KERATAN AKHBAR-AKHBAR TEMPATAN
TARIKH: 28 JUN 2015 (AHAD)

Bil	Tajuk	Akhbar
1.	Fenomena ribut suria	Berita Harian
2.	100 Gegaran susulan di Ranau sejak gempa bumi 5 Jun	BERNAMA
3.	Tiga gempa bumi lemah melanda Ranau awal hari ini	BERNAMA
4.	Penduduk Ranau perlu sabar, jangan takut gegaran kecil	BERNAMA
5.	Angin kencang, laut bergelora dijangka landa Sabah, Labuan mulai Rabu ini	BERNAMA
6.	'No quake lakes were formed near river'	New Sunday Times
7.	Building disaster-resistant communities	Sunday Star
8.	Shaping science talent	New Sunday Times

KERATAN AKHBAR
BERITA HARIAN (NASIONAL) : MUKA SURAT 18
TARIKH : 28 JUN 2015 (AHAD)

FENOMENA RIBUT SURIA

» *Berupaya mencetuskan pelbagai masalah kesihatan termasuk kanser kulit*

Oleh Luqman Arif Abdul Karim
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Kuala Lumpur

Berkelajuan 400 kilometer sesaat, iaitu 1,174 kali ganda lebih pantas daripada gelombang bunyi, letusan hawa matahari hanya memerlukan tempoh 19 jam untuk menembusi atmosfera bumi.

Fenomena yang turut dikenali sebagai ribut suria atau ribut geomagnetik itu, berlaku dalam kitaran tertentu, iaitu sekitar sembilan hingga 14 tahun.

Terbaharu adalah pada 23 Jun lalu yang menyaksikan langit diwarnai pelbagai rona di kutub utara dan beberapa negara, antaranya Amerika Syarikat (AS) dan England.

Observatori Negara yang berpangkalan di Langkawi, Kedah antara lain melaporkan fenomena susulan dikenali sebagai Aurora itu dapat dilihat secara jelas di Pennsylvania, Iowa dan Oregon, di AS.

Semburan tenaga

Ribut geomagnetik yang berlaku jam 2.33 pagi pada Selasa lalu, berpunca daripada semburan tenaga dan partikel dihasilkan siri letusan pada permukaan matahari, iaitu suar dan penyemburan jisim korona (CME).

Suar sinar-X yang terpancar daripada permukaan matahari ke ruang angkasa akibat tindak balas solar berupaya mencetuskan pelbagai masalah kesihatan, khususnya kanser kulit jika manusia terdedah kepadanya dalam tempoh lama.

Agensi Angkasa Negara (ANGKASA) bagaimanapun, mengesahkan Malaysia tidak menerima kesan langsung daripada fenomena berkenaan kerana ia terletak di garisan Khatulistiwa yang mempunyai lapisan magnet tebal.

Sebaliknya, ia memberi kesan ketara kepada negara di kutub utara atau latitud tinggi melebihi 35 darjah termasuk Russia dan Eropah yang menjadi laluan medan magnet bumi.

Laporan Pusat Ramalan Cuaca Angkasa Lepas (NWS) daripada Pentadbiran Hidupan Laut dan Atmosfera Kebangsaan (NOAA), mendapati ribut geomagnetik berukuran G4, iaitu pada skala kuat mencetuskan gangguan beberapa sistem di bumi.

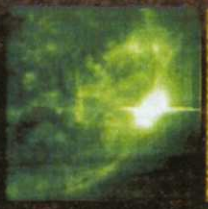
Antara terjejas teruk adalah gelombang radio, sistem satelit, pandu arah penerbangan dan operasi kapal angkasa yang mengalami perubahan orientasi, sekali gus memberi petunjuk tidak tepat.

INFO

Tarikh: 23 Jun 2015
Masa kejadian: 2.33 pagi (waktu tempatan)
Kelas Ribut Geomagnet: G4 (kuat)
Kelas Suar Matahari (X-ray): S3 (kuat)
Gangguan Radio: R2 (sederhana)

KESAN RIBUT GEOMAGNETIK

- Kawasan impak berlaku pada 45 darjah Latitud Geomagnetik.
- Arus teraruh iaitu ketidakseragaman sistem kuasa pencawang elektrik yang mengakibatkan laporan atau amaran salah pada alat peranti tertentu.
- Operasi kapal angkasa atau satelit terganggu.
- Sistem pandu arah satelit dan pengesan kedudukan global (GPS) mengalami ralat bacaan.
- Gangguan siaran radio
- Aurora berlaku di beberapa negara, khususnya di hemisfera utara.



