**Supplemental File 1,** to accompany *Geosphere* paper “Paleogeographic and structural evolution of northwestern Africa and its Atlantic margins since the early Mesozoic” by Ye et al.

***Table S1:*** Compilation of thermochronological data (Apatite Fission Track analysis (AFTA) and Apatite (U-Th-Sm)/He dating (AHe)) available over Northwestern Africa. Sample’s name, location, lithology, age and mean track length issued from AFTA, AHe dates and the corresponding reference are shown for each sample, when available. The reader may access the temperature-time paths obtained by data inversion by consulting the cited studies.

TABLE S1. THERMOCHRONOLOGICAL DATA OVER NORTHWESTERN AFRICA

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample Name** | **Long** | **Lat** | **Location** | **Elevation****(m)** | **Lithology** | **AFT\_Age****(Ma)** | **Error****(Ma)** | **MTL(µm)** | **Error****(µm)** | **MTL\_Std** | **AHe\_Mean****(Ma)** | **AHe\_Correc****(Ma)** | **Reference\*** |
| TGH3163 | 9.9W | 24.9N | Reguibat Central | 305 | granite | 139 | 9 | 11.9 | 0.2 | 1.8 | 162-137 | 191-166 | (1) (2) |
| TGH3111B | 9.4W | 24.0N | Reguibat Central | 252 | granite | 150 | 8 | 11.9 | 0.2 | 1.7 |  |  | (2) |
| TEN1185 | 10.5W | 24.1N | Reguibat Central | 236 | gabbro | 163 | 10 | 12.4 | 0.2 | 2.1 | 142-86 | 167-133 | (1) (2) |
| YT7 | 7.3W | 26.5N | Reguibat Central | 384 | monzogranite | 166 | 8 | 11.4 | 0.3 | 1.8 |  |  | (2) |
| TEN4065 | 10.0W | 24.3N | Reguibat Central | 258 | microgranite | 172 | 13 | 11.7 | 0.3 | 2.0 |  |  | (2) |
| TGH4072A | 9.7W | 24.5N | Reguibat Central | 273 | granite | 199 | 13 | 12.4 | 0.2 | 1.6 |  |  | (1) (2) |
| AL10 | 7.1W | 26.6N | Reguibat Central | 394 | granodiorite | 202 | 14 | 12.0 | 0.2 | 1.6 | 280-67 | 396-96 | (2) |
| TEN1153 | 10.5W | 24.0N | Reguibat Central | 216 | grabbro | 256 | 21 | 12.3 | 0.2 | 2.3 | 66-31 | 81-38 | (1) (2) |
| TL3 | 3.2W | 27.4N | Reguibat East | 381 | gabbro | 237 | 21 |  |  |  | 99-31 | 133-40 | (2) |
| CH2 | 3.6W | 25.6N | Reguibat East | 252 | gabbrodiorite | 264 | 21 | 12.0 | 0.2 | 1.7 |  |  | (2) |
| CH1 | 3.6W | 25.6N | Reguibat East | 252 | gabbrodiorite | 307 | 26 | 11.5 | 0.2 | 2.1 | 178-26 | 234-32 | (2) |
| CH3 | 3.6W | 25.6N | Reguibat East | 252 | gabbrodiorite | 315 | 24 | 11.5 | 0.3 | 2.3 | 175-99 | 222-138 | (2) |
| DEG6 | 3.0W | 26.1N | Reguibat East | 355 | gabbro | 355 | 25 | 11.2 | 0.4 | 2.1 |  |  | (2) |
| GH3 | 6.1W | 25.5N | Reguibat East | 360 | trondhjemite | 359 | 27 | 11.5 | 0.2 | 1.9 | 256-88 | 326-104 | (2) |
| IG3 | 6.2W | 26.2N | Reguibat East | 366 | rhyolite | 393 | 36 | 0.0 | 0.0 |  | 277-120 | 384-166 | (2) |
| GH20 | 6.0W | 25.6N | Reguibat East | 350 | gabbro |  |  |  |   |  | 61-27 | 87-41 | (2) |
| AOS2 | 14.3W | 22.5N | Reguibat West | 400 | nephelinic syenite | 107 | 8 | 11.8 | 0.2 | 1.8 | 65-21 | 81-27 | (2) (3) |
| TAS29 | 15.6W | 21.0N | Reguibat West | 110 | gneiss | 115 | 6 | 12.2 | 0.3 | 1.8 | 138-62 | 185-94 | (2) (3) |
| AG169 | 13.4W | 20.7N | Reguibat West | 137 | charnockite | 118 | 10 |  |  |  |  |  | (2) |
| TAS233 | 15.6W | 21.0N | Reguibat West | 110 | volcanite | 126 | 7 | 12.5 | 0.2 | 1.8 | 77-35 | 111-43 | (2) (3) |
| TCH7 | 15.1W | 21.9N | Reguibat West | 194 | granite | 127 | 8 | 9.4 | 0.3 | 2.0 | 55-23 | 67-29 | (2) (3) |
| AOS3 | 14.3W | 22.5N | Reguibat West | 400 | nephelinic syenite | 128 | 6 | 11.9 | 0.2 | 1.6 | 74-38 | 95-47 | (2) (3) |
| AOS5 | 14.3W | 22.5N | Reguibat West | 400 | nephelinic syenite | 128 | 8 | 11.8 | 0.2 | 1.8 | 39-12 | 52-14 | (2) (3) |
| AG167 | 13.4W | 20.7N | Reguibat West | 125 | charnockite | 137 | 12 |  |  |  |  |  | (2) |
| SC12 | 14.5W | 22.6N | Reguibat West | 292 | granite | 141 | 8 | 12.2 | 0.2 | 1.8 | 64-55 | 82-63 | (2) (3) |
| SC9 | 14.3W | 22.6N | Reguibat West | 318 | granite | 143 | 13 | 11.2 | 0.4 | 1.9 | 71-42 | 93-52 | (2) (3) |
