Introduction of WNISAT-1R
What nano-sat can do for WNI

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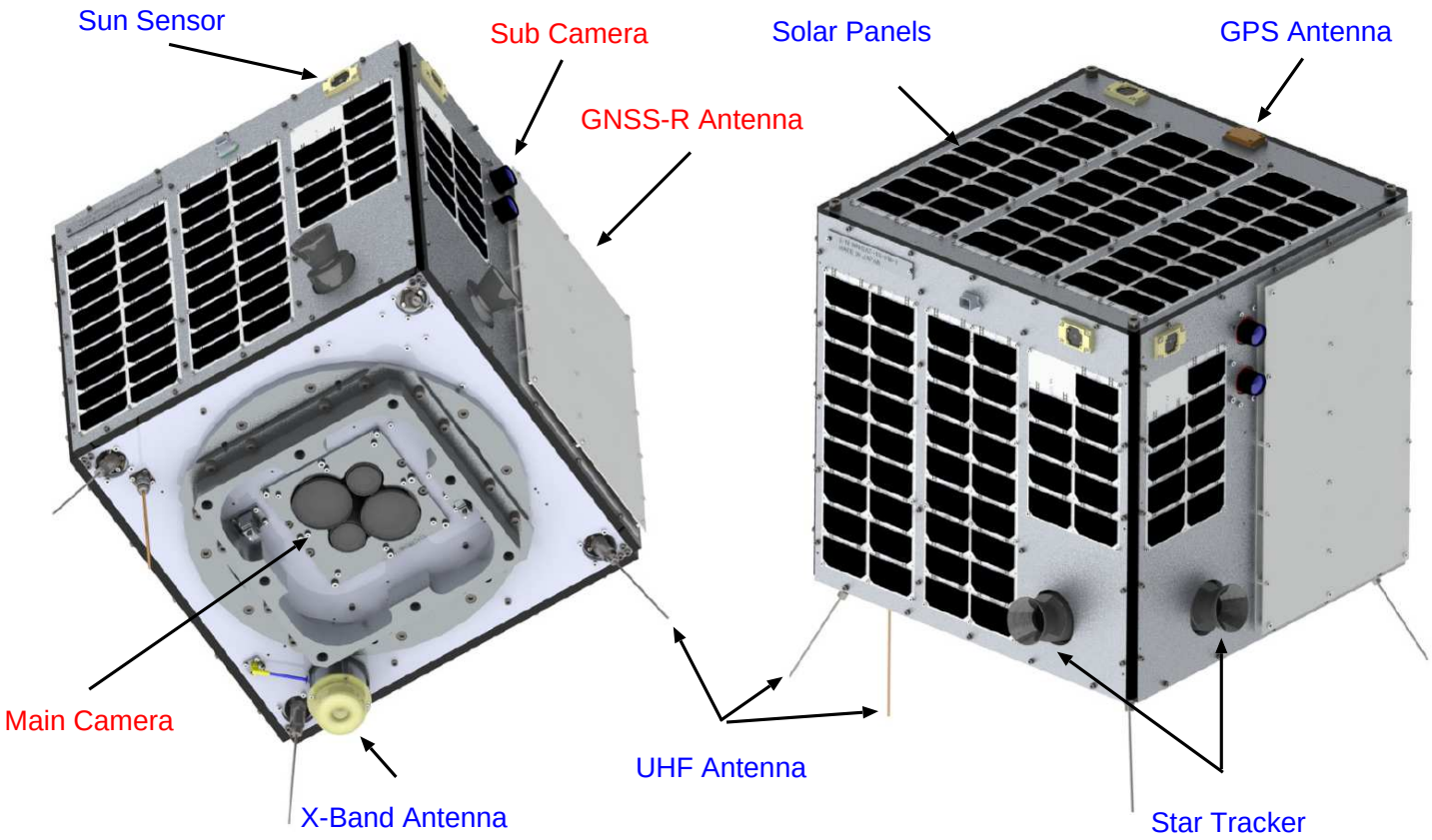
Mission of WNISAT-1R

- Sea ice monitoring
- Typhoon, volcanic plume and other phenomena monitoring,
- Additional experiments : GNSS-R, Optical communication

WNISAT-1R



Tracking and Control Station : Weathernews (UHF) / Tokyo University(UHF)

Downlink : Toukai University Kumamoto (X-Band)

Specification of WNISAT-1R

Dimensions	524 x 524 x 507mm
Weight	43kg
Mission Equipments	6 Imagers - 3 Visible (R, G, PAN) - 1 NIR - 2 Spares GNSS-R Experiment
GDS	400m(NIR, R)、200m(G, PAN)
Spectral Bands	PAN(450-650nm), G(535-607nm) R(620-680nm), NIR(695-1005nm)
Attitude Control	3-axis stabilized Sun Oriented, Earth Oriented, Track Point
Launcher	Soyuz 2
Launch Pad	Baikonur Cosmodrome
Orbit	Sun Synchronous Orbit (LTAN 11:30), Height 600km

