



AGENSI REMOTE SENSING MALAYSIA (ARSM)
Kementerian Sains, Teknologi dan Inovasi

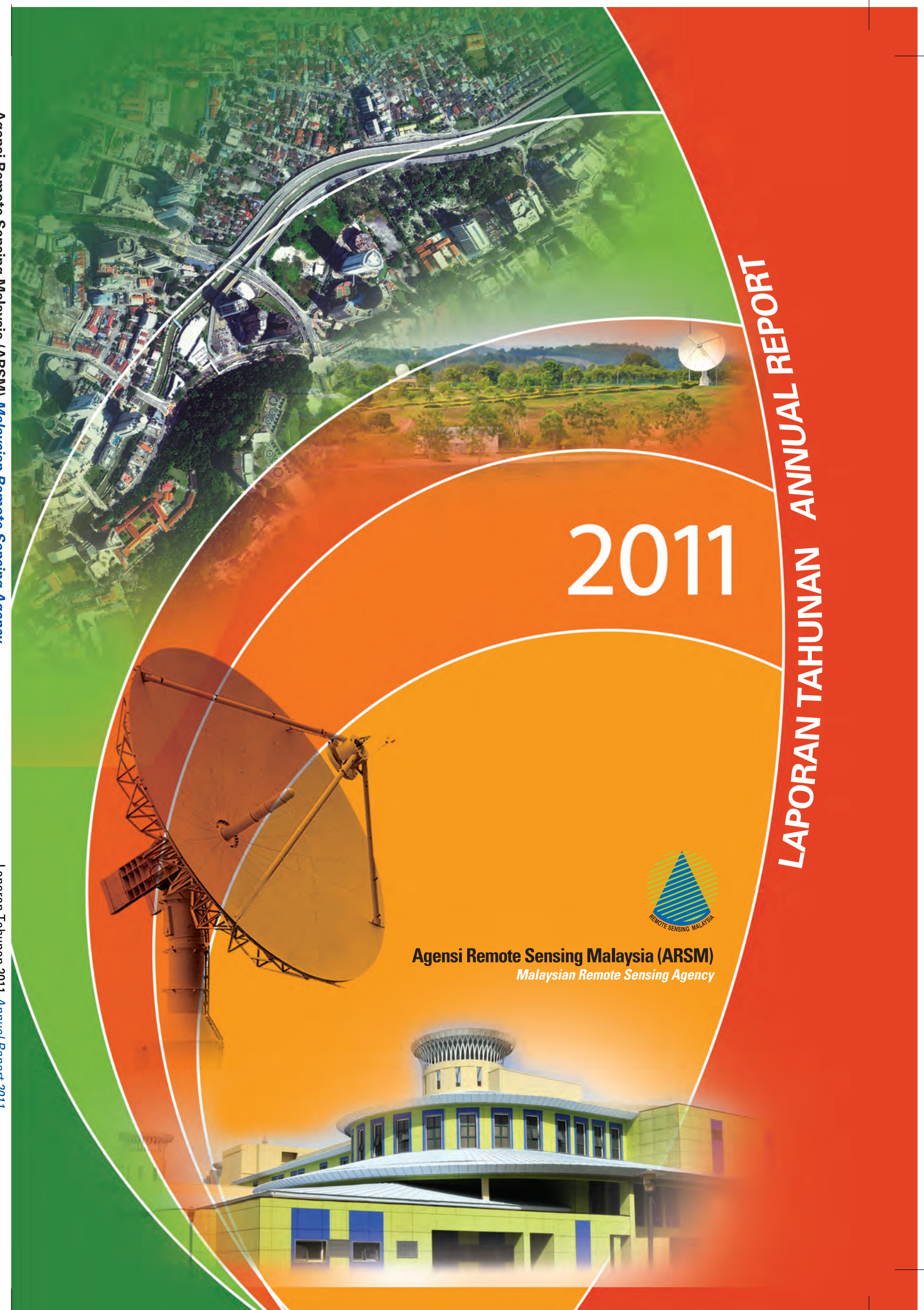
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PROFIL
PROFILE



OBJEKTIF, VISI DAN MISI

OBJECTIVE, VISION AND MISSION

Objektif

Untuk membangunkan aplikasi remote sensing dan teknologi-teknologi lain yang berkaitan bagi diguna pakai di agensi pelaksana bagi pengurusan pertanian, perikanan, sumber asli, alam sekitar, bencana, keselamatan dan pembangunan tanah negara dengan lebih efektif.

Objective

To develop applications of remote sensing and related technologies for use in operational agencies for more effective management of agriculture, fishery, natural resources, environment, disaster, security and land development of the country.

Visi

Untuk mengoptimumkan penggunaan remote sensing dan teknologi-teknologi lain yang berkaitan bagi pembangunan lestari negara.

Vision

To optimise the use of remote sensing and related technologies for sustainable development of the country.

Misi

Menyediakan penyelesaian menyeluruh dalam aplikasi remote sensing dan teknologi-teknologi lain yang berkaitan, dan perolehan dan pembekalan imej satelit remote sensing secara bersepadu bagi memenuhi keperluan negara.

Mission

Provide total solution in remote sensing and related technologies applications, and centrally acquire and distribute remote sensing images for the requirement of the country.

PROGRAM UTAMA MAJOR PROGRAMME

Program Penyelidikan dan Pembangunan

- i. Menjalankan penyelidikan dalam bidang aplikasi remote sensing, GIS dan teknologi lain yang berkaitan dalam semua sektor pengurusan pengeluaran pertanian, sumber asli, alam sekitar, bencana, keselamatan dan pembangunan tanah negara;
- ii. Menjalankan penyelidikan analisis dan pemodelan data ruang dalam persekitaran sistem maklumat geografi (GIS);
- iii. Menjalankan penyelidikan untuk membangunkan sistem komputer dan sensor remote sensing; dan
- iv. Menyediakan perkhidmatan nasihat teknikal dalam aplikasi remote sensing, GIS dan teknologi lain yang berkaitan.

Program Perkhidmatan Teknikal

- i. Mengoperasi dan mengurus pusat khidmat pengguna bagi imej satelit remote sensing dan perkhidmatan lain yang disediakan untuk pengguna;
- ii. Mengoperasi dan mengurus stesen bumi bagi penerimaan imej satelit remote sensing;
- iii. Mengoperasi dan mengurus pusat maklumat setempat teknologi remote sensing;
- iv. Merancang dan melaksanakan program pembangunan modal insan;
- v. Mengurus dan menyelenggara sistem perkakasan dan perisian secara dalaman; dan
- vi. Merancang perolehan, mengurus dan mengekalkan infrastruktur dan kemudahan.

Research and Development Programme

- i. Conduct research on applications of remote sensing, GIS and related technologies in all sectors of agriculture production, natural resources, environment, disaster, security and land development management;
- ii. Conduct research in spatial data analysis and modeling in geographic information system (GIS) environment;
- iii. Conduct research in the development of remote sensing computer systems and sensors; and
- iv. Provide advisory services on applications of remote sensing, GIS and related technologies.

Technical Services Programme

- i. Operate and manage user service centre for remote sensing satellite image and related services provided to clients;
- ii. Operate and manage remote sensing satellite image ground receiving station;
- iii. Operate and manage a remote sensing technology information one-stop-centre;
- iv. Plan and implement human capital development programme;
- v. Manage and maintain in-house hardware and software systems; and
- vi. Plan the acquisition, manage and maintain infrastructure and facilities.

TERAS STRATEGIK ***STRATEGIC THRUST***

Teras Strategik 1

**Pembangunan Pakej Aplikasi
Remote Sensing bagi Kegunaan
Agensi Pengguna**

Strategic Thrust 1

***Remote Sensing Application
Packages Development for
Use by User Agencies***

Teras Strategik 2

**Pembekalan Secara Bersepadu Imej
Satelit Remote Sensing dan Data
Spatial yang Dihasilkan**

Strategic Thrust 2

***Centralised Distribution of
Remote Sensing Satellite Images
and Spatial Data Products***

Teras Strategik 3

**Pembangunan Modal Insan bagi
Memaksimumkan Penggunaan
Teknologi Remote Sensing
Dalam Negara**

Strategic Thrust 3

***Human Capital Development
to Maximise the Use of
Remote Sensing Technology
in the Country***

Teras Strategik 4

Promosi Teknologi Remote Sensing

Strategic Thrust 4

Remote Sensing Technology Promotion

PIAGAM PELANGGAN CLIENT'S CHARTER

Dalam usaha mencapai objektifnya, ARSM komited sepenuhnya untuk:

- i. Memberi perkhidmatan secara profesional, cekap dan mesra.
- ii. Memberi maklum balas kepada khidmat yang dipohon dalam tempoh tiga (3) hari dari tarikh permohonan diterima.
- iii. Membekalkan produk imej remote sensing dalam jangkamasa* seperti di bawah (berasaskan satu unit produk dan imej tersebut sedia ada di ARSM):

Data Remote Sensing TIDAK TERPERINGKAT:

- a. Produk *Standard Digital*
 - *System Corrected* 4 hari bekerja
 - *Map Corrected* 4 hari bekerja
 - *Pansharp* 5 hari bekerja
- b. Produk Tambah Nilai 12 hari bekerja
- c. Produk Cetakan Design Jet 6-14 hari bekerja
- d. Produk Cetakan Fotografi 7-15 hari bekerja

Data Remote Sensing TERPERINGKAT:

Permohonan imej remote sensing jenis TERPERINGKAT (resolusi 5 meter dan ke bawah) adalah mengikut prosedur di bawah Pekeliling Arahan Keselamatan Terhadap Dokumen Geospatial Terperingkat. Oleh itu tambahan masa 2 hingga 4 minggu diperlukan bagi proses tapisan keselamatan.

* Tidak termasuk masa penghantaran produk kepada pelanggan

- iv. Menyediakan imej remote sensing dan maklumat yang diperlukan semasa bencana, keselamatan negara dan ketenteraman awam dengan segera.
- v. Menyediakan program latihan mengikut kehendak pelanggan.
- vi. Melaksanakan penyelidikan aplikasi remote sensing bagi memenuhi keperluan pelanggan.

Towards achieving its objective, ARSM is fully committed to:

- i. Provide its services in a professional, efficient and courteous manner.*
- ii. Provide feedback within three (3) working days from the date of receipt of application.*
- iii. Provide remote sensing image products within the following stipulated time-frame* (based on one unit image product and the said image is readily available at ARSM):*

NON-CLASSIFIED Remote Sensing Data:

- a. *Standard Digital Product*
 - *System Corrected* 4 working days
 - *Map Corrected* 4 working days
 - *Pansharp* 5 working days
- b. *Value-added Product* 12 working days
- c. *Design Jet Printed Product* 6-14 working days
- d. *Photography Printed Product* 7-15 working days

CLASSIFIED Remote Sensing Data:

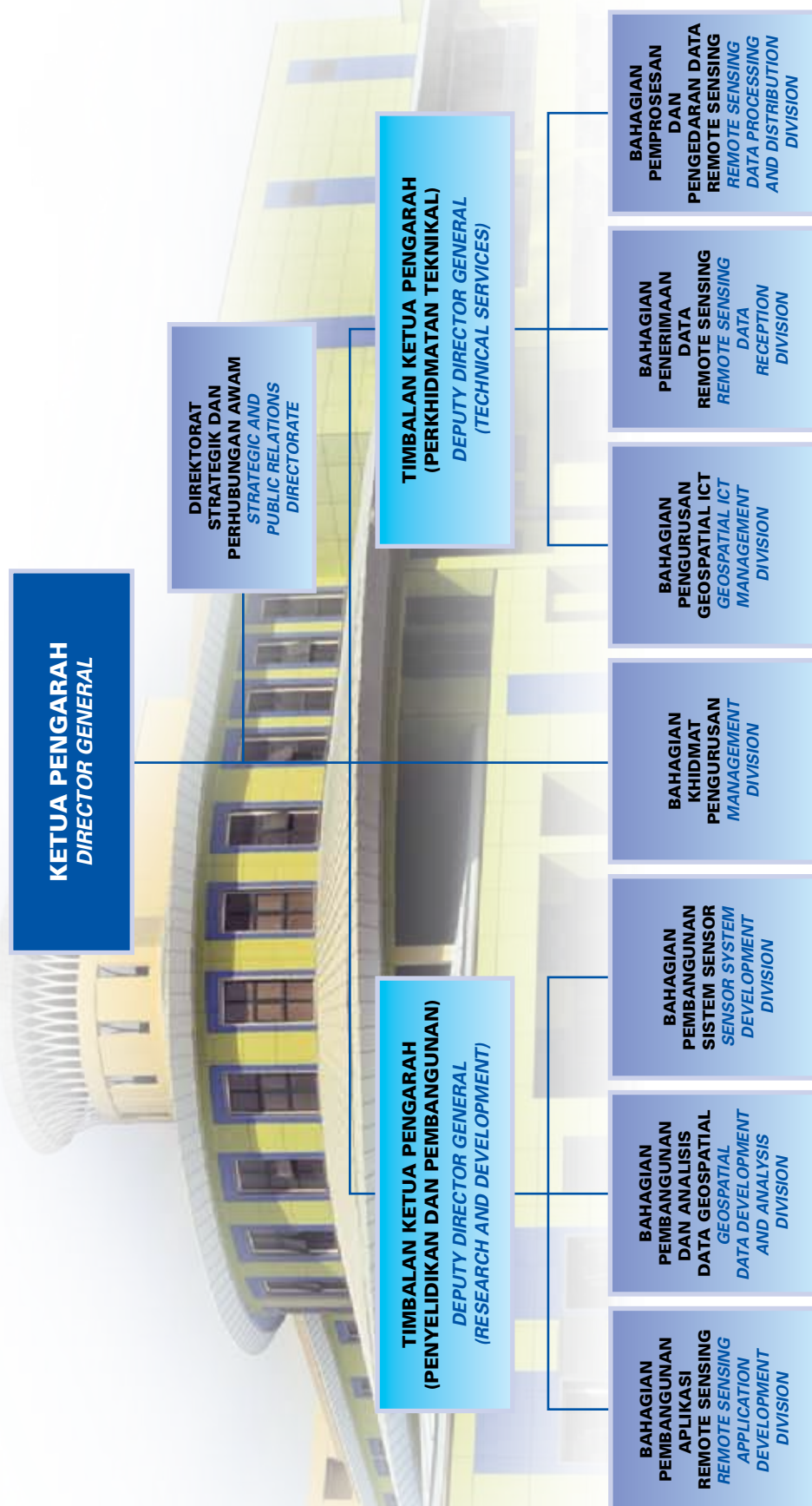
Application for RESTRICTED remote sensing image (5 meter resolution and below) is in accordance to the Security Directive Circular on Classified Geospatial Documents. Therefore, an additional of 2 to 4 weeks is required for security vetting process.

* Does not include product delivery duration

- iv. Provide remote sensing images and the generated geospatial information required for disaster, national security and public order as and when it is required.*
- v. Provide customised client-defined training programme.*
- vi. Implement remote sensing application research to fulfill client's need.*

CARTA ORGANISASI ORGANISATION CHART

AGENSI REMOTE SENSING MALAYSIA (ARSM)



PERUTUSAN KETUA PENGARAH
DIRECTOR GENERAL'S MESSAGE

PERUTUSAN KETUA PENGARAH *DIRECTOR GENERAL'S MESSAGE*

Dato' Haji Darus bin Ahmad

**Assalamu'alaikum Warahmatullahi Wabarakatuh,
Salam Sejahtera dan Salam 1Malaysia**

Syukur ke hadrat Ilahi kerana dengan limpah kurnia dan keizinanNya jua membolehkan Agensi Remote Sensing Malaysia (ARSM) menerbitkan Laporan Tahunan 2011 yang memaparkan pencapaian agensi bagi tahun 2011.

Pada tahun ini, ARSM meneruskan pelaksanaan program P&P dengan tumpuan kepada pembangunan pakej aplikasi yang memberikan impak yang signifikan kepada rakyat dan penambahbaikan kepada pakej aplikasi sedia ada yang sedang dioperasikan oleh agensi pengguna. Pakej aplikasi tersebut adalah bertujuan meningkatkan kecekapan dan keberkesanan sistem penyampaian perkhidmatan yang dilaksanakan oleh agensi pengguna berkenaan selaras dengan Program Transformasi Kerajaan (GTP). Pelaksanaan pembangunan pakej aplikasi secara strategi lautan biru dengan pelbagai agensi kerajaan yang berkaitan bukan sahaja menjimatkan masa dan kos, dan meningkatkan kepakaran dalaman agensi terlibat malahan dapat menyumbang kepada peningkatan kesejahteraan dan kemakmuran hidup rakyat.

Antara pencapaian utama dalam tahun 2011 ialah penambahbaikan dan pengoperasian pakej aplikasi Sistem Penentuan Lokasi Penangkapan Ikan (Sistem FSI) dan Sistem Pengurusan Wabak Denggi (SPWD), dan pelaksanaan Pemetaan Litupan Tanah Sarawak.



Praised be to Allah for His grace and blessings that allows Malaysian Remote Sensing Agency (ARSM) publishes 2011 Annual Report which features achievements of the agency in 2011.

This year, ARSM continues to implement R&D programmes which focus on the development of application packages that provide significant impact on people and the improvement of the existing application packages that are being operated by the user agencies. The application packages aimed at improving the efficiency and effectiveness of the service delivery system of the relevant user agencies which is in line with the Government Transformation Programme (GTP). The implementation of the application packages development through blue ocean strategy with various government agencies not only saves time and cost, and increase internal expertise within the agencies but also contribute to improving the prosperity and the societal well-being of the citizens.

Among the highlights of the year 2011 are the improvement and operationalisation of the Fishing Site Identification System (FSI System) and Dengue Outbreak Management System (SPWD) application packages, and the implementation of the Sarawak Land Cover Mapping.

Sistem Penentuan Lokasi Penangkapan Ikan (Sistem FSI) dibangunkan bersama-sama Jabatan Perikanan (DoF), Lembaga Kemajuan Ikan Malaysia (LKIM) dan Persatuan Nelayan Kebangsaan (NEKMAT). Sistem ini mengenal pasti lokasi yang berpotensi tinggi bagi penangkapan ikan. Maklumat tersebut disalurkan kepada nelayan berdaftar melalui khidmat Sistem Pesanan Ringkas MySMS-15888 dan menerusi portal FSI. Sehingga kini Sistem FSI telah berjaya memberikan manfaat kepada 10,000 nelayan. Jumlah ini dijangka meningkat kepada 20,000 berikutan perluasan penggunaan sistem ini ke seluruh negara ekoran daripada kejayaan pelaksanaan projek perintis di Perairan Pantai Timur Semenanjung Malaysia. Penggunaan Sistem FSI didapati telah meningkatkan hasil tangkapan ikan antara 30% hingga 50%.

