GEOGRAPHY
Shaping the future

Flood nonstationarity: detecting, attributing and forecasting changes in hydroclimatic extremes

Dr Louise Slater – School of Geography and the Environment –

University of Oxford

Thursday 2nd April 2020 – 1 p.m. – 2 p.m.

Location: Room E003, Newman Building

Bio:

Louise Slater is Associate Professor in the School of Geography and the Environment (University of Oxford), tutorial fellow of Hertford College, honorary visiting fellow at Loughborough University, and Chair of the Oxford Water Network. Her interests lie in understanding how flood risk is changing dynamically in space and time, by investigating the relative role of different nonstationary drivers. With her group, she develops a range of computational approaches to detect, attribute, and forecast/project how changes in climate, land cover, rivers and society affect water-related extremes over daily to multi-decadal timescales.

Abstract:

Many flood estimates and models still rely on a stationary description of the historical flood record and of the physical landscape, when in reality, flood properties are changing rapidly and dynamically – through an altered frequency of meteorological extremes, shifts in societal practices (such as urbanization, de-/afforestation, and river management), and morphological changes in the landscape (such as channel conveyance).

In this talk I will introduce our research on (1) detection of changes in flood properties; (2) attribution of different flood drivers (climate, land cover and landscape changes); and (3) forecasting and projection of changes in flooding (from sub-seasonal to multidecadal). This will include a range of statistical methods, ensemble-based detection and forecasting, and the new understandings that emerge from global data science approaches.