| SC5 | 14.5W | 22.7N | Reguibat West | 284 | granite | 156 | 15 | 10.7 | 0.3 | 1.7 | 77-28 | 101-35 | (2) (3) |
| SC11 | 14.4W | 22.6N | Reguibat West | 293 | granite | 160 | 11 | 12.1 | 0.3 | 1.8 | 71-35 | 92-24 | (2) (3) |
| SC15 | 14.5W | 22.7N | Reguibat West | 282 | granite | 175 | 16 |  |  |  | 67-21 | 80-27 | (2) (3) |
| SC-31 | 7.8E | 18.5N | Air |  | pegmatitic granite | 34 | 3 | 12.5 | 0.7 |  |  |  | (4) |
| SC-56 | 7.8E | 18.5N | Air |  | leucoratic granite  | 36 | 2 | 12.8 | 1.2 |  |  |  | (4) |
| SC-71 | 8.4E | 18.0N | Air |  | orthoclase-phenocryst granite | 44 | 3 | 12.6 | 0.2 |  |  |  | (4) |
| BF 3 | 2.0W | 12.7N | Burkina Faso | 400 | granite | 175 | 10 | 12.8 | 0.2 | 1.6 |  |  | (5) |
| BF 1 | 1.3W | 12.6N | Burkina Faso | 340 | granite | 179 | 10 | 12.8 | 0.2 | 1.5 |  |  | (5) |
| BF 7 | 3.2W | 10.7N | Burkina Faso | 320 | granite | 179 | 9 | 13.1 | 0.2 | 1.5 |  |  | (5) |
| BF 4 | 0.3W | 12.3N | Burkina Faso | 380 | quartz syenite | 196 | 19 | 12.4 | 0.2 | 1.9 |  |  | (5) |
| BF 5 | 1.9W | 12.0N | Burkina Faso | 400 | granodiorite | 211 | 8 | 12.4 | 0.2 | 1.6 |  |  | (5)  |
| BF 2 | 1.9W | 11.4N | Burkina Faso | 380 | granite | 218 | 7 | 12.2 | 0.2 | 1.8 |  |  | (5)  |
| IT05 | 5.7E | 22.8N | Hoggar | 1523 | granite | 75 | 8 |  |  |  | 55 |  | (6) |
| BLN12-2 | 9.6E | 17.6N | Hoggar | 671 | rhyolite | 91 | 10 |  |  |  | 64 |  | (6) |
| IT22 | 5.7E | 22.8N | Hoggar | 1537 | granite | 96 | 11 |  |  |  | 71 |  | (6) |
| ALG3 | 4.5E | 22.5N | Hoggar | 707 | granodiorite | 99 | 6 |  |  |  | 43 |  | (6) |
| TOD17 | 7.3E | 25.0N | Hoggar | 1341 | granite | 111 | 10 |  |  |  | 41 |  | (6) |
| ARO113 | 8.5E | 23.7N | Hoggar | 1037 | granite | 114 | 10 |  |  |  | 17 |  | (6) |
| ALG1 | 4.4E | 22.7N | Hoggar | 705 | granodiorite | 166 | 10 |  |  |  |  |  | (6) |
| ALG2 | 4.4E | 22.6N | Hoggar | 699 | granodiorite | 166 | 9 | 10.4 | 0.2 |  | 41 |  | (6) |
| TOD27 | 7.3E | 25.1N | Hoggar | 1372 | granodiorite | 179 | 20 | 0.0 | 0.0 |  | 22 |  | (6) |
| TOD30 | 7.3E | 25.0N | Hoggar | 1416 | granite | 285 | 29 |  |  |  | 14 |  | (6) |
| ALG4 | 4.6E | 22.5N | Hoggar | 722 | granodiorite |  |  |  |   |  | 42 |  | (6) |
| FRZ1 | 3.5E | 25.7N | Hoggar | 625 | Cambro-Ordovician sandstone |  |  |   |  | 78 |  | (6) |
| BLN400 | 8.6E | 19.6N | Hoggar | 802 | mylonitic metatonalite |  |  |   |  | 37 |  | (6) |
| TZA14 | 4.5E | 23.9N | Hoggar | 827 | granite |  |  |   |  | 49 |  | (6) |
| TZA28 | 4.4E | 24.0N | Hoggar | 754 | granite |  |  |  |   |  | 49 |  | (6) |
| TZA182 | 4.0E | 25.1N | Hoggar | 834 | granodiorite |  |  |   |  | 71 |  | (6) |
| TZA204 | 4.7E | 24.7N | Hoggar | 912 | granite |  |  |  |   |  | 43 |  | (6) |
| ARO108 | 8.5E | 23.7N | Hoggar | 1037 | granite |  |  |  |   |  | 41 |  | (6) |
| EN06-5 | 2.5W | 3.6N | IC-GN marginal ridge | -3465 | sandstone | 68 |  |  |  |  |  |  | (7) |
| EN04-9 | 2.3W | 3.7N | IC-GN marginal ridge | -2405 | sandstone | 69 |  |  |  |  |  |  | (7) |
| EN09-9 | 2.7W | 3.5N | IC-GN marginal ridge | -2675 | sandstone | 78 |  |  |  |  |  |  | (7) |
| EN01-3 | 1.9W | 3.9N | IC-GN marginal ridge | -3479 | sandstone | 83 |  |  |  |  |  |  | (7) |
| EN09-4 | 2.7W | 3.5N | IC-GN marginal ridge | -3524 | sandstone | 90 |  |  |  |  |  |  | (7) |
| EN09-2 | 2.7W | 3.5N | IC-GN marginal ridge | -3905 | sandstone | 92 |  |  |  |  |  |  | (7) |
| 961 | 3.1W | 3.5N | IC-GN marginal ridge | -365 | siltstone | 92 |  |  |  |  |  |  | (7) |
| 960 | 2.7W | 3.6N | IC-GN marginal ridge |  | sandstone, claystone, limestone |  |  |   |  |  |  | (7) (8) |
| 959 | 2.7W | 3.6N | IC-GN marginal ridge |  | sandstone |  |  |  |   |  |  |  | (8)  |
| **\*Reference**: (1) Leprêtre et al., 2014; (2) Leprêtre, 2015; (3) Leprêtre et al., 2015; (4) Cavellec, 2006; (5) Gunnell, 2003; (6) Rougier, 2012; (7) Bouillin et al., 1997; (8) Clift et al., 1998 |

