

GIS CAREERS

Courtesy: ESRI South Africa & Inroads SA

Geography
Science
Computer Science
Mathematics
Economics
Biology



Meteorologist
Forester
Crime analyst
Conservationist
Cartographer
Surveyor
Market Research Analyst
Geologist
Disaster Planner
Town Planner
Engineer
Statistician

Meteorologists

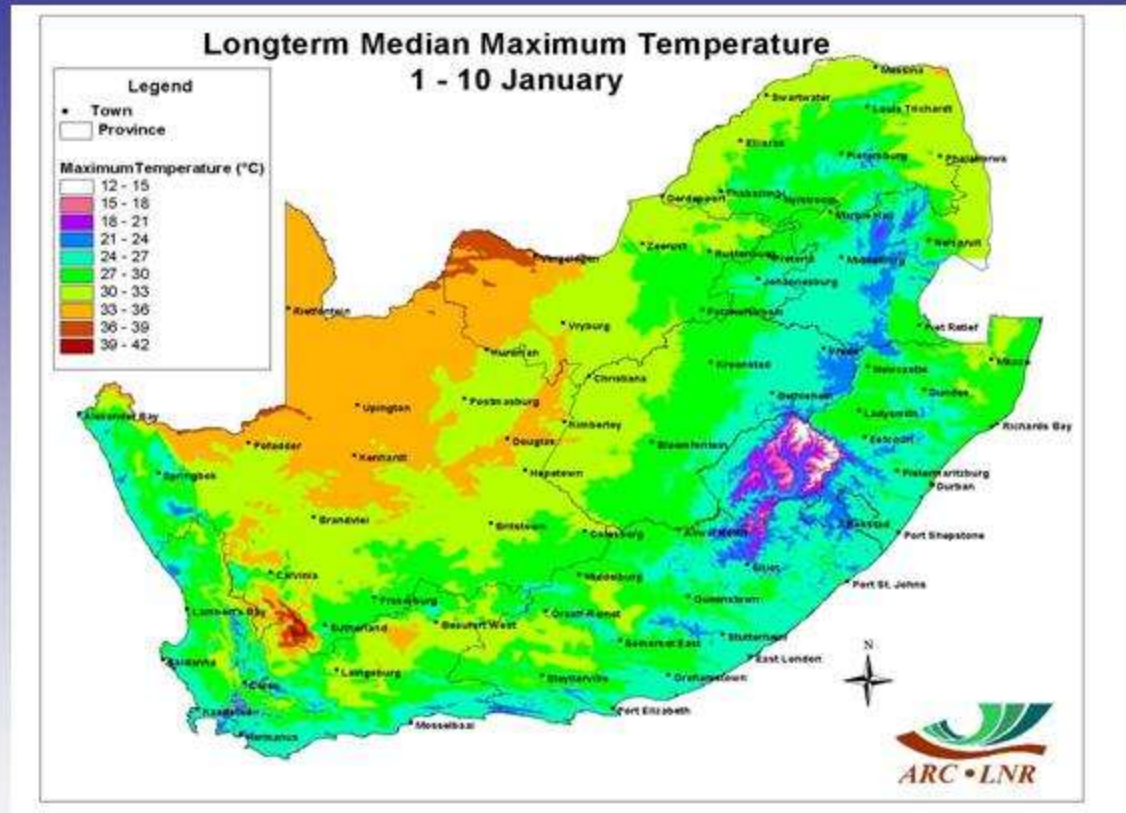
What does a meteorologist do?

- Study of earth's atmosphere & weather in it
- Analyze information on atmospheric conditions
- Spot and interpret trends
- Early warning systems
 - Risk assessment and mitigation
 - Response

Where are they employed?

- The Weather Bureau
- Agricultural Research Council (ARC)
- Council for Scientific and Industrial Research (CSIR)





Courtesy: ESRI South Africa & Inroads SA

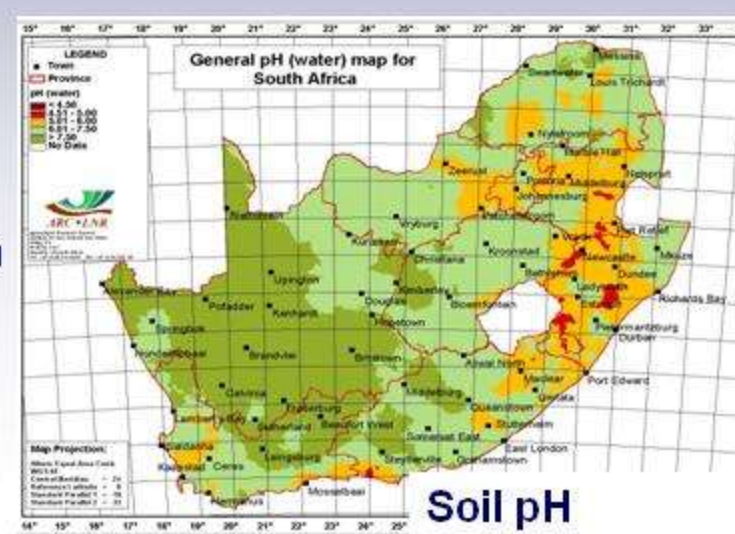
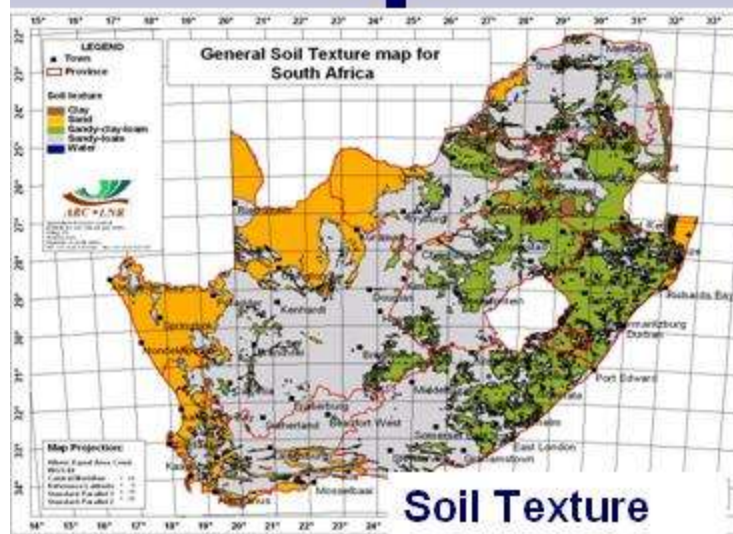
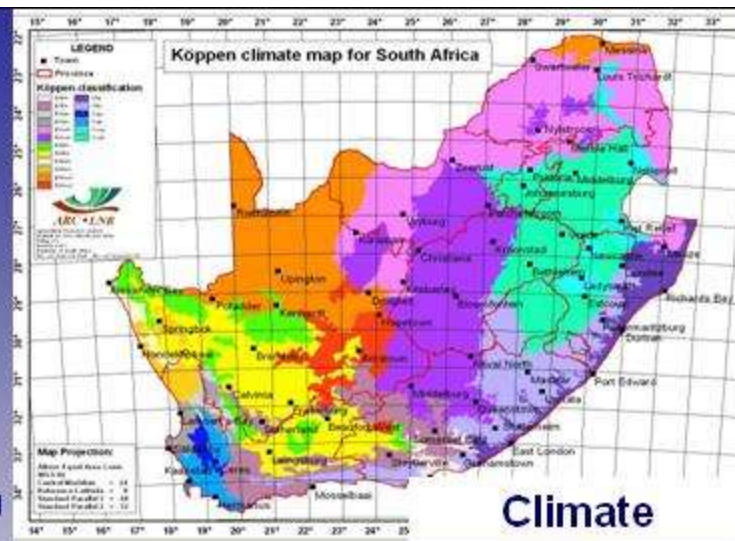
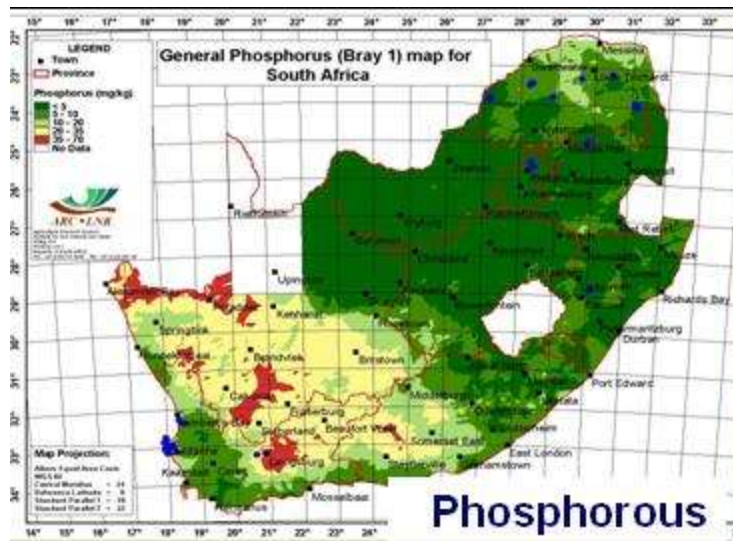
Foresters

What does a forester do?

- **Forests provide a number of products and services**
- **Forests need to be managed for**
 - Timber / paper
 - poles
 - matches
 - outdoor recreation
 - wildlife
 - Water

Where are they employed?

- **SAPPI, Mondi and many private growers**
- **Department of Water Affairs and Forestry (DWAF)**



Courtesy: ESRI South Africa & Inroads SA

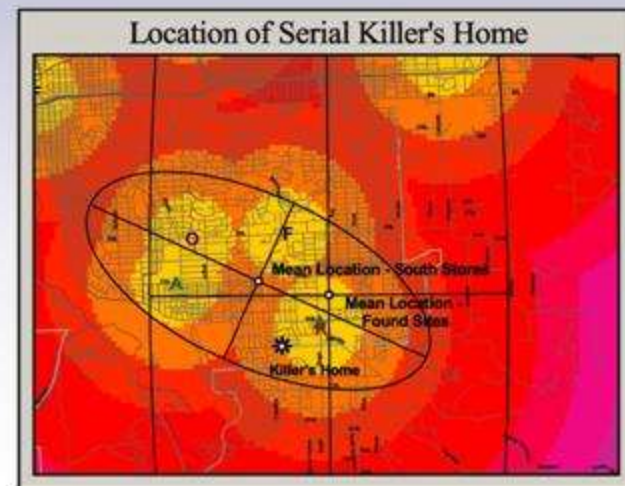
Crime analyst

What does a crime analyst do?

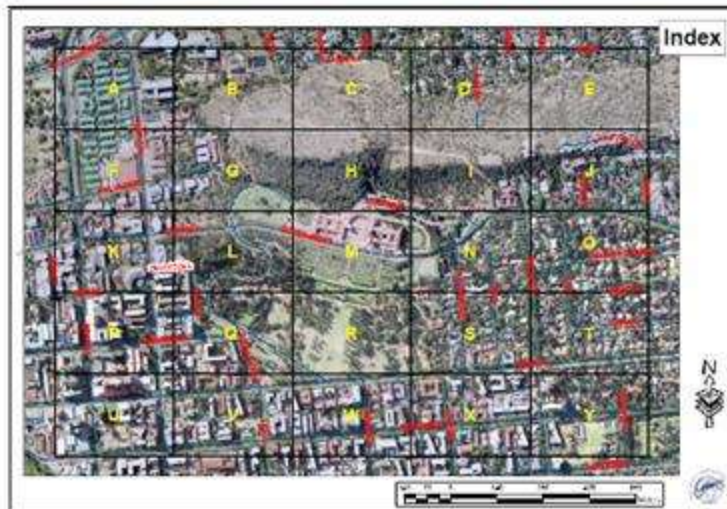
- Study crime
- Case management (Forensics)
- Analyze crime data to forecast where crime might occur
- Communicate crime patterns

Where are they employed?

