



Information Server for the Global Soil Wetness Project Phase II

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***Institute of Industrial Science, University of Tokyo**

Asian Water Cycle Symposium, Nov. 3rd, U of Tokyo, Japan

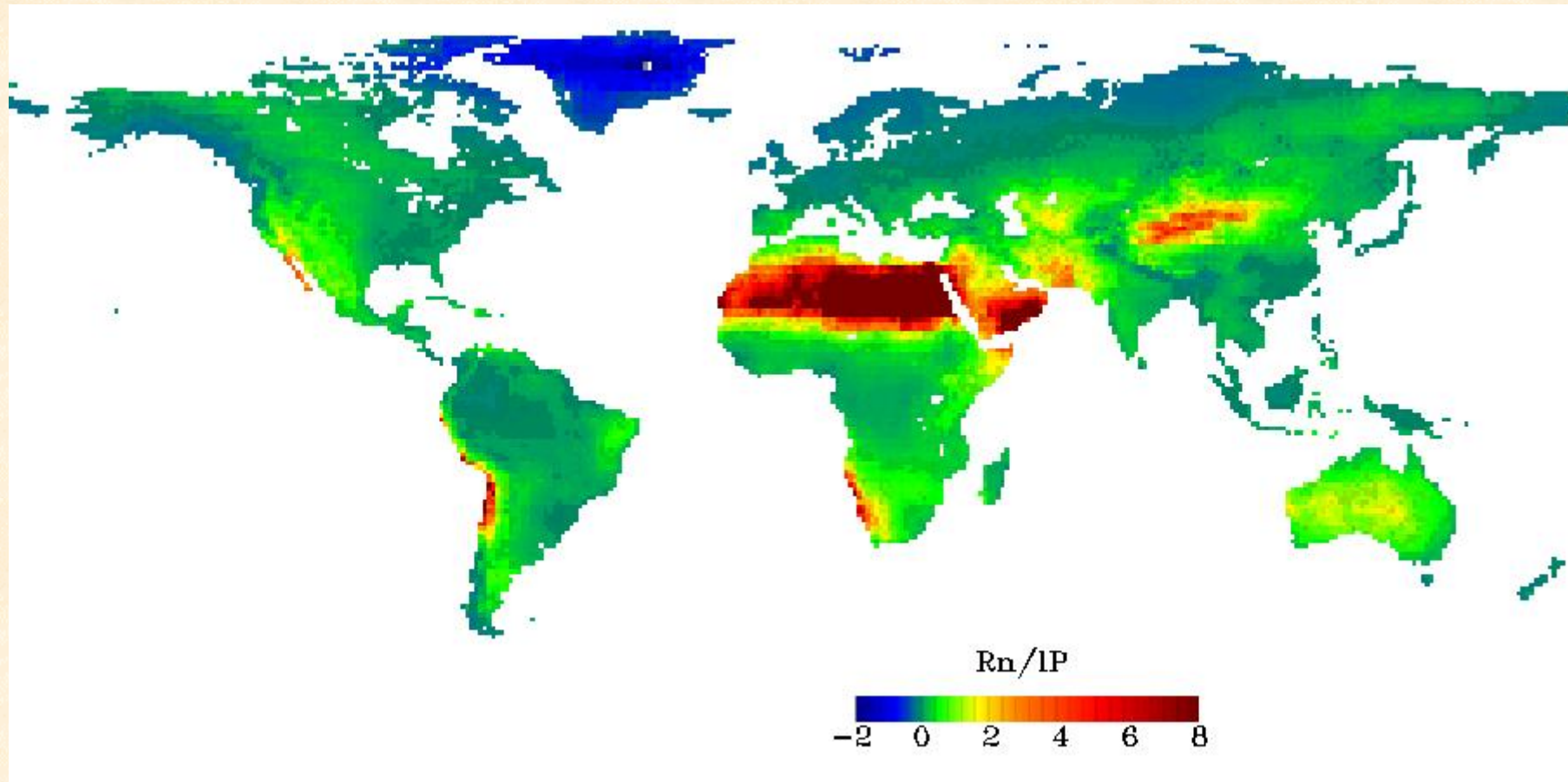


One of the Goals of the GSWP2

- ◆ Produce the “best” global data sets of soil moisture, surface fluxes, and related hydrologic quantities (including runoff) for 1986-1995 with 1x1 degree grid spacing considering the uncertainties associated with
 - ✓ Land surface models: more than 20 LSMs
 - ✓ Model parameters: 2 kinds of vegetation etc.
 - ✓ Forcing data: 3 kinds of reanalysis data, corrected precipitation, etc.
 - ✓ Temporal and spatial scales to run LSMs

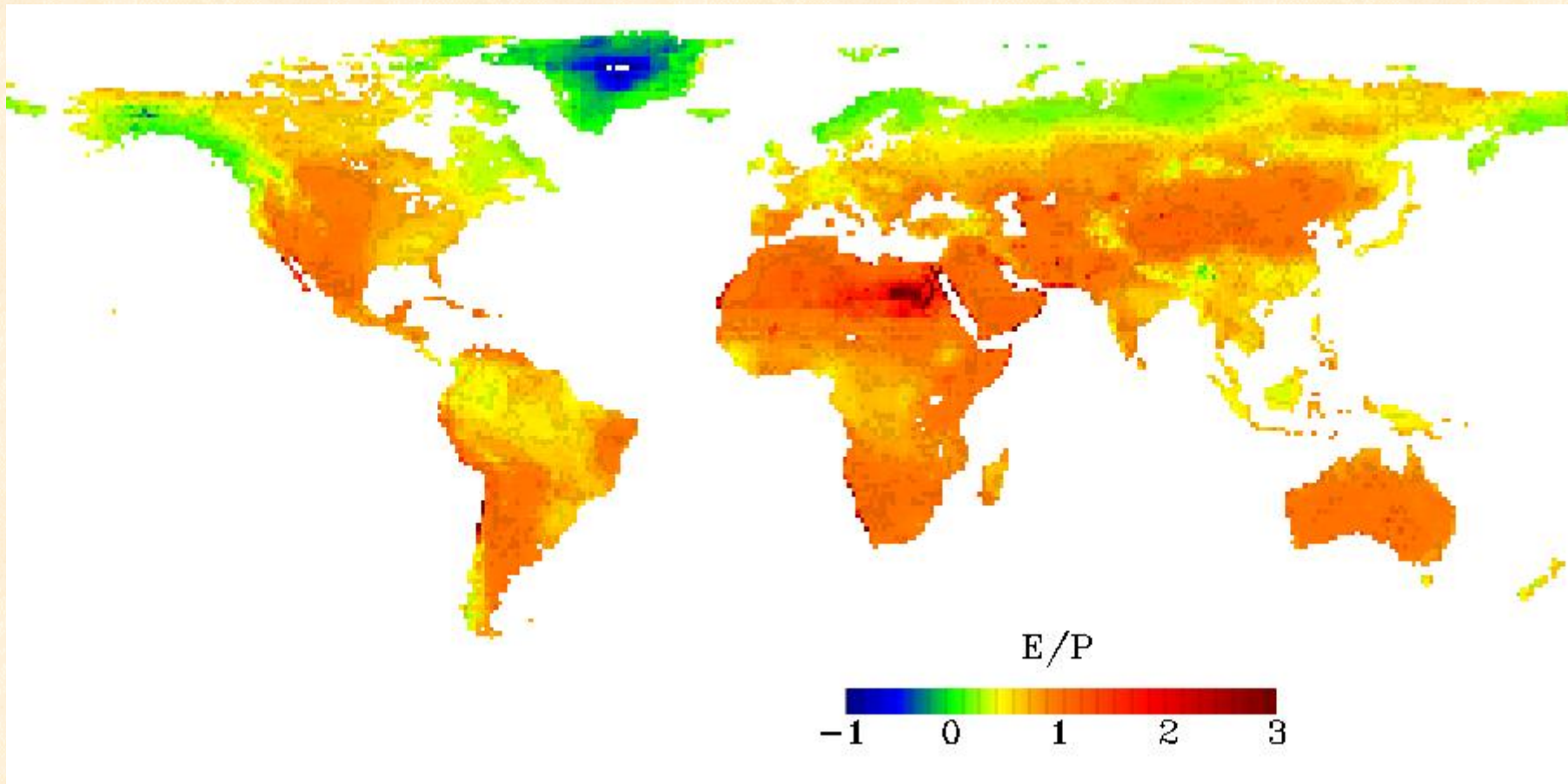


Net radiation to Precipitation ratio (Rn/IP)



