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Notes on Maps of the Callovian and Tithonian Paleogeography of the Caribbean, Atlantic, and Tethyan Realms: Facies and Environments

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A. NOTE

The Callovian-Tithonian period of the Atlantic and its connected oceans was tectonically intense. It was mainly marked by the opening of the Caribbean Seaway, the pursuance of the Atlantic and Tethyan spreading, as well as the North Atlantic rifting. This period is characterized by a general deepening of the oceans. At the same time, the sedimentation passed from largely siliceous to carbonaceous deposits within the Tethyan realm.

Callovian and Tithonian facies and environments were compiled and added to a plate tectonics model that constrains their arrangements. The elaboration of paleo-environmental maps at large scale hides various regional paleogeographic interpretations and many controversies. With the help of the plate tectonics model, different possibilities emerge and regional interpretations are reconciled at a larger scale. This leads to an alternative paleogeographic model for the Callovian and Tithonian age. These maps show the evolution of sedimentary deposits with their evolving associated tectonic context and may be considered as a useful tool for helping scientists of various disciplines in their research.

The tectonic reconstructions for the Callovian and Tithonian used within the present work are derivative from the 600–0 Ma Neftex Geodynamic Earth Model (© Neftex Petroleum Consultants Ltd.), which is based on the integration of dynamic plate boundaries, plate buoyancy factor, ocean spreading rates, subduction rates, past synthetic isochrones and global geometric constraints as, well as pluridisciplinary field and laboratory geological data. The methodology of plate tectonic modeling was introduced by Stampfli and Borel (2002) and technically detailed in Hochard (2008). The Mesozoic reconstructions were partly presented and discussed in Flores (2009) for the Pacific and Caribbean realms; in Stampfli and Borel (2002, 2004) for the Atlantic realm; and in Stampfli (2000, 2001), Stampfli et al. (2001a, 2001b, 2002, 2003), Stampfli and Borel (2004), Stampfli and Kozur (2006), Bagheri and Stampfli (2008), Bonev and Stampfli (2008, 2011), Moix et al. (2008), and Stampfli and Hochard (2009) for the Tethyan realm.

Key localities and linked references used for the elaboration of the Callovian and Tithonian maps are geographically presented in section B. The Dercourt et al. (1993, 2000) atlases were used as general references. The characteristics and development of the various Middle–Late Jurassic facies and environments of the Caribbean, Atlantic, and Tethyan realms are detailed in the latter works.

B. KEY LOCALITIES AND ASSOCIATED REFERENCES

1. The Pacific Realm (Pacific Plate)

BaCa—Baja California.
Salvador et al. (1992) and Flores (2009).

2. The Transitional Pacific-Atlantic Realm (Chortis, Yucatan, North, and South American Plates)

2.1. Mexico and Gulf of Mexico (United States)

Chortis: Cho—Chortis; Mix—Mixteca; Oax—Oaxaquia; Tahu—Tahue; Zapo—Zapoteco.

North America: Alda—Adama; Bis—Bisbee; Chi—Chihuahua; Coa—Coahuila Basin; Cor—Cortes; GM—Gulf of Mexico; Hid—Hidalgo; Hui—Huizachal; LPop—La Popa

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Basin; Monc—Monclova; Monte—Monterrey; NuRo—Nueva Rosita; PeBl—Penon Blanco; Pic—Picachos; PoRi—Poza Rica; Pue—Puebla; Sabi—Sabinas Basin; Salt—Saltillo; SiMa—Sierra Madre; SLP—San Luis Potosi; Sono—Sonora; TaMi—Tampica-Misant Basina; TanA—Tanaulipas Arch; Vera—Veracruz.

Yucatan: ChiB—Chiapas Basin; ChiM—Chiapas Massif; ChTa—Chiapas Tabasco; MaU—Maya Uplift; SoCa—Sonda de Campeche; Yuc—Yucatan.

Caballero-Miranda et al. (1990), Salvador et al. (1992), Marton and Buffler (1994), Barboza-Gudino et al. (1999), Franco-Rubio, (1999), Marton and Buffler (1999), Angeles-Aquino and Cantú-Chapa (2001), Cantú-Chapa (2001), de Antunano (2001), Dickinson and Lawton (2001), Goldhammer and Johnson (2001), Lawton et al. (2001), Meneses-Rocha (2001), Ortega-Gutiérrez et al. (2007), Centeno-García et al. (2008), and Galloway (2008).

2.2. Caribbean (Cuba, Bahamas)

Yucatan: Esc—Escambray; Gua—Guaniguanco; Pino—Pinos.

