Seasonal Highlights (June 2017 – August 2017)

- Seasonal mean temperatures were significantly above normal in Okinawa/Amami.
- Seasonal precipitation amounts were above normal on the Sea of Japan side of northern and eastern Japan.
- Seasonal mean temperatures were extremely high from Mauritius to Madagascar.
- In the equatorial Pacific, remarkably positive SST anomalies were observed in the western part.
- Convective activity was enhanced around the Maritime Continent.
- The polar vortex was stronger than normal and the subpolar jet stream meandered northward over Central and Eastern Siberia.
- The Pacific High was stronger than normal to the south of Japan, and its expansion over the mainland of Japan was weaker than normal.

Oceanographic Conditions (Fig. S3)**:**

- In the equatorial Pacific, remarkably positive SST anomalies were observed in the western part.
- In the North Pacific, remarkably positive SST anomalies were observed from near the Philippines to near 20˚N, 120˚W, around Japan, in the Sea of Okhotsk, and in the Bering Sea.
- In the South Pacific, remarkably positive SST anomalies were observed from the eastern coast of Australia to near 30˚S, 105˚W.
- In the Indian Ocean, remarkably positive SST anomalies were observed from the eastern coast of East Africa to near 35˚S, 100˚E, and also from the eastern coast of East Africa to near 10˚N, 70˚E.
- In the North Atlantic, remarkably positive SST anomalies were observed in the tropical region and from near the eastern coast of the USA to near 30˚N, 30˚W.

Tropics:

- Convective activity was enhanced over the Maritime Continent, and was suppressed over the western North Pacific and the central-to-eastern equatorial Indian Ocean (Fig. S4).
- In the upper troposphere, wave trains were observed along the subtropical jet stream over Eurasia with anti-cyclonic circulation anomalies over Mongolia (Fig. S5). The intensity of the Tibetan High was near normal.
- In the lower troposphere, anti-cyclonic circulation anomalies were observed around Taiwan to the sea east of the Philippines.

Extratropics:

- In the 500-hPa height field (Fig. S6), the polar vortex was stronger than normal. Zonally elongated negative anomalies were seen from northeastern Canada to Western Russia and positive anomalies were seen to the south. A wave train was dominant from Central Siberia to North America with positive anomalies over Central and Eastern Siberia and the western part of North America, and negative anomalies over northern Japan and to the south of Alaska.
- The subpolar jet stream meandered northward over Central and Eastern Siberia. The subtropical jet stream meandered northward over China and southward over Japan (Fig. S7).
- In the sea level pressure field (Fig. S8), negative anomalies were seen over the high-latitudes. The Pacific High was stronger than normal to the south of Japan, and its expansion over the mainland of Japan was weaker than normal.
- Temperatures at 850-hPa were above normal over the western part of North America, from the western part of North Africa to the Middle East through southern Europe, wide area of eastern Eurasia, and below normal over the eastern part of North America and from the northern part of the North Atlantic to northwestern Europe (Fig. S9).

