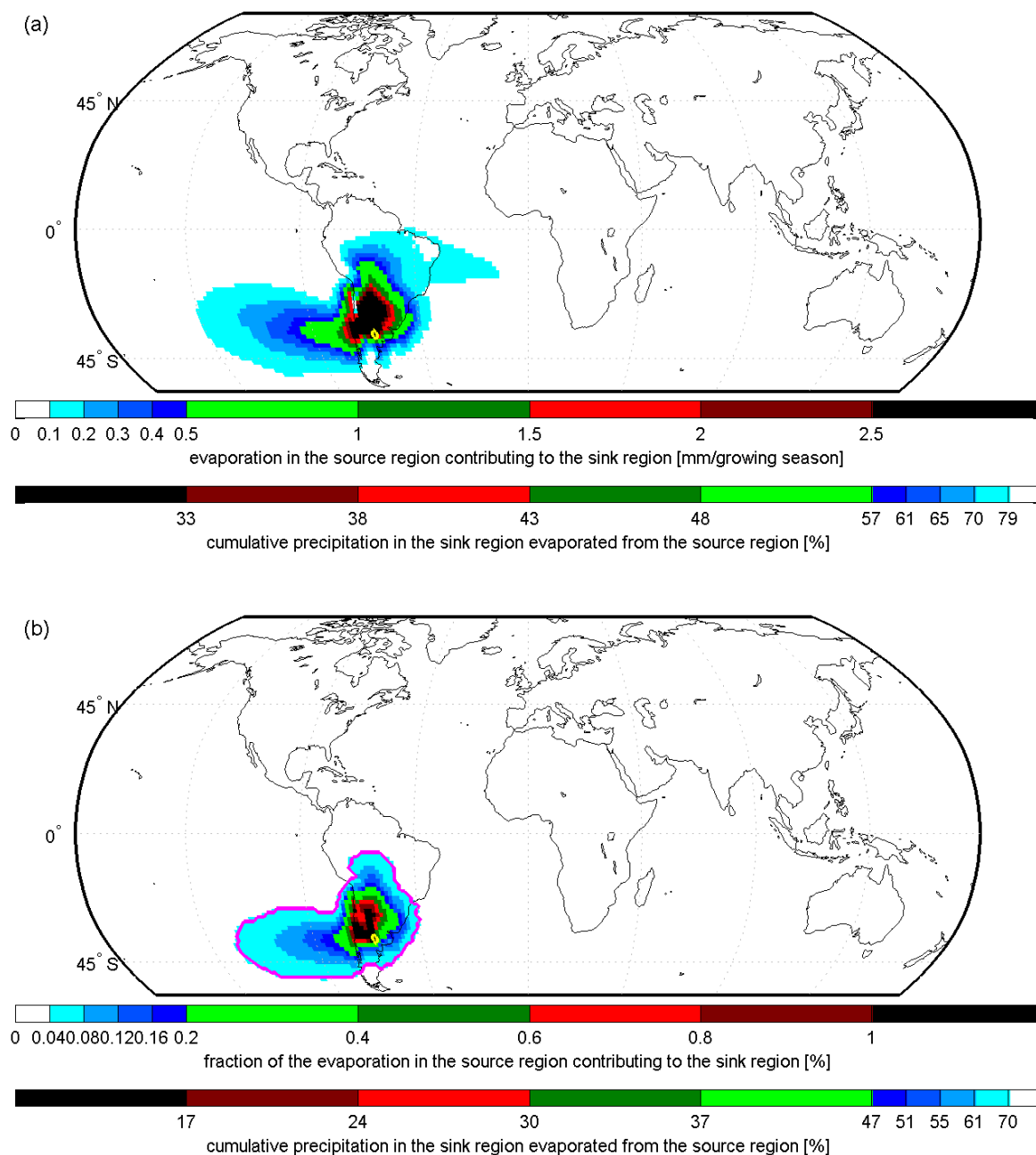
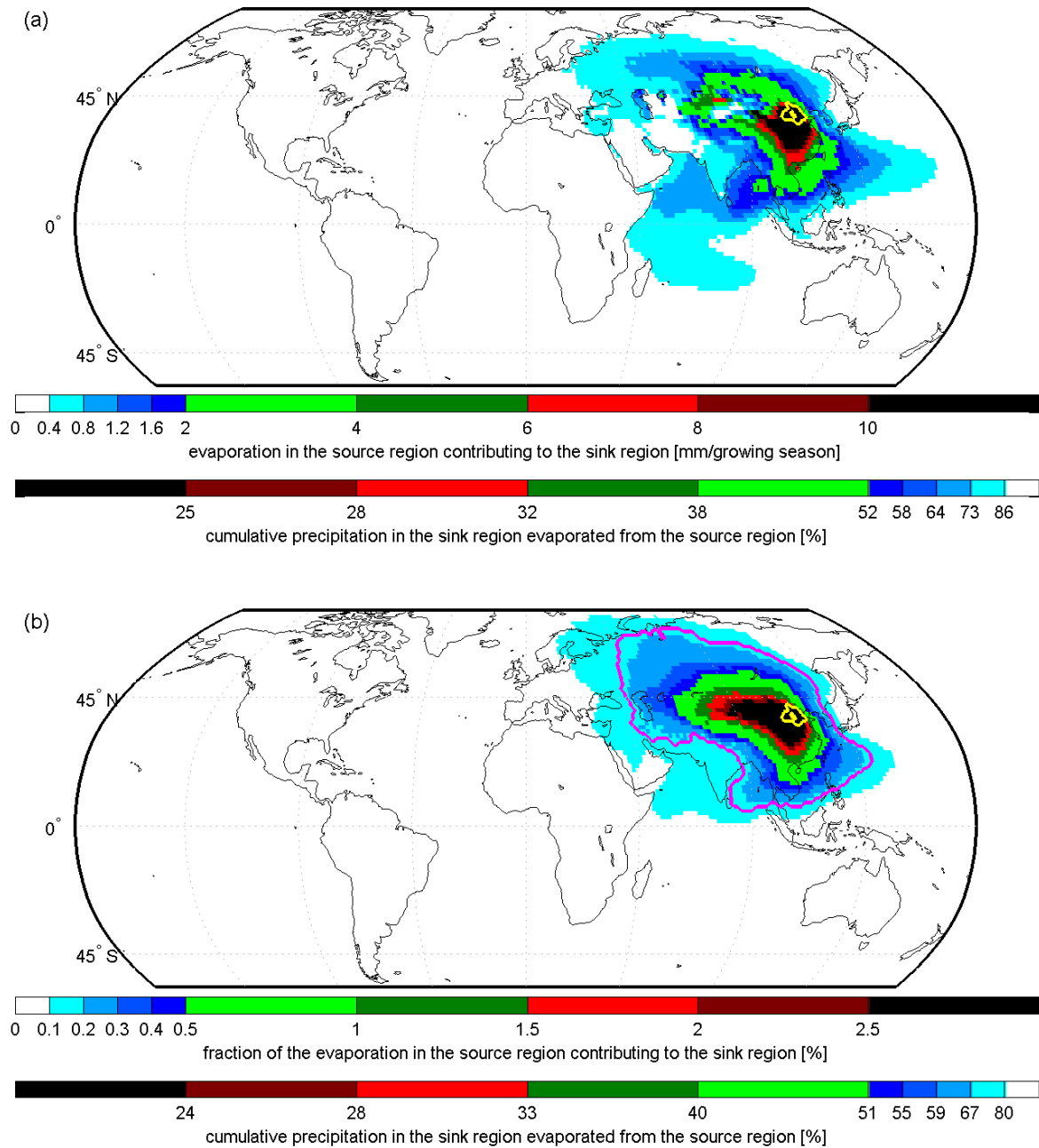


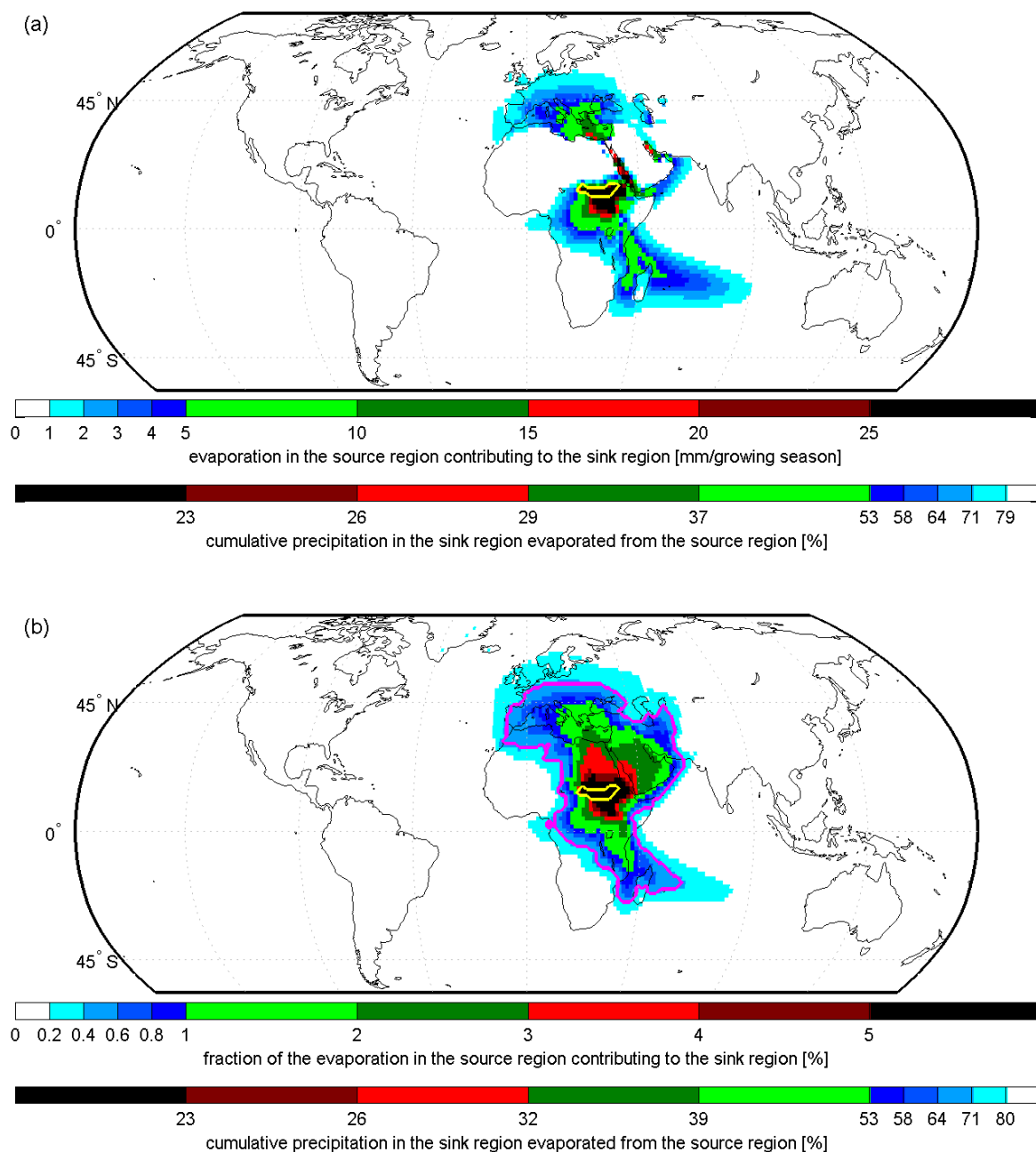
**Figure S1.** Two very different looking precipitationsheds with the same underlying data. Both figures show the absolute precipitationshed of the West-Sahel sink region (yellow border), expressed in terms of absolute evaporation (mm/growing season contributed to sink region precipitation). Compare also Figure 2a. The second color scale in (a) and (b) indicates which percentage of the precipitation in the West-Sahel region is generated within the area indicated by the corresponding colors. This figure illustrates the necessity of having a second color scale to interpret the data.



