Index

Figures in **bold**; Tables in *italics*

```
Advisory Committee on Marine Resources Research, 80
Agreed Measures for the Conservation of Antarctic Fauna and Flora (AMCAFF), 8-9,
    33, 44, 78, 90, 97, 103, 210, 273
Agreement Governing the Activities of States on the Moon and Other Celestial Bodies
    (Moon Agreement), 147, 283
Agreement on the Conservation of Albatross and Petrels, 219
albedo, 177, 179
American Polar Society, 2
Amundsen-Scott South Pole Station, 160, 270
Antarctica
  astronomy and, 159, 198-200
  bottom water in, 181
  challenges, 98-99
  characteristics of, 146, 296, 307
  climate change and, 40, 155-57 (see also climate: change)
  Cold War and, 61 (see also Cold War)
  commercial activity in, 53
  conservation plan for, 273
  contamination in, 114, 137-38, 143, 145, 147-50, 170
  continental shelf delimitation, 47
  cryosphere, 158
  current activities in, 153
  demilitarisation of, 3, 7
  ecosystems, 11, 33-34, 53-54, 94, 100-101, 104-6, 108, 116-18, 147, 156-57, 241,
    302 (see also environment)
  environmental protection of, 9-10, 32, 36, 89-100, 302
  exploration of, 161
  as fresh water source, 155
  genetic resources, 98, 99
  geographical name use, 83-84
  geosciences research themes, 154
  glaciology and (see glaciers; glaciology)
  global politics and, 2
  global processes, 69
```

| Antarctica (continued) | Antarctic Peninsula, 30, 62, 98, 100, 155, 181, 217, 220, 224, |
|--|--|
| global significance of, 305 | 243, 257, 280. <i>See also</i> King George Island Antarctic Seismic Data Library System for Cooperative Re- |
| governance, 1, 20, 30, 37, 42, 273 (see also Antarctic Treaty) | search, 225–27. See also seismic activity |
| history and policy development of, 295 human activities in, 32, 33, 36, 212 | Antarctic Submillimeter Telescope and Remote Observatory |
| ice sheet, 2, 62–63, 155–58, 178, 179, 185, 267, 267, 269 | (AST/RO), 199–200, 202 |
| infrastructure and logistics in, 269–70 | Antarctic Telecommunications Operational Manual (ATOM), |
| internationalisation of, 5 | 234 |
| international spaces and, 288, 306 (see also international | Antarctic Treaty |
| | Article I, 30, 54, 104 |
| spaces) internet and telephone service in, 202 | Article II, 6–7, 17, 24, 25, 30–31, 33–34, 42, 78, 104–6, |
| legal framework for, 1 (see also Antarctic Treaty) | 108–10, 109, 112, 114, 134–35, 300, 302 |
| marine living resources, 32–33 | Article III, 30, 32, 37, 84, 98, 99, 226, 271, 275 |
| microbes, 147 | Article IV, 7–8, 10–11, 31–32, 34, 36, 38, 40, 43–44, 46–47, |
| military occupation of, 30 | 51–58, 91, 98–99, 103, 136–37, 282 |
| mineral resources of, 35, 45, 55, 58 | Article V, 30, 247, 260 |
| monitoring of, 296 | Article V, 30, 247, 200 Article VI, 25, 30, 33, 45–46, 53–54, 100, 134–35, 250 |
| as nuclear-free peace zone, 30 | Article VI, 23, 30, 33, 43–40, 33–34, 100, 134–33, 230 Article VII, 30, 45, 54, 92, 134, 247 |
| outer space and, 133, 144–48, 145, 146 (see also outer space) | Article VII, 45, 100 Article VIII, 45, 100 |
| ozone and, 190–91 (see also ozone) | Article VIII, 43, 100 Article IX, 7–8, 10, 31–33, 44, 54, 90–91, 93, 103, 106, 118, |
| preservation of (<i>see</i> Antarctica: environmental protection of) | 137–38, 147, 209, 231, 275, 303 |
| research in, 23, 59, 61, 65, 76, 154, 156, 162–63, 266 (see | Article XII, 34, 54, 139, 211 |
| also specific research topic) | Article XV, 10, 80, 117, 145 |
| science in (<i>see</i> Antarctica: research in) | Article XVI, 10, 30, 117, 143 Article XVI, 10, 37, 89–92, 94, 97–98, 100, 216–17, 278, |
| scientific cooperation in, 63, 306 (see also science) | 283–84, 291–92 |
| security threats within, 47 | challenges to, 46 |
| snow and ice cover of, 157 | cooperation obligation of, 4, 6, 282 |
| Southern Annular Mode (SAM) and, 181–82, 182 | countries participating in, 211 |
| South Pole of, 200–201 | data access and, 84, 225–27, 274 |
| strategic importance of, 23 | development of, 8 |
| stratosphere, 190 | early drafts of, 3 |
| subglacial lakes in, 157–58, 161, 169–71, 237, 269 | Eisenhower and, 5, 17–19, 21–25, 41, 76, 299, 304 |
| telescopes, 199, 203–5 (see also astronomy) | environmental management and, 145, 150 |
| territorial sovereignty and, 41, 43 | evolution of, 2, 5–6, 32, 44, 154, 90 (see also Antarctic |
| tourism in (see tourism) | Treaty: negotiation of) |
| Treaty (see Antarctic Treaty) | format of, 97 |
| United States policy in, 23 | future improvements to, 278–80 |
| wilderness and esthetic value of, 277 | implementation of, 91, 94, 145, 278 |
| as world natural park, 60 | inclusion criteria, 59 |
| Antarctic and Southern Ocean Coalition (ASOC), 211, 220, | intergovernmental organizations and, 271–72 |
| 272–73, 277–80 | international status of the high seas and, 25 |
| Antarctica's Gamburtsev Province Project (AGAP), 157, 267 | jurisdiction and, 45–46 |
| Antarctic Bioprospecting Database, 98 | liability annex in, 10, 45, 83 (see also Antarctic Treaty: |
| Antarctic Bottom Water (AABW), 176, 179, 181, 302 | Article XVI) |
| Antarctic Circumpolar Current (ACC), 176 | mineral resources and, 10, 35, 45, 55, 58, 226 (see also |
| Antarctic Climate Change and the Environment (ACCE), 220, | mining) |
| 308 | modus vivendi and, 5 |
| Antarctic Convergence, 33, 53, 77, 80, 104, 302 | monitoring and, 296 |
| Antarctic Flight Information Manual (AFIM), 234 | negotiation of, 29 |
| Antarctic Geological Drilling Program (ANDRILL), 156, 269 | nongovernmental organizations and, 274 |
| Antarctic krill, 33, 98, 101 | political and scientific agendas in, 65 |
| Antarctic Mineral Resources Regulatory Committee, 56–58 | reporting and, 296 |
| Antarctic Offshore Stratigraphy (ANTOSTRAT) Project, | Rules of Procedure in, 272, 275 |
| 224_25 224 226 227_28 | science and 59 (see also science) |

