Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

ACG40-01 Room:102B Time:May 19 14:15-14:30

How does atmospheric reanalysis reproduce real atmosphere?

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After NOAA/NCEP completed the first atmospheric reanalysis NCEP/NCAR, 20 years passed. For that time, NCEP/DOE, ERA-15, ERA-40, and JRA-25 are processed and widely utilized in various fields in meteorology. Recently, the new generation re-analysis including MERRA, CFSR, ERA-Interim, JRA-55 are also completed and available.

Today, the atmospheric reanalyses are fundamental database for various meteorology studies. Sometimes, they are utilized as same as observation data. Strictly speaking, however, they are hybrid data of observations and model output, and their qualities are widely distributed from high to low. For example, directly assimilated quantities including surface pressure or surface temperature have almost equivalent qualities as observations. On the other hand, radiation fluxes including OLR are the quantities largely reflecting characteristics of the model performance. Therefore, it is important to understand characteristics and application limitation of the elements to intend for when we utilize reanalysis products.

As a second point, we have to take into account a temporary variation of qualities of reanalysis products with change in observing systems. In atmospheric reanalysis, we aim to produce homogenous quality dataset through the target period with the frozen data assimilation system. On the other hand, there are the changes of the observation systems as another factor to affect the quality of the products. For example, meteorological satellites suffer their generation change in several years, and the qualities of satellite data changes every several years. Therefore, if reanalysis system utilizes satellite data, their products are also affected by the generation change of satellites.

As a third point, we have to pay attention to the possibility of discontinuity of the qualities of the products with the connection of the calculation streams. Sometimes there are large discrepancies between real atmosphere climatology and assimilation model climatology depending on the elements, and there may be some discontinuities around connection of calculation streams in such an element. For example, JRA-25 has large discontinuity in stratospheric moisture field around 1990.

There is not doubt that reanalysis products are the GPV data easy to use which reflected observations. Their qualities are depending on the elements, and we have to understand application limitation of these elements in utilization.

Keywords: Data Assimilation, Reanalysis, Data Integration, Observations

Japan Geoscience Union Meeting 2013
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ACG40-02 Room:102B Time:May 19 14:30-14:45

Release of GCOM-W1 AMSR2 L2 and L3 Products (Geophysical Dataset)

Takashi Maeda[1*], Keiji Imaoka[1], Misako Kachi[1], Arata Okuyama[1], Kazuhiro Naoki[1]

[1]JAXA EORC

The Global Change Observation Mission 1st - Water ”SHIZUKU” (GCOM-W1) was launched by the H-IIA Launch Vehicle No. 21 at 1:39 a.m. on May 18, 2012 (Japan Standard Time, JST) from the Tanegashima Space Center. SHIZUKU satellite is carrying the Advanced Microwave Scanning Radiometer 2 (AMSR2), which is the successor sensor to the Advanced Microwave Scanning Radiometer - Earth Observing System (AMSR-E) loaded on Aqua satellite.

AMSR2 started observation on July 3, 2012, and after the initial calibration operation, the brightness temperature dataset (L1 product) was released from ‘GCOM-W1 Data Providing Service’ (https://gcom-w1.jaxa.jp/) on January 25, 2013. As the next step, release of the geophysical dataset (L2 and L3 products) is scheduled in May, 2013, and we are surely making preparations for it.

On the other hand, observation by AMSR-E was stopped on October 4, 2011 due to increasing frictional resistance of rotating antenna, but was successfully restarted on December, 2012. AMSR-E is now rotating at 2 rpm, one - twentieth slowly than the normal operation, but its data also can be obtained, and used for cross calibration for AMSR2 data.

We present the current status of AMSR2 data products, and how to use them.

Keywords: GCOM-W1, AMSR2, L2 Product, L3 Product, Geophysical Dataset

Japan Geoscience Union Meeting 2013
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ACG40-03 Room:102B Time:May 19 14:45-15:00

In-situ data archiving for the GEOSS/AWCI, AfWCCI and WCRP/AMY on DIAS

Katsunori Tamagawa[1*], Tetsu Ohta[2], Eiji Ikoma[1], Hiroko Kinutani[1], Misa Oyanagi[1], Shizu Kanauchi[1], Masaru Kitsuregawa[3], Jun Matsumoto[4], Toshio Koike[2]

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This is to introduce three types of international in-situ data archive research projects which are ongoing in Asia and Africa. The two are Global Earth Observation System of Systems (GEOSS)/Asian Water Cycle Initiative (AWCI), and African Water Cycle Coordination Initiative (AfWCCI) and the other one is World Climate Research Programme (WCRP)/Asian Monsoon Years (AMY) by using Data Integration and Analysis System (DIAS).

