



Glacier dynamics in benchmarks areas in connection with Project INT5153 (IAEA)

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IAEA Project INT5153 has allowed us to acquaint with a condition of glaciers in different places of our planet in polar and high-mountainous regions: Spitsbergen, Caucasus, Gongushan (SE Tibet), Cordillera Blanca and Cordillera Real, Antarctic Peninsula. The analysis of the data received during work on the project has shown that almost all observed glaciers are in a degradation stage, having during long time negative ice mass balance. And only in one place, in Antarctic Peninsula (King George Island) which was considered until recently as a place of the biggest warming on a planet cooling has begun, which has led to the beginning of the period with positive ice mass balance on glaciers. Analyzing the obtained data we cannot unequivocally tell that degradation of all observed glaciers is connected with climate warming. Three benchmarks do not belong to this line: King George Island (Antarctic), Spitsbergen Archipelago and mount Elbrus (Caucasus). On King George Island since 2009 the climate begins to cool (in particular, air temperature during summer seasons decrease and glaciers begin to grow). On Spitsbergen Archipelago from 2006 there was a lowering of Equilibrium Line Altitude (ELA) to about 400-450 m asl (ELA was before on 300 m and more above modern one) and its stabilization at the same level till now. It is equivalent to climate cooling in mountains on 2° and more. In area of Elbrus (Caucasus) retreating of glaciers occurs against invariable air temperature throughout last 200 years. One of the reasons of possible modern glaciers retreating could be that circumstance that ice mass which now arrives to tongues of glaciers was accumulated 200-300 years ago, i/e/ during Little Ice Age (LIA). At this time climate was colder and quantity of precipitation was less. Thus, modern glaciers retreating can be connected with adverse conditions of glaciers feeding 200-300 years ago. In 2016/2017 changes have concerned also with glaciers of Bolivia where probably snow mass accumulation on glaciers also has begun. It means that when we study sediments redistribution in proglacial areas we need to know exactly evolution of each glacier.