

SRI LANKA

**Cyclonic Storm Roanu and the Orographic Rainfall Mechanism
Triggered the Landslide in Aranayaka in May 2016**

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Various studies of the landslide in Aranayaka and neighbouring regions on the days after 14 May 2016, have not reported on its meteorological drivers. The question as to why the landslide occurred in this particular region and sites has not been satisfactorily explained. This event was coincident with a storm whose eye passed close to and over Sri Lanka from the 14th to 16th – it intensified to a cyclone in the next days as it tracked in a North-Easterly direction off the Eastern Coast of India in the Bay of Bengal. Sri Lanka experienced intense winds from the 13th onwards due to the long-range impact of this storm. Such rapid wind can interact with the topography to lead to intense orographic rainfall in the windward slopes of the mountain.

Here, we analyze, the topography, the rainfall, the cyclone track, wind fields, satellite imageries of the clouds and show that the precise dates and the locations of the heavy rainfall are consistent with what is expected from the orographic rainfall mechanism. The wind in the eye-wall was dramatically increased from the North-Westerly direction on the 15th of May. What is in common for these sites that experienced peak rainfall on the 15th was its situation on the north-western slopes of the mountains and less impeded exposure to north-westerlies. The peak rainfall on the 17th was on western mountain slopes located on slopes that give unimpeded channels for westerlies. These findings have implications for more precise risk assessment for landslide elsewhere.