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Suggestions for the study of Nikopolis in its changing context

The archaeological investigation of Nikopolis is a moumental undertaking to consider. I am honored to be present at this symposium where preliminary discussions are taking place that may result in a project of such major significance for all of us who study human societies, their interactions, and their evolution. And I am honored by this opportunity to comment on some approaches that might be taken to a project of such potential magnitude — honored, but at the same time burdened by the concomitant responsibility to try to be sure that my suggestions to you who will form the project are both worthwhile and practical, and that, above all, they will not lead, if followed, to a loss of the very understanding that you are seeking.

The last concern that I just mentioned is similar to, and in fact is prompted by, what we might call the archaeologist's nightmare. It is familiar to every archaeologist, and should, I believe, be impressed upon all students of archaeology long before they ever engage in fieldwork. The setting for that nightmare lies in the recognition that a particular archaeological excavation can be conducted only once; the horror that follows is that the archaeologist might err so grievously in the concept or process of excavation that whatever knowledge might have been gained is irretrievably lost. "Irretrievably": a powerful, disturbing word. The archaeologist must understand that no one else will ever again have the opportunity to recover and analyze the cultural remains and their context in an excavation he or she has conducted or documented inadequately or improperly. You cannot dig the same trench twice. It is with this deep concern in my mind, bolstered by a quarter century of experience in the field, that I venture to offer the following suggestions.

Archaeological excavation is not only filled with risks, but is time consuming and expensive. And the recovery of Nikopolis, we may be certain, is a task that will require generations of scholars. It is, therefore, incumbent upon anyone who proposes to carry out such an excavation to demonstrate in advance the potential significance of the results. The aim of the investigation must be of such significance as to justify the potential – perhaps I should say *inevitable* – loss of information that is at the heart of the archaeologist's nightmare that I described above.

The significance of the research must also justify the human and financial resources that will be required. Simply uncovering Nikopolis in order to uncover Nikopolis, or to find more works of art to pack into already overcrowded museums, or to answer a broken series of specific questions on unrelated topics would be poor reasons to commit those resources. The lands of the Mediterranean littoral are dotted with examples where just such approaches were employed, their names too familiar to require comment.

Barbara McNairn commented recently that V. Godron Childe, a generation ago, "was using the archaeological record in a new and exciting fashion as a testing ground for social theory".[1] That is a concept worth keeping in mind as we consider what we might learn from the remains of Nikopolis. It could help us direct the focus of research on matters of special significance to us all. One general aim of major significance not only for the cultural history of Greece but also for comparative social history, and one that might be pursued here, would be the study of the changes in Nikopolitan society throughout time. I mean a study aimed not merely at identifying the changes, and dating them — although those too are required — but a study aimed specifically at understanding *why* those changes occured. Of course we want to know when the walls of Nikopolis were built, and when and where the earliest Christian basilicas were constructed. But is it not of greater significance to know *why* they were built in the manner they were, and *why* at the particular time? I suggest to you that it is no longer sufficient for us merely to recover another early Christian church, or a Roman bath, even if we date them this time, without aiming at integrating their forms, functions, art, symbols, and other aspects of significance with those of the other remains of Nikopolis to recreate an intelligible, reasonably comprehensive, pattern of culture.

Once a broad general aim, such as the one I have suggested, has been established, the next step would be to define a number of specific problems to be addressed, the solutions of which would eventually lead to the comprehensive understanding at which the overall project is aimed. A few examples follow in line with the concept suggested a moment ago. What were the demographic effects on the region of the founding and early development of Nikopolis? What was the economic basis of the relationship between the city and its region? In what ways did the urban development of Nikopolis affect the regional environment? What kinds of social responses were occasioned by the increasingly xeric climate of SE Europe during Late Antiquity? How extensive was trade in essential and luxury commodities, as compared to local production (including foodstuffs)? What were the principal natural resources of the region and how extensively were they exploited? What were the principal causes of the eventual demise of urban life at Nikopolis: social conflicts, civic discord, environmental change, or complex combinations of these and other possible factors?

