

## CMECS Aquatic Setting (AS) Changes

- Added column “Setting”; populated with “Aquatic Setting” for all units
- Added Aquatic Setting unit at the uppermost level with definition, Component Code, and Unit Code
- Corrected name of Oceanic Subsystem unit to Marine Oceanic Subsystem; corrected definition (previous version mistakenly used the definition for Marine System unit).
- Appended each unit name (term) with applicable type of setting (e.g. System, Subsystem, Tidal Zone). **See description of unit status for more information**
- Added column “Literature Cited”; populated with references for literature cited in unit definitions where applicable, sourced from FGDC-STD-018-2012 Section 14- Literature Cited, p. 245
- Added column “Unit Type”; populated with type of unit for each unit
- Added column “CMECS Version”; populated with “1.1.0” for each unit
- Added column “Unit Status”; populated with unit status for each unit. **See description of unit status for more information**
- Added column “Type of Change”; populated with change type for each unit where applicable. **See description of unit status for more information**
- Added column “Term ID”; populated with individual identifier codes for each unit
- Added column “Unit IRI”; populated with individual Internationalized Resource Identifiers for each unit. See [https://en.wikipedia.org/wiki/Internationalized\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Internationalized_Resource_Identifier) for more information.

## CMECS Biogeographic Setting (BS) Changes

- Added column “Setting”; populated with “Biogeographic Setting” for all units
- Added row populated with “Biogeographic Setting” unit term and attributes at the uppermost level
- Appended each unit name (term) with applicable type of setting (e.g. System, Subsystem, Tidal Zone). **See description of unit status for more information**
- Deprecated unit Ecoregion: Crustacean Meroplankton (E3.1.3), which was an erroneous entry from the previous CMECS Catalog database
- Added column “Literature Cited”; populated with references for literature cited in unit definitions where applicable, sourced from FGDC-STD-018-2012 Section 14- Literature Cited, p. 245
- Added column “Unit Type”; populated with type of unit for each unit
- Added column “CMECS Version”; populated with “1.1.0” for each unit
- Added column “Unit Status”; populated with unit status for each unit. **See description of unit status for more information**
- Added column “Type of Change”; populated with change type for each unit where applicable. **See description of unit status for more information**
- Added column “Term ID”; populated with individual identifier codes for each unit

- Added column “Unit IRI”; populated with individual Internationalized Resource Identifiers for each unit. See [https://en.wikipedia.org/wiki/Internationalized\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Internationalized_Resource_Identifier) for more information.

## CMECS Biotic Component (BC) Changes

- Added column “Component”; populated with unit term “Biotic Component” for all units
- Added “Biotic Component” unit with all related attributes at the uppermost level
- Added column “Literature Cited”; populated with references for literature cited in unit definitions where applicable, sourced from FGDC-STD-018-2012 Section 14- Literature Cited, p. 245
- Added unit Biotic Component Benthic/Attached Biota Emergent/Wetland Emergent Tidal Marsh Freshwater Tidal Marsh/*Acorus calamus* Tidal Herbaceous Vegetation. Note: an original unit that was included in the FGDC-STD-018-2012 but was omitted from the database.
- Corrected definition for Subclass: Worm Meroplankton unit (previous version mistakenly used the definition for Subclass: Worm Holoplankton unit)
- Added column “Unit Type”; populated with type of unit for each unit
- Added column “CMECS Version”; populated with “1.1.0” for each unit
- Added column “Unit Status”; populated with unit status for each unit. **See description of unit status for more information**
- Added column “Type of Change”; no changes were made, so column is unpopulated. **See description of unit status for more information**
- Added column “Term ID”; populated with individual identifier codes for each unit
- Added column “Unit IRI”; populated with individual Internationalized Resource Identifiers for each unit. See [https://en.wikipedia.org/wiki/Internationalized\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Internationalized_Resource_Identifier) for more information.

