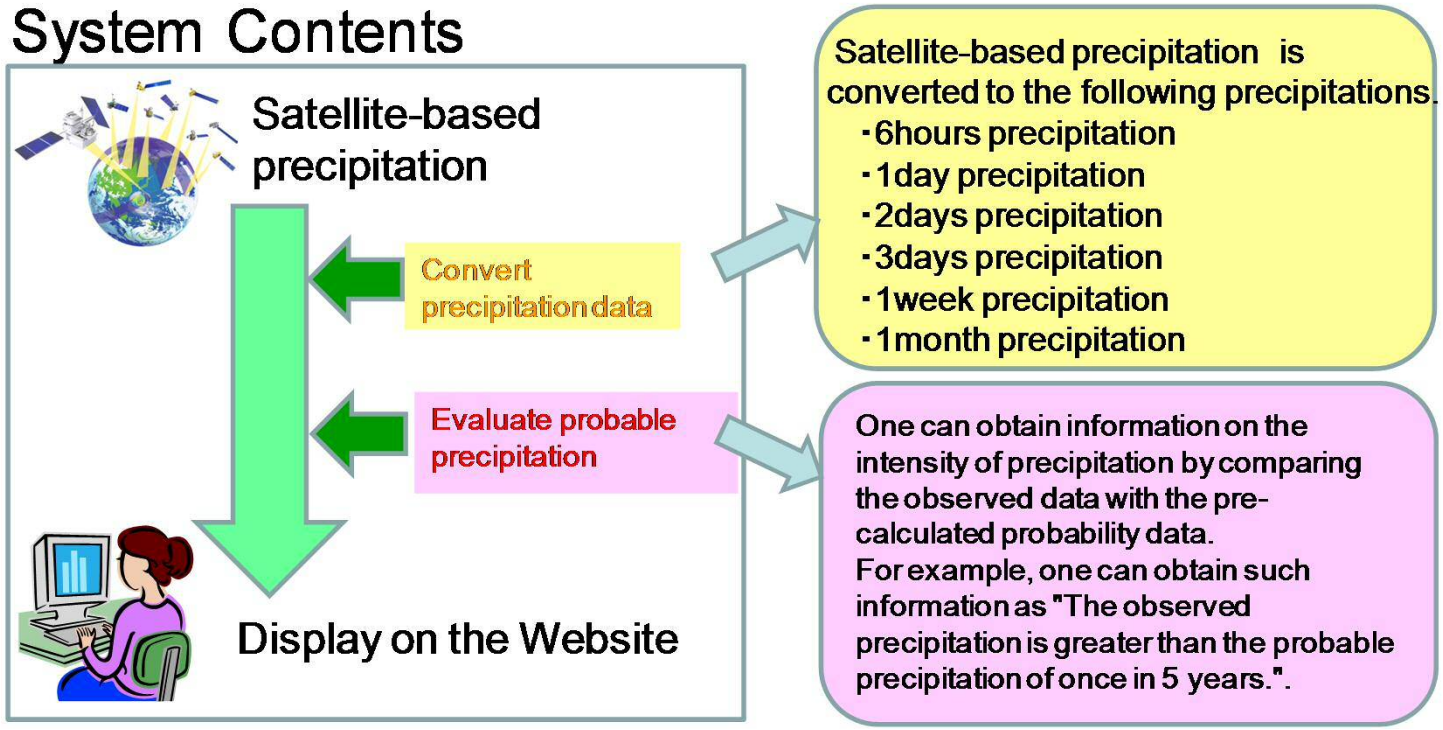
Satellite-Based Precipitation Data Delivery System for Thailand

Infrastructure Development Institute-Japan

1. About the Satellite-Based Precipitation Data Delivery System

The Satellite-Based Precipitation Data Delivery System by using GSMaP data provides river basin average precipitation and regional average precipitation.

The system also notify when the observed basin or regional average precipitation exceeds the pre-calculated probable precipitation with some return periods (for example, once in 5 years).



2. Overview of GSMaP

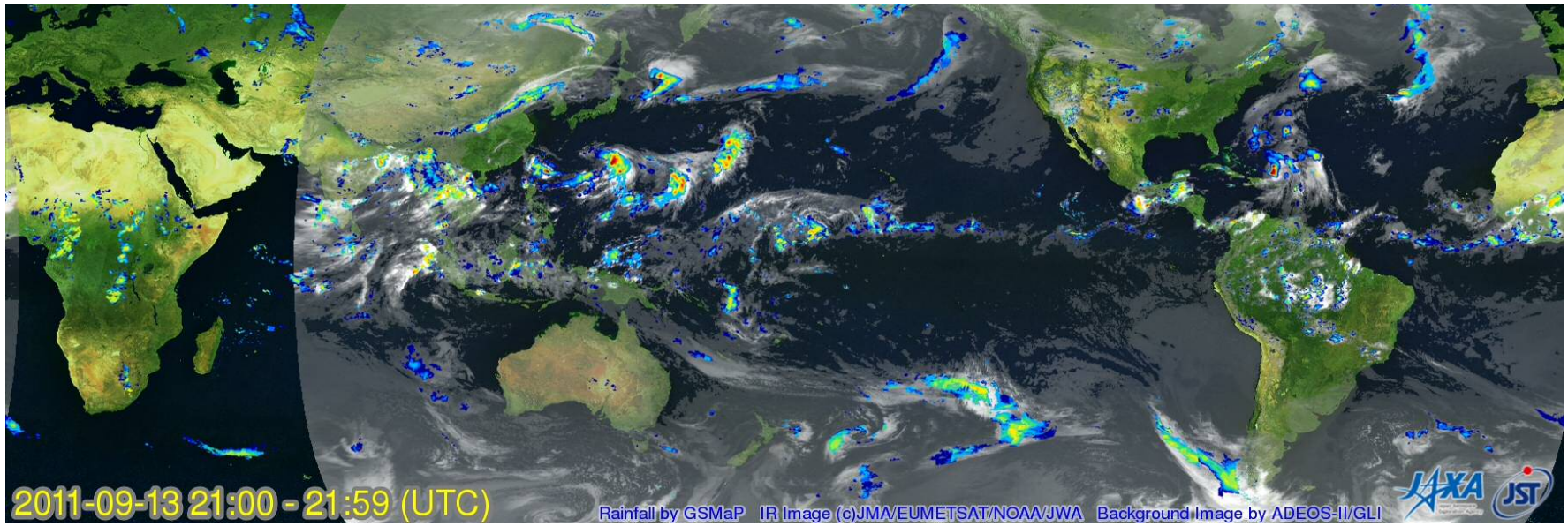
GSMaP is a precipitation intensity distribution map developed by using the satellite observation data.

