



ENCYCLOPEDIA
of MODERN
CORAL REEFS
STRUCTURE, FORM AND PROCESS

Edited by
David Hopley

 Springer

ENCYCLOPEDIA of EARTH SCIENCES SERIES

Author Index

A

Abbey, Elizabeth, 1058
Abram, Nerilie J., 1034
Andréfouët, Serge, 102, 906, 920
Aretz, Markus, 190
Aronson, Richard B., 610
Atkinson, Marlin J., 181

B

Baker, Andrew C., 1070, 1189
Barber, Todd R., 844
Beaman, Robin J., 1067
Biribo, Naomi, 51
Blanchon, Paul, 77, 469, 621, 683
Bowen, James, 193, 236, 645, 798, 827
Braga, Juan C., 423
Brock, John C., 785
Brown, Barbara E., 348, 451, 707, 1187
Brückner, Helmut, 368
Burke, Laretta, 918
Byrne, Maria, 358

C

Cabioch, Guy, 102, 373, 422, 717, 822, 1133
Collins, Lindsay B., 896, 1128, 1180
Copper, Paul, 94
Cortés, Jorge, 351
Cuffey, Roger J., 172

D

Davies, Peter J., 40, 301, 504, 539, 869, 1027
Day, Jon C., 230
Dinsdale, Elizabeth A., 697
Dixon, David J., 1086
Dodge, Richard E., 958
Done, Terry, 261, 281, 594, 1092
Drew, Edward, 535, 1091
Duke, Norman C., 96, 653, 655

E

Edinger, Evan, 575
Enos, Paul, 85

F

Fabricius, Katharina, 722, 740
Fallon, Stewart, 829
Feingold, Joshua S., 365
Finkl, Charles W., 846
Flint, Elizabeth, 700

Flood, Peter, 84, 139, 191, 193, 321, 406,
427, 776, 854, 915, 940, 1124, 1143
Ford, Murray, 992
Freiwald, André, 225
Frohlich, Cliff, 679
Furnas, Miles J., 934, 1125

G

Gagan, Michael K., 1034
Geister, Jörn, 1171
Genin, Amatzia, 839
Ginsburg, Robert N., 1137
Gischler, Eberhard, 15, 112, 164, 561,
586, 1005, 1143
Goodwin, William B., 889
Gourlay, Michael R., 601, 1144,
1149, 1154
Greenstein, Benjamin J., 1076
Grigg, Richard W., 298, 549

H

Hallock, Pamela, 415, 416
Harvey, Nick, 299, 1014
Hearn, Clifford J., 563
Heatwole, Harold, 256, 1138
Helmle, Kevin P., 958
Hongo, Chuki, 966
Hopley, David, 13, 97, 210, 237, 303, 325,
503, 617, 647, 798, 850, 1028, 1138
Hornbach, Matthew J., 679
Houk, Peter, 1138
Hubbard, Dennis K., 338, 856
Hudson, J. Harold, 889
Hutchings, Pat, 139

K

Kan, Hironobu, 940
Kayanne, Hajime, 966
Kench, Paul, 359, 639, 648, 994, 1096
Kendall, Christopher G. St. C., 193
Kikuchi, Ruy K. P., 168
Kleypas, Joan A., 733
Krumholz, Jason, 844

L

Laborel, Jacques L., 39, 156
Lambeck, Kurt, 491, 1140
Leal, José H., 712
Leão, Zelinda M. A. N., 168

Lidz, Barbara H., 16, 180, 406, 821
Littler, Diane S., 18, 20, 30, 38
Littler, Mark M., 18, 20, 30, 38
Logan, Alan, 118
Lough, Janice M., 198
Lovell, Edward, 553
Lugo-Fernández, Alexis, 613, 876

M

Macintyre, Ian G., 97, 691, 855, 1052
Madin, Joshua, 218
Maragos, James E., 123, 380, 391,
700, 753
Matson, Eric G., 294
Maxfield, Barbara, 700
McGregor, Helen V., 777
McLaren, Sue J., 47, 179, 404
McLean, Roger, 47, 107, 165,
405, 812
Merlin, Mark D., 973
Miller, Ian, 1
Montaggioni, Lucien F., 229, 648, 713, 933,
1073, 1184
Morrison, R. John, 1019
Murdoch, Thaddeus, 118

N

Neumann, A. Conrad, 855
Nott, Jonathan, 165, 1016

O

Obura, David, 9
Ohde, Shigeru, 446
Ota, Yoko, 562

P

Palaseanu-Lovejoy, Monica, 785
Pandolfi, John M., 554
Paris-Limouzy, Claire B., 881
Parnell, Kevin E., 254, 427, 608
Patterson, Mark R., 71
Perrin, Christine, 309
Perry, Chris T., 185, 558, 1110
Pichon, Michel, 815
Pirazzoli, Paolo Antonio, 167
Playford, Phillip E., 305
Potts, Donald C., 700
Purkis, Samuel, 790

R

Radtke, Ulrich, 368
Reid, R. Pamela, 1045, 1121
Relles, Noelle J., 71
Ridd, Peter, 931
Riding, Robert, 911
Riegl, Bernhard, 663, 790, 1174
Risk, Michael J., 575
Roberts, Harry H., 613, 876

S

Sarg, J. Fredrick, 745, 1010
Schellmann, Gerhard, 368
Shah, Sofia, 553
Shaked, Yonathan, 839
Sheppard, Charles, 214
Shinn, Eugene A., 16, 1032
Siciliano, Daria, 700
Smithers, Scott G., 237, 430, 691, 711, 712, 978

Spencer, Tom, 2, 297, 298, 302, 486, 938, 1043, 1044, 1079
Stephens, Lester D., 678
Stieglitz, Thomas, 931, 1052

T

Taylor, Andrew C. F., 368
Taylor, Frederick W., 327, 679
Thornborough, Kate J., 869
Trudgill, Stephen, 721, 1024
Tucker, Maurice, 752

V

Venkataraman, Krishnamoorthy, 267
Veron, John E. N., 275, 497, 671, 947

W

Wallace, Carden C., 3, 333
Webster, Jody M., 1058

Wessel, Paul, 737, 801
Williams, Gareth J., 753
Wood, Rachel, 452, 789, 1084
Woodroffe, Colin D., 51, 163, 221, 363, 776, 813, 931, 1062
Woodroffe, Sarah, 698
Woodworth, Philip L., 834
Wulff, Janie, 1028
Wust, Raphael A. J., 136, 158

Y

Yokoyama, Yusuke, 618, 620

Z

Zawada, David G., 902
Zhao, Jian-xin, 1128

Subject Index

- A**
Acanthaster planci, 1, 2, 139, 151, 160, 204, 205, 287, 359, 367, 389, 504, 610, 704, 722, 725, 729, 770, 794, 820
Accommodation space, 2, 3, 409, 431, 448, 897, 901, 967, 1100, 1104, 1111
 lateral reef development, 699
 vertical reef growth, 699
Accretionary potential, 863
Accretion rates, 116, 210, 303, 304, 346, 558, 562, 864
 detrital facies, 303
Acropora, 3, 5, 6, 53, 54, 119, 289, 336, 338, 349
 Acropora cervicornis, 6, 7, 98, 112, 116, 466, 556, 622, 623, 628, 699, 728, 814, 1078
 Acropora palmata, 6, 77, 78, 80–82, 88, 98–100, 112, 116, 214, 215, 265, 287, 289, 340, 341, 342, 343–346, 409, 412, 438, 466, 478, 556, 622, 623, 628, 683, 685, 699, 728, 970, 971, 980, 1032–1034, 1078, 1175
 evolution, 7
 genetics, 7
 Madrepora, 4
Adaptation, 10, 1082, 1191
 acclimatization (acclimation), 9
Aerial photography, 13, 14, 103, 925, 1044. See also: Remote Sensing
 digitized aerial photographs, 926
 near infra red photography, 13, 14
Agassiz, Alexander, 15, 52, 649, 678, 692, 857, 938, 1064
Airborne dust, 16
Aldabra atoll, 939, 1087
Algae, 9, 272, 396, 452, 453, 936, 1006, 1095
 algal blooms, 273, 936
 algal cementation, 263
 algal reefs/structures, 136, 1053
 algal turf, 38, 141, 477
 blue green, endolithic, boring algae, 18, 19, 141
 classification of coralline algae, 21
 Caulerpa sp., 34
 Chlorophyta, 30, 33, 419, 540
 crustose coralline algae, 20, 21, 25, 26, 28, 29, 39, 53, 54, 91, 121, 136, 186, 262, 277, 290, 330, 340, 423–426, 442, 466, 474, 476, 477, 481, 549, 629, 664, 701, 704, 733, 735, 863, 871, 873, 913, 933, 1143
 evolution of crustose coralline algae, 23
 filamentous algae, 137
 Hydrolithon sp., 26, 39, 425, 426
 Lithophyllum sp., 22, 23
 Lithothamnion, 425, 426, 435
 macroalgae, 30, 91, 501, 610, 611, 725, 726, 728, 813, 1138, 1139, 1182
 microalgae, 722, 723
 Phaeophyceae, 30, 33
 Rhodophyta, 30, 32, 419
 Sargassum sp., 31, 33
 Udotea sp., 34
Algal cup reefs, 120, 121, 311, 1177
Algal pavement, 211
Algal ridges (Lithothamnion ridges, Porolithon ridges), 21, 25, 32, 167, 474, 475, 478, 713, 1075
Algal rims, 39, 44, 53, 54, 473, 475, 476, 711, 712, 897, 980, 981, 1087
 coralline algal fringing reef, 1049
 rates of accretion, 474
Algal symbiosis, 10, 12, 277, 278, 282, 723, 1190
Alkalinity anomaly measurements, 303
Allochthonous carbonates, 197
Andaman and Nicobar Islands, 267, 268, 270, 271, 348, 349, 1100
Andaman Sea, 348
Antecedent karst hypothesis, 44, 647, 1064
Antecedent platforms, 40, 58, 647, 719
 siliciclastic, 45
Antecedent topography, 41, 43, 119, 343, 345, 407, 414, 561, 898, 901, 932, 1144
Anthropogenic impacts, 63–66, 139, 151, 152, 250, 260, 272, 361, 448, 554, 555, 576, 582, 594, 651, 918, 962, 975, 1117, 1138.
 See also: Environmental impacts
anti-fouling bottom paint, 891
aquaculture, 723
aquarium, 355
blast fishing, 273
causeway construction, 63
clearing for agriculture, 101
coastal construction, 392
coastal construction activities, 796
coastal developments, 231, 727
coral mining, 708
coral reef condition, 723
coral reef degradation, 230, 724
curio trade, 355
direct physical damage, 231
dredging, 702
dredging and filling, 403
early cultural history, 131
engineering on coral reefs, 391–403
eutrophication, 578, 1052
fertilizers, 723, 800
fishing, 273
health of seagrass beds, 976
heavy metal accumulation, 553, 1039
herbicides and pesticides, 936
human damage, 350
human occupation, 601
invasive species, 231
land based water quality, 231
large-size grounding sites, 892
mangroves, 657
mining/quarrying of coral reefs, 707–710, 800
mortar and plaster, 708
oil pollution, 795
overfishing, 610, 795
pollution and ship grounding, 122
pollution of lagoonal waters, 604
poorly designed engineering activities, 392–397
radioactivity, 133
recent history, 132
road causeways, 393
seagrass, 976
sedimentation, 273, 578
sediment delivery, 1118
sewage discharges, 396, 397, 723
ship channels, 395
shipping, 232
soil erosion, 727
tourism, 231
trace elements and reef pollution, 1039
unsustainable harvesting, 231
vessel grounding, 889
Arabian/Persian Gulf, 817
Aragonite. See Calcium Carbonate (CaCO₃),
Atlantic Multidecadal Oscillation (AMO), 782
Atoll islands (motu), 47, 48, 60, 191, 221, 223, 242, 1155
 classification of atoll islands, 48
 dunes, 224
 processes of formation, 49, 62
 sediments, 49
 soils and vegetation, 62, 133
 vegetation, 50

