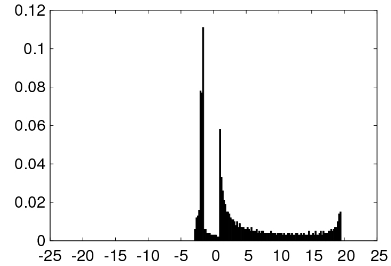
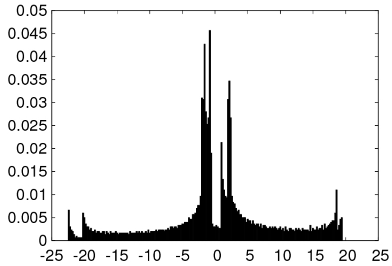
# Appendices

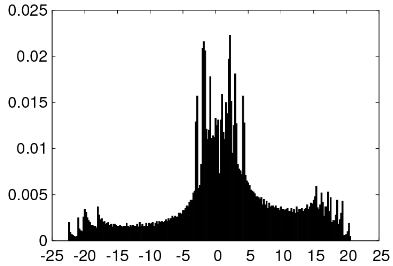
# Appendix A: L63 Results



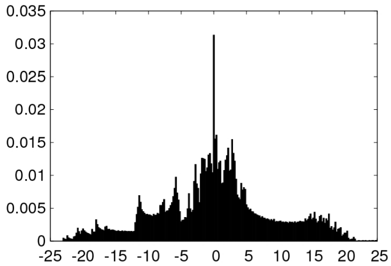
(a) 1 LTU



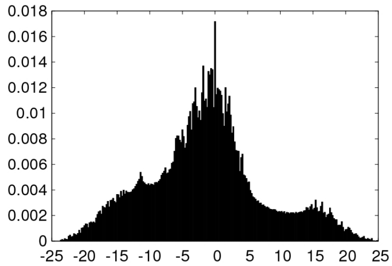
(b) 3 LTUs



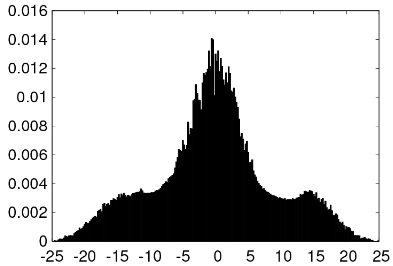
(c) 10 LTUs



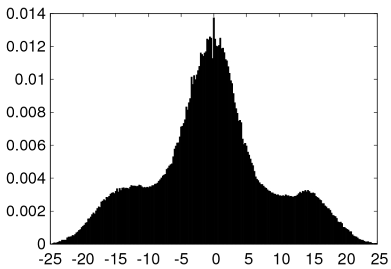
(d) 30 LTUs



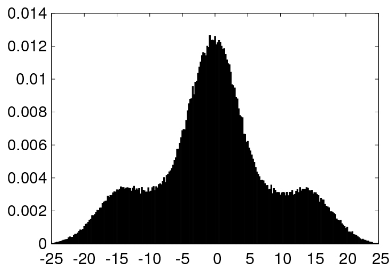
(e) 100 LTUs



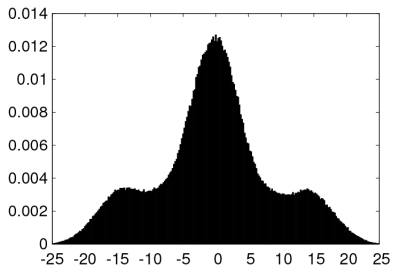
(f) 300 LTUs



(g) 1,000 LTUs

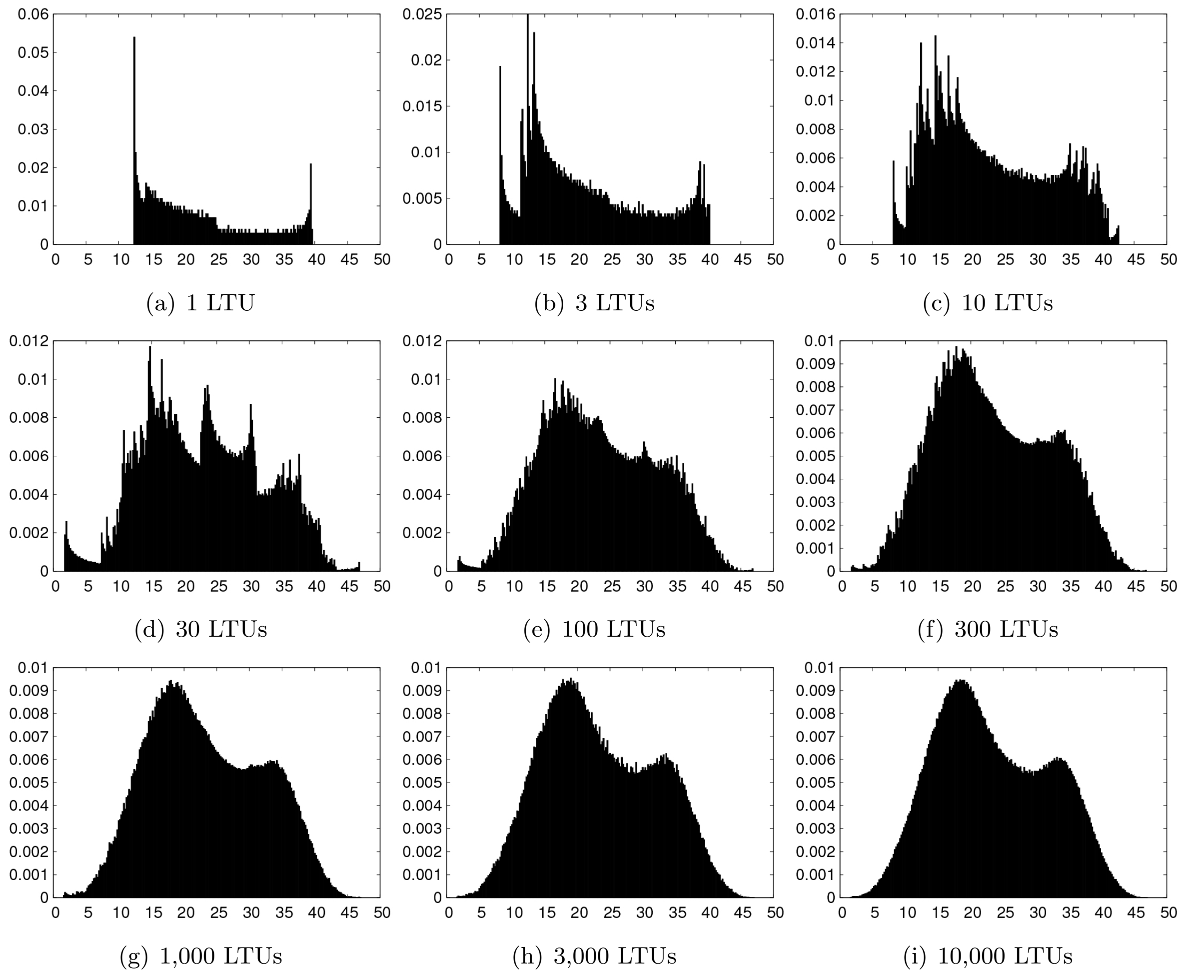


(h) 3,000 LTUs



(i) 10,000 LTUs

Figure A-1: Normalised frequency distributions of the $Y$ variable from a single trajectory of the L63 model with ICs $(X, Y, Z) = (1.0, 1.0, 25.0)$, over increasing time periods. In each plot, the x-axis corresponds to the $Y$ variable and the y-axis corresponds to the frequency per occupuied bin; bin width $= 0.2$.

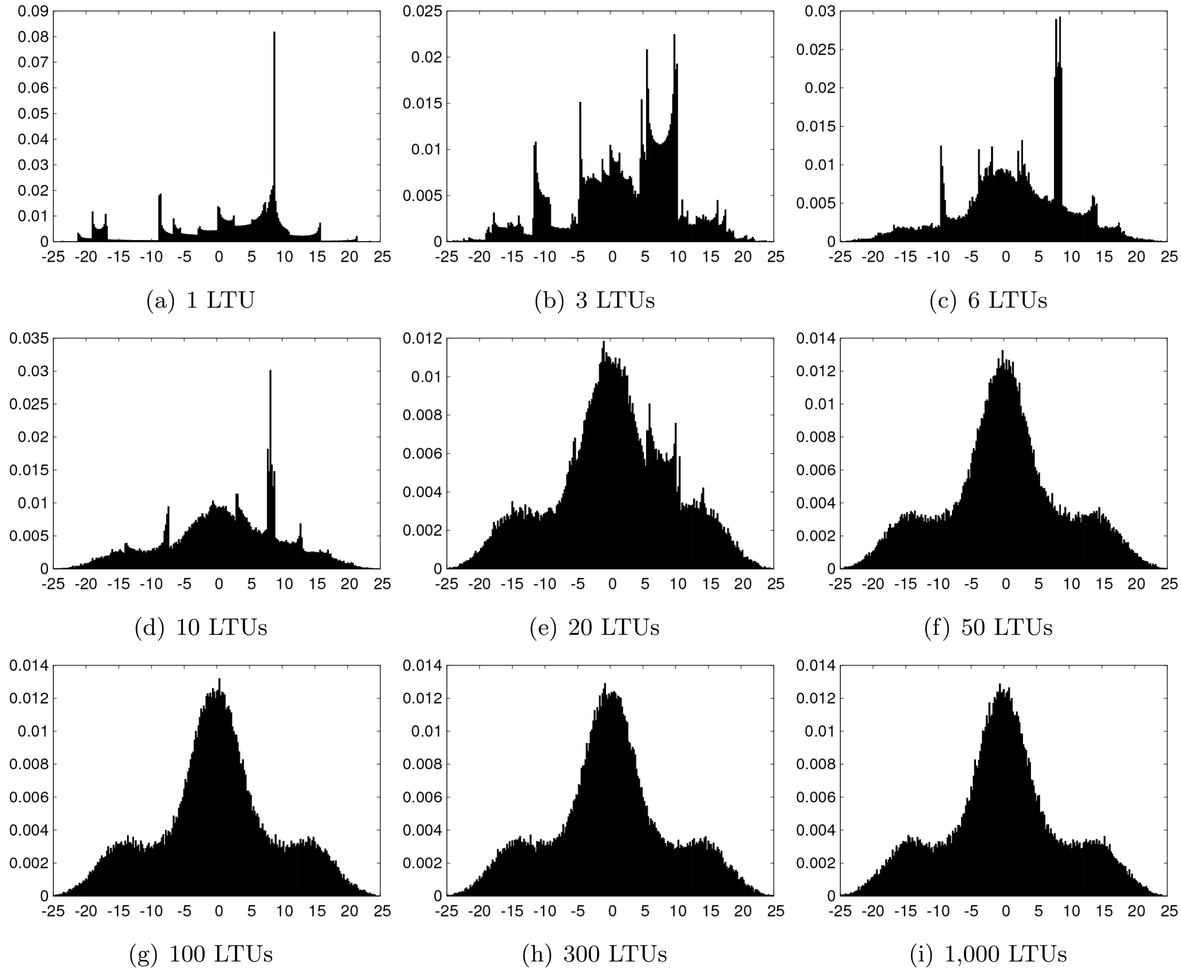


(a) 1 LTU (b) 3 LTUs (c) 10 LTUs

(d) 30 LTUs (e) 100 LTUs (f) 300 LTUs

(g) 1,000 LTUs (h) 3,000 LTUs (i) 10,000 LTUs

Figure A-2: Normalised frequency distributions of the $Z$ variable from a single trajectory of the L63 model with ICs $(X, Y, Z) = (1.0, 1.0, 25.0)$, over increasing time periods. In each plot, the x-axis corresponds to the $Z$ variable and the y-axis corresponds to the frequency per occupuied bin; bin width $= 0.2$.

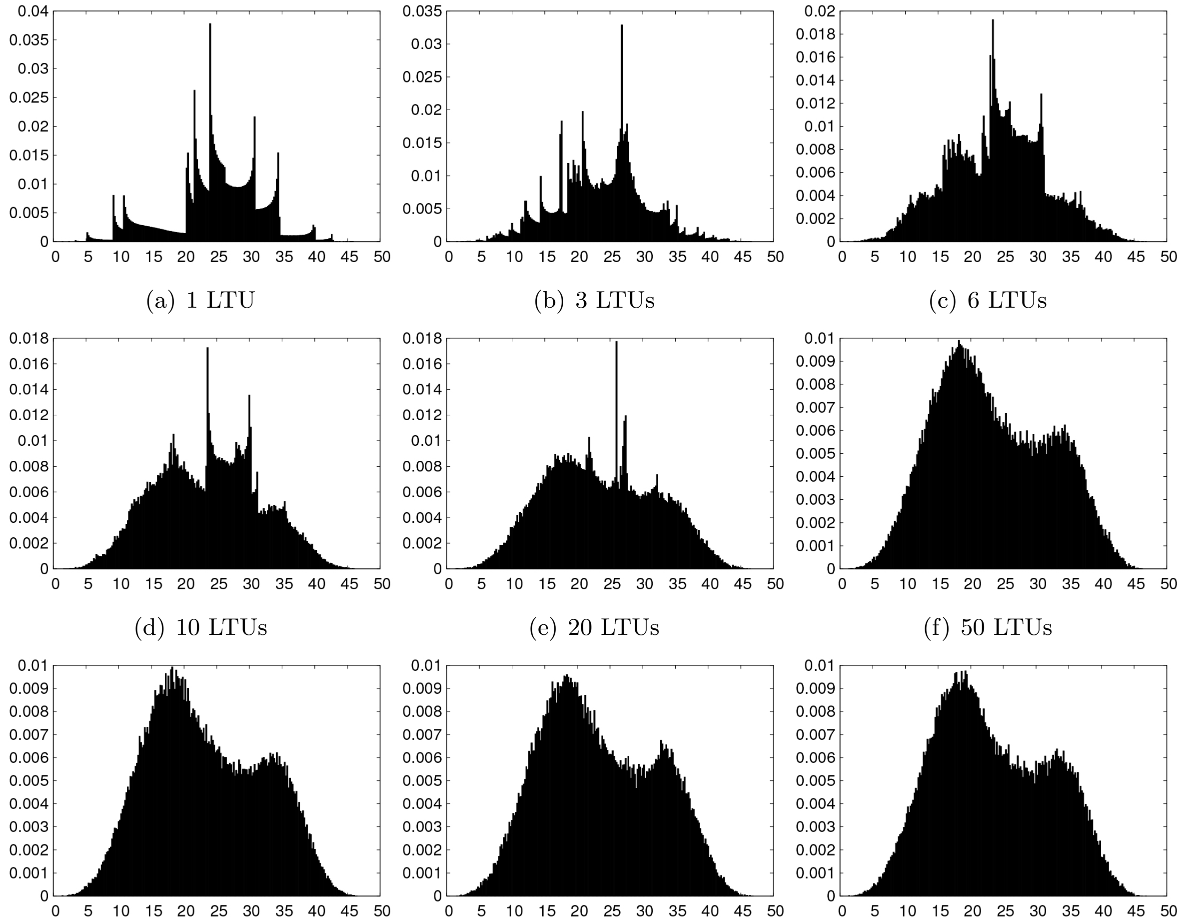


(a) 1 LTU (b) 3 LTUs (c) 6 LTUs

(d) 10 LTUs (e) 20 LTUs (f) 50 LTUs

(g) 100 LTUs (h) 300 LTUs (i) 1,000 LTUs

Figure A-3: Normalised frequency distributions of the $Y$ variable for the L63 model, from a 100,000 member IC ensemble with ICs spread evenly along a transect from $(X_l, Y_l, Z_l) = (-20, -25, 1)$ to $(X_h, Y_h, Z_h) = (20, 25, 40.0)$. The distributions show the states of each ensemble member at the given time instant in the simulation period. In each plot, the x-axis corresponds to the $Y$ variable and the y-axis corresponds to the frequency of ensemble members per occupuied bin; bin width = 0.2.



