Sociedad Cubana de Geología

Field-Workshop of Caribbean Geology

Conveners M. Iturralde-Vinent and A. García-Casco

UNESCO / IUGS - IGCP Project 546

Subduction zones in the Circum-Caribbean

GEO10. Taller de Campo Geología del Caribe

Día 23 09:00 a 12:00 h. Sala 8

Presidentes: Dr. Manuel Iturralde Vinet y Dr. Antonio Garcia Casco
Secretaria relatora: M.Sc. Kenya Núñez Cambra

ORAL

09:00 GEO10-O1 PRINCIPALES EVENTOS TECTÓNICOS DE LA PLACA DEL CARIBE Y SU ENTORNO. Manuel A. Iturralde-Vinent. Museo Nacional de Historia Natural, Cuba

09:20 GEO10-O2 CARIBEANA, A POSSIBLE SOLUTION TO A LONG STANDING PUZZLE: THE CARIBBEAN LATEST CRETACEOUS TECTONIC EVENTS. Antonio García Casco. Universidad de Granada. España

09:40 GEO10-O3 IMPLICACIONES GEODINÁMICAS SOBRE LAS EDADES EXISTENTES DE ZIRCONES EN CUBA. Yamirka Rojas Agramonte. Instituto Superior Minero Metalúrgico. Cuba

10:00 GEO10-O4 THE LA COREA MÉLANGE (EASTERN CUBA) REVISITED: NEW PETROLOGICAL AND GEOCHEMICAL CHARACTERISTICS AND GEODYNAMIC SIGNIFICANCE. Idael Blanco Quintero. Instituto Superior Minero Metalúrgico. Cuba

10:20 GEO10-O5 ASSEMBLAGES OF PLATINUM GROUP MINERALS IN THE SAGUA DE TÁNAMO CHROMITE DISTRICT (EASTERN CUBA): GENETIC AND TECTONIC IMPLICATIONS. J. M. González Jiménez. Universidad de Granada. España

10:40 GEO10-O6 CARIBBEAN BASEMENT ROCKS AND PLATE TECTONICS. James Pindell, Tectonic Analisys, UK.

11:00 GEO10-O7 LARAMIDIC-AGE PLUTONISM IN THE GUERRERO TERRANE, SOUTHERN MEXICO: SOME TECTONIC AND METALLOGENIC IMPLICATIONS. P. Corona-Chávez, Univ. Michoacán, Mexico

11:20 GEO10-O8 IMPORTANCIA DEL COMPORTAMIENTO VISCOSO DE LA CAPA DE DECOLLEMENT EN EL DESARROLLO DE ESTRUCTURAS DURANTE ACORTAMIENTO INTENSO Y MODERADO. Mariano Cerca. Universidad Nacional Autónoma de México. México.

DIA 21, SALA 12. POSTER GEO10

Presidentes: Dr. Manuel Iturralde-Vinent y Dr. Antonio García Casco

Secretario relator: Dra. Yamirka Rojas

GEO10-P10	THE INVOLVEMENT OF NORTH-AMERICAN AND ATLANTIC SEDIMENTS IN THE SOURCES OF CRETACEOUS ISLAND ARC VOLCANICS FROM NORTHEASTERN CUBA: TECTONIC IMPLICATIONS. Joaquín .A. Proenza. Universidad de Barcelona. España.
GEO10-P11	EVOLUCIÓN DE LA CUENCA DEL MARGEN CONTINENTAL PARA LA REGIÓN QUE OCUPA LA SIERRA DEL ROSARIO. Carlos Sosa Meizoso. CEINPET. Cuba.
GEO10-P12	MODELO ESTUCTURAL PARA EL EMPLAZAMIENTO DE LAS ROCAS OFIOLITICAS EN CUBA ORIENTAL. Kenya Nuñez Cambra. IGP. Cuba.
GEO10-P13	REINTERPRETACIÓN DE LA FORMACIÓN ARROYO CANGRE A LA LUZ DEL ANÁLISIS ESTRUCTURAL. Dámaso Cáceres Govea. Universidad de Pinar del Río. Cuba.

ABSTRACTS

GEO10-O1 PRINCIPALES EVENTOS TECTÓNICOS DE LA PLACA DEL CARIBE Y SU ENTORNO

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La placa del Caribe, desde su formación al inicio del Cretácico, ha sufrido una serie de eventos tectónicos que han conformado los momentos más importantes de su evolución. Estos eventos son los siguientes: Berriasiano (ca. 145-140 Ma), Aptiano tardío (116-112 Ma), Coniaciano-Santoniano (88-83 Ma), Campaniano tardío-Maastrichtiano temprano (74-68 Ma), Maastrichtiano tardío-Daniano (67-60 Ma), Eoceno Medio a Superior temprano (40-36 Ma), Transición Eoceno-Oligoceno (35-31 Ma) Mioceno Medio-Superior (10-8 Ma).

