

CEOP/IGWCO Joint Meeting in Paris

Feb.27 – Mar.1 2006

Comparison of Japanese 25-year Reanalysis with Observational data including CEOP

**Tomoaki Ose and JRA-25 Working Group
Climate Prediction Division, Japan
Meteorological Agency
1-3-4 Otemachi, Tokyo, 100-8122, Japan**



Japanese 25-year Re-Analysis project (JRA-25)

Joint Project by
Japan Meteorological Agency (JMA) and
Central Research Institute of Electric Power Industry
(CRIEPI) of Japan

Production of JRA-25 will be completed in April 2006.

Special thanks to
observational data contributors in the world including
CEOP, NCEP, ECMWF, NCAR and other organizations
and
Prof. Koike in University of Tokyo for his large support

Data Assimilation and Forecast System

Spectral T106, 40 vertical layers, top at 0.4hPa

3DVAR system with the land surface assimilation system. low-resolution version of the T213 JMA's operational numerical models

Wind retrieval data surrounding tropical cyclones

by Dr. Mike Fiorino of LLNL/USA

more precise position and intensity of tropical cyclones

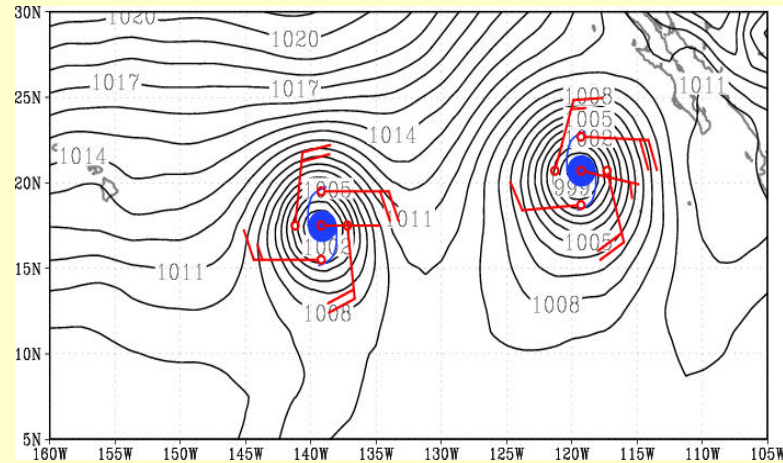
COBE SST and sea ice

COBE:Centennial comprehensive marine dataset by JMA

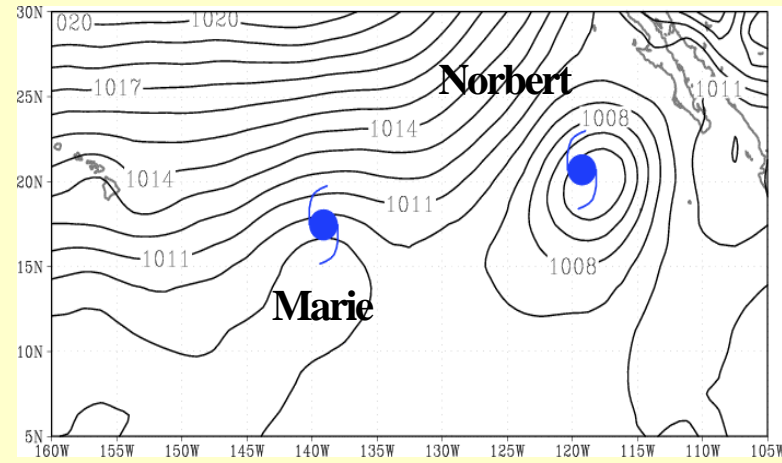
Impact of Fiorino's TC Wind Data

1200 UTC 15 September 1990 in the eastern North Pacific

JRA-25

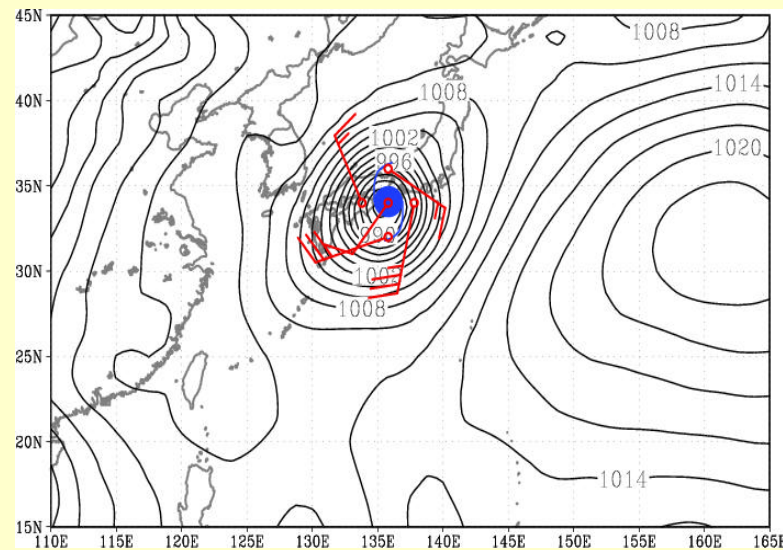


Control

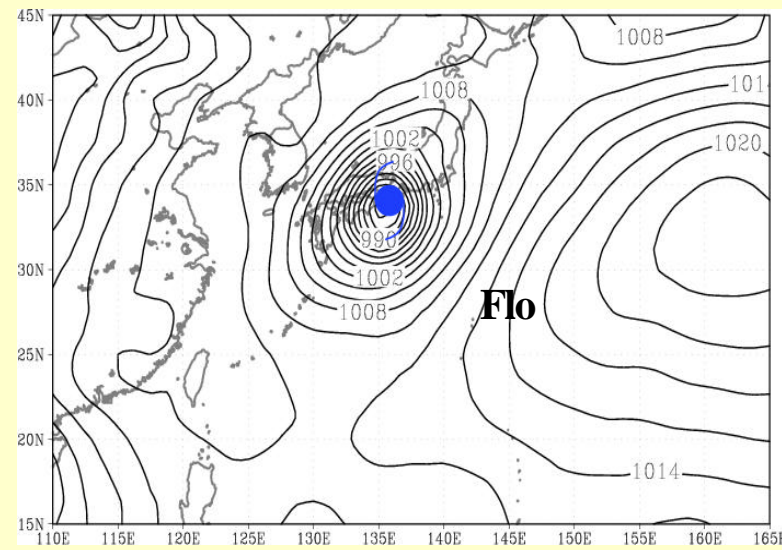


1800 UTC 19 September 1990 in the western North Pacific

JRA-25



Control



(1)

