

climate information and prediction service from TCC website

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URL <http://ds.data.jma.go.jp/tcc/tcc/index.html>

Contents

- **WMO Framework for climate information services (GPC, RCC**)
- **Climate-related activities and services for NMHSs in RA II (provided by TCC) in accordance with RCC functions**

World Meteorological Organization (WMO)



**Located in
Geneva, Switzerland**

Scientific and Technical Programmes of WMO

World Weather Watch (WWW) Programme

WMO Space Programme
Disaster Risk Reduction Programme

World
Climate
Programme
(WCP)

Atmospheric
Research
and
Environment
Programme

Applications
of
Meteorology
Programme

Hydrology
and Water
Resources
Programme

Education and Training Programme
Technical Cooperation Programme
Regional Programme

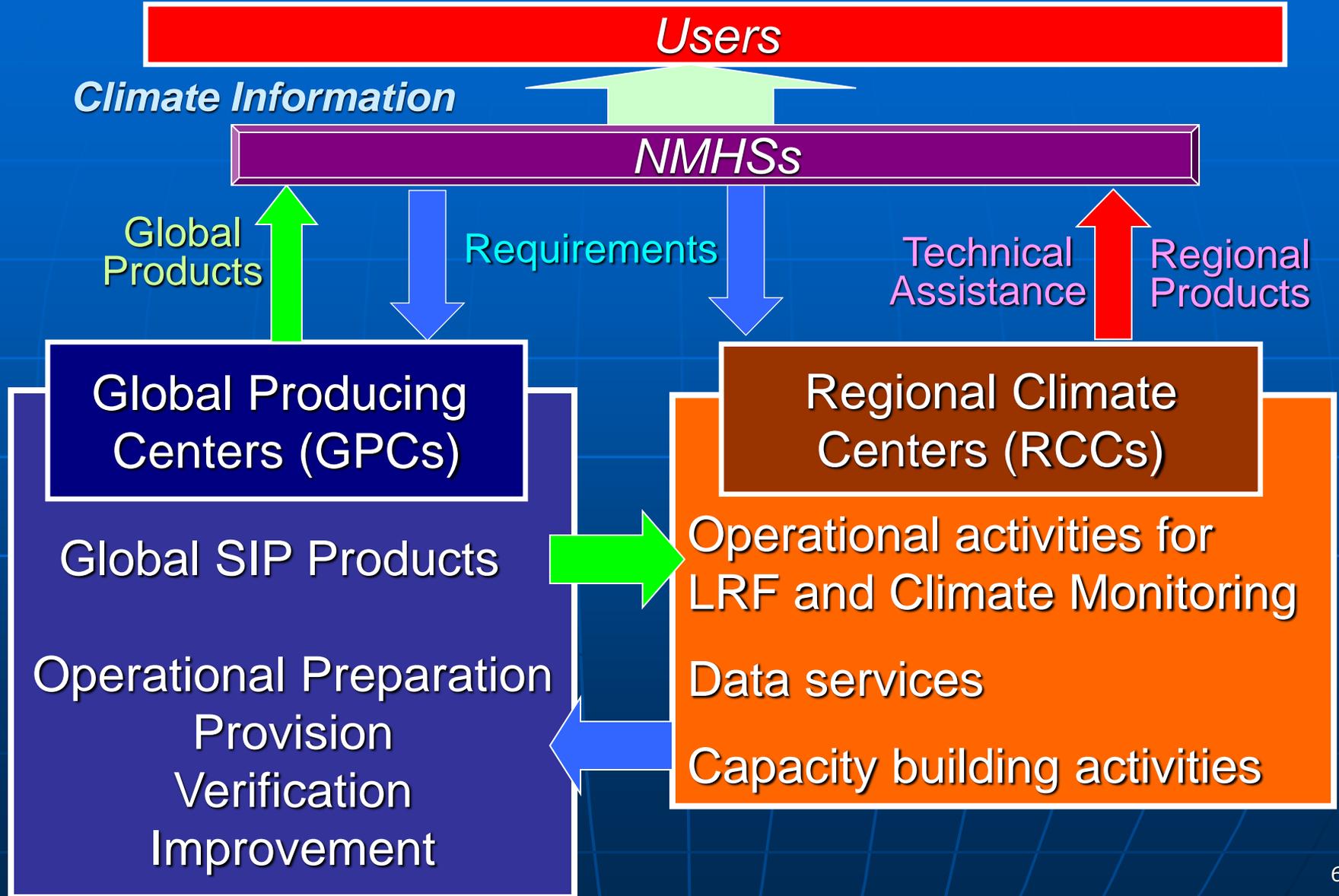
WMO Programmes for Climate Services

■ World Climate Programme (WCP)

The World Climate Programme (WCP) is an authoritative international scientific programme whose goals are to improve understanding of the climate system and to apply that understanding for the benefit of societies coping with climate variability and change.

WCP was established following the staging of the First World Climate Conference in Geneva, Switzerland in February 1979.

Framework proposed by WMO for Advanced Climate Service



Global Producing Center (GPC)

Mission

To operate Seasonal to Inter-annual prediction (SIP) system routinely and provide the products for NMHSs and RCCs on the website or disseminate them via GTS or Internet.

- To provide global analysis GPV
- To provide global prediction GPV including Sea Surface Temperatures
- To provide verification products including hindcasts



Currently, 11 GPCs have been designated worldwide.

Beijing, Exeter, Melbourne, Montreal, Moscow, Pretoria, Seoul, Tokyo, Toulouse, Washington and ECMWF

Global Producing Center (GPC) (cont.)

- Access to all GPCs can be found through WMO page:
http://www.wmo.int/pages/prog/wcp/wcaspc/clips/producers_forecasts.html

- A comprehensive set of standard verification measures, with which to communicate the skill of forecasts, has been defined (the WMO Standard Verification System for Long-Range Forecasts – SVSLRF)
<http://www.bom.gov.au/wmo/lrfvs/index.html>

World Meteorological Organization
Working together in weather, climate and water

HOME CONTACT US TOPICS LINKS UR SYSTEM

World Climate Application and Service Programme (WCASP)

Programmes > WCP > WCASP / CLIPS >

Global Producing Centres (GPCs) of Long Range Forecasts

The following are the officially designated WMO Global Producing Centres (GPCs) of Long Range Forecasts:

- Bureau of Meteorology (BoM), Australia**
<http://www.bom.gov.au/climate/ahead/>
- China Meteorological Administration (CMA)/Beijing Climate Center (BCC)**
<http://bcc.cma.gov.cn/en/>
- Climate Prediction Center (CPC), NOAA, United States of America**
<http://www.cpc.ncep.noaa.gov/>
- European Centre for Medium-Range Weather Forecasts (ECMWF)**
Forecast - <http://www.ecmwf.int/products/forecasts/seasonal/>
- Japan Meteorological Agency (JMA)/Tokyo Climate Centre (TCC)**
<http://ds.data.jma.go.jp/gmd/tcc/tcc/index.html>
- Korea Meteorological Administration (KMA)**
<http://www.kma.go.kr/>
- Meteo-France**
<http://www.meteo.fr>
- Met Office (United Kingdom)**
<http://www.metoffice.gov.uk/research/seasonal/>
- Meteorological Service of Canada (MSC)**
http://weatheroffice.ec.gc.ca/saisons/index_e.html

World Meteorological Organization
Lead Centre for the Long Range Forecast Verification System

Home | Contact
Disclaimer | Users Guide
Documentation | Verification Maps

DISCLAIMER

DOCUMENTATION

- Participating Met. Agencies.
- Lead Centre role.
- Documentation and software.
- Verifying datasets.
- Submitting data.
- Glossary.

USERS GUIDE

- Variables to be assessed.
- Levels of assessment.
- Diagnostic measures.
- What the Lead Centre provides.
- How to submit results.
- Format for submitting results.
- Model system details.

VERIFICATION MAPS

The Lead Centre provides access to verification datasets, verifying software, documentation of the system, broad technical support, access to the final verification data as well as graphing and display of results.

