

Arctic Observation from Space

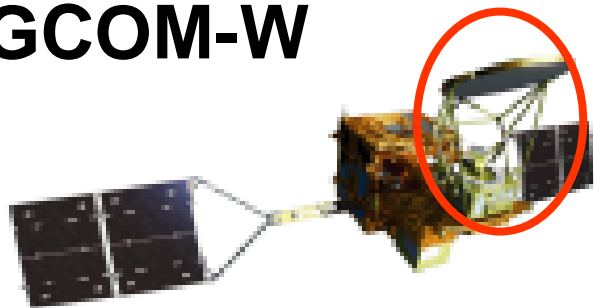
Feb. 4, 2016

Norimasa Ito

Satellite applications and Operations Center
JAXA

Sea Ice Concentration

GCOM-W



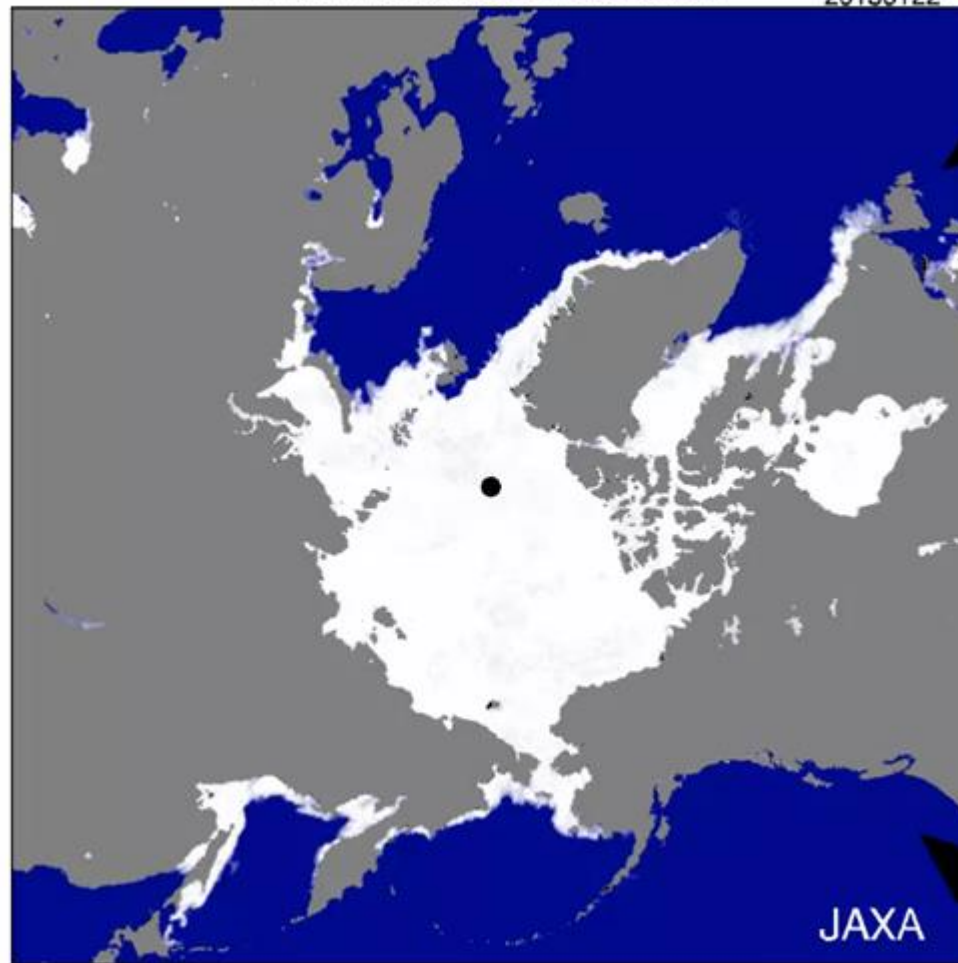
**AMSR2(Microwave Imager)
“ Cloud free”**

Jan.2015-Jan.2016
(Daily)