## CMECS Geoform Component (GC) Changes

- Added column “Component”; populated with unit term “Geoform Component” for all units
- Added row populated with “Geoform Component” unit term and all related attributes at the uppermost level
- Added row populated with “Tectonic Setting” unit term and attributes
- Added row populated with “Physiographic Setting” unit term and attributes
- Moved all Unit Codes to single column and deleted Physiographic Setting and Geoform Unit Code columns
- Moved all Geoform Component Subcomponents (Tectonic Setting, Physiographic Setting, Level 1 Geoform, Level 2 Geoform) to a single “Subcomponent” column
- Added Geoform Origin term (ex., Geologic Origin) to Geoform Subcomponent term (ex., Geologic Geoform (Level 1); deleted “Geologic Origin” column
- Corrected definition for Anthropogenic Geoform: Dredge Deposit unit (previous version mistakenly used the definition for Anthropogenic Geoform Type: Dredge Deposit Shoal unit)
- Added column “Literature Cited”; populated with references for literature cited in unit definitions where applicable, sourced from FGDC-STD-018-2012 Section 14- Literature Cited, p. 245

- Added column “Unit Type”; populated with type of unit for each unit
- Added column “CMECS Version”; populated with “1.1.0” for each unit
- Added column “Unit Status”; populated with unit status for each unit. **See description of unit status for more information**
- Added column for “Type of Change” attribute (**see description of unit status for more information**); at this time, there are no values to populate for the GC.
- Added column “Term ID”; populated with individual identifier codes for each unit
- Added column “Unit IRI”; populated with individual Internationalized Resource Identifiers for each unit. See [https://en.wikipedia.org/wiki/Internationalized\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Internationalized_Resource_Identifier) for more information.

## CMECS Substrate Component (SC) Changes

- Added column “Component”; populated with unit term “Substrate Component” for all units
- Added row populated with “Substrate Component” unit term and all related attributes at the uppermost level.
- Unit Changes and Additions
  - Acropora Hash: Addition
  - Aggregate Fines: Addition
  - Aggregate Hash: Name Change (formerly Construction Hash); Change in Level Down; Membership Change; Editorial Change (definition re-worded)
  - Aggregate Rubble: Name Change (formerly Construction Rubble); Membership change; Editorial change (definition re-worded)
  - Algal Hash: Addition
  - Algal Reef Substrate: Addition
  - Algal Rubble: Addition
  - Algal Sand: Change in level down; Membership change; Editorial Change (definition re-worded)
  - Anthropogenic Substrate: Editorial change (definition re-worded)
  - Anthropogenic Wood Fines: Addition
  - Anthropogenic Wood Hash: Change in Level Down; Membership Change; Editorial change (definition re-worded)
  - Anthropogenic Wood Rubble: Change in Level Down; Membership Change; Editorial change (definition re-worded)
  - Biogenic Hash: Addition
  - Biogenic Pavement: Addition
  - Biogenic Pavement: Addition
  - Biogenic Rubble: Addition
  - Biogenic Sand: Addition
  - Biogenic Substrate: Editorial Change (definition re-worded)
  - Boulder: Editorial Change (definition re-worded)
  - Carbonate Ooze: Change in Level Down; Editorial Change (definition re-worded)
  - Clay: Editorial Change (definition re-worded)
  - Clayey Sand: Editorial Change (definition re-worded)
  - Coarse Sand: Editorial Change (definition re-worded)

- Coarse Unconsolidated Aggregate Substrate: Addition
- Coarse Unconsolidated Anthropogenic Substrate: Addition
- Coarse Unconsolidated Anthropogenic Wood Substrate: Addition
- Coarse Unconsolidated Biogenic Substrate: Addition
- Coarse Unconsolidated Metal Substrate: Addition
- Coarse Unconsolidated Mineral Substrate: Name Change (formerly Coarse Unconsolidated Substrate); Change in level up (Subclass to Class); Editorial Change (definition re-worded)
- Coarse Unconsolidated Trash/Plastic Substrate: Addition
- Coarse Woody Debris: Membership Change; Editorial Change (definition re-worded)
- Cobble: Editorial Change (definition re-worded)
- Coccolithophore Ooze: Change in level down; Editorial Change (definition re-worded)
- Consolidated Biogenic Substrate: Addition
- Coquina Hash: Change in level down; Membership change; Editorial Change (definition re-worded)
- Coquina Reef Substrate: Membership Change; Editorial Changes: definition re-worded
- Coquina Reef Substrate: Name Change; Membership Change; Editorial Changes: definition re-worded
- Coquina Rubble: Editorial Change (definition re-worded); Membership Change
- Coquina Sand: Change in level down; Editorial Change (definition re-worded)
- Coral Hash: Change in level down; Membership Change; Editorial Change (definition re-worded)
- Coral Reef Substrate: Change in level down; Membership change; Editorial Change (definition re-worded)
- Coral Rubble: Change in level down; Membership Change; Editorial Change (definition re-worded)
- Coral Sand: Change in level down; Membership Change; Editorial Change (definition re-worded)
- Coraline Pavement: Addition
- Crepidula Hash: Change in level down; Editorial Change (definition re-worded)
- Crepidula Reef Substrate: Change in Level Down; Editorial Change (definition re-worded)
- Crepidula Rubble: Change in level down; Editorial Change (definition re-worded)
- Ctenophore: Change in Level Down; Editorial Change (definition re-worded)
- Diatomaceous Ooze: Change in Level Down; Editorial Change (definition re-worded)
- Diploria Sand: Addition
- Fine Organic Substrate: Addition
- Fine Sand: Editorial Change (definition re-worded)
- Fine Unconsolidated Aggregate Substrate: Addition
- Fine Unconsolidated Anthropogenic Substrate: Addition
- Fine Unconsolidated Anthropogenic Wood Substrate: Addition
- Fine Unconsolidated Biogenic Substrate: Addition
- Fine Unconsolidated Metal Substrate: Addition
- Fine Unconsolidated Substrate: Name Changed (to Fine Unconsolidated Mineral Substrate); Change in level up; Editorial Change (definition re-worded)

