

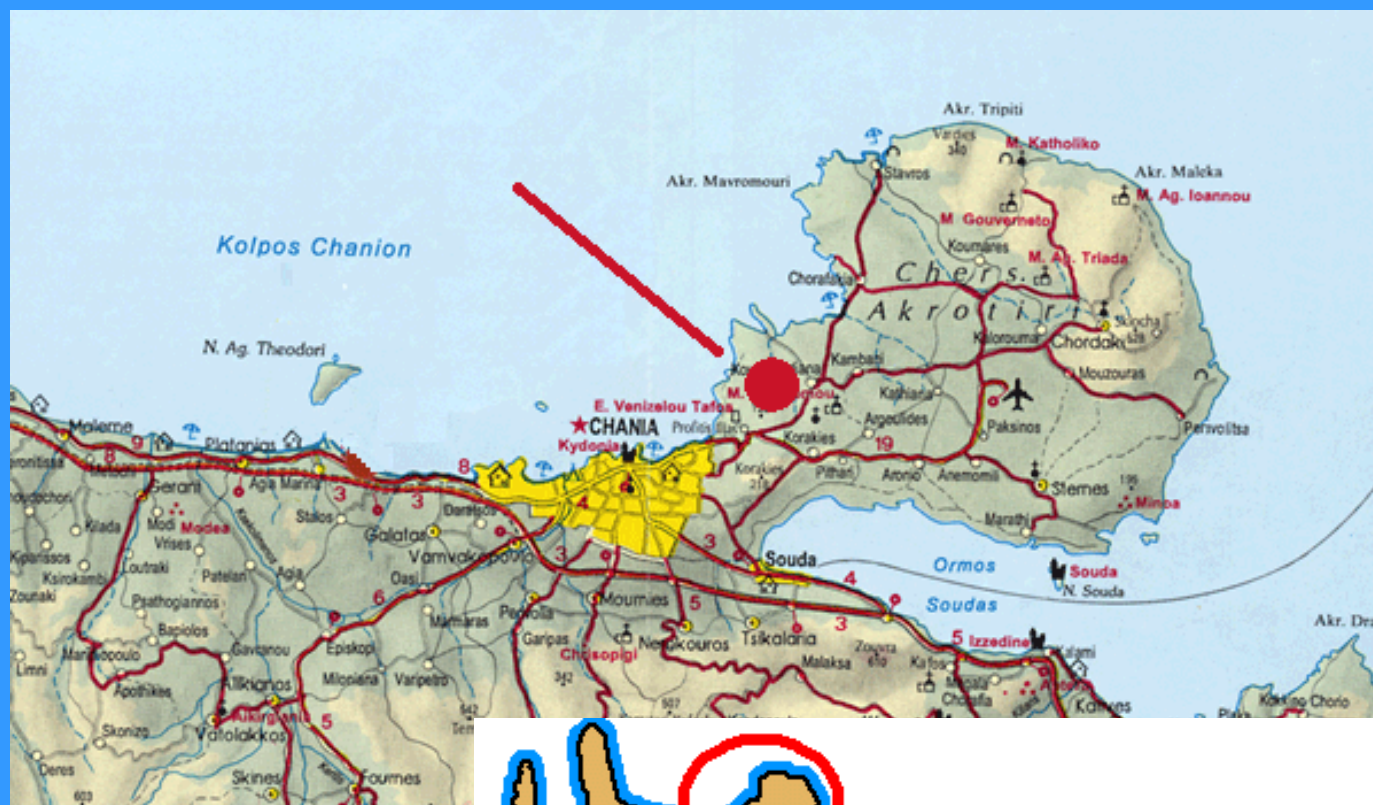


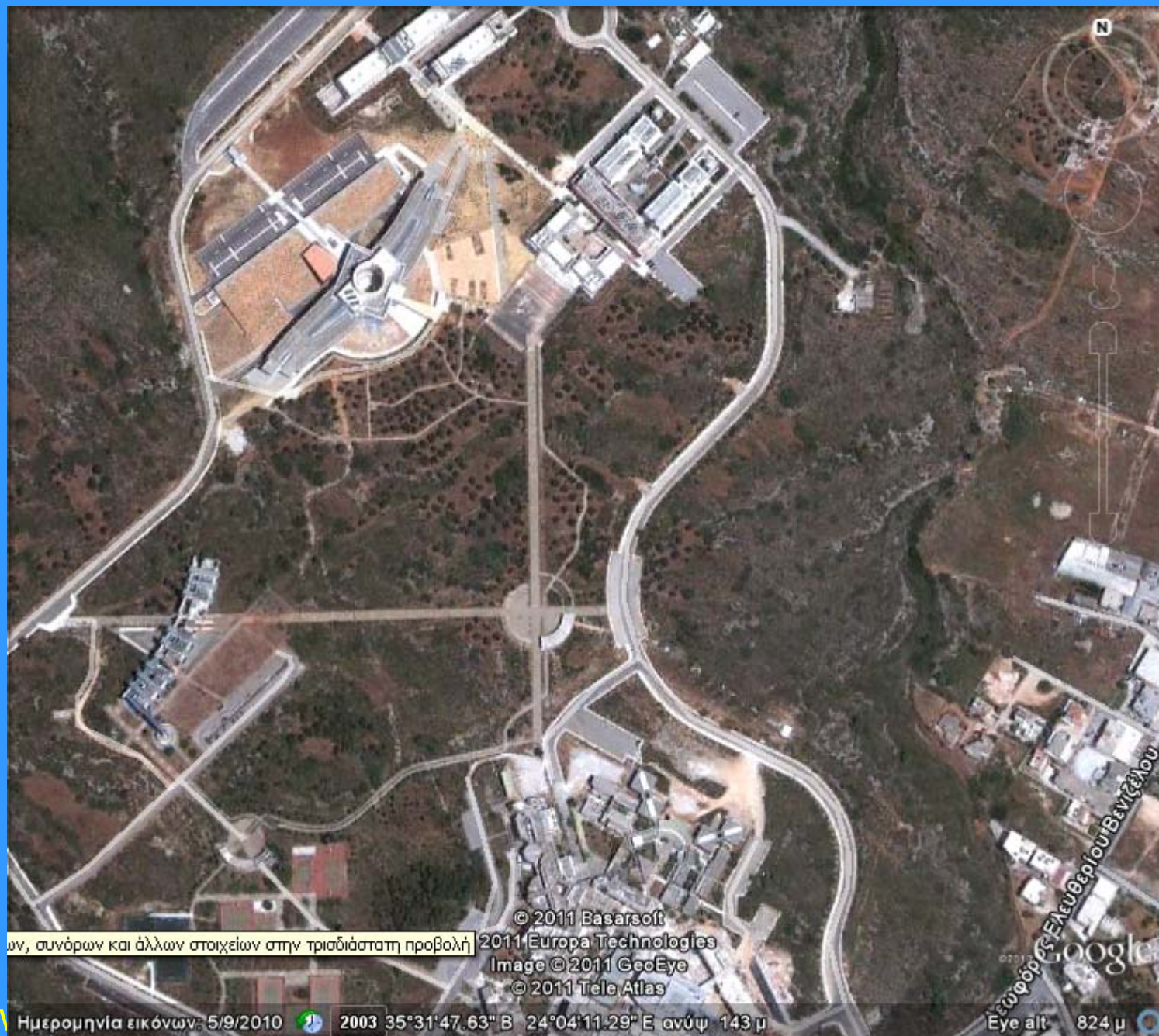
The Department of Mineral Resources Engineering at TUC in support of Oil & Gas exploration

Prof. Z. Agioutantis
Department Head



Crete - TUC





<http://>



<http://>



A view of the facilities



[http](http://)



A view of the facilities



<http://>



A view of the facilities



[http](http://)