Posing these and other related qustions, as well as the subsets of problems they would entail, will make it possible to determine the kinds of staffs you will require; will guide you in establishing criteria to judge the merits of the many proposals that will doubtless be made to you; and will make it possible to set out reasonable schedules of coordinated research.

These are, I believe, critical early steps. To take them, however, an authoritative body must first be formed. A committee of thoughtful men and women, committed to the study of Nikopolis and its region through time, could assemble an advisory council, perhaps international, to help in the development of the research design and in setting guidelines for the inception of the project. The Committee would have the responsibility of overseeing the entire project, including the hiring of an overall Director; reviewing the budget; recommending permits for research; seeing that the research is coordinated, carried out properly, documented in a predetermined manner, and published; and other such matters.

Other early steps by the Committee, which could be facilitated by an international advisory council, might include the following.

1. The establishing of a conservation laboratory with a staff and equipment to deal with the conservation of walls, mosaics, and frescoes. The need, commented on by several of the speakers at this symposium, is clearly urgent. The staff would be charged with an ongoing program of conservation and protection of the monuments. A laboratory capable of cleaning and preserving smaller, movable artifacts should be added before major excavation begins.

2. A program documenting all visible structures with appropriate photographs and drawings would immediately, and at little cost, vastly improve our knowledge of Nikopolis. This program might be accomplished by inviting institutions that regularly teach courses in archaeological drawing and surveying to hold field classes where the students, under the guidance of their professors and the Director of Nikopolis, might draw the required plans, elevations, and sections.

3. A survey both of the natural resources and the cultural remains of the region will be required if Nikopolis is to be studied in its regional context. What is more, the ancient topographic profile, including the changing coastlines, must be determined, along with climatic changes and the palaeoecology generally. Remote sensing and computer-assisted analysis, as we shall see, make a regional survey a fully practical possibility.

4. Geophysical prospecting and other types of remote sensing might provide at least the general outlines of a city plan, and could well provide more. These techniques would also provide additional information useful in determining excavation strategy.

You will note that all my suggestions so far concern activities other than excavation. Neither my opening remarks, however, nor my ommision of excavation from the list of what seem to be the most useful first steps, should be taken as a negative assessment of the value of excavation — only a high estimation of the risk, time, and cost involved. At Nikopolis, of course, excavation will be essential in the resolution of many of the problems. But what I want to do here is to emphasize (1) that there is much that is important that can be done with no, or little, excavation, and (2) that the risks entailed in excavation can be minimized by careful prior deliberation and preparation.

I have also so far said little about methodology and techniques. There is time here only to remind you that technologies developed in a variety of disciplines are constantly providing archaeologists with new tools. Some are especially appropriate for Nikopolis. I would mention, for example, the radiocarbon dating of lime mortar that can help date not only structures at Nikopolis, but phases of remodeling and rebuilding of those structures (2).

I have already referred briefly to geophysical prospecting and remote-sensing. These techniques are quite different from standard protography, which has already proved itself to be essential in the field, and which continues to develop. The bipod (Fig. 1) developed by Julian Whittlesey was of enormous value to us at Stobi in the documentation of mosaics (Fig. 2) and impressions of opus sectile in mortar beds, by providing photographs on a vertical axis making possible photogrammetric reproductions. Cameras suspended from tethered balloons make similar phrographs possible from still greater elevations, (3) so that whole units may be photographed at once, from mosaics to entire buildings, like the Episcopal Basilica at Stobi (Fig. 3), to whole sections of a city, like the Roman Forum and Temple Hill at Corinth. (4) The value of aerial photographs was demonstrated in the presentations of several speakers in this symposium and I will not dwell further on the matter, except to suggest that photographs from a tethered balloon would be useful at Nikopolis.

The space age has brought with it many new technologies, although conventional photography still produces spectacular results, as you may see in a color protograph of earth from a satellite. Landsat, however, carries remote sensors that can detect images not visible to the eye and that conventional photography cannot record. That is, the visible portion of the electromagnetic spectrum is, as shown in Figure 4, a very small part (= "visible light") of the entire spectrum; compare its scale, for example, with that of infrared. The Landsat sensors, then, are capable of recording images day or night in several bands of the electromagnetic spectrum that we cannot see. The images are made up of spectral units of specific

2. *Robert L. Folk* and *Salvatore Valastro, Jr.*, "Successful Technique for Dating of Lime Mortar by Carbon 14: "Journal of Field Archaeology 3 (1976) 203–208.

