

Management@istains.com

: ()

:

%

%

:

:

()

:

()

()

()

()

()

:

M= a+b.logL

M:

L:()

(Slemmons1992)

()

()

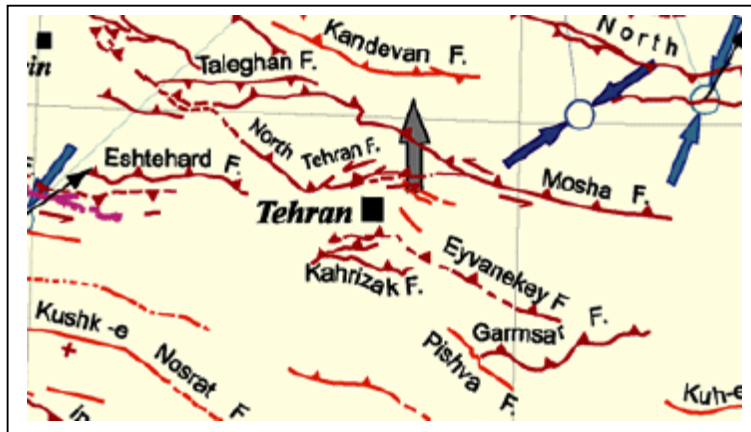
a,b

() a=5.4, b=1.0

(Nowroozi ,1985)

():

Mmax	()		



(Ms=7.7) mb=7.4

(Ms)

±

±

()

" "

$$P(\geq 1, t) = 1 - e^{-t/T}$$

T:

t: ()

$$P(\geq 1, t) = 1 - e^{-t/T}$$

$$P(\geq 1, 174) = 1 - e^{-174/158} = 67\%$$

$$P(\geq 1, 174) = 1 - e^{-174/158} = 67\%$$

$$P(\geq 1, 191) = 1 - e^{-191/158} = 70\%$$

$$P(\geq 1, 191) = 1 - e^{-191/158} = 70\%$$

!...

$$10\% = 1 - e^{-50/T} \rightarrow T = 475$$

(APE)

$$P(\geq 1, t) = 1 - e^{-t/T}$$

)

(

$$P(\geq 1, t) = 1 - e^{-t/T}$$

$$P(\geq 1, t) = 1 - e^{-t/T}$$

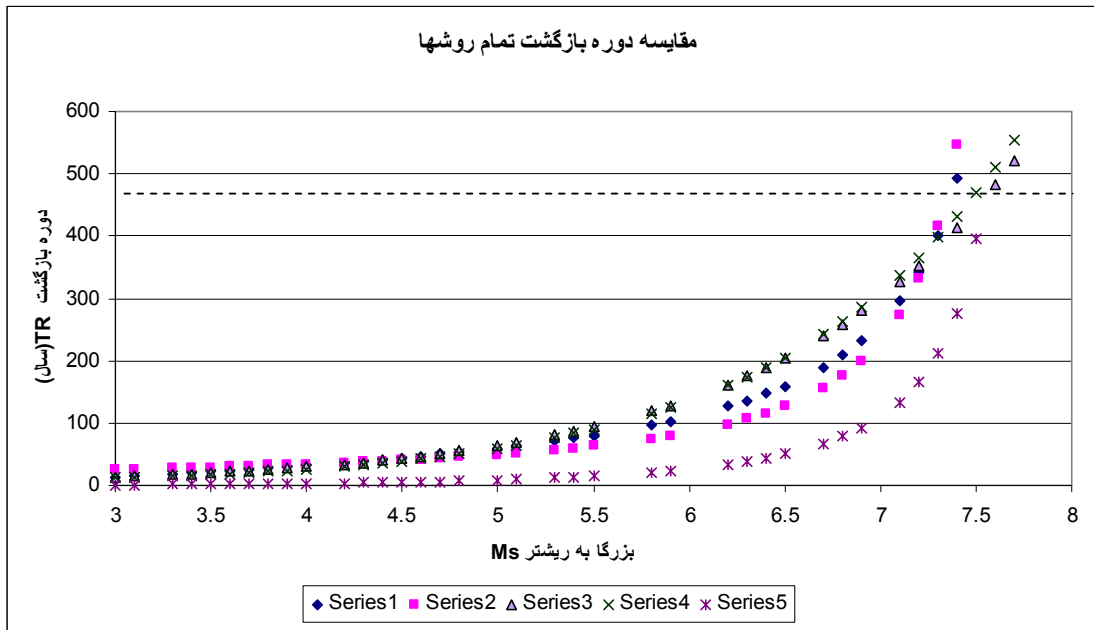
$$P(\geq 1, t) = 1 - e^{-t/T}$$

(APE)

g

- 1) Gumbel type I
- 2) Gumbel type III
- 3) Gumbel type S
- 4) Gutenberg –Richter
- 5) Kijko-Sellevoll

Kijko-Sellevoll



series1= GS
series2= GIII
series3= GI
series4= G-R
series5= KIJKO

Kijko-Sellevoll

(LogE = 4.8+1.5M -)!

4-1 IRCOLD, Iranian Committee of Large Dams, (1994)."Relationship between Ms and mb
"Internal Report, Tehran, Iran. (In Persian)

4-2 Green A. R. and Hall, W. J.(1994) " An overview of selected seismic hazard analysis
methodologies" A Report on a Research Project, Department of Civil Engineering, University of
Illions at Urbana-Champaign.