Sistem Pengurusan Wabak Denggi (SPWD) yang dibangunkan dengan kerjasama Kementerian Kesihatan Malaysia (KKM) bertujuan meningkatkan keberkesanan aktiviti pemantauan, kawalan dan pencegahan wabak denggi. Sistem ini mula dioperasikan oleh KKM mulai Julai 2011 dan sehingga akhir tahun tersebut ianya telah dioperasikan sepenuhnya di 15 daerah di tiga (3) buah negeri iaitu Melaka, Pulau Pinang dan Negeri Sembilan.

Projek Pemetaan Litupan Tanah Sarawak pula dilaksanakan dengan kerjasama Jabatan Tanah dan Survei Sarawak. Melalui projek kerjasama ini, peta litupan tanah pada skala 1:50,000 dihasilkan melalui pengelasan data satelit remote sensing. Penggunaan data satelit dapat mempercepatkan penghasilan peta litupan tanah bagi seluruh Sarawak berbanding kaedah konvensional yang diamalkan sebelum ini. Berdasarkan kejayaan pelaksanaannya di kawasan perintis di tiga (3) daerah di Sarawak, sebanyak 206 lembar peta litupan tanah bagi seluruh negeri Sarawak akan dapat disiapkan dalam tempoh 3 (tiga) tahun.

Bagi perkhidmatan data remote sensing pula, bilangan scene data yang dipohon oleh agensi pengguna pada tahun 2011 telah meningkat sebanyak 73% berbanding tahun sebelumnya. Peningkatan ini adalah selaras dengan peranan ARSM sebagai pembekal tunggal data satelit remote sensing secara bersepadu kepada semua agensi kerajaan dan peningkatan kesedaran mengenai kelebihan penggunaan teknologi

Fishing Site Identification System (FSI System) was developed in collaboration with the Department of Fisheries (DoF), Malaysian Fisheries Development Authority (LKIM) and National Fishermen's Association (NEKMAT). The system identifies high potential locations for fishing grounds. The information is transmitted to registered fishermen through the Short Messaging System service of MySMS-15888 and through the FSI portal. Until now FSI system has benefited 10,000 fishermen. The number is expected to increase to 20,000 due to the expansion on the use of the system to the whole nation as a result of the successful implementation of the pilot project in the East Coast of Peninsular Malaysia Waters. The usage of FSI system has improved fish catches between 30% to 50%.

The aim of the Dengue Outbreak Management System (SPWD) which was developed in collaboration with the Ministry of Health Malaysia (MOH) is to enhance the effectiveness of monitoring, control and prevention of dengue outbreaks activities. The system was operationalised by MOH since July 2011 and by the end of the year it has been fully operated in 15 districts in three (3) states of Malacca, Penang and Negeri Sembilan.

The Sarawak Land Cover Mapping Project was undertaken in collaboration with Land and Surveys Department Sarawak (LSDS). Through this collaborative project, land cover maps at 1:50,000 scale were produced through classification of remote sensing satellite data. The use of satellite data is capable to expedite the production of land cover maps for the whole of Sarawak compared to conventional methods practiced before. Based on the successful implementation of the pilot areas in three (3) districts in Sarawak, a total of 206 sheets of land cover maps for the whole state will be completed within a period of 3 (three) years.

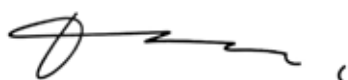
For remote sensing data services, the number of data scene requested by the user agencies in 2011 has increased by 73% compared to the previous year. This increase is in line with ARSM role as an integrated provider of satellite remote sensing data for all government agencies and the raising awareness on the advantages of remote sensing and related technologies among the government user agencies. ARSM always strive to guarantee

remote sensing dan teknologi berkaitan di kalangan agensi pengguna kerajaan. ARSM sentiasa berusaha menjamin dan mempertingkatkan perkhidmatan data remote sensing kepada semua pelanggan dengan terus mengekalkan Persijilan ISO 9001:2008 Perkhidmatan Data Remote Sensing sehingga 3 April 2014. Di samping itu, perolehan versi terkini perisian pemprosesan data remote sensing - PCI Geomatica dan mesin pencetak digital Chromira bagi mencetak imej satelit dalam format foto beresolusi tinggi turut dilaksanakan.

Selain daripada menjalankan aktiviti teras iaitu P&P dan perkhidmatan data remote sensing, ARSM turut memberikan penekanan kepada pembangunan prasarana ICT bagi menyokong dan memastikan kedua-dua aktiviti teras tersebut dapat dilaksanakan dengan cekap dan berkesan. Rangkaian ARSM*Net bagi menghubungkan Stesen Bumi di Temerloh, Pahang dan Ibu Pejabat ARSM di Kuala Lumpur dipertingkatkan keupayaannya dari 8Mb kepada 16Mb manakala talian internet ARSM pula ditingkatkan kepada 8Mb. ARSM sentiasa menitikberatkan aspek keselamatan infrastruktur ICT dan rangkaian serta keselamatan pengurusan data dengan persijilan ISO 27001:2005 ISMS semenjak tahun 2007. Aktiviti pembangunan modal insan dan promosi teknologi juga turut dilaksanakan dengan matlamat meningkatkan penggunaan teknologi remote sensing dan teknologi berkaitan di negara ini.

Akhir kata, saya ingin mengucapkan jutaan terima kasih kepada pegawai dan kakitangan ARSM yang telah memberikan komitmen yang tinggi, dedikasi dan usaha gigih dalam melaksanakan tanggungjawab bagi merealisasikan sasaran tahunan agensi. Saya juga merakamkan setinggi-tinggi penghargaan kepada semua kementerian, agensi kerajaan, sektor swasta dan universiti yang terlibat secara aktif dalam pembangunan dan pengoperasian pelbagai pakej aplikasi, program pembangunan modal insan dan promosi teknologi yang telah dilaksanakan di sepanjang tahun 2011.

Terima kasih.



DATO' HAJI DARUS BIN AHMAD

and enhancing remote sensing data services to all customers by continuing to maintain ISO 9001:2008 Remote Sensing Data Services until 3 April 2014. In addition, the acquisition of the latest version of remote sensing data processing software - PCI Geomatica and Chromira digital printer for printing satellite images in high resolution photo format was also implemented.

*Apart of its core activities in R&D and remote sensing data services, ARSM also emphasises the development of ICT infrastructure to support and ensure that the two core activities are efficiently and effectively implemented. ARSM*Net network capacity linking Ground Station in Temerloh, Pahang and Head Quarters in Kuala Lumpur was upgraded from 8Mb to 16Mb, while ARSM internet line was increased to 8Mb. ARSM always emphasis on the ICT infrastructure and network security as well as data management security with ISO 27001:2005 ISMS certification since 2007. Human capital development activities and technology promotion are also being pursued with the goal of increasing the use of remote sensing and related technologies in the country.*

Finally, I would like to thank the officers and staff of ARSM who have given commitment, dedication and hard work in implementing their responsibilities in realising the annual targets of the agency. I also would like to express my sincere appreciation to all ministries, government agencies, private sectors and universities that are actively involved in the development and operationalisation of various application packages, human capital development programme and technology promotion implemented throughout 2011.

Thank you.

PROGRAM PENYELIDIKAN DAN PEMBANGUNAN
RESEARCH AND DEVELOPMENT PROGRAMME



PEMBANGUNAN APLIKASI *APPLICATION DEVELOPMENT*

APLIKASI PERTANIAN DAN PERIKANAN

Sistem Pengurusan Tanaman Padi

ARSM dengan kerjasama Jabatan Pertanian Negeri Selangor (JPNS) membangun dan mengoperasikan Sistem Pengurusan Tanaman Padi yang berterasaskan teknologi remote sensing, Sistem Maklumat Geografi (GIS) dan ICT bagi mengurus tanaman padi dengan lebih cekap dan berkesan. IADA Barat Laut Selangor telah dipilih sebagai kawasan perintis. Sistem yang dijangka dapat beroperasi sepenuhnya mulai Julai 2012 ini akan diperluaskan penggunaannya ke seluruh jelapang padi di Semenanjung Malaysia.

Sistem ini mempunyai empat (4) komponen utama iaitu kemasukan data, analisis data, carian maklumat dan penjaan laporan. Komponen analisis data merangkumi pemantauan status aktiviti tanaman padi berdasarkan penggunaan imej satelit radar. Manakala komponen carian maklumat membolehkan beberapa carian berikut dilakukan dengan pantas dan berkesan iaitu: (i) maklumat data meta setiap lot, kelas (padi, bukan padi atau rizab) dan keluasan fizikal; (ii) status aktiviti tanaman padi seperti membajak, mengairi sawah, menanam dan menuai bagi dua (2) musim terkini; dan (iii) bilangan lot mengikut blok pengairan. Bagi komponen penjaan laporan pula, beberapa laporan pengurusan dapat disediakan secara terperinci, cepat dan berkesan.

Pemindahan teknologi mengenai penggunaan sistem ini kepada pegawai JPNS dan penambahbaikan sistem dilaksanakan secara berterusan bagi memenuhi keperluan pengguna.

AGRICULTURE AND FISHERY APPLICATION

Paddy Cultivation Management System

ARSM in collaboration with the Department of Agriculture Selangor (JPNS) is developing Paddy Cultivation Management System using remote sensing, Geographic Information System (GIS) and ICT technologies for fast and efficient management of paddy cultivation. IADA Barat Laut Selangor has been selected as a pilot area. The system that is expected to be fully operational in July 2012 will eventually be expanded to the whole rice growing areas in Peninsular Malaysia.

There are four (4) major components of the system comprising data entry, data analysis, information retrieval and report generation. In the data analysis component, images from radar satellite are used for monitoring the growth status of paddy crops. Whilst, the information retrieval component permits fast and efficient generation of several information including: (i) metadata for each lot, class (paddy, non-paddy or reserves) and hectareage; (ii) status of paddy planting activities such as plowing, irrigation, planting and harvesting for the latest two (2) seasons; and (iii) the number of lots in each irrigation block. Several management reports can easily be prepared in details, expeditiously and efficiently using report generation component.

The transfer of technology on the use of the system to JPNS officers is on-going and the system is continuously upgraded to meet the targeted users' requirements.



**Antaramuka Sistem
Pemantauan Aktiviti
Tanaman Padi**
*Interface of Paddy
Cultivation Management
System*

Sistem Penentuan Lokasi Penangkapan Ikan

Sistem Penentuan Lokasi Penangkapan Ikan (Sistem FSI) dibangunkan dengan kerjasama Jabatan Perikanan Malaysia (DoF), Lembaga Kemajuan Ikan Malaysia (LKIM) dan Persatuan Nelayan Kebangsaan (NEKMAT). Pengoperasian Sistem FSI diperluaskan ke seluruh negara pada tahun 2011 berdasarkan kejayaan pelaksanaan projek perintis di Perairan Pantai Timur Semenanjung Malaysia.

Fishing Site Identification System

Fishing Site Identification System (FSI System) was developed in collaboration with the Department of Fisheries (DoF), Malaysian Fisheries Development Authority (LKIM) and National Fishermen's Association (NEKMAT). In 2011, the operationalisation of FSI System has been expanded to the whole country leveraging on the success of pilot project implemented in the coastal waters of the East Coast Peninsular Malaysia.



Ketua Pengarah Jabatan Perikanan sedang menerima maklum balas positif daripada nelayan mengenai keberkesanan penggunaan Sistem FSI semasa pelancaran sistem di Zon Pantai Barat Semenanjung, Alor Setar, Kedah pada 21 November 2011

The Director General of Department of Fisheries receiving positive feedbacks from the fisherman on the efficiency of FSI System during the launching of the system at West Coast Peninsular Zone, Alor Setar, Kedah on 21 November 2011

Pelbagai aktiviti telah dilaksanakan dalam usaha untuk memberi pendedahan dan pemahaman kepada agensi perikanan, Persatuan Nelayan Kawasan (PNK) dan nelayan bagi setiap kawasan mengenai kelebihan penggunaan Sistem FSI. Aktiviti ini merangkumi siri jelajah ke tempat-tempat pendaratan ikan, penganjuran seminar,

Several activities were undertaken in an effort to provide exposure and impart understanding on the advantages of FSI System to fisheries agencies, Area Fisherman's Association and local fishermen. These activities include road tours to fish landing ports, seminars, training workshops and exhibitions. Through this initiative, a total of



Sebahagian daripada nelayan yang menghadiri siri jelajah Sistem FSI di Bintulu, Sarawak
Amongst the fishermen attending the FSI System roadshow in Bintulu, Sarawak

bengkel latihan dan pameran. Melalui inisiatif ini, sebanyak 10,000 nelayan telah mendapat manfaat daripada sistem ini dan jumlah tersebut dijangka meningkat kepada 20,000 nelayan menjelang penghujung tahun 2012. Analisis penilaian *outcome* yang dijalankan bagi menilai impak terhadap hasil tangkapan ikan dan pendapatan nelayan menunjukkan penggunaan Sistem FSI telah berjaya meningkatkan hasil tangkapan ikan antara 30% hingga 50% sebulan.

10,000 fishermen have benefited from the system and this number is expected to increase to 20,000 by the end of 2012. The outcome assessment analysis which was conducted to evaluate the impact on fish catch and income of fishermen showed that the utilisation of FSI System has increased the fish catch by 30% to 50% monthly.

APLIKASI PENGURUSAN SUMBER ASLI DAN ALAM SEKITAR

Sistem Pangkalan Data Geospasial Bersepadu Biodiversiti Kebangsaan

Dalam tahun 2011, pembangunan sistem bersepadu secara atas talian ini diteruskan dengan menggunakan sepenuhnya kepakaran dalaman. Sistem ini terdiri daripada tiga (3) komponen utama, iaitu kemasukan data, analisis data dan carian maklumat. Pengujian sistem prototaip dilaksanakan oleh lima (5) agensi iaitu Institut Penyelidikan Perhutanan Malaysia (FRIM), Jabatan Perlindungan Hidupan Liar dan Taman Negara (PERHILITAN), Jabatan Perikanan Malaysia (DOF), Jabatan Taman Laut Malaysia (JTLM) dan Jabatan Perhutanan Semenanjung Malaysia (JPSM). Maklum balas yang diperolehi daripada agensi ini dijadikan sebagai panduan untuk memperbaiki dan mengemas kini sistem tersebut agar dapat memenuhi keperluan pengguna. Sistem ini dihadkan capaiannya hanya kepada pegawai yang diberi kuasa daripada beberapa jabatan kerajaan yang berkaitan bagi menjamin keselamatan data dan maklumat biodiversiti negara.

Selain daripada pembangunan sistem, kemasukan dan pengintegrasian maklumat daripada pelbagai sumber ke dalam pangkalan data juga dititikberatkan dan sentiasa dipertingkatkan. Ini merangkumi rekod mengenai flora dan fauna mengikut taxa dan kumpulan.

Tiga (3) model baharu yang boleh diakses secara atas talian telah dibangunkan di dalam komponen analisis iaitu model analisis konflik, model analisis habitat spesies sangat terancam dan model analisis spesies berpotensi pupus. Model yang telah dibangunkan ini akan sentiasa ditambah baik bagi menjamin keberkesanan dan kebolehpercayaan analisis secara atas talian.

NATURAL RESOURCE AND ENVIRONMENTAL MANAGEMENT APPLICATION

Integrated National Biodiversity Geospatial Database System

The development of this online integrated system is continued in 2011 by using internal expertise. The system comprise of three (3) main components, i.e. data input, data analysis and queries. Testing of the prototype system was conducted by five (5) agencies i.e. Forest Research Institute of Malaysia (FRIM), Department of Wildlife and National Parks (PERHILITAN), Department of Fisheries Malaysia (DOF), Department of Marine Parks Malaysia (DMPM) and Department of Forestry Peninsular Malaysia (JPSM). The feedbacks were used to further improve and upgrade the system to meet the user requirements. Accessed to the system is only by authorised personnel from the related government agencies considering the security of the data and information of national biodiversity.

Other than system development, data entry and integration of information from multi-sources into the database were also emphasised and constantly updated. These include records on flora and fauna by taxa and groups.

Three (3) online new models were developed in the analysis component, i.e. conflict analysis model, habitat suitability for critically endangered species model and extinction risk species model. All models developed are continuously enhanced to ensure efficiency and reliability of the online analyses.

Projek Pemetaan Litupan Tanah Sarawak

Ekoran daripada kejayaan pelaksanaan projek perintis pemetaan litupan tanah di Daerah Matang, Sibu dan Kapit pada tahun 2010, ARSM dan Jabatan Tanah dan Survei Sarawak (JTSS) bersetuju untuk memperluaskan pemetaan litupan tanah ke seluruh negeri Sarawak. Bagi memperkukuhkan kerjasama dalam pelaksanaan projek tersebut, ARSM dan JTSS telah menandatangani Nota Kerjasama yang telah diadakan di Kuching, Sarawak pada 19 Ogos 2011. Majlis menandatangani Nota Kerjasama ini disaksikan oleh Y.B. Datuk Amar Haji Awang Tengah bin Ali Hassan, Menteri Perancangan dan Pengurusan Sumber Kedua Sarawak dan Y.B. Datuk Haji Fadillah bin Haji Yusof, Timbalan Menteri Sains, Teknologi dan Inovasi Malaysia. Turut hadir adalah Ketua-Ketua Jabatan Persekutuan dan Negeri, wakil-wakil media serta ahli-ahli projek daripada ARSM dan JTSS.

Melalui jalinan kerjasama ini sebanyak 206 lembar peta litupan tanah pada skala 1:50,000 yang dihasilkan melalui pengelasan imej satelit akan disiapkan dalam tempoh tiga (3) tahun bagi melengkapkan pemetaan seluruh negeri

Sarawak Land Cover Mapping Project

Following the successful implementation of a pilot project on land cover mapping in the districts of Matang, Sibu and Kapit in 2010, ARSM and Lands and Surveys Department Sarawak (LSDS) have agreed to extend the land cover mapping to the whole state of Sarawak. To further strengthen the implementation of the project, ARSM and LSDS has signed a Collaboration Note on 19 August 2011 at Kuching, Sarawak. The signing of the Collaboration Note was witnessed by Y.B. Datuk Amar Haji Awang Tengah bin Ali Hassan, Sarawak Second Minister of Planning and Resource Management and Y.B. Datuk Haji Fadillah bin Haji Yusof, Deputy Minister of Science, Technology and Innovation Malaysia. Also present were State and Federal Head of Departments, media representatives, ARSM and LSDS project members.

