

KOREA Satellite Remote Sensing Activities on Arctic: Joint research of KOPRI - KARI

Hyun-cheol Kim, kimhc@kopri.re.kr

Director

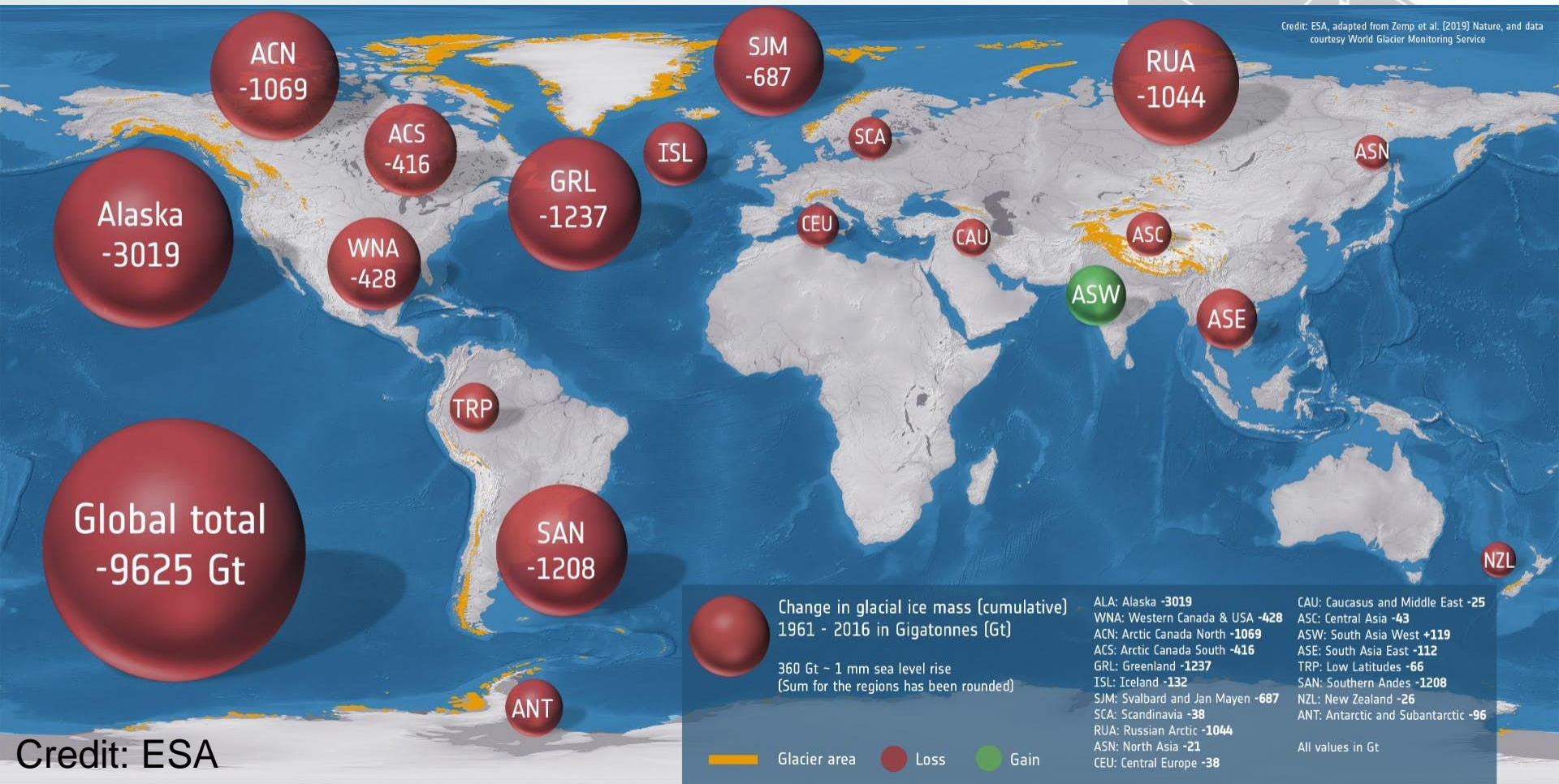
Satellite Remote Sensing & Cryosphere Information Center

Unit of Arctic Sea Ice Prediction, KOPRI

Glacier loss



Around Arctic: over 84%



Credit: ESA



KOPRI (Korea Polar Research Institute)

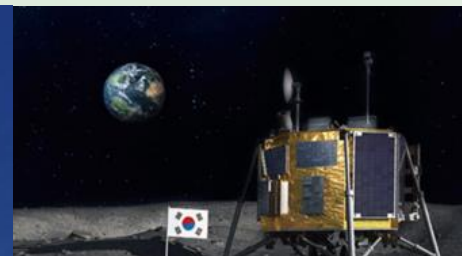
www.kopri.re.kr



Ministry of Oceans
and Fisheries

KARI (Korea Aerospace Research Institute)

www.kopri.re.kr



Ministry of Science and ICT

KOPRI

Korea Polar Research Institute

Vision

Global Leading Polar Research Organization

Goals

1. Enhance polar climate change research in response to the new climate cycles
2. Create inherent polar values for the next generation's national competitiveness
3. Expand polar research through international partnership and industry-academic-government cooperation system