GSMaP: Global Satellite Mapping of Precipitation

Area : N60° ～S60°

Spatial resolution : 0.1° （ About 11km ）

Time resolution : 1 hour



3. Calculation of probable precipitation with some return periods

The probable precipitation with some return periods is calculated by using the precipitation records.

Table Calculation conditions

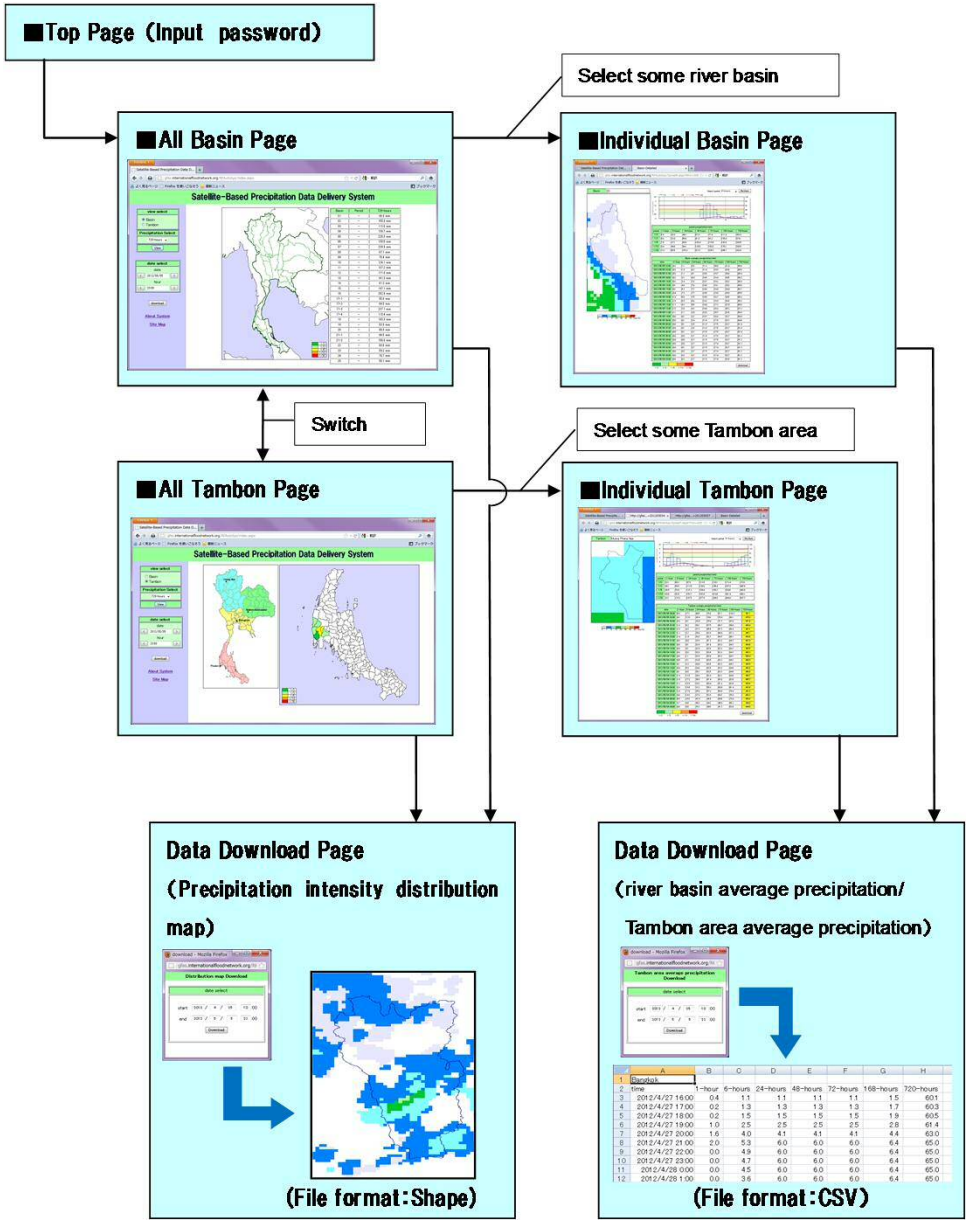
Unit	25basin、all Amphoe、0.1° mesh
Use data	Satellite-based precipitation（GSMaP）
Data period	2003～2011
Probability scale	1/2、1/3、1/5、1/10、1/30
Cumulative period※	6-hours, 24-hours(1-day), 48-hours(2-days), 72-hours(3-days), 168-hours(1-week), 720-hours(1-month)

※To calculate the probable precipitation with some return periods , the annual maximum values of cumulative precipitation data is required.

