Agriculture management using EO data in Th nd

The 10th GEOSS Asia-Pacific Symposium

Pakorn Petchprayoon

Geo-informatics and Space Technology Agency (Public Organization) : GISTDA

Ministry of Science and Technology, Thailand

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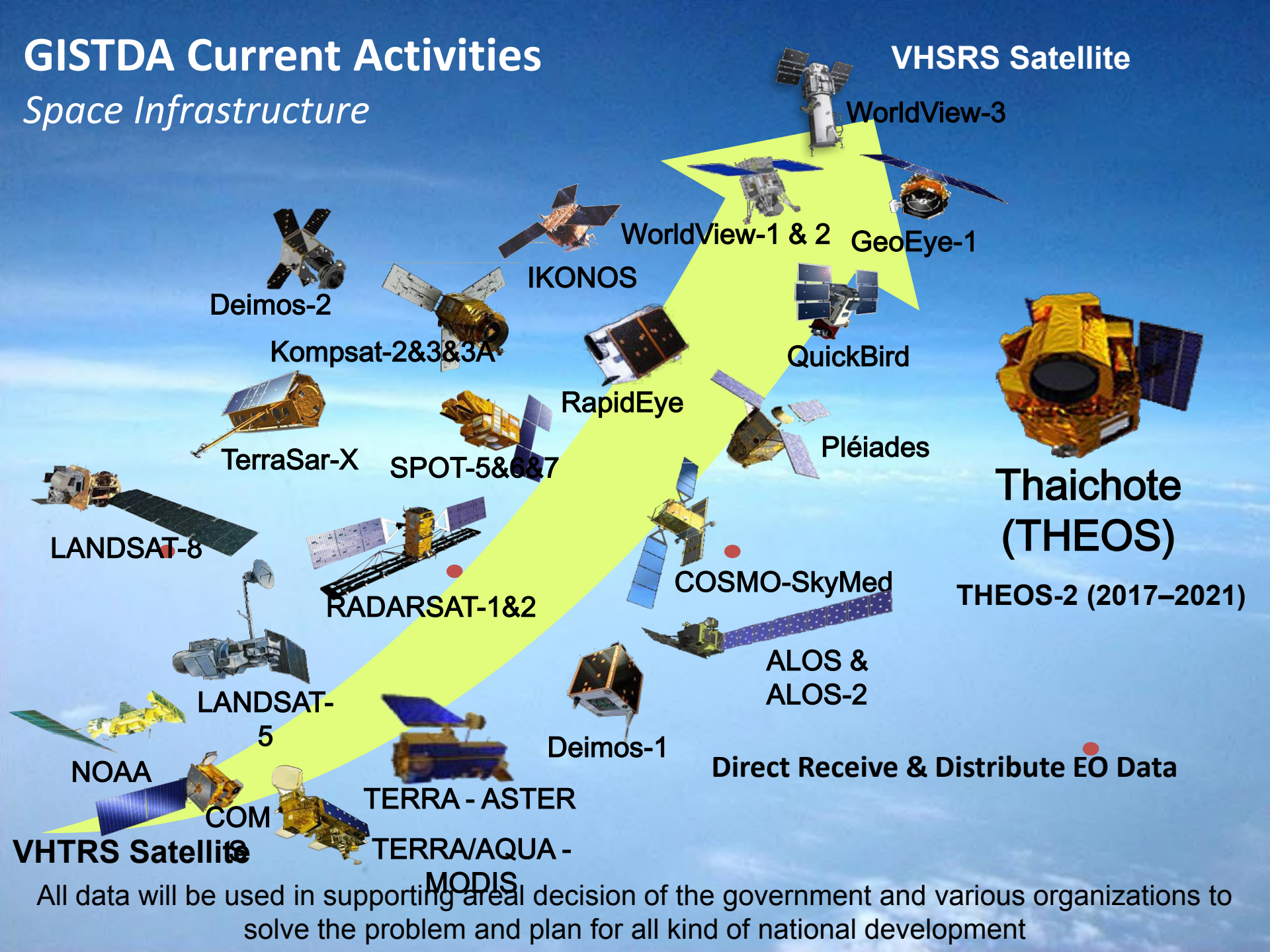
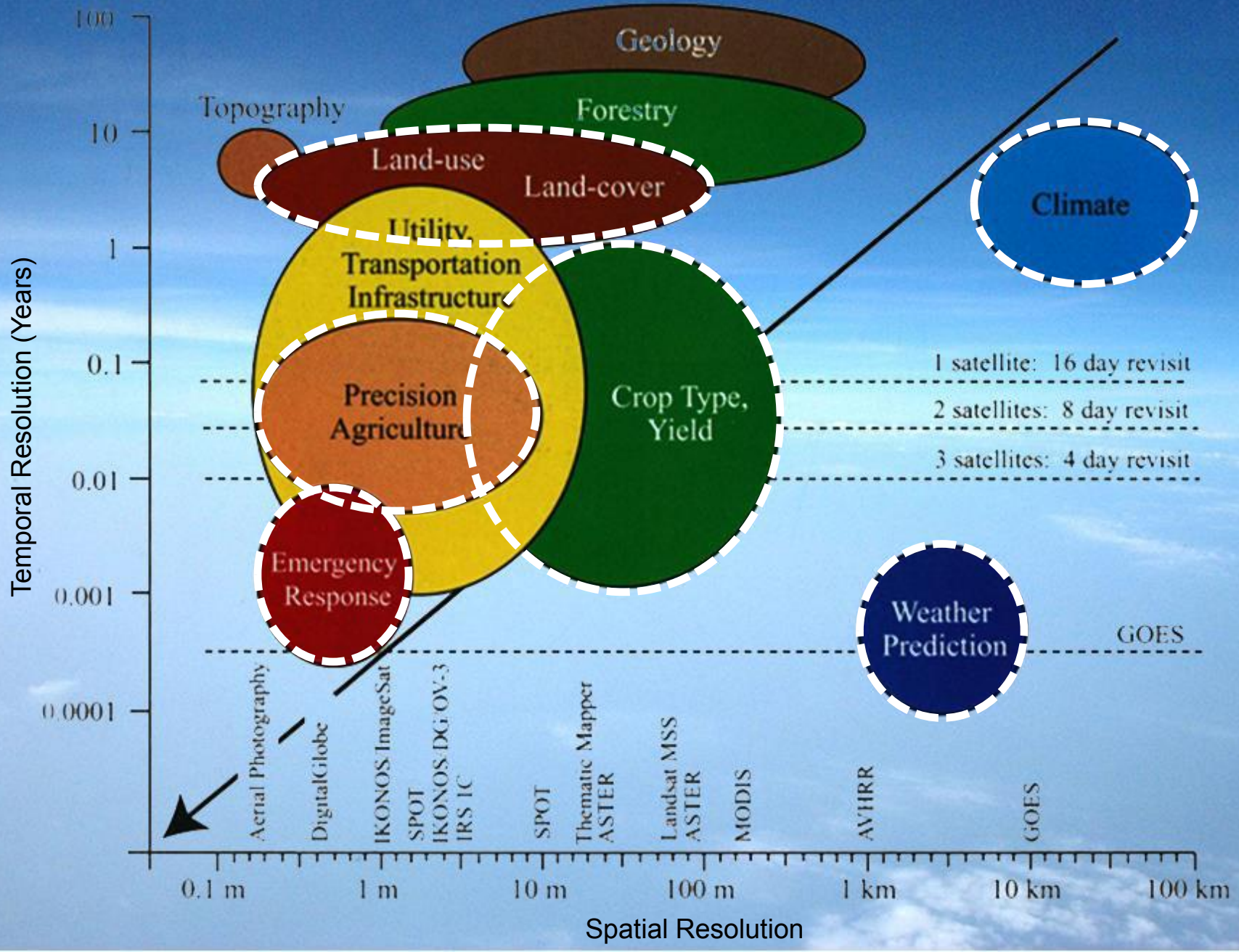
GISTDA Current Activities

