

HYDROLOGY & WATER RESOURCES SERVICES DIVISION NATIONAL CENTER FOR HYDROLOGY & METEOROLOGY THIMPHU: BHUTAN



Status and River Level Trends: Glacier Lake Outbrust Flood (GLOF) Early Warning System

Tuesday, November 19, 2019

Issued at: 10:00 AM

1. Punatshang Chhu Sub Basin

| SI No. | River Basin Number | Basin Name | Name of River | Station Name | Highest Water Level Recorded | Alert Water Level | Alerm Water Level | Water Level (m) recorded at 9:00 AM Yesterday | | Water Level Rise (+)/Fall (-) in meters during last 24 Hrs ending at 9 AM | Downstream Settlement | |
|--------|-----------------------|------------|------------------|----------------|---------------------------------|----------------------|----------------------|--|-------|---|---|-------|
| 1 | | | | Luggay Tsho | | 7.80 | 10.00 | 6.33 | 6.33 | 0.00 | | |
| 2 | | | Pho Chhu | | Thorthormi Tsho | | 7.50 | 5.00 | 5.57 | 5.57 | 0.00 | |
| 3 | | | | Rapstreng Tsho | | 7.40 | 5.00 | 6.09 | 6.09 | 0.00 | Thanza, Tenchey, Lhedi and Lunana area and Downstream of Pho Chhu and Puna- Wangdue Valley | |
| 4 | | | | Pho Chhu | Bay Tsho | | 7.40 | 5.00 | 6.28 | 6.28 | 0.00 | |
| 5 | Basin II | Punatshang | | | Thanza | | 7.70 | 8.70 | 6.33 | 6.33 | 0.00 | |
| 6 | Dasin n | Chhu | | | | Tarina Wachey | | 8.50 | 10.50 | 6.43 | 6.45 | -0.02 |
| 7 | | | | Dangsa | | 5.50 | 7.00 | 3.67 | 3.67 | 0.00 | Khuruthang) Puna-Wangdue Valley and Downstream | |
| 8 | | | | Taksemakhang | | 7.50 | 8.50 | 5.28 | 5.29 | -0.01 | | |
| 9 | | | Mo Chhu | Tashithang | | 9.00 | 10.50 | 5.12 | 5.10 | 0.02 | Gasa,Mo Chhu Valley,Puna-Wangdue Valley and Downstream | |
| 10 | | 1 1 | | Yebesa | | 5.00 | 7.00 | 1.34 | 1.32 | 0.02 | | |

| 1 | Approximate Lead Time for Evacuation after the detection of flood at Four lake Sensor | | | | | | | Approximate Lead Time for Evacuation after the detection of flood at Dangsa Sensor | | | | | | |
|--------|---|--|---|--|---|--|--------|--|--|--|--------------------------------------|--|--|--|
| SI Nos | Name of Place Downstream | Approx. Distance from Sensor (Bay Tsho) | Approx. Distance from Sensor (Rapstreng Tsho) | Approx. Distance from Sensor (Thorthormi Tsho) | Approx. Distance from Sensor (Luggey Tsho) | Approx. Tme available for Evacuation | SI Nos | Name of Place Downstream | Approx. Distance from Sensor (Bay Tsho) | Approx. Time for Flood to reach at the Place | Approx. Tme available for Evacuation | | | |
| 1 | Thanza | 1.5 km | 2.8 km | 3.3 km | 6.7 km | | 1 | Wolathang | 5.8 km | 30 minutes | 30 minutes | | | |
| 2 | Tenchey | 2.9 km | 4.1 km | 4.6 km | 8.2 km | 20-60 | 2 | Samdingkha | 12.0 km | 55 minutes | 55 minutes | | | |
| 3 | Tshojo | 8.1 km | 10.0 km | 10.5 km | 13.8 km | minutes | 3 | Punakha | 20 km | 90 minutes | 1 hours 30 minutes | | | |
| 4 | Lhedi | 16.7 km | 17.6 km | 18.5 km | 21.8 km | | 4 | Khuruthang | 24 km | 120 minutes | 2 hours | | | |
| 5 | Puna- | 100 km | 100 km | 100 km | 100 km | 5-7 hours | 5 | Bajo Town | 30.5 km | 145 minutes | 2 hours 25 minutes | | | |
| | | | | | | | 6 | Wangdue | 33 km | 150 minutes | 2 hours 30 minutes | | | |

