CLIK hands-on (part II):

Multi-Model Prediction

(http://clik.apcc21.org)

Daeun Jeong

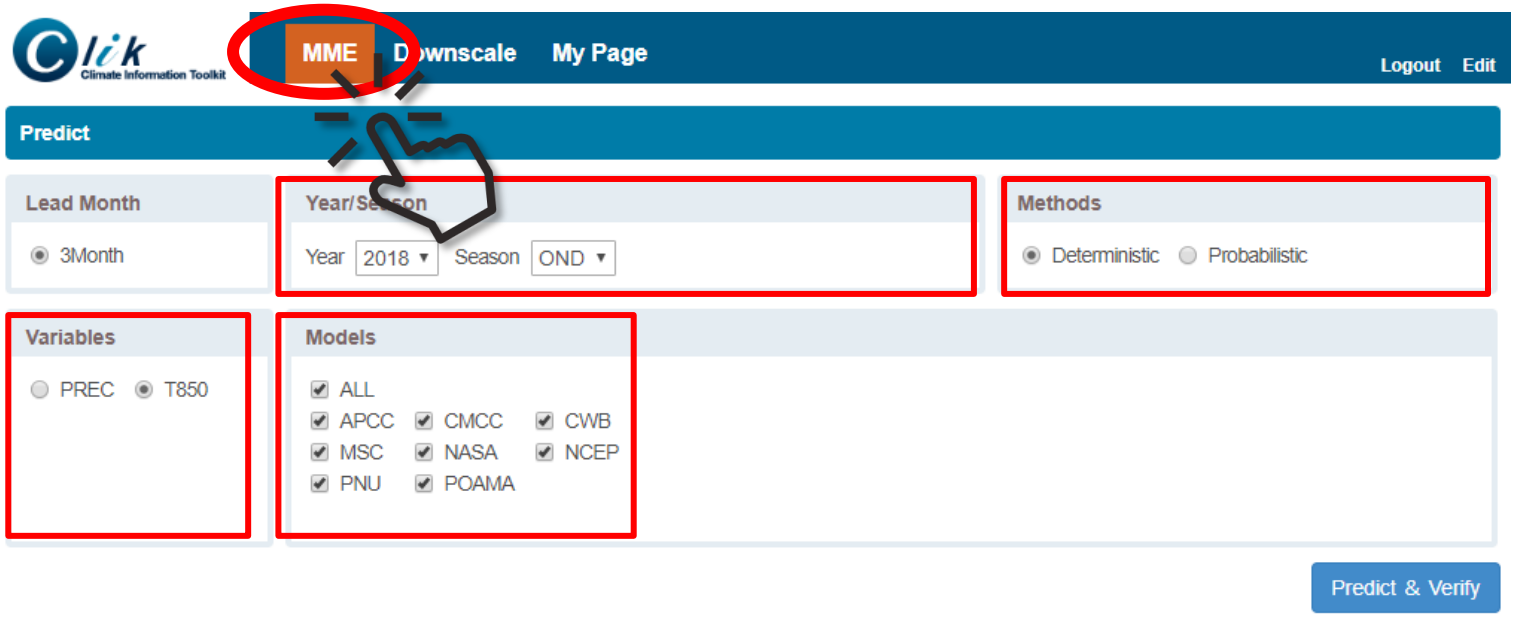
16 October 2018

APCC APEC CLIMATE CENTER

Temperature over Busan for OND 2018?

1. Deterministic MME

1-1. Customize your own prediction



① When

: 3-month lead prediction data is updated every month.

② Methods

: 1 deterministic (SCM) and 1 probabilistic (GAUS) MME methods

③ Variables

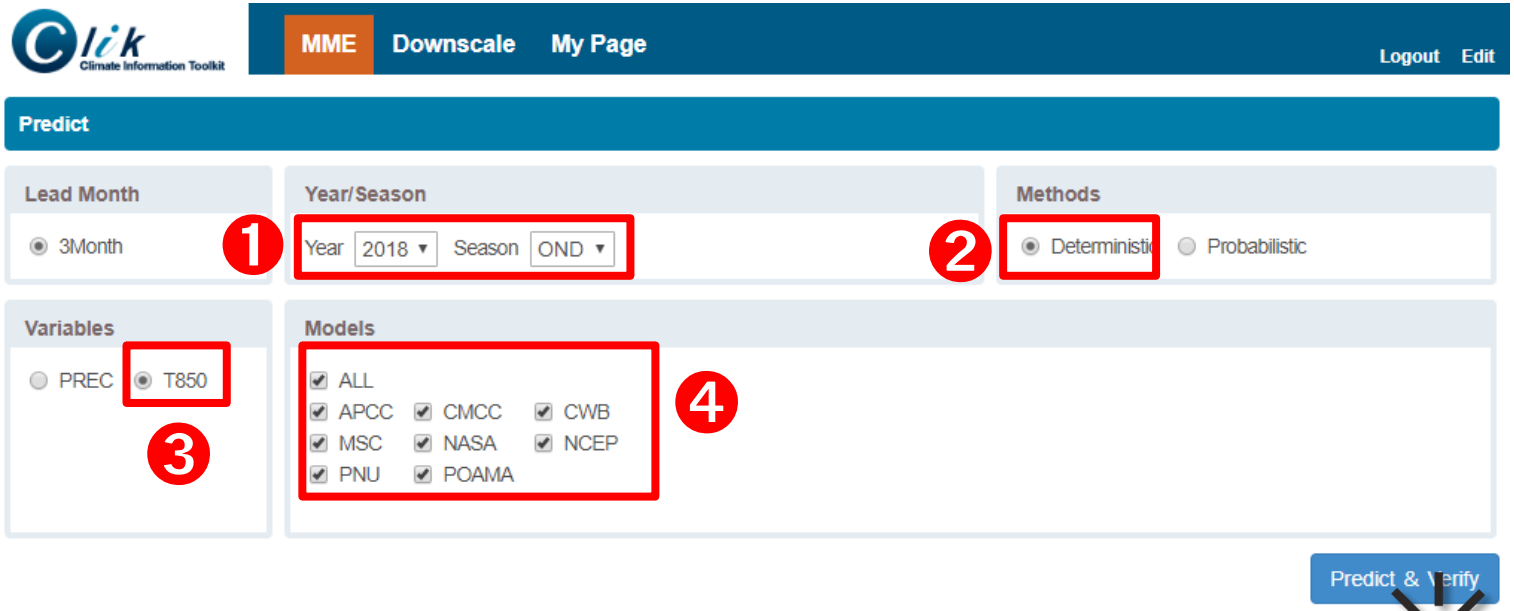
: the target variable

④ Models

: GCM models for a MME prediction

1. Deterministic MME

1-1. Customize your own prediction



① **When** (**2018/OND**)

: 3-month lead prediction data is updated every month.

② **Methods** (**Deterministic**)

: 1 deterministic (SCM) and 1 probabilistic (GAUS) MME methods

③ **Variables** (**T850**)

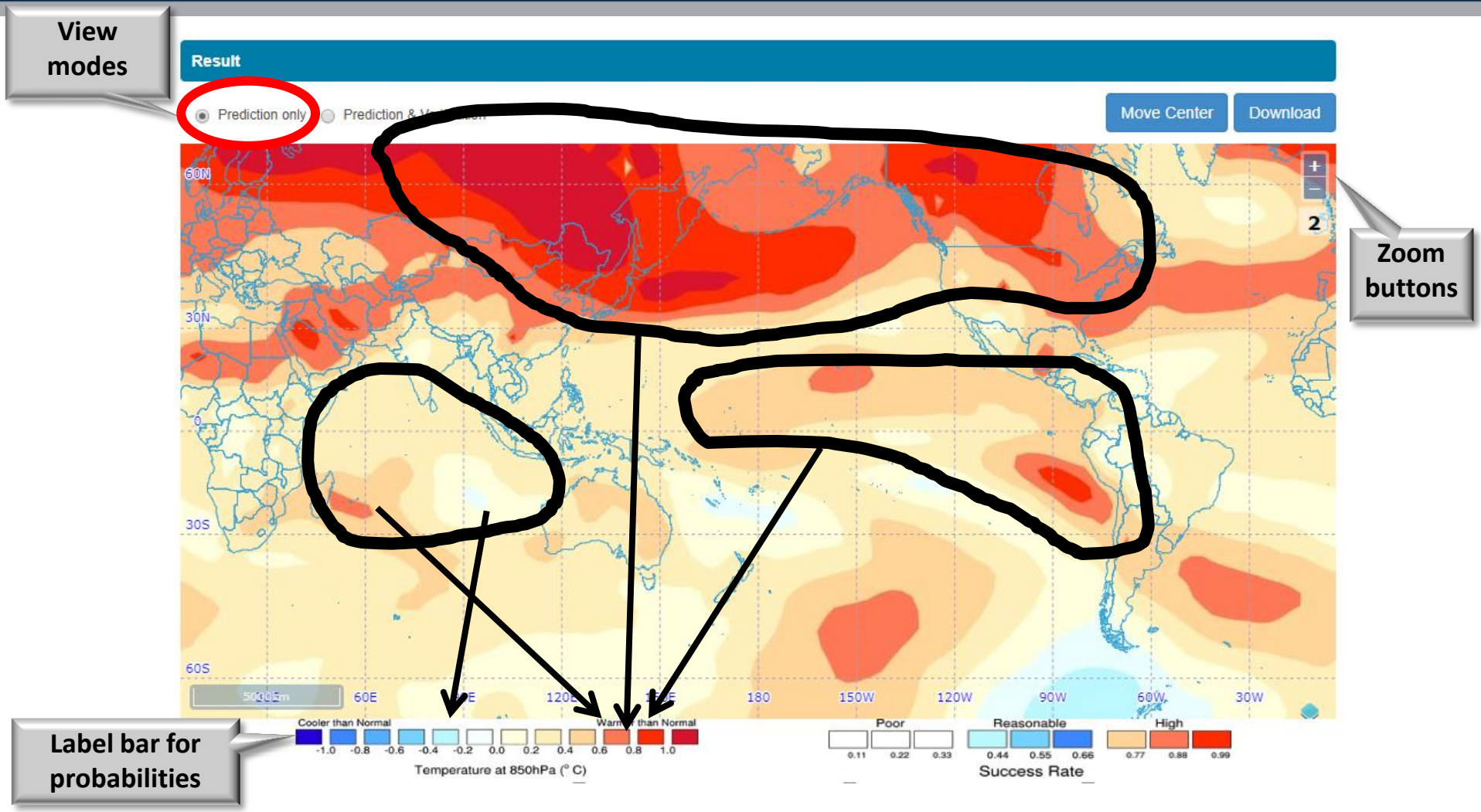
: the target variable

④ **Models** (**ALL**)

