GIS Technology for Dynamic Monitoring Land Cover/Land Use Changes for all of Azerbaijan Using High Resolution Space Images

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THE VECTOR DATA - GIS AND DATA BASE REALIZATION

• Digitization of the thematic layers (Vegetation, Climatic, Administrative, Physical, Geomorphology, General);
• Creation of the general sketch of the project (topographical sheets and satellite images);
• Visual interpretation and manual digitization, creation of the attribute data base according to the legend.

THE GIS PROCESSING PHASE

The position of the satellite images
The map sheet grid
The position of the satellite images

GK-8th zone
GK-9th zone
Processing Space images

Classification

Geometry

Analysis texture

Processing

Spectral analysis

Recognizing process

Vectorisation

Thematic layers

Maps
Printing of results
The results of the project for whole territory of republic were printed as separate sheets (841x 594 mm). The total number of the printed sheets are 148 pieces. Besides the sheets in all 76 administrative areas of republic were prepared. In these sheets were submitted:
- Name of the project;
- Logos of ANASA and FAO;
- Scale of map (1:50.000);
- Legends of map;
- Current number of map in the project;
- Section of appropriate topographical map;
- Code of project.

Results of project
The digital map of Land Cover / Land Use for whole territory of republic in scale 1:50000 using the base of LANDSAT TM 1998-1999 interpretation of space images was created:
- The database of raster and cartographical data was created in uniform base projection which includes:
  a) thematic maps of district in scale 1:500 000;
  b) topographical maps of whole territory of republic in scale 1:100 000;
  c) the legends of Land Cover / Land Use responding the LCCS standards, showing the most specific for region representative classes with the number of 38 pieces were developed.
- The digital map of water resources of internal reservoirs was created: the rivers, lakes, reservoirs, ponds, lagoons, dams, network of channels and drainage systems;
- The map of highways and railways network was developed;
In practice the theoretical aspects of the new approaches to modern cartography with attraction of expert systems were checked.
THE EDITING/PRINTING PHASE

Logos:
- Logo of FAO
- Logo of ANASA

Elements:
- Map scale
- Legend
- Sheet number
- Map sheets sketch
LANDSAT 1999

Map for area

IKONOS 2007
Example of canopy cover measurement using the NDVI
Different resolution images for area of interest
Mapping forest types classes with GIS (IKONOS)
Classification map for Gabala
species
species
species
Species map for GABALA
On the basis of performed research and work experience a conclusion is made: the offered technology allow us to perform the whole class of tasks of on-line quantitative assessment of damage (changes) to the environment; but one thing becomes a necessary conditions (with availability of direct access to remote sensing materials), this is the implementation of high volume and complex activities on creation and maintenance of regional information systems (of different scope and scale dictated by a spectrum of tasks) about ground objects of research based on modern information technologies.