

Training Seminar on Climate Analysis using Reanalysis Data

- Exordium of this seminar -

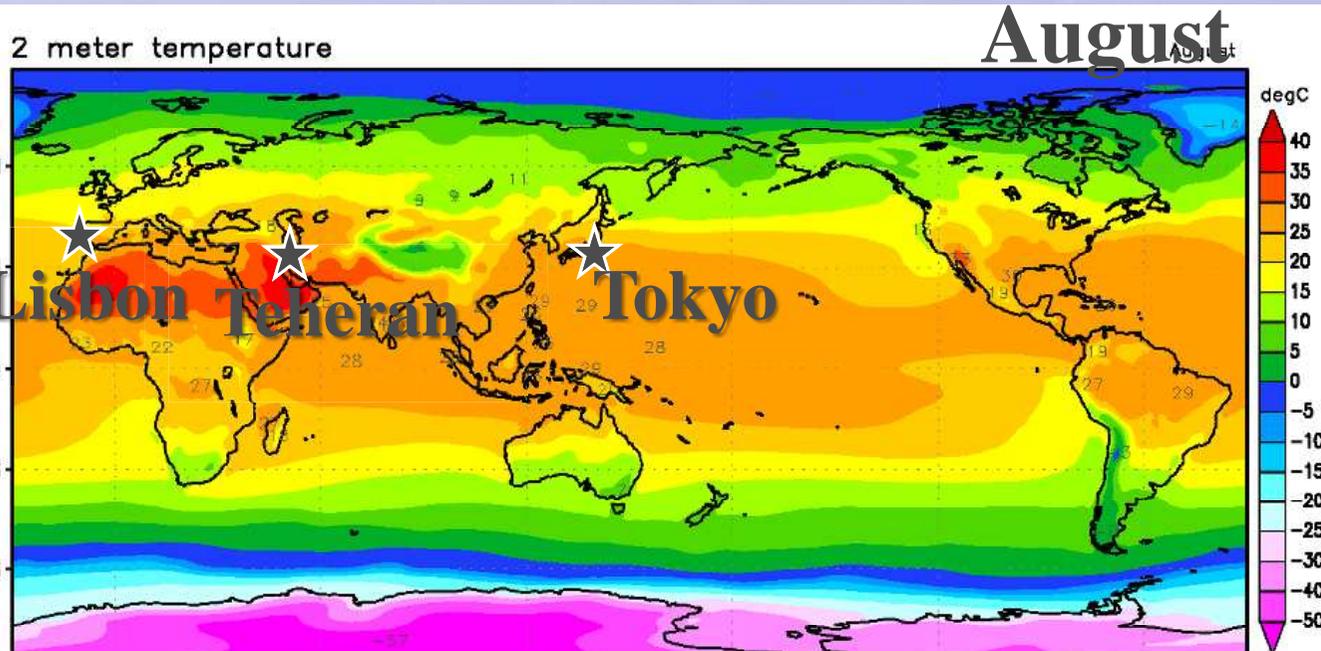
Norihisa FUJIKAWA
Climate Prediction Division,
Japan Meteorological Agency

Purpose of this seminar

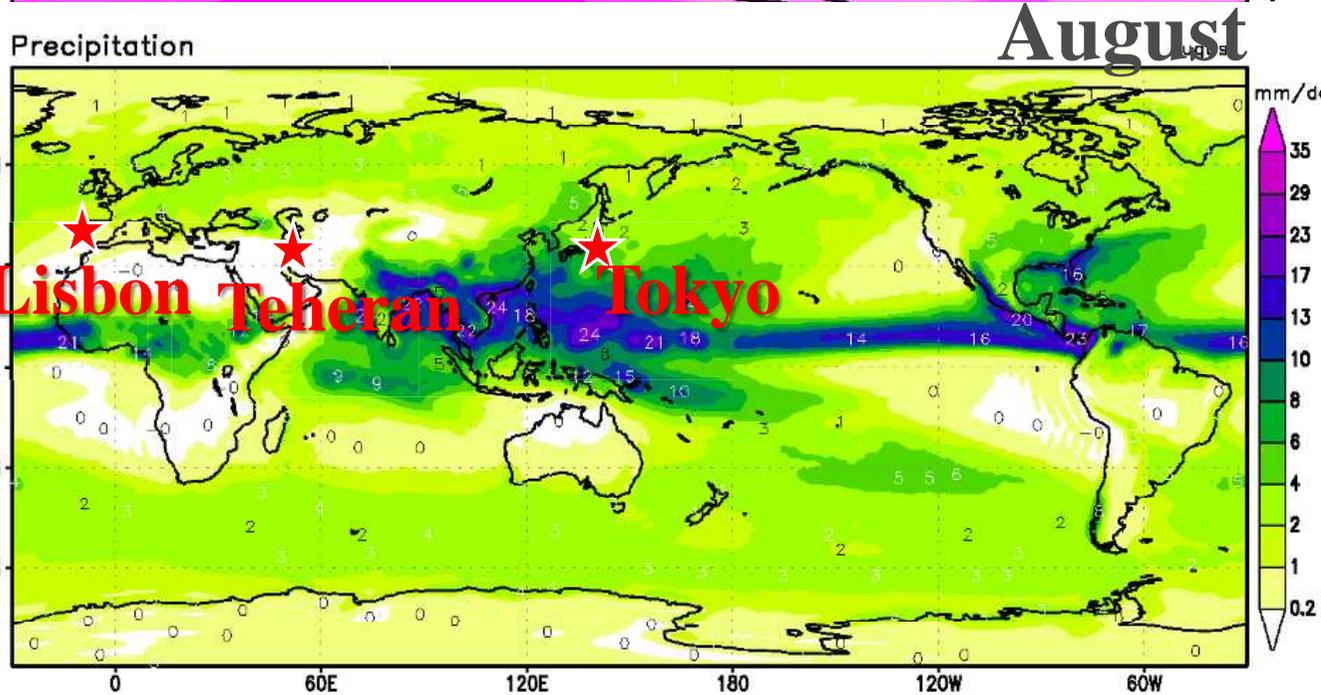
**Let's cultivate our sensibility
for climate analysis!**

