Table 1. *Principal references and minimum ages of faults, lineaments, and seismic zones in Alaska. (Age of youngest known or inferred displacement: 1, Historic; 2, Holocene; 3, Late Pleistocene; 4, Pleistocene; 5, Neogene; 6, Suspicious.)*

NAME	AGE	REFERENCES
ABRAHAM-TEMNAC RIVER FAULT	6	Gates and others, 1971
ALBATROSS BANK FAULT ZONE	5	Hampton, 1928b; Pulpan and Kienle, 1979; Thrasher, 1979
ALEUTIAN MEGATHRUST	1	Kanamori, 1977; Page, 1975; Plafker, 1969, Sykes, 1971; Nishenko and Jacob, 1990
ALEXAI POINT THRUST	2	Schafer *in* Gates and others, 1971
ALSEK-GRAND PLATEAU FAULT	2	Plafker, unpub. data, 1968
AMCHITKA FAULT	3	Gard, 1977; L.M. Gard, oral commun., 1984
ANVIK FAULT	6	Patton and Moll, 1985; Plafker, unpub. data, 1981
ATASKAKSOVLUK-HOLOKUK FAULT ZONE	3	Cady and others, 1955
BEACH FAULT	5	See Kayak Island faults
BENDELEBEN FAULT	2	Hudson and Plafker, 1978
BERING SEA SHELF FAULT ZONE	3	Askren, 1972; Carlson and Karl, 1981a, 1981b; Marlow and others, 1976; Marlow and others, this volume; Hopkins, 1976; Johnson and Holmes,1987
BILLY CREEK LINEAMENT	6	Woodward-Clyde Consultants, 1981
BOGOSLOF I and II FAULTS	2	Byers, 1959
BOUNDARY FAULT	6	Plafker and Thatcher, 1982; Tarr and Martin, 1912
BROXSON GULCH FAULT	5	Nokleberg and others, 1982, 1985; Stout and Chase, 1980
BRUIN BAY FAULT		
Becharof-Iniskin Segment	6	Detterman and Reed, 1980; Keller and Reiser, 1959; Kelly, 1963; R.L. Detterman, oral commun., 1979
Iniskin-Susitna Segment	5	Detterman and others, 1975, 1976a; Detterman and Reed, 1980
BULDIR ISLAND FAULTS	3	Coats, 1953
BULL RIVER FAULT	6	B. Csejtey, Jr., oral commun., 1984
CACHE CREEK FAULT	5	Reed and Nelson, 1977, 1980
CAMDEN BAY SUBMARINE FAULTS	2,3	Grantz and others, 1979, 1983, 1987
CANOE PASSAGE FAULT	5	Koch and others, 1977
CANTEEN FAULT	3	Woodward-Clyde Consultants, 1981
CARIBOU FAULT	3	See Castle Mountain fault entry
CARIBOU CREEK LINEAMENTS	6	Woodward-Clyde Consultants, 1981
CASTLE MOUNTAIN FAULT		Detterman and others, 1974, 1976b; Lahr and others, 1986
Susitna Segment	2	
Talkeetna (west) Segment	2	
Talkeetna (east) Segment	6	
Caribou-East Boulder Creek Segment	3	
Hicks Creek Segment	6	
CHAIX HILLS FAULT	5	Plafker, unpub. data, 1982
CHAMPION CREEK FAULT	6	Woodward-Lundgren, 1974; Plafker and Hudson, unpub. data, 1977
CHATHAM STRAIT FAULT	6	See Denali fault entry
CHIGNIK FAULT	5	Detterman and others, 1981
CHILKAT FAULT	6	Winkler and Plafker, 1981; Plafker, unpub.data, 1982
CHIRIKOF ISLAND FAULT	1	Moore, 1967; G.W. Moore, oral commun., 1976
CHUGACH-ST. ELIAS FAULT	5	Plafker, 1987; Plafker, unpub. data, 1977, 1979; Savage and Lisowski, 1988
CLEAR CREEK FAULT	6	Plafker, unpub. data, 1982; Tysdal and others, 1976a; Winkler and Plafker, 1981
COAL GLACIER FAULT	6	Plafker, 1987
CONSTANTINE HARBOR FAULTS	3	Powers and others, 1960; Gard, 1980
COOK INLET FAULT ZONE	3	Hampton, 1982a; Pulpan and Kienle, 1979
COOPER PASS FAULT	2	See Totschunda fault entry
CORDOVA FAULT	6	Plafker, unpub. data, 1982; Winkler and Plafker 1981
CRATER CREEK FAULT	3	Hopkins and others, 1983; Kaufman, 1985
CROSS CREEK FAULT	2	See Totschunda fault entry
DALL MOUTAIN FAULT	4	Brosgé and others, 1973; Woodward-Lundgren, 1974
DENALI FAULT		Grantz, 1966; Lanphere, 1978; Plafker and others, 1977; Hudson and others, 1982b, Hudson and Plafker, unpub. data, 1976
Togiak-Tikchik Segment	6	W.L. Coonrad, oral commun., 1976
Holitna Segment	3	Cady and others, 1955; J.M. Hoare, oral commun., 1975
Boss Creek Segment	6	Cady and others, 1955
Farewell Segment	2	Fernald, 1960; Plafker and others, 1977; Reed and Nelson, 1977
Tonzona-Muldrow Segment	2	Lanphere, 1978; Plafker and others, 1977; Reed and Lanphere, 1974; Reed and Nelson, 1977
Muldrow-Alsek Segment	2	Clague, 1979; Denton and Stuvier, 1967; Hickman, 1971; Hickman and others, 1977; Plafker and others, 1977; Stout and others, 1973
Dalton Segment	4	Clague, 1979
Chilkat River Segment	6	Boucher and Fitch, 1969; Clague, 1979; Hudson and others, 1982b
Chatham Strait Segment	6	Hudson and others, 1982b; Lahr and Plafker, 1980; Tobin and Sykes, 1968
DENNISON FORK LINEAMENTS	6	H.L. Foster, oral commun., 1981; Woodward-Clyde Consultants, 1981
DONNELLY DOME FAULT	3	Hudson and Weber, 1977; Woodward-Clyde Consultants, 1981; Woodward-Lundgren, 1974
DRY CREEK FAULT	3	See Horn Mtn./Dry Creek faults
DUKE RIVER FAULT	5	Campbell and Dodds, 1975; Clague, 1979; Souther and Stanciu, 1975
EAGLE LINEAMENT	6	Woodward-Clyde Consultants, 1981
EARLE COVE FAULTS	2	Morris, 1970; Morris and Bucknam, 1972; Schafer *in* Gates and others, 1971; J.P. Schafer, oral commun., 1984
EAST BOULDER CREEK FAULT	3	See Castle Mountain fault entry
EAST FORK FAULT	2	Hudson and Plafker, unpub. data, 1977; B.L. Reed, oral commun., 1961
EMMONS LAKE FAULTS	4	Kennedy and Waldron, 1955
ESKER CREEK FAULT	1	Plafker and Thatcher, 1982
ETCHES FAULT	6	Winkler, 1973; G.R. Winkler, oral commun., 1982
EYAK FAULT	6	Plafker, unpub. data, 1982
FAIRWEATHER FAULT-Onshore Segment	1	Page, 1969, 1973; Plafker and others, 1978; Tocher, 1960
FAIRWEATHER FAULT-Offshore Segment	1,5	Carlson and others, 1985; Page, 1973; Stauder, 1959
FOSSIL PEAK FAULT	6	Seitz, 1959
GASTINEAU CHANNEL FAULT	6	Brew and Ford, 1978; R.D. Miller, oral commun., 1972
GRANITE MOUNTAIN FAULT	3	Woodward-Lundgren, 1974; Hudson and Weber, 1977; Woodward-Clyde Consultants, 1981
HALLO CREEK FAULT	5	Keller and Reiser, 1959
HANNING BAY FAULT	1	Plafker, 1967; Plafker, 1969
HEALY FAULT	2	Thorson, 1979
HEALY CREEK FAULT	3	Woodward-Lundgren, 1974, Plafker, unpub. data, 1976; Wahrhaftig, 1970
HENEY FAULT	2	Plafker, unpub. data, 1982
HICKS CREEK FAULT	6	See Castle Mountain fault entry
HOPE BASIN FAULT	5	Barazangi and Dorman, 1970; Tolson, 1987
HOPE BASIN FAULT ZONE	5,4	Tolson, 1987
HOPE CREEK FAULT	5	Miller and Plafker, 1971; Plafker, 1987
HORN MOUNTAIN-DRY CREEK FAULT	3	Woodward-Clyde Consultants, 1981
HUSLIA LINEAMENT	6	Davis, 1960; Patton, 1966
ICY POINT FAULT	5	Bruns, 1979; Carlson and others, 1985; Plafker, 1987
IDAHO INLET FAULT	2	Rossman, 1959
IDITAROD-NIXON FORK FAULT	3,6	S.E. Box, oral commun., 1987; T.P. Miller, Tom Bundtzen, W.W. Patton, Jr., oral commun., 1985
JOHNSTONE BAY FAULT	2	Tysdal and Case, 1979; Woodward-Lundgren, 1974
KALTAG FAULT	3	Patton and Hoare, 1968; Patton, 1975; Plafker, unpub. data, 1975, 1976; D.B. Slemmons and L.S. Cluff, oral commun., 1974
KANAGA ISLAND FAULT	6	Fraser and Barnett, 1959
KANUTI FAULT	6	Woodward-Lundgren, 1974
KAVALGA ISLAND FAULTS	6	Fraser and Barnett, 1959
KAYAK ISLAND FAULTS	5	Plafker, 1974, 1987
KENAI LINEAMENT	6	Plafker, 1969
KIGLUAIK FAULT	2	Hudson and Plafker, 1978
KIRILOF BAY FAULTS	3	Gard, 1977, 1980; oral commun., 1984
KISKA ISLAND FAULTS	5	Coats and others, 1961
KIWALIK LAGOON FAULT	3	D.M. Hopkins, oral commun., 1975
KLINK FAULT	2	J.W. Reeder, written commun., 1990
KOBUK FAULT	4	Hamilton, 1984; Plafker and Hudson, unpub. data, 1977
KODIAK ISLAND FAULT ZONE	6	Greene and Coonrad, 1974; G.W. Moore, oral commun., 1983; Moore, 1967; Pulpan and Kienle, 1979
KODIAK SHELF FAULT ZONE	2,4,5	Fisher and von Huene, 1980; Hampton, 1982b; Hampton and Bouma, 1977; Pulpan and Kienle, 1979; Thrasher, 1979; von Huene and others, 1987
KOROVIN BAY FAULTS	2	J.W. Reeder, written commun., 1990
KOSAKUTS FAULT	6	Plafker, unpub. data, 1974; Plafker 1987
KUGRUK FAULT ZONE	6	D.M. Hopkins, oral commun., 1975; Till and Dumoulin, this volume
KULTHIETH MOUNTAIN FAULT	5	Hudson and Plafker, unpub. data, 1982, Miller and Plafker, 1971; Plafker, 1987
KUZITRIN FAULT	2	Turner and Swanson, 1981
LABAREE CREEK FAULT	2	Turner and Swanson, 1981
LAKE CLARK FAULT	5	Detterman and others, 1976a; Plafker and others, 1975
LAKE CREEK FAULT	5	Reed and Nelson, 1980
LITTLE SITKIN ISLAND FAULTS	4	Snyder, 1959
LITUYA SLOPE FAULT ZONE	4	Plafker, 1987
LONE FAULT	2	Plafker, unpub. data, 1968
LONG GLACIER FAULT	2	Woodward-Lundgren, 1974
LUNCH GULCH FAULT	5	Harris, 1978; Reed and Nelson, 1977
MAKUSHIN VALLEY FAULTS	2	Drewes and others, 1961
MALASPINA FAULT	5	Plafker, 1987
MANSFIELD CREEK LINEAMENTS	6	Griscom, 1976; Meyers, 1976; Woodward-Clyde Consultants, 1981
MATANUKSA GLACIER FAULT	2	Burns and others, 1983; G.H. Pessel, oral commun., 1984
McCALLUM-SLATE CREEK FAULT	3	Nokleberg and others, 1982; 1985; Weber and Turner, 1977
McGINNIS GLACIER FAULT	3	Brogan and others, 1975; T. Hudson, oral commun., 1976, 1979
MEDICINE LAKE LINEAMENT	6	Gedney and others, 1972; Hudson and Plafker, unpub. data, 1977; Weber and Foster, 1982
MIDDLE FORK FAULT	2	Gilbert and others, 1982; Plafker, unpub. data, 1976
MIDDLETON-YAKATAGA SHELF & SLOPE FAULT ZONE	3,4,5	Bruns and Schwab, 1983; Carlson and others, 1975; Plafker, 1974, 1987
MILLER CREEK FAULT	5	Hudson and Plafker, unpub. data, 1982; Miller and Plafker, 1971; Plafker, 1987
MINOOK CREEK FAULT	6	R.M. Chapman, oral commun., 1975; Hudson and Plafker, unpub. data, 1977; Woodward-Lundgren, 1974; Gedney and others, 1969
MOON LAKE LINEAMENT	6	Woodward-Clyde Consultants, 1981
MT. PENDLETON FAULTS	6	B. Csejtey, Jr., oral commun., 1984
MT. RESCHNOI FAULTS	2	J.W. Reeder, oral commun., 1982
MT. PILLSBURY FAULT	3	L.D. Carter and W.J. Nokleberg, oral commun., 1984; T. Hudson, oral commun., 1976, 1979
MYSTIC MOUNTAIN FAULT	5	Wahrhaftig, 1970
NARROW CAPE FAULT	5	Moore, 1967; Pulpan and Kienle, 1979
NORTH PASS FAULT	2	Gates and others, 1971; Schafer *in* Gates and others, 1971; J.P. Schafer, oral commun., 1984
NORTON SOUND FAULT ZONE	3	Fisher and others, 1981; Holmes and others, 1978; Hooser and others, 1981; Steffy and others, 1981; Marlow and others, this volume
OTMELOI FAULT	1	Plafker and Thatcher, 1982; Tarr and Martin, 1912
PARKER LAKE FAULT	6	Reed and Nelson, 1980; B.L. Reed, oral commun., 1984
PASS CREEK-DUTCH CREEK FAULT	3	Hudson and Plafker, unpub. data, 1976; S.W. Nelson, oral commun., 1979
PATTON BAY FAULT	1	Plafker, 1967
PERIL STRAIT FAULT	6	D.A. Brew, oral commun., 1982; Carlson and others, 1985; Loney and others, 1975; Tobin and Sykes, 1968
PIVOT FAULT	4	W.W. Patton, Jr., oral commun., 1975; Patton, 1966
PORT CLARENCE FAULT ZONE	3	Grim and McManus, 1970; Hopkins and others, 1974
PREACHER FAULT	3	Foster and others, 1983; Weber and Foster, 1982
QUEEN CHARLOTTE FAULT	1	Sykes, 1971; Tobin and Sykes, 1968; von Huene and others, 1979
RAGGED MOUNTAIN FAULT	2	Tysdal and others, 1976b
REDWOOD FAULT	6	Plafker, unpub. data, 1982; Tysdal and others, 1976a
RIFLE RANGE FAULT	3	L.M. Gard, oral commun., 1975
RUDE RIVER FAULT	6	Plafker, unpub. data, 1982; Winkler, 1973; Winkler and Plafker 1981
RUNWAY FAULT	2	J. Rubenstone, oral commun., 1984; R.W. Kay, oral commun., 1984
SADDLE LINEAMENT	6	Holmes and Foster, 1968; Woodward-Clyde Consultants, 1981
ST. GEORGE ISLAND FAULTS	4	Cox and others, 1966; Hopkins, 1976
ST. GEORGE BASIN SHELF FAULT ZONE	6	Marlow and others, 1976, this volume; Gardner and others, 1979
ST. LAWRENCE ISLAND OFFSHORE FAULT ZONE	6	Fisher and others, 1981; D.M. Hopkins, oral commun., 1975
ST. PAUL ISLAND FAULTS	3	Cox and others, 1966; Hopkins, 1976
SANAK ISLAND FAULT	2	Bruns and others, 1987
SEA LEVEL FAULT	2	Loney and others, 1975, Plafker, unpub. data, 1975; Rossman, 1959
SHEEP CREEK LINEAMENT	6	Woodward-Clyde Consultants, 1981
SHELIKOF STRAIT FAULTS	2	M.A. Hampton, oral commun., 1982; Hampton and Winters, 1981; Hampton and others, 1981; Hoose and Whitney, 1980
SITKINAK DOME FAULT	5	W.L. Coonrad, oral commun., 1976; G.W. Moore, oral commun., 1983; Pulpan and Kienle, 1979
SOUTH BIGHT GRABEN FAULTS	3	Gard, 1980; Powers and others, 1960
STEVENS CREEK FAULT ZONE	6	D.M. Hopkins, oral commun., 1976; Woodward-Lundgren, 1974
SULLIVAN FAULT	5	Miller and Plafker, 1971; Plafker, 1987; Plafker and Thatcher, 1982
SUMMER BAY FAULT	2	Drewes and others, 1961
TAKAYOFO CREEK FAULT	3	R.L. Detterman, oral commun., 1984; Keller and Reiser, 1959
TANAGA ISLAND FAULT	6	Fraser and Barnett, 1959
TEN FATHOM FAULT	5	See Middleton-Yakataga Shelf and Slope Fault Zone
TERRACE FAULT	2	Plafker, unpub. data, 1970
THOMPSON CREEK FAULT	6	Grantz, 1966; J.M. Hoare, oral commun., 1978
TOGIAK-TIKTCHIK FAULT	6	See Denali fault entry
TONGASS NARROWS FAULT	6	H.C. Berg, oral commun., 1984
TOTSCHUNDA FAULT	2	Péwé, 1975; Plafker and others, 1977; Richter and Matson, 1971
TRANSITION FAULT ZONE	1,5	Bruns, 1979; Gawthrop and others, 1973; Page, 1975; Plafker, 1987
TWIN LAKES FAULT	6	Gates and others, 1971; J.P. Schafer, oral commun., 1984
UNALASKA FAULTS	2,3,4	Drewes and others, 1961; J.W. Reeder, written commun., 1990; Black, 1976
WOOD RIVER THRUST	6	B. Csejtey, Jr., oral commun., 1984
YAKUTAT BAY FAULT	1	Plafker and Thatcher, 1982; Tarr and Martin, 1912
YANERT FORK FAULT	6	B. Csejtey, Jr., oral commun., 1984
YANERT GLACIER FAULTS	6	B. Csejtey and others, 1986; B. Csejtey, Jr., oral commun., 1984
YUSHIN RIDGE FAULT	5	Plafker, 1987