SUAR MATAHARI
- Letupan di permukaan matahari yang terhasil daripada pembebasan tenaga magnetik terpendam pada lapisan atmosfera sistem solar.
- Lazimnya berlaku dekat tompok matahari, iaitu garisan yang memisahkan medan magnet bertentangan arah.

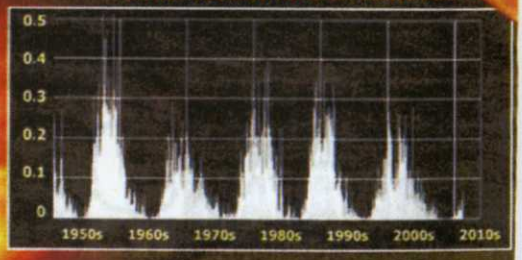
TOMPOK MATAHARI
- Zon pada permukaan matahari yang berwarna hitam kerana mempunyai suhu lebih rendah berbanding kawasan sekeliling.
- Tarikan medan magnet terkuat terletak di zon ini dan selalunya terhasil dalam gandaan melebihi dua.

KITARAN API
- Dalam kerak matahari, gelombang plasma panas mengelilingi mengikut sistem yang dikenali sebagai Lingkaran Sawat Utama.
- Setiap lingkaran iaitu utara dan selatan mengambil tempoh 40 tahun bagi melengkapkan satu kitaran, sekali gus menjadi sistem peralihan pusat matahari.

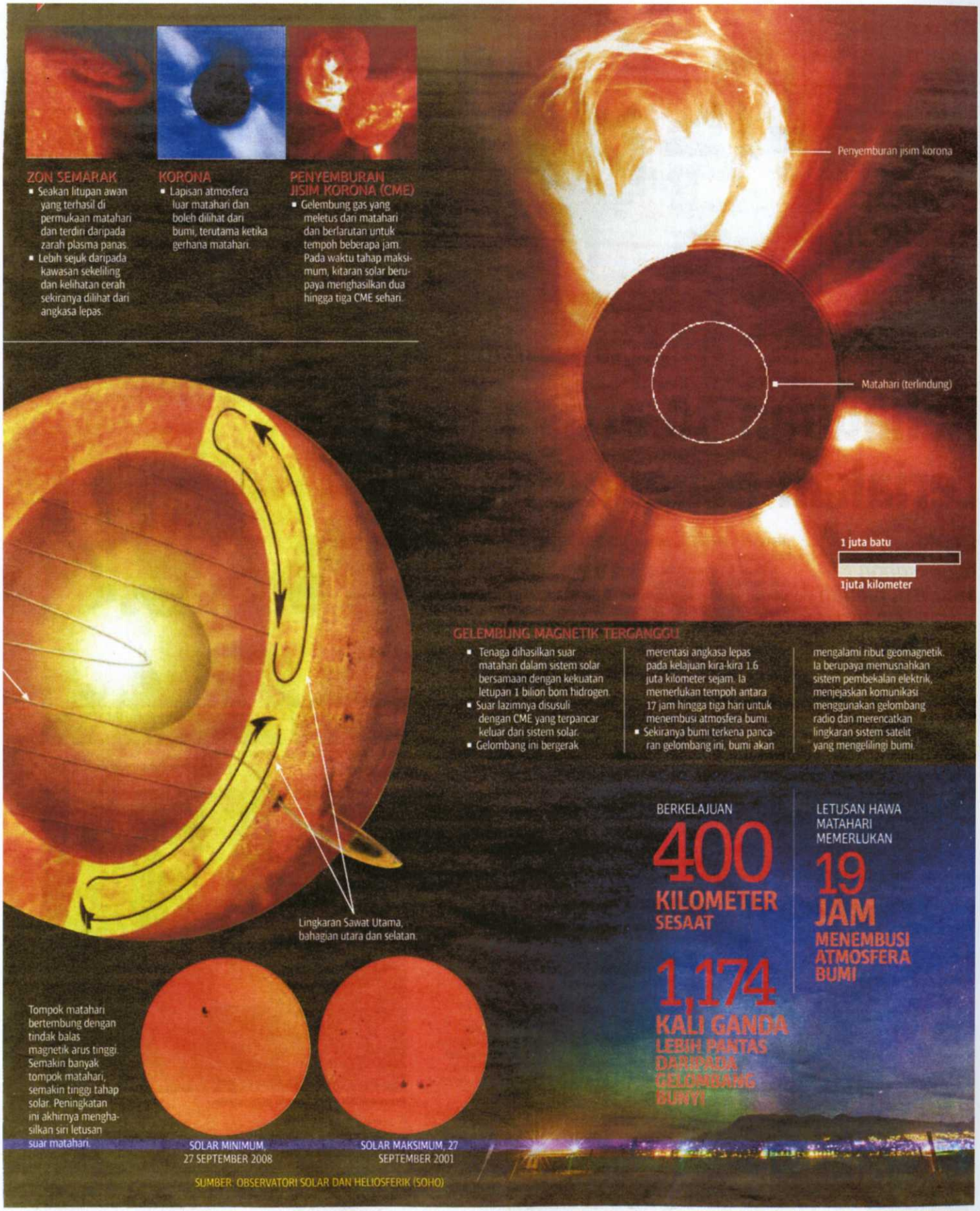
RIBUT SURIA
Letusan terbesar dalam sistem solar

