

## SUBJECT INDEX

- Ablation zones, 165–169
- Accelerator mass spectroscopy (AMS), 91–101,  
119–130, 149–154, 227–237, 275–284, 285–290,  
299–310, 331–336, 347–359, 371–378, 629–636,  
637–641, 649–656, 657–661, 663–673, 675–681,  
683–691, 693–696, 697–704, 705–710, 711–716,  
791–795, 815–817
- Actual rate of carbon accumulation (ARCA), 575–584
- Age deviation, 119–130
- Ageröds Mosse, 197–202
- Allerød, 149–154, 347–359
- Alluvial-fan delta, 531–542
- Amino acid racemization (AAR) dating, 103–109
- Annual grasses, 505–508
- Antarctica, 165–169, 171–180
- Anthropogenic disturbance, 505–508
- Anthropogenic radiocarbon, 497–504
- Arizona, 829–830
- Atmospheric <sup>14</sup>C levels, 505–508
- Atmospheric <sup>14</sup>C variations, 361–369, 443–456,  
509–515
- Australia, 361–369, 517–524, 593–598, 663–673
- Azore Islands, 139–147
- $\beta$ -counting systems, 767–772, 791–795
- Background, 629–636, 697–704, 737–742, 759–765  
reduction, 773–779, 781–787
- Bayesian statistics, 425–430, 431–441
- Belfast 1986 calibration, 395–407, 829–830
- Belgium, 291–297
- Benzene, 737–742  
synthesis, 717–725
- Biblical chronology and sites, 205–212, 267–273
- Bioturbation, 119–130, 191–195, 91–101
- Blank sample background, 705–710
- Bog sediments, 149–154
- Boiling water reactors, 475–483
- Bomb-<sup>14</sup>C, 567–573
- Bone, 331–336, 822–823  
proteins, 331–336
- Boron, 551–565
- Bottom water, ocean, 617–627
- Breccia, 139–147
- Bremsstrahlung, 599–604
- Bristlecone pine, 395–407
- Bulgaria, 443–456
- Bükk Mountains, 543–505
- Caldeira Formation, 139–147
- Calibrated measurements, 239–244
- Calibration curve, 155–163, 197–202, 213–220,  
347–359, 361–369, 389–393, 395–407, 425–430,  
822–823, 829–830
- Carbon cycle, 567–573, 575–584, 585–592, 824–825
- Carbon dioxide, 165–169, 509–515, 637–641, 711–716  
collection of, 629–636, 643–647, 683–691  
in groundwater, 551–565
- Carbon emissions, 567–573
- Carbonate  
dissolution, 585–592  
sediment, 91–101
- Carnegie Canyon, 611–614
- Carpathian Basin, 239–244
- Cassia oil samples, 505–508
- Catalyst, for benzene synthesis, 717–725
- Caves, 103–109
- Cellulose, 605–610
- Ceramics, 239–244  
seriation of, 443–456
- Charcoal, 443–456
- Chemical pretreatment, 805–811
- Chernobyl nuclear power plant, 469–473
- Chile, 389–393
- China, 245–249, 605–610
- Clam communities, 617–627
- Clay, 275–284  
varved, 347–359
- Climate change, 181–190
- Climatic warming, 818–819
- Collagen, 319–330, 331–336
- Computer  
data acquisition system, 767–772, 773–779  
databases, 337–343, 789–790  
software, 767–772, 789–790
- Consensus values, 805–811, 820–821
- Contamination, in microsamples, 697–704
- Coral  
post-bomb, 517–524  
samples, 791–795
- Cosmic rays, 599–604, 637–641  
flux, 417–424, 593–598
- Counter calibration, 737–742
- Croatia, 259–266
- Cyclotron, 675–681
- Czech Republic, 131–137
- $\Delta R$  value, 409–416
- Danau-di-Atas, 181–190
- Dating uncertainties, 409–416
- Daya Bay Nuclear Power Plant, 505–508
- Decadal samples, 361–369
- Deep-sea cores, 91–101, 585–592
- Dendrochronology, 347–359, 361–369, 605–610
- Depletion, <sup>14</sup>C, 509–515
- Deuterium, 551–565
- Devensian, 111–117
- Dislocated samples, 291–297
- Dispersion, <sup>14</sup>C, 485–496
- Dissolved inorganic carbon (DIC), 459–467, 543–505,  
517–524, 567–573, 617–627, 683–691, 824–825

