One of the major challenges to analyzing and interpreting data from an onshore/offshore passive seismic array is recognizing major differences in the background noise sources in the two environments. The chief variables controlling the noise floor on modern seismometers fall into three categories: 1) the electronic and mechanical properties of the hardware, 2) coupling of the seismometer to the ground, and 3) the environment of the installed location. While installation of land stations involves careful choice of site characteristics, burying the seismometer, separation of the sensor from the recording instrumentation, and post-installation data quality tests, logistical and cost restraints require that most ocean bottom seismometer (OBS) installations be much less controlled. Generally OBSs are deployed by allowing them to fall freely to the seafloor, where they may land on an uneven surface or in sediments with a shear modulus that is much lower than that of terrestrial sediments. If the sensor is decoupled from the recording package, it can be difficult to assess the quality of the decoupling. Protrusion of the sensor above the seafloor puts it in the path of benthic currents and fauna. This can result in significant differences in both the background noise level and in the number of transient noise sources between land and seafloor instruments. We present a summary of signal-to-noise data for selected land (FlexArray) and ocean bottom seismometers (from the OBSIP) simultaneously deployed on- and off-shore the coast of Oregon, on the forearc of the Cascadia subduction zone from 2007-2009. In addition to summaries of the background noise floor at several elevations, ocean depths, and distances from the coast, we also present properties of teleseismic and local earthquakes and transient environmental and electronic signals recorded by stations of the array at different frequency bands. We also discuss ongoing efforts to develop an automated method of classifying signals to separate earthquakes from the many transient signals resulting from benthic fauna. While the noise floor can be much higher for ocean bottom instruments, several offshore 4-component (geophone + pressure gauge) broadband stations can improve detection/location of regional and local events, given a sufficient number of coastal stations.