
Index

A

Adjusted Rand Index, 111
Aerosol, 231
Alpine war, 16, 50
Alps, 3, 4, 6, 7, 9–11, 15–17, 19, 39, 50–67, 76, 106, 113, 123, 124, 128–131, 134, 136, 146, 147, 158, 176, 181, 182, 184, 186, 187, 191, 197, 219–223, 233–241
Altitude, 7, 63, 66, 113, 130, 134, 153, 155, 156, 163, 164, 171, 173, 194
Altitude effect, 163–164, 168, 172, 173
Ambras, 204
Ampass, 14, 15, 146, 148, 163, 167, 169, 176
Amphorae, 57, 60–62, 65
Animal, 4, 8, 11, 13, 15, 28, 29, 33–35, 37, 39, 41, 49–68, 82, 84, 86, 106–108, 113, 122–124, 134–136, 147, 153–155, 158, 163–168, 175–177, 179–181, 183, 185, 186, 188–191, 193–195, 211, 212, 219–221, 223, 231–233, 243–244, 246
Animal transfers, 62–64
Apatite, 33, 76, 77, 79, 86–88, 96, 97, 100, 128, 148–151, 164, 165, 168, 173–175, 180, 182, 184, 185, 187–190, 192–194, 213–218, 222, 232
Archaeofauna, 57, 136, 163, 244
Aubing, 55, 57, 243
Austria, 124, 158, 173, 174, 176, 181, 184, 186, 187, 212, 240

B

Bavaria, 4, 6, 7, 9, 11, 14, 82, 86, 100, 219, 220, 233–241
Berching-Pollanten, 146, 163, 181, 182, 184, 186, 189, 191
Bergisel, 146, 163, 165, 167
Bieberwier, 169

Bioapatite, 31–34, 76–81, 83, 88, 128, 134, 150–152, 168, 232
Bioarchaeology, 28–42, 106, 107, 180, 181
Biodiversity, 231, 232, 243
Biomineral, 30, 42, 77, 196, 232
Body mass, 54
Bone, 4, 29, 54, 76, 106, 128, 231
Bone remodelling, 62
Breeding history, 55
Brenner pass, 4, 9–11, 13, 50, 59, 76, 106, 128, 130, 134–136, 146–153, 155, 156, 158, 163–165, 168, 172–174, 176–181, 184, 186, 189, 191, 192, 194–197, 211, 219–221, 223
Brixen, 6, 7, 10, 14, 15, 134, 147, 163, 167, 170, 173, 174, 176, 181, 182, 186, 191, 192, 241–243
Brixlegg/Inn, 146
Bronze Age, 2, 5, 7–11, 77, 82, 92, 128, 163, 195, 233–241

C

Calcite, 78, 84, 85, 97, 100
Calcium, 30, 32, 36, 38, 39, 41, 77, 78, 148, 153, 177
Carbonate, 30–32, 35, 36, 77–79, 81, 86–88, 100, 130, 147–149, 164, 165, 168, 176, 177, 191
Carbonated hydroxyapatite, 30, 77, 78, 81, 88, 100
Cat, 56
Cattle, 38, 54, 55, 64, 65, 113, 134–136, 153–159, 163–167, 173, 174, 180, 182, 184, 186, 187, 192, 194, 244
 α -cellulose, 148, 150, 168–173
Chalcopyrite, 234
Chicken, 56, 66
Cluster analysis, 155, 221