(a) 1 LTU

(b) 3 LTUs

(c) 6 LTUs

(d) 10 LTUs

(e) 20 LTUs

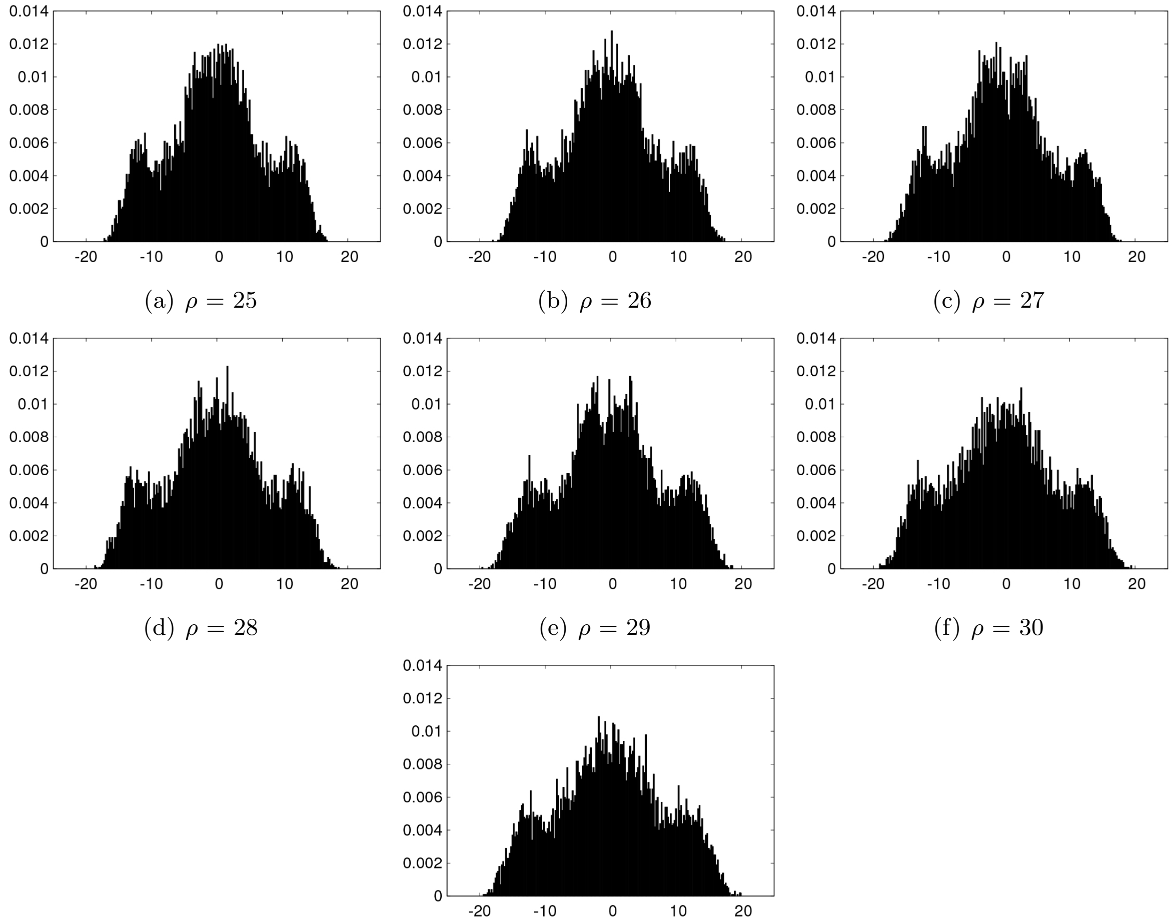
(f) 50 LTUs

(g) 100 LTUs

(h) 300 LTUs

(i) 1,000 LTUs

Figure A-4: Normalised frequency distributions of the $Z$ variable for the L63 model, from a 100,000 member IC ensemble with ICs spread evenly along a transect from $(X_l, Y_l, Z_l) = (-20, -25, 1)$ to $(X_h, Y_h, Z_h) = (20, 25, 40.0)$. The distributions show the states of each ensemble member at the given time instant in the simulation period. In each plot, the x-axis corresponds to the $Z$ variable and the y-axis corresponds to the frequency of ensemble members per occupuied bin; bin width = 0.2.

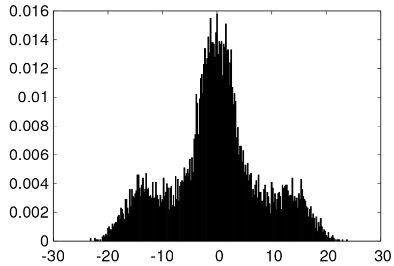


(a) $\rho = 25$ (b) $\rho = 26$ (c) $\rho = 27$

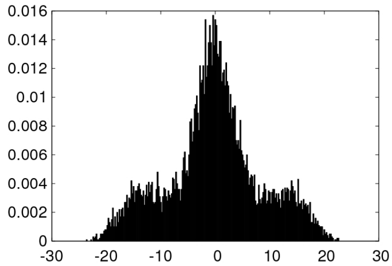
(d) $\rho = 28$ (e) $\rho = 29$ (f) $\rho = 30$

(g) $\rho = 31$

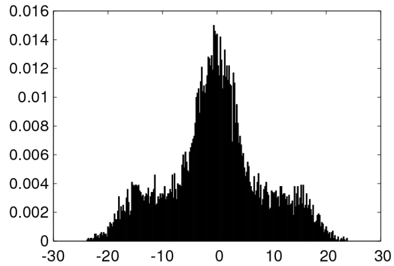
Figure A-5: Normalised frequency distributions for a 10,000 member IC ensemble after 100 LTUs for different values of $\rho$ for the $X$ variable. The IC ensembles were initiated with ICs taken from the first 10,000 members of the equilibrium climate distributions for $\rho = 28$, shown in figure 3.5. In each plot, the x-axis corresponds to the $X$ variable and the y-axis corresponds to the frequency of ensemble members per occupuied bin; bin width = 0.2.



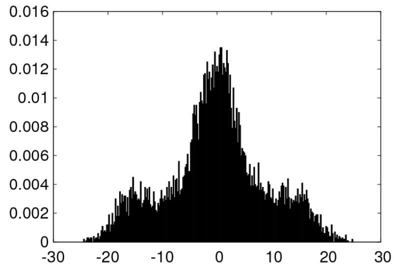

(a) $\rho = 25$



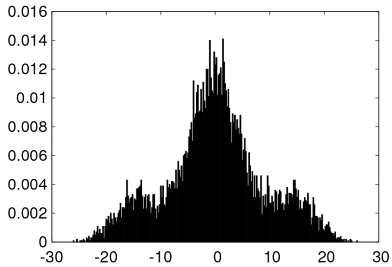

(b) $\rho = 26$



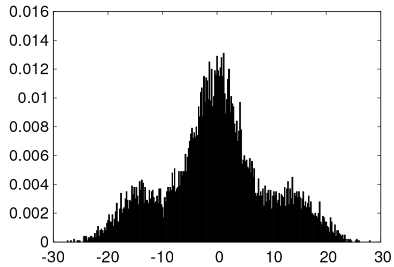

(c) $\rho = 27$



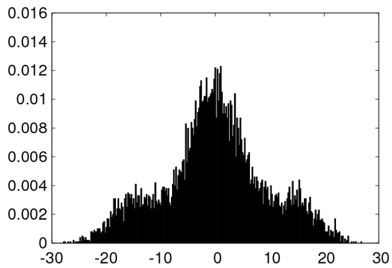

(d) $\rho = 28$




(e) $\rho = 29$



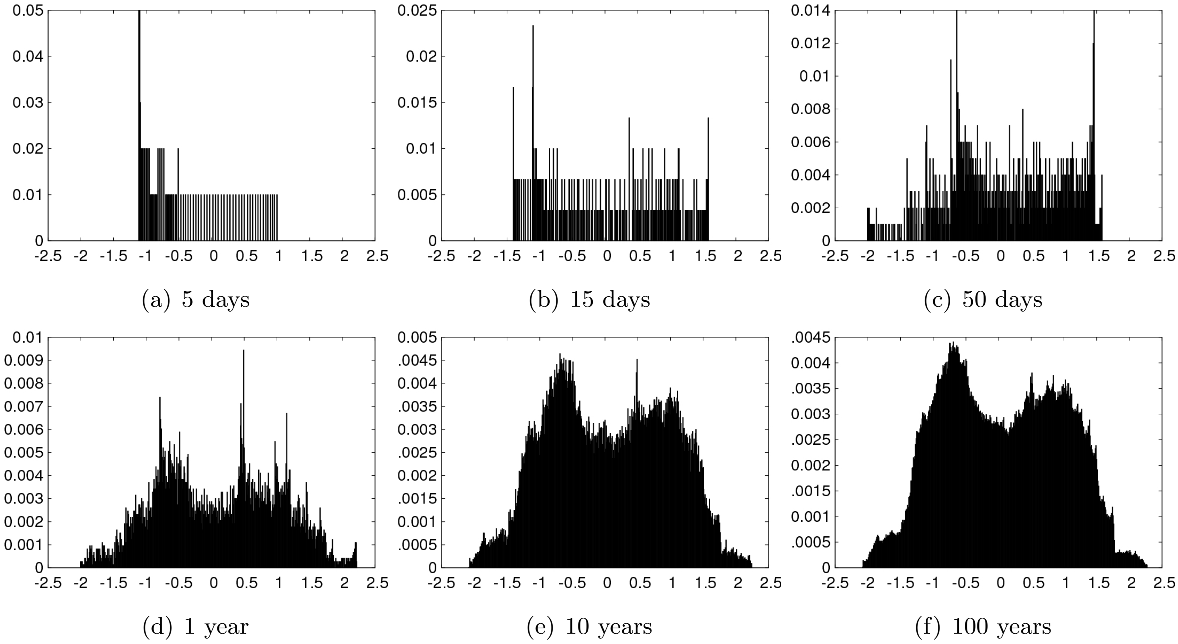

(f) $\rho = 30$




(g) $\rho = 31$

Figure A-6: Normalised frequency distributions for a 10,000 member IC ensemble after 100 LTUs for different values of $\rho$ for the $Y$ variable. The IC ensembles were initiated with ICs taken from the first 10,000 members of the equilibrium climate distributions for $\rho = 28$, shown in figure 3.5. In each plot, the x-axis corresponds to the $Y$ variable and the y-axis corresponds to the frequency of ensemble members per occupuied bin; bin width = 0.2.

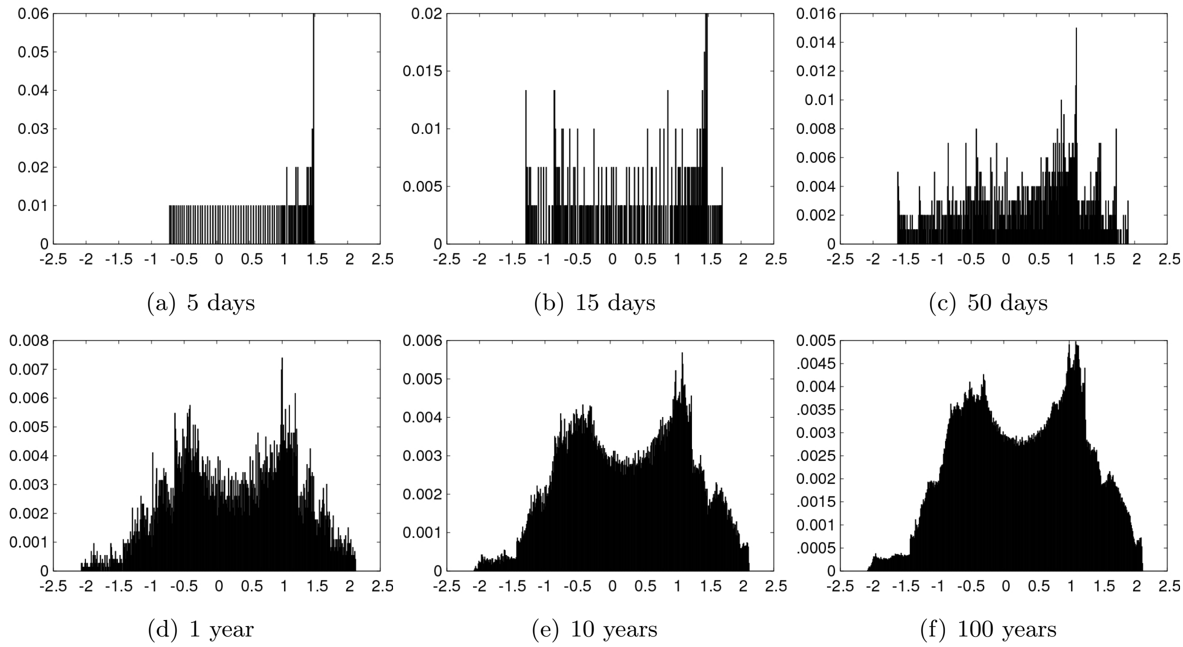
# Appendix B: L84 Results



(a) 5 days (b) 15 days (c) 50 days

(d) 1 year (e) 10 years (f) 100 years

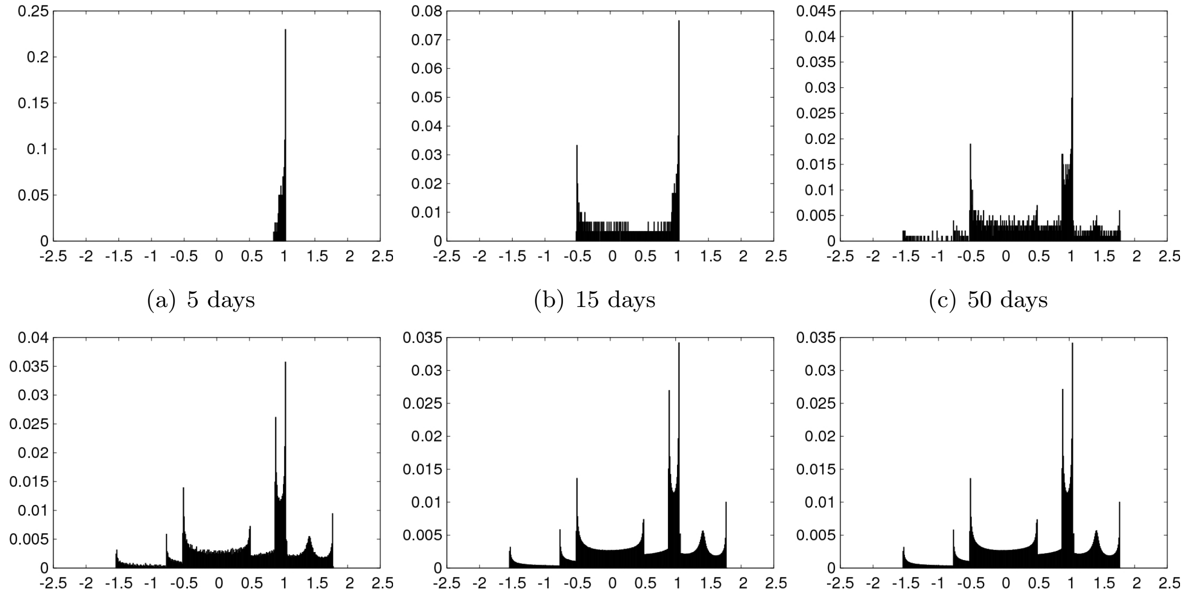
Figure B-1: Normalised frequency distributions for the $Y$ variable of a single trajectory in the L84 model when $F = 8$ after given simulation periods, with ICs: $(X, Y, Z) = (1.0, 1.0, 1.0)$. In each plot, the x-axis denotes the $Y$ variable and the y-axis corresponds to the frequency per occupied bin; bin width = 0.01.



(a) 5 days (b) 15 days (c) 50 days

(d) 1 year (e) 10 years (f) 100 years

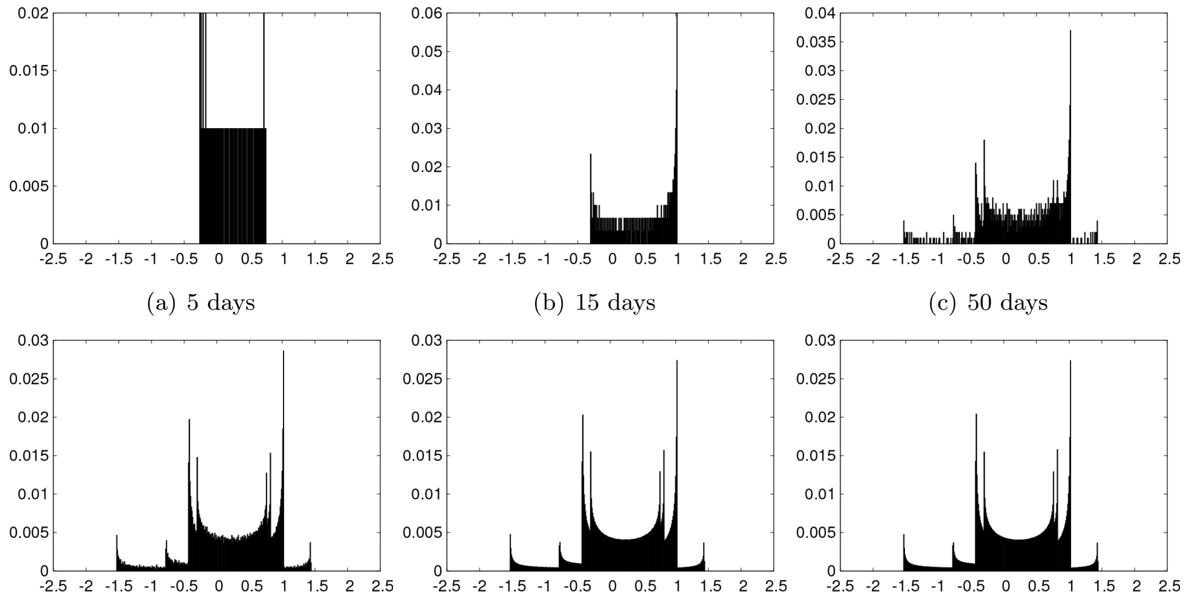
Figure B-2: Normalised frequency distributions for the $Z$ variable of a single trajectory in the L84 model when $F = 8$ after given simulation periods, with ICs: $(X, Y, Z) = (1.0, 1.0, 1.0)$. In each plot, the x-axis denotes the $Z$ variable and the y-axis corresponds to the frequency per occupied bin; bin width = 0.01.