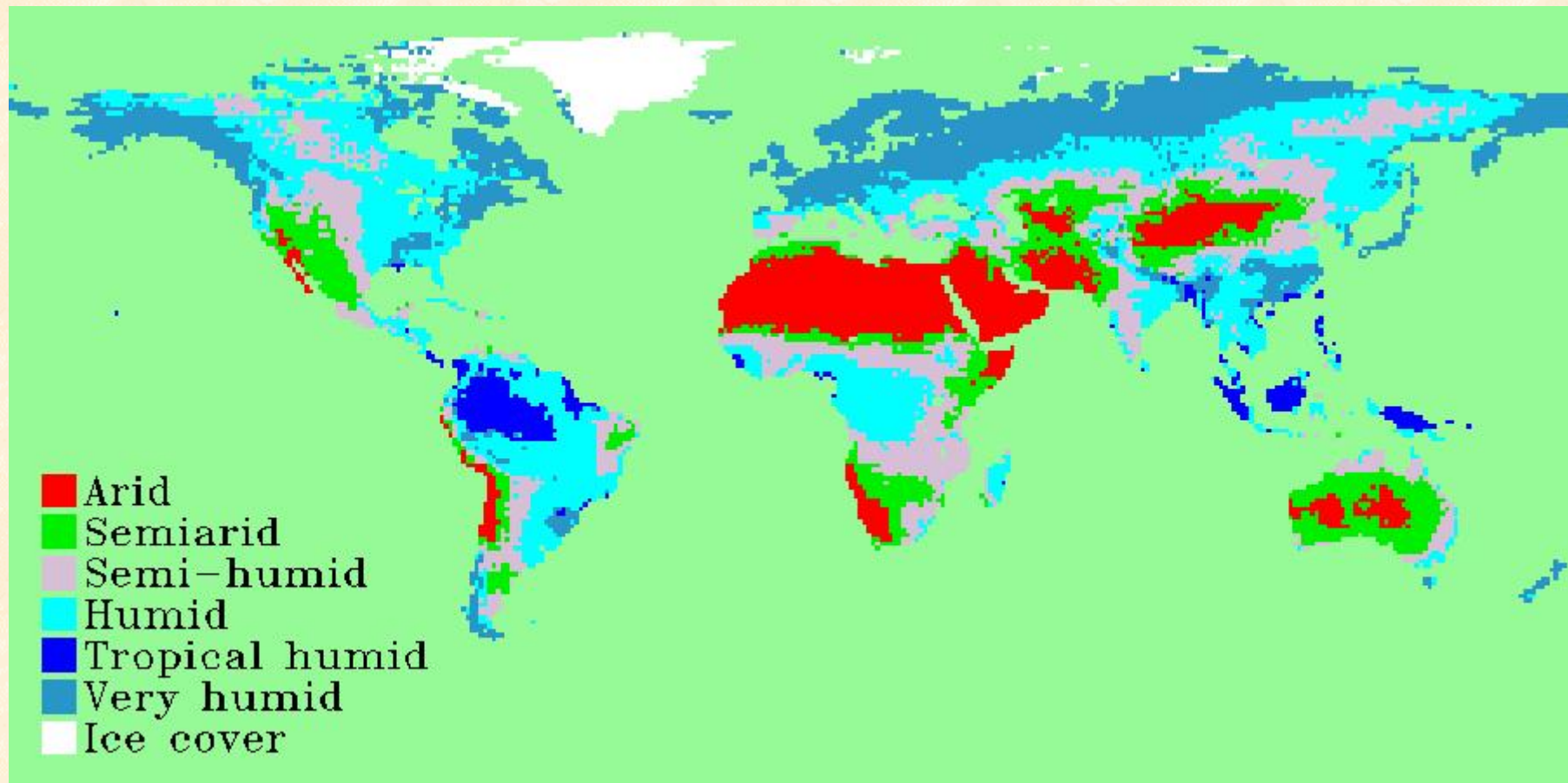


Evapotranspiration to precipitation ratio (E/P)





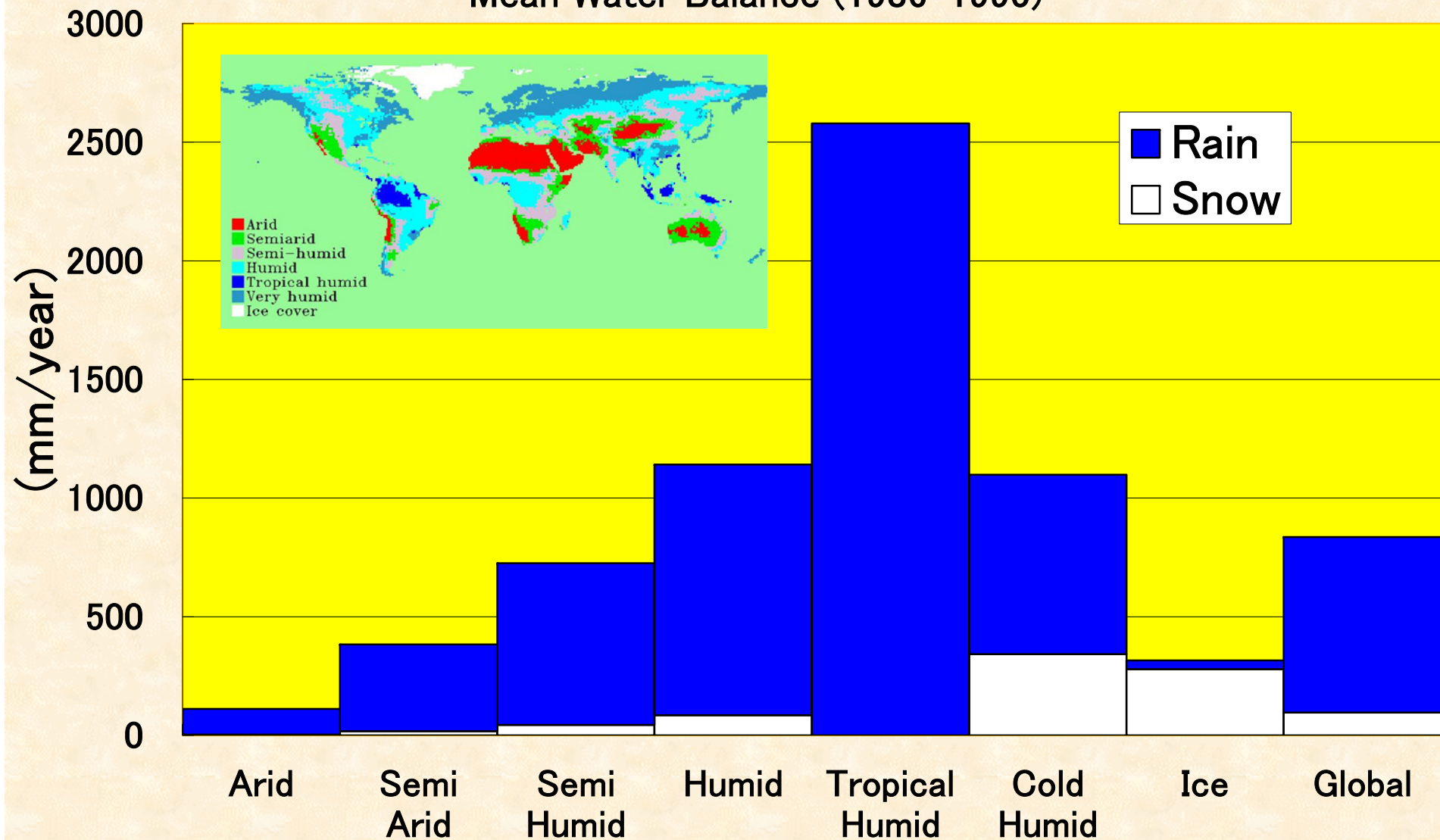
Climatic Zones delineated by Budyko's Aridity Index (BAI)





Mean Annual Precipitation

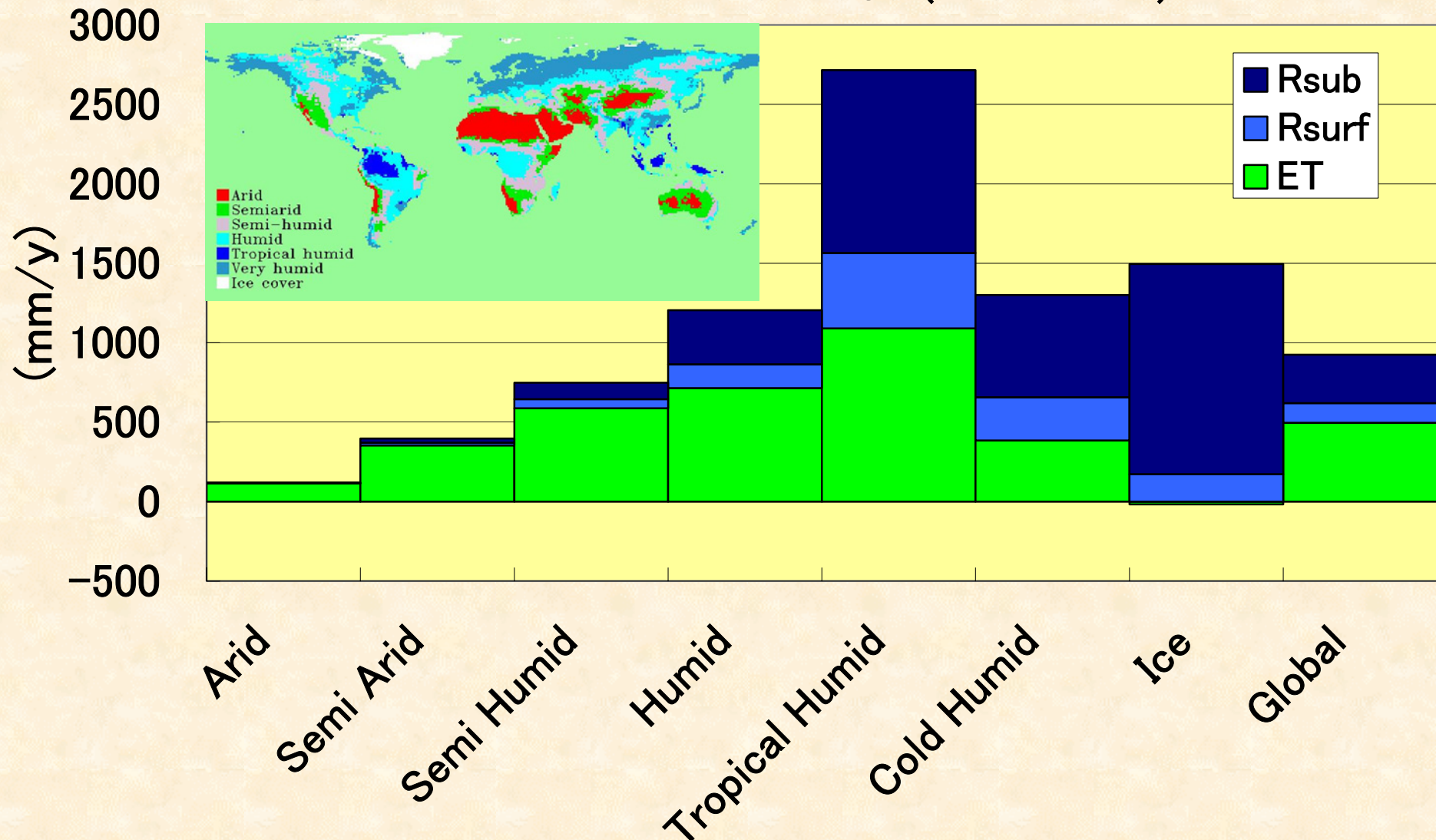
Mean Water Balance (1986–1995)





Mean Water Balance (mm/y)

Water Flux from Land Surface (1986–1995)





GSWP2-ICC:

Data viewer & data distributor

- ◆ Work with your internet browser

<http://gswp2.tkl.iis.u-tokyo.ac.jp/gswp2/>

- ◆ Developed by Drs. E. Ikoma and M. Yasukawa

- ◆ Three interfaces

1. Data visualization on scratch pad

- ◆ Simple, high response, and easy-to-use viewer

2. Time sequential comparison

- ◆ For time series comparison at a grid point

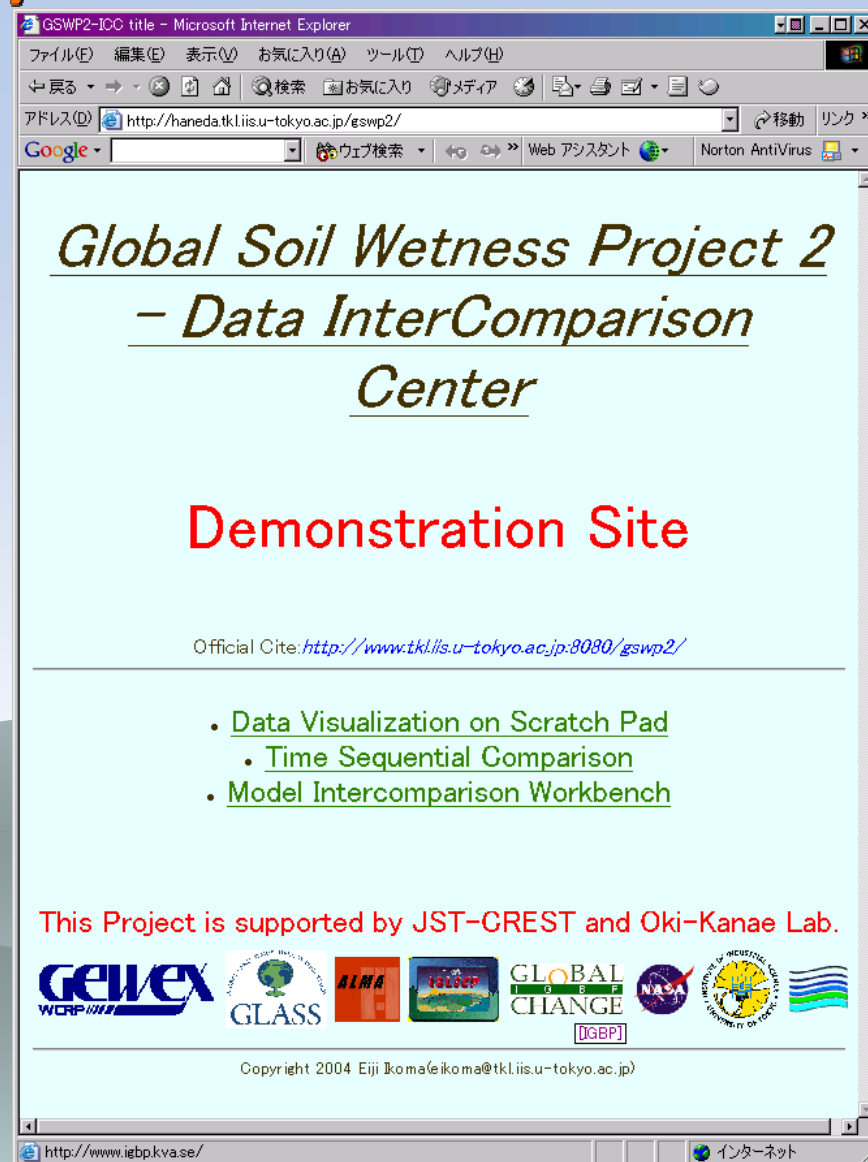
3. Model inter-comparison workbench

- ◆ Matrix type viewer for model inter-comparison

- ◆ Prototype is introduced for B0 run outputs



<http://gswp2.tkl.iis.u-tokyo.ac.jp/gswp2/>



SGI ONYX4
UltimateVision



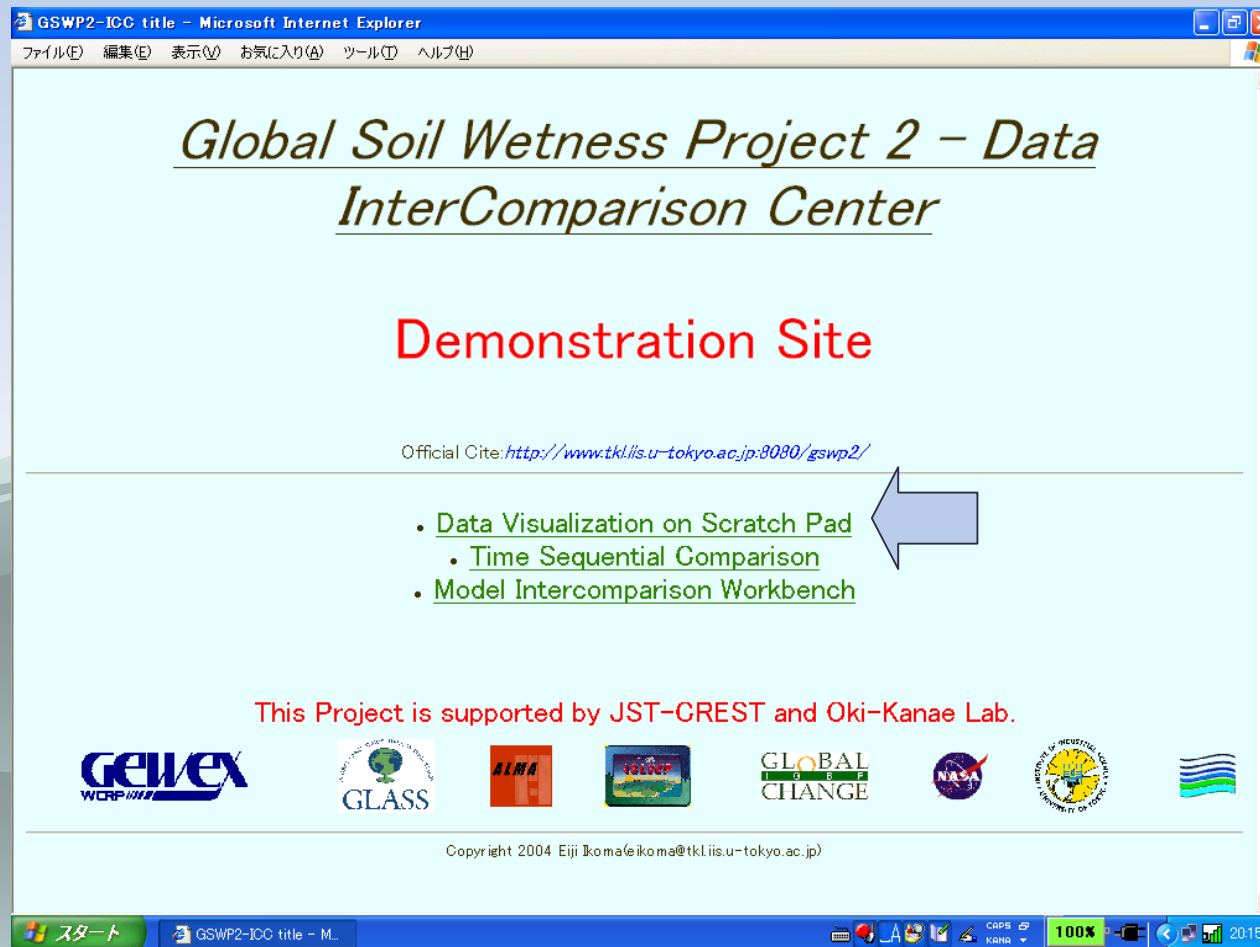
Approximately
0.7 PB of
Data Archiver

GSWP2-ICC/DDC
Toppage

<http://gswp2.tkl.iis.u-tokyo.ac.jp/gswp2/>



1. Data visualization on scratch pad



Select “data visualization on scratch pad”



Data visualization on scratch pad

GSWP2 top - 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)

GSWP2 ICC

Data Visualizaion on Scratch Pad

Variable **Model** **Period** **Location**

Variable: SWnet

Model: ☒ BUCKETIIS ☐ LaD ☐ MOSE ☐ NSIP ☐ SIBUC ☐ SSIBCOLA ☐ VISA ☐ SWAP ☐ NOAH ☐ CLM ☐ IS9A ☐ GISS

Period: Year-Month-Day 1986 0 0

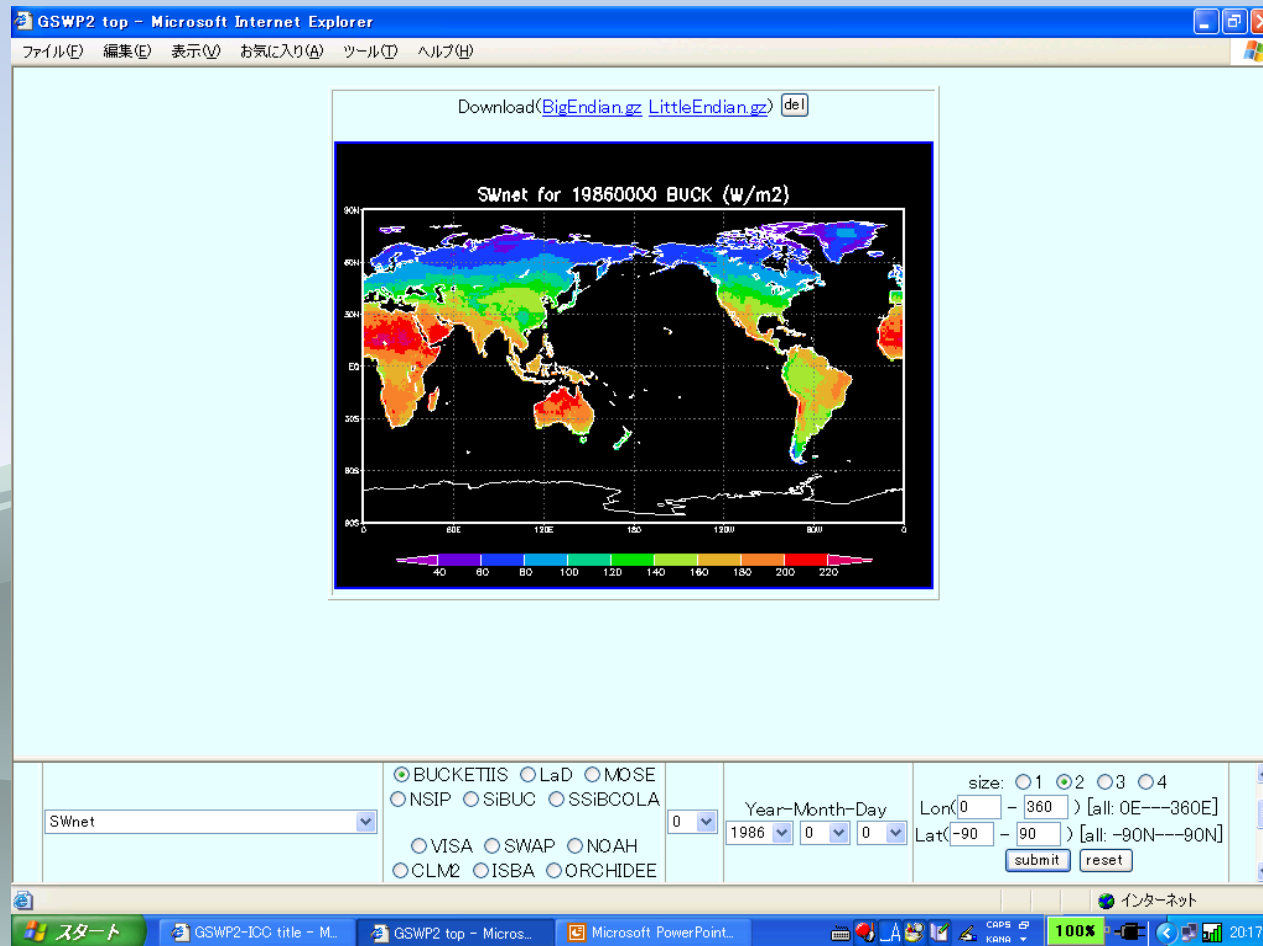
Location: size: ☐ 1 ☒ 2 ☐ 3 ☐ 4
Lon(0 - 360) [all: 0E---360E]
Lat(-90 - 90) [all: -90N---90N]