Through this collaboration, 206 map sheets of land cover maps at a scale of 1:50,000 derived through classification of satellite images will be completed within three (3) years for the whole state of Sarawak. The updated land cover map



Majlis menandatangani Nota Kerjasama antara ARSM dan JTSS dengan disaksikan oleh Y.B. Datuk Amar Haji Awang Tengah bin Ali Hassan dan Y.B. Datuk Haji Fadillah bin Haji Yusof
The signing ceremony of Collaboration Note between ARSM and JTSS, witnessed by Y.B. Datuk Amar Haji Awang Tengah bin Ali Hassan and Y.B. Datuk Haji Fadillah bin Haji Yusof



Majlis menandatangani Nota Kerjasama antara ARSM dan JTSS
The signing ceremony of Collaboration Note between ARSM and JTSS

Sarawak. Peta litupan tanah yang terkini amat diperlukan bagi tujuan perancangan, pengurusan dan pentadbiran tanah khususnya bagi kesejahteraan rakyat di Sarawak.

is vital for planning, management and land administration, particularly for the societal well-being of the people of Sarawak.

Projek Pemetaan Guna Tanah bagi Rancangan Pembangunan

Projek Pemetaan Guna Tanah bagi Rancangan Pembangunan dilaksanakan di bawah kerjasama ARSM dan Jabatan Perancangan Bandar dan Desa Semenanjung Malaysia (JPBDSM). Teknologi remote sensing melalui keupayaan pengkelasan imej satelit digunakan bagi menghasilkan peta guna tanah terkini yang amat diperlukan dalam memantau, mengukur pencapaian perancangan, mengemaskini Rancangan Tempatan Daerah (RTD) dan Rancangan Fizikal Negara (RFN) yang telah diwartakan.

Pada tahun 2011, beberapa siri pemindahan teknologi kepada pegawai JPBDSM telah diadakan pada 10-18 Mac, 1-30 Jun, 8-19 Ogos dan 19-21 Oktober di ARSM. ARSM komited untuk meneruskan sokongan teknikal kepada JPBDSM bagi memantapkan lagi pelaksanaan pemetaan guna tanah menggunakan teknologi

Landuse Mapping Project for Development Plan

Land Use Mapping Project for Development Plan is a collaborative effort between ARSM and Town and Country Planning Department of Peninsular Malaysia (JPBDSM). Remote sensing technology through satellite image classification is used to produce an updated land use maps vital for monitoring, evaluating the planning achievement and updating the gazetted Local District Planning (RTD) and National Physical Planning (RFN).

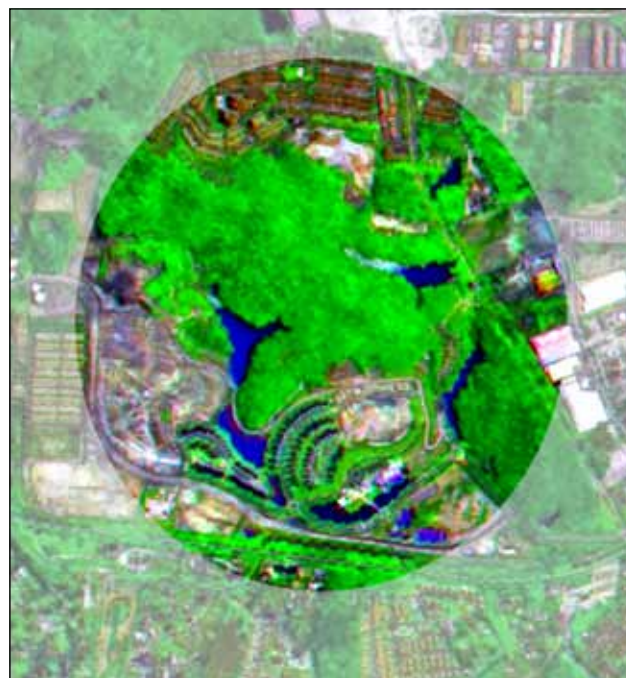
In 2011, series of technology transfer programmes to JPBDSM officers were organised on 10-18 March, 1-30 June, 8-19 August and 19-21 October at ARSM. ARSM is committed to continue supporting JPBDSM to further enhance the capability in land use mapping using remote sensing technology for development planning. Additionally, to further benefit the officers and staff of JPBDSM on utilization of remote sensing in urban planning, a workshop on Land Suitability

remote sensing bagi rancangan pembangunan. Selain itu, bagi memberikan manfaat kepada lebih ramai pegawai dan kakitangan JPBDSM mengenai penggunaan remote sensing dalam perancangan bandar, satu bengkel bertajuk Analisis Kesesuaian Tanah untuk Rancangan Pembangunan melalui Aplikasi Penggunaan Remote Sensing dalam Perancangan Bandar telah diadakan di Telok Dalam Resort, Pulau Pangkor, Perak pada 11-13 Oktober 2011.

Analysis in Development Plan using Remote Sensing Applications in Urban Planning was held at Telok Dalam Resort, Pulau Pangkor, Perak on 11-13 October 2011.



**Peta Guna Tanah
Rancangan Tempatan
*Local District
Planning Landuse Map***



**Pemantauan guna tanah menggunakan imej satelit
*Monitoring of landuse using satellite image***



Sesi Bengkel Analisis Kesesuaian Tanah untuk Rancangan Pembangunan melalui Penggunaan Aplikasi Remote Sensing dalam Perancangan Bandar
Workshop on Land Suitability Analysis for Development Plan Using Remote Sensing Applications in Urban Planning

Eksplorasi Air Tanah

Pada tahun 2011, projek eksplorasi air tanah dengan kerjasama Jabatan Mineral dan Geosains (JMG) diteruskan ke Lembangan Sungai Muar yang terletak dalam kawasan Negeri Sembilan dan Negeri Johor. Objektif projek ini adalah untuk mengenal pasti potensi sumber air tanah di Lembangan Sungai Muar sebagai sumber alternatif kepada bekalan air Daerah Batu Pahat semasa musim kemarau.

Kajian mendapati terdapat lapan (8) parameter yang merangkumi aspek geologi dan persekitaran mempengaruhi kewujudan air tanah di kawasan ini. Parameter tersebut dijana daripada data remote sensing dan data spatial lain yang kemudiannya digabung dan dianalisis dalam persekitaran GIS menggunakan teknik *Weighted Map Overlay* bagi menghasilkan peta kawasan berpotensi air tanah.

Hasil kajian menunjukkan kawasan ini boleh dikelaskan kepada empat (4) kelas potensi pengeluaran; Sangat Tinggi, Tinggi, Sederhana, dan Rendah. Kawasan berpotensi Sangat Tinggi adalah kawasan yang berkeupayaan mengeluarkan air bawah tanah melebihi 20m³/jam manakala kawasan Sangat Rendah hanya berkeupayaan menghasilkan kurang 5m³/jam.

Groundwater Exploration

In 2011, groundwater exploration project which was being implemented in collaboration with the Department of Minerals and Geoscience (JMG) has been extended to Muar River Basin in the states of Negeri Sembilan and Johor. The objective of this project is to identify the potential sources of groundwater in Muar River Basin as an alternative source of water supply for Batu Pahat District during the drought season.

The research has indicated that eight (8) parameters comprising geological and environmental aspects affecting the existence of ground water in this area. These parameters were extracted from remote sensing and other spatial data which subsequently being analysed using 'Weighted Map Overlay' technique in the GIS environment to produce groundwater potential map.

The result shown that the study area could be categorised into four (4) classes of groundwater potential; namely, Very High, High, Medium, and Low. The Very High potential area is termed as having production capacity exceeding 20m³/hour, whilst Very Low potential areas produce less than 5m³/hour.

Ketepatan kajian disahkan di lapangan dengan membandingkan data lubang gerudi yang diperoleh dari JMG dengan peta potensi air tanah yang telah dihasilkan. Selain itu, jumlah penggunaan air tanah oleh masyarakat setempat, sekolah dan kem Pusat Latihan Khidmat Negara (PLKN) turut digunakan dalam analisis kajian ketepatan. Hasil kajian ini amat berguna sebagai input kepada Majlis Air Tanah Negara dalam perancangan penyediaan sumber air alternatif terutamanya semasa musim kemarau.

The accuracy assessment was verified by comparing with the borehole data acquired from JMG. The survey on the use of groundwater by local residents, schools and National Service Training Camp (PLKN) was also used in the accuracy assessment. The outcome from this study was very beneficial as an input to the National Groundwater Council for the planning of alternative water resources especially during the drought season.



Kajian verifikasi lapangan dijalankan di Sekolah Kebangsaan Buloh Kasap, Segamat, Johor

Field verification conducted at Sekolah Kebangsaan Buloh Kasap, Segamat, Johor

Kajian verifikasi lapangan dijalankan di Pusat Pertanian Tangkak, Muar, Johor
Field verification conducted at Tangkak Agriculture Centre, Muar, Johor



APLIKASI KESIHATAN PERSEKITARAN

Sistem Pengurusan Wabak Denggi

ARSM dengan kerjasama Kementerian Kesihatan Malaysia (KKM) telah membangunkan Sistem Pengurusan Wabak Denggi (SPWD) bagi tujuan meningkatkan keberkesanan aktiviti pemantauan, kawalan dan pencegahan wabak denggi dengan lebih cepat, tepat dan menyeluruh. Sistem ini mula dioperasikan oleh KKM pada Julai 2011 bagi menyelaraskan aktiviti pengurusan denggi di peringkat nasional. Sistem ini kemudiannya telah digunakan oleh Jabatan Kesihatan Negeri (JKN) dan Jabatan Kesihatan Daerah (JKD) bagi aktiviti pemantauan dan kawalan kes serta wabak secara harian. Selain itu, sistem ini juga digunakan bagi menyediakan peta kawasan berisiko untuk membantu dalam perancangan aktiviti pencegahan pada peringkat awal.

Sebanyak empat (4) sesi pemindahan teknologi telah diadakan melalui taklimat dan bengkel di peringkat Kementerian dan Jabatan Kesihatan Negeri (JKN). Pemantauan dan penggunaan berterusan sistem SPWD akan dapat mengurangkan tempoh masa wabak dan dapat mengawal penularan wabak denggi dengan lebih berkesan. Ini dapat dilaksanakan melalui penentuan kluster kawasan wabak yang menunjukkan sempadan aktiviti kawalan dengan lebih tepat menggunakan imej satelit remote sensing beresolusi tinggi.

Di akhir tahun 2011, SPWD telah dioperasikan sepenuhnya di 15 buah daerah di tiga (3) buah negeri iaitu Melaka, Pulau Pinang dan Negeri Sembilan. Seterusnya sistem ini akan diperluaskan pengoperasiannya ke seluruh negara mulai tahun 2012.

ENVIRONMENTAL HEALTH APPLICATION

Dengue Outbreak Management System

ARSM in collaboration with the Ministry of Health Malaysia (MOH) has developed a Dengue Outbreak Management System (SPWD) with the objective to improve and enhance the efficiency in monitoring, controlling and prevention of dengue outbreak expeditiously, accurately and holistically. This system began operational in July 2011 where the information was used by MOH to coordinate the management of dengue outbreak at national level. It was subsequently used by the State and District Health Departments for daily monitoring and controlling of the dengue cases and outbreaks. The system also provides a dengue risk map that assist in planning the prevention activities at an early stage.

Four (4) technology transfer sessions, consisting of lectures and workshops at Ministry's and States' Health Departments were organised. The continuous monitoring and utilisation of SPWD would reduce the duration of the outbreak and subsequently effectively preventing the spreading through the identification of outbreak clusters, which precisely depicting the boundaries of controlling activities by using high resolution remote sensing satellite images.

At the end of 2011, SPWD was fully operational in 15 districts in three (3) states of Melaka, Pulau Pinang and Negeri Sembilan. The system will eventually be operationalised to the whole country starting 2012.



Sistem Pengurusan Wabak Denggi
Dengue Outbreak Management System



Kluster kawasan wabak
Cluster Outbreak Area

Pemantauan Banjir

APPLICATION OF NATURAL DISASTER MANAGEMENT

Flood Monitoring

ARSM is continuously committed in producing Monsoon Flood Prone Areas Map which is processed from satellite imageries for the whole nation since 2009. The maps in both hardcopy and digital formats were delivered to National Security Council (MKN), Drainage and Irrigation Department Malaysia (DID), Muda Agriculture Development Authority (MADA), Fire and Rescue Department Malaysia (BOMBA) and Public Works Department Malaysia (PWD) for monitoring and planning activities of an area development.



Antaramuka Sistem Maklumat dan Logistik Banjir Monsun
Interface of Monsoon Flood Logistics and Information System

Sebanyak 13 peta cetak kekal dan 10 peta *digital* meliputi kawasan banjir di Kelantan, Terengganu, Pahang, Kedah dan Perlis diserahkan kepada agensi-agensi tersebut bagi tujuan merancang, mengurus, dan memantau segala bentuk usaha penyelarasan dan bantuan kepada mangsa banjir. Di samping itu, maklumat lokasi 3,474 pusat pemindahan banjir di seluruh negara yang dibekalkan oleh Jabatan Kebajikan Masyarakat (JKM) telah dicerap dan disahkan di lapangan menggunakan peralatan GPS. Maklumat tersebut kemudiannya dimasukkan ke dalam pangkalan data untuk diintegrasikan bersama data geospasial yang lain.

Semua maklumat berkaitan banjir boleh diakses melalui laman web Sistem Maklumat dan Logistik Banjir Monsun yang telah siap dibangunkan oleh ARSM dengan menggunakan kepakaran dalaman. Sistem ini hanya boleh diakses oleh agensi pengguna berdaftar sahaja. Antara maklumat yang boleh diakses secara atas talian adalah seperti liputan dan keluasan kawasan yang ditenggelami air, pusat pemindahan, jenis guna tanah yang terjejas, anggaran jumlah mangsa banjir, pangkalan hadapan dan jaringan perhubungan yang ditenggelami air.

Pemantauan Kebakaran Hutan

Pemantauan kebakaran hutan dan pembakaran terbuka bagi tahun 2011 telah melangkah ke fasa baru dengan wujudnya Sistem Maklumat Kebakaran Hutan (ForFIS) yang dibangunkan dengan menggunakan kepakaran dalaman ARSM. ForFIS ialah sistem yang berasaskan web GIS dibangunkan dengan mengintegrasikan teknologi remote sensing, GIS dan teknologi ICT. Sistem ini mula beroperasi sepenuhnya mulai Julai 2011 dan boleh diakses melalui internet oleh agensi pengguna yang berdaftar. ForFIS dibangunkan dengan objektif utama untuk mempercepatkan proses penyebaran maklumat melalui internet kepada agensi pengguna terlibat bagi menggantikan kaedah lama melalui fax dan e-mail.

ForFIS memaparkan taburan titik panas di Malaysia dan Indonesia yang dikesan melalui Satelit NOAA dan MODIS serta menyediakan laporan ringkas bagi setiap negeri dan daerah.

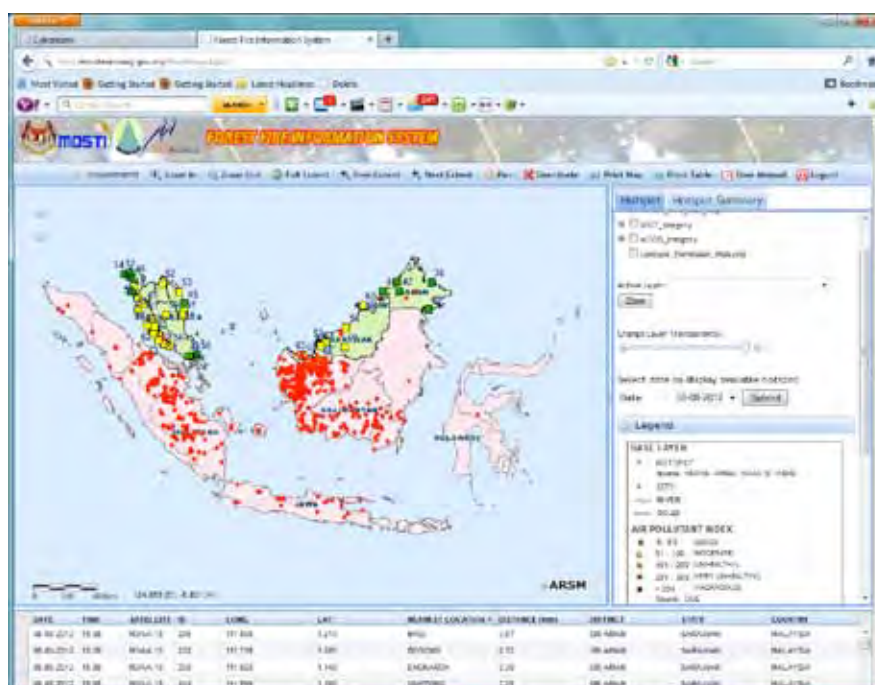
A total of 13 maps in hardcopies and 10 maps in digital forms covering flood hit areas in Kelantan, Terengganu, Pahang, Kedah and Perlis were delivered to the above mentioned agencies for planning, managing and monitoring coordination efforts and assistance for flood victims. In addition, the location of 3,474 flood evacuation centres in Malaysia which were provided by Social and Welfare Department (JKM) were observed and verified on-site using GPS equipments. The information is stored into the database for integration with other geospatial data.

All flood related information could be easily accessed through the website of Monsoon Flood Logistics and Information System which was successfully developed by ARSM using internal expertise. The system is only accessible by registered user agencies. Amongst the information available online are coverage and acreage of inundated areas, flood evacuation centres, types of landuse affected, estimation number of flood victims, front liner centres and inundated transportation network.

Forest Fire Monitoring

The monitoring of forest fire and open burning in 2011 has entered a new phase with the completion of Forest Fire Information System (ForFIS) which was developed by ARSM in-house expertise. ForFIS is a GIS web based system developed with the integration of remote sensing GIS and ICT technologies. It has been fully operationalised effective July 2011 and accessible through internet by registered user agencies. The main objective of ForFIS is to expedite the dissemination of information to user agencies through internet of which was previously delivered through faxes and e-mails.

ForFIS displays hotspots distribution in Malaysia and Indonesia as detected by NOAA and MODIS satellites, and produce reports summary for every states and districts. These hotspots information were complemented with geospatial information such as the nearest village or town, county,



Maklumat taburan titik panas dan API
Information on distribution of hotspots and API

Maklumat taburan titik panas ini turut dilengkapi dengan maklumat geospasial antaranya kampung atau bandar yang berhampiran, mukim, daerah, negeri, dan jaringan jalanraya dan sungai. Semua maklumat ini membolehkan pihak berkuasa terlibat mengambil tindakan segera menjalankan penyiasatan di lapangan dan seterusnya mengatur strategi pemadaman sekiranya perlu.

