

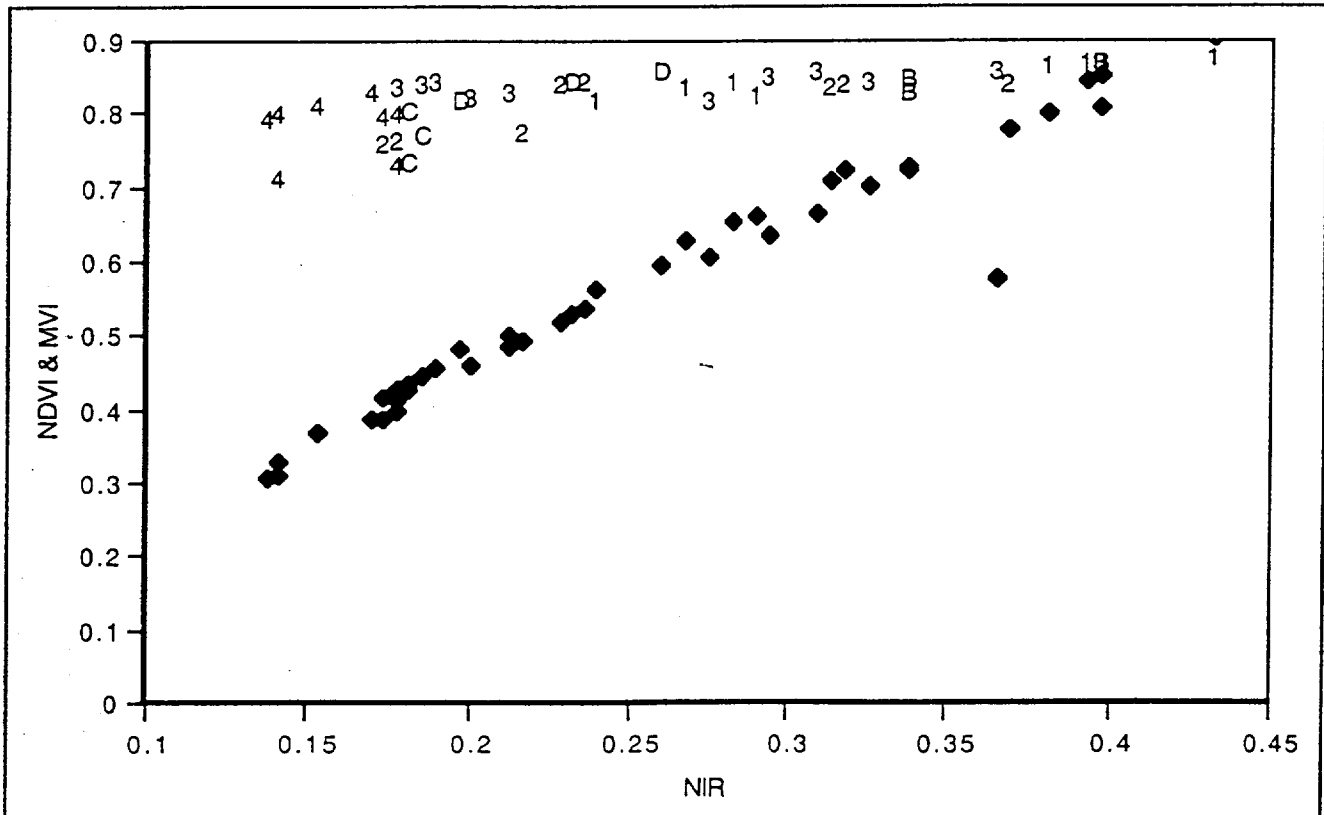
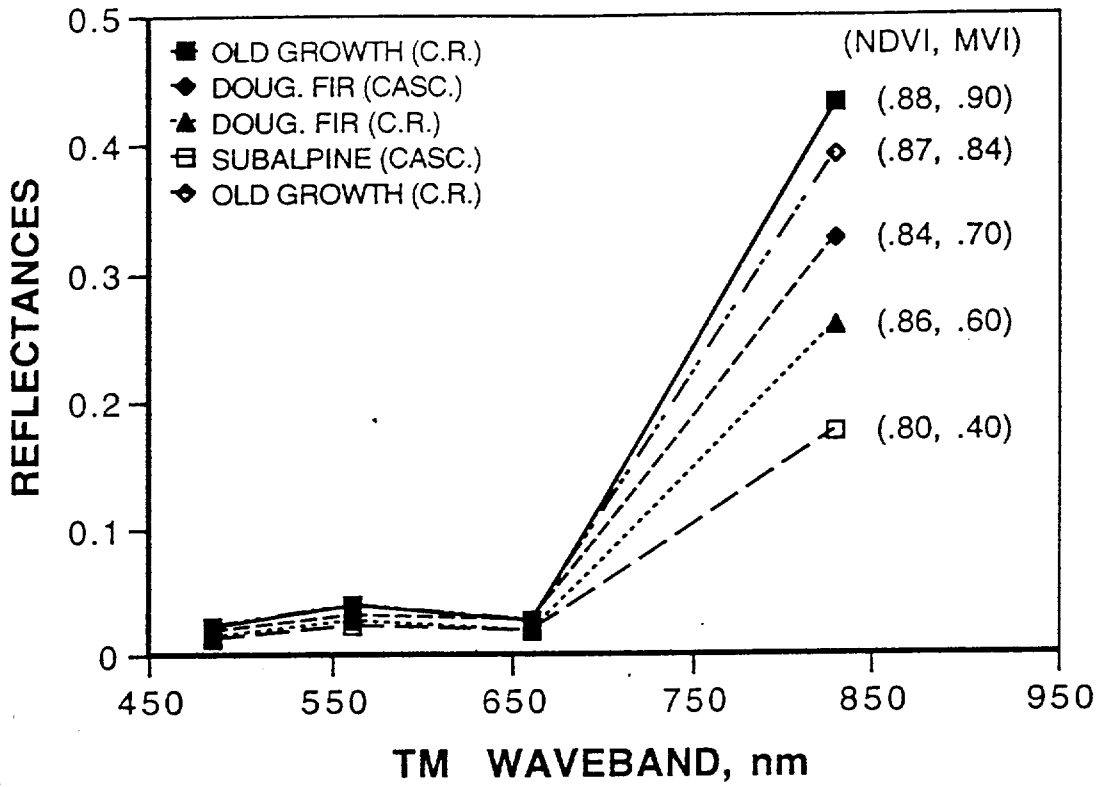
FIELD RADIOMETRY
FAPAR / LAI EXPERIMENTS
(SCAR-B, Aug. - Sept. 1995)