NOTE: The above distance were Calculated from basic tools in the Google Earth Map, thus diastance were approximate only

| Glacier Lake Outbrust Flood (GLOF) & Rainstorm Flood Early Warning System. 2. Chamkhar Chhu and Mangdue Chhu Sub Basin | | | | | | | | | | | | |
|---|-----------------------|-----------------|-----------------------------|--------------|--|--------------------------|--------------------------|------|------|---|---|--|
| SI No. | River Basin Number | Basin Name | Name of River | Station Name | Highest Water Level Recorded (m) | Alert Water Level (m) | Alerm Water Level (m) | | | Water Level Rise (+)/Fall (-) in meters during last 24 Hrs ending at 9 AM | Downstream Settlement | |
| 1 | | | Chamkhar Chhu Mangdue | Tshampa | | 5.00 | 6.50 | 3.74 | 3.75 | 0.01 | Chokortoe Pry School,Kurjey Village,Wangdicholing,Chamkhar Town,Gangrith Pry School,Gvelkhar Village and Downstream settlement under Zhemgang. | |
| 2 | | | | Khagthang | | 5.50 | 6.00 | 4.43 | 4.43 | 0.00 | | |
| 3 | Basin III | Manas Mangdu | | Kurjey | 5.72 | 3.30 | 5.00 | 1.64 | 1.63 | -0.01 | 5 ,5 6 66 | |
| 4 | | | | Jongthang | | 5.90 | 7.00 | 3.92 | NR | #VALUE! | Bjizam Community, MHPA Dam, Power House and Downstream settlement of | |
| 5 | | | Chhu | Bjizam | 5.52 | 4.20 | 5.50 | 1.78 | 1.78 | 0.00 | Trongsa and Zhemgang | |

| | Approximate Lead Time for Evacuation after the detection of Flood at the Tshampa | | | | | | Approximate Lead Time for Evacuation of Mangdue Chhu Sub Basin Approximate Lead Time for Evacuation after the detection of Flood at the Jongthang AWLS | | | | | | |
|--------|--|---|---|-----------|----------------------|--------|---|---|--|-----------|-------------------|--|--|
| SI Nos | Name of Place Downstream | Approx.Dista nce from the Tshampa AWLS | Approx. Cumlative Distance from Tshampa AWLS | Elevation | Approx. Lead Time | SI Nos | Name of Place Downstream | Approx.Dista nce from the Tshampa AWLS | Approx. Cumlative Distance from Tshampa AWLS | Elevation | Approx. Lead Time | | |
| 1 | Khagthang | 20.3 km | 20.3 km | 3704 m | 27 minutes | 1 | Bjizam | 18.5 km | 18.5 km | 2223 m | 34 minutes | | |
| 2 | Chorkhor Toe | 4.5 km | 24.8 km | 2904 m | 34 minutes | 2 | Dam Site | 7.8 km | 26.3 km | 1848 m | 50 minutes | | |
| 3 | Kurjey | 12.4 km | 37.2 km | 2771 m | 60 minutes | 3 | Power Plant | 20.4 km | 46.7 km | 1024 m | 88 minutes | | |
| 4 | Wangdichollin | 5.7 km | 42.9 km | 2600 m | 79 minutes | | | | | | | | |
| 5 | Bumthang | 1 km | 43.9 km | 2562 m | 83 minutes | | | | | | | | |
| 6 | Gangrithang | 0.3km | 44.2 km | 2552 m | 84 minutes | | | | | | | | |
| 7 | Gyelkhar | 1.7 km | 45.9 km | 2538 m | 91 minutes | | | | | | | | |

