

Index

A

Aigues-Mortes, 215
Aiguilles de Chamonix, 172–173
Alsatian vineyards, 143, 145
Arcachon Bay, 71–79
Ardèche River
 Messinian-Pliocene eustatic cycle, 199
Arles, 211, 213
Armorican Loire, 64–69
Austral archipelago, 251
Austral islands, 251, 253
Aven d'Ornac Cave, 200, 202–203
Avignon, 208–212

B

Basaltic shield volcanoes. *See* La Réunion Island
Biogeomorphology, coral reef, 257–258
Blandas Causse, geomorphological map, 109, 110
Block stream, 99, 100
Bora Bora island and blue lagoon, 251, 252
Brenva rock avalanches, 177–178
Bronze age engravings and petroglyphs,
 224, 225, 226–227

C

Calanques, 229–233
Camargue, Rhône delta
 inherited and active landforms, 210
 Mediterranean deltaic plains, 207
 Pleistocene alluvial gravel, 210
 Rhône River, 208, 210
Canyon formation, Lower Ardèche River,
 197–200
Castles
 La Roche-Guyon and Les Andelys, 18
 Medieval, Seine valley, 25
Catacombs
 Senonian chalk, 8
 sinkholes, 9
Chaîne des Puys
 edifices, 84–87
 monogenetic, 81
 nested/superimposed structures, 84
 Strombolian cones, 84
Chalk cliff, High Normandy
 chalk layers, 32, 33
 rapid retreat, 29, 34–35
Chalk erosion, Seine Valley, 21, 22

Cirque de Navacelles
 cultural value and touristic promotion, 113–114
 geomorphosite, 105, 106
 Holocene travertinization, 109, 111
 inactive poljes, 112
 sinkholes, 112–113
 Vis Canyon, 111–112
 Vis river course, 108
 waterfall formation, 109, 111
Coastal dune, 72–74
Coastal erosion, 30, 36, 37
Coastal management, 71
Continental shelf, Karst, 236–237
Coral reef development, 251, 252
Corsican granitic landforms
 Bavella needles
 castellated ridge, 244
 ring structures, 244–245
 selective erosion, 245
 Filitosa and Lower Tavaro basin
 anthropomorphic megaliths, 248–249
 weathering, 246
 Laricio pine forest, 241, 242
 Porto-Otta valley and calanches, 243–244
Cosquer cave
 Cape Morgiou, 237
 engravings and paintings, 237
 Gravettian and Tardigravettian, 237–238
 Massif de Marseilleveyre, 230, 231
Couesnon channel, 47–49
Cultural heritage
 Aigues-Mortes, 210, 215
 Arles, 208, 211, 213
 Avignon, 207–210
 Les Saintes-Maries-de-la-Mer, 208, 211, 215–216

D

Darwin's theory, 258
Denudation coast, 58
Devès plateau, 103

E

Eastern Pyrenees
 cirque glaciers and glacial denudation rates, 134–135
 fluvial incision, 135
 geomorphological history, 134
 rapid crustal uplift, 135
 rejuvenation, 135