Space Infrastructure

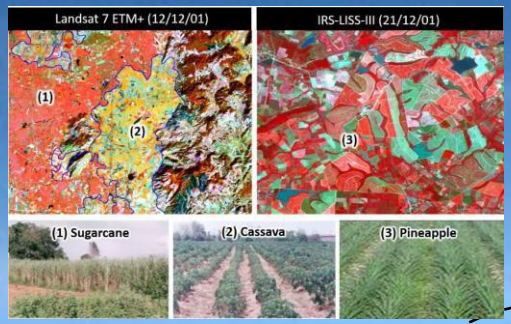


All data will be used in supporting areal decision of the government and various organizations to solve the problem and plan for all kind of national development

Utilization of the EO data for different applications.



The Agricultural Systematic Monitoring



The Agricultural Systematic Monitoring

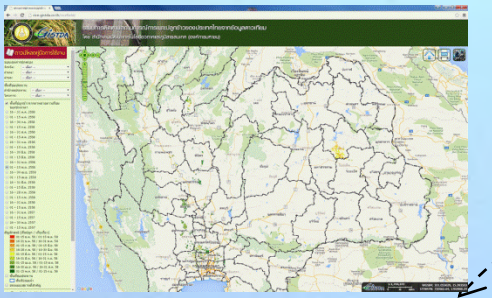
National Field Monitoring Networks

Crop Type Identification & Mapping

- crop rotation
- farm activity

Crop Condition Assessment

Crop Disaster Monitoring..



Crop Monitoring

Damage Assessment

- moist-deficiency
- insects
- fungal/weed

Crop Area Estimation

- feather extraction
- ...

Crop Growth Monitoring

- phenology
- stage type
- crop health

Crop Yield Prediction

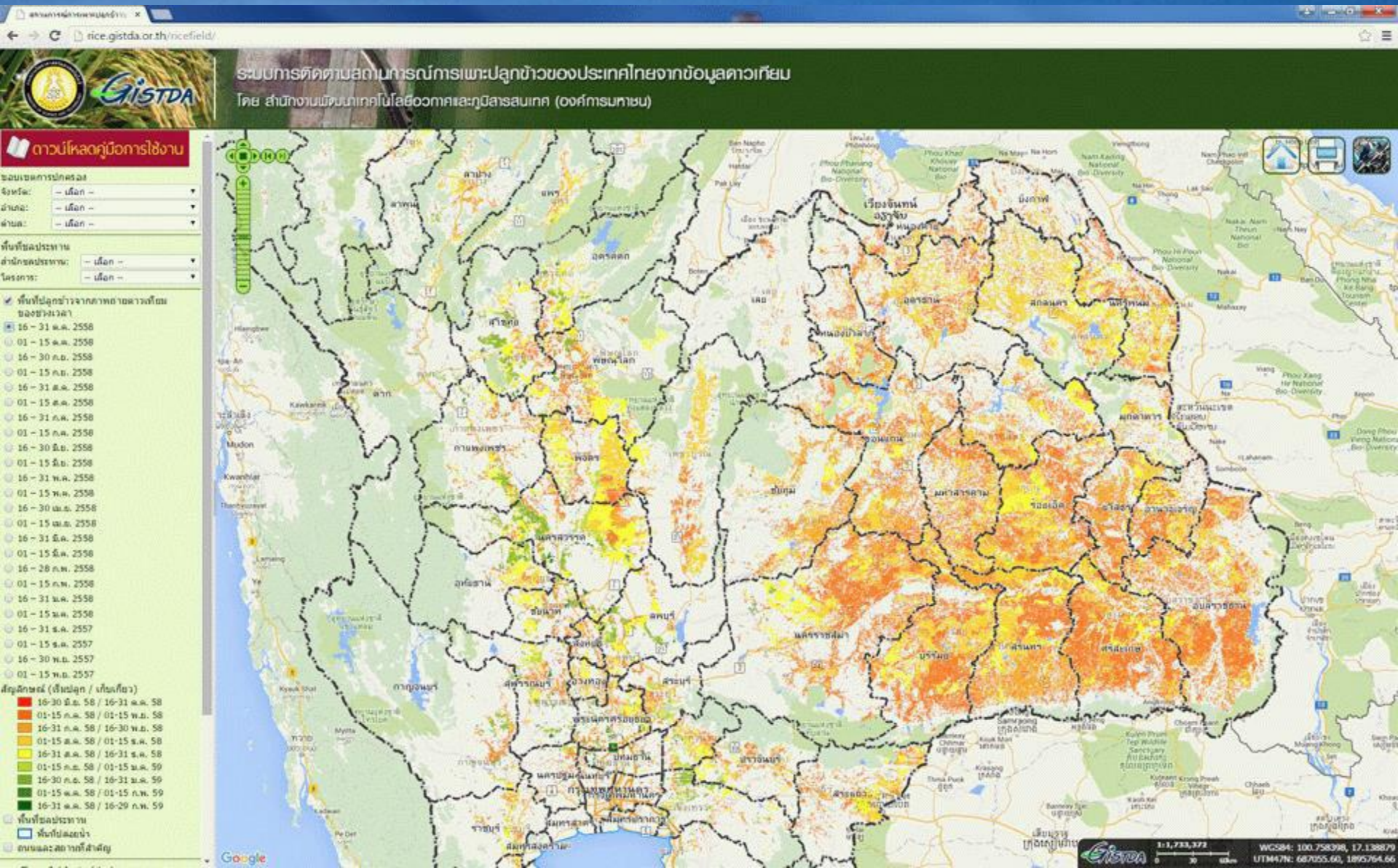
- agri-climate
- Crop growth
- remote sensing

