

Introduction to ITACS

- ITACS: Interactive Tool for Analysis of Climate System -

Shotaro TANAKA

Tokyo Climate Center

Japan Meteorological Agency

Contents

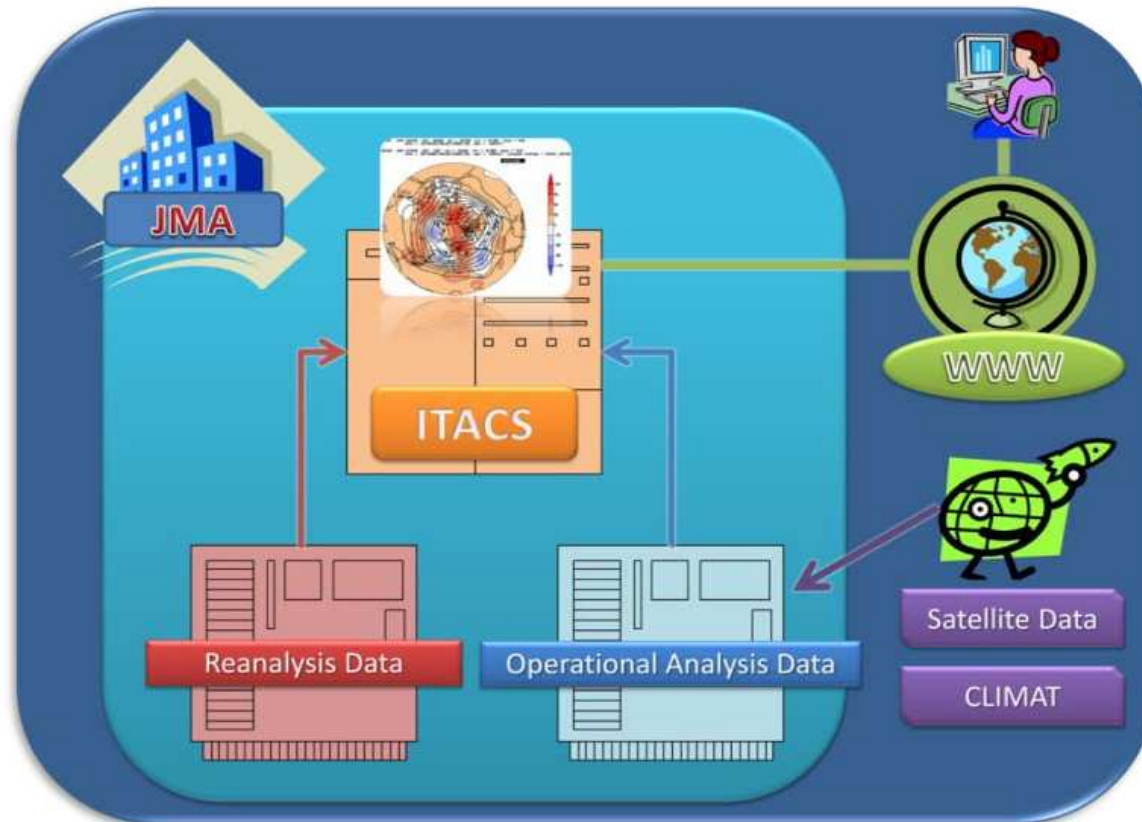
- Introduction
- <Exercise 1> Draw a latitude-longitude map
- <Exercise 2> Draw a time-series chart
- <Exercise 3> Implement regression analysis

Contents

- **Introduction**
- <Exercise 1> Draw a latitude-longitude map
- <Exercise 2> Draw a time-series chart
- <Exercise 3> Implement regression analysis

What's ITACS?

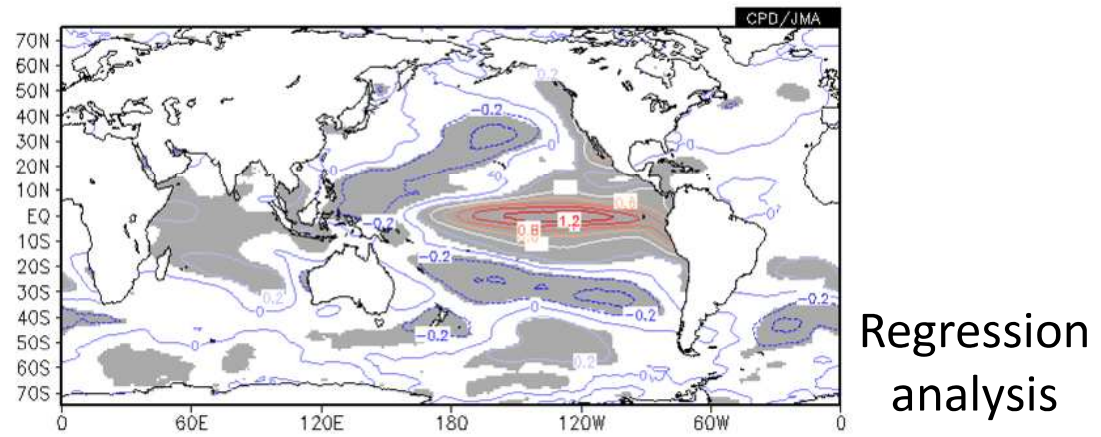
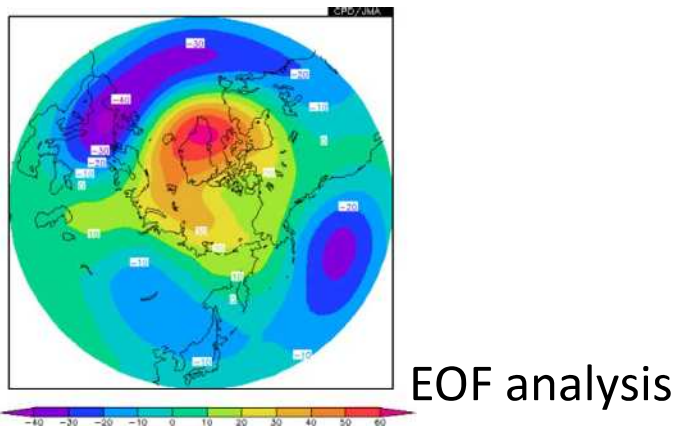
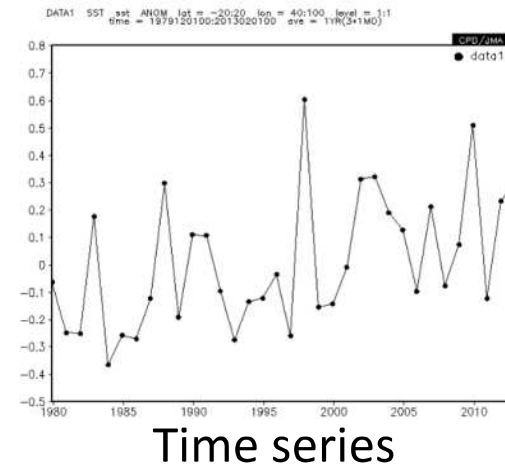
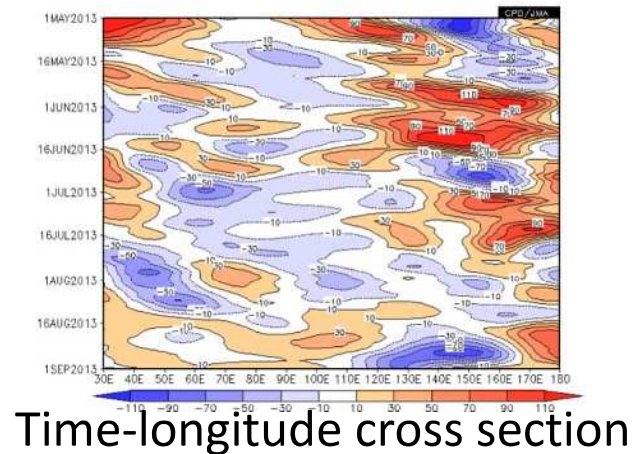
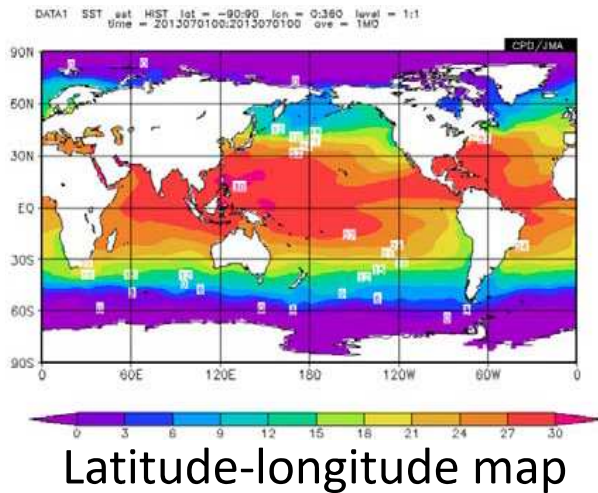
- It's a web-based application for climate system monitoring and analysis.
- It's available on web browsers. No additional software or plug-ins are required.



What can be done using ITACS?

- Various types of charts can be drawn.
- Various statistical analyses can be performed.

Samples



Available data

- Atmospheric analysis data
 - JRA-25/JCDAS since 1979
 - Japanese 25-year Reanalysis / JMA Climate Data Assimilation System
 - JRA-55 (new reanalysis data since 1958) will be available next year.
 - Outgoing longwave radiation data provided by NOAA since 1974
- Oceanic analysis data
 - Sea surface temperature data by COBE-SST since 1891
 - Oceanic condition analyzed by MOVE/MRI.COM-G since 1958
- Forecast data (experimental product)
 - The latest outputs of JMA's one-month prediction model
- Others
 - Major SST Indices, CLIMAT reports, and user-input data (CSV format)

(See for details)

JRA project <http://jra.kishou.go.jp/>

COBE-SST http://ds.data.jma.go.jp/tcc/tcc/products/elnino/cobesst_doc.html / http://ds.data.jma.go.jp/tcc/tcc/library/MRCS_SV12/index_e.htm

MOVE/MRI.COM-G http://ds.data.jma.go.jp/tcc/tcc/products/elnino/move_mricom_doc.html

How to access

- Registered users can access ITACS from the Tokyo Climate Center (TCC) website.

TCC website (<http://ds.data.jma.go.jp/tcc/tcc/index.html>)

Entrance

Announcement

31 October 2011
ITACS version 4.0 has been launch for more than one year have been d

Tools and documents

[ITACS ver 4.0](#)

ITACS (<http://extreme.kishou.go.jp/tool/itacs-tcc2011/>)

dataset	element	data type	area	level	average period	show period
-Dataset-	element	-Data_type-	-Area-	1000hPa	1000hPa	-Mean Period-
	Vector <input type="checkbox"/>				Ave <input type="checkbox"/>	RANGE
	SD <input type="checkbox"/>				time filter <input type="checkbox"/>	2100
	Derivative: longitude <input type="checkbox"/> latitude <input type="checkbox"/>					2100

analysis method : -Analysis_method-

Graphic Option

Show Contour Labels
 Show Color Bar
 Set Contour Parameters for data
 Polar Stereographic : North pole
 Logarithmic Coordinates
 Reverse the Axes
 Flip the X-axis Flip the Y-axis
 No Scale Labels
 Draw Credit Inside
 Apply All Pics
picture size %

Submit Clear SliceTool Help Sample Logout

Image1

No Image

< output txt file > [detailed options](#)
< download data (ctl file and 4byte data) >

Standard procedure

The screenshot shows the ITACS web interface with five numbered sections:

- 1**: Data setting field, containing dropdown menus for dataset, element, data type, area, level, average period, and show period, along with checkboxes for Vector, SD, and time filter.
- 2**: Analysis method field, containing a dropdown menu for Method: -Analysis_method-.
- 3**: Graphic options field, containing checkboxes for Show Contour Labels, Show Color Bar, and Set Contour Parameters for data, along with a text input for interval and a dropdown for image format.
- 4**: Control buttons, containing Submit, eTool, Help, Sample, and Logout.
- 5**: Image display area, containing the text "No Image".