Launch

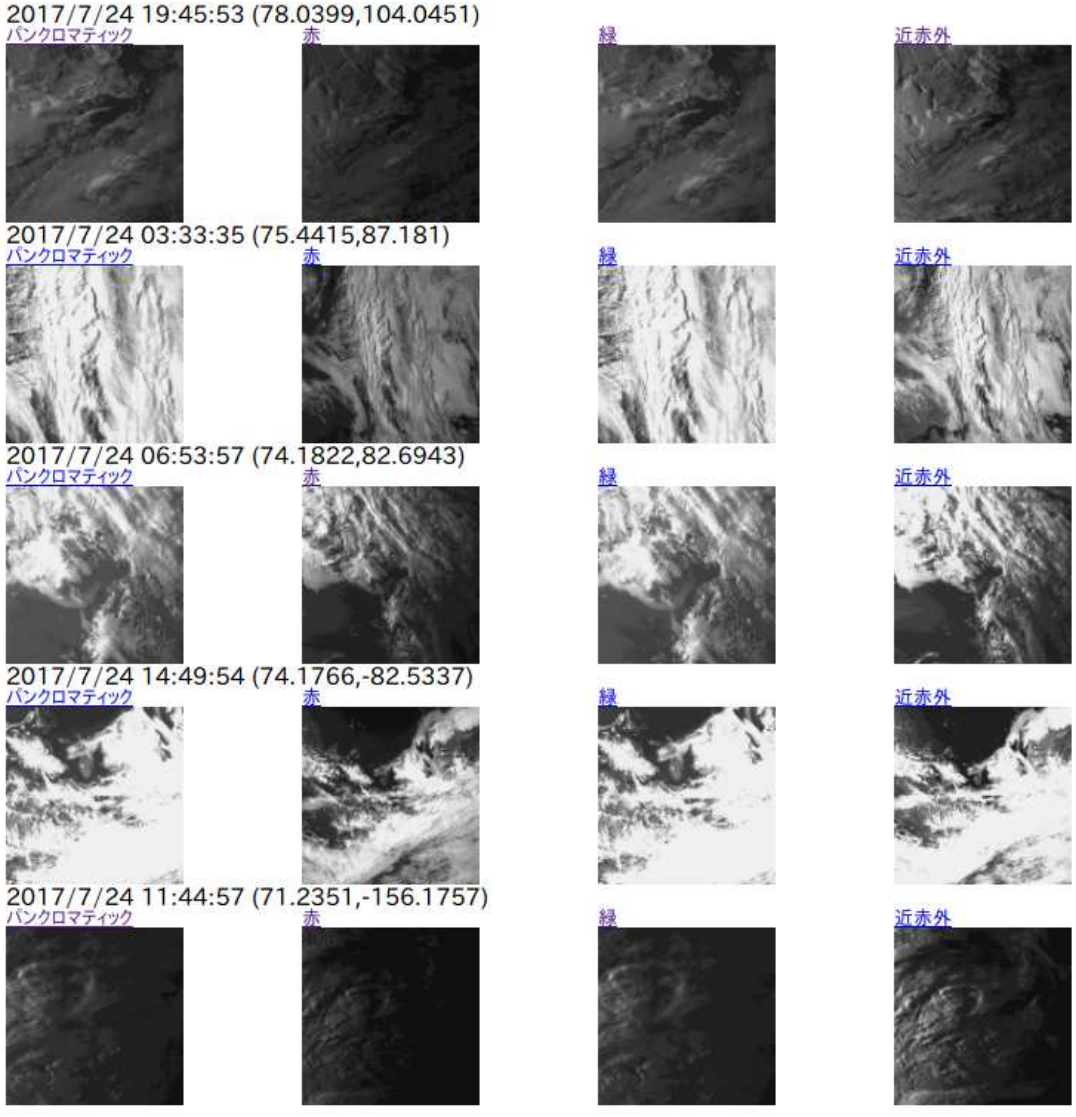
15:36, July 14, 2017 (JST)
Launched by Soyuz 2 rocket from Baikonur Cosmodrome (Kazakhstan)
Sub-payload of Kanopus-V-IK with 72 microsatellites

Initial Commissioning Operation

- Mode transfer from the safety mode to the operational mode after the first contact.
- Bus checkout : To confirm each bus equipment.
- Mission checkout : To confirm each mission equipment.
- Operation test for main mission :
  Total checkout for camera mission operation including satellite system and ground system.

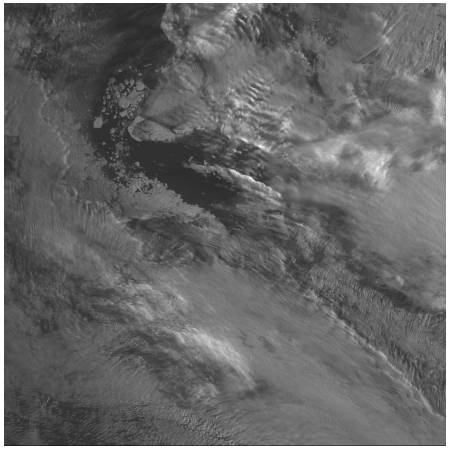
First Light Image

From July 24, we started chekout main mission camera. And we got the first light images.