- Police Department
- Insurance Companies



Courtesy: ESRI South Africa & Inroads SA

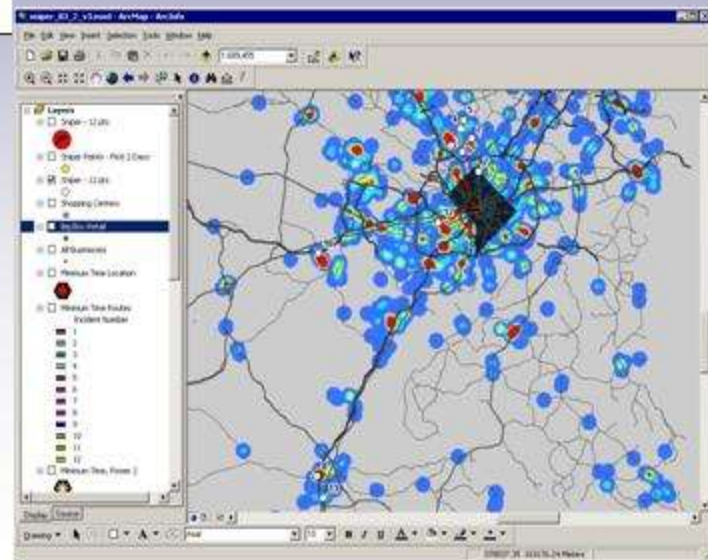


Crime Analysis

Washington Sniper

VIP Protection

Counter Sniper Operations



Courtesy: ESRI South Africa & Inroads SA

Crime Against Persons Versus Property

Crime
against
person



Crime
against
property



Courtesy: ESRI South Africa & Inroads SA

Conservationist

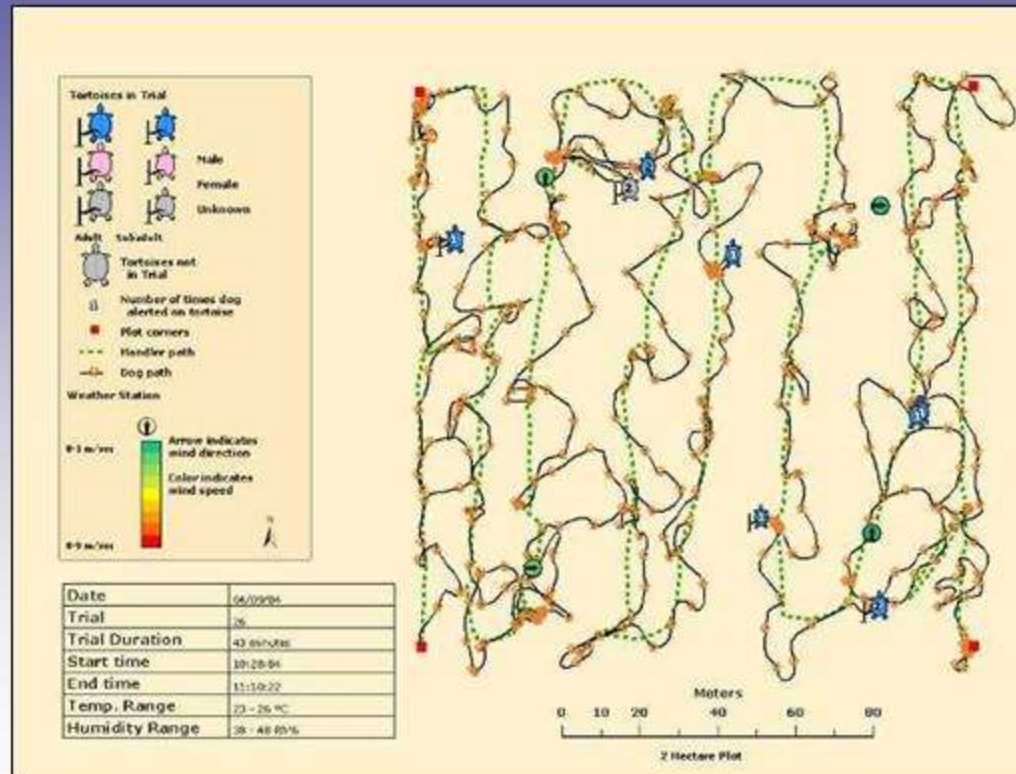
What does a conservationist do?

- **Collect information on wildlife**
 - endangered species
- **Supervise seasonal activities**
 - removal of alien plants
 - Block burning
- **Monitor animal movement**
 - New animals introduced to a park, what are there movements?

Where are they employed?

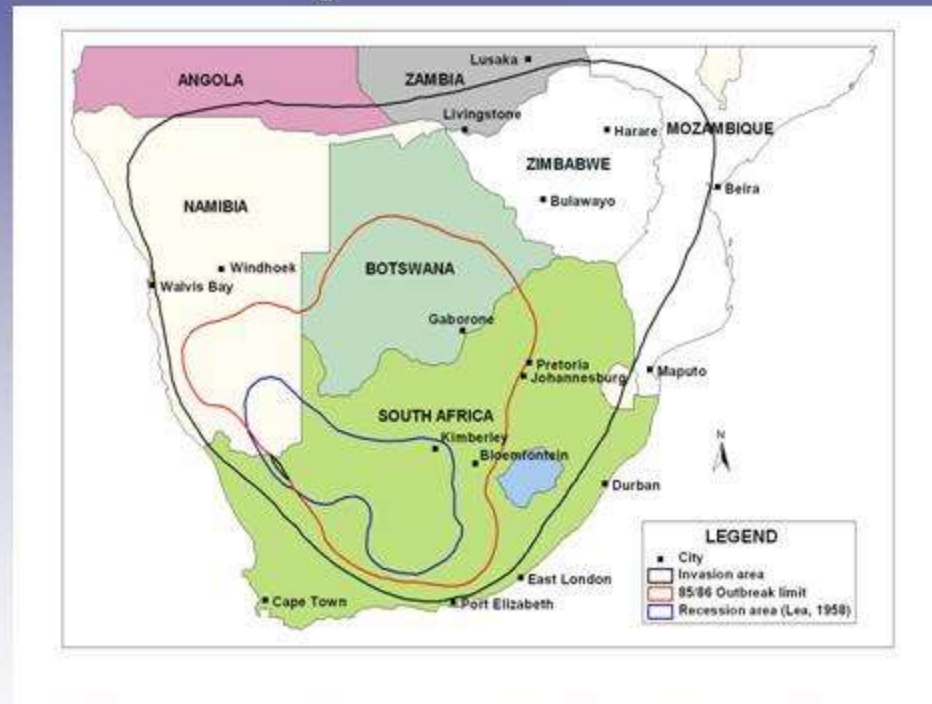
- **Private game reserves**
- **National Parks**
- **Dept Nature Conservation**

Tortoise Mapping using Dogs

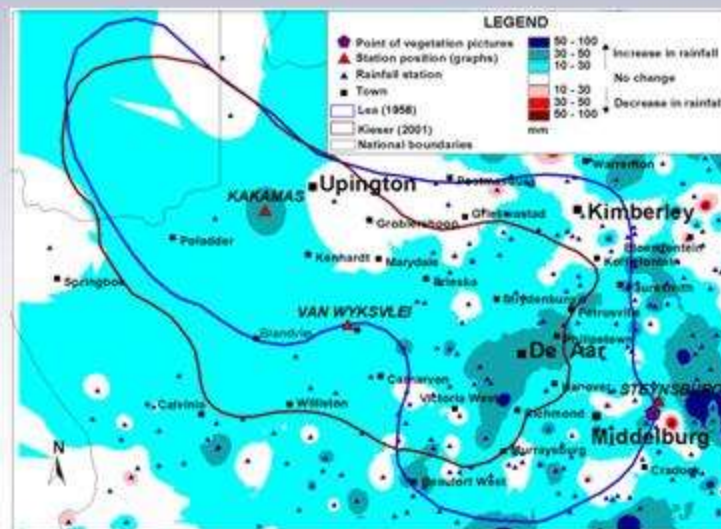
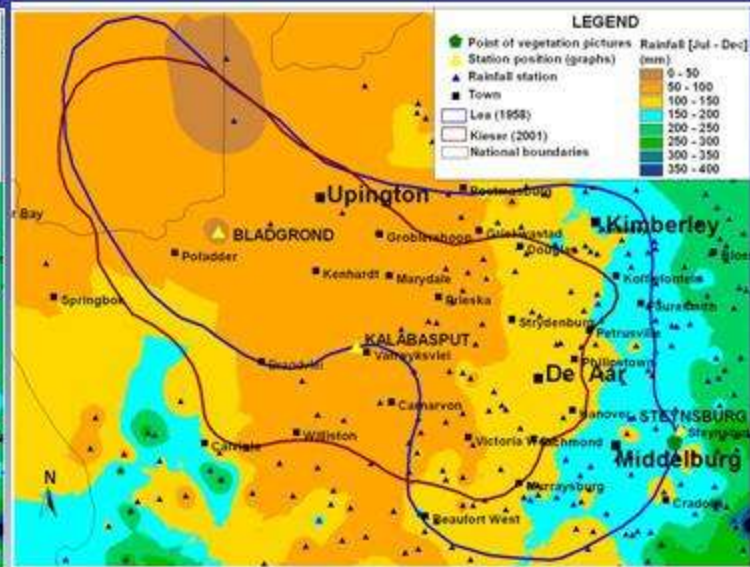
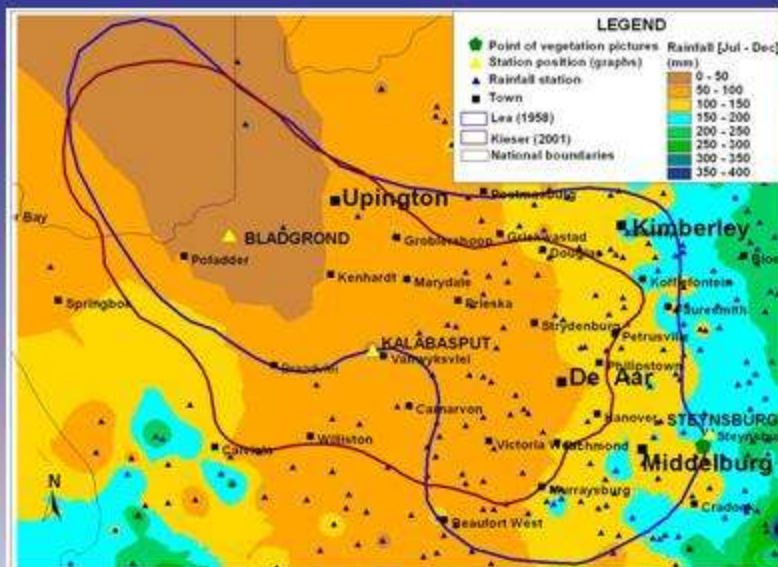