bromocarbons, 190, 193. See also chlorofluorocarbons; hydrosealing and, 53 (see also sealing and seals) signatories to, 232 carbons; ozone bycatch, 35, 113. See also fisheries; harvesting signing of, 18 sovereign neutrality and, 41, 43 Byrd, Richard Evelyn, 257 Soviet involvement in, 23 (see also Soviet Union) transparency in, 278 Canada, 70, 98, 125, 128, 135, 193 United States Condominium Proposal and, 6 carbon dioxide, anthropogenic, 171, 176-78, 178, 182, 185 verification in, 296 Census of Antarctic Marine Life (CAML), 156, 269 Antarctic Treaty Consultative Meetings (ATCMs), 8-9, 31-33, Center for Astrophysical Research in Antarctica (CARA), 199 37, 45, 52, 55, 57–58, 74, 78, 81, 89, 90–92, 98, 104, chemolithoautotrophic microorganisms, 171 Chile, 2, 4, 29–31, 40–42, 62, 237 144–45, 210–12, 215, 220, 226–27, 233, 248, 271–78, 284, 303 China, 37, 76, 80, 98, 135, 267 Antarctic Treaty Consultative Parties (ATCPs), 8–10, 31–33, chlorofluorocarbons, 125-27, 189-90, 193, 194. See also bro-35-37, 40, 43-45, 48, 52-53, 55-56, 58, 79, 80, 82-87, mocarbons; hydrocarbons; ozone 90-94, 98-101, 210-12, 233, 266, 272-75, 278-79, 303. climate Antarctic science and, 155 See also specific country Antarctic Treaty Handbook, 274 change, 40, 62, 64–65, 87, 100–101, 117, 124, 155–56, 158, Antarctic Treaty Secretariat, 37, 89, 91-94, 219 163, 165, 171, 182–83, 190, 193, 219–20, 224, 268–69, Antarctic Treaty System. See Antarctic Treaty 273, 275, 293, 296–97, 305 Arctic, the high-resolution records of, 155 characteristics of, 296, 307 record, 167-68 economic development in, 297 research, 279 governance in, 295, 296, 297, 306 sedimentary records of, 156 scientific cooperation in, 63, 306 (see also science) Southern Ocean and, 179 (see also Southern Ocean) stratosphere, 191, 193 variability, 155, 167-68, 169 See also environment Arctic Climate Impact Assessment (ACIA), 308 Arctic Council, 296-97, 306-8 coastal state jurisdiction, 54, 56 Arctic Ocean, 162, 228, 258, 269, 306 cold seep communities, 156 Argentina, 2, 4, 29–31, 40–41, 62, 76, 237 Cold War, 17, 19, 22–24, 30–31, 40–42, 51, 59–61, 76, 133–34, Argo floats, 158, 184, 184 137, 143–44, 146, 148, 166, 259–60, 266, 274, 295, 304 Army Ballistic Missile Agency, 17, 22 Commission on the Limits of the Continental Shelf (CLCS), 53, astrobiology, 147 58, 97-8, 306 astronomy, 66, 159, 198-202. See also telescopes Commission to Study the Organization of Peace, 2 atmospheric dust particles, 167-68 Committee for Environmental Protection (CEP), 45, 83, 86, atomic tests, 59, 61. See also nuclear explosions; nuclear 114, 146, 163, 213–20, 213, 214, 236, 279 Committee on Space Research (COSPAR), 137-38, 144, 147, weapons Australia, 4, 29–31, 41, 45, 99, 237, 251, 267 149-50. See also outer space Panel on Exploration (PEX), 149 ballistic missiles, 17, 19, 20-21, 300, 304. See also nuclear Planetary Protection Panel, 150 Committee on the Peaceful Uses of Outer Space (COPUOS), weapons Balloon Observations of Millimetric Extragalactic Radiation 134–35, 137, 138, 140, 144, 147–48 and Geophysics (BOOMERANG), 199, 204 common heritage principle, 281-84, 287-89 Basel Convention on the Transboundary Movement of Concordiasi project, 269 Hazardous Wastes and Their Disposal, 246–47 conservation. See Antarctica: environmental protection of; Con-Belgium, 4, 10, 29–31, 41–42, 51, 61–63, 76, 98, 255, 267, vention on the Conservation of Antarctic Marine Living Resources; Convention on the Conservation of Antarctic Biological Investigations of Marine Antarctic Systems and Seals: environment Consultative Meetings. See Antarctic Treaty Consultative Stocks (BIOMASS), 33, 79-80, 104, 272, 302 biological prospecting. See bioprospecting Meetings bioprospecting, 11, 47, 83, 98–99, 101, 148, 273, 297, 301 Consultative Parties. See Antarctic Treaty Consultative Parties contamination, 114, 137-38, 143, 145, 147-50, 170 bluefin tuna, 47. See also fisheries; harvesting Brazil, 37, 41-42, 80, 101, 235, 269 continental shelf claims, 97-98, 101 Britain. See United Kingdom Convention for the Regulation of Antarctic Mineral Resource British Antarctic Survey, 63, 65, 80, 126, 190, 251, 259 Activities, 52. See also mining

