

EUROPE CENTRAL EUROPE

INDEX PRECIPITATION

YEAR 2071-2100 RELATIVE TO 1961-1990

SCENARIO A2 AND OTHER SCENARIOS

Reference: WG1 2007, Christensen and Christensen (2003)

1 Extreme events in the A2 scenario

This fact sheet completes the main sheet on precipitation in Europe for the A1B scenario, and is based on the PRUDENCE project results.¹

¹Prediction of Regional Scenarios and Uncertainties for Defining European Climate Change Risks and Effects'. The models used are finer scale than those applied in the IPCC report and use dynamic downscaling methods; they are called regional climate models.

By 2071-2100, the mean precipitation intensity and the 90th percentile of precipitation increase in both winter and summer in Scandinavia. However, the wet-day frequency and mean seasonal precipitation increase in winter and decrease in summer. These results are confirmed in both central Europe

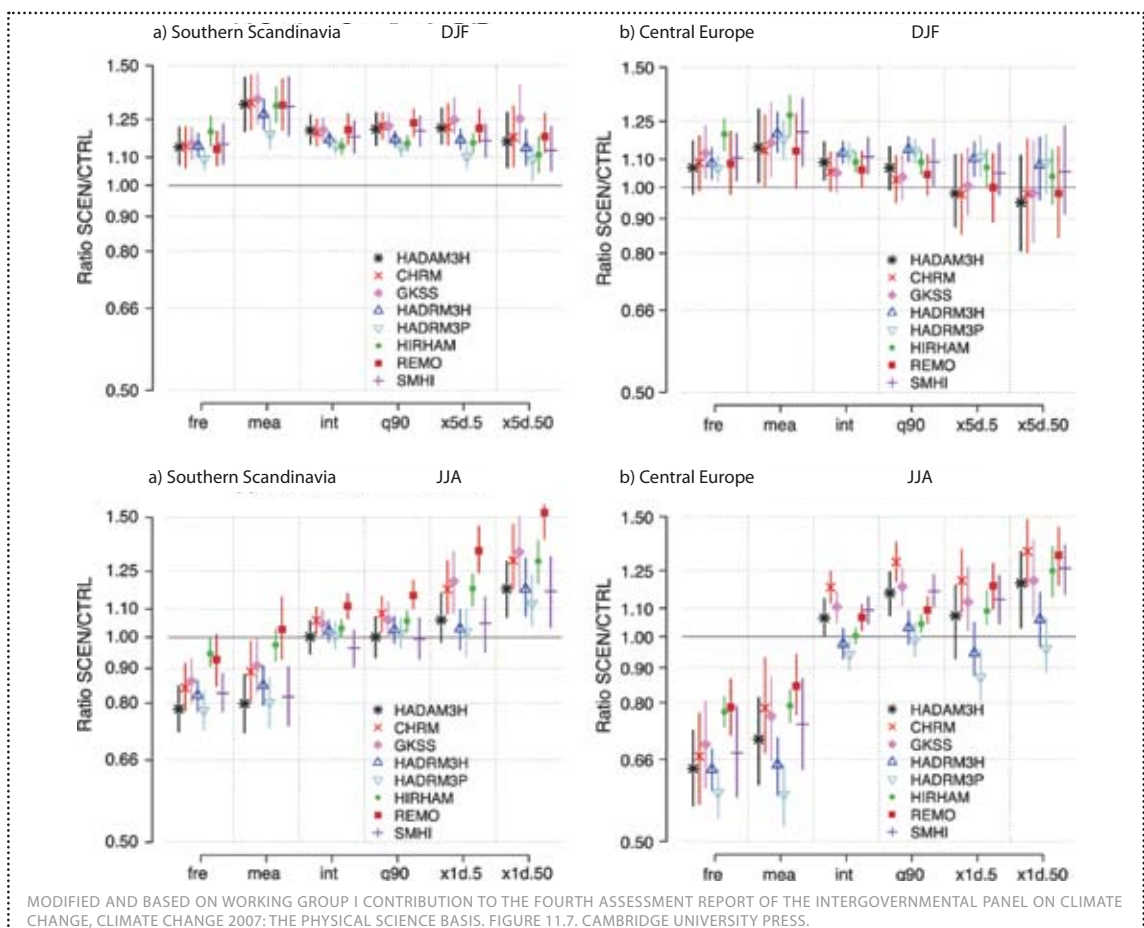


FIGURE 1 Changes (ratio 2071-2100 / 1961-1990) for the A2 scenario) calculated from the PRUDENCE project simulations in southern Scandinavia (5°E-20°E, 55°N-62°N) and central Europe (5°E-15°E, 48°N-54°N) in winter (top diagram) and in summer (bottom diagram). fre = wet-day frequency; mea = mean seasonal precipitation; int = mean wet-day precipitation; q90 = 90th percentile of wet-

