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Application of ERTS Data to the Detection of thin Cirrus and
Clear Air Turbulence

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15. Abstract The feasibility of detecting a thin cirrus and clear air turbulence from ERTS MSS data is explored. The result of analyses indicates that a thin cirrus not shown in a conventional meteorological satellite picture can be revealed in ERTS MSS picture. It is also found that the core of jet stream can be located with high accuracy from ERTS pictures and the possible area of clear air turbulence can be predicted if the data of the quality of ERTS data are available in real time.		

1. Objective

Detection of CAT in reference to cirrus species observed by ERTS

2. Scope of activity

Sampling of pictures to be investigated

Using catalogues and roll of microfilm, pictures which contain cirrus are selected.

Processing pictures

Mostly channel 5 films MSS are printed. This channel pictures are most suitable for studying clouds

Classification of cirrus cloud

The method is qualitative, objective means are under consideration.

Data collection

Conventional data

Aircraft reports

collected routinely at Air Weather Service, Tokyo International Airport from civil and military aircraft flying mostly over Japanese island chain.

Construction of charts

Surface charts

Upper air charts

Space cross section chart

Flight cross section chart

Summary of analysis of charts.

3. Significant analyses, finding and techniques.

4

CAT is found in the region where cirrus cloud with chaotic edge indicative of trail, entangled or curved filaments is observed in ERTS picture.

4. Conclusion

The resolution of ERTS pictures is 10-20 times finer than conventional weather satellite pictures. Although our study is limited to the interpretation of cirrus cloud, the pictures used are definitely useful for the study of mesoscale phenomena.

5. Recommendations

Three other examples of pictures which exhibit similar species are obtained throughout the period covered, however, any aircraft did not report over the cirrus region. These pictures were taken over the sea. In order to substantiate the finding mentioned above, more data is necessary.