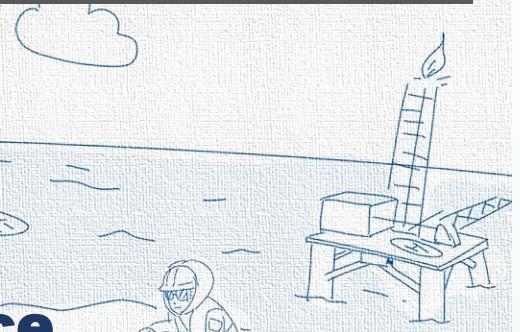
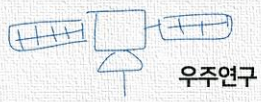
Researches



Global Issue

Pioneer

Application



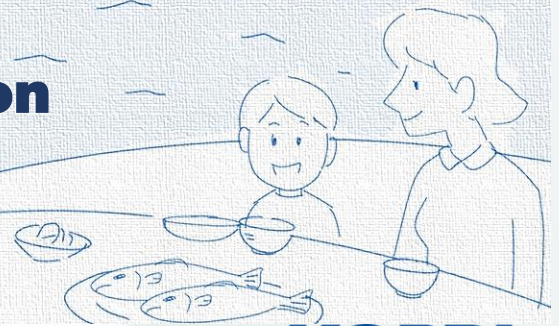
Polar Climate Sciences
Polar Earth-System Science
Polar Life Sciences
Polar Ocean Sciences
Polar Paleoenvironment



Antarctic K-route expedition
Ice Sheet and Sea level Changes



Polar Genomics
Arctic Sea-Ice Prediction



KOPRI RS Program



FOCI



KOMPSAT series



International network



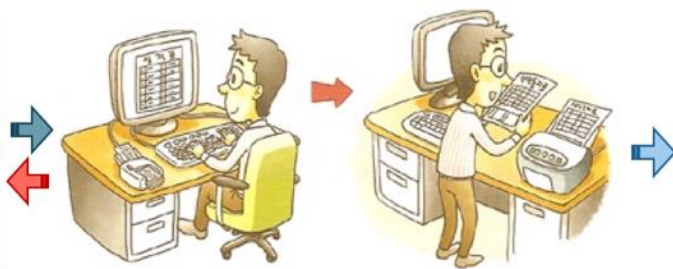
Earth Observing Satellite

Data Order

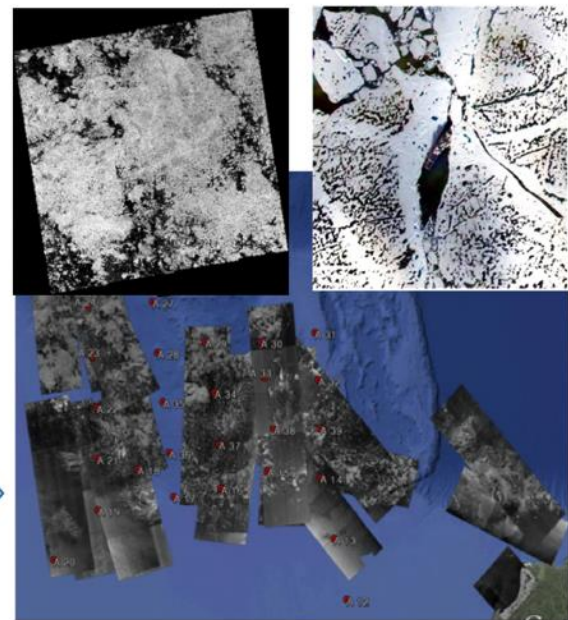
Data Archive



Archive / Manage System
STAR - System



Processing and Analysis



Sea Ice related Products



Collaboration



Satellite Remote Sensing Team for the Arctic & Antarctic Research

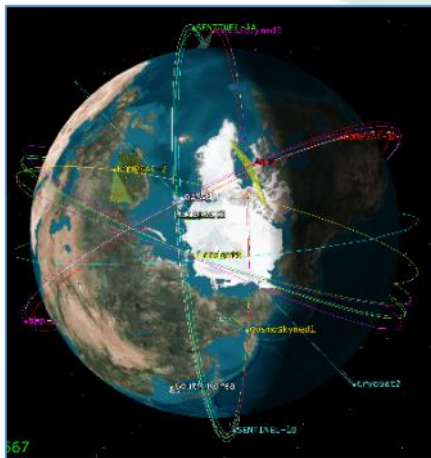


Satellite Remote sensing & Cryosphere Information Center

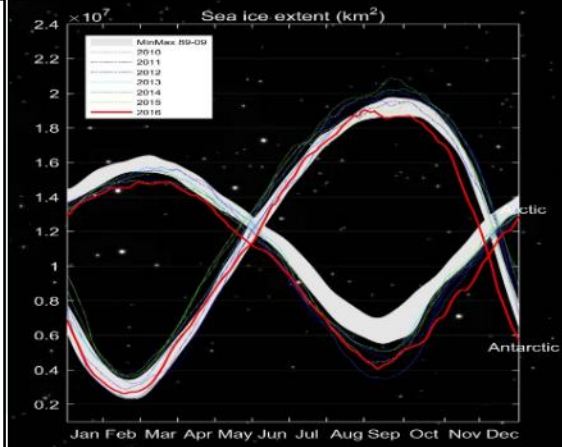
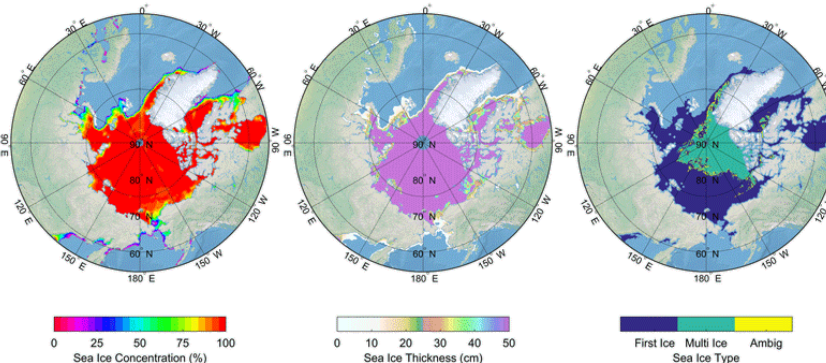