Vital Statistics

- Staff
 - 20 Professors
 - 18 Scientific Personnel
 - About 10 Teaching Assistants
 - Over 10 Researchers



Vital Statistics 2

- Student Enrollment
 - about 80 undergraduate per year
 - about 15 graduate per year
- Student Graduation
 - about 40 graduate per year



Department Organization

- Division of Exploration and Positioning
- Division of Mining Technology
 - Mining Technology Labs and Units
 - Petroleum Technology Labs and Units
- Division of Mineral Exploitation



Department Organization

- Division of Exploration and Positioning
 - Inorganic and Organic Geochemistry and Organic Petrography Lab
 - Applied Geophysics Lab
 - Petrology and Economic Geology Lab
 - Geodesy and Geomatics Lab
 - Geostatistics Unit
 - Economic Geology Unit



Inorganic and Organic Geochemistry

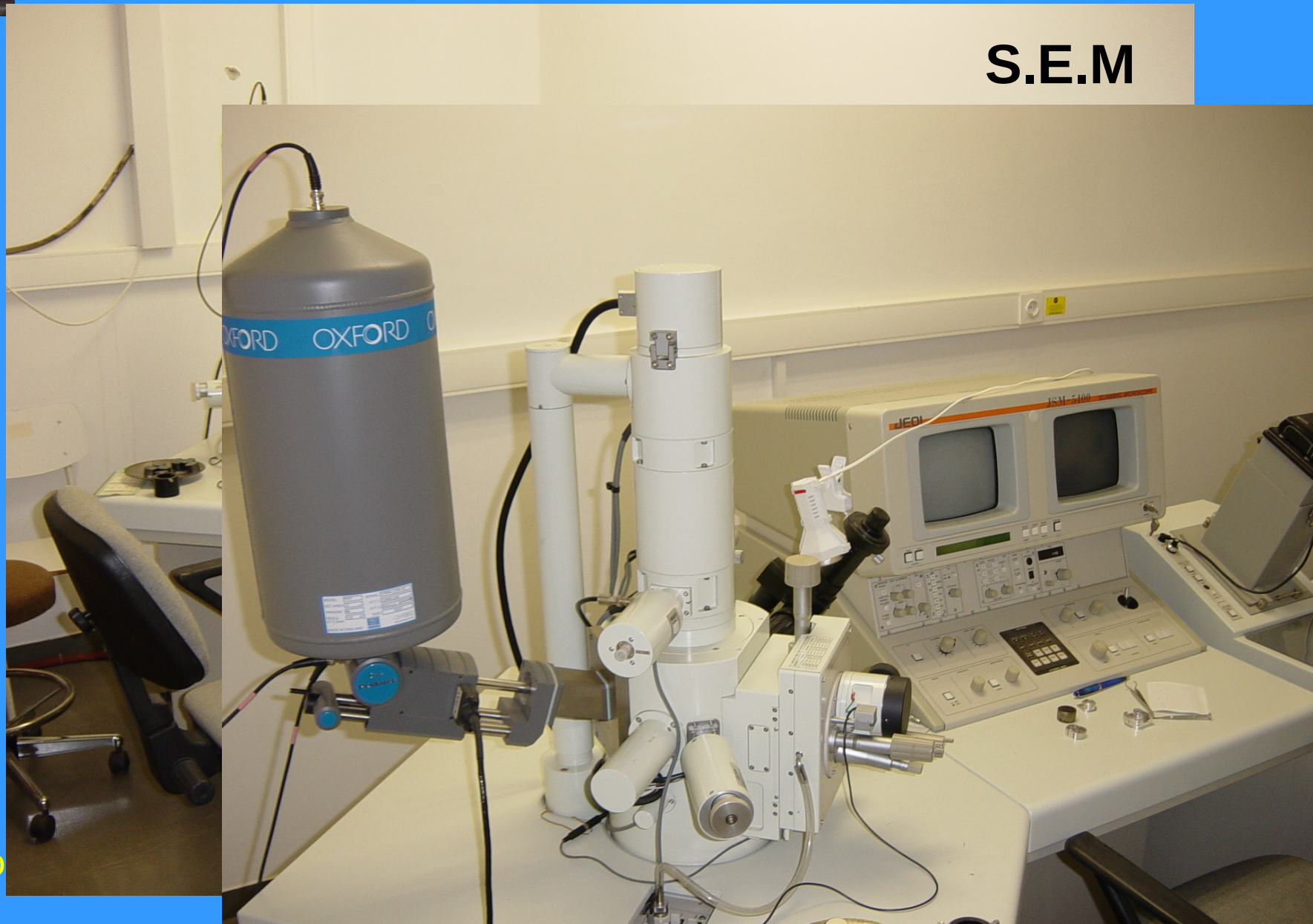


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Petrology and Economic Geology

S.E.M



<http://>



Geodesy and Geomatics



GPS Reference
Station



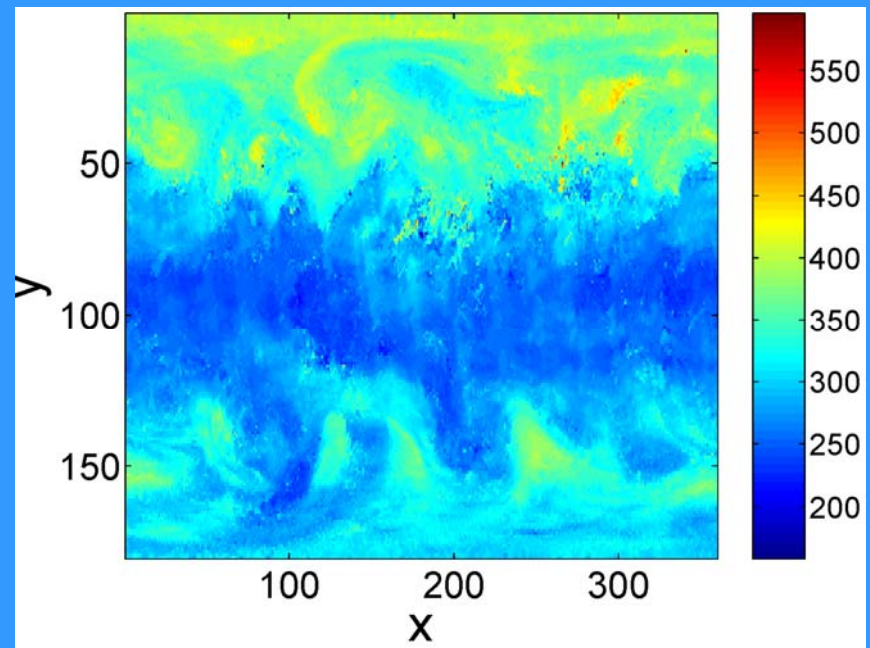
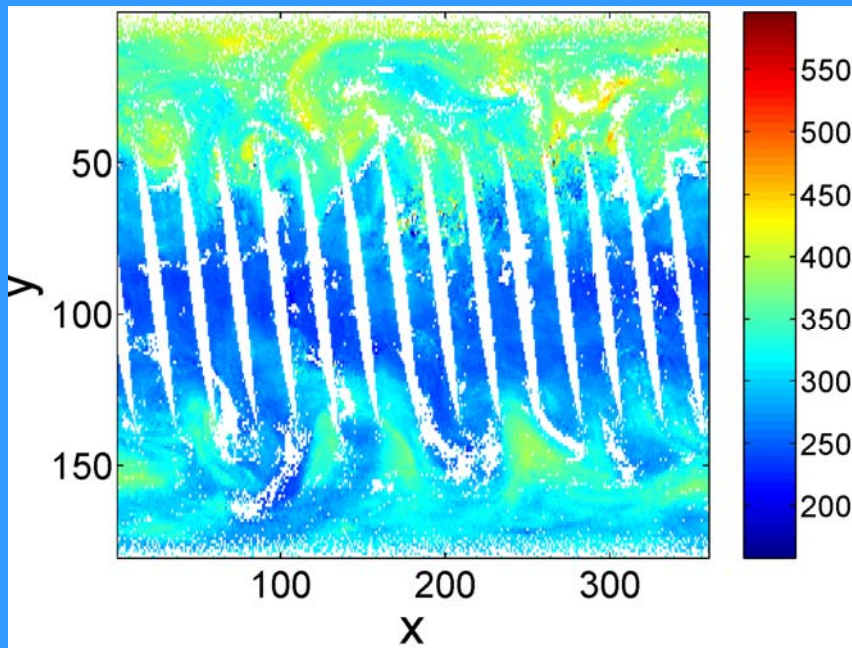