3. See, e.g., *J. Wilson Myers*, "Balloon Survey Field Season, 1977": Journal of Field Archaeology 5 (1978) 145–159.

4. *J. Wilson* and *Eleanor Myers* recently photographed the site of Ancient Corinth from a tethered balloon.

sizes that can be given a numeric value and assigned distinctive colors so that they can be recreated by a computer, displayed on a computer screen, and then photographed. Such a photograph might show different types of vegetation and other landcover. This digitizing of images and enhancement with color make possible a great variety of computer-assisted calculations. It would be a simple matter, for example, to determine the exact amount of acreage planted with different crops by having the computer count the spectral units of each color, which it can do almost instantaneously.

Geologists, geographers, and other scientists have for several years been making effective use of this new technology. They are able, again with the aid of computers, to integrate several planes of information on topographic profile, soil types, geology, etc., and to display the integrated information on a computer screen. Once that is done, it is possible to determine, for example, ideal routes by creating criteria of one's own choosing (avoiding large cities, lakes, or the need to create tunnels through mountains).

Archaeologists have been slow to avail themselves of this new technology, but I think you can understand, even from the few examples just cited, that there are a number of possible applications in archaeology. The "ideal routes" of the preceding paragraph, for example, were determined by using a computer program, "Corridor Analysis", which offers an approach with great potential for predictive modelling of ancient land routes.

With sensors, it is possible to detect otherwise invisible trails, like boat wakes recorded hours after the boat that made them had passed (Fig. 5). A similar application of the technology made it possible two years ago for Tom Sever, an archaeologist with NASA's Earth Resources Laboratory, to detect prehistoric roads in Chaco Canyon, New Mexico (Fig. 6), in one of the few archaeological applications of the new technology.

Clouds, however, cover much of the earth and the kinds of sensors used on satellites are limited in what they can record through the clouds. But radar can penetrate the cloud cover, and the development of imaging radar carried by the space shuttle has made possible some spectacular results with major archaeological implications. Figure 7 is a Landsat image of the Sudanese desert; what you see is partly cloud cover, partly desert. In Figure 8 it is possible to see what the shuttle imaging radar detected along this 50-kilometer swath: prehistoric river beds buried beneath the sands of the Sahara.

The technology so far has been applied in archaeological research in arid and semi-arid lands, and recently in a tropical forest. I hope to be able to apply it in the near future in a survey in northern Portugal where the land cover is similar to that of this region of Greece. One of our aims will be to try to develop a method of detecting archaeological sites by distinctive spectral "signatures". In any case, the technology is now available to archaeologists to use and to develop[5]. Archaeologists have even been invited, for the first time, to suggest regions of archaeological interest that they would like to have recorded by imaging radar on a shuttle flight scheduled for next year. You might consider the invitation for Nikopolis; it might make possible a complete regional survey in three or four years instead of three or four lifetimes.

5. Two recent publications on remote sensing in archaeology are: *James R. Wiseman*, "Archaeology in the Space Age", Context 4:1–2 (1984) 1–3, and *Thomas Sever* and *James Wiseman*, Remote Sensing and Archaeology: Potential for the Future (NASA: National Space Technology Laboratories, Mississippi 1985).