위성탐사·빙권정보센터

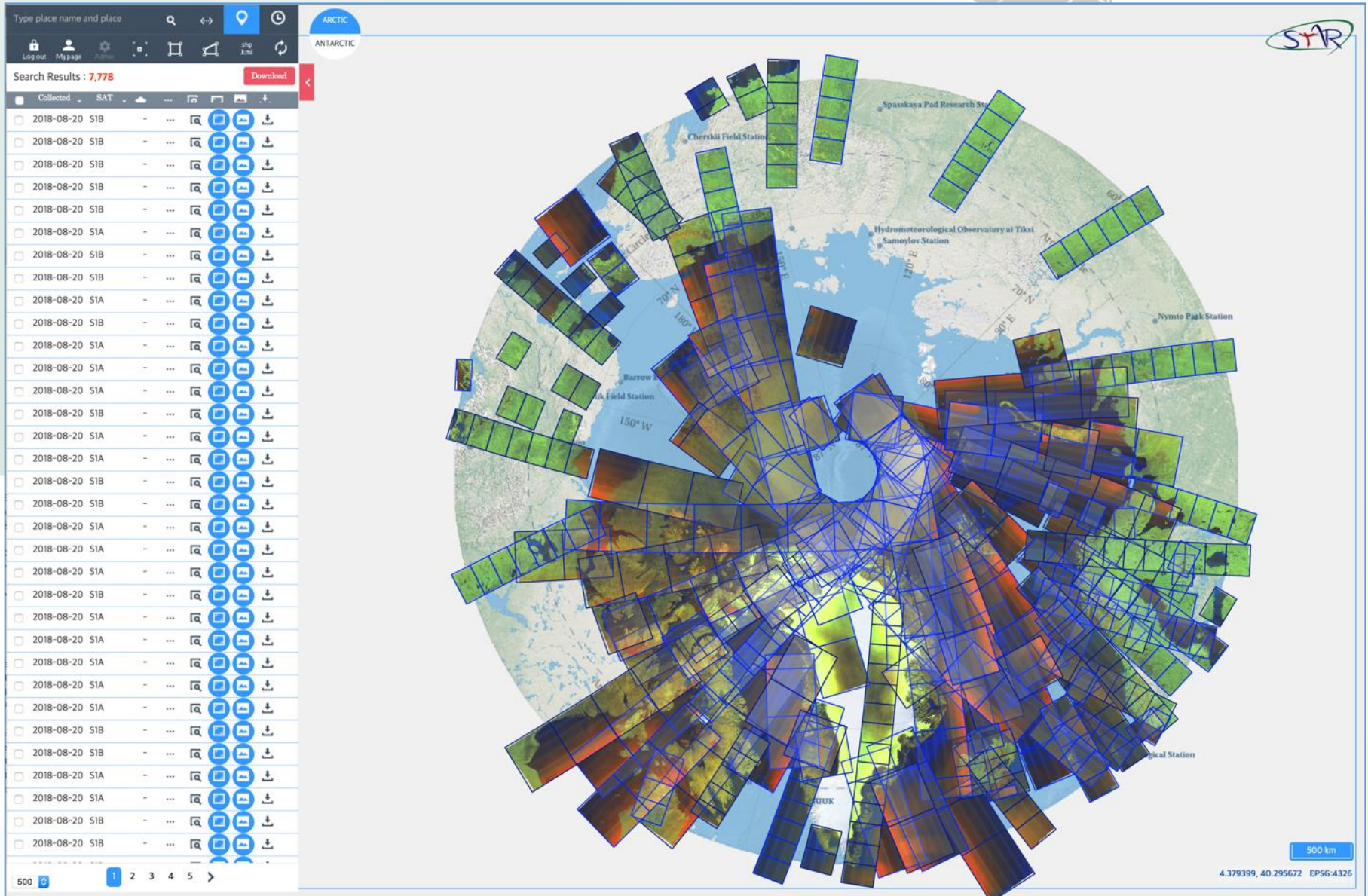
Satellite Remote Sensing & Cryosphere Information Center



