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analyses of changes in the occurrence of extremes in relation to changes in mean temperature and total precipitation.

Because of its daily resolution, the ECA dataset enables a variety of empirical climate studies, including detailed analyses of changes in the occurrence of extremes in relation to changes in mean temperature and total precipitation.

The potential of the ECA dataset for climate studies is demonstrated in two examples. In the first example, it is shown that the winter (October–March) warming in Europe in the 1946–99 period is accompanied by a positive trend in the number of warm-spell days at most stations, but not by a negative trend in the number of cold-spell days. Instead, the number of cold-spell days increases over Europe. In the second example, it is shown for winter precipitation between 1946 and 1999 that positive trends in the mean amount per wet day prevail in areas that are getting drier and wetter.

Because of its daily resolution, the ECA dataset enables a variety of empirical climate studies, including detailed analyses of changes in the occurrence of extremes in relation to changes in mean temperature and total precipitation.

A comparison of the ECA dataset with existing gridded datasets, having monthly resolution, shows that correlation coefficients between ECA stations and nearest land grid boxes between 1946 and 1999 are higher than 0.8 for 95% of the temperature series and for 51% of the precipitation series. The overall trends in the ECA dataset are of comparable magnitude to those in the gridded datasets.

The data set is available for climate research on CDROM and through the Internet (at http://www.knmi.nl/samenw/eca).