Which global reanalysis dataset represents better in snow cover on the Tibetan Plateau?

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Table S1. Characteristics of the GLDAS-2.1 snow cover products used in this study.

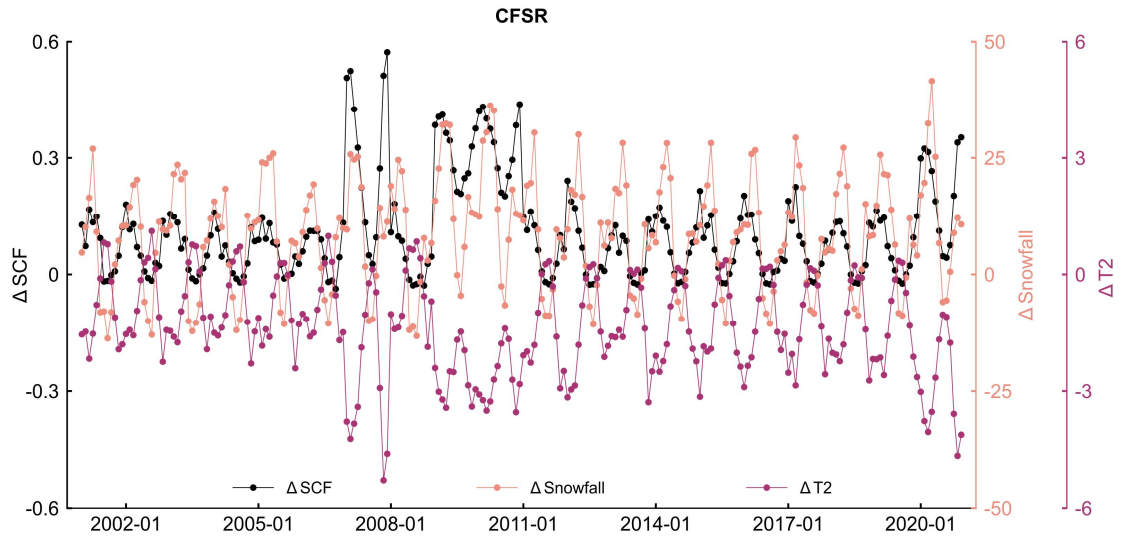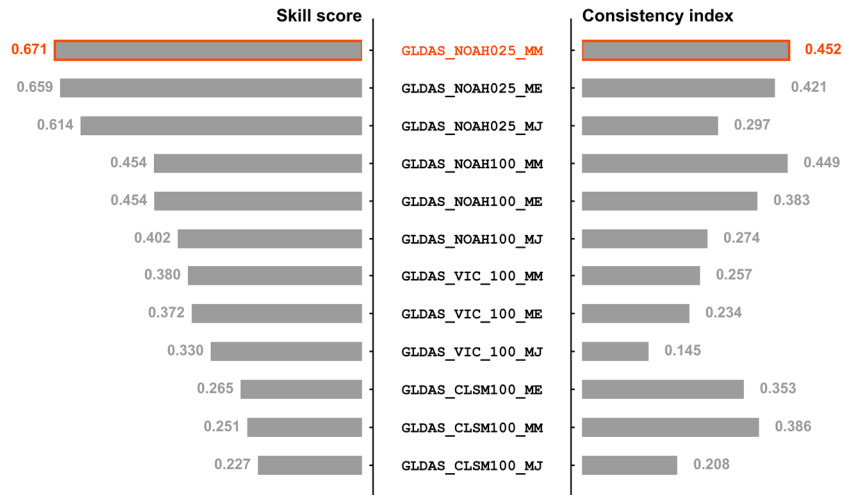|	Spatial resolution	Land Surface Model
GLDAS_NOAH025	0.25°×0.25°	NOAH
GLDAS_NOAH100	1°×1°	NOAH
GLDAS_VIC_100	1°×1°	VIC
GLDAS_CLSM100	1°×1°	CLSM

Figure S1: Temporal variations of the monthly SCF (black), snowfall (light pink), and T2 (purple) bias in the CFSR, based on SPIReS, over the Tibetan Plateau region from January 2001 to December 2020.