- DOC (dissolved organic carbon), 459–467, 567–573, 818–819  
 “Dry” separation system, 629–636  
 Dvina River, 251–257
- Early Iron Age, 251–257, 259–266  
 Ecosystem dynamics, 575–584  
 El Niño/Southern Oscillation (ENSO), 509–515, 517–524  
 England, 459–467  
 Estonia, 575–584
- Finland, 567–573, 575–584  
 Fish otoliths, 409–416  
 Floodplain, 131–137  
 Flow velocities, 531–542  
 Fluvial sediments, 131–137  
 Foraminifera, 119–130, 585–592, 91–101  
 Fossil fuels, 475–483, 505–508, 509–515  
 Fractionation, 815–817
- γ-rays, 599–604  
 Gas chromatography, 711–716  
 Gas purification, 749–757  
 Gas-proportional counting system, 759–765, 781–787, 791–795  
 Gastropod shells, 459–467  
 Geothermal systems, 551–565  
 German oak, 395–407  
 Gibbs sampling, 425–430  
 Glen Garry, 379–388  
 Global climate, 417–424  
 Global cooling, 611–614  
 Global warming, 643–647  
 Grains, 213–220, 227–237  
 Graphite, 815–817  
   sample, 705–710, 683–691, 697–704  
   target, 629–636  
 Greenhouse gases, 637–641  
 Greenland, 637–641  
 Groundwater, 543–505, 551–565, 749–757
- Hair, dating, 319–330  
 Hallstattzeit (Hallstatt period), 259–266  
   disaster, 611–614  
 Hebrew, 205–212  
 Hekla tephra, 379–388  
 High-intensity Cs sputtering ion source, 705–710  
 High-precision measurement, 197–202, 417–424, 649–656, 657–661, 737–742, 791–795  
 High-precision multisample techniques, 379–388  
 High-throughput measurement, 649–656, 657–661  
 Histograms, <sup>14</sup>C, 443–456  
 Hoabinhian culture, 221–225  
 Holocene, 119–130, 139–147, 371–378, 417–424  
   floodplain, 131–137  
 Holzmaar, 149–154
- Hong Kong, 505–508  
 Huangling, 605–610  
 Hungarian Plain, 239–244  
 Hungary, 497–504, 543–505  
 Hydrocarbon emissions, 497–504  
 Hydrogeology, 531–542, 543–505
- IAEA <sup>14</sup>C Quality Assurance Programme, 797–803  
 IAEA intercomparison standards, 657–661, 797–803, 805–811  
 Ice cores, 149–154, 165–169, 637–641  
 Iceland, 525–529, 551–565  
 India, 191–195  
 Inscriptions, archaeological, 205–212  
 Intercomparison, 657–661, 727–736, 791–795, 797–803, 805–811  
 International Collaborative Study, 805–811  
 Ion source, 705–710, 711–716  
 Irish oak, 395–407  
 Iron Age II, 205–212  
 Iron artifacts, 629–636  
 Israel, 205–212, 267–273  
 Italy, 593–598
- Japan, 371–378, 629–636  
 Jericho, 213–220
- Karst, 111–117, 543–505  
 Kauri (wood) standard, 797–803  
 Keratin, 319–330  
 Kvartett (LSC system), 727–736
- La Tène, 259–266  
 Laacher See, 149–154  
 Labe (Elbe) River, 131–137  
 Lake sediments, 149–154, 191–195, 347–359, 371–378  
 Lake Suigetsu, 371–378  
 Late Glacial, 119–130  
 Late Mesolithic, 291–297  
 Late Pleistocene, 371–378  
 Late Quaternary, 171–180, 181–190  
 Late Weichselian, 347–359  
 Lignin, 311–317  
 Linearbandkeramik (LBK) culture, 227–237  
 Liquid scintillation counting (LSC), 275–284, 717–725, 727–736, 737–742, 743–747, 773–779, 789–790  
 Lithics, 291–297  
 Little Ice Ages, 417–424  
 Loess, 637–641  
 Logs, buried, dating of, 611–614  
 Long-lived radioisotopes, 663–673  
 LORCA (long-term rate of carbon accumulation), 575–584  
 Lovat River, 251–257  
 Low-level counting systems, 727–736, 759–765  
 Lysocline, 585–592