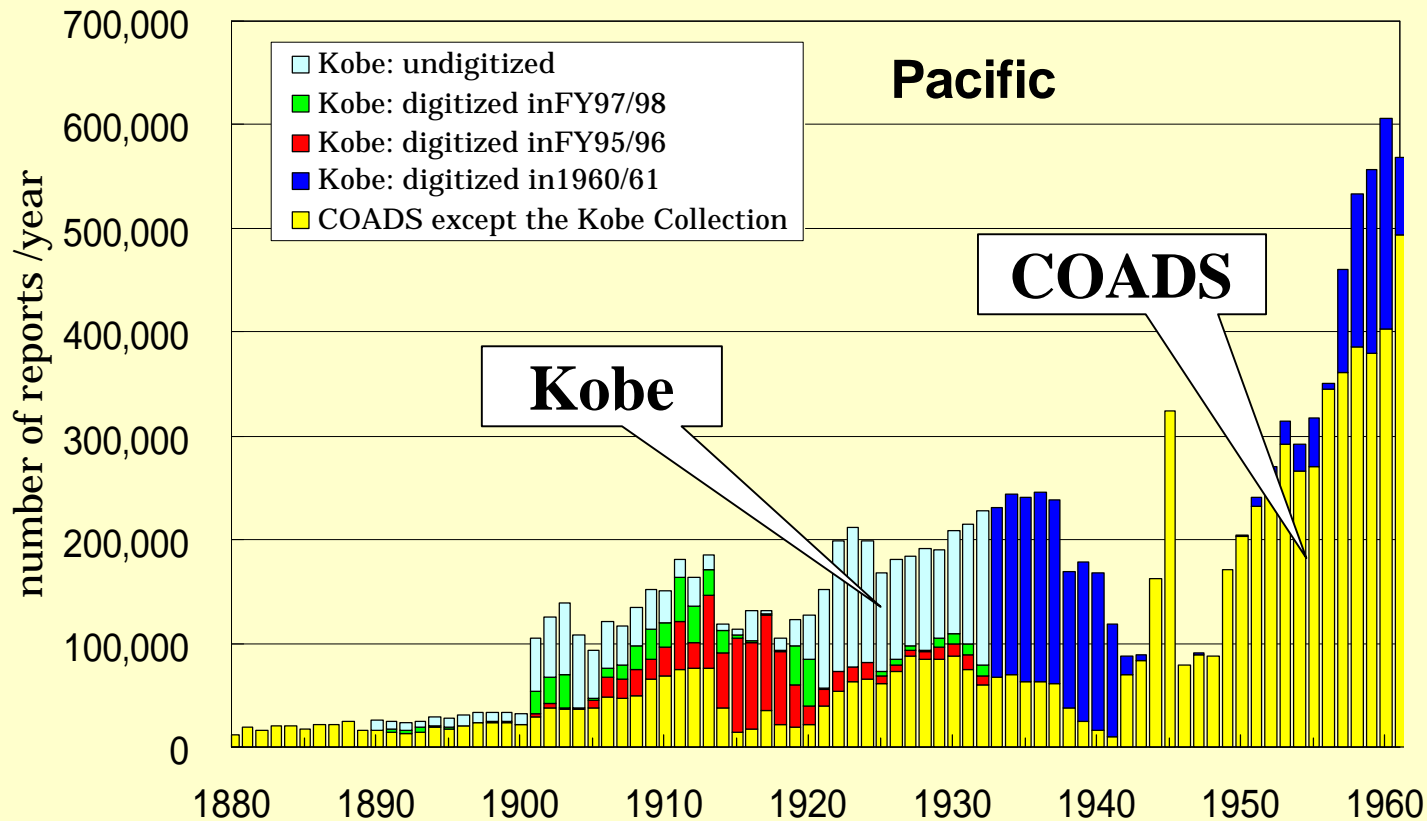
COBE

Centennial in-situ Observation-Based Estimates
Of variability of SST and marine meteorological variables

Centennial SST data set from
1900 is used in JRA-25

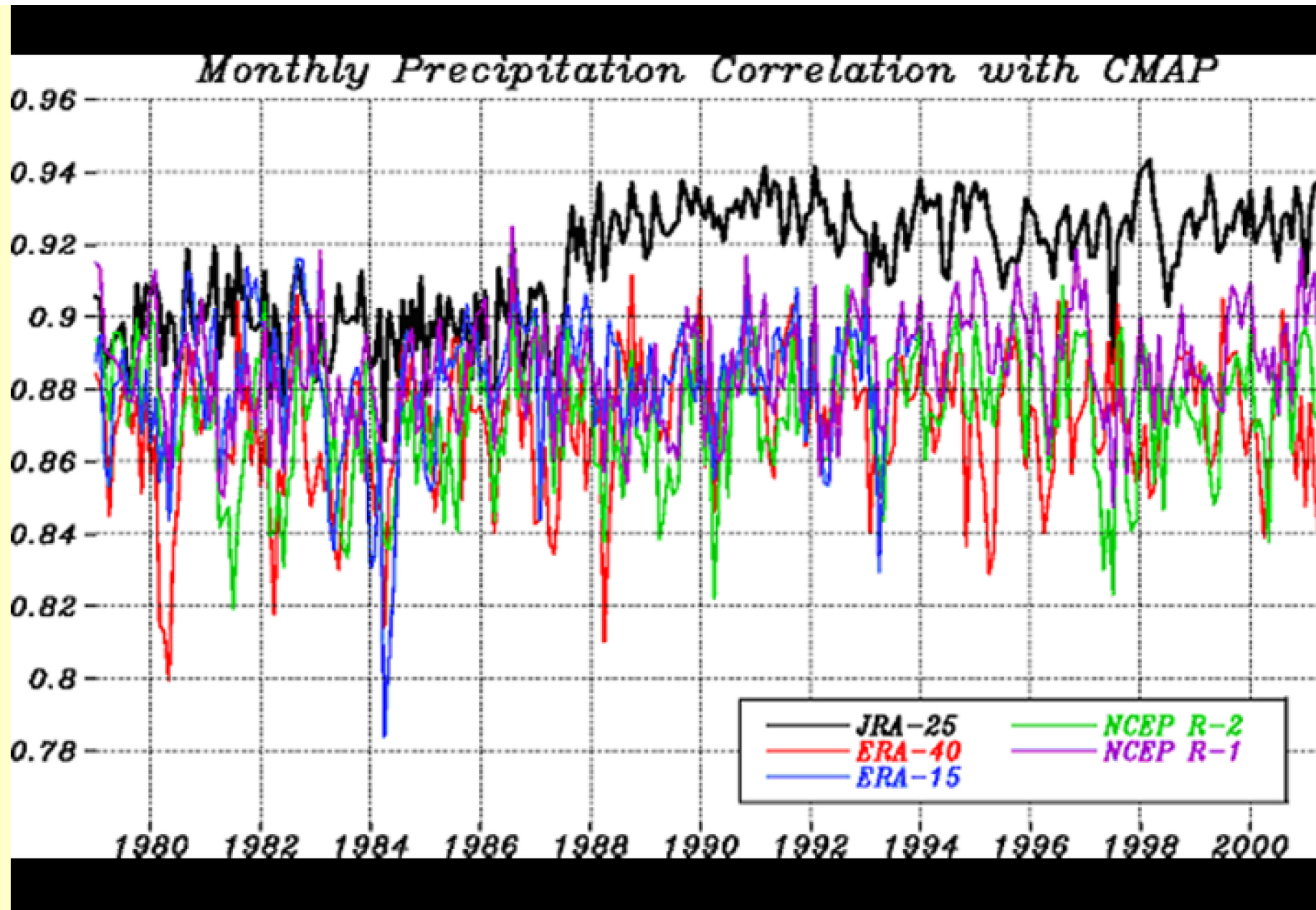
- Ishii et al.

The Kobe collection marine data are assimilated.



Performance of JRA-25

Comparison with observation



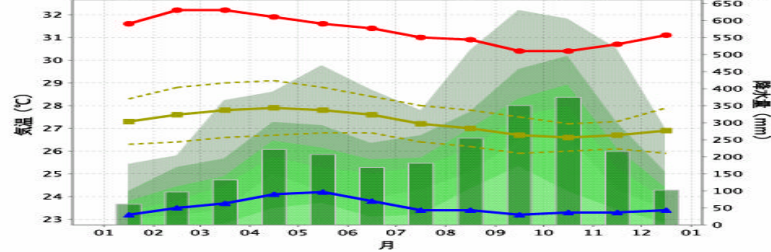
Precipitation in the Ocean is improved by applying SSM/I Precipitable Water after July 1987.

By H.Koide

Comparison with Annual cycle of SYNOP precipitation

SYNOP

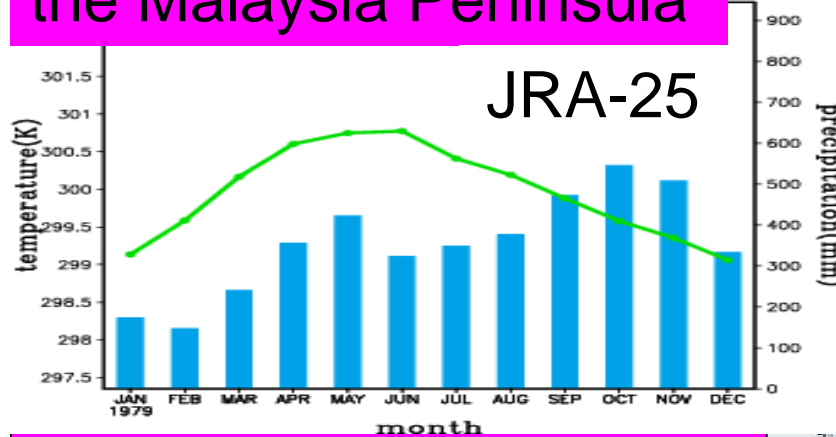
ペナン国際空港 (バンレバス国際空港) [マレーシア]



