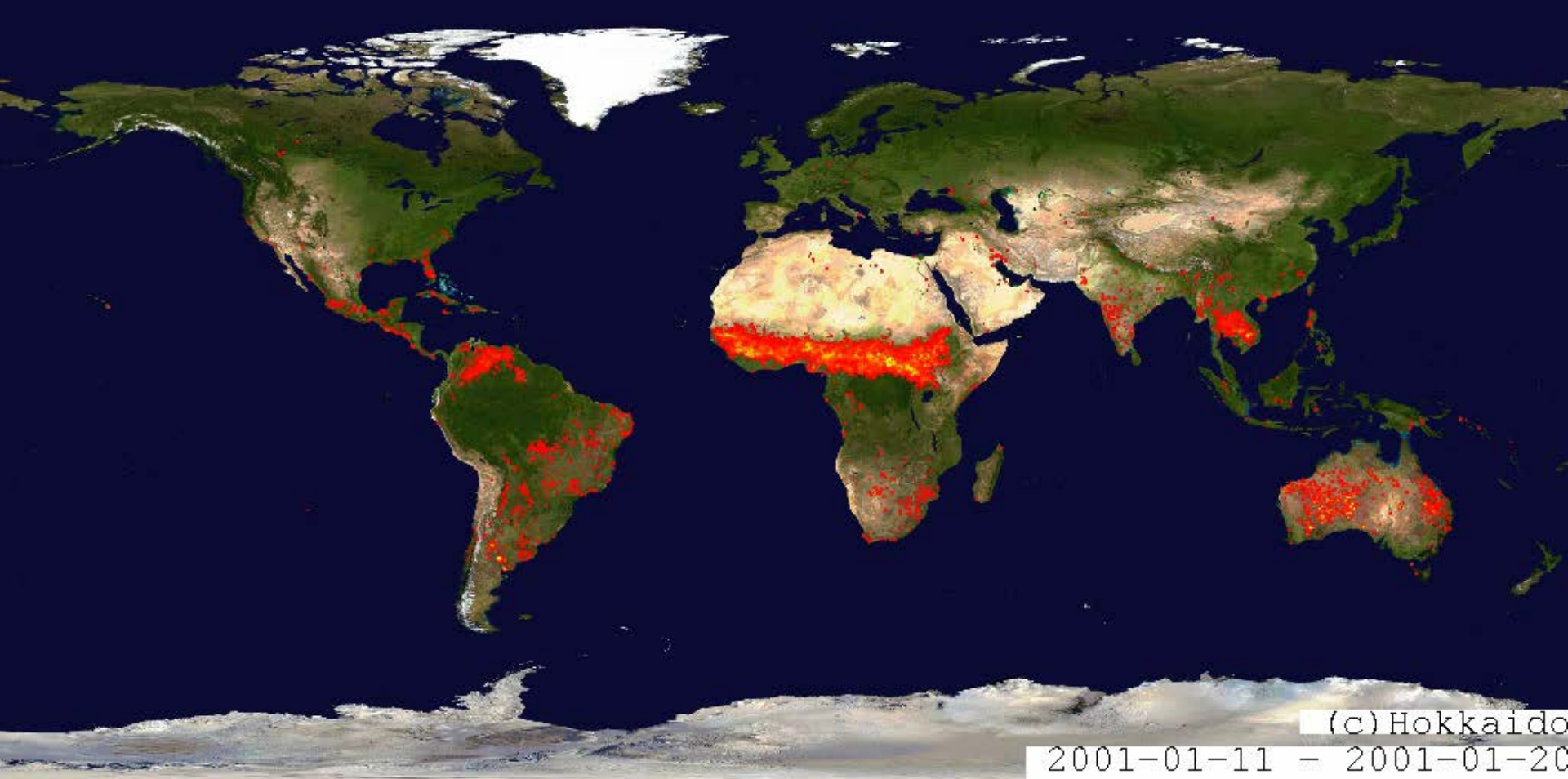


# Utilization of IR imagery for wildfire management

with MTSAT and Himawari datasets

JAXA/SAOC, Nakau Koji PhD.  
(SentinelAsia Wildfire WG chair)