Geostatistics Unit

Example: Satellite data

Daily column ozone map with missing data due to limited coverage. *Source: NASA, Giovanni online data system*

Reconstructed ozone map with *Directional Gradient – Curvature* method



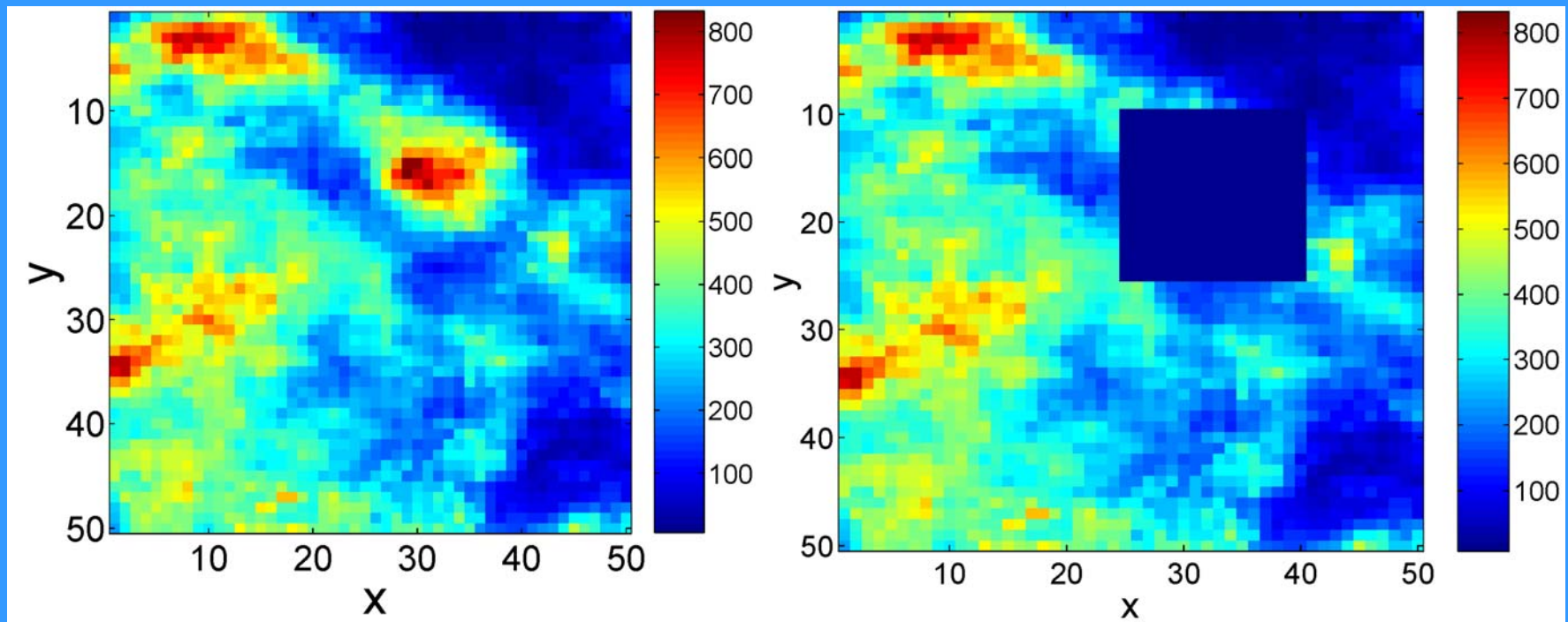


Geostatistics Unit

Example: Remote sensing data

Rainfall data from Indonesia, January 2007. *Source: NASA, Giovanni online data system*