The WMO Lead Centre for the SVS-LRF is jointly managed by the Australian Bureau of Meteorology and the Meteorological Service of Canada.

Current seasonal forecasts from Global Producing Centre (GPC) models will become available via the Lead Centre for Long-Range Forecast Multi-Model Ensemble Prediction.

Regional Climate Center (RCC)

- The Regional Climate Center is responsible for providing necessary supports to the NMHSs in the region in order to strengthen their climate information and prediction services.

RCC Mandatory Functions

- Operational Activities for LRF
 - Operational Activities for Climate Monitoring
 - Operational Data Service, to support operational LRF and climate monitoring
 - Training in the use of operational RCC products and services
- Establishment of RCCs will be initiated by Regional Associations, based on regional needs and priorities.**

Goal of RCC

Mitigation of hazards due to climatic variability

Climate Database

- Long-term accumulation of climate data
- Long-term accumulation of hazards due to climate variability

Climate Analysis

- Analysis of relationship between global and regional anomalies

Climate Prediction

- Prediction of global anomalies by Global Climate Models
- Prediction of local anomalies by downscaling the global anomalies

Climate Monitoring

- Real-time collection of observational data
- Detection of extreme climate by comparing with normals

Prediction of the indices of the impact of extreme climate ⇒
probability of exceedance of user-specific thresholds

When high probability is predicted

Release of **Climate Watch** by NHMSs

Organization of TCC

Global Environment and Marine Department

Administration Division

Climate Prediction Division

Marine Division

Atmospheric Environment Division

Director

Deputy-Director

Forecast Unit

Global Climate Monitoring Unit

Global Warming Unit

Climate System Monitoring Unit

Numerical Weather Prediction and
Re-analysis Unit

El Niño Unit

Tokyo Climate Center (TCC)

Tokyo Climate Center (TCC)

- Established in April 2002 at the headquarters of JMA

✓ Main Tasks and Activities

- **Provision of Climate Information to the Government and Public**
 - Climate system monitoring
 - Seasonal outlook & El Niño outlook
 - Climate Change Projection
- **Development of Climate Models to support the above tasks**
(in cooperation with the Meteorological Research Institute of JMA)
 - » Atmospheric GCM & Data assimilation system
 - » Oceanic GCM & Data assimilation system
 - » Coupled Atmosphere-Ocean Global Climate Model (CGCM)
 - » Long-term Re-Analysis Project (JRA-25)
- **Support of climate services of NMHSs in Asia & Pacific region**



TCC is responsible for

- **Support of climate services of NMHSs in Asia & Pacific region** as an RCC in RA II
- Provision of LRF products from GPC Tokyo

TCC Homepage

The screenshot shows the Tokyo Climate Center (TCC) homepage. The browser address bar displays <http://ds.data.jma.go.jp/tcc/tcc/index.html>. The page features a navigation menu with categories like Home, World Climate, Climate System Monitoring, El Niño Monitoring, NWP Model Prediction, Global Warming, Climate in Japan, Training Module, and News Archive. The main content area is divided into sections: Main Products, What's New, and Links. The 'What's New' section lists recent updates, including a new release of the Monthly Climate Report for October 2009, updated content on El Niño and La Niña, and new services for downloading gridded global sea surface temperature datasets and monthly/annual mean data sets. The 'Links' section provides access to various international and national climate-related organizations and centers. Callouts in teal speech bubbles highlight specific sections: 'world climate', 'climate system monitoring', 'el Niño monitoring', 'NWP model prediction', 'climate in Japan', and 'global warming'.

Address: <http://ds.data.jma.go.jp/tcc/tcc/index.html>

HotMail の無料サービス Windows Windows Media リンクの変更

気象庁 Japan Meteorological Agency

Welcome to Tokyo Climate Center

TCC home About TCC Site Map Contact us

Home World Climate Climate System Monitoring El Niño Monitoring NWP Model Prediction Global Warming Climate in Japan Training Module News Archive

HOME

Main Products

World Climate

Climate System Monitoring

Climate in Japan

ClimateView

GPC Long-range forecast (LRF) Products

GPC LRF products

TCC News (latest issue)

TCC News

Monthly Highlights on Climate System (latest issue)

気候系監視速報

Monthly Highlights on Climate System

What's New

16 November 2009 **NEW**

New Release: Monthly Climate Report (October 2009)

6 November 2009

Updated Contents: World Climate associated with El Niño and La Niña

Monthly Climate Report (October 2009)

17 September 2009

New Service: Download of Gridded Global Sea Surface Temperature Dataset (COBE-SST) from 1891 onward

25 August 2009

TCC News No. 17 (Summer 2009; PDF)

14 August 2009

Updated Contents: World Climate associated with El Niño and La Niña

17 June 2009

New Contents available: Madden-Julian Oscillation (MJO) Information

29 May 2009

Upgrade of One-month Forecast GPV Products (available only for registered NMHSs)

28 May 2009

New Service: Application for use of the Interactive Tool for Analysis of Climate System (ITACS) (only for NMHSs)

15 May 2009

New Service: Download of Gridded Monthly and Annual Mean Data Set

Links

Regional Climate Center (RCC) Network

Climate-related Products and Services for Japan

IMTSAT-1R

Tropical Cyclone Advisory : Tokyo Typhoon Center

Japanese 25-year Reanalysis Project (JRA-25)

JRA-25 Atlas **NEW**

World Data Center for Greenhouse Gases (WDCGG)

RSMC Tokyo - Typhoon Center

Meteorological Research Institute, JMA

Meteorological Satellite Center, JMA

World Meteorological Organization (WMO)

Surface Network Monitoring Center (GSNMC)

Climate Center

Center

ological Administration

Asian Disaster Reduction Center

Severe Weather Information Center

World Weather Information Service

> more links

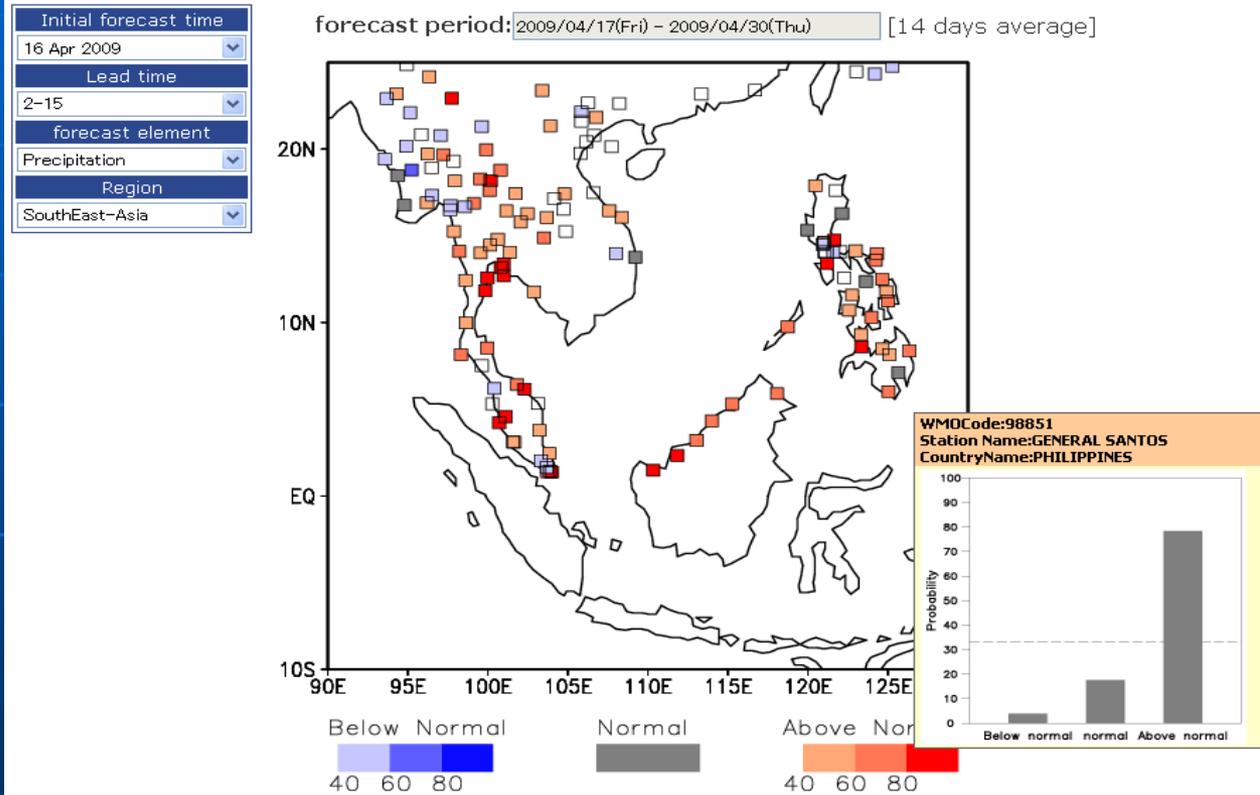
RCC Mandatory Functions

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- **Operational Activities for Climate Monitoring**
- **Operational Data Service, to support operational LRF and climate monitoring**
- **Training in the use of operational RCC products and services**