# Global Wildfire Distribution



(c) Hokkaido

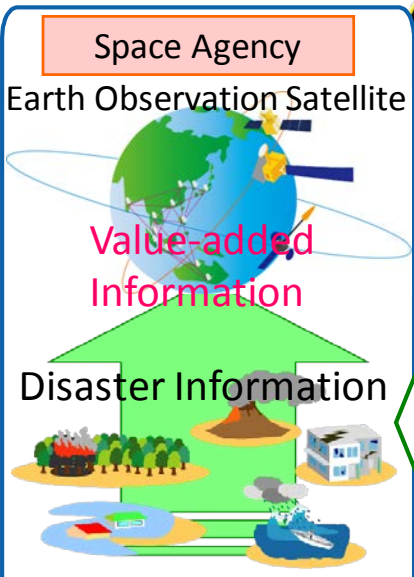
2001-01-11 - 2001-01-20

- Wildfire emits  $\text{CO}_2$ , corresponding  $\frac{1}{2}$  to  $\frac{1}{4}$  of  $\text{CO}_2$  by fuel combustion

# Sentinel Asia

Sentinel Asia(SA) is a voluntary initiative by a collaboration between space agencies and disaster management agencies, applying remote sensing and Web-GIS technologies to assist disaster management in the Asia-Pacific region.

