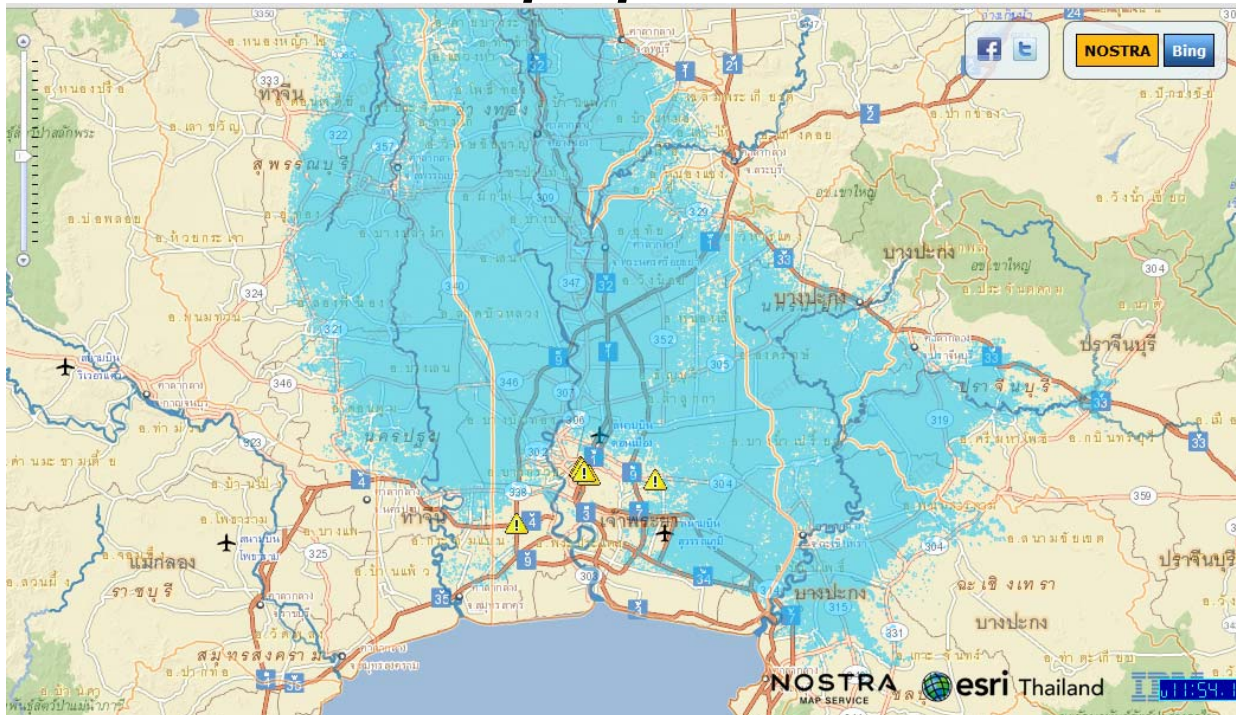


# Fall 2011 Thai Flood Photos: Part 9

## Map Updates



Screen capture 03 Nov 2011 1854 TH time

## ***Floods Are Not New to Bangkok***

Flooding is no stranger to Bangkok. The annual SW monsoon rains of summer are a well established climatic feature. The Chao Phraya River has been mapped, so they know about the major rivers and drainage basins feeding into it from the north.

The topography has been mapped. They know Bangkok is built on the flood plain and delta of the Chao Phraya. They also know about the tides in the Gulf of Thailand. The geography of Bangkok has flood written all over it.

In the late 1800's Bangkok was more of a water city with houseboats along the Chao Phraya. The flood in 1942 was one of the worst in the city's history.



