



„EVERYONE MAKES MISTAKES” – (CARTOGRAPHIC) TOPONYMICAL INCONSISTENCIES AND MISSELECTION OF TRIANGULATION POINTS

EXAMPLES OF PEAKS ON LOŠINJ AND RAB ISLANDS DURING FRANCISCAN MILITARY AND CADASTRAL SURVEYS



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FRANCISCAN SECOND MILITARY SURVEY (1806 – 1869) AND STABLE CADASTER SURVEY (1817 – 1861)

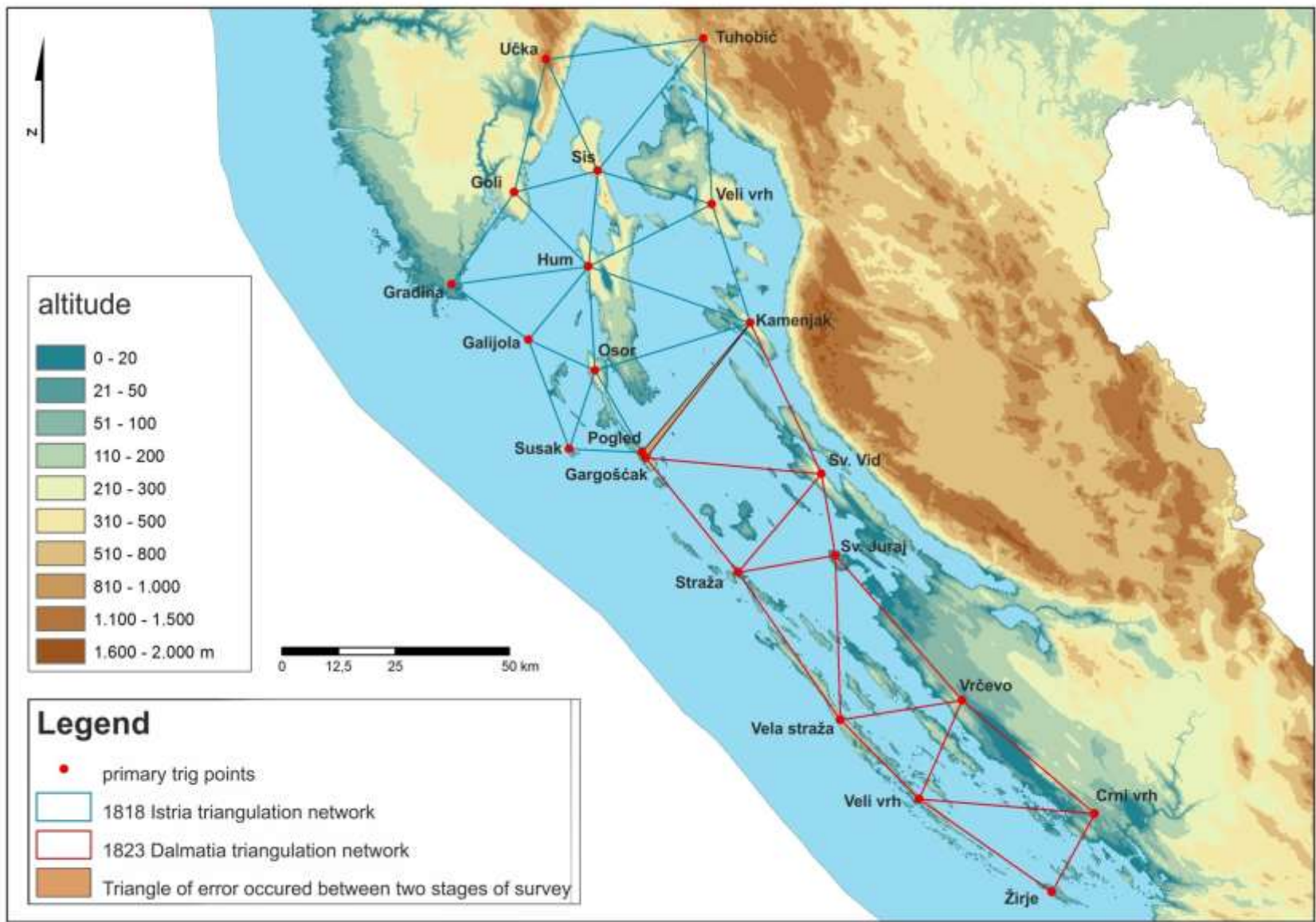
- Carried out during the reign of emperor Franz I. (1768 – 1835, reign 1792 - 1835)

Mapping of Croatia during *Stable Cadaster Survey*:

- Istria: 1818 – 1822
- Dalmatia: 1823 – 1830 – hiatus – 1834 – 1838
- 1:2880 (1:2904 !) and 1:1440 scale („1 zoll =40 klafter” and „1 zl .=20 klf.”)

