

iTacs

~TCC/JMA's tools for climate analysis~

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The iTacs is available from the website of Tokyo Climate Center (TCC).

The screenshot shows the Tokyo Climate Center website interface. At the top, there are logos for the Japan Meteorological Agency (JMA) and the World Meteorological Organization (WMO). The main header identifies the Tokyo Climate Center as the WMO Regional Climate Center in RA II (Asia). A navigation menu includes links for Home, World Climate, Climate System Monitoring, El Niño Monitoring, NWP Model Prediction, Global Warming, Press release, and Links. A secondary menu offers TCC home, About TCC, Site Map, and Contact us.

Two callouts highlight specific products:

- iTacs**: An orange callout box points to the iTacs product description under 'Main Products'. The text states: "iTacs, Interactive Tool for Analysis of the Climate System, is a web-based application to assist NMHSs to analyse extreme climate events and to monitor climate status."
- ClimatView**: A green callout box points to the ClimatView product description. The text states: "The ClimatView tool enables viewing and downloading of monthly world climate data, including monthly temperature/precipitation statistics and 30-year climate normals."

Other visible content includes:

- What are WMO RCCs**: A section explaining that WMO RCCs are centres of excellence.
- RCC Functions**: A list of functions including operational activities for long-range forecasting, climate monitoring, data services, and training.
- Latest Updates**: A section for 'World Climate' updated on 15 November 2016, featuring a map titled 'Distribution of Extreme Climate Event (October 2016)'. The map shows various events across the globe, with a legend for Warm, Cold, Wet, Dry, Tropical Cyclone, and Disaster. Specific events like Tropical Storm 'AERE' and Hurricane 'MATTHEW' are noted.
- Main Products**: A list of other products including GPC Tokyo, Monthly Discussion on Seasonal Climate Outlook, El Niño Monitoring, and TCC News.
- News**: A list of recent announcements, including the 2015 edition of the Climate Change Monitoring Report, updates to Global Average Surface Temperature Anomalies, and the introduction of ENSO forecast probabilities.

At the bottom left, the URL ds.data.jma.go.jp/gmd/tcc/tcc/products/model/index.html is visible, dated 15 November 2016. A 'Links' section is located at the bottom right.

iTacs

- The iTacs (Interactive Tool for Analysis of the Climate System) is a web-based application for climatological analysis.
- Additional software or plug-ins or development of own data archive are **NOT** required.
- Users can draw various kinds of figures and operate statistical analysis through a web browser.

Less time to visualize the data,
More time to diagnose the
climate system!

The screenshot displays the iTacs web application interface. At the top, there are tabs for "Select parameters" and "Graphic Options". The "Data1" section contains a table with columns for Dataset, Element, Data type, Area, Level, Time unit, and Showing period. The "Data2" section has a similar table. Below these are checkboxes for "Use parameter code" and "Show/Hide code", and a blue "Analysis Data Submit" button. A large orange arrow points from the "Analysis Data Submit" button to a visualization area. This area shows two data series: "DATA1 JRA-55 u37.v37 HIST" and "DATA2 SST". Below the data series are two maps: a polar projection map on the left and a rectangular map on the right. The rectangular map shows a time series from APR2016 to OCT2016 with a color scale from -80 to 60. A color bar at the bottom indicates values from -80 to 60.

Data1

Dataset	Element	Data type	Area	Level	Time unit	Showing period
JRA-55	Pressure Levels	HIST	ALL	250hPa	MONTHLY	RANGE
	U (Zonal Wind) (m/s)		Lat: -70 - 70 Ave		<input type="checkbox"/> Ave <input type="checkbox"/> Year-to-year	2015 9
	Pressure Levels		Lon: 0 - 360 Ave		<input type="checkbox"/> Time filter	2015 9

Analysis Data Submit

Image 1

DATA1 JRA-55 u37.v37 HIST lgt = -70:70 lon = 0:360 level = 21:21
time = 2015090100:2015090100 ove = 1MO

DATA2 SST_sst ANOM lgt = -70:70 lon = 0:360 level = 1:1
time = 2015090100:2015090100 ove = 1MO analysis method = DATA1_DATA2

70N
60N
50N
40N
30N

APR2016
MAY2016
JUN2016
JUL2016
AUG2016
SEP2016
OCT2016

60E 120E 180 120W 60W 0

-80 -60 -40 -20 0 20 40 60

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- Available dataset

Dataset	Contents	Coverage
JRA-55	Atmospheric variables derived from JMA's long-range reanalysis data	01/01/1958 -
SST	Sea surface temperature	01/01/1891 -
MOVE-G2	Oceanic analysis data	06/01/1958 -
SAT	Outgoing longwave radiation	01/06/1974 -
CLIMAT	CLIMAT reports	Jun. 1982 -
INDEX	Indices regarding ENSO and the Indian Ocean	Jan. 1900 -

Dataset	Contents	Coverage
1MONTH_ENS_MEAN	JMA's 1-month forecast (Ensemble mean)	All initial times since 28 Oct 2015
1MONTH_HIND	JMA's 1-month forecast (result of re-forecast)	Every 10 days from 10 Jan.