Sea Ice Information from Microwave Data 2018-01-01



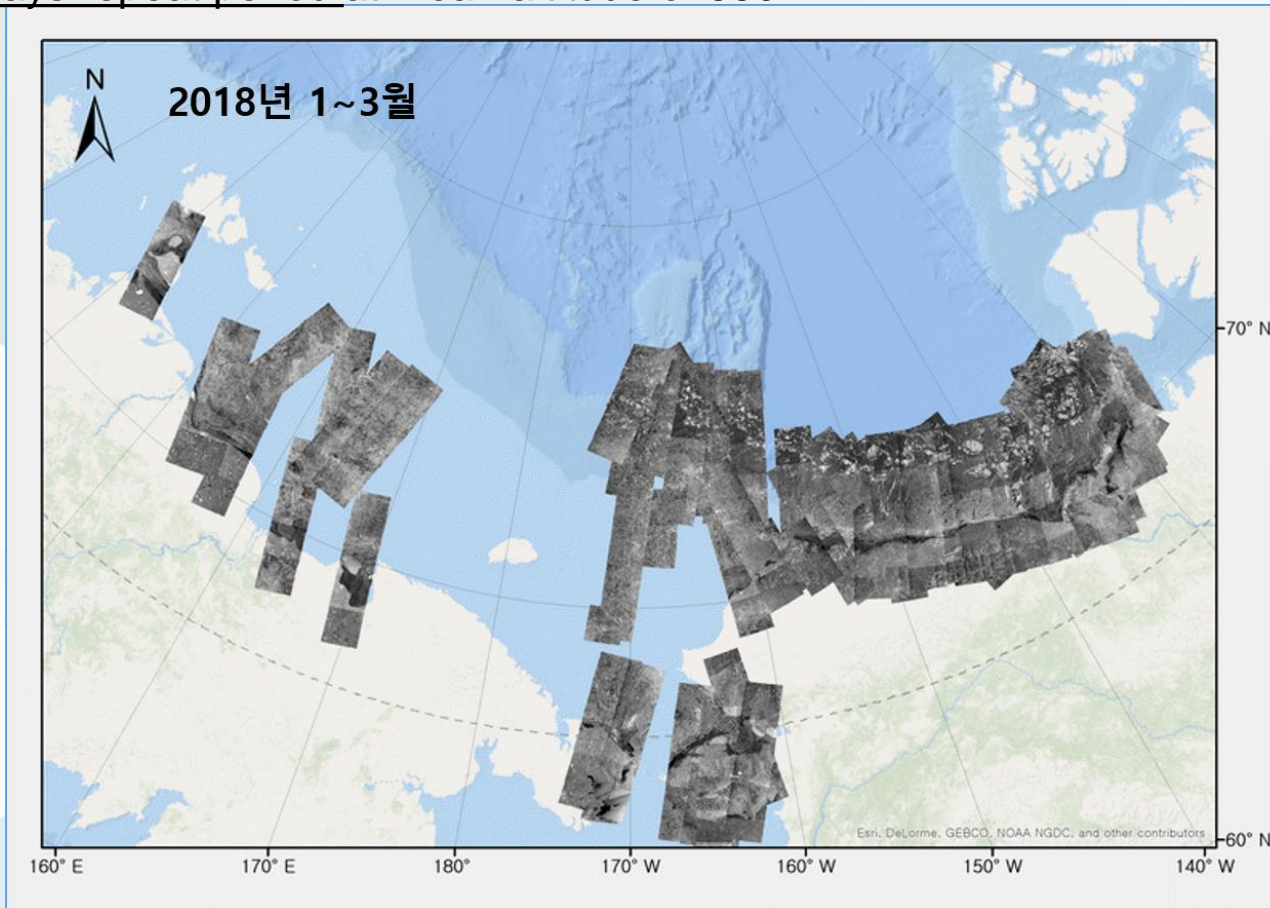
Star System: web-based system



KOMPSAT 5 Archive



- Launch - August 22, 2013
- SAR payload name: COSI (Corea SAR Instrument)
 - X-band (9.6 GHz)
 - Spatial R. : HR(2.7), EHR(2), UHR(0.85) / 5km x 5km
ST(3), EST(2.5), / 30km x 30km
WS(20), EWS(6.25) / 100km x 100km
 - 28 days repeat period at mean altitude of 550 km



High resolution SIC /K-5



Remote Sensing of Environment 209 (2018) 343–362



ELSEVIER

Contents lists available at ScienceDirect

Remote Sensing of Environment

journal homepage: www.elsevier.com/locate/rse



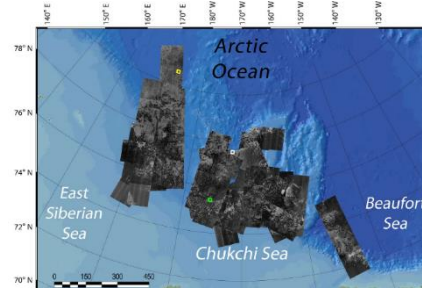
(c)

Sea ice algorithms for the sea ice concentration estimates evaluated in this study.

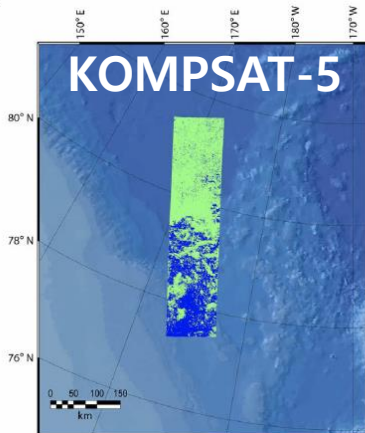
Name	Acronym	Channels used	Grid size of SIC products (km)
NASA Team	NT	19 H, 19 V, 37 V	25
Bootstrap	BT	19 V, 37 H, 37 V	12.5
OSISAF	OSISAF	19 V, 37 H, 37 V	10
ARTIST Sea Ice	ASI	89 H, 89 V	3.125

Evaluation of summer passive microwave sea ice concentrations in the Chukchi Sea based on KOMPSAT-5 SAR and numerical weather prediction data