*Flood 1942: Democracy Monument, Bangkok*





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Floods also occurred in 1995 with the water lasting 2 months (Oct-Nov). The score card:

- 400+ dead
- ~4.3 million people affected
- Damages estimated to be the tens of billions of THB

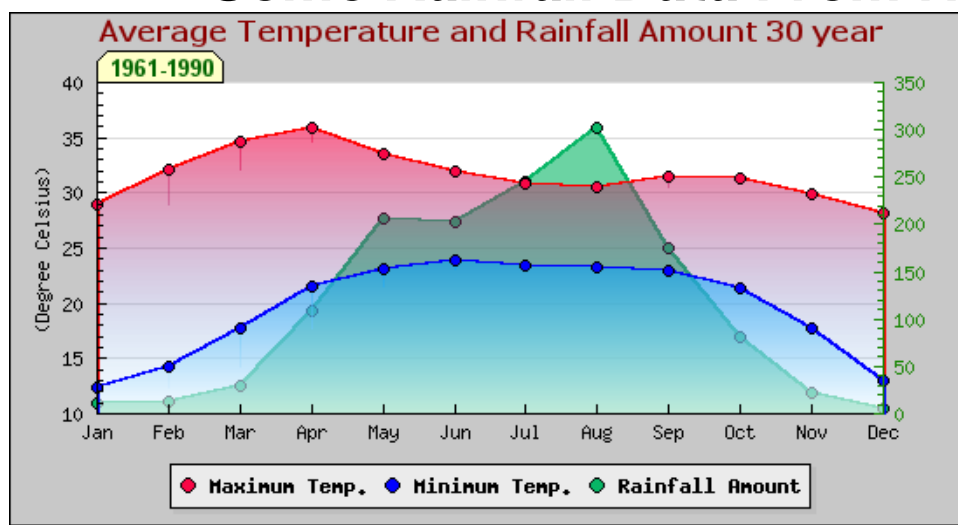


In 1983, another major flood struck Bangkok. Flood waters stayed 4 months (Sep-Dec). The score card:

- 400 dead
- 60,000 relocated
- 400 million THB (Thai Baht) damages to farms and orchards
- 460 million THB damages to roads in Bangkok



## Some Rainfall Data From Nan



The chart on the left is the 30-year average climatic summary for Thawangpha City, Nan Province, Thailand. Rain would runoff into the Nan River which normally makes

up 20% of the water in the Chao Phraya River. The table below shows the rainfall in Thawangpha for the first 9 months of 2011. [Note: Rainfall data for Oct covers only the first half of the month.]

Month	Min Temp (°C)	Max Temp (°C)	Amt of Rainfall (mm)	2011 Rainfall (mm)	% of 30 yr av rainfall
Jan	12.4	29.0	11.0	1.52	14%
Feb	14.2	32.1	12.6	14.48	115%
Mar	17.8	34.7	29.2	69.3	237%
Apr	21.5	35.9	108.0	98.55	91%
May	23.1	33.5	206.2	208.53	101%
Jun	23.9	31.9	202.4	396.23	196%
Jul	23.5	30.8	244.1	340.87	140%
Aug	23.3	30.6	302.3	321.05	106%
Sep	22.9	31.5	175.6	371.08	211%
Oct	21.3	31.3	80.4	86.87	
Nov	17.7	29.9	22.7		
Dec	13.0	28.1	5.9		

Notice that rainfall for 7 of the first 9 months of 2011 were above the 30-year average. Of those, 4 were well above the 30-year average.

The warm-wet rainy season is typically May-Oct. Massive irrigation project dams need to store water for the dry season (Nov-Apr). Rainwater must be stored when it comes. So the saving begins as soon as the rains come. In 2011, Mar had significant rain. By Jun the rainy season was in full swing. Typically by Aug-Sep things begin to taper off and end in Oct. But 2011 wasn't typical, as still more water ran off to already nearly full dams.

### Geo-Hazards Related to Heavy Rain Events (in addition to flooding):

- **Flashfloods:** Sudden floods usually occurring in narrow mountain valleys. If living near streams, pay attention to unusual sounds or sudden rises in water level.
- **Landslides:** Often occurring in mountainous areas with steep slopes that have been saturated by slow lengthy rainfall. Slopes with sparse vegetation cover or weakened / weathered rock materials can be susceptible to landslides.



