

SEA ICE PREDICTION NETWORK (SIPN)

Template for Pan-Arctic Sea Ice Outlook Core Contributions June Report (Using May Data)

**Required*

1. *Contributor Name(s)/Group: Dr. Frank Bosse

2. *Type of Outlook projection
_x__model __statistical __heuristic

If you use a model, please specify:

Model Name: AHCIV (Arctic Heat Content and Ice Volume)

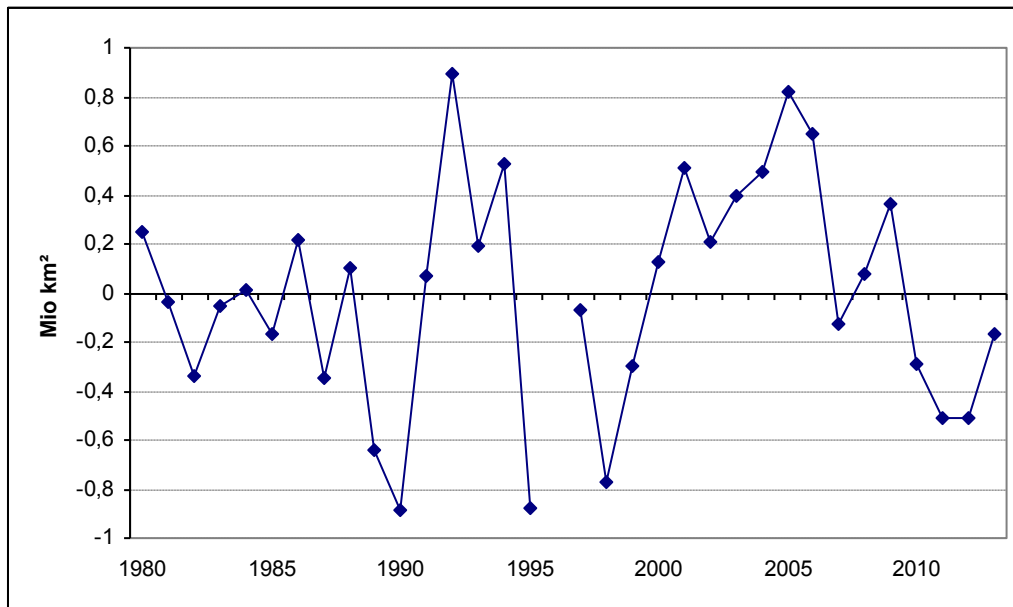
For non-coupled model: Ice x, Ocean x, Forcing 0

3. September monthly average projection (in million square kilometers):
5.0 Mio km² extent for 2014.

4.

The model works with the OHC (0...700m) of the year n-1 for the year n and the volume of seaice (PIOMAS) of the year n in the end of wintertime (28.02.). The method is linear regression of the extent-data of the Septembers 1979...2013 (NSIDC) with the OHC-data of 65...90N and thereafter the regression of the residuals of this regression to the volume of the existing seaice in the end of winter of the year n. The uncertainty is +/-0,45 Mio km² as the standard deviation of the remaining residuals model- observed data.

The skill of the model over the years as these residuals:



The year 1996 is the only outlier. The special sex of the model is: It's ready in the end of feb.

Physical explanation: The heat content measured in year n-1 remains in the arctic basin during winter, it's conserved due to the isolating ice-layer over the winter and works in the following year as melting heat. The other variable is the existing ice volume in the end of winter, not at the maximum. The later volume has no influence on the melting of the central arctic during august-september.

5. Projection uncertainty/probability estimate (only required if available with the method you are using): see Nr. 4!

6. See Nr.4

7. The approach with OHC of the year n-1 as the variable with the most important influence on the melting of the year n is a new one AFAIK. The model is plausible: The melting depends on the quantity of heat of the arctic basin and the volume of the existing seaice-volume in the actual year.