- Clustering algorithm, 108, 109, 121, 122, 124
Collagen, 29–33, 35, 77, 78, 80, 87, 106
196, 231
Contamination, 39, 40, 76, 84, 87, 181
Copper, 2, 3, 6–9, 57, 234, 236–238, 241
Cremation, 9, 79, 81, 82, 87–91, 93, 96,
98–101, 128, 130, 134–136, 146–153,
155, 156, 158, 163–165, 168, 172–174,
176–181, 184, 186, 189, 191, 192,
194–197, 211, 219–221, 223, 233, 237,
238, 241, 245
Crystallite, 77, 79–81, 83, 88, 89, 96, 97, 100
Crystallite size, 80, 84–86, 88, 89, 96–98,
100, 196
Culture transfer, 30, 42, 76, 128, 136, 194, 195,
223, 233, 241, 242
Cut-off value, 135, 176, 180, 181, 192
- D**
Danube, 16, 17, 51, 134, 240, 244
Data mining, 42, 106, 108–116, 118–124, 158,
194, 195, 211, 222, 231, 232
Data structure, 110, 231
Database, 40, 230, 231, 233
Dentin, 30, 65, 196–198, 232
Deuterium, 33
Diffusion fractionation, 28
Dog, 55
- E**
Eching, 82, 92, 93, 96, 100, 146, 163, 186,
191, 219
Ehrwald, 169
Ellbögen, 15
Enamel, 30, 31, 36, 62, 63, 65, 66, 77, 196,
197, 232
Englschalking, 198
Equilibrium fractionation, 28
Erding, 146, 176
Exclusion principle, 37, 176, 194, 211
Expectation-maximization algorithm, 42
Experimental cremation, 82, 87–91, 194
- F**
Feature selection, 109–119, 123
Feeding behaviour, 63, 64
Flintsbach/Inn, 9
Forensic sciences, 29, 231
Forstinning, 211
- Founder individuals, 66
Fourier Transform Infrared Spectroscopy
(FTIR), 79, 82, 89, 92, 96, 98, 100,
101, 150
Freising, 146, 163, 165, 166, 176, 186, 189,
191
Fritzens, 12–14, 146, 147, 169
Fritzens-Sanzeno culture, 12–14, 16, 211,
241–243
Fügen, 205
- G**
Garching/Alz, 204
Gaul, 16, 19, 50, 51, 57, 58, 60–62, 64, 65,
244–246
Gaussian mixture model, 42, 109, 110, 121,
122, 124
Geological map, 29, 36, 37, 106, 131
Geology, 63, 176, 220
Germany, 4, 6, 16, 19, 56, 58, 106, 130, 158,
173, 181, 184, 186, 191, 212, 245, 246
Gernlinden, 203
Glass, 60, 149
GMM clustering, 221, 222, 232
Gneiss, 176
Grave goods, 11, 221, 238, 240, 243, 245, 246
Griesstetten, 146, 163, 166, 173, 186
Groundwater, 148, 163, 168–170, 177, 178
Grünwald, 146, 163, 176, 198
Günzburg, 19, 244–246
- H**
Hallstatt period, 11, 12, 56, 242
Hazelnut, 147, 148, 168
Heimstetten Group, 51, 55, 67, 243, 244, 246
Hofoldingner Forst, 211
Hohe Birga, 146, 174, 176
Horse, 54, 56, 57, 65
Hötting, 169, 219, 221
Human, 2, 29, 50, 76, 106, 128, 231
Hydrogen, 28, 31–34
Hydroxyapatite, 30, 31, 38, 77–79, 81, 86,
88, 100
- I**
Immigration, 6, 7, 232, 233, 236, 238, 243
Imperial Roman Times, 77, 128, 195, 219
Imst, 4, 169
Infrared spectroscopy, 77, 81