Annual maximum value is the maximum precipitation observed in a year from January to December. For example, the annual maximum 6-hours precipitation is the maximum cumulative precipitation in some 6hr precipitation during a year.

4. System configuration

- All basin page will open to enter a password at the top page.
- Select the individual basin from all basin page.
- You can switch from all basin page to all Amphoe page.
- Select the individual Amphoe from all Amphoe page.
- You can download the distribution map at all basin page and all Amphoe page.
- You can download the average precipitation at individual basin page and individual Amphoe page .



5. System operation

■ All basin page

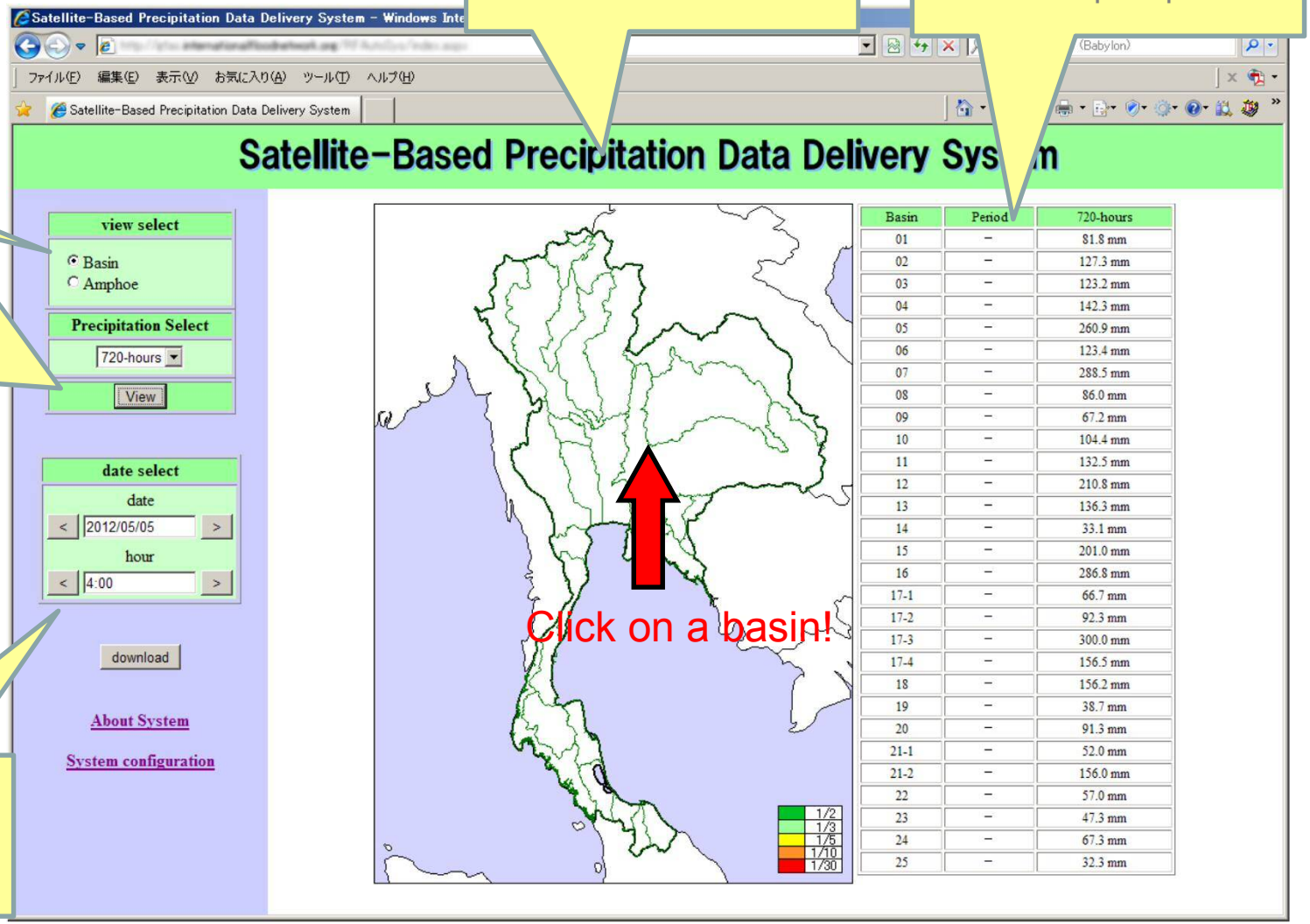
Distribution map of cumulative precipitation is shown.

Precipitation information is shown for the selected date/time and cumulative precipitation.

Select Basin or Amphoe.