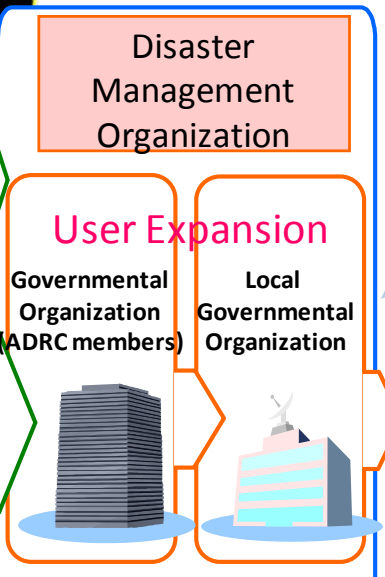
## Observation



## Communication Satellite

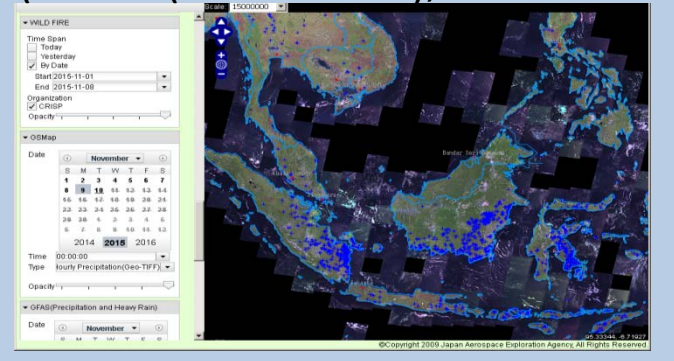


## Utilization

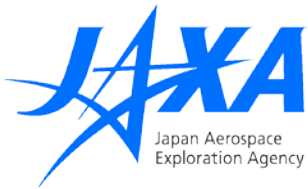


Human Network  
Capacity Building • Outreach

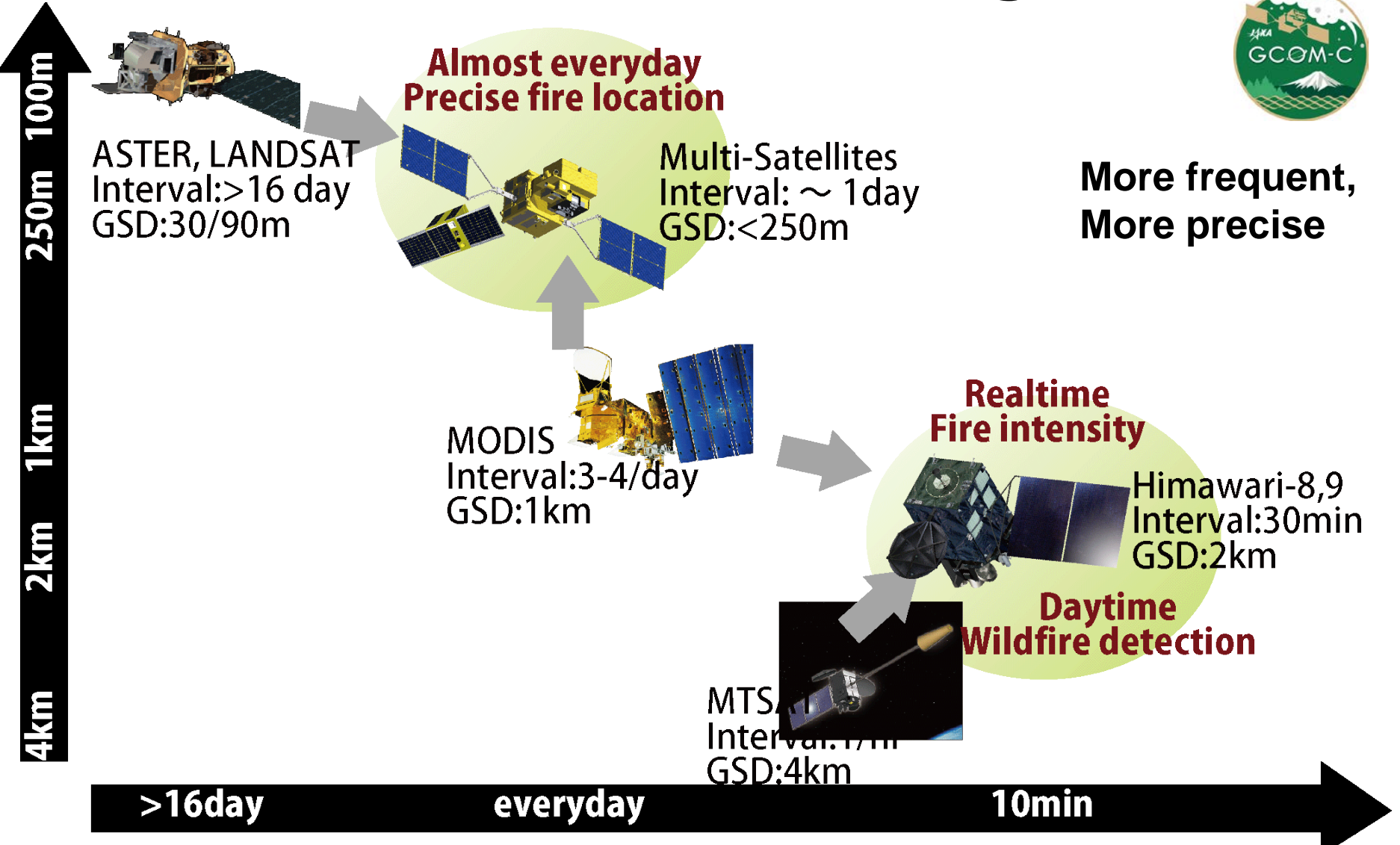
## Fire location DB Web-GIS (MTSAT(→Himawari), MODIS)



Wildfire WG is developing technologies for application of remote sensing for wildfire management. Currently, SA Web-GIS share fire location data by MTSAT and MODIS.