Aunque todos estos eventos han jugado un papel imporante, su manifestación localmente es distinta. Sin embargo, estos eventos han provocado fracturación de la placa, cambios en la inclinación y/o dirección de las zonas de subducción, cambios en el quimismo del vulcanismo de arco, metamorfismo regional de alta presión/colisión, exhumación, deformaciones y emplazamiento de mantos tectónicos, modificaciones de la altitud de los terrenos tectónicos.

El análisis de las manifestaciones de estos eventos muestra que jugaron un papel más destacado los del Cretácico Inferior Berriasiano (delimitación de la placa del Caribe), Cretácico Terminal Maastrichtiano tardío-Daniano (primera gran colisión Caribe-Placas Norte y Sudamericanas), Eoceno Medio-Superior temprano (Final de la Colisión Caribe-Bahamas).

GEO10-O2 CARIBEANA, A POSSIBLE SOLUTION TO A LONG STANDING PUZZLE: THE CARIBBEAN LATEST CRETACEOUS TECTONIC EVENTS

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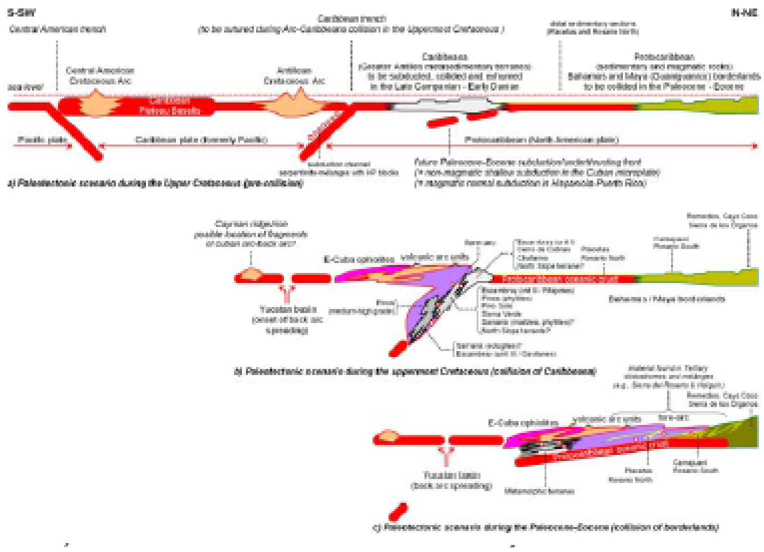
In this contribution it is demonstrated that at the end of the Cretaceous took place a major tectonic event that played a key role in the subsequent evolution of the Caribbean. During the eastward drift of the Caribbean Plate from the Pacific, with respect to North and South America, the leading edge of the Caribbean Plate encountered a thick sedimentary prism represented by a submarine promontory extended eastward into the ProtoCaribbean realm from the Maya Block, somehow as a southern counterpart of the Bahamas. This submarine promontory here is dubbed “Caribeana”, today is represented by the Pinos, Cabras-Pino Solo, Escambray and Asunción Terranes. Aditional candidates are the Samaná and Northern Puerto Rico terranes. The collision between Caribeana and the Caribbean Plate produced a major turnover in the evolution of the region. Within the Caribbean Plate this event triggered the interruption or attenuation of the magmatic arc activity; along with exhumation and tectonic emplacement of ophiolites and subduction channels. Within the ProtoCaribbean realm, Caribeana was the subject of deep-seated metamorphism followed by rapid exhumation and thrust tectonics. Since the Paleocene, CARIB started a faster north and eastward drift with respect to North and South American Plates, and in this process, the original Caribbean Plate (CARIB) broke into two major segments along the Motagua-Cayman-Oriente fault system, so the Cuban microplate (W-CARIB) ultimately collided with the Bahamas platform (NOAM) in the late Middle to early Upper Eocene. The Eastern Caribbean Plate (E-CARIB) continues eastward drifting up to the present. Tectonic evolution of terranes attributed to Caribeana and other terranes in the NE leading edge of the Caribbean plate, and final emplacement onto the Bahamas and Yucatan platforms.

Tectonic evolution of terranes attributed to Caribeana and other terranes in the NE leading edge of the Caribbean plate, and final emplacement onto the Bahamas and Yucatan platforms.