Courtesy: ESRI South Africa & Inroads SA

Brown Locust Early Warning System



Courtesy: ESRI South Africa & Inroads SA



Courtesy: ESRI South Africa & Inroads SA

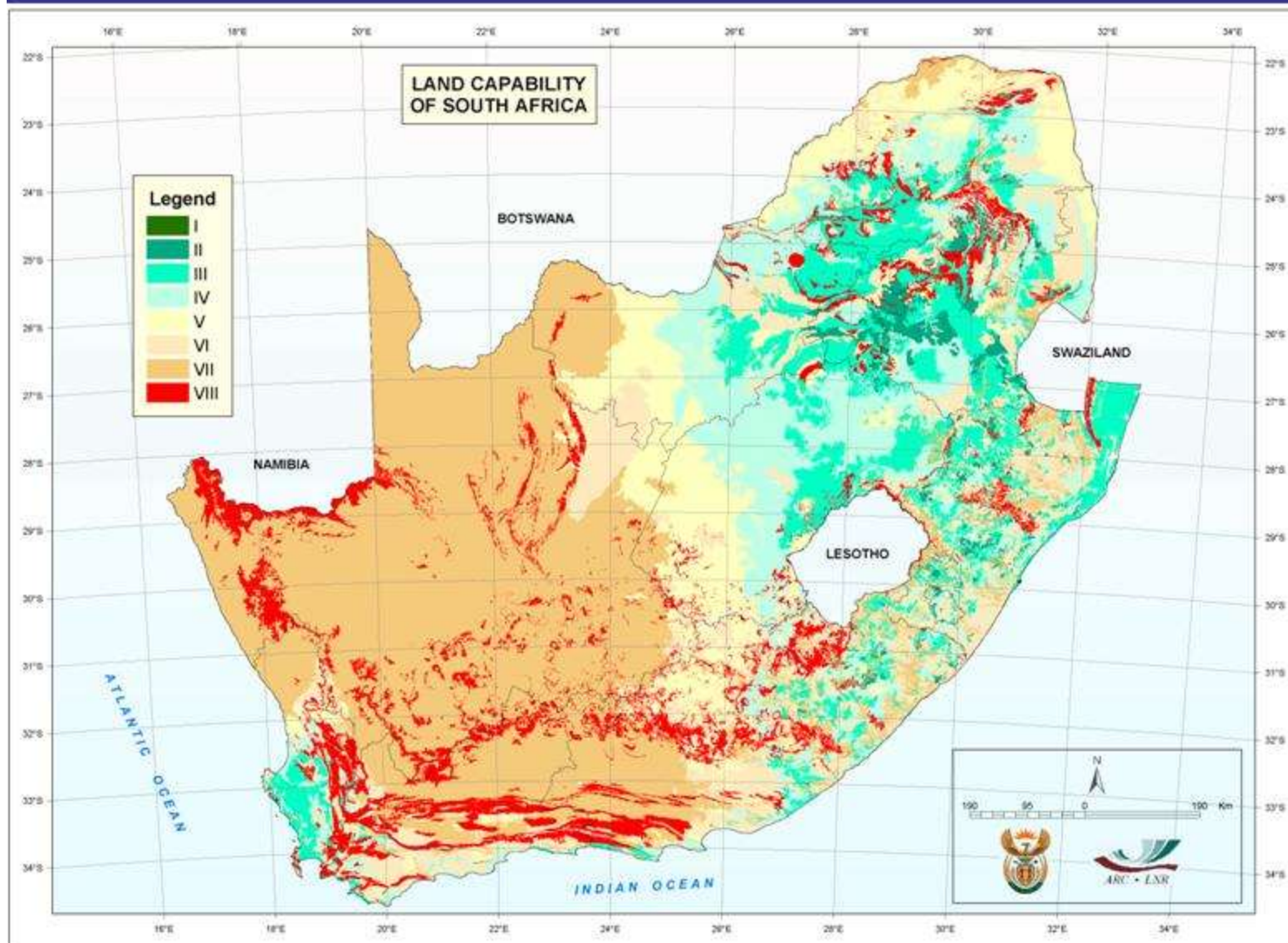
Cartographer

What does a cartographer do?

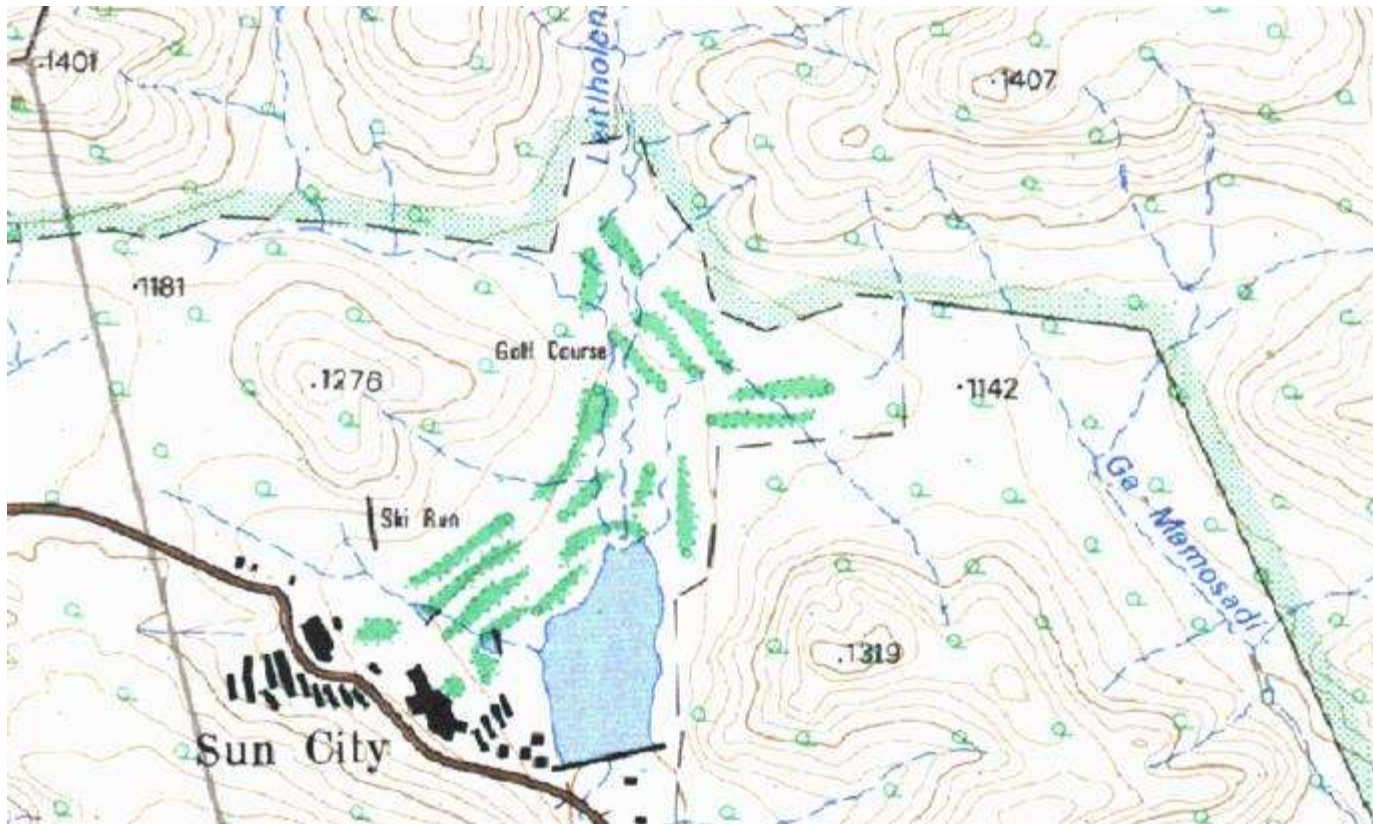
- Design high quality map products
- Define production specifications e.g. projection, scale
- Revise existing maps
- Collect, analyze and interpret geographic information

Where are they employed?

- Municipalities
- Private Companies
- Chief Directorate Surveys and Mapping
- Parastatals – CSIR, ARC, Council for Geoscience



Courtesy: ESRI South Africa & Inroads SA



Courtesy: ESRI South Africa & Inroads SA

Surveyor

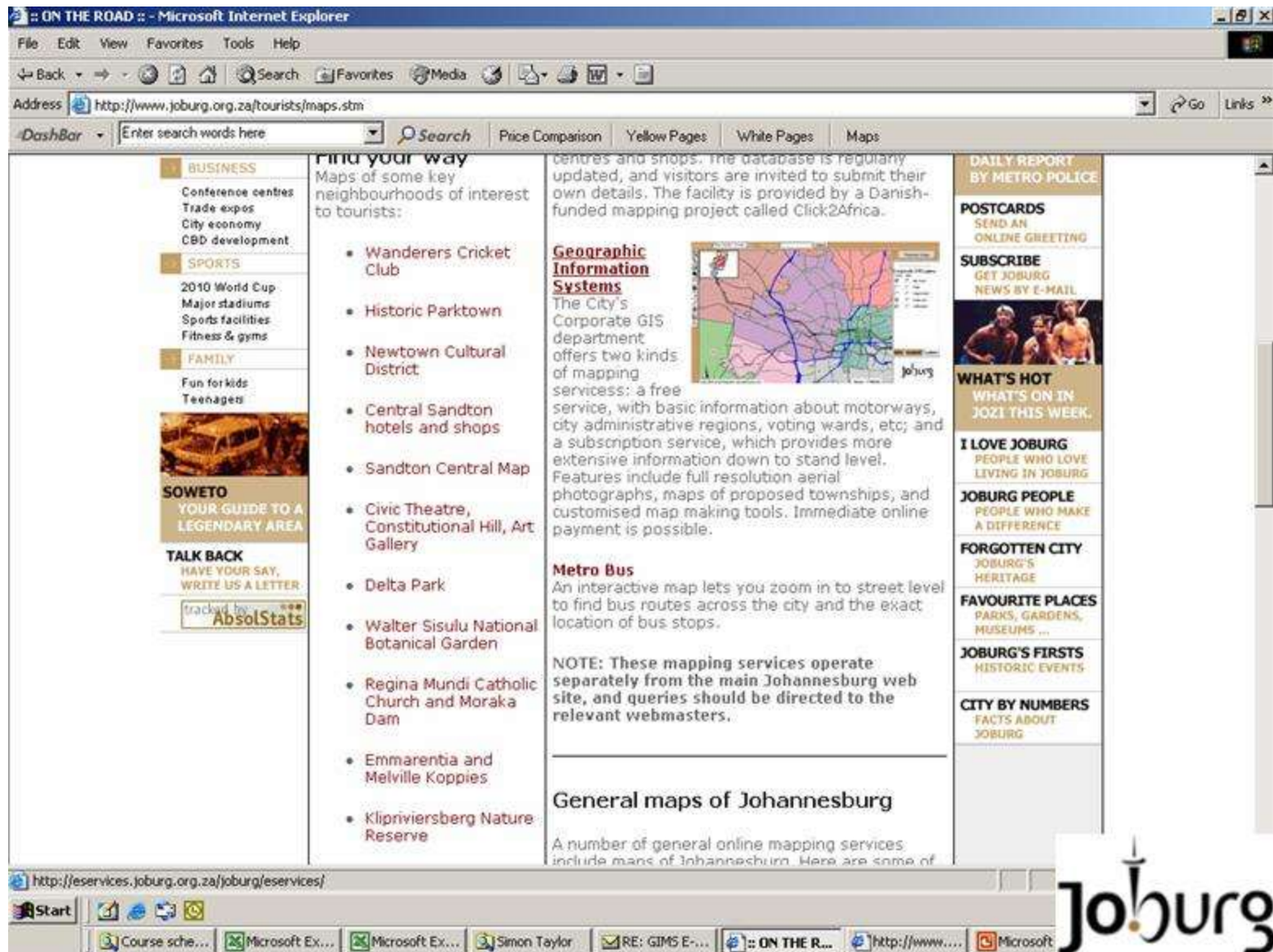
What does a surveyor do?