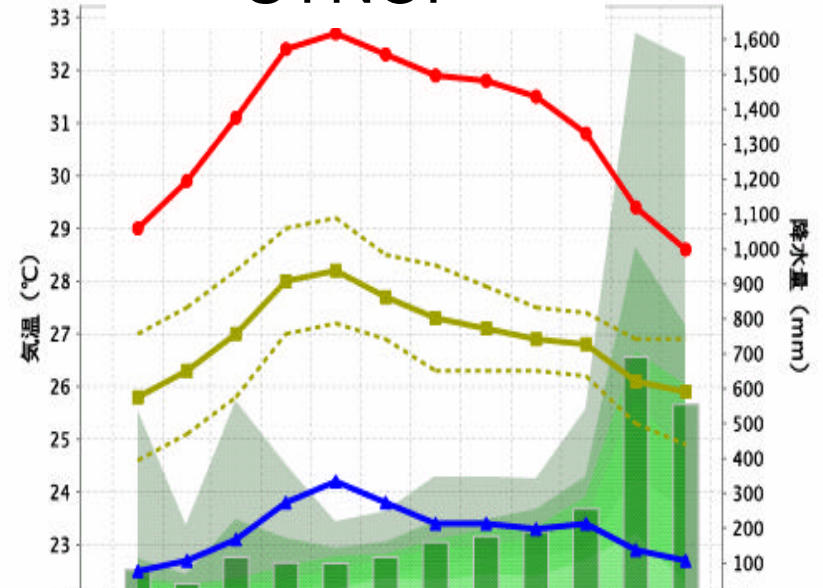
Penang

in the western side of the Malaysia Peninsula

JRA-25



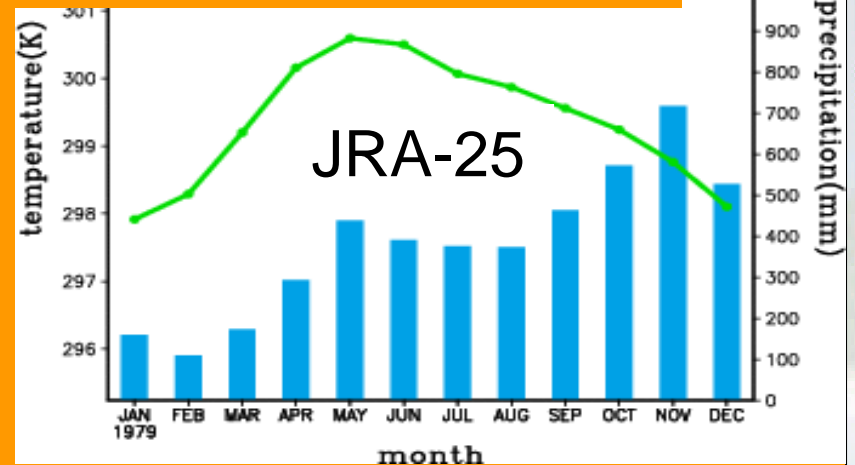
SYNOP



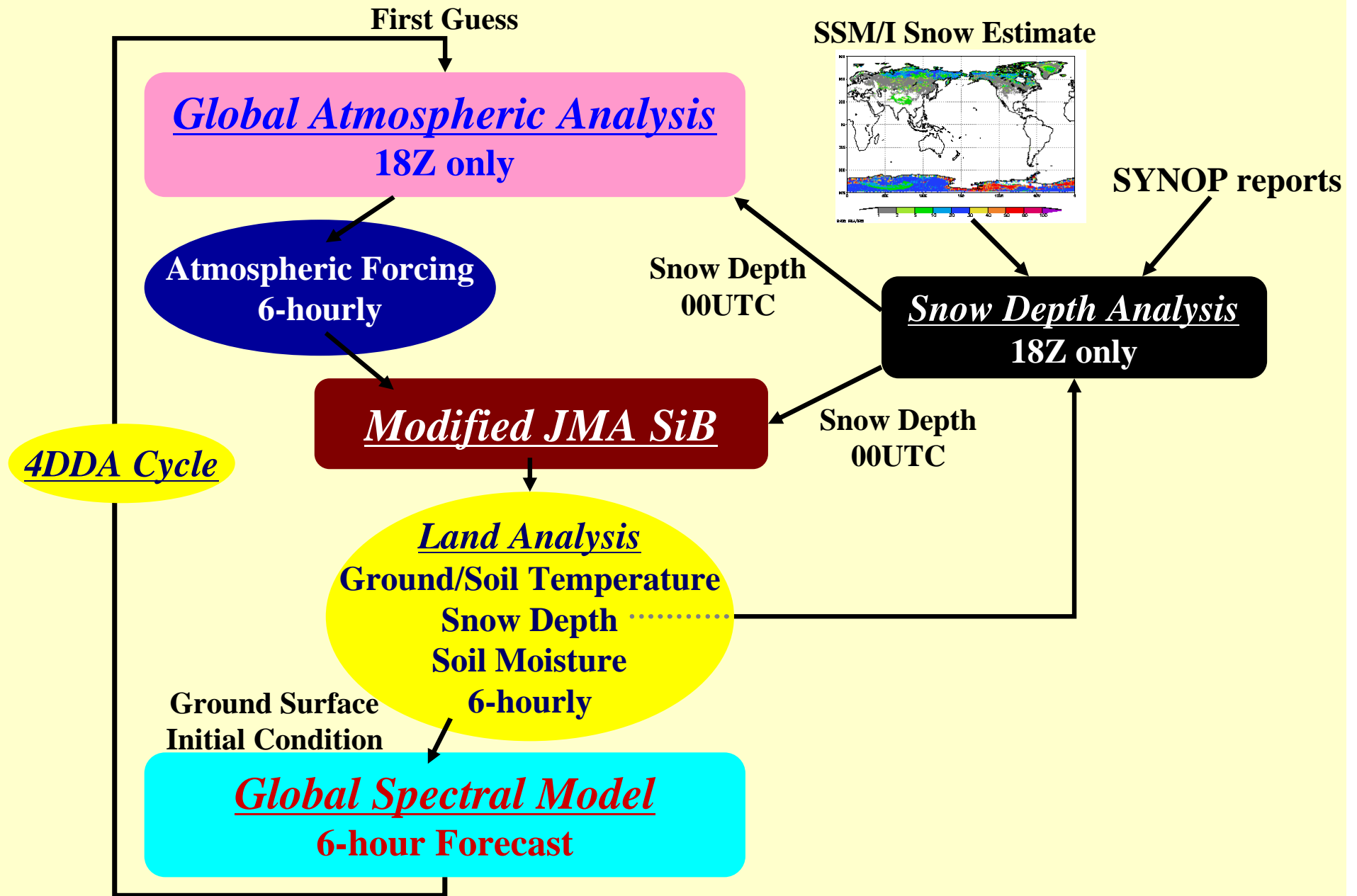
Kota_Bharu

in the eastern side of the Malaysia Peninsula

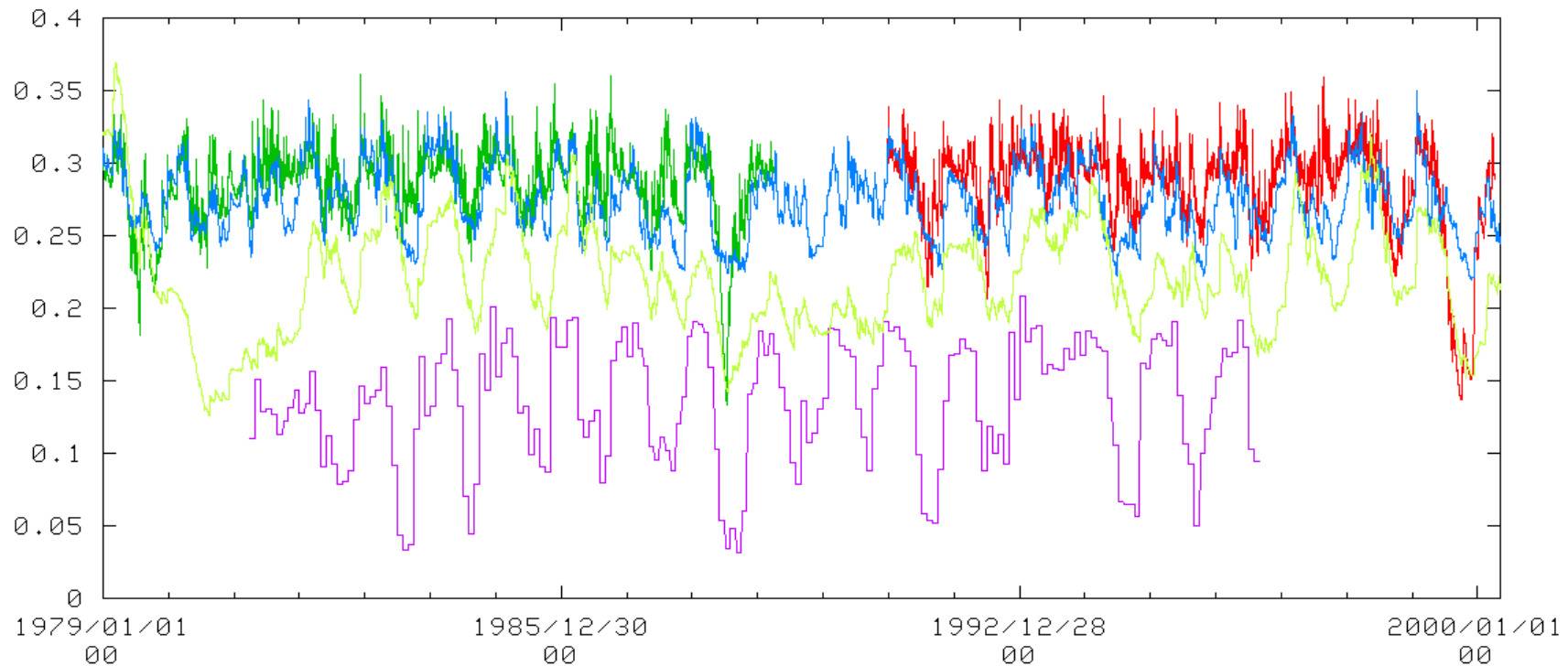
JRA-25



JMA SiB for JRA-25



JRA 25 Analysis Monitor Soil Wetness Surface Illinois (90W 88W,38N 42N)

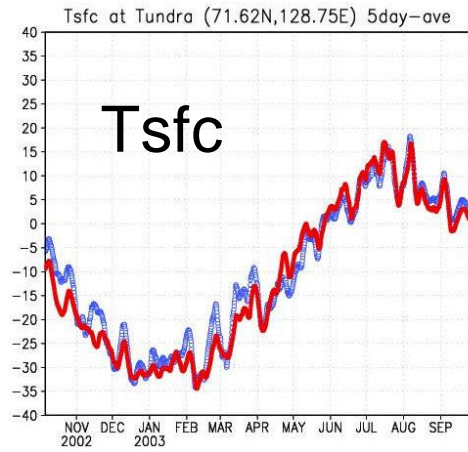


STAG ——— STB2 ——— er40 ——— ilob ——— nr-2 ———

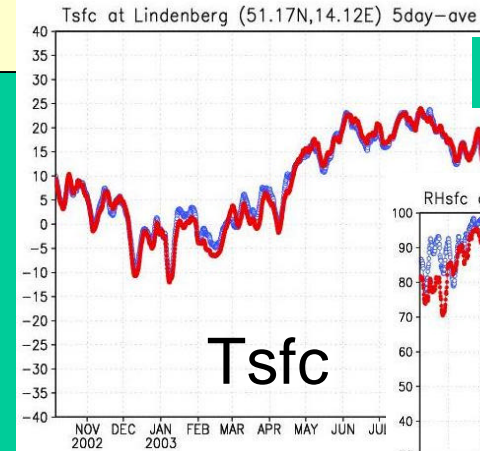