demilitarization, 59, 90, 256, 260, 304. See also military

Denmark, 98, 256, 261 Convention on Biological Diversity (CBD), 246–47, 277, 305 Convention on the Conservation of Antarctic Marine Living Dome Concordia, 161 Dome Fuji, 62, 171 Resources (CCAMLR) Antarctic Treaty and, 34, 52, 212 (see also Antarctic Treaty: Drake Passage, 176 drift stations, 258 Article IV) area, 105 Dronning Maud Land Air Network (DROMLAN), 162, BIOMASS and, 79-80 235 - 36characteristics of, 106 Dronning Maud Land Shipment (DROMSHIP), 162 climate change and, 117 dropsonde, 269, 269 Commission for, 37, 54 Dulles, John Foster, 19, 23 Ecosystem Monitoring Program (CEMP), 106, 117 fisheries and, 109–11, 110, 157 (see also fisheries; harvesting) earth system science, 154, 270, 300 geographic scope of, 33, 105 ecosystems. See Antarctica: ecosystems; environment history of, 33-35, 80, 210 Eisenhower, Dwight, 5, 17-19, 21-25, 41, 76, 299, 304. See institutionalisation of Antarctica and, 9 also Antarctic Treaty: evolution of management, 35, 106, 108 elephant seals, 71, 103, 185. See also sealing and seals marine protected areas (MPAs) and, 114, 115, 278 environment mineral resources and, 35 bioprospecting and, 11, 47, 83, 98-99, 101, 148, 273, 297, as model provision, 38 301 role and scope of, 46, 104, 106 climate and (see climate) science and, 104, 106 ecosystems and (see Antarctica: ecosystems) scientific committee of, 34 greenhouse gases and (see greenhouse gases) small scale management units and, 112, 113, 114 (see also Greenland records and, 168-69 small-scale management units) hyperarid regions of, 165 small scale research units and, 114 (see also small-scale ice in (see ice) research units) management, 145, 150 South Orkney Islands Southern Shelf, 115 mining and (see mining) spatial management by, 113-14 ocean (see ocean; Southern Ocean) vulnerable marine ecosystems (VME) risk areas for longline ozone and (see ozone) fisheries, 116 protection of, 9-10, 32, 36, 89-100, 302 Convention on the Conservation of Antarctic Seals (CCAS), reconstruction of past, 168 8-9, 33, 44, 52-53, 79, 97, 103, 210, 272-73, 302-3 stewardship of, 149-50, 154 subglacial aquatic, 157-58 (see also subglacial lakes) Convention on the High Seas, 17, 24, 25, 282, 304 Convention on the Law of the Sea (UNCLOS), 9, 55, 65, 97, tourism and, 47 (see also tourism) 100, 135, 140, 148, 228, 272, 281–84, 289–90, 292, 304 Environmental Protection and Biodiversity Conservation Act Convention on the Prevention of Marine Pollution by Dumping (EPBC), 45 of Wastes and Other Matter (London Convention), 289 Environment Protocol (Article XVI, Antarctic Treaty), 10, 37, Convention on the Prohibition of Military or Any Other Hos-89-92, 94, 97-98, 100, 209-11, 216-17, 278, 283-84, tile Use of Environmental Modification Techniques, 290 291-92 Convention on the Regulation of Antarctic Mineral Resource Escudero proposal, 3–4, 7, 12, 41 Activities (CRAMRA), 9–10, 35, 45, 55–56, 58, 65, 81, European Antarctic Project (EAP), 61–63, 127–28 83, 85, 97, 99, 139-40, 210-12, 283, 291, 301 European Committee for Ocean and Polar Science (ECOPS), Cook, James, 70–71, 176 cosmic microwave background (CMB) radiation, 198–200, European Project for Ice Coring in Antarctica (EPICA), 62–65, 202-3, 200, 205 156, 162, 168, 171 Council of Managers of National Antarctic Programs (COM-European Science Foundation (ESF), 64, 162 NAP), 37, 82, 84–87, 162–63, 212–13, 232–38, 233, 269, European Space Agency (ESA), 150 303 European Space Foundation (ESF), 150 Cousteau, Jacques, 190 European Space Policy Institute (ESPI), 150 cryosphere, 158, 177, 267 European Space Research Organization (ESRO), 259 deep seabed, 282-83 Falkland Island Dependencies Survey, 259 Deep Sea Drilling Project, 272 Falkland Islands. See Malvinas

