CREATION OF GRIDS FOR KEITH FORMATIONS (version 3.0)

(Rod Ruffio - April 2011)

Introduction

This document describes the background of the grid dataset, ***Nswmap_v3_VIS_3850***.

A vector layer, Vegetation Formations of NSW (v 3.0), had been derived from the NSW vegetation map (v 2.2) and the interpretation of additional vegetation maps. This layer included Lord Howe island. However, the complexity of this layer (nearly 1 million polygons) resulted in often slow display, and caused problems for GIS analyses. To help overcome such issues, a simplified Grid version was derived.

Methods

Lord Howe island was extracted out of the vector dataset and exported to a separate vector layer. The vector data for mainland NSW and Lord Howe island were then simplified by reducing the number of polygons. This was achieved in ArcMap, v9.3, by eliminating polygons less than 2 hectares in area. Computer memory limitations prevented this step from being successfully applied to the whole NSW mainland dataset, so it was necessary to divide the vector data into smaller subsets. After carrying out the polygon elimination on each subset, the data were merged back into a single dataset for NSW.

One exception, however, was that polygons which contained the attribute value, "Estuarine macrophytes CCA", were to retain their original areas (ie; not be simplified as with the remaining polygons). These polygons were selected from the vector attribute table and exported as a separate vector subset. This subset was then merged back into the simplified NSW mainland dataset.

An extra attribute field was added to the simplified vector layers to provide a unique numerical identifier for each polygon. This field was subsequently used as the source for raster cell values during the conversion process. The ArcCatalog conversion tool, Polygon to Raster, was used to convert to raster format, with a pixel size of 200 metres, and cell value assignment based on the polygon attribute that coincides with the cell centre. Finally, the attributes of the vector layers were joined back to the GRID attributes using the unique numerical identifier as the link field.

Results

Table 1 below shows that by eliminating polygons less than 2 hectares, a reduction of nearly 50 per cent in the number of polygons was achieved.

Dataset	No. polygons
Original	973527
NSW mainland	973474
NSW GT 2Ha	536664

Table 1: Effect of area-based polygon elimination

Table 2 compares area statistics for the original vector data and the grid version, after polygon elimination. The overall impact on Formation Class statistics is low, except for Lord Howe island.

FormationName	ORIGINAL DATA (vector) Ha	<= 2Ha (Grid) Ha	% diff
Alpine complex	152421	152336	-0.1
Arid shrublands (Acacia subformation)	8852730	8852692	0.0
Arid shrublands (Chenopod subformation)	6951100	6951276	0.0
Cleared	29698600	29746980	0.2
Dry sclerophyll forests (Shrub/grass subformation)	3118570	3112184	-0.2
Dry sclerophyll forests (Shrubby subformation)	5024420	5039912	0.3
Forested wetlands	1117060	1103016	-1.3
Freshwater wetlands	1342320	1338240	-0.3
Grasslands	1247330	1246376	-0.1
Grasslands (Lord Howe)	79	188	137.4
Grassy woodlands	2436460	2419636	-0.7
Heathlands	204748	202136	-1.3
Heathlands (Lord Howe)	140	0	-100.0
Rainforests	570950	568216	-0.5
Rainforests (Lord Howe)	1211	1236	2.0
Saline wetlands	67335	67320	0.0
Saline wetlands (Lord Howe)	1	0	-100.0
Semi-arid woodlands (Grassy subformation)	4845500	4842688	-0.1
Semi-arid woodlands (Shrubby subformation)	11655300	11654108	0.0
Wet sclerophyll forests (Grassy subformation)	1747090	1751200	0.2
Wet sclerophyll forests (Shrubby subformation)	1300060	1282216	-1.4

Table 2: Effect of area-based polygon elimination and raster conversion

Discussion

Polygon elimination and raster conversion of Lord Howe island vector data was carried out for consistency. Due to the small number of polygons, analyses involving only Lord Howe island may be carried out on the vector source data.

The Grid version of Keith Formations version 3.0 data were initially output as two separate grids for mainland NSW and Lord Howe island. These two grids were merged into a combined grid. Zero values were converted to "no-data" values.

Data Output:
Nswmap_v3_VIS_3850 – Grid version of Vegetation Formations of NSW v 3.0 (polygons less than 2 hectares eliminated).
Nswmap_v3_VIS_3850_formations.lyr – Layer symbology file based on Keith Formations.
Nswmap_v3_VIS_3850_reliability.lyr - Layer symbology file based on map reliability.
Nswmap_v3_VIS_3850_spatial_resolution.lyr - Layer symbology file based on spatial resolution.
Nswmap_v3_VIS_3850_thematic_resolution.lyr - Layer symbology file based on thematic resolution.