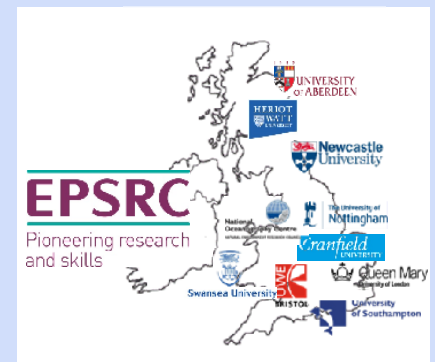


FloodMEMORY

Multi-Event Modelling Of Risk & recoveryY

Contact: Prof Chris Kilsby (PI), Newcastle University chris.kilsby@ncl.ac.uk

Harshinie Karunaratna (Swansea University) Christian Beck (Queen Mary) Jessica Lamond (UWE)
 Qihua Liang (Newcastle University) Ivan Haigh (Southampton University) Ian Holman (Cranfield University)
 Dubravka Pokrajac (Aberdeen University) Riccardo Briganti (Nottingham University)
 Jenny Brown (NOC Liverpool) Heather Haynes (Heriot Watt University)



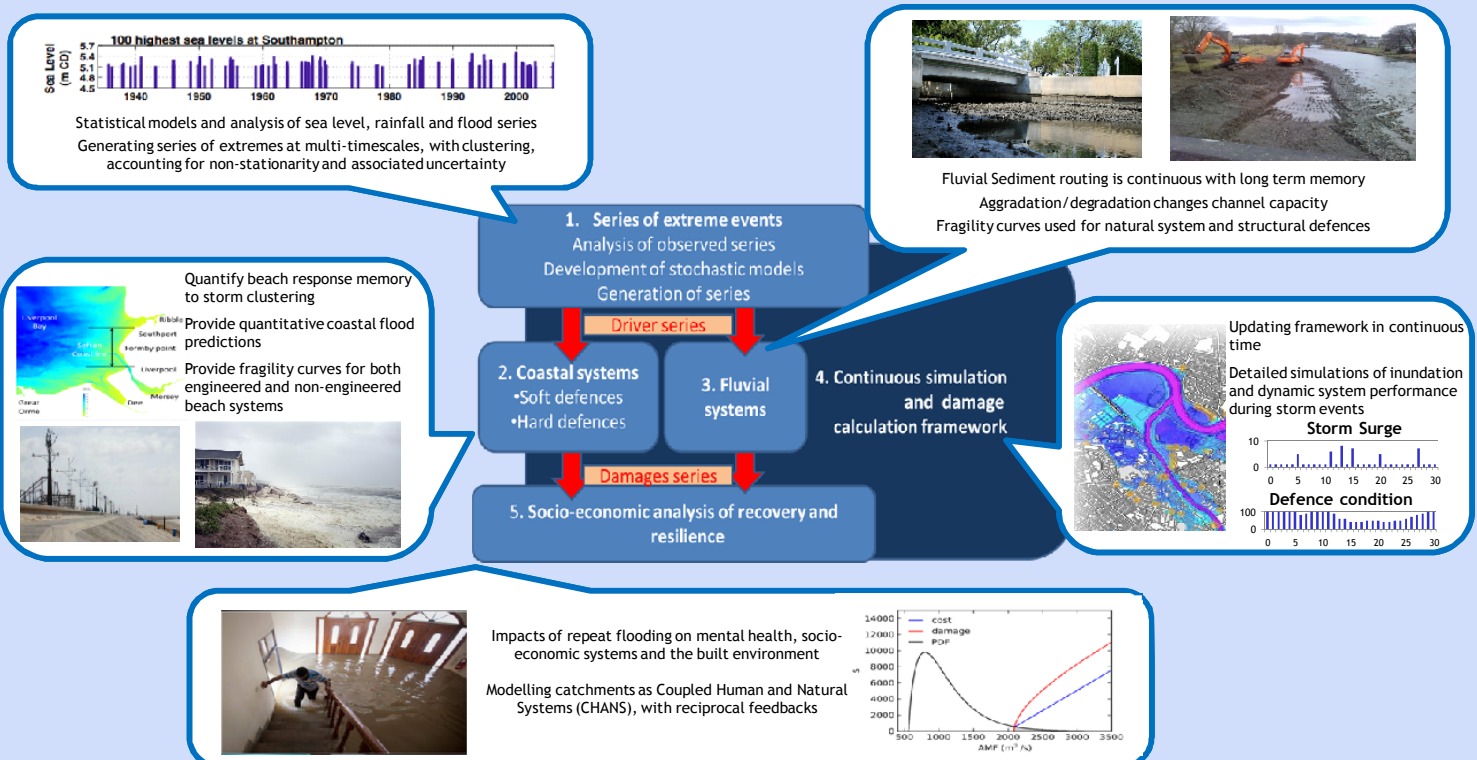
Introduction

FloodMEMORY is investigating the effects of temporal clustering of flood events on natural, built and socio-economic systems in order to identify critical vulnerabilities, better allocate resources for protection and recovery, and improve flood resilience.

- ❖ Floods do not occur at regular intervals - they **cluster** in time
- ❖ The vulnerability of receptors and performance of pathways both have **memory**
- ❖ If **repeated shocks** occur within the **memory period** then increased damage may occur

This project seeks to:

- ❖ Identify and quantify this under-estimated risk
- ❖ Increase resilience by pre- and post-event actions



Winter 2014 storm cluster

- ❖ From mid-December to early January, a succession of major winter storms brought widespread impacts through coastal and fluvial flooding to the UK, highlighting the role of flood memory



Sea wall breach, South Devon



Prolonged flooding of Somerset levels

Outcomes

- ❖ New combination of climate, “super-statistics” and flood system models, including “memory”, all within a novel continuous/event simulation framework to inform socio-economic analyses
- ❖ Information and strategies for dealing with “multiple shocks” which may be “blindspots” in UK flood risk
- ❖ “Myth busting” of return periods and non-stationarity: replacement of inadequate conventional analyses for use in a changing climate