finfish, 101, 104, 109, 111. See also fisheries

| fisheries | core (see ice core) |
|---|---|
| illegal, 11, 35, 111, 279 | sheets, 154 |
| management, 109, 109, 111, 116, 279 | Ice and Climate Evolution of the Central Antarctic Plate (ICE- |
| See also specific fish | CAP), 157. See also climate |
| Forum of Arctic Research Operators (FARO), 163 | ice core |
| France, 4, 29–31, 40, 76, 256 | contamination, 170 |
| Freedom of Space doctrine, 17, 21–22, 24, 304. See also outer | drilling, 62, 63, 165, 167 |
| space | records, 40, 64, 155–56, 168, 268, 301 |
| freedom of the seas, 17, 21 | See also climate: change; sedimentary cores |
| fur seals, 79, 103. See also harvesting; sealing and seals | IceCube telescope, 159. See also telescopes |
| | illegal, unregulated, and unreported (IUU) fishing and tourism, |
| Gaia hypothesis, 299 | 11, 35, 111, 279. See also fisheries |
| Gamburtsev Mountains, 157, 267 | India, 5–6, 37, 41–42, 80, 98, 251, 304 |
| geoengineering, 185 | Indian Ocean Tuna Commission, 48 |
| Germany, 9, 60–63, 72, 83–84, 86, 98, 101, 149, 215, 251, | information availability, 84, 225–27, 274 |
| 255–56, 258, 261, 267 | Integrated Ocean Drilling Program (IODP), 156 |
| glaciers, 40, 101, 124, 158, 165, 170 | intellectual property rights, 99, 226 |
| glaciology, 29, 61–63, 166 | Inter-Agency Space Debris Coordination Committee (IADC), |
| Glaciology of the Antarctic Peninsula project, 62. See also | 147. See also outer space: debris |
| glaciology | Intergovernmental Oceanographic Commission (IOC), 9, 272 |
| global interdependence, 24 | Intergovernmental Panel on Climate Change (IPCC), 64, 85, |
| Global Ozone Observing System, 124. See also ozone | 156, 171, 183, 194, 220, 250, 267 |
| global warming potentials (GWP), 128, 194. See also climate: | International Academy of Astronautics (IAA), 149 |
| change | International Arctic Science Committee (IASC), 162, 261, 306 |
| governance | International Association for Biological Oceanography (IABO). |
| of Antarctica, 1, 20, 30, 37, 42, 273 | 80 |
| of the Arctic, 295–97, 306 (see also Arctic, the) | International Association of Antarctica Tour Operators |
| of deep seabed, 292 (see also deep seabed) | (IAATO), 47, 220, 237, 241–43, 273. <i>See also</i> tourism |
| of international spaces, 25, 289–93 | International Convention for the Prevention of Pollution from |
| Great Britain. See United Kingdom | Ships (MARPOL), 246, 248 |
| greenhouse gases, 124, 156, 165, 168, 178, 182, 191, 193, | International Convention for the Regulation of Whaling |
| 291, 293. <i>See also</i> carbon dioxide, anthropogenic; climate: | (ICRW), 46, 100. See also whales and whaling |
| change | International Council for Science (ICSU), 20, 32, 60, 76, 144, |
| Greenland, 63–64, 158, 168, 169, 268, 301 | 260, 271 |
| Greenland Ice Core Project (GRIP), 64 | International Council of Scientific Unions (ICSU), 20, 60, 64, |
| Greenland Ice Sheet Project 2 (GISP2), 64 | 76–79, 85, 144, 154, 260–61, 271, 292, 307. <i>See also</i> |
| Group of Specialists on Environmental Affairs and Conserva- | International Council for Science |
| tion (GOSEAC), 83, 213 | International Court of Justice, 3, 5, 41, 45, 100 |
| tion (doserro), 63, 213 | International Geographical Union (IGU), 76 |
| halocarbons, 191. See also chlorofluorocarbons; ozone: hole | International Geophysical Year (IGY), 5, 7, 17, 20–23, 29, 42, |
| harvesting, 33–35, 54, 71, 104–6, 109, 110, 112, 157, 290, | 51, 59, 61, 70, 72–73, 75, 89, 124, 133, 144, 154, 165, |
| 302. See also fisheries; harvesting; sealing and seals; whales | 190, 231, 241, 260, 265–66, 274, 299–300 |
| and whaling | International Geosphere-Biosphere Programme (IGBP), 64, 85, |
| hazardous waste, 246. See also ocean dumping; waste | 300 |
| Holland. See Netherlands, the | International Hydrographic Organization (IHO), 91, 273 |
| Hughes Doctrine, 256 | internationalism, 5, 60, 66. See also international spaces |
| Humane Society International (HSI), 40, 45–46, 99 | International Maritime Organization (IMO), 237, 242–43, 246 |
| hydrocarbons, 81, 97, 224–25, 272, 291. <i>See also</i> bromo- | 249–51, 257, 277–79 |
| carbons; chlorofluorocarbons; ozone | International Polar Year (IPY), 20, 29, 72, 257, 299 |
| | |
| hyperarid regions, 165 | International Research Council (IRC), 60, 257 International Seabed Authority (ISA), 282–83 |
| ion | • |
| ice | International Society for the Exploration of the Arctic Regions |
| accretion, 169, 170 | by Means of Aircraft (AEROARCTIC), 257–58, 258, 260 |
| breakers, 162 | See also transport systems |