(a) 5 days (b) 15 days (c) 50 days

(d) 1 year (e) 10 years (f) 100 years

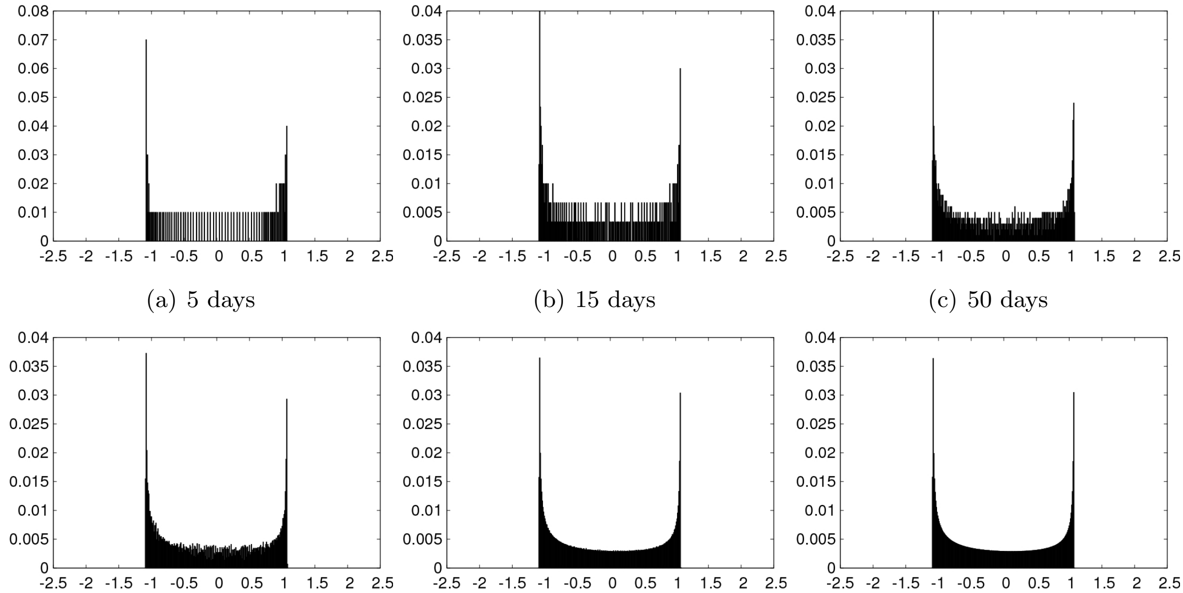
Figure B-3: Normalised frequency distributions for the $Y$ variable of a single trajectory in the L84 model when $F = 6$ after given simulation periods, with ICs: $(X, Y, Z) = (0.12, 0.95, -0.26)$. In each plot, the x-axis denotes the $Y$ variable and the y-axis corresponds to the frequency per occupied bin; bin width $= 0.01$.



(a) 5 days (b) 15 days (c) 50 days

(d) 1 year (e) 10 years (f) 100 years

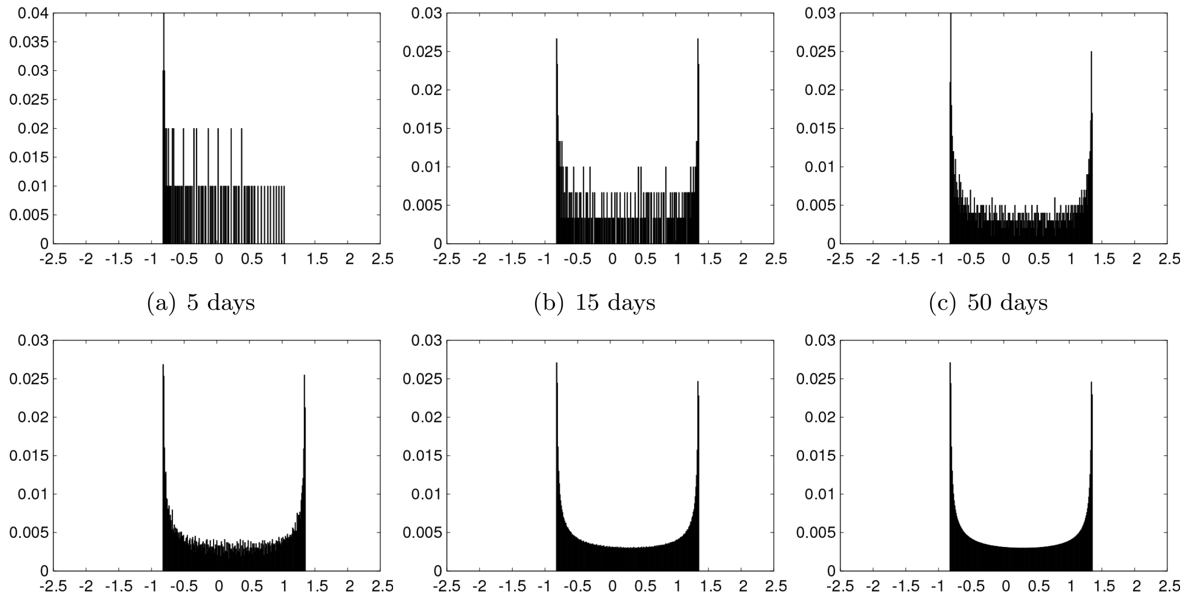
Figure B-4: Normalised frequency distributions for the $Z$ variable of a single trajectory in the L84 model when $F = 6$ after given simulation periods, with ICs: $(X, Y, Z) = (0.12, 0.95, -0.26)$. In each plot, the x-axis denotes the $Z$ variable and the y-axis corresponds to the frequency per occupied bin; bin width $= 0.01$.



(a) 5 days (b) 15 days (c) 50 days

(d) 1 year (e) 10 years (f) 100 years

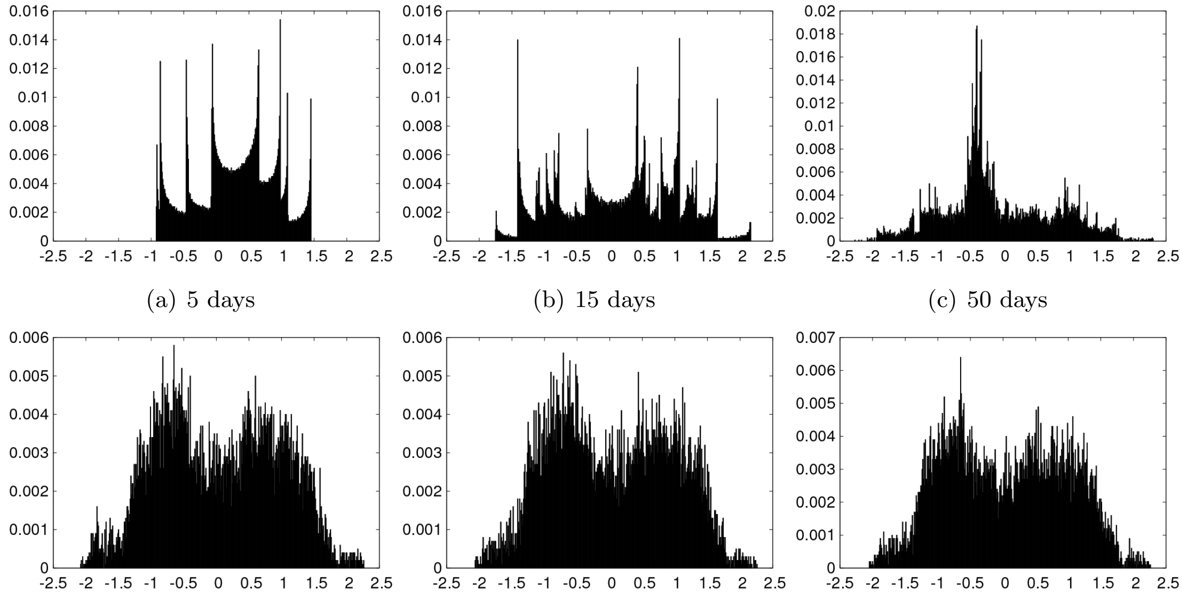
Figure B-5: Normalised frequency distributions for the $Y$ variable of a single trajectory in the L84 model when $F = 6$ after given simulation periods, with ICs: $(X, Y, Z) = (0.93, -1.04, 0.58)$. In each plot, the x-axis denotes the $Y$ variable and the y-axis corresponds to the frequency per occupied bin; bin width $= 0.01$.



(a) 5 days (b) 15 days (c) 50 days

(d) 1 year (e) 10 years (f) 100 years

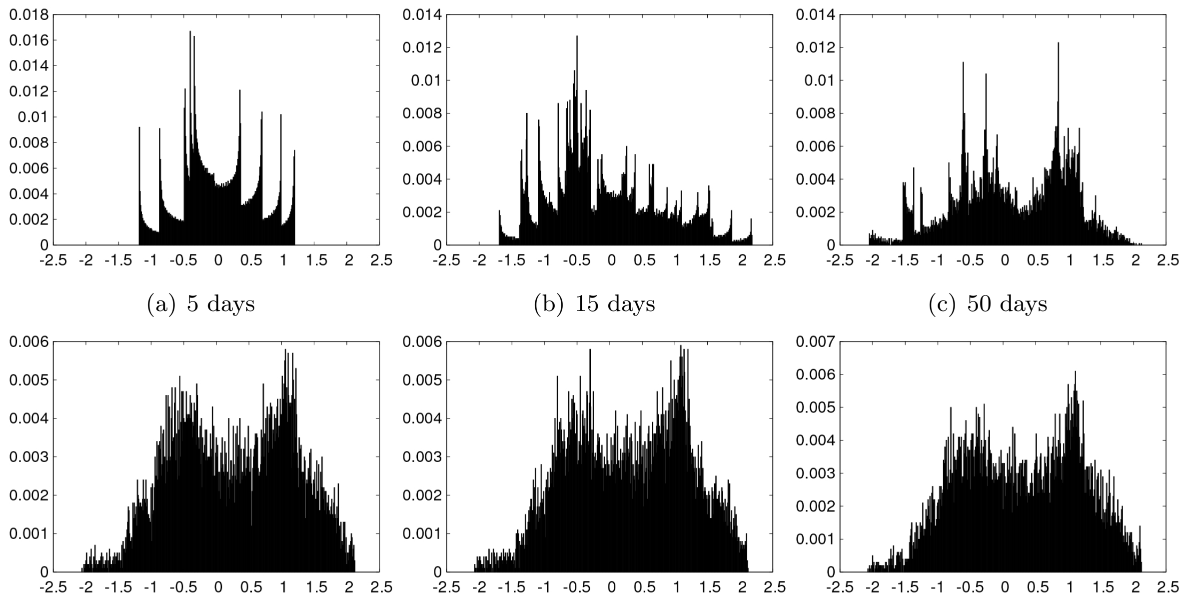
Figure B-6: Normalised frequency distributions for the $Z$ variable of a single trajectory in the L84 model when $F = 6$ after given simulation periods, with ICs: $(X, Y, Z) = (0.93, -1.04, 0.58)$. In each plot, the x-axis denotes the $Z$ variable and the y-axis corresponds to the frequency per occupied bin; bin width $= 0.01$.



(a) 5 days (b) 15 days (c) 50 days

(d) 1 year (e) 10 years (f) 100 years

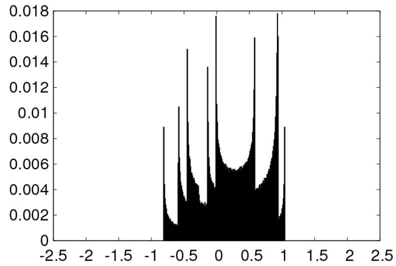
Figure B-7: Normalised frequency distributions for a 10,000 member IC ensemble of the L84 model when $F = 8$ after given simulation periods with ICs spread along a transect from $(-1, -2.5, -2.5)$ to $(2.5, 2.5, 2.5)$. In each plot, the x-axis denotes the $Y$ variable and the y-axis corresponds to the frequency per occupied bin; bin width = 0.01.



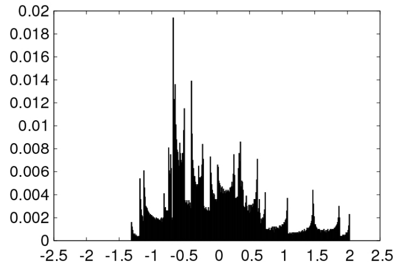
(a) 5 days (b) 15 days (c) 50 days

(d) 1 year (e) 10 years (f) 100 years

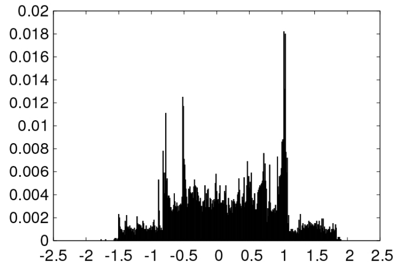
Figure B-8: Normalised frequency distributions for a 10,000 member IC ensemble of the L84 model when $F = 8$ after given simulation periods with ICs spread along a transect from $(-1, -2.5, -2.5)$ to $(2.5, 2.5, 2.5)$. In each plot, the x-axis denotes the $Z$ variable and the y-axis corresponds to the frequency per occupied bin; bin width = 0.01.



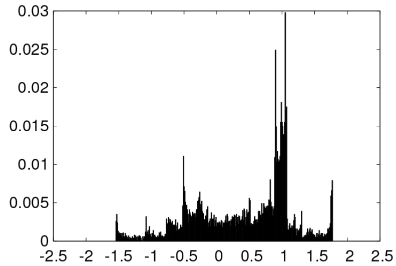
(a) 5 days



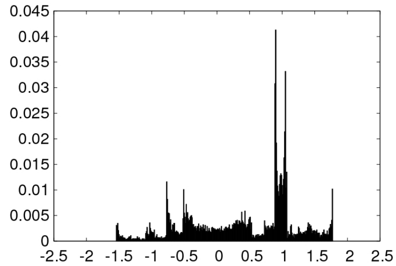
(b) 15 days



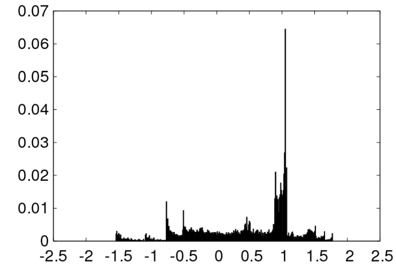
(c) 50 days



(d) 1 year

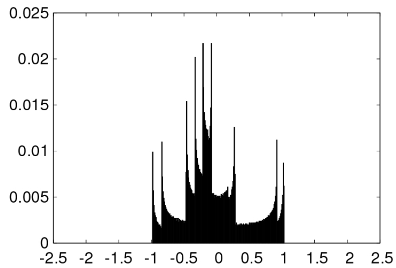


(e) 10 years

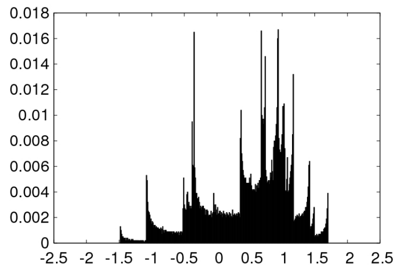


(f) 100 years

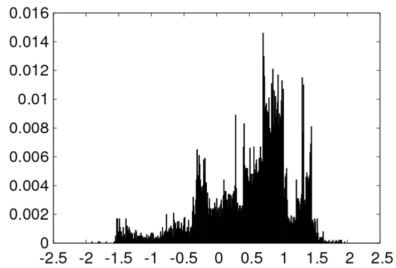
Figure B-9: Normalised frequency distributions for a 10,000 member IC ensemble of the L84 model when $F = 6$ after given simulation periods with ICs spread along a transect from $(-1, -2.5, -2.5)$ to $(2.5, 2.5, 2.5)$. In each plot, the x-axis denotes the $Y$ variable and the y-axis corresponds to the frequency per occupied bin; bin width $= 0.01$.



