



Space applications for sustainable development in Asia and the Pacific

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Structure of the Presentation:

4 Key Questions

- 1. Why the UN Regional Commission (ESCAP) has put in place space applications to realize its vision?**
- 2. How ESCAP facilitates promoting space applications?**
- 3. What has been the overall impact?**
- 4. Conclusions to be shared with COPOUS**



Achieving Sustainable Development in Asia –Pacific

Key Challenges

- Eradicating poverty and narrowing inequality
- Pursuing sustained and inclusive economic growth
- Gender Equality and Empowerment
- Building resilience to economic crisis, climate change and disasters
- Responding to population dynamics and urbanization
- Enhancing resource efficiency and natural resource management
- Deepening regional integration and connectivity

**ESCAP Recognizes
that Space
Applications
leapfrog and fill the
gaps**

Key Enablers

- Financing
- Science, Technology and Innovation
- Trade
- Capacity Building
- Partnership
- Governance



How ESCAP facilitates space applications...?

Regional Space Applications for Sustainable Development in Asia and the Pacific (RESAP)

...Strong Political Commitments , Ownership and Support

69/11: Implementation of the Asia-Pacific Plan of Action for Applications of Space Technology and Geographic Information Systems for Disaster Risk Reduction and Sustainable Development, 2012-2017 (2013)

68/5: Asia-Pacific Years of Action for Applications of Space Technology and the Geographic Information System for Disaster Risk Reduction and Sustainable Development, 2012-2017 (2012)

Regional Cooperative Mechanism for Drought Monitoring and Early Warning was launched

.. Institutionalization of RESAP: ESCAP acts as the secretariat of RESAP

2nd Space Ministerial Conference

New Delhi (1999)

Capacity Building

1st Space Ministerial Conference

Beijing (1994)

RESAP: Education and Training Networks (China, India and Indonesia)

... + Regional /South-South Cooperation

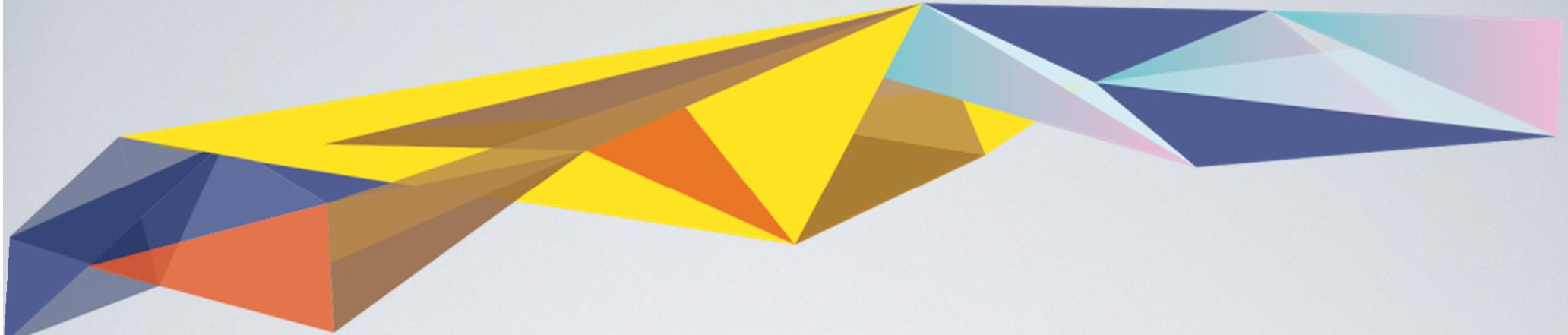
Inception of RESAP: – Intergovernmental Consultative Committee, Thematic Regional Working Groups



Implementing the Asia-Pacific Plan of Action 2012 - 2017

Applications of Space Technology and GIS for Disaster Risk Reduction and Sustainable Development

- ESCAP was tasked to take the lead in implementing the Asia-Pacific Plan of Action at the regional level
 - Harmonize and enhance existing regional initiatives, pool expertise and resources at the regional and sub-regional levels and share good practices and lessons.
- Enhance collaboration with space related UN agencies and regional initiatives, including UNITAR/UNOSAT, UN-SPIDER, ISDR, the Charter, APRSAF, APSCO, Sentinel Asia,
 - MOA between ESCAP and UNITAR signed in 2013.
 - Provision of space based information to disaster affected countries.
 - Joint advisor mission with UN-SPIDER.
 - Joint organization of workshop/training programme on space technology applications.
 - Cross participation activities and share of the information.
- Deliver capacity-building to address the main technical gaps in developing countries.
 - Establish the Geo-DRM portal in CSNs for disaster risk management.
 - Joint organization of workshop/training programme on space technology applications with UNITAR/UNOSAT, UN-SPIDER and AHA centre.