- Atoll islands (motu) (*Continued*)
 vulnerability, 50
- Atolls, 42, 45, 47, 48, 51, 66, 102, 116, 118, 123, 190, 221, 224, 299, 300, 322–323, 391, 392, 405, 449, 473, 591, 598, 617, 737, 759, 760, 767, 827, 907, 969, 1019, 1020, 1062–1064, 1075, 1087, 1099, 1142
- accretion of the reef rim, 59
- almost atoll, 53
- atoll lagoons, 52, 56, 57, 223, 447, 615, 1065, 1088
- Caribbean atolls, 52
- classification of atolls, 52
- closed atoll, 762
- compound atolls, 848
- emerged atolls, 53, 647, 718, 1027
- feo, 54, 55
- hydrology, 63
- Indian Ocean atolls, 52
- lagoon sediments, 57
- lagoon flushing, 56, 1087
- Pacific Ocean atolls, 52
- passes, 124
- Quaternary evolution, 59
- shelf atolls, 848
- submerged atolls, 53
- volcanic basements, 447
- vegetation and soils, 128
- Atoll zonation, 53
- Australian continental shelf, 618
- Australian Coral Reef Society, 504
- Autochthonous carbonates, 197
- Automated underwater vehicles (AUVs), 71, 72, 74, 980
- B**
- Backreef, 897
- Backstepping, 77, 78, 80, 82, 100, 342, 344, 346, 409, 683, 1061
- Bacteria, 136, 863
- Baffles, 916, 175, 348. See also: Seagrass, *Halimeda*
- Bafflestone, 197
- Bahamas, 85, 86, 103, 173, 340, 631, 636, 680, 752, 1047, 1137
- Holocene beach-accretion ridges, 86
- last interglacial, 628
- octocorals, 90
- Pleistocene buttresses, 86
- Pleistocene dunes, 86
- Pleistocene eolianites, 86
- Pleistocene sea cliff, 88
- reef zonation, 88
- sediments, 917
- Bahamas banks, 928
- Bahamian seamount, 22
- Bank barrier reef, 100, 261
- Banks Island, 94
- Banks, Joseph, 96, 938
- Barbados, 17, 77, 78, 82, 97, 342, 344, 345, 370, 371, 373–375, 479, 481, 556, 561, 618, 622, 634, 683, 685, 823, 824, 968, 969, 978, 979, 1052, 1058–1060
- hydrogeology, 101
- local uplift rate, 375
- reef terraces, 91
- Barrier or ribbon reefs, 102, 299, 509, 590, 598, 719, 847, 1176
- Bassett edges, 107, 229
- Beach rock, 50, 62, 107, 108, 110, 171, 179, 192, 224, 247, 248, 651, 718, 983, 984, 1125, 1138, 1152
- cements, 108, 109
- composition, 108
- incipient beachrocks, 983
- problems of dating, 109
- as sea level indicator, 110
- Belize, 44, 52, 103, 106, 110, 112, 114, 115, 117, 164, 175, 422, 640, 855, 914, 1053
- atoll reefs, 112
- Belize barrier reef, 42, 112, 481, 489
- Holocene sea-level curve, 116
- postglacial reef growth, 114
- reef zonation, 112
- sediments, 115, 917
- Bermuda, 43, 118, 119, 122, 173, 175, 479, 1052, 1174
- terrace reefs, 120
- Bikini Atoll, 57–59, 123, 124, 128, 130, 132, 134, 322, 380, 615, 932, 1064
- drill cores, 126
- lagoon sediments, 127
- Binding organisms, 136, 974, 975, 998, 1007, 1030
- Bindstone, 197
- Biodiversity, 334
- Bioerosion, 18, 91, 111, 139, 150, 153, 186, 187, 189, 266, 280, 287, 304, 330, 344, 346, 354, 360, 366, 367, 389, 400, 452, 454, 464, 465, 562, 575, 576, 610, 713, 722, 725, 863, 864, 995, 1025, 1115, 1143
- boring, 143, 144, 150, 183, 468, 725, 1026
- grazers, 10, 146, 189, 1026
- grazers, chitons, 149
- macroborers, 139, 140, 142, 143, 144, 149, 150, 227
- macroborers, succession, 146
- microborers, 149, 150, 1008
- parrot fish, 148
- polychaetes, 725
- rates of bioerosion, 143, 144, 145, 147, 149, 151
- Bioherms, 156, 157, 174, 539, 1046
- Biostromes, 156, 157, 540
- Bioturbation, 158, 161, 389, 466, 524, 998
- rate of bioturbation, 159
- Birds/Seabirds, 62, 63, 128, 191, 192, 245, 258, 259, 603, 705
- Bleaching, 6, 11, 12, 17, 87, 92, 112, 122, 139, 200, 201, 204, 251, 273, 279, 287, 348, 350, 355, 361, 366, 611, 651, 704, 706, 728, 736, 794, 814, 889, 927, 962, 963, 1079–1083, 1088, 1182, 1189
- adaptive bleaching hypothesis, 11, 1082
- recovery from bleaching, 201
- sea surface temperatures, 1079
- thermal threshold, 1082
- thermal tolerance, 1079
- Blowholes, 163, 1033
- Blue holes, 41, 57, 103, 164, 222, 932, 1180
- Boat channels, 53, 54, 165, 434, 617, 712
- Boilers, 120. See also: Cup reefs
- Bonaire, 370
- Boulder beaches, 165, 166, 191, 432, 438, 442, 559, 1106,
- Boulder zone/Boulder ramparts, 62, 107, 166, 167, 442, 475, 643, 915, 1094
- Brazil coral reefs, 168–170, 1174
- chapeirão, 168, 172
- endemic species, 170
- fore reef, 171
- fringing reefs, 171
- lagoon, 171
- patch reefs, 171
- reef types, 171
- submerged banks, 171
- Brunhes/Matayama boundary, 522
- Bryozoans, 173–175, 227, 452, 461, 466, 467, 542, 863, 913, 933
- C**
- Calcification, 183, 281, 454, 724, 726, 733–736, 863, 1189
- Calcification rates, 251, 282, 291, 728, 959, 961, 995
- Calcite. See: Calcium Carbonate (CaCO₃)
- Calcium Carbonate (CaCO₃), 107, 109, 136, 181, 185, 210, 275, 277, 284, 312, 359, 464, 547, 777, 819, 915, 1008, 1024, 1056
- aragonite, 5, 25, 47, 108, 283, 303, 309, 369, 404, 464, 714, 733, 735, 752, 777, 779, 961, 1023
- calcite, 20, 32, 47, 108, 179, 303, 309, 404, 417, 419, 422, 464, 468, 481, 691, 714, 733, 735, 752, 779, 1023, 1054
- carbonate dissolution, 734, 735
- cement, 984
- precipitation, 734, 1049
- production, 212, 251, 994, 1111
- Calcrete/Caliche, 99, 179, 404, 747, 776, 1027
- breccias, 180
- rhizoliths, 180
- Callianassid shrimps, 159, 160
- Carbonate budgets, 185–189, 360, 1113
- carbon metabolism, 182
- organic carbon, 181
- organic carbon production, 183, 1009
- planktonic carbon, 183
- sediment budgets, 994, 995
- Carbonates, 197
- classification, 193–198
- Carbonate sediments, 265, 813
- Carbon dioxide, 29
- Carbon fluxes, 181, 182
- energy transfer, 181
- Caribbean coral reefs, 204, 338–346, 901
- barrier reefs, 338
- fringing reefs, 338
- inner-shelf reefs, 344
- late Holocene reefs, 341
- reef-crest, 340
- reef types, 338
- shelf-edge reefs, 338, 340, 342–344
- submerged reefs, 342
- Caribbean corals, 17
- Caroline Islands, 48
- Cellular reefs, 473. See also: Reticulated Reefs
- Cementation, 309, 314, 316, 318
- aragonite cements, 309, 311
- botryoidal cements, 312
- calcite cement, 312
- controls of cementation, 313
- fibrous cements, 312
- high-magnesium calcite (HMC), 311
- low-magnesium calcite (LMC), 311
- sparte cements, 312
- syndimentary lithification, 454
- Central American Isthmus, 353
- Central American Seaway, 497, 498, 949
- Chamisso, Adelbert von, 193
- Classification of carbonates, 193, 196, 197
- allochthonous, 195
- autochthonous, 195
- bafflestones, 84, 265
- boundstones, 745
- floatstones, 22, 265, 406, 745, 1115
- framestones, 265, 427
- grainstones, 521, 745
- packstones, 194, 461, 521, 745, 776
- rudstones, 22, 265, 745, 940

