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Erosion by debris flows in the Atacama Desert during the March 2015 extreme precipitation event in Chile

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Quantify contribution of extraordinary erosion events over the long-term landscape evolution is difficult to assess, because these events not happened during the time span of measurement hydrological stations. During two day of march 2015 a torrential storm (∼60mm average rain in 72h) triggered several debris flows in the arid catchments of Atacama Desert. By fieldwork measurement and analysis of post-event satellite images we calculated 6 mm mean erosion rates during this event in the Huasco Valley. Previous works calculated long-term erosion rates between 0.07-0.04 mm/years, whereas decadal erosion rates registered by hydrological stations is only 0.004 mm/years. The data quantify the high contribution of this extraordinary erosion events in the long term landscape evolution of arid catchment of the Atacama Desert.