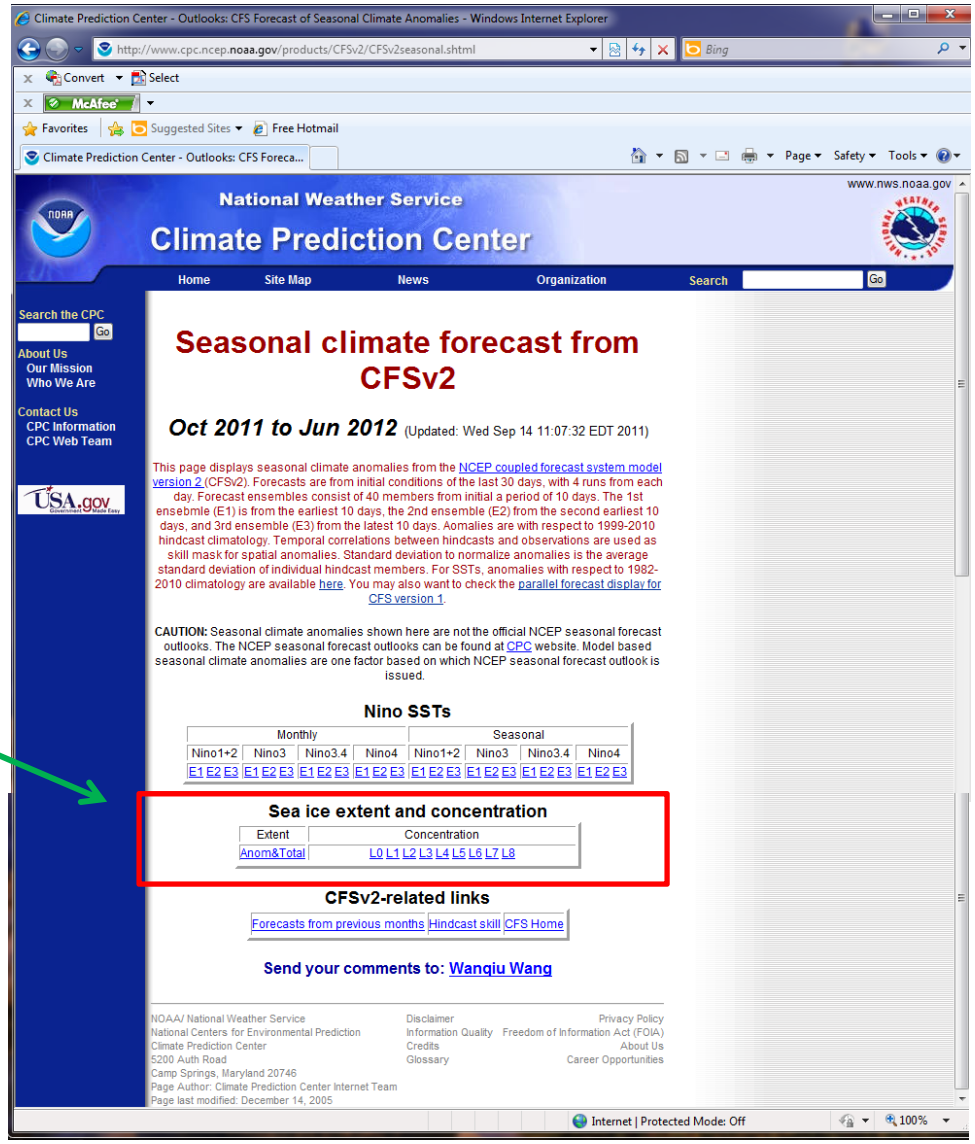
Seasonal sea ice forecast from NCEP CFSv2

I. Forecasts updated daily
II. 40 ensemble members initialized from the last 10 day (4 runs/day)
III. Bias adjustment based on 1997-2010 hindcasts
IV. Forecast plots:
   - Sea ice extent anomaly and total
   - Spatial sea ice concentration anomalies

