

# Primary factors of extreme summer conditions in East Asia in 2013

Kazuto TAKEMURA

Tokyo Climate Center, Japan Meteorological Agency

k-takemura@met.kishou.go.jp

East Asia experienced extreme summer conditions in 2013, with severe heat conditions in southern China, South Korea and Japan, heavy rainfall near the Amur river and in Tohoku region and the Sea of Japan side areas of Japan's main islands, and dry conditions over southern China, South Korea and the Pacific side areas of eastern and western Japan and parts of Okinawa/Amami.

In July and August 2013, the Tibetan High was enhanced and the northwestern Pacific High continued to expand westward. Convective activity was significantly enhanced over large parts of the Asian summer monsoon region in association with SST anomaly patterns in the Pacific (above-normal around Indonesia and the Philippines, and below-normal in the equatorial central-eastern Pacific), and contributed to the enhancement of the Pacific High and the Tibetan High.

The northwestern Pacific High continued to expand westward and predominantly developed over southern China and western Japan, contributing to severe heat and dry conditions. Enhanced warm moist air continued to flow over northeastern China and the Sea of Japan side areas of Japan along the western and northern periphery of the Pacific High, contributing to heavy rain in these countries. Upper cold air occasionally flowed over the areas in association with the southward meandering of the subtropical jet stream, contributing to heavy rain brought by unstable atmospheric conditions.

Possible primary factors contributing to the extreme summer conditions are summarized as shown in the conceptual diagram below.