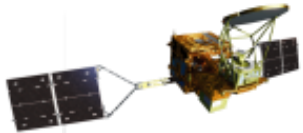
<https://ads.nipr.ac.jp/>

AMSR2 Sea Ice Concentration

20150122

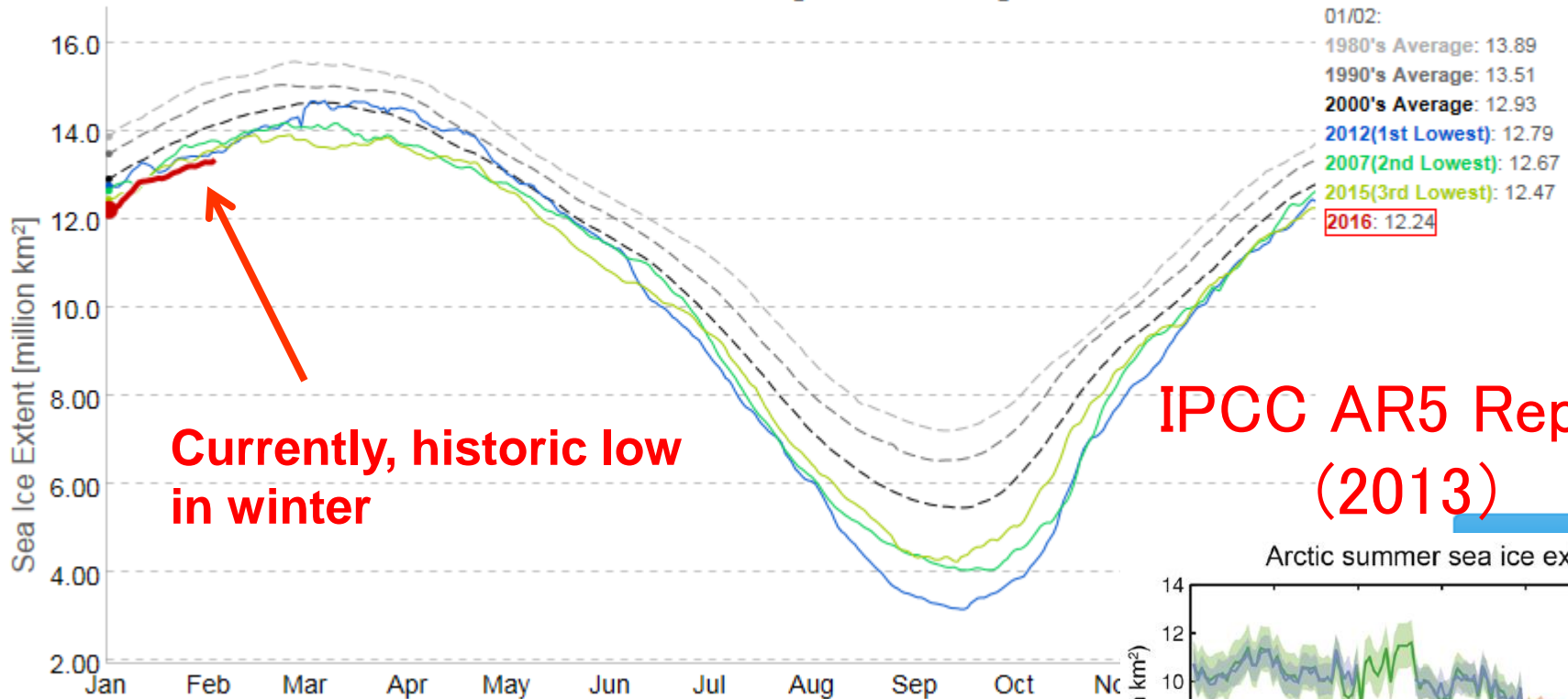


GCOM-W



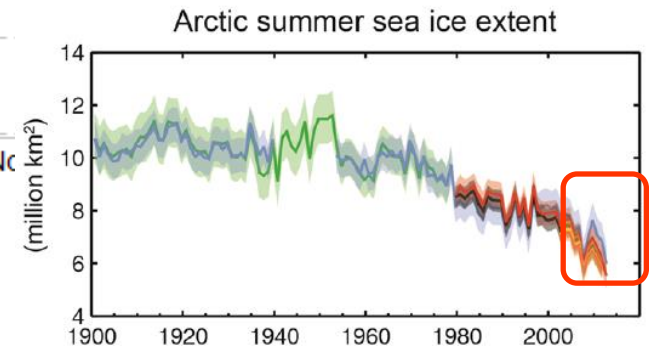
The latest value: 13,370,134 km² (February 3, 2016)

Arctic Sea Ice Extent [million km²]



