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Cloud Scene Simulation Modeling the Enhanced Model Apr 1992 44 pages

Authors: Maureen E. Cianciolo; R. G. Rasmussen; ANALYTIC SCIENCES CORP READING MA

Full Text

This report documents the development of the Enhanced **Cloud Scene Simulation** Model developed by TASC for Phillips Laboratory in support of the ...) Program under the Balanced Technology Initiative. The model simulates multi-dimensional **cloud** water density fields for input to radiative transfer models and **scene** generation systems. The enhanced **cloud** model incorporates additional capabilities and modifications to previous model versions. This document ... on those new capabilities and briefly summarizes the technical tasks completed under the **Cloud Scene** Model Development Project. **Cloud** model, Fractal ...

A Validation Study of Cloud Scene Simulation Model Temporal Performance Mar 1999 112 pages

Authors: Glenn Kerr; AIR FORCE INST OF TECH WRIGHT-PATTERSONAFB OH SCHOOL OF ENGINEERING

Full Text

Cloud Scene Simulation Model (CSSM) temporal performance was validated by comparing the **cloud** forcing signatures on observed radiometric time series with ... incidence pyraheliometer sensitive to wavelengths in the range .3mm to 3mm. **Simulation** radiometric time series data was derived by ... the following process to each case study. CSSM **cloud** liquid water content (CLWC) grids were ... a path from the position of the sun through each **cloud** volume to a point at its base. The position of ... and statistical comparison of the observed and corresponding **simulation** time series data were then made. ...

The Integration of the PSU/NCAR Mesoscale Model (MM5) with the Phillips Laboratory Cloud Scene Simulation Model (CSSM) Apr 30, 1996 21 pages

Authors: A. A. Setayesh; RADEX INC BEDFORD MA

Full Text

... to a set of appropriate input data in Navy Operational Regional Atmospheric Prediction System (NORAPS) format to be used in the Phillips Laboratory **Cloud Scene Simulation** Model (CSSM). The CSSM is an empirical model that produces high resolution, multi-layer, four dimensional **cloud** liquid water content fields. The MM5 with its utility programs such as TERRAIN, DATAGRID, ... model uses for its meteorological input data. The converted MM5 data and a set of **cloud** data from CSSM are used to generate some sample **cloud scene** fields.

Cloud Scene Simulation Model (CSSM) Aug 2000 26 pages

Authors: Susan A. Triantafillou; NORTHEAST CONSORTIUM FOR ENGINEERING EDUCATION PORT ROYAL VA

Full Text

The majority of the effort focused on fine tuning the **Cloud Scene Simulation** Model(CSSM). Support was also provided for the National Polar Orbiting Operational Environmental Satellite System (NPOESS) by determining NPOESS Environmental Data Records accuracy requirements.

Atmospheric Scene Simulation Modeling and Visualization Apr 15, 1996 118 pages

Authors: Maureen E. Cianciolo; Mark E. Raffensberger; Eric O. Schmidt; John R. Stearns; ANALYTIC SCIENCES CORP READING MA

Full Text

... provides a review of the **Cloud Scene Simulation** Model (CSSM), an empirical **cloud** model developed to support high-fidelity training and **simulation** applications. TASC and the U.S. Air Force ... developed the CSSM to simulate realistic high-resolution **cloud** and precipitation features within domains ... larger-scale weather conditions. The current version of the **cloud** model is built upon the CSSM developed ... key additions and enhancements to satisfy modeling and **simulation** requirements of the Distributed Interactive ... dimensional (three spatial and time) **cloud** and precipitation fields using a combination ...

Development of an Atmospheric Scene Simulation Model May 14, 1998 177 pages

Authors: Ryan B. Turkington; Maureen E. Cianciolo; Mark E. Raffensberger; ANALYTIC SCIENCES CORP READING MA

Full Text

The **Cloud Scene Simulation** Model (CSSM) was developed to generate high resolution synthetic **cloud** backgrounds for a variety of DoD **simulation** systems. This report describes recent efforts to enhance that model and presents plans for future areas of development. Recent efforts were ... uncinus model design simulates the vertically developed particle distributions observed in nature. The climatological preprocessor will use climatological **cloud** and meteorological databases along with statistical information to build typical weather conditions for a user specified location/ ...

Analysis of Cloud-Free Line-of-Sight Probability Calculations Mar 2001 76 pages

Authors: Joseph J. Golemboski III; AIR FORCE INST OF TECH WRIGHT-PATTERSONAFB OH

... taken over Columbia, Missouri and forecasted **cloud** amounts rather than climatological values. The second was a new approach using the **Cloud Scene Simulation** Model developed by Phillips Laboratory. **Cloud** scenes were generated using forecasted **cloud** fields, meteorological inputs, and thirty random ... methods. Stratus, stratocumulus, cumulus, and altocumulus **cloud** types were independently examined with the CSSM generated **cloud** scenes. Each method and **cloud** type were compared against the known CFLOS probability ... as much as twelve per cent with horizontal **cloud** coverage ranging from 30 to 80 per cent ...