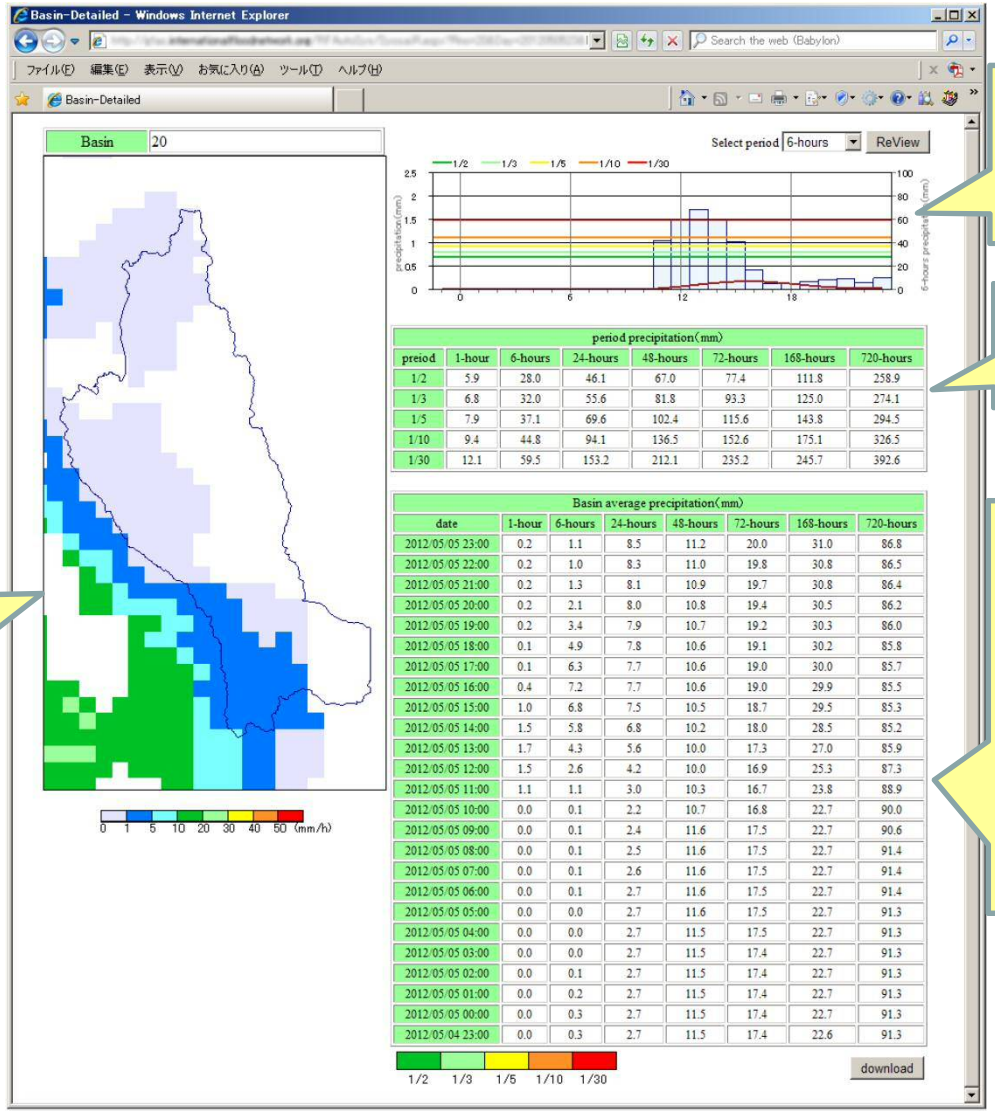
Select satellite-based precipitation.
- 1 hour
- 6 hours
- 1 day
- 2 days
- 3 days
- week
- month

Select date and time(hour) to display.



5. System operation

■ Individual Basin Page



The screen displays the satellite-based hourly precipitation of the selected date.

Cumulative precipitation and hourly precipitation are shown on a graph.

Probable precipitation is shown in a table.

Cumulative precipitation is shown from the 24hr before the selected time/date.
When the observed precipitation exceeds the probable precipitation, the cell becomes to be colored.