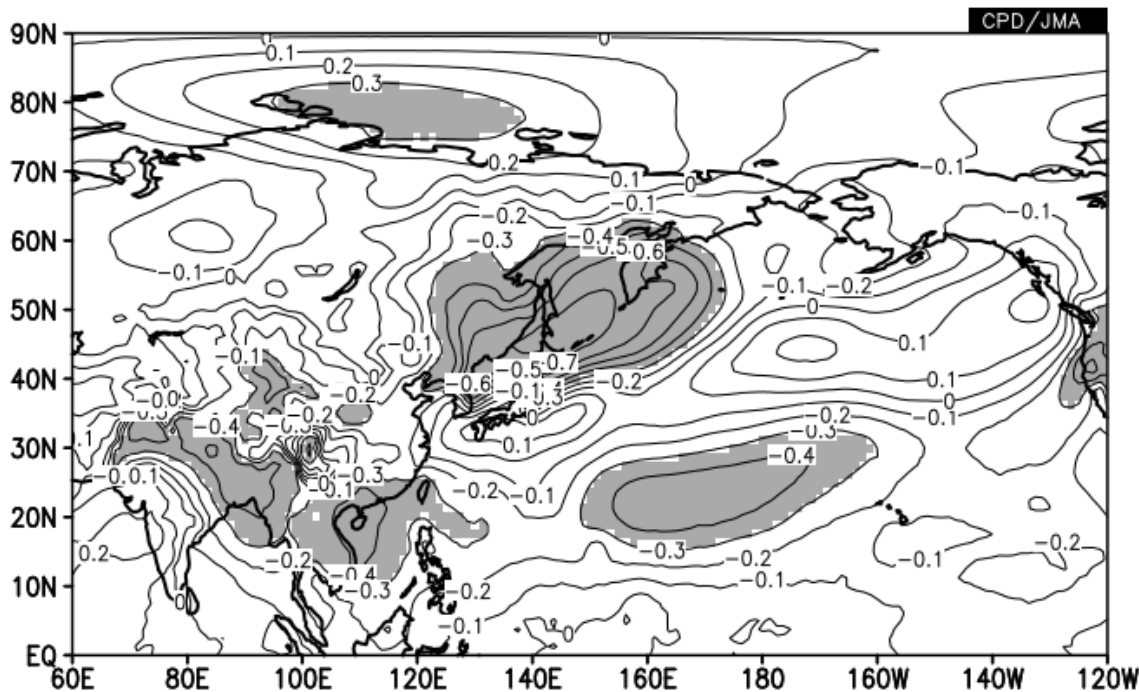
iTacs

- Main analysis methods built in iTacs

Description in iTacs	function
DATA1_DATA2	Drawing two valuables superimposing in a single map
COMPOSIT	Operate a composite analysis
REGRESSION_COEFFICIENT	Calculate regression coefficient “Data1” is a responsible (dependent) variable, and “Data2” is an explanatory (independent) variable
CORRELATION_COEFFICIENT	Calculate correlation coefficient
INDEX	Indices regarding ENSO and the Indian Ocean
EOF_SINGLE, EOF_MULTI	Operate an empirical orthogonal function (EOF) analysis
SVD	Operate a singular value decomposition (SVD) analysis
FFT	Operate a Fast Fourier Transform (FFT) analysis
WAVELET	Operate a wavelet analysis
ADD, SUBTRACT, MULTIPLY, DIVIDE	four arithmetic operations

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- Users can upload their own data on iTacs system and handle it in the same manner with other dataset.



Example

Correlation coefficient between sea level pressure and monthly mean temperature in Tokyo for July

- Dependent value: SLP
- Explanatory value: temperature at Tokyo

Applying various explanatory values (ex. crop yield, river runoff, the number of patients of an infection disease), statistical relationship between them and climate variabilities will be easily derived.

iTacs

- In **2007**, JMA established “Advisory Panel on Extreme Climate Events” and the iTacs has been developed since then as an analysis tool for the Panel.
- The iTacs was **published in 2009** in order to assist NMHSs in their production of analysis information on extreme climate events and their climate status monitoring.
- The intended users of iTacs is **registered NMHS staffs only.**
- The iTacs was designated as a **GFCS contributing project** in **April 2016**.

iTacs

- There are **278 users** as of 22 November 2016.
- **About 6,800** and more operations were requested to the iTacs every month of 2016.

