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seismic monitoring integrating DAS analysis with conventional seismological analysis

The rapid detection, location and classification of seismic events, particularly offshore, has become increasingly important in a world where critical infrastructure on the seabed has been the subject of several damaging incidents. Given the intense political focus on the events, it is equally important to provide data to deescalate a situation if events have natural causes as it is to help clarify the cause in case of man-made disruptions. Conventional seismograph networks are almost exclusively installed on land making it challenging to detect small events far from the shore. The rapidly evolving field of Distributed Acoustic Sensing (DAS) where fiber cables on the seabed are used as sensors can reduce the threshold for detection, improve the accuracy of locating events and reliably discriminate the event origin. DAS generates enormous amounts of data with 1 Tb/day and thousands of channels from one cable not being uncommon. Examples will be given on how data recorded on existing fiber cables can be combined with seismograph network data to obtain a more precise solution. As critical infrastructure on the seabed in many cases is surrounded by multiple countries, international collaboration on rapid data and event exchanges is crucial.

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