KITARAN TOMPOK MATAHARI
- Tindak balas solar berbeza mengikut jumlah fluks magnetik yang menghampiri permukaan matahari.
- Kitaran lengkap mengambil tempoh kira-kira 11 tahun.
- Beberapa tompok matahari boleh dilihat pada tahap minimum, namun jumlah itu boleh berganda menjadi 100 sekiranya mencapai tahap maksimum.

PURATA HARIAN TOMPOK MATAHARI



KERATAN AKHBAR
BERITA HARIAN (NASIONAL) : MUKA SURAT 19
TARIKH : 28 JUN 2015 (AHAD)



BERITA ONLINE
BERNAMA.COM
TARIKH: 28 JUN 2015 (AHAD)

100 Gegaran Susulan Di Ranau Sejak Gempa Bumi 5 Jun

KOTA KINABALU, 28 Jun (Bernama) -- Sebanyak 100 gegaran susulan **direkodkan Jabatan Meteorologi** sehingga awal pagi ini susulan gempa bumi berukuran 5.9 pada skala Richter yang berpusat di Ranau pada 7.15 pagi, 5 Jun lalu.

Pengarah Jabatan Meteorologi Sabah Abd Malik Tussin berkata pada awal pagi tadi sebanyak tiga gegaran lemah berlaku iaitu pada 4.01 pagi, 4.25 pagi dan 6.09 pagi.

"Ketiga-tiga gegaran pagi tadi masing-masing berukuran 2.4, 2.4 dan 2.5 pada skala Richter," katanya dalam satu kenyataan di sini hari ini.

Beliau berkata gegaran susulan itu berlaku antara 12 hingga 16 Kilometer di barat daya Ranau.

Kejadian gempa bumi berukuran 5.9 pada skala Richter pada 5 Jun lalu itu mengorbankan 18 nyawa melibatkan 14 pendaki dan empat malim gunung, termasuk warga asing.

-- BERNAMA

BERITA ONLINE
BERNAMA.COM
TARIKH: 28 JUN 2015 (AHAD)

Tiga Gempa Bumi Lemah Melanda Ranau Awal Hari Ini

Siling Masjid Daerah Ranau rosak akibat gempa bumi berukuran 5.9 pada skala Richter pada 5 Jun lepas - Gambar Fail

KUALA LUMPUR, 28 Jun (Bernama) -- Tiga gempa bumi lemah melanda Ranau, Sabah hari ini sejak pukul 4.01 pagi dengan gempa pertama berukuran 2.5 pada skala Richter, menurut **Jabatan Meteorologi Malaysia.**

Gempa kedua berukuran 2.4 pada skala Richter berlaku 24 minit kemudian iaitu pada pukul 4.25 pagi, dan gempa ketiga berukuran 2.5 pada skala Richter pada 6.09 pagi, menurut jabatan itu dalam satu kenyataan di sini.

Pihaknya sedang memantau perkembangan gempa di Ranau itu, menurut kenyataan itu.

Sementara itu, jurucakap jabatan itu berkata, pihaknya menerima laporan daripada penduduk tempatan yang merasai gegaran gempa pertama dan ketiga.

Bagaimanapun, tiada laporan bagi gempa kedua.

