



**Statistisk sentralbyrå**  
Statistics Norway



PBL Netherlands Environmental  
Assessment Agency

## **Setting up a land use scenario and linking it with biodiversity**

### **Part III: Exercise Land use scenario building**

Scenario Planning Session  
The Arctic Biodiversity Congress:  
Trondheim, Norway, December 2-4, 2014

By Wilbert van Rooij

Plansup, The Netherlands

In collaboration with the Netherlands Environmental Assessment Agency and Statistics Norway

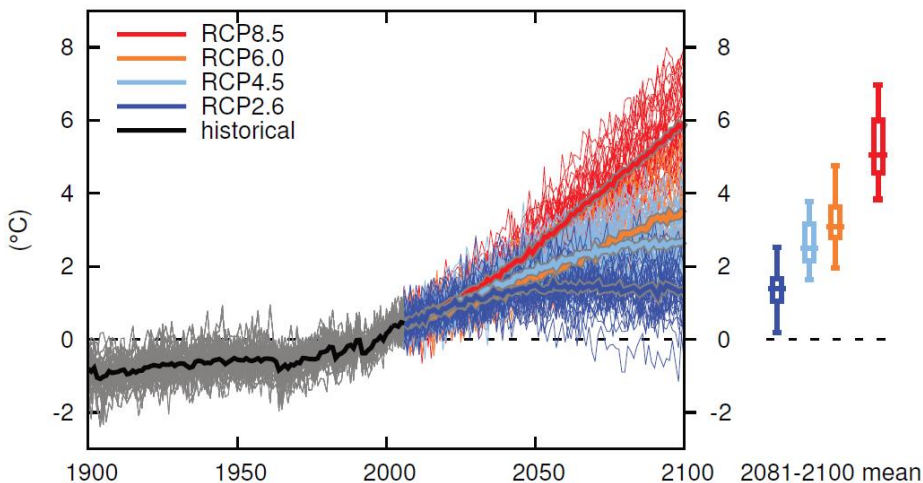


# Results IPCC's Fifth Assessment Report (AR5, 2013)

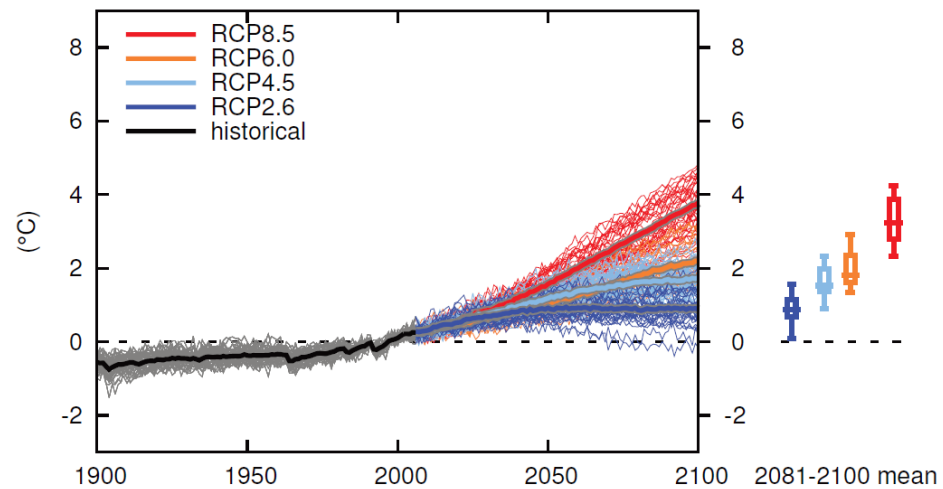
**Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850.**

**In the Northern Hemisphere, 1983–2012 was *likely* the warmest 30-year period of the last 1400 years**

Temperature change World (land)

