

Climate Change in the Arctic

Results and implications

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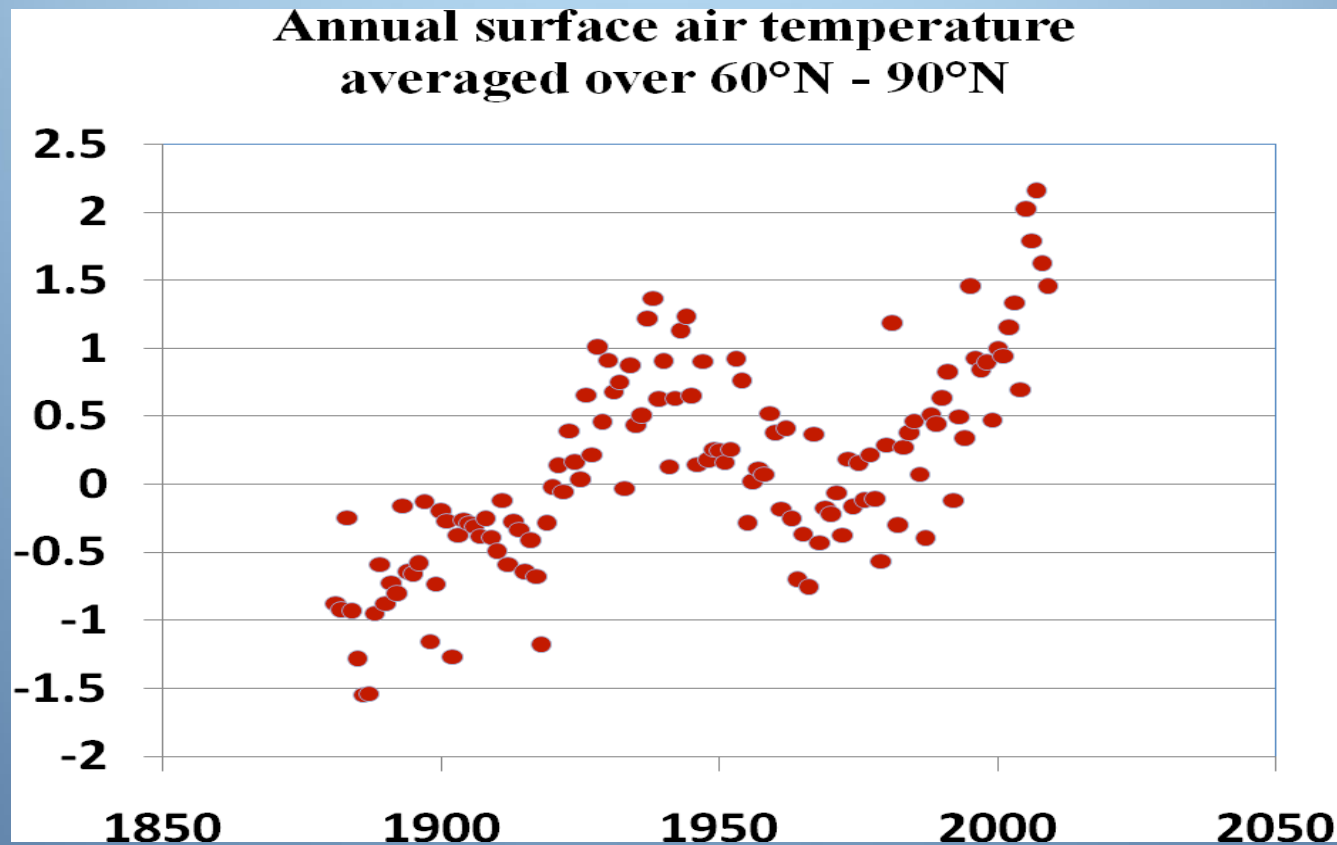
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- Synthesis of changes in the Arctic Cryosphere and effects
- Benchmark is the 2004/2005 ACIA report
- Assessment based on peer-reviewed science including IPY-results
- Approximately 200 scientists involved
- Elaborate scientific review

The Arctic is home for millions of people and it plays a crucial role in the global system.