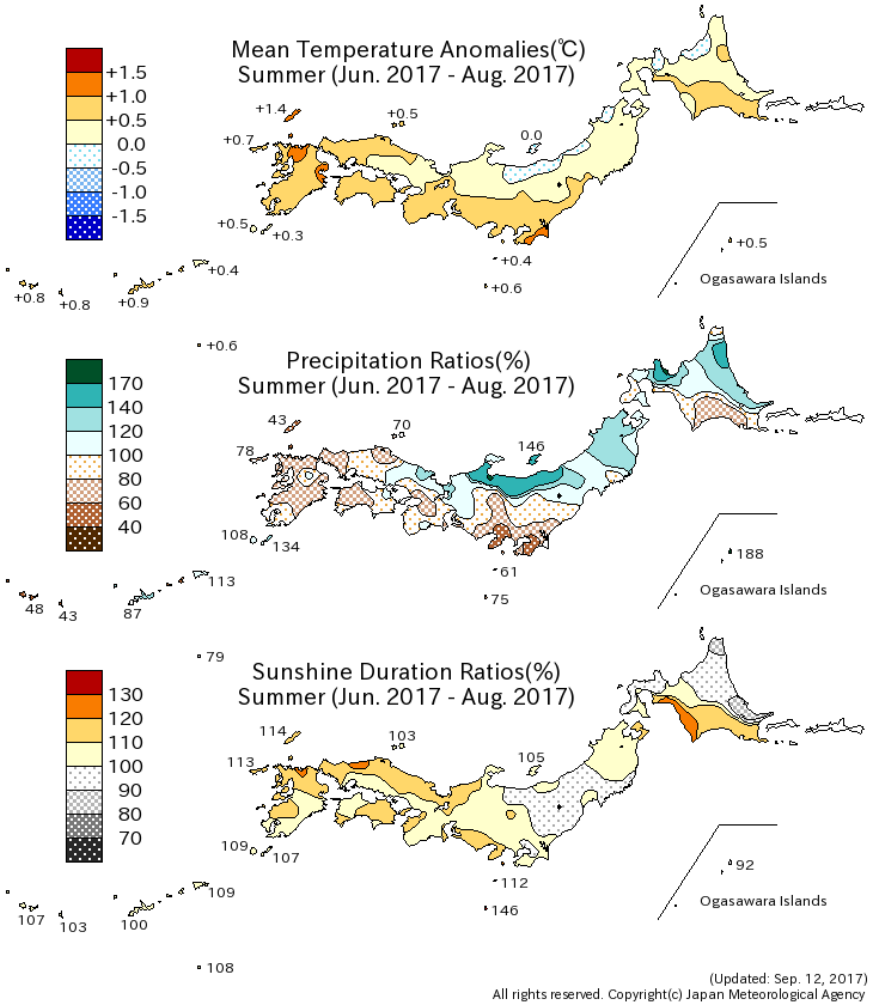

Fig. S1 Seasonal climate anomaly/ratio over Japan (June 2017 - August 2017)
Top: temperature anomalies (degree C)
Middle: precipitation ratio (%)
Bottom: sunshine duration ratio (%)
The base period for the normal is 1981-2010.

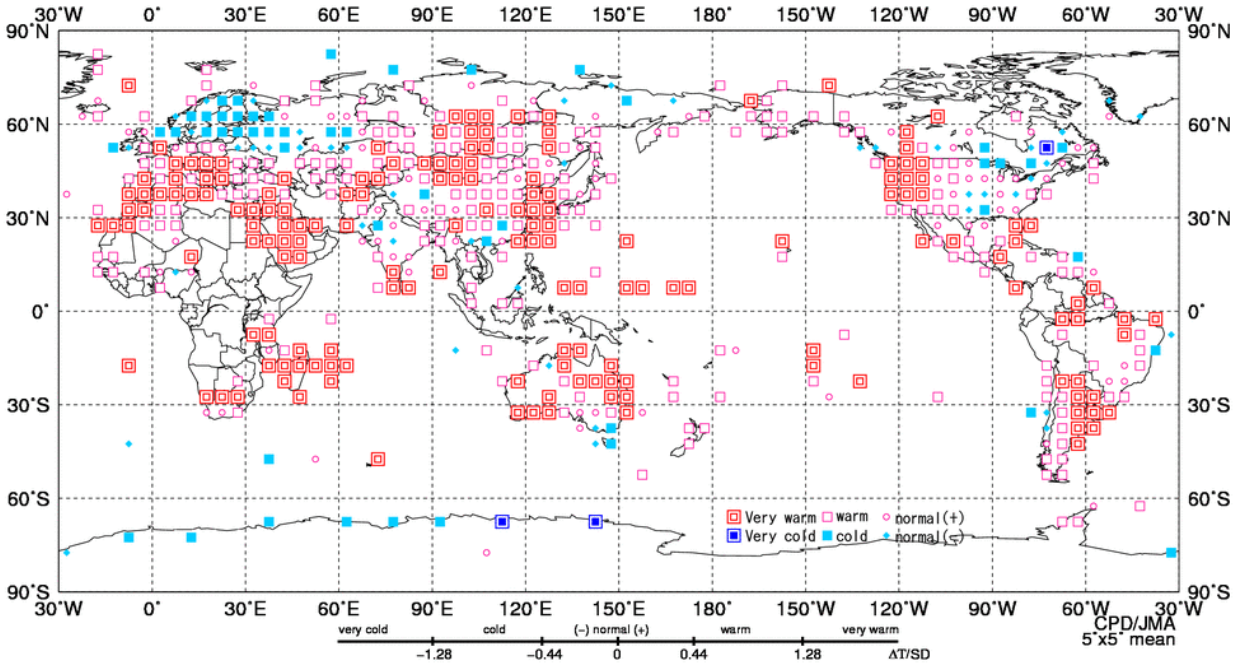

Fig. S2 Three-month mean temperature anomaly (normalized) category (June 2017 - August 2017)

