

The JMA's cold season outlook for 2007/08 winter

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Abstract

JMA issued the cold season outlook for the coming winter over Japan on September 25th. It says that normal winter, the middle one third category, has a slightly larger probability (40%) than the climatological one (33%) in the most part of Japan. It also says that warm winter, upper one third category, and cold winter, lower one third category, have same probabilities (30%) which is slightly smaller than the climatological ones.

Obvious warming trends are observed in winter mean temperatures in Japan, consistent with the warming trend of tropospheric thickness temperatures in the Northern Hemisphere mid-latitudes. Actually, we experienced only two cold winters in these recent twenty years in the main islands of Japan.

The La Niña event which began last spring is still going on now and seems to be a mature phase in autumn. The JMA's El Niño forecast model predicts that the NINO.3 SST will stay below normal during the coming winter. So, it is likely that La Niña conditions will continue until winter. According to our statistical studies, cold or normal winters tend to be observed in the most part of Japan during La Niña events.

The JMA's seasonal forecast model (AGCM-TL95-M51) predicts that convective activities will be enhanced in the tropical western Pacific especially to the north of New Guinea while be suppressed near the dateline along the equator. Consistent with these convective activity anomalies, the patterns of atmospheric circulation anomalies in tropics and sub-tropics are similar to the features which are often observed during La Niña events. The patterns from the eastern Pacific to the North America are also similar to them. Meanwhile the Eurasian teleconnection pattern and the Arctic Oscillation pattern are not predicted with a significant signal. As the result, 500hPa height anomalies and 850hPa temperature anomalies are predicted to be slightly positive over almost all parts in the Far East.

Considering the above points, signals of warm winter and signals of cold winter cancel each other, so the base of winter mean temperature is predicted near normal and the winter monsoon which brings heavy snow in the Sea of Japan side is also predicted near normal. More to the point, the warm effect by the long-term trends and the cold effect by the La Niña event are balanced. Taking into account that the Arctic Oscillation which is closely concerned with winter climate in Japan is not predicted as a significant signal, neither a probability of a warm winter nor a probability of a cold winter is small. We should carefully keep monitoring the situation of the Arctic Oscillation. Because the active convection around the Maritime Continent enhanced by the La Niña event will work synergistically in increasing the possibilities of major cold waves if the Arctic Oscillation become a certain level of negative phase.