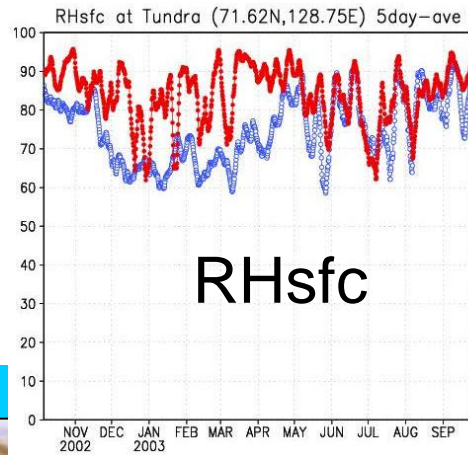
Intercomparison of Illinois Root-depth Soil Wetness

**Purple: Monthly observation (Hollinger et. al., 1994),
Green: JRA-25 Stream-B, Red: JRA-25 Stream-A,
Yellow: NCEP R-2, Cyan: ERA-40. The serious
droughts in 1988 and 1999 are well reproduced in
JRA-25.**

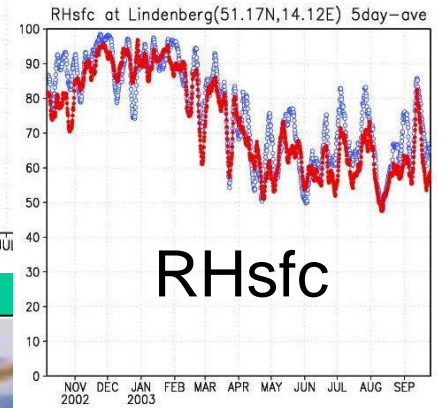
Comparison of JRA-25 with
CEOP surface data
(Oct. 2002 – Sep. 2003)



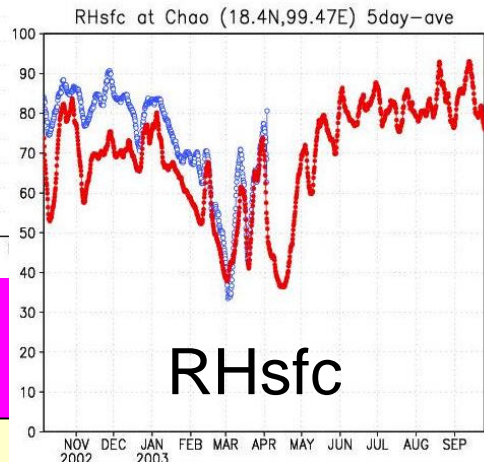
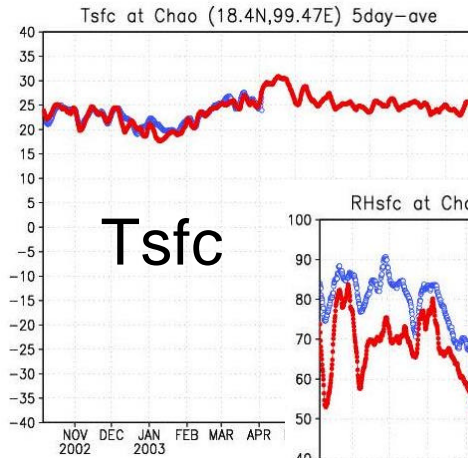
Eastern Siberian Tundra