submit reset

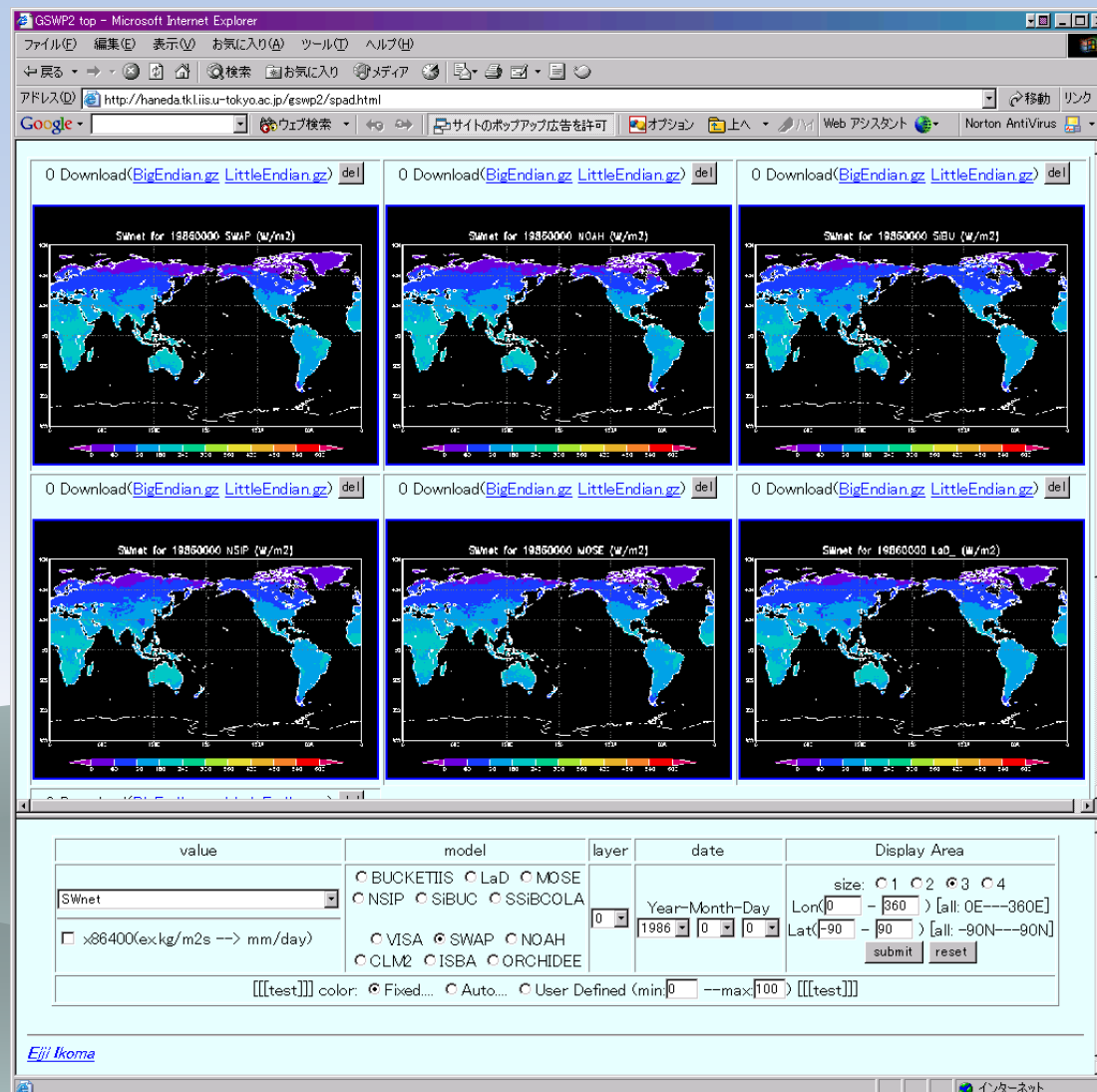
Select variable, model, period and location



Data visualization on scratch pad



Selected data appears on the screen as a contour map₁₂



◆ Time step:

- ❖ Daily
- ❖ Monthly mean
- ❖ Annual mean

◆ Color bar:

- ❖ Automatic
- ❖ User specified max. and min.

◆ 4 figure sizes

◆ Unit conversion from kg/m²/s to mm/day

You can display several figures at once
⇒ you can compare between variables/models



<http://gswp2.tkl.iis.u-tokyo.ac.jp/gswp2/>



GSWP2 top - Microsoft Internet Explorer

Download(BigEndian.gz LittleEndian.gz) del

Download(BigEndian.gz LittleEndian.gz) del

Download(BigEndian.gz LittleEndian.gz) del

Qle for 19860000 NOAH (W/m²)

Qle for 19860000 SWAP (W/m²)

Qle for 19860000 MOSE (W/m²)

ファイルのダウンロード

ファイルによっては、コンピュータに問題を起こす可能性があります。
以下のファイル情報に関して疑わしい点がある場合や、発信元が完全に信用できない場合は、このファイルを開いたり保存したりしないでください。

ファイル名: 0300NOAH_B0_19860000.one
ファイルの種類:
発信元: haneda.tkl.iis.u-tokyo.ac.jp

ファイルを開くか、ファイルをコンピュータに保存するか選択してください。

開く(O) 保存(S) キャンセル 詳細情報(M)

☒ この種類のファイルであれば常に警告する(W)

Qle

BUCKETIIS LaD MOSE
NSIP SiBUC SSIBCOLA
VISA SWAP NOAH
CLM2 ISRA ORCHIDEE

Year-Month-Day
1986 0 0

size: 1 2 3 4
Lon(0 - 360) [all: 0E---360E]
Lat(-90 - 90) [all: -90N---90N]
submit reset

インターネット

スタート GSWP2-IOC titl... GSWP2 top - ML... ファイルのダウンロ... Microsoft Power... CAPS KANA 100% 20:46

You can download the selected data, as well.
(big or little endian, compressed binary file)



2. Time sequential comparison

GSWP2-ICC title - 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)

Global Soil Wetness Project 2 - Data InterComparison Center

Demonstration Site

Official Site: <http://www.tkl.iis.u-tokyo.ac.jp:8080/gswp2/>

- [Data Visualization on Scratch Pad](#)
- [Time Sequential Comparison](#)
- [Model Intercomparison Workbench](#)

This Project is supported by JST-CREST and Oki-Kanae Lab.

GEWEX WCRP GLASS ALMA GSWP2 GLOBAL CHANGE NASA UNIVERSITY OF TOKYO

Copyright 2004 Eiji Ikoma (eikoma@tkl.iis.u-tokyo.ac.jp)

スタート GSWP2-ICC title - M... 100% 20:15

Select “Time sequential comparison”



Time sequential comparison

GSWP2 top - Microsoft Internet Explorer

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

GSWP2 ICC-Time Series Comparison

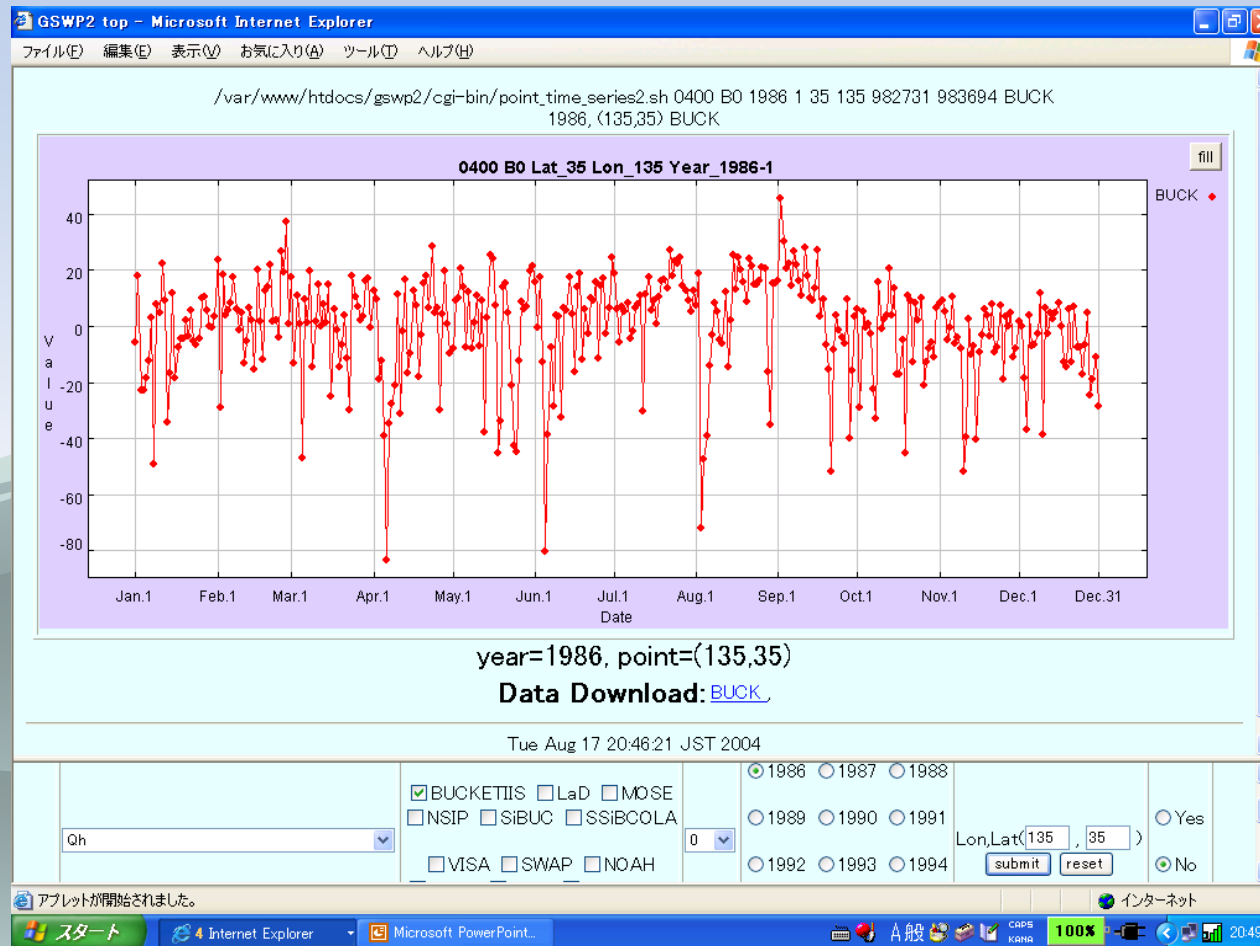
Variable	Model	Period	Location
SWnet	☒ BUCKETIIS ☐ LaD ☐ MOSE ☐ NSIP ☐ SIBUC ☐ SSIBCOLA ☐ VISA ☐ SWAP ☐ NOAH	☒ 1986 ☐ 1987 ☐ 1988 ☐ 1989 ☐ 1990 ☐ 1991 ☐ 1992 ☐ 1993 ☐ 1994	Lon, Lat(135, 35) ☐ Yes ☒ No submit reset

