A European perspective: How does Norway prepare for climate change?

Presented by Irene Brox Nilsen, 16. June 2026,
Norwegian Water Resources and Energy Directorate

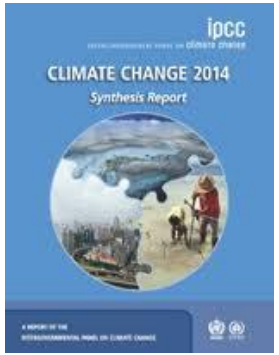
Climate adaptation tip: Use climate change allowances.

Nilsen et al., 2022: From climate model output to actionable climate information.
https://www.frontiersin.org/journals/climate/articles/10.3389/fclim.2022.866563/full

Flooding 10. august 2023 (Hans). Photo: Trond Reitan/NVE

NORSK KLIMASERVICESENTER | Meteorologisk institutt | NVE | NORCE | Kartverket | BJERKNES CENTRE for Climate Research

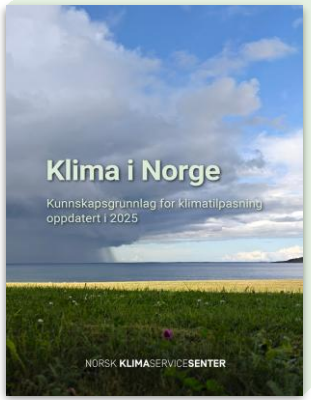
IPCC and Norwegian climate assessment reports



IPCC AR5
CMIP5
(RCPs)

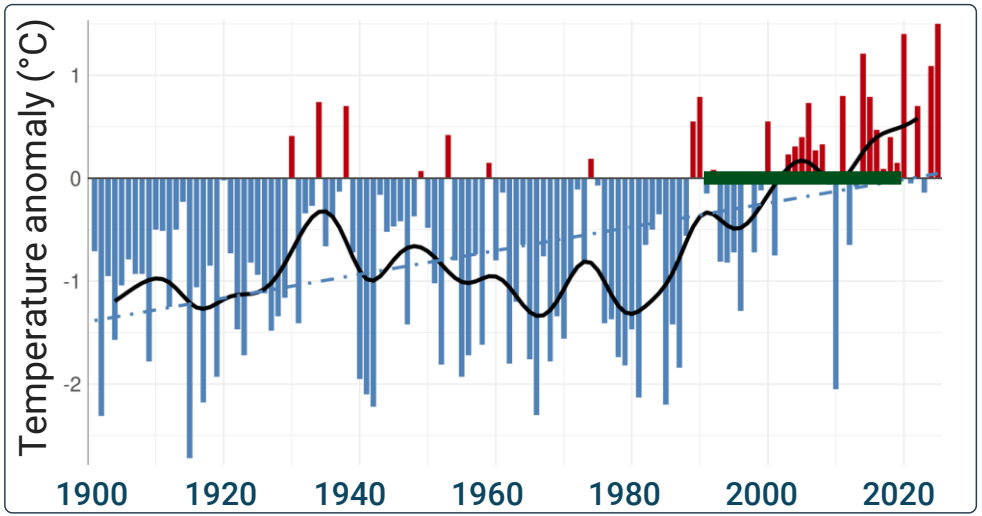
KiN-2015
(«Climate in Norway 2100»)
Hanssen-Bauer et al., 2015
CMIP5, 10 models available
Reference: 1971–2000
≈200 pages

IPCC AR6
CMIP6
(SSPs)



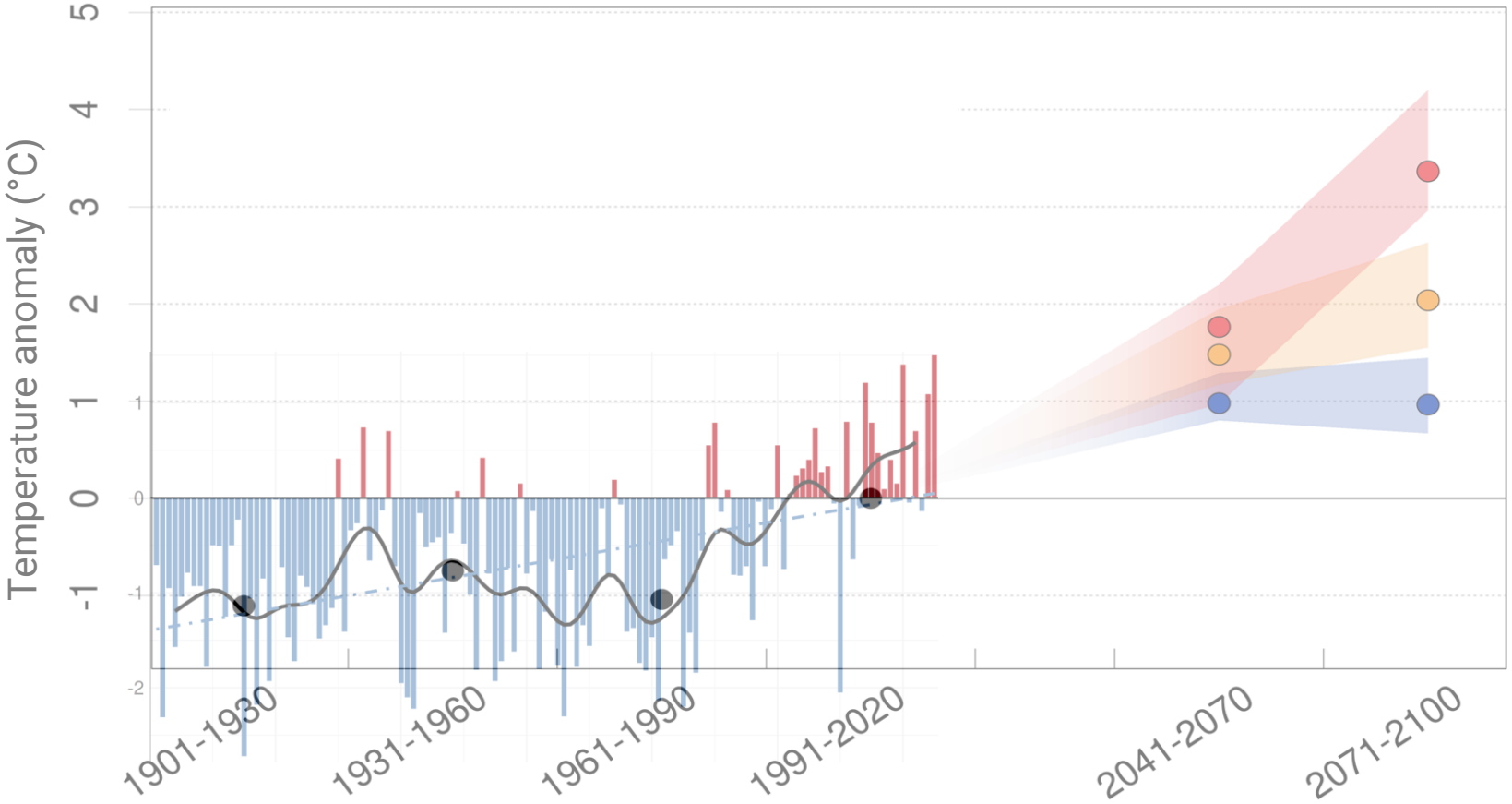
KiN-2025
(«Climate in Norway»)
Dyrrdal et al., 2025
CMIP6
CMIP5
Reference: 1991–2020
≈300 pages

