

JMA/CRIEPI

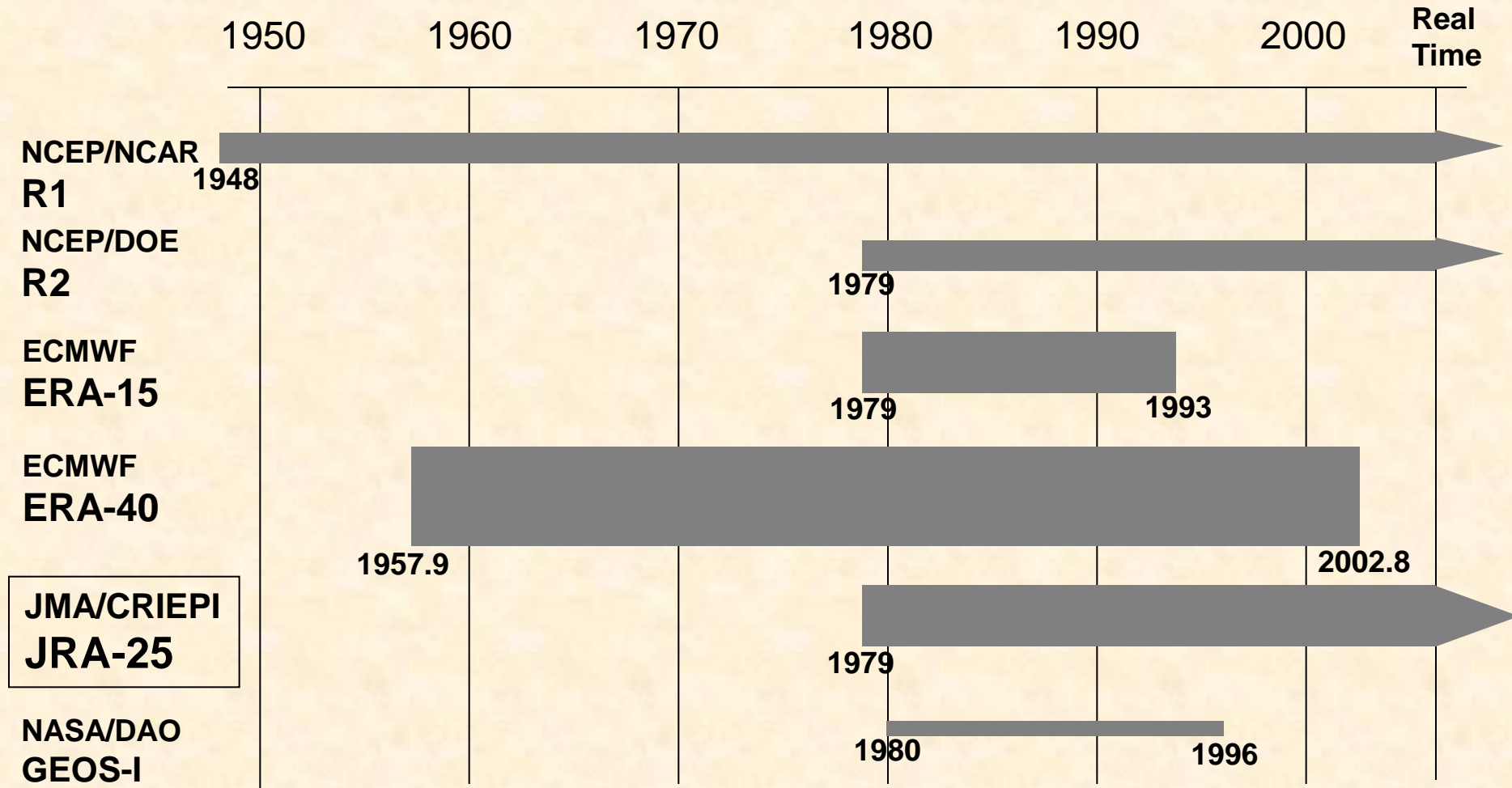
Hiroataka KAMAHORI (JMA)

2006.9.14 APEC Climate Center Symposium

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- JRA-25 overview
- Performance of JRA-25
- Plan of use and policy of JRA-25 data
- Announcement

