JMA/TCC Training Seminar

Basic GUI concept in ITACS

December 1, 2009

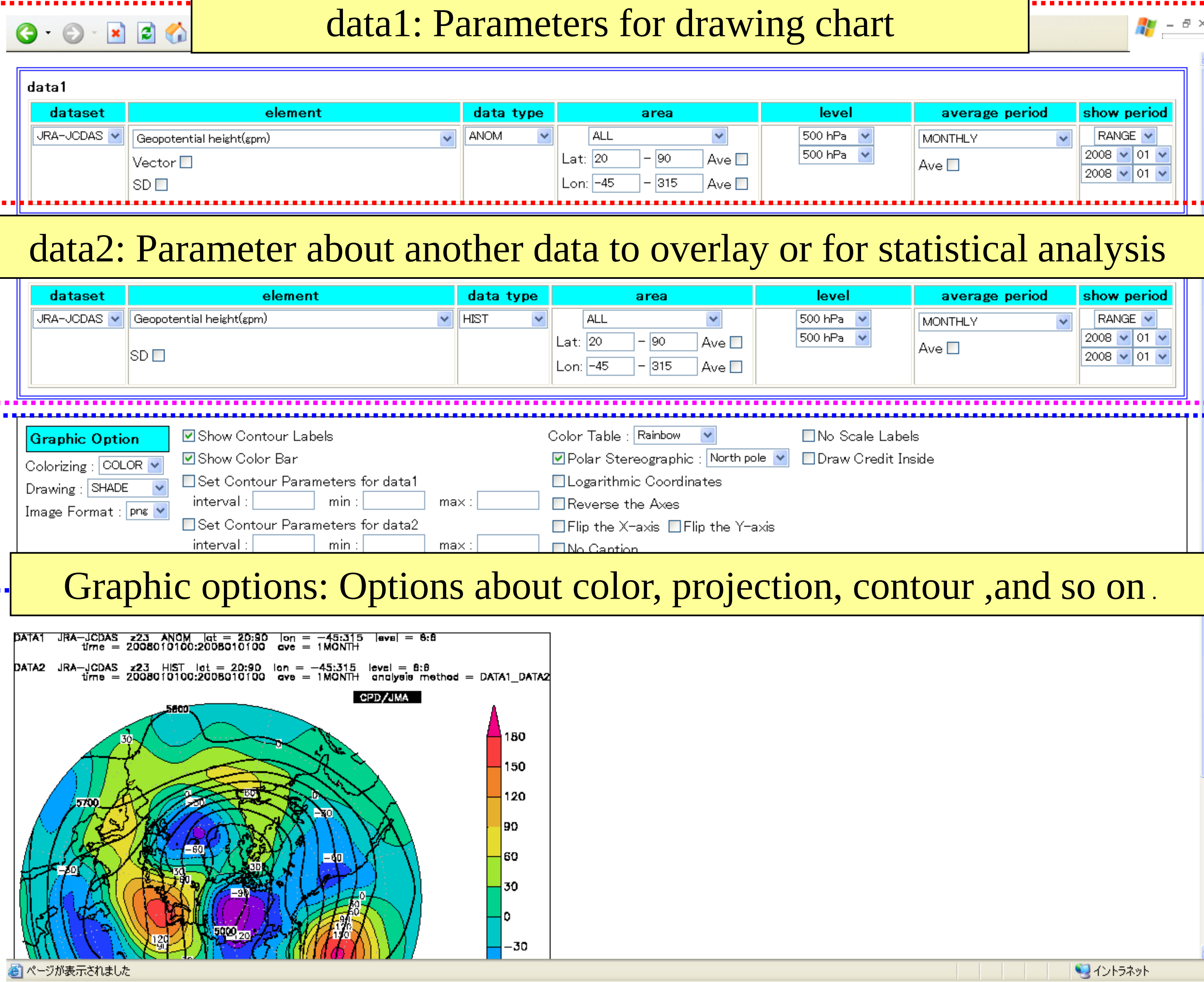
Shingo Ushida
Climate Prediction Division, JMA

Setting Parameters

data1: Parameters for drawing chart

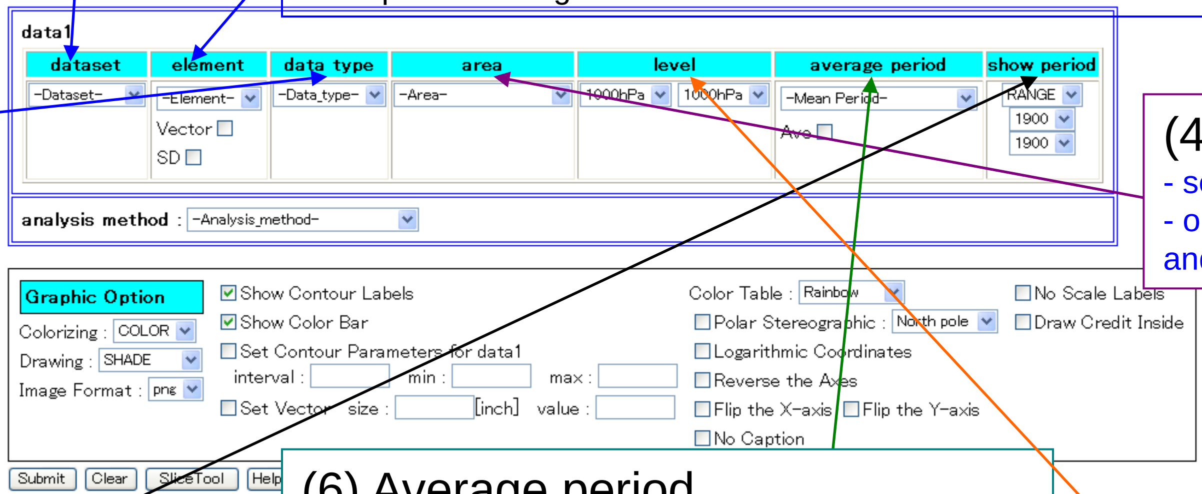
data2: Parameter about another data to overlay or for statistical analysis

Graphic options: Options about color, projection, contour ,and so on .



