APPENDIX 1. Updated stratigraphic framework for Timor Leste
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Tectonostratigraphic Associations (Haig et al. 2019, Haig et al. 2021a, b, Barros et al. 2022, Nano et al. 2023, McCartain et al. 2024, Haig et al. 2024):
***1. East Gondwana Interior Rift Association (EGIRA)*: neritic and basinal deposits; Upper Carboniferous to lower Middle Jurassic**
***2. Timor–Scott Plateau Association (T–SPA)*: deposited on submerged Australian continental platform after breakup and Indian Ocean formed**
***3. Overthrust Ocean-Basin Association (OO-BA)* scrapings of deep-sea sediment and basement overthrust onto orogenic belt**
***4. Overthrust-Terranes Association (OTA)*: complex amalgamations of terranes on southern Sundaland margin (east Java-south Sulawesi), crustal blocks, detached with opening of Banda Sea, rolled back onto Australian continental margin (Timor–Scott Plateau)**
***5. Synorogenic cover:* deposits formed in depressions around rising mountains of orogenic belt**

East Gondwana Interior Rift Association

Name	Tectonostratigraphic Association and facies	Main rock types	Age	References; Type area/section
Wailuli Formation	East Gondwana Interior Rift Association - basinal facies	Mainly grey calcareous mudstone, commonly with dark grey burrow infills (including *Zoophycos* and *Chondrites*). In limited parts of the section, grey calcisphere and radiolarian-rich thin to medium carbonate-cemented mudstone is interbedded with calcareous grey mudstone. Note these alternating units are of limited thickness and the friable mudstone is calcareous unlike the "paper shale" interbeds common in the Aitutu Formation. No debris slide deposits with shallow-water carbonate clasts have been found in the Wailuli Formation	Latest Triassic (Rhaetian) to late Early Jurassic (Toarcian, possibly to early Middle Jurassic	This is the "Flysch supérieur" of Gageonnet *et al*. 1959), named "Wai Luli Formation" by Audley-Charles (1968). In the type area of the "Wai Luli Formation" of Audley-Charles (1968), "in the valley of the Wai Luli where it follows the strike of the Aitutu anticline", an Upper Permian sandstone/mudstone succession was recorded by McCartain *et al*. (2006), and a Carnian section of the Babulu Group was noted by Haig *et al*. (2007). The Wailuli Group is present in part of the area on the southern side of the river; McCartain *et al*., 2024. A more suitable "type section" at least for the lower part of the formation, may be along the Sahem River south-east of Soibada (see online April 2019 youtube.com talk by Haig: https://www.youtube.com/channel/UCMaGYrG5izJnNWQOfZBdrgQ).
Aitutu Formation	East Gondwana Interior Rift Association - basinal facies	Alternating succession of thin to thick bedded carbonate-cemented mudstone (usually grey) with organic-rich friable mudstone (commonly "paper" shales). Carbonate-cemented mudstone relatively unfossiliferous but bioturbated in places (with burrows, including *Chondrites* and *Zoophycos,* infilled by dark mud or silt). Patches of high density halobiid and "*Monotis*" bivalves; rare ammonoids; scattered foraminifers and radiolarians [+ may be dolomitized]. Foraminifers include distinctive variostomatids.	Late Triassic (mainly Norian); based mainly on conodonts	Audley-Charles (1968) selected type section in Aitutu Anticline); see also McCartain *et al*. 2024; Barros *et al*. (2025).
Babulu Formation	East Gondwana Interior Rift Association - basinal facies	Massive silty mudstone with scattered interbeds of lithic sandstone (commonly laminated and with high abundance of plant debris preserved along laminae) and occasional debris-slide conglomerates including clasts of Bandeira Formation (see Haig *et al*. 2007). Thick turbiditic lithic sandstone beds (with high volcanic clast content) alternating with mudstone form the Foura Member (see separate entry). Short intervals of Aitutu-like carbonate-cemented mudstone alternating with friable mudstone are present (probably what Audley-Charles, 1968,	Late Early Triassic to early Late Triassic (middle Anisian to Carnian; locally lower Norian). [From conodont biostratigraphy supplemented by palynomorphs, foraminifers and bivalves]	"Flysch inférieur" of Gageonnet *et al*. (1959) - in main part. Originally named Babulu Formation by Bird and Cook (1991) from sections in West Timor. Local typical section suggested by McCartain *et al*. (2024) in eastern bank of Laclo River just south of Dili-Manatutu bridge. See McCartain *et al*. (2024) for review of formation in Timor-Leste.

