

## International Summer School: Application of GIS and Remote Sensing in Biodiversity Habitat Conservation

Organizers: Vina Eka Aristya (Indonesia), Han Ni Soe (Myanmar), Mabula Makemie (Tanzania), Maryory Velado (El Salvador), Marina Bossoukpe (Benin), Pius Wamala (Uganda)

Geographic Information System and Remote Sensing Application in Biodiversity Habitats Conservation		Learning outcomes	Learning activities / Assignments	Basic learning materials
Day 1	Principles of biodiversity management and habitats loss	<ul style="list-style-type: none"> <li>Describe the key concepts of biodiversity conservation and habitat loss</li> <li>Identify and discuss various causes of habitat loss and best practices</li> </ul>	<ul style="list-style-type: none"> <li>Group discussion (5 participants in a group)</li> <li>Brainstorming (causes of habitat loss)</li> <li>Sharing experiences (talk about some situation in their own countries)</li> </ul>	Handouts Readings materials: <a href="https://doi.org/10.1038/sj.embor.7400398">https://doi.org/10.1038/sj.embor.7400398</a> <a href="http://www.nature.com/doifinder/10.1038/nature11148">http://www.nature.com/doifinder/10.1038/nature11148</a> <a href="https://doi.org/10.1046/j.1523-1739.2002.00530.x">https://doi.org/10.1046/j.1523-1739.2002.00530.x</a>
	Excursion Program to Karimunjawa National Park	<ul style="list-style-type: none"> <li>Explore and identify important threats to biodiversity around the National Park</li> </ul>	<ul style="list-style-type: none"> <li>Discussion with the Park Management</li> </ul>	Map (Location of National Park) <a href="https://en.wikipedia.org/wiki/Karimunjawa">https://en.wikipedia.org/wiki/Karimunjawa</a> Leaflet on Karimunjawa <a href="http://www.indonesia-tourism.com/centraljava/karimunjawa.html">http://www.indonesia-tourism.com/centraljava/karimunjawa.html</a>
Day 2	Introduction to GIS and Remote Sensing concept	<ul style="list-style-type: none"> <li>Define basic terms in geospatial technology</li> <li>Analyse the challenges and related issue of using technologies</li> <li>Use open source GIS &amp; remote sensing software.</li> </ul>	<ul style="list-style-type: none"> <li>Silent reflections</li> <li>Brainstorming on the challenges of using the technology</li> <li>Downloading and installing QGIS and R software</li> <li>Hands-on practicals with QGis and USGS web interface and software.</li> </ul>	Handouts Reading materials <a href="http://www.ai.soc.i.kyotou.ac.jp/field_en/english_textbook/RemoteSensing_1.pdf">http://www.ai.soc.i.kyotou.ac.jp/field_en/english_textbook/RemoteSensing_1.pdf</a> <a href="https://geogra.uah.es/patxi/gisweb/GISModule/GISTheory.pdf">https://geogra.uah.es/patxi/gisweb/GISModule/GISTheory.pdf</a> <a href="http://www.gdmc.nl/oosterom/PoRSHyperlinked.pdf">http://www.gdmc.nl/oosterom/PoRSHyperlinked.pdf</a> <a href="https://qgis.org/en/site/">https://qgis.org/en/site/</a> <a href="https://qgis.org/en/site/">https://qgis.org/en/site/</a> ; <a href="https://www.r-project.org/">https://www.r-project.org/</a> <a href="https://rstudio.com/">https://rstudio.com/</a>
Day 3	Application: Data acquisition and processing	<ul style="list-style-type: none"> <li>Identify various sources of remote sensing data</li> <li>Describe key procedures in satellite data processing</li> <li>Use remote sensing software to extract meaningful information from satellite data</li> </ul>	<ul style="list-style-type: none"> <li>Access and download the open source remote sensing data</li> <li>Atmospheric correction, mosaicking, clipping, classification, NDVI calculation</li> </ul>	<a href="https://www.usgs.gov/">https://www.usgs.gov/</a> <a href="https://www.esa.int/ESA/Our_Missions">https://www.esa.int/ESA/Our_Missions</a> Computers with relevant software: QGIS & R Karimunjawa datasets Satellite data Training data
Day 4	Post -classification analysis	<ul style="list-style-type: none"> <li>Be able to test significance of results and make meaningful deduction to support decision making</li> </ul>	<ul style="list-style-type: none"> <li>Accuracy assessment,</li> <li>Change detection and statistical analysis</li> </ul>	Computers with relevant software: QGIS & R
Day 5	Case-based project work	<ul style="list-style-type: none"> <li>Apply GIS &amp; RS skills to handle, analyse and communicate GIS &amp; RS data</li> <li>Able to evaluate the product of their project in the working process</li> </ul>	<ul style="list-style-type: none"> <li>Spatial and temporal extent of habitat loss in Karimunjawa National Park</li> </ul>	Computers with relevant software: QGIS & R ESRI Story Map Satellite data <a href="https://storymaps.arcgis.com/">https://storymaps.arcgis.com/</a>