(1) Dataset
- JRA-JCDAS
- SAT
- SST
- MOVE-G
- ODAS
- CLIMAT
- USERINPUT
- INDEX

(2) Element
- Velocity potential
- Pressure vertical velocity
- Stream function
- Surface pressure to MSL
- Air temperature
- Zonal wind
- Meridional wind
- Zonal wind divergence
- Meridional wind divergence
- Calc Zonal component of wave activity flux
- Calc Meridional component of wave activity flux
- Geopotential height



(3) Data Type
- HIST
- NORM
- ANOM
- ANOM_SD

(4) Area
- select area
- or input latitude and longitude

(5) Level
Select vertical level.
To show vertical cross section chart, input bottom level in upper raw and top level in lower raw.

(6) Average period
MONTH
PENTAD DAY
DAILY
Direct input
Year average
(for interannual variations of monthly data)
Year average pentad
(for interannual variation of pentad data)
Year average day
(for interannual variation of daily data)

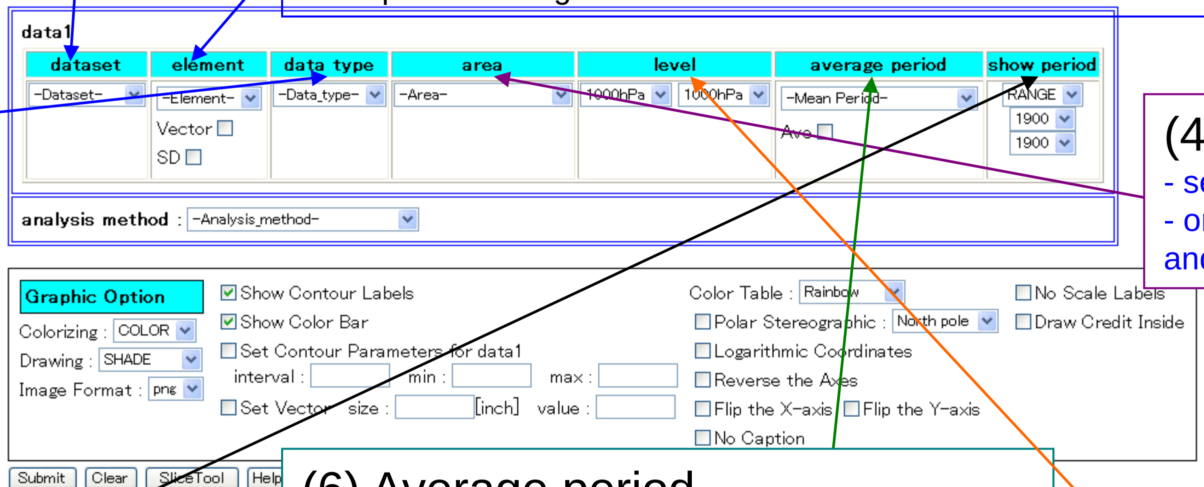
(7) Show Period
RANGE (used usually)
YEARS
(select several years to take the average)
INDEX
(to show the chart under the condition of an index)

(1) Dataset

- JRA-JCDAS
- SAT
- SST
- MOVE-G
- ODAS
- CLIMAT
- USERINPUT
- INDEX

(2) Element

- Velocity potential
- Pressure vertical velocity
- Stream function
- Surface pressure to MSL
- Air temperature
- Zonal wind
- Meridional wind
- Zonal wind divergence
- Meridional wind divergence
- Calc Zonal component of wave activity flux
- Calc Meridional component of wave activity flux
- Geopotential height



(3) Data Type

- HIST
- NORM
- ANOM
- ANOM_SD

(4) Area

- select area
- or input latitude and longitude

(5) Level

Select vertical level.
To show vertical cross section chart, input bottom level in upper raw and top level in lower raw.

(6) Average period

MONTH
PENTAD DAY
DAILY
Direct input
Year average
(for interannual variations of monthly data)
Year average pentad
(for interannual variation of pentad data)
Year average day
(for interannual variation of daily data)

(7) Show Period

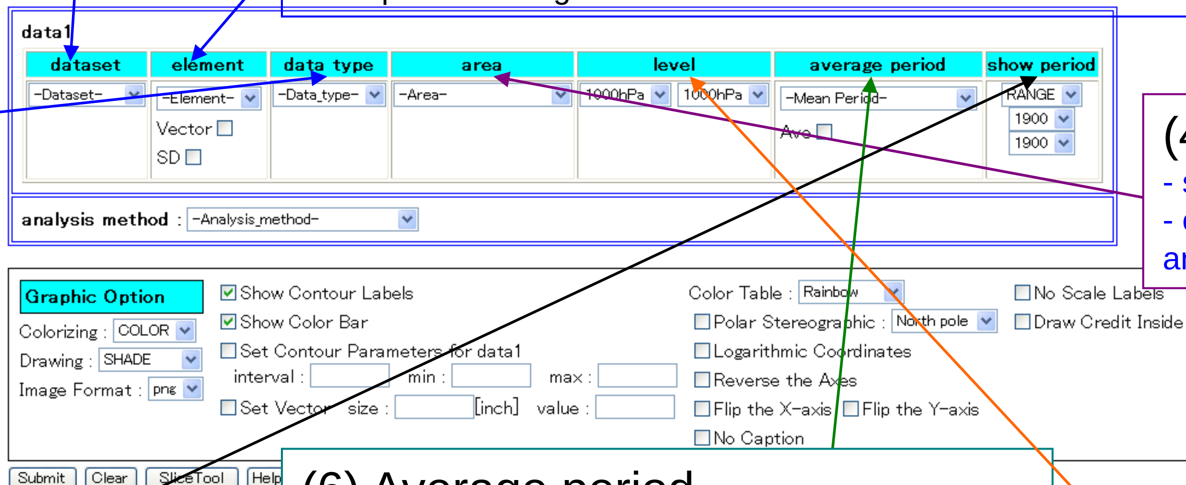
RANGE (used usually)
YEARS
(select several years to take the average)
INDEX
(to show the chart under the condition of an index)

