3

Lamont-Doherty Geological Observatory of Columbia University | Palisades, N.Y. 1096

Cable: LAMONT, Palisades, New York State

Telephone: Code 914, LIMwood 9-2111

Twx: 710-878-2617

10 May 1978

Dr. John Kelleher
Geosciences Branch
Division of Site Safety and
Environmental Analysis
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear John,

In response to your request I am enclosing the following material:

1) Table listing the locations of earthquakes in Fig. 2 of our Science paper. Earthquakes and their magnitudes used in Fig. 4 (the regressi curve) are indicated by X's in this table.

2) Magnitude-Intensity relationship curve (Reference 19, in preparation).

3) A b-value plot for recent earthquakes in N.Y. State and adjacent area

As far as Reference 10 is concerned, one paper is in preparation. I do not as yet have a preprint. A copy of the Annual Technical Report to NYSERDA and NRC is available at NRC (ask Jerry Harbour).

An estimate of the total length of the major NE trending faults in southeastern N.Y. and northern N.J. was obtained from Fig. 2 of our paper. Note that it is a very rough estimate and that we consider the probability calculation made by this method (method 2 in our paper) to be a crude estimate. We take the rupture length for an intensity VII earthquake to be about 5 km and hence four rupture zones along the Ramapo fault can be considered to be within 10 km of the site.

If you have any further questions, please feel free to call.

Best regards,

Yash Aggarwal

YA/llm
Encls.

A/B

8111140118 780524
CF ADOCK 05000003
CF

Sorry for this delay. I was out of town.

PA

List of Instrumentally Located Earthquakes

following velocity model was used to locate these events. A velocity of 4.5km/s was used for the Triassic where appropriat

	km/s	Depth
P velocity	5.98	0
	6.6	7.5
	8.1	35.

$v_p/v_s = 1.73$

Center No. Fig. 1 2	Date	Lat. (North) Deg Min.	Long. (West) Deg Min	Depth km	ERH km	ERZ km	Magnitude	Locality
1	20 Dec. 1962	40 59.2	74 19.7	6.4	0.7	1.0	2.9	Pompton Lakes, NJ
[illegible]	30 Nov. 1964	41 12.7	73 57.2	7.4	0.2	0.3	1	Bowling Point, NY
3.	21 May 1966	41 08.6	74 02.0	10.2	1.1	2.0	1 - 1.5	Summit Park, NY
4.	6 Oct 1969	40 57.3	74 38.2	0	1.6	--	1.25	Lake Hopatcong, NJ
5.6	8 Apr. 1974	41 13.1	73 59.5	1	1.2	1.5	2.1	Stony Point, NY
5.7	7 June 1974	41 37.0	73 56.3	0	0.8	1.5	3.3	Wappingers Falls, NY
7=7'	29 Apr 1975	41 35.3	73 52.8	0	1.7	3.9	2.3	Wappingers Falls, NY
8.	15 June 1975	41 37.0	73 56.2	0	1.1	2.8	2	Wappingers Falls, NY
9.	19 July 1975	41 25.5	73 47.4	3	0.9	1.3	2.3	Mahopac, NY
[illegible]	22 Aug. 1975	41 08.6	73 57.0	3	0.4	0.7	2.3	Lake De Forest, NY
11.	24 Oct. 1975	41 37.1	73 56.3	0	1.1	2.5	2	Wappingers Falls, NY
12.	10 Nov. 1975	41 03.6	74 19.1	6.5	0.4	0.3	1.5	Wanaque Reservoir, N
13.	6 Mar. 1976	41 10.1	73 48.8	9.2	0.5	1.0	1	Ossining, NY
14.	11 Mar. 1976	40 57.1	74 21.2	0	0.9	1.7	2.5-2.8	Pompton Lakes, NJ
15.	12 Mar. 1976	40 57.2	74 21.4	4.6	1.1	0.7	1.8	Pompton Lakes, NJ
16.	13 Apr. 1976	40 50.1	74 02.9	2.5	1.2	1.4	3	Ridgefield, NJ