North America: BaP—Bahamas Plateau; CaGa—Cap Gap; CBP—Cuban Bahamas Platform; Exu—Exuma; Flor—Forida; PuAl—Punta Alegre.

Iturralde-Vinent (1994), Pszczółkowski (1999), and Iturralde-Vinent (2006).

2.3. Venezuela

South America: BarB—Barinos Basin; DemR—Demerara Rise; Espi—Espino; EVB—East Venezuela Basin; Guaj—Guajira; GuyB—Guyana Basin; LlaB—Llampos Basin; Meri—Merida; Peri—Perijia; Seln—Serrana del Interior; Tri—Trinidad.

Algar and Erikson (1995), Giunta et al. (2002), Ostos et al. (2005), and Pindell and Kennan (2009).

3. Atlantic Realm (Gondwanian, North American, Iberian, and Eurasian Plates)

Gondwana: AaTa—Aaiun-Tarfaya Basin; CanI—Canary Islands; CB—Cap Blanc; Essa—Essaouira; GuiT—Guinea Terrace; MazP—Mazagan Plateau; SenBm—Senegal Basin.

North America: BBB—Blake Bahamas Basin; BCT—Baltimore Canyon Trough; BP—Blake Plateau; CaHa—Cape Hatteras; CarT—Carolina Trough; GBB—Grand Bank Basin; GeBB—Georges Bank Basin; JAB—Jeanne d'Arc Basin; LabS—Labrador Shelf; Rock—Rockall; ScoB—Scotian Basin.

Iberia: GalB—Galicia Bank; FCB—Flemish Cap Basin; LusB—Lusitanian Basin

Eurasia: PoB—Porcupine Basin; Iri—Irish Basin.

Jansa et al. (1979), Jansa et al. (1982), Ranke et al. (1982), Baumgartner et al. (1983), Ogg et al. (1983), Robertson and Ogg (1986), Gohn (1988), Olsson et al. (1988), Poag and Valentine (1988), Ziegler (1988), Steiner et al. (1998), and Ford and Golonka (2003).

4. The Tethyan Realm (Gondwanian, Eurasian, Moesian, and Iberian Plates)

4.1. Gondwana

BarrB—Barreirinhas Basin; ChaB—Chad Basin; FoAm—Foz do Amazonas Basin; GhB—Ghadames Basin; LulB—Lullemeden Basin; MurB—Murzuq Basin; OMB—Oued Mya Basin; PaMa—Para-Manranhao Basin; SirB—Sirte Basin; SLL—Sierra Leone-Liberia Basin; TadB—Taoudeni Basin; TimB—Timimoun Basin; UEgB—Upper Egypt Basin.

Dercourt et al. (1993, 2000) and IHS confidential data.

4.2. Gondwanian Margin

4.2.1. Morocco

Atla—Atlas; ConP—Constantine Platform; ExRi—External Rif; MagP—Maghrebian Platform; MAt—Middle Atlas; Mese—Meseta; TeT—Tellian Trough.

Wildi (1979, 1981, 1983), Hinz et al. (1982), Benzaggagh (2000), Benzaggagh and Habibi (2006), Chalouan et al. (2008), and Frizon de Lamotte et al. (2008).

4.2.2. Tunisia, Malta, and Sicilia

Malt—Malta; SPel—Sicilian Pelgian Basin; TPel—Tunisian Pelagian Basin; TuDo—Tunisian Dorsale; TunT—Tunisian Trough.

Soussi et al. (2000, 2003), Enay et al. (2005), and Boughdiri et al. (2006, 2007).

4.2.3. Lybia, Arabia, Eastern Turkey, and Iran (Zagros)

Bisi—Bisitoun; CyrP—Cyrenica Platform; Karad—Karadut; Kerm—Kermanshah; Hawa—Hawasina; Haz—Hazro; Hez—Hezan; Mar—Mardin; Hez—Hezan; arB—Marmarica Basin; Mist—Mistah; Ney—Neyriz; Pich—Pichakun.

Bechennec et al. (1990), Fourcade et al. (1991), Barrier and Vrielynck (2007), and Gharib and De Wever (2010).