One-month Probabilistic Forecast for Southeast Asia

Probabilistic forecasts map

If you move your mouse over the observation points on the map, the station's name and histogram which you chose are appeared. Please click the point to see the chart of verification data.



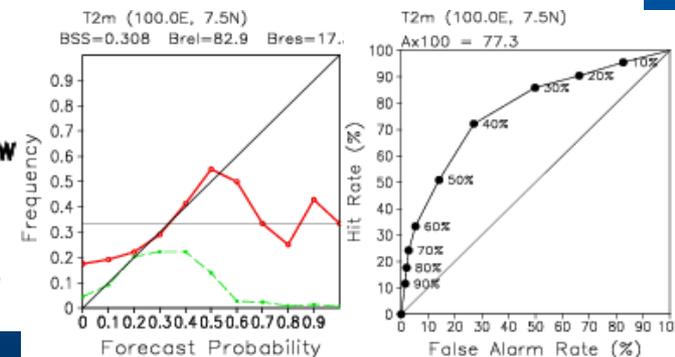
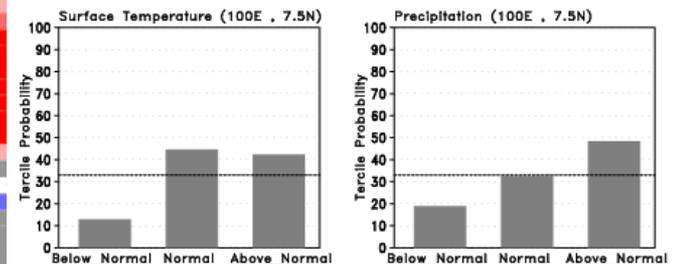
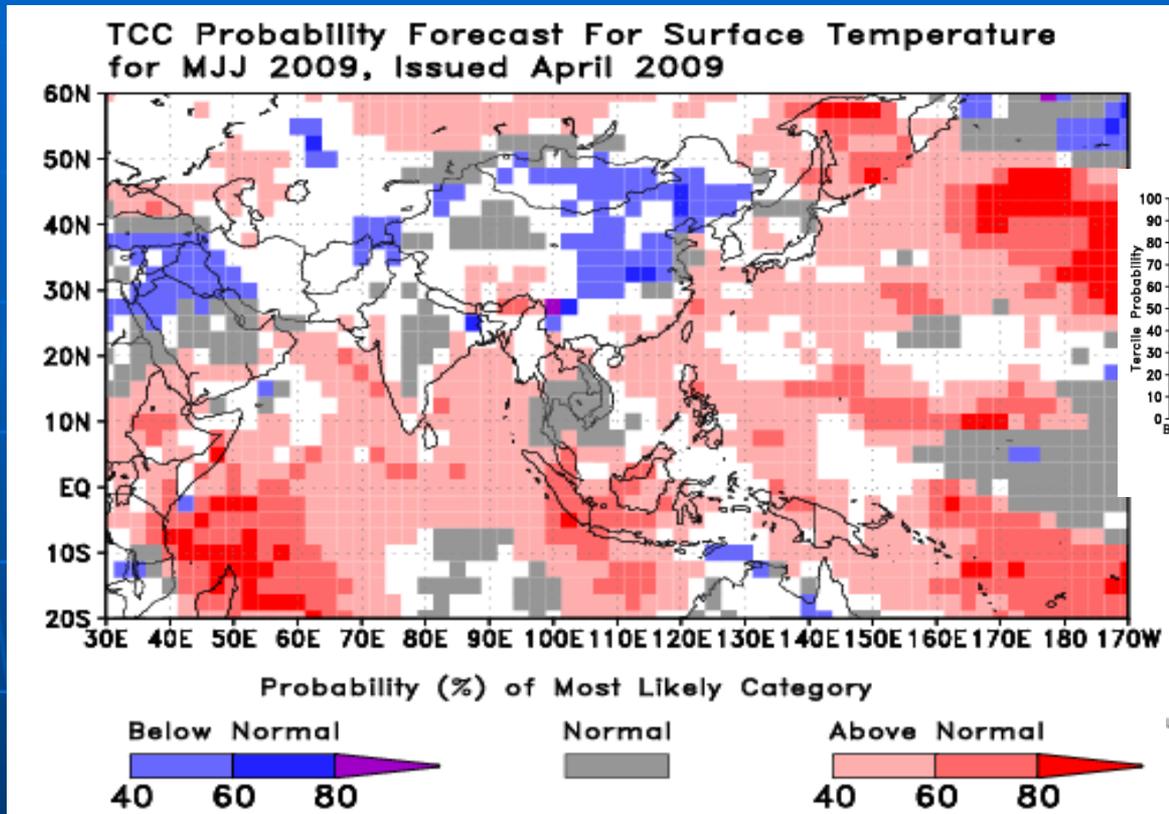
TCC provides tercile probabilistic forecasts of 2m temperature and total precipitation at a number of major stations in Southeast Asia, based on the needs of regional and sub-regional scale forecasts from NMHSs

Initial Forecast Time: 16 Apr. 2009

Lead time: 2-15 days, Element: Precipitation

<http://ds.data.jma.go.jp/tcc/tcc/products/guidancetst/>

Probabilistic three-month forecasts



TCC produces tercile probabilistic three-month forecasts of such temperature and precipitation for each $5^\circ \times 5^\circ$ grid box over the globe.

LRF products available on the TCC website (1)

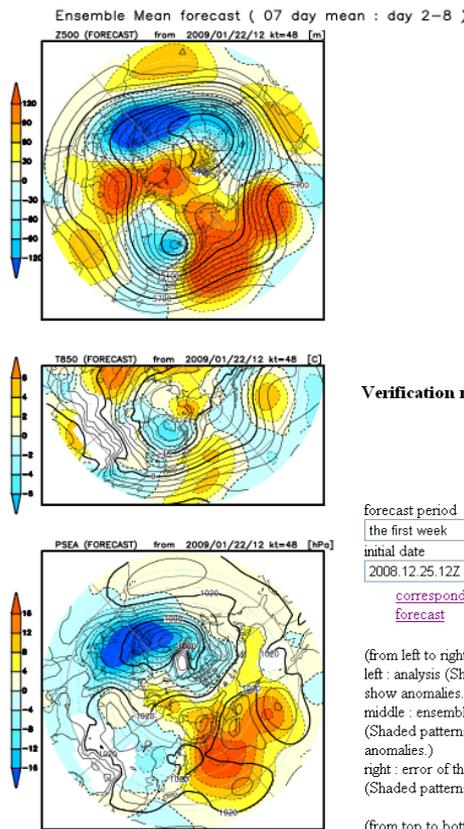
forecast map

forecast period

 initial date

[corresponding verification](#)

(from top to bottom)
 top : Contours show 500hPa height in an interval of 60m.
 middle : Contours show 850hPa temperature in an interval of 3C.
 bottom : Contours show sea level pressure in an interval of 4hPa.
 (Shaded patterns show anomalies.)