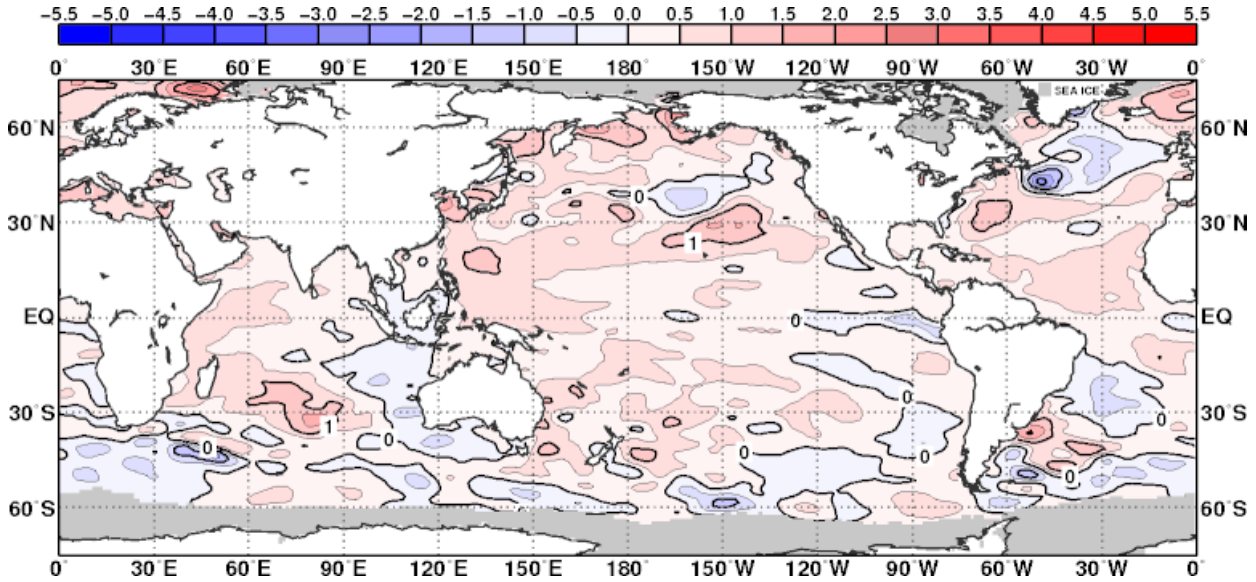

Fig. S3 Three-month mean sea surface temperature anomaly (June 2017 - August 2017)
The contour interval is 0.5 degree C. The base period for the normal is 1981-2010. Maximum coverage with sea ice is shaded in gray.

