

Natural Disaster : .JP's Experience and Preparation

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Where's Japan



earthquakes large enough to feel
: 2,000-20,000 times a year
typhoons disastrous to Japanese territory
: 5-20 times a year

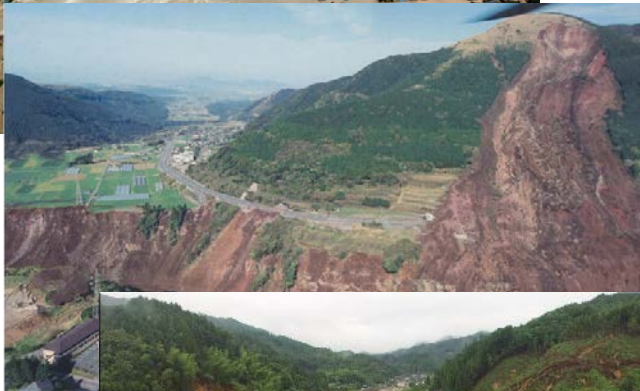
Natural Disasters in Japan



Earthquake : January, 1995
6,500 dead, 44,000 wounded, 640,000 houses broken



Typhoon : September, 2015
40 dead, 80 wounded, 7,500 houses broken

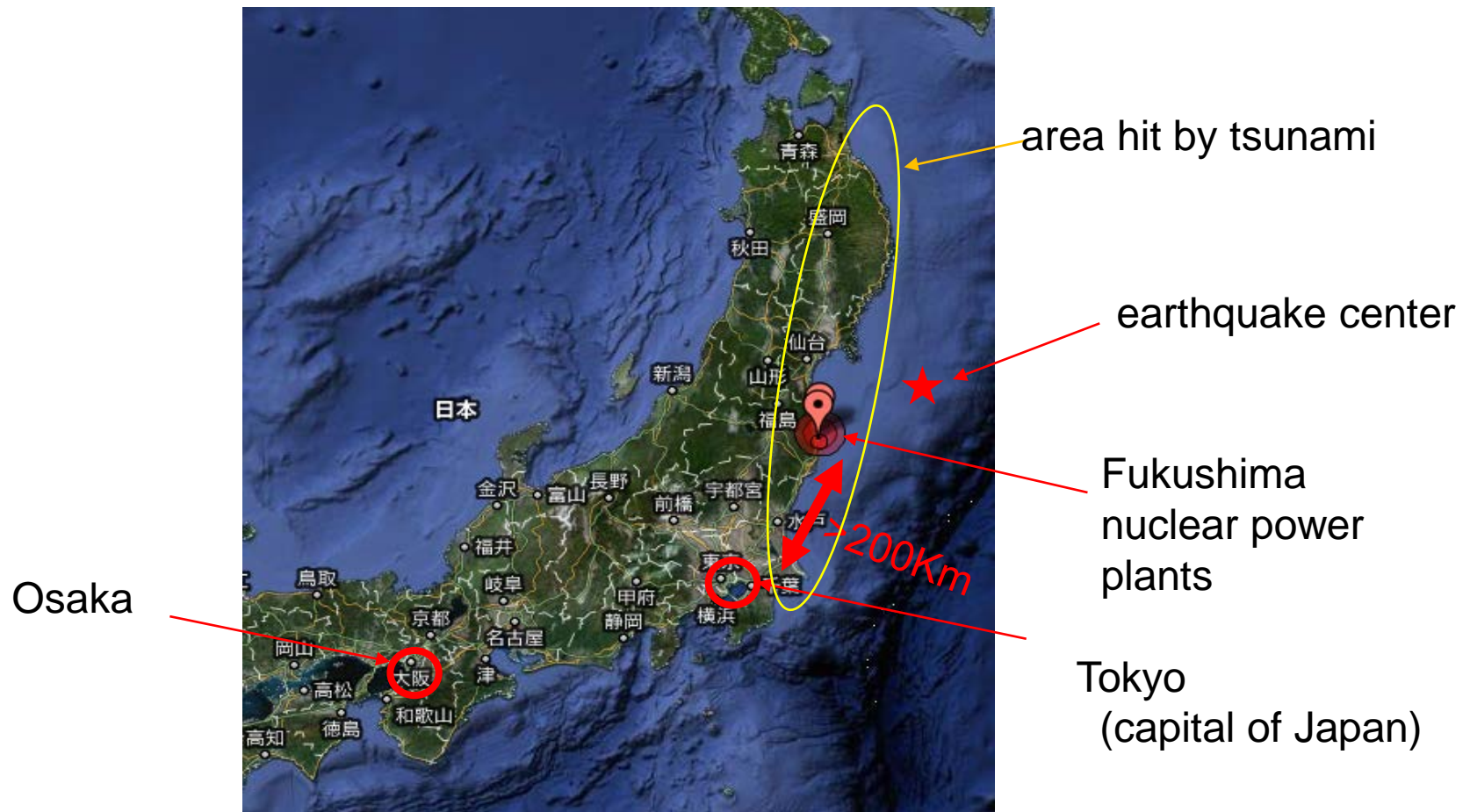


Earthquake : April, 2016
258 dead, 2,800 wounded, 195,000 houses broken



Heavy rain : July, 2017
41 dead, 21 wounded, 1400 houses broken

the Great East Japan Earthquake and Tsunami in March 2011



What happened

- Earthquake
 - Friday, March 11, 2011 14:46 JST
 - magnitude scale 9.0
 - buildings collapsed by quakes, buildings slanted by land liquefaction, roads/railroads severed, lifelines severed, ...
- Tsunami
 - height ~9 meters on the sea
 - ran up land slopes to 30-40 meters high
 - nearly 20,000 dead or missing
- Nuclear power plants disaster
 - nuclear power plants were intensely hit by earthquake and tsunami
 - plants broken and radiation leaked
 - power shortage
 - no traffic lights even in some parts of Tokyo area
 - planned blackout several hours a day

Difficulties experienced – “people” aspects

- On the day of earthquake
 - some facilities/goods in the office and machine rooms were broken or fell down by the earthquake
 - fortunately, none of our employees injured
 - not easy to spot all employees
 - some were out of office
 - phones (fixed line, mobile, Internet) were heavily congested and lines/waves couldn't be grabbed by users
 - staff-safety-check service purchased for this kind of emergency didn't work (because of communication congestion!)
 - employees couldn't go back home after earthquake
 - public transportation halted their operation because they had to do thorough safety checkups after an intense earthquake
 - road congestion because many people tried to get home by cars as public transportation systems were not available
 - 30-40 employees stayed overnight with blankets and sleeping bags
(over 120,000 people couldn't travel home in Tokyo area)