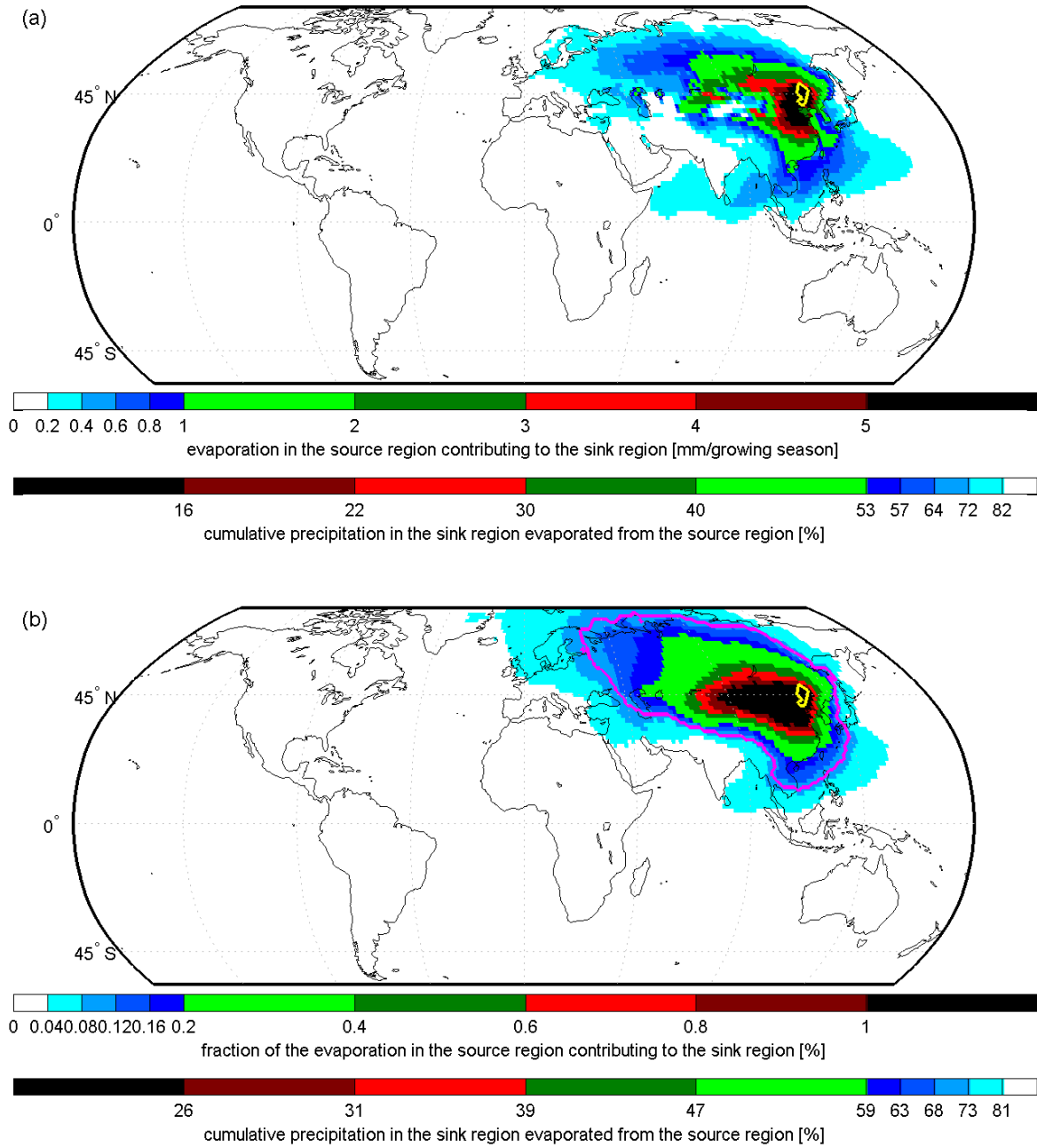
**Figure S2.** Precipitation sheds of the Argentina sink region: **(a)** The absolute precipitation shed of the Argentina sink region (yellow border), expressed in terms of absolute evaporation mm/growing season contributed to sink region precipitation; **(b)** The relative precipitation shed of the Argentina sink region (yellow border), expressed in terms of a fraction of the evaporation contributed to sink region precipitation. The second color scale in (a) and (b) indicates which percentage of the precipitation in the Argentina region is generated within the area indicated by the corresponding colors. The pink border in (b) (= the red border in Figure 4) is the relative precipitation shed for the Argentina region (at 70% contribution). The Argentina sink region receives an average of 583 mm of precipitation per growing season.



