

Space Applications Working Group at APRSAF-24 in Bangalore

Report

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SA Working Group
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Group Photo



- Total number of participants : **177** (97+80)
- 6 sessions & 43 presentations from 10 countries + UN-ESCAP

Discussion Items of SAWG

- Host country session on role of Space Technology in Governance - Indian Experience
- Agriculture
- Integrated Land & Water Resource Management (flood, drought landuse & forest)
- Information platform – Data Cube
- APRSAF Initiatives
 - SAFE
 - Sentinel-Asia
- SAWG/SEWG joint session for human resource development
- International cooperation with UN, etc..

General Statement

1. *Recognizes* the Synergy of Earth Observation, Communication, Navigation and emerging technologies for Space Applications in support of enhanced Governance & Development
2. *Space technology as Key Enabler* for societal development through provision of information/ input to find solutions for addressing the Global Agenda (Sendai Framework, the Paris Agreement and the Sustainable Development Goals.....).
3. *Continuing efforts* of Spatial Data Infrastructure through value addition, dissemination and data sharing framework such as Open Data Cube efforts by Australia, India & Vietnam and Portals such as JASMIN (JAXA), MOSDAC and BHUVAN (India), MANTAP (Indonesia), etc.



Open Data Cube



- Initiated through a CEOS Data Cube meeting in Canberra in February 2017
- Building off the Australian Geoscience Data Cube and a growing collaboration with the GA, CSIRO, NCI, USGS, NASA and CEOS



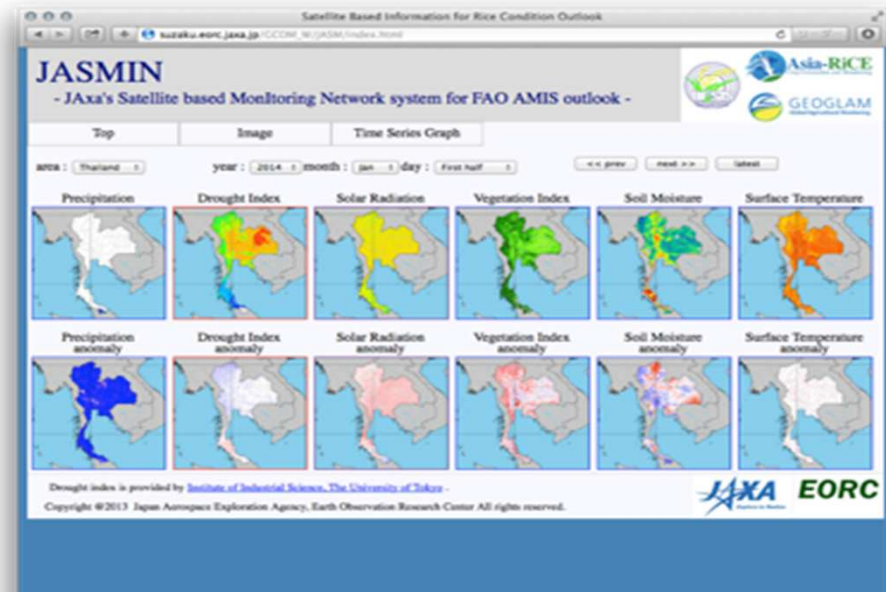
Vietnam Data Cube

- Mekong Data cube: Pilot cube of Vietnam Data cube: Landsat, Sentinel-1&-2, ALOS-2
- Applications:
 - Forest monitoring
 - Rice monitoring
 - Water monitoring



Data cube Efforts in ISRO

- IRS Pre-Processing Engine (In-house), Oracle DB,
- Tools (OpenDataCube, In-house Software)
- Visualization & Analytics (OpenGL, OpenSceneGraph, WorldViz , in-house software)



AGRICULTURE (Potential of space inputs for addressing dynamic issues of agriculture)

