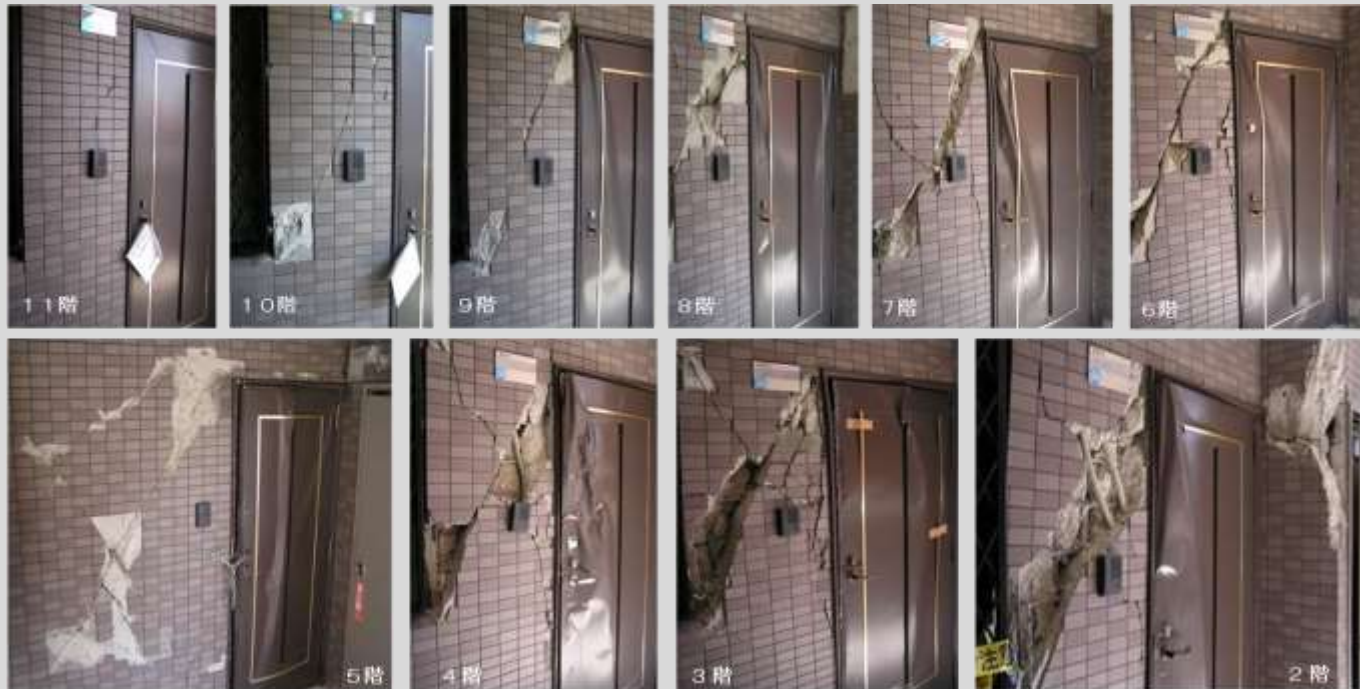


# Preparedness for the coming Tokyo Metropolitan M7 earthquake



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**First of all .....**

**Welcome to Kanto basin !**



# Destiny of Tokyo Metropolis

- ☆ Tokyo Metropolis is located not in a plain, but in a big basin.
- ☆ Kanto basin is still active (sinking down) even now.
- ☆ Sedimentary layers are very thick and very soft.
- ☆ Therefore, earthquake ground motion could be enlarged in amplitude, period, and duration.



