CLIK hands-on (part II): Multi-Model Prediction
(http://clik.apcc21.org)

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16 October 2018
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
1. Deterministic MME

1-2. Read the map

View modes

Label bar for probabilities

http://clik.apcc21.org
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

- View modes
- Label bar for probabilities
- Label bar for skill scores

[Map with legend showing probabilities and skill scores]
2. Probabilistic MME

2-3. Get quantities

Microsoft EXCEL recommended!
### 2. Probabilistic MME

#### 2-3. Get quantities

<table>
<thead>
<tr>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Variable=t850][MME method=GAUS][Models=APCC CMCC CWB MSC NASA NCEP PNU POAMA][Training Period=1983-2005]</td>
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<td>5</td>
<td>7.5</td>
<td>10</td>
<td>12.5</td>
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<td>44.101</td>
<td>43.98</td>
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<td>44.27</td>
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<td>47.323</td>
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<td>50.862</td>
<td>50.54</td>
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<td>54.363</td>
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<td>48.947</td>
<td>48.431</td>
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<td>50.282</td>
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<td>46.879</td>
<td>45.954</td>
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<td>51.597</td>
<td>49.929</td>
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<td>40.05</td>
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<td>38.858</td>
<td>38.462</td>
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<td>38.849</td>
<td>39.602</td>
</tr>
</tbody>
</table>
2. Probabilistic MME

2-3. Get quantities

Probabilistic Distribution of Rainfall

- AN = 50%
- NN = 34%
- BN = 16%

Tercile bins:

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

sum = 100%

Longitude

http://clik.apcc21.org
2. Probabilistic MME

2-3. Get quantities

Busan
- Longitude ≈ 127.5°E
- Latitude ≈ 35°N

Tercile bins

<table>
<thead>
<tr>
<th>Level</th>
<th>AN</th>
<th>NN</th>
<th>BN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lev 1</td>
<td>57.690%</td>
<td>28.662%</td>
<td>13.648%</td>
</tr>
<tr>
<td>Lev 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lev 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

sum = 100%
### 2. Probabilistic MME

### 2-3. Get quantities

**Busan**

- Longitude $\approx 127.5^\circ$E
- Latitude $\approx 35^\circ$N

<table>
<thead>
<tr>
<th>Tercile bins</th>
<th>Probability for temperature at 850 hPa for Busan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lev 1 AN</td>
<td>57.690%</td>
</tr>
<tr>
<td>Lev 2 NN</td>
<td>28.662%</td>
</tr>
<tr>
<td>Lev 3 BN</td>
<td>13.648%</td>
</tr>
</tbody>
</table>

**sum = 100%**
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: [Unknown]
Lon: [Unknown]

Hanoi
Lat: [Unknown]
Lon: [Unknown]

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:
2. **Probabilistic MME Practice!**

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

**Taipei**
- Lat: 25.0667° = 25°
- Lon: 121.5167° = 120°

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

**Predict**

- **Lead Month**: 3Month
- **When**: Year 2018 Season SON
- **Methods**: Deterministic Probabilistic
- **Variables**: PREC T850
- **Models**: ALL

**Map**

- Color scale: Below Normal Above
- **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
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Precipitation for OND 2018

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Precipitation for OND 2018
1. Deterministic MME

Precipitation for OND 2018
2. Probabilistic MME

Precipitation for OND 2018

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   : the target variable

④ Models (ALL)
   : GCM models for a MME prediction
2. Probabilistic MME

Precipitation for OND 2018

[Map showing precipitation patterns with labels for View modes, Zoom buttons, and a label bar for probabilities]
2. Probabilistic MME

Precipitation for OND 2018
2. Probabilistic MME
Precipitation for OND 2018
Get annoyed with scrolling up and down?

1. Delimit data from text to columns.
Get annoyed with scrolling up and down?

- Delimited
- Comma

http://clik.apcc21.org
Get annoyed with scrolling up and down?

2. Select the cell whose longitude is 0 and latitude is -90 and freeze panes.
lev 4?

<table>
<thead>
<tr>
<th>Model</th>
<th>AN lev1</th>
<th>NN lev2</th>
<th>BN lev3</th>
<th>lev4</th>
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<tbody>
<tr>
<td>ALL</td>
<td>52.026</td>
<td>29.417</td>
<td>18.557</td>
<td>152.026</td>
</tr>
<tr>
<td>NASA+NCEP+PNU</td>
<td>44.849</td>
<td>29.862</td>
<td>25.289</td>
<td>1E+20</td>
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<tr>
<td>APCC+POAMA</td>
<td>74.701</td>
<td>15.888</td>
<td>9.412</td>
<td>174.701</td>
</tr>
</tbody>
</table>

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)