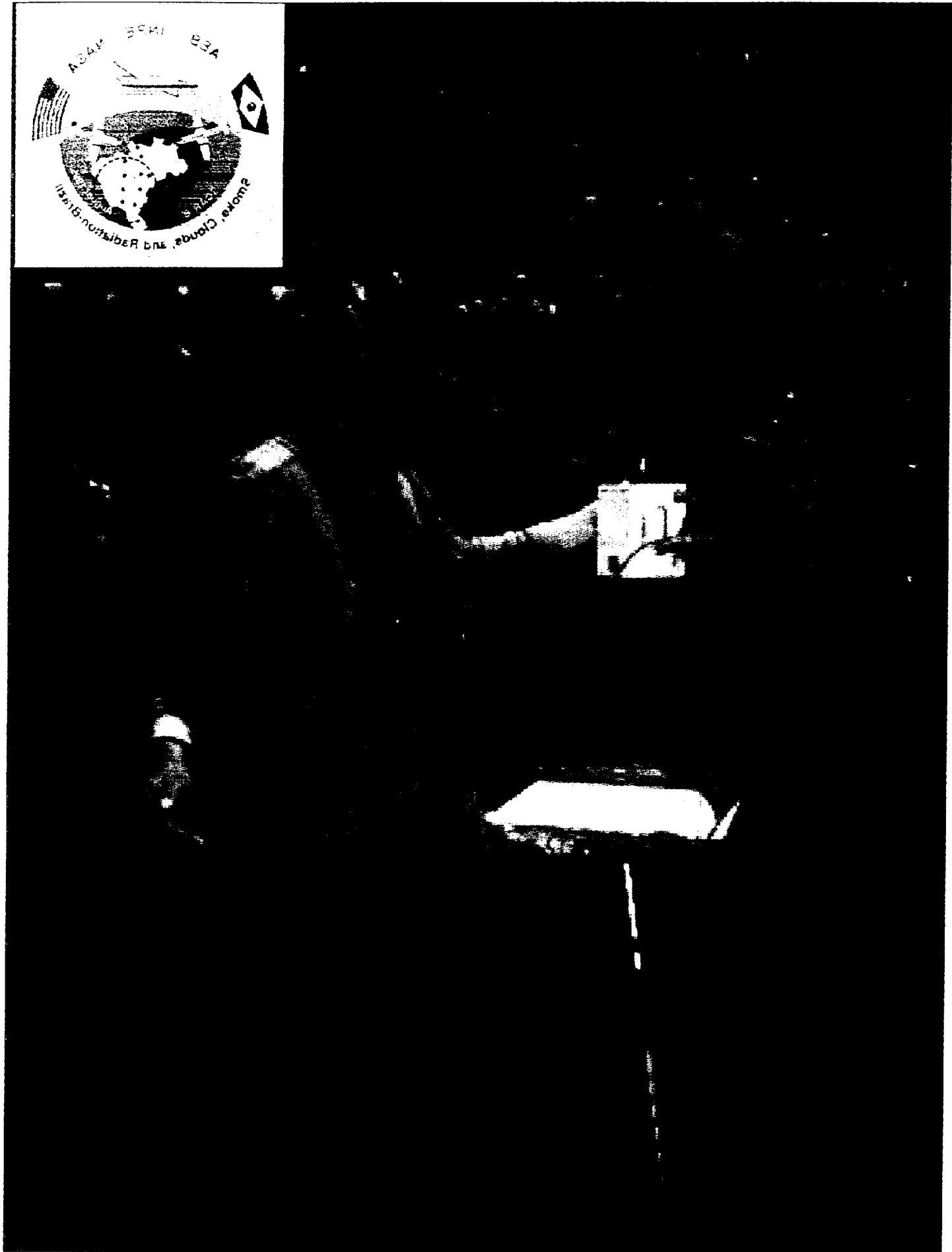
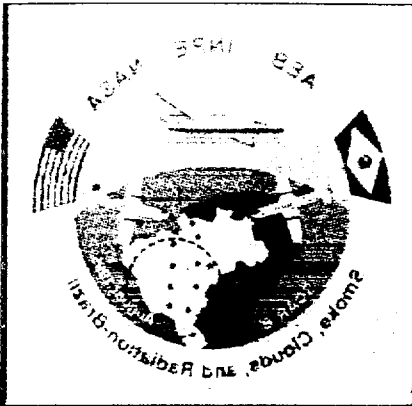
University of Arizona
(Alfredo Huete, Wim van Leeuwen, Barron Orr)