Sistem ini juga dibangunkan dengan keupayaan menerima data satelit beresolusi tinggi yang mana sentiasa dikemas kini dari semasa ke semasa. Penggunaan data satelit seperti SPOT sangat berguna dalam mengenal pasti lokasi dan jenis guna tanah di tempat kejadian dengan tepat. Selain itu, ForFIS turut mengintegrasikan maklumat Indeks Pencemaran Udara (API) yang diperoleh dari Jabatan Alam Sekitar Malaysia.

Antara agensi pengguna berdaftar yang telah menggunakan sistem ini adalah Majlis Keselamatan Negara (MKN), Jabatan Alam Sekitar (JAS), Kementerian Sumber Asli dan Alam Sekitar (NRE), Jabatan Bomba dan Penyelamat Malaysia (BOMBA), Jabatan Perhutanan Semenanjung Malaysia (JPSM) dan Kementerian Sains, Teknologi dan Inovasi (MOSTI).

districts, states, and road and river networks. The information provided would definitely assist the authorities to conduct prompt investigations on-site and plans for any suppression measure if necessary.

The system is also designed to accommodate high resolution remote sensing satellite data of which being constantly updated when available. The use of satellite data such as SPOT is very useful in precisely identifying location and landuse types on the ground. Information on Air Pollution Index (API) from the Department of Environment Malaysia is also being integrated into the system.

Amongst the registered user agencies to access ForFIS are The National Security Council (NSC), Department of Environment (DOE), Ministry of Natural Resources and Environment (NRE), Fire and Rescue Department Malaysia (BOMBA), Forestry Department Peninsular Malaysia (FDPM), and Ministry of Science, Technology and Innovation (MOSTI).

APLIKASI PEMETAAN

Pembangunan Jaringan *Image Chip Satellite Based Positioning*

Pada tahun 2011, kerja lapangan pengumpulan data titik kawalan bumi (GCP) dan pembangunan *image chips library* berasaskan data satelit SPOT-5 ditumpukan di Sabah dan Sarawak. Kerja-kerja seumpamanya bagi Semenanjung Malaysia telah berjaya disiapkan pada tahun lepas. Walau bagaimanapun kerja-kerja menambah bilangan GCP bagi kawasan yang berkepadatan rendah di Semenanjung Malaysia masih diteruskan pada tahun ini.

Cerapan data GCP dijalankan dengan menggunakan dua (2) jenis peralatan *Global Navigation Satellite System* (GNSS) iaitu; TOPCON GR3 yang menggunakan servis *Malaysia Real-Time Kinematic System* (MyRTKNet) dari Jabatan Ukur dan Pemetaan Malaysia (JUPEM) dengan kejituan sentimeter dan TRIMBLE PRO XRT yang menggunakan servis OMNISTAR HP dengan kejituan desimeter.

Semua GCP yang diceraap tersebut dijadikan *chips* dan digunakan bagi menjalankan pembetulan geometri data SPOT-5 multispektral dan pankromatik secara automatik untuk menghasilkan produk yang dikenali sebagai imej *orthorectified* rujukan piawai SPOT-5. Sehingga penghujung 2011 sebanyak 80 scene imej *orthorectified* SPOT-5 multispektral dan 79 scene imej *orthorectified* SPOT-5 pankromatik telah dihasilkan.

MAPPING APPLICATION

Development of Image Chip Satellite Based Positioning Network

In 2011, the collection of ground control points (GCP) and the development of image chips library based on SPOT-5 satellite data were concentrated in Sabah and Sarawak. Similar works in Peninsular Malaysia was completed last year. However, the exercise to increase the number of GCP in low density areas of Peninsular Malaysia was continued in 2011.

The field observations were conducted using two (2) types of Global Navigation Satellite System (GNSS) equipments i.e. TOPCON GR3 using Real-Time Kinematic System (MyRTKNet) service provided by the Department of Survey and Mapping Malaysia (JUPEM) with centimeter accuracy; and Trimble PRO XRT uses HP OMNISTAR service with decimeter accuracy.

All collected GCP were converted into chips of which being used for automatic image geometric correction of SPOT-5 multispectral and panchromatic data to produce a product known as SPOT-5 orthorectified standard reference image. Until end of 2011, 80 scenes of SPOT-5 orthorectified multispectral and 79 scenes of SPOT-5 orthorectified panchromatic images were produced.

PROGRAM PERKHIDMATAN TEKNIKAL
TECHNICAL SERVICES PROGRAMME



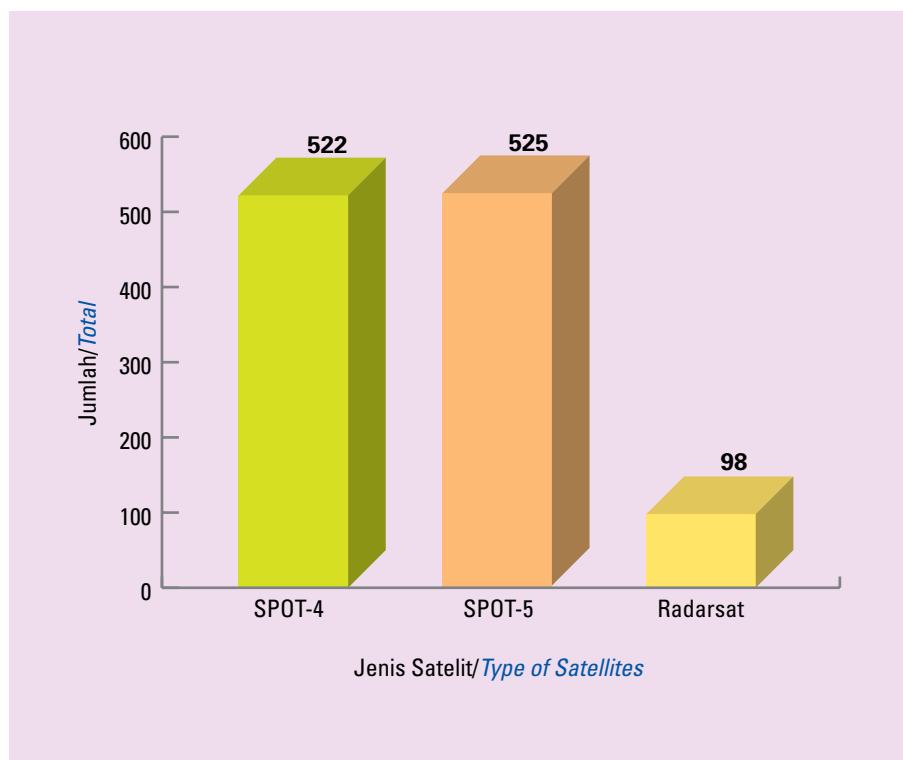
PERKHIDMATAN DATA SATELIT REMOTE SENSING *REMOTE SENSING SATELLITE DATA SERVICES*

PENERIMAAN DATA

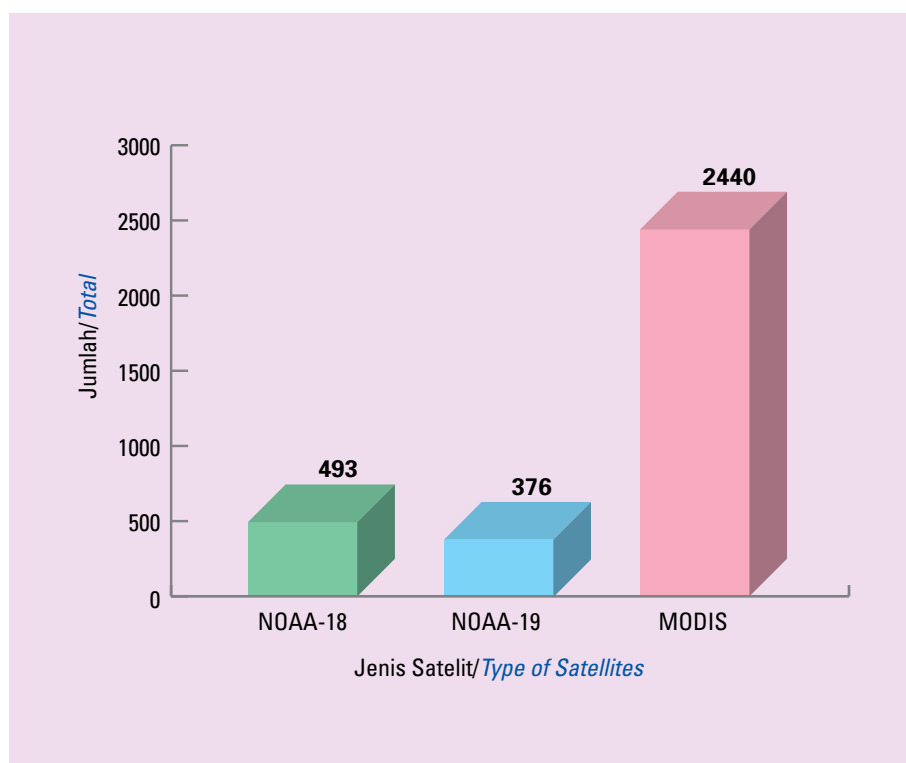
Pada tahun 2011, pengoperasian Stesen Bumi ARSM di Temerloh, Pahang diteruskan lagi dengan penerimaan data secara masa sebenar daripada satelit SPOT-4, SPOT-5, Radarsat-1, MODIS (Aqua-1 dan Terra-1), NOAA-18 dan NOAA-19. Stesen bumi ini menerima sebanyak 522 cerapan data SPOT-4, 525 cerapan SPOT-5 dan 80 cerapan Radarsat-1 menggunakan sistem antena 13m. Manakala 493 imej satelit NOAA-18 dan 376 NOAA-19 telah dicerap dengan menggunakan antena 2.4m dan 2,440 cerapan data MODIS diterima dengan menggunakan antena 3.6m. Stesen bumi ini juga bertanggungjawab menjalankan pra-pemprosesan imej satelit yang dicerap sebelum dibekalkan kepada pengguna. Sebanyak 1,968 scene data satelit SPOT dan 98 scene data satelit Radarsat telah diproses.

DATA RECEPTION

In 2011, the operationalisation of ARSM Ground Station in Temerloh, Pahang is continued with the real-time data reception activities from SPOT-4, SPOT-5, Radarsat-1, MODIS (Aqua-1 and Terra-1), NOAA-18 and NOAA-19 satellites. It has received a total of 522 downlinks of SPOT-4, 525 downlinks of SPOT-5 and 80 downlinks of Radarsat-1 by using 13m antenna system. 493 images of NOAA-18 and 376 of NOAA-19 satellites were acquired by using 2.4m antenna while 2,440 downlinks of MODIS were acquired by using 3.6m antenna. The ground station is also responsible in pre-processing of those satellite images acquired and hence, a total of 1,968 scenes of SPOT satellite data and 98 scenes of Radarsat satellite data have been processed.



Cerapan data SPOT dan Radarsat tahun 2011
2011 SPOT and Radarsat data downlinks



Cerapan data NOAA dan MODIS tahun 2011
2011 NOAA and MODIS data downlinks



Cerapan data satelit masa sebenar di Stesen Bumi
Real time data reception at the Ground Station

PENGEDARAN DATA

Dalam tahun 2011, ARSM meneruskan lagi usaha untuk meningkatkan mutu perkhidmatan data remote sensing dengan memperoleh versi terkini perisian pemprosesan data remote sensing PCI Geomatika, meningkatkan keupayaan perisian PCI Proline dengan Model *Atmospheric Correction* yang terkini dan perolehan mesin pencetak digital Chromira bagi mencetak imej satelit dalam format foto beresolusi tinggi.

Tahun ini menyaksikan jumlah data satelit yang diedarkan kepada agensi pengguna meningkat dengan ketara sebanyak 73% berbanding tahun sebelumnya, iaitu daripada 6,482 scene kepada 11,261 scene. Peningkatan ini adalah selaras dengan usaha-usaha yang dijalankan dalam meningkatkan kecekapan, kualiti dan produktiviti serta aktiviti promosi yang berterusan.

DATA DISTRIBUTION

In 2011, ARSM continue to pursue its effort to strengthen the quality of its remote sensing data services through procurements of the latest version of PCI Geomatica satellite data processing system, upgrading of PCI Proline software incorporating the latest Atmospheric Correction Model and purchasing of Chromira Digital Printer for the production of satellite imagery in high resolution photographic format.

This year has witnessed a significant increase in the number of satellite data distributed to user agencies compared to the previous year, from 6,482 scenes to 11,261 scenes, an increment of 73%. The increment was in line with the agency's continuous effort in improving efficiency, quality and productivity as well as continuous promotional activities.



Pegawai Khidmat Pengguna sedang memberikan penerangan kepada pelanggan
User Service Officer briefs the customers

Statistik Pengedaran Data Satelit
Satellite Data Distribution Statistics

	2007	2008	2009	2010	2011
i. Bilangan agensi pengguna <i>Number of user agencies</i>					
Sektor Kerajaan/ <i>Government Sector</i>	131	135	142	268	223
Sektor Swasta/ <i>Private Sector</i>	16	27	30	33	11
Jumlah/ <i>Total</i>	147	162	172	301	234
ii. Bilangan scene yang dipohon <i>Number of scenes requested</i>					
Sektor Kerajaan/ <i>Government Sector</i>	3,792	6355	8779	6,420	10,985
Sektor Swasta/ <i>Private Sector</i>	118	189	380	114	276
Jumlah/ <i>Total</i>	3,910	6544	9,159	6,534	11,261
iii. Jumlah data satelit yang dipohon mengikut jenis satelit <i>Number of satellite data requested based on types of satellites</i>					
a. Sektor Kerajaan/ <i>Government Sector</i>					
Landsat	173	199	145	59	122
Spot	3039	2375	2,874	2,757	3,120
Radarsat	431	177	89	188	146
Ikonos, QuickBird & WorldView	70	267	220	97	180
MODIS, OCM & NOAA	79	3337	5,451	3,263	7,417
Terrasar-X	0	0	0	54	0
Jumlah/ <i>Total</i>	3,792	6355	8,779	6,418	10,985
b. Sektor Swasta/ <i>Private Sector</i>					
Landsat	15	8	0	0	6
Spot	99	145	380	111	259
Radarsat	3	34	0	0	11
Ikonos, QuickBird & WorldView	0	2	0	3	0
MODIS, OCM & NOAA	1	0	0	0	0
Jumlah/ <i>Total</i>	118	189	380	114	276

BENGKEL KAJIAN KEPERLUAN PENGGUNA SATELIT RAZAKSAT-2

ARSM dengan kerjasama Agensi Angkasa Negara (ANGKASA) telah mengadakan bengkel Kajian Keperluan Pengguna Satelit RazakSAT-2 pada 10-11 November 2011 di Kuala Lumpur. Bengkel ini bertujuan untuk mendapatkan maklum balas mengenai keperluan sebenar pengguna data remote sensing bagi membantu ANGKASA dalam pembangunan satelit RazakSAT-2 iaitu satelit remote sensing ketiga negara. Seramai 153 orang peserta daripada 126 agensi pengguna kerajaan, swasta dan universiti telah menghadiri bengkel ini. Para peserta telah diberi taklimat mengenai status semasa program remote sensing nasional dan Program RazakSAT-1 serta disusuli dengan sesi perbincangan mengenai keperluan pengguna serta potensi satelit RazakSAT-2.

RAZAKSAT-2 SATELLITE USER REQUIREMENT WORKSHOP

ARSM in collaboration with National Space Agency (ANGKASA) has organised a workshop entitled RazakSAT-2 Satellite User Requirement on 10-11 November 2011. The objective is to gather information on the requirement of remote sensing users in an effort to assist ANGKASA in the development of RazakSAT-2 satellite i.e. the 3rd Malaysian remote sensing satellite. A total of 153 participants representing 126 user agencies from government and private agencies, and universities have attended the workshop. The participants were highlighted on the current status of national remote sensing programme and RazakSAT-1 Programme which was then followed by a discussion session on the user requirements and the potential of RazakSAT-2 satellite.



Perasmian Bengkel Kajian Keperluan Pengguna Satelit RazakSAT-2
oleh Y.Bhg. Dato' Dr. Sharifah Zarah binti Syed Ahmad, Timbalan Ketua Setiausaha (Dasar) MOSTI
Opening ceremony of RazakSAT-2 Satellite User Requirement Workshop
by Y.Bhg. Dato' Dr. Sharifah Zarah binti Syed Ahmad, Deputy Secretary General (Policy) MOSTI



Peserta Bengkel Kajian Keperluan Pengguna Satelit RazakSAT-2
Participants of RazakSAT-2 Satellite User Requirement Workshop

KORPORAT DAN PERHUBUNGAN AWAM *CORPORATE AND PUBLIC RELATIONS*

PEMBANGUNAN MODAL INSAN

ARSM menganjurkan dan menyertai sebanyak 162 program pembangunan modal insan terdiri daripada 75 program teknikal dan 87 program pengurusan. Program ini merangkumi latihan sambil bekerja, kursus jangka pendek, seminar dan persidangan. Selain daripada pegawai dan kakitangan ARSM, beberapa program teknikal yang dianjurkan turut melibatkan penyertaan pegawai daripada beberapa agensi pengguna yang berkaitan serta pelajar universiti khususnya melalui latihan industri.

Kursus Remote Sensing Ke-17

Program latihan tahunan ini dilaksanakan dengan matlamat meningkatkan penggunaan dan kemahiran teknologi remote sensing dalam negara. Kursus ini diadakan di Ibu Pejabat ARSM melalui dua (2) modul. Modul 1 yang mengkhususkan kepada teori dan pemahaman konsep remote sensing dan teknologi berkaitan diadakan di ARSM pada 10-21 Oktober 2011 dengan penyertaan seramai 44 orang peserta. Selain daripada pegawai penyelidik ARSM, kursus Modul 1 ini juga melibatkan penceramah jemputan iaitu Prof. Dr. Yousoff Hussein dari Fakulti Sains Geoinformasi dan Pemantauan Bumi, ITC, Netherlands. Sementara itu, modul 2 pula yang mengkhususkan kepada pelaksanaan projek aplikasi remote sensing diadakan pada 14-25 November 2011 yang turut melibatkan pensyarah jemputan iaitu Prof. Ibrahim Busu dari UTM disamping pegawai penyelidik ARSM. Modul 2 ini disertai oleh 40 peserta dari agensi kerajaan dan swasta.