G10-03 THE LA COREA MELANGE (EASTERN CUBA) REVISITED: NEW PETROLOGICAL AND GEOCHEMICAL CHARACTERISTICS AND GEODYNAMIC SIGNIFICANCE

Blanco-Quintero, I.F.[1,2], García-Casco, A.[1], Proenza, J.A.[3], Lázaro-Calisalvo, C.[1], Rojas-Agramonte, Y. [2,4], Kröener, A. [4], Vega-Rodríguez, A. [2], Sarmiento-Cabrera, A. [2]

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The La Corea mélange is a key geologic element for establishing the tectonic evolution of eastern Cuba. The mélange is tectonically below the ophiolitic massif of Mayarí-Cristal of the Mayarí-Baracoa Ophiolitic Belt (MBOB), and is made of exotic blocks of diverse origin and composition (garnet-amphibolite, blueschist and greenschist are dominat) within a serpentinite-matrix. Metamorphism evolved under high- to medium-pressure and low- to medium-temperature, and is therefore related to subduction. An exceptional characteristic of this mélange is the presence of leucocratic bodies, dikes and veins of intermediate to acid composition (tonalitic-trondhjemitic-granitic) intimately associated with the amphibolites. Structural, petrologic and geochemical characteristics presented here indicate that the tonalitic-trondhjemitic leucocratic material formed as result of partial melting of amphibolites during subduction.
The amphibolites consist of primary Amp+Ep±Grt±Ms±Pl±Qtz (documenting epidote-amphibolite facies, 10-15 kbar, 650-700 ºC) overprinted by retrograde Chl+Ms±Act±Ab (greenschist facies). Major and trace element geochemistry indicate basaltic composition and tholeiitic N-MORB affinity. The leucocratic rocks are intermediate to acid (trachy-andesite, dacite and rhyolite) in composition and can be separated in two groups: 1) Tonalitic-trondhjemitic rocks are medium grained, bearing the primary (magmatic) assemblage Pl+Qtz+Ep± Amp overprinted by retrograde Chl+Ms±Lws. 2) Granitic rocks are commonly pegmatitic, with primary Pl+Qtz+Ms. As whole, these rocks do not show a calc-alkaline trend typical of intermediate-to-acid associations of volcanic arcs, but a trondhjemitic trend. Trace element abundances show REE depletion relative to amphibolites, but variable LILE contents. The tonalitic-trondhjemitic rocks are similar to adakites of volcanic arcs though to represent slab melts: SiO_2> 56%, Na_2O (4.5-7.5 %), low K_2O/Na_2O (<0.2), high Mg#~0.5-0.6, Ni<20 ppm and Cr~ 19-25 ppm, Sr from 100 to 400-800 ppm, Yb<0.3 and Y<6. Sr/Y >100 even 1250 in one sample, La/Yb > 5. These data suggest infiltration of LILE-bearing fluids accompanied formation of the tonalitic-trondhjemitic rocks after partial melting of the amphibolites. Published age data, and new unpublished zircon SHRIMP data, indicate that partial melting conditions were attained in the Aptian (ca. 115 Ma).
Petrologic interpretation indicates that the geothermal gradient evolved from hot to cold during subduction. The hot subduction event is interpreted as the result of the onset of subduction of (hot) oceanic lithosphere at the Aptian in agreement with tectonic models that incorporate an Aptian flip of subduction in the region.

Gd10-05 ASSEMBLAGES OF PLATINUM GROUP MINERALS IN THE SAGUA DE TÁNAMO CHROMITE DISTRICT (EASTERN CUBA): GENETIC AND TECTONIC IMPLICATIONS

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The Sagua de Tánamo district is the smallest of the three chromite mining districts comprising the Mayarí-Baracoa ophiolitic belt (Eastern Cuba). The chromitite bodies

