

3. CLIMATE AND RAINFALL

3.1 Temperature at Select Stations in Tamil Nadu

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CHART

1 Rainfall by Seasons in Tamil Nadu

3. CLIMATE AND RAINFALL

3.1 TEMPERATURE AT SELECT STATIONS IN TAMIL NADU 2009-10 (in Celsius)

Station: NUNGAMBAKKAM (Chennai North)

| Year and Month | | Maximum | | Minimum | | Humidity in % | |
|----------------|-----------|---------|------|---------|------|---------------|-------------|
| | | Highest | Mean | Lowest | Mean | 8.30 Hours | 17.30 Hours |
| 2009 | June | 40.8 | 39.1 | 25.4 | 28.5 | 62 | 62 |
| | July | 39.8 | 37.8 | 24.5 | 28.1 | 66 | 60 |
| | August | 39.1 | 36.0 | 23.5 | 26.3 | 69 | 66 |
| | September | 38.7 | 35.6 | 23.2 | 26.0 | 70 | 65 |
| | October | 38.0 | 34.7 | 22.5 | 25.1 | 72 | 65 |
| | November | 32.4 | 30.6 | 21.4 | 23.3 | 88 | 83 |
| | December | 30.4 | 29.3 | 20.4 | 21.8 | 86 | 76 |
| 2010 | January | 31.5 | 29.9 | 17.5 | 21.2 | 84 | 68 |
| | February | 34.2 | 31.3 | 19.0 | 21.8 | 82 | 65 |
| | March | 35.8 | 33.9 | 20.4 | 24.0 | 79 | 68 |
| | April | 37.0 | 35.4 | 25.3 | 26.9 | 72 | 69 |
| | May | 40.9 | 36.6 | 21.4 | 26.8 | 71 | 69 |

Station: MEENAMBAKKAM (PBO Chennai)

| Year and Month | | Maximum | | Mean Minimum | | Humidity in % | |
|----------------|-----------|---------|------|--------------|------|---------------|-------------|
| | | Highest | Mean | Lowest | Mean | 8.30 Hours | 17.30 Hours |
| 2009 | June | 41.4 | 39.3 | 25.8 | 28.1 | 55 | 54 |
| | July | 39.9 | 37.8 | 23.8 | 27.7 | 58 | 45 |
| | August | 38.1 | 35.7 | 23.8 | 26.1 | 70 | 65 |
| | September | 37.0 | 35.0 | 22.0 | 25.7 | 73 | 66 |
| | October | 37.5 | 34.3 | 22.4 | 25.2 | 73 | 62 |
| | November | 32.6 | 30.4 | 22.1 | 23.9 | 85 | 79 |
| | December | 30.0 | 28.9 | 20.5 | 22.3 | 87 | 76 |
| 2010 | January | 32.0 | 29.9 | 19.2 | 21.6 | 82 | 66 |
| | February | 34.7 | 31.5 | 19.5 | 22.2 | 81 | 63 |
| | March | 36.9 | 34.9 | 20.4 | 24.5 | 77 | 62 |
| | April | 38.7 | 36.9 | 25.7 | 27.5 | 73 | 65 |
| | May | 41.4 | 37.5 | 22.6 | 27.6 | 70 | 64 |