- accurate physical description of property boundaries
- Survey results are used to:
 - establish boundaries, prepare maps, subdivide land
- GPS newest land surveying technology

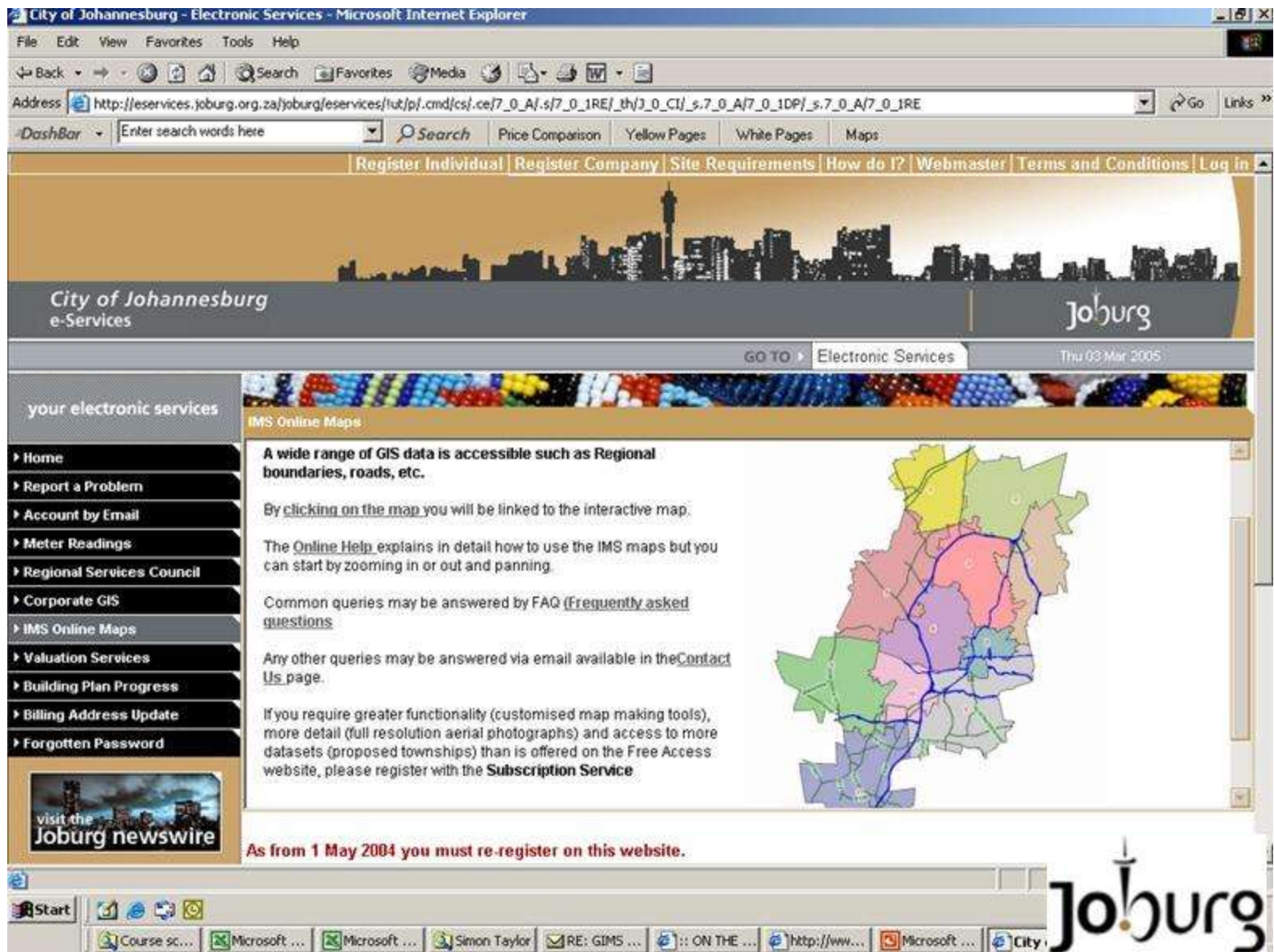
Where are they employed?