Table 2. *Source parameters of magnitude 7.0 or greater earthquakes in or adjacent to Alaska, 1891–1988 (50°N–68°N, 170°E–130°W). (Note: M_S is the 20-second surface-wave magnitude. m_B is the broad-band body-wave magnitude. M_W is the moment magnitude. Depths in parenthesis were assigned rather than computed.)*

Date (Yr Mo Day)	Time (Hr Min Sec)	Latitude	Longitude	Depth (km)	Reference	M_S	Reference	m_B, M_W	Reference
1898 06 29	18 36 00	52 N	172 E		Kanamori and Abe, 1979	7.6	Abe and Noguchi, 1983b		
1899 07 14	13 32 00	60* N	150* W		Kanamori and Abe, 1979	7.2	Abe and Noguchi, 1983b		
1899 09 04	00 22 00	60 N	142 W	(<60)	Gutenberg, 1956	7.9	Abe and Noguchi, 1983b		
1899 09 10	17 04 00	60 N	140 W	(<60)	Gutenberg, 1956	7.4	Abe and Noguchi, 1983b		
1899 09 10	21 41 00	60 N	140 W	(<60)	Gutenberg, 1956	8.0	Abe and Noguchi, 1983b		
1899 09 23	12 50 00	60 N	143 W	(<60)	Kanamori and Abe, 1979	7.0	Abe and Noguchi, 1983b		
1900 10 09	12 28 17.6	57.09 N	153.48 W	(33)	Boyd and Lerner-Lam,1988	7.7	Abe and Noguchi, 1983b		
1901 01 18	04 39 00	60** N	135** W		Kanamori and Abe, 1979	7.1	Abe and Noguchi, 1983b		
1901 12 31	09 02 43.1	51.45 N	171.02 W	(33)	Boyd and Lerner-Lam,1988	7.1	Abe and Noguchi, 1983b		
1902 01 01	05 20 14.8	52.38 N	167.45 W	(33)	Boyd and Lerner-Lam,1988	7.0	Abe and Noguchi, 1983b		
1903 01 17	16 05 07.1	50.85 N	175.16 W	(33)	Boyd and Lerner-Lam,1988	7.0	Abe and Noguchi, 1983b		
1904 08 27	21 56 20.3	64.66 N	148.08 W	(33)	Boyd and Lerner-Lam,1988	7.3	Abe and Noguchi, 1983b		
1905 02 14	08 46 38.4	50.73 N	178.55 W	(33)	Boyd and Lerner-Lam,1988	7.3	Abe and Noguchi, 1983b		
1905 03 22	03 38 53.0	51.28 N	174.83 E	(33)	Boyd and Lerner-Lam,1988	7.8	Abe and Noguchi, 1983b		
1906 12 23	17 21 11.7	56.85 N	153.90 W	(33)	Boyd and Lerner-Lam,1988	7.3	Abe and Noguchi, 1983b		
1907 09 02	16 01 39.6	52.59 N	169.73 E	(33)	Boyd and Lerner-Lam,1988	7.4	Abe and Noguchi, 1983b		
1908 05 15	08 31 36.0	59 N	141 W	(<60)	Gutenberg and Richter, 1954	7.0	Abe and Noguchi, 1983b		
1909 04 10	19 36 00.0	52 N	175 E	(0)	Abe and Noguchi, 1983b	7.0	Abe and Noguchi, 1983b		
1909 09 08	16 49 48.0	52 1/2 N	169 W	90	Gutenberg and Richter, 1954			7.0 m_B	(Abe, 1981)
1910 09 09	01 13 18.1	50.75 N	179.38 E	(33)	Boyd and Lerner-Lam,1988	7.0	Abe and Noguchi, 1983b		
1911 09 17	03 26 00.0	51 N	180 E	(0)	Gutenberg, 1956	7.1	Abe and Noguchi, 1983b		
1912 01 31	20 11 48.0	61 N	147 1/2 W	80	Gutenberg and Richter, 1954			7.0 m_B	(Abe, 1981)
1912 07 07	07 57 41.0	63.07 N	146.14 W	(33)	Boyd and Lerner-Lam,1988	7.2	Abe and Noguchi, 1983b		
1912 11 07	07 40 24.0	57 1/2 N	155 W	90	Gutenberg and Richter, 1954			7.3 m_B	(Abe, 1981)
1916 04 18	04 01 48.0	53 1/4 N	170 W	170	Gutenberg and Richter, 1954			7.4 m_B	(Abe, 1981)
1917 05 31	08 47 30.7	54.79 N	159.12 W	(33)	Boyd and Lerner-Lam, 1988	7.9	Abe and Noguchi, 1983a		
1923 05 04	16 26 39.3	55.55 N	156.75 W	(0)	Sykes, 1971	7.1	Abe, 1981		
1926 10 13	19 08 07.0	52 N	176 W	(0)	Gutenberg and Richter, 1954	7.0	Abe, 1981		
1927 10 24	15 59 44.8	57.69 N	136.07 W	(0)	Tobin and Sykes, 1968	7.1	Abe, 1981		
1929 03 07	01 34 39.0	51 N	170 W	50	Gutenberg and Richter, 1954	7.5	Abe, 1981	7.8 M_W	Kanamori, 1977
1929 05 26	22 39 54.0	51 N	131 W	(0)	Gutenberg and Richter, 1954	7.0	Abe, 1981		
1929 07 05	14 19 02.0	51 N	178 W	(0)	Gutenberg and Richter, 1954	7.0	Abe, 1981		
1929 07 07	21 23 12.0	52 N	178 W	(0)	Gutenberg and Richter, 1954	7.3	Abe, 1981		
1929 12 17	10 58 30.0	52 1/2 N	171 E	(0)	Gutenberg and Richter, 1954	7.8	Abe, 1981		
1934 05 04	04 36 07.0	61 1/4 N	147 W	80	Gutenberg and Richter, 1954			7.1 m_B	(Abe, 1981)
1935 02 22	17 05 54.0	52 1/4 N	175 E	(0)	Gutenberg and Richter, 1954	7.1	Abe, 1981		
1937 07 22	17 09 28.0	64.60 N	147.10 E	(33)	International Seismological Centre	7.3	Abe, 1981		
1937 09 03	18 48 12.0	52 1/2 N	177 1/2 W	80	Gutenberg and Richter, 1954			7.2 m_B	(Abe, 1981)
1938 11 10	20 18 41.2	55.48 N	158.37 W	(0)	Sykes, 1971	8.3	Abe, 1981	8.2 M_W	Kanamori, 1977
1938 11 17	03 54 34.0	55 1/2 N	158 1/2 W	(0)	Gutenberg and Richter, 1954	7.3	Abe, 1981		
1940 04 16	06 43 07.0	52 N	173 1/2 E	(0)	Gutenberg and Richter, 1954	7.1	Abe, 1981		
1940 07 14	05 52 53.0	51 3/4 N	177 1/2 E	80	Gutenberg and Richter, 1954			7.4 m_B	(Abe, 1981)
1940 08 22	03 27 18.0	53 N	165 1/2 W	(0)	Gutenberg and Richter, 1954	7.0	Abe, 1981		
1943 11 03	14 32 17.5	61.90 N	150.84 W	(0)	Sykes, 1971	7.4	Abe, 1981		
1944 07 27	00 04 23.0	54 N	165 1/2 W	70	Gutenberg and Richter, 1954			7.1 m_B	(Abe, 1981)
1946 04 01	12 28 54.0	52 3/4 N	163 1/2 W	(0)	Gutenberg and Richter, 1954	7.3	Abe, 1981		
1945 11 01	11 14 24.0	51 1/2 N	174 1/2 W	40	Gutenberg and Richter, 1954	7.0	Abe, 1981		
1947 10 16	02 09 44.0	64.20 N	148.30 W	(33)	International Seismological Centre	7.2	Abe, 1981		
1948 05 14	22 31 43.0	54 1/2 N	161 W	(0)	Gutenberg and Richter, 1954	7.5	Abe, 1981		
1949 08 22	04 01 12.2	53.62 N	133.27 W	(0)	Tobin and Sykes, 1968	8.1	Abe, 1981	8.1 M_W	Kanamori, 1977
1951 02 13	22 12 53.8	55.55 N	156.35 W	(0)	Sykes, 1971	7.1	Abe, 1981		
1953 01 05	07 48 20.0	53 N	171 1/2 E	(0)	International Seismological Centre	7.1	Abe, 1981		
1957 03 09	14 22 32.15	51.48 N	175.72 W	(33)	T.M. Boyd, written comm., 1987	8.1	Abe, 1981	9.1 M_W	Kanamori, 1977
1957 03 09	20 39 16.70	52.56 N	169.65 W	(33)	T.M. Boyd, written comm., 1987	7.1	Abe, 1981		
1957 03 11	09 58 44.00	52.58 N	169.24 W	(33)	T.M. Boyd, written comm., 1987	7.0	Abe, 1981		
1957 03 12	11 44 56.96	51.44 N	177.40 W	(33)	T.M. Boyd, written comm., 1987	7.0	Abe, 1981		
1957 03 14	14 47 50.97	51.24 N	176.92 W	(33)	T.M. Boyd, written comm., 1987	7.1	Abe, 1981		
1957 03 16	02 34 17.86	51.41 N	178.93 W	(33)	T.M. Boyd, written comm., 1987	7.0	Abe, 1981		
1957 03 22	14 21 07.10	53.71 N	165.82 W	(33)	T.M. Boyd, written comm., 1987	7.0	Abe, 1981		
1958 04 07	15 30 40.30	65.99 N	156.55 W	(0)	Tobin and Sykes, 1966	7.3	Abe, 1981		
1958 07 10	06 15 53.60	58.34 N	136.52 W	(0)	Tobin and Sykes, 1968	7.9	Abe, 1981	7.7 M_W	AK80
1964 02 06	13 07 23.10	55.72 N	155.95 W	13	International Seismological Centre	7.0	Abe, 1981		
1964 03 28	03 36 13.90	61.05 N	147.48 W	23	International Seismological Centre	8.4	Abe, 1981	9.2 M_W	Kanamori, 1977
1965 02 04	05 01 21.60	51.29 N	178.55 E	36	International Seismological Centre	8.2	Abe, 1981	8.7 M_W	Kanamori, 1977
1965 02 04	08 40 42.10	51.39 N	179.59 E	40	International Seismological Centre	7.0	Abe, 1981		
1965 03 30	02 27 03.40	50.32 N	177.93 E	20	International Seismological Centre	7.4	Abe, 1981		
1969 05 14	19 32 55.00	51.29 N	179.85 W	22	International Seismological Centre	7.0	USGS, PDE		
1970 06 24	13 09 11.30	51.77 N	130.76 W	22	International Seismological Centre	7.0	USGS, PDE		
1971 05 02	06 08 26.90	51.42 N	177.21 W	38	International Seismological Centre	7.1	USGS, PDE		
1972 07 30	21 45 15.80	56.77 N	135.91 W	29	International Seismological Centre	7.4	Abe, 1981	7.6 M_W	(Schell and Ruff, 1989)
1975 02 02	08 43 39.90	53.08 N	173.58 E	0	International Seismological Centre	7.4	Abe, 1981		
1979 02 28	21 27 07.20	60.64 N	141.60 W	13	Stephens and others, 1980	7.1	Buland and Taggart 1981	7.5 M_W	(Buland and Taggart, 1981)
1986 05 07	22 47 10.80	51.52 N	174.78 W	(33)	USGS,PDE	7.7	USGS, PDE	8.0 M_W	(Hwang and Kanamori, 1986)
1987 11 30	19 23 16.39	58.91 N	142.76 W	(10)	Lahr and others, 1988	7.6	USGS, PDE	7.9 M_W	(Page and others, 1992)
1988 03 06	22 35 36.38	57.23 N	142.78 W	(10)	Lahr and others, 1988	7.6	USGS, PDE	7.8 M_W	(Page and others, 1992)

* Epicenter unreliable. Based on felt reports from Unga and Unalaska Islands (Tarr and Martin, 1912), epicenter may be near tip of Alaska Peninsula (Davies and others, 1981).
** Epicenter unreliable. No constraints or confirmation from felt reports.

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Table 3. *Tectonic displacement rates in Alaska. Vertical and horizontal displacement rates at localities indicated on Figure 30. Vertical shoreline displacements are with reference to the eustatic sea level curve of Bard and others, 1990.*

Map Number	Location	Displacement Rate (mm/yr)	Duration (yr B.P.)	Principal Reference
	Vertical strandline displacements (^{14}C Data)			
1	Icy Cape	10.5	5.0×10^3	Plafker and others, 1982
2	Cape Suckling	+2.6	5.1×10^3	Plafker, 1969
3	Katalla	-5.8	8.1×10^2	Plafker, unpub. data
4	Copper River	-1.3	1.45×10^3	Plafker and others, 1992; Plafker and Rubin, 1992
5	Columbia Bay	+0.1	1.14×10^3	Plafker, 1969
6	Girdwood	-0.1	2.8×10^3	Karlstrom, 1964
7	Middleton Island	+10.5	5.1×10^3	Plafker and Rubin, 1978
8	Patton Bay	+4.4	2.1×10^3	Plafker, 1969
9	Yukon Island	+1.3 to -0.6	1.4×10^3	Rainy and Ralph, 1959
10	Sitkalidak Island	+1.5	5.5×10^3	Clark, 1966
11	Outer Shumagin Islands	+1.5 to +3.0	6.0×10^3	Winslow and Johnson, 1989
12	Upper Cook Inlet	+5.4	14×10^3	Schmoll and others, 1972
14	Chititna Bay, Lower Cook Inlet	+4.5	4.2×10^3	Thorson and others, 1980
15	Lituya Bay	+6.4	6.9×10^3	Heusser, 1960; Mann, 1986
16	Icy Point	+10	8.8×10^3	Hudson, Plafker, and Rubin, unpub. data, 1981
17	Upper Turnagain Arm Knik Arm	0.8 to 1.5 +0.2 to -0.2	4.2×10^3 2.1×10^3	Combellick, 1991
	Vertical displacement (fission track data)			
13	Mt. McKinley	+0.9	4.5×10^6	Plafker and others, 1984
	Dextral horizontal displacements			
18	Fairweather Fault	48 to 58	1.3×10^3	Plafker and others, 1978
19	Totschunda Fault	15	10×10^3	Plafker and others, 1977
20	Denali Fault	8.7	10×10^3	Plafker and others, 1977
21	Denali Fault	11.6	10×10^3	Plafker and others, 1977
22	Denali Fault	9	10×10^3	Plafker, unpub. data
	***Vertical displacement (tide gage)**			
23	Sand Point	-2.1	15	Savage and Plafker, 1991
24	Kodiak	+19	25	Savage and Plafker, 1991
25	Seldovia	+8.7	24	Savage and Plafker, 1991
26	Nikishka	+20.1	8	Savage and Plafker, 1991
27	Anchorage	-0.4	25	Savage and Plafker, 1991
28	Seward	+1.4	25	Savage and Plafker, 1991
29	Valdez	-4	15	Savage and Plafker, 1991
30	Cordova	-8.2	25	Savage and Plafker, 1991
31	Yakutat	+6.0	49	Savage and Plafker, 1991
32	Skagway	+18	44	Savage and Plafker, 1991
33	Juneau	+14	50	Savage and Plafker, 1991
34	Sitka	+3.6	50	Savage and Plafker, 1991
35	Ketchikan	+1.5	52	Savage and Plafker, 1991

*Rates shown here differ from those of Savage and Plafker (1991) because of differing assumptions in average rate of eustatic sea level rise (1.5 mm/yr *vs* 2.4 mm/yr) and because they do not include corrections for post-glacial isostatic rebound.

EXPLANATORY NOTE

This plate portrays deformation related to the Paleogene (post-Oligocene) tectonic regime in the shallow crust of Alaska. Features depicted on the map are the Paleogene faults, folds, volcanic rocks, active thermal springs, focal regions and epicenters of major earthquakes, and the configuration of the Pacific plate beneath the margin of southern Alaska. These neotectonic features, and the regional horizontal stress trajectories inferred from them, are primarily associated with strains across the boundary between the Pacific and North American plates. The figures show relative motions of crustal plates and of tectonic blocks (Figure 1), the distribution of seismicity (Figure 2), and coseismic deformation and localities at which neotectonic displacements and displacement rates have been determined (Figure 3).

RELATIVE PLATE AND BLOCK MOTIONS

Relative motions between the Pacific and North American plates averaged over the last 3 million years (Ma) increase from 49 mm/yr in eastern Alaska to 77 mm/yr in western Alaska (Figure 1). The Pacific-North American plate boundary is the Queen Charlotte dextral transform zone in southeastern Alaska and the Aleutian megathrust system of thrust, to dextral-oblique, to dextral strike-slip faults extending from the western Gulf of Alaska to the west end of the Aleutian Islands. Significant northwest-southeast relative motion is concentrated mainly along the boundaries of the Yakutat (YB), Saint Elias (SE), and Wrangell (WB) structural blocks in the complex region between the northern Gulf of Alaska, the Denali fault system, and the western Alaska Range (Figure 1). Most of the Pacific-North American relative motion in the northern Gulf of Alaska region is taken up by dominantly strike-slip on the northwest-trending Fairweather fault between the Yakutat and Saint Elias blocks and by shortening and deformation along the northeast-trending eastern segment of the Aleutian megathrust zone between the Yakutat and Wrangell blocks. The rates of dextral oblique thrusting (<1 cm/yr) are inferred to be relatively low along nearly east-west trending structures such as the Transition and Chugach-Saint Elias fault zones which bound the north and south margins of the Yakutat block. Slip rates of 10-20 cm/yr occur on the eastern Denali and Totschunda faults between the Wrangell block and North American plate. North of the Denali fault, deformation within the North American plate is widespread but relatively minor. Indicators of principal horizontal stress directions in Alaska are broadly compatible with the relative Pacific-North American plate motions; however, the style of faulting within plates and blocks is generally more variable than along boundaries (Figure 1).