DSSAT v4.6

4 main crops: Rice Maize (Corn), Cassava (Tapioca) Sugarcane

Monitoring 4 main crops: rice corn cassava s

Rice crop monitoring http://rice.gistda.or.th



Disaster Management in Agriculture

"Access to information is critical to successful disaster risk management. You cannot manage what you cannot measure

– Margaret Wahlstorom – "

Efforts to reduce the effects or risks associated with hazards

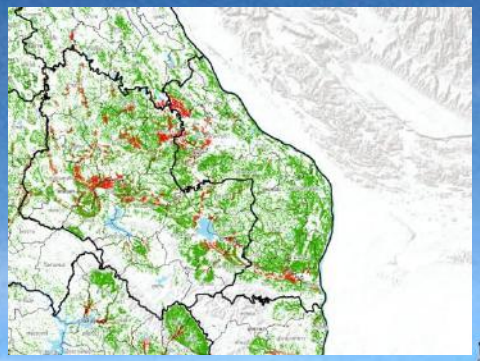
Actions taken prior to an emergency to facilitate response and promote readiness

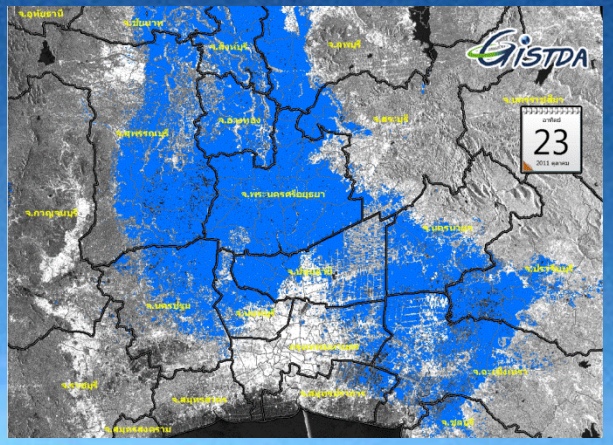
http://globalasiablog.com

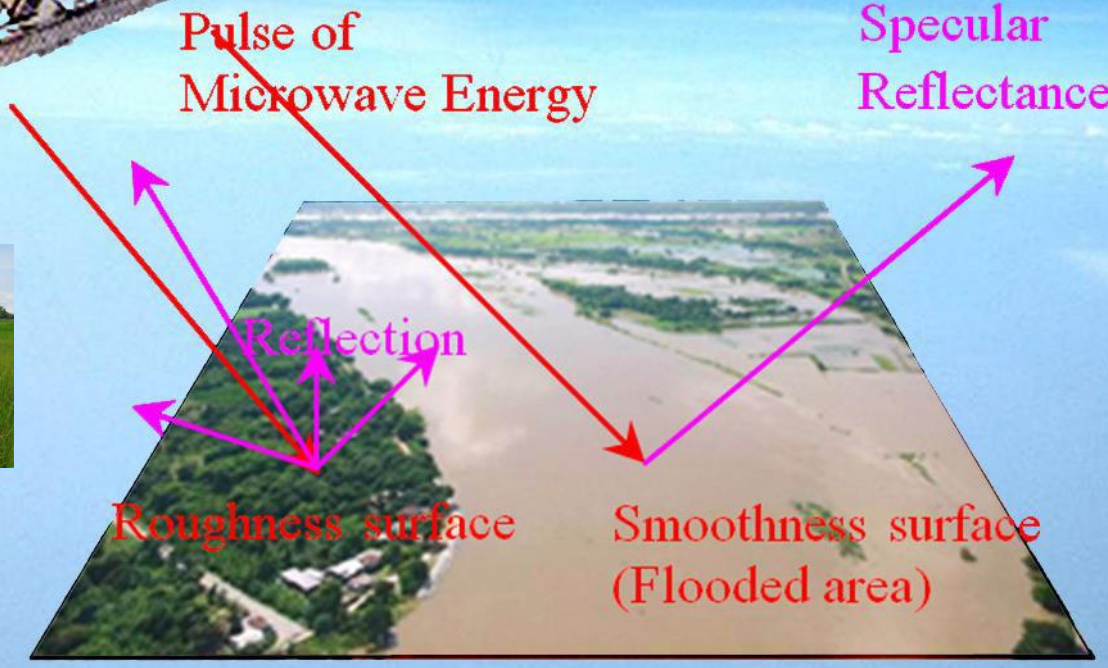
Action taken after an emergency to restore and resume normal operations

