Index

Note: tables and graphs are indicated in *italics*

Agadir region
  1731 and 1960 earthquakes 247–52
  active folding, coastal morphology 241–4
  Ait Lamine-Kasbah fault-related fold 247–52
    Landsat image 241
  uplift rates *245*
    implications 251–2
  U-Th dating of fossils *244*, 245
Ait Lamine-Kasbah fault-related fold
  1960 earthquake 240, 247
  Morocco 239–53
  recent surface faulting and displacements 247–51
aminostratigraphy 57–8, 186, 260
Anadara trapezia, racemization of amino acids 260
Apennines, uplift patterns 71–110
Aquapora palmata, U-Th dating 21, 23–5, *244*, 245
Arca sp. *79*, *87*
archaeological sites
  evidence for vertical movement 147–63
  see also submarine human occupation sites (SHOS)
Arctica islandica 116
Argentina, relative sea-level change *10*
asthenosphere
  post-event stress relaxation 165
  viscosity 174
Atlas Mts, Morocco, South Atlas Thrust Front, marine terraces 239–53
Australia
  Coorong to Mt Gambier coastal plain 255–67
    geomorphological context 258
    Holocene sedimentation 261–2
    Quaternary volcanism 262–3 thermoluminesce 259–60, 263
    volcanic edifices 265
  Miocene Gambier Limestone 265
  Portland Volcanic Province 262
  relative sea-level change *10*
    radiocarbon dating *23*
Australian plate, collision zone, E Indonesia, surface uplift 213–24

back-arc basins, Lau Basin 269
Banda Arc-Australian plate collision zone, E Indonesia
  Quaternary surface uplift 213–24
  vertical strain conclusions 222–3
Barbados
  predicted eustatic curve *35*
  relative sea-level change *10*, 22–5
beachrock facies, Brazil, NE 279–93
Bering Strait *12*
Brazil, NE, Holocene beachrock facies 279–93
  Barreiras Formation 285–6
  chronology vs glacio-hydro-isostatic predictions 289–91
  glacio-hydro-isostatic models 281–2
  radiocarbon dating 287–9
British Isles, relative sea-level change 19–22
Bronze Age sites, evidence for vertical movement 147–63
Brunhes-Matuyama geomagnetic polarity reversal 255, 259

Calabria-Peloritan Arc, Pleistocene uplift 116
  calcretes, Australia 255
California
  late Quaternary tectonism 179–97
    deformation of 125 ka and later shorelines 184–91
    Palos Verdes Peninsula 189–90
    Peninsular Ranges 189–94
    Southern Coast Ranges 186–7
    Transverse Ranges 187–9, 191–3
  Mesa Hills, Santa Barbara
    dating and correlation of marine terraces 57–61
    oxygen-isotope correlation of marine terraces and uplift 57–69
      data *62–4*
    Santa Barbara fold belt (SBFB) 58–61
    uplift rates 65–8
  Quaternary marine limit 182–4
  San Clemente and san Nicolas Island terrace sequences 184
  tectonic implications 191–4
carbon 14 *see* radiocarbon dating
Cascadia Subduction Zone 199–211, 321–42
  active crustal structures and coastal subsidence 324–33
  coastal deformation 200, 321–42
  earthquakes 321–42
  marsh burial locations *325*, 333, 335–6
  regional stratigraphy and structure 322–4
Cerastoderma sp. *75–89*
Chandler wobble frequency 4
Cladocora coespitosa 77–81, *85–7*
coastal indicators of sea-level change
  rock-cut installations 147–55
  other indicators 155–6
Conus spp. *75*, *83*, *87*
convergent-margin deformation, Washington, Olympic Coast 199–211
coral dating
  hermatypic corals 185
  Iran 229–236
  Quaternary surface uplift, Banda Arc-Australian plate collision zone, E Indonesia 213–24
  solitary corals 65, 185
U-Th dated coral sequences 21, 23–5, 57, 65, *219*, 220, *231*, *244*, 245
coral reefs
  dominant taxa *34*
  palaeo water depths 36–39
  Quaternary uplift 31–9
see also Papua New Guinea, Huon Peninsula
Cordilleran ice-sheet, Juan de Fuca lobe 208
Coseismic uplift 32
Crete, Falasarna harbour
  relative sea-level change
    and historical earthquakes 350
    radiocarbon dating 351
  tsunami signature 343–52

deglaciation, ICE-4G model 7–11

earthquake-generated tsunami 343–52
  Cook Strait, New Zealand (1855) 355–6
earthquakes
  Agadir region (1731, 1960) 247–52
  Ait Lamine-Kasbah (1960) 240, 247
  Cascadia Subduction Zone 321–42
  contemporary accounts, Rann of Kachchh, India (1819) 295–320
  Crete, Falasarna harbour (AD 65) 350
  Greece, Gulf of Corinth, Helike Delta (373BC, 1861, 1995) 41–56
  Rann of Kachchh, India (1819 and 1844–46) 295–320
  subduction earthquake cycle *323*
  and tsunami signatures 343–52
Elephas sp. 81
ETOPOS model 5