: GCM models for a MME prediction

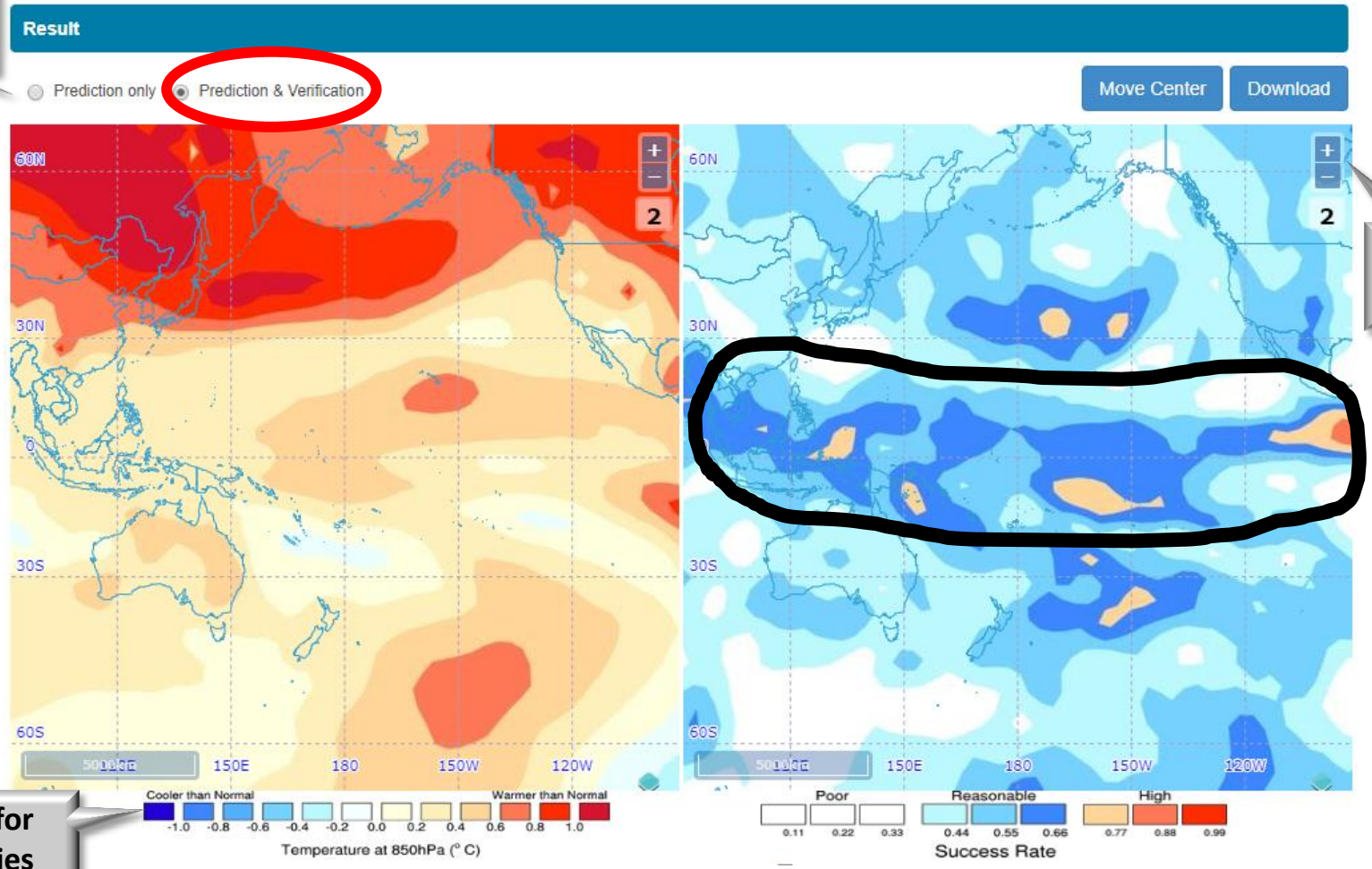
1. Deterministic MME

1-2. Read the map



1. Deterministic MME

1-2. Read the map



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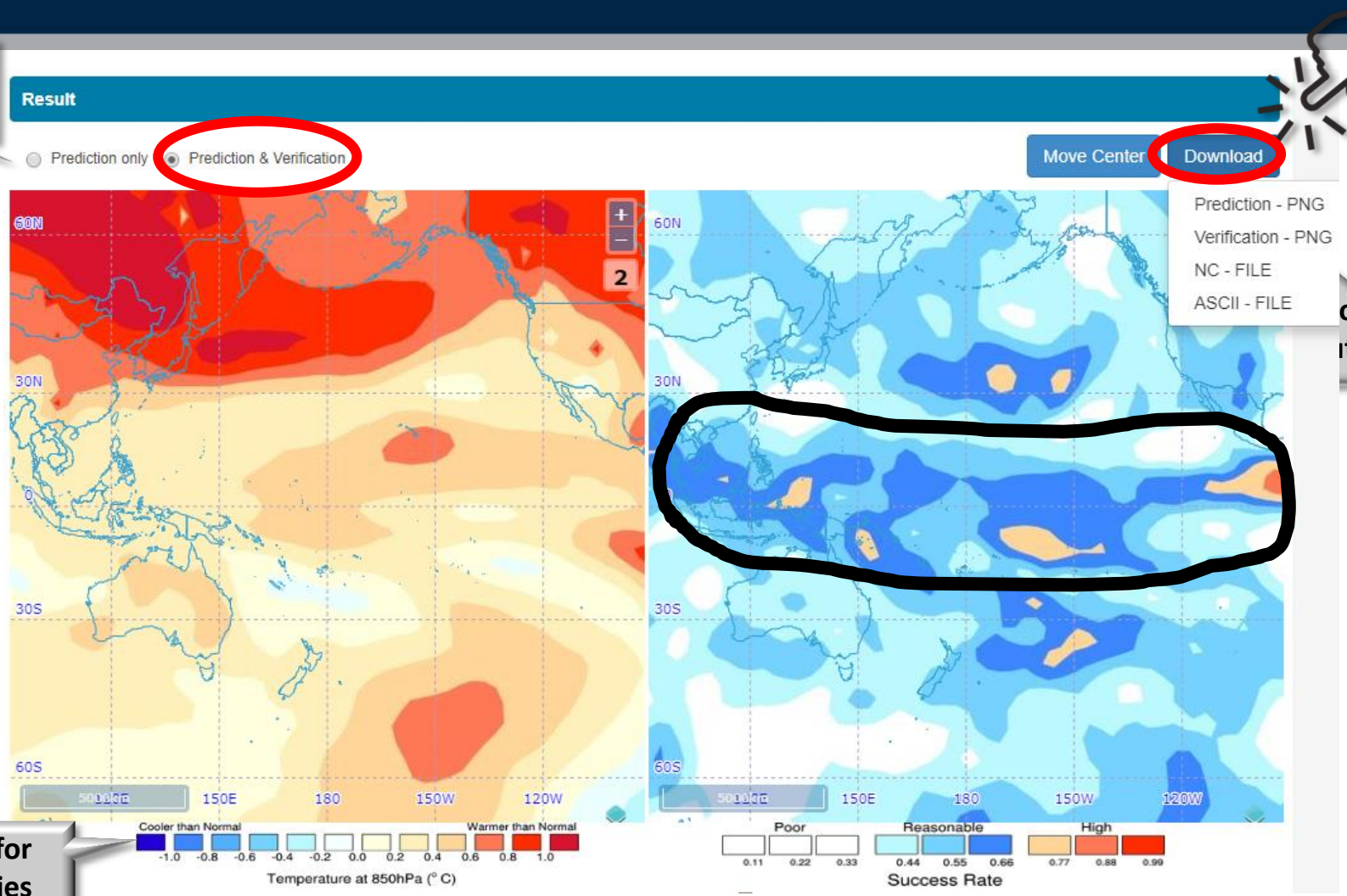
1-2. Read the map



2. Probabilistic MME

2-1. Customize your own prediction

① When

: 3-month lead prediction data is updated every month.

② Methods

: 1 deterministic (SCM) and 1 probabilistic (GAUS) MME methods

③ Variables

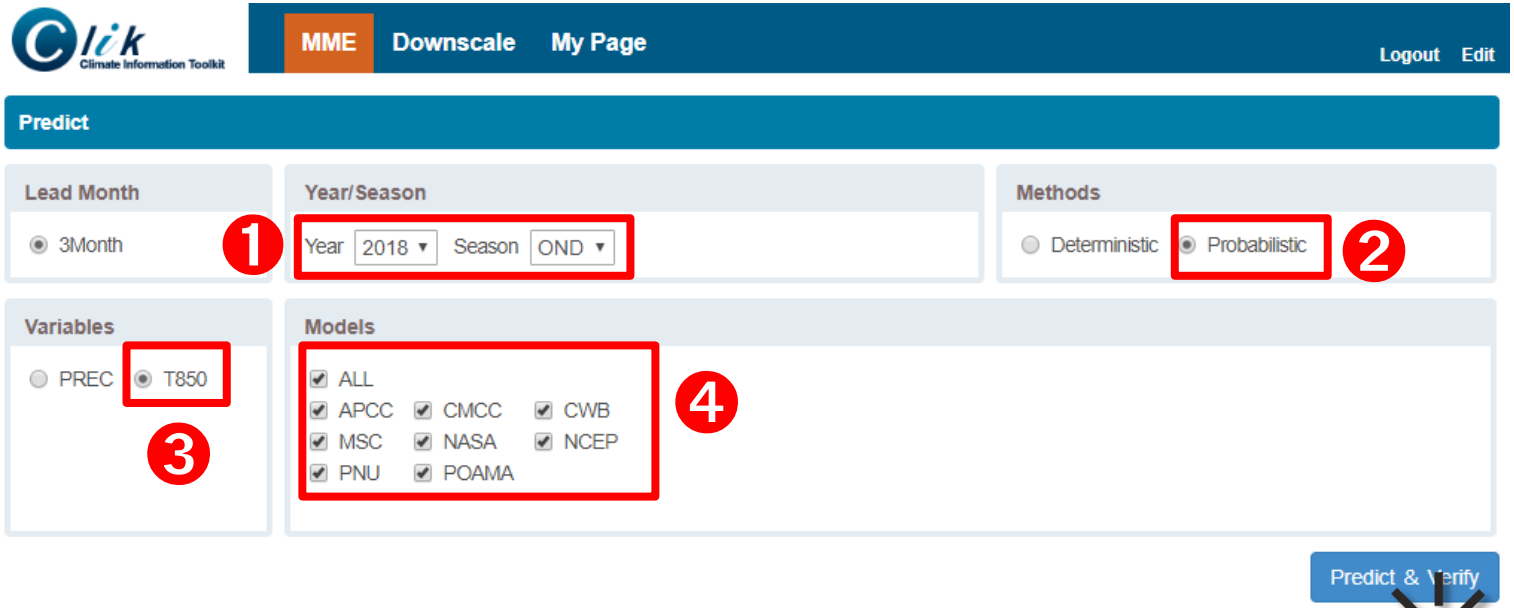
: the target variable

④ Models

: GCM models for a MME prediction

2. Probabilistic MME

2-1. Customize your own prediction



① **When** (**2018/OND**)

: 3-month lead prediction data is updated every month.

② **Methods** (**Probabilistic**)

: 1 deterministic (SCM) and 1 probabilistic (GAUS) MME methods

③ **Variables** (**T850**)

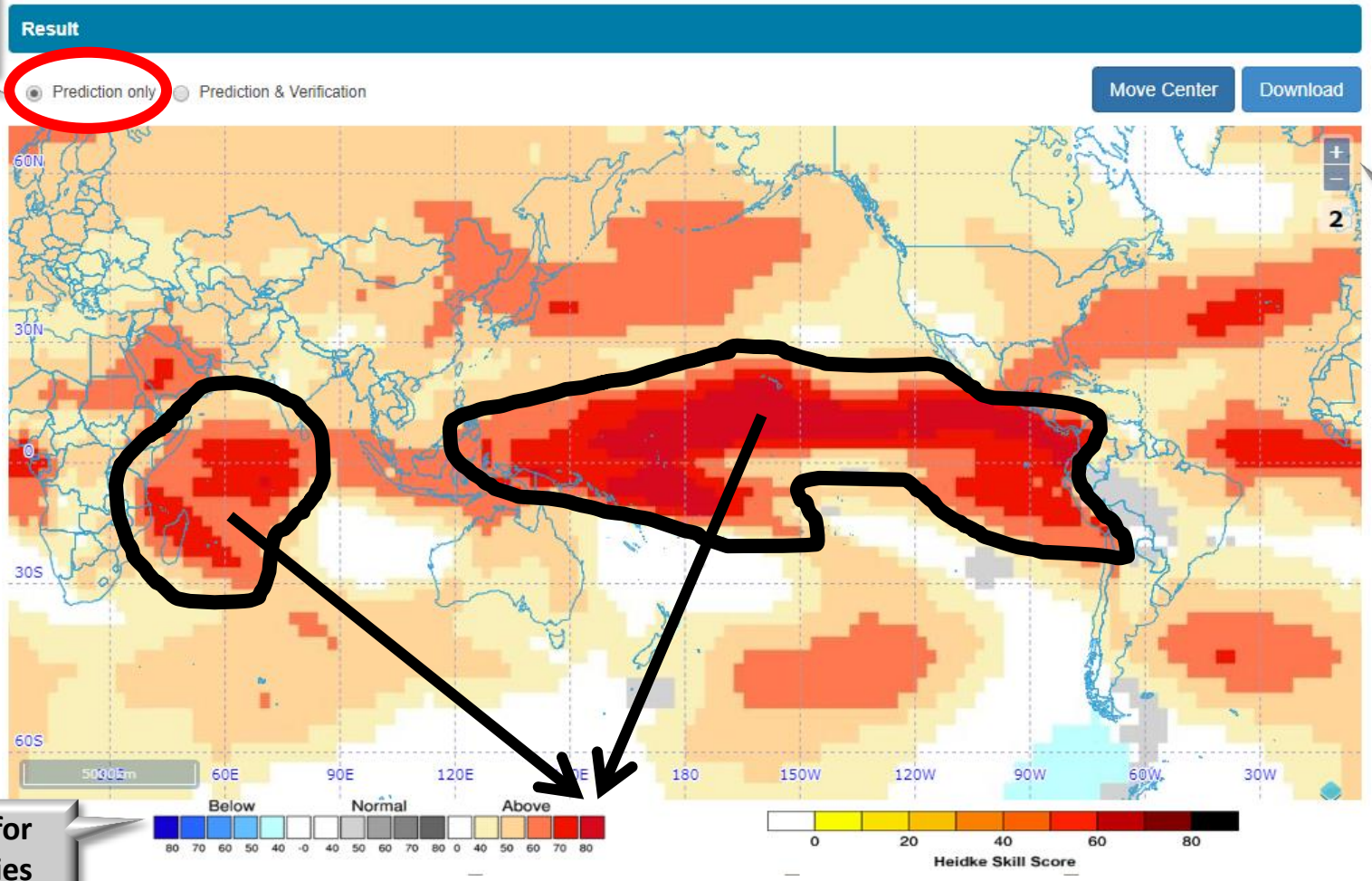
: the target variable

④ **Models** (**ALL**)

