

Map of Quaternary Faults and Folds of Panama and Its Offshore Regions

A project of International Lithosphere Program Task Group II-2,
Major Active Faults of the World

A cooperative project between the U.S. Geological Survey, the Institute of Geosciences of the University of Panama,
the Swedish Agency for Research Cooperation with Developing Countries (SAREC), and NORSAR, Norway

Data compiled by Hugh Cowan, digital representation by Richard L. Dart,
and project coordinated by Michael N. Machette (Co-chairman, ILP Task Group II-2)

1998

Scale 1:750,000 Mercator Projection
(longitude of central meridian, 80 W; latitude of true scale 0 ; Clarke 1886 spheroid)

Mapa de Fallas y Pliegues Cuaternarios de Panamá y Regiones Oceánicas Adyacentes

Proyecto Internacional de la Litósfera, Grupo de Trabajo II-2,
Principales Fallas Activas del Mundo

Un proyecto de cooperación entre el U.S. Geological Survey, el Instituto de Geociencias de la Universidad de Panamá,
la Agencia Sueca para Investigaciones Cooperativas con Naciones en Desarrollo (SAREC), y NORSAR, Norway

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y proyecto coordinado por Michael N. Machette (Co-chairman, ILP Grupo de Trabajo II-2)

1998

Escala 1:750,000 Proyección de Mercator
(longitud de meridiano central, 80 W; latitud de escala verdadera 0 ; con base en el esferoide de Clarke 1886)

