JAXA's Challenges on Sustainable Development

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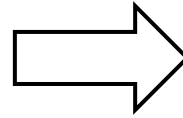©JAXA/NASA

An Example in Bangladesh

Flood Warning
- Minimizing flood damage and improving water management, especially international rivers -

(Before) Warnings

3days

before flood

⇒

(Now) Warnings

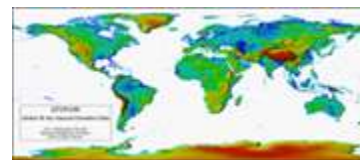**5days**

before flood

Evacuation only

Harvesting crops

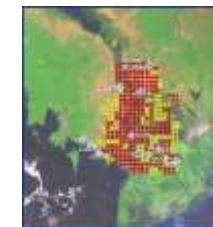Releasing cattle, and

Evacuation

Rainfall measurement from Space   In-situ data   Flood Forecast   Early Warning

GPM

GCOM-W

【Data】   【Information】   【Action】

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2）Attempts of Data Revolution

　①　Flood responses in Sri Lanka (integration with Socio economic data)

　②　Weather index insurance in India (use of long term observation data)

　③　Accurate and cost effective statistics in Cambodia (machine learning technique)

3）Data Revolution together with start-ups (An example with Keio University)

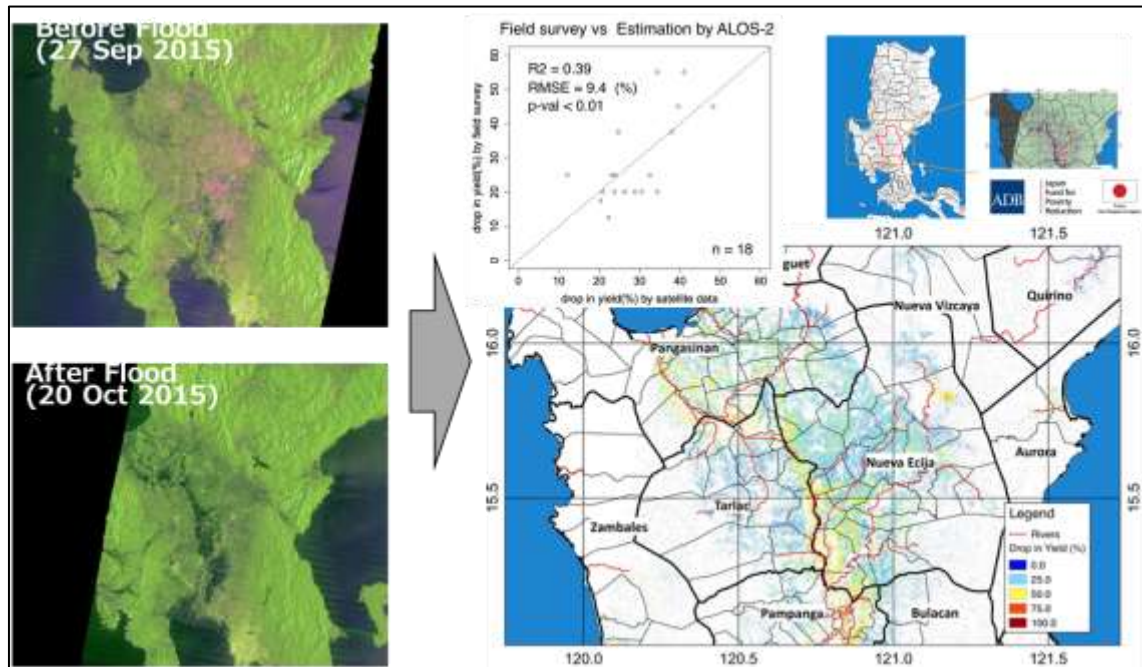4）Conclusion

1. On going Projects for SDGs
- improved statistics information -

Agriculture Statistics
- Agriculture damage impact assessment -

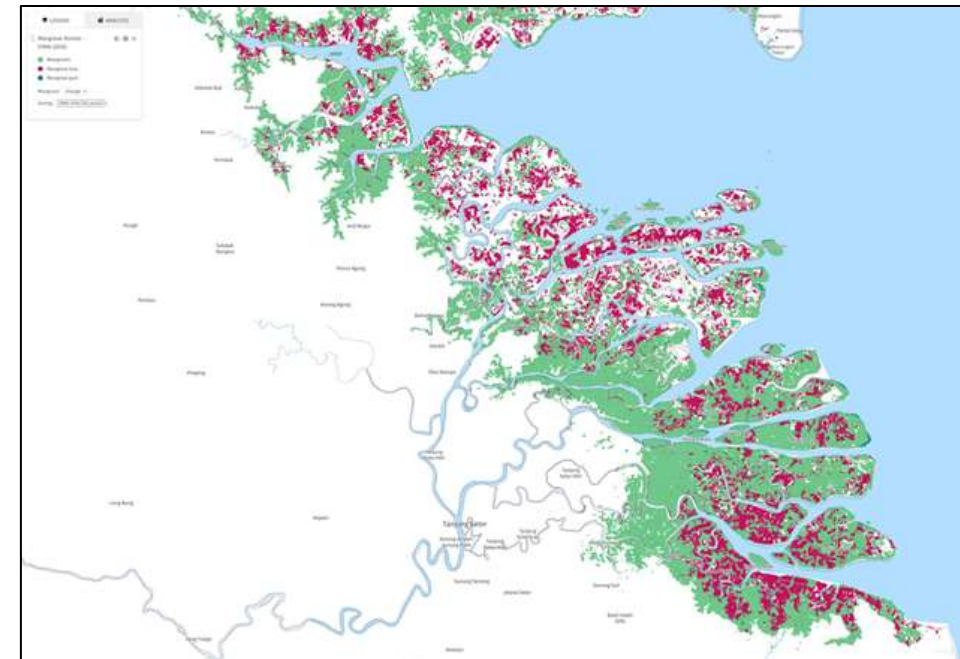- To estimate agriculture damage of rice production to support farmers in Philippine

Mangrove Monitoring
- Protecting environment by periodic monitoring -

- To monitor mangrove forests to conserve coastal ecosystem and to protect coastal area from storms and tsunamis. It is for coastal fishermen and people living in these areas.
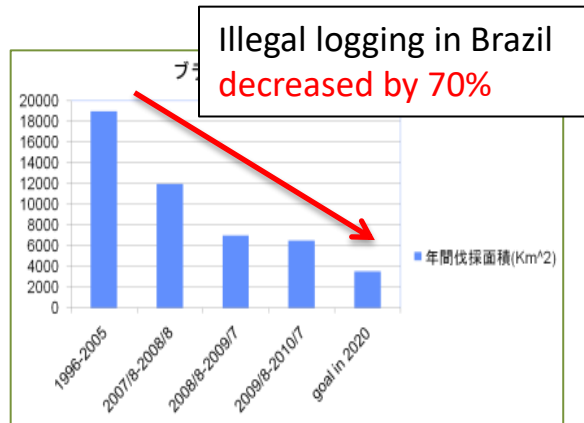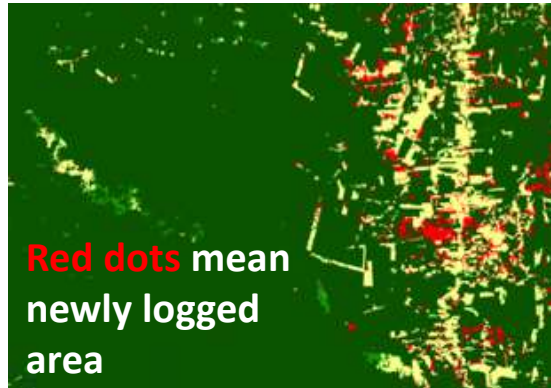
1. On going Projects for SDGs

- responses to environmental degradation -

Forest Monitoring

- Protecting tropical forest from illegal logging -

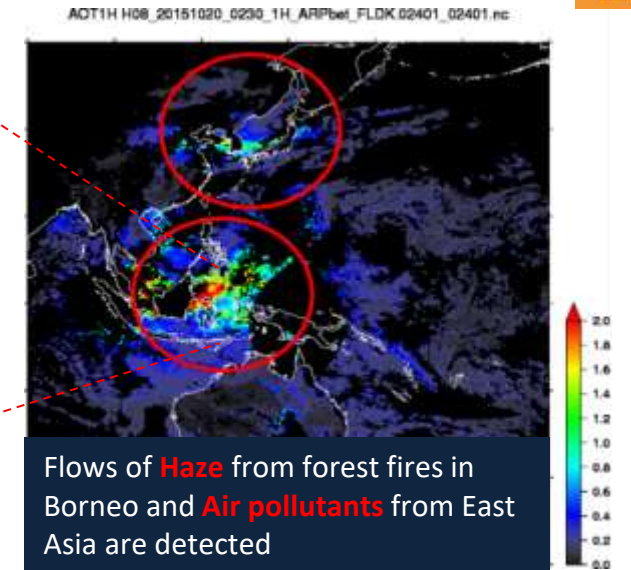Forest monitoring under clouds using radar technology