Annual temperature for Norway has increased

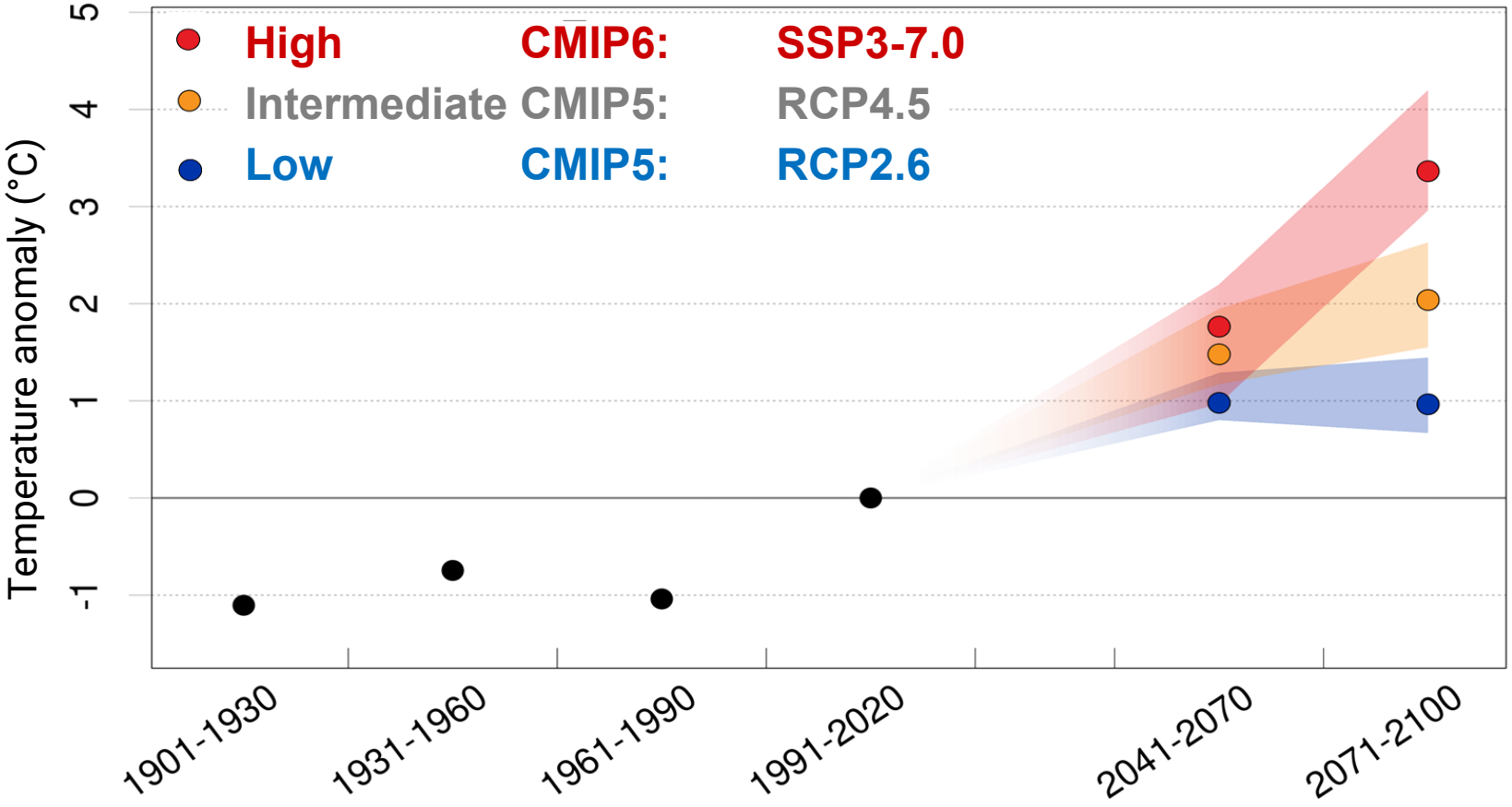


+ 1,4 °C
from 1901 to 2024
(linear trend)