- Fine Unconsolidated Trash/Plastic Substrate: Addition
- Fine Woody Debris: Change in Level Up; Membership change; Editorial Change (definition re-worded)
- Fixed Aggregate Substrate: Name Change (formerly Anthropogenic Rock Reef Substrate); Editorial change (definition re-worded)
- Fixed Aggregate Substrate: Name Change (formerly Construction Reef); Membership change; Editorial Change (definition re-worded)
- Fixed Anthropogenic Substrate: Addition
- Fixed Anthropogenic Wood Substrate: Name Change (formerly Anthropogenic Wood Reef Substrate); Membership change; Editorial Change (definition re-worded)
- Fixed Metal Substrate: Name Change (formerly Metal Reef Substrate); Membership change; Editorial change (definition re-worded)
- Fixed Trash/Plastic Substrate: Addition
- Foraminiferan Ooze: Change in level down; Editorial Change (definition re-worded)
- Geologic Substrate: Editorial Change (definition re-worded)
- Granule: Editorial Change (definition re-worded)
- Gravel Mixes: Membership change; Editorial Change (definition re-worded)
- Gravel Substrate: Name Change (formerly Gravel); Change in level; Editorial Change (definition re-worded)
- Gravelly Mud: Editorial Change (definition re-worded)
- Gravelly Muddy Sand: Editorial Change (definition re-worded)
- Gravelly Sand: Editorial Change (definition re-worded)
- Gravelly Mixes: Name Change (formerly Gravelly); Membership change; Editorial Change (definition re-worded)
- Halimeda Sand: Change in Level Down; Editorial Change (definition re-worded)
- Medium Sand: Editorial Change (definition re-worded)
- Metal Fines: Addition
- Metal Hash: Change in Level Down; Membership Change; Editorial change (definition re-worded)
- Metal Rubble: Change in Level Down; Editorial change (definition re-worded)
- Mixed Gravels: Addition
- Moderately Coarse Gravel: Addition
- Mud: Membership change; Editorial Change (definition re-worded)
- Muddy Gravel: Editorial Change (definition re-worded)
- Muddy Mixes with Trace Gravel: Addition
- Muddy Sand: Membership change; Editorial Change (definition re-worded)
- Muddy Sandy Gravel: Editorial Change (definition re-worded)
- Muddy Substrate: Addition
- Mussel Hash: Change in Level Down; Editorial Change (definition re-worded)
- Mussel Reef Substrate: Change in Level Down; Editorial Change (definition re-worded)
- Mussel Rubble: Change in Level Down; Editorial Change (definition re-worded)
- Mussel Sand: Addition
- Ooze Substrate: Change in Level Down; Membership Change; Editorial Change (definition re-worded)

