Summary of VBL Research Project

<table>
<thead>
<tr>
<th>Theme</th>
<th>Development of Synthetic Aperture Radar onboard Unmanned Aerial Vehicle and Microsatellites for University Venture</th>
</tr>
</thead>
</table>
| Researcher | Josaphat Tetuko Sri Sumantyo (Center for Environmental Remote Sensing)  
Hiroyuki Obanawa (Center for Environmental Remote Sensing) |

Synthetic Aperture Radar (SAR) is well-known as a multi-purpose sensor that can be operated in all-weather and day-night time. Recently, many countries develop SAR sensor using linear polarization for earth observation that bulky, high cost (billions–ten billions yen), high power etc. In this research, we propose Circularly Polarized Synthetic Aperture Radar (CP–SAR) for microsatellite to retrieve the physical information of land surface and disaster monitoring. The sensor is designed as a low cost, light, low profile configuration and low effect of faraday rotation and platform posture. For this purpose, we also develop unmanned aerial vehicle (UAV, JX series) for ground experiment of CP–SAR sensor. The main mission of CP–SAR is to hold the basic research on elliptically polarized scattering and its application developments. In application development, CP–SAR sensor will be implemented for land cover mapping, disaster monitoring, oceanographic monitoring etc. In disaster monitoring, CP–SAR sensor will be employed for monitoring of earthquake area, volcano activity, landslide etc.

Fig.1 CP–SAR onboard Microsatellite (example)  
Fig.2. CP–SAR sensor for UAV  
Fig.3. Large scale unmanned aerial vehicle (UAV) for SAR sensor ground test