Mapping of Croatia during *Military Survey*:

- Istria: 1821 – 1824
- Dalmatia: 1851 – 1854
- Cassini-Soldner projection, Zach-Oriani ellipsoid ($a=6376130$, $f=1/310$)
- Ferro prime meridian (17°39'16" east of Greenwich)
- Krimberg (Istria) and Wien (Dalmatia) mapping systems
- 1:28800 scale



First-order triangulation points of cadastral survey of Kvarner (Istria) and Dalmatia
(source: Ungarov, 1949, Solarić, 2008)

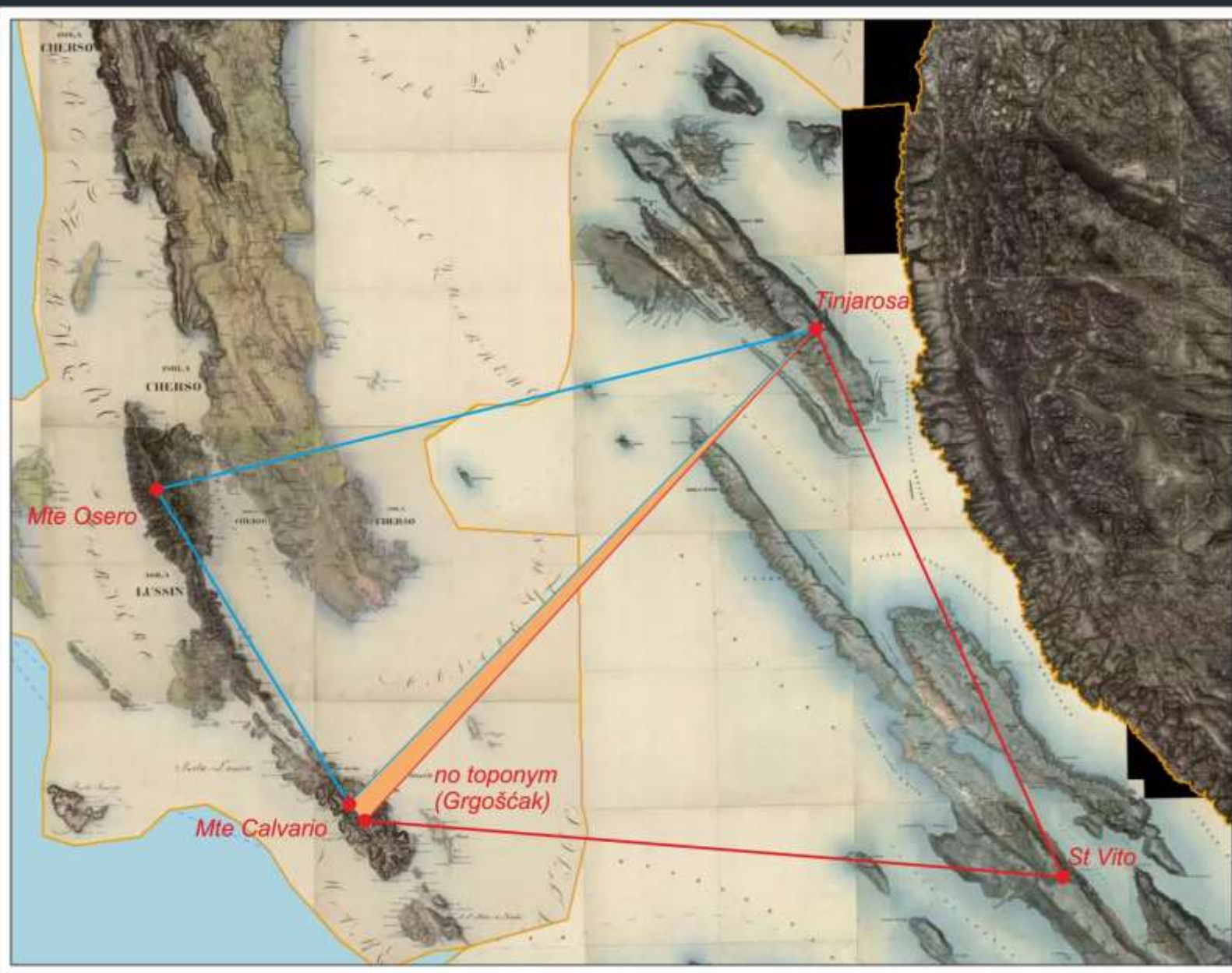
STABLE CADASTER SURVEY OF KVARNER (1818 – 1822) AND DALMATIA (1823 – 1830)