4.3. Apulia, Adria, Anatolia, Pelagonia and Pindos, Maliac, Vardar, and Tethyan (Ligurian, Lombardian) Domains

4.3.1. Italy (Sicilia, Apennines, and Southern Alps)

Adri—Adria; Apu—Apulia; Bel—Belluno; CaLu—Campania-Lucana; Cana—Canavese; Emma—Emma Basin; ExLi—External Ligurian; Fri—Friuli; GSR—Gran Sasso Range; InLi—Internal Ligurian; LaAb—Latium-Abbruzzi; LaNe—Lago Negro; Lomb—Lombardian; Pano—Panormides; Pol—Pollino; SicB—Sicanian Basin; Tren—Trento Plateau; TusB—Tuscan Basin; UmMa—Umbria Marche; Verb—Verbicaro.

Cousin (1981), Santantonio (1993), Caracuel et al. (1997), Bill et al. (2001), Beccaro et al. (2002), Ferrando et al. (2004), Bazzucchi et al. (2005), Iannace et al. (2005), Marroni and Pandolfi (2007), Chiari et al. (2008), Passeri et al. (2008), Scisciani and Calamita (2009), Channell et al. (2010), Zarcone and Di Stefano (2010), and Santantonio and Carminati (2011).

4.3.2. Greece (Hellenides)

Adha—Adhami; Almo—Almopias; Argo—Argolis; Ask—Askipion; Beo—Beotia; Chio—Chios; CTri—Creatan Tripolis; DhTr—Dhidhimi-Trapezona; Eth—Ethia; Evia—Evia; Gab—

Gabrovo; Hyd—Hydra; Io—Ionian; Koz—Koziakas; Malia—Maliac; Mig—Migdhalista; Oth—Othris; Parn—Parnassos; Pax—Paxos; Pin—Pindos; Rho—Rhodes; Saza—Sazani; TaOr—Talea Ori; Theo—Theokafta; Trip—Tripolis; Var—Vardousia; Vig—Vigla; Viv—Vivari.

Aubouin and Dercourt (1962), Bernoulli et al. (1974), Celet et al. (1976), Fleury (1980), Ferrière (1982), Bonneau (1984), Baumgartner (1985), Dercourt et al. (1993), Robertson and Shallo (2000), Robertson and Pickett (2000), Scherreiks (2000), Sharp and Robertson (2006), and Scherreiks et al. (2010).

4.3.3. Turkey (Anatolides-Taurides)

Akse—Askeki; Ana—Anamas; Anta—Antalya; BaDa—Barla Dag; Bade—Badenli; Bey—Beysehir; Beyda—Beydaglari; Bod—Bodrum; Boya—Boyalitepe; Buc—Bucak; Dat—Datca; Din—Dinar; Gumu—Gumuslu; Hadi—Hadim; Hati—Haticeana; Hug—Huglu; Kara—Karakaya; Keba—Keban; Kizi—Kizilca; Koc—Kocali; Koy—Koycegiz; Men—Menderes; Pina—Pinarbasi; Seyd—Seydisehir; SuDa—Susuz Dag.

Brunn et al. (1971), Bernoulli et al. (1974), Gutnic et al. (1979), Poisson (1984), Fourcade et al. (1991), Collins and Robertson (1999), Poisson et al. (2003), and Moix et al. (2008).

4.3.4. Former Yugoslavia (Dinarides)

Bos—Bosnian; Bud—Budva; Cuka—Cukali; Dal—Dalmatian; Drin—Drinjaca; Dur—Durmitor; Gm—Gmec; GoKo—Gorski Kotar; HKa—High Karst; Kolo—Kolovrat; Korab—Korabi; Kru—Kruja; Lim—Lim; MaEm—Malesia e Madhe; Mir—Mirdita; Mo—Mostar; PKa—Pre-Karst; RoDe—Romajia-Devetak; Sara—Sarajevo; Soko—Sokolina; Sos—Sosice; TmGo—Tmovski Gozd; Ulog—Ulog; Val—Valbona; Vid—Vidusa; Viso—Visocica.

Aubouin (1964), Blanchet (1974), Rampnoux (1974), Chorowicz (1977), Cadet (1978), Charvet (1978), Cousin (1981), Kodra et al. (1993), Goričan (1994), Robertson and Shallo (2000), Tari (2002), Bucković et al. (2004), Bucković (2006a, 2006b), Karamata (2006), Gawlick et al. (2008), and Vishnevskaya et al. (2009).

4.4. ALCAPA and Meliata Domain (Eastern Alps, Western Carpathians, and Pannonian Basin)

Baju—Bajuvaric; Bako—Bakony; Biho—Bihor; Bu—Bükk; CaAl—Carnic Alps; Dolo—Dolomites; Driv—Drina-Ivanjica; Fat—Fatric; Geme—Gemeric; Hall—Hallstatt; Hron—Hronic; Jul—Julian; Juva—Juvavic; Kal—Kalnik; LoAA—Lower Austroalpine; Lov—Lovinzola; MAA—Middle Austroalpine; Mec—Mecsek; Med—Medvelica; Mel—Meliata; Sili—Silicic; SKa—South Karawankan; Tat—Tatric; Tiro—Tirolic; Tol—Tolmin; Vahi—Vahic; Vapo—Vaporic; Zala—Zala; Zum—Zumberak.