FAULTS

The map shows the distribution of faults in Alaska with emphasis on those faults known or suspected to have had displacement during the late Cenozoic (≤24 Ma). Faults are categorized by both the sense of displacement across them where known and by the age category of the most recent demonstrable displacement. Ages and displacements of onshore faults are based on stratigraphic or geomorphic evidence; in two places (Talkeetna segment of the Castle Mountain fault and the eastern Denali fault) earthquake data suggest current activity at depth, but surface displacements have not been identified. Offshore faults are inferred from seismic -reflection data, seismically inferred rupture zones, or combinations of these data. The overwhelming majority of these faults are related to regional plate-boundary and intraplate deformation. Some, however, formed in response to local stress fields such as those on the flanks of active volcanoes in the Aleutian Islands. The map represents an analysis of data from published or publicly available unpublished material, supplemented by reconnaissance field investigations of most of the younger onshore faults (Table 1). Additional faults undoubtedly exist but have not yet been recognized because of the reconnaissance nature of much of the geologic mapping or because they are concealed beneath unconsolidated deposits or water. Future geologic and seismologic investigations will undoubtedly identify many more faults and will provide evidence requiring changes in the classification of the sense and age of movement for faults shown on this map.

FOLDS, VOLCANISM, AND THERMAL SPRINGS

The map depicts major areas of geologically young folds (≤24 Ma) and volcanic rocks (<10Ma) as well as active thermal springs. Folds are present in Neogene strata extending from the south to the north margins of the North American plate, and their age, orientation, and style provide information on the orientation and duration of the regional stress field.

Volcanic activity in Alaska consists mainly of compositionally variable calc-alkaline volcanic rocks related to the subducting Pacific plate (Aleutian-Wrangell magmatic arc) and dominantly basaltic volcanism within the segment of the North American plate between the magmatic arc and the Brooks Range. On the Seward Peninsula east-west trending normal faults occur in an area of flood basalts, but evidence of faulting has yet to be documented elsewhere.

The distribution of thermal springs and wells is shown on the map because in many other regions of the world these features are commonly fault-related. In Alaska, however, only a few thermal springs are situated on known or suspected young faults. Most thermal springs are associated with volcanic rocks of the Aleutian arc or with granitic intrusive rocks throughout Alaska; many have no known geologic control.

SEISMICITY

Earthquakes provide critical data on the distribution and nature of the present tectonic deformation within Alaska. The larger earthquakes and earthquake rupture zones (as determined from aftershock distribution) depicted on the map (magnitudes ≤7.0) are mainly associated with the Pacific-North American plate boundary, but some large intraplate events have occurred in central Alaska (Table 2). Small events are recorded throughout Alaska; only parts of northern Alaska lying north of the Brooks Range appear to be aseismic (Figure 2). Detailed data and discussion of instrumentally recorded earthquakes in Alaska are given by Page and others (1991) and Taber and others (1991). Correlations of some earthquakes can be made with surface or submarine faults. For most earthquakes, uncertainty in the epicenters makes correlation with a specific mapped fault trace speculative. In southern coastal Alaska there is the added complication that many shallow shocks originate along or near the Pacific-North American plate interface and can not be expected to correlate with surface structures.

The configuration of the subducting Pacific plate lithosphere is indicated on the map by contours (isopleths) beneath the Aleutian-Wrangell arc based on the spatial distribution of seismicity. Intermediate depth earthquakes in Alaska are restricted to the Aleutian-Wrangell arc; deep events have not been recorded (Figure 2). Subcrustal Aleutian earthquakes below 50 km have not exceeded a body-wave magnitude (M_b) of 7.4, and globally the largest known event within a subducted plate had a magnitude of 8.1 (Abe and Kanamori, 1980).

Large earthquakes within the Pacific plate beneath and seaward of the Aleutian trench are relatively rare (Figure 2); some of them may induce tsunamis. The Rat Island earthquake of March 30, 1965, with a surface-wave magnitude (M_S) of 7.4 was an intraplate event (Abe, 1972), as was most probably the March 7, 1929 event with a moment magnitude (M_W) of 7.8 (Kanamori, 1972). The two intraoceanic M_S 7.6 shocks with unusual strike-slip mechanisms in the northern Gulf of Alaska in 1987 and 1988 are interpreted to represent fragmentation of the Pacific plate in a tectonically complex part of the plate boundary (Lahr and others, 1988). The maximum credible magnitudes of earthquakes within the Pacific plate off Alaska might be as large as 8.4 M_W, equivalent to the magnitude of the Sanriku earthquake of 1933 beneath the Japan trench.

HORIZONTAL AND VERTICAL DISPLACEMENTS

The extreme tectonic mobility of the crust in southern Alaska is indicated by available data on coseismic tectonic displacements as well as the limited data for average horizontal and vertical displacement rates (Figure 3). Vertical displacement rates have been determined from tide-gage records, radiocarbon-dated displaced shorelines, and fission-track analyses; horizontal displacement rates across faults are from offset moraines of assumed late Pleistocene age (Table 3).

During the 1899 Yakutat Bay earthquakes, coseismic uplift of as much as 14 m affected much of the coast of Yakutat Bay. The 1964 Alaska earthquake was accompanied by regional warping along 800 km of the Gulf of Alaska margin with as much as 11.3 m of uplift and 2 m of subsidence (Figure 3).

In coastal Alaska, radiocarbon dating of shorelines indicates average long-term Holocene uplift and subsidence rates that range from +10.5 mm/yr to -7.8 mm/yr (Table 3). Tide-gage data in southeastern Alaska show a broad area of historic uplift of as much as 35 mm/yr centered on the Glacier Bay area that is at least in part related to rapid wasteage of glaciers (Figure 3 and Table 3)). In the area affected by coseismic deformation in 1964, tide-gage data indicate post-quake tectonic displacement rates ranging from -16 mm/yr at Kodiak to +8.2 mm/yr at Cordova (Table 3).

The one locality in interior Alaska for which quantitative data are available from fission-track studies (Mt. Denali), has had and average uplift rate of 0.9 mm/yr since about 4.5 million years ago (Table 3) and a significantly lower uplift rate prior to that time.

Dextral displacement rates during the Holocene averaged 48 to 58 mm/yr on the Fairweather fault, 10 to 20 mm/yr on the Totschunda fault, and 8.7 to 11.6 mm/yr across the Denali fault.

EARTHQUAKE HAZARDS

Earthquakes, fault movement, and seismic sea waves (tsunami) can pose a major hazard to man and his constructions. The neotectonic map of Alaska provides information critical to evaluation of these potential hazards on a regional basis. Because of the small scale, it cannot be used as an index of specific faults or fault hazards. However, it offers a synopsis of the fault and seismic data that must be taken into consideration in assessments of hazards from future sudden displacements on geologically young faults. We assume that fault processes acting during the Quaternary are likely to continue. In general, earthquake magnitude is related to fault length, so that long faults pose a greater hazard than short faults. Recorded earthquakes provide an additional clue to regional earthquake hazards. By using the age, length, and style of faulting to assess possibilities of future faulting and earthquake hazard, the short historic record of seismicity can be extended to cover a longer, geologic sample of time.

The relative susceptibility of regions in Alaska to earthquake-related hazards is outlined below. The largest historic earthquakes, and the greatest hazard is related to faults that define the margins of the major tectonic plates and blocks (Figure 1). The hazard associated with faulting within plates and blocks is variable, but likely to be less than along their margins. Our hazard assessments are modified from syntheses by Howard and others (1978), Plafker and Jacob (1985), Thenhaus and others (1985), and Page and others (1991).

Aleutian Megathrust

This segment of the Pacific plate margin is one of the most seismically active regions in the world. It is underlain by a northward-dipping zone of earthquakes that reflects underthrusting of the Pacific plate beneath the arc and much of south-central Alaska. Major active faults are thus believed to underlie the entire region and to surface at and near the Aleutian trench (the Aleutian megathrust). This major fault system varies from dextral strike slip in the westernmost part of the Aleutian arc, dextral oblique thrust in the segment from the Andreanof Islands to the Alaska Peninsula, and mainly thrust in the eastern segment. Sudden slip on the down-dip extensions of this fault system may extend as much as one-third to one-half the distance from the trench to the associated Aleutian-Wrangell volcanic arc, as indicated by aftershock distribution of the larger earthquakes. Large historic earthquakes (M_W 7.3-9.2) have ruptured most of this plate boundary, and are likely to recur in the future, although the recurrence interval for these events is speculative (Nishenko and Jacob, 1990). Near the east end of the Aleutian Trench, dip-slip fault movement with a minor sinistral component in excess of 20 m occurred during the 1964 earthquake, resulting in large-scale vertical displacements of the coast (Figure 3) and generation of a seismic sea wave (tsunami). The zone in which subsidiary surface faulting occurred was 140 km wide. At M_W 9.2, this is the largest historic event along the Aleutian megathrust zone and the second largest earthquake ever recorded worldwide. Paleoseismologic data suggest that the recurrence interval for earthquakes of this magnitude in the same area is about 600-950 years (Plafker and others, 1990; 1992). The tsunami hazard from great earthquakes in the central and eastern part of the region is high because of the likelihood of significant vertical displacements of the sea floor during subduction zone earthquakes.

Kayak-Pamplona Zone

A zone of compressional structures between the northeast end of the Aleutian megathrust and the Fairweather transform fault marks the convergent boundary along which the Yakutat block has been underthrust beneath the Wrangell block (Lahr and Plafker, 1980; Plafker, 1987). This zone is as much as 100 km wide on the continental shelf between the Kayak-Ragged Mountain-Chugach-Saint Elias faults on the west and north, and the Pamplona Spur-Malaspina and related faults, which mark the deformational front on the east. On-going deformation within this zone is indicated by seismic activity, young folds and faults, and local shoreline uplift (Plafker, 1987). Paleoseismologic and seismic data indicate that this is an area in which a major earthquake may occur and that if the entire segment ruptures in a single event it could generate a tsunamagenic earthquake in the range of M_W 8-9. The Yakutat Bay area, in the transition zone between this zone of convergence and the Queen Charlotte-Fairweather transform faults, was affected by vertical tectonic displacement of as much as 14 m during a series of major earthquakes in 1899 (inset map). The sequence included two events with M_W approximately 8.0 that are inferred to be caused by slip on north-dipping faults in the region (Plafker and Thatcher, 1982). In the same general area, the M_W 7.5 Saint Elias earthquake of 1979 occurred at a depth of about 13 km on a subsurface structure that may be the down-dip extension of the Chugach-Saint Elias fault (Table 2).

Transition Fault System

The Yakutat block is largely transported by the Pacific plate to which it is tightly coupled. As a consequence, the Yakutat block has a high rate of dextral strike slip along its northeast boundary, and a low rate of dextral oblique slip along its south boundary, the Transition fault system (Lahr and Plafker, 1980). Local Neogene deformation and sparse historic seismicity suggest some relative movement between the Pacific plate and Yakutat block. Approximately 40 km of this boundary appears to have ruptured in 1973 during the M_S 6-6.9 Cross Sound earthquake (Gawthrop and others, 1973). The tsunami hazard from earthquakes along the south boundary is judged to be low to moderate.

Queen Charlotte-Fairweather Fault System

The Queen Charlotte-Fairweather dextral strike-slip transform fault system defines the Pacific-North America plate boundary to about 57°45'N. latitude and the Fairweather fault is the boundary between the Yakutat and Saint Elias blocks further north. This entire fault system is seismically active and has ruptured in the 1949 Queen Charlotte (M_W 8.1), the 1972 Sitka (M_W 7.4), and the 1958 Lituya (M_W 7.7) earthquakes. Catastrophic strike-slip rupture of as much as 4 m was recorded along the Fairweather fault during the 1958 earthquake.