Block of data artificially removed to create a gap over a hot-spot area



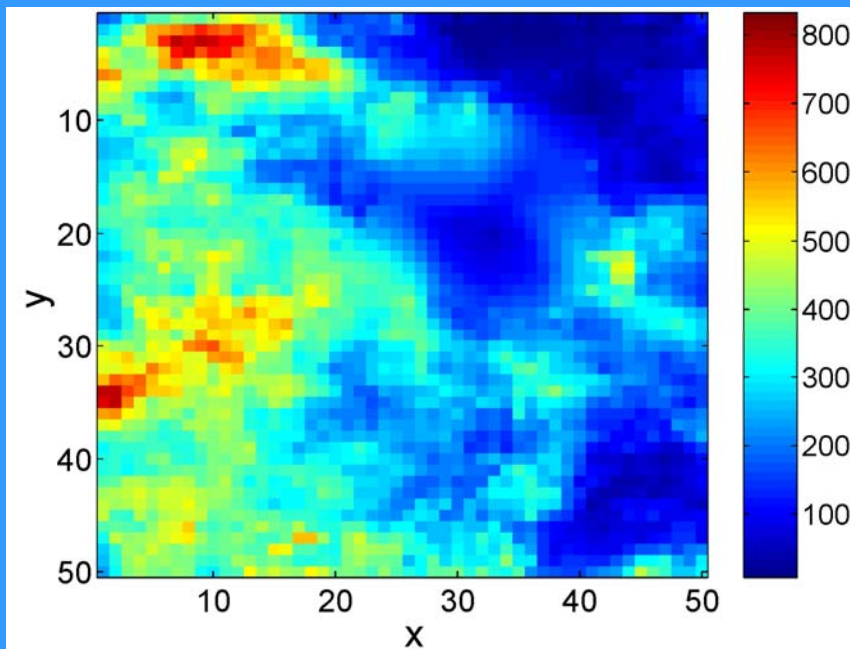
Žukovič and Hristopulos, *Phys. Rev., E*, 2009; *Int. J. Appl. Earth Obs. Geoinformation*, in review
<http://www.mred.tuc.gr>



