



## Natural Hazards

# ASTARTE

### At a glance

Title: Assessment, Strategy And Risk Reduction for Tsunamis in Europe

Instrument:  
FP7 – Collaborative Project

Total Cost:  
7,884,882.47

EC Contribution:  
5,999,677.80

Duration:  
3 years (2013-2016)

Start Date:  
01 November 2013

Consortium:  
26 partners, from 16 countries

Project Coordinator:  
Prof. Maria Ana Baptista, Instituto Português do Mar e da Atmosfera, IPMA

Project Web Site:  
[www.astarte-project.eu](http://www.astarte-project.eu)

Key Words:  
Tsunamis; social resilience; early warning; coastal impacts; structural performance; source mechanisms

### The challenge

Tsunamis are low frequency but high impact natural disasters. In 2004, the Boxing Day tsunami killed hundreds of thousands of people from many nations along the coastlines of the Indian Ocean. Tsunami run-up exceeded 35 m. Seven years later, and in spite of some of the best warning technologies and levels of preparedness in the world, the Tohoku-Oki tsunami in Japan dramatically showed the limitations of scientific knowledge on tsunami sources, coastal impacts and mitigation measures. The experience from Japan raised serious questions on how to improve the resilience of coastal communities, to upgrade the performance of coastal defenses, to adopt a better risk management, and also on the strategies and priorities for the reconstruction of damaged coastal areas. Societal resilience requires the reinforcement of capabilities to manage and reduce risk at national and local scales.

### Project objectives

The ultimate goals of ASTARTE are to reach a higher level of tsunami resilience in the North-East Atlantic (NEAM) region, which includes the Mediterranean Sea, to improve preparedness of coastal populations and, ultimately, to help saving lives and assets. The main objectives are:

- (i) Assessing long term recurrence of tsunamis;
- (ii) Improving the identification of tsunami generation mechanisms;
- (iii) Developing new computational tools for hazard assessment;
- (iv) Ameliorate the understanding of tsunami interactions with coastal structures;
- (v) Enhance tsunami detection capabilities, forecast and early warning skills in the NEAM region;
- (vi) Establishing new approaches to quantify vulnerability and risk and to identify the key components of tsunami resilience and their implementation in the NEAM region.

## Methodology

ASTARTE consists of 10 work packages (WPs). Following WP1, which is devoted to Project coordination and management, WPs 2-5 focus on tsunami recurrence, generation mechanisms, modeling and coastal impacts? Altogether these WPs will provide an up-to-date knowledge background to the Project. They involve dedicated fieldwork, including research cruises, in locations that are considered highly significant to obtain new critical background information. Most ship time costs will be provided in kind by the Consortium partners, with only a very small amount charged to the Project. WPs 6-8 focus on detection and communication infrastructures, early warning and forecast and risk assessment. These WPs open into WP9, which aims at building tsunami resilient societies in Europe, and WP10, which is devoted to the dissemination and exploitation of results. ASTARTE considers 9 test sites in the Mediterranean and Northeast Atlantic where interconnections between WPs will be implemented, interactions with stakeholders and the society at large will take place, and practical applications will be tested.

## Expected results

ASTARTE will result in: (i) an improved knowledge on tsunami generation involving novel empirical data and statistical analyses so that the long-term recurrence and associated hazards of large events in sensitive areas of the NEAM could be established; (ii) the development of numerical techniques for tsunami simulation concentrating in real-time codes and novel statistical emulations, and (iii) refined methods for the assessment of tsunami hazard, vulnerability and risk. ASTARTE will also provide better forecast and warning tools for candidate tsunami watch providers (CTWPs) and national tsunami warning centers (NTWCs), and guidelines for tsunami Euro Codes and decision makers so that sustainability and resilience of coastal communities could be increased. In summary, ASTARTE will develop critical scientific and technical elements required for a significant enhancement of the Tsunami Warning System (TWS) in the NEAM region in terms of monitoring, early warning and forecast, governance and resilience. Overall, this will lead to the goal of the European/NEAM Horizon 2020 strategy: to foster tsunami resilient communities.

Project Partners	Country
INSTITUTO PORTUGUES DO MAR E DA ATMOSFERA	PT
FUNDAÇÃO DA FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DE LISBOA	PT
MIDDLE EAST TECHNICAL UNIVERSITY	TR (TURKEY)
BOGAZICI UNIVERSITESI	TR (TURKEY)
COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	FR
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FR
ALMA MATER STUDIORUM-UNIVERSITA DI BOLOGNA	IT
ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA	IT
UNIVERSIDAD DE CANTABRIA	ES
UNIVERSITAT DE BARCELONA	ES
TECHNICAL UNIVERSITY OF CRETE	GR
NATIONAL OBSERVATORY OF ATHENS	GR
UNIVERSITAET HAMBURG	DE
HELMHOLTZ-ZENTRUM POTSDAM DEUTSCHES GEOFORSCHUNGSZENTRUM	DE
UNIVERSITAET BREMEN	DE
STIFTELSEN NORGE GEOTEKNISKE INSTITUTT	NO (NORWAY)
UNIVERSITY COLLEGE DUBLIN, NATIONAL UNIVERSITY OF IRELAND	IE
NATURAL ENVIRONMENT RESEARCH COUNCIL	GB
DANMARKS TEKNISKE UNIVERSITET	DK
NSTITUTUL NATIONAL DE CERCETARE-DEZVOLTARE PENTRU FIZICA PAMANTULUI	RO
SPECIAL RESEARCH BUREAU FOR AUTOMATION OF MARINE RESEARCHES FAR EAST BRANCH RUSSIAN ACADEMY OF SCIENCE	RU (RUSSIAN FEDERATION)
CENTRE NATIONAL POUR LA RECHERCHE SCIENTIFIQUE ET TECHNIQUE	MO (MOROCCO)
U.S. DEPARTMENT OF COMMERCE	US (UNITED STATES)
PORT AND AIRPORT RESEARCH INSTITUTE	JP (JAPAN)
UNIVERSITY OF SOUTHERN CALIFORNIA	US (UNITED STATES)
UNIVERSITY OF TOKYO	JP (JAPAN)