TRANSLATION Emm-65-51(a)

TRANSLATED SUMMARY AND TABLE OF CONTENTS

APPEARING IN THE MONOGRAPH

A STUDY OF THE MICROPHYSICAL MECHANISM OF WARM-CLOUD PRECIPITATION

暖云降水微物理机制的研究

by

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The Science Press, Peking, China. 1964. 105 pp.

SUMMARY

This monograph on modern meteorology contains a summary of the results of a study of the microphysical mechanism of warm-cloud precipitation in China during the past three years. Included is a critical survey of the related topics investigated in other countries.

This four-chapter monograph is subdivided into fourteen sections and contains 47 figures, 10 tables, 67 references and equations. It begins with a discussion of the characteristics of the stochastic growth of cloud droplets, followed by a review of the theories of cloud-droplet growth. The effect of a fluctuating humidity distribution on condensation growth, the collision and coalescence growth in a fluctuating density field, a turbulence field and due to fluctuating vertical current, and the mechanism for cloud droplet electrification together with the effect of electric charge on collision and coalescence growth are examined. On the basis of the results obtained, a more general statistical theory of warm-cloud precipitation is proposed. This theory, when compared with the past theory of gravitational collision and coalescence, permits a more objective generalization of facts. The concept of stochastic process introduced in this theory can also be extended to the study of the microphysical processes of cool-cloud precipitation.

The theoretical analysis of these problems offers a new approach to the understanding and further study of the microphysical processes of cloud and fog precipitation.

The reference monograph is intended for researchers and academicians.

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TABLE OF CONTENTS

205-cth-12/65