Gwinner (1978), Trümpy (1981), Tollmann (1985), Eberli (1988), Froitzheim and Manatschal (1996), Kozur and Mock (1996, 1997), Plašienka et al. (1997), Plašienka (1998), Rakus (1998), Gawlick et al. (1999), Halamić et al. (1999, 2005), Faupl and Wagreich (2000), Haas et al. (2000), Mandl (2000), Gawlick et al. (2002), Csontos and Vörös (2004), Haas and Pero (2004), Froitzheim et al. (2008), Pienkowski et al. (2008), Schmid et al. (2008), Halamić and Klindžić (2009), Gawlick and Schlagintweit (2010), and Missoni and Gawlick (2011).

4.5. Moesia and Vardar Domain (Romania, Bulgaria, Macedonia, and Northeastern Greece)

Ani—Anina; Bar—Barlya; Belo—Belogradchik; Danu—Danubian; Ele—Elena; ESre—East Srednogorie; Gab—Gabrovo; Get—Getic; Gint—Gintsi; Iz—Izdremets; Kot—Kotel; Mac—Macin; Ni—Nish; Pai—Paikon; Peo—Peonias; Ray—Rayantsi; Rhodo—Rhodope; SApu—South Apuseni; SDob—South Dobrogea; Sev—Severin; SM—Serbo-Macedonian; SuGe—Supra-Getic; Trek—Treklyano; TrSy—Transylvanides; Tul—Tulcea; Yun—Yunak; Zvez—Zvezdets.

Sándulescu (1975), Tchoumatchenko et al. (1992), Tchoumatchenco and Sapunov (1994), Ferrière and Stais (1995), Sapunov (1999), Georgiev et al. (2001), Seghedi (2001), Csontos and Vörös (2004), Lazar et al. (2004), Tchoumatchenco (2006), Lakova et al. (2007), and Sapunov and Metodiev (2007).

4.6. Eurasia

Armo—Armorica; Bohe—Bohemian Massif; Cado—Cadomia; EEPM—East European Platform Margin; Karp—Karpinsky; LBM—London Brabant Massif; Rhen—Rhenish Massif; STaM—Stavropol Massif.

Dercourt et al. (1993, 2000) and Daukeev et al. (2002).

4.7. Eurasian Margin (Carpathians to Provence)

4.7.1. Eastern (Dacides) and Western Carpathians (Pieniny Klippen Belt)

Buco—Bucovinian; Cea—Ceahlau; Czor—Czorztyn; Magu—Magura; Pien—Pieniny; PoBo—Poiana Botizii; Sile—Silesian; SuBu—Subbucovinian.

Sándulescu (1975), Mišík (1994), Krobicki et al. (2003), Aubrecht and Sýkora (2004), Oszczypko et al. (2004), Lewandowski et al. (2005), Sidorczuk (2005), Aubrecht et al. (2006), Oszczypko (2006), Froitzheim et al. (2008), Pienkowski et al. (2008), and Schlögl et al. (2009).

4.7.2. Western Alps, France, and Corsica

Ann—Annecy; Bala—Balagne Nappe; Bre—Breche Nappe; Brian—Briançonnais; Cau—Causses; Co—Corsica; Dau—Dauphinois; Dij—Dijon; Fran—Francardo; Gen—Genève; Gren—Grenoble; He—Helvetic; Jura—Jura; Lion—Golfe du Lion; Lyon—Lyon; Mars—Marseille; MC—Massif Central; Mont—Montpelier; Nice—Nice; Nies—Niesen Nappe; NHel—North Helvetic; PuCa—Punta di Calcina; Sept—Plateforme Septentrionale; SubA—Subalpine Basin; SubB—Subbriançonnais; Toul—Toulon; UH—Ultrahelvetic.

Gwinner (1978), Trümpy (1981), Debrand-Passard et al. (1984), Tollmann (1985), Stampfli et al. (1998), Peybernes et al. (2001), Stampfli (2001), Stampfli et al. (2002), Marroni and Pandolfi (2007), Stampfli and Hochard (2009), and Graciansky et al. (2011).

