

Reminiscences of the great tsunamis of July 1627 in the Frentana coast: the case of Lanciano-San Vito Chietino port

*Reminiscenze del grande tsunami del luglio 1627 sulla costa Frentana:
il caso di Lanciano e il porto di San Vito Chietino*

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ABSTRACT - Chronicles and legends related to the telluric upheavals Frentana dot the coast in the province of Chieti. These myths fable describing the mountains and cities that plunge into the sea, migration, persistent fear of the sea and acts of faith of the people who invoke the protection of sea gods and telluric. While many of these legends are probably exaggerated and magnified, objective, however, is the scope of historical changes that have occurred. In fact, in the historical context in which these legends have formed a corpus of oral tradition, we are witnessing a drastic change of use of land and habits related to a change in the pattern of socio-economic. These changes are supported by direct and indirect in the quantification of the costs of repair, in the deeds of sale and in the records of the variations of trade and the movement of the community. On the basis of historical references and mythopoeic interpretation, these phenomena may be associated with the overall effects of the earthquake and, above all, the Tsunami of 1627. Thereafter, it introduces new coastal economic systems more "terrestrial" and the old fabric and commercial political will contract for nearly a century, dismembered and redistributed. A substantial underestimation of the possible effects of the earthquake and tsunami comes from two factors. The first is that historians generally have a low sensitivity to the influence of the physical phenomena on human society and, second, that the amplitude of the geological phenomenon is still uncertain. However, the effect documented by cultural anthropological study leads to a reconsideration of the immediate risk of a tsunami on the Abruzzo coast, especially in light of an irrational structure of bathing facilities and recreational facilities associated with a disorder and vulnerability of escape routes and emergency.

KEY WORDS: Abruzzi region, Anthropology, Geomithology, 1627 Adriatic Tsunami, Feast of our lady of thee Sea

RIASSUNTO - Cronache e leggende legate a sommovimenti tellurici costellano la Costa Frentana in provincia di Chieti. Tali miti favolistici descrivono monti e città che si inabissano nel mare, migrazioni, una persistente paura del mare e atti di fede popolare che invocano la protezione di divinità marine e telluriche. Mentre molte di queste leggende sono probabilmente esagerate ed ingigantite, oggettiva è invece la portata di mutamenti storici avvenuti. Infatti, nel contesto storico durante il quale queste leggende hanno formato un corpus di tradizione orale, si assiste a un drastico cambio di destinazione d'uso del territorio e di abitudini legate a una mutata configurazione socio-economica. Tali mutamenti trovano conferme dirette ed indirette nelle quantificazioni dei costi di riparazione, negli atti di compravendita e nelle registrazioni delle variazioni dei traffici commerciali e degli spostamenti di comunità. Sulla base dei riferimenti storici e della interpretazione mitopoietica, tali fenomeni possono essere nel complesso associati agli effetti del terremoto e, soprattutto, dello Tsunami del 1627. Dopo tale data, vengono introdotti nuovi sistemi economici costieri più "terricoli" e il vecchio tessuto commerciale e politico viene contratto per quasi un secolo, smembrato e ridistribuito. Una sostanziale possibile sottostima degli effetti di tale terremoto e tsunami deriva da due fattori. Il primo è che gli storici hanno in genere una scarsa sensibilità per l'influenza del fenomeni fisici sulla società umana e, il secondo, che l'ampiezza del fenomeno geologico è ancora incerta. Tuttavia, l'effetto culturale documentato dallo studio antropologico induce a una immediata riconsiderazione del rischio tsunami sulle coste abruzzesi, anche alla luce di una irrazionale strutturazione degli impianti balneari e delle installazioni da diporto associate a un disordine e vulnerabilità delle vie di fuga e di soccorso.