are small and variable in size (30-40 m long, 10-20 m wide and 1-3 m thick), and are enclosed in amphibole-bearing dunite and harzburgite that show mantle tectonite fabric. Primary chromitite textures are predominantly massive, disseminated and banded.Chromite exhibits large and continuous compositional variations from typical Al-rich (Cr# = 0.45-0.54), to Cr-rich (Cr# = 0.63-0.75). The high PGE concentrations are found in high-Cr chromitites (up to 3.7 ppm of total PGE), whereas high-Al chromitites (#Cr < 0.6) systematically are poor in PGE. The platinum group minerals (PGMs) were found in five chromitite bodies: Monte Bueno, Negro Viejo, Albertina, Tres Amigos and Caridad. They occur in chromite as single or composite inclusions; in the unaltered core of chromite grains or within ferrian-chromite rims. In some cases, PGM grains were observed associated with cracks in strongly fractured chromite, as well as in the silicate matrix (serpentinized) of fractured chromite. The grain size is usually below 20 µm with crystal morfology variable from andhedral-subhedral to euhedral. The most abundant minerals are Ru and Os disulphides [laurite (RuS_2)-erlichmanite (OsS_2) solid solution series], followed by Ir and Rh sulfarsenides [irarsite (IrAsS)-hollingworthite (RhAsS) solid solution series]. In third order of abundance we recognize Ru-Os-Ir oxides and Ru-Os-Ir-(Fe-Ni) alloys, as well as PGE -bearing base-metal sulphides, RhNiAs and a mineral with a composition close to Ir_2S_3, as minor phases. Together with PGMs, chromite usually exhibits a great variety of inclusions of base-metal sulfides such as pentlandite $(Fe,Ni)_9S_8$, millerite (NiS), heazlewoodite (Ni_3S_2), godlevskite (Ni_7S_6), chalcopyrite ($CuFeS_2$) and bornite (Cu_5FeS_4), minor Ni arsenides [maucherite($Ni_{11}As_8$) and orcelite ($Ni_{5-x}As_2$)] and Ni sulfarsenides [gersdorffite (NiAsS)], and rare Fe-Ni alloys [awaruite ($Ni_{2.5}Fe$)]. On the basis of textural position and composition, we distinguished two main assemblages of PGMs: (i) Primary PGM, formed in the high temperature magmatic stage before and during the crystallization of chromite, in a suprasubduction-zone geotectonic environment (Proenza et al. *1999*; Gervilla et al., *2005*); (ii) Secondary PGM, formed at low temperature, via desulfurization of the magmatic PGM, due to some postmagmatic event such as: serpentinization, chloritization and/or, most probably, oxidative weathering after ophiolite emplacement.

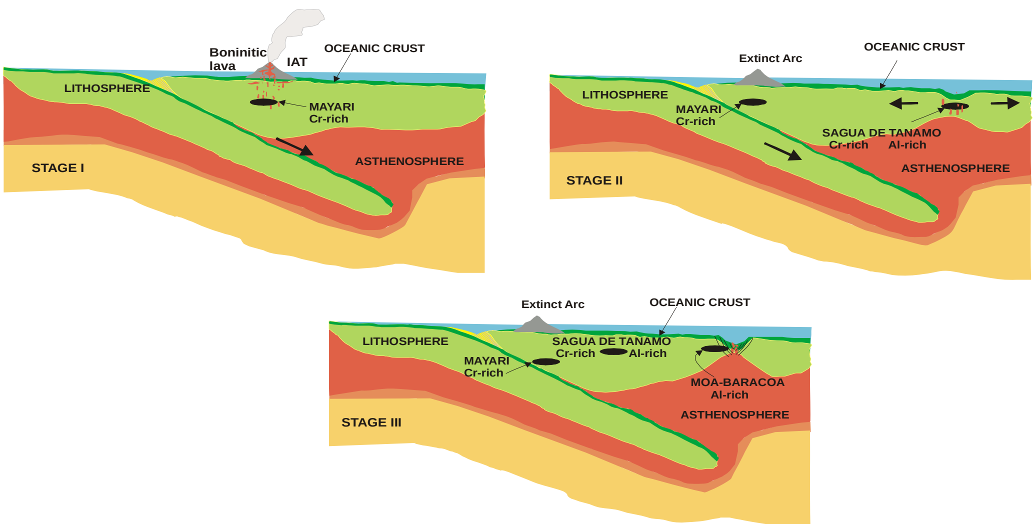

Figure 1. Cartoon showing three possible stages of PGE-chromitite deposits formation in the Mayarí-Baracoa ophiolitic belt (mo