DIAS which was launched in 2006 as part of the Earth Observation and ocean Exploration System, provides cooperative opportunities for constructing GEOSS/AWCI, AfWCCI and WCRP/AMY data archives, and developing data integration and analysis functions (http://www.editoria.u-tokyo.ac.jp/projects/dias/).

The objectives of GEOSS/AWCI and AfWCCI is to develop an information system of systems for promoting the implementation of integrated water resources management (IWRM) through data integration and sharing and improvement of understanding and prediction of the water cycle variation as a basis for sound decision making of national water policies and management strategies. Currently the 18 demonstration basins from AWCI data are widely open to public through the DIAS and now archiving long term (historical data) from each demonstration basin, and two hydrological and meteorological data are archived form 2 AfWCCI river basins.

The long-term goal of WCRP/AMY is to improve Asian monsoon prediction for societal benefits through coordinated efforts to improve our understanding of Asian monsoon variability and predictability. The various kind of in-situ data are archived from 24 international projects. (http://www.wcrp-amy.org/).

The basis for the GEOSS/AWCI, AfWCCI and WCRP/AMY collaborative framework is the mutual consensus among participating countries, international organizations and individual participating and partner projects that defines data sharing and exchanging policy and responsibilities for data processing, management and archiving.

The purpose of this poster is to provide the introduction of the GEOSS/AWCI, AfWCCI and WCRP/AMY and their data archiving status which used data uploading system, data quality control system and metadata registration system under the framework of DIAS.

Keywords: DIAS, GEOSS/AWCI, GEOSS/AfWCCI, WCRP/AMY, in-situ data, Water Cycle

Japan Geoscience Union Meeting 2013
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ACG40-04 Room:102B Time:May 19 15:00-15:15

The release of Arctic Data archive System(ADS)

Hironori Yabuki[2*], Haruko Kawamoto[1]

[1]National Institute of Polar Research, [2]Japan Agency for Marine-Earth Science and Technology

Arctic is the region where the global warming is mostly amplificated, and the atmosphere/ ocean/ cryosphere/ land system is changing. Active promotion of Arctic environmental research, it is large and responsible for observational data. Promotion of Arctic research in Japan, has not been subjected to independent in their respective fields.

In the National Institute of Polar Research, perform the integration and sharing of data across a multi-disciplinary such as atmosphere, ocean, snow and ice, land, ecosystem, model, for the purpose of cooperation and integration across disciplines, we build a Arctic Data archive System (ADS).

Arctic Data archive System (ADS), to promote the mutual use of the data across a multi-disciplinary to collect and share data sets, such as observational data, satellite data, numerical experiment data. Through these data sets, clarify of actual conditions and processes of climate change on the Arctic region, and further contribute to assessment of the impact of global warming in the Arctic environmental change, to improve the future prediction accuracy.

Keywords: Arctic, Environment, Global Warming, Data

Japan Geoscience Union Meeting 2013
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ACG40-05 Room:102B Time:May 19 15:15-15:30

The current state of Cryosphere Data Archive Partnership(CrDAP)

Hironori Yabuki[1*]

[1]Japan Agency for Marine-Earth Science and Technology

Asia Eurasian cryosphere is a key area of the global climate system is a big factor in recent years as glacier, frozen ground and frozen glacier fluctuations, have been focused. Changes in the cryosphere, IPCC AR-4 report is described has been greater concern for social impacts in particular. The Snow and Ice Data, NCDC and NSIDC data are being developed worldwide have become a data center, such as the USA. The Snow and Ice data, there are no international data organizations such as WMO, is very weak and data archive to worldwide. It is required to share the data of a cryosphere data between large areas, the atmosphere, land, and the water area continuing irrespective of the without border, and closing the information about the cryosphere of a wide area per country. Especially, many countries exist in the Asia Eurasia cryosphere, and in order to understand frozen ground, snow and glacier area change in a wide area, international and systematic data management is needed. The necessity is pointed out also by IPY or IGOS-Cryosphere.