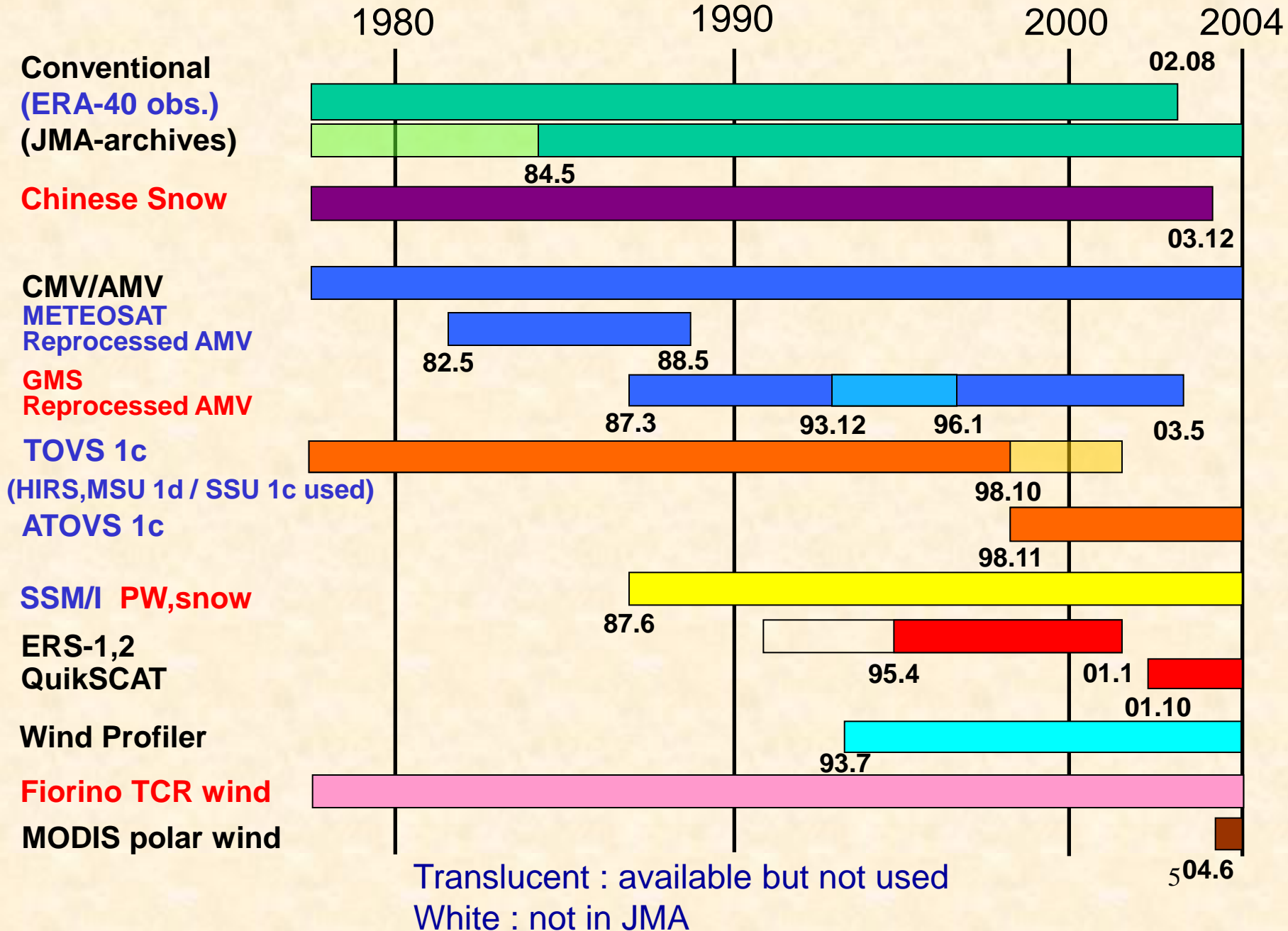
Completed Reanalyses



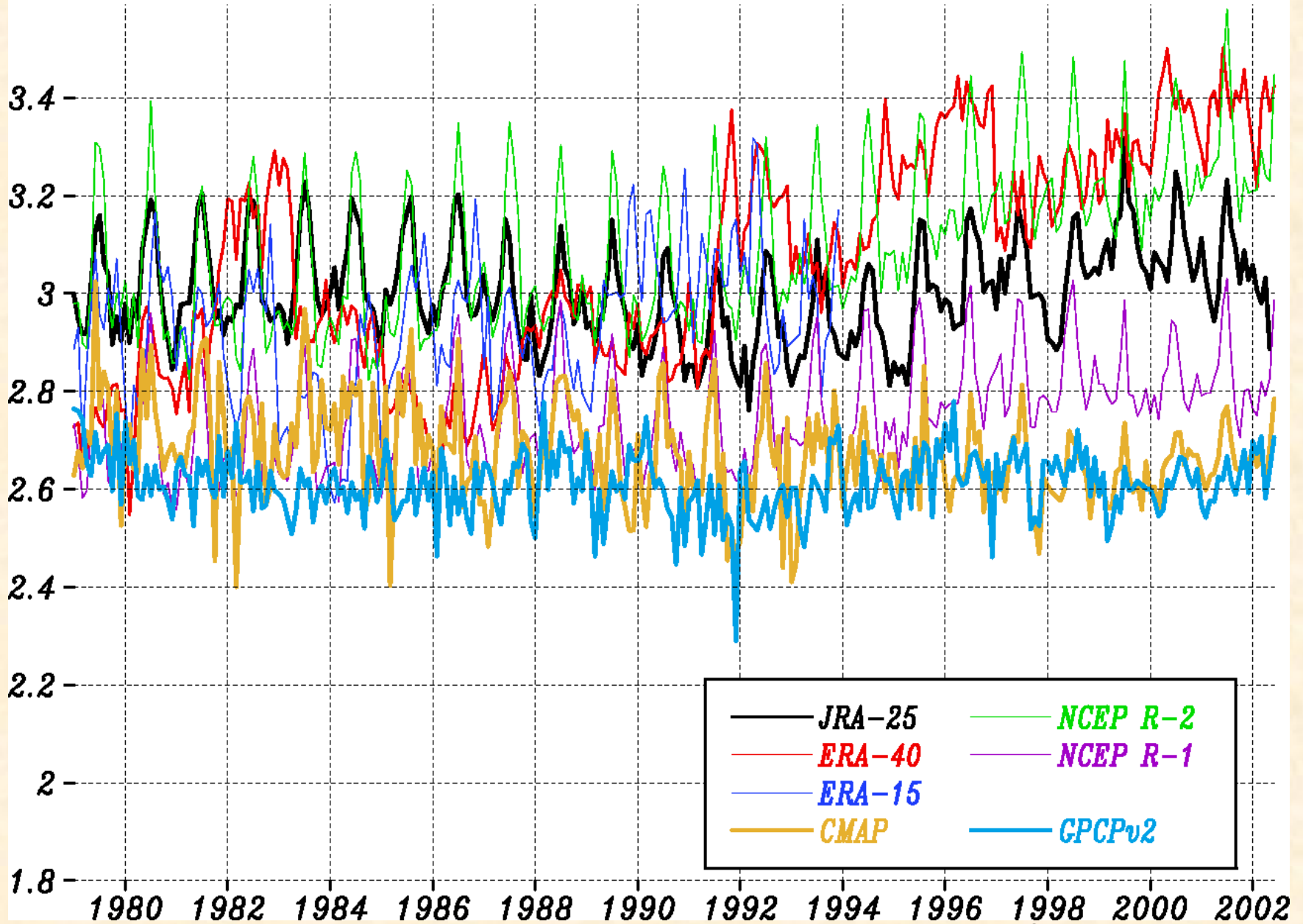
JRA-25 Overview

- Joint research project of JMA and CRIEPI
- Period : 1979.1 - 2004.12 (As JCDAS 2005.1-)
- Resolution : T106L40 with top level at 0.4hPa
- Assimilation Scheme : 3D-Var
- Version : JMA operational system as of April 2004
- JRA-25 original or firstly used observational data
 - TCR, SSM/I snow coverage, digitized Chinese snow depth data, reprocessed GMS-AMV
- JRA-25 original boundary/forcing data
 - Daily COBE SST and sea ice (Ishii 2005, IJC)
 - Daily 3D-ozone profile produced with a chemical transport model