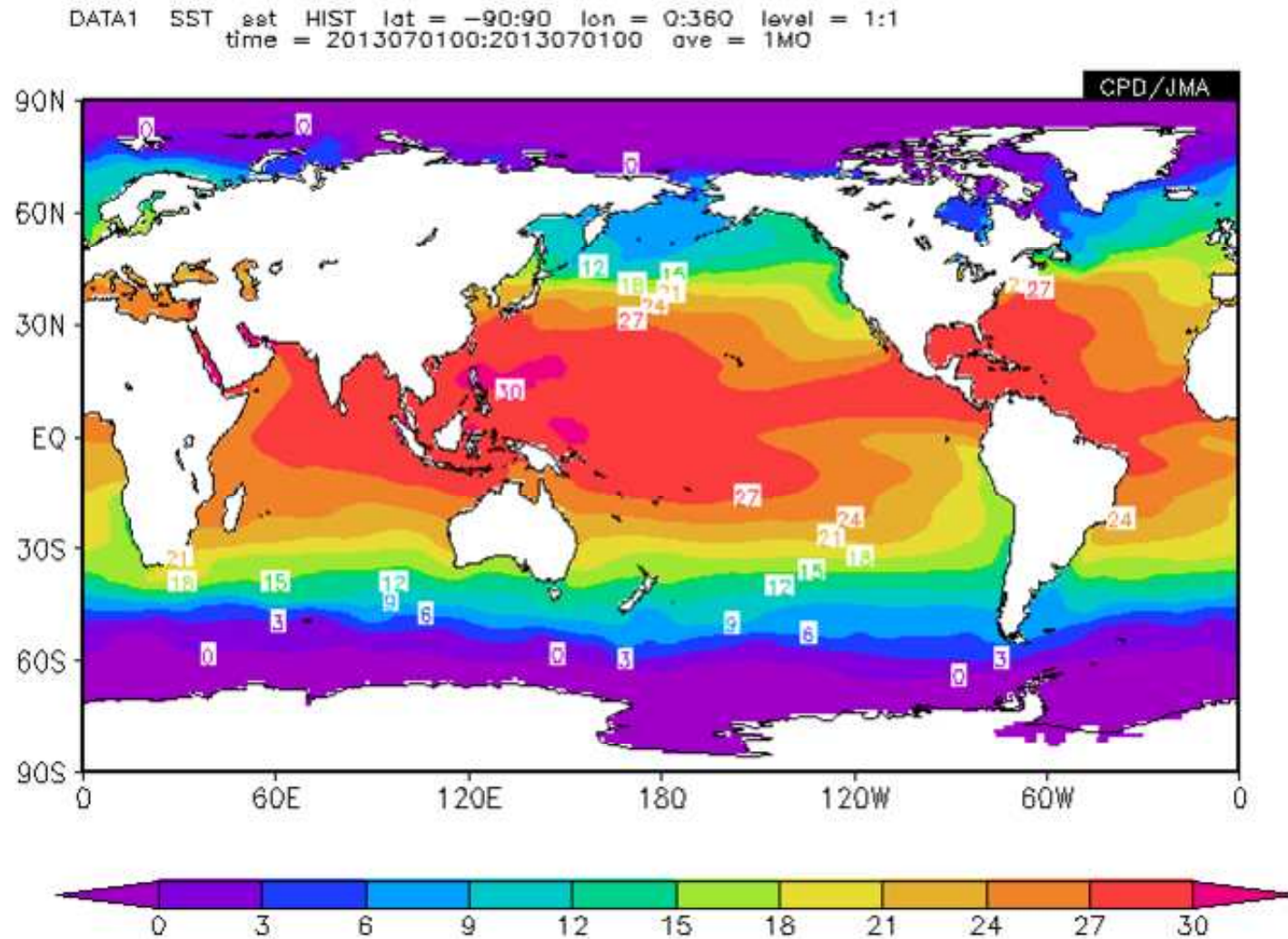
- ITACS consists of 5 parts.
 - ① Data setting field
 - ② Analysis method field
 - ③ Graphic options field
 - ④ Control buttons
 - ⑤ Image display area
- At first, set data and analysis method in the 1st and 2nd field, and if necessary set graphic options the in 3rd field.
- Next, click the “Submit” button in the 4th, and then a created map will be shown in the 5th field.

Contents

- Introduction
- <Exercise 1> Draw a latitude-longitude map
- <Exercise 2> Draw a time-series chart
- <Exercise 3> Implement regression analysis

Latitude-longitude map (1)

- Let's chart monthly sea surface temperature (SST) for July 2013.



Latitude-longitude map (2)

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.] Vector <input type="checkbox"/> SD <input type="checkbox"/> Derivative: longitude <input type="checkbox"/> latitude <input type="checkbox"/>	HIST	ALL Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa 1000hPa	MONTHLY Ave <input type="checkbox"/> time filter <input type="checkbox"/>	RANGE 2013 07 2013 07

analysis method : -Analysis_method-

- To set each item in “data1” as follows.
 - dataset SST
 - element Temperature
 - data type HIST (meaning historical data)
 - Area ALL
 - level 1000hPa (meaning sea surface for SST data)
 - average period MONTHLY
 - show period “RANGE”; 2013 7; 2013 7

Latitude-longitude map (3)

The screenshot shows a web interface for selecting a dataset and element for a latitude-longitude map. The interface is divided into several sections:

- Selection Fields:** A table with columns: dataset, element, data type, area, level, average period, and show period. The 'dataset' field is highlighted with a red box and labeled '1'. The 'element' dropdown is highlighted with a yellow box and labeled '2'. A red arrow points to the 'Temperature (SST) [C.Deg.]' option in the dropdown menu.
- Analysis Method:** A dropdown menu labeled 'analysis method' with the value '-Analysis_method-'.
- Graphic Option:** A section with various checkboxes and input fields for customizing the map display. Options include 'Show Contour Labels', 'Show Color Bar', 'Set Contour Parameters for data1', 'Set Vector', 'Color Table', 'Polar Stereographic', 'Logarithmic Coordinates', 'Reverse the Axes', 'Flip the X-axis', 'Flip the Y-axis', 'No Caption', 'No Scale Labels', 'Draw Credit Inside', and 'Apply All Pics'.
- Buttons:** A row of buttons: Submit, Clear, SliceTool, Help, Sample, Logout.

1. Select “SST” in the “dataset” field.
 - Various datasets are available; CLIMAT, INDEX, JRA-JCDAS, K1EM, OCEAN-DATA, SAT, SST and USER-INPUT
2. Select “element” “Sea Surface Data >> Temperature”.
 - Available datasets will be shown in a pop-up menu.

Latitude-longitude map (4)

data1

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.]	-Data_type- -Data_type- HIST NORM ANOM ANOM_SD	-Area-	1000hPa 1000hPa	-Mean Period- Ave <input type="checkbox"/> time filter <input type="checkbox"/>	RANGE 2013 2013

analysis method : -Analysis_method-

Graphic Option

Show Contour Labels
 Show Color Bar
 Set Contour Parameters for data1
interval : min : max :
 Set Vector size : [inch] value : skip : 1

Color Table : Rainbow
 Polar Stereographic : North pole
 Logarithmic Coordinates
 Reverse the Axes
 Flip the X-axis Flip the Y-axis
 No Caption

No Scale Labels
 Draw Credit Inside
 Apply All Pics
picture size %

Submit Clear SliceTool Help Sample Logout

3. Select “data type” “HIST”.

Available options are as follows:

- HIST : Historical actual analysis or observation data.
- NORM : Climatological normal data (averaged from 1981 to 2010).
- ANOM : Anomaly data (HIST – NORM: difference from the climatological normal)
- ANOM_SD : Anomaly data normalized by their standard deviations.

Latitude-longitude map (5)

The screenshot shows a web-based data visualization tool. The main configuration area is titled 'data1' and contains several dropdown menus and checkboxes. The 'dataset' is set to 'SST' and the 'element' is 'Temperature (SST) [C.Deg.]'. The 'data type' is 'HIST'. The 'area' dropdown is open, showing a list of regions including 'ALL', 'ASIA', 'Northern Hemisphere', 'Tropical Pacific', 'Tropics', 'Indian Pacific', 'Europe', 'North America', 'South America', and 'Africa'. The 'level' dropdown is set to '1000hPa'. The 'average period' is set to '-Mean Period-' and the 'show period' is set to 'RANGE' with '2013' selected. Below the 'data1' section, there is an 'analysis method' dropdown set to '-Analysis_method-'. The 'Graphic Option' section includes checkboxes for 'Show Contour Labels' (checked), 'Show Color Bar' (checked), 'Set Contour Parameters for data1' (unchecked), and 'Set Vector' (unchecked). There are also input fields for 'interval', 'min', 'max', 'size', 'value', and 'skip'. The 'Color Table' is set to 'Rainbow'. The 'Polar Stereographic' option is set to 'North pole'. The 'Logarithmic Coordinates' option is unchecked. The 'Reverse the Axes' option is unchecked. The 'Flip the X-axis' and 'Flip the Y-axis' options are unchecked. The 'No Caption' option is unchecked. The 'picture size' is set to a blank field followed by a percentage sign. At the bottom, there are buttons for 'Submit', 'Clear', 'SliceTool', 'Help', 'Sample', and 'Logout'.

4. Select “area” “ALL”.

- After your selection, setting boxes will appear in the “area” field and you can set/change the area more precisely (unit: 2.5 degrees).

5. Select “level” “1000hPa”.

- Options in the “level” menu will change depending on you selection of “element”.

Latitude-longitude map (6)

data1

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.]	HIST	ALL Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa 1000hPa	-Mean Period- -Mean Period- ANNUAL MONTHLY DAILY PENTAD DAY Year average Year average day Year average pentad day	RANGE 2013 2013

analysis method : -Analysis_method-

Graphic Option

Show Contour Labels
 Show Color Bar
 Set Contour Parameters for data1
interval : min : max :
 Set Vector size : [inch] value : skip : 1

Colorizing : COLOR
Drawing : SHADE
Image Format : png
Font : default

Color Table : Rainbow
 Polar Stereographic : North pole
 Logarithmic Coordinates
 Reverse the Axes
 Flip the X-axis Flip the Y-axis
 No Caption

No Scale Labels
 Draw Credit Inside
 Apply All Pics
picture size %

Submit Clear SliceTool Help Sample Logout

6. Select “average period” “MONTHLY”.

– The options shown here are classified in 2 types as follows (see supplemental explanation for details).

i. To select a consecutive period:

ANNUAL, MONTHLY, DAILY and PENTAD DAY

ii. To select a specific period of each year:

Year average, Year average day and Year average pentad day

Latitude-longitude map (7)

The screenshot shows a web-based interface for data selection. The main panel is titled 'data1' and contains several dropdown menus and checkboxes. The 'show period' dropdown is highlighted with a red box and a yellow arrow. A second 'show period' dropdown is also highlighted with a red box, showing a list of months from 01 to 12, with '07' selected. Orange circles with numbers 7 and 8 point to these elements.