Difficulties experienced – “people” aspects – *cont.*

- on the day of earthquake – *cont.*
 - foods/drinks in market stores or convenience stores were sold out
 - employees couldn't sleep well in frequent aftershocks
 - To take their minds off the fear, beer, wine, DVDs were of much help even in the office
- for several days after the earthquake
 - not all the public transportation services were back to normal
 - planned blackout was executed, rotating among designated areas
 - employees living in designated areas were directed to work from home
 - employees who need to work in the office were directed to come to the office but back home early during daylight time
 - the ministry directs people to stay home as far as possible in order for them to avoid troubles and save electric power

Difficulties – “service” aspects

- on the day of earthquake
 - all sorts of problem-finding must be done immediately
 - safety in the office
 - continuity of the service
 - DNS, WHOIS, registry system, office system, ...
 - servers in the office, servers in data centers, NOC function, ...
 - => fortunately, JP services were not disrupted
 - => some office facilities got damages
- during several days after the earthquake
 - decide how domain names should be handled (=relief)
 - people (registrants / registrars) in the disaster-affected area may not be able to renew their domain names
 - such domain names were automatically renewed with no charge
 - announce to the public was not done, only through registrars
 - some registrars could not extend the above relief to their registrants

Preparing ourselves

- Pocket-manual for all employees
 - evacuation, safety check, ...
 - whom/what/how you should report
 - how to manually unlock electrically locked doors, to unlock electrically locked safety boxes, ...
 - brief manuals within smartphone & on paper
- Survival kit
 - food/water/gloves/helmet/...for every employee + more
 - sleeping bags/radios/flush lights/... for office stayers
- Basic drills
 - periodical evacuation drills
 - periodical emergency messaging drills
 - Email or SMS addresses are often changed but not reported to the manager

