Ad hoc estimation of glacier contributions to sea-level rise from latest glaciological observations

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Comprehensive assessments of global glacier mass changes based on a variety of observations and prevailing methodologies have been published at multi-annual intervals, typically towards IPCC reports. For the years in between, the glaciological method provides annual observations of specific mass changes but is suspected to not be representative at the regional to global scales due to uneven glacier distribution with respect to the full sample. Here, we present a framework to infer *ad hoc* (i.e., timely but preliminary) estimates of global-scale glacier contributions to sea-level rise from annual updates of glaciological observations. For this purpose, we combine the annual anomaly provided by the glaciological sample (relative to a decadal mean) with the (mean) absolute mass-change rate of a global reference dataset over a common calibration period (from 2006/07 to 2015/16). As a result, we provide preliminary estimates of regional and global glacier mass changes and related uncertainties for the latest hydrological years; i.e. about –300 ± 250 Gt per year in 2016/17 and –500 ± 200 Gt per year in 2017/18. These *ad hoc* estimates indicate that glacier contributions to sea-level rise exceeded 1 mm SLE per year which corresponds to more than a quarter of the currently observed rise. We also discuss the regional biases of the glaciological sample and conclude with a brief outlook on possible applications and remaining limitations of the glaciological observation network of the World Glacier Monitoring Service.