



Water Watch and Monitoring System for Warning Branch, Royal Irrigation Department , MOAC

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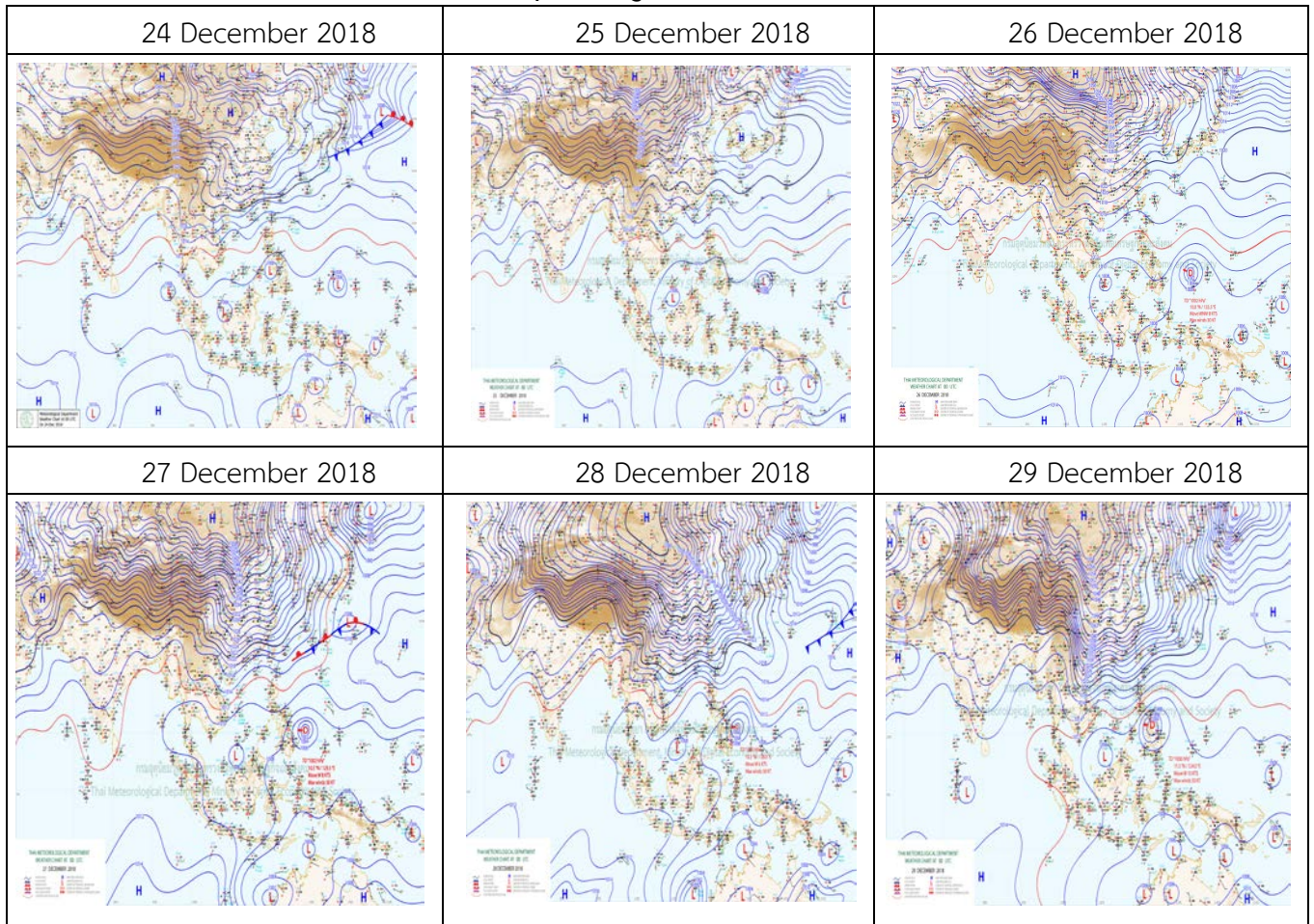
Weekly Report for water watch during rainy season in 2018/2019

During 24 – 30 December 2018

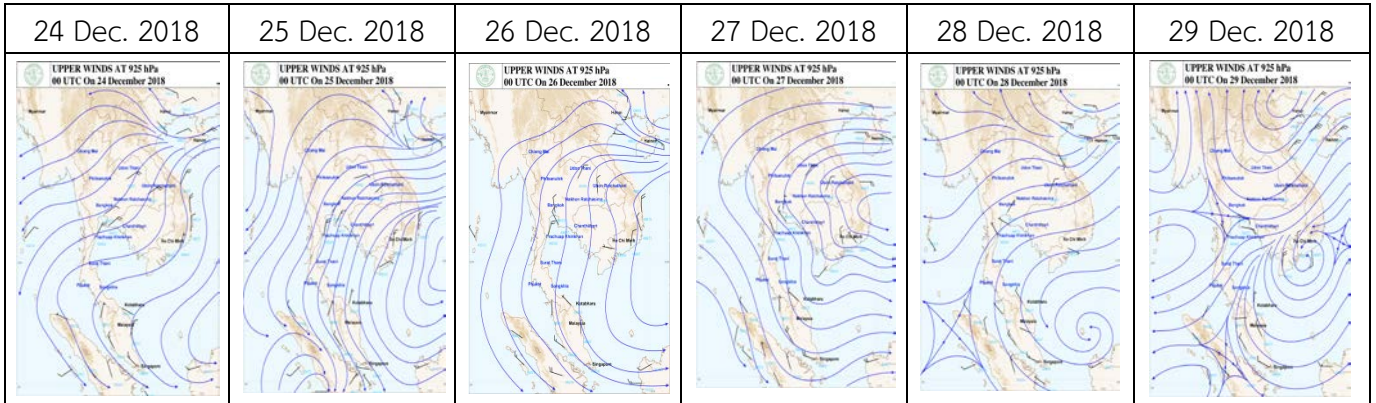
1. Weather atmosphere for last 7 days (24 – 30 December 2018)

