Solid Fuel-Gaseous Oxygen Reaction Techniques for Producing High Altitude Barium Vapor Clouds

Authors: Jr. Allen Edward F.; Philip E. Beaudoin; SPACE DATA CORP TEMPE AZ

The program was conducted to develop superior techniques for producing barium vapor clouds at high altitudes using sounding rockets. Several possible vapor production reactions are considered and thermochemical computations are performed comparing achievable efficiencies of yielding free barium at high temperatures. Several prime candidate reactions are evaluated for safety in use and practicality in reactor design. A reactor has been designed for future implementation. Thermochemical ...
Thermodynamic Feedback Between Clouds and the Ocean Surface Mixed Layer
Authors: P. C. Chu; Jr Garwood Roland W.; NAVAL POSTGRADUATE SCHOOL MONTEREY CA DEPT OF OCEANOGRAPHY

A cloud-ocean planetary boundary layer (OPBL) feedback mechanism is presented and tested in this paper. Water vapor, evaporated from the ocean surface or transported by the large-scale air flow, often forms convective clouds under a conditionally unstable lapse rate. The variable cloud cover and rainfall may base positive and negative feedback with the ocean mixed layer temperature and salinity structure. The coupling of the...

Effects of Satellite Spectral Resolution and Atmospheric Water Vapor on Retrieval of Near-Ground Temperatures
Authors: Alan E. Lipton

... the surface temperature errors tend to be smaller and the low-level air temperature errors tend to be larger. These values do not account for other sources of retrieval error, such as interference by clouds, uncertainty of the ground surface emissivity, or deficiencies in the radiative transfer computation method. ANNOTATION: Reprint: Effects of Satellite Spectral Resolution and Atmospheric Water Vapor on Retrieval of Near-Ground Temperatures.

Real-Time Data Collection Programs and Source Code for a Commercial Passive FTIR Remote Sensor
Authors: Robert Knoutil; Michael Houy; Gary S. Small

... in C language for an IBM PC using the DOS operating system allow one to collect and display data in a variety of formats useful for the environmental monitoring of vapor clouds. Software is described that enables the user to execute signal processing algorithms for the real-time analysis of interferograms. The programs collect data from the commercial interferometer and detect a vapor species using digital filters and pattern recognition methods. Source code and documentation describing all program functions are provided...

Modeling the Multiphase Atmospheric Chemistry of Launch Clouds
Authors: B. B. Brady; L. R. Martin

The adaptation is described of a widely available subroutine library, originally developed to model chemical vapor deposition to model a plume of steam and hydrogen chloride gas that is released during solid rocket booster launches such as the Space Shuttle and the Titan IV. Hydrogen chloride is a very hygroscopic gas, and it tends to form an aerosol cloud from the water vapor in the atmosphere as well as from the steam released by engine combustion and launch deluge water. The aerosol cloud is the most difficult feature to model because it involves phase...

Target Detection in Multispectral Images using the Spectral Co-Occurrence Matrix and Entropy Thresholding
Authors: Mark L. Althouse; Chein-I. Chang

... related to entropy-based segmentations computed for the statistics of a spatial co-occurrence matrix. For detection of spectrally active targets such as chemical vapor clouds in multispectral or hyperspectral imagery, a spectral co-occurrence matrix is employed. Using the entropy of various regions of the matrix, thresholds can be ... spectral characteristics of the intended target. Experiments are presented that show the detection of a chemical vapor cloud in multispectral thermal imagery. Several manners of dividing the co-occurrence matrix into...

Modeling of Cloud/Radiation Processes for Tropical Anvils
Authors: Q. Fu; K. N. Liou; S. K. Krueger

... tropics are covered by extensive cirrus cloud systems. Tropical cirrus clouds evolve during the life cycle of the mesoscale convective systems and are modulated by large-scale disturbances. Outflow cirrus clouds from tropical cumulonimbus appear to be maintained in a convectively active state by radiative flux gradients within the clouds, as suggested by Danielson (1982). Extensive anvils are likely to become radiatively ... convective fluxes which in turn would provide an upward flux of water vapor within the cloud. The additional moisture at cloud top levels would promote rapid...