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.]	HIST	ALL	1000hPa	MONTHLY	RANGE

analysis method : -Analysis_method-

Graphic Option

- Show Contour Labels
- Show Color Bar
- Set Contour Parameters for data1
- Set Vector size: [] [inch] value: [] skip: 1
- Color Table: Rainbow
- Polar Stereographic: North pole
- Logarithmic Coordinates
- Reverse the Axes
- Flip the X-axis Flip the Y-axis
- No Caption
- No Scale I
- Draw Cre
- Apply All F
- picture size []

Submit Clear SliceTool Help Sample Logout

7. Select “show period” “RANGE”.

8. Select the year and month, “2013 07”, for both upper and lower boxes.
Available options are as follows:

- RANGE : Setting the start and end points of the targeted time period.
- YEARS : Setting individual years.
- INDEX : Setting a SST index border to pick up years. (e.g. NINO.3)

Latitude-longitude map (8)

data1

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.] Vector <input type="checkbox"/> SD <input type="checkbox"/> Derivative: longitude <input type="checkbox"/> latitude <input type="checkbox"/>	HIST	ALL Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa 1000hPa	MONTHLY Ave <input type="checkbox"/> time filter <input type="checkbox"/>	RANGE 2013 07 2013 07

analysis method : -Analysis_method-

Graphic Option

Colorizing : COLOR
Drawing : SHADE
Image Format : png
default

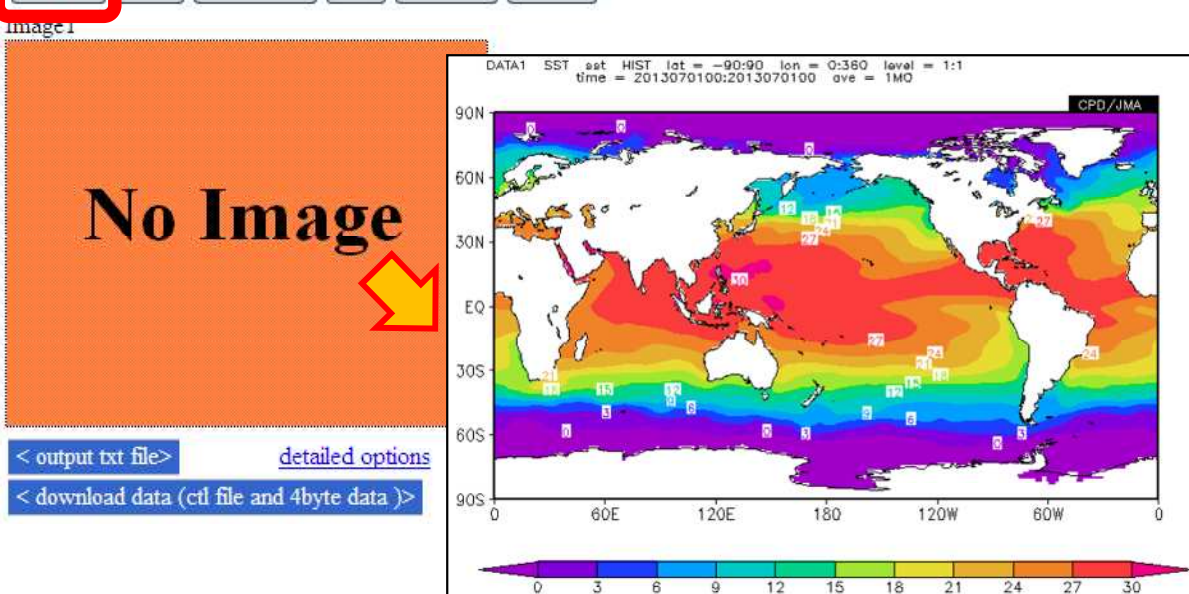
Show Contour Labels
 Show Color Bar
 Set Contour Parameters for data1
interval : min : max :
 Set Vector size : [inch] value : skip : 1

Color Table : Rainbow
 Polar Stereographic : North pole
 Logarithmic Coordinates
 Reverse the Axes
 Flip the X-axis Flip the Y-axis
 No Caption

No Scale Labels
 Draw Credit Inside
 Apply All Pics
picture size %

9

Submit Clear SliceTool Help Sample Logout



9. Finally, click the “Submit” and the image will be displayed.

Latitude-longitude map (9)

- You can change the area to draw, directly typing latitude/longitude in the “Lat”/”Lon” boxes.

data

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.]	HIST	Lat: -20 - 60 Lon: 30 - 190	1000hPa 1000hPa	MONTHLY Ave time filter	RANGE 2013 07 2013 07

analysis method : -Analysis_method-

Southern border

Northern border

Western border

Eastern border

Graphic Option

Colorizing : COLOR

Drawing : SHADE

Image Format : png

Font : default

Show Cor

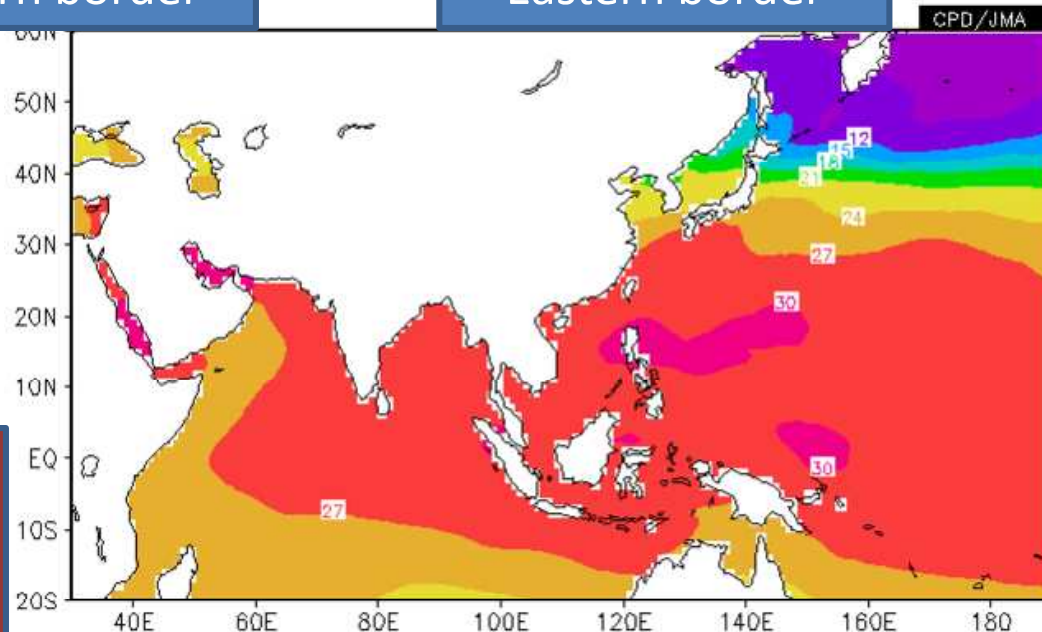
Show Col

Set Conto

interval :

Set Vector

Submit Clear SliceTool Help



After re-setting the area, please click the “Submit” button to display

Latitude-longitude map (10)

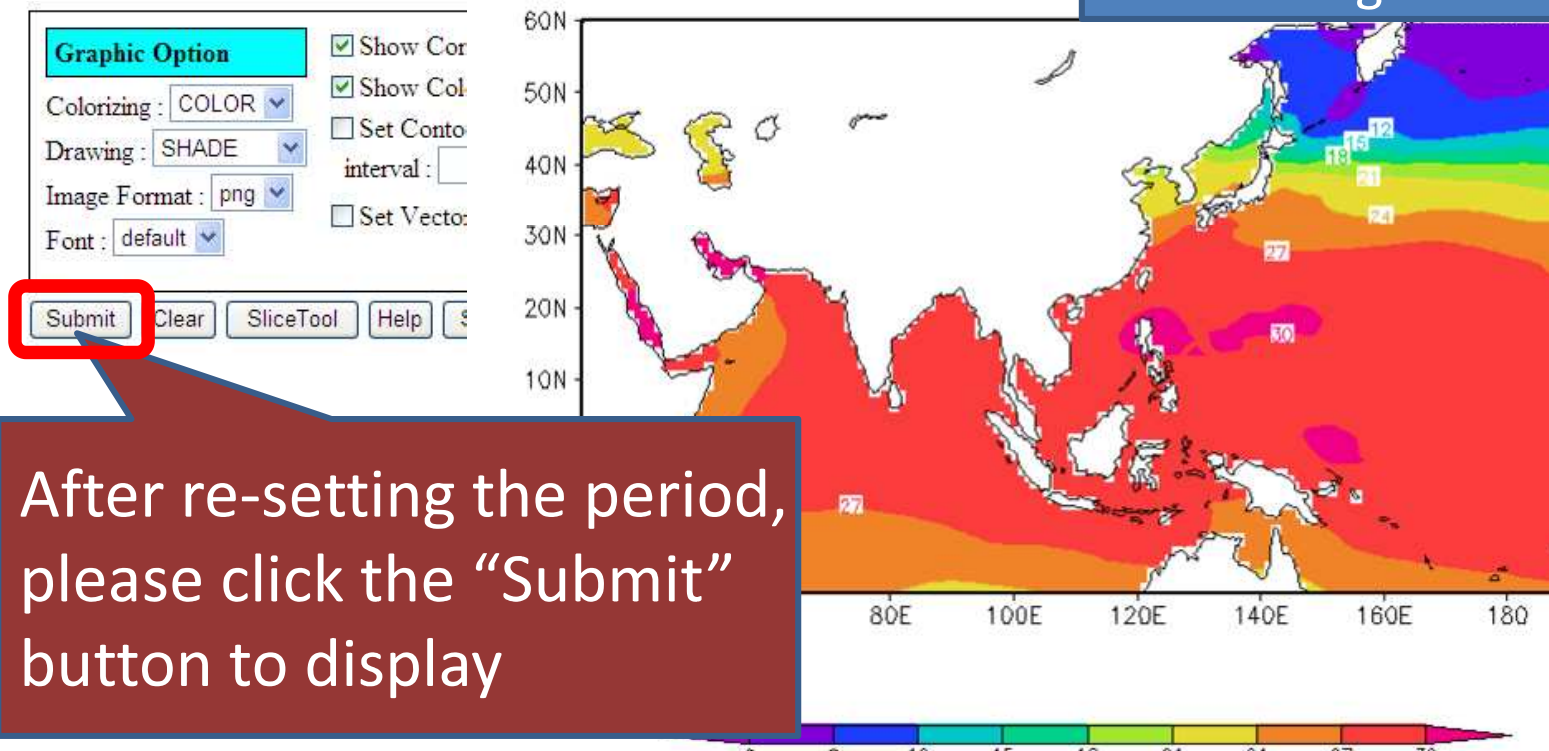
- You can draw consecutive months average SST (e.g., June-July-August 2013).

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.]	HIST	ALL Lat: -20 - 60 Ave <input type="checkbox"/> Lon: 30 - 190 Ave <input type="checkbox"/>	1000hPa 1000hPa	MONTHLY Ave <input checked="" type="checkbox"/>	RANGE 2013 06 2013 08

analysis method : -Analysis_method-

Checking "Ave" for time average

Upper: start month
Lower: end month



After re-setting the period, please click the "Submit" button to display

Latitude-longitude map (11)

- You can change intervals for contour/shading.

