

References

(Written in Japanese)

Asai, T. (1983): "Taiki Tairyu no Kagaku"(Science of Atmospheric convection), Tokyodo Shuppan, 220pp.

Asai, T. (1988): Meso-scale features of heavy snowfalls in Japan Sea coastal regions of Japan, *Tenki*, 35, 156-161.

Bokura, K. (1995): "Yamase" and Cold Summer Damage, *Kisyo-kenkyu Note*, 183, 15-30.

Browning, K. A. (1999): Dry Intrusions and the Mesoscale frontal, Cloud and Precipitation Structure of Extratropical Cyclones, *Tenki*, 46, 97-103.

Forecast Division, Forecast Department, JMA, Tokyo Aviation Weather Service Center, and New Tokyo Aviation Weather Service Center (1993): Development of Conceptual Models of Mesoscale Phenomena, Aimed at Applying to the Practical Use in Aviation Weather Forecast (Report 2) – A Summary of National Symposium on Forecasting Techniques for Aviation Held in fiscal Year 1992-, *Journal of Meteorological Research*, 45, 139-157.

Fuchita, N. and K. Onosato (1998): Forest Fire observed by GMS-5 in the Maritime Province region, *Meteorological Satellite Center Technical Note*, 36, 61-67.

Fujiyoshi, Y. (1999): Comment on "Dry intrusions and the Mesoscale Frontal, Cloud, and Precipitation Structure of Extratropical Cyclones", *Tenki*, 46, 104-108.

Hasegawa, Y. (1998): Features of Low Cloud and Fog on Satellite Image, *Nephanalysis Case Study Reports*, *Meteorological Satellite Center*, 1-5.

Ikeda, H. and H. Okumura (1999): Grasping the Occurrence Area of Clear Air Turbulence with Water Vapor Imagery, *Aviation Weather Notes*, 57, 11-25.

Iwasaki, H. and T. Takeda (1993): Characteristic features on meso-scale cloud clusters around Japan in the Baiu-season from 1985 to 1988, *Tenki*, 40, 161-170.

Kishimoto, K. (1997): The interpretation of water vapor imagery, *Tenki*, 44, 357-361.

Kitabatake, N., A. Kanasaki, S. Ebihara, H. Shigeoka, Y. Ogata, H. Deguchi, N. Uekiyo, Y. Muta, and K. Suzuki (1995): Browning: Extratropical Cyclones, *Weather Service Bulletin*, 62, 1-31.

Kitabatake, N. (1997): Answers to Questions on "Browning: Extratropical Cyclones – Structure of Cloud and Precipitation in Extratropical Cyclones", *Weather Service Bulletin*, 64, 29-44.

Koba, H. (1984): An Explanation of the Revised DVORAK Technique for Estimating Tropical Cyclone Intensity using Satellite Cloud Imagery and Some Results of its Application to Two 1982 Storms, *Meteorological Satellite Center Technical Note*, 9, 39-56.

Kodaira, N. ed. (1980): Remote Sensing Series "Meteorology", Asakura Shoten, 141pp.