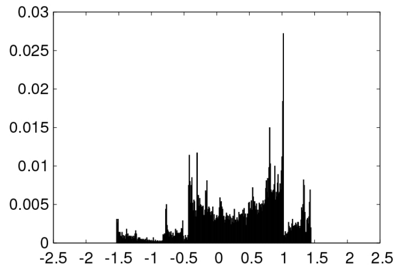
(a) 5 days



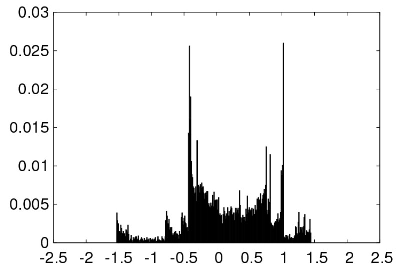
(b) 15 days



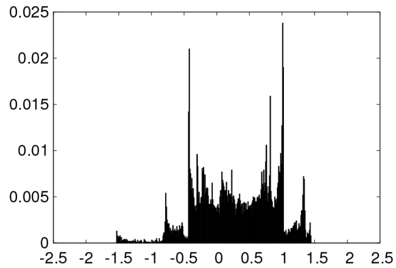
(c) 50 days



(d) 1 year

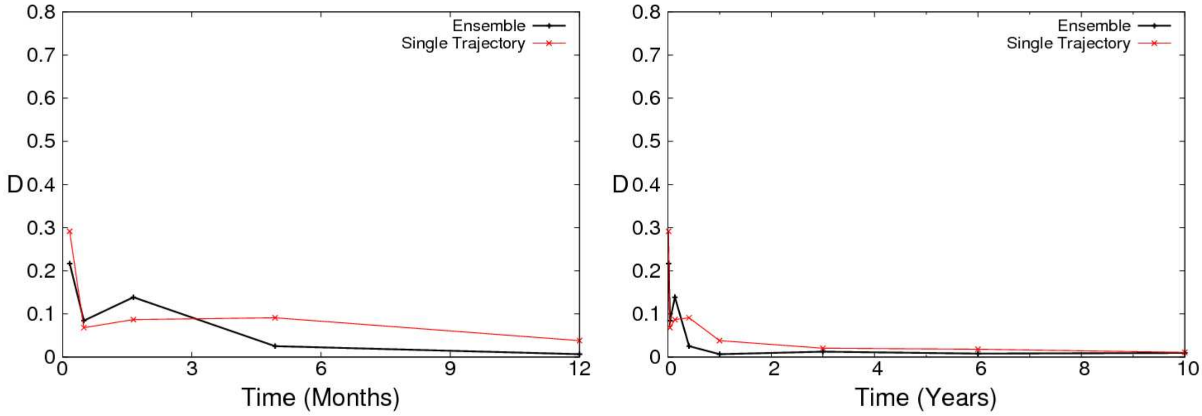


(e) 10 years



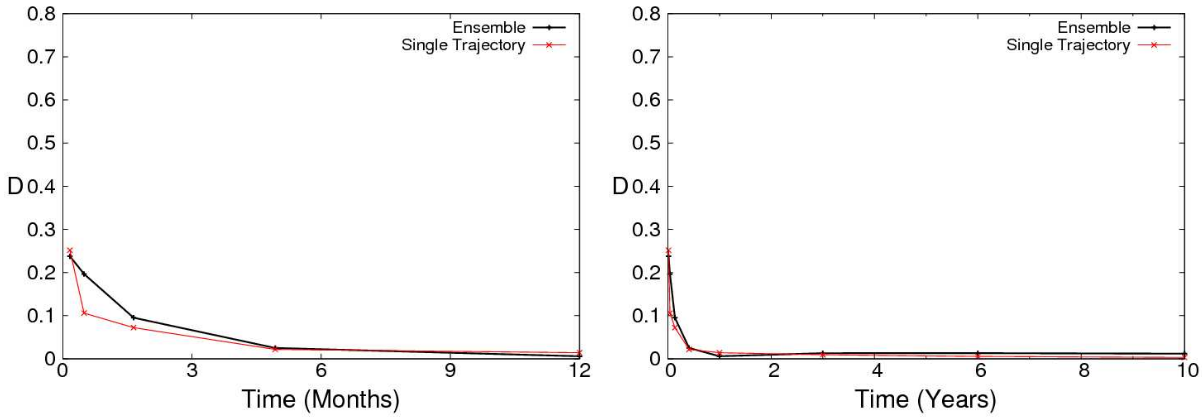
(f) 100 years

Figure B-10: Normalised frequency distributions for a 10,000 member IC ensemble of the L84 model when $F = 6$ after given simulation periods with ICs spread along a transect from $(-1, -2.5, -2.5)$ to $(2.5, 2.5, 2.5)$. In each plot, the x-axis denotes the $Z$ variable and the y-axis corresponds to the frequency per occupied bin; bin width $= 0.01$.



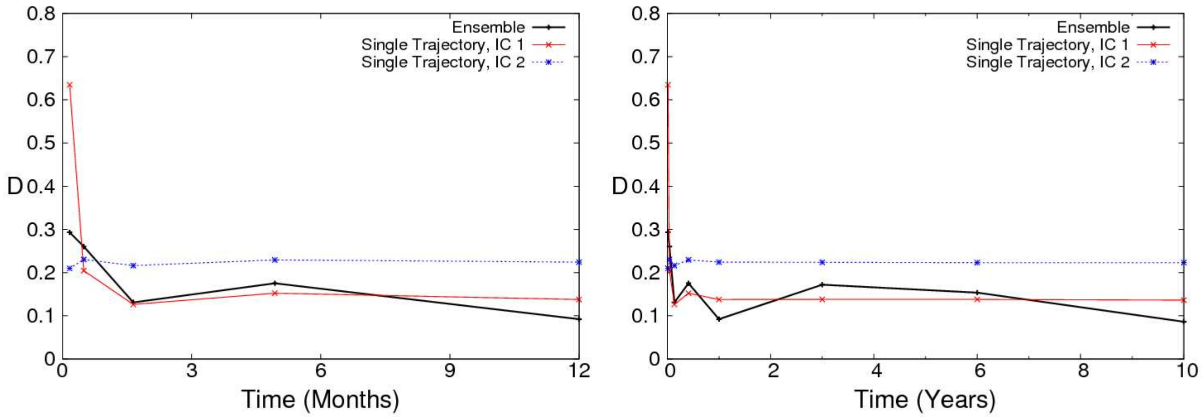

(a) 1 year (b) 10 years

Figure B-11: KS comparisons for the $Y$ variable in the L84 model with $F = 8$ between the 100,000 member IC ensemble distributions shown in figure 4.15 and: $(i)$ the 10,000 member IC ensemble distributions shown in figure B-7; and $(ii)$ the single trajectory distributions shown in figure B-1.



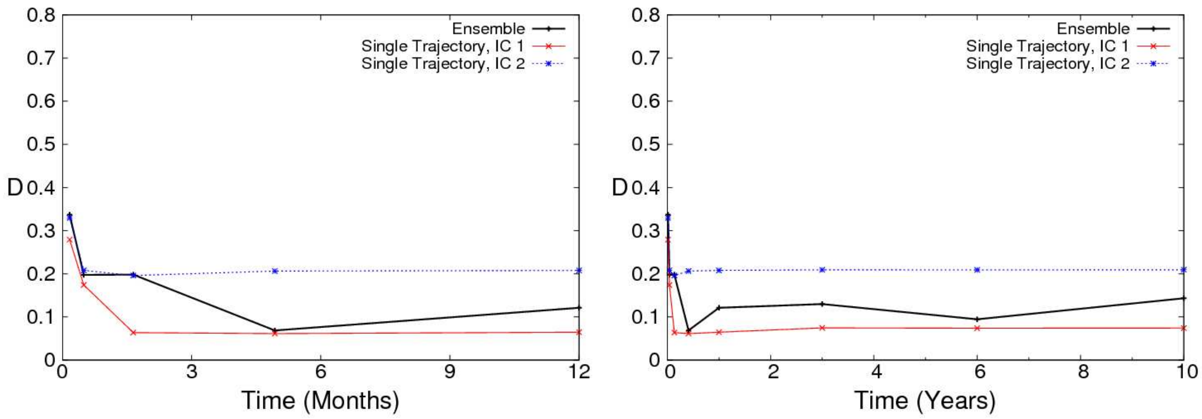

(a) 1 year (b) 10 years

Figure B-12: KS comparisons for the $Z$ variable in the L84 model with $F = 8$ between the 100,000 member IC ensemble distributions shown in figure 4.15 and: $(i)$ the 10,000 member IC ensemble distributions shown in figure B-8; and $(ii)$ the single trajectory distributions shown in figure B-2.




(a) 1 year (b) 10 years

Figure B-13: KS comparisons for the $Y$ variable in the L84 model with $F = 6$ between the 100,000 member IC ensemble distributions shown in figure 4.15 and: ($i$) the 10,000 member IC ensemble distributions shown in figure B-9; ($ii$) the single trajectory distributions shown in figure B-3 from $IC1$ (associated with attractor $A1$); and ($iii$) the single trajectory distributions shown in figure B-5 from $IC2$ (associated with attractor $A2$).




(a) 1 year (b) 10 years

Figure B-14: KS comparisons for the $Z$ variable in the L84 model with $F = 6$ between the 100,000 member IC ensemble distributions shown in figure 4.15 and: ($i$) the 10,000 member IC ensemble distributions shown in figure B-10; ($ii$) the single trajectory distributions shown in figure B-4 from $IC1$ (associated with attractor $A1$); and ($iii$) the single trajectory distributions shown in figure B-6 from $IC2$ (associated with attractor $A2$).

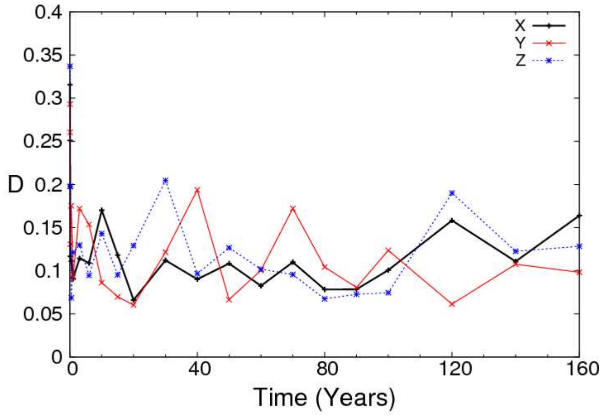
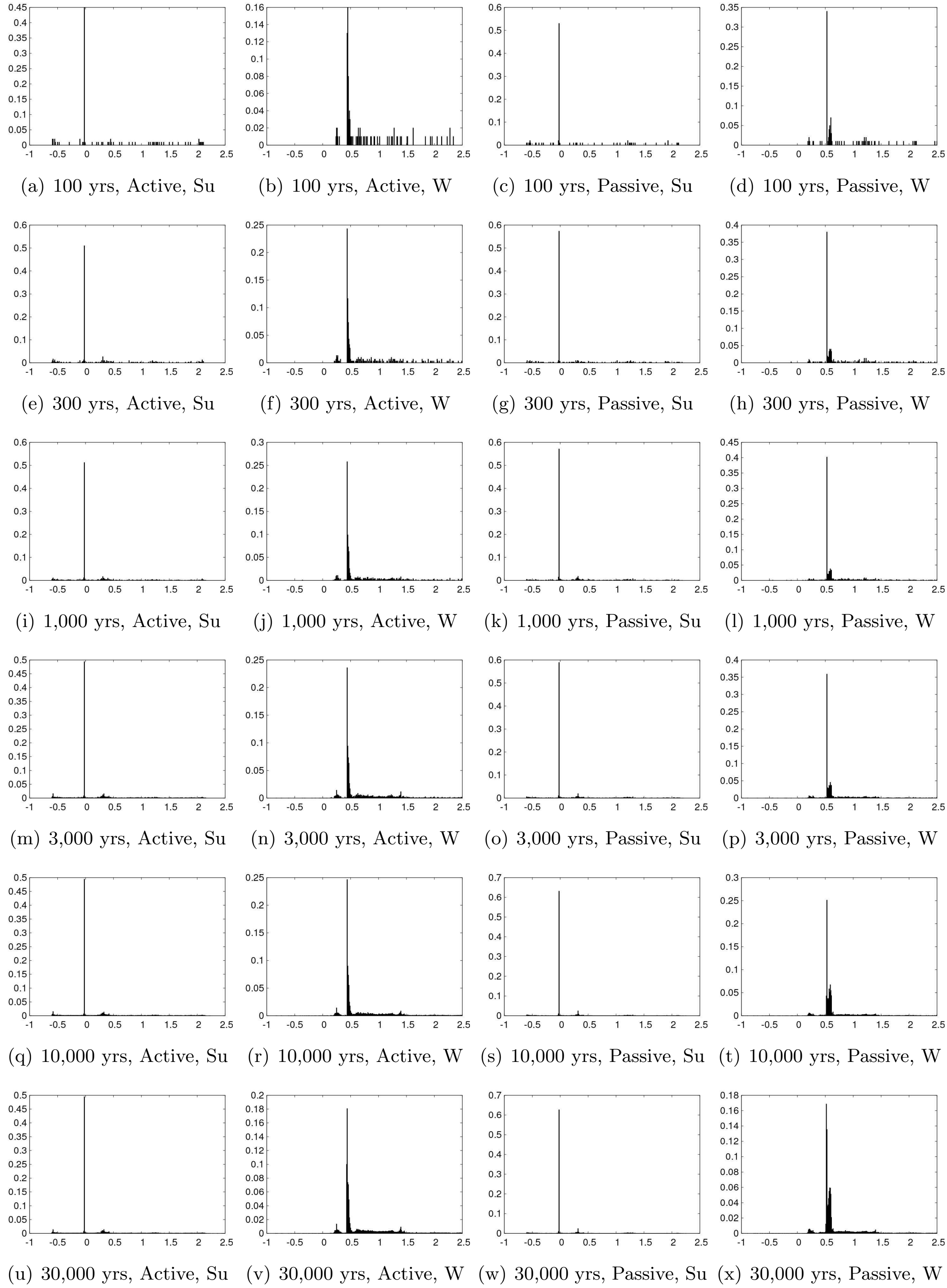



Figure B-15: KS comparisons for all variables in the L84 model with $F = 6$ between the 100,000 member IC ensemble distributions shown in figure 4.15 and the 10,000 member IC ensemble distributions shown in figure 4.11 over a simulation period of 160 years.

# Appendix C: LS84 Results



(a) 100 yrs, Active, Su (b) 100 yrs, Active, W (c) 100 yrs, Passive, Su (d) 100 yrs, Passive, W

(e) 300 yrs, Active, Su (f) 300 yrs, Active, W (g) 300 yrs, Passive, Su (h) 300 yrs, Passive, W

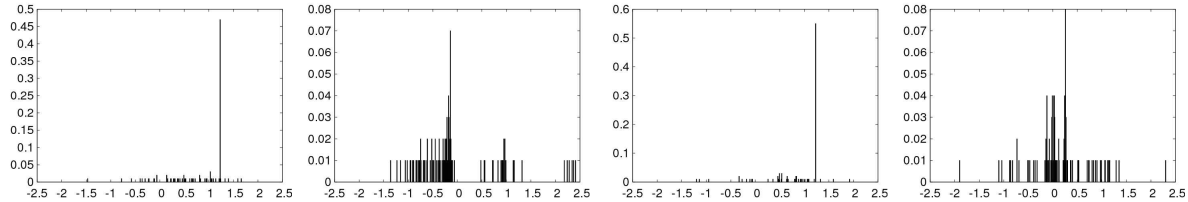
(i) 1,000 yrs, Active, Su (j) 1,000 yrs, Active, W (k) 1,000 yrs, Passive, Su (l) 1,000 yrs, Passive, W

(m) 3,000 yrs, Active, Su (n) 3,000 yrs, Active, W (o) 3,000 yrs, Passive, Su (p) 3,000 yrs, Passive, W

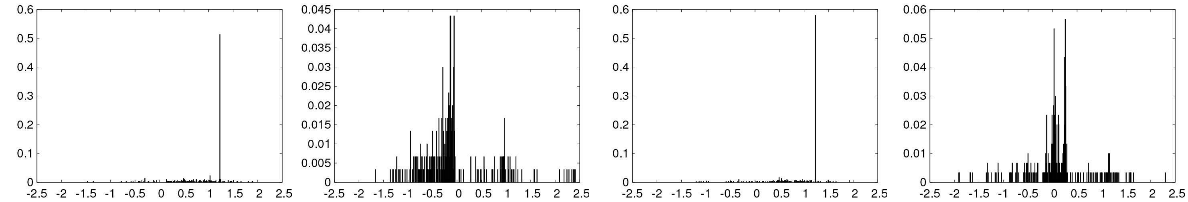
(q) 10,000 yrs, Active, Su (r) 10,000 yrs, Active, W (s) 10,000 yrs, Passive, Su (t) 10,000 yrs, Passive, W

(u) 30,000 yrs, Active, Su (v) 30,000 yrs, Active, W (w) 30,000 yrs, Passive, Su (x) 30,000 yrs, Passive, W

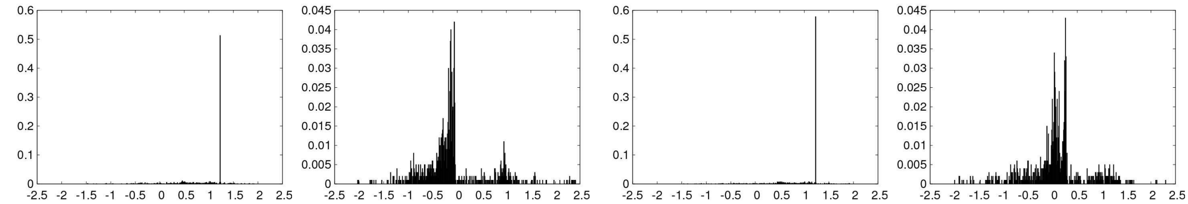
Figure C-1: Normalised frequency distributions for a single trajectory of the LS84 model variable $X$ over increasing time periods. The method of coupling is given as active or passive and the respective ICs are given in table 5.7. $Su$ denotes mid-summer and $W$ denotes mid-winter. In each plot, the x-axis corresponds to the atmosphere variable $X$ and the y-axis corresponds to the frequency per occupuied bin; bin width = 0.01.