GD10-07 LARAMIDIC-AGE PLUTONISM IN THE GUERRERO TERRANE, SOUTHERN MEXICO: SOME TECTONIC AND METALLOGENIC IMPLICATIONS

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Laramidic-age magmatism along the northern and southern Cordillera as a coeval magmatic belt with the timing of the Laramide orogeny during the Late Cretaceous to Paleocene (80-55Ma) is inferred to have a spread tectonic placing which could be close related to the fold and thrust belts, blocks uplifts and coeval or latest orogenic deformation.
Based on the analysis of radiometric, geochemical and geobarometric data of plutonic rocks which ages ranging from 66 to 45 Ma (Laramidic Magmatic Belt; LMB) in the Guerrero terrane, southern Mexico, we discuss their tectonic relationships and ore deposits distribution.
LMB is mainly exposed along the present-day coastline of southwestern Mexico (Figure 1). The outstanding of the LMB is that, although it was emplaced over a time span of as much as ~21 Ma, all of these plutons were mainly emplaced in the upper crust regime and, they are presumably contemporary to the latest and/or slightly post-Laramidic deformational scenario.
LMB is constituted by irregular, zoned and asymmetric granodioritic plutons which include some large mafic gabbroic bodies. Boundaries are commonly sub-vertical sharp type associated with low-pressure metamorphic contact assemblages and, they always show close relations with internal (cross-cut) and external faults developed in a brittle regime.
They are usually undeformed granitoids and there is rare internally magmatic foliation; however, pegmatitic and aplitic dykes are commonly close related to radial or orthogonal joints systems. This geological structure is concordant with the emplacement depths, which we have estimated using the $Al_{(tot)}$ geobarometer in calcic-amphiboles of granitoids, which are ranging from 8 to 12 kilometers (2.6-4 Kbar).
Geochemical compositions are essentially calc-alkaline type with 62-70 wt% SiO_2. Isotopic and trace elements show locations on the Cordilleran tectonic setting of magmatic arc with compositions from 0.7036 to 0.7050 of $^{87}Sr/^{86}Sr$ and relative enrichment of LILE and LREE and, variable anomaly of Eu.
The irregular geometry and compositional distribution of intrusions of LMB are usually associated with orthomagmatic and/or skarn type ore deposits system of Fe-Cu and rarely Au-Cu. Most of the Fe-Cu ore deposits are specially related to the occurrence of the mafic or tonalitic portions. However, the metallogenic relationships are not well explained.
The remarkable outcome is that, although the LMB is not genetically related to the Cretaceous volcanogenic host rocks affected by open folding; the irregular size and placing of plutons seem to be apparently at close relationships to the geometry of antiforming, overthrusting and other related shear or brittle structures. Subsequently, most of these intrusive bodies of the LMB can not be considered as a "typical" example of post-laramidic magmatism. We argue that, the LMB magmatism

apparently was formed by latest Laramidic subduction process which could be characterized by the waning and/or migrating of the magmatism developed above the zone along which the subducting slab eventually steepened and descended into the deep mantle. This magmatic process was also coeval with the latest Laramidic deformation characterized by a transitional changing of the deformational mechanism related to the early uplift and a transpressional deformational process and associated with moderate temperature shear zone and brittle systems. Therefore we suggest that the emplacement of the Laramidic-age plutons and aerial erosion of offshore and limited continental regions can be related, at least in part, to an important continental uplift-faulting processes related to latest Laramidic process.
Although they fit on the different geodynamic and tectonic processes, by confronting the temporal data, the tectonic framework and the geological features of the LMB in southern Mexico, are large resembling to each other the Paleocene-Eocene magmatic arcs in North America and Greater Antilles. There is also a relative coincidence with their ore deposits and metallogenic belts.