Checking this box

Graphic Option

Colorizing : COLOR

Drawing : SHADE

Image Format : png

Font : default

Set Contour Parameters for data1

interval : 1

min : 20

max : 30

Color Table : Rainbow

Polar Stereographic : North pole

Logarithmic Coordinates

Reverse the Axes

Flip the X-axis Flip the Y-axis

No Scale Labels

Draw Credit Inside

Apply All Pics

picture size %

Submit

Clear

SliceTool

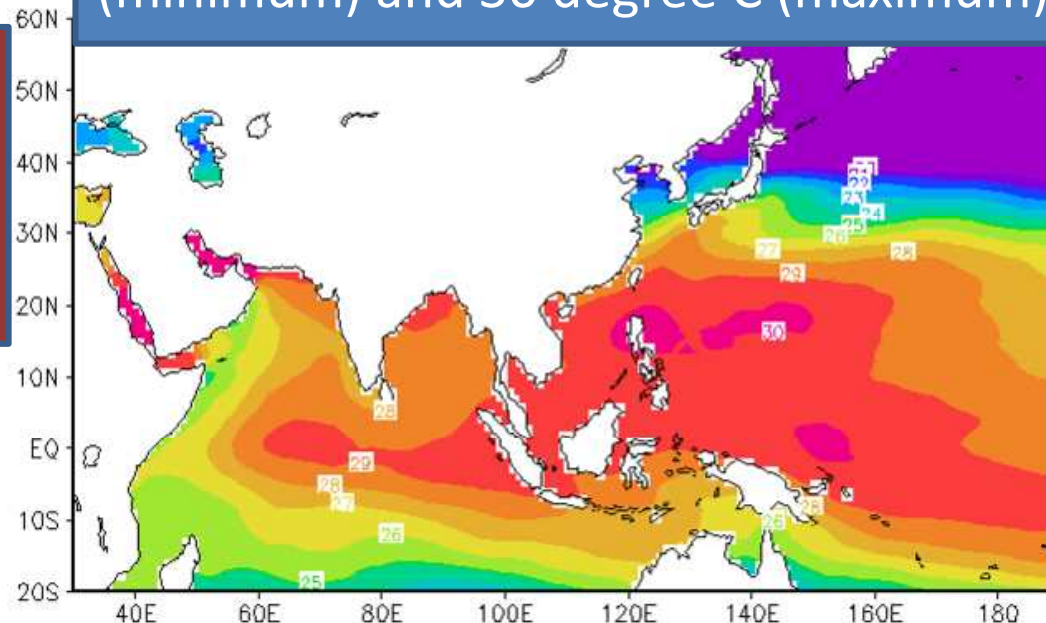
Help

Sample

Logout

After changing the intervals, please click the "Submit" button to display

Set 1 degree C between 20 degree C (minimum) and 30 degree C (maximum)

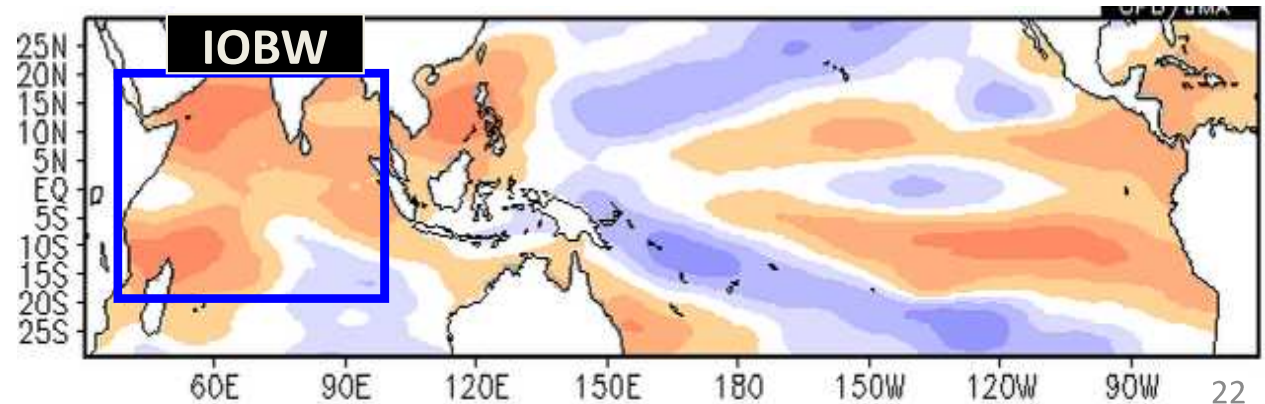
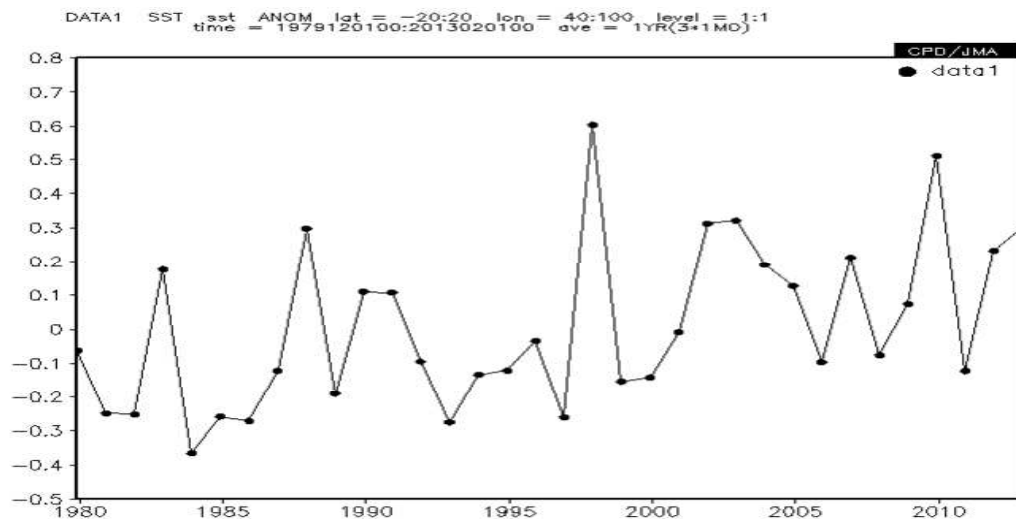


Contents

- Introduction
- <Exercise 1> Draw a latitude-longitude map
- <Exercise 2> Draw a time-series chart
- <Exercise 3> Implement regression analysis

Time-series chart (1)

- To chart the interannual variation of three-month mean SST anomaly averaged in the tropical Indian Ocean (20S – 20N, 40E – 100E) for December – February from 1979/1980 to 2012/2013.



Time-series chart (2)

data1

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.] Vector <input type="checkbox"/> SD <input type="checkbox"/> Derivative: longitude <input type="checkbox"/> latitude <input type="checkbox"/>	ANOM	ALL Lat: -20 - 20 Ave <input checked="" type="checkbox"/> Lon: 40 - 100 Ave <input checked="" type="checkbox"/>	1000hPa 1000hPa	Year average Ave <input type="checkbox"/> time filter <input type="checkbox"/>	RANGE 1979 - 2012 12 - 02

analysis method : -Analysis_method-

Please set each item in “data1” as follows.

- Dataset SST
- Element Temperature
- Data type ANOM (meaning “anomaly”, deviation from climatological normal)
- Area lat: -20 – 20; lon: 40 – 100 checking “Ave”
- Level 1000hPa (meaning sea surface for SST data)
- Average period Year average
- Show period “RANGE”; 1979 – 2012 (year); 12 – 2 (month)

Time-series chart (3)

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.]	ANOM	ALL Lat: -20 - 20 Lon: 40 - 100	1000hPa 1000hPa	Year average	RANGE 1979 - 2012 12 - 02

analysis method : -Analysis_method-

Graphic Option

Show Contour Labels
 Show Color Bar
 Set Contour Parameters for data1
interval : min : max :
 Set Vector size : [inch] value : skip : 1

Colorizing : COLOR
Drawing : CONTOUR
Image Format : png
Font : default

Color Table : Blue - Red
 Polar Stereographic : North pole
 Logarithmic Coordinates
 Reverse the Axes
 Flip the X-axis
 Flip the Y-axis
 No Caption

No Scale Labels
 Draw Credit Inside
 Apply All Pics
picture size %

Submit Clear SliceTool Help Sample Logout

Point 1: Checking “Ave” means averaging of values in the given latitudinal/longitudinal area.

Point 2: Setting “Year average” means year-to-year variation for the month(s) identified in “show period”.

Point 3: Numbers in the middle and bottom boxes indicate the range of year and month, respectively, to draw.

Time-series chart (4)

data1

dataset	element	data type	area	level	average period	show period
SST	Temperature (SST) [C.Deg.]	ANOM	ASIA	1000hPa	Year average	RANGE
	Vector <input type="checkbox"/>		Lat: -20 - 20 Ave <input checked="" type="checkbox"/>	1000hPa	Ave <input type="checkbox"/>	1979 - 2012
	SD <input type="checkbox"/>		Lon: 40 - 100 Ave <input checked="" type="checkbox"/>		time filter <input type="checkbox"/>	12 - 02
	Derivative: longitude <input type="checkbox"/> latitude <input type="checkbox"/>					

analysis method : -Analysis_method-

Graphic Option

Show Contour Labels
 Show Color Bar
 Set Contour Parameters for data1

Coloring : COLOR
Drawing : SHADE
Image Format : png
Font : default

min : [] max : []
[] [inch] value : [] skip : 1

Color Table : Rainbow
 Polar Stereographic : North pole
 Logarithmic Coordinates
 Reverse the Axes
 Flip the X-axis Flip the Y-axis
 No Caption