- Climate change, 12, 29, 198, 200, 210, 211, 214, 217, 218, 231, 290, 291, 355, 551, 611, 962
carbon dioxide, 198
coastal impacts, 214–216
coral growth, 962
future sea level trends, 204, 836
increasing storm activity, 218, 219
poleward extension of reefs, 813–814
projected future climates, 203
rate of warming, 199
sea level rise, 192
tropical rainfall amount and intensity, 200
- Climate long-range investigation, mapping, and prediction (CLIMAP), 487
- Coastal zone management (CZM), 402. See also: Conservation
- Cocos (Keeling) atoll, 52, 210, 812, 999
atoll islands, 49, 58, 110, 221, 222–224, 246, 615, 932, 1062, 1063, 1065
atoll lagoon, 222
atoll rim, 222
mid Holocene evolution, 225
- Cocos nucifera* (Coconut), 245, 258, 642
- Cold-water coral reefs, 225, 226, 228, 261
- Conglomerates, 62, 108, 229, 713, 812, 984, 1075
- Conservation and management, 230, 232, 273, 336, 884, 887, 975, 1061
artificial reef, 844
coastal management, 727
coastal seagrass beds, 976
coral triangle initiative (CTI), 336
difficulties, 1061
education, 235
enforcement and surveillance, 235
FORAM Index, 415, 416
Great Barrier Reef Marine Park (GBRMP), 13, 232–234, 247, 524
Great Barrier Reef Marine Park Authority (GBRMPA), 504, 850
management, 556
Midway atoll, National Wildlife Refuge, 703
permits and licensing, 235
reef balls, 844, 845
Reefs at Risk, 918, 919
seagrasses, 975
status of coral reefs, 230
zoning, 235
- Controls on coral growth, light limitation, 722
- Cook, James, 96, 236, 938
- Coral biology
polyp, 288
population genetics, 885
reproductive season, 882
sexual and asexual reproduction, 6
skeletal deposition, 277
spawning events, 882
- Coral bleaching. See: Bleaching
- Coral cay, classification, 237, 241, 249
criteria used in classification, 239
dunes, 191
Fairbridge classification of coral island types, 849
island location on the reef platform, 240
island shape, 240
sediment type, 61, 239
soils and vegetation, 213, 240, 1124
- Coral cay, dynamics, 248
cyclonic events, 250
decadal changes, 249
seasonal changes, 248
storm surges, 250
tidal cycle changes, 248
tsunamis, 250
- Coral cay, evolution, 191, 216, 237, 238, 246–247, 256, 1152
- Coral cay, geohydrology, 247, 254
beach groundwater, 1020, 1148
degassing from groundwaters, 109
dual aquifer model, 254
Ghyben-Herzberg model, 63, 254, 255
groundwater, 1022
lens thickness and freshwater resources, 253
water table, 798, 1138, 1148
- Coral cay, soils, 1019–1023
moisture retention, 1020
plant nutrients, 1020
properties of soils, 1022
soil classification, 1022
soil forming factors, 1020
- Coral cay, stability
cementation, 247
location on reef flat, 247
meteorological conditions, 248
platform height, 248
sediment budgets, 247
shape of cay, 247
size of cay, 247
vegetation, 247
- Coral cay, vegetational succession, 191, 238, 245, 256, 642
colonizing vegetation, 244
forests, 258
herb meadows, 258
pioneer species, 257
pioneer vegetation, 258
savannah, 258
shrub “ring” 257, 258
- Coral cays – general and types and characteristics
agricultural practices, 1022
atoll islands (motus). See also: separate entry
carbonate mineralogy, 1020
diversity, 1020
erosion, 259
erosional episodes, 244
extractable phosphorus, 1023
low wooded islands. See also: separate entry
mangrove islands. See also: separate entry
sand cays, 191
sediments, 239
shingle cays, 191
unvegetated cays. See also: separate entry
vegetated cays. See also: separate entry
- Coral cays, 26, 27, 32, 87, 202, 350, 361, 409, 611, 724
Black band disease, 34, 36, 795
White band disease, 341, 795
Yellow band disease, 795
- Coral evolution, 9
- Corals – global distribution, 282
- Coralgal reefs, 1086
- Coral geochemistry, 959, 1034
stable isotope, 1034
trace element, 1034
- Coral growth/growth rates, 280, 281, 554. See also: Sclerochronology
linear extension rate, 349
- Coral life cycle, 275, 672, 881
- Coral palaeoclimatology, 777–781. See also: Sclerochronology
coral-climate signals, 779
ENSO variability, 780
fossil corals, 779, 780
geochemical climate proxies, 778
sea surface salinity (SSS), 777
sea surface temperature (SST), 777
- Coral reef conservation. See: Conservation
- Coral reef geodesy, 330
- Coral reefs definition, 11, 261, 263, 275
coral-algal reef, 261
coral community, 263
- Coral reproduction, 275–276, 366–367, 952
coral larvae, 287, 290, 501
coral spawning, 1088
larvae planula stage, 1088
mass spawning, 290
sexual and asexual reproduction, 6
- Coral Sea, 504–520
Bunker High, 508
Capricorn basin, 508, 513
collision, 516
drift, 513
Marion Plateau, 507, 508, 519, 520
palaeo-oceanography, 519
Queensland Plateau, 507, 508, 510, 513, 516, 519, 520
rift basins, 510
rifting, 513
sea-level variations, 516
subsidence, 513
- Corals: environmental controls on growth, 281, 285, 336, 594, 1060
chemistry, 282, 283
growth form, 363
high-temperature limits to reef and coral growth, 279
light, 286,
low-temperature limits to reef growth, 279
salinity, 287, 288
sediments, 286
solar radiation, 282, 284, 288
substrate, turbulence and mechanical effects, 279
temperature, 279, 282–284, 287, 288
water depth, turbidity and latitude, 278
water quality, 279
- Coral terraces, 374, 375, 967, 1133. See also: Emerged reefs
- Coral triangle. See: East Indies Triangle of Biodiversity (EITB)
- Coral windrows, 871, 872
- Coriolis force, 761, 934, 936, 1093, 1126
- Costa Rica, 353
- Cretaceous mass extinction, 672–673
- Curaçao, 370
- Cyanobacteria, 19, 32, 34, 35, 1139
- Cyclones/hurricanes/typhoons. See: Tropical cyclones, hurricanes, typhoons
- D**
- Daly, Reginald Aldworth, 41, 109, 297, 486, 488, 813, 1064
- Dana, James Dwight, 58, 298, 301, 692, 938, 1063
- Darwin, Charles, 9, 15, 40, 51, 57, 165, 221, 298–303, 328, 351, 373, 430, 692, 897, 938, 1063
- Darwin Point, 298–299, 550, 706, 813, 897
- Darwin’s subsidence theory, 647, 857
- David, T.W. Edgeworth, 58, 301–302, 938
- Davis, William Morris, 302–303, 486, 488, 1063
- Deep drilling program (Enewetak Atoll), 386–388
- Deep sea/cold water reefs, 73, 225, 1177
- Density and Porosity, 303–304, 821
porosity, 821
- Depth-zonation, 625
- Diadema*, 141, 146, 359, 611
- Diadema antillarum*, 17, 91, 160, 610, 728