HUMAN DEVELOPMENT PROGRAMME

ARSM has organised and participated in 162 human capital development programmes consisting 75 on technical and 87 on management. The programmes comprised on-job trainings, short courses, seminars and conferences. Beside the officers and staff of ARSM, several technical programmes have also benefited officers of related user agencies and also university students particularly through industrial trainings.

17th Remote Sensing Course

This annual programme is organised with the aim to increase the utilisation and expertise of remote sensing and related technologies in the country. The programme was organised at ARSM headquarters and implemented in two (2) modules. Module 1 emphasising on the basic theory and understanding of remote sensing and related technologies was held at ARSM on 10-21 October 2011 with 44 participants. Other than ARSM research officers, Module 1 course has also involved a renowned invited lecturer i.e. Prof. Dr. Yousoff Hussein from Faculty of Geoinformation Science and Earth Observation, ITC, The Netherlands. While module 2 with special emphasise on remote sensing application projects was held on 14-25 November 2011 with an involvement of an invited lecturer i.e. Prof. Dr. Ibrahim Busu from UTM besides ARSM research officers. Module 2 was attended by 40 participants from government and private sectors.



**Peserta Kursus
Remote Sensing
Modul 1**
*Participants of
Remote Sensing
Course Module 1*



Peserta Kursus Remote Sensing Modul 2
Participants of Remote Sensing Course Module 2

Latihan Industri

Seramai 12 pelajar menjalani latihan industri di ARSM pada tahun ini yang terdiri daripada enam (6) pelajar dari UiTM, tiga (3) dari UMS dan masing-masing seorang dari UKM, UTM dan USM. Pelajar-pelajar tersebut adalah daripada pelbagai bidang pengkhususan seperti remote sensing, sains sekitaran, geomatik, geofizik dan geologi. Antara lain, pelajar-pelajar tersebut didedahkan dengan persekitaran alam pekerjaan sebenar, pengetahuan asas remote sensing dan teknik pemprosesan imej, GIS dan GPS.

Semua pelajar tersebut juga turut menjalankan projek mini yang berkaitan dengan bidang pengkhususan masing-masing dengan mengaplikasikan pengetahuan yang diperolehi semasa latihan dan membuat pembentangan hasil kajian masing-masing. Pelajar-pelajar juga dibawa melawat ke Stesen Bumi ARSM di Temerloh, Pahang bagi tujuan pendedahan secara langsung muat turun dan proses perolehan data satelit remote sensing.

Industrial Training

A total of 12 students have completed their industrial training at ARSM in 2011 comprising six (6) from UiTM, three (3) from UMS and one (1) each from UKM, UTM and USM. The students were from various disciplines such as remote sensing, environmental science, geomatic, geophysics and geology. Among others, the students were exposed to the actual working environment, basic understanding of remote sensing and image processing techniques, GIS and GPS.

The students have also conducted mini research projects related to their respective discipline by applying the knowledge obtained during the training period and making individual project presentation. The students were also taken for a visit to ARSM Ground Station in Temerloh, Pahang to experience live downloading and processes of the remote sensing satellite data acquisition.



Sebahagian daripada pelajar latihan industri tahun 2011
Some of the 2011 industrial training students

PENGURUSAN KUALITI

Audit Persijilan Semula ISO 9001:2008 Perkhidmatan Data Remote Sensing

Sesi Audit Persijilan Semula ISO 9001:2008 Perkhidmatan Data Remote Sensing ARSM telah diadakan pada 30 Mac-1 April 2011. Hasil penemuan audit telah merekodkan sistem pengurusan kualiti bagi Perkhidmatan Data Remote Sensing ARSM adalah mengikut prosedur dan memenuhi keperluan standard ISO 9001:2008. SIRIM QAS International Bhd. telah mengesahkan sijil tersebut sehingga 21 April 2014.

Audit Pemantauan ISO 27001:2005 ISMS

Sesi Audit Pemantauan ISO 27001:2005 Sistem Pengurusan Keselamatan Maklumat (ISMS) ARSM yang diadakan pada 18 Julai hingga 6 Ogos 2011 mencadangkan dua (2) penambahbaikan untuk dilaksanakan. Walau bagaimanapun, pada keseluruhannya pihak SIRIM QAS International Bhd. berpuas hati dengan pelaksanaan dan penambahbaikan ISMS yang dilaksanakan secara berterusan di agensi ini.

PENGURUSAN HAK HARTA INTELEK

Pendaftaran Rekabentuk Industri untuk Projek *Synthetic Aperture Radar Unmanned Aerial Vehicle (SAR UAV)*

Program pengurusan Hak Harta Intelek (IP) ARSM yang bermula sejak tahun 2003 telah berjaya meningkatkan kesedaran pegawai dan kakitangan ARSM bagi melindungi hasil projek penyelidikan melalui pendaftaran hak harta intelek. ARSM telah membuat permohonan kepada Perbadanan Harta Intelek Malaysia (MyIPO) melalui SIRIM Bhd. pada 22 Disember 2010 bagi tujuan pemfailan hak harta intelek untuk melindungi hasil projek SAR UAV. Pada 22 November 2011, ARSM telah memperoleh kelulusan bagi empat (4) item SAR UAV di bawah kategori Reka Bentuk Industri.

QUALITY MANAGEMENT

ISO 9001:2008 Remote Sensing Data Services Recertification Audit

The ISO 9001:2008 Remote Sensing Data Services Recertification Audit was held on 30 March-1 April 2011. The audit findings recorded that the quality management system for Remote Sensing Data Services was in order and conform to ISO 9001:2008 standards. SIRIM QAS International Bhd. has endorsed the certification effective until 21 April 2014.

ISO 27001:2005 ISMS Surveillance Audit

The Surveillance Audit of ISO 27001:2005 Information Security Management System (ISMS) which was held at ARSM on 18 July to 6 August 2011 recommended two (2) improvements to be implemented. Nevertheless, SIRIM QAS International Bhd. is satisfied with the implementation and continuous improvements of the ISMS undertaken by the agency.

INTELLECTUAL PROPERTY RIGHTS MANAGEMENT

Industrial Design Registration for Synthetic Aperture Radar Unmanned Aerial Vehicle (SAR UAV) Project

ARSM Intellectual Property (IP) Rights Management Programme which started since 2003 has successfully raised the awareness of officers and staff of ARSM to safeguard research project outputs through the filing of intellectual property registration. ARSM has filed an application to the Malaysian Intellectual Property Office (MyIPO) through SIRIM Bhd. on 22 December 2010 to protect the outputs of SAR UAV project. ARSM was granted approval of four (4) items of SAR UAV under the Industrial Design category on 22 November 2011.

KERJASAMA SERANTAU DAN ANTARABANGSA

Sub-Komiti Teknologi dan Aplikasi Angkasa ASEAN (ASEAN-SCOSA)

Ketua pengarah ARSM selaku pengerusi ASEAN-SCOSA telah mempengerusikan mesyuarat ke-22 sub-komiti ini yang diadakan di Siem Reap, Cambodia pada 9-10 Mei 2011. Sepuluh (10) negara ASEAN iaitu Brunei Darussalam, Filipina, Indonesia, Myanmar, Malaysia, Singapura, Thailand, Viet Nam, Laos PDR dan tuan rumah Cambodia telah menghadiri mesyuarat kali ini.

Mesyuarat ini diadakan bagi membincangkan status projek kerjasama serantau dalam bidang teknologi dan aplikasi angkasa. Status terkini projek kerjasama di bawah ASEAN-SCOSA yang dilaporkan ialah terdapat dua (2) projek yang sedang berjalan, enam (6) projek yang masih memerlukan peruntukan dan dua (2) projek baharu.

Di akhir mesyuarat ini, Ketua Pengarah ARSM telah menyerahkan mandat Pengerusi ASEAN-SCOSA kepada Negara Myanmar setelah menyandang jawatan tersebut selama tiga (3) tahun berturut-turut.

REGIONAL AND INTERNATIONAL COOPERATION

ASEAN Sub-Committee on Space Technology and Applications (ASEAN-SCOSA)

The Director General of ARSM as the chairman of ASEAN-SCOSA chaired the 22nd meeting of the sub-committee held in Siem Reap, Cambodia from 9-10 May 2011. Ten (10) member countries namely: Brunei Darussalam, Philippines, Indonesia, Myanmar, Malaysia, Singapore, Thailand, Viet Nam, Laos PDR and Cambodia as the host country attended this meeting.

The meeting was organised to discuss the status of regional cooperation projects in space technology and applications. It was reported that the latest status of the ASEAN-SCOSA collaboration projects were two (2) on-going projects, six (6) still require funding and two (2) new projects.

At the end of the meeting, the Director General of ARSM handed over the chairmanship to Myanmar after assuming the ASEAN-SCOSA chairmanship for three (3) consecutive years.



Ahli Mesyuarat ASEAN-SCOSA ke-22 di Siem Reap, Cambodia
Members of the 22nd ASEAN-SCOSA Meeting in Siem Reap, Cambodia

Komiti Sains dan Teknologi ASEAN (ASEAN-COST)

Mesyuarat ASEAN-COST ke-61 telah diadakan di Siem Reap, Cambodia pada 9-13 Mei 2011. Ketua Pengarah ARSM selaku pengerusi ASEAN-SCOSA telah melaporkan status terkini pelaksanaan program di bawah sub-komiti berkenaan di mesyuarat tersebut. Selain itu, Ketua Pengarah ARSM juga turut menghadiri Mesyuarat ASEAN-COST ke-62 yang diadakan di Ho Chi Minh City, Viet Nam pada 21-25 November 2011.

ASEAN-Committee on Science and Technology (ASEAN-COST)

The 61st ASEAN-COST Meeting was held in Siem Reap, Cambodia on 9-13 May 2011. The Director General of ARSM as the chairman of ASEAN-SCOSA has reported the latest status of the programmes implemented under the sub-committee. He has also attended the 62nd ASEAN-COST Meeting in Ho Chi Minh City, Viet Nam on 21-25 November 2011.



Y.Bhg. Dato' Dr. Madinah Mohamad, KSU MOSTI (Lima dari kiri) bersama ketua delegasi negara-negara ASEAN yang menghadiri Mesyuarat ASEAN-COST Ke-61 di Siem Reap, Cambodia
Y.Bhg. Dato' Dr. Madinah Mohamad, Secretary General of MOSTI (Fifth from left) with heads of ASEAN delegates attending 61st ASEAN-COST Meeting in Siem Reap, Cambodia

Senarai Program Teknikal bagi Pembangunan Modal Insan Tahun 2011

List of Technical Programmes of Human Capital Development in 2011

Bil. Num.	Program Programmes	Tarikh Date	Bil. Peserta Num. of Participants	Penganjur Organiser
1.	11 th Meeting of the ASEAN Sub-Regional Steering Committee (MSC) and 11 th Technical Meeting Group (TWG) on Trans-boundary Haze	16-17 Feb	1	ASEAN Sub-Regional Steering Committee
2.	Workshop Using ENVI for Image Analysis of Vegetation	18 Feb	1	ESRI
3.	Key Issues of EMI/EMC: How to Design and Build a Compliant System	24-25 Feb	1	ABT Media Pte Ltd.
4.	Kolokium: Technical Updates on ArcGIS R10	11 Mac	56	ARSM
5.	1 st National Workshop on Reducing Emission and Forest Degradation (REDD Plus): Definitions and drivers of deforestation and forest degradation	23-24 Mac	2	FRIM
6.	Latihan Sistem Synthetic Aperture Radar (SAR)	28 Mac- 1 Apr	4	ARSM
7.	International Training Course on Microwave Remote Sensing and Its Applications	4-29 Apr	1	Indian Institute of Remote Sensing
8.	Seminar on Geographic Information Technology and Its Applications	7 Apr	3	Embassy of France
9.	Seminar Pengurusan Sasaran Penting Peringkat Zon Pantai Timur	17 Apr	1	Pejabat Keselamatan Negara
10.	Bengkel Pemindahan Teknologi bagi Projek Kerjasama ARSM-Jabatan Hutan Sabah dalam Pemprosesan Imej Satelit untuk Kumpulan Kerja Penyediaan Litupan Hutan dan REDD Negeri Sabah	18-20 Apr	8	ARSM
11.	Mesyyuarat ASEAN Committee on Science and Technology (ASEAN COST) ke-61	9-13 Mei	2	Ministry of Industry, Mines and Energy, Cambodia
12.	Seminar Kebangsaan Penyelidikan dan Pengurusan Tasik Serta Lembangannya Ke Arah Penggunaan Berkekalan di Malaysia: Status Semasa Tasik-Tasik Terpilih Peringkat 2	10-11 Mei	1	NAHRIM
13.	Bengkel dan Mesyyuarat Kumpulan Kerja serta Mesyyuarat Jawatankuasa Teknikal ISO/ TC211 Geographic Information/Geomatics	23-27 Mei	1	SIRIM
14.	SKYBOX: A New Generation Imaging Satellites	23 Mei	35	ARSM
15.	Kursus Analisis dan Rekabentuk Sistem (OODAD) Bil. 1/2011	23-27 Mei	1	INTAN
16.	Pengurusan Penyelidikan dan Pembangunan (MGT300)	31 Mei-2 Jun	3	Nuklear Malaysia
17.	Signature Analyst and Earth Where-GEOEYE	2 Jun	53	ARSM

Bil. Num.	Program Programmes	Tarikh Date	Bil. Peserta Num. of Participants	Penganjur Organiser
18.	<i>MCTS: Windows Server 2008 Networking Infrastructure Configuration</i>	6-15 Jun	1	INTAN
19.	Bengkel Penulisan Karya Saintifik (MGT302)	7-9 Jun	1	Nuklear Malaysia
20.	Seminar Kebangsaan Projek-Projek Penyelidikan dan Pembangunan (R&D) bagi Hutan Pesisiran Pantai di Malaysia	7-8 Jun	1	FRIM
21.	<i>ISTIC-ISESCO-UNESCO Training Workshop on Science, Technology and Innovation (STI) Policy Embracing Structural Innovation for Socio-Economic Transformation</i>	13-17 Jun	1	International Science, Technology and Innovation Centre (ISTIC)
22.	Latihan Sistem <i>Unmanned Aerial Vehicle (UAV)</i>	13-15 Jun	7	ARSM
23.	<i>22nd Pacific Science Congress</i>	14-17 Jun	3	Akademi Sains Malaysia
24.	Kursus Intranet-Aplikasi Web (PHP) Bil. 2/2011	20-23 Jun	1	INTAN
25.	<i>UN-SPIDER International Expert Meeting: Crowd Source Mapping for Preparedness and Emergency Response</i>	5-6 Jul	1	The United Nations
26.	<i>Oracle Hardware on Oracle Database Seminar</i>	7 Jul	2	MOSTI
27.	Persidangan ICT Kebangsaan 2011	7-8 Jul	2	INTAN
28.	<i>Semantic Technology Workshop</i>	13-16 Jul	1	Sabah Biodiversity Centre
29.	Kursus Pemahaman dan Pelaksanaan ISO 9001:2008	18-19 Jul	2	SIRIM
30.	<i>Blue Ocean Strategy in the Public Services</i>	19 Jul	10	INTAN
31.	<i>Workshop on Cooperative Project on the Establishment of ASEAN Earth Observation Satellite</i>	26-27 Jul	1	GISTDA, Thailand
32.	<i>Sabah REDD+ Framework Development Kick-Start Workshop</i>	18-19 Ogos	4	Le Meridian Hotel, Kota Kinabalu
33.	<i>1st International Fisheries Symposium (IFS) 2011</i>	3-5 Okt	2	Universiti Malaysia Terengganu
34.	Kursus Remote Sensing 2011- Modul 1	10-21 Okt	18	ARSM
35.	Kursus Remote Sensing 2011-Modul 2	14-25 Nov	20	ARSM
36.	<i>National Innovation Conference & Exhibition (NICE)</i>	15 Nov	7	MOSTI
37.	<i>Kuala Lumpur Innovation Forum (KLIF) 2011</i>	15-16 Nov	2	Yayasan Inovasi Malaysia(YIM)
38.	<i>18th Session of The Asia Pacific Regional Space Agency Forum (APRSF-18)</i>	6-9 Dis	1	Japan Aerospace Exploration Agency (JAXA)
39.	Seminar Teknikal Gempa Bumi	20-21 Dis	1	Meteorologi Malaysia

Senarai Program Pengurusan bagi Pembangunan Modal Insan Tahun 2011
List of Management Programmes of Human Capital Development in 2011

Bil. Num.	Program Programmes	Tarikh Date	Bil. Peserta Num. of Participants	Penganjur Organiser
1.	Kursus Tatatertib	7-9 Feb	2	MOSTI
2.	Kursus Kenaikan Pangkat	9-10 Feb	1	MOSTI
3.	Perakaunan Terima/Hasil Kerajaan	28 Feb- 4 Mac	1	Institut Perakaunan Negara
4.	Kursus Pengurusan Aset dan Stor Kerajaan Siri 1	7-10 Mac	2	MOSTI
5.	Pra Persaraan dan Pengurusan Pencen	10-12 Mac	1	BARAQAH IKHTIAR/JPA
6.	Bengkel Pengurusan Mesyuarat, Penulisan Minit Mesyuarat/ Memo/ Surat Rasmi dan Gaya Bahasa	14-16 Mac	2	MOSTI
7.	Latihan Pengurusan Kewangan (Perbelanjaan dan Pembayaran)	28-31 Mac	2	Kementerian Kewangan
8.	Seminar Keselamatan Kebakaran Tahun 2011	29 Mac	1	Jabatan Bomba dan Penyelamat Malaysia
9.	Kursus Penterjemahan Am (Intensif)	11-23 Apr	1	Institut Terjemahan Negara Malaysia
10.	Kursus Penyelenggaraan Bangunan dan Harta	19-21 Apr	1	FNR Consultant
11.	<i>Leadership Development Programme</i> Siri 1	26-28 Apr	1	MOSTI
12.	Kursus Persediaan Persaraan	28-30 Apr	2	Yayasan Amanah Latihan Berkanun
13.	Kursus Stor dan Pengurusan Aset Alih Kerajaan	11-14 Mei	1	MOSTI
14.	Bengkel Pengukuhan Integriti Perkhidmatan Awam (PIPA)	12-14 Mei	3	MOSTI
15.	Kursus Amalan 5S untuk Peningkatan Prestasi	25-26 Mei	1	U-Smart Resources
16.	Kursus Pengurusan Sistem Fail dan Pengkelasan Perkara	1-3 Jun	1	Yayasan Amanah Latihan Berkanun
17.	<i>INTAN Executive Talk: 'Enculturing Innovation: Seven Pillars'</i>	9 Jun	3	INTAN
18.	Kursus Pemanduan Defensif Berhemah	17-19 Jun	1	MOSTI
19.	Kursus Asas Pasukan Keselamatan Kebakaran	20-24 Jun	4	Jab. Bomba dan Penyelamat Malaysia
20.	Bengkel Pengemaskinian Tatacara dan Prosedur Perolehan	24-25 Jun	2	MOSTI
21.	Kursus Pemantapan Pengurusan	24-26 Jun	58	ARSM