At first

Climate mainly depends on geographic distribution of Continents and Oceans



Surface
Temperature

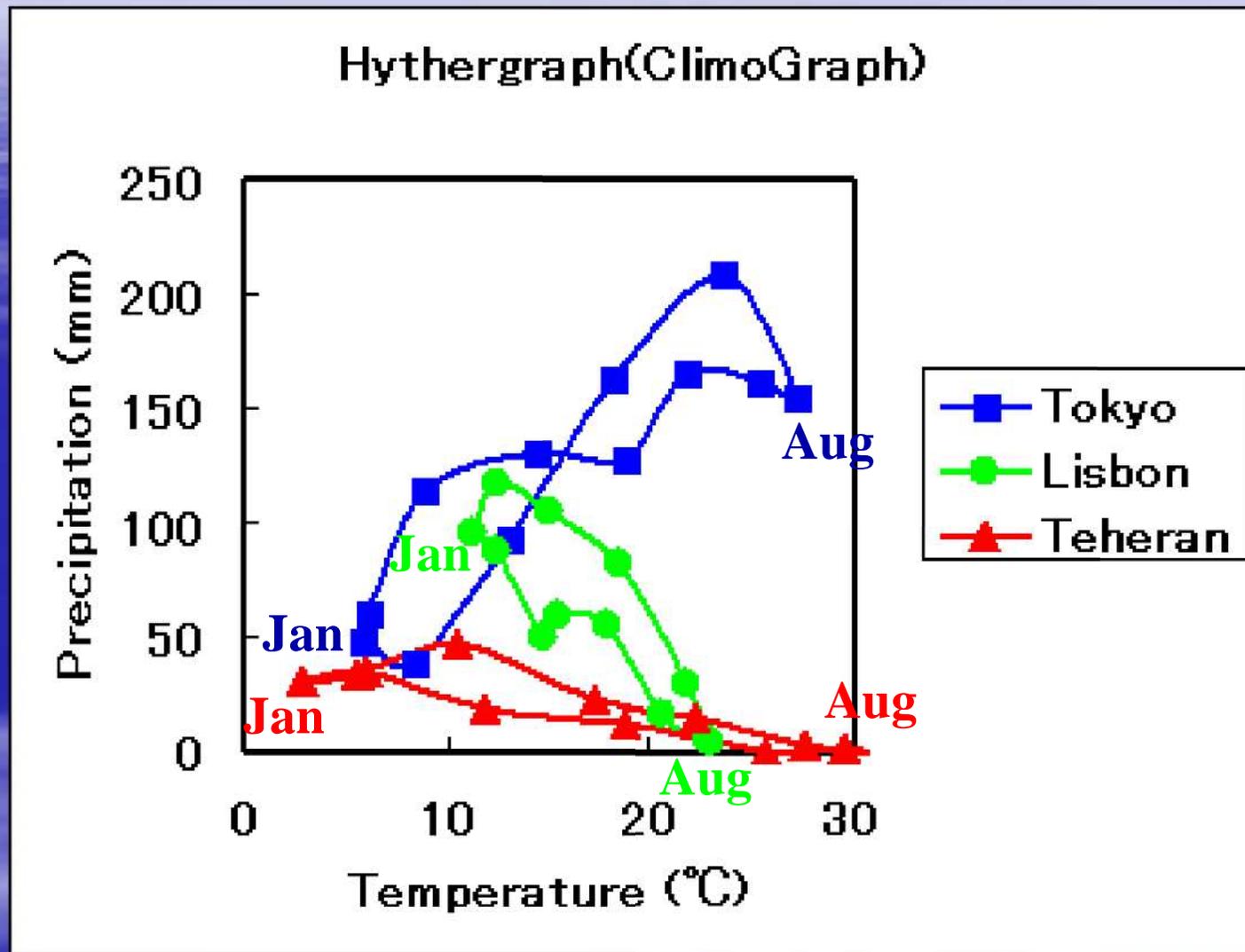


Precipitation

JRA-25 Atlas