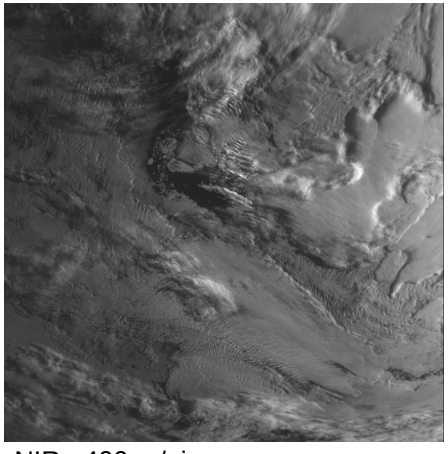


First Light Image 1

Vilkitsky Strait, Arctic sea



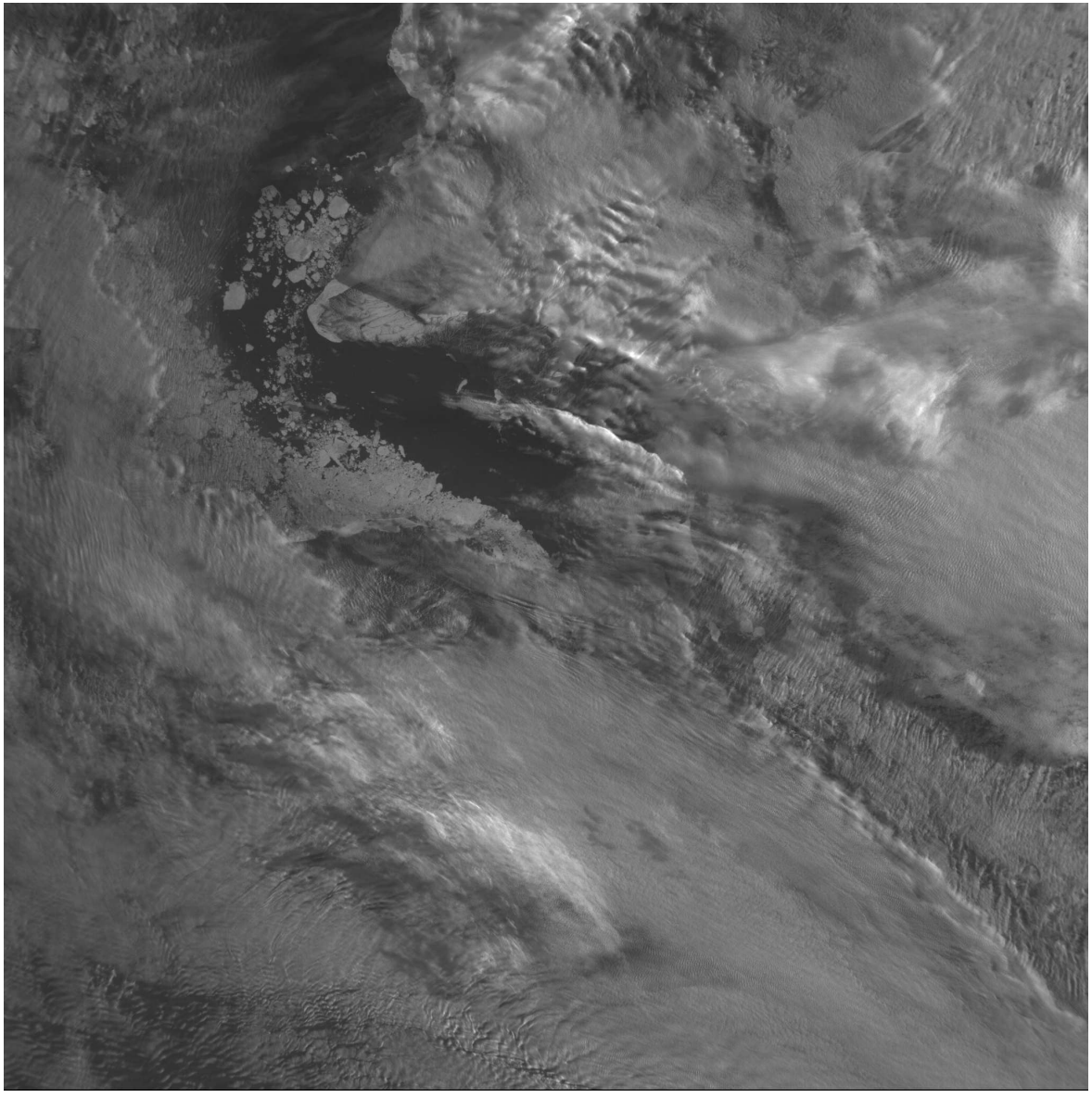
G : 200 m/pix



NIR : 400 m/pix

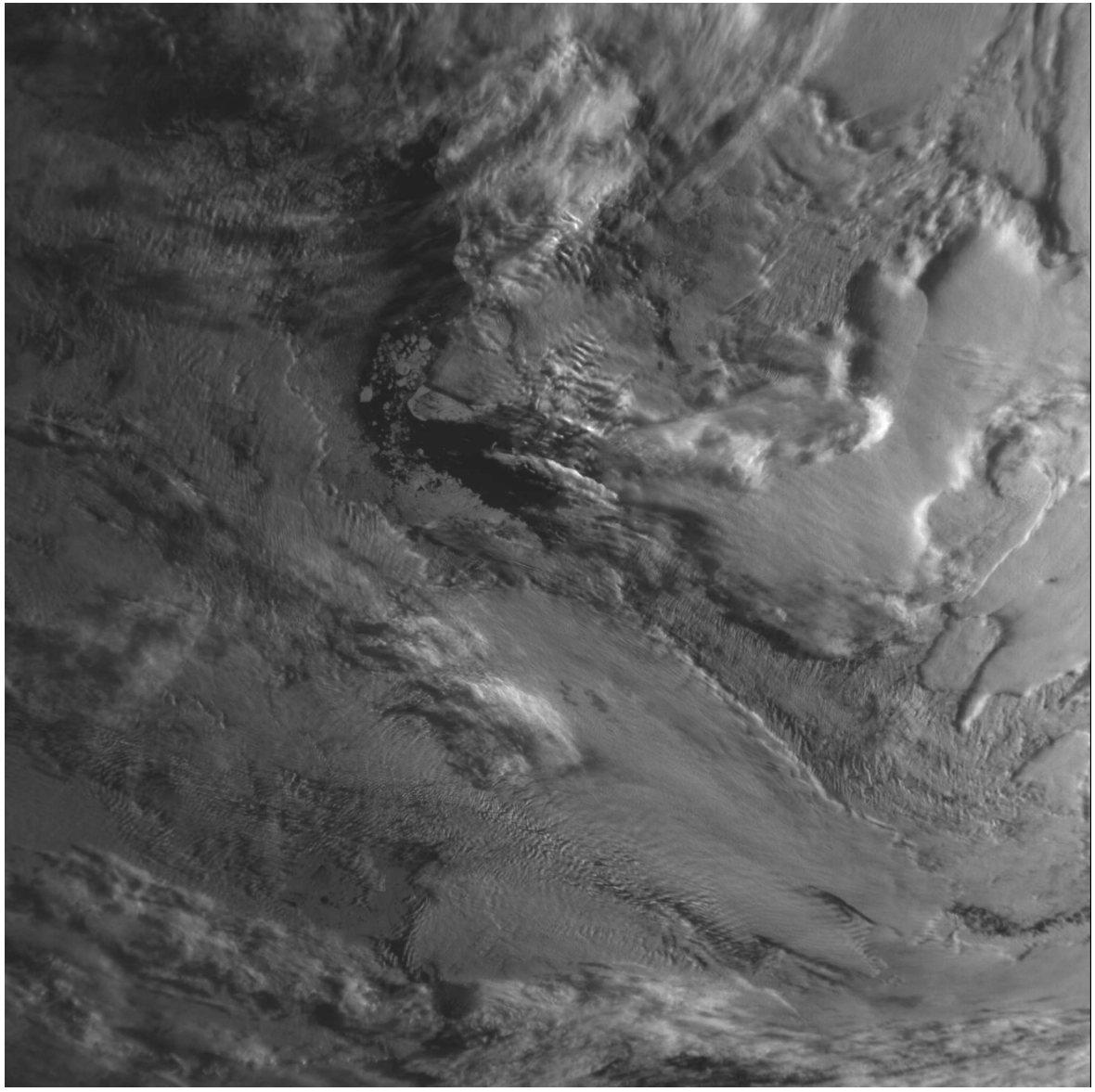
First Light Image 1-1

Green channel



First Light image 1-2

Near infra red



Main Imager

Specification of main imager

Number of Cameras	4
Spectral Bands	PAN (450-650nm), G (535-607nm), R (620-680nm), NIR(695-1005nm)
Pixel Count	2048 x 2048
GSD	PAN, G : 200m , R, NIR : 400m
Bit Depth	12bit

