



Changes In flood hAzard and risk over NOrThern Italy: Man-Made Modifications or Myths? (*Ciao Tim!*)

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Economic losses and social consequences caused by hydrological extreme events in Italy, as well as in many other European countries, have been steadily increasing over the last three decades. Climate change and the resulting intensification of extreme hydrological events are often indicated as the main responsables for such an increase. However, a scrupulous and detailed investigation of all components of flood risk (e.g. hazard, vulnerability and exposure) may provide a dramatically different picture and support the need for a general rethinking of flood risk policies and management strategies. Our study investigates the dynamics of different flood-hazard components in Emilia-Romagna, a densely populated region in Northern Italy. First, we look for possible changes in flood hazard at regional scale by taking field significance into account and considering several long time-series of different hydrological extremes, such as: annual maximum series (AMS) of sub-hourly rainfall depths (min. and max. series length are equal to 20 and 85 years, respectively); partial duration series (PDS) and AMS of hourly rainfall depths (series length ~ 30 years); PDS and AMS of daily rainfall totals (min. and max. series length are equal to 68 and 88 years, respectively) and AMS of flood peaks (mean and max. series length are equal to 30 and 89 years, respectively). The main findings of our study are: (1) some statistically significant changes, in terms of both intensity and seasonality, are detected for hourly precipitation, yet no widespread significant alteration can be observed; (2) a few changes are detected in sample flood frequency distributions, which are likely to be the product of river-training or water resources management; (3) spatial and temporal evolution of urban settlements and industrial assets occurred in the study region during the last half century is definitely a much stronger driver of flood-risk change than flood-hazard dynamics.