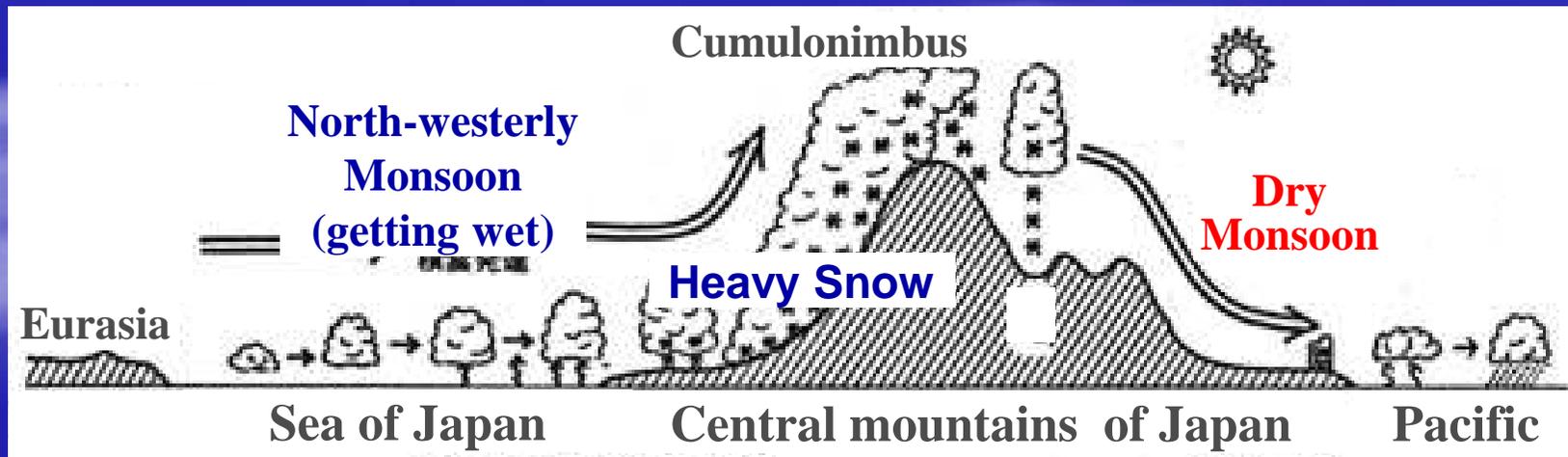
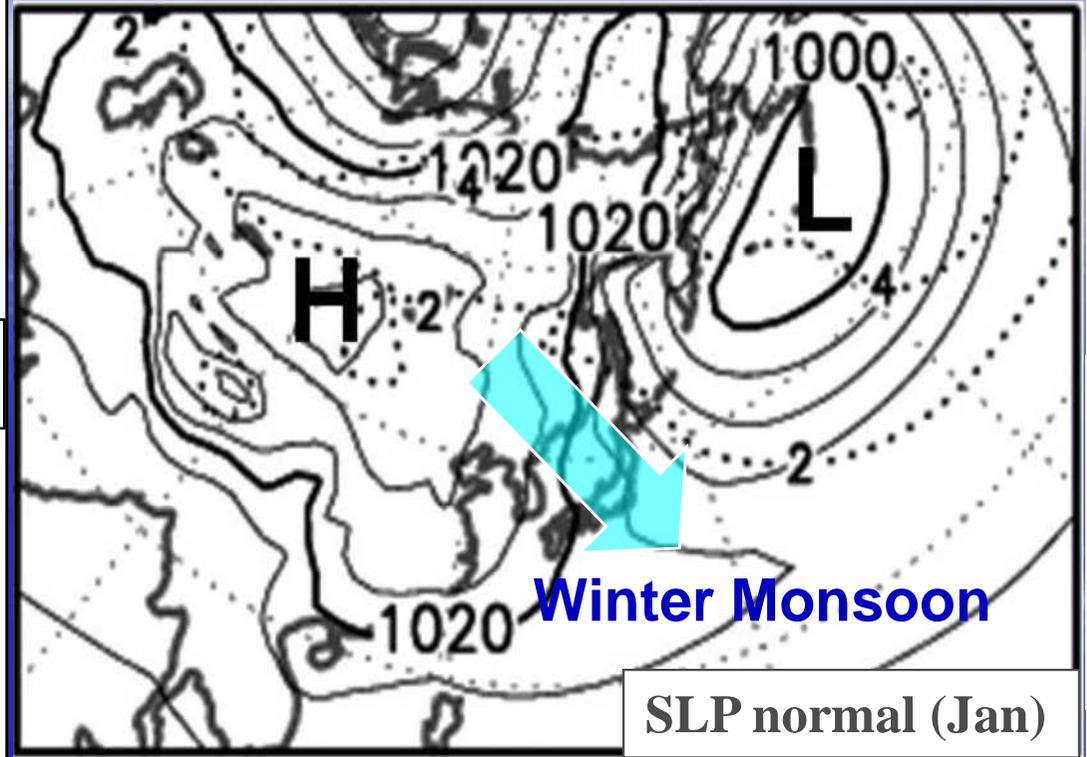
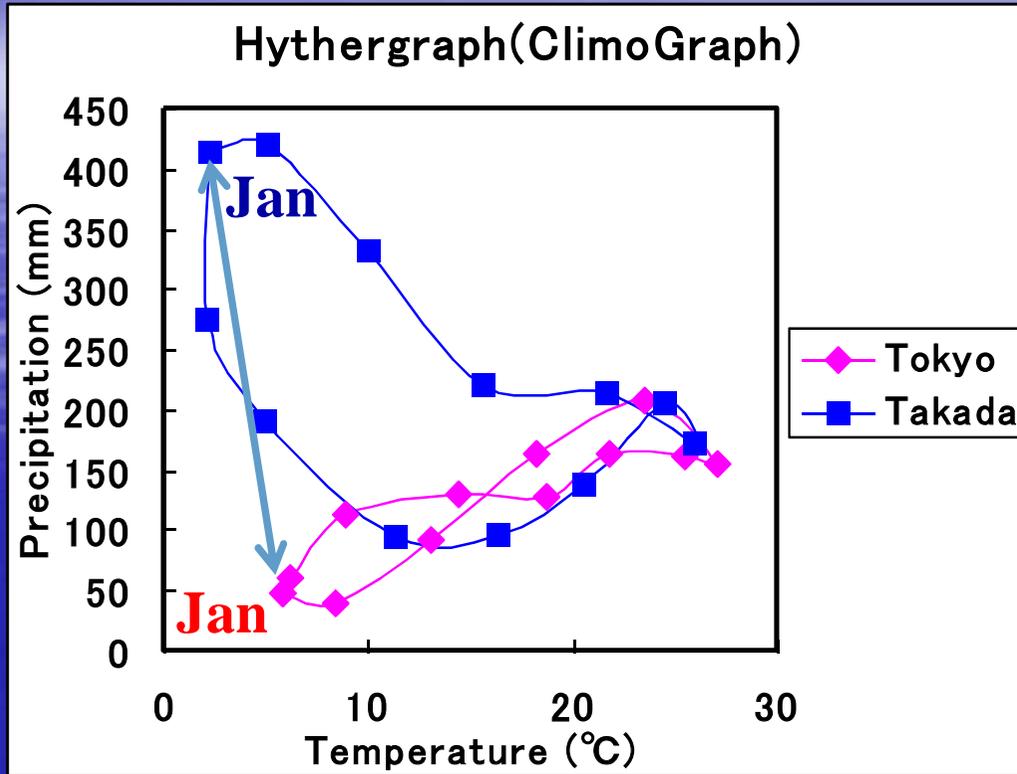
<http://ds.data.jma.go.jp/gmd/jra/atlas/eng/atlas-tope.htm>

Do you know the climate in Japan ?