**We are here now!**

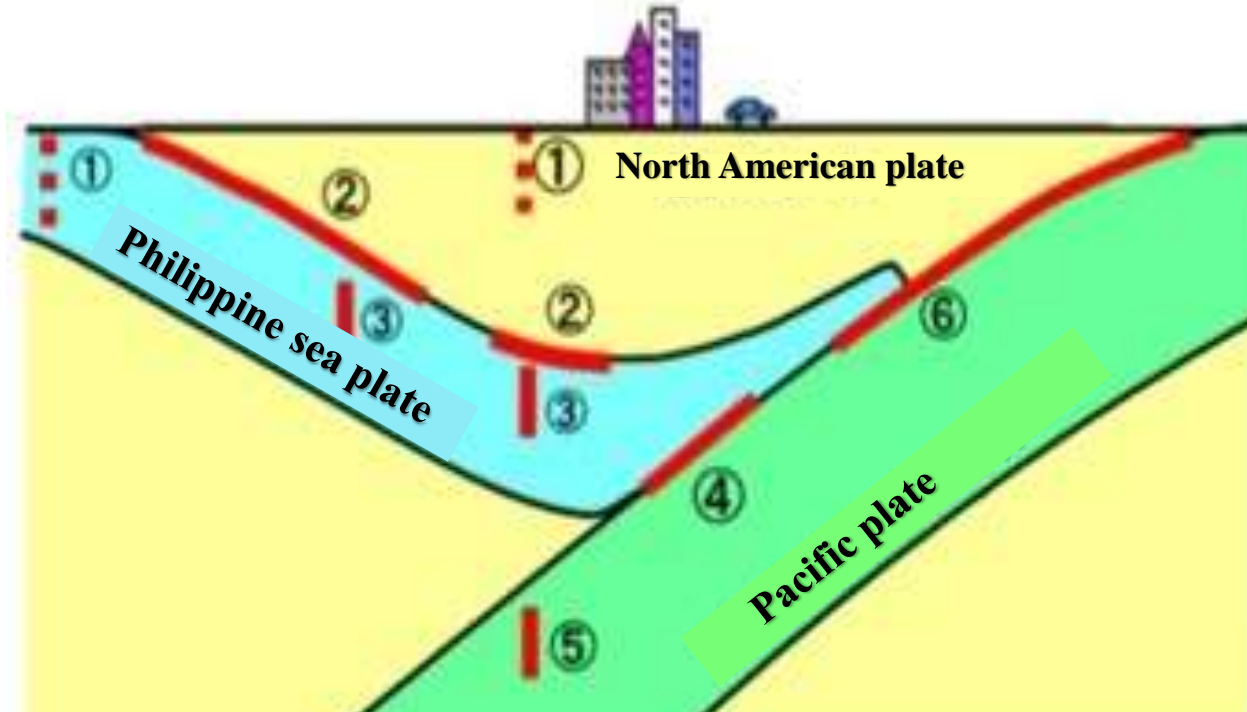
**Seismicity .....**

**M7, M8, and even M9 earthquakes  
are waiting for us !**



# Earthquake mechanism in the Southern Kanto region

We are living on a very complicated condition!