スタート Internet Explorer Microsoft PowerPoint...

Select variable, model, period and location
(Common interface)



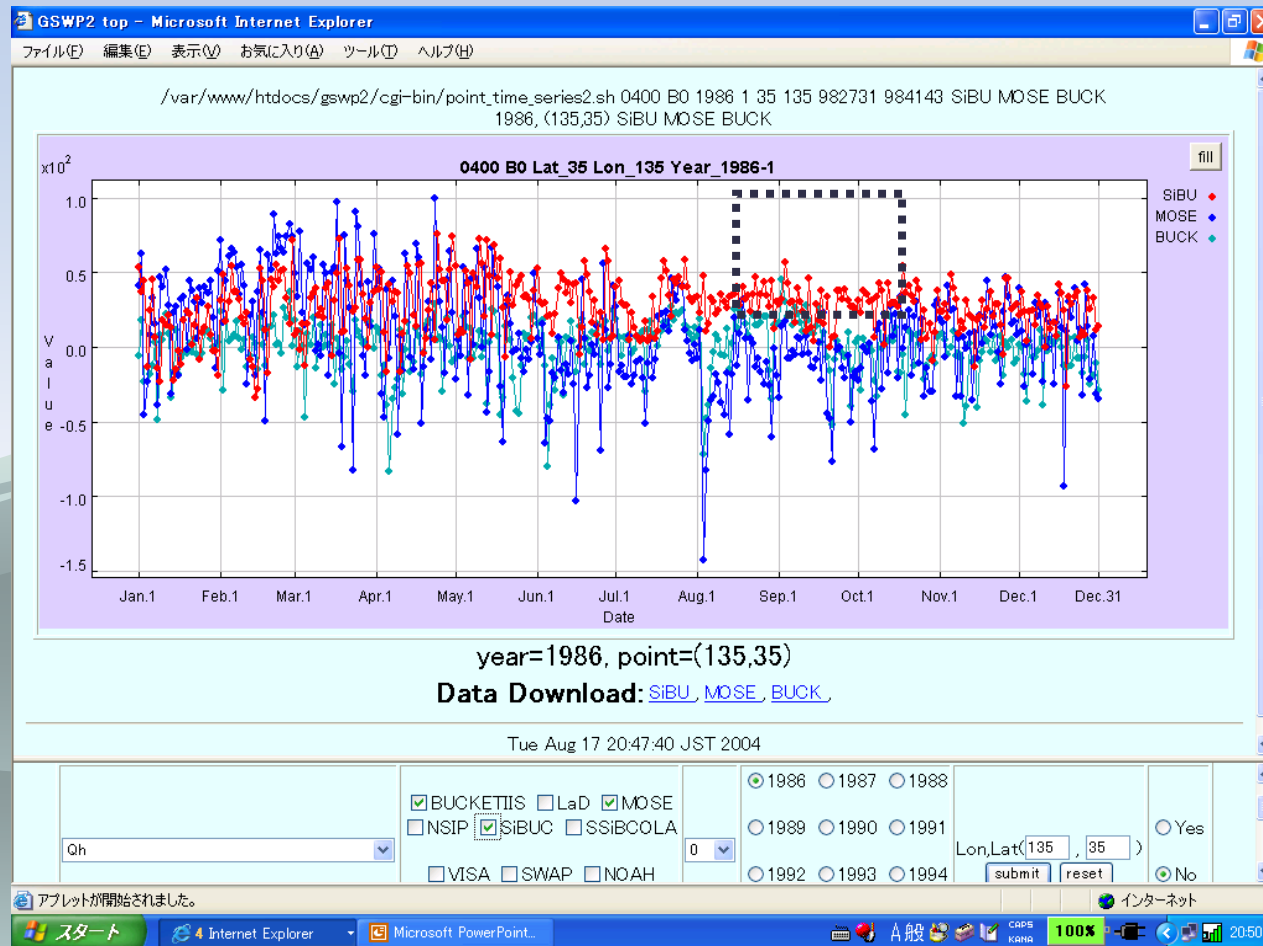
Time sequential comparison



Time series (one year) appear on screen



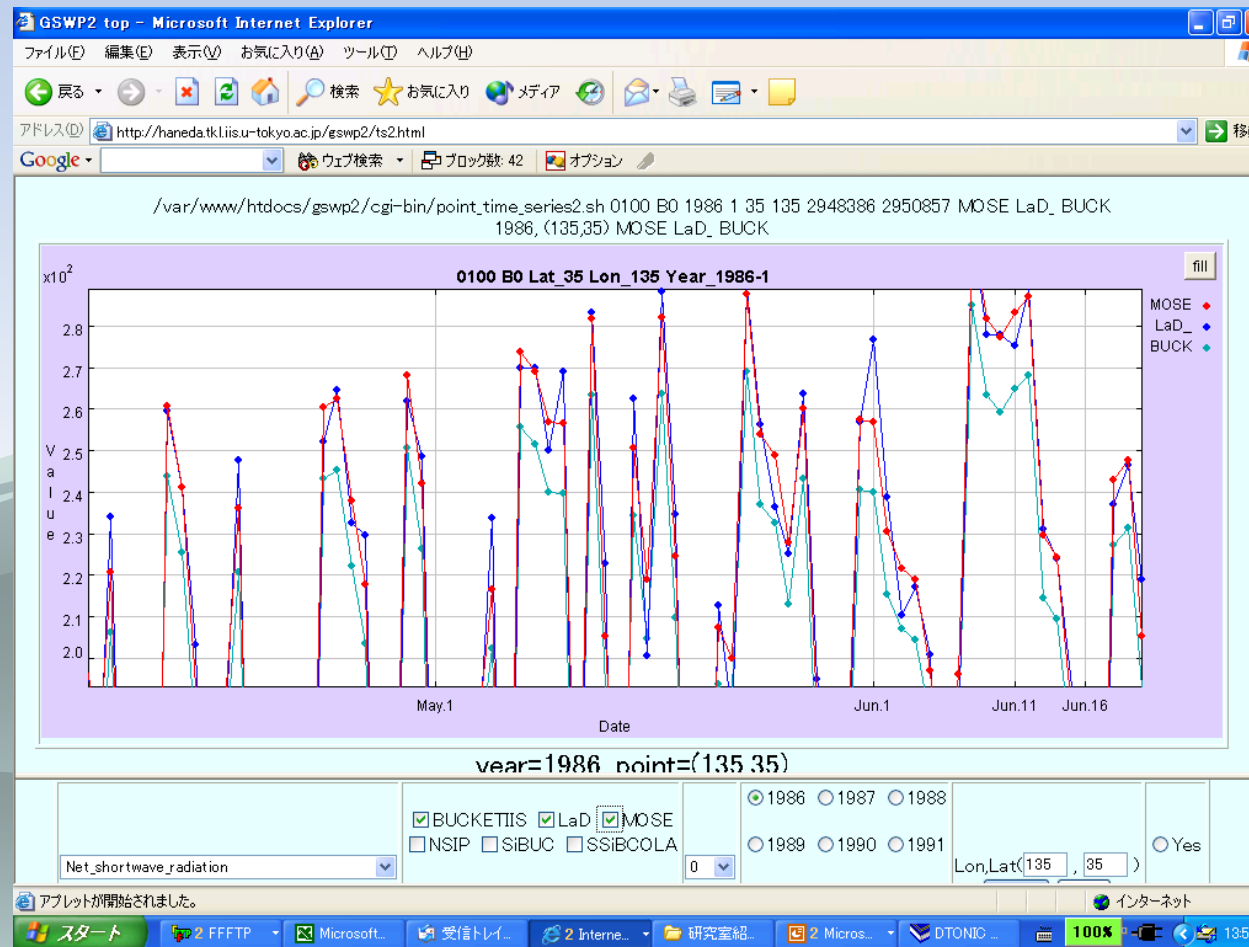
Time sequential comparison



You can overlay several models



Time sequential comparison

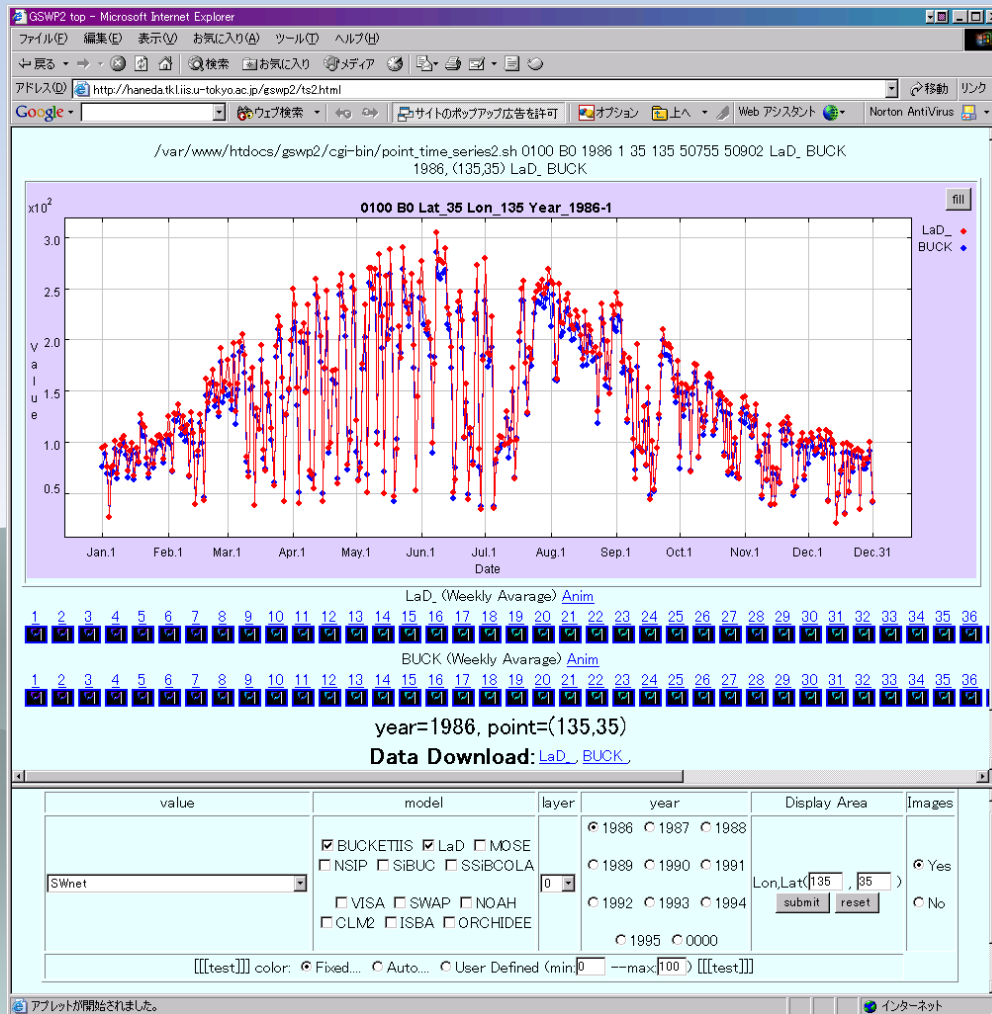


You can have a closer look



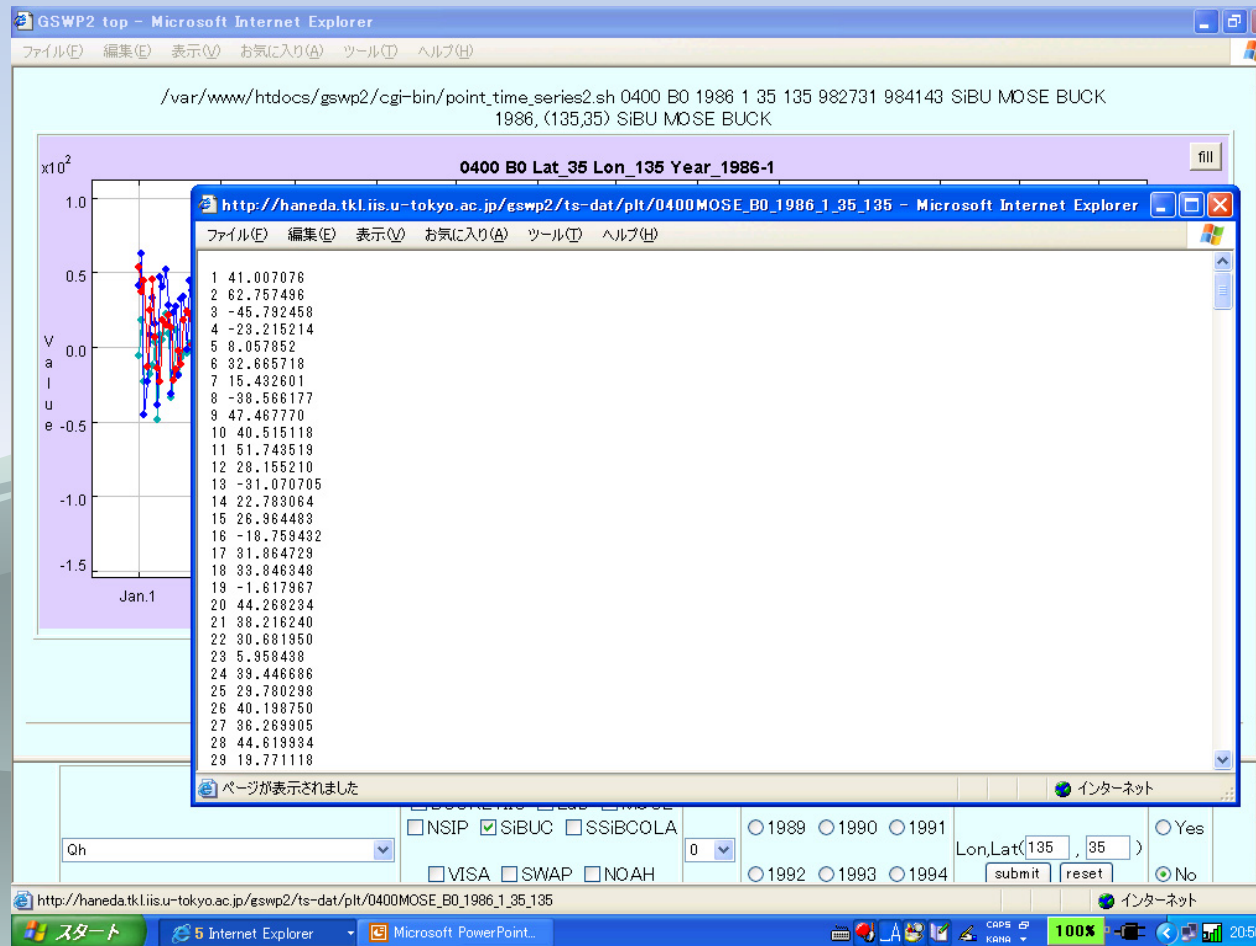
Time Sequential Comparison

- ◆ Spatial images of weekly time series around the specific grid point are displayed.
 - ❖ Color bar can be modified.
 - ❖ Mpeg animation of temporal sequences
 - ❖ Frame by frame display by pointing images by mouse