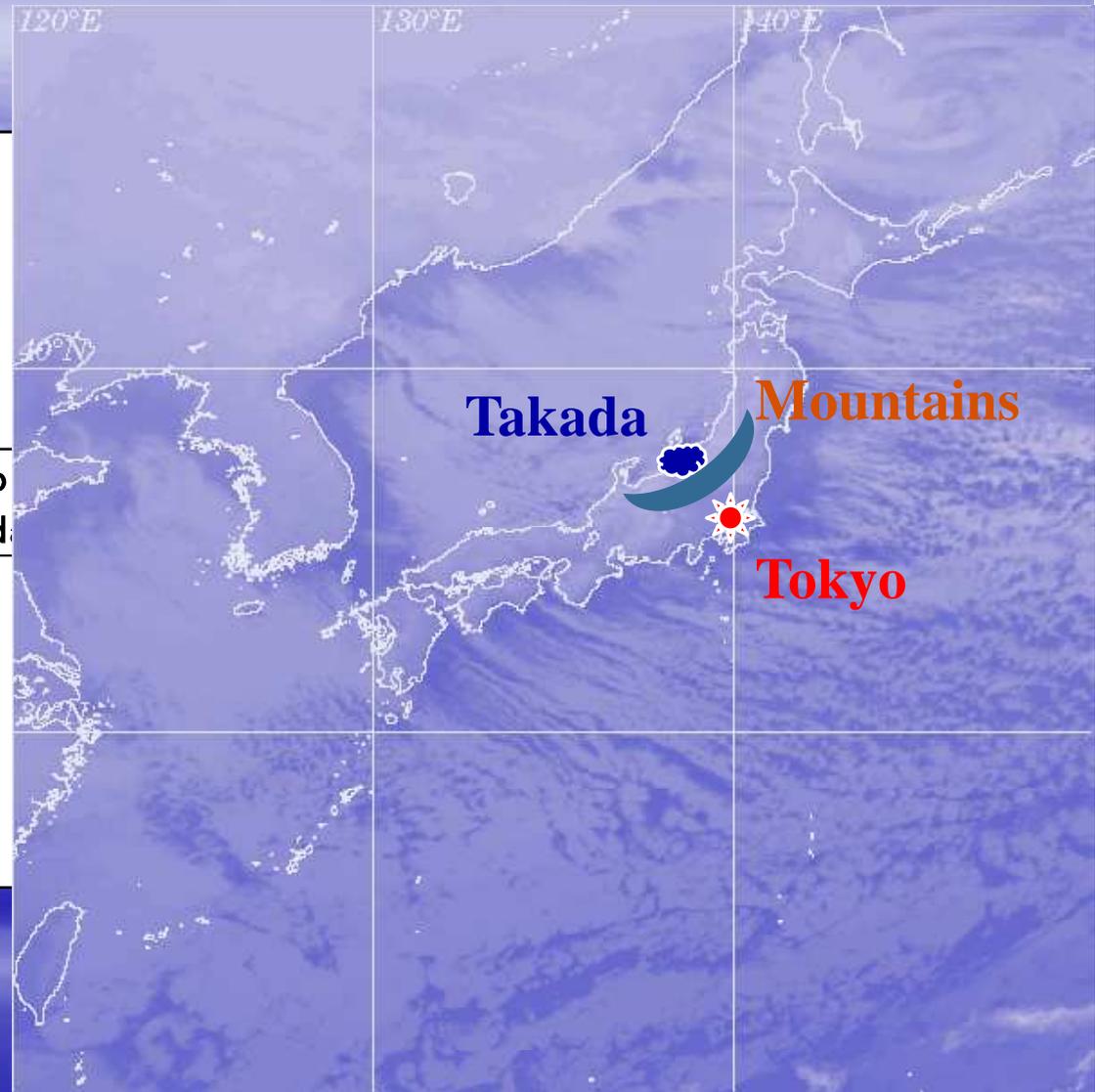
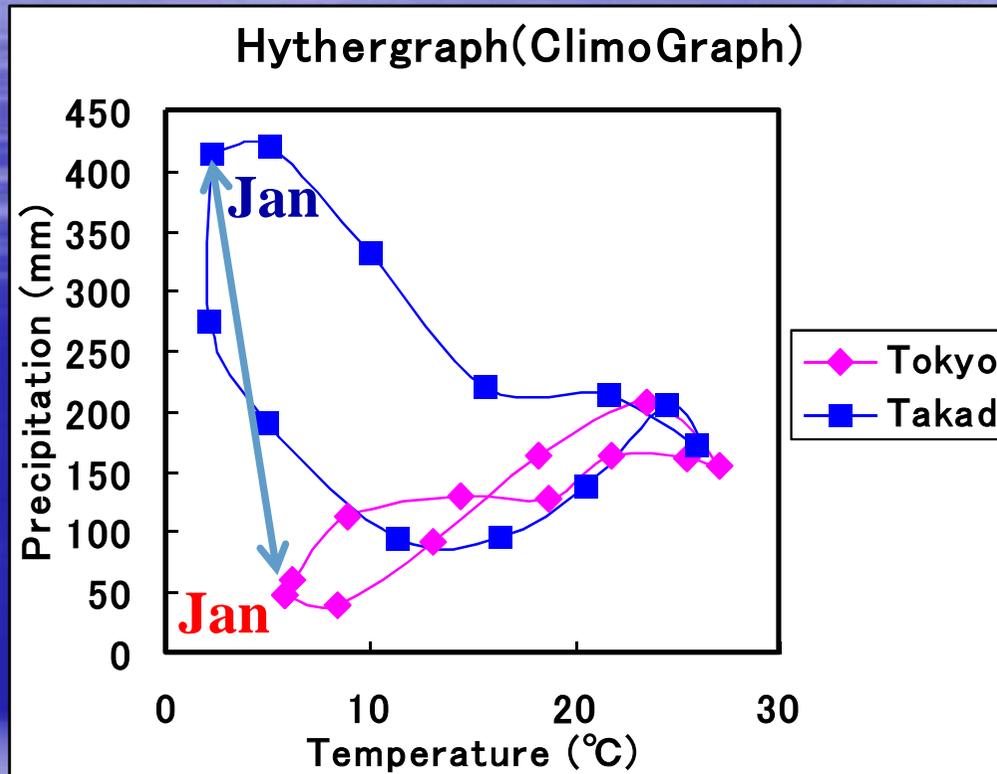
Climates are quite different among cities even if they lie at the same latitude.