**3.1 TEMPERATURE AT SELECT STATIONS
IN TAMIL NADU 2009-10 (in Celsius) (Contd.)**

Station: SALEM

| <i>Year and Month</i> | | <i>Maximum</i> | | <i>Minimum</i> | | <i>Humidity in %</i> | |
|-----------------------|-----------|----------------|-------------|----------------|-------------|----------------------|--------------------|
| | | <i>Highest</i> | <i>Mean</i> | <i>Lowest</i> | <i>Mean</i> | <i>8.30 Hours</i> | <i>17.30 Hours</i> |
| 2009 | June | 36.4 | 34.3 | 22.4 | 24.6 | 75 | 53 |
| | July | 37.0 | 34.0 | 23.0 | 24.2 | 77 | 55 |
| | August | 37.3 | 33.6 | 22.0 | 24.1 | 80 | 56 |
| | September | 35.9 | 33.1 | 22.6 | 23.8 | 81 | 61 |
| | October | 36.2 | 34.0 | 20.6 | 23.0 | 74 | 51 |
| | November | 32.8 | 30.7 | 19.6 | 22.3 | 85 | 73 |
| | December | 32.3 | 30.0 | 18.4 | 21.0 | 81 | 62 |
| 2010 | January | 34.4 | 32.3 | 17.8 | 20.3 | 76 | 42 |
| | February | 38.6 | 35.3 | 17.2 | 20.9 | 76 | 32 |
| | March | 40.1 | 38.4 | 18.8 | 23.2 | 66 | 28 |
| | April | 42.2 | 39.5 | 24.7 | 26.8 | 67 | 38 |
| | May | 40.8 | 37.7 | 21.6 | 25.8 | 72 | 45 |

Station: AMS-COIMBATORE

| <i>Year and Month</i> | | <i>Maximum</i> | | <i>Minimum</i> | | <i>Humidity in %</i> | |
|-----------------------|-----------|----------------|-------------|----------------|-------------|----------------------|--------------------|
| | | <i>Highest</i> | <i>Mean</i> | <i>Lowest</i> | <i>Mean</i> | <i>8.30 Hours</i> | <i>17.30 Hours</i> |
| 2009 | June | 34.8 | 32.5 | 21.2 | 23.4 | 77 | 61 |
| | July | 33.0 | 30.3 | 21.0 | 22.3 | 82 | 67 |
| | August | 33.8 | 32.0 | 21.6 | 22.7 | 82 | 63 |
| | September | 34.0 | 31.9 | 21.6 | 22.9 | 81 | 67 |
| | October | 34.2 | 32.2 | 20.2 | 22.3 | 75 | 51 |
| | November | 32.1 | 29.9 | 19.0 | 22.1 | 86 | 68 |
| | December | 30.6 | 29.2 | 17.8 | 20.9 | 81 | 57 |
| 2010 | January | 32.2 | 30.6 | 17.4 | 20.3 | 80 | 30 |
| | February | 36.0 | 33.3 | 17.4 | 20.8 | 77 | 29 |
| | March | 37.7 | 36.2 | 19.8 | 23.0 | 71 | 25 |
| | April | 39.5 | 37.3 | 23.0 | 25.1 | 73 | 40 |
| | May | 37.8 | 35.3 | 22.0 | 25.0 | 78 | 58 |

**3.1 TEMPERATURE AT SELECT STATIONS
IN TAMIL NADU 2009-10 (in Celsius) (Contd.)**

Station: AMS TIRUCHIRAPPALLI

| <i>Year and Month</i> | | <i>Maximum</i> | | <i>Minimum</i> | | <i>Humidity in %</i> | |
|-----------------------|-----------|----------------|-------------|----------------|-------------|----------------------|--------------------|
| | | <i>Highest</i> | <i>Mean</i> | <i>Lowest</i> | <i>Mean</i> | <i>8.30 Hours</i> | <i>17.30 Hours</i> |
| 2009 | June | 39.8 | 38.4 | 23.5 | 26.9 | 69 | 48 |
| | July | 39.1 | 37.1 | 26.3 | 26.9 | 70 | 54 |
| | August | 39.6 | 36.4 | 23.8 | 26.3 | 68 | 45 |
| | September | 38.4 | 36.1 | 23.3 | 26.0 | 71 | 50 |
| | October | 37.2 | 35.1 | 22.7 | 25.2 | 72 | 51 |
| | November | 34.5 | 30.4 | 20.7 | 23.6 | 88 | 79 |
| | December | 30.9 | 28.9 | 20.2 | 22.2 | 87 | 74 |
| 2010 | January | 32.4 | 30.4 | 18.2 | 21.2 | 85 | 58 |
| | February | 35.8 | 32.6 | 18.7 | 21.8 | 82 | 42 |
| | March | 38.4 | 36.4 | 19.2 | 23.9 | 78 | 35 |
| | April | 40.4 | 38.9 | 25.8 | 27.3 | 70 | 43 |
| | May | 40.9 | 38.1 | 21.6 | 27.0 | 72 | 46 |