PAN : Panchromatic, NIR : Near Infra Red, GSD : Ground Sampling Distance

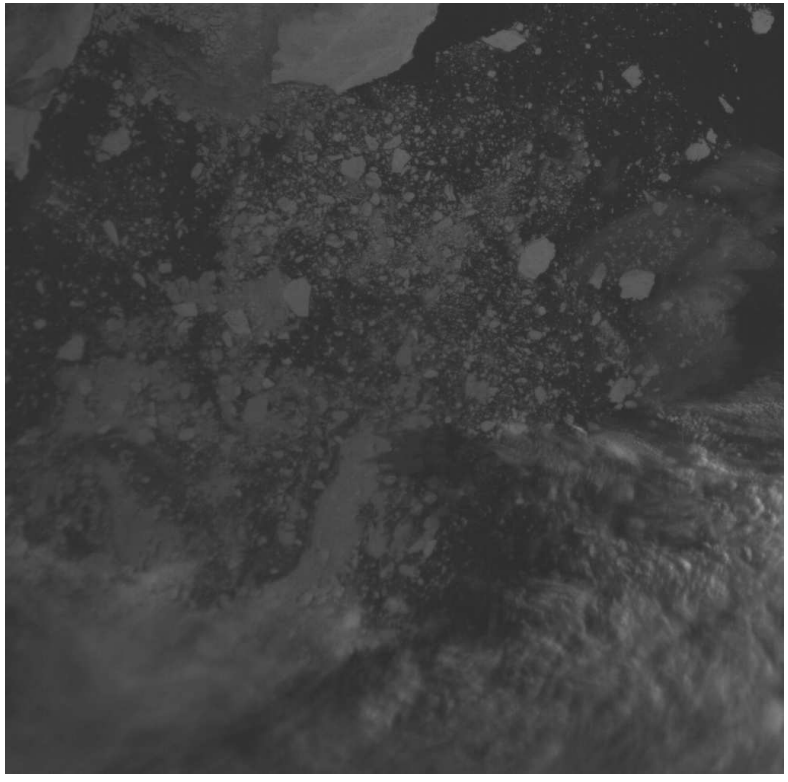
Feature of Main Imager

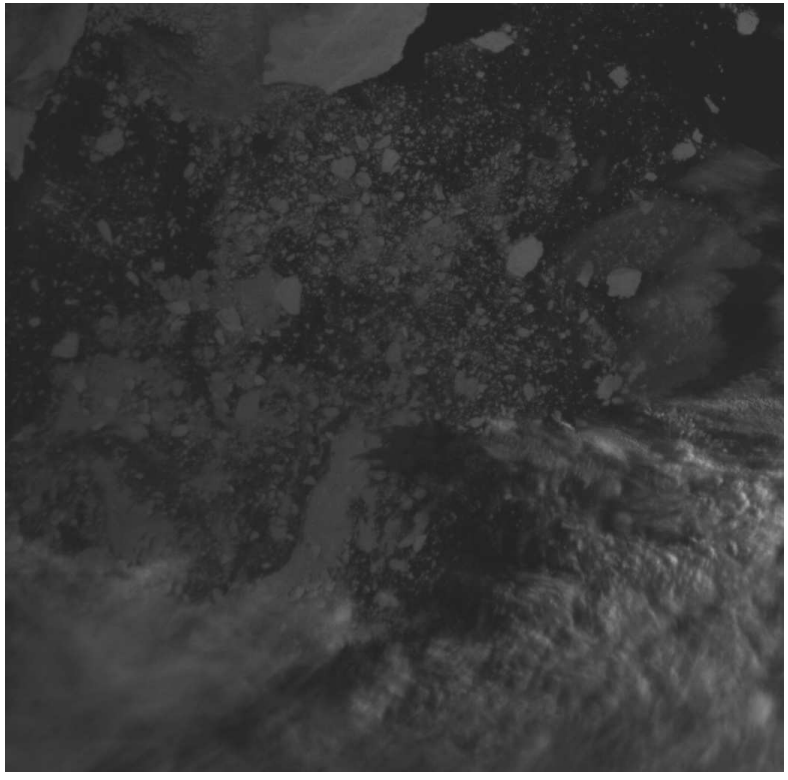
- Area senser
- Independent bands
- Low - middle resolution

These feature bring us spectral products, time series products.