- Inn-Eisack-Adige, 5–7, 11, 76, 106, 107,
113, 123, 128, 130, 134–136, 146–153,
155, 156, 158, 163–165, 168, 172–174,
176–181, 184, 186, 189, 191, 192,
194–197, 211, 219–221, 223, 232,
241, 244
- Innsbruck, 5, 9, 10, 15, 146, 147, 176, 186, 238
- Introduced stock, 54, 66
- Isoscape, 29, 106, 232
- Isotopic fingerprint, 40–42, 106, 108–116,
118–124, 130, 135, 136, 195–223, 230,
232, 233, 243
- Isotopic fractionation, 28, 34, 242
- Isotopic landscape, 3, 28–42, 177, 180,
230, 231
- Isotopic map, 28, 37, 40, 42, 106,
108–113, 120–123, 128, 130, 134–136,
146–153, 155, 156, 158, 163–165, 168,
172–174, 176–181, 184, 186, 189, 191,
192, 194–197, 211, 219–221, 223,
230–233, 244
- Isotopic mixing, 130, 176, 219
- Italy, 4, 6, 11, 15, 16, 50, 51, 57–62, 64, 106,
123, 130, 158, 173, 174, 181, 184, 186,
187, 212, 244, 246
- J**
- Julio-Claudian period, 57, 61
- K**
- Kernel density, 153, 155, 156, 158, 159, 173,
174, 181, 182, 184, 186, 187, 191, 192
- Kinetic fractionation, 28
- Kirchbichl, 146, 169, 173, 176
- Kirchheim, 204
- Kitchenware, 51
- Kitzbühel, 205
- Kleinaitingen, 199, 202
- Königsbrunn, 204
- Kundl, 11, 14, 169, 242
- L**
- Langengeisling, 204
- Latitude, 113, 146, 153, 155, 156, 168,
171–173, 194
- Latsch, 170, 172, 211, 219, 220, 243
- Lattice parameter, 79, 80, 86, 87, 97, 100
- Lead, 4, 28, 62, 79, 106, 128, 230
- Livestock, 19, 52, 62, 66, 67, 243
- Livestock husbandry, 54
- Livestock melioration, 52, 54, 67
- Local, 7, 29, 52, 81, 106, 128, 231
- Longitude, 113–115, 118, 119, 153, 155, 156,
168, 171, 173
- M**
- Manching, 146, 163, 174, 186, 189, 191
- Mass spectrometry, 149–151
- Mathematical outlier, 155, 173, 181, 182,
186, 191
- Matrei, 7, 9, 170
- Mediterranean foodstuff, 51, 57
- Mediterranean lifestyle, 50, 57, 64
- Meteoric water, 164, 168, 173
- Micro-region, 30, 135, 191, 194, 211,
221–223, 238
- Microstrain, 80, 82, 87, 98
- Midden deposits, 57
- Mieming, 146, 163, 169, 186
- Migration, 2–4, 9, 16, 29, 30, 32–33, 35, 37,
39–41, 50, 67, 76, 107, 128, 130,
134–136, 164, 176, 180, 194, 195, 197,
198, 220, 222, 223, 230–233, 237, 238,
240–244, 246
- Mineralogy, 194
- Mining, 6, 7, 9, 15, 42, 106, 108–116,
118–124, 158, 194, 195, 211, 219, 222,
234, 236
- Mixing diagram, 177, 180
- Mixing model, 180
- Mobility, 2–4, 6–17, 19, 30, 35, 37, 39–41, 53,
62–64, 66, 67, 106, 107, 109, 135, 136,
155, 180, 194, 195, 197, 219, 223,
232–242, 244, 245
- Model prediction, 176–180
- Modelling, 3, 29, 34, 181
- Modern ocean water, 36
- Moritzing, 242
- Mühlau, 147
- Mule, 56, 57, 65, 66
- Multivariate analysis, 108
- München, 146, 163, 176, 198
- N**
- NBS 120c, 34, 149
- NBS 982, 152
- Nitrogen, 29, 32, 33, 35, 106, 231
- Non-local, 3, 30, 36, 37, 40, 55, 62, 66, 67, 106,
108, 109, 113, 114, 121, 128, 135, 155,
176, 180, 181, 192, 194, 197, 211, 221,
231, 232, 238, 240, 246

O

Obermenzing, 200
 $\delta^{18}\text{O}_{\text{carbonate}}$, 134, 164–168
 Ocean water, 113, 177
 $\delta^{18}\text{O}_{\text{cellulose}}$, 168, 171–173
 $\delta^{18}\text{O}_{\text{phosphate}}$, 33, 34, 128, 134, 135, 149, 153, 155, 158, 159, 161, 163–168
 $\delta^{18}\text{O}_{\text{precipitation}}$, 130, 158, 164
 Ore deposits, 39, 134, 181, 219, 236, 239, 241
 $\delta^{18}\text{O}_{\text{water}}$, 34, 153, 155, 158, 163, 164, 171–173
 Oxygen, 28, 32–34, 40–42, 62–64, 108, 109, 113–120, 122, 124, 128, 130, 135, 148–150, 153, 158–165, 168, 194–196, 244

P

Pack animal, 15, 53, 54, 56, 65–67, 244
 Palaeoclimate, 34
 Palaeodiet, 29, 35, 106, 164
 Pasturing, 63, 64
 $^{206}\text{Pb}/^{204}\text{Pb}$, 39, 42, 134, 151, 152, 155, 186, 189, 191–193, 211, 218, 219
 $^{206}\text{Pb}/^{207}\text{Pb}$, 39, 42, 134, 151, 152, 155, 181, 182, 184–186, 211, 215, 220, 221
 $^{207}\text{Pb}/^{204}\text{Pb}$, 39, 42, 134, 151, 186, 187, 189–191, 211, 217, 219, 221
 $^{208}\text{Pb}/^{204}\text{Pb}$, 39, 42, 134, 151, 186–188, 211, 216, 219, 221
 $^{208}\text{Pb}/^{207}\text{Pb}$, 42, 134, 151, 155, 181, 182, 184, 211, 214, 221
 Pestenacker/Lech, 146, 189, 191
 Pfaffenhofen/Inn, 146, 147, 178–180, 192
 Pfatten, 8, 15, 170, 242
 Phosphate, 30–32, 41, 77, 79, 89, 92, 93, 99, 100, 106, 149, 150, 164, 165, 168
 Phosphorus, 165
 Photosynthesis, 28, 34
 Phyllite, 174
 Physiology, 63
 Pig, 38, 64, 113, 134–136, 153–157, 159, 163, 164, 166, 167, 173, 174, 180, 182, 184, 187, 194, 233
 Poing, 204
 Population admixture, 42, 128, 195, 197, 211, 223, 230–232
 Potter stamps, 57, 59
 Precipitation, 28, 33, 34, 41, 113, 130, 135, 147–149, 163, 164, 168–170, 177
 Prediction, 29, 34, 37, 106, 109, 177, 179, 180
 Probability density function, 122
 Profile analysis, 81