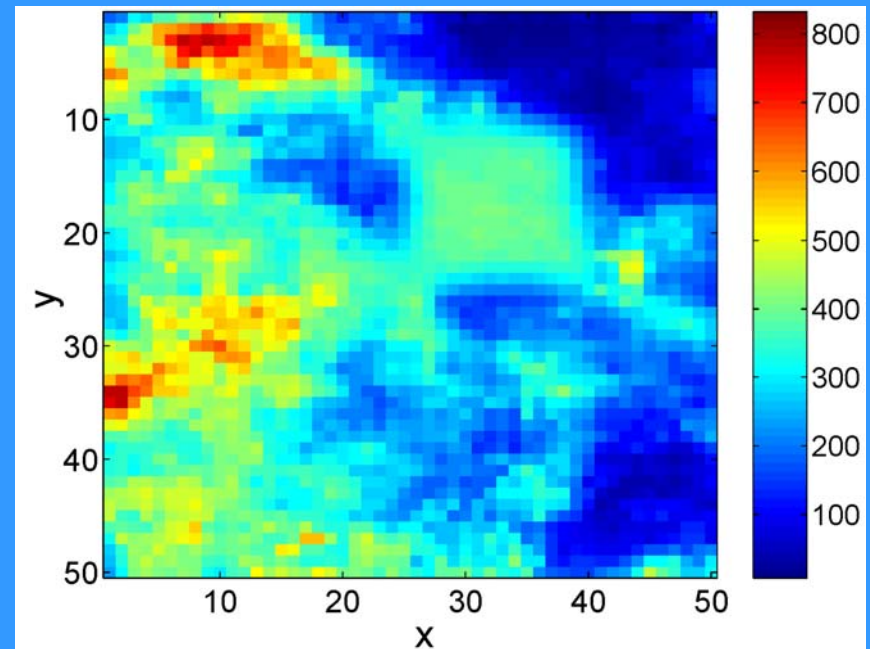
Geostatistics Unit

Example: Remote sensing data

Data reconstruction using
Universal Kriging



Data reconstruction using *our*
Gradient – Curvature Monte
Carlo algorithm





Department Organization

- Division of Mining Technology:
 - Engineering Geology Lab
 - Rock Mechanics Lab
 - PVT and Core Analysis Lab
 - Mine Design Lab
 - Drilling Engineering Unit
 - Chemistry and Technology of Hydrocarbons Unit
 - Quality Control – Health and Safety in the Mineral Industry



Drilling Engineering Unit

Flow Loop





Laboratory of Engineering Geology



[http](http://)

Rock Mechanics Lab



[http](http://)

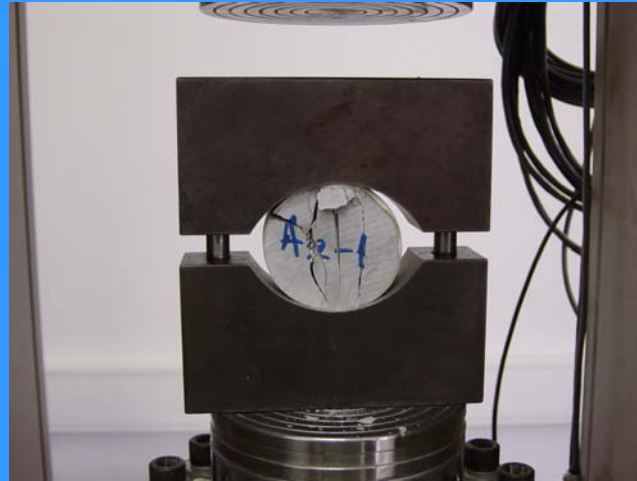


Specimen Preparation, Rock Mechanics Lab





Rock Testing, Rock Mechanics Lab





Rock Testing, Rock Mechanics Lab

- Measurement of mechanical properties
- Stability analysis of structures in geomechanics (tunnels, slopes, wellbores, etc).
- FEM solutions of stress-strain problems in geomechanics.





PVT and Core Analysis Lab



<http://www.utexas.edu>



Department Organization

- Division of Mineral Exploitation:
 - Applied Mineralogy Lab
 - Ceramics and Glass Technology Lab
 - Coal Gasification Lab
 - Ore Processing Lab
 - Management of Mining Waste Unit



Applied Mineralogy Lab

2 XRD
units





Typical Equipment

- XRF, XRD, SEM
- Atomic Absorption
- Load Frames (Rock, Concrete Testing)
- Climatic Chamber
- Field / Lab Seismographs
- GPS units





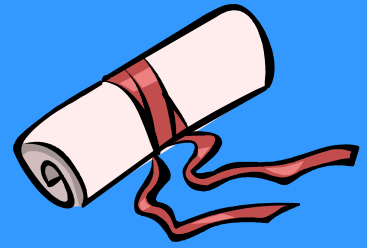
Ties with the Industry

- Ties with the industry are very good
 - Every year about 50 students get summer jobs with the industry (mining, industrial minerals, geotech works, other)
 - Small percentage of our graduates are unemployed (a large number is employed in other industries, however)





