

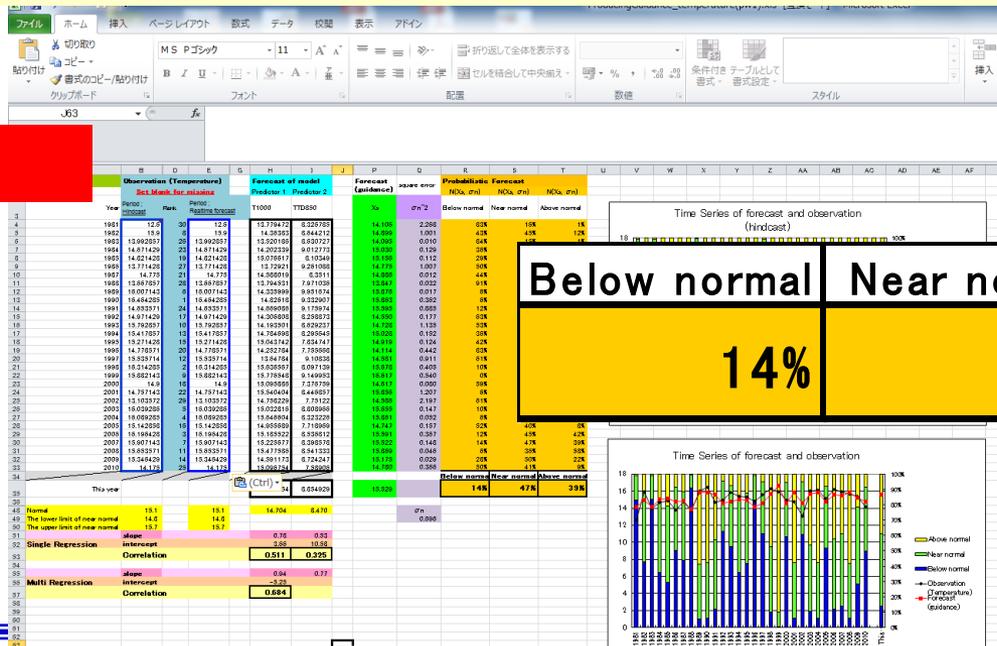
Overview of the guidance tool

For concrete method of the guidance tool, please refer to
“[exercise1_How to use guidance tool.ppt](#)”.

Overview of the guidance tool

- EXCEL base ... Simple
 - Regression analysis is executed using the EXCEL functions, not macro
 - easy to understand the principle of guidance
 - good portability
 - easy to customize

Worksheet



Structure ... Three worksheet

- “Calc_guidance”

Main part of the tool

- Creation of guidance; regression analysis using past observation and model forecast (hindcast)
- application to the real-time forecast
- Provision of guidance output

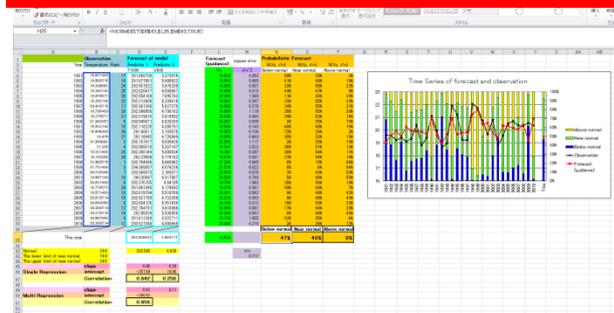
- “Verification”

- confirm prediction skill of guidance

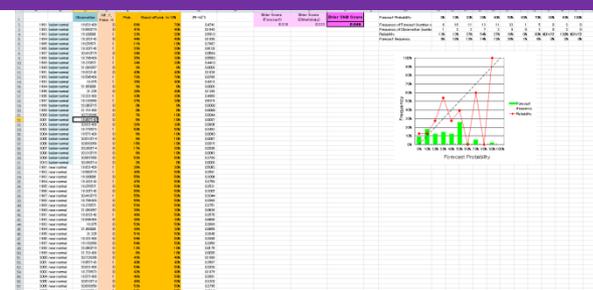
- “Memopad”

- Free space for cut and paste of data

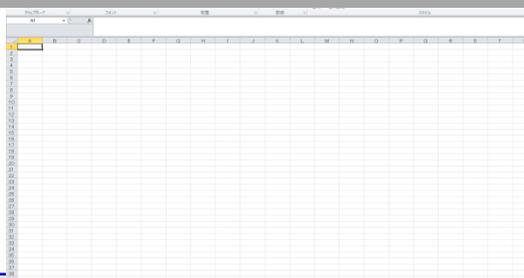
Worksheet “Calc_guidance”



Worksheet “Verification”



Worksheet “Memopad”