3. River Level Status of Gauging Station

| SI No. | Station Type | River Basin Number | Basin Name | Name of River | Station Name | Highest Water Level Recorded (m) | Water Level (m) recorded at 9:00 AM Yesterday | Water Level (m) recorded at 9:00 AM Today | Water Level Rise (+)/Fall (-) in meters during last 24 Hours ending at 9:00 AM Today | Weather Condition | Downstream Settlement |
|--------|--------------|-----------------------|------------|-------------------------------|-----------------|--|--|--|---|----------------------|--|
| 1 | AWLS | | | | Dodena | | 1.48 | 1.51 | 0.03 | Sunny | Thimphu Valley and Downstream |
| 2 | Principal | | | Thim Chhu | Lungtenphu | 2.82 | 0.52 | 0.51 | -0.01 | Sunny | |
| 3 | Principal | | | | Damchu | 6.00 | 2.14 | 2.14 | 0.00 | Sunny | Chukha and Downstream |
| 4 | Secondary | Basin l | Wang Chhu | Haa Chhu | Haa | 2.60 | 0.58 | 0.60 | 0.02 | Cloudy | Haa and Wang Chhu Downstream |
| 5 | Secondary | | | Pa Chhu | Bonday | | 0.88 | 0.88 | 0.00 | Sunny | Downstream of Paro Valley and Wang Chhu Basin |
| 6 | Principal | | | Amo Chhu | Dorokha | | 2.50 | 2.50 | 0.00 | Sunny | Samtse, Phuntsholing and Downstream |
| 7 | Principal | | | | Doyagang | 7.07 | 2.35 | 2.36 | 0.01 | Cloudy | Phunsholing and Downstream |
| 8 | Secondary | | | Pho Chhu | Samdingkha | 6.10 | 2.71 | 2.73 | 0.02 | Cloudy | Puna-Wangdue Valley and Downstream |
| 9 | Principal | | | Mo Chhu | Yebesa | 3.94 | 1.31 | 1.31 | 0.00 | Sunny | Mo Chhu Valley and Downstream |
| 10 | Secondary | | | | Wangdue Bridge | | 0.85 | 0.85 | 0.00 | Sunny | PHPA I,PHPA II and Downstream |
| 11 | Principal | Basin II | Punatshang | | Wangdue Rapid | 7.82 | 1.38 | 1.37 | -0.01 | Sunny | THE A LETTE A II and Downstream |
| 12 | Principal | Dasin n | Chhu | Punatshang Chhu | Turitar Sunkosh | 6.68 | 1.95 | 1.95 | 0.00 | Cloudy | Downstream of Dagana and Lhamoizingkha |
| 13 | Secondary | | | | Sunkosh Bridge | | 1.20 | 1.20 | 0.00 | Cloudy | Downstream of Dagana and Lhamoizingkha |
| 14 | Principal | | | | Kerabari | 11.90 | 3.81 | 3.79 | -0.02 | Cloudy | Lhamoizingkha and Downstream |
| 15 | Secondary | | | Mao Chhu | Sherzhong | | 3.60 | 3.60 | 0.00 | Cloudy | Gelelephu Valley and Downstream |
| 16 | Principal | | | Mangdue Chhu Chamkhar Chhu | Bjizam | 5.35 | 1.79 | 1.78 | -0.01 | Cloudy | MHPA Dam,Power House and Downstream of Trongsa & Zhemgang |
| 17 | Secondary | | | | Dakpai Chhu | 2.26 | 1.24 | 1.23 | -0.01 | <i>a</i> . 1 | D |
| 18 | Principal | | | | Tingtibi | 7.45 | 2.86 | 2.85 | -0.01 | Cloudy | Downstream of Zhmgang and Panbang |
| 19 | Principal | | | | Kurjey | 4.00 | 1.64 | 1.63 | -0.01 | | Chamkhar Valley, Zhemgang and Downstream |
| 20 | Principal | | | | Shingkhar | | 1.44 | 1.44 | 0.00 | Cloudy | Zhemgang and Downstream |
| 21 | Principal | | | | Sumpa | 7.65 | 3.11 | 3.10 | -0.01 | | |
| 22 | Secondary | | | | Khoma | 5.30 | 1.39 | 1.36 | -0.03 | Cloudy | Lhuntse Downstream,Kurizampa,KHPA and Downstream along the Kuri Chhu |
| 23 | Secondary | | | Kuri Chhu | Autsho | 8.48 | 2.98 | 2.97 | -0.01 | Cloudy/Sunny | Kurizampa,KHPA and Downstream along the Kuri Chhu |
| 24 | Principal | Basin III | Manas | | Kurizampa | 18.45 | 6.94 | 6.93 | -0.01 | Cloudy | KHPA and Downstream along the Kuri Chhu |
| 25 | Principal | | | Kholong Chhu | Muktirap | 6.00 | 1.60 | 1.60 | 0.00 | Cloudy | Doksum, Kholong Chhu Hydro Power Project and Downstream of Gongri Chhu |
| 26 | Principal | | | | Doksum | | 3.13 | 3.12 | -0.01 | Sunny | Kholong Chhu Hydro Power Project and Downstream of Gongri Chhu |
| 27 | Secondary | | | | Chazam | | 7.30 | 7.30 | 0.00 | Cloudy | Downstream Settlement of Kuri-Gongri and Panbang |
| 28 | Principal | | | Drangme Chhu | Ozorong | 6.75 | 1.18 | 1.18 | 0.00 | | |
| 29 | Secondary | | | | Sheri Chhu | 2.58 | 1.36 | 1.35 | -0.01 | Cloudy | Downstream of Kuri-Gongri and Panbang |
| 30 | Principal | | | | Panbang | 12.48 | 4.20 | 4.21 | 0.01 | Cloudy | Manas and Downstream |
| 31 | Principal | | | Ngara Ama | Pangzam | | 5.55 | 5.55 | 0.00 | Sunny | Bangtar Settlement and Downstream |
| 32 | Principal | | | Chhu | Bangtar | | 1.89 | 1.90 | 0.01 | Cloudy | Downstream of Bangtar Settlement |

NOTE The Water Level are relative Gauge Hight of the Observation site reference to the Site Specific and does not represent the actual water depth. ALERT INTROPORTING TO A DEPARTMENT OF THE ACTUAL OF THE ACTUAL

ISSUED BY: FMCR, HWRSD, NCHM