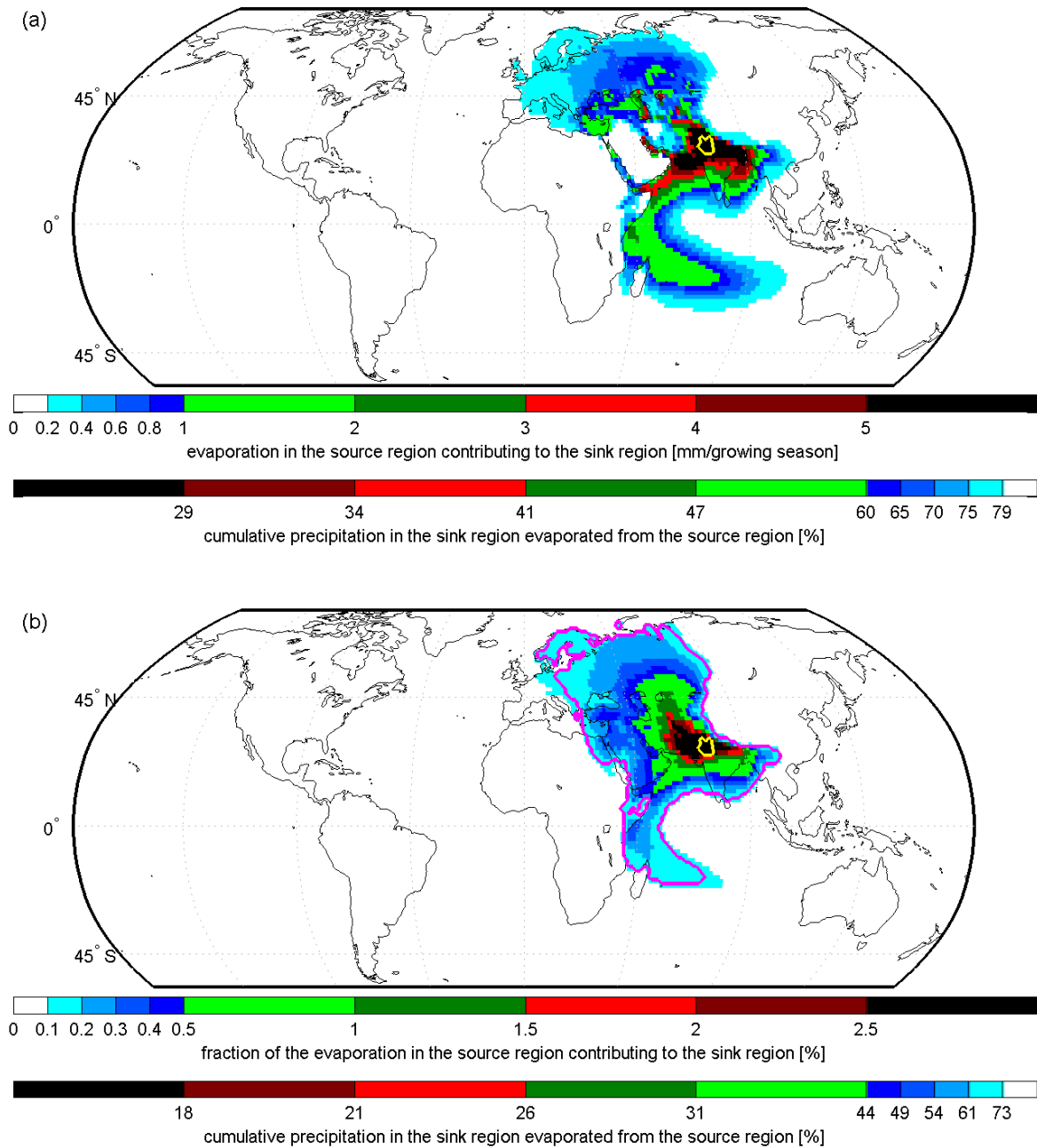
**Figure S3.** Precipitation sheds of the East China sink region: **(a)** The absolute precipitation shed of the East China sink region (yellow border), expressed in terms of absolute evaporation mm/growing season contributed to sink region precipitation; **(b)** The relative precipitation shed of the East China sink region (yellow border), expressed in terms of a fraction of the evaporation contributed to sink region precipitation. The second color scale in (a) and (b) indicates which percentage of the precipitation in the East China region is generated within the area indicated by the corresponding colors. The pink border in (b) (= the green border in Figure 4) is the relative precipitation shed for the East China region (at 70% contribution). The East China sink region receives an average of 419 mm of precipitation per growing season.



