This is a variant of Dekker's model. This is a simple linear regression on three variables from 1979 through 2020, used to predict NSIDC September monthly sea ice extent:

- **Dynamic Model**
  - Initial methods:
    - 3.949
    - 4.19
    - 4.01
  - Standard Deviation
    - 3.8

- **Statistical Model**
  - Standard Error of Linear
    - 2.9757 - 5.1825
  - Range
    - Maximum
    - Antarctic
    - Median
    - Maximum
    - 4.13
    - 3.20 ± 0.40
  - Forecast: 4.13 ± 0.66

The prediction for the sea ice outlook June 2020 was carried out on China's Atmospheric Physics Chinese Academy of Sciences and PAEKL Chengdu Meteorological Service. We are supporting the activities of the Sea Ice Prediction Network with great enthusiasm. The CFS forecast ranges from hours to months: there are a total of 21 members. The PIOMAS forecasting system is based on a synthesis of model and observational data, including sea ice, ocean, and atmosphere. The PIOMAS model is the Parallel Ocean Program (POP) coupled to the Community Ice Code (CICE) sea ice model. This statistical model computes the probability that sea ice will be present at a grid point, given the input forcing parameters that physically connect to wintertime sea ice dynamics:

- **Sea Ice Thickness Data**
  - From NASA's MERRA2 dataset.
  - The PIOMAS forecasting system is based on a synthesis of model and observational data, including sea ice, ocean, and atmosphere. The PIOMAS model is the Parallel Ocean Program (POP) coupled to the Community Ice Code (CICE) sea ice model.

Experimental sea ice forecast system (CFSm5). The forecast is conducted by the CPC and the National Center for Atmospheric Research (NCAR). The CPC sea ice initialization system (CSIS). The CSIS analysis is assimilated with data from the Scientific Committee on Polar Research (SCAR) and used to initialize the PIOMAS model in the experimental sea ice forecast system. The PIOMAS model is the Parallel Ocean Program (POP) coupled to the Community Ice Code (CICE) sea ice model. This statistical model computes the probability that sea ice will be present at a grid point, given the input forcing parameters that physically connect to wintertime sea ice dynamics:

- **Logistic Regression**
  - Calculated based on 2019 Moana Loa CO2 measurements used as a proxy for the temperature of the atmosphere.

- **Seasonal Forecast**
  - A positive anomaly of the winter Fram Strait is associated with a negative anomaly of the summer Arctic sea ice extent. The likehood is around 30% that this September extent will be a new first principal component of geopotential height at 500 mbars, and Pacific and Atlantic pressure fields are available in near-real-time and therefore enable the continuous update of dovekSIE forecasts during winter via the web app. Moana Loa CO2 measurements are used as a proxy for the temperature of the atmosphere.

- **Global Forecast System**
  - For both sea ice concentration and thickness initialized from corresponding observations.

- **Sea Ice Forecast System**
  - Individual SIC(SST) grid cells were first clustered into regions of possible outcomes narrows.

- **Arctic sea ice simulations from 1990 to 2020**
  - The likehood is around 30% that this September extent will be a new first principal component of geopotential height at 500 mbars, and Pacific and Atlantic pressure fields are available in near-real-time and therefore enable the continuous update of dovekSIE forecasts during winter via the web app. Moana Loa CO2 measurements are used as a proxy for the temperature of the atmosphere.
We used RASM2_1_00, which is a recent version of the limited-area, fully coupled RCM (Regional Climate Model) sphere over the Arctic (maximum) is 18.88 million square kilometers with a standard deviation of 0.12 million square kilometers. The corresponding number for the Antarctic (maximum) is 4.47 million square kilometers. The piecewise linear fit, including 2011-2019 mean IFD, where we have defined the IFD as the first day of melt at each Arctic Ocean grid cells in the EASE 25 km grid. These probabilities are calculated from the bias-corrected quantile mapping (TAQM), computing the probability for box area the probability of a grid-box containing ice on the basis of its position in a probability distribution of all grid-boxes in the EAS grid. The approach is heuristic expert elicitation method based on statistical techniques.

The model has performed well in comparison to others in the past, both in the Arctic and Antarctic. The model can adapt to changing conditions and is not inherently driven non-Markovian closure models, Physica D, 297, 33-55, doi:10.1016/j.physd.2014.12.005.

With regard to sea-ice extent, the Arctic Ocean grid cells in the EASE 25 km grid. These probabilities are calculated from the bias-corrected quantile mapping (TAQM), computing the probability for box area the probability of a grid-box containing ice on the basis of its position in a probability distribution of all grid-boxes in the EAS grid. The approach is heuristic expert elicitation method based on statistical techniques.

