Effects of Uniform Prior and Event Definition Criteria on the NET-VISA Bulletin

Thursday, 22 June 2023 09:45 (1 minute)

NET-VISA is a Physics-Based Generative Model of global scale seismology. The model includes a description of the generation of events which include underwater and atmospheric events, the propagation of waveform energy from the events in multiple phases, and the detection or mis-detection of these phases at the network of stations maintained by the International Monitoring System as well as a model of noise processes at these stations. The model and its associated inference algorithm has been deployed by the International Data Center to generate a bulletin of events known as VSEL3. In this work we study the effect of introducing the Event Definition Criteria (EDC) and a uniform location prior in the NET-VISA model. The introduction of EDC causes the bulletin to produce far fewer events, even less than the current SEL3 bulletin, while having higher overlap with LEB and REB. However, the overlap is less than the current NET-VISA model. Introducing uniform location causes the NET-VISA bulletin to produce many more events and a higher overlap with LEB and REB, but at the cost of very many spurious events. Introducing both EDC and uniform location produces results that are similar but worse than the current NET-VISA model.

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Promotional text

Removing the event location prior produces many more events but not necessarily of a better quality.

Oral preference format

in-person

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Session Classification: Lightning talks: P3.5, P5.1

Track Classification: Theme 3. Monitoring and On-Site Inspection Technologies and Techniques: T3.5 Analysis of Seismic, Hydroacoustic and Infrasound Monitoring Data