- Surveyor General
- Municipalities
- Private practices

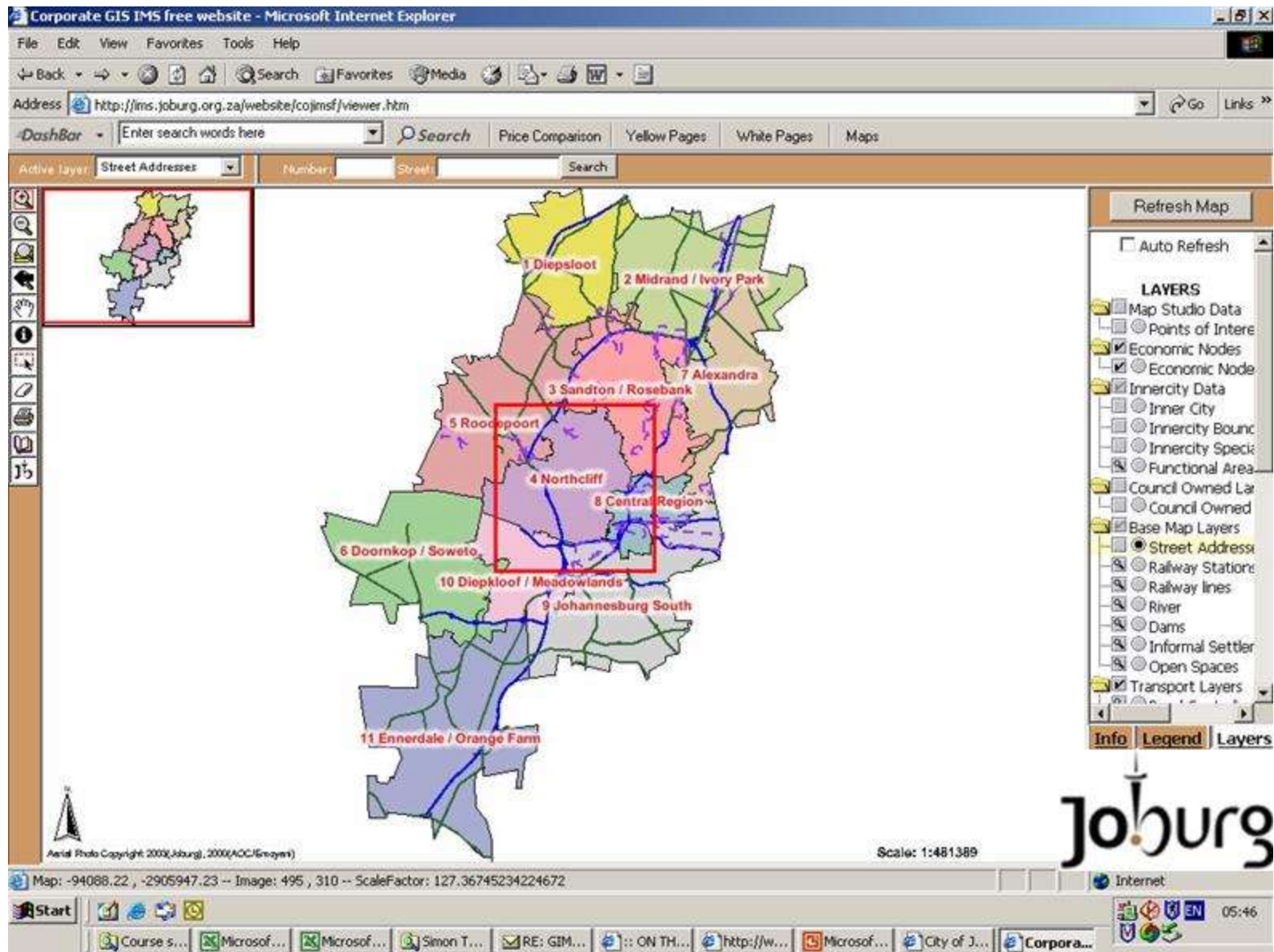




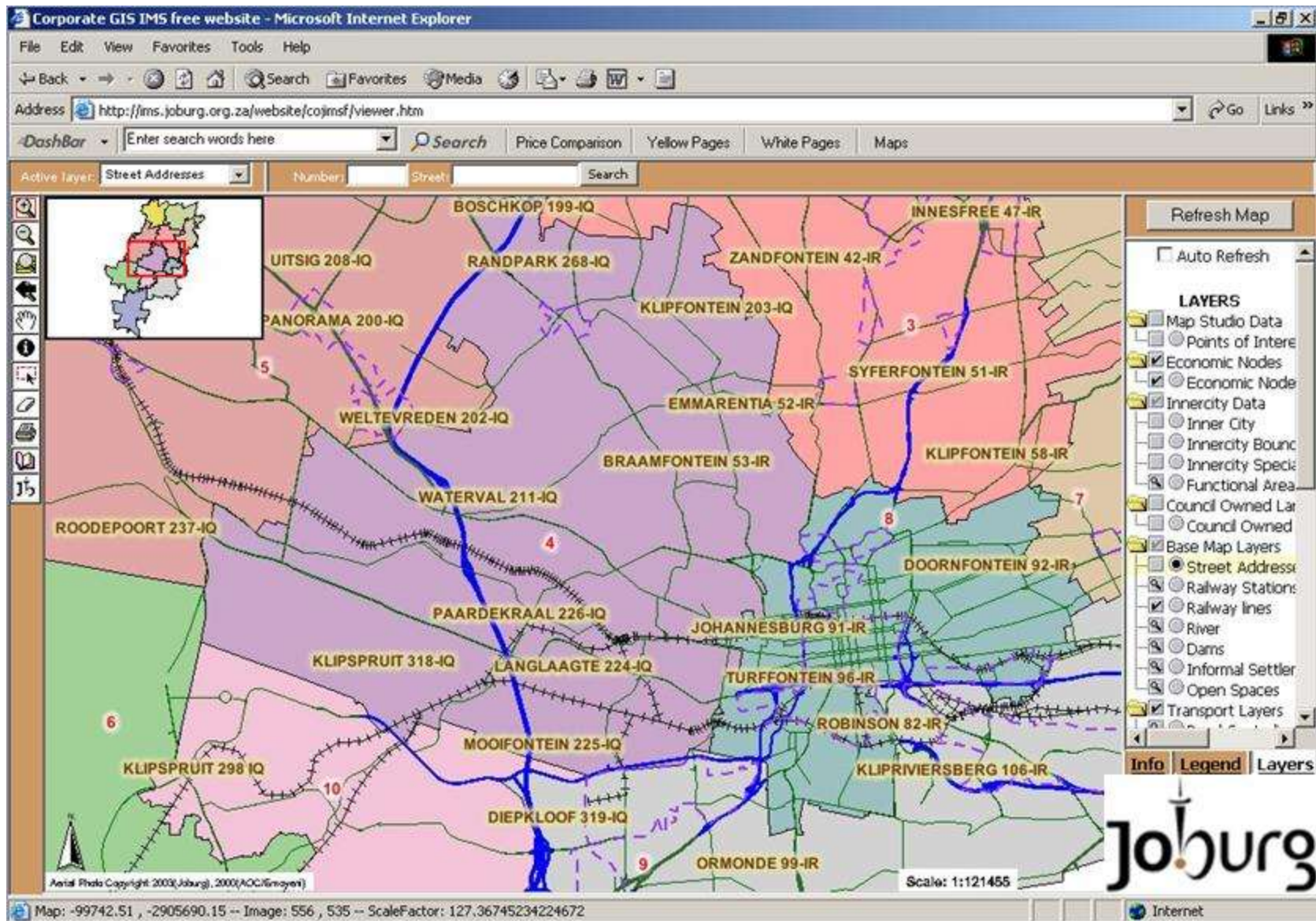
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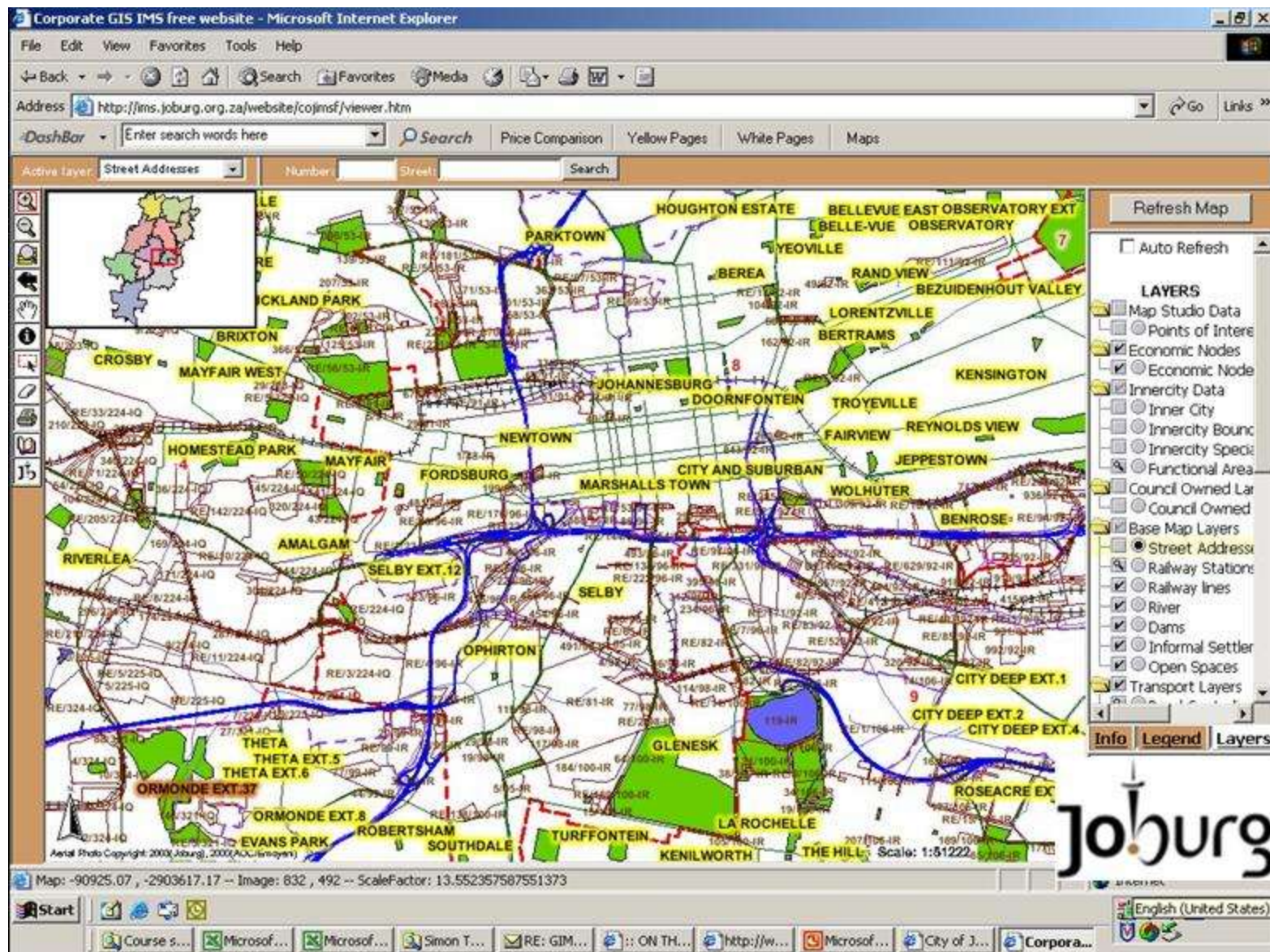
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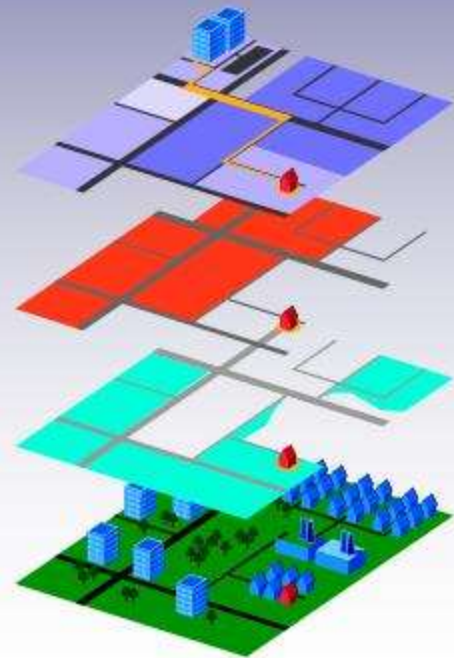
Market Research Analyst

What does a market research analyst do?

- Analyze statistical data on sales to predict future sales
- Analyze prices, sales, marketing and distribution
- Recommend new locations for stores

Where are they employed?

- Banks
- Fuel providers
- Service providers



VISA
EXPLO

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ATM Locator

Visa Worldwide | Special Events | Shopper's Plaza | Deal Locations | Financial Tools | Visa.com | For Merchants



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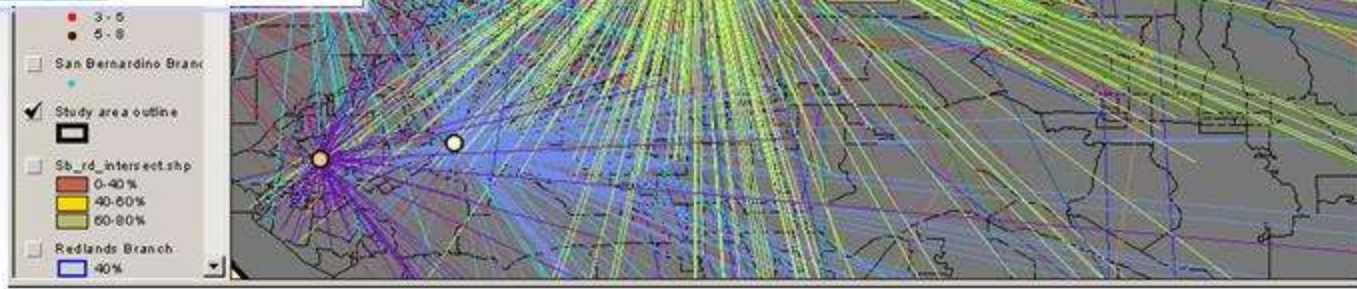
To show us to a specific ATM, select its location.

ATM #1 ATM #2 ATM #3

600 E. Grand Ave., Chicago, IL

#	Address	Location	Hours	Institution
ATM #1	300 E ILLINOIS ST	N/A	24Hours	BOULEVARD BANK
ATM #2	440 E ONTARIO ST	N/A	24Hours	FIRST SECURITY BANK OF CHICAGO
ATM #3	680 N LAKE SHORE DR	N/A	24Hours	FIRST NATIONAL BANK OF CHICAGO, THE

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Courtesy: ESRI South Africa & Inroads SA

Geologist

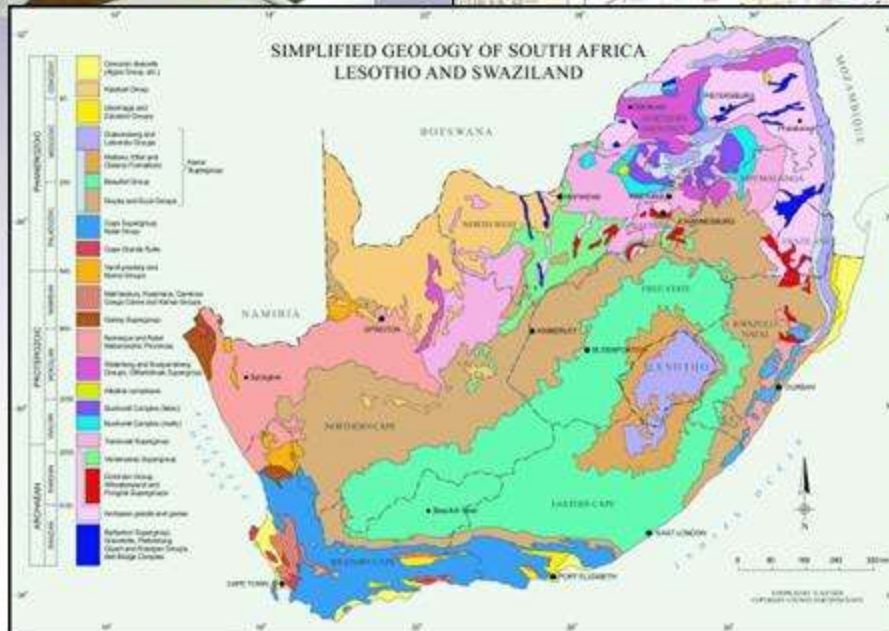
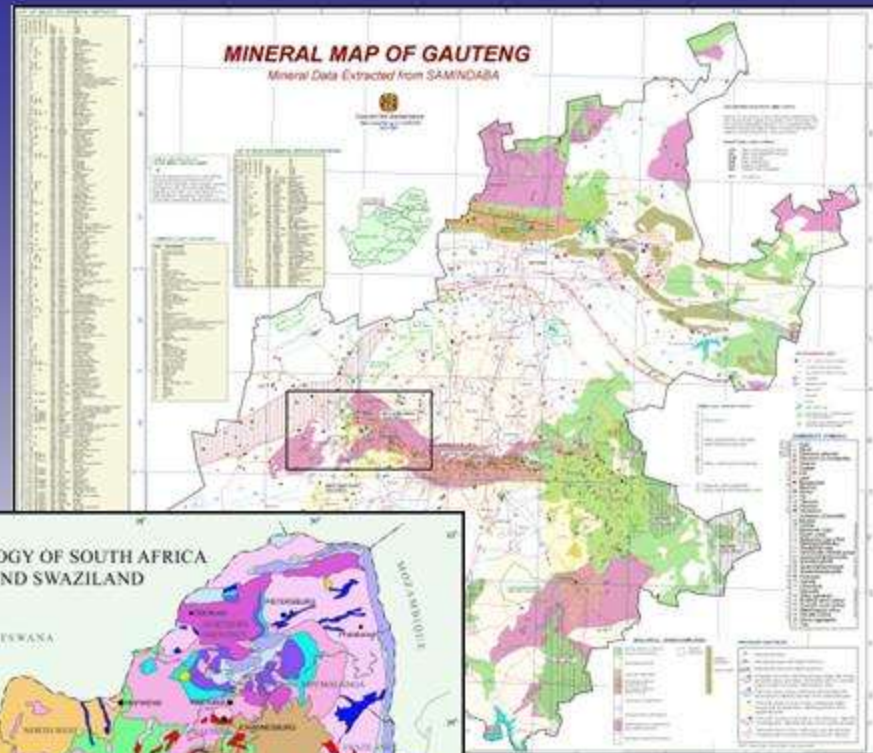
What do geologists do?