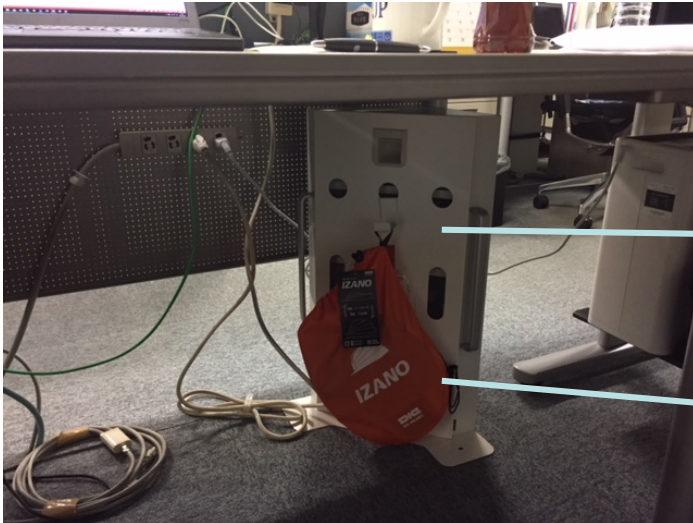
Preparing ourselves – *cont.*

- For organizational initial decision
 - set basic priorities to
 - functions to survive
 - who are going to do what
- Basic criteria for
 - making employees go home
 - selecting and making employees to come to office
 - treating visitors who happen to be in our office
- Emergency communication tool
 - smartphone + G Suite
 - for all employees, e-mail accounts under a TLD other than .JP
 - for each operation site, a satellite phone
 - ...

Preparing ourselves – *cont.*

- Remote work environment
 - software on PC
 - shared data on the network
 - scheme to manage remote staffs
- Disaster Recovery sites
 - Tokyo and Osaka (500Km away)
 - both systems and staffs
 - periodical drills to switch the active site
- Anycast DNS servers within regional big ISP networks
 - Experimental research
- Crisis Management Committee
 - Planning and handling all the above

3-day survival kit is stored under each employee's desk



inside the storage

folding helmet



under my desk

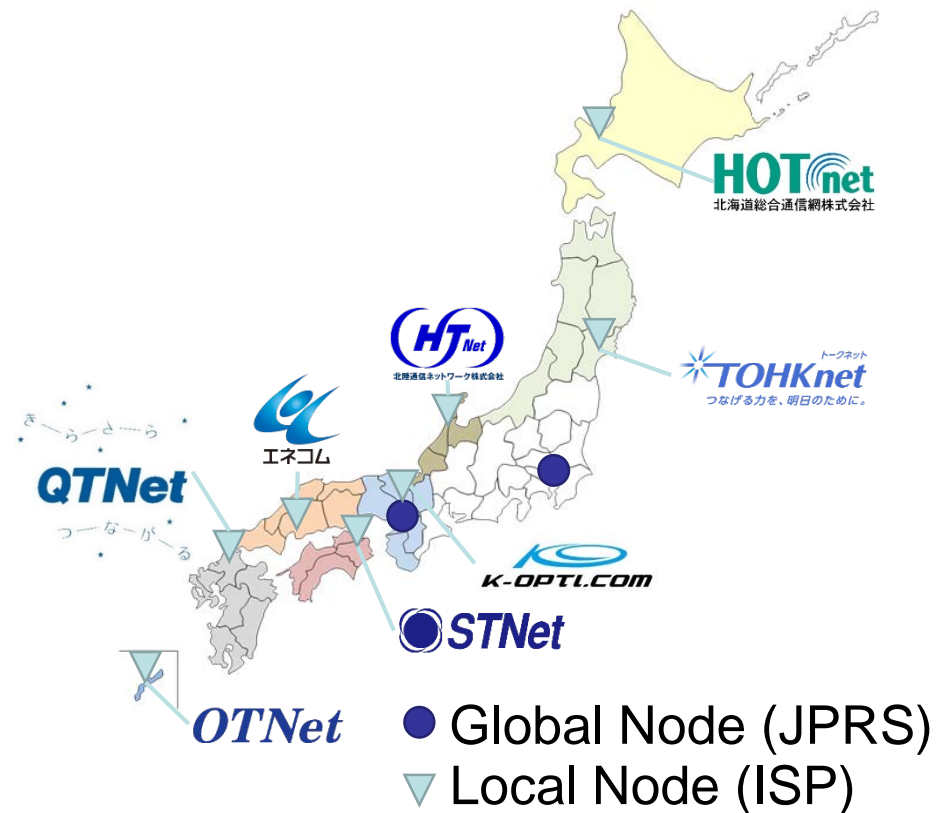
- fully clear to hide my body
- storage with 3-day survival kit



content

Anycast DNS servers within regional big ISP networks

- Joint research effort with 8 domestic ISPs
 - those ISPs are provided by regional electric power companies (or affiliates)
 - their area coverage don't overlap and collectively cover the whole Japan
- This collaboration will make JP DNS survive even when many parts of Japan are in trouble due to natural disaster



Q & A