PAROLE CHIAVE: Abruzzo, Antropologia, geomitologia, Tsunami adriatico del 1627, Festa di Nostra Signora del Mare

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1 - INTRODUCTION

The Abruzzi mainland region is all classified for the seismic hazard even if the real hazard may be underestimated as demonstrated by the occurrence and consequence of L'Aquila Earthquake on 6 April 2009. The seismic hazard of the coastal area is practically unevaluated due to the fact that seismogenetic structures, possibly identified by seismic profiles and weak seismicity, do not break out at the surface and remain buried all the time in this area. Historical off-shore seismicity is largely unknown and based on a few events occurred in the last century (BOSCHI *et alii*, 1997). Oldest observations, possibly related to tsunamigenic events, are confused and solely reported by chronicles of the localized effects on mainland and isolated buildings such as castles, monasteries (e.g. MAMMARELLA, 1990). In addition, storm surges, floods, coastal landslides and tsunami probably overlap in the old chronicles and legends. Less than 50% of the events that are recorded on the western coast of the were earthquake-triggered tsunamis, while the others are sea effects attributed to meteorological forcing and submarine landslides (TINTI *et alii*, 2004; VILIBIC & SEPIC, 2009; ZECCHI, 2006). Transformations of the human settlements along the coast were often related to these phenomena but the exact nature of these events is doubtful.

There are several citations in the traditional literature *corpus* of a destructive earthquake occurred on 1088 in Southern Abruzzi, badly damaging the Diocletian Bridge in Lanciano, the San Giovanni in Venere Abbey in Frentania e a tsunami which flooded the Sangro-river coast ruining the Santo Stefano in *Rivo Maris* abbey (e.g. MAMMARELLA, 1990). This event is not reported or credited in the official Italian Tsunami and Earthquake catalogs but needs more work to be eliminated or confirmed.

Civita di Sangro, near the estuary of the Sangro river, and Rocca di Osento, near the estuary of the Osento river, suffered serious damage at the end of the XIII century, and the King Carlo the Ist had to authorize the movement of the two villages to a safer place (PRIORI, 1957, AQUILANO, 1997). In general, only landslides and earthquakes produce the abandon of a city. River flooding is unlikely as old settlements were up to the main flooding level and only unpredictable large events may damage them. The first place was located in the valley and possibly flooded by a tsunami wave moving up stream, the second place on a low marine terrace near the sea could be hit by a large tsunami or collapsed in a landslide. Seismic catalogues do not show any suitable event in the area but major earthquakes are recorded on the Serbia-Montenegro coast on 1280 and 1300 (ALBINI, 2004).

Coast is already affected by erosion/ingression, cliff collapse, pollution and overexploitation which progressively eliminate the coastal natural environment

and increases sensibly the risk also in terms of exposed artifacts and human beings (STOPPA, 2010a). Poor sustainable governance of the territory multiplies different hazards increasing vulnerability and the amount of artifacts, goods and human beings in the hazardous area.

Moderate tsunamis have occurred frequently along the coast. The effect of the ingression of a IV-V intensity tsunami (0.5-1m high) is certainly less spectacular and destructive than a high wave (2-4 m high) impacting on the beach and moving inland for kilometers in flat areas, but is still able to trigger strong currents interfering with the coastal morphology and any existing structures (ports, piers, breakwaters, etc). These kind of tsunami is likely to produce frightening and considerable panic in the exposed population which would run to higher ground. Boats are expected to move strongly onshore, crash into each other, shatter on the rocks or overturn. Flooding of outdoor facilities, such as beach resorts and of near-shore road, railroad and low-ground residential areas is expected, even if most masonry buildings withstand. This moderate hazard scenario in fact implies a very high risk if a tsunami would hit the coast and ports during the summer period by day when beach are over-crowded and ports hosts many small leisure boats. In addition, tsunami hazard could be underestimated as a consequence of seismic hazard underestimation. Pure probabilistic methods may be much too optimistic.