Dataset

Dataset	Data Description
JRA/JCDAS	**Atmospheric circulation data** produced by JMA's Climate Data Assimilation System (JCDAS), which is consistent quality with Japanese 25-year reanalysis (JRA-25). Normals are calculated from analyses for the period 1979-2004. For more information, please refer to the following address, http://jra.kishou.go.jp/JRA-25/index_en.html
SAT	**Outgoing Longwave Radiation (OLR),** which is derived from observations by NOAA's polar orbital satellites, and provided by Climate Prediction Center (CPC) in the National Centers for Environmental Prediction (NCEP) of the National Oceanic and Atmospheric Administration (NOAA). Normals are calculated from analyses for the period 1979-2004.
ODAS	**Oceanic assimilation** produced by the system operated by JMA until February 2008. Normals are calculated from analyses for the period 1987-2006.
SST	**Sea Surface Temperature** produced by the system operated by JMA (COBE-SST）. Normals are calculated from analyses for the period 1971-2000. For more information, please refer to the following address, http://ds.data.jma.go.jp/tcc/tcc/products/elnino/cobesst_doc.html
INDEX	**El Nino Monitoring Indices** consisting of monthly mean Sea Surface Temperature produced by COBE-SST. Normals are calculated from the index values for the period 1971-2000. For more information, please refer to the following address, http://ds.data.jma.go.jp/tcc/tcc/products/elnino/index/Readme.txt
CLIMAT	**Monthly world climate data** derived from CLIMAT messages via the GTS line from WMO Members around the world. Temperature (mean temperarure) and precipitation anomalies are calculated from the data for the period 1971-2000, and the other elements' anomalies for the period 1961-1990.

(1) Dataset
- JRA-JCDAS
- SAT
- SST
- ODAS
- CLIMAT
- USERINPUT
- INDEX

(2) Element
- Velocity potential
- Pressure vertical velocity
- Stream function
- Surface pressure to MSL
- Air temperature
- Zonal wind
- Meridional wind
- Zonal wind divergence
- Meridional wind divergence
- Calc Zonal component of wave activity flux
- Calc Meridional component of wave activity flux
- Geopotential height



(3) Data Type
- HIST
- NORM
- ANOM
- ANOM_SD

(4) Area
- select area
- or input latitude and longitude

(7) Show Period
RANGE (used usually)
YEARS
(select several years to take the average)
INDEX
(to show the chart under the condition of an index)

(6) Average period
MONTH
PENTAD DAY
DAILY
Direct input
Year average
(for interannual variations of monthly data)
Year average pentad
(for interannual variation of pentad data)
Year average day
(for interannual variation of daily data)

(5) Level
Select vertical level.
To show vertical cross section chart, input bottom level in upper raw and top level in lower raw.

Data Type

HIST: Observed or Analyzed DATA

ANOM: Anomaly DATA

NORM: Normal DATA (In case of JRA/JCDAS, averaged from 1979 to 2004)

ANOM_SD: Anomaly DATA normalized by its standard deviation (σ)

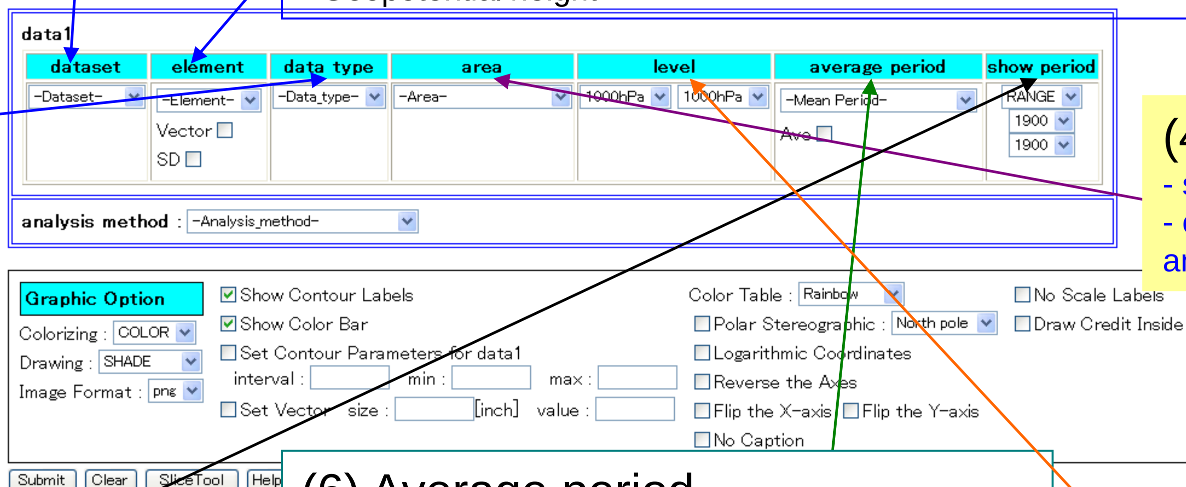
NOTE

“HIST” minus “NORM” is “ANOM”.

“ANOM” divided by σ is “ANOM_SD”.