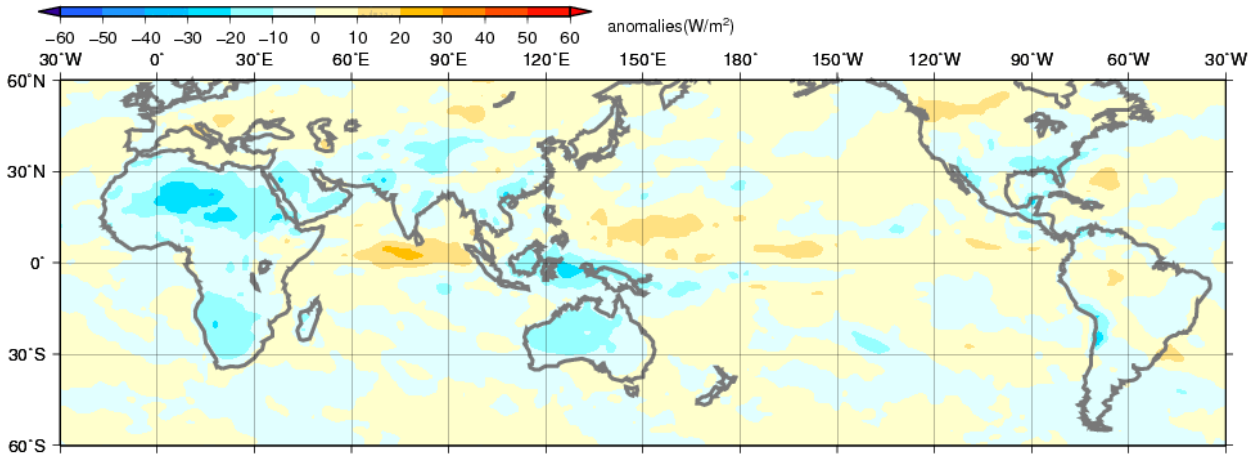

Fig. S4 Three-monthly mean Outgoing Longwave Radiation (OLR) anomaly (June 2017 - August 2017)
The contour interval is 10 W/m^2. The base period for the normal is 1981-2010. Original data provided by NOAA.

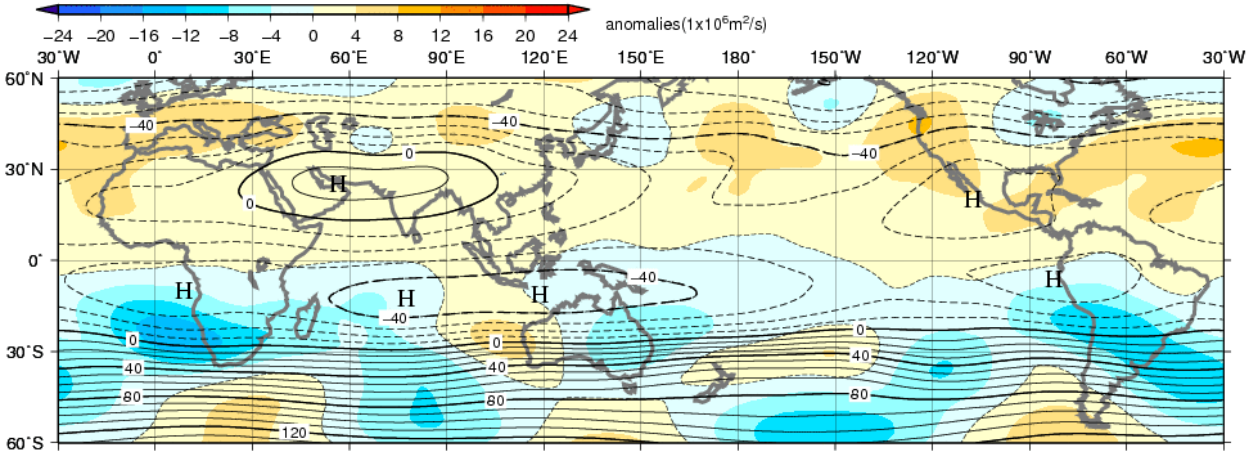

Fig. S5 Three-month mean 200-hPa stream function and anomaly (June 2017 - August 2017)
The contour interval is 10x10^6 m^2/s. The base period for the normal is 1981-2010.

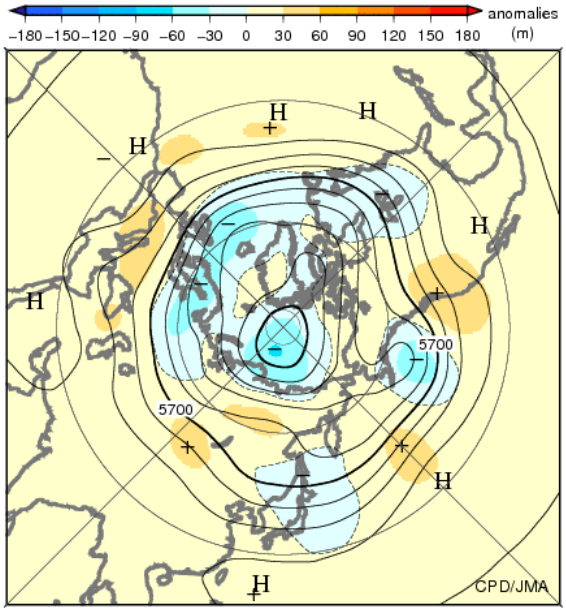

Fig. S6 Three-month mean 500-hPa height and anomaly in the Northern Hemisphere
(June 2017 - August 2017)

The contours show 500-hPa height at intervals of 60 m. The shading indicates its anomalies. The base period for the normal is 1981-2010.