2. - TSUNAMI IN THE ADRIATIC SEA

Only a few seismic stations are located in and mostly inside the mountain chain. GPS measurements are performed only on mainland and the off-shore seismic data set is too scarce to allow a serious Gutenberg-Richter evaluation. However, basing on regional seismicity and general geology of the Adriatic foredeep, it is clear that has seismogenetic sources that can easily release energies close to magnitude (M_w) ~ 5.5 , (VISINI *et alii*, 2010). Although these magnitudes cannot generate very large tsunamis, i.e. $>VI$ intensity in the Papadopoulos Imamura scale, smaller tsunamis, 0.5-1 meter high, of intensity $<V$ seem frequent and would impact on the vulnerable coastal system which is not specifically warned and/or alerted and provided with preventive systems (TIBERTI *et alii*, 2008). Tsunamis related to medium M earthquakes (5.5-6) are potentially triggered by consequent underwater landslides. Landslides may occur also in absence of a noticeable seismic disturbance and are mainly related to turbidity currents descending in the Tremiti trench slope and to local collapse of the holocene, muddy pro-delta accumulated along the Abruzzi Coast (TRINCARDI *et alii*, 2004, RIDENTE & TRINCARDI, 2006).

Has a size (760x200 km) slightly larger of the Baykal lake (600x80 km) but contain 1 order less water

being very shallow. Tides and seiches are increased with respect to other larger seas and produces coastal flooding that are not related to earthquake even if they have very similar characteristics: i.e. have the same periods (1 - 10 minutes), the same spatial scales, similar physical properties and hit the coast in the same destructive manner (VILIBIC & SEPIC, 2009; ORLIC, 1980). These events are thought to be related with landslides and meteomarine processes. An example is the 21 June 1978 tsunami, which impacted Vela Luka in the Bay of Kotor (Montenegro), consisting of ingressive waves with a period of 15 minutes and up to 2.5 meters high (intensity >VI) which completely flooded the town. Notably the Tsunami extended to the other side of the Adriatic hitting the coast also producing flooding and damages by a sensible regression and ingression of the sea. This tsunami is not associated to an earthquake but alternative origin by a meteomarine or landslide phenomena is still debated.

3. - OFF SHORE AND COASTAL SEISMICITY AND TSUNAMIS

Only three earthquakes with magnitude around 5.5 occurred off-shore the Adriatic Sea in a century: 30-11-1930 M 5.8, 25-05-1951 M 5.2 and 26-04-1988 M 5.4 (Boschi *et alii*, 1997). The first two were felt in Abruzzi (intensity II-IV) and that of 1930 generated a tsunami of intensity IV (Inamura scale) along the Marche coast. Other seismo induced tsunamis are those of 14-04-1672, M5.6, 17-03-1875 M. 5.7, 16-08-1915 M5.9, but

in this last cases the epicenter is locate along the coast. Epicenter cluster and intense weak-moderate seismicity off shore the coast of Central Adriatic testify that this area is seismically active (fig. 1).

It seems reasonable that 5.5 is the minimum magnitude which may generate a moderate tsunamis in the Central Adriatic Sea associated to off-shore or coastal seismicity. This possibly occurs were seismogenetic fault breaks up the sea floor and/or ipocentre are at a shallow depth. Small-medium size tsunami left behind traces of sand on ground only upon favorable circumstances and their detection requires a specific field survey. However, tsunami and seismicity have a repetitive nature and previous bigger tsunamites may be discovered along the Abruzzi coast as occurred in the nearby Puglia region (MASTRONUZZI *et alii*, 2006; DE MARTINI *et alii*, 2003). A very clear example is from the three “fan” forms generated from three different tsunamis entering the Lesina Lagoon. Fan were generated by tsunamis dated to about V centry BC, VIII century and 1627 or 1088.

The strongest recent tsunami was related to the Montenegrin earthquake on 15 April 1979, when one person was killed by the tsunami wave; on this occasion the tsunami waves were also recorded on the opposite, Italian coast of Adriatic. Three rather strong tsunamis occurred in the seismically active region near Dubrovnik: the first accompanied the devastating earthquake of 6 April 1667 that destroyed greater part of the town, the second occurred in Boka Kotorska on 21 September 1780 and the third one again in Dubrovnik, on 16 August 1845.

