Our methodology

**Space-data production.** We are using Interferometric Synthetic Aperture Radar (InSAR) to monitor surface movement on and around the infrastructure of interest. We are also using optical earth observation (EO) data to monitor indicators of pollutants downstream of tailings dams.

**Hydrological forecast.** We are coupling short term forecasts to hydrological models.

**In-situ monitoring.** For the displacement we are using Global Navigation Satellite System (GNSS) technologies combined with real-time in-situ devices.

**Data integration and assessment.** All data is integrated in an open cloud platform.

**Consequence modelling.** The risks of tailings dams failures are evaluated with breach, flood and evacuation models.

**Visualization and product.** DAMSAT will generate alerts of possible problems based on data of abnormal movements detected using INSAR or GNSS technologies, possible pollutant events, intense rainfall forecast and overtopping estimations.

**Sustainability.** The system is developed in close collaboration with end-users to suit their operational and budgetary constraints. The long term system operation can be transferred to end-users if desired.

**User engagement.** The project is funded by the Global Challenges Research Fund under the International Partnership Programme run by the UK Space Agency.

Benefits

- Possibility to take early decisions to reduce the risks of failure and possible consequences downstream to communities and ecosystems.
- Better understanding of risks in larger and remote areas, helping to plan and prioritize the use of resources.
- Support coordination of actions between institutions.
- Provide real time information in selected locations.

Project team

**From UK:**
HR Wallingford leading the project, Telespazio VEGA, Siemens Corporate Technology, Satellite Applications Catapult, Oxford Policy Management, and the Smith School of Enterprise and the Environment at the University of Oxford.

**From Peru:** Ciemam, the National Foundation for Hydraulic Engineering, and the National University of Cajamarca (School of Hydraulic Engineering and Faculty of Engineering).

The project works with Government Agencies, local stakeholders and mining companies in Peru to test the approach on a number of sites.

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For more information, visit: [www.tailingsdams.info](http://www.tailingsdams.info)