IPCC AR4 Future Temperatures

A1B: 2020-2029

A1B: 2090-2099

°C
Fractional Ice Area in 2050 Relative to 1990

Overland and Wang
GRL
In review
September Arctic Sea Ice

Stroeve et al.
2007, GRL
also Holland et al.
2006, GRL
Colder in Bering Sea in 2006 and 2007
Europe Warm
Arctic still warm overall

Surface Air Temperature Anomalies
SUMMARY

Greater than 40% sea ice loss in summer Arctic seas and winter marginal seas by 2050 (except Baffin Bay)

Arctic: 3 degree temperature increase by 2050

Must consider large natural variability in near term climate projections

More confidence in Arctic Basin summer (multiple models)
Climate Patterns

Temperature Anomalies

1977-1988 (NP-) North Pacific
1989-1995 (AO+) Arctic Oscillation
2000-2005 (Arctic Warm)

Overland and Wang 2005