- Kumabe, R., K. Kishimoto and T. Sakurai (1996): Estimation of Central Pressure of Mid-latitude marine Cyclones using Satellite Imagery, Meteorological Satellite Center Technical Note, 31, 1-15.
- Kumabe, R. and S. Kumashiro (1997): Estimation of Central Pressures of Comma Cloud, Meteorological Satellite Center Technical Note, 33, 1-15.
- Meteorological Satellite Center (1991): Meteorological Satellite Data "Tapering Cloud", Meteorological Satellite Center, 84pp.
- Meteorological Satellite Center (1993): Water Vapor Imagery, Interpretation and Applications to Weather Analysis and Forecasting (Translation of NOAA Tech. Rep. NESDIS 57), Meteorological Satellite Center, 262pp.
- Meteorological Satellite Division (1976): Application of Meteorological Satellite Data in Analysis and Forecasting (Translation of ESSA Tech. Rep. NES-51), Japan Meteorological Agency, 105.
- Naito, S. (1992): Change and Fall of convergent cloud band over Japan Sea in winter, Materials for the National Symposium on Forecasting Techniques Held in fiscal Year 1991, Meteorological Satellite Center, 21-34.
- Naito, S. (1993): Images by HIMAWARI on July 1993, Kishou, 437, 20.
- Obana, R. (1981): Orographically enhanced cirrus, Tenki, 28, 624-634.
- Obana, R. (1983): Cumulonimbus around Japan in Warm Season, Analysis and application of Cloud Image from the Meteorological Satellite HIMAWARI, Meteorological Satellite Center, 130-132.
- Obana, R. (1983): Anomalous Clouds under orographical Influence, Analysis and application of Cloud Image from the Meteorological Satellite HIMAWARI, Meteorological Satellite Center, 251-257.
- Ogura, Y. (1997): Fundamentals of Meso-meteorology, University of Tokyo Press, 215pp.
- Ohno, H. and N. Miura (1982): Excitation of Kelvin-Helmholtz waves in relation to cirrus transverse lines just below the Tropopause, Tenki, 29, 1235-1241.
- Okabayashi, T. (1972): Snow Clouds seen from Satellite and their Use in Study on Snowfall, Kisyo-kenkyu Note, 113, 74-106.
- Okabayashi, T. (1982): The Use of Meteorological Satellite Data (II), Weather Service Bulletin, 49, 185-250.
- Research Group on meteorology of Marine Department, JMA (1988): On the mesoscale structure of the cloud band system over Japan Sea in winter monsoon period – A mesoscale observation on board R/V Keifuu-Marui, Tenki, 35, 237-248.
- Saito, N. (1979): Weather Analysis, Kisyo-kenkyu Note, 137, 125pp.

- Sapporo District Meteorological Observatory (1989): Study on Small Low generating around Western Coast of Hokkaido, Technical Report of Sapporo District Meteorological Observatory (Special issue 38), 137pp.
- Suzuki, K. and Y. Ando (1992): A Conceptual Model of Meso- α Scale Cloud System that Brings Local Cloudy Weather around Kanto Area, Journal of Meteorological Research, 44, 63-79.
- Suzuki, K. and S. Yamada (1994): Features of Extratropical Cyclones Rapidly Developing around Sea East of Japan: Classification Based on Satellite Imagery, Preprints, 1994 Spring Conference of Meteorological Society of Japan, 65, 279.
- Suzuki, K. (1998): Rapidly Developing Off-Boso Cyclones, Preprints, 1998 Autumn Conference of Meteorological Society of Japan, 74, 118.
- Suzuki, K. (1999): The features of the extratropical cyclones passing through around Japan, Meteorological Satellite Center Technical Note, 37, 35-62.
- Takamine, T. (1995): Images by HIMAWARI on August 1995, Kishou, 462, 20-21.
- Takasaki, H. (1984): Anomalous Cloud Lines in the Northern Pacific Region, Tenki, 31, 315-318.
- Tokuno, M. and R. Kumabe (1996): Satellite Nephanalysis Information Chart (SNIC), Meteorological Satellite Center Technical Note Special Issue, 119-138.
- Uchida, E. (1979): V-type cloud pattern, and severe snowfalls at coastal area of the Japan Sea, Tenki, 26, 287-298.
- Yamada, S. and K. Suzuki (1994): Features of Extratropical Cyclones Rapidly Developing around sea East of Japan: Statistical Investigation, Preprints, 1994 Spring Conference of Meteorological Society of Japan, 65, 278.

References

(Written in English)