Fennoscandian rebound 13–18
Fiji *see* Lau-Colville Ridge
Florida, submarine human occupation sites (SHOS) 137
foraminiferal associations
  radiocarbon dating *48*
  tsunami signatures, Crete 346–50
fossils, U-Th dating *244*, 245
France, submarine human occupation sites (SHOS) 135

Gibralter, submarine human occupation sites (SHOS) 135
glacial isostatic adjustment (GIA), global 1–29
  relative sea-level change, model-data comparisons 18–27
  theory of relative sea-level change 2–8
  tuning model parameters 8–18
glacial rebound 5–8, 11–18
glacio-hydro-isostatic models, Brazil, beachrock facies 281–2
Global Positioning System (GPS)
  small-scale device 228
  surveying, Iceland, vertical motion 165–78
  Globorotalia inflata 116
Glycymeris sp. *75–89*
Gorda plate 200, 322
Greece, Gulf of Corinth, Helike Delta 41, 42, 47, 49, 51
  Holocene uplift and subsidence 41–56
    borehole data *48*
    modelling absolute sea level and coastal uplift 43–5
    shoreline data *47*
    stratigraphy 49–53

halokinetic deformation 233
Heaviside step function 5
Holocene
  Brazil, NE 279–93
  Crete, Falasarna harbour 343–52
  glacial isostatic adjustment (GIA), global 1–29
  Greece, Gulf of Corinth, Helike Delta 41–56
  Iran 225–37
  Papua New Guinea, Huon Peninsula 33
Huon Peninsula *see* Papua New Guinea

ICE-4G model of deglaciation 7–11
Iceland, vertical motion, GPS surveying 165–78
  Askja magma chamber 171–2
  Krafla spreading segment 171–4
  Northern Volcanic Zone (NVZ) 166–72
  Tjörnes Fracture Zone (TFZ) 166, 173
  Vatnajökull 168–170, 174
India, Rann of Kachchh 295–320
  1819 and 1844–46 earthquakes contemporary accounts 296–305
  appendix, correspondence 311–19
  listric fault models 306–7
  planar dislocations 305–6
  secular strain contraction rate 309–10
Indonesia
  first seafaring 130
  Quaternary surface uplift, Banda Arc-Australian plate collision zone 213–24
  Semau and Rote island surveys (West Timor) 217–222
Indo-Australian Plate
  island-arc volcanism 270
  surface uplift 213–24
interseismic deformation 209
Iran, South Coast
  marine terraces and uplift rates 225–37
    Qeshm Island 226–9, 232–6
island-arc volcanism, Pacific and Indo-Australian Plates 270
isostatic adjustment, global glacial 1–29
Israel coast
  Acre peninsula 150–1, 158–60
  rock-cut installations 147–55
  other coastal indicators 155–6
Italy
  deformation of 125 ka marine terrace 71–110
    distribution of uplift 99–101
    uplift rates 100
  Ionian coast 94–106
  Palinuro, submarine human occupation sites (SHOS) 135
  Southern Apennines 102–5
  Southern Calabria, lineament-coplanarity analysis 111–127
    Calabro-Peloritan Arc 112–17
    fault scarps 116–17
    fracture planes vs existing faults 123–6
    marine terraces 116–17
    synthesis of marine terrace data *114–15*
  Tyrrhenian coast 72–94

Japan, Tokyo Bay, relative sea-level change *10*
Java Trench 214
Juan de Fuca plate 200, 322

Laurentide rebound *14* Lau-Colville Ridge, Pacific Ocean 269–78
  geotectonic context 269
  late Cenozoic evolution 270
  model for pre-Holocene uplift 272–7
  terraces, suggested chronology *274*
lineament-coplanarity analysis 117–27
listric faults, models 306–8
Lithophaga lithophaga 46
lithosphere-asthenosphere, post-event stress relaxation 165

Makran geological province 226
marine terraces 199
marsh burial locations, Cascadia Subduction Zone *325*, 333, 335–6
Mediterranean coast
  rock-cut installations
    Israel 147–54
    other parts 154–5
  submarine human occupation sites (SHOS) 129–46, 147–63
  terrace data on RSL *114–15*
Milankovitch hypothesis 257, 259
molluscs, oxygen-isotope correlations 57–69
Morocco, South Atlas Thrust Front, marine terraces 239–53

Neolithic sites, evidence for vertical movement 147–63
New Zealand, tsunami signatures 353–74
  Cook Strait, 1855 earthquake-generated tsunami 355–6
  Okourewa Valley 355–369
  Wellington fault 353–6
  West Wairarapa fault, 1855 earthquakes 354–5
notches, emerged 44, 272, 274