		termed the Talibellis Member, but not confined only to the upper part of the formation). The Babulu Formation is probably the thickness sedimentary unit in Timor-Leste (thickness possibly > 1000 m). It has commonly undergone broken-formation deformation with the mudstone deforming in a ductile manner and the cemented sandstone beds broken into small slabs incorporated in the mudstone (Audley-Charles, 1968, called much outcrop of the Babulu Formation with broken-formation deformation as the "Bobonaro Scaly Clay").		
Foura Member of Babulu Formation	East Gondwana Interior Rift Association - basinal facies	Very thick to thin bedded turbiditic sandstones with high volcaniclastic content, interbedded with mudstone	Carnian (*speciosus* spore-pollen zone)	Defined as "Foura Sandstone of Charlton and Gandara (2014) and considered by them to be a "Plover" equivalent of Jurassic age. Redefined with measured section, outcrop gamma log, and palynostratigrpahy by Peyrot *et al*. (2019, 2025) based on type section indicated by Charlton and Gandara (2014) in lower Belulic River near Cassa.
Baharedu Beds	East Gondwana Interior Rift Association - basinal facies	Bedded clay-dominated mudstone (often variegated) rarely with laminae or thin beds of sandstone and carbonate-cemented mudstone. Some horizons rich in bivalves (including *Claraia* spp.) and poorly preserved ammonoids.	Early to early Middle Triassic (Induan–middle Anisian)	Defined by McCartain *et al.* (2024) with suggested type section in Sumasse River at locality C505 of McCartain *et al*. (2024)
Bandiera Formation	East Gondwana Interior Rift Association - carbonate-platform facies	Shallow-water carbonate-platform facies plus associated siliciclastic facies. In type area in Bandeira Gorge, conformable succession from base to top: **Unit 1**, mainly thick-bedded rudstone; **Unit 2**, mainly shallow-marine sandstone; **Unit 3**, mainly thin-bedded shallow-marine wackestone and floatstone; **Unit 4**, covered unit, possibly friable mudstone and/or sandstone; **Unit 5**, mainly thick-bedded rudstone; elsewhere with small coral – algal – calcimicrobe - calcareous sponge bioherms, with megalodont bivalves	In type area: **Unit 1** - Carnian; **Unit 2** - late Carnian or early Norian; **Unit 3** - early Norian; **Unit 5** - Norian to early Rhaetian. Elsewhere, Norian to early Rhaetian.	Defined in Haig *et al*. 2021a (see also Haig and McCartain 2012; McCartain 2014; McCartain *et al*., 2024). Part of Fatu Limestone facies of Whittouck (1937); including "timorische Korallenkalk" and "Dachsteinkalkfazies" of Wanner (1931; 1956); Paulaca facies of Charlton *et al*. (2009).
Lilu facies of Bandiera Formation [named a "facies" because deposited as part of different depositional cycles of the Bandeira Formation; not a continuous "facies"]	East Gondwana Interior Rift Association - outer neritic or upper bathyal facies	Red ammonoid-rich wackestone/packstone, laminated to thin–medium bedded; may be white or variegated. This is a condensed facies (deposition on "deep-water" submerged carbonate platform - Halstatt facies)	Early Triassic (Induan) to Late Triassic (early Rhaetian); not continuous; age based on conodonts and ammonoids, and foraminifers for Rhaetian.	Defined as Lilu Beds by Berry *et al*. (1984) from type area at Mt Lilu and valley immediately to the west. See also: Martini *et al*. 2000; Barros *et al*. 2022; McCartain *et al*. 2024. "Cephalopodenkalksteinfazies" of Wanner (1931, 1956).