- Diagenesis, 58, 99, 161, 179, 184, 229,
309–319, 608, 625, 714, 745, 747, 779,
780, 980, 1035
crystalline modifications, 317
- Diseases. See: Coral diseases
- Dissolved organic carbon, 183
- Dolomite, 58, 316–317, 322, 323
Dissolution, 315
- Dolomitization, 317–319, 321–324, 745
dolomite, 321, 447, 448
dolosparite, 318
dolostone, 316, 321, 323
- Double and triple reef fronts, 325–326
- Drill cores data, 303, 476, 506, 515–517, 530,
649, 701, 872, 1027
- Drilling, 41, 58, 59, 105, 106, 126, 294, 302, 432,
433, 447, 503, 520, 523, 549, 561, 715,
719, 798, 867, 960, 1060, 1062, 1064,
1074, 1185
Integrated Ocean Drilling Program, (IODP),
688, 822–824, 1060
oil drilling, 504
- Dunes, 776, 777
- Dune sands, 404
- E**
- Earthquakes, 270, 327–332, 348, 596, 598, 695,
1097, 1100, 1103
Nias Indonesian, March 2005, 598
- Eastern Pacific Warm Pool, 352
- Eastern tropical Pacific coral reefs, 351, 352
Holocene growth history, 353
types of coral reefs, 354
- East Indies triangle of biodiversity (EITB),
333–337, 501, 594, 595, 743, 763, 1093
- Echinoderms, 26, 358–359, 367, 704
- Eco-morphodynamics, 359–362
timeframes of change, 360
- Ecomorphology, 363–365, 978
coral growth forms, 289, 972
ecomorphological zonation, 363, 364, 422
environmental stresses and their effect on coral
morphology, 363
variation in coral communities, 363–364
- Electro mineral accretion, 368
artificial reef structures, 368
- Electron Spin Resonance Dating (ESR), 368–372
- El Niño Southern Oscillation (ENSO), 15–16, 62,
189, 199, 201, 204, 221, 353–355,
365–367, 498, 694, 695, 717, 762, 777,
780–782, 927, 1001, 1035, 1038, 1039,
1075, 1087, 1135
sea-surface temperature (SST) anomalies, 365,
366
- Emerged reefs, 98, 327–330, 373–378, 406, 596,
663, 968, 978, 979, 980, 1035, 1038,
1059, 1075, 1133
- Emperor Seamount Chain, 549, 701, 802, 803,
806–809
- Enewetak, (Enewetok) Atoll, 57, 58, 173, 175,
322, 383–390, 448, 540, 544, 932, 1064
biogeography and ecology, 388–390
cultural history, 382
deep drilling program, 386–388
diversity levels, 388
Enewetak marine biological laboratory,
383–386
subsidence theory, 390
upwelling effects, 388
zonation, 381
- ENSO. See: El Niño Southern Oscillation
- Environmental controls on coral growth, 9, 11,
281–293, 363, 962, 978, 979
emersion, 818
latitudinal limits, 813
light, 278, 818
microenvironmental controls, 287
salinity, 817
sedimentation, 818
temperature, 501
water motion, 818
- Environmental impact assessment (EIA), 397
- Eolianite, 108, 179, 404, 776, 777, 985
- Eutrophication, 101, 576, 581, 723, 724, 726,
799. See also: Nutrients
nutrient pollution/eutrophication, 575,
722–729, 934, 936
seawater contamination/ sewage, 64
- Evolutionary Theory – Genetic Links. See also:
Scleractinia evolution
Acropora, 7
algae, 23
Croizat's panbiogeography, 953
Darwinian evolution, 9, 954
Darwin's centres of origin, 953
dispersion and the founder principle, 953
dispersion biogeography, 953
genetic links, 950
genotypes, 950
ocean currents and reticulate patterns, 951, 952,
954
syngameons, 955
vicariance biogeography, 953
- Evolution of carbonate reefs, 452–469, 513
ages of seamounts and oceanic islands, 804
ancient reefs, 275–281
Canning Basin, 305
Carbonate record in SE Asia, 334
Carboniferous reefs, 190
Devonian, 305
epeiric seas, 462
Florida reef evolution, 407
fossil reefs and bryozoans, 173
Frasnian, 94
geological history of Eastern Tropical Pacific
reefs (ETP), 353
Gondwana, 1084, 1085
Gulf Stream, 498
Jurassic, 464
Laurasia, 1084, 1085
Miocene, 464
Miocene 'phosphate' spike, 516
ocean circulation and reef evolution, 497–503
Northern Coral Sea, 516
Pangea, 1085
Permian Capitan reef system, 789
Response to long-term environmental change,
462
- F**
- Facies, 532, 857, 860, 897
- Fangataufa, 322
- Faroese, 42, 405, 590, 591, 650
- Fiji, 373, 376
- Fish, 10, 25, 128, 227, 389, 465, 467, 611, 651,
768, 975, 1056, 1087
algal growth, 465
clown fish, 1070
coral reef fish larvae, 883
damselfish, 38, 709
Hawaiian grouper, 704
herbivorous fish, 537, 726
lion fish, 92
parrot fish, 26, 91, 121, 147, 462
surgeon fish, 26
- Floatstone, 197, 406
- Florida, 80, 81, 343, 1137, 1174
coral zonation, 628
Florida Keys, 173, 406–414, 785, 889,
893, 928
Holocene transgression, 414
Key Largo Limestone, 406, 408, 409, 627
Miami limestone, 627
Pleistocene marine deposition, 409
sediments, 917
- Flushing, 569, 1095, 1166
flushing times, 613
- Foraminifera, 53, 54, 57, 61, 87, 91, 108, 136,
265, 415, 416–421, 442, 447, 542, 549,
618, 733, 863, 913, 933, 988, 992, 1000,
1006, 1086
algal symbionts, 417, 418
environmental indicators, 416
life cycle, 418
- FORAM Index, 415–416
- Fore reef, 120, 422, 566, 713, 876, 897, 1054
buttress zone, 1032
fore-reef slope, 119, 914
fore-reef zone, 713
- Fossil coralline algae, 423–426, 523, 1060
palaeoenvironmental indicators, 424
zonation, 425
- Framestone, 197, 427
- Fringing reef hydrodynamics, 427–429, 567
- Fringing reefs, 261, 430–444, 598
- Fringing reefs – features
accretion, development and growth, 435,
437–439, 440, 898
framework, 434, 439
growth models, 436, 437, 898
nutrients, 434, 435
structure, 436
substrate, 432
turbidity and terrestrial influence, 432, 434,
435
types, 433
- Fringing reefs – surface structure and zonation
algal terraces, 442
high water shingle ridges, 442
outer living coral zone, 444
reef crest, 439
reef flat, 436
reef slope, 441
shingle ramparts, 442
- Funafuti Atoll, 40, 48, 58, 65, 66, 109, 302, 303,
322, 446–449, 857, 939, 995, 1017, 1064
recent sea level rise, 447
- G**
- Gaimard, Joseph Paul, 827
- Galapagos islands, 353, 354
- Gardiner, John Stanley, 52, 109, 451, 649, 938
- Gastropods, 39
- Geomorphological zonation. See:
Ecomorphological zonation, Zonation
- Glacio control hypothesis, 58, 486–489, 1064.
See also: Daly, Reginald Aldworth
- Glacial-interglacial cycle, 80, 97, 106, 489, 491,
492, 596, 968, 1064
- Glacial interstadials, 479, 968
- Glacio-hydro isostasy, 246, 435,
492, 495, 497, 523, 620, 698, 969,
1140, 1185
deformation, 491
elastic response, 494
eustatic sea-level, 493
Great Barrier Reef model, 494–496
hydro-isostatic adjustments, 59, 60, 494, 718,
850, 853, 1018, 1018, 1075
hydro-isostatic spatial response, 494
hydro-isostatic influence on reef type, 1075
ice sheets, 491

- Japanese model, 494
 last glacial maximum sea levels, 496
 lithospheric flexures, 373
 lithospheric forebulge, 698
 ocean basin, 491
 sea-level response, 493
 viscous response, 494
- Global Ocean Circulation, 203, 204, 497–499
 Antarctic circumpolar current, 497
 Atlantic current, 226
 California current, 758
 East Australian current, 499, 501, 761, 1126
 Equatorial current, 352
 Gulf Stream, 86, 119, 1126
 Humboldt current, 352
 Indonesian throughflow, 336, 501, 596, 1180
 interstadials, ocean circulation changes, 618
 Intertropical Convergence Zone, 1135
 Kuroshio current 502, 550, 758, 940, 943
 Leeuwin current, 501, 1127, 1180
 North Equatorial Counter Current (NECC), 352, 761
 North Equatorial current, 86, 501, 758
 Ocean circulation and reef formation, 500
 Peru current, 758
 South Equatorial countercurrent, 761
 South Equatorial current, 365, 501, 758, 1180
 South Pacific Convergence Zone, 201, 717, 1135
 subtropical counter current, 550
 Yucatan current, 1126
- Global Sea Level Observing System (GLOSS), 1090
- Gondwana, 168, 191, 497
- Grand Cayman, 245, 480, 481, 630, 631, 685, 1162
- Great Barrier Reef (GBR), 17, 325, 470, 504–532, 781, 1038
 accretion rates, carbonate productivity, 3, 187
 beach rock, boulder beaches and platforms, 109, 110, 166, 812
 bioturbation, 159
 blue holes, 164
 bryozoans, 173
 carbonate facies, 528
 cays and islands, 191, 237–251, 322, 639–644
 climate change, 152, 204
 drilling and seismic survey, 521–522, 823, 857
 early evolution/development, 519–520
Halimeda, *Halimeda* bioherms, 540, 545–548
 Holocene evolution, 523–524, 699–700
 hydrodynamics/tides, 711, 1090–1091
 hydroisostasy, 494–496
 internal structure, 43, 45, 1053
 remote sensing and seismic survey, 13, 928, 1015
 sediments, delivery and impact, 581, 916, 1116, 1118
 submerged reefs, 978–979, 1058
- Great Barrier Reef Committee, 503–504, 1043, 1044, 1187
- Great Barrier Reef, Growth Models
 One Tree Reef model, 528
 Ribbon Reef 5 model, 528
 Stanley Reef model, 528
- Great Barrier Reef – Locations
 Bunker-Capricorn Islands, 103, 245, 248, 473, 508
 deltaic reefs, 525
 Heron Island, 504, 799
 Low Isles, 503
 Michaelmas Island, 503
 mid-shelf reefs 525
 One Tree Reef, 529
 outer shelf reefs, 525
 Pompey reefs, 103, 164, 527
 Raine Island, 606, 789
 Ribbon reefs (including Ribbon 5), 5, 102–106, 521, 522, 525, 540,
 Swains Reefs, 103, 510
 Whitsunday Islands, 510
- Great Barrier Reef Marine Park, 13, 232–234, 247, 524
- Great Barrier Reef Marine Park Authority, 232–236, 504, 850
 Fairbridge, R. W., 1950, 846–849
 Hopley, D., 1982, 850–853
 Maxwell, W.G.H., 1968, 854–855
- Great Barrier Reef – reef classifications
 Gross primary production, 181, 182, 184
 community respiration, 182
 net community production, 182
- Growth models, 532
- Guam, 663, 667, 1162
- Guano, 62, 192, 247, 258, 391, 766, 776, 798, 799, 1022, 1138. See also: Phosphatic cay sandstone
- Guyots, 322, 549, 737, 738, 803, 897. See also: Seamounts
- H**
- Halimeda*, 32, 34, 57, 91, 108, 112, 117, 158, 265, 302, 438, 447, 464, 516, 523, 535–548, 576, 591, 618, 916, 992, 1000, 1001, 1006, 1088, 1092, 1183, 1185
 calcification, 536
 distribution, 536, 540
 growth, 536
 holdfasts, 535, 540
 reproduction, 537, 538
 sediments, 538
- Halimeda* bioherms/banks, 5, 457, 510, 538, 539, 541, 543, 547, 548, 1092
 accumulation rates, 543, 548
 growth rates, 542, 544, 545
 internal structure, 542
 seismic data, 542
- Halimeda* bioherms – Locations
 Enewetak Atoll, lagoon, 544
 Java Sea, 542
 Miskita Bank, 542
 Sahul Shelf, 542
 Swains Reef, 542
- Hawaiian Islands, 232, 298, 393, 432, 438, 486, 550, 633, 739, 824, 857, 914, 1058, 1061
 last interglacial deposits, 633
- Hawaiian-Emperor seamount chain, 232, 298, 549–552, 737, 738, 802, 897, 1061
- Heinrich events, 618, 686, 689
- Heliopera* sp., 54, 55, 60
- Historical ecology, 554
 shifting baseline syndrome, 555
- Hoa*, 47, 56. See also: Atolls
- Holocene coral reefs, 166, 562, 625, 663, 814, 941, 1061
 framework, 255
 fringing reefs, 591
 growth, 932, 1182
 thickness, 561
- Holocene high energy window, 245, 558–561, 942
- Holocene sea levels, 409, 412, 433, 439, 596, 597, 906, 982
- Holocene transgression and high stand, 80, 409, 412, 431, 436, 437, 558, 684, 686, 698, 699, 788, 822–824, 841, 900, 969, 979, 1058, 1182
- Holothuria*, 359
- Hotspots, 513, 549, 649, 701, 713, 758, 762, 802–806, 808, 897, 1064
 core-mantle boundary, 737
 hotspot swell, 738
 mantle plumes, 737, 738
- Human activities, 63–66, 657, 976. See also: Anthropogenic Impacts
- Huon Peninsula, Papua New Guinea, 370, 373–375, 431, 562, 563, 625, 626, 634, 635, 685–688, 968, 969, 978, 1059
- Hurricanes. See: Tropical cyclones, hurricanes, typhoons
- Hydrodynamics of coral reefs, 237, 239, 286, 288, 313, 360, 470, 563, 565, 568, 569, 571, 682, 882, 883, 906, 909, 997, 1081, 1095, 1161
 internal circulation, 608, 609
 Richardson plot, 569
 run up, 1017
 shelf resonance, 428
 steep reef slopes, 1017
 thermocline, 1091
 tides, waves, wind interaction, 613
- Hydrodynamics – currents, 567, 727
 current-wave interaction, 567
- Hydrodynamics – mathematical models, 564, 1163
 porous reef model, 564, 571
 solid reef model, 570
- Hydrodynamics – roughness/rugosity, 564, 565, 510, 878
 bottom friction coefficient, 878
- Hydrodynamics – turbulence
 turbulent binding zones, 1126
 turbulent diffusion, 883
 turbulent energy, 568
- Hydrodynamics – wave energy, 872, 874, 934, 1053
 reef front wave energy, 876, 877, 879, 1087
 wave pumping, 473, 1056
- Hypoxia, 725
- I**
- Imbrication, 873
- Incipient reefs, 598
- Indian-Australian plate, 513
- Indian coral reefs, 267–274
 Andaman and Nicobar Islands, 269
 biodiversity, 271
 conservation issues, 273
 Gulf of Kachchh, 269
 Gulf of Mannar, 268
 Lakshadweep (Laccadive Islands), 267, 269
 submerged reefs, 598
 West coast, 269
- Indian Ocean reefs, 348, 356, 586–593
 Eastern Indian Ocean, northern sector, 348–349
 Grand Récif, 589
 Madagascar, 587, 588
 Maldives, 648–652
 Mayotte, 590
 reef zones, 589
 sedimentary facies, 591
 Western Australia, 634, 1180–1183
- Indian Ocean Tsunami 2004. See: Tsunami Indian Ocean, 26th December, 2004
- Indonesia, 5, 7, 175, 334, 336, 373, 377, 578, 594
- Indonesia reefs, 594–597
 atolls, 600
 Bali, 599
 Biodiversity, 594
 Great Sunda barrier reef, 598
 Java, 598