NORSK KLIMASERVICESENTER



NORSK KLIMASERVICESENTER Figures: https://klimaservicesenter.no/kss/rapporter/klima-i-norge-2025/figurer-fra-klima-i-norge-2025-1-3



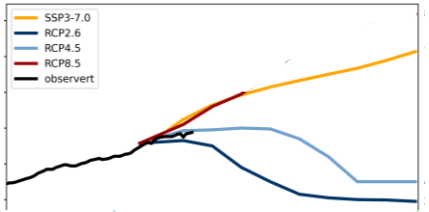
NORSK KLIMASERVICESENTER Figures: https://klimaservicesenter.no/kss/rapporter/klima-i-norge-2025/figurer-fra-klima-i-norge-2025-1-3

3 scenarios
SSP3-7.0
RCP4.5
RCP2.6

10 GCM–RCMs
CMIP6
CMIP5
12x12 km

Downscaled
into 1x1 km
Bias-adjusted using EQM
and EQM+3DBC

1 Utslippsscenarioer



2 Global klimainformasjon

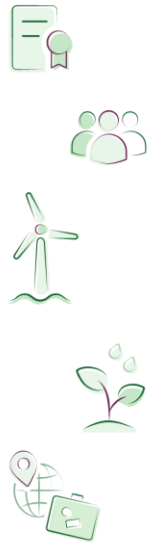
3 Regional klimainformasjon

4 Nasjonal klimainformasjon

Gridded hydrological modelling

5 Hydrologisk informasjon

6 Brukere

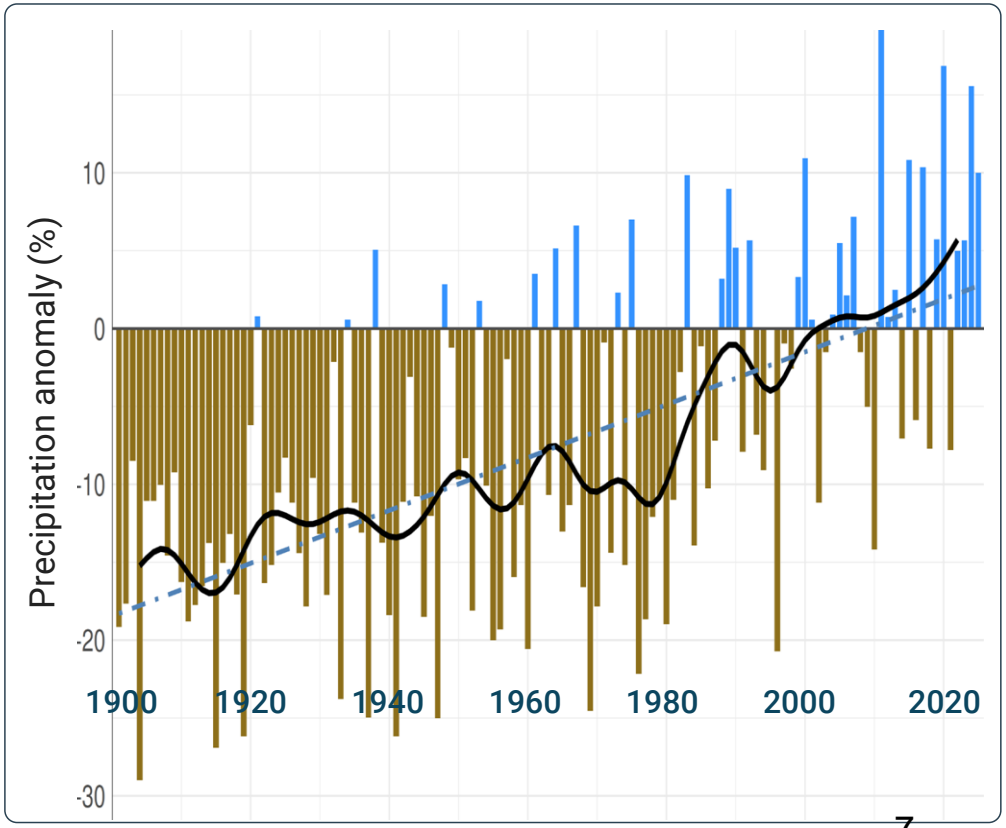


Huang et al., 2026
An improved modelling chain for bias-adjusted high-resolution climate and hydrological projections for Norway

