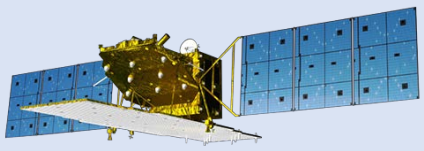
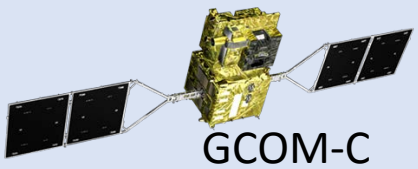
Key findings
from Decadal Japanese Satellite Observations
for Climate Change

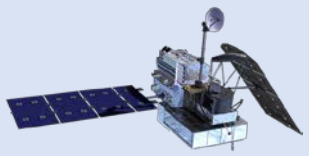
JAXA

ALL Free Download Data


GOSAT-2


ALOS-2


GCOM-C

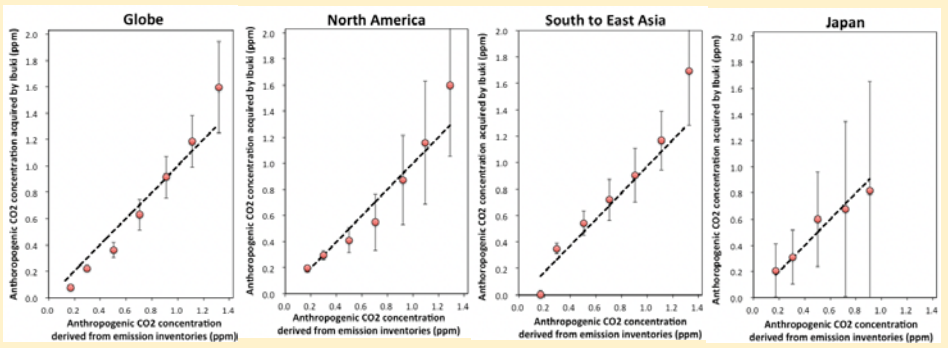

GPM/DPR

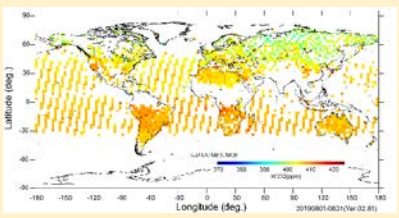

GCOM-W

Atmosphere

Changes for 10 years
GOSAT(2009-2019),GOSAT-2(2018-)

Relationship between anthropogenic CO2 concentrations derived from emission inventories and those acquired by GOSAT

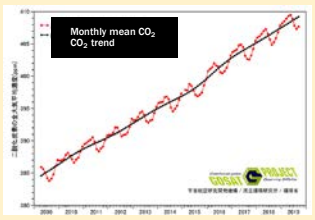


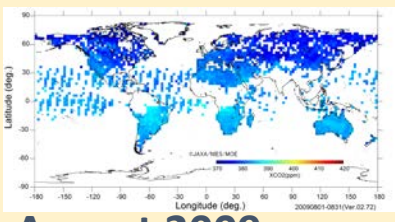


August 2019

CO2 ↑

Whole-atmosphere monthly mean CO2 concentration based on GOSAT data.





August 2009

Monthly mean CO2 Sep 2019 (Sep 2009)	407.7 ppm (384.1 ppm)
CO2 trend Sep 2019 (Sep 2009)	409.2 ppm (385.6ppm)
CO2 growth in the past 1 year Sep 2019 - Sep 2018	2.4 ppm/year

Estimation of the anthropogenic CO_2 concentrations in Japan
- GOSAT data
- data on fossil fuel emissions (inventory)

Satellite observations from space can become useful to monitor and verify CO_2 emission rates that were aggregated and published by all nations of the world based on the framework of "The Paris Agreement".

Land

Forest ↓

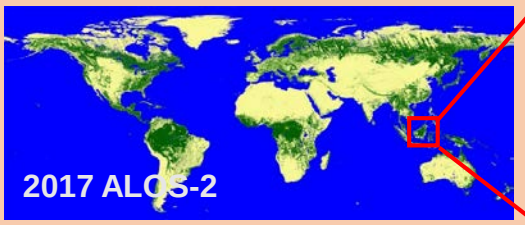
146,132 loggings were detected between Nov 2016 and Aug 2019

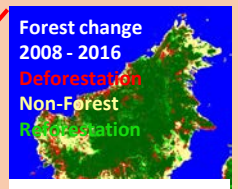
6000 km² estimated lost between 1996 and 2016