***Table S2****:* Compilation of Meso-Cenozoic magmatic occurences in Northwestern Africa. Paleogeographic maps: Fig 5- Early Jurassic (235-190 Ma), Fig 6- Vanlanginian (140-133Ma), Fig 7- Middle Aptian (120-115 Ma), Fig 8- Late Albian (107-100 Ma), Fig 9- Late Cenomanian (97-93 Ma), Fig 10- Santonian (86-84 Ma), Fig 11- Maastrichtian (72-66 Ma), Fig 12- Late Paleocene (61-56 Ma), Fig 13- Oligocene (34-23 Ma).

|  |
| --- |
| TABLE S2. REFERENCES OF MAGMATISM DATING |
| **Country** | **Location** | **Emplacement mode** | **Age (Ma)** | **Dating Method** | **Reference+** | **Fig** |
| Nigeria | Benue Trough | Intrusion in Kerri-Kerri formation | 41 | Radiometrical dating | [1] | 13 |
| Algeria | Touareg Shield | Serouenout lava flows | 18.1 ± 0.4; 6.3 | K-Ar | [2] [3] | 13 |
| Algeria | Touareg Shield | Tahalgha lava flows | 3.4 ± 0.1 - 2.43 ± 0.06 | K-Ar | [2] [3] | 13 |
| Algeria | Touareg Shield | Taharaq lava flows | 34.5 ± 3.5 - 32.8 ± 2.6  | Ar-Ar | [4] | 13 |
| Algeria | Touareg Shield | Taharaq lava flows, dykes | 44 ± 0.8; 33.6 ± 0.7 - 24.4 ± 0.5  | K-Ar | [4] | 13 |
| Sierra Leone | CAMP | Freetown Complex | 232.1 ± 9 - 196.3 ± 3  | Ar-Ar | [5] [6] | 5 |
| Guinea | Offshore | Krausse Seamount | 53.3 - 55.4 | N.D.\* | [7] | 12 |
| Guinea | Offshore | Nadir Seamount | 58.6 ± 0.3 | Ar-Ar  | [7] | 12 |
| Algeria | CAMP | Reggane-Tindouf-Hank Sills & Fersiga  Dykes & Bechar Lava flows | 197.9 ± 2.0 - 195.0 ± 1.6  | Ar-Ar  | [8]  | 5 |
| Liberia | CAMP | Paynesvill Sill | 185.0 ± 4.4 - 187.0 ± 3.4 | Ar-Ar  | [9] | 5 |
| Liberia | CAMP | Liberia Dyke and Sills | 192 ± 6 - 173 ± 4  | K-Ar  | [9] | 5 |
| Guinea | CAMP | Kakoulima Laccolithic Complex & Fouta Djalon Dykes and Sills | 200.4 ± 2.4 - 188.7 ±  1.9 | Ar-Ar  | [10] | 5 |
| Nigeria | Younger Granites | Pankshin ring complexe | 151 | Rb-Sr  | [11] [12] | 5 |
| Nigeria | Younger Granites | Jos ring complexe | 161 | Rb-Sr  | [11] [12] | 5 |
| Nigeria | Younger Granites | Shere Hills ring complexe | 161 | Rb-Sr  | [11] [12] | 5 |
| Nigeria | Younger Granites | Amo ring complexe | 162 | Rb-Sr  | [11] [12] | 5 |
| Nigeria | Younger Granites | Zaranda ring complexe | 186 | Rb-Sr  | [11] [12] | 5 |
| Nigeria | CAMP | Oban-Obudu Dyke Swarm | 219.9 ± 4.7 - 204.0 ± 9.9  | K-Ar | [13]  | 5 |
| Nigeria | N.P.\* | Oban-Obudu Dyke Swarm | 140.5 ±  0.7 | Ar-Ar | [14]  | 6 |
| Nigeria | Cameroun Line | Mandara lava flows | 36 - 30 | K-Ar | [15]  | 13 |
| Nigeria | Cameroun Line | Biu Plateau lava flows | 5 - 0.8 | K-Ar | [15]  | 13 |
| Cameroun | Cameroun Line | Manengouba lava flows | 3 - 0 | K-Ar, Rb-Sr | [15] [16]  | 13 |
| Cameroun | Cameroun Line | Sao Tomé lava flows | 13 - 0 | K-Ar, Rb-Sr | [15] [16] [17] | 13 |
| Cameroun | Cameroun Line | Bambouto lava flows | 23 - 14 | K-Ar | [15] [18]  | 13 |
| Cameroun | Cameroun Line | Oku lava flows | 31 - 22 | K-Ar | [15] [19]  | 13 |
| Chad | WCRAS | Dilia (Langrin-1) granites, Termit | 190 ± 7  | N.D.\* | [20] [21]  | 5 |
| Chad | WCRAS | Doseo (Tega-1) sills | 97 ± 1.2  | N.D.\* | [20] [21] | 9 |
| Chad | WCRAS | Bongor (Naramay-1) sills | 52 - 56 | N.D.\* | [20] [21] | 12 |
| Chad | WCRAS | Doseo (Kikwey-1) sills | 101.1 ± 1.1  | N.D.\* | [20] [21] | 8 |
| Chad | WCRAS | Termit (Kumia-1) sills | Cenomanian  | Relative dating | [20] [21] | 9 |
| Chad | WCRAS | Sedigi dykes, Termit  | Santonian  | Relative dating | [20] [21] | 10 |
| Chad | WCRAS | Doseo (Keita-1) sills | Upper Aptian | Relative dating | [20] [21] | 7 |
| Niger | WCRAS | Gosso Lorom lava flows, Termit | 10 ≤ 1 | N.D.\* | [20] [21] | 13 |
| Niger | WCRAS | Termit (Iaguil-1) sills | 8.6 ± 0.5 | N.D.\* | [20] [21] | 13 |
| Nigeria | Nigeria Shield | Jos Plateau lava flows | 2.1 ± 0.1 - 0.9 ± 0.2 | K-Ar | [22]  | 13 |
| Nigeria | Benue Trough | South Gombe plugs | 22.8 - 11.2 | K-Ar | [22] | 13 |
| Nigeria | Cameroun Line | Biu Plateau lava flows | 5.0 ± 0.2 - 0.8  | K-Ar | [22] | 13 |
| Nigeria | Benue Trough | South Gombe plugs | 7.4 - 2.5 | K-Ar  | [22] | 13 |