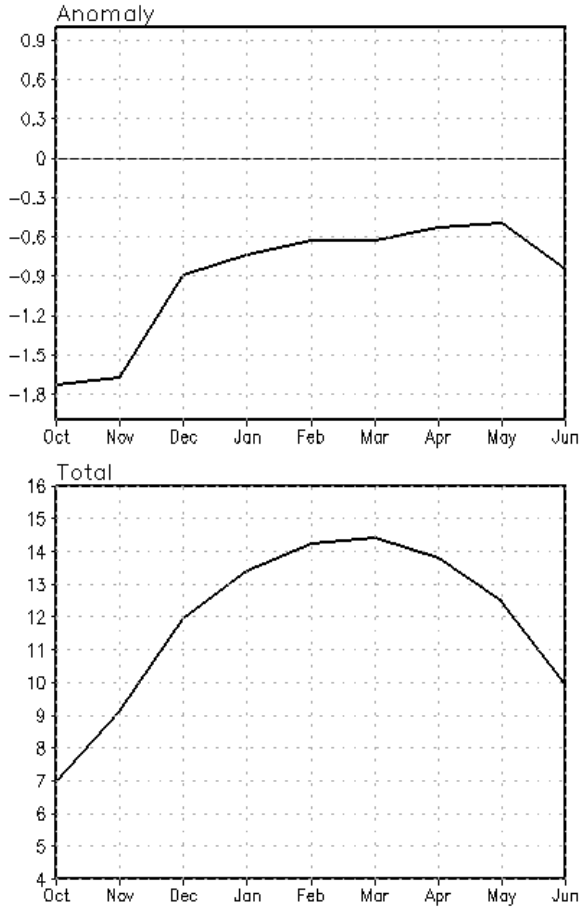


http://www.cpc.ncep.noaa.gov/products/CFSv2/CFSv2seasonal.shtml

NWS/NCEP/CPC

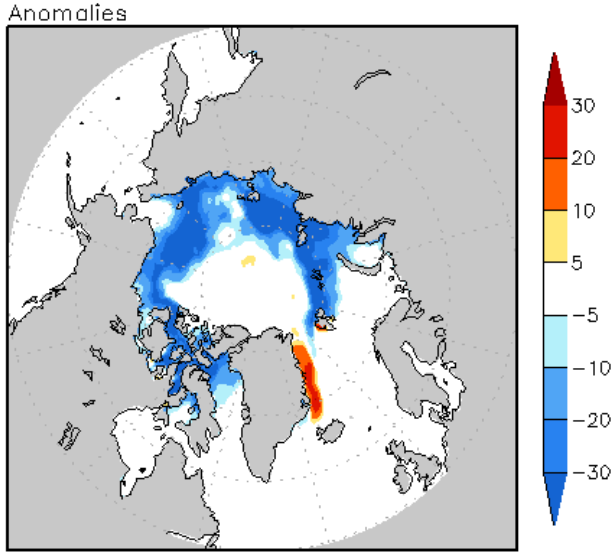
Initial conditions: 4Sep2011–13Sep2011
Last update: Wed Sep 14 2011