Provenance analysis, 29, 33, 41, 61, 106, 108, 109, 113, 121–124, 136, 155, 176, 219, 230–233

Q

Quartz, 84, 97, 151, 174

R

Radfeld-Mauken, 146
 Raetia, 16, 19, 51–62, 64–68, 243–246
 Recrystallization, 78, 79, 81
 Red deer, 38, 64, 113, 134–136, 153–159, 163, 164, 166, 167, 173, 174, 181, 182, 184, 186, 187, 194
 Reference clustering, 110–112, 114–120
 Rietveld analysis, 96
 Roman conquest, 19, 50, 52, 56, 57, 67
 Roman times, 19, 50, 52, 54, 55, 61, 163, 233, 244
 Roppen, 169

S

Sanzeno, 12, 147, 163, 167, 168, 170, 176, 192, 241–243
 Schwabmünchen, 146, 174
 Secondary phase, 84, 100
 Shoulder height, 54, 55
 Siebeneich, 167, 170
 Similarity search, 106, 108–116, 118–124, 223, 233
 Sires, 52, 65, 66
 Skeleton, 30–33, 35, 38, 39, 41, 42, 100, 128, 130, 153–158, 181, 195–197, 211, 232, 233, 242, 243
 Skull morphology, 54
 Soil, 28, 29, 31, 34–40, 63, 76, 78, 84–86, 100, 107, 130, 134, 135, 147, 148, 152, 155, 177, 178, 180, 191, 196, 211, 231, 232
 Soil admixture, 63
 Spatial clustering, 109, 121–123
 Spatial redundancy, 37, 42, 176, 181, 186, 194, 219, 222
 Spectral decomposition, 79, 82, 89, 93
 SRM 1400, 149, 151, 152
 SRM 987, 33, 151
 $^{87}\text{Sr}/^{86}\text{Sr}$, 29, 32, 35–38, 41, 42, 106, 128, 130, 134, 147, 148, 151, 153, 155, 173–181, 211, 213, 219–221
 Straubing group, 233

- Strontium, 29, 62, 79, 106, 128, 232
Structural carbonate, 32, 35, 79, 148, 149, 164, 165, 168
Structural redundancy, 112, 116–120
Structural relevance, 112, 116–120
Sulfur, 32, 33
Supply patterns, 61
- T**
Tablewares, 57–59, 61, 65
Terra Sigillata, 58–61, 65
²³²Th, 38, 186
Thaur, 6, 7, 146, 176
Tooth, 30, 31, 41, 62, 63, 65, 77, 151, 196, 197, 232
Trade, 2–4, 6–17, 19, 29, 30, 33, 37, 40, 50, 52, 53, 56–62, 64, 65, 76, 106, 107, 109, 128, 135, 136, 180, 194, 195, 223, 230–232, 236, 244
Transhumance, 15, 64, 66
Trudering, 146, 176, 211
- U**
²³⁵U, 38, 186, 187
²³⁸U, 38, 191
Unit cell, 79, 81, 86, 87, 194
Univariate statistics, 29, 135, 153, 155, 157, 180, 194, 219, 232
Unsupervised learning, 110
- Unterhaching, 146, 163, 165, 166, 176, 186
Urnfield Period, 9, 211, 233, 234, 236, 239, 240
- V**
Vegetation, 34, 35, 37, 38, 147, 171, 177, 178, 180, 232
Via *Claudia Augusta*, 51, 54, 59–62, 64, 65, 67
Völs, 169
Vomp, 238
- W**
Waging am See, 201
Wehringen, 146
Wenns, 8, 14, 169, 173
Wiesberg, 148
Wiesing, 14, 146, 163, 167, 169, 179, 180
Wilten, 169
Wood, 98, 147, 148, 150, 168, 173, 195, 231
Wörthsee, 146
- X**
X-ray diffraction (XRD), 77, 79–82, 84, 86, 88, 93, 96–101
- Z**
Zambana, 147, 163–165, 167, 170, 172