

## [Invited] A Bayesian framework for Earthquake Early Warning

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Earthquake early warning (EEW) systems are designed to rapidly analyze real-time seismic data and report occurrence of earthquakes before strong shaking is felt at a site. EEW has been implemented in many seismically active regions around the world, yet there are still many challenges to be solve in order to achieve faster and more accurate strong shaking warning. Two of the key challenges of EEW include: (1) prediction of fault rupture using only the first few seconds of seismic wave data is highly uncertain, and (2) existing ground motion prediction equations that are computationally fast enough for EEW are highly uncertain. A natural solution to handle these uncertainties is to apply a fully Bayesian framework to EEW, but the typically high computational demand in Bayesian inference has been a bottleneck. In this presentation, I will introduce multiple attempts to design efficient EEW algorithms based on a Bayesian framework, including the seismic source inversion problem, ground motion prediction problem, and decision-making of emergency response under different source of uncertainties.