Documentation of the Hourly Time Series from the NCEP Climate Forecast System Reanalysis (1979-2009)

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Layout of the 30 Hourly Time Series from the FLX file are given below:

Initial condition 1 Jan 1979, 0Z
Record 1: f00: forecast at first time step of 3 mins
Record 2: f01: forecast (either averaged over 0 to 1 hour, or instantaneous at 1 hour)
Record 3: f02: forecast (either averaged over 0 to 2 hours, or instantaneous at 2 hours)
Record 4: f03: forecast (either averaged over 0 to 3 hour, or instantaneous at 3 hours)
Record 5: f04: forecast (either averaged over 0 to 4 hours, or instantaneous at 4 hours)
Record 6: f05: forecast (either averaged over 0 to 5 hours, or instantaneous at 5 hours)
Record 7: f06: forecast (either averaged over 0 to 6 hours, or instantaneous at 6 hours)

Initial condition 1 Jan 1979, 6Z
Record 8: f00: forecast at first time step of 3 mins
Record 9: f01: forecast (either averaged over 0 to 1 hour, or instantaneous at 1 hour)
Record 10: f02: forecast (either averaged over 0 to 2 hours, or instantaneous at 2 hours)
Record 11: f03: forecast (either averaged over 0 to 3 hour, or instantaneous at 3 hours)
Record 12: f04: forecast (either averaged over 0 to 4 hours, or instantaneous at 4 hours)
Record 13: f05: forecast (either averaged over 0 to 5 hours, or instantaneous at 5 hours)
Record 14: f06: forecast (either averaged over 0 to 6 hours, or instantaneous at 6 hours)

Initial condition 1 Jan 1979, 12Z
Record 15: f00: forecast at first time step of 3 mins
Record 16: f01: forecast (either averaged over 0 to 1 hour, or instantaneous at 1 hour)
Record 17: f02: forecast (either averaged over 0 to 2 hours, or instantaneous at 2 hours)
Record 18: f03: forecast (either averaged over 0 to 3 hour, or instantaneous at 3 hours)
Record 19: f04: forecast (either averaged over 0 to 4 hours, or instantaneous at 4 hours)
Record 20: f05: forecast (either averaged over 0 to 5 hours, or instantaneous at 5 hours)
Record 21: f06: forecast (either averaged over 0 to 6 hours, or instantaneous at 6 hours)

Initial condition 1 Jan 1979, 18Z
Record 22: f00: forecast at first time step of 3 mins
Record 23: f01: forecast (either averaged over 0 to 1 hour, or instantaneous at 1 hour)
Record 24: f02: forecast (either averaged over 0 to 2 hours, or instantaneous at 2 hours)
Record 25: f03: forecast (either averaged over 0 to 3 hour, or instantaneous at 3 hours)
Record 26: f04: forecast (either averaged over 0 to 4 hours, or instantaneous at 4 hours)
Record 27: f05: forecast (either averaged over 0 to 5 hours, or instantaneous at 5 hours)
Record 28: f06: forecast (either averaged over 0 to 6 hours, or instantaneous at 6 hours)

Initial condition 2 Jan 1979, 0Z
Record 29: f00: forecast at first time step of 3 mins
Record 30: f01: forecast (either averaged over 0 to 1 hour, or instantaneous at 1 hour)
……… and so on, till the end of the month (31 Jan 1979, 18Z) with **868 records**.

Note: The 2 Wind variables (WND) have the zonal component (U) and meridional component (V) interspersed one after the other, with a total of 1736 records.

