



WILLIAM T. PECORA AWARD

RAY D. JACKSON

Atkinson
8/5/93
Stephens
8-5-93
Friedrich
8/6/93

In recognition of his outstanding achievements and leadership in the advancement of remote sensing for the management of natural resources and environmental monitoring.

The basic and applied research conducted by Dr. Jackson as a Research Physicist for the Agricultural Research Services, U.S. Department of Agriculture, constitutes a body of work in science and remote sensing matched by few. Aerospace remote sensing was early recognized by Dr. Jackson as a way to provide synoptic assessments of crop and soil conditions.

Dr. Jackson recognized that agricultural applications of remotely sensed data require accurate measurements of reflected radiation from soil and crop surfaces, whether the measurements are made at ground level or at satellite altitudes. He was a member of a University of Arizona team that has become internationally known for its work on in-flight calibrations of sensors onboard Landsat 4 and 5, SPOT 1 and 2, and AVHRR sensors on NOAA satellites. These calibrations allowed the first verifiable satellite-based reflectance measurements to be obtained over an agricultural area.

His research on the difference in temperature between the plant canopy and the surrounding air demonstrated the feasibility of using crop and air temperatures for irrigation scheduling and rapid evaluation of disease incidence. In subsequent research using radiometrically measured temperatures, Dr. Jackson developed a theoretical basis for quantifying plant stress -- a "crop water stress index." Numerous research projects, publications, and several conference sessions have since been based on this work. Commercial companies now manufacture infrared thermometers designed specifically to evaluate crop water stress in agricultural and environmental applications.

Dr. Jackson developed a procedure for determining net radiation and evapotranspiration using a combination of remotely sensed data and ground station meteorological data. This work paved the way for detailed spatial mapping of these factors over agricultural and hydrological sites.

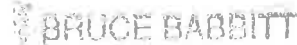
He was the main investigator in a series of intensive field experiments at the University of Arizona's Maricopa Agricultural Center, drawing over 100 scientists and engineers from throughout the U.S., Canada, France, Japan, and other countries. This work resulted in a series of databases for remote sensing research that is without parallel.

A key aspect of Dr. Jackson's work is pragmatism -- his theories and analytic studies do not remain in the laboratory as academic abstractions but flow quickly into the mainstream of testing, development, and operational use. Dr. Jackson's research accomplishments in remote sensing have inspired many scientists to work in this field. He has been particularly generous in giving his time to students. He has lectured at colleges and universities across the nation and around the world, and he has served on graduate-student degree committees. Directly through his efforts, remote sensing for agriculture is a fact today, and remote sensing for use by individual farm operators is on the verge of becoming reality.

For his outstanding accomplishments toward understanding of the Earth by means of remote sensing, the National Aeronautics and Space Administration and the Department of the Interior take great pleasure in presenting the 1993 William T. Pecora Award to Dr. Ray D. Jackson.



Administrator, National Aeronautics
and Space Administration



Secretary of the Interior