The high pressure area had kept on covering Upper Thailand throughout the week. The new high pressure area had spreaded to cover Southern China and Upper Vietnam in the middle of the week and then it spreaded to cover Upper Thailand at the end of the week. In addition, the western wind wave moved to cover the northern part at the end of the week so that it kept cool in Upper Thailand and it was cold in upper northern part and some area of the northeastern part. In Upper Thailand, it rained with some isolated heavy to very heavy rain during the second half of the week. For the northeast monsoon appeared strengthening over the Gulf of Thailand and the South during the end of the week so that it rained with some isolated heavy to very heavy rain in the southern part throughout the week.

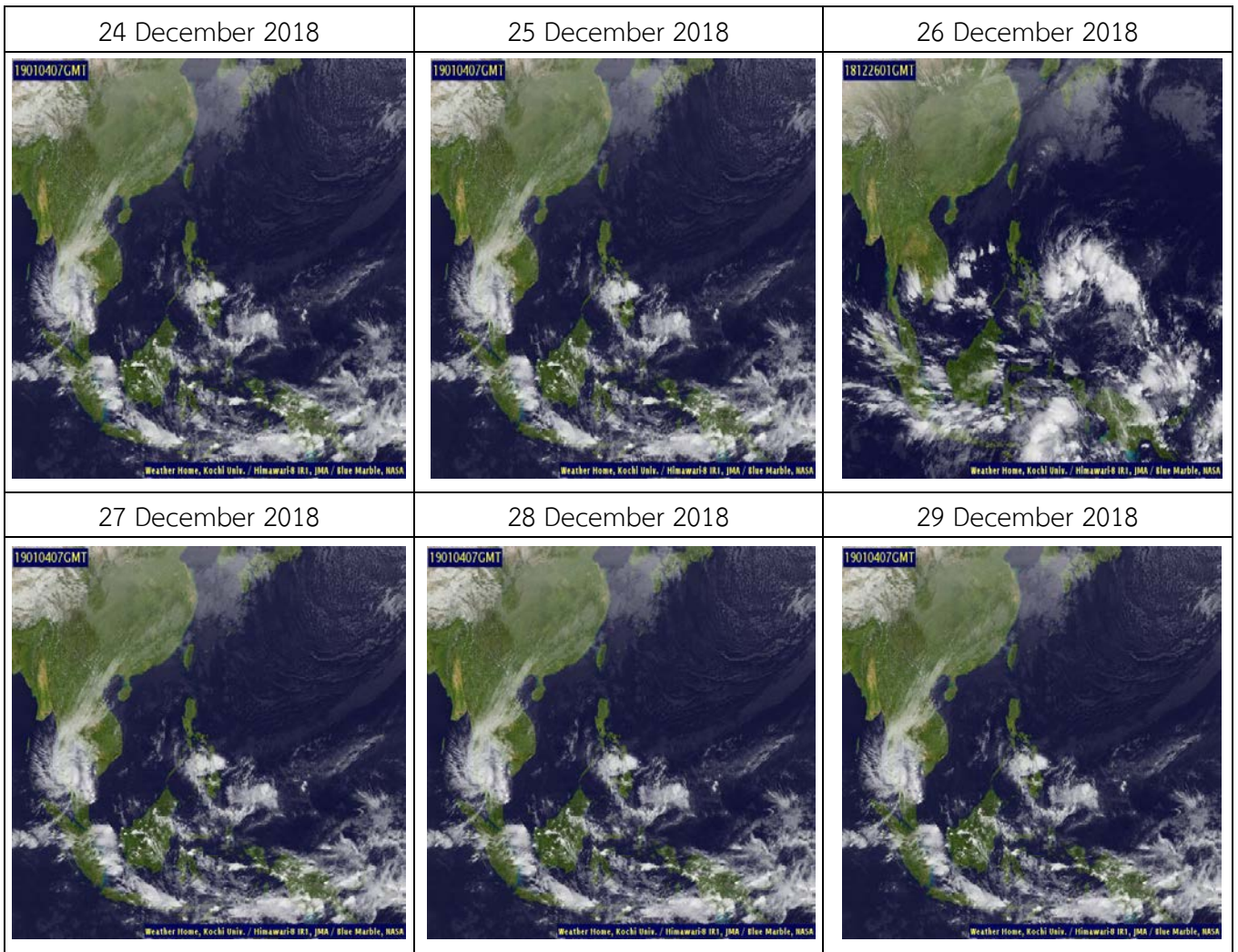
Weather map during 24-29 December 2018



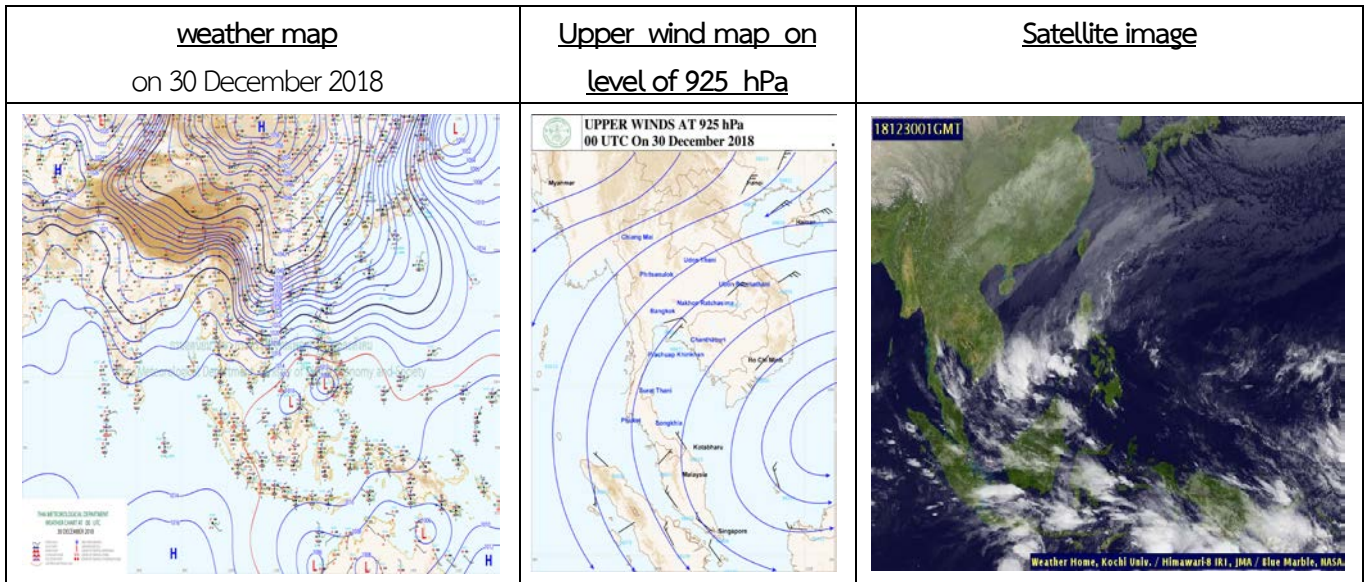
Upper wind map on level of 925 hPa during 24-29 December 2018



Satellite images during 24 – 29 December 2018



Weather atmosphere on 30 December 2018



Announcement from Thai Meteorological Department

“Changeable weather in the upper part and strong wind wave in the southern Thailand”

(Affected until 2 January 2019)

No.15, dated on 30 December 2018

The intense high pressure area covers Upper Thailand. It is expected that this high pressure area will cover the area until 2 January 2019. In addition, there is the western wind wave moving into the northern part. Thus, it will affect as follows:

