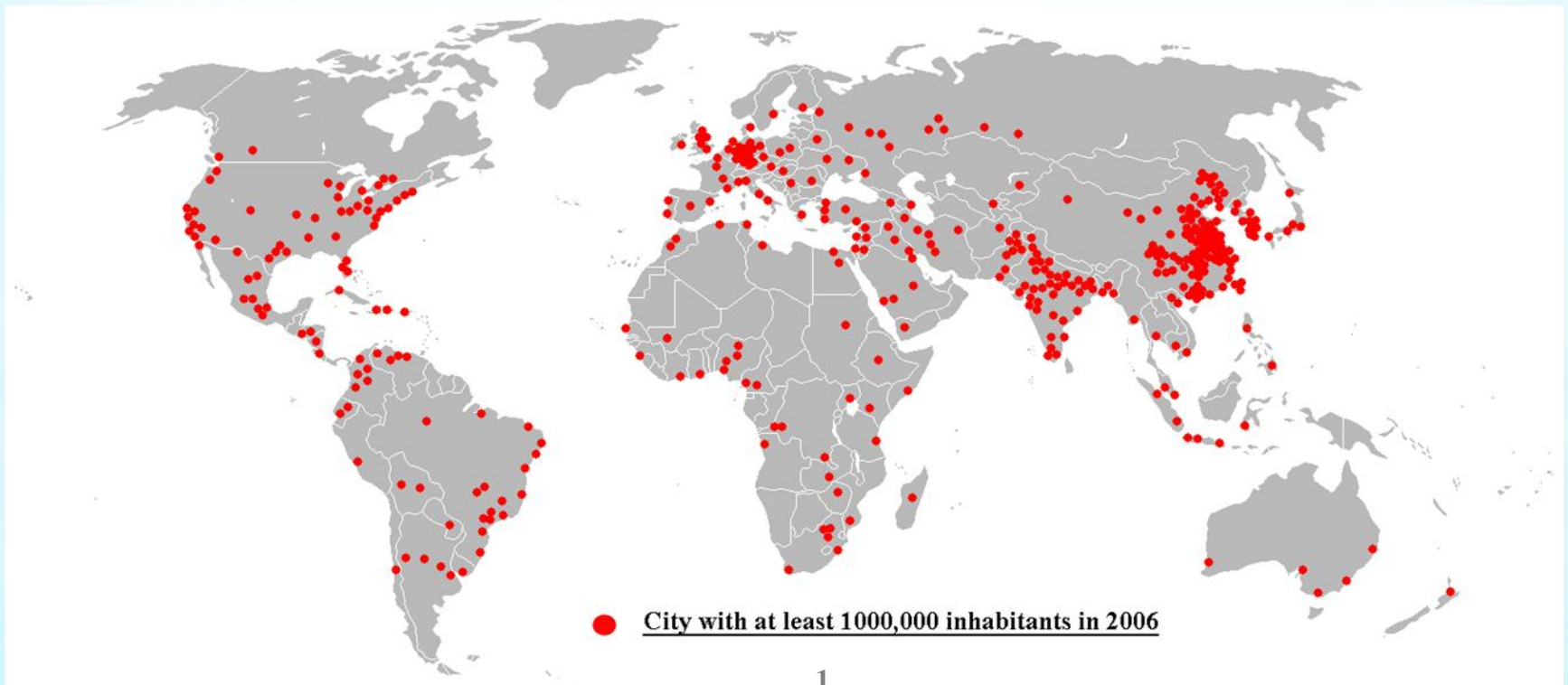


Mega-City



Mega cities are overcrowded and environmentally stressed



Challenges:

- The **demographic challenges** are population growth, aging population, youth bulge and migration.
- The **main environmental challenges** are air, water, landscape consumption, and climate change impact.
- The **economic and social challenges** are social segregation, lack of housing and infrastructures, unemployment and informality.
- The **administration challenges** are lack of governance, multilevel political administration, technical approaches, lack of de-central structures and private involvement.