Do you exactly know the climate in Japan ?



Local topography has a large influence on the local climate.

Do you exactly know the climate in Japan ?



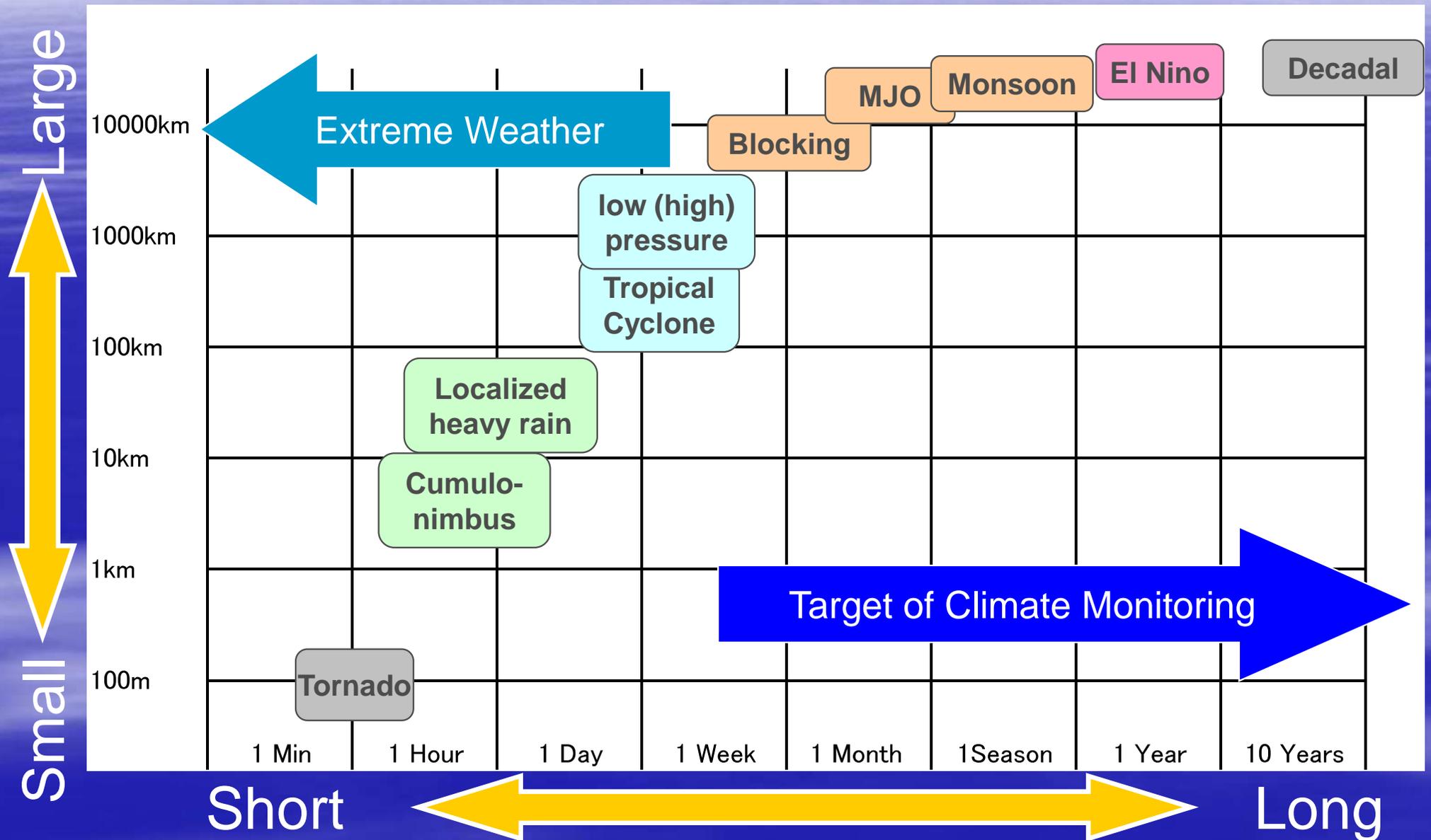
Local topography has a large influence on the local climate.

To understand the climate, it is necessary to know how continental scale geography and local topography make influence on the climate there.