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30 Hourly Time Series from the FLX File
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1. LHTFL (latent heat flux) : averaged
2. SHTFL (sensible heat flx) : averaged
3. WNDSTR (u and v stress) : averaged
4. PRATE (precipitation rate) : averaged
5. PRESSFC (Surface pressure) : instantaneous
6. PWAT (Precipitable Water) : instantaneous
7. TMP2M (2m air temperature) : instantaneous
8. TMPSFC (surface temperature) : instantaneous
9. TMPHY1 (temperature at hybrid level 1) : instantaneous
10. SNOHF (Snow phase-change heat flux) : averaged
11. WND10M (u and v at 10m) : instantaneous
12. DLWSFC (Downward LW at the surface) : averaged
13. DSWSFC (Downward SW at the surface) : averaged
14. ULWSFC (Upward LW at the surface) : averaged
15. ULWTOA (Upward LW at the top) : averaged
16. USWSFC (Upward SW at the surface) : averaged
17. USWTOA (Upward SW at the top) : averaged
18. SOILM1 (Soil Moisture Level 1) : instantaneous
19. SOILM2 (Soil Moisture Level 2) : instantaneous
20. SOILM3 (Soil Moisture Level 3) : instantaneous
21. SOILM4 (Soil Moisture Level 4) : instantaneous
22. SOILT1 (Soil Temperature Level 1) : instantaneous
23. GFLUX (Ground Heat Flux) : averaged
24. SWE (Snow Water Equivalent) : instantaneous
25. RUNOFF (Ground Runoff) : accumulation
26. ICECON (Ice concentation)
27. ICETHK (Ice Thickness)
28. Q2M (2m Specific Humidity)
29. TMIN (Minimum 2m air temperature)
30. TMAX (Maximum 2m air temperature)

Important Note: The forecast at the first time step (f00) of 3 minutes constitutes a spin up of the model physics, and extreme care should be taken when using it as a proxy of any type of validation. IT IS NOT THE ANALYSIS.

Layout of the 30 Hourly Time Series from the PGB and IPV files are given below:

Initial condition 1 Jan 1979, 0Z

Record 1: anl: Analysis
Record 2: f00: instantaneous forecast at first time step of 3 mins
Record 3: f01: instantaneous forecast at 1 hour
Record 4: f02: instantaneous forecast at 2 hours
Record 5: f03: instantaneous forecast at 3 hours
Record 6: f04: instantaneous forecast at 4 hours
Record 7: f05: instantaneous forecast at 5 hours
Record 8: f06: instantaneous forecast at 6 hours

Initial condition 1 Jan 1979, 6Z

Record 9: anl: Analysis
Record 10: f00: instantaneous forecast at first time step of 3 mins
Record 11: f01: instantaneous forecast at 1 hour
Record 12: f02: instantaneous forecast at 2 hours
Record 13: f03: instantaneous forecast at 3 hours
Record 14: f04: instantaneous forecast at 4 hours
Record 15: f05: instantaneous forecast at 5 hours
Record 16: f06: instantaneous forecast at 6 hours

Initial condition 1 Jan 1979, 12Z

Record 17: anl: Analysis
Record 18: f00: instantaneous forecast at first time step of 3 mins
Record 19: f01: instantaneous forecast at 1 hour
Record 20: f02: instantaneous forecast at 2 hours
Record 21: f03: instantaneous forecast at 3 hours
Record 22: f04: instantaneous forecast at 4 hours
Record 23: f05: instantaneous forecast at 5 hours
Record 24: f06: instantaneous forecast at 6 hours

Initial condition 1 Jan 1979, 18Z

Record 25: anl: Analysis
Record 26: f00: instantaneous forecast at first time step of 3 mins
Record 27: f01: instantaneous forecast at 1 hour
Record 28: f02: instantaneous forecast at 2 hours
Record 29: f03: instantaneous forecast at 3 hours
Record 30: f04: instantaneous forecast at 4 hours
Record 31: f05: instantaneous forecast at 5 hours
Record 32: f06: instantaneous forecast at 6 hours

……… and so on, till the end of the month (31 Jan 1979, 18Z) with **992** records.
Note: The 5 Wind variables (WND) have the zonal component (U) and meridional component (V) interspersed one after the other, with a total of 1984 records.