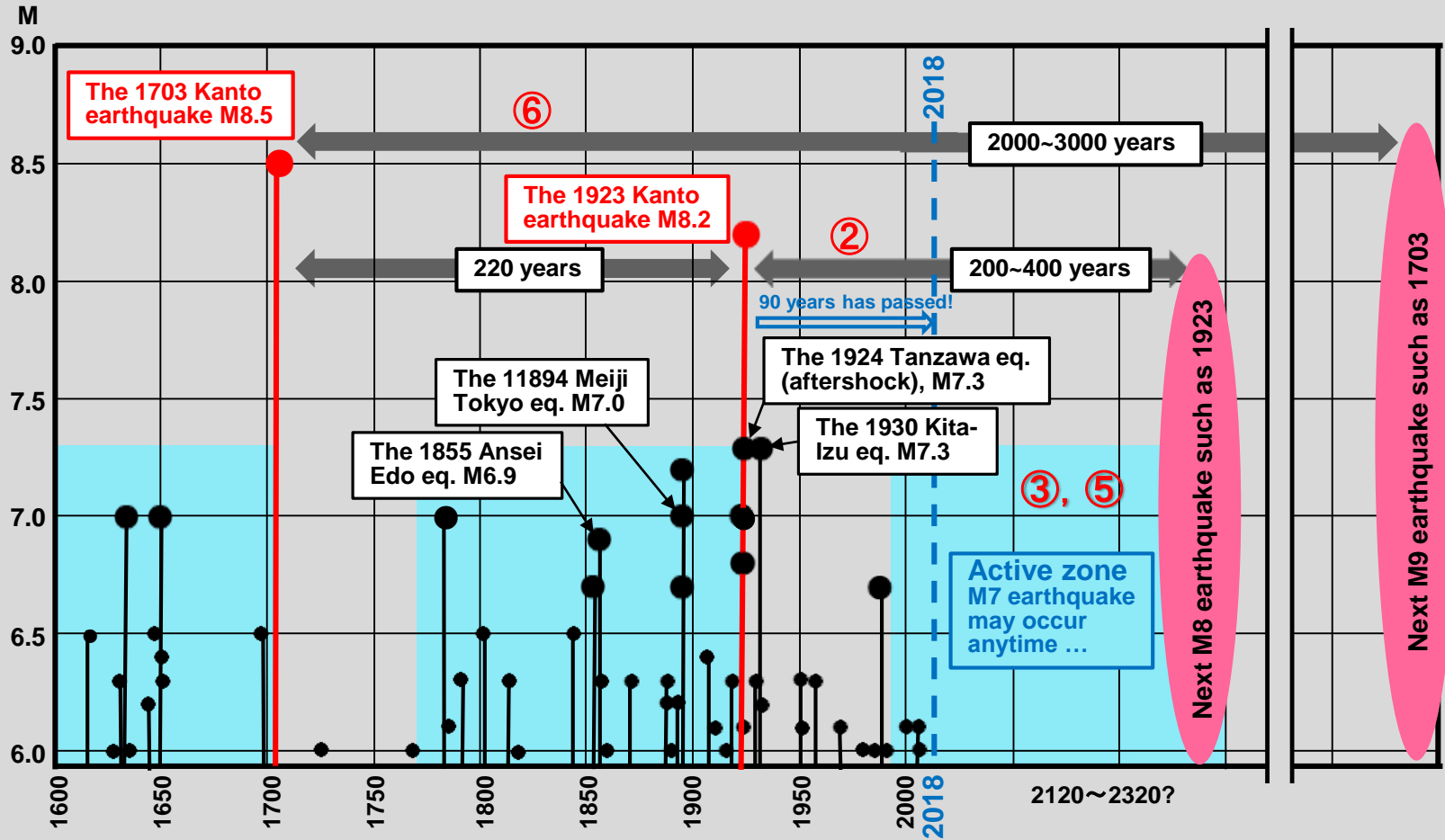


- ① Shallow earthq. In the Earth's crust **Almost impossible in the basin!**
- ② Between N.American & Philippine sea plates (inter-plate earthq.) **M8**
- ③ Inside the Philippine sea plate (intra-plate earthq.) **M7**
- ④ Between Philippine sea & Pacific plates
- ⑤ Inside the Pacific plate
- ⑥ Shallow earthq. between N.American & Pacific plates **M9 class**