Bil. Num.	Program Programmes	Tarikh Date	Bil. Peserta Num. of Participants	Penganjur Organiser
22.	<i>Executive Talk: Accrual Accounting, Our Journey of Transformation</i>	13 Jul	1	Institut Perakaunan Negara
23.	Kursus Induksi Khusus Bil.2/2011	13-15 Jul	2	MOSTI
24.	Kursus <i>Corrective and Preventive Action</i>	18-19 Jul	2	SIRIM
25.	Program Latihan Pemahaman dan Pelaksanaan MS ISO 9001:2008	18-19 Jul	1	SIRIM
26.	Seminar Kesedaran Keselamatan	18 Jul	19	ARSM
27.	Kursus Bina Integriti 2011	21-23 Jul	1	MOSTI
28.	Latihan dan Ceramah Kebakaran	24 Jul	11	ARSM
29.	Bengkel Pusat Pengurusan Maklumat Krisis/Bencana MOSTI	26 Jul	1	MOSTI
30.	Taklimat Pematuhan Pengurusan Kewangan	26 Jul	1	AELB
31.	Kursus Pengendalian Mesyuarat dan Penulisan Minit Mesyuarat yang Berkesan	27-28 Jul	1	UTMspace
32.	Bengkel Penstrukturan Semula Program Pembangunan Modal Insan dalam Sains, Teknologi dan Inovasi (HCD STI) dan Program Brain Gain Malaysia (BGM)	8-9 Sept	2	MOSTI
33.	Kursus Gaji, Elaun dan Kemudahan Penjawat Awam	12-15 Sept	1	Institut Perakaunan Negara
34.	Kursus Penyelia Berkesan	20-22 Sept	2	MOSTI
35.	Kursus Asas Protokol dan Etika Sosial Bil. 2/2011	26-29 Sept	1	INTAN
36.	Kursus Pengurusan Stor Bil. 3/2011	26 Sept	1	INTAN
37.	Kursus <i>Coaching and Mentoring for Leaders</i>	4-6 Okt	1	MOSTI
38.	Kursus Pengurusan Projek	19 Sept-7 Okt	1	INTAN
39.	Kursus Pengurusan Aset dan Stor	19-22 Okt	1	MOSTI
40.	Bengkel Transformasi Profesionalisma	27-29 Okt	2	MOSTI
41.	Program Transformasi Birokrat MOSTI	3-5 Nov	1	JPM
42.	Kursus Pengurusan Kewangan (Perolehan)	10-12 Nov	2	MOSTI
43.	<i>Malaysia CIO Conference and MYGOSSCON 2011</i>	29-30 Nov	1	MAMPU

PROMOSI TEKNOLOGI *TECHNOLOGY PROMOTION*

PAMERAN

Pada tahun ini, ARSM telah mengambil bahagian dalam 24 pameran yang dianjurkan di peringkat kebangsaan, negeri dan daerah termasuklah penganjuran bersempena konferens, seminar atau majlis rasmi lain. ARSM menyertai pameran sebegini dengan tujuan mempromosi teknologi remote sensing dan teknologi lain yang berkaitan kepada profesional dan orang awam khususnya pelajar sekolah.

Antara pameran yang mendapat sambutan menggalakkan ialah pameran bersempena Persidangan Antarabangsa Parti Politik Asian (ICAPP) di Kuala Lumpur pada 5-6 Mei 2011 yang dirasmikan oleh Y.A.B. Tan Sri Muhyiddin Yassin, Timbalan Perdana Menteri Malaysia. Pameran utama lain termasuklah yang diadakan bersempena Seminar Aplikasi Sistem Penentuan Lokasi Penangkapan Ikan (Sistem FSI) di Kuantan, Pahang pada 17-18 Januari 2011 dan Majlis Menandatangani Perjanjian Persefahaman antara ARSM dan PLUS di Pesada PLUS pada 31 Mei 2011.

EXHIBITION

In 2011, ARSM has participated in 24 exhibitions organised at national, state and district levels including exhibitions organised in parallel to conferences, seminars, or specific official events. ARSM participated in such exhibitions as an effective mechanism in promoting remote sensing and related technologies to professionals and general public especially the students.

Amongst the exhibitions that received overwhelming response was exhibition held in conjunction with the International Conference on Asian Political Parties (ICAPP) held in Kuala Lumpur on 5-6 May 2011 which was officiated by Y.A.B. Tan Sri Muhyiddin Yassin, The Deputy Prime Minister of Malaysia. Other main exhibitions were exhibitions organised in conjunction with the Seminar on Applications of Fishing Site Identification System (FSI System) held in Kuantan, Pahang on 17-18 January 2011 and the Signing Ceremony of the Memorandum of Understanding between ARSM and PLUS at Pesada PLUS on 31 May 2011.



Lawatan Y.A.B. Tan Sri Muhyiddin Yassin, Timbalan Perdana Menteri Malaysia ke booth pameran ARSM sempena persidangan ICAPP
Visit by Y.A.B. Tan Sri Muhyiddin Yassin, Deputy Prime Minister of Malaysia to ARSM booth during ICAPP conference



Pengunjung ke pameran ARSM bersempena penganjuran Seminar Aplikasi Penentuan Lokasi Ikan (Sistem FSI) di Kuantan, Pahang
Visitors to ARSM exhibition's booth during the Seminar on Applications of Fishing Site Identification System (FSI System) in Kuantan, Pahang



Pameran sempena Majlis Menandatangani Perjanjian Persefahaman antara ARSM dan PLUS di Pesada PLUS pada 31 Mei 2011
Exhibition held in conjunction with the Signing Ceremony of the Memorandum of Understanding between ARSM and PLUS at Pesada PLUS on 31 May 2011

Senarai Pameran yang Disertai ARSM bagi Tahun 2011
List of Exhibitions Participated by ARSM in 2011

Bil. Num.	Pameran Exhibition	Tarikh Date	Tempat Venue
1.	Pameran Bersempena Seminar Sistem Penentuan Lokasi Penangkapan Ikan	17-18 Jan	Kuantan, Pahang
2.	Pameran Bengkel Kesedaran Bencana Peringkat Kebangsaan	16-21 Feb	MITC, Melaka
3.	<i>Science on Wheels</i> Peringkat Negeri Johor	28 Mac	SMK Kota Kulai, Johor
4.	<i>Science on Wheels</i> Peringkat Negeri Johor	29 Mac	SMK Permas Jaya 2, Johor
5.	<i>Science on Wheels</i> Peringkat Negeri Johor	30 Mac	SM Teknik, Johor Bahru, Johor
6.	<i>Science on Wheels</i> Peringkat Negeri Johor	1 April	SMK Dato' Penggawa Barat, Pontian, Johor
7.	<i>Science on Wheels</i> Peringkat Negeri Johor	2 Apr	Kompleks Penghulu Mukim Lubok, Batu Pahat, Johor
8.	Pameran Bersempena Seminar Sistem Penentuan Lokasi Penangkapan Ikan	11-12 Apr	Sibu, Sarawak
9.	Pameran <i>International Conference on Asian Political Parties (ICAPP)</i>	5-6 Mei	PWTC, Kuala Lumpur
10.	Pameran Sambutan Hari Falak 2011 Peringkat Negeri Melaka	21-22 Mei	Kompleks Falak Al-Khawarizmi
11.	Pameran Majlis Menandatangani MOA di Antara ARSM dan PLUS	31 Mei	Persada PLUS, Subang
12.	Hari Denggi ASEAN dan Pelancaran Semula Program COMBI	16 Jun	Sekolah Tinggi Sentul, Kuala Lumpur
13.	Pameran <i>Pacific Science Congress</i>	14-17 Jun	KLCC
14.	Program Penggalakan Sains dan Teknologi Sarawak	23-25 Jul	Belaga, Sarawak
15.	Pameran Hari Penternak, Peladang dan Nelayan Peringkat Negeri Terengganu 2011	23-28 Jul	Kuala Terengganu
16.	<i>Malaysia Science and Technology Innovation & Exposition (MYSTI 2011)</i>	29-31 Jul	KLCC
17.	Majlis Menandatangani Nota Kerjasama Antara ARSM-Jabatan Tanah dan Survei Sarawak (JTS)	19 Ogos	Kuching, Sarawak
18.	Pameran Sistem Penentuan Lokasi Penangkapan Ikan	13 Sep	Kuala Terengganu
19.	Pameran Program Tahun Penggalakan Sains dan Matematik Peringkat Negeri Sabah	17-18 Sep	Keningau, Sabah
20.	Pameran Kursus Remote Sensing Modul 1	10-21 Okt	ARSM
21.	Pameran Sempena Program Hari Kesedaran Bencana Tahun 2011 Peringkat Negeri Pahang	15 Nov	Kuantan, Pahang
22.	Pameran Sistem Penentuan Lokasi Penangkapan Ikan	21-22 Nov	Alor Setar, Kedah
23.	Pameran Festival Sains 2011	3-11 Dis	Pusat Sains Negara, Kuala Lumpur
24.	Pameran Sempena <i>Langkawi International Maritime and Airshow (LIMA)</i>	6-10 Dis	Langkawi, Kedah

LAWATAN

Sepanjang tahun 2011, ARSM menerima seramai 1,625 pelawat termasuk 43 lawatan secara berkumpulan terdiri daripada lawatan dif-dif kehormat, pelbagai agensi kerajaan dan swasta, institusi pengajian tinggi, sekolah dan agensi luar negara.

Lawatan Kerja Rasmi Y.B. Menteri MOSTI ke Stesen Bumi ARSM

Lawatan kerja rasmi Y.B. Menteri Sains, Teknologi dan Inovasi, Datuk Seri Panglima Dr. Maximus Johnity Ongkili ke Stesen Bumi ARSM di Temerloh, Pahang telah diadakan pada 26 Julai 2011. Dalam lawatan tersebut Y.B. Menteri telah diberi taklimat terperinci mengenai pengoperasian Stesen Bumi ARSM dan penerimaan data satelit secara masa sebenar.

VISIT

In 2011, ARSM received 1,625 visitors including 43 group visits from VVIP's, various government and private agencies, institutes of higher learning, schools, and foreign agencies.

Official Working Visit by Y.B. Minister of MOSTI to ARSM Ground Station

Y.B. Minister of Science, Technology and Innovation, Datuk Seri Panglima Dr. Maximus Johnity Ongkili has call on his official working visit to Ground Station in Temerloh, Pahang on 26 July 2011. He was briefed in detail on the operationalisation of ARSM Ground Station and real time remote sensing data reception.



Lawatan Y.B. Menteri Sains, Teknologi dan Inovasi, Dato' Sri Panglima Maximus J. Ongkili ke Stesen Bumi ARSM di Temerloh, Pahang pada 26 Julai 2011
Visit by Y.B. Minister of Science, Technology and Innovation, Dato' Sri Panglima Maximus J. Ongkili to ARSM Ground Station in Temerloh, Pahang on 26 Julai 2011



Sesi bergambar bersama Y.B. Menteri MOSTI di hadapan antenna 13m
Photographic session with Y.B. Minister of MOSTI in front of 13m antenna

Lawatan oleh T.Y.T. Timbalan Presiden Uganda

Pada 21 Jun 2011, ARSM menerima lawatan delegasi Uganda yang diketuai Timbalan Presiden Republik Uganda, T.Y.T. Edward Ssekandi. Lawatan ini adalah susulan daripada penglibatan beliau dalam Dialog Antarabangsa Langkawi (LID). Objektif utama lawatan beliau ke ARSM dan dua (2) lagi agensi di bawah MOSTI adalah untuk mendapatkan maklumat terkini mengenai kejayaan Malaysia dalam bidang Sains dan Teknologi termasuk dalam bidang remote sensing di samping meneroka peluang kerjasama antara kedua-dua negara. Ketibaan beliau di ARSM disambut oleh Y.B. Timbalan Menteri MOSTI, Datuk Haji Fadillah b. Haji Yusof.

Visit by His Excellency Vice President of Uganda

On 21 June 2011, ARSM received a delegation from Republic of Uganda which was headed by Vice President of Republic of Uganda, His Excellency Edward Ssekandi. This visit was in conjunction with his involvement in Langkawi International Dialogue (LID). The main objective of his visit to ARSM and two (2) other agencies under MOSTI was to obtain the latest information on the Malaysian successes in Science and Technology including remote sensing and as well as to explore potential cooperation between the two (2) countries. Upon arrival at ARSM, His Excellency was greeted by Y.B. Deputy Minister of MOSTI, Datuk Haji Fadillah b. Haji Yusof.



Lawatan oleh T.Y.T. Timbalan Presiden Republik Uganda ke ARSM
Visit by His Excellency Vice President of Republic of Uganda to ARSM

Lawatan Kedutaan Peranchis

Pada 8 April 2011, ARSM telah menerima lawatan delegasi daripada Kedutaan Peranchis di Kuala Lumpur yang diketuai oleh Pesuruhjaya Perdagangan Peranchis. Kunjungan ini adalah bertujuan melihat sendiri kepesatan pembangunan dan pengoperasian teknologi remote sensing dan GIS di Malaysia di samping membincangkan peluang kerjasama teknikal untuk kepentingan kedua-dua negara.

Visit by Embassy of France

ARSM has received a visit by a delegation of the Embassy of France which was headed by French Trade Commissioner, His Excellency Mr. Francois Matraire on 8 April 2011. The visit was to observe the development and operationalisation of remote sensing and GIS technologies in Malaysia as well as discussing on the opportunities of technical cooperation for the benefit of both countries.



Lawatan delegasi daripada Kedutaan Peranchis
Visit by delegation from French Embassy

Lawatan Peserta Kursus Diploma Pengurusan Awam

ARSM turut menerima lima (5) lawatan kumpulan peserta Kursus Diploma Pengurusan Awam anjuran INTAN, Bukit Kiara pada 10 Januari, 8 Mac, 7 April, 14 April dan 19 Julai.

Visit by Participants of Diploma in Public Management Course

ARSM also received five (5) group visits by participants of Diploma in Public Management Course organised by INTAN, Bukit Kiara on 10 January, 8 March, 7 April, 14 April and 19 July.

Lawatan Asia-Pacific Space Cooperation Organization (APSCO)

Pada 17 Oktober 2011, ARSM telah menerima lawatan delegasi daripada Asia-Pacific Space Cooperation Organization (APSCO) yang diketuai oleh Ketua Pengarahnya, En. Ahmad Talebzadeh. Lawatan ini bertujuan untuk mengadakan perbincangan mengenai potensi kerjasama antara Malaysia dan APSCO khususnya dalam bidang pembangunan teknologi dan aplikasi angkasa.

Visit by Asia-Pacific Space Cooperation Organization (APSCO)

ARSM has received a delegation from Asia-Pacific Space Cooperation Organization (APSCO) headed by its Director General, Mr. Ahmad Talebzadeh on 17 October 2011. The objective of the visit was to discuss on the potential collaboration between Malaysia and APSCO particularly in the development of technology and space application.



Lawatan delegasi Asia-Pacific Space Cooperation Organization (APSCO)
Visit by the delegation of Asia-Pacific Space Cooperation Organization (APSCO)

Senarai Lawatan ke ARSM pada Tahun 2011
List of Visits to ARSM in 2011

Bil. Num.	Jabatan/Agensi Department/Agency	Tarikh Date
1.	Peserta Kursus Diploma Pengurusan Awam Anjuran INTAN, Bukit Kiara, Kuala Lumpur	10 Jan
2.	Pejabat Tanah dan Galian Negeri Perak	21 Jan
3.	Jabatan Bomba dan Penyelamat, Wilayah Persekutuan	9 Feb
4.	Jabatan Sains Ukur dan Geomatik, UiTM, Perlis	21 Feb
5.	Politeknik Ungku Omar, Ipoh, Perak	21 Feb
6.	Institut Pengajian Kependidikan, Universiti Malaya, Kuala Lumpur	28 Feb
7.	Fakulti Pengurusan Maklumat, UiTM, Shah Alam	1 Mac
8.	Sekolah Kebangsaan Presint 14 (1), Putrajaya	2 Mac
9.	Kolej Matrikulasi Teknikal Pahang	3 Mac
10.	Peserta Kursus Diploma Pengurusan Awam Anjuran INTAN, Bukit Kiara, Kuala Lumpur	8 Mac
11.	Fakulti Sains Gunaan, UiTM, Shah Alam	10 Mac
12.	Persatuan Pelajar Kejuruteraan Elektrik dan Komputer, UIA	15 Mac
13.	Jabatan Kejuruteraan Biologi dan Pertanian, UPM, Serdang	16 Mac
14.	Jabatan Sains Marin, UMT	18 Mac
15.	Telekom Malaysia Berhad	21 Mac
16.	Fakulti Kejuruteraan, UPM, Serdang	24 Mac
17.	Sekolah Asrama Penuh Integrasi, Temerloh, Pahang	30 Mac
18.	Sekolah Indonesia, Kuala Lumpur	6 Apr
19.	Peserta Kursus Diploma Pengurusan Awam Anjuran INTAN, Bukit Kiara, Kuala Lumpur	7 Apr
20.	Sekolah Menengah Kebangsaan Mengkarak, Bera, Pahang	7 Apr
21.	Pegawai Kedutaan Perancis, Kuala Lumpur	8 Apr
22.	Fakulti Agro Industri dan Sumber Asli, UMK, Kelantan	12 Apr

Bil. Num.	Jabatan/Agensi Department/Agency	Tarikh Date
23.	Fakulti Kejuruteraan, UPM, Serdang	13 Apr
24.	Sekolah Menengah Kebangsaan Agama Naim Lilbanat, Kelantan	14 Apr
25.	Peserta Kursus Diploma Pengurusan Awam Anjuran INTAN, Bukit Kiara, Kuala Lumpur	14 Apr
26.	MADA, Kedah	5 Mei
27.	Sekolah Agama Sri Ayesha, Bangi, Selangor	12 Mei
28.	Management and Science University (MSU)	16 Mei
29.	Fakulti Sastera dan Sains Sosial, Universiti Malaya	18 Mei
30.	Fakulti Geoinformasi dan Harta Tanah, UTM	23 Mei
31.	Lawatan Kerja Timbalan Presiden Republik Uganda	22 Jun
32.	Pusat Latihan Peperangan Elektronik, Kem Paya Jaras Sg. Buloh, Selangor	30 Jun
33.	Institut Penyelidikan Keselamatan Jalan Raya Malaysia (MIROS)	11 Jul
34.	Peserta Kursus Perbandaran dan Alam Sekitar Anjuran INTAN, Bukit Kiara, Kuala Lumpur	19 Jul
35.	Lawatan Y.B. Menteri MOSTI	26 Jul
36.	Pusat Latihan Risik (PULARIS) Temerloh, Pahang	8 Ogos
37.	Sekolah Pendidikan Profesional dan Pendidikan Berterusan UTM (UTMSPACE)	9 Sep
38.	Politeknik Merlimau, Melaka	5 Okt
39.	Sekolah Kebangsaan Sri Tualang, Pahang	13 Okt
40.	Sekolah Menengah Mentakab, Pahang	17 Okt
41.	<i>Asia-Pacific Space Cooperation Organisation (APSCO)</i>	17 Okt
42.	Inspektorat ICU, JPM	25 Nov
43.	Fakulti Pengajian Maritim dan Sains Marin, UMT	23 Dis

PERPUSTAKAAN

Perpustakaan ARSM yang berperanan sebagai perpustakaan khusus dalam bidang remote sensing dan teknologi yang berkaitan sentiasa berusaha meningkatkan jumlah bahan rujukan untuk kemudahan semua pengguna. Pada tahun 2011 sebanyak 136 naskah buku telah diterima, menjadikan jumlah koleksi sehingga kini sebanyak 6,311 naskah. Sebanyak 16 judul majalah dan jurnal telah dilanggan sebagai bahan rujukan dan bahan bacaan ringan kepada pengguna. Manakala bagi koleksi tesis pula, sebanyak 183 judul telah terkumpul sehingga kini.