Next,

**what kinds of phenomena
should we focus on ?**

Tempospatial diagram of climatic phenomena



Example for multi-scale interaction of climate system

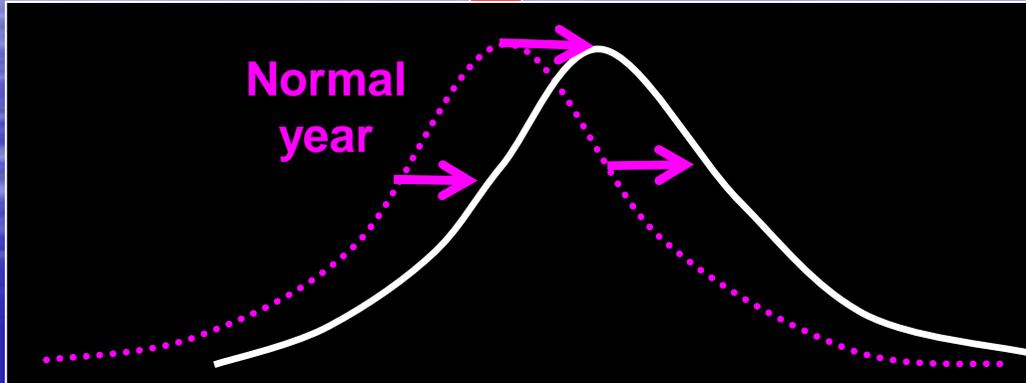
Precipitation

El Nino

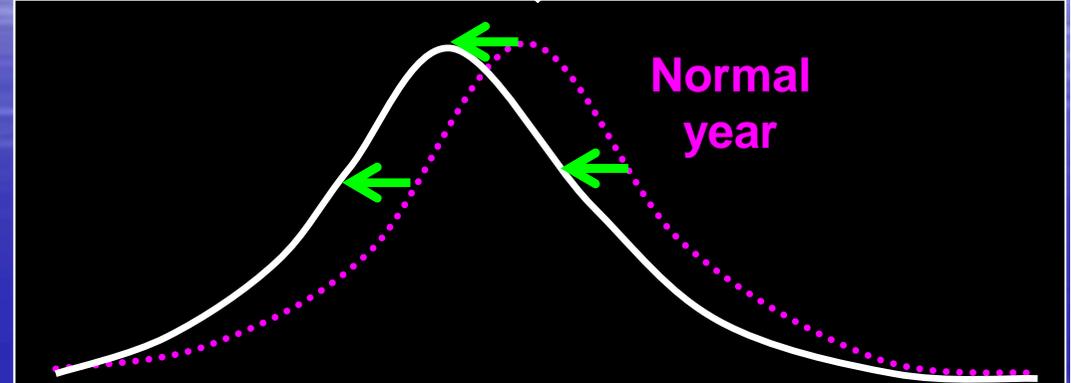
Statistical relationship

Time average at each grid

Change the shape of distribution



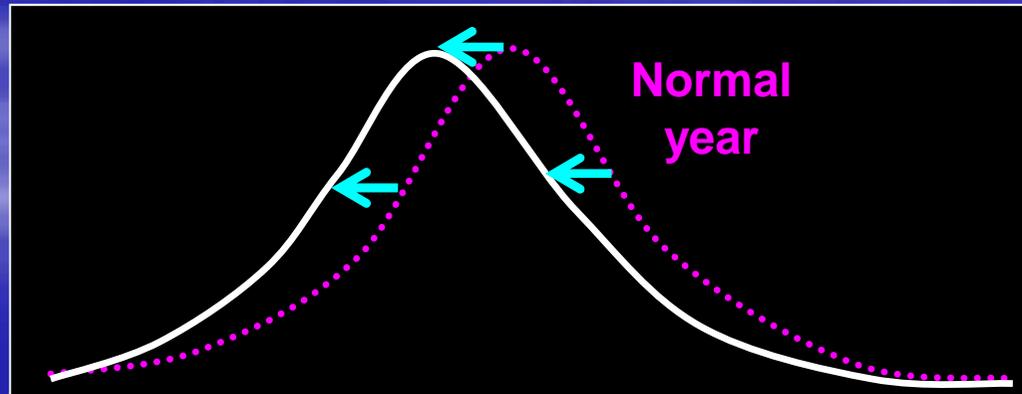
Probability density of convective activity



Probability density of a monsoon activity

Change the shape of distribution

Change the shape of distribution



Probability density of a MJO activity

Each probability density has a tempo spatial structure.