4.8. Iberia

4.8.1. Italy (Calabria, Sardinia)

Cala—Calabria; Calo—Caloveto; MoSo—Monte Soro; Posa—Posada; SuMo—Supramonte; Tac—Tacchi.

Dercourt et al. (1993, 2000), Santantonio (1993), and Costamagna et al. (2007).

4.8.2. Spain (Betic and Balearic Islands) and Morocco (Internal Rif)

Cab—Cabrera; ExSu—External Subbetic; IBet—Internal Betic; IbMe—Iberian Meseta; InRi—Internal Rif; InSu—Internal Subbetic; ISu, Intermediate Subbetic; Kaby—Kabylie; Mall—Mallorca; MeSu—Median Subbetic; PBet—Prebetic; SBe—Subbetic.

Wildi (1979), Molina et al. (1999), O'Dogherty et al. (2001), Vera (2001), Aurell et al. (2002), Caracuel et al. (2006), Gómez and Fernández-López (2006), Chalouan et al. (2008), and Aurell et al. (2010).

5. The Eastern Tethyan Realm (Eurasian, Sakarya, and Iranian Plates)

5.1. Turkey (Pontides) and Caucasus

Baku—Baku; Dzir—Dzirula; EKub—East Kuban; Epo—Eastern Pontides; GCau—Great Caucasus; Ist—Istanbul; IzAn—Izmir Ankara; Kara—Karakaya; Kark—Karkinitsky; Kure—Küre; Saka—Sakarya; SCrim—South Crimea; Terek—Terek; TrCa—Transcaucasus; WKub—West Kuban; Zong—Zonguldak.

Nikishin et al. (1998), Kozur et al. (2000), Nikishin et al. (2001), Daukeev et al. (2002), Barrier and Vrielynck (2007), and Moix et al. (2008).

5.2. Iran (Sanandaj, Lut-Tabas, and South Caspian)

Chalu—Chalus; EAlb—Eastern Alborz; Lut—Lut; Rasht—Rasht; Ravar—Ravar; San—Sanandaj; SCasp—South Caspian; Sir—Sirjian; Tab—Tabriz; Tal—Talesh; Teh—Tehran; Yazd—Yazd.

Stampfli (1978), Berberian and King (1981), Davoudzadeh and Schmidt (1984), Dercourt et al. (1993), Dercourt et al. (2000), Barrier and Vrielynck (2007), and Wilmsen et al. (2009).

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CALLOVIAN PALEOGEOGRAPHY

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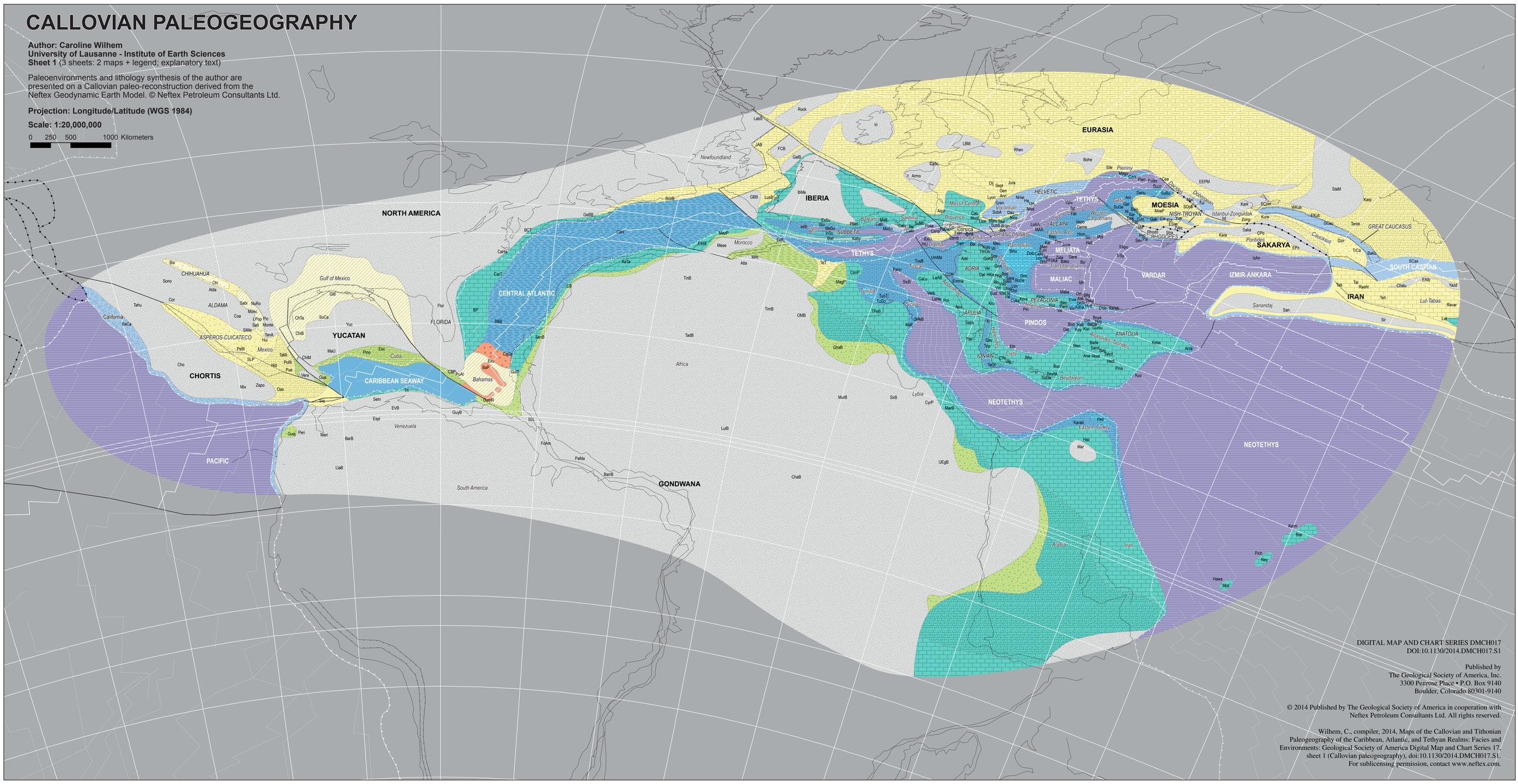
Sheet 1 (3 sheets: 2 maps + legend; explanatory text)