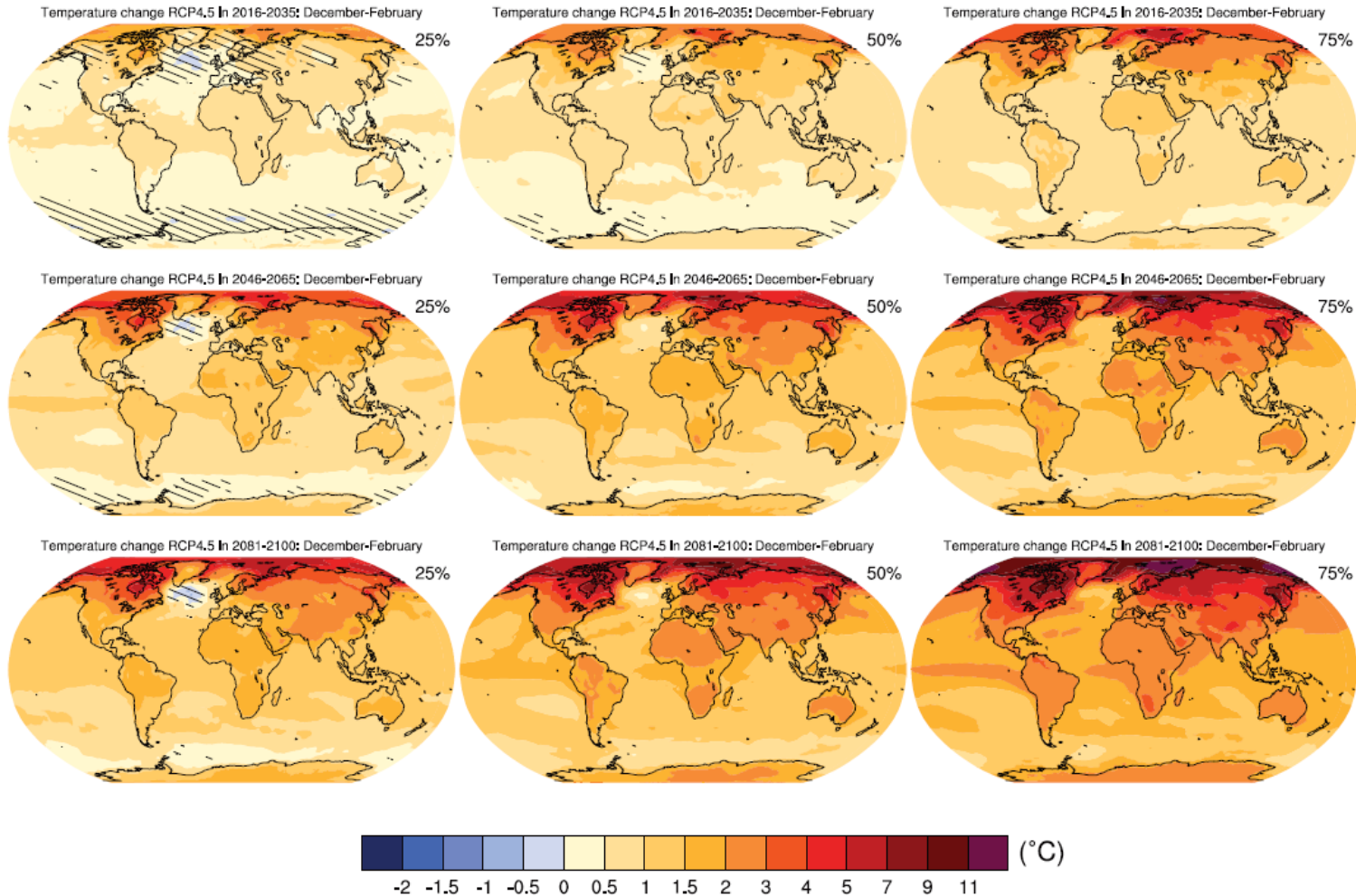


Temperature change World (sea) December-February



# Global Temperature increase according AR5 report IPCC

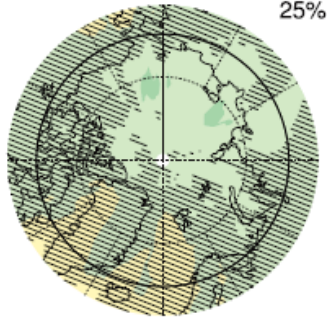
Note largest temperature increase in Northern Arctic region!