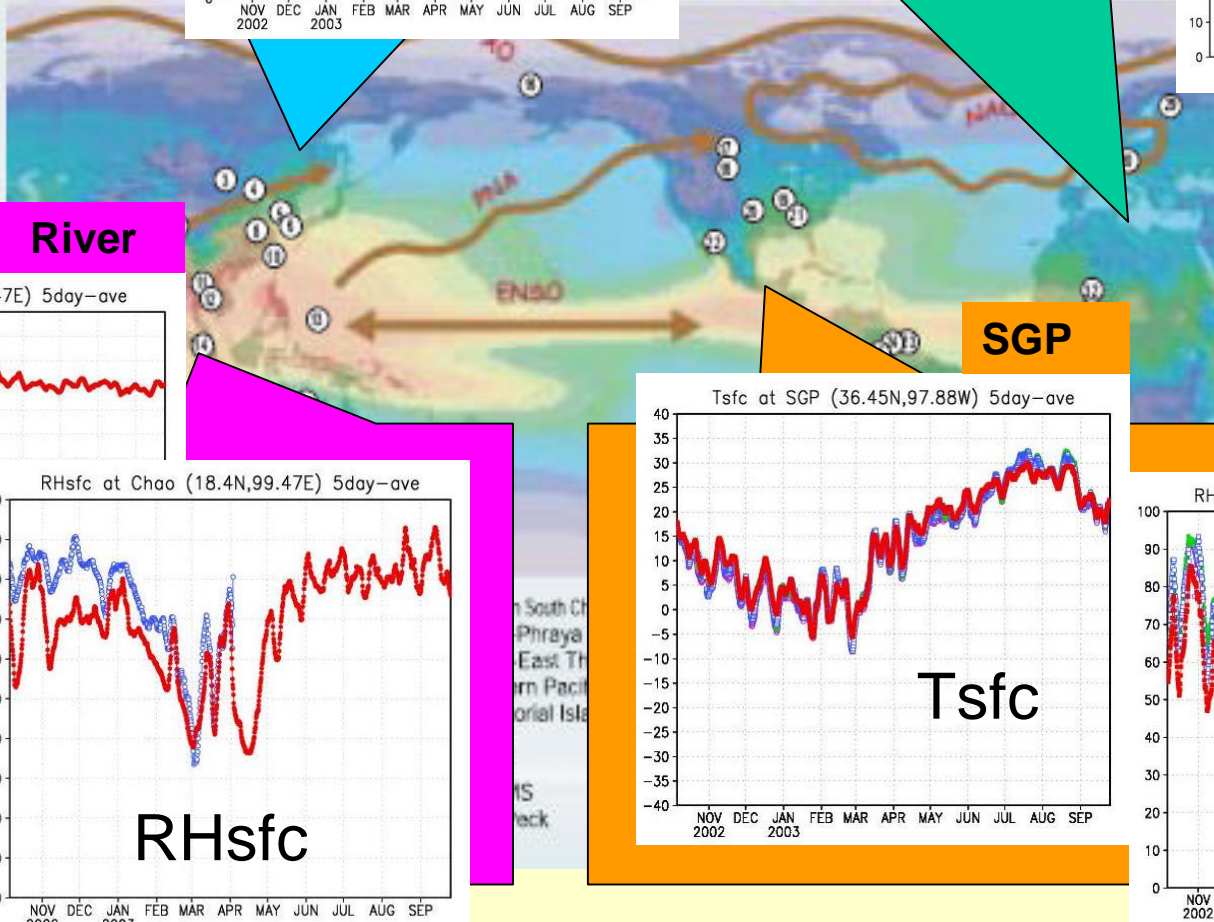
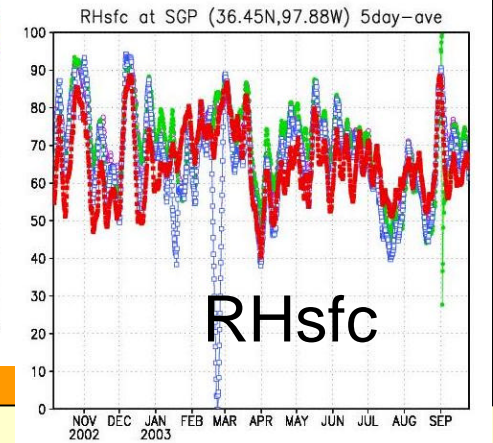
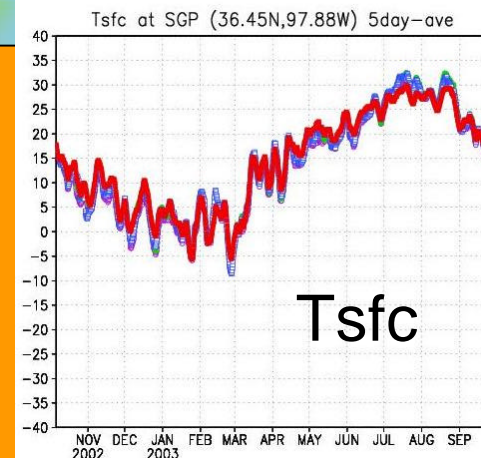
Lindenberg



Chao - Phraya River

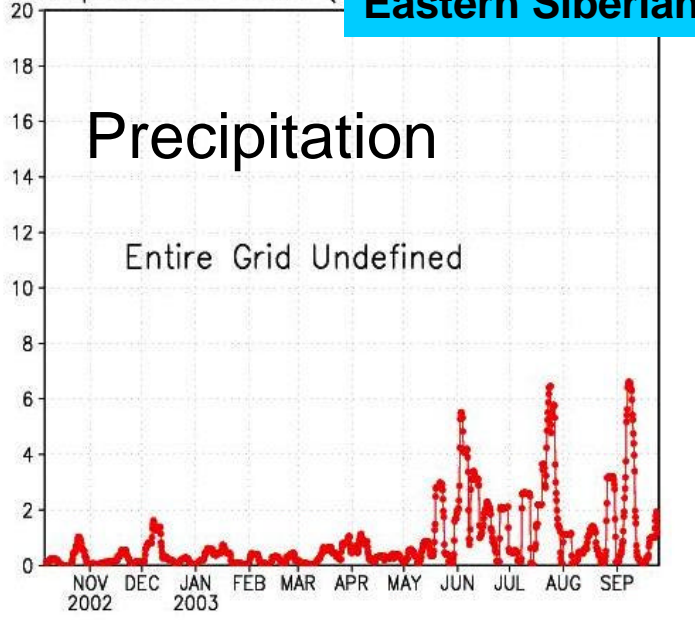


SGP



Precipitation at Tundra ()

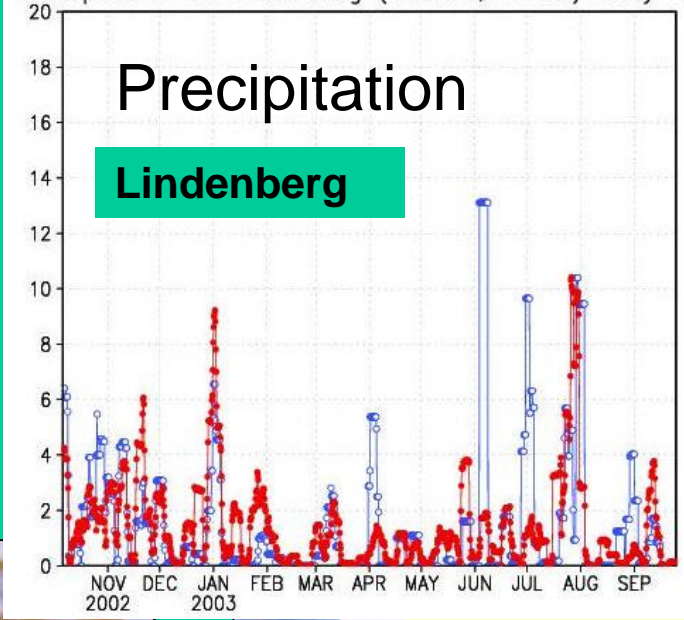
Eastern Siberian Tundra



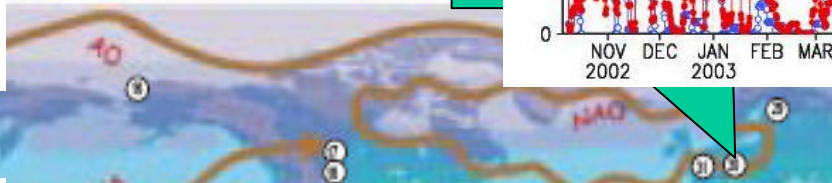
Precipitation at Lindenberg (51.17N,14.12E) 5day-ave