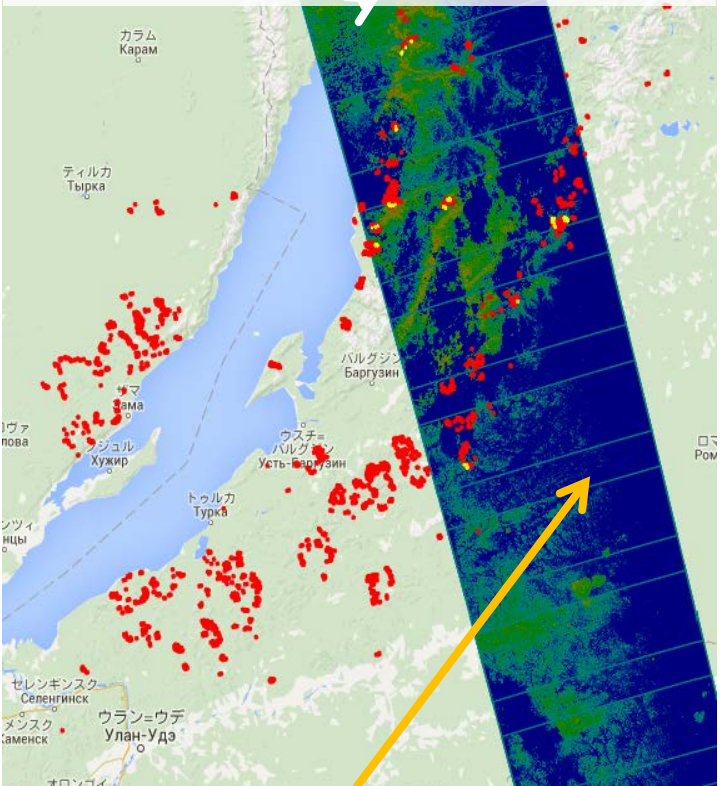
# New Satellites for fire monitoring



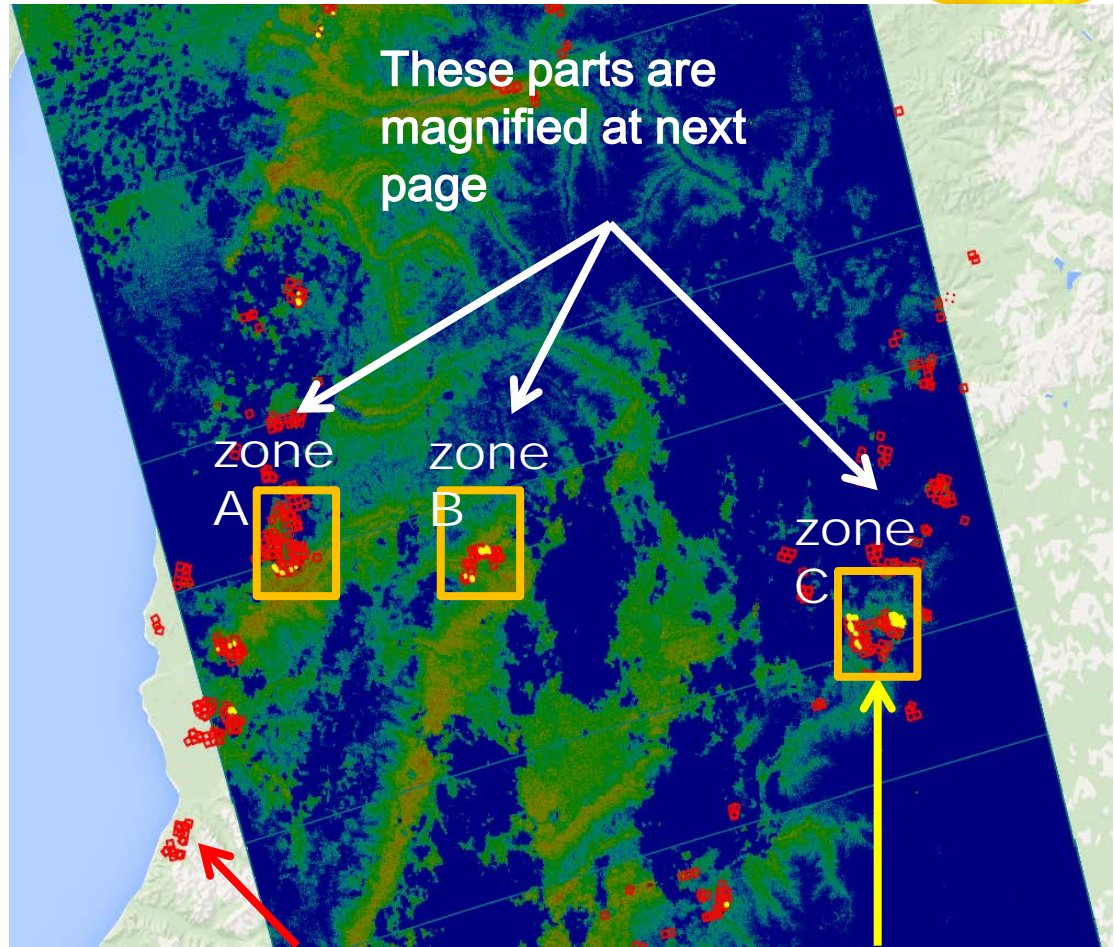


# CIRC Observed Wildfire around Bikal on 2015-08-24

The pseudo colored images