

Asian Wetland Inventory



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<http://www.wetlands.org/awi/>

Applying Remote Sensing and GIS Technologies to Address Wetland Management Issues

Wetlands are critically important ecosystems that provide local and globally significant social, economic and ecological benefits. They have a multitude of functions, all of which provide services of inestimable value to society.

Recent developments in remote sensing and geographical information system (GIS) technologies are providing valuable tools to assist with the inventory, monitoring and management of wetlands.

Geographical Information Systems

GIS are computer-based tools for mapping and analysing features and events. A GIS stores information about the world as a collection of thematic layers that can be linked together by geography.

GIS technology integrates common database operations, such as query and statistical analysis with maps. A GIS may also be used to enter, manipulate, manage, query, analyse and visualise geographic data.

Remote Sensing

Remote sensing technologies provide the means to map the characteristics of an area, and monitor its condition at regular intervals, from a distance. A variety of remote sensing platforms and sensors are available, offering products with a variety of spatial (size) spectral (reflectance characteristics) and temporal resolutions (period between data capture). Using remote sensing data, it is therefore possible to map or classify features over areas ranging from continental-scale, to individual sites, at a variety of time intervals.





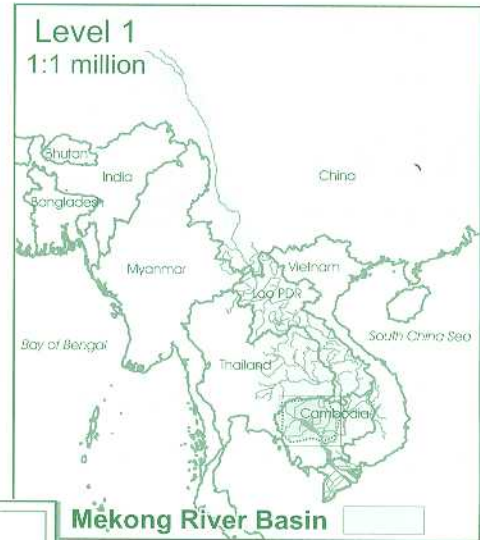
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Remote Sensing - GIS Integration

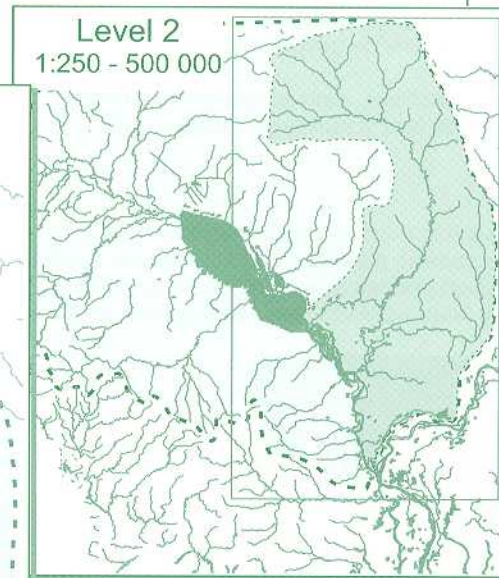
Remote sensing products may be integrated with other datasets in a GIS to perform further analysis. Some examples of integrated remote sensing and GIS applications for the environmental management role include:

- Monitoring and modelling ecosystem condition, including health of plant communities
- Flood hazard mapping
- Mapping the impact and extent of fires
- Monitoring plant community dynamics - spread and change in floral composition
- Monitoring and modelling geomorphic processes - channel movement, shoreline movement
- Mapping and monitoring sediment movement, as well as other suspended materials e.g. pollutants
- Weed or pest species mapping
- Landcover - including wetlands - mapping and classification
- Modelling impacts of land development and land degradation or erosion

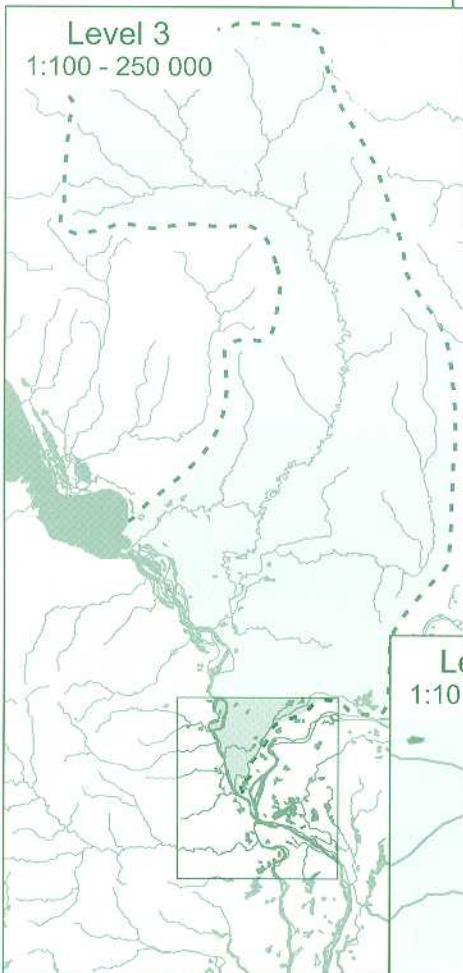
River basin



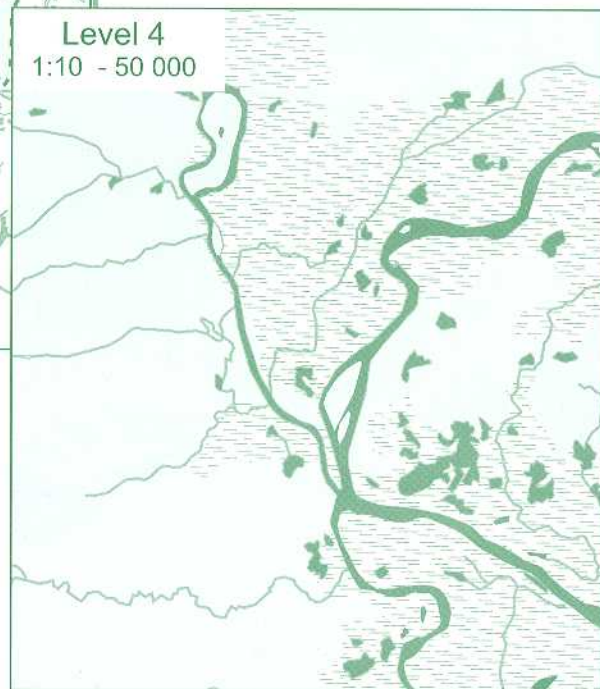
Sub-basin



Wetland complex



Wetland habitat



The hierarchical approach proposed for the AWI

Mekong River Basin

The application of remote sensing and GIS for the Asian Wetland Inventory

A broadly supported protocol for wetland inventory has been developed through the Asian Wetland Inventory (AWI). This will serve as a platform for assessment and monitoring of wetland resources.

The AWI project has been designed from the outset to take advantage of the capabilities provided by remote sensing and GIS technologies.

A key element of the AWI approach is the adoption of a unique hierarchical approach for wetland inventory. The data is structured and stored in a hierarchical manner in a GIS, defined by spatial scale and extent.

By integrating data from different sources, including remote sensing in a GIS, it will be possible to map and analyse data of wetlands according to management and conservation requirements.

Within the context of the AWI process, information management protocols will provide guidelines for data entry using standardised data sheets. The metadatabase format being developed for the Ramsar Convention will also be adopted, to enable the extraction, analysis and management of information which has been collated or created for each level of inventory.