| Cameroun | Cameroun Line | Mt Cameroon lava flows | 3 - 0 | Rb-Sr | [16] | 13 |
| Cameroun | Cameroun Line | Bioko lava flows | 1 - 0 | Rb-Sr | [16] | 13 |
| Cameroun | Cameroun Line | Principe lava flows | 31 - 0 | Rb-Sr | [16] [17] | 13 |
| Cameroun | Cameroun Line | CL plutons | 73 ± 6 - 39 ± 2 | K-Ar, Ar-Ar, Rb-Sr | [23] | 11 |
| Cameroun | Cameroun Line | CL plutons | 73 ± 6 - 39 ± 2 | K-Ar, Ar-Ar, Rb-Sr | [23] | 12 |
| Cameroun | Cameroun Line | CL plutons | 73 ± 6 - 39 ± 2 | K-Ar, Ar-Ar, Rb-Sr | [23] | 13 |
| Liberia | CAMP | Liberia Dyke Swarm | 196 ± 4 - 177 ± 4 | K-Ar  | [24] [25] | 5 |
| Cameroun | Cameroun Line | Pagalu lava flows | 5 - 0 | Rb-Sr | [17] | 13 |
| Chad | Tibesti Shield | Tibesti lava flows | 9.7 - 0.3 | N.D.\* | [26]  | 13 |
| Mali | Touareg Shield | Tin Zaouatene lava flows | 0 | N.D.\* | [26] | 13 |
| Niger | Touareg Shield | Tin Taralle and Todra lava | 28 - 20; 15 - 8; 4 - 0.7 | N.D.\* | [26] | 13 |
| Mali | Touareg Shield | Tidjerazraze ring complexe | 161 ± 5 | Rb-Sr | [27] | 5 |
| Mali | Touareg Shield | Anezrouf ring complex | 184 ± 14 | Rb-Sr | [27] | 5 |
| Mali | Touareg Shield | Tirkine ring complexe | 215 ± 11  | Rb-Sr | [27] | 5 |
| Nigeria | Benue Trough | Gowol lava flows | 123.1 ± 1.6 | Ar-Ar | [28] | 7 |
| Nigeria | Benue Trough | Bima Hill lava flows | 106.6 ± 19  | Ar-Ar | [28] | 8 |
| Nigeria | Benue Trough | Dumne lava flows | 130.7 ± 2.7 | Ar-Ar  | [28] | 6 |
| Nigeria | Benue Trough | Burashikai lava flows | 146.7 ± 1.6 - 137.8 ± 1.9 | Ar-Ar  | [28] | 6 |
| Nigeria | Benue Trough | Gboko dykes | 93.5 ± 1.7; 92.3 ± 1.1  | Ar-Ar  | [28] | 9 |
| Nigeria | Benue Trough | Wanakum Hills lava flows, sills, dykes and pyroclastic deposits | 95.3 ± 1 - 71.4 ± 1.3  | Ar-Ar  | [28] | 9 |
| Nigeria | Benue Trough | Katyo subvolcanic intrusions | 97.1 ± 1.2; 68.4 ± 1.1  | Ar-Ar  | [28] | 9 |
| Nigeria | Benue Trough | Okigwi subvolcanic intrusions | 87.7 ± 1 - 81.1 ± 1.1  | Ar-Ar  | [28] | 10 |
| Nigeria | Benue Trough | Wanakum Hills lava flows, sills, dykes and pyroclastic deposits | 95.3 ± 1 - 71.4 ± 1.3  | Ar-Ar  | [28] | 10 |
| Nigeria | Benue Trough | Wanakum Hills lava flows, sills, dykes and pyroclastic deposits | 95.3 ± 1 - 71.4 ± 1.3  | Ar-Ar  | [28] | 11 |
| Nigeria | Benue Trough | Katyo subvolcanic intrusions | 97.1 ± 1.2; 68.4 ± 1.1  | Ar-Ar  | [28] | 11 |
| Nigeria | Benue Trough | Makurdi intrusions | 49.1 ± 1.1 | Ar-Ar  | [28] | 12 |
| Nigeria | Benue Trough | Afikpo sills | 55.2 ± 2 | Ar-Ar  | [28] | 12 |
| Liberia | CAMP | Liberia Dyke Swarm | 201 ± 2 - 186 ± 4  | K-Ar  | [29]  | 5 |
| Algeria | Touareg Shield | Achkal ring complexe, Amadhor | 29 ± 0.6; 24 ± 0.4 | K-Ar | [30] | 13 |
| Guinea | Offshore | Los Island instrusions | 104.5 ± 1.6 | Rb-Sr | [31] | 8 |
| Mauritania | Taoudenni | Richat dome | 85 ± 5 | Fission track dating | [32]  | 10 |
| Cameroun | Cameroun Line | Garoua lava flows | 39 - 34 | K-Ar | [33] | 13 |
| Nigeria | Benue Trough | Burashika-Shani lava flows | 147 ± 7 | K - Ar | [34]  | 6 |
| Nigeria | Benue Trough | Gowol and Bima-Wada lava flows | 103 ± 5 | K - Ar | [34]  | 8 |
| Nigeria | Younger Granites | Mada ring complexe | 150 ± 2; 145 ± 4 | Rb-Sr  | [35]  | 5 |
| Nigeria | Younger Granites | Tibchi ring complexe | 171 ± 3  | Rb-Sr  | [35] | 5 |
| Nigeria | Younger Granites | Banke ring complexe | 173 ± 3; 173 ± 2  | Rb-Sr  | [35] | 5 |
| Nigeria | Younger Granites | Kudaru ring complexe | 175 ± 16; 173 ± 3  | Rb-Sr  | [35] | 5 |
| Nigeria | Younger Granites | Dutsen ring complexe | 177 ± 3; 173 ± 3  | Rb-Sr  | [35] | 5 |
| Nigeria | Younger Granites | Ningi ring complexe | 183 ± 7  | Rb-Sr  | [35] | 5 |
| Nigeria | Younger Granites | Shira ring complexe | 186 ± 5  | Rb-Sr  | [35] | 5 |
| Nigeria | Younger Granites | Fagam ring complexe | 191 ± 3  | Rb-Sr  | [35] | 5 |
| Nigeria | Younger Granites | Dutse ring complexe | 213 ± 7  | Rb-Sr  | [35] | 5 |
| Nigeria | Younger Granites | Ririwai ring complexe | 170 - 166 | Rb-Sr  | [12] [35] [36]  | 5 |
