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# BANJUL/YUNDUM, Gambia

WMO#: **617010**

Lat: **13.20N** Long: **16.63W** Elev: **33** StdP: **100.93** Time Zone: **0.00 (GRW)** Period: **89-10** WBAN: **99999**

## Annual Heating and Humidification Design Conditions

| | Coldest Month | Heating DB | | Humidification DP/MCDB and HR | | | | | | Coldest month WS/MCDB | | | | MCWS/PCWD to 99.6% DB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 99.6% | | | 99% | | | 0.4% | | 1% | | | | |
| | | 99.6% | 99% | DP | HR | MCDB | DP | HR | MCDB | WS | MCDB | WS | MCDB | MCWS | PCWD | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) | (m) | (n) | (o) | |
| (1) | **1** | **16.4** | **17.3** | **0.2** | **3.8** | **27.2** | **1.8** | **4.3** | **27.5** | **10.2** | **26.2** | **9.2** | **25.9** | **2.4** | **50** | (1) |

## Annual Cooling, Dehumidification, and Enthalpy Design Conditions

| | Hottest Month | Hottest Month DB Range | Cooling DB/MCWB | | | | | | Evaporation WB/MCDB | | | | | | MCWS/PCWD to 0.4% DB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.4% | | 1% | | 2% | | 0.4% | | 1% | | 2% | | | | |
| | | | DB | MCWB | DB | MCWB | DB | MCWB | WB | MCDB | WB | MCDB | WB | MCDB | MCWS | PCWD | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) | (m) | (n) | (o) | (p) | |
| (2) | **10** | **8.8** | **37.9** | **20.2** | **36.1** | **20.2** | **35.0** | **21.0** | **27.7** | **31.4** | **27.2** | **30.9** | **26.8** | **30.4** | **4.6** | **90** | (2) |

| | Dehumidification DP/MCDB and HR | | | | | | | | | Enthalpy/MCDB | | | | | | Hours 8 to 4 & 12.8/20.6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.4% | | | 1% | | | 2% | | | 0.4% | | 1% | | 2% | | | |
| | DP | HR | MCDB | DP | HR | MCDB | DP | HR | MCDB | Enth | MCDB | Enth | MCDB | Enth | MCDB | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) | (m) | (n) | (o) | (p) | |
| (3) | **26.8** | **22.5** | **30.0** | **26.2** | **21.7** | **29.5** | **26.0** | **21.4** | **29.3** | **88.1** | **31.8** | **86.3** | **31.2** | **84.5** | **30.7** | **141** | (3) |

## Extreme Annual Design Conditions

| | Extreme Annual WS | | | Extreme Max WB | Extreme Annual DB | | | | n-Year Return Period Values of Extreme DB | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Mean | | Standard deviation | | n=5 years | | n=10 years | | n=20 years | | n=50 years | | |
| | 1% | 2.5% | 5% | | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) | (m) | (n) | (o) | (p) | |
| (4) | **8.7** | **7.9** | **7.0** | **34.2** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | (4) |