Full Text

Solar Flux Initialization Schemes for Distributed Surface Energy Budget Modeling Aug 2003 71 pages

Authors: George G. Koenig; David H. Tofsted; ENGINEER RESEARCH AND DEVELOPMENT CENTER HANOVER NH COLD REGIONS RESEARCH AND ENGINEERING LAB

... surface temperatures. For partly cloudy and cloudy skies only the AIM model can mimic the spatial variability observed with the measured solar fluxes. The **Cloud Scene Simulation** Model (CSSM) was used to determine the spatial variability of the clouds. The **cloud** distributions were then used by AIM to produce the variations of the surface solar loading. CSSM also has the capability to produce the temporal variations in the **cloud** fields for short periods of time. Thus, it would be possible to use CSSM and AIM to produce the ...

Full Text

Integrated Efforts for Analysis of Geophysical Measurements and Models Sep 26, 1997 234 pages

Authors: S. M. Ayer; C. A. Hein; G. P. Seeley; J. N. Bass; M. J. Kendra; RADEX INC BEDFORD MA

... , and mathematics of the atmosphere and near space. Projects undertaken and reported include spacecraft, ionospheric, atmospheric, and astronomical circumstances; data based studies of air combat targeting; meteorology including **cloud scene simulation** and ITASCA expert system; ionospheric scintillations; atmospheric metal deposition; auroral particle and electric field modeling, magnetic field studies for CRRES; atmospheric density models, databases and drag; ...

Full Text

Cloud Simulation Using HEFeS-Hierarchical Environmental Feature Structure Apr 11, 1996 36 pages

Authors: Albert R. Boehm; J. H. Willand; HUGHES STX CORP LEXINGTON MA

The goal is to rapidly simulate **cloud** scenes including radiances using a large variety of **cloud** structure associated with a given area and season. HEFeS uses a hierarchy of climate objects for nine ... 95% coldest temperature) to be generated. Instead of using ray tracing methods to render a **scene**, radiometric properties are precalculated for each object under various lighting conditions and stored as prototype objects ... These are stretched to adjust for viewing perspective, exact lighting, and individual shapes. The resulting **scene** is consistent with climatology and the physics of the atmosphere.

Full Text

Two Models for Predicting the Probability of a Cloud-Free Line-of-Sight Nov 8, 2002 54 pages

Authors: Susan A. Triantafillou; Guy P. Seeley; RADEX INC BEDFORD MA

... from space-borne sensor to a missile or other object. The models, which account for various **cloud** conditions and zenith angles, are suitable for military training and **simulation** purposes. One approach uses a set of detailed models to generate a **cloud scene** and randomly place m issiles within it. A simulated sensor then detects ... that remains visible between clouds from a collection of scenes is the PCFLOS. This calculation relies on **cloud** metrics that are evaluated in consideration of meteorological observations and then tuned to improve agreement with the ...

Full Text

Validation Report for the Celestial Background Scene Descriptor (CBSD) Zodiacal Emission Model CBZODY6 Feb 2001 83 pages

Authors: Paul V. Noah; Meg A. Noah; MISSION RESEARCH CORP NASHUA NH

This report provides detailed information on the evolving improvements and verification of the AFRL/HRS Celestial Background **Scene** Descriptor (CBSD) Zodiacal Emission code (CBZODV). The CBZODY model predicts the flux from the solar system dust **cloud** for a given line-ot-sight or field-of-view that would be detected by optical and infrared sensor systems. CBZODY is currently in use by the MDA as a component of the SSGM **simulation** package and as part of the AFRL PLEXUS R3V2 atmospheric effects modeling suite.

Full Text

Weather and Atmospheric Effects for Simulation. Volume 1: WAVES98 Suite Overview Sep 1998 27 pages

Authors: Patti Gillespie; Alan Wetmore; David Ligon; ARMY RESEARCH LAB ADELPHI MD

The Weather and Atmospheric Effects for **Simulation** (WAVES) suite of models calculates and visualizes environmental effects due to natural clouds, haze, and fog. These models determine the illumination through multiple inhomogeneous **cloud** layers and the resulting radiance field. Other effects calculated with these models are forward scattering and ... in the viewing of input, output, and intermediate data within WAVES. This suite of models can simulate a **scene** or can be used to modify an image. This overview discusses the scope of this modeling suite, and maps the other ...

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