

1) Names of scientist(s) contributing outlook content

Masahiro Hori (Japanese Aerospace Exploration Agency (JAXA))

2) Estimate of sea ice extent for the month of September 2008 (the value for September 2007 was 4.3 million square kilometers)

5.4 million square kilometers

3) Principal method (e.g., numerical model, statistical model, comparison to 2007 weather and satellite data, etc.). Keep this short, as this information will go into a table for the final report

Comparison to 2007 weather and satellite data

4) A short (several sentences) summary of the primary physical reasoning behind the estimate of September sea ice extent (provided in #2). The organizers are primarily interested in how you may be using data from July.

We have been monitoring daily changes of the Arctic sea ice extent using AMSR-E data. The trend of sea ice extent in July 2008 is following those of 2005 and 2006 (i.e., second minimum extent). Two factors can be considered important for estimating the minimum extent to be observed in September 2008. One is the ice thickness preconditioned in winter to spring seasons. This year's sea ice thickness in spring can be estimated to be the thinnest among recent 6 years (<http://www.eorc.jaxa.jp/en/imgdata/topics/2008/tp080514.html>). Thus, sea ice physical condition is considered to become much more fragile in this melting season. On the other hand, as second factor, the summer weather condition so far observed this year is not necessarily favorable to sea ice melting. Our analysis of cloudiness anomalies during June and July derived from MODIS data indicates that it was mostly cloudy over north of the Eastern Siberia Sea where much sea ice remains in this July and mostly clear over north of Alaska and Canada near the Banks Island where large open water area appears. The cloudiness pattern is consistent with those of the sea level pressure derived from NCEP/NCAR reanalysis data. Thus, clear weather under high pressure pattern seems to promote melting of sea ice in the latter region. Depending on August weather conditions there is still a possibility of sudden decrease of sea ice extent as the case in 2007 taking into account the fragile physical condition of sea ice. However, weather conditions in most of the Arctic Ocean in June and July tended to be cloudy on an average as opposed to the abnormal clear weather conditions seen in 2007. As a result, this year's minimum extent is

expected to become among those of 2005 and 2006.

5) Any expanded information with figures that support #4

The daily information of the Arctic sea ice extent is available at the website “Arctic Sea-Ice Monitor by AMSR-E” on the International Arctic Research Center (IARC) web (Daily browse image: <http://www.ijis.iarc.uaf.edu/cgi-bin/seaice-monitor.cgi?lang=e>, Daily updated plot showing seasonal variation of sea ice extent: http://www.ijis.iarc.uaf.edu/en/home/seaice_extent.htm). These web pages are maintained by Japan Aerospace Exploration Agency (JAXA) through the cooperation between IARC and JAXA. Thanks to the cooperative relationship between NASA and JAXA, JAXA is applying the sea ice concentration algorithm developed by Dr. Comiso in NASA/GSFC to the analysis of sea ice extent from AMSR-E data.

Several figures are attached below supporting the summary explained above (#4) as follows.

Fig_1. Images showing sea ice concentration at the end of July in 2007 and 2008.

Fig_2. A plot showing seasonal variations of sea ice extent during the recent 7 years.

Fig_3. Images showing RGB color composite image of AMSR-E brightness temperatures at the 36GHz-V and 18GHz-V channels captured on April 20 during 2003 to 2008 which indicate rough estimates of the spatial distribution of the arctic sea ice thickness (thick multi-year ice is shown in dark blue, and thin young ice in light blue).

Fig_4. Images showing spatial distribution of cloudiness anomalies in the Arctic in summer (June-July) of 2007 and 2008. The anomaly is calculated from the 9-year average (2000-2008) of cloudiness analyzed using MODIS data.

