

**Context:** During high flows events, debris (e.g. driftwood, plastic, rubble, etc.) are likely to accumulate at riverine bridge piers. Recent research has acknowledged the negative consequences of debris accumulations at bridge piers on bridge stability, hydraulic capacity and therefore on inundation dynamics. More specifically, the accumulated debris may causes an increase of the water velocity, with consequences on hydrodynamic phenomena (e.g. scour); moreover, the clogging also causes backwater level rise, with consequences on the surroundings (e.g. embankment failures, overflow). During the 2021 floods in Belgium, Germany and Netherlands, many bridges suffered from debris accumulation. Currently, satellite imagery have been shown to capture debris accumulation (e.g. [Panici et al., 2020](#)) in given locations and for several years, but this technology has not been explored yet.

**Objective:** to assess debris accumulation from satellite imagery for several bridges affected during recent floods.

**Methodology:** this project will investigate how satellite imagery can be used to identify debris accumulation at bridges for an event of reference and various bridges of interest. This imagery will be also used to assess the effect of the debris accumulation on the upstream flooding areas. Questions of interest are: are debris formed in short periods of times? Is there a precedent history of debris accumulation to the same structures? Can we estimated the upstream inundation? Can we identify the main characteristics of the accumulation (e.g. geometry, composition)? Also, limitations of the work will be explored: can this method be applied in any (size) river and/or location? Collected data will also be used to validate other on-going pieces of research.



**Figure 1.** Satellite image of a large wood accumulation at a railway bridge crossing the River Tagliamento in Latisana (Italy). Source: Google Earth. Image: Landsat/Copernicus (from [Panici et al., 2020](#))

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