

### RESEARCH ACTIVITY

- Diagnosis of damage due to climate, microclimate, pollution and anthropogenic pressure at local (monument and artifact), regional, national and international scale, both outdoor and indoor.
- Effects of atmospheric pollution on building materials and structures in urban areas, including aesthetical impairment on architectural surfaces, with particular attention to the impact of mobility on cultural heritage.
- Impact of climate change on cultural landscape and built heritage, including extreme events.

### RESEARCH TEAM

#### CNR-ISAC – Bologna (Italy)

- Cristina Sabbioni
- Alessandra Bonazza
- Izabela Ozga
- Nadia Ghedini
- Paolo Mandrioli
- Paola De Nuntiis
- Giacomo Moriconi
- Francesca Tittarelli

### DIAGNOSIS OF ATMOSPHERE – CULTURAL HERITAGE INTERACTION



VITTORIANO, ROME



BLACK CRUSTS  
SAMPLING, SANTA  
MARIA DEL FIORE,  
FLORENCE



### RESULTS/ADVANTAGES

- Development of models and damage functions of environment-building material interaction.
- Setting up of strategies for the preventive analysis and diagnosis of environmental impact on cultural heritage.
- Development of non invasive technologies and tools aiming at preventive conservation of cultural heritage.

### CASE STUDIES

- Milan Cathedral, Italy
- Piazza dei Miracoli, Pisa, Italy
- Cathedral and Baptistery, Florence, Italy
- Cathedral of Seville, Spain
- Tower of London, UK
- Persepolis, Iran
- Cologne Cathedral, German
- Petra, Jordan
- Ancient walls of Damascus, Syria
- Saint-Eustache Church, Paris, France
- Vittoriano, Rome, Italy