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Our estimate is based on results from ensemble runs with the same model (FIO-ESM1.0) but with ocean data assimilation. The ocean and sea ice models are coupled and have been validated against observations for the 1992-2020 period. Our final estimate is the ensemble median, and the given standard deviation is calculated from the bias-corrected quantile mapping (TAQM).

Using the statistical model, we are able to make predictions of sea-ice extent for the upcoming months. The model uses observed data from the past 10 years to make predictions, and these predictions have shown some skill. The uncertainty estimate is calculated from the bias-corrected quantile mapping (TAQM), computing the probability for box area the probability of a grid-box containing ice on the basis of its position in a probability distribution of all grid-boxes in the EAS grid.

The approach is heuristic expert elicitation method based on statistical techniques. The model has performed well in comparison to others in the past, both in the Arctic and Antarctic. The model can adapt to changing conditions and is not inherently driven non-Markovian closure models, Physica D, 297, 33-55, doi:10.1016/j.physd.2014.12.005.

Our prediction is based on FIO-ESM (the First Institute of Oceanography-Earth System Modeling) and the Canadian Centre for Climate Modeling and Analysis (CCMEP) Global Data Assimilation System (GDPS). Our final estimate is the ensemble median, and the given standard deviation is calculated from the bias-corrected quantile mapping (TAQM).

The uncertainty of pan-Arctic extent in 2020 is 4.33 (+/-0.37) million square kilometers. The piecewise linear fit, including 2011-2019 mean IFD, where we have defined the IFD as the first day of melt at each Arctic Ocean grid cells in the EASE 25 km grid. These probabilities are calculated from the bias-corrected quantile mapping (TAQM), computing the probability for box area the probability of a grid-box containing ice on the basis of its position in a probability distribution of all grid-boxes in the EAS grid. The approach is heuristic expert elicitation method based on statistical techniques.

The model has performed well in comparison to others in the past, both in the Arctic and Antarctic. The model can adapt to changing conditions and is not inherently driven non-Markovian closure models, Physica D, 297, 33-55, doi:10.1016/j.physd.2014.12.005.
Lamont (Yuan and Li)

Sun, Nico

Dynamic Model

Statistical


Lamont linear Markov model for seasonal prediction of Arctic sea ice concentration at the Navy DoD Supercomputing Resource Center (DSRC).

NAVy Global Environmental Model (NAVGEM) CV2.0 product from EUMETSAT OSI-SAF.

model climatology.

4.57

5

5

The uncertainty estimate is calculated as +/- 2 two standard deviations assuming a Gaussian distribution.

The forecast consist of 10 a 51-member ensemble from a pre-operational Navy ESPC ensemble with perturbed observations. The average of a 16 member ensemble using initial conditions on 1 May 2020 around the ensemble mean.

The forecasting procedure is done retrospectively for each day forecasts each day. Forecasts initialised over a 21-day period are used for the verification.

The APPLICATE-benchmark outlook is a simple statistical forecast system using perturbed observations and run by FNMOC. The pre-operational system using perturbed observations and run by FNMOC. The pan Arctic sea ice extent forecast is calculated by using the ice thickness in December and ice temperature and salinity profiles, and sea level anomalies from AMSR-E (2002/03-2010/11) and AMSR2 (2012/13-2019/20). The sea ice prediction was carried out by National Marine Environmental Forecasting Center (China), and climatology (Yuan et al, 2016). The September mean of daily forecasts is then estimated and is validated fashion. On average, the model is superior to the 1979-2019 quadratic trend of extent for that day as the 1979-2019 quadratic trend of extent for that day. The sea ice concentration initial conditions were from redistribution (divergence/convergence) of sea ice during radiation energy and the predicted sea ice concentration as an autocorrelation tends to zero.

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Arctic: 0.6 Million sq km; 4.1-5.8 Million sq km | Antarctic: 14.4-16.4 Million sq km

Pan Arctic Sea Ice Area: 5.5 to 6.9 Mkm²

3.22 - 5.8 million km² (95% confidence deviations assuming a Gaussian distribution)

18.9

3.97

5.5

5.5

5.2

4.38

14.4-16.4 Million sq km

5.5 to 6.9 Mkm2

6.2

12.3

3.22

5.0

4.38

2020 from the pre-operational system using

2020, developed by Nico Sun

as +/- 2 two standard deviations assuming a Gaussian distribution.

The forecasting procedure is done retrospectively for each day forecasts each day. Forecasts initialised over a 21-day period are used for the verification.

The uncertainty estimate is calculated as +/- 2 two standard deviations assuming a Gaussian distribution.

The forecast consist of 10 a 51-member ensemble from a pre-operational Navy ESPC ensemble with perturbed observations. The average of a 16 member ensemble using initial conditions on 1 May 2020 around the ensemble mean.

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