(1) Dataset
- JRA-JCDAS
- SAT
- SST
- MOVE-G
- ODAS
- CLIMAT
- USERINPUT
- INDEX

(2) Element
- Velocity potential
- Pressure vertical velocity
- Stream function
- Surface pressure to MSL
- Air temperature
- Zonal wind
- Meridional wind
- Zonal wind divergence
- Meridional wind divergence
- Calc Zonal component of wave activity flux
- Calc Meridional component of wave activity flux
- Geopotential height



(3) Data Type
- HIST
- NORM
- ANOM
- ANOM_SD

(4) Area
- select area
- or input latitude and longitude

(7) Show Period
RANGE (used usually)

YEARS

(select several years to take the average)

INDEX

(to show the chart under the condition of an index)

(6) Average period
MONTH

PENTAD DAY

DAILY

Direct input

Year average

(for interannual variations of monthly data)

Year average pentad

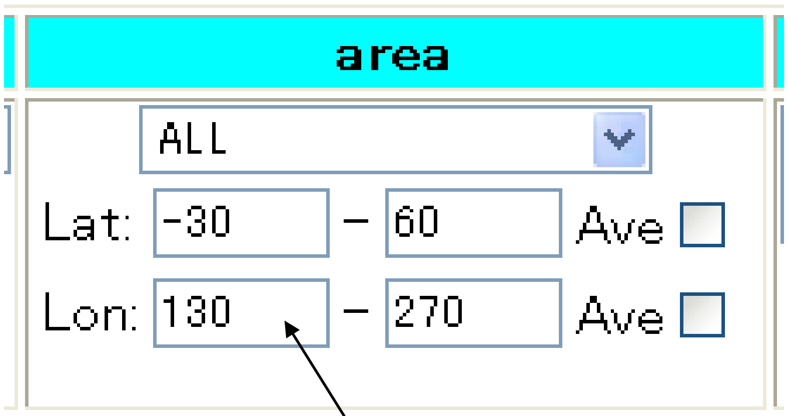
(for interannual variation of pentad data)

Year average day

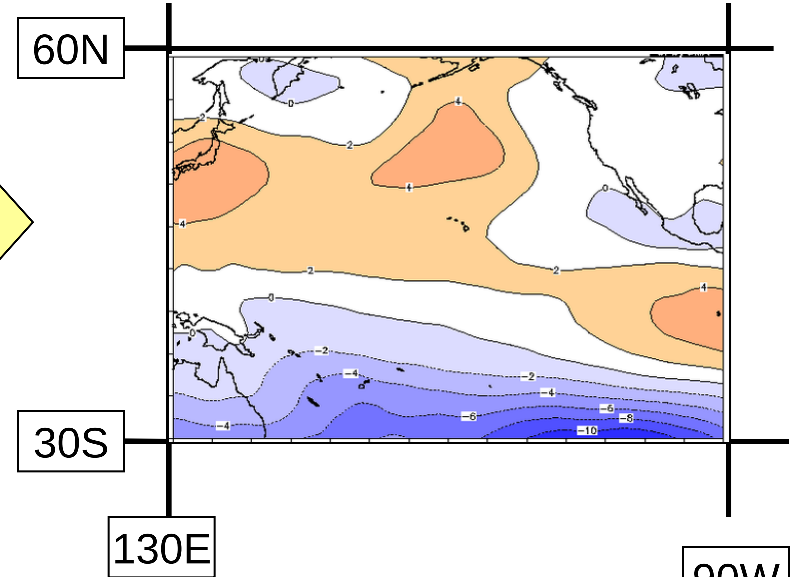
(for interannual variation of daily data)

(5) Level
Select vertical level.
To show vertical cross section chart, input bottom level in upper raw and top level in lower raw.

Area

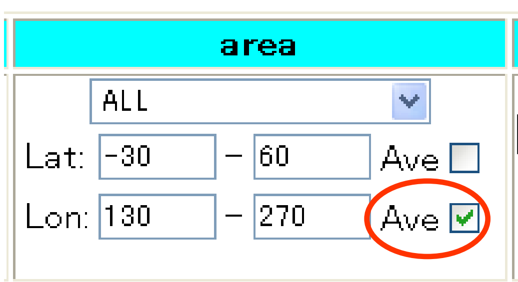


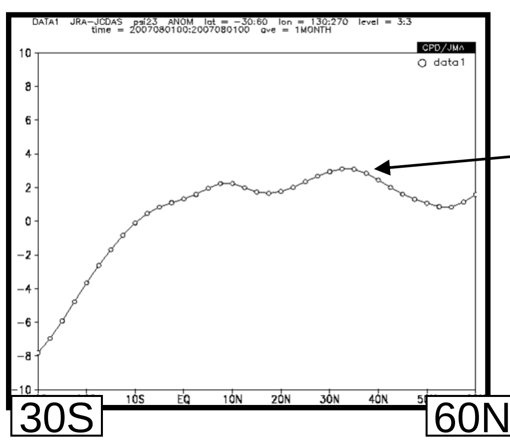
Type from your keyboard



NOTE

“Lat” means Latitude. For example, “Lat -30” refers to 30S.
“Lon” means Longitude.





Each point is zonally-averaged form 130E to 90W .

NOTE

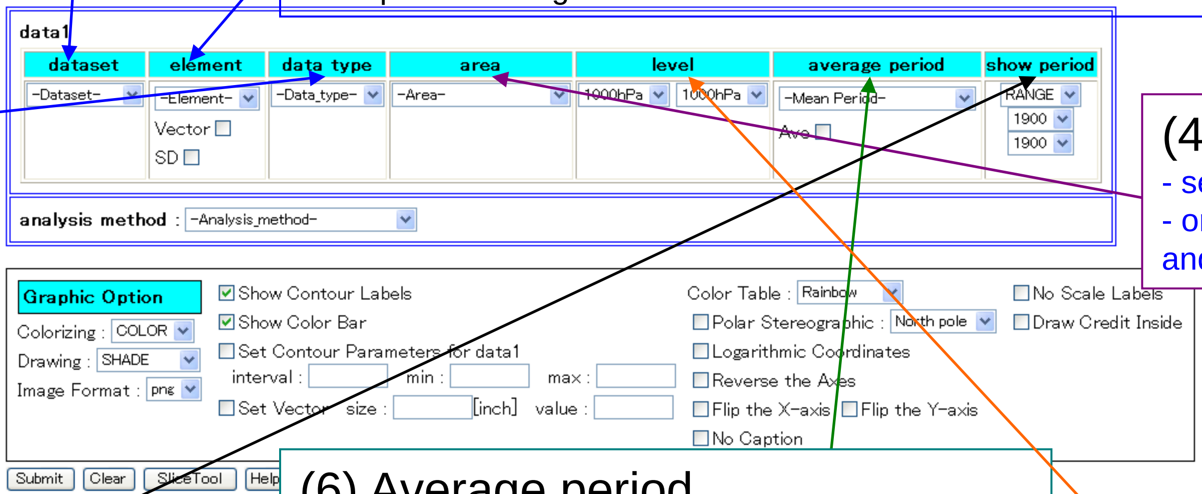
“Ave” means “Averaged”.