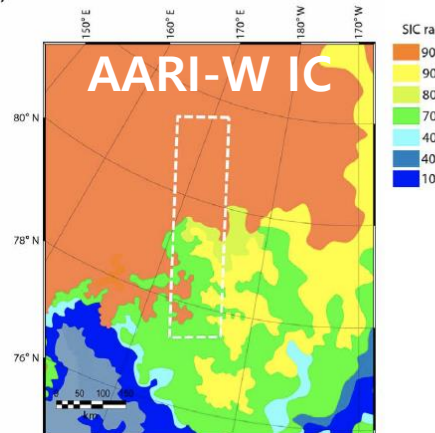
Hyangsun Han, Hyun-cheol Kim*



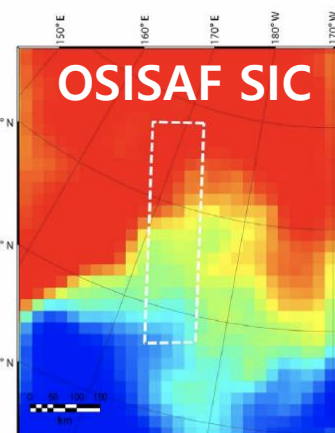
(a)



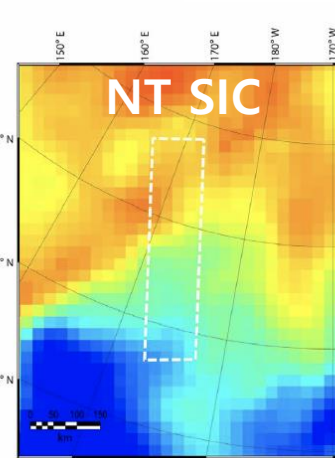
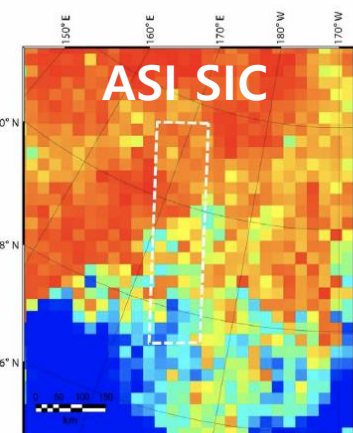
(b)



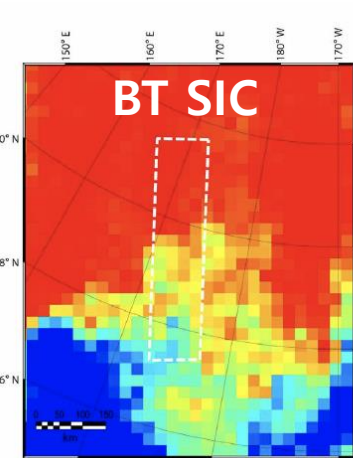
(e)



(f)



(d)

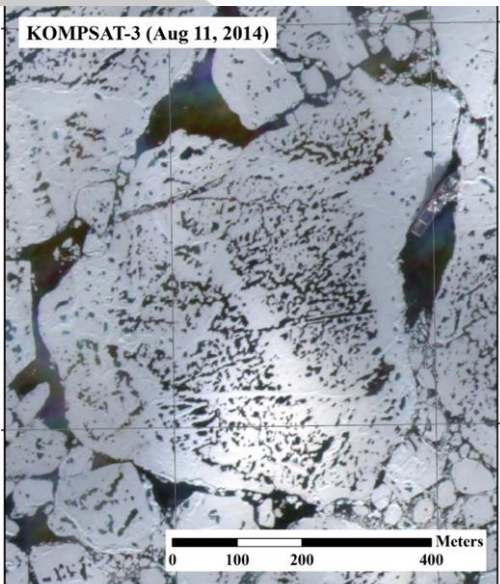
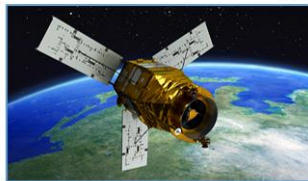


