after Koper & Hawley, 2010) aim to evaluate the directionality of this noise signal and capture the complications of regional tectonics and a high-noise environment.

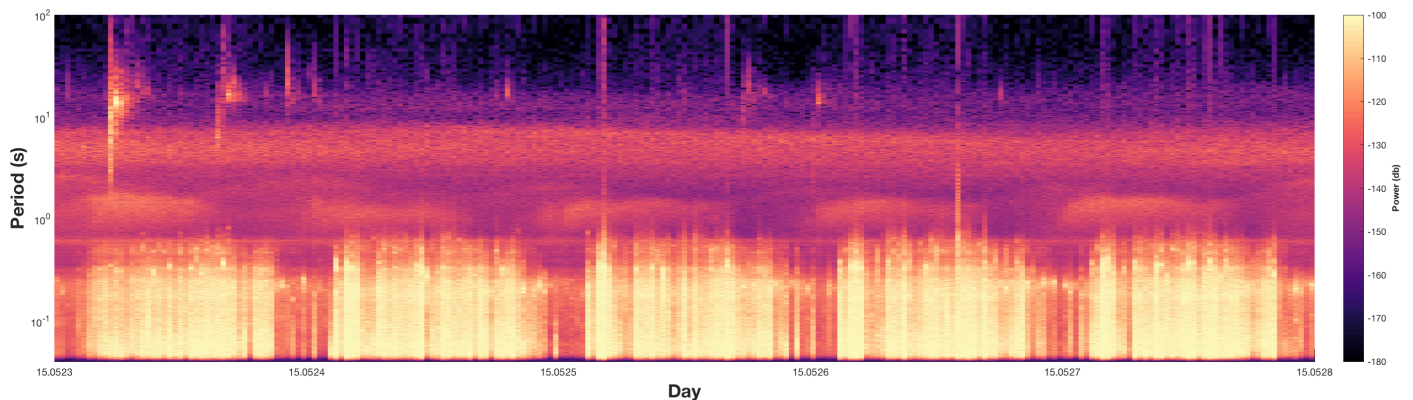


Figure 1. Spectrogram from 2018-05-23 through 2018-05-27 for station YQ UNDA and component BHZ.