# Structure of SPIN

- WP1 New observational methods & techniques (4 ESR)
- WP2 New physical models for the restless Earth (3 ESR)
- WP3 Integration & Optimization (4 ESR)
- WP4 Applications to monitoring natural hazards (4 ESR)

#### Observations of a restless Earth

# Dynamic softening and recovery

In a granite beam



### Dynamic softening and recovery

In Buildings



SECTION X-X

Astorga, Guéguen 2020

#### Dynamic softening and recovery

seismic velocity changes n the landscape (Chile)







Marc et al. 2015 Marc et al. 2021

Increase of landslide rates



#### Landslide rate and dv/v decay times





VEI>2 eruptions following M>6 earthquakes within 800km

Sawi and Manga (2018)



Van der Elst et al. 2013



### Sensitivity of nonlinear response

Salton Sea



Takaaki Taira et al. (2018)

#### Models for a restless/dynamic Earth













# New physical models for a restless Earth (WP2)

Objectives:

- empirical and physical description of time variable material properties
- connect different observations of time variable properties to their common physical origin
- time dependent assessment of natural hazards related to material failure

#### WP2 structure

- 2.1 Unlocking nonlinear elasticity with new wavefield observations
- 2.2 Effective media theory: Waves, damage and speed
- 2.3 Physics based earthquake triggering models