In Upper Thailand, there will be some isolated thunderstorms. And during 30 December 2018 - 2 January 2019, it will be generally cool with gust in the upper Thailand and temperature will drop 5-8 degrees Celsius in the north and northeast parts. The high mountain area appears cold to very cold. The lowest temperature turns 3 - 13 degrees Celsius with some frosts in some area. For the Central, Eastern, Bangkok Metropolitan and its vicinity, the temperature drops 3 -5 degrees Celsius. People in the upper Thailand should take care of their health due to the cold weather.

In the south, rain will be increasing with isolated heavy rain by firstly starting from Phetchaburi and Prachuap Khiri Khan Provinces while others will be affected in the next phase. People in the South should be aware of the heavy rain. The Gulf of Thailand will have strong wind waves with 2 - 3 meter high. Ships should be navigated with caution. Small boats should be kept ashore until 2 January 2019.

2. Weather forecast for the next 7 days during 31 December 2018 – 6 January 2019

During 31 December 2018 - 2 January 2019, it will be cool to cold Upper Thailand and the temperature will drop 5-7 degrees Celsius in the north part. In the northeastern, central, eastern, including Bangkok Metropolitan and its vicinity, the temperature will drop 2-4 degrees Celsius. For the Gulf of Thailand, it will have 2-3 meter waves. During 3-6 January 2019, temperature will be higher in the Upper Thailand. It remains little rain in some places, but still cool to cold in the north and northeast parts. In the South, there will have some isolated heavy to very heavy rain. For the Gulf of Thailand and the Andaman Sea, waves will be 2-3 and 2 meter high, respectively.

3. Rainfall Condition in Summary

Daily maximum rainfall in each region (at 07.00 a.m.) from 24 -30 December 2018

On 24 December 2018 No report of raining

On 25 December 2018 southern part (west coast) at Ko Lanta District, Krabi Province 52.4 mm.

