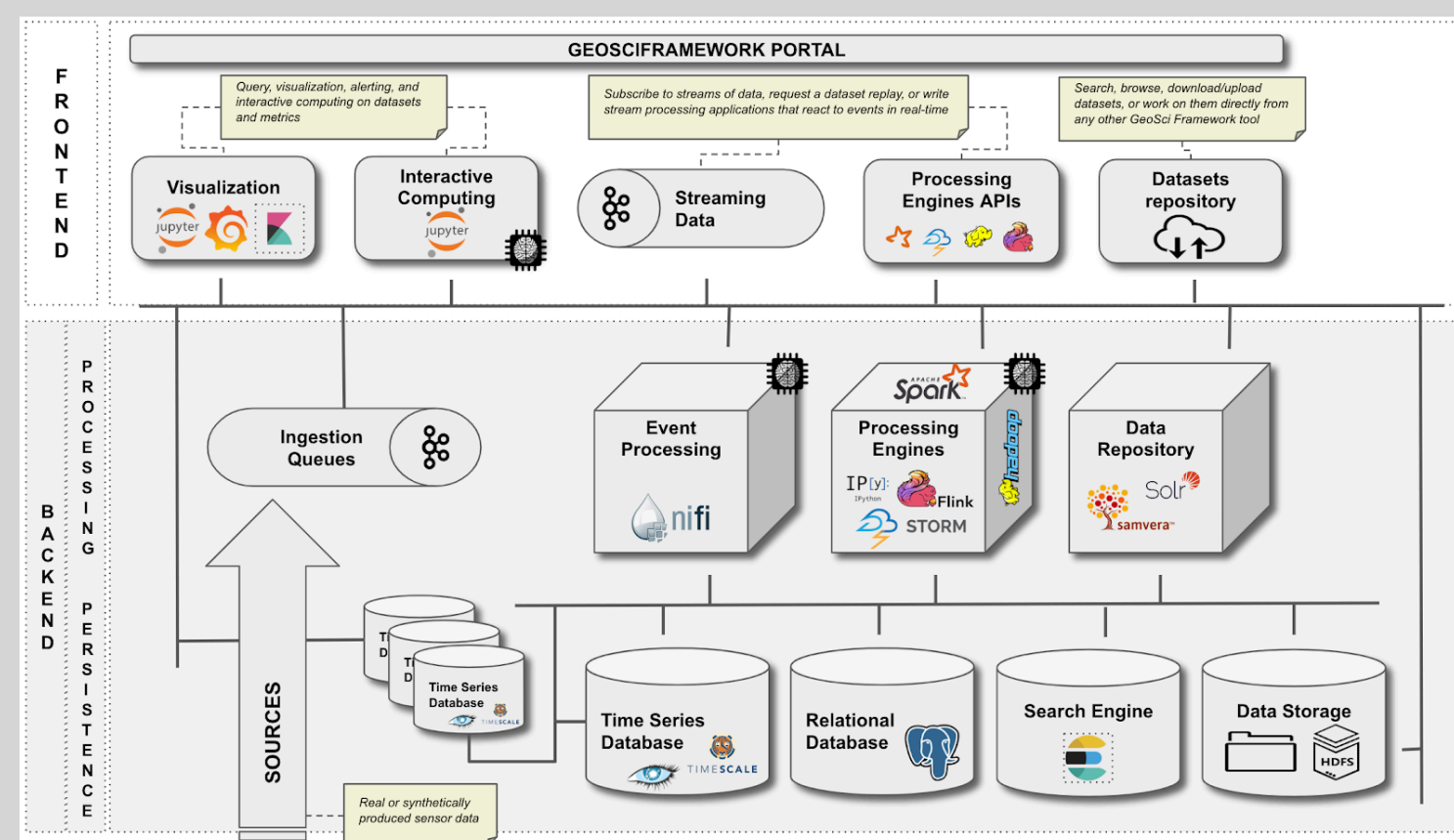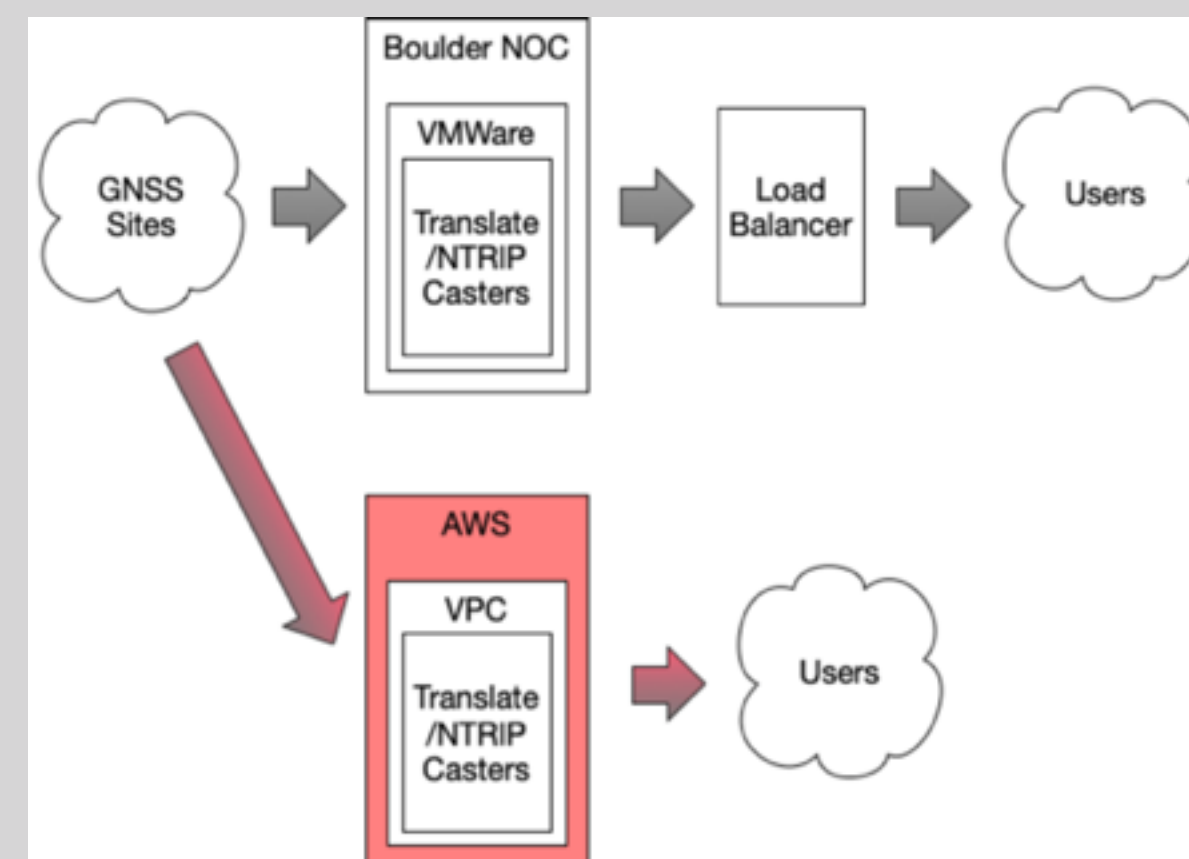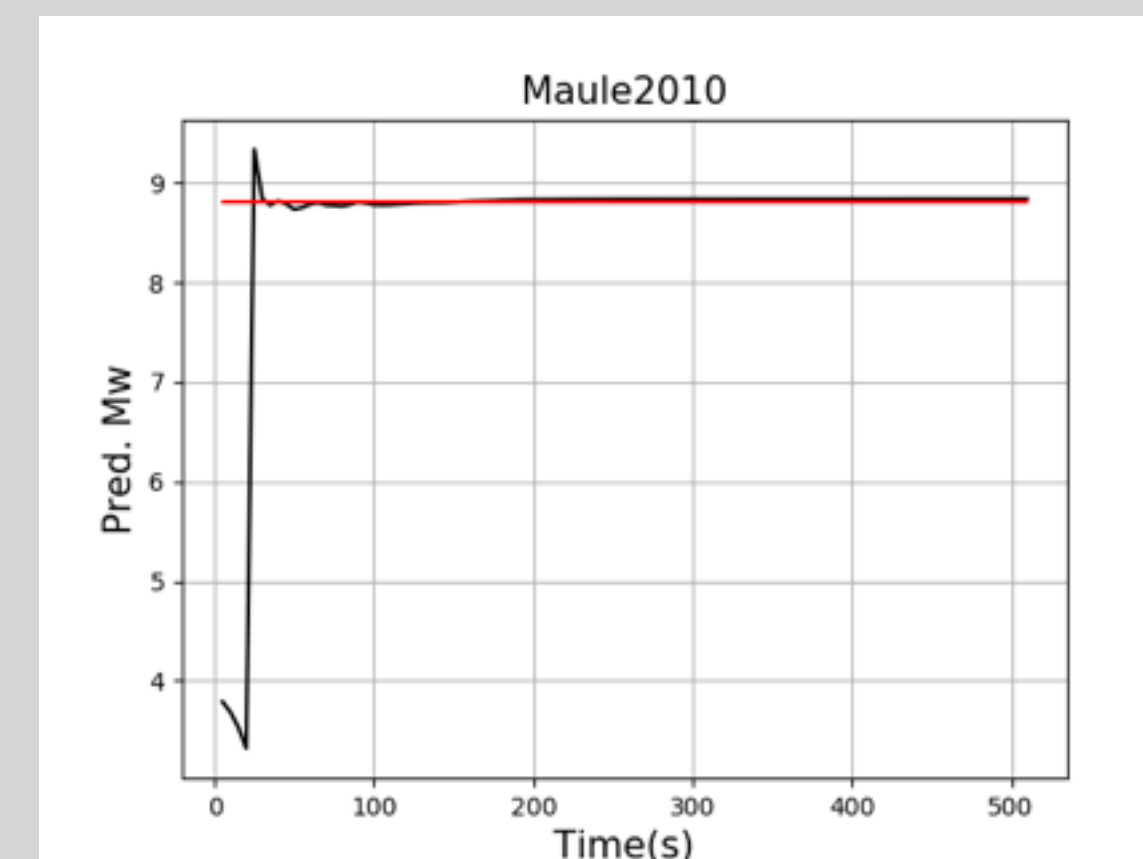# CSSI Element: Collaborative Research:NSCI:HDR:Framework:Data:GeoSCIFramework: **Scalable Real-time Streaming Analytics and Machine Learning for Geoscience and Hazards Research**
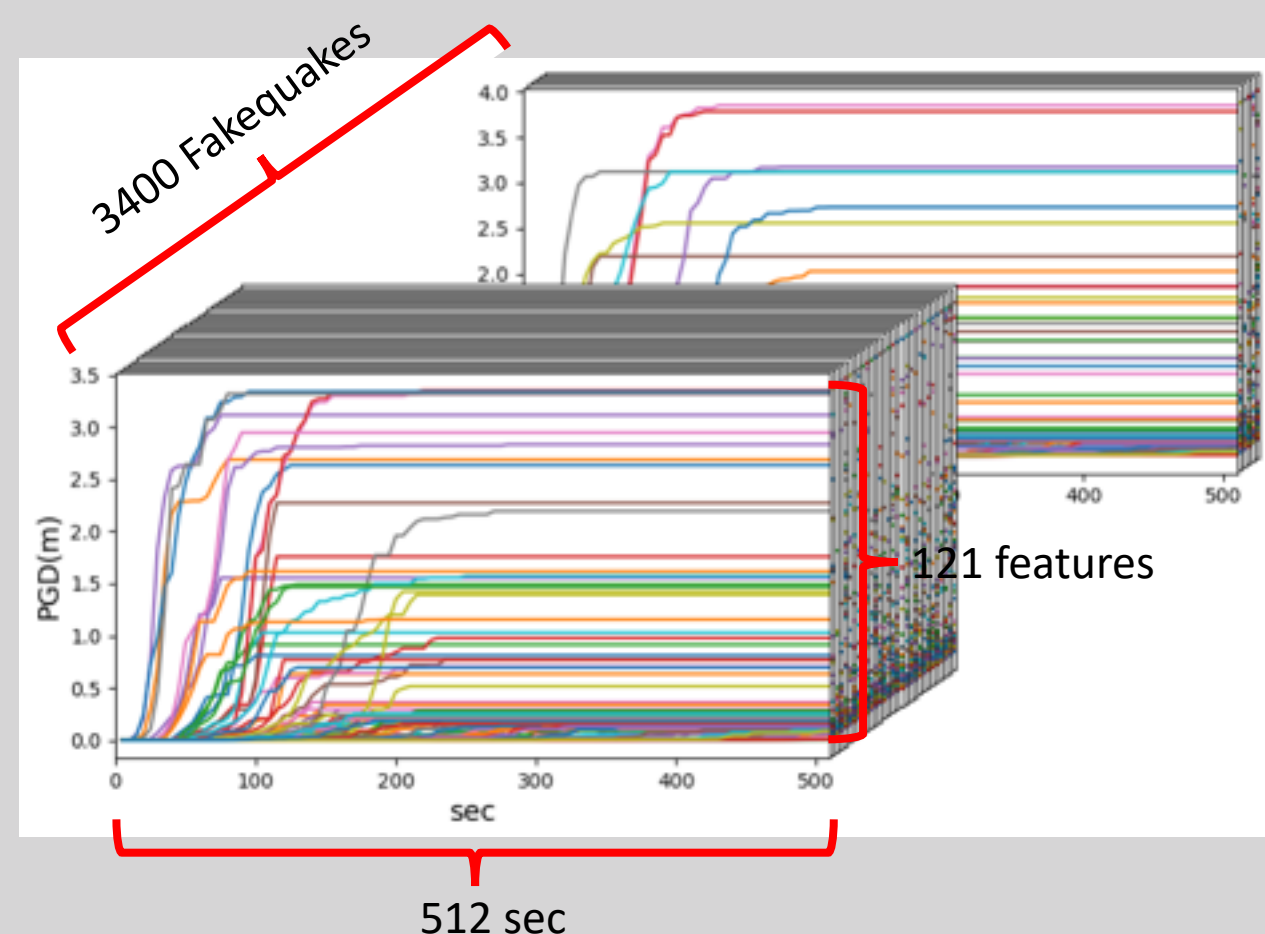