ID: Type: **Oral**

the existing telecommunication optical fiber cables as underwater seismic events detectors

Friday, 28 June 2019 12:15 (15 minutes)

Detecting ocean-floor seismic activity is crucial for our understanding of the interior structure and dynamic behavior of the Earth. However, 70% of the planet's surface is covered by water and seismometers coverage is limited to a handful of permanent ocean bottom stations. It can be shown that existing telecommunication optical fiber cables can detect seismic events when combined with state-of-the-art frequency metrology techniques by using the fiber itself as the sensing element. As it was found, the existing underwater telecommunication optical fiber cables could be used in this way without disruptions to service and without having to make any changes to the cables. All that would be needed would be to gain access to one of a group of channels on both ends of a cable. Each side would be fitted with a special laser-based detector to continually monitor the signal. The researchers suggest that if enough of the cables under the oceans were used as seismic monitors they could offer access to unprecedented types of information—information that could be used to predict tsunamis, for example, or to better understand global seismic activity as it relates to plate shifting and volcanism.

Primary author: PASHKOV, Yurii (Main Centre of Special Monitoring)

Presenter: PASHKOV, Yurii (Main Centre of Special Monitoring)

Session Classification: T3.1 Design of Sensor Systems and Advanced Sensor Technologies

Track Classification: Theme 3. Verification Technologies and Technique Application