DOM of Sri-Lanka's expectations of new-generation satellites for hazard monitoring

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Before 1997
APT pictures from NOAA
CMACast and COMS receiving systems
Web based Insat, Eumetsat and Himawari
DOM’s top three hazards that can be monitored by satellite (Q 1 of the JMA questionnaire)

- **Hazard 1: Monsoon activity.**
- There was an exceptionally heavy rainfall in Colombo on the 4th June 1992 and hence most parts of the Colombo city was flooded. The 24-hour rainfall of this event was 493.7 mm and it was the highest rainfall recorded at Colombo since observations commenced in 1869.
- The heavy rains occurred on the 17th May 2003 over Ratnapura and Deniyaya areas. Aninkanda recorded 738mm of rainfall.
DOM’s top three hazards that can be monitored by satellite (Q 1 of the JMA questionnaire)

- Hazard 2: Severe Thunder Storm
  Deaths due to Lightning

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF DEATHS</td>
<td>26</td>
<td>14</td>
<td>33</td>
<td>51</td>
<td>48</td>
<td>19</td>
<td>24</td>
</tr>
</tbody>
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පහ ආරාම මෙයින් සිටියේ

2013 අප්‍රේල් 8වැනි 04:15:42:56 | ම.ල. අමාත්‍යතාව

පහ ආරාම මෙයින් මිදින් විනාශයේ මාසයේ මිසින් උදාහරණයක් කොටස්
31 මාස පරිසර බැඹී යනුතා සිටියේදී, මෙම මාස උදාහරණය මට්ටමේ රාජයේදී පහළිනි බැඳු අතිරෝධයේ ක්‍රියාත්මක කිරීම.

විශේෂ කළු සාකචිතය මෙය මෙහෙය බැඳුමේදී.
විශේෂිතව 20 දිනා (20 දිනා) අතර ආරක්ෂා කරුණාකර කරන අතර, මෙම මායිමක් මෝකුණු අතර සම්බන්ධානය කිරීමයි. මෙහෙයින් ඔයදා පිළිමාවමක් හා පිළිතුරු අතර, මෙම මෝකුණු මේ මෝකුණු මෙහෙයින් මිටින් සොයාගත් මෙම මෝකුණු මෙහෙයින් සොයා ගනී. මෙහෙයින් මෝකුණු විශේෂිතයි. මෙම මෝකුණු සම්බන්ධානය කිරීමයි. 

ඉංග්‍රීසි: මෙම මෝකුණු විශේෂිතයි. මෙම මෝකුණු සම්බන්ධානය කිරීමයි.
DOM’s top three hazards that can be monitored by satellite
(Q 1 of the JMA questionnaire)

• Hazard 3: Tropical Cyclone

Severe Cyclone hit the eastern coast of Sri Lanka on the 23 November 1978
915 deaths
more than one million people affected,
nearly 250,000 houses partially or completely damaged,
240 school buildings were also damaged.
Depression closer to Sri-lanka
2015-11-07-1200UTC
DOM’s expectations of new series of satellites for hazard monitoring  
(Q 2 of the JMA questionnaire)

Major hazard  
Features of new generation GEO met. satellite

Hazard 1: Monsoon Activity  
**Multi-spectral bands:**
New signals derived from multi-spectral-band observations will support issuance of more effective warnings especially about the heavy rain

Hazard 2: Thunder Storm  
**Rapid scanning:**
Data from rapid scanning observation will enable early detection and to find the movement of Thunder Storm

**Multi-spectral bands:**
New quantitative products will be derived from multi-spectral band observation data which can be used to issue warning for heavy rain.

**High spatial resolution**
High spatial resolution would help to issue location specific forecast

**New instruments**
Lightning mapers would help to issue lightning alerts
DOM’s expectations of new series of satellites for hazard monitoring
(Q 2 of the JMA questionnaire)

<table>
<thead>
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<th>Major hazard</th>
<th>Features of new generation GEO met. satellite</th>
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<tr>
<td>Hazard 3: tropical cyclones</td>
<td><strong>Multi spectral bands:</strong> New signals derived from multi-spectral band observation would help to estimate extremely heavy rainfall.</td>
</tr>
</tbody>
</table>
DOM’s requirements to get desired benefits from the new generation of satellites
(Q 3 of the JMA questionnaire)

Major hazard Features of new generation GEO met. satellite

Hazard 1: Monsoon Activity Training in imagery analysis:
Training would support the retrieval of new signals from multi-spectral band observation.

Hazard 2: Thunder Storm Training in imagery analysis:
Training would support the retrieval of new signals from multi-spectral band observation.
Stable provision of imagery without communication errors
For the detection of the movement of TS stable provision of imageries are necessary

Hazard 3: tropical cyclones Training in imagery analysis:
Training would support the retrieval of new signals from multi-spectral band observation.
DOM’s plans/expectations for utilization of new-generation geostationary meteorological satellite data

- Current major problem is the geometric correction as the Clouds are little shifted to the west in Himawari imageries.
DOM’s plans/expectations for utilization of new-generation geostationary meteorological satellite data

- Make geometric correction to Himawary imageries over Sri-Lanka area with the help of JMA.
- We request radiance data to be used in data assimilation of WRF.
- Development of a weather monitoring system using enhanced features of new-generation satellites such as high spatial resolution and multi-spectral bands.
- Issuing of Convective activity forecast using satellite imageries and the WRF outputs.
- Issuing of quantitative forecast.
- Need Master Degree opportunities for our youngers to learn satellite Meteorology.
Thank You!
Sincere thanks to JMA