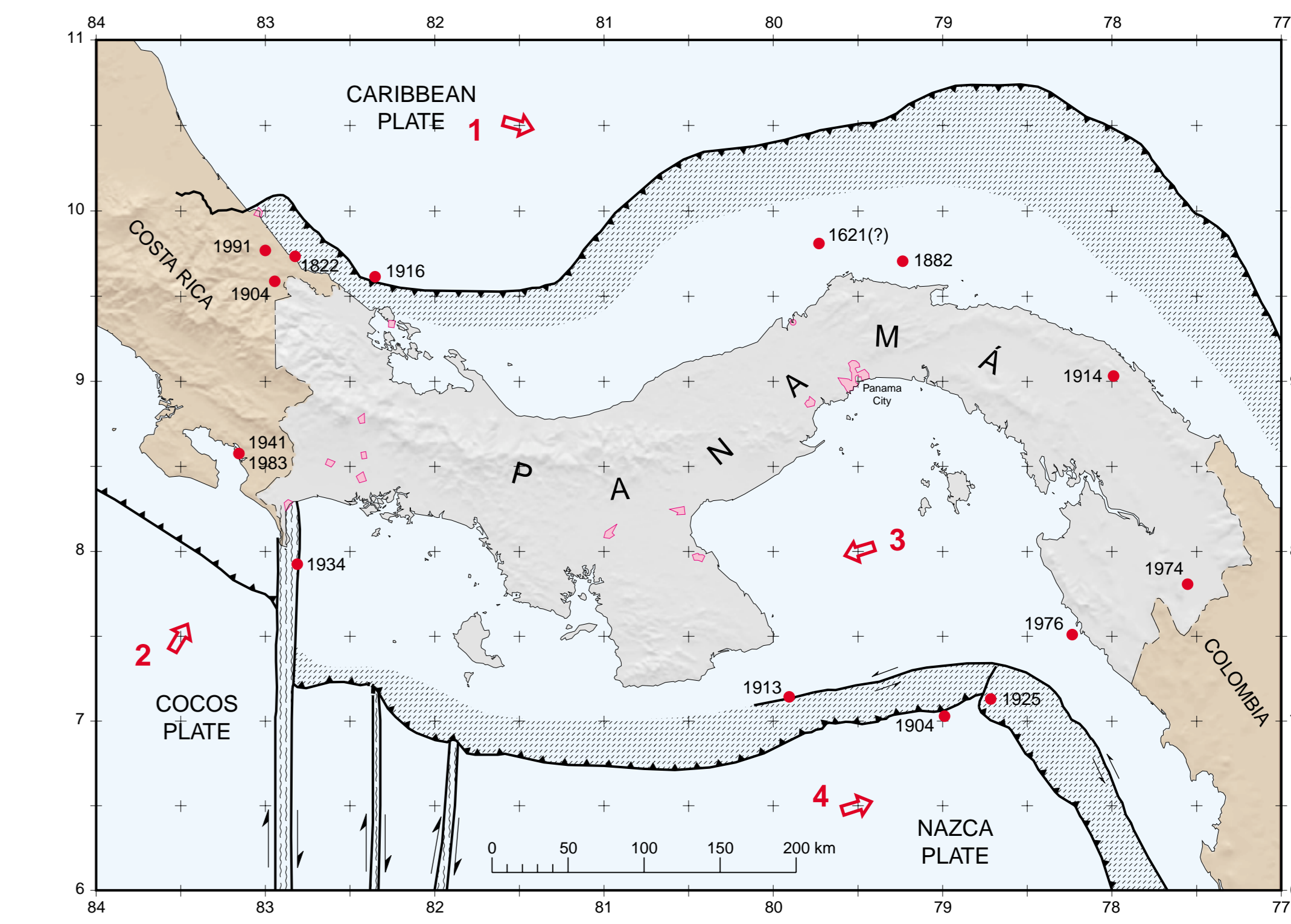


Diagram of plate boundaries and major historical earthquakes for Panama
Esquema de límites de placas y terremotos históricos de mayor importancia para Panamá

RELATIVE PLATE MOTION

No.	Location	Fixed	Moving	Velocity	Direction
1	81.5 W/10.5 N	South America	Caribbean	1.40 cm	105.64
2	83.5 W/7.5 N	Caribbean	Cocos	9.40 cm	201.84
3	79.5 W/8.0 N	Nazca	Panama	5.09 cm	252.60
4	78.0 W/8.5 N	Panama	Nazca	5.19 cm	72.64

Source: Newman, Taylor, Cooper and Hodges, University of Texas
1:15.1 Miramonte, Nakano-Ku, Tokyo, 1984; Japan (earthquake) center