Cloud Optical Depth Retrieval from Cloud Radar and Microwave Radiometer Measurements
Authors: Paul R. Desrochers

Radar and microwave radiometer measurements of clouds were taken along the California Coast at Vandenberg AFB on 10 ... with Minuteman III and Titan II rocket launches. The purpose was to characterize the clouds to derive an estimate of the optical depth at the time of the launches. These ... effort at AFRL to detect rocket emissions through optically thick clouds. The instruments used were the Air Force Research Laboratory Ka-band (35 GHz) ... and a Radiometrics Corp. model WVQ-500, 5-channel (22-30 GHz) water vapor profiling microwave radiometer. A variation of the technique developed by Frisch et al ...

New Techniques for Contrail Forecasting
Authors: B. B. Brady; L. R. Martin

... involved with the contrail formation and persistence. These studies demonstrate that the contrail formation and persistence are related to the stratospheric temperature structure...
Multi-Sensor Improved Sea Surface Temperature (MISSST) for GODAE
Authors: Cheille L Gentemann; Gary A Wick; James Cummings; Eric Bayler; NAVAL RESEARCH LAB STENNIS SPACE CENTER MS OCEANOGRAPHY DIV
Jan 1, 2004 7 pages

Multi-Sensor Improved Sea Surface Temperature (MISSST) for GODAE

Aerosols and atmospheric water vapor affect IR retrievals, these phenomena have little impact on MW retrievals. Characteristically, IR SST provides high spatial resolution (~1 km at nadir) but poorer coverage with the presence of clouds.

Numerical Approximations of Selected Meteorological Parameters Related to Cloud Physics
Authors: Walter S, Nordquist Jr; ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N MEX ATMOSPHERIC SCIENCES LAB
Mar 1973 50 pages

Image Detection Using Edge Extraction Algorithms
Authors: Chein-I Chang; MARYLAND UNIV BALTIMORE
Aug 1993 74 pages

FEASIBILITY STUDY FOR THE DEVELOPMENT OF A SMOKE TRACER FOR AN APDS SHOT
Authors: David J. Edelman; Seymour M. Kaye; PICATINNY ARSENAL DOVER NJ FELTMAN RESEARCH LABS
Jul 1965 27 pages

Authors: NAVAL OCEAN SYSTEMS CENTER SAN DIEGO CA
Jul 31, 1980 639 pages

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Aerosols and atmospheric water vapor affect IR retrievals, these phenomena have little impact on MW retrievals. Characteristically, IR SST provides high spatial resolution (~1 km at nadir) but poorer coverage with the presence of clouds.
This presentation includes technical comparisons of different atmospheric modeling instruments. For this report, results of the DBIS (Double Input Beam Interferometer Sounder) were compared to models such as FASCOD3 and MODTRAN2/L. The goal of this project was the retrieval of atmospheric temperature and water vapor profiles and possibly over relevant information on clouds and aerosol properties from high resolution IR emission measurements with a ground-based interferometer.

Comparison between Cross-Track and Conical Scanning Microwave Window Channels

Aug 2000 15 pages

Authors: J. E. Wessel; D. J. Boucher; AEROSPACE CORP EL SEGUNDO CA

... objective of this study was to determine the angular characteristics of the cross-track 92-GHz window channel of the SSM/T-2 microwave water vapor radiometer (T-2) over the ocean surface and to relate measurements from this instrument to corresponding 85-GHz window channel measurements from the ... model and provided a general relationship between 92-GHz SSM/T-2 and 85-GHz SSM/I signals, which is applicable in the absence of depolarization by rain, clouds, or severe sea surface roughness. Intercomparison between instruments, based on surface modeling, may be useful for instrumental calibration, it ...

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Results per page: 50