Survey of Kvarner (commanded by Cpt. Bossi) **southernmost first-order triangle points** on which survey of Dalmatia was planned to be attached:

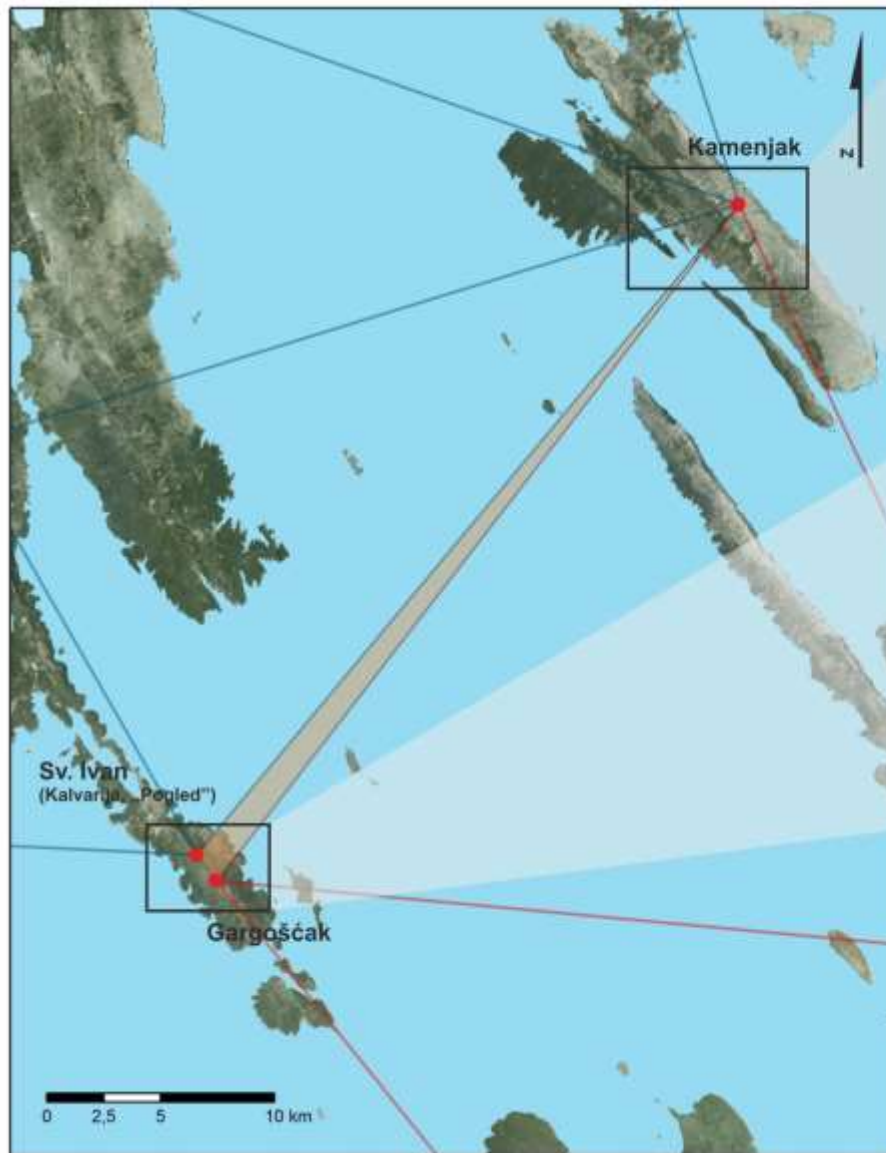
- *Televrina* peak (also: *M^{te} Osero*, *Oserščica*) – 588 m (Lošinj island)
- *Sv. Ivan* peak (also: *M^{te} Calvario*, *Grgošćak* ???) – 230,7 m (Lošinj island)
- *Kamenjak* peak (also: *Tignarossa*, *Tinjarosa*) – 409,7 m (Rab island)
- Survey of Dalmatia was commanded by 1st Lt. Haan and Lt. Montanario, and **they were ordered to attach the northernmost triangle to already existing *M^{te} Calvario* – *Tignarossa* line segment.**
- They were told that those trig point **markers were left there by Cpt. Giacomo Marieni's team during hydrological survey of Adriatic Sea in order to create *Carta di Cabotaggio del Mare Adriatico* map from 1818 to 1821 ...**