: GCM models for a MME prediction

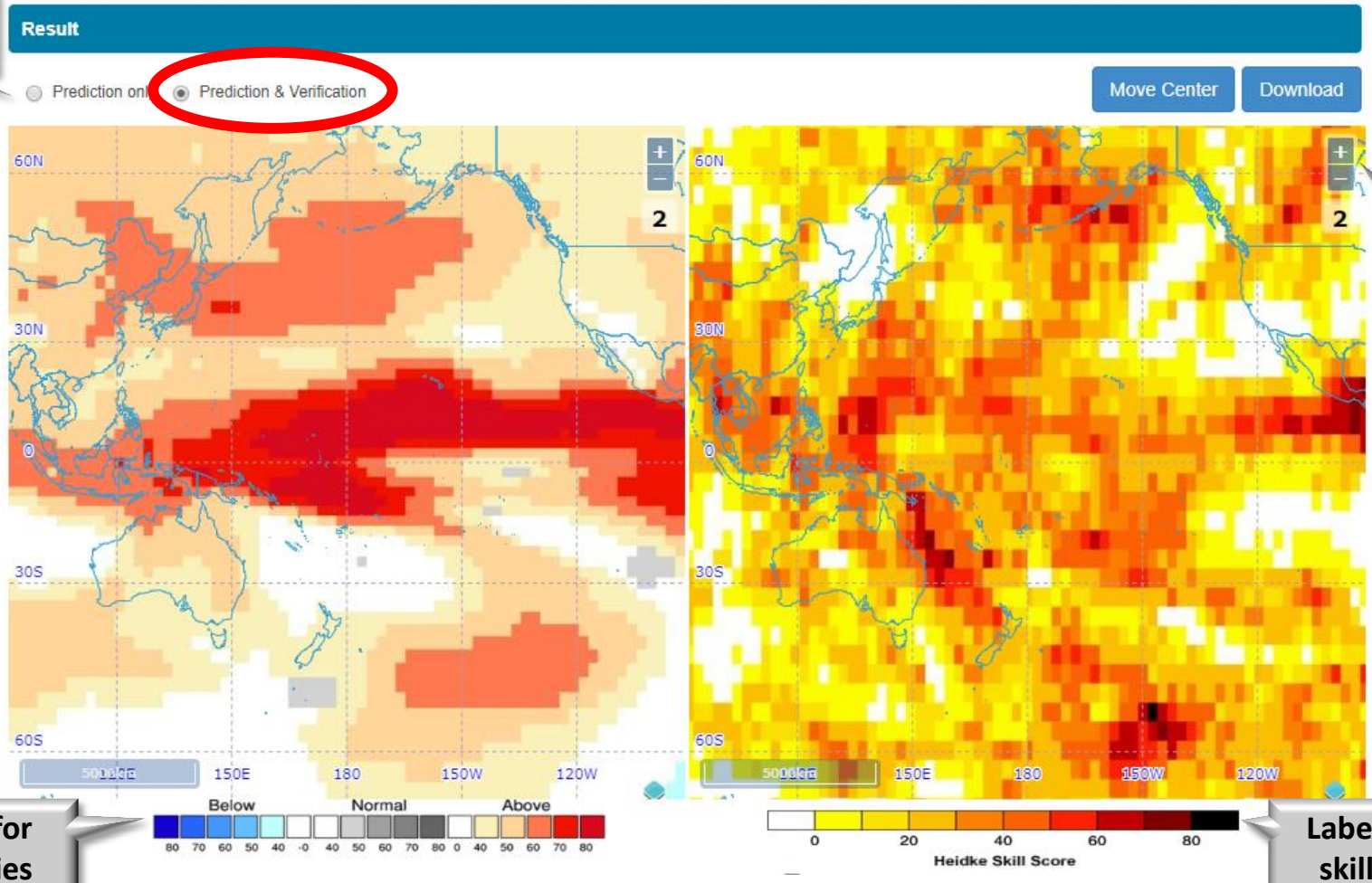
2. Probabilistic MME

2-2. Read the map



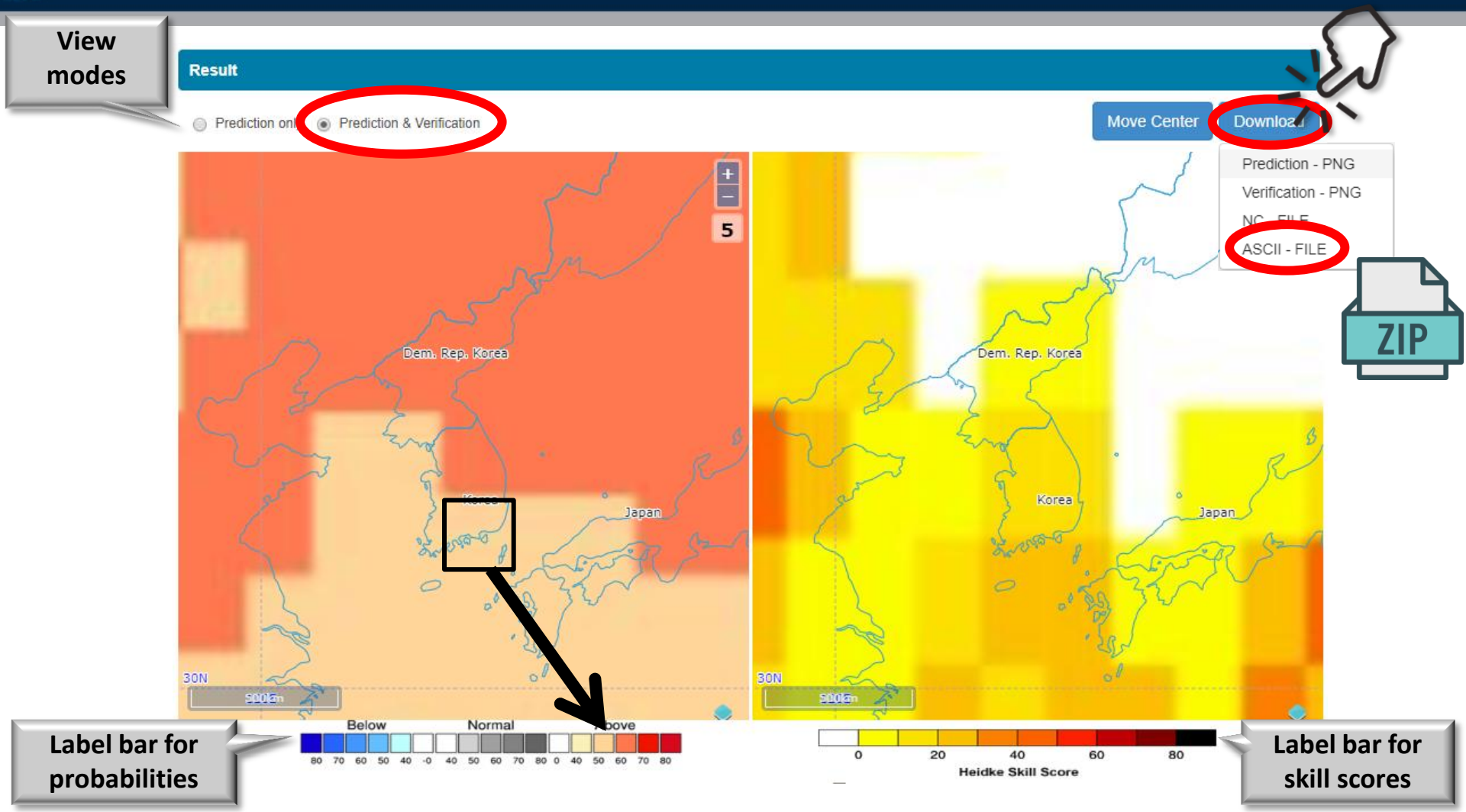
2. Probabilistic MME

2-2. Read the map



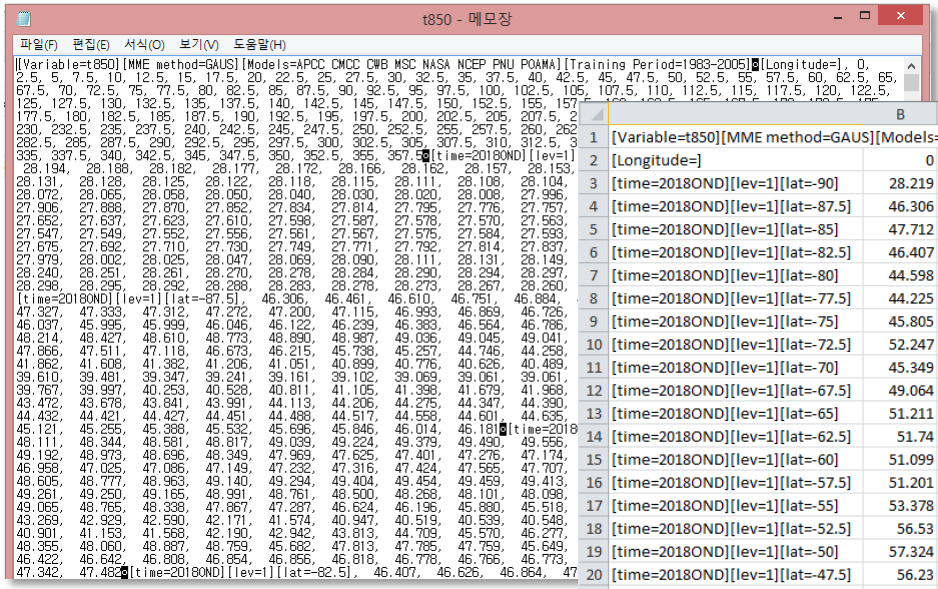
2. Probabilistic MME

2-2. Read the map



2. Probabilistic MME

2-3. Get quantities



	B	C	D	E	F	G	H	I	J	K
1	[Variable=t850][MME method=GAUS][Models=APCC CMCC CWB MSC NASA NCEP PNU POAMA][Training Period=1983-2005]									
2	[Longitude=]	0	2.5	5	7.5	10	12.5	15	17.5	20	22.5
3	[time=2018OND][lev=1][lat=-90]	28.219	28.213	28.207	28.2	28.194	28.188	28.182	28.177	28.172	28.166
4	[time=2018OND][lev=1][lat=-87.5]	46.306	46.461	46.61	46.751	46.884	46.997	47.098	47.18	47.259	47.302
5	[time=2018OND][lev=1][lat=-85]	47.712	47.898	48.111	48.344	48.581	48.817	49.039	49.224	49.379	49.49
6	[time=2018OND][lev=1][lat=-82.5]	46.407	46.626	46.864	47.123	47.402	47.697	47.962	48.195	48.388	48.569
7	[time=2018OND][lev=1][lat=-80]	44.598	44.882	45.09	45.225	45.298	45.293	45.183	45.014	44.852	44.755
8	[time=2018OND][lev=1][lat=-77.5]	44.225	44.225	44.162	44.101	43.98	43.761	43.602	43.579	43.527	43.174
9	[time=2018OND][lev=1][lat=-75]	45.805	45.428	44.82	44.27	43.934	43.69	43.562	43.665	43.813	43.798
10	[time=2018OND][lev=1][lat=-72.5]	52.247	46.61	45.865	45.367	45.411	45.789	46.408	47.261	48.246	49.226
11	[time=2018OND][lev=1][lat=-70]	45.349	44.639	44.042	43.827	43.501	43.297	43.198	43.451	43.97	44.494
12	[time=2018OND][lev=1][lat=-67.5]	49.064	48.399	47.932	47.532	46.999	46.625	46.136	45.577	45.091	44.688
13	[time=2018OND][lev=1][lat=-65]	51.211	50.716	50.292	49.863	49.334	48.544	47.637	46.977	46.178	45.405
14	[time=2018OND][lev=1][lat=-62.5]	51.74	51.638	51.12	50.276	49.491	48.847	48.02	47.135	46.411	45.677
15	[time=2018OND][lev=1][lat=-60]	51.099	51.327	51.131	50.508	49.627	48.989	48.289	47.401	46.594	46.049
16	[time=2018OND][lev=1][lat=-57.5]	51.201	51.493	51.801	51.781	51.162	50.119	49.196	48.459	47.82	47.368
17	[time=2018OND][lev=1][lat=-55]	53.378	53.28	53.129	52.644	51.582	50.013	48.579	47.614	46.836	46.358
18	[time=2018OND][lev=1][lat=-52.5]	56.53	55.957	54.755	53.362	51.805	50.439	48.779	47.323	46.363	45.7
19	[time=2018OND][lev=1][lat=-50]	57.324	57.072	56.052	54.671	53.236	52.201	50.968	49.906	48.992	47.968
20	[time=2018OND][lev=1][lat=-47.5]	56.23	55.387	54.385	53.376	52.246	51.667	50.862	50.54	50.027	49.139
21	[time=2018OND][lev=1][lat=-45]	55.469	54.363	53.309	51.897	50.373	49.708	48.947	48.431	48.048	47.417
22	[time=2018OND][lev=1][lat=-42.5]	54.84	53.416	51.884	50.282	48.975	48.223	46.879	45.954	45.278	45.118
23	[time=2018OND][lev=1][lat=-40]	52.766	51.597	49.929	49.137	48.231	47.331	45.276	43.807	43.074	42.526
24	[time=2018OND][lev=1][lat=-37.5]	48.931	47.726	46.184	45.506	43.642	41.671	39.138	39.026	39.049	37.962
25	[time=2018OND][lev=1][lat=-35]	46.443	44.495	43.373	41.817	39.411	37.618	36.678	37.757	38.127	37.063
26	[time=2018OND][lev=1][lat=-32.5]	44.112	42.893	41.594	40.011	38.036	37.896	39.209	40.05	40.674	42.433
27	[time=2018OND][lev=1][lat=-30]	42.42	41.117	39.827	38.858	38.462	38.793	38.849	39.602	43.636	51.349

***Microsoft EXCEL* recommended!**

2. Probabilistic MME

2-3. Get quantities

	A	B	C	D	E	F	G	H	I	J	K
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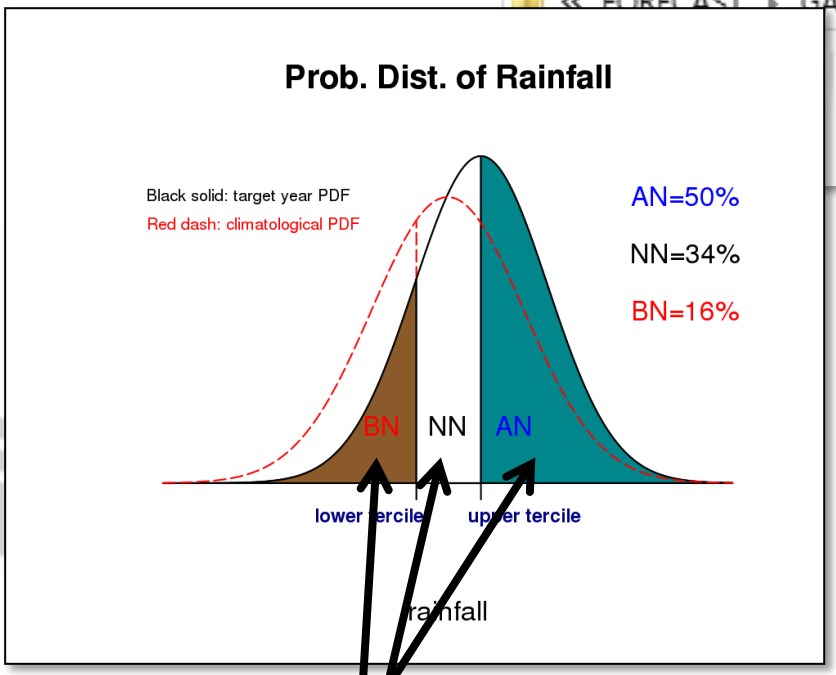
2. Probabilistic MME