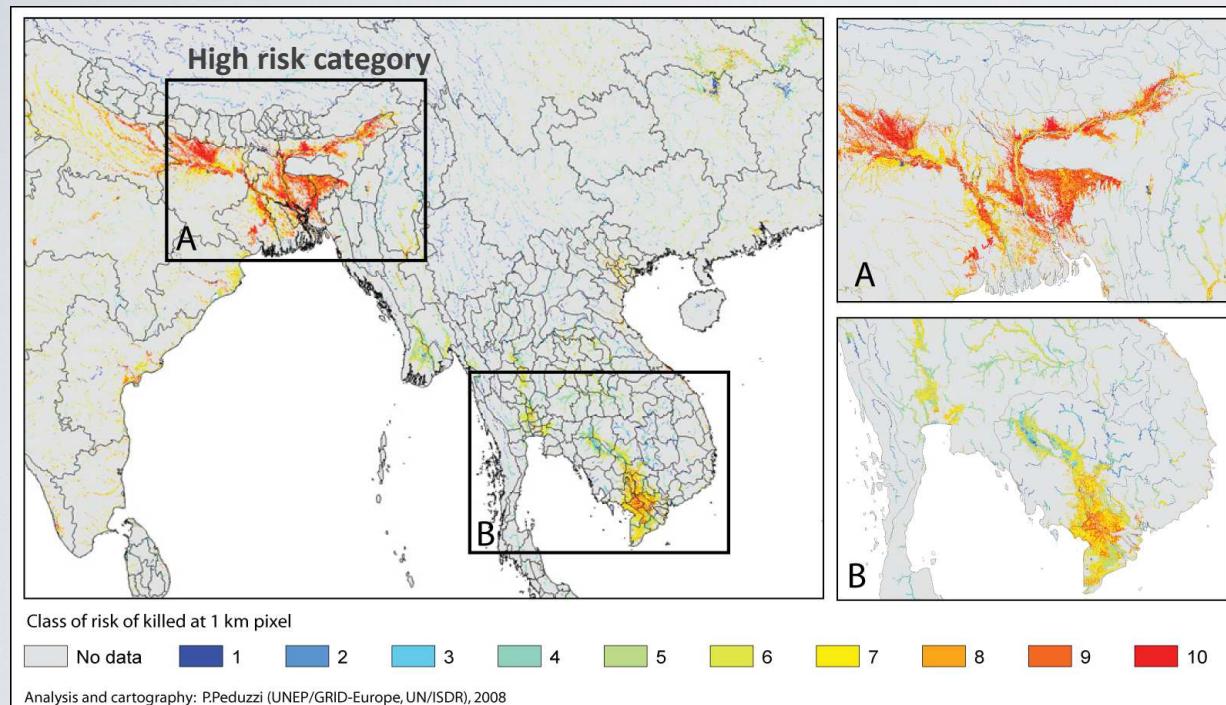


ESCAP Space Applications : 3 Visible Impacts

- I. Analytical Research for Public Policy, Regional and South-South Cooperation**
- II. Bridging the Gaps between EO products/services and its down-the-line utilization**
- III. Strengthening Institutional Capacity**

I. Analytical Work for Public Policy, Regional and South-South Cooperation

A person living in the region faces 4 times more risk than in Africa and 25 times more than in Europe or North America.



Use Space to demonstrate how the risk and vulnerability are intensively concentrated in high risk countries and are on the rise