- Bader, M. J., G. S. Forbes, J. R. Grant, R. B. E. Lilley and A. J. Waters (1995): Images in weather forecasting , Cambridge Univ. Press, 499pp.
- Browning (1990): Extratropical Cyclones , The Eric Palmen Memorial Volume, C.W.Newton and Holopaine Eds. American Meteorological Society, 129-153.
- Browning, K. A. and F. F. Hill (1985): Mesoscale analysis of a polar trough and interacting with a polar front. Quart. J. Roy. Meteor. Soc., 111, 445-462.
- Carlson, T. N. (1980): Air Flow through midlatitude cyclone and the comma cloud pattern, Mon.Wea.Rev., 108, 1498-1509.
- Chopra, K. P. and L. F. Hubert (1965): Mesoscale eddies in the wake of islands. J. Atmos. Sci, 22, 652-657.
- Corby, G. A. (1957): A Preliminary Study of Atmospheric Waves using Radiosonde Data, Q.J. Roy. Met. Soc., 83, 49-60.
- Ellrod, G. P. (1995): Advance in the Detection and Analysis of Fog at Night Using GOES Multispectral Infrared Imagery. weather and forecasting, 10, 606-619.
- Ellrod, G. P. (1989): A decision tree approach to clear air turbulence analysis using satellite and upper air imagery, NOAA tech. memo. NESDIS23.
- Hubert ,L. F. and A. F. Krueger (1962): Satellite pictures of mesoscale eddies. Mon. Wea. Rev., 90,457-463.
- Lilijas, E. (1989): Experience of an operational cloud classification method.4th AVHRR DATA USERS' MEETING Rothenburg, F. R. Germany, 5-8 September 1989. 73-78.
- Maddox, R. A. (1980): Mesoscale Convective Complexes. Bull. Amer. Meteorol. Soc., 61, 1374-1387.
- McGinnigle, J. B. M. V. Young and M. J. Bader (1988): The development of instant occlusion in the North Atlantic. Meteor. Mag., 117, 325-341.
- Magono, C. (1971): On the localization phenomena of snowfall, J. Meteor. Soc. Japan, 49, 824-835.
- Neiman (1993): The Life Cycle of an Extratropical Marine Cyclone.Part II: Mesoscale Structure and Diagnostics.Mon.Wea.Rev., 122, 2177-2199.
- Ninomiya, K and K, Yamazaki (1979): Heavy Rainfalls Associated with Frontal Depression in Aasian Subtropical Humid Region (II) Mesoscale Features of Precipitation, Radar Echoes and Stratification. J. Meteor. Soc. Japan, 57, 399-413.

- Ramond. D., H. Corbin, M. Desbois, G. Szejwach and P. Waldteufel (1981): The Dynamics of Polar Jet Streams as Depicted by the METEOSAT WV Channel Radiance Field, *Mon. Wea. Rev.*, 109, 2164-2176.
- Reed, R. J., and W. Blier(1986): A Case study of comma cloud development in the Eastern Pacific. *Mon. Wea. Rev.*, 114, 1681-1695.
- Shapiro, M. A. and D. Keyser(1990): Fronts, Jet Streams and the Tropopause. Extra-tropical Cyclones: The Eric Palmen Memorial Volume, C. W. Newton and E. O. Holopaine Eds. American Meteorological Society, 167-191.
- Shimamura, M. (1981): The Upper-Tropospheric Cold Low in the Northwestern Pacific as Revealed in the GMS Satellite Data. *Geophys. Mag.*, 39, 119-156.
- Smigielski, F. J. and H. M. Mogil (1992): A systematic satellite approach for estimating central pressure of mid-latitude oceanic storm. NOAA Technical Report NESDIS 63, U. S. Department of Commerce, 65pp.
- Thomson, R. E., J. F. R. Gower and N. W. Bowker (1977): Vortex Streets in the Wake of the Aleutian Islands. *Mon. Wea. Rev.*, 105, 873-884.
- Weldon. R. B. and S. J. Holmes (1991): Water Vapor Imagery, NOAA Tech. Report NESDIS57, 213pp.
- Young, M. V. G. A. Monk and K. A. Browning (1987): Interpretation of satellite of a rapidly deepening cyclone. *Quart. J. Roy. Meteor. Soc.*, 113, 1089-1115.