2-3. Get quantities



« FORECAST ▸ GAUS ▸ OCT ▸ OND ▸ 2018

유형	크기
ASC 파일	409KB

Tercile bins

Lev 1	AN	57.690%
Lev 2	NN	28.662%
Lev 3	BN	13.648%

sum = 100%

LONGITUDE

LATITUDE

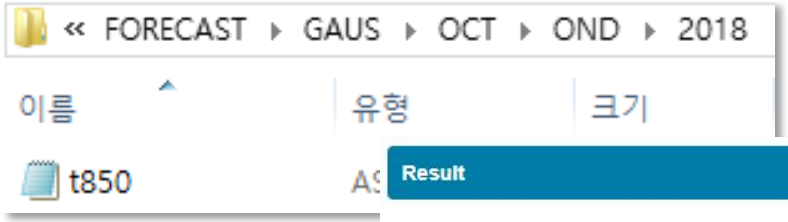
	A	AY	AZ	BA	BB	BC
1	[Variable=t850][MME method=GAU					
2	[Longitude=]	122.5	125	127.5	130	132.5
51	[time=2018OND][lev=1][lat=30]	52.805	50.778	51.266	51.766	52.177
52	[time=2018OND][lev=1][lat=32.5]	55.229	53.965	53.344	54.657	57.933
53	[time=2018OND][lev=1][lat=35]	58.302	57.613	57.69	59.567	59.942
54	[time=2018OND][lev=1][lat=37.5]	58.379	58.696	60.201	64.565	64.887
55	[time=2018OND][lev=1][lat=40]	61.758	63.371	64.591	64.826	65.02

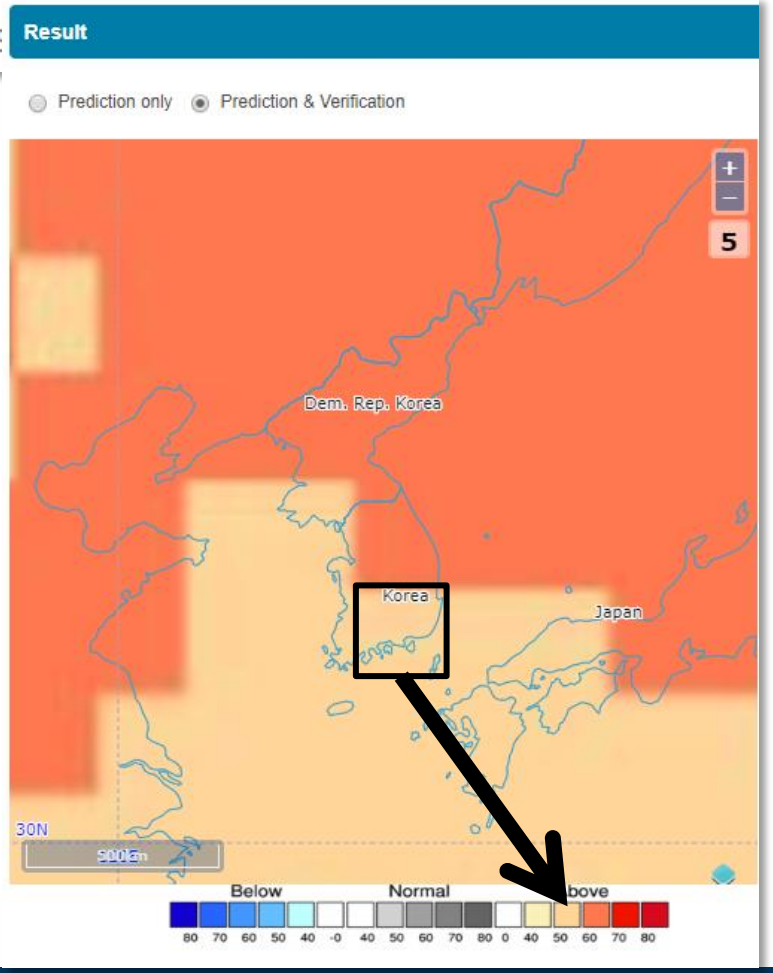
	A	AY	AZ	BA	BB	BC
1	[Variable=t850][MME method=GAU					
2	[Longitude=]	122.5	125	127.5	130	132.5
124	[time=2018OND][lev=2][lat=30]	27.73	30.022	31.491	33.079	34.145
125	[time=2018OND][lev=2][lat=32.5]	27.632	28.374	30.611	30.728	29.123
126	[time=2018OND][lev=2][lat=35]	28.012	27.298	28.662	28.124	28.825
127	[time=2018OND][lev=2][lat=37.5]	30.194	29.987	29.325	25.678	26.898
128	[time=2018OND][lev=2][lat=40]	27.944	27.034	26.555	26.699	27.067

	A	AY	AZ	BA	BB	BC
1	[Variable=t850][MME method=GAU					
2	[Longitude=]	122.5	125	127.5	130	132.5
197	[time=2018OND][lev=3][lat=30]	19.464	19.2	17.242	15.155	13.678
198	[time=2018OND][lev=3][lat=32.5]	17.14	17.661	16.045	14.615	12.945
199	[time=2018OND][lev=3][lat=35]	13.686	15.089	13.648	12.308	11.233
200	[time=2018OND][lev=3][lat=37.5]	11.426	11.317	10.474	9.757	8.215
201	[time=2018OND][lev=3][lat=40]	10.298	9.596	8.854	8.475	7.912

2. Probabilistic MME

2-3. Get quantities





Busan

- Longitude ≒ 127.5°E
- Latitude ≒ 35°N

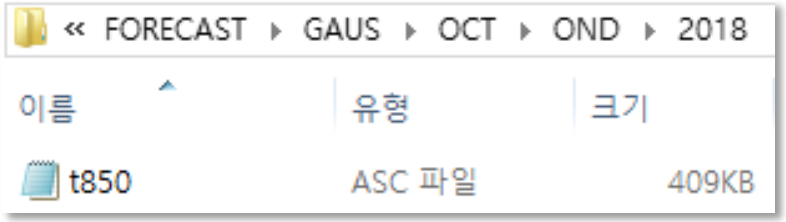
Tercile bins

Lev 1	AN	57.690%
Lev 2	NN	28.662%
Lev 3	BN	13.648%

sum = 100%

2. Probabilistic MME

2-3. Get quantities



Busan

- Longitude ≒ 127.5°E
- Latitude ≒ 35°N

Tercile bins

Lev 1	AN	57.690%
Lev 2	NN	28.662%
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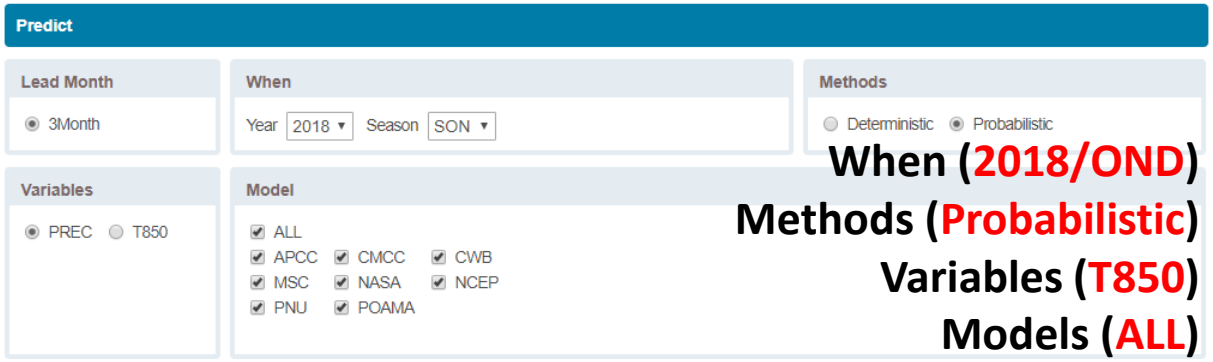
sum = 100%

Probability for temperature at 850 hPa for Busan

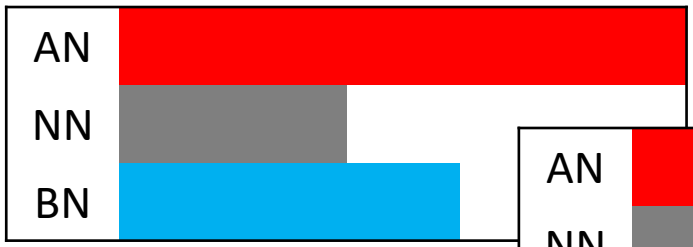
2. Probabilistic MME

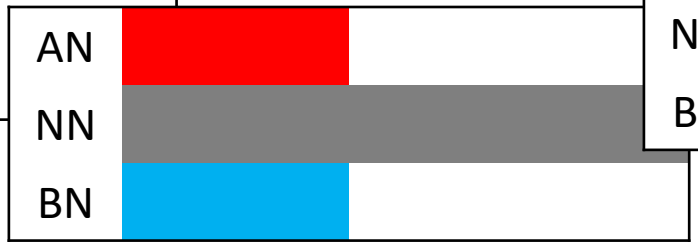
Practice!

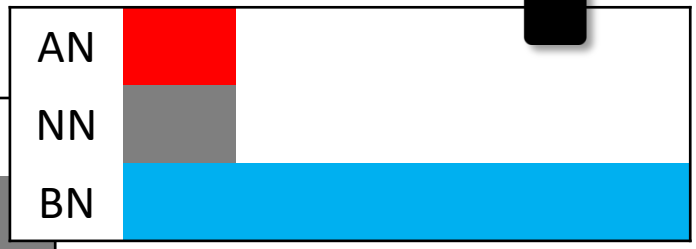
1. Set options.
2. Read the map.
3. Download ASCII file.
4. Open the file with EXCEL and read probabilities in the table.



When (2018/OND)
Methods (Probabilistic)
Variables (T850)
Models (ALL)

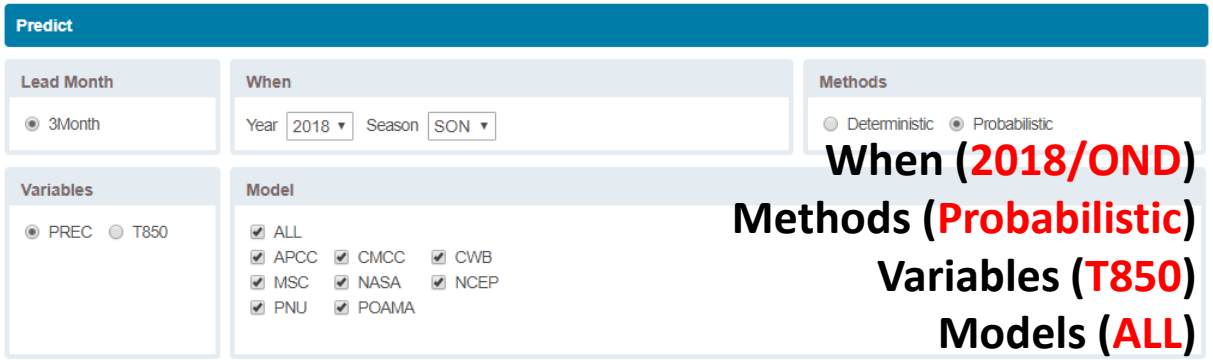






2. Probabilistic MME

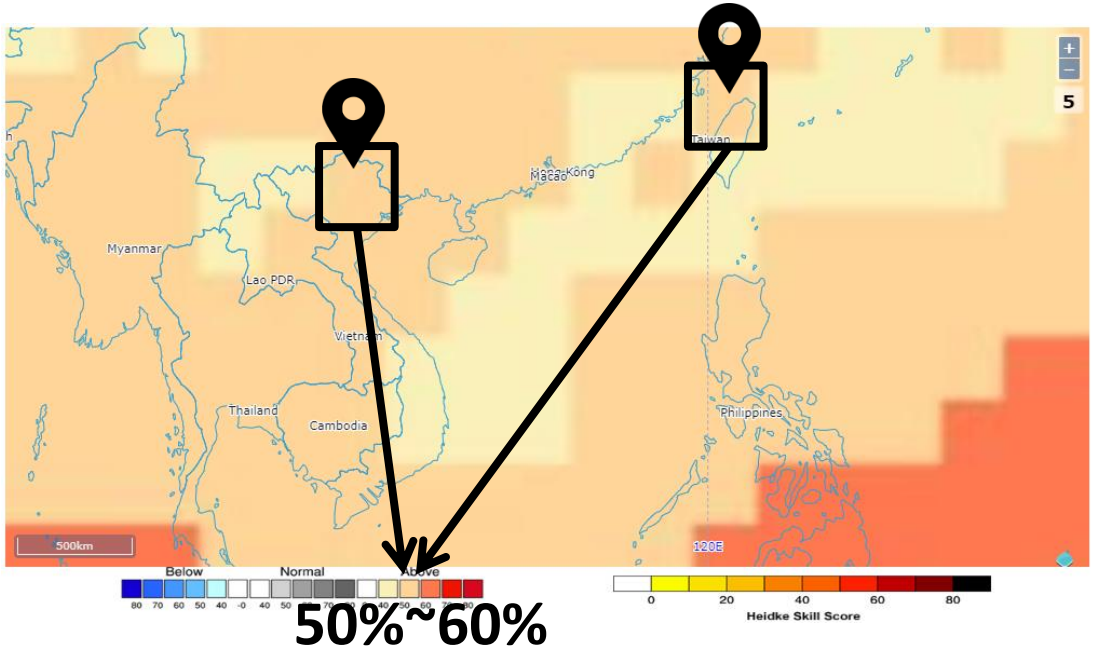
Practice!