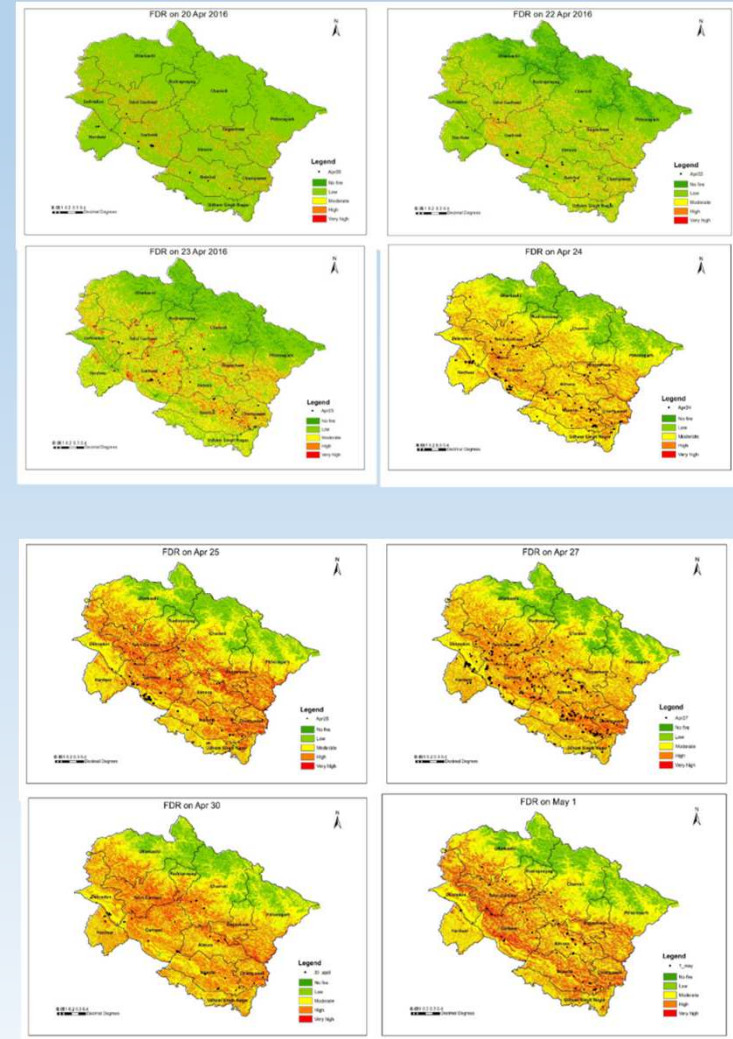
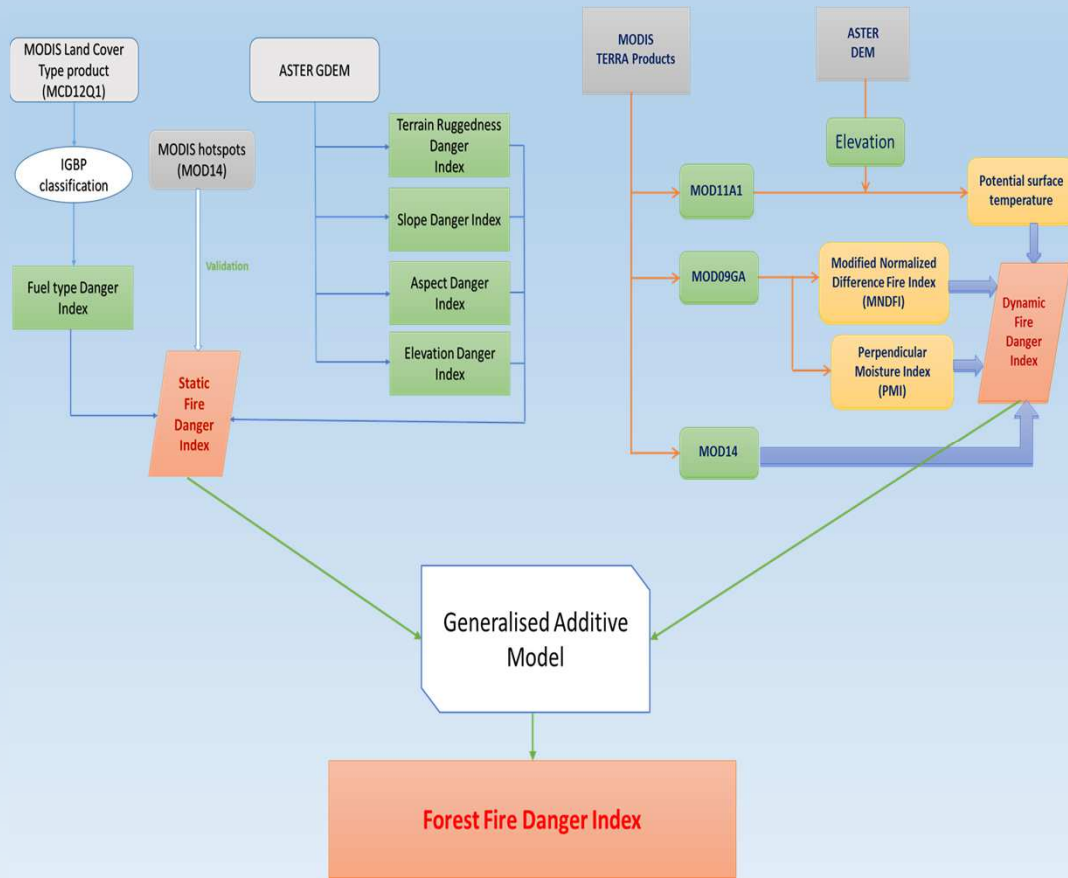
Efforts made towards development of region specific crop forecasts, monitoring systems to aid in governance of food security using space inputs.