| Cameroun | Cameroun Line | Ngaoundere lava flows | 11 - 7 | N.D.\* | [19]  | 13 |
| Ghana | Offshore | Vocaniclastic deposits | 125 - 120 | N.D.\* | [37]  | 7 |
| Algeria | Touareg Shield | Atakor basaltic lava flows | 19.9 ± 1.9 - 12.4 ± 2; 6.7 ± 2 - 4.2 ± 0.2; 1.95 ± 0.2 - 1.5 ± 0.1 | K-Ar | [38] [39]  | 13 |
| Algeria | CAMP | Ksi-Ksou Dyke | 198.0 ± 1.8 | Ar-Ar  | [40]  | 5 |
| Mali | CAMP | Taoudenni  Dyke Swarm | 203.7 ± 2.7 - 200.9 ± 2.5 | Ar-Ar  | [40] | 5 |
| Guinea | Kimberlite | Banakoro kimberlite pipe | 139 ± 3  | Ar-Ar  | [41] | 6 |
| Guinea | Kimberlite | Droujba kimberlite pipe | 153 ± 3  | Ar-Ar  | [41] | 6 |
| Sierra Leone | Kimberlite | Tongo kimberlite dyke | 140 | N.D.\* | [41] | 6 |
| Sierra Leone | Kimberlite | Koidu kimberlite pipe 1 | 143 ± 1  | Ar-Ar  | [41] | 6 |
| Sierra Leone | Kimberlite | Koidu kimberlite pipe 2 | 146 ± 2  | Ar-Ar  | [41] | 6 |
| Nigeria | Benue Trough | Gboko-Ikyuen rhyolites | 113 ± 3  | Rb-Sr  | [42] | 7 |
| Nigeria | Younger Granites | Afu ring complexe | 141 ± 2; 144 ± 2 | Rb-Sr  | [43] [44] | 5 |
| Mali | CAMP | Taoudenni Sills  | 202.4 ± 1.6 - 198.9  ±  1.2 | Ar-Ar  | [45] | 5 |
| Mali | CAMP | Taoudenni  Dyke Swarm | 203.7 ± 2.7 - 196.6 ± 1.0 | Ar-Ar  | [45] | 5 |
| Nigeria | Kimberlite | Kuafur kimberlite | c.150  | N.D.\* | [46] | 6 |
| Nigeria | Nigeria Shield | Jos Plateau lava flows | 34.7 ± 0.2; 27 ± 0.2; 8.4 ± 0.1 | K-Ar | [47] | 13 |
| Algeria | Touareg Shield | In Ezzane lava flows | 0 | N.D.\* | [26] | 13 |
| Algeria | Touareg Shield | Manzaz lava flows | 20 - 12; 7 - 4; 3 - 0.01 | N.D.\* | [26] | 13 |
| Algeria | Touareg Shield | Adrar n'Ajjer lava flows | 3.5 - 2.5 | N.D.\* | [26] | 13 |
| Algeria | Touareg Shield | Eggere lava flows | 3.5 - 2.5 | N.D.\* | [26] | 13 |
| Algeria | Touareg Shield | Serouenout lava flows | 16.8 ± 0.6 - 4.7 ± 0.3  | Ar-Ar | [48] | 13 |
| Guinea | Offshore | Drilled volcanic | Aptian-Albian | Relative dating | This study | 7 |
| Guinea | Offshore | Drilled volcanics  | Aptian-Albian | Relative dating | This study | 8 |
| Liberia | Offshore  | Drilled interbedded tuffs and basalts | Neocomian | Relative dating | This study | 6 |
| Liberia | Offshore  | Drilled andesite | Neocomian | Relative dating | This study | 6 |
| Liberia | Offshore  | Drilled interbedded tuffs and basalts | Neocomian | Relative dating | This study | 6 |
| Liberia | Offshore | Drilled tuffs | Albian | Relative dating | This study | 8 |
| Liberia | Offshore | St Paul lacoliths, volcanics | Tertiary | Relative dating | This study | 12 |
| Liberia | Offshore | St Paul lacoliths, volcanics | Tertiary | Relative dating | This study | 13 |
| **\*N.P.** = not provided.**+Reference**: [1] Adegoke et al., 1986; [2] Aït Hamou and Dautria, 1994; [3] ; Aït Hamou, 2000; [4] Aït Hamou et al., 2000; [5] Barrie, 2006; [6] Barrie et al., 2010; [7] Bertrand et al., 1993; [8] Chabou et al., 2007; [9] Dalrymple et al., 1975; [10] Deckart et al., 1997; [11] Van Breemen et al., 1975; [12] Dickin et al., 1991; [13] Ekwueme et al., 1997; [14] Ekwueme,1994; [15] Fitton and Dunlop, 1985; [16] Halliday et al., 1990; [17] Lee et al., 1994; [18] Marzoli et al., 2000; [19] Rankenburg et al., 2005; [20] Genik, 1992; [21] Genik, 1993; [22] Grant et al., 1972; [23] Kamdem et al., 2001; [24] Lanphere and Dalrymple, 1971; [25] Lanphere and Dalrymple, 1976; [26] Liégeois et al., 2005; [27] Liégois et al., 1991; [28] Maluski et al., 1995; [29] Mauche et al., 1989; [30] Maza et al., 1995; [31] Moreau et al., 1996; [32] Netto et al., 1992; [33] Ngounouno et al., 1997; [34] Popoff et al., 1982; [35] Rahaman et al., 1984; [36] Van Breemen et al., 1975; [37] Reyre, 1984; [38] Rognon et al., 1981; [39] Rognon et al., 1983; [40] Sebai et al., 1991; [41] Skinner et al., 2004; [42] Umeji and Caen-Vachette, 1983; [43] Vail, 1989; [44] Bowden et al., 1976; [45] Verati et al., 2005; [46] Wright, 1976; [47] Zeese et al., 1994; [48] Maza et al., 1998. |