Malaysia, 37, 304 international spaces appropriation and nonappropriation of, 135 Malvinas, 41, 47, 257, 257 definition of, 288 marine acoustics, 84 marine mammals, 35, 71. See also harvesting; sealing and seals; governance of, 25, 289-93 human activities in, 293 whales and whaling legal and political status of, 289–90 Marine Protected Areas, 114, 115 security and, 291 McCarthyism, 18 International Telecommunication Union (ITU), 136, 138, 283, McMurdo Ice Shelf, 269 293 medical care and evacuation, 91. See also search and rescue International Trans-Antarctic Scientific Expedition (ITASE), 268 methane, 81, 168, 189, 191 International Tribunal for the Law of the Sea, 45, 284 microwave background anisotropy measurements, 201 International Union for Conservation of Nature (IUCN), 9, 47, military 81, 87, 220, 272–74 activities in outer space, 139 International Union of Biological Sciences (IUBS), 76 bases, 30, 52, 137, 293 International Union of Geodesy and Geophysics (IUGG), 76 expeditions to Antarctica, 2 International Union of Pure and Applied Physics (IUPAP), 76 fortifications, 30, 52, 137, 293 International Whaling Commission (IWC), 9, 46, 71, 99, 272, manoeuvres, 52, 137 277-78. See also harvesting; whales and whaling nuclear weapons and (see nuclear weapons) Intersessional Legal and Related Issues Working Group on mining, 35, 45, 47, 81, 139, 149, 210, 254, 256, 259, 283–84, Ocean Fertilization, 251. See also ocean dumping: ocean 291-92 Montreal Protocol on Substances that Deplete the Ozone Layer fertilization as Ireland, 256 (Montreal Protocol), 123–24, 127–30, 193, 296, 302 Italy, 10, 62, 83, 256, 269 Moon Agreement. See Agreement Governing the Activities of States on the Moon and Other Celestial Bodies; outer space Japan, 19, 29–31, 41–42, 46, 51, 73–74, 76, 98–101, 129, 256, multichannel seismic reflection (MCS), 225-28, 225. See also 300, 304 seismic activity Japanese Antarctic Research Expedition (JARE), 73 Japanese Whale Research Programme, 100 NASA, 136, 202 Japanese Whaling Case, 45. See also whales and whaling National Academy of Sciences, 30, 76, 125, 126, 271 Joint Committee for Antarctic Data Management (JCADM), 85 National Science Foundation (United States), 63, 79, 82, 199, Joint Convention on the Safety of Spent Fuel Management and 202, 265 on the Safety of Radioactive Waste Management, 246. See National Security Council (NSC), 20 also waste Netherlands, the, 61–62, 98, 124, 256 New Zealand, 3-6, 9, 19, 29-31, 41, 47, 51, 53, 55, 62, 76, King George Island, 66, 161, 235-36, 243 78, 81–82, 97–98, 162, 215, 237, 251, 270 krill fishery, 106-7, 110, 110-12, 117-18, 210, 279 nitrous oxide, 124, 191, 251 Kyoto Protocol, 128, 193 Non-Consultative Parties (NCPs) to the Antarctic Treaty, 10, 37, 43, 80, 133–37, 140, 147, 148, 272, 274–75, 282 Lake Vostok, 157, 169-71, 215. See also glaciology; Vostok North Atlantic Treaty Organization (NATO), 259 Norway, 3-5, 19, 29-31, 40-41, 51, 60, 62-63, 72, 76, 78-79, station Larson Ice Shelf System (LARISSA), 101, 156, 267–68 91, 98, 193, 254, 256, 258–59, 280 Law of the Sea Convention. See United Nations: Convention on territorial sovereignty and, 40 the Law of the Sea Norwegian-British-Swedish Expedition (NBSX), 72, 259 LOHAFEX ocean fertilization experiment, 245, 248, 251. See Norwegian Polar Institute, 256, 259 also ocean dumping: ocean fertilization as nuclear explosions, 23, 42, 52 London (Dumping) Convention, 246. See also ocean dumping; nuclear weapons, 18-19, 22, 24, 136, 143-44, 290, 304, 308 waste (see also ballistic missiles) longline fishing, 116. See also fisheries; harvesting Lunar Crater Observation and Sensing Satellite (LCROSS), 148 ocean Lunar Prospector, 148 acidification, 158, 293 (see also carbon dioxide, anthropogenic) acoustics, 84 Madrid Protocol on Antarctic Environmental Protection to the dead zones, 291 (see also Southern Ocean)

deep seabed, 283-84

dumping (see ocean dumping)