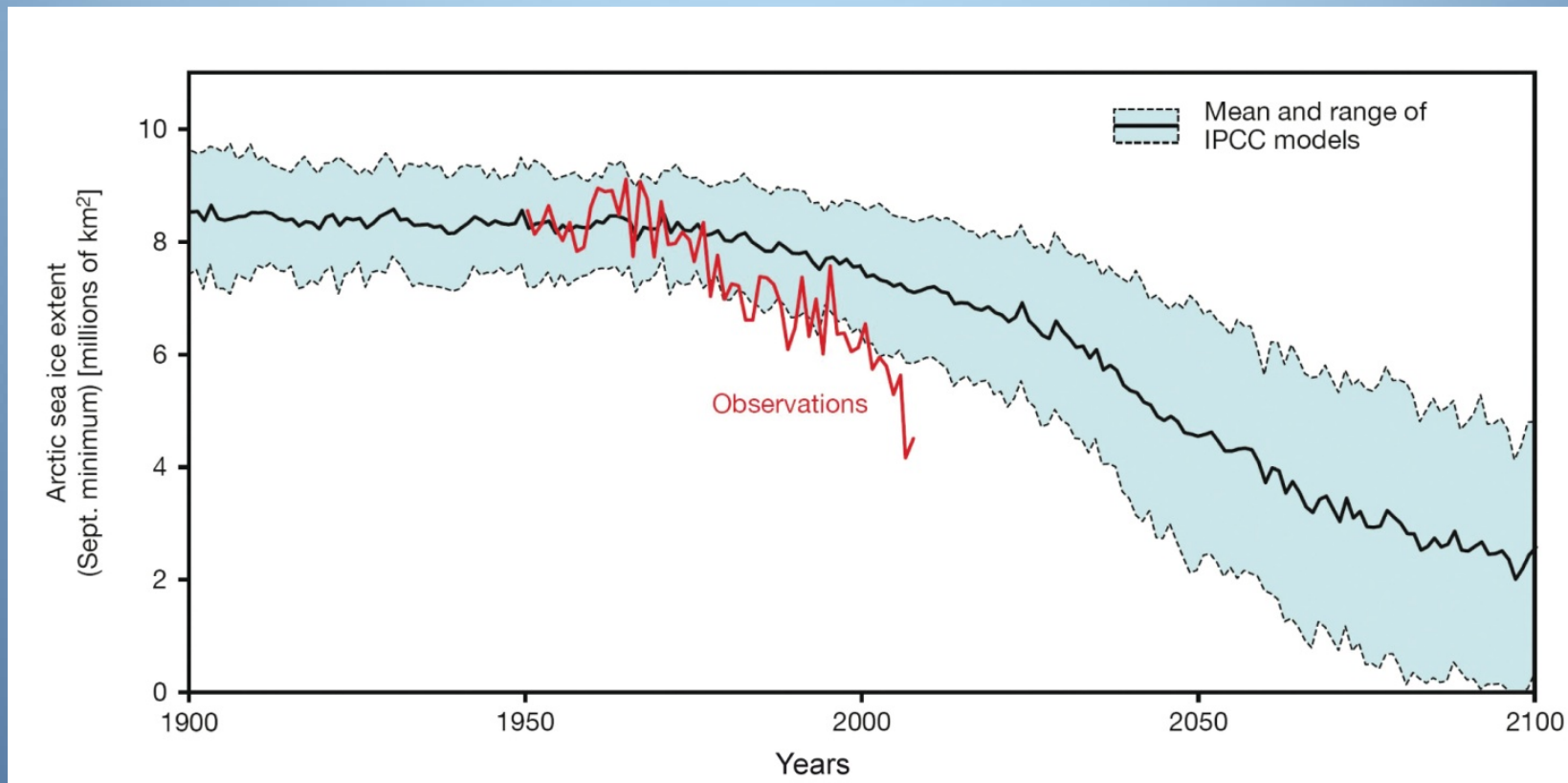
Arctic warming continues and the Arctic is experiencing a period of unprecedented warming.