- Indonesia reefs (*Continued*)
 Kalimantan, 598
 Maluku, 599
 Nusa Tenggara 599
 Sulawesi, 599
 Sumatra, 598
 West Papua, 599
- Indo-Pacific Warm Pool (IPWP), 781
- Infrastructure and reef islands, 605,
 1163, 1166
 agricultural fertilizers, 604
 airfields, 602
 artificial entrance channels, 601
 causeways, 604
 dredging, 601, 602
 infrastructure for navigation and weather
 monitoring, 606
 reclamation, 602
 removal of vegetation, 602
 roads, 602
 sea defence works, 604
 sewage, 603, 604
 waste disposal, 603
- Inshore terrigenous sediment prism, 559
- Intermediate disturbance hypothesis (IDH), 220
- Inter-tropical Convergence Zone (ITCZ), 112,
 351, 717, 761
- Intrinsic and extrinsic drivers, 610
- Island types, 191, 236–251, 255–256, 256–260
 low wooded islands, 639–644
 multiple islands, 243
 unvegetated sand cays, 240, 1124–1125
 unvegetated shingle cays, 240
 vegetated mixed sand and shingle cays, 241
 vegetated sand cays, 241, 1138
 vegetated shingle cays, 243
- Isostasy, 491
- Isostatic readjustment. See: Glaciohydroisostasy
 and Volcanic loading and isostasy
- Isthmus of Panama, 498
- J**
- Jamaica, 422, 914
- Johnston Atoll, 395
- K**
- Karst, 42, 45, 58, 103, 117, 164,
 181, 314, 315, 489, 591, 617, 714, 719,
 850, 854, 932, 1011, 1064, 1065
 collapse structures, 473
 drainage divide, 41
 karst marginal plains, 41, 45
 lapies, 41
 seismic expression, 1013
 solution dolines, 41, 42, 563
 solution rim, 41
 tower karst, 41
 karst limestone, 164, 821
 karst limestone islands, 761, 762, 939
 karst model, 647
 karst solution, 745
 karstification, 649, 1027
- Kita-daito-jima, 322
- Krakatoa, 432, 679
- Kure atoll, 52, 550, 700, 701, 704, 706, 773
- L**
- Laccadives (Lakshadweep Islands), 48, 52, 267,
 269
- Lagoons, 124, 470, 613, 615–618, 897, 1007
 cross reef flux, 615
 hydrography, 618
 lagoon circulation, 125, 564, 613–616
 lagoon infilling, 618, 851
 lagoonal reefs, 121, 471, 473
 productivity, 852
- Larvae, 884
- Larval dispersal, 346, 881–883, 885, 886, 1029
 dispersal kernel, 882–885
 modeling approaches, 885
- Last deglaciation, 683
- Last glacial interstadials, 325, 374, 618–619, 634
 sea-level changes, 618
- Last glacial maximum lowstand and shelf
 exposure, 481, 487, 595, 620, 686, 715,
 968, 969, 1058, 1059
- Last interglacial, 59, 83, 270, 432, 493, 497, 592,
 688–689, 814, 968, 979, 1065, 1130,
 1131, 1182, 1185
 climate, 621
 complex stratigraphy, 626
 fossil reef-crest units, 630
 patch reefs, 630
 reef development 622–624, 625, 629, 632,
 634, 636
- Late Devonian mass extinction, 671
- Lithospheric flexuring, 1075
- Lithothamnion ridges. See: Algal ridges
- Little Ice Age (LIA), 781
- Lord Howe Island, 434, 435, 439, 814, 817
- Low wooded islands, 210, 243, 244, 639–644,
 653, 812, 851, 854
 age framework, 643
 chronology, 244
 formation, 643
 high terrace, 642
 leeward sand cay, 642
 reef flat, 640
 types, 244
- Lyell, Charles, 57, 300, 645–646, 857, 1062
- M**
- MacNeil, F.S., 41, 42, 647–648
- Macroborders, 139, 140, 142–144, 149, 150, 227.
 See also: Bioerosion
- Makatea, 648, 767, 1142
- Maldives, 48–50, 52, 60, 62, 109, 240, 249, 405,
 473, 560, 591, 648–652, 708, 709, 939,
 1001, 1104
 biogeography, 649
 Holocene reef, 649
 latitudinal gradients, 650
 reef islands, 651–652
- Management, 1061. See also: Coastal zone
 management, Environmental impact
 assessment
- Mangroves, 56, 63, 112, 191, 243, 244, 598, 640,
 655–663, 985
 biodiversity, 653
 distributions, 658, 663
 mangrove islands, 243, 653–654
 mangrove muds, 986
 mangrove peats, 985, 986
 nutrients, 655
 peat substrate, 406, 1025
 structural diversity, 658
 types of mangrove islands, 653
- Mangrove swamp, 640
- Mariana islands, 663–670, 1162
 coral habitats, 663
 Saipan, 668
 surficial geology, 669
 Tinian, 668
- Marine protected areas, 205, 230, 232, 276, 551, 887.
 See also: Conservation and Management
 Convention on Biological Diversity, 232
 Florida Keys National Marine Sanctuary
 (FKNMS), 889
- Great Barrier Reef Marine Park (GBRMP),
 850, 851
 Midway Atoll, National Wildlife Refuge,
 703
- Marine snow, 723, 724, 727
- Mass extinctions 25, 95, 467, 671–677, 735,
 1085, 1086
 Cretaceous, 672–673
 Late Devonian, 671
 Ordovician, 671
 Permian, 672
 Triassic, 672
- Mass extinctions – contributing causes, 673–675
 acidification, 676, 733–736
 acid rain, 675
 bolides, 672, 673
 carbon cycle, 675
 carbon dioxide, 672, 676, 677
 disease and toxins, 675
 dust clouds, 673
 extraterrestrial events, 675
 high temperatures, 674
 hydrogen sulphide, 672, 675
 loss of biodiversity, 674
 loss of reef area, 674
 low temperatures, 674
 methane, 673, 675
 ocean chemistry and pH, 676
 oxygen and anoxia, 675
 reef gaps, 671
 salinity, 674
 sea-level changes, 674
 volcanic outpouring, 672
- Mataiva, 931, 932
- Mauritius, 103
- Mayor, Alfred Goldsborough, 678–679
- Megablocks, 62, 448, 679–682, 995, 1106
 coral boulders, 679
 dating, 681
 origin, 680–681, 689
 tsunami-emplaced vs storm-emplaced
 deposits, 680
- Meltwater pulses (MWP), 77, 79, 100, 479,
 683–689, 823, 969, 979, 1058,
 1074, 1185
- Micrites, 109, 193, 194, 197, 314, 422, 459, 579,
 691, 1008, 1056
 microcrystalline carbonates, 691
 micritic crusts, 1049, 1053
- Microatolls, 54, 55, 210, 223, 244, 246, 330, 364,
 373, 433, 438, 592, 640, 691–695, 712,
 718, 819, 873, 981, 982, 984, 1075, 1086,
 1100, 1177
 as sea level indicators, 692–694, 981–982
 Caribbean, 699
 formation, 693
 fossil microatolls, 694, 695
 interannual changes, 982
 microatoll elevations, 693
 microatoll forms, 693
 species, 692
 subaerial emergence, 693
- Microbes, 17, 111, 319, 322,
 452, 454, 456, 458, 459, 697, 723,
 1047, 1095
 microbial communities, 161, 190
 microbial crusts, 911, 912, 914
 microbial crusts Palaeozoic and Mesozoic,
 914
 microbialites, 481, 688, 714, 789, 911, 912,
 914, 1045, 1074, 1086, 1136, 1177
 microbial reefs, 455
 role in altering environmental conditions, 697
 role in coral stress, 697