Time sequential comparison



You can download the time series data.

3. Model inter-comparison workbench

GSWP2 top - 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 進む 印刷 検索 お気に入り メディア

アドレス http://haneda.tkl.iis.u-tokyo.ac.jp/gswp2/diff.html

Google ウェブ検索 ブロック数: 43 オプション

GSWP2 ICC-diff Test Page

Variable	Model	Period	Location
Net_shortwave_radiation	☒ BUCKETIIS ☐ LaD ☐ MOSE ☐ NSIP ☐ SiBUC ☐ SSiBCOLA ☐ VISA ☐ SWAP ☐ NOAH ☐ CLM2 ☐ ISBA ☐ ORCHIDEE	layer 0 experiment B0	Year-Month-Day 1986 0 0
[[[test]]] color: ☒ Fixed... ☐ Auto... ☐ User Defined (min:0 --max:100) [[[test]]]			

ページが表示されました

インターネット

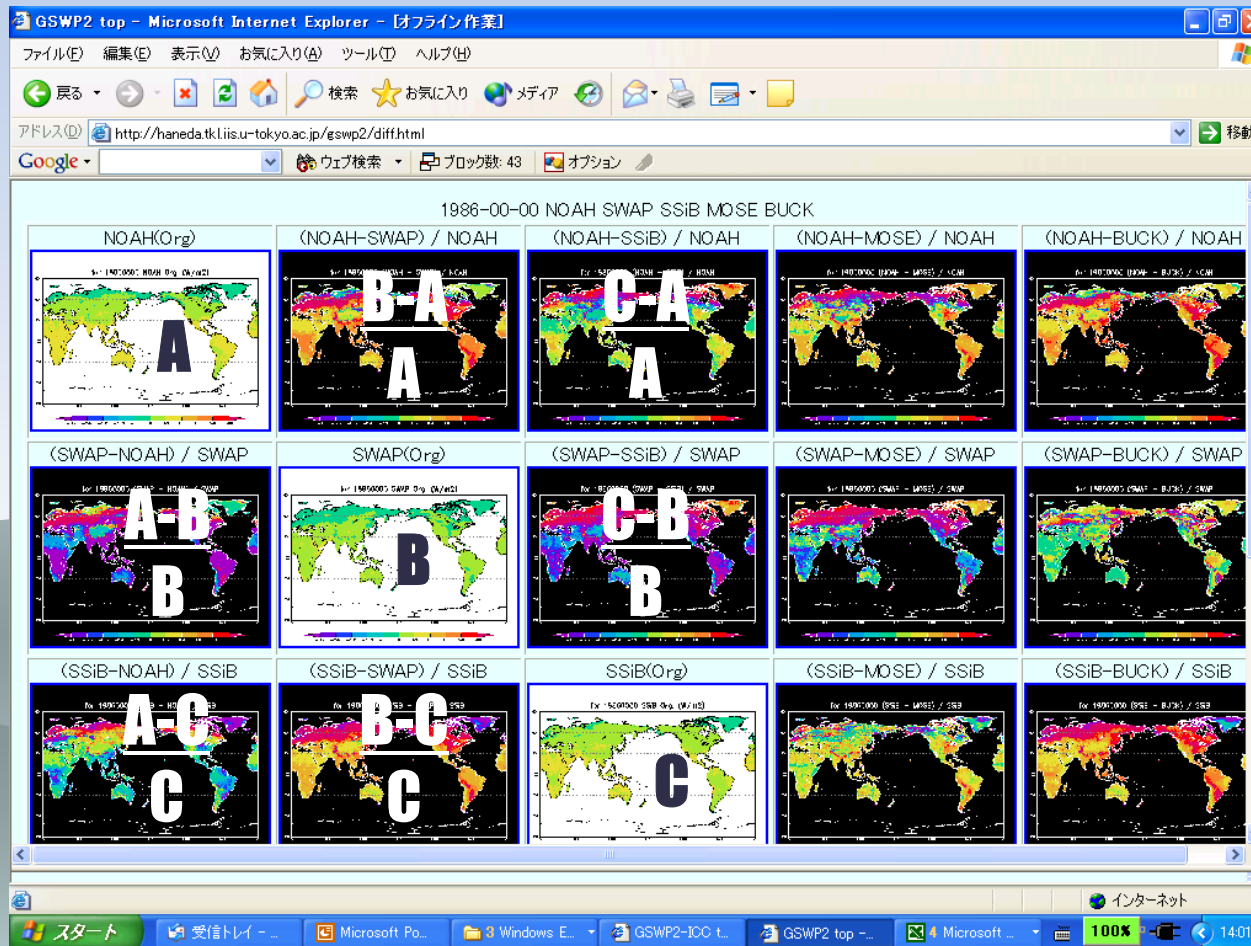
Select variable, model, period and location (Common interface)