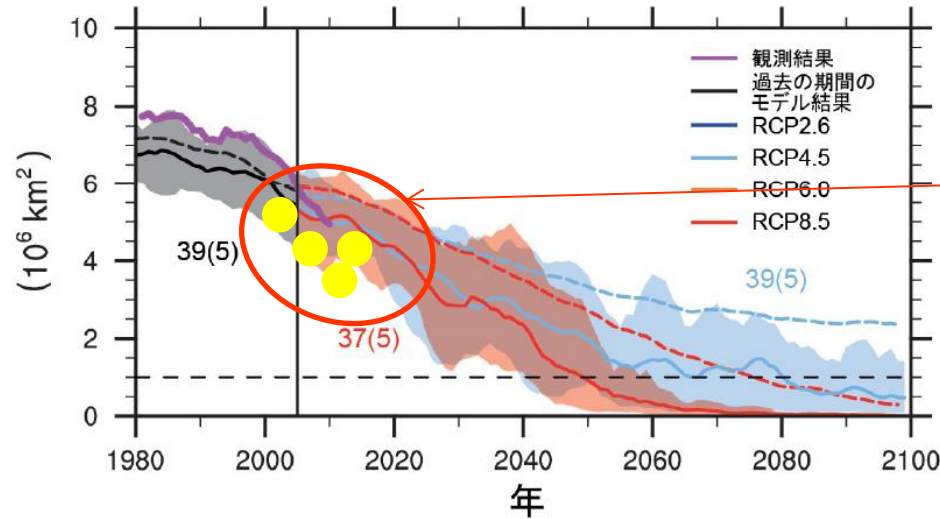
Currently, historic low in winter

IPCC AR5 Report (2013)

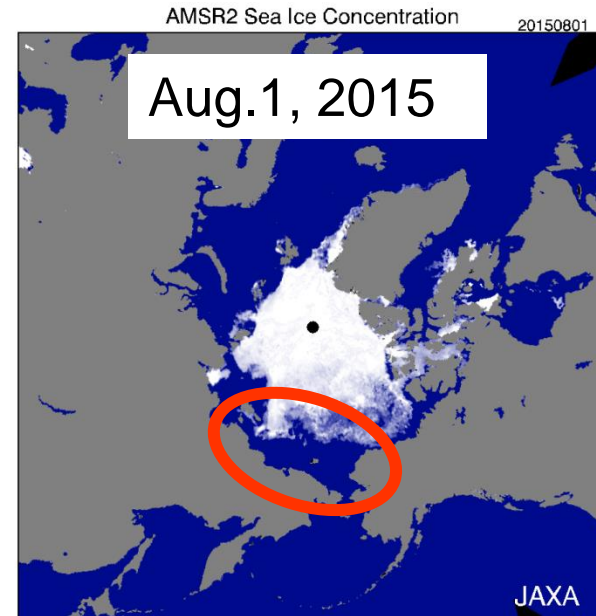
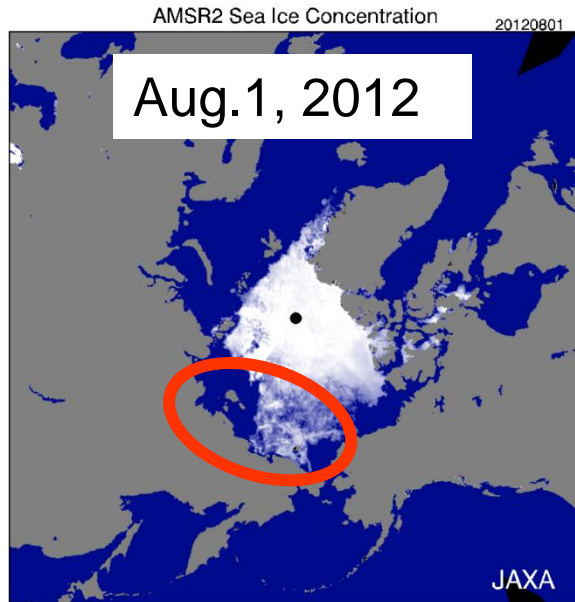


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IPCC AR5
(2013)
Arctic Sea Ice
Extent in Summer
(Prediction)

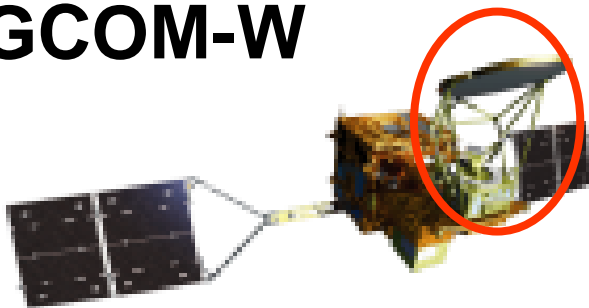


Observed in
 2002 Summer
 2007 Summer
 2012 Summer
 2015 Summer



Sea Ice Thickness (New research product)