Pada 5 Jun lepas, Ranau dilanda gempa bumi sederhana berukuran 5.9 pada skala Richter yang mengorbankan 18 nyawa.

-- BERNAMA

BERITA ONLINE
BERNAMA.COM
TARIKH: 28 JUN 2015 (AHAD)

Penduduk Ranau Perlu Sabar, Jangan Takut Gegaran Kecil - Ahli Geologi UMS

KOTA KINABALU, 28 Jun (Bernama) -- Penduduk di daerah Ranau diharap terus bersabar dan tidak perlu terlalu takut dengan gegaran kecil yang berlaku di Gunung Kinabalu, kata Pensyarah Geologi Universiti Malaysia Sabah (UMS) Prof Dr Felix Tongkul.

Felix yang juga Pengarah Pusat Penyelidikan dan Inovasi UMS berkata gegaran kecil seumpama itu adalah suatu kebiasaan di negara lain seperti Jepun, Taiwan, Filipina dan Indonesia.

"Malahan sekitar 50,000 gegaran bermagnitud kurang daripada 4.0 skala Richter berlaku setiap tahun di seluruh dunia," katanya dalam kenyataan di sini Ahad.

Felix berkata keadaan gegaran berkenaan tidak cukup kuat untuk menyebabkan kerosakan infrastruktur.

Walau bagaimanapun, katanya gegaran berterusan itu boleh menyebabkan lebih banyak tanah runtuh di kawasan gunung.

"Mengikut rekod kekerapan gempa susulan, kita masih lagi dalam 'fasa aktif'. Ini bermakna, gempa susulan akan berterusan beberapa minggu atau beberapa bulan lagi, dan keadaan ini memang agak luar biasa," jelasnya.

Felix berkata kewujudan 'faktor Gunung Kinabalu tercedera' telah menyebabkan keadaan geologi di daerah itu lebih rumit dan sukar untuk diramal.

Mengulas sebanyak 100 gegaran susulan direkodkan **Jabatan Meteorologi Malaysia**, Felix berkata mengikut analisa awal terhadap data gempa susulan itu, didapati sebilangan besar pusat gempa terletak di bahagian barat dan barat laut Gunung Kinabalu.

Kedalaman fokus gempa adalah antara 9km dan 33km.

"Kedalaman gempa susulan meningkat ke arah barat dari gunung ke kawasan Tuaran. Ini bermakna satah sesar turun yang menyebabkan gempa bumi utama pada 5 Jun lepas adalah sangat dalam, mencapai lebih 33km dan mempunyai kelebaran sekitar 20km," tambahnya.

Mengulas lanjut, Felix berkata sesar itu terletak di bawah jasad granit Gunung Kinabalu, iaitu jasad seperti 'cendawan butang besar' bersaiz sekitar 3,000 kubik kilometer yang terapung di permukaan kerak bumi.

Sesar utama itu juga menggerakkan beberapa sesar lain yang berdekatan, katanya.

"Ini bermaksud jasad batuan granit Gunung Kinabalu 'terpotong' di bahagian kakinya.

"Keadaan ini telah membuat kawasan gunung kurang stabil dan memerlukan masa untuk menyesuaikan diri," katanya.

Sesar utama dan sesar-sesar lain akan terus bergerak dan boleh menghasilkan gempa-gempa susulan, jika pergerakan mereka terhalang, jelas Felix.

-- BERNAMA

BERITA ONLINE
BERNAMA.COM
TARIKH: 28 JUN 2015 (AHAD)

Angin Kencang, Laut Bergelora Dijangka Landa Sabah, Labuan Mulai Rabu Ini

KUALA LUMPUR, 28 Jun (Bernama) -- Angin kencang selaju 40 hingga 50 kilometer sejam dengan ketinggian ombak mencecah 3.5 meter dijangka melanda kawasan perairan Sabah (Pedalaman, Pantai Barat, Kudat) dan Wilayah Persekutuan Labuan bermula Rabu hingga Sabtu depan.

Jabatan Meteorologi Malaysia dalam kenyataannya hari ini berkata keadaan sama juga dijangka berlaku di perairan Condore, Reef North, Layang-layang, Palawan dan Labuan pada tempoh itu.

Keadaan itu adalah berbahaya kepada kepada bot-bot kecil, rekreasi laut dan sukan laut.