https://gmd.copernicus.org/articles/19/4567/2026/

NORSK KLIMASERVICESENTER

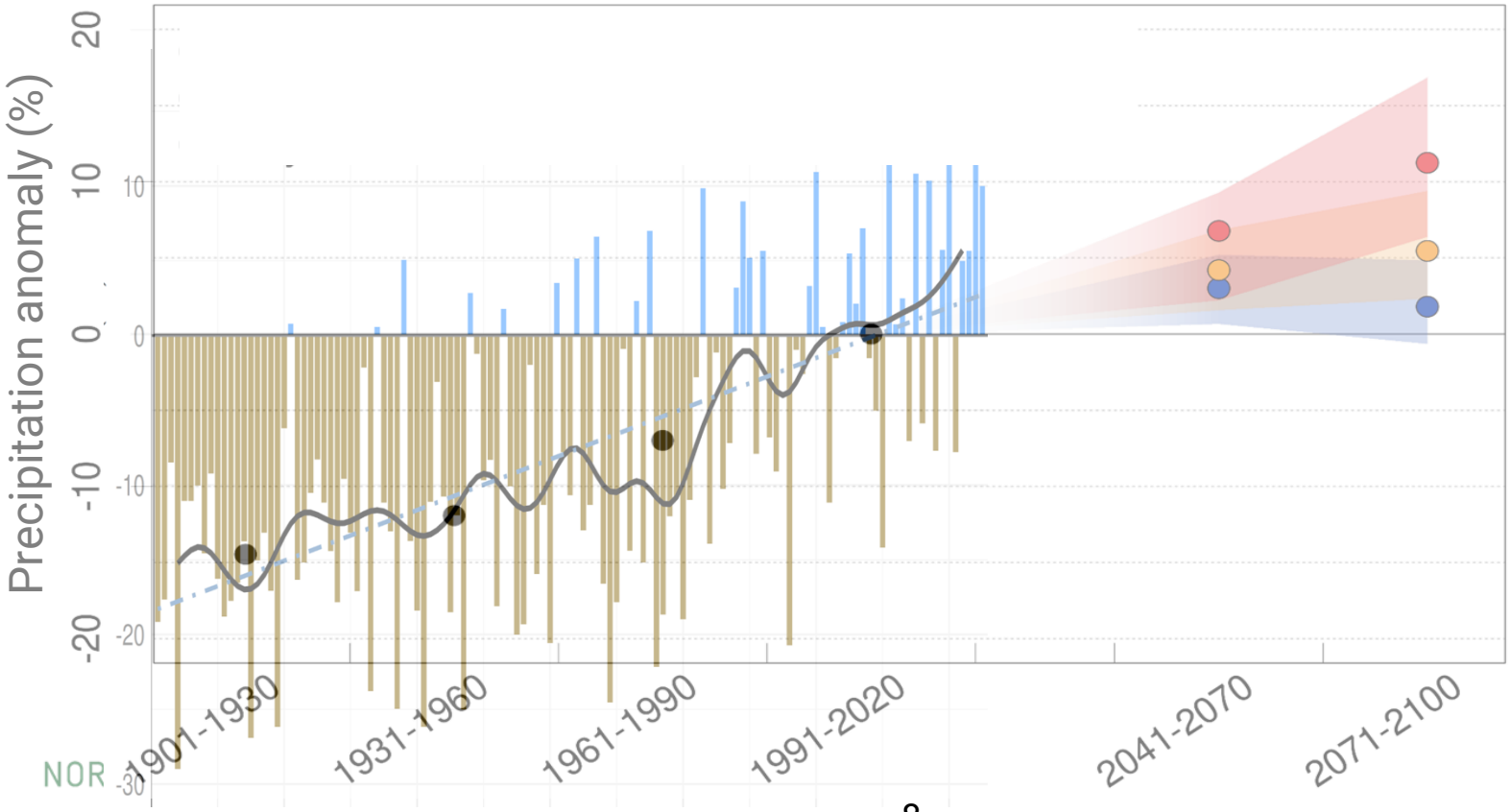
Annual precipitation for Norway has increased