ERROR DURING THE SURVEY OF DALMATIA

- ...They couldn't identify marker on the *Mte Calvario* peak, but they found ruined remains on the neighbouring peak (about 1430 m SE, measured on TK25) of similar height called *Grgošćak*, and they assumed it was Marieni's marker.
- However, they made a mistake because Marieni used St. John church on *M^{te} Calvario* peak as a trig point, so their northernmost first order triangle (acutally rotated cca. 2°) for survey of Dalmatia now consisted of points:
 - *Grgošćak* peak (also: *Gargošćak*) – 242,5 m (Lošinj island)
 - *Kamenjak* peak (also: *Tignarossa*, *Tinjarosa*) – 409,7 m (Rab island)
 - Sv. Vid peak – 349,1 m (Pag island)
- Error was discovered in 1827 during the third stage of survey that started in Varaždin in 1826 and was carried out southwards towards Dalmatia.



Area of Lošinj where misselection of trg points occurred (smaller scale)
(source: Ungarov, 1949, Solarić, 2008, mapire.eu)



Legend

- (red circle with cross) primary trig points
- (blue line) 1818 Istria triangulation network
- (red line) 1823 Dalmatia triangulation network
- (orange shaded area) Triangle of error occurred between two stages of survey

Area of Lošinj where misselection of trig points occurred (larger scale)

(source: Ungarov, 1949, DGU, mapire.eu)

- In order to avoid immense costs of repeating such endeavor to correct measurements, **scale of cadastral maps of Dalmatia was simply transformed from 1:2880 to 1:2904**



Peaks of Lošinj in perspective



Kamenjak peak in perspective



Standpoint view of peaks Sv. Ivan and Kamenjak from peak Sv. Vid (349,1 m), Pag island

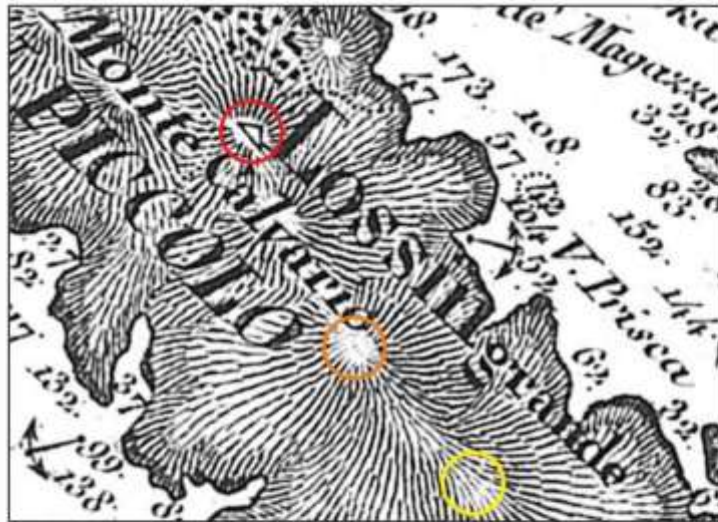
Unfortunately, areas of peaks *M^{te} Calvario* (now *Sv. Ivan*) and *Tignarossa* (now *Kamenjak*) besides being marked as „geodetic survey crime scene”, also became some sort of victims of various toponymical inconsistencies on maps during last two hundred years

TOPONYMIC INCONSISTENCIES OF LOŠINJ PEAKS

- Also, toponymical inconsistencies appear in papers that cover this particular matter („the error of 1:2904”), so it is sometimes difficult to determine which peak of Lošinj is being discussed at a moment.