KOMPSAT-2,3



- High resolution Imagery

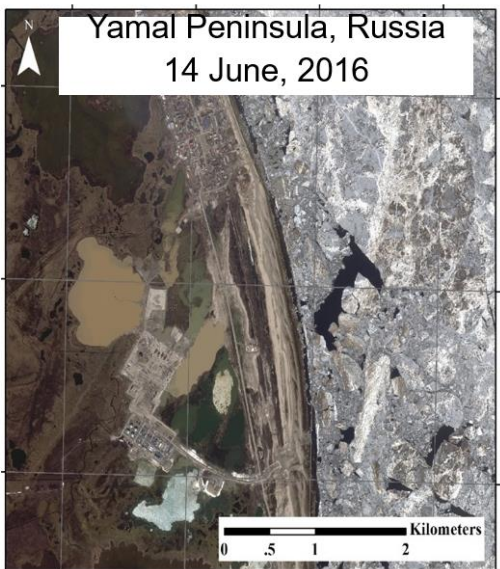
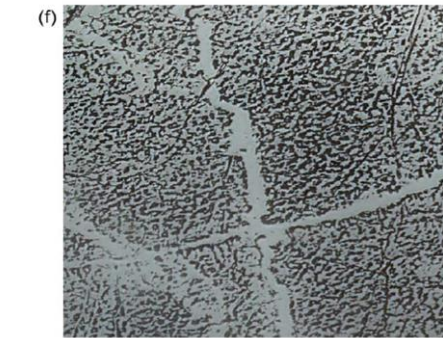
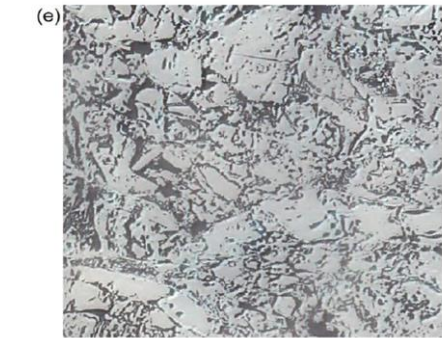
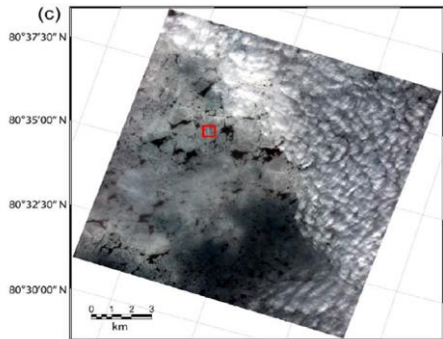
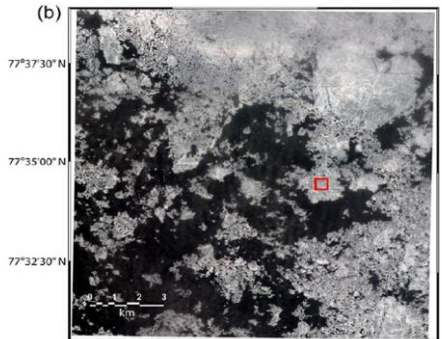
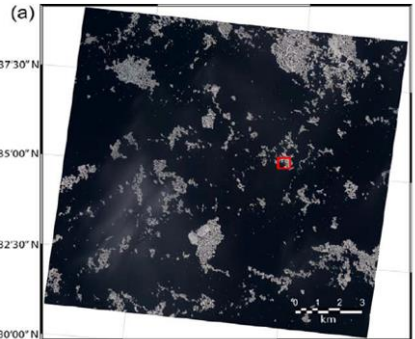
	KOMPSAT 2	KOMPSAT 3	KOMPSAT 3A
Launch	July 28, 2006	May 18, 2012	March 25, 2015
Resolution			
- Panchromatic	1.0 m	0.7m	0.5 m
- Multispectral	4.0 m	2.8 m	2.2 m
- IR	-	-	5.5 m



Open Drift Ice Zone(0-15)

Marginal Ice Zone(15-80)

Pack Ice Zone(80-100)



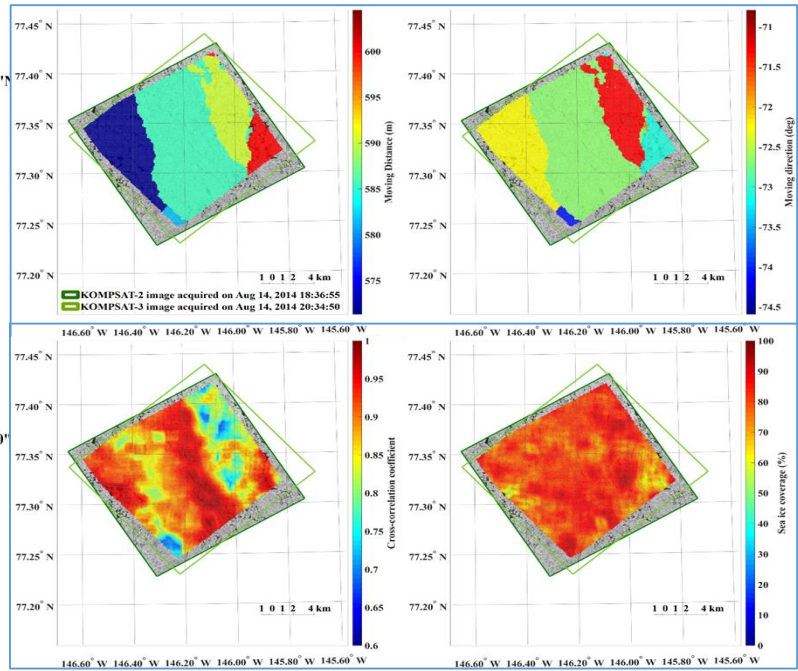
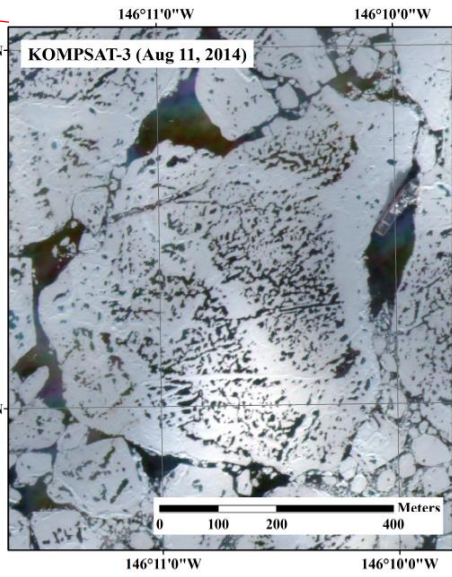
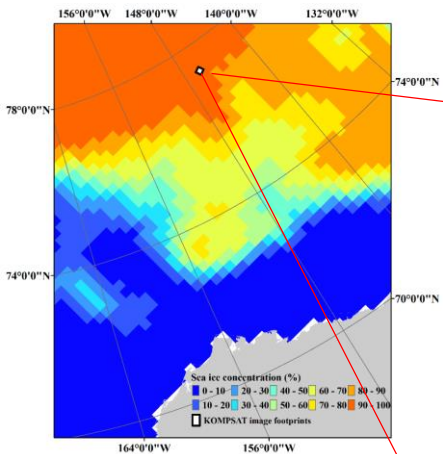
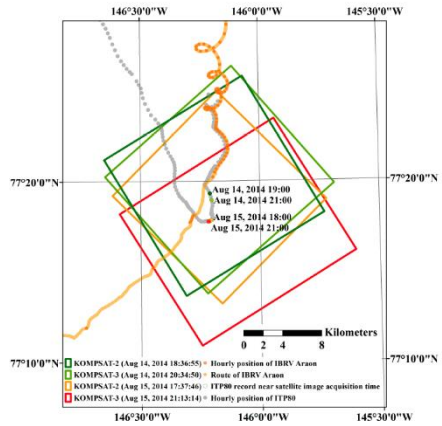
Sea-Ice motion & Deformation