Precipitation

Lindenberg



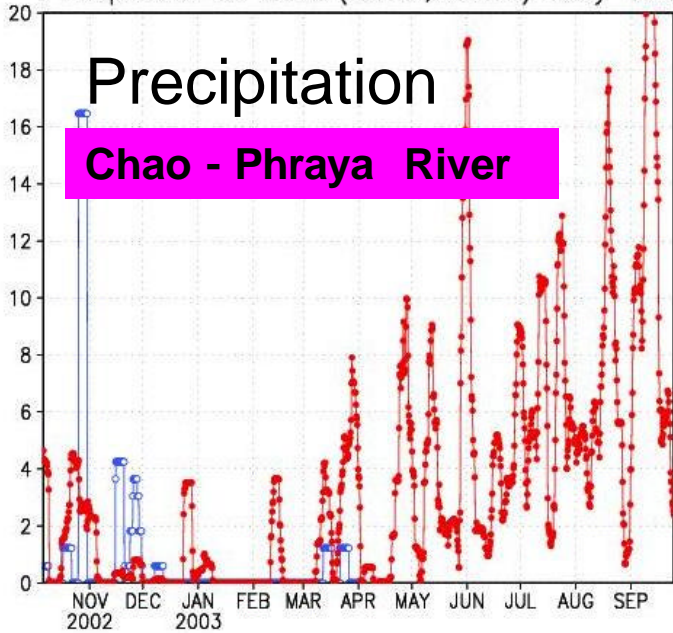
Reference S



Precipitation at Chao (18.4N,99.47E) 5day-ave

Precipitation

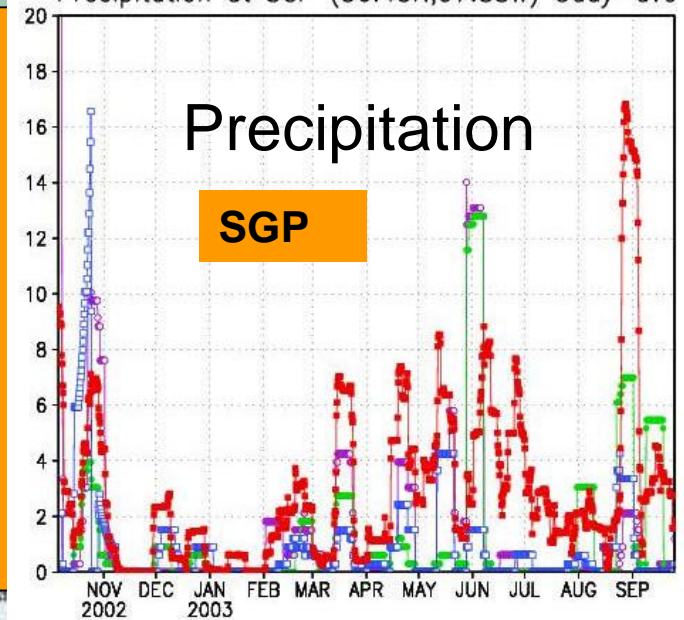
Chao - Phraya River

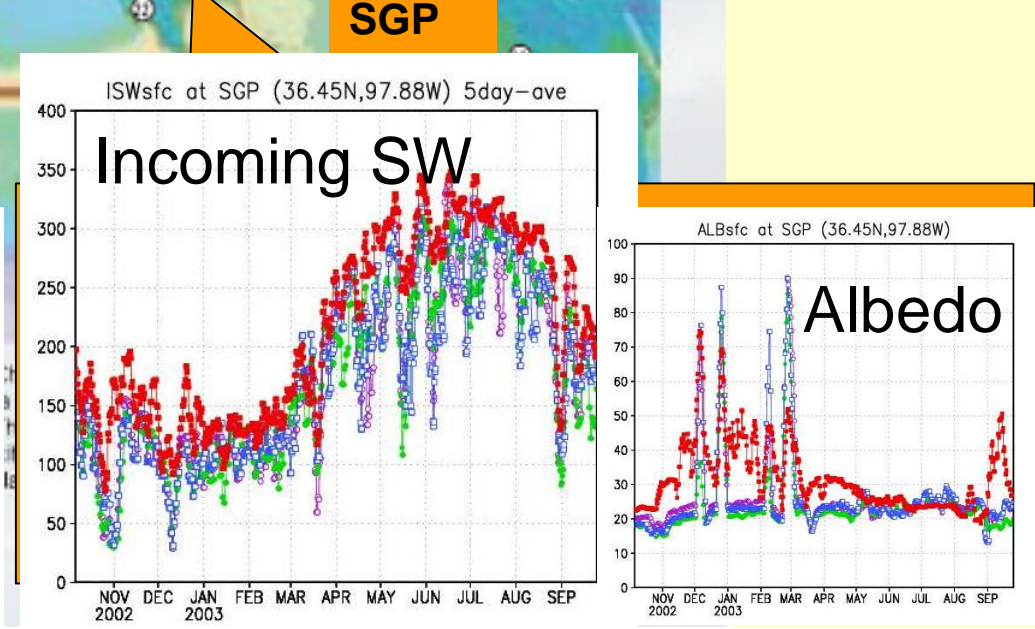
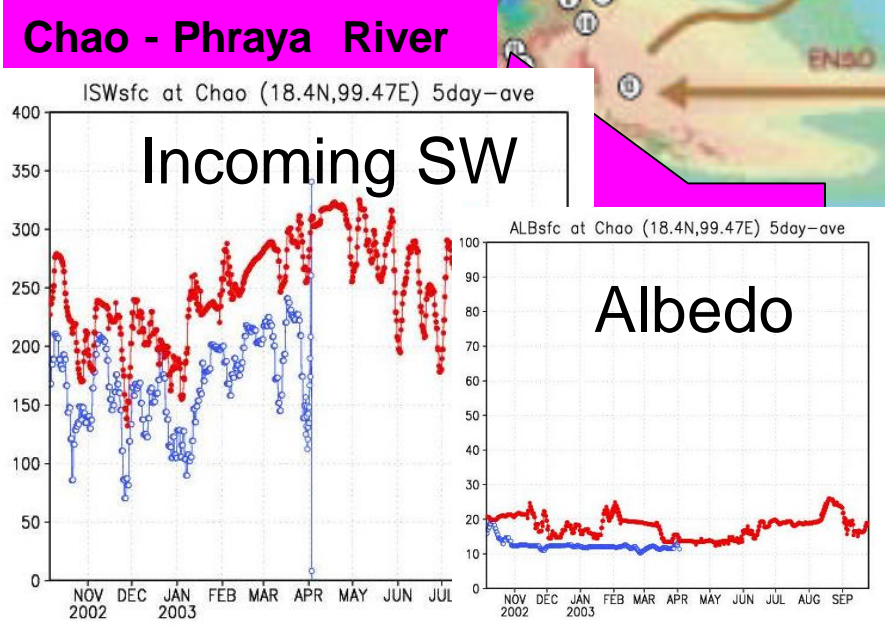
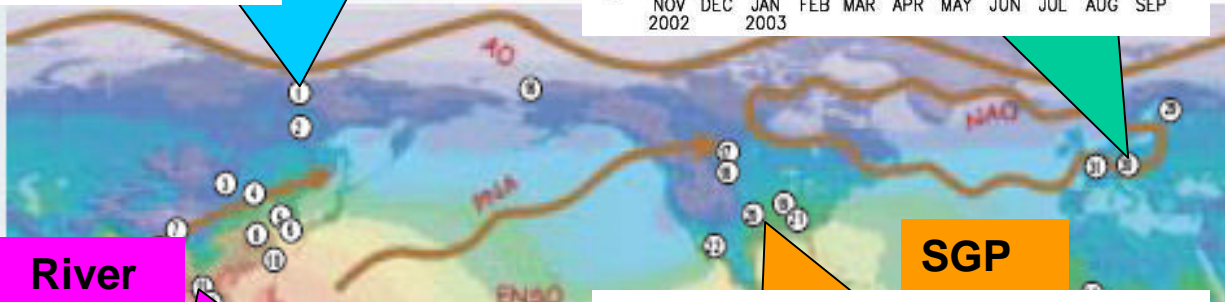
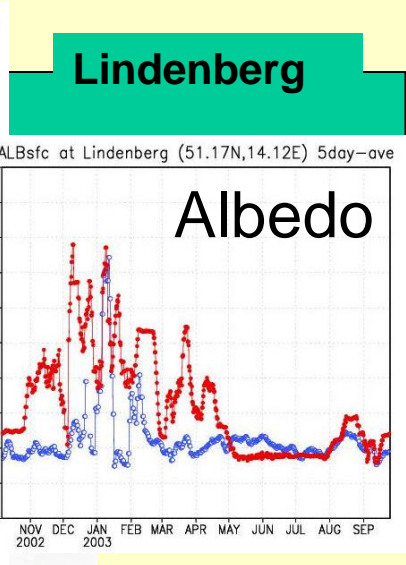
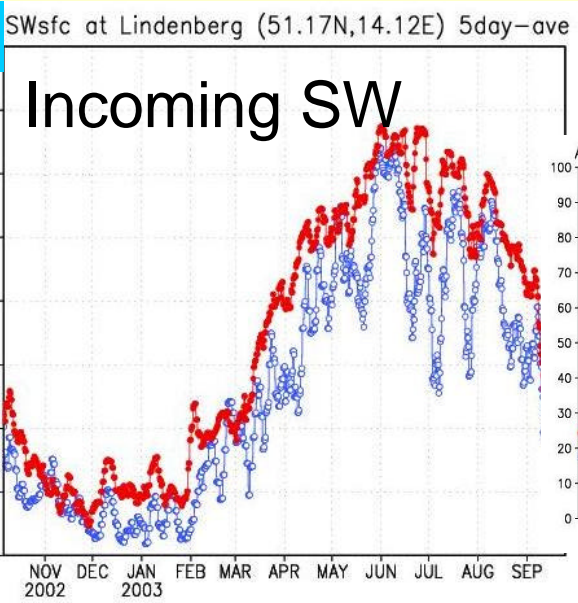
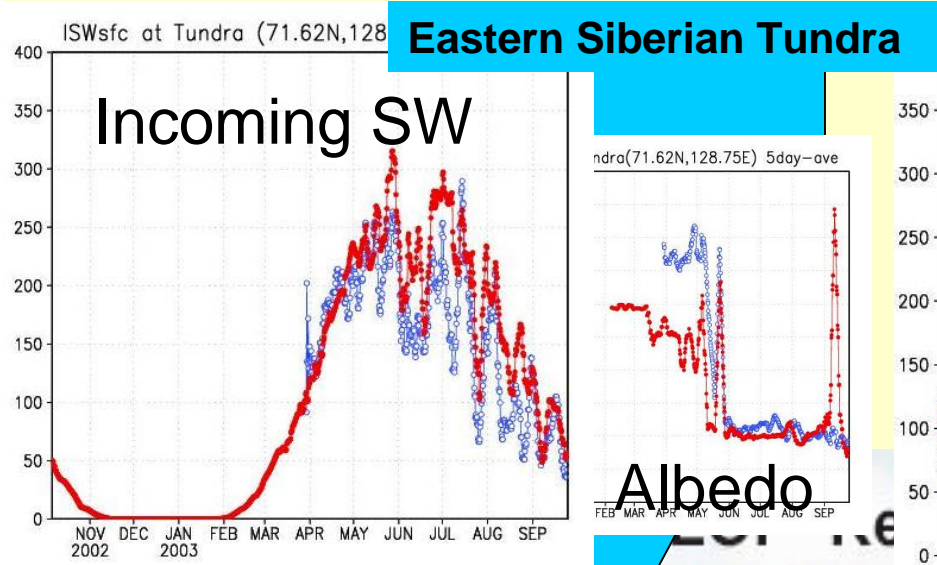