day precipitation; x1d.5 and x1d.50 = 5- and 50-year return values of one-day precipitation; x5d.5 and x5d.50 = 5- and 50-year return values of five-day precipitation. For each of the eight models, the vertical bar gives the 95% confidence interval associated with sampling uncertainty (re- drawn from Frei et al., 2006). The models are the Hadley Centre Atmospheric Model (HadAM3H), the Cli-

mate High Resolution Model (CHRM), the climate version of the 'Lokalmodell' (CLM), the Hadley Centre Regional Model (HadRM3H and HadRM3P), the combination of the High-Resolution Limited Area Model (HIRLAM) and the European Centre Hamburg (ECHAM4) GCM (HIRHAM), the regional climate model REMO, and the Rossby Centre regional Atmosphere-Ocean model (RCAO).

and southern Scandinavia. The return periods² of 5 years and 50 years for one day precipitation rise in both winter and summer in Scandinavia by 2071-2100 relative to 1961-1990. However, in central Europe, the return periods appear to be equivalent in 2070-2100 and 1961-1990 in winter, and slightly higher in 2071-2100 during the summer

(see **FIGURE 1**). According to another study, precipitation will diminish in central Europe by between 20 and 40% by 2071-2100 relative to 1961-1990 during the July-September time (see **FIGURE 2A**). However, heavy rain events (more than five consecutive days) are expected for certain very specific regions of central Europe (green points on the map in **FIGURE 2B**) while other regions (red points on the map in **FIGURE 2B**) experience less heavy rain.

2. See paragraph 1.5 of the technical sheet for further information.

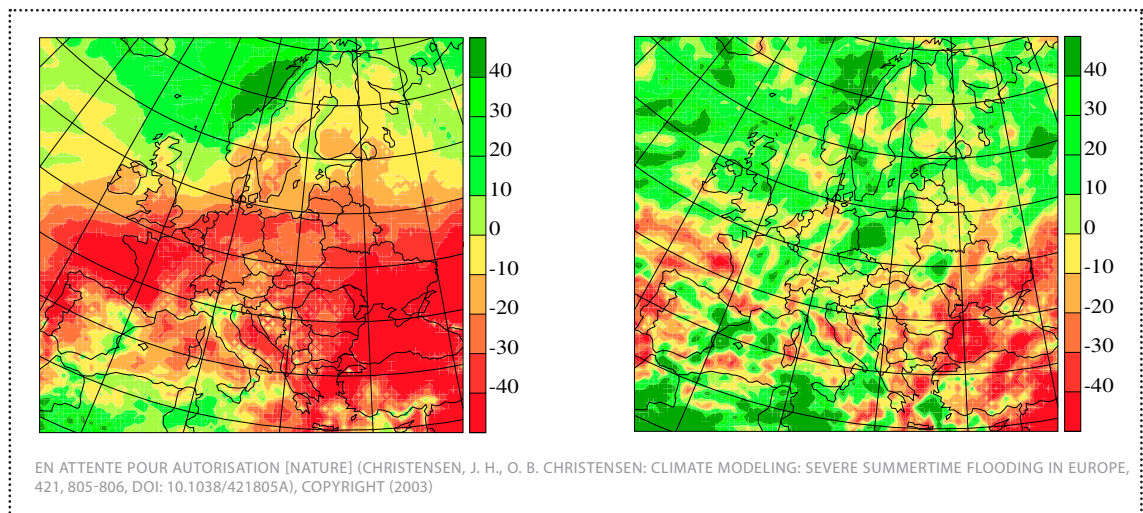


FIGURE 2 Relative percentage change in precipitation for July-September in the Intergovernmental Panel on

Climate Change's A2 scenario with respect to the present day. Relative change is shown for a, the seasonal

mean; and b, the five-day mean exceeding the 99th percentile.