When (2018/OND)
Methods (Probabilistic)
Variables (T850)
Models (ALL)

Taipei

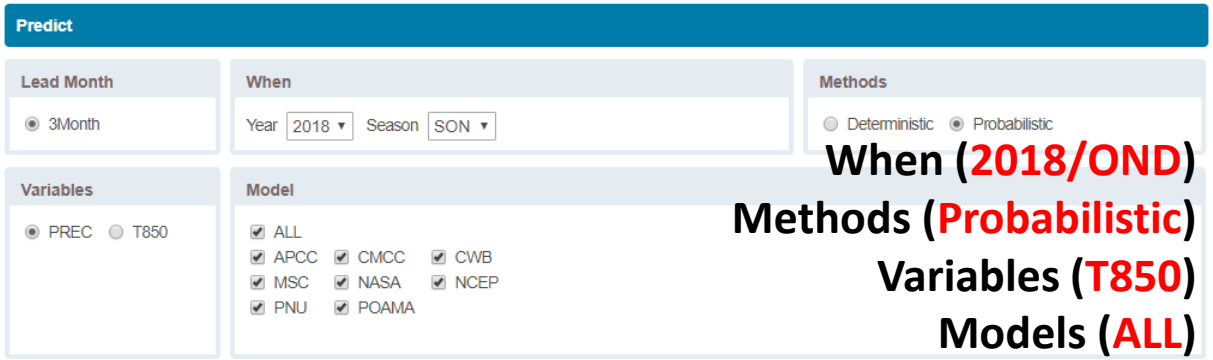
Hanoi



50%~60%

2. Probabilistic MME

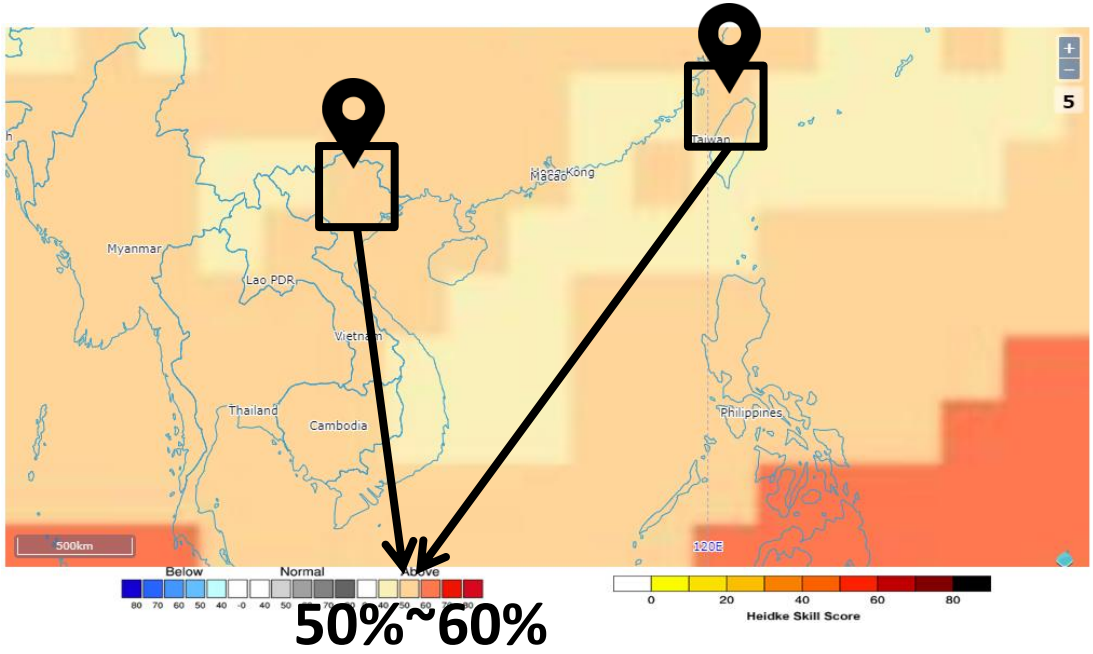
Practice!



When (2018/OND)
Methods (Probabilistic)
Variables (T850)
Models (ALL)

Taipei
Lat:
Lon:

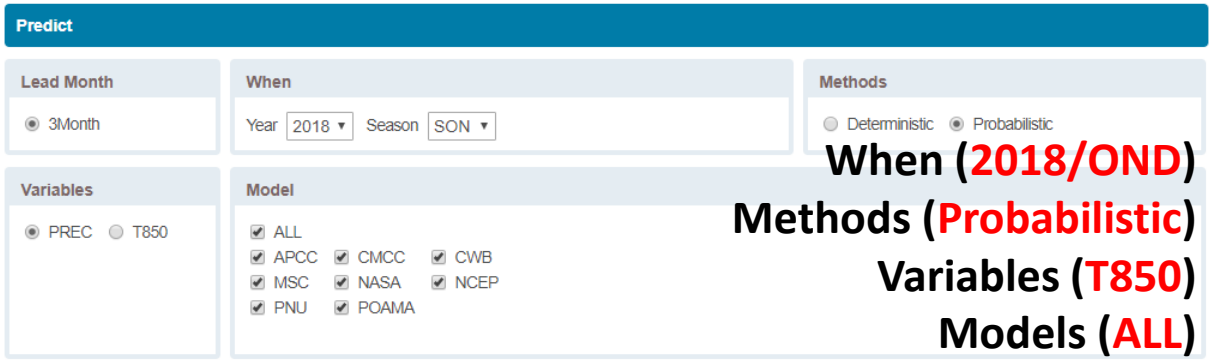
Hanoi
Lat:
Lon:



50%~60%

2. Probabilistic MME

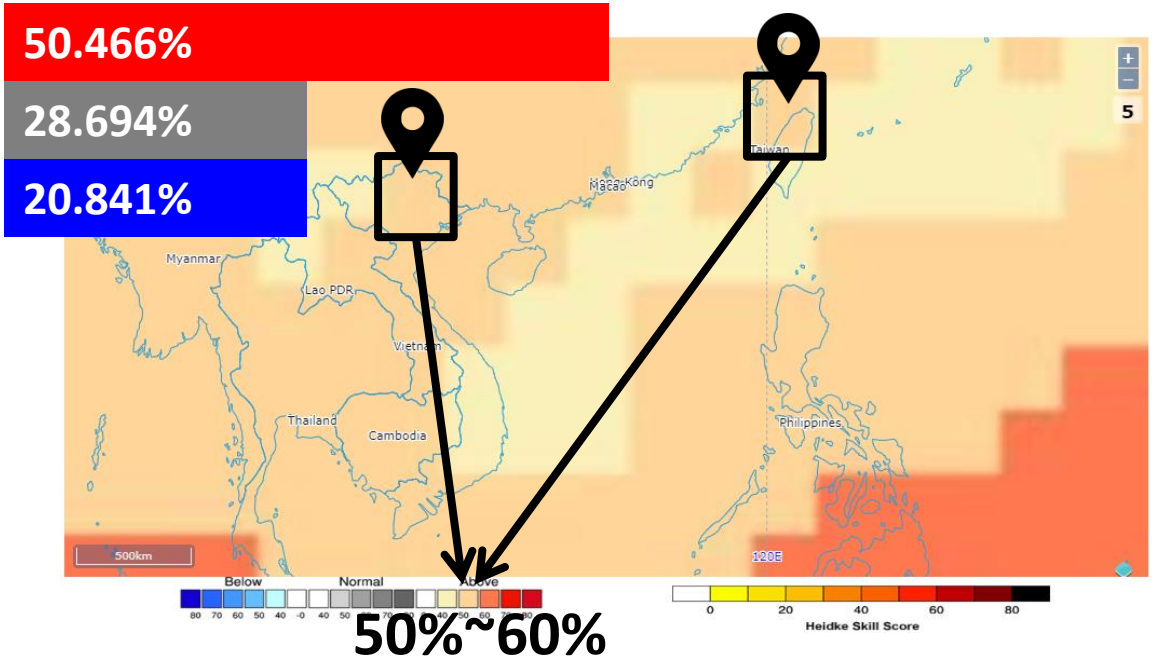
Practice!



When (2018/OND)
Methods (Probabilistic)
Variables (T850)
Models (ALL)

Taipei
Lat: 25.06667 ° = 25 °
Lon: 121.5167° = 120 °

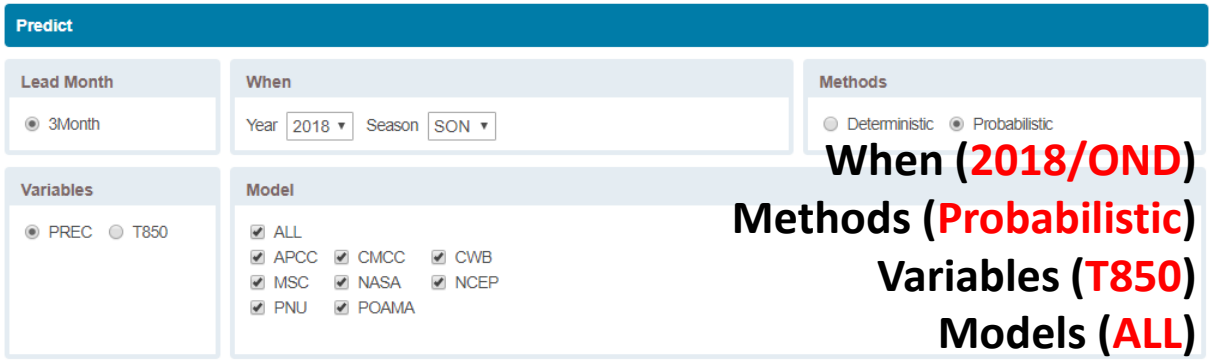
Hanoi
Lat:
Lon:



50%~60%

2. Probabilistic MME

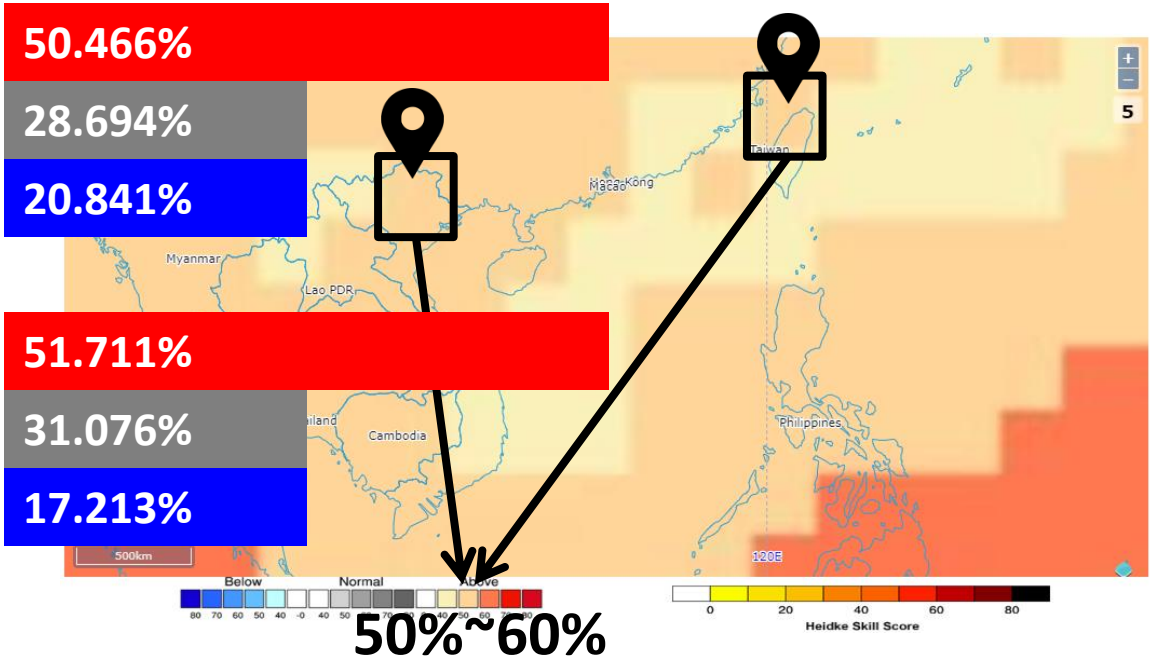
Practice!