5-Journal of Earthquake Engineering, Vol 7, No. 3 (2003) 347-372

Imperial College Press

SEISMIC HAZARD ASSESSMENT OF METROPOLITAN TEHRAN, IRAN

G. GHODRATI AMIRI, R.MOTAMED and H.RABET ES-HAGHI

year	month	day	Ms	Mb	ML
-400			7.6		
743			7.2		
855			7.1		
864	1		5.3		
958	2	23	7.7		
1119	12	10	6.5		
1127			6.8		
1177	5		7.2		
1485	8	15	7.2		
1495			5.9		
1608	4	20	7.6		
1665			6.5		
1678	2	3	6.5		
1687			6.5		
1755	6	7	5.9		
1778	12	15	6.2		
1808	12	16	5.9		
1809			6.5		
1825			6.7		
1830	4	6	7.1		
1868	8	1	6.4		
1901	5	20	5.4		
1927	7	22	6.3	6.3	
1930	10	2	5.4	5.5	
1932	5	20	5.5	5.6	
1935	4	15	3		4.2
1940	9	25	4		5
1945	5	11	4.4	4.7	
1948	6	30	4		5
1951	11	13	3.3		4.5
1952	7	18	3.5		4.7
1954	9	2	3.3		4.5
1955	11	14	3.6	4	

1956	4	12	5		5.5
1957	5	6	4.8	5	
1957	7	2	7.7	7.4	
1958	1	16	3.4		4.6
1958	6	25	4		5
1958	10	6	4.4		5.2
1959	5	1	4.6		5.3
1960	6	23	6.9		6.5
1960	7	10	3.6	4	
1961	2	15	3.3		4.5
1962	10	13	5		5.5
1963	5	28	3.9	4.3	
1968	5	19	4.3	4.6	
1968	8	2	4.4	4.7	
1968	12	12	4.6	4.9	
1970	6	7	3.4		4.6
1970	6	27	3.6		4.8
1970	10	3	3.7	4.1	
1971	8	9	5	5.2	
1972	1	30	4.4	4.7	
1972	2	23	3.4		4.6
1973	2	15	3.3		4.5
1973	10	27	3.9	4.3	
1973	10	30	3.7	4.1	
1973	9	17	4.4	4.7	
1974	1	10	3.9	4.3	
1974	11	5	4.3	4.6	
1975	2	20	3.1		4.4
1975	4	11	4.4	4.7	
1975	8	2	3.6		4.8
1975	11	6	4.4	4.7	
1976	1	31	3.8	4.2	
1977	4	6	6.4		6.2
1977	5	25	5.1	5.3	
1978	5	26	6.3	6.3	
1978	11	3	4.8	5	
1978	11	4	6.7	6.6	
1979	3	25	3.9	4.6	
1980	12	3	4.7	5.1	
1980	12	25	4	4.4	
1981	3	29	4	4.4	
1981	8	4	4.4	4.7	
1982	2	5	4.2	4.5	
1982	10	25	4.2	4.5	
1983	5	29	4	4.4	
1983	7	23	4	4.4	
1983	12	20	4.5	4.8	
1985	2	16	3.9	4.3	
1985	7	8	4.4	4.7	
1985	10	14	4.3	4.7	
1986	3	20	4.3	4.6	
1987	11	25	4	4.4	
1988	3	1	4.2	4.5	
1988	8	22	5	5	
1989	2	15	4.4	4.7	
1990	1	20	5.8	5.5	

1990	6	20	7.4	6.2	
1991	8	23	4.4	4.7	
1992	9	22	4.5	5	
1993	3	8	4	4.4	
1993	5	12	3.9	4.3	
1993	6	9	4.8	5	
1993	8	19	4.3	4.6	
1994	11	21	4.2	4.5	
1994	6	3	3.6	4	
1995	11	23	3.8	4.2	
1995	6	26	4.2		
1996	1	14	3.6	4	
1996	8	25	4	4.4	
1997	6	7	4	4.4	
1997	6	23	3.6	4	
1997	8	26	4.2	4.5	
1997	11	5	4.2	4.5	
1998	1	9	4.5	4.8	
1998	1	24	3.8	4.2	
1998	12	3	4.2	4.5	
1998	12	19	3.9	4.3	
1999	3	13	4.2	4.5	
1999	3	26	3.7	4.1	
1999	12	9	4.5	4.8	
2000	4	28	3.7	4.1	
2001	3	4	2.6	3.2	
2001	5	16	3.6	4	
2001	11	23	2.9	3.5	
2002	2	14	4.2	4.5	
2002	4	8	4.5	4.8	
2002	4	19	5	5.2	
2002	5	13	3.6	4	
2002	6	22	5.8	5.9	
2003	6	21	4.2	4.5	
2003	12	24	4.4	4.7	
2004	5	28	5.8	5.9	
2004	8	21	4.2	4.5	
2004	9	24	3.4	3.9	

Table Ref:

ABS: Ambraseys, N.N., Melville, C.P.

BCIS: Bureau Central International de Seismologie, Strasbourg, France

BER, M: Berberian, Geological and Mining Survey of Iran

CCP (BAN): Atlas USSR Earthquake

CGS: U.S. Coast and Geodetic Survey, USA

FS (BAN): Fisher

HFS1: Hagfors, Sweden

ISC: International Seismological Center, UK

MOS: Moscow, USSR

NOW: Nowroozi

NEIC: National Earth quake Information Center, USA

NEIS: National Earth quake Information Service, USA

PT: Publication of Institute of Geophysics –Tehran University

USGS: United States Geological Survey