Denali Fault System

The long Denali fault system marks the northeast boundary of the Saint Elias block with North America south of 62°45'N. latitude; north of that latitude the fault system marks the boundary of the northern part of the Wrangell block with North America. Seismicity is low along most of the fault, and there is no evidence of historic slip. In the segment between the Wrangell block and North America, however, the fault is dominantly dextral strike slip with Holocene slip rates that range from 8.7 to 11.6 mm/yr (Table 3). Geologic data suggest the occurrence of infrequent large to great earthquakes that, together with the Totschunda fault, may rupture segments as long as 350 km with strike-slip displacements of 7 to 15 m (Plafker and others, 1977). The resulting earthquakes are likely to have magnitudes of M_W 8+.

West of about 151° W. longitude, the boundary between the Wrangell block and North America is poorly defined and is inferred to be marked by a diffuse zone of seismicity that extends southwest through the western Alaska Range and through Cook Inlet and Shelikof Strait to merge with the Aleutian megathrust southwest of Kodiak Island (Lahr and Plafker, 1980).

Totschunda Fault System

The dextral strike-slip Totschunda fault system is a major splay of the Denali fault that marks the boundary between the Saint Elias and Wrangell blocks. Although seismicity is low, Holocene slip rates average about 10 to 20 mm/yr (Table 3). Geologic data suggest the occurrence of infrequent large to great earthquakes that rupture all of the Totschunda fault and possibly adjacent parts of the Denali fault (Plafker and others, 1977) in events with magnitude M_W 8+.

North America Intraplate Earthquake Hazards

Along the Aleutian Ridge, short normal faults with Quaternary movement are known on land, and transcurrent faults of unknown age and type are numerous offshore. The surface faults are probably mainly related to volcanism and are estimated to have potential for generating small- to moderate-size earthquakes; the seismogenic potential of the submarine faults is speculative, but many are long enough to generate moderate to large earthquakes.

The extensive region north of the Alaska Range and Aleutian arc and south of the Brooks Range has many short faults with Holocene displacement, and several longer strike-slip faults mostly along reactivated major breaks with Quaternary and possible late Cenozoic displacement. Seismicity is moderate; the three largest recorded earthquakes have magnitudes of about 7.3 M_S, although none of these earthquakes can be related to a known surface structure.

The Seward Peninsula region is characterized by Holocene and other Quaternary faults having mostly normal displacement. The largest earthquake recorded was magnitude 6.5 M_S but earthquakes as large as magnitude 7.5 M_S are possible in the event of rupture along the entire length of structures such as the Bendeleben or Kigluaik faults.

In the Brooks Range and North Slope neotectonic activity is mainly limited to small earthquakes and sparse Neogene faults and folds in the eastern Brooks Range and on the western Beaufort Sea continental shelf and adjacent onshore area of the North Slope. The Brooks Range has no known neotectonic activity. The largest credible earthquake in the region is estimated to be magnitude 6.0 M_S