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30 Hourly Time Series from the PGB and IPV Files
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1. Z200 (Geopotential at 200 hPa)
2. Z500 (Geopotential at 500 hPa)
3. Z700 (Geopotential at 700 hPa)
4. Z850 (Geopotential at 850 hPa)
5. Z1000 (Geopotential at 1000 hPa)
6. T2 (Temperature at 2 hPa)
7. T50 (Temperature at 50 hPa)
8. T200 (Temperature at 200 hPa)
9. T500 (Temperature at 500 hPa)
10. T700 (Temperature at 700 hPa)
11. T850 (Temperature at 850 hPa)
12. T1000 (Temperature at 1000 hPa)
13. WND200 (Zonal (u) and Meridional: (v) Wind at 200 hPa)
14. WND500 (Zonal (u) and Meridional: (v) Wind at 500 hPa)
15. WND700 (Zonal (u) and Meridional: (v) Wind at 700 hPa)
16. WND850 (Zonal (u) and Meridional: (v) Wind at 850 hPa)
17. WND1000 (Zonal (u) and Meridional: (v) Wind at 1000 hPa)
18. PSI200 (Streamfunction at 200 hPa)
19. PSI850 (Streamfunction at 850 hPa)
20. CHI200 (Velocity Potential at 200 hPa)
21. CHI850 (Velocity Potential at 200 hPa)
22. VVEL500 (Vertical Velocity at 500 hPa)
23. Q500 (Specific Humidity at 500 hPa)
24. Q700 (Specific Humidity at 700 hPa)
25. Q850 (Specific Humidity at 850 hPa)
26. Q925 (Specific Humidity at 925 hPa)
27. PRMSL (Mean Sea Level Pressure)
28. IPV450 (Potential Vorticty at 450 K Isentropic Level)
29. IPV550 (Potential Vorticty at 550 K Isentropic Level)
30. IPV650 (Potential Vorticty at 650 K Isentropic Level)

Important Note: The forecast at the first time step (f00) of 3 minutes constitutes a spin up of the model physics, and extreme care should be taken when using it as a proxy of any type of validation. IT IS NOT THE ANALYSIS.

Layout of the 13 Hourly Time Series from the OCN files are given below:

Initial condition 1 Jan 1979, 0Z
Record 1: f01: forecast averaged over 0 to 1 hour
Record 2: f02: forecast averaged over 1 to 2 hours
Record 3: f03: forecast averaged over 2 to 3 hours
Record 4: f04: forecast averaged over 3 to 4 hours
Record 5: f05: forecast averaged over 4 to 5 hours
Record 6: f06: forecast averaged over 5 to 6 hours

Initial condition 1 Jan 1979, 6Z
Record 7: f01: forecast averaged over 0 to 1 hour
Record 8: f02: forecast averaged over 1 to 2 hours
Record 9: f03: forecast averaged over 2 to 3 hours
Record 10: f04: forecast averaged over 3 to 4 hours
Record 11: f05: forecast averaged over 4 to 5 hours
Record 12: f06: forecast averaged over 5 to 6 hours

Initial condition 1 Jan 1979, 12Z
Record 13: f01: forecast averaged over 0 to 1 hour
Record 14: f02: forecast averaged over 1 to 2 hours
Record 15: f03: forecast averaged over 2 to 3 hours
Record 16: f04: forecast averaged over 3 to 4 hours
Record 17: f05: forecast averaged over 4 to 5 hours
Record 18: f06: forecast averaged over 5 to 6 hours

Initial condition 1 Jan 1979, 18Z
Record 19: f01: forecast averaged over 0 to 1 hour
Record 20: f02: forecast averaged over 1 to 2 hours
Record 21: f03: forecast averaged over 2 to 3 hours
Record 22: f04: forecast averaged over 3 to 4 hours
Record 23: f05: forecast averaged over 4 to 5 hours
Record 24: f06: forecast averaged over 5 to 6 hours

………. and so on, till the end of the month (31 Jan 1979, 18Z) with **744** records.

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13 Hourly Time Series from the OCN Files
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1. OCNDT20C (Depth of 20C Isotherm)
2. OCNHEAT (Ocean Heat Content)
3. OCNSLH (Sea Level Height)
4. OCNSST (Ocean Potential Temperature at depth of 5m)
5. OCNU5 (Ocean Zonal Current at depth of 5m)
6. OCNV5 (Ocean Meridional Current at depth of 5m)
7. OCNSAL5 (Ocean Salinity at depth of 5m)
8. OCNU15 (Ocean Zonal Current at depth of 15m)
9. OCNV15 (Ocean Meridioanl Current at depth of 15m)
10. OCNT15 (Ocean Potential Temperature at depth of 15m)
11. OCNSAL15 (Ocean Salinity at depth of 15m)
12. OCNVV55 (Ocean vertical velocity at depth of 55 m)
13. OCNMLD (Ocean Mixed Layer Depth)