Observation availability in JRA-25

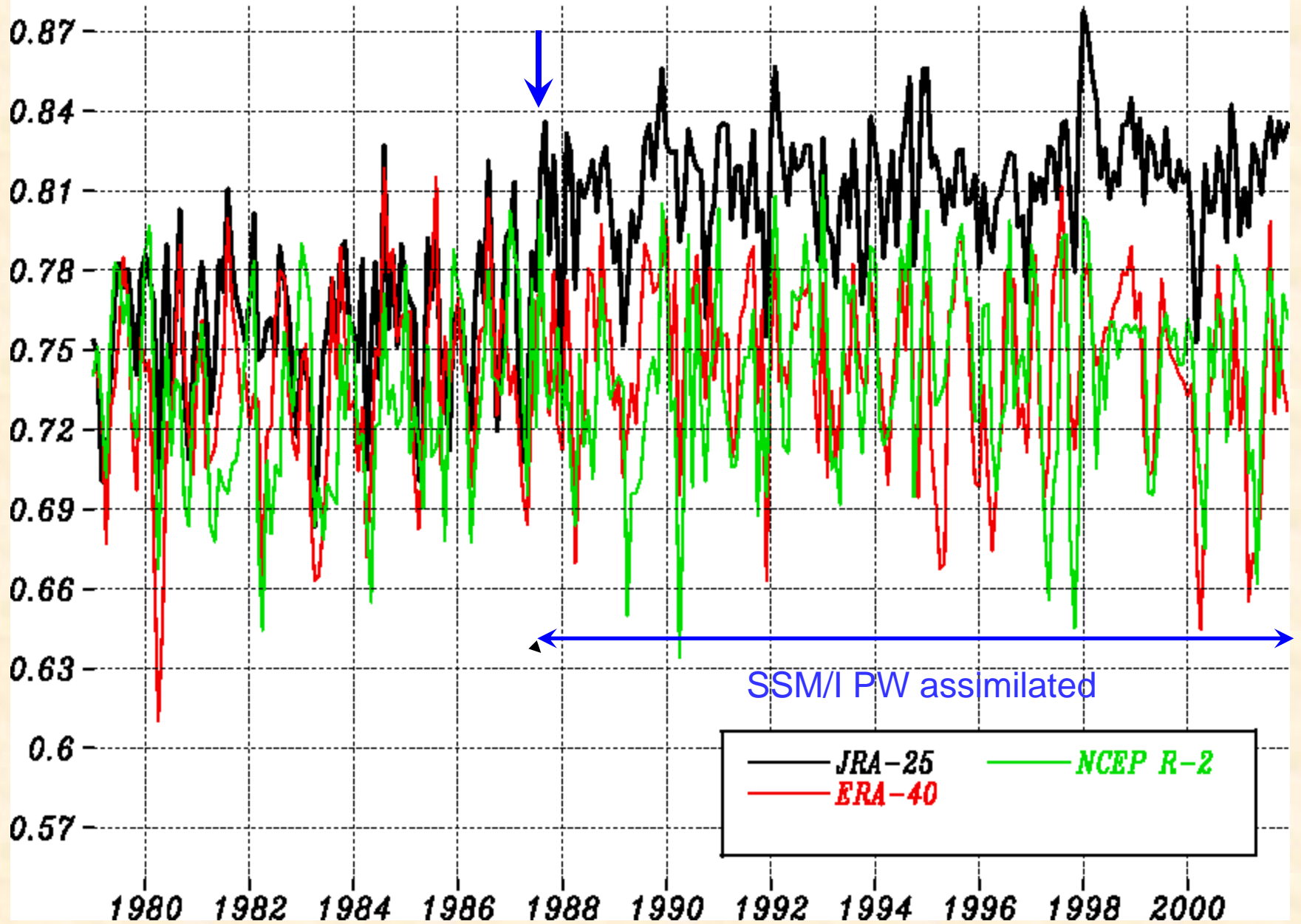


Global Mean Monthly Precipitation



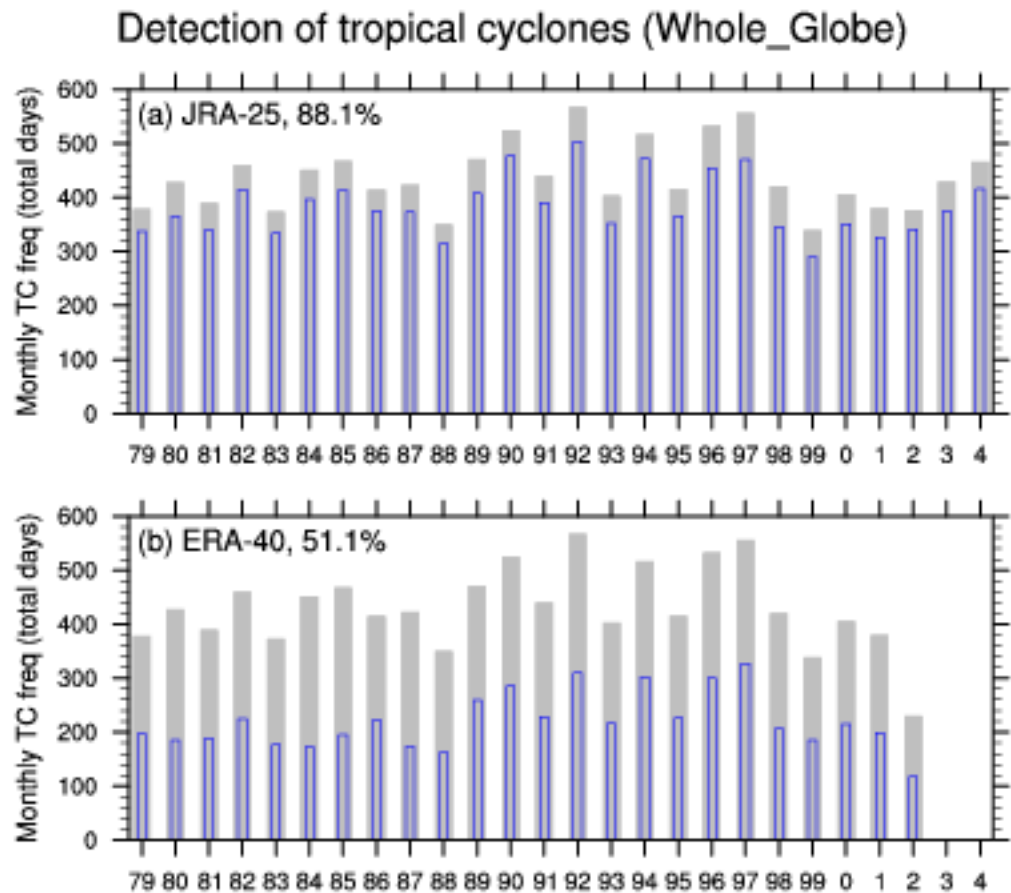
Courtesy: H. Koide

Correlation of Monthly Precipitation with GPCPv2



Courtesy: H. Koide

Global Detection Rate of Tropical Cyclones



Grey : Observed TC (Best track)

Blue : Detected TC

The detecting method is based on relative vorticity, sea level pressure (SLP) and middle to upper tropospheric thickness.

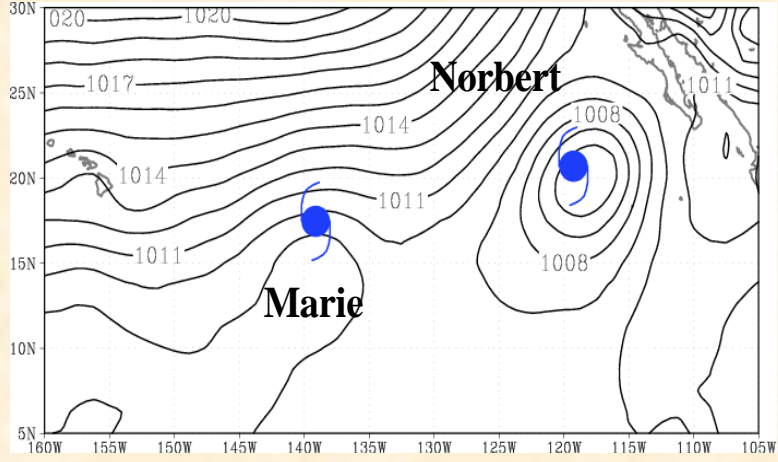
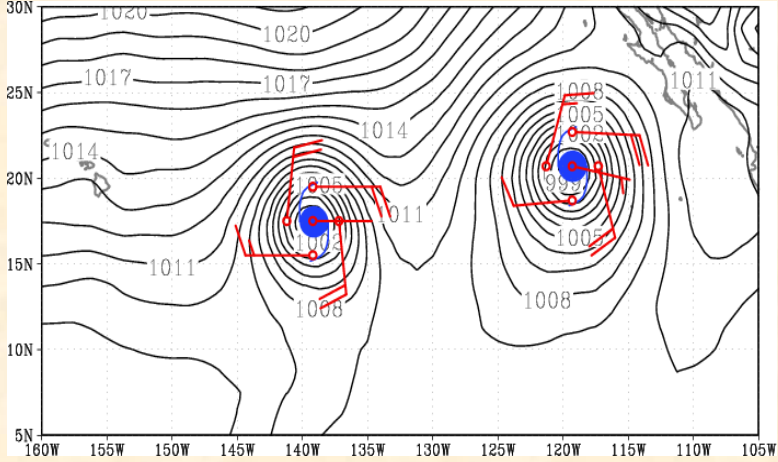
Courtesy: H. Hatsushika

Impact of Fiorino's TC Wind Data

1200 UTC 15 September 1990 in the eastern North Pacific

JRA-25

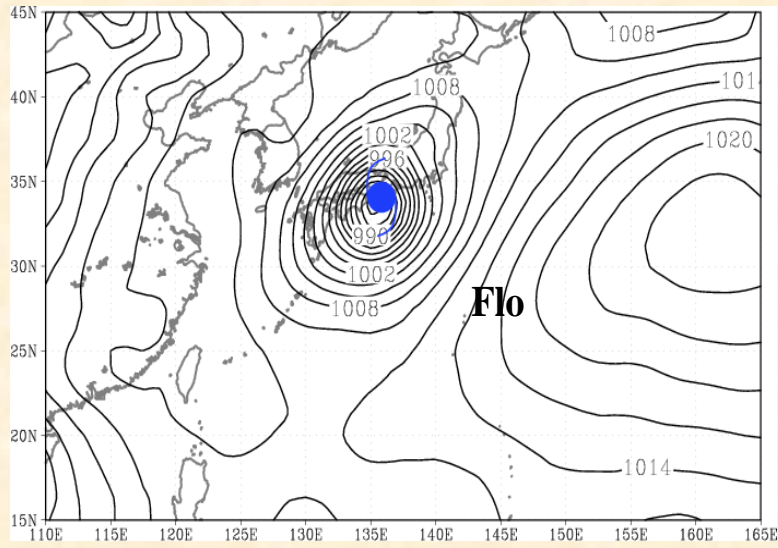
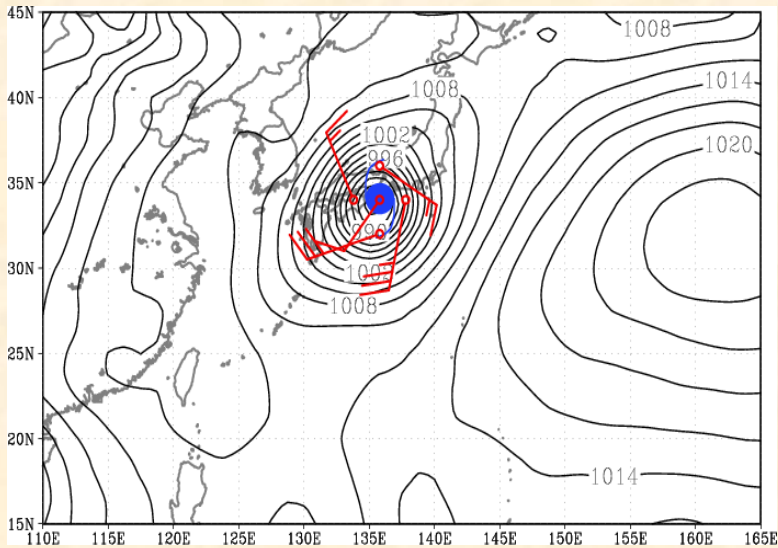
Control



