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Variation of the Kuroshio Extension and its impacts on the formation zone of the North Pacific central Mode Water (NPCMW) is studied in detail using newly 2004-2009 ARGO data. At first, the formation region of the three types of mode waters in the North Pacific subtropical gyre is presented. The western subtropical mode water (NPSTMW) forms south off the Kuroshio and the Kuroshio Extension and is being confined in the Kuroshio Recirculation system, which extends eastward no more than 180º. The formation zone of the eastern subtropical mode water (ESMW) is fairly fixed, which is located between the Hawaii Island and the western coast of America. Comparably, NPCMW forms in the central North Pacific and has significant local featrures, with definite separation from the NPSTMW. Analysis on the upper ocean stratification and the interannal variability of the Kuroshio shows that a special weak zone of the ocean stratification in the upper ocean (100 m) in the central North Pacific-the “stability gap” could be detected in October, which fits well the formation zone of the NPCMW in the early spring of the coming year. Further study indicates that the northward ward advection of the Kuroshio Extension between the Shatsky Rise (159ºE) and the Emperor Seamount (171ºE) counteracts effectively the cooling trend of the mixed layer and helps to the occurrence of the “stability gap”, which acts as the “Precondition Mechanism”, eventually results in the “local feature” of the formation of the NPCMW.