INTRODUCTION

Variability of land surface emissivity and its spectra are not uniform across many surface types. This variability is attributed to a major unknown: the effect of soil moisture on the land surface. For example, the soil dielectric constant increases with soil water content, which modifies the energy flux coupling to the soil surface. This energy flux is a function of soil temperature and soil moisture content, and the interaction is complex and nonlinear. The variability of land surface emissivity and its spectra is a function of soil moisture, temperature, and soil type. The variability is even more complex for soil-vegetation systems.

In the past, radiative transfer models have been developed to simulate the variability of land surface emissivity and its spectra. These models include a variety of radiative transfer schemes, such as the radiative transfer model of the Department of Energy (DOE) (Dobson et al., 1985), the radiative transfer model of the National Aeronautics and Space Administration (NASA) (Ulaby et al., 1982), and the radiative transfer model of the European Space Agency (ESA) (Matzler, 1994a). These models have been used to simulate the variability of land surface emissivity and its spectra for different soil-vegetation systems.

This study presents a radiative transfer scheme for deriving microwave emissivity and reflectivity for a vertically stratified soil and vegetation system. The scheme is based on the radiative transfer model of the NASA (Ulaby et al., 1982), which is a well-known and widely used model for simulating the variability of land surface emissivity and its spectra. The scheme is also based on the radiative transfer model of the ESA (Matzler, 1994a), which is a relatively new model that has been used to simulate the variability of land surface emissivity and its spectra for different soil-vegetation systems.

The radiative transfer model used in this study is a modified version of the radiative transfer model of the NASA (Ulaby et al., 1982). The model includes a new radiative transfer scheme for simulating the variability of land surface emissivity and its spectra for different soil-vegetation systems. The model also includes a new radiative transfer scheme for simulating the variability of land surface emissivity and its spectra for different soil-vegetation systems.

SUMMARY AND FUTURE WORK

The radiative transfer model used in this study is a modified version of the radiative transfer model of the NASA (Ulaby et al., 1982). The model includes a new radiative transfer scheme for simulating the variability of land surface emissivity and its spectra for different soil-vegetation systems. The model also includes a new radiative transfer scheme for simulating the variability of land surface emissivity and its spectra for different soil-vegetation systems.

REFERENCES


