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Environmental Monitoring of International and Domestic Operations Using Remote Sensing

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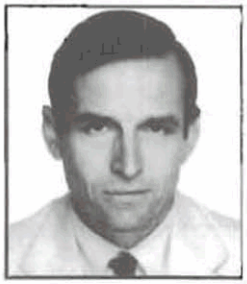
Satellite and aircraft remote sensing is a cost-effective technology for environmental assessment and monitoring. Satellite and airborne digital and photographic data are used for this purpose. Aerial photographs date back to the 1920s, and satellite images to 1972. These data are used to document environmental conditions that existed at a moment in time (a "baseline"), typically before the occurrence of some event (beginning of oil field operations, urbanization, spills, etc.). This documentation serves as a benchmark against which future changes can be compared and quantified. Typically, land cover and land use, existing environmental conditions, geologic hazards, water quality, and archeological sites are evaluated. Changes in the environment are then monitored at regular intervals throughout the operational cycle.

The application of remote sensing technology to environmental assessments and monitoring will be shown in examples of: 1) deforestation in South America, 2) hydrocarbon spill detection, 3) vegetation regrowth patterns in wetlands after seismic surveys, 4) land use and agricultural changes in developing countries, and 5) seismic survey designs in the central U.S. ■

Biographical Sketches

John S. Janks is a Research Associate with Texaco's Exploration and Production Technology Department (EPTD) in Houston, Texas. He joined Texaco in 1983 as a reservoir geologist. In 1990, he began working with the application of remote sensing to environmental technology. He received a B.S. in Geology from Monmouth College (Illinois) and an M.S. in Geology from the University of Illinois at Chicago.



John D. Wieser is a Senior Research Scientist at Texaco's EPTD in Houston, Texas. Currently, he is a member of the remote sensing group, applying remote sensing technology to environmental issues. Previously, he worked in chemical-enhanced oil recovery and environmental technology. He received a B.S. in Chemistry from Canisius College and a Ph.D. in Physical Chemistry from Indiana University. He did post-Doctoral research at SUNY in Buffalo, New York in surface chemistry.

Alfredo E. Prelat is a Technical Consultant at Texaco's EPTD in Houston, Texas. He joined Texaco in 1989 and established the remote sensing laboratory, applying the technology to exploration, production, and environmental topics. Previously, he worked with Bechtel, Unocal, and the United Nations. He received M.S. and Ph.D. degrees in Geology from Stanford University.