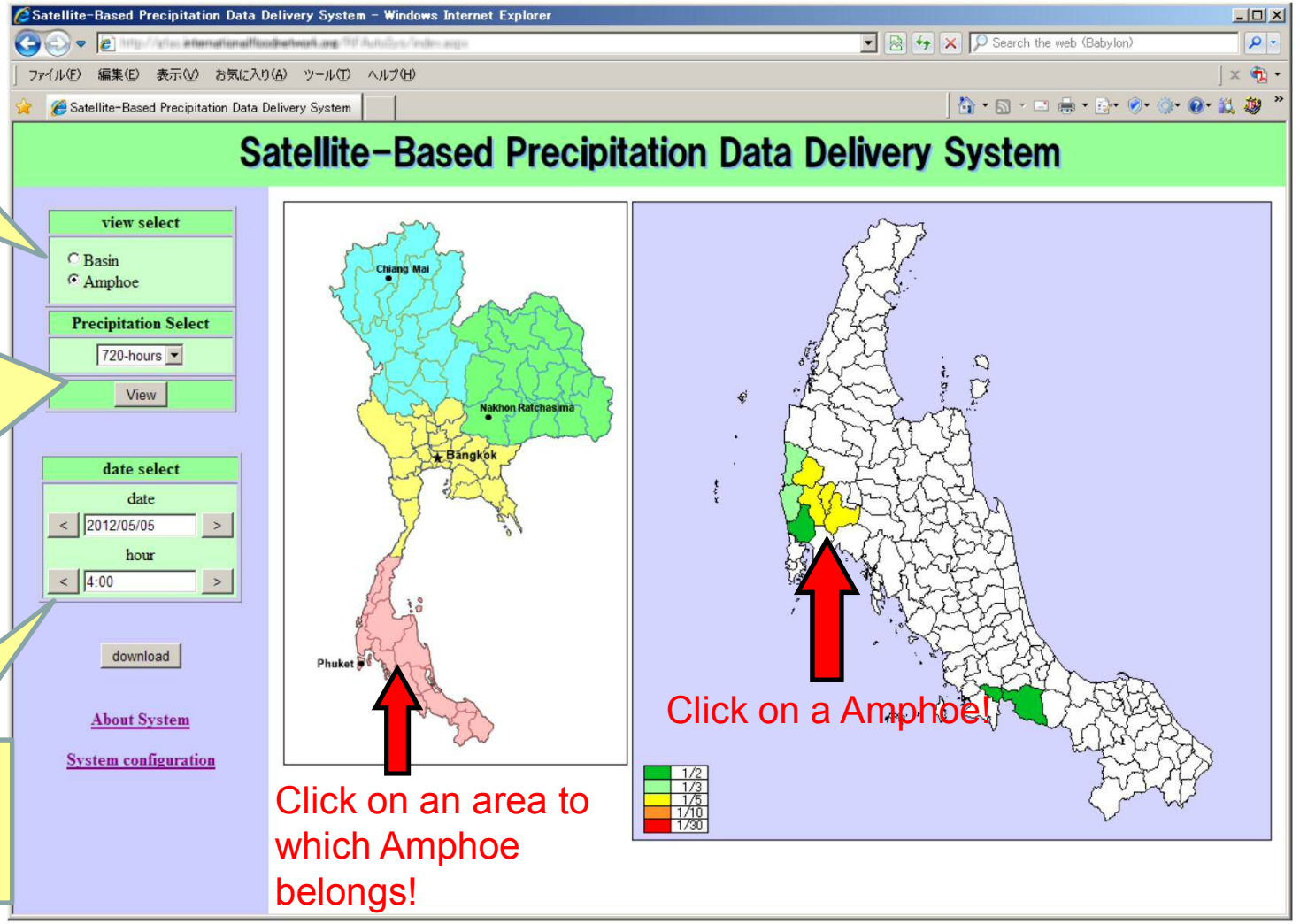
5. System operation

■ All Amphoe Page

Select Basin or Amphoe.

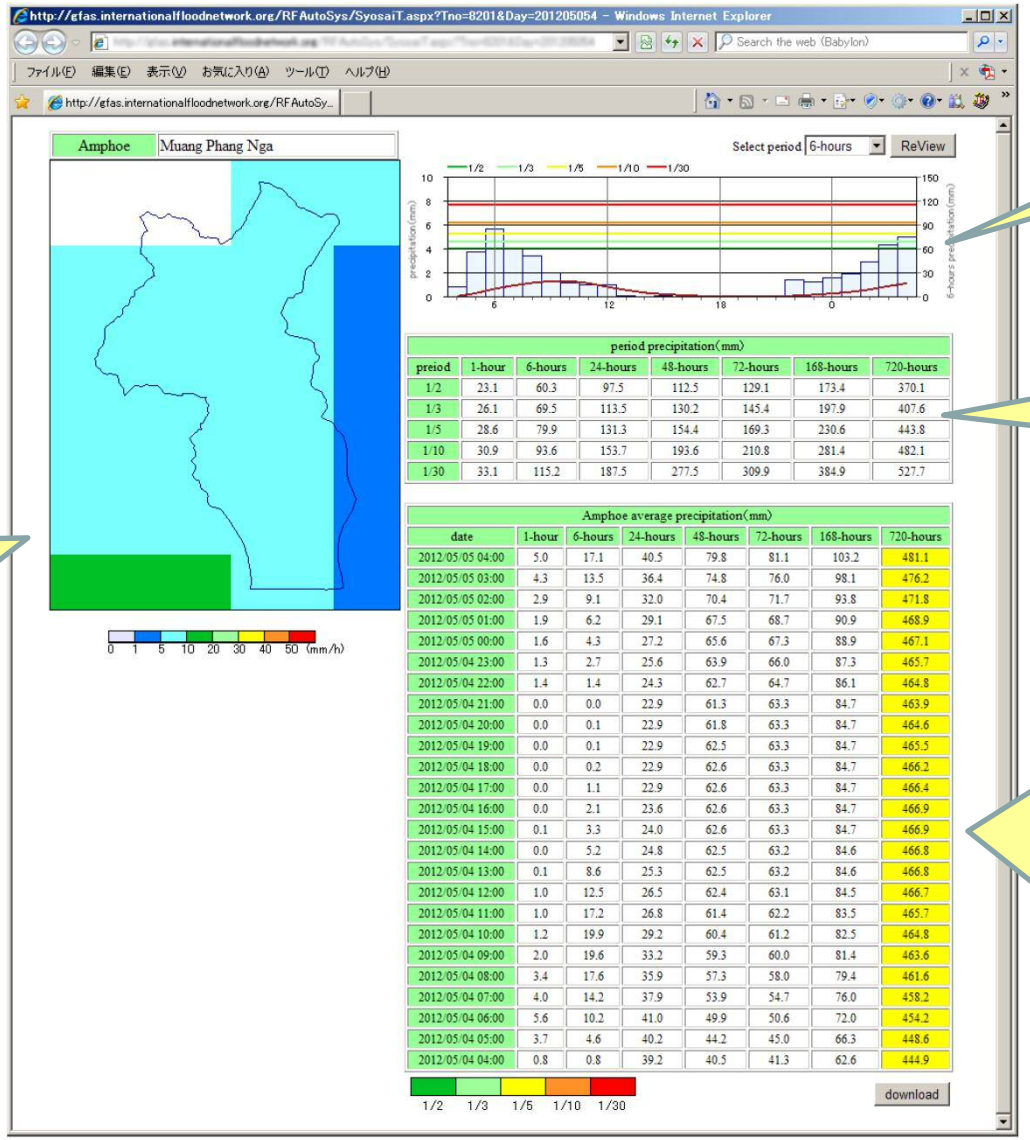
Select satellite-based precipitation.
- 1 hour
- 6 hours
- 1 day
- 2 days
- 3 days
- week
- month