Figures

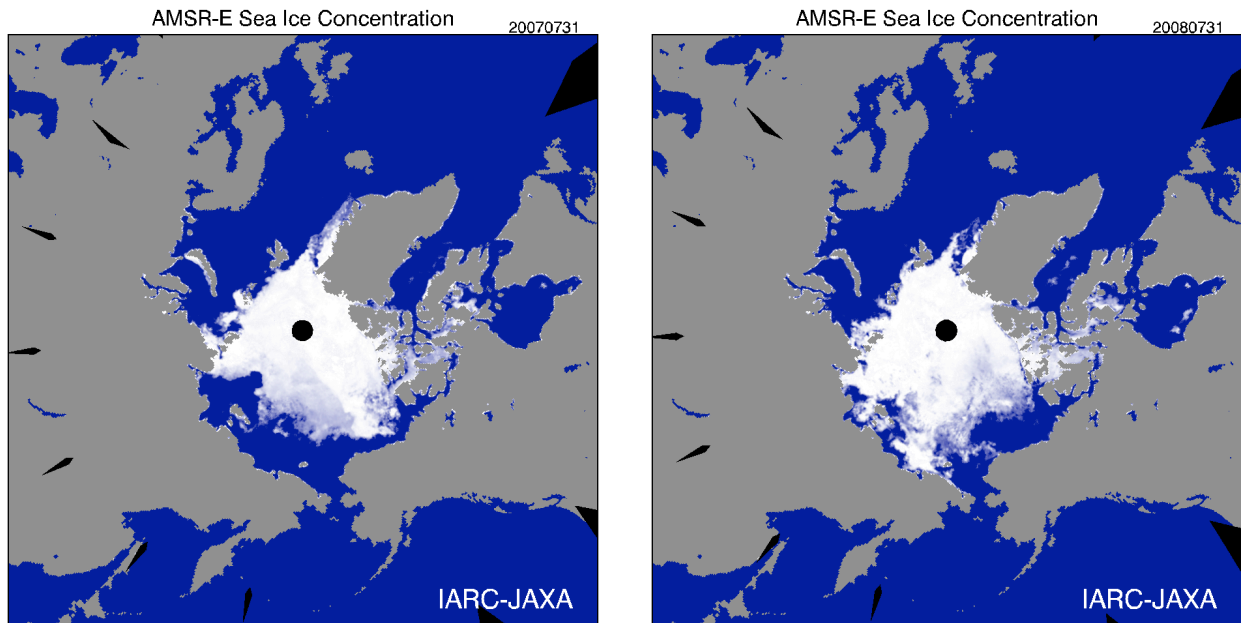
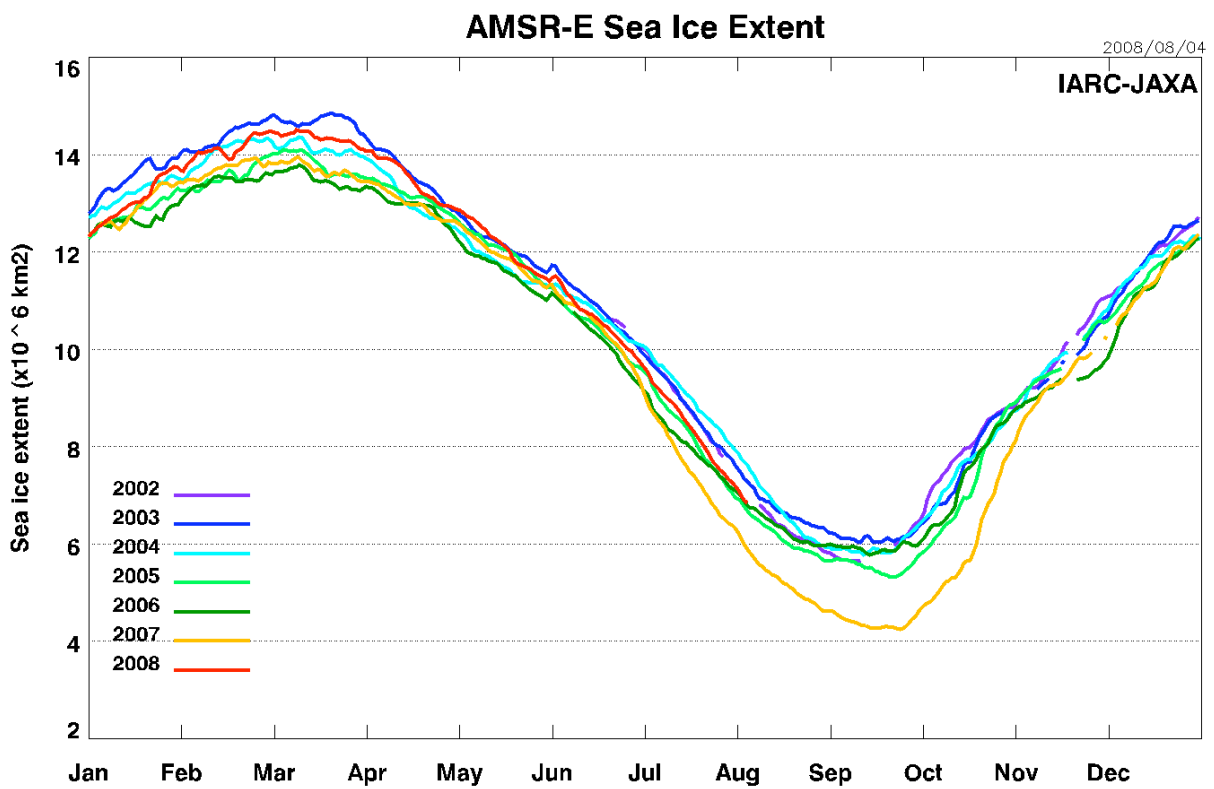