<http://gswp2.tkl.iis.u-tokyo.ac.jp/gswp2/>

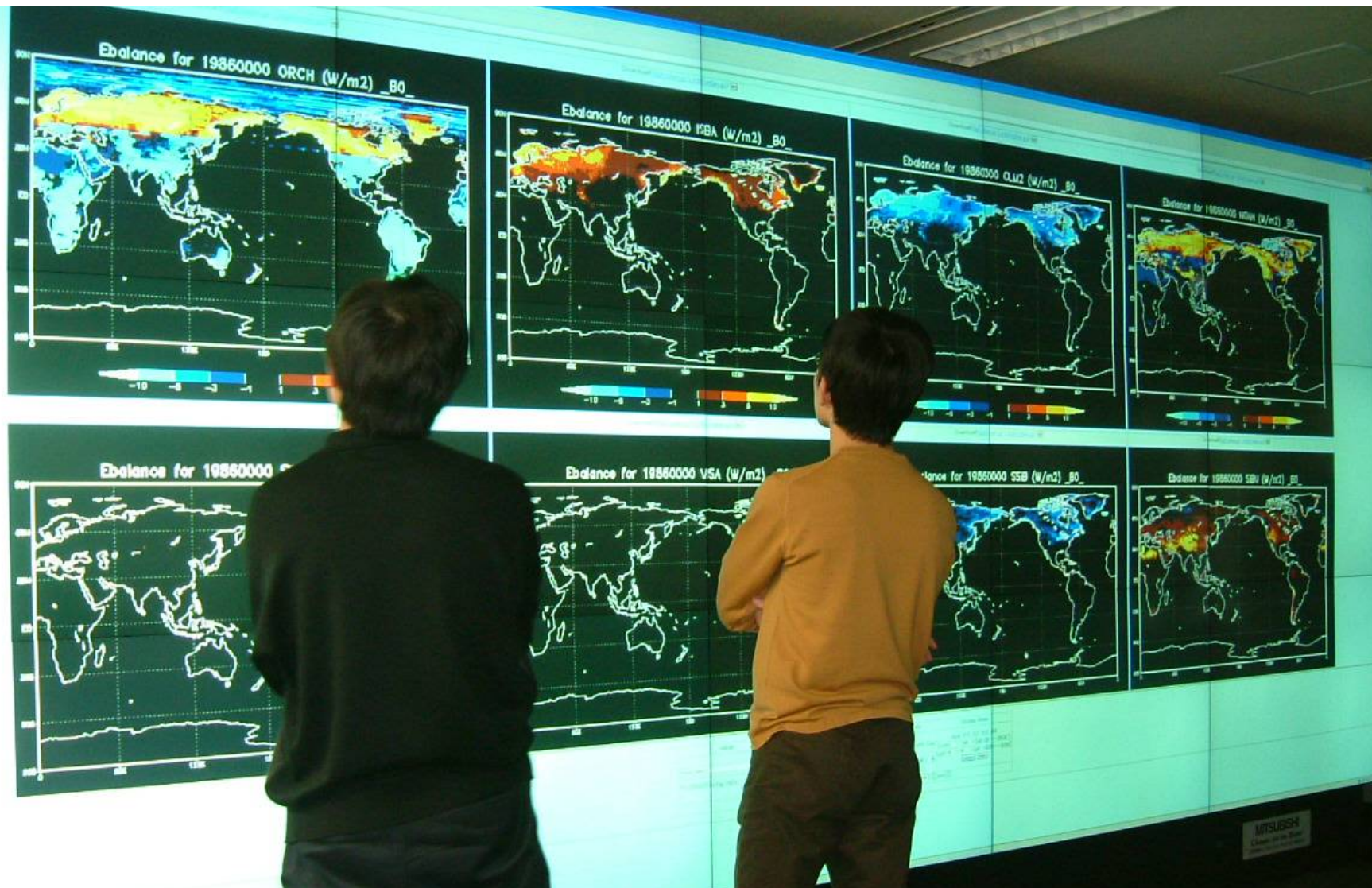


3. Model inter-comparison workbench



Show difference between models on screen

- ◆ All the figures for comparing every pair of models are displayed at once.
- ◆ Color bar setting.
- ◆ Expansion and erase with a click



The GSWP2-ICC is scale independent!
If you have a big screen, you can display many figures at once and enjoy the modern map discussion!



<http://gswp2.tkl.iis.u-tokyo.ac.jp/gswp2/>



ICC workflow



Public

Participants

DVD, DAT, FTP



IIS/UT



Oki Lab

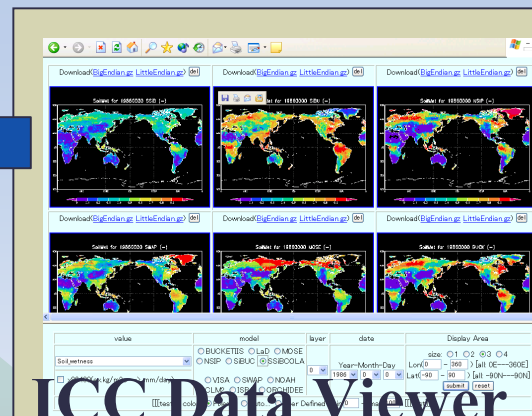
Primary analysis

N. Hanasaki

Data upload



Kitsuregawa Lab



**ICC Data Viewer
& Data Distributor**

Dr. E. Ikoma

Dr. M. Yasukawa

Prototype of GSWP2-Data Download Center

Specify year
and month or
10 year mean

Monthly/daily

All on/off
vertically

Region by
Lon./Lat.

Select
Experiment or
Model

All on/off
laterally

Automatic
estimation
of total
volume

GSWP2 DL top - Microsoft Internet Explorer

アドレス http://haneda.tkl.iis.u-tokyo.ac.jp/gswp2/protected/download4.html

GSWP2 DCC141
At 2004-Dec-7-18:39

Year / Month

☐ 1986 ☐ 1987 ☒ 1988 ☐ 1989
☐ 1990 ☐ 1991 ☒ 1992 ☐ 1993
☐ 1994 ☐ 1995 ☐ Average

☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☒ Jun
☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec

☐ monthly ☐ daily ☐ Annually

Area

Lon: -180 Lat: -90
 - Lon: 180 Lat: 90

Experiment = B0
 [B0][P1][P2][P3][R1][M1][V1][I1][N1]

ID	Value	BUCK	CLM2	ISBA	LaD	MOSE	NOAH	NSIP	ORCH	SSIb	SWAP	SiBU	VISA	
0100	SWnet	58 ☐	59 ☐	60 ☐	61 ☒	62 ☐	63 ☐	64 ☐	65 ☐	66 ☐	67 ☐	68 ☐	69 ☐	ALL Reset SWnet
0200	LWnet	72 ☒	73 ☒	74 ☒	75 ☒	76 ☒	77 ☒	78 ☒	79 ☒	80 ☒	81 ☒	82 ☒	83 ☒	ALL Reset LWnet
0300	Qle	86 ☐	87 ☐	88 ☐	89 ☒	90 ☐	91 ☐	92 ☐	93 ☐	94 ☐	95 ☐	96 ☐	97 ☐	ALL Reset Qle
0400	Qh	100 ☐	101 ☐	102 ☐	103 ☒	104 ☐	105 ☐	106 ☐	107 ☐	108 ☐	109 ☐	110 ☐	111 ☐	ALL Reset Qh
0500	Qg	114 ☐	115 ☐	116 ☐	117 ☒	118 ☐	119 ☐	120 ☐	121 ☐	122 ☐	123 ☐	124 ☐	125 ☐	ALL Reset Qg

Number of Value = 17 data ,Data = 68 data ,Year = 2 years ,Month = 2 months ,Ly = 1 ly ,Pixels = 64800 pixels --> Total File size = 17MB ,Number of Partition = 1 Files



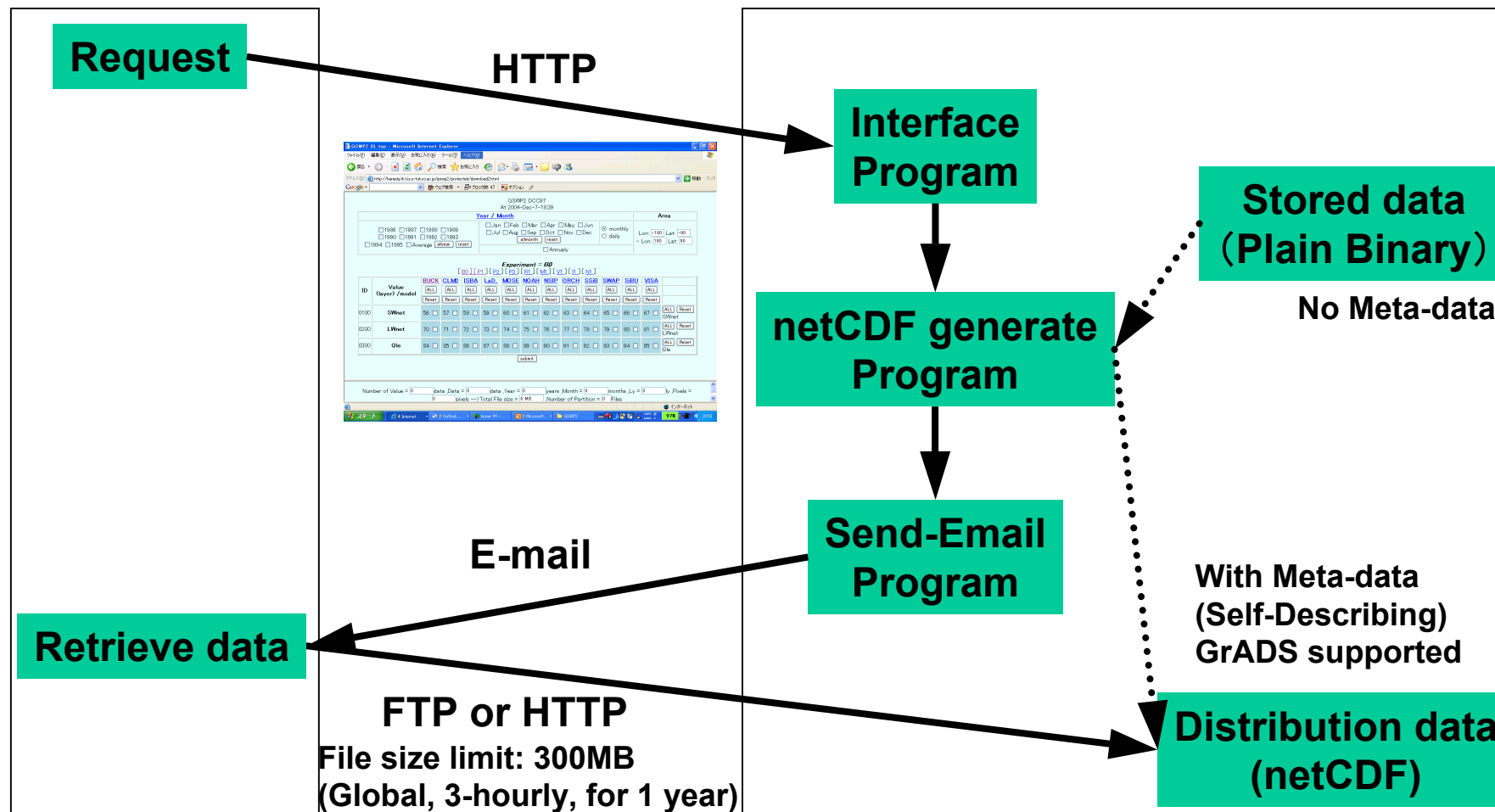
<http://gswp2.tkl.iis.u-tokyo.ac.jp/gswp2/>