are CIRC Thermal Infrared Image.  
We acquired 16 scenes along truck.



Blue area seems to be clouds.



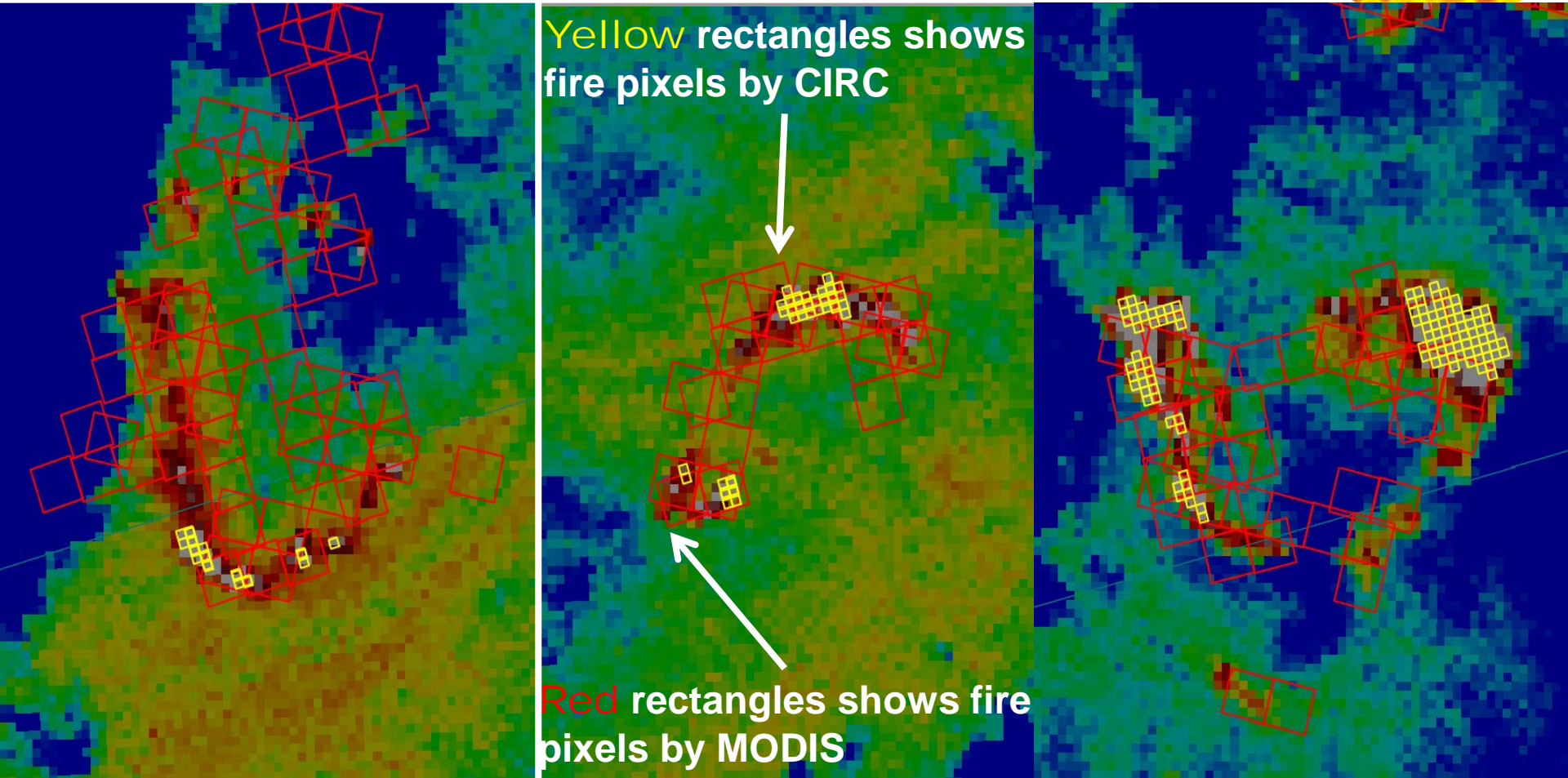
Red is fire pixel by MODIS Yellow is fire pixel by CIRC