Action taken during an emergency to save lives, property, and the environment

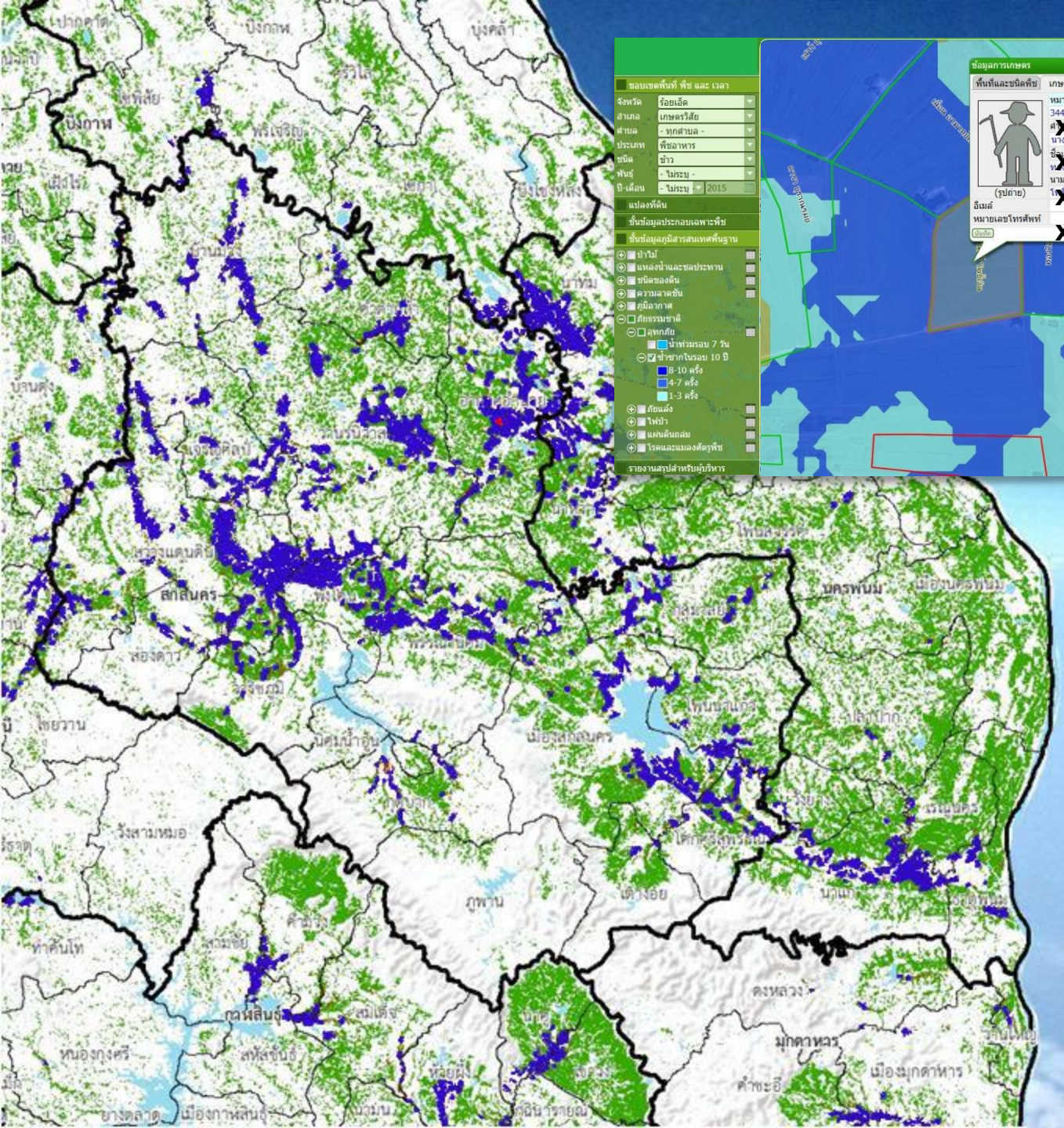
Monitoring the Surface Extent of Water Bodies (Active Microwave)







