

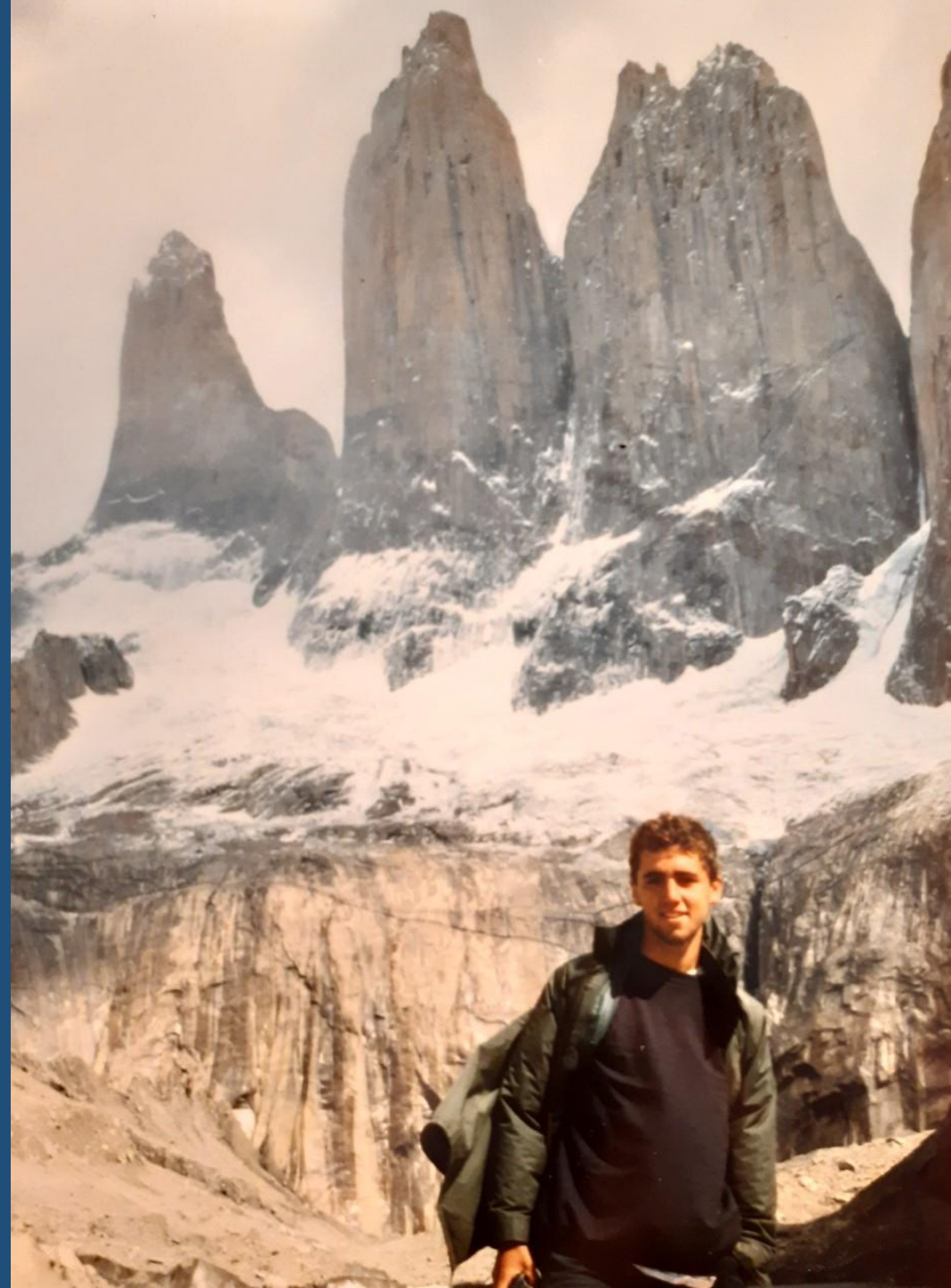
The Mountain hazard chain

Concept and case studies

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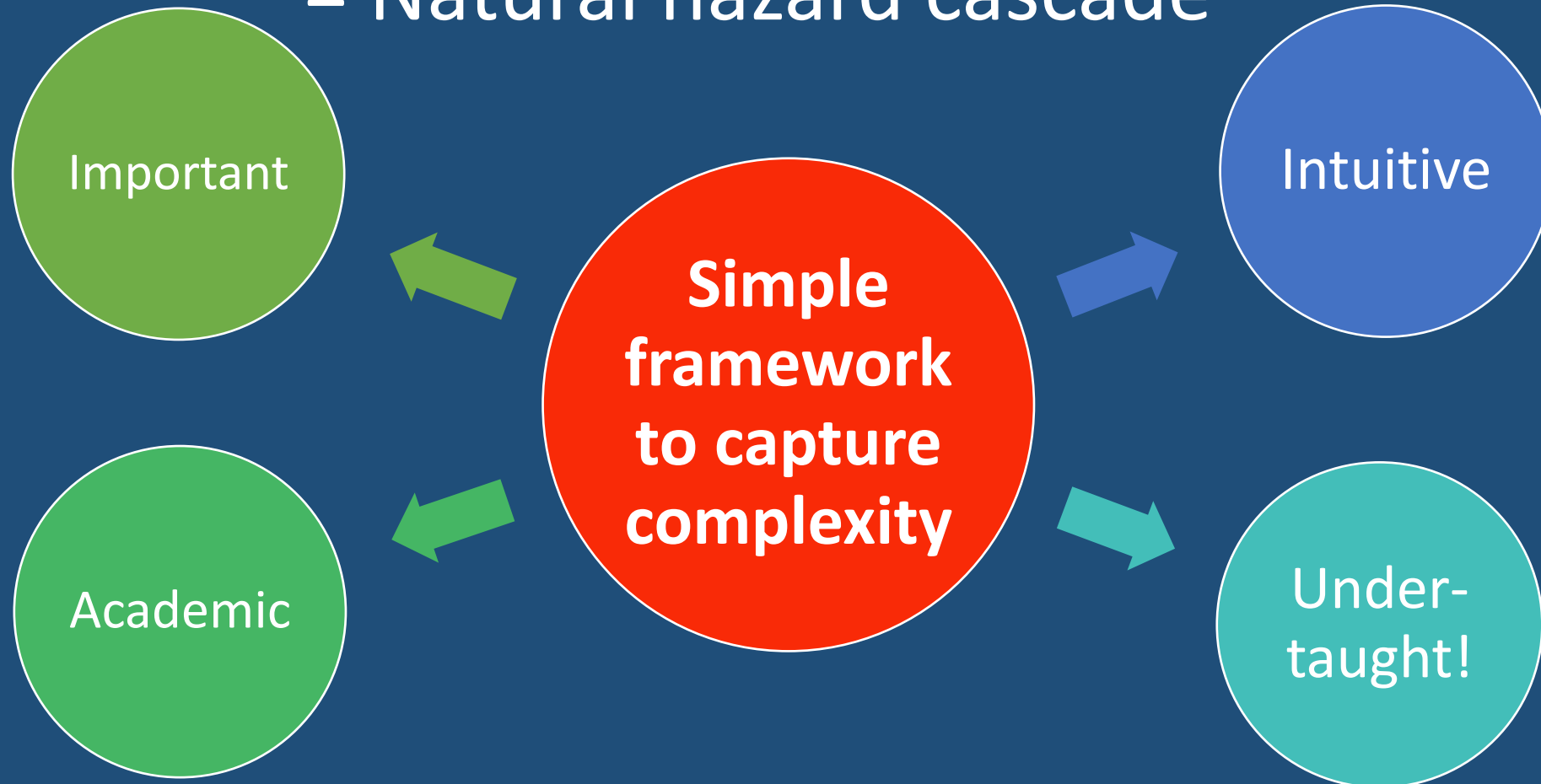
19th January 2022 RGS-IBG Secondary teachmeet



The Mountain hazard chain

= Mountain process cascade

= Natural hazard cascade



Background factors

- High level source areas

Trigger process

- Upper slopes or source

Transform 1

- Mid-slope transformation

Transform 2

- Valley floor impact

The Mountain hazard chain



Bondo, Swiss Alps, August 2017

Photo: Watchers.news



Bondo, Swiss Alps, August 2017

Youtube: [Cities of the world](#)



Bondo, Swiss Alps, August 2017

Photo: [Swissinfo.ch](https://www.swissinfo.ch)

Melting permafrost

- Rising temperatures destabilise rock cliffs

Massive rockfall

- Rock slope collapses and disintegrates

Debris avalanche

- Mass of rock debris flows at high speed

Debris flow

- Saturated by ice melt on valley floor

Bondo, Swiss Alps, August 2017



Lake Palcacocha Peru

Map: [Wikipedia](#)

Photo: [Alexander Luna](#)

Slope instability

- Warming trigger
- Rainfall trigger
- Earthquake trigger

Avalanche

- Ice avalanche or massive rockfall into lake

Flood wave

- Overtops or breaches moraine
- Catastrophic lake drainage

Flooding

- Water and debris flow downstream

Lake Palcacocha, Peru

Glacial lake outburst flood