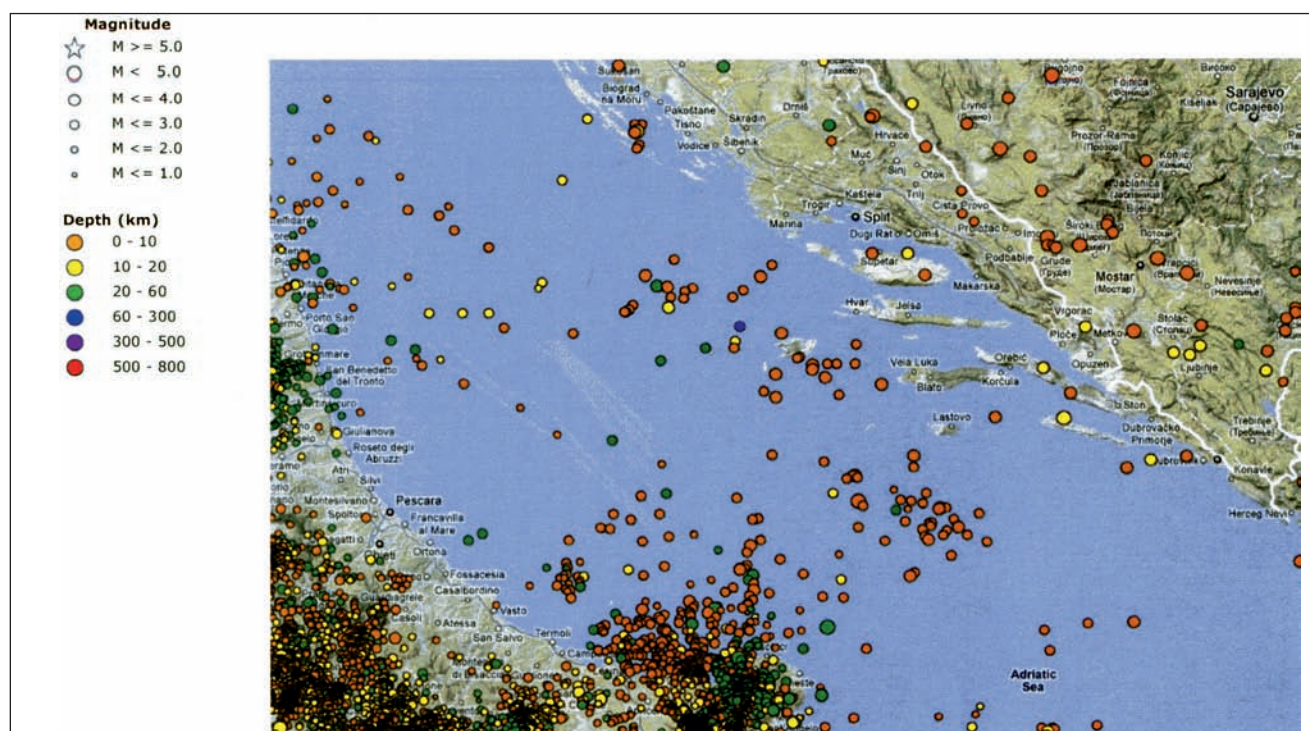


Fig. 1 - Last 10 years Epicenter distribution in central Adriatic sea. - *Distribuzione degli epicentri dei terremoti degli ultimi 10 anni nella zona adriatica centrale.*

On 1743 in the Otranto channel occurred an earthquake of M 6.9, which was disastrous in southern Puglia and Ionian Islands (IX-X MCS). The earthquake also generated a tsunami, for which the information contained in the historical sources are quite scarce, and only testifies for some effects in port of Brindisi, where the sea was seen to retreat (TINTI *et alii*, 2004). In contrast, the effects of the tsunami along the Adriatic and Ionian coasts of Apulia are well documented in terms of geological records. The study of Mastronuzzi *et alii* (2006) testifies the presence and characterize the evidences of boulders accumulation along the southern coast of Puglia. These accumulations are particularly significant in areas Torre S. Emiliano and Torre di Pietra. In Torre S. Emiliano, the boulders are arranged along two ridges that extend along the coast for about 2.5 km and have a total width of approximately 30 m. Boulder mass is up to 70 tons, and the maximum altitude of emplacement is 11 m. At Torre di Pietra the boulders have a mass of up to 31 tons and are at a maximum altitude of 5 m s.l.m. The analysis of the characteristics of the boulder clusters has led the authors to formulate the hypotheses that they have been put in place by the tsunami of 1743. This fact poses the problem of historical unrecognized tsunamis along the Adriatic coast.

