

International Disaster Reduction Alliance Forum 2022

Preparedness for torrential rain disasters from the perspectives of “evacuation switch” and “second best”



Katsuya Yamori

Professor at the Disaster Prevention
Research Institute at Kyoto University
(Disaster psychology / Disaster Informatics)



Points of this presentation

- Evacuation during torrential rain disasters: From the perspective of disaster psychology
- Three keywords: Evacuation switch, Second best and Consideration of evacuation as a “practice swing” not an “unnecessary attempt”.
- Evacuation switch
 - Act as a bridge between information and action rather than as information
 - Immediate abnormalities, information in a narrow sense, (largest record)
- Second best
 - Evacuation drills to the second floor
 - (Evacuation drills to the front door)
 - (Invitation to evacuation drills)
- Consideration of evacuation as a “practice swing” not an “unnecessary attempt”.

Only two important things when you think about evacuation

- **When** to evacuate?
 - = What do you use as an “**evacuation switch**” when you evacuate?
 - Torrential rains in northern Kyushu in 2017: The first inundated house was also used as a switch in 2012. (Asakura City in Fukuoka Prefecture)
 - Torrential rains in in Tohoku regions in 2017: The Omono River water level data was used as a switch based on the lessons learned from the disaster occurred at a group home in Iwate Prefecture in the previous year. (Daisen City in Akita Prefecture)
- **Where** to evacuate?
 - Torrential rains in western Japan: A shrine hall in Kyotamba Town
⇒ Find a **second best** evacuation site (which is not perfect but gets a score of 60 points). Evacuation sites designated by local governments are also important.

Evacuation switch (torrential rains in western Japan in 2017)

Hiraenoki district in Asakura City

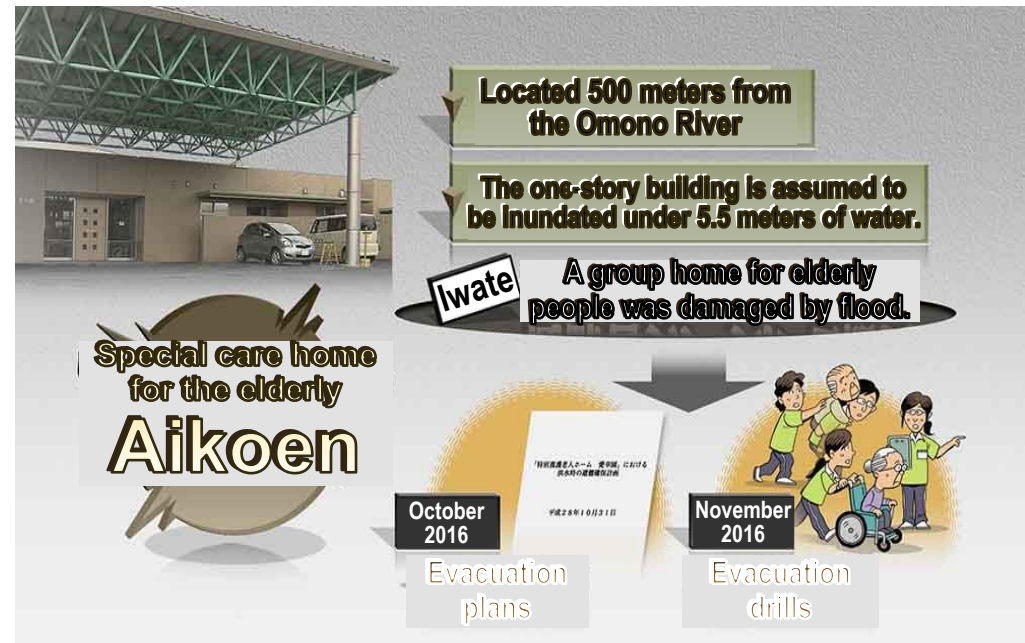
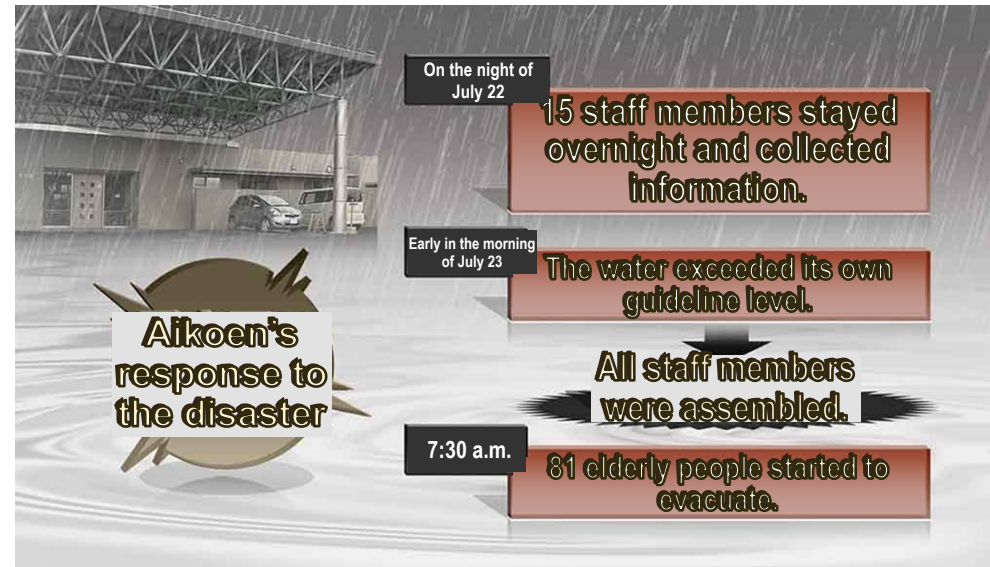
The district has defined its own guideline for evacuation after the disaster in 2012.
92 people in 37 households evacuated safely.