Cribas Group - undifferentiated	East Gondwana Interior Rift Association - basinal facies	Siliciclastic and volcaniclastic units; including **A:** Sequence Pseq2 of EGIRA Permian; Sakmarian–Artinskian) red and grey mudstones with sandstone interbeds and volcaniclastics including ash beds; with ammonoids (e.g., *Metalegoceras sundaicum* - identified by T. Leonovo, Moscow) and albaillellarian Radiolaria (see Maekawa *et al.* 2021). Ash bed in red mudstone section dated as 289±0.08 Ma, close to Sakmarian–Artinskian	Permian	Formations require descriptions and definitions and relationships drawn to depositional cycles in EGIRA basins to the south (in Western Australia). See also Haig *et al.* (2014, 2017, 2019). See McCartain *et al*. (2006) for Babulu-like facies of Lopingian.

		boundary (based on TIMS date by Jim Crowley, Boise). **B** - turbiditic sandstone interbedded with mudstone — Babulu-like facies; Sequence Pseq5 or 6 of EGIRA Permian; Late Permian, Lopingian).		
Maudika Formation of Cribas Group (newly named formation yet to be defined)	East Gondwana Interior Rift Association - basinal facies	Thick bedded grey to green lithic sandstone (with high component of volcanic clasts) and associated shallow-water bioclastic limestone containing foraminifer *Colaniella.*	Late Permian (Lopingian), Wuchiapingian.	Newly named formation to be defined
"Bissore Limestone"	East Gondwana Interior Rift Association - basinal facies	Bryozoan-rich packstone/floatstone with larger fusulines (foraminifers). Sequence Pseq4 of EGIRA basins	Middle Permian (late Wordian or Capitanian)	Definition and description is required. See Nogami (1963) for fusulinids.
Bua-bai Limestone	East Gondwana Interior Rift Association - basinal facies	Bryozoan-fusulinid-crinoidal floatstone to loose packstone; crinoidal-bryozoan closely packed packstone, and grainstone to rudstone. Small bryozoan-crinoidal mounds. Within Sequence Pseq3 of EGIRA Permian succession.	Early Permian (late Artinskian to early Kungurian) based on fusuline foraminifers	Defined by Haig *et al*. (2017)
Cribas Formation	East Gondwana Interior Rift Association - basinal facies	At type locality in Sumasse River: shales, silty shales, micaceous siltstone, fine quartz sandstones, packstones and wackestones	Early Permian (late Artinskian to Kungurian) based on conodonts and nodosarian foraminifers (first appearance of genera with radiate apertures: *Nodosaria*, *Pseudonodosaria*).	Defined by Audley-Charles (1968) for Upper Cribas Series of Gageonnet and Lemoine (1958). Type locality was designated in the Sumasse River. Note: the stratigraphic succession in the Sumasse River is disrupted (Triassic outcrops between Permian outcrops). See revision by Haig *et al*. (2017)
Maubisse Limestone	East Gondwana Interior Rift Association - basinal facies	In type section: 180 m succession of thick-bedded to massive limestone (bryozoan-crinoidal packstone/grainstone). Top of formation – mudstone unit conformably overlies the Maubisse Limestone in the type section. Base – volcaniclastic sandstone/mudstone unit underlies the Maubisse Limestone in its type section. Succession thins to east and to west of type section. Interpreted as a bryozoan-crinoidal mound. Within Sequence Pseq2 of EGIRA Permian succession.	Early Permian (Sakmarian to early Artinskian)	Redefined by Haig *et al*. (2014) based on type section of Audley-Charles's (1968) Maubisse Formation.
Maubisse Group - undifferentiated	East Gondwana Interior Rift Association - basinal facies	Limestone units at specific intervals are now recognized and named in Timor-Leste. These are isolated bryozoan-crinoidal mounds underlain and overlain by siliciclastic/ volcaniclastic/ volcanic units. In reconnaissance mapping:the term “Maubisse Group” could be applied to all the Permian massive limestone successions. There is no continuous limestone succession in the Permian of Timor-Leste	Permian	See Haig *et al*. 2014, 2017, 2019
Kulau Limestone	East Gondwana Interior Rift Association - basinal facies	At type locality – massive limestone unit overlain by bedded grainstone unit. Massive limestone unit is *Tubiphytes*-coral reef framework at base followed by rudstone with abundant *Tubiphytes*, common to abundant foraminifers (including larger fusulines), common crinoid plates. Grainstone unit contains mainly bryozoans and	Earliest Permian - *Schwagerina robusta – Ultradaixina bosbytauensis* Zone (Davydov *et al*. 2014; considered to be latest Gzhelian. Recent zircon analysis suggests earliest Permian age –	Defined by Davydov *et al*. (2013) from type section: 6 km WNW of Maubisse near the village of Kulau; Slokaka River and adjoining hill-side cliff. EGIRA Sequence Pseq1 of Haig *et al.* (2017)

		crinoid debris. At type locality: base of Kulau Limestone overlies basalt. Top of Kulau Limestone is overlain by mudstone	V. Davydov pers. comm. August 2025)	
Atahoc Formation	East Gondwana Interior Rift Association - neritic or basinal facies	Massive to thick quartz sandstone with minor grey mudstone interbeds [~ 100 m thick)	Earliest Permian - Asselian (*confluens* spore-pollen zone)	In part: Audley-Charles 1968 (type locality in Akraun River; lower part of "Lower Cribas Series" of Grunau (1956) and Gageonnet & Lemoine (1958); Sequence Pseq1 of Haig et al. 2017.