Precipitation

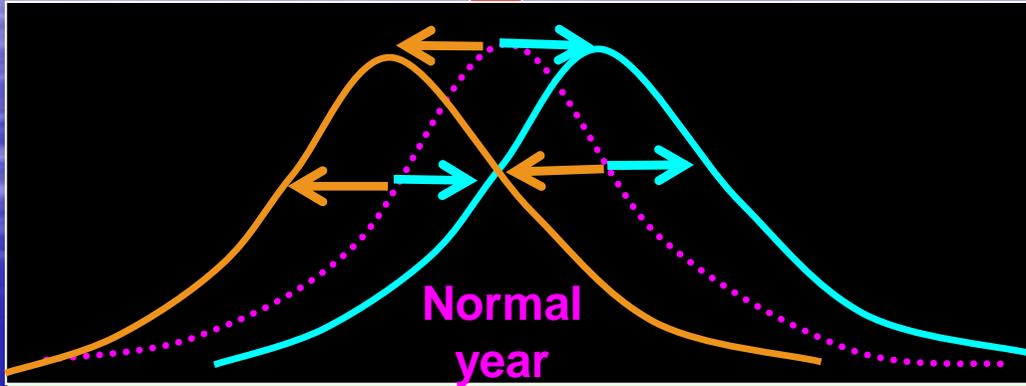
Negative Correlation

El Nino

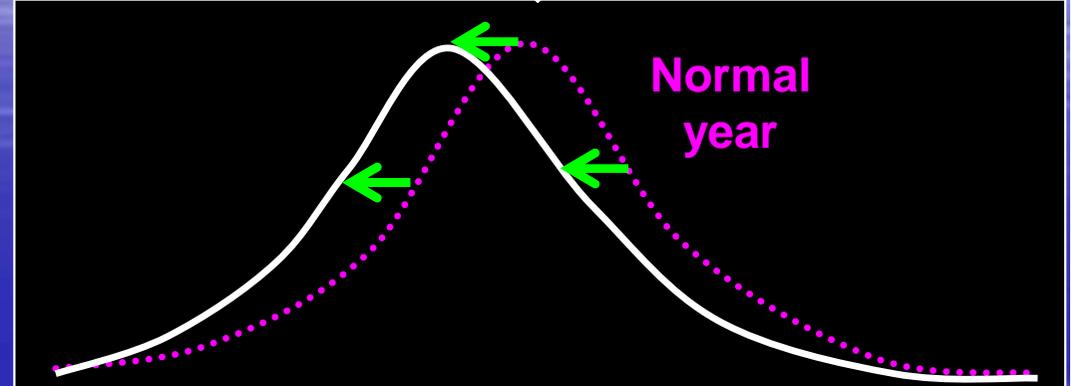
Positive Correlation

Time average at each grid

Change the shape of distribution



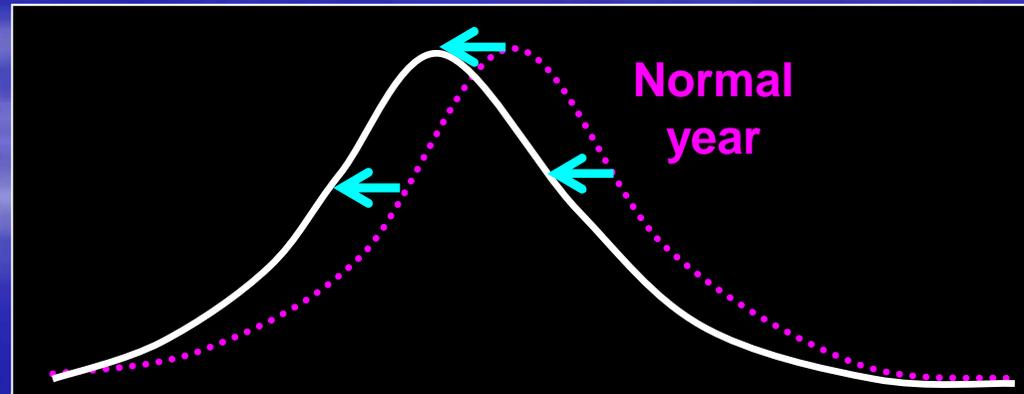
Probability density of convective activity



Probability density of a monsoon activity

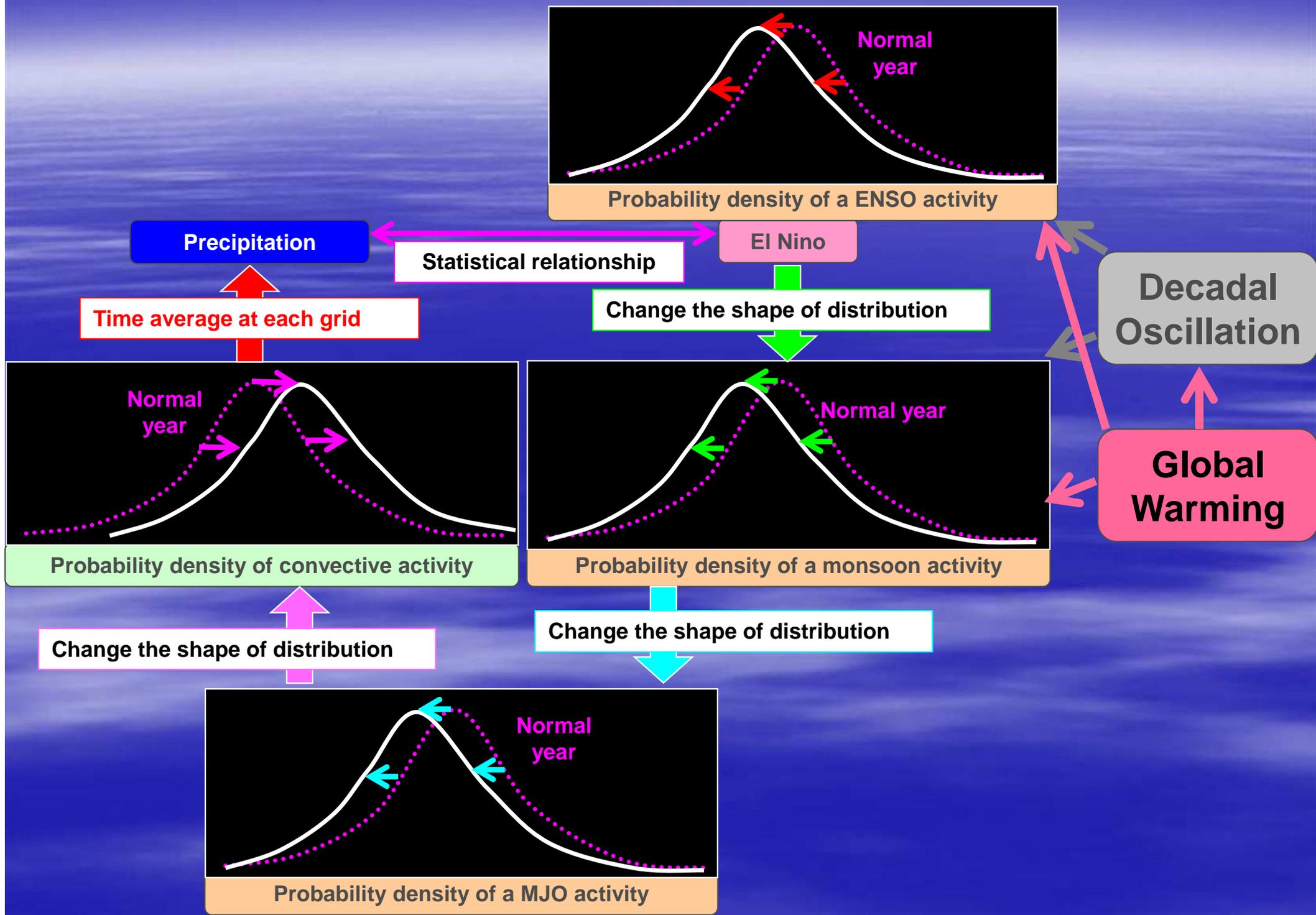
Change the shape of distribution at each grid

Change the shape of distribution



Probability density of a MJO activity

Each probability density has a tempo spatial structure.