Forecast map

Verification map of one month forecast for each

forecast period

 initial date

[corresponding recent forecast](#)

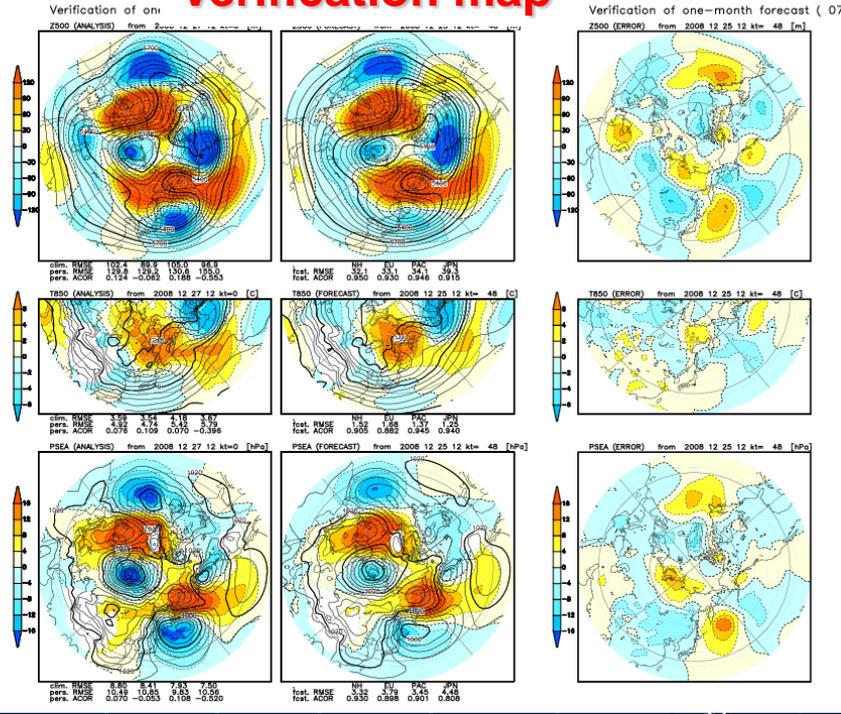
(from left to right)
 left : analysis (Shaded patterns show anomalies.)
 middle : ensemble mean forecast (Shaded patterns show anomalies.)
 right : error of the forecast (Shaded patterns show errors.)

(from top to bottom)
 top : Contours show 500hPa height in an interval of 60m.
 middle : Contours show 850hPa temperature in an interval of 3C.
 bottom : Contours show sea level pressure in an interval of 4hPa.

ACOR : anomaly correlation
 RMSE : root mean square error
 fct : ensemble mean forecast
 clim : climate forecast
 pers : persistence forecast

NH : 0-360,20N-90N
 EU : 0-180,20N-90N
 PAC : 90E-90W,20N-90N
 JPN : 100E-170E,20N-60N

Verification map



LRF products available on the TCC website (2)

The screenshot shows the homepage of the Japan Meteorological Agency's TCC website. It features a navigation bar with links for Home, Climate in the World, Climate System Monitoring, and El Niño Monitoring. A 'Notice' section contains an email expiration warning. A 'Main Products' section lists 'NWP Model Prediction' (1-month, 3-month, 7-month) and 'Hindcast GPV'. A 'Tips' section mentions 'Visualization with GrADS'. A yellow arrow points from the 'Hindcast GPV' section to the file list on the right.

Index of /tcc/tcc/gpv/model/4mE/GPV/200901

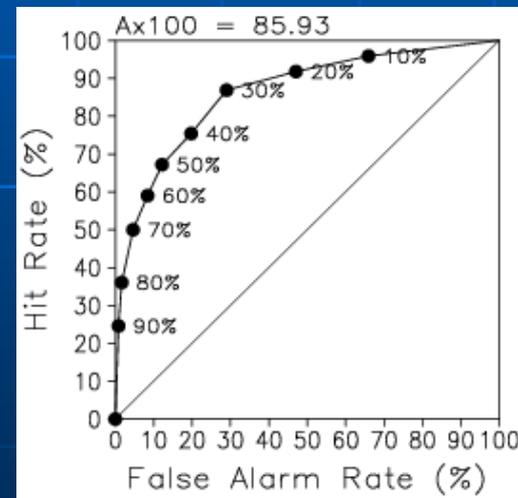
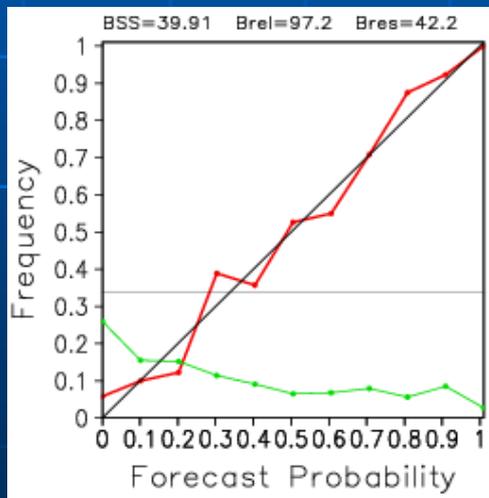
Name	Last modified	Size	Description
Parent Directory	-	-	-
ahh_p500_em.200901	18-Jan-2009 12:06	62K	
app_surf_em.200901	18-Jan-2009 12:06	62K	
arr_surf_em.200901	18-Jan-2009 12:06	62K	
ass_surf_em.200901	18-Jan-2009 12:06	47K	
att_h2_em.200901	18-Jan-2009 12:06	62K	
att_p850_em.200901	18-Jan-2009 12:06	61K	
awu_p200_em.200901	18-Jan-2009 12:06	62K	
awu_p850_em.200901	18-Jan-2009 12:06	61K	
awv_p200_em.200901	18-Jan-2009 12:06	62K	
awv_p850_em.200901	18-Jan-2009 12:06	61K	
hh_p500_em.200901	18-Jan-2009 12:06	62K	
hp_surf_em.200901	18-Jan-2009 12:06	62K	
rr_surf_em.200901	18-Jan-2009 12:06	62K	
shh_p500_em.200901	18-Jan-2009 12:06	62K	
spp_surf_em.200901	18-Jan-2009 12:06	62K	
srr_surf_em.200901	18-Jan-2009 12:06	62K	
ss_surf_em.200901	18-Jan-2009 12:06	47K	
stt_h2_em.200901	18-Jan-2009 12:06	62K	
stt_p850_em.200901	18-Jan-2009 12:06	61K	
swu_p200_em.200901	18-Jan-2009 12:06	62K	
swu_p850_em.200901	18-Jan-2009 12:06	61K	
swv_p200_em.200901	18-Jan-2009 12:06	62K	

Registered NMHSs can download and visualize LRF products.

<http://ds.data.jma.go.jp/tcc/tcc/gpv/index.html>

Verification of RCC quantitative LRF products, including the exchange of basic forecasts and hindcast data

TCC provides verification results (e.g., SVS LRF scores, Brier Skill Scores, ROC, Hit Rate Skill Score) and hindcast data for several elements including 2-m temperature and total precipitation. Whenever an LRF system is updated, a set of hindcasts is implemented and verification datasets are distributed.