1800 UTC 19 September 1990 in the western North Pacific

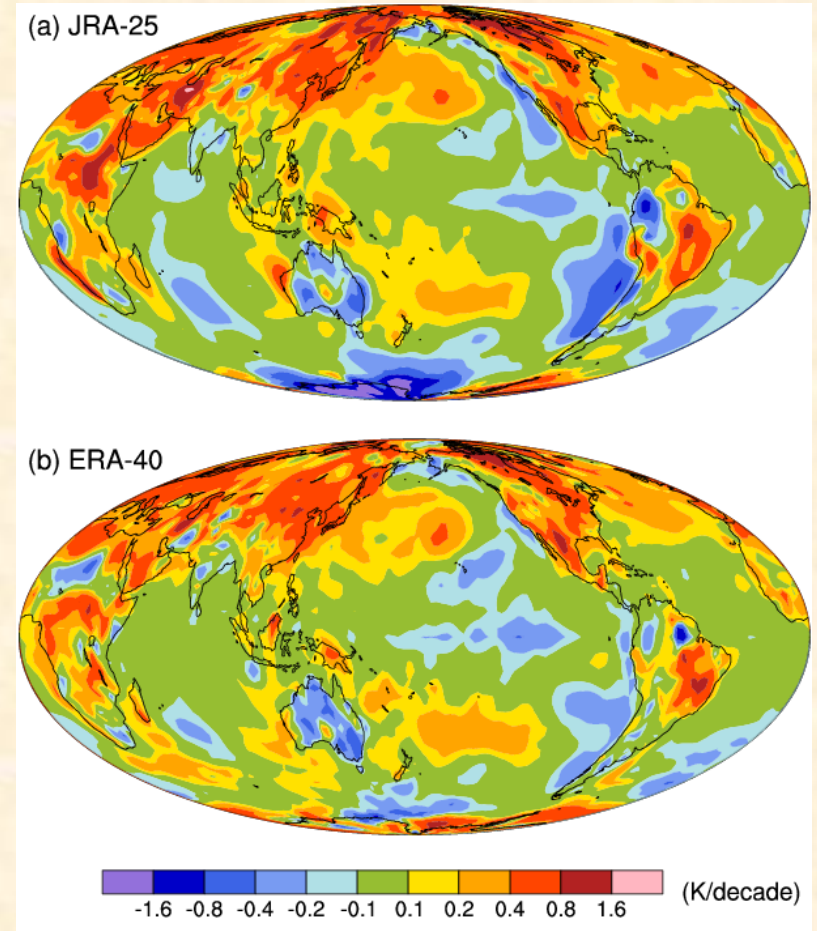
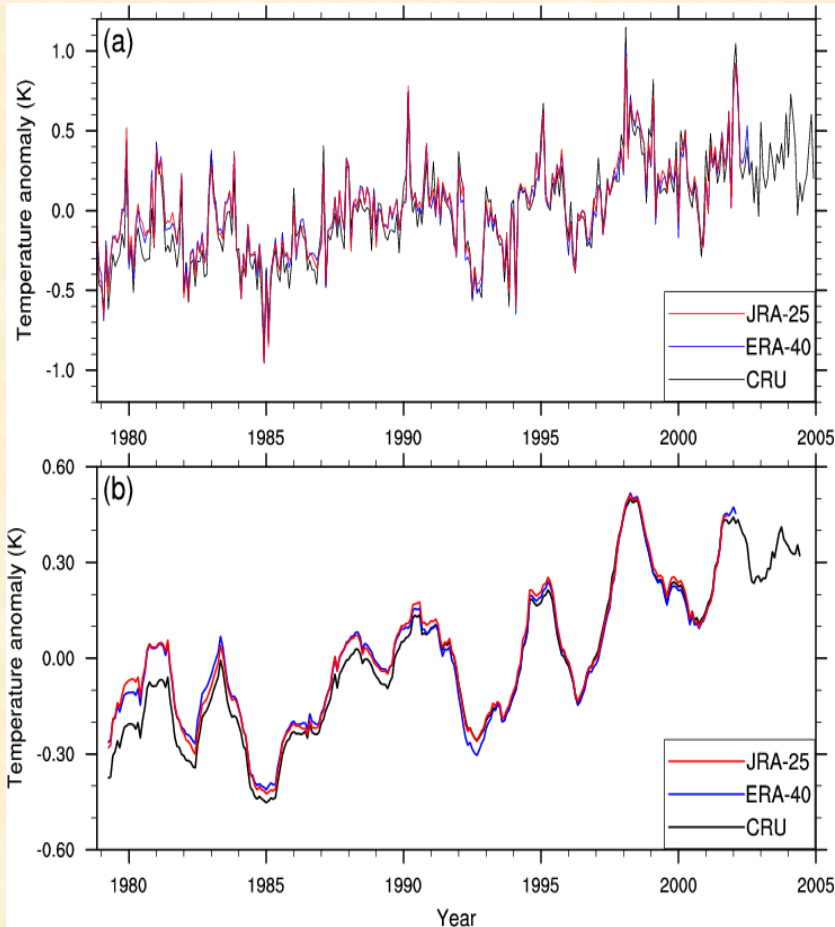
JRA-25

Control



Surface temperature Trend

JRA-25 and ERA-40



Global Temperature Anomaly

JRA-25, ERA-40, CRU(Jones)

Top : monthly mean, Bottom : 5-year moving average

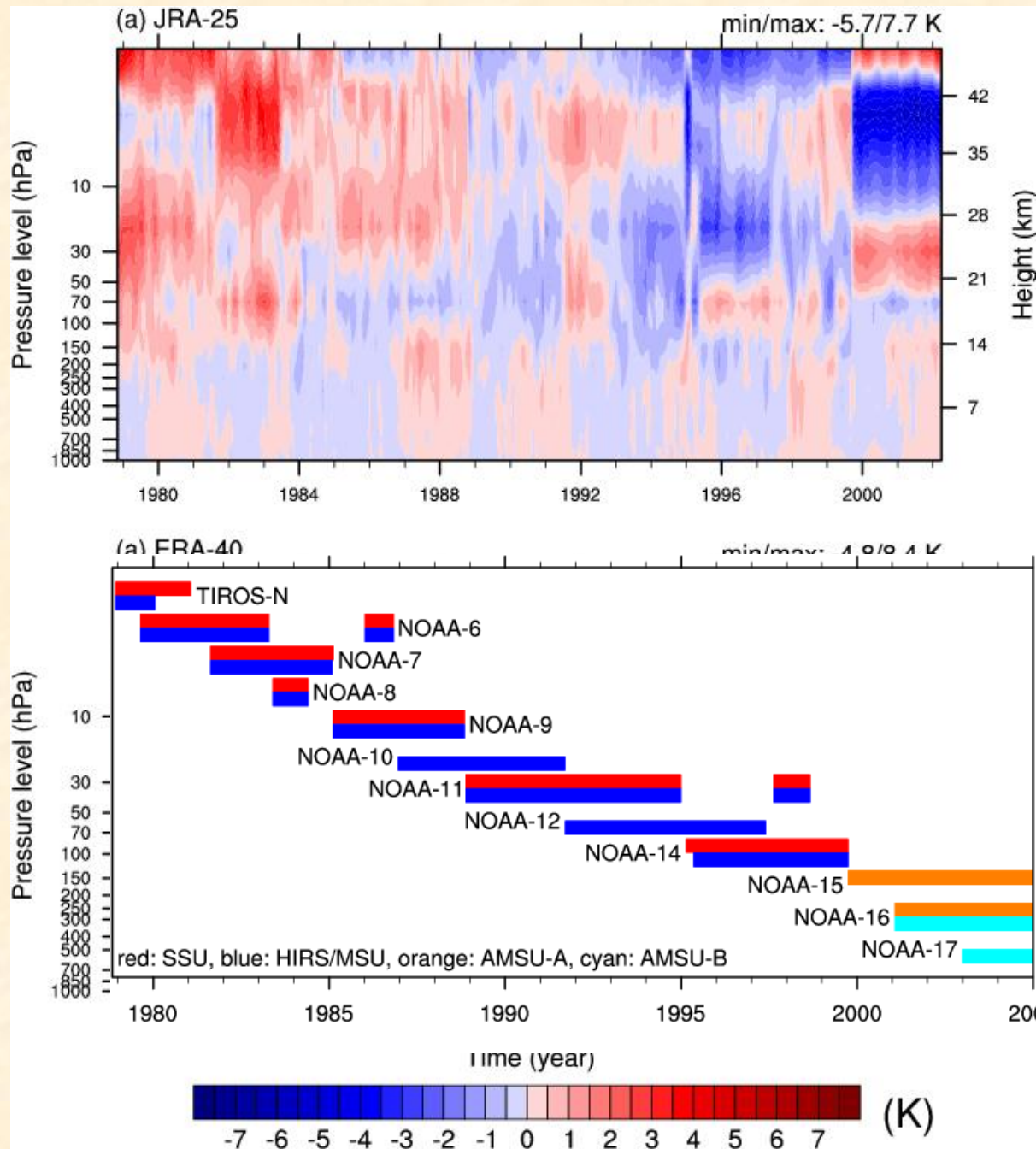
Distribution of tendency (K/decade)