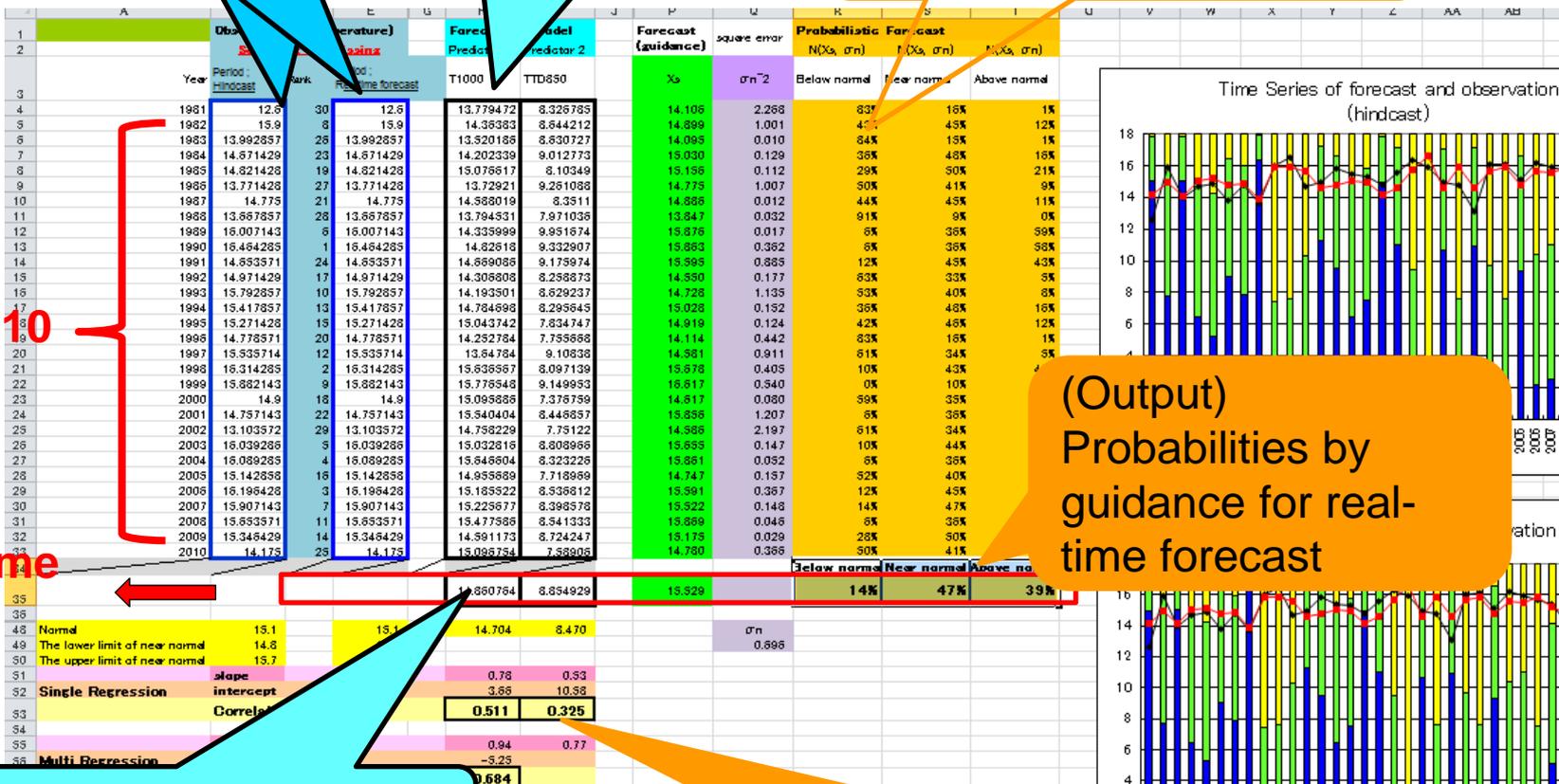


Worksheet "Calc_guidance"

(Input)
Past observation

(Input)
Model forecast
by hindcast

Probabilities by guidance
for hindcast



1981 to 2010

For real-time
forecast

(Input)
real-time forecast by model

(Output)
Probabilities by
guidance for real-
time forecast

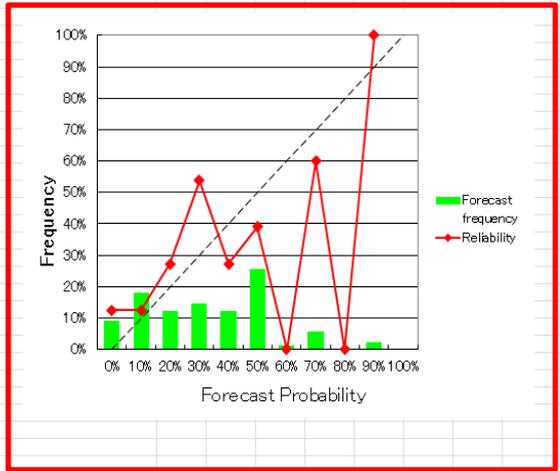
(Output)
Prediction skill (correlation score)