Keywords: Cryosphere, Database

Japan Geoscience Union Meeting 2013
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ACG40-06 Room:102B Time:May 19 15:30-15:45

Database of the rapidly deepening extratropical cyclones in Japan

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Rapidly deepening extratropical cyclones (so-called ‘meteorological bomb cyclones’) are frequently observed in Japan during cold season. Due to severe weather conditions (strong wind, heavy rainfall and/or snowfall) accompanying with rapid development of traveling cyclones, a bomb cyclone occasionally cause serious damages to socioeconomic activities in Japan.

Database of the rapidly deepening extratropical cyclones in Japan (http://fujin.geo.kyushu-u.ac.jp/meteorol_bomb/; in Japanese) provides comprehensive information of the meteorological bomb cyclones after 1996. The database contains several statistics of bomb cyclones (e.g. track path, sea level pressure at cyclone center, deepening rate, and total lifetime of cyclone) obtaining from the Japanese 25-year Reanalysis (JRA-25) and the Japan Meteorological Agency Climate Data Assimilation System (JCDAS). In addition to the cyclone statistics, you can get observed atmospheric field variables (e.g. horizontal wind and rainfall amount at the AMeDAS observatories, infrared image of geostationary meteorological satellite) and disaster information during total lifetime of bomb cyclone. Users can also see monthly frequency and inter-annual variation of bomb cyclones for the specified period.

Keywords: meteorological bomb cyclone, disaster information

Japan Geoscience Union Meeting 2013
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ACG40-07 Room:102B Time:May 19 15:45-16:00

Web analytics to improvement of data dissemination websites

Kazuyo Fukuda[1*], Hideaki Saito[1], Tomoaki Kitayama[1], Shin Miyagi[2], Ruri Funakoshi[1], Makoto Nakamura[2], Akira Sonoda[1]

[1]JAMSTEC, [2]Marine Works Japan Ltd.

The Data Research Center for Marine-Earth Sciences (DrC), Japan Agency for Marine-Earth Science and Technology (JAMSTEC) publishes information of data and samples obtained by JAMSTEC's research cruises to the internet through multiple data dissemination websites[1)]. In order to improve usability of our websites, it is important to understand user's behaviors and needs. We promote the use of web server logs and application logs to understand them.

The web server logs about data dissemination websites operated by DrC are routinely collected and preprocessed. The preprocessed data are used as input data to a web analytics tool AWstats[2)], and the output data such as page views and number of visit is daily monitored. For web accesses from outside of JAMSTEC network, a monthly report is produced by using monthly data calculated from the AWStats. When outstanding changes of page views or search phrases are detected, additional information such as trend of search engine keywords or contents of referred pages is also described in the report. Furthermore, characteristics of visitor are also investigated based on organization name referred from domain name or IP address. It becomes possible to extract differences of visitor's business type among websites from the number of page views by each domain. This information is also used to consider target user group for hearing survey and usability survey about our websites.

For some website, the systems have been developed after considering utilization of application logs at the design phase. Consequently, application logs for data search and download have been able to be stored. Search logs make available for research metadata, keywords and number of matching results when searching data or samples. Download logs are used to discover frequent patterns downloaded type of data or sample and combination of them. Furthermore, a fusion of application logs and user information such as user's profile or comment entered on user registration page or questionnaire page makes understandings of user's needs in more detail.

In our presentation, we will show examples of analysis results and report our future issues of web analytics.

References
1) http://www.jamstec.go.jp/drc/e/datasites/
2) http://awstats.sourceforge.net/

Keywords: Data dissemination, web analytics, user's behaviors, user's needs, web server log, application log

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ACG40-08 Room:102B Time:May 19 16:15-16:30

The metadata collection of Earth observation project data products by DIAS

Hiroko Kinutani[1*], Toshiyuki Shimizu[2], Masatoshi Yoshikawa[2], Masaru Kitsuregawa[1], Toshio Koike[1]