- Etretat
 calculation, coastal evolution, 36
 chalk stratification, 35–36
 cliffs, 35
 geomorphosite, 37–38
 stacks, caves and arches, 35, 36
- External Jura. *See* Jura
- F**
 Faceted fault scarps, 129, 135
 Fisheries, 46–47
 Flood risk, 11–12
 French Prealps
 crystalline basement, 184
 external Alpine domain, 184, 186
 geoparks, 188
 glacial periods, 186
 Pliocene epeirogenic uplift and river incision, 184
 Prealpine landscape, 183, 185, 186
 sedimentary folded external margin, 184, 185
- G**
 Gavarnie cirque
 adjacent national parks, 126
 Brèche de Roland, 124, 125
 Glacial history, 118, 120–121
 Lavedan country, 115–116, 117
 Long-term evolution, 117–118, 119
 Lourdes, 124
 megalithic remnants, 122–123
 northern trail, Refuge des Espuguettes, 115, 116
 Pyrenean system, 115
 UNESCO, 126
- Geopark, Bauges Massif
 geosites, 188–189
 regional nature park, 188
- Glacial geomorphology
 carved valleys and cirques, 221
 scouring and polishing effects, 224–226
 ice-smoothed rocky areas, 224
 late-glacial Moraines and drift boulders,
 225, 226
- Glaciers
 Himalayan, 175–176
 Italian Alps, 172
 Pélerins, Blaitière and Nantillons, 173
 Tacul, 174
- Glazed wall, 224, 225
- Gorges. *See* Vis gorges
- Grands Causses
 Cirque de Navacelles (*see* Cirque de Navacelles)
 Tarn river valley, 111, 112
 Vis river gorge, 105
- Granite. *See* “Pink Granite” coast
- H**
 Hautes Chaumes, 161–165
 High Ardèche, 96
 High Normandy coast
 cliff retreat, 29
 chalk cliffs and gravel beaches, 30, 31
 chalk layers, 32, 33
 Storm surges, 34, 35
- tectonic deformations, 31
 valleuses, 34
 Himalayan glacier, 175–176
- I**
 Ile aux Oiseaux marshes, 77, 79
 Ill-Rhine plains
 “Hardt”, 146
 “Rieds” (*see* “Ried”)
 Upper Pleistocene and Holocene alluvial plain, 146
- Impressionism, 18
- Incised meander
 Cirque de Navacelles, 105, 109
 waterfalls, 109
- Internal Jura
 Jura plissé, 149
 Würmian moraines, 154
- Intrusion
 alkali basalt, 253
 gabbro and diorite, 246
 granitic, 55
 leucogranite, 42
 phonolite, 102
 plutonic, 55, 58
- J**
 Jura
 Jurassic ice-cap and lacustrine margins, 154–156
 lake sediments and peat bogs, 154, 156
 Lons-le-Saunier, 152, 153
 Neolithic and Bronze Age palafittic settlements, 154–155, 157
 plateaus and karstic landscapes, 151–153
 reculées, 151–153
 thermal spas, 158
 western fold-and-thrust belt, 156–158
- Jura vineyards and wines
 aperitifs/dessert wines, 158
 clavelins, 158
 grape varieties, 158
 ‘yellow wine’, 156–157
- Jurassic period, 149
- K**
 Karst
 arches and lapiaz, 234
 Cosquer cave (*see* Cosquer cave)
 polje, 235
 resurgence, 236
 sinkholes, 234–235
- Knickpoints, 132, 133
- L**
 La Réunion Island
 coastlines, 269–270
 cultural value and touristic promotion, 270
 cyclone period, 262
- Last glacial maximum (LGM), 173, 176–177
- Lava field, 84
- Le Puy Tertiary Graben, 93
- Les Saintes-Maries-de-la-Mer, 208, 211, 215–216
- LGM. *See* Last glacial maximum (LGM)
- LIA. *See* Little Ice Age (LIA)

- Little Ice Age (LIA)
 cold phases, Neoglacial, 177
 intense glacial erosion, 172
 winter precipitation, 177
- Loire Valley
 Ancenis, 64
 Armorican Loire, 64
 “Atlantic Loire”, 62
 “bec de Nevers”, 62
 inscription, 61
 Touraine Loire, 64
- Lower Ardèche River
 canyons and caves, 197–198
 canyon formation, 199–200
 karst formation, 200–204
 Urgonian limestones, 196
- Lower Rhône valley, 208
- M**
- Maar, 82, 84
- Meanders, Seine valley
 chalk pinnacles, 18, 25
 cretaceous chalk, 20
 fluvial terraces, 22
 glacial-interglacial and stadial-interstadial periods, 22
 historical and cultural heritages, 17–18
 impressionism, 18
 low convex and asymmetric lobes, 20
 marine transgression, 20
 Medieval castle, 25
 Sparnacian clay, 25
 weathering mantle and superficial deposit, 20, 23
- Mer de Glace, 174–175
- Messinian salinity crisis (MSC)
 deep karst drainages, 197
 Messinian canyons, 198
 Messinian erosional surface (MES), 197
 Messinian-pliocene eustatic cycle, 196–198
 pre-evaporitic surface, 198
- Monogenetic volcanoes, 82
- Mont Blanc Massif
 Aiguilles de Chamonix, 172–173
 global climate change, 171
 LGM (*see* Last glacial maximum (LGM))
- Mont-Saint-Michel
 Mont-Saint-Michel bay, 47–48, 49
 morpho-sedimentary map, 42
 present-day sedimentary dynamics, 50
 sedimentation, 50
 tourism and restoration, 49
- Mount Bego, Southern Alps
 Argentera-Mercantour crystalline rocks, 220, 222
 Bronze age engravings, 224, 225
 carved valleys and cirques, 221
 Conques lake area, 224
 Mount Bego regions, 221, 223
 Plan tendasque peak, 224
 rock glaciers, 225–226
 scouring and polishing effects
 glazed wall, 224, 225
 ice-smoothed rocky areas, 224
 late-glacial Moraines and drift boulders,
 225, 226
- MSC. *See* Messinian salinity crisis (MSC)
- Multilevel cave, 200–202
- N**
- Natural hazard, 270
- Neolithic and Bronze Age palafittic sites,
 154–157
- Neotectonics, 133
- O**
- Oceanic islands
 Austral, 251, 253
 Bora Bora, 251, 252
 Rurutu, 253–254
 Tubuai, 253
- P**
- Pacific Ocean, French Polynesia, 251–258
- Palaeoenvironment and geoarchaeology, 207
- Palaeogeography, 6–8
- Paleic erosion surfaces
 Carlit massif, 130
 Pyrenean range, 127, 129
 thermochronology, 131
- Peat bog, 226, 227
- Periglacial features, 20, 23, 25
- Permafrost, 172, 177, 178
- Permafrost degradation, 178
- Petit Rhône branch, 211
- “Pink Granite” coast, 53–60
- Piton des Neiges Volcano
 “Cirques”, 263–264
 Enclos Fouqué and Grand Brûlé,
 267–268
 external slopes, 264
 rift zones, 268
 Saint Pierre-Les Plaines-Saint Benoit
 corridor, 269
- Ploumanac’h complex
 “chaos”, 57
 granitic intrusion, 53
 Napoleon’s hat, 58, 60
 rock basins, 57
 “tortoise”, 58, 59
- Prehistory, 195, 203–204, 229–230
- Puy de Dôme, 85–86
- Puy Pariou, 85
- Pyla dune, 74–75
- Pyrenean glaciation, 116–119
- R**
- “Reculées”
 Baume-les-Messieurs, 152, 153
- Reclaimed salt marshes, 76–77, 78
- Réunion Island, 262
- Rhône channel, 209–210
- “Ried”
 Ensisheim/Mussig, tumulus culture, 147
 Ill River and tributaries, 147
 Rhine River, 147
 Strasbourg-Markolsheim area, 146
- Ring structure, Bavella needles, 244–245
- Rock avalanche, 178
- Rockfall, 178
- Rock glaciers, 225–226
- Rockwall morphodynamics, 178