Index

A

absorption, 2, 3, 6, 11, 12
amount of radiation, 6, 7
ana-type cold front, 79
anvil cirrus, 10, 36, 45
aspect ratio, 41
atmospheric window, 2, 3, 11

B

backward inclined ascend model, 79
baroclinic leaf boundaries, 61
baroclinic leaf boundary, 59
barrage cloud, 175
base surge boundaries, 68
base surge boundary, 59, 72
bent-back warm front, 117, 121
BH model, 108
Bjerknes model, 92, 117
Black Fog, 164
blackbody radiation, 7, 8
blocking, 58, 62
boundary, 58
bright region, 54
bulge, 38, 95

C

calibration, 4
CAT, 66
Cb, 19
Cb cluster, 43
CCB, 74
CDO, 45
Cg, 19
Ci, 19
Ci streak, 33
clear air turbulence, 66
closed cell, 41, 167
cloud band, 48
cloud cluster, 43, 62, 138
cloud form, 19
cloud leaf, 61, 94
cloud line, 48
cloud street, 41, 155
cloud top height, 5, 6, 9, 14
cloud top temperature, 6, 9, 10
cloud type, 19

Cm, 19

coastal front, 173
coastal gap, 151
cold conveyor belt, 74, 85
cold dome, 131
cold low, 70, 131
cold occlusion, 83, 85
comma-type, 92, 128
convective, 5, 14
convective cloud belt, 51, 144, 157
conveyor belt, 74
Cu, 19
cumulus congestus, 19, 31

D

dark region, 54, 135
darkening, 55, 135
deformation field, 60
dry intrusion, 55, 98
dry slot, 55, 85, 98
dry surge boundary, 59, 66
Dvorak method, 99

E

eclipse operation, 13
emissivity, 3, 8, 9
enhanced Cu, 41
enhanced cumulus, 41, 102

F

foehn, 175
frontal fracture, 117, 120

G

geostationary satellite, 1, 2, 13
GMS, 1

H

hammer head, 55
head boundary, 59, 62
Hokkaido west coast small low, 149
Hokuriku line of discontinuity, 144
hook, 38, 97

I

ice crystal, 9
image of the moon, 18

inside boundary, 59, 62
instant occlusion, 92, 108
intertropical convergence zone, 68
inversion layer, 39, 50
Ishikari Bay small low, 149

J

Japan-Sea Polar-Airmass Convergence Zone,
51
jellyfish type, 171
jet axis, 34, 60, 85
jet core, 60, 66
JPCZ, 51

K

Karman vortex, 50
kata-type cold front, 80
Kelvin-Helmholtz wave, 34

L

landmark, 4
leaf-shaped cloud area, 61
lee wave cloud, 39, 163
line convection, 79
low-level vortex, 134, 144

M

marginal current (wind), 83, 140, 143
MCC, 43
MTSAT, 1, 3, 4
MYB model, 108

N

navigation, 4, 5
NOAA, 1, 13
notch, 102, 120

O

Okabayashi model, 93
open cell, 41, 100, 167
orographic Ci, 35
orographic cirrus, 35

P

pair creation, 128
parallel jet stream boundary, 59
polar low, 100
polar orbiting satellite, 1, 2
positive vorticity advection max, 101
PTCB, 108

PVAmx, 101

R

rain band, 79, 81
range finding, 4
ranging, 4
re-emission, 6
reflectance, 4, 5, 8, 9, 13
resolution, 3, 4
rope cloud, 48, 83

S

Sc, 19
Scorer number, 39
shear, 41, 46, 51, 171
shime, 186
ship trails, 53
SK model, 117
SMZ, 81
solar interference avoiding operation, 23
split front, 81
St, 19
station-keeping control, 5
stratiform, 5
surge, 58, 66, 72

T

tapering cloud, 45
T-bone, 92, 117
texture, 5, 21
transmittance, 9
transverse line, 34
trepan type, 171
tropical upper troposphere trough, 71
tropopause, 36, 55
turbulence, 34, 66
TUTT, 71

U

UCF, 80
UCL, 71
upper trough, 57, 132, 138
upper vortex, 57, 131

V

volcanic ash, 12, 180

W

warm conveyor belt, 74, 94
warm core seclusion, 117, 122

warm occlusion, 83, 87, 120

water cloud, 8, 9

WCB, 74, 94

Y

yamase, 169

yellow sand, 12

Analysis and Use of Meteorological Satellite Images

First Edition

Issued on April 1, 2002

Edited and issued by

Meteorological Satellite Center

Japan Meteorological Agency

3-235 Nakakiyoto, Kiyose-shi, Tokyo