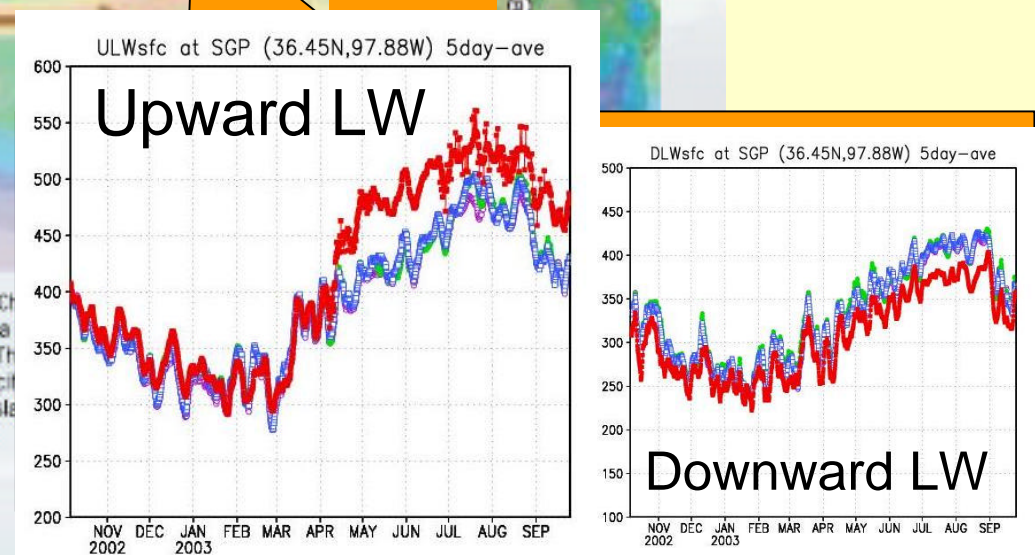
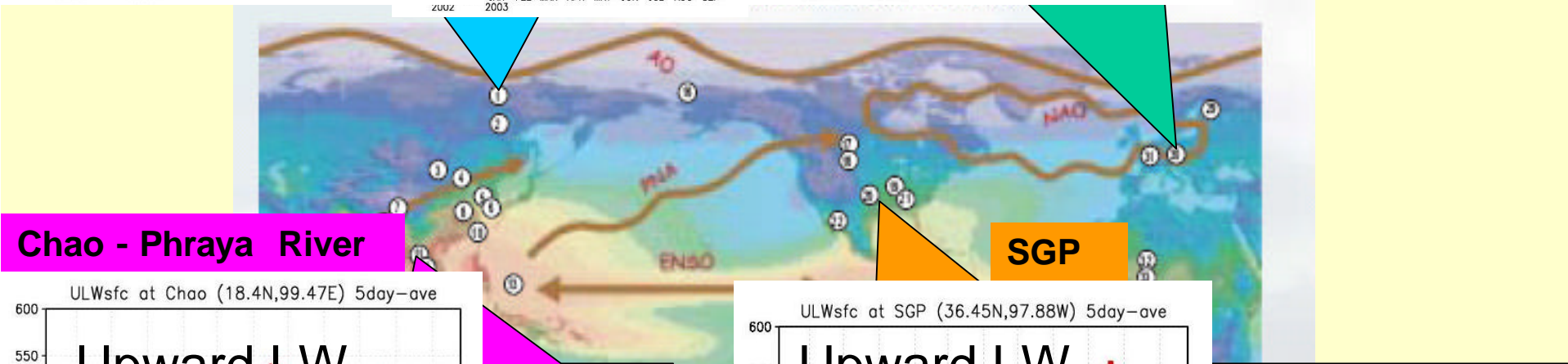
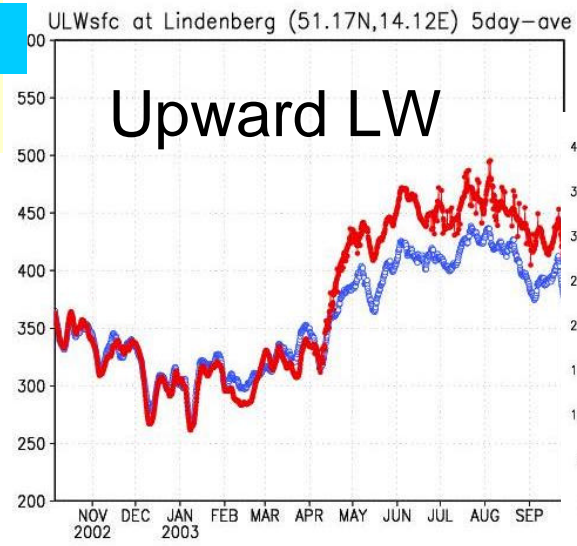
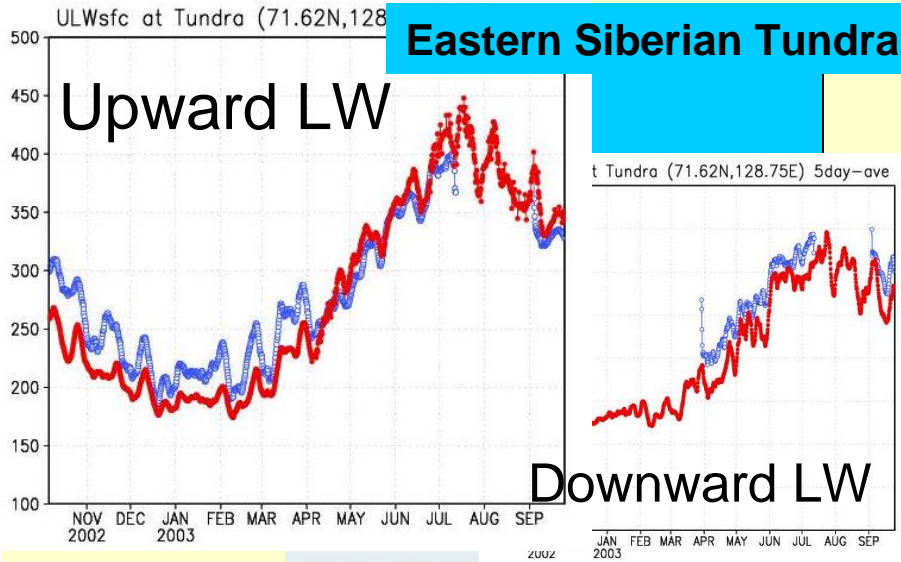
Precipitation at SGP (36.45N,97.88W) 5day-ave