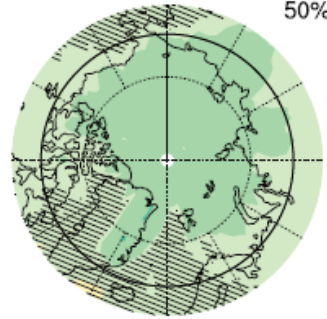
# Global precipitation change according AR5 report IPCC

## Note large precipitation increase winter in Northern Arctic region

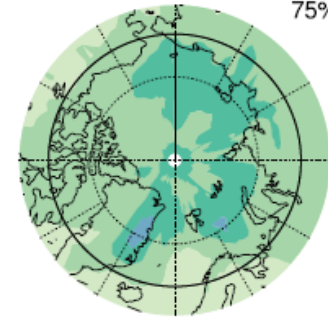
Precipitation change RCP4.5 In 2016-2035: October-March



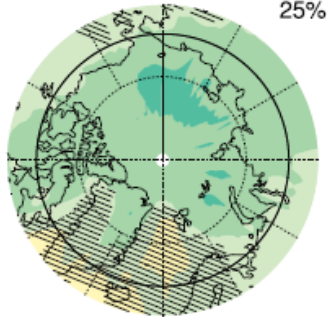
Precipitation change RCP4.5 In 2016-2035: October-March



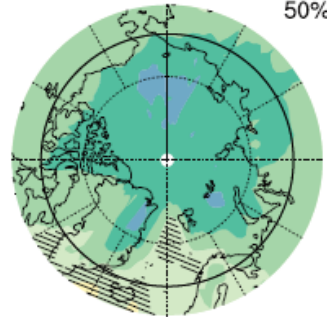
Precipitation change RCP4.5 In 2016-2035: October-March



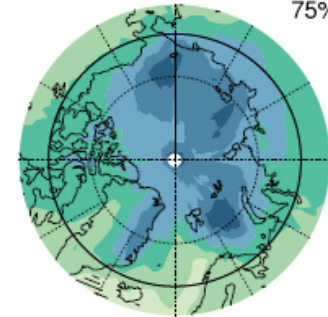
Precipitation change RCP4.5 In 2046-2065: October-March



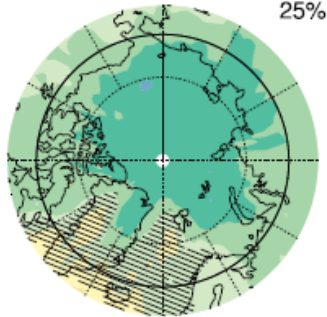
Precipitation change RCP4.5 In 2046-2065: October-March



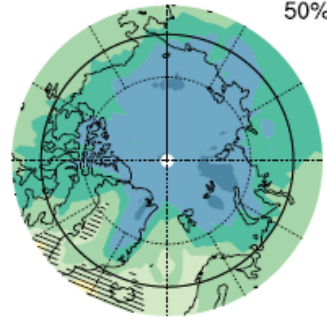
Precipitation change RCP4.5 In 2046-2065: October-March



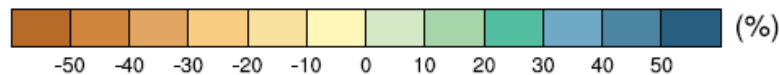
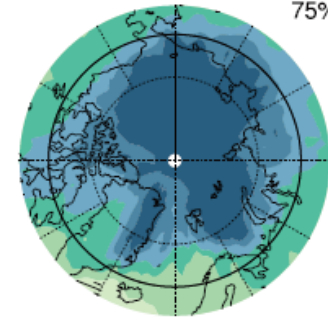
Precipitation change RCP4.5 In 2081-2100: October-March



