

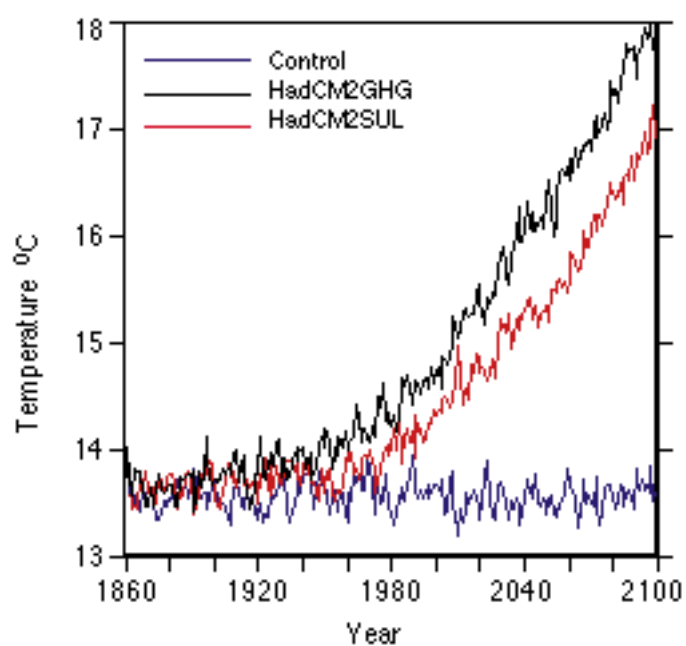


Figure 5.1: Global mean temperature time series (°C) for HadCM2CON, HadCM2GHG and HadCM2SUL.

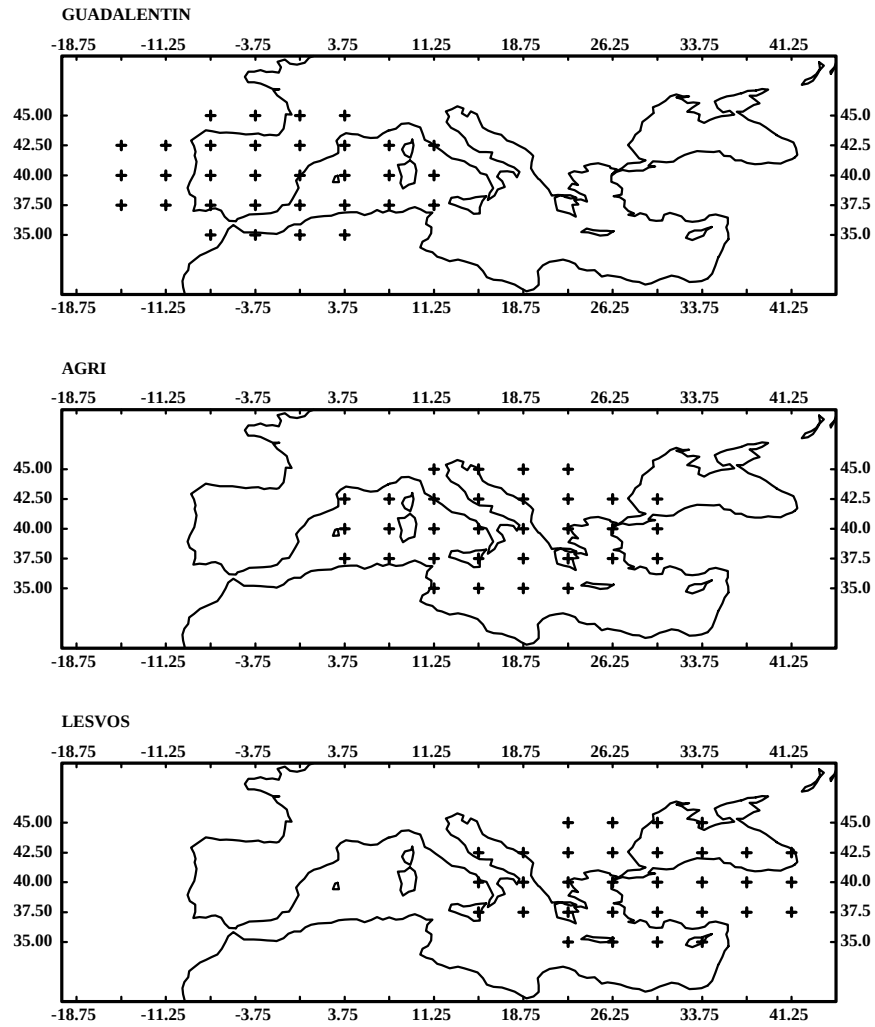


Figure 5.2: Grids used for the three study regions in the new typing scheme.

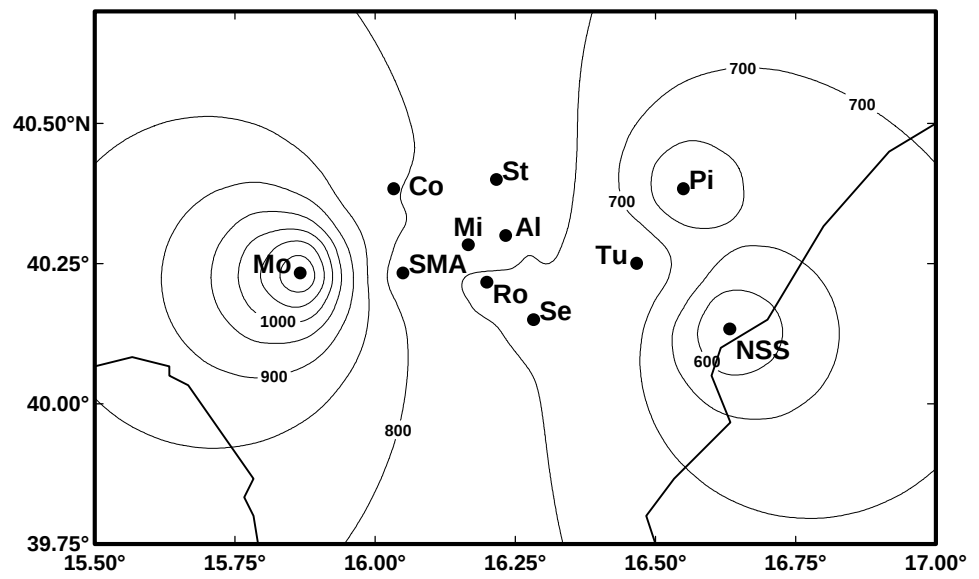


Figure 5.3: Mean annual rainfall (mm) and the location of the 11 Agri stations. Al = Aliano, Co = Corleto Perticara, Mi = Missanello, Mo = Moliterno, NSS = Nova Siri Scalo, Pi = Pisticci, Ro = Roccanova, Se = Senise, SMA = San Martino d'Agri, St = Stigliano, Tu = Tursi.



Figure 5.4: Map of the Agri Basin. Michelin Map 431, © Michelin Travel Publications, 2000, Authorisation no 0006322.

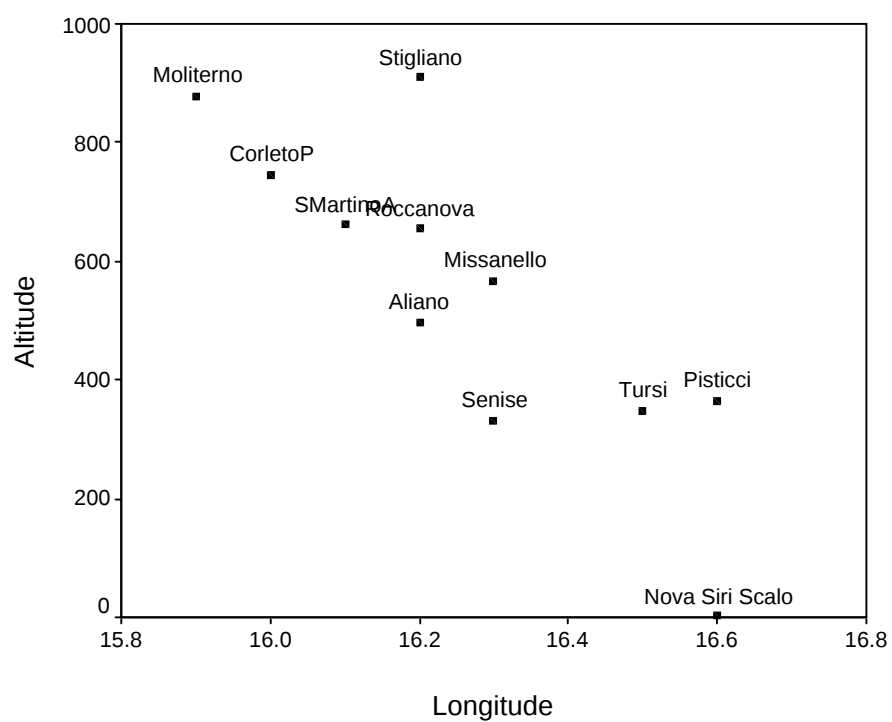


Figure 5.5: Scatter plot of altitude (m) versus longitude (°E) for 11 stations in the Agri Basin.

Figure 5.6a:

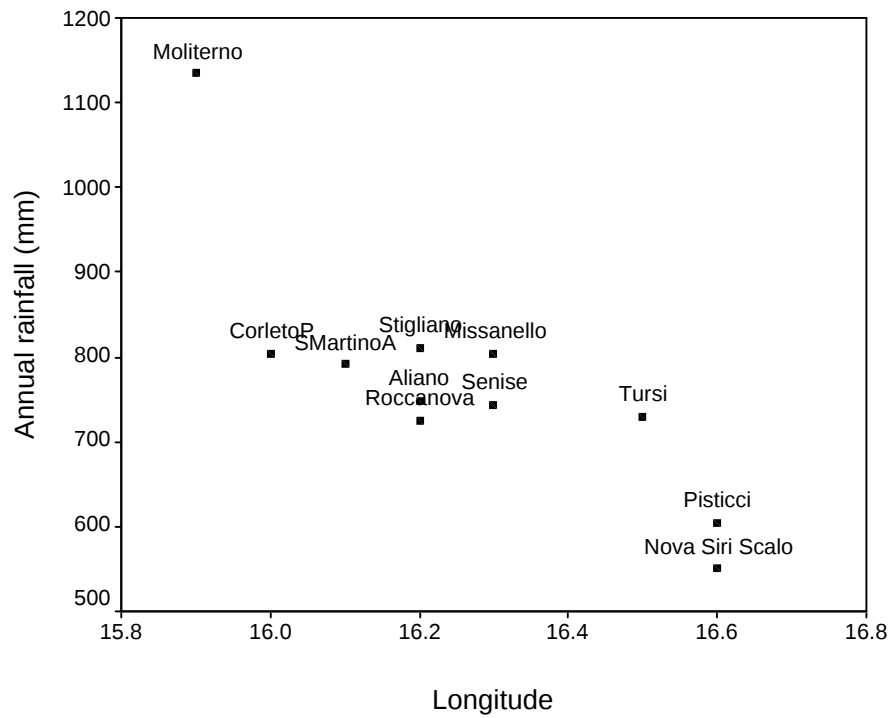


Figure 5.6b:

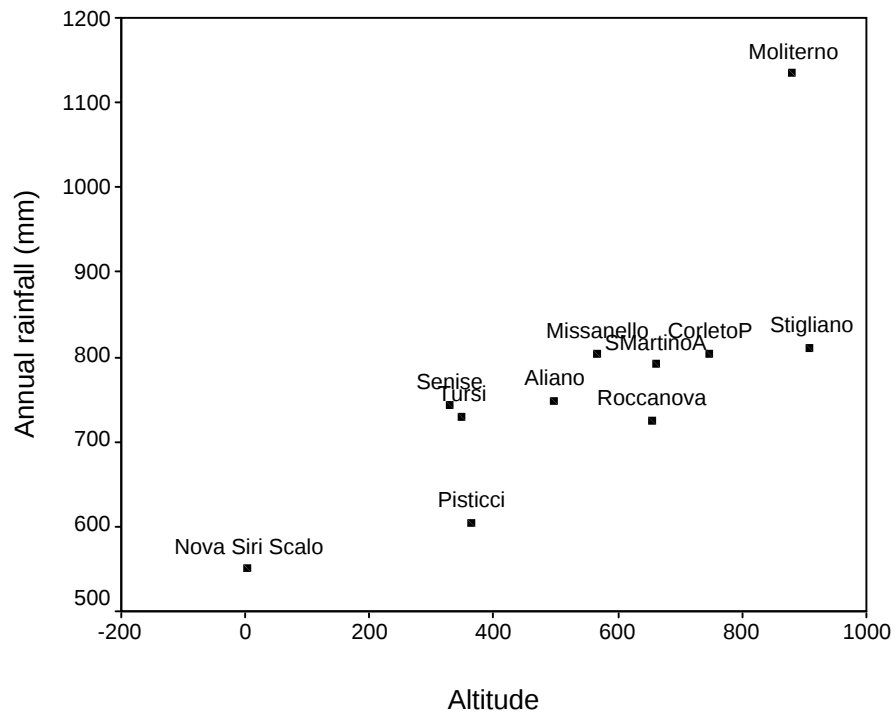


Figure 5.6: Scatter plot of mean annual rainfall (mm) versus (a) longitude (°E) and (b) altitude (m) for 11 stations in the Agri Basin.

Figure 5.7a:

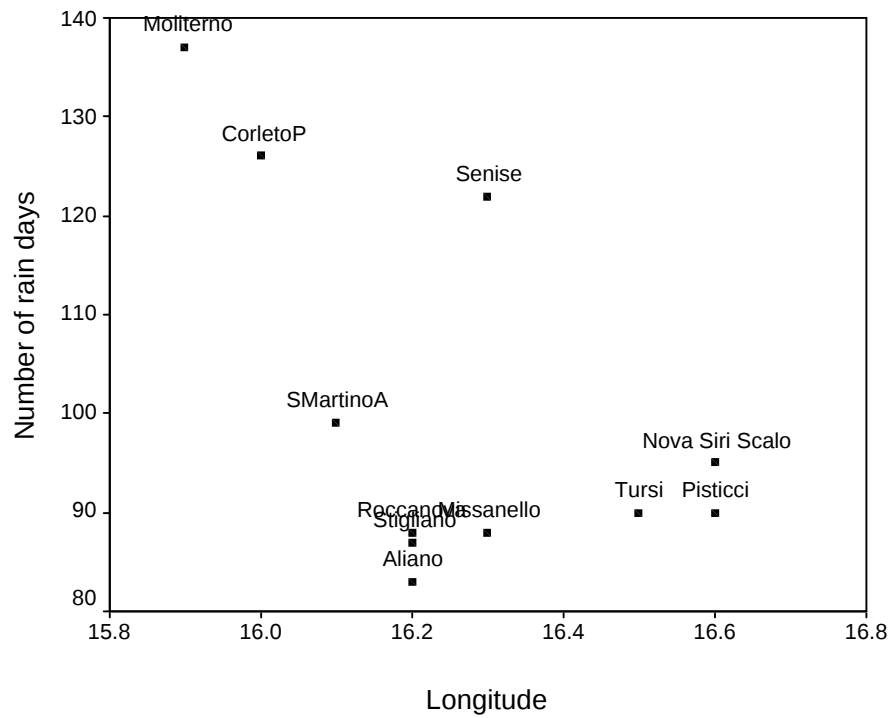


Figure 5.7b:

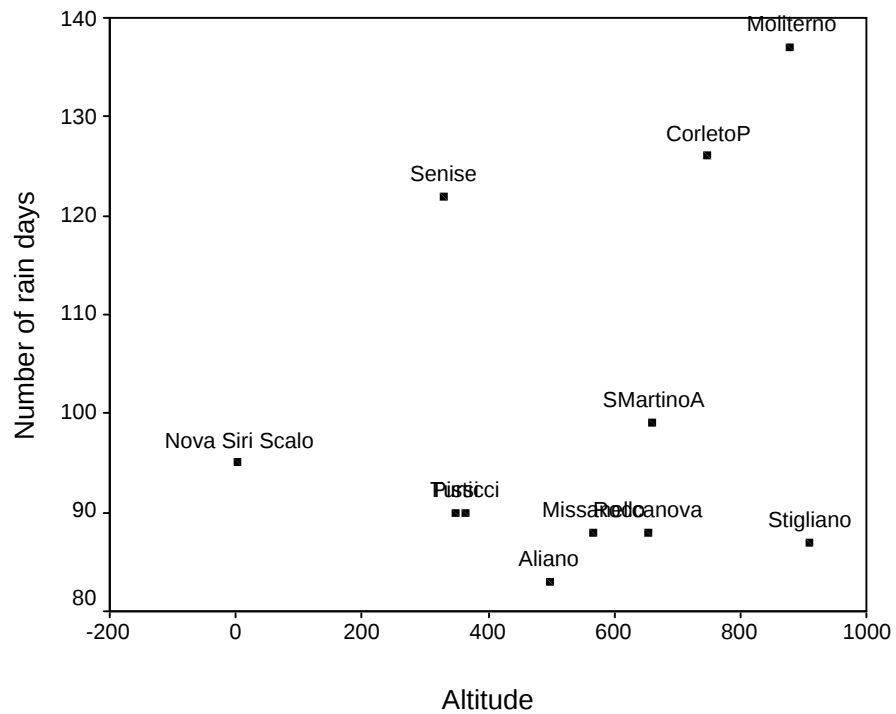


Figure 5.7: Scatter plot of mean number of rain days versus (a) longitude (°E) and (b) altitude (m) for 11 stations in the Agri Basin.

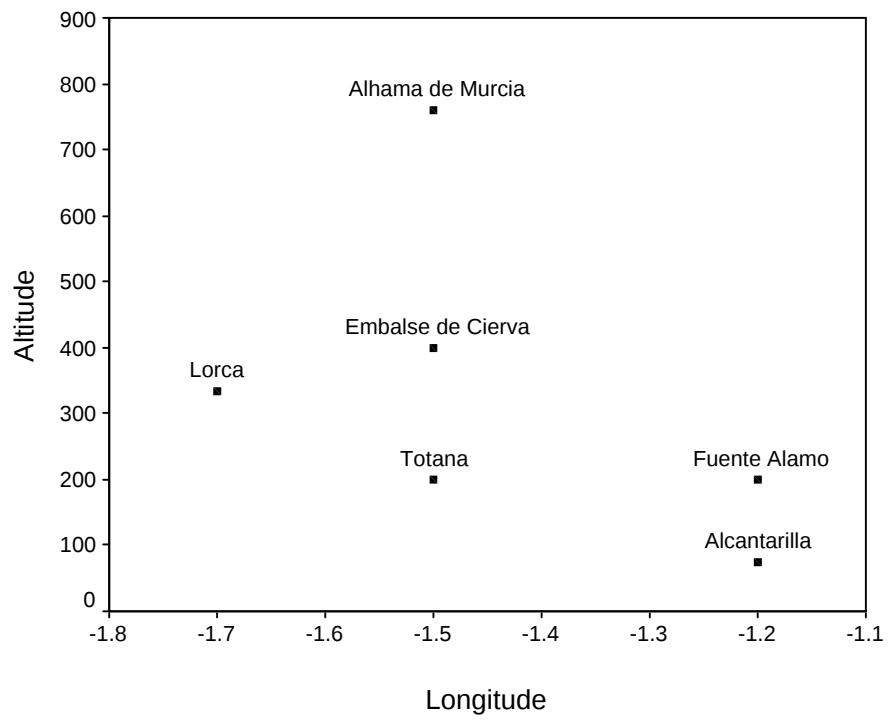


Figure 5.8: Scatter plot of altitude (m) versus longitude (°W) for six stations in the Guadalentin Basin.

Figure 5.9a:

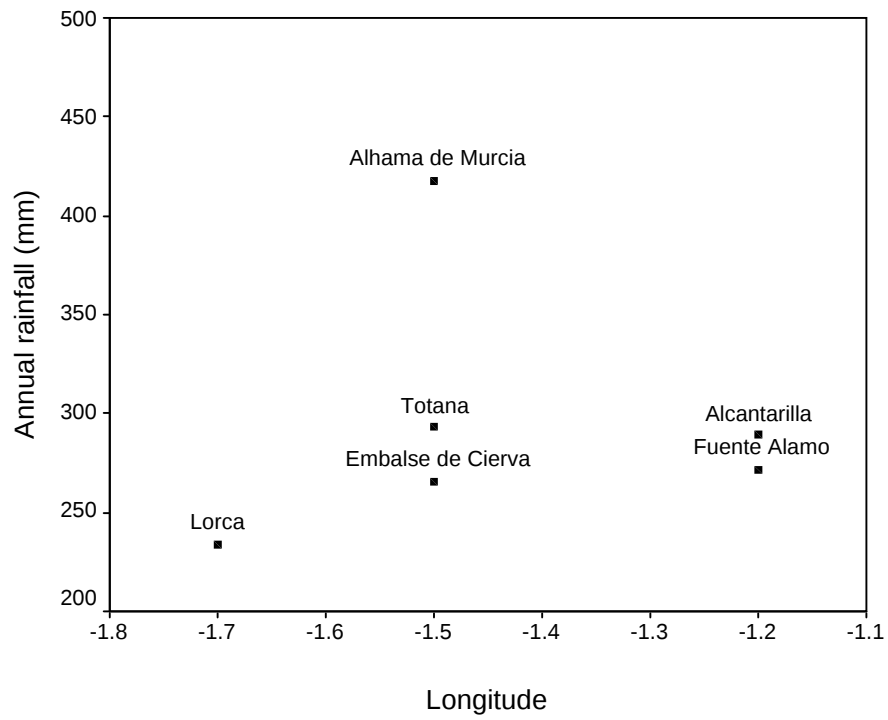


Figure 5.9b:

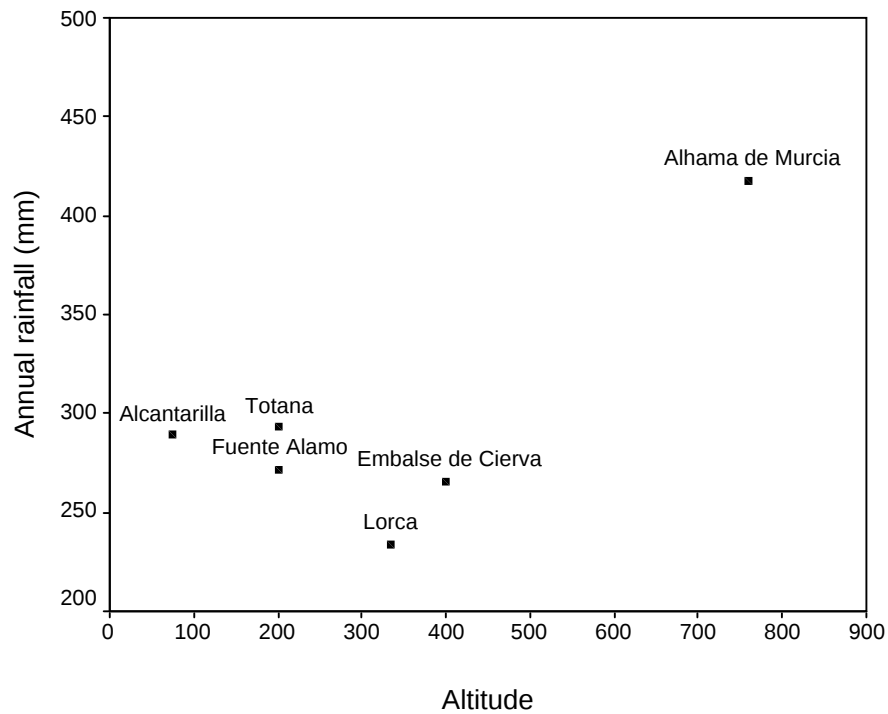


Figure 5.9: Scatter plot of mean annual rainfall (mm) versus (a) longitude (°W) and (b) altitude (m) for six stations in the Guadalentin Basin.

Figure 5.10a:

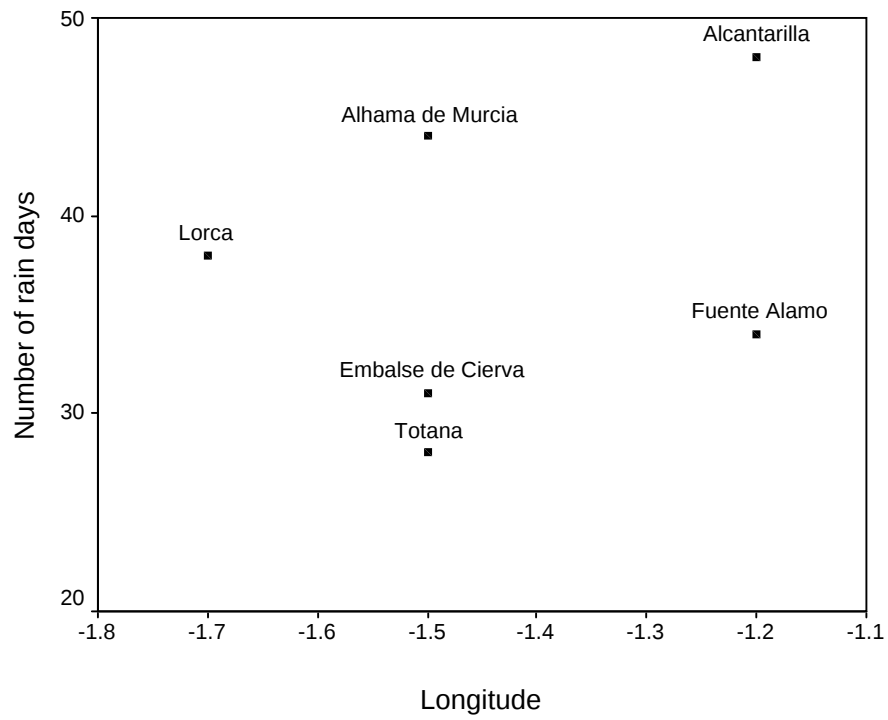


Figure 5.10b:

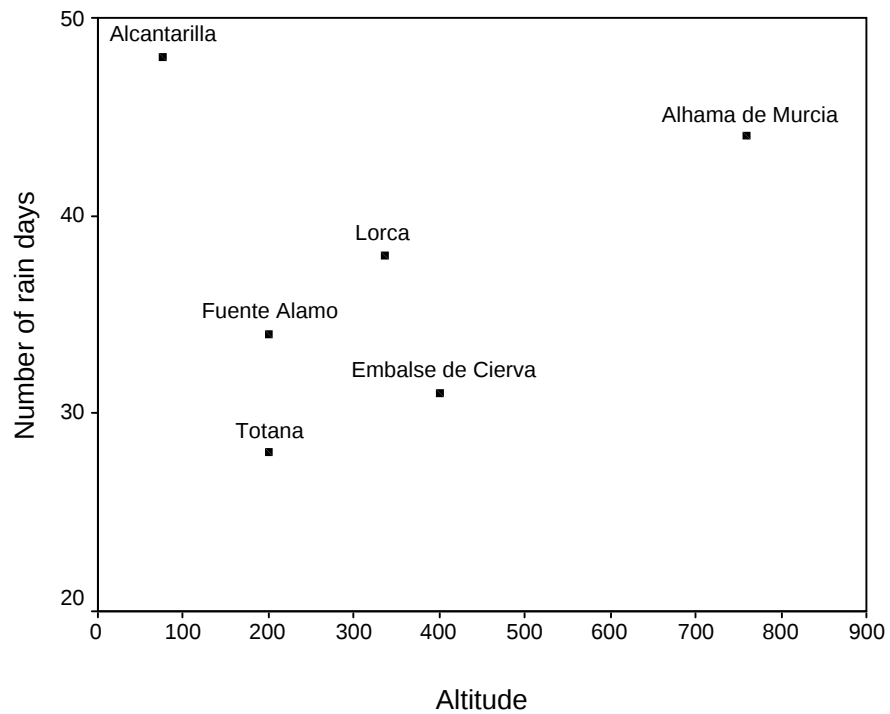


Figure 5.10: Scatter plot of mean number of rain days versus (a) longitude (°W) and (b) altitude (m) for six stations in the Guadalentin Basin.

Figure 5.11a:

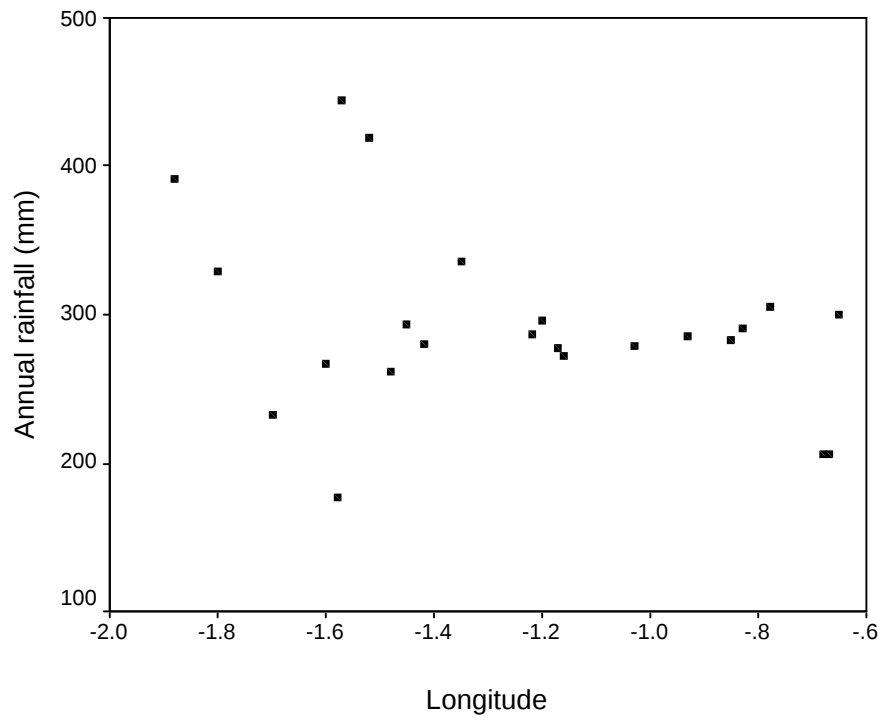


Figure 5.11b:

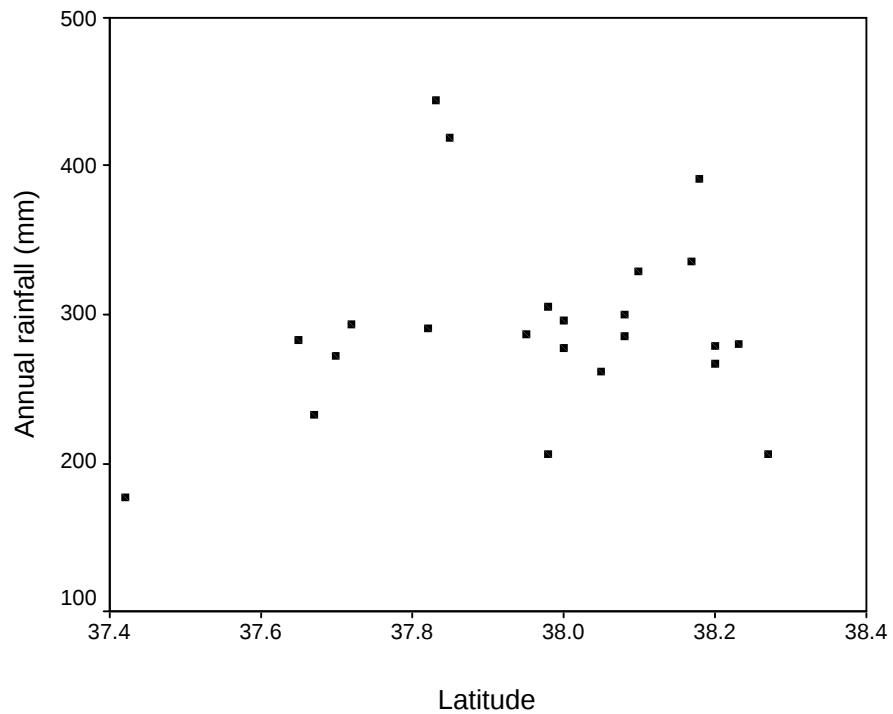


Figure 5.11: Scatter plot of mean annual rainfall (mm) versus (a) longitude (°W) and (b) latitude (°N) for 22 stations in the Guadalentin Basin.

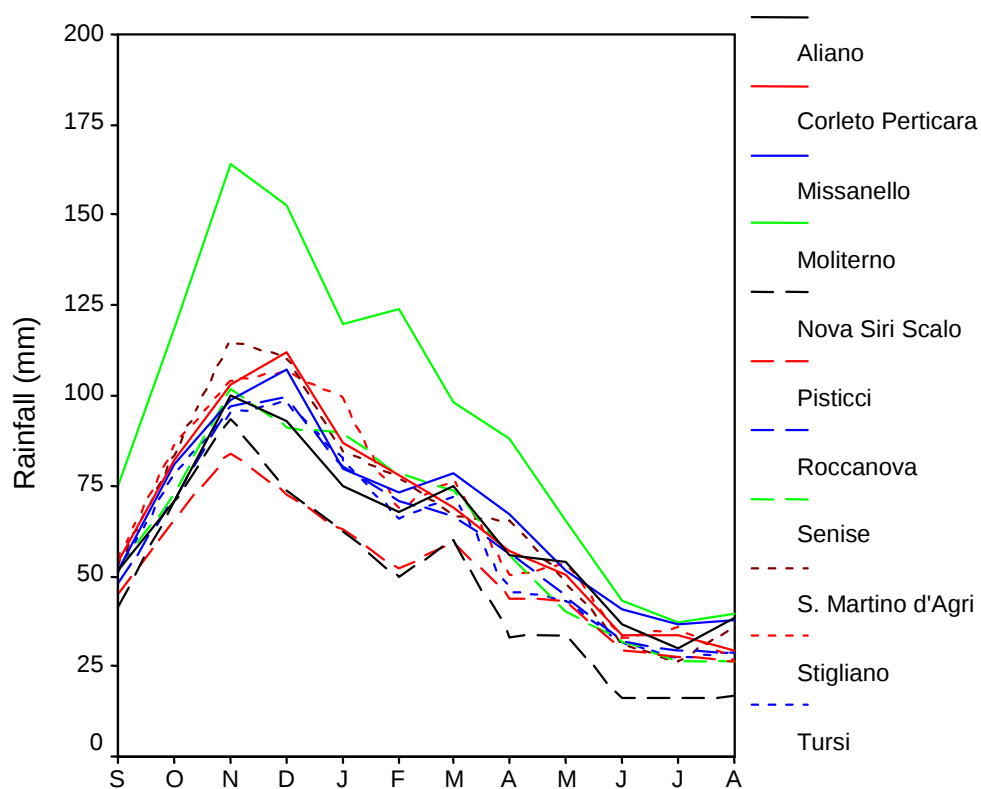


Figure 5.12: Seasonal cycle of mean monthly rainfall (mm) for 11 stations in the Agri Basin.

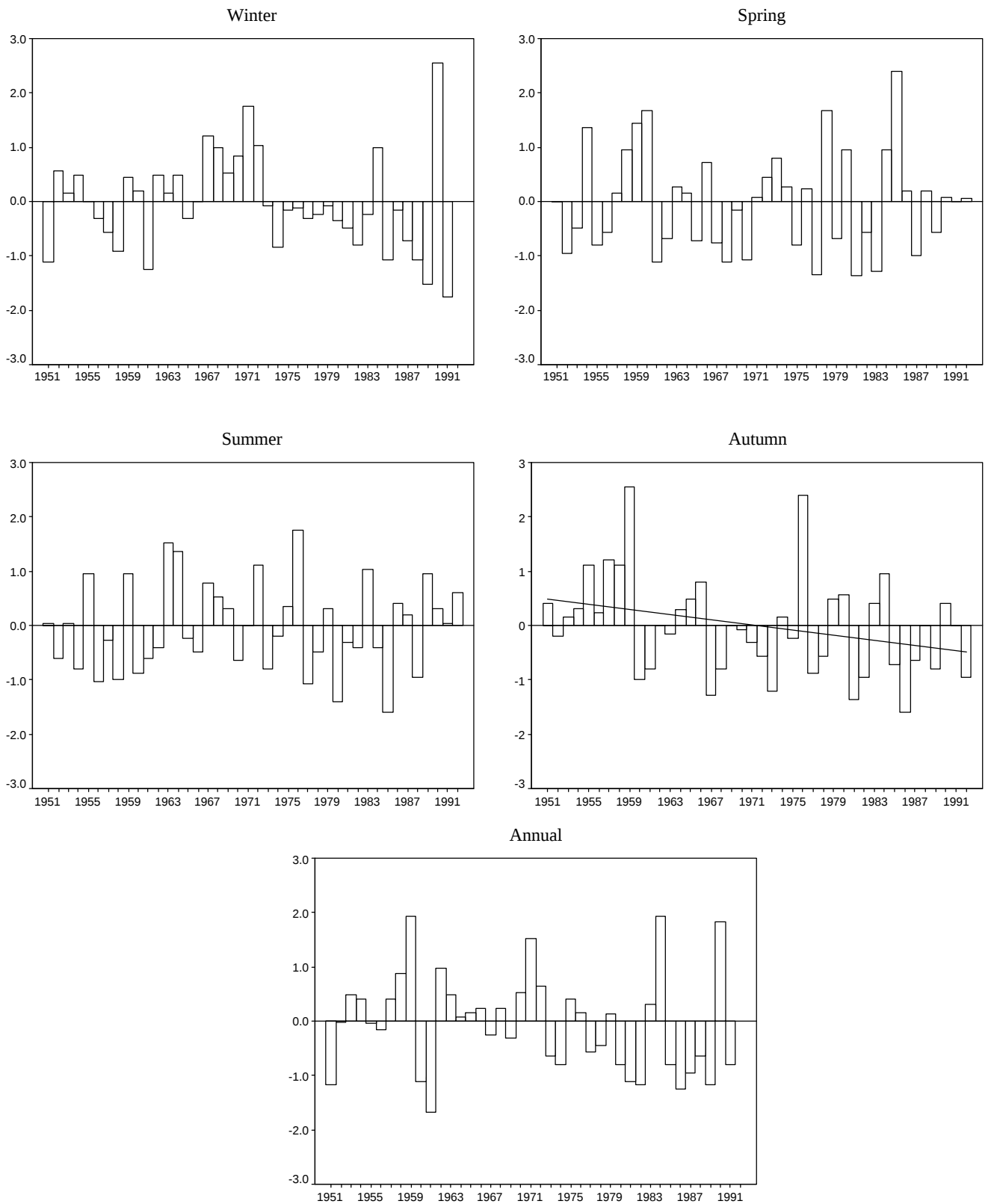


Figure 5.13: Annual and seasonal standardised anomaly indices of rainfall amount for 11 stations in the Agri Basin.

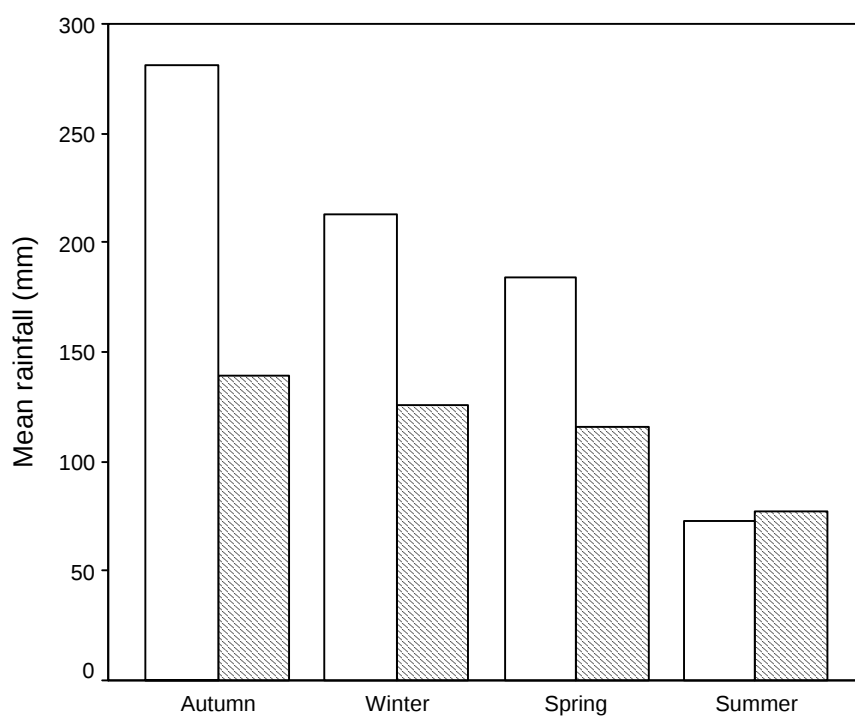


Figure 5.14: Mean seasonal rainfall totals (mm) for 1951-1960 (open bars) and 1981-1990 (hatched bars) for Pisticci in the Agri Basin. Annual rainfall: 1951-1960 = 758 mm, 1981-1990 = 461 mm.

