Suplementary material 1. Environmental characteristics of the study areas. Different letters indicate significative differences (*p*<0.05).

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Atalaia** | **Farol-Velho** | **Corvinas** |
| **A** | **B** | **C** | **D** | **E** | **F** | **G** | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Organic Matter %** | **B** | 0.009±0.010  | 0.024±0.011 | 0.039±0.015  | 0.030±0.005  | 0.053±0.043  | 0.132±0.07  | 0.118±0.05  | 0.037±0.011  | 0.042±0.007  | 0.050±0.003  | 0.052±0.003  | 0.085±0.001  | 0.259±0.241  | 0.260±0.218  | 0.033±0.005  | 0.039±0.001  | 0.052±0.009  | 0.053±0.005  | 0.062±0.016  | 0.081±0.019  | 0.189±0.125  |
| **V** | 0.01±0.01  | 0.009±0.004  | 0.043±0.007  | 0.0313±0.003  | 0.016±0.001  | 0.040±0.016  | 0.051±0.029  | 0.003±0.001  | 0.016±0.007  | 0.033±0.002  | 0.036±0.004  | 0.040±0.008  | 0.052±0.006  | 0.279±0.052  | 0.025±0.016  | 0.029±0.004  | 0.040±0.001  | 0.044±0.001  | 0.049±0.007  | 0.053±0.003  | 0.073±0.016  |
| **A1** | 0.041±0.005  | 0.029±0.003  | 0.040±0.010  | 0.054±0.001  | 0.066±0.009  | 0.076±0.007  | 0.071±0.012  | 0.045±0.001  | 0.046±0.004  | 0.052±0.006  | 0.053±0.016  | 0.068±0.002  | 0.062±0.001  | 0.136±0.064  | 0.026±0.003  | 0.046±0.007  | 0.046±0.003  | 0.069±0.01  | 0.062±0.012  | 0.076±0.021  | 0.119±0.035 |
| **A2** | 0.024±0.006  | 0.031±0.005  | 0.046±0.001  | 0.036±0.003  | 0.035±0.005  | 0.049±0.017  | 0.067±0.032  | 0.019±0.001  | 0.042±0.018  | 0.040±0.011  | 0.055±0.010  | 0.067±0.002  | 0.072±0.011  | 0.060±0.008  | 0.042±0.004  | 0.049±0.014  | 0.043±0.018  | 0.062±0.004  | 0.056±0.007  | 0.084±0.004  | 0.092±0.008  |
| **Grain Size** | **B** | 2.25  | 2.42  | 2.54  | 1.26  | 1.45  | 2.95  | 1.48  | 2.63  | 2.72  | 2.9  | 2.79  | 2.87  | 2.77  | 3.88  | 2.75  | 1.35  | 2.54  | 2.97  | 2.95  | 1.47  | 1.3  |
| **V** | 2.22  | 1.98  | 2.17  | 1.03  | 2.01  | 2.53  | 2.58  | 1.29  | 2.58  | 2.79  | 2.71  | 3.05  | 3.28  | 3.09  | 2.69  | 2.68  | 2.79  | 2.54  | 2.52  | 2.53  | 1.3  |
| **A1** | 2.15  | 2.29  | 2.28  | 2.22  | 2.38  | 2.44  | 1.25  | 3.15  | 3.15  | 3.02  | 3.02  | 3  | 1.5  | 3.09  | 2.6  | 2.46  | 2.77  | 2.47  | 3.05  | 1.22  | 1.25  |
| **A2** | 2.26  | 2.26  | 2.25  | 2.22  | 2.52  | 2.25  | 1.12  | 2.42  | 2.71  | 2.91  | 2.73  | 1.27  | 1.28  | 2.59  | 2.76  | 2.75  | 2.77  | 2.77  | 2.77  | 2.76  | 2.77  |