Paleoenvironments and lithology synthesis of the author are presented on a Callovian paleo-reconstruction derived from the Neftex Geodynamic Earth Model. © Neftex Petroleum Consultants Ltd.

Projection: Longitude/Latitude (WGS 1984)

Scale: 1:20,000,000

0 250 500 1000 Kilometers



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TITHONIAN PALEOGEOGRAPHY

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Sheet 2 (3 sheets: 2 maps + legend; explanatory note)

Paleoenvironments and lithology synthesis of the author are presented on a Tithonian paleo-reconstruction derived from the Neftex Geodynamic Earth Model. © Neftex Petroleum Consultants Ltd.

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CALLOVIAN AND TITHONIAN PALEOGEOGRAPHY LEGEND

Author: Caroline Wilhem
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Sheet 3 (3 sheets: 2 maps + legend; explanatory text)

PALEOENVIRONMENTS

- Exposed land
- Fluviodeltaic environment
- Evaporitic platform
- Terrigenous shelf and shallow basin
- Shallow platform
- Hemipelagic environment
- Pelagic rise
- Carbonaceous pelagic environment
- Siliceous pelagic envrionment
- Seamount/plateau/island arc

LITHOLOGIES

- Unknown
- Nondeposition or continental deposits
- Conglomerate, sand, silt, clay
- Clay, shale
- Alternance of carbonate, sand, silt and clay
- Turbidites
- Melanges
- Marl / Argillaceous carbonate
- Pelagic carbonate
- Pelagic nodular carbonate / Ammonitico Rosso
- Radiolarian / Cherty limestone
- Radiolarites / Bedded chert
- Resedimented limestone
- Shallow-water carbonate
- Dolomite
- Evaporite
- Hiatus/Condensed sedimentation
- Volcano-clastic sediments
- Basalt

PLATE TECTONICS AND OTHER RELEVANT BOUNDARIES

- Subduction Zone
- Obduction Zone
- Collision/Inversion Zone
- Rift Margin
- Transform Fault
- Mid-Oceanic Ridge
- Isochron
- Passive Margin
- Suture

TEXTS

PLATES

OCEANIC DOMAINS

PALEOGEOGRAPHIC DOMAINS

Regions/Basins/Orogenic Systems

Localities (abbreviations)