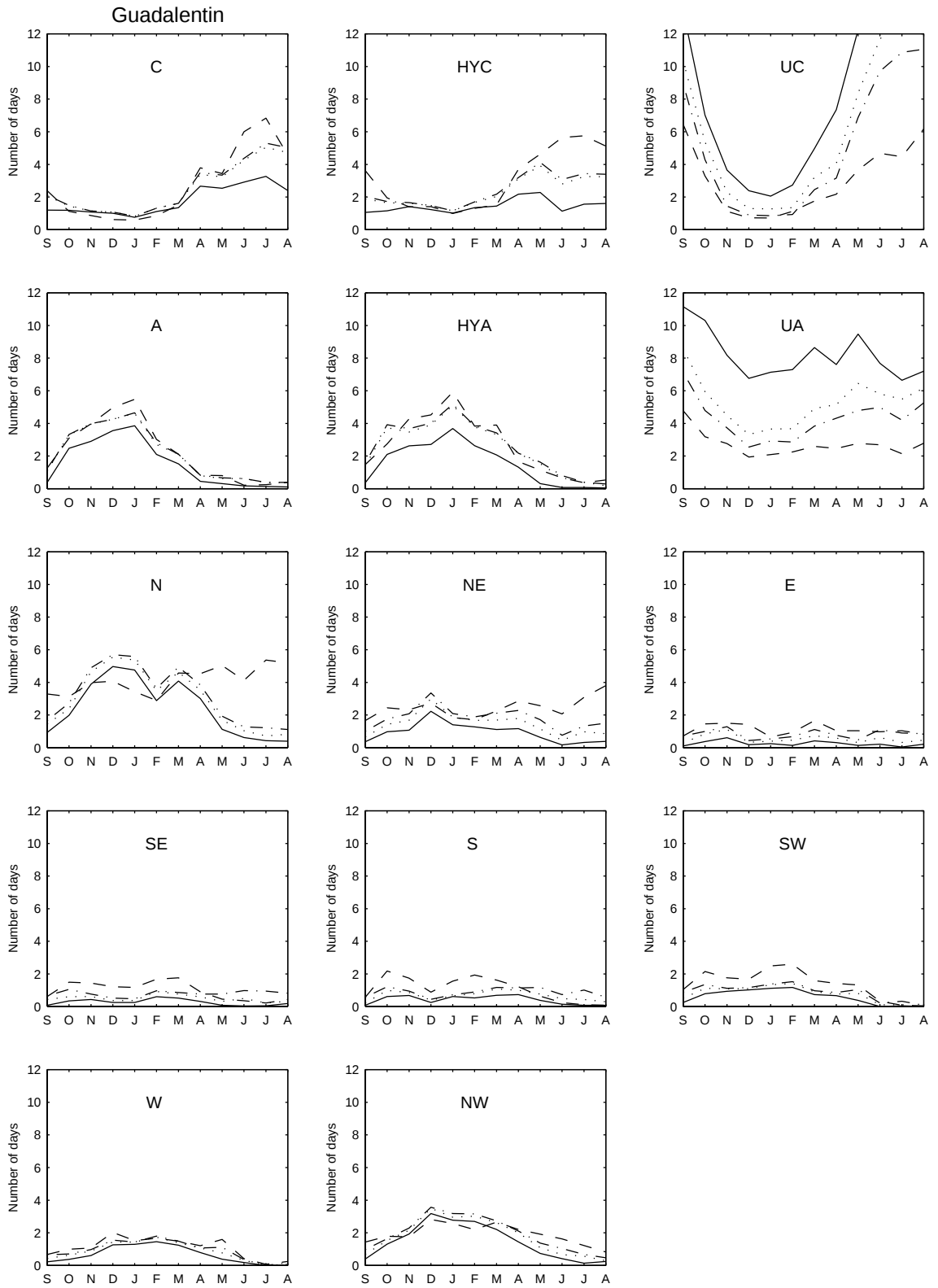


Figure 5.15: Observed monthly frequencies of the 14 circulation types calculated for the HadCM2-GRID_{1.88w-6} (solid line), HadCM2-GRID_{1.88w-4} (dot-dash line), HadCM2-GRID_{5.63w-4} (dashed line) and UKTR-GRID_{3.75w-6} (dotted line) grids.

Figure 5.16a:

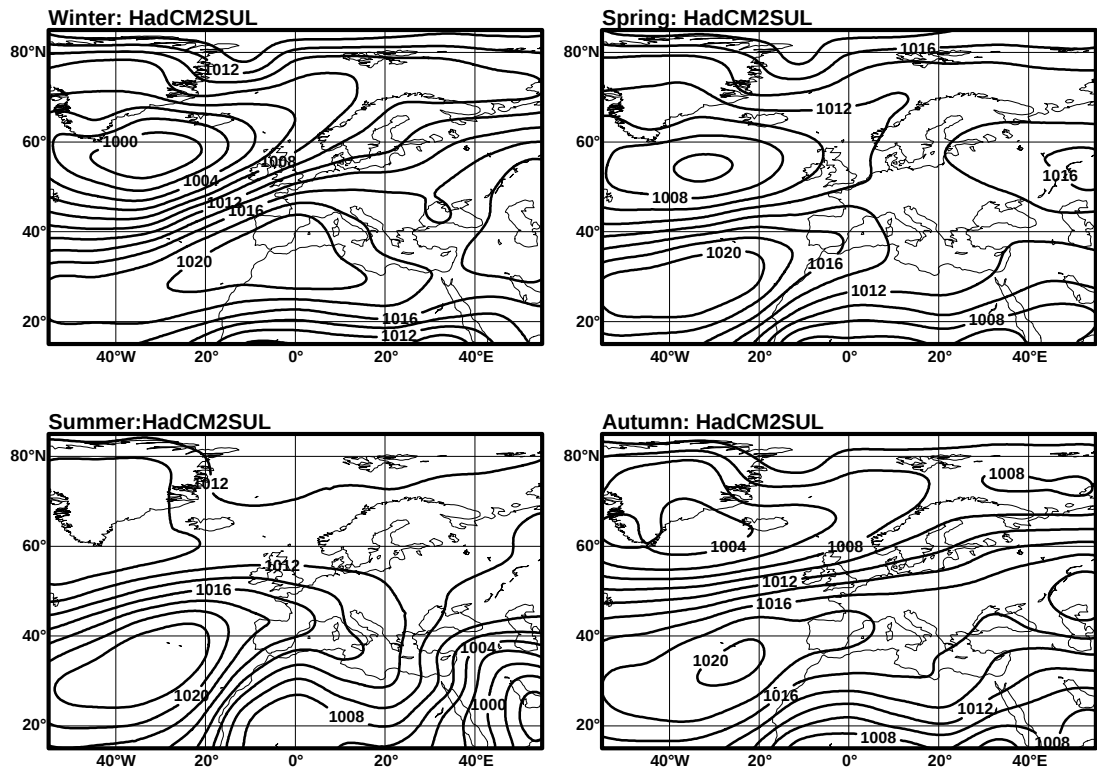
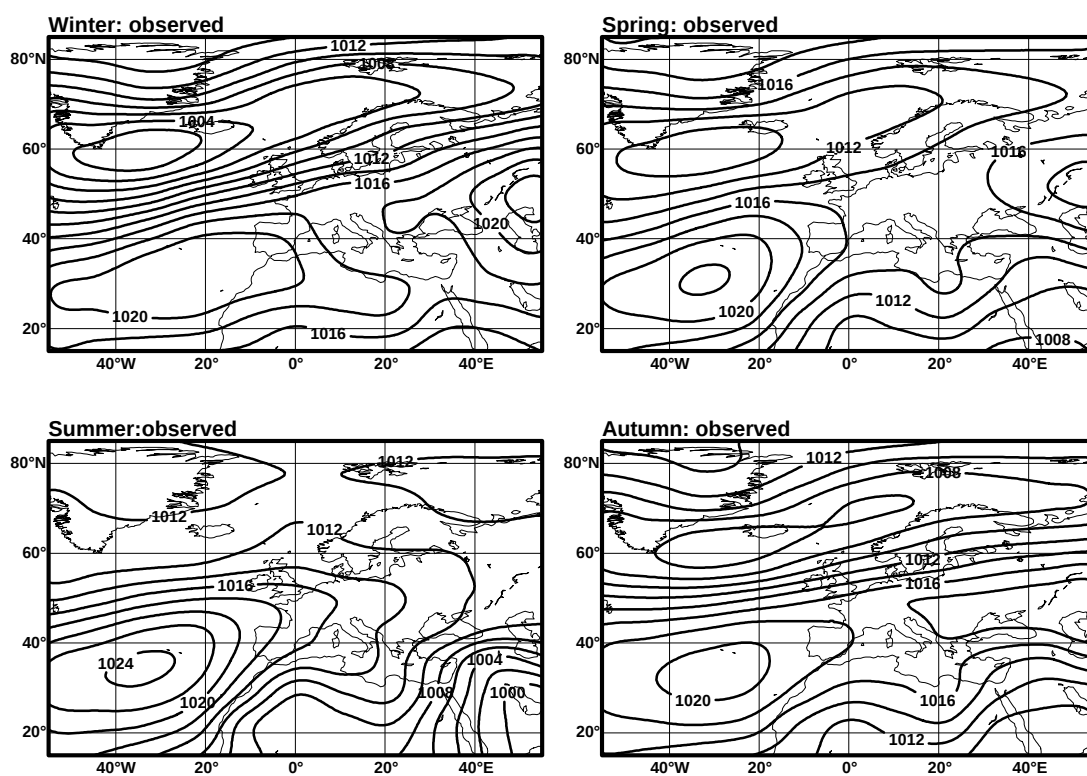


Figure 5.16: (a) Seasonal mean SLP (hPa) calculated from HadCM2SUL output for 1956-1989. (b) Seasonal mean SLP (hPa) calculated from the observed data for 1956-1989.

Figure 5.16b:



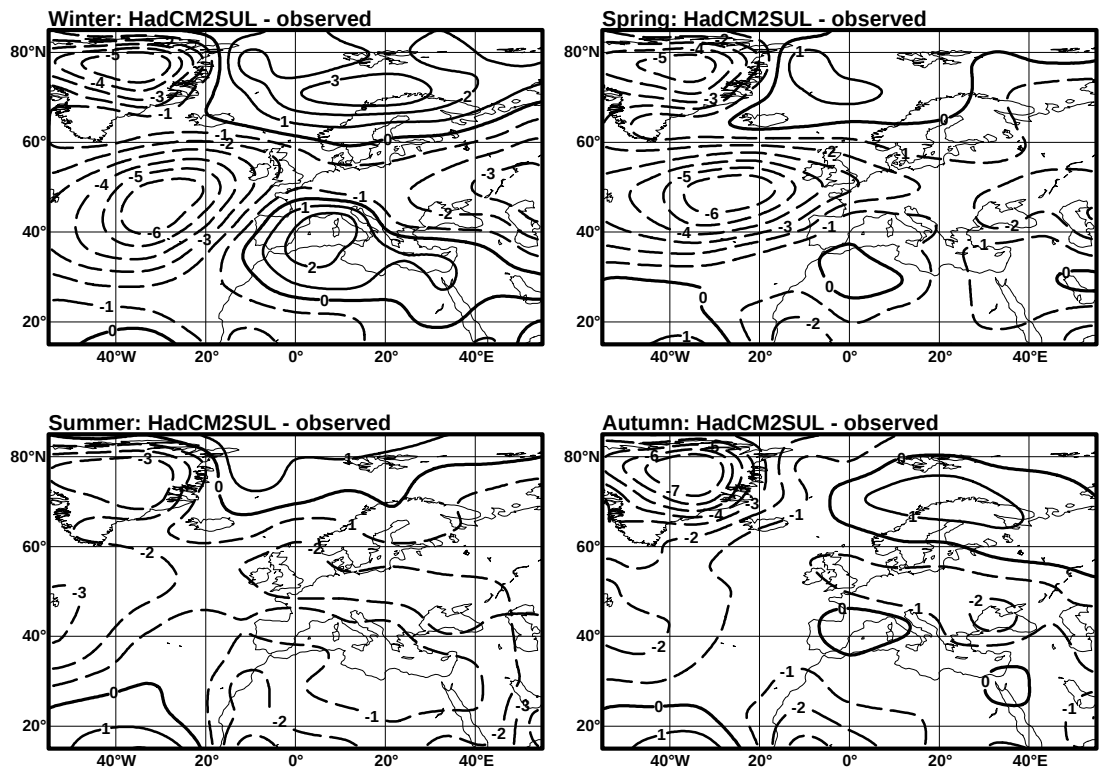


Figure 5.17: HadCM2SUL minus observed differences in seasonal mean SLP (hPa) for 1956-1989.

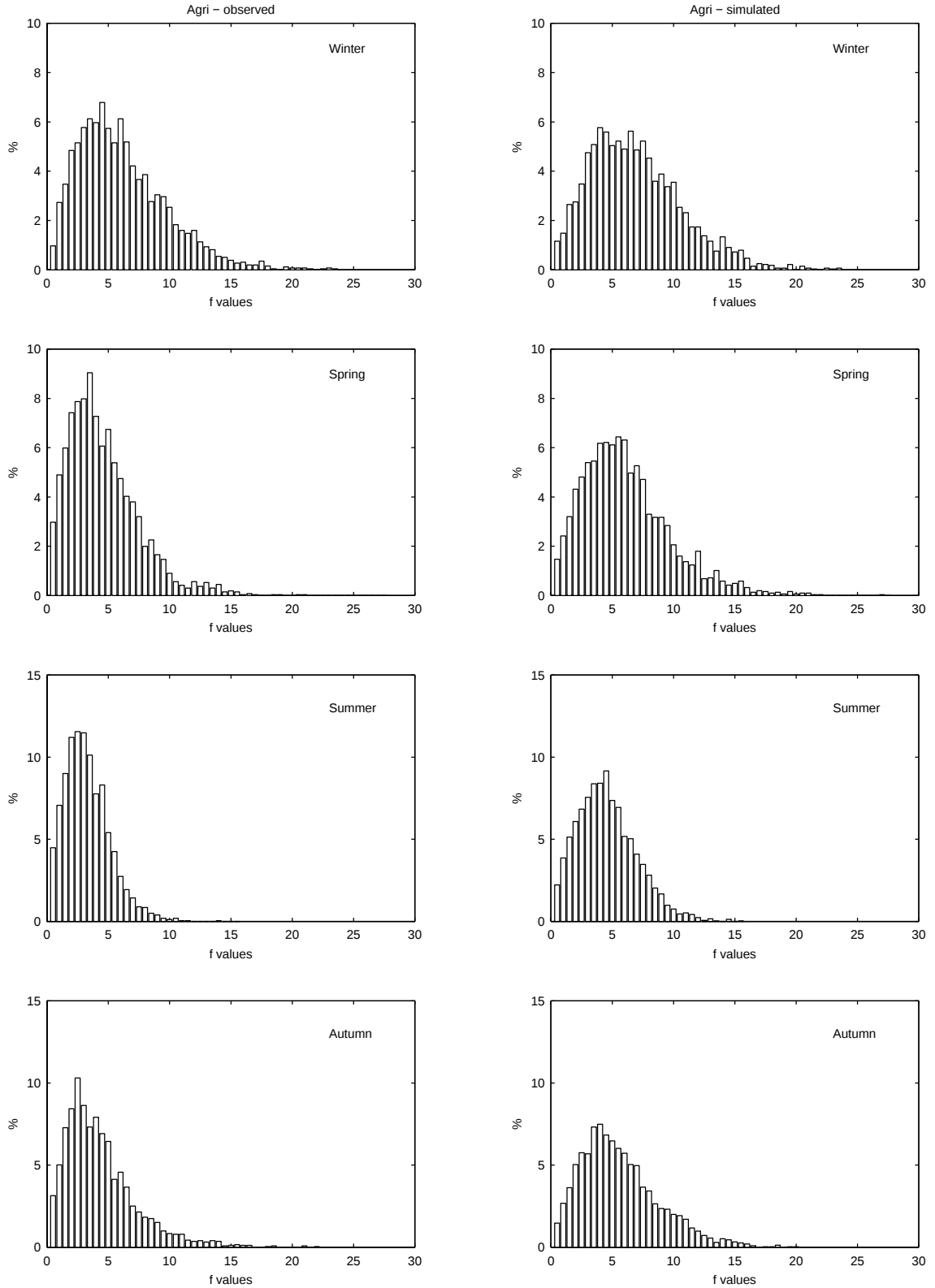


Figure 5.18: Frequency histograms of seasonal observed and HadCM2SUL-simulated F values for the Agri, 1956-1989.

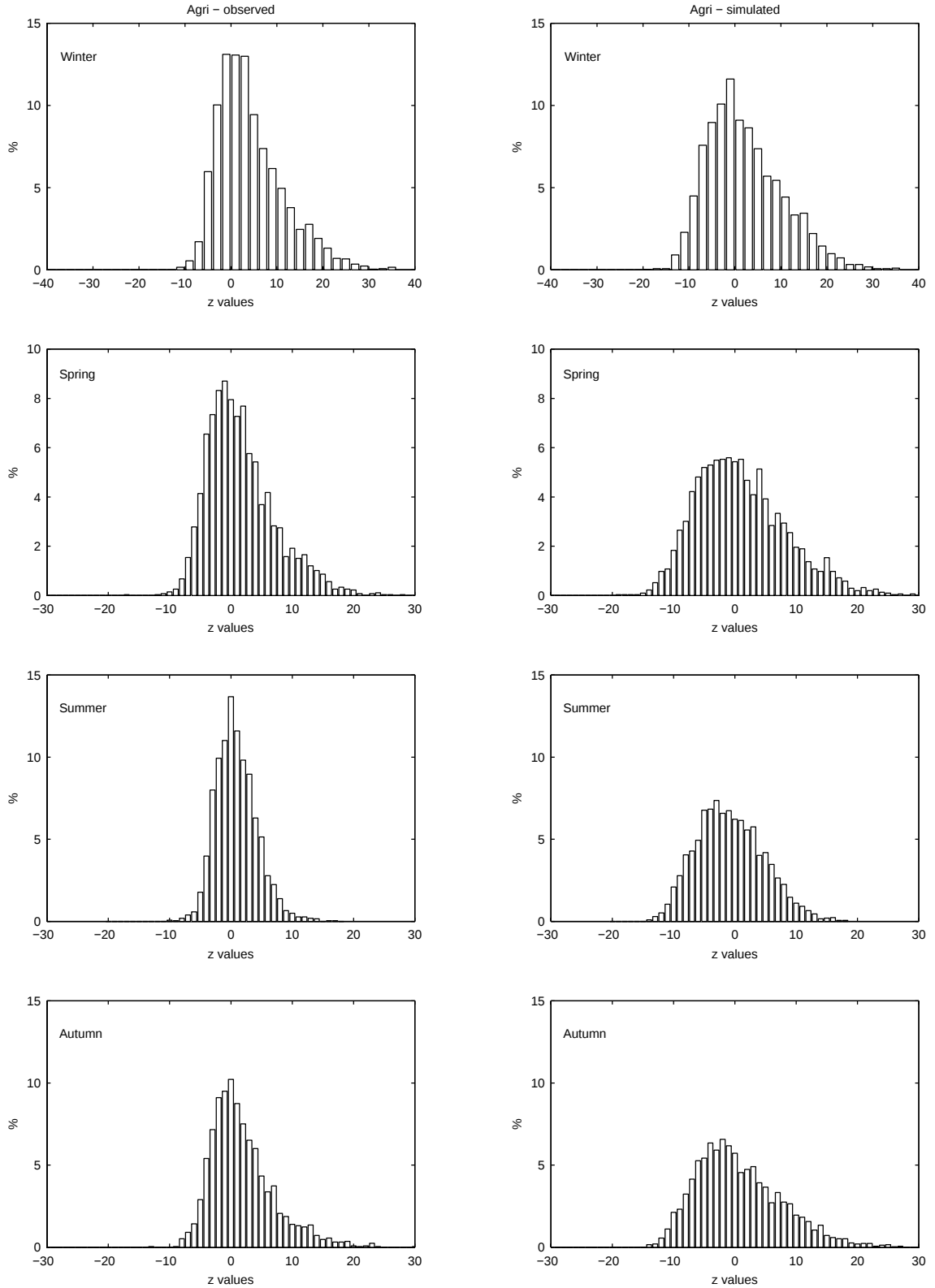


Figure 5.19: Frequency histograms of seasonal observed and HadCM2SUL-simulated Z values for the Agri, 1956-1989.

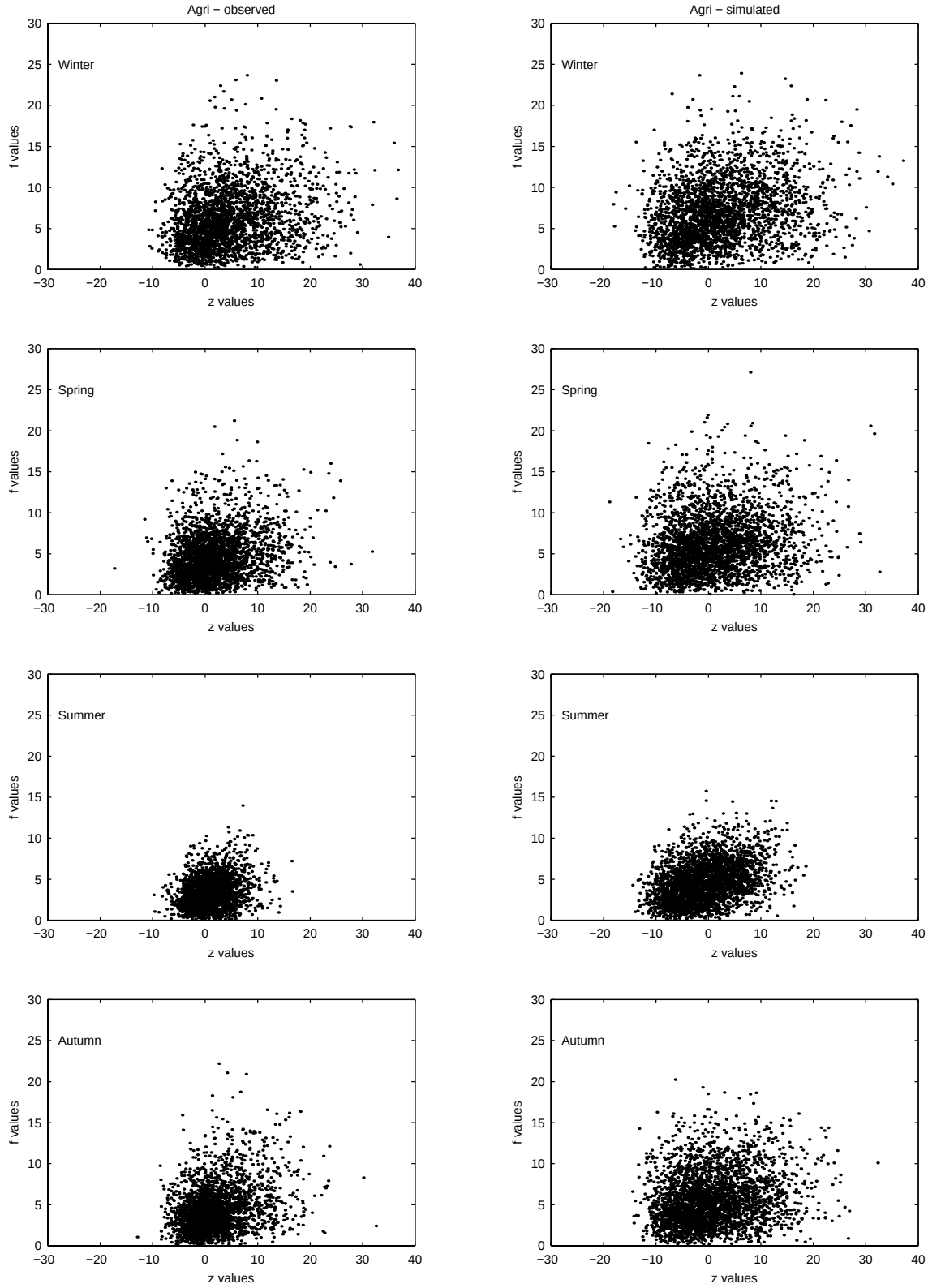


Figure 5.20: Scatter plots of seasonal observed and HadCM2SUL-simulated F and Z values for the Agri, 1956-1989.

Figure 5.21a:

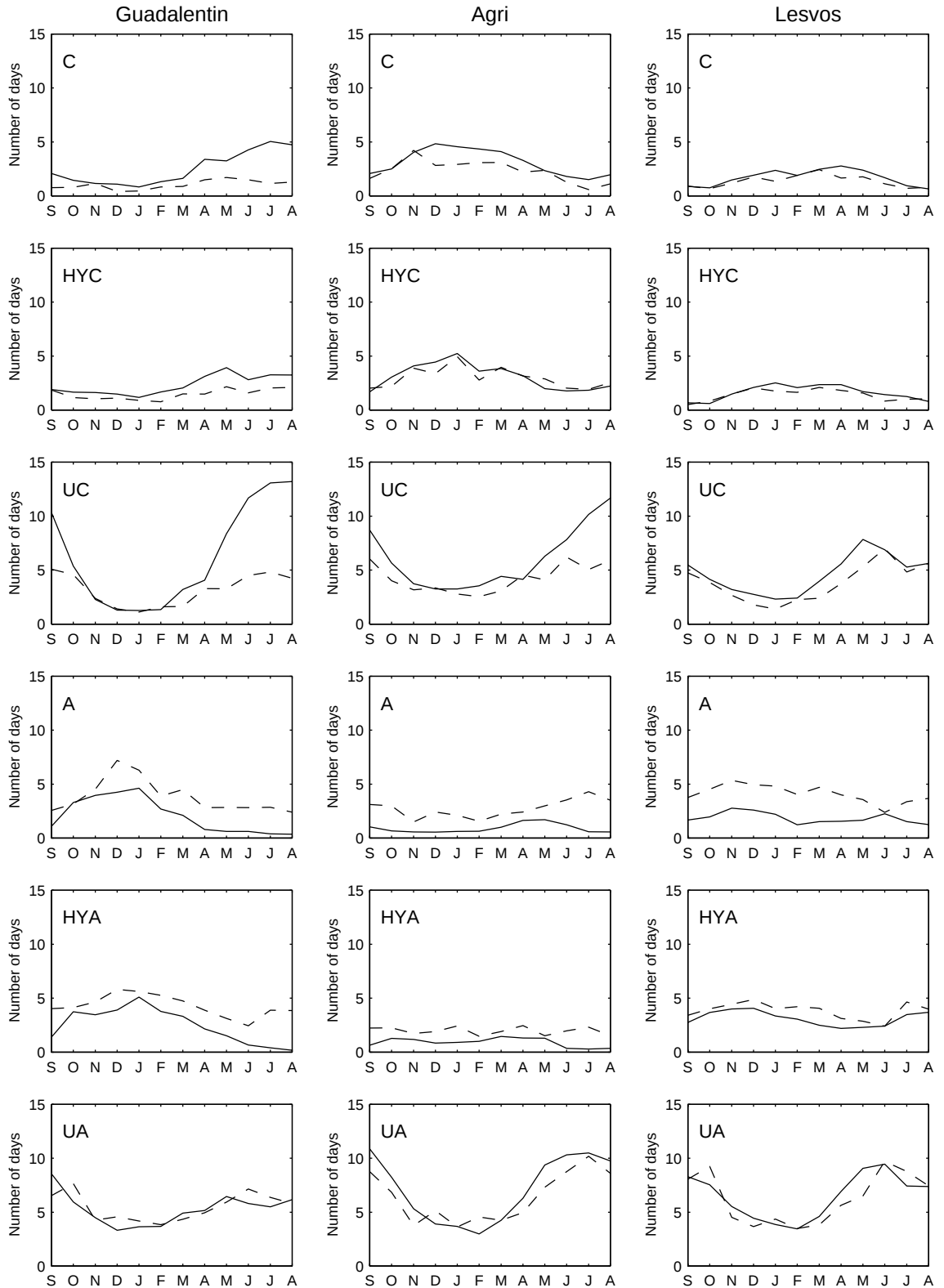


Figure 5.21: Observed (solid line) and HadCM2SUL-simulated (dashed line) monthly frequencies of (a) the six non-directional circulation types and (b) the eight directional circulation types for the Guadaleatin, Agri and Lesvos, 1956-1989.

Figure 5.21b:

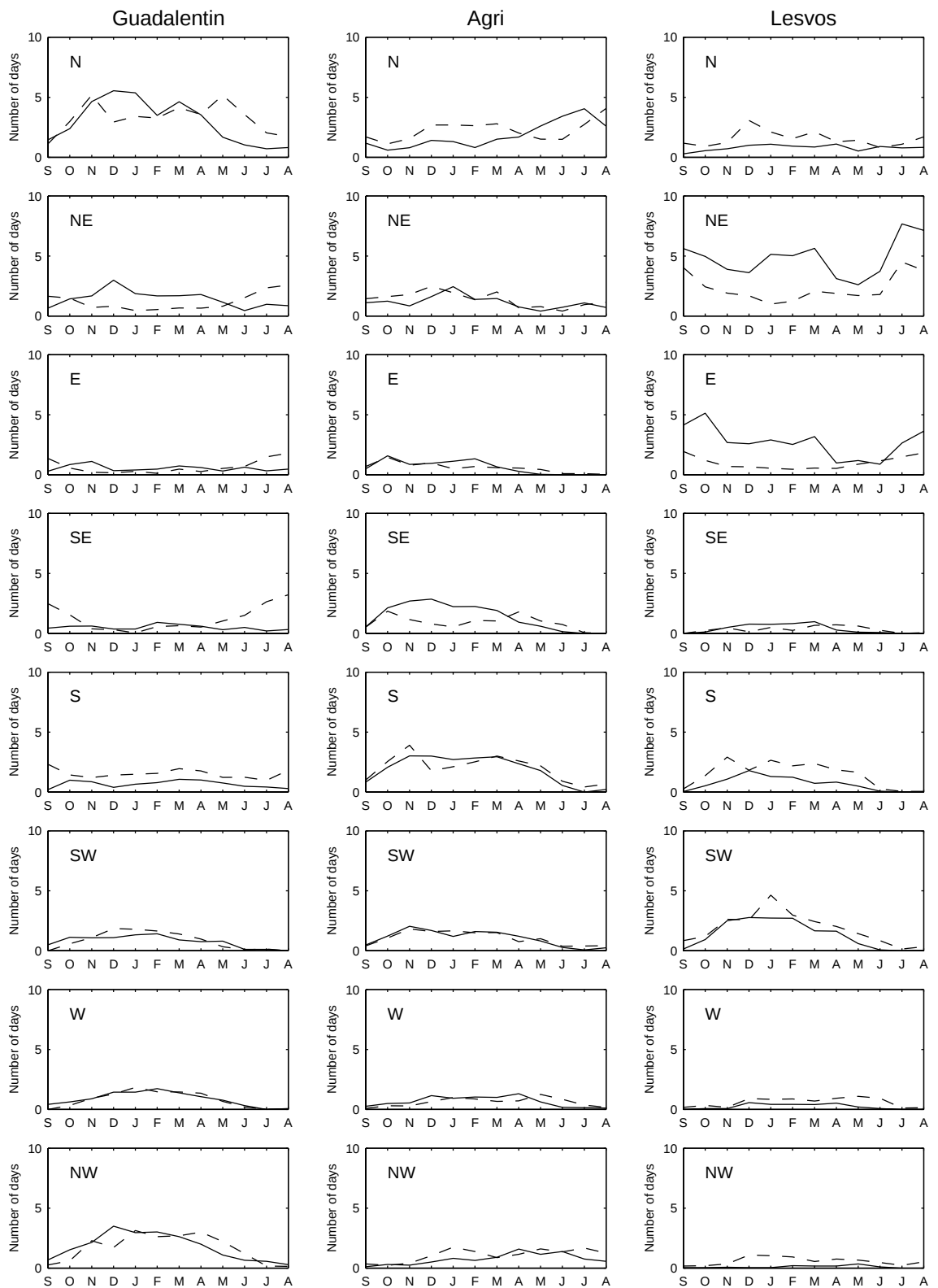


Figure 5.22a:

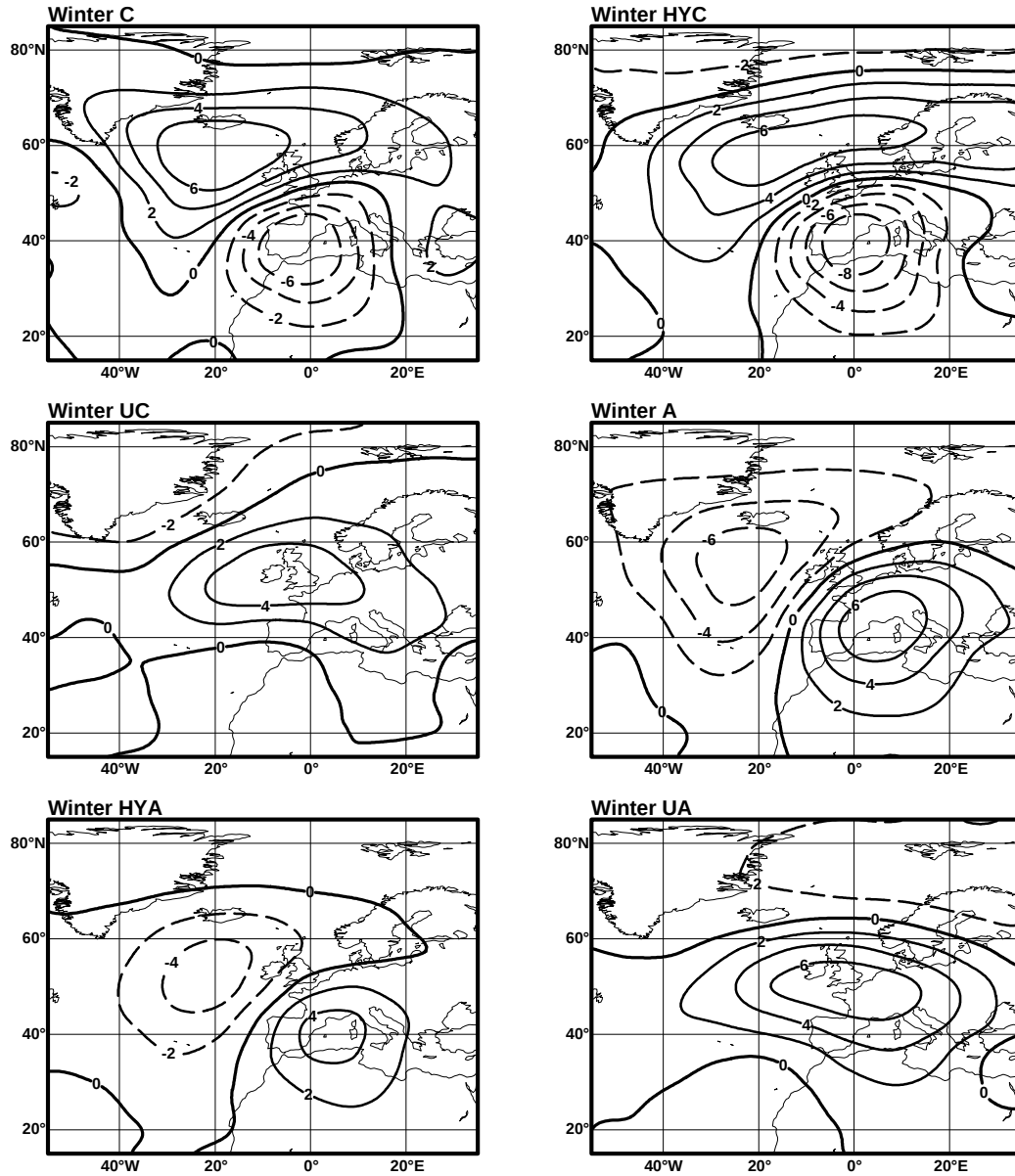


Figure 5.22: Winter SLP (hPa) anomalies for (a) the six non-directional circulation types and (b) the eight directional circulation types for the Guadalentin, calculated from observed data, 1956-1989.

Figure 5.22b:

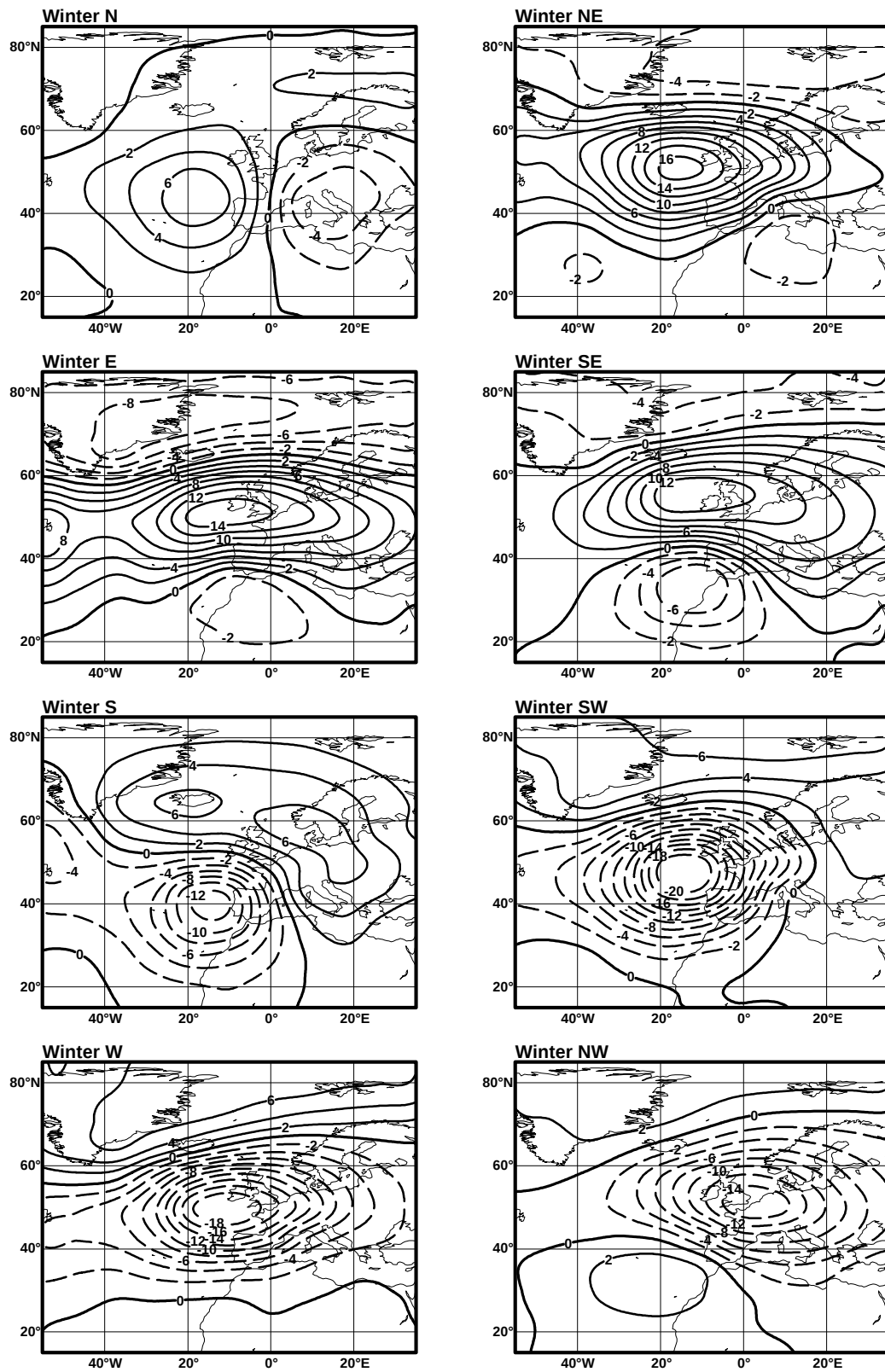


Figure 5.23a:

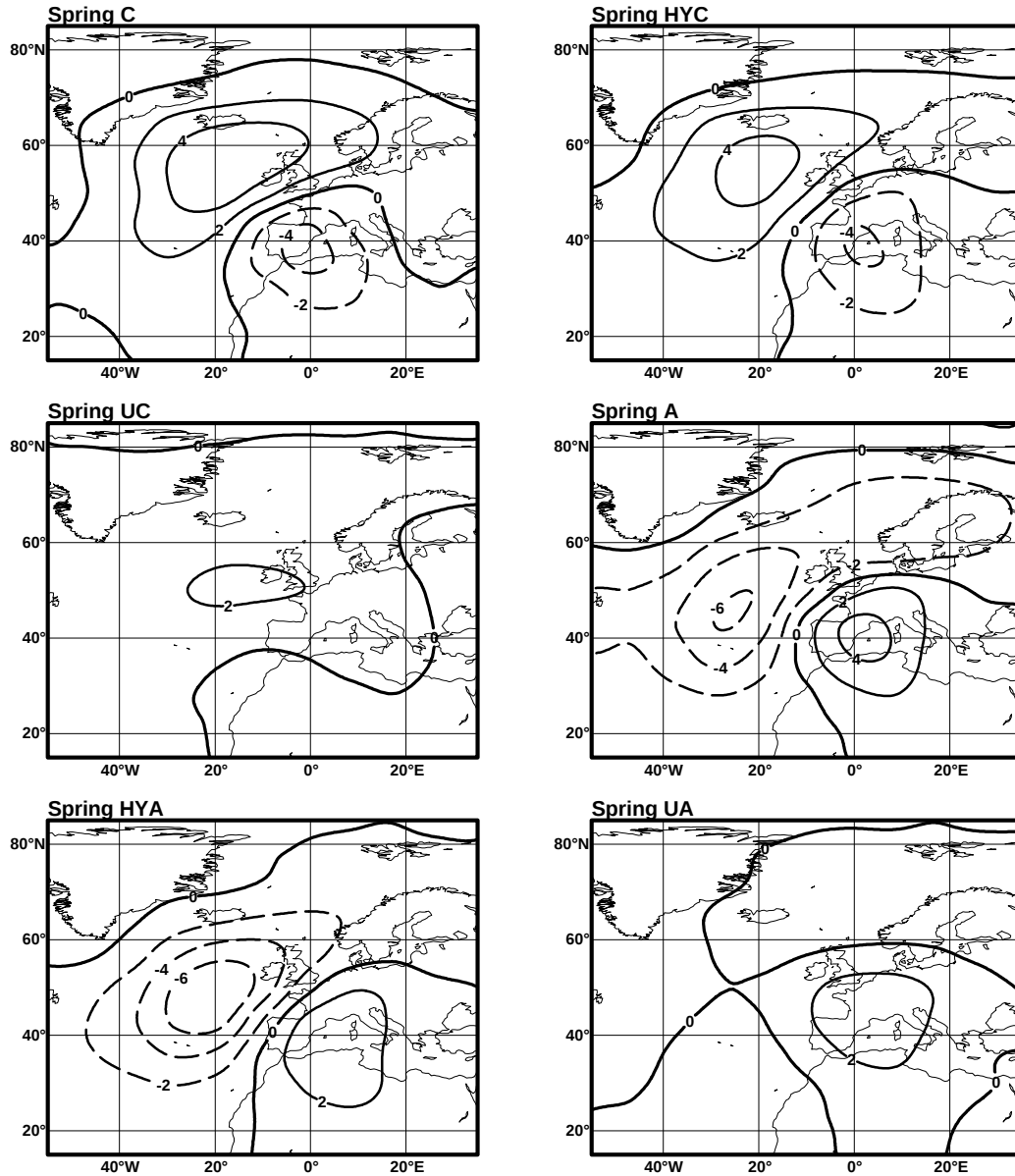


Figure 5.23: Spring SLP (hPa) anomalies for (a) the six non-directional circulation types and (b) the eight directional circulation types for the Guadalentin, calculated from observed data, 1956-1989.