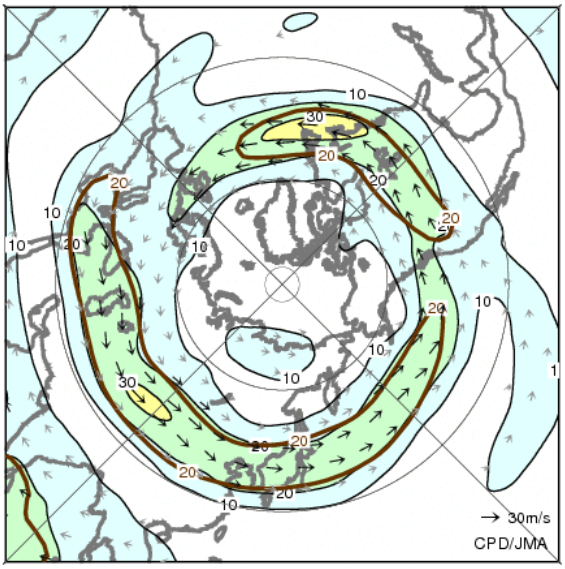

Fig. S7 Three-month mean 200-hPa wind speed and vectors in the Northern Hemisphere
(June 2017 - August 2017)

The black lines show wind speed at intervals of 10 m/s. The brown lines show its normal at intervals of 20 m/s. The base period for the normal is 1981-2010.

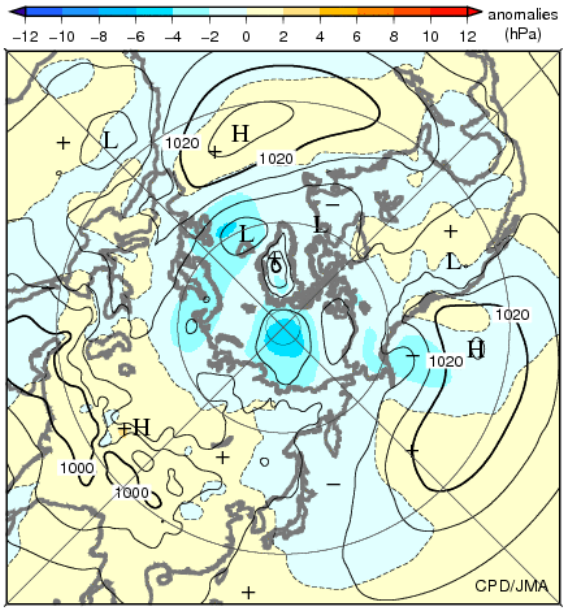

Fig. S8 Three-month mean sea level pressure and anomaly in the Northern Hemisphere
(June 2017 - August 2017)

The contours show sea level pressure at intervals of 4 hPa. The shading indicates its anomalies. The base period for the normal is 1981-2010.

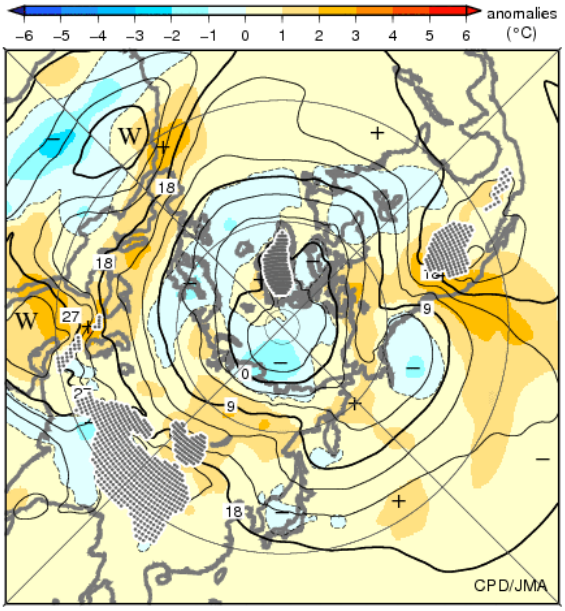

Fig. S9 Three-month mean 850-hPa temperature and anomaly in the Northern Hemisphere
(June 2017 - August 2017)

The contours show 850-hPa temperature at intervals of 3 degree C. The shading indicates its anomalies. The base period for the normal is 1981-2010.

Detailed information on the climate system is available on the Tokyo Climate Center's website.
http://ds.data.jma.go.jp/tcc/tcc/index.html
This report is prepared by the Tokyo Climate Center, Climate Prediction Division, Global Environment and Marine Department, Japan Meteorological Agency.