Global Temperature Anomaly

Anomaly from averaged temperature of each level for each reanalysis

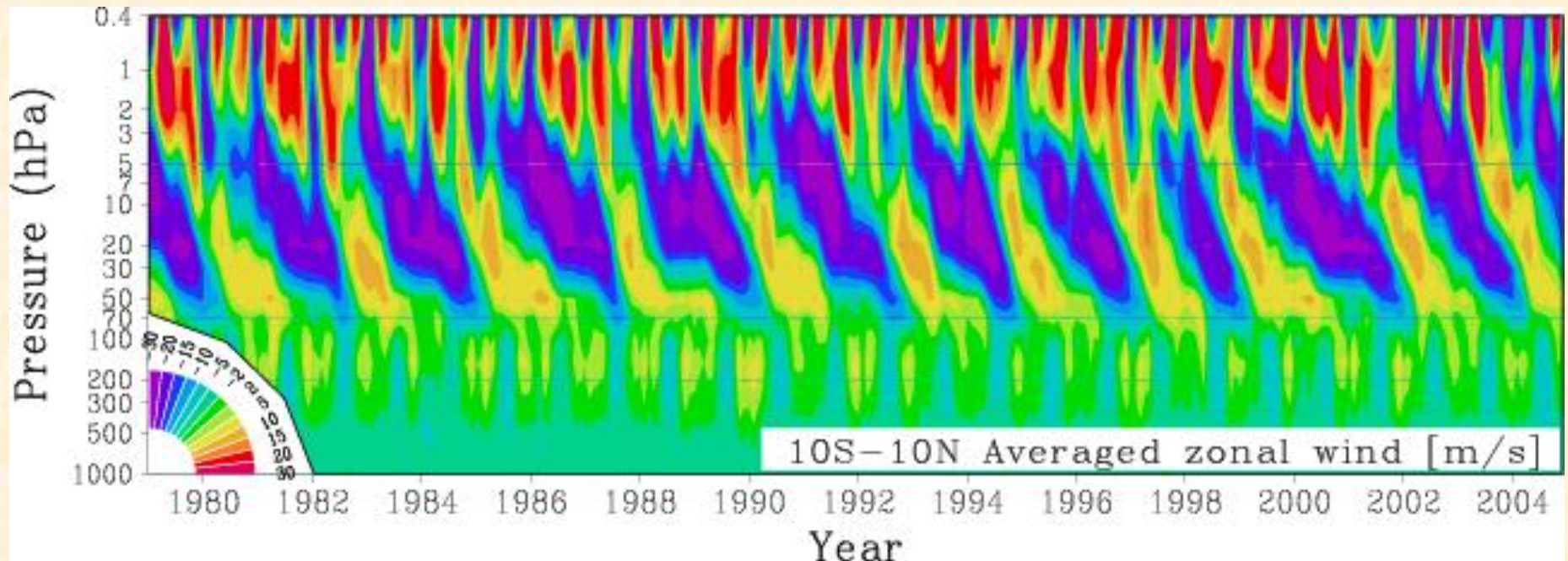
Natural variability in troposphere with ENSO

Artificial variability in stratosphere with Satellite data

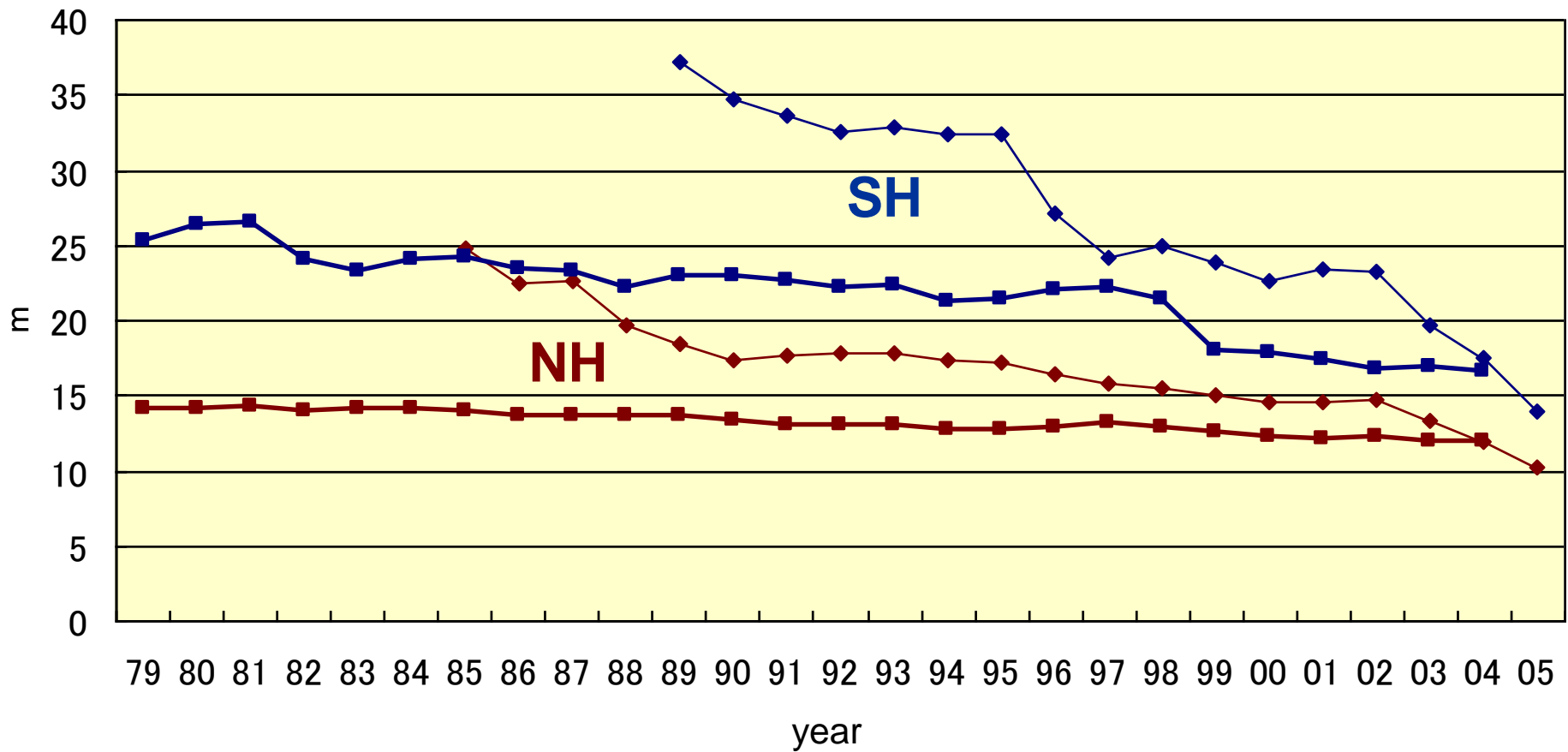


QBO with JRA-25

10S-10N averaged zonal wind cross section



Forecast Score (Z500 FT=24 RMSE)