REFERENCES CITED

Adegoke, O.S., Agumanu, A.E., Benkhelil, M.J., and Ajayi, P.O., 1986, New stratigraphic, sedimentologic and structural data on the Kerri-Kerri Formation, Bauchi and Borno states, Nigeria: Journal of African Earth Sciences, v. 5, p. 249–277.

Ait-Hamou, F., 2000, Un exemple de “point chaud” intra-continental en contexte de plaque quasi-stationnaire : étude pétrologique et géochimique du djebel Taharaq et évolution du volcanisme cénozoïque de l’Ahaggar (Sahara algérien) [Ph.D. thesis]: Université Montpellier II, France, 200 p.

Ait-Hamou, F., and Dautria, J.M., 1994, Le magmatisme cénozoïque du Hoggar : Une synthèse des données disponibles. Mise au point sur l’hypothèse d’un point chaud: Bulletin du Service Géologique de l’Algérie, v. 5, p. 49–68.

Aït-Hamou, F., Dautria, J.M., Cantagrel, J.M., Dostal, J., and Briqueu, L., 2000, Nouvelles données géochronologiques et isotopiques sur le volcanisme cénozoïque de l’Ahaggar (Sahara algérien): des arguments en faveur de l’existenced’un panache: Comptes Rendus de l’Academie des Sciences de Paris, v. 330, p. 829–836.

Akpati, B.N., 1978, Geologic structure and evolution of the Keta basin, Ghana, West Africa: Geological Society of America Bulletin, v. 89, p. 124–132.

Barrie, I.J., 2006, Tectono-thermal evolution of the Sierra Leone passive continental margin, West Africa; constraints from thermochronology, *in* Geochimica et Cosmochimica Acta, Melbourne, Victoria, Australia, v. 70, p. A36–A36.

Barrie, I.J., Wijbrans, J., Andriessen, P., Beunk, F., Strasser-King, V., and Fode, D., 2010, Combined 40Ar/ 39Ar and fission-track study of the Freetown layered igneous complex, Freetown, Sierra Leone, West Africa; implications for the inital break-up of Pangea to form the Central Atlantic Ocean and insight into the Post-rift Evolution of the Sierra Leone Passive Margin, *in* Geophysical Research Abstracts, v. 12, p. 7322.

Bertrand, H., Féraud, G., and Mascle, J., 1993, Alkaline volcano of Paleocene age on the Southern Guinean Margin: Mapping, petrology, 40Ar-39Ar laser probe dating, and implications for the evolution of the Eastern Equatorial Atlantic: Marine Geology, v. 114, p. 251–262.

Bouillin, J.-P., Poupeau, G., Labrin, E., Basile, C., Sabil, N., Mascle, J., Mascle, G., Gillot, F., and Riou, L., 1997, Fission track study: heating and denudation of marginal ridge of the Ivory Coast–Ghana transform margin: Geo-Marine Letters, v. 17, p. 55–61.

Bowden, P., Van Breemen, O., Hutchinson, J., and Turner, D.C., 1976, Paleozoic and Mesozoic age trends for some ring complexes in Niger and Nigeria: Nature, v. 259, p. 297–299.

Cavellec, S., 2006, Evolution diagénétique du bassin de Tim Mersoï et conséquences pour la genèse des minéralisations uranifères dans les formations carbonifères du Guezouman et du Tarat (district Arlit-Akokan, Niger) [Ph.D. thesis]: Université de Paris XI, Orsay, France, 449 p.

Chabou, M.C., Sebai, A., Feraud, G., and Bertrand, H., 2007, Datation 40Ar/ 39Ar de la province magmatique de l’Atlantique central dans le Sud-Ouest algérien: Comptes Rendus Géoscience, v. 339, p. 970–978.