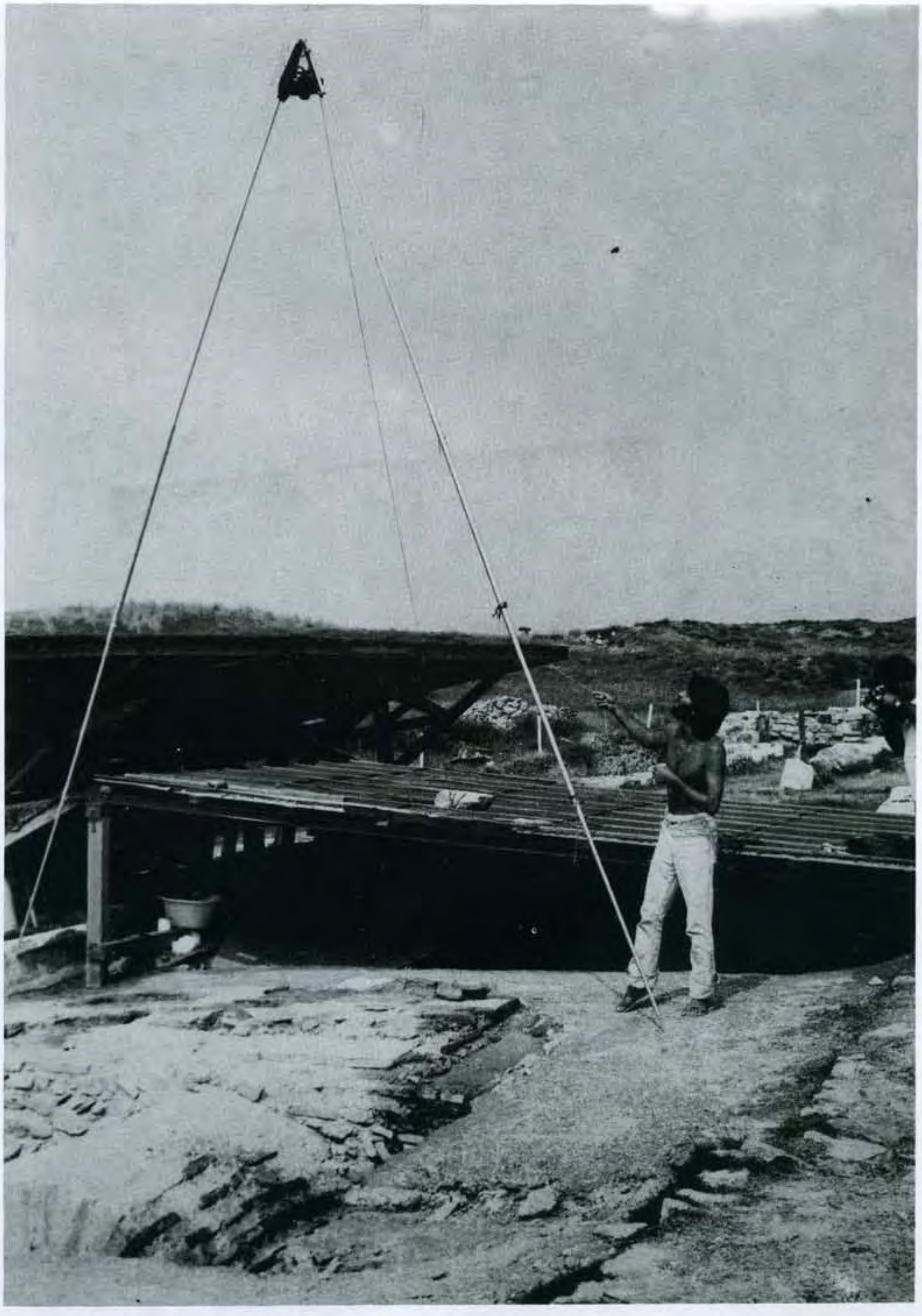

Figure 1. The Whittlesey bipod in operation at Stobi, Yugoslavia.

Figure 2. Part of a mosaic in the 5th – 6th century Episcopal Basilica at Stobi photographed from a bipod.

Figure 3. Photograph of the Episcopal Basilica at Stobi from a tethered balloon. Photo by J. Wilson and Eleanor Myers.