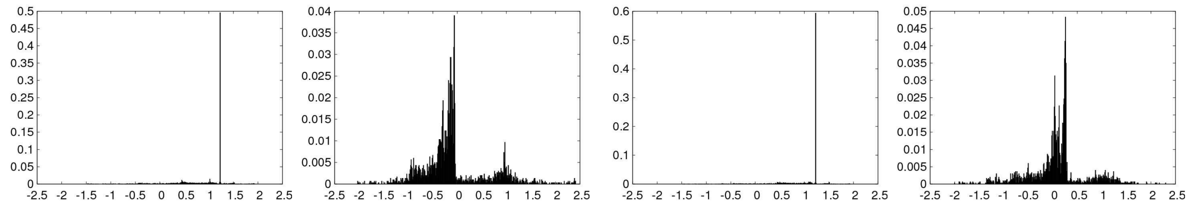
(a) 100 yrs, Active, Su (b) 100 yrs, Active, W (c) 100 yrs, Passive, Su (d) 100 yrs, Passive, W



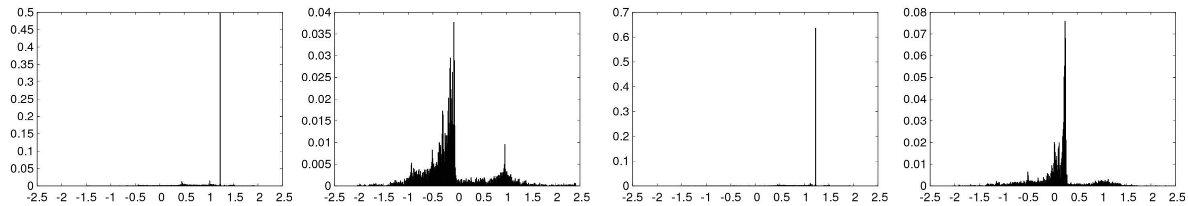
(e) 300 yrs, Active, Su (f) 300 yrs, Active, W (g) 300 yrs, Passive, Su (h) 300 yrs, Passive, W



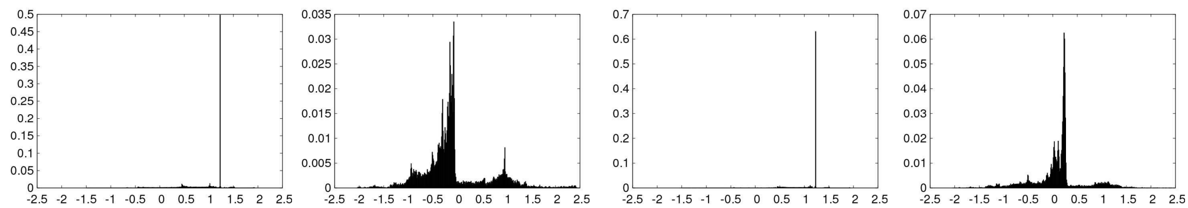
(i) 1,000 yrs, Active, Su (j) 1,000 yrs, Active, W (k) 1,000 yrs, Passive, Su (l) 1,000 yrs, Passive, W



(m) 3,000 yrs, Active, Su (n) 3,000 yrs, Active, W (o) 3,000 yrs, Passive, Su (p) 3,000 yrs, Passive, W

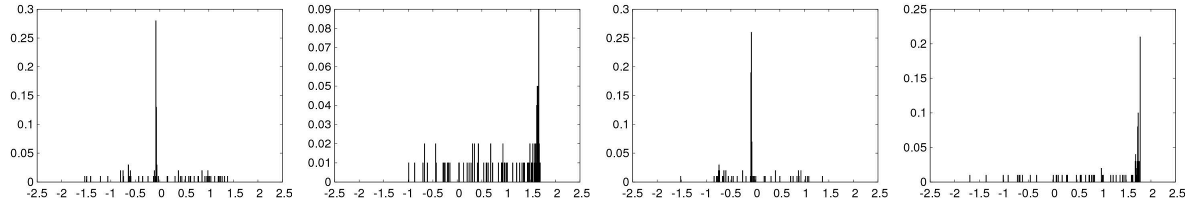


(q) 10,000 yrs, Active, Su (r) 10,000 yrs, Active, W (s) 10,000 yrs, Passive, Su (t) 10,000 yrs, Passive, W

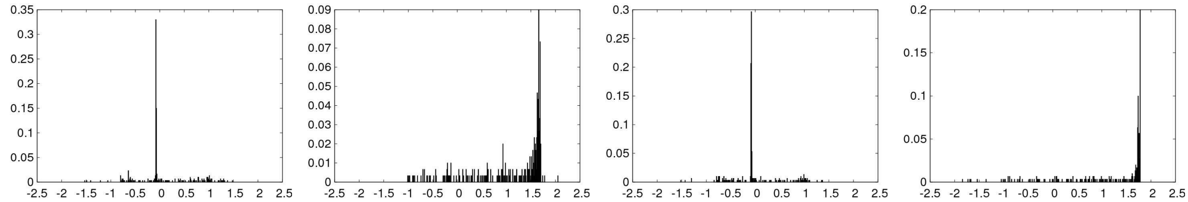


(u) 30,000 yrs, Active, Su (v) 30,000 yrs, Active, W (w) 30,000 yrs, Passive, Su (x) 30,000 yrs, Passive, W

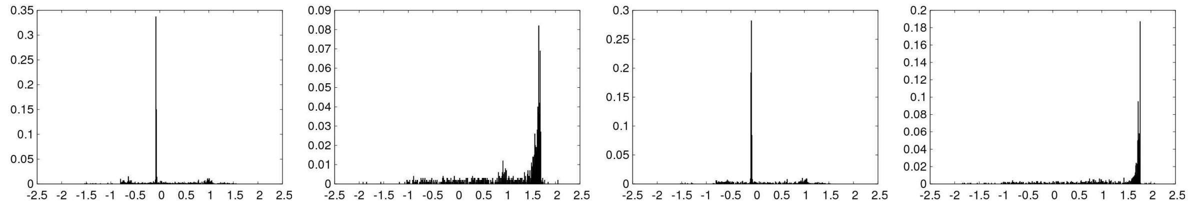
frequency distributions for a single trajectory of the LS84 model variable $Y$ over increasing time periods]Normalised frequency distributions for a single trajectory of the LS84 model variable $Y$ over increasing time periods. The method of coupling is given as active or passive and the respective ICs are given in table 5.7. *Su* denotes mid-summer and *W* denotes mid-winter. In each plot, the x-axis corresponds to the atmosphere variable $Y$ and the y-axis corresponds to the frequency per occupuied bin; bin width = 0.01.



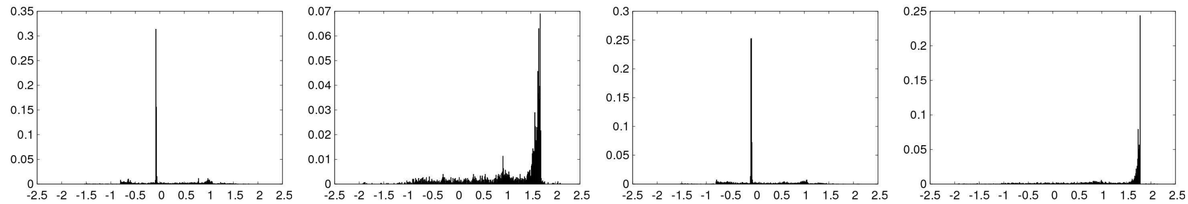
(y) 100 yrs, Active, Su (z) 100 yrs, Active, W () 100 yrs, Passive, Su () 100 yrs, Passive, W



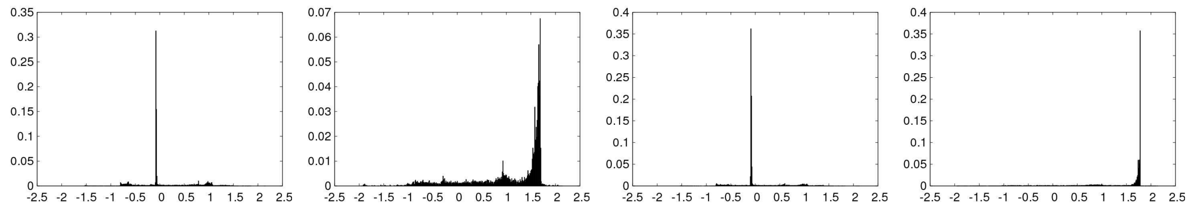
() 300 yrs, Active, Su () 300 yrs, Active, W () 300 yrs, Passive, Su () 300 yrs, Passive, W



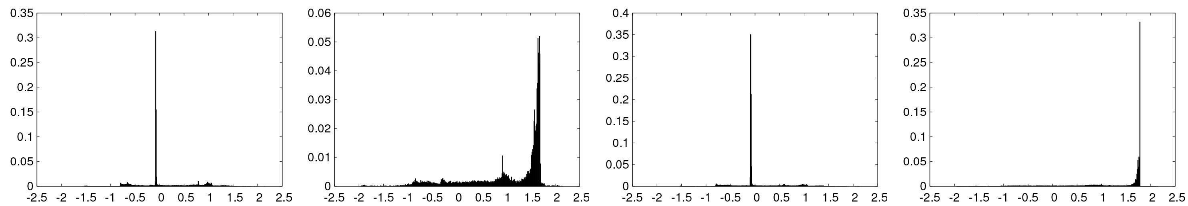
() 1,000 yrs, Active, Su () 1,000 yrs, Active, W () 1,000 yrs, Passive, Su () 1,000 yrs, Passive, W



() 3,000 yrs, Active, Su () 3,000 yrs, Active, W () 3,000 yrs, Passive, Su () 3,000 yrs, Passive, W

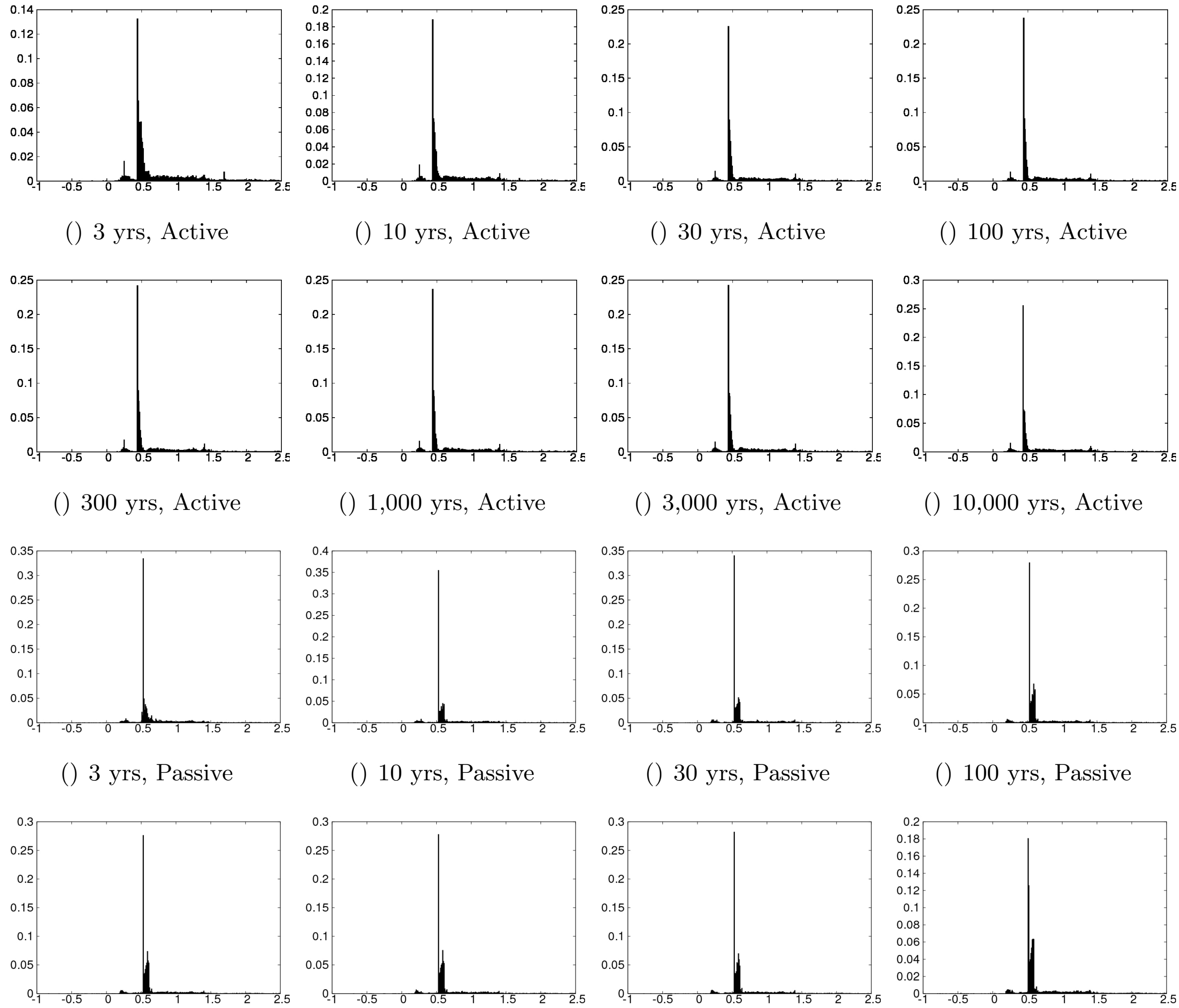


() 10,000 yrs, Active, Su () 10,000 yrs, Active, W () 10,000 yrs, Passive, Su () 10,000 yrs, Passive, W



() 30,000 yrs, Active, Su () 30,000 yrs, Active, W () 30,000 yrs, Passive, Su () 30,000 yrs, Passive, W

frequency distributions for a single trajectory of the LS84 model variable $Z$ over increasing time periods]Normalised frequency distributions for a single trajectory of the LS84 model variable $S$ over increasing time periods. The method of coupling is given as active or passive and the respective ICs are given in table 5.7. *Su* denotes mid-summer and *W* denotes mid-winter. In each plot, the x-axis corresponds to the atmosphere variable $Z$ and the y-axis corresponds to the frequency per occupuied bin; bin width = 0.01.



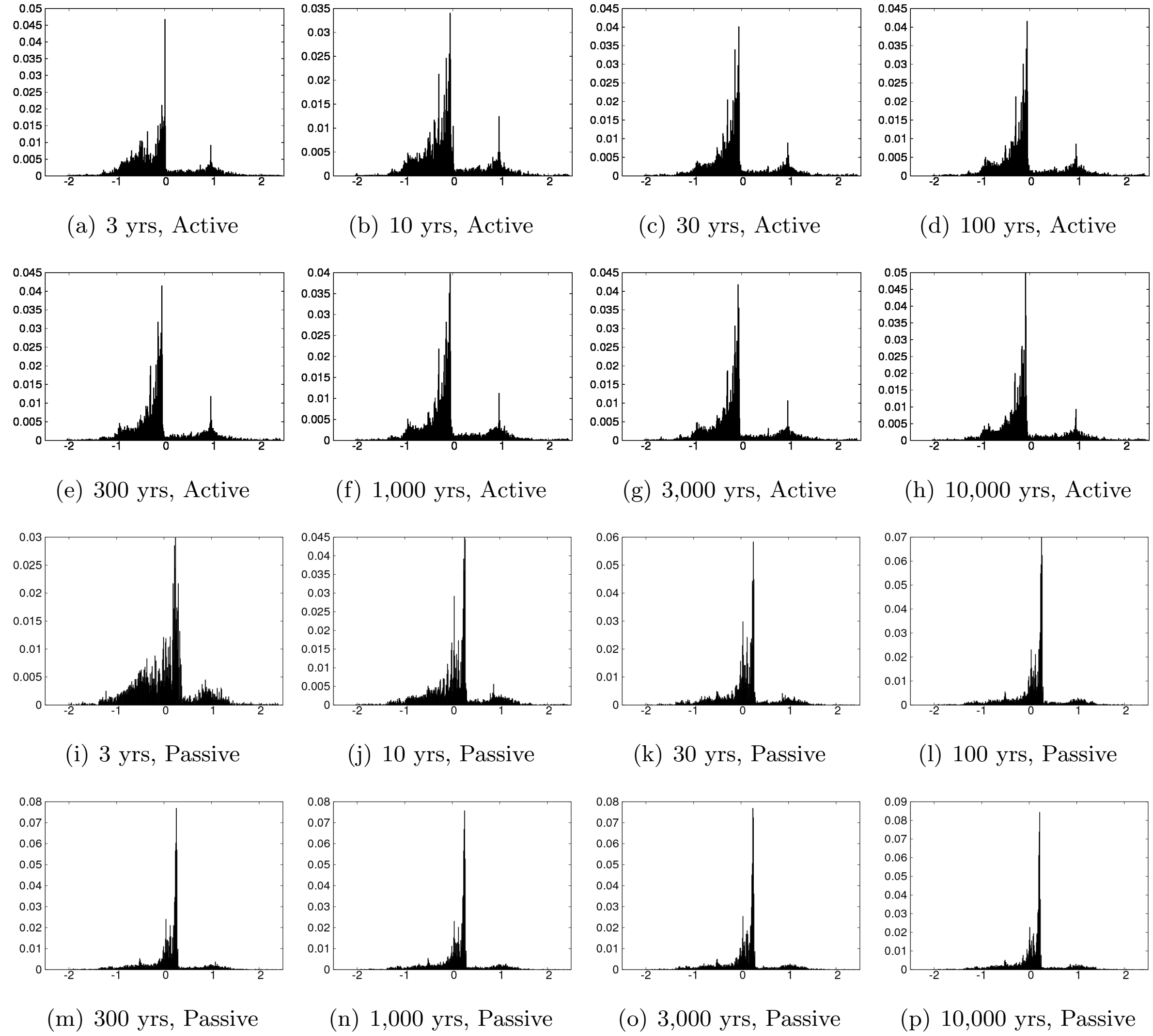
() 3 yrs, Active () 10 yrs, Active () 30 yrs, Active () 100 yrs, Active

() 300 yrs, Active () 1,000 yrs, Active () 3,000 yrs, Active () 10,000 yrs, Active

() 3 yrs, Passive () 10 yrs, Passive () 30 yrs, Passive () 100 yrs, Passive

() 300 yrs, Passive () 1,000 yrs, Passive () 3,000 yrs, Passive () 10,000 yrs, Passive

Figure C-2: Normalised frequency distributions for the atmosphere variable $X$ from a 10,000 member IC ensemble of the LS84 model in mid-winter at given instants in time. The method of coupling is given as active or passive and ICs are spread evenly along a transect spanning the range from $(X_1, Y_1, Z_1, T_1, S_1) = (-1.0, -2.5, -2.5, 3.8, 1.45 \times 10^{-3})$ to $(X_{10000}, Y_{10000}, Z_{10000}, T_{10000}, S_{10000}) = (2.5, 2.5, 2.5, 5.0, 1.8 \times 10^{-3})$. In all plots, the x-axis corresponds to $X$ and the y-axis corresponds to the frequency of ensemble members per occupuied bin; bin width = 0.01.