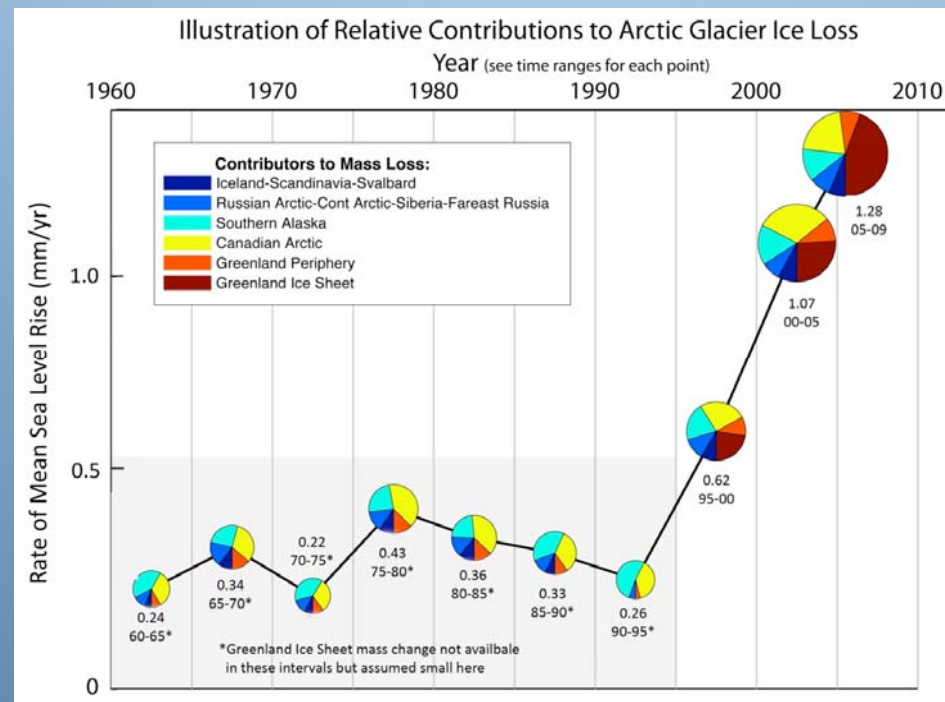
- **All parts of the cryosphere respond to a warming Arctic and major parts are responding much faster than anticipated**



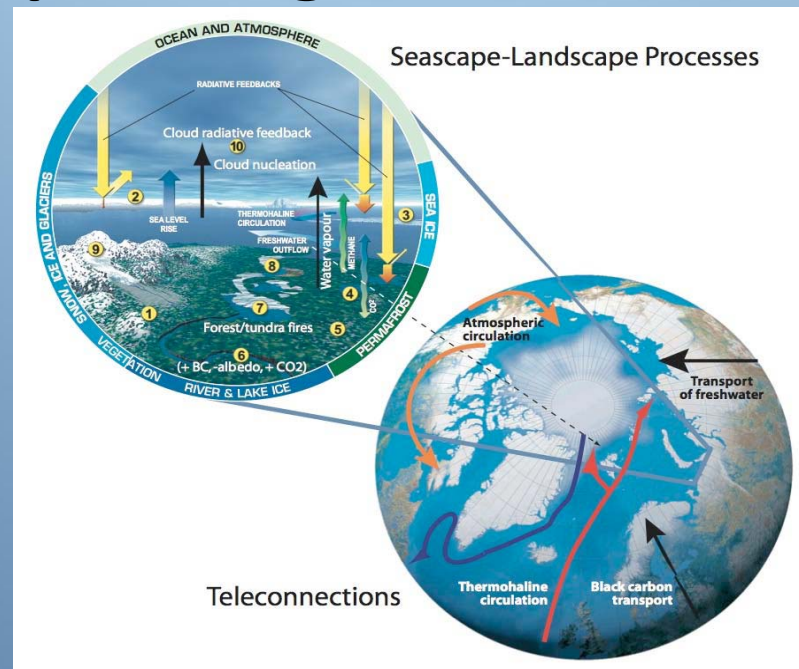
- **Sea ice is diminishing at an increasing rate.**
- **An Arctic Ocean free of summer ice is realistic within the next 30-40 years.**



- Changes in the loss of Arctic land ice, necessitate new projections of global sea level rise (0,9 m- 1,6 m, by 2100)
- Sea level rise will continue



- We are now witnessing the first evidence of the predicted feedbacks.
- More feedbacks are expected to become activated as climate warms. This could lead to abrupt change.



- Changes in climate and cryosphere fundamentally alter Arctic ecosystems.



The Arctic is a key element of the global climate system

- Reflector of heat from the sun
- Regulator of carbon balance and atmospheric greenhouse gas
- Global heat distribution (thermo-haline circulation)
- Important part of the global water balance and regulates sea level
- Part of the global ecosystem

A new Arctic reality!

- Climate change is not the only driver of change in the Arctic
- Effects of climate change can not be separated from those of other changes.

What does the future hold?

- How quickly will ecosystems and living conditions change?
- How can resilience and cultural identity be secured?
- How can adaptive capacity be strengthened?
- What are the challenges and what are the opportunities?

Conclusions

- **Globally and locally, mankind is facing unprecedented challenges due to Arctic climate change.**
- **Since ACIA Arctic climate change has happened much faster than expected and abrupt changes have become more likely.**
- **Responding to cryospheric change requires immediate action.**
- **Better advice to local, regional and global societies calls for improved and integrated Arctic monitoring and research.**

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Thank you!!!

