

2002 Fall Meeting
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AN: **OS22E-09 INVITED**

TI: [The exchange between northwest Pacific marginal seas and the North Pacific and its influence on North Pacific water mass properties](#)

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AB: The Japan Sea and Okhotsk Seas have differing influences on water mass processes in the North Pacific. The Japan Sea, although deep and well-ventilated to the bottom, is connected to the Pacific only through very shallow straits. It funnels relatively saline subtropical Pacific waters to the subpolar North Pacific, thereby increasing the density of locally-formed waters in both the Okhotsk Sea and the Oyashio region. This directly impacts North Pacific Intermediate Water formation, which is the densest water formed within the North Pacific outside the Japan Sea. While much denser water is formed within the Japan Sea, this process is only part of the overall processes that modify Pacific waters on their passage through the Japan Sea. The transports and properties of waters passing through the straits, and the modification of waters within the Japan Sea are reviewed and further quantified. The Okhotsk Sea is much more connected to the Pacific Ocean, through the numerous Kuril straits that allow exchange to mid-depth. Dense waters formed

on the northwestern Okhotsk Sea shelf as a result of brine rejection are the nucleus of new North Pacific Intermediate Water (NPIW). This fresh water mass is denser than waters formed similarly in the Bering Sea because of the saline inflow from the Japan Sea through Soya Strait. Large tidal currents mix the new NPIW with Pacific waters within the Okhotsk Sea and much more strongly within the Kuril Straits. Probably as a result of its large productivity, the Okhotsk Sea sediments are a source of a denitrification signal that is observed throughout the northwestern Pacific.

DE: 4223 Descriptive and regional oceanography

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