

Results of Implementation of National Strategy for Research and Application of Space Technology up to 2020 (2016-2017)

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Outline

- Brief Introduction to National Strategy
- Results of Implementation during 2016-2017
 - Legal aspect
 - Building infrastructure
 - Research and development (including education)
 - Application
- Plan up to 2020
- Conclusions

National Strategy up to 2020

- Approved by Prime Minister in 2006
- Goals up to 2020
 - To formulate national policies and legal frameworks for research, application and international cooperation;
 - To build technical infrastructure for the development of space technology;
 - To organize and implement a national research program on space technology;
 - To master small satellite manufacturing technology for earth observation, sub-systems of the ground station;
 - To apply widely and regularly space technology for serving the needs of the production, service, education and healthcare sectors.

National Strategy up to 2020 (cont.)

- Specific tasks
 - Development and improvement of the legal framework for research and application of space technology:
 - To join international treaties, bi- and multi-lateral agreements;
 - To build specific policy for different socio-economic sectors;
 - To constitute Law of the Space.
 - Building of technical infrastructure for the development of space technology
 - For telecommunication, remote sensing;
 - For doing scientific research.
 - To conduct research and development works in the area of space technology through those activities to educate and reinforce human resource in both legal and technical aspects
 - Application of space technology for development of socio-economy

Results of Implementation

- Legal Aspect
 - Framework Agreement between Governments of India and Viet Nam (signed on Nov. 7th, 2016);
 - Agreement for Cooperation between Viet Nam Academy of S&T (VAST) and Ministry of Science, Technology and Space of Israel (signed on June 21st, 2017);
 - Agreement for data exchange between JAXA and VAST (signed on Sept. 18, 2017);
 - Legal documents:
 - 02 regulations related to frequency planning;
 - 02 regulation for supply, manage and use of data from vehicle route monitoring equipment;
 - 05 documents for regulations of remote sensing applications.
 - Delegation from MOST participated in:
 - 56th session of Legal Subcommittee of COPUOS, Vienna, Austria
 - 1st International Space Forum at Ministerial level – ISF 2016, Trento, Italy

Results of Implementation (cont.)

- Building technical infrastructure
 - Set up technical infrastructure for Viet Nam Space Center Project which is supported by Government of Japan;
 - Built up several research laboratories at universities, including USTH, HUST, UET@VNU;
 - Improved availability for satellite communications control stations in Ha Noi and Binh Duong Province to further control of other telecom satellites in the future;
 - VNREDSat-1 has become a Sentinel Asia-DPN (provided 300 scenes in 2016).

Results of Implementation (cont.)

- Research and development
 - National Research Prog.:
 - 2016: 6 projects focusing on study of changes in natural conditions and natural resources; assessment and partitioning of saltwater intrusion; assessment of water quality in the Red River basin;
 - 2017: 16 projects focusing on evaluation of environmental hazards in the North Central Coast; study of geological structure and oceanographic characteristics; development of sub-systems for small satellite and ground station.
 - National research projects at MOST:
 - 05 projects for conducting multidiscipline research.
 - Ministerial level research projects:
 - MIC for development of the use VINASAT-1, -2 for tele-medicine, tele-healthcare, e-learning, DTH.
 - MONRE for improvement of national database for satellite data
 - VAST for development of applications for specific regions.

Results of Implementation (cont.)

- Education through research and development activities
 - Asian Try Zero-G 2017 in Vietnam
 - Call for Proposals on STI website;
 - Over 20 experiments had sent to STI, after a week one experiment was selected to send to KIBO, JAXA.
 - At Viet Nam Space Center
 - Over 150 people have educated at different level (PhD, MSc., Eng., BSc.);
 - The Global Learning and Observations to Benefit the Environment (GLOBE) Program has been conducted by VAST
>> VNSC will host AP GLOBE meeting in Hanoi in 5/2018.
 - University curriculums for aerospace technology have been promoted at a number of university.

Results of Implementation (cont.)