| **Medium Sand %** | **B** | 6.92  | 11.27  | 4.43  | 0.01  | 2.85  | 0.00  | 5.24  | 1.71  | 1.07  | 1.09  | 1.93  | 1.66  | 0.24  | 0.0 0 | 3.90  | 0.83  | 4.43  | 0.00  | 2.82  | 0.00  | 5.09  |
| **V** | 13.15  | 11.64  | 7.53  | 32.58  | 46.98  | 12.89  | 7.88  | 7.72  | 7.92  | 8.27  | 15.09  | 3.14  | 0.00  | 0.00  | 11.16  | 4.41  | 0.00  | 6.10  | 0.00  | 12.86  | 5.09  |
| **A1** | 9.39  | 3.20  | 2.30  | 9.92  | 2.03  | 10.44  | 3.16  | 4.71  | 0.78  | 0.00  | 0.07  | 0.00  | 0.00  | 0.00  | 1.13  | 1.55  | 0.00  | 0.00  | 0.00  | 1.33  | 2.46  |
| **A2** | 1.70  | 0.52  | 0.39  | 1.24  | 6.46  | 1.17  | 2.87  | 3.04  | 1.77  | 1.47  | 1.25  | 2.45  | 1.88  | 2.76  | 2.13  | 0.36  | 0.25  | 1.23  | 2.37  | 1.15  | 2.85  |
| **Fine Sand %** | **B** | 93.08  | 88.73  | 95.10  | 99.99  | 62.82  | 59.70  | 84.18  | 89.61 | 87.81  | 83.84  | 72.46  | 71.77  | 62.86  | 40.72  | 89.11  | 93.45  | 95.10  | 61.32  | 62.15  | 59.04  | 81.83  |
| **V** | 86.85  | 86.00  | 92.47  | 64.01  | 53.02  | 76.87  | 81.83  | 92.28  | 87.72  | 35.53  | 82.57  | 23.29  | 39.26  | 60.83  | 86.34  | 93.23  | 72.53  | 91.37  | 97.10  | 76.90  | 81.83  |
| **A1** | 90.61  | 95.58  | 79.70  | 0.08  | 99.69  | 88.53  | 94.54  | 12.22  | 17.71  | 19.61  | 44.10  | 48.76  | 48.75  | 33.51  | 85.87 | 90.54 | 72.53  | 100.00 | 0.00  | 88.67 | 94.17 |
| **A2** | 93.58 | 99.48 | 99.61 | 98.76 | 93.54 | 88.75 | 96.27 | 94.16 | 93.62 | 91.88 | 21.40  | 93.05 | 87.44 | 93.25 | 95.13 | 98.54 | 98.07 | 97.97 | 96.95 | 96.89 | 95.51 |
| **Very Fine Sand %** | **B** | 0.00 | 0.00 | 0.47 | 0.00 | 34.33  | 40.30  | 10.59  | 8.55 | 11.04 | 14.97 | 25.00 | 25.36 | 36.73 | 25.91 | 6.99 | 5.72 | 0.47 | 38.68 | 33.97 | 39.85 | 10.29 |
| **V** | 0.00 | 0.00 | 0.00 | 0.52 | 0.00 | 10.24 | 10.29 | 0.00 | 4.36 | 56.20  | 2.34 | 73.57  | 59.77 | 38.49 b | 2.50 | 2.37 | 27.47 | 2.53 | 2.90 | 10.25 | 10.29 |
| **A1** | 0.00 | 0.00 | 0.00 | 0.00 | 0.28 | 1.03 | 2.31 | 83.07 | 81.51 | 80.39 | 55.84 | 51.24 | 51.25 | 66.4 9 | 0.00 | 7.91 | 27.47 | 0.00 | 8.81  | 1.00 | 3.37 |
| **A2** | 4.72 | 0.00 | 0.00 | 0.00 | 0.00 | 10.09 | 0.86 | 2.72 | 4.42 | 6.48 | 7.25 | 4.33 | 10.49 | 3.94 | 0.29 | 0.67 | 1.24 | 0.44 | 0.23 | 1.11 | 0.70 |
| **Fines %** | **B** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.03 | 0.02 | 0.03 | 0.04 | 0.10 | 33.35  | 0 | 0 | 0 | 0 | 1.06  | 1.11  | 2.79  |
| **V** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0.67  | 0  | 0 | 0.28  | 0 | 0 | 0 | 0 | 0 | 0 | 2.79  |
| **A1** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.19 | 0 | 0 |