Antarctic Treaty, 36, 37, 45-46, 65, 212, 226, 246-48,

251, 300–302, 305

Malaysia, 37, 304 international spaces appropriation and nonappropriation of, 135 Malvinas, 41, 47, 257, 257 definition of, 288 marine acoustics, 84 marine mammals, 35, 71. See also harvesting; sealing and seals; governance of, 25, 289-93 human activities in, 293 whales and whaling legal and political status of, 289–90 Marine Protected Areas, 114, 115 security and, 291 McCarthyism, 18 International Telecommunication Union (ITU), 136, 138, 283, McMurdo Ice Shelf, 269 293 medical care and evacuation, 91. See also search and rescue International Trans-Antarctic Scientific Expedition (ITASE), 268 methane, 81, 168, 189, 191 International Tribunal for the Law of the Sea, 45, 284 microwave background anisotropy measurements, 201 International Union for Conservation of Nature (IUCN), 9, 47, military 81, 87, 220, 272–74 activities in outer space, 139 International Union of Biological Sciences (IUBS), 76 bases, 30, 52, 137, 293 International Union of Geodesy and Geophysics (IUGG), 76 expeditions to Antarctica, 2 International Union of Pure and Applied Physics (IUPAP), 76 fortifications, 30, 52, 137, 293 International Whaling Commission (IWC), 9, 46, 71, 99, 272, manoeuvres, 52, 137 277-78. See also harvesting; whales and whaling nuclear weapons and (see nuclear weapons) Intersessional Legal and Related Issues Working Group on mining, 35, 45, 47, 81, 139, 149, 210, 254, 256, 259, 283–84, Ocean Fertilization, 251. See also ocean dumping: ocean 291-92 Montreal Protocol on Substances that Deplete the Ozone Layer fertilization as Ireland, 256 (Montreal Protocol), 123–24, 127–30, 193, 296, 302 Italy, 10, 62, 83, 256, 269 Moon Agreement. See Agreement Governing the Activities of States on the Moon and Other Celestial Bodies; outer space Japan, 19, 29–31, 41–42, 46, 51, 73–74, 76, 98–101, 129, 256, multichannel seismic reflection (MCS), 225-28, 225. See also 300, 304 seismic activity Japanese Antarctic Research Expedition (JARE), 73 Japanese Whale Research Programme, 100 NASA, 136, 202 Japanese Whaling Case, 45. See also whales and whaling National Academy of Sciences, 30, 76, 125, 126, 271 Joint Committee for Antarctic Data Management (JCADM), 85 National Science Foundation (United States), 63, 79, 82, 199, Joint Convention on the Safety of Spent Fuel Management and 202, 265 on the Safety of Radioactive Waste Management, 246. See National Security Council (NSC), 20 also waste Netherlands, the, 61–62, 98, 124, 256 New Zealand, 3-6, 9, 19, 29-31, 41, 47, 51, 53, 55, 62, 76, King George Island, 66, 161, 235-36, 243 78, 81–82, 97–98, 162, 215, 237, 251, 270 krill fishery, 106-7, 110, 110-12, 117-18, 210, 279 nitrous oxide, 124, 191, 251 Kyoto Protocol, 128, 193 Non-Consultative Parties (NCPs) to the Antarctic Treaty, 10, 37, 43, 80, 133–37, 140, 147, 148, 272, 274–75, 282 Lake Vostok, 157, 169-71, 215. See also glaciology; Vostok North Atlantic Treaty Organization (NATO), 259 Norway, 3-5, 19, 29-31, 40-41, 51, 60, 62-63, 72, 76, 78-79, station Larson Ice Shelf System (LARISSA), 101, 156, 267–68 91, 98, 193, 254, 256, 258–59, 280 Law of the Sea Convention. See United Nations: Convention on territorial sovereignty and, 40 the Law of the Sea Norwegian-British-Swedish Expedition (NBSX), 72, 259 LOHAFEX ocean fertilization experiment, 245, 248, 251. See Norwegian Polar Institute, 256, 259 also ocean dumping: ocean fertilization as nuclear explosions, 23, 42, 52 London (Dumping) Convention, 246. See also ocean dumping; nuclear weapons, 18-19, 22, 24, 136, 143-44, 290, 304, 308 waste (see also ballistic missiles) longline fishing, 116. See also fisheries; harvesting Lunar Crater Observation and Sensing Satellite (LCROSS), 148 ocean Lunar Prospector, 148 acidification, 158, 293 (see also carbon dioxide, anthropogenic) acoustics, 84 Madrid Protocol on Antarctic Environmental Protection to the dead zones, 291 (see also Southern Ocean)

deep seabed, 283-84

dumping (see ocean dumping)

