

## **NORTHERN HEMISPHERE CONTINENTAL SNOW COVER EXTENT: 2015 UPDATE**

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Annual snow cover extent (SCE) over Northern Hemisphere (NH) lands averaged 24.6 million square kilometers in 2015. This is 0.5 million sq. km. less than the 46-year average, and ranks 2015 as having the 36<sup>th</sup> most extensive (or 11<sup>th</sup> least extensive) cover on record (table 1). This evaluation considers snow over NH continents, including the Greenland ice sheet. SCE in 2015 ranged from 47.1 million sq. km. in January to 3.0 million sq. km. in August. Monthly SCE is calculated at the Rutgers Global Snow Lab from daily SCE maps produced by meteorologists at the National Ice Center (a US joint NOAA, Navy and Coast Guard facility), who rely primarily on visible satellite imagery to construct the maps.

SCE across the NH was close to average in January 2015, a balance between above average cover in Eurasia (EU) and below average over North America (NA). This reversed in February, with SCE 1.1 million sq. km. below average mostly due to the 9<sup>th</sup> lowest SCE over EU. Both continents ranked in the bottom ten for SCE during March, with only six other Marches since 1967 with less snow coverage. Spring melt proceeded faster over NA than EU, with the overall NH April coverage in the middle tercile. May and June behaved like most years within the past decade, quickly losing continental snow cover. This resulted in the 5<sup>th</sup> lowest May NH SCE and 2<sup>nd</sup> lowest in June within the satellite era.

Much as in the previous two years, snow arrived early over NH continents during Fall 2015, with SCE 14<sup>th</sup> highest in September. Coverage continued expanding quickly in October and November, each month ranking 7<sup>th</sup> most extensive. December saw the brakes put on this rapid expansion, with coverage 0.2 million sq. km. below average or 32<sup>nd</sup> most extensive.

SCE over the contiguous United States was at the boundary of the middle and lower tercile in January 2015. It was within the middle tercile but leaning toward the above normal side in February. The situation changed considerably in spring, with March SCE ranking 5<sup>th</sup> lowest on record and April 9<sup>th</sup> least extensive. Fall 2015 SCE began building slowly in October, ranking 9<sup>th</sup> lowest. This changed in November and December, which ranked 19<sup>th</sup> and 22<sup>nd</sup> most extensive, respectively.

Maps depicting daily, weekly and monthly conditions, daily and monthly anomalies, and monthly climatologies for the entire period of record may be viewed at the Rutgers Global Snow Lab website (<http://snowcover.org>). Monthly SCE for the NH, EU, NA, contiguous US, Alaska and Canada are also posted, along with information on how to ftp weekly areas and the weekly and monthly gridded products.

	Yrs	Mean	Std. Dev.	2015	2015 N.Hem. rank	Eurasia rank	N. Am. rank
Jan	49	47.1	1.6	47.3	22	18	32
Feb	49	46.1	1.8	45.0	36	41	20
Mar	49	40.6	1.8	38.5	43	41	40
Apr	49	30.6	1.7	30.1	28	21	35
May	49	19.3	1.9	17.0	44	38	47
Jun	48	9.7	2.4	5.4	47	47	47
Jul	46	4.0	1.2	2.5	42	39	44
Aug	47	3.0	0.7	2.6	34	39	23
Sep	47	5.4	1.0	5.9	14	18	8
Oct	48	18.3	2.6	21.4	7	6	11
Nov	50	34.0	2.1	36.2	7	7	19
Dec	50	43.7	1.9	43.5	32	30	22
Ann	46	25.1	0.8	24.6	36	29	39

Table 1. Monthly and annual climatological information on Northern Hemisphere and continental snow extent between November 1966 and December 2015. Included are the numbers of years with data used in the calculations, means, standard deviations, 2015 values and rankings. Areas are in millions of square kilometers. 1968, 1969, and 1971 have 1, 5, and 3 missing months respectively, thus are not included in the annual (Ann) calculations. North America (N. Am.) includes Greenland. Ranks are from most extensive (1) to least (ranges from 46 to 50 depending on the month).

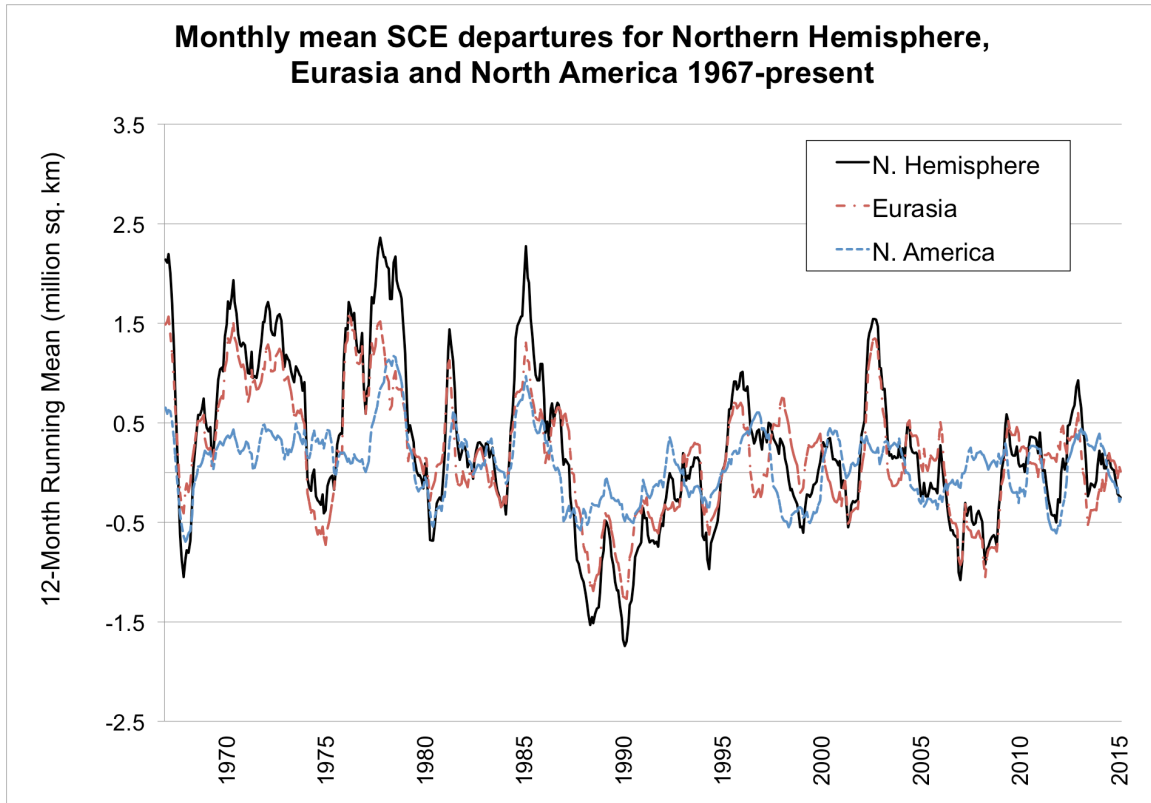


Figure 1. Twelve-month running anomalies of monthly snow cover extent over Northern Hemisphere lands as a whole and Eurasia and North America (including Greenland) separately between November 1966 and December 2015. Anomalies are calculated from NOAA snow maps. Mean hemispheric snow extent is 25.1 million sq. km. for the full period of record. Monthly means for the period of record are used for 9 missing months between 1968 and 1971 in order to create a continuous series of running means. Missing months fall between June and October, no winter months are missing.