



Climate change in the marine Arctic in the beginning of 21s century

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The state of the Arctic climate system during the first decade of XXI century and during the IPY 2007/08 are considered and compared with one during the previous periods and with estimates of the global climate models. Although the Arctic had been warmed over the past three decades as well as the globe the changes in the Arctic are amplified whereas the climate models underestimate of the Arctic warming. The experimental data collected during the IPY 2007/08 and other field campaigns provides evidence for new sites of interaction between the ocean and atmosphere in the Arctic involving the sea ice, radiation and CO₂ fluxes. Significant changes in the vertical structure of the Arctic atmosphere (e.g. distribution of the humidity, cloudness, heat fluxes) are indicative of the changes in radiative properties of the air column and snow/ice surfaces. Observations from North Pole drifting ice stations show that during ice growth in the central Arctic Ocean, CO₂ is emitted. Recent data from the Arctic show some slowdown of the warming that might be a result of the natural influence. The report presents some results on processes study in the Arctic climate system, comparison of observed and modeled climate change, quantification of the feedbacks and contribution of anthropogenic and natural forcing to the arctic warming.