Mangrove ↓

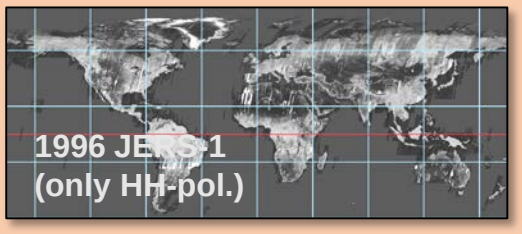
Changes over 20 years
JERS-1 (1996) ~ ALOS (2007-2010) ~ ALOS-2 (2014-2019)

Global 25m Forest/Non-Forest Map





Borneo Island from 2008 to 2016



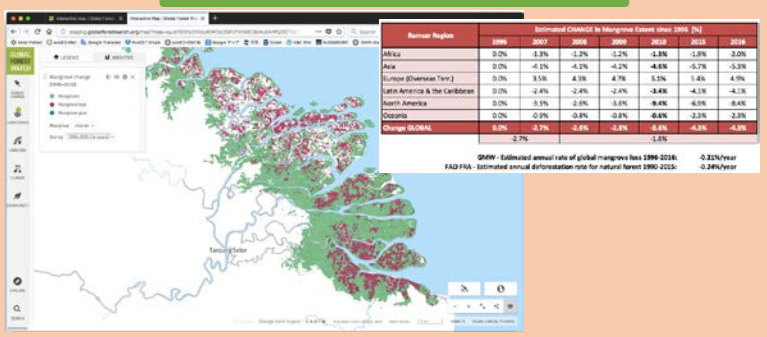
JJ-FAST
JICA-JAXA Forest Early Warning System in the Tropics

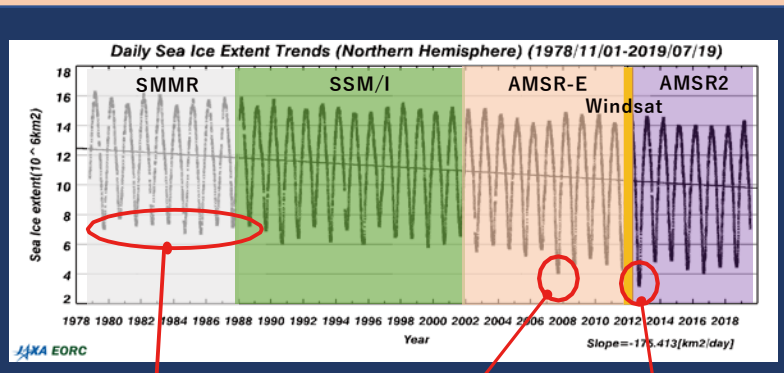
www.eorc.jaxa.jp/jjfast/

- Provide forest change images tropical forest (50m Resolution, every 1.5 months, freely)
- Monitoring Tropical forests in **77** countries

The Global Mangrove Watch
A Project for Annual Mapping of the World's Mangroves

www.globalforestwatch.org





AMSR2 captured the smallest sea ice extent in the record in 2012, and AMSR-E captured the 2nd smallest in 2007.

Ocean

Sea Ice ↓

The 2nd smallest Arctic sea ice extent, 396 Mkm2 was observed in Sep 2019.

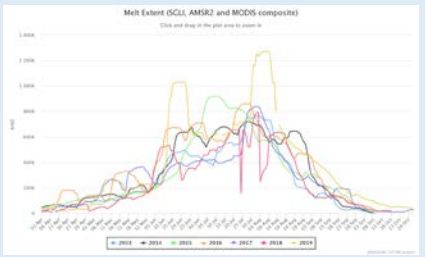
GCOM-W/AMSR2 observes sea ice concentration everyday. JAXA develops and produces **daily sea ice concentration dataset** by SMMR, SSM/I, AMSR-E, Windsat and AMSR2.

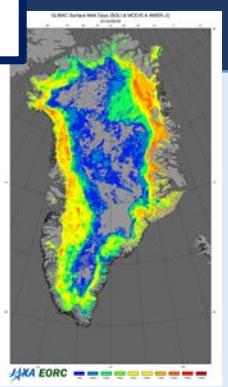
https://kuroshio.eorc.jaxa.jp/JASMES/climate/

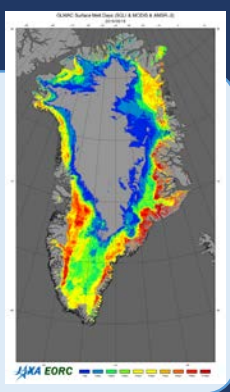
Trends from 1978 to 2019
SMMR ~SSM/I ~AMSR-E~AMSR2

Greenland in 2019

Ice melts extent in Greenland observed by SGLI, AMSR2 and MODIS. The colors of the image show the number of days that have been melted in the last 10 days. **Massive ice melting was found in June and August in 2019.**







Japan Aerospace Exploration Agency