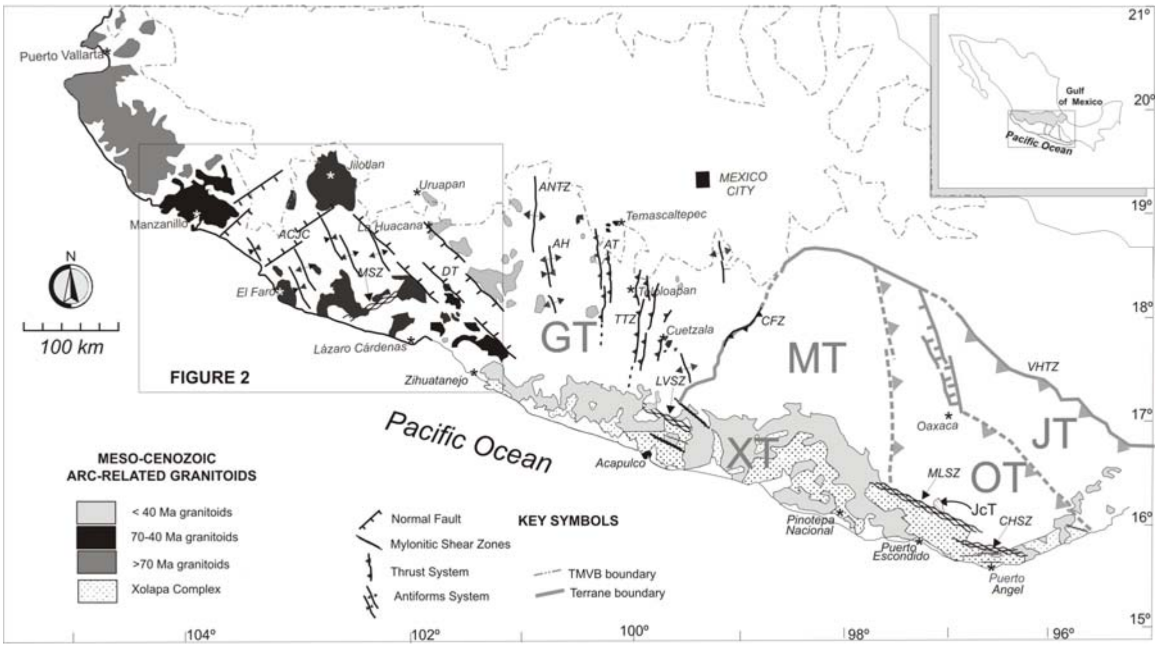

Figure 1. Meso-Cenozoic arc-related granitoids in southern Mexico. GT: Guerrero terrane; MT: Mixteco terrane; OT: Oaxaca terrane; JT: Juchatengo terrane; XT; Xolapa terrane.

Even though, it is obvious that there is no direct geological correlation between these Paleocene-Eocene magmatic arcs; the similarity of these resembling geological settings could be understand considering that whereas the Laramide-age magmatism is widely believed to post-date the late-Early to Late Cretaceous accretion in the Cordilleran terranes; Paleocene-Eocene magmatism in the Greater Antilles post-date the coeval deformation in the Caribbean Realm which is response to the collisional event of the Caribbean Cretaceous arcs against to the continental margins (Yucatán-Bahamas system).

GD10-08 IMPORTANCIA DEL COMPORTAMIENTO VISCOSO DE LA CAPA DECOLLEMENT EN EL DESARROLLO DE ESTRUCTURAS DURANTE ACORTAMIENTO INTENSO Y MODERADO

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Se presenta una serie de experimentos físicos en los que se explora la importancia de las diferencias en densidad y comportamiento viscoso de una capa de *decollement* durante dos diferentes magnitudes de acortamiento: intenso (ca. 50%) y moderado (ca. 15%). Modelos anteriores se han enfocado principalmente en estudiar la influencia del espesor de la capa de despegue y la tasa de deformación y no se ha explorado con detalle la influencia de la viscosidad. Los modelos son estratificados mecánicamente con una capa superior quebradiza, una capa intermedia de despegue dúctil y una capa inferior con comportamiento quebradizo diferente de la capa superior. Para simular el comportamiento quebradizo se utilizo arena de cuarzo bien redondeada y tamaño de grano cercano a 0.254 mm (capa superior) y arena de cuarzo y feldespato angular con tamaño de grano menor a 0.3 mm (capa inferior). Estos materiales obedecen un comportamiento de acuerdo con el criterio de Mohr-Coulomb. La capa dúctil fue simulada con 3 mezclas de silicón y arena con diferencias sutiles en viscosidad dinámica (□□Pa s) y densidad (□□gr cm^{-3}): (a) □ = 2.0 e 4 y □ = 0.978, (b)□□ = 3.3 e 4 y □ = 1.195□□(c)□□ = 4.7 e 4 y □ = 1.270. Los modelos fueron simplificados geométricamente y su dinámica y cinemática fueron escalados utilizando los principios propuestos por Hubbert (1937) y Ramberg (1981). Los modelos fueron construidos en una caja de acrílico y deformados mediante una pared móvil que se desplazo a una velocidad constante de 1.5 cm/hora. Los resultados muestran la importancia de la viscosidad del despegue dúctil en el estilo de deformación resultante. Los modelos con baja viscosidad muestran un desarrollo estructural caracterizado por nappas de bajo ángulo y pliegues de despegué con rotación de flanco. Los modelos con alta viscosidad muestran un acoplamiento mecánico mayor entre la capa quebradiza y frágil con desarrollo preferencial de pliegues de despegue. El desarrollo de relieve observado en la superficie del modelo es mayor y se encuentra mas localizado en los modelos con mayor viscosidad. Finalmente, la comparación de los modelos con ejemplos naturales en la periferia del Golfo de México nos da indicios sobre el desarrollo estructural de los cinturones de pliegues y cabalgaduras desarrollados sobre una capa de despegue.