◆ Routine GSM NH ■ JRA-25 NH ◆ Routine GSM SH ■ JRA-25 SH

Heavy Rain event

- Nagasaki Gou -

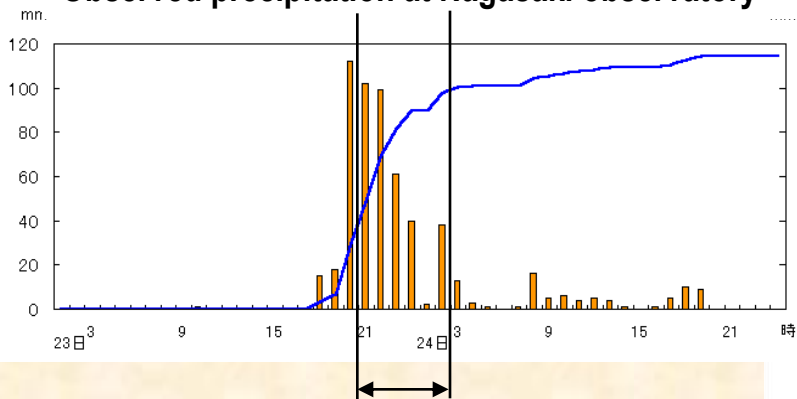
1982. 7.24. 03JST

Surface
Weather
Chart



Synoptic fields are properly analyzed,
while resolution is not sufficient.

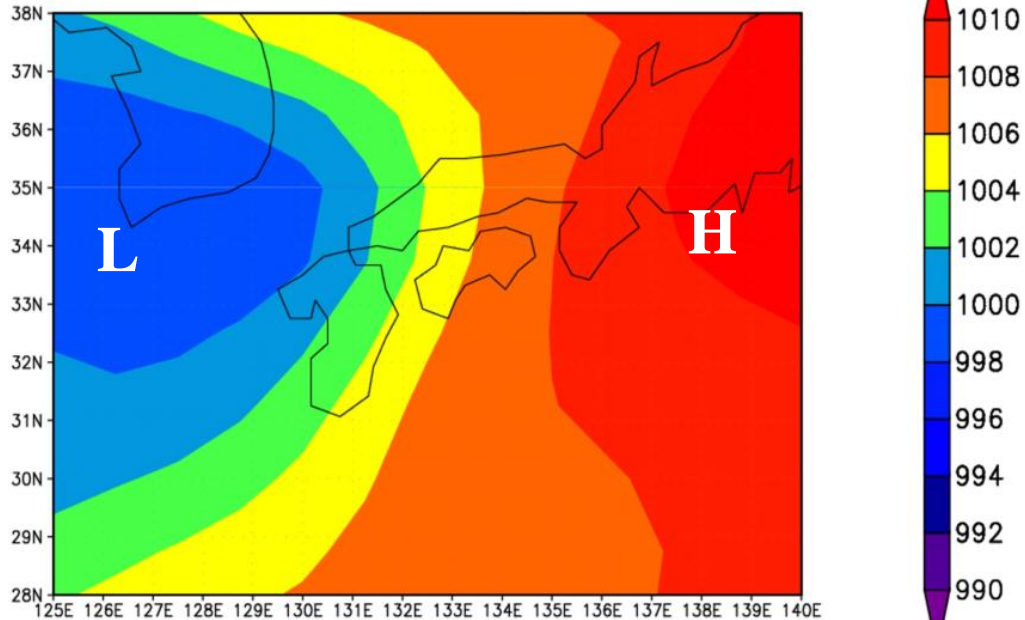
Observed precipitation at Nagasaki observatory



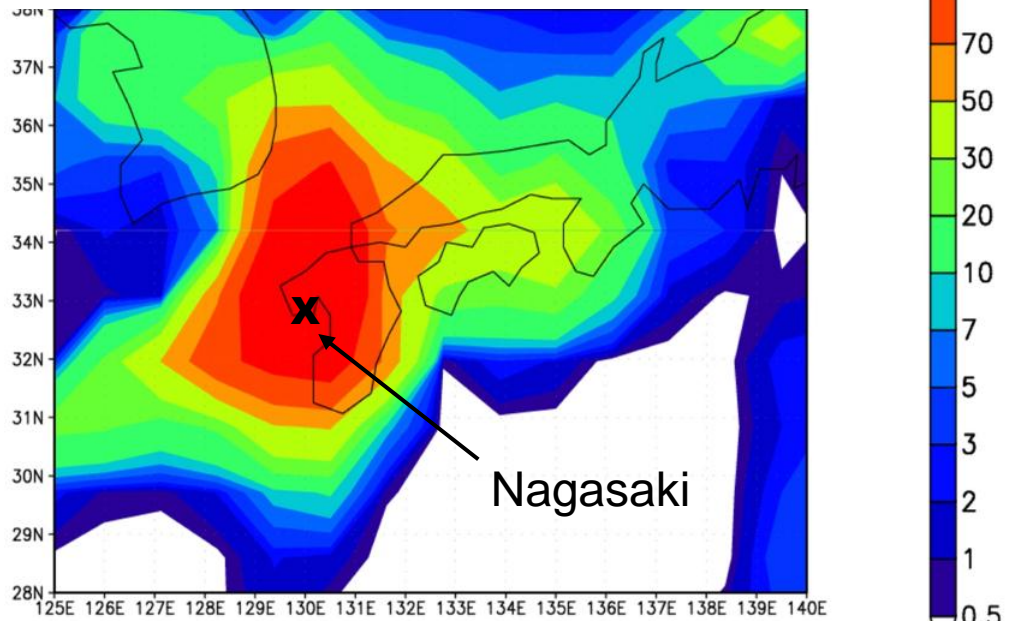
hourly precip. total precip.

299 persons died.

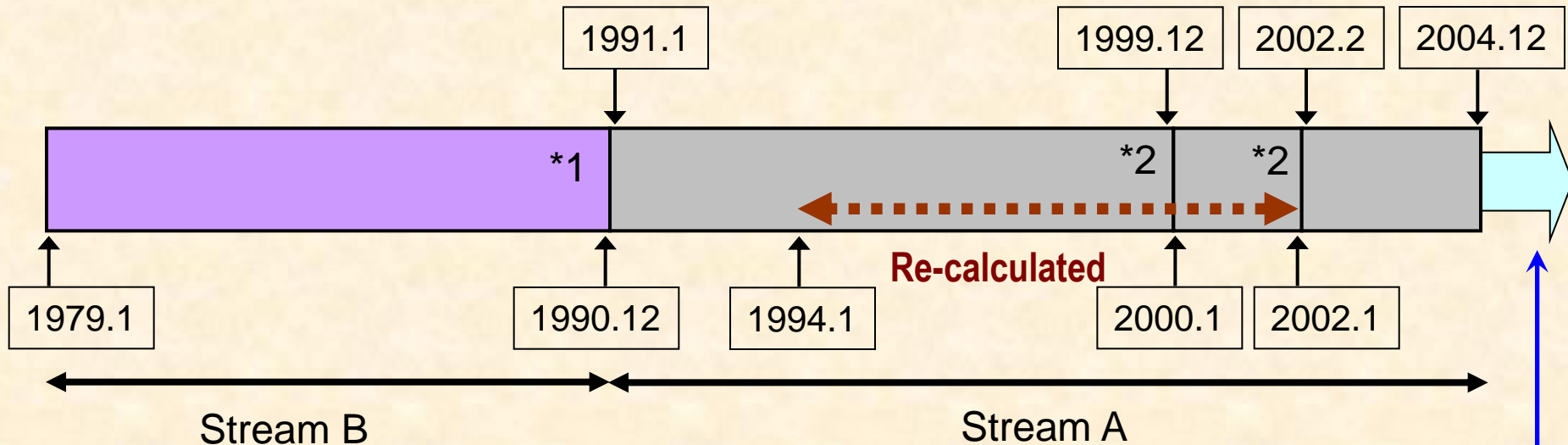
JRA-25 MSLP (hPa)



JRA-25 6hour precip. (232100 - 240300JST) (unit:mm/day)



JRA-25 Final Streams



*1:discontinuities

*2:small discontinuities

JRA-25 is transitioned to JMA-CDAS (JCDAS) for after 2005.

