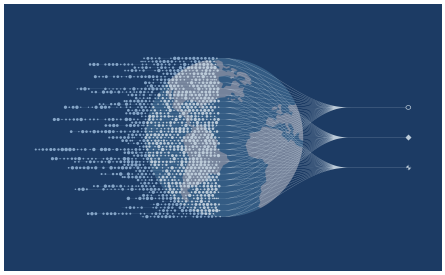

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geocharacterization of volcanic tuffs in support of source discrimination modeling

A series of multi-physics experiments, referred to as Physics Experiment 1 (PE1), is underway at Aqueduct Mesa within the United States' Nevada National Security Site (NNSS). The PE1 series includes detonation of underground chemical explosions that will provide key observations relevant to source discrimination models and algorithms. An important aspect in understanding the signals generated by these experiments is detailed characterization of the testbed geology. Here we present geologic, hydrologic, and geomechanical properties collected and analyzed from the bedded sequence of Miocene pyroclastic tuffs at Aqueduct Mesa. Analysis of geologic samples has allowed us to constrain important material properties, including seismic velocity, two-phase permeability, material strength properties, mineral and elemental composition, and water saturation. This suite of characterization data is synthesized with borehole log data for integration into the testbed's Geologic Framework Model, which directly feeds predictive models of seismic wave propagation, gas transport, and source mechanics.

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