Fig.1 Images showing sea ice concentration at the end of July in 2007 (left) and 2008 (right).



Fig_2. Seasonal variations of the Arctic sea ice extent during recent 7 years.

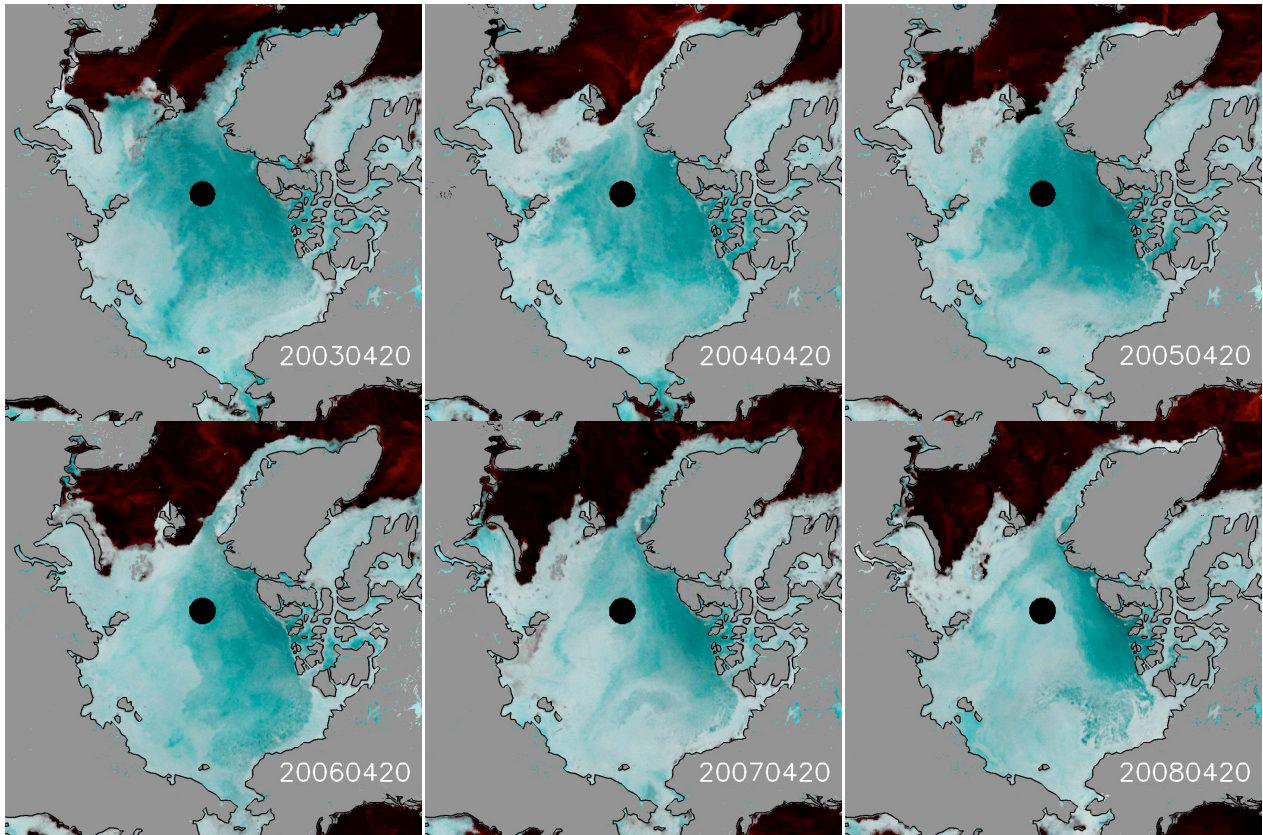


Fig.3 RGB color composite images of AMSR-E brightness temperatures at the 36GHz-V and 18GHz-V channels captured on April 20 during 2003 to 2008 which indicate rough estimates of the spatial distribution