Timor–Scott Plateau Association				
Lasau Group (new name; in prep.). As well as un-named formations listed below, also see: Aliambata Limestone; Iliomar Limestone; and Borolola Limestone.	Timor-Scott Plateau Association - bathyal pelagite	Planktonic foraminiferal-nannoplantkton pelagite; usually in medium to thick stylobeds (true bedding obscured). Note pelagite remains as ooze/chalk in deep-sea successions until geothermal gradient increases and orogenesis commences (resulting in rapid cementation and ductile deformation of original bedding). Formation differentiated by identification of distinctive sediment grains (i.e., foraminifers) that can be achieved by hand lens in field	late Early Cretaceous (Aptian) to early Late Miocene	See Haig and McCartain (2007), Haig 2012, and Haig *et al.* (2019) for discussion of Timor–Scott Plateau Association
Aliambata Limestone of Lasau Group	Timor-Scott Plateau Association - bathyal pelagite	White planktonic foraminiferal-nannoplantkton pelagite, occasional pale yellow to pink/red; usually in medium to thick stylobeds (true bedding obscured). Note pelagite remains as ooze/chalk in deep-sea successions until geothermal gradient increases and orogenesis commences (resulting in rapid cementation and ductile deformation of original bedding). Formation differentiated by identification of distinctive sediment grains (i.e., foraminifers) that can be achieved by hand lens in field	Middle to early Late Miocene; based on planktonic foraminifers	Defined by Audley-Charles (1968) with type section in uppermost 100 m of Borolala Hill north of beach at Aliambati. Under review (age detailed in Haig and McCartain 2007)
Iliomar Limestone (new name) of Lasau Group	Timor-Scott Plateau Association - bathyal pelagite	White planktonic foraminiferal-nannoplantkton pelagite, occasional pale yellow to pink/red; usually in medium to thick stylobeds (true bedding obscured). Note pelagite remains as ooze/chalk in deep-sea successions until geothermal gradient increases and orogenesis commences (resulting in rapid cementation and ductile deformation of original bedding). Formation differentiated by identification of distinctive sediment grains (i.e., foraminifers) that can be achieved by hand lens in field	Late Oligocene to Early Miocene	Definition to be published with typical section in Foromar River north-east of Iliomar
Lasau Group: un-named Paleocene–Eocene pelagite	Timor-Scott Plateau Association - neritic facies	Yellow, red or white planktonic foraminiferal-nannoplantkton pelagite; usually in medium to thick stylobeds (true bedding obscured). Note: pelagite remains as ooze/chalk in deep-sea successions until geothermal gradient increases and orogenesis commences (resulting in rapid cementation and ductile deformation of original bedding). Formation differentiated by identification of distinctive sediment grains (i.e., foraminifers) that can be achieved by hand lens in field	Paleocene to Eocene	Formation and type section to be defined. See records in Haig & McCartain 2007, revised in Haig *et al*. 2019)

Borolalo Limestone of Lasau Group	Timor-Scott Plateau Association - bathyal pelagite	Commonly red foraminiferal-nannoplantkton pelagite, occasional pale yellow to white; usually in medium to thick stylobeds (true bedding obscured). Note: pelagite remains as ooze/chalk in deep-sea successions until geothermal gradient increases and orogenesis commences (resulting in rapid cementation and ductile deformation of original bedding). Formation differentiated by identification of distinctive sediment grains (i.e., foraminifera) that can be achieved by hand lens in field	Late Cretaceous (mainly Campanian–Maastrichtian)	Defined by Audley-Charles (1968) with type section in Borolala Hill north of beach at Aliambati.