Clift, P.D., Carter, A., and Hurford, A.J., 1998, Apatite fission track analysis of sites 959 and 960 on the transform continental margin of Ghana, West Africa: Proceedings of the Ocean Drilling Program, Scientific Results, v. 159, p. 35–41.

Dalrymple, G.B., Gromme, C.S., and White, R.W., 1975, Potassium-argon age and paleomagnetism of diabase dikes in Liberia; initiation of central Atlantic rifting: Geological Society of America Bulletin, v. 86, p. 399–411.

Deckart, K., Feraud, G., and Bertrand, H., 1997, Age of Jurassic continental tholeiites of French Guyana, Surinam and Guinea: implications for the initial opening of the central Atlantic Ocean: Earth and Planetary Science Letters, v. 150, p. 205–220.

Dickin, A.P., Halliday, A.N., and Bowden, P., 1991, A Pb, Sr and Nd isotope study of the basement and Mesozoic ring complexes of the Jos Plateau, Nigeria: Chemical Geology, v. 94, p. 23–32.

Ekwueme, B.N., 1994, Basaltic magmatism related to the early stages of rifting along the Benue Trough; the Obudu dolerites of South-east Nigeria: Geological Journal, v. 29, p. 269–276.

Ekwueme, B.N., Itaya, T., and Yabe, H., 1997, K-Ar ages of intrusive rocks in the Oban-Obudu Massif and their significance for the tectonic and plutonic history of southeastern Nigeria: The Island Arc, v. 6, p. 353–360.

Fitton, J.G., and Dunlo, H.M., 1985, The Cameroon line, West Africa, and its bearing on the origin of oceanic and continental alkali basalt: Earth and Planetary Science Letters, v. 72, p. 23–38.

Genik, G.J., 1993, Petroleum geology of Cretaceous-Tertiairy rift basins in Niger, Chad, and Central African Republic: American Association of Petroleum Geologists Bulletin, v. 77, p. 1405–1434.

Genik, G.J., 1992, Regional framework, structural and petroleum aspects of rift basins in Niger, Chad and the Central African Republic (C.A.R.): Tectonophysics, v. 213, p. 169–185.

Grant, N.K., Rex, D.C., and Freeth, S.J., 1972, Potassium-Argon Ages and Strontium Isotope Ratio Measurements from Volcanic Rocks in Northeastern Nigeria: Contributions to Mineralogy and Petrology, v. 35, p. 277–292.

Gunnell, Y., 2003, Radiometric ages of laterites and constraints on long-term denudation rates in West Africa: Geology, v. 31, p. 131–134.

Halliday, A.N., Davidson, J.P., Holden, P., De Wolf, C., Lee, D.C., and Fitton, J.G., 1990, Trace-element fractionation in plumes and the origin of HIMU mantle beneath the Cameroon Line: Nature, v. 347, p. 523–528.

Kamden, J.B., Kraml, M., Keller, J., and Henjes-Kunst, F., 2001, Cameroon Line magmatism: conventional K/Ar and single-crystal laser 40Ar/ 39Ar ages of rocks and minerals from the Hossere Nigo anorogenic complex Cameroon: Journal of African Earth Sciences, v. 35, p. 99–105.

Lanphere, M.A., and Dalrymple, G.B., 1971, A test of the 40Ar/ 39Ar age spectrum technique on some terrestrial materials: Earth and Planetary Science Letters, v. 12, p. 359–372.

Lanphere, M.A., and Dalrymple, G.B., 1976, Identification of excess 40Ar by the 40Ar/ 39Ar age spectrum technique: Earth and Planetary Science Letters, v. 32, p. 141–148.

Lee, D.C., Halliday, A.N., Fitton, J.G., and Poli, G., 1994, Isotopic variations with distance and time in the volcanic islands of the Cameroon Line; evidence for a mantle plume origin: Earth and Planetary Science Letters, v. 123, p. 119–138.

Leprêtre, R., 2015, Evolution phanérozoïque du Craton Ouest Africain et de ses bordures Nord et Ouest [Ph.D. thesis]: Université Paris Sud - Paris XI, France, 423 p.

Leprêtre, R., Barbarand, J., Missenard, Y., Leparmentier, F., and Frizon de Lamotte, D., 2014, Vertical movements along the northern border of the West African Craton: the Reguibat Shield and adjacent basins: Geological Magazine, v. 151, p. 885–898.

Leprêtre, R., Missenard, Y., Barbarand, J., Gautheron, C., Saddiqi, O., and Pinna-Jamme, R., 2015, Postrift history of the eastern central Atlantic passive margin: Insights from the Saharan region of South Morocco: Journal of Geophysical Research: Solid Earth, v. 120, p. 4645–4666.

Liégois, J.P., Benhallou, A., Azzouni-Sekkal, A., Yahiaoui, R., and Bonin, B., 2005, The Hoggar swell and volcanism: Reactivation of the Precambrian Tuareg shield during Alpine convergence and West African Cenozoic volcanism: Geological Society of America, Special Paper, v. 388, p. 379–400.

Liégois, J.P., Sauvage, J.F., and Black, R., 1991, The Permo-Jurassic alkaline province of Tadhak, Mali: geology, geochronology and tectonic significance: Lithos, v. 27, p. 95–105.

Maluski, H., Coulon, C., Popoff, M., and Baudin, P., 1995, 40Ar/ 39Ar chronology, petrology and geodynamic setting of Mesozoic to early Cenozoic magmatism from the Benue Trough, Nigeria: Journal of Geological Society, London, v. 152, p. 311–326.

Marzoli, A., Piccirillo, E.M., Renne, P.R., Bellieni, G., Iacumin, M., Nyobe, J.B., and Tongwa, A.T., 2000, The Cameroon Volcanic Line Revisited: Petrogenesis of Continental Basaltic Magmas from Lithospheric and Asthenospheric Mantle Sources: Journal of Petrology, v. 41, p. 87–109.