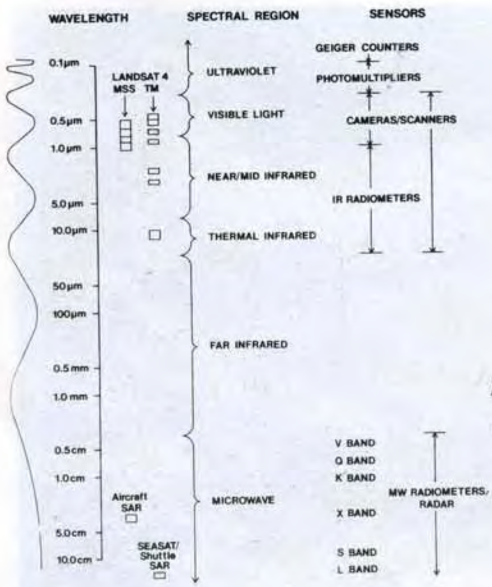

Figure 4. Diagram showing the electromagnetic spectrum and some of the capabilities of selected sensors. Compare the range of "visible light" to the other spectral regions. Diagram courtesy of NASA's Earth Resources Laboratory.

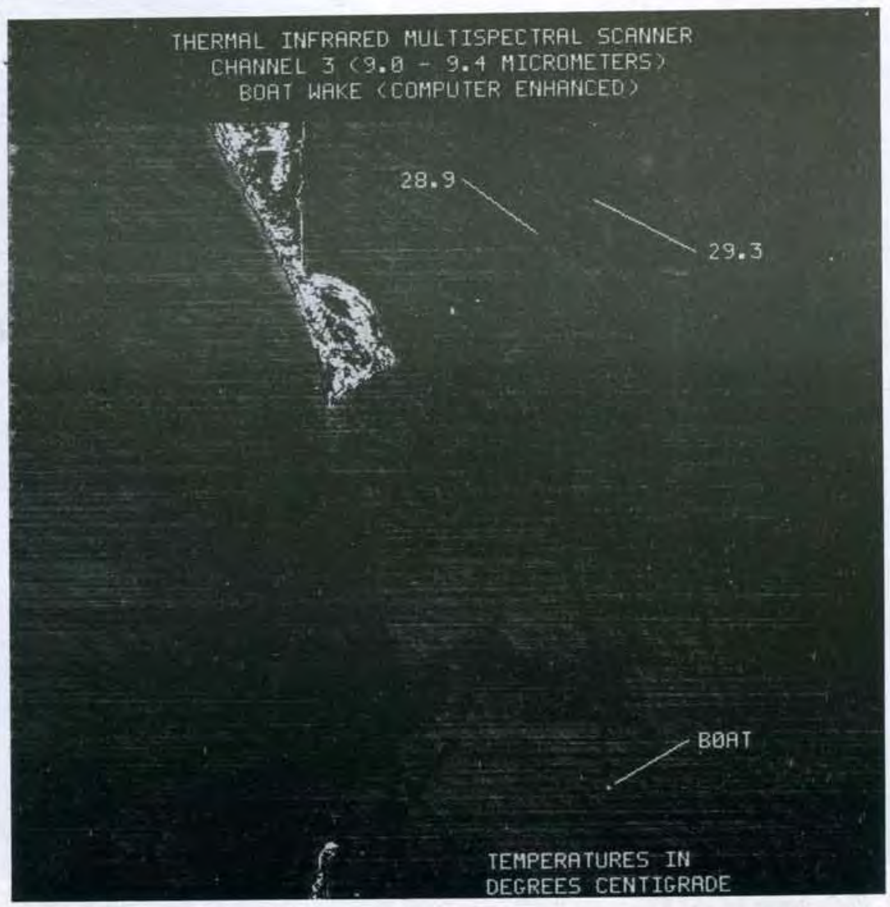

Figure 5. Boat wakes (enhanced by computer) in the Caribbean recorded by a Thermal Infrared Multispectral Scanner (TIMS).Photo courtesy of NASA's Earth Resources Laboratory.

Figure 6. Prehistoric roads and other archaeological features in Chaco Canyon, New Mexico. The computer–enhanced image was derived from TIMS data. Photo courtesy of NASA's Earth Resources Laboratory.

