Potential impact of ocean circulation on the declining Japanese eel catches

*Yu-Lin Eda Chang[1], Yasumasa Miyazawa[1], Michael Miller[2], Katsumi Tsukamoto[2]

1. Application Laboratory, Japan Agency for Marine-Earth Science and Technology, 2. Nihon University

Recruitment of Japanese eels, *Anguilla japonica*, has declined in recent decades possibly due to both anthropogenic and ocean-atmosphere factors. The potential impact of ocean circulation on the decreasing Japanese eel catches in the western North Pacific was examined based on a three-dimensional particle-tracking method, in which virtual larvae (v-larvae) were programmed to swim horizontally and vertically, in addition to being transported by ocean currents after being released in their North Equatorial Current (NEC) spawning area. Transport patterns varied among years between 1993 and 2013, and dispersion of v-larvae towards East Asia decreased in the last two decades, especially for the western Taiwan and Japan regions. In recent years, instead of entering the Kuroshio and moving towards East Asia as in the 1990s', more v-larvae tended to enter the southern areas due to the weakening of the NEC and strengthening of subsurface southward flow near the spawning area. Changes in ocean circulation in the western Pacific appear to be caused by the weakening of subtropical and tropical wind stress curl in the past two decades. This suggests that decadal changes in ocean circulation have occurred that affect the larval migration success of the Japanese eel to their recruitment areas.

©2018. Japan Geoscience Union. All Right Reserved.