

Formation of bottom water and its variability in the Sea of Japan

*Kiyoshi Tanaka¹

1. University of Tokyo

The downslope descent of dense shelf water in the northwestern part of the Sea of Japan is investigated from a dynamical point of view. Before 1980, the shelf water in Peter the Great Bay sometimes descended far down the continental slope, at least partly reaching depths in excess of 3000 m (the foot of the continental slope). After 1980, however, the shelf water did not descend as far; it either descended only moderately or not at all. In Winter 2001, however, the dense shelf water again descended to depths greater than 3000 m, resulting in the formation of bottom water. Descents of more than 3000 m are due to low temperatures coupled with high salinities, whereas the moderate descents of the late 20th century were purely related to the low temperature of the shelf water. The formation of bottom water is greatly influenced by interannual atmospheric variability; thus in Winter 2001 a combination of the strengthened Siberian High (especially in its northern part) and the Aleutian Low advected very cold air into northeast Asia, producing dense shelf water and resulting in the formation of bottom water.

Keywords: Sea of Japan, Formation of Bottom Water, Interannual variability, Hydrodynamic Modeling