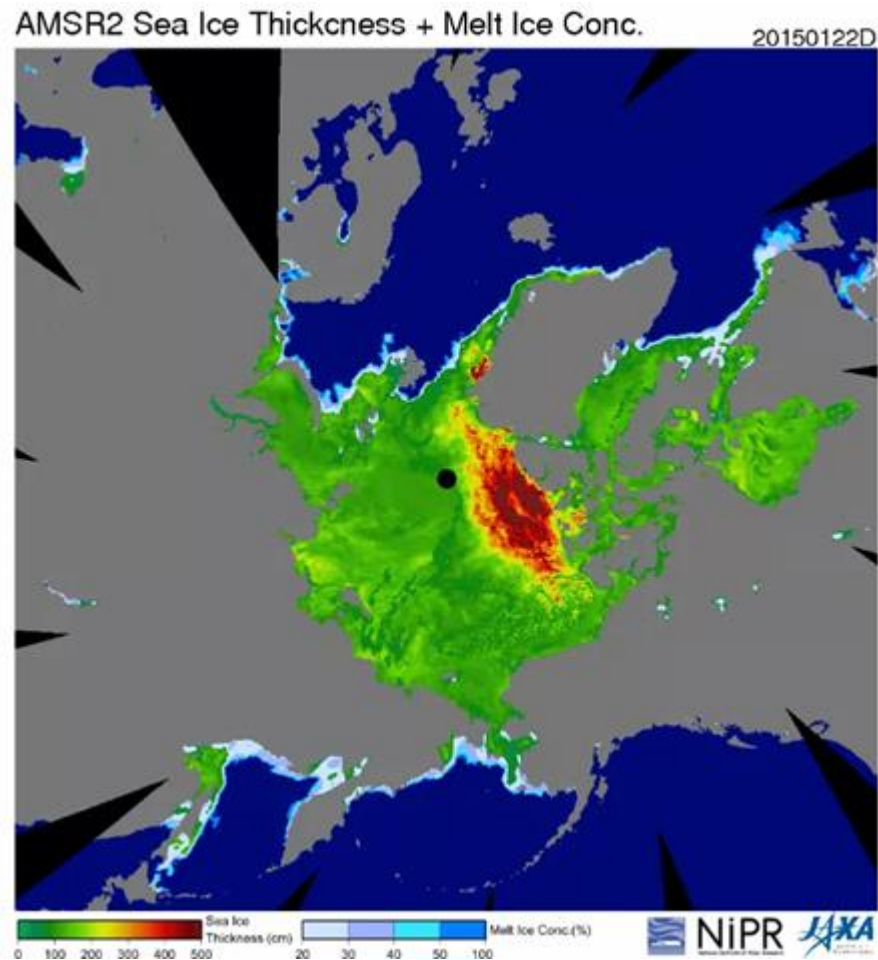
GCOM-W



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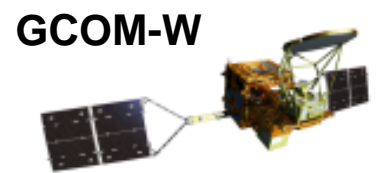
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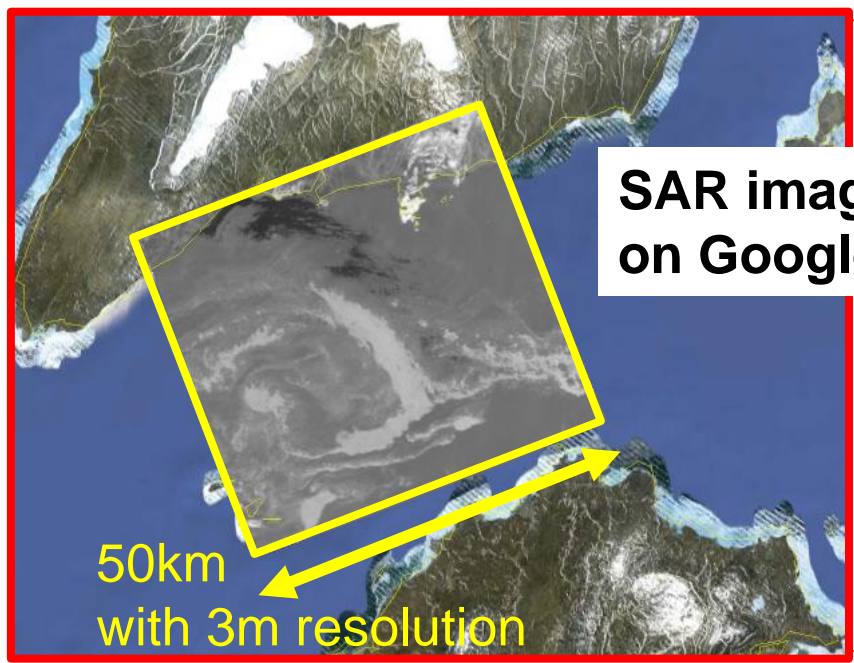
ALOS-2(Advanced Land Observing Satellite-2)