Seramai 6,161 pengguna telah direkodkan mengunjungi perpustakaan termasuk 114 pengguna luar yang terdiri daripada pegawai dari agensi kerajaan yang lain dan pelajar institusi pengajian tinggi.

LIBRARY

ARSM library which is a specialised library in remote sensing and related technologies is always striving to accumulate its reference collections and provide services to all users. In 2011, 136 copies of new books were added into the collection to a total amount of 6,311 copies. 16 magazines and journals were also subscribed for the benefit of the users. While the total collection of thesis has accumulated to 183 titles.

The library has recorded 6,161 users including 114 external users comprising government officers from other departments and university students.

Pencapaian Perpustakaan pada Tahun 2011 *2011 Library Achievements*

i. Koleksi Bahan/*Material Collection*

Bahan/ <i>Materials</i>	Perolehan/ <i>Acquisition</i>	Jumlah Koleksi/ <i>Total Collection</i>
Monograf/ <i>Monographs</i>	136 naskah/ <i>issues</i>	6,311 naskah/ <i>issues</i>
Tesis/ <i>Thesis</i>	23 naskah/ <i>issues</i>	183 naskah/ <i>issues</i>
Majalah/ <i>Journal</i>	16 judul/ <i>title</i>	16 judul/ <i>title</i>

ii. Perkhidmatan/*Services*

Perkara/ <i>Item</i>	Jumlah/ <i>Total</i>
Peminjaman/ <i>Circulation</i>	547
Peminjaman melalui SPP/ <i>Circulation through ILL</i>	-
Pengguna Luar/ <i>External Users</i>	114

PEMBANGUNAN DAN PENGURUSAN ICT GEOSPATIAL

DEVELOPMENT AND MANAGEMENT OF GEOSPATIAL ICT

Pada tahun 2011, ARSM meneruskan usaha meningkatkan kepakaran kakitangan dan keupayaan organisasi dalam pembangunan sistem aplikasi remote sensing berasaskan web dan pangkalan data geospasial bersepadu. Sistem aplikasi dan pangkalan data dibangunkan untuk diguna pakai oleh agensi pengguna dalam pengurusan pertanian, perikanan, sumber asli, alam sekitar, bencana, kesihatan, keselamatan dan pembangunan tanah negara.

Antara aplikasi GIS Web yang berjaya dibangunkan oleh kepakaran dalaman ARSM ialah Sistem Penentuan Lokasi Penangkapan Ikan (Sistem FSI). Sistem ini telah diperluaskan pengoperasiannya ke Sabah dan Sarawak. Selain itu, Sistem Pengurusan Wabak Denggi (SPWD) pula telah dimanfaatkan oleh beberapa Jabatan Kesihatan Negeri dalam merancang aktiviti pemantauan dan kawalan wabak denggi.

Memandangkan permintaan terhadap aplikasi GIS Web yang semakin meningkat, ARSM telah menaik taraf rangkaian ARSM*Net dari 8Mb kepada 16Mb bagi menghubungkan Ibu Pejabat ARSM dengan Stesen Bumi, Temerloh, Pahang manakala talian internet ARSM telah dipertingkatkan kepada 8Mb. Selain itu, Portal 1Map yang memaparkan pelbagai data geospasial terkini telah diguna pakai secara meluas oleh agensi pengguna. Data tersebut sentiasa dikemas kini bagi memastikan kesahihan dan ketepatannya. Dari aspek pengurusan keselamatan maklumat pula, ARSM telah memperoleh persijilan ISO 27001:2005 ISMS secara berterusan semenjak tahun 2006.

In the year 2011, ARSM continued to enhance personnel skills and organisational capabilities in the development of web based application systems and integrated geospatial database. Application systems and the database were developed for use by user agencies in the management of agriculture, fishery, natural resources, environment, disaster, health, security and land development of the country.

Amongst the Web GIS application that was successfully developed by ARSM internal expertise is Fishing Site Identification System (FSISystem). This system has been operationalised to Sabah and Sarawak. In addition, Dengue Outbreak Management System (SPWD) has been utilised by several State Health Departments in the planning of monitoring activities and surveillance of dengue outbreak.

*With the increasing demand for Web GIS application, ARSM has upgraded the ARSM*Net from 8Mb to 16Mb for communication link between Headquarters and Ground Station in Temerloh, Pahang while the ARSM internet line has been upgraded to 8Mb. Other than that, 1Map Portal which depicts the latest multi-geospatial data has been widely used by the user agencies. The data is consistently updated to ensure the integrity and accuracy of the data. In the information security management aspect, ARSM has obtained the ISO 27001:2005 ISMS certification continuously since 2006.*

PENTADBIRAN DAN KEWANGAN
ADMINISTRATION AND FINANCE



PENTADBIRAN DAN KEWANGAN

Pada tahun 2011, ARSM menerima peruntukan Bajet Mengurus sebanyak RM25,963,458.03 dan Bajet Pembangunan sebanyak RM300,000.00 dengan perbelanjaan masing-masing adalah sebanyak RM25,531,194.19 (98.34%) dan RM298,806.84 (99.6%).

Jumlah kutipan hasil yang merangkumi yuran kursus, penjualan data satelit dan lain-lain daripada agensi kerajaan adalah sebanyak RM565,846.74 manakala daripada agensi swasta adalah sebanyak RM496,148.20.

ADMINISTRATION AND FINANCE

In 2011, ARSM was allocated RM25,963,458.03 for Operating Budget and RM300,000.00 for Development Budget and the expenses were at RM25,531,194.19 (98.34%) and RM298,806.84 (99.6%), respectively.

The total revenue comprising course fees, sales of satellite data and others from government agencies and private sector were RM565,846.74 and RM496,148.20, respectively.

Perbelanjaan Bajet Mengurus dan Pembangunan bagi Tahun 2011 *Operating and Development Budgets Expenditure for 2011*

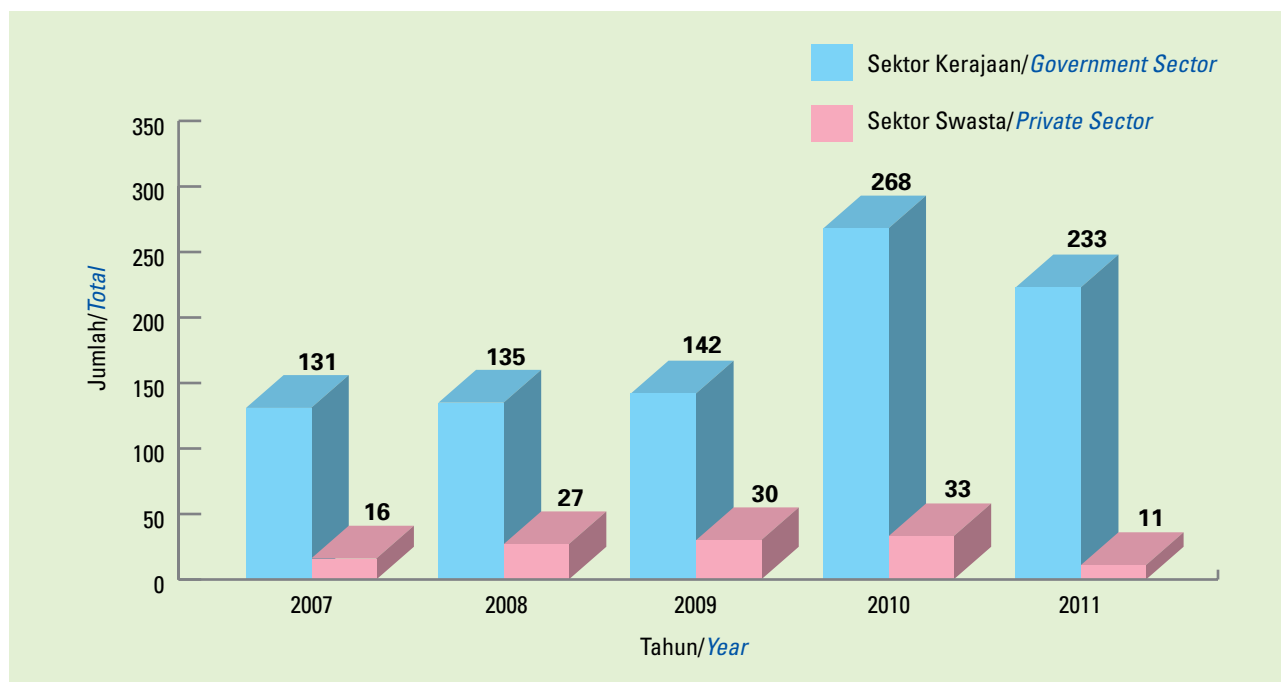
Perkara/ <i>Item</i>	RM (Juta/ <i>Million</i>)		% Perbelanjaan <i>Expenditure</i>
	Bajet Diterima <i>Allocated Budget</i>	Bajet Dibelanjakan <i>Budget Spent</i>	
Bajet Mengurus/ <i>Operating Budget</i>	25,963,458.03	25,531,194.19	98.34
Bajet Pembangunan/ <i>Development Budget</i>	300,000.00	298,806.84	99.60
Jumlah/ <i>Total</i>	26,263,458.03	25,830,001.03	98.35

Kutipan hasil ARSM bagi tahun 2011 *ARSM Revenue for 2011*

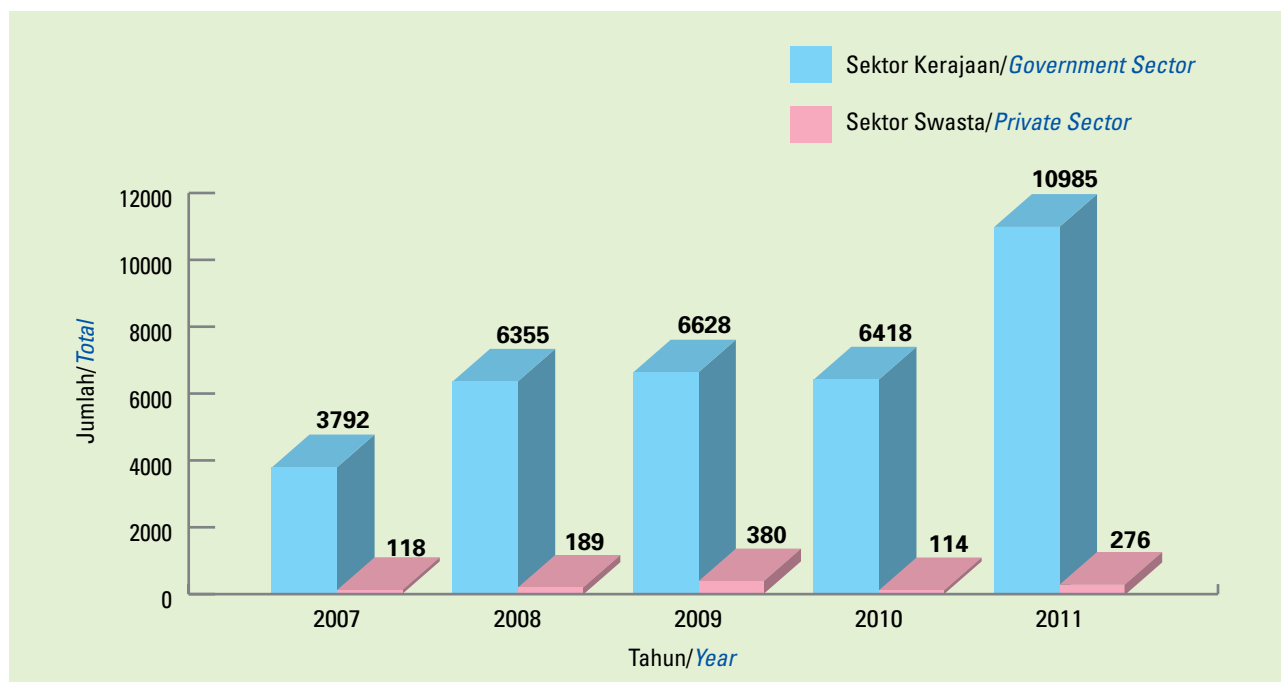
Perkara/ <i>Item</i>	Hasil/ <i>Revenue</i> RM (Juta/ <i>Million</i>)	
	Agensi Kerajaan/ <i>Government Agencies</i>	Agensi Swasta/ <i>Private Sector</i>
Yuran Kursus dan Penjualan Data/ <i>Course Fee and Sales of Data</i>	565,846.74	496,148.20

PETUNJUK PRESTASI
PERFORMANCE INDICATORS

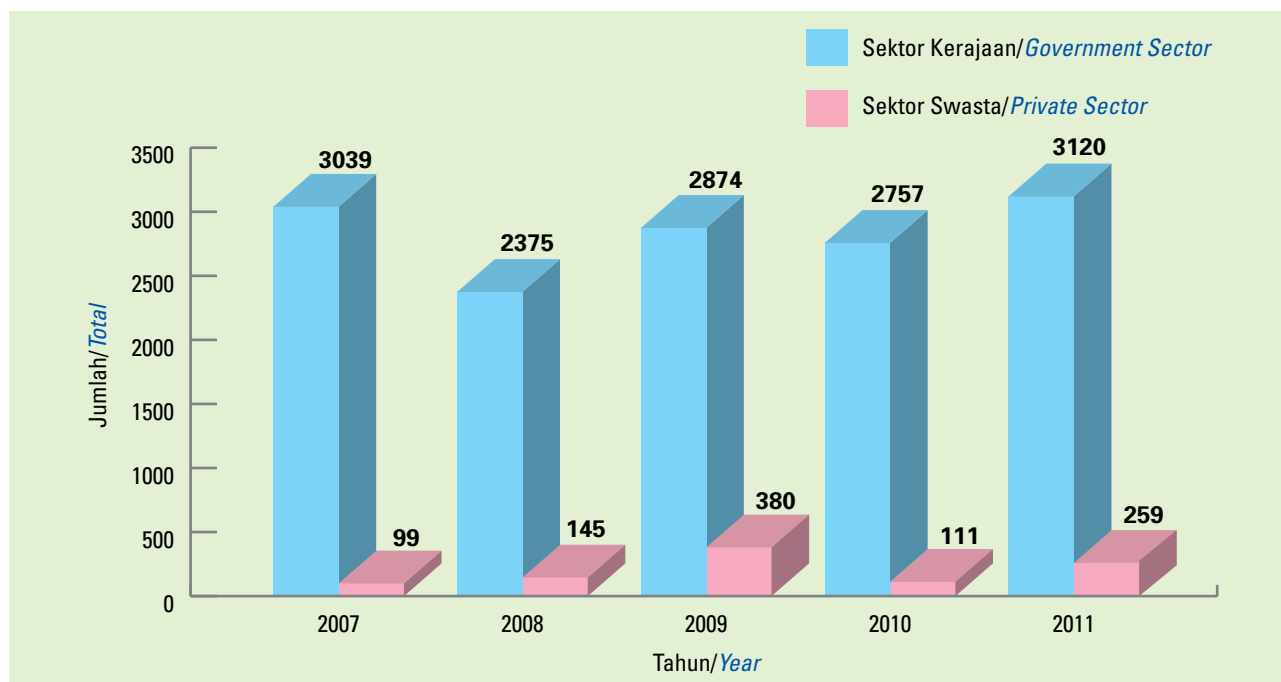
Perkhidmatan Data Satelit Remote Sensing *Remote Sensing Satellite Data Services*



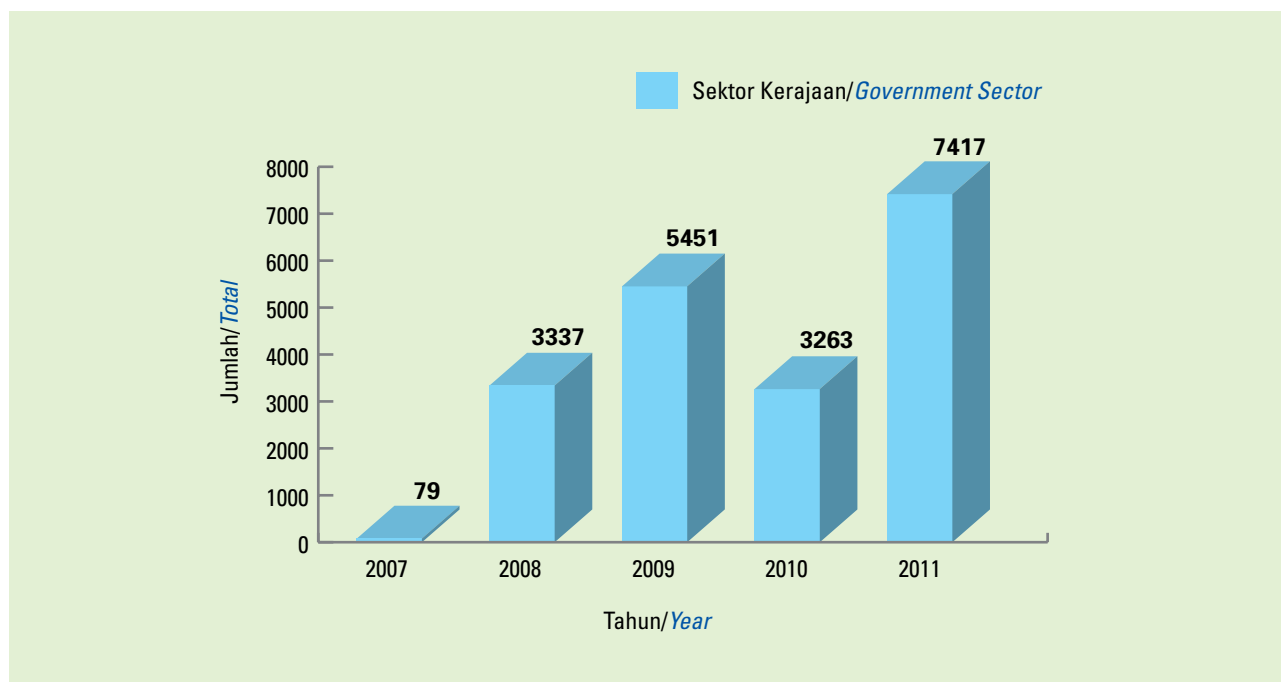
Bilangan agensi pengguna
Number of user agencies