No Scale Labels
 Draw Credit Inside
 Apply All Pics

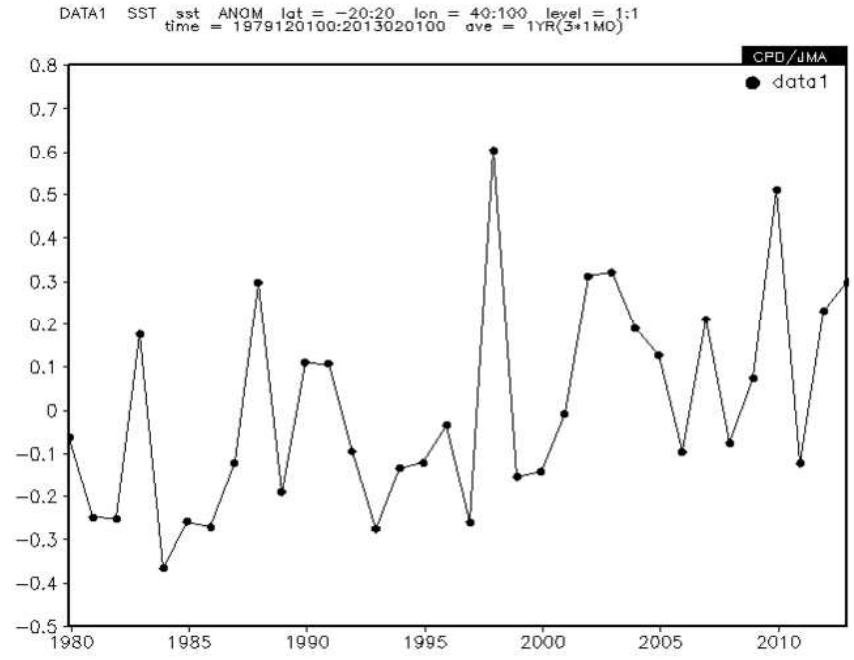
picture size [] %

Click

Submit Clear SliceTool Help Sample Logout

image1

No Image

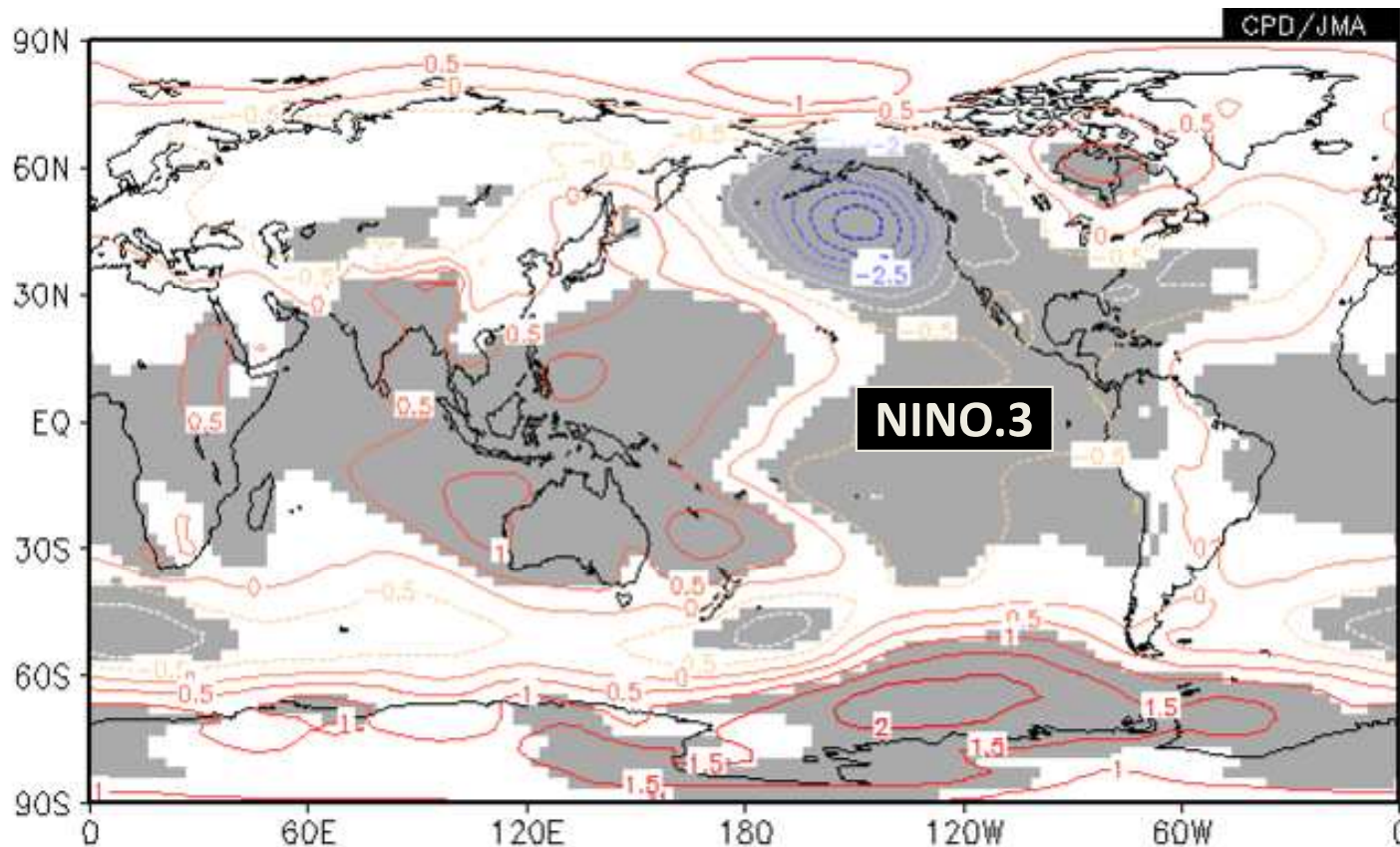


Contents

- Introduction
- <Exercise 1> Draw a latitude-longitude map
- <Exercise 2> Draw a time-series chart
- <Exercise 3> Implement regression analysis

Regression analysis (1)

- To regress three-month mean sea level pressure (SLP) onto NINO.3 SST index for DJF from 1979/1980 to 2012/2013.



Regression analysis (2)

- Select “JRA-JCDAS” in the dataset box of “data1”.
- “data1” is a response variable (SLP in this case).

The screenshot shows a web-based interface for selecting and configuring data. The main section is titled "data1" and contains a table with columns: dataset, element, data type, area, level, average period, and show period. The "dataset" dropdown is open, showing a list of datasets including "JRA-JCDAS", which is highlighted. A red arrow points to this selection. Below the table, there are various configuration options for visualization, including "Colorizing", "Drawing", "Image Format", "Font", "Show Color Bar", "Set Contour Parameters", "Set Vector", "Color Table", "Polar Stereographic", "Logarithmic Coordinates", "Reverse the Axes", "Flip the X-axis", "Flip the Y-axis", "No Caption", "No Scale Labels", "Draw Credit Inside", "Apply All Pics", and "picture size".

dataset	element	data type	area	level	average period	show period
JRA-JCDAS	element	-Data_type-	-Area-	1000hPa	1000hPa	-Mean Period-
-Dataset-	Vector <input type="checkbox"/>				Ave <input type="checkbox"/>	RANGE
CLIMAT	SD <input type="checkbox"/>				time filter <input type="checkbox"/>	2100
INDEX	Active: longitude <input type="checkbox"/> latitude <input type="checkbox"/>					2100
JRA-JCDAS	method-					
K1EM_20131031						
K1EM_20131107						
OCEAN-DATA_by_MOVE-G						
SAT						
SST						
TCC-TS						
TCC-TS2						
USER INPUT						

Colorizing : COLOR
Drawing : SHADE
Image Format : png
Font : default

Show Color Bar
 Set Contour Parameters for data1
interval : min : max :
 Set Vector size : [inch] value : skip : 1

Color Table : Rainbow
 Polar Stereographic : North pole
 Logarithmic Coordinates
 Reverse the Axes
 Flip the X-axis Flip the Y-axis
 No Caption

No Scale Labels
 Draw Credit Inside
 Apply All Pics
picture size %

Submit Clear SliceTool Help Sample Logout

Image1

Regression analysis (3)

- Select “Surface” and “SLP (Sea Level Pressure)” in the element box.

data1

dataset	element	data type	area	level	average period	show period
JRA-JCDAS	element	-Data_type-	-Area-	1000hPa	1000hPa	-Mean Period-
	Flux					RANGE
	Pressure Levels				Ave <input type="checkbox"/>	2100
	Surface				time filter <input type="checkbox"/>	2100
	Zonal mean					

analysis method : -Analysis_met

Graphic Option

Colorizing : COLOR

Drawing : SHADE

Image Format : png

Font : default

Show Contour Labels

Show Color Bar

Set Contour Parameters for data1

interval : min :

Set Vector size : [inch] val

Table : Rainbow

Polar Stereographic : North pole

logarithmic Coordinates

Reverse the Axes

Flip the X-axis Flip the Y-axis

No Caption

No Scale Labels

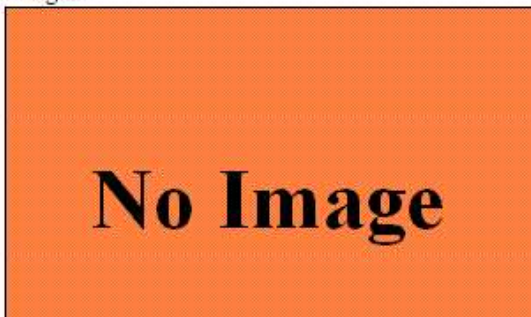
Draw Credit Inside

Apply All Pics

picture size %

Submit Clear SliceTool Help Sample Logout

Image1



Regression analysis (4)

- Set each of the remaining items in data1 as shown below.
 - data type HIST
 - area ALL
 - level 1000hPa; 1000hPa
 - average period Year average
 - show period 1979 – 2012; 12 – 2

dataset	element	data type	area	level	average period	show period
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL	1000hPa 1000hPa	Year average	RANGE 1979 - 2012 12 - 02

analysis method : -Analysis_method-

Graphic Option		Color Table	
<input checked="" type="checkbox"/> Show Contour Labels	<input checked="" type="checkbox"/> Show Color Bar	Rainbow	<input type="checkbox"/> No Scale Labels
Colorizing : COLOR	<input type="checkbox"/> Set Contour Parameters for data1	<input type="checkbox"/> Polar Stereographic : North pole	<input type="checkbox"/> Draw Credit Inside
Drawing : SHADE	interval : min : max :	<input type="checkbox"/> Logarithmic Coordinates	<input type="checkbox"/> Apply All Pics
Image Format : png	<input type="checkbox"/> Set Vector size : [inch] value : skip : 1	<input type="checkbox"/> Reverse the Axes	picture size %
Font : default		<input type="checkbox"/> Flip the X-axis <input type="checkbox"/> Flip the Y-axis	
		<input type="checkbox"/> No Caption	

Submit Clear SliceTool Help Sample Logout

Regression analysis (5)

- Select “REGRESSION COEFFICIENT” in the analysis method box.

data1

dataset	element	data type	area	level	average period	show period
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL	1000hPa	Year average	RANGE
	Vector <input type="checkbox"/> SD <input type="checkbox"/> Derivative: longitude <input type="checkbox"/> latitude <input type="checkbox"/>		Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa	Ave <input type="checkbox"/> time filter <input type="checkbox"/>	1979 - 2012 12 - 02

analysis method:

Graphic Option

- DATA1_DATA2
- SUBTRACT
- COMPOSITE
- SIGNIFICANCE_TEST
- REGRESSION_COEFFICIENT**
- CORRELATION_COEFFICIENT
- EOF_SINGLE
- EOF_MULTI
- SVD
- FFT
- WAVELET
- ADD
- MULTIPLY
- DIVIDE

Color Table: Rainbow

Polar Stereographic: North pole

Logarithmic Coordinates

Reverse the Axes

Flip the X-axis Flip the Y-axis

No Scale Labels

Draw Credit Inside

Apply All Pics

picture size: %

max:
skip: 1

Image1

No Image

[< output txt file >](#) [detailed options](#)
[< download data \(ctl file and 4byte data\) >](#)

Regression analysis (6)

- You can see “data2” open.
- “data2” is an explanatory variable (NINO.3 SST index in this case).

data1						
dataset	element	data type	area	level	average period	show period
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa 1000hPa	Year average Ave <input type="checkbox"/> time filter <input type="checkbox"/>	RANGE 1979 - 2012 12 - 02

analysis method: REGRESSION_COEFFICIENT

data2							
dataset	element	data type	area	level	average period	lag	significance
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa 1000hPa	Year average Ave <input type="checkbox"/> time filter <input type="checkbox"/>	0 YEAR	90%(two side)

Graphic Option	
Colorizing: COLOR	<input checked="" type="checkbox"/> Show Contour Labels
Drawing: SHADE	<input checked="" type="checkbox"/> Show Color Bar
Image Format: png	<input type="checkbox"/> Set Contour Parameters for data1
Font: default	interval: min: max:
	<input type="checkbox"/> Set Vector size: [inch] value: skip: 1
	Color Table: Rainbow
	<input type="checkbox"/> Polar Stereographic: North pole
	<input type="checkbox"/> Logarithmic Coordinates
	<input type="checkbox"/> Reverse the Axes
	<input type="checkbox"/> Flip the X-axis <input type="checkbox"/> Flip the Y-axis
	<input type="checkbox"/> No Scale Labels
	<input type="checkbox"/> Draw Credit Inside
	<input type="checkbox"/> Apply All Pics
	picture size %
	<input type="checkbox"/> No Caption