Re-calculation

1994.1 to 1999.12 : Large number of low quality GMS-AMV data were unexpectedly assimilated.

2000.1 to 2002.1 : TCR data were not assimilated due to Y2K problem.
(Lower quality of TC analysis)

1982.1, 1992.1,2 and 11 : no TCR data were given around **the date line** (with little influence) .

JRA-25 official data

- Data from 1979 to 2004
- Released on 18th July 2006
- Data for the re-calculated period are replaced.
- The official data is supplied from a JMA data server.

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

JRA-25 data available via internet

JRA-25 Data User Application - Microsoft Internet Explorer

ファイル(E) 編集(E) 表示(V) お気に入り(A) ツール(T) ヘルプ(H)

戻る 検索 お気に入り 移動 リンク

アドレス(D) http://jra.kishou.go.jp/cgi/secaccess.cgi?pr=2

JRA-25 Data User Application

Please fulfill following blanks **in English.**

Name :

Affiliation :
(If you are a retirant or resigned person, please write your former affiliation like "former XXXX".)

Address of affiliation (Country only. e.g Japan, USA, UK, ... etc.) :

E-mail address :

Purpose of use :
(e.g Research of intensities and tracks of tropical cyclones and water circulation in JRA-25)

OK

A guidance mail will be sent to the applied address within a few days.

ページが表示されました インターネット

JRA-25 paper / report

- **The JRA-25 Reanalysis**

Submitted to **JMSJ** (Journal of Meteorological Society of Japan)

K. Onogi, J. Tsusui, H. Koide, M. Sakamoto, S. Kobayashi, H. Hatsushika, T. Matsumoto, N. Yamazaki, H. Kamahori, K. Takahashi, S. Kadokura, K. Wada, K. Kato, R. Oyama, T. Ose, N. Mannoji and R. Taira

- **JRA-25 : Japanese 25-year Reanalysis**
– progress and status –

Onogi et al., QJRMS special issue of the WMO 4th DA workshop (April 2005), Vol.131, 3259-3268.

Announcement

The 3rd Reanalysis Conference

Co-hosting Organizations: JMA, CRIEPI, WCRP

To be held in Tokyo in January 2008

International Programming Committee

Dr. Phillip Arkin (MD Univ.)

Dr. Michael Fiorino (NHC)

Dr. Eugenia Kalnay (MD Univ.)

Dr. Masao Kanamitsu (Scripps lab.)

Dr. Toshio Koike (Univ. of Tokyo)

Dr. Michael Manton (Monash Univ.)

Dr. Siegfried Shubert (GMAO/NASA)

Dr. Andrew Lorenc (UKMO)

Dr. Adrian Simmons (ECMWF)

Dr. Detlef Stammer (Univ. Hamburg)

Dr. Masato Sugi (MRI/JMA)

Dr. Kevin Trenberth (NCAR)

Dr. Tadashi Tsuyuki (JMA)

Dr. Tetsuzo Yasunari (Nagoya Univ.)

Dr. Glenn White (NCEP)

The 3rd Reanalysis Conference

Tentative schedule

- Dec. 2006 -- : call for paper
- 1st Jun. to 15th Jul. 2007 : registration period
- 16th Jul. to 20th Sep. 2007 : refereeing period
- 30th Sep. 2008 : program fixed

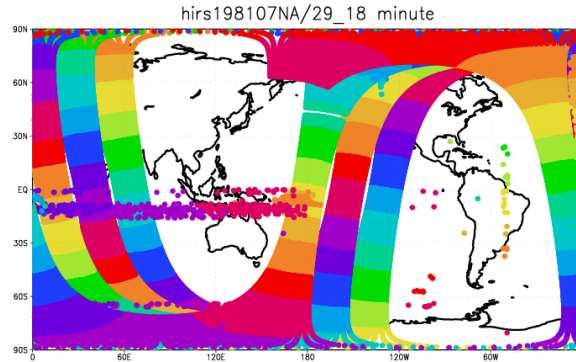
Thank you very much !

JMA

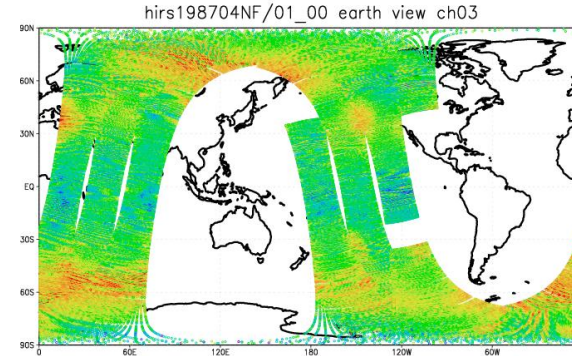
Quality monitoring of TOVS data

Typical examples of poor quality data

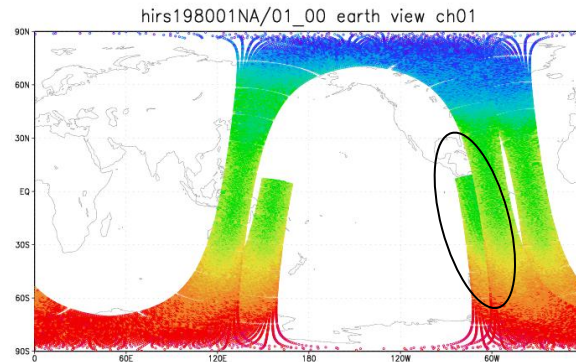
Bad earth location(1)
Out of orbit



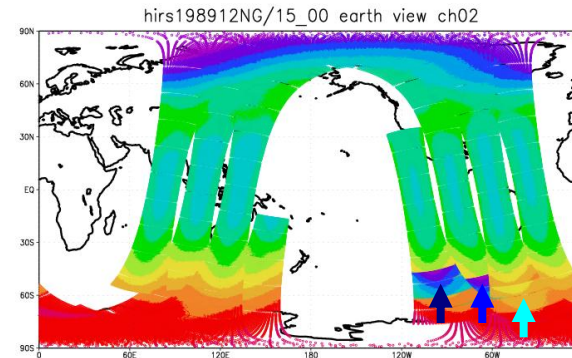
Noisy data



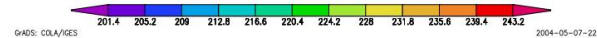
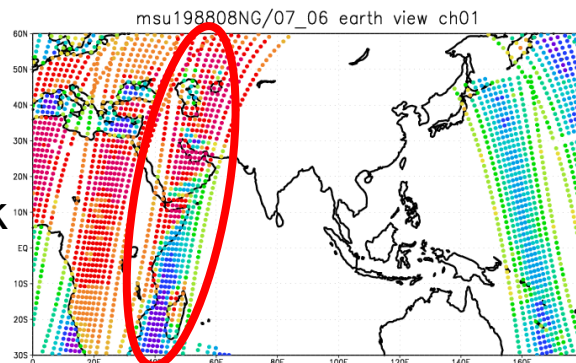
Bad earth location(2)
Error of time



Calibration error



Bad earth location(3)
Slip along track



To detect these types of error,
we developed systematic
detecting method.