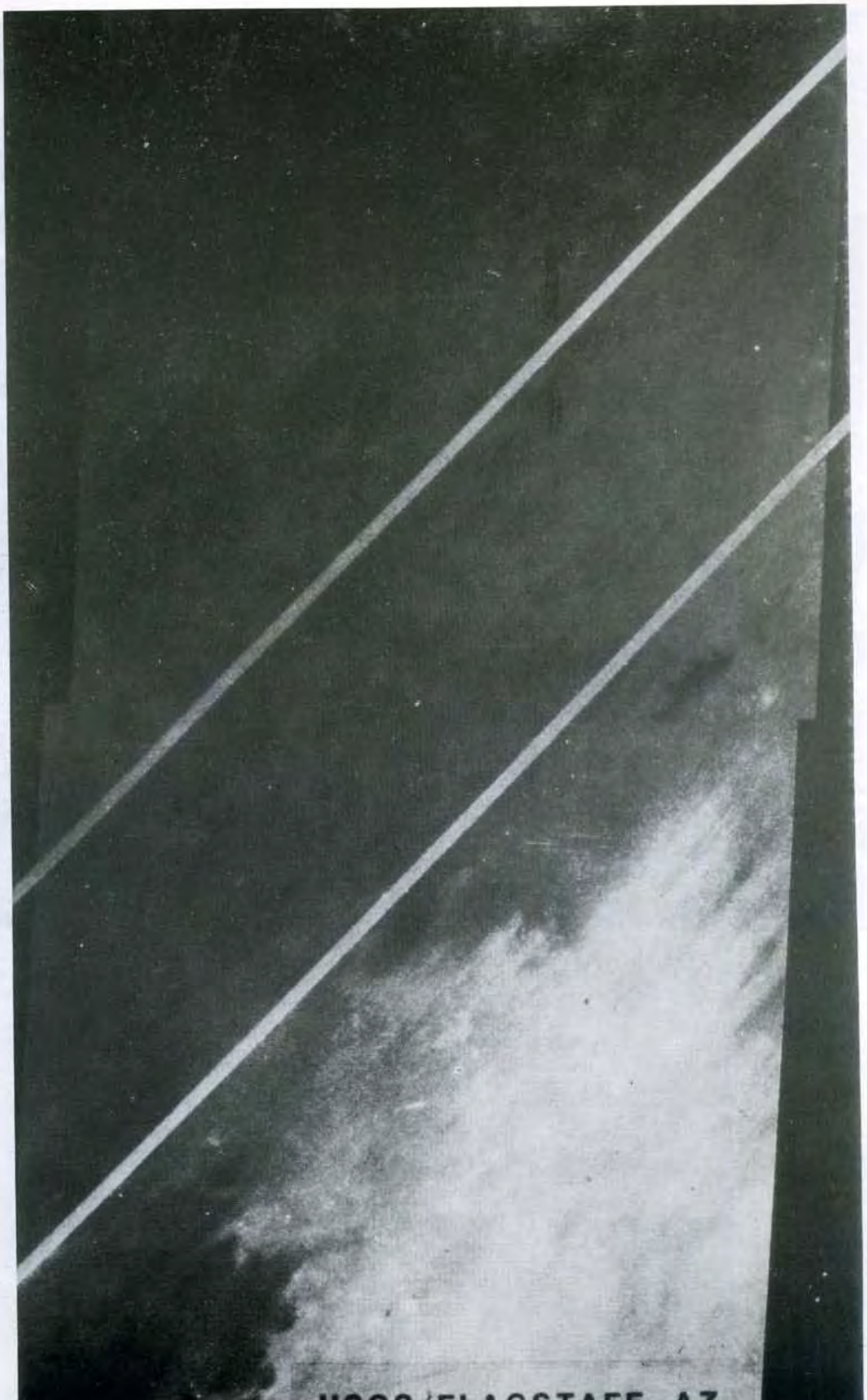

Figure 7. Landsat image of a portion of the Sahara desert in Sudan showing sand and partial cloud cover. Note the diagonal band, a 50-kilometer swath scanned by the first shuttle imaging radar test (SIR – A), and compare it with the same band in Figure 8. Photo courtesy of NASA's Earth Resources Laboratory.