Rereference information: NHK's program "Jiji Koron" aired on August 4, 2017

Among the residents, the water volume of this small river and the state of damage to an inundated house were one of the guidelines when they consider evacuation. ... When the water reached its own guideline level, they called out to each other and started to evacuate to higher houses. One hour after the evacuation, muddy water flooded the district. Hiroshi Hino, who lives in the Hiraenoki district, said, "As well as our usual strong community ties among residents, the experience in 2012 raised the residents' awareness of disaster prevention, allowing us to evacuate safety."

Case of Aikoen, a special care home for the elderly in Daisen City in Akita Prefecture



Lessons learned from the disaster hit hard by Typhoon No. 10 at a group home in the town of Iwaizumi, Iwate Prefecture in 2016

Reference information: "Lessons learned from the torrential rains in July. One month has passed since torrential rains in northern Kyushu." (NHK's program "Jiji Koron" aired on Augst 4, 2017)

Initiatives conducted in the district of Kawamo district in the city of Takarazuka, Hyogo Prefecture



Kawamo's Disaster Response Switch



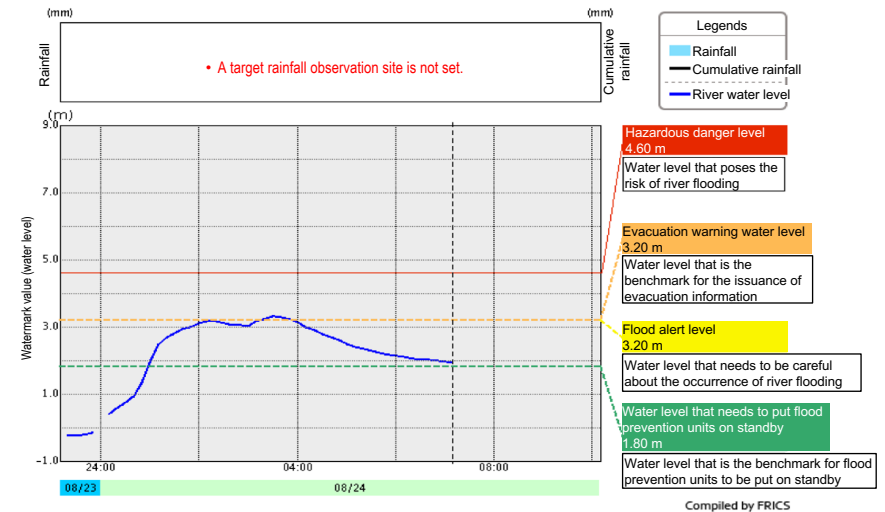
Point where the Kojin River and Muko River flow together

July 5, 2018 (Thu.) 10:54 a.m.