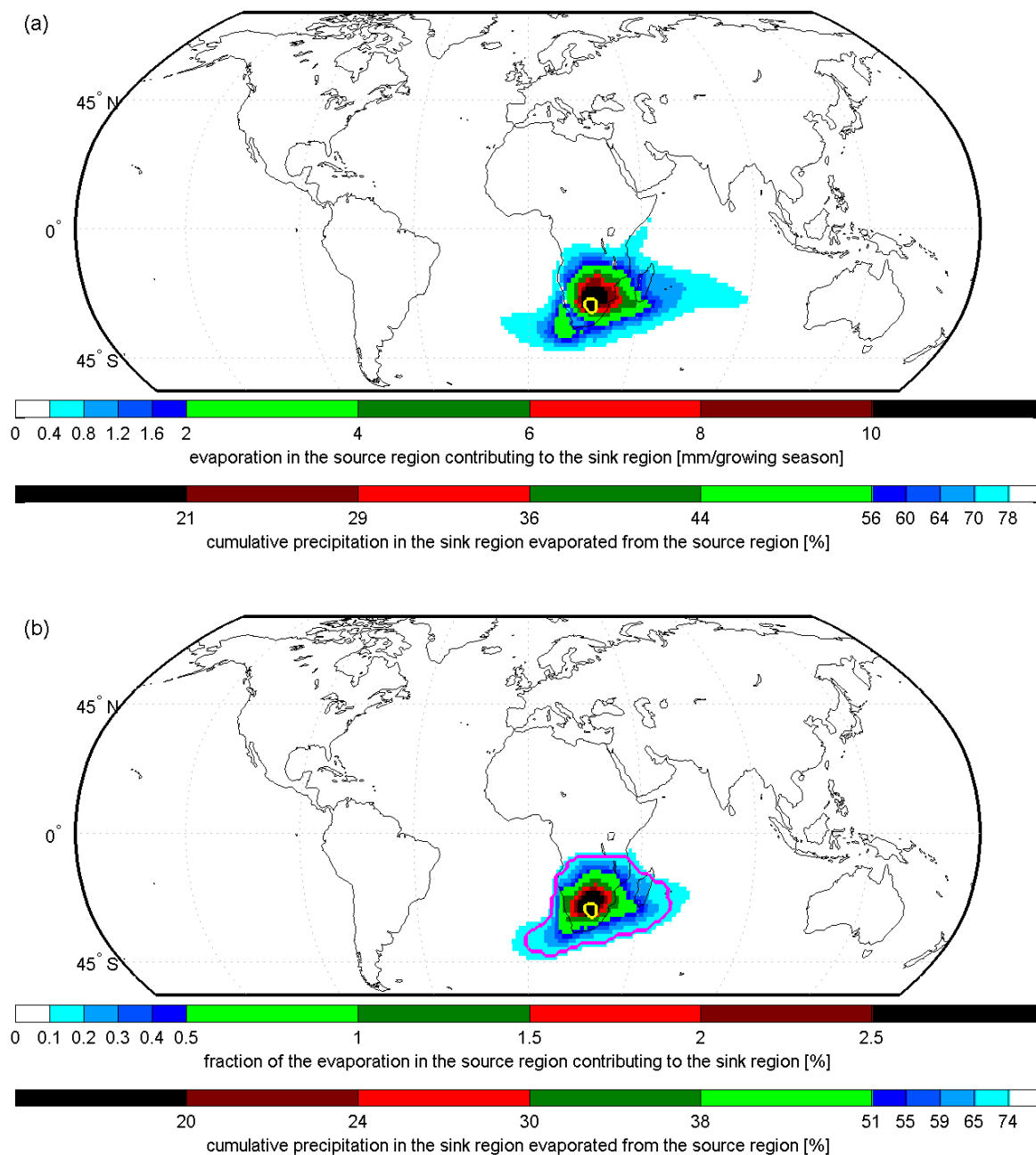
**Figure S4.** Precipitation sheds of the East Sahel sink region: **(a)** The absolute precipitation shed of the East Sahel sink region (yellow border), expressed in terms of absolute evaporation mm/growing season contributed to sink region precipitation; **(b)** The relative precipitation shed of the East Sahel sink region (yellow border), expressed in terms of a fraction of the evaporation contributed to sink region precipitation. The second color scale in (a) and (b) indicates which percentage of the precipitation in the East Sahel region is generated within the area indicated by the corresponding colors. The pink border in (b) (= the yellow border in Figure 4) is the relative precipitation shed for the East Sahel region (at 70% contribution). The East Sahel sink region receives an average of 452 mm of precipitation per growing season.