(1) Dataset

- JRA-JCDAS
- SAT
- SST
- MOVE-G
- ODAS
- CLIMAT
- USERINPUT
- INDEX

(2) Element

- Velocity potential
- Pressure vertical velocity
- Stream function
- Surface pressure to MSL
- Air temperature
- Zonal wind
- Meridional wind
- Zonal wind divergence
- Meridional wind divergence
- Calc Zonal component of wave activity flux
- Calc Meridional component of wave activity flux
- Geopotential height



(3) Data Type

- HIST
- NORM
- ANOM
- ANOM_SD

(4) Area

- select area
- or input latitude and longitude

(5) Level

Select vertical level.
To show vertical cross section chart, input bottom level in upper raw and top level in lower raw.

(6) Average period

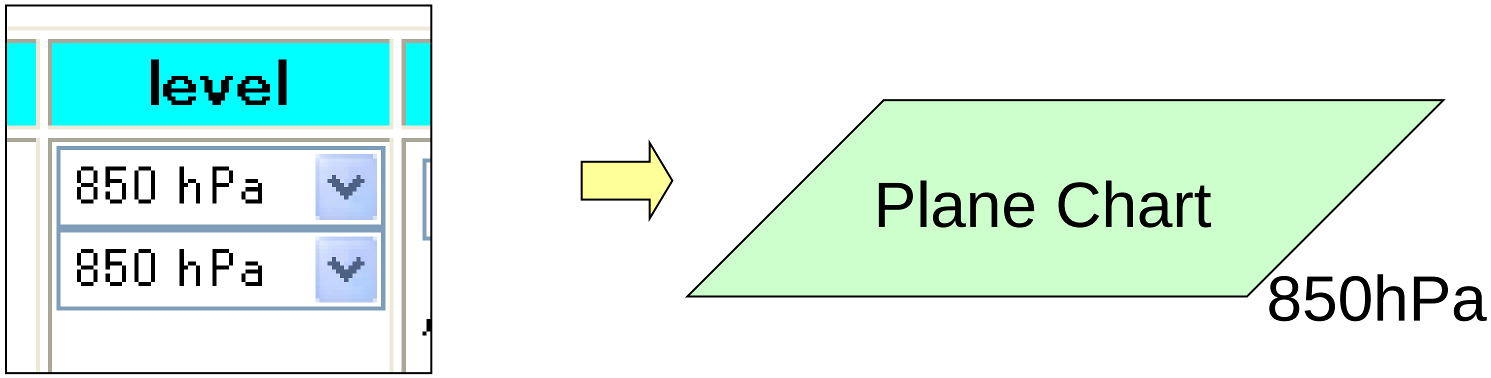
MONTH
PENTAD DAY
DAILY
Direct input
Year average
(for interannual variations of monthly data)
Year average pentad
(for interannual variation of pentad data)
Year average day
(for interannual variation of daily data)

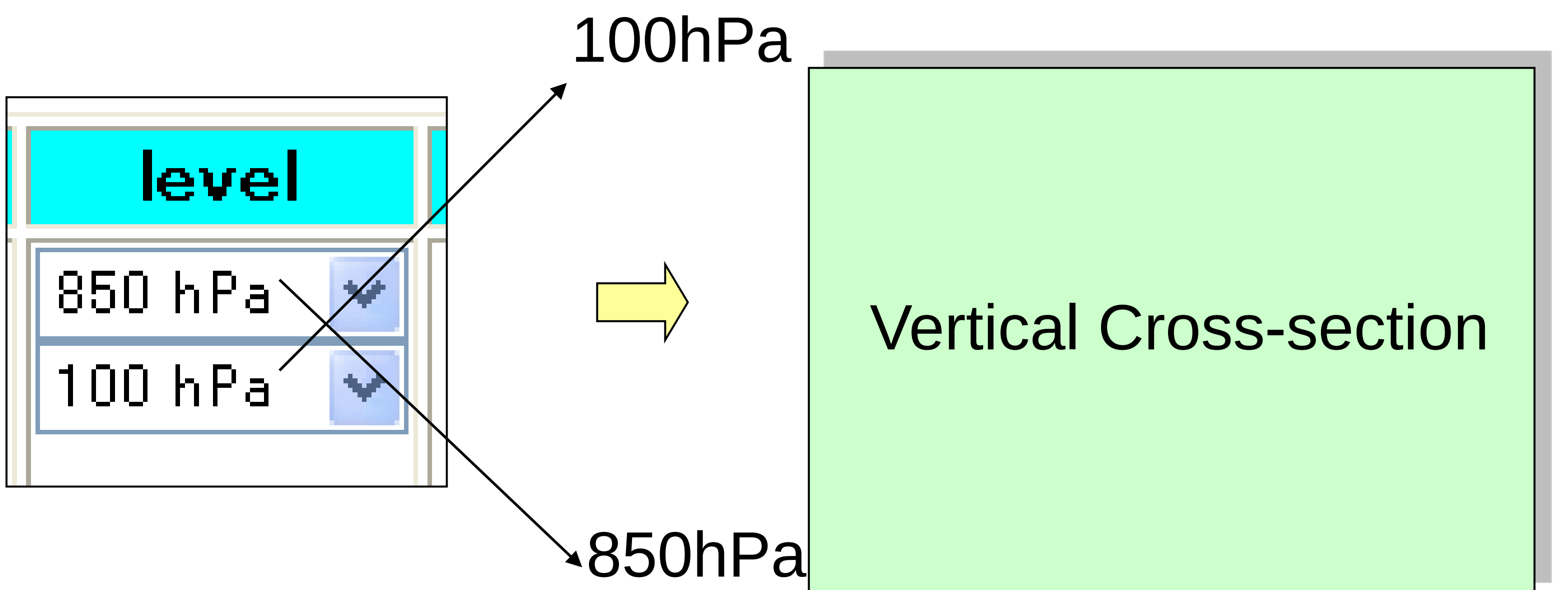
(7) Show Period

RANGE (used usually)
YEARS
(select several years to take the average)
INDEX
(to show the chart under the condition of an index)

Level

In “Level” form we set vertical level.





