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HELLENIC WORLD*

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Post-Byzantine Glass Panels from the Area of Preveza: A Preliminary Investigation

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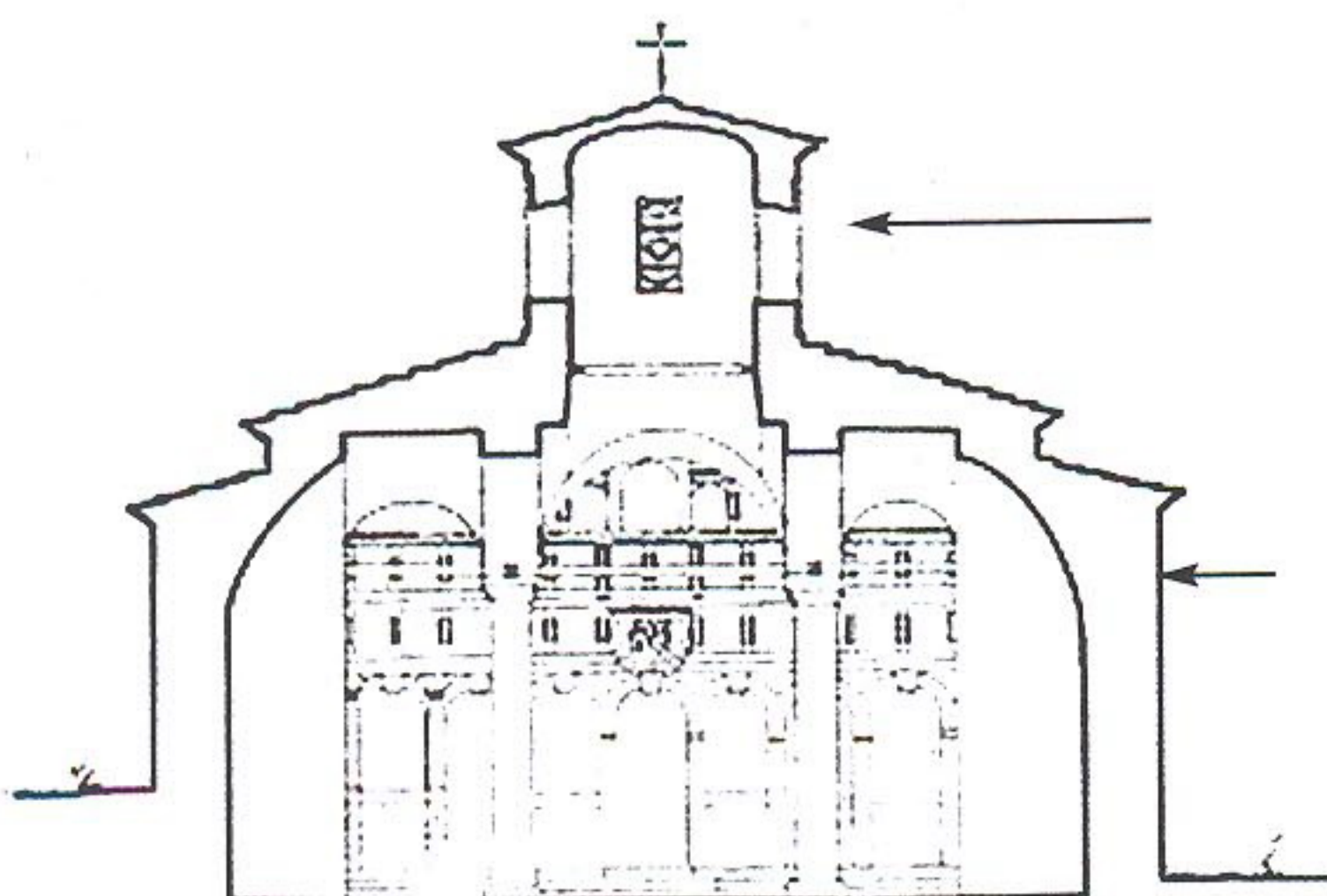
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Abstract

Ecclesiastic and secular buildings in the area of Preveza (northwest Greece) provide some excellent examples of post-Byzantine glass panels. This article considers the origin of the technique used to produce glass panels as developed in the eastern Mediterranean, with particular reference to the use of gypsum for forming the tracery.