-- BERNAMA

KERATAN AKHBAR
NEW SUNDAY TIMES (NEWS) : MUKA SURAT 17
TARIKH : 28 JUN 2015 (AHAD)

'No quake lakes were formed near river'

'JUST RUMOURS': Condition may change if rockfalls occur, says geologist

AVILA GERALDINE
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NO landslide or quake lakes were formed in areas near Mount Kinabalu, thus bringing relief to villagers residing at the foot of the mountain.

Sabah geologist Professor Dr Felix Tongkul, who conducted an aerial survey surrounding the 4,095m high mountain on Friday, said allegations that a large lake was formed at the upstream of Sungai Mesilou were just rumours.

"Even though there have been widespread landslides, there are no obstacles to the flow of river.

"No temporary dams have been formed. This is good news for the folks there," he said.

Felix, who is also a professor of geology at Universiti Malaysia Sabah, however, cautioned that the condition might change if rockfalls occur following the continuous aftershocks.

He also noted that large portions of the mountain suffered landslides and only the eastern part of the mountain towards Poring was spared.

"Based on my observation, the rockfalls have damaged the surface of the mountain so much that the granite rock surface has been exposed," he said, adding that trees around the side of the mountain were also destroyed.

"The leftover trees are now piled up at the foot of the mountain. Due to rockfalls and flow of debris, the creek's bottom has now been exposed and resemble highways."

Felix added the "highways" would allow water to flow more quickly in the event of rain.

On June 5, a moderate earthquake measuring 5.9 on the Richter scale struck Sabah and rocked Mount Kinabalu, killing 18 mountain climbers, all of whom were trapped in the mountain due to the quake.

This was followed by more than 80 aftershocks and mudslides. Debris made up of boulders, trees, and mud filled up Sungai Mesilou and Sungai Liwagu, clogging two water intake points and treatment plants in Ranau.

In **Kuala Lumpur**, the Malaysian Meteorological Department in a statement said in a statement that a second mild quake, measuring 2.6 on the Richter Scale, hit Ranau in Sabah at 8.38pm yesterday, adding that the epicentre was 11km west of Ranau.

The statement said tremors were felt in Ranau and that the department was monitoring the situation.

The department had earlier reported that a magnitude 2.8 earthquake had also hit the area at 1.35pm yesterday.

KERATAN AKHBAR
SUNDAY STAR (FOCUS) : MUKA SURAT 24
TARIKH : 28 JUN 2015 (AHAD)

Building disaster-resistant communities

The recent earthquake in Sabah shows that there is no guarantee that we are safe from major natural disasters and need to be prepared for any emergency.

By HARIATI AZIZAN
sunday@thestar.com.my

THE shrill sound of the fire alarm rings through the fancy rooftop restaurant. Apart from one or two heads looking up, no one at the tables even bats an eyelash while they continue eating.

It's a familiar scenario here.

Panic is the biggest culprit of disasters, says director of Wilayah Fire and Rescue Department, Senior Assistant Commissioner Khirudin Drahman.

"But complacency is a bigger culprit," he says of Malaysians' lack of preparedness in disasters.

Now that the scenario is changing, we need to shift how we do things, Khirudin stresses.

The FRD Wilayah chief is talking about the warnings from geologists and other experts of Malaysia's potential seismic hazards, particularly in the congested Klang Valley area.

Malaysia has always been considered safe from earthquakes as it is located outside the Pacific Ring of Fire. The closest quakes that we have experienced here are the low magnitude tremors that occur each time after our neighbour Indonesia is struck by an earthquake.

What many don't realise is that the fault lines in Bukit Tinggi, Pahang, have been moving or that Sabah has recorded more than 80 quakes since 1897, with the highest magnitude of 3.8 at the Richter scale.

The early morning quake in Sabah on June 5, with its magnitude of 5.9, was definitely a wake-up call to all.

Declining to comment on the problems in the search and rescue (SAR) mission by the National Security Council (MKN) in the recent Sabah earthquake, Khirudin, however, concedes that the FRD have some way to go to prepare for the likelihood of a major earthquake in the Klang Valley, what more the rest of the nation.

"This is quite new for us because our training is mainly focused on building or structural fires, not major earthquakes search and rescue, although it is mentioned in the MKN directive for disaster and relief management in the country."

Looking at the equipment that they have now, he adds, the FRD will not be able to cope with the impact of an earthquake, especially if it is a major one.

Likewise, construction companies and other stakeholders, including the person on the ground, have not taken into consideration any earthquake protections such as building proofing or having an early warning system.