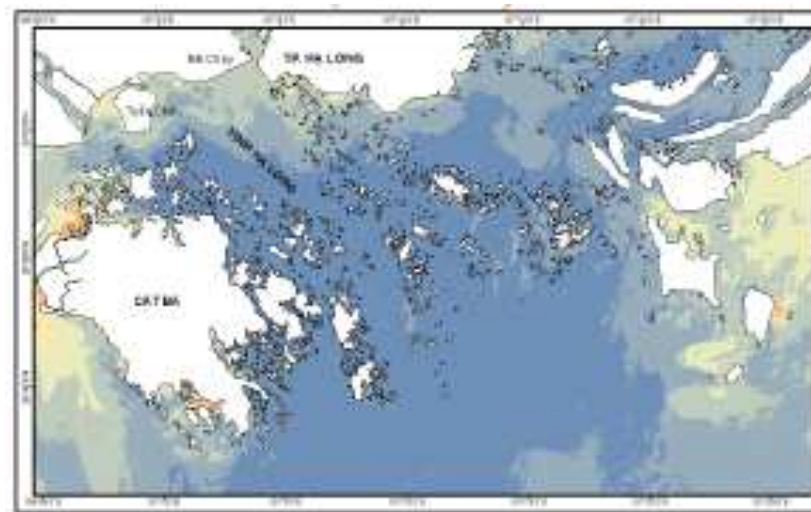
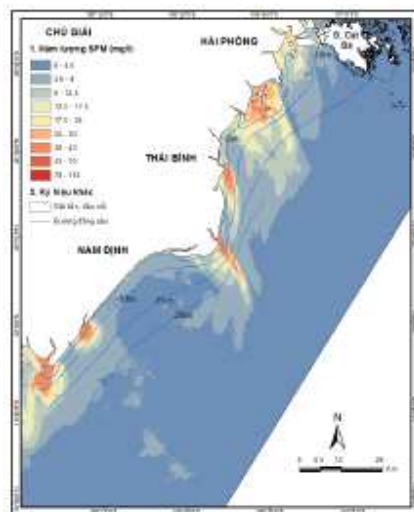
- Application of space technology for socio-economy development
 - Transportation
 - Development of high accuracy navigation system for UAV, maritime pilot;
 - Multi-GNSS receiver for management and monitoring of public transport vehicles.
 - Communication
 - To conduct the project of digital transmission and terrestrial television broadcasting till 2020

Results of Implementation (cont.)

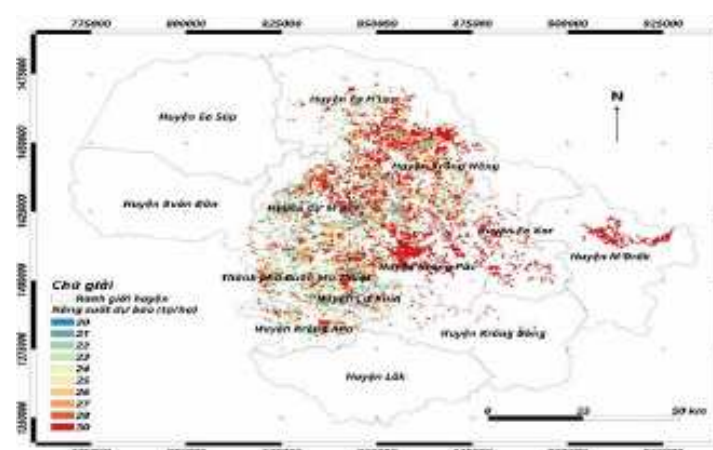
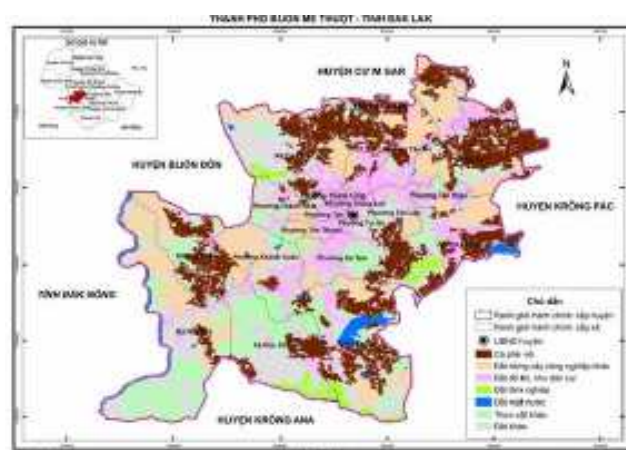
- Application of space technology for socio-economy development
 - Natural Resources and Environment
 - Estimation and monitoring of coastal water quality; coverage in primary forest;
 - Assistant in decision-making to cope with natural disasters, climate change.
 - Agriculture and Rural Development
 - Development of GNSS high accuracy receiving station for mapping, estimation of rice and aquaculture farm;
 - Disease surveillance;
 - Yield estimation.