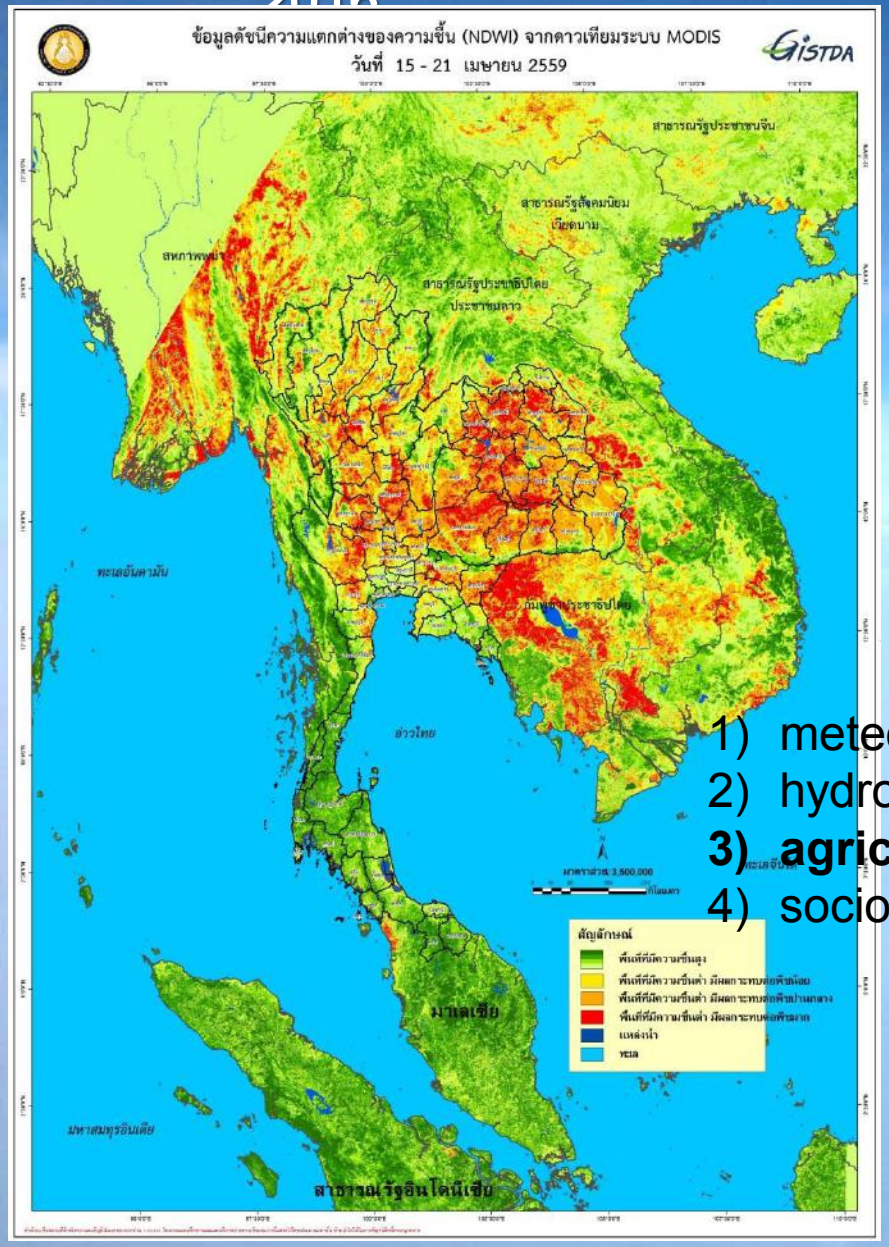
Surface roughness **is the terrain property that most strongly influences the strength of the** ***radar backscatter*****.**