When (2018/OND)
Methods (Probabilistic)
Variables (T850)
Models (ALL)

Taipei
Lat: 25.06667 ° = 25 °
Lon: 121.5167° = 120 °

Hanoi
Lat: 21.02833° = 22.5 °
Lon: 105.8542° = 105 °

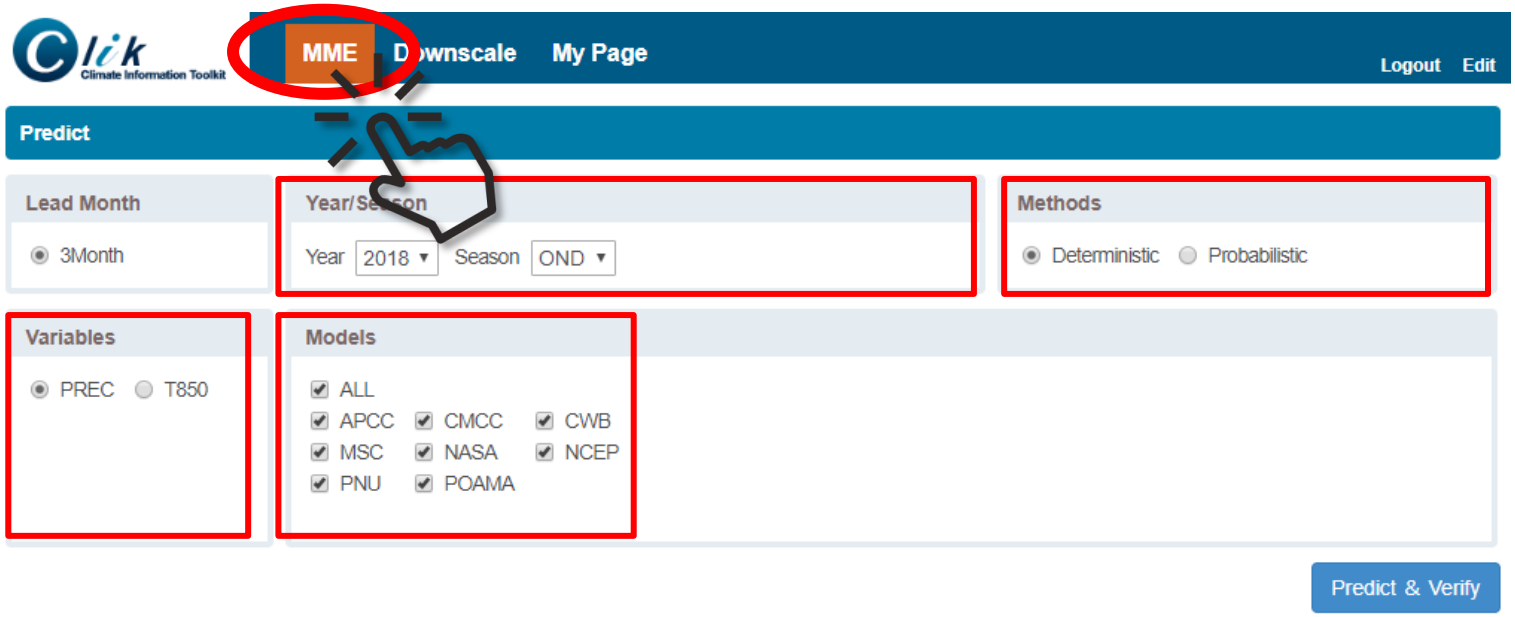


50%~60%

Precipitation for OND 2018?

1. Deterministic MME

Precipitation for OND 2018



① **When**

: 3-month lead prediction data is updated every month.

② **Methods**

: 1 deterministic (SCM) and 1 probabilistic (GAUS) MME methods

③ **Variables**

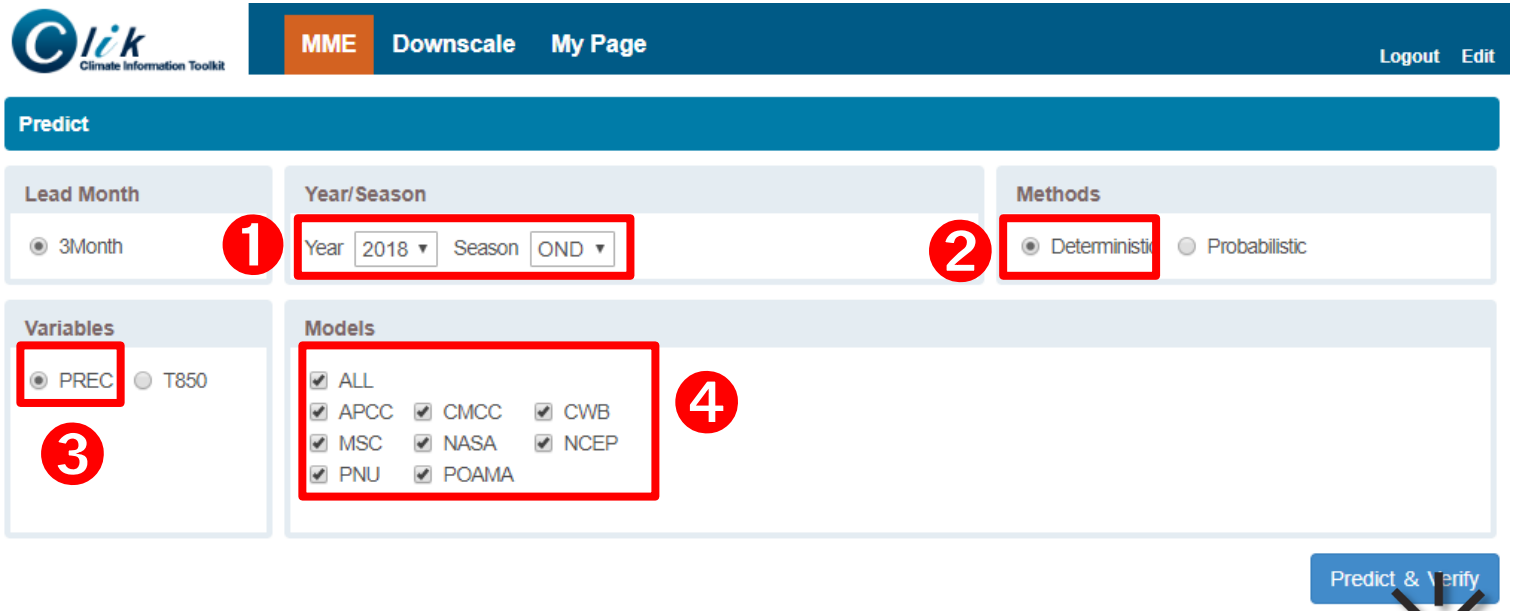
: the target variable

④ **Models**

: GCM models for a MME prediction

1. Deterministic MME

Precipitation for OND 2018



① **When** (**2018/OND**)

: 3-month lead prediction data is updated every month.

② **Methods** (**Deterministic**)

: 1 deterministic (SCM) and 1 probabilistic (GAUS) MME methods

③ **Variables** (**PREC**)

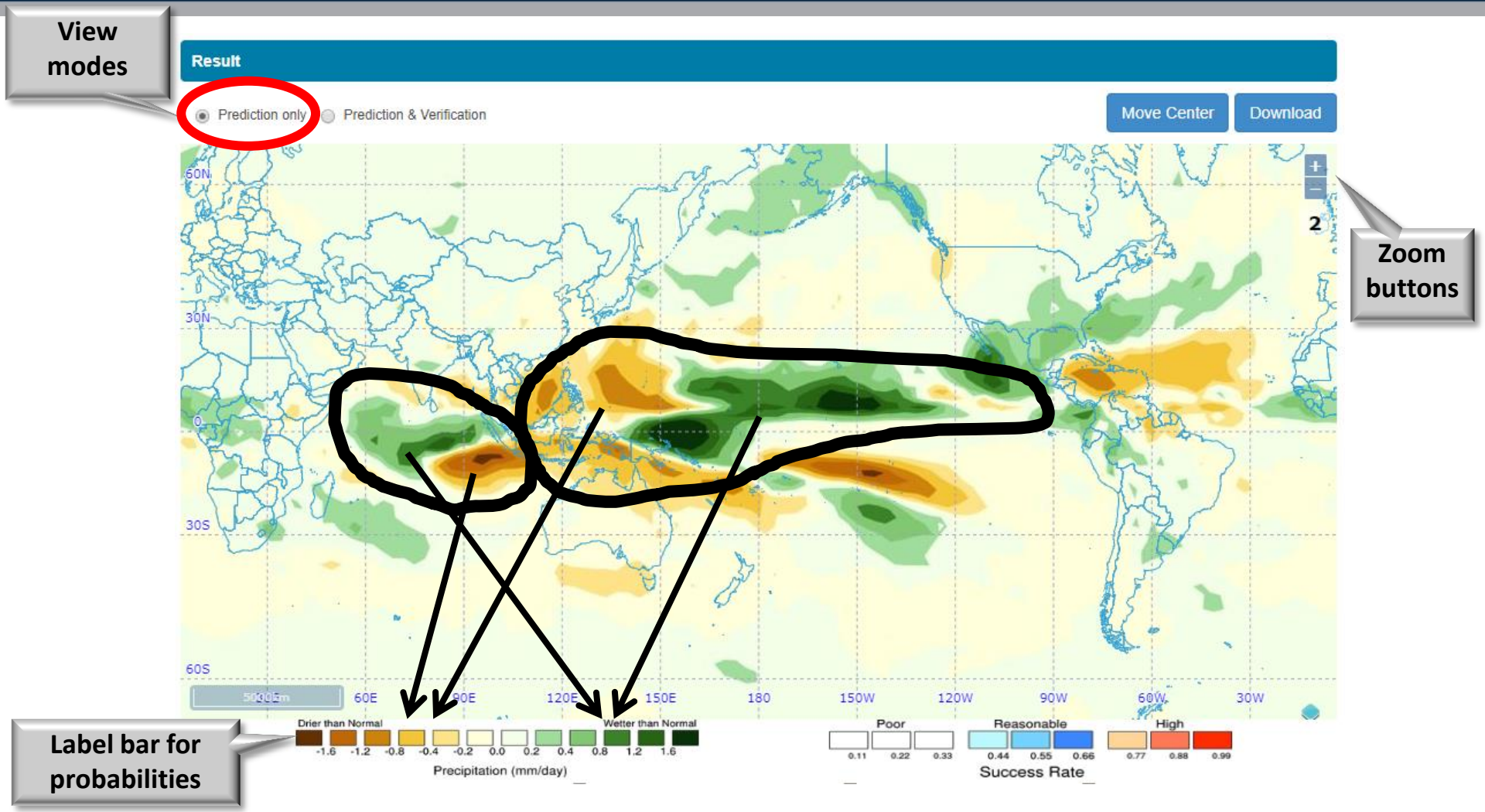
: the target variable

④ **Models** (**ALL**)