Lasau Group: unnamed Aptian–Albian pelagite	Timor-Scott Plateau Association - bathyal pelagite	Red, pale pink or white planktonic foraminiferal-nannoplantkton pelagite; usually in medium to thick stylobeds (true bedding obscured). Note pelagite remains as ooze/chalk in deep-sea successions until geothermal gradient increases and orogenesis commences (resulting in rapid cementation and ductile deformation of original bedding). Formation differentiated by identification of distinctive sediment grains (i.e., foraminifers) that can be achieved by hand lens in field	Early Cretaceous (Aptian-Albian)	Formation and type section to be defined (see records in Haig & McCartain 2007, revised in Haig *et al*. 2019)
Lasau Group: unnamed Late Jurassic *Malayomaorica-Belemnopsis* Beds	Timor-Scott Plateau Association - neritic facies	Reddish, geenish, grey mudstone with common bivalve *Malayomaorica*, belemnite *Belemnopsis*, and in some places abundant calcite prisms and fragments of *Inoceramus* bivalve shells (sometimes making up a “sandstone”.	Late Jurassic (probably Kimmeridgian or Tithonian)	Formerly referred to Oebaat Formation of Harris *et al*. (2000), Charlton (2004), Villeneuve *et al*. (2005), defined from sections in West Timor. Zimmermann and Hall (2019) found parts of the Oebaat Formation in West Timor were Cretaceous rather than Upper Jurassic. A new name should be used for the Upper Jurassic "*Malayomaorica* beds" in Timor-Leste.
Overthrust Ocean-Basin Association				
Noni–Nakfunu–Wai Bua Complex	Overthrust Ocean-Basin Association - abyssal	Mainly siliceous argillite, commonly rich in Radiolaria and including chert (manganiferous in Cretaceous). Minor carbonate pelagites with Radiolaria and planktonic Foraminifera	late Middle Jurassic to Cretaceous (age from Radiolaria; and also planktonic Foraminifera in Cretaceous)	Requires detailed study. See Haig et al. (2019) and Haig and McCartain (2007) for Early Cretaceous example near Wai Bua in Betano region, and Haig and Bandini (2013) for an upper Bathonian–lower Callovian example near Viqueque.
Overthrust-Terranes Association				
Atelari Mudstone	Overthrust-Terranes Association - upper bathyal to outer neiritic facies	Conformable above Booi Limestone (Mundo Perdido); type succession from base: (i) calcareous mudstone with thin debris slide conglomerate; (2) massive, grey to dark grey mudstone, less calcareous than underlying unit; (3) greenish-grey sandy mudstone at base to muddy lithic sandstone at top; (4) massive dark grey to grey mudstone; (5) 30 cm thick bedded laminated fine lithic sandstone at base overlain by massive green grey mudstone.	Late Oligocene to earliest Miocene: Unit 1 is within planktonic foraminiferal zone O7, Late Oligocene, probably within the 25.3–25.9 Ma interval at sampled level; Unit 2 is within planktonic foraminiferal zone M1b (21.8–22.4 Ma), earliest Miocene.	Nano *et al*. 2023 (type section on Matebian Overthrust Terrane); Haig *et al*. 2024 (definition of unit)
Booi Limestone	Overthrust-Terranes Association - neritic carbonate platform facies	At type section: massive and well bedded coralline and "larger" foraminiferal limestone, conglomerate.	Late Oligocene to earliest Miocene (Aquitanian), Te5 Letter Stage based on larger foraminifers (including *Spiroclypeus* and primitive *Lepidocyclina*)	Defined by Haig *et al.* (2008) with type "sections" in Niti and Noni Rivers, West Timor (after Tappenbeck 1940).