Technical Note
A Feasibility Study of Sea Ice Motion and Deformation Measurements Using Multi-Sensor High-Resolution Optical Satellite Images

Remote Sens. 2017, 9, 930; doi:10.3390/rs9090930 www.mdpi.com/journal/remotesensing

Chang-Uk Hyun and Hyun-cheol Kim *



VHR - Sea ice observing



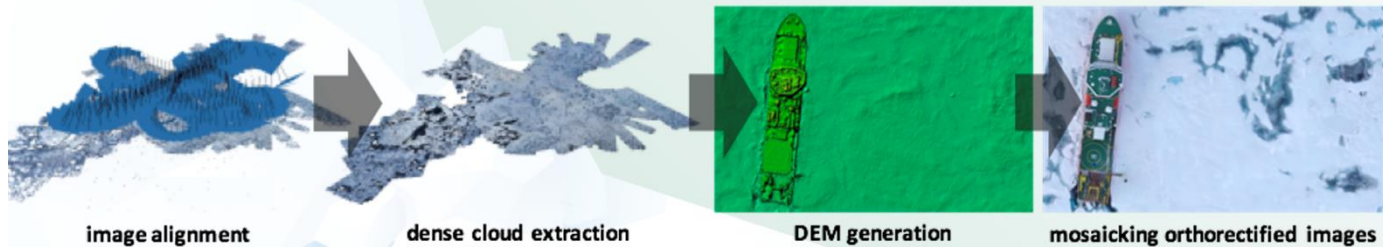
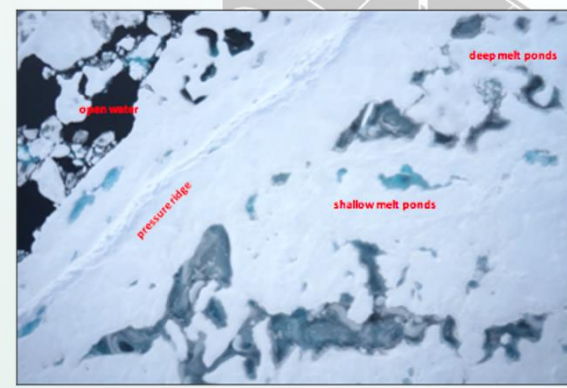
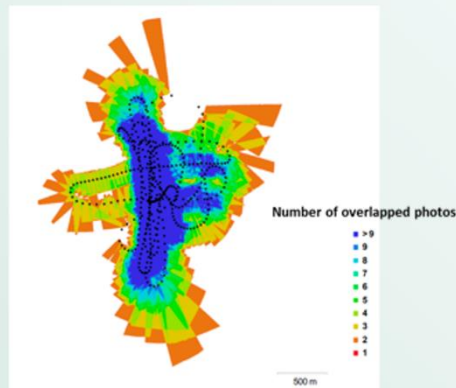
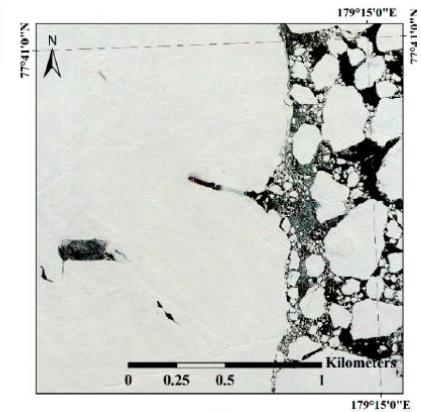
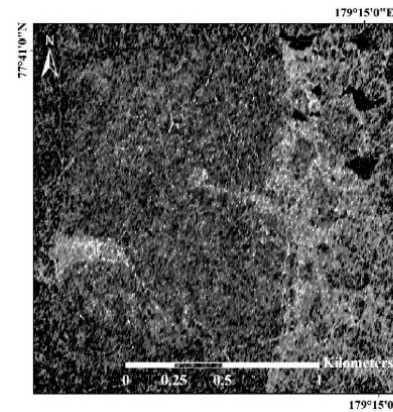
Article

Mosaicking Opportunistically Acquired Very High-Resolution Helicopter-Borne Images over Drifting Sea Ice Using COTS Sensors