Select date and time(hour) to display.



5. System operation

■Individual Amphoe Page



The screen displays the satellite-based hourly precipitation of the selected date.

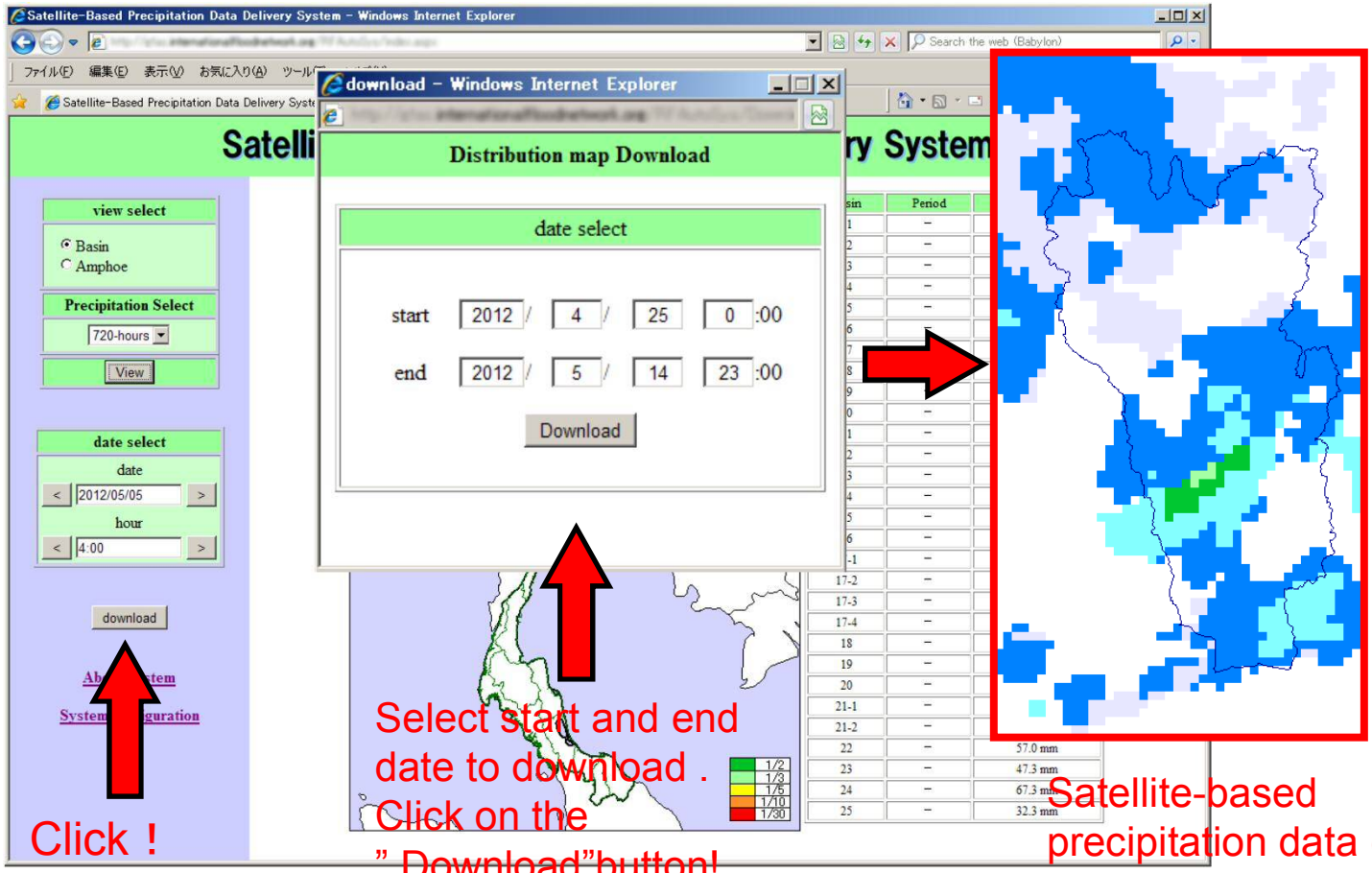
Cumulative precipitation and hourly precipitation are shown on a graph.

Probable precipitation is shown in a table.

Cumulative precipitation is shown from the 24hr before the selected time/date.
When the observed precipitation exceeds the probable precipitation, the cell becomes to be colored.