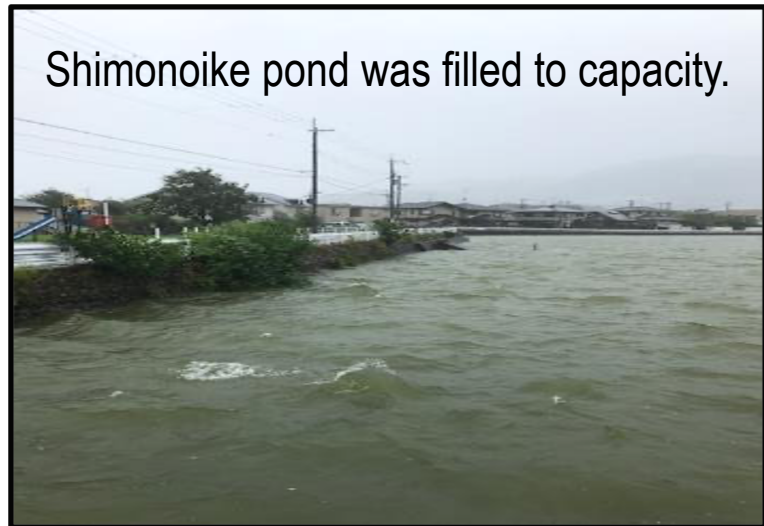
Examples of evacuation switch (Kawamo district in Takarazuka City)



Pictures provided by the voluntary disaster prevention group in the Kawamo district in Takarazuka City, Hyogo Prefecture



Muko River water level (August 24, 2018)



Shimonoike pond was filled to capacity.

September 4, 2018 (Tue.) 2:51 p.m.

Second Best Torrential Rains in Western Japan in July 2018

Photographed by Yamori
At Kamiotomi district in Kyotamba Town
(Total population of 44, elderly population: 50%)



50km

Volunteer firefighter leader



Temporary evacuation site: Shrine hall



Nine people who were stranded in the district



Point where a mudslide occurred at the exit from the district



Evacuation site (outside the district)



Point where a mudslide occurred in the district



The hill behind his house collapsed.



Torrential Rains in Western Japan in July 2018

- Total fatality: 51
- Aged 65 or older: 45 (about 90%)
- At home: 44 (about 86%)
- On the first floor of the house: 42 (about 81%)
- Among the above 42, 21 lost their lives in one-story houses and 21 in two-story houses.
- Idea to evacuate to the second floor, preparation and drills
- Conducting evacuation drills to the second floor

Mabi district in Kurashiki City

Unnecessary attempt / Practice Swing

西日本豪雨3週間復興へ道遠く

早めの避難、母救った

西日本豪雨による綾部市旭町の土砂崩れで、91歳の女性が家が全壊するう目前に避難し、命が助かった。救ったのは、大雨のたびに女性を早めに避難させていた家族の行動。7日未明に記録的豪雨が降ると予測していた。

綾部の女性 5年で20回空振りも…

「あの家にいたら母が危ない」。池田（旧姓・岩崎）静子さん（64）は5日午後、西日本各地を襲い始めた記録的豪雨のニュースを見て胸騒ぎがした。「綾部でも降るかもしれない」。長女（25）に頼んで、山間地の旭町に1人で住む母・岩崎てるみさん（91）を車で迎えにいつてもらい、5日夕、街中にある綾部市大島町の自宅に避難させた。

雨は6日午後、小康状態に。てるみさんは「たいしたことない。（旭町に）帰る」と言い始めた。「帰ってはダメ。綾部の雨はこれから本番」。池田さんは引き留め、1泊させた。テレビニュースは発達した雨雲が列をなす「線状降水帯」が広島県に甚大な被害を与えていると報じていた。

7日未明。綾部市内の天気は一変した。3時間で150ミリの記録的豪雨が襲った午前3時半ごろ、旭町に残った



母のてるみさん（左）と避難当時をふり返る池田さん＝綾部市内旭町を襲った土砂崩れ。右端の下から3棟目がてるみさんの家。7日、小型無人機で撮影。綾部市提供

「続けて良かった」

いた住民らは「ゴォー」という音を聞いた。集落正面の山が高さ約50メートル、幅約50メートルにわたって崩落。押し寄せた土砂はてるみさんの家を突き破って寝室に達した。市内最大の土砂崩れだった。てるみさんは「あそこいたら死んでいた」とふり返る。

実は池田さんがてるみさんを早めに避難させたのは今回が初めてではない。旭町では同じ現場で5年前にも同規模の土砂崩れが発生し、てるみさんの家の手前まで土砂が迫ったことがあった。池田さんは以来、雨雲の動きをニュースでチェックし、台風や大雨のたびに自宅に連れ出していた。

5年間で避難は20回を越え、今回までは「空振り」だった。だが、池田さんは言う。「5年前の土砂崩れを目の当たりにしなかったら、早めに避難させなかったかもしれない。でも、今は未経験の雨が降る。人ごとではなく、自分や家族に危険が起ころうと考え、行動を起こすことが大事ではと」。

（八幡一男）



From an article reported by Kyoto Shimbun on August 5, 2018