## ***Floating Toilets for Flood Sanitation***



Floating toilets (with holding tanks) are being made and deployed to help improve sanitation in flood zones. In some cases, technical colleges are being used to build these as quickly as possible.

We couldn't find much information about the holding tank capacities. If we use guidelines for commercial rented portable toilets, each unit may hold ~800 liter capacity. This may be able to serve 200-300 people within a 500 m radius during the course of a one day public event. Of course, like many devices in modern life, making and installing a unit incurs an initial cost which is soon dwarfed by the operational and maintenance costs.



Of course, failing to adequately deal with flood zone sanitation runs the risk of even higher health care costs for treating the many diseases resulting from flood victims and relief workers coming in contact with contaminated and infectious water. Recent reports are skin diseases, rashes and fungal infections are wide spread in flood areas. Diarrhea and dehydration is also on the rise.

People staying behind in zones where evacuations were ordered are at greater risk. Even if they are keeping dry on upper floors of multi-story buildings, there may be no running water or electricity service. This means they must get through the flooded streets to a relief center to get food, water, and medical aid. The stay behinds can only relieve themselves directly into the flood waters around them.



This is the same water used for bathing and washing when clean water is lacking. People are wading through it and children are playing in it. With nearly 1/3 the country affected, it is a public health nightmare that can quickly become even worse.



## ***Flood Emergency Toilets & Guidelines***

There are some basic emergency toilets useful in floods. Of course, proper disposal is an issue that becomes more critical as the flood duration increases.

Most of these emergency toilet ideas involve using heavy duty plastic trash bags to contain the toilet wastes. The main idea is to avoid contaminating flood waters with human wastes. So you need to seal and store the bags.

- **Use an Existing Toilet:** If you have a toilet that isn't flooded, but has no water for flushing, line the bowl with two large plastic trash bags putting one inside the other. Seal the bag after each use until "full". Securely seal and store it when "full."

**[Note:** If you have a toilet on a ground floor, put a sand bag to plug up the bowl. This keeps the sewer from backing up and flooding your house.]

- **Container Toilet:** You can use a sturdy cardboard box, bucket, a ceramic or plastic container lined with double plastic trash bags.

Controlling odors can be an issue. Some suggest using kitty litter, sprinkling a little bleach, crushed charcoal, or quick lime into the bag after each use.

Storing the used bags requires care. The bags will be heavy and relatively easy to puncture. Storing them in direct sunlight for a length of time weakens them. Leaking bags result in contamination. These methods have been used in short-term floods (2-3 days). Look at past flood durations to plan ahead to have adequate supplies to support your family's needs.

Of course, you need to isolate the toilet from food preparation and eating areas. Good hand washing is still basic sanitation that goes a long way to preventing illness. **[Note:** Gel hand sanitizers can serve a dual purpose and be used as cooking fuel like sterno.] You need to prepare these things ahead of time. Once the emergency starts there is no time to prepare.





## ***Didn't Prepare? The Shelves May Be Bare***

Panic buying is a possible indicator that people haven't prepared in advance for the flood. Combine this with the fact that the government and donors will be buying similar "emergency" supplies of instant noodles and bottled drinking water as part of the relief effort.

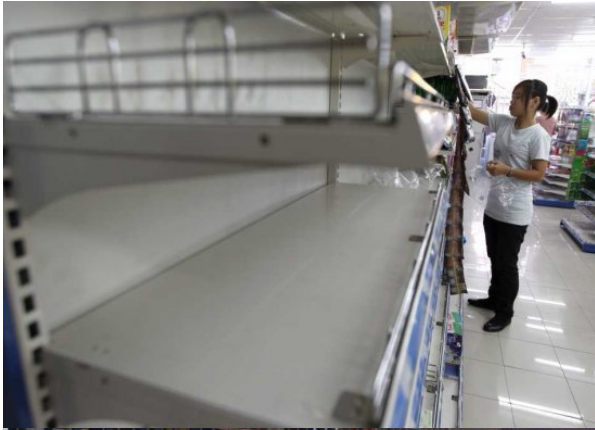
For Nan Province, heavier than normal rainfall started in May. In Jun there was more rain and we had local flooding.