Station: KODAIKANAL

| <i>Year and Month</i> | | <i>Maximum</i> | | <i>Minimum</i> | | <i>Humidity in %</i> | |
|-----------------------|-----------|----------------|-------------|----------------|-------------|----------------------|--------------------|
| | | <i>Highest</i> | <i>Mean</i> | <i>Lowest</i> | <i>Mean</i> | <i>8.30 Hours</i> | <i>17.30 Hours</i> |
| 2009 | June | 21.1 | 19.2 | 11.4 | 12.8 | 76 | 86 |
| | July | 20.3 | 17.6 | 11.3 | 12.2 | 81 | 87 |
| | August | 20.6 | 18.1 | 11.3 | 12.1 | 82 | 89 |
| | September | 20.6 | 17.6 | 11.2 | 12.2 | 87 | 91 |
| | October | 20.0 | 17.7 | 8.9 | 11.0 | 82 | 87 |
| | November | 20.4 | 16.5 | 7.0 | 10.8 | 89 | 91 |
| | December | 20.9 | 16.7 | 7.9 | 10.7 | 81 | 88 |
| 2010 | January | 20.2 | 18.0 | 5.8 | 8.7 | 66 | 84 |
| | February | 22.8 | 20.7 | 7.9 | 10.7 | 49 | 73 |
| | March | 23.4 | 21.5 | 8.7 | 11.5 | 54 | 72 |
| | April | 24.3 | 21.4 | 10.6 | 13.0 | 70 | 88 |
| | May | 25.0 | 21.9 | 10.9 | 13.8 | 74 | 87 |

**3.1 TEMPERATURE AT SELECT STATIONS
IN TAMIL NADU 2009-10 (in Celsius) (Concld.)**

Station: AMS-MADURAI

| Year and Month | | Maximum | | Minimum | | Humidity in % | |
|-----------------------|------------------|----------------|-------------|----------------|-------------|----------------------|--------------------|
| | | Highest | Mean | Lowest | Mean | 8.30 Hours | 17.30 Hours |
| 2009 | June | 39.6 | 37.9 | 24.6 | 26.2 | 58 | 44 |
| | July | 39.8 | 37.7 | 25.2 | 26.7 | 53 | 42 |
| | August | 39.6 | 37.0 | 23.4 | 25.8 | 62 | 51 |
| | September | 39.6 | 36.6 | 23.8 | 25.8 | 66 | 52 |
| | October | 37.8 | 35.9 | 22.8 | 25.0 | 65 | 46 |
| | November | 33.6 | 30.8 | 20.6 | 23.6 | 81 | 75 |
| | December | 31.8 | 29.8 | 20.9 | 22.7 | 78 | 67 |
| 2010 | January | 33.0 | 31.3 | 19.8 | 21.9 | 75 | 51 |
| | February | 37.0 | 33.5 | 19.7 | 22.1 | 76 | 39 |
| | March | 38.8 | 37.2 | 19.4 | 24.1 | 70 | 32 |
| | April | 40.2 | 38.7 | 24.4 | 26.8 | 66 | 42 |
| | May | 41.4 | 38.2 | 23.2 | 27.2 | 77 | 64 |