LOŠINJ		
SOURCE, YEAR:	TOPONYM	GEOMORPH. FORM
Ivon, 1923	<i>Kalvarij / Gargoščak</i>	separate peaks
Ungarov, 1949	<i>Pogled / Kalvarija</i>	same peak
Ungarov, 1958	<i>Kalvarija</i>	one peak
Kosović, 1958	<i>Kalvarija / Grgošćak</i>	separate peaks
Slukan-Altić, 2003	<i>Kalvarija / Grgošćak</i>	separate peaks
Solarić, 2008	<i>Pogled / Kalvarija</i>	same peak

Carta di Cabotaggio del Mare Adriatico (1822 - 1824)



○ Monte Calvario ○ no toponym ○ no toponym

Second Military Survey (1806 - 1869)



○ Mte Calvario ○ no toponym ○ no toponym

Third Military Survey (1869 - 1877)



○ Calvario ○ Gergošćak ○ Pogled

Croatia Topographic map 1:25,000 (2011)



○ Sv. Ivan ○ Grgošćak ○ Pogled

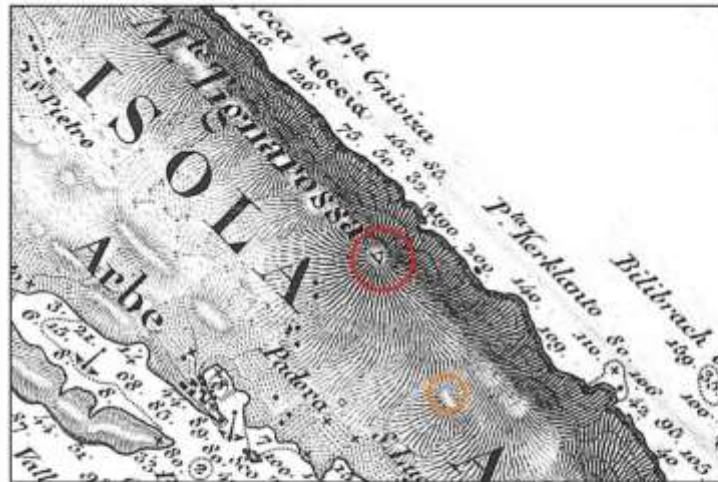
Toponyms of peaks of Lošinj on various maps

TOPONYMIC INCONSISTENCIES OF RAB PEAK

- *Kamenjak* peak was obviously named *Tignarossa*, according to map and written sources.
- However, *Kamenjak* is also a toponym used for the whole karst ridge that stretches from NW to SE

RAB	
SOURCE, YEAR:	TOPONYM
Ivon, 1923	<i>Tignarossa</i>
Brusić, 1926	„ <i>Tinjarosa</i> , once knowns as <i>Kamenjak</i> (<i>Camignaco</i>)”, actual peak is called <i>Straža</i>
Ungarov, 1949	<i>Tinjarosa</i> / <i>Crvena Glavica</i>
Ungarov, 1958	<i>Tignarossa</i> / <i>Crvena Glavica</i>
Kosović, 1958	<i>Tignarossa</i>
Bognar, 1989	<i>Tinjaroša</i> / <i>Kamenjak</i>
Slukan-Altić, 2003	<i>Tignarossa</i> / <i>Kamenjak</i>
Pahernik, 2007	<i>Tinjaroša</i> / <i>Kamenjak</i>
Solarić, 2008	<i>Crvena Glavica</i>

Carta di Cabotaggio del Mare Adriatico (1822 - 1824)



○ Mte Tignarossa ○ no toponym

Second Military Survey (1806 - 1869)



○ Tinjarosa ○ no toponym — unnamed geomorph.features

Third Military Survey (1869 - 1877)