Verification results (Brier Skill Score (left) and ROC (right)) for 2-m mean temperature

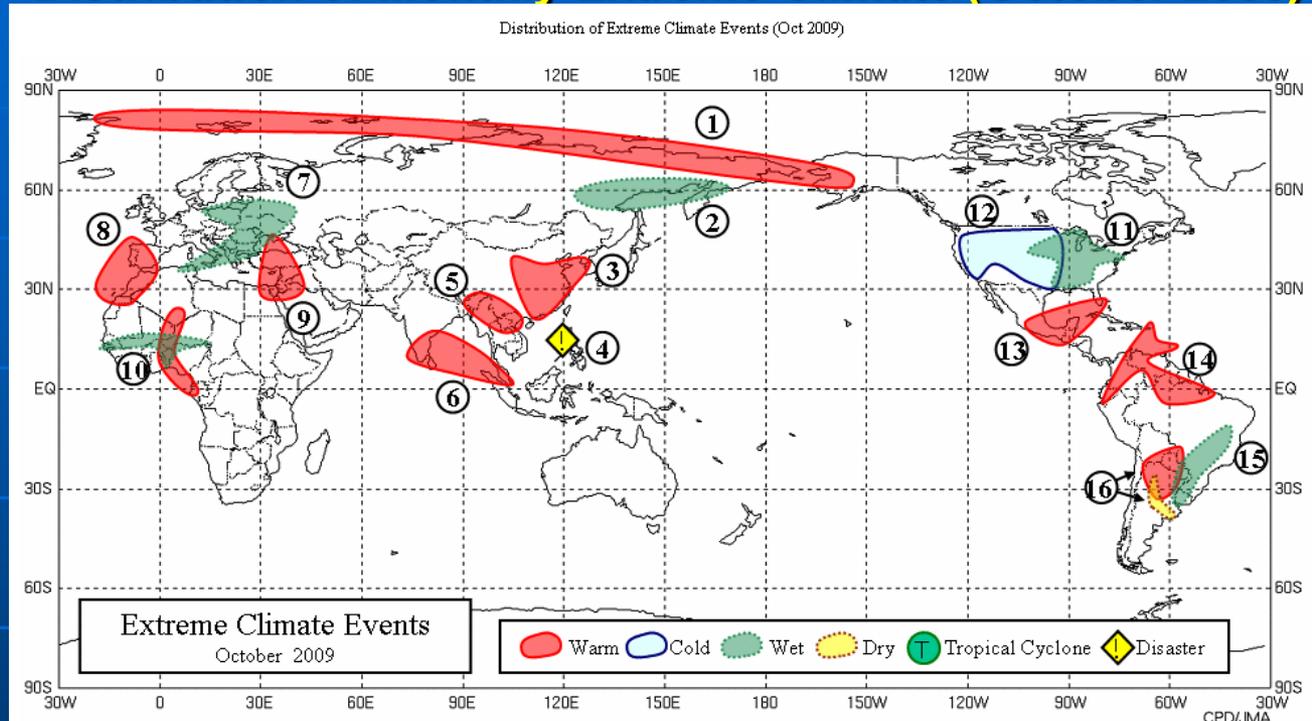
RCC Mandatory Functions

- Operational Activities for LRF
- **Operational Activities for Climate Monitoring**
- Operational Data Services, to support operational LRF and climate monitoring
- Training in the use of operational RCC products and services

Global Climate Monitoring

Weekly, Monthly, Seasonal and Annual Temperature/Precipitation
Hazardous Climatic Events (Flood / Drought / Tropical Cyclone)

Distribution of Monthly Extreme Climate (October 2009)



1. High temperature around the Arctic Sea
2. Heavy precipitation in eastern Siberia
3. High temperature in eastern China
4. Typhoon in the Philippines
5. High temperature around southern China
6. High temperature from the southern Malay Peninsula to southern India
7. Heavy precipitation in eastern Europe
8. High temperature from the Iberian Peninsula to northwestern Africa

9. High temperature around Turkey
10. High temperature and heavy precipitation in western Africa
11. Heavy precipitation in the eastern USA
12. Low temperature in the central USA
13. High temperature around southern Mexico
14. High temperature in northern South America
15. Heavy precipitation around southern Brazil
16. High temperature and light precipitation around northern Argentina

Climate System Monitoring

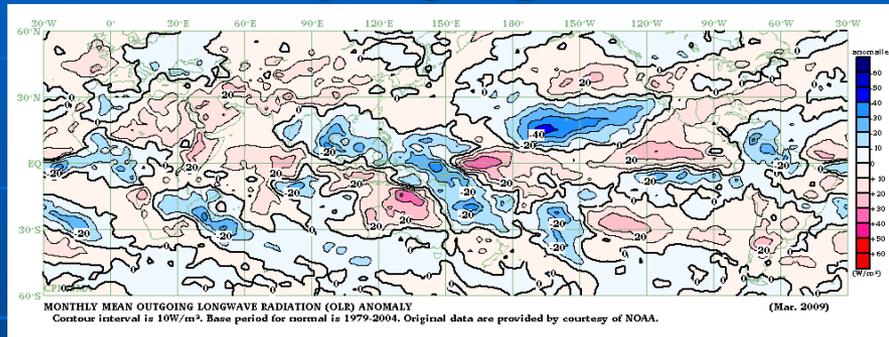
Atmospheric Circulation: Global Objective Analysis Data by JMA

Tropical Convective Activity: Satellites Observations (NOAA/NESDIS)

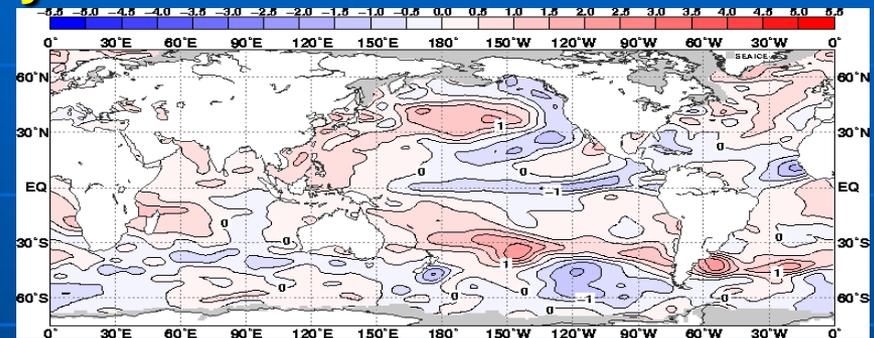
Sea Surface Temperature: Global SST Analysis Data by JMA

Snow and Sea Ice: CLIMAT Reports & Satellite Observations (SSM/I)

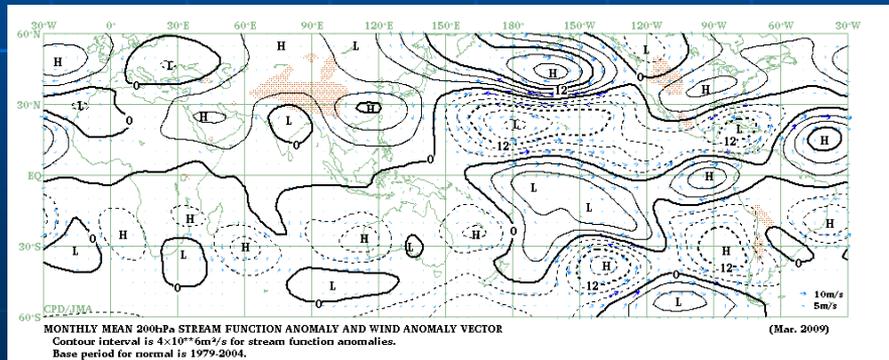
⇒ Monthly Highlights on Climate System



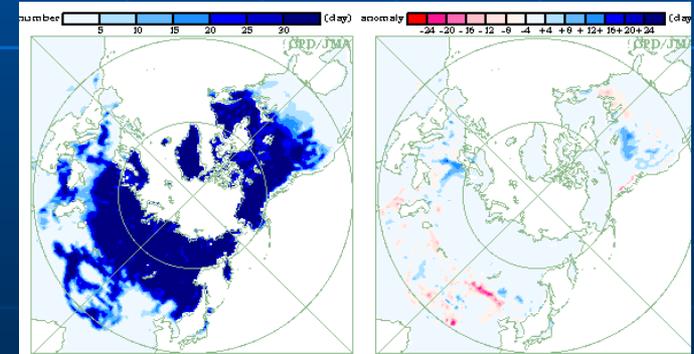
OLR Anomaly (March 2009)



SST Anomaly (March 2009)



200hPa Stream Function & Wind Anomalies (March 2009)



Number of days covered with snow observed by SSM/I (left) and its anomaly (right) (March 2009)

Reports & Figures

Report on Climate System

Monthly features of extratropical circulation, tropical circulation and convection, conditions of ocean are described with figures and tables.