+21 %

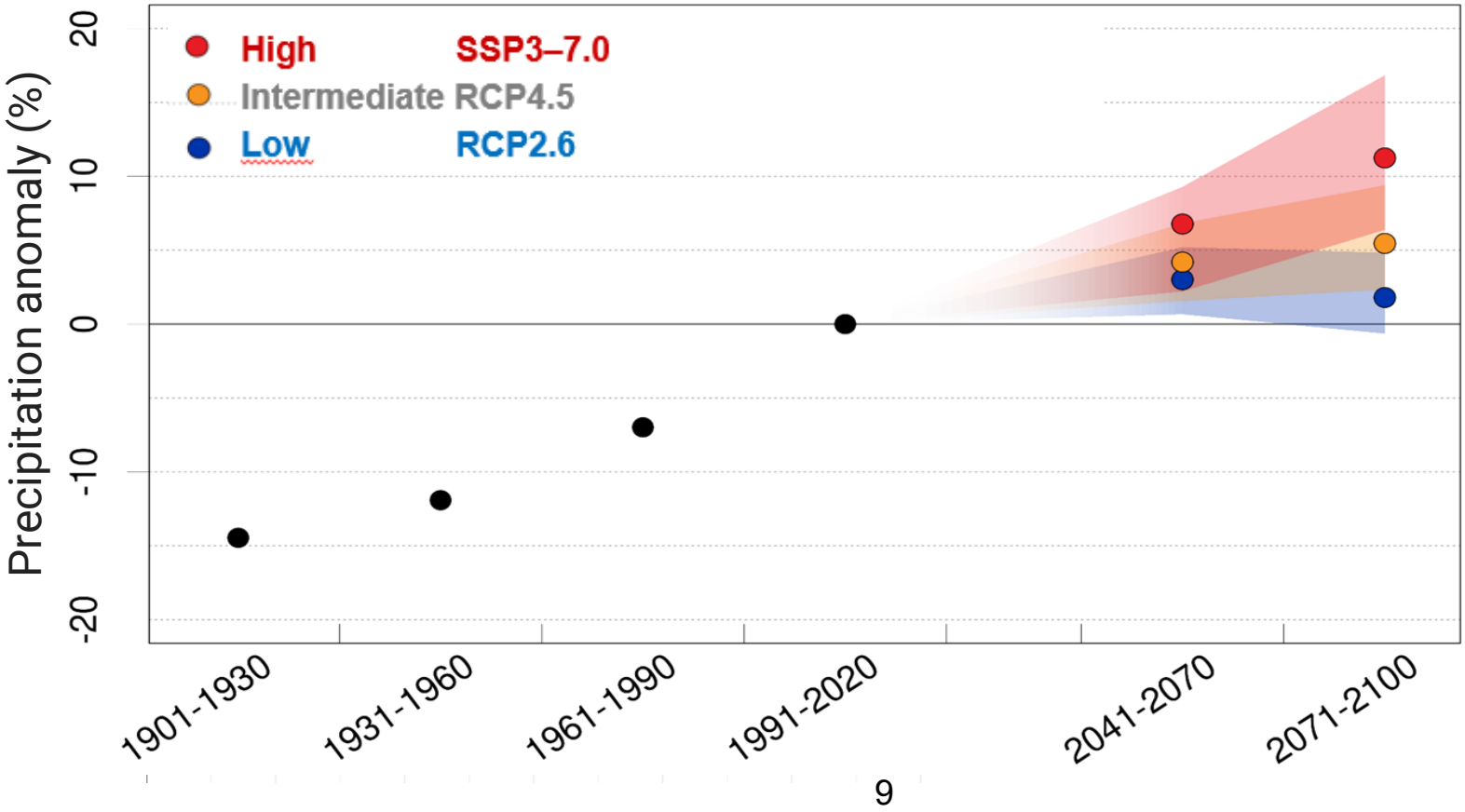
from 1900 to 2024

Annual precipitation projections



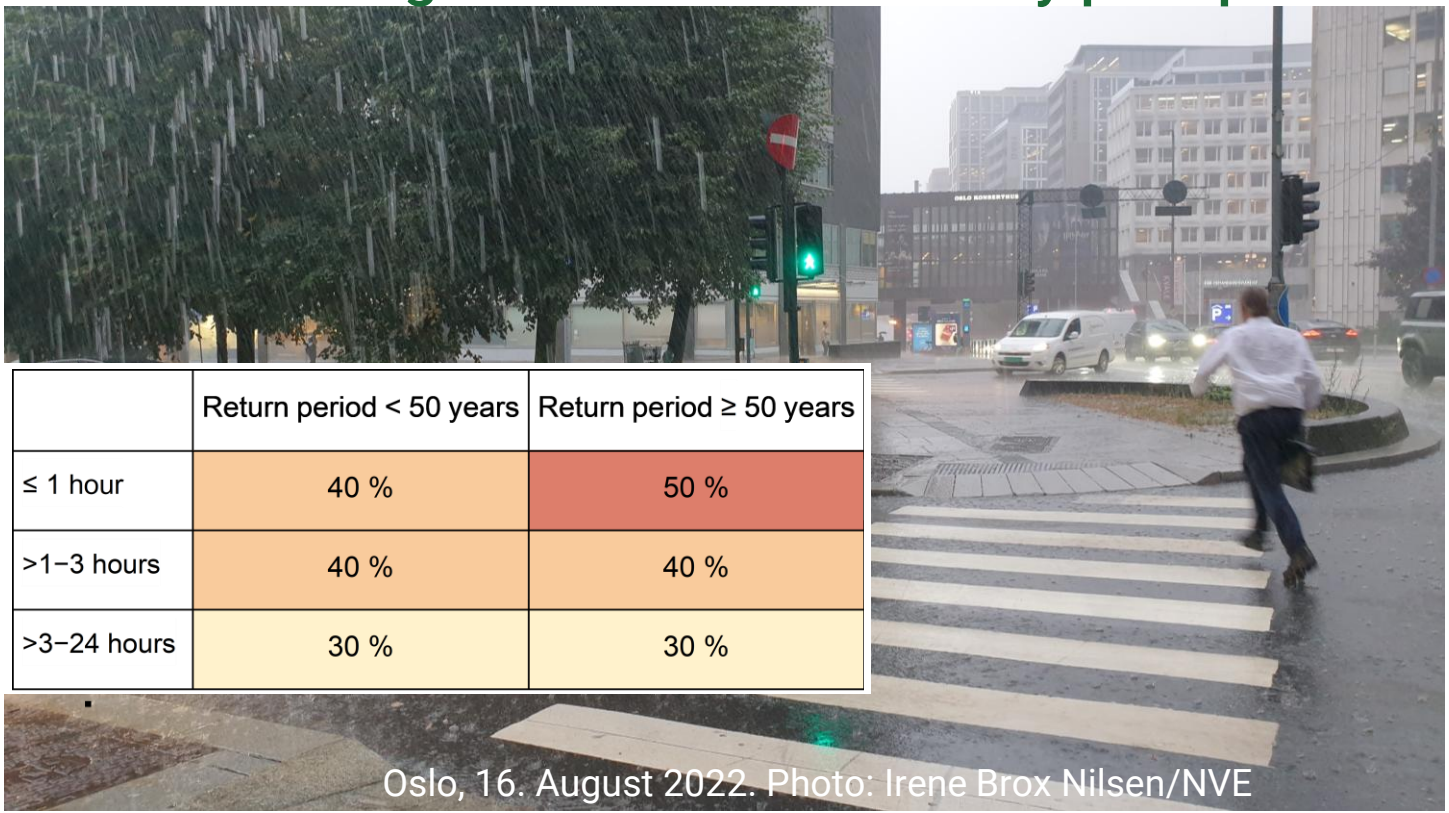
+11 %

Annual precipitation projections



+11 %

Climate change allowances for heavy precipitation



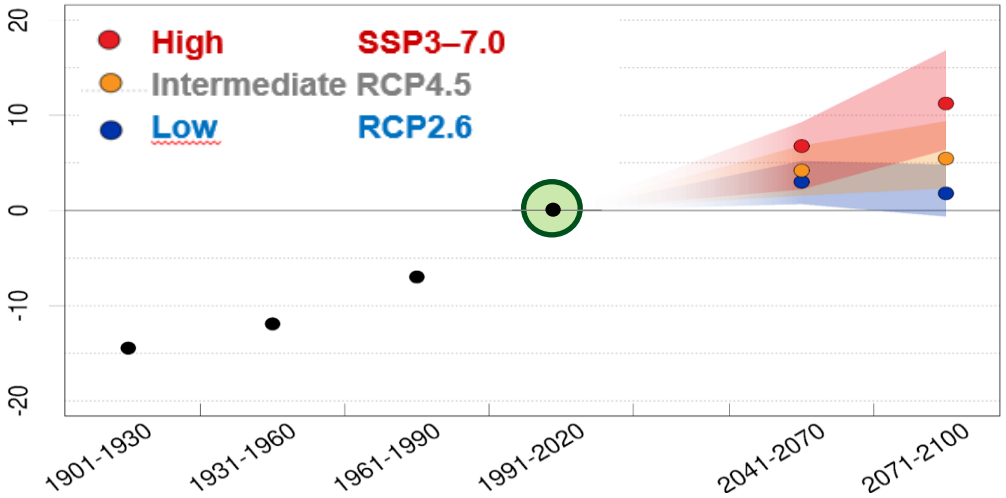
	Return period < 50 years	Return period ≥ 50 years
≤ 1 hour	40 %	50 %
>1–3 hours	40 %	40 %
>3–24 hours	30 %	30 %

Oslo, 16. August 2022. Photo: Irene Brox Nilsen/NVE

NORSK KLIMASERVICESENTER

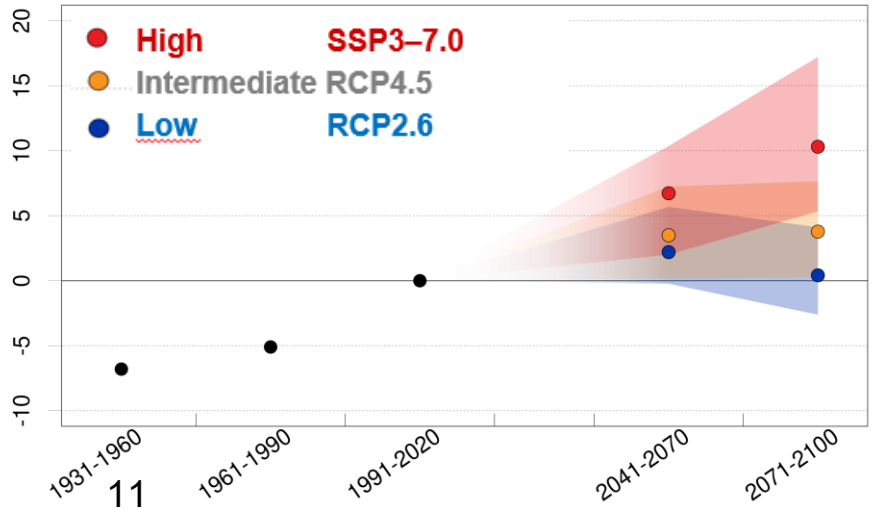
