

Historic centre of Florence

Engineering geological conditions and problems:

The Arno River runs through the historical centre of Florence, therefore floods are the biggest geological problem concerning the city.

In 1966, the Arno River flooded the historical centre and several cultural important monuments as Uffizzi, the Santa Croce square and church, the Cathedral square and all the buildings along both sides of the river. *Ponte Vecchio*, the oldest bridge on the river, was partially destroyed.

The flood of 1966 is the last big flooding event of the Arno River.

The hill of *Monte alle Croci*, the panoramic point of view of the city, shows several problems of instability, affecting in particular the San Miniato church and the walls designed by Michelangelo. Instability derives from the geological and geomorphological characteristics of the site (calcareous sandstones and clayey sands) and from drainage problems. The last event occurred in 1979, with damages to Michelangelo's walls and the San Salvatore complex. near San Miniato church).



The Cathedral – *Santa Maria del Fiore*



Santa Croce church and square after the 1966 flood (www.weekendafirenze.com)

Investigations and protection measures already realized:

- Several maps illustrate areas interested by floods (especially between 1966 and 2000) and the areas potentially involved in a flood. A flood hazard map was realized too.
- Execution of structural investigations on the hill of *Monte alle Croci*, both on foundation ground and on the buildings.
- Setting up of a monitoring system of landslides and buildings, particularly in the complex of San Salvatore and on the walls designed by Michelangelo.



Ponte Vecchio during the 1966 flood (www.mega.it)

Supplementary information:

The historical centre of Florence, inserted in the UNESCO World Heritage List in 1982, is the best example of architectonic and cultural Renaissance in Italy. Examples are the Cathedral and the Uffizzi Palace, designed respectively by Brunelleschi and Michelangelo, two of the most important Italian architects and artists.

References on studies already done:

AGOSTINI G. e FANTI R. (2003) "I fenomeni di instabilità di Monte alle Croci (Firenze): analisi dei dissesti e attività di monitoraggio". Atti del Convegno dell'AIGA, Chieti, 19-20 febbraio 2003 - pag. 3-12.

BERTOCCI R. e D'AMATO AVANZI G. (1993) "Il contributo dell'analisi storica nello studio dei dissesti del Monte alle Croci (Firenze)". *Geologia applicata e Idrogeologia*, XXVIII, pag. 99-110.