The good news is, says Khirudin, most of our buildings can withstand small earthquakes, even up to magnitude 6 to 7 on the Richter scale.

"We have been having tremors for a few years now anyway, but all minor, going up to magnitude 4, and our buildings have been able to take it. Anything as big as magnitude 9, of course, will be difficult."

While they have been instructed to assist the government authorities, building regulators and the DBKL to look at the building bylaws – to see how buildings can be strengthened, new features in construction can be added and early warning system can be implemented – the main task at hand for the FRD is to reskill and upskill their personnel to be earthquake-ready.

"We have been asked to look at how we can prepare our personnel for earthquakes – upgrade our training module, on top of reviewing our building regulations.

"It is still premature to talk about this but I can say that this is something that we are working towards," he says.

At the same time, he adds, the FRD are developing a pamphlet to raise the public's awareness on the hazards of an earthquake as well as give them the practical know-how of protecting themselves in an earthquake.

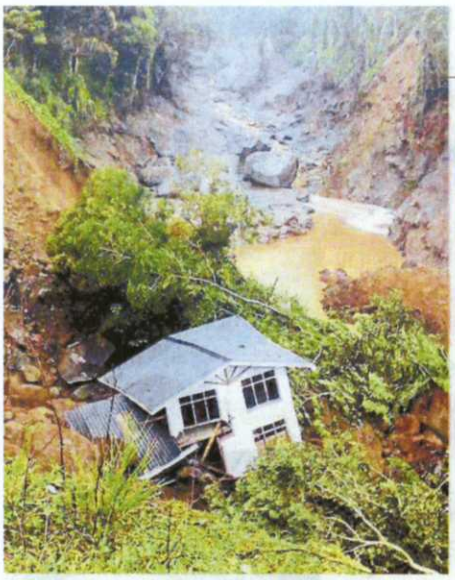
It is crucial that we build a disaster-resistant community and train the community to prepare for any emergencies, Khirudin stresses.

"And the main way to empower the community is to get the community themselves to become first responders in any disaster and emergency."

It is not about passing the buck to the people, he says.

"Even for me, when I am

SAMBUNGAN...
SUNDAY STAR (FOCUS) : MUKA SURAT 25
TARIKH : 28 JUN 2015 (AHAD)



1. SAR on mission after the Kinabalu earthquake.

2. Many Malaysian houses cannot withstand the impact of an earthquake.

3. Khirudin: Panic is the biggest culprit of disasters.

4. It is important for residents of high-rise homes to evacuate at the first shake or sign of danger.

home, I will not have a fire engine or other equipment at home. I will have to be prepared and know what to do and where my exit routes are, et cetera."

Khirudin also points out to Kuala Lumpur's population, building and traffic density as an emergency hazard.

"KL now is a metropolitan and when you look at the existing distribution of emergency units, you will see that they might have difficulty in meeting the international standard of response time of 10 minutes - especially at peak hours."

Take the Bukit Bintang area as example, he says.

"On paper, the Hang Tuah fire station is only five minutes away. But if you factor in the traffic from Jalan Hang Tuah to Jalan Bukit Bintang, it can take much longer."

This is why we need to train the community on how they should react and respond to disaster and give support to rescuers.

"This is how they do it in New Zealand, Taiwan, South Korea and Japan," he says, adding that they are hoping to build on the Rakan Komuniti Bomba programmes which have been set up in various residential areas around the city with the cooperation of DBKL to prepare residents to be the first responders in any emergency or disaster in their community and neighbourhood.

These first responders will help to mitigate destruction and minimise the loss of life, he says pointing to the community in Ranau and around Mount Kinabalu as good examples.

"What has not been publicised is that even the other community members such as hotel workers and farmers, not just the mountain guides, went out to help in the safe and rescue efforts when the earthquake struck Mount Kinabalu.

"With the mountain guides, it was a coincidence that they have some training of first aid and emergency rescue, but the mechanism for them to work together with the MKN personnel was not there, so the operation didn't go smoothly."

He added that if the authorities had worked with the villagers and mountain guides to prepare them for disasters like the earthquake, more lives could have been saved.

Commending the local guides for their bravery, Khirudin is glad that they are now part of an auxiliary unit for mountain and search rescue (Mosar) in Sabah and will be based at the Ranau Fire Station.

Back to Kuala Lumpur, Khirudin warns that with a majority of people living and working in high-rise buildings, it is important for them to have regular fire and rescue drills.