after the Central Disaster Prevention Council in Dec. 2013

# Historical map of earthquakes

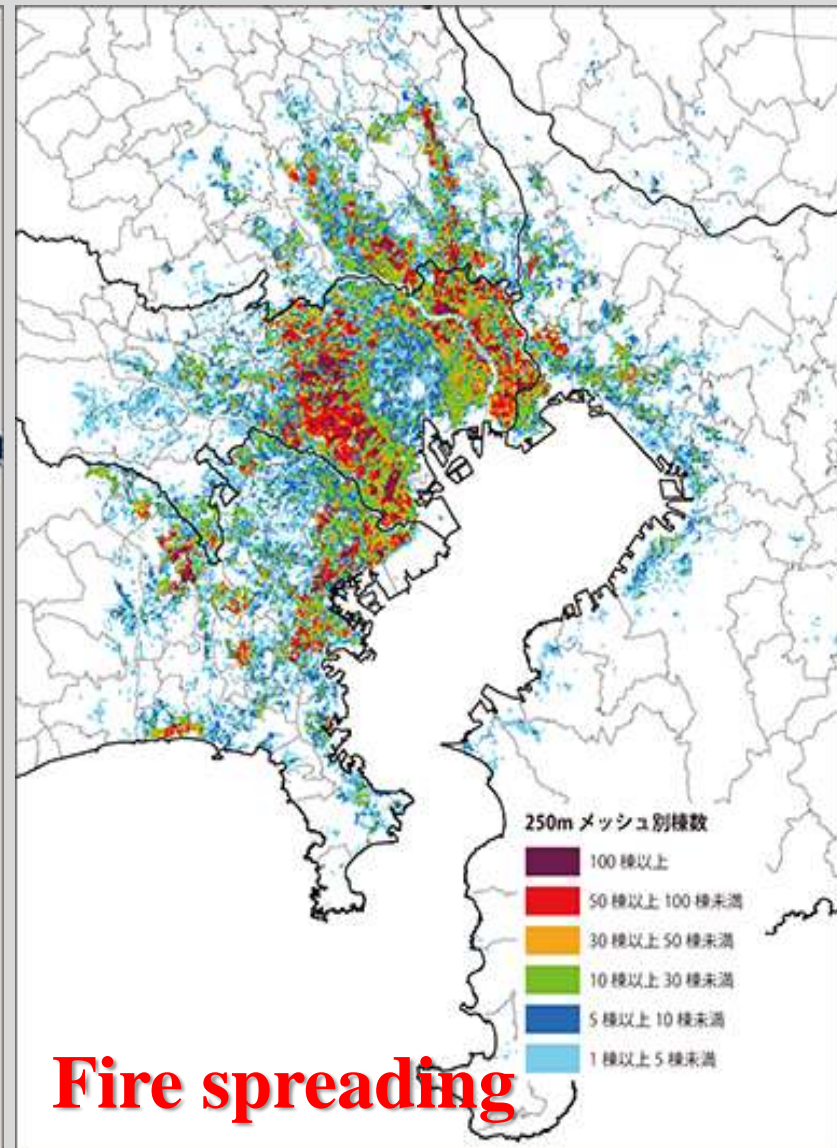