NOTE

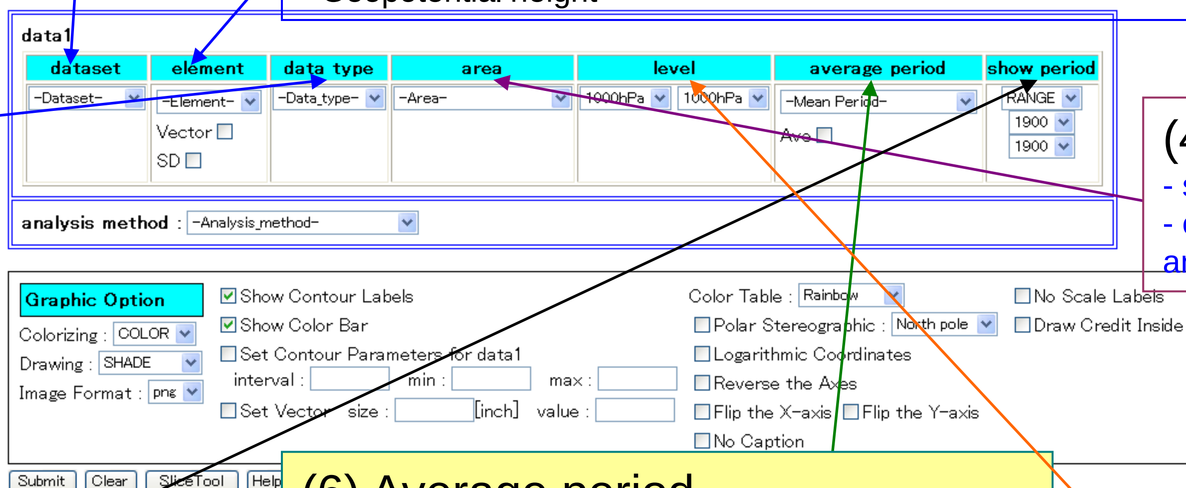
Lower raw corresponds to top vertical level.
Upper raw corresponds to bottom vertical level.

(1) Dataset

- JRA-JCDAS
- SAT
- SST
- MOVE-G
- ODAS
- CLIMAT
- USERINPUT
- INDEX

(2) Element

- Velocity potential
- Pressure vertical velocity
- Stream function
- Surface pressure to MSL
- Air temperature
- Zonal wind
- Meridional wind
- Zonal wind divergence
- Meridional wind divergence
- Calc Zonal component of wave activity flux
- Calc Meridional component of wave activity flux
- Geopotential height



(3) Data Type

- HIST
- NORM
- ANOM
- ANOM_SD

(4) Area

- select area
- or input latitude and longitude

(7) Show Period

RANGE (used usually)

YEARS

(select several years to take the average)

INDEX

(to show the chart under the condition of an index)

(6) Average period

MONTH

PENTAD DAY

DAILY

Direct input

Year average

(for interannual variations of monthly data)

Year average pentad

(for interannual variation of pentad data)

Year average day

(for interannual variation of daily data)

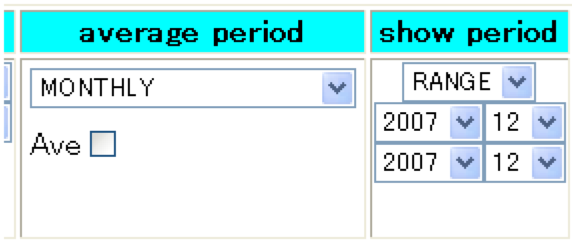
(5) Level

Select vertical level.

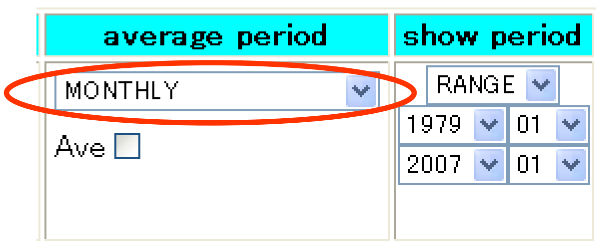
To show vertical cross section chart, input bottom level in upper raw and top level in lower raw.

Average Period & Show Period

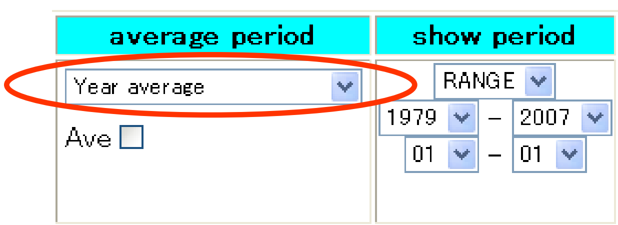
They are most complex in ITACS operation!



Dec.2007



Jan.1979, Feb.1979, Mar.1979, Apr.1979,…
…, Nov.2006, Dec.2006, Jan.2007
(too many values!)