Protecting Development Gains

Reducing Disaster Vulnerability and Building Resilience in Asia and the Pacific

The Asia Pacific Disaster Report, 2010

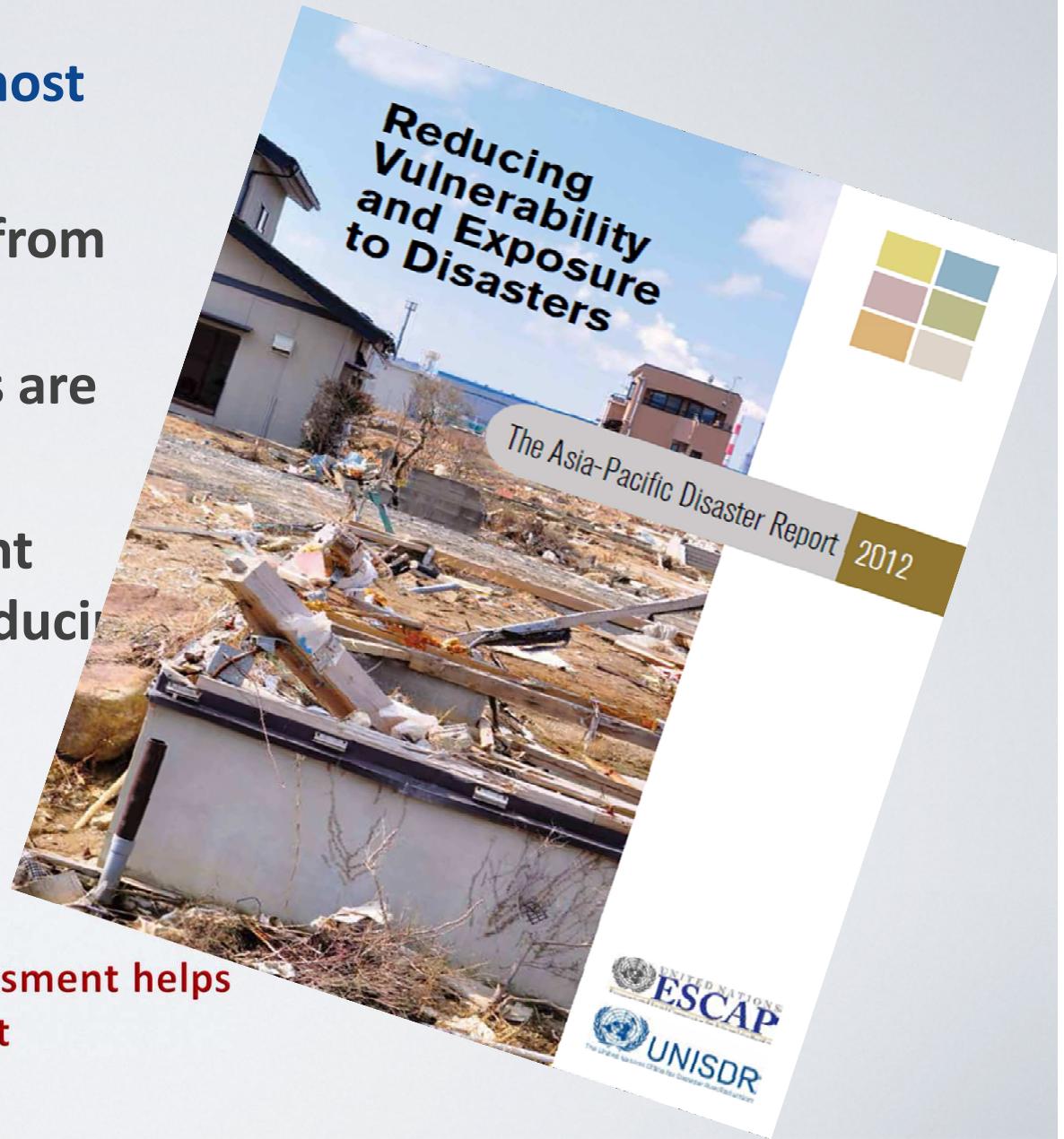


I. Analytical Work for Public Policy, Regional and South-South Cooperation

Asia and Pacific is the world's most disaster-prone region

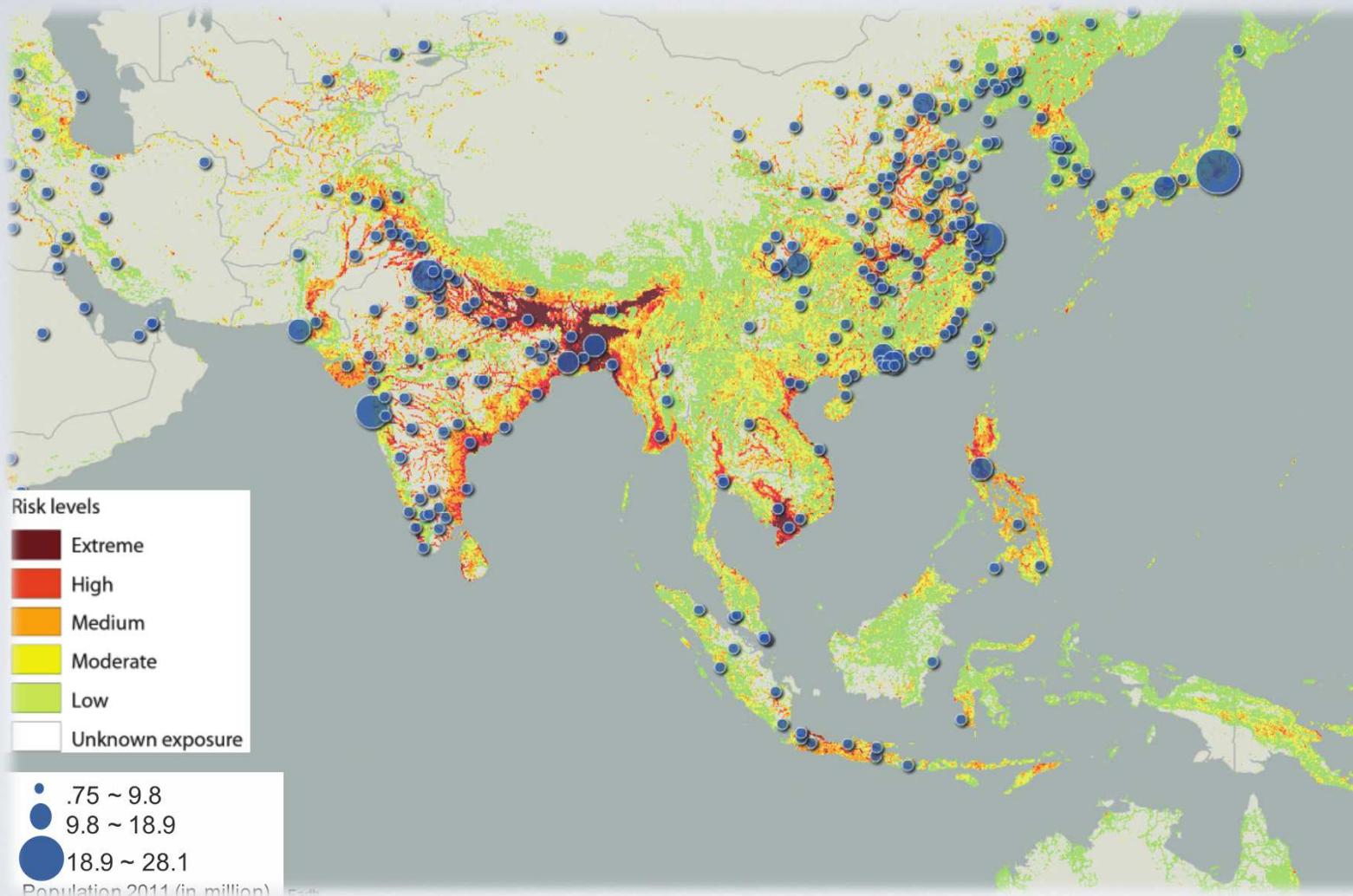
a.The loss of life is decreasing from hydro-meteorological hazards, while the economic losses are alarmingly on the rise.

a.Spatial land use plans, resilient critical infrastructure help in reducing economic losses.



Space for early warning, risk assessment and post-disaster damage and loss assessment helps substantially in disaster risk management

Many urban risk hot spots in Asia-Pacific...