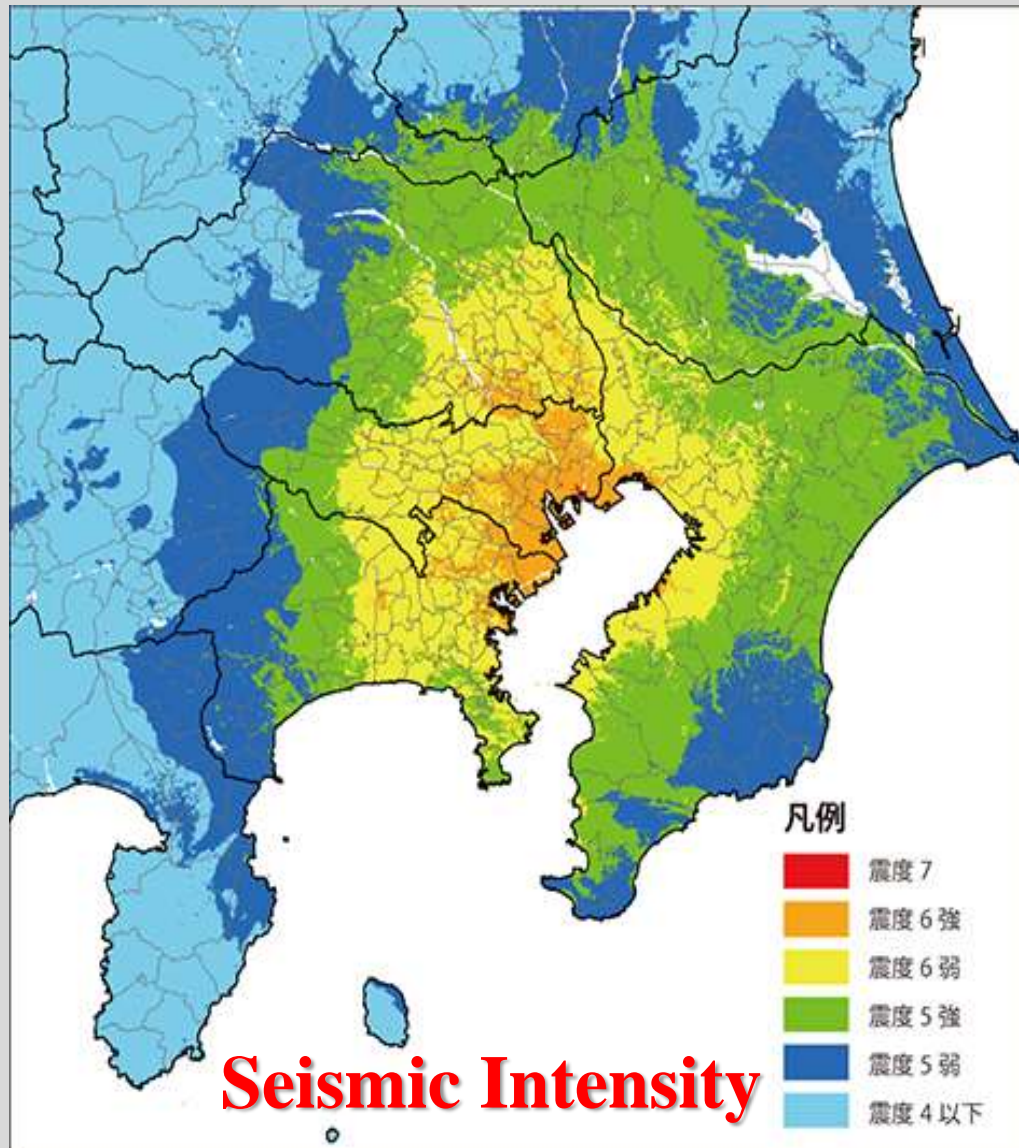
A point will be the interval (return period) of earthquake occurrence!