Center for Spatial Information Science
at the University of Tokyo

Data Download Center

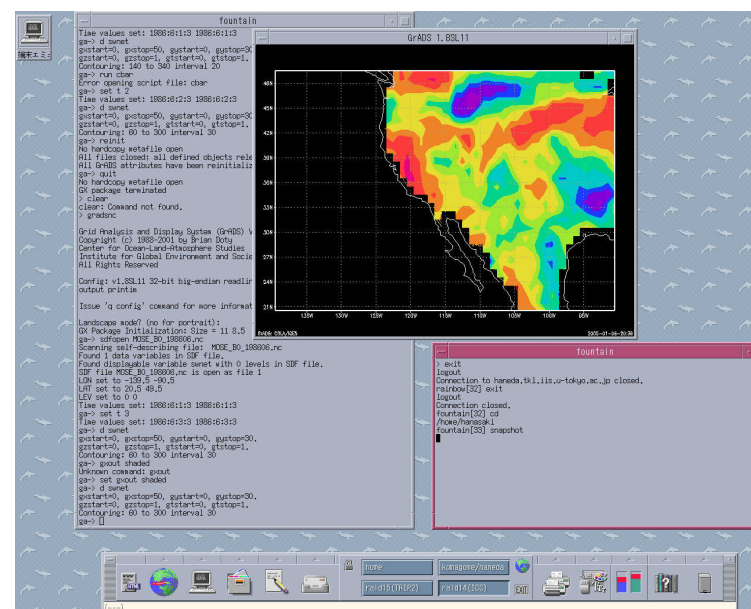
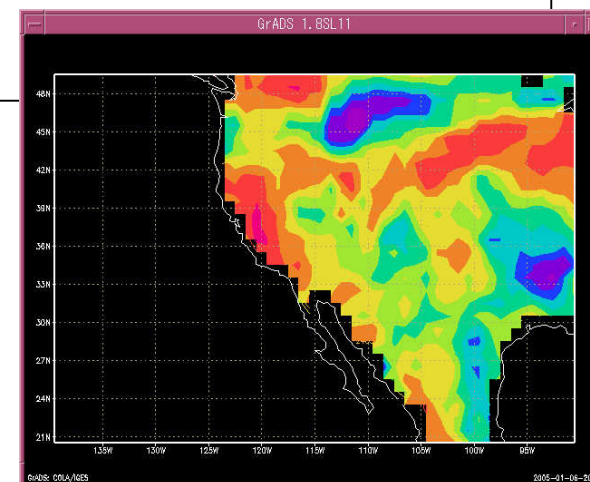
User

GSWP2 server <haneda>



You can check your downloaded file immediately via GrADS!!

- **netCDF file**
 - **Lon/Lat coordinate**
(GSWP2 original one is “dehydrated”-1D)
 - **COARDS convention**
- **Flexible cutout**
 - **Area: rectangular**
 - **Period: any month**
(annually, monthly, daily, 3-hourly(1995))
 - **Model/Run**



GSWP-2 Modeling Status

MODEL	Institute
CLM-TOP	University of Texas at Austin
COLA-SSiB	COLA
ISBA	Météo France/CNRM
LaD	USGS & NOAA/GFDL
MOSES-2	Met Office. UK
NOAH	NOAA NCEP/EMC
SiBUC	Kyoto University
SWAP	Institute of Water Problems, Russian Academy of Sciences
VISA	University of Texas at Austin
BUCKET*	University of Tokyo
Mosaic	NASA GSFC/HSB
NSIPP-catchment	NASA GSFC/NSIPP (GMAO)
ORCHIDEE	IPSL. France
CLM	NASA GSFC/HSB
HY-SSiB	NASA GSFC/HSB
VIC	NASA GSFC/HSB

Multi-model Analysis



Included



**Ready to
be included**

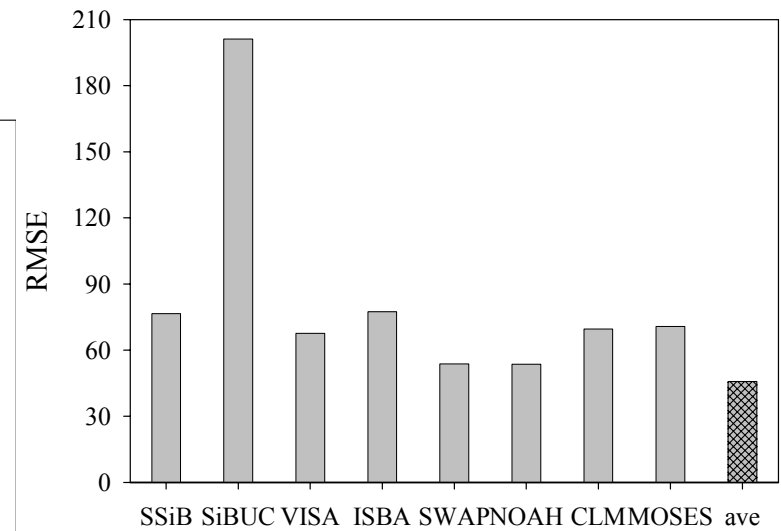
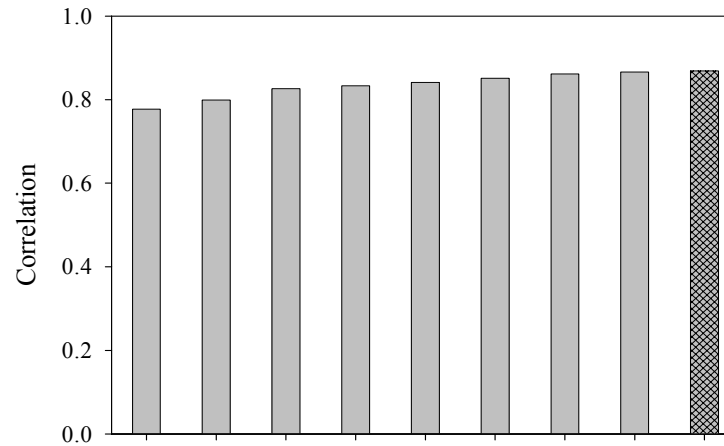


**Not ready
to be
included**

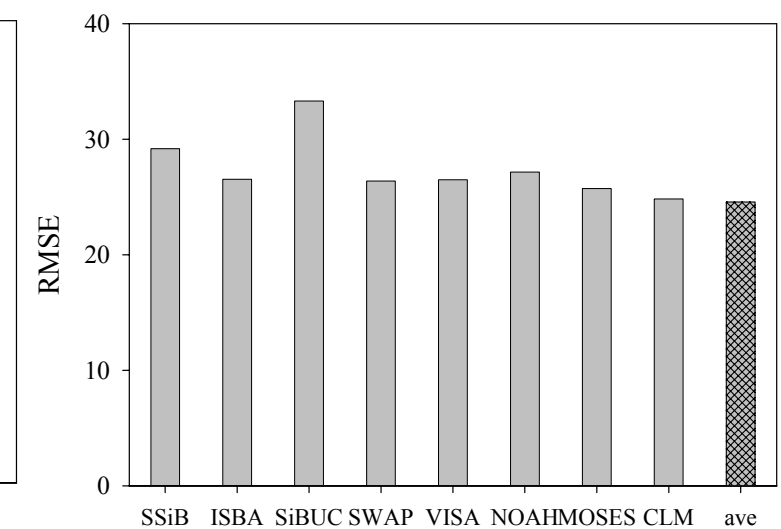
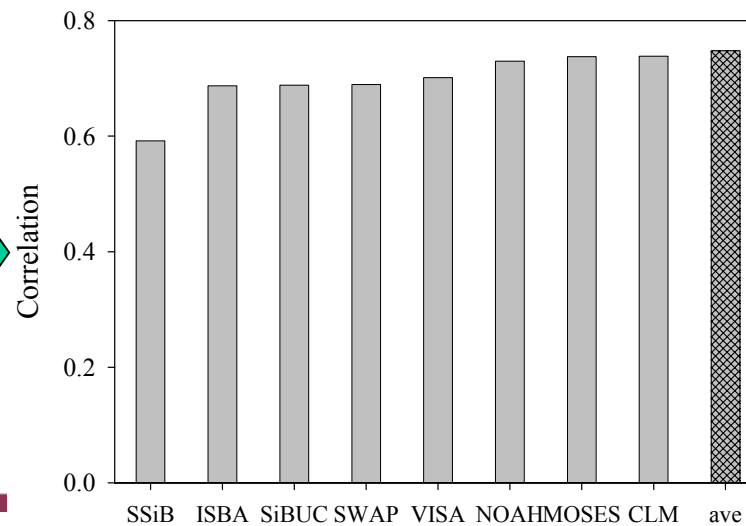
* May be dropped

Validation of GSWP-2 1m Column Soil Moisture (IL, GSMDB)

Total Field
(1m, 1986-1995)



Anomaly
(1m, 1986-1995)



Notice

- **DDC is now under TEST-OPERATION**
 - Now access is protected by password
 - If you find any trouble, please contact us.
- **Your request to ICC/DDC is welcome**
 - If you find any shortage in function, please let us know. We will try our best to support your request.
- **BAMS Article on GSWP2 will appear soon.**