	Skill score		Consistency index
0.671		GLDAS_NOAH025_MM	0.452
0.659		GLDAS_NOAH025_ME	0.421
0.614		GLDAS_NOAH025_MJ	0.297
0.454		GLDAS_NOAH100_MM	0.449
0.454		GLDAS_NOAH100_ME	0.383
0.402		GLDAS_NOAH100_MJ	0.274
0.380		GLDAS_VIC_100_MM	0.257
0.372		GLDAS_VIC_100_ME	0.234
0.330		GLDAS_VIC_100_MJ	0.145
0.265		GLDAS_CLSM100_ME	0.353
0.251		GLDAS_CLSM100_MM	0.386
0.227		GLDAS_CLSM100_MJ	0.208

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Figure S2: SS and CI values of SCF calculated offline using the MM_SCF, MJ_SCF, and ME_SCF parameterization methods and various products from GLDAS-2.1.
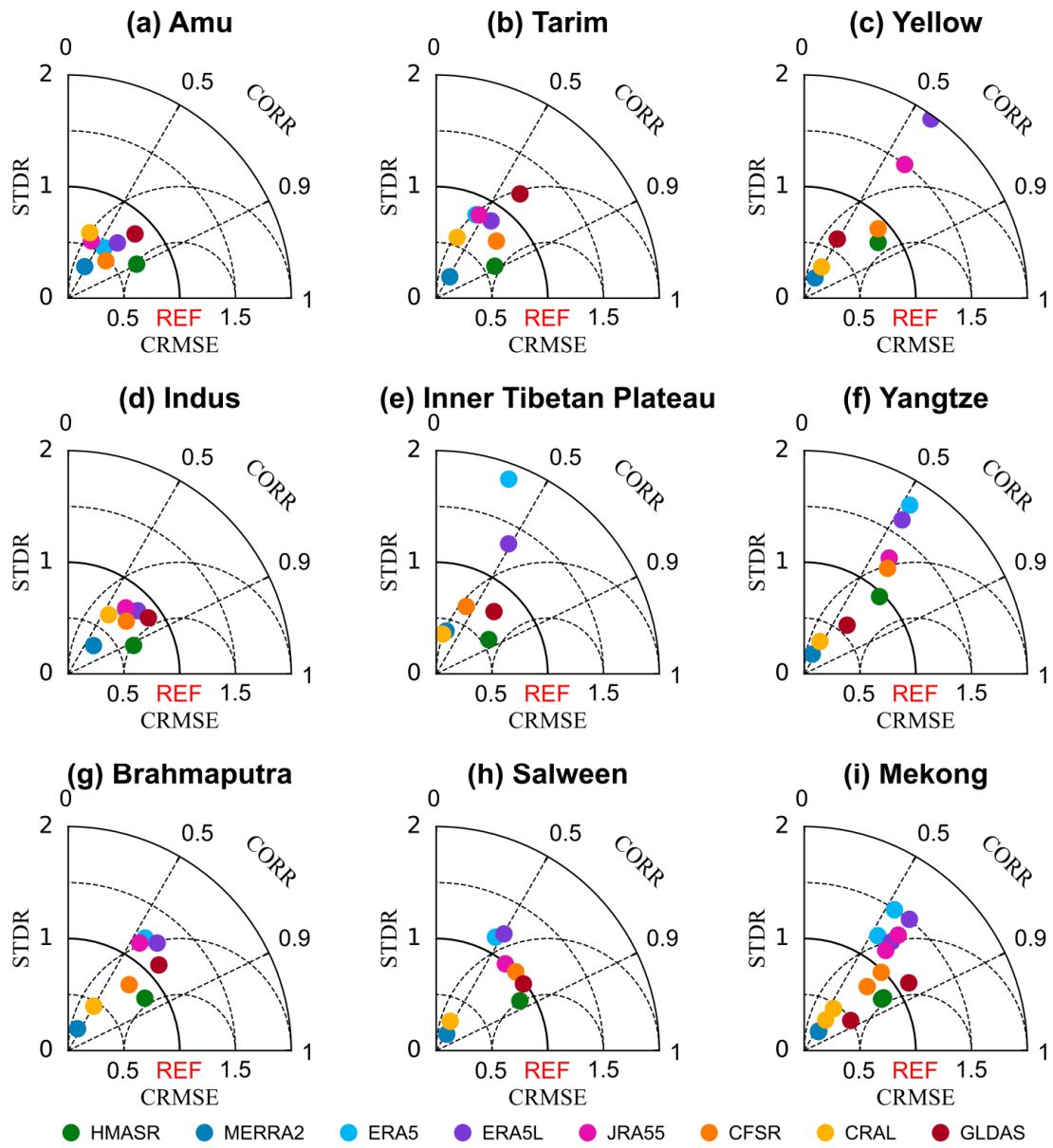
Figure S3: Taylor diagrams showing the spatial correlation coefficients (R) and standard deviation ratio (STDR) of SCF between reanalysis datasets and SPIReS for each basin.
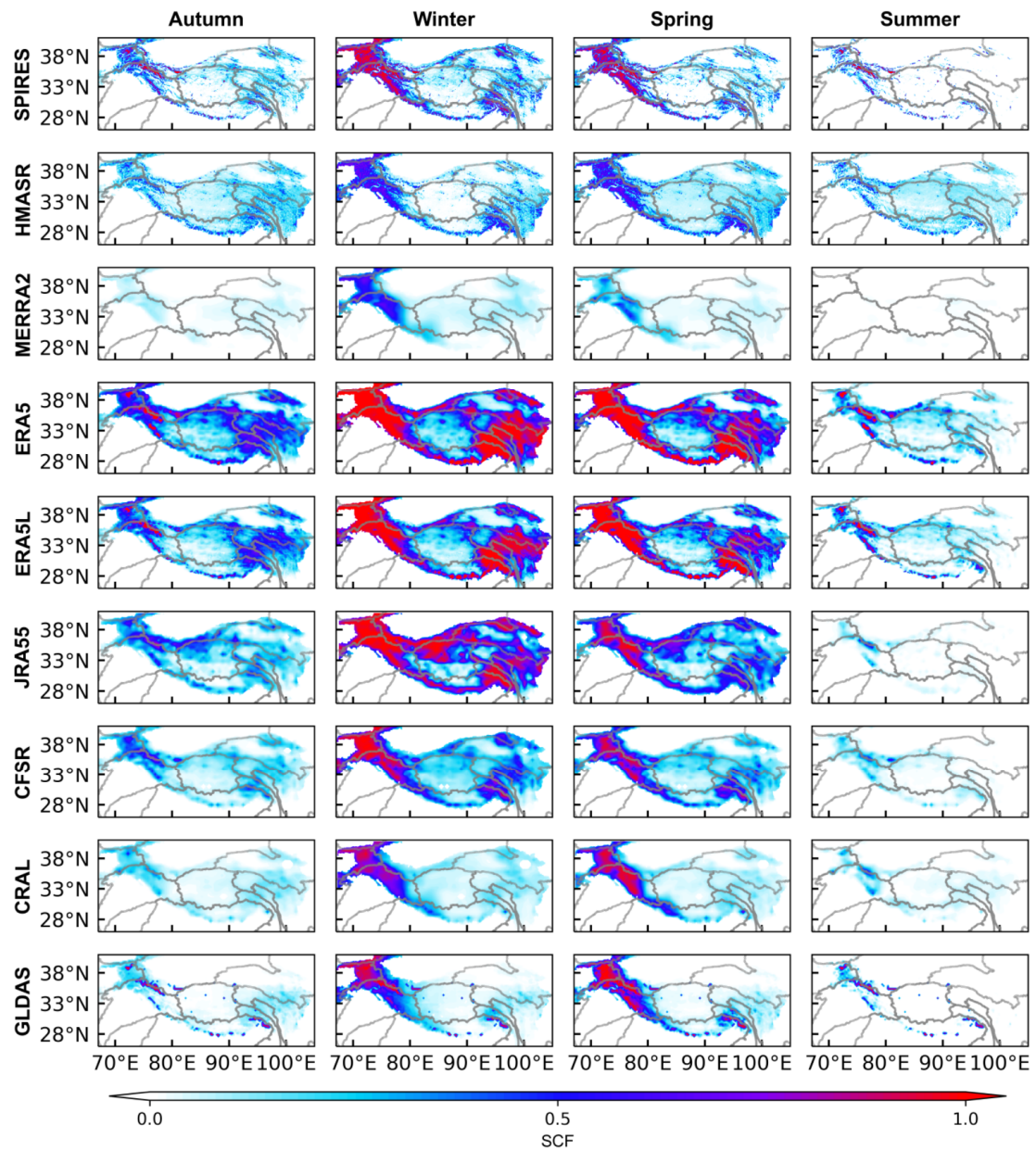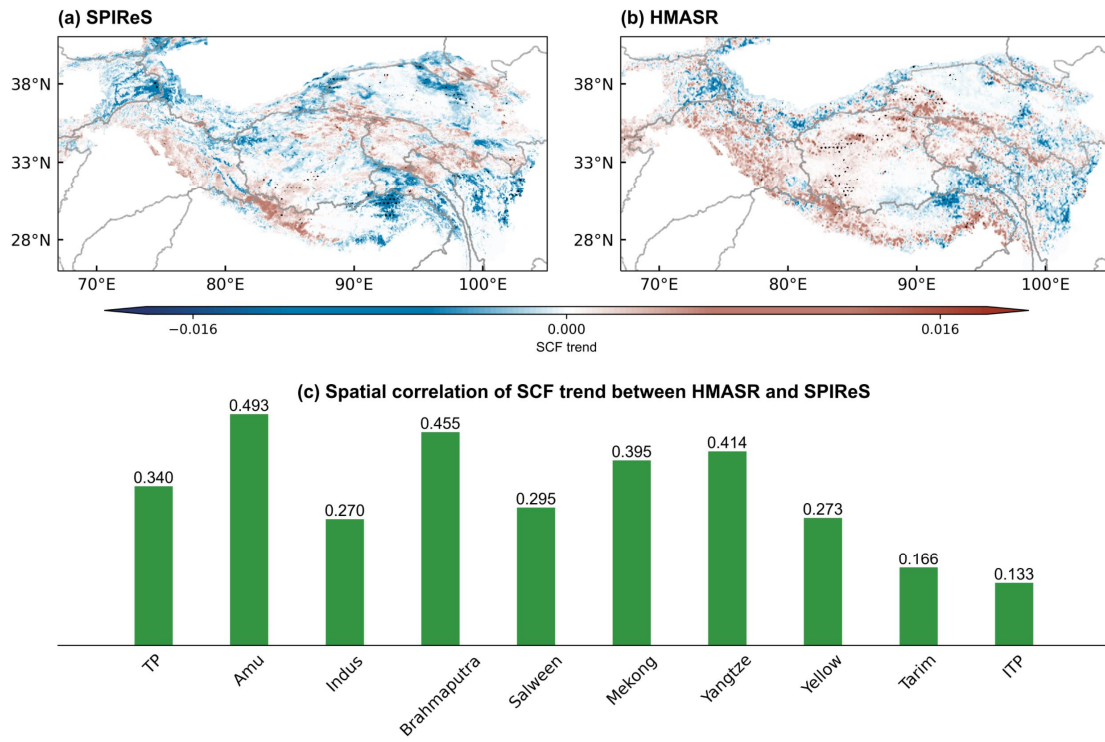
Figure S4: Spatial distribution of the averaged seasonal SCF from each dataset for 2001–2020 over the Tibetan Plateau region.

(a) SPIReS

(b) HMASR

SCF trend

(c) Spatial correlation of SCF trend between HMASR and SPIReS

TP	Amu	Indus	Brahmaputra	Salween	Mekong	Yangtze	Yellow	Tarim	ITP
0.340	0.493	0.270	0.455	0.295	0.395	0.414	0.273	0.166	0.133

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Figure S5: (a), (b) Spatial distribution of the annual trend in SCF for SPIReS over the Tibetan Plateau region from 2001 to 2016. (c) Spatial correlations of SCF annual trends between HMASR and SPIReS for each basin. Black dots in (a) and (b) indicate that the trend exceeds the 95% confidence level.