Worksheet "Verification"

C22 fx =IF(Calc_guidance!B24<>"",Calc_guidance!B24)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
		Observation	Hit : 1, False : 0	Prob.	Round off prob. to 10%	(P-I-VI)^2		Brier Score (Forecast)	Brier Score (Climatology)	Brier Skill Score		Forecast Probability	0%	10%	20%	30%	40%	50%	60%	70%	
1981	below normal	19.621429	0	69%	70%	0.4741		0.318	0.333	0.046		Frequency of Forecast (number)	8	16	11	13	11	23	1	5	
1982	below normal	19.560715	0	41%	40%	0.1643						Frequency of Observation (num)	1	2	3	7	3	9	0	3	
1983	below normal	19.200001	1	23%	20%	0.5910						Reliability	13%	13%	27%	54%	27%	39%	0%	60%	#DIV
1984	below normal	19.382143	0	44%	40%	0.1898						Forecast frequency	9%	18%	12%	14%	12%	26%	1%	6%	
1985	below normal	19.078571	1	11%	10%	0.7867															
1986	below normal	19.307142	1	22%	20%	0.6103															
1987	below normal	20.410715	0	24%	20%	0.0584															
1988	below normal	18.796429	1	25%	30%	0.5560															
1989	below normal	19.378571	1	34%	30%	0.4410															
1990	below normal	21.092857	0	2%	0%	0.0003															
1991	below normal	19.932142	0	40%	40%	0.1636															
1992	below normal	18.596428	1	72%	70%	0.0796															
1993	below normal	19.975	1	35%	40%	0.4218															
1994	below normal	21.950001	0	2%	0%	0.0003															
1995	below normal	21.225	0	36%	40%	0.1298															
1996	below normal	19.221428	1	30%	30%	0.4968															
1997	below normal	19.192858	1	27%	30%	0.5315															
1998	below normal	22.060715	0	0%	0%	0.0000															
1999	below normal	21.721428	0	0%	0%	0.0000															
2000	below normal	20.739286	0	7%	10%	0.0044															
2001	below normal	19.657143	0	5%	10%	0.0027															
2002	below normal	20.921428	0	28%	30%	0.0806															
2003	below normal	18.778572	1	50%	50%	0.2493															
2004	below normal	19.571428	0	9%	10%	0.0090															
2005	below normal	20.510714	0	9%	10%	0.0087															
2006	below normal	20.692858	0	15%	10%	0.0215															
2007	below normal	20.360714	0	17%	20%	0.0296															
2008	below normal	20.310715	0	8%	10%	0.0062															
2009	below normal	20.567858	0	62%	60%	0.3789															
2010	below normal	20.360714	0	2%	0%	0.0003															
1981	near normal	19.621429	1	29%	30%	0.5062															
1982	near normal	19.560715	1	49%	50%	0.2581															
1983	near normal	19.200001	0	55%	50%	0.3008															
1984	near normal	19.382143	1	47%	50%	0.2758															
1985	near normal	19.078571	0	50%	50%	0.2531															

(Output)
Brier skill score



(Output)
Reliability diagram

For calculations of verification

Specifications of the guidance tool

Climate baseline is
1981-2010.

- **Threshold of tercile categories**
 - Observation data in 30 years (1981 to 2010)
- **Method of guidance**
 - **Multi regression (two elements)** between model forecast (ensemble mean) and observation for the past cases
 - Single regression (one element) is also supported
- **Estimation of uncertainty**
 - Uncertainty is estimated **based on forecast error (RMSE)** of guidance during hindcast (1981 to 2010).
 - PDF is assumed a normal distribution.

Necessaries for producing guidance

- Past observation (Objective variables)

- Target of forecast
(ex. Temperature, rainfall)

Create by users.
(You have prepared.)

- Model forecast (Predictors)

- Past cases (hindcast)
- Real-time forecast

Using iTacs

For concrete method of the guidance tool, please refer to
“**How to use guidance tool .ppt**”.

Workflow of the guidance tool

1. (Preparation)

1. Create the past observation file (csv format)

Input of the guidance tool
(We have already prepared.)

2. (using EXCEL file and iTacs)

1. Check the initial date and target period
2. Production of guidance and verification

(1) Get past observation data

(2) Get hindcast data

(3) Confirmation of prediction skill of guidance

3. Application to the real-time forecast

- Input of real-time forecast of model

Obtaining solution of probabilistic forecast by the guidance

For concrete method of the guidance tool, please refer to
“**How to use guidance tool .ppt**”.