A pilot study for this project has been the evaluation of the current state of preservation of four glass panels from the post-Byzantine church of Agia Pelagia, Kastrosikia (date of construction: 1795).

For this purpose, Scanning Electron Microscope (SEM) analyses have been used to determine the composition of the glass, which, in combination with climatological data (from the Greek National Meteorological Service), allows us to investigate the corrosion processes and their causes.



The church of Agia Pelagia - vertical section.

1. Introduction

The post-Byzantine monastery of Agia Pelagia is situated near the village of Kastrosikia, which is northwest of Preveza, in northwest Greece. The church of Agia Pelagia, constructed in 1795, in vertical section is a cross-shaped circumscribed type. The dome holds exist four windows. The lower body of the church has another four smaller windows. Initially, all of the windows consisted of elaborate glass panels [1].

2. The glass panels technique

2.1 Description

The glass panels of Agia Pelagia Kastrosikia are rectangular in shape with an arched top (1m high x 0,35m wide x 0,05m maximum thickness). They are made of a decorative plaster tracery, containing coloured glass panels. With regard to the design, we could say that it has been influenced:

X by the Byzantine tradition, mainly in the geometrical shapes and

X the Islamic tradition, because of the naturalistic form of the upper part of the tracery work.

2.2 Construction

The glass panels are a synthesis of a variety of materials, with differing in properties:

- wooden frame (Figs. 1, 2, 4),
- glass parts in several shapes and colours (Fig. 2),
- plaster tracery (Fig. 3) and
- iron holders (handmade), against the wall (Fig. 4).

