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Cloud Dissipation



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[Dynamics of Marine Cloud Layers: Computer Simulation and Experimental Verification](#) Dec 15, 1998 61 pages

Authors: [Joseph Chi](#); [DISTRICT OF COLUMBIA UNIV WASHINGTON](#)

Goals of this research have been to identify physical processes that determine the dynamics of the marine **cloud** layers and to quantify roles of turbulence, convection and thermal radiation that play in formation, **dissipation** and stability of the marine **cloud** layers. And immediate objectives of the research are to advance turbulence models, use efficient numerical schemes, develop computer simulation programs, simulate the marine **cloud** layers and compare computer results with published experimental data on the marine **cloud** layers so as to yield insights into the **cloud**'s physical processes.

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[Dynamics of the Marine Cloud Layers](#) Jul 28, 1999 78 pages

Authors: [Joseph Chi](#); [DISTRICT OF COLUMBIA UNIV WASHINGTON](#)

... have been to identify physical processes that determine the dynamics of marine **cloud** layers and to quantify roles of turbulence, convection and thermal radiation that play in formation, **dissipation** and stability of the marine **cloud** layers. And immediate objectives of the research ... numerical schemes, develop computer simulation programs, simulate the marine **cloud** layers and compare computer results with published experimental data on the marine **cloud** layers so as to yield insights into the **cloud**'s physical processes. For these objectives, two theoretical models. using the ...

**Full Text**

[Suppression of Marine Stratocumulus Clouds Due to Reduced Cloud Condensation Nuclei](#) Sep 2000 68 pages

Authors: [Neil T. Smith](#); [NAVAL POSTGRADUATE SCHOOL MONTEREY CA](#)

... researchers have documented a variety of processes at work in the formation and **dissipation** of clouds in the marine boundary layer (MBL). **Cloud** rifts occasionally mark a distinct ... the removal of CCN by nucleation scavenging and drizzle. A **cloud** rift feature embedded in marine stratocumulus was observed in ... the rift were only 1/6 that observed below the background stratocumulus. **Cloud** droplets in rift clouds were 3-5 microns larger than ... losses can be accounted for in drizzle droplets and the disruption of the **cloud** layer evolves in a manner described by Ackerman (1993).

**Full Text**

[Observed Microphysical and Radiative Structure of Mid-Level, Mixed-Phase Clouds](#) May 2001 190 pages

Authors: [Robert P. Fleishauer](#); [AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH](#)

... We found the virtual potential temperature to be the best discriminator of **cloud** interfaces for mid-level clouds, with 1-2 C differences between ambient ... air. A noteworthy contribution to this observational study was the use of the **Cloud** Particle Imager (CPI) instrument for the qualitative analysis of ... particle sizes, shapes, habits, and distributions through the **cloud**. An analysis of the liquid water budget of a Lagrangian **cloud** sample ... that large-scale subsidence was the main mechanism responsible for its **dissipation**. Heating rates and fluxes are computed for each **cloud** using a single-column ...

**Full Text**

[Numerical Simulation of Cirrus Clouds - Fire Case Study and Sensitivity Analysis](#) Aug 12, 1991 142 pages

Authors: [Scot T. Heckman](#); [COLORADO STATE UNIV FORT COLLINS DEPT OF ATMOSPHERIC SCIENCE](#)

... agreement between observed and model predicted dynamic and **cloud** fields. We verified **cloud** height, thickness, areal extent and microphysical composition against GOES satellite imagery, ... to determine possible formation, maintenance and **dissipation** mechanisms. Sensitivity simulations were run to ... was run with no condensate to examine **cloud** feedbacks on the environment. **Cloud** top generation zones, ... activity in the lower layer thereby increasing its optical depth. **Cloud** top cooling and **cloud** base heating affected the flow around the **cloud**. Secondly, the effects of three upper boundary ...

**Full Text**

[Evolution of Boundary Layer Height in Response to Surface and Mesoscale Forcing](#) Mar 2005 75 pages

Authors: [Matthew J. Moore](#); [NAVAL POSTGRADUATE SCHOOL MONTEREY CA DEPT OF METEOROLOGY](#)

This thesis study focuses on understanding the **dissipation** processes of the stratocumulus deck after sunrise. This objective is met ... the boundary layer mean thermodynamic properties during the **cloud** breakup period. Measurements from a laser ceilometer and the routine surface measurements are also used to detect the variation of **cloud** base height, the evolution of the **cloud** deck, and the onset of sea breeze. These measurements revealed the increase of the boundary layer depth ... surface heating and sea breeze development in modulating **cloud** evolution. The effects of surface heating and sea breeze ...

**Full Text**

[Determining the Fine Structure of the Entrainment Zone in Cloud-Topped Boundary](#)

Mar 2005 93 pages

[Layers](#)Authors: [Michael S. Horner](#); [NAVAL POSTGRADUATE SCHOOL MONTEREY CA DEPT OF METEOROLOGY](#)

... , the presence of an interfacial layer in-between the top of the **cloud** mixed-layer and the base of the free atmosphere is identified and consequently ... on the order of tens of meters, where turbulence and sometimes **cloud** droplets are detectable. Inhomogeneous mixing was found to occur within the ... the entrainment zone. Analyses suggest that turbulence intensity and **cloud** amount in the entrainment zone vary depending on the distribution of ... entrainment zone appears to dissipate the upper-cloud layer. However, continuous **dissipation** of the upper-cloud layer has not been observed. Further study is ...

[Full Text](#)[Mid-Level Vorticity in Mesoscale Convective Systems](#)

May 8, 1996 100 pages

Authors: [Ronnie G. King](#); [AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH](#)

... spent over the WPDN. Bartels and Maddox's (1991) climatological study of MCVs for 1981 - 1988 estimated that less than 5% of MCSs exhibit a vortex whose clouds persist long enough after the **dissipation** of the MCSs high-level obscuring cirrus **cloud** to become apparent in visible satellite imagery. This low estimate of MCVs in MCSs leads to the question of how many MCSs produce MCVs. Some researchers state that the MCV is an inherent part of the ...

[Full Text](#)[High-Order Godunov Schemes for Multiphase Gas-Particulate Flowfield Modeling and Simulation](#)

Sep 2000 53 pages

Authors: [Jacob Krispin](#); [Mark Potts](#); [Brady Brown](#); [Ralph Ferguson](#); [James Collins](#); [KRISPIN TECHNOLOGIES INC ROCKVILLE MD](#)

... facilities. The evolution of nuclear clouds at relatively late (incompressible) times is also simulated. The results are compared with empirical and analytical data where available. In general, axisymmetric simulations do not accurately caption the physics of such flows in terms of **cloud** height, width, and rate of **dissipation** in comparison to three-dimensional simulations.

[Full Text](#)[Analysis of Aerosol Aging in the Rotating Drum Chamber](#)

Aug 2005 76 pages

Authors: [Janon F. Embury](#); [Tiffany A. Sutton](#); [EDGEWOOD CHEMICAL BIOLOGICAL CENTER ABERDEEN PROVING GROUND MD](#)

... . Once rotation begins, transport by diffusion was found to dramatically decrease, probably because convective currents gyrate driving smaller eddies that experience rapid viscous **dissipation**. Damping of convective diffusion was found to be sufficient for transport to be dominated by centrifugal acceleration three orders of magnitude smaller than gravity acting on particles ... settling dominates. When the drum was rotated, transport by the repulsive coulombic force between a triboelectric charged particle and the monopolar charged aerosol **cloud** dominated transport by centrifugal acceleration.

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