5. System operation

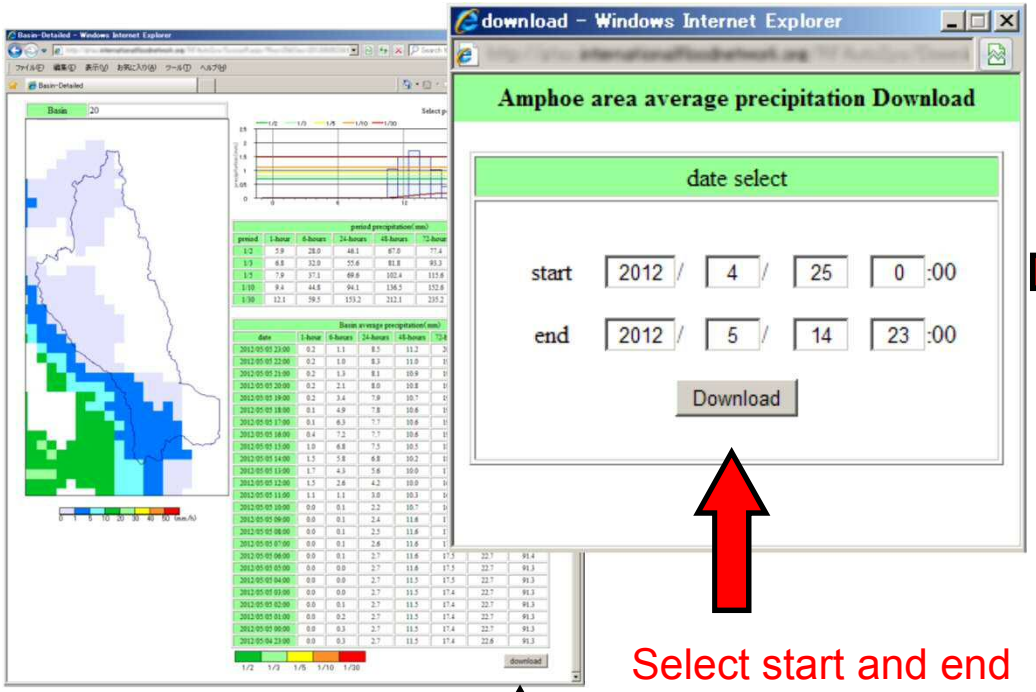
■Data Download Page（Precipitation intensity distribution map）



5. System operation

■Data Download Page

（river basin average precipitation/Amphoe area average precipitation）



Click ！

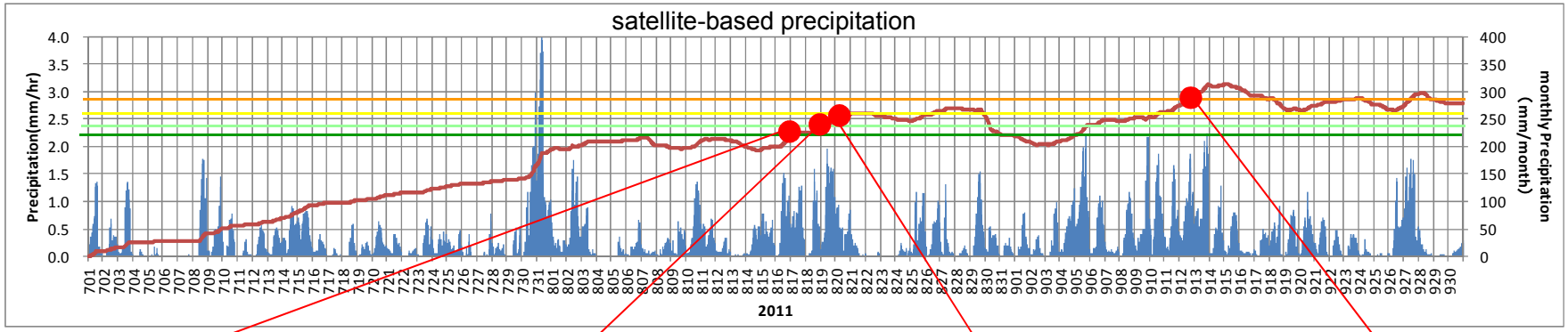
Select start and end date to download . Click on the ” Download”button!

