

Monitoring water circulation in the crust with seismology

(Proposer: Dott. Piero Poli)

Monitoring the evolution of water volumes in the crust is nowadays a major societal challenge, in the framework of drastic climatic changes we experience.

Indeed, severe droughts are nowadays impacting the freshwater supply and agricultural activity. Improving our understanding on how water behave in the shallow crust is thus fundamental in this context, to plan solutions aimed at reducing the impact of droughts.

We here propose to track the spatiotemporal evolution of water into the crust by using seismic waves. Changes in water content manifests as a strong variation of seismic velocity, which can be measured in time with repeated seismic experiments, based on cutting edge seismological techniques and existing data.

We will thus focus on

- i) building time series of velocity change in the Po plain region and surrounding areas,
- ii) construct model to locate velocity variation in time, and
- iii) develop physical model able to explain the spatiotemporal evolution of water content.