REFERENCES

Abe, Katsuyuki, 1972, Seismological evidence for a lithospheric tearing beneath the Aleutian Arc: Earth and Planetary Science Letters, v. 14, no. 3, p. 428-432.
——1981, Magnitudes of large shallow earthquakes from 1904 to 1980, Physics of the Earth and Planetary Interiors, v. 27, p. 72-92.
Abe, Katsuyuki and Kanamori, Hiroo, 1979, Temporal variation of the activity of intermediate and deep focus earthquakes: Journal of Geophysical Research, v. 84, p. 3589-3595.
——1980, Magnitudes of great shallow earthquakes from 1953 to 1977, Tectonophysics, v. 62, p. 191-203.
Abe, Katsuyuki and Noguchi, Shin'ichi, 1983a, Determination of magnitude for large shallow earthquakes 1898-1917, Physics of the Earth and Planetary Interiors, v. 32, p. 45-59.
——1983b, Revision of magnitudes of large shallow earthquakes 1897-1912, Physics of the Earth and Planetary Interiors, v. 33, p. 1-11.
Adams, John, 1985, Canadian stress data - a compilation to 1985: Seismological Service of Canada, Earth Physics Branch Open File No. 85-31.
Alaska Division of Geological and Geophysical Surveys, 1983, Geothermal resources of Alaska: Alaska Division of Geological and Geophysical Surveys publication, scale, 1:2,500,000.
Askren, D.R., 1972, Holocene stratigraphic framework southeastern Bering Sea continental shelf: University of Washington M.S. thesis.
Barazangi, Muawia, and Dorman, James, 1970, Seismicity map of the Arctic compiled from ESSA, Coast and Geodetic Survey, epicenter data January 1961 through September 1969: Bulletin of the Seismologic Society of America, v. 60, no. 5, p. 1741-1743.
Bard, Eduord, Hamelin, Bruno, and Fairbanks, R.G., 1990, U-Th ages obtained by mass spectrometry in corals from Barbados: sea level during the past 130,000 years: Nature, v. 346, p. 456-458.
Black, R.F., 1976, Geology of Umnak Island, eastern Aleutians as related to the Aleuts: Arctic and Alpine Research, vol. 8, p. 7-35.
Boucher, G.W., and Fitch, T.J., 1969, Microearthquake seismicity of the Denali Fault: Journal Geophysical Research, v. 74, no. 27, p. 6638-6648.
Boyd, T.M. and Lerner-Lam, A.L., 1988, Spatial distribution of turn-of-the-century seismicity along the Alaska-Aleutian arc, Bulletin of the Seismological Society of America, v. 78, p. 636-650.
Brew, D.A., and Ford, A.B., 1978, Coast Range megalineament and related lineaments in southeastern Alaska mark southwest edge of Coast Range batholithic complex: Canadian Journal Earth Sciences, v. 15, p. 1763-1772.
Brogan, G.E., Cluff, L.S., Korringa, M.K., and Slemmons, D.B., 1975, Active faults of Alaska: Tectonophysics, v. 29, no. 1-4, p. 73-85.
Brosge, W. P., Reiser, H. N., and Yeend, Warren, 1973, Reconnaissance geologic map of the Beaver quadrangle Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-525, 1 sheet, scale 1:250,000.
Bruns, T.R., 1979, Late Cenozoic structure of the continental margin, northern Gulf of Alaska: *in* Sisson, A. ed., Proceedings of the 6th Alaska Geological Society Symposium, Anchorage, Alaska Geological Society, p. I-1-30.
Bruns, T.R., and Schwab, W.C., 1983, Structure maps and seismic stratigraphy of the Yakataga segment of the continental margin, northern Gulf of Alaska: Miscellaneous Field Studies Map MF-1424, scale 1:250,000.
Bruns, T.R., von Huene, Roland, Culotta, R.C., Lewis, S.D., and Ladd, J.W., 1987, Geology and petroleum potential of the Shumagin margin, Alaska: *in* Scholl, D. W., Grantz, Arthur, and Vedder, J. G., eds., Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series v. 6, Circum-Pacific Council for Energy and Mineral Resources, Houston, Texas, p. 157-189.
Buland, Ray, and Taggart, James, 1981, A mantle wave magnitude for the St. Elias, Alaska, earthquake of 28 February 1979, Bulletin of the Seismological Society of America, v. 71, p. 1143-1159.
Burns, L.E., Little, T.A., Newberry, R.J., Decker, J.E., and Pessel, G.H., 1983, Preliminary geologic map of parts of the Anchorage C-2, C-3, D-2, and D-3 Quadrangles, Alaska: Alaska Division of Geological and Geophysical Surveys, Report of Investigations, 83-10, 3 sheets, scale 1:25,000.
Byers, F. M., Jr., 1959, Geology of Umnak and Bogoslof Islands, Aleutian Islands, Alaska: U.S. Geological Survey Bulletin 1028-L, p. 267-369.
Cady, W. M., Wallace, R. E., Hoare, J. M., and Webber, E. J., 1955, The central Kuskokwim region, Alaska: U.S. Geological Survey Professional Paper 268, 132 p.
Campbell, R.B., and Dodds, C.J., 1975, Operation Saint Elias, Yukon Territory: *in* Report of Activities, Part A, Geological Survey of Canada Paper 75-1A, p. 51-53.
Carlson, P.R. and Karl, H.A., 1981a, High resolution seismic reflection profiles: Navarin Basin province, Northern Bering Sea, 1980: U.S. Geological Survey Open-File Report 81-1221, 4 p.
——1981b, Seafloor geologic hazards, sedimentology and bathymetry; Navarin Basin province, Northwestern Bering Sea; U.S. Geological Survey Open-File Report 81-1217, 151 p.
Carlson, P. R., Bruns, T. R., and Molnia, B. F., 1975, Submarine slides and nearsurface faults, northern Gulf of Alaska: U.S. Geological Survey Open-File Report 75-504, 1 sheet, scale 1:500,000.
Carlson, P.R., Molnia, B.F., and Wheeler, M.C., 1980, Seafloor geologic hazards in OCS lease area 55, eastern Gulf of Alaska: Proc., 12th Offshore Technology Conference Houston, Texas, vol. 1, p. 5923-603.
Carlson, P.R., Plafker, George, and Bruns, T.R., 1985, Map and selected seismic profiles of the seaward extension of the Fairweather fault, eastern Gulf of Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1722, 2 sheets, scale 1:500,000.
Carlson, P.R., Plafker, G., Bruns, T.R., and Levy, W.P., 1979, Seaward extension of the Fairweather fault: U.S. Geological Survey Circular 804-B, p. B135-B139.
Clague, J.J., 1979, The Denali Fault System in southwest Yukon Territory - A geologic hazard? in Current Research, Part 1 : Geological Survey Canada, Paper 79-1A, p. 169-178.
Clark, D.W., 1966, Perspectives in the prehistory of Kodiak Island, Alaska: American Antiquities, v. 31, no. 3, p. 358-371.
Coats, R.R., 1953, Geology of Buldir Island, Aleutian Islands, Alaska: U.S. Geological Survey Bulletin 989-A, p. 1-26.
——1956, Geology of northern Adak Island, Alaska: U.S. Geological Survey Bulletin 1028-C, p. 45-67.
Coats, R. R., Nelson, W. H., Lewis, R. Q., and Powers, H. A., 1961, Geologic reconnaissance of Kiska Island, Aleutian Islands, Alaska: U.S. Geological Survey Bulletin 1028-R, p. 563-581.
Combellick, R.A., 1991, Paleoseismicity of the Cook Inlet region, Alaska: evidence from peat stratigraphy in Turnagain and Knik Arms: Alaska Division of Geological and Geophysical Surveys Professional Report 112, 52 p.
Cox, A., Hopkins, D. M., and Dalrymple, G. B., 1966, Geomagnetic polarity epochs, Pribilof Islands, Alaska: Geological Society America Bulletin, v. 77, p. 883-910.
Csejtey, Bela, Jr., Mullen, M.W., Cox, D.P., Gilbert, W.G., Yeend, W.E., Smith, T.E., Wahrhaftig, Clyde, Craddock, Campbell, Brewer, W.M., Sherwood, K.W., Hickman, R.G., Stricker, G.D., Aubin, D.R., and Goerz, D.J., III, 1986, Geology and geochronology of the Healy quadrangle, Alaska: U.S. Geological Survey Open-File Report 86-396, scale 1:250,000, 92 p.
Davies, J.N., Sykes, L.R., House, L., and Jacob, K.H., 1981, Shumagin seismic gap, Alaska Peninsula: History of great earthqaukes, tectonic setting, and evidence for high seismic potential, Journal of Geophysical Research, v. 86, p. 3821-3855.
Davis, T. N., 1960, A field report on the Alaska earthquakes of April 7, 1958: Seismology Society America Bulletin, v. 50, no. 4, p. 489-510.
DeMets, C., Gordon, R.G., Argus, D.F., and Stein, S., 1990, Current plate motions: Geophysical Journal International, v. 101, no. 2, p. 425-478.
Denton, G.H. and Stuiver, Minze, 1967, Late Pleistocene glacial stratigraphy and chronology, northeastern St. Elias Mountains, Yukon Territory, Canada: Geological Society of America Bulletin, v. 78, p. 485-510.
Detterman, R.L., and Reed, B.L., 1980, Stratigraphy, structure and economic geology of the Iliamna Quadrangle, Alaska: U.S. Geological Survey Bulletin 1368-B 86 p.
Detterman, R. L., Hudson, Travis, and Hoare, J. M., 1975, Bruin Bay fault inactive during Holocene: *in* Johnson, K.M., ed., Geologic studies in Alaska by the U.S. Geological Survey during 1977: U.S. Geological Survey Circular 722, p. 45.
Detterman, R.L., Miller, T.P., Yount, M.E. and Wilson, F.H., 1981, Quaternary geologic map of the Chignik and Sutwik Island Quadrangles, Alaska: U.S. Geological Survey Miscellaneous Investigation Series Map I-1292, scale 1:250,000.
Detterman, R.L., Hudson, Travis, Plafker, George, Tysdal, R.G., and Hoare, J.M., 1976a, Reconnaissance geology map along Bruin Bay and Lake Clark faults in Kenai and Tyonek Quadrangles, Alaska: U.S. Geological Survey Open-File Report 76-477, scale 1:250,000, 4 p.
Detterman, R.L., Plafker, George, Tysdal, R.G. and Hudson, Travis, 1976b, Geology and surface features along part of the Talkeetna segment of the Castle Mountain-Caribou fault system, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-738, 1 sheet, scale 1:63,360.
Detterman, R.L., Plafker, George, Hudson, Travis, Tysdal, R.G., and Pavoni, Nazario, 1974, Surface geology and Holocene breaks along the Susitna segment of the Castle Mountain fault, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-618, 1 sheet, scale 1:24,000.
Drewes, Harald, Fraser, G.D., Snyder, G.L., and Barnett, H.F., Jr., 1961, Geology of Unalaska Island and adjacent insular shelf, Aleutian Islands, Alaska: U.S. Geological Survey Bulletin 1028-S, p. 583-676.
Drummond, K.J., 1986, Plate-tectonic map of the circum-Pacific region, northeast quadrant: Circum-Pacific Council for Energy and Mineral Resources, Houston, Texas, scale: 1:10,000,000.
Fernald, A.T., 1960, Geomorphology of the upper Kuskokwim region, Alaska: U.S. Geological Survey Bulletin 1071-G, p. 191-279.
Fisher, M.A., and von Huene, Roland, 1980, Structure of the upper Cenozoic strata beneath Kodiak Shelf, Alaska: American Association of Petroleum Geologists Bulletin, v. 64, p. 1014-1033.
Fisher, M.A., Patton, W.W., and Holmes, M.L., 1981, Geology and Petroleum potential of the Norton Bay area, Alaska: U.S. Geological Survey, Open-File Report 81-1316, p. 51.