[1]The University of Tokyo, [2]Kyoto University

Our project, DIAS (Data Integration and Analysis System) started in 2006, has a purpose of constructing data infrastructure that can integrate earth observation data, numerical model outputs, and socio-economic data effectively. DIAS also has a purpose to create knowledge enabling us to solve earth environment problems and to generate socio-economic benefits. From October 2010, we have released data of DIAS with Document-metadata, describing about dataset in English and Japanese. Anyone can use the DIAS data discovery system by accessing http://dias-dss.tkl.iis.u-tokyo.ac.jp/ddc/finder, and can download data files of 187 datasets through the system.

hrough Earth Observation implementation plan we are aiming centralized registration of metadata about Earth observation data, the published data for the purpose of sharing and of observation towards the integrated use of the Global Earth Observation System of Systems in Japan. As a first step, we are supporting the creation of metadata for projects as listed on the ”Implementation Plan for Earth Observation in Japan’s FY 2011”. We have conducted a survey of metadata about the contents of the data that has been collected in the projects to 155 projects for Earth Observation implementation plan of FY 2011 of the Ministry of Education from June 2012. Answered 95 projects, the number of respondents were 130. The main agencies who have responded are JAXA, NICT, JAMSTEC, NIPR, FFPRI, NIES, GSI, JMA, JCG, NIAES etc.. About data release, all data is published from 55 respondents, a part of data is published from 29 respondents and 46 respondents are answered as unpublished. We found that 65% of organizations have the means to publish data products because they are consist of research institutions and public service institutions. 90% of the data that has been published is already implemented quality control. Many climate information, weather, disaster, environment, earth science, ocean ecosystems are areas where the product is the appropriate data. In-situ, marine, earth observation satellite, simulation models are platforms where the product is the appropriate data. Survey results are published in http://dias-d.tkl.iis.u-tokyo.ac.jp/dias-report/enquete/. In February 2013, 292 data products have been collected from 155 projects and about 2,200 metadata have been collected.

Based on the preliminary survey, we are identifying the data products in each project, and are creating or collecting their metadata. Against the 45% respondents not creating metadata, we ask to create metadata using the DIAS metadata management system. Using the DIAS metadata management system, everybody can create the ISO 19139 format metadata (XML) and PDF and HTML dataset documentation. 55% respondents are answered have already created the metadata. The format of the metadata that is already created are various; DIF, JMP2.0, EML, for example. When respondents have metadata complying with the standard specifications for metadata related to Earth observation data, we collect metadata from them. But, when respondents don’t have metadata complying with the standard specifications for metadata related to Earth observation data, we ask to create their metadata using the DIAS metadata management system.

We will plan the design and development of an integration and mediation metadata system in order to extract the most characteristics of various fields of data from metadata written by several kinds of metadata formats, and to provide basic information for integrated use of data. We will also provide search services that can have access to the data products from Earth Observation projects.

Keywords: DIAS, Earth Observation project, Satellite data, Model output data, In-situ data, metadata

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ACG40-09 Room:102B Time:May 19 16:30-16:45

Toward the One Stop Data Shop in JAMSTEC 2 (Achievement and Future Plan of the Integrated Database)

Yasunori Hanafusa[1*], Kazuyo Fukuda[1], HASE, Hideaki[1], SAITO, Hideaki[1], Yuji Ichiyama[1], SATO, Takako[1]

[1]JAMSTEC

1. Background

Data Research Center for Marine-Earth Sciences(DrC) in the Japan Agency for Marine Earth Science and Technology(JAMSTEC) has developed an integrated database ”Data Research System for Whole Cruise Information(DARWIN)” for data from JAMSTEC’s research cruises and dives. Authors reported it in Ichiyama et al.(U01-P01, JpGU Meting 2012). DrC transferred data from the old data site to DARWIN and opened it to public (http://www.godac.jamstec.go.jp/darwin/e/) October 2012. DrC, a data center in JAMSTEC, collects, manages and disseminates various kinds of data from cruises and dives. DARWIN is designed to provide an comprehensive search, check and download service (One Stop Data Shop). In this presentation authors will show the functions of DARWIN and current situation and future plan of our ”One Stop Data Shop” realized by DARWIN.

2. Achievement

Although the former ”Data Site for Research Cruises” was an aggregate of html pages which are arranged to cruise number, DARWIN uses a relational database management system and enables users to;

- search for cruises, dives, data and samples by various kinds of metadata rather than cruise number,
- narrow down cruises, dives, data and samples by selecting keywords in a hierarchical metadata tree (Data Tree),
- collect and download selected data file(s) in a ”basket” and
- access to the related databases(rock, sediment core, biological sample, documents and images) with automatically generated links.