Precipitation change RCP4.5 In 2081-2100: October-March



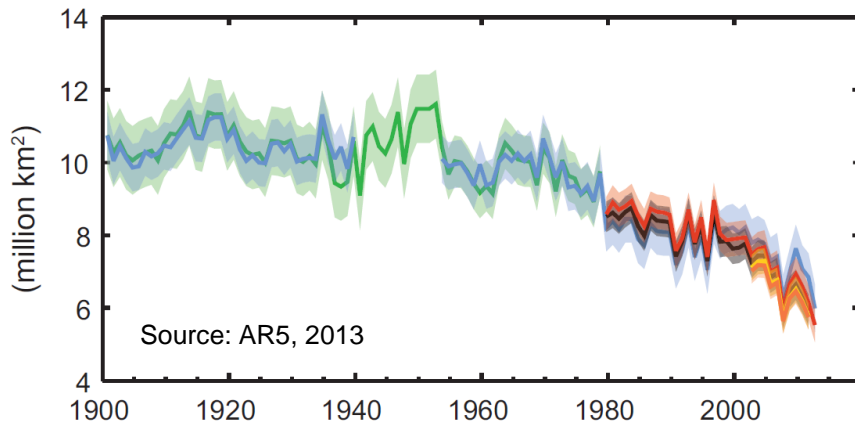
Precipitation change RCP4.5 In 2081-2100: October-March



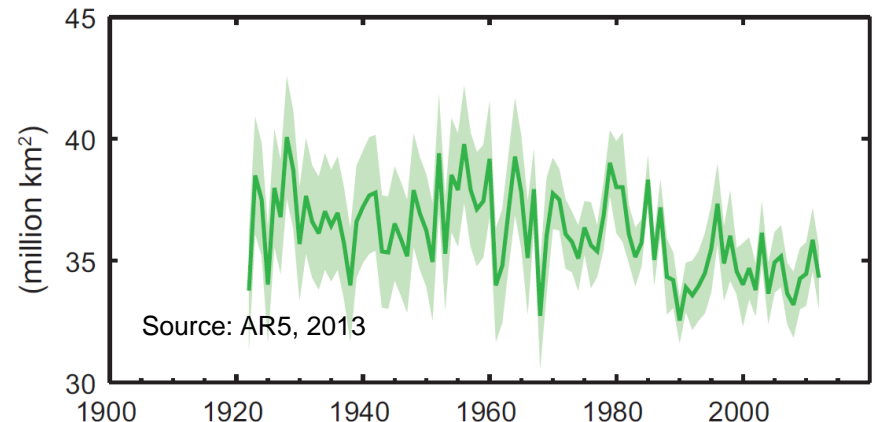
# Results IPCC's Fifth Assessment Report (AR5, 2013)

**Over the last two decades, the Greenland and Antarctic ice sheets have been losing mass, glaciers have continued to shrink almost worldwide, and Arctic sea ice and Northern Hemisphere spring snow cover have continued to decrease in extent**

