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*IC 12-64*  
*Training Program*

**INTEROFFICE CORRESPONDENCE**

**TO:** Chief, EROS Data Center  
**THROUGH:** Chief, Applications Branch *DR*  
**FROM:** Principal Applications Scientist,  
Agriculture/Soils  
**SUBJECT:** First Latin American Remote Sensing Course;  
Argentina, 1976

**DATE:** December 9, 1976  
**RE:** OAB12-43  
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During the period 2-20 November 1976, I assisted in the presentation of a four-week training course in remote sensing applications conducted by personnel of EROS, NASA, and the Argentine National Commission for Space Investigations (CNIE). The course, the bulk of which was taught in Buenos Aires, was given under the auspices of CNIE to 34 Latin American students representing nearly all earth resource disciplines.

Considerable time was spent by Jack Rinker and myself prior to the course in assembling workshop exercise materials (including images, overlays, and written material) and shipping these to Argentina. One negative of each image and one copy of the written material was sent. The reproduction costs of multiple copies was borne by CNIE. The bulk of the exercises and examples used were those that had been presented in the Sixth International Training Course at the EROS Data Center, which had been attended by H. Luis Pascual, the Director of the Argentine Course, and Natalia Marlenko, who assisted him. Both are employed by CNIE.

The first week of the course involved an introduction to the basic concepts of remote sensing data acquisition and analysis, with the emphasis on manual interpretation procedures. Subjects covered included cameras and films, the electromagnetic spectrum, the Landsat system, stereoscopy, principles of image analysis, and basic photo geometry. A number of practical exercises and quizzes were given. This week was taught in nearly equal amounts by CNIE personnel, Charles Paul of NASA, and myself.

During the second week, several days were spent on applications of remote sensing. Doug Carter covered the fields of geology and hydrology and I taught the sections on vegetation (agriculture, range, and forestry) and soils. The applications instruction included numerous interpretation exercises which were done by the students and corrected by the instructors. Among the exercises were those on mineral exploration, groundwater exploration, regional soils mapping, crop identification, rural land use change, and drainage delineation. The last 2½ days of the week were spent on an analysis of a Landsat scene of the San Luis area,

approximately 700 km west of Buenos Aires. The students were grouped into four-man multi-disciplinary teams by the instructors. Each team prepared overlays of the scene for geology, landform, drainage, vegetation, and soils, and were asked to analyze this data base as it could be used in the planning of an irrigation program in the test area. They were warned that they would later be required to write a report on their findings.

The third week was spent on a field trip to the San Lu s area to ground-check the area which had been interpreted. The class was flown from Buenos Aires to San Luis in an Argentine Air Force plane, and a chartered bus was used for the actual field trip travel. Instruction during the last half of the second week and the third week was conducted jointly by Jack Rinker, Doug Carter, and myself.

I returned to the U.S. at the end of the third week, as did Doug Carter. The fourth week, conducted by Rinker, Pascual, and Marlenko, was spent in preparing team reports on the San Lu s scene and round-table discussions. A detailed discussion of the fourth week appears in Jack Rinker's trip report.

I felt, as did the CNIE people, that the course was a definite success. In my opinion, the class, as a group, was the best that I have encountered in any of the EROS courses, either domestic or foreign, in terms of background, enthusiasm, and attentiveness. All of the materials for the course were ready on time and of acceptable quality, and the logistics went smoothly. Lu s Pascual, in particular, and Natalia Marlenko, are to be congratulated on the preparations and arrangements for the course. Especially considering the logistical problems that they faced, they did an amazing job. It should be mentioned that they were given excellent support and encouragement by Comodoro S nchez Pe a, President of CNIE. All of the students with whom I discussed the subject were of the opinion that they had gained much valuable training in the course and that it was of a sufficiently practical nature that they would be readily able to put it to use in whatever their job might be.

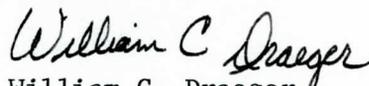
As for the arrangements concerning my own travel, lodging, etc., I had no complaints whatsoever. Advance travel plans were made through OIG, and I thank them for their help. Upon my arrival in Buenos Aires, all necessary arrangements were made by CNIE. Everyone with whom I came in contact was most hospitable and helpful.

When I departed, officials of the CNIE discussed their desire to conduct a second course, similar to the first, probably sometime in mid-1977, and inquired as to the possibility of continued assistance from the EROS Program. In my opinion a second course would be desirable, particularly as they expressed a hope of enrolling students from a

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larger number of Latin American countries (they already have 20-25 prospective students for whom there was no room in the first course). The second course will certainly be easier in that CNIE now has nearly all of the materials necessary for such a course; they have experienced one course and so can anticipate problems which might arise; the San Luis area, if it is used as the test site, is familiar to the instructors; and several students from the first course could assist in the instruction of the second. Certainly U.S. assistance could be reduced.

As for benefits to the EROS Program which accrued from participation in the course, the most obvious is experience gained in foreign instruction and international goodwill. But an important plus is the development of a cadre of people in Latin America who can use Landsat data and who will provide a rationale for the continuing availability of earth resources satellite data (Argentina is currently planning to establish a Landsat receiving station, for example). Finally, in conjunction with the team problems and field trip, I gathered ground photos and ground truth materials which along with the Landsat images of the San Luis area will form the basis for several workshop exercises and instructional materials to be used in courses conducted at the EROS Data Center, which are badly in need of good non-U.S. examples.

  
William C. Draeger

cc: JMDeNoyer  
WDCarter  
FJEngel, Jr.  
HFleming  
HLPascual  
JNRinker  
GATHorley  
WAFischer