Source: India Meteorological Department, Chennai-6

3.2 DISTRIBUTION OF DISTRICTS BY RANGE OF RAINFALL 2009-10

| <i>Range of Rainfall</i> | <i>Distribution of districts by range of rainfall</i> | |
|--------------------------|--|--|
| | <i>Normal Rainfall expected</i> | <i>Actual Rainfall occurred</i> |
| Below 800 mm | Namakkal, Coimbatore, Erode, Tiruchirapalli, Karur, Tirunelveli and Thoothukudi | Namakkal, Erode, Tiruchirapalli, Karur, Perambalur, Madurai, Virudhunagar and Thoothukudi |
| 801 mm to 1000 mm | Vellore, Salem, Dharmapuri, Krishnagiri, Perambalur, Pudukkottai, Madurai, Theni, Dinugul, Ramanathapuram, Virudhunagar, Sivagangai and Ariyalur | Vellore, Salem, Dharmapuri, Krishnagiri, Thiruvannamalai, Pudukkottai, Dindugul, Theni, Ramanathapuram, Sivagangai, Tirunelveli and Ariyalur |
| 1001 mm to 1200 mm | Thiruvallur, Villupuram, Thiruvannamalai, Thanjavur and Kanniyakumari | Kancheepuram, Thiruvallur, Villupuram, Coimbatore and Kanniyakumari |
| 1201 mm to 1400 mm | Chennai, Kancheepuram, Cuddalore Thanjavur and Nagapattinam | Chennai, Cuddalore, Thanjavur and Thiruvarur |
| 1401 mm to 1800 mm | -- | Nagapattinam |
| 1801 mm and above | The Nilgiris | The Nilgiris |

Source: India Meteorological Department, Chennai - 600 006

3.3 RAINFALL BY DISTRICTS 2009-10

(in mm)

| District | South West Monsoon (June '09 to September '09) | | North East Monsoon (October '09 to December '09) | |
|----------------------|---|--------------|---|--------------|
| | Actual | Normal | Actual | Normal |
| 1 | 2 | 3 | 4 | 5 |
| 1. Chennai | 220.6 | 443.5 | 799.8 | 753.1 |
| 2. Kancheepuram | 323.0 | 462.7 | 737.1 | 697.2 |
| 3. Thiruvallur | 331.7 | 449.5 | 589.9 | 604.1 |
| 4. Cuddalore | 278.0 | 373.6 | 960.5 | 716.5 |
| 5. Villupuram | 352.1 | 433.0 | 659.2 | 484.8 |
| 6. Vellore | 434.4 | 442.0 | 238.8 | 353.0 |
| 7. Thiruvannamalai | 392.0 | 465.8 | 436.4 | 439.8 |
| 8. Salem | 462.1 | 380.0 | 243.6 | 347.0 |
| 9. Namakkal | 250.2 | 317.0 | 207.5 | 291.0 |
| 10. Dharmapuri | 379.8 | 361.0 | 244.3 | 316.7 |
| 11. Krishnagiri | 457.4 | 403.6 | 231.9 | 290.9 |
| 12. Coimbatore | 765.4 | 192.9 | 306.1 | 327.0 |
| 13. Erode | 209.3 | 213.1 | 324.5 | 323.5 |
| 14. Tiruchirappalli | 231.3 | 270.3 | 385.3 | 356.1 |
| 15. Karur | 166.6 | 249.7 | 343.4 | 365.4 |
| 16. Perambalur | 210.4 | 349.6 | 435.3 | 449.6 |
| 17. Pudukkottai | 204.6 | 350.7 | 478.7 | 418.0 |
| 18. Thanjavur | 269.7 | 342.0 | 810.5 | 545.7 |
| 19. Thiruvarur | 224.8 | 301.8 | 955.3 | 665.4 |
| 20. Nagapattinam | 159.1 | 274.1 | 1340.1 | 886.4 |
| 21. Madurai | 259.1 | 305.4 | 302.1 | 373.0 |
| 22. Theni | 270.6 | 178.4 | 382.5 | 384.0 |
| 23. Dindigul | 209.9 | 251.4 | 468.6 | 399.2 |
| 24. Ramanathapuram | 110.5 | 136.1 | 658.1 | 507.4 |
| 25. Virudhunagar | 78.3 | 181.8 | 331.1 | 431.2 |
| 26. Sivagangai | 333.5 | 289.6 | 440.1 | 415.5 |
| 27. Tirunelveli | 127.3 | 92.6 | 653.4 | 429.8 |
| 28. Thoothukudi | 54.5 | 86.8 | 490.5 | 410.1 |
| 29. The Nilgiris | 1265.2 | 1060.0 | 893.0 | 367.7 |
| 30. Ariyalur | 170.9 | 349.6 | 585.3 | 449.6 |
| 31. Kanyakumari | 355.8 | 327.8 | 452.8 | 427.4 |
| State Average | 317.0 | 316.1 | 482.6 | 431.1 |