- Organic Detritus: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Organic Mud: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Oyster Hash: Change in Level Down; Editorial Change (definition re-worded)
- Oyster Reef Substrate: Change in Level Down; Editorial Change (definition re-worded)
- Oyster Rubble: Change in Level Down; Editorial Change (definition re-worded)
- Oyster Sand: Addition
- Peat: Name Change (formerly Peat Debris); Membership Change; Editorial Change (definition re-worded)
- Pebble: Editorial Change (definition re-worded)
- Piling Substrate: Addition
- Pteropod Ooze: Change in Level Down; Editorial Change (definition re-worded)
- Radiolarian Ooze: Change in Level Down; Editorial Change (definition re-worded)
- Reef Substrate: Addition
- Rhodolith Hash: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Rhodolith Reef Substrate: Addition
- Rhodolith Rubble: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Rhodolith Sand: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Rock Substrate: Name Change (to Consolidated Mineral Substrate)
- Sabellariid Hash: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Sabellariid Reef Substrate: Change in level down; Editorial Change (definition re-worded); Membership change
- Sabellariid Rubble: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Sabellariid Sand: Addition
- Sand: Membership change; Editorial Change (definition re-worded)
- Sandy Clay: Editorial Change (definition re-worded)
- Sandy Gravel: Editorial Change (definition re-worded)
- Sandy Mixes with Trace Gravel: Addition
- Sandy Mud: Membership change; Editorial Change (definition re-worded)
- Sandy Silt: Editorial Change (definition re-worded)
- Sandy Silt-Clay: Editorial Change (definition re-worded)
- Sandy Substrate: Addition
- Serpulid Hash: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Serpulid Reef Substrate: Change in level down; Editorial Change (definition re-worded); Membership change
- Serpulid Reef Substrate: Change in Level Down; Membership Change; Editorial Change (definition re-worded)

- Serpulid Rubble: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Serpulid Sand: Addition
- Shell Hash: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Shell Reef Substrate: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Shell Rubble: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Shell Sand: Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Siliceous Ooze: Change in Level Down; Editorial Change (definition re-worded)
- Silt: Editorial Change (definition re-worded)
- Silt-Clay: Editorial Change (definition re-worded)
- Silty Sand: Editorial Change (definition re-worded)
- Silty-Clayey Sand: Editorial Change (definition re-worded)
- Slightly Gravelly Mud: Membership Change; Editorial Change (definition re-worded)
- Slightly Gravelly Muddy Sand: Membership Change; Editorial Change (definition re-worded)
- Slightly Gravelly Sand: Membership Change; Editorial Change (definition re-worded)
- Slightly Gravelly Sandy Mud: Membership Change; Editorial Change (definition re-worded)
- Slightly Gravelly: Deprecated (split into Sandy Mixes with Trace Gravel and Muddy Mixes with Trace Gravel groups)
- Substrate Component: Editorial Change (definition re-worded)
- Tar: Addition
- Trace Gravels: Addition
- Trash/Plastic Fines: Addition
- Trash/Plastic Hash: Name Change (formerly Trash Bits); Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Trash/Plastic Rubble: Name Change (formerly Trash Rubble); Change in Level Down; Membership Change; Editorial Change (definition re-worded)
- Tree: Addition
- Very Coarse Gravel: Addition
- Very Coarse Sand: Editorial Change (definition re-worded)
- Very Coarse Woody Debris: Membership Change; Editorial Change (definition re-worded)
- Very Fine Sand: Editorial Change (definition re-worded)
- Very Large Root or Root Network: Addition
- Very Large Trunk or Branch: Addition
- Very Large Trunk or Root: Addition
- Very Large Wood Fragment: Addition
- Very Large Wood: Addition
- Wood Rubble: Addition

- Worm Hash: Addition
- Worm Reef Substrate: Addition
- Worm Reef Substrate: Addition
- Worm Rubble: Addition
- Worm Sand: Addition
- Deprecated Units
  - *Globigerina* Ooze
  - Algal Substrate
  - Anthropogenic Rock Hash
  - Anthropogenic Rock Mud
  - Anthropogenic Rock Reef Substrate
  - Anthropogenic Rock Rubble
  - Anthropogenic Rock Sand
  - Anthropogenic Rock
  - Anthropogenic Wood
  - Clam Hash
  - Clam Reef Substrate
  - Clam Rubble
  - Construction Materials
  - Coral Substrate
  - Metal
  - Organic Debris
  - Organic Substrate
  - Rhodolith Substrate
  - Sabellariid Substrate
  - Serpulid Substrate
  - Shell Substrate
  - Slightly Gravelly
  - Trash
  - Unconsolidated Mineral Substrate
  - Woody Debris
  - Worm Substrate
- Most Unit Codes have been deleted; new codes are TBD and will be added later.
- Added column “Literature Cited”; populated with references for literature cited in unit definitions where applicable, sourced from FGDC-STD-018-2012 Section 14- Literature Cited, p. 245
- Added column “Unit Type”; populated with type of unit for each unit
- Added column “CMECS Version”; populated with “1.1.0” for each unit
- Added column “Unit Status”; populated with unit status for each unit. **See description of unit status for more information**
- Added column for “Type of Change” attribute (**see description of unit status for more information**).
- Added columns for “Implementation Guidance” attribute; populated with guidance statements for each unit where applicable.