| **A2** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.02  | 0.07 | 0.26 | 0.22 | 0.18 | 0.39 | 0.51 |
| **Granulometry classification** | **B** | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | V.F.S | F.S | F.S | F.S | F.S/V.F.S | F.S | F.S | F.S |
| **V** | F.S | M.S/F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | V.F.S | V.F.S | V.F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S |
| **A1** | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S/V.F.S | F.S | F.S |
| **A2** | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S | F.S |
| **Sorting Classification** | **B** | V.W.S | W.S / V.W. S | V.W.S | V.W.S | W.S / V.W. S | V.W.S | W.S / V.W. S | W.S / V.W. S | W.S / V.W. S | M.S | V.W.S | V.W.S | W.S / V.W. S | M.S | V.W.S | V.W.S | V.W.S | V.W.S | W.S / V.W. S | V.W.S | W.S / V.W. S |
| **V** | V.W.S | W.S/M.S | V.W.S | V.W.S | W.S/M.S | V.W.S | W.S | W.S | W.S | W.S / V.W. S | W.S | V.W.S | V.W.S | W.S / V.W. S | V.W.S | V.W.S | V.W.S | W.S | V.W.S | W.S / V.W. S | W.S |
| **A1** | W.S / V.W. S | W.S / V.W. S | V.W.S | V.W.S | W.S / V.W. S | W.S | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S | W.S / V.W. S | V.W.S | V.W.S | V.W.S | V.W.S | W.S | V.W.S |
| **A2** | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S | W.S / V.W. S | W.S / V.W. S | M.S | V.W.S | V.W.S | W.S / V.W. S | M.S | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S | V.W.S |
| **Compactation (Kg.F/cm²)** | **B** | 13.5±0.70 | 15.5±0.70 | 14 | 16.5±2.12 | 17±1.41 | 15.5±0.70 | 15±1.41 | 11.5±2.12 | 10.5±0.70 | 10.5±0.70 | 13.5±2.12 | 12±1.41 | 13.5±0.70 | 12.5±2.12 | 4.5±0.70  | 5.5±0.70 | 5 | 6±1.41 | 9±1.41 | 10.5±0.70 | 11±1.41 |
| **V** | 19±1.41 | 20 | 15.5±0.7 | 15.5±0.7 | 18.5±2.1 | 16.5±0.7 | 16 | 20 | 20 | 17±1.41 | 14.5±0.7 | 11.5±2.1 | 16±1.41 | 14±1.41 | 12.5±0.7 | 12.5±2.1 | 16±1.41 | 16±2.82 | 16±2.82 | 12 | 13±1.41 |
| **A1** | 16±1.41 | 16.5±0.7 | 14 | 16.5±0.7 | 15 | 15.5±0.7 | 17 | 15.5±4.94 | 16±2.82 | 15±4.24 | 14±1.41 | 14.5±0.7 | 14±4.2 4 | 14.5±2.1 | 7.5±0.7 | 6±1.41 | 7 | 10.5±2.1 | 12±4.24 | 12±1.41 | 12.5±2.1 |
| **A2** | 14.5±0.70 | 16±1.41 | 14 | 14±1.41 | 14±2.82 | 13±1.41 | 12±2.82 | 13.5±3.53 | 14.5±0.7 | 13±1.41 | 13.5±0.7 | 13 | 13±2.82 | 12±2.82 | 7.5±3.53 | 6.5±2.12 | 8±2.82 | 9±1.41 | 10 | 9±1.41 | 11.5±0.70 |

**\*B: Before, V: Vacation, A1: After 1, A2: After 2; FS: Fine sand, V.F.S: Very fine sand, W.S: Well sorted, V.W.S: Very well sorted.**