: GCM models for a MME prediction

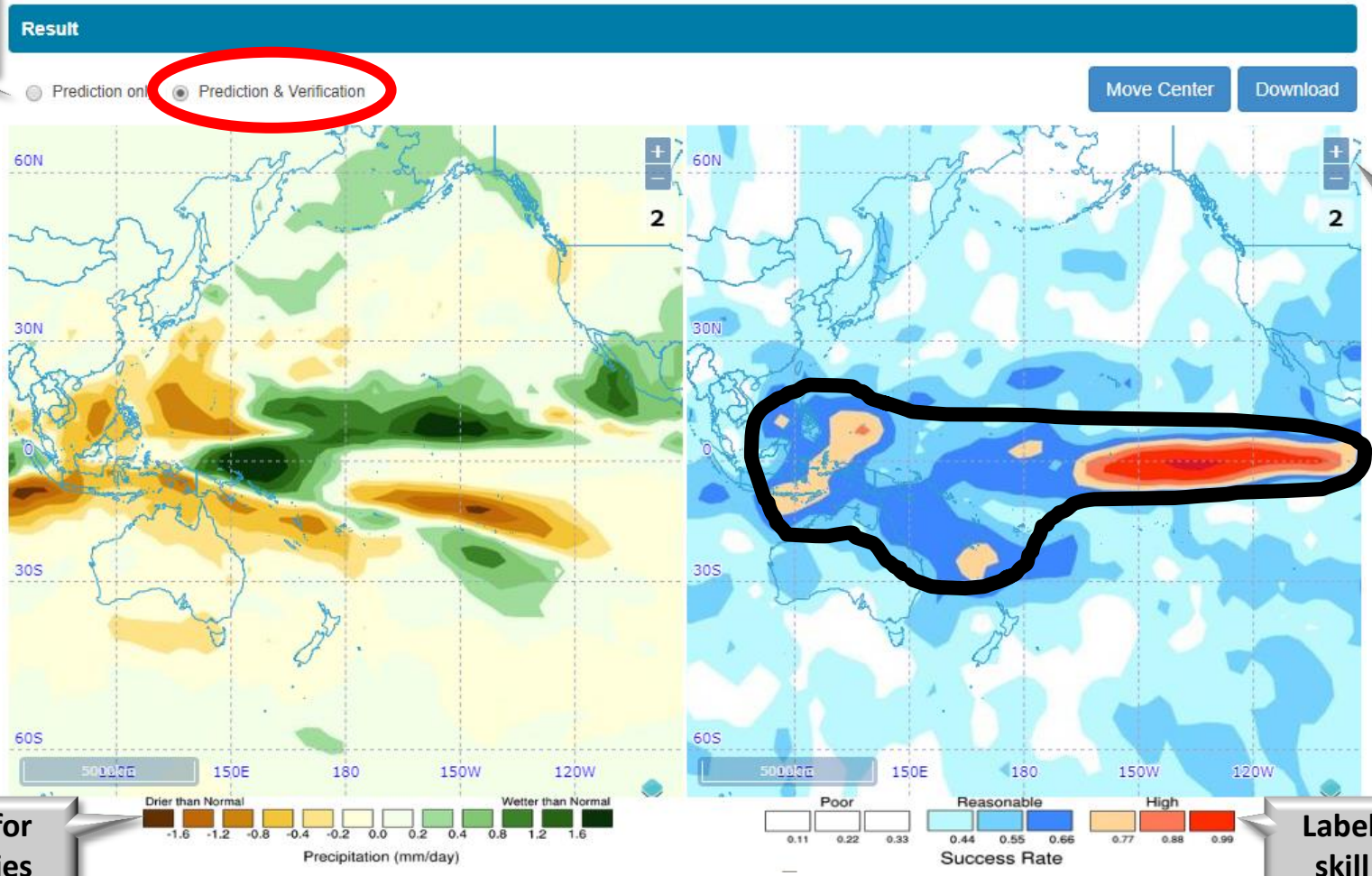
1. Deterministic MME

Precipitation for OND 2018



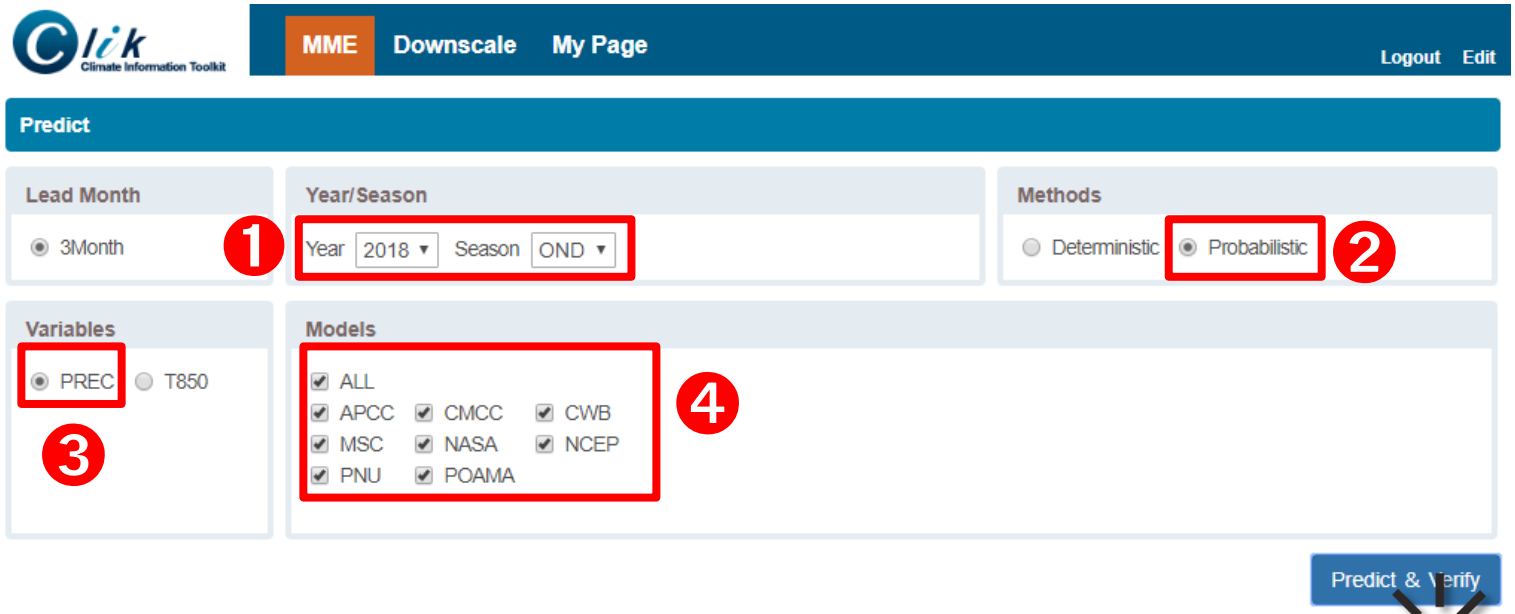
1. Deterministic MME

Precipitation for OND 2018



2. Probabilistic MME

Precipitation for OND 2018



① **When** (**2018/OND**)

: 3-month lead prediction data is updated every month.

② **Methods** (**Probabilistic**)

: 1 deterministic (SCM) and 1 probabilistic (GAUS) MME methods

③ **Variables** (**PREC**)

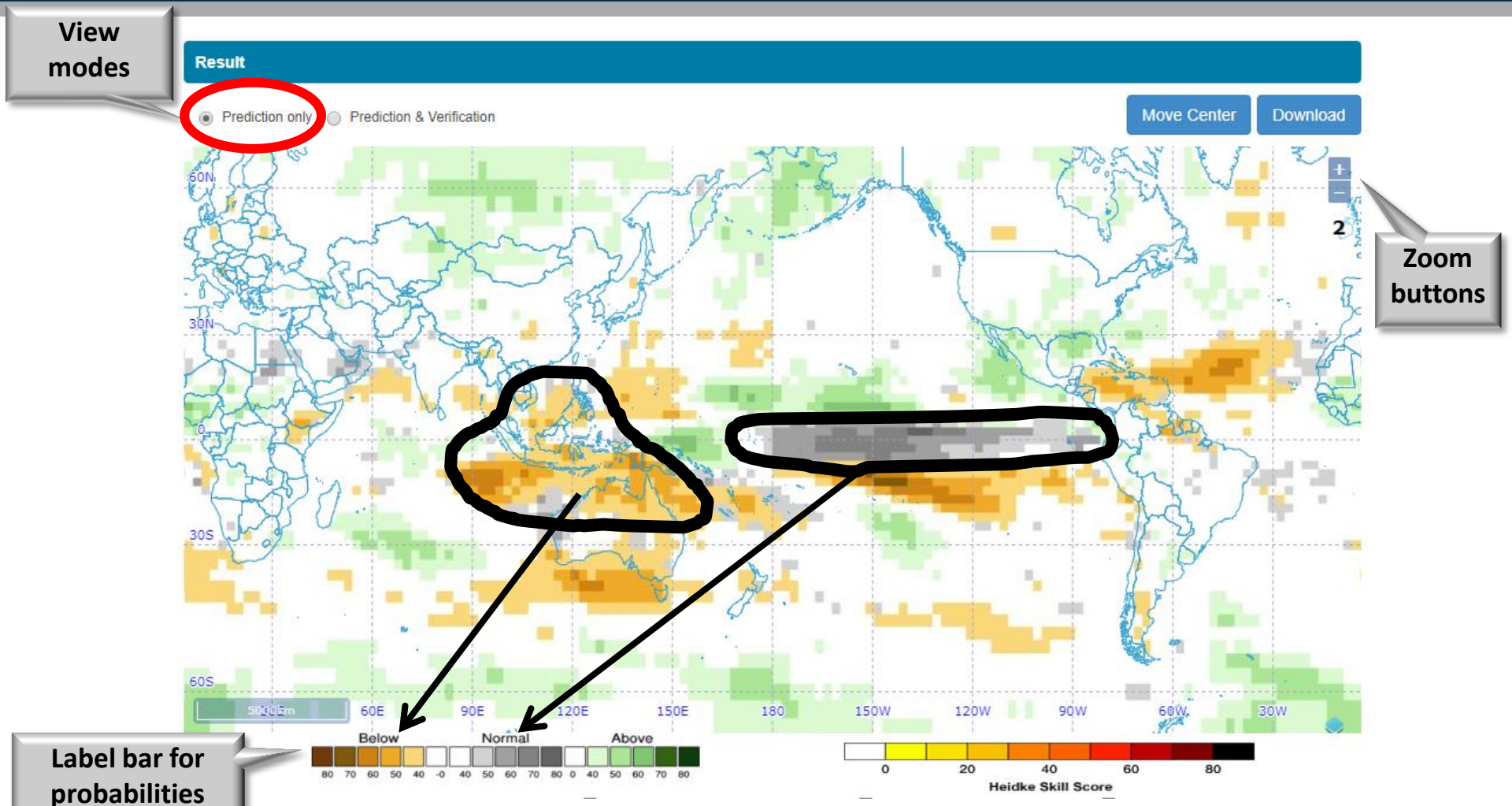
: the target variable

④ **Models** (**ALL**)