Especially the Data Tree is a comprehensive search tool which enables even not-professional users to find cruises, dives or data easily by selecting hierarchically not only name of research vessels, submersibles or year of observation, but also month of observation, dive depth, science keyword(data type) or type of sample.

By these new functions users are able to search for data from cruises or dives via various kinds of search path in DARWIN, check, store and download it, and also access to the information of samples, documents and images. DrC encourages user registration and provides exclusive services to log-in users such as downloading more than one data file by one click, keeping user’s own basket and showing download history, etc.

3. Future Plans

DrC is going to improve the functions of DARWIN simpler and more usable by analyzing access records and figuring out the tendency and needs of users.

In the next step DARWIN will enable to create a dataset and visualize it by integrating or extracting data from original data files.

DrC is also providing a data search service on a map ”Data Seaerch Portal (http://www.godac.jamstec.go.jp/dataportal/index_eng.html)”, and a metadata search service for databases and data sites ”Data Catalog (http://www.godac.jamstec.go.jp/catalog/data_catalog/index_en.htm DrC is going to discuss the integration of these search services and DARWIN to develop the next One Stop Data Shop as a whole information service in DrC.

Keywords: One Stop Data Shop, Integrated Database, Oceanographic Observation Data, Data Management

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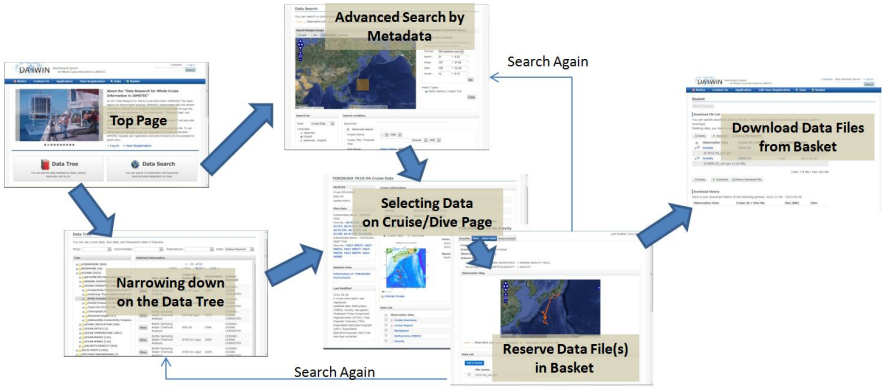

Figure : Data Search and Download in DARWIN

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ACG40-10 Room:102B Time:May 19 16:45-17:00

Development of VDVGE: Volume visualization software for Google Earth

Shintaro Kawahara[1*], Fumiaki Araki[1], Keiko Takahashi[1]

[1]JAMSTEC

Software to visualize volume data called VDVGE (Volume Data Visualizer for Google Earth) was developed. VDVGE visualizes a three-dimensional scalar data, and exports it to KML and COLLADA which are suitable format to Google Earth. Data format that can be input to VDVGE is a data descriptor file for GrADS (The Grid Analysis and Display System) that is visualization software for earth science data. In this software, volume rendering method using layered color slice images with opacity is used as one of the methods to express the visualization results of simulation data to represent on Google Earth. It is necessary to determine various parameters (transfer function, numbers of color slice images, and so on), and it requires much skill. However, it becomes easy to determine these parameters by operation using GUI. VDVGE is developed by using Qt SDK that is a GUI toolkit. Qt is a framework of the cross-platform, and the binary for Windows, Linux, and Mac OS can be made by a common source code. The source code of VDVGE has been published under GPL v3.0 license and anyone can use freely. In the presentation, we will introduce VDVGE and its technical features. And we will also introduce a cross-cutting approach (simulation, observation and visualization researchers) via this software.