AaTa Aaiun-Tarfaya Basin
Adha Adhami
Adri Adriatic
Akse Akseki
Alda Aldama
Almo Almopias
Ana Anamas
Ani Anina
Ann Annecy
Anta Antalya
Apu Apulia
Aqui Aquitaine Basin
Argo Argolis
Armo Armorica
Ask Askipion
Atla Atlas
BaCa Baja California
BaDa Barla Dag
Bade Badenli
Baju Bajuvaric
Bako Bakony
Baku Baku
Bala Balagne Nappe
BaP Bahamas Plateau
Bar Barlya
BarB Barinos Basin
BarrB Barreirinhas Basin
BBB Blake Bahamas Basin (Site 534)
BCT Baltimore Canyon Through
Bel Belluno
Belo Belogradchik
Beo Beotia
Bey Beysehir
Beyda Beydaglari
Biho Bihor
Bis Bisbee
Bisi Bisitoun
Bod Bodrum
Bohe Bohemian Massif
Bos Bosnian
Boya Boyalitepe
BP Blake Plateau
Bre Breche Nappe
Brian Brianconnais
Bu Bukk
Buc Bucak
Buco Bucovian
Bud Budva
CaAl Carnic Alps
Cab Cabrera
Cado Cadomia
CaGa Cap Gap
CaHa Cape Hatteras
Cala Calabria
Calo Caloveto
CaLu Campania-Lucana
Cana Canavese
CanI Canary Islands
CarT Carolina Trough
Cau Causses
CB Cap Blanc
CBP Cuban Bahamas Platform
Cea Ceahlau
ChaB Chad Basin
Chalu Chalus
Chi Chihuahua
ChiB Chiapas Basin
Chio Chios
ChiM Chiapas Massif
Cho Chortis
ChTa Chiapas Tabasco
Co Corse
Coa Coahuila Basin
ConP Constantine Platform
Cor Cortes
CPo Central Pontides
CTri Creatan Tripolis
Cuka Cukali
CyrP Cyrenica Platform
Czor Czorztyn
Dal Dalmatian
Danu Danubian
Dat Datca
Dau Dauphinois
DemR Demerara Rise
DhTr Dhidhimi-Trapezona
Dij Dijon
Din Dinar
Dolo Dolomites
Drin Drinjaca
Drlv Drina-Ivanjica
Dur Durmitor
Dzir Dzirula
EAlb Eastern Alborz
EEPM East European Platform Margin
EKub East Kuban
Ele Elena
Emma Emma Basin
EPo Eastern Pontides
Esc Escambray
Espi Espino
ESre East Srednogorie
Essa Essaouira
Eth Ethia
EVB East Venezuela Basin
Evia Evia
ExLi External Ligurian
ExRi External Rif
ExSu External Subetic
Exu Exuma
Fat Fatric
FCB Flemish Cap Basin
Flor Florida
FoAm Foz do Amazonas Basin
Fran Francardo
Fri Friuli
Gab Gabrovo
GalB Galicia Bank
Gav Gavroro
GBB Grand Banks Basin
GeBB Georges Bank Basin
GCau Great Caucasus
Geme Gemeric
Gen Geneva
Gere Gerecse
Get Getic
GG Gulf of Gascogne
GhaB Ghadames Basin
Gint Gintsi
GM Gulf of Mexico
GoKo Gorski Kotar
Gren Grenoble
Grm Grmec
GSR Gran Sasso Range
Gua Guaniguanco
Guaj Guajira
GuiT Guena Terrace
Gumu Gumuslu
GuyB Guyana Basin
Hadi Hadim
Hall Hallstatt
Hati Haticeana
Hawa Hawasina
Haz Hazro
He Helvetic
Hez Hezan
Hid Hidalgo
HKa High Karst
Hron Hronic
Hug Huglu
Hui Huizachal
Hyd Hydra
IBet Internal Betic
IbMe Iberian Meseta
InLi Internal Ligurian
InRi Internal Rif
ISu Intermediate Subbetic
InSu Internal Subbetic
Io Ionian
Iri Irish Basin
Ist Istanbul
Iz Izdremets
IzAn Izmir-Ankara
JAB Jeanne d'Arc Basin
Jul Julian
Jura Jura
Juva Juvavic
Kaby Kabylies
Kal Kalnik
Kara Karakaya
Karab Karaburun
Karad Karadut
Kark Karkinitsky
Karp Karpinsky
Keba Keban
Kerm Kermanshah
Kizi Kizilca
Koc Kocali
Kolo Kolovrat
Kora Korabi
Kot Kotel
Koy Koycegiz
Koz Koziakas
Kru Kruja
Kure Kure
LaAB Latium-Abruzzi
LabS Labrador Shelf
LaNe Lago Negro
LBM London Brabant Massif
Lim Lim