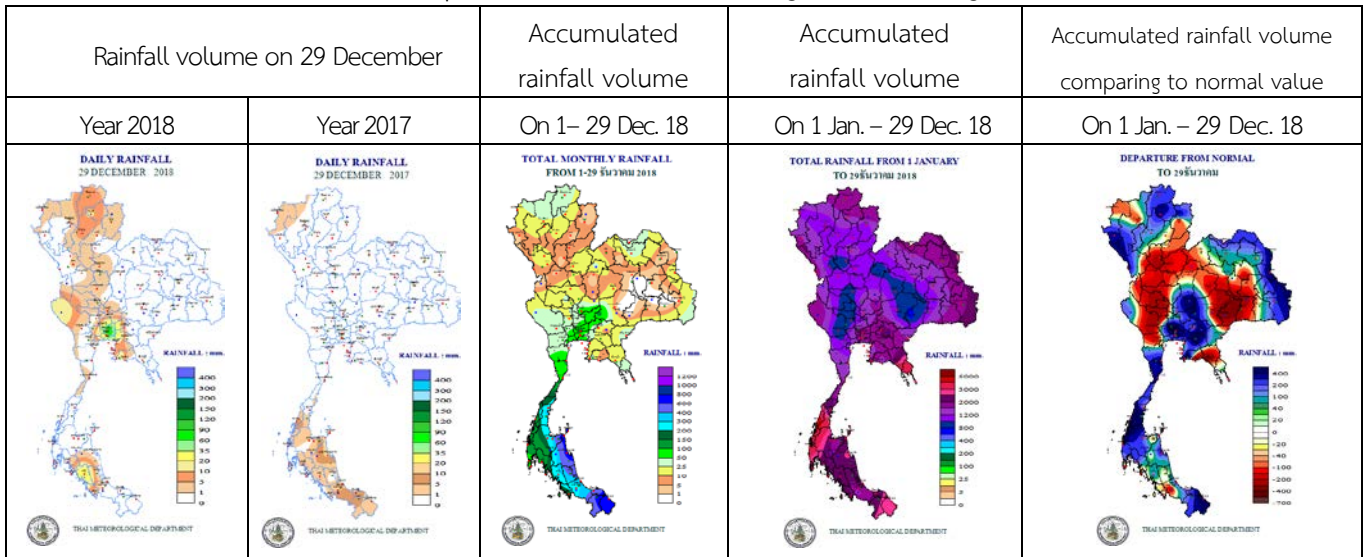
On 26 December 2018 southern part (west coast) at Nuea Khlong District, Krabi Province 34.0 mm.

On 27 December 2018 southern part (west coast) at Mueang District, Satun Province 5.8 mm.

On 28 December 2018 southern part (east coast) at Mueang District, Yala Province 118.0 mm.

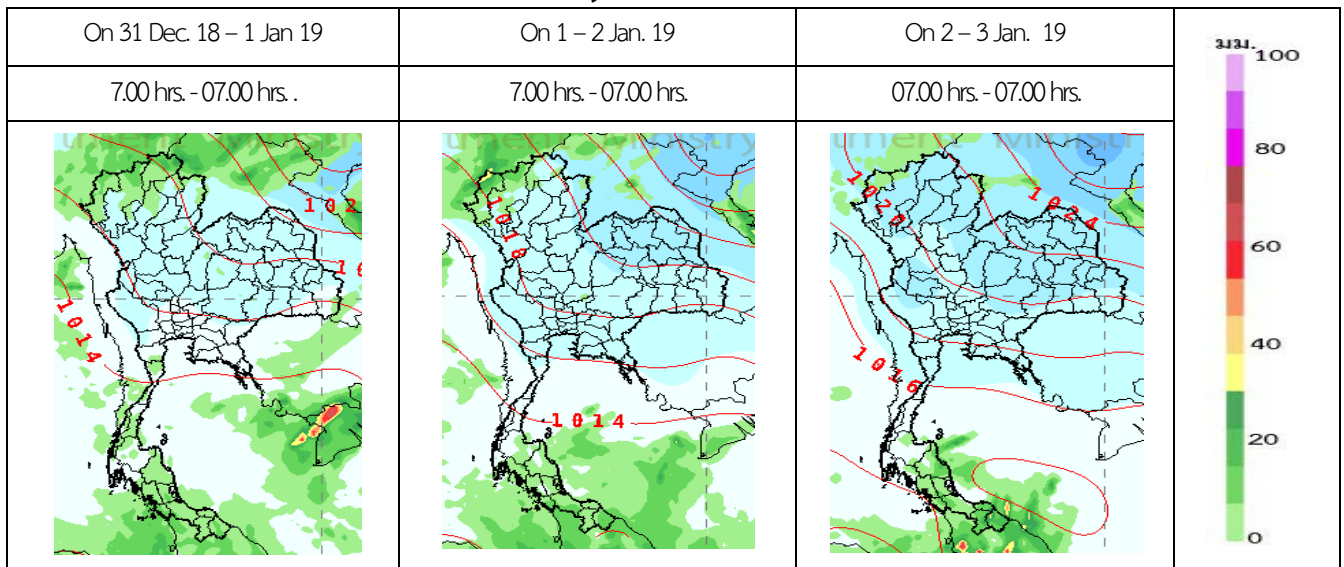
On 29 December 2018 central part at Bang Phli District, Samut Prakan Province 52.6 mm.

On 30 December 2018 southern part (west coast) at Mueang District, Trang Province 38.2 mm.



Source from Thai Meteorological Department: Immeasurable, light, moderate, heavy, and very heavy rainfall means its volume appears less than 0.1, 0.1-10.0, 10.1-35.0, 35.1-90.0 and more than 90.1 mm., respectively.

3-day rainfall forecast



4. Water condition in reservoir

Water condition in large and medium scale reservoirs (30 Dec. 2018): water volume in reservoir appears 57,937 MCM which is equal to 76% (while usable water volume appears 34,009 MCM which is equal 65%). It seems 4,775 MCM less than year 2017; however, more water capacity gets 18,149 MCM.

Water condition in large scale reservoirs (30 Dec. 2018): water volume in reservoir appears 54,466 MCM which is equal to 77% while usable water volume appears 30,924 MCM which is equal to 65% and 3,843 MCM less than year 2017. Water discharge flows into reservoir with 40.05 MCM. On this week, (24-30 Dec. 2018) water accumulated discharge flows into the reservoirs with 191.75 MCM which appears 66.00 MCM less than last week (116.58 MCM less than year 2017). Water drainage volume appears 103.08 MCM. On this week (24-30 Dec. 2018), accumulated water volume is drained with 738.21 MCM which appears 85.06 MCM more than last week (47.88 MCM less than year 2017), and more water intake capacity remains 16,478 MCM.