- Study composition & structure of earth's crust
- Examine rocks, minerals & fossils
- Use chemistry, physics, biology & mathematics to explain phenomena
- Locate mineral and petroleum deposits

Where are they employed?

- Council for Geoscience
- Mining Companies

Mapping



Courtesy: ESRI South Africa & Inroads SA

Mobile GIS – Borehole water quality



Logging Boreholes



Courtesy: ESRI South Africa & Inroads SA

Disaster Planner

What does a disaster planner do?

- assists people in case of natural phenomena (fires, flooding, hail, lightning)
- Predict disasters to minimize damaged

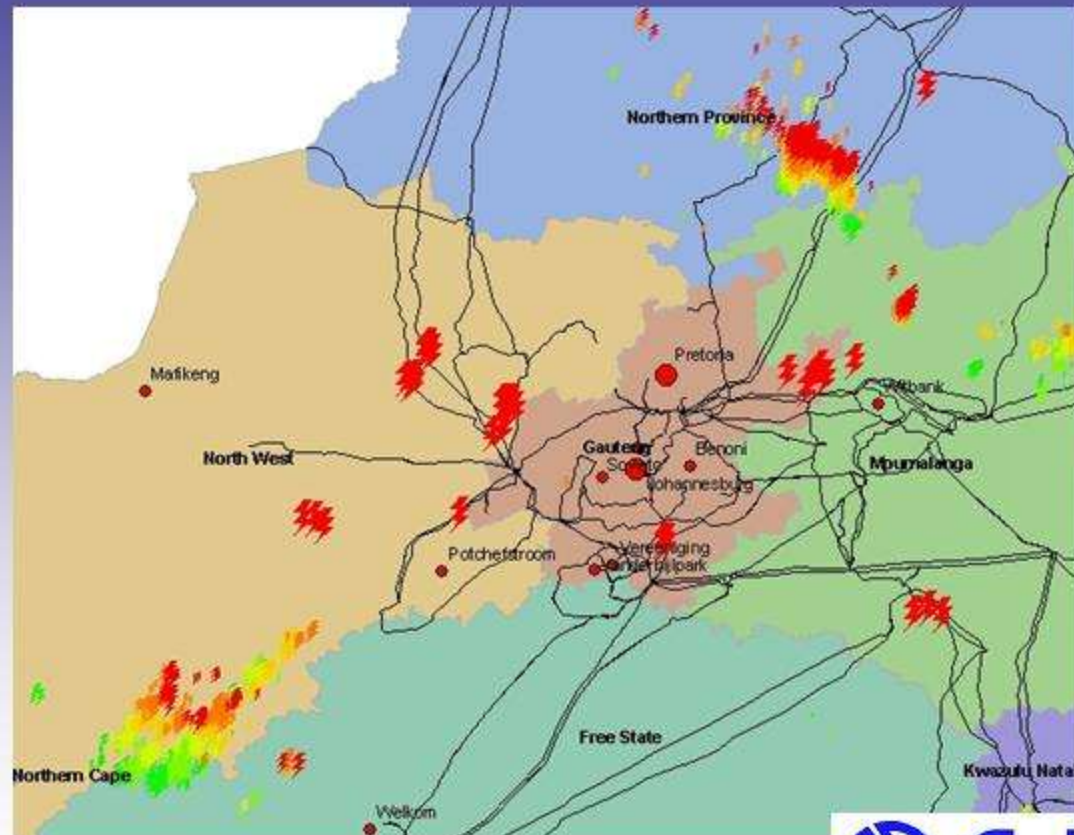
Where are they employed?

- Disaster Management
- Municipalities
- Parastatal organizations such as CSIR, ESKOM, ARC



Courtesy: ESRI South Africa & Inroads SA

Tracking the storm



Courtesy: ESRI South Africa & Inroads SA

Courtesy: ESRI South Africa & Inroads SA

Asian Tsunami

Banda Aceh

DIGITALGLOBE

Banda Aceh, Indonesia



Courtesy: ESRI South Africa & Inroads SA

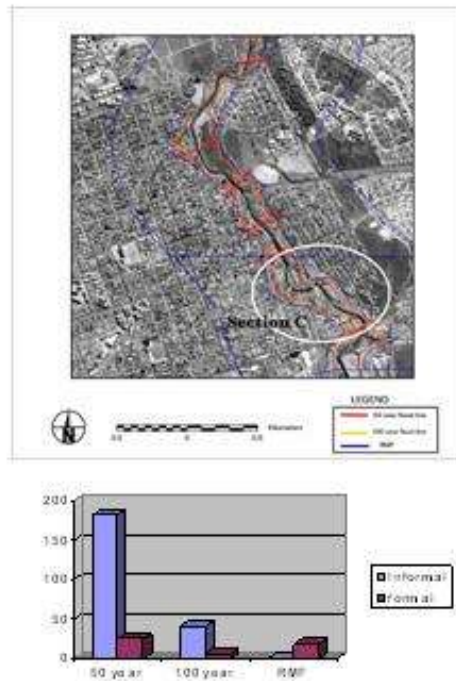
Asian Tsunami

Banda Aceh



Courtesy: ESRI South Africa & Inroads SA

Alexandra Flooding



Courtesy: ESRI South Africa &
Inroads SA

Town Planner

What do Town Planners do?

- Prepare plans for development
 - Zoning
- Planners consider social and economic factors
- Analyze trends in population
- Property valuation
- Spatial Development Frameworks

Where are they employed?

- Municipalities
- Town Planning companies



Urban Change Monitoring Diepsloot



Diepsloot '93



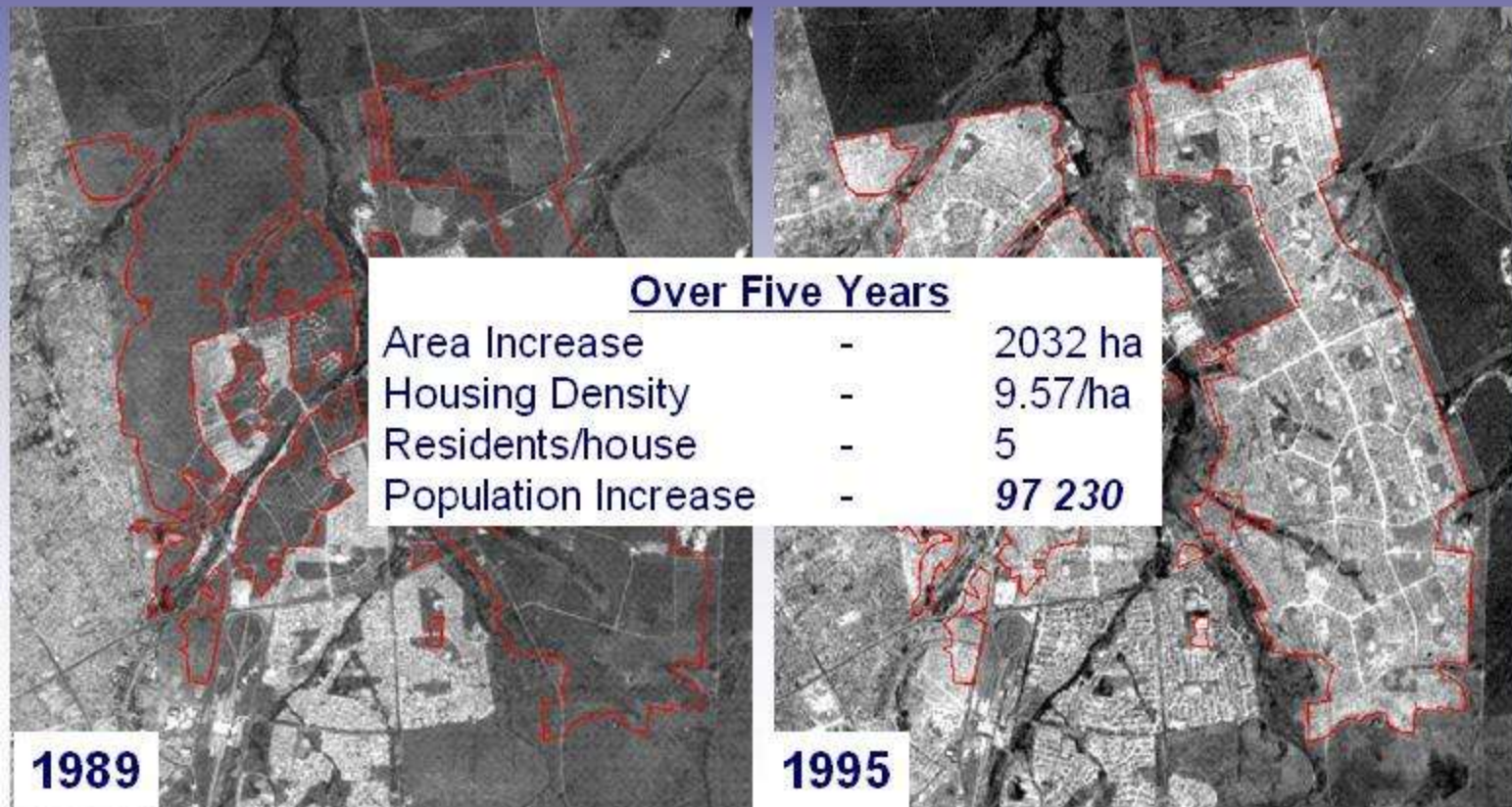
Diepsloot '95



Diepsloot '98

Demographic analyses

(Winterveld urban change 1989-1995)