Afalari Pelagite	Overthrust-Terranes Association - lower bathyal facies	Carbonate pelagite with scattered planktonic foraminifera and, in some beds, radiolaria.	Middle Oligocene, late Rupelian (about 30 Ma to 28 Ma); based on planktonic foraminifers	Nano *et al.* 2023 (type section on Matebian Overthrust Terrane); Haig *et al*. 2024 (definition of unit)
Dartollu Limestone	Overthrust-Terranes Association - neritic facies	Larger foraminiferal, algal limestone. Larger foraminifers include abundant *Pellatispira*.	Late Eocene (larger benthic foraminiferal zone Tb)	Defined by Audley-Charles 1968 with type locality — a low terrace about the village of Dartollu. Audley-Charles (1968) listed benthic foraminifers determined by Irene Crespin (BMR, Canberra) for Timor Oil – "from near Dartollu". The "type locality" has not been found during searches over the last 20 years. Outcrops of the Dartollu limestone are rare. A small outcrop of the unit with excellent *Pellatispira* is present northeast of Suai. A new type locality should be defined.
Barique Volcanics	Overthrust-Terranes Association neritic? to bathyal facies	At "type section": Massive green tuffs, blue-grey mudstone, minor limestone (same age as Same Limestone), minor breeciated "basalt". Not a coherent section. ?No published geochemical or geochronological data on volcanics.	Limestone in " type section" Middle Eocene, late Lutetian (42.3–43.6 Ma) based on planktonic foraminifera supported by "larger: benthic foraminifera. Limestone contains reworked volcanic clasts - maybe contemporaneous with volcanics.	Defined by Audley-Charles (1968) in type locality along Culolau River (= Quique River). Re-examined by Haig *et al*. (2019)
Liloli Calcarenite	Overthrust-Terranes Association - bathyal facies	Massive to indistinctly bedded. Well-sorted calcarenite with sparry calcite cement, dominated by micritic clasts some of which show 'ghosts'of ooids; large clasts with probable thaumatoporellid algae; clasts with planktonic forams. Debris-slide deposit.	Planktonic foraminifera, as the youngest biogenic components in the debris-slide deposits, suggest a Middle Eocene age	Defined by Nano *et al*. (2023) and Haig *et al*. (2024) with typical section in southern part of Matebian Overthrust Block.
Lakamutu Beds	Overthrust-Terranes Association - abyssal facies	Red mudstone dominates. Thick to thin-bedded red to light grey calcareous sandstone, calcilutite, red siliceous argillite, thin black shale and less common medium-bedded brown chert are exposed within the mudstone succession at some localities. Some of the mudstones are radiolarian rich; planktonic foraminifera are present in turbidites (sometimes forming planktonic foram calcarenites). Very shallow water larger benthic forams are rare in turbidites. Very rare quartz-felspar sandstone is also present.	Middle Eocene (43–45 Ma) based on planktonic forams	Defined by Nano *et al*. (2023) and Haig *et al*. (2024) with typical localities in Lakamutu River, east side of Matebian Overthrust Block.
Same Limestone	Overthrust-Terranes Association - neritic carbonate platform facies	Nummulitic , discoclyinids, and alveolinid limestones associated with eruptive volcanics, tuffs, conglomerates, brecciated volcanics	Middle Eocene (based on larger benthic foraminifers)	Defined by Gageonnet and Lemoine (1958) as "Série de Samé". See Haig *et al*. (2019)
"Haulasi" Beds	Overthrust-Terranes Association - bathyal facies	Bedded sandstone (turbidites), mudstone, conglomerates (debris-slide deposits)	In part, at least, Late Cretaceous in Timor-Leste north-east of Same (Timor Resources, pers. comm.). Harris (2006) reported the following specific age information:"andesitic cobbles in the conglomerate overlying the Bebe Susu metamorphic rocks yielded an U/Pb age of 83 Ma [Late Cretaceous] - with Jurassic xenocrysts". No other age information was provided by Harris (2006).	Haile *et al*. (1979), using a Geological Survey of Indonesia subdivision of the Palelo Group into formations, recognized the "Haulasi Beds" as the upper unit of the Palelo "Group". Requires detailed description and revision in Timor-Leste.

Tibalari Pelagite	Overthrust-Terranes Association - lower bathyal facies	Wackestone with scattered rare planktonic foraminifers in a carbonate-mud matrix. Many of the foraminiferal tests show evidence of some dissolution and breakage. Planktonic tests are infilled with calcite mosaic cement or are partly infilled with micrite. Chert "nodules"	Late Cretaceous (mainly Cenomanian to Turonian) based on planktonic foraminifers	Defined by Nano *et al* (2023) and Haig *et al*. (2024) with type area of slope of Matebian Feto.