Challenges



From Brain Storm to Conceptual Model

Driving Forces

- population growth
- Investments

Pressures

- Urbanization
- Agriculture
- Industry

States

- Fertile soil distribution
- housing type
- Geo-state
- Water quality
- Air quality

Impacts

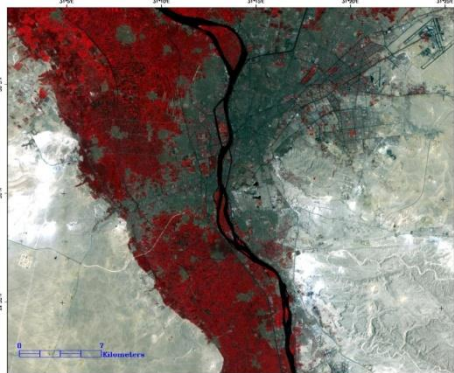
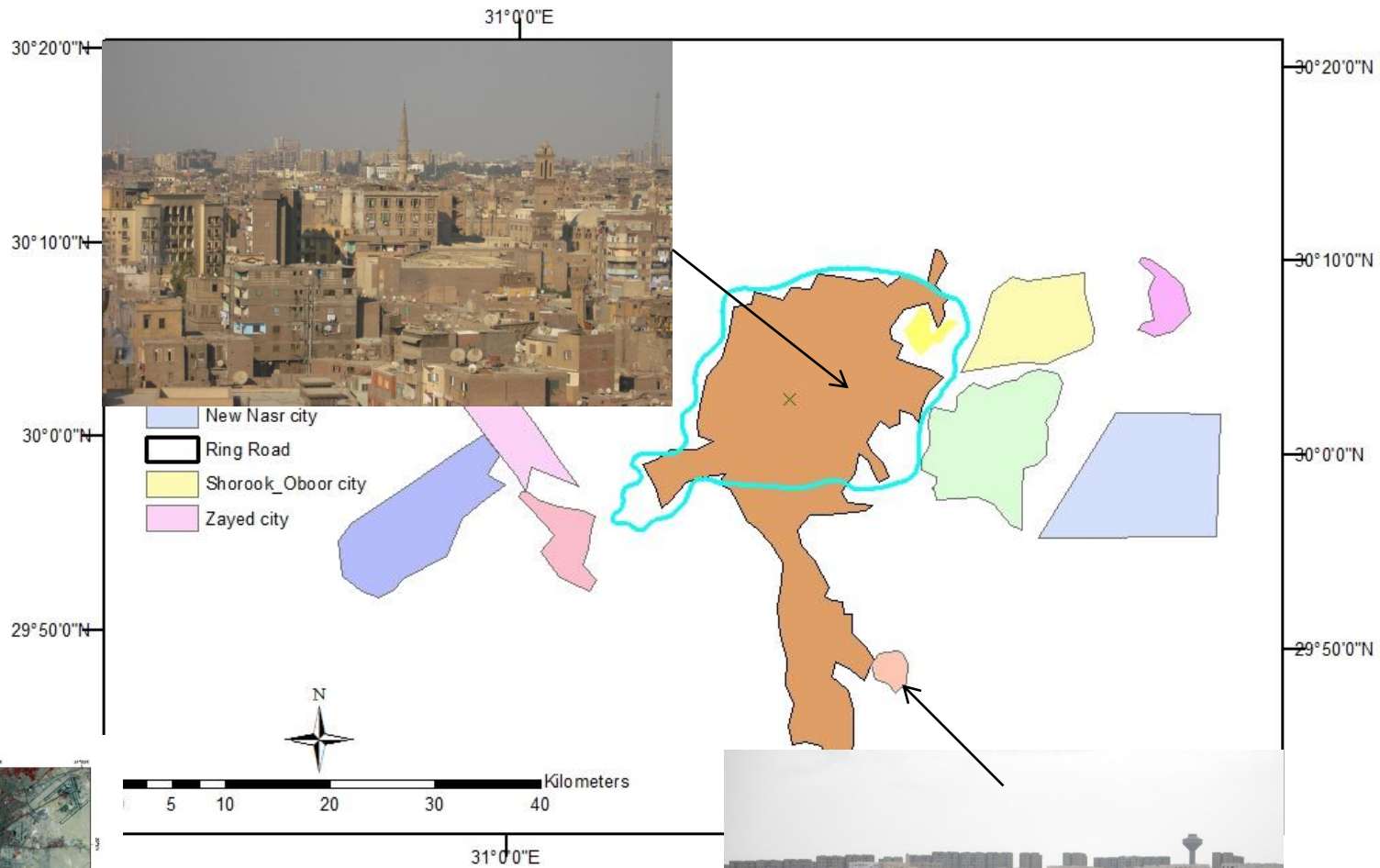
- Reduced crop yield
- Informal buildings and low life quality
- Geo-hazards
- Air and water pollution

