

# Sea ice outlook 2011

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## Second lowest sea ice minimum in 2011

Our current estimate for the September 2011 Arctic sea ice mean extent is  $4.5 \pm 0.1$  million square km. This would be the second lowest observed sea ice extent. The 4.3 million square km of the 2007 minimum sea ice extent lay only slightly outside our uncertainty estimates.

In a press release the University of Bremen announced on 8 September a new historic Arctic sea ice minimum. The reported value was 0.027 million square kilometers smaller as compared to the lowest ice extent day of 2007. The Bremen group uses the algorithm of Spreen et al. (2008) that we also used in our Sea Ice Outlook estimates. In contrast to the Bremen group we adjust our estimate to the NSIDC monthly averaged value (Fetterer et al., 2002) as a standard reference. In addition to our estimate we provide the uncertainty which is currently about 0.1 million square kilometers. Thus, the reported difference between 2007 and 2011 was within the range of uncertainty and we would consider the 2007 and 2011 sea ice minimums on par.

Based on our analysis of daily 89 GHz AMSR-E level 3 data the sea ice extent on 8 September 2011 was within the error estimates identical to the lowest sea ice extent day on 15 September 2007 (Figure 1).

However, compared to these daily sea ice extent estimates the September monthly mean is a more robust indicator for changes in summer Arctic sea ice cover. We will have to wait until the end of September to do a more profound analysis of this year's sea ice minimum. According to our statistical analyses it is unlikely that the mean September 2011 sea ice extent drops below the 2011 value and at the moment 2011 can be considered the second lowest sea ice minimum.

## References

- Fetterer, F., K. Knowles, W. Meier, and M. Savoie (2002, updated 2009). *Sea Ice Index, 1972-2009*. Boulder, Colorado USA: National Snow and Ice Data Center. Digital media.
- Spreen, G., L. Kaleschke, and G. Heygster (2008). Sea ice remote sensing using AMSR-E 89-GHz channels, *J. Geophys. Res.*, 113, C02S03, doi:10.1029/2005JC003384.

# 2011 Minimum Sea Ice Extent

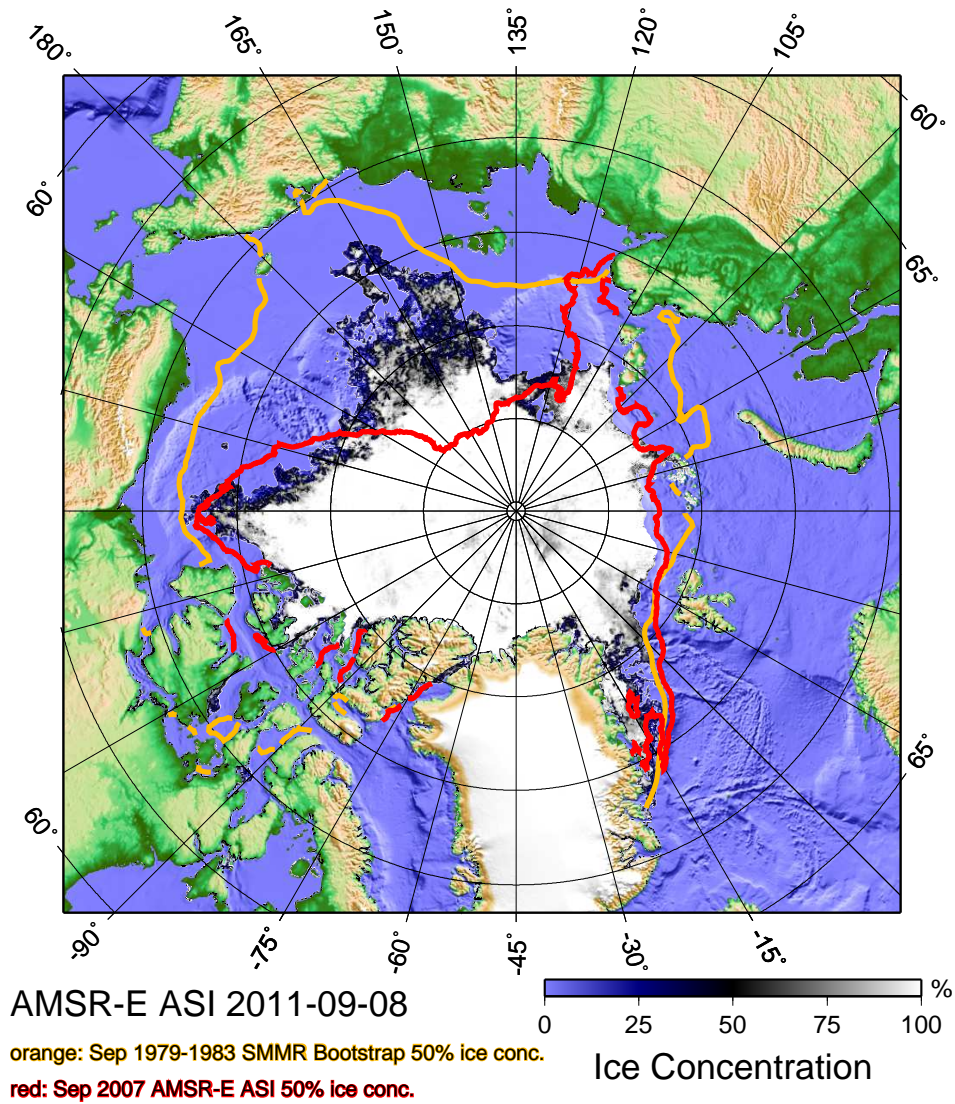


Figure 1: The sea ice extent on 8th September 2011 ( $4.0 \pm 0.1 \cdot 10^6 \text{ km}^2$ ) was slightly larger but within the error estimates of the 15 September 2007 minimum sea ice extent ( $3.9 \pm 0.1 \cdot 10^6 \text{ km}^2$ ).