The propagation models indicate that tsunami from lower Adriatic sea (Gargano), Croatia/Montenegro coast and Ionian Sea may also affect the coast of Abruzzi. The times of propagation of tsunamis in the Adriatic Sea is short. In 20 minutes is struck much of the coastline near the area of tsunami generation, and within an hour the tsunami cross the basin and the Tsunami arrives on the coast which is opposite to that where it is generated.

4. - THE 1627 EARTHQUAKE AND THE TSUNAMI

On 30 July 1627 (literature wrongly reports also 1626) at 10:50 an earthquake of M 6.7 struck the Capitanata and hit the Abruzzi Citeriori, corresponding to the present Termoli area and the Chieti Province. Mercalli's intensity varies along the Chieti province coast from VII-VIII. Lanciano and Vasto were heavily damaged having "la meta rovinata - half destroyed" according to the Matteo Greuter map and De Poardi (1627) report, different effects were reported up to nowadays Pescara province (fig. 2).

ANTINORI (1627) says "Il giorno 30 luglio, verso mezzogiorno, un grande tremoto portò sgomento nell'Abruzzo inferiore. La fascia adriatica e l'entroterra furono scosse violentemente. Lanciano, Ortona a Mare, Francavilla, Vasto, Termoli, Paglieta e Fossacesia patirono danni gravissimi?" - On the 30th July, about noon, a large tremor brought despair in southern Abruzzo. The Adriatic coast and the hinterland were shaken violently. Lanciano, Ortona a Mare, Francavilla,



Fig. 2 - Greuter's map of the effects of the 1627 earthquake and tsunamis.
- Mappa del Greuter degli effetti del terremoto e tsunami del 1627.

Vasto, Termoli, Paglieta, Fossacesia, suffered severe damage-. The castle of Montazzoli was badly damaged by the earthquake and the nearby village of Baselice was canceled by a landslide.

From the summaries of Corrado Marciani we desume the amount of destruction by means of the acts of sale, renovation and construction in the affected areas. "Per tutti i disastri patiti, molti, da ricco stato caddero in miseria ... Forse intere città?" -For all the disasters suffered, many who were rich fell into poverty... Perhaps entire cities ...-. For example, the city of Lanciano claimed an extra amount of money for the renovation of the damaged/collapsed walls. In the local literature the 1627 earthquake was considered among the major damaging events, together with that of 1088 and 1456, that occurred since the founding of the city.

In Rocca San Giovanni, near Fossacesia, the 1627 earthquake brings death and destruction, damaged the eastern wall, where people committed themselves personally to reconstruct it. The Benedictines did their utmost for the restoration of buildings owned by them. The nearby monastery of San Giovanni in Venere, had demolished the cloister and part of the Church (ANITORI, 2006). Originally, the facade was all stone. As a result of repeated earthquakes (1456 and 1627) the top that had suffered more was rebuilt in bricks.

The epicenter was placed in the land but there are some doubts about that. It could be undersea as a subsequent disastrous tsunami hit the coasts of Gargano and the Abruzzi up to Pescara (GIUDOBONI & TINTI, 1988). The exact coincidence of the main shake and tsunami is not clear. It seems that several tsunamis affected the area in the following hours/days but also powerful aftershocks occurred. Whatever the causes, the tsunamis, rather than the earthquake, has generated a large number of legends and convergence of religious holidays on the date of the event, especially in ports of

the Frentana coast (Chieti province). Archival data about the event are abundant and implemented by rich oral tradition. Some religious fests and rituals are plausibly related to the Tsunami. However, local geological records are still unverified.

Some effects of this large earthquake overlaps in the literature with those of the same year and month whose epicenter is located in Accumoli. This poor studied event may responsible for the damage in the Aquila province sometimes attributed to the 30th July 1627. However, intense shaking and damage in Sulmona and Caramanico are difficult to be attributed to one or the other event. If they are due to the Accumoli earthquake this latter is certainly underestimated.