Responses

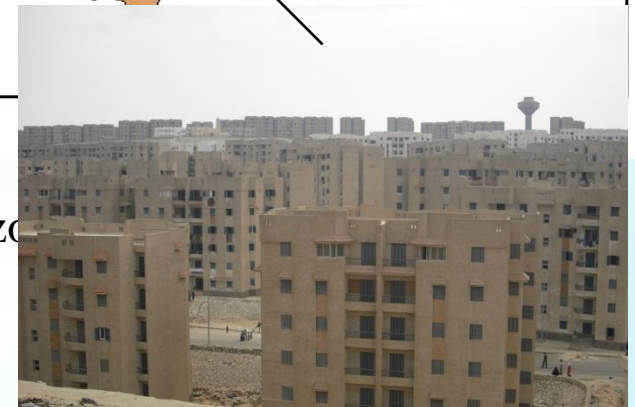
- Environmental mangement
- Suitable policy and strategy



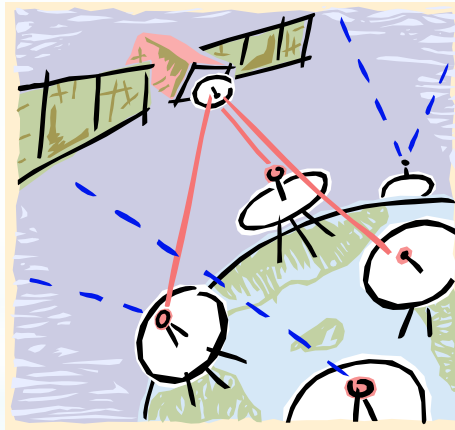
Greater Cairo Metropolitan



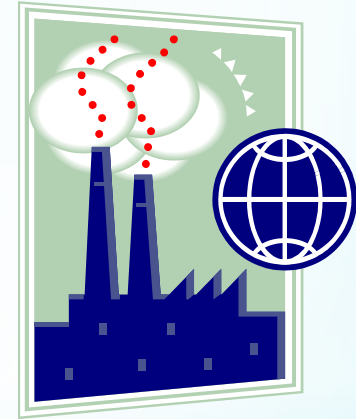
Greater Cairo zone



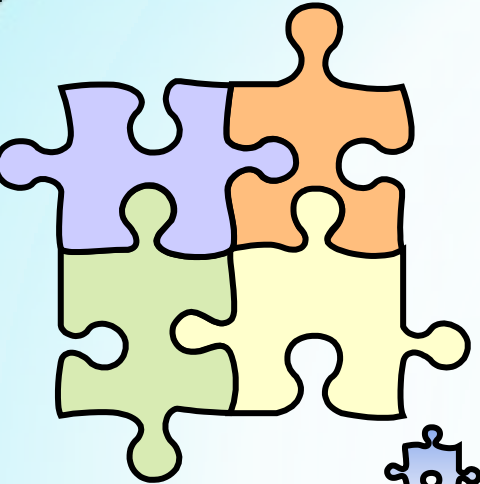
Monitoring and dynamic change detection



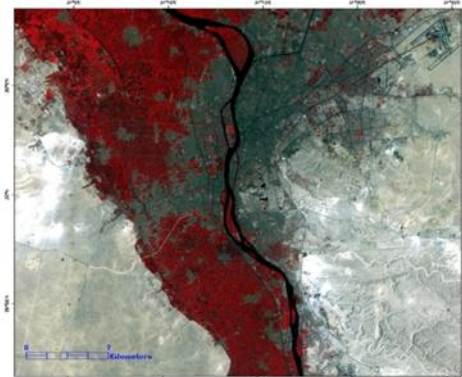
*Time Series
Satellite Images*

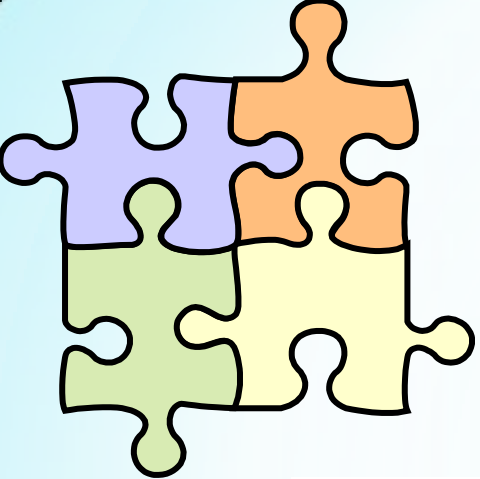