Precipitation

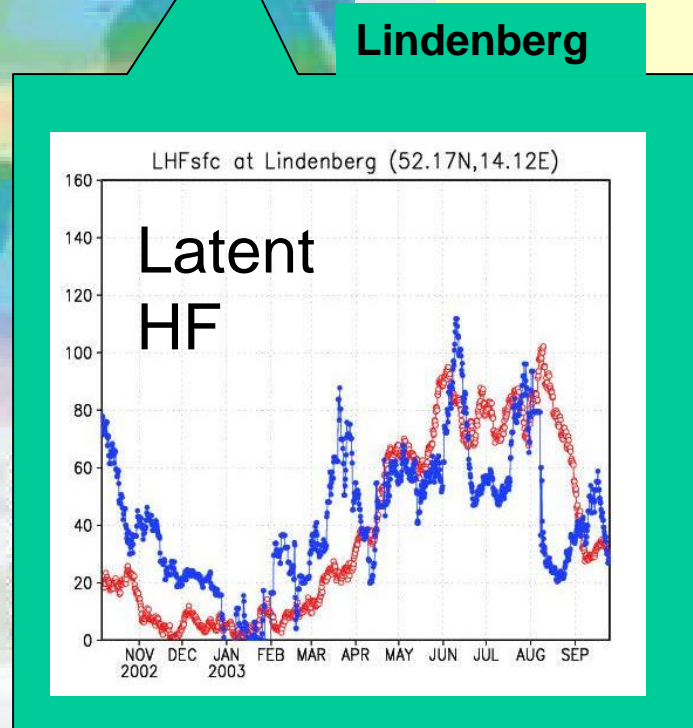
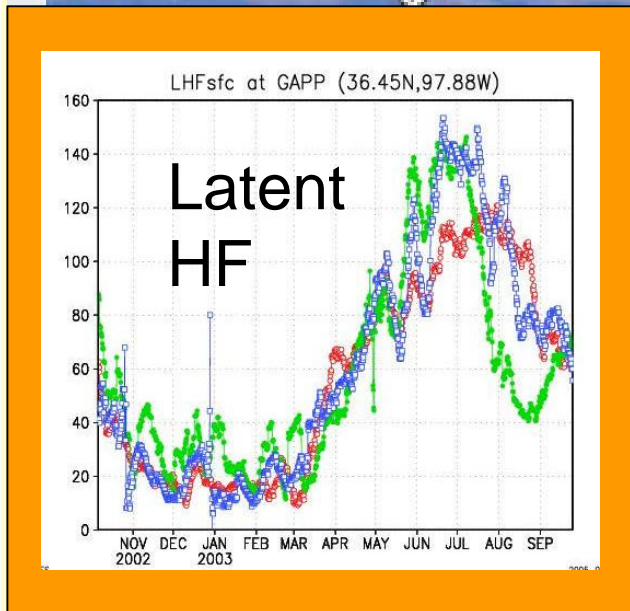
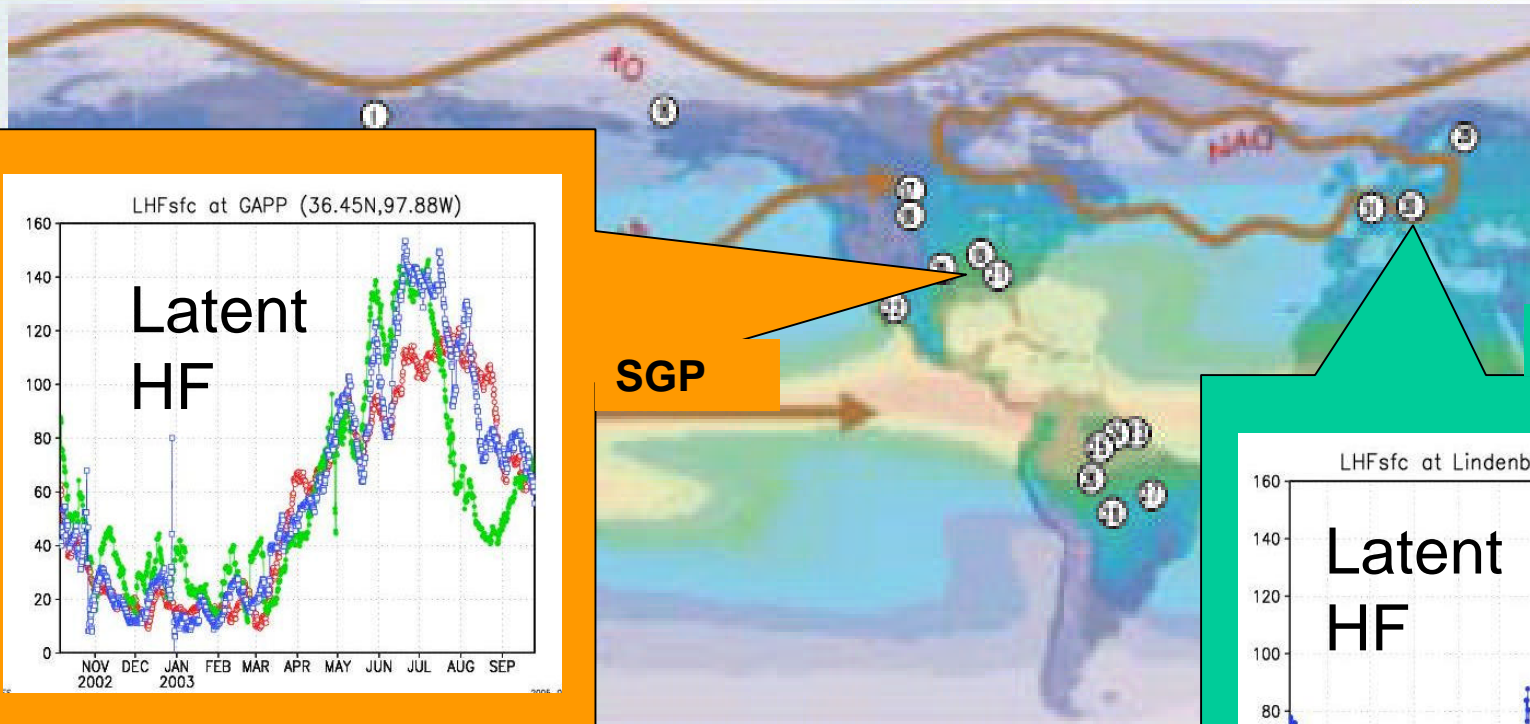
SGP







CEOP Reference Sites



- | | | |
|----------------------------|--|---------------|
| 1) Eastern Siberian Tundra | 10) Northern South China Sea- Southern Japan | 19) Bondville |
| 2) Eastern Siberian Taiga | 11) Chao-Phraya River | 20) SGP |
| 3) Mongolian | 12) North-East Thailand | 21) Oak Ridge |
| 4) Inner Mongolia | 13) Western Pacific Ocean | 22) AZ |
| 5) Korean Peninsula | 14) Equatorial Island | 23) Flora |
| 6) Korean Jeju | 15) TWP | 24) Santarem |
| 7) Tibet | 16) NSA | 25) Manaus |
| 8) Yangtze River | 17) BERMS | 26) Rondonia |
| 9) Himalayas | 18) Fort Peck | 27) Brasilia |

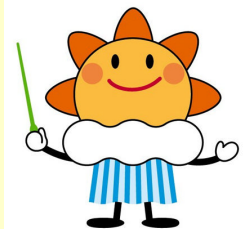
Summary

From March 2006 onward, JMA will start **quasi-real-time JMA CDAS** with the same system as that for JRA-25. These datasets will be available for CEOP community soon after the completion from University of Tokyo.

From the comparison with CMAP, GPCP and SYNOP, JRA-25 has advantages in the performance of **precipitation** inter-annually and climatologically.

Assimilated **soil wetness** is checked with the Illinois root-depth observation (Hollinger et al., 1994).

Serious droughts in 1988 and 1999 are well reproduced in JRA-25.



Conclusion

Comparison with CEOP for Oct. 2002-Sep. 2003
at Eastern Siberian Tundra (Tundra), Lindenberg, SGP and
Chao-Phraya River (Chao).

Daily precipitation

relatively consistent at Lindenberg, not at Chao

Low surface albedo at Tundra and High at Lindenberg

low snow albedo in JRA-25?

To be improved in the next reanalysis project JRA-50.

Large incoming SW, small downward LW at all points

small cloud amounts over land

Only annual cycle of LHF (and SHF) are comparable

To some extent