QUATERNARY FAULTS AND FOLDS OF PANAMA AND ITS OFFSHORE REGIONS

Number	Name of structure	Primary topographic map sheet (number, see map below)	Time of most recent faulting	Slip rate (mm/yr)
PA-01	Longitudinal fault zone			
PA-01A	Unnamed section	David (2)	Probably <1.6 m.y.	Probably <1
PA-01B	Unnamed section	David (2)	Probably <1.6 m.y.	Probably <1
PA-02	Madre Vieja Anticline	David (2)	Possibly historic (1934), <15 k.y.	Probably >1 (light rate)
PA-03	Medial fault zone	David (2)	Probably <15 k.y.	Probably >10
PA-04	Panama fracture zone	Isla de Coiba (3) and offshore	Historic (1934), <15 k.y. for zone	Probably >50
PA-05	Unnamed series of faults	David (2)	Probably <15 k.y.	Unknown
PA-05A	Unnamed section	David (2)	Probably <1.6 m.y.	Unknown
PA-05B	Unnamed section	David (2)	Probably <1.6 m.y.	Unknown
PA-05C	Unnamed section	David (2)	Probably <1.6 m.y.	Unknown
PA-06	Unnamed fault	Isla de Coiba (3)	<1.6 m.y.	Unknown
PA-06A	Unnamed section	Isla de Coiba (3)	<1.6 m.y.	Unknown
PA-06B	Unnamed section	Isla de Coiba (3)	<1.6 m.y.	Unknown
PA-06C	Unnamed section	Isla de Coiba (3)	<1.6 m.y.	Unknown
PA-07	Central and South Coiba fault zones	Isla de Coiba (3)	Probably <1.6 m.y.	Unknown
PA-07A	Central Coiba fault zone	Isla de Coiba (3)	Probably <1.6 m.y.	Unknown
PA-07B	South Coiba fault zone	Isla de Coiba (3)	Probably <1.6 m.y.	Unknown
PA-08	Balboa fracture zone	Isla de Coiba (3) and offshore	<15 k.y. for entire zone	Probably >5
PA-09	South Panama deformed belt	Isla de Coiba (3) and offshore	Probably <15 k.y. for entire belt	Probably 1-5
PA-10	Unnamed fault system	Chiriqui (6)	<1.6 m.y.	Unknown
PA-10A	Rio Flores fault zone	Chiriqui (6)	<1.6 m.y.	Unknown
PA-10B	Unnamed fault	Chiriqui (6)	<1.6 m.y.	Unknown
PA-10C	Unnamed fault	Chiriqui (6)	<1.6 m.y.	Unknown
PA-10D	Unnamed fault	Chiriqui (6)	<1.6 m.y.	Unknown
PA-11	Azuero-Sona fault zone	Chiriqui (6)	Probably <1.6 m.y.	Unknown
PA-11A	Azuero-Sona fault zone	Chiriqui (6)	<1.6 m.y.	Unknown
PA-11B	Unnamed fault	Chiriqui (6)	<1.6 m.y.	Unknown
PA-12	North Panama deformed belt	Bocas del Toro (1)	Historic (1991)	Unknown
PA-12A	Lupón fault	Bocas del Toro (1)	<15 k.y.	Unknown
PA-12B	Western section	Donoso (4) and offshore	Historic (1882), <15 k.y. for section	Probably 1-5
PA-12C	Eastern section	Donoso (4)	<1.6 m.y.	Unknown
PA-13	Unnamed fault system	Panamá Norte (7)	<1.6 m.y.	Probably <1
PA-13A	Unnamed fault S. of Palmas Belas	Panamá Norte (7)	<1.6 m.y.	Unknown
PA-13B	Rio Gatun fault	Panamá Norte (7)	<1.6 m.y.	Unknown
PA-14	Unnamed fault system	Panamá Sur (8) and offshore	Probably <15 k.y. for entire belt	Unknown
PA-15	Unnamed faults of the East Panama deformed belt	La Palma (11)	Probably <1.6 m.y.	Unknown
PA-16	Sanson Hills fault zone	La Palma (11)	Probably historic (1974), <15 k.y. for zone	Unknown
PA-17	Pirre Hills fault zone	La Palma (11)	Probably <1.6 m.y.	Unknown
PA-18	Sambu fault zone	Jaqué (12)	Probably <1.6 m.y.	Unknown
PA-19	Jaqué River fault zone	Jaqué (12)	Probably <1.6 m.y.	Unknown
PA-20	Unnamed series of folds	Bocas del Toro (1)	Historic (1991), <15 k.y. for series	Probably >5
PA-21	Southern Panama fault zone	Offshore	Probably historic, <15 k.y. for zone	Probably >5
PA-22	Colombian accretionary complex (deformation zone)	Offshore	Probably historic, <15 k.y. for zone	>5

From special series of 12 topographic maps at 1:250,000 scale entitled "Mapa General de la República de Panamá" (edition 10) by the Instituto Geográfico Nacional "Tommy Guardia" (IGNIG), Ministerio de Obras Públicas, Panamá.