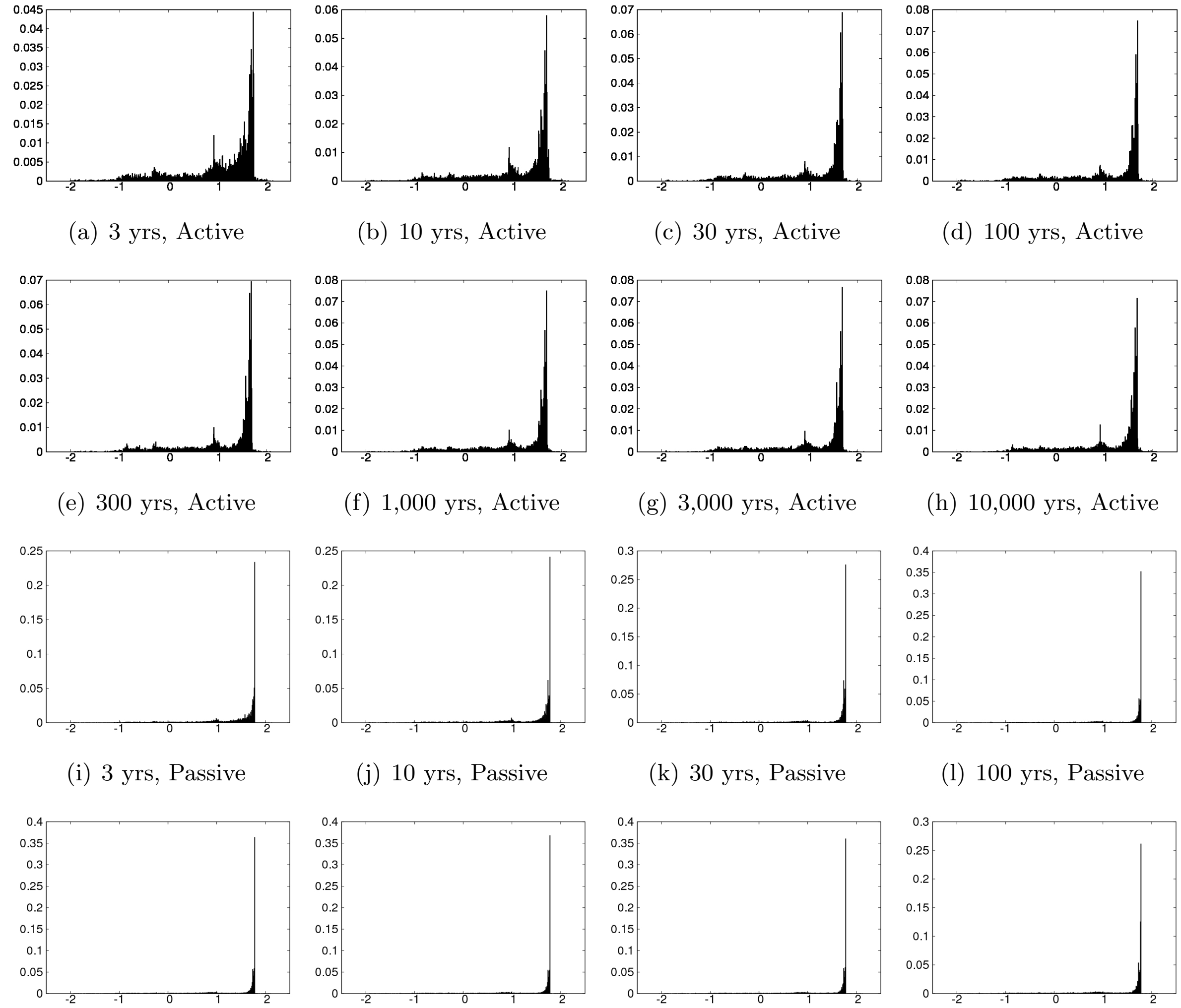
(a) 3 yrs, Active (b) 10 yrs, Active (c) 30 yrs, Active (d) 100 yrs, Active

(e) 300 yrs, Active (f) 1,000 yrs, Active (g) 3,000 yrs, Active (h) 10,000 yrs, Active

(i) 3 yrs, Passive (j) 10 yrs, Passive (k) 30 yrs, Passive (l) 100 yrs, Passive

(m) 300 yrs, Passive (n) 1,000 yrs, Passive (o) 3,000 yrs, Passive (p) 10,000 yrs, Passive

Figure C-3: Normalised frequency distributions for the atmosphere variable $Y$ from a 10,000 member IC ensemble of the LS84 model in mid-winter at given instants in time. The method of coupling is given as active or passive and ICs are spread evenly along a transect spanning the range from $(X_1, Y_1, Z_1, T_1, S_1) = (-1.0, -2.5, -2.5, 3.8, 1.45 \times 10^{-3})$ to $(X_{10000}, Y_{10000}, Z_{10000}, T_{10000}, S_{10000}) = (2.5, 2.5, 2.5, 5.0, 1.8 \times 10^{-3})$. In all plots, the x-axis corresponds to $Y$ and the y-axis corresponds to the frequency of ensemble members per occupuied bin; bin width = 0.01.



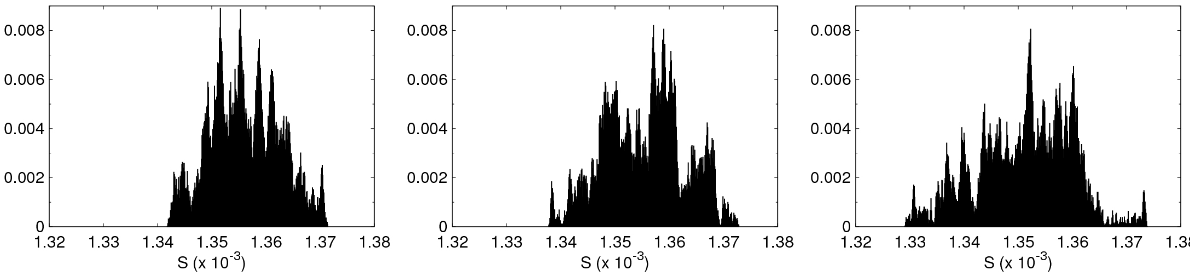
(a) 3 yrs, Active (b) 10 yrs, Active (c) 30 yrs, Active (d) 100 yrs, Active

(e) 300 yrs, Active (f) 1,000 yrs, Active (g) 3,000 yrs, Active (h) 10,000 yrs, Active

(i) 3 yrs, Passive (j) 10 yrs, Passive (k) 30 yrs, Passive (l) 100 yrs, Passive

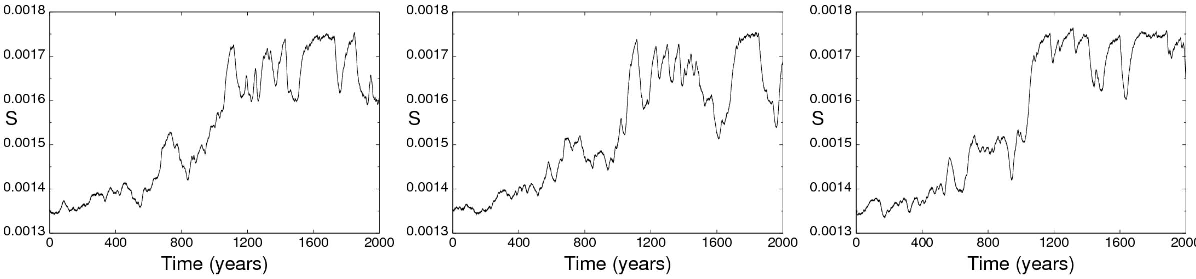
(m) 300 yrs, Passive (n) 1,000 yrs, Passive (o) 3,000 yrs, Passive (p) 10,000 yrs, Passive

Figure C-4: Normalised frequency distributions for the atmosphere variable $Z$ from a 10,000 member IC ensemble of the LS84 model in mid-winter at given instants in time. The method of coupling is given as active or passive and ICs are spread evenly along a transect spanning the range from $(X_1, Y_1, Z_1, T_1, S_1) = (-1.0, -2.5, -2.5, 3.8, 1.45 \times 10^{-3})$ to $(X_{10000}, Y_{10000}, Z_{10000}, T_{10000}, S_{10000}) = (2.5, 2.5, 2.5, 5.0, 1.8 \times 10^{-3})$. In all plots, the x-axis corresponds to $Z$ and the y-axis corresponds to the frequency of ensemble members per occupuied bin; bin width = 0.01.



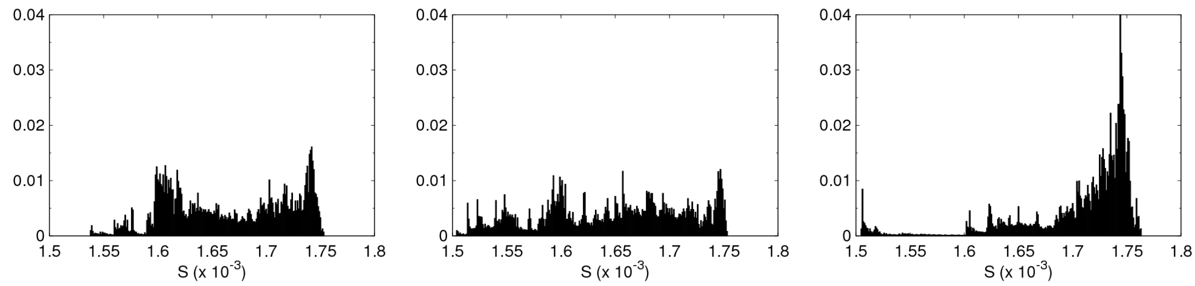

(a) IC 1 (b) IC 2 (c) IC 3

Figure C-5: Normalised frequency distributions from three single trajectories of $S$ from the LS84 model with passive coupling and a fixed value of $F_m = 8$, with different initial values in $T$. The three ICs correspond to: *IC 1* $= (0.167, 1.045, -0.547, 5.248, 1.352 \times 10^{-3})$; *IC 2* $= (0.167, 1.045, -0.547, 5.348, 1.352 \times 10^{-3})$; *IC 3* $= (0.167, 1.045, -0.547, 5.448, 1.352 \times 10^{-3})$. In each plot, the y-axis corresponds to the frequency of ensemble members per occupuied bin; bin width $= 1 \times 10^{-7}$.




(a) IC 1 (b) IC 2 (c) IC 3

Figure C-6: Evolution of three single trajectories of $S$ from the LS84 model with passive coupling under climate change, with different initial values in $T$. The mean value of $F$ decreases from $F_m = 8$ to $F_m = 7$ over the first 1,000 years and then remains constant at $F_m = 7$ for the following 1,000 years. The three ICs correspond to: *IC 1* $= (0.167, 1.045, -0.547, 5.248, 1.352 \times 10^{-3})$; *IC 2* $= (0.167, 1.045, -0.547, 5.348, 1.352 \times 10^{-3})$; *IC 3* $= (0.167, 1.045, -0.547, 5.448, 1.352 \times 10^{-3})$.




(a) IC 1 (b) IC 2 (c) IC 3

Figure C-7: Normalised frequency distributions from three single trajectories of $S$ from the LS84 model over a 1,000 year period following a linear change in $F_m$ from $F_m = 8$ to $F_m = 7$ over the previous 1,000 years (as in fig. 5.20). The three ICs correspond to: *IC 1* $= (0.167, 1.045, -0.547, 5.248, 1.352 \times 10^{-3})$; *IC 2* $= (0.167, 1.045, -0.547, 5.348, 1.352 \times 10^{-3})$; *IC 3* $= (0.167, 1.045, -0.547, 5.448, 1.352 \times 10^{-3})$. In each plot, the y-axis corresponds to the frequency of ensemble members per occupuied bin; bin width $= 1 \times 10^{-6}$.

# Appendix D

### Preparatory questions for informal discussions with insurance practitioners

- What are the main strategic issues being considered by insurers that may be influenced by knowledge of climate change?
- Can you identify any insurance issues that are relevant on time scales greater than one year?
- How is climate change factored into existing insurance decisions?
- Over what time scales is climate change information considered relevant to insurance strategies?
- In what specific areas of insurance activity is climate model information being utilised?
- How might climate model information on multi-decadal time scales be relevant for strategic planning with the insurance industry?

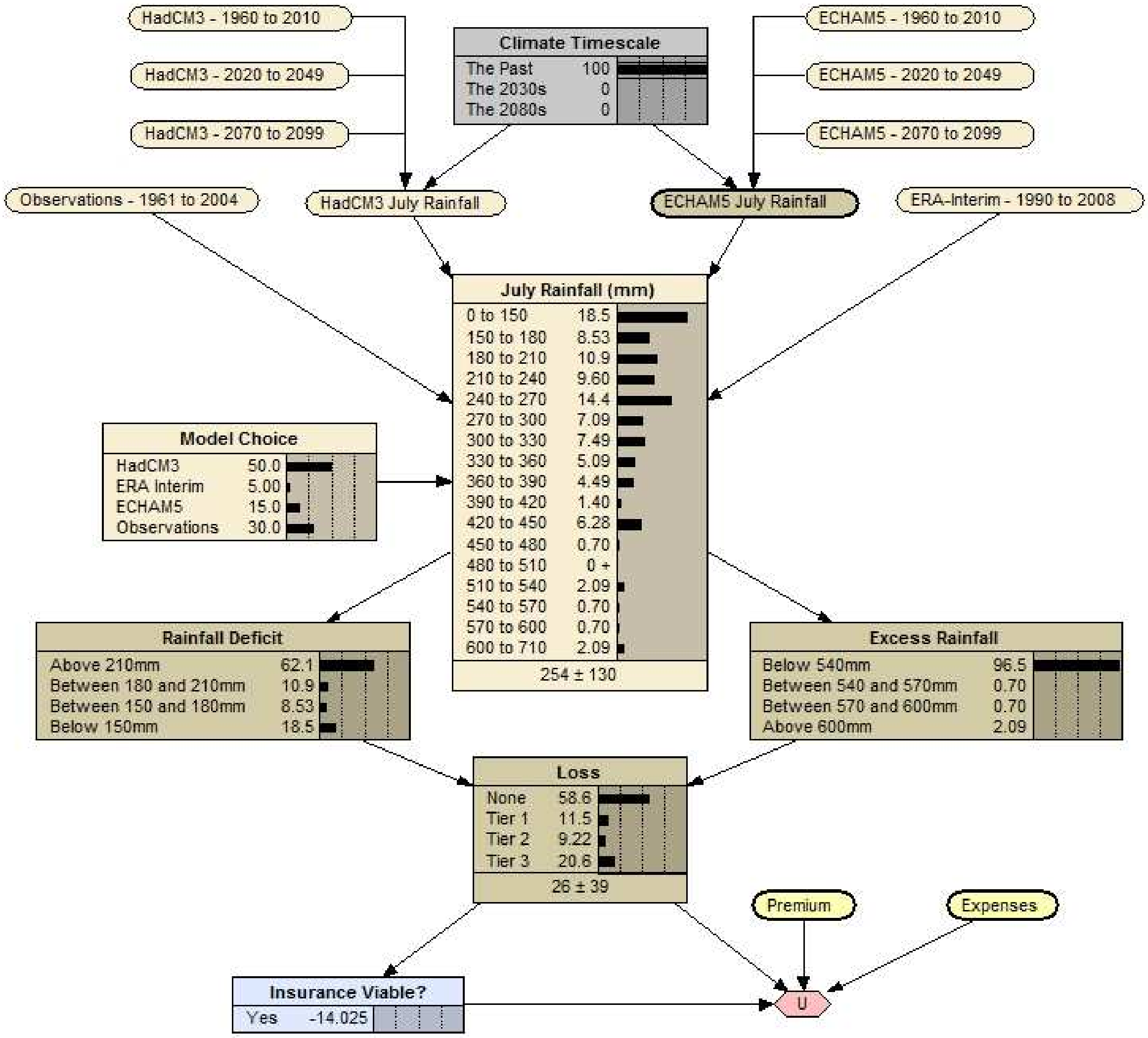



Figure D-1: BN to inform viability of weather index insurance for rice production in Kolhapur, India. The relative weights of the states in the *Model Choice* node have been arbitrarily selected and the *Climate Timescale* set to the past. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