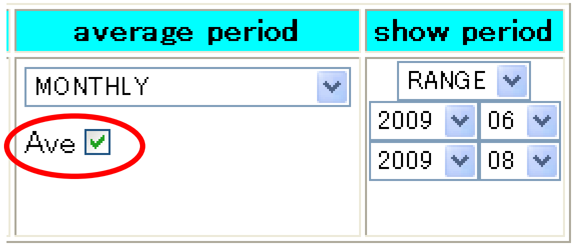


Jan.1979, Jan.1980, Jan.1981, … ,Jan.2007
(year-to-year values)

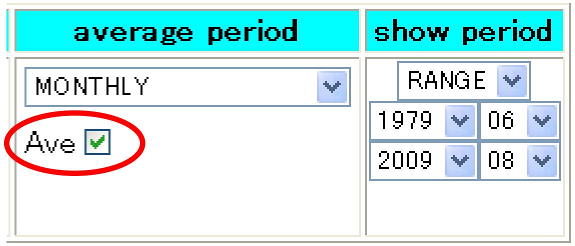
NOTE

In Show Period form upper low means start date and lower raw means end date. In Average Period form “MONTHLY” means “each month” but “Year average” means “year-to-year”.

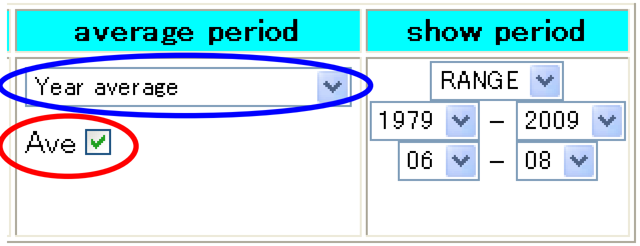
Average Period & Show Period



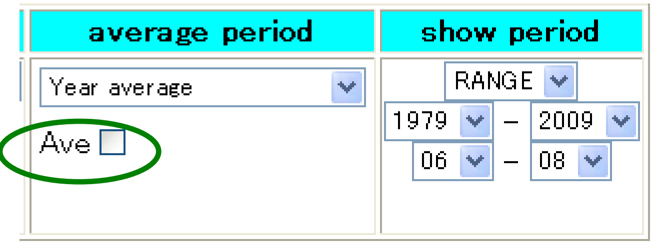
three month (Jun.2009, Jul.2009 and Aug.2009) averaged value



363 month (Jun.1979, Jul.1979, Aug1979, Sep.1979, Oct.1979,…, May2009, Jun.2009, Jul.2009, Aug.2009) averaged value!



climatological average for three month (June, July, and August, JJA) from 1979 to 2009

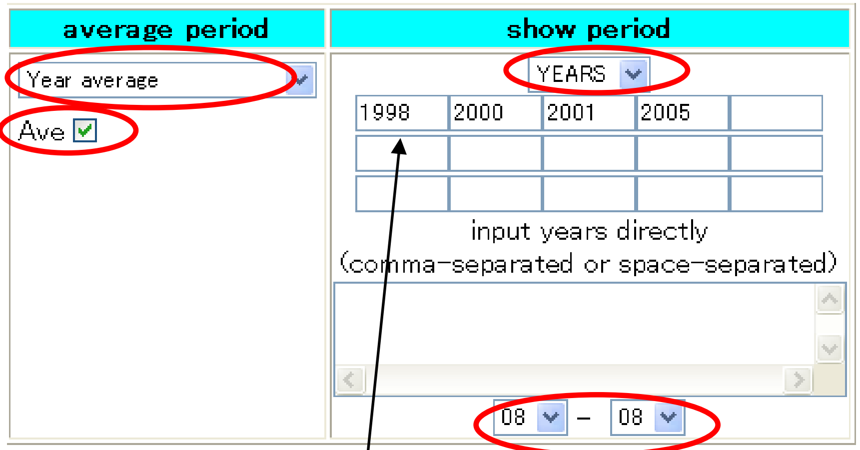


Year-to-year three month averaged value (1979JJA, 1980JJA, 1981JJA,…, 2009JJA)

NOTE

“Ave” means temporally averaged values.

Average Period & Show Period



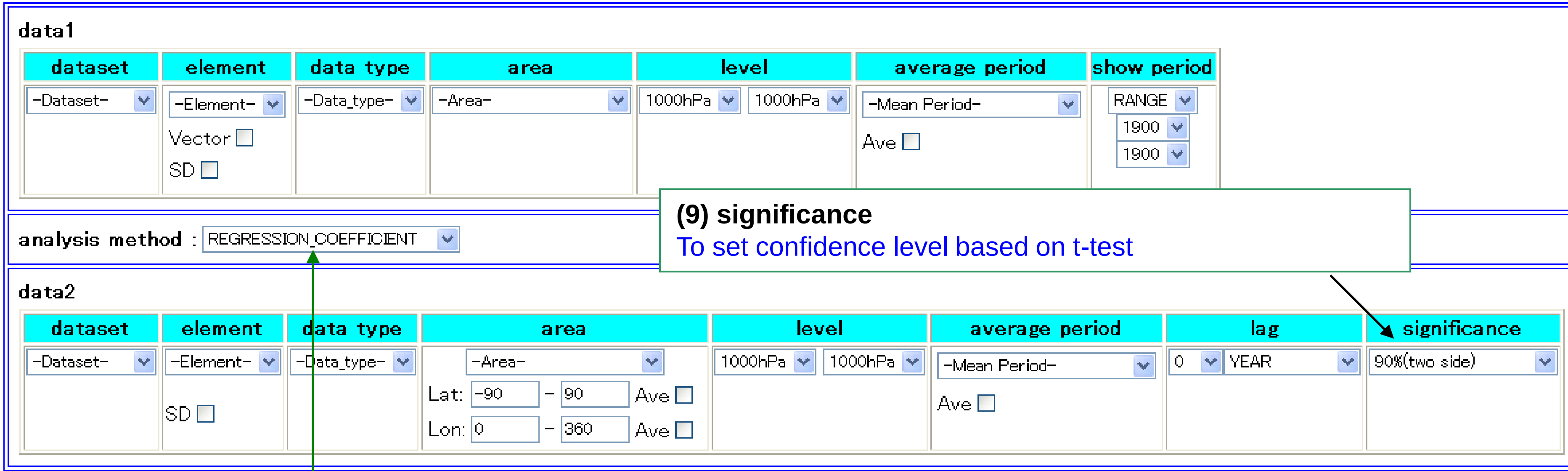
Type from your keyboard

Averaged values over Aug.1998, Aug.2000, Aug.2001 and Aug.2005

(Aug.1998 + Aug.2000 + Aug.2001 + Aug.2005) / 4

NOTE

You can select some years that you want to treat by “YEARS” in Show Period form.