GEO10 P10 THE INVOLVEMENT OF NORTH-AMERICAN AND ATLANTIC SEDIMENTS IN THE SOURCES OF CRETACEOUS ISLAND ARC VOLCANICS FROM NORTHEASTERN CUBA: TECTONIC IMPLICATIONS

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The Cretaceous igneous suites spatially-related with the Mayarí-Baracoa ophiolite belt (eastern Cuba) record different subdution-related igneous styles that are now juxtaposed in complex fields relations. For this study, 16 volcanic rocks of the Quibiján Formation were collected along the Barbudo and Quibiján Rivers where the homonymous formation has been originally defined. Sampled volcanic rocks mainly consist of subalkaline basalts and minor basaltic andesite. In terms of whole rock major composition, the Quibiján volcanics show a calcalkaline evolutionary trend. In contrast, the REE patterns largely overlap the so-called IAT series and differ from the calcalkaline series reported in the magmatic series of the Caribbean realm. Similar to

Téneme Formation, Quibiján volcanics are classified as tholeiitic in terms of their La/Yb-Th/Hf ratios. This apparent discrepancy is a semantic issue as the calcalkaline series in the Caribbean realm are customarily classified on the basis of their trace elements ratios. We propose that the Quibiján and Téneme (Upper Cretaceous) extrusives should be coupled on the basis of their coincident whole rock compositions, conversely to previously believed. The trace element and radiogenic isotope compositions of primitive volcanic rocks from the Quibiján Formation are manisfestly bimodal. One subgroup of samples is characterized by relatively low Ta/Yb (0.02-0.03) and Th/La (0.10-0.13), slightly subcondritic Nb/Ta (13.5-17.3), and high initial 206Pb/204Pb (18.57-18.62) and εNd (7.6-9.4); on the other hand, the rest of the Quibiján primitive lavas shows greater Ta/Yb (0.07-0.11) and Th/La (0.23-0.31) ratios, highly subcondritic Nb/Ta (7.7-8.9), coupled with lower initial 206Pb/204Pb (18.24-18.29) and εNd(3.4-5.5). These two signatures were induced by two distinct subduction components that imposed their Nb/Ta to the mantle fractionations to the mantle source of Quibiján volcanics. In the first case the dehydration and/or melting of Cretaceous Atlantic marine sediments in the subducting slab may have caused the fractionation of Nb from Ta, and the slab-derived component might have then mixed in small percentages (< 1%) with the depleted sub-arc mantle overprinting its primary Nb/Ta ratio. In the second case, the highly subcondritic Nb/Ta that characterized the slab-derived fluids and/or melts was not created in the subduction zone but indicate that this slab component derived from the dehydration and/or melting of Nort-American continental material and may have then mixed is small proportions (< 1%) with the mantle wedge beneath the eastern Cuba paleo-arc. The involvement of Atlantic and North American sediments in the Cretaceous magmatism from eastern Cuba indicates that the Proto-Caribbean (North America-Proto Atlantic) lithosphere was subducting beneath the Greater Antilles arc in Late Cretaceous (pre-Campanian) time. These results then confirm that the Late Cretaceous Cuban arc was located in a setting relatively close to North America where input of detritic sediments from the paleo-north American continental margin into the Greater Antilles subduction zone were present but likely sporadic. Finally, this conclusion support geotectonic models proposing the onset of south-westward dipping subduction beneath the Great Caribbean arc in the Aptian.

GEO10 P11 EVOLUCIÓN DE LA CUENCA DEL MARGEN CONTINENTAL PARA LA REGIÓN QUE OCUPA LA SIERRA DEL ROSARIO

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El estudio petrográfico y paleontológico de las rocas que forman parte de la Sierra del Rosario han posibilitado arribar a algunas consideraciones relacionadas con el desarrollo de la cuenca del margen continental, que pensamos, no debe diferenciarse mucho del que tuvo lugar en otras regiones del occidente y centro de Cuba. Las descripciones petrográficas y paleontológicas de las muestras de la Fm. Polier, tomadas durante el trabajo de cartografía geológica, y las conocidas en los pozos, describen con mucha claridad la presencia de areniscas cuarcíferas entre los estratos de calcilutitas, unidas en muchas oportunidades a materiales terrígenos como lutitas y minerales accesorios como el zircón, la turmalina, la clorita y otros, producto del vulcanismo, componentes estos que permiten suponer que la fuente de aporte, durante todo el Cretácico Inferior, estuvo al sur, por lo que, es lícito admitir que, durante este período geológico, hubo bloques del basamento cíclicamente emergidos. La información paleontológica disponible permite asegurar que la Fm. Sumidero, se depositó sincrónicamente con la anteriormente descrita y no cuenta con los componentes terrígenos estudiados; mientras que, en otros trabajos precedentes han sido datadas las secuencias de la Fm. Santa Teresa de la misma edad y su composición litológica la ubica sedimentada en la parte más profunda de la cuenca; autorizándonos a elaborar un nuevo modelo palinspástico de la misma, en el que puede suponerse mayor complejidad y más de un depocentro, pudiéndose explicar la presencia de secuencias de agua someras cabalgadas sobre la Fm. Polier en Soroa y la existencia del terreno Pinos más al sur.