(in mm)

| District | Winter Season (January '10 and February '10) | | Hot Weather Season (March '10 to May '10) | | Annual Total (June '09 to May '10) | |
|----------------------|---|-------------|--|--------------|--|--------------|
| | Actual | Normal | Actual | Normal | Actual | Normal |
| 1 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Chennai | 4.8 | 37.3 | 191.1 | 64.2 | 1216.3 | 1298.1 |
| 2. Kancheepuram | 1.0 | 32.1 | 95.7 | 60.1 | 1156.8 | 1252.1 |
| 3. Thiruvallur | 2.3 | 33.5 | 138.1 | 65.7 | 1062.0 | 1152.8 |
| 4. Cuddalore | 41.3 | 56.4 | 71.6 | 89.3 | 1351.4 | 1235.8 |
| 5. Villupuram | 11.4 | 34.5 | 74.2 | 77.1 | 1096.9 | 1029.4 |
| 6. Vellore | 9.5 | 20.3 | 132.1 | 101.7 | 814.8 | 917.0 |
| 7. Thiruvannamalai | 5.1 | 32.8 | 124.2 | 108.2 | 957.7 | 1046.6 |
| 8. Salem | 0.6 | 21.3 | 153.9 | 149.7 | 860.2 | 898.0 |
| 9. Namakkal | 0.0 | 18.1 | 134.6 | 150.4 | 592.3 | 776.5 |
| 10. Dharmapuri | 1.2 | 18.5 | 187.4 | 156.9 | 812.7 | 853.1 |
| 11. Krishnagiri | 1.8 | 14.3 | 229.4 | 154.7 | 920.5 | 863.5 |
| 12. Coimbatore | 4.8 | 26.1 | 101.5 | 150.2 | 1177.8 | 696.2 |
| 13. Erode | 0.7 | 20.7 | 174.1 | 153.3 | 708.6 | 710.6 |
| 14. Tiruchirappalli | 7.5 | 25.0 | 133.2 | 110.5 | 757.3 | 761.9 |
| 15. Karur | 1.7 | 24.0 | 125.4 | 101.3 | 637.1 | 740.4 |
| 16. Perambalur | 32.5 | 34.5 | 82.0 | 120.6 | 760.2 | 954.3 |
| 17. Pudukkottai | 1.5 | 38.2 | 128.9 | 114.6 | 813.7 | 921.5 |
| 18. Thanjavur | 29.8 | 50.7 | 107.0 | 114.6 | 1217.0 | 1053.0 |
| 19. Thiruvarur | 39.7 | 57.9 | 106.0 | 104.8 | 1325.8 | 1129.9 |
| 20. Nagapattinam | 57.0 | 81.5 | 110.7 | 99.7 | 1666.9 | 1341.7 |
| 21. Madurai | 2.7 | 29.8 | 149.4 | 131.8 | 713.3 | 840.0 |
| 22. Theni | 4.8 | 48.4 | 163.5 | 213.4 | 821.4 | 824.2 |
| 23. Dindigul | 4.2 | 33.0 | 137.3 | 148.0 | 820.0 | 831.6 |
| 24. Ramanathapuram | 10.3 | 53.9 | 87.5 | 123.8 | 866.4 | 821.2 |
| 25. Virudhunagar | 0.1 | 42.0 | 93.7 | 174.6 | 503.2 | 829.6 |
| 26. Sivagangai | 4.1 | 35.8 | 114.8 | 135.1 | 892.5 | 876.0 |
| 27. Tirunelveli | 36.0 | 72.6 | 84.4 | 141.9 | 901.1 | 736.9 |
| 28. Thoothukudi | 23.3 | 46.6 | 66.4 | 112.2 | 634.7 | 655.7 |
| 29. The Nilgiris | 20.1 | 30.8 | 190.3 | 237.2 | 2368.6 | 1695.7 |
| 30. Ariyalur | 13.0 | 34.5 | 54.5 | 111.1 | 823.7 | 944.8 |
| 31. Kanyakumari | 50.7 | 33.4 | 283.1 | 217.4 | 1142.4 | 1006.0 |
| State Average | 11.5 | 35.3 | 126.7 | 129.1 | 937.8 | 911.6 |