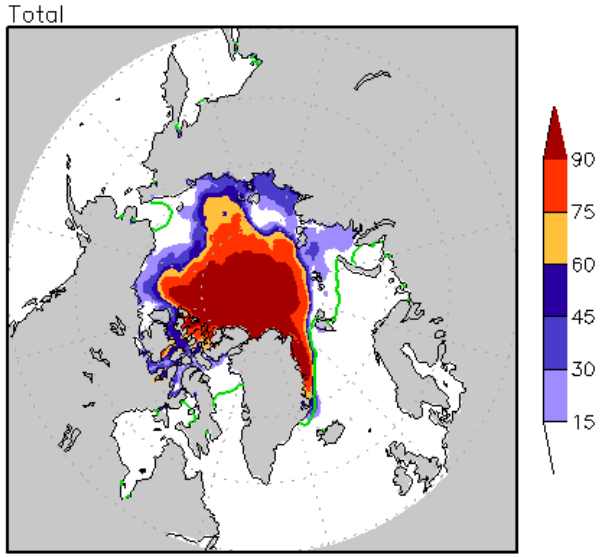
Sea ice extent (10^6 km^2) from CFSv2



Sea ice extent

Sea ice concentration



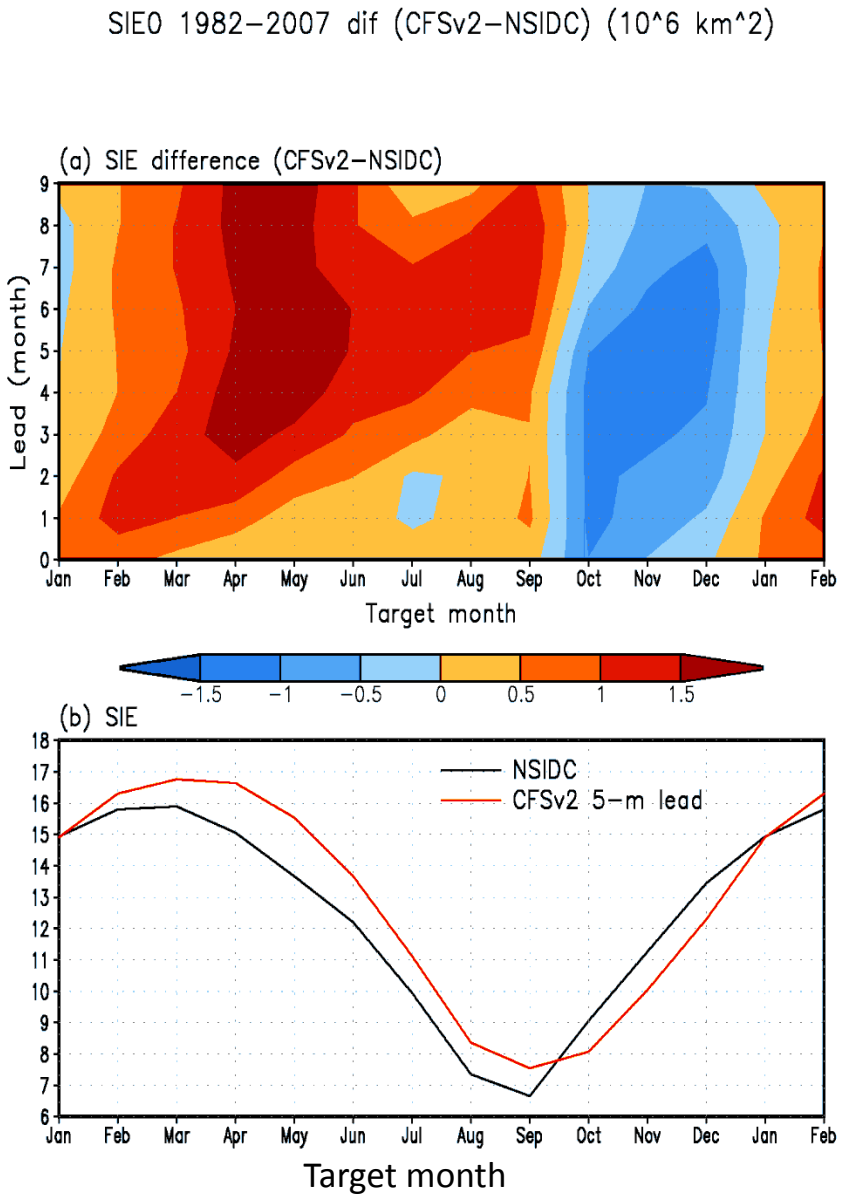


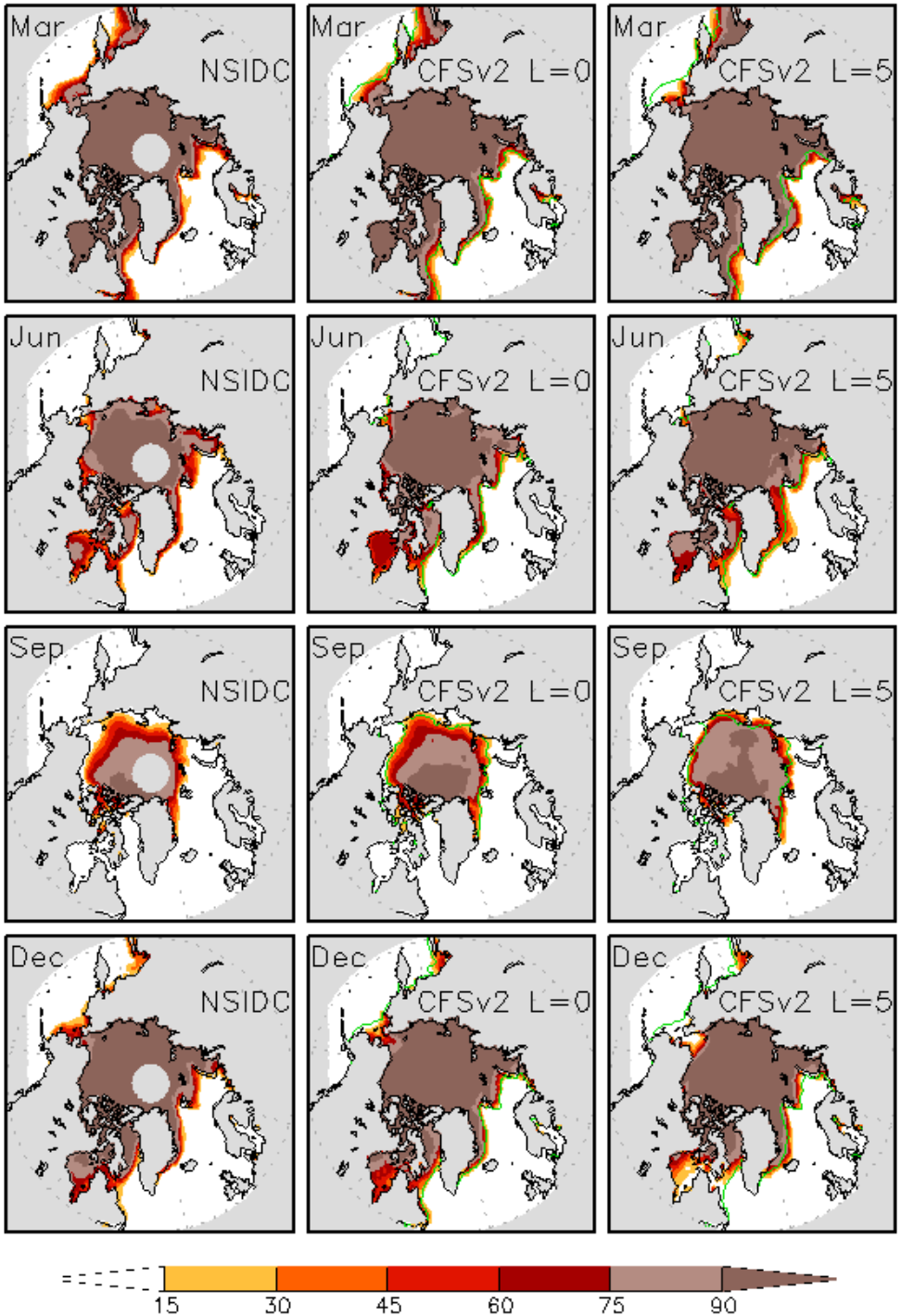
Green curves are 15% concentration contours of NSIDC 1982–2010 climatology.