Red dots mean newly logged area

ALOS-2

Old palm tree forest changed to rice pads

Illegal logging in Brazil decreased by 70%

Partners

JICA

Air Quality Monitoring

- Protecting people from exposure to haze and PM2.5 -

AOT1H H08_20151020_0230_1H_ARPbet_FLDK.02401_02401.nc

Red dots represents forest fires

Flows of **Haze** from forest fires in Borneo and **Air pollutants** from East Asia are detected

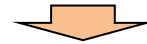Now β-version is available on http://www.eorc.jaxa.jp/ptree/

Partners

(on going)

(under disucussion)

2. Attempts of Data Revolution
① Flood responses in Sri Lanka

● To deliver the right amount of food to those needs supports by satellite data together **with socio-economic data**
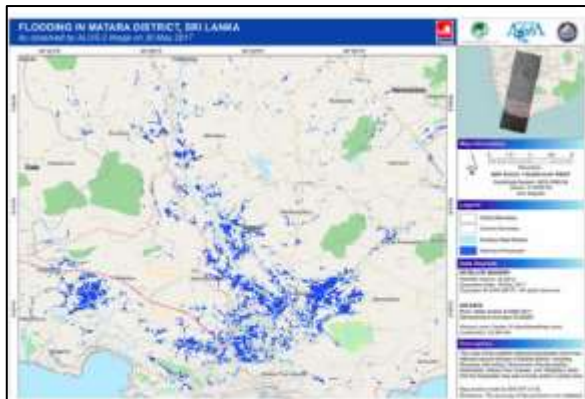
Flood	24-26 May 2017

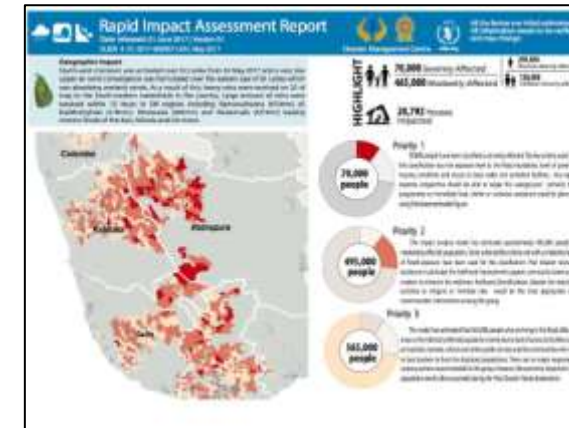| Emergency Observation and Impact Analysis	27 May – 1 June 2017

Satellite data（Flooded area）

Impact Assessment

+

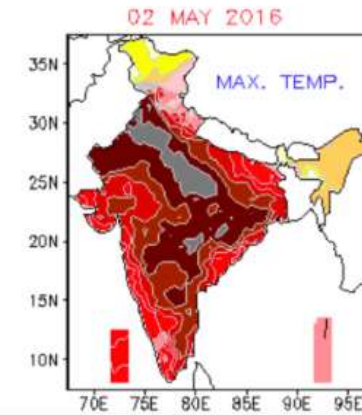Socio-economic data
(population,
Transportation, etc.)

→

Emergency Food Support by Sri Lanka's authority	3 June 2017

3. Attempts of Data Revolution
② Compensation by insurance in drought year

● To support farmers with financial instruments which incorporate **long-term satellite observation data**.