Mauche, R., Faure, G., Jones, L.M., and Hoefs, J., 1989, Anomalous isotopic compositions of Sr, Ar and O and the Mesozoic diabase dikes of Liberia, West Africa: Contributions to Mineralogy and Petrology, v. 101, p. 12–18.

Maza, M., Briqueu, L., Dautria, J.M., and Bosch, D., 1998, Le complexe annulaire d’âge Oligocène de l’Achkal (Hoggar Central, Sud Algérie): témoin de la transition au Cénozoïque entre les magmatismes tholéitique et alcalin. Évidences par les isotopes du Sr, Nd et Pb: Comptes Rendus de l’Academie des Sciences de Paris, v. 327, p. 167–172.

Maza, M., Dautria, J.M., Briqueu, L., and Cantagrel, J.M., 1995, Massif annulaire de l’Achkal: un témoin d’un magmatisme alcalin d’âge oligocene supérieur au Hoggar Centro-Oriental: Bulletin du Service Géologique de l’Algérie, v. 6, p. 61–77.

Moreau, C., Ohnenstetter, D., Demaiffe, D., and Robineau, B., 1996, The Los Archipelago nepheline syenite ring-structure: a magmatic marker of the evolution of the Central and Equatorial Atlantic: The Canadian Mineralogist, v. 34, p. 281–299.

Netto, A.M., Fabre, J., Poupeau, G., and Champenois, M., 1992, Datation par traces de fission de la structure circulaire des Richat (Mauritanie): Comptes Rendus de l’Académie des Sciences de Paris, Série II, v. 314, p. 1179–1186.

Ngounouno, I., Deruelle, B., Demaiffe, D., and Montigny, R., 1997, Données nouvelles sur le volcanisme cénozoïque du fossé de Garoua (Nord du Cameroun): Comptes Rendus de l’Académie des Sciences de Paris, Série IIA v. 325, p. 87–94.

Popoff, M., Kampunzu, A.B., Coulou, C., and Esquevin, J., 1982, Découverte d’un volcanisme mésozoïque dans le NE du Nigeria: datations absolues, caractères magmatiques et signification dans l’évolution du rift de la Bénoué., *in* Popoff, M. and Tiercelin, J.J. eds., Rifts et Fossés anciens, Résumés de communication des travaux du laboratoire de Science de la Terre, Saint Jérome, Marseille, France, p. 47–49.

Rahaman, M.A., Van Breemen, O., Bowden, P., and Bennett, J.N., 1984, Age migrations of anorogenic ring complexes in northern Nigeria: Journal of Geology, v. 92, p. 173–184.

Rankenburg, K., Lassiter, J.C., and Brey, G., 2005, The Role of Continental Crust and Lithospheric Mantle in the Genesis of Cameroon Volcanic Line Lavas: Constraints from Isotopic Variations in Lavas and Megacrysts from the Biu and Jos Plateaux: Journal of Petrology, v. 46, p. 169–190.

Reyre, D., 1984, Remarques sur l’origine et l’évolution des bassins sédimentaires africains de la côte altantique: Bulletin de la Societé Géologique de France, v. 26, p. 1041–1059.

Rognon, P., Gourinard, Y., and Bandet, Y., 1981, Un épisode de climat aride dans l’Atakor (Hoggar) vers 1,5 Ma (datations K/Ar) et sa place dans le contexte paléoclimatique du Plio-Pléistocène africain: Bulletin de la Societé Géologique de France, v. 7, p. 313–318.

Rognon, P., Gourinard, Y., Bandet, Y., Koeniguer, J.C., and Delteil-Desneux, F., 1983, Précisions chronologiques sur l’évolution volcanotectonique et géomorphologique de l’Atakor (Hoggar): apports des données radiométriques (K/Ar) et paléobotaniques (bois fossiles): Bulletin de la Societé Géologique de France, v. 25, p. 973–980.

Rougier, S., 2012, Interactions lithosphère-ssthénosphère et mouvements verticaux : le cas du Massif du Hoggar [Ph.D. thesis]: Université Paris-Sud, France, 276 p.

Sebai, A., Feraud, G., Bertrand, H., and Hanes, J., 1991, 40Ar/ 39Ar dating and geochemistry of tholeiitic magmatism related to the early opening of the Central Atlantic rift: Earth and Planetary Science Letters, v. 104, p. 455–472.

Skinner, E.M.W., Morelli, C., Apter, D.B., and Smithson, N.K., 2004, Kimberlites of the Man craton, West Africa: Lithos, v. 76, p. 233–259.

Umeji, A.C., and Caen-Vachette, M., 1983, Rb-Sr isochron from Gboko and Ikyuen rhyolites and its implications for the age and evolution of the Benue Trough, Nigeria: Geological Magazine, v. 120, p. 529–533.

Vail, J.R., 1989, Ring complexes and related rocks in Africa: Journal of African Earth Sciences, v. 8, p. 19–40.

Van Breemen, O., Hutchinson, J., and Bowden, P., 1975, Age and origin of the Nigerian mesozoic granites: A Rb-Sr isotopic study: Contributions to Mineralogy & Petrology, v. 50, p. 157–172.

Verati, C., Bertrand, H., and Feraud, G., 2005, The farthest record of the Central Atlantic Magmatic Province into West Africa craton: Precise 40Ar/ 39Ar dating and geochemistry of Taoudenni basin intrusives (northern Mali): Earth and Planetary Science Letters, v. 235, p. 391–407.

Wright, J.B., 1976, Volcanic rocks in Nigeria, *in* Kogbe, C.A. ed., Geology of Nigeria, Elizabethan Publication Company, Surulere, Lagos, Nigeria, p. 93–142.

Zeese, R., Schwertmann, U., Tietz, G.F., and Jux, U., 1994, Mineralogy and stratigraphy of three deep lateritic profiles of the Jos plateau: Catena, v. 21, p. 195–214.