Workshop on Computer Applications in Geology

Convened by

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A workshop on Computer Applications in Geology was held at Williams College on January 25 and 26, 1991. The workshop concentrated on programs in Geophysics, Oceanography, Seismology and Sedimentation. The workshop was held in the Computer Science Laboratory in the Bronfman Science Center at Williams College. The laboratory is equipped with 20 Apple Macintosh II si computers with one of the monitors connected to an overhead projector at the front of the room. The computers were connected to an Appletalk Network so that they could share programs and data files. While the instructor was explaining a program using the overhead projector , the participants worked on their own copies of the program through the network.

Six faculty and fourteen students from eight colleges and universities participated in the workshop. The workshop was directed by Bill Fox of Williams College in cooperation with Bob Burger of Smith College and Glenn Kroeger of Trinity University. The colleges represented included Amherst, Beloit , Franklin and Marshall, Smith, Whitman and Williams along with Tbilisi University, Georgia, U.S.S.R. and Trinity University.

The Workshop started out on Friday morning, January 25, with Professor Fox presenting a computer program entitled BEDFORMS 2.0 for simulation and animation of bedforms and cross-bedding. The program was written by David M. Rubin of the U. S. Geological Survey in Menlo Park, California and published by S.E.P.M. in 1987 . The students worked thorough a series simulated bedforms starting with a simple sine curve and finishing with complex 3-dimensional models of climbing ripples and trough shaped cross beds. Gia Khazaradze who is visiting the the Geology Department at Williams from Tbilisi State University presented program SHAPE which he developed with Dr. Fox at Williams . The program is used to compute and plot maximum projection Sphericity of beach and stream pebbles on triangular diagrams.

After a brief coffee break, the group went over to the wave tanks in the Geology Department to see a demonstration on wave shoaling and refraction. After the Demonstration, they returned to the computer lab to run computer simulation models of wave refraction. After starting with simple geometric models of straight and curved shorelines, actual shorelines from Cape Cod and Cape Ann, Massachusetts; Monterey Bay, California; and Clearwater, Florida. The program were developed for I.B.M. computers at Williams College and modified for the Macintosh by Glenn Kroeger at Trinity University.

On Friday afternoon, Ann Puffal of Smith College presented a aeries of Geophysics programs developed by Bob Burger and his son Douglas on a Keck Project ion the summer of 1988. The programs were developed for reflection and refraction seismology for exploration geophysics of the shallow subsurface.The students were able to work with the geophysical data and model the subsurface topography. Several Hypercard programs from Continental Drift to Trilobites were also available for demonstrations in the workshop.

On Saturday morning, Glenn Kroeger explained how seismic energy is radiated from earthquakes. He demonstrated synthetic waveform modeling that is used to determine movement along fault planes from first motion studies. He also demonstrated the latest programs that are available for plotting contour maps on the Macintosh. After lunch, he gave a talk on the future developments in personal computers