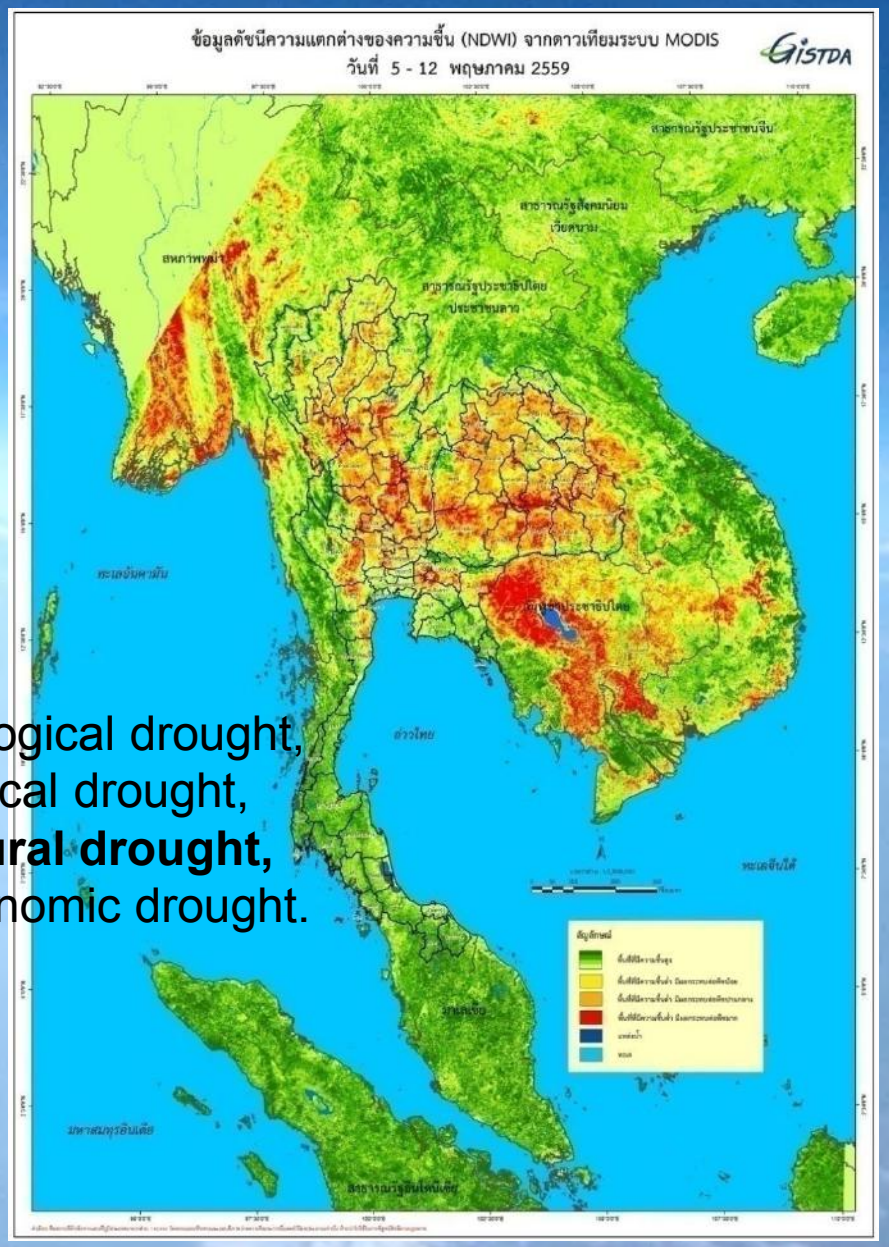
4 August 2017

Drought

15 – 21 April 2016

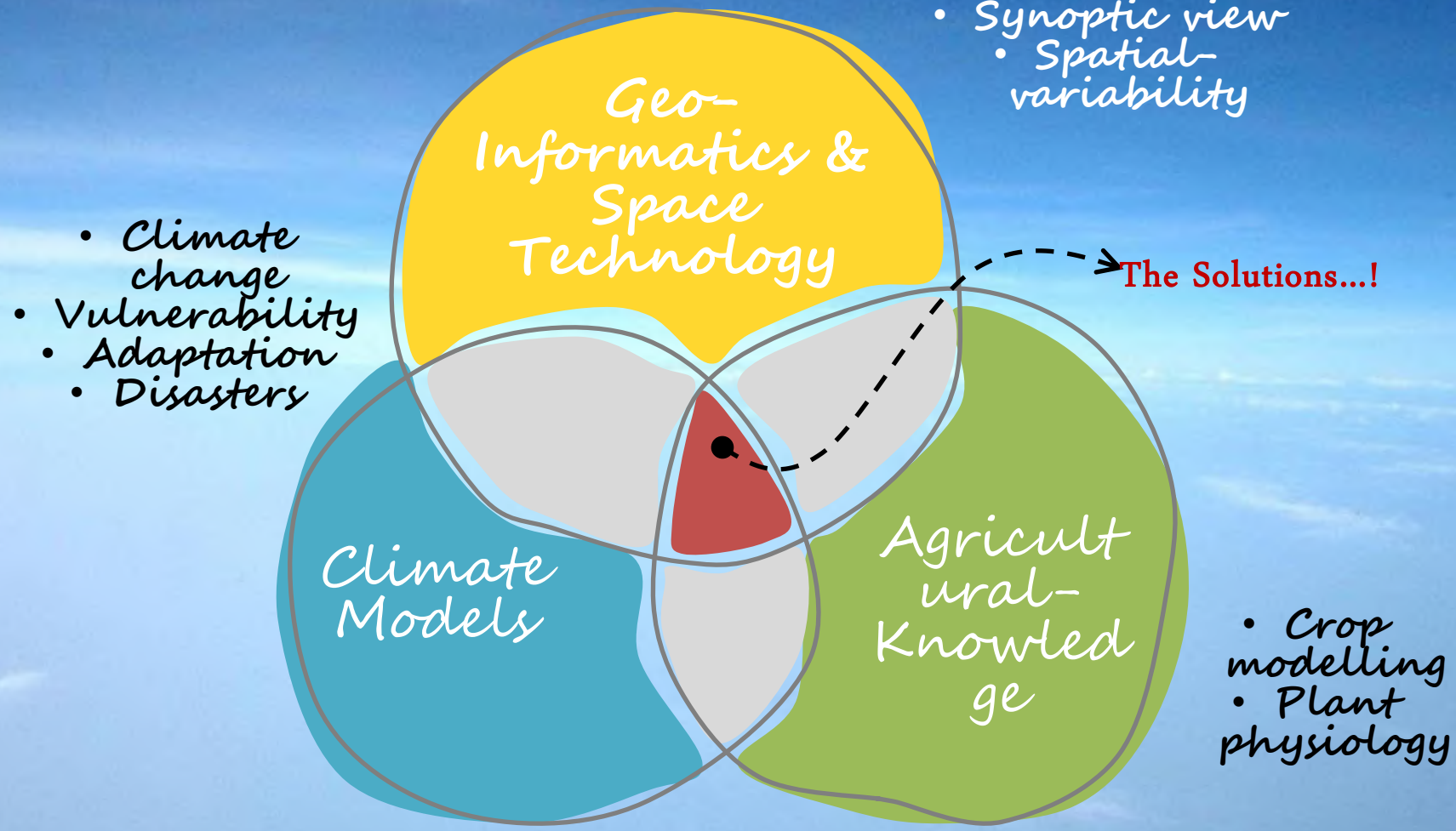


5 - 12 May 2016



1) meteorological drought,
2) hydrological drought,
3) **agricultural drought,**
4) socioeconomic drought.

Integrated-Disciplinary & Technology



Intelligent Geo-Agromatic System

- From Our Space To Your Farms -

Ubiquitous accessibility at sub-district and end-user levels through smart interaction, user equipment.

Improving yields and reducing costs & pollutions

Strategic Planning

Decision Making

Operational Planning

FarmRoyal

FarmPad

FarmMate

"AgroPolygon"

Delivery to

Farmer

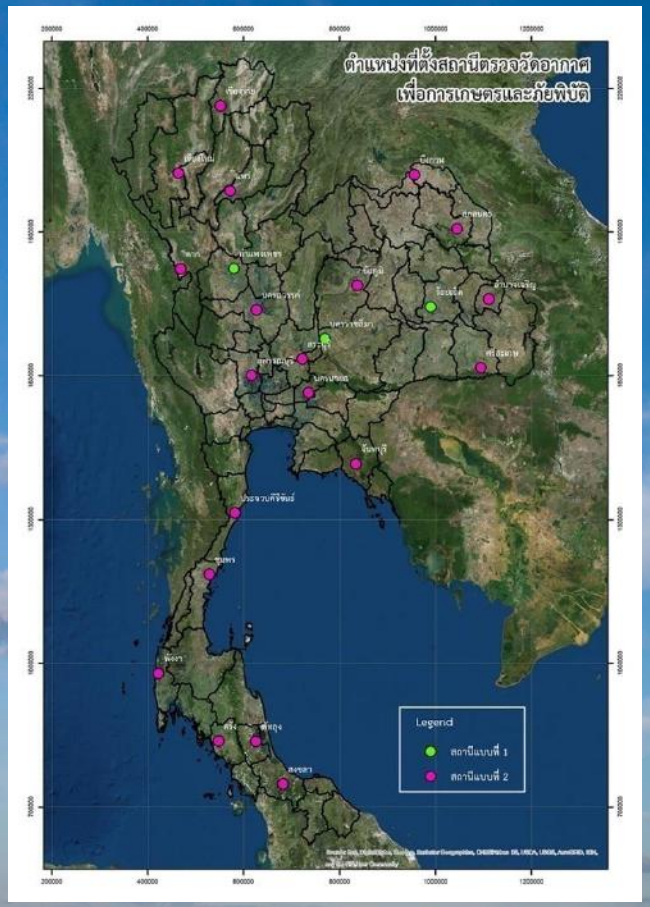
Providing better information for management decisions.