GOALS: MODIS (LAND)

- Investigate effects of aerosols and smoke on vegetation indices.
- Determine saturation or linearity of vegetation indices for dense vegetation types
- Assess relationships between vegetation indices and biophysical parameters for different vegetation types

OREGON TRANSECT

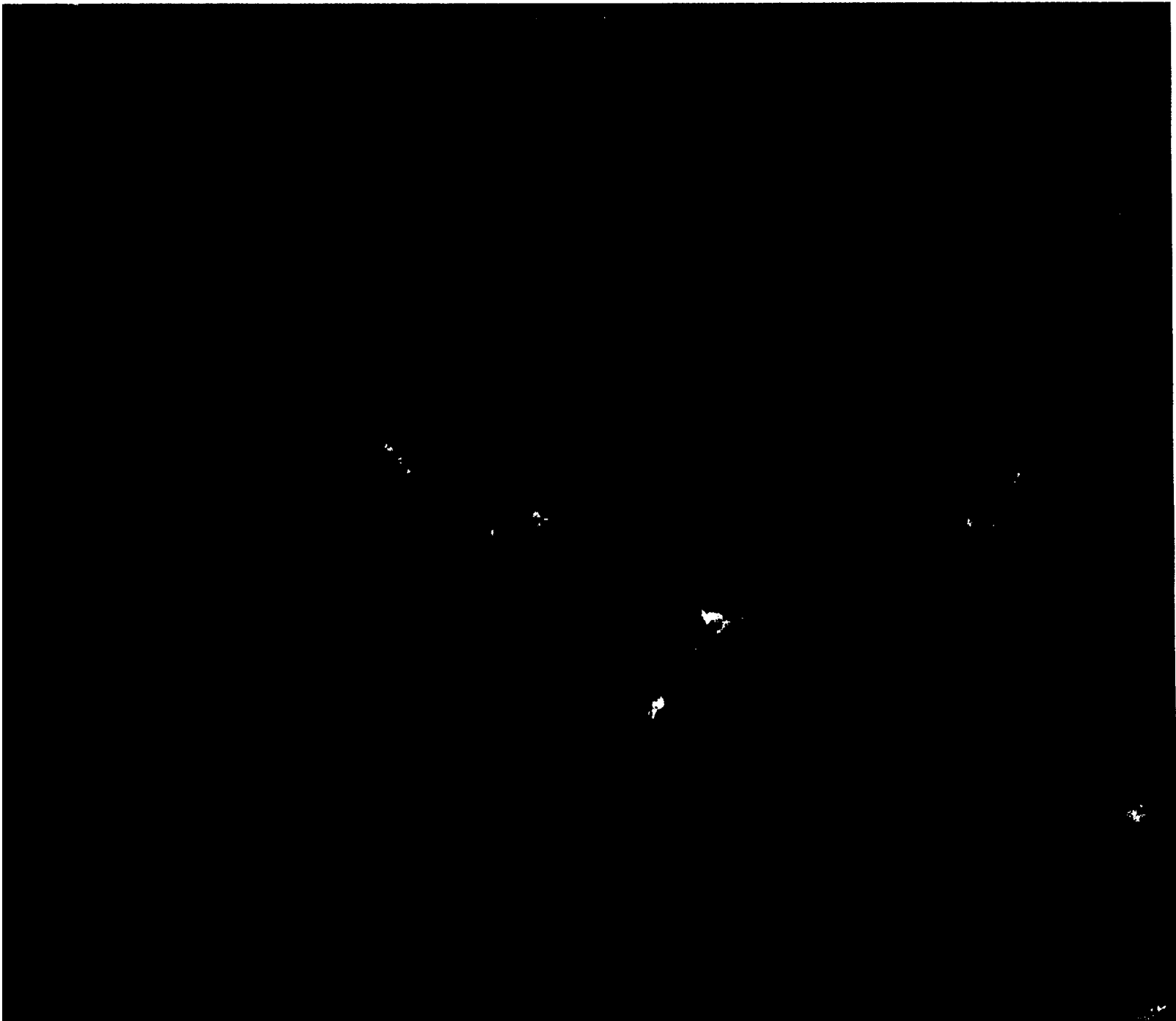






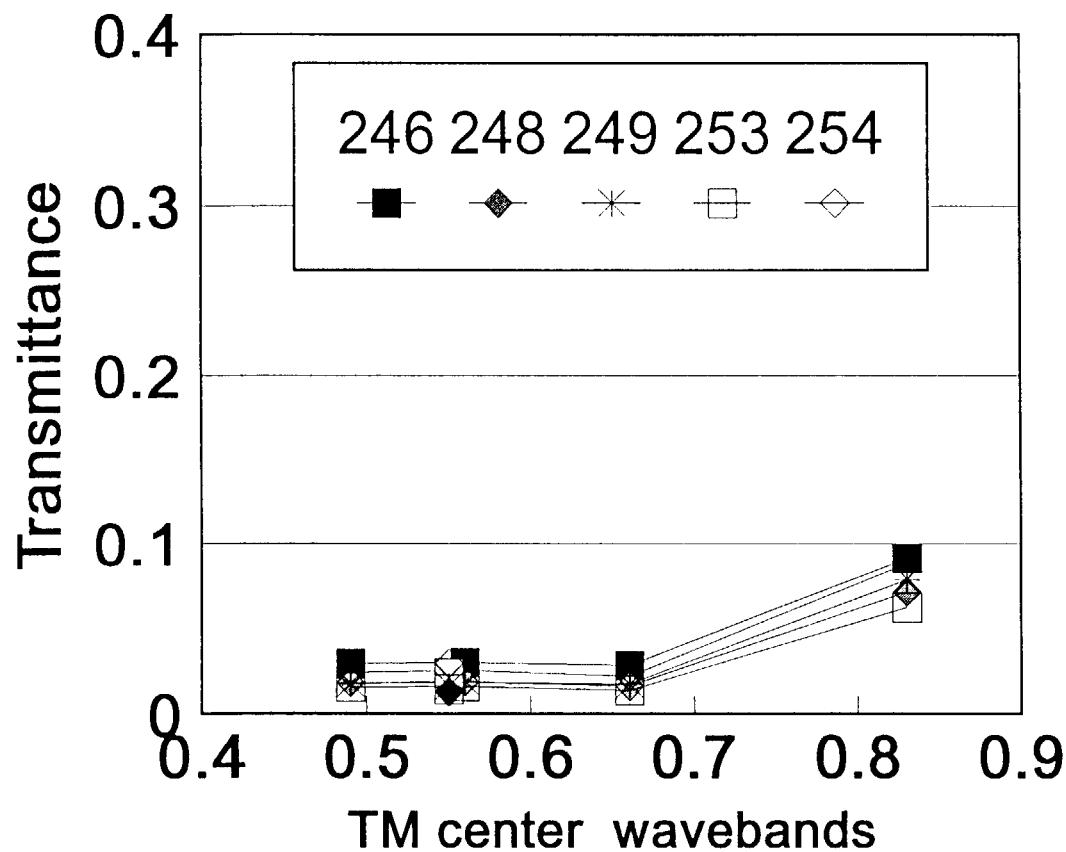
