



National Survey for Seismic Protection of Armenia

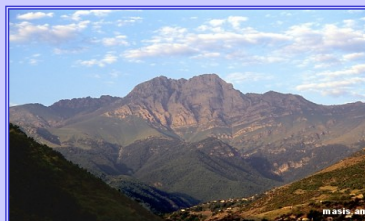
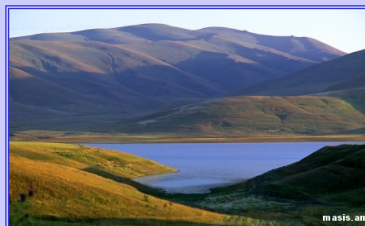
## **ARMENIA COUNTRY REPORT 2006 and Visiting Researcher Programs from Jan.- Mar.**

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- Seminar on Disaster Management January 15 – February 25 2006





## A R M E N I A

The Republic of Armenia is situated in the Southern Caucasus  
Territory of the Republic of Armenia is 30 thousand km<sup>2</sup>  
The Republic of Armenia adjoins with Georgia, Azerbaijan, Iran, Turkey  
Country's Population is 3,7mil. people  
Type of government – presidential  
National currency is dram  
Christianity was first adopted as the national religion in 301. The most of Christians(94%) belong to the Armenian Apostolic Church.



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Armenia is a typical mountain country. The average territorial elevation is 1800 meters above sea level. The maximum height is 4095 meters /mount Aragats/ and the minimum is 380 meters.

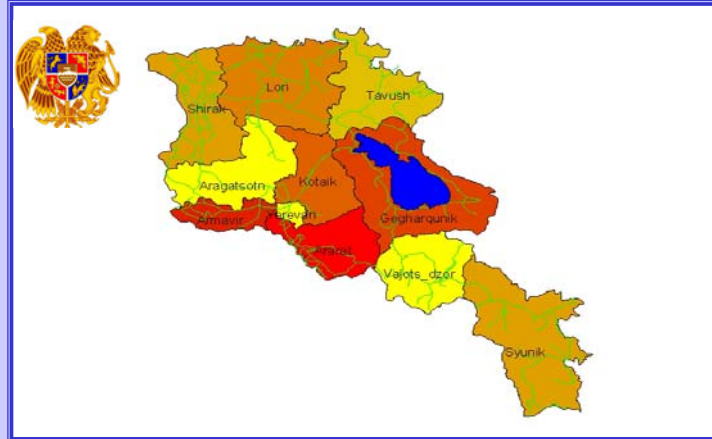




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**Administratively, Armenia is divided into 11 provinces, called Marz, including the capital of Armenia -Yerevan:**

*1.Aragatsotn 2.Ararat 3.Armavir 4.Gegharkunik 5.Kotayk 6.Lorri 7.Shirak  
8.Syunik 9.Tavush 10.Vayots Dzor 11.Yerevan*

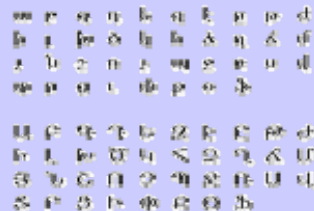


Administrative divisions map of the territory of Armenia, NSSP, 2005



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Armenia is rich in historical-architectural monuments(Echmiadzin,Garni, Gexard,Khorvirap,Noravank,Tatev and etc.). State language is Armenian. There is no other similar language in the world.Since the beginning of the 5<sup>th</sup> century Armenians created their unique alphabet.





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## Industry

Period from 1994 to 2000 was a period of stabilization for the national industry. In 2001 the physical volume index of the industrial output reached - 103.8%.



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## Energy

In 2001 the physical volume of electricity generated in Thermal Power Stations made up 48.6% , the physical volume of electricity generated in Nuclear Power Stations – 34.6% ,the physical volume of electricity generated in Hydro Power Stations - 16.8%





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## Agriculture

Privatization of the agriculture sector of Armenia began in 1991. In 2001 the past 10 thousand collective farms, soviet farms, inter-farms and other agricultural enterprises were replaced by 333 thousand farms and collective farms.



