



Wildfire detection with the Compact Infrared Camera (CIRC) onboard ALOS-2

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JPTM201: 19-21 November 2014, Yangon, Myanmar





- Introduction of the CIRC
- Missions of the CIRC
- ALOS-2 and CALET
- Wildfire detection with the CIRC
- Summary



Proto Flight Model



> Microbolometer

(uncooled infrared array detector)

- Small sizeLight weight
 - Low power consumption

Baseline specifications of the CIRC

	Detector	Microbolometer
		SOI diode IR FPA (MELCO)
	Size	11 cm x 18 cm x 23 cm
)	Mass	~ 3 kg
	Wavelength	8 - 12 μm
	Pixel Array	640 x 480 💢
		< 210 m @630 km (ALOS-2)
	Spatial resolution	<130 m @ 400 km (CALET)
		(<0.33 mrad)
	Field of View	12° x 9°
	Dynamic range	180 K - 400 K
	Power	< 20 W
	NEdT	0.2 K @300 K
	FPN	0.3 K @300 K

ightarrow The largest microbolometer ever used

for earth observations from space.

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Mission of the CIRC



- Wildfire
- Major and chronic disaster that affects many countries, especially those in the Asia-Pacific region
- Cause for global warming and climate change



Wildfirg dataction by MODI

INAKAU EL AL (2007)

The goal of the CIRC project

 Increase the observational frequency with many CIRCs carried on various satellites by taking advantages of small size, light weight, and low power consumption.



ALOS-2 and CALET



CIRC is developed as a technology demonstration payload of the ALOS-2 and ISS(JEM/CALET)





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Basic observation plan of the CIRC



- Wildfire Area that wildfires are frequently detected by MODIS
- Volcanoes
 Active volcanoes
 (30 volcanoes are selected)
- Heat island
 Cities in Japan and
 Asia

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Wildfires detected by CIRC

Wildfires are detected more than 300 scenes of ALOS-2/CIRC



Wildfire detection with the CIRC

Observation time: UT 2014/08/31 10:29 Angola wildfire







MODIS visible image and areas wildfire was detected (MOD14)

> http://fire.cris.hokudai.ac.jp/ provided by K. Nakau

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Wildfire in South Borneo



Observation time: UT 2014/10/09 04:30 South Borneo wildfire





⁹⁻²¹ November 2014, Yangon, Myanmar



Obs. time UT 2014/09/11 23:28







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- CIRC is a compact infrared camera to observe wildfire, volcanoes, and heat island phenomena.
- CIRC onboard ALOS-2 was launched in May 24, 2014. CIRC onboard ISS(JEM/CALET) will be launched in 2015.
- ALOS-2/CIRC shows its ability to detect wildfires. Calibration and validation of ALOS-2/CIRC is ongoing.
- ALOS-2/CIRC data will be available to the public this December.



CIRC data archive



http://circgs.tksc.jaxa.jp

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