Figure 5.23b:

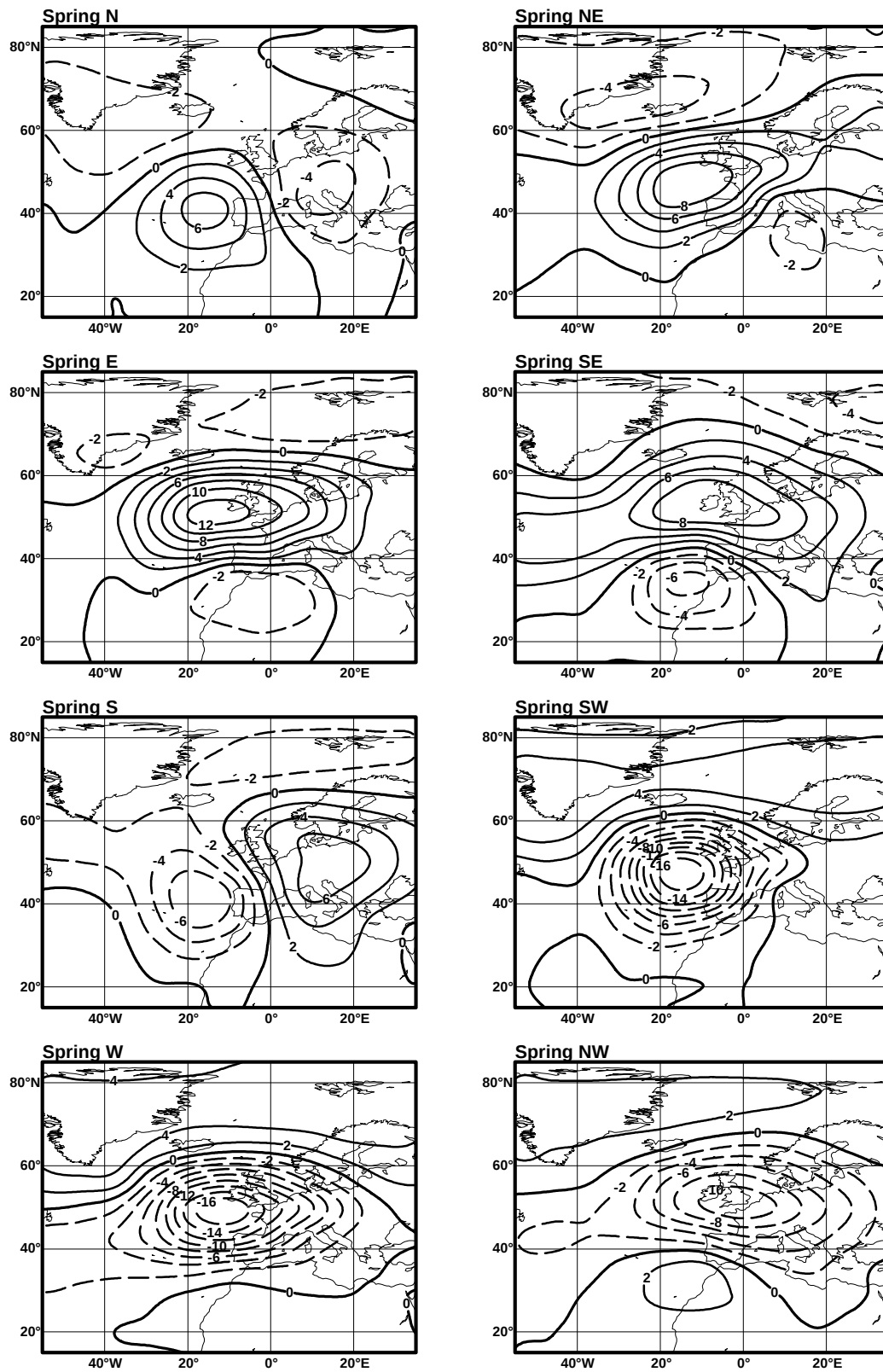


Figure 5.24a:

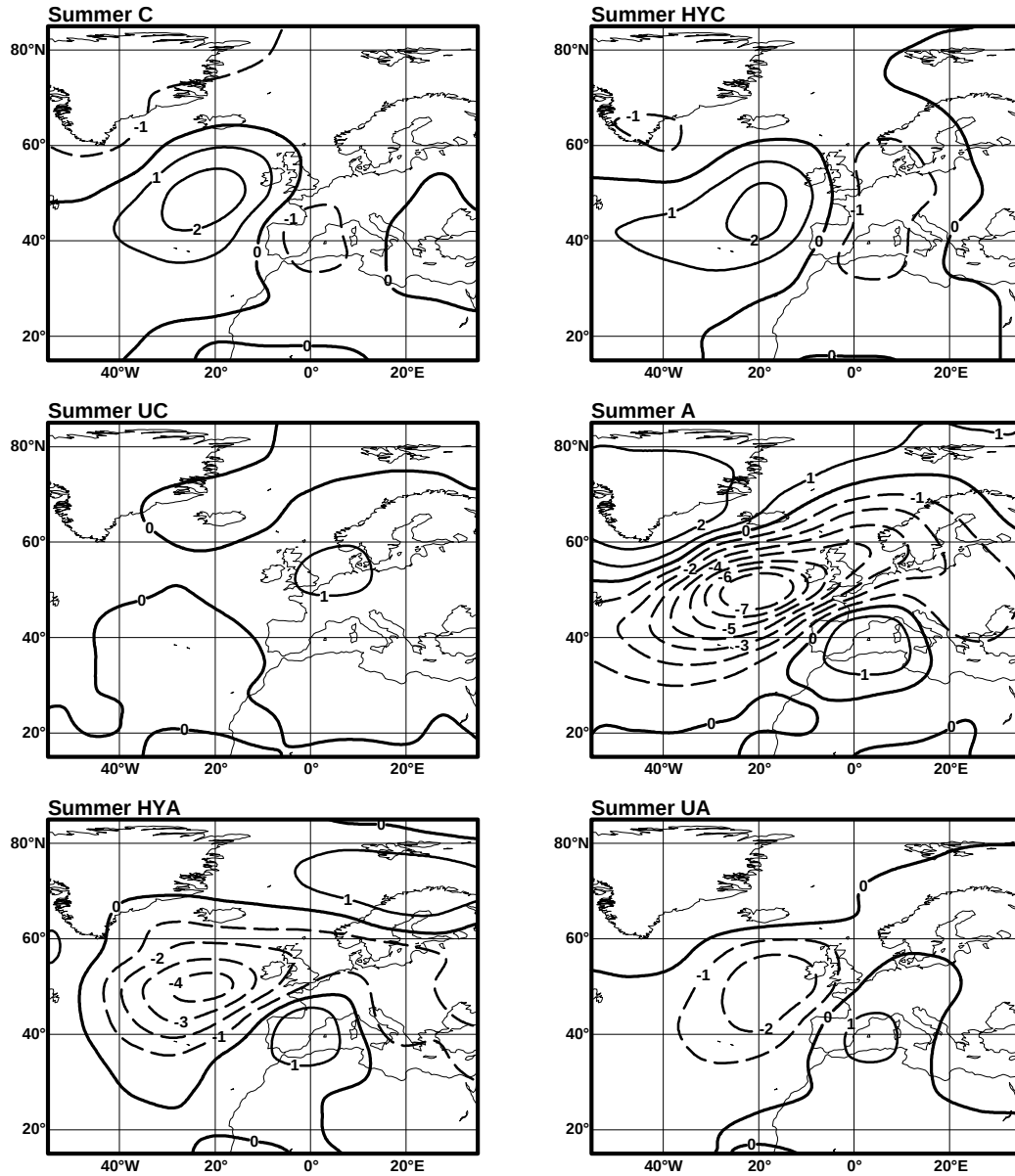


Figure 5.24: Summer SLP (hPa) anomalies for (a) the six non-directional circulation types and (b) the eight directional circulation types for the Guadalentin, calculated from observed data, 1956-1989.

Figure 5.24b:

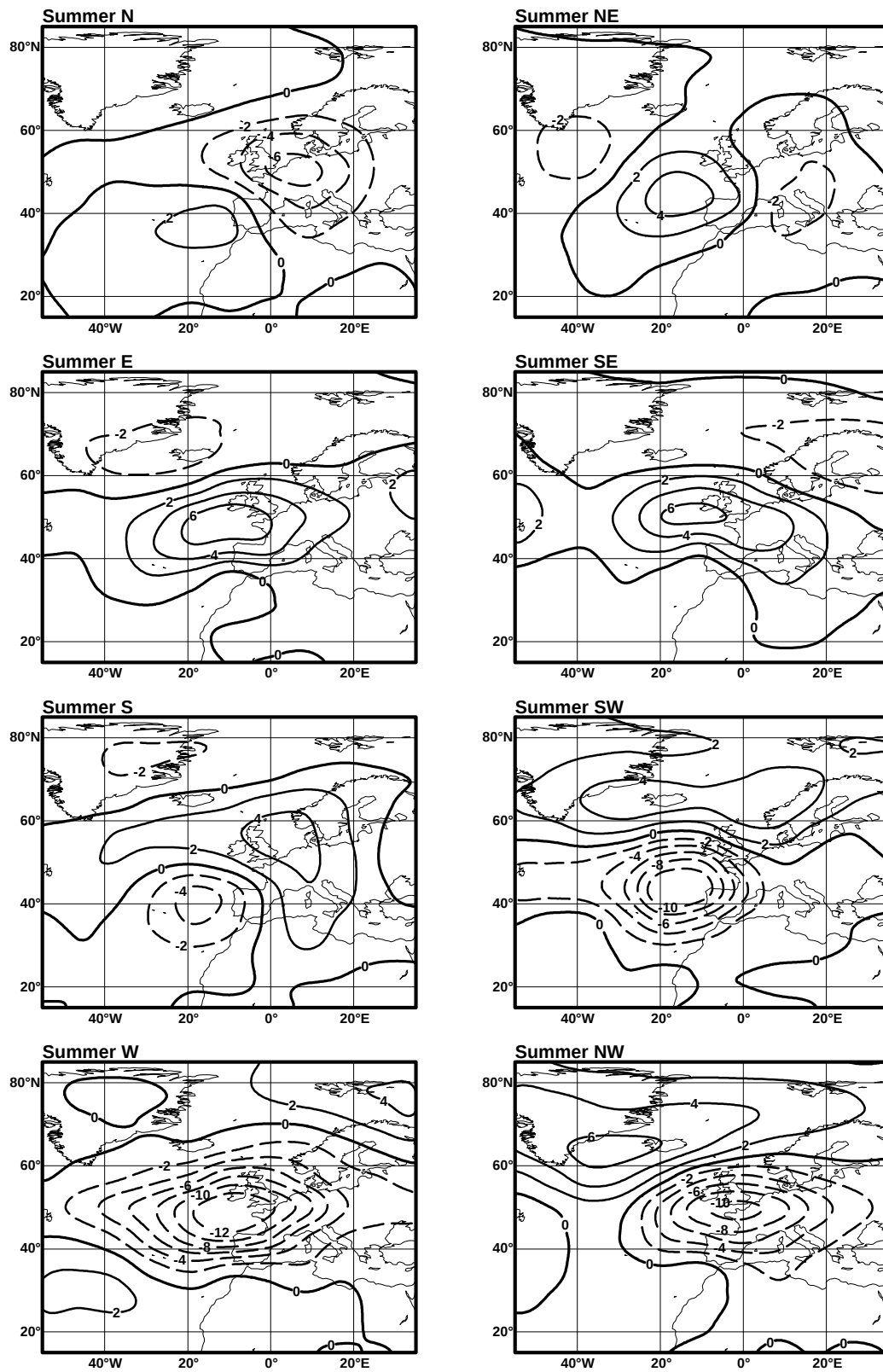


Figure 5.25a:

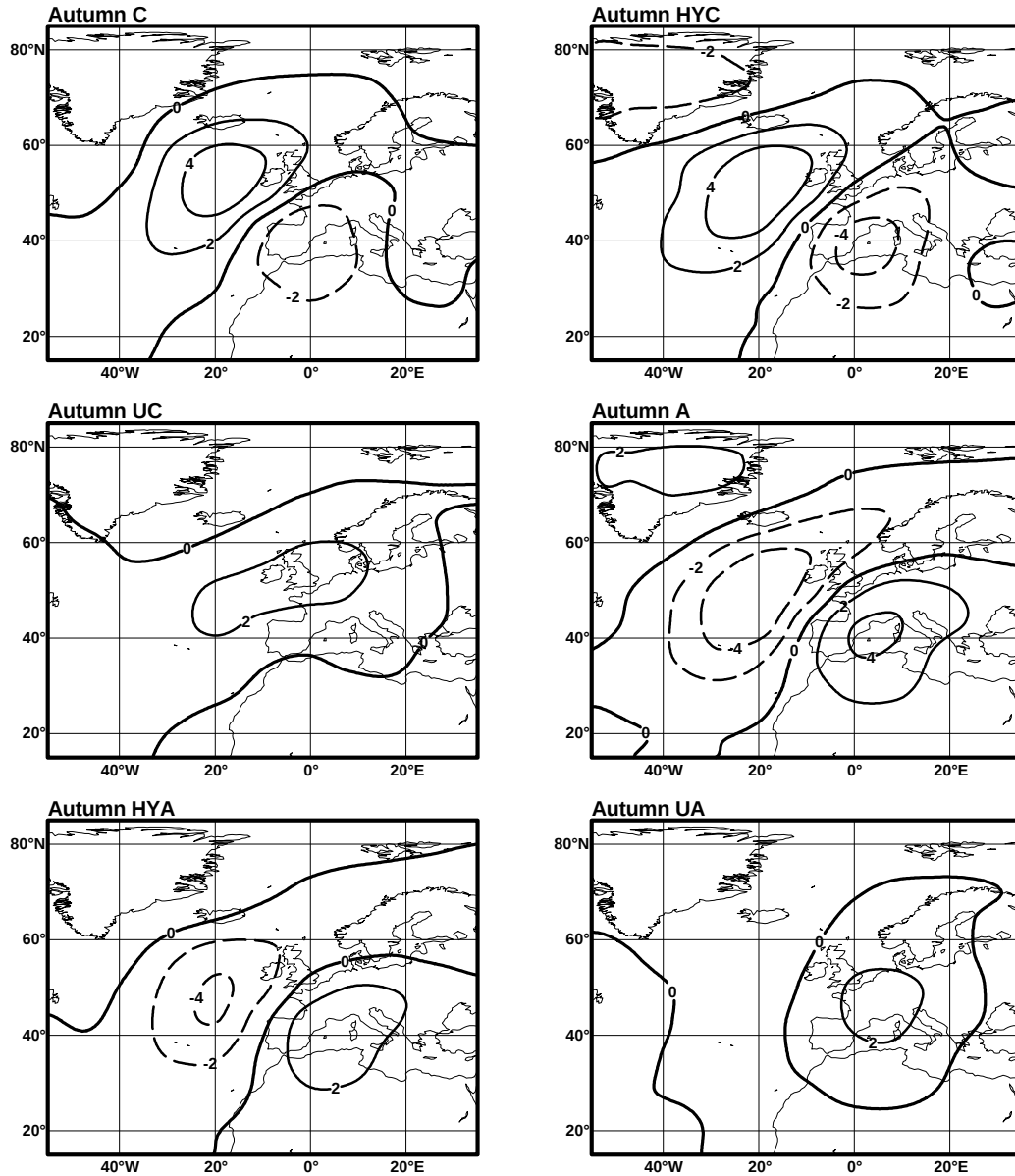


Figure 5.25: Autumn SLP (hPa) anomalies for (a) the six non-directional circulation types and (b) the eight directional circulation types for the Guadalentin, calculated from observed data, 1956-1989.

Figure 5.25b:

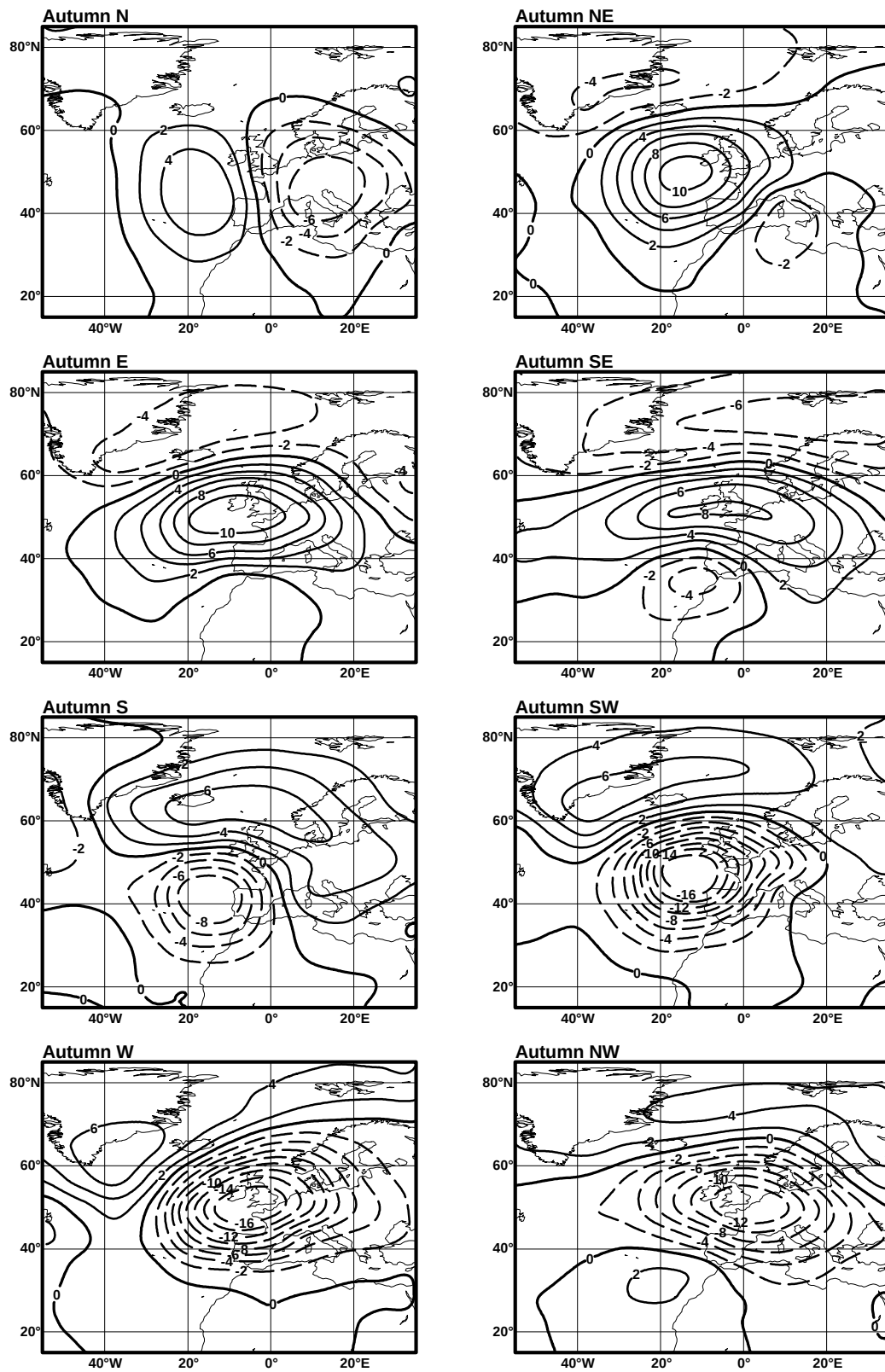


Figure 5.26a:

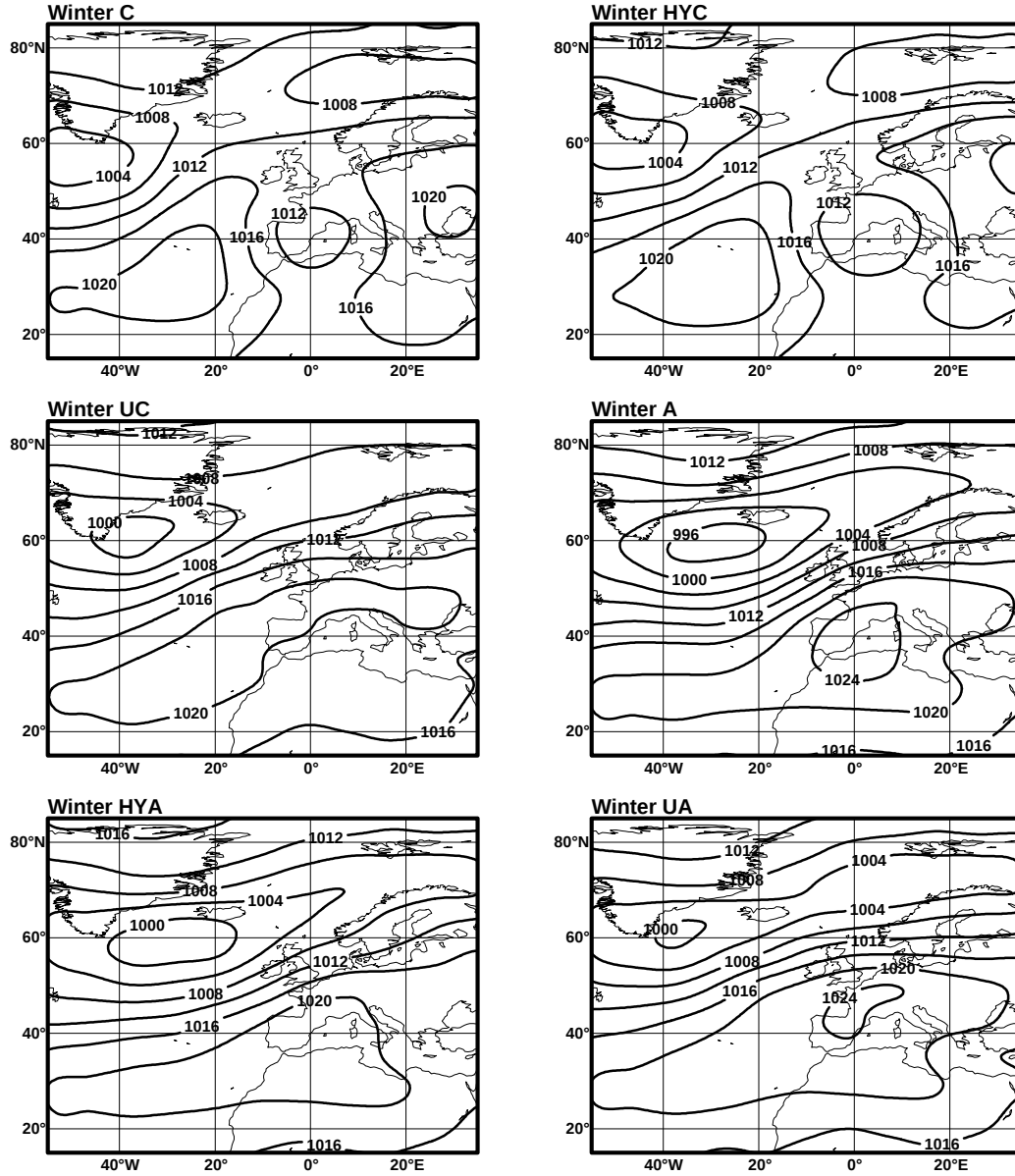


Figure 5.26: Winter mean SLP (hPa) for (a) the six non-directional circulation types and (b) the eight directional circulation types for the Guadalentin, calculated from observed data, 1956-1989.

Figure 5.26b:

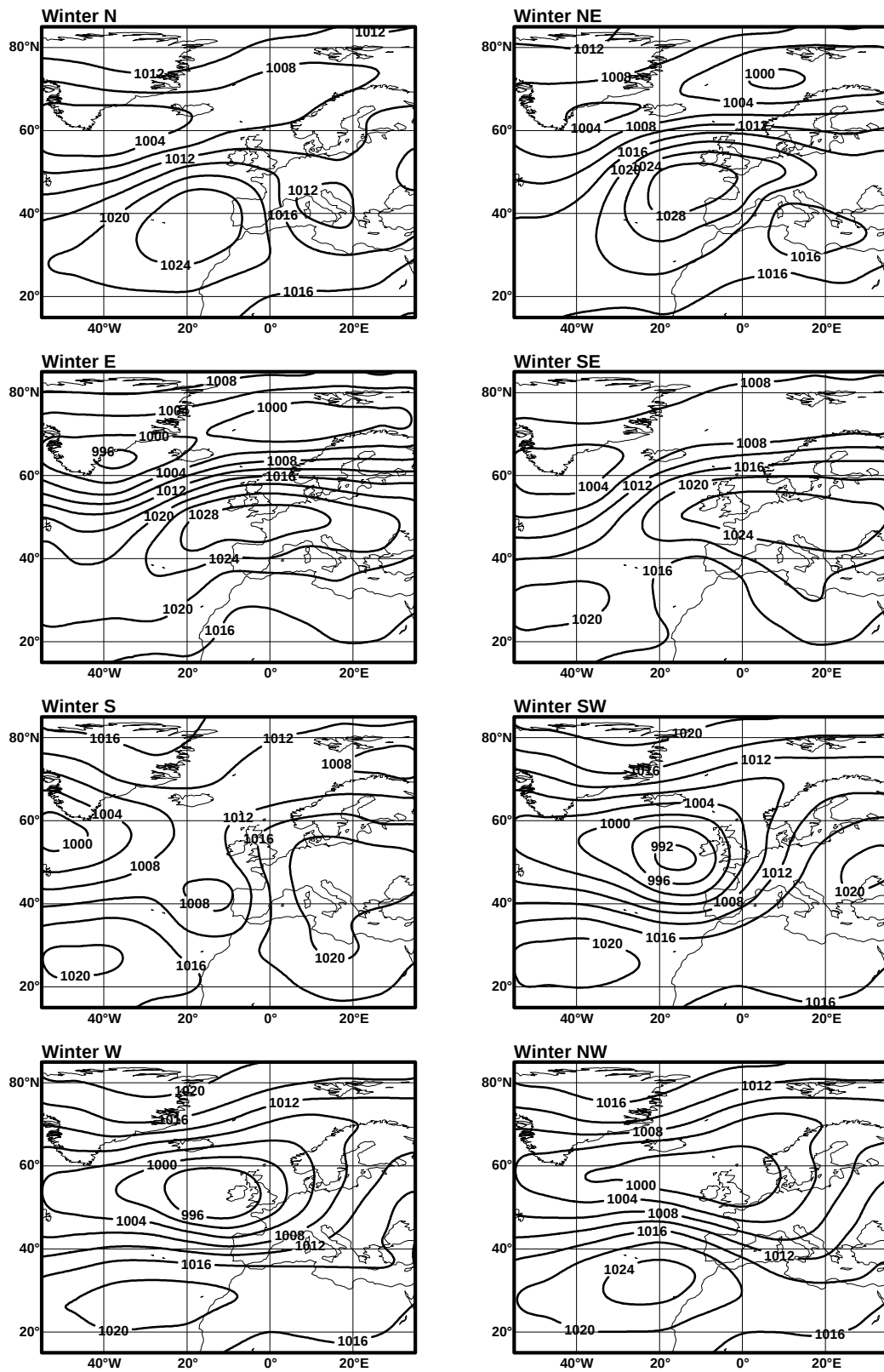


Figure 5.27a:

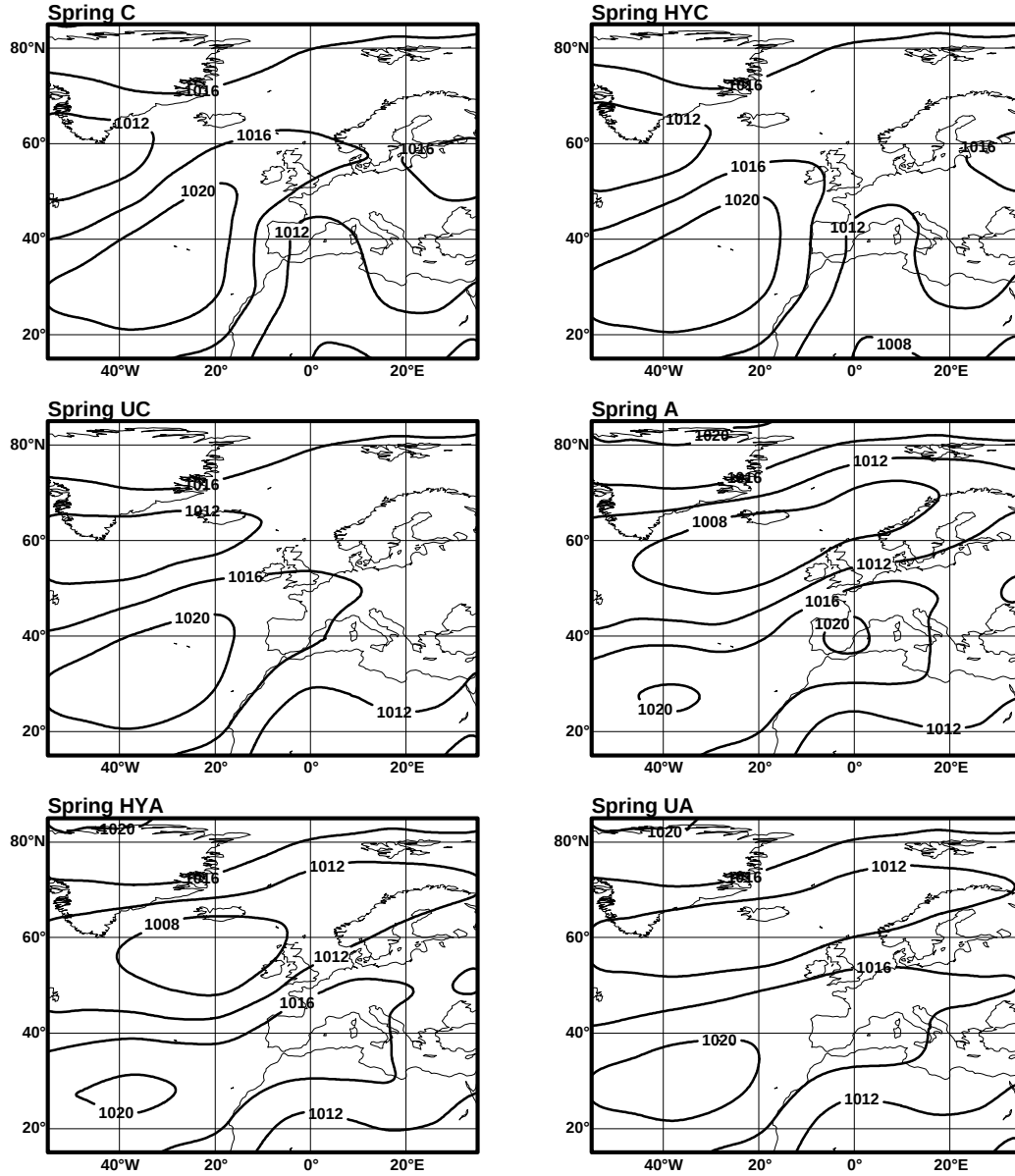


Figure 5.27: Spring mean SLP (hPa) for (a) the six non-directional circulation types and (b) the eight directional circulation types for the Guadentin, calculated from observed data, 1956-1989.

Figure 5.27b:

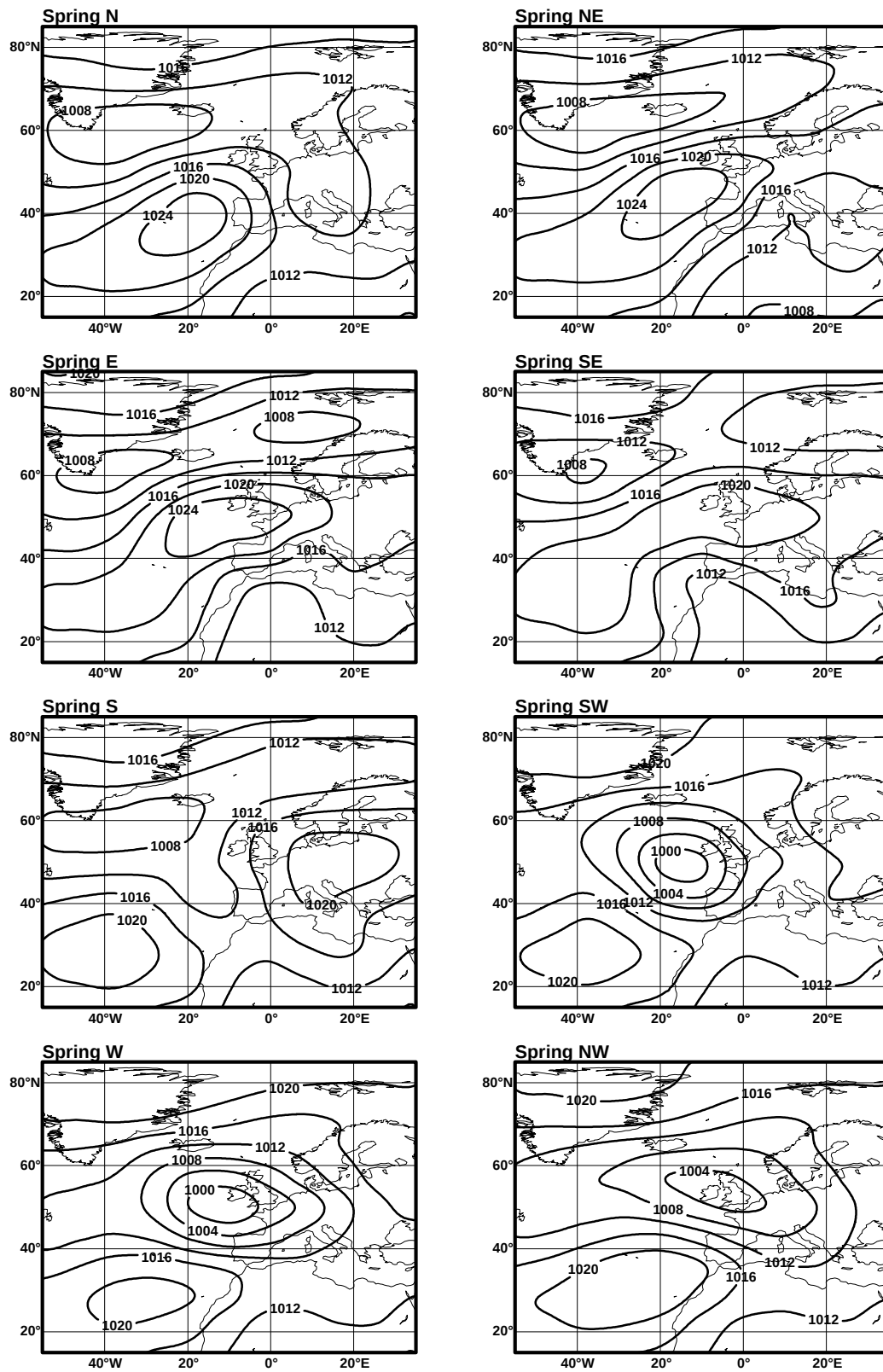


Figure 5.28a:

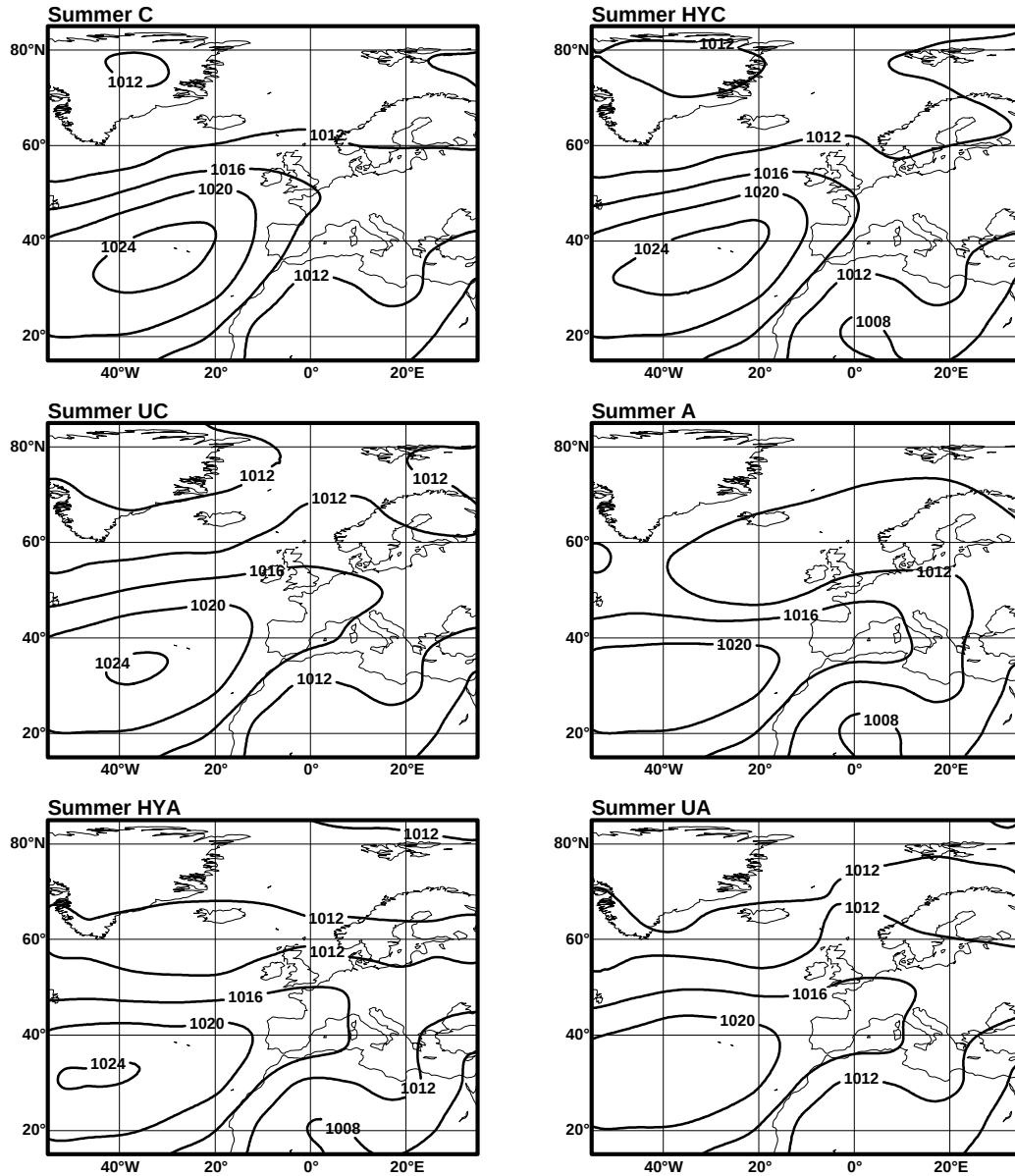


Figure 5.28: Summer mean SLP (hPa) for (a) the six non-directional circulation types and (b) the eight directional circulation types for the Guadalentin, calculated from observed data, 1956-1989.