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## Construction

In 2001 the share of housing constructions funded by the population amounted to 67% the total construction funding, by the state budget - 17%, by the investors - 16%.





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## Transport

In 2001 cargo shipment via rail transport took up 62% of total cargo shipped

cargo shipment by cars - 30%

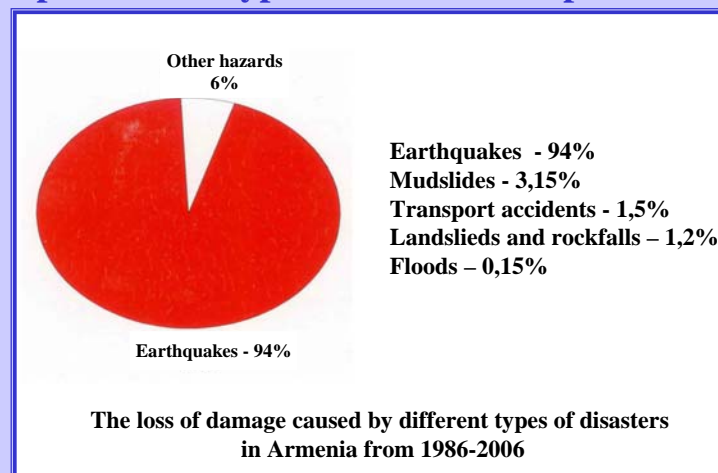
by air transport - 8%



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**Armenia is one of the most disaster prone countries in the world**

It is prone to all types of disaster except the sea ones



## Earthquake of Spitak in 1988 25.000 people have died.

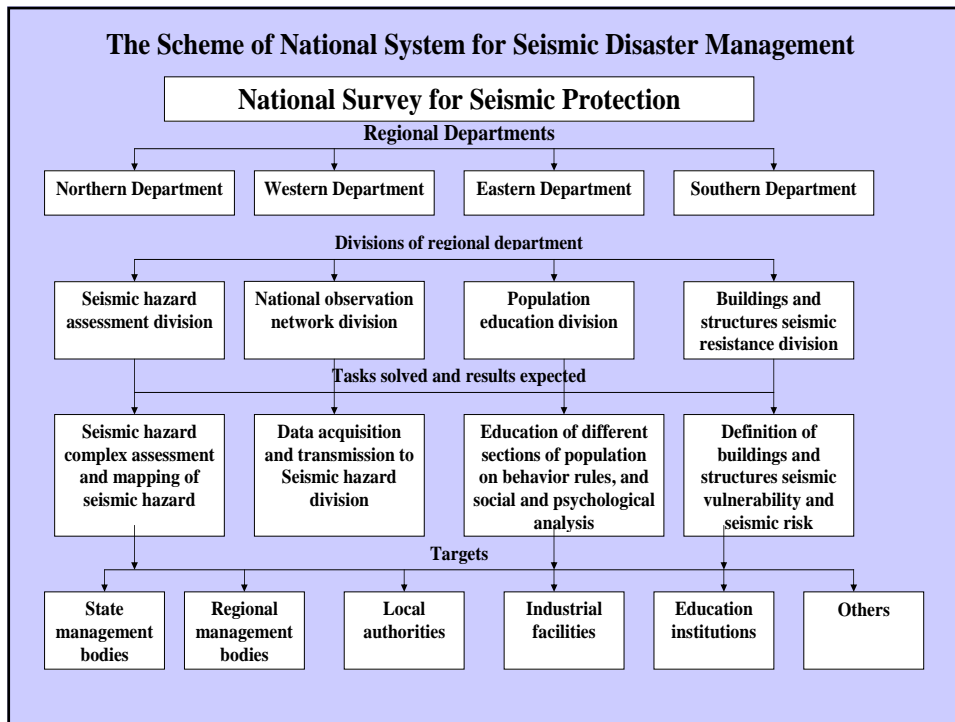


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### Activities of National Survey for Seismic Protection (Armenian NSSP)