4.1. - THE TSUNAMI OF 1627 IN THE CONTEXT OF ENVIRONMENT AND COASTAL SETTLEMENTS

The Frentana coast alternate fossil marine sandstone cliff which are prone to rotational slips and landslides which often involve the coastal cities such the very disastrous one of Ortona on 1506 and the more recent in Vasto on 1956 (fig. 3). During the Roman and middle ages, estuaries were important natural ports due to bigger water rate in the rivers (fig. 4). This explain the presence of populated areas near estuaries being most of the rest of the low coast inhabited. However, a line of springs at the base of the cliff and favorable microclimate favor the fruit tree culture and horticulture on the narrow belt of the first marine terrace which is safe from marine tempest. Till a recent past the coast was characterized by a peculiar fishing methods based on wooden pilework structures, called “trabocchi”, comprised of a long runway that ends in a broad platform from which it let down into the sea a fishing net like a scale. The construction technique of these fishing machines is similar to that used on ships for the management of the sails from which is derived. This is may be due to a drastic change in the local economy, starting from the second half of 1600, when agri-



Fig. 3 - Vasto, 1956 landslide in the “muro delle lame” area.
- Vasto, frana del 1956 nella zona di “muro delle lame”.



Fig. 4 - View of Ortona, map of the eighteenth century By G.B. Pacicelli.
- Veduta di Ortona, mappa del XV/III secolo di G.B. Pacicelli.

cultural activities alternating with fishing in shallow water substituted the previous economy based on marine trades across the Adriatic Sea. It seems that “trabocchi” are a consequence of this change.

Apart from the exception of the port of Ortona, the Frentana cost includes only a limited number of small coastal plains and gravel beach mainly at river mouth which are also used as landing areas. In particular the San Vito “beach” was equipped as a launching port at the mouth of Feltrino river but it was too shallow for the draft of vessels. In spite of this, in the XIV and XV centuries, Lanciano thanks to its port of San Vito, considered itself a maritime town. In fact, the San Vito port was used mainly as for the customs transit of goods acquired in the two important annual fairs of Lanciano. Most of the goods were shipped through the nearby city of Ortona equipped with a secure and largest port (fig. 5). Internal strife between powerful families, the earthquake of 1627, continued attempts by neighboring lords to seize it, plague, began a period of tribulation for Lanciano and its port. The Marciani’s archive in Lanciano Library contains references to San Vito port in volume V, VI, VII for the period between 1590 and 1710. It states a list of possessions, and describes the status sum-

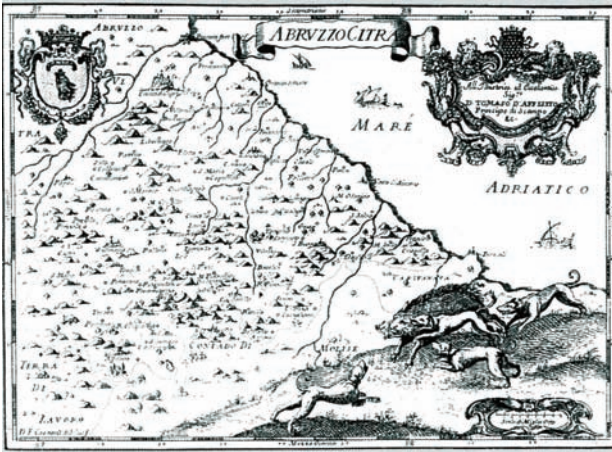


Fig. 5 - Abruzzo Citeriore, map, etching from the work of G.B. Pacichelli "The Kingdom of Naples in perspective dodeci divided into provinces", published in Naples in 1703 in the Printing House Michael Louis Mutio.

- Abruzzo Citeriore, carta geografica, incisione all'acquaforte tratta dall'opera di G.B. Pacichelli "Il Regno di Napoli in prospettiva diviso in dodici provincie", edita a Napoli nel 1703 nella Stamperia di Michele Luigi Mutio.

mary of the assets. Following the general crisis of the trade, Lanciano lost his privileges to state town, barony was created and was sold to the Duke Pallavicini of Castro by the Viceroy of Naples, Medina las Torres, without the consent of the king. The port of San Vito was sold off to heal the debts of the city of Lanciano on 1642. In 1646, Lanciano was sold to the Marquis d'Avalos del Vasto. This decadence period is reflected in a data scarcity right in the period 1625-1700.