Bilangan scene yang dipohon oleh agensi pengguna
Number of scenes requested by user agencies

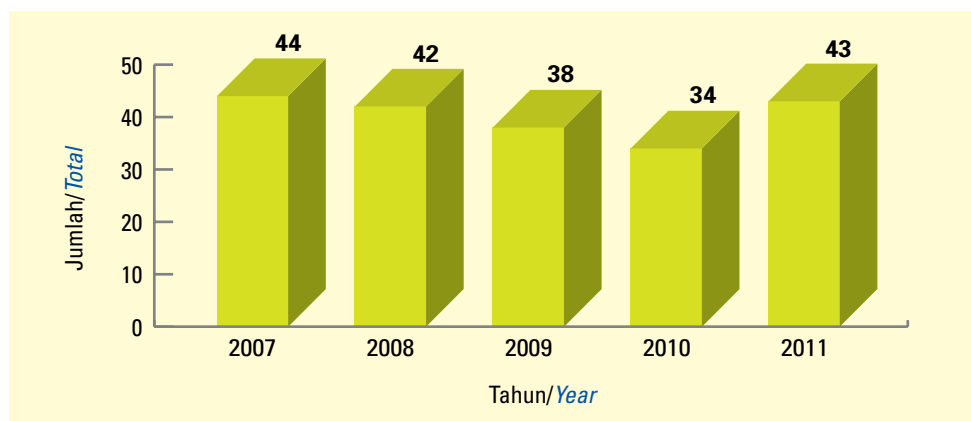


Jumlah data satelit SPOT yang dipohon oleh agensi pengguna
Number of SPOT satellite data requested by user agencies

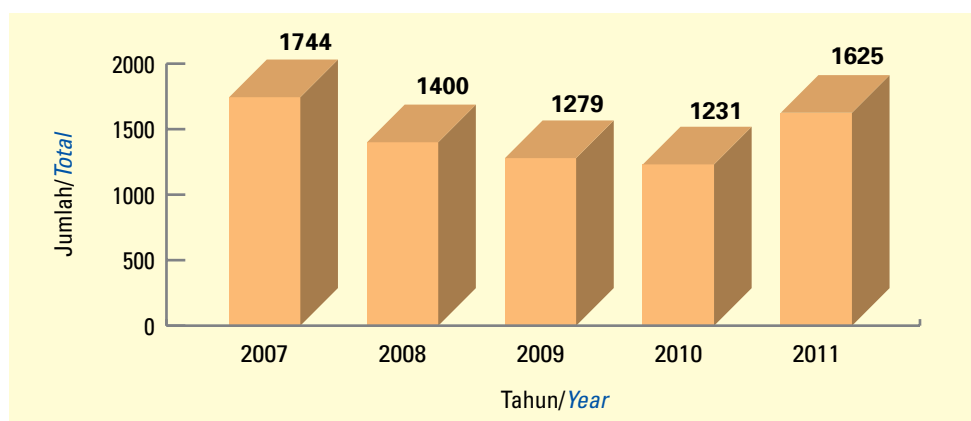


Jumlah data satelit MODIS, OCM & NOAA yang dipohon oleh sektor kerajaan
Number of MODIS, OCM & NOAA satellites data requested by government sector

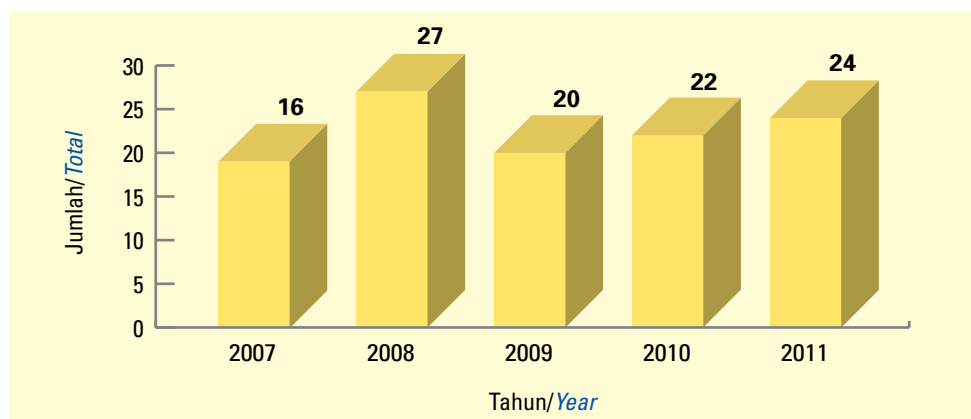
Aktiviti Promosi Teknologi *Technology Promotion Activities*



Jumlah lawatan
Number of visits



Jumlah pelawat
Number of visitors



Jumlah pameran
Number of exhibitions

SOROTAN PERISTIWA
HIGHLIGHT OF EVENTS

**HARI KUALITI DAN PENYAMPAIAN ANUGERAH
PERKHIDMATAN CEMERLANG MOSTI 2011**
*2011 MOSTI QUALITY DAY AND EXCELLENT SERVICE
AWARDS PRESENTATION*



Penerima Anugerah Perkhidmatan Cemerlang MOSTI 2011 bergambar
bersama Y.B. Menteri di SIRIM Berhad pada 10 Mei 2011
*2011 MOSTI Excellent Service Awards Recipients with
Y.B. Minister at SIRIM Berhad on 10 May 2011*

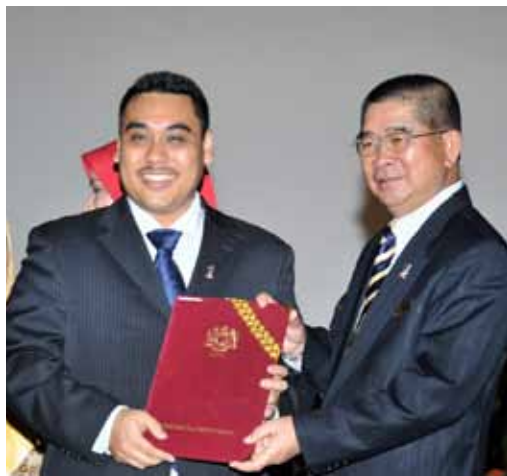
PENERIMA ANUGERAH PERKHIDMATAN CEMERLANG ARSM 2011
2011 ARSM SERVICE AWARDS RECIPIENTS



En. Samsudin bin Omar



En. Kamaruzzaman bin Wahid



En. Akmal Arif bin Zainul Arif



En. Zahid bin Ahmad



En. Khor Soong Wei



En. Zuhairi bin Abdullah



Puan Norhayati Che Musa



En. Jamaludin bin Ibrahim



Cik Nor Adila binti Yusof



Puan Salmiah binti Ahmad



Cik Nurain binti Abd. Karim



Cik Siti Faridah binti Hamzah



Puan Nur Dhuha binti Zulkifli



En. Mohd Hafiz bin Fadil

MAJLIS JASAMU DIKENANG PADA 19 SEPTEMBER 2011
RETIREMENT FAREWELL CEREMONY ON 19 SEPTEMBER 2011



Tuan Haji Mansor Abd. Rahaman, Timbalan Ketua Pengarah (Penyelidikan dan Pembangunan) ARSM mula bersara wajib pada 15 September 2011. Beliau memulakan kerjaya sebagai Pegawai Penyelidik tetap di ARSM mulai 1 Julai 1999. Sebelum itu, beliau telah berkhidmat sebagai Pegawai Pertanian di Jabatan Pertanian Malaysia mulai 15 Mei 1978.

Tuan Haji Mansor Abd. Rahaman, Deputy Director General (Research and Development) of ARSM has retired effective from 15 September 2011. He started work at ARSM as a permanent Research Officer effective from 1 July 1999 after being seconded from Department of Agriculture Malaysia where he was serving as an Agriculture Officer effective from 15 May 1978.



En. Abd. Halim bin Abd. Aziz, Pegawai Penyelidik di Direktorat Strategik dan Perhubungan Awam ARSM mula bersara pada 1 September 2011. Beliau memulakan kerjaya sebagai Pegawai Penyelidik di ARSM mulai 25 Julai 1994. Sebelum itu, beliau telah berkhidmat sebagai Pembantu Teknik di Jabatan Kerjaraya Malaysia mulai 14 Jun 1977.

Mr. Abd. Halim bin Abd. Aziz, a Research Officer at Strategic and Public Relations Directorate of ARSM has retired effective from 1 September 2011. He started work in government service as a Mechanical Technical Assistant at Public Works Department starting from 14 June 1977 before joining ARSM as a Research Officer on 25 July 1994.



PERHIMPUNAN BULANAN *MONTHLY GATHERING*



Perhimpunan Bulanan ARSM pada 7 Januari 2011
ARSM Monthly Gathering on 7 January 2011

KONTINJEN ARSM SEMPENA SAMBUTAN MAULIDUR RASUL *ARSM CONTINGENT DURING MAULIDUR RASUL CELEBRATION*



Kontinjen ARSM semasa perarakan Maulidur Rasul di Putrajaya pada 14 Februari 2011
ARSM contingent during Maulidur Rasul parade at Putrajaya on 14 February 2011

AKTIVITI PEMBANGUNAN MODAL INSAN *HUMAN CAPITAL DEVELOPMENT ACTIVITIES*



Sesi taklimat teknologi remote sensing kepada pelajar Sekolah Menengah Kebangsaan Sri Sentosa, Kuchai Lama sempena Minggu Kerjaya pada 28 April 2011

Briefing session on remote sensing technology to students of Sekolah Menengah Kebangsaan Sri Sentosa, Kuchai Lama in conjunction with Career Week on 28 April 2011



Ceramah perkembangan terkini perisian pemprosesan imej ERDAS Imagine oleh ESRI Malaysia Sdn. Bhd. pada 14 Mac 2011

Talk on the advances of ERDAS Imagine image processing software by ESRI Malaysia Sdn. Bhd. on 14 March 2011



Ceramah Teknikal mengenai SKYBOX: A New Generation Imaging Satellites pada 23 Mei 2011
Technical Talk on SKYBOX: A New Generation Imaging Satellites on 23 May 2011



Kursus PCI Proline pada 20-23 Jun 2011
Training Course on PCI Proline on 20-23 June 2011

Kursus Pemantapan Pengurusan di Cameron Highlands, Pahang pada 24-26 Jun 2011
Course on 'Pemantapan Pengurusan' at Cameron Highlands, Pahang on 24-26 June 2011



Kursus Remote Sensing Modul-1 pada 1-10 Oktober 2011
Remote Sensing Course Module-1 on 1-10 October 2011



Ceramah Tribunal Pengguna pada 25 Oktober 2011
Talk on Consumer Tribunal on 25 October 2011



Bengkel Kajian Keperluan Pengguna Satelit RazakSAT-2 pada 10 November 2011
RazakSAT-2 Satellite User Requirement Workshop on 10 November 2011



Kursus Remote Sensing Modul-2 pada 14-25 November 2011
Remote Sensing Course Module-2 on 14-25 November 2011





LAWATAN VISIT



Lawatan Pegawai Kanan Jabatan Bomba dan Penyelamat Malaysia pada 9 Januari 2011
Visit by Senior Officers of Fire and Rescue Department Malaysia on 9 January 2011



Lawatan peserta Kursus Diploma Pengurusan Awam anjuran INTAN, Bukit Kiara pada 10 Januari 2011
Visit by participants of Diploma in Public Management Course organised by INTAN, Bukit Kiara on 10 January 2011

Lawatan Pejabat Tanah dan Galian Perak pada 21 Januari 2011
Visit by Perak Land and Mining Office on 21 January 2011





Lawatan pelajar Geomatik Universiti Teknologi Mara (UiTM), Arau, Perlis
pada 21 Februari 2011
*Visit by Geomatic students of Universiti Teknologi Mara (UiTM), Arau, Perlis
on 21 February 2011*



Lawatan pelajar Universiti Terbuka Malaysia (OUM) pada 1 Mac 2011
Visit by students of Open University Malaysia (OUM) on 1 March 2011



Lawatan peserta Kursus Diploma Pengurusan Awam
 anjuran INTAN, Bukit Kiara pada pada 8 Mac 2011
*Visit by participants of Diploma in Public Management Course
 organised by INTAN, Bukit Kiara on 8 March 2011*



Lawatan pelajar Universiti Putra Malaysia (UPM), Serdang pada 16 Mac 2011
Visit by students of Universiti Putra Malaysia (UPM), Serdang on 16 March 2011



Lawatan pelajar Universiti Malaysia Terengganu (UMT) pada 18 Mac 2011
Visit by students of Universiti Malaysia Terengganu (UMT) on 18 March 2011



Lawatan pegawai Telekom Malaysia Berhad pada 21 Mac 2011
Visit by officers of Telekom Malaysia Berhad on 21 March 2011



Lawatan pelajar Universiti Putra Malaysia (UPM), Serdang pada 23 Mac 2011
Visit by students of Universiti Putra Malaysia (UPM), Serdang on 23 March 2011



Lawatan pelajar Sekolah Indonesia Kuala Lumpur pada 6 April 2011
Visit by students of Sekolah Indonesia Kuala Lumpur on 6 April 2011



Lawatan peserta Kursus Diploma Pengurusan Awam
 anjuran INTAN, Bukit Kiara pada 7 April 2011
*Visit by participants of Diploma in Public Management Course
 organised by INTAN, Bukit Kiara on 7 April 2011*



Lawatan pelajar Sekolah Kebangsaan Mengkarak, Pahang pada 7 April 2011
Visits by students of Sekolah Kebangsaan Mengkarak, Pahang on 7 April 2011



Lawatan pegawai Universiti Malaysia Kelantan (UMK) pada 12 April 2011
Visit by officers of Universiti Malaysia Kelantan (UMK) on 12 April 2011



Lawatan peserta Kursus Diploma Pengurusan Awam
 anjuran INTAN, Bukit Kiara pada 14 April 2011
*Visit by participants of Diploma in Public Management Course organised
 by INTAN, Bukit Kiara on 14 April 2011*



Lawatan Sekolah Menengah Agama Naim Lilbanat, Kota Bharu, Kelantan pada 14 April 2011
Visit by students of Sekolah Menengah Agama Naim Lilbanat, Kota Bharu, Kelantan on 14 April 2011



Lawatan pelajar Sekolah Menengah Agama Sri Ayesha, Bangi, Selangor pada 12 Mei 2011
Visit by students of Sekolah Menengah Agama Sri Ayesha, Bangi, Selangor on 12 May 2011



Lawatan pelajar Management and Science University (MSU) pada 16 Mei 2011
Visit by students of Management and Science University (MSU) on 16 May 2011



Lawatan pelajar Fakulti Geografi, Universiti Malaya (UM) pada 18 Mei 2011
Visit by students from Faculty of Geography, University Malaya (UM) on 18 May 2011



Lawatan Institut Penyelidikan Keselamatan Jalan Raya Malaysia (MIROS)
pada 11 Julai 2011

*Visit by Malaysian Institute of Road Safety Research (MIROS)
on 11 July 2011*



Lawatan peserta Kursus Perbandaran dan Alam Sekitar
anjaran INTAN, Bukit Kiara pada 19 Julai 2011

*Visit by participants of Urban and Environment Course
organised by INTAN, Bukit Kiara on 19 July 2011*



Lawatan pelajar Politeknik Merlimau, Melaka pada 5 Oktober 2011
Visit by students from Merlimau Polytechnic, Melaka on 5 October 2011



Lawatan Unit Pemodenan Tadbiran dan Perancangan
 Pengurusan Malaysia (MAMPU) pada 13 Oktober 2011
*Visit by Malaysia Administrative Modernisation and
 Management Planning Unit (MAMPU) on 13 October 2011*



Taklimat projek ARSM kepada Unit Penyelarasan Pelaksanaan (ICU), JPM pada 25 November 2011
Briefing on ARSM projects to Implementation Coordination Unit (ICU), JPM on 25 November 2011



Lawatan pelajar Universiti Malaysia Terengganu (UMT) pada 24 Disember 2011
Visit by students of Universiti Malaysia Terengganu (UMT) on 24 December 2011

**MESYUARAT AGONG KE-15 KELAB SUKAN DAN SOSIAL ARSM
PADA 14 FEBRUARI 2011**
*SPORT AND SOCIAL CLUB ANNUAL GENERAL MEETING
ON 14 FEBRUARY 2011*





Penyampaian hadiah sukan antara pasukan
Sports inter team prize presentation



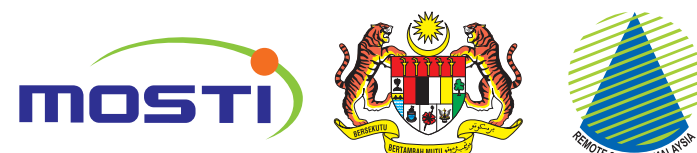
Pemilihan Ahli Jawatankuasa Pentadbir Kelab sesi 2011/2013
Election of Club Committee Members session 2011/2013



Ahli Jawatankuasa Pentadbir Kelab baharu sesi 2011/2013
New Club Committee Members session 2011/2013

MESYUARAT AGONG PUSPANITA ARSM PADA 8 APRIL 2011
ARSM PUSPANITA ANNUAL GENERAL MEETING ON 8 APRIL 2011





AGENSI REMOTE SENSING MALAYSIA (ARSM)
Kementerian Sains, Teknologi dan Inovasi

MALAYSIAN REMOTE SENSING AGENCY
Ministry of Science, Technology and Innovation (MOSTI)

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