- ❖ Seismic Hazard Assessment
- ❖ Seismic Risk Assessment
- ❖ Study of Historic Earthquakes
- ❖ Seismic Risk Reduction includes:
  - ✓ Earthquake Engineering
  - ✓ Population Education and Training
  - ✓ Preparedness of Government Officials and Local Authorities
  - ✓ Development of Early Warning System
  - ✓ Compiling of Hazard and Maps

In 1999 NSSP was recognized by UN as the best one in Europe and world finalist and awarded with the Certificate of Distinction in the field of disaster prevention – UN-Sasakawa award





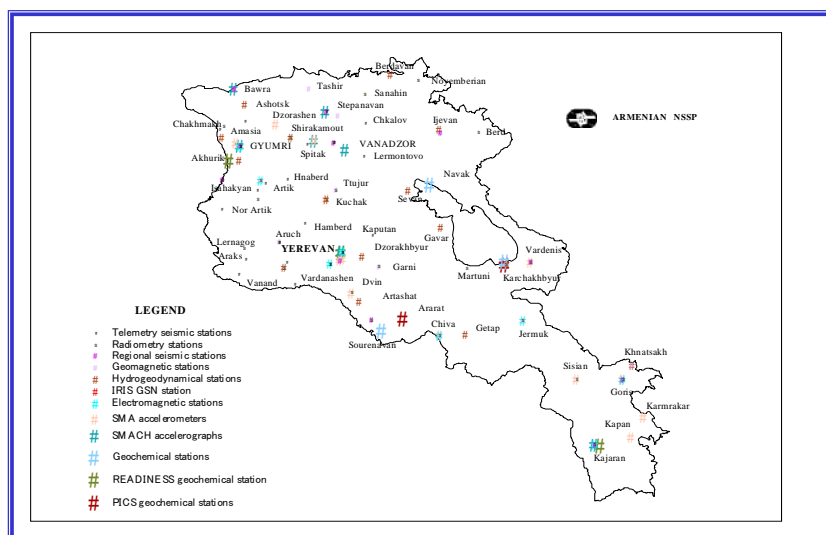
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**The National Survey of Seismic Protection (NSSP) is in charge of the seismic protection and seismic monitoring system. NSSP has the following international and local monitoring systems:**

- ❖ **GPS-Global Position Stations**
- ❖ **NSSP- IRIS-USGS Project**
- ❖ **CTBT International Monitoring System (Comprehensive nuclear Test-Ban Treaty)**
- ❖ **Local Seismic Network**
- ❖ **Observation Network**



## National observation network



The arrangement of seismic stations of NSSP

## National observation network

- Radonometrical stations 24
- Geomagnetic monitoring stations 10
- Electromagnetical monitoring stations 9
- Atmospheric pressure measuring stations 4
- Hydro geodynamic stations 13
- Hydro geochemical Regional stations 7
- Hydro geochemical READINESS stations 4
- Seismic stations 11
- IRIS network stations 1 (international global network stations, unique in the region, long period)
- Ground strong motion stations 24
- Telemetric seismic stations 28
- GPS stations 17 ( 1 stationary, 16 field stations)



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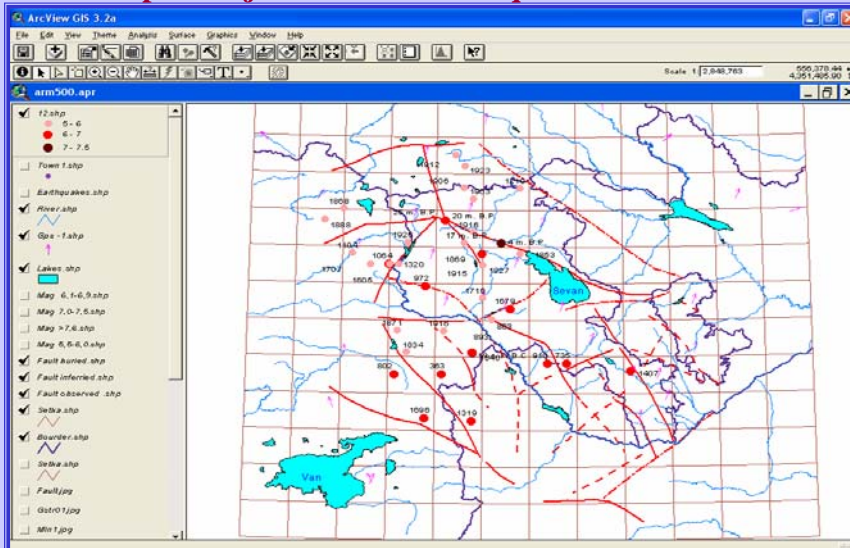
## Seismic stations of NSSP