Foster, H.L , Laird, T., Keith, T.E.C., Cushing, G.W., and Menzie, W.D., 1983, Preliminary geologic map of the Circle quadrangle, Alaska: U.S. Geological Survey Open-File Report 83-170-A, scale 1:250,000, 27p.
Fraser, G.D., and Barnett, H.F., 1959, Geology of the Delarof and westernmost Andreanof Islands, Aleutian Islands, Alaska: U.S. Geological Survey Bulletin 1028-I, p. 211-248.
Gard, L.M., 1977, Geologic history: *in* Merritt, M.L. and Fuller, G.R., eds., The Environment of Amchitka Island, Alaska: Technical Information Center, Energy Research Develpoment Administration, p. 13-34.
Gard, L.M., 1980, The Pleistocene geology of Amchitka Island, Aleutian Islands, Alaska: U.S. Geological Survey, Bulletin 1478, 38 p.
Gardner, J.V., Vallier, T.L., Dean, W.E., Kvenvolden, K.A., and Redden, G.D., 1979, Sedimentology and geochemistry of surface sediments and the distribution of faults and potentially unstable sediments, St. George basin region of the outer continental shelf, southern Bering Sea: U.S. Geological Survey Open-File Report 79-1562, 88 p.
Gates, Olcott, Powers, H.A. and Wilcox, R.E., 1971, Geology of the Near Islands Alaska *with a section on* Surficial geology by J.P. Schafer: U.S. Geololgical Survey Bulletin 1028-U, p. 709-822.
Gawthorp, W.H., Page, R.A., Reichle, M., and Jones, A., 1973, The southeast Alaska earthquakes of July 1973, (abs.): EOS, American Geophysical Union Transactions, v. 54, p. 1136.
Gedney, L., and Berg, E., 1969, The Fairbanks earthquakes of June 21, 1967; aftershock distribution, focal mechanisms, and crustal parameters: Bulletin of the Seismological Society of America, v. 59, no. 1, p. 73-100.
Gedney, L., Shapiro, L., Van Wormer, D., and Weber, F.R., 1972, Correlation of epicenters with mapped faults, east-central Alaska, 1968-1971: U.S. Geological Survey Open-File Report, 7 p.
Gedney, L. Berg, E, Pulpan, H. Davies, J. Feetham, W., 1969, A field trip report on the Rampart Alaska earthquake of October 29, 1968: Seismological Society of America Bulletin, v.59, no.3, p.1421-1423.
Gilbert, W., Solie, D.N., and Dickey, D.B., 1982, Preliminary bedrock geology of the McGrath B-3 quadrangle, Alaska: Division of Geological and Geophysical Surveys Open-File Report 48, scale 1:40,000.
Gough, D., Fordjor, C., and Bell, J., 1983, A stress province boundary and tractions on the North American plate: Nature, v. 305, p. 619-621.
Grantz, Arthur, 1966, Strike-slip faults in Alaska: U.S. Geological Survey Open-File Report, 82 p.
Grantz, A. Dinter, D.A. and Biswas, N.N., 1983, Map, cross sections and chart showing Late Quaternary faults, folds and earthquake epicenters on the Alaskan Beaufort Shelf: U.S. Geological Survey, Miscellaneous Investigations Map I-1182-C, 2 sheets.
Grantz, Arthur, Ettreim, S.L., and Dinter, D.A., 1979, Geology and tectonic development of the continental margin north of Alaska: Tectonophysics, v. 59, p. 263-291.
Grantz, Arthur, May, S.D., and Dinter, D.A., 1987, Regional geology and petroleum potential of the United States Beaufort and northeasternmost Chukchi Seas: *in* Scholl, D.W., Grantz, Arthur, and Vedder, J.G., eds., Geology and resource potential of the continental margin of western North America and adjacent ocean basins—Beaufort Sea to Baja California, v. 6 *of* Circum-Pacific Council for Energy and Mineral Resources Earth Science Series: Houston, Texas, Circum-Pacific Council for Energy and Mineral Resources, p. 17-35.
Greene, G.W., and Coonrad, W.L., 1974, Kodiak Island faults inactive: *in* Johnson, K.M., ed., Geologic studies in Alaska by the U.S. Geological Survey during 1977: U.S. Geological Survey Circular 722, p. 43.
Grim, M.S., and McManus, D.A., 1970, A shallow seismic-profiling survey of the northern Bering Sea: Marine Geological, v. 8, p. 293-320.
Griscom, Andrew, 1976, Aeromagnetic map and the interpretation of the Tanacross quadrangle Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-767A, 2 sheets, scale 1:250,000.
Gutenberg, Beno, 1956, Great earthquakes 1896-1903, Transactions, American Geophysical Union, v. 37, p. 608-614.
Gutenberg, Beno and Richter, C.F., 1954, Seismicity of the Earth, 2nd. ed., Princeton University Press, Princeton, New Jersey, 310 p.
Hamilton, T.D., 1984, Late Quaternary offsets along the Kobuk and related fault zones, NW Alaska [Abs.]: Geological Society of America Cordillerian Section Meeting Programs with Abstracts, v. 16, no. 5, p. 288.
Hampton, M.A., 1982a, Synthesis Report: environmental geology of lower Cook Inlet, Alaska: U.S. Geological Survey Open-File Report 82-197, 55 p.
——1982b, Synthesis report: environmental geology of the Kodiak Shelf, Alaska: U.S. Geological Survey Open-File Report 82-59, 76 p.
Hampton, M.A., and Bouma, A.H., 1977, Slope instability near the shelf break, Western Gulf of Alaska : Marine Geotechnology, v. 2, p. 309-331.
Hampton, M.A. and Winters, W.J., 1981, Environmental geology of Shelikof Strait, OCS sale area 60, Alaska: Proceedings 13th offshore Technology Conference, v. 4, p. 19-34.
Hampton, M.A., Johnson, K.H., Torreson, M.E., and Winters, W.J, 1981, Description of seafloor sediments and preliminary geo-environmental report, Shelikof Strait, Alaska: U.S. Geological Survey Open-File Report 81-1133, 87 p.
Harris, N.B., 1978, Late Tertiary faults in south-central Alaska: Stanford University M.S. thesis.
Heusser, C.J., 1960, Late-Pleistocene environments of North Pacific North America—an elaboration of late-glacial and postglacial climatic, physiographic, and biotic changes: American Geographical Society Special Publication 35, 308 p.
Hickman, R.G., 1971, The Denali fault near Cantwell, Alaska: Madison, Wisconsin, Univ. Wisconsin, M.S. thesis, 76 p.
Hickman, R.G., Craddock, Campbell, and Sherwood, K.W., 1977, Structural geology of the Nenana River segment of the Denali fault system, central Alaska Range: Geological Society America Bulletin, v. 88, no. 9, p. 1217-1230.
Hicks, S.D., and Shofnos, William, 1965, The determination of land emergence from sea level observations in southeastern Alaska: Journal of Geophysical Research, v. 70, no. 14, p. 3315-3320.
Holmes G.W., and Foster, H.L., 1968, Geology of the Johnson River area, Alaska: U.S. Geological Survey Bulletin 1249, 49 p.
Holmes, M.L., Cline, J. and Johnson, J.L., 1978, Geological setting of the Norton Basin gas seep: Proceedings of the 10th Annual Offshore Technology Conference, Houston, Texas, 1978, v. 1, p. 73-80.
Hoose, P.J. and Whitney, J., 1980, Map showing selected geologic features on the outer continental shelf, Shelikof Strait, Alaska: U.S. Geological Survey Open-File Report 80-2035, scale 1:250,000.
Hoose, P.J., Steffy, D.A. and Lybeck, L.D., 1981, Isopach map of Quaternary and Upper Tertiary strata, Norton Sound, Alaska: U.S. Geological Survey Open-File Report 81-723, scale 1:250,000.
Hopkins, D.M., 1976, Fault history of the Pribilof Islands and its relevance to bottom stability in the St. George Basin, *in* Environmental Assessment of the Alaskan Continental Shelf: National Oceanic and Atmospheric Administration and Bureau of Land Management, Annual Reports from Principal Investigations, v. 13, p. 41-67.
Hopkins, D.M., Pratt, R., Nelson, R.E. and Powell, C.L., 1983, Glacial sequence southwestern Seward Peninsula, in Thorson, R.M., and Hamilton, T.D., eds., Glaciation in Alaska, Alaska Quaternary Center Occasional Paper no. 2, University of Alaska, p. 45-50.
Hopkins, D.M., Rowland, R.W., Echols, R.E., and Valentine, P.C., 1974, An Anvilian (Early Pleistocene) marine fauna from western Seward Peninsula, Alaska: Quaternary Research, v. 4, no. 4, p. 441-470.
Hottman, C.E., J.H. Smith, and W.R. Purcell, 1979, Relationship among earth stresses, pore pressure, and drilling problems offshore Gulf of Alaska: Journal of Petroleum Technology, v. 31, n. 11, p. 1477-1484.
Howard, K.A., Aaron, J.M., Brabb, E.E., Brock, M.R., Gower, H.D., Hunt, S.J., Milton, D.J., Muehlberger, W.R., Nakata, J.K., Plafker, George, Prowell, D.C., Wallace, R.E., Witkind, I.J., 1978, Preliminary map of young faults in the United States as a guide to possible fault activity: U.S. Geological Survey Miscellaneous Field Studies Map MF-916, 2 sheets, scale 1:5,000,000 and 1:7,500,000.
Hudson, Travis, and Plafker, George, 1978, Kigluaik and Bendeleben faults, Seward Peninsula: *in* Johnson, K.M., ed., Geologic studies in Alaska by the U.S. Geological Survey during 1977: U.S. Geological Survey Circular 772-B, p. B47-B50.
Hudson, Travis, and Weber, F. R., 1977, The Donnelly Dome and Granite Mountain faults, south-central Alaska: *in* Blean, K.M., ed., Geologic studies in Alaska by the U.S. Geological Survey during 1976: U.S. Geological Survey Circular 751-B, p. B64-B66.
Hudson, Travis, Dixon, Kirk, and Plafker, George, 1982, Regional uplift in southeastern Alaska: *in* Coonrad, W.L., ed., The United States Geological Survey in Alaska: Accomplishments during 1980: U.S. Geological Survey Circular 844, p. 132-135.
Hudson, Travis, Plafker, George and Dixon, Kirk, 1982, Horizontal offset history of the Chatham strait fault: *in* Coonrad, W.L., ed., The U.S. Geological Survey in Alaska: Accomplishments during 1980: U .S. Geological Survey Circular 844, p. 128-132.
Hwang, L.S. and Kanamori, Hiroo, 1986, Of the May 7, 1986 Andreanof Islands earthquake source parameters, Geophysical Research Letters, v. 13, p. 1426-1429.
International Seismological Centre, International Seismological Summary or Bulletin of the International Seismological Centre, U. K.
Plafker, George and Jacob, Klaus, 1985, Seismic sources in Alaska: *in* Hays, W.W. and Gori, P.L., eds., Proceedings of a workshop on Evaluation of Regional and Urban Earthquake Hazards and Risk in Alaska, U. S. Geological Survey Open-File Report 86-79, 76-82.
Johnson, J.L. and Holmes, M.L., 1978, report on surface and subsurface faulting in the Norton Sound and northeastern Chirikov basin, Alaska (1978): *in* Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators for the year ending March, 1978: Env. Res. Lab, Boulder, Colo., NOAA, U.S. Department of Commerce, v. 12, p. 203-227.
Kanamori, Hiroo, 1972, Mechanism of tsunami earthquakes: Physics of the Earth and Planetary Interiors, v. 6, p. 346-359.