## Monthly Climatic Design Conditions

| | | | | Annual (d) | Jan (e) | Feb (f) | Mar (g) | Apr (h) | May (i) | Jun (j) | Jul (k) | Aug (l) | Sep (m) | Oct (n) | Nov (o) | Dec (p) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (5) | Temperatures, Degree-Days and Degree-Hours | Tavg | | **26.9** | **24.9** | **26.2** | **26.8** | **26.5** | **27.1** | **28.2** | **27.5** | **27.3** | **27.3** | **28.1** | **27.2** | **25.8** | (5) |
| (6) | | Sd | | | **1.85** | **2.02** | **2.24** | **1.95** | **1.78** | **1.24** | **1.17** | **1.05** | **1.06** | **1.18** | **1.31** | **1.58** | (6) |
| (7) | | HDD10.0 | | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | (7) |
| (8) | | HDD18.3 | | **1** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | (8) |
| (9) | | CDD10.0 | | **6169** | **463** | **454** | **520** | **495** | **529** | **545** | **543** | **535** | **518** | **561** | **516** | **489** | (9) |
| (10) | | CDD18.3 | | **3128** | **206** | **221** | **262** | **245** | **271** | **295** | **284** | **277** | **268** | **302** | **266** | **231** | (10) |
| (11) | | CDH23.3 | | **28444** | **1717** | **1951** | **2247** | **1867** | **2211** | **2993** | **2822** | **2572** | **2523** | **3114** | **2472** | **1957** | (11) |
| (12) | | CDH26.7 | | **12162** | **850** | **1076** | **1233** | **905** | **979** | **1173** | **911** | **781** | **859** | **1263** | **1178** | **953** | (12) |
| (13) | Precipitation | PrecAvg | | **1162** | **1** | **0** | **0** | **0** | **4** | **69** | **254** | **413** | **271** | **77** | **4** | **1** | (13) |
| (14) | | PrecMax | | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | (14) |
| (15) | | PrecMin | | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | (15) |
| (16) | | PrecSD | | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | (16) |
| (17) | Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures | 0.4% | DB | | **36.2** | **38.7** | **40.1** | **39.1** | **37.9** | **35.1** | **33.2** | **32.2** | **33.1** | **35.0** | **36.1** | **36.2** | (17) |
| (18) | | | MCWB | | **19.6** | **19.5** | **20.0** | **21.1** | **22.6** | **24.6** | **25.9** | **26.6** | **27.6** | **26.8** | **23.4** | **21.1** | (18) |
| (19) | | 2% | DB | | **34.9** | **36.9** | **38.0** | **36.0** | **35.0** | **33.9** | **32.1** | **31.6** | **32.1** | **33.8** | **35.0** | **34.9** | (19) |
| (20) | | | MCWB | | **19.1** | **18.8** | **19.6** | **20.7** | **22.9** | **24.6** | **25.8** | **26.5** | **27.0** | **26.6** | **23.1** | **21.0** | (20) |
| (21) | | 5% | DB | | **33.2** | **35.2** | **35.9** | **33.9** | **33.1** | **32.9** | **31.2** | **31.0** | **31.3** | **32.9** | **33.9** | **33.2** | (21) |
| (22) | | | MCWB | | **18.3** | **18.4** | **19.1** | **20.9** | **23.0** | **24.7** | **25.8** | **26.5** | **26.8** | **26.4** | **22.9** | **20.2** | (22) |
| (23) | | 10% | DB | | **31.8** | **33.7** | **33.2** | **31.8** | **31.8** | **31.9** | **30.8** | **30.2** | **30.9** | **32.0** | **32.8** | **32.0** | (23) |
| (24) | | | MCWB | | **17.9** | **18.0** | **19.3** | **20.9** | **22.7** | **24.6** | **25.8** | **26.1** | **26.7** | **26.2** | **22.9** | **19.9** | (24) |
| (25) | Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures | 0.4% | WB | | **23.0** | **22.8** | **23.9** | **24.0** | **25.9** | **26.7** | **27.6** | **27.7** | **28.5** | **28.5** | **26.9** | **25.0** | (25) |
| (26) | | | MCDB | | **30.7** | **33.6** | **32.8** | **33.3** | **31.0** | **31.4** | **31.0** | **30.9** | **31.6** | **33.1** | **32.3** | **30.8** | (26) |
| (27) | | 2% | WB | | **21.1** | **21.2** | **22.5** | **22.9** | **25.0** | **26.2** | **26.7** | **27.1** | **27.6** | **27.6** | **26.1** | **23.8** | (27) |
| (28) | | | MCDB | | **28.8** | **29.7** | **30.1** | **31.1** | **30.7** | **30.5** | **30.3** | **30.4** | **31.0** | **31.9** | **31.1** | **28.3** | (28) |
| (29) | | 5% | WB | | **20.3** | **20.5** | **21.5** | **22.2** | **24.3** | **25.7** | **26.3** | **26.7** | **27.1** | **27.2** | **25.4** | **22.9** | (29) |
| (30) | | | MCDB | | **27.6** | **28.3** | **28.9** | **29.4** | **29.7** | **29.8** | **29.7** | **29.8** | **30.5** | **31.3** | **30.1** | **27.4** | (30) |
| (31) | | 10% | WB | | **19.5** | **19.7** | **20.7** | **21.6** | **23.6** | **25.4** | **26.0** | **26.2** | **26.7** | **26.7** | **24.6** | **22.1** | (31) |
| (32) | | | MCDB | | **26.6** | **26.8** | **28.1** | **28.2** | **28.8** | **29.4** | **29.2** | **29.1** | **29.8** | **30.5** | **28.9** | **27.0** | (32) |
| (33) | Mean Daily Temperature Range | | MDBR | | **14.3** | **15.0** | **14.5** | **12.7** | **10.9** | **8.5** | **6.9** | **6.7** | **7.6** | **8.8** | **12.3** | **13.6** | (33) |
| (34) | | 5% DB | MCDBR | | **16.8** | **17.9** | **18.1** | **15.6** | **12.7** | **9.6** | **7.6** | **7.5** | **8.3** | **9.6** | **13.9** | **15.6** | (34) |
| (35) | | | MCWBR | | **6.7** | **5.9** | **5.1** | **4.5** | **3.9** | **3.0** | **3.3** | **3.5** | **4.2** | **4.1** | **5.9** | **6.4** | (35) |
| (36) | | 5% WB | MCDBR | | **14.7** | **14.9** | **15.0** | **13.1** | **10.9** | **8.3** | **7.1** | **7.0** | **7.9** | **8.7** | **12.0** | **13.7** | (36) |
| (37) | | | MCWBR | | **6.3** | **5.2** | **5.0** | **4.3** | **3.8** | **3.2** | **3.5** | **3.5** | **4.3** | **4.1** | **5.4** | **6.0** | (37) |
| (38) | Clear Sky Solar Irradiance | taub | | | **0.555** | **0.611** | **0.653** | **0.617** | **0.683** | **0.698** | **0.668** | **0.595** | **0.613** | **0.617** | **0.537** | **0.514** | (38) |
| (39) | | taud | | | **2.010** | **1.853** | **1.751** | **1.787** | **1.653** | **1.633** | **1.692** | **1.864** | **1.877** | **1.895** | **2.103** | **2.160** | (39) |
| (40) | | Ebn,noon | | | **750** | **726** | **707** | **730** | **671** | **653** | **676** | **737** | **726** | **712** | **761** | **776** | (40) |
| (41) | | Edh,noon | | | **172** | **209** | **236** | **227** | **254** | **256** | **243** | **207** | **205** | **197** | **156** | **146** | (41) |

Nomenclature: See separate page