PALSAR-2(Synthetic Aperture Radar)



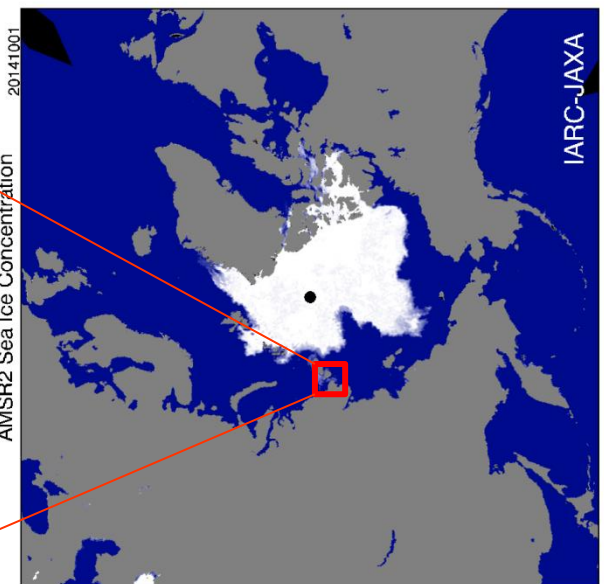
GCOM-W



SAR image on Google Earth

50km with 3m resolution

Oct.1, 2014



20141001
AMSR2 Sea Ice Concentration

IARC-JAXA

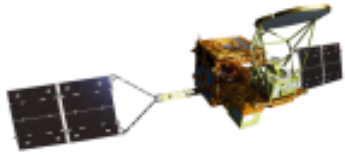
Oct.1, 2014



Tracks of NSR(Northern Sea Route) transit vessels

GCOM-W

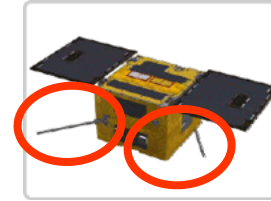
Sea ice concentration



ALOS-2



SDS-4

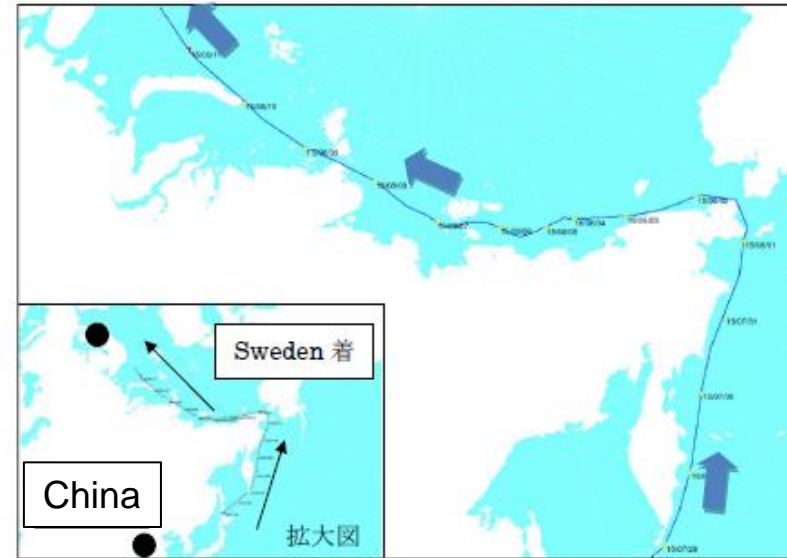


AIS

(Automatic Identification System) receivers



Sea ice concentration and AIS signals on Sep.14, 2015



A cargo ship track analyzed in 2015

National Institute for Land and Infrastructure Management (NILIM), The Government of JAPAN
 Hokkaido Regional Development Bureau, MLIT, The Government of JAPAN
 Aomori Prefectural Government
 JAXA