4.2. - TSUNAMI EFFECTS IN FRENTAIA

In many reports, rather than the other effects of the Earthquake, was said that that the cities sank into the sea and cliff formed. Again it is not possible to tell if this is a description of the collapse of large portions of unstable cliff or flooding due to the tsunami. In any case, damages in the ports of Termoli, Vasto, Ortona and San Vito Chietino were considerable and often accurately depicted. The number of sailors killed in San Vito Chietino area by the tsunami can be found on the notarial records maintained by C. Marciari and deposited in the public library in Lanciano (MARCIANI, 1974). Combined effect of the earthquake and tsunami in the port city of Ortona and Lanciano seems relevant and able to contribute to a general decay and change of cost use.

If the 1627 tsunami did relatively little damage in the coastal plain hinterland this was due to absence of villages in the flat coastal areas. Most of the populated areas were on safe high-level and cultivated areas suffered minor flooding due to the presence of dunes, lagoons and sand-barriers but effects in the main estuaries and ports were noticeable up to the northern limit of Chieti province.

An important marine ingression occurred in the southern Abruzzi coast where flat areas corresponding

to Val di Sangro valley were flooded causing extensive damage to crops - for example near the village of Paglieta. Sea retreat up to 90 meters were observed at Pescara and Saline rivers mouths before the tsunami. Both the places were estuary ports. This retreat is considerably bigger if compared with the 1979 tsunami when retreat was a few meters. An upstream wave about 1 meter high marked the tsunami ingression. "A breve distanza, nella pianura tra Silvi e Mutignano, un colle arborato e sparso di abitazioni campestri che - come una penisola - entrava nel mare - si staccò per lo scuotimento della terraferma e disparve inghiottito dalle acque procellose che, ribollendo, invasero il lido fino alla notte del giorno seguente per oltre cento passi addentro" (ANTINORI, 1627) - A short distance in the plain between Silvi and Mutignano, a hill with trees and scattered rural dwellings - as a peninsula - went into the sea - broke away to the shaking of the land and disappeared swallowed by stormy waters that seething, invaded the shore until at night the next day for more than a hundred yards-.

4.3. - FORMATION OF THE CLIFF AND THE "FEAR OF THE SEA"

In the area of Vallevò, a small village of country-fisher man, has been collected a legend about the formation of the cliff during the 1627 earthquake referred by a resident, Rinaldo Veri. The cost is high in this point and houses stay about 10 m on the sea level. A corollary of this legend is the "fear of the Sea" for which local people were said to never go boating in high water preferring to fishing from "trabocchi" being shocked by the memory of the Tsunami. It was also referred that sailors from Jewish settlers from the Veneto and Liguria have repopulated the coast after the tsunami. However, this is not reflected in the distribution of surnames of the local families, e.g. Veri, who have a peak distribution only in Frentania. On the other hands, Jewish are not know to be sailors but are often associated for antonomasia to the concept of "migrants". We know that the earthquake of 1456, not stronger in Frentania if compared to that of 1627, provoked a wave of migration of Albanians and Slavs peoples (Schiavoni) for restoring and repopulate the villages and the country farms destroyed by the earthquake in the province of Chieti and in particular in the Frentana area where the Villa Santa Maria Imbaro would have had this origin (Bocache). A common surname for Frentania "trabocanti" families is Veri or Lari that very likely are among the 4 letters surnames of Albanian origin together with those with sci, vla, sca phonic groups.