← cold      Brightness Temperature      hot →





# CIRC Observed Wildfire around Bikal on 2015-08-24



Zone A

Zone B

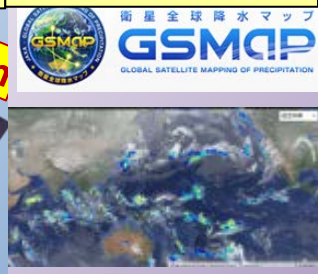
Zone C

source data is available at <http://circgs.tksc.jaxa.jp/data>

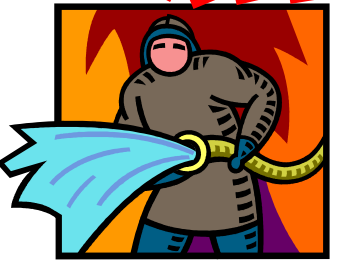
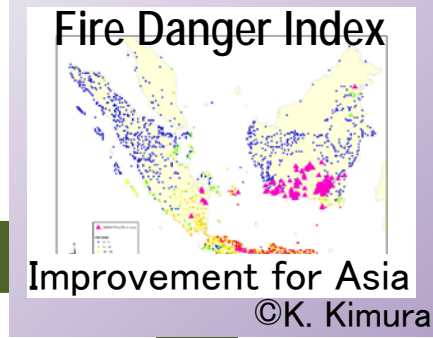
# Integrated fire monitoring with multiple satellites

**Fire location: Available Everyday after launch of GCOM-C**      **Fire Intensity by Himawari**      **Precipitation by GSMaP**

<b>To be launch</b>	<b>Operation</b>	<b>Checkout</b>	<b>Operation</b>	<b>Checkout</b>	<b>Operation</b>	<b>Operation</b>
SGLI on GCOM-C1 FY2015	CIRC on ALOS-2 FY2014	CIRC/CALET on JEM/ISS FY2015	ASTER on Terra operation	UNIFORM-1 FY2014	OLI on LANDSAT8 FY2012	
Swath: <b>1150km</b>	Swath: <b>130km</b>	Swath: <b>80km</b>	Swath: <b>60km</b>	Swath: <b>96km</b>	Swath: <b>185km</b>	req: <b>10min</b>
Resol: <b>250m</b>	Resol: <b>200m</b>	Resol: <b>115m</b>	Resol: <b>90m</b>	Resol: <b>150m</b>	Resol: <b>30m</b>	Resol: <b>2km</b>



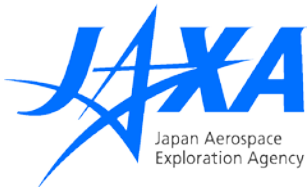
**Integration of fire location, intensity, precipitation, fire danger, smoke prume.**