Sea Ice : R, NIR

Difference between R and NIR can extract sea ice

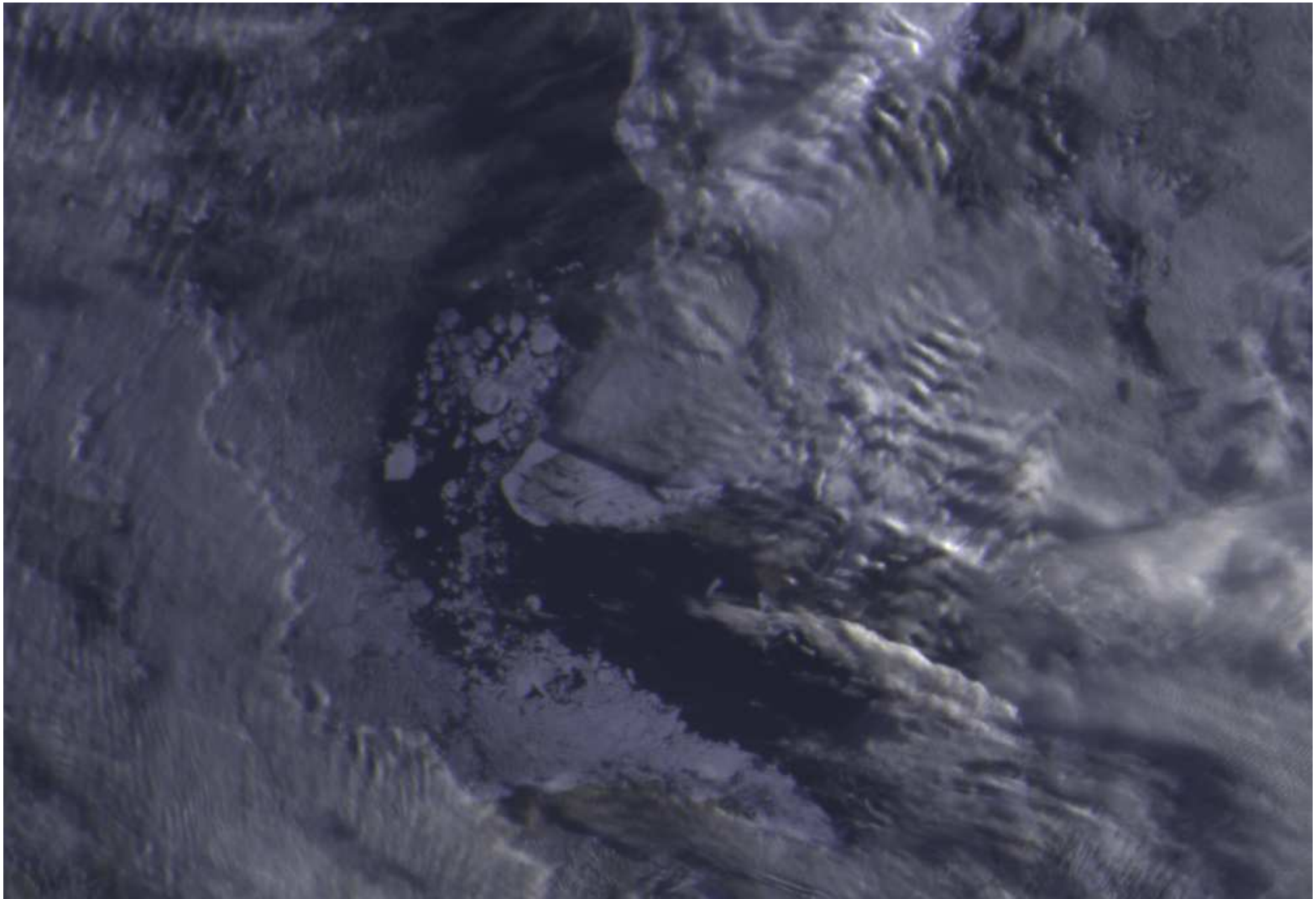




Sea Ice : Pseudo Colorized Image 1

Light blue parts indicate sea ice.