Lion Golfe du Lion
LlaB Llampos Basin
LoAA Lower Austroalpine
Lomb Lombardian Basin
Lov Lovinzola
LPop La Popa Basin
LulB Lullemmeden Basin
LusB Lusitanian Basin
Lut Lut
Lyon Lyon
MAA Middle Austroalpine
Mac Macin
MaEM Malesia e Madhe
MagP Maghrebian Platform
Magu Magura
Malia Maliac
Mall Mallorca
Malt Malta
Mar Mardin
MarB Marmarica Basin
Mars Marseille
MAt Middle Atlas
MaU Maya Uplift
MazP Mazagan Plateau
Mec Mecsek
MC Massif Central
Med Medvelica
Mel Meliata
Men Menderes
Meri Merida
Mese Meseta
MeSu Median Subbetic
Mig Migdhalista
Mir Mirdita
Mist Mistah
Mix Mixteca
Mo Mostar
MoeP Moesian Platform
Monc Monclova
Mont Montpellier
Monte Monterrey
MoSo Monte Soro
MurB Murzuq Basin
Ney Neyriz
NHel North Helvetic
Ni Nish
Nice Nice
Nies Niesen Nappe
NuRo Nueva Rosita
Oax Oaxaquia
OMB Oued Mya Basin
Oth Othrys
Pai Paikon
PaMa Para-Manranhao Basin
Pano Panormides
Parn Parnassos
Pax Paxos
PBet Prebetic
PeBl Penon Blanco
Peo Peonias
Peri Perijia
Pic Picachos
Pich Pichakun
Pien Pieniny
Pin Pindos
Pina Pinarbasi
Pino Pinos
PKa Pre-Karst
PoB Porcupine Basin
PoBo Poiana Botizii
Pol Pollino
PoRi Poza Rica
Posa Posada
Prov Provence
PuAl Punta Alegre
PuCa Punta di Calcina
Pue Puebla
Rasht Rasht
Ravar Ravar
Ray Rayantsi
Rhen Rhenish Massif
Rho Rhodes
Rhodo Rhodope
Rock Rockall
RoDe Romanija-Devetak
Sabi Sabinas Basin
Saka Sakarya
Salt Saltillo
San Sanandaj
Sand Sandikli
SApu South Apuseni
Sara Sarajevo
Saza Sazani
SCas South Caspian
ScoB Scotian Basin
SCrim South Crimea
SDob South Dobrogea
Seln Serrana del Interior
SenB Senegal Basin
Sept Plate-forme Septentrionale
Sev Severin
Seyd Seydisehir
SicB Sicanian Basin
Sile Silesian
Sili Silicic
SiMa Sierra Madre Foreland
Siq Siquisique
Sir Sirjan
SirB Sirte Basin
SKa South Karawanken
SLL Sierra Leone-Liberia Basin
SLP San Luis Potosi
SM Serbo-Macedonian
SoCa Sonda de Campeche
Soko Sokolina
Sono Sonora
Sos Sosice
SPeB Sicilian Pelagian Basin
StaM Stavropol Massif
Stra Strandja
SubA Subalpine Basin
SubB Subbrianconnais
SBet Subbetic
SuBu Subbucovinian
SuDa Susuz Dag
SuGe Supra-Getic
SuMo Supramonte
Tab Tabriz
Taba Tabas
Tac Tacchi
TadB Taoudeni Basin
Tahu Tahue
Tal Talesh
TaMi Tampica-Misant Basina
TanA Tanaulipas Arch
TaOr Talea Ori
Tat Tatric
Teh Tehran
Terek Terek
TeT Tellian Trough
Theo Theokafta
TimB Timimoun Basin
TinB Tindouf Basin
Tiro Tirolic
TmGo Tmovski Gozd
Tol Tolmin
Toul Toulon
TPeB Tunisian Pelagian Basin
TrCa Transcaucasus
Trek Trekly ano
Tren Trento Plateau
Tri Trinidad
Trip Tripolis
Troy Troyan
TrSy Transylvanides
TuDo Tunisian Dorsale
Tul Tulcea
TunT Tunisian Trough
TusB Tuscan Basin
UEgB Upper Egypt Basin
UH Ultrahelvetic
Ulog Ulog
UmMa Umbria Marche
Vahi Vahic
Val Valbona
Var Vardousia
Vel Velebit
Vepo Veporic
Vera Veracruz
Verb Verbicaro
Vid Vidusa
Vig Vigla
Vil Villani
Viso Visocica
Viv Vivari
WKub West Kuban
Yazd Yazd
Yuc Yucatan
Yun Yunak
Zala Zala
Zapo Zapoteco
Zong Zonguldak
Zum Zumberak
Zvez Zwezdets

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