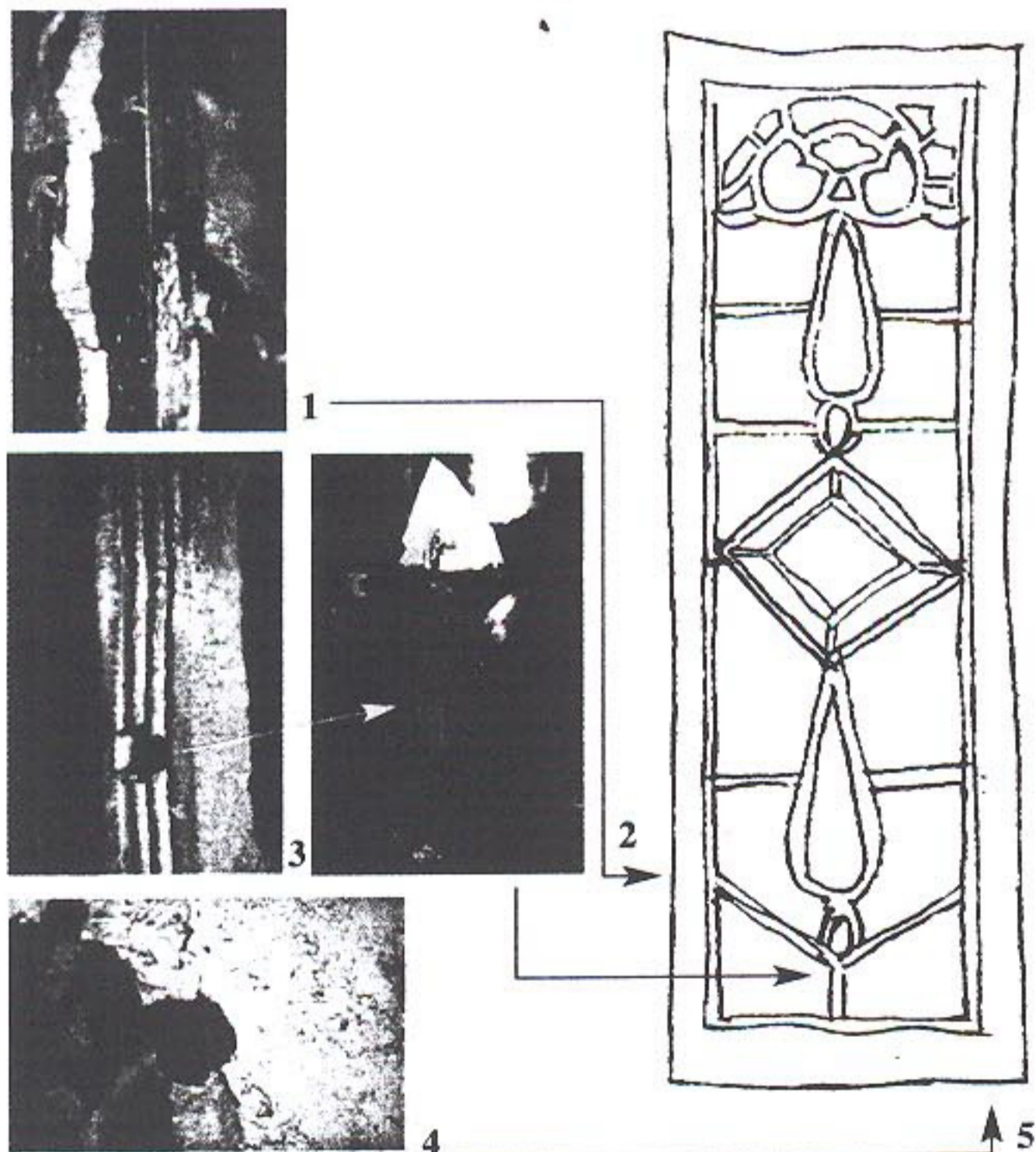


Fig. 1. Wooden frame, Fig. 2. Glass parts, Fig. 3. Plaster tracery Fig. 4. Iron holders, Fig. 5. The glass panel.

2.3 Chronology

The glass panels of Agia Pelagia Kastrosikia are contemporary with the building and date from 1795.