- › Monthly Highlights on Climate System
- › Explanation of figures
- › New Climatological

Current Month (October)

16 November, 2009

Japan Meteorological Agency

Monthly Highlights on Climate System (October 2009)

Highlights in October 2009

- Monthly precipitation amounts were above normal on the Pacific side of Japan and Okinawa/Amami, due to the landfall or approach of Typhoons.
- Monthly mean temperatures were extremely low in western North America due to cold northerly winds.
- In the sea level pressure field, high and low pressure anomalies dominated in the high and mid-latitudes, respectively.
- Enhanced convective activities persisted in the western Pacific throughout the month and westerly wind anomalies were dominant in the lower troposphere of the equatorial Pacific.
- Positive SST anomalies were found over the whole equatorial Pacific and they were remarkable in the central part.

Seasonal Report (Summer)

- › Report on Climate System
- › Extratropics (Highlights)
- › Tropics (Highlights)
- › Oceanic Conditions

Annual Report

- › Annual Report on Climate System
- › Back Number
- › Select Past Months

Figures and Tables

- › 5-day Mean Figures
- › 10-day Mean Figures
- › Monthly Mean Figures
- › 3-month Mean Figures
- › Time Cross Section
- › GPV data (text format)
- › Oceanic Figures and Tables

Climate in Japan (Fig. 1):

The weather generally changed periodically through the month. In the first 10 days, Typhoon Melor (0918) made landfall on the mainland of Japan with heavy rainfall and strong winds. And in the last 10 days, Typhoon Ketsana (0920) passed on the south of Eastern Japan. In Okinawa/Amami, rainy and cloudy days were dominant and monthly sunshine durations were significantly below normal due to the Typhoons and fronts. Although monthly mean temperature was above normal, temperature

activities of high frequency disturbances shifted southward in the North Pacific and North Atlantic storm track regions.

Tropics (Figs. 6, 7 and 8):

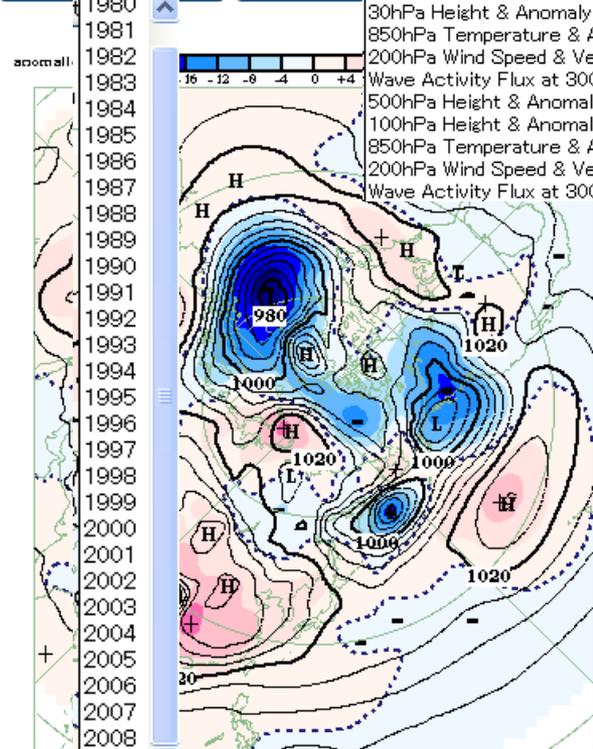
Enhanced convective activities persisted in the western Pacific throughout the month. Convective activities were also enhanced in the Inter-tropical Convergence Zone (ITCZ), the South Pacific Convergence Zone (SPCZ), the Sahel and the western Indian Ocean (Fig. 6). On the other hand, they were suppressed from around Indonesia to

Pentad Mean Figures of Atmospheric Circulation

Region

Element & Pressure Surface

Year



5-DAY SEA LEVEL PRESSURE AND ANOMALY IN THE NORTHERN HEMISPHERE (17Nov.-21Nov.2009)
Contours show sea level pressure in an interval of 4hPa.
Shaded patterns show SLP anomalies.
Base period for normal is 1979-2004.

Section

Other figures

- › Pentad Mean
- › 10-day Mean
- › Monthly Mean
- › 3-Month Mean
- › Time Cross Section & Indices
- › GPV data (text)

select a region (Extratropics, Tropics)

select a year(1979-latest)

select an element

Asian Monsoon Monitoring last updated : 25 Nov 2009

5-day and monthly mean features of associated circulation

› [Explanation of data and figures](#)

Latitude-Longitude

Stream function, Wind & OLR ‹ 5-day ‹ monthly

Wave activity flux, Stream function & OLR ‹ 5-day ‹ monthly

Water vapour flux and its horizontal divergence ‹ 5-day

Latitude-Time Cross Section

OLR ‹ 5-day

500 hPa Height and Normal ‹ 5-day

500 hPa Height anomaly and Normal ‹ 5-day

Time-Longitude Cross Section

Velocity Potential, OLR and Zonal WInd ‹

Time Series

Area-averaged OLR ‹ 5-day

Asian Monsoon Monitoring (figures)

Madden-Julian Oscillation

Stratospheric Circulation Monitoring

Madden-Julian Oscillation **NEW**

- › [Phase and Amplitude monitor \(25 Nov 2009\)](#)
- › [Time-longitude cross section \(25 Nov 2009\)](#)
- › [Time series of RMM1 and RMM2 \(25 Nov 2009\)](#)
- › [Details](#)

Stratospheric Circulation Monitoring last updated : 25 Nov 2009

Daily maps (30 hPa and 10 hPa) and cross sections including E-P Flux.

- › [Explanation of data and figures](#)
- › [Northern Hemisphere](#)
- › [Southern Hemisphere](#)

Download Atmospheric Analysis GPV

- › [Monthly Mean Data in GRIB format \(25 Nov 2009\)](#)
- › [5-day Mean Data in GRIB format \(25 Nov 2009\)](#)
- › [Monthly Mean Data in ASCII format](#)