"They need to know how to evacuate safely at the first sign of danger," he says.

"Usually earthquakes will have a trigger – the first tremor is usually followed by a lull. That's when you need to evacuate or get to safety.

"It is important for us to get the right information and feedback from geologists and the MET (Meteorological) office," he notes, underscoring the importance of good communications and a reliable early warning system.

Crucially, he adds, we need to go to schools to train Malaysians to be disaster resistant from young.

"Even now, how many of us know what to do if there is an earthquake or other disasters?"

A big proponent of building disaster-resistant communities, former director-general of the Fire and Rescue Department Datuk Dr Soh Chai Hock agrees that schools are the best place to start training and educating Malaysians on how to react in emergency situations.

"Disaster education will boost community awareness and emergency preparedness, and this is something that the MKN can implement," says Dr Soh, also stressing for regular emergency drills conducted in the communities.

Having worked in Japan as a fire and emergency expert – overseeing 20 Asia-Pacific countries – with the Asian Productivity Organisation, Dr Soh believes there is a lot we can learn from the Japanese in building a disaster-resistant community.

"In Japan, when a disaster occurs, the people on the spot are the first responders, and they are usually from the community. Training is done from young with regular emergency drills in the community.

"The more prepared communities are, the better they can deal with emergencies and disasters. It reduces panic and will help reduce the loss of lives," he reiterates.

Many look at Japan as a wonder that is impossible to emulate, but the fact is they have had many learning curves, Dr Soh highlights.

"In 1923, Tokyo and Yokohama were hit by a massive earthquake. In Tokyo, a fire broke out, burning out the already flattened city. Everything was destroyed and over 100,000 people were killed."

The tragedy prompted them to look at their disaster management, says Dr Soh, and the date of the tragedy – Sept 1, 1923 – is remembered every year as its Disaster Prevention Day, with drills and other emergency training held throughout the country.

Crucially, the Japanese authorities have been improving on their disaster management – mechanisms and policies as well as their building bylaws introduced after the 1923 earthquake – particularly after the earthquakes in the Miyagi prefecture in 1978 and in Kobe in 1995, Dr Soh adds, underlining the importance of continuous improvement.

Instead of making excuses for the lack of equipment or the right personnel, he notes, we need to take an inventory of what we have and see how we can optimise the use of what we have.

"As for the personnel, we have many able and eager people. For one, we already have a group of about 1,000 people who graduated with Masters of Science in Disaster Management from UPM who can come in and share their expertise and contribute to the country."

Adds Dr Soh, we also have many members of the community – like the mountain guides of Sabah – with a lot of knowledge and skills who can be tapped to help in the country's national security and disaster management.

"What we need is to provide the right command mechanism on the ground and strong leaders in emergencies."

Crucially, we need to move forward and avoid repeating our mistakes, Dr Soh stresses. "We have to carry out a post-mortem and learn from our failures.

"Post-mortem is not witch hunting; it's about lessons learnt, reviewing and reforming the system we have, and upgrading and upskilling our personnel.

"It's about improving on our best."

KERATAN AKHBAR
NEW SUNDAY TIMES (LEARNING CURVE) : MUKA SURAT 2
TARIKH : 28 JUN 2015 (AHAD)

Shaping science talent

THE WAY FORWARD: Inspiring students to take up Science, Technology, Engineering and Mathematics careers goes hand in hand with providing access to information on the subjects and enhancing the approach to lessons

***Gender-wise**, many girls are interested in STEM subjects but once they progress to postgraduate levels, the numbers drop.*

ZULITA MUSTAFA
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WE need thinkers, problem-solvers and innovators to navigate escalating global challenges and accelerating technologies that abound today and in the future.

To develop these skills from young, efforts need to be put in place for them to engage in research and learn to explore and inquire, and identify solutions to problems.

For this to happen, Science, Technology, Engineering and Mathematics (STEM) education among schoolchildren in the country should be made attractive via hands-on and project-based learning in schools with the involvement of the university, industry and community.

Children and young people can be drawn to science through a more interesting method of teaching and learning the subject. One way is to get them involved in projects to find solutions instead of employing in-classroom-only methods.

All quarters, including parents, teachers and lecturers, have a role to play in kindling students' interest in STEM and they should expose children from as young as pre-school to careers in the fields of STEM to ensure a new generation is passionate about the disciplines as a career.