Keywords: Google Earth, Volume visualization, Software development

Japan Geoscience Union Meeting 2013
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ACG40-11 Room:102B Time:May 19 17:00-17:15

Daily simulation using the cloud resolving model

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We have conducted the daily simulation using the Cloud Resolving Storm Simulator (CReSS: Tsuboki and Sakakibara, 2002) developed by Hydrospheric Atmospheric Research Center, Nagoya University since 2005. Because of the computer limitation, the simulation domain was limited around the target observational region and the horizontal resolution was 5km. After third generation cluster system has installed in 2010, the simulation domain was expanded almost all Japan and the horizontal resolution was 2.5km. Since October 2012, the horizontal resolution has been 2.0km. We have also developed the three dimensional atmosphere-ocean coupled model (CReSS-NHOES) since 2010. The ocean model, Non-Hydrostatic Ocean Model for the Earth Simulator (NHOES), has been developed by Japan Agency for Marine-Earth Science and Technology. Using this model, we have conducted the daily atmosphere-ocean coupling simulation which the horizontal resolution is about 5km since 2011. We have saved all results without any information loss. We make use of them to evaluate and improve the CReSS and the CReSS-NHOES. Also, it is expected that these data would be useful for assessment, such as wind and photovoltaic power plant.

Keywords: cloud resolving model, atmosphere ocean coupled model

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ACG40-12 Room:102B Time:May 19 17:15-17:30

Idealized Experiments for Data Assimilation of Vapor Isotopes with Isotopic AGCM and Ensemble Kalman Filter

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[1]Atmosphere and Ocean Research Institute, University of Tokyo

We present idealized tests to develop a data assimilation system of stable water isotopes by combining high frequency vapor isotope satellite observations with the isotope-incorporated general circulation model and a data assimilation technique based on the ensemble Kalman filter. We developed an LETKF-based four dimensional data assimilation system which provides analysis of water isotope and atmospheric state variables, which are physically and dynamically consistent. Not only this purpose, but also we have a purpose of quantifying the observation impact on the dynamical fields (wind, temperature, humidity, pressure). We have done several numerical experiments using various idealized datasets based on the pre-executed model simulation. Comparing with a control experiment with conventional atmospheric fields, addition of isotopic fields as input observation had small positive impact on both isotopic fields and dynamical fields. Surprisingly, if there is less conventional atmospheric observation, the positive impact on the dynamical fields became much larger. The results indicate that there is potential of isotopic data as dynamical constraint of the model, particularly for the past with only isotopic observation data.

Keywords: vapor isotope ratio, data assimilation, general circulation model, ensemble Kalman filter, spectroscopic analysis

Japan Geoscience Union Meeting 2013
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ACG40-P01 Room:Convention Hall Time:May 19 18:15-19:30

Utility of operational meteorological data to diagnose environmental conditions for local-scale convective rain events

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[1]Disaster Prevention Research Institute, Kyoto University

Local-scale convective rain events develop rapidly and sometimes spawn water-related disasters. Densely populated urban areas are vulnerable to such disasters due to the local-scale convective rain events. From the perspective of disaster prevention and mitigation, the prediction and diagnosis of local-scale heavy rain events are critically important. In general, such local-scale heavy rain events occur under the influences of synoptic-scale weather disturbances such as typhoons and fronts; but they do develop without the influences of such synoptic-scale disturbances. It is well known that cumulonimbus clouds develop in the afternoon under synoptically undisturbed conditions; however, it is quite difficult to predict and diagnose the intensity of cumulonimbus clouds and when and where those cumulonimbus clouds develop. To overcome this difficulty, research projects that deploy a local-scale dense observation network and merge those high-resolution observed data to numerical weather prediction models are currently underway; these projects in general require a large amount of material and human resources. On the other hand, operational meteorological data compiled by Japan Meteorological Agency (JMA) can be used by research community outside JMA. We have been investigating mesoscale meteorological phenomena by use of the JMA operational data (Nomura and Takemi 2011, SOLA) and the outputs of the JMA/MRI climate simulations with a global warming scenario (Takemi et al. 2012, JMSJ). In the present study, we discuss the utility of operational meteorological data for local-scale analysis by investigating the characteristics of local-scale rain events and their environments under synoptically undisturbed conditions in summer. We focus on the rain events in the Nobi Plain during July and August after the end of the Baiu periods. We statistically analyze Radar-AMeDAS analysis precipitation, AMeDAS surface observations, radiosonde upper-air observations, and mesoscale objective analysis data (MANAL) during the period of 2003 and 2010. The diurnal and regional characteristics of the rain events and the relationship with surface wind and temperature fields are shown. After examining the representation and validity of the MANAL data with the upper-air observations at Hamamatsu, the environmental conditions over the Nobi Plain and the surrounding regions are investigated. By comparing the environmental conditions with and without the rain events, we show that the middle-level moisture contents control the development of local-scale convective rain events in the Nobi Plain. The utility of the operational meteorological data for the mesoscale analysis is demonstrated. We should recognize the utility of the JMA data both for operational and research perspectives; the JMA dataset is our national important property that nothing can be its substitute.