GEO10 P12 MODELO ESTUCTURAL PARA EL EMPLAZAMIENTO DE LAS ROCAS OFIOLITICAS EN CUBA ORIENTAL

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Cuba Oriental se interpreta como un territorio geológicamente independiente al resto de la nación, con características muy específicas, que no han encontrado una explicación completa en el modelo actual de evolución geológica para la región caribeña. Uno de los aspectos discutidos es la dirección del emplazamiento de las ofiolitas. El complejo ofiolitico en la parte oriental de Cuba fue emplazado en el Maastrichtiano Tardío, generalmente como mantos sobrecorridos subhorizontales de espesor variable encima de las metavulcanitas cretácicas del Complejo Sierra del Purial. Estudios estructurales dentro del macizo Moa-Baracoa, revelaron que los sistemas de fallas principales se agrupan con rumbo WNW (285) y las lineaciones estructurales en los planos de las fallas de sobrecorrimiento principales y las de movimiento inverso, indican un sentido de transporte tectónico (vergencia) hacia el N fundamentalmente, NNW, NNE coincidiendo con las direcciones de máxima tensión. Estas estructuras hacen pensar en el emplazamiento en frio (tardío) de las ofiolitas del Macizo Moa-Baracoa sobre las metavulcanitas cretácicas viniendo del sur. El cuerpo anfibolítico de Güira del Jauco, está localizado al este de las ofiolitas de Moa-Baracoa, con algunas intercalaciones de serpentinitas que, a su vez, contienen bloques de anfibolitas. Este subyace las rocas del Complejo Sierra del Purial. El pico de P-T logró ser 600-650 ºC y 6 kbar. La estructura general de este cuerpo se caracteriza por rocas fuertemente deformadas, con los pliegues cerrados con planos axiales que buzan al WNW. Ese hecho sugiere un emplazamiento caliente (temprano) de este cuerpo desde el WNW. El melange ofiolítico del macizo Sierra del Convento, localizado al sur de Sierra del Purial, es un complejo de subducción que contiene, dentro de una matriz serpentinitica, metabasitas de HP/HT fuertemente deformadas (anfibolitas, eclogitas, esquistos azules) y graintoides ligeramente deformados que intruyen las rocas de HP/HT pero también se metamorfizan en condiciones de HP/LT. Este complejo se describe sobrecorriendo el complejo Sierra del Purial. Los rasgos estructurales en las rocas metavulcánicas subyacentes muestran micro y meso pliegues con vergencia hacia el NNW. Esto sugiere que este melange fue emplazado desde el SSE.

GEO10 P13 REINTERPRETACIÓN DE LA FORMACIÓN ARROYO CANGRE A LA LUZ DEL ANÁLISIS ESTRUCTURAL

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La Formación Arroyo Cangre se extiende desde la localidad de Sábalo hasta la región de San Diego de los Baños, provincia de Pinar del Río; ocupa la porción más meridional de la Faja Cangre y contacta por el Sur con la falla Pinar. Está constituida por meta-areniscas cuarcíferas, filita lustrosa con mica blanca a veces enriquecida con materia carbonosa e intercalaciones aisladas de calizas carbonosas grises hasta casi negras, cortadas por cuerpos de diabasas y gabroides. Ha sido descrita como una unidad de yacencia monoclinal con buzamiento al Sur o Sureste. La relación del clivaje S1 con la estratificación (S0) y a la forma y disposición del plegamiento parásito F1 a lo largo de ella, ha permitido considerar la misma como un gran pliegue isoclinal tumbado de vergencia Noroeste. Se considera en este trabajo la Formación Arroyo Cangre como una unidad, constituida en su parte baja por secuencias predominantemente arenosas, representadas por intercalaciones de meta-areniscas y meta-limolitas cuarzosas de diferente granulometría, localizadas en el núcleo de la estructura plegada, ahora denominado paquete inferior (J3ac1). El paquete superior (J3ac2) está representado por una alternancia de meta-areniscas y meta-limolitas cuarzosas y cuarzo-feldespáticas con algunas intercalaciones esquistosas, que hacia la parte alta del corte se hacen predominantes, donde tienen lugar también algunos lentes de calizas recristalizadas, diferentes horizontes de material volcánico representados por tobas, areniscas tobáceas, tufitas y brechas volcánicas, donde se desarrollan además cuerpos de gabro y diabasa. Estas secuencias se localizan en ambos flancos del gran pliegue isoclinal.