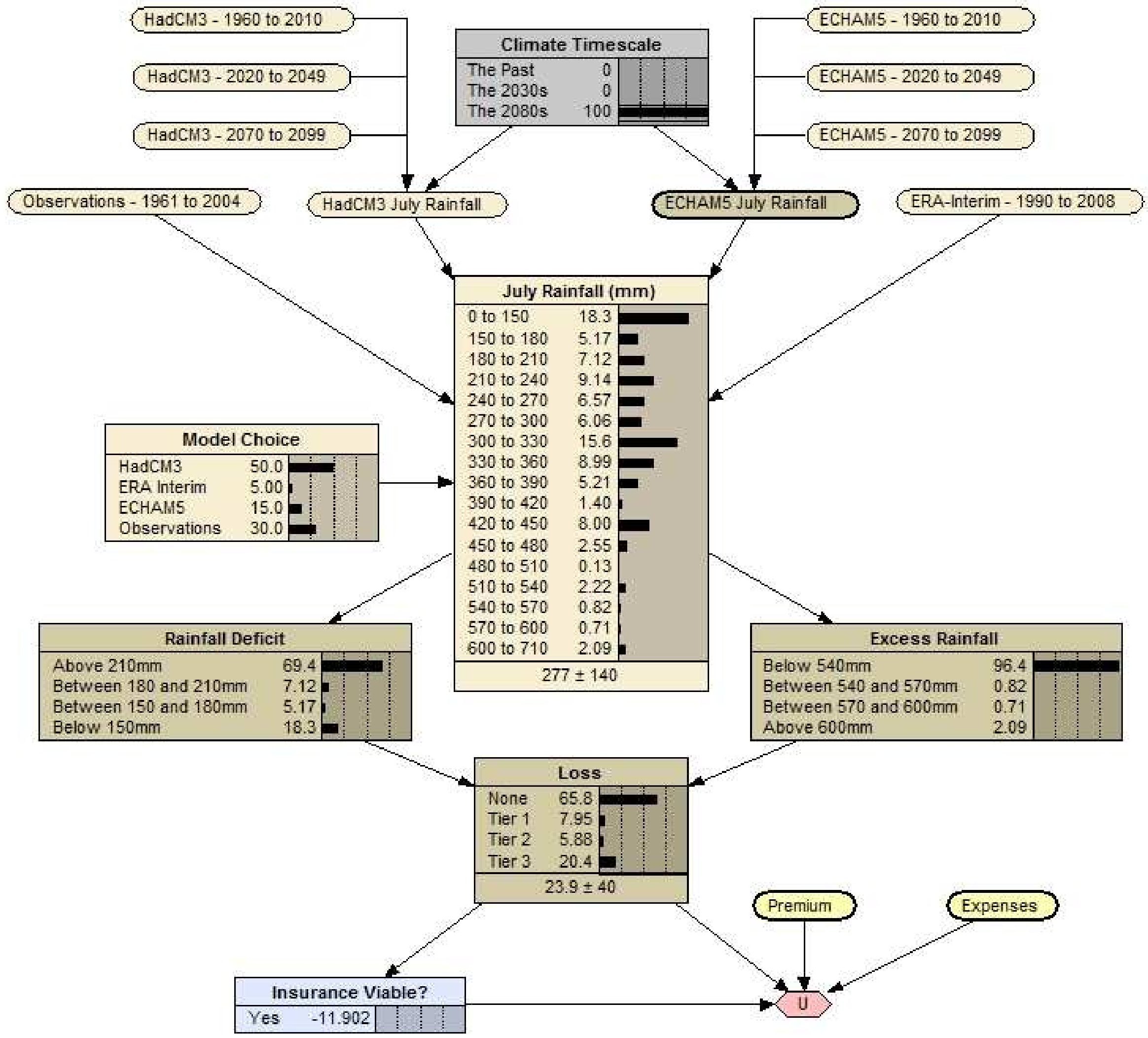



Figure D-2: BN to inform viability of weather index insurance for rice production in Kolhapur, India. The relative weights of the states in the *Model Choice* node have been arbitrarily selected and the *Climate Timescale* set to the 2080s. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

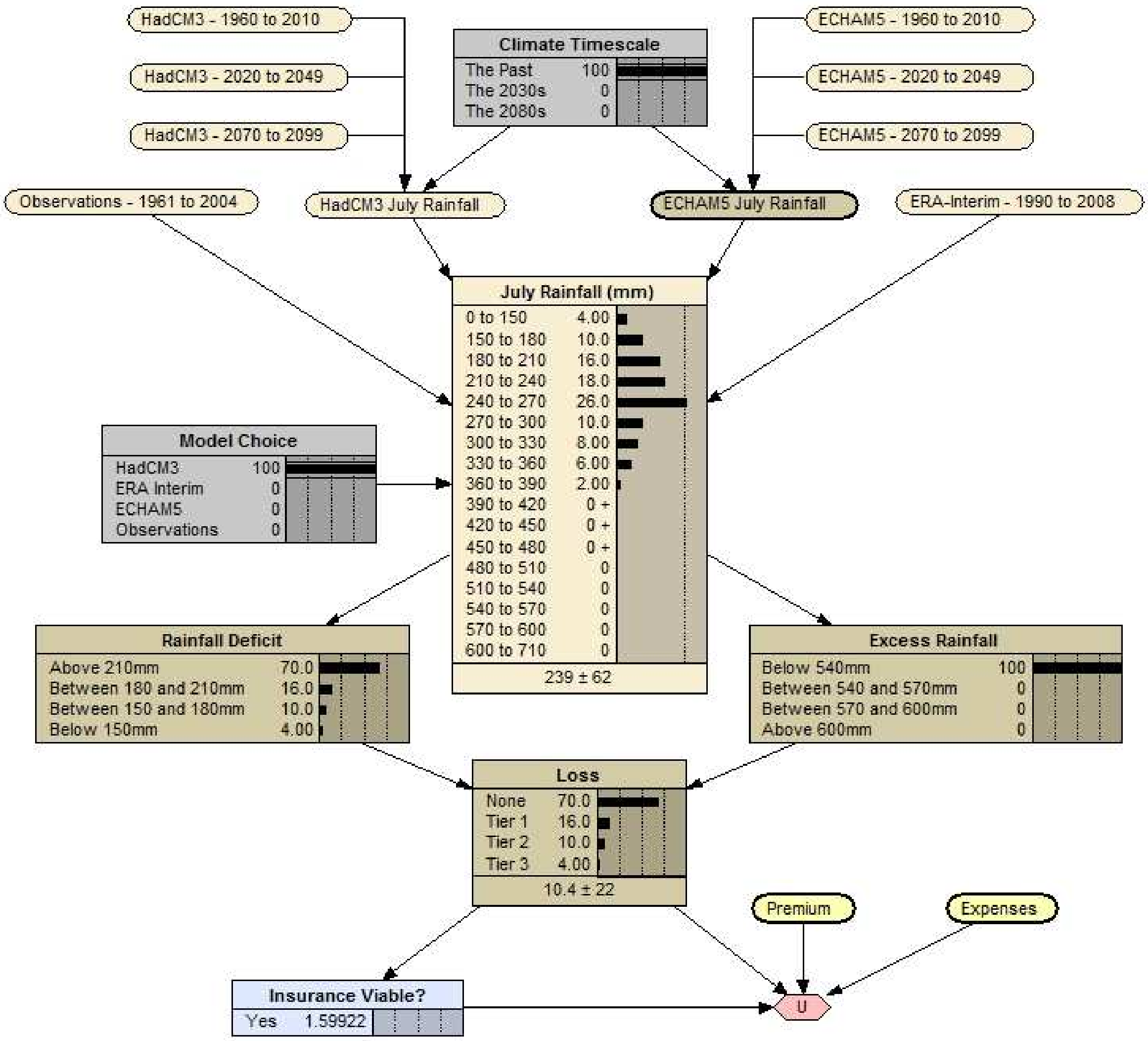



Figure D-3: BN to inform viability of weather index insurance for rice production in Kolhapur, India. The HadCM3 model has been selected in the *Model Choice* node and the *Climate Timescale* set to the past. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

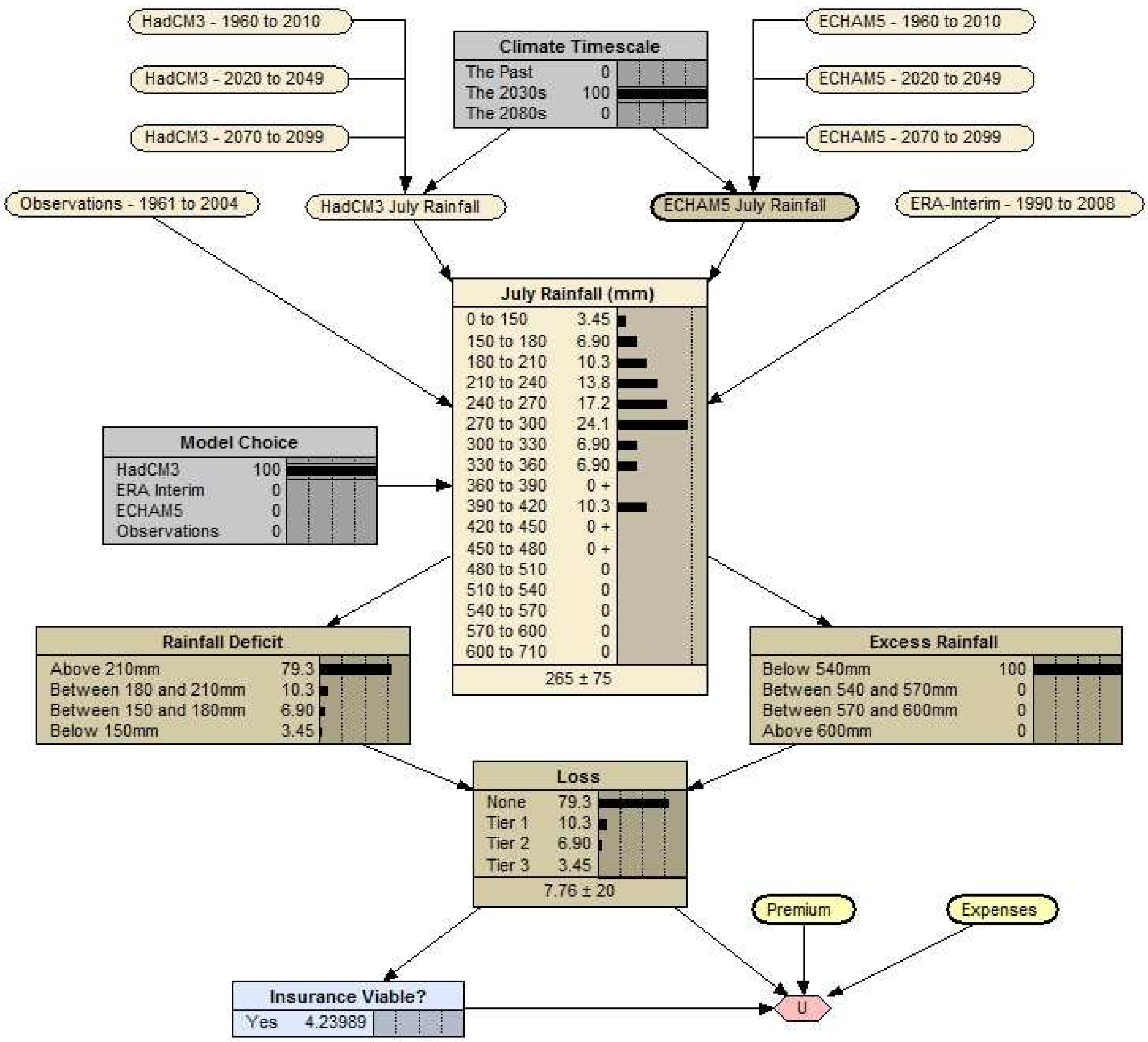



Figure D-4: BN to inform viability of weather index insurance for rice production in Kolhapur, India. The HadCM3 model has been selected in the *Model Choice* node and the *Climate Timescale* set to the 2030s. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

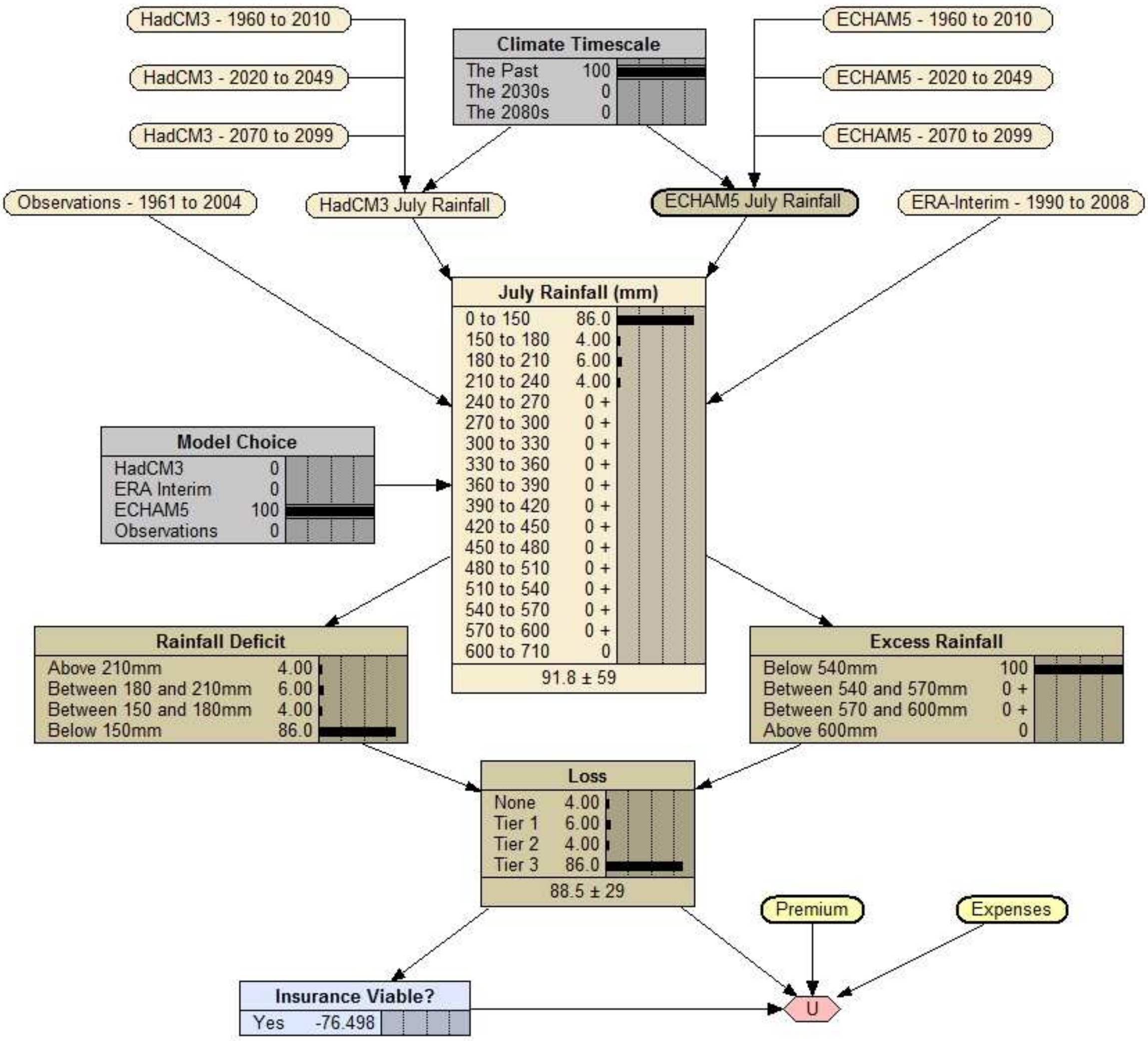



Figure D-5: BN to inform viability of weather index insurance for rice production in Kolhapur, India. The ECHAM5 model has been selected in the *Model Choice* node and the *Climate Timescale* set to the past. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