S

- Salt marshes
 - Arcachon Bay, 76
 - La Chapelle Sainte Anne, 45
 - Mont-Saint-Michel, 45
 - reclamation, 71–72, 76–77, 78
 - salt marshes evolution, 45
 - sedimentary accretion, 45
 - tidal flats, 45–46, 73
- Sarcoui, 82
- Saverne fault “field”
 - faulted zone, 143, 144
 - lower foothills terraces, 144–145, 146
- Selective erosion, Bavella needles, 245
- Simple cone, 84
- Southern Alps. *See* Mount Bego, Southern Alps

T

- Tafoni
 - granodioritic castellated blocks, 246, 247
 - Porto-Otta valley, 243
- Tarn river, 108, 111–112
- Têt River Valley
 - Carlit massif, 127
 - Carolingian empire, 136
 - Conflent Basin, 132, 134–136
 - Eastern Pyrenees, 127
 - intermontane tectonic basins, 127
 - Mt Canigou, 136
 - Orgues d’Ille, 132–133
- Thrust nappes
 - Gavarnie-Mont-Perdu nappe complex, 117
- Thrust plane
 - Bresse graben, 151
- Travertines
 - Holocene travertinization, 109, 111
- Tropical cyclone, 257
- Tuff ring, 82, 84, 85

U

- Underground Paris
 - ancient site and history, 4–8
 - catacombs and quarries (*see* Catacombs)
 - 1910 flood impact, 11–12
 - hazards, 4, 9
 - protection measures, 13
 - religious edifices, 3
 - renovation, 3, 4
 - Seine River, 3
 - urban development, 14
- Upper Loire catchment. *See* Velay Mézenc
- Upper Rhine Graben
 - alluvial Pleistocene deposits, 148

- anthropogenic impact, 148
- European Cenozoic Rift System, 139
- geomorpho-diversity, 139
- German Black Mountains, 139
- Ill-Rhine plains (*see* Ill-Rhine plains)
- Upper Oligocene, 140–141

V

- Velay Mézenc
 - Devès and Puy Basin, 103
 - Hercynian crystalline basement, 94, 95
 - Padgels, 101–103
 - Periglacial imprint, 99, 100
 - Rayols, 101
 - RTM, 99, 101
 - volcanism, 94–95, 98
- Vis gorges
 - inactive poljes, 112
 - remarkable sinkholes, 112–113
- Volcanism, 94–95
- Volcano-karstic landforms
 - intrusive plugs, 253, 254
 - makateas, 255–256
 - Palaeo-sea levels, 257
- Vosges mountain main ridge
 - Ballons and Hautes Chaumes*, 161, 168
 - deglaciation, 166, 168
 - glacial cirques, 165–167, 168
 - Hohneck, 162–164
 - Tête des Faux, 162, 163
 - Vosges Mountains/Rhine Graben, 139, 141–143
 - Vosgian foothills, 142

W

- Water landscape
 - Aigues-Mortes, 215
 - Arles, 211
 - Avignon site, 211
 - Beauduc site, 217
 - La Capelière, Rhône River, 212–215
 - Les Saintes-Maries-de-la-Mer, 215–216
 - Petit Rhône Branch, 211
- Weathering
 - “chaos”, 57
 - “gnammas” and “karrens”, 55
 - pits and incipient flutes, 59
 - thick mantles, 58

Y

- Yellow wine, 156, 158