Typical illustrations

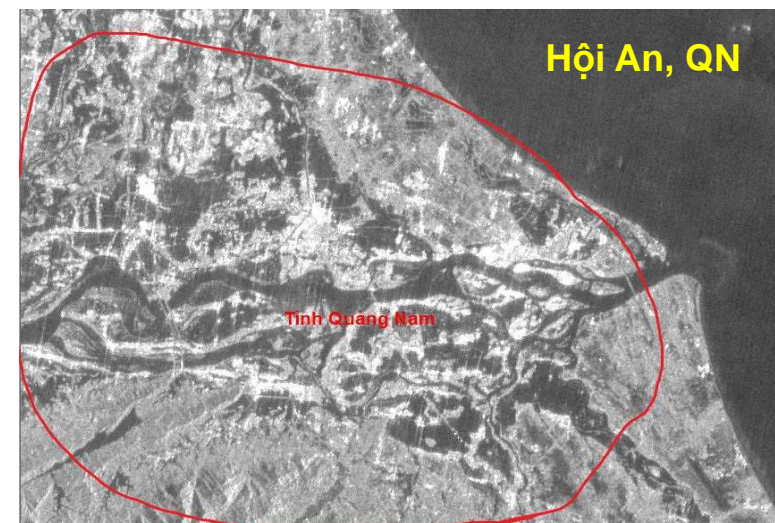
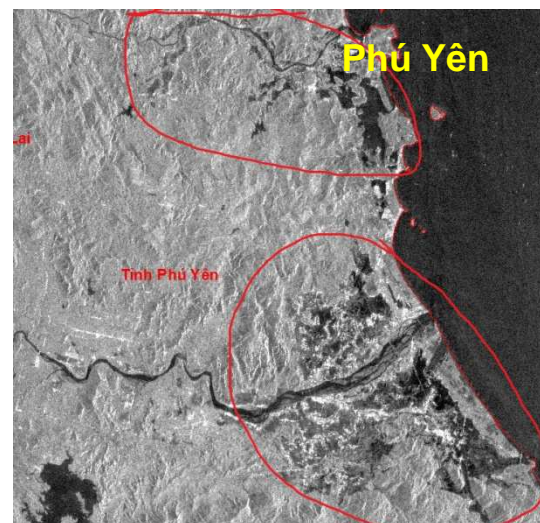
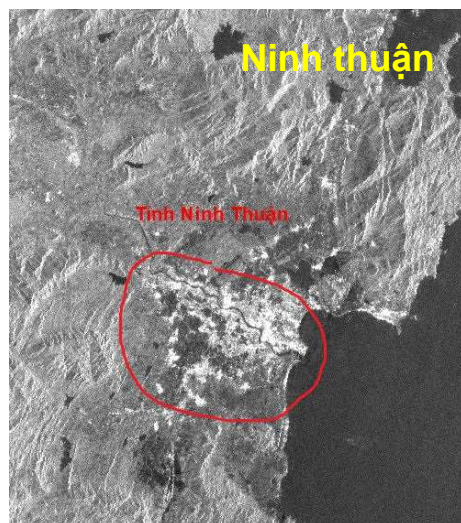
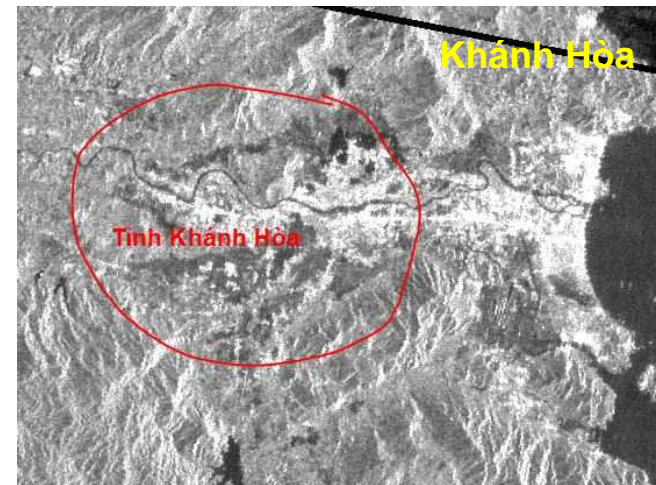
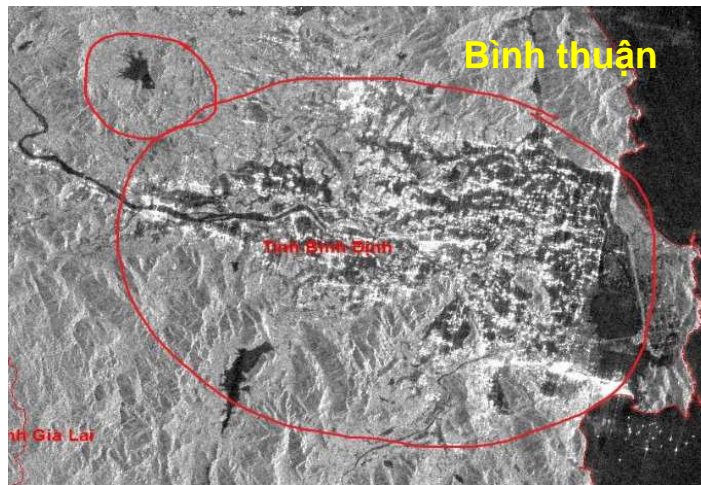
Water Quality