Earthquakes occurred in South Kanto area (after 1600, M>6.0)

after the Central Disaster Prevention Council in Dec. 2013

**Damage estimation for a M7 earthquake that directly hits Tokyo area,  
prepared by the Central Disaster Prevention Council in Dec. 2013**



Distribution of seismic intensity (left) and totally collapsed and burned-out houses (right), assuming a winter evening with the wind velocity of 8 m/s.



# **The final report on Damage estimation for a M7 earthquake that directly hits Tokyo area, prepared by the Central Disaster Prevention Council in Dec. 2013**

☆ **M7.3 earthquake that directly hits Tokyo area was chosen as the most probable one at this stage.**

## ☆ **Damage estimation**

### **Damage by earthquake (strong shaking) itself**

- \* **Totally collapsed 175,000 houses, and maximum 11,000 deaths.**
- \* **Maximum 72,000 citizens will ask rescue activities.**

### **Damage by fires induced by the earthquake**

- \* **Burned-out maximum 412,000 houses, and in total maximum 610,000 houses will be lost.**
- \* **Maximum 16,000 deaths, and in total maximum 23,000 deaths.**

### **Damage of infra-structures and lifelines**

- \* **Damage estimation was made for electric power, water and gas supply systems, and also for transportation systems like railway, road, harbor, and telephone.**

### **Damage of economy**

- \* **Direct losses about 47,000 billion-yen, and indirect losses about 48,000 billion-yen, therefore the total losses will be about 95,000 billion-yen.**

## ☆ **Direction of countermeasures**

### **Expectations against the national and the local governments**

### **Countermeasures expected to citizens themselves**

- \* **Protection by themselves from strong shaking, and preparation of survival water and foods**
- \* **Quick and sure evacuation from a big fire after the earthquake**
- \* **Cooperation not to disturb traffics and infra-structure in a possible way**

**This is a part of the official estimation from the government!**



# **Prediction and preparedness for the coming Tokyo Metropolitan M7 earthquake**



**I am very sorry to say a very pessimistic private comment.**

- ☆ **Prediction of earthquake occurrence looks almost impossible, and even an estimation looks difficult. All we can do will be just to point out possible earthquakes in the future.**
- ☆ **Preparation for an earthquake is surely possible and necessary, but we need to change our life-style completely.**
  - ☆ We had better to choose our residential place far away from the central city.
  - ☆ We need to be very careful if we want to live in a high-rise building.
  - ☆ If possible, we should avoid trains and subways, even cars, in dense city area.
  - ☆ JR super-express, Shin-kansen, is not always safe. They must prepare seatbelts.
- ☆ **Fighting against an earthquake should be that during a war.**
  - ☆ Nowadays nobody knows how to fight a war, and how terrible the war is.
  - ☆ The damage of Central Tokyo looked quite similar between the 1923 earthquake and the 1945 big-fire during the world war II. According to a recent newspaper, the air raid bombing to Tokyo was done by referring the result of the 1923 fires.

# Lessons from the 1923 Kanto earthquake...Fire killed more than 100,000 citizens.



Marunouchi, central Tokyo



Hibiya



Suitengu, Ningyo-cho



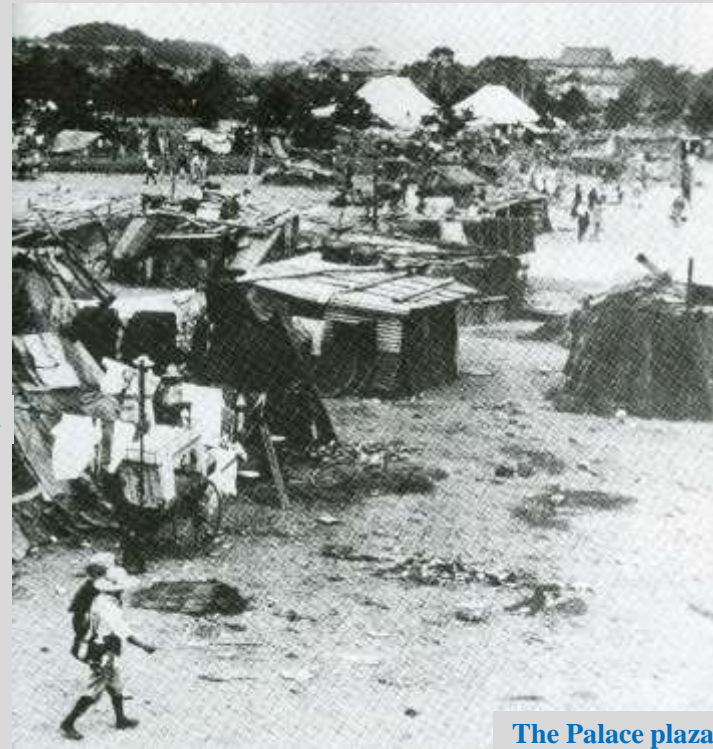
Ueno park



Omiya stn.



Yokoami



The Palace plaza

Mainichi Graph (1992): After 69 years since the 1923 Kanto earthquake.