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## Impacts of rising sea water temperature on underwater acoustic propagation in the upper layer of the East Sea of Korea

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The temperature of the sea is constantly rising due to global warming. In the case of the East Sea of Korea, sea water temperature has risen about 1 °C over the past 100 years. The rise in sea water temperature in the upper layer is larger than that of the lower layer, and the rise will accelerate more and more over the year. The factors influencing sound velocity in underwater are seawater temperature, salinity, and pressure, which is especially affected by sea water temperature (as seawater temperature rises by 1 °C, sound velocity is about 3 m/s faster). Thus, the change in seawater temperature causes the change in sound velocity which has mainly effect on underwater acoustic propagation pattern. Underwater sounds are widely used in various fields of the ocean such as echo depth sounder, oceanographic survey, resource exploration, biological signal and noise measurement, navigation, communication. In the Navy, it is used in the acoustic-based naval weapon systems those are a passive and active sonar, torpedoes, mines and etc. The study shows how the rise of sea water temperature caused by global warming affects the underwater acoustic transmission in the upper layer of the East Sea of Korea.

### Biography

Sehan Lim is working as an Associate professor in Department of Oceanography of Republic of Korea Naval Academy. He graduated from Korea Naval Academy and completed his PhD from School of Earth and Environmental Science in Seoul National University of Korea. His research areas are meso-scale ocean circulation, mixed layer depth and underwater acoustics.

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