Epicenter No. on Fig. 2	Date	Lat. (North) Deg	Min.	Long. (West) Deg	Min.	Depth km	ERH km		ERZ km	Magnitude	Locality
17.	20 Aug. 1976	41	07.4	73	45.5	* 5.3	0.7	≤2	0.8	2.5	Mount Pleasant.
x → 18.	22 Sep. 1976 x	41	17.1	73	57.1	* 7.9	0.1	<1	0.1.	1.8	Indian Point, N.Y.
19.	28 Oct. 1976	40	53.6	74	29.3	0	0.7	≤5	--	~1	Denville, NJ (three events)
20.	22 Nov. 1976	40	59.8	73	51.5	* 5	0.4	≤1	0.3	1.9	Scarsdale, NY
21.	5 Dec. 1976	40	46.1	74	45.6	3	--	≤2	--	1.8	Schooleys Mtn.,
22.	7 Dec. 1976	40	46.1	74	45.7	5	--	≤2	--	1.7	Schooleys Mtn.,
5	15 Feb 1972	41	16.27	73	36.16	* 6	1.1	≤2	0.7		near West Point Ridge.
→ 12'	17 Jan 76 x	40	58.85	74	23.45	4.2	2.1	≤5	1.2	2.0	Riverdale No. 5
22'	7 Jan 77	41	01.26	74	30 23	18.8	2.3	≤5	0.9	~1	Green Pond
→ 23	10 March 77	41	10.94	74	08.88	* 6	0.7	≤2	0.5	2.2	Suffern No. 4
24	10 June 77	40	41.97	74	53.32	5.7	1.6	≤5	1.9	1.1	High Bridge No.
25	02 July 77	40	42.22	74	56.12	7.3	1.0	≤5	10.4	2.3	Hampton No.
26	17 Sept. 1977	41	12.07	74	03.36	* 0.97	0.5	<1	0.4	~1	Hawksbrook No. 7.
x → 27	02 Sept 1977	41	18.8	75	55.4	* 2.4	0.4	<1	0.4	2.4	Peekskill
27'	29 Sept. 1977	41	18.71	73	55.58	* 2.46	0.3	<1	0.7	~1	Peekskill No.
28	14 Oct 1977	41	33.53	73	51.18	0.0	0.9	≤2	1.5	2.2	North of Newburg.
x → 29	27 Nov 1977 x	41	00.89	74	12.91	* 5.8	0.4	≤2	0.5	1.8	Oakland No. 5.

* = reliable depths (others not [illegible])

(1) Note we did not use aftershocks (for example event # in the regression curve.

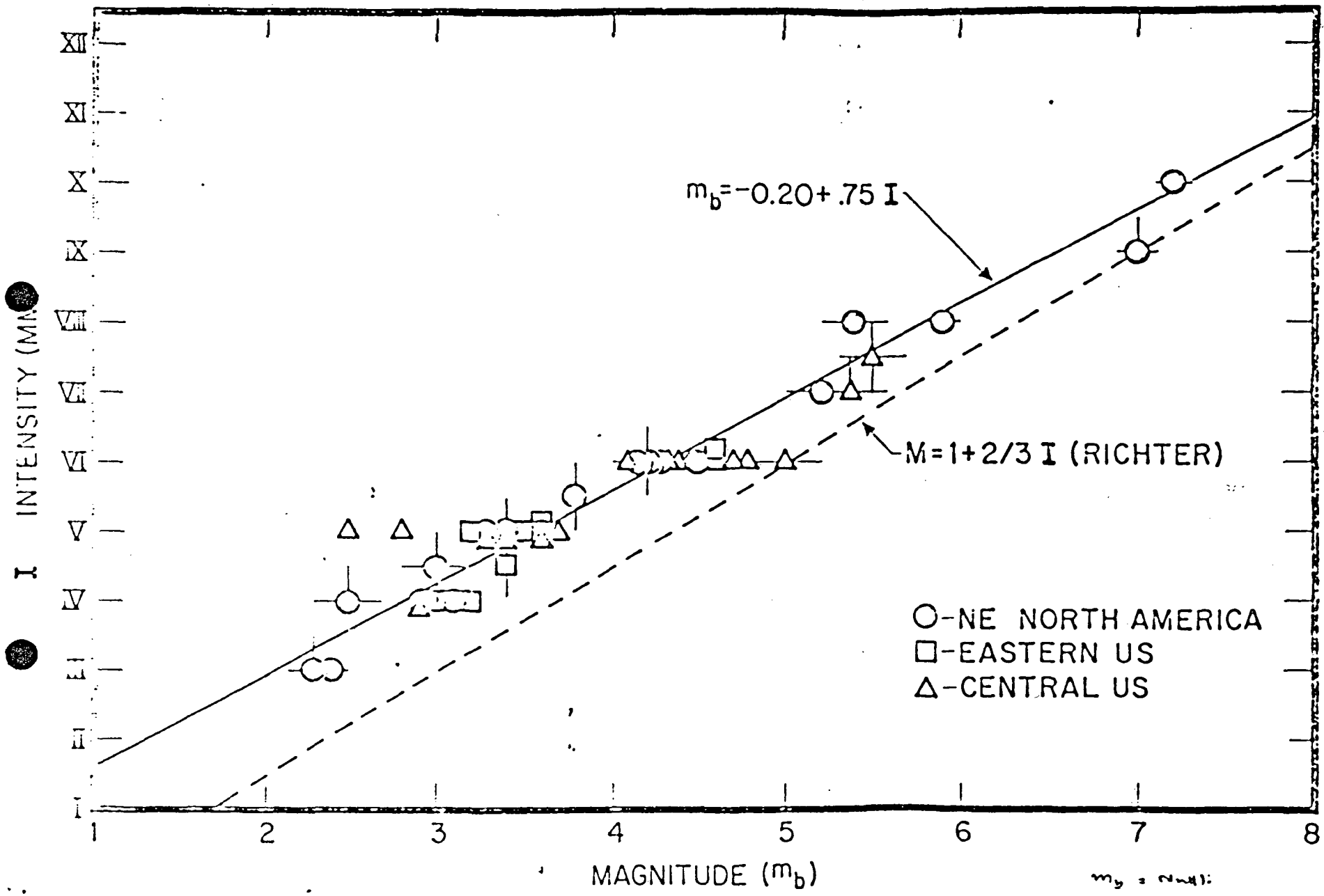
(2) The earthquakes used in the regression curve are underlined

(3) The m_b for event # 14 is 2.5 to 2.8 and I look it to be greater than 2.4 and started the regression plot with m_b?