Sea Ice : Pseudo Colorized Image 2

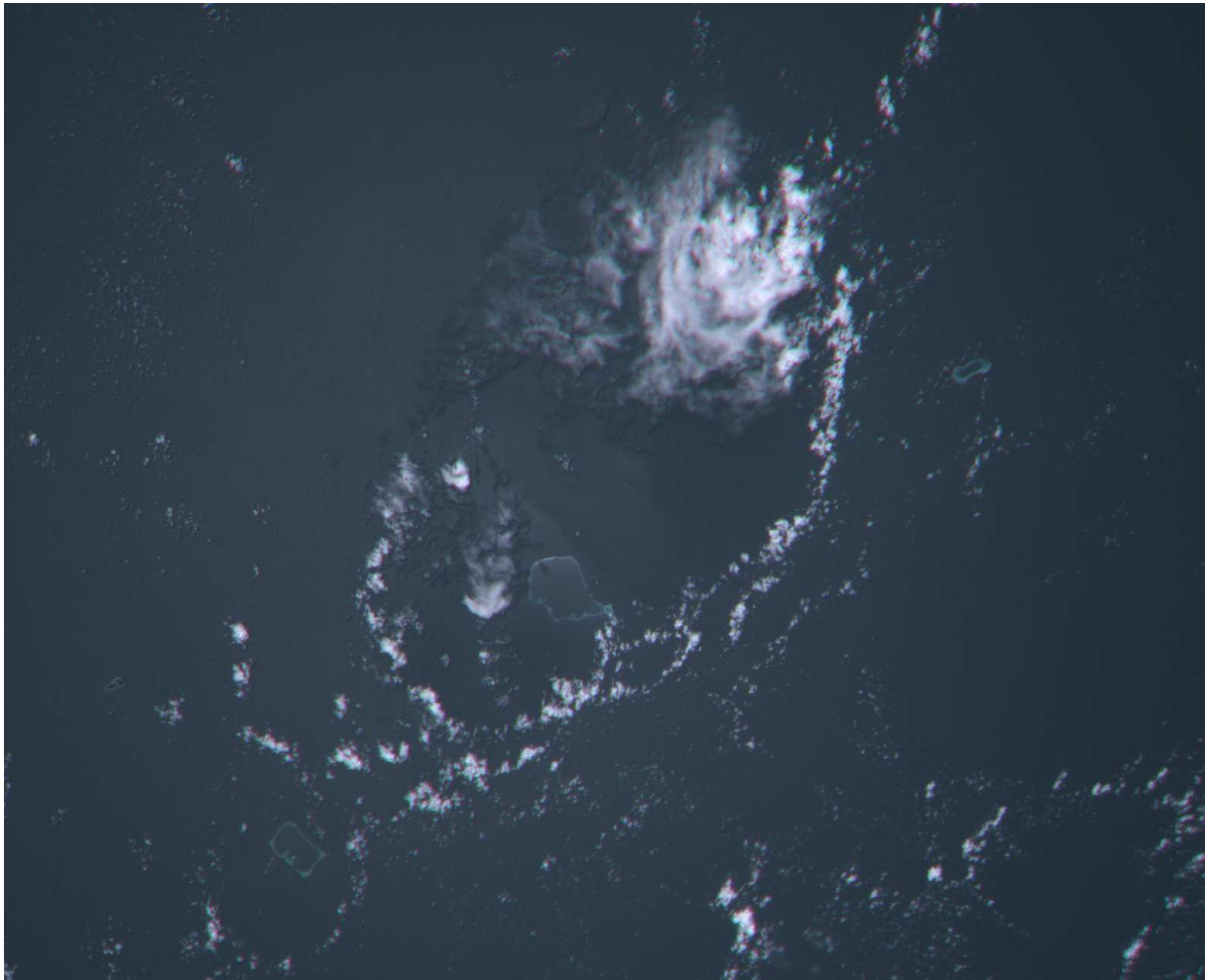


Sea Ice : Pseudo Colorized Image 3

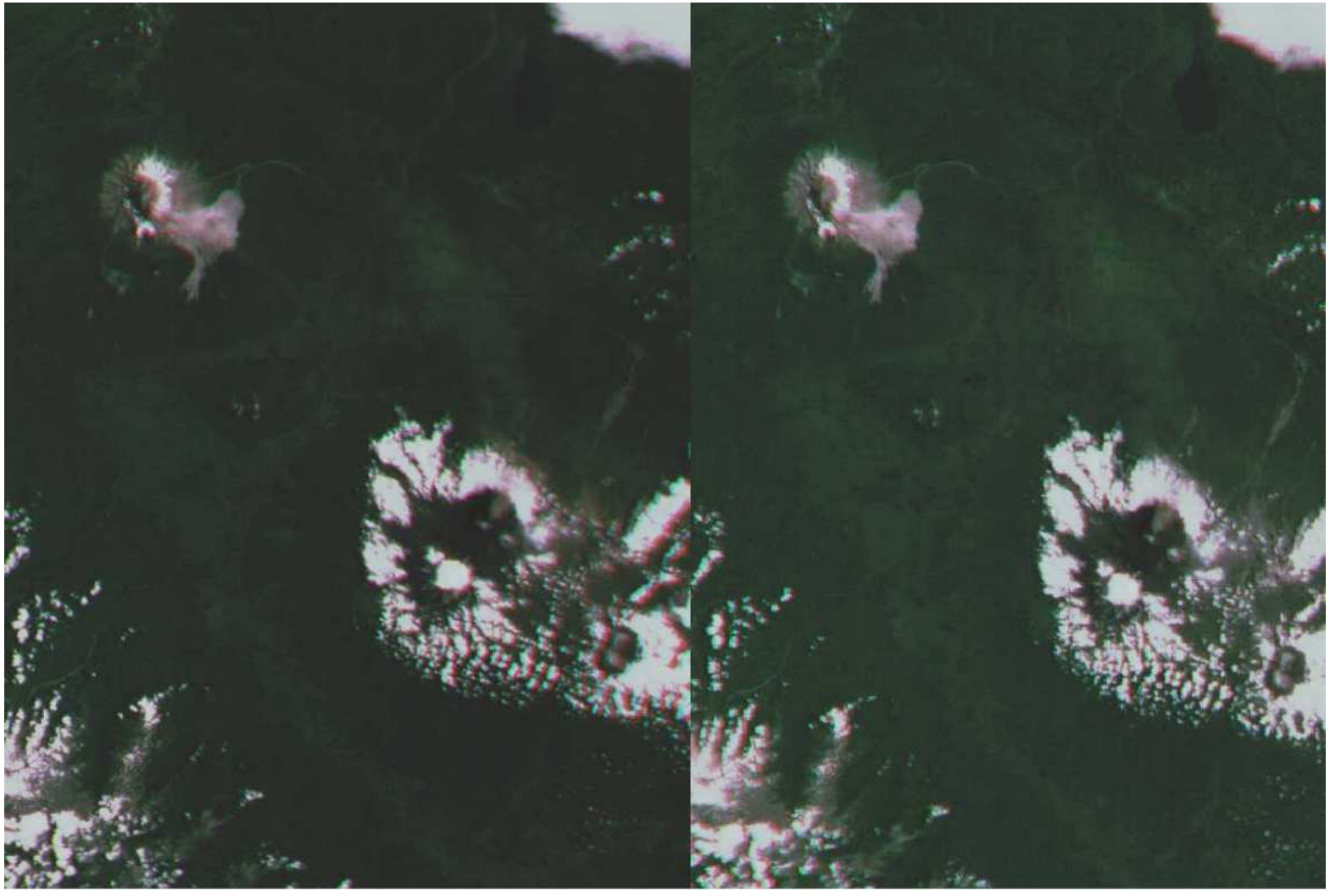
True Color Image 1 : R, G, PAN

True Color Image 2 : R, G, PAN