Source: India Meteorological Department, Chennai-600 006

3.4 TIME SERIES DATA – RAINFALL BY SEASONS IN TAMIL NADU

(in mm)

| Year | South West Monsoon | | North East Monsoon | | Winter Season | |
|---------|--------------------|--------|--------------------|--------|---------------|--------|
| | Normal | Actual | Normal | Actual | Normal | Actual |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2000-01 | 322.8 | 314.5 | 470.3 | 335.6 | 47.3 | 16.8 |
| 2001-02 | 322.8 | 260.0 | 470.3 | 379.4 | 47.3 | 70.0 |
| 2002-03 | 329.5 | 185.4 | 468.1 | 407.1 | 36.8 | 8.7 |
| 2003-04 | 331.5 | 336.5 | 464.6 | 403.1 | 37.4 | 11.6 |
| 2004-05 | 331.5 | 360.7 | 464.6 | 472.1 | 37.4 | 14.3 |
| 2005-06 | 332.8 | 308.5 | 459.2 | 828.8 | 36.8 | 15.9 |
| 2006-07 | 316.1 | 250.9 | 431.1 | 497.5 | 35.3 | 10.9 |
| 2007-08 | 316.1 | 341.6 | 431.1 | 515.4 | 35.3 | 46.6 |
| 2008-09 | 287.6 | 333.5 | 431.1 | 552.7 | 35.3 | 7.7 |
| 2009-10 | 316.1 | 317.0 | 431.1 | 482.6 | 35.3 | 11.5 |

(in mm)

| Year | Hot Weather Season | | Total | | % Deviation from Normal |
|---------|--------------------|--------|--------|--------|-------------------------|
| | Normal | Actual | Normal | Actual | |
| 1 | 8 | 9 | 10 | 11 | 12 |
| 2000-01 | 138.9 | 118.4 | 979.3 | 785.3 | -19.8 |
| 2001-02 | 134.2 | 85.8 | 974.6 | 795.2 | -18.4 |
| 2002-03 | 129.8 | 129.8 | 964.1 | 731.0 | -24.2 |
| 2003-04 | 128.4 | 283.4 | 961.8 | 1034.6 | 7.6 |
| 2004-05 | 128.4 | 231.7 | 961.9 | 1078.8 | 12.2 |
| 2005-06 | 129.6 | 150.9 | 958.5 | 1304.1 | 36.1 |
| 2006-07 | 129.1 | 100.4 | 911.6 | 859.7 | -5.7 |
| 2007-08 | 129.1 | 261.2 | 911.6 | 1164.8 | 27.8 |
| 2008-09 | 129.1 | 129.2 | 911.6 | 1023.1 | 15.9 |
| 2009-10 | 129.1 | 126.7 | 911.6 | 937.8 | 2.9 |

Source: India Meteorological Department, Chennai-600 006