DROUGHT AND DESPAIR FOR INDIA'S FARMERS CNN
Sumrima Udas CNN Correspondent

02 MAY 2016
MAX. TEMP.
5月2日のインドの気温。赤〜黒ほど気温が例年より高い。インド気象局

Dry Season

Normal year with rain

Normal year with rain

Drought year (no rain)

Satellite base rain data

Monthly Precipitation by JPMAP (http://www.jpmap-jaxa.jp)

JPMAP
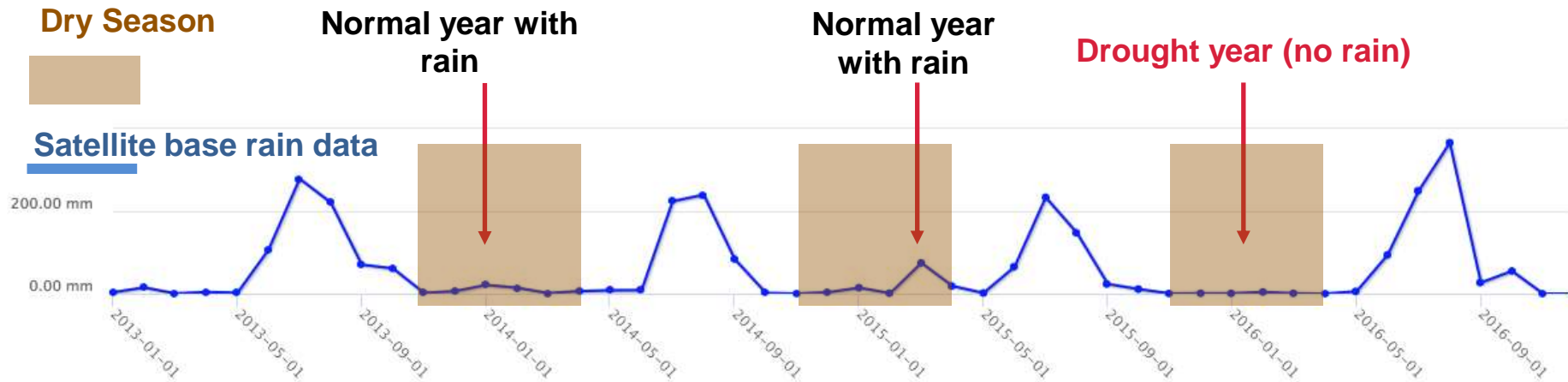
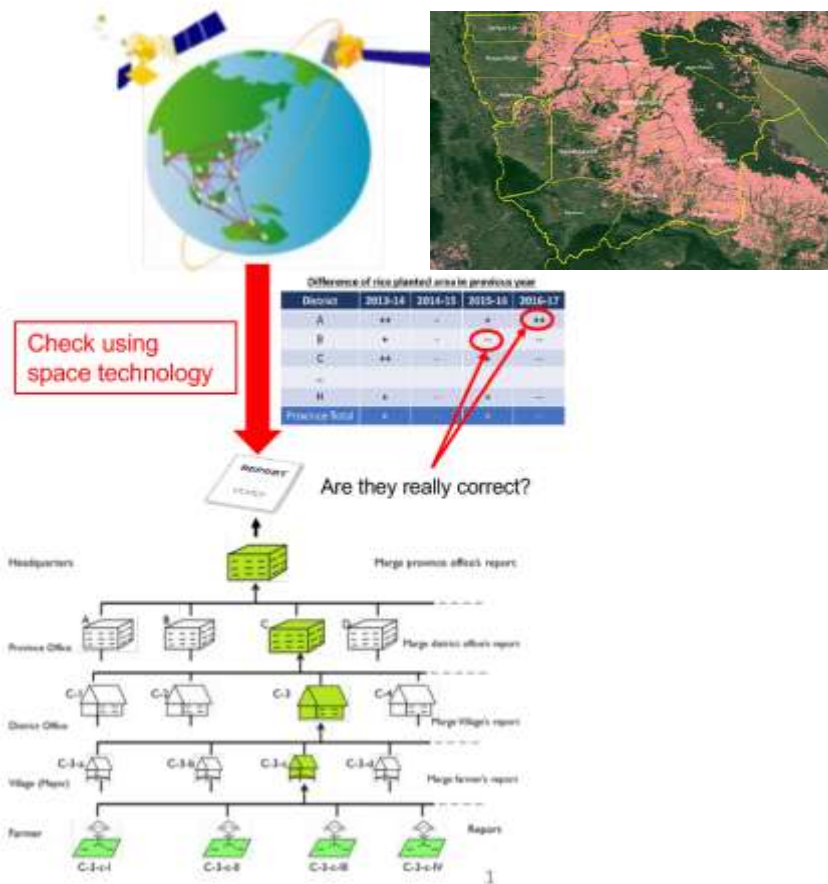# 3. Attempts of Data Revolution
③ Rice planted area estimation in Cambodia

● To establish a standardized, accurate, cost efficient and timely method by **machine learning technique** for improved agriculture statistics

Check using space technology

Are they really correct?