- Macrofossils, 119–130, 149–154, 371–378  
 Marine plants, 505–508  
 Marine samples, vs. terrestrial, 389–393  
 Marine sediment cores, 119–130  
 Mean-residence times, 543–505  
 Medieval warming, 191–195  
 Methane, 617–627  
     atmospheric, 475–483  
 Microvolume  $^{14}\text{C}$  dating, 743–747  
 Mid-Holocene elm decline, 197–202  
 Middle Ages, 251–257, 259–266  
 Middle Bronze Age, 213–220  
 Mini-cyclotron, 675–681  
 Mollusk shells, 119–130, 221–225  
 Moss, 525–529  
 Multidetector systems, 727–736, 759–765  
 Mumiyo, 171–180  
 Mussels, 459–467
- Near Eastern archaeology, 213–220  
 Neolithic, 227–237, 239–244, 245–249, 251–257, 291–297  
 New Zealand, 409–416, 797–803  
 Nuclear bomb tritium, 531–542  
 Nuclear power plants, 469–473, 475–483, 505–508  
     discharges and emissions, 459–467, 469–473, 485–496, 497–504  
 Nuclear weapons, 485–496, 505–508
- Oxalic acid, 693–696  
 OxCal (software), 425–430
- Paint, dating, 299–310  
 Paks Pressurized Water Reactor (PWR) Nuclear Power Plant, 497–504  
 Paleoclimatic records, 103–109  
 Paleogeography, 205–212  
 Paleokarst, 111–117  
 Paleolithic, 245–249  
 Palynology, 251–257  
 Particulate Inorganic Carbon (PIC), 459–467  
 Particulate Organic Carbon (POC), 459–467, 617–627, 824–825  
 Peat, 197–202, 431–441, 525–529, 567–573, 575–584  
     accumulation and decay rates of carbon in, 431–441  
 Petrels, 171–180  
 Phoenician, 205–212  
 Photomultiplier tube, 727–736  
 Photosynthesis, 459–467  
 Phytoplankton, 459–467  
 Pictographs, 299–310  
 Plasma-chemical extraction, 299–310  
 Poland, 103–109  
 Pollen, 181–190, 815–817, 818–819  
 Pore waters, 617–627  
 Potsherds, 227–237, 275–284  
 Pottery, dating, 275–284, 443–456
- Pre-bomb  $^{14}\text{C}$ , 824–825  
 Precipitation history, 191–195  
 Pressurized water reactors, 475–483, 485–496, 497–504  
 Pretreatment, chemical, 805–811  
 Probability distribution, 239–244, 425–430  
 Procedural blanks, 683–691  
 Production rate of  $^{14}\text{C}$ , variations in, 593–598  
 Pulse-shape discrimination, 781–787  
 Pyroclasts, 139–147
- Quality assurance, 797–803, 820–821, 822–823  
 Quality control, 693–696
- Radon, 749–757, 759–765  
     contamination, 395–407, 805–811  
 Raised beaches, 111–117  
 Recharge rates, 531–542  
 Reservoir age, 389–393  
 Reservoir effect, 409–416, 824–825  
 Reworking, 119–130  
 Rise-time analysis, 781–787  
 Russia, 251–257
- Sample contamination, 227–237, 749–757  
 Sample preparation, 285–290, 311–317, 319–330, 683–691, 749–757, 815–817  
 Sandy soils, 291–297  
 Schlackenmehrener Maar, 149–154  
 Scotland, 379–388  
 Seattle 1993 calibration, 395–407, 829–830  
 Seawater samples, 683–691, 517–524, 824–825  
 Seaweed, 459–467  
 Sediment, 111–117, 131–137, 191–195  
     bog, 149–154  
     carbonate, 91–101  
     fluvial, 131–137  
     lake, 149–154, 191–195, 347–359, 371–378  
     ocean, 91–101, 119–130, 585–592  
 Sedimentation rates, 585–592  
 Sellafield Nuclear Fuel Reprocessing Plant, 459–467, 469–473  
 Shag Mouth, 409–416  
 Shells, 119–130, 409–416  
 Shell-charcoal pairs, 409–416  
 Short-lived samples, 213–220  
 Silica-alumina catalyst, 717–725  
 Sinai, 205–212  
 Site chronology, 291–297  
 Skagen core, 119–130  
 Smoke-derived carbon, 275–284  
 Soils, 818–819  
 Solar activity, 417–424, 611–614  
 Solar cycle, 417–424  
 Solar flare particles, 593–598  
 Soppensee, 149–154  
 South America, 337–343, 509–515  
 South Equatorial Current, 517–524