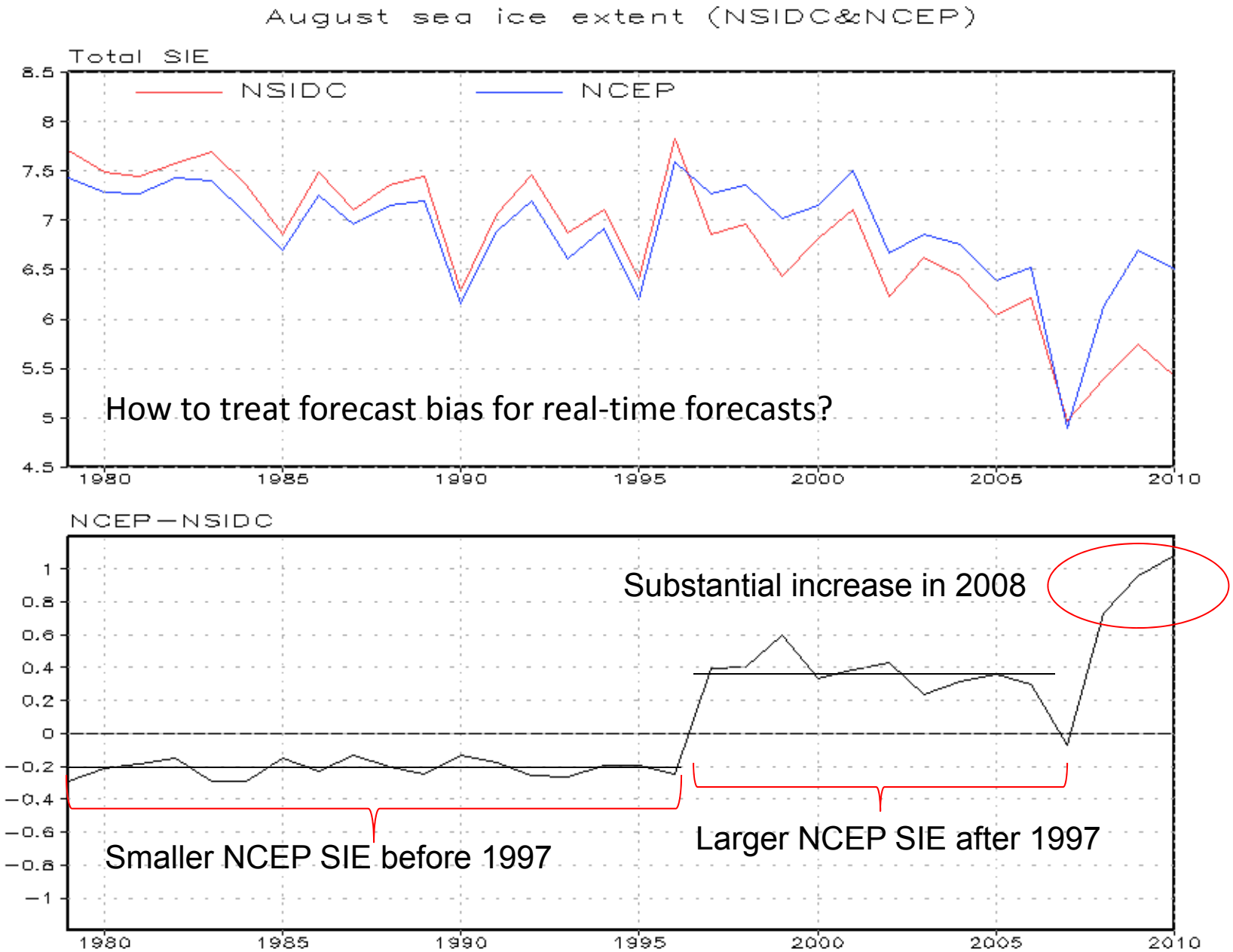
Issues yet to be addressed

1. Systematic biases of the forecast
   - The bias may vary with time because of changes in initial conditions
2. Skill information (based on hindcasts from 1982-2010)
   - Representation of the trend
   - Prediction of interannual anomalies
3. Improvements of the forecasts
   - Reducing errors in conditions (e.g., sea ice thickness)
   - Improving model physics (e.g., errors in surface heat fluxes)
4. Relationship with other fields

SIC climatology







Should the bias correction for real time be only based on 2008-2010 hindcasts?

Sea ice data used for CFS reanalysis

- From 1979 to 1996, the sea ice concentrations for most of the globe are regridded from Cavalieri et al. (1996, updated 2007). (GSFC Ice)
- From Jan 1997-Feb 2000, the global ice concentration analysis was the NCEP operational ice analysis (Grumbine, 1996) (outside the Great Lakes and Canadian Lakes). (NASA Team1 algorithm)
- From 1 March 2000 to 29 October 2007, the sea ice analysis is the newer NCEP sea ice analysis system (Grumbine, 2010) applied to archived passive microwave data for DMSP F-13, F-14, and F-15. (NASA team2 algorithm)
- From October 30, 2007 onwards, the concentrations are the operational NCEP passive microwave sea ice concentration analyses. (5 minutes lat-lon grid from 85GHz SSMI info)