

**ABSTRACT FORM**  
**1993 ANNUAL MEETING, ECOLOGICAL SOCIETY OF AMERICA**

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4800 Oak Grove Drive, Pasadena, CA 91109  
Phone number: (818) 354-8225 Who will present the paper? Way  
Oral contributed paper  ; poster session  ; Invited symposium paper  ; ESA member   . yes  
Audiovisual equipment required: 35-mm slide projector  ; Other Viewgraph Machine  
Session topic code (see Bulletin 73(3):157-158): First choice 44; Second choice 3m; Session topic if choice is "Other" (04 or 42): \_\_\_\_\_

WAY, J. B., E. RIGNOT, K. MCDONALD, P. ADAMS and L. VIERECK. Jet Propulsion Laboratory, Pasadena, CA, 91109, USA and Institute of Northern Forestry, Fairbanks, AK, 99701, USA. Monitoring seasonal state and mapping species in Alaskan taiga using imaging radar as input to CO<sub>2</sub> flux models,

Changes in the seasonal CO<sub>2</sub> flux of the boreal forests may result from increased atmospheric CO<sub>2</sub> concentrations and associated atmospheric warming. To monitor this potential change, a combination of remote sensing information and ecophysiological models are required. In this paper we address the use of synthetic aperture radar (SAR) data to provide some of the input to the ecophysiological models: forest type, freeze/thaw state which limits the growing season for conifers, and leaf on/off state which limits the growing season for deciduous species. AIRSAR data collected in March 1988 during an early thaw event and May 1991 during spring breakup are used to generate species maps and to determine the sensitivity of SAR to canopy freeze/thaw transitions. These data are also used to validate a microwave scattering model which is then used, to determine the sensitivity of SAR to leaf on/off and soil freeze/thaw transitions. Finally, a CO<sub>2</sub> flux algorithm which utilizes SAR data and an ecophysiological model to estimate CO<sub>2</sub> flux is presented. CO<sub>2</sub> flux maps are generated from which areal estimates of CO<sub>2</sub> flux are derived. *This work was carried out at the Jet Propulsion Laboratory under contract to the NASA.*

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PLEASE NOTE: Submitting this abstract is a guarantee from you that the research reported has been completed and will not have been published **before** the time of the meeting.

**INSTRUCTIONS:**

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3. Use a high quality printer (no older dot matrix) or a typewriter with a carbon ribbon, **Single space** all typing except for the one blank line. Use a font no smaller than in the example below. There should be no more than 17 typed lines, including the citation. Make certain that the copy is clean with all letters fully typed and no typographical errors. If you photocopy this form, make certain that the blue-lined rectangle does not show up as black lines. See the *Bulletin* for additional instructions.

**EXAMPLE:**

MURPHY, PETER G. and REBECCA R. SHARITZ. Michigan State University, East Lansing, MI, 48824, USA and Savannah River Ecology Laboratory, Aiken, SC, 29801, USA. Long-term recovery of northern hardwood forest following gamma irradiation .

A northern Wisconsin hardwood forest was exposed to 3300 hours of point-source gamma irradiation from 3 May to 16 October, 1972. Cumulative . . .