

### **3.5. Calculation of Earthquake Ground Motion**

The waveform at the ground surface is calculated from the waveform at the engineering bedrock and subsurface amplification function.

#### **3.5.1. Peak Ground Acceleration**

The peak ground acceleration (PGA) distribution maps are shown in Figure 3.5.2 to Figure 3.5.5 .

##### **(1) Ray Fault Model**

According to this model, the southern area of the city experiences over 400 gal.

The northern area experiences less than 200 gal.

##### **(2) NTF Model**

According to this model, ground acceleration in the northern area of the city reaches over 400 gal.

The southern area experiences fewer than 200gal.

##### **(3) Mosha Fault Model**

According to this model, the majority of the city experiences less than 200 gal.

##### **(4) Floating Model**

In this model, the difference of resulting PGA is affected only by subsurface amplification. It is pointed out that areas of high amplification distribute at several areas. The majority of the city experiences acceleration between 300 and 400 gal.

#### **3.5.2. Seismic Intensity**

The seismic intensity (MMI) scale is a subjective one, based on human observation of shaking and damage during an earthquake. The relation of seismic intensity and physical parameters of seismic waves, such as acceleration, velocity and spectral intensity, is studied by many researchers. In this study, the consideration of Trifunac and Brady (1975) was adopted. The relation between PGA and MMI is shown in Figure 3.5.1.

The seismic intensity distribution maps are shown in Figure 3.5.6 to Figure 3.5.9.

##### **(1) Ray Fault Model**

According to this model, the southern area of the city experiences a seismic intensity of 9 and the northern area experiences intensities of 7 to 8.

##### **(2) NTF Model**

According to this model, seismic intensity in the northern area of the city reaches 9 and in the southern area reaches 7.

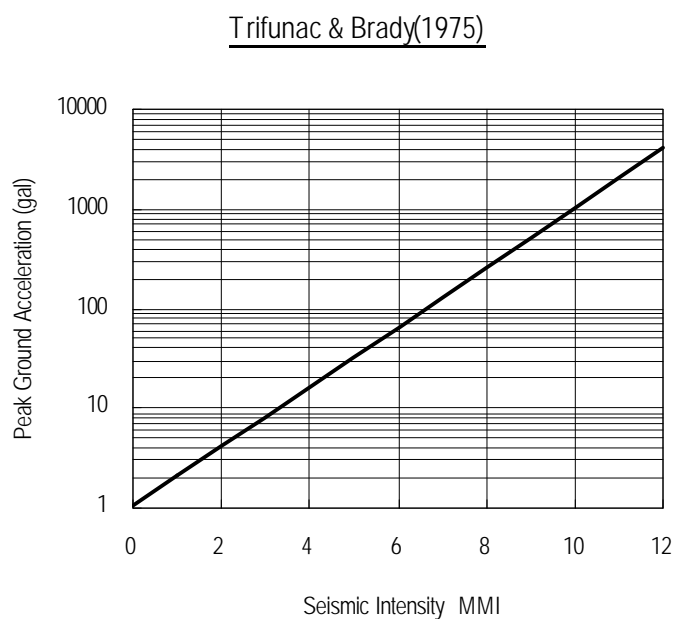
The majority of the city experiences a seismic intensity of 8.

##### **(3) Mosha Fault Model**

According to this model, the majority of the city experiences a seismic intensity of 7.

##### **(4) Floating Model**

According to this model, the majority of the city experiences a seismic intensity of 8. Several areas experience a seismic intensity of 9.