(4) m_b's are mostly:

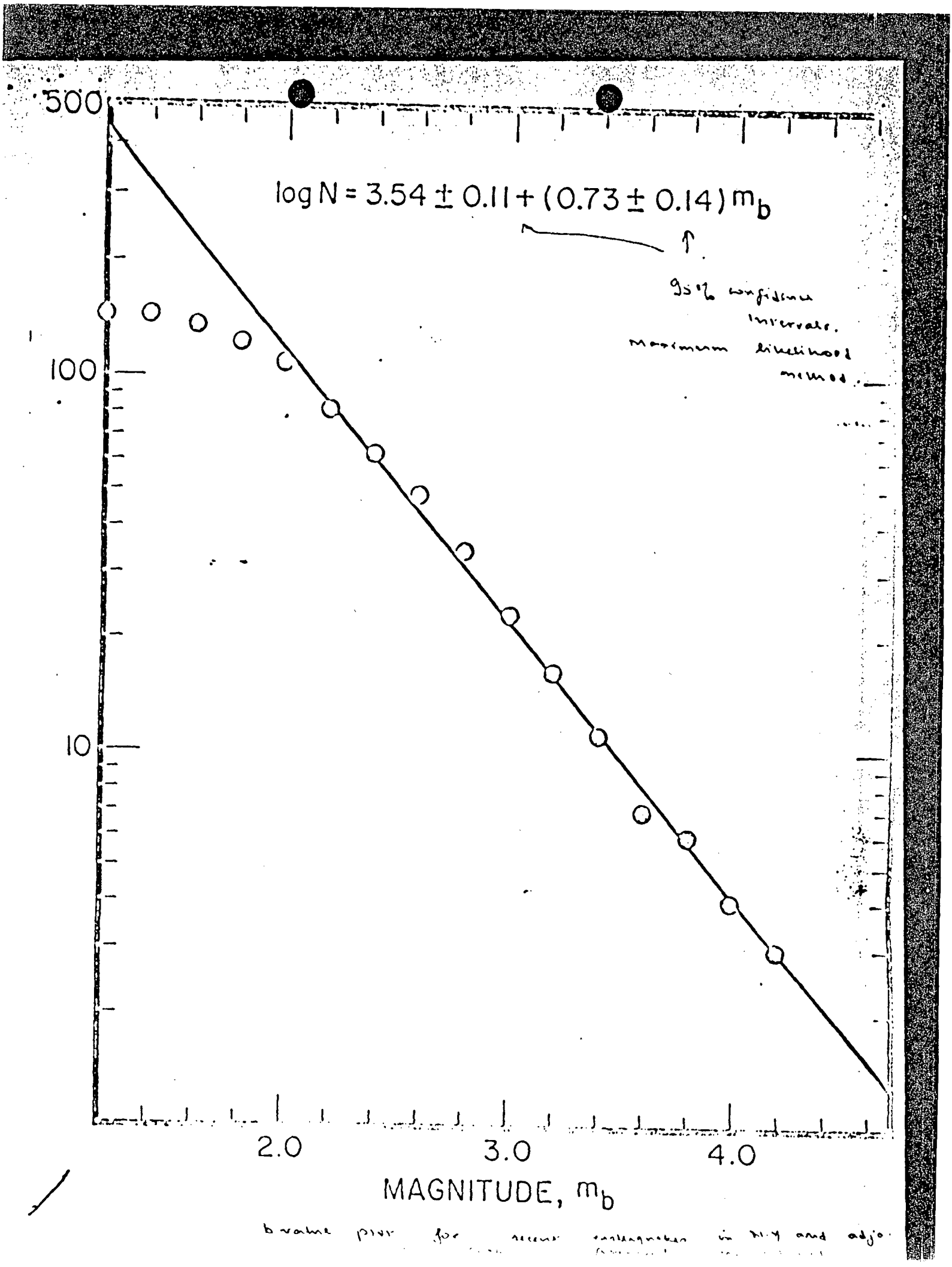
~~(2) In the equation $\log_{10} N = 1.7 \pm 0.43 M - 11.73$ the standard deviation (95% confidence interval) 0.13 was obtained~~

(5) The solid line in Fig 4 was obtained by least squares fit through the x only. The 95% confidence interval of 0.13 in the 'a' value, however was obtained by using both the real and the triangles



m_b = Nuttli

Magnitude - Intensity relationship (unpublished Aggarwal)



b value plot for recent earthquakes in N.Y and adjo