Water condition in large and medium scale reservoirs on 30 December 2018

Regions	Large Scale						Medium Scale						Total				More Water Intake (MCM)		
	quantity (numbers)	Cap. at Retention Level	Water volume				quantity (numbers)	Cap. at Retention Level	Water volume				quantity (numbers)	Cap. at Retention Level	Water volume				
			In the reservoirs	Retention level (%)	Usable Water	Usable Water (%)			In the reservoirs	Retention level (%)	Usable Water	Usable Water (%)			In the reservoir	Retention level (%)		Usable water	Usable water (%)
N	8	24,825	17,888	72	11,143	62	75	1,001	668	67	569	62	83	25,825	18,556	72	11,712	62	7,288
NE	12	8,368	4,443	53	2,792	42	218	1,998	1,160	58	1,010	55	230	10,367	5,603	54	3,803	44	4,764
C	3	1,419	676	48	616	47	22	369	214	58	190	55	25	1,788	890	50	806	49	898
W	2	26,605	23,478	88	10,201	77	7	142	123	87	114	93	9	26,747	23,601	88	10,315	77	3,146
E	6	1,515	1,231	81	1,132	80	51	963	776	81	724	79	57	2,478	2,007	81	1,856	80	471
S	4	8,194	6,750	82	5,039	78	39	668	530	79	477	74	43	8,863	7,280	82	5,517	77	1,583
Total	35	70,926	54,466	77	30,924	65	412	5,142	3,471	68	3,085	64	447	76,068	57,937	76	34,009	65	18,149

(Unit: MCM)

Water volume in large and medium scale reservoirs in each region appears as follow:

Northern part: total water volume in reservoir appears 18,556 MCM (72% of reservoir capacity) which is 2,555 MCM (equal to 12 %) less than year 2017. However, usable water volume appears 11,712 MCM and water volume in the reservoirs decreases from last week with 363 MCM.

Northeastern part: total water volume in reservoir appears 5,603 MCM (54% of reservoir capacity) which is 3,102 MCM (equal to 36%) less than year 2017. However, usable water volume appears 3,803 MCM and water volume in the reservoirs decreases from last week with 128 MCM.

Central part: total water volume in reservoir appears 928 MCM (54% of reservoir capacity) which is 650 MCM (equal to 41%) less than year 2017. However, usable water volume appears 843 MCM and water volume in the reservoirs decreases from last week with 38 MCM.

Western part: total water volume in reservoir appears 23,601 MCM (88% of reservoir capacity) which is 1,124 MCM (equal to 5%) more than year 2017. However, usable water volume appears 10,315 MCM and water volume in the reservoirs decreases from last week with 96 MCM.

Eastern part: total water volume in reservoir appears 2,007 MCM (81% of reservoir capacity) which is 16 MCM (equal to 1%) more than year 2017. However, usable water volume appears 1,856 MCM and water volume in the reservoirs decreases from last week with 66 MCM.

Southern part: total water volume in reservoir appears 7,280 MCM (82% of reservoir capacity) which is 382 MCM (equal to 6%) more than year 2017. However, usable water volume appears 5,517 MCM and water volume in the reservoirs increased from last week with 10 MCM.

Reservoirs in Bhumibol, Sirikit, Khwae Noi Bamrungdan, and Pa Sak Jolasid Dams for last week on 24 – 30 Dec. 2018

Reservoirs	Water volume in the reservoirs on 23 Dec. 18		Water volume in the reservoirs	usable water volume		Water volume flowing into the reservoir		Water drainage volume		More water intake
	Water Volume	Reservoir Capacity %	(+) increase/ (-) decrease	Water Volume	Usable water %	On 24-30 Dec.18	On 30 Dec. 18	On 24 -30 Dec 18	on 30 Dec. 18	
Bhumibol	9,072	67	-163	5,272	55	25.02	10.25	179.00	27.00	4,390
Sirikit	7,423	78	-162	4,573	69	25.64	3.45	182.29	25.70	2,087
Bhumibol+ Sirikit	16,496	72	-325	9,846	60	50.66	13.70	361.29	52.70	6,476
Khwae Noi	655	70	-24	612	68	2.15	0.77	25.17	3.02	285
Pa Sak	563	59	-32	560	58	0.60	0.30	25.32	3.05	397
Total	17,713	71	-380	11,017	61	53.41	14.77	411.78	58.77	7,158

(Unit: MCM)

Bhumibol Reservoir: water volume appears 9,072 MCM (67%) which is less than year 2017 (10,597 MCM: 79%) with 1,525 MCM. However, usable water volume appears 5,272 MCM. Water discharge flew into the reservoir today (30 Dec. 2018) with 10.25 MCM while accumulated water discharge flew into the reservoir weekly (24-30 Dec. 2018) with 25.02 MCM (11.92 MCM less than year 2017). Water volume was drained today (30 Dec. 2018) with 27.00 MCM while accumulate water volume was weekly drained (24 –30 Dec. 2018) with 179.00 MCM (20.00 MCM more than year 2017). More water intake turns 4,390 MCM.

Sirikit Reservoir: water volume appears 7,423 MCM (78%) which is less than year 2017 (8,008 MCM: 84%) with 585 MCM. However, usable water volume appears 4,573 MCM. Water discharge flew into the reservoir today (30 Dec. 2018) with 3.45 MCM while accumulated water discharge flew into the reservoir weekly (24 – 30 Dec. 2018) with 25.64 MCM (26.76 MCM less than year 2017). Water volume was drained today (30 Dec. 2018) with 25.70 MCM while accumulate water volume was weekly drained (24 – 30 Dec. 2018) with 182.29 MCM (27.11 MCM less than year 2017). More water intake turns 2,087 MCM.