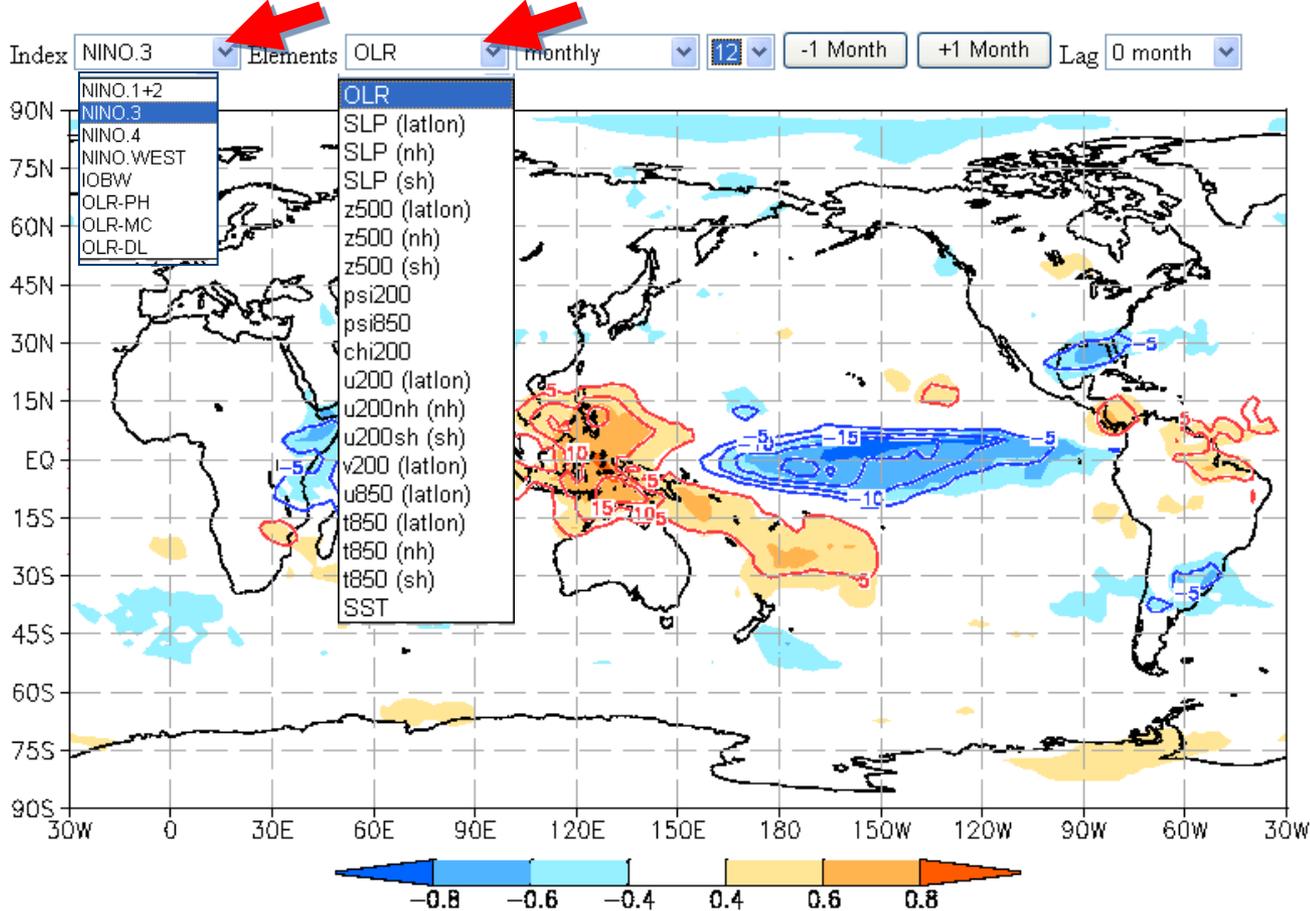
Statistical Relationships **NEW**

Atmospheric circulations regressed on El Niño Monitoring Indices.

- [Explanatory Notes](#) ‹ [HTML](#) ‹ [PDF: 2.3MB](#)
- › [Regression & Correlation map](#)

Statistical Relationships

Regression and Correlation map



Regression and correlation coefficients between each indices and atmospheric circulation fields.

Contours show atmospheric circulation anomalies when normalized indices are +1.0.

Red (blue) contours show positive (negative) anomalies.

0 lines are not shown.

Shadings show correlation coefficients.

"3-month mean" means 3-month mean centered shown month.

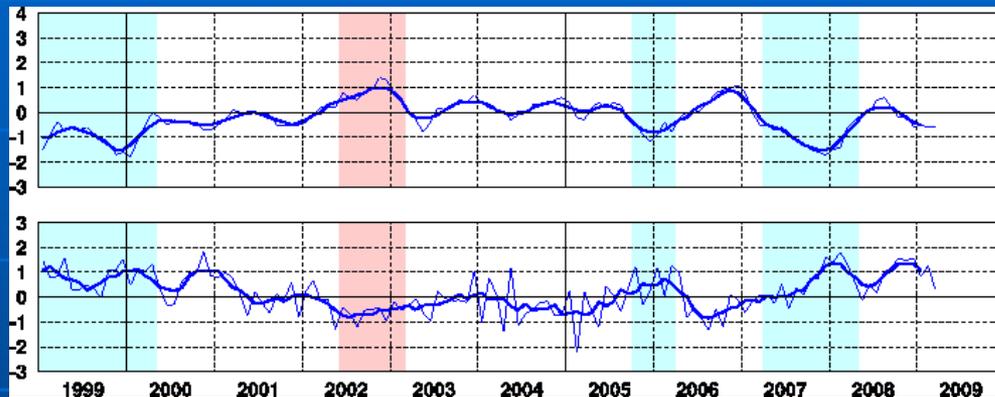
For example, when "Elements=SLP", "Month=3" and "Lag=-2" are selected, regression and correlation map of "SLP in March" for "index in January" is shown.

El Niño Monitoring and Prediction

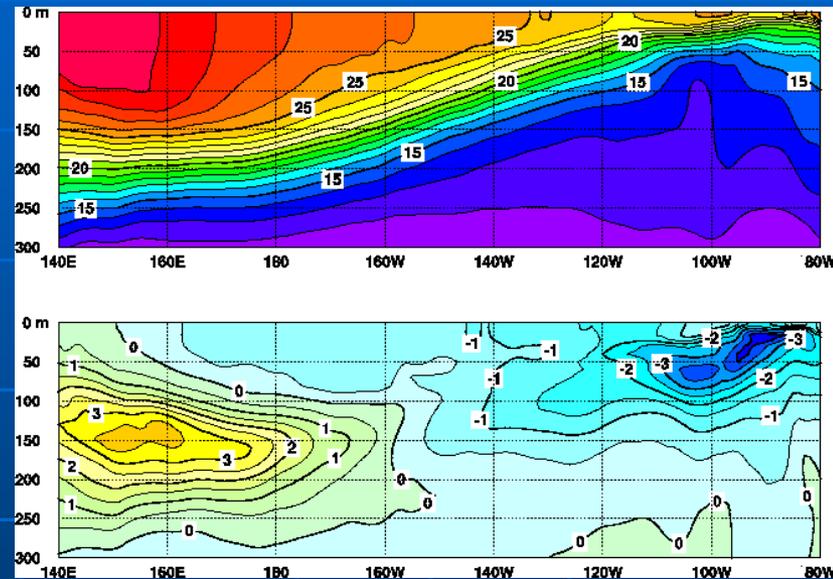
Analysis : the Ocean Data Assimilation System (ODAS)

Prediction : the El Niño Prediction Model (JMA/MRI-CGCM)

⇒ **El Niño Monitoring and Outlook**



Time Sequence of ENSO indices
upper: Nino.3 SST lower: SOI



Longitude-Depth Cross-section of
Temperature (upper) and Anomaly (lower)
along the Equator (March 2009)

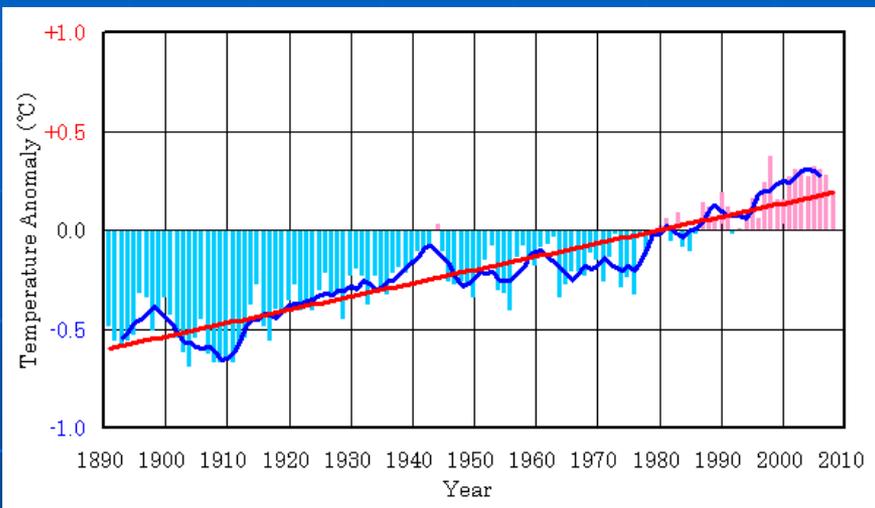


Outlook of the SST Deviation for Nino.3

<http://ds.data.jma.go.jp/tcc/tcc/products/elniño/index.html>

Global Warming Monitoring and Projection

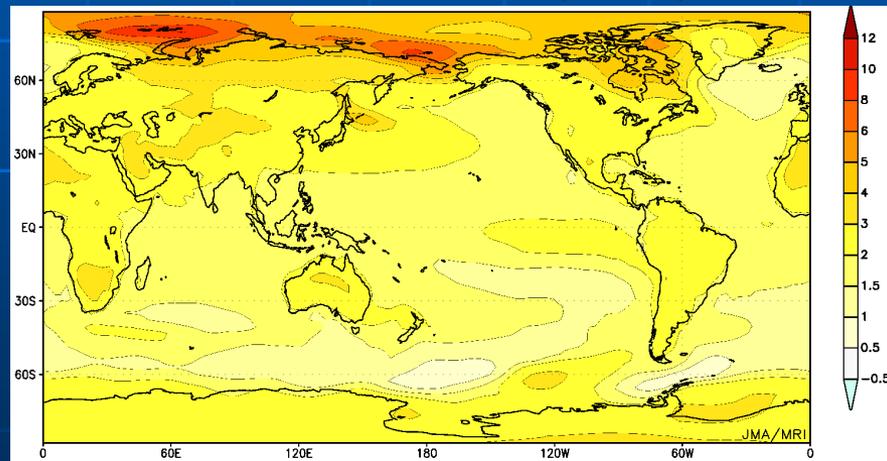
Annual anomaly of surface temperature over the globe
(combined temperature of near-surface air temperature over
land, and sea surface temperature)



JMA has conducted global warming experiment toward the year 2100 by using the "Coupled atmosphere-ocean General Circulation Model" developed at MRI (MRI-CGCM). A series of "Global Warming Projection" was published to provide scientific estimation for the government organizations and research institutions responsible for preventing global warming and assessing its impact.

