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Proposal for using commercial submarine telecommunications cables for monitoring earthquakes and tsunamis - the SMART cable concept

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Hundreds of thousands of kilometres of commercial telecommunications cables traverse the world's oceans, many of them crossing large ocean basins, which are otherwise poorly sampled by geophysical sensors (seismometers or pressure gauges), or running along active continental margins, where additional observations would be particularly valuable for allowing observation of subduction zone earthquakes and offshore plate deformation from the updip end. However, as of today these cables are unaware of their environment. These cables are equipped with repeaters spaced at ∼50 km intervals to boost the telecom signal, though. These repeaters in principle offer access to power and bandwidth, providing the opportunity to add sensor capability to future "SMART" cables (Science Monitoring and Reliable Telecommunications).
In a workshop held in early November 2016 at the German Research Centre for Geosciences in Potsdam (GFZ) research scientists, practitioners from earthquake observatories and tsunami warning centers, and engineers discussed possible applications of such SMART cables both from the viewpoint of fundamental research, i.e. Earth imaging and the study of earthquake processes and possibly plate deformation, as well as technical aspects of possible implementations by drawing on the expertise of operators of existing cabled networks. In this presentation, we will summarise the outcomes of this workshop.