Of the 305 urban agglomerations, 119 are situated along coastlines, large number of cities with high seismic risk

69th
Commission Session
25 April - 1 May 2013
Bangkok

I. Analytical Work for Public Policy, Regional and South-South Cooperation

Asia-Pacific Leaders Convene to
Discuss Strategies to Build Resilience
to Natural Disaster and Economic
Crises in the Region

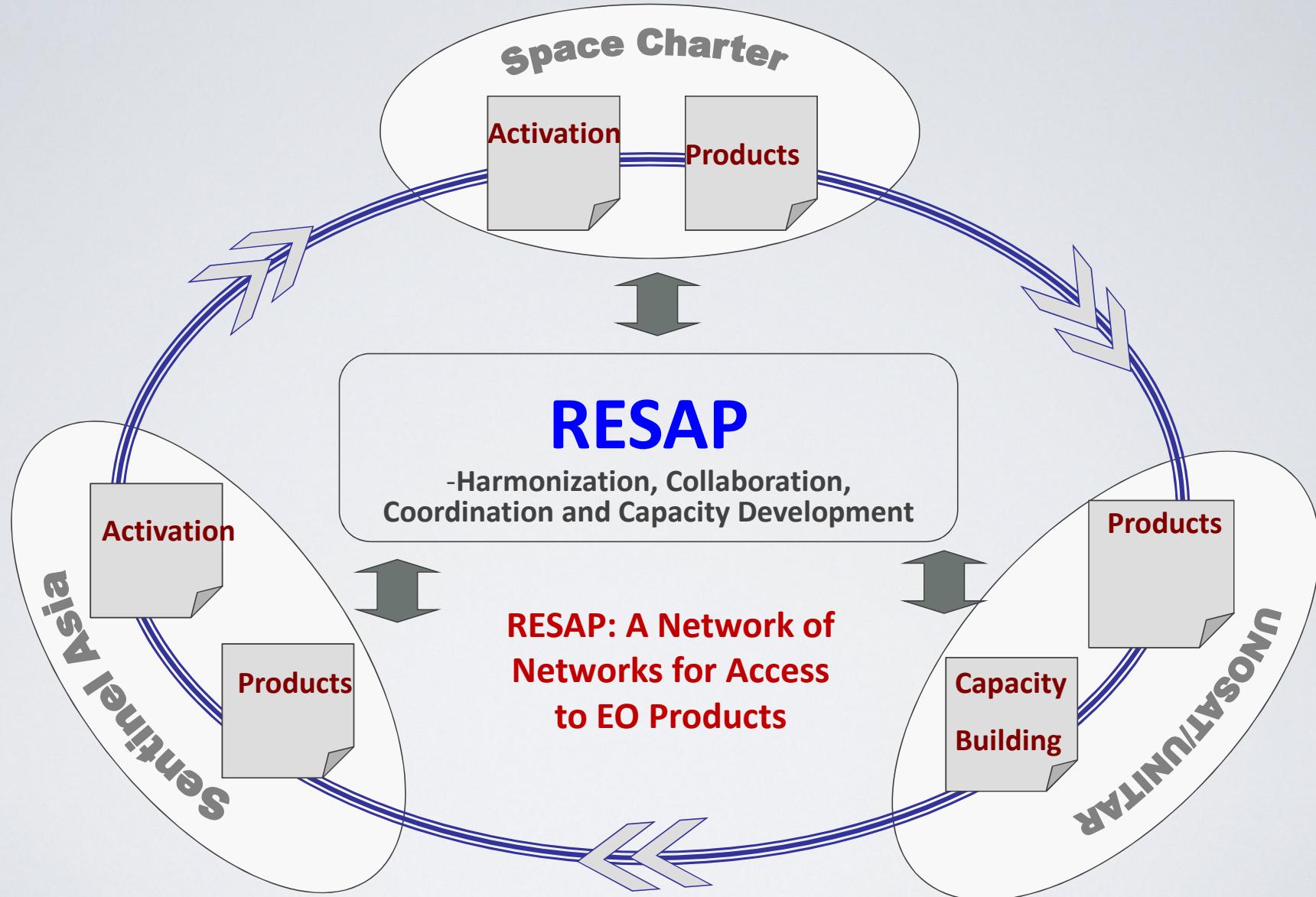
Use Space to study the specific resilience issues - economic, social, environment, critical infrastructure and supply chains

Building Resilience to
Natural Disasters and
Major Economic Crises





II. Bridging the Gaps between EO products/services and its down-the-line utilization



It enable access to data products from the global and regional constellations of EO satellites



Maximizing Access to Earth Observation Products

- Timely provision of near real-time imagery is critical for disaster response, relief and impact assessments-support disaster governance.
- In last 2 years, ESCAP has provided more than 150 near real-time satellite images and damage maps to Afghanistan, Bangladesh, China, Pakistan, the Philippines, Solomon Islands and others
 - Typhoon Haiyan--Under the RESAP framework, 19 scenes of radar and high resolution images by the Indian space agency, ISRO have been provided to the Philippines; More than 30 links of damage assessment maps and satellite images provided by UNOSAT.
 - Hailstorm and landslide in Afghanistan-ESCAP worked with UNITAR/UNOSAT to provide near real time satellite imagery to disaster management authority.
- Innovative technical tools for disaster early warning, response, relief and damage assessment
 - Provision of satellite imagery downloading supported by RESAP members and UN family, such as UNITAR/UNOSAT and UN-SOIDER
 - Establish networks of space based information/products sharing for DRR.

**ESTIMATED RAINFALL ACCUMULATION FROM
25 TO 29 APRIL 2014, AFGHANISTAN**

Rainfall Accumulation Analysis with TRMM (TMPCP-RT 3B-42RT) Derived Data Acquired 25 to 29 April 2014