of the sea ice thickness (thick multi-year ice is shown in dark blue, and thin young ice in light blue).

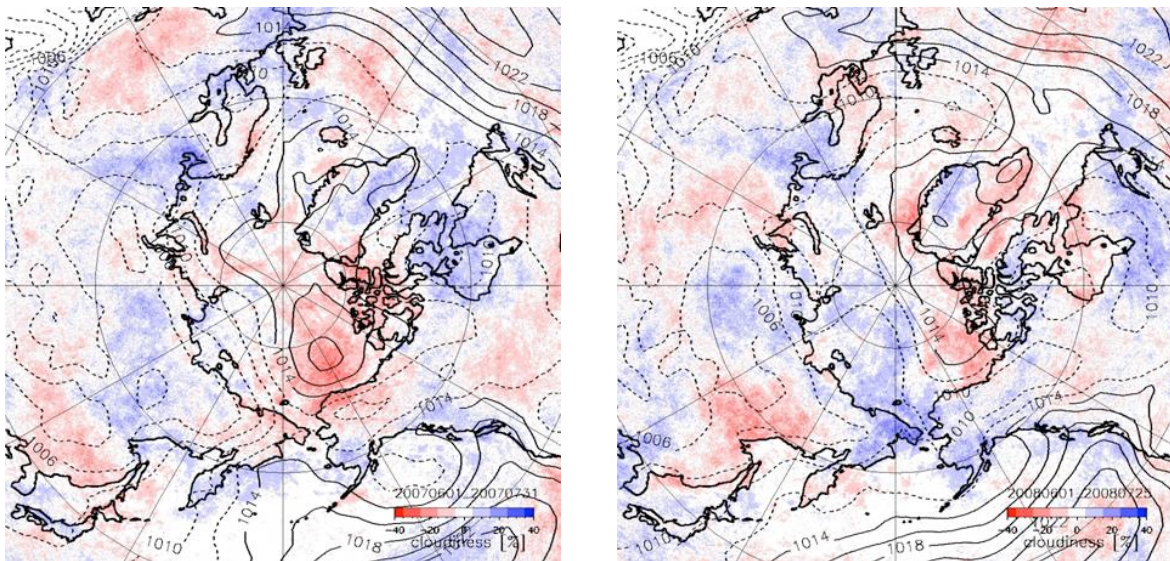


Fig.4 Spatial distribution of cloudiness anomalies in the Arctic in summer (June-July) of 2007 (left) and 2008 (right) calculated from the 9-year average (2000-2008) derived from MODIS data. Contour lines indicate sea level pressure from NCEP/NCAR reanalysis data.