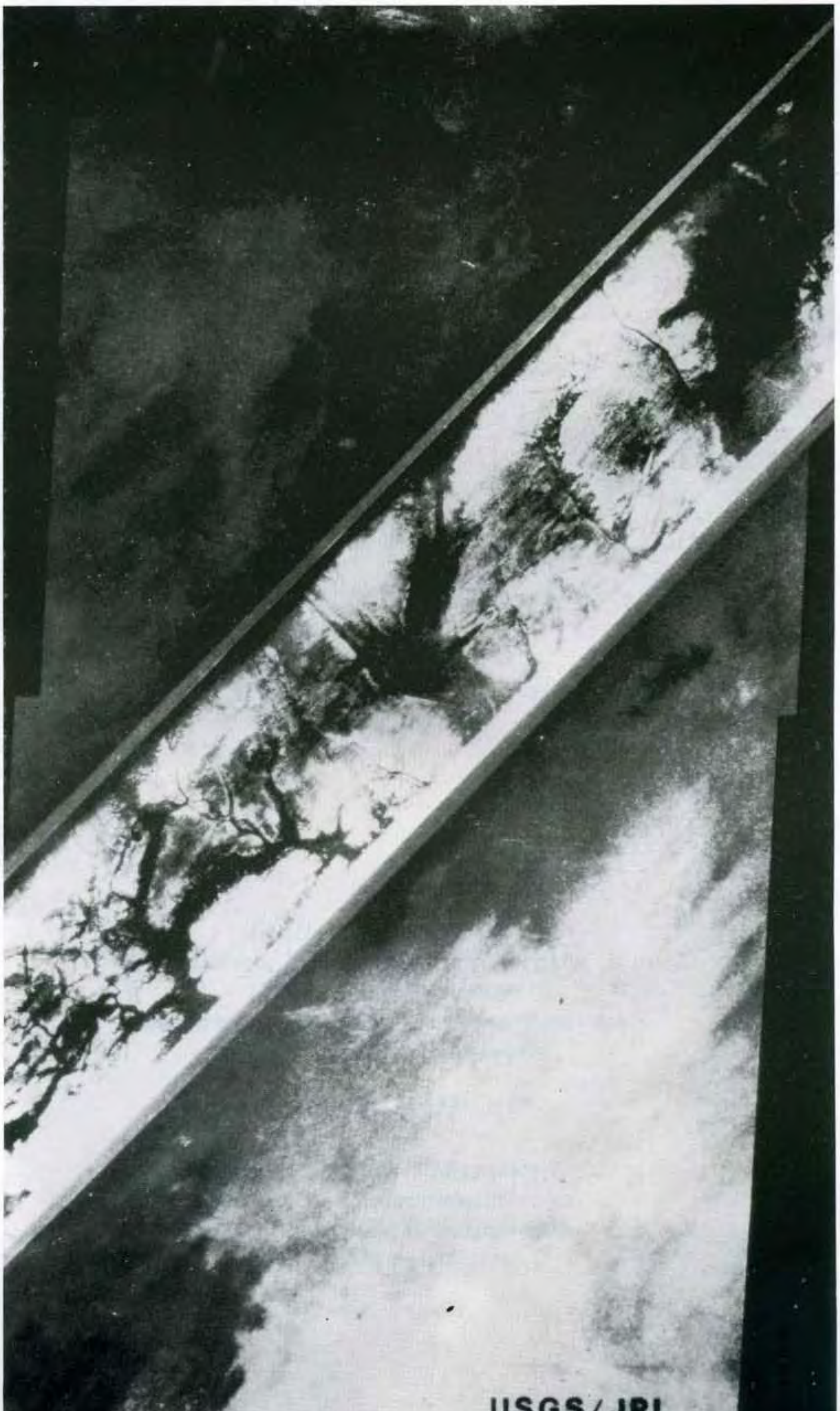

Figure 8. SIR – A detected prehistoric riverbeds beneath the Sudanese desert that were impossible to detect with Landsat (see Fig. 7). Photo courtesy of NASA's Earth Resources Laboratory.