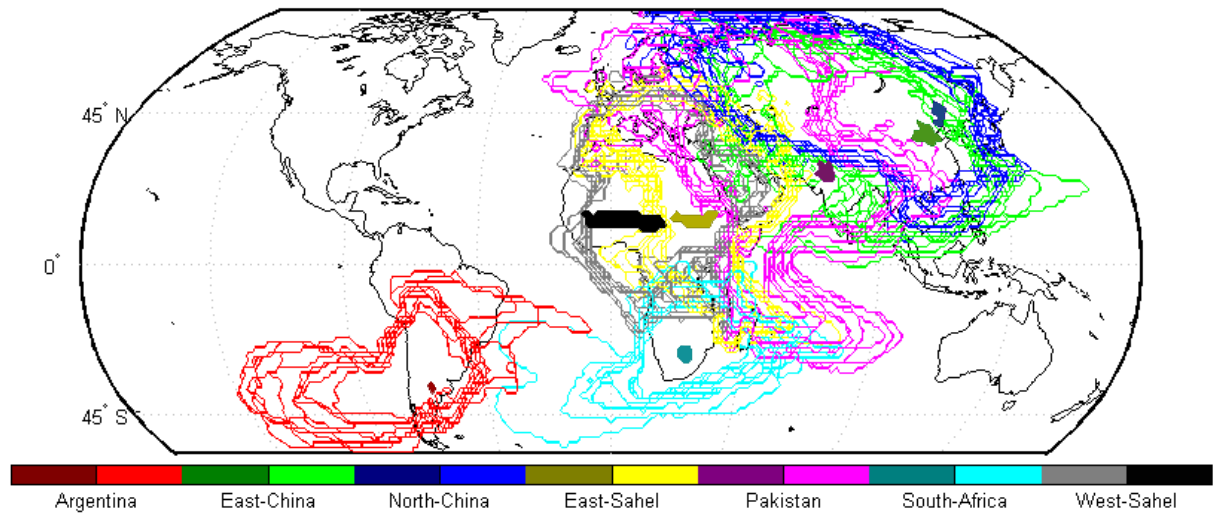
**Figure S5.** Precipitation sheds of the North China sink region: **(a)** The absolute precipitation shed of the North China sink region (yellow border), expressed in terms of absolute evaporation mm/growing season contributed to sink region precipitation; **(b)** The relative precipitation shed of the North China sink region (yellow border), expressed in terms of a fraction of the evaporation contributed to sink region precipitation. The second color scale in (a) and (b) indicates which percentage of the precipitation in the North China region is generated within the area indicated by the corresponding colors. The pink border in (b) (= the blue border in Figure 4) is the relative precipitation shed for the North China region (at 70% contribution). The North China sink region receives an average of 334 mm of precipitation per growing season.



**Figure S6.** Precipitationsheds Pakistan-India sink region: **(a)** The absolute precipitationshed of the Pakistan-India sink region (yellow border), expressed in terms of absolute evaporation mm/growing season contributed to sink region precipitation; **(b)** The relative precipitationshed of the Pakistan-India sink region (yellow border), expressed in terms of a fraction of the evaporation contributed to sink region precipitation. The second color scale in (a) and (b) indicates which percentage of the precipitation in the Pakistan-India region is generated within the area indicated by the corresponding colors. The pink border in (b) (= the pink border in Figure 4) is the relative precipitationshed for the Pakistan-India region (at 70% contribution). The Pakistan-India sink region receives an average of 339 mm of precipitation per growing season.



**Figure S7.** Precipitation sheds of the Southern Africa sink region: **(a)** The absolute precipitation shed of the Southern Africa sink region (yellow border), expressed in terms of absolute evaporation mm/growing season contributed to sink region precipitation; **(b)** The relative precipitation shed of the Southern Africa sink region (yellow border), expressed in terms of a fraction of the evaporation contributed to sink region precipitation. The second color scale in (a) and (b) indicates which percentage of the precipitation in the Southern Africa region is generated within the area indicated by the corresponding colors. The pink border in (b) (= the light blue border in Figure 4) is the relative precipitation shed for the South-Africa region (at 70% contribution). The Southern Africa sink region receives an average of 343 mm of precipitation per growing season.



**Figure S8.** Interannual variability of the seven growing-season precipitationsheds, during the 1998 to 2007 time period. The general shape and size are evidently very consistent, with slight expansions and contractions during the course of the decade.



**Table S1.** Correlation between precipitation (average depth, during the growing season) and precipitationshed size (average area).

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Precipitationshed	Correlation
Argentina	0.35
East China	0.45
Eastern Sahel	0.83
North China	0.41
Pakistan-India	0.16
Southern Africa	-0.27
Western Sahel	-0.05

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