Khwae Noi Bamrungdan Reservoir: water volume appears 655 MCM (70%) which is less than year 2017 (838 MCM: 89%) with 183 MCM. However, usable water volume appears 612 MCM. Water discharge flew into the reservoir today (30 Dec. 2018) with 0.77 MCM while accumulated water discharge flew into the reservoir weekly (24 – 30 Dec. 2018) with 2.15 MCM (7.70 MCM less than year 2017). Water volume was drained today (30 Dec. 2018) with 3.02 MCM while accumulated water volume was weekly drained (24 – 30 Dec. 2018) with 25.17 MCM (11.09 MCM less than year 2017). More water intake turns 285 MCM.

Pa Sak Jolasid Reservoir: water volume appears 563 MCM (59%) which is less than year 2017 (781 MCM: 81 %) with 218 MCM. However, usable water volume appears 560 MCM. Water discharge flew into the reservoir today (30 Dec. 2018) with 0.30 MCM while accumulated water discharge flew into the reservoir weekly (24 – 30 Dec. 2018) with 0.60 MCM (5.73 MCM less than year 2017). Water volume was drained today (30 Dec. 2018) with 3.05 MCM while accumulated water volume was weekly drained (24 – 30 Dec. 2018) with 25.32 MCM (11.24 MCM less than year 2017). More water intake turns 397 MCM.

Two large-scale reservoirs that have storage water criteria less than 30% of retention capacity is as follow:

No.	Reservoirs	Water volume in the reservoirs on 30 Dec. 18		Water volume in the reservoirs	usable water volume			Water volume flowing into the reservoirs		Water drainage volume		More water intake
		Water Volume	Reservoir Capacity %	(+) increase/ (-) decrease	Water Volume	Reservoir Capacity %	Usable water %	24 - 30 Dec. 18	30 Dec. 18	24 - 30 Dec. 18	30 Dec. 18	
1	Thap Salao	42	26	0	25	15	17	0.33	0.17	0.16	0.00	118
2	Kraseaw	72	24	-1	32	11	12	0.00	0.00	1.49	0.05	227

Remarks: water available in percentage = $\frac{\text{Water available volume on the report day}}{\text{Water available of the reservoir}} \times 100$

Water available of the reservoir

(Unit: MCM)

Eleven large-scale reservoirs that have storage water criteria more than 80% of retention capacity are as follow:

No.	Reservoirs	Water volume in the reservoirs on 30 Dec. 18		Water volume in the reservoirs		usable water volume		Water volume flowing into the reservoirs		Water drainage volume		More water intake
		Water Volume	Reservoir Capacity %	(+) increase/ (-) decrease	Water Volume	Reservoir Capacity %	Usable water %	24-30 Dec. 18	30 Dec. 18	24 – 30 Dec. 18	30 Dec. 18	
1	Mae Ngat	266	100	-1	254	96	100	0.88	0.20	1.60	0.25	-
2	Kiew Lom	92	87	-5	89	84	87	5.96	2.33	9.90	2.02	14
3	Kiew Kho Ma	187	110	-3	181	106	110	1.27	0.88	3.48	1.83	-
4	Srinagarind	16,211	91	-40	5,946	34	79	21.84	5.60	63.07	9.02	1,534
5	Vajiralongkorn	7,267	82	-56	4,255	48	73	15.14	2.93	63.24	9.03	1,593
6	Khun Dan Prakhonchon	182	81	-12	177	79	81	0.28	0.04	12.31	2.20	42
7	Nong Pla Lai	151	92	-2	137	84	91	3.41	1.88	1.81	0.23	13
8	Naruebodindrachinta	265	90	-5	245	83	89	1.45	0.17	5.68	0.81	31
9	Kaeng Krachan	613	86	-2	548	77	85	9.93	1.01	10.37	1.30	97
10	Pran Buri	353	90	1	335	86	90	3.42	0.35	1.74	0.25	38
11	Rajjaprabha	4,716	84	-23	3,365	60	78	15.73	2.65	35.98	5.54	923

Remarks: water available in percentage = $\frac{\text{Water available volume on the report day}}{\text{Water available of the reservoir}} \times 100$

Water available of the reservoir

(Unit: MCM)