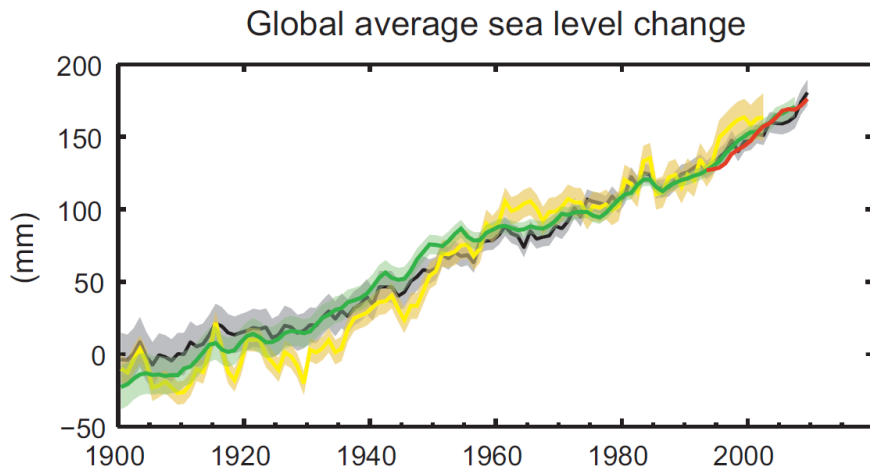
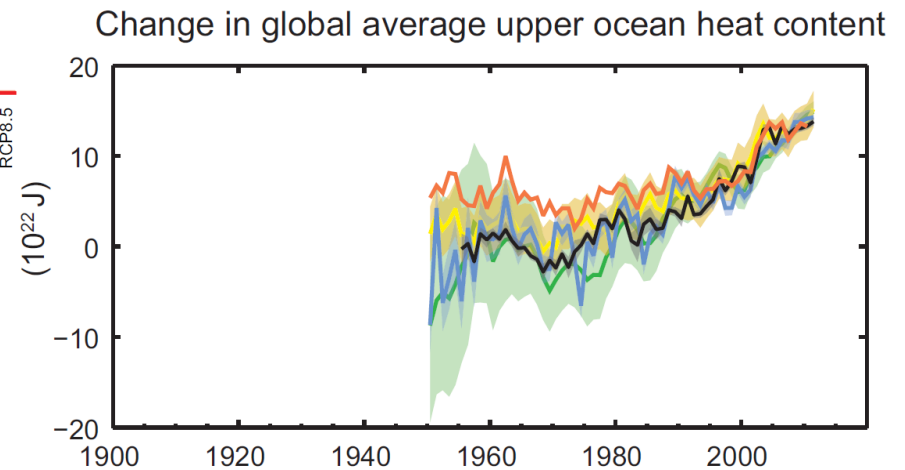
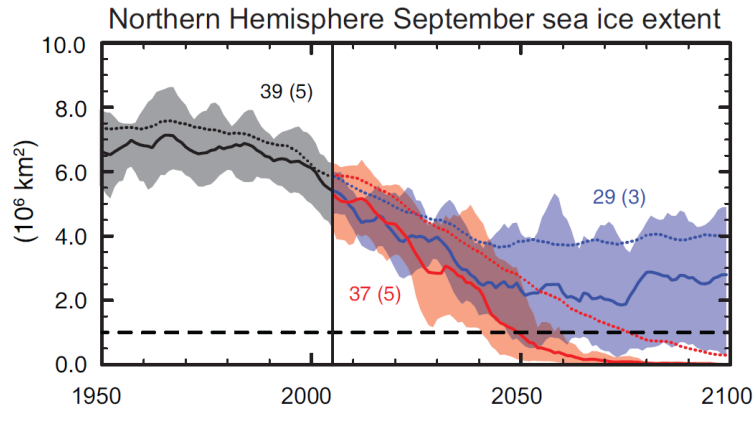
Arctic summer sea ice extent



Northern Hemisphere spring snow cover



# Climate change: Social, Environmental and Economical Consequences



# Climate scenario – exercise 1a: Story line

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## Objective 1a:

A short discussion per group about the future state of the Arctic region given an extreme climate change for the future (2100).

List the main positive + negative consequences from a:

- Environmental perspective
  - Economic perspective
  - Social perspective
- 3 groups?
  - 15 minutes
  - 1 person per group makes notes

*Note: For this exercise we will not look into all aspects of the baseline scenario, but only focus on the impact of climate change*

## Objective 1b:

A short discussion per group if the listed consequences result in land use change in the future

- List the main affected types of land use and try to describe the change in terms of **use intensity**
  - 10 minutes
  - 1 person per group makes notes

+

**Final Presentation results 1a + 1b per group**

- 5 minutes per group

# Scenario exercise 1c: Quantification in terms of area

Land Use Class	Estimate relative change in % over period				
	Historical Baseline	Scenario with moderate climate change		Scenario with extreme climate change	
	2000-2014	2015-2050	2050-2100	2015-2050	2050-2100
Natural rangelands, no grazing					
Natural rangelands, low grazing intensity					
Natural rangelands, moderate intensity grazing					
Natural rangelands, high intensity grazing					
Semi-natural rangelands, intensive grazing					
Semi-natural, degraded rangelands, very intensive grazing					
Water					
Cropland (Extensive agriculture)					
Urban					
Natural Forest (no grazing)					
Natural bare					
Mining					

**Link with Biodiversity change:**  
 Method: *(No time to do this in this session)*

1. Determine first historical and current area per land use type based on historical and current land use maps.
2. Extrapolate trend to future as sort of Business as Usual reference. Also look at available census data.
3. Quantify scenario storyline in terms of expected land use change
4. Use changes in area per land use type as input in CLUE land use model
5. Use CLUE output (future land use map) as input in GLOBIO biodiversity model