1. Navak s/s 2. Yerevan s/s 3. Jermuk s/s 4. Karmrakar s/s



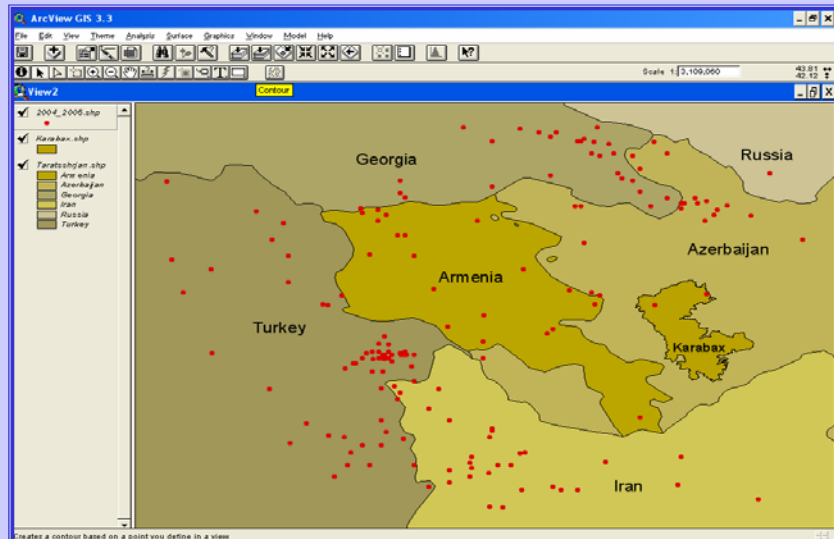
The historical earthquake study is the most important issue of seismology.

## Map of major historical earthquakes in Armenia



Spatial distribution of epicenters of historical destructive earthquakes in the territory of Armenia, NSSP, 2005

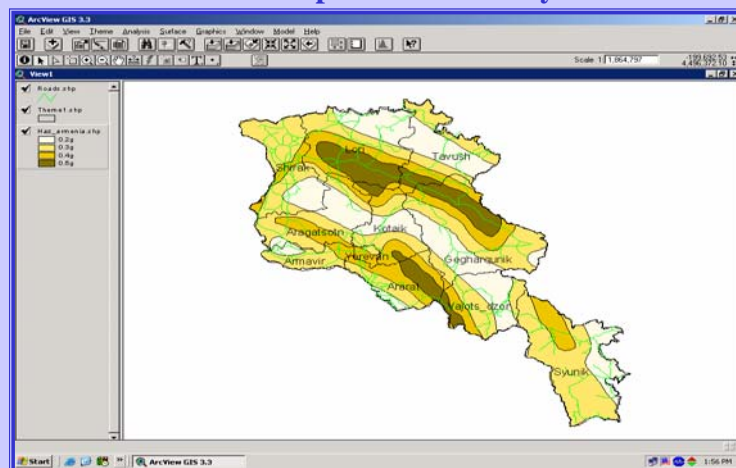
## Earthquake sequence and distribution in Armenia and neighboring countries for 2004-2005



Spatial distribution image of earthquakes in the territory of Armenia, NSSP, 2005