'ocean function', defined 2
Olivella biplicata, oxygen-isotope correlation of marine terraces and uplift 63
Olympic Coast, Washington, Pleistocene convergent-margin deformation 199–211
Oregon-Washington Coast, Pleistocene uplift 321–42
Ostraea sp. *77*
oxygen-isotope stratigraphy 58
  correlations
    marine terraces and uplift, Santa Barbara, California 57–69
  thermoluminescence studies, Australia 259–60

Pacific Ocean, islands with relative sea-level history 24, *25*
Pacific Plate
  Lau-Colville Ridge, late Cenozoic evolution 270
  tsunami sources 355
Palaeolithic sites, evidence for vertical movement 147–63
Papua New Guinea, Huon Peninsula 24–6, 31–9
phosphate, avian, chronology 272
Pinus pollen 371
Pleistocene deformation, Cascadia Subduction Zone 321–42
Pleistocene uplift
  Apennines 71–110
  California, Mesa Hills, Santa Barbara 57–69
  convergent-margin deformation 199–211
  glacial isostatic adjustment (GIA) 1–29
  Washington, Olympic Coast 199–211
  Washington-Oregon Coast 321–42
pollen, radiocarbon dating analysis 370, 371

Quaternary coastal deformation, Cascadia Subduction Zone 200, 321–42
Quaternary surface uplift
  Australia, SE, Coorong to Mt. Gambier coastal plain 255–67
  Banda Arc-Australian plate collision zone, E Indonesia 213–24
  California 179–97
  Iran 225–37
  Mediterranean coast, terrace data on RSL *114–15*
  Papua New Guinea, Huon Peninsula 31–9
  Washington, Olympic Coast 199–211
Quaternary volcanism, Australia, SE 262–3

racemization, amino acids 260
radiocarbon dating
  Brazil, NE, Holocene beachrock facies 287–9
  calibration, Southern Hemisphere 357
  glacial rebound 18–19
Greece, Gulf of Corinth, Helike Delta 46–53
  hard water effect 46, 50
  Hydrobia acuta, AMS 347, *349*
  limitations 58
  Qeshm, Iran *230*
  relative sea-level change, Crete, Falasarna 351
  reservoir effect, Greece 45–6
  shells, in tsunami signature analyses 369–70
  wood and charcoal 50–1, 262–3, 369–70
Rann of Kachchh, India, contemporary accounts of earthquakes 295–320
relative sea-level change
  based on U-Th dated coral sequences 21, 23–5, *219*, *244*, 245
  Brazil, NE, Holocene beachrock facies 279–93
  British Isles 19–22
  Papua New Guinea, Huon Peninsula 24–6
  predictions, VM2 and ICE-4G models 9
  submarine human occupation sites (SHOS) 139–41
  VM1 and VM2 vicosity models 20
rock-cut coastal installations
  Iran 234
  Israel 147–63

salt, dome, halokinetic processes 233
sea-level markers
  rock-cut installations 149
  see also relative sea-level change
shell middens 130
shells, in tsunami signature analyses 369–70
Sicily, deformation of the 125 ka marine terrace, Tyrrhenian coast 98–9
slip parameters, Rann of Kachchh, India (1819 and 1844–46) 295–320
Strombus bubonius 71, *75–89*
submarine human occupation sites (SHOS) 129–46, 147–63
  age distribution 135–7
  depth distribution 137–8
  Florida, Warm Mineral Springs 137
  France, Fermanville, nr Cherbourg 135
  geographical distribution 138–9
  Gibraltar, Gorham's Cave 135
  Israeli coast 147–63
  Italy, Palinuro 135
  number and rate of discovery 130–4
  relative sea-level change derivation 139–41
  taphonomy 134–5
  see also rock-cut coastal installations

thermal infrared multispectral scanning (TIMS) 32
thermoluminescence dating 259–60, 263
Timor Trough, location maps 214, 216
Timor, West 217–222
Tonga–Kermadec ridge 270
tsunami signatures 370–2
  Crete, Falasarna harbour 343–52
  Helike, Greece 41
  New Zealand 353–74

U-Th dating, coral sequences 21, 23–5, *219*, *244*, 245
  correlation methods 57–8
  principles 220
uplift rates 205–207

viscosity, asthenosphere 174
viscosity models VM1, VM2, VM3 6–27
volcanic provinces
  Australia 262, 265
  Iceland 166–72

Washington, Olympic Coast
  convergent-margin deformation 199–211
    Kalaloch syncline 199–200, 204–7
    Pleistocene strata deformation, Whale Creek 202–3
Washington–Oregon Coast, Pleistocene uplift 321–42
wave-cut surfaces 200–201

X-ray diffraction analysis 63–4, 218–19

Yellowstone hotspot, compared with Iceland 177

Zagros geological province 226