- Added column for “Notes” attribute; populated with notes providing context and additional information about units where applicable.
- Added column “Term ID”; populated with individual identifier codes for each unit
- Added column “Unit IRI”; populated with individual Internationalized Resource Identifiers for each unit. See [https://en.wikipedia.org/wiki/Internationalized\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Internationalized_Resource_Identifier) for more information.

## CMECS Water Column Component (WC) Changes

- Added column “Component”; populated with unit term “Water Column Component” Component” for all units
- Added row populated with “Water Column Component” unit term and all related attributes at the uppermost level.
- Added column “Subcomponent”; populated with “Water Column Layer”, “Salinity”, “Temperature”, Hydroform”, and “Biogeochemical Feature” subcomponent unit terms for each relevant unit
- Added rows populated with “Water Column Layer”, “Salinity”, “Temperature”, Hydroform”, and “Biogeochemical Feature” subcomponent unit terms and attributes.
- Moved all Unit Codes to single column and deleted individual columns for the subcomponent unit codes
- Added column “Literature Cited”; populated with references for literature cited in unit definitions where applicable, sourced from FGDC-STD-018-2012 Section 14- Literature Cited, p. 245
- Added column “Unit Type”; populated with type of unit for each unit
- Added column “CMECS Version”; populated with “1.1.0” for each unit
- Added column “Unit Status”; populated with unit status for each unit. **See description of unit status for more information**
- Added column for “Type of Change” attribute (**see description of unit status for more information**); at this time, there are no values to populate for the BC.
- Added column “Term ID”; populated with individual identifier codes for each unit
- Added column “Unit IRI”; populated with individual Internationalized Resource Identifiers for each unit. See [https://en.wikipedia.org/wiki/Internationalized\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Internationalized_Resource_Identifier) for more information.
- Added rows populated with unit terms and attributes for Marine Offshore Surface Layer, Marine Offshore Upper Water Column, Marine Offshore Pycnocline, Marine Offshore Lower Water Column units that were missing from former database

## CMECS Modifier Changes

- Added rows for Modifier Types and Modifiers as needed and populated with unit terms and all related attributes.
  - Anthropogenic Modifiers
  - Anthropogenic Impact

- Biogeographic Modifiers
- Primary Water Source
- Biological Modifiers
- Associated Taxa
- Community Successional Stage
- Invertebrate Community Organism Size
- Phytoplankton Productivity
- Macrovegetation Productivity
- Temporal Modifiers
- Temporal Persistence
- Physical Modifiers
- Energy Direction
- Energy Intensity
- Energy Type
- Unit Changes and Additions:
  - Constructed: Addition
  - Mineral Precipitate: Addition
  - Crust: Addition
  - Nodules: Addition
  - Patina: Addition
  - Porous: Addition
  - Added “Constructed” unit to Anthropogenic Impact modifier
  - Added unit “Porous” to Substrate Descriptor modifier
  - Added Modifier: Mineral Precipitate with units: Crust, Nodules, Patina.
- Added column “Literature Cited”; populated with references for literature cited in unit definitions where applicable, sourced from FGDC-STD-018-2012 Section 14- Literature Cited, p. 245
- Added column “Unit Type”; populated with type of unit for each unit
- Added column “CMECS Version”; populated with “1.1.0” for each unit
- Added column “Unit Status”; populated with unit status for each unit. **See description of unit status for more information**
- Added column for “Type of Change” attribute (**see description of unit status for more information**); at this time, there are no values to populate for the BC.
- Added column “Term ID”; populated with individual identifier codes for each unit
- Added column “Unit IRI”; populated with individual Internationalized Resource Identifiers for each unit. See [https://en.wikipedia.org/wiki/Internationalized\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Internationalized_Resource_Identifier) for more information.
- Added columns for “Implementation Guidance” attribute; populated with guidance statements for each unit where applicable