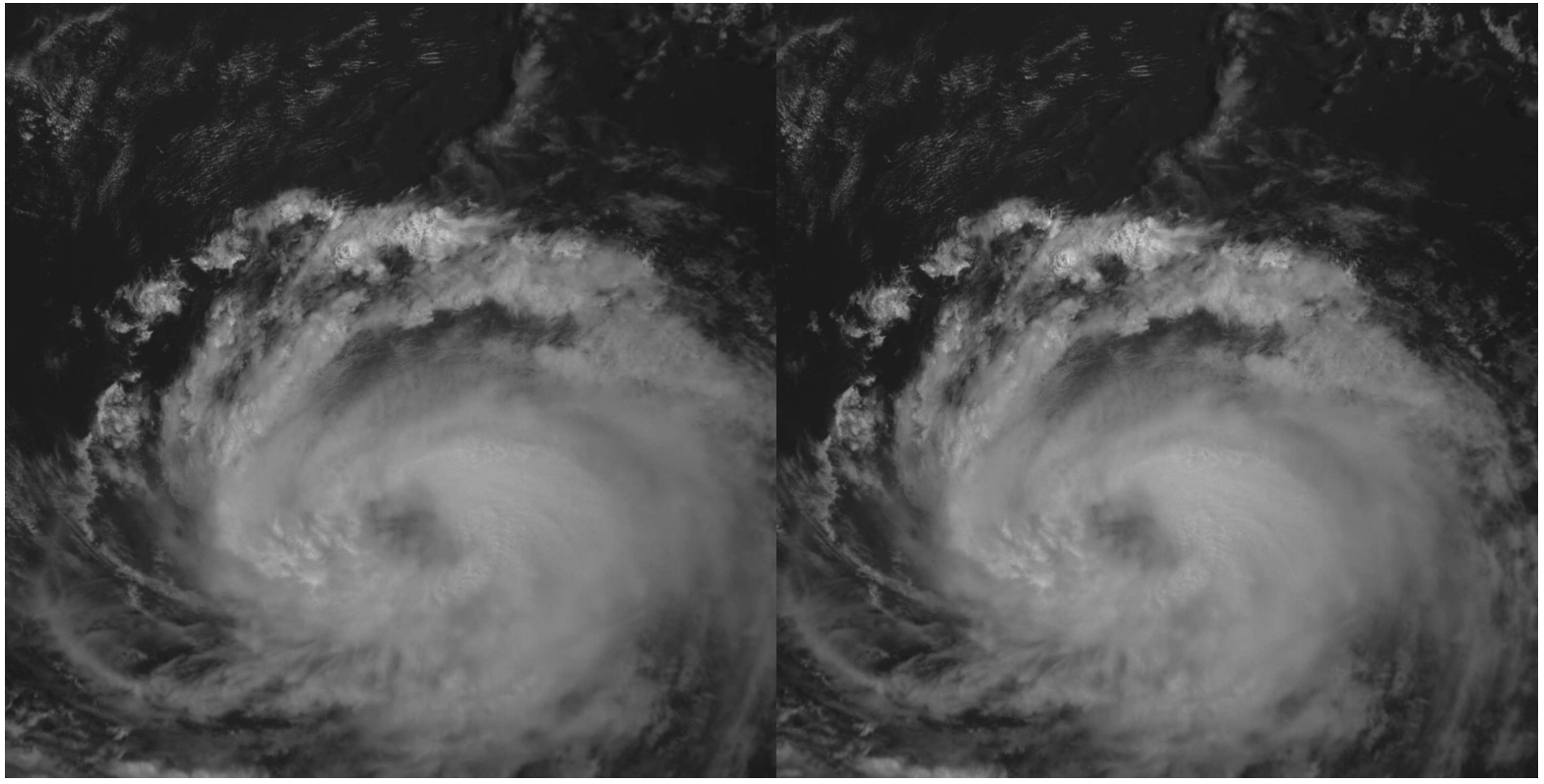
True Color Image 3 : R, G, PAN



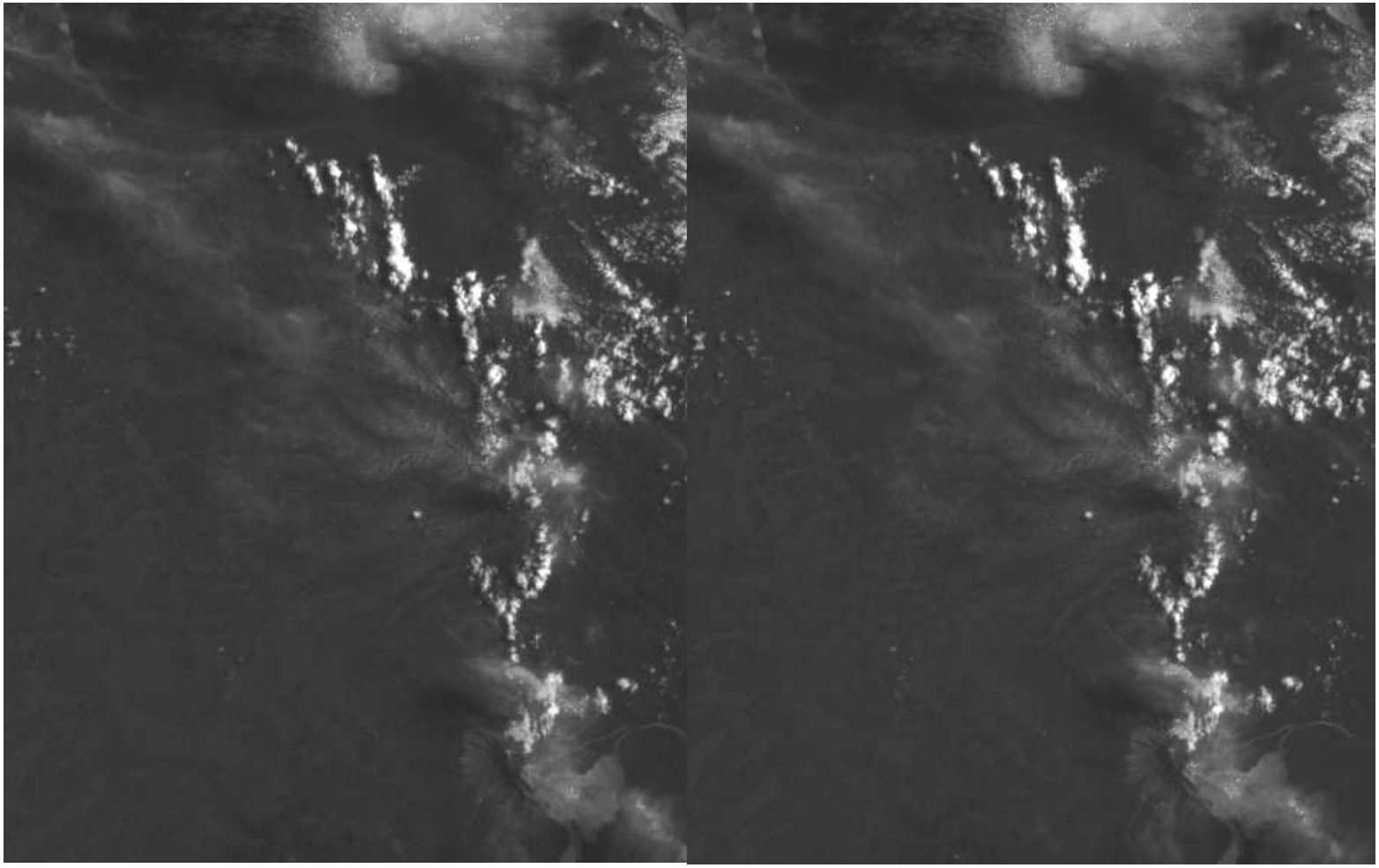
Stereo Scopic Image : Volcanic Plume



Stereo Scopic Image: Typhoon

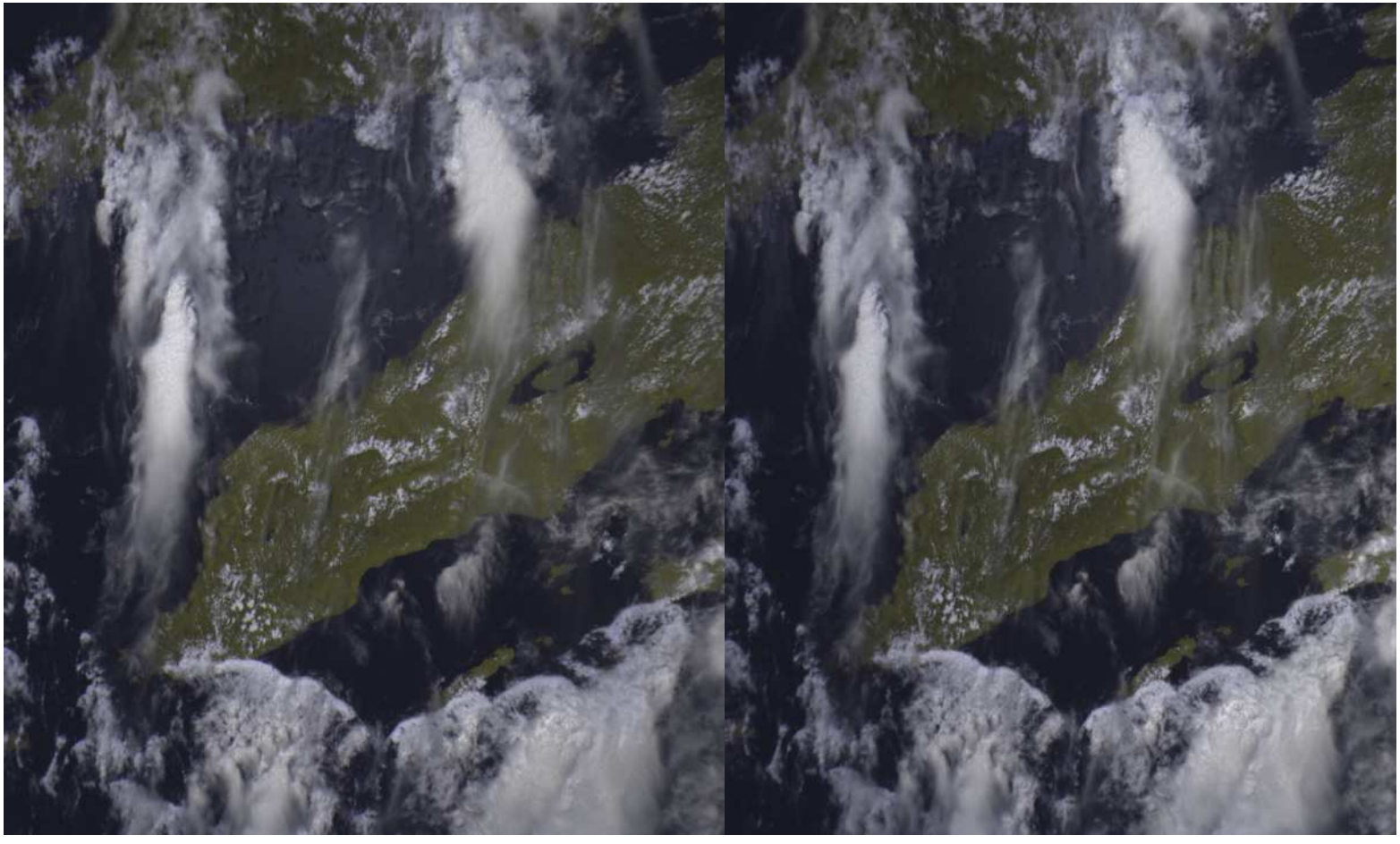