- Microborers, 139, 140, 149, 150, 1008. See also: Bioerosion
- Mid-Holocene, 244, 246, 270, 559, 698–700, 718, 814, 969, 1075
- Mid-Holocene high energy window, 699, 1104
- Mid-Holocene high stand, 50, 448, 495, 497, 650, 694, 969, 1117, 1185
- Midway Atoll, 59, 322, 395, 700–706, 1064
lagoon habitats, 704
management plan, 705
mean linear growth rates, 706
National Wildlife Refuge, 703
sediments, 704
strategic importance, 702
- Milankovitch astronomical theory, 375
Milankovitch cycles, 463, 467
- Moats, 165, 442, 640, 711–712, 982, 1086
- Molluscs, 142, 227, 537, 542, 712–713, 820, 1006, 1185, 1190
- Monsoons, 349, 591, 650, 782, 1097
- Motus. See: Atoll Islands
- Mud mounds, 459, 461, 462
- Mururoa Atoll, 45, 53, 54, 59, 310, 322, 448, 713–715, 1064
carbonate cap, 714
cementation, 310
lagoon, 714
outer reef rim, 713
Pleistocene reef growth and sea-level changes, 714–715
volcaniclastic series, 714
volcanic shield, 714
- Mutualisms, 10. See also: Zooxanthellae
- N**
- New Caledonia, 103–106, 325, 422, 432, 439, 717–721, 932
barrier reefs, 719
biofacies, 720
fringing reef, 719
lagoon, 719
- Ningaloo fringing reef, 103, 432, 613, 631, 847, 900, 901, 1127, 1162, 1180, 1181, 1182
- Niue, 322
- North Atlantic Oscillation (NAO), 16
- Notch and visor, 721–722, 986
- Nuclear testing, 129–131, 132, 134, 382–384, 713, 832, 959
- Nutrient pollution, 611, 723, 934, 936
dissolved inorganic nutrients, 725
nitrogen, 724
phosphorus, 724
- Nutrients, 10, 16, 25, 28, 31, 183, 264, 286, 287, 343, 576, 1087, 1091, 1125, 1126. See also, Eutrophication
nitrogen, 722, 723, 724
phosphorus, 722, 723, 724
- Nutrients and eutrophication, 431, 575
nutrient eddies, 548
- O**
- Ocean acidification, 25, 29, 202, 204, 220, 251, 280, 409, 611, 651, 671–677, 729, 733–736, 819, 1039, 1189
- Ocean chemistry, 464, 677, 733–734
pH, 202, 733, 735
saturation states, 735
- Ocean circulation/currents. See: Global Ocean Circulation
- Ocean Drilling Programme, 82, 822–824. See also: Drilling
- Oceanic hotspots, 737–739
- Octocorallia, 88, 91, 740–744
biology and ecology, 743–744
classification, 740
conservation issues, 744
evolution and biogeography, 743
gorgonians, 742
sea fans, 742
sea rods, 742
sea whips, 742
sexual reproduction, 743
- Oil and gas reservoirs, 745–751
carbonate reservoirs, 745
hydrocarbon exploration, 749
Neogene reservoirs, 749
- Ooids/Oolites, 86, 114, 404, 406, 408, 752, 821, 1007
- Ordovician mass extinction, 671
- P**
- Pacific coral reefs, 753, 770–774
- Pacific Ocean, 753, 754, 756, 762, 780
anthropogenic impacts, 770
biogeography of corals, 763
coral species, 770
coral species richness, 768, 769
cultural settlement, 764
global climate change, 771
islands, 757
Melanesia, 764
Micronesia, 764
political history, 765
Polynesia, 764
- Pacific plate, 757, 758, 806, 808
- Pacific reefs, 753, 770–774
atolls, 757
barrier reefs, 753
closed atolls, 757
fringing reefs, 753
low reef islands, 757
raised limestone islands and atolls, 757
submerged reefs, 757
use of atolls and islands, 770
- Palaeo-oceanography, 549, 619
- Palaeoclimate, 859, 958, 1035, 1038, 1075, 1186
palaeotemperature, 1035
palaeoclimate from corals, 695, 1060
- Palaeosols, 404, 776, 777, 980
terra rosa, 776
- Palaeoenvironment, 859
- Palmyra Atoll, 393, 395
- Panama, 353, 438
- Panamanian land bridge, 1175
- Pangaea, 757
- Papuan barrier reef, 7, 105
- Particulate organic matter, 724, 725
- Patch reefs, 86–88, 90, 91, 96, 121, 171, 409, 470, 472, 667, 704, 785–788, 847, 1059
- Pathogens, 26, 27
- Peloids, 911, 912
- Pemphis acidula*, 50, 63, 640, 642, 653
- Permiability, 747
- Permian mass extinction, 672
- Persian/Arabian Gulf Coral Reefs, 790–793, 795, 796, 817
coral carpets, 793
coral fauna, 791
diseases, 795
distribution of coral reefs, 791
environmental factors shaping coral assemblages, 794
environmental impacts and changes, 794
fringing reefs, 793
Holocene transgression, 791
patch reefs, 793
stringer reef, 793
structure, 793
types of framework, 793
- Peysonnell, Jean-Andre, 798
- Philippines, 7
- Phosphatic cay sandstone, 50, 108, 192, 245, 247, 248, 651, 798–800, 985, 1022, 1138
age and rate of accumulation, 799
anthropogenic uses, 800
dahlite, 798, 799
francolite, 799
kopara, 714
- Photic zone, 226, 1112
- Photosynthesis, 181–183, 417
- Photosynthetically active radiation (PAR), 284, 287–289
- Phytoplankton, 936
- Pisonia grandis*, 62, 63, 128, 192, 257, 258, 642, 799, 800, 1022
Pisonia forest, 1138
- Plate tectonics, 348, 594, 648, 737, 801–809, 898, 1062, 1064, 1133
absolute plate motions, 805
lithospheric bulge, 378
mid-oceanic ridge system, 803
Pacific plate, 549, 717, 802
palaeolatititude, 807
seafloor spreading, 510, 802
subduction zones, 802
underwater volcanoes, 804
- Platform ribbon reefs, 261, 510
- Platforms (cemented), 85, 108, 475, 640, 812
- Pleistocene climate and sea-level change, 114, 119, 486, 967
Pleistocene low stands, 342, 595
- Pleistocene foundation and framework
Pleistocene framework, 255
Pleistocene foundations, 325, 559, 850
Pleistocene substrate, 440, 523
Pleistocene unconformities, 180, 255, 541, 701, 969, 1015
- Pleistocene reefs and uplifted terraces
coral reefs, 164, 840, 848, 1059, 1173
fringing reefs, 841
Pleistocene sequences, 1074
terraces and uplifted flights, 120, 370, 373, 562, 596, 622, 625, 942
- Poleward extension of reefs, 622
expansion of subtropical reefs, 633
Holocene changes in range, 813
latitudinal gradient, 941, 942
Pleistocene reefs, 814
- Polychaetes, 137, 140, 142, 158, 227
- Porites*, 6, 54, 55, 60, 90, 96, 294, 349, 692, 735, 777, 779, 815, 911, 1034
ecological requirements, 817
geographic distribution, 817
growth and growth rates, 819
mortality, 820
palaeontological history, 816
reproduction, 818
shape and size, 817
skeletal detail, 815
- Porolithon ridges. See also: Algal ridges
- Porosity, 303–304, 309, 313, 746
- Primary productivity, 9, 17, 22, 28
- Pumice, 239, 257, 1017
- Purdy, E.G., 41
- Q**
- Quoy, Jean Rene, 827

R

- Radiocarbon, (^{14}C) dating, 60, 62, 247, 371, 829, 829–832, 979, 1035
 “bomb” radiocarbon, 832
 measuring ^{14}C , 829
 radiocarbon calibration, 100, 830, 831, 1135
 radiocarbon in ocean, 831
 reservoir effect, 831
- Red Sea, 80, 103, 373, 377, 615, 626, 783, 839, 914
 diversity, 842
 fishes, 842
 fringing reefs, 840
 modern fauna, 842
 patch reefs, 840
 reefs-morphology, distribution and description, 839
 tidal ranges, 1089
 tilted last interglacial reef sequences, 626
- Red Tides, 16, 723
- Reefal sedimentation, 354–355
- Reefal sediments origins, types and characteristics, 113, 289, 575, 591, 722, 915
 characteristics, 996
 lagoonal (Midway Atoll), 704
 primary producers, 994–995
 production rates, 995, 1009
 properties, 722, 726, 1005, 1008
 secondary producers, 995
 segmented, 915
 spicular, 915
 tabular, 915
 texture, 1007
- Reef classification, Fairbridge (1950), 846–849
 atolls, 848
 barrier reefs, 847
 fringing reefs, 847
 patch or platform reefs, 848
 reefs with islands, 848
- Reef classification, Hopley (1982), 244, 246, 261, 262, 524, 850–853
 Pleistocene foundations, 851
 submerged reefs, 851
 irregular reef patches, 851
 crescentic reefs, 851
 lagoonal reefs, 851
 planar reefs, 246, 851
- Reef classification, Maxwell (1968), 261, 524, 854–855
 resorbed reefs, 854
 shelf reef types, 854
- Reef classification in response to sea level rise, Macintyre and Neumann (1985), 523, 561, 855–856
 catch-up-reefs, 187, 325, 345, 476, 489, 558, 559, 591, 619, 823, 851, 855, 897, 898, 970
 keep-up reefs, 187, 325, 345, 489, 558, 591, 619, 823, 851, 855, 897, 898, 970
 give-up reefs, 489, 619, 823, 855, 897, 898, 970
 sea level versus reef accretion, 862
- Reef classification, West Indian ecological classification, 1171, 1172
 ecology and classification, 1171
 extreme wave exposure, 1172, 1173
 facies zones, 1171
 low wave exposure, 1173
 medium wave exposure, 1173
 minimum wave exposure, 1173
 sea level history, 1173
 vertical zonation, 1173
- wave zonation, 1172
 wave zones, 1171
 zonal structure, 1171
- Reef drilling, 856, 858–862, 864–866. See also: Drill cores and Drilling
 core logging, 865
 core plugs, 294–296
 coring artefacts, 865
 coring method, 857, 858
 drill, 295
 wire line systems, 858
- Reef energy window index, 211, 239
- Reef flats, 210–212, 216, 524, 565, 566, 869, 871, 873–875, 1087
 abraded reef flat, 373–374
 algal flat, 870
 boulder zone, 475
 coral algal flat, 474
 coral-dominated, 870, 871
 coral windrows/aligned coral zone, 238, 871
 formation, 475
 living zone, 473
 palaeoreef flats, 246
 productivity, 210, 211
 reef flat accretion, 942
 reef flat zonation, 210
 rubble dominated, 871, 873
 sand flat, 475, 871
 sand zone, 473
 storm deposits, 475
 striated zone, 475
- Reef flat zonation, 211
- Reef framework production/accumulation, 183–188, 227, 275, 277, 353, 354, 409, 897, 932, 1053, 1113
 constructors, 872
 framework cavities, 913
 framework types, 187
 rates of framework accumulation, 187
 vertical framework accretion, 188
- Reef front, 80, 175, 325, 422, 478, 479, 481, 876
 bedrock terrace, 478
 buttresses, 474
 formation terrace features, 479
 sand terrace, 478, 479
 shelf-edge chutes and buttresses, 480
 surge channels, 474
- Reef growth, 116, 210, 303, 304, 346, 353, 532, 558, 562, 649, 864
 reef growth rates, 280
 detrital facies, 303
 vertical accretion rates, 971
- Reef interconnectivity, 881–883, 885–887
 pelagic phase, 881
 reef population connectivity, 881
 scales of interconnectivity, 882
 transport of coral larvae, 549
- Reef restoration, 133, 844, 889–895, 1030
 emergency salvage, 891
 epoxy cement, 892
 restoration to medium grounding sites, 892
 vessel grounding sites, 894
- Reef structure, 11, 277, 650, 896, 899, 900
 backreef infill, 900
 back-stepping, 899
 Caribbean reefs compared to Indo Pacific, 899–901
 contrasting sea-level curves, 899
 reef stacking, 901
 seaward prograding model, 899
- Reef topographic complexity, 902, 904, 905
 roughness, 902, 903
 rugosity index, 902, 903
- Reef typology, 906, 908
 Battistini et al (1975), typology, 909
 geomorphological typology, 906
 Great Barrier Reef typology, 909
 island/atoll, 909
 millennium typology, 909
- Remotely operated vehicles (ROVs), 71–74, 225, 1068, 1121
- Remote Sensing, 13, 57, 203, 920–922, 924–928.
 See also: Aerial photography
 acoustic and optical active sensors, 927
 active systems, 922
 AGDS (Acoustic Ground Discrimination Systems), 922
 AISA (Airborne Imaging Spectoradiometer for Applications), 924
 AVHRR (Advanced Very High Resolution Radiometer), 927
 AVIRIS (Airborne Visible Infrared Imaging Spectrometer), 924, 925
 CASI (Compact Airborne Spectrographic Imager), 14, 924, 925
 categories of remote sensing systems, 920
 CZCS (Coastal Zone Coastal Scanner), 927
 electromagnetic acoustic spectrum, 920
 FILLS (Fluorescence Imaging Laser Line Scanner), 927
 Google Earth, 470
 HYMap (Hyperspectral Mapper), 924
 IKONOS, 920
 infrared limit, 923
 LADS (Laser Airborne Depth Sounder), 927
 LANDSAT, 103, 909, 920, 923, 925
 LiDAR, 81, 470, 922, 927
 lidar morphometric analysis, 785–788
 lidar-rugosity mapping, 786
 lidar surveys, 785
 MASTER (MODIS/ASTER Airborne Simulator), 924
 MERIS (Medium Resolution Imaging Spectrometer), 927
 MODIS (Moderate Resolution Imaging Spectroradiometer), 927
 ocean colour, 928
 passive sensors, 922
 PHILLS (Portable Hyperspectral Imager for Low Light Spectroscopy), 924
 platforms, 921
 Polar Operational Environmental Satellites, 920
 RADAR (Radio Detection and Ranging), 922
 satellite altimetry, 803
 satellite imagery, 14
 satellite radar altimeters, 834
 SeaWiFS (Sea-viewing Wide Field-of-View Sensor), 927
 sensors types, 921
 SONAR (Sound Navigation and Ranging), 922
 spatial resolution, 923
 spectral resolution, 923
 SPOT, 925
 survey coral reefs, 73
 thermal infrared passive scanners, 927
 underwater landscape mosaics, 1121, 1122
- Residence time, 569, 609, 906, 931, 1087, 1088
- Response to sea level rise, 979
- Reticulated reefs, 57, 222, 471, 472, 473, 931, 932
 reticulated atolls, 931
- Rheology, 491
- Rhodoliths, 21–24, 98, 521, 735, 933, 934
- Rim reefs (Bermuda), 120
- Ring of fire, 757