5. Runoff Condition (06.00 a.m.)

River	Stations	Station location			Bank (m.)	Capacity (m ³ /sec)	Water Level			Water volume			Lower(-) Higher(+) Than the bank (m)	Criteria	Tendency
							Today 30 Dec. 2018 (m.)	Today 30 Dec. 2018 (m ³ /sec)	Last week 24-30 Dec. 2018 (m ³ /sec)	Today 30 Dec. 2018 (m ³ /sec)	Last week 24-30 Dec. 2018 (m ³ /sec)	Today 30 Dec. 2018 (m ³ /sec)			
1. Ping	P.1	Nawarat Bridge	Mueang	Chiang Mai	3.70	490	1.34	20	15	-	22	-2.36	Less	Decreased	
Ping	P.7A	Ban Huai Yang Bridge	Mueang	Kamphaeng Phet	5.87	4,035	1.19	380	341	-	405	-4.68	Less	Decreased	
Ping	P.17	Ban Tha Ngio	Banphot Phisai	Nakhon Sawan	38.08	1,815	35.16	255	193	-	255	-2.92	Less	Decreased	
2. Wang	W.4A	Ban Wang Man	Sam Ngao	Tak	6.10	458	1.18	27	27	-	27	-4.92	Less	Stable	
3. Yom	Y.1C	Ban Nam Khong Bridge	Mueang	Phrae	8.20	1,000	0.14	7	7	-	9	-8.06	Less	Stable	
Yom	Y.16	Ban Bang Rakam	Bang Rakam	Phitsanulok	7.00	376	0.39	-	0	-	0	-6.61	N/A	N/A	
4. Nan	N.1	Forestry office	Mueang	Nan	7.00	1,265	0.10	23	20	-	23	-6.90	Less	Increased	
Nan	N.5A	Ekathotsarot Bridge	Mueang	Phitsanulok	10.54	1,452	2.75	251	236	-	265	-7.79	Normal	Stable	
Nan	N.67	Ban Koei Chai Bridge	Chum Saeng	Nakhon Sawan	28.30	1,520	20.38	243	211	-	243	-7.92	Less	Increased	
5. Mun	M.6A	Ban Satuek	Satuek	Buri Ram	6.00	365	0.09	0	0	-	0	-5.91	Less	Stable	
Mun	M.9	Ban Nong Ya Phlong	Mueang	Si Sa Ket	9.00	167	5.97	-	0	-	0	-3.03	N/A	N/A	
Mun	M.7	Seri Pracha Thippatai Bridge	Mueang	Ubon Ratchathani	7.00	2,300	2.51	32	30	-	33	-4.49	Less	Increased	
6. Phra Sathueng	Kgt.10	Bang Sa Khwan	Mueang	Sa Kaeo	11.00	300	5.62	-	0	-	0	-5.38	N/A	N/A	
7. Bang Pakong	Kgt.3	Ban Kabin Buri	Kabin Buri	Prachin Buri	10.20	658	0.64	12	12	-	18	-9.56	Less	Increased	
8. Tha Taphao	X.158	Wang Khrok Bridge	Tha Sae	Chumphon	12.00	930	3.82	29	29	-	34	-8.18	Less	Increased	
9. Tapi	X.37A	Ban Yan Din Daeng	Phrasaeng	Surat Thani	10.76	488	8.10	181	181	-	353	-2.66	more	Increased	
10. Golok	X.119A	Ban Pa Se Mat	Su-ngai Kolok	Narathiwat	8.20	212	5.87	86	51	-	134	-2.33	Normal	Increased	

Remark: - meaning not yet received any reports

Chao Phraya River Basin C.2 Station (30 Dec. 18); water volume flowed with 454 m³/sec at level of +18.57 m MSL which was 7.63 m. below the bank. Last week (24 – 30 Dec. 18) water volume flowed with 382 – 545 m³/sec.

Chao Phraya Dam C.13 Station (30 Dec. 18); water volume flowed with 80 m³/sec. At upstream water level is +15.74 m MSL and at downstream water is at level of +5.64 m MSL. During the week (24 – 30 Dec. 18), water volume flowed with 80 m³/sec.

Water intake into distribution system in eastern ward field (30 Dec. 18); water was supplied with 122 m³/sec into the canals, including Khlong Chai Nat – Pa Sak (Manorom Floodgate) with 100 m³/sec, and Chai Nat – Ayutthaya (Maharat Floodgate) with 18 m³/sec. During the week of 24 – 30 Dec. 18, water volume flowed with 120 – 132 m³/sec.

Pa Sak River (30 Dec. 18); water flowed with 20 m³/sec for Rama IV Barrage. During the week (23 – 30 Dec. 18), water volume flowed with 20 – 35 m³/sec. And water was supplied 66 m³/sec to Rabhibhat Canal passing westward tributaries of Rabhibhat Canal (Phra Si Sin) with 7 m³/sec. and the southward tributaries of Rabhibhat Canal (Phra Si Saowaphak Canal) with 33 m³/sec. During the week (24 – 30 Dec. 18), water volume flowed with 60 – 67 m³/sec.

Water intake into distribution system in western ward field (30 Dec. 18); water was supplied with 141 m³/sec to the canals, including Makham Thao - Uthong Canal (Makham Thao – Uthong Floodgate) with 20 m³/sec, Suphan River (Phonlathep Floodgate) with 50 m³/sec, Noi River (Borommathat Floodgate) 56 m³/sec and other small canals with 15 m³/sec. During the week (24 – 30 Dec. 18), water volume flowed with 141 – 153 m³/sec.

Bang Sai District C.29A Station (30 Dec. 18); average water volume flowed around 103 m³/sec. During the week (24 – 30 Dec. 18), water volume flowed with 90 – 103 m³/sec.

6. Water allocation for dry season 2018/2019

Royal Irrigation Department (RID) plans for water use from large scale and medium scale irrigation projects in dry season throughout the years of 2018/2019 (1 November 2018 – 30 April 2019). As on 1 November 2018, available water volume is affordable for 39,570 mcm³, and RID plans for 23,100 mcm³ of water volume use throughout the country as its priority; 2,404 mcm for consumption, 6,440 mcm³ for ecosystem conservation, 13,953 mcm³ for agriculture, and 303 mcm³ for industry, respectively. However, there are implementation of water allocation for 8,000 mcm³ in Chao Phraya River Basin (6,500 mcm³ for Bhumibol and Sirikit Dams, 400 mcm³ for Khwae Noi Bamrungdan Dam, 400 mcm³ for Pa Sak Jolasid Dam, and 700 mcm³ for Mae Khlong River Basin) as well as can be divided into 1,140 mcm³ for consumption, 1,450 mcm³ for ecosystem conservation, and 5,410 mcm³ for agriculture.