Porto Velho / Jamarí. Rondonia. TM

7

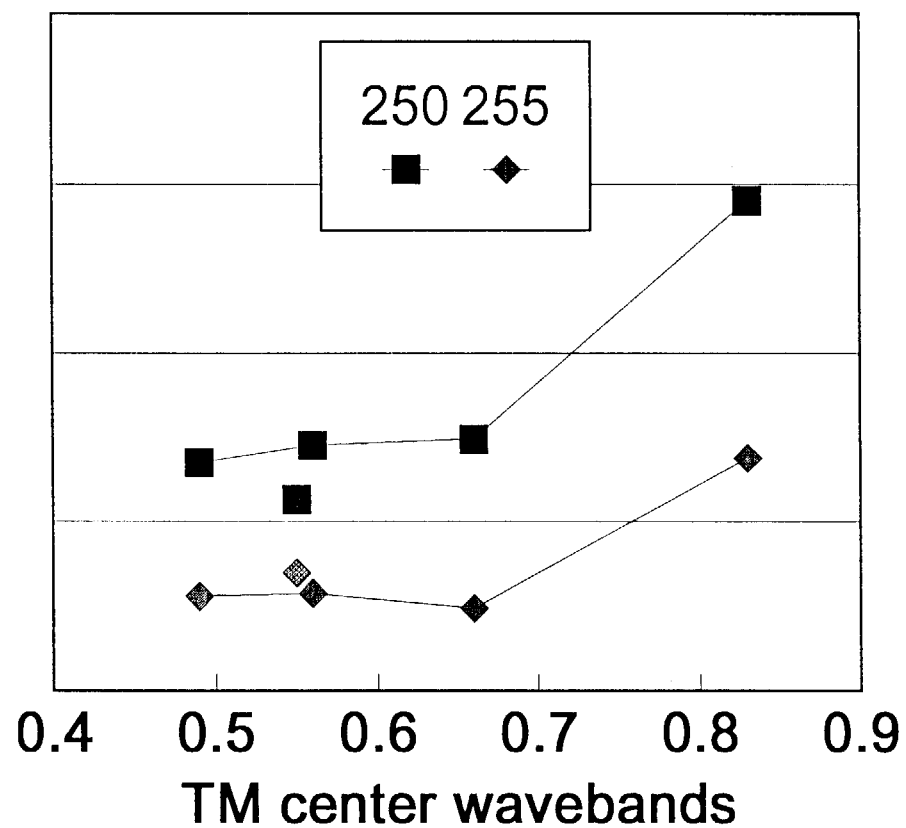


TM and PAR radiometry

primary forest transmittance

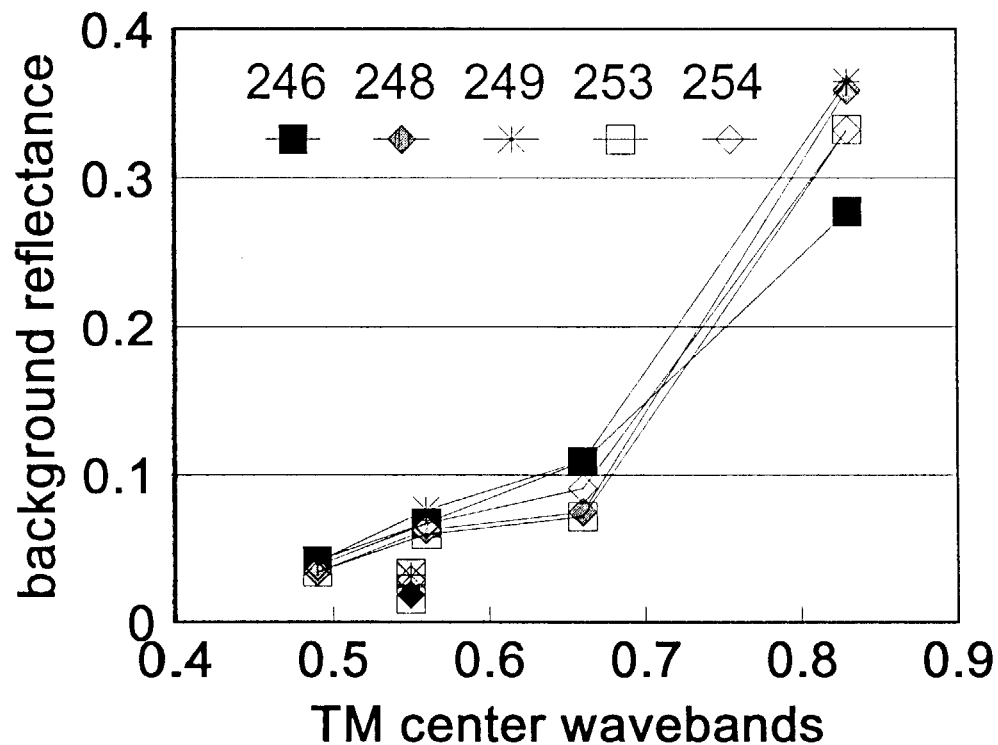


secondary forest transmittance

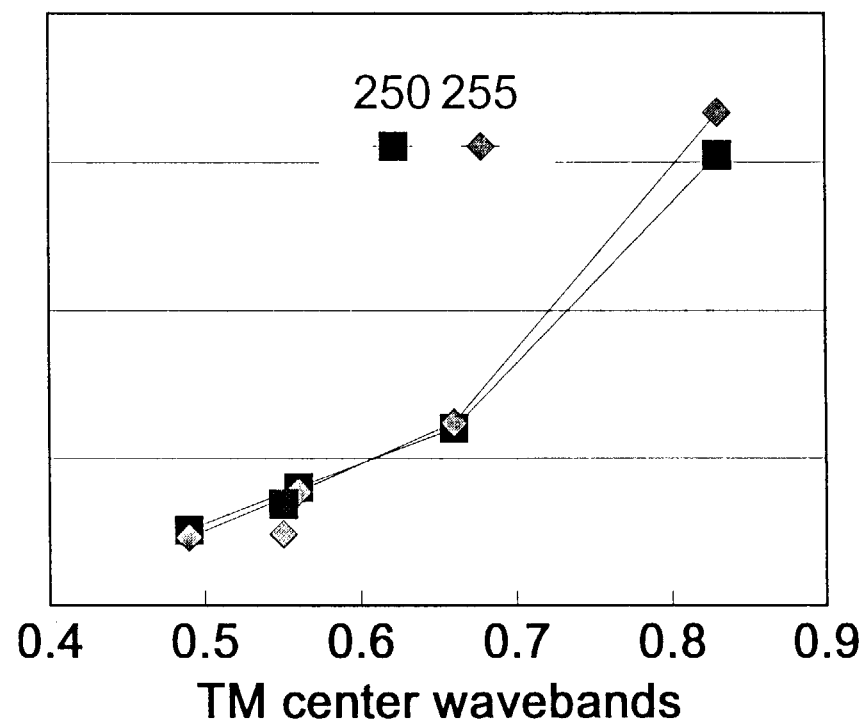


TM and PAR radiometry

primary forest background reflectance

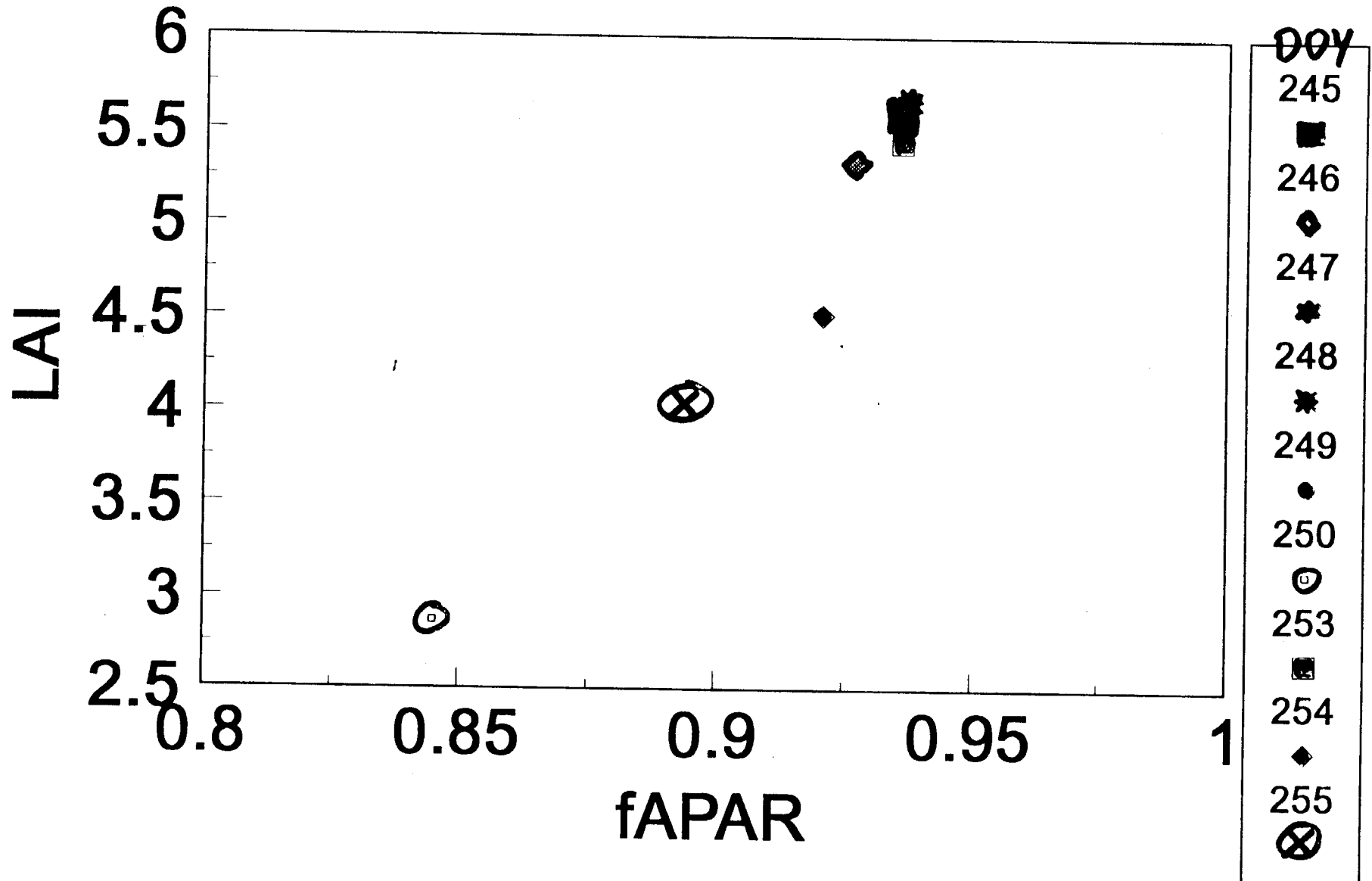


secondary forest background reflectance



LAI = f (fAPAR) for primary and secondary forest

Rondonia (Aug. / Sept., 1995)



For primary and secondary forest:

- ▶ Vegetation Index = f (biophysical parameters)

$$VI = f(\text{fAPAR}, \text{LAI})$$

$$\text{fAPAR} = 1 - \tau_c - \rho_c + \tau_c \rho_s$$

- ▶ Radiative transfer modeling

$$e.g.: \quad R_m(\lambda) = E_o(\lambda) \rho_s(\lambda) \tau_c^2(\lambda) + E_o(\lambda) \rho_c(\lambda)$$

(Lillesaeter, 1982)

SAIL (Verhoef, 1976)

fAPAR - fraction of Absorbed Photosynthetically Active Radiation
(400 -700 nm)

LAI - Leaf Area Index

τ_c - canopy transmittance

ρ_c - canopy reflectance

ρ_s - soil reflectance

R_m - measured spectral response

E_o - irradiance

λ - wavelength

SAIL - Scattering by Arbitrarily Inclined Leaves