Reducing Farmers Vulnerability

Turning Big Data into Big Profits

SmartFarm

Monitoring / Measuring / Mapping / Modeling / Management



OCO2 , GOSAT

Measurement **of** ***greenhouse gas*** **(*GHG*) fluxes**

The seasons or weather patterns also affect the growth in crop

spectroradiometer

3-D sonic anemometer

krypton hygrometer

thermal infrared radiometer

net radiometer

solar radiation

air temperature

relative humidity

water content profile probe

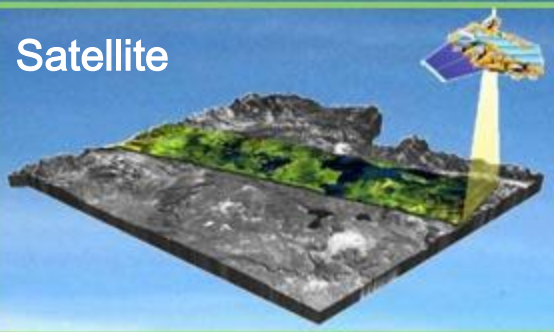
rain gage

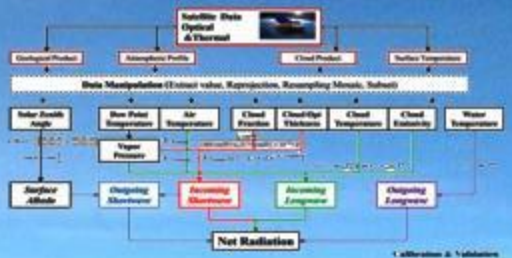
wind speed and direction

digital camera (2)

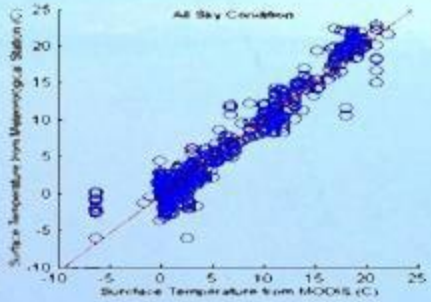
Validation

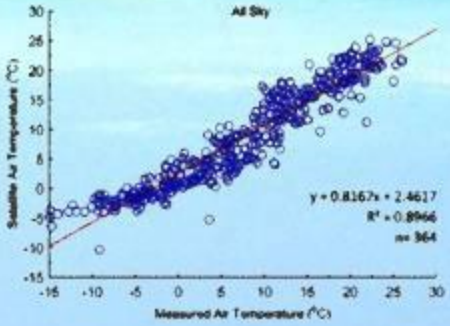
Satellite

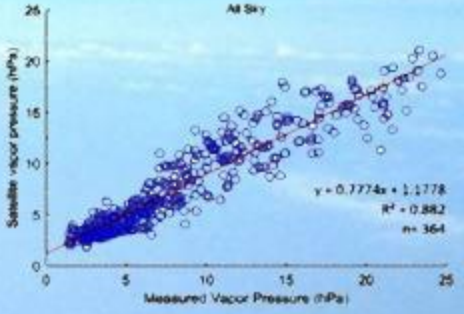


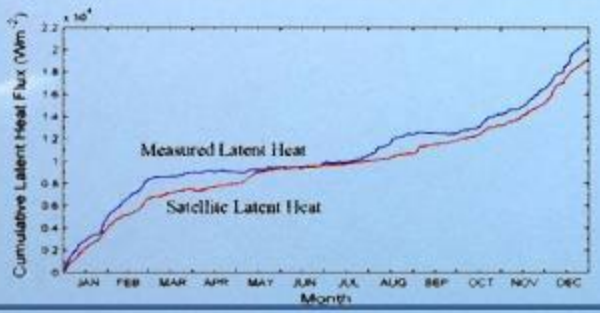


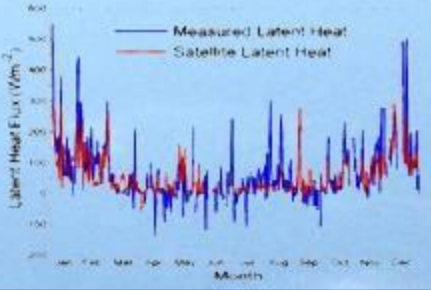
Spectroradiometer/Weather station











Monitoring stresses in plants
: from in situ measurement and space technology

EO provide a supplement to in-situ measurements by offering observations that are regularly, temporally, and spatially reliable