Antarctic Treaty, 36, 37, 45-46, 65, 212, 226, 246-48,

251, 300–302, 305

| salinity, 180 | polar regions |
|--|--|
| Southern (see Southern Ocean) | astronomical observations and, 158 (see also telescopes) |
| temperature, 180 | characteristics of, 146, 296, 307 |
| Ocean Biogeographic Information System (OBIS), 156 | climate and (see climate) |
| ocean dumping | ecosystems of (see Antarctica: ecosystems) |
| control of, 245–46, 248 | global significance of, 305 |
| laws, 246 | governance of, 1, 20, 30, 37, 42, 273, 295–97, 306 (see also |
| national, 246 | Antarctic Treaty) |
| ocean fertilization as, 245, 247-51 | as international spaces (see international spaces) |
| waste discharge and, 292 | mining activities in (see mining) |
| See also waste | oceans in (see Southern Ocean) |
| Office of Polar Programs (OPP), 82 | ozone and (see ozone) |
| Open Skies doctrine, 21, 23–24, 304 | research nations in, 161 (see also science) |
| Organization of Petroleum Exporting Countries (OPEC), 35, 81 | science and (see science; specific discipline) |
| outer space | tourism in (see also tourism) |
| compared to Antarctica, 133 | waste handling in (see ocean dumping; waste) |
| control of activities in, 134 | wilderness and esthetic value of, 277 |
| debris, 134, 137, 138, 139, 140, 147, 148, 293 | See also Antarctica; Arctic, the |
| human activities in, 136, 293 | Polar Year. See International Polar Year |
| international cooperation in, 137 (see also Outer Space Treaty) | Portugal, 69 |
| as international space, 288 (<i>see also</i> international spaces) | prospecting, 55. See also bioprospecting; mining |
| law, 134, 138, 283 (see also Outer Space Treaty) | Protecting the Environment of Celestial Bodies (PECB), 149 |
| | Protocol on Environmental Protection to the Antarctic Treaty, |
| military activity and, 136 mineral resources and, 147–48 | • • |
| · · · · · · · · · · · · · · · · · · · | 10, 24, 36–37, 45, 52, 58, 65, 81, 86, 89–90, 97, 135, 139, |
| protection of, 137 | 146, 210, 212, 216, 219, 241, 246, 278, 283, 291, 300 |
| regulation of, 138 | Protocol to the London Convention, 246, 248 |
| weaknesses of, 137 | D.:-1 |
| weaponisation of, 22, 136 | Rainbow Warrior attack, 47 |
| Outer Space Treaty, 134–35, 137, 139, 144–45, 146, 147–48, | remote sensing, 133, 136, 147, 224 |
| 289-90, 292-93, 304-5. See also outer space | rescue coordination centers, 237 |
| ozone | research |
| cancer and, 124–25, 130, 190 | Antarctica and, 23, 59, 61, 65, 76, 154, 156, 162–63, 266 |
| -depleting substances (ODS), 124–30, 193 (see also bromo- | (see also specific research topic) |
| carbons; chlorofluorocarbons; hydrocarbons) | challenges to, 161 |
| depletion, 190–93 | climate, 279 |
| hole, 40, 101, 124, 126–28, 155, 161, 190, 193–94, 237, 297 | organizations for, 98-99 (see also specific organization) |
| layer, 123–30, 190, 192, 193, 291, 293 | stations, 66, 161 (see also Vostok station) |
| monitoring network, 128 | vessels, 79, 84, 162, 269 |
| Montreal Protocol and, 193 (see also Montreal Protocol on | See also science |
| Substances that Deplete the Ozone Layer) | Ross Ice Shelf Project (RISP), 62 |
| records, 191, 192 | Ross Sea, 79, 81, 116, 215, 224, 272, 279. See also Southern |
| -safe technologies, 128 | Ocean |
| | Royal Society of Britain, 70, 76, 293, 308 |
| paleoclimatology, 64 | runways, blue ice, 162 |
| paleohistory, 154 | Russia. See Soviet Union |
| Panel on Planetary Protection (PPP), 138 | |
| Panel on Potentially Environmentally Detrimental Activities in | 11: 47 24 22 24 420 424 420 444 447 450 202 |
| Panel on Potentiany Environmentary Detrimental Activities in | satellites, 1/, 21–22, 24, 128, 136, 139, 144, 14/, 138, 202, |
| · | satellites, 17, 21–22, 24, 128, 136, 139, 144, 147, 158, 202, 205, 268, 283, 300, 303–4. <i>See also</i> outer space |
| Space (PEDAS), 138 | satellites, 17, 21–22, 24, 128, 136, 139, 144, 147, 158, 202, 205, 268, 283, 300, 303–4. <i>See also</i> outer space science |
| Space (PEDAS), 138 penguins, 73, 101, 181, 297 | 205, 268, 283, 300, 303–4. <i>See also</i> outer space science |
| Space (PEDAS), 138 penguins, 73, 101, 181, 297 Peru, 41, 269 | 205, 268, 283, 300, 303–4. <i>See also</i> outer space science as confidence-building activity, 125 |
| Space (PEDAS), 138 penguins, 73, 101, 181, 297 Peru, 41, 269 phytoplankton, 158, 177, 181, 185, 248, 250, 302, 305 | 205, 268, 283, 300, 303–4. <i>See also</i> outer space science as confidence-building activity, 125 cooperation in, 306 |
| Space (PEDAS), 138 penguins, 73, 101, 181, 297 Peru, 41, 269 | 205, 268, 283, 300, 303–4. <i>See also</i> outer space science as confidence-building activity, 125 |