Application of JRA-25 for operation and research

Extreme Event / Seasonal Forecast

Monitoring worldwide extreme events and climate system

Atmospheric, terrestrial and oceanic initial and verification data for seasonal prediction model, El Nino prediction model

Forcing data for ocean models

Earth Environment

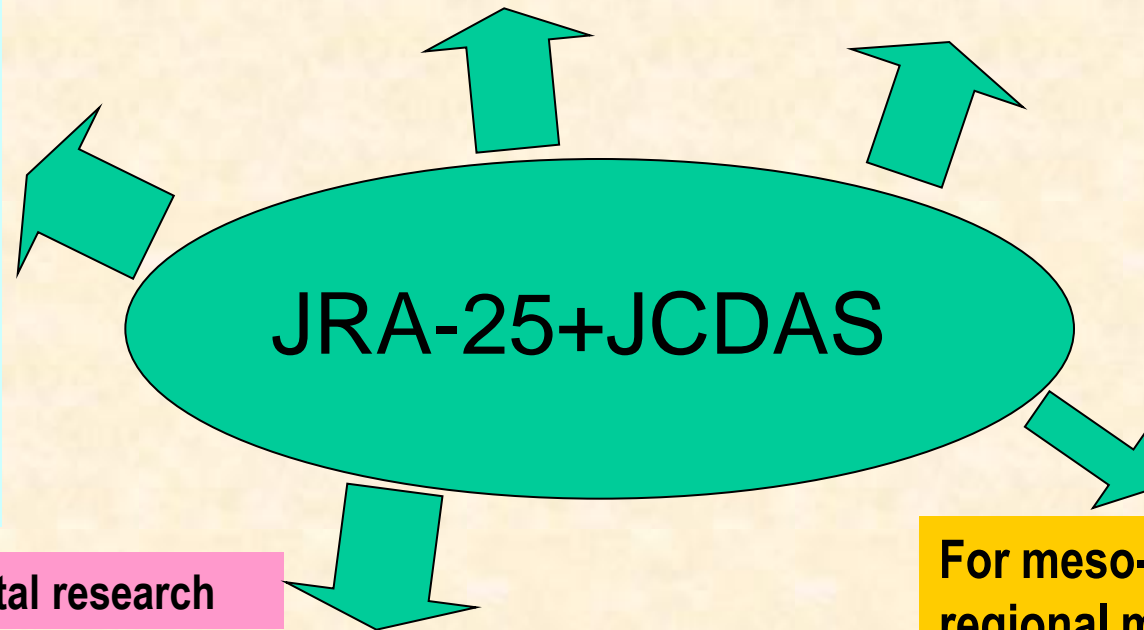
Carbon cycle, reference data for ozone analysis

Forcing data for a chemical transport model

Climate information

- Time series of a point

- JRA-25 Atlas



Climate and environmental research

Extreme events, climate change, development and improvement of seasonal prediction model

Analysis of Energy and water cycle.

For meso-scale regional models

To provide proper initial and boundary data to perform numerical experiments for severe events in the past.

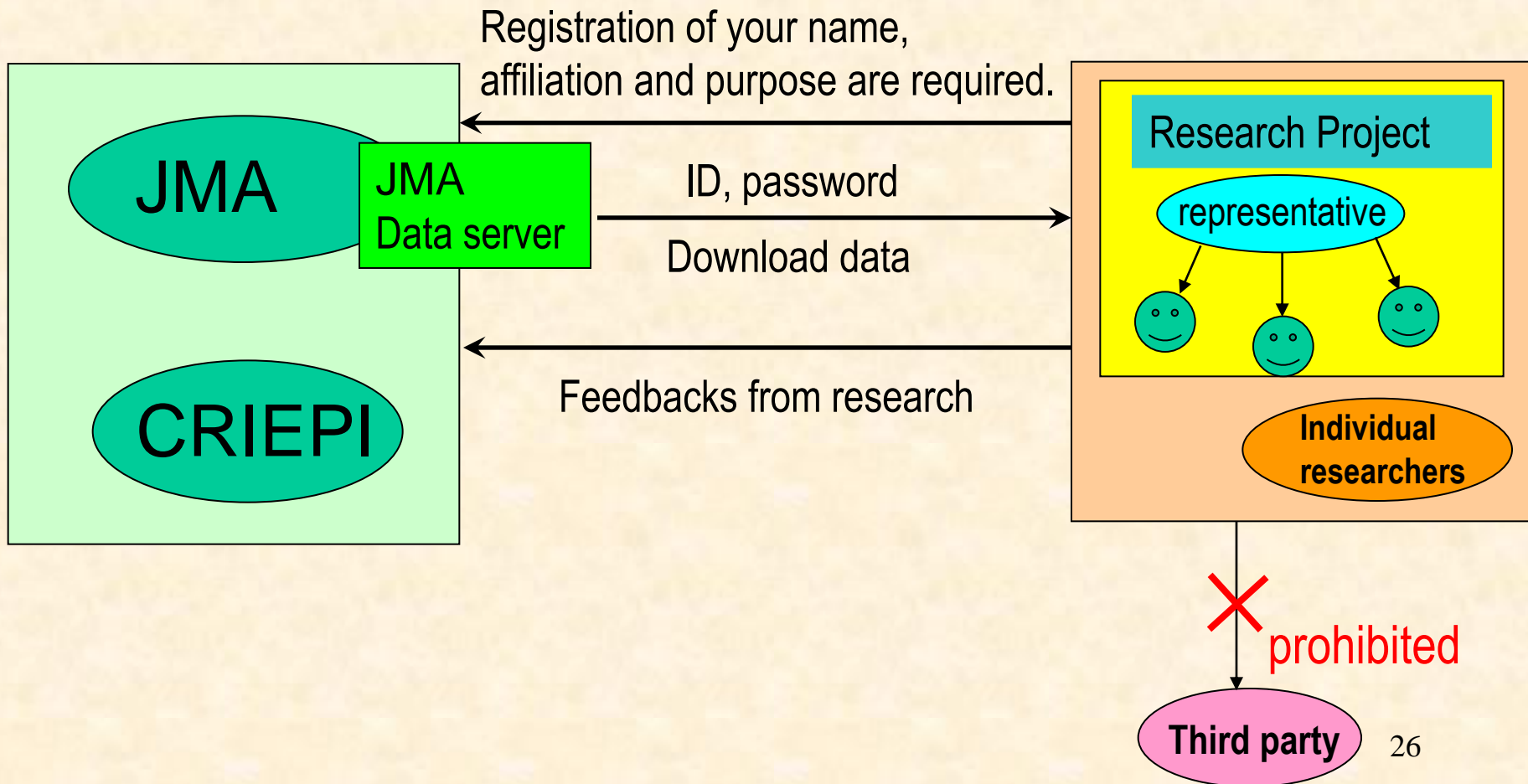
JRA-25 & JCDAS data are available for research use via internet.

Reminder for using JRA-25 data

- Discontinuity at the stream change from STB to STA (1990.12 to 1991.1)
 - Temperature and height above 200hPa, specific humidity above 150hPa, soil wetness, snow depth,
- **Surface parameters except pressure** were assimilated with **2D-OI**, separately from 3D-Var for upper air. Hence, inconsistency between the parameters can exist.
- Jumps in time series (temperature ...) are often found mainly in the stratosphere due to **changes of satellites in the biased model background**.
- **Snow depth in Siberia is less before the winter 1982-83** than after, because part of SYNOP snow data were not assimilated by mistake.
- Problem of the land surface process:
 - less precipitation in Amazon basin** than the other reanalyses.

JRA-25 data available via internet

For research use only



The 3rd Reanalysis Conference

Provisional Agenda

(Day 1)

Keynote address

1. Introduction of reanalysis (by the reanalysis centres)
(NCEP, ECMWF, JMA, NASA/GMAO and Ocean)

Features of reanalysis products

2. Variation of observational data and reanalysis
3. Long term tendencies found in reanalysis

(Day 2)

4. Monsoons, and the hydrological cycle
5. Tropical cyclone and extratropical storms
6. Land surface and hydrology

(Day 3)

7. Stratosphere
8. Polar regions

(Day 3)

Applications of reanalysis products

9. Diagnosis of extreme climate events and climate monitoring
10. Seasonal forecast and prediction of climate change
11. Ocean applications (surface fluxes and driving ocean models)

(Day 4)

Data assimilation technique for atmospheric and ocean reanalysis

12. Quality control of observational data in the past, including bias correction
13. Assimilation of satellite data
14. Advanced data assimilation techniques

(Day 5)

Future reanalysis

15. Advanced reanalysis plan
(National plans, coordination, datasets, archives, coupled reanalysis, etc.)
16. Panel discussion : ‘Future reanalysis and international cooperation’