Since we are in the north, our runoff flowed into and through to Bangkok. The 2011 warning shot was fired when March rains came in heavier than normal. That should have given folks 2-6 months advance notice to prepare. Of course, the rationalization for procrastination is "but it was never this bad before." That doesn't go far with me. So much of the turmoil of the early 21<sup>st</sup> century seems to be "unprecedented" that most savvy folks have opened their minds to consider the formerly "unthinkable" and "remotely possible" to being more plausible if not more probable today. Perhaps this flood will get more people to learn prepare better. Many who sit and wait in frustration for aid may consider a more self-sufficient life-style approach. It is very hard for anyone to be 100% self-sufficient. Remember, as







the King said in his New Theory for the Self-sufficient Economy: "...everyone should strive as much as possible to be self-sufficiency in their own way."

In modern times, it is difficult to be totally self-sufficient. But clearly, the more you can stand on your own, the more you are empowered to act and the more choices you have. Better this than to be a helpless frustrated flood victim.



## ***Reduce Your Wake***



The woman is holding a sign reminding drivers to slow down. Much like speed boats entering a marina, speeding trucks create waves that push water over sand bag barriers and into shops and homes along flooded Bangkok streets.

You've see similar behavior in rain flooded streets. Some cars rush through oblivious to the fact they are splashing water over the heads of pedestrians on the sidewalks. A bit of care and courtesy can go a long way to helping keep people from being over stressed in hard times.





## ***Distributing Relief Supplies***

An ironic observation: water coming from above caused the floods and misery for the people. And now, water from above (delivered by helicopter or high trucks and administratively from the government) bring much needed relief to thirsty flood victims.

Distribution problems plague flood relief efforts from all sides and levels. Egos rear up when officials fight to get supplies and put their names on relief supplies in order to “look good” among their constituents. Transportation issues due to flooded road access, lack of trucks, boats, and helicopters make it hard to get relief to widely scattered victims urgently needing them. The great number of the needy quickly swamps any arriving supplies. People struggle, sometimes for hours, just to get to relief centers to get water and food.



For those in need, the aid never seems to come fast enough nor in adequate amounts. Government agencies are stretched thin. Many community groups spring up to help fill the gap. The basic tug-of-war between “good behavior” vs. “not-so-good” behavior continues during the flood. In that sense, life goes on with some profiting from the misery of others. There are examples of fairness as well.





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This flood is the real “stress test” of the Thai government and people. They have an opportunity to rise above the flood waters and the recent political polarization of the country. Let’s hope a charismatic leader with a vision of a better Thailand will be able to motivate the Thai people to rebuild a greener, cleaner, and more sustainable Thailand.



## Seeing Opportunities in Problems

People with a fixed business location who can find a way to stay open for business are lucky. At least they still have a job. And there is no shortage of customers in spite of evacuations. Many folks chose to stay behind and still need basic supplies of water, food, and other necessities. Resupply is the critical problem for businesses.



Some businesses prepared ahead of time with sand bags. Others got lucky. Their neighborhood didn't get flooded as much as others. For some, having electricity to run pumps is essential to staying open. If they lose electric power, they may lose the battle with the flood waters.

Businesses compete with both government and non-government relief groups for water and food supplies. Flooded warehouses and roads add to the resupply issue.



## More Fall 2011 Thai Flood Photos: Part 9



Street vendors have the advantage of moving their business to shallower water or drier locations. As long as they can find fuel and supplies, they can stay in business and provide valuable food services to flood survivors.





## More Fall 2011 Thai Flood Photos: Part 9

Lucky survivors who found a dry spot and have cooking equipment and supplies can become business people and sell food to others. If they are a displaced or unemployed factory worker, they might be able to literally make a comeback from the edge of destruction. They need to earn some income until factories re-open.