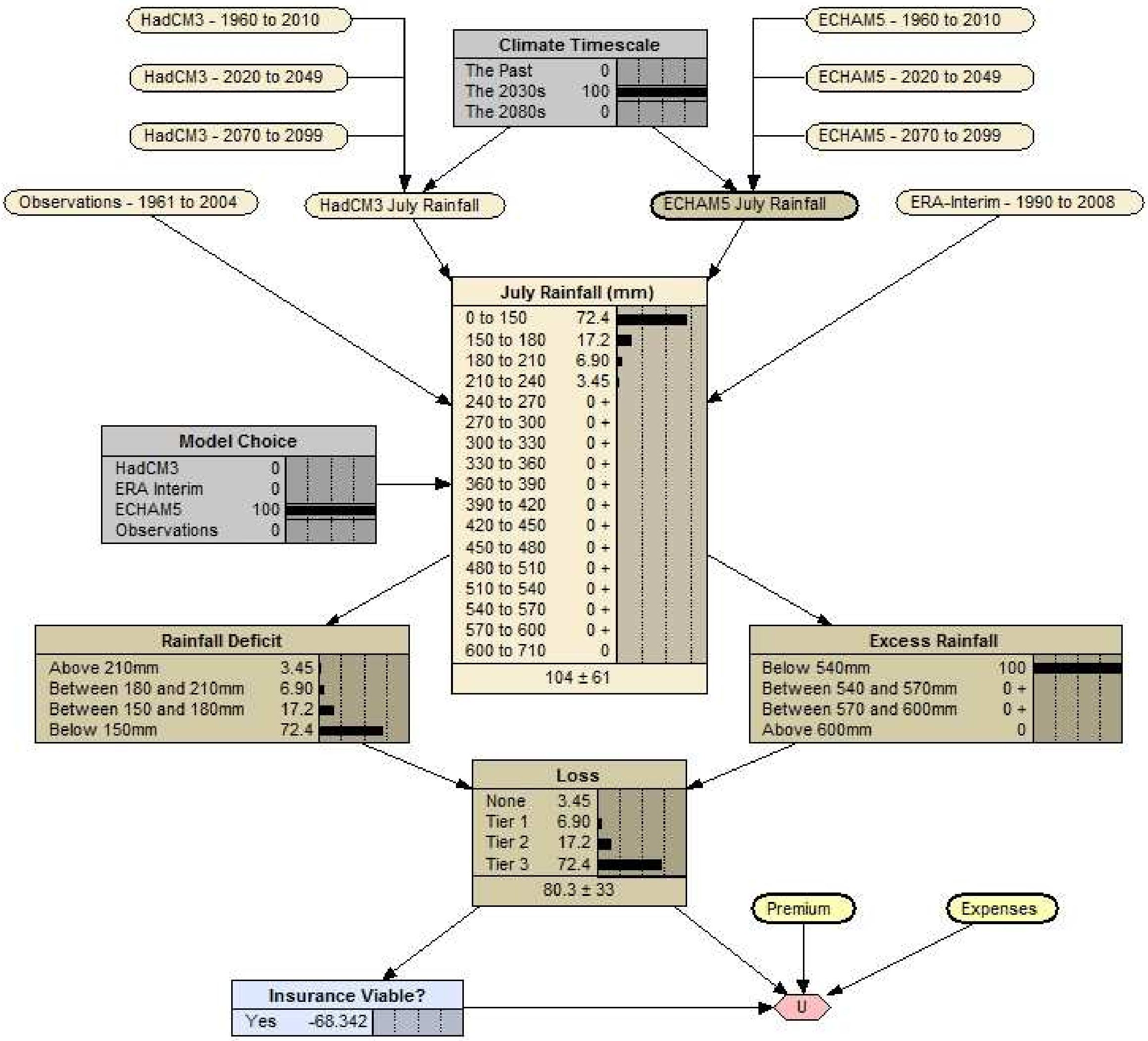



Figure D-6: BN to inform viability of weather index insurance for rice production in Kolhapur, India. The ECHAM5 model has been selected in the *Model Choice* node and the *Climate Timescale* set to the 2030s. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

### BNs incorporating bias corrected model data

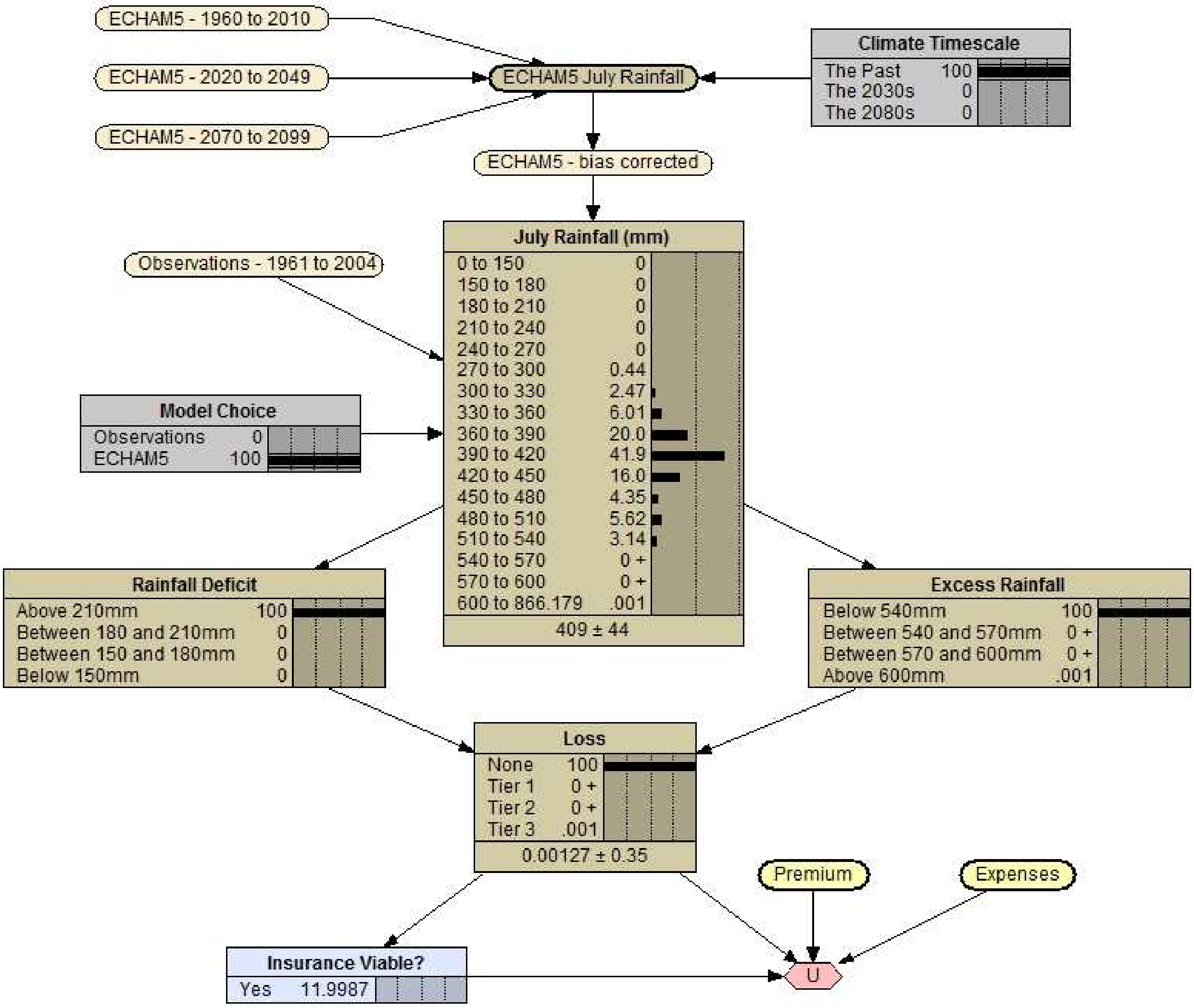



Figure D-7: BN to inform viability of weather index insurance for rice production in Kolhapur, India. The ECHAM5 model has been selected in the *Model Choice* node and a bias correction has been applied according to table 6.6. The *Climate Timescale* is set to the past. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

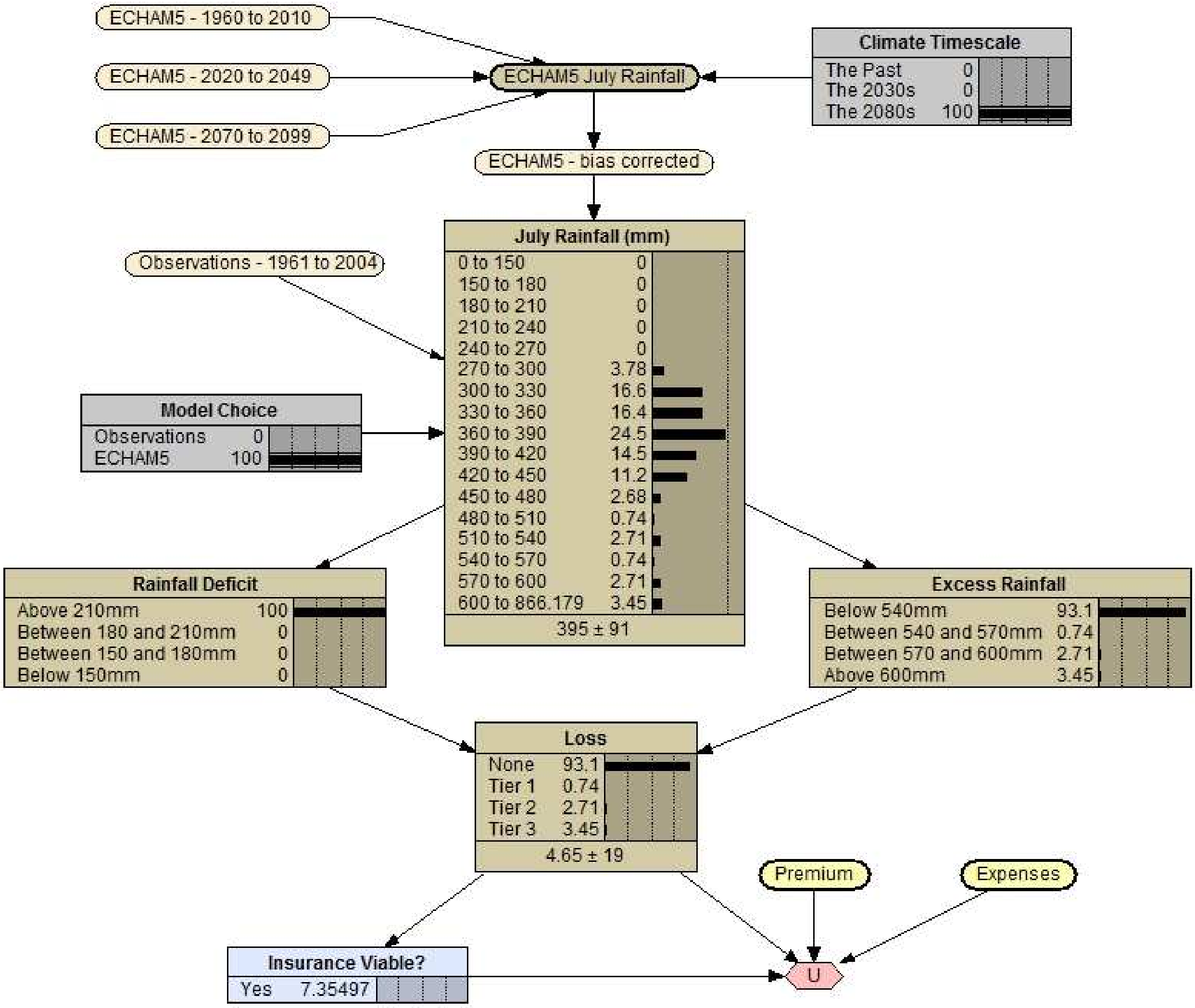



Figure D-8: BN to inform viability of weather index insurance for rice production in Kolhapur, India. The ECHAM5 model has been selected in the *Model Choice* node and a bias correction has been applied according to table 6.6. The *Climate Timescale* is set to the 2080s. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

## BNs with observational data altered using model output anomalies

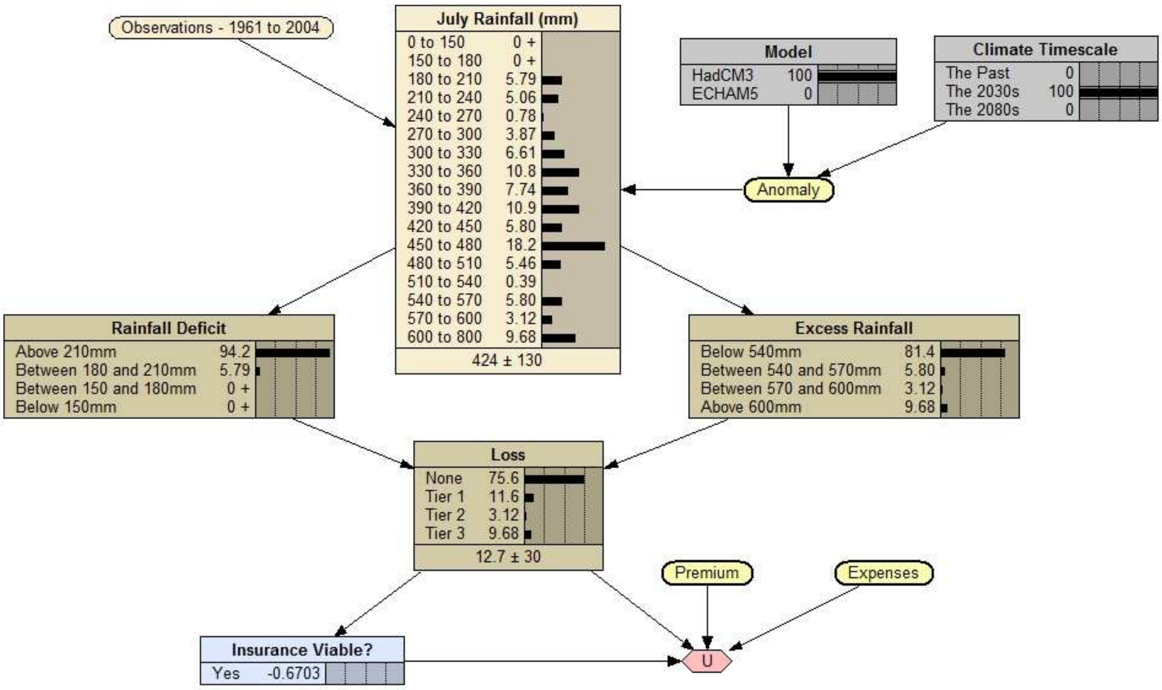



Figure D-9: BN to inform viability of weather index insurance for rice production in Kolhapur, India. Observational data is altered using anomaly information from the HadCM3 model projections according to table 6.7. The *Climate Timescale* is set to the 2030s. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

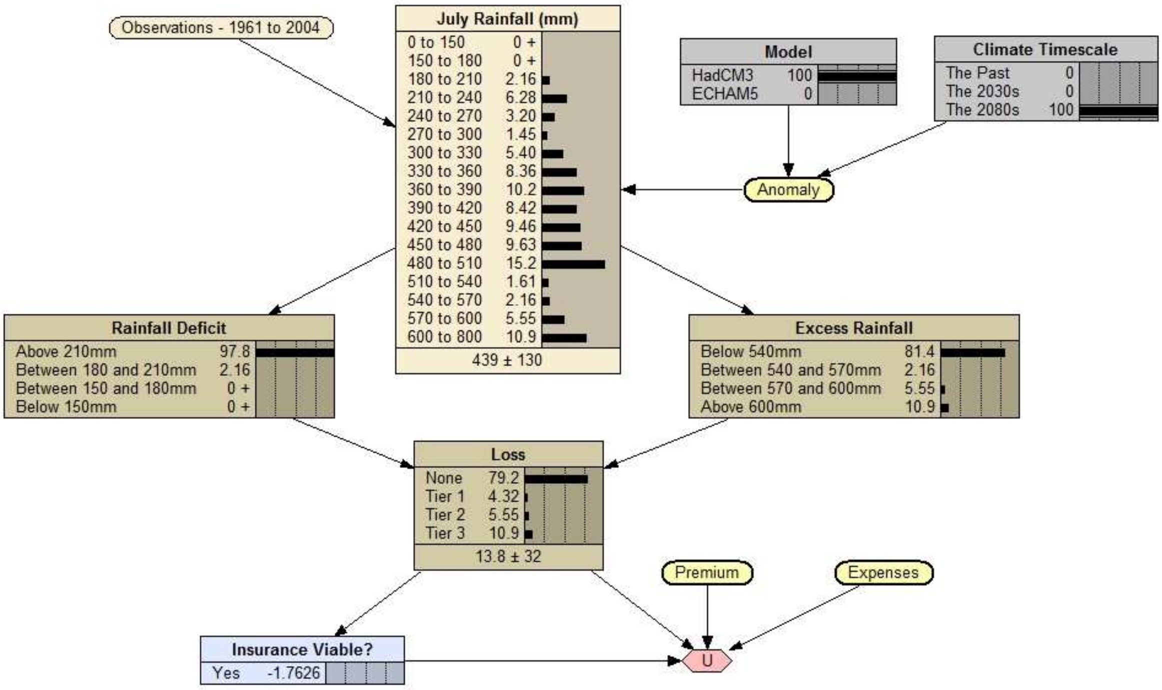



Figure D-10: BN to inform viability of weather index insurance for rice production in Kolhapur, India. Observational data is altered using anomaly information from the HadCM3 model projections according to table 6.7. The *Climate Timescale* is set to the 2080s. Constants are given the values: premium = 15% of maximum indemnity and expenses = 3% of maximum indemnity.

# Glossary

| | |
|---|---|
| Transitivity | A transitive system is one in which a trajectory can pass through all of the possible system states. |
| Intransivity | An intransitive system is one in which a trajectory will only pass through a subset of all possible system states; the subset is determined by the initial state and once established, will persist forever. |
| Almost intransitivity | A system displays almost intransitivity if the statistics of a single trajectory taken over infinitely long time intervals are independent of initial conditions, but the statistics of a single trajectory taken over very long but finite intervals depend very much upon initial conditions. |
| Ergodic hypothesis | The assertion that the probability distribution derived from many iterations of a single orbit is the same as the probability distribution derived from a high-order iteration of many orbits with a range of different initial conditions. |
| Hysteresis | Exhibited by a system whose current state is a function of the past evolution of the system. |
| Psuedo-attractor | The set of states towards which a trajectory evolves for a dynamical system subject to time-periodic forcings. |