Precipitation

El Nino

Statistical relationship

Time average at each grid

Change in shape of distribution

Predictability over a season

Normal year

Normal year

Probability density of convective activity

Probability density of a monsoon activity

Predictability within a few days

Change in shape of distribution

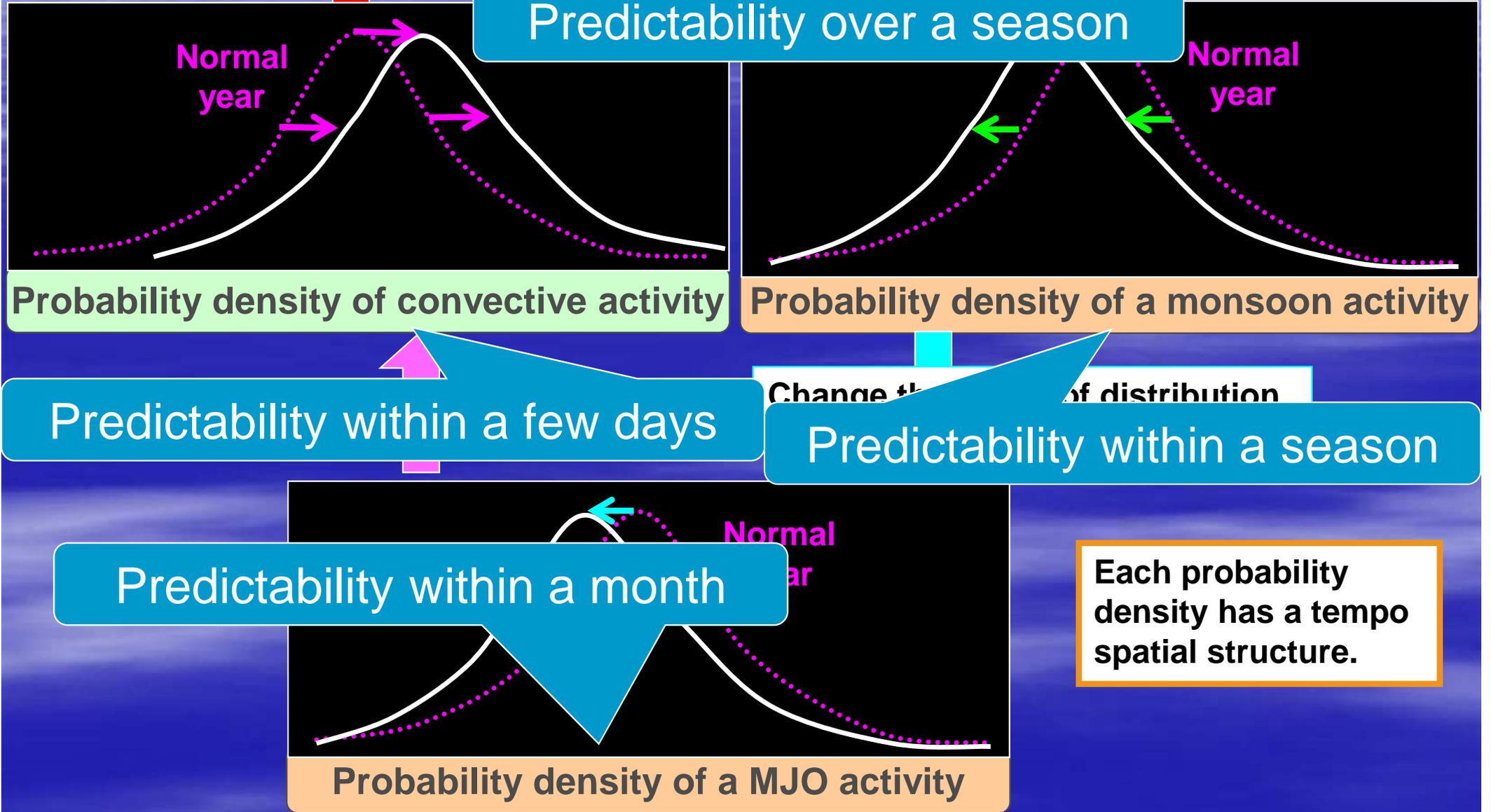
Predictability within a season

Predictability within a month

Normal year

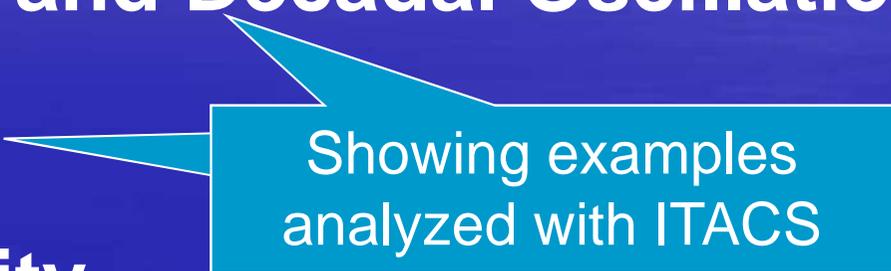
Probability density of a MJO activity

Each probability density has a tempo spatial structure.



Program of Basic Understanding for Climate Monitoring

- Outline of Climate System Monitoring
- Global Warming Trend and Decadal Oscillation
- Interannual Variability
- Intra-seasonal Variability
- Prediction skill of the seasonal prediction model



Showing examples
analyzed with ITACS

And then,

Let's move onto the ITACS world!

JMA Organization



Director-General

Deputy Director-General

Headquarters

Administration Department

Forecast Department

Observations Department

Seismological and
Volcanological Department

Local Offices

District Meteorological
Observatory (5)
Okinawa Meteorological
Observatory

Local Meteorological
Observatory (47)
Aviation Weather
Service Center (4)

Weather Station (46)
Aviation Weather Station (6)

Auxiliary Organs

Meteorological
Research Institute

Meteorological
Satellite Center

Aerological Observatory

Magnetic Observatory

**Global Environment
and Marine Department**

Climate Prediction Division

Climate Prediction Division

Director

Administration

**Numerical
model
developing**

GPC

**Seasonal
forecast**

**ENSO
monitoring
& forecast**

**Reanalysis
(JRA-25)**

**Climate
diagnosing**

**Tokyo
Climate
Centre**

RCC

**WMO
NMHSs
Programs**

**Global
Warming**

**Climate
monitoring**

GSN-MC

CBS-LC