Visible

Red edge

Mid-Infrared

Near-Infrared

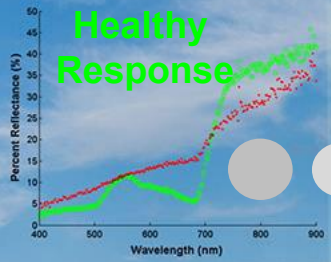
Thermal-Infrared

Evapotranspiration

Policy, Decision Making

Spatial analysis

Stresses in plants



Healthy Response

Stressed Response

Satellite-derived data is validated based on in-situ data

Stresses in plants

heat stress

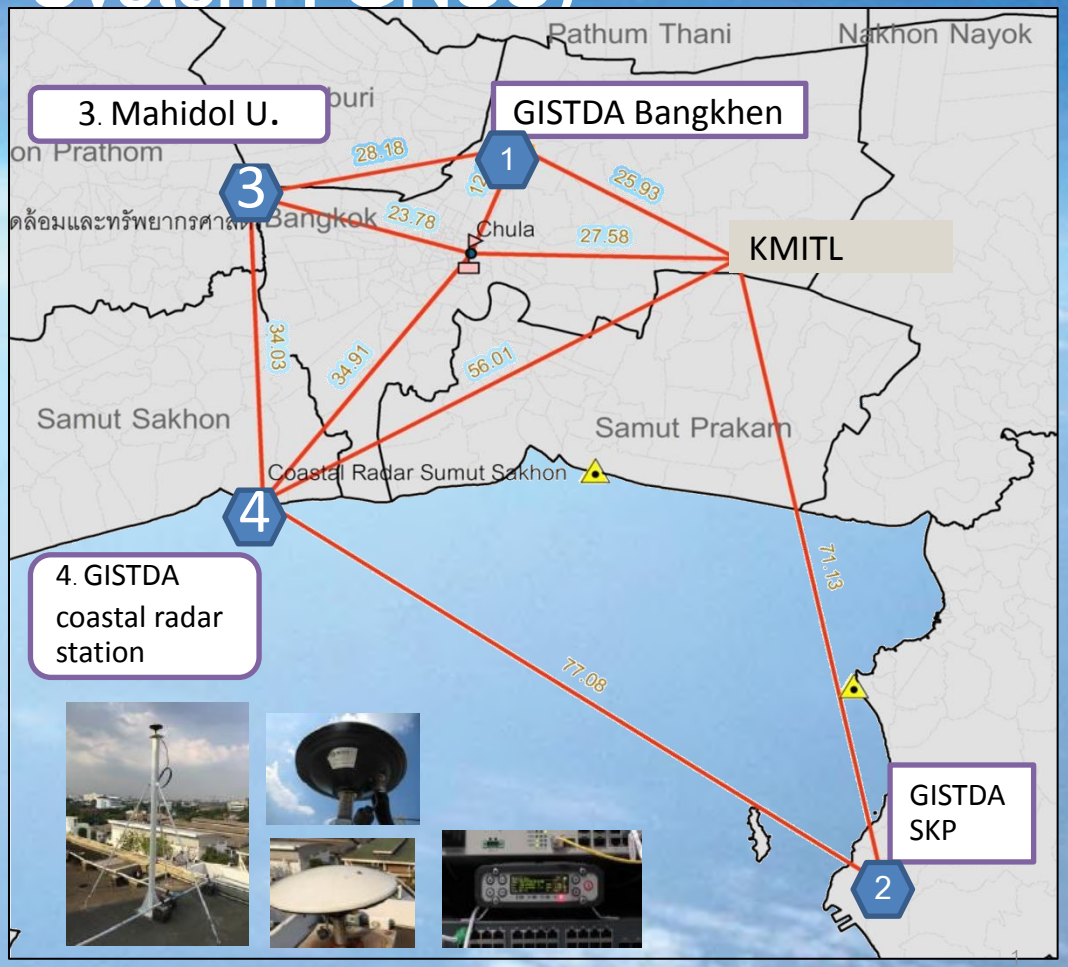
water stress

cold stress

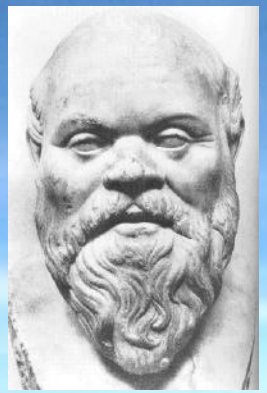
Farmer

Precision agriculture Satellite Farming

(Global Navigation Satellite System : GNSS)



“Man must rise above the Earth—to the top of the atmosphere and beyond—for only thus will he fully understand the world in which he lives”



(Socrates 470 BC-399 BC)

“Man masters nature not by force but by understanding…..”

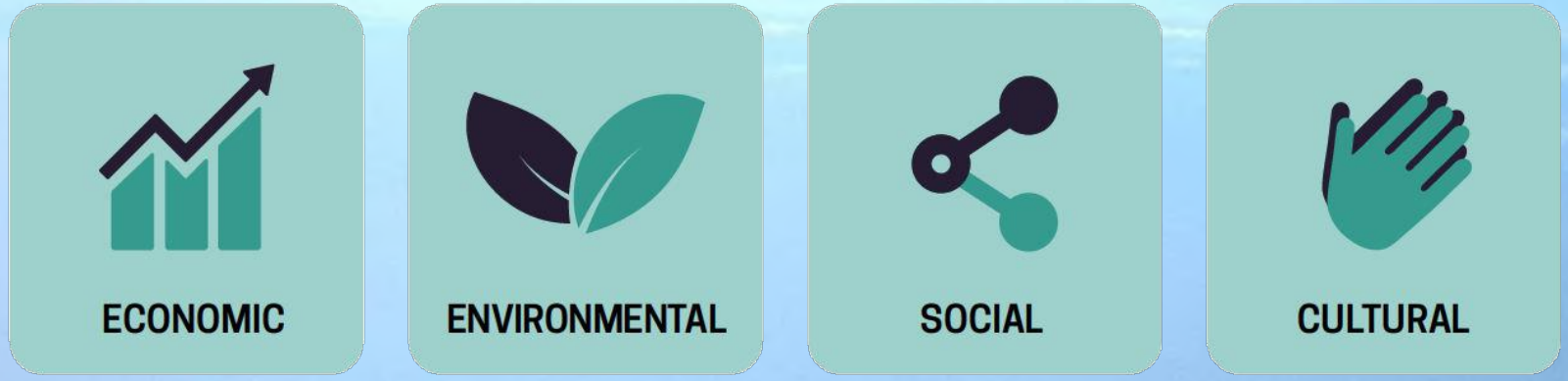
Jacob Bronowski

'If You Can't Measure It, You Can't Manage It’… You can't improve It”

Peter Drucker (father of management)

GISTDA still move forward to promote the applications of space technology for supporting agricultural management and sustainable development in ASEAN region.

“progress toward sustainability with balance”



THANK YOU
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GISTDA

Delivering Values From Space

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https://www.facebook.com/gistda