**Providing integrated fire infomation to Asia region with suitable way depending countries.**



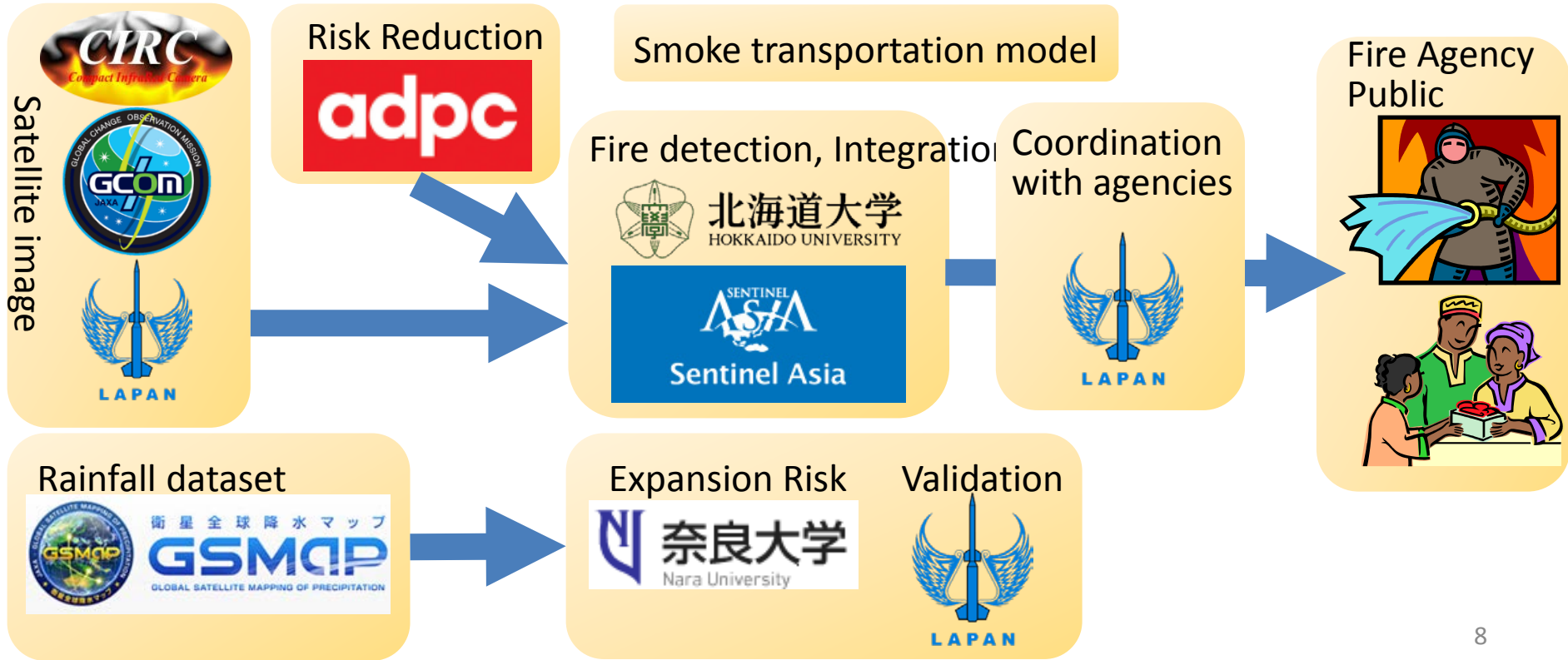




# Demonstration in Indonesia (TBD)



- Integration with fire expansion risk and smoke transportation
- Existing models available for each segment
- Collaboration with Sentinel Asia by SAPC





# Summary



- Current: Sentinel Asia uses wildfire dataset including MTSAT and MODIS
  - Limited Geolocation accuracy for fire location
  - Limited Frequency for fire intensity



- Wildfire WG will utilize Himawari as well as CIRC, GCOM-C and other IR sensors.
  - Drastical change in geolocation and frequency utilizing Himawari-8,9 and CIRC, GCOM-C Satellites.