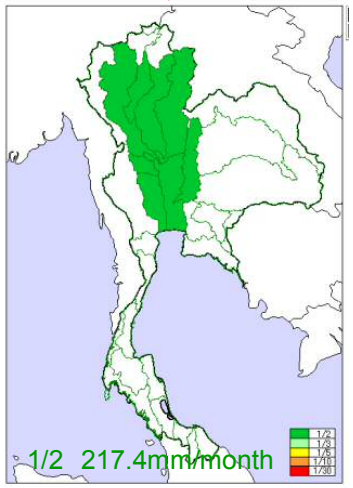
	A	B	C	D	E	F	G	H
1	Bangkok							
2	time	1-hour	6-hours	24-hours	48-hours	72-hours	168-hours	720-hours
3	2012/4/27 16:00	0.4	1.1	1.1	1.1	1.1	1.5	60.1
4	2012/4/27 17:00	0.2	1.3	1.3	1.3	1.3	1.7	60.3
5	2012/4/27 18:00	0.2	1.5	1.5	1.5	1.5	1.9	60.5
6	2012/4/27 19:00	1.0	2.5	2.5	2.5	2.5	2.8	61.4
7	2012/4/27 20:00	1.6	4.0	4.1	4.1	4.1	4.4	63.0
8	2012/4/27 21:00	2.0	5.3	6.0	6.0	6.0	6.4	65.0
9	2012/4/27 22:00	0.0	4.9	6.0	6.0	6.0	6.4	65.0
10	2012/4/27 23:00	0.0	4.7	6.0	6.0	6.0	6.4	65.0
11	2012/4/28 0:00	0.0	4.5	6.0	6.0	6.0	6.4	65.0
12	2012/4/28 1:00	0.0	3.6	6.0	6.0	6.0	6.4	65.0
13	2012/4/28 2:00	0.0	2.0	6.0	6.0	6.0	6.4	65.0
14	2012/4/28 3:00	0.0	0.0	6.1	6.1	6.1	6.4	65.0
15	2012/4/28 4:00	0.0	0.1	6.1	6.1	6.1	6.5	65.1
16	2012/4/28 5:00	0.0	0.1	6.1	6.1	6.1	6.5	65.1
17	2012/4/28 6:00	0.0	0.1	6.1	6.1	6.1	6.5	65.1
18	2012/4/28 7:00	0.0	0.1	6.1	6.1	6.1	6.4	65.1
19	2012/4/28 8:00	0.0	0.1	6.1	6.1	6.1	6.4	65.1
20	2012/4/28 9:00	0.0	0.1	6.1	6.1	6.1	6.4	65.1
21	2012/4/28 10:00	0.0	0.0	6.1	6.1	6.1	6.4	65.1
22	2012/4/28 11:00	0.0	0.0	6.1	6.1	6.1	6.4	65.1
23	2012/4/28 12:00	0.0	0.0	6.1	6.1	6.1	6.4	65.1
24	2012/4/28 13:00	0.0	0.0	6.1	6.1	6.1	6.4	65.1
25	2012/4/28 14:00	0.0	0.0	6.0	6.1	6.1	6.4	65.1
26	2012/4/28 15:00	0.0	0.0	5.4	6.1	6.1	6.4	65.1
27	2012/4/28 16:00	0.0	0.0	5.0	6.1	6.1	6.4	65.1
28	2012/4/28 17:00	0.0	0.0	4.8	6.1	6.1	6.4	65.1
29	2012/4/28 18:00	0.0	0.0	4.6	6.1	6.1	6.4	65.1
30	2012/4/28 19:00	0.0	0.0	3.7	6.1	6.1	6.4	65.1
31	2012/4/28 20:00	0.0	0.0	2.0	6.1	6.1	6.4	65.1
32	2012/4/28 21:00	0.0	0.0	0.1	6.1	6.1	6.4	65.1
33	2012/4/28 22:00	0.0	0.0	0.1	6.1	6.1	6.4	65.1
34	2012/4/28 23:00	0.0	0.0	0.1	6.1	6.1	6.4	65.1
35	2012/4/29 0:00	0.0	0.0	0.1	6.1	6.1	6.4	65.1
36	2012/4/29 1:00	0.0	0.0	0.1	6.1	6.1	6.4	65.1

Satellite-based precipitation data (csv file) is downloaded.

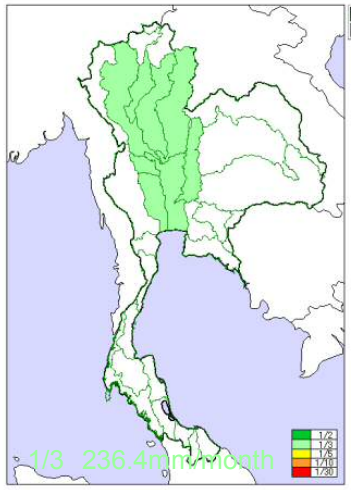
6. Grasp of a long-term rain tendency by the System

from July to September, 2011　monthly satellite-based precipitation

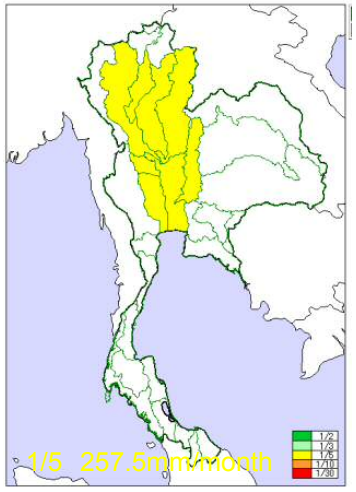




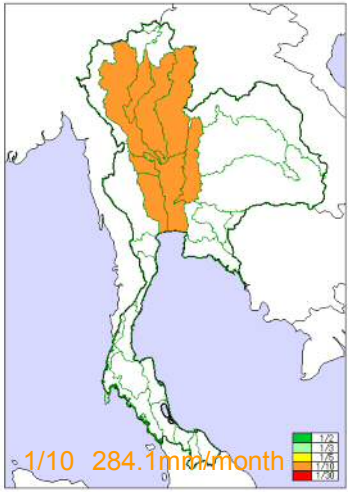
8/17 5:00
Monthly satellite-based precipitation over 2-year return period.



8/19 9:00
Monthly satellite-based precipitation over 3-year return period.



8/20 21:00
Monthly satellite-based precipitation over 5-year return period.



9/12 17:00
Monthly satellite-based precipitation over 10-year return period.

Satellite-based monthly precipitation exceeded 2-year return period in the middle of August and 10-year return period in the middle of September.