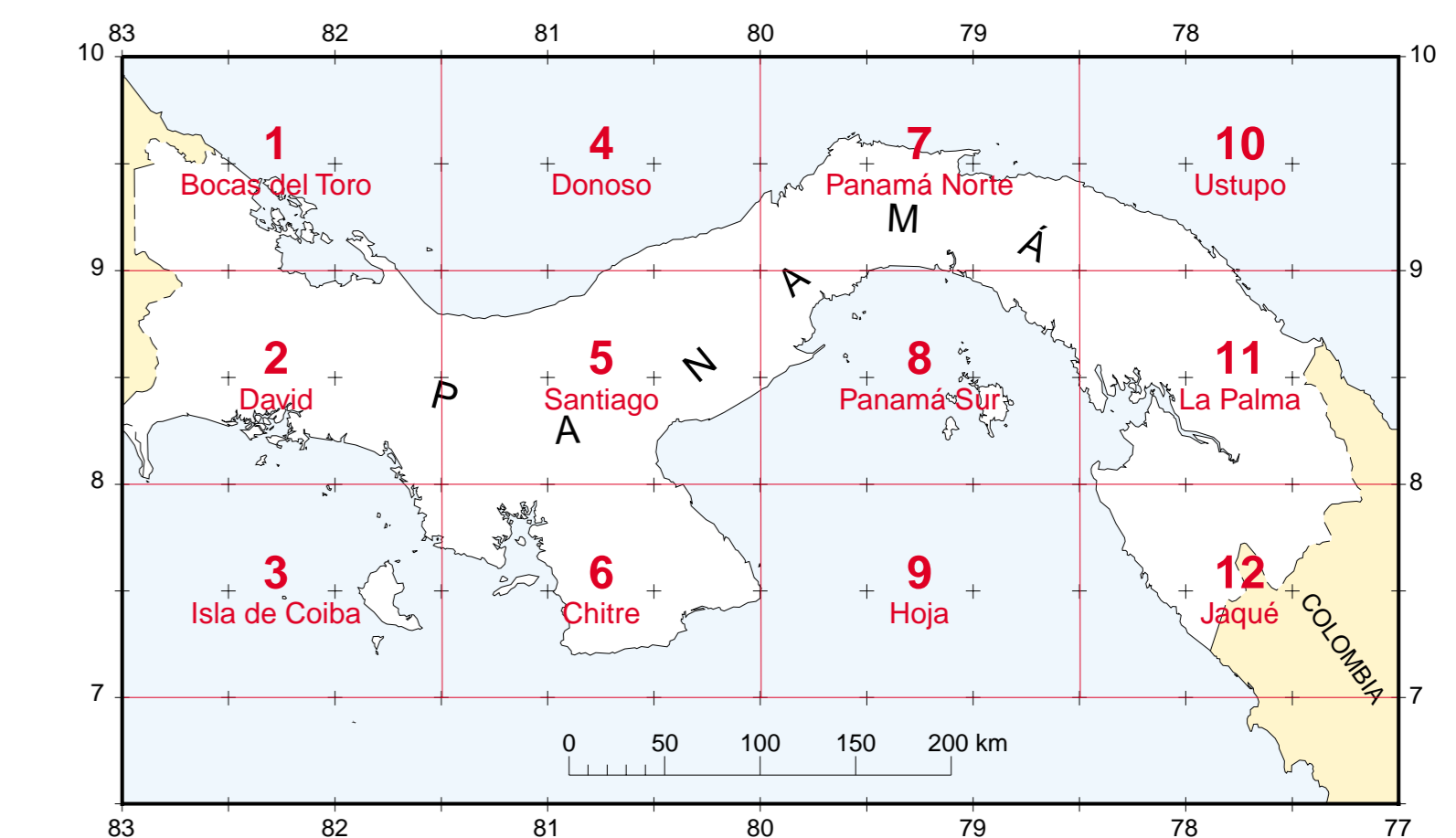


Diagram of topographic map sheets for Panama
Esquema de hojas topográficas para Panamá

MAP EXPLANATION	SIMBOLOGIA DEL MAPA
TIME OF MOST RECENT SURFACE RUPTURE	EDAD DE ÚLTIMA RUPTURA SUPERFICIAL
Historic	Histórica (1991)
Historic (<10,000 yrs) or post-glacial (<15,000 yrs)	Histórica (<10,000 años) o post-glacial (<15,000 años)
Quaternary, undifferentiated (<1,800,000 yrs)	Cuaternario, undiferenciado (<1,800,000 años)
SLIP RATE	TASA DE DESPLAZAMIENTO
> 5 mm/yr	> 5 mm/año
1-5 mm/yr	1-5 mm/año
< 1 mm/yr	< 1 mm/año (o desconocida)
QUALITY	CALIDAD
Continuous at map scale	Continúa en la escala del mapa
Point or discontinuous at map scale	Punto o discontinua en la escala del mapa
Inferred or concealed	Inferida u oculta
STRUCTURE TYPE	TIPO DE ESTRUCTURA
Thrust or reverse fault (both on upper block)	Falla inversa o corrimiento (triángulo en bloque superior)
Right-lateral (dextral) strike-slip fault	Falla de rumbo dextral
Left-lateral (sinistral) strike-slip fault	Falla de rumbo sinistral
Normal fault	Falla normal (ciclado en bloque nórdico)
Normal fault	Falla normal (ciclado en bloque nórdico)
Anticline	Anticlinal
Syncline	Sinclinal
Plunge direction	Dirección y buzamiento del eje
PATTERNS	ESTAMPADOS
Broad deformed belts	Zonas anchas de deformación
Broad fracture zones	Zonas anchas de fracturación

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accuracy with U.S. Geological Survey editorial standards. Any
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