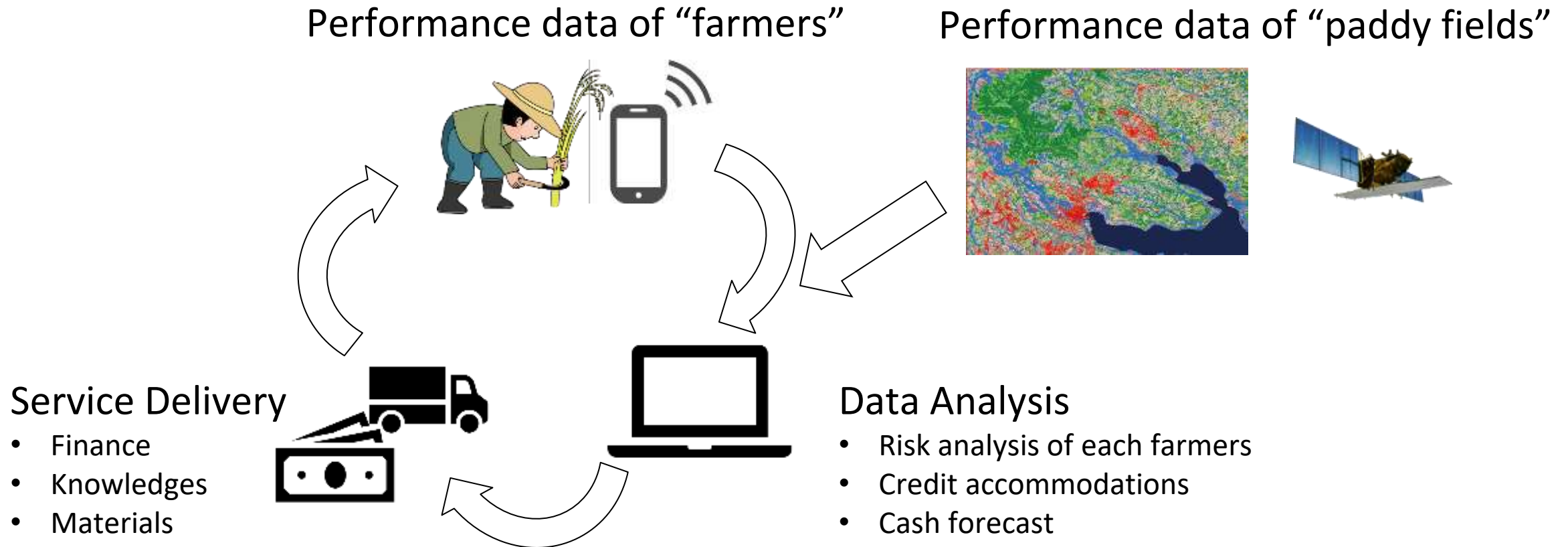● Improved accuracy of rice crop area estimation by machine learning

95 % accuracy

● Improved INAHOR information tells that

✓ Rice planting in restricted areas on the border area of lake wet land

✓ Rice paddy area estimated by INAHOR is 20 % larger than that of statistics

3. Data Revolution together with start-ups

- A business case of a Japanese start-up company "AGRIBUDDY" with Keio University, JAXA and RESTEC.

Performance data of "farmers"

Performance data of "paddy fields"

Service Delivery
- Finance
- Knowledges
- Materials

Data Analysis
- Risk analysis of each farmers
- Credit accommodations
- Cash forecast

Summary

- JAXA is active to support SDGs.

- Integration with socio-economic data and effective use of machine learning are new challenges.

- We need various partnerships, especially with those from non-space communities,
  - to mobilize resources and technologies,
  - to respond to the needs of those people in need of support

- Your feedbacks are more than welcome. We would like to know of which JAXA data can add value to your business.

Thank you for your attention

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（Children in Nepal looking images taken by "ALOS" satellite）