Nilsen et al., 2022: From climate model output to actionable climate information.
https://www.frontiersin.org/journals/climate/articles/10.3389/fclim.2022.866563/full

Precipitation
(anomalies from 1991–2020 [%])



+11 %

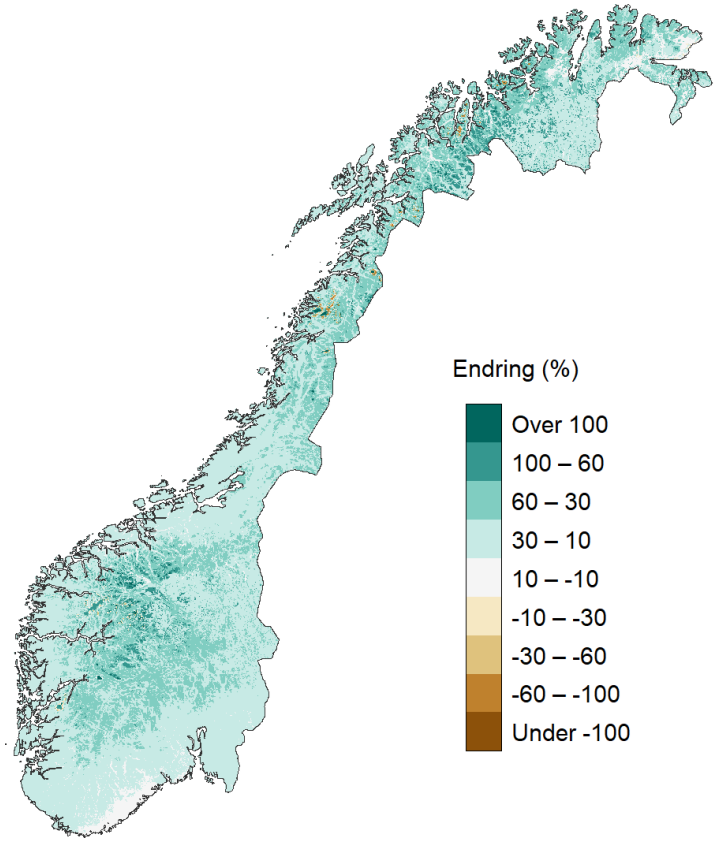
Runoff
(anomalies from 1991–2020 [%])



+10 %

Seasonal runoff changes are driven by increasing precipitation…

Autumn: increase



Seasonal runoff changes are driven by increasing precipitation as well as increasing temperature