Figure 5.28b:

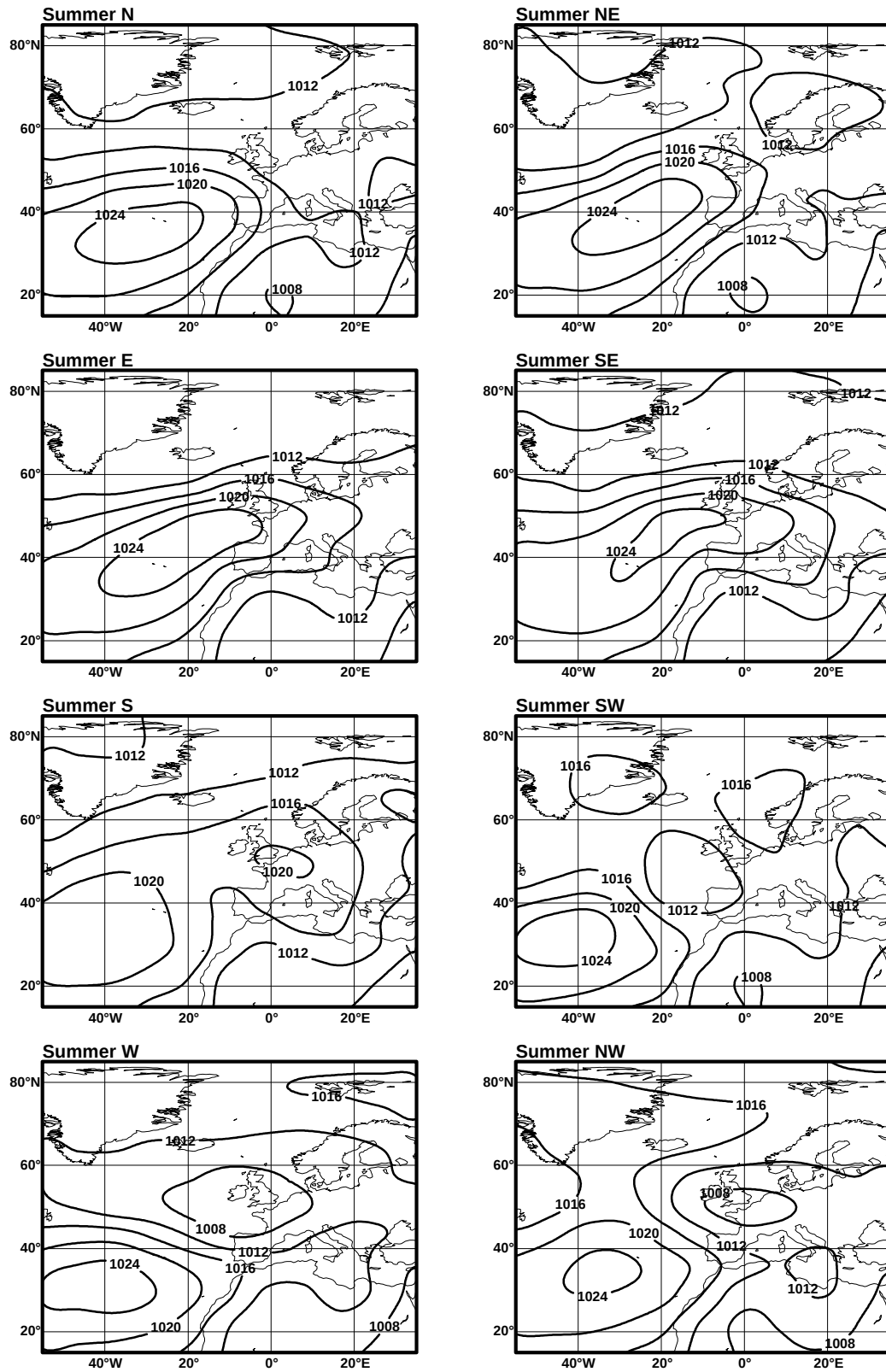


Figure 5.29a:

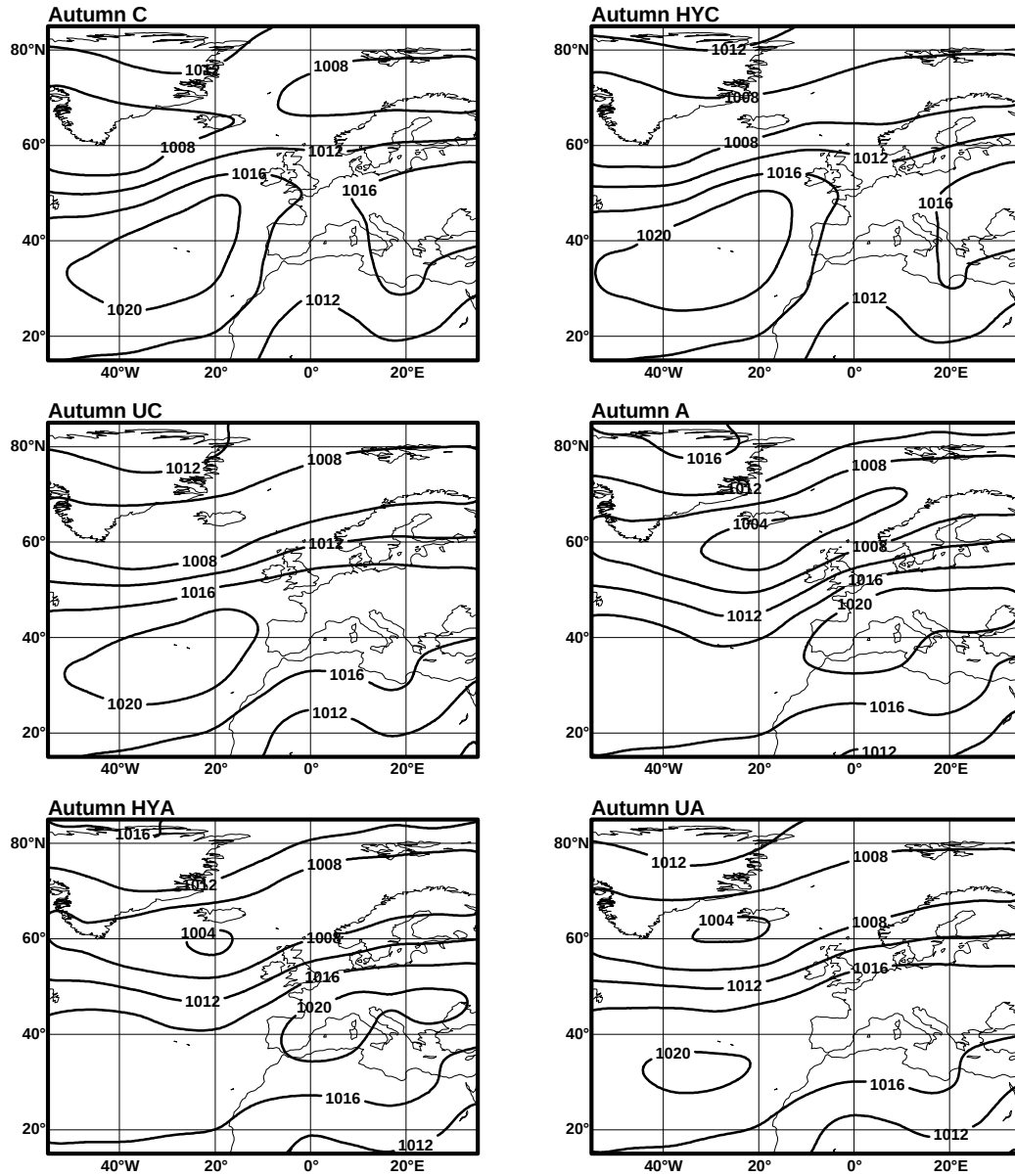


Figure 5.29: Autumn mean SLP (hPa) for (a) the six non-directional circulation types and (b) the eight directional circulation types for the Guadalentin, calculated from observed data, 1956-1989.

Figure 5.29b:

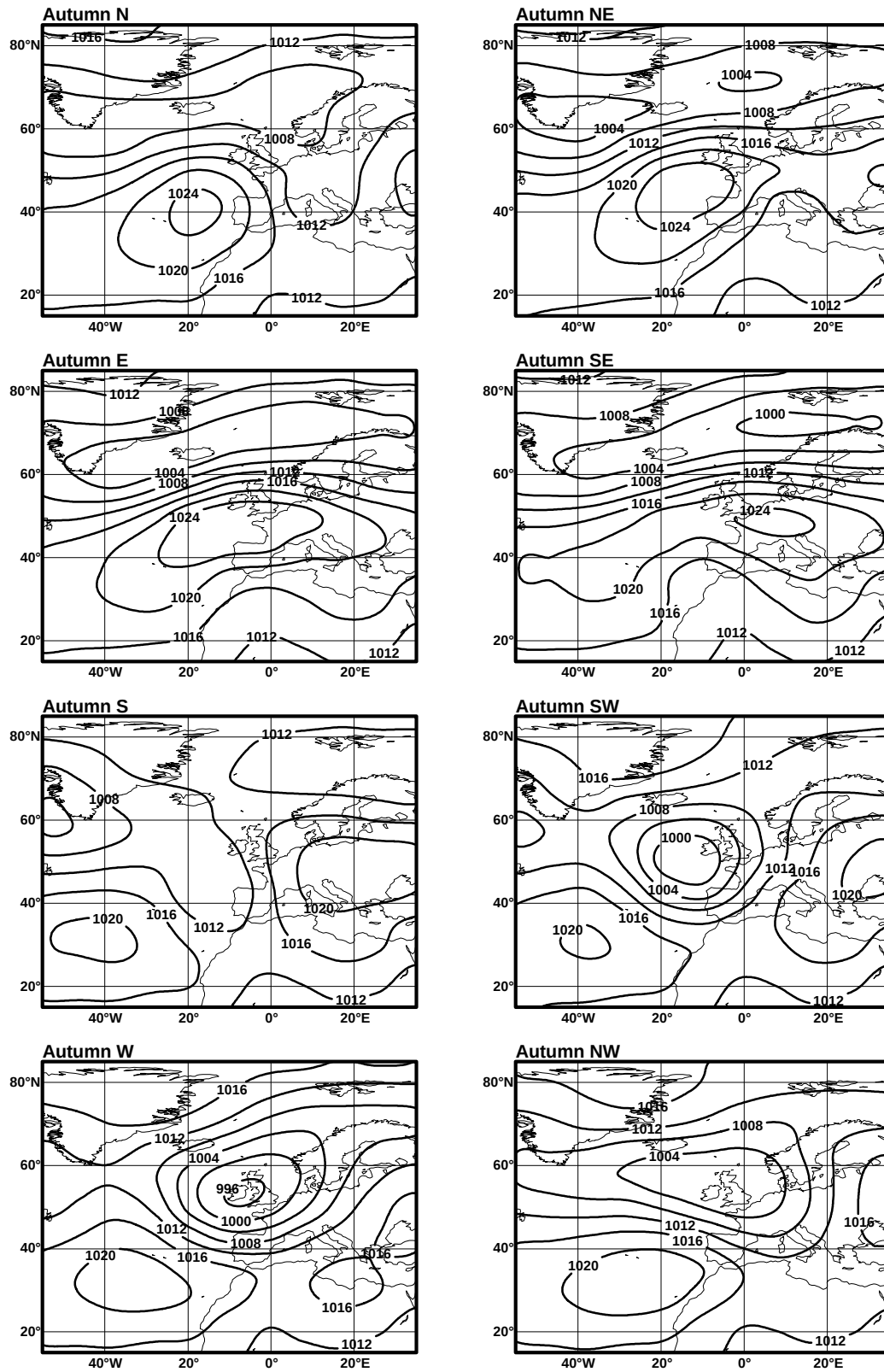


Figure 5.30a:

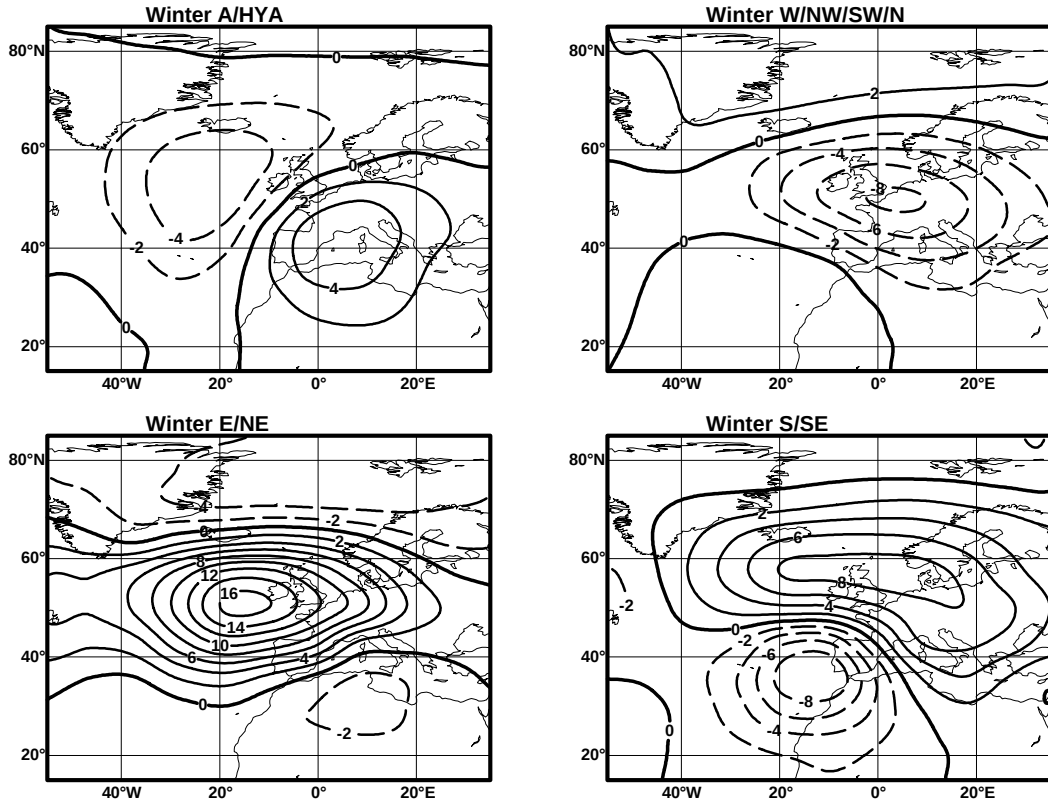


Figure 5.30b:

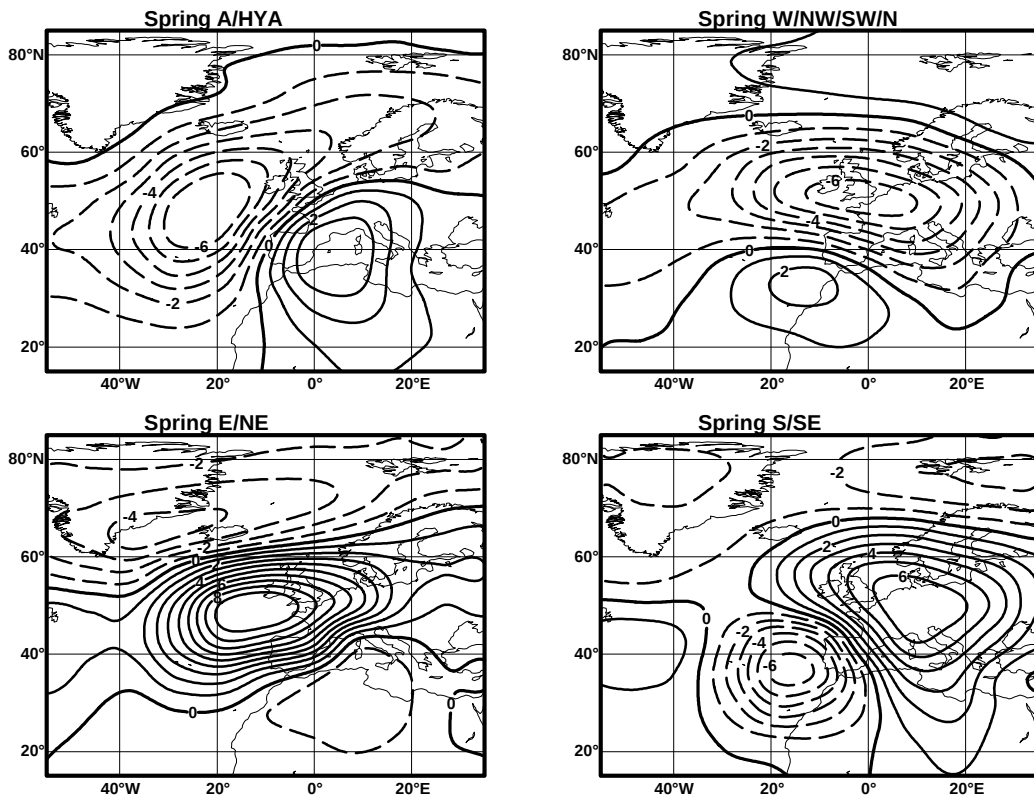


Figure 5.30: Seasonal SLP (hPa) anomalies for the four combined circulation-type groups for the Guadalentin, calculated from observed data, 1956-1989. (a) winter, (b) spring, (c) summer; and, (d) autumn.

Figure 5.30c:

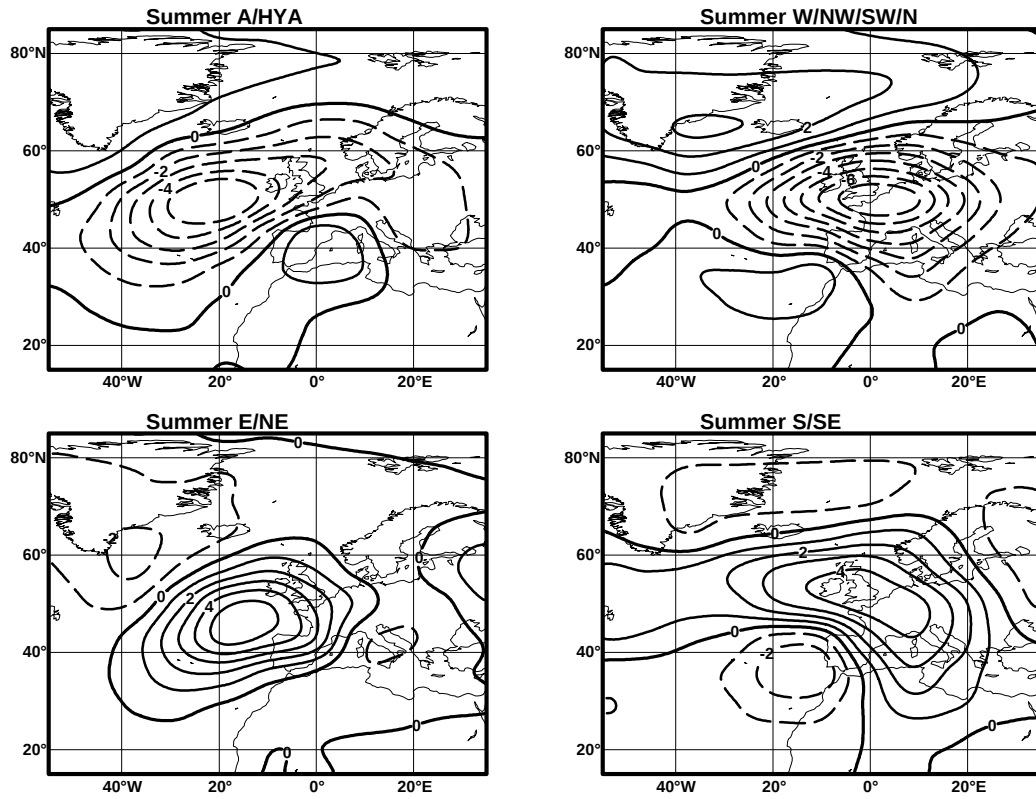


Figure 5.30d:

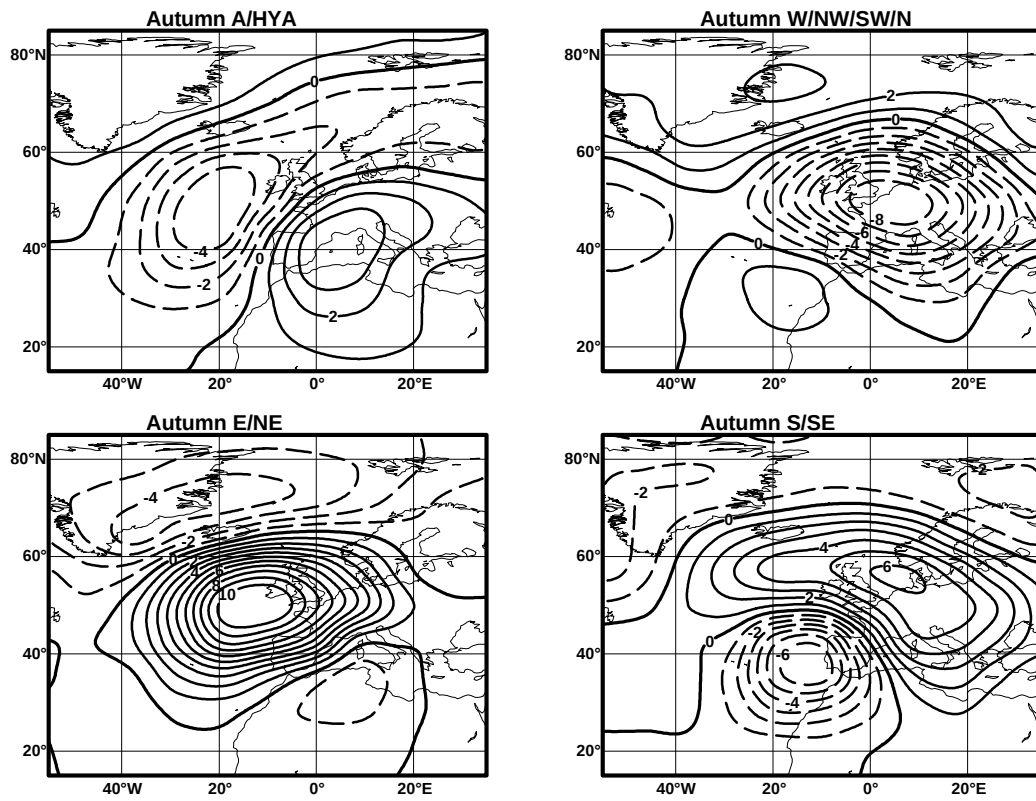


Figure 5.31a:

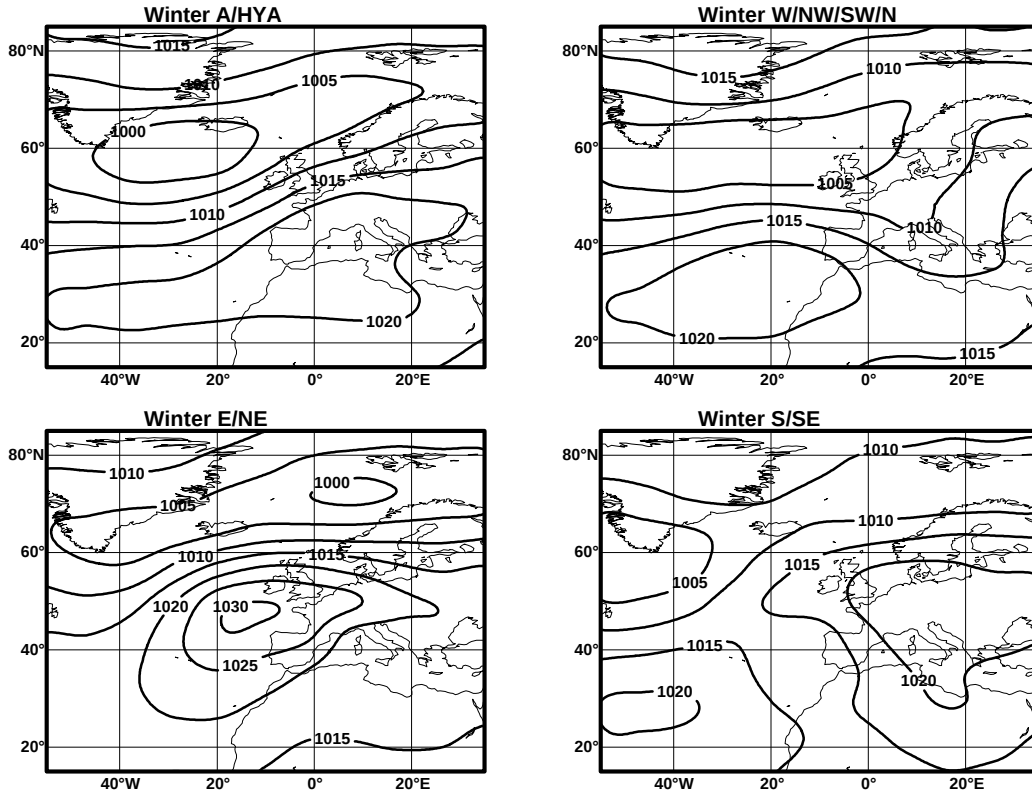


Figure 5.31b:

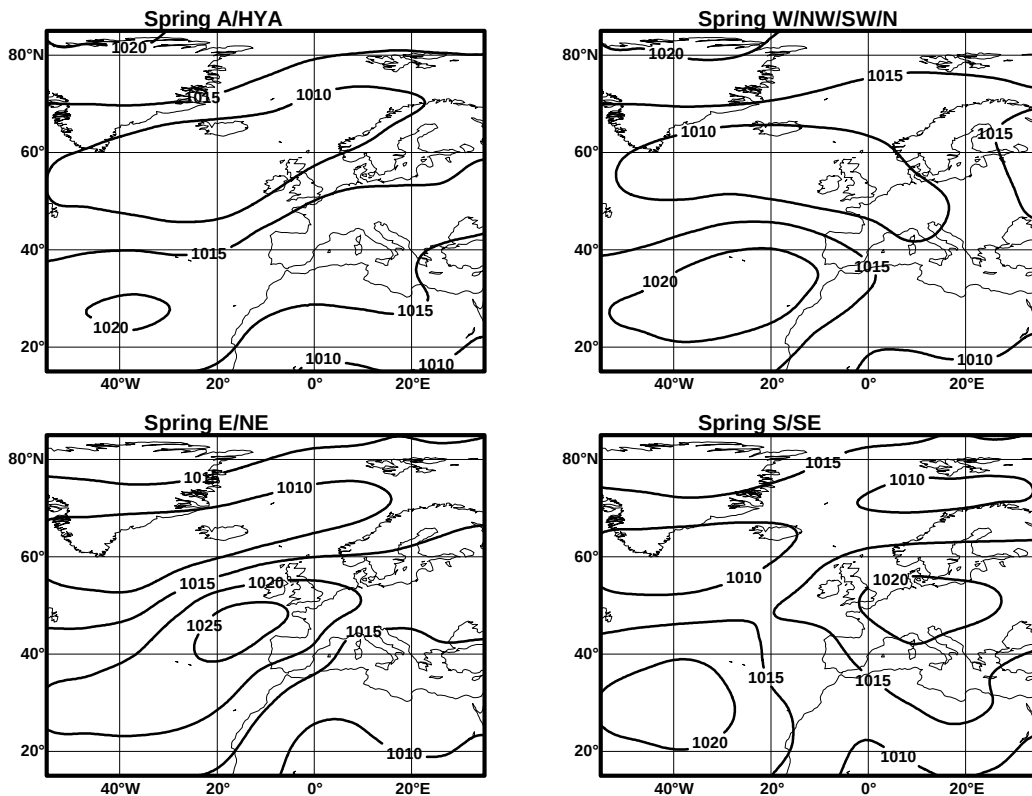


Figure 5.31: Seasonal mean SLP (hPa) for the four combined circulation-type groups for the Guadalentin, calculated from observed data, 1956-1989. (a) winter, (b) spring, (c) summer; and, (d) autumn.

Figure 5.31c:

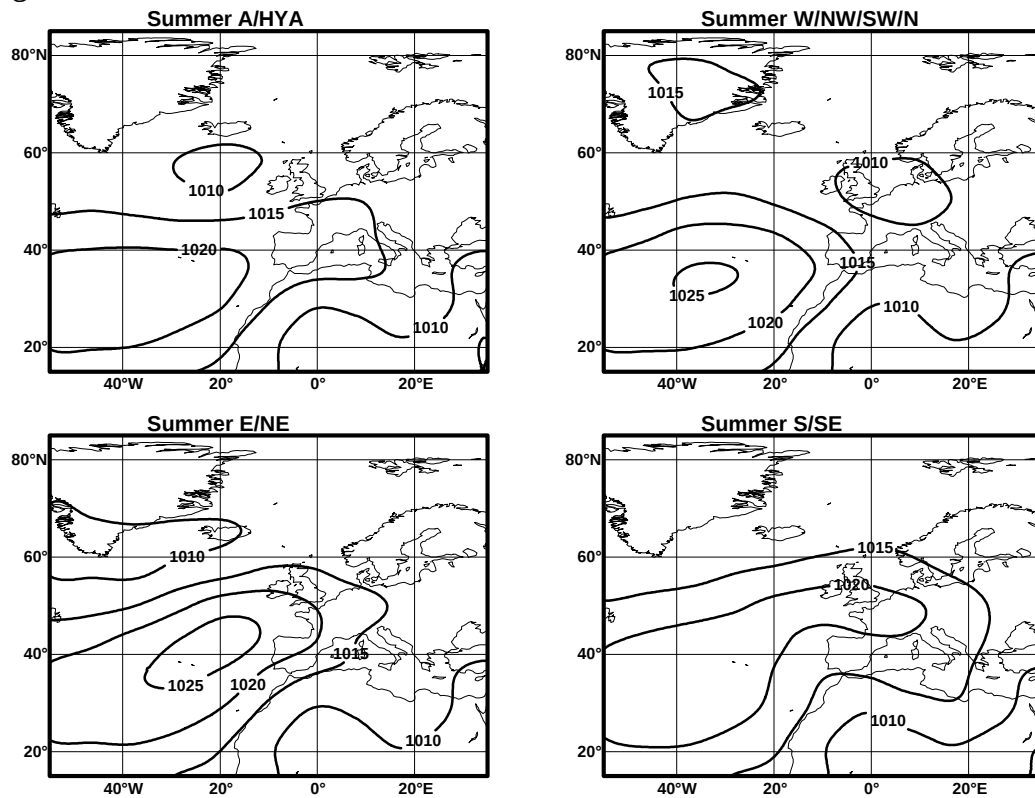


Figure 5.31d:

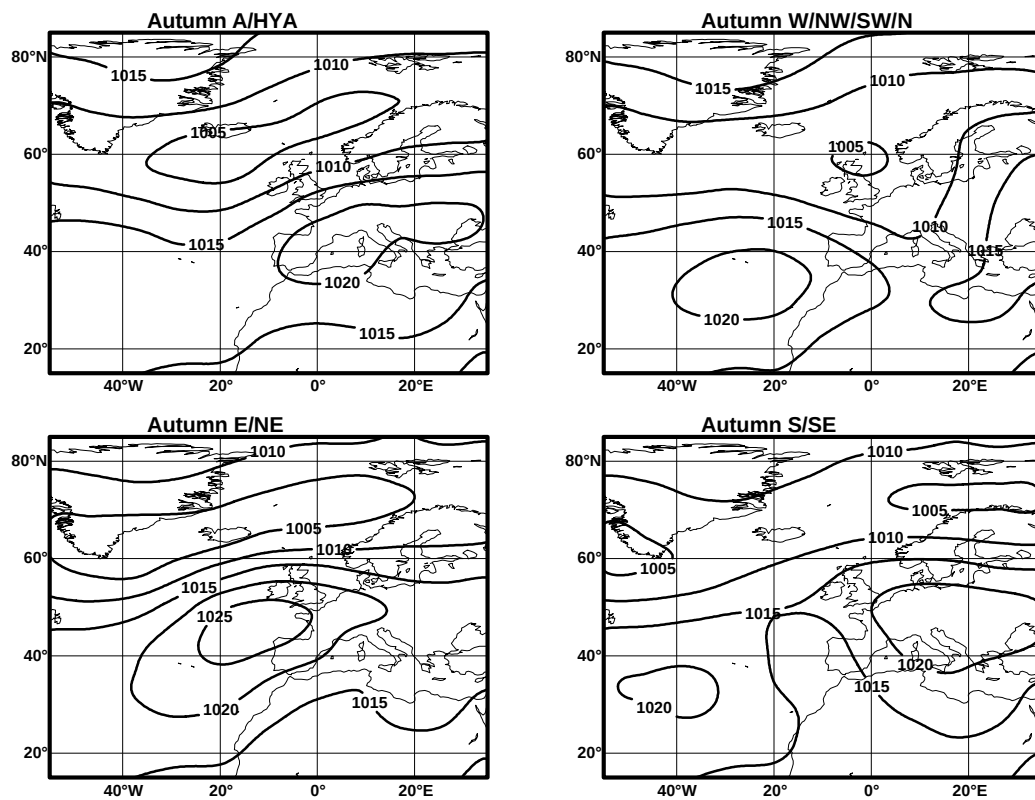


Figure 5.32a:

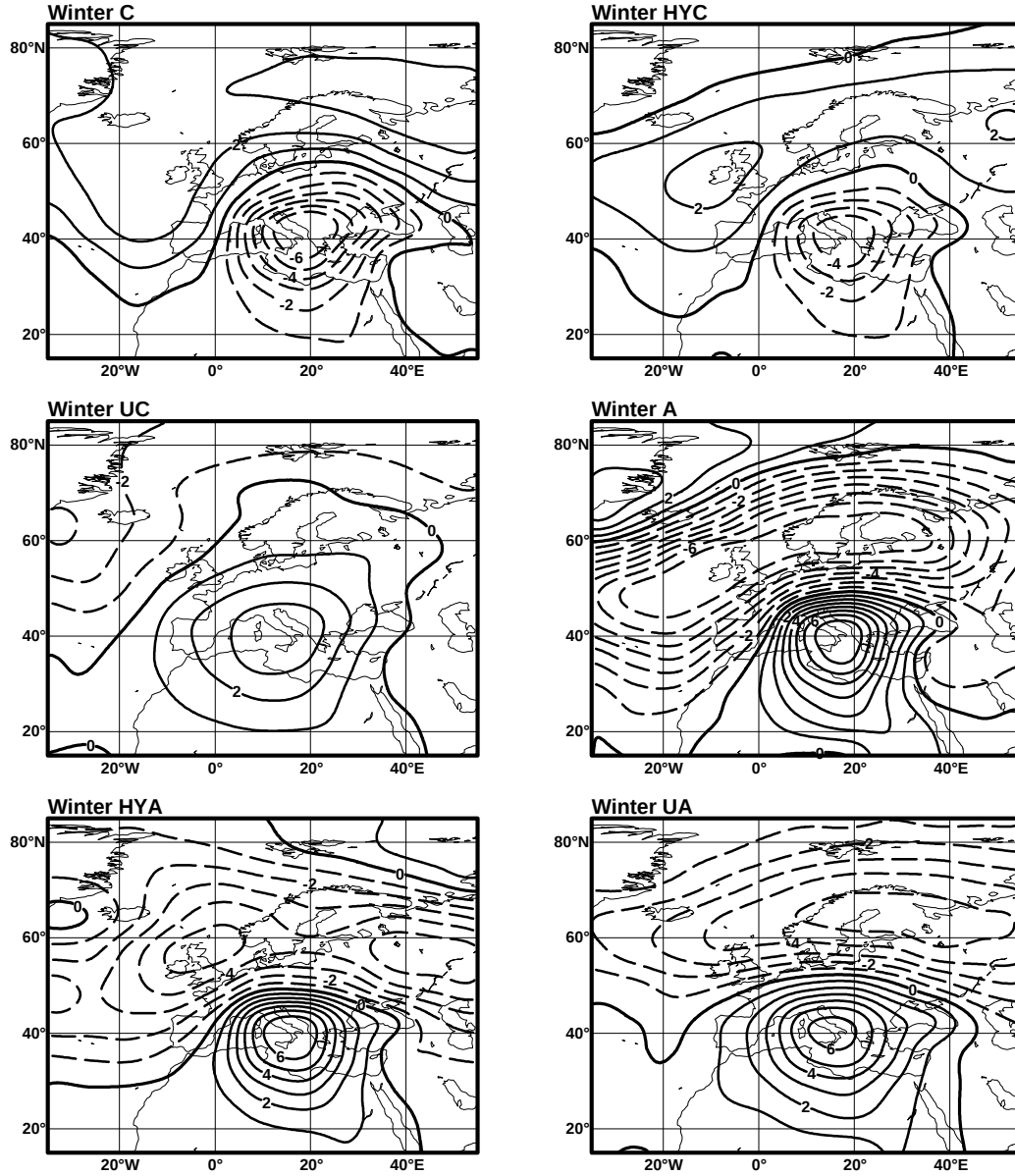


Figure 5.32: Seasonal SLP (hPa) anomalies for the six non-directional circulation types for the Agri, calculated from observed data, 1956-1989. (a) winter; (b) spring; (c) summer; and, (d) autumn.

Figure 5.32b:

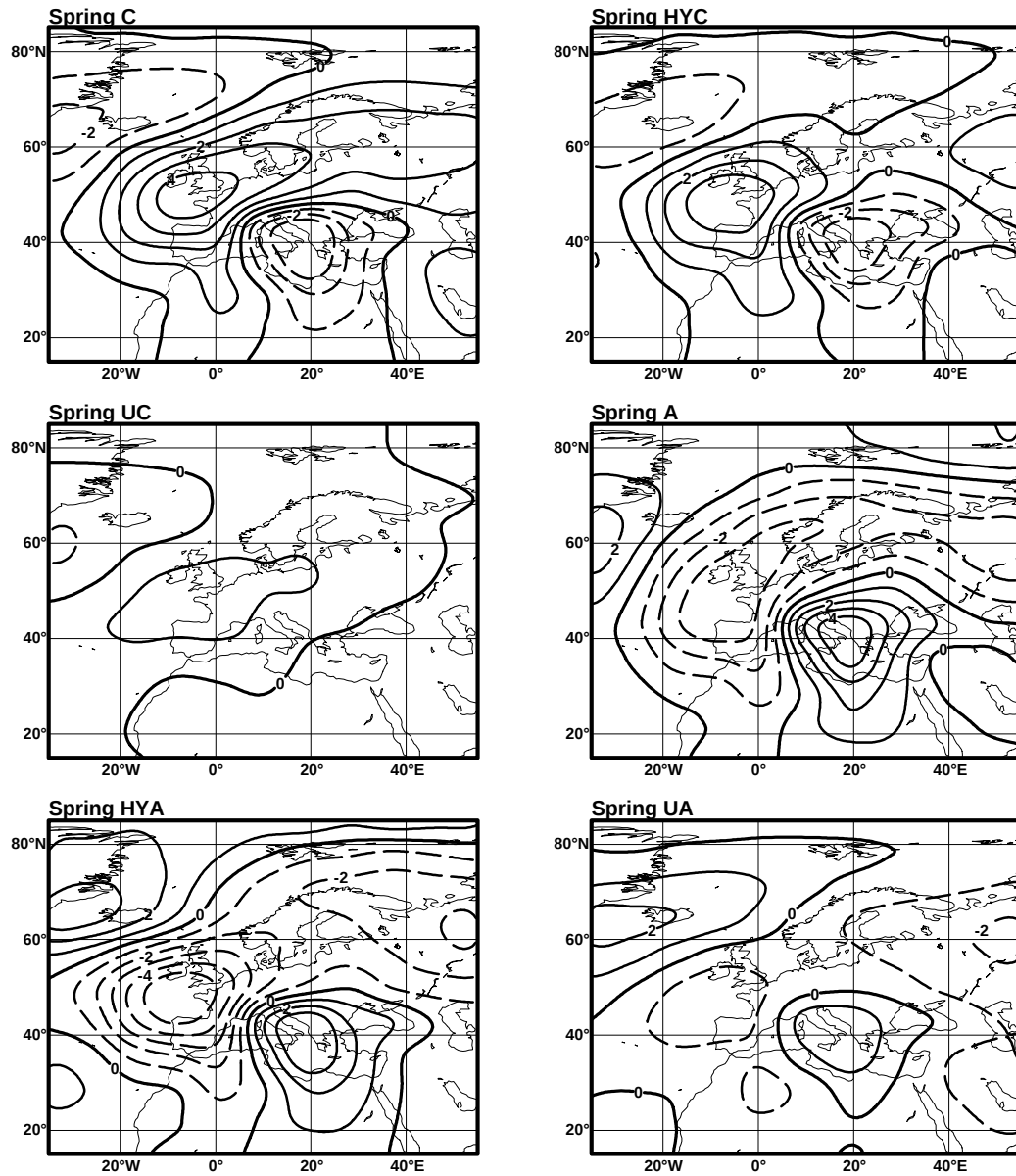


Figure 5.32c:

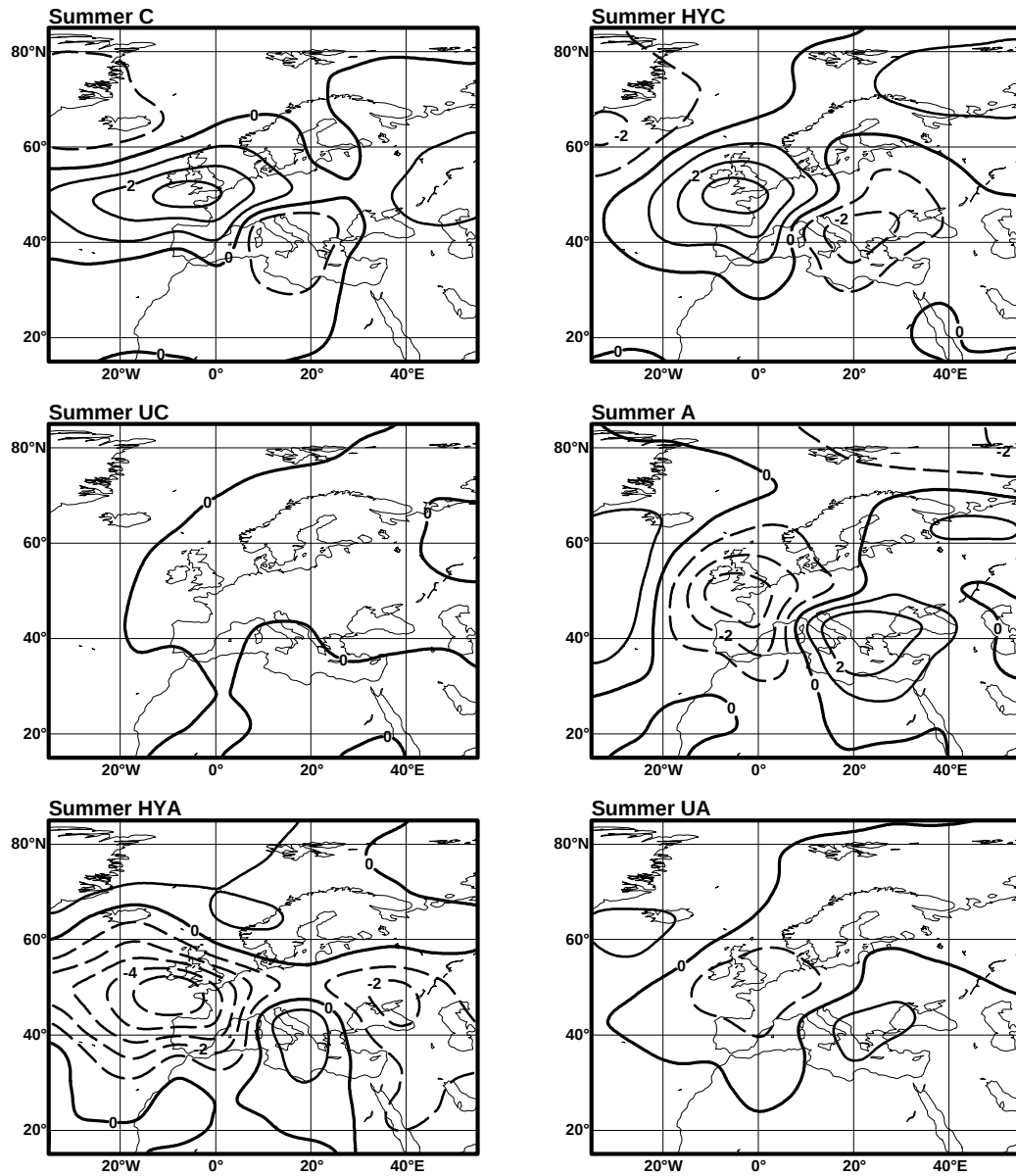


Figure 5.32d:

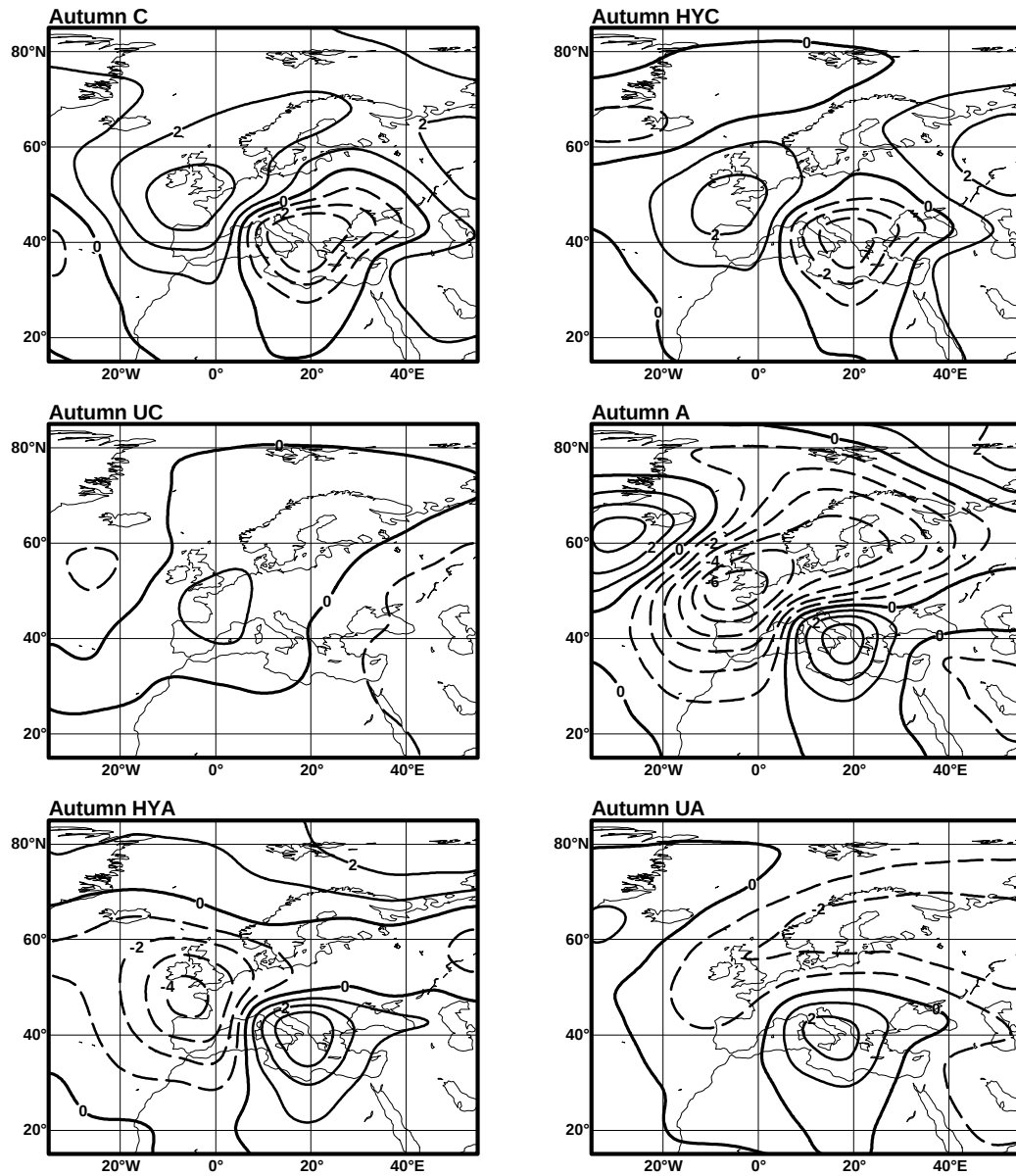


Figure 5.33a:

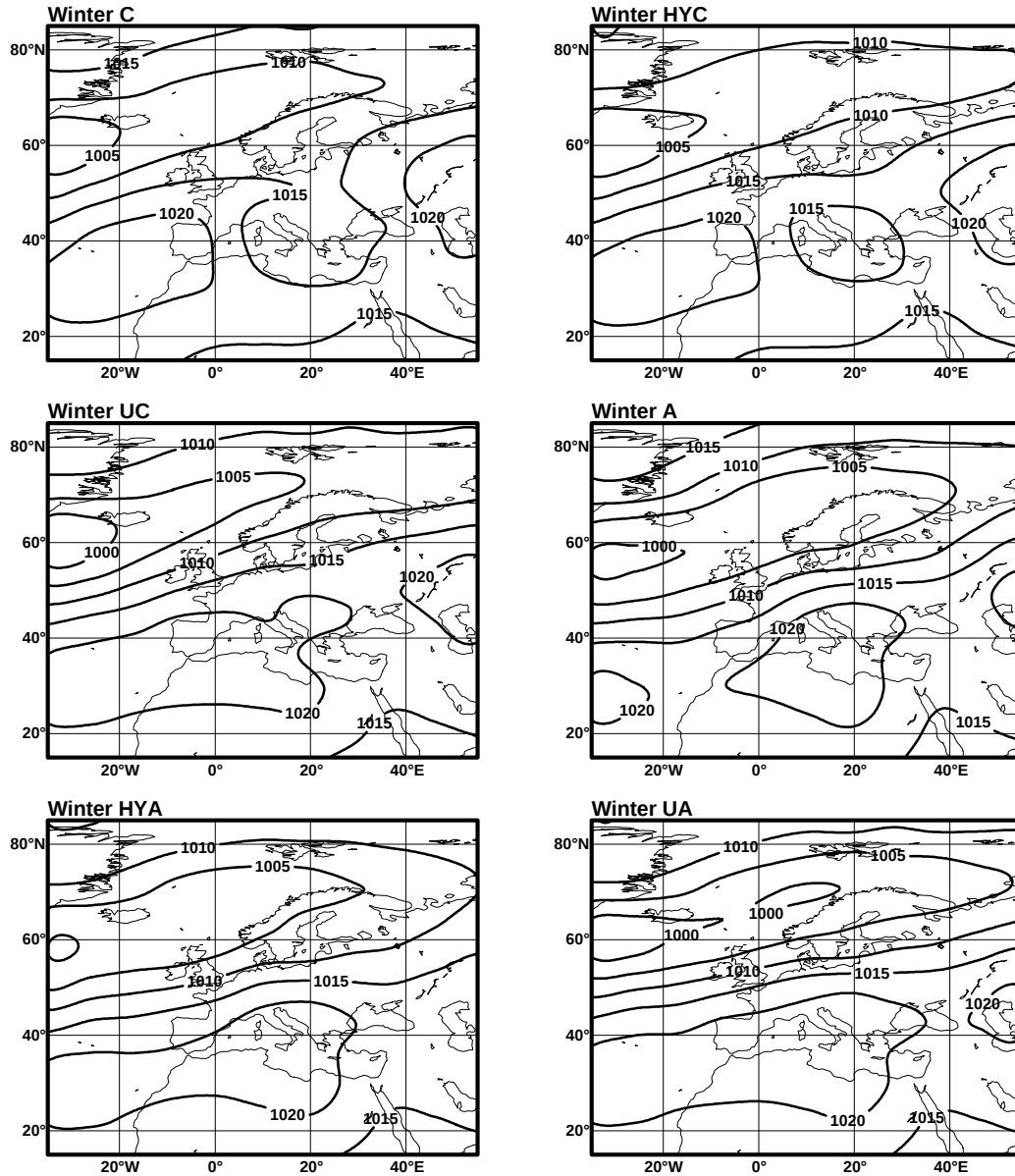


Figure 5.33: Seasonal mean SLP (hPa) for the six non-directional circulation types for the Agri, calculated from observed data, 1956-1989. (a) winter; (b) spring; (c) summer; and, (d) autumn.

Figure 5.33b:

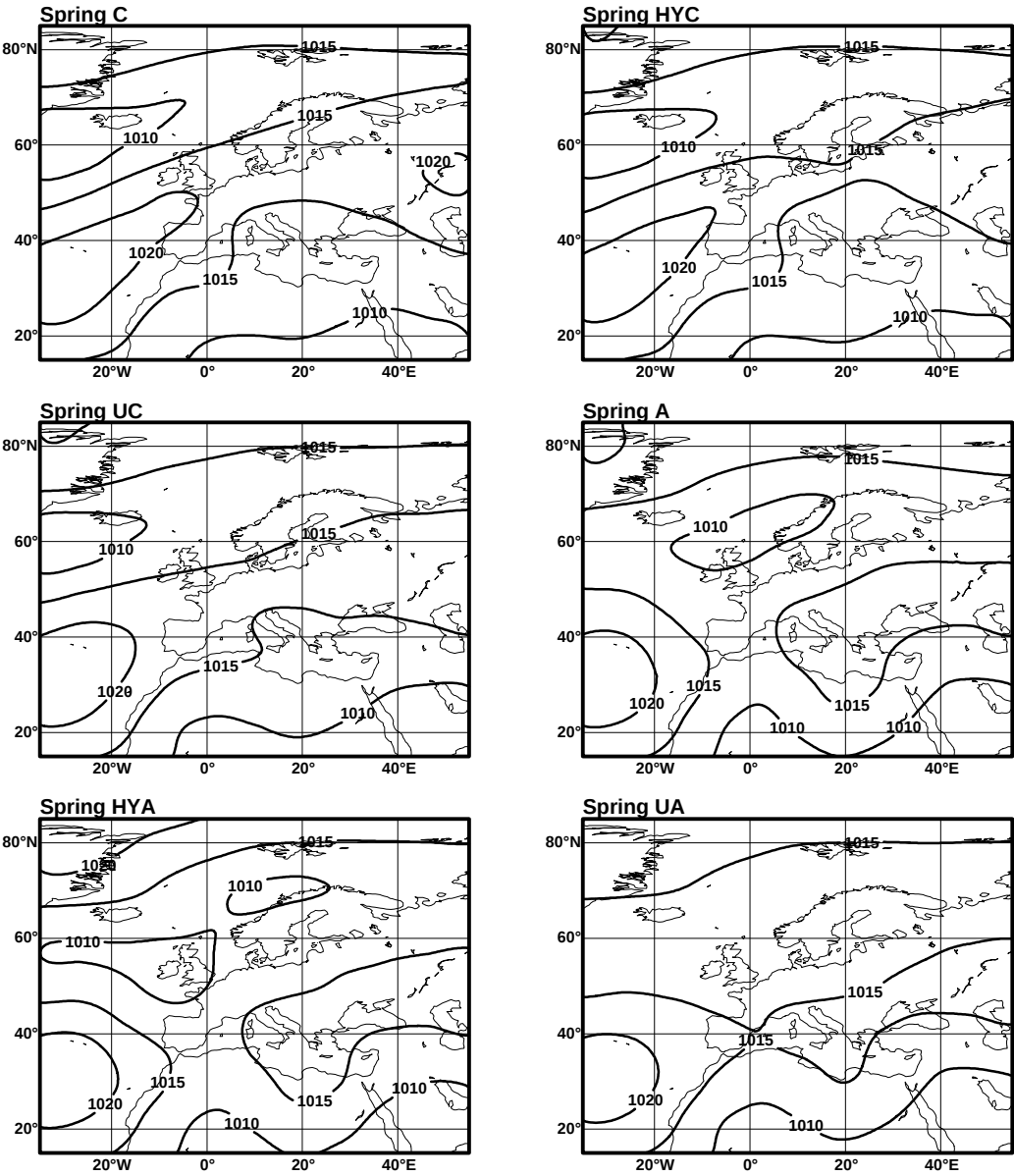


Figure 5.33c:

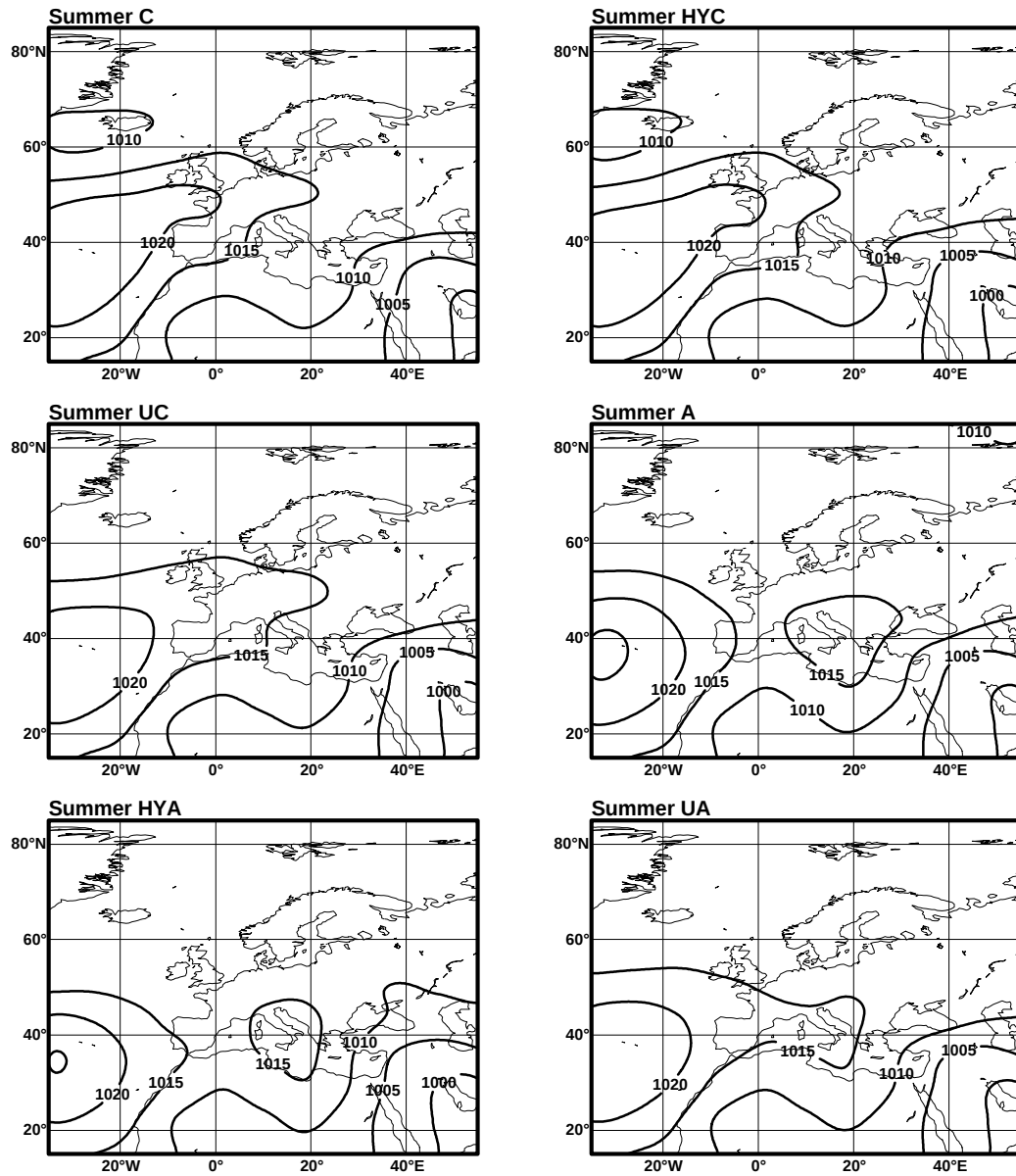


Figure 5.33d:

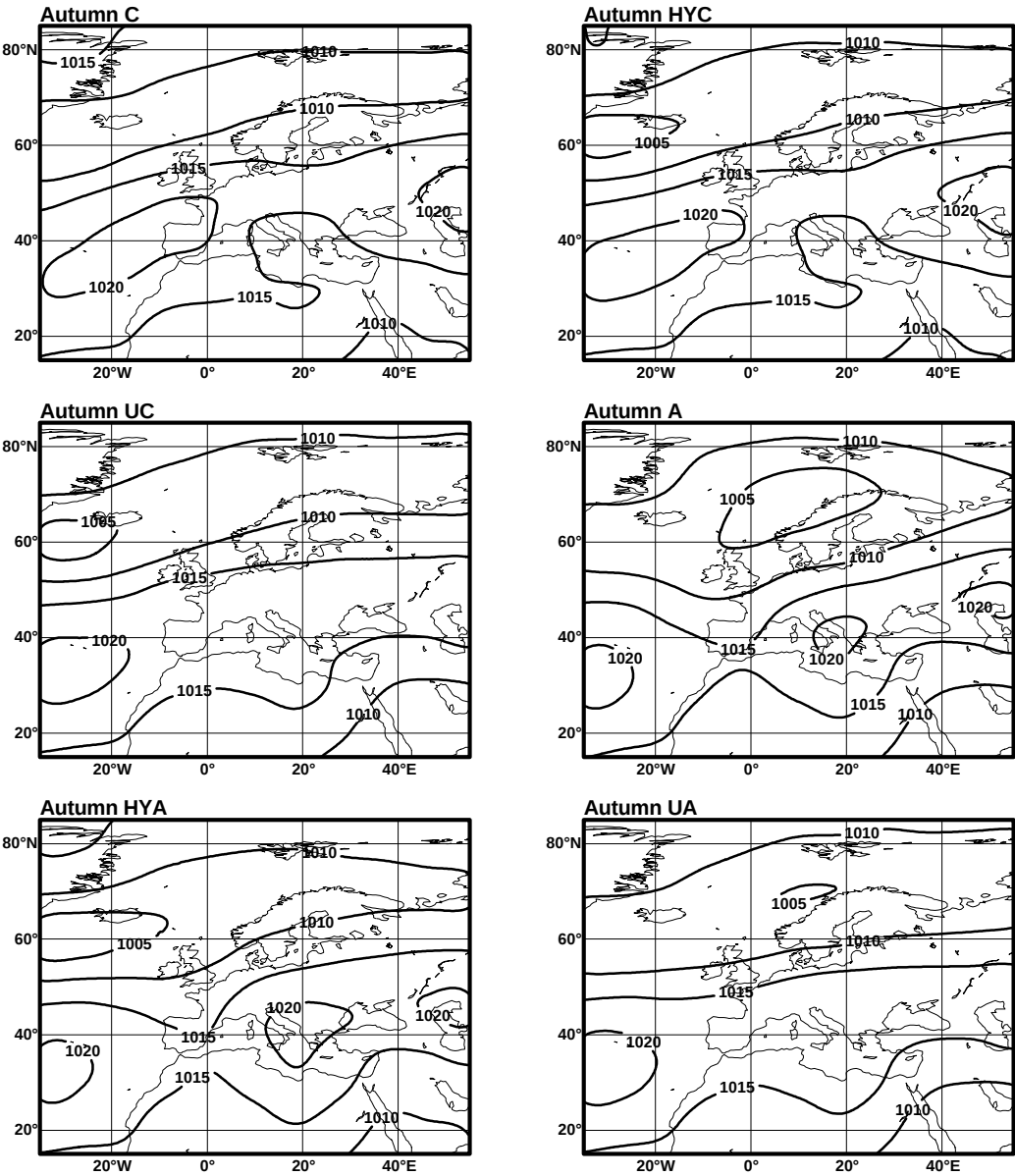


Figure 5.34a:

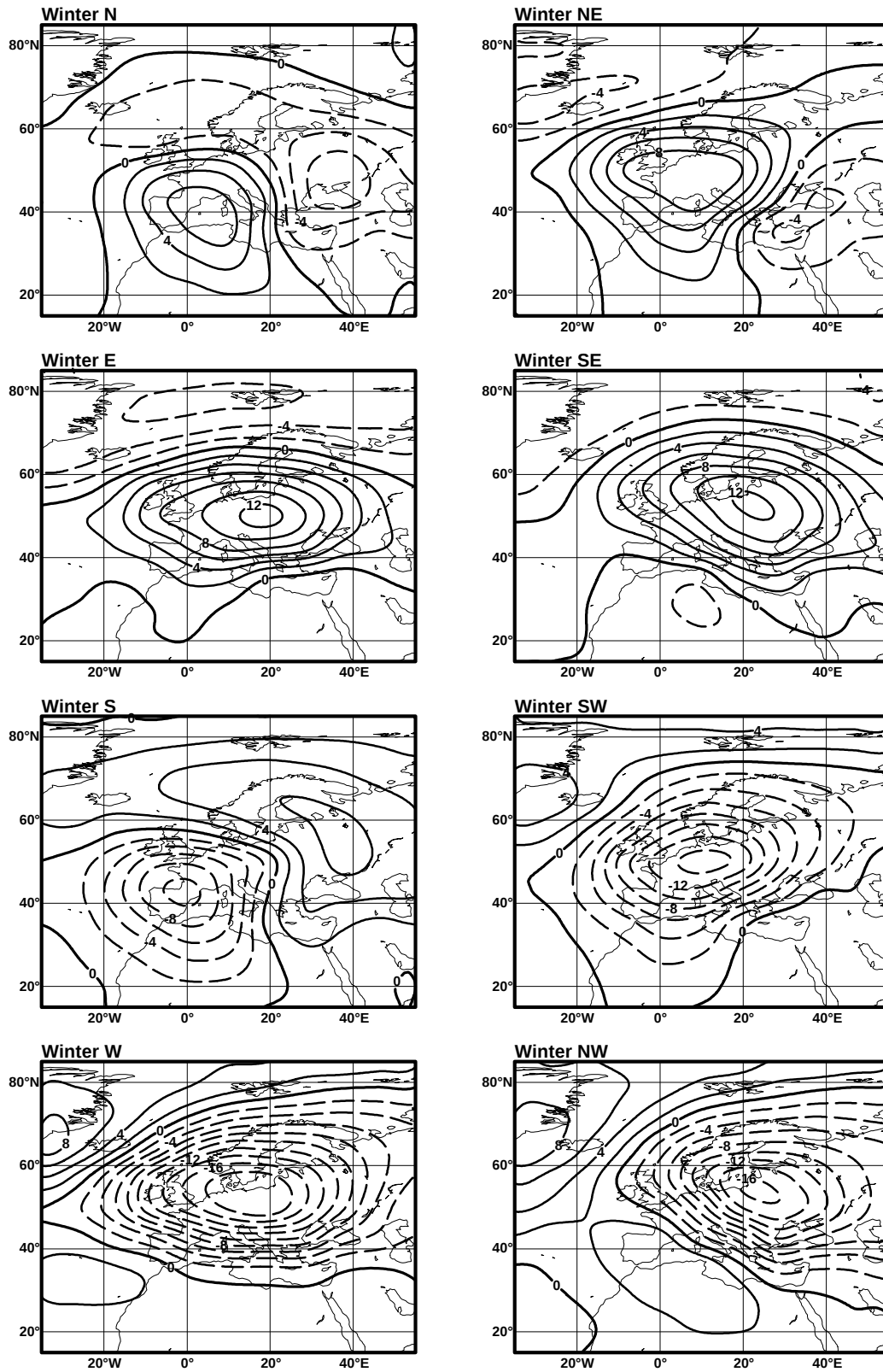


Figure 5.34: Seasonal SLP (hPa) anomalies for the eight directional circulation types for the Agri, calculated from observed data, 1956-1989. (a) winter; (b) spring; (c) summer; and, (d) autumn. N.B. The E-type does not occur in summer.

Figure 5.34b:

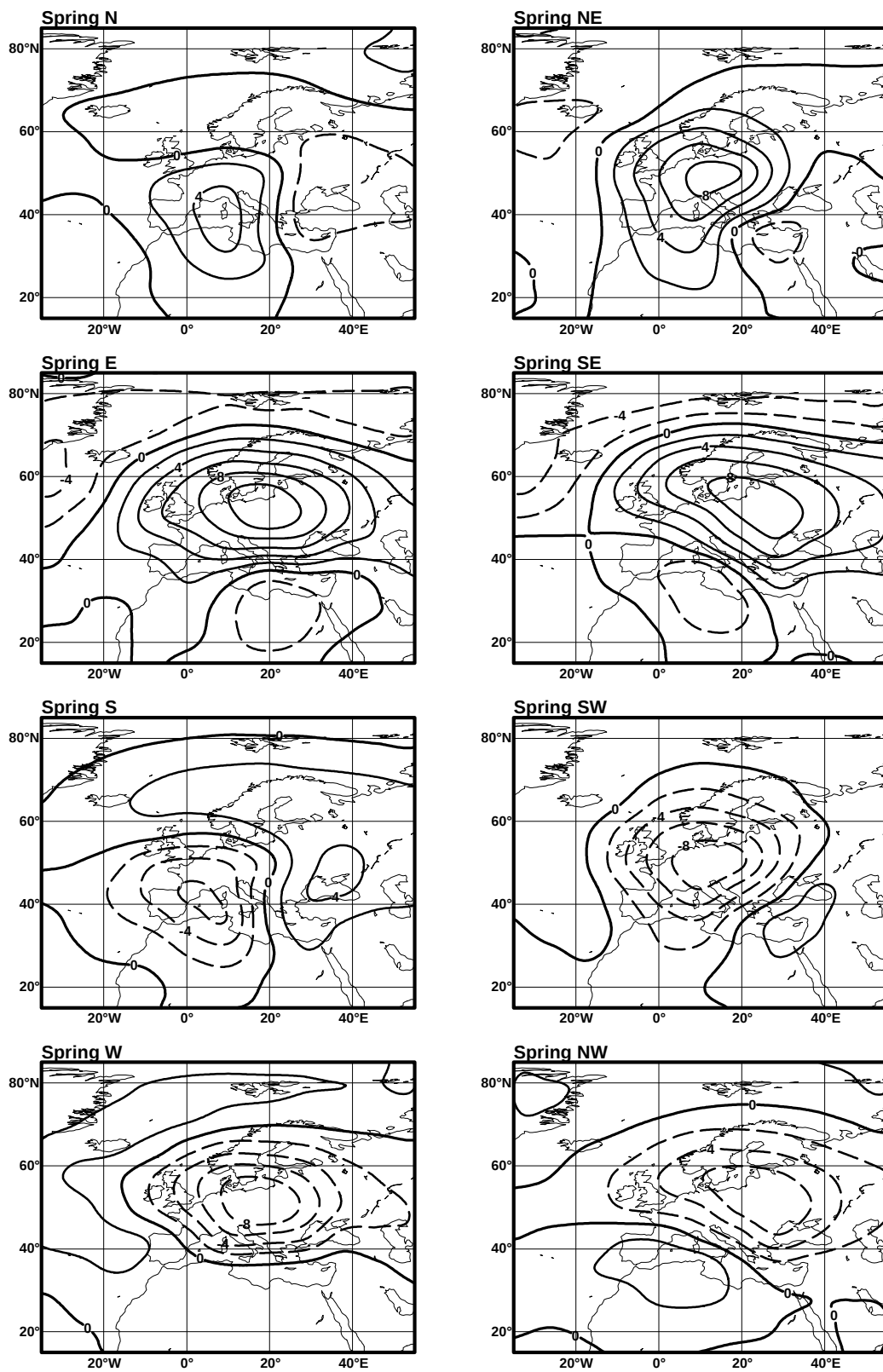


Figure 5.34c:

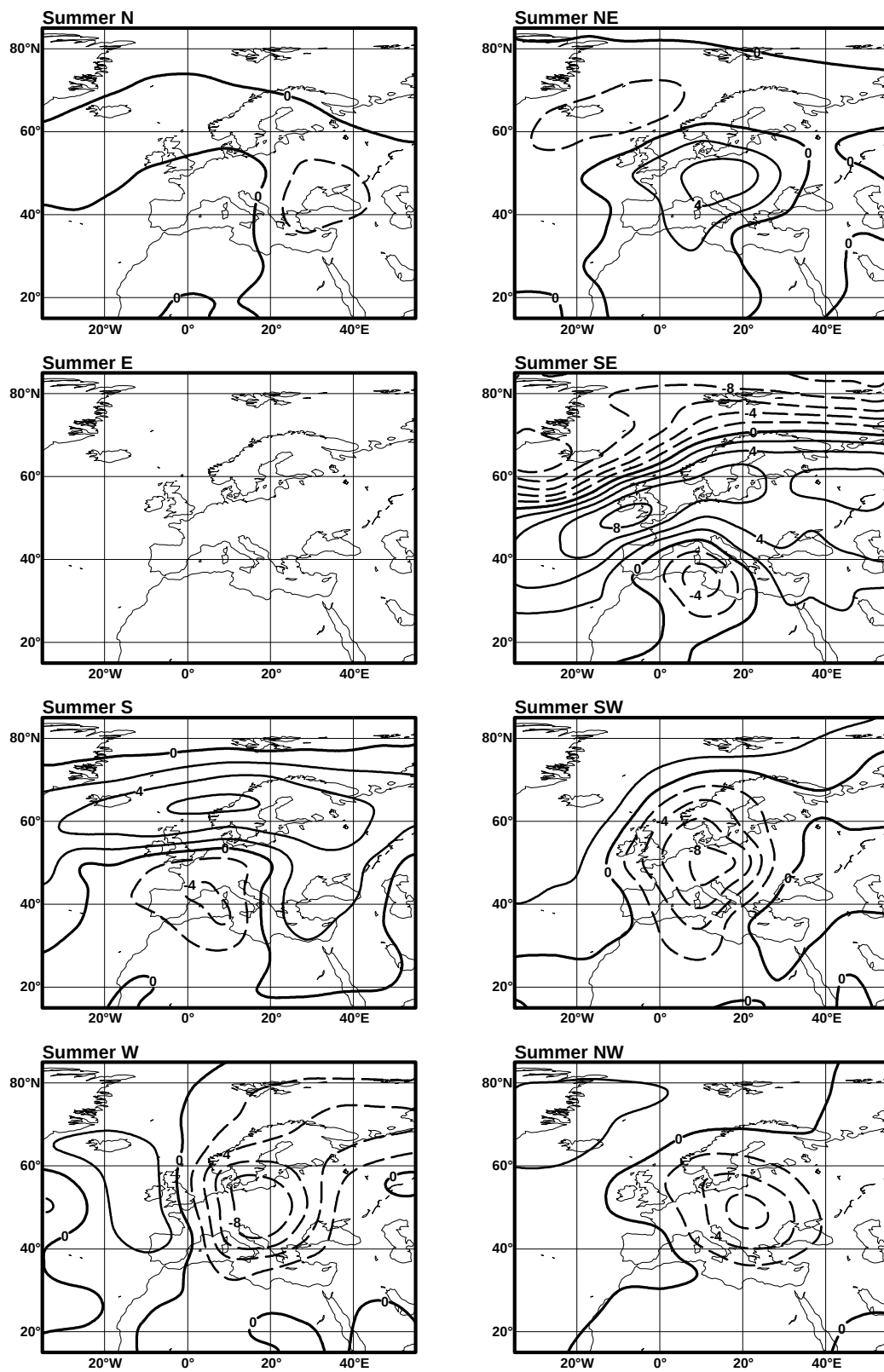


Figure 5.34d:

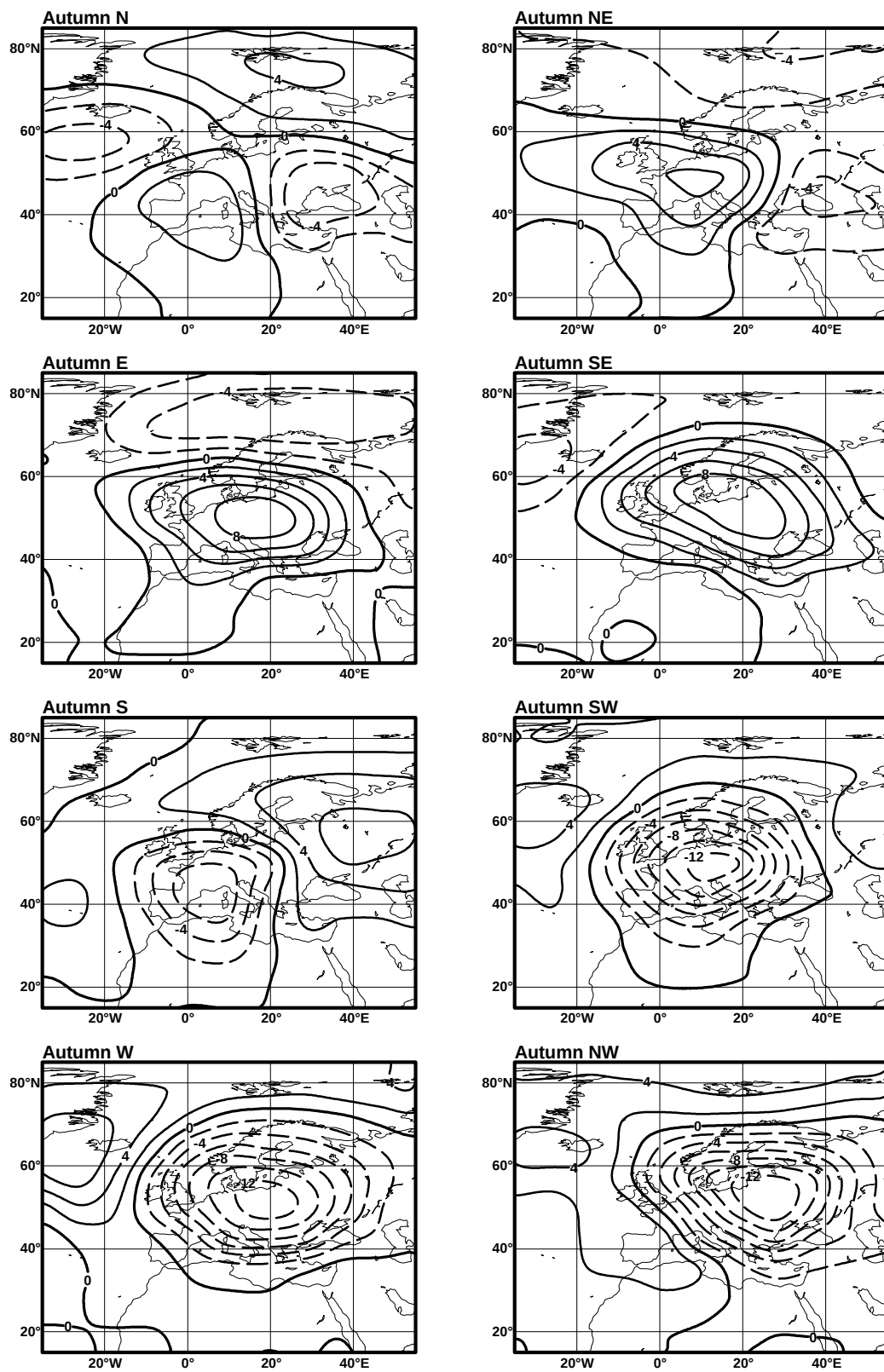


Figure 5.35a:

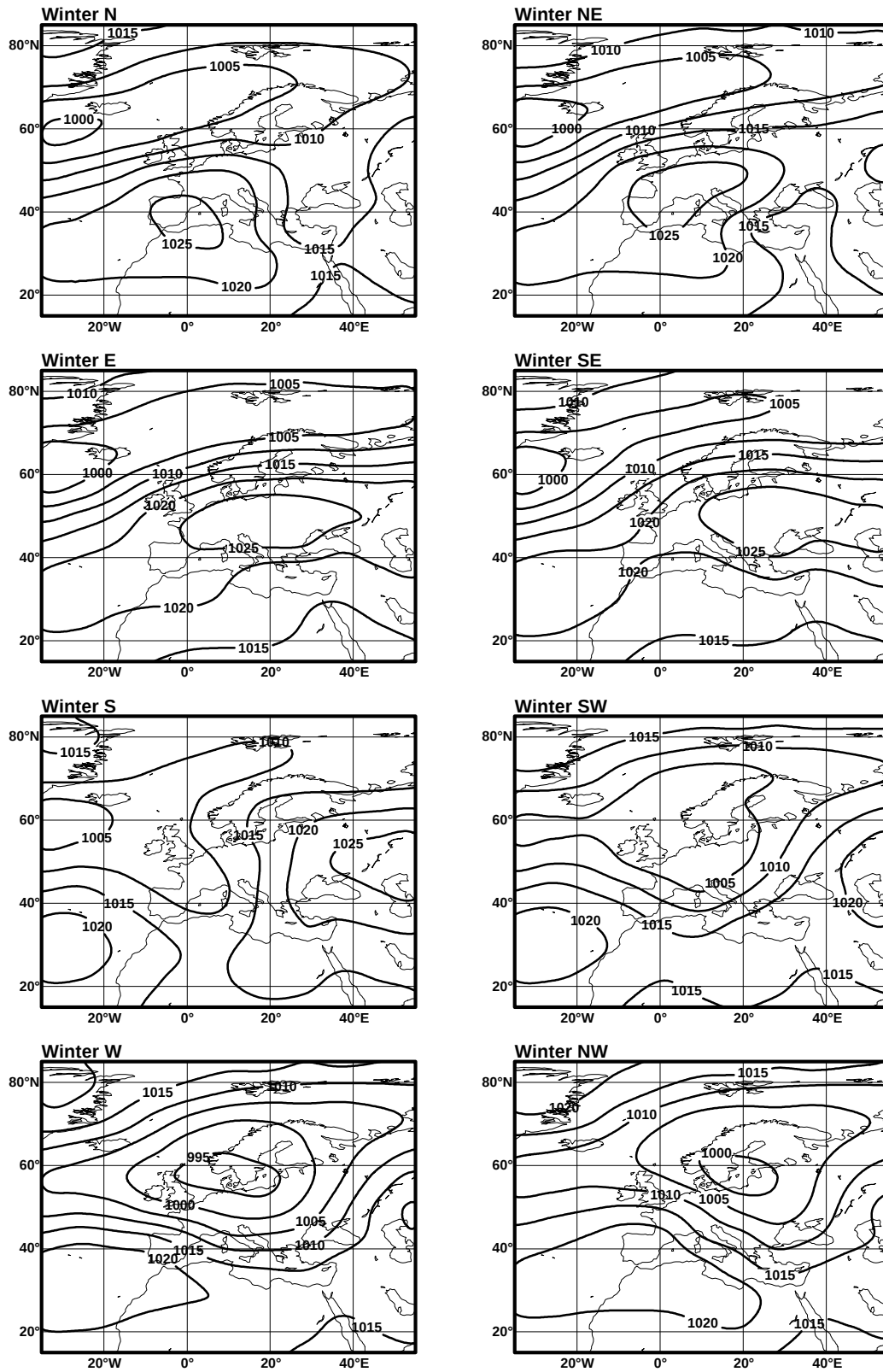


Figure 5.35: Seasonal mean SLP (hPa) for the eight directional circulation types for the Agri, calculated from observed data, 1956-1989. (a) winter; (b) spring; (c) summer; and, (d) autumn. N.B. The E-type does not occur in summer.

