Which glaciers are most at risk of sudden collapse?

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Glacier collapse events, where a large section of ice dramatically breaks away from a glacier, have the potential to be catastrophic hazards in the mountain cryosphere. Most notably in recent years, a large ice avalanche in Uttarakhand, India in February 2021 killed more than 200 people (Shugar et al., 2021, *Science* **373**) and a detachment from the Marmolada glacier in Italy in July 2022 killed 11 people. Given the extreme rarity of such events, the exact causes of detachments are unknown. In some cases, the combination of extreme heat and a soft bed can cause this instability, while in others the role of meltwater at the bed may be more important. Limited meta-analysis has yielded a set of criteria which appear to be common among these events, such as glacier slope, prevalence of nearby surging glaciers, and weak beds (Kääb et al., 2021, *The Cryosphere* **15**). This project aims to refine these criteria where the risk of sudden detachment is likely and use open-source datasets within Google Earth Engine (a cloud computing service) to produce a global hazard zone map which highlights the areas where future such events may occur. Depending on the interests of the successful candidate, this hazard zone map could harness the full potential of cloud computing by incorporating day-by-day weather, and forecasted weather, to create a dynamic hazard zone map. Ultimately, this project will go on to inform immediate intervention in areas at extremely high risk of imminent detachment.