When streets turn into waterways and folks need transportation, along comes a “water taxi” (see photo on right). Here’s an example that necessity is the mother of invention. Two young entrepreneurs with a big piece of Styrofoam get into business and charge a fee for a float ride to this couple’s destination.

Another creative person took bits and pieces to make his Thai flood version of a jet ski (see photo below).



In the photo above, a homemade “high water bike” helps the rider minimize contact with flood water.

People who chose to “shelter in place” need a way to cook their food. If electricity is cut off or they run out of bottled gas, they can fall back on the traditional Thai charcoal stove. That is if they can find one, and have matches, paper, wood, and charcoal. See why it’s a good idea to prepare ahead of time?





## More Fall 2011 Thai Flood Photos: Part 9

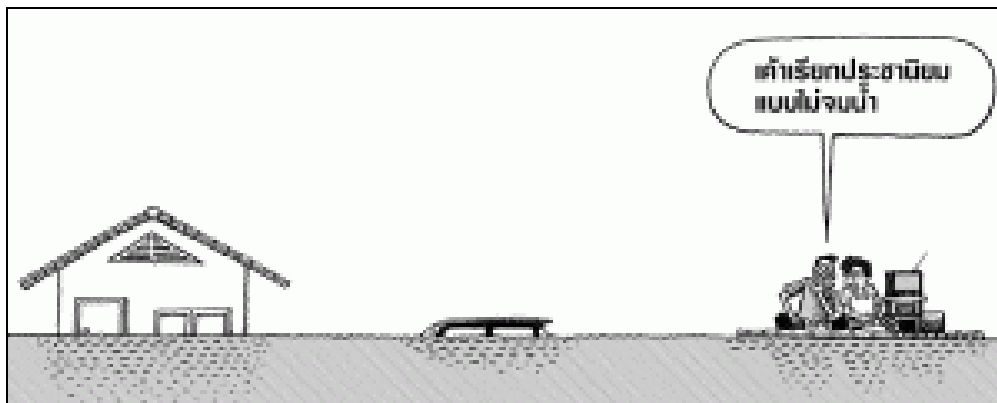
Out of a job and seizing the moment, some folks literally launch a new business with a boat and rubber boots and “paddle” their wares around the flooded streets to earn an income. Business success often depends on being at the right place, at the right time with the right product or service at the right price. Similar efforts are made selling inflatable boats, rafts, mattresses, hip waders, and life jackets.



*Plastic containers being sold for water storage*



*Volunteers making EM (effective micro-organisms) balls to treat contaminated flood water as a preventative measure to reduce water-borne diseases*



*A lament relevant to many aspiring middle class people in Bangkok: First house, first car, first bamboo raft.*

## ***Basic Sanitation is Critical***



Many people are forced to wade through contaminated flood water increasing their exposure and risk to water-borne diseases. Children will be more susceptible. They often play in flood water and get it in their mouths, touch things that were in contact with contaminated flood water, then put their fingers in their mouths or rub their eyes. Good hygiene calls for diligent hand washing before handling food, eating, handling things contacting flood water. All hand washing, bathing, and brushing of teeth should be done with clean / safe water. During a flood, clean water is often in short supply or non-existent. Preparing for emergencies is very important.



Leeches are an increasing risk the longer the flood waters remain. Leeches inject an anesthetic so the victim doesn't feel the bite. Pulling them off risks infection of remnants of the leech. The wound is a prime site for infections from contaminated flood waters. The recommended removal method is to press your finger nail against your skin at the smaller end of the leech (the biting end) and slide your finger nail to dislodge the leech's biting grip. Older methods of using salt, touching the leech with a hot cigarette, etc. will make the leech release, but the leech may also regurgitate into the wound which can get bacteria in the leech's gut into your blood. Once removed, thoroughly disinfect the bite area using a cotton swab wiping in a circular motion spiraling outward from the bite. Apply pressure to the wound which may continue to bleed for 2-20 hrs. Without preparing ahead of time, how many people will have what is needed to deal with leeches?