4.4. - FEAST OF OUR LADY OF THE SEA

The psychological mechanism that binds to a cult is usually a disaster thanksgiving for having received less damage than other communities (STOPPA, 2010b,

c). “Years ago, working on my thesis, I came across historical documents on the earthquake of 1627. But most interesting to me that I was living in a seaside town was the fact that the authors spoke of a strong tsunami that took many lives on the coast Frentana 30 July 1627, the date coincides with the most important religious feast of the Navy of St. Vito, the procession of Madonna del Porto “ (arch. Nicola d’Angelo pers. com.). The last Saturday of July every year (for example 30th July 2011), the Madonna del Porto is taken from the church and placed in the boat designated for the sea parade. The date of the celebration is remarkable as this kind of procession on the sea (i.e. San Basso, San Nicola, Nostra Signora di Punta Penne) are celebrated every May and not July. In fact, the day of rest for the fishermen, if we exclude the main Saints, were only those known as “star points”, unlucky days for those who want to go boating: Are “star points” the All Soul day and the days when a storm had produced a considerable number of dead and missing among sailors as on November the 16th and on July the 30th (tsunami) . The boat carrying the Madonna statue reaches the open sea, is surrounded by fishing boats from Ortona and Pescara, that, in a circle, receive the blessing from the priest (fig. 6). In the afternoon, the boat with the Virgin Mary and other boats, call to the beach for loading on board the authorities and the faithful, who come in procession on the pier. At 21.30, the boats return, the Madonna is shown in a procession, adorned with gems and gold donated by the faithful by the grace received. The base of the foundation myth, or rather the strengthening of the cult of Our Lady of the Sea is linked to the legend that the tsunami breached through the door of the church and stood at the foot of the statue of the Madonna.

As for the church, the first S. Maria del Porto and then Our Lady of the Port, there are the letters following the visits of the Priors of the Abbey of San Giovanni in Venere from which those Churches depended.



Fig. 6 - San Vito Chietino port church of the 'Madonna del Porto', nowadays no longer existing.
- Chiesa della Madonna del Porto a San Vito Chietino, non più esistente.

The reports follow one another from year to year until 1624. Then there are no other data until 1710. The church of Our Lady of the harbor (fig. 7) was built after the earthquake of 30 July 1627 replacing an earlier chapel on the beach according to A.L. Antinori (1781-3). The same Antinori speaks about that in “Annals of the Abruzzi” manuscript in the library Tommasi di L’Aquila. The church was destroyed by the Germans in the last conflict and rebuilt to an higher place.



Fig. 7- Sea parade during the “Festa della Madonna del Porto”, San Vito Marina, 1920.

- *Processione in mare durante la “Festa della Madonna del Porto”, San Vito Marina, 1920.*

5. - CONCLUSIONS

In the absence of stratigraphical and morphological geological studies that may allow a precise characterization of potential past tsunamis, their intensity and frequency, it is possible to evaluate the consequences of such phenomena by their cultural evidences which are sometimes more persistent of the material effects on the environment. The earthquake and tsunami of 1627 in the Abruzzo region are an excellent case study. The consequences of these two phenomena are not clearly disentangled and this is possible due to the subsequent period of socio-economic decline, partly induced by the earthquake and tsunami itself, for which chronicles are fragmentary and incomplete. On the

other hand, without the stimulus of chronicles to prompt deeper research, the scientific study of these events would appear unlikely in areas which qualify as “marginally” interested from the phenomenon. Certainly, even a brief combined analysis of chronicles and legends, indicates the need for a geological study on repetitiveness, genetic mechanisms and local effects, especially when the present population density and vulnerability is considered. If a tsunami similar to that of 1627 is thought of producing damages to leisure and commercial boats, more worrying is the risk for urban areas on the coastal plain, on the traffic situation with subways and in critical areas such as bathing areas. Even in the case of a moderately hazardous event such as occurred on the Abruzzo coast in 1627, should this occur in daytime and in summer it would multiply the risk due to total lack of preparation for such an event. Thousands of lives would be rapidly exposed to a risk increased by the panic and the presence of bottlenecks and difficulties in evacuation facilities as bathing areas are mostly fenced. Rescuers could find ways to access flooded such as underpasses that are virtually the only step to overcome linear works such as rail and highway along the Adriatic coast.

The corpus of myths and rituals associated with the memory of the tsunami of 1627 are more than sufficient to induce a serious reflection on the tsunami hazard of the coast and a quick calculation of the high risk should produce a rapid and safer re-design of bathing facilities and communication systems road of the coastal zone as well as the destination use of the coastal area.

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