- River Plumes, 934–937, 1038, 1112
 flood events, 934, 935
- ROV. See: Remotely operated vehicles
- Royal Geographical Society of Australia, 503
- Royal Society of London, 96, 302, 447, 448, 451, 504, 798, 857, 938, 1044, 1064, 1073, 1187
- 1928–1929 Great Barrier Reef Expedition, 640, 939, 1187
- 1973 Great Barrier Reef Expedition, 504, 640, 939, 1044
- Rudstone, 197
- Rugosity, 96, 672, 906
- Ryukyu Islands, 373, 376, 560, 940, 941, 943, 968
- elevated reefs, 376
- Holocene reefs, 942
- postglacial reefs, 942
- start up, 942
- zonation, 942
- S**
- Scleractinia evolution, 462, 672, 947, 948, 951, 952, 955, 956
- evolutionary mechanisms, 951
- non-zooxanthellate corals, 949
- species, 957
- Sclerochronology, 581, 694, 958–960, 963, 982, 1035
- annual density bands, 330, 863, 958
- coral skeletal geochemistry, 777
- density banding, 778, 819, 959–962
- fluorescent bands, 863, 959
- microarchitecture, 961
- proxy environmental records, 959
- temperature salinity, 863
- terrestrial input, 863
- X-radiography, 331, 863, 960, 963
- Seabirds. See: Birds/Seabirds
- Seagrass, 222, 268, 272, 603, 667, 704, 736, 785, 916, 973, 974, 976, 998
- biogeography, 974
- biology, 974
- taxonomy, 974
- Sea level changes, 45, 246, 270, 486, 492, 897
- Sea level changes – contributors
- thermal expansion of oceans, 967
- vertical tectonic movements, 967
- volume of ice sheets, 967
- Sea level changes, extremes, 836
- Sea level change and impact on reef growth, 435, 966–970
- Sea level changes – indicators on coral reefs, 269, 692, 693, 978–989
- attributes, 978
- barnacles, 983
- beach rock, 107–110, 982, 983
- coral reefs and corals, 979
- encrusting organisms, 982
- mangrove deposits, 985
- marine notches, 986
- microatolls, 691–695
- micro fossils, 988
- oysters/oyster beds, 982, 983
- reef terraces, 980
- tube worms, 983
- Sea-level rise/transgression, 66, 202, 210, 211, 213, 250, 344, 345, 835
- glaciers and ice caps, 837
- hydrological exchanges, 835
- melting of glaciers, 835
- ocean thermal expansion, 835, 837
- pseudo sea-level rise, 216
- sea-level budget, 835
- Seamount chains, 897
- Seamounts, 22, 737–739, 803–805. See also: Guyots
- Sea surface temperature (SST), 204, 927
- Sea turtles, 129, 259, 260, 272, 975
- Green turtle, *Chelonia mydas*, 129, 705, 801, 976
- Hawksbill turtle *Ereimochelys imbricate*, 129, 705, 1030
- Sea urchins, 26, 704
- Secondary framework builders, 265
- Sediments, alteration and breakdown
- abrasion, 993
- breakdown, 915
- durability, 992
- fragmentation, 992, 993
- sediment alteration, 1007
- Sorby principle, 916, 1007
- Sediments, bafflers and binders, 175, 348
- Sediments, composition and properties, 289, 348, 575, 722, 1005, 1008
- calcium carbonate contribution, 994
- composition and sediment contributors, 992, 1006
- marine snow, 579
- mud, 915, 1007
- properties, 1005, 1008
- sediment carbon, 183
- sediment formers, 174
- siliciclastic sediments, 576, 1006
- texture, 1007
- whittings, 917, 1007
- Sediments, impacts, 575–586, 1110, 1115
- ambient sedimentation levels, 581
- changes in coral morphology, 577
- changes in coral population structure, 577
- decrease in available light, 578
- decrease in coral growth rates, 576
- metabolic drain, 578
- microbially mediated decline, 579
- mortality, 577
- reduced larval settlement, 577, 578
- reduced species richness and diversity, 578
- sediment rejection, 579
- threshold sedimentation rates change, 1112
- Sediments, transportation
- currents of removal, 915, 1000
- sediment accretion and removal, 915, 1000
- sediment accumulation, 1113
- sediment budgets, 994, 999
- sediment dynamics/hydrodynamic properties, 211, 213, 996, 997, 999, 1000–1001, 1008
- sediment entrainment, 997
- sediment loads, 353
- sediment movement, 213
- sediment resuspension, 121, 576, 580, 976, 1112, 1115
- settling behavior, 996, 997
- settling velocity, 996
- suspended sediment fluxes, 999
- Sediment traps, 579, 580
- Seismic data, 514, 526, 1027
- Seismic reflection, 738, 750, 1059, 1061, 1182
- carbonate imaging, 1010
- “chaotic” seismic facies, 1013
- seismic facies, 1012
- seismic reefs, 1011
- seismic reflector, 541
- seismic resolution, 1010
- seismic section, 546
- Seismic refraction, 1015, 1016
- 12 channel portable seismography, 1014
- internal reef structure, 1014
- single-channel seismic refraction, 1014
- Seychelles, 103, 215, 216
- Shelf-edge reefs, 409, 479–481
- Shingle ramparts, 244, 640, 643, 712
- Shingle ridges, 238, 700, 1001, 1016–1018, 1087, 1094, 1106, 1154
- berm, 1017
- islands, 640
- record of the frequency and intensity of tropical cyclones, 1019
- Shoaling. See: Wave Shoaling
- Society Islands, 245, 479, 1073, 1075
- Solomon Islands, 373, 376
- Solution processes, 61, 315–316, 569, 1024, 1063, 1065
- biological respiration processes, 1025
- dissolution of limestone, 161, 315–316, 932, 1064
- erosion rates, 2, 43, 280, 488, 1025
- exposed limestone surfaces, 1027
- salt weathering, 1025
- solution lowering, 489
- zonation, 1026
- Solution unconformities, 59, 127, 254, 255, 701, 1014, 1015, 1027, 1064
- Thurber discontinuity, 1027, 1065
- Sorby principle, 916, 1007
- Spiculite, 1028
- Sponge boring, 144, 145, 725, 1029
- Sponges, 23, 87, 88, 91, 136, 144, 152, 190, 227, 452, 453, 455, 466, 467, 820, 1031, 1086
- Cliona*, 45
- coralline sponges, 1029
- diseases, 1030
- diversity of growth forms, 1029
- filtering, 1029
- sclerosponges, 913
- sexual reproduction, 1029
- silica spicules, 1029
- sponge metabolism, 1028
- Spur-and-groove, 39, 411, 412, 422, 476, 482, 590, 599, 666, 704, 876, 878, 1032, 1033, 1089, 1160, 1181, 1182
- formation, 477
- wave-energy level 1033
- Stable isotopes and trace elements, 777, 958, 1034, 1035, 1040, 1053
- carbon isotopes, 1036
- oxygen isotopes, 1036
- trace elements, 582
- trace element studies, 581
- Stadials, 968. See also: Pleistocene
- St. Croix, 341, 343, 344, 346, 408, 481, 911
- Stearns, H.T., 647
- Steers, James Alfred, 107, 503, 1043
- Stoddart, David Ross, 57, 504, 939, 1044
- Storm surges. See: Tropical cyclones
- Stromatolites, 19, 35, 88, 137, 455, 458, 459, 461, 911, 914, 1045–1051, 1177
- archean stromatolites, 1046
- evolution, 1045, 1046
- modern stromatolites, 1047
- Proterozoic stromatolites, 1046
- Shark Bay, Western Australia, 1047
- Submarine groundwater discharge, 49, 723, 1052
- wonky holes, 1052
- Submarine cements and lithification, 309, 911, 1056, 1177
- carbonate cements, 1052
- composition of submarine cements, 1053
- environmental conditions, 1053
- origin of submarine lithification, 1055
- pavement limestones, 1054
- textural characteristics, 1053