- Southern hemisphere, 155–163  
 Speleothems, 103–109  
 Sphagnum, 197–202, 567–573  
 Stable isotope analysis, 103–109, 285–290  
 Stable-carbon isotope, 605–610  
 Standards  
   ANU sucrose, 361–369, 657–661, 663–667, 797–803, 805–811  
   Chinese sucrose, 505–508  
   IAEA, 797–803, 805–811  
   NIST (NBS), 361–369, 663–667, 693–696  
 Statistical analysis, 797–803  
 Stomach oil deposits, *see* mumiyo  
 Stratigraphy, 443–456, 822–823  
 Sublimation, ice core, 637–641  
 Suess effect, 593–598  
 Sumatra, 181–190  
 Sunspot cycle, 417–424, 611–614  
 Supernovas, 593–598, 599–604  
 Sweden, 347–359  
 Swedish Time Scale, 149–154, 347–359  
  
 Taiwan, 531–542  
 Tandron accelerator, 617–627, 629–636, 649–656, 657–661  
 Tasmania, 361–369  
 Taupo eruption, 155–163  
 Teflon® light coupler, 743–747  
 Teflon® vials, 743–747  
 Tell mounds, 443–456  
 Tephra, 149–154, 379–388  
 Tephrochronology, 139–147  
 Terrestrial plants, 525–529  
 Thermal karst springs, 543–505  
 Thermoluminescence, 111–117  
 Third International Radiocarbon Intercomparison (TIRI), 299–310, 805–811, 820–821  
  
 Tooth enamel carbonate, 285–290  
 Tracer studies, 711–716  
 Transport model, 475–483  
 Tree rings, 155–163, 417–424, 469–473, 593–598, 599–604, 605–610, 611–614  
 Tritium, 531–542, 543–505, 749–757  
 Troposphere, 509–515  
 Troy, 443–456  
 Turkey, 443–456  
  
 Upwelling, 389–393  
 Uranium/thorium (U/Th) series dating, 103–109, 347–359, 759–765  
  
 Varves, 149–154, 347–359, 371–378  
 Vials, 727–736, 737–742, 743–747  
   holders, 773–779  
 Vietnam, 221–225  
 Vistulian, 103–109  
 Volcanoes, 139–147, 155–163, 525–529  
   ash, 149–154, 379–388  
   gases, 525–529  
  
 Wiggle-matching, 213–220, 361–369, 379–388, 425–430, 443–456, 611–614, 824–825  
 Winkels, 459–467  
 Wood  
   archaeological, 311–317  
   decomposed, 311–317  
   Pliocene-age, 697–704  
  
 X-rays, 599–604  
  
 Younger Dryas, 149–154  
  
 Zagreb, 259–266  
 Zeolite molecular sieve, 643–647