- LEO & GEO satellite data in conjunction with mobile apps for field data collection are used for crop assessment such as FASAL (9 crops - India), MANTAP (Rice & Wheat - Indonesia), Rice Crop Monitoring mechanisms INAHOR (Japan) etc.
- Regional Activities of rice planting area and growth monitoring by the Asia-RiCE team and agromet parameters using JASMIN, Wall-to-Wall rice crop monitoring using time series SAR data.
- Geospatial initiatives towards horticulture crop inventory, development and post harvest infrastructure (CHAMAN-India), crop residue burning etc., Irrigation project evaluation by Japan International Cooperation Agency (JICA).
- Pragmatic approach to crop monitoring, drought and insurance sectors (such as NADAMS & KISAN (India), MANTAP (Indonesia), Crop meteorological parameters (JASMIN -Japan), etc.

INTEGRATED LAND & WATER RESOURCE MANAGEMENT (*Observing the strength of spatial data in sustainable management*)

- ***Serving the society*** with drinking water potential prospect zones, advanced hydrological models for flood management and early warning initiatives (AWCI-ICHARM, International Flood Initiative- Sri Lanka and 6 countries, WRIS-India)
- ***Ensuring*** land & water resource conservation through watershed development, ***Promoting*** satellite based rain fall products such as GSMaP (JAXA), agrometeorological information MOSDAC (ISRO) and JASMIN (JAXA) for generation of crop prospects, drought monitoring and extreme weather events for sustainable management.
- ***Addressing*** the environmental issues such as sustainable forest management using Satellite, Airborne and ground sensors (in the context of REDD+ and MRV) and Global Forest Observation Initiative-GFOI.
- ***Monitoring*** air pollution including hot spot detection and fire risk assessment (Fire danger index) using space technology to protect human life in tune with Sendai Framework, Paris agreement and Sustainable Development Goals.

Forest Fire Danger Index



Accuracy of 86% to 92%.
With respect to actual fire occurrence

MISSING ASPECT IS THE HUMAN INFLUENCE

SAFE Initiative

Ongoing, completion and follow-up of projects including success stories of the prototypes for paddy field monitoring in Indonesia & Vietnam; Oil palm management in Indonesia and Malaysia.

- *Increasing* the visibility of SAFE prototypes (agriculture, water resource management, forest management) to promote regional implementation.
- *Evolving* SAFE framework to share the common interest / knowledge and methods / techniques in Asia Pacific region .
- *Calling* for participation for updating SAFE TOR with India, Indonesia, Japan, Vietnam and AIT.
- *Enhancing* the multilateral cooperation to find solutions in support of the Sendai Framework (disasters), the Paris Agreement (climate, COP-21) and the Sustainable Development Goals (SDGs) as an *enabler*, and provide a solution “*as a seed*” for climate change adaptation and mitigation.

SAFE Prototyping Line-up

○ On going

● completed



23 completed, 5 on going (As of November, 2017)

Country (proposal number)	Agriculture (7)	Drought (2)	Water resource (7)	Coastal (3)	Forest (4)	Ecosystem (1)	Fishery (2)
Vietnam (6)	●(FU)		●●	●	●●		
Indonesia (7)	○●(FU)●	●●			○●		
Sri Lanka (4)			○	●		●	●
Cambodia (3)	○		●●				
Malaysia (2)	●(FU)●						
Lao P.D.R (1)					●		
Bangladesh (1)				●			
Pakistan (1)			●				
Thailand (1)							●
Myanmar(1)	○						
International Organization (1)			●				

- FU: Follow-up activity
- More information at SAFE portal site: <http://www.eorc.jaxa.jp/SAFE/>

SENTINEL ASIA INITIATIVE

Current status of Sentinel Asia, such as activities of Data Provider Node (DPN) and Data Analysis Node (DAN), analytical review on Emergency Observation Requests (EORs), and data analysis and capacity enhancement;

- *Expanding* the scope of Data Analysis Node with value added products
- *Requesting* participation of space agencies and disaster response agencies to make their voluntary contribution addressing the entire disaster cycle.
- *Sharing* success story of Institutionalization of Disaster Management viz. in India, Korea, Japan and the management of rainfall-driven landslides through “GSMaP Application to Landslide Warning system (GLAWS)” in Philippines.
- *Considering* GISTDA’s proposal to offer the integration of EOR optimization tool “OPTEMIS” and Participation of National Disaster Management Institute (NDMI), Korea in Sentinel Asia.

Sentinel Asia: Emergency Observation Request (EOR) Responded Disaster by Geographical Distribution



SAWG Recommendations

- Promote active contribution from countries having implemented advanced application such as India for Agricultural monitoring, water resource management, and disaster management.
- Implement a virtual satellite based agro-met data & information system (viz. MOSDAC & JASMIN) by sharing data, information and expertise for AP region.
- Knowledge sharing of air pollution using space technology in AP region to protect human life in relationship with Sendai framework, SDG and Paris Agreement.
- Encourage and enable AP region with country specific data cube initiative, data portal and analysis ready data through capacity building and if possible, by data sharing mechanisms.
- Increase visibility of SAFE prototypes (in domains of agriculture, water resources, forestry, environment) with multilateral involvement to promote regional implementation through sharing of knowledge, data and methodology.
- Establish the strategic plan of Sentinel Asia under the leadership of the Steering Committee and the revised Term Of Reference (TOR) to evolve SAFE framework .