Figure 5.35b:

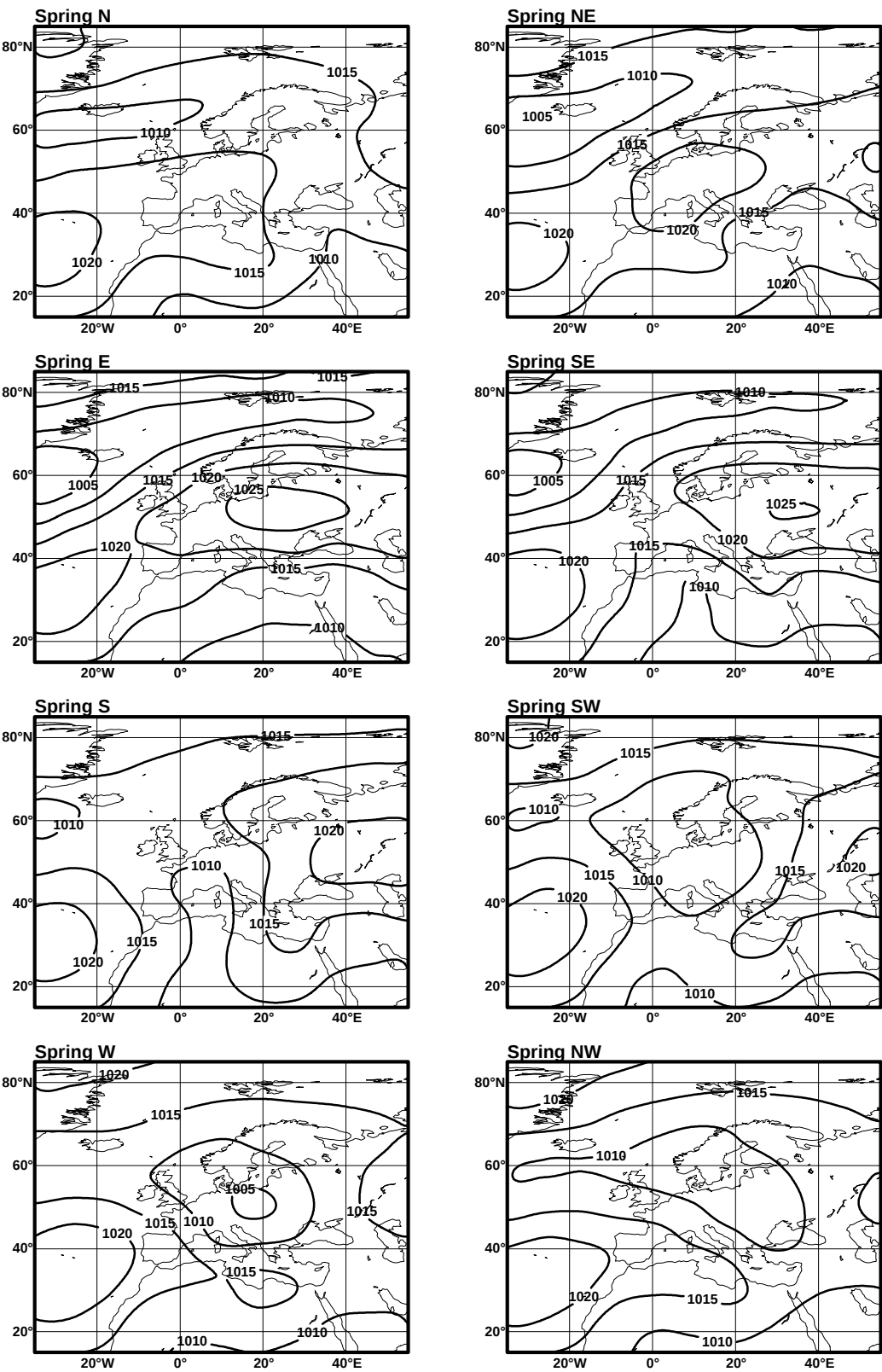


Figure 5.35c:

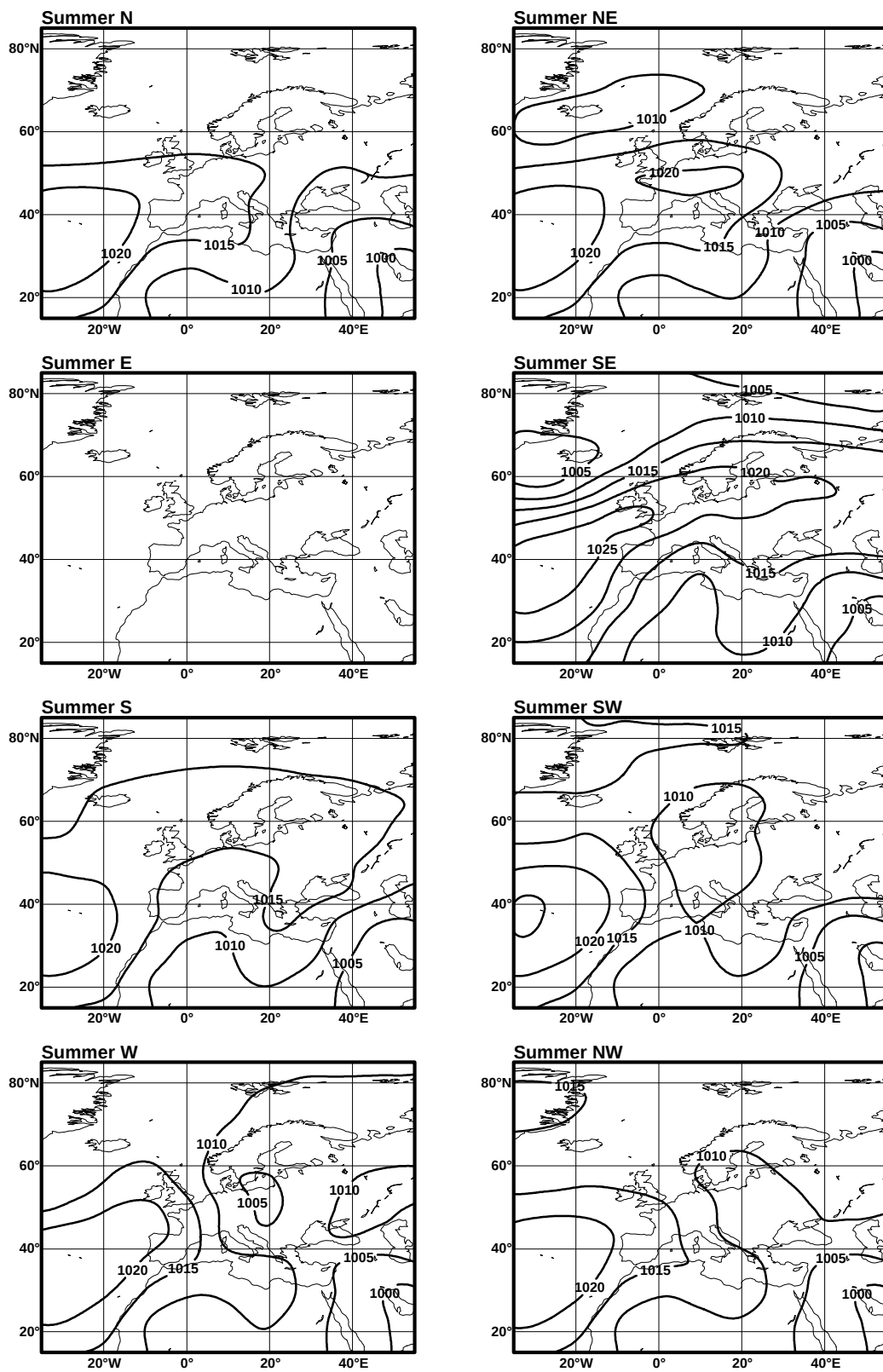
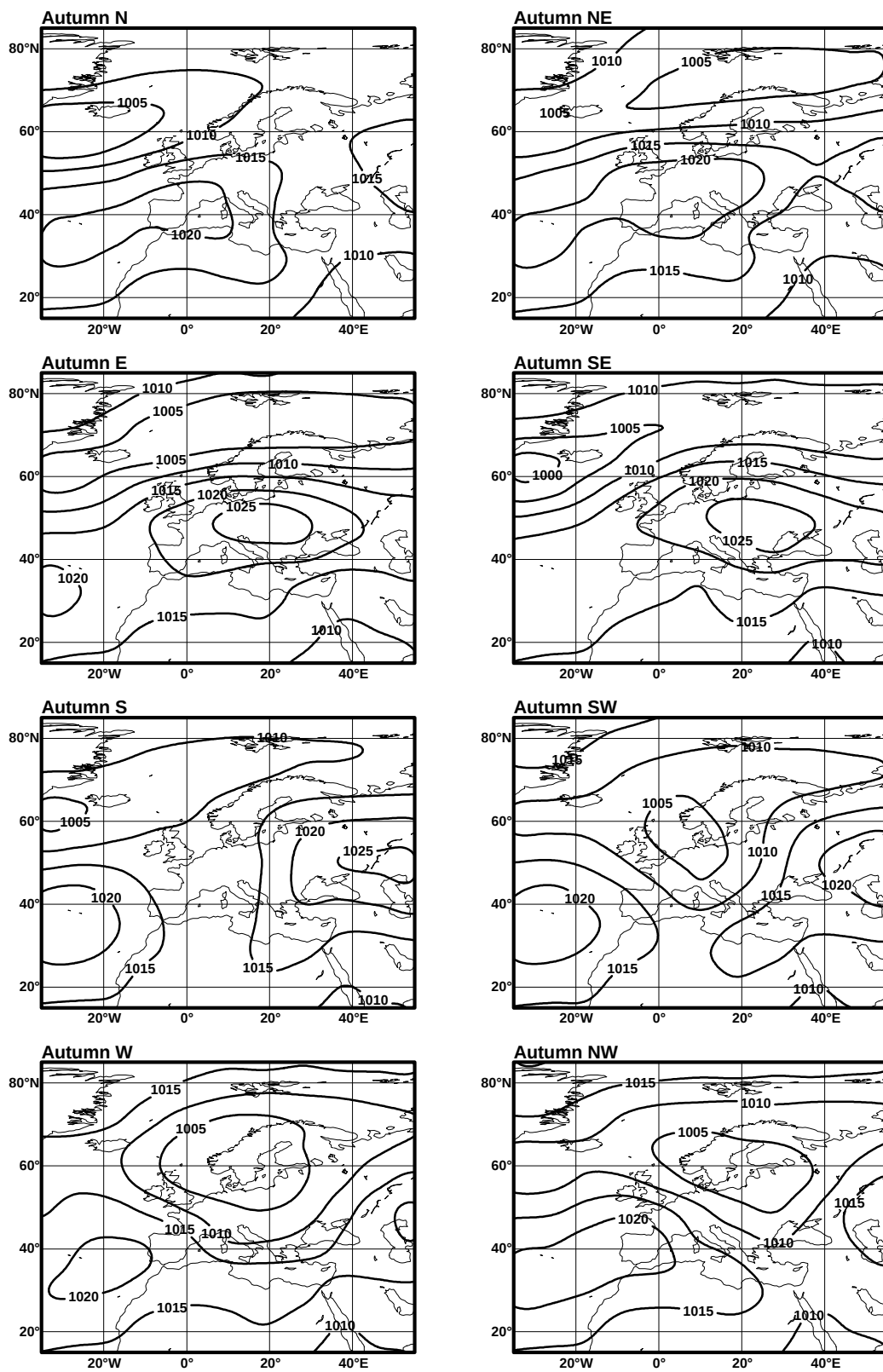


Figure 5.35d:



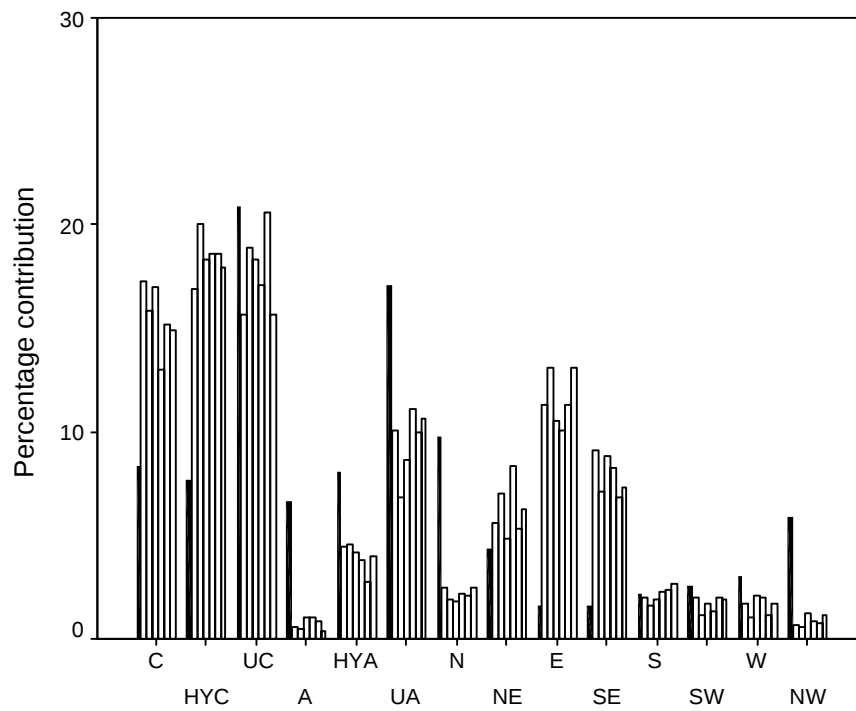


Figure 5.36: The mean annual frequency (shown as the percentage of all days) of the 14 circulation types (solid bars); and their contribution to annual rainfall (shown as the percentage of total annual rainfall) for six stations in the Guadalentin Basin.

Figure 5.37a: Winter

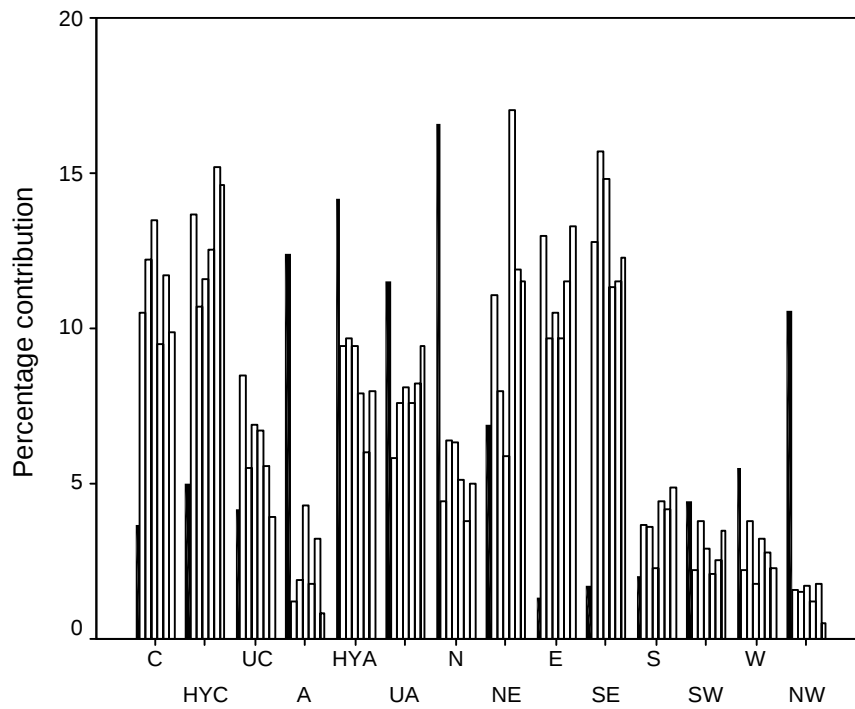


Figure 5.37b: Spring

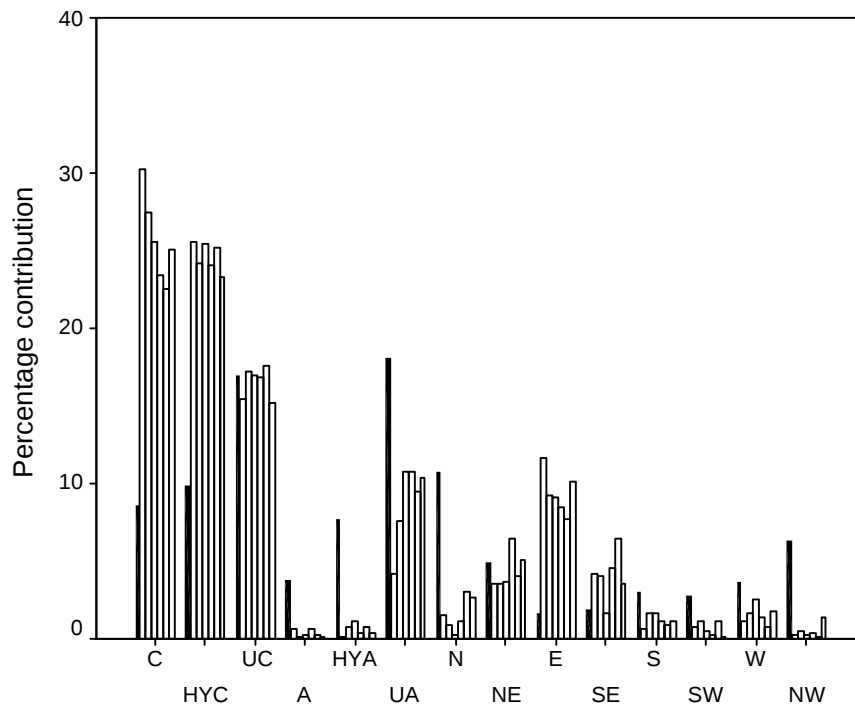


Figure 5.37: The mean seasonal frequency (shown as the percentage of all days) of the 14 circulation types (solid bars); and their contribution to seasonal rainfall (shown as the percentage of total seasonal rainfall) for six stations in the Guadalentin Basin. (a) winter, (b) spring, (c) summer, and (d) autumn.

Figure 5.37c: Summer

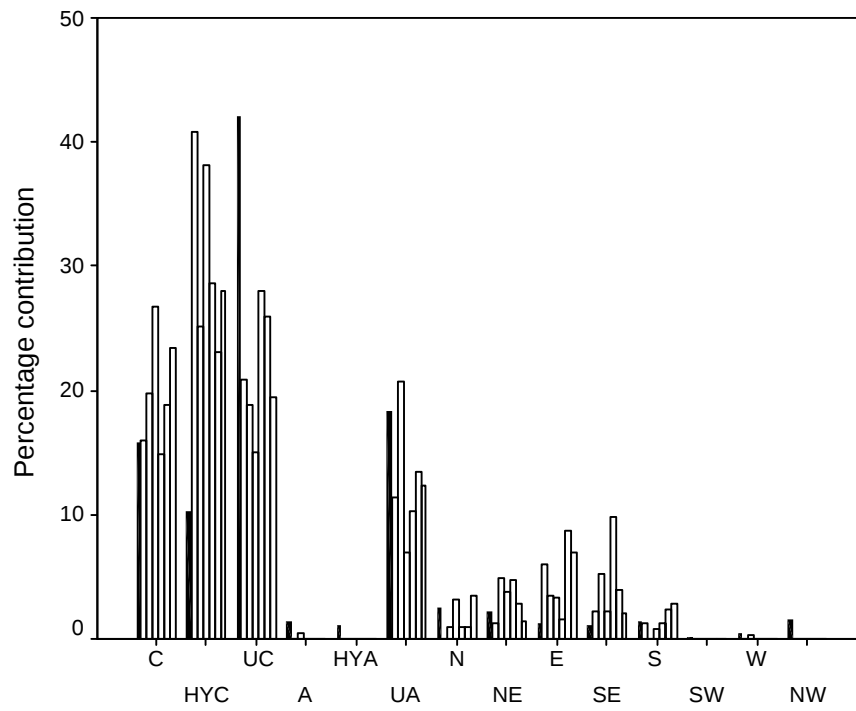
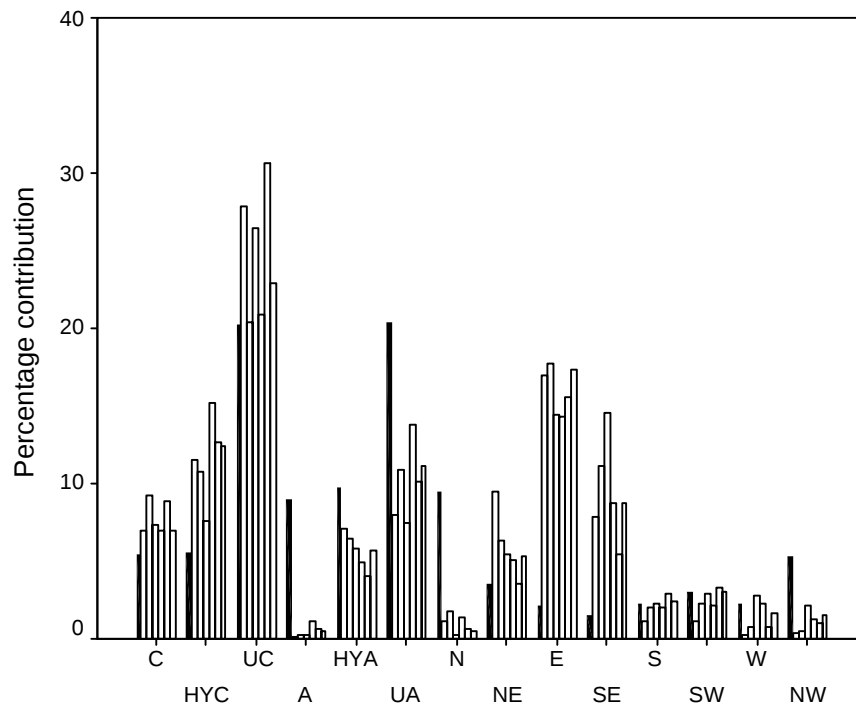


Figure 5.37d: Autumn



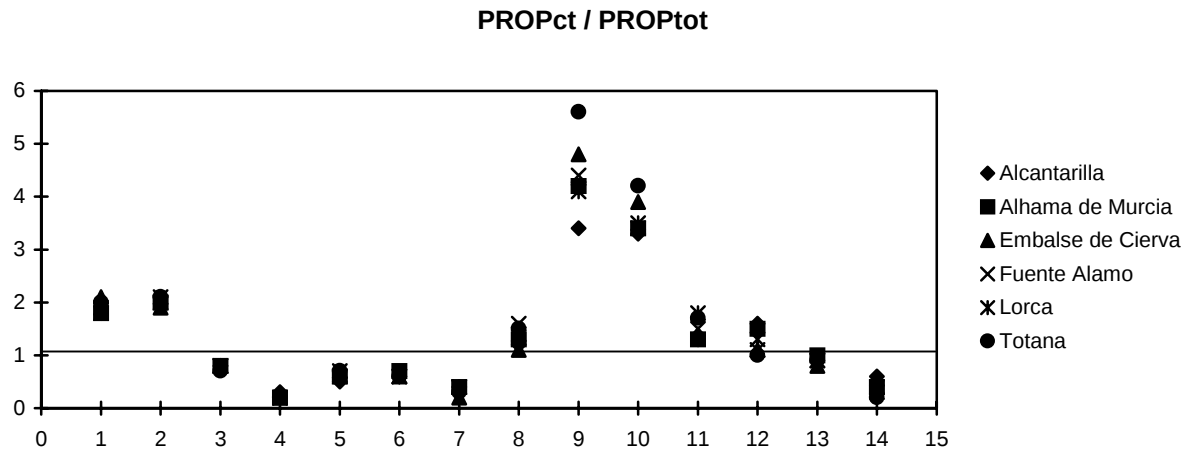


Figure 5.38: Annual standardised ratios $PROP_{ct}/PROP_{tot}$ for six stations in the Guadalentin Basin. 1 = C, 2 = HYC, 3 = UC, 4 = A, 5 = HYA, 6 = UA, 7 = N, 8 = NE, 9 = E, 10 = SE, 11 = S, 12 = SW, 13 = W, 14 = NW circulation types.

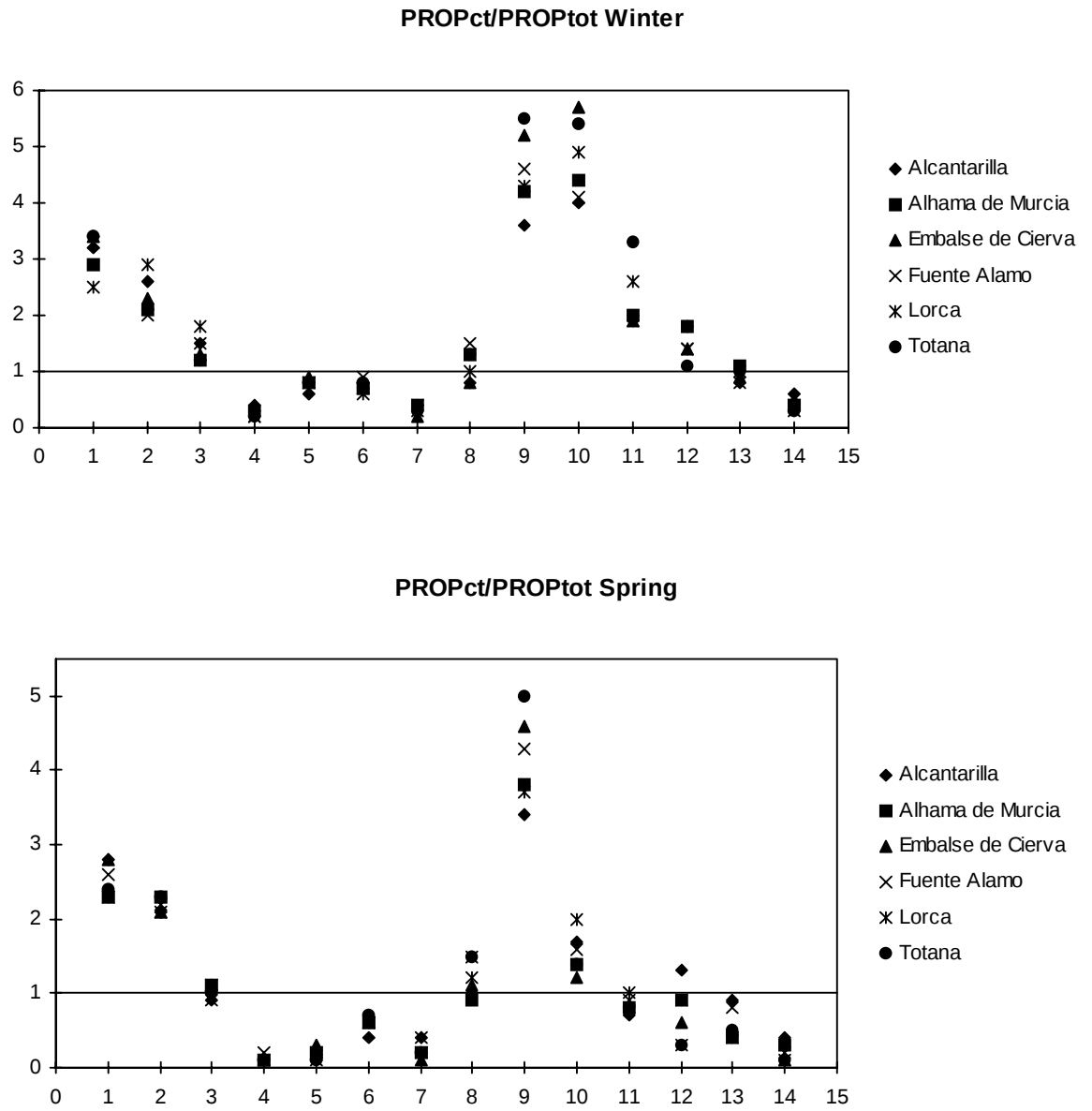
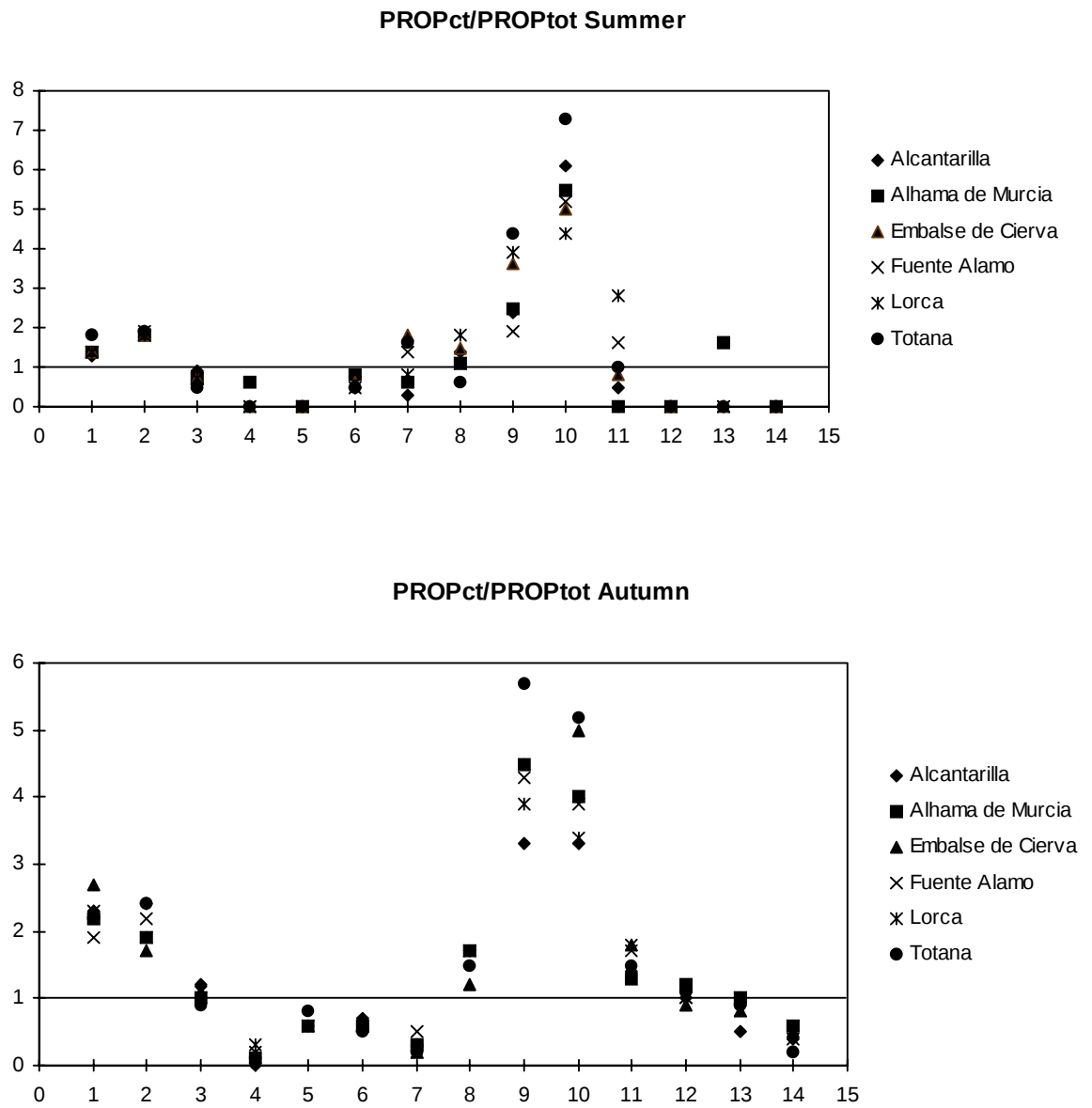


Figure 5.39: Seasonal standardised ratios $PROP_{ct}/PROP_{tot}$ for six stations in the Guadalentin Basin. 1 = C, 2 = HYC, 3 = UC, 4 = A, 5 = HYA, 6 = UA, 7 = N, 8 = NE, 9 = E, 10 = SE, 11 = S, 12 = SW, 13 = W, 14 = NW circulation types.

Figure 5.39: ...continued.



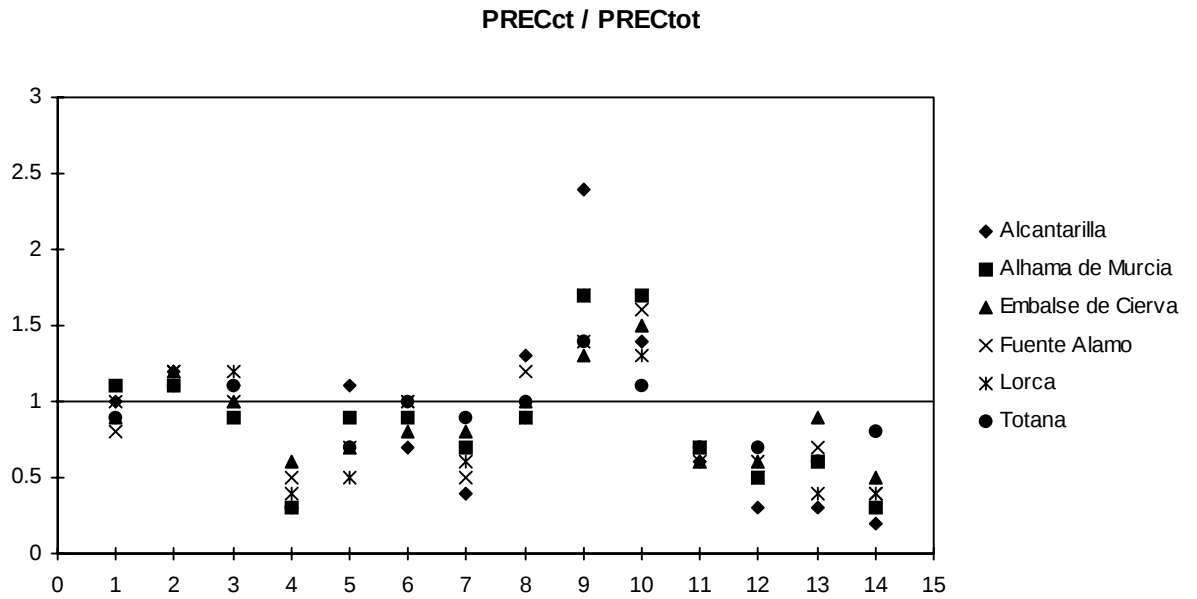


Figure 5.40: Annual standardised ratios $PREC_{ct}/PREC_{tot}$ for six stations in the Guadalentin Basin. 1 = C, 2 = HYC, 3 = UC, 4 = A, 5 = HYA, 6 = UA, 7 = N, 8 = NE, 9 = E, 10 = SE, 11 = S, 12 = SW, 13 = W, 14 = NW circulation types.

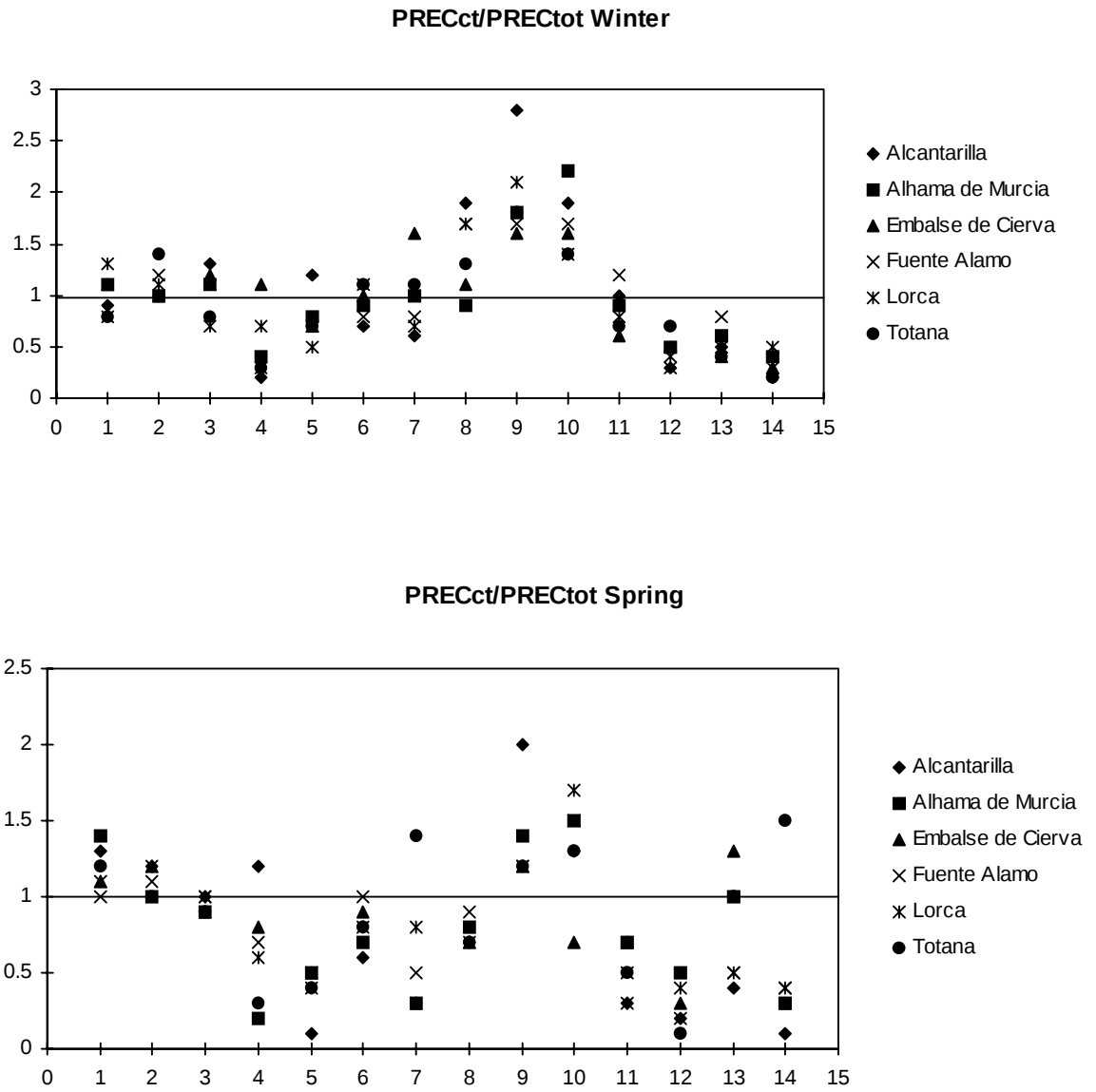
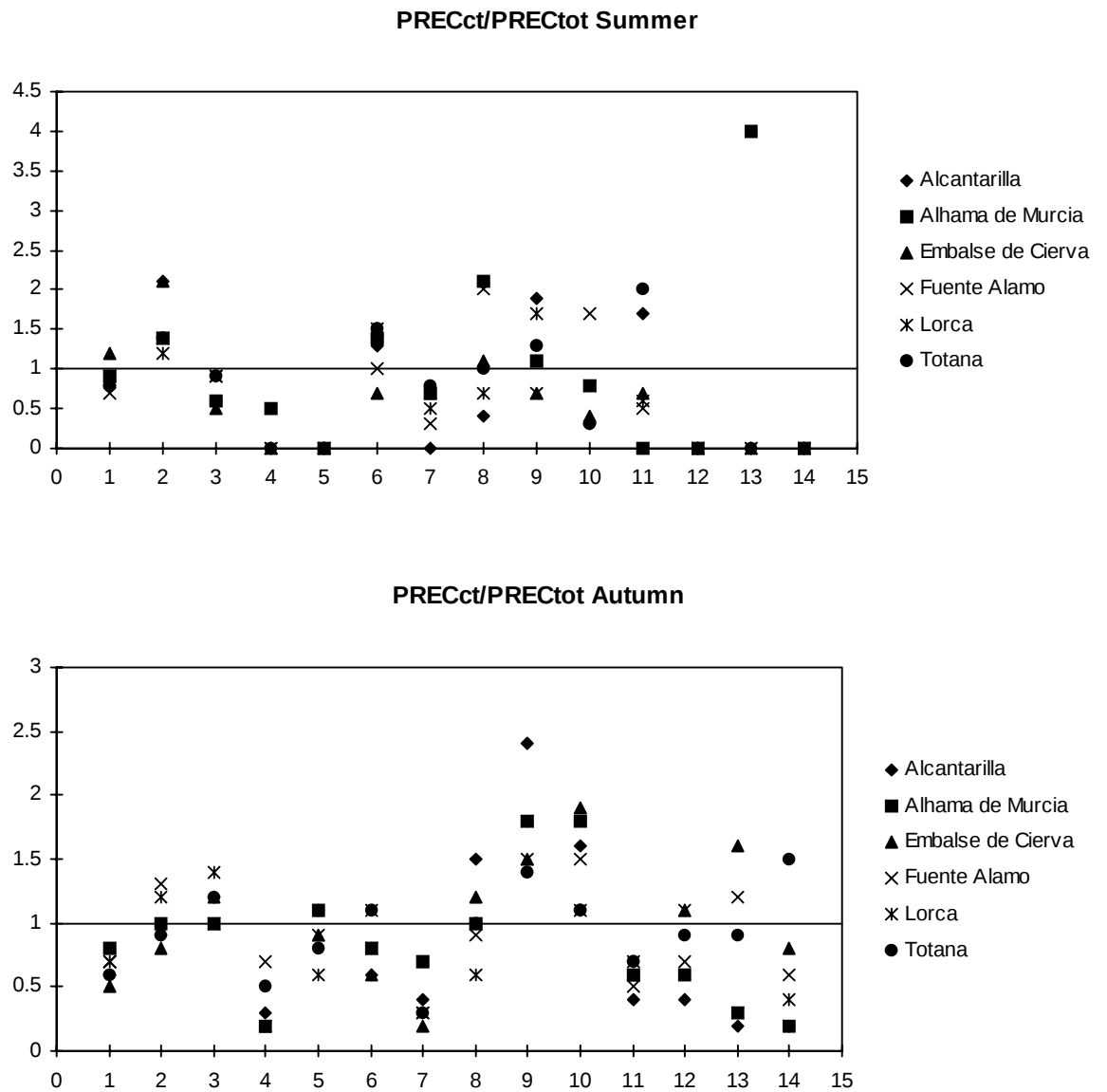


Figure 5.41: Seasonal standardised ratios $PREC_{ct}/PREC_{tot}$ for six stations in the Guadalentin Basin. 1 = C, 2 = HYC, 3 = UC, 4 = A, 5 = HYA, 6 = UA, 7 = N, 8 = NE, 9 = E, 10 = SE, 11 = S, 12 = SW, 13 = W, 14 = NW circulation types.

Figure 5.41:...continued.



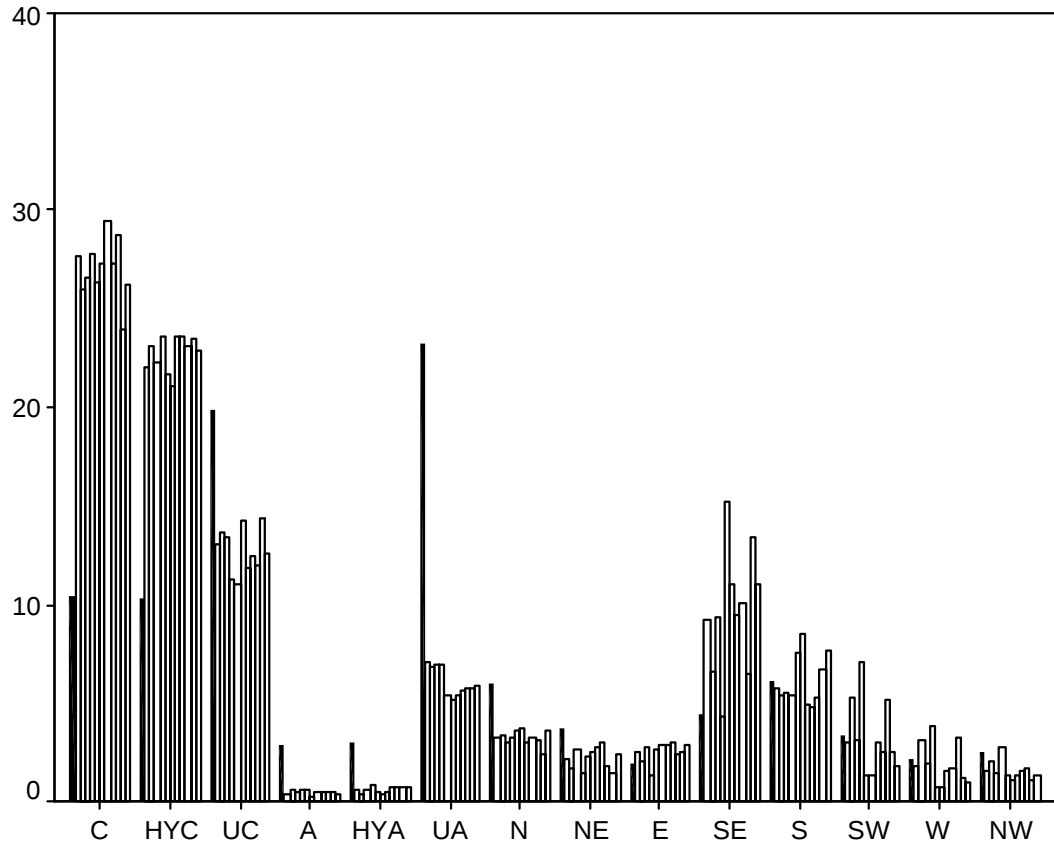


Figure 5.42: The mean annual frequency (shown as the percentage of all days) of the 14 circulation types (solid bars); and their contribution to annual rainfall (shown as the percentage of total annual rainfall) for 11 stations in the Agri Basin.