(9) significance

To set confidence level based on t-test

(8) **Analysis Method**

-Analysis _method-: To show a chart associated with data1

DATA1_DATA2: To overlay data2 with data1(to show data1 and data2 on the same chart)

SUBTRACT: To show data1 minus data2

COMPOSITE:To make composite chart of data1 under the condition set on data2

SIGNIFICANCE_TEST:To show areas where the difference between the composite patterns of data1 and data2 is statistically significant.

REGRESSION_COEFFICIENT:To show regression coefficient (data1 is dependent variable, data2 is explanatory variable.)

CORRELATION_COEFFICIENT:To show correlation coefficient (data1 is dependent variable, data2 is explanatory variable.)

EOF: To show a result of Empirical Orthogonal Function (EOF) analysis. The data matrix is composed in data1.

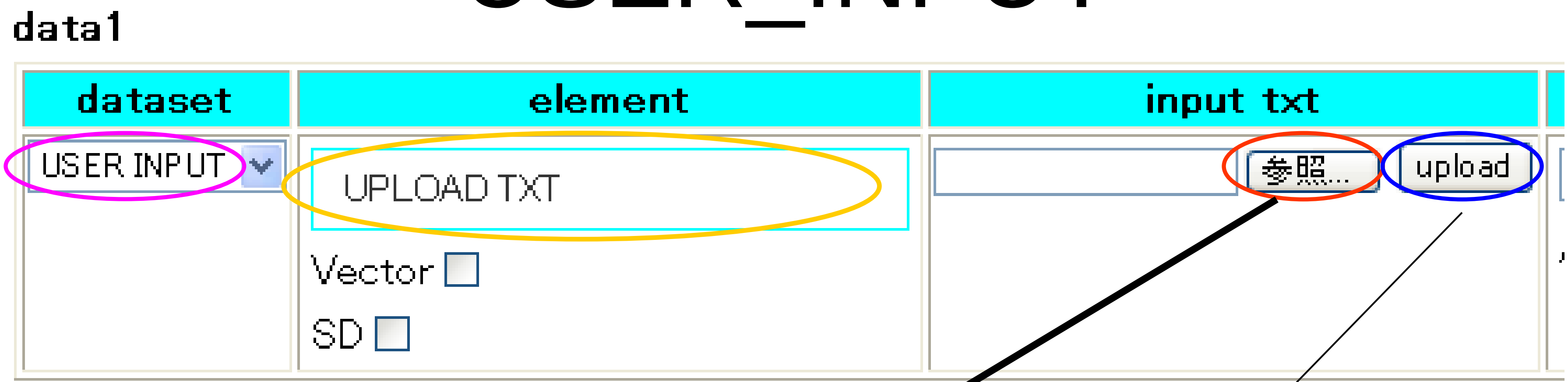
EOF_MULTI: Same as EOF but the data matrix is composed in data1 and data2.

SVD: To show a result of Singular Value Decomposition (SVD) analysis

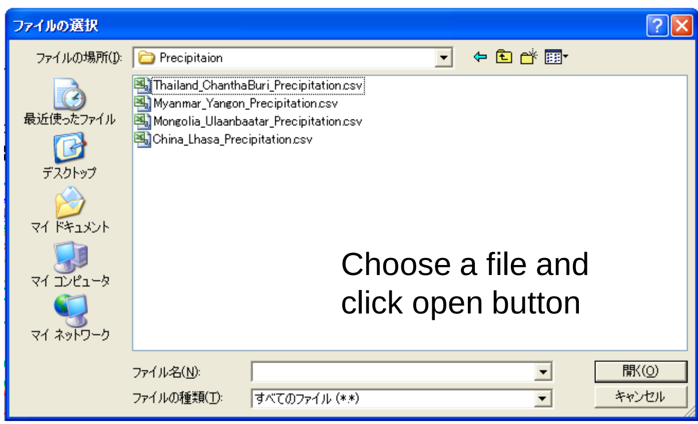
FFT: To show Fourier power spectrum of time series data composed in data1

WAVELET: To show a result of wavelet analysis

USER_INPUT

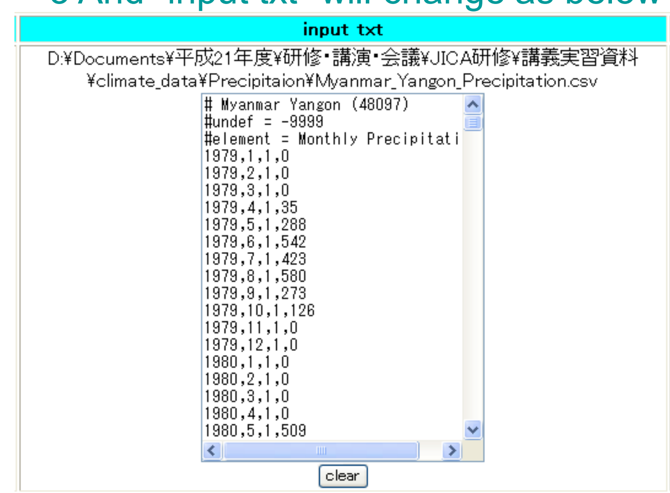


1 Click the button and choose an appropriate file



2 Then click the upload button so that the chosen file is uploaded.

3 And “input txt” will change as below



NOTE

You can use a data file save as text file on your PC.