: GCM models for a MME prediction

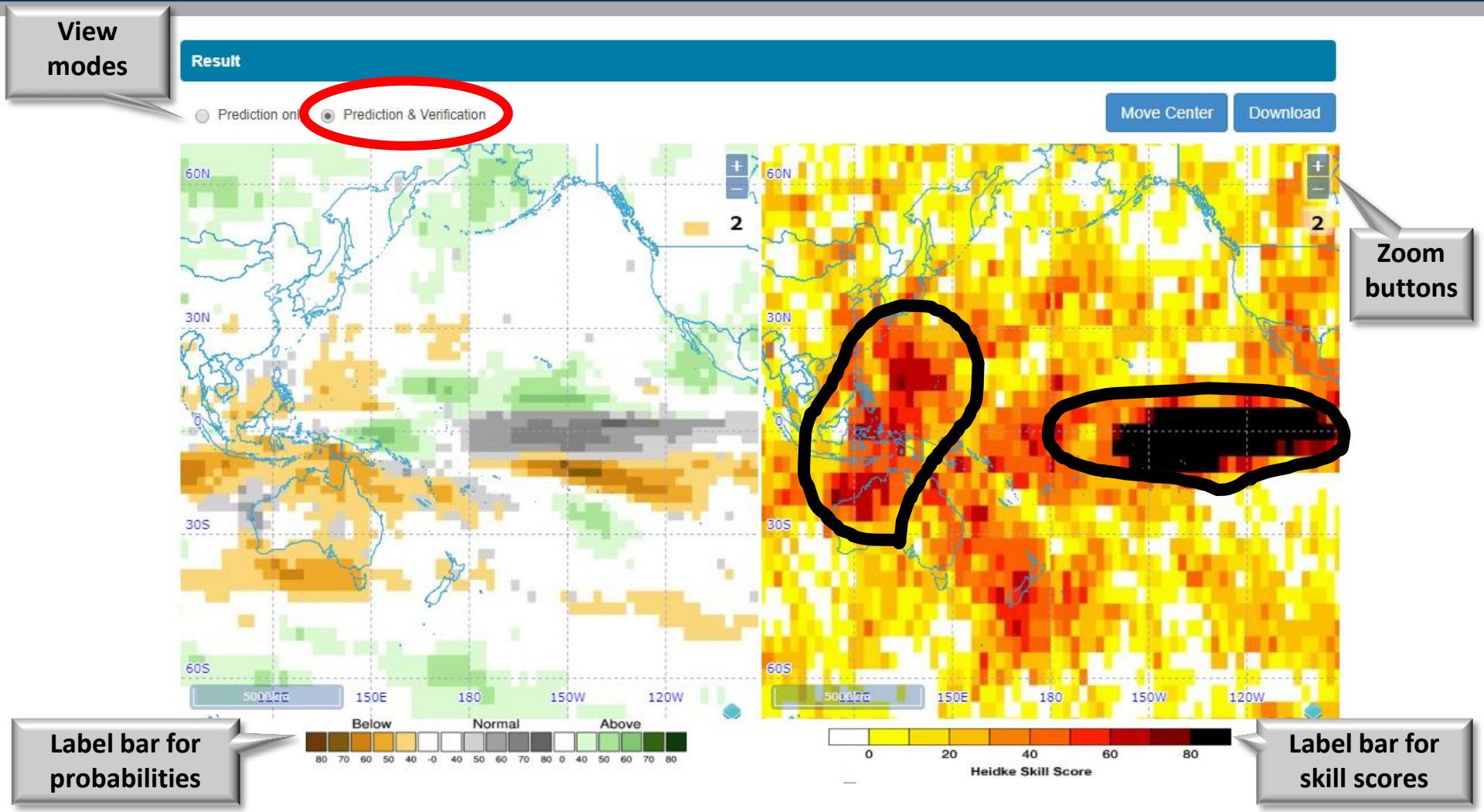
2. Probabilistic MME

Precipitation for OND 2018



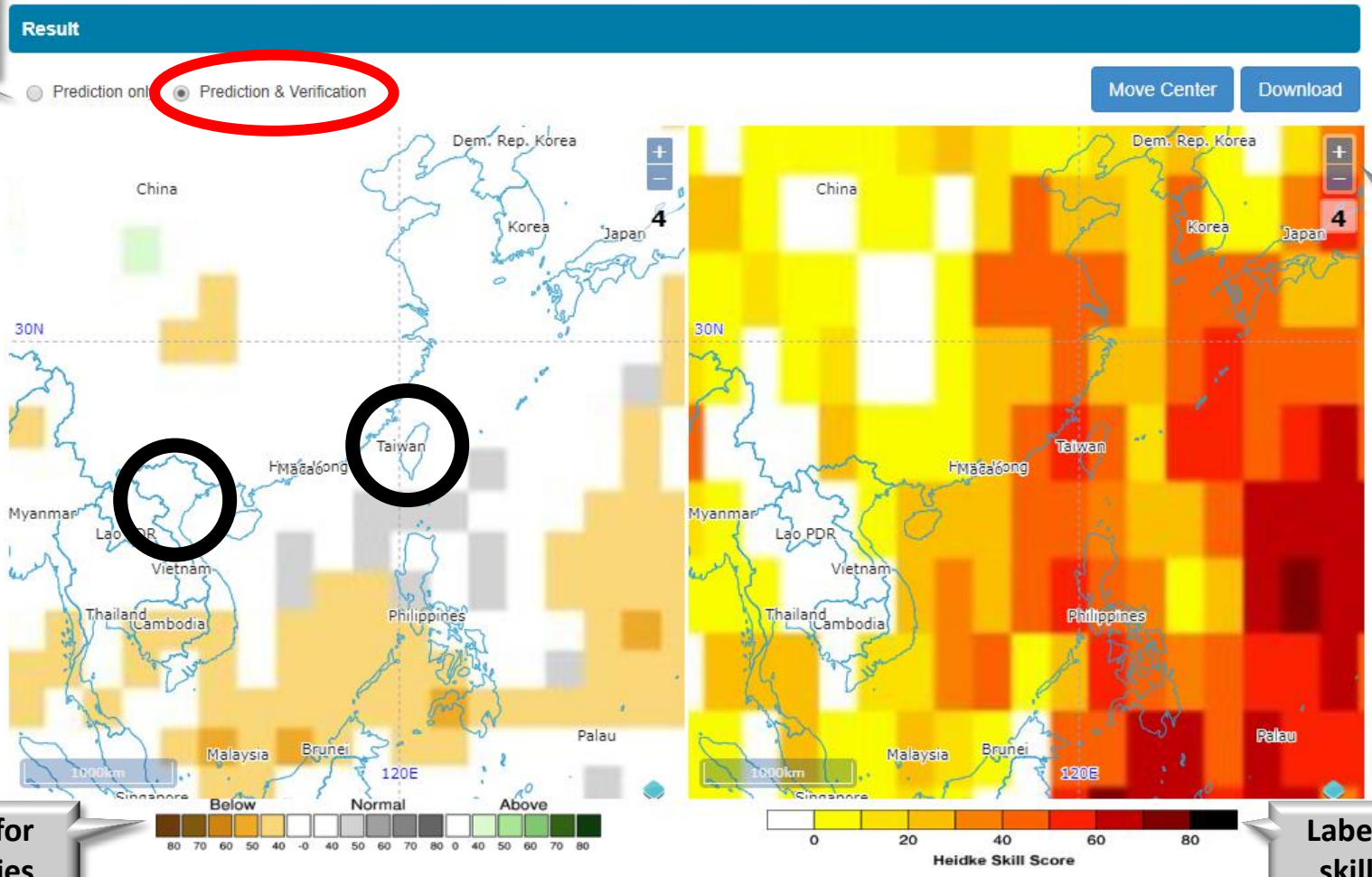
2. Probabilistic MME

Precipitation for OND 2018



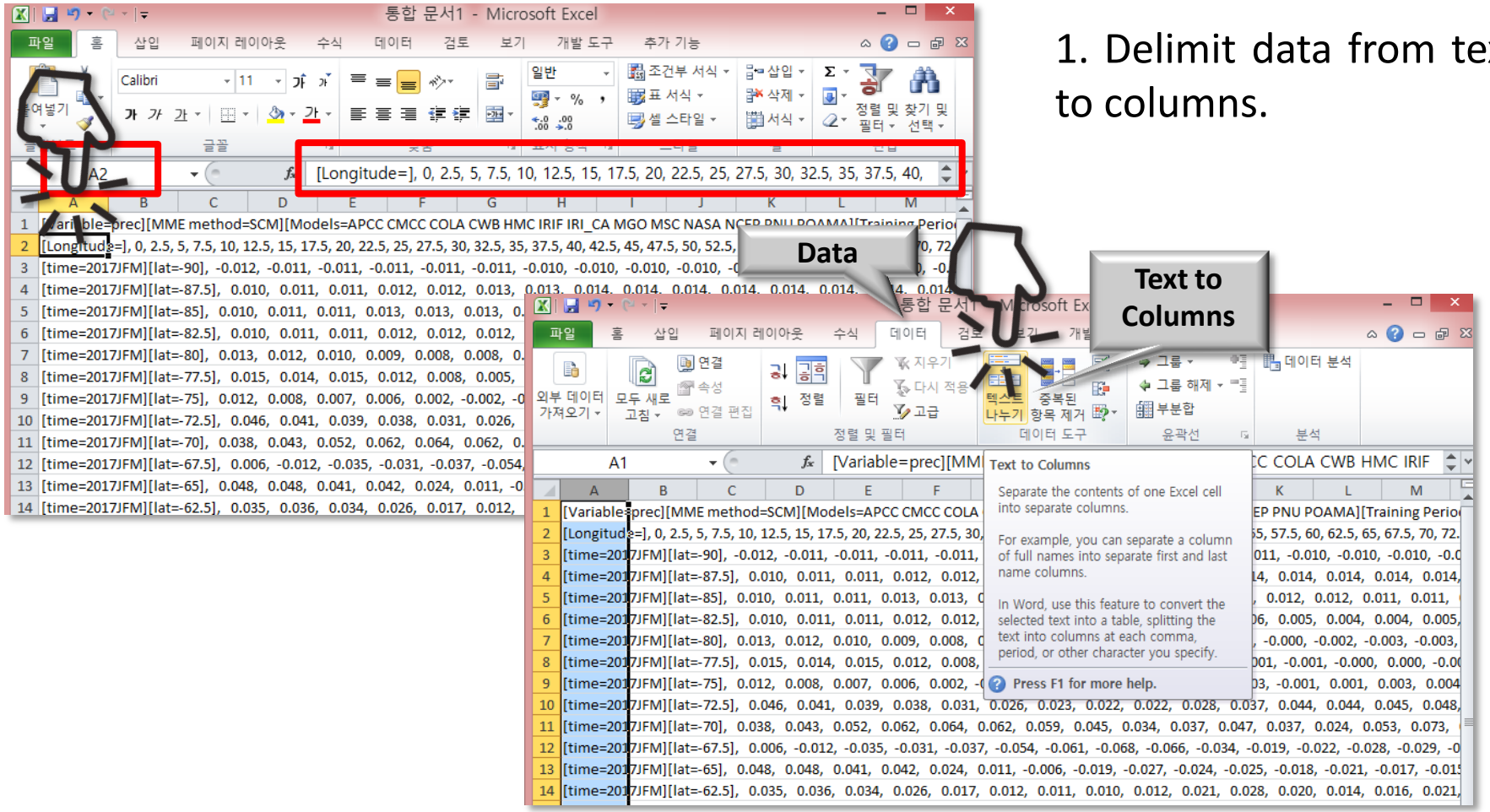
2. Probabilistic MME

Precipitation for OND 2018



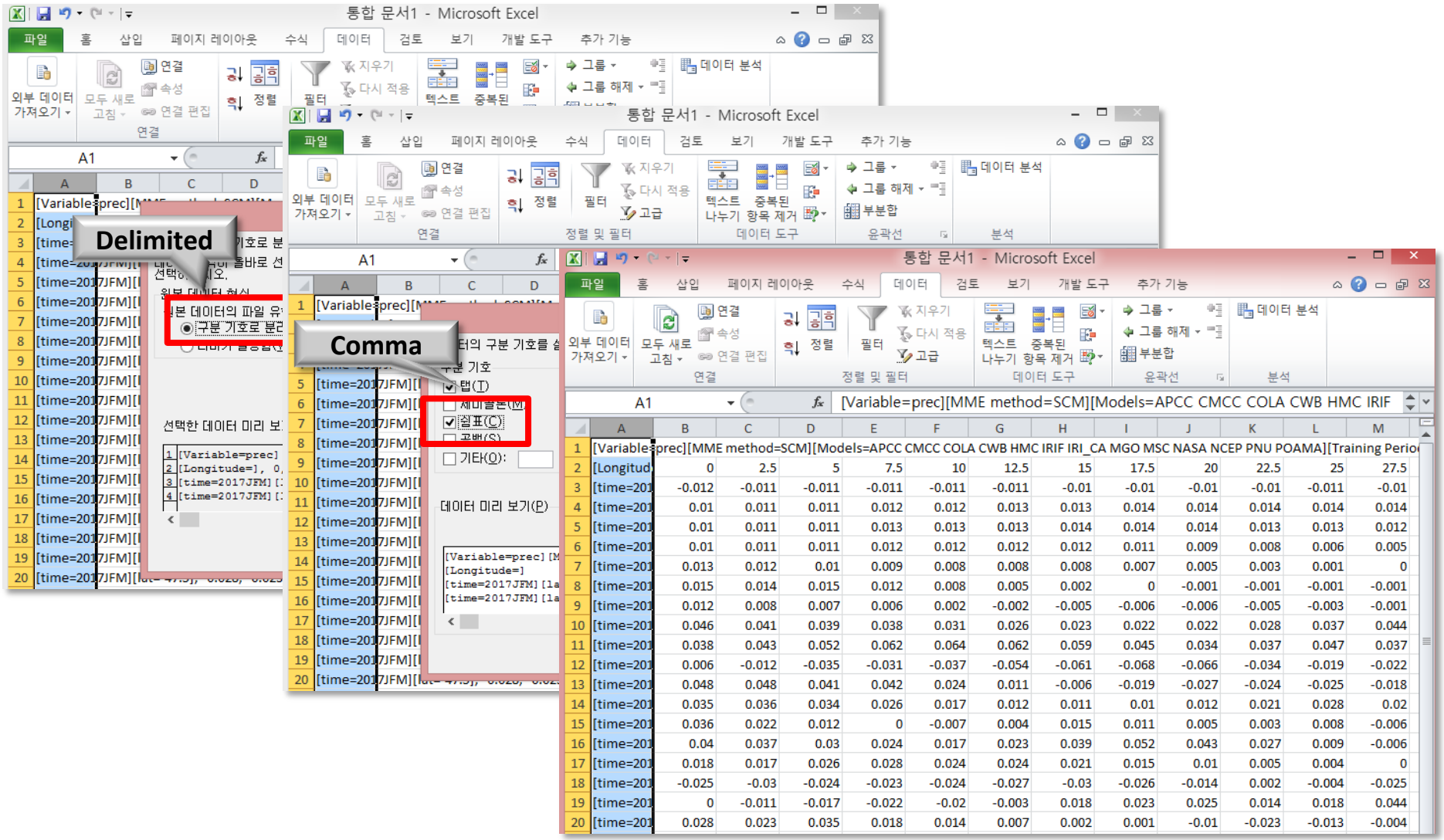

Thank you!

Get annoyed with scrolling up and down?

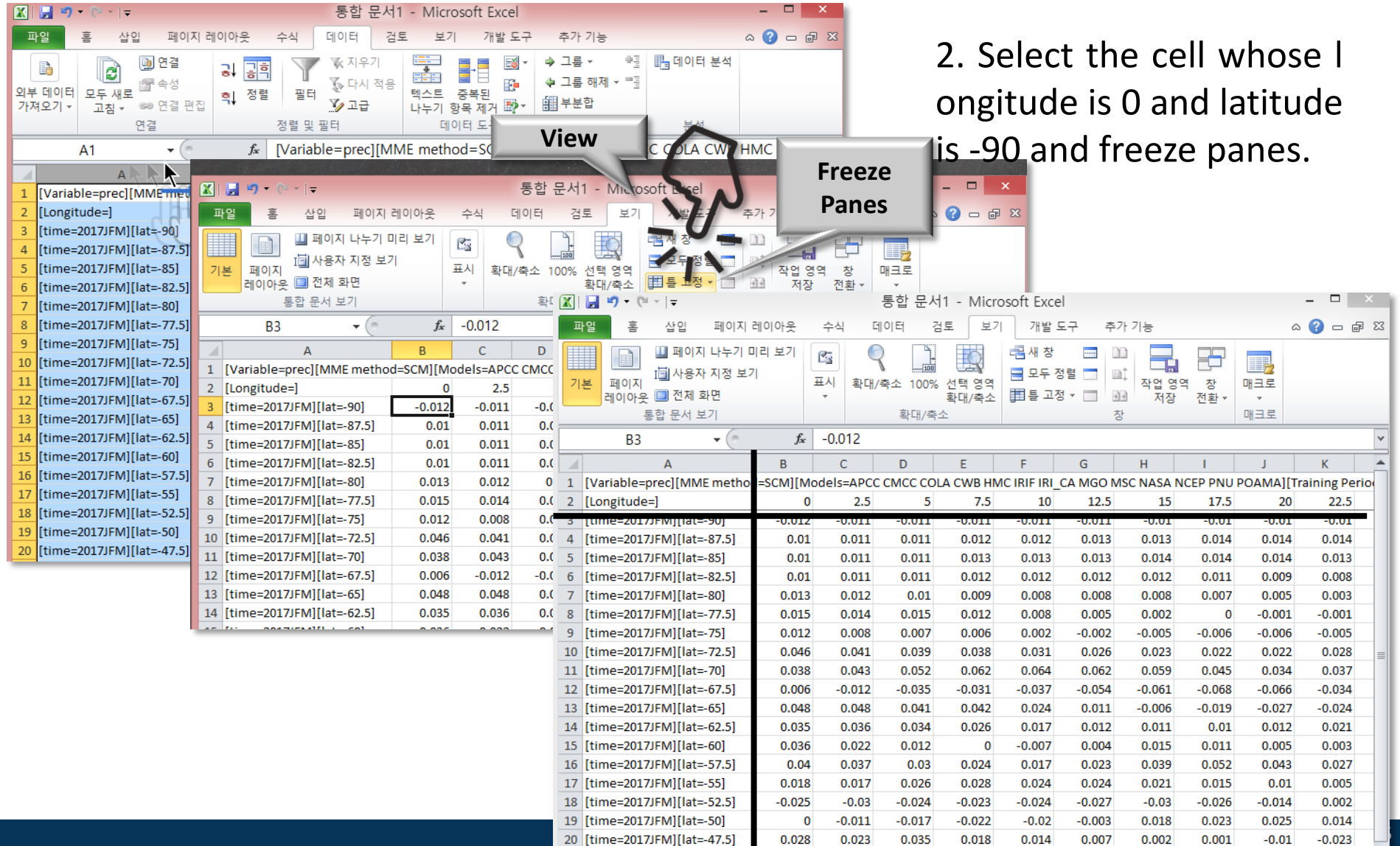


1. Delimit data from text to columns.

Get annoyed with scrolling up and down?



Get annoyed with scrolling up and down?



2. Select the cell whose l ongitude is 0 and latitude is -90 and freeze panes.

lev 4?

Naypyidaw	AN lev1	NN lev2	BN lev3	lev4
① ALL	52.026	29.417	18.557	152.026
② NASA+NCEP+PNU	44.849	29.862	25.289	1E+20
③ APCC+POAMA	74.701	15.888	9.412	174.701

lev4 → final tercile category (drawn)

- lev4 >100 : AN with (lev4-100) %
- 0 < lev4 < 100 : NN with lev4 %
- lev4 <0 : BN with (-1)*lev4%
- lev4 = 1E+20 : eq. chance (IDK)