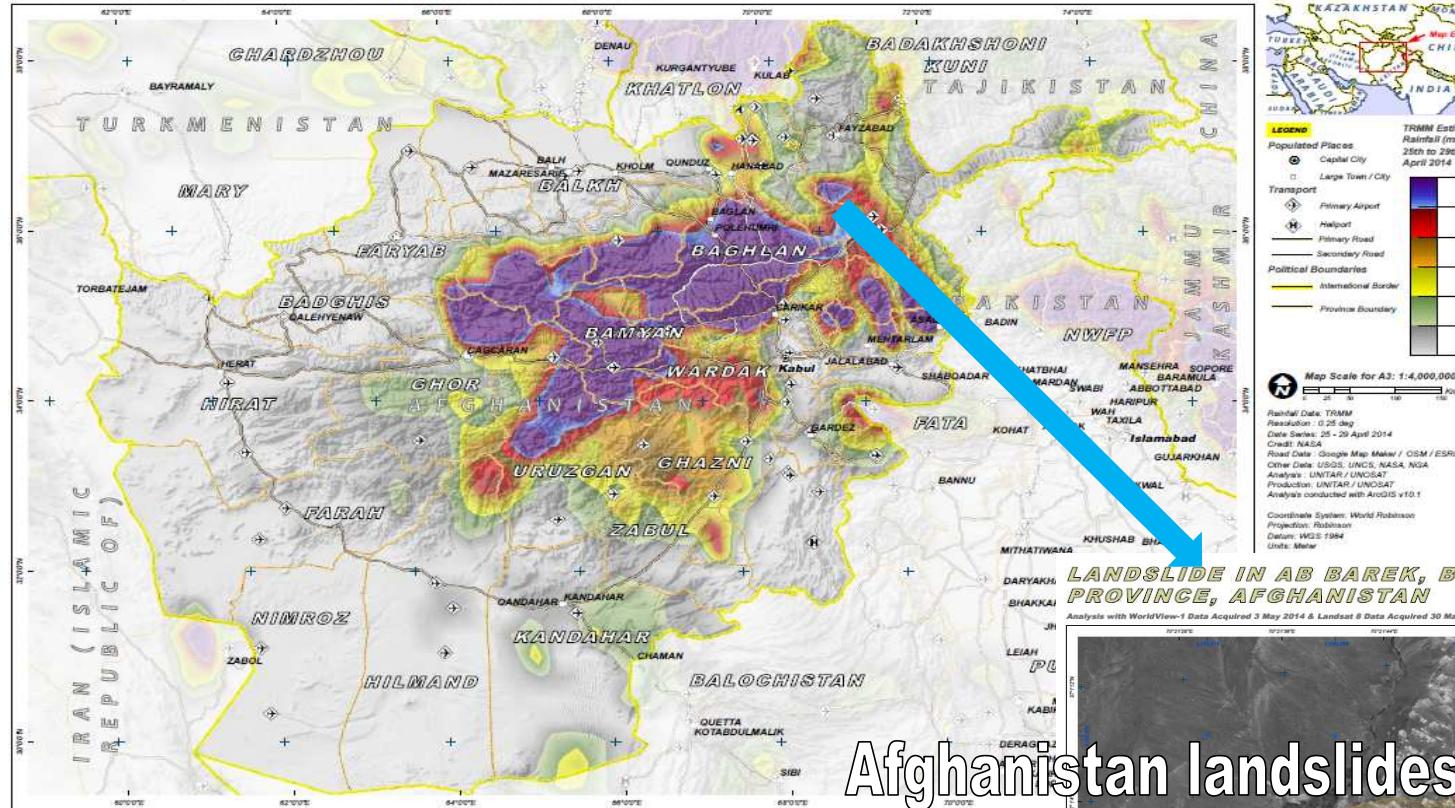
This map presents the estimated total rainfall accumulation in Afghanistan covering the period from 25 to 29 April 2014. The total estimate was derived from the Tropical Rainfall Monitoring Mission (TRMM) precipitation dataset at a spatial resolution of approximately 0.25 degrees for this region. It is possible that precipitation levels may have been underestimated for low-lying areas, and it is not a substitute for ground station measurements.



Heavy Rainfall Flooding Event

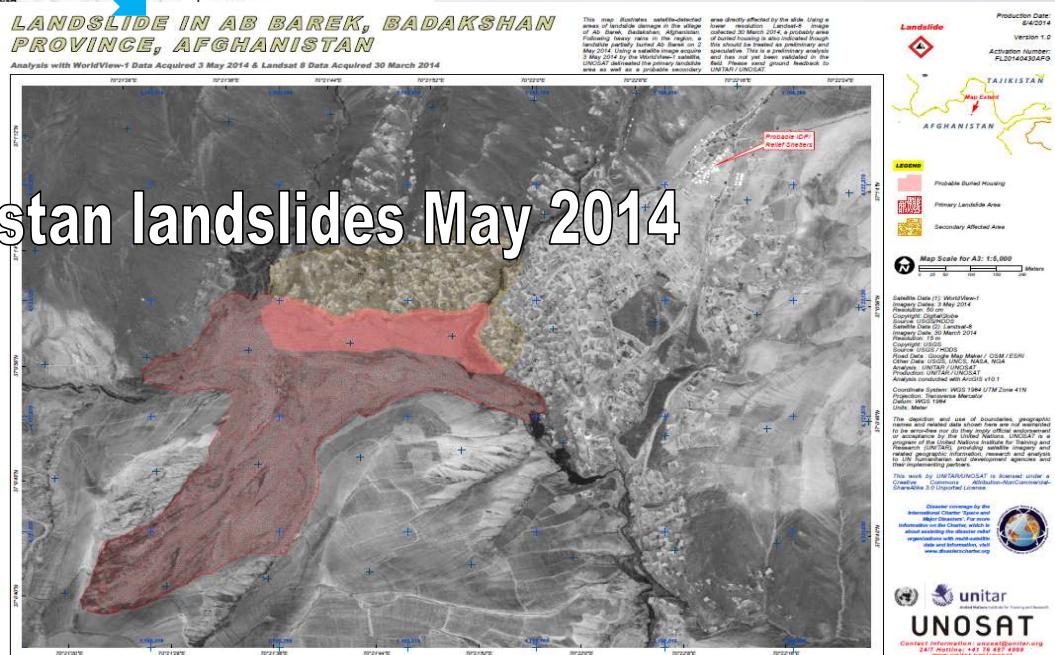
Activation N
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Bridging the Gaps between EO products/services and its down-the- line utilization



Afghanistan landslides May 2014

ESCAP: Mobilizing support from member Countries and partners to support disaster-affected countries for response, relief and impact assessments.