| science (continued) | South Africa, 4, 6, 29–31, 41–42, 47, 51, 76, 78, 162, 235–37, |
|--|---|
| freedom of, 3-7, 30, 32, 38, 99, 42, 52, 101, 103, 123, 265, | 300 |
| 300, 303–4 | Southern Annular Mode (SAM), 181-82, 182 |
| future trends in, 154-56 (see also specific discipline) | Southern Ocean |
| industry and, 126 | acidification, 158 |
| internationalism in, 60 | carbon dioxide absorbance by, 176, 179, 182-84 |
| international value of, 305 | characteristics of, 179-83, 269 |
| for monitoring, reporting, and verification, 128 | current systems, 177 |
| political agendas and, 65 | definition of, 176 |
| public participation in, 272, 274-75 | dumping (see ocean dumping) |
| regulatory performance and, 128 | earth system and, 175-79 |
| See also polar regions; research; specific discipline | food webs, 157 |
| Scientific Committee on Antarctic Research (SCAR) | future change in, 183 |
| Antarctic Climate Evolution (ACE) program, 156, 176, 179, | models, 158-59, 183-84 |
| 183 | oceanography, 176 |
| Antarctic Seismic Data Library System for Cooperative Re- | overturning circulation, 176-77, 178, 183 |
| search (SDLS), 226-28, 226 (see also seismic activity) | research on, 161, 184-85 |
| Antarctic treaty and, 78, 80, 226 | science policy and, 185 |
| BIOMASS program of (see Biological Investigations of | surface wind over, 183 |
| Marine Antarctic Systems and Stocks) | upwelling, 176 |
| conservation and, 80–81 | warming, 155, 176, 179, 183 |
| geographical names and, 83-84 | Southern Ocean Observing System (SOOS), 185 |
| goals of, 231–32 | Southern Ocean Whale Sanctuary, 99–100 |
| history of, 32, 60, 76–77, 77, 144, 231–33, 273 | South Georgia, 44, 71, 77, 255 |
| IASC Bipolar Action Group (BipAG), 163 | South Pole, 166-67, 199. See also Antarctica; polar regions |
| logistics and, 82–83, 162–63, 269 | South Pole Station, 199, 201–2, 260, 270 |
| Marine Biodiversity Information Network (SCAR-MarBIN), | South Pole Telescope, 199, 203. See also astronomy |
| 156, 219 | sovereignty. See territorial sovereignty |
| membership in, 161, 163 | Soviet Antarctic Expedition, 166 |
| minerals and, 81, 210 | Soviet Union, 5, 22, 29, 41, 256, 267. See also Vostok station |
| organization of, 261 | space. See outer space |
| reorganisation of, 85–86 | Spain, 69, 98 |
| research library of, 226–27, 226 | Special Meetings on Antarctic Mineral Resources, 74. See also |
| role and influence of, 32, 34, 80, 86, 163, 219, 260 sealing and, 33, 53, 79 | Convention on the Regulation of Antarctic Mineral Resource Activities; mining |
| Working Group on Logistics (WGL), 232 | Sputnik, 17, 22, 78, 133, 304. See also Soviet Union |
| Scientific Committee on Oceanic Research (SCOR), 9, 80, 104, | stable isotopes, 167 |
| 272 | Straddling Fish Stocks Agreement, 289. <i>See also</i> fisheries; |
| Scott Polar Research Institute, 62, 63 | harvesting |
| seabed. See deep seabed | subglacial lakes, 157–58, 161, 169–71, 237, 269 |
| sea level increases, 124, 158, 177, 179, 181, 267, 268, 302 | Subsidiary Group on Management Plans (SGMP), 218–19 |
| sealing and seals, 2, 33, 35, 71, 79, 210, 254, 260 | Super Dual Auroral Radar Network (SuperDARN), 159 |
| search and rescue (SAR), 47, 91, 235, 237, 238, 297 | superpressure balloons, 269 |
| Sea Shepherd Conservation Society, 47 | Svalbard Treaty, 253, 256, 258–60 |
| Second International Polar Year, 20, 257. See also International | Sweden, 62, 72, 86, 98, 125–26, 193 |
| Polar Year | Sweden, 62, 72, 66, 76, 123-26, 173 |
| sedimentary cores, 155. See also ice core | telescopes, 149, 159, 202-3, 205. See also astronomy |
| seismic activity, 62, 84, 157–58, 224, 227–28, 268, 302 | territorial sovereignty, 30–31, 34, 40–41, 43–44, 47, 52–56, 99 |
| • | 300 |
| Shackleton, Edward, 2, 266 | |
| Shallow Drilling on the Antarctic Continental Margin | toothfish, 111, 113–14, 116, 279 |
| (SHALDRILL), 156 small-scale management units (SSMUs), 108, 112, 113, 113, | tourism Antarctic Treaty Consultative Meeting (ATCM) and, 8, 91 |
| 118 | control of, 278 |
| emall-scale research units (SSRUs) 114 114 247 | cooperative nature of 241_43 |
| | |

development in Antarctica, 11, 242-43 environmental risks of, 47 incidents, 243 regulation and management of, 242 ships for, 91-92 tour operators and, 241-43

Transitional Environmental Working Group (TEWG), 212 transport systems, 162. See also International Society for the Exploration of the Arctic Regions by Means of Aircraft trawler fleets, 79. See also fisheries; harvesting

Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, 136

Treaty of Tordesillas, 69, 257

Treaty of Westphalia, 299

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 136, 289

Union Radio Scientifique Internationale (URSI), 76 United Kingdom, 2, 4, 29-31, 40-41, 62, 76, 256, 267 United Nations

Agreement Relating to the Conservation and Management of Straddling Fish Stocks and Migratory Fish Stocks, 284 Commission on the Limits of the Continental Shelf (CLCS),

Convention on the Law of the Sea (UNCLOS), 9, 53, 47, 53, 55, 137, 145, 148, 228, 246, 272, 281–84, 289, 292, 304 Educational, Scientific and Cultural Organization (UNESCO), 2, 60, 66, 138, 246, 272 Environment Program (UNEP), 81, 126–28, 220, 273 Environment Program Coordinating Committee on the

Ozone Layer, 126 (see also ozone: layer) Food and Agriculture Organization (FAO), 9, 126, 272, 274

Outer Space Treaty, 143 (see also outer space) Trusteeship Council, 2

United States, 2, 21, 29, 31, 41, 256, 267 Antarctic Development Project, 2, 259

Condominium Proposal, 6 Draft Declaration on Antarctica, 4 upwelling, 155, 176-77, 183 Uruguay, 41, 80, 269, 280

Vienna Convention for the Protection of the Ozone Layer, 123, 126. See also ozone: layer

Viper telescope, 199, 202–3. See also astronomy; telescopes Vostok station, 165-68, 166, 171. See also glaciology; ice core; subglacial lakes

waste

ocean dumping of (see ocean dumping) hazardous, 246 incineration, 248 management plans, 92, 248 weaponisation, 22, 139–40 weapons, 52. See also nuclear weapons

Weddell Gyre, 266

Weddell Sea, 224, 266

West Antarctic Ice Sheet (WAIS), 158. See also Antarctic: ice sheet

Whale Protection Act (Australia), 99 whales and whaling, 2, 7, 35, 40, 45–47, 71, 99–101, 103, 253-57, 260

Wilkins Ice Shelf, 101

Women's International League for Peace and Freedom, 2 Working Party for European Polar Research (WPEPR), 62 World Data Centres, 77, 84

World Meteorological Organization (WMO), 76, 124, 126, 128, 190, 193, 272-74

World Plan of Action on the Ozone Layer, 126. See also ozone:

World Wildlife Fund (WWF), 81

zeppelin expedition, 258