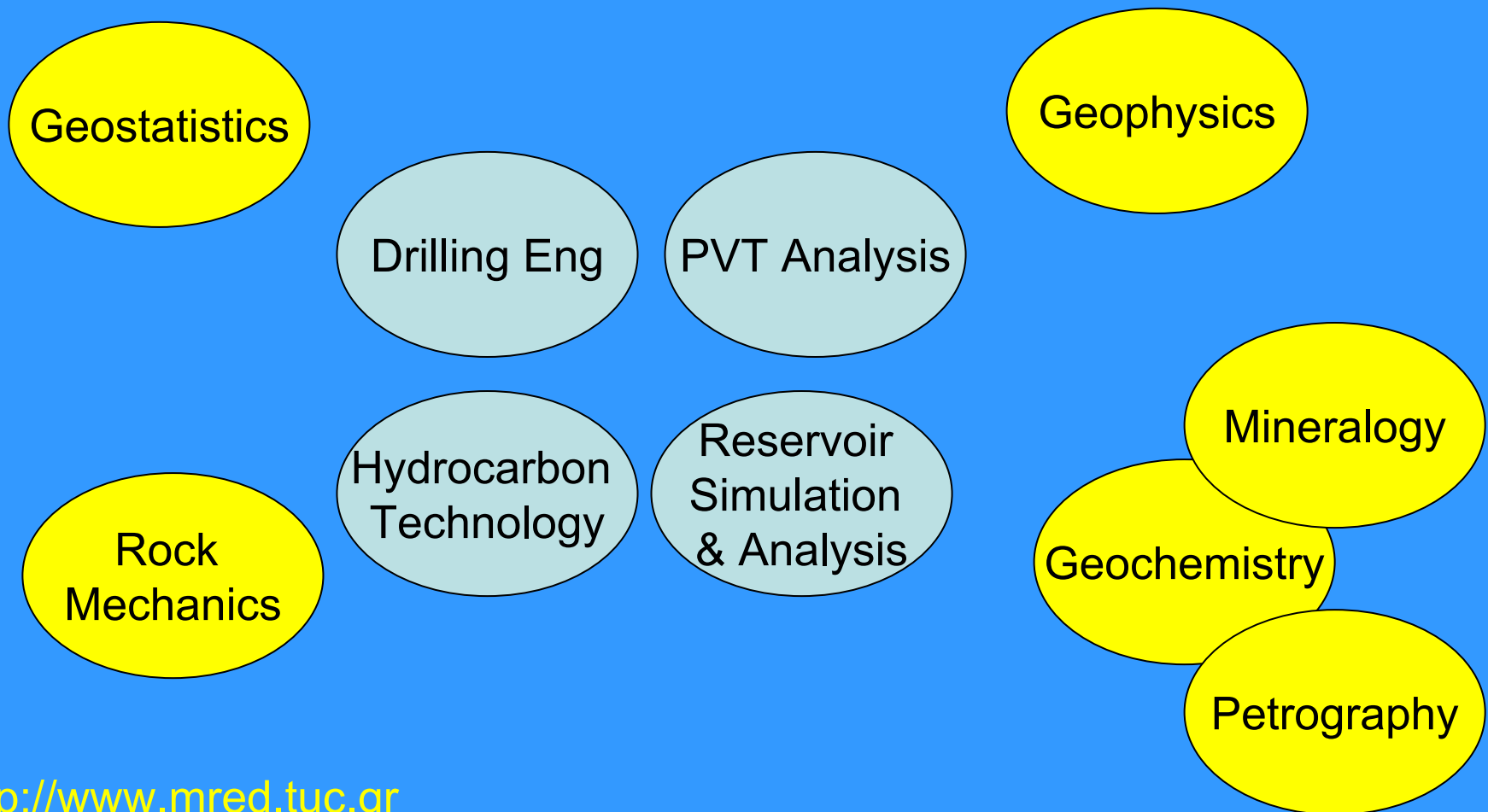
Ties with Peers



- Cooperation Agreement with the Petroleum Engineering Department of the University of Stavanger in Norway.
- Research collaboration with Heriot-Watt University, Robert Gordon University, University of Houston, and the Canadian Geological Survey.
- Research collaboration with other institutions such as Virginia Tech, Universite Laval, etc.



Overall Picture





Thank you



<http://www.mred.tuc.gr>