Classification

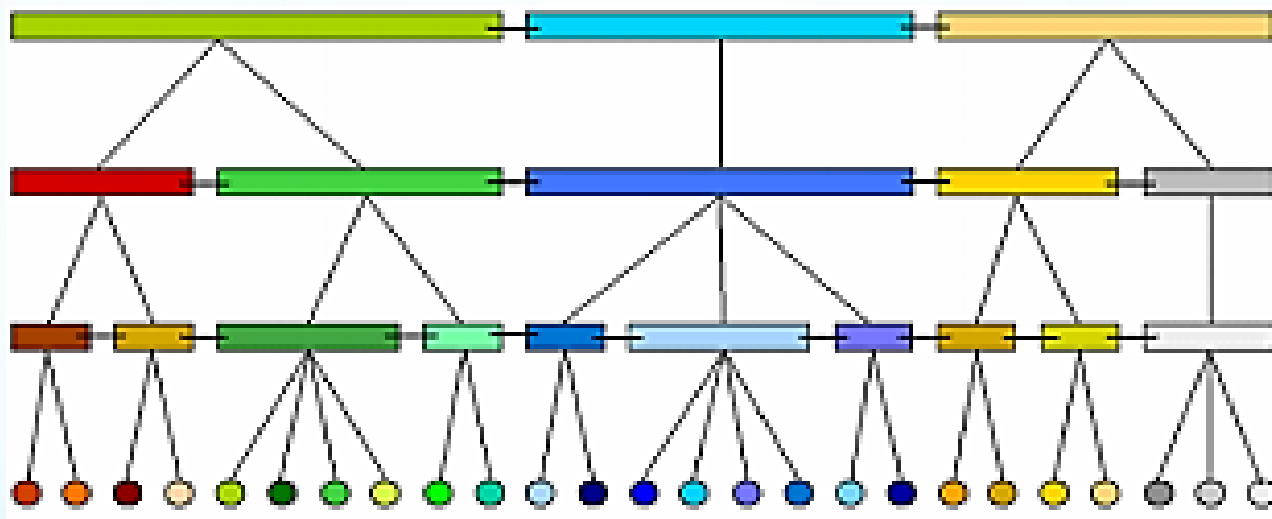


Pixel-based classification

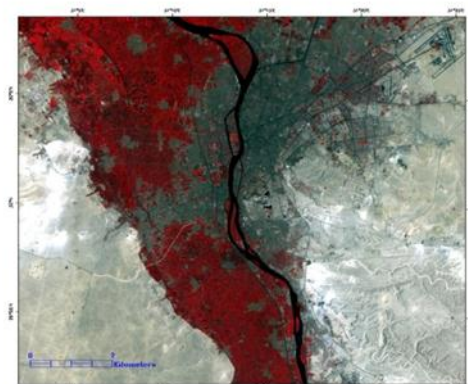




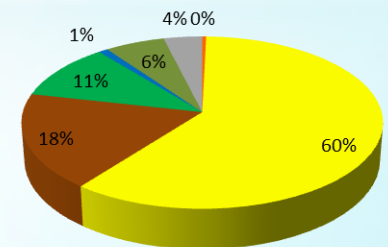
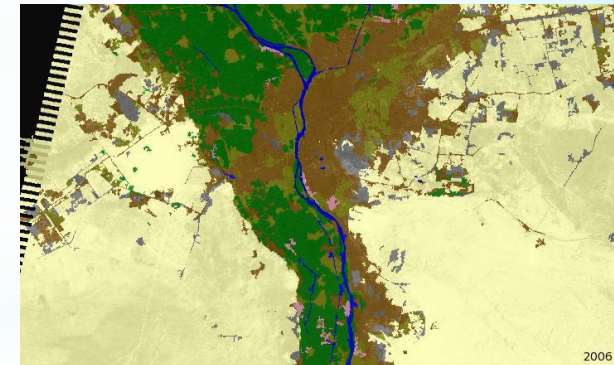
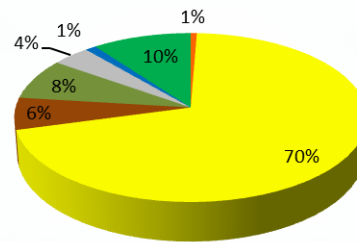
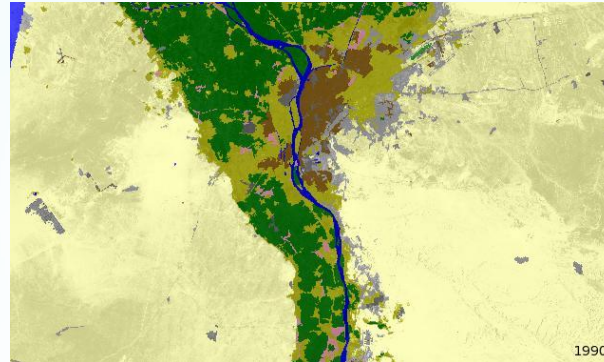
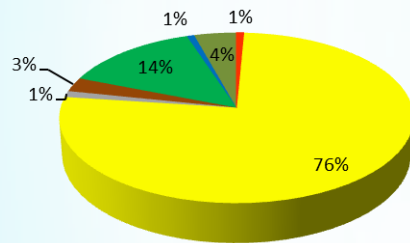
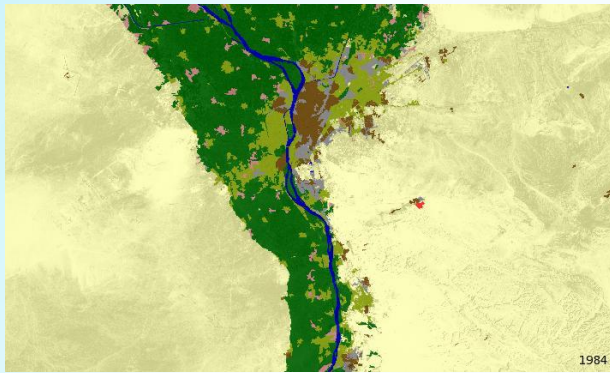
- Hierarchical network of segments in different scale levels.
- Choice of proper thresholds for homogeneity and heterogeneity criteria.



Object-based classification

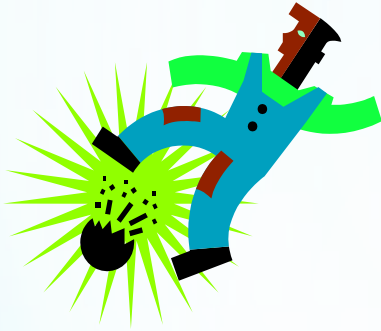


Land cover-use changes in Greater Cairo



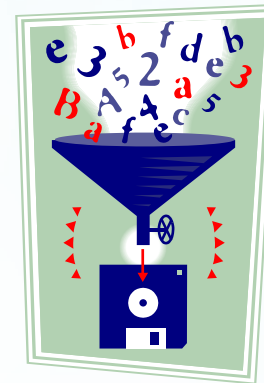
- Bare Soil2006
- Desert2006
- Urban-Areas2006
- Vegetation Cover2006
- Water2006
- Urban-Cultivated2006
- Very loose urbanization06

Rapid growth and expansion



Explosion

Or



Management

THANK YOU



Change Today Shape Tomorrow