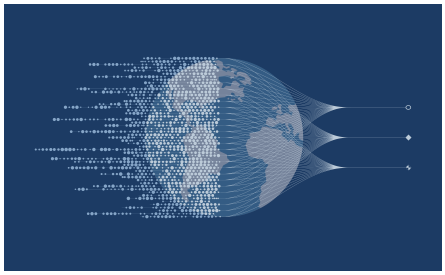

ID: **P1.2-288** Type: **E-poster**

Improving a 3-D global propagation model via SMART cables and other sea floor data

Friday 12 September 2025 10:00 (1 hour)

Global seismic models suffer from heterogenous source and receiver distributions. The greatest gaps are beneath the oceans, ~70% of the Earth's surface. Most teleseismically observed earthquakes occur at plate margins, while most seismic sensors are on land. Ocean Bottom Seismometers (OBSs) offer some improvement in sensor distribution, but OBS deployments are limited in extent and duration. In a year-long deployment there may be ~100 earthquakes of magnitude >6, but many are nearly co-located, reducing added ray coverage. Nearshore cabled arrays of OBS have longer lifetimes but do not offer novel sampling for teleseismic arrivals. We thus analyse teleseismic records from over 4000 P phase arrivals for 240 events using abyssal OBS data from Ocean Bottom Seismic Instrumentation Pool (OBSIP) experiments, and add these to our database. These provide novel paths for tomography, but only modest improvement in resolution and travel-time uncertainty. Future seismic data from Science Monitoring And Reliable Telecommunication (SMART) Cable sensors will revolutionize seismology in terms of more complete global models, better distribution of sensing, and significantly improved resolution and travel time uncertainty estimates. We compare global models with and without OBS, and we examine model resolution and travel time uncertainty improvements with the SMART sensors.

E-mail

char@lanl.gov

In-person or online preference

Primary author: ROWE, Charlotte (Los Alamos National Laboratory (LANL))

Co-authors: Mr BEGNAUD, Michael L. (Los Alamos National Laboratory (LANL)); Ms CONLEY, Andrea (Sandia National Laboratories (SNL))

Presenter: ROWE, Charlotte (Los Alamos National Laboratory (LANL))

Session Classification: P1.2 The Solid Earth and its Structure

Track Classification: Theme 1. The Earth as a Complex System: T1.2 The Solid Earth and its Structure