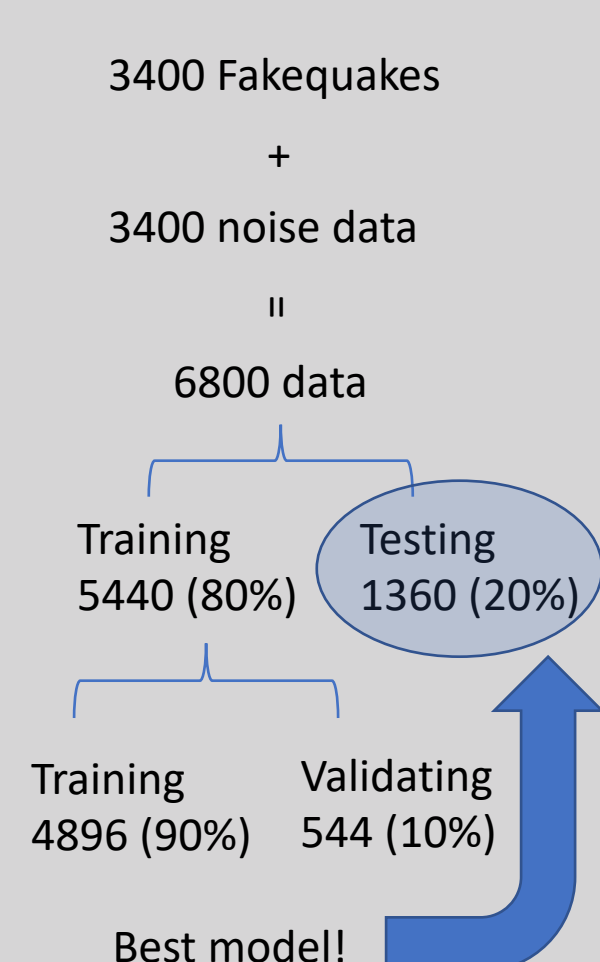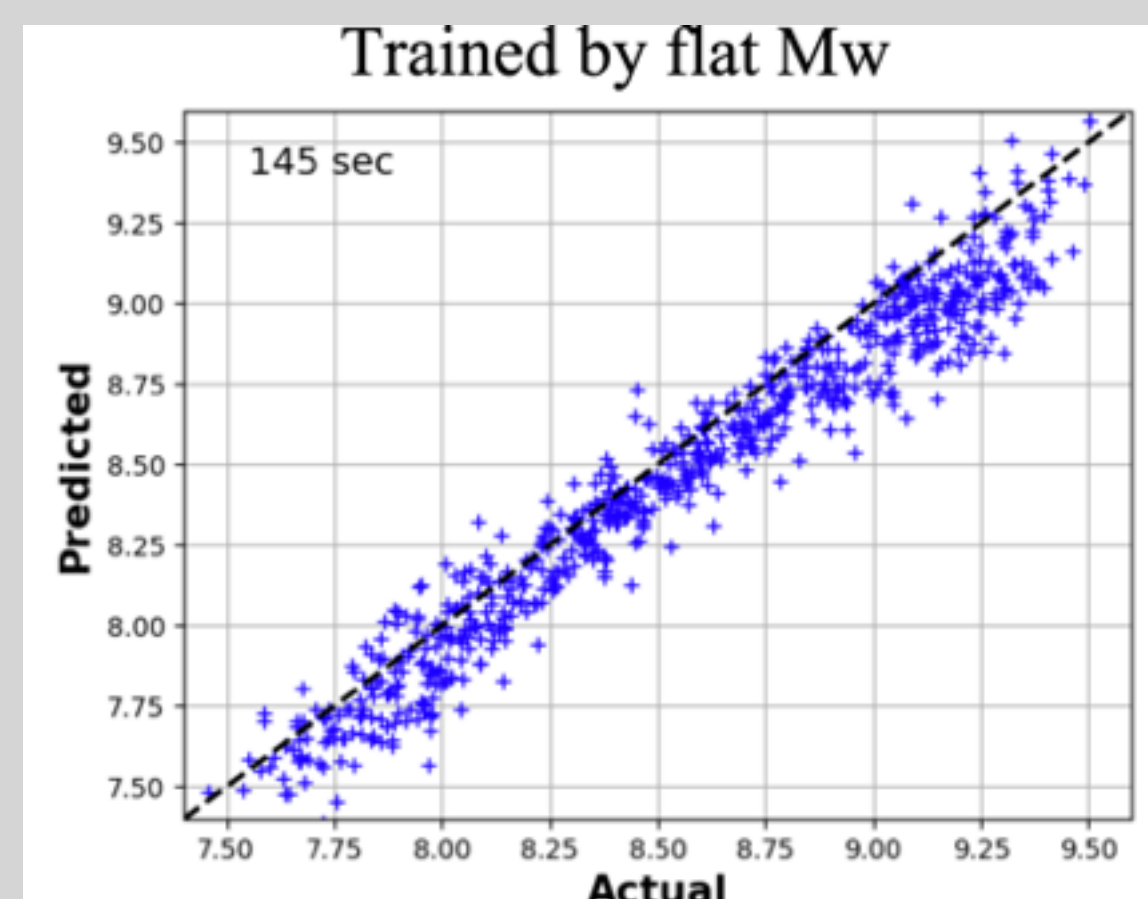

Use Big Data…

Lift data from 1000's sensors to the cloud…

Detect large earthquakes in real-time

Build training sets with synthetic data …

Time	Source	Mw
3 min	JMA initial	NEIC W phase
5 min	PTWC Mwp	6.8
10-20 min	PTWC, ATWC, JMA	7.3
		7.9
20 min	**NEIC W phase**	**9.0**
22 min	PTWC W phase	8.8
27 min	USGS Research	8.9
30 min	CMT	8.8
45 min	PTWC W phase	8.8
62 min	Strasbourg W phase	8.9

Improve warning time for large earthquakes from 20 minutes to 20 seconds …