Stereo Scopic Image 1



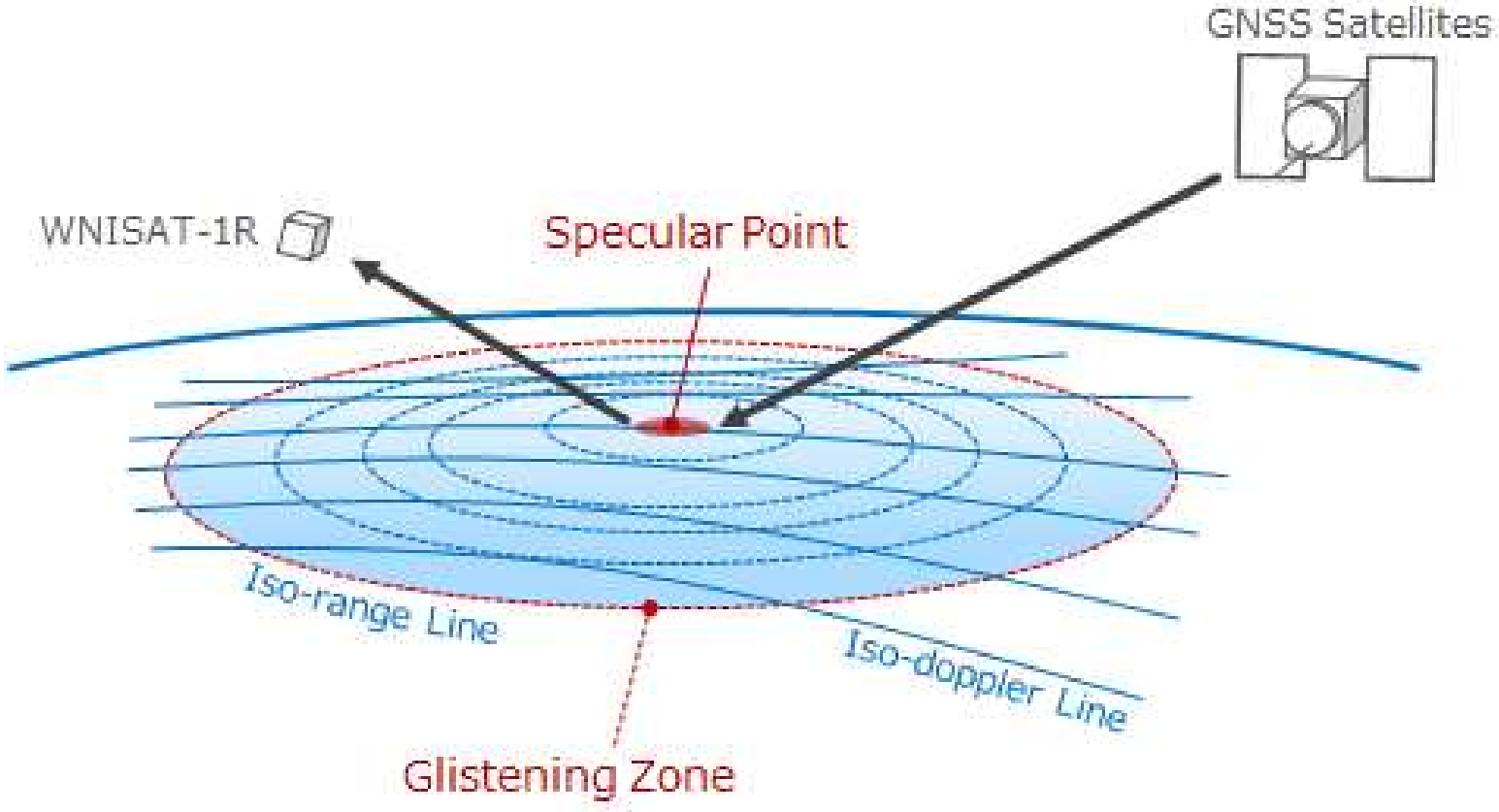
Stereo Scopic Image 2

Pseudo Color Image



Schedule of Experiments

- GNSS-R : November
- Optical Communication December

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