Submit Clear SliceTool Help Sample Logout

Image1

Regression analysis (7)

- Select “INDEX” in the dataset box of data2.

data1

dataset	element	data type	area	level	average period	show period
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa 1000hPa	Year average Ave <input type="checkbox"/> time filter <input type="checkbox"/>	RANGE 1979 - 2012 12 - 02

analysis method: REGRESSION_COEFFICIENT

data2

dataset	element	data type	area	level	average period	lag	significance
JRA-JCDAS -Dataset- CLIMAT INDEX JRA-JCDAS K1EM_20131031 K1EM_20131107 OCEAN-DATA_by_MOVE-G SAT SST TCC-TS TCC-TS2 USER INPUT	SLP (Sea Level Pressure) [hPa] SD <input type="checkbox"/>	HIST	ALL Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa 1000hPa	Year average Ave <input type="checkbox"/> time filter <input type="checkbox"/>	0 YEAR	90%(two side)

how Contour
how Color Bar
Contour Parameters for data1
Interval: min: max:
Set Vector size: [inch] value: skip: 1

Color Table: Rainbow
 No Scale Labels
 Polar Stereographic: North pole
 Draw Credit Inside
 Logarithmic Coordinates
 Apply All Pics
 Reverse the Axes
 Flip the X-axis Flip the Y-axis
 No Caption

Image Format: png
Font: default
picture size %

Submit Clear SliceTool Help Sample Logout

Image1

No Image

Regression analysis (8)

- Select “NINO.3” in the element box.

data1

dataset	element	data type	area	level	average period	show period
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa 1000hPa	Year average Ave <input type="checkbox"/> time filter <input type="checkbox"/>	RANGE 1979 - 2012 12 - 02

analysis method : REGRESSION_COEFFICIENT

data2

dataset	element	data type	average period	lag	significance
INDEX	element NINO.1+2 NINO.3 NINO.3.4 NINO.4 NINO.WEST	-Data_type- SD <input type="checkbox"/>	-Mean Period- Ave <input type="checkbox"/> time filter <input type="checkbox"/>	0 YEAR	90%(two side)

Graphic Option

Colorizing : COLOR
Drawing : SHADE
Image Format : png
Font : default

Set Vector size : [] [inch] value : [] skip : 1

Color Table : Rainbow
 Polar Stereographic : North pole
 Logarithmic Coordinates
 Reverse the Axes
 Flip the X-axis Flip the Y-axis
 No Caption

No Scale Labels
 Draw Credit Inside
 Apply All Pics
picture size [] %

Submit Clear SliceTool Help Sample Logout

Image1

No Image

Regression analysis (9)

- Set each of the remaining items in data2 as shown below.
 - data type HIST
 - average period Year average
 - lag 0; YEAR
 - Significance 95% (two side)

data1						
dataset	element	data type	area	level	average period	show period
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL	1000hPa	Year average	RANGE
	Vector <input type="checkbox"/>		Lat: -90 - 90 Ave <input type="checkbox"/>		Ave <input type="checkbox"/>	1979 - 2012
	SD <input type="checkbox"/>		Lon: 0 - 360 Ave <input type="checkbox"/>		time filter <input type="checkbox"/>	12 - 02
	Derivative: longitude <input type="checkbox"/> latitude <input type="checkbox"/>					

analysis method : REGRESSION_COEFFICIENT

data2					
dataset	element	data type	average period	lag	significance
INDEX	NINO.3	HIST	Year average	0 YEAR	95%(two side)
			Ave <input type="checkbox"/>		90%(two side)
			time filter <input type="checkbox"/>		95%(two side)
					99%(two side)
					90%(one side, upper)

Regression analysis (10)

- Select "CONTOUR" in the Drawing box of Graphic Option.

data1						
dataset	element	data type	area	level	average period	show period
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>	1000hPa 1000hPa	Year average Ave <input type="checkbox"/> time filter <input type="checkbox"/>	RANGE 1979 - 2012 12 - 02

analysis method : REGRESSION_COEFFICIENT

data2					
dataset	element	data type	average period	lag	significance
INDEX	NINO.3 SD <input type="checkbox"/>	HIST	Year average Ave <input type="checkbox"/> time filter <input type="checkbox"/>	0 YEAR	95%(two side)

Graphic Option	
Colorizing : COLOR	<input checked="" type="checkbox"/> Show Contour Labels
Drawing : CONTOUR	<input checked="" type="checkbox"/> Show Color Bar
Image For : CONTOUR	<input type="checkbox"/> Set Contour Parameters for data1
Font : def	interval : min : max :
	Set Vector size : [inch] value : skip : 1
	Color Table : Rainbow
	<input type="checkbox"/> Polar Stereographic : North pole
	<input type="checkbox"/> Logarithmic Coordinates
	<input type="checkbox"/> Reverse the Axes
	<input type="checkbox"/> Flip the X-axis <input type="checkbox"/> Flip the Y-axis
	<input type="checkbox"/> No Scale Labels
	<input type="checkbox"/> Draw Credit Inside
	<input type="checkbox"/> Apply All Pics
	picture size %
	<input type="checkbox"/> No Caption

Submit Clear SliceTool Help Logout

Image1

Regression analysis (11)

- Select “Blue - Red” in the Color Table box to display **negative** and **positive** values with **blue** and **red** contours, respectively.

data1						
dataset	element	data type	area	level	average period	show period
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL	1000hPa	Year average	RANGE
	Vector <input type="checkbox"/> SD <input type="checkbox"/> Derivative: longitude <input type="checkbox"/> latitude <input type="checkbox"/>		Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>		Ave <input type="checkbox"/> time filter <input type="checkbox"/>	1979 - 2012 12 - 02

analysis method : REGRESSION_COEFFICIENT

data2					
dataset	element	data type	average period	lag	significance
INDEX	NINO.3	HIST	Year average	0 YEAR	95%(two side)
	SD <input type="checkbox"/>		Ave <input type="checkbox"/> time filter <input type="checkbox"/>		

Graphic Option	
Colorizing : COLOR	<input checked="" type="checkbox"/> Show Contour Labels
Drawing : CONTOUR	<input checked="" type="checkbox"/> Show Color Bar
Image Format : png	<input type="checkbox"/> Set Contour Parameters for data1
Font : default	interval : min : max :
	<input type="checkbox"/> Set Vector size : [inch] value : skip : 1
	<input type="checkbox"/> Polar Stereographic
	<input type="checkbox"/> Logarithmic
	<input type="checkbox"/> Reverse the Axes
	<input type="checkbox"/> Flip the X-axis <input type="checkbox"/> Flip the Y-axis
	<input type="checkbox"/> No Scale Labels
	<input type="checkbox"/> Draw Credit Inside
	<input type="checkbox"/> Apply All Pics
	are size %
	<input type="checkbox"/> No Caption

Color Table: Blue - Red (selected), Rainbow, Red - Blue, Blue - Red

Buttons: Submit, Clear, SliceTool, Help, Sample, Logout

Image1

Regression analysis (12)

- Click “Submit” button to draw a chart.

data1						
dataset	element	data type	area	level	average period	show period
JRA-JCDAS	SLP (Sea Level Pressure) [hPa]	HIST	ALL	1000hPa	Year average	RANGE
	Vector <input type="checkbox"/> SD <input type="checkbox"/> Derivative: longitude <input type="checkbox"/> latitude <input type="checkbox"/>		Lat: -90 - 90 Ave <input type="checkbox"/> Lon: 0 - 360 Ave <input type="checkbox"/>		Ave <input type="checkbox"/> time filter <input type="checkbox"/>	1979 - 2012 12 - 02


analysis method : REGRESSION_COEFFICIENT

data2					
dataset	element	data type	average period	lag	significance
INDEX	NINO.3	HIST	Year average	0 YEAR	95%(two side)
	SD <input type="checkbox"/>		Ave <input type="checkbox"/> time filter <input type="checkbox"/>		

Graphic Option	
Colorizing : COLOR	<input checked="" type="checkbox"/> Show Contour Labels
Drawing : CONTOUR	<input checked="" type="checkbox"/> Show Color Bar
Image Format : png	<input type="checkbox"/> Set Contour Parameters for data1
Font : default	interval : min : max :
	<input type="checkbox"/> Set Vector size : [inch] value : skip : 1
	Color Table : Blue - Red
	<input type="checkbox"/> Polar Stereographic : North pole
	<input type="checkbox"/> Logarithmic Coordinates
	<input type="checkbox"/> Reverse the Axes
	<input type="checkbox"/> Flip the X-axis <input type="checkbox"/> Flip the Y-axis
	<input type="checkbox"/> No Scale Labels
	<input type="checkbox"/> Draw Credit Inside
	<input type="checkbox"/> Apply All Pics
	picture size %
	<input type="checkbox"/> No Caption

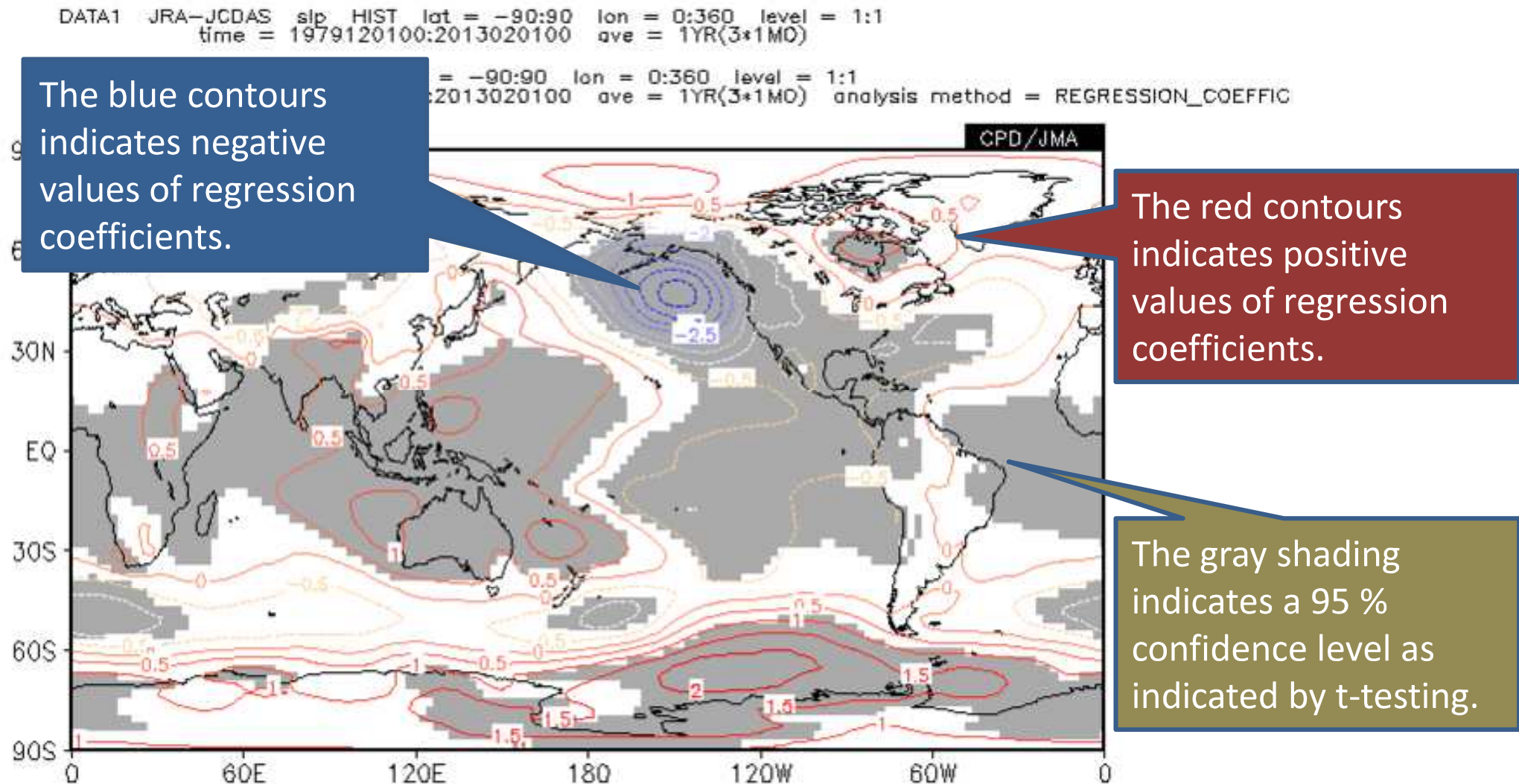
Submit Clear SliceTool Help Sample Logout

Image1



Regression analysis (13)

- You can draw the following chart.