——1977, The energy release in great earthquakes: Journal Geophysical Research, v.82, no.20, p. 2981-2987.
Kanamori, Hiroo, and Katsuyuki, Abe, 1979, Reevaluation of the turn-of-the-century seismicity peak, Journal of Geophysical Research, v. 84, p. 6131-6139.
Karlstrom, T.N.V., 1964, Quaternary geology of the Kenai Lowland and glacial history of the Cook Inlet region, Alaska: U.S. Geological Survey Professional Paper 443, 69 p.
Kaufman, D.S., 1985, Windy Creek and Crater Creek faults, Seward Peninsula: *in* Bartsch-Winkler, Susan and Reed, Katherine M., eds., The U.S. Geological Survey in Alaska: Accomplishments during 1983: U.S. Geological Survey Circular 945, p.22-24.
Keller, A.S., and Reiser, H.N., 1959, Geology of the Mount Katmai area, Alaska: U.S. Geological Survey Bulletin 1058-G, p. 261-298.
Kelly, T.E., 1963, Geology and hydrocarbons in Cook Inlet basin, Alaska, *in* Childs, D.E., and Beebe, B.W., eds., Backbone of the Americas: American Association Petroleum Geologists Memoir 2, p. 278-296.
Kennedy, G.C., and Waldron, H.H., 1955, Geology of Pavlof Volcano and vicinity, Alaska: U.S. Geological Survey Bulletin 1028-A, p. 1-19.
Koch, R.D., Smith, J.G., and Elliot, R.L., 1977, Miocene or younger strike-slip(?) fault at Canoe Passage, southeastern Alaska: *in* Blean, K.M., ed., Geologic studies in Alaska by the U.S. Geological Survey during 1976: U.S. Geological Survey Circular 751-B, p. B76.
Lahr, J.C. and Plafker, George, 1980, Holocene Pacific-North America plate interaction in southern Alaska: Implications for the Yakataga seismic gap: Geology, v. 8, p. 483-486.
Lahr, J.C., Plafker, George, Stephens, C.D., Fogleman, K.A., and Blackford, M.E., 1979, Interim report on the St. Elias Earthquake of 28 February 1979: U.S. Geological Survey Open-File Report 79-670, 35 p.
Lahr, J.C., Page, R.A., Stephens, C.D., Fogleman, K.A., 1986, Sutton, Alaska, earthquake of 1984: Evidence for activity on the Talkeetna segment of the Castle Mountain fault system: Bulletin Seismological Society of America, v. 76, p. 967-983.
Lahr, J.C., Page, R.A., Stephens, C.D., and Christensen, D.H., 1988, Unusual earthquakes in the Gulf of Alaska and fragmentation of the Pacific plate, Geophysical Research Letters, v. 15, p. 1483-1486.
Lanphere, M.A., 1978, Displacement history of the Denali fault system, Alaska and Cananda: Canadian Journal Earth Science, v. 15, no. 5, p. 817-822.
Loney, R.A., Brew, D.A., Muffler, L.J.P., and Pomeroy, J.S., 1975, Reconnaissance geology of Chichagof, Baranof, and Kruzof Islands, southeastern Alaska: U.S. Geological Survey Professional Paper 792, 105 p.
Luedke, R.G., and Smith, R.L., 1986, Map showing distribution, composition, and age of late Cenozoic volcanic centers in Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-1091-F, scale 1:1.000,000.
Mann, D.H., 1986, Wisconsin and Holocene glaciation of southeast Alaska: *in* Hamilton, T.D., Reed, K.M., and Thorson, R.M., eds., Glaciation in Alaska—The geologic record: Anchorage, Alaska Geological Society, p. 237-265.
Marlow, M.S., Scholl, D.W., Cooper, A.K., and Buffington, E.C., 1976, Structure and evolution of the Bering Sea Shelf south of St. Lawrence Island: American Association Petroleum Geologists Bulletin, v. 60, p. 161-183.
Meyers, H., 1976, A historical summary of earthquake epicenters in and near Alaska: National Oceanic and Atmospheric Administration, Environmental Data Service, Technical Memorandum EDSMGSDC-1, 56 p.
Miller, D.J., and Plafker, George, 1971, Geologic map of the Yakataga district, Gulf of Alaska Tertiary province, Alaska: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-610, scale 1:125,000.
Moore, G.W., 1967, Preliminary geologic map of Kodiak Island and vicinity, Alaska: U.S. Geological Survey Open-File Report, scale 1:250,000.
Morris, R.H., 1970, A preliminary study of relict marine terraces of the western Aleutian Islands, Alaska: U.S. Geological Survey Report; National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, NTIS-USGS-474-62, 21 p.
Morris, R.H., and Bucknam, R.C., 1972, Geomorphic evidence of late Holocene vertical stability in the Aleutian Islands, Alaska: Seismology Society America Bulletin, v. 62, no. 6, p. 1356-1375.
Nakamura, Kazuaki, Plafker, George, Jacob, K.H., and Davies, J.N., 1980, A tectonic stress trajectory map of Alaska using information from volcanoes and faults: Bulletin of Earthquake Research Institute, v. 55, part 1, p. 89-100.
Nishenko, S.P. and Jacob, K.H., 1990, Seismic potential of the Queen Charlotte-Alaska-Aleutian seismic zone: Journal of Geophysical Research, v. 95, no. B3, p. 2511-2533.
Nokleberg, W.J., Jones, D.L., and Silberling N.J., 1985, Origin and tectonic evolution of the Maclaren and Wrangellia terranes, eastern Alaska Range, Alaska: Geological Society of America Bulletin, v. 96, p. 1251-1270.
Nockleberg, W. J., Albert, N. R. D., Bond, G. C., Herzon, P. L., Miyaoka, Nelson, W. H., Richter, D. H., Smith, T. P., Stout, J. H., Yeend, W., Zehrner, R. E., 1982, Geologic map of the southern part of the Mt. Hayes quadrangle, Alaska: U.S. Geological Survey, Open-File Report, OF 82-52, scale 1:250,000, 26 p.
Page, R. A., Jr., 1969, Late Cenozoic movement on the Fairweather fault in southeastern Alaska: Geological Society America Bulletin, v. 80, no. 9, p. 1873-1877.
——1973, The Sitka, Alaska, earthquake of 1972, an expected visitor: Earthquake Information Bulletin, v. 5, no. 5, p. 4-9.
——1975, Evaluation of seismicity and earthquake shaking at offshore sites: Proceedings of the 7th Offshore Technology Conference, Houston, Texas, v. 3, p. 179-190.
Page, R.A., Biswas, N.N., Lahr, J.C., and Pulpan, Hans, 1991, Seismicity of continental Alaska in Slemmons, D.B., Engdahl, E.R., Zoback, M.D., Zoback, M.L., and Blackwell, D., eds., Neotectonics of North America: Boulder, Colorado, The Geological Society of America, CSM V-1.
Patton, W.W., Jr., 1966, Regional geology of the Kateel River quadrangle, Alaska: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-437, 1 sheet, scale 1:250,000.
——1975, New information on the Kaltag fault: *in* Johnson, K.M., ed., Geologic studies in Alaska by the U.S. Geological Survey during 1977: U.S. Geological Survey Circular 722, p. 43.
Patton, W.W., Jr., and Hoare, J. M., 1968, The Kaltag fault, west-central Alaska: U.S. Geological Survey Professional Paper 600-D, p. D147-D153.
Patton, W.W., Jr., and Moll, E.J., 1985, Geologic map of northern and central parts of Unalakleet quadrangle, Alaska: U.S. Geological S urvey Miscellaneous Investigations Map MF-1749, scale 1:250,000.
Péwé, T.L., 1975, Quaternary stratigraphic nomenclature in central Alaska: U.S. Geological Survey Professional Paper 862, 32 p.
Plafker, George, 1967, Surface faults on Montague Island associated with the 1964 Alaska earthquake: U.S. Geological Survey Professional Paper 543-G, 42 p.
——1969, Tectonics of the March 27, 1964, Alaska earthquake: U.S. Geological Survey Professional Paper 543-I, 74 p.
——1974, Preliminary geologic map of Kayak and Wingham Islands, Alaska: U.S. Geol Survey Open-File Report 74-82, scale 1:31,680.
——1987, Regional geology and petroleum potential of the northern Gulf of Alaska continental margin, *in* Scholl, D.W., Grantz, Arthur, and Vedder, J.G., eds., Geology and resource potential of the continental margin of western North America and adjacent ocean basins—Beaufort Sea to Baja California, v. 6 *of* Circum-Pacific Council for Energy and Mineral Resources Earth Science Series: Houston, Texas, Circum-Pacific Council for Energy and Mineral Resources, p. 229-268.
Plafker, George and Jacob, K.H., 1985, Seismic sources in Alaska: *in* Hays, W.W. and Gori, P.L., eds., Proceedings of a workshop on Evaluation of Regional and Urban Earthquake Hazards and Risk in Alaska, U.S. Geological Survey Open-File Report 86-79, p. 76-82.
Plafker, George, and Rubin, Meyer, 1967, Vertical tectonic displacements in south-central Alaska during and prior to the great 1964 earthquake: Journal Geosciences (Osaka City University), v. 10, art. 1-7, p. 1-14.
Plafker, George, and Rubin, Meyer, 1978, Uplift history and earthquake recurrence as deduced from marine terraces on Middleton Island, Alaska, *in* Proceedings of Conference VI, Methodology for identifying seismic gaps and soon-to-break gaps: U.S. Geological Survey Open-File Report 78-943, p. 687-721.
——1992, "Yo-Yo" tectonics above the eastern Aleutian subduction zone: coseismic uplift alternating with even larger interseismic subsidence [expanded abs.]: Proceedings of the Wadati Conference on Great Subduction Earthquakes, Geophysical Institute, University of Alaska, Fairbanks, Alaska, p. 90-91.
Plafker, George, and Thatcher, Wayne, 1982, Geological and geophysical evaluation of the mechanisms of the great 1899-1900 Yakutat Bay, Alaska, earthquakes [Abs.]: Program and Abstracts, AGU Conference on fault behavior and the earthquake generating process, Snowbird, Utah, Oct. 11-15, 1982.
Plafker, George, Detterman, R.L., and Hudson, Travis, 1975, New data on the displacement history of the Lake Clark fault: *in* Cobb, E.H., ed., The United States Geological Survey in Alaska: Accomplishments during 1975, U.S. Geological Survey Circular 722, p. 44-45.
Plafker, George, Hudson, Travis, and Richter, D.H., 1977, Preliminary observations on late Cenozoic displacements along the Totschunda and Denali fault systems: *in* Blean, K.M., ed., Geologic studies in Alaska by the U.S. Geological Survey during 1976: U.S. Geological Survey Circular 751-B, p. B67-B69.
Plafker, George, LaJoie, K.R., and Rubin, Meyer, 1992, Determining recurrence intervals of great subduction zone earthquakes in southern Alaska by radiocarbon dating: *in* Taylor, R.E., Long, Austin, and Kra, R.S., eds., Radiocarbon After Four Decades, An Interdisciplinary Perspective, New York, Springer-Verlag, p. 436-453.
Plafker, George, Hudson, Travis, Bruns, T. R., and Rubin, Meyer, 1978, Late Quaternary offsets along the Fairweather fault and crustal plate interactions in southern Alaska: Canadian Journal of Earth Sciences, v. 15, no. 5, p. 805-816.