- Submarine mass failure, 1097
- Submerged bank reefs and terraces, 77, 80, 82, 100, 270, 327–330, 476, 527, 683–685, 759, 824, 841, 914, 971, 972, 978, 979, 980, 1038, 1058–1061, 1074, 1160, 1176
- morphology, 1059
- significance, 1059
- subsidence/rates, 897, 898
- tectonic setting, 1058
- Subsidence hypothesis of reef development, 59, 299, 431, 1062–1066
- Subsiding terrain, 80, 82
- Sumatra, 348
- Sumatran mega-tsunami 2004. *See*: Tsunami, Indian Ocean 26th December, 2004
- Sunda shelf, 685
- Super-Tethys, 675
- Swathe mapping, 73, 980, 1070
- interactive 3D visualization, 1068
- LIDAR, 1067, 1069
- multibeam system, 1067–1069
- multifrequency (hyperspectral) acoustic laser transmissions, 1068
- Symbiosis, 10, 12, 277, 282, 723, 1190
- photosynthesis, 1070
- Symbiotic algae. *See*: Zooxanthellae
- T**
- Tahiti, 70–80, 106, 236, 300, 422, 561, 685, 688, 699, 824, 911–914, 1058, 1062, 1073–1075, 1142
- coral diversity, 1073
- coralgal frameworks, 1074
- environmental setting, 1073
- Pleistocene sequence, 1074
- sea-level curve, 1074
- unconformity, 1074
- Taphonomy, 1076, 1077
- coral preservation, 1076
- fidelity, 1076
- Holocene, 1077
- information gain, 1076
- information loss, 1076
- late Pleistocene, 1077
- Taphonomic filter, 864
- Tarawa Atoll, 393
- Taxonomy, 947, 948, 951, 952, 954–956
- classification, 954
- species variation, 949
- Terrestrial runoff/terrigenous sediments, 45, 239, 617, 1111–1118
- Tethys Sea, 467, 497, 498, 500, 550, 949, 1084–1086
- Thailand, 679
- Tidal effects
- on coral reefs, 874
- local tide range, 213, 428, 1086
- Tidal jets, 545, 548, 1088, 1091
- Bernoulli effect, 1091
- Tides, 567, 1086, 1087, 1089, 1090, 1155
- baroclinic tides, 1089
- diurnal and semi-diurnal, 1087
- eddies, 1088
- internal tides, 1089
- island wakes, 1088
- regimes, 1087
- resonance, 1089
- tidal currents, 615, 1088, 1091
- Topographic complexity/rugosity, 564, 902–906
- Trace elements, 1034, 1035, 1040
- barium and cadmium, 1038
- manganese and rare earth elements, 1038
- palaeothermometry, 1037
- ultraviolet luminescence, 1038
- Triassic mass extinction, 672
- Tropical cyclones/hurricanes/typhoons, 2, 3, 49, 62, 86, 112, 158, 166, 167, 192, 199, 204, 218, 219, 229, 265, 340, 432, 444, 447, 448, 475, 569, 596, 605, 717, 762, 770, 809, 942, 1000, 1016, 1092, 1102, 1155, 1162, 1182, 1186
- current velocity, 1094
- cyclone genesis, 1093
- cyclone regime, 1095
- cyclonic waves, 1094
- eye, 1092
- hydraulic conditions, 1094
- storm surge, 219, 604, 605, 1017–1019, 1093, 1094, 1147
- wind velocity, 219
- Tsunami, 50, 270, 271, 273, 335, 348, 349, 370, 596, 605, 679, 680, 681, 770, 837, 1096–1108, 1155
- coral reef ecology, 1100
- energy dissipation, 1099
- influence of reefal systems on tsunami behavior, 1098
- mechanical damage, 1100
- mega-tsunami, 1100
- overturned corals, 1103
- reef elevation, 1104
- run-up height, 1099
- salinization, 1104
- sand sheets, 1104, 1105
- sedimentation, 1101
- shoreline erosion, 1104
- subsidence, 1104
- tsunami generation, 1096
- turbulent bores, 1099
- uplift, 1100
- wave lengths, 1097
- wave propagation, 1097
- Tsunami, Indian Ocean, 26th December, 2004, 273, 596, 609, 679, 975, 1096–1108
- Tuamotu Archipelago, 48, 52
- Turbidity, 101, 343, 344, 434, 581, 610, 722, 726, 935, 1081, 1111, 1112, 1118
- Turbid-zone, 1110, 1113–1117
- reducing light levels, 1112, 1115
- resuspension, 1118
- terrigenous sediment wedge, 1116, 1117
- turbidity levels, 1115
- Turbid-zone reef development, 432, 434, 598, 1112, 1113, 1115
- Tuvalu, 48
- U**
- Ultraviolet radiation, 289
- Unvegetated cays, types, 1124
- Upwelling, 25, 226, 349, 352, 538, 545, 575, 595706, 720, 831, 913, 1038, 1081, 1088, 1092, 1125, 1127
- Ekman upwelling, 1126
- internal waves, 1126
- intrusive upwelling, 1126
- nutrient biogeochemistry, 1127
- topographic upwelling, 1126
- Uranium-series dating, 371, 404, 562, 779, 979, 1035, 1128–1130
- analytical methods, 1130
- applications, 1130
- secular equilibrium, 1129
- uranium series disequilibrium, 1129
- U.S. Geological Survey, 384, 701, 857, 1137
- drilling Funaafuti, 447
- USGS Professional Papers, 384
- V**
- Vanuatu, 328, 331, 373, 376, 824, 968, 1133–1136
- Holocene uplift rate, 1133
- neotectonics, 1133
- palaeoclimatology, 1135
- Pleistocene raised coral reefs, 376
- sea-level variations, 1133
- zonation, 1133
- Vaughan, Thomas Wayland, 41, 679, 1137
- Vegetated coral cays, 244, 642, 1138. *See also*: Coral cays, vegetational succession
- floating seeds, 245
- physiognomic similarities, 245
- Volcanic islands, 51, 53, 102, 300, 488, 898, 1020
- volcanic core, 648
- Volcanic loading and isostasy, 82, 373, 633, 1140
- isostatic readjustment, 377–378
- lithospheric flexure, 377
- moat, 1141
- uplifted bulge, 1141
- Volcanoes, 45, 298, 327, 434, 486, 549, 582, 594, 598, 599, 645, 668, 737, 757, 803, 1062, 1097, 1133, 1138
- volcanic ash, 1138
- volcanic disturbances, 1139
- volcanic disturbances and coral reefs, 1138
- W**
- Wallace, Alfred Russell, 334
- Walther, Johannes, 1143
- Wave energy, 211, 214, 217, 564, 659. *See also*: Hydrodynamics
- Wave-reef interactions, 876, 1146, 1154
- Waves and wave-driven currents, 237, 428, 564, 567, 568, 874, 999, 1147–1150, 1154, 1155, 1157–1159, 1161, 1162, 1163, 1165–1168, 1169
- energy dissipation, 1161
- monsoon conditions, 1162
- ocean waves, 1147
- orbital motion, 1156
- orbital velocity, 1154, 1163
- reformed waves, 1161
- swell, 1154
- wave frequency, 1154
- wave period, 1154
- wave propagation, 1155
- wave pumping, 1164, 1165
- wave spectrum, 1159
- wave transformation, 1160
- Wave setup, 216, 471, 566, 613, 874, 1017, 1087, 1144, 1146–1148, 1158, 1162, 1164, 1165, 1167, 1168
- surf beat, 1147
- surf zone, 1145
- wave induced groundwater level, 1145, 1147
- wave set down, 566
- wave set-up on coral reefs, 1146
- Wave shoaling and refraction, 216, 237, 564, 615, 874, 1099, 1149–1153, 1156, 1160, 1163, 1168
- diffraction, 1149
- orthogonals, 1149, 1150
- Snell's law, 1150
- surf zone, 566, 1144, 1145
- wave breaking, 878, 1157, 1158, 1164, 1168
- wave height, 1149
- wave run-up, 250

- Wave transformations. See also: Wave shoaling and refraction
- Western Atlantic/Caribbean coral reefs, 1174–1178
algal built hardgrounds, 1175
bank-barrier reefs, 1175
coral fauna, 1174
fringing reefs, 1175
mid-shelf reefs, 1175
shelf-edge reefs, 1175
similarities and differences to Indo-Pacific reefs, 1177
- Western Australian Reefs, 53, 1180–1183
Ashmore Reef, 1180
cyclone frequency, 1180
Houtman Abrolhos Islands, 164, 473, 631, 848, 901, 932, 1180, 1181
Last Interglacial reef deposits, 631
reefs and shoals of the Sahul Shelf, 1183
reefs of the Kimberley coast, 1162
reefs of the Pilbara coast, 1162
- Rottneest Island, 632
Rowley Shoals, 1180, 1182
Scott Reef, 848, 901, 1180, 1182
Serlingapatam Reef, 848, 1180
tidal range, 1180
- Western Indian Ocean Reefs, 1184
algal ridges, 1184
atolls, 1184
carbonate production, 1185
eastern African coasts, 1184
emerged reefs, 1185
last deglaciation, 1185
Mauritius, 1184
reef communities, 1184
Réunion, 1184
Rodrigues, 1184
Seychelles, 1184
submerged bank reefs, 1184
- Western Pacific Warm Pool (WPWP), 717, 940, 1135
Windrows, 873
- Y**
Yonge, Sir Maurice, 503, 504, 938, 939, 1187
Younger Dryas, 226, 969, 1136
Yucatan Peninsula, 80, 83, 630, 631, 635, 688
- Z**
Zonation, 53, 97, 127, 175, 238, 412, 467, 469–486, 860, 862–864, 897, 903, 942, 943, 972, 978–980
environmental gradients, 364
Zooxanthellae, 10, 202, 226, 277–279, 282, 284, 366, 553, 724, 744, 967, 1070, 1079, 1080, 1082, 1087, 1189–1191
algal symbiont tolerance, 202
Symbiodinium, 1189, 1190
Zooxanthellae symbiosis, 12