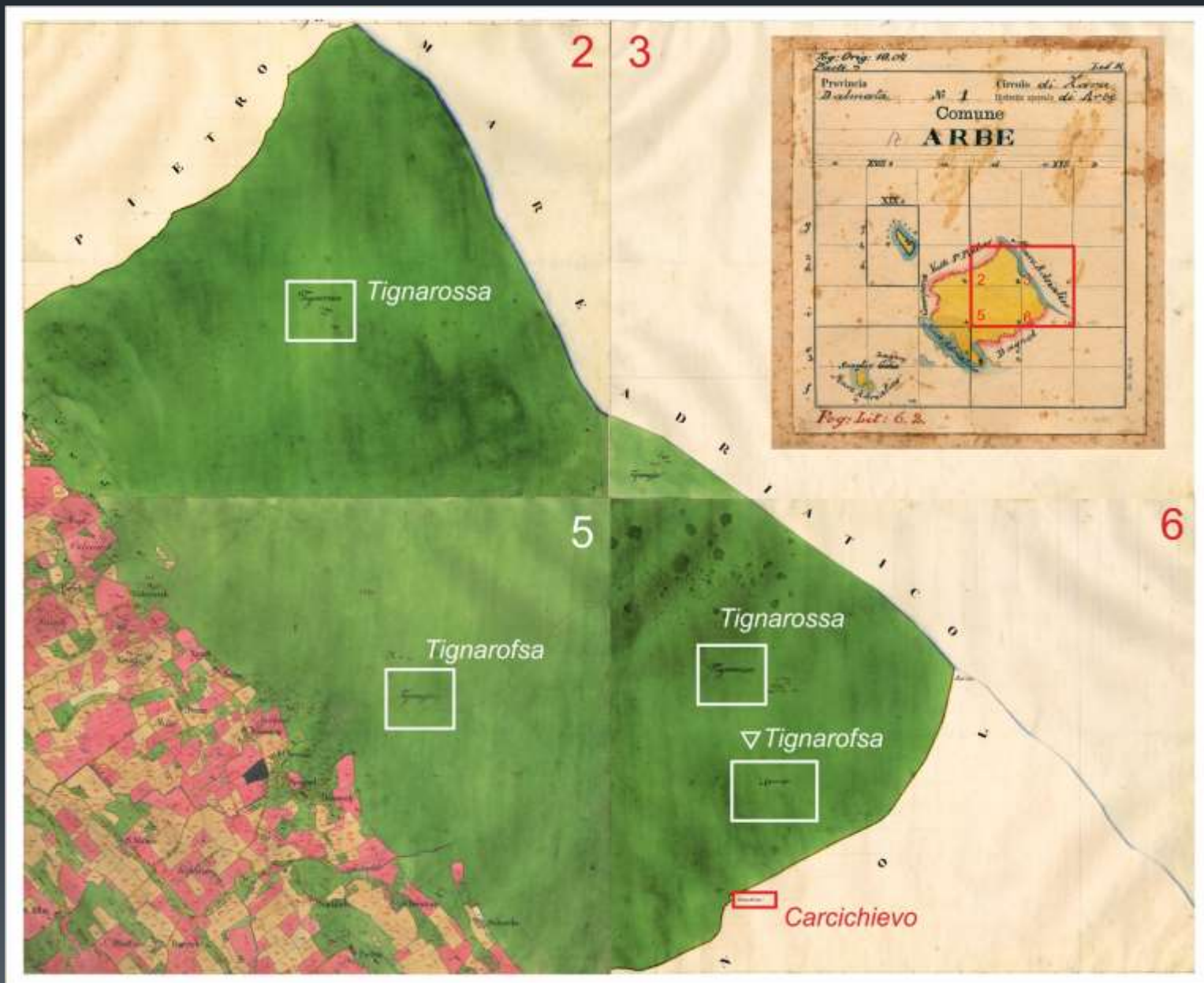
○ Tignarossa ○ no toponym

Croatia Topographic map 1:25,000 (2011)



○ Kamenjak ○ Tinja roša 1 Karačičeva draga
2 Markova draga

Toponyms of peak *Tignarossa* and surrounding area on Rab on various maps



Toponyms of peak *Tignarossa* and surrounding area on Rab on cadaster map

CONCLUSION

- Toponyms can often be the most inaccurate information given on a map or in various written sources, especially if they are taken for granted and without consulting local people.
- There is a possibility that misunderstanding of toponyms, i.e. their actual locations (and lack of communication with local people) led to selection of wrong peak during cadastral survey of Dalmatia.
- Correct writing of toponyms should be of the prime interest for cartographers and other people involved in map making as same as positioning them accurately.

THANK YOU FOR YOUR ATTENTION !