**Figure 3.5.1 Relation between Peak Ground Acceleration (PGA) and Seismic Intensity (MMI)**

Source: Trifunac and Brady (1975)

Figure 3.5.2  
**Peak Ground Acceleration Distribution Map (Ray Fault model)**

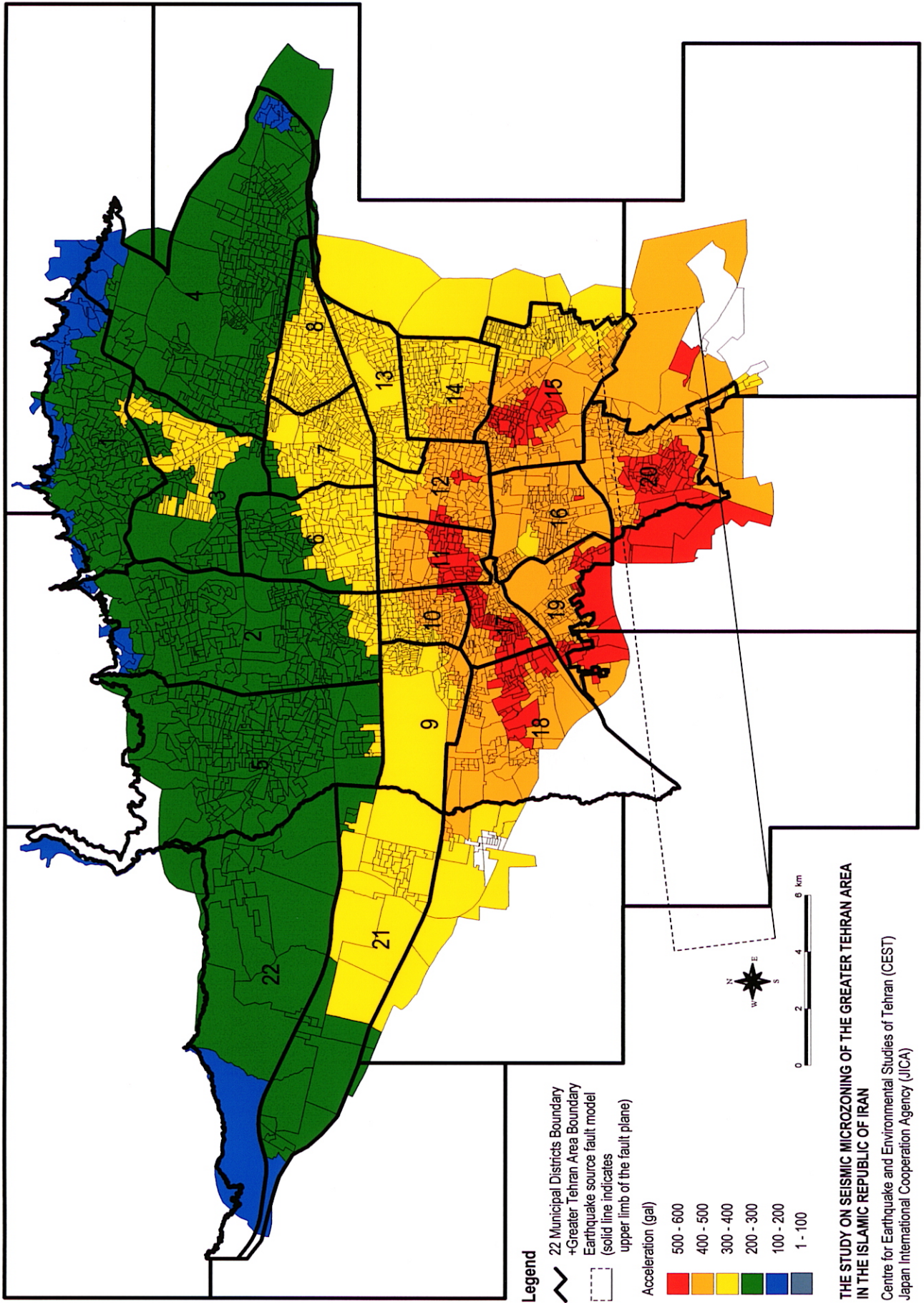


Figure 3.5.3

Peak Ground Acceleration Distribution Map (NTF model)