Keywords: Local-scale rainfall, precipitation, environmental condition, operational meteorological data, Japan Meteorological Agency

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ACG40-P02 Room:Convention Hall Time:May 19 18:15-19:30

Improvement of the cloud top database based on geostationary satellite observation

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Stratiform clouds (nimbostratus and cirriform clouds) in the upper troposphere accompanied with cumulonimbus activity extend in the large part of the tropical region and largely affect the radiation and water vapor budgets there. Recently new satellites (CloudSat and CALIPSO) can give us the information of cloud height and cloud ice amount even over the open ocean. However, their coverage is limited just below the satellite paths; it is difficult to capture the whole shape and to trace the lifecycle of each cloud system by using just these datasets. We made, as a complementary product, a dataset of cloud top height and visible optical thickness with one-hour resolution over the wide region, by using infrared split-window data of the geostationary satellites and released on the internet. (http://database.rish.kyoto-u.ac.jp/arch/ctop/).

We made lookup tables for estimating cloud top height only with geostationary infrared observations by comparing them with the direct cloud observation by CloudSat (Hamada and Nishi, 2010, JAMC). We picked out the same-time observations by MTSAT and CloudSat and regressed the cloud top height observation of CloudSat back onto 11micro m brightness temperature (Tb) and the difference between the 11micro m Tb and 12micro m Tb. We will call our estimated cloud top height as ”CTOP” below. The area of our coverage is 85E-155W (MTSAT2) and 80E-160W (MTSAT1R), and 20S-20N. We briefly introduced the first version of the product in the JPGU meeting 2012.

We compared the cloud top statistics between our CTOP product and CloudSat 2B-GEOPROF data. In the upper troposphere above 11 km, the distribution of cloud top in CTOP has good agreement with that in CloudSat direct observation both seasonally and longitudinally. Next, we tried to extend the analysis into the middle troposphere (6-11 km), where we have not estimated how CTOP can be reliable. We found that the number of such cloud systems is not constant with seasons but frequently increased in some specific seasons in both datasets. However, the large discrepancy between the datasets was detected near the edge of MTSAT view. It is probably due to the effect of the thin overlapped clouds in the upper troposphere which has longer optical path in the condition of large zenith angle near the edge of the view.

We are now making a new version of the dataset. Major revisions are made on the following points: Exclusion of the CloudSat pixels with no-cloud when making lookup table (LUT). Maybe due to imperfect matching between MTSAT sample and CloudSat sample and presence of the optically thin cloud that cannot be observed by CloudSat, some cloud-free pixels of CloudSat have lower Tb value than that of fine-weather pixel. In revised version, we will exclude such pixels for regression. It improves the estimation in the parameter range where the estimation error is large in the first version. We also conducted the geometric adjustment when regressing MTSAT data with CloudSat data. Edge region of MTSAT picture has satellite zenith angle larger than 60 degree. Therefore, the cirrus whose height is larger than 10 km is recorded to the position where is shifted several grid from the actual place. We will take into account the shift when making LUT. We introduce the improvement in the estimation from the previous version.

Keywords: geostationary satellite, cloud top, infrared radiation, tropical atmosphere

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Discussion for more effective data sharing

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For better understanging of the Earth environments, maximal utilization of data is essential. However only limitted (well documented) datasets are used for analysis. In this presentation, I will show the standing points for more effective data shareing, to take into account for the point of views in ”top-down” and ”bottum up”. I hope that such standing points are usefull for the discussion in this session.

Keywords: data sharing, bottom up, top down

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Atmosphere-Ocean Coupled Ensemble Analysis: CLERA

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An atmosphere-ocean coupled ensemble analysis: CLERA (CFES-LETKF Experimental ReAnalysis) is introduced.

Keywords: Atmosphere-Ocean Coupled, Ensemble Analysis