Figure 5.43a: Winter

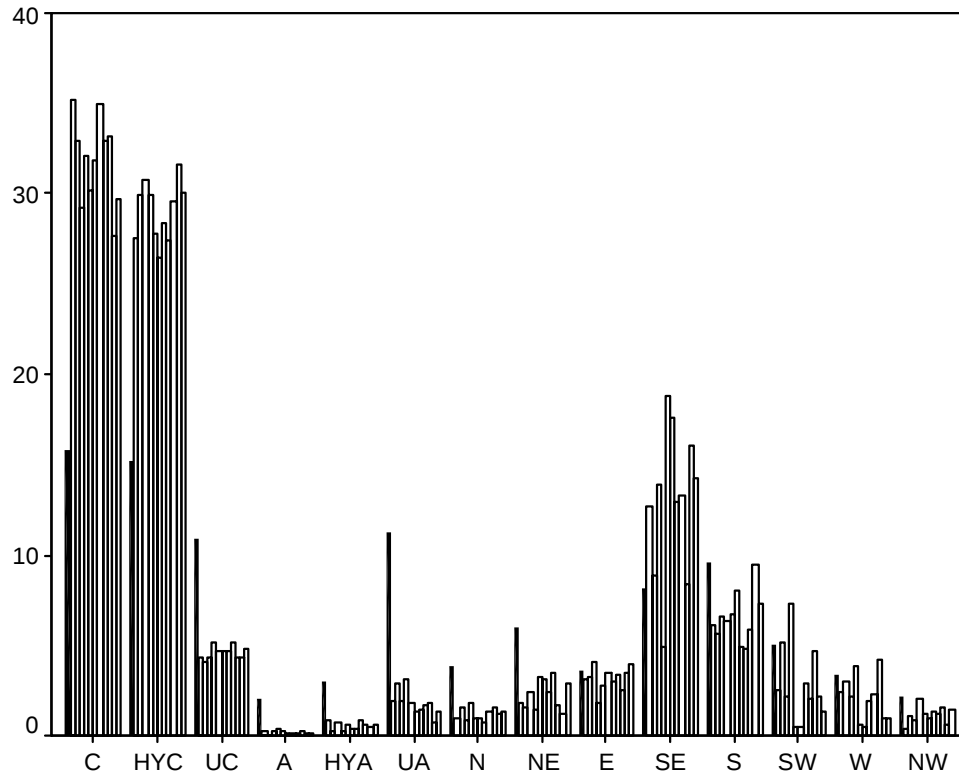


Figure 5.43b: Spring

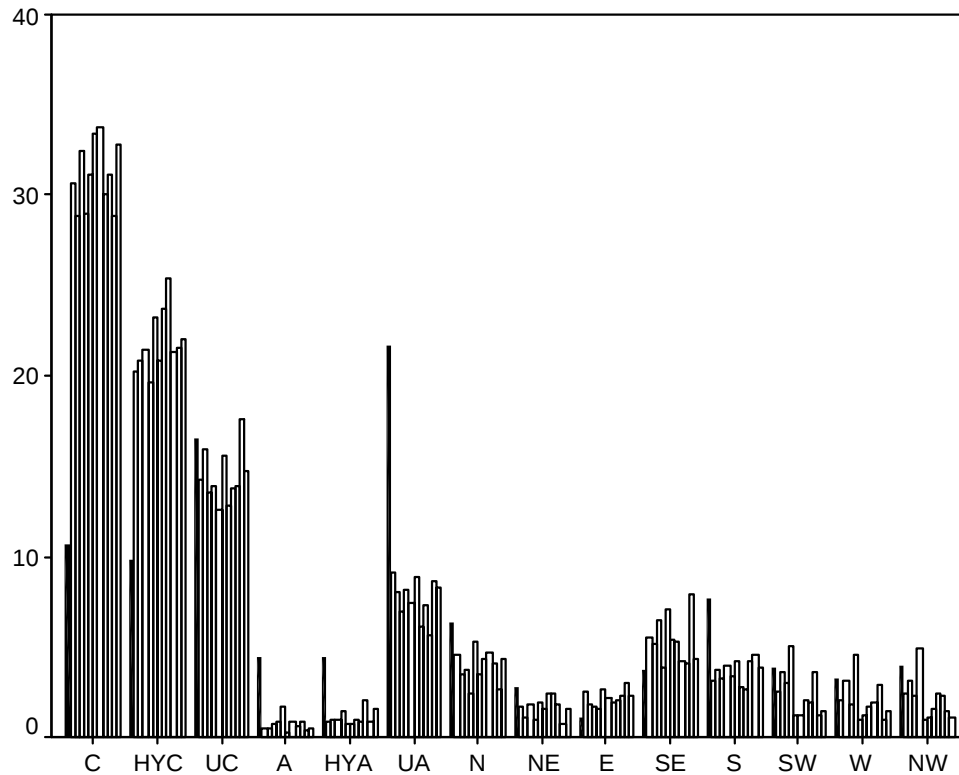


Figure 5.43: The mean seasonal frequency (shown as the percentage of all days) of the 14 circulation types (solid bars); and their contribution to seasonal rainfall (shown as the percentage of total seasonal rainfall) for 11 stations in the Agri Basin. (a) winter, (b) spring, (c) summer, and (d) autumn.

Figure 5.43c: Summer

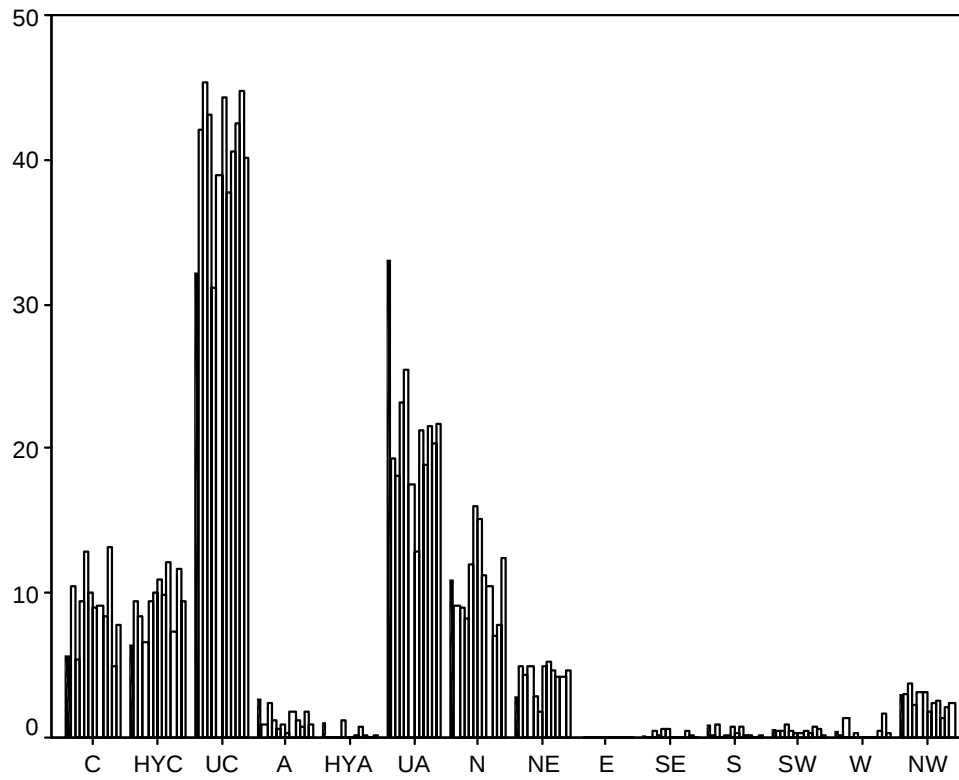


Figure 5.43d: Autumn

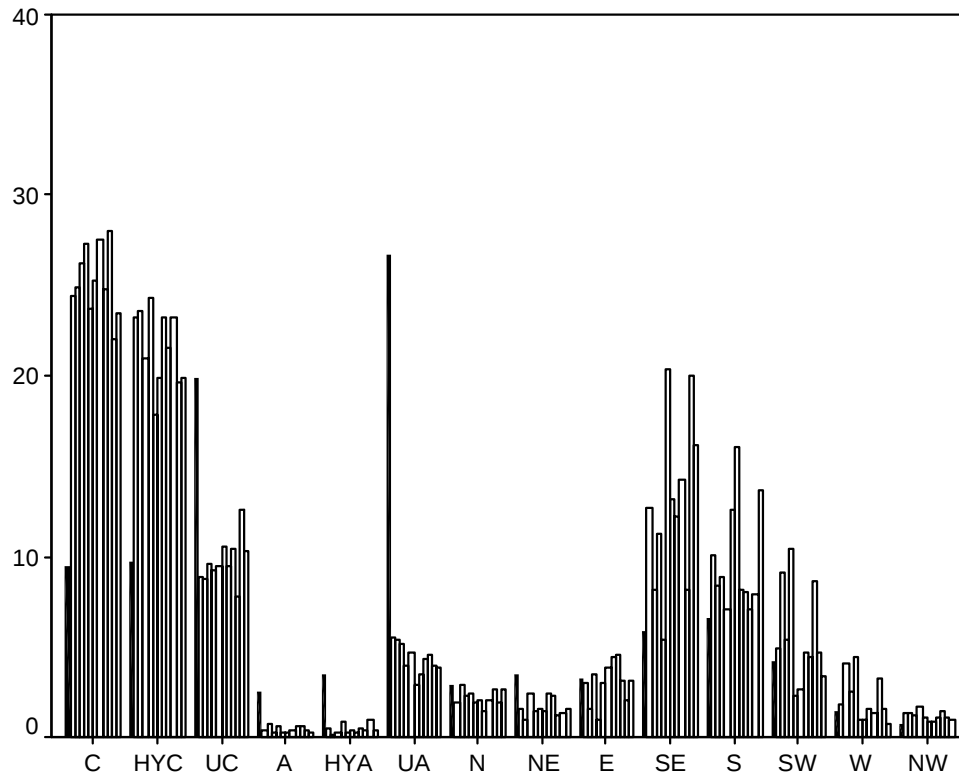


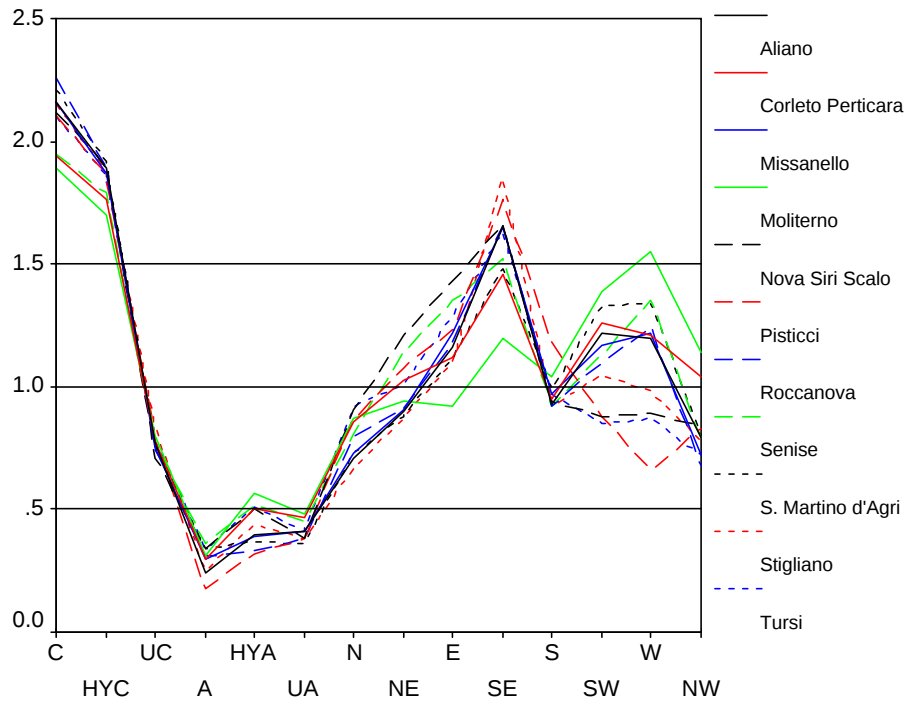
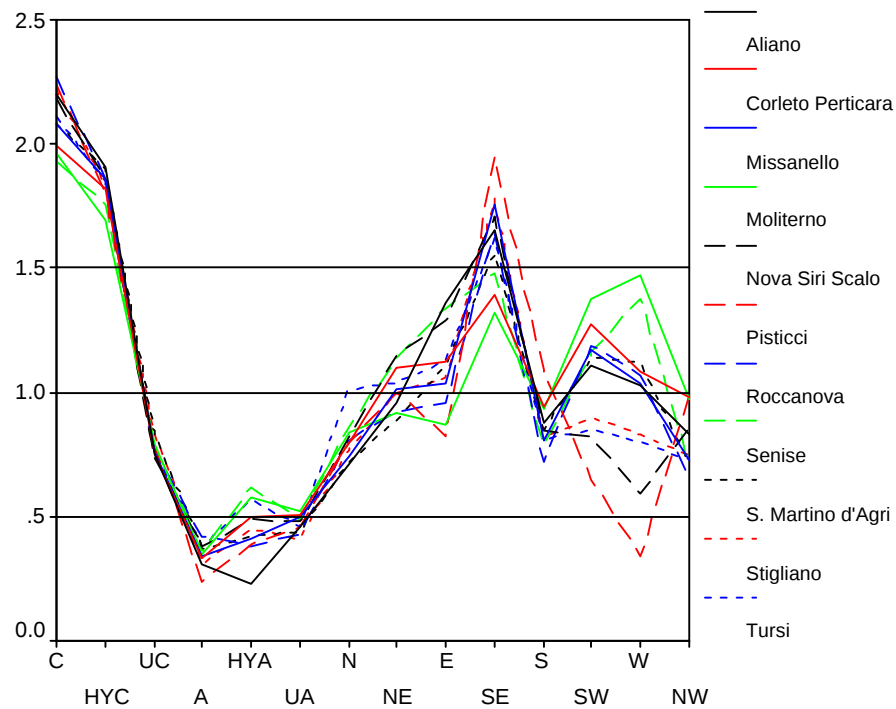
Figure 5.44a: $PROP_{ct}/PROP_{tot}$ 1956-1988Figure 5.44b: $PROP_{ct}/PROP_{tot}$ 1956-1968Figure 5.44: Annual standardised ratios $PROP_{ct}/PROP_{tot}$ for 11 stations in the Agri Basin. (a) 1956-1988; (b) 1956-1968; (c) 1969-1978; and, (d) 1979-1988.

Figure 5.44c: $PROP_{ct}/PROP_{tot}$ 1969-1978

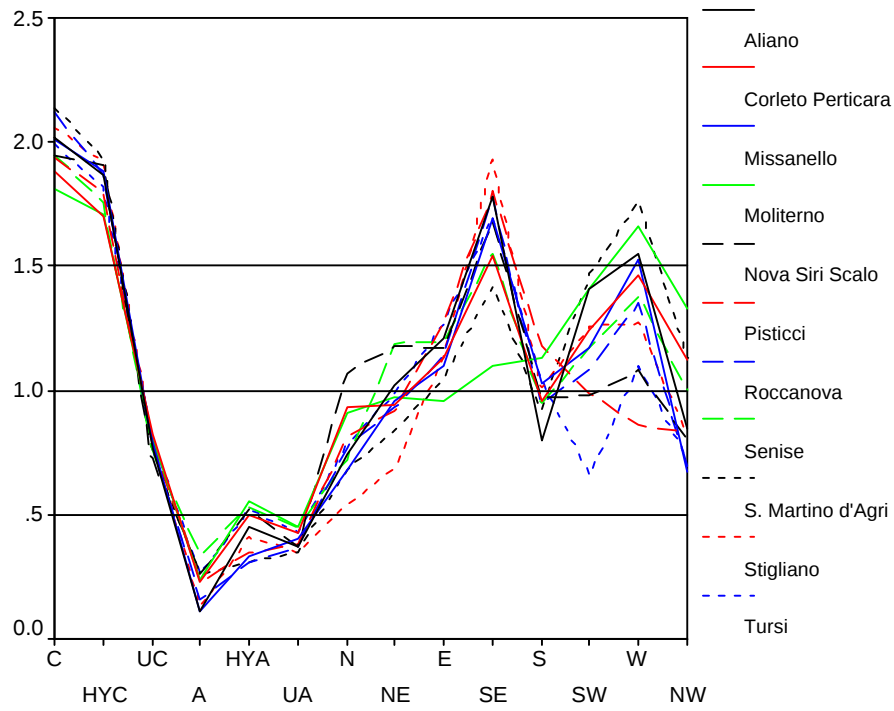


Figure 5.44d: $PROP_{ct}/PROP_{tot}$ 1979-1988

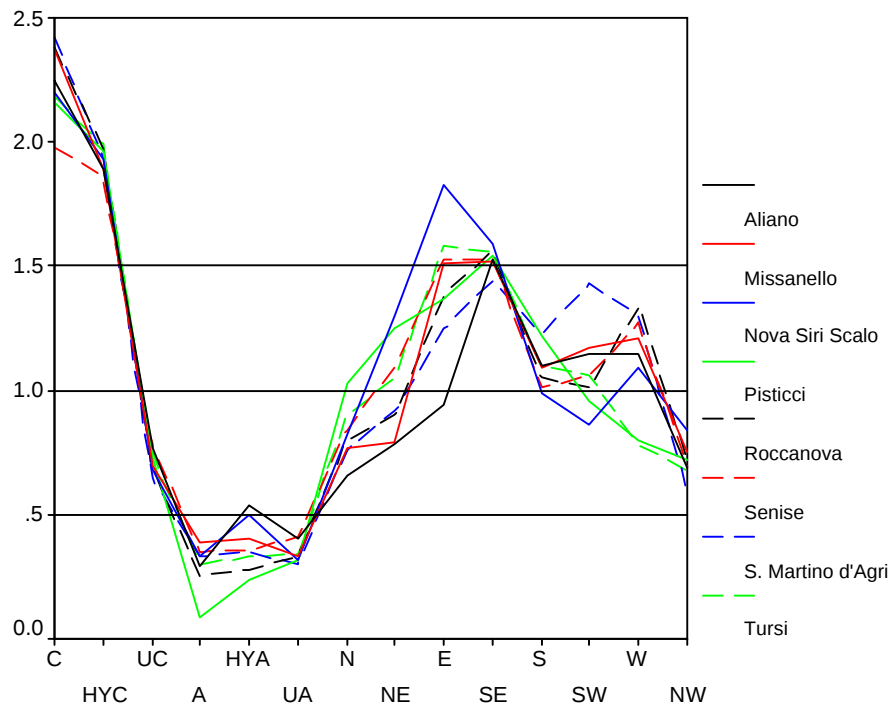


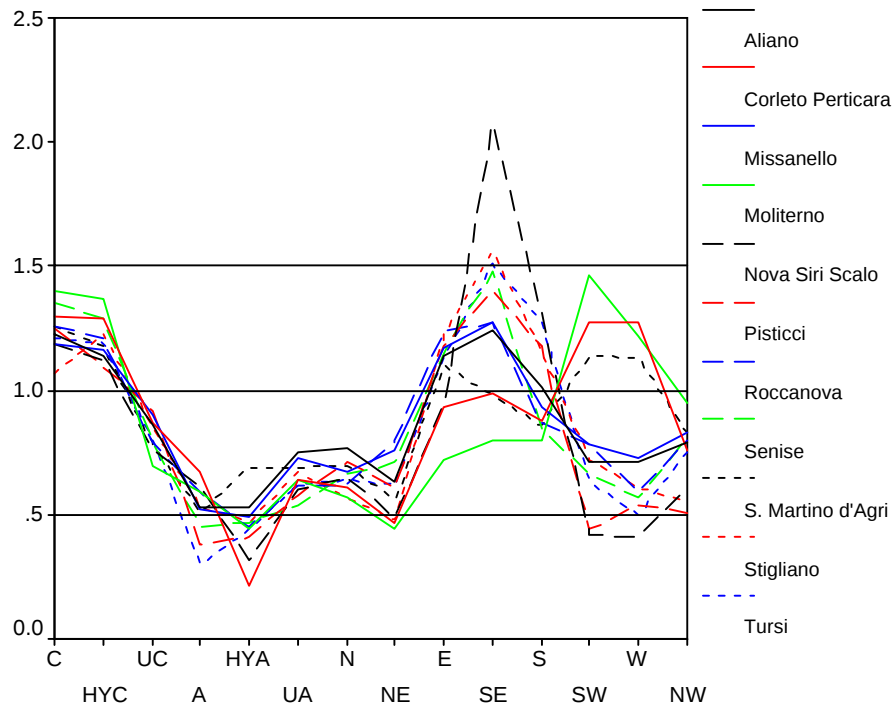
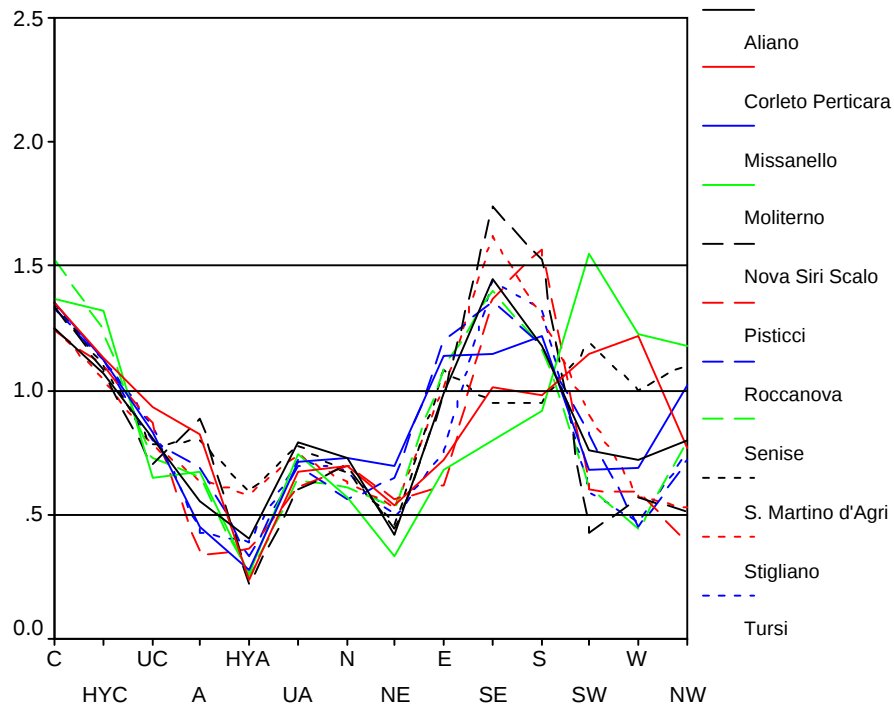
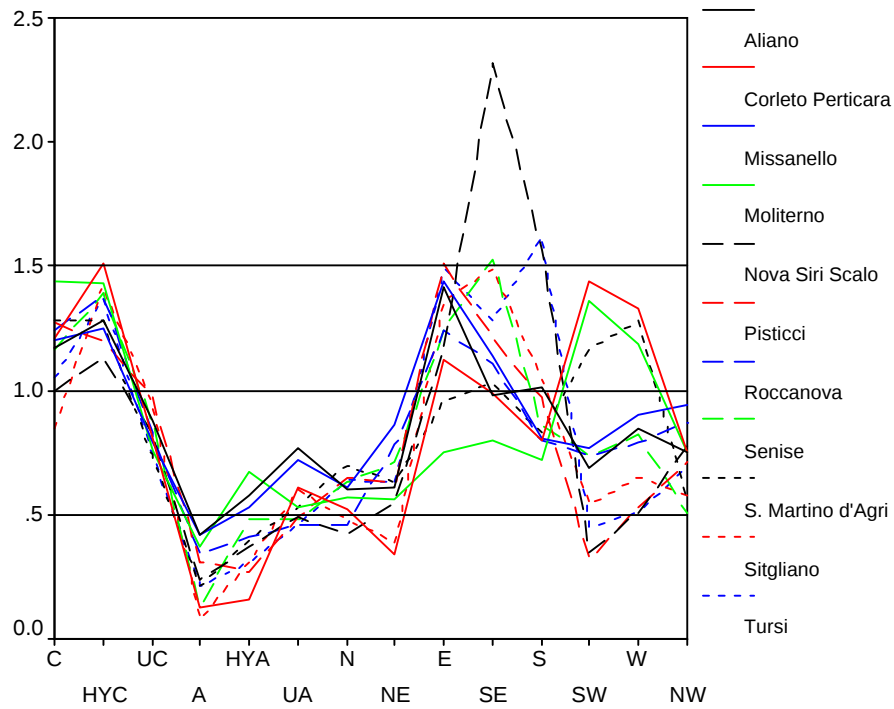
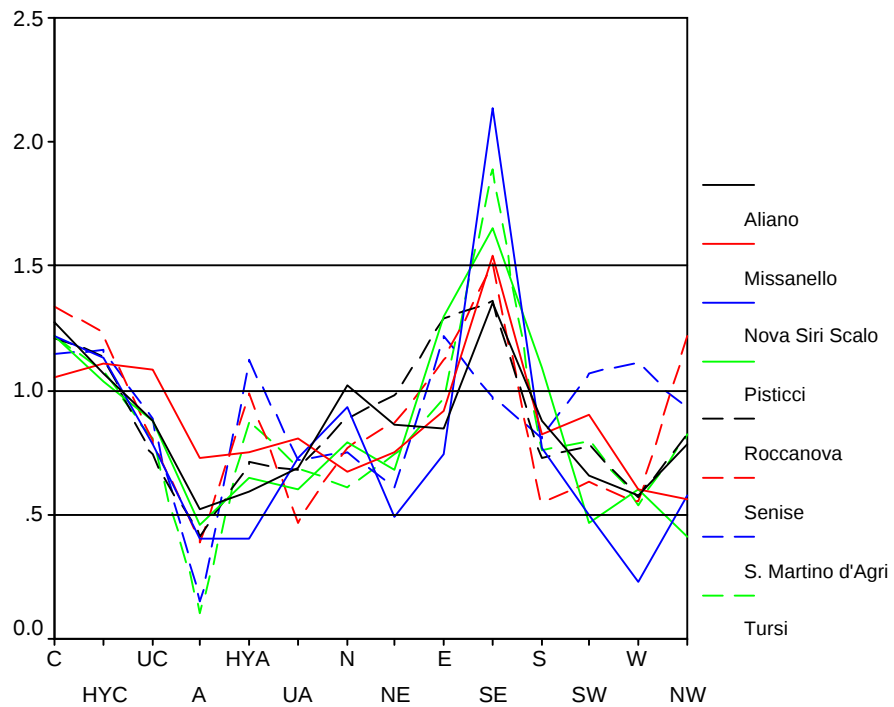
Figure 5.45a: $PREC_{ct}/PREC_{tot}$ 1956-1988Figure 5.45b: $PREC_{ct}/PREC_{tot}$ 1956-1968Figure 5.45: Annual standardised ratios $PREC_{ct}/PREC_{tot}$ for 11 stations in the Agri Basin. (a) 1956-1988; (b) 1956-1968; (c) 1969-1978; and, (d) 1979-1988.

Figure 5.45c: $PREC_{ct}/PREC_{tot}$ 1969-1978Figure 5.45d: $PREC_{ct}/PREC_{tot}$ 1979-1988

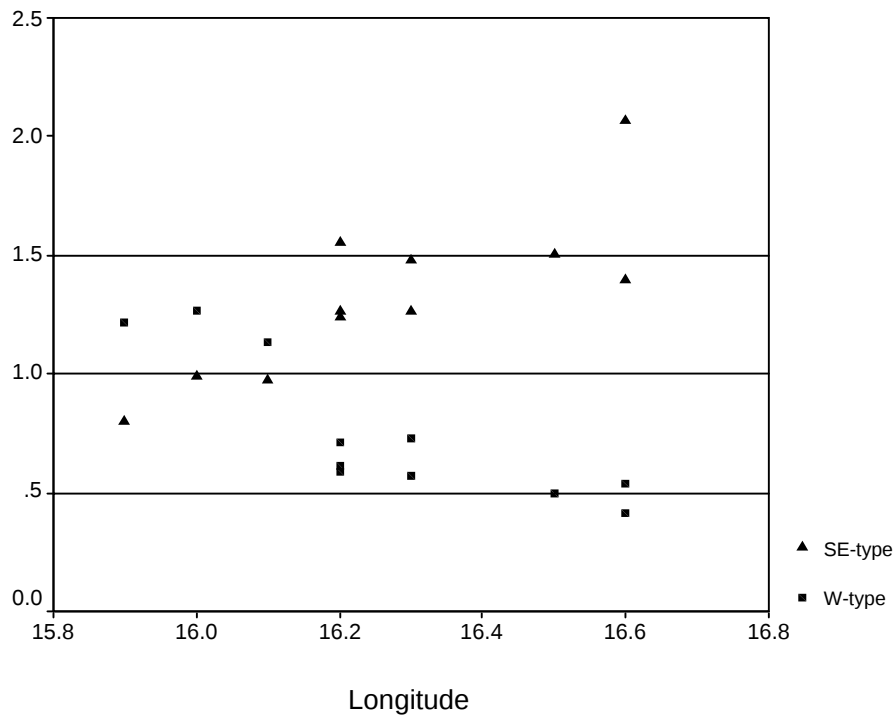


Figure 5.46: Annual standardised ratios $PREC_{ct}/PREC_{tot}$ for the SE (triangles) and W (squares) circulation types for 11 stations in the Agri Basin plotted against longitude (°E).

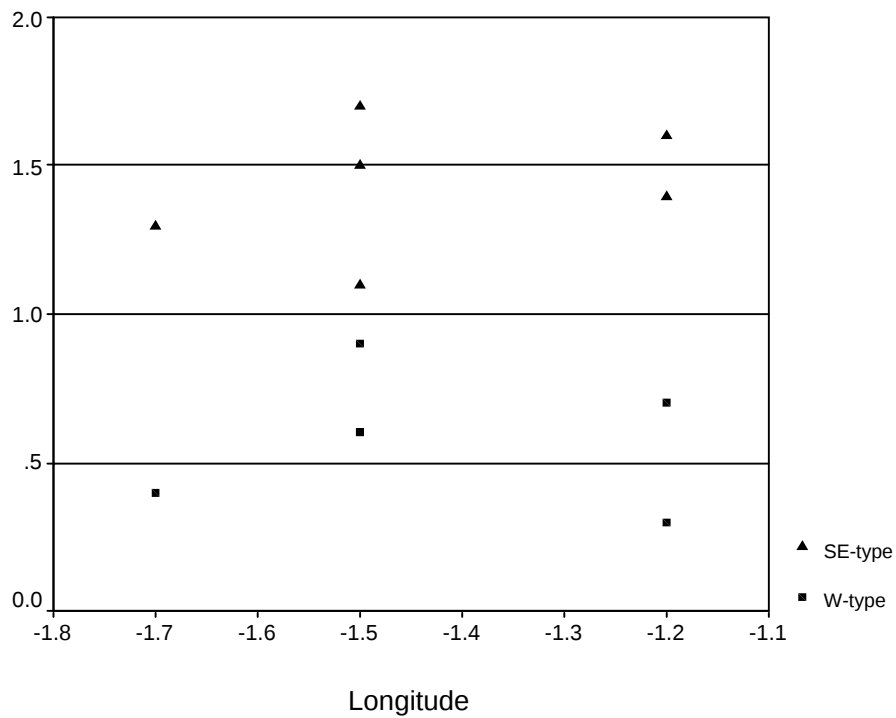


Figure 5.47: Annual standardised ratios $PREC_{ct}/PREC_{tot}$ for the SE (triangles) and W (squares) circulation types for six stations in the Guadalentin Basin plotted against longitude (°W).

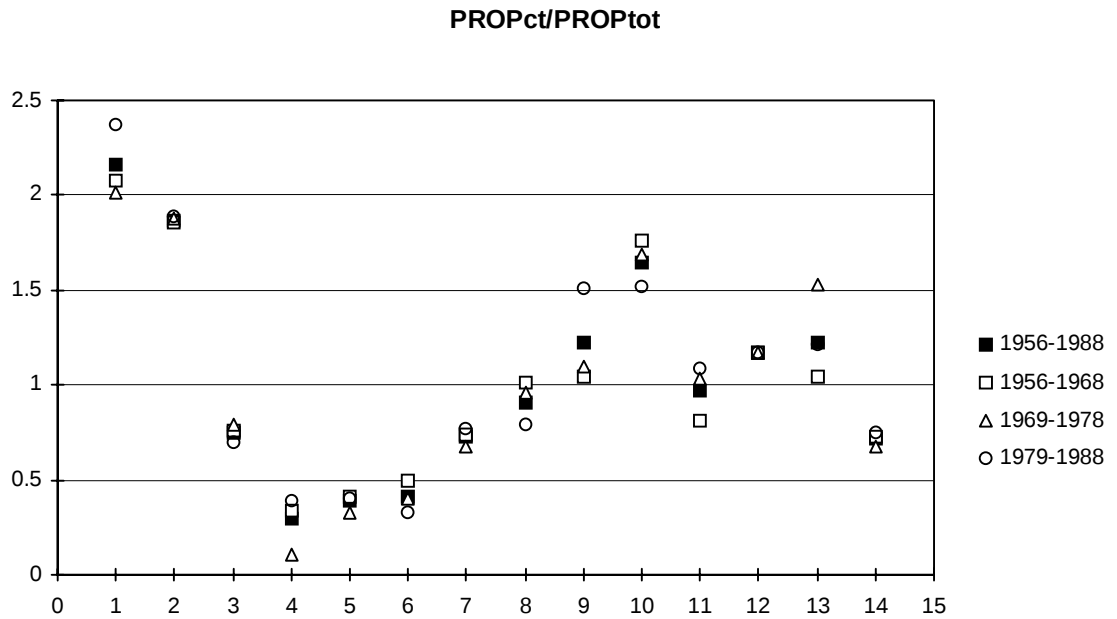


Figure 5.48: Annual standardised ratios $PROP_{ct}/PROP_{tot}$ for Missanello for 1956-1988, 1956-1968, 1969-1978 and 1979-1988. 1 = C, 2 = HYC, 3 = UC, 4 = A, 5 = HYA, 6 = UA, 7 = N, 8 = NE, 9 = E, 10 = SE, 11 = S, 12 = SW, 13 = W, 14 = NW circulation types.

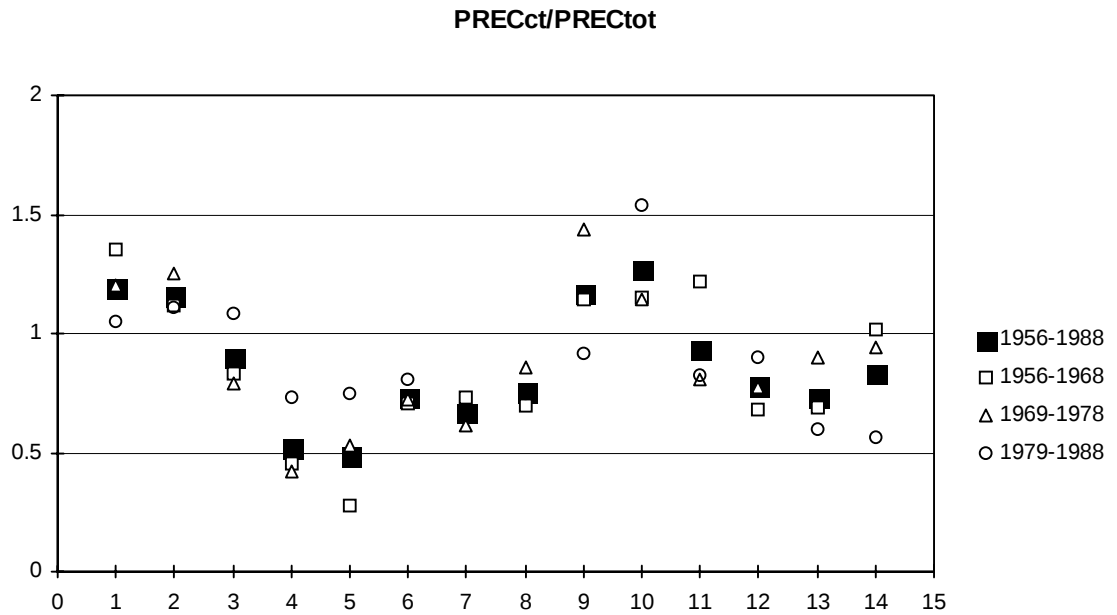


Figure 5.49: Annual standardised ratios $PREC_{ct}/PREC_{tot}$ for Missanello for 1956-1988, 1956-1968, 1969-1978 and 1979-1988. 1 = C, 2 = HYC, 3 = UC, 4 = A, 5 = HYA, 6 = UA, 7 = N, 8 = NE, 9 = E, 10 = SE, 11 = S, 12 = SW, 13 = W, 14 = NW circulation types.

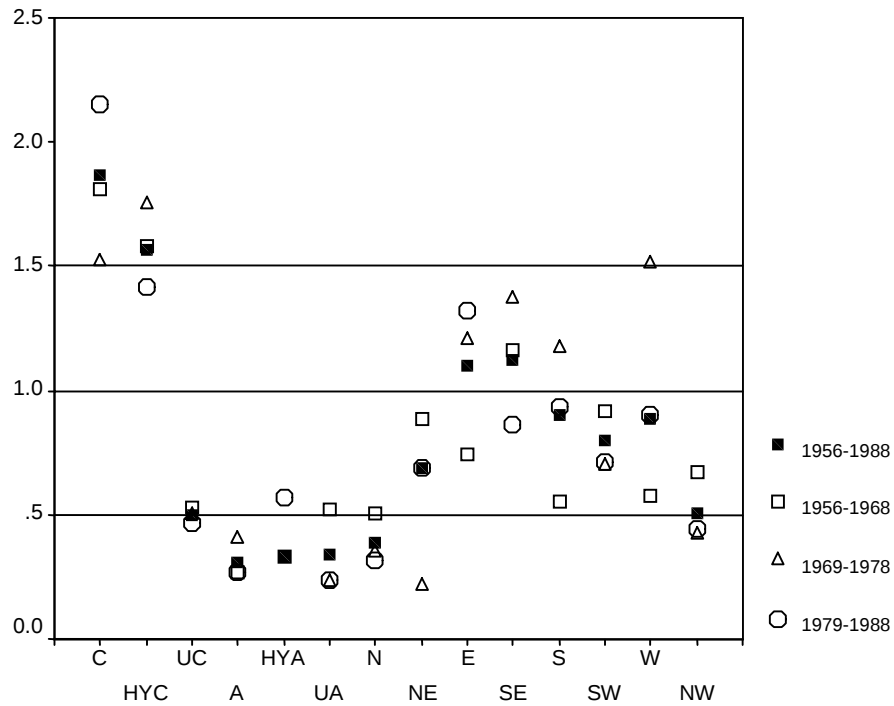
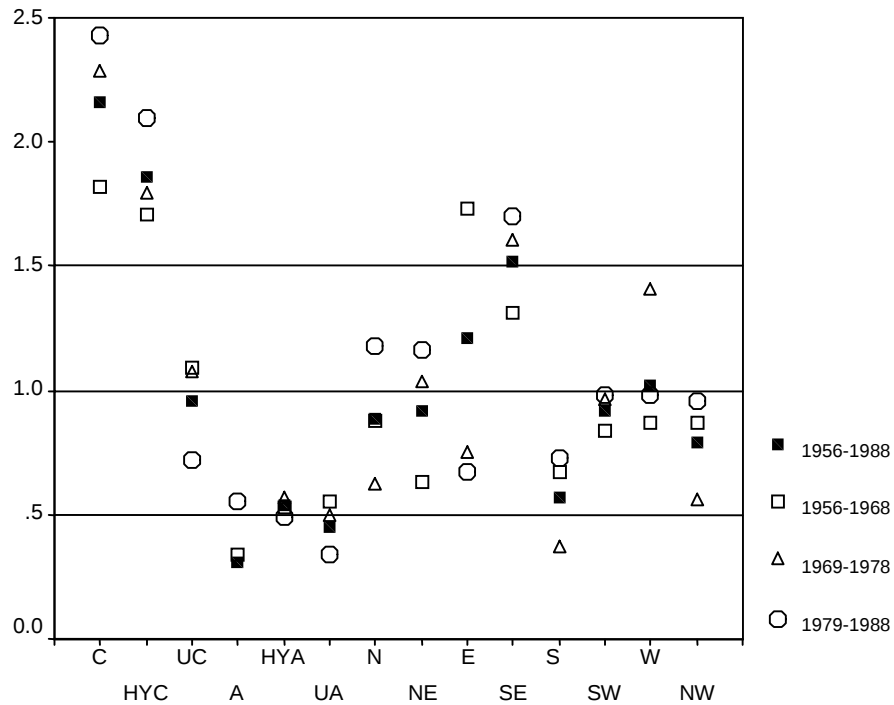
Figure 5.50a: Winter $PROP_{ct}/PROP_{tot}$ Figure 5.50b: Spring $PROP_{ct}/PROP_{tot}$ 

Figure 5.50: Seasonal standardised ratios $PROP_{ct}/PROP_{tot}$ for Missanello for 1956-1988, 1956-1968, 1969-1978 and 1979-1988. (a) winter, (b) spring, (c) summer, and (d) autumn.