Courtesy: ESRI South Africa & Inroads SA

Urban Growth

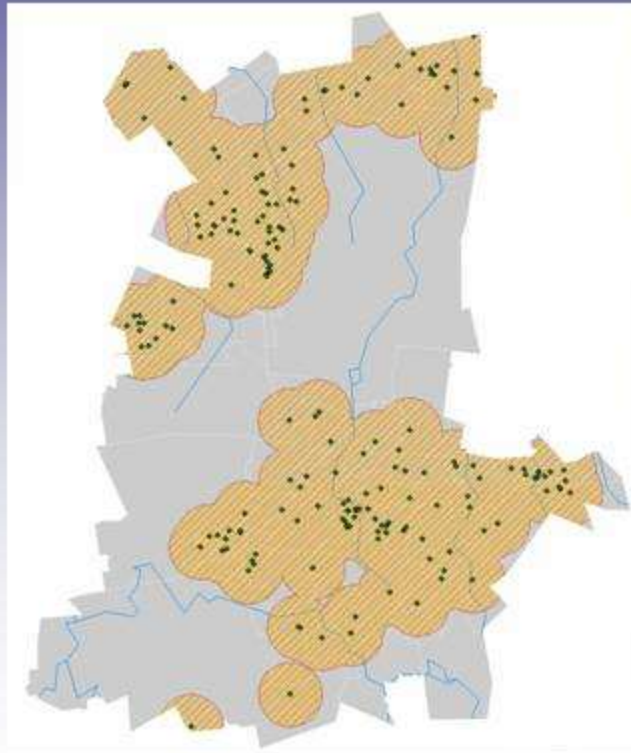
225 New Townhouses (2000 - 2002)



Courtesy: ESRI South Africa & Inroads SA

Municipal Geographic Analysis

**390 500 / 441 484
learners live
within 3 km of
Secondary
Schools**



Courtesy: ESRI South Africa & Inroads SA

Municipal Geographic Analysis

**128 950 / 1 682 701
people live within
“sink hole” areas**

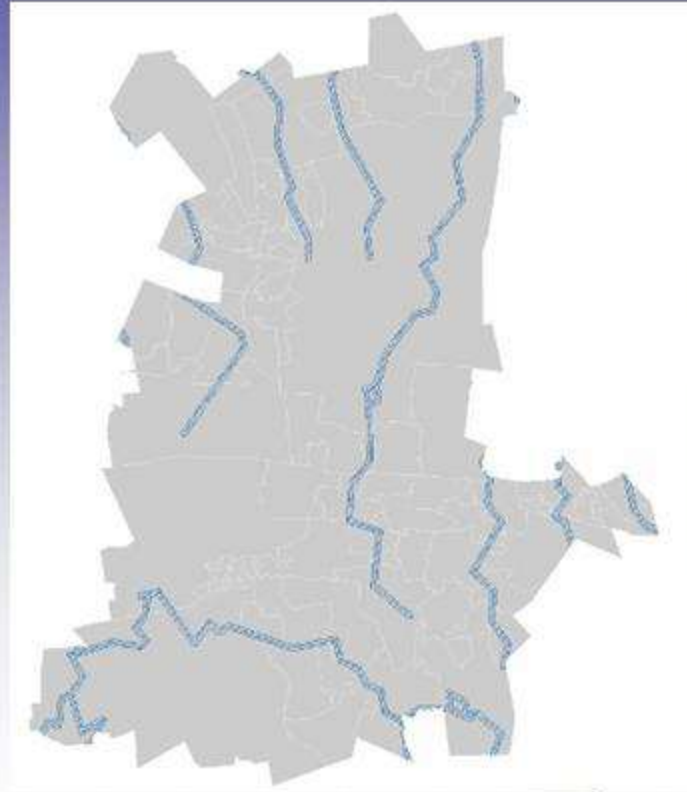
(8 Schools)



Courtesy: ESRI South Africa & Inroads SA

Municipal Geographic Analysis

**88 100 / 1 682 701
people live within
250m from “rivers”**



Courtesy: ESRI South Africa & Inroads SA

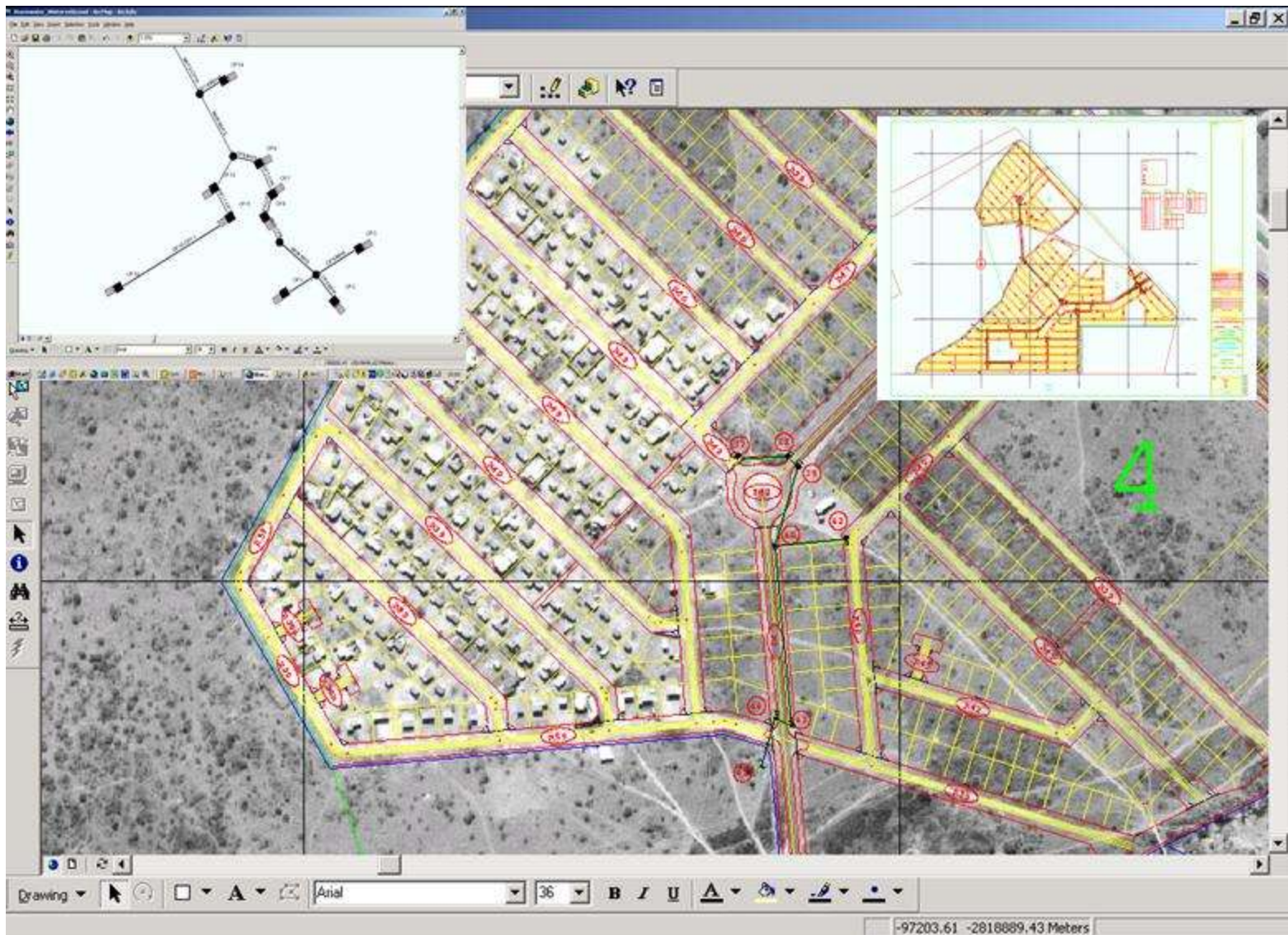
Civil Engineers

What does a civil engineer do?

- Plan, design & direct construction
- Surveying, site investigation
- Sample and test soil in relation to stability for construction
- Prepare reports on environmental impact

Where are they employed?