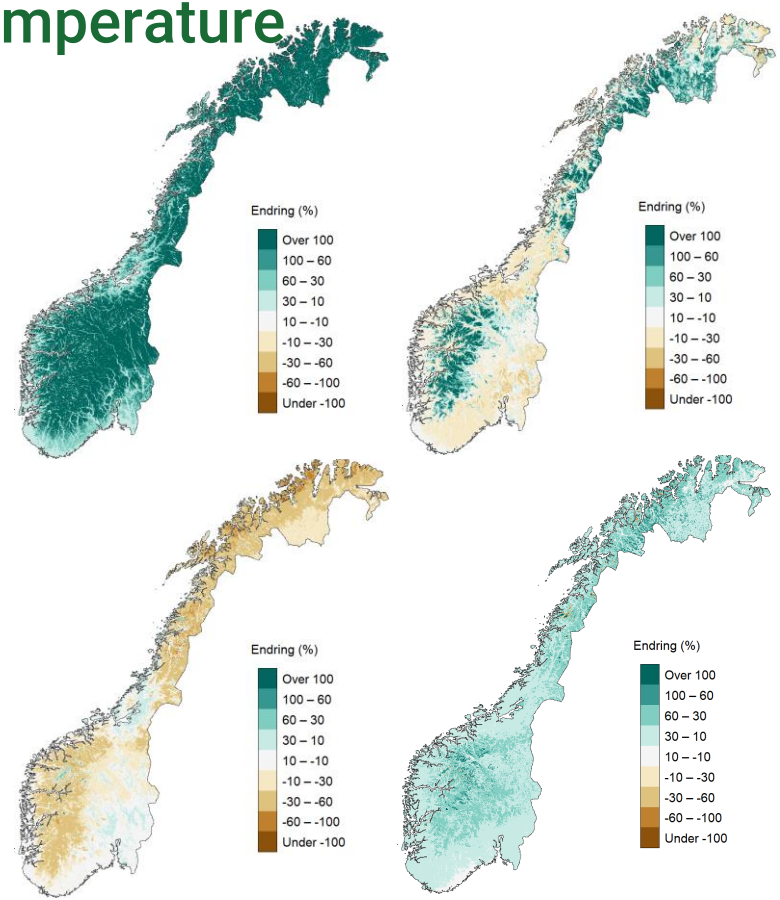
Autumn: increase

Winter: Substantial increase

Spring: Increase in mountain regions

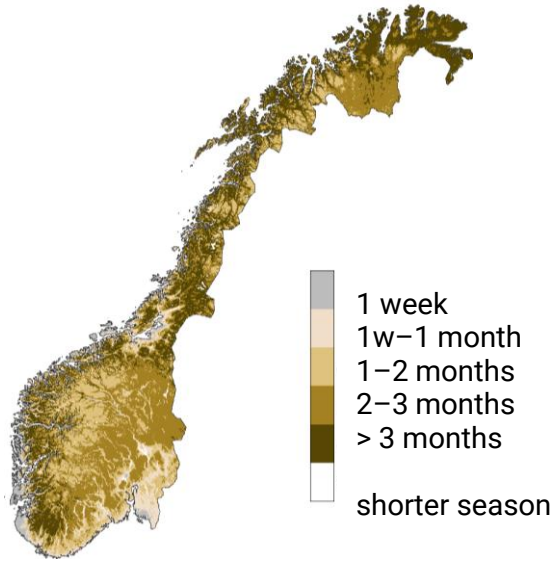
...and reduction in lowlands

Summer: Substantial decrease



Snow amounts decrease

Skiing season (SWE>60 mm, approximately SD>25 cm) will shorten by up to 3 months



NORSK KLIMASERVICESENTER

Bærumsmarka, March 2022 Photo: Irene Brox Nilsen

Projected changes in flood magnitude (200-year flood)

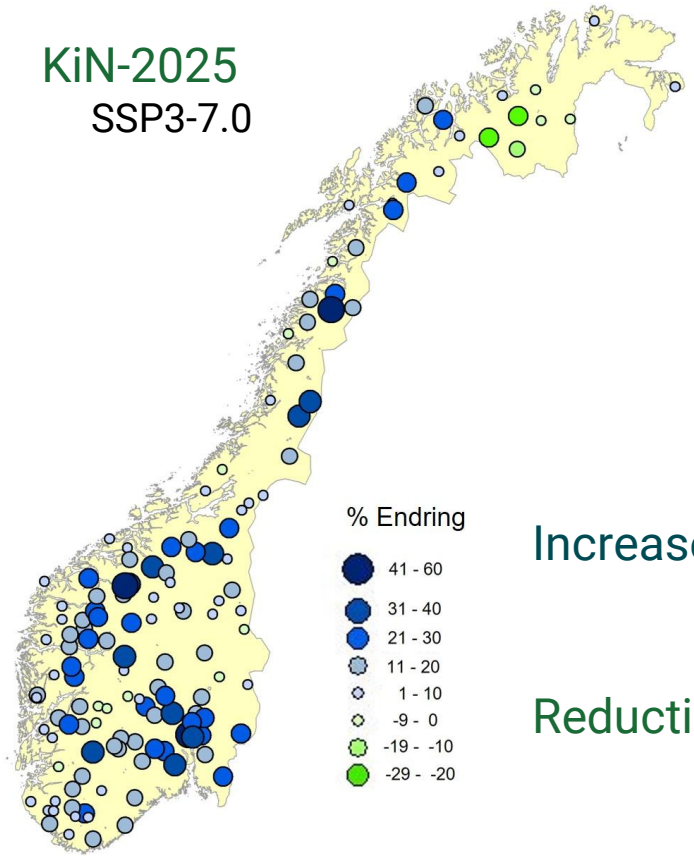
Three categories of climate change allowances:

0% Lagre catchments dominared by snowmelt floods

20% Catchments where rainfall floods will dominate.