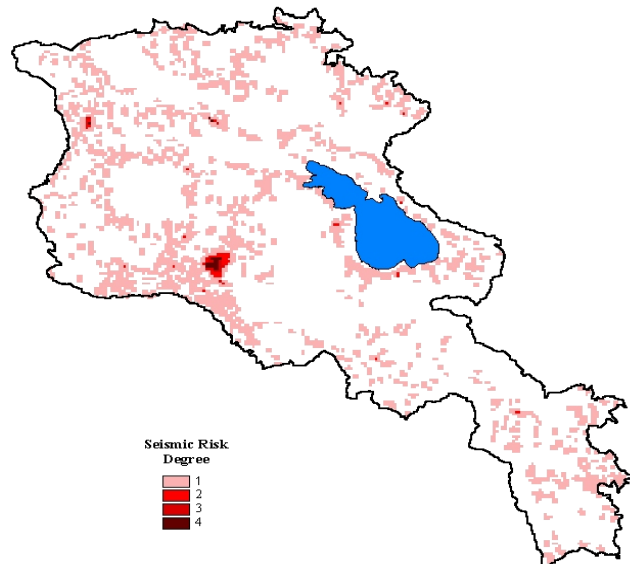
Seismic risk and seismic hazard assessments are the first necessary stages of seismic protection. The territory of Armenia is divided into 4 zones of seismic hazard. Those zones are: 7 value of intensity, 8 value of intensity, 9 value of intensity, 10 value of intensity.

### Seismic Hazard Map of the Territory of Armenia



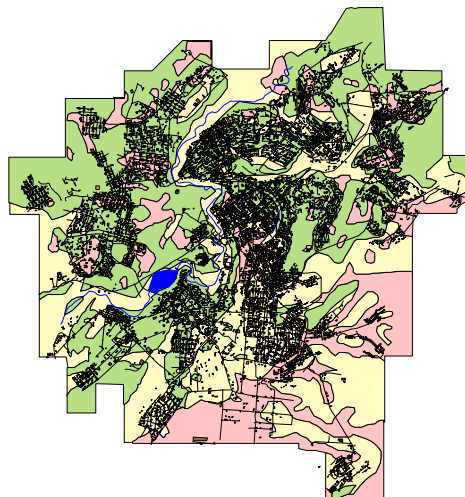
Seismic zonation map of the territory of Armenia , NSSP, 2005

## Seismic Risk Map of Republic of Armenia

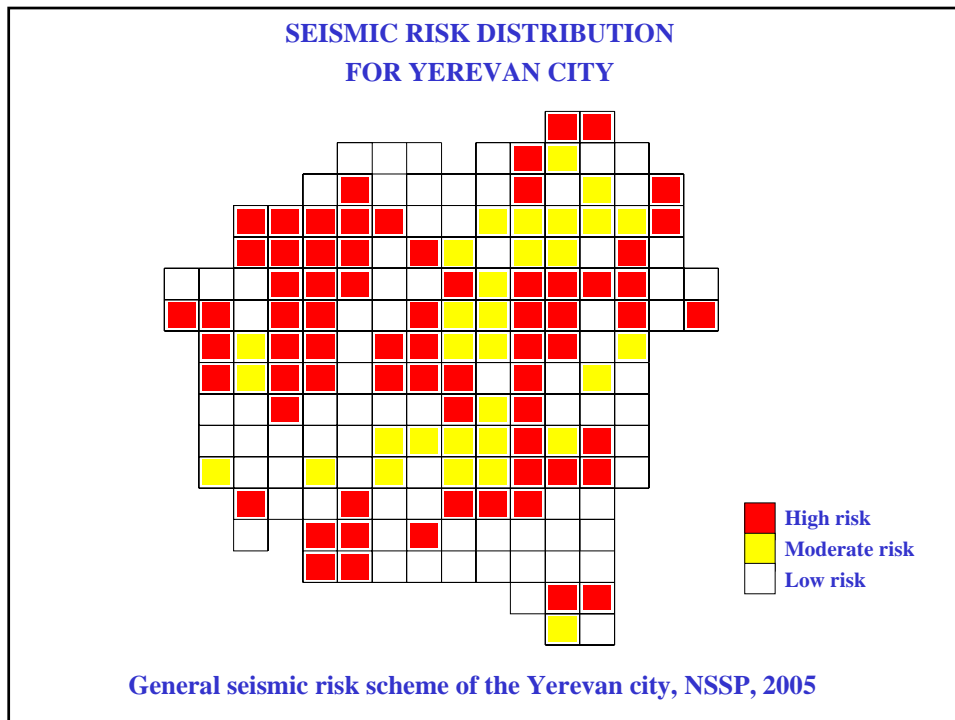


Seismic Risk Map of Republic of Armenia, NSSP, 2005

## Seismic Hazard Map of City Yerevan



Seismic Hazard Map of city Yerevan, NSSP, 2005



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**The National Assembly of the Republic of Armenia has passed more than two tens of Laws in the area of disaster reduction, including the following basic Laws on establishing and regulating emergency management in the country:**

