Geophysical Research Abstracts
Vol. 20, EGU2018-3039, 2018
EGU General Assembly 2018


# Towards the implementation of the Open Global Glacier Model output data into the global hydrological model WaterGAP 2.2

Denise Caceres, Petra Doell, Ben Marzeion, and Hannes Mueller Schmied
Frankfurt Goethe University, Institute of Physical Geography, Germany (d.caceres@em.uni-frankfurt.de)

Global mean sea level is rising due to climate change. Within the European Space Agency (ESA) Climate Change Initiative (CCI) programme, consistent and continuous observation data for sea level and other climate-related variables are produced. Observed changes of global mean sea level are due to ocean mass changes and thermal expansion. Ocean mass change equals the sum of global-scale changes in mass of glaciers, ice sheets (Greenland and Antarctica), land water in the form of liquid water and snow, and atmospheric water. To improve our understanding of the specific causes of observed sea level changes, the CCI Sea Level Budget Closure (SLBC_cci) project aims at re-assessing the sea level budget by estimating the contribution of each component and the pertaining uncertainty over recent decades. The land water and glacier mass contributions are estimated with the global hydrological model WaterGAP 2.2, which computes water storage variations in all terrestrial compartments (canopy, soil, snow, groundwater, surface water bodies) except glaciers, and the Open Global Glacier Model (OGGM), respectively. In order to take into account the effect of glacier mass changes on river storage and thus on total land water storage changes, we intend to assimilate monthly time series of OGGM output data (glacier runoff, area and glacier mass changes) into WaterGAP 2.2 via an offline-coupling. These data are used to scale daily output time series of the global glacier model HYOGA2 that have already been integrated into a non-standard version of WaterGAP 2.2. We present an assessment of recent glacier mass variations by comparing HYOGA2 to OGGM output (glacier mass change and area) as well as to observed glacier mass changes at interannual and multi-decadal time scales. This assessment will constitute the basis for the future implementation of OGGM data into the latest version of WaterGAP 2.2.