Water allocation result (Large and middle scale reservoirs) since 1 November 2018 until the present, water has been used for 6,388 mcm³ or 28% of the water allocation plan. For Chao Phraya River Basin (Bhumibol, Sirikit, Khwae Noi Bamrungdan, Pa Sak Jolasid Dams) (30 Dec. 2018), its water has been used for 59 mcm³. Furthermore, water volume now (30 Dec. 2018) has been used for 2,633 mcm³ or 33% of the water allocation plan since 1 November 2018.

7. Result of Dry Season Cultivation in Large and Medium Scale Irrigation Projects throughout the Country and in the Chao Phraya River Basin

As on 26 December 2018

Regions	Off season rice			Field crop - vegetable			Total		
	Plan (m. ha)	Result (m. ha)	%	Plan (m. ha)	Result (m. ha)	%	Plan (m. ha)	Result (m. ha)	%
North	0.082	0.046	56.40	0.134	0.018	13.65	0.216	0.064	29.80
Northeast	0.120	0.027	23.19	0.091	0.002	1.98	0.211	0.029	14.01
Central	0.010	0.002	17.11	0.000	0.000	26.17	0.010	0.002	17.28
East	0.056	0.027	47.44	0.008	0.003	34.32	0.066	0.030	45.68
West	0.139	0.010	6.63	0.027	0.002	8.46	0.168	0.011	6.93
South	0.029	0.003	8.75	0.002	0.000	6.23	0.032	0.003	8.57
Chao RB	0.848	0.638	75.25	0.123	0.011	8.85	0.971	0.650	66.81
Thailand	1.285	0.752	58.58	0.389	0.037	9.44	1.674	0.789	47.16

Remark North, Central, West, and Northeast excluding area in the Chao Phraya River Basin that use water from Bhumibol, Sirikit, Khwae Noi Bamrungdan, Pa Sak Jolasid Reservoirs

8. Water Quality

Royal Irrigation Department has water monitoring (Salinity value) in the Chao Phraya River.

Rivers	Monitoring Point	Salinity (g./litre)	Criteria	Remarks
Chao Phraya	Canal mouth of Samlae, Pathum Thani Province	0.17 Info. on 30 Dec. 2018 (07.00 hr.)	Normal	- Salinity value for agriculture water is not more than 2g./litre - Salinity value for water work is not more than 0.25 g./litre
Chao Phraya	Pier at Nonthaburi Province	0.17 Info. on 30 Dec. 2018 (07.00 hr.)	Normal	
Chao Phraya	Pier at RID Samsen, Bangkok Metropolis	0.19 Info. on 23 Dec. 2018 (07.00 hr.)	Normal	

Source: Sediment and Water Quality Branch, Hydrology Division, Bureau of Water Management and Hydrology.

9. Mekong Water Situation

Stations	Bank Level	Water Level 24 Dec. 18	+higher than the bank -lower than the bank
Chiang Saen District, Chiang Rai Province	12.80	3.02	-9.78
Chiang Khan District, Loei Province	16.00	6.22	-9.78
Mueang District, Nong Khai Province	12.20	3.02	-9.18
Mueang District, Nakhon Phanom Province	12.00	2.21	-9.79
Mueang District, Mukdahan Province	12.50	2.52	-9.98
Khong Chiam District, Ubon Ratchathani Province	14.50	2.92	-11.58

Remarks: Information from www.dwr.go.th

10. Readiness Preparation and help offer

1,851 mobile pumps are prepared by RID in order to help area for in and off-season rice, consumption, and flood disaster in rainy season 2018/2019. Now, 115 mobile pumps are locally installed in each purpose as follows:

10.1 In-season rice and field crop

Regions	Province	Water pumps (quantity)	Province Name List
North	4	9	Chiang Mai(1), Uttaradit(2), Phichit(1), Lampang(5)
Northeast	3	7	Ratchasima(3), Yasothon(2), Nakhon Phanom(2)
Central, East, and West	7	37	Nakhon Nayok(3), Prachin Buri(18), Chachoengsao(4) Chon Buri (2), Chanthaburi(1), Rayong (1), Kanchanaburi(8)
South	1	5	Phetchaburi(5)
Total	15	58	

10.2 Off-season rice

Regions	Province	Water pumps (quantity)	Province Name List
North	2	7	Chiang Rai (1), Sukhothai (6)
Central, East, and West	1	3	Nakhon Sawan (3)
Total	3	10	

10.3 Consumption

Regions	Province	Water pumps (quantity)	Province Name List
North	1	1	Kamphaeng Phet (1)
Northeast	2	14	Nakhon Ratchasima (12), Buri Ram(2)
Central, East, and West	3	26	Nonthaburi(3), Pathum Thani(14), Chai Nat(9)
South	1	6	Nakhon Si Thammarat (6)
Total	7	47	

Remarks: information from the report of pumping movement under responsibility of the Mechanical Engineering Division, Bureau of Mechanical Engineering, RID.

- Reported by Miss Chiranan Pangphao, Irrigation Engineer, Bureau of Water Management and Hydrology.
- Verified by Mr. Phanuphong Roenimit, Irrigation Engineer, Practitioner Level, Bureau of Water Management and Hydrology.
- Translated by Miss Arunee Chootip and Miss Kasinee Muangklom, Foreign Relations Official, Professional Level, Bureau of Project Management.

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