ESCAP coordinated UNITAR/UNOSAT to provide landslide damage map to
Afghanistan National Disaster Management Authority



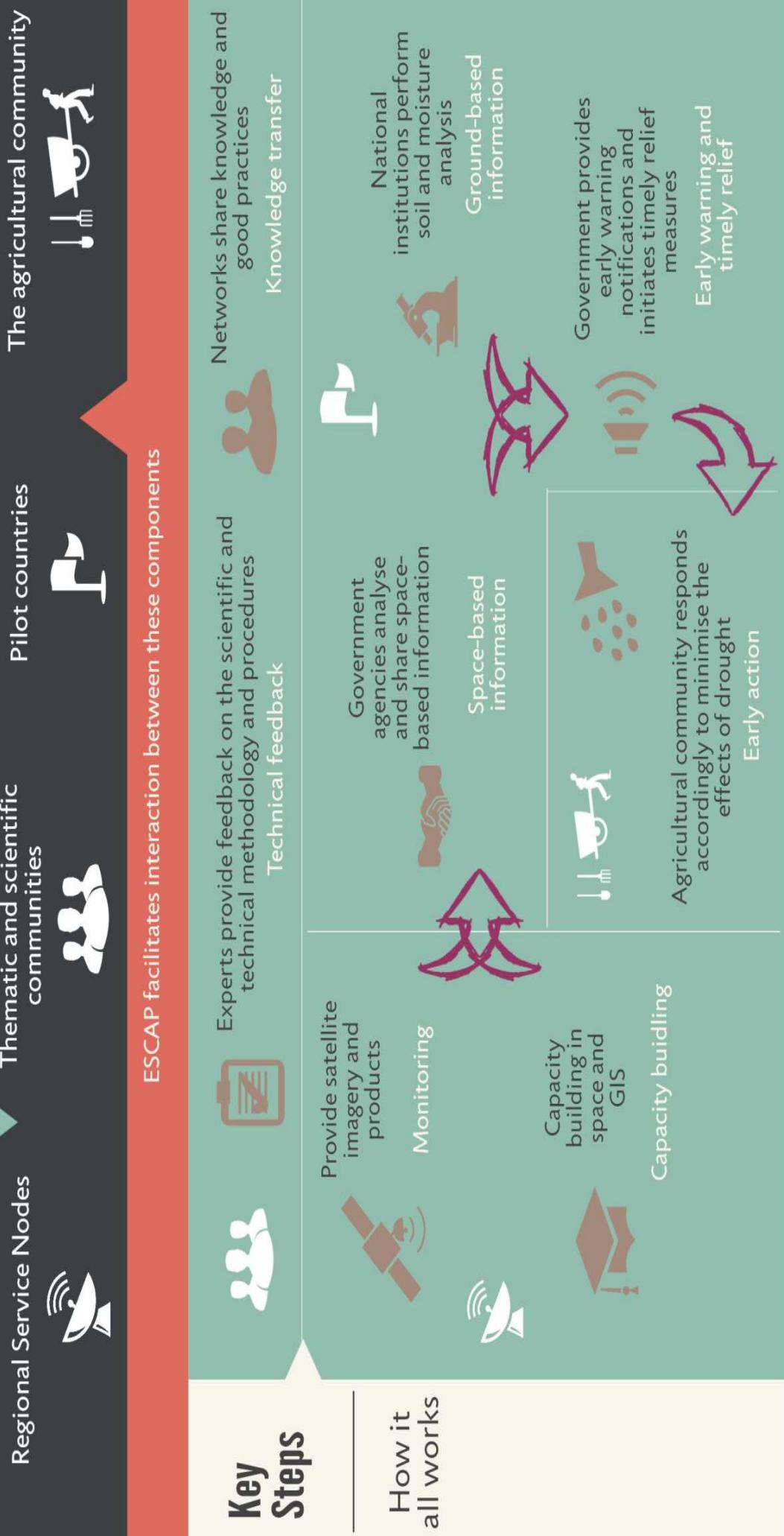
Regional Drought Mechanism

-Monitoring, early warning and preparedness

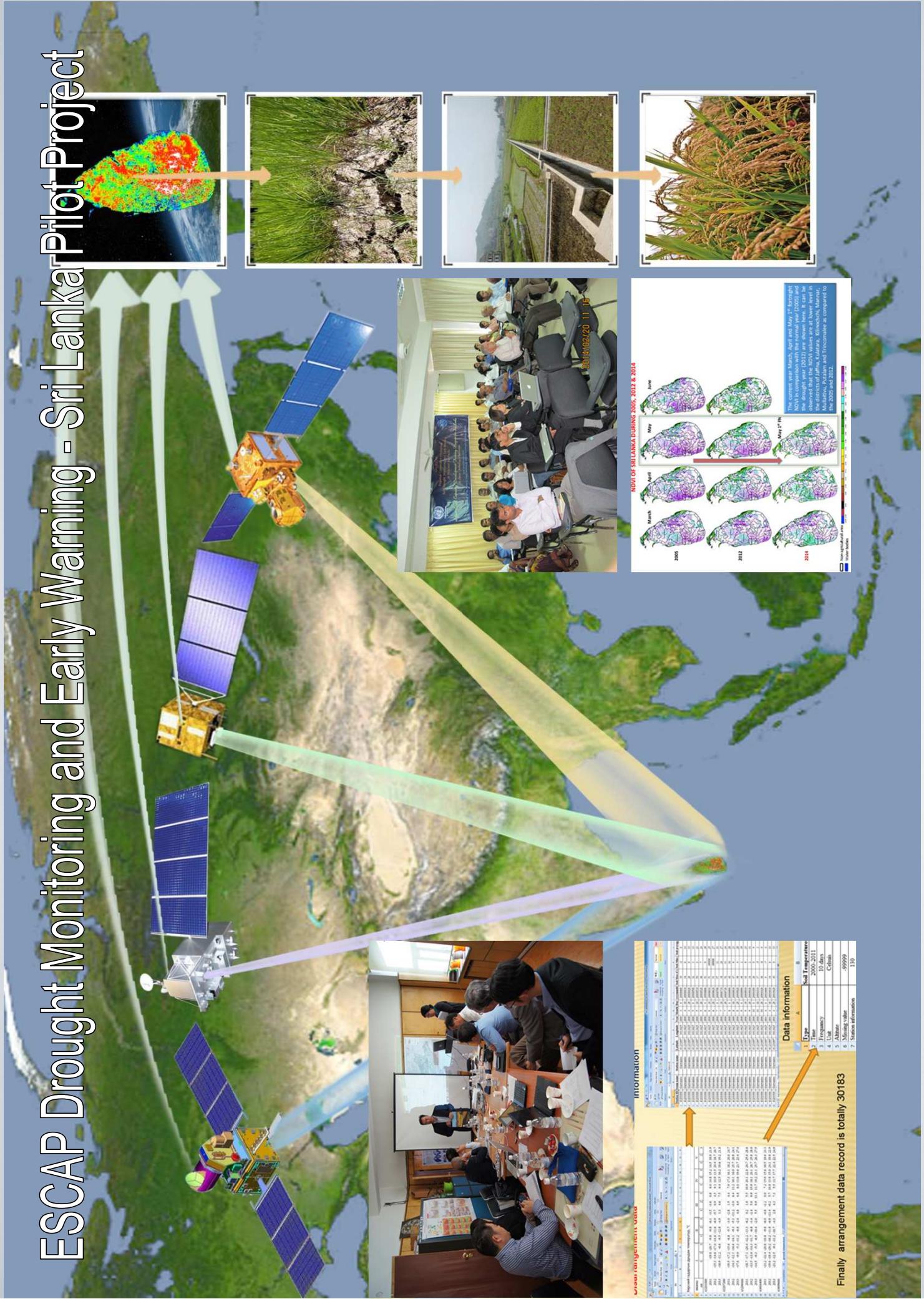
- Drought is creeping disaster, long term socio-economic ramifications, affects more severely in developing countries due to the agrarian nature of the economy and low coping capacity. Between 1985 and 2013, 110 drought events occurred in the region, affecting 1.2 billion people and costing US\$52 billion.
- Aims to enhance the capacity of governments to use space-based data for effective drought monitoring and early warning.
- Apply science and technology to support the Asia-Pacific region in better addressing drought. Participating countries benefit from:
 - Enhanced access to space-based data;
 - Capacity building in preparedness and response;
 - Strengthened institutional coordination and policies at the country level; and,
 - Regional and South-South cooperation and support networks.
 - At present, two Regional Service Nodes have been put in place in China and India to provide space-based data/products as well as capacity building.
 - Cambodia, Mongolia, Myanmar, Nepal and Sri Lanka have applied for the pilot countries of the Mechanism.
 - Specialized training has been conducted in Mongolia and Sri Lanka.
- Delivery as “ONE UN”: partnership with UNITAR/UNOSAT, UN-SPIDER, UNCCD, FAO, WMO, ISDR, WFP and UNEP.