To learn more about ITACS

- Sample images and tutorials are available on the ITACS website.

<http://extreme.kishou.go.jp/tool/itacs-tcc2011/>

Tools and documents

[ITACS ver 4.0](#)

[ITACS ver 3.0](#)

[Sample images for ITACS ver.4.0](#)

[Tutorial for ver.4.0](#)

[Sea surface temperature\(SST\)](#)

[Average of SST anomaly](#)

[Stream function of historical data on 850hPa](#)

[Stream function of historical data and anomaly data on 850hPa](#)

[Subtraction of monthly SST](#)

[500-hPa height and anomaly](#)

[Time-longitude cross section of 200-hPa velocity potential](#)

[Water vapor flux\(vector\) anomaly and specific humidity anomaly](#)

[Interannual variation of monthly mean 850-hPa air temperature](#)

[SST composite of La Nina years](#)

[Regression Analysis : NINO.3 SST and 850hPa Stream Function / Correlation analysis](#)

[boundaries +](#)

[Tutorial of the ITACS ver 3.0 \(2.85MB\)](#)

What's ITACS?

The ITACS is a web-based application for climatological analysis. The Japan Meteorological Agency (JMA) has developed the ITACS to assist National

Supplemental explanation

Average period

- The “average period” options are classified in two types.

<“MONTHLY” type>

- to select a consecutive period:

ANNUAL, MONTHLY, DAILY and PENTAD DAY

average period	show period
MONTHLY	RANGE
Ave <input type="checkbox"/>	2010 03
time filter <input type="checkbox"/>	2013 05



<Calendar>
 2010 : J F M A M J J A S O N D
 2011 : J F M A M J J A S O N D
 2012 : J F M A M J J A S O N D
 2013 : J F M A M J J A S O N D

Red framed months (39months) are selected.

average period
-Mean Period-
-Mean Period-
ANNUAL
MONTHLY
DAILY
PENTAD DAY
Year average
Year average day
Year average pentad day

< “Year average” type>

- to select a specific period of each year:

Year average, Year average day and Year average pentad day

average period	show period
Year average	RANGE
Ave <input type="checkbox"/>	2010 2013
time filter <input type="checkbox"/>	03 - 05



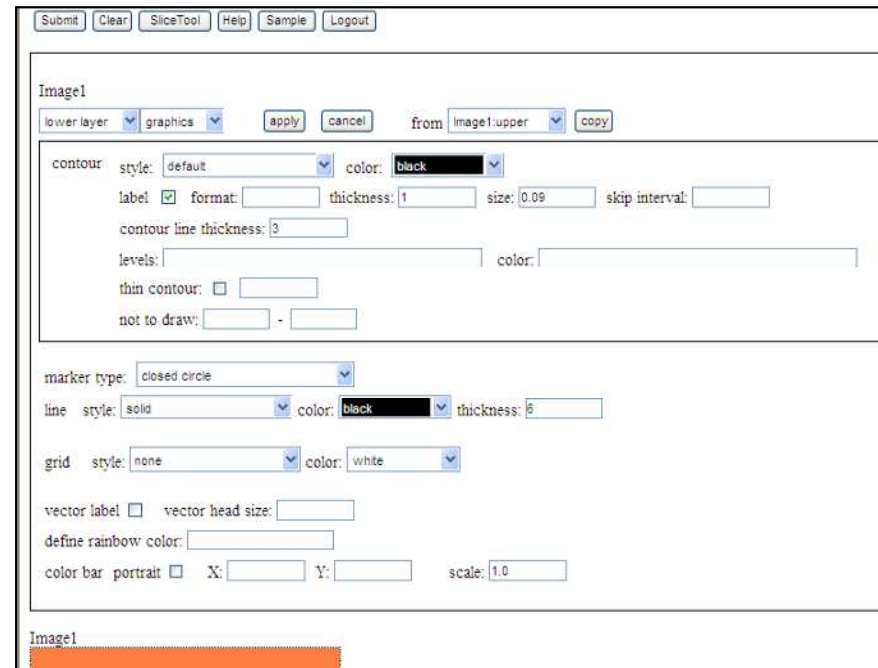
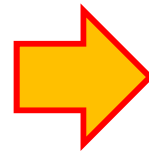
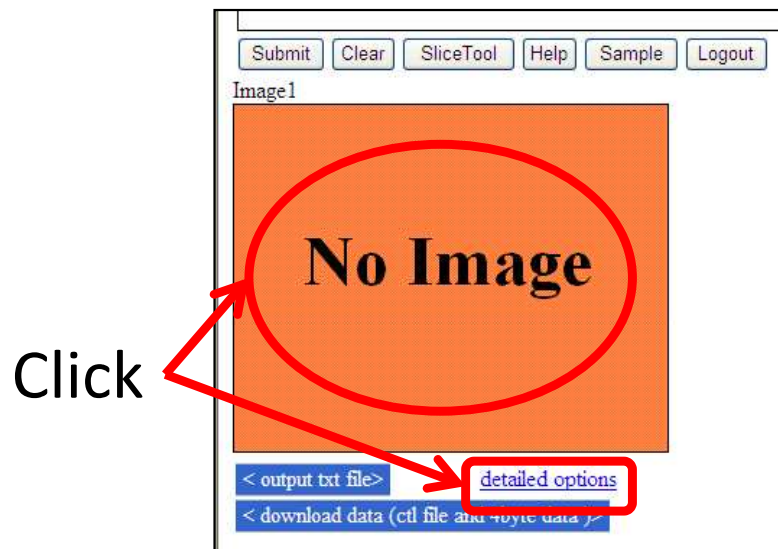
<Calendar>
 2010 : J F M A M J J A S O N D
 2011 : J F M A M J J A S O N D
 2012 : J F M A M J J A S O N D
 2013 : J F M A M J J A S O N D

Blue framed MAMs (4MAMs) are selected.

With no relation to “Ave” box in “average period”, months included here are always averaged about each year.

Detailed options

- There are a lot of options to create maps.
 - Contour : Color, thickness, style, label and others.
 - Axis : Color, interval, style and others.
 - Map : Color, resolution, style and others.
- Click the image display area or the link written as “detailed options” to open the detailed options dialogues.



Procedure of setting detailed options

1. Select target

The “lower layer” means the settings for drawing data1, and the “upper layer” corresponds to data2 respectively.

(Click to copy another layer’s settings or the default settings.)

(Click to close these dialogues.)

2. Choose options

Choose contour style, color, thickness and so on.

3. Click the “apply” button

Apply the chosen options.
(If you miss clicking this button, all the settings can’t be applied)

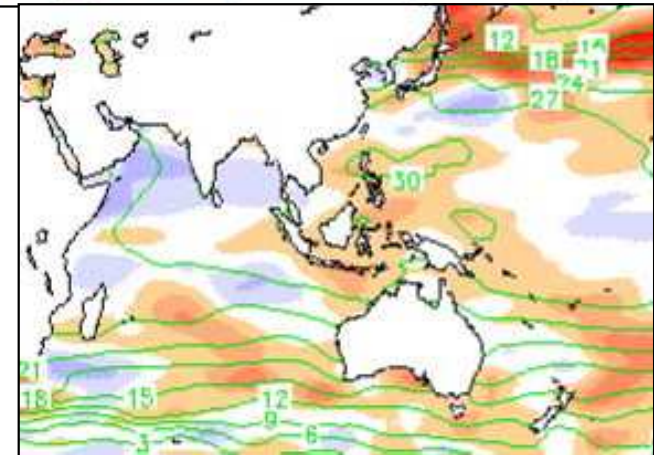
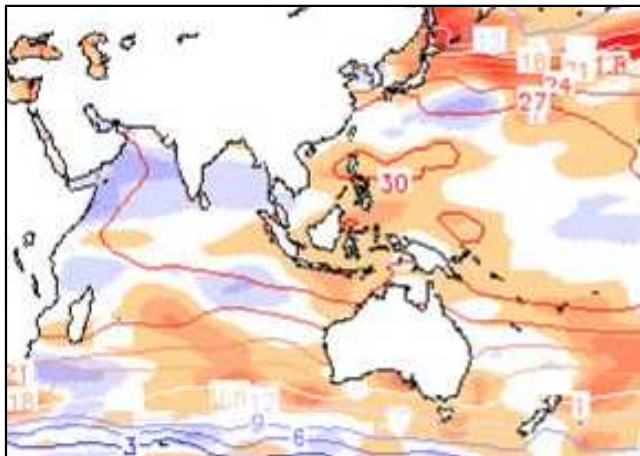
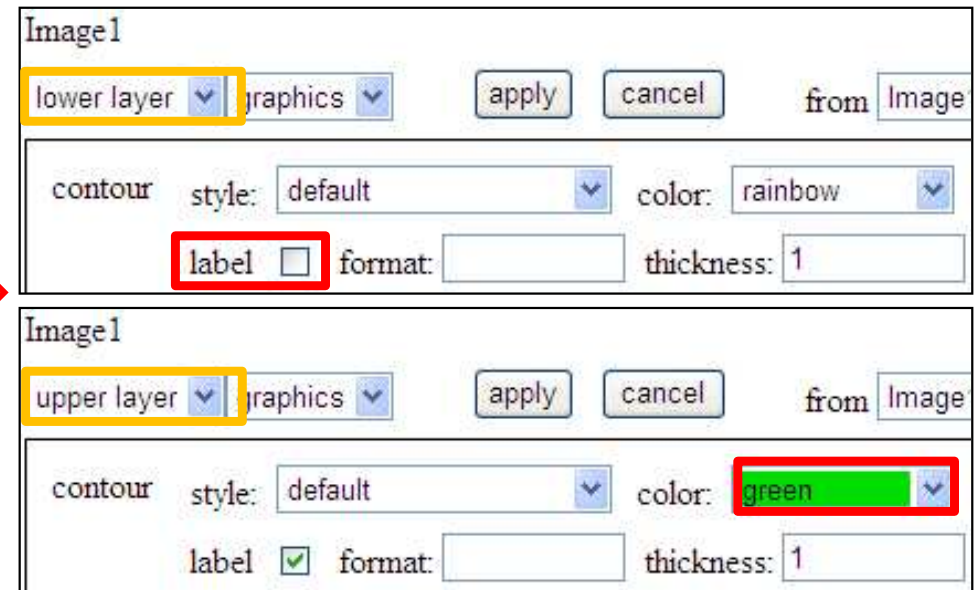
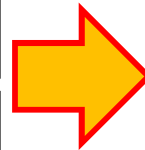
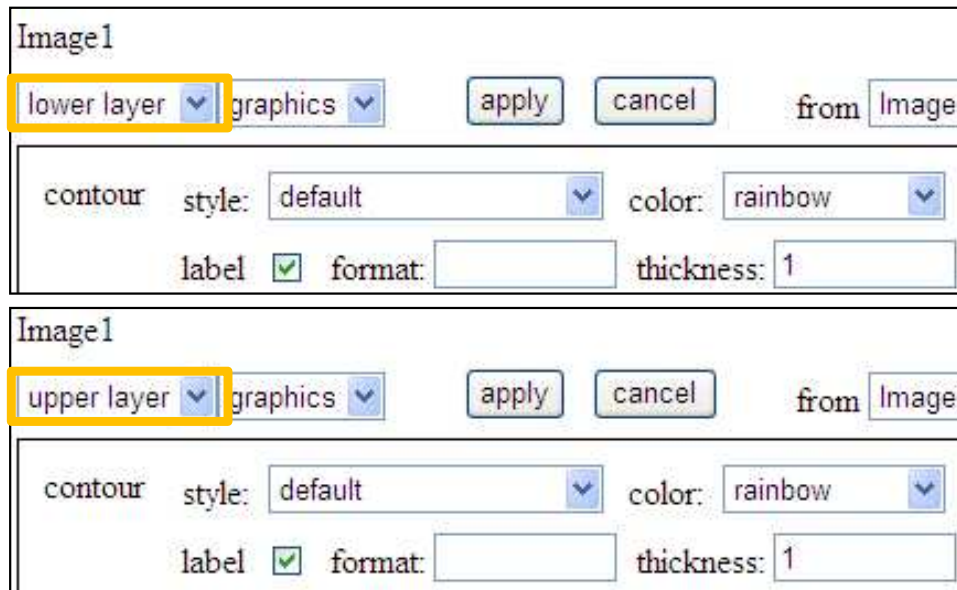
The screenshot shows a dialog box titled "Image1" with several sections and controls:

- Layer Selection:** "lower layer" and "graphics" are selected in dropdown menus. The "apply" button is highlighted with a red box. "cancel" and "copy" buttons are also visible.
- Contour Properties (Green dashed box):** Includes "style: default", "color: rainbow", "thickness: 1", "size: 0.09", "skip interval", "contour line thickness: 3", "levels", "color", "thin contour", and "not to draw". A green box labeled "(Contour's properties)" is overlaid on this section.
- General Properties (Blue dashed box):** Includes "marker type: closed circle", "line style: solid", "color: black", "thickness: 6", "grid style: none", "color: white", "vector label", "vector head size", "define rainbow color", "color bar portrait", "X", "Y", "scale: 1.0", and "44". A blue box labeled "(General properties)" is overlaid on this section.

Yellow dashed arrows point to the "cancel" and "copy" buttons, and a red arrow points to the "apply" button.

Contour color and label

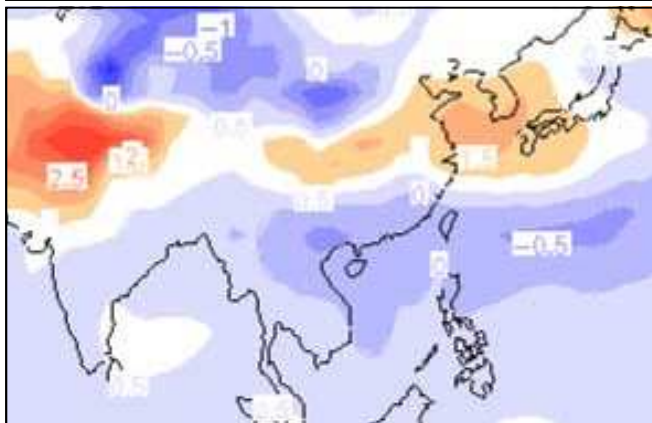
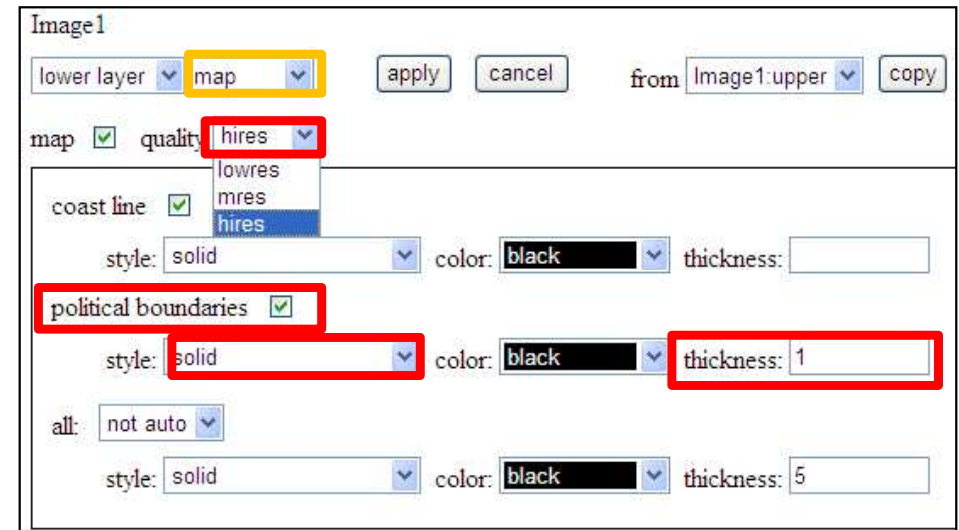
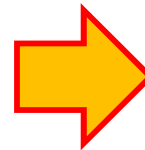
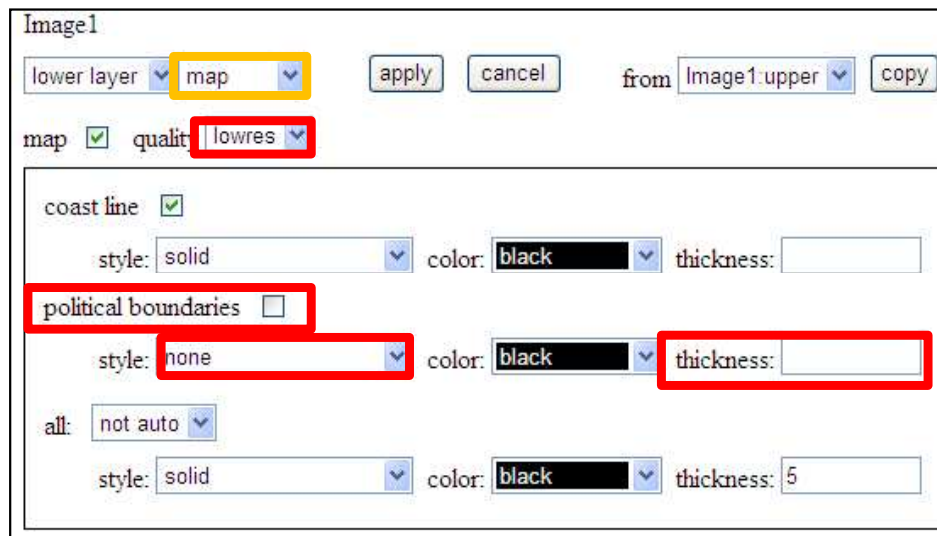
- Select layer at first, and then set color and label to change contour properties.



SST in July 2013. (shade; anomaly, contour; SST) (both figures)

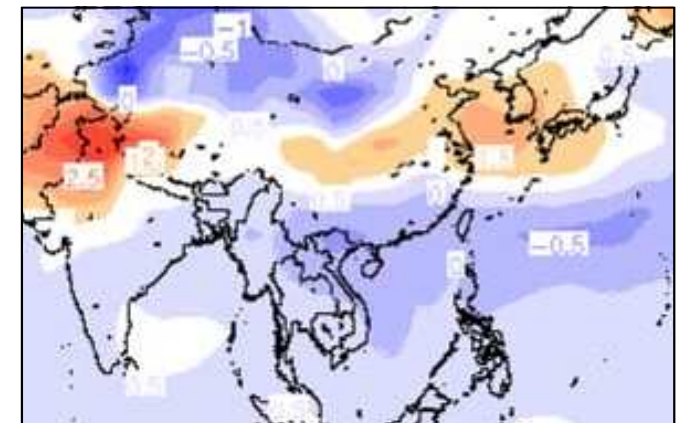
Map options

- Map resolution and political boundaries are customizable.



Quality has to be set “mres” or “hires” to show political boundaries

- mres : middle resolution
- hires : high resolution



Temperature anomaly at 850hPa in July 2013. (both figures)

Color table

- Set levels and colors separated by comma in the boxes to define color table by yourself. The color numbers are defined as the right table.

white	0	orange	8
black	1	purple	9
red	2	yellow green	10
green	3	medium blue	11
dark blue	4	dark yellow	12
light blue	5	aqua	13
magenta	6	dark purple	14
yellow	7	gray	15

– e.g.) levels: -2, -1, 0, 1, 2 / color: 4,11,5,7,12,2



Image1

lower layer | graphics | apply | cancel | from Image1:upper | copy

contour style: default | color: rainbow

label format: | thickness: 1 | size: 0.09 | skip

contour line thickness: 3

levels: | color:

Image1

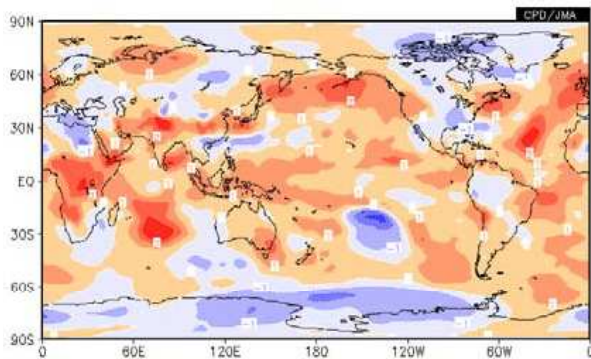
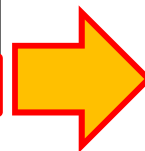
lower layer | graphics | apply | cancel | from Image1:upper | copy

contour style: default | color: rainbow

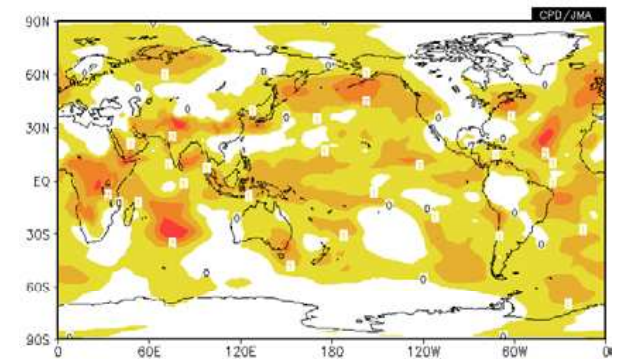
label format: | thickness: 1 | size: 0.09 | skip

contour line thickness: 3

levels: 0,1,2,3 | color: 0,7,12,8,2



For example, the color setting like the right map is more suitable to focus on the positive value.



Normalized temperature anomaly at 850hPa in July 2013. (both figures)