Sagadati Argillite	Overthrust-Terranes Association - bathyal facies	Dominated by siliceous argillite (radiolarian-rich), with variable carbonate content, intercalated with thin-bedded mudstone. Ooid infilled shallow channel cuts (< 4 m wide) are present in the upper parts of some argillite beds. Ooid channel infills include carbonate-cemented agglutinated foraminifers (either as free specimens or as cores of ooids) like those found in the Perdido Limestone.	Early Jurassic (Sinemurian to Pliensbachian) - based on carbonate-cemented agglutinated foraminifers	Defined by Nano *et al*. (2023) and Haig *et al*. (2024) with typical section in Tarmaliu River
Perdido Limestone	Overthrust-Terranes Association - neritic carbonate platform facies	Massive grey oolitic, oncoidal, peloidal, and intraclastic grainstone, packstone and wackestone. Main bioclasts include carbonate-cemented agglutinated foraminifera, dasycladale algae and thaumatoporellacean algae (including cryptoendolithic types)	Early Jurassic (Sinemurian to Pliensbachian) - based on carbonate-cemented agglutinated foraminifers and calcareous algae (see Haig *et al*. 2021b; 2024).	Defined by Benincasa *et al*. (2012) with type area south-east Mundo Perdido. See also Haig *et al* (2021a), Nano *et al*. (2023) and Haig *et al*. (2024). On Cablaci, Audley-Charles (1968) mistakenly combined these Lower Jurassic ooid limestones with what is no called the upper Oligocene-lowest Miocene Booi Limestone into his "Cablac limestone" - this is a meaningless stratigraphic term.
Synorogenic cover				
Baucau "terrace units"	Synorogenic Cover: uplifted terraces, innermost neritic and terrestrial. Deposited during present phase 4 of collision (aseismic domal uplift of Timor)	Coral reef terraces (highest preserved on Mt Laritame - see Leme 1968 and mapping by Gilsel Borges (UWA Honours Thesis). Also uplifted gravel and fluvial deposits in terraces close to palaeorivers.	Middle Pleistocene (overlap of ranges of *G. tosaensis* and *G. truncatuloides* planktonic foraminiferal species) to present.	See general discussion in Haig *et al*. (2019); studies in progress.
Viqueque Formation	Synorogenic Cover: bathyal to outer neritic. Main part deposited around rising mountains during phase 3 of collision (slab tear).	In type section (see Haig and McCartain 2007), turbiditc sandstone interbedded with mudstone, conglomerates, shelly and coaly sands and muds in upper part. Formation shallows upward from middle bathyal to neritic water depths. Elsewhere, middle to upper bathyal graded sandstones, conglomerates, interbedded with mudstones and marls; thick debris slide conglomerates. Aprons of lithogenic sediment around rising mountains	Late Pliocene to Pleistocene (planktonic foraminiferal zones N20 to N22)	Defined by Audley-Charles (1968) with type section in river at Viqueque. Type section logged by Haig and McCartain (2007). See also papers by Brendan Duffy. [Note Audley-Charles, 1968, included the Batu Putih Formation as the basal part of the Viqueque Formation. These formations are separated here]
Lari Guti Member of Viqueque Formation	Synorogenic Cover: bathyal debris slide deposits in upper bathyal zone (<1000 m water depth)	Fragmental coral debris-slide "conglomerates" in blue grey mudstone with abundant planktonic foraminifer; decreasing in thickness and grain size away from coral reef source	Early Pleistocene (planktonic foraminiferal zone N22)	Defined as "Lari Guti Formation" by Audley-Charles and interpreted by him as a shallow-water coralline limestone. "Type section" shows a large-scale channel cut. Requires description and redefinition.
Batu Putih Formation	Synorogenic Cover: bathyal pelagite deposited during phase 2 of collision (during jamming of subduction slab)	Planktonic foraminiferal-nannoplantkton friable chalk	Latest Miocene to early Pleistocene (planktonic foraminiferal zones N18 to N22); age of top of formation depends on proximity to rising mountains shedding detrital sediment (i.e. Viqueque Formation).	Haig & McCartain 2007; Haig 2012

Appendix 1 references

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