- Municipalities
- Engineering companies

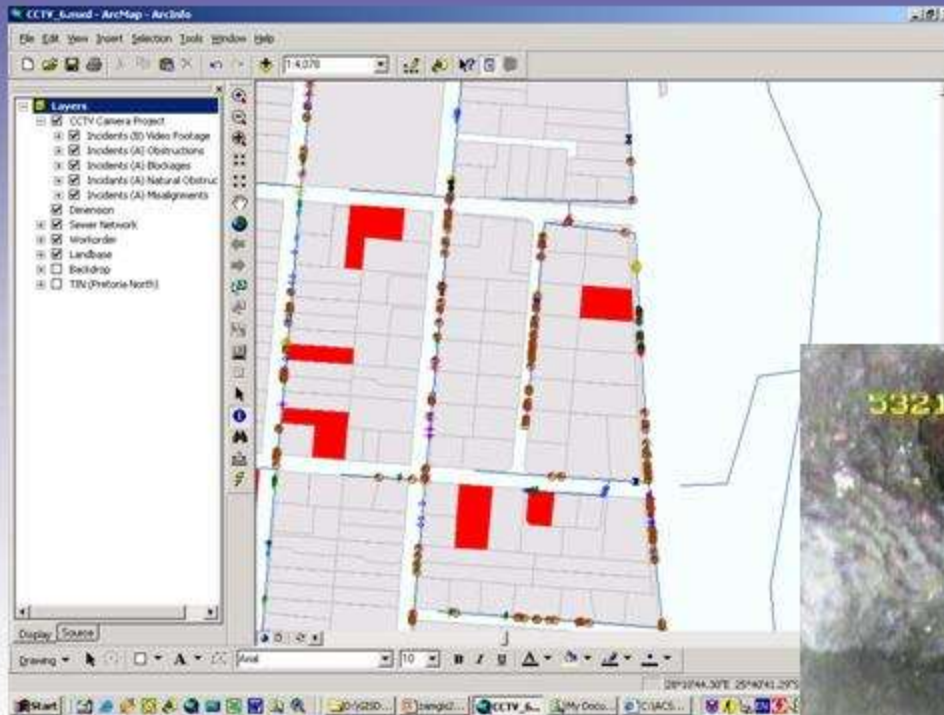


Courtesy: ESRI South Africa & Inroads SA

INCIDENT_N	START	END	DESCRIPTIO	
100017345	01/01/2002	01/01/2002	Grootvlei - Leander No1 400kV Line Trip and	
100017330	02/01/2002	02/01/2002	Hydra - Perseus No3 400kV Line Trip and A	
100017332	02/01/2002	02/01/2002	Midas - Mercury No1 400kV Line Tripped an	
100017407	05/01/2002	05/01/2002	Matimba - Midas No2 400kV Line Trip and	
100017395	08/01/2002	08/01/2002	Droerivier - Muldersvlei No2 400kV Line Trip	
100017437	11/01/2002	11/01/2002	Delphi - Poseidon No1 400kV Line Trip and	
100017443	14/01/2002	14/01/2002	Droerivier - Hydra No2 400kV Line Trip and ARC	Environment - Pollution - Bird - Crow
100017445	14/01/2002	14/01/2002	Droerivier - Hydra No2 400kV Line Trip and ARC	Environment - Pollution - Bird - Crow
100017446	14/01/2002	14/01/2002	Droerivier - Hydra No2 400kV Line Trip and ARC	Environment - Pollution - Bird - Crow
100017448	15/01/2002	15/01/2002	Matimba - Midas No2 400kV Line Trip and ARC	Environment - Foreign Object - Animal - Mo
100017449	15/01/2002	15/01/2002	Athene - Umfolozi No1 400kV Line Tripped OFF ARC	Environment - Weather - Lightning
100017451	15/01/2002	15/01/2002	Matimba - Midas No2 400kV Line Trip and ARC	Environment - Foreign Object - Animal - Mo
100017463	16/01/2002	16/01/2002	Perseus - Leander No1 400kV Line Trip and ARC	Unknown
100017485	16/01/2002	16/01/2002	Hydra - Perseus No3 400kV Line Trip and ARC	Unknown
100017462	16/01/2002	16/01/2002	Majuba - Venus No2 400kV Line Trip and ARC	Environment - Foreign Object - Bird - Bird
100017506	18/01/2002	18/01/2002	Arnot - Maputo No1 400kV Line Trip and ARC	Environment - Weather - Lightning
100017519	22/01/2002	22/01/2002	Bacchus - Muldersvlei No1 400kV Line Trip and AR	Environment - Pollution - Bird - Bird Stre
100017557	23/01/2002	23/01/2002	Hermes - Pluto No2 400kV Line Trip and ARC	Environment - Weather - Lightning
100017586	23/01/2002	23/01/2002	Camden - Normandie No1 400kV Line Trip and ARC	Environment - Pollution - Bird - Bird Stre
100017635	25/01/2002	25/01/2002	Grassridge - Poseidon No1 400kV Line Tripped OFF	Human Interference - Contractor
100017676	29/01/2002	29/01/2002	Duvha - Kendal No1 400kV Line Trip and ARC	Environment - Weather - Lightning
100017700	31/01/2002	31/01/2002	Duvha - Apollo No1 400kV Line Trip and ARC	Environment - Weather - Lightning
100017703	31/01/2002	31/01/2002	Duvha - Apollo No1 400kV Line Trip and ARC	Environment - Weather - Lightning
100017721	02/02/2002	02/02/2002	Grootvlei - Zeus No1 400kV Line Trip and ARC	Environment - Pollution - Bird - Bird Stre
100017719	03/02/2002	03/02/2002	Midas - Mercury No1 400kV Line Trip and ARC	Environment - Pollution - Bird - Bird Stre
100017761	06/02/2002	06/02/2002	Maputo - Edwaleni No1 400kV Line Trip and ARC	Environment - Weather - Lightning
100017778	08/02/2002	08/02/2002	Camden - Incandu No1 400kV Line Trip and ARC	Environment - Foreign Object - Bird - Bird
100017800	08/02/2002	08/02/2002	Camden - Incandu No1 400kV Line Trip and ARC	Environment - Foreign Object - Bird - Bird

Courtesy: ESRI South Africa & Inroads SA

City of Tshwane CCTV Camera Project



Courtesy: ESRI South Africa & Inroads SA

Statistician

What does a statistician do?

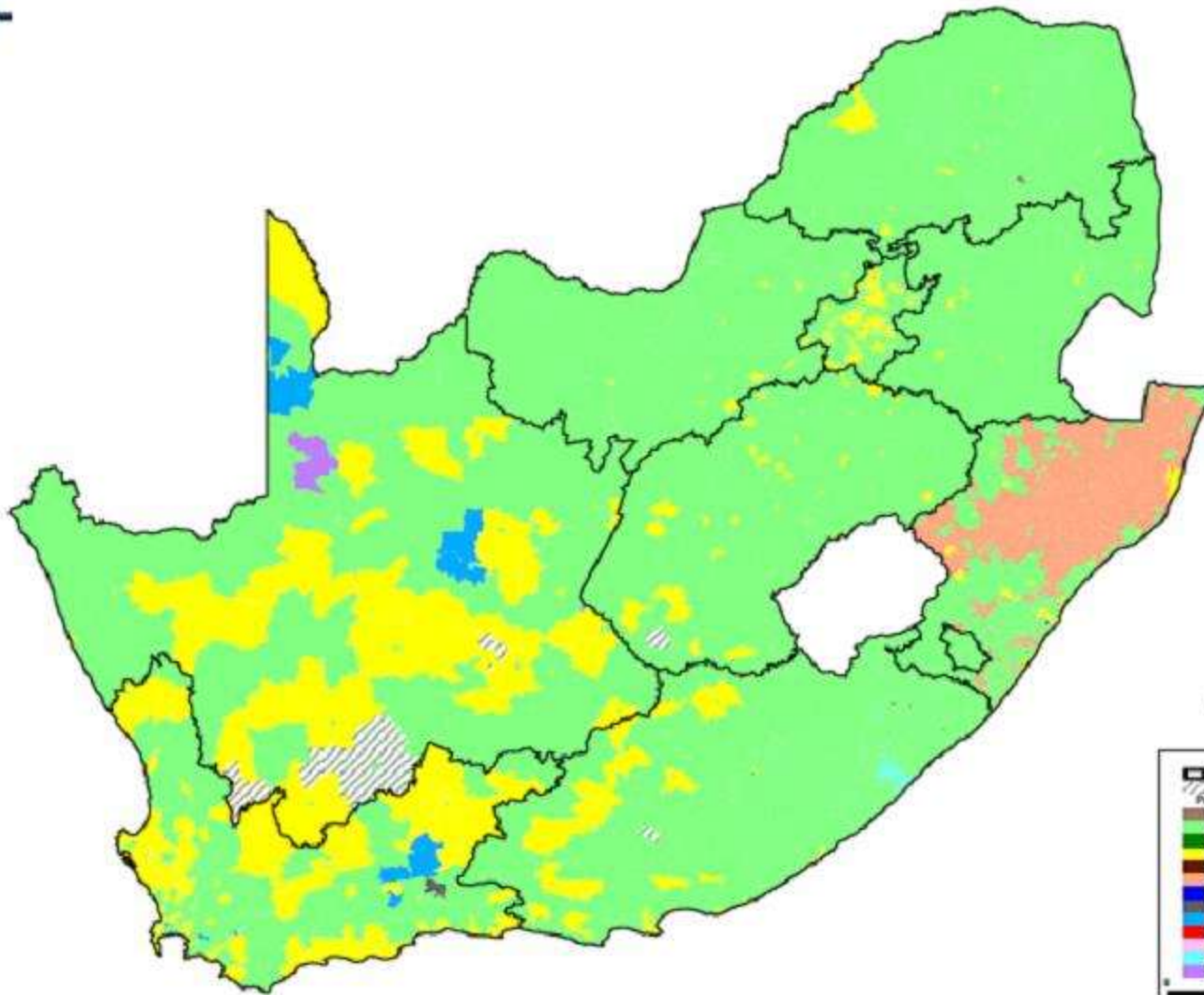
- Compile statistical data
- Interpret numerical results into meaningful terms
- Refine methods of analyzing data

Where are they employed?

- STATSSA
- Municipalities
- HSRC

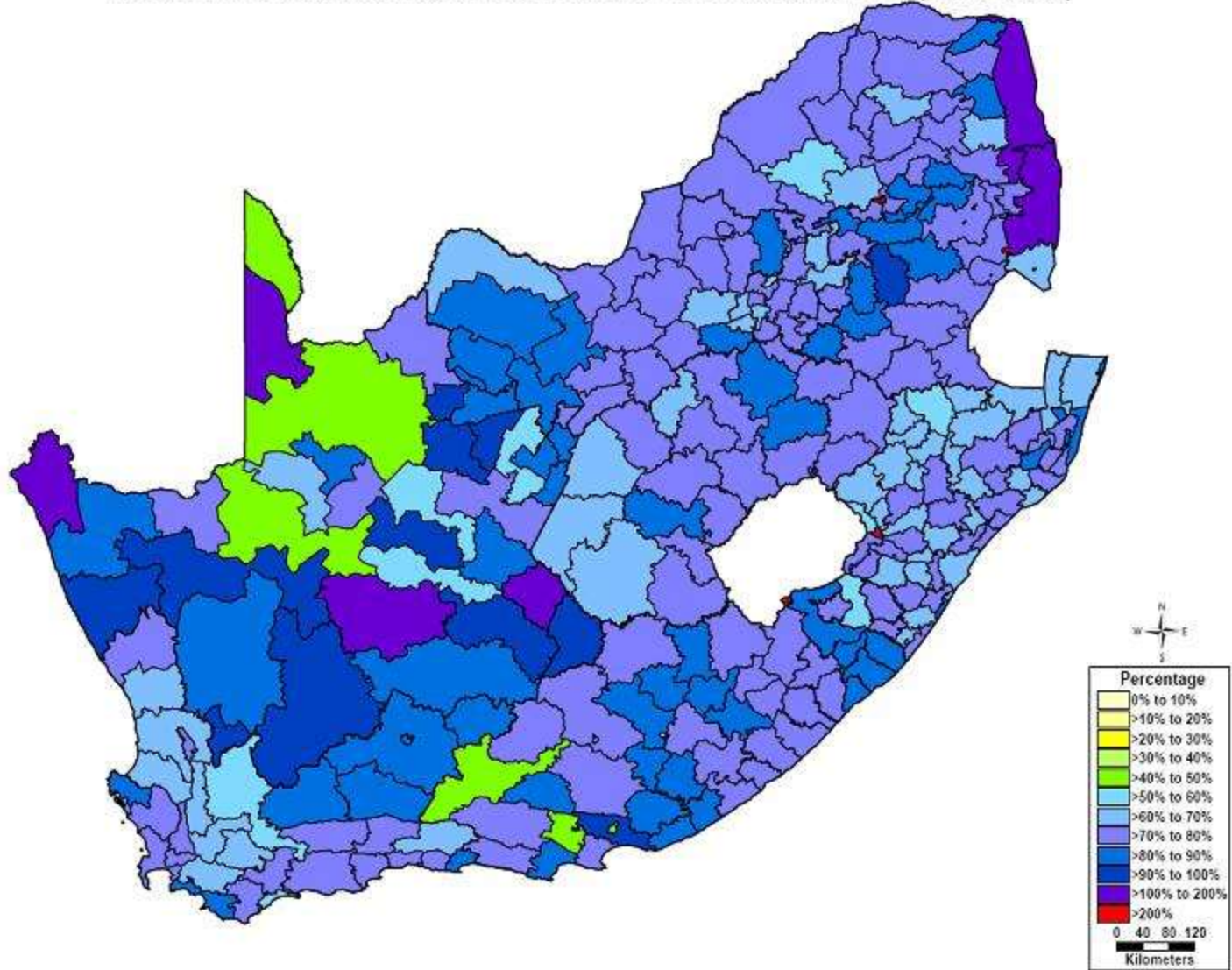
SOUTH AFRICA - LEADING PARTY BY VOTING DISTRICT

2004
ELECTIONS



Courtesy: ESRI South Africa & Inroads SA

SOUTH AFRICA: VOTER REGISTRATION BY MUNICIPALITY (20,674,926)



Courtesy: ESRI South Africa & Inroads SA

Geographic Information Systems

What can you do using GIS software?

- Create maps and reports
- Compile geographic data from a variety of sources
- Analyze spatial data for geographic statistics.
- Design and update database
- Enter new map data
- Track changes
- Analyze geographic relationships
- Prepare metadata and other documentation.
- Present information to users and answer questions.
- Retrieve stored maps.
- Model scenarios before physical implementation.