Professor Raha Abdul Rahim, Higher Education Excellence (planning division) director at the Education Ministry, acknowledged that there are gaps in the manner STEM education is being projected to schoolchildren, leading to mixed interest in the fields.

She felt that students and parents lack access to information on the subjects and the availability of STEM-related jobs awaiting graduates.

"Lack of knowledge is maybe one of the reasons why people shy away from a career in STEM. That's why we feel awareness is important. We are also looking at quality partners to rectify the situation," she said.

Raha added that gender-wise, many girls are interested in STEM subjects but once they progress to postgraduate levels, the numbers drop, leading to a loss of field experts.

To bolster the situation, the government has emphasised Technical, Industrial, Vocational and Entrepreneurship Training in the Malaysia Education Blueprint (Higher Education) 2015-2025.

National Science Challenge chairman and Universiti Kebangsaan Malaysia Professor Yang Farina Abdul Aziz, an expert in inorganic chemistry, said an upgrade is needed in the way science subjects are taught in schools.

"During the recent Malaysia Chemistry Carnival, we enhanced the teaching of the subject in secondary schools especially in rural areas. When we went to Ranau, Sabah last year, the schoolchildren came up to me and said *saya suka datang sini sebab boleh main* (I like to come here because I can play)," said Yang Farina.

"We set up various experiments and they loved being able to let loose in them. This is the way forward. It has to be hands-on. Science is not theory, it is everywhere around us."

"An **upgrade is needed** in the way science subjects are **taught in** schools."

Yang Farina Abdul Aziz, National Science Challenge chairman

Raha Abdul Rahim

ExxonMobil Subsidiaries in Malaysia chairman See Kok Yew said the industry is concerned about the number of graduates from local universities who can fill up STEM career openings.

"What will happen when experienced professionals retire while the number of students taking STEM

See Kok Yew

Sotaro Ito

subjects decrease?

"If these two things happen at the same time, we will not have sufficient talent in the industry," said See. Adding that the country needs talent with holistic and critical thinking along with technical capabilities and interpersonal skills, he asked: "The real question is: do fresh graduates possess the skills that we are looking for?"

Most major companies, See said, look for employees who are able to partner with their global-based counterparts. There is a lot of interaction between staff in many different parts of the world, so potential employees need to be able to cooperate in knowledge-sharing.

"We look for all these traits and capabilities, and found out that there are not many local graduates whom we can recruit. As a result, we offer employment to overseas graduates as they generally have better perspective and knowledge. The education system will help alleviate the issue to some extent but there must be a capacity to learn," added See.

Sharing the same sentiment, Japan Science and Technology Agency international affairs senior director Sotaro Ito said Japan also faces a shortage of STEM graduates. Only 20 per cent of graduates apply for jobs in science-related fields.

Raha, See, Yang Farina and Ito were panellists at The Bigger Picture, a recent forum on STEM Education to deliberate on challenges and opportunities to enhance the country's STEM resources, talent, institutions and proponents towards meeting the national agenda of growth and development by 2020.

The panellists also highlighted concerns such as strategic placement of STEM talent in priority sectors of the economy including the oil and gas field; effective and efficient implementation of the education policy and blueprint towards better STEM outcomes; and transfer of knowledge and best practices from scientifically advanced countries.

The forum ended with concluding remarks by science adviser to the Prime Minister, Professor Emeritus Tan Sri Zakri Abdul Hamid.

Zakri said the promotion of STEM should not only be at the government level, but the onus should also be on the parents, teachers and private sector.

"The teaching profession in Singapore is very much sought after and the salary of a teacher is equivalent to a doctor or an engineer. I hope teaching becomes a profession that many aspire to take up in Malaysia," he said, adding that science is not only for elitists, but also for the masses.

At the forum, ExxonMobil presented RM330,000 to the Academy of Science Malaysia for the 2015 National Science Challenge (NSC) competition. NSC is the nation's premier science competition open to Malaysian students aged 16.

The 2015 NSC kicked off in March with more than 9,200 students participating in the preliminary online quiz. Five teams consisting of three students each were shortlisted for each State.

The State-level selections in the form of a science quiz was held in May. The top team from each State will compete at the semi-finals from Aug 10-15. The winning team, to be crowned at the finals scheduled on Oct 22, will win the Primary Minister's Challenge Trophy and a study trip to Stockholm, Sweden to attend the Nobel Prize awards ceremony.