40% Small, fast-responding catchments

KiN-2025
SSP3-7.0



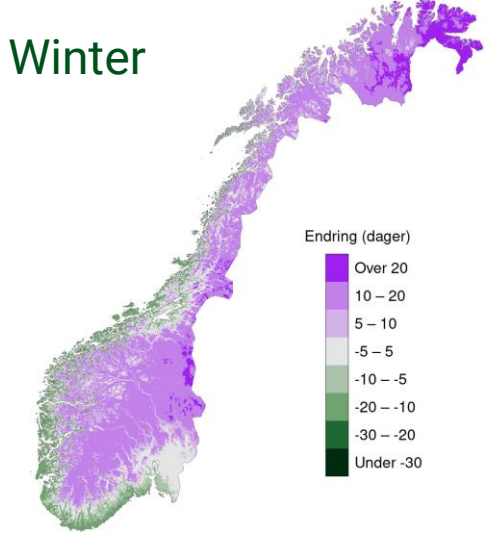
Increase

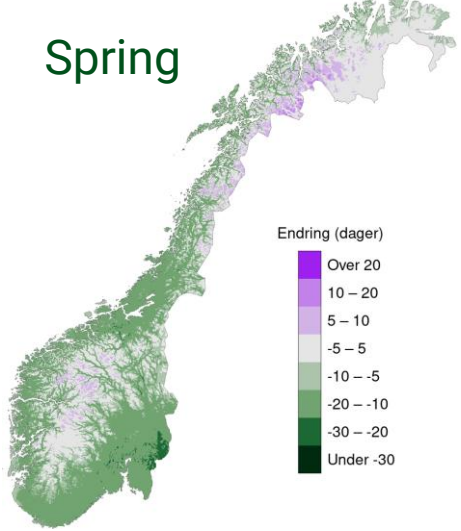
Reduction

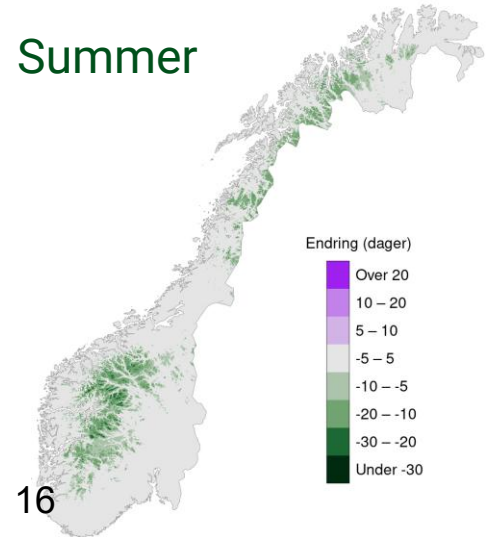
NORSK KLIMASERVICESENTER

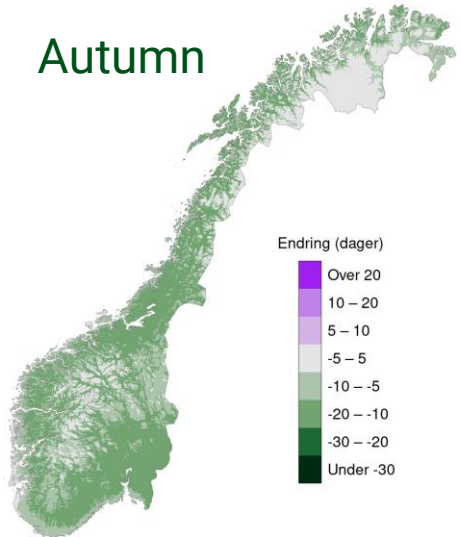
Days with zero crossings

More freeze-thaw cycles where temperatures increase towards 0 °C









ØKT SANNSYNLIGHET

Intense precipitation

Rainfall floods

Debris flow

Storm surges

MULIG ØKT SANNSYNLIGHET

Summer drought

Ice drift

Snow avalances

Quick-clay slides

UENDRET ELLER MINDRE SANNSYNLIG

Snowmelt floods

USIKKERT

Strong wind

Rock fall

Rock avalanches

NORSK KLIMASERVICESENTER https://klimaservicesenter.no/kss/rapporter/klima-i-norge-2025/ Søk...

KLIMAFRAMSKRIVNINGER VÆRDATA OG STATISTIKK KLIMAPROFILER RAPPORTER LÆR MER OM OSS / ABOUT

Innhold

Klima i Norge

Sist oppdatert: October 2025

Kilde: Marie Kristine Dinessen.

- Oppsummeringer fra kapitlene i rapporten
- Faktabokser fra rapporten

datagrunnlag

Sist oppdatert: November 2025

Om klimaframskrivningene

Norsk klimaservicesenter publiserer ulike typer klimaframskrivninger. Dataene er grunnlaget for klimaframskrivningene presentert i rapporten Klima i Norge. I kapittel 10 finner du også en nærmere beskrivelse av hvordan beregningene er gjort.

Det gjøres oppmerksom på at klimaframskrivninger er modellerte data, basert på antakelser om framtidige utslipp av drivhusgasser (her kalt utslippsscenarioer). For den historiske perioden vil de statistiske egenskapene over hele perioden gjenspeile de statistiske egenskapene i observert klima og hydrologi. Imidlertid vil ikke simuleringer for en bestemt dato være i overensstemmelse med det som faktisk er observert. På samme måte beskriver simuleringene for framtiden mulige utviklinger av klima og hydrologi.

klimaservicesenter.no
ibni@nve.no

NORSK KLIMASERVICESENTER

Meteorologisk institutt
NVE
NORCE
Kartverket
BJERKNES CENTRE for Climate Research