**“Law on the Protection of the Population in Emergency Situations”, adopted by the elected National Assembly on 2 December 1998.**

**„Law on Seismic Protection of the Republic of Armenia,, adopted by the elected National Assembly on 12 June 2002.**

**“Law on Civil Defense of the Republic of Armenia”, adopted by the elected National Assembly on 5 March 2002.**



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**“Law on Fire Security of the Republic of Armenia”, adopted by the elected National Assembly on 18 April 2001.**

**“Law on Environmental Education and Public Awareness”, adopted by the elected National Assembly on 20 November 2001.**

**“Law on Rescue Forces and Status of a Rescuer”, adopted by the elected National Assembly on 19 June 2004.**

**“Law on Safe Utilization of Atomic Energy for Peaceful Purposes”, adopted by the elected National Assembly on 1 February 1999.**



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**The Armenian NSSP is dealing with the whole complex of earthquake disaster reduction problems. Several strong organizations are involved into research activities dealing with earthquake disaster reduction issues.**

*Organizations*

*studying the earthquake disaster reduction are:*

**Armenian Association of Seismology and Physics of the Earth's Interior**

**Armenian Foundation for Seismic Protection**

**Armenian Research Institute of Earthquake Engineering and Protection of Constructions**



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**Institute of Water Problems under the  
Ministry of Agriculture**

**The Hydrometeorology and Environment  
Monitoring Agency**

**In Armenia the Emergency Management  
Administration under the Government of the  
Republic of Armenia**

**Engineering Project Based Institute under the  
Ministry of Urban Development**



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**In the Republic of Armenia there has been developed and are being realized the National Programs on raising public awareness in disaster risk reduction area. At present, in all public schools, colleges and higher education of the Republic the corresponding training programs in disaster risk reduction area are realized. The audiences and training programs, respectively are subdivided into two categories:**

- ... for trainers involved into labor sphere**
- ... for the non involved ones**



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**The audiences involved into labor sphere are subdivided into 4 levels:**

- ...top managers**
- ...medium level managers**
- ...specialists**
- ...servicing staff**



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**The noninvolved into labor sphere trainees are subdivided into 5 levels:**

- ... pre-school institution children**
- ... public school pupils**
- ... college students**
- ... students of high education institutions**
- ... housekeepers, pensioners, invalids**





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## Training programme holding in Yerevans schools



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## Early Warning Systems in the Republic of Armenia

### Means of Early Warning:

- ❖ Not urgent warning through the government management bodies
- ❖ Urgent warning – automatic warning through the sound seismic alarm



## **Objectives of Visiting Research**

- 1. Information, knowledge and experience exchange in the field of seismic protection.**
- 2. Study of disaster risk reduction activities in Japan and relevant political actions.**
- 3. Study of public education system.**
- 4. Participation in training courses and drills.**
- 5. Providing update information for ADRC database.**
- 6. Acquisition of different didactic materials for Armenia.**



## **Results of research**

- **Participation in high-level training courses**
- **Visits to organizations and institutions, Governmental offices, schools, health facilities, museums**
- **Study of various advanced methods and technologies for disaster risk management and reduction**
- **Participation at the workshops and symposiums**
- **Experiences, knowledge and information sharing and dissemination**
- **Study of the disaster risk reduction system in Japan and appropriate political measures**
- **While participating in training courses access to valuable information essential for disaster risk reduction in Armenia**



## Training-program <<Disaster Management>>

January 15 – February 25 2006



Numerous important lessons learned during joint work and rich experience and knowledge acquired will be used in the work on achievement of sustainable natural disaster risk reduction for my country and Armenian people.



Hovhann Avedian



Karen Grigoryan

## THANK YOU



masis.am



Arayik Shoghher