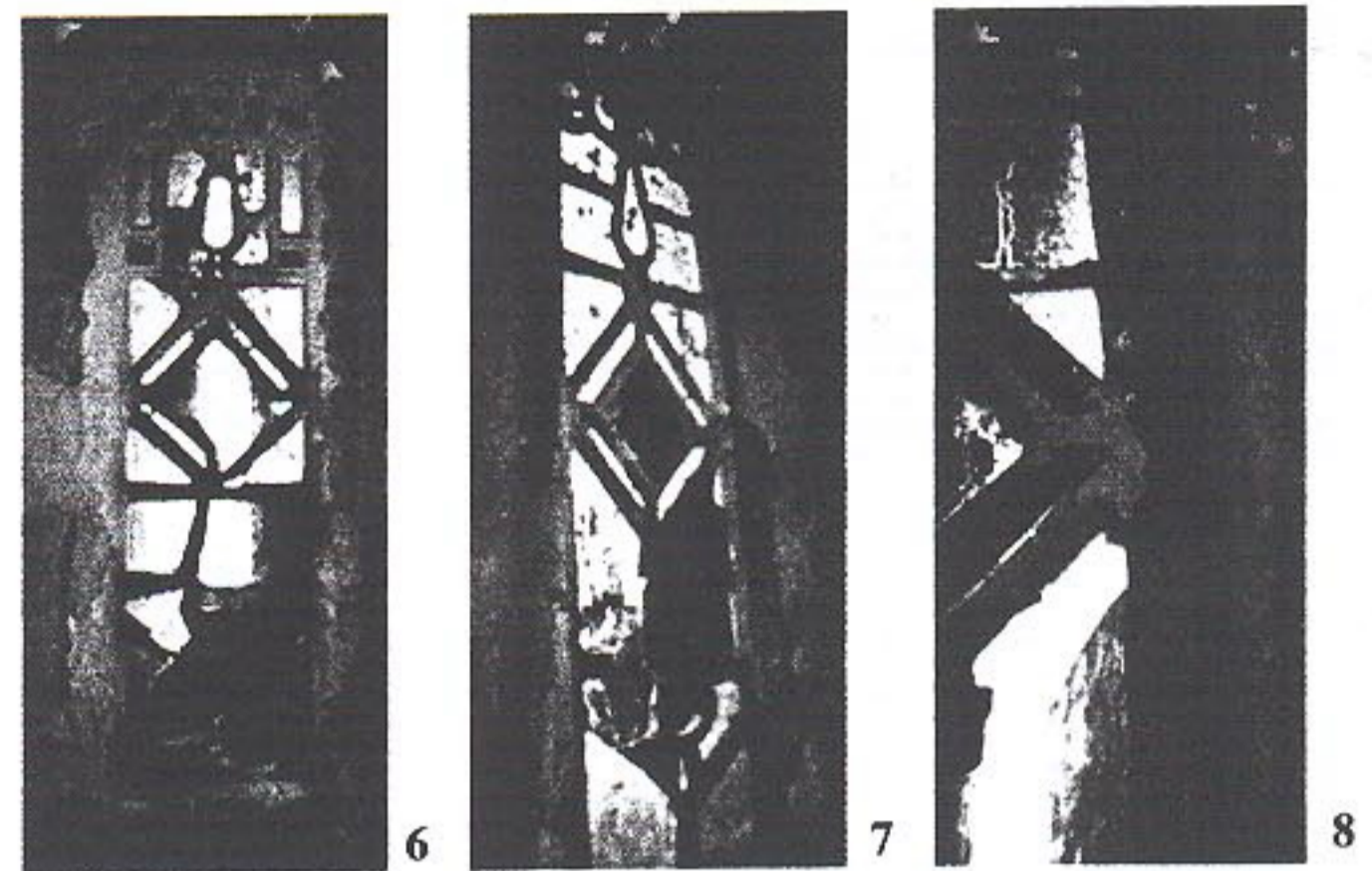


Fig. 6. The East glass panel, Fig. 7. North glass panel, Fig. 8. West glass panel.

3. State of preservation

Three of the windows in the dome still hold the original glass panels but the fourth has been lost. Only the wooden frames of the four windows in the lower body of the church now survive: the glass panels no longer exist. The three remaining original glass panels (Figs. 6, 7, 8) are threatened by a series of serious problems:

- broken plaster tracery,
- broken glass panels,
- weathering of the glass,
- corroded iron holders and
- detached wooden frames [2].

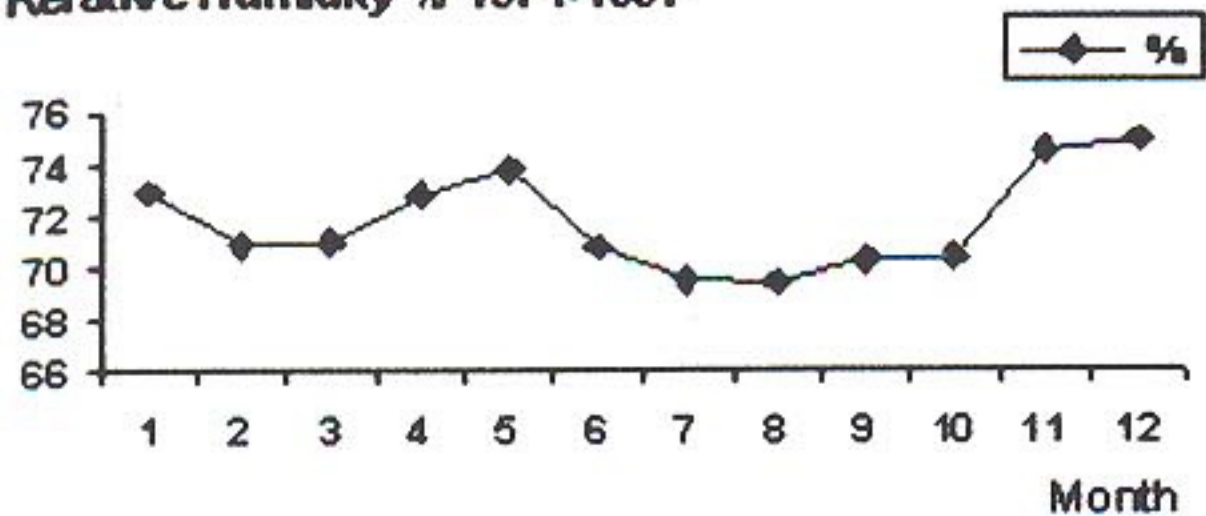
4. Environment

Preveza is a seaside area, where the climate is characterized by:

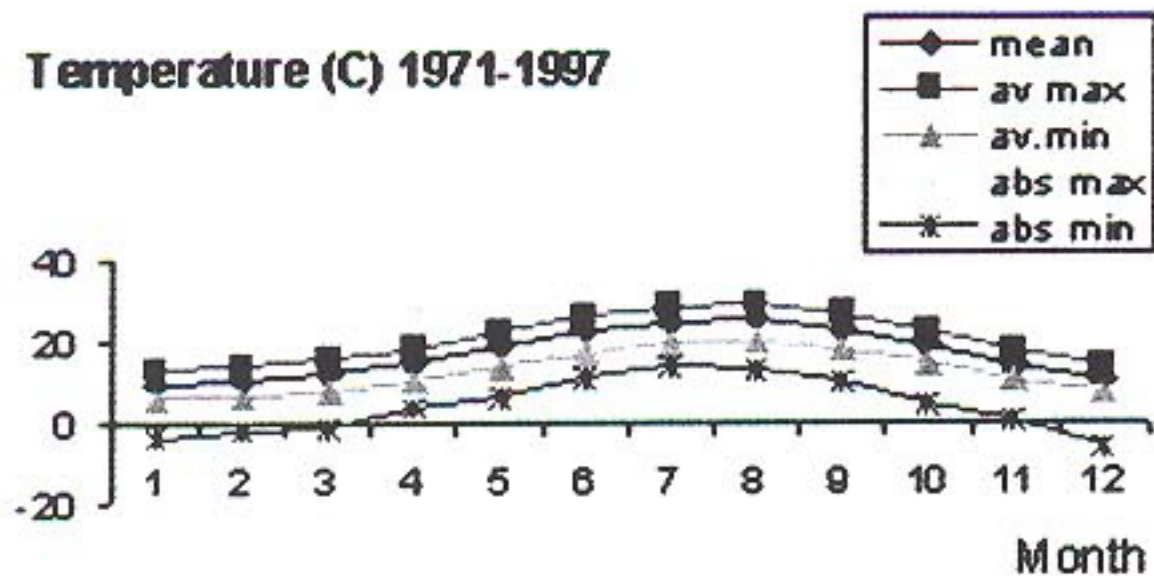
- a) high relative humidity %,
- b) average-temperature weather,
- c) high precipitation % and
- d) NE & W prevalent winds, shown in the tables:

Climatological data (from the National Meteorological Center of Greece)