Plafker, George, Hudson, Travis, Rubin, Meyer, and Dixon, K.L., 1982, Holocene marine terraces and uplift history in the Yakataga seismic gap near Icy Cape, Alaska, *in* Coonrad, W. L., ed., The United States Geological Survey in Alaska: Accomplishments during 1980: U.S. Geological Survey Circular 844, p. 111-115.
Plafker, George, Naeser, C.W., Zimmermann, R.A., Lull, John, and Hudson, Travis, 1992, Cenozoic uplift history of the Mount McKinley area in the central Alaska Range based on fission-track dating: *in* Bradley, D.C., and Dusel-Bacon, Cynthia, eds., Geologic studies in Alaska by the U. S. Geological Survey, 1991: U. S. Geological Survey Bulletin 2041, p. 202-212.
Powers, H.A., Coats, R.R., and Nelson, W.H., 1960, Geology and submarine physiography of Amchitka Island, Alaska: U.S. Geological Survey Bulletin 1028-P, p. 521-554.
Pulpan, H. and Kienle, F., 1979, Western Gulf of Alaska seismic risk: Proceedings of the 11th Offshore Technology Conference, Houston, Texas, p. 2209-2218.
Rainy, F., and Ralph, E.K., 1959, Radiocarbon dating in the Arctic: American Antiquity, v. 24, no. 4, pt. 1, p. 365-374.
Reed, B.L., and Lanphere, M.A., 1974, Offset plutons and history of movement along the McKinley segment of the Denali fault system, Alaska: Geological Society America Bulletin, v. 85, no. 12, p. 1883-1892.
Reed, B.L., and Nelson, S.W., 1977, Geologic map of the Talkeetna Quadrangle Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-870-A, scale 1:250,000.
——1980, Geologic map of the Talkeetna Quadrangle, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-1174, scale 1:250,000.
Richter, D.H., and Matson, N.A., Jr., 1971, Quaternary faulting in the eastern Alaska Range, Alaska: Geological Society America Bulletin, v. 82, no. 6, p. 1529-1540.
Rogers, G.C., 1986, Seismic gaps along the Queen Charlotte fault: Earthquake Prediction Research, v. 4, p. 1-11.
Rossman, D.L., 1959, Geology and ore deposits of northwestern Chichagof Island, Alaska: U.S. Geological Survey Bulletin 1058-E, p. 139-216.
Savage, J.C., and Lisowski, Michael, 1988, Deformation in the Yakataga seismic gap, southern Alaska, 1980-1986: Journal of Geophysical Research, v. 93, no. B5, p. 4731-4744.
Savage, J.C., and Plafker George, 1991, Tide-gage measurements of uplift along the south coast of Alaska: Journal of Geophysical Research, v. 96, no. B3, p. 4325-4335.
Schell, M.M. and Ruff, L.J., 1989, Rupture of a seismic gap in southeastern Alaska: The 1972 Sitka earthquake (M_S 7.6), Physics of the Earth and Planetary Interiors, v. 54, p. 241-257.
Schmoll, H.R., Szabo, B.J., Rubin, Meyer, and Dobrovolny, Ernest, 1972, Radiometric dating of marine shells from the Bootlegger Cove Clay, Anchorage area, Alaska: Geological Society of America Bulletin, v. 83, p. 1107-1114.
Seitz, J.F., 1959, Geology of Geikie Inlet area, Glacier Bay, Alaska: U.S. Geological Survey Bulletin 1058-C, p. 61-120.
Snyder, G.L., 1959, Geology of Little Sitkin Island, Alaska: U.S. Geological Survey Bulletin 1028-H, p. 169-210.
Souther, J.G., and Stanciu, C., 1975, Operation Saint Elias, Yukon Territory: Canadian Geological Survey Report of Activities No. 75-1, Part A, p. 63-70.
Stauder, William, 1959, A mechanism study: The earthquake of Oct. 24, 1927: Geofisica para e applicata, vol.44, p.135-143.
——1960, The Alaska earthquake of July 10, 1958--Seismic studies: Seismology Society America Bulletin, v. 50, no. 2, p. 293-322.
Steffy, D.A., Turner, B.W. Lybeck, L.D., and Roe, J.T., 1981, Isopach map of Holocene sedimentary units, Norton Sound, Alaska: U.S. Geological Survey Open-File Report 81-720, scale 1:250,000.
Stephens, C.D., Lahr, J.C., Fogleman, K.A., and Horner, R.B., 1980, The St. Elias, Alaska, earthquake of February 28, 1979: Regional recording of aftershocks and short-term, pre-earthquake seismicity, Bulletin of the Seismological Society of America, v. 70, p. 1607-1633.
Stout., J.H., and Chase, C.G., 1980, Plate kinematics of the Denali fault system: Canadian Journal of Earth Sciences, v. 171. p. 1527-1537.
Stout, J.H., Brady, J.B., Weber, F.R., and Page, R.A., 1973, Evidence of Quaternary movement on the McKinley strand of the Denali in the Delta River area, Alaska: Geological Society America Bulletin, v. 84, no. 3, p. 939-948.
Sykes, L.R., 1971, Aftershock zones of great earthquakes, seismicity gaps, and earthquake prediction for Alaska and the Aleutians, Journal of Geophysical Research, v. 76, p. 8021-8041.
Taber, J.J., Billington, S., and Engdahl, E.R., in press, Seismicity of the Aleutian arc: *in* Slemmons, D.B., Engdahl, E.R., Zoback, M.D., Zoback, M.L., and Blackwell, D., eds., Neotectonics of North America: Boulder, Colorado, The Geological Society of America, CSM V-1.
Tarr, R.S. and Martin, L., 1912, The earthquakes at Yakutat Bay, Alaska, in September 1989, U.S. Geological Survey Professional Paper 69, 135 p.
Thenhaus, P.C., Ziony, J.I., Diment, W.H., Hooper, M.G., Perkins, D.M., Hanson, S.L., and Algermissen, S.T., 1985, Probabilistic estimates of maximum seismic horizontal ground acceleration on rock in Alaska and the adjacent continental shelf: Earthquake Spectra, v. 1, p. 285-306.
Thorson, R.M., 1979, Recurrent Late Quaternary faulting near Healy Alaska: Division of Geological and Geophysical Surveys, Geologic Report no. 61, p. 10-14.
Thorson, R.M., Plaskett, D.C., and Dixon, E.J., Jr., 1980, A reported early-man site adjacent to southern Alaska's continental shelf: A geologic solution to an archaeologic enigma: Quaternary Research, v. 13, p. 259-273.
Thrasher, G.P., 1979, Geologic map of the Kodiak Outer Continental Shelf, western Gulf of Alaska U.S. Survey Open-File Report 79-1267, 2 sheets, scale 1:250,000.
Tobin, D.G. and Sykes, L.R., 1966, Relationship of hypocenters of earthquakes to the geology of Alaska, Journal of Geophysical Research, v. 71, p. 1659-1667.
——1968, Seismicity and tectonics of the northeast Pacific Ocean, Journal of Geophysical Research, v. 73, p. 3821-3845.
Tocher, Don, 1960, The Alaska earthquake of July 10, 1958--Movement on the Fairweather fault and field investigation of southern epicentral region: Seismology Society America Bulletin, v. 50, no. 2, p. 267-292.
Tolson, R.B., 1987, Structure and stratigraphy of the Hope Basin, southern Chukchi Sea, Alaska: *in* Scholl, D.W., Grantz, Arthur, and Vedder, J.G., eds., Geology and resource potential of the continental margin of western North America and adjacent ocean basins-Beaufort Sea to Baja California, v. 6 *of* Circum-Pacific Council for Energy and Mineral Resources Earth Science Series: Houston, Texas, Circum-Pacific Council for Energy and Mineral Resources, p. 59-72.
Turner, D.L., and Swanson, S.E., 1981, Continental rifting, a new model for the central Seward Peninsula, in Wescott, E. and Turner, D.L, eds., Geothermal Reconnaissance Survey of the central Seward Peninsula, Alaska: Geophysical Instute, University of Alaska, Fairbanks, p. 7-33.
Tysdal, R.G., and Case, J.E., 1979, Geologic map of the Seward and Blying Sound quadrangles, Alaska: U.S. Geological Survey, Miscellaneous Investigations Series Map I-1150, scale 1:250,000.
Tysdal, R.G., Hudson, Travis, and Plafker, George, 1976a, Surface features and recent movement along the Ragged Mountain fault, south-central Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-782, scale 1:24,000.
Tysdal, R.G., Hudson, Travis, and Plafker, George, 1976b, Geologic map of the Cordova B-2 quadrangle and northern part of the Cordova A-2 quadrangle, south-central Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-783, scale 1:63,360.
U.S. Geological Survey Preliminary Determinations of Epicenters and associated Earthquake Data Reports and Monthly Listings, January 1961 - present (formerly by U.S. Coast and Geodetic Survey, U.S. Environmental Science Services Administration, and U.S. National Oceanic and Atmospheric Administration).
Von Huene, Roland, Shor, G.G., and Wageman, J., 1979, Continental margin of the eastern Gulf of Alaska and boundaries of tectonic plates: *in* Watkins, J.S., Montdert, L., and Dickerson, P.W., eds., Geological and geophysical investigations of continental margins, American Association of Petroleum Geologists, Memoir 29, p. 273-290.
Von Huene, Roland, Fisher, M.A., and Bruns, T.R., 1987, Geology and evolution of the Kodiak margin, Gulf of Alaska: *in* Scholl, D. W., Grantz, Arthur, and Vedder, J. G., eds., Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series v. 6, Circum-Pacific Council for Energy and Mineral Resources, Houston, Texas, p. 229-268.
Wahrhaftig, Clyde, 1970, Geologic map of the Healy D-4 quadrangle, Alaska: U.S. Geological Survey Geologic Quadrangle Map GQ-806, scale 1:63,360.
Weber, F.R., and Foster, H.L., 1982, Tertiary (?) conglomerates and Quaternary faulting in the Circle quadrangle Alaska: *in* Coonrad, W.L., ed., The U.S. Geological Survey in Alaska: Accomplishments during 1980: U.S. Geological Survey Circular 844, p. 58-60.
Weber, F.R., and Turner. D.L., 1977, A late Tertiary thrust fault in the central Alaska Range: *in* Blean, K.M., ed., Geologic studies in Alaska by the U.S. Geological Survey during 1976: U.S. Geological Survey Circular 751-B, p. B66-B67.
Winkler, G.R., 1973, Geologic map of the Cordova A-7 and A-8, B-6, B-7 and B-8 quadrangles, Hinchenbrook Island, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-531, scale 1:63,360.
Winkler, G.R. and Plafker, George, 1993, Geologic map and cross sections of the Cordova and Middleton Island quadrangles, southern Alaska: U. S. Geological Survey Miscellaneous Investigation Series I-1984, 1 sheet and text, scale, 1:250,000.
Winslow, M.A., and Johnson, L.L., 1989, Prehistoric human settlement patterns in a tectonically unstable environment: outer Shumagin Islands, southwestern Alaska: Geoarchaeology, v. 4, no., 4, p. 297-318.
Woodward-Clyde Consultants, 1981, Final Report on seismic studies for the Susitna Hydroelectric Project, prepared for Acres American Inc., Buffalo, N.Y, 35 p.
Woodward-Lundgren and Associates, 1974, Summary report basis for pipeline design for active-fault crossings for the Trans-Alaska pipeline system: unpublished report prepared for Alyeska Pipeline service Company, Houston, Texas, 115 p., appendicies.