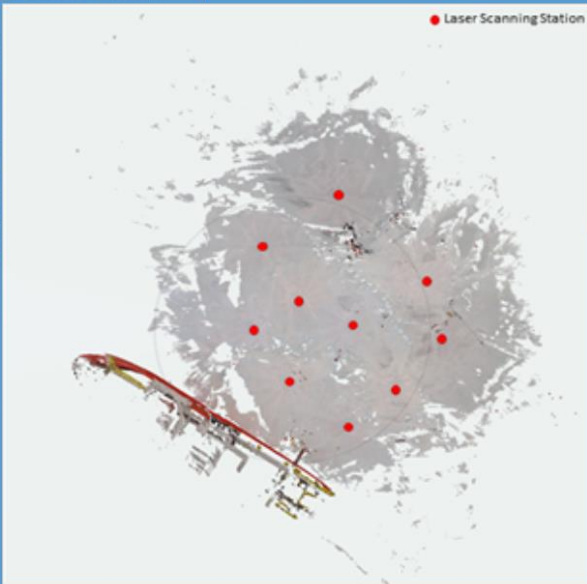
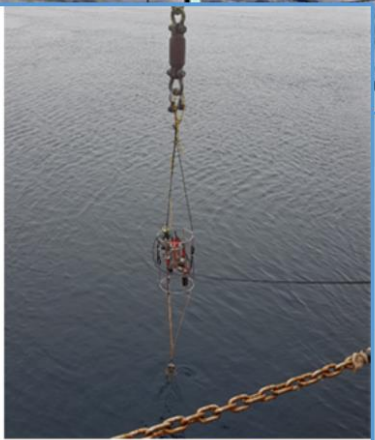
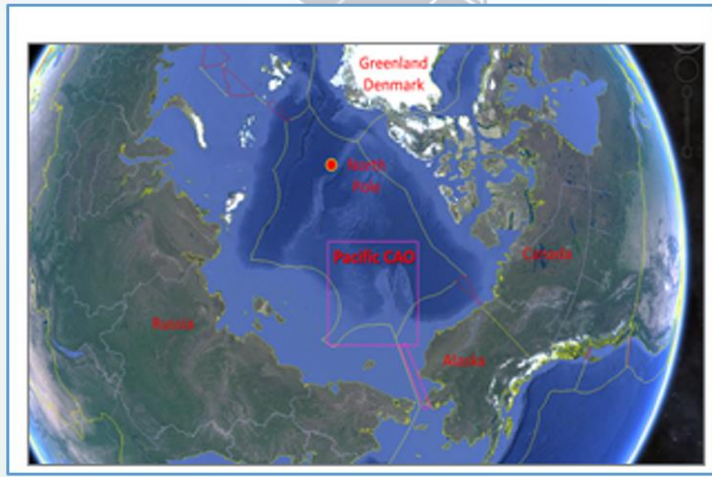
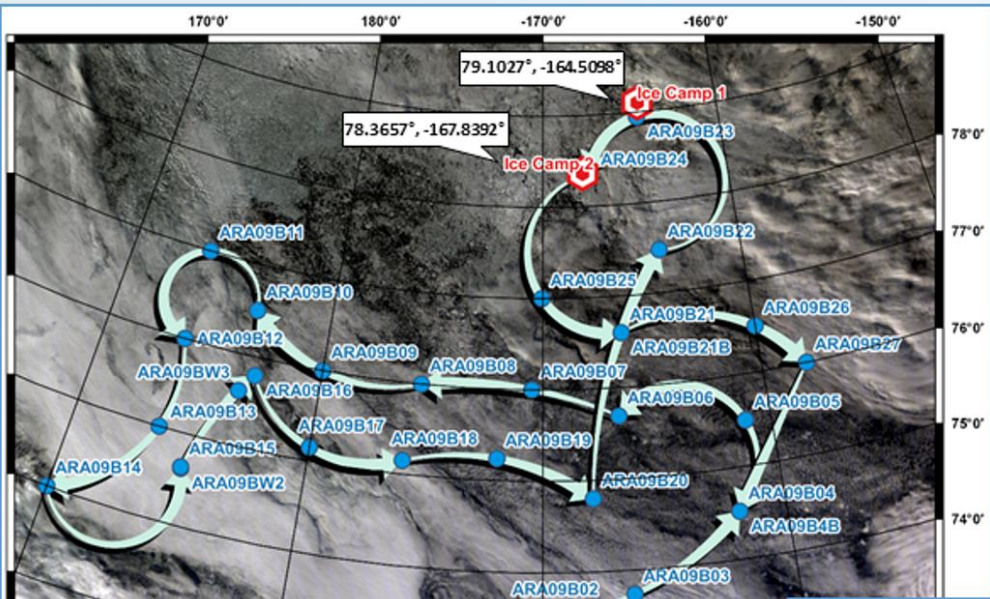
Chang-Uk Hyun , Joo-Hong Kim, Hyangsun Han and Hyun-cheol Kim *

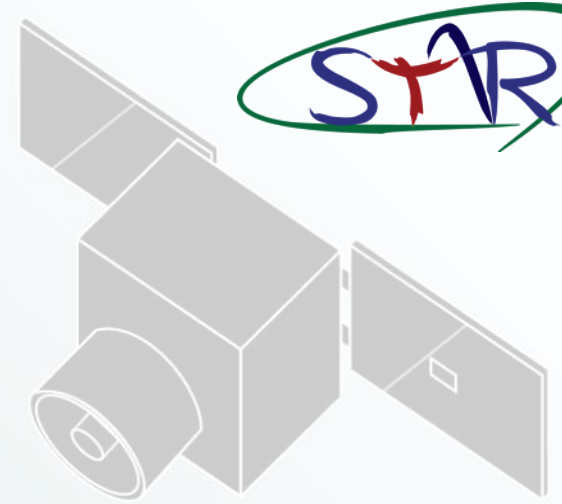
Sensors 2019, 19, 1251; doi:10.3390/s19051251

www.mdpi.com/journal/sensors



Arctic Cruise Survey & Ice Camp





Thank you

Satellite remote sensing **T**eam
for **A**rctic & Antarctic **R**esearch

**Satellite Remote Sensing
& Cryosphere Information Center**