Yield estimation



Last Damrey Typhoon during APEC Summit



Viet Nam Space Center Project

**Nha Trang
Observatory**



**Construction in
Hoa Lac High-Tech Park**



GLOBE activities



**Signing MoU for GLOBE
between VAST and NASA in
Dec. 2015**

**GLOBE activities at Junior
High Schools in Ha Noi**



Plan up to 2020

- Legal aspect
 - To join/rectify remaining 04 UN Treaties, including Rescue Agreement, Liability Convention, Registration Convention, Moon Agreement;
 - To enlarge international cooperation on peaceful use of outer space;
 - To strengthen national capability on legal aspect of outer space;
 - To consolidate scientific and practical basis with current status.
- Building technical infrastructure
 - To continue the VNSC project;
 - To improve research capability at several universities, institutes;
- Research and development
 - To continue the implementation of national research program;
 - To approach control technology for two-phase satellite launcher;
 - To master the design, fabrication and testing of microsatellite.

Plan to 2020

- Development of application
 - To reinforce national satellite database and create special databases;
 - To develop toolkits for radar-based data;
 - To promote UAV for collecting supplement data;
 - To apply high accuracy GNSS receiving stations in the field of transportation, building works, and agriculture;
 - To develop commercial services based on satellite data for private sector.
- After 2020
 - To submit new National Strategy to Prime Minister for approval;
 - To submit Law of the Space to National Assembly (term of 2021-2025) for consideration which would include establishment of Viet Nam Space Agency.

Conclusions

- National Strategy has been implemented with 04 specific missions. However:
 - Legal Framework has less development, in particular to sign/ratify UN treaties;
 - Development of technical infrastructure does not catch the plan yet;
 - Research and development activities have been performed widely with application-oriented topics, but less technology transfer;
 - Applications of space technology have been well developed to support development of different socio-economic disciplines.
 - Lacking of a master plan for development of human resource.
- Seeking for bi- and multi-lateral cooperation on earth observation and its application, human resource development, especially constitution of Law of the Space.

Thank you for your attention!

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