Annual anomalies of surface temperature over the globe and Japan are monitored to get hold of climate change due to global warming.

Change in the annual mean temperature for the SRES scenario A2 (Unit: °C)



This panel shows the change in the annual mean temperature for the period from 2071 to 2100 relative to the period from 1971 to 2000.

RCC Mandatory Functions

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- **Operational Data Services, to support operational LRF and climate monitoring**
- Training in the use of operational RCC products and services

Climate Database (ClimatView: Web-based Interactive Tool)

- Monthly temperature and precipitation data from CLIMAT report from 1982 onward are available.
- ClimatView enables users to view or download monthly mean temperature and monthly total precipitation.

Climate Monitoring | Climate System Monitoring | El Niño Monitoring | NWP Model Prediction | Global Warming | Climate in J

HOME > Global Climate Monitoring > ClimatView > map

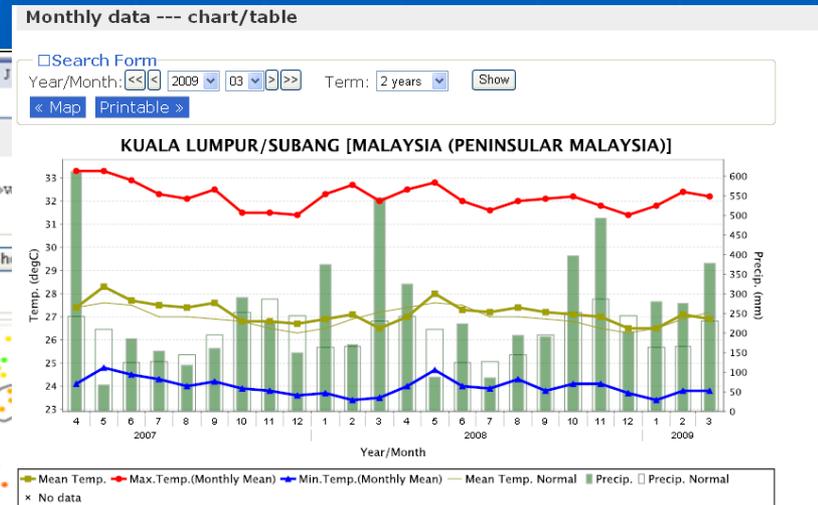
Monthly data --- map

If you move your mouse to the observation points on the map, the point's name and data which you chose in "Search form" are show. Please click the point to see the chart of monthly data.

◆ Search Form

Region: World | Element: Mean Temp. | Year/Month: << 2007 08 >> | Show

« ClimatView TOP | Data List » | Printable » "Data List" and "Printable" buttons are available after pushing "Show" button.



KUALA LUMPUR/SUBANG - MALAYSIA (PENINSULAR MALAYSIA)
Lon.: 101.55°E / Lat.: 3.12°N Height: 27(m)

Download --- download in text file

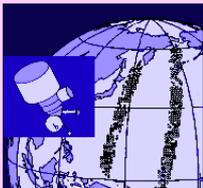
Year/Month	Observation			Normal		
	Mean Temp. [degC]	Max. Temp. (Monthly Mean) [degC]	Min. Temp. (Monthly Mean) [degC]	Precip. [mm]	Mean Temp. [degC]	Precip. [mm]
2007-4	27.4	33.3	24.1	612.0	27.4	242.7
2007-5	28.3	33.3	24.8	68.0	27.6	210.0
2007-6	27.7	32.9	24.5	186.0	27.5	125.3
2007-7	27.5	32.3	24.3	154.0	27.0	127.2
2007-8	27.4	32.1	24.0	118.0	27.0	144.5
2007-9	27.6	32.5	24.2	161.0	26.9	195.3
2007-10	26.8	31.5	23.9	291.0	26.8	253.0
2007-11	26.8	31.5	23.8	230.0	26.5	286.6
2007-12	26.7	31.4	23.6	150.0	26.3	244.3
2008-1	26.9	32.3	23.7	375.0	26.5	163.9
2008-2	27.1	32.7	23.4	171.0	26.9	166.3
2008-3	26.5	32.0	23.5	546.0	27.2	230.6
2008-4	27.0	32.5	24.0	325.0	27.4	242.7

NMHSs can grasp the availability of CLIMAT report through the GTS.

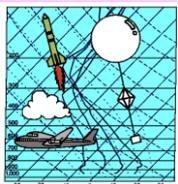
<http://ds.data.jma.go.jp/gmd/tcc/climatview/>

Climate System Database (Long-term Re-Analysis Project: JRA-25)

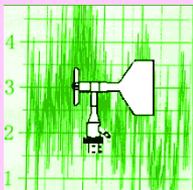
Historical Observational Dataset



Satellite



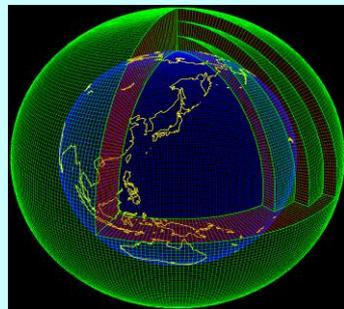
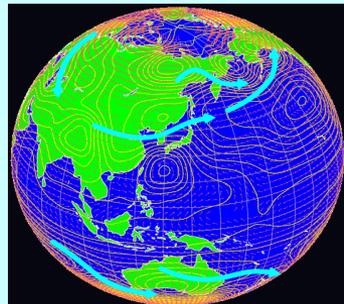
Upper Air



Surface



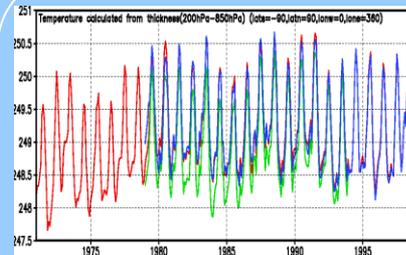
Ship



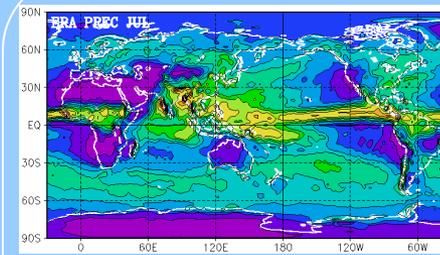
JRA-25 Project (2001-2005)

6-hourly Climate System Datasets from 1979 to 2004 was computed based on Past Observation and the Numerical Weather Prediction Technology by JMA and CRIEPI

The Best Estimate of the State and Evolution of the Climate System



Physically Consistent
Time- Series Data
(No Artificial Gap)



Physically
Consistent Gridded
Data over the Globe
(No Empty Area)

Wind, Air Temperature, Moisture, Precipitation, Evaporation, Soil Moisture, Snow Depth, Surface Fluxes, Radiation, Ground Temperature, etc.

- Improving Initial Conditions for Seasonal Prediction
- Analyzing the mechanisms of Unusual Climate
- Monitoring Global Climate Change

JRA-25 Atlas

Select element and period ***

Mean sea level pressure

Annual mean