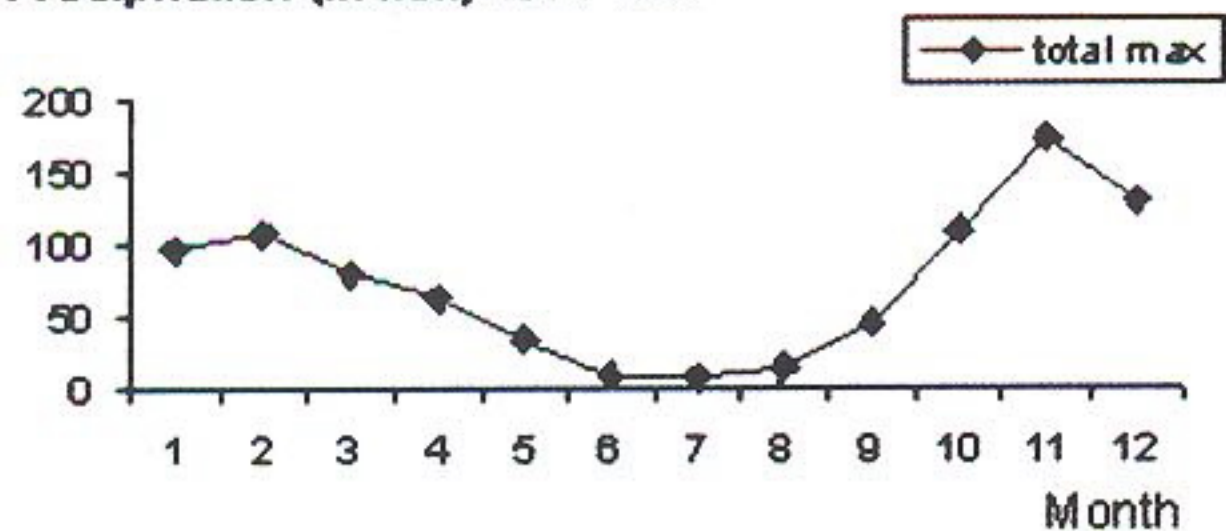
Relative Humidity % 1971-1997



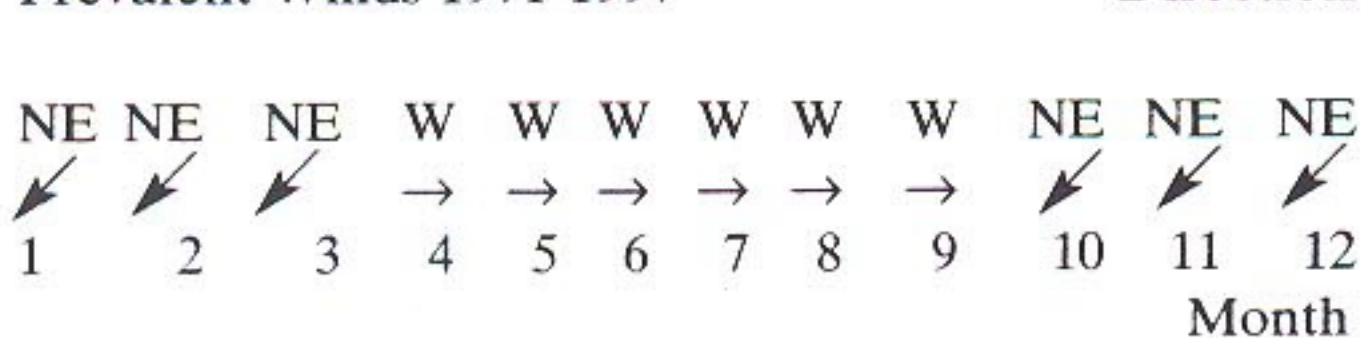
Temperature (C) 1971-1997



Precipitation (in mm) 1971-1997



Prevalent Winds 1971-1997



5. Corrosion Morphology

Two glass parts are all left from the destroyed south glass panel. We examined these two samples. One made from colourless glass (Fig. 9) and the other made from red glass (Fig. 12). The pictures below reveal the weathering process of the glasses:

- dulling (Fig. 10),
- pitting (Fig. 13),
- crust deposition (Fig. 11, 14),
- iridescences (Fig. 13, 14, 15, 16),
- crizzling (Fig. 18) and
- wind corrosion (Fig. 16, 17, 20) [3].

Stereo-microscope pictures - Surface layers:

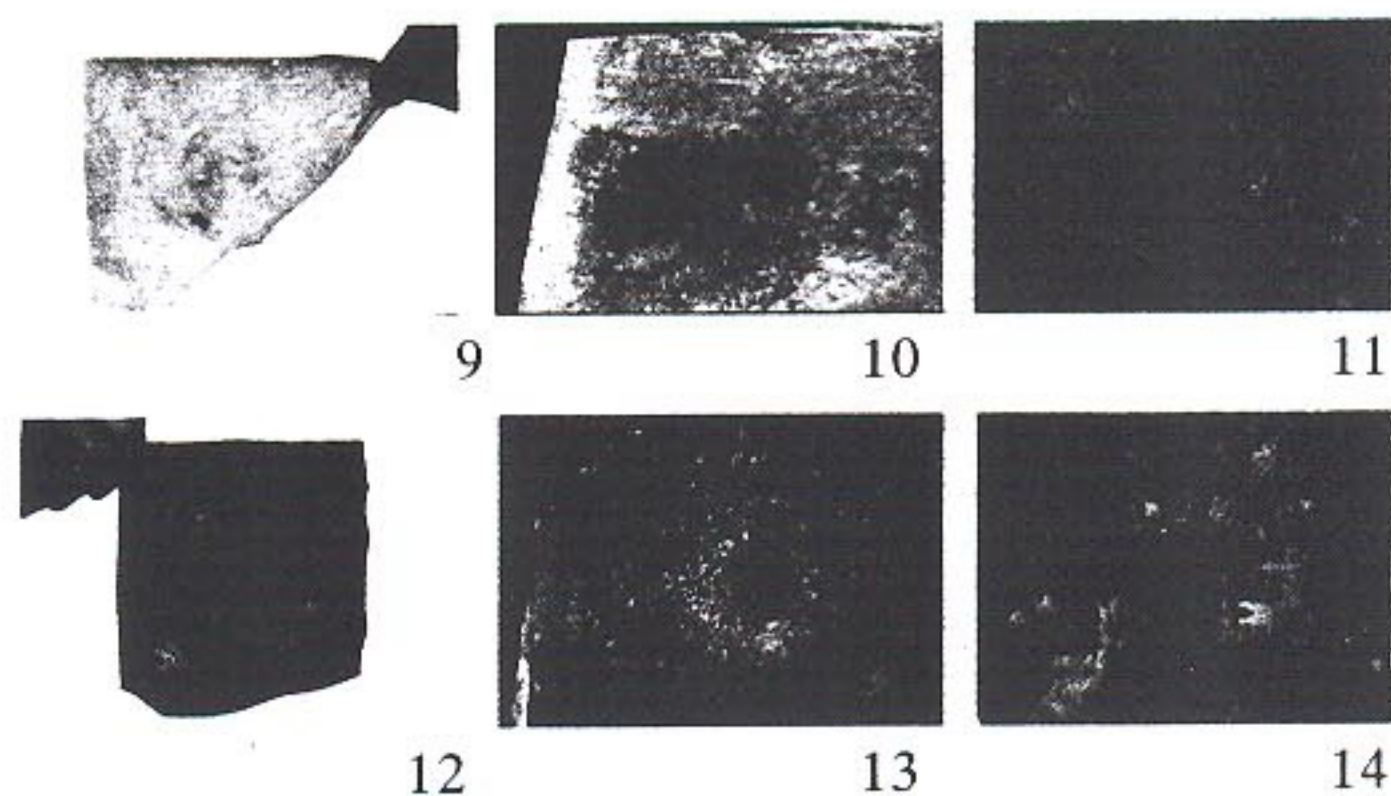


Fig. 9. Colourless glass part, Fig. 10. Dulling, Fig. 11. Crust deposition, Fig. 12. Red glass part, Fig. 13. Pitting, Fig. 14. Crust deposition.

Optical microscope pictures - Cross Sections:

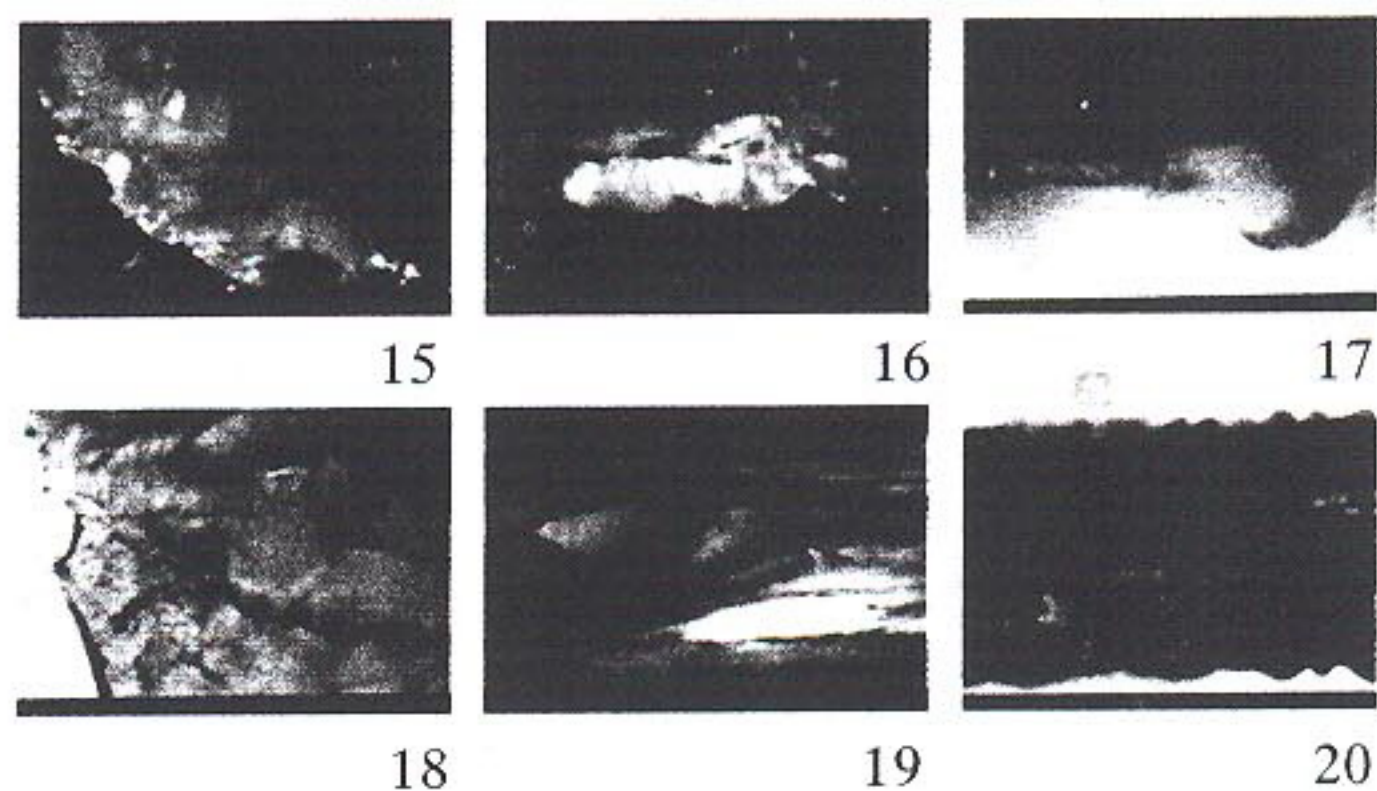


Fig. 15. Iridescences Fig. 16. Iridescences Fig. 17. Wind corrosion Fig. 18. Crizzling Fig. 19. Colour mixture Fig. 20. Wind corrosion

6. Analyses

A Scanning Electron Microscope with EDAX attachment has been used to determine the composition of the glass.

SEM EDAX Quantitative Results:

	(Sample APKP gg 1)	
Na ₂ O	10.41	K ₂ O 2.60
MgO	4.39	CaO 12.66
Al ₂ O ₃	1.91	MnO 0.28
SiO ₂	65.35	FeO 1.09
P ₂ O ₅	0.82	

Generally, the composition of the glass observed would result in a stable product. They are Silica-soda-lime glasses with plant ash alkali source [4].

Conclusion

The glass panels' technique has widely been used in the eastern Mediterranean, for example in Jerusalem, Damascus, and Asia Minor. Searching for the origin of the technique we have to look at the tradition from the Byzantine, Justinian era (monastery of Sinai) and afterwards. On the other hand, we know little about the glass panels in the northern Greece where further research is required.

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