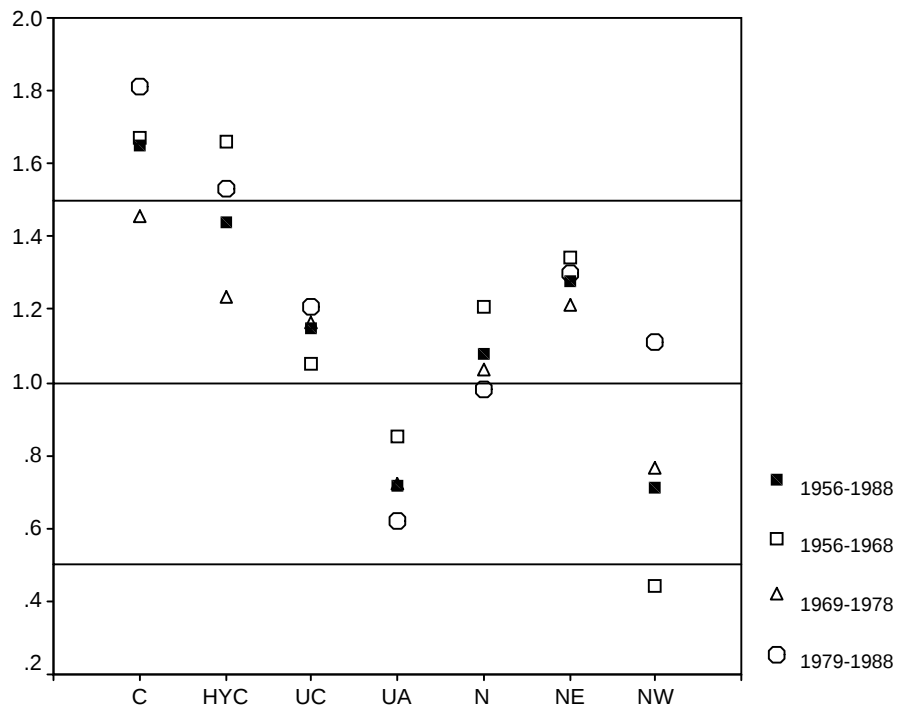
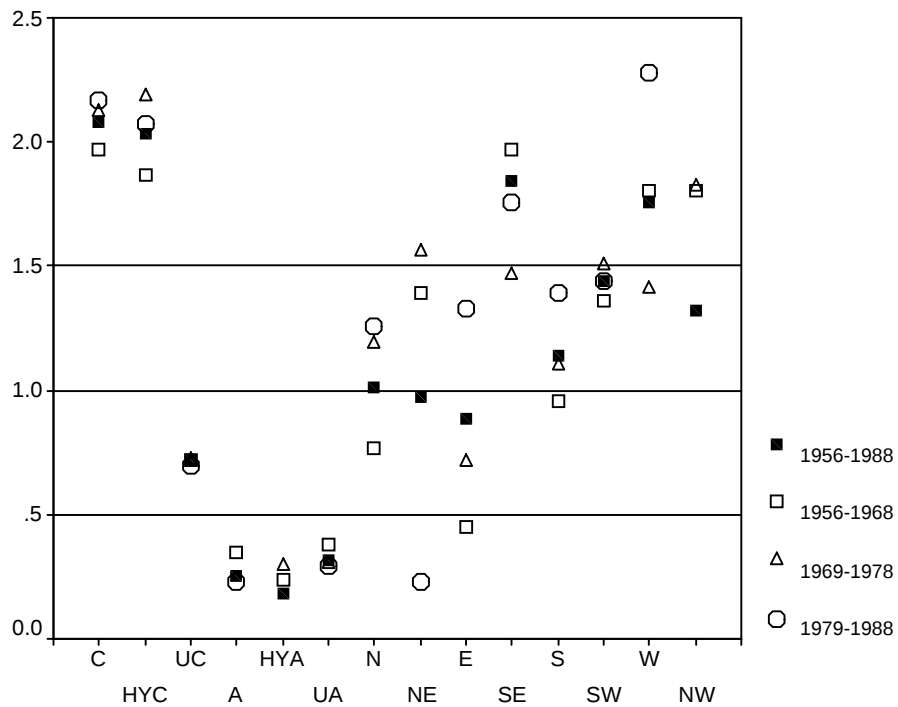
Figure 5.50c: Summer $PROP_{ct}/PROP_{tot}$ Figure 5.50d: Autumn $PROP_{ct}/PROP_{tot}$ 

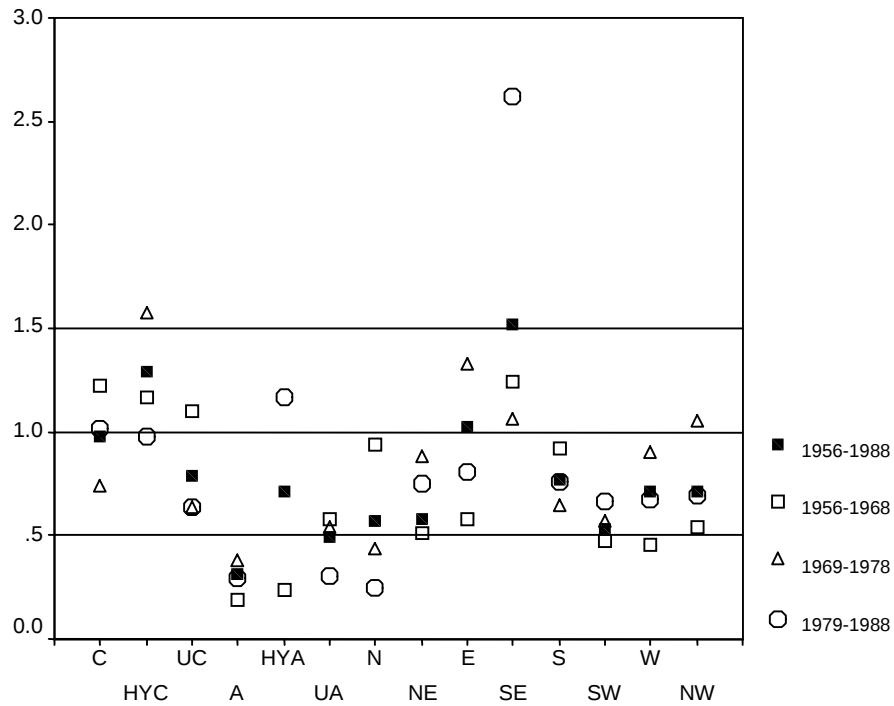
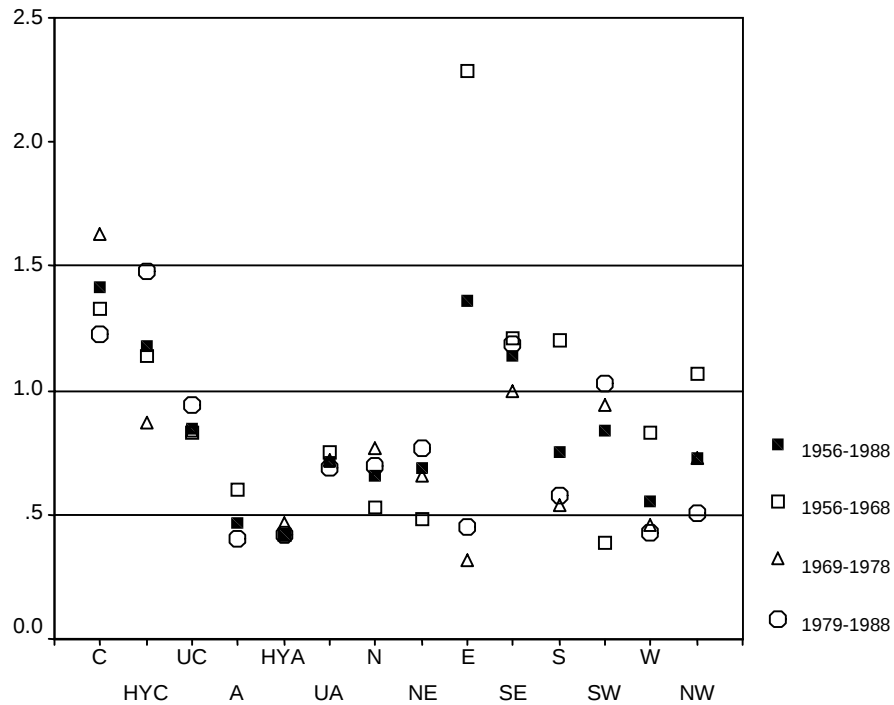
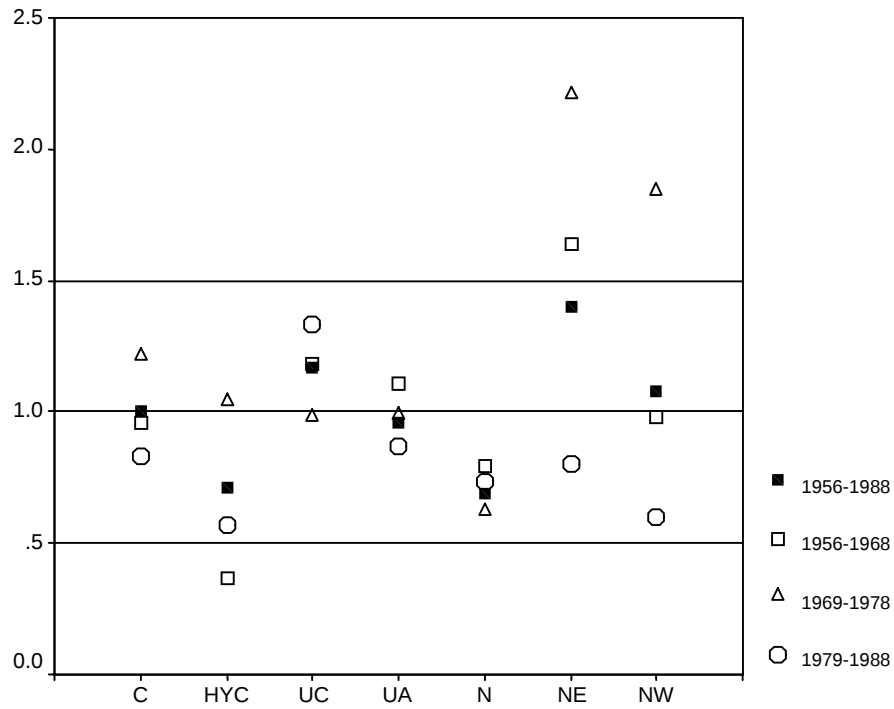
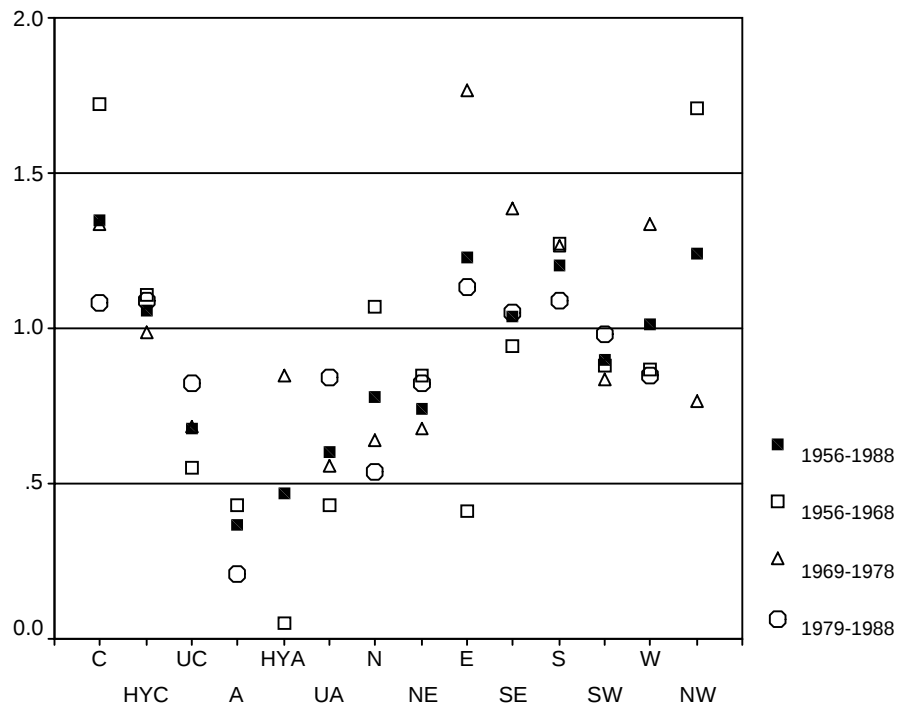
Figure 5.51a: Winter $PREC_{ct}/PREC_{tot}$ Figure 5.51b: Spring $PREC_{ct}/PREC_{tot}$ 

Figure 5.51: Seasonal standardised ratios $PREC_{ct}/PREC_{tot}$ for Missanello for 1956-1988, 1956-1968, 1969-1978 and 1979-1988. (a) winter, (b) spring, (c) summer, and (d) autumn.

Figure 5.51c: Summer $PREC_{ct}/PREC_{tot}$ Figure 5.51d: Autumn $PREC_{ct}/PREC_{tot}$ 

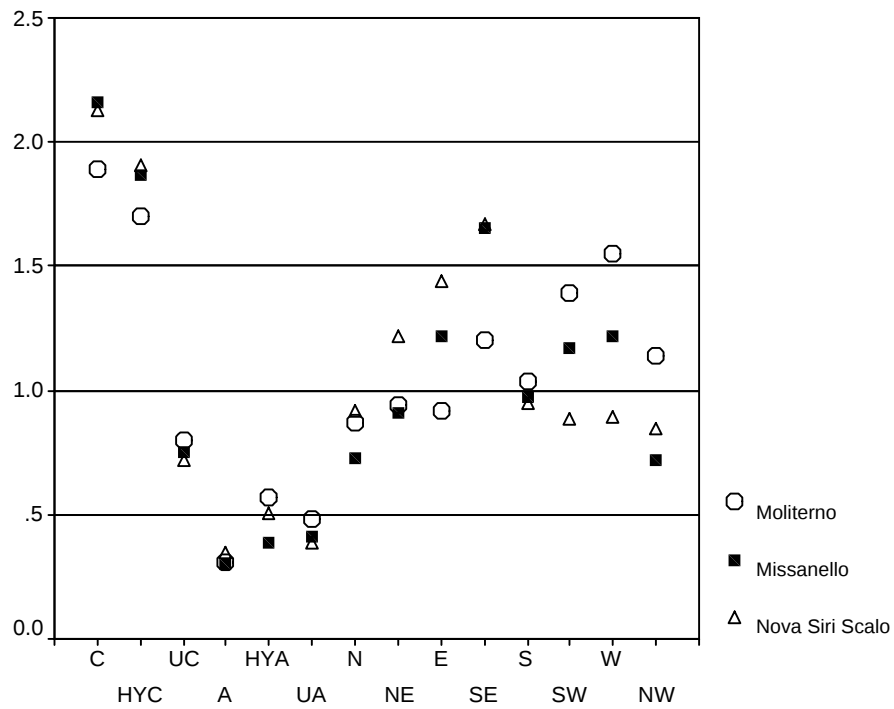


Figure 5.52: Annual standardised ratios $PROP_{ct}/PROP_{tot}$ for Moliterno, Missanello and Nova Siri Scalo.

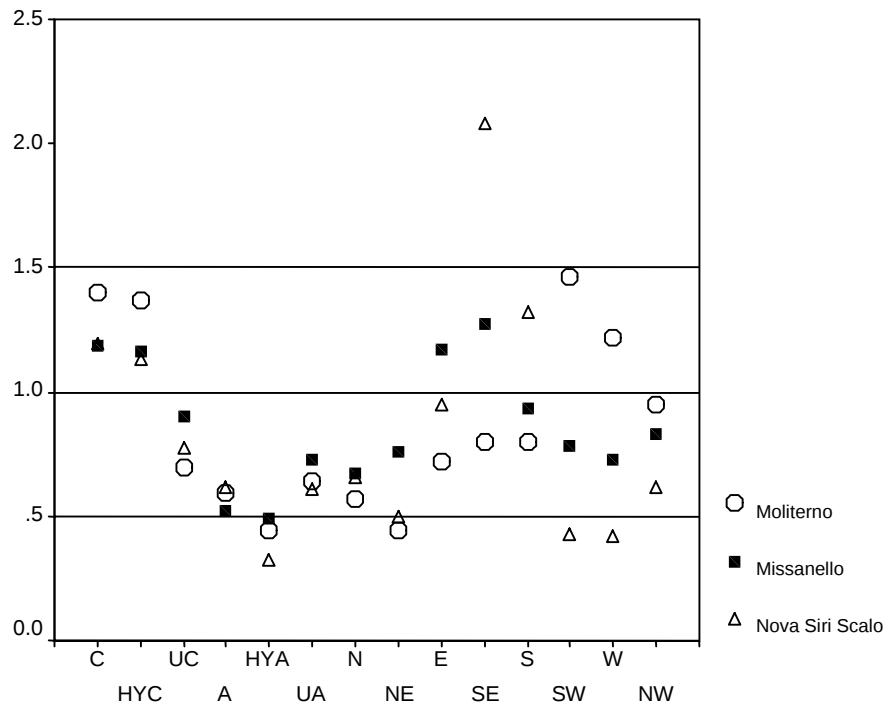


Figure 5.53: Annual standardised ratios $PREC_{ct}/PREC_{tot}$ for Moliterno, Missanello and Nova Siri Scalo.

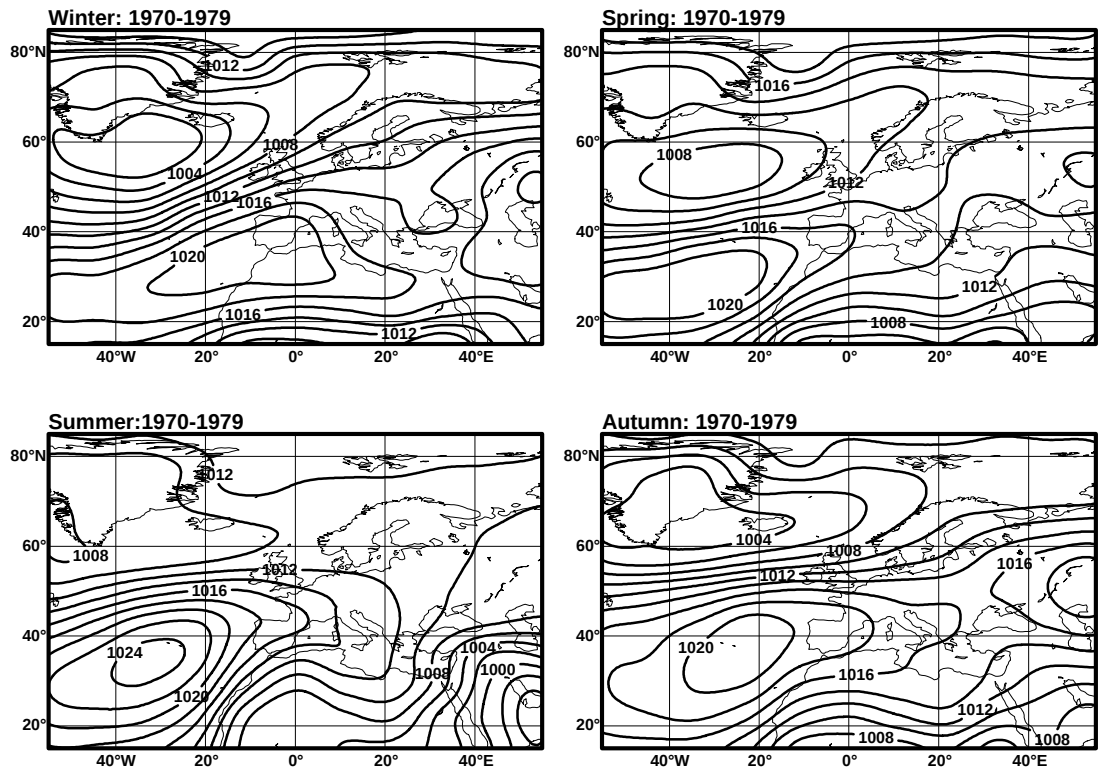


Figure 5.54: Seasonal mean SLP (hPa) calculated from HadCM2SUL output, 1970-1979.

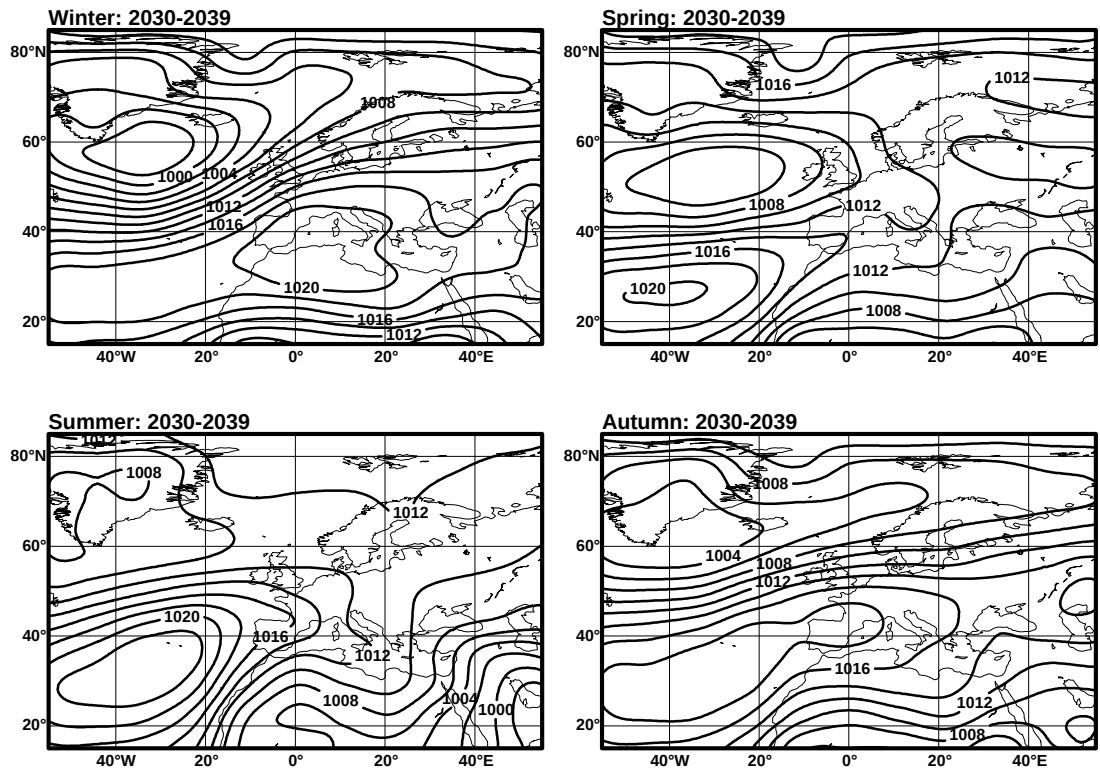


Figure 5.55: Seasonal mean SLP (hPa) calculated from HadCM2SUL output, 2030-2039.

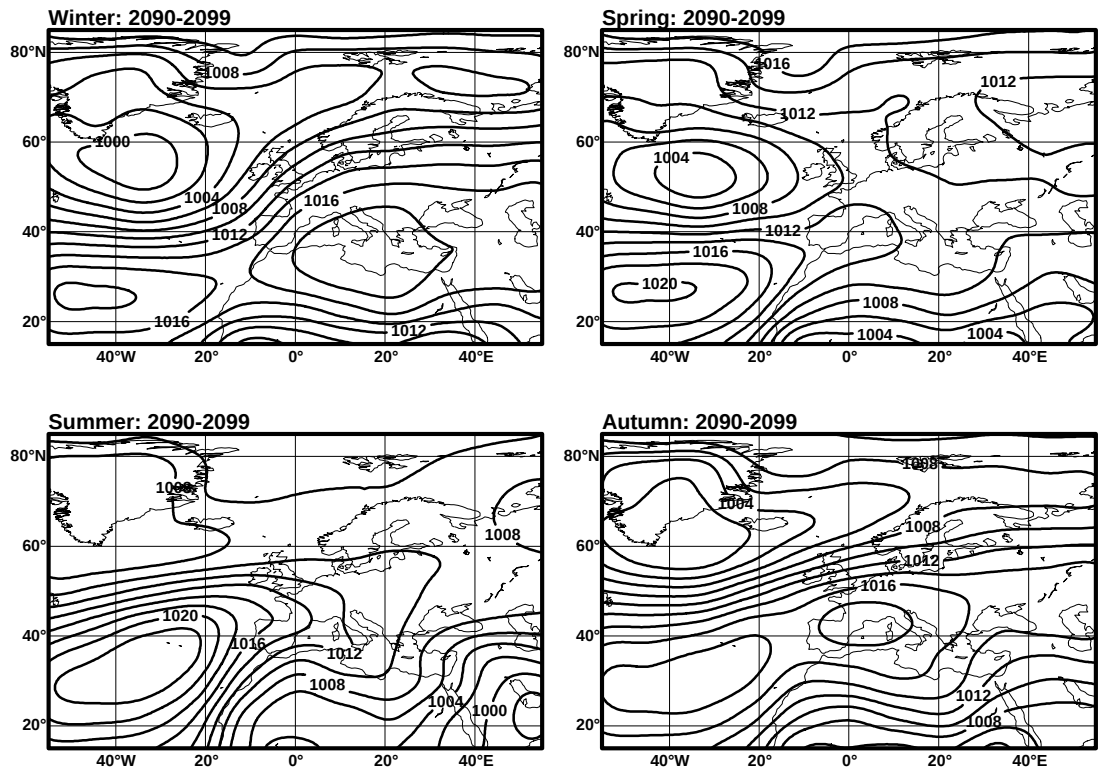


Figure 5.56: Seasonal mean SLP (hPa) calculated from HadCM2SUL output, 2090-2099.

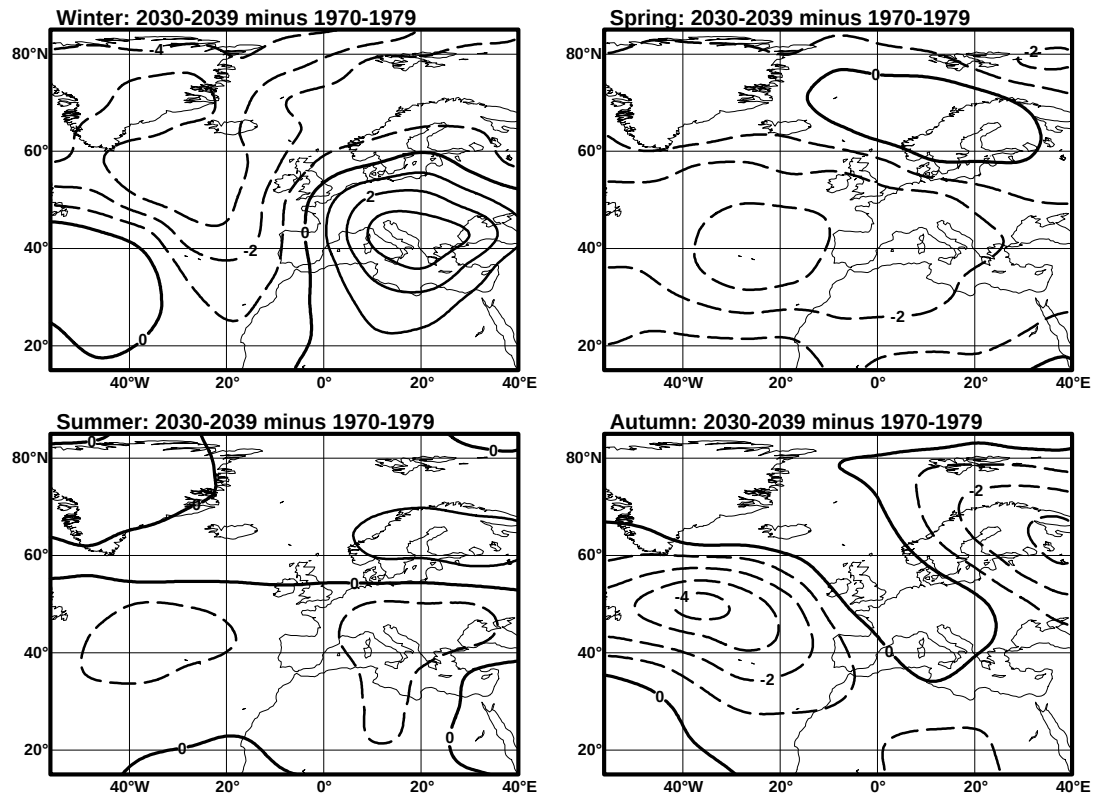


Figure 5.57: HadCM2SUL differences in seasonal mean SLP (hPa), 2030-2039 minus 1970-1979.

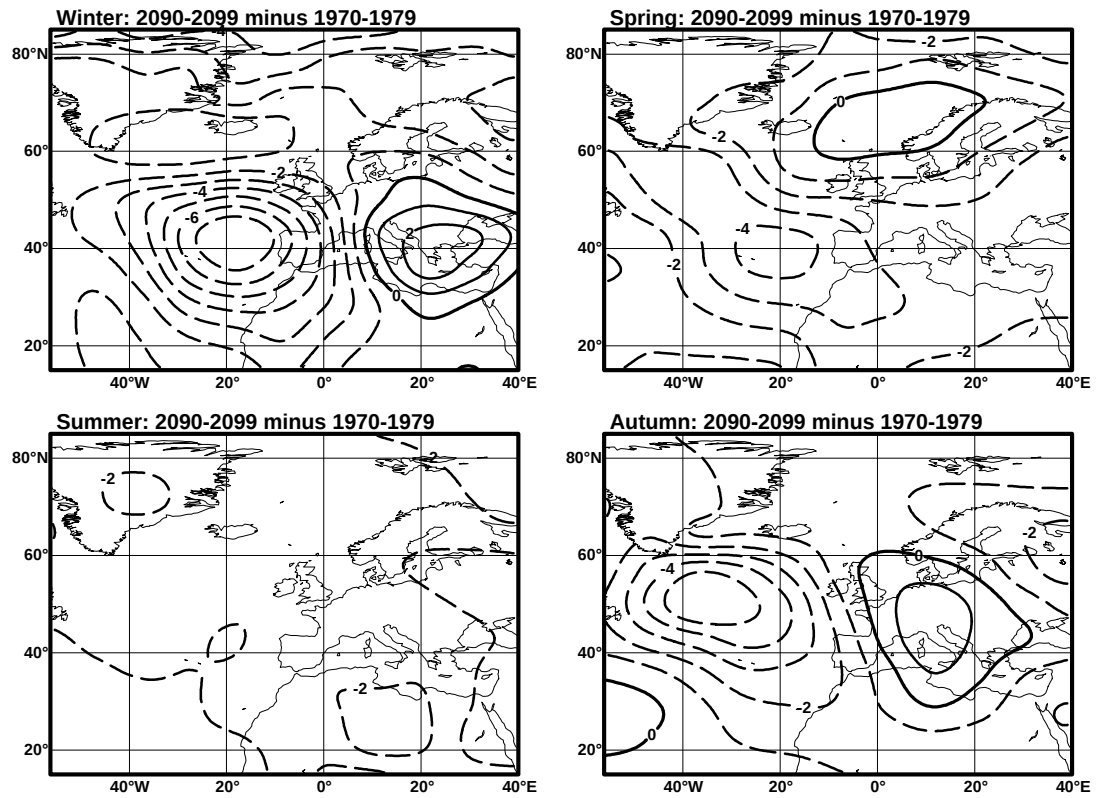


Figure 5.58: HadCM2SUL differences in seasonal mean SLP (hPa), 2090-2099 minus 1970-1979.

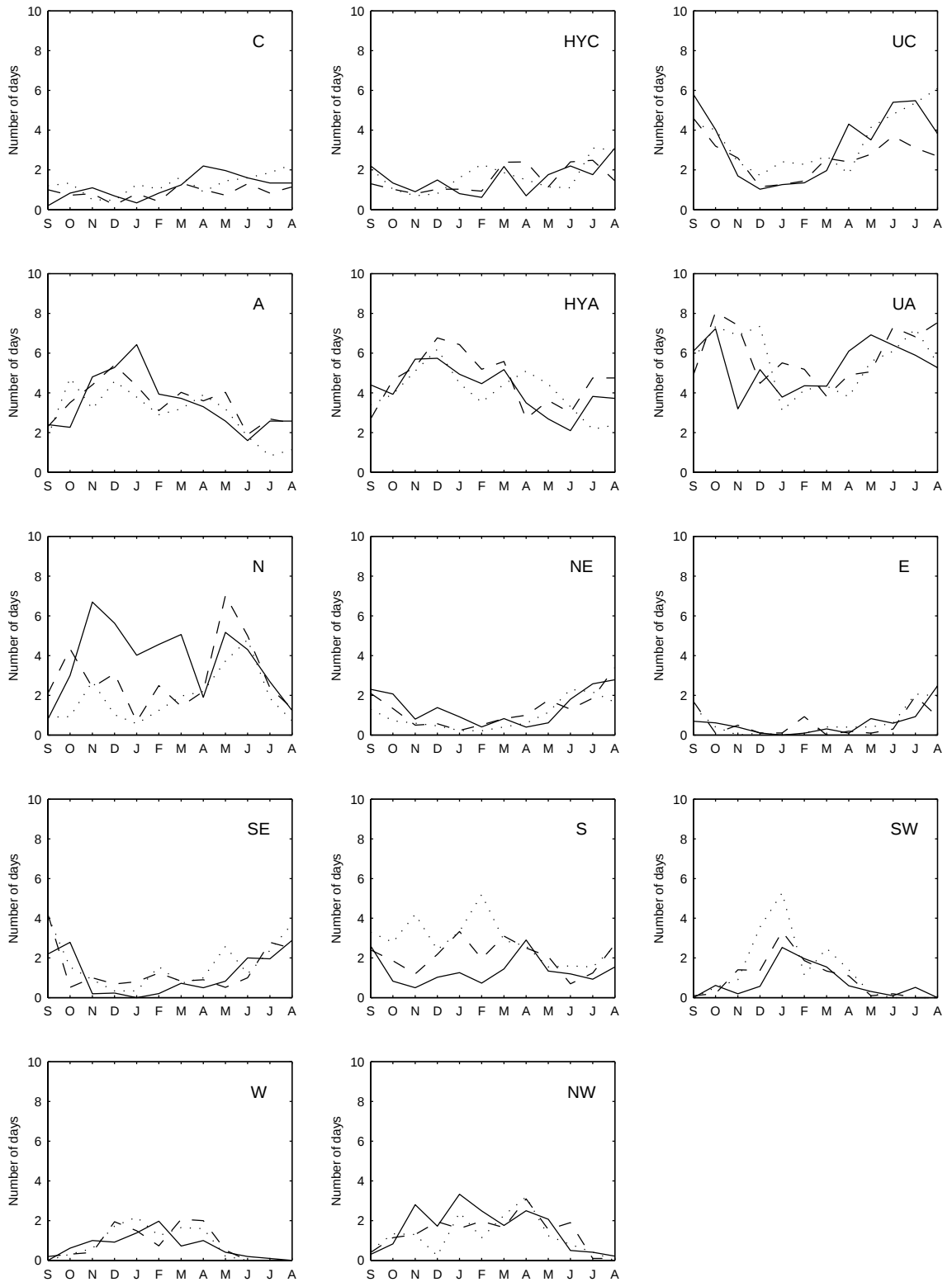


Figure 5.59: Mean monthly frequencies of the 14 circulation types in the Guadaleatin Basin calculated from HadCM2SUL output for 1970-1979 (solid line), 2030-2039 (dashed line) and 2090-2099 (dotted line).

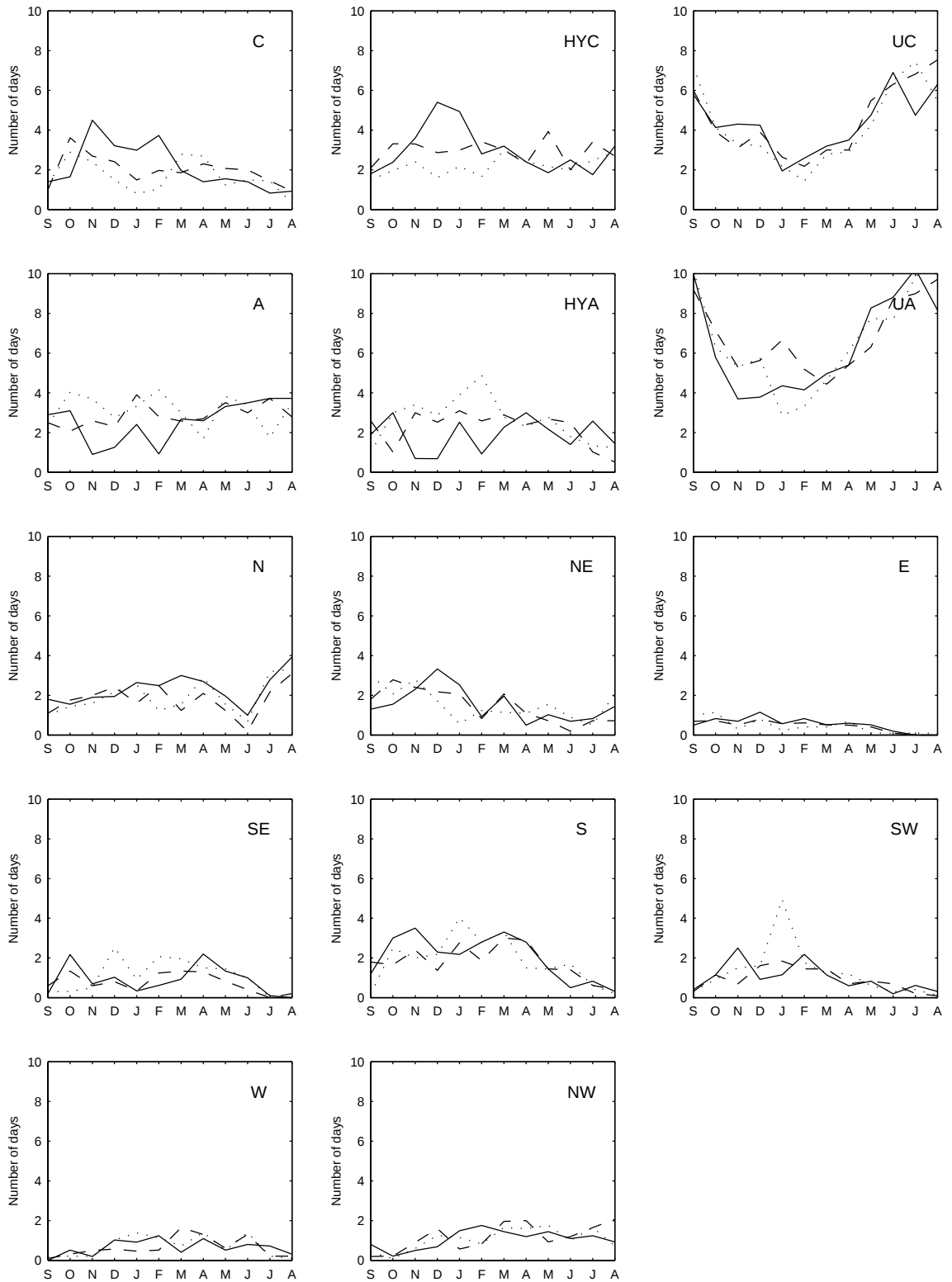


Figure 5.60: Mean monthly frequencies of the 14 circulation types in the Agri Basin calculated from HadCM2SUL output for 1970-1979 (solid line), 2030-2039 (dashed line) and 2090-2099 (dotted line).

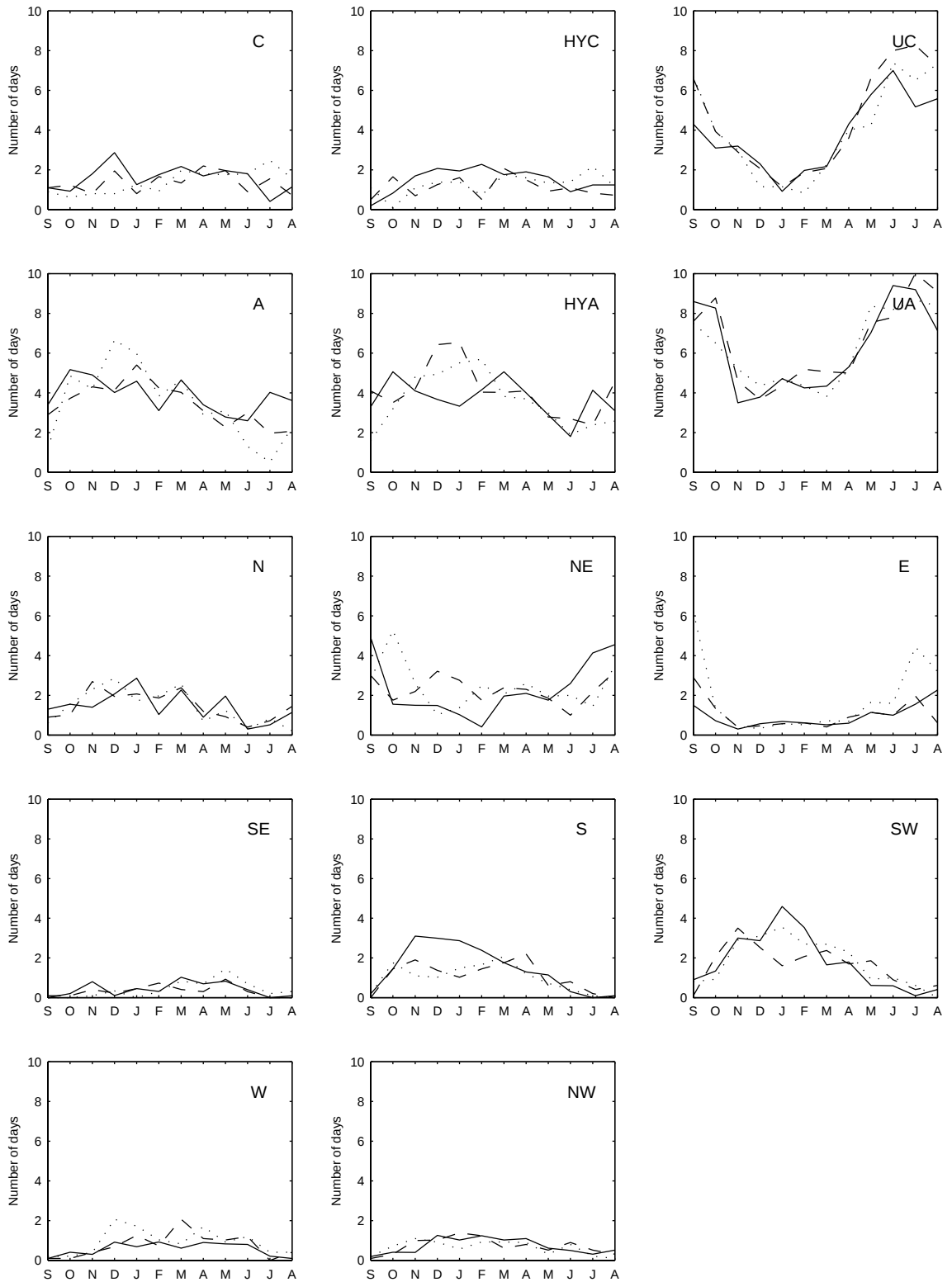


Figure 5.61: Mean monthly frequencies of the 14 circulation types for Lesvos calculated from HadCM2SUL output for 1970-1979 (solid line), 2030-2039 (dashed line) and 2090-2099 (dotted line).