The Drought Mechanism

Four main components

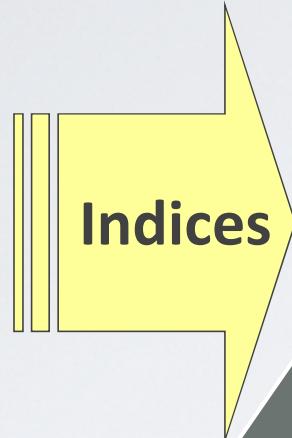


ESCAP Drought Monitoring and Early Warning - Sri Lanka Pilot Project



Addressing Drought Risk Pyramid

Mechanism
EO data/
Products



Piloting Drought Mechanisms:
A Framework from Sri Lanka
Proto Type

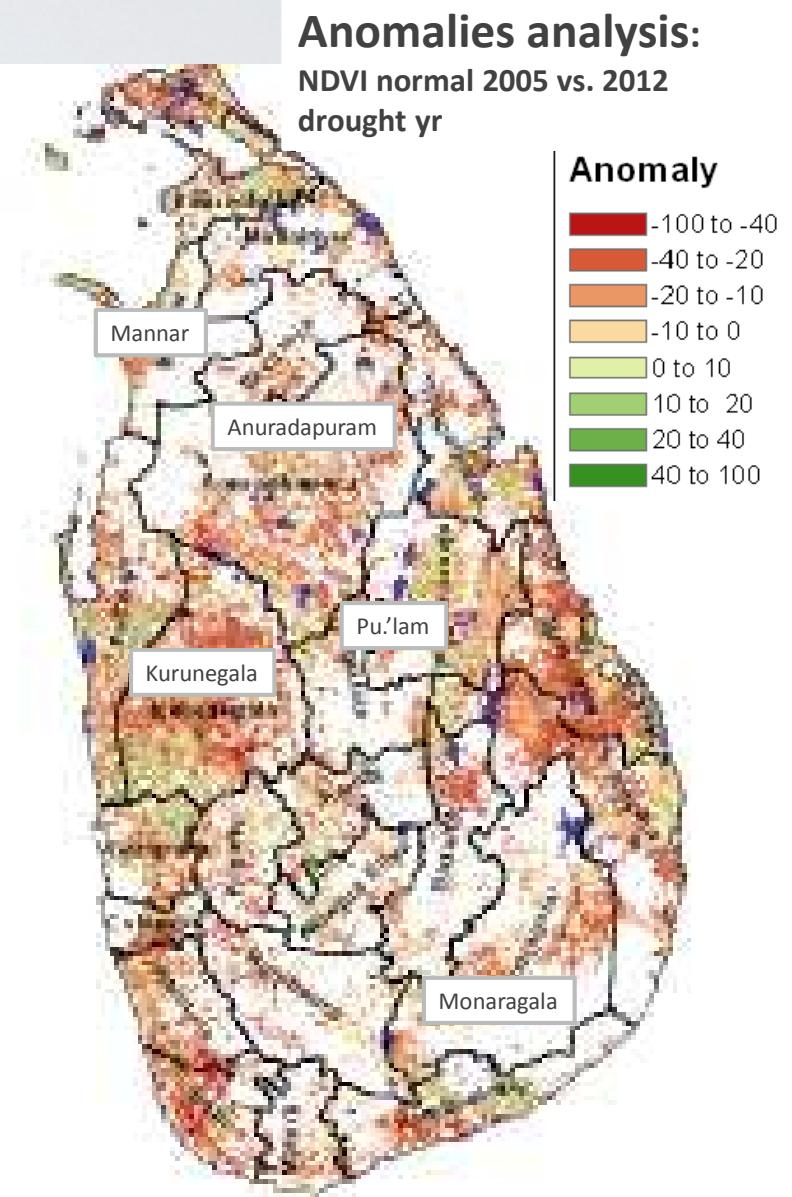
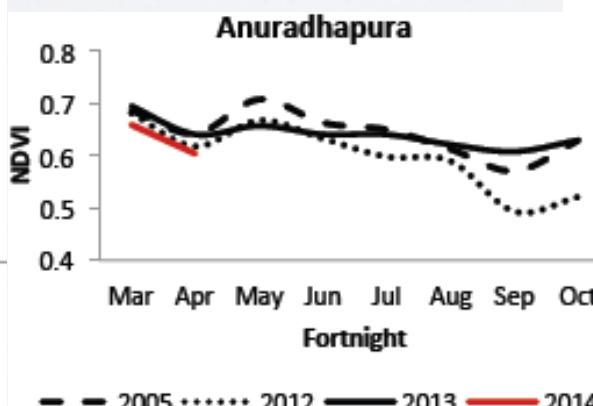
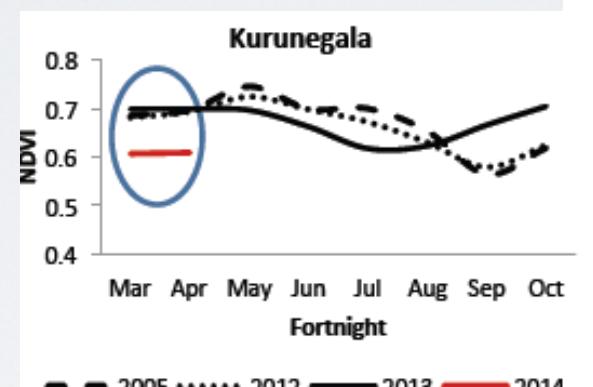
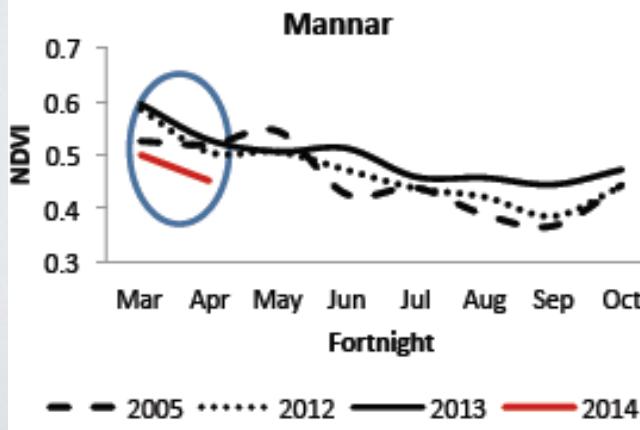
Specialized and In-depth
Training for sharing know-how
and institutionalization

Sri Lanka: *In-season Drought Monitoring Pilot*

Reference : 2005 normal, 2012 drought and 2014 monitoring

	Cumulative (mm)	Average (mm)	Rainfall %	Reduction in production %
Anuradapuram	40.3	234.6	17.2	21%
Kurunegala	333.7	715.8	46.6	50%
Mannar	51.2	114.6	44.7	55%
Puttalam	78	230.7	33.8	58%

Coarse (NOAA/MODIS)
@ national and
Moderate (IRS AWiFA)
@ district Levels



NDVI anomalies closely linked with
reduction in crop production



III. Capacity building to enhance the national capacity of developing countries

- Special focus on high-risk and low capacity developing countries.
 - Since 2012, 400 government officials/ practitioners of 38 member countries trained
- Focus areas
 - Mainstreaming space applications into disaster risk management.
 - Use of space and GIS in flood-risk mapping, drought monitoring and early warning.
 - Facilitate the establishment and use of the geo-referenced information system for DRR (Geo-DRM) in CSNs.
 - Technical advisory service in effective use of space and GIS for DRR.
- Needs identified through Surveys and Regional Inventory on capacity of space applications
- RESAP Training and Education Networks – China, India (CSSTEAP – Dehra Dun), Indonesia and ESCAP – APCICT (Incheon, Republic of Korea)



Conclusion

- While Science, Technology and Innovation are the key enablers for Post 2015 Development Agenda, Space Applications hold the key.
- Focus areas
 - 'Actionable' multi-hazard risk assessment, spatial land use planning, post-disaster needs assessment with efficient tools and techniques
 - Development of 'smart' insurance products, knowledge based decision support tools with data mining and cloud computing technologies
 - Precision agriculture